



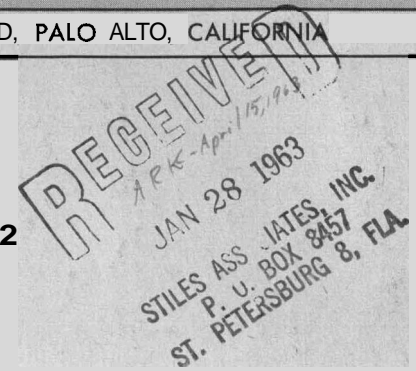
HEWLETT-PACKARD JOURNAL

TECHNICAL INFORMATION FROM THE -hp- LABORATORIES

PUBLISHED BY THE HEWLETT-PACKARD COMPANY, 1501 PAGE MILL ROAD, PALO ALTO, CALIFORNIA

VOLS. 1 - 13
SEPTEMBER, 1949 - AUGUST, 1962

PART I CHRONOLOGICAL INDEX



VOLUME 1, SEPT., 1949 - AUG., 1950

VOLUME 2, SEPT., 1950 - AUG., 1951

No. and Date of Issue	Title and Author	No. and Date of Issue	Title and Author
No. 1 Sept., 1949	A New Amplifier for Milli-Microsecond Pulses, <i>N. B. Schrock</i>	No. 1 Sept., 1950	A 3800-7600 MC Signal Generator Using A Parallel-Plane Type Resonator, <i>W. D. Myers</i>
No. 2 Oct., 1949	A New Frequency Standard and Time Interval Generator, <i>Brunton Bauer</i>	No. 2 Oct., 1950	A 10 MC Scaler for Nuclear Counting and Frequency Measurement, <i>A. S. Bagley</i>
No. 3 Nov., 1949	Design Notes on the Resistance-Capacity Oscillator Circuit (I), <i>Brunton Bauer</i>	No. 3 Nov., 1950	The 700 Megacycle Voltmeter and its Applications, <i>J. R. Petrak</i>
No. 4 Dec., 1949	Design Notes on the Resistance-Capacity Oscillator Circuit (II), <i>Brunton Bauer</i>	No. 4 Dec., 1950	A New Low-Power Klystron Supply, <i>J. R. Petrak</i> Balanced Load Measurements with VHF Bridge, <i>W. B. Wholey</i>
No. 5 Jan., 1950	Greater Reliability in UHF Impedance Measurements, <i>W. B. Wholey</i>		Repair of Hewlett-Packard Instruments
No. 6 Feb., 1950	A New 0.07-10 Microsecond General-Purpose Pulse Generator, <i>G. S. Kan</i>	No. 5 Jan., 1951	The High-speed Frequency Counter—A New Solution to Old Problems, <i>A. S. Bagley</i>
No. 7 Mar., 1950	A New 10-500 Megacycle A-M Signal Generator, <i>H. E. Overacker</i>	No. 6 Feb., 1951	The -hp- Program for Waveguide Type Measuring Equipment, <i>N. B. Schrock</i>
No. 8 Apr., 1950	Direct Measurement of Impedance in the 50-500 MC Range, <i>Arthur Fong</i> 10-500 MC VHF Detector	No. 7-8 Mar.-Apr., 1951	Power Measurements from 10 to 12,400 Megacycles, <i>B. P. Hand</i> and <i>N. B. Schrock</i>
No. 9 May, 1950	Direct Reading UHF Power Measurements, <i>B. P. Hand</i>	No. 9 May, 1951	Inexpensive Quality
No. 10 June, 1950	The Explanation for Certain Cathode-Follower Effects, <i>Brunton Bauer</i> Extended-Range Metered Power Supply	No. 10 June, 1951	A New Generator of Frequencies Down to 0.01 CPS, <i>R. H. Brunner</i>
No. 11 July, 1950	New 125-Volt Fast Pulse Amplifier, <i>N. B. Schrock</i>	No. 11 July, 1951	Accuracy in -hp- Voltmeters and Oscillators, <i>Brunton Bauer</i> and <i>R. M. Demere</i>
No. 12 Aug., 1950	A New Monitor for FM Communications Services, <i>J. E. Stiles</i> New Aural and Video Monitors for TV Stations	No. 12 Aug., 1951	-hp- Distortion Measuring Equipment, <i>Brunton Bauer</i>

**BACK ISSUES ARE PRESENTLY IN PRINT FOR BOTH VOLUMES 12 AND 13
SPECIFIED ISSUES FROM THESE TWO VOLUMES AVAILABLE ON REQUEST**

CHRONOLOGICAL INDEX (Continued)

VOLUME 3, SEPT., 1951 – AUG., 1952

No. and Date of Issue	Title and Author
No. 1 Sept., 1951	Good Practice in Slotted Line Measurements (Part I), <i>W. B. Wholey</i>
No. 2 Oct., 1951	Two New Test Sets for SHF Measurements Good Practice in Slotted Line Measurements (Conclusion). <i>W. B. Wholey</i>
No. 3 Nov., 1951	Recent Developments in <i>-hp-</i> Waveguide Type Measuring Equipment, <i>J. K. Hunton</i> and <i>N. B. Schrock</i>
No. 4 Dec., 1951	Oscillators for Many Purposes
No. 5-6 Jan.-Feb., 1952	Simplified Microwave Frequency Measurements Using the 10-MC Frequency Counter, <i>W. D. Myers</i> The 'Perfect Load' and The Null Shift—Aids in VSWR Measurements, <i>J. K. Hunton</i> and <i>W. B. Wholey</i>
No. 7-8 Mar.-Apr., 1952	A Precision Directional Coupler Using Multi-Hole Coupling, <i>E. F. Barnett</i> and <i>J. K. Hunton</i>
No. 9-10 May-June, 1952	The <i>-hp-</i> Direct-Reading UHF Signal Generators, <i>Arthur Fong</i> and <i>W. D. Myers</i>
No. 11 July, 1952	A Novel Impedance-Measuring System Using Standard <i>-hp-</i> Instruments
No. 12 Aug., 1952	The <i>-hp-</i> Audio Signal Generators

VOLUME 4, SEPT., 1952 – AUG., 1953

No. 1-2 Sept.-Oct., 1952	Greater Flexibility in the <i>-hp-</i> 3800-7600 MC Signal Generator, <i>W. D. Myers</i> Measuring Large Resistances with the <i>-hp-</i> 410 VTVM Checking Klystron Linearity with <i>-hp-</i> Equipment
No. 3 Nov., 1952	A New 100 KC Counter for Use in Electronics and Industry, <i>E. A. Hilton</i>
No. 4 Dec., 1952	Those New <i>-hp-</i> Oscillators, <i>Brunton Bauer</i> and <i>B. M. Oliver</i> Greater Power Capacity for the 8.5-10 KMC Test Set, <i>P. D. Lacy</i>
No. 5-6 Jan.-Feb., 1953	More About the <i>-hp-</i> Precision Directional Couplers, <i>E. F. Barnett</i>
No. 7-8 Mar.-Apr., 1953	A New Signal Generator for Aeronautical Radio and UHF Television, <i>H. E. Overacker</i> Field Repair Stations

No. and Date of Issue

Title and Author

No. 9-10 May-June, 1953	The <i>-hp-</i> TV Monitor, <i>Robert Grimm</i>
No. 11-12 July-Aug., 1953	Measurements to 100 Megacycles with the <i>-hp-</i> Frequency Counter, <i>Dexter Hartke</i>

VOLUME 5, SEPT., 1953 – AUG., 1954

No. 1-2 Sept.-Oct., 1953	Time Interval Measurements with the <i>-hp-</i> Electronic Counter, <i>E. A. Hilton</i> and <i>D. R. Scott</i>
No. 3-4 Nov.-Dec., 1953	A New 60-Cycle Per Revolution Generator for Precision Tachometry Measurements, <i>Wm. Girdner</i> Table of Important Transforms, <i>B. M. Oliver</i> (Also printed in separate form with expanded explanatory notes.)
No. 5-6 Jan.-Feb., 1954	A. New Signal Generator for the 7,000 to 11,000 MC Range, <i>Arthur Fong</i> Hewlett Elected IRE President
No. 7-8 Mar.-Apr., 1954	Frequency and Time Measurements with the New <i>-hp-</i> High Speed Counter, <i>Alan S. Bagley</i> , <i>Dexter Hartke</i> , and <i>Wm. D. Myers</i>
No. 9 May, 1954	Wider Range and Higher Stability in the new <i>-hp-</i> 4 MC Voltmeter, <i>John Zevenbergen</i>
No. 10 June, 1954	The <i>-hp-</i> 500-Volt, 200-MA Metered Power Supply, <i>Don Broderick</i> A Convenient Source of Multiple Pulses
No. 11 July, 1954	New Conveniences for Microwave Power Measurements, <i>Wm. Gallagher</i> and <i>B. P. Hand</i>
No. 12 Aug., 1954	Advanced Performance in Two New VHF Signal Generators, <i>H. E. Overacker</i>

VOLUME 6, SEPT., 1954 – AUG., 1955

No. 1-2 Sept.-Oct., 1954	The <i>-hp-</i> Microwave Reflectometers, <i>J. K. Hunton</i> and <i>N. L. Pappas</i>
No. 3-4 Nov.-Dec., 1954	New Broadband Microwave Power Amplifiers Using Helix-Coupled TWT's, <i>P. D. Lacy</i> and <i>D. E. Wheeler</i> A New Helix-Forming Machine with Micro-Inch Error
No. 5 Jan., 1955	A Precision Wave Guide Attenuator Which Obeys a Mathematical Law, <i>B. P. Hand</i> A New Precision Wave Guide Phase Shifter, <i>E. F. Barnett</i>

CHRONOLOGICAL INDEX (Continued)

No. and Date of Issue	Title and Author	No. and Date of Issue	Title and Author
No. 6 Feb., 1955	A New 10 MC to 12 KMC Coaxial Crystal Detector Mount, <i>N. S. Schrock</i> New Plug-In Decade Counters of Kehn Design, <i>Marvin Willrodt</i> Two New Transformers for Measurements on Balanced Systems	No. 4 Dec., 1955	An Enhanced Accuracy High Readability VTVM, <i>John Zevenbergen</i> Use of the "Notch Wattmeter" with -hp- Signal Generators
No. 7 Mar., 1955	A New Standing Wave Indicator with an Expanded VSWR Scale, <i>Brunton Batter</i> More Conveniences in the -hp- Microwave Power Meter, <i>Don Carmean</i> Notes On Bolometer Elements	No. 5 Jan., 1956	New IWT Amplifiers with Provision for Simulating Special Microwave Signals, <i>Peter D. Lacy</i> and <i>Geo. W. C. Mathers</i>
No. 8 Apr., 1955	A New 10 CPS-600 KC High Stability VTVM, <i>John Zevenbergen</i> Some Effects of Waveform on VTVM Readings (I), <i>B. M. Oliver</i>	No. 6 Feb., 1956	Three New -hp- Audio Oscillators, <i>Brunton Bauer</i> The -hp- Balanced R-C Oscillator Circuit, <i>B. M. Oliver</i>
No. 9 May, 1955	A New 1 CPS-1 MC Square Wave Generator with a 20-Millimicrosecond Rise Time, <i>Don Broderick</i> Some Effects of Waveform on VTVM Readings (II), <i>B. M. Oliver</i>	No. 7 Mar., 1956	A New DC-300 KC High-Sensitivity Oscilloscope with Triggered Sweep, <i>Duane Dunwoodie</i> and <i>Dick Reynold</i>
No. 10 June, 1955	The New -hp- 15-21 KMC 10 MW Signal Generator, <i>Wm. D. Myers</i> Some Effects of Waveform on VTVM Readings (Conclusion), <i>B. M. Oliver</i>	No. 8 Apr., 1956	A New DC-10 MC Oscilloscope with Dual-Trace and High-Gain Preamplifiers, <i>Robert A. Grimm</i> and <i>Norman B. Schrock</i>
No. 11 July, 1955	A New 120 KC Industrial Counter for Measuring RPM, Velocity, Quantity, Flow, Etc., <i>Frank Koziuk</i> Summary of -hp- Electronic Counters	No. 9-10 May-June, 1956	A New 10-15.5 KMC 10 MW Signal Generator, <i>Wm. D. Myers</i> A Simple 0-500 Volt Metered Power Supply, <i>Brunton Bauer</i> Balanced Output from the -hp- Square Wave Generator.
No. 12 Aug., 1955	A Simple Precision System for Measuring CW and Pulsed Frequencies Up to 12,400 MC, <i>Dexter Hartke</i>	No. 11-12 July-Aug., 1956	A 0-1.1 MC Frequency Counter with Time Interval Markers, <i>Jeffrey B. Wolfington</i> The -hp- Readout System Summary of -hp- Electronic Counters

VOLUME 7, SEPT., 1955 - AUG., 1956

No. 1 Sept., 1955	A New 3 CPS-100 KC Electronic Frequency Meter With Discriminator Output and Expandable Scale. <i>Duane Marshall</i>
No. 2 Oct., 1955	High-Directivity Coaxial Directional Couplers and Reflectometers, <i>J. K. Hunton, H. C. Poulter</i> and <i>C. S. Reis</i>
No. 3 Nov., 1955	Square Wave and Pulse Testing of Linear Systems, <i>B. M. Oliver</i>

VOLUME 8, SEPT., 1956 - AUG., 1957

No. 1-2 Sept.-Oct., 1956	A Micrometric 12-40 KMC Waveguide Slotted Line with Interchangeable sections and Untuned Probe, <i>J. K. Hunton</i>
No. 3-4 Nov.-Dec., 1956	A New Adjustable Gate Time Counter, New -hp- Affiliate Flow Measurements Dynac, Inc. - A New Service For Specialized Instrumentation Radar Signal Simulators
No. 5 Jan., 1957	An RC Oscillator that Covers the 20 CPS-20 KC Range in a Single Dial Sweep Design Principles of the 1000:1 Range Single-Band RC Oscillator, <i>Nicholas Kovalevski</i> and <i>B. M. Oliver</i>

CHRONOLOGICAL INDEX (Continued)

No. and Date of Issue	Title and Author	No. and Date of Issue	Title and Author
No. 6 Feb., 1957	A New 8-12 KMC Voltage-Tuned Sweep Oscillator for Faster Microwave Evaluations, <i>P. D. Lacy</i> and <i>Daniel E. Wheeler</i> Backward Wave Oscillator Tubes	No. 7 Mar., 1958	An Increased-Sensitivity Micro Volt-Ammeter Using a Photo-conductive Chopper, <i>John M. Cage</i>
No. 7 Mar., 1957	A Fast Digital Recorder with Analog Output for Automatic Data Plotting, <i>Alan S. Bagley</i> and <i>Ed A. Hilton</i> Operation of the Digital Recorder	No. 8 Apr., 1958	A Precision Delayed-Pulse Generator for Measuring and Generating Short Time Intervals, <i>Don Broderick</i> , <i>Dexter Hartke</i> , and <i>Marvin Willrodt</i>
No. 8 Apr., 1957	A 250 CPS-100 KC Oscillator for High Stability Applications, <i>Albert Ennor</i> and <i>Edna MacLean</i> How Model 200T Stability Curves Were Plotted Higher Accuracy in Measuring Audio and Sub-Audio Frequencies, <i>Albert Ennor</i>	No. 9 May, 1958	A Fast, Automatic Printer for Digital Type Data Devices, <i>Ed A. Hilton</i> A Current-Limiting Regulated Power Supply for Transistor Work, <i>Donald F. Schulz</i>
No. 9-10 May-June, 1957	A Note on Measuring Coaxial Coupler Directivity, <i>Howard C. Poulter</i> High DB-Resolution Meter Scales for -hp- VTVM's	No. 10-11 June-July, 1958	A Clip-On DC Milliammeter for Measuring Tube and Transistor Circuit Currents, <i>Arndt Bergh</i> , <i>Charles O. Forge</i> , and <i>George S. Kan</i> -hp- Board of Directors Enlarged
No. 11 July, 1957	A Small, Convenient Frequency Counter for General-Purpose Use, <i>Frank Koziuk</i> Some Handy Uses for the -hp- 650A Test Oscillator, <i>Arthur Fong</i>	No. 12 Aug., 1958	An Automatic DC to X-Band Power Meter for the Medium Power Range, <i>B. P. Hand</i>
No. 12 Aug., 1957	A Rack-Mounting DC-300KC Oscilloscope With Expandable Sweep, <i>Dyane Dunwoodie</i> and <i>Dick Reynolds</i>	VOLUME 10, SEPT., 1958 - AUG., 1959	
VOLUME 9, SEPT., 1957 - AUG., 1958			
No. 1-2 Sept.-Oct., 1957	Permanent Record and Oscilloscope Techniques with the Microwave Sweep Oscillator, <i>Peter D. Lacy</i> and <i>Daniel E. Wheeler</i>	No. 1-2 Sept.-Oct., 1958	A Dual-Trace Automatic Base Line Oscilloscope For The DC - Several Hundred KC Range, <i>John Strathman</i> Two High-Performance Attenuators For The DC-500 MC Range, <i>Arthur Fong</i> and <i>Harley L. Halverson</i>
(Supplement)	Sputnik's Doppler Shift Measured and Recorded with -hp- Counter and Digital Recorder	No. 3-4 Nov.-Dec., 1958	5x10- ⁻⁶ /Week Time Base Accuracy in the 10 MC Frequency Counter, <i>LaThare N. Bodily</i> , <i>Leonard S. Cutler</i> Assuring Time Base Performance
No. 3-4 Nov.-Dec., 1957	An Improved Method for Measuring Losses in Short Waveguide Lengths, <i>Peter</i> and <i>Kenneth E. Miller</i> How Doppler Shift Records Provide Satellite Range and Height Data	No. 5 Jan., 1959	A New Digital DC Voltmeter with Automatic Range and Polarity Selection, <i>Theodore C. Anderson</i> and <i>Noel M. Pace</i>
No. 5 Jan., 1958	An Automatic Noise Figure Meter for Improving Microwave Device Performance, <i>Howard C. Poulter</i> Noise Figure and Its Measurement, <i>B. M. Oliver</i>	No. 6-7 Feb.-Mar., 1959	Additional Conveniences for Noise Figure Measurement, <i>Marco R. Negrete</i>
No. 6 Feb., 1958	Increased Operational Simplicity in a New DC-Several Hundred KC Oscilloscope, <i>Duane Dunwoodie</i> New -hp- Research and Development Divisions	No. 8 Apr., 1959	Special-Purpose Performance in a General-Purpose 50 KC-65 MC Signal Generator, <i>Arthur Fong</i> Friis Becomes Consultant Gaither Elected to -hp- Board of Directors
		No. 9-10 May-June, 1959	A Clip-On Oscilloscope Probe for Measuring and Viewing Current Waveforms, <i>Robert R. Wilke</i>
		No. 11-12 July-Aug., 1959	A Precision DC Vacuum-Tube Voltmeter with Extended Sensitivity and High Stability, <i>Donald Vorgaard</i>

CHRONOLOGICAL INDEX (Continued)

VOLUME 11, SEPT., 1959 – AUG., 1960

No. and Date of Issue	Title and Author
No. 1-2 Sept.-Oct., 1959	A New 20 CPS-50 KC Wave Analyzer with High Selectivity and Simplified Tuning, <i>J. R. Petrak</i> Measuring Microwave Tube Electrode Coefficients with an Audio Wave Analyzer, <i>Harley L. Halverson</i>
No. 3-4 Nov.-Dec., 1959	A New Clock for Improving the Accuracy of Local Frequency and Time Standards, <i>Dexter Hartke</i>
No. 5-7 Jan.-Mar., 1960	A Versatile New DC-500 MC Oscilloscope with High Sensitivity and Dual Channel Display, <i>Roderick Carlson</i>
No. 8-10 Apr.-June, 1960	The Effect of μ -Circuit Non-Linearity on the Amplitude Stability of RC Oscillators, <i>Bernard M. Oliver</i> De Gaulle Visits -hp- Plant Utilizing VLF Standard Broadcasts with the -hp- Frequency Divider and Clock
No. 11-12 July-Aug., 1960	A New Clip-On Oscilloscope/Voltmeter Probe for 25%-20 MC Current Measurements, <i>Charles O. Forge</i> The Value of AC Current Measurements

VOLUME 12, SEPT., 1960 – AUG., 1961

No. 1 Sept., 1960	A New RF Millivoltmeter for Convenient Measurements to 1 Kmc, <i>Theodore C. Anderson</i>
No. 2 Oct., 1960	A Voltage-to-Frequency Converter for Greater Flexibility in Data Handling, <i>R. A. Andersen</i> Dymec—An -hp- Service for Special Instrumentation Situations
No. 3 Nov., 1960	A New Frequency/Time Standard with 5×10^{-10} /Day Stability, <i>Leonard S. Cutler</i>
No. 4 Dec., 1960	Improved Sweep Frequency Techniques for Broadband Microwave Testing, <i>J. K. Hunton and Elmer Lorence</i>
No. 5 Jan., 1961	A New Frequency Counter Plug-In Unit for Direct Frequency Measurements to 510 MC Two New Microwave Frequency Doublers for Extending Signal Sources to the 18-40 KMC Range, <i>Russell B. Riley</i>
No. 6 Feb., 1961	Two Versatile New Power Supplies for High Power Semiconductor Work, <i>E. Robert Aiken</i>
No. 7 Mar., 1961	Increased Accuracy in -hp- Meters Through Servo Calibrating Methods, <i>Bernard M. Oliver</i>
No. 8 Apr., 1961	Two New Militarized Oscilloscopes Having Both Horizontal and Vertical Plug-Ins, <i>George F. Fredrick</i>
No. 9 May, 1961	Two New Transistorized Frequency Counters with Increased Readout and Low-Frequency Capabilities

No. and Date of Issue

Title and Author

No. 10 June, 1961	A Microwave Power Meter with a Hundred-fold Reduction of Thermal Drift, <i>R. F. Pramann</i> A New Low-Cost DC Fan For Cabinet Cooling
No. 11-12 July-Aug., 1961	A Parallax-Free No-Glare μ -hp- Oscilloscopes, <i>Bertrand W. Squier, Jr.</i> A New DC-450 KC Oscilloscope Using the Internal-Graticule CRT, <i>Robert L. DeVries</i>

VOLUME 13, SEPT., 1961 – AUG., 1962

No. 1-2 Sept.-Oct., 1961	A New SWR Meter with High Gain-Stability, <i>Darwin L. Howard</i>
No. 3-4 Nov.-Dec., 1961	Broader Information Capabilities in the Clip-On DC Milliammeter, <i>Donald E. Barkely and Arndt Bergh</i> Large Aperture Clip-On Probe Magnetic Ink Testing An Instrument for Automatic Measuring Frequencies from 200 mc to 12.4 gc, <i>Albert Benjamminson</i>
No. 5 Jan., 1962	The Transistorized RC Oscillator, <i>David Cochran</i> New One Watt TWT Amplifiers for more Rapid Microwave Measurements, <i>George W. C. Mathers</i>
No. 6 Feb., 1962	A New Digital Voltmeter Having High Rejection of Hum and Noise, <i>R. A. Andersen</i> A Versatile Digital Recorder for BCD Data, <i>Ed. A. Hilton</i> A Digital-to-Analog Converter with High Output Resolution, <i>Ed. A. Hilton</i>
No. 7 Mar., 1962	A New Scope Plug-In for Convenient measuring of Fast Switching Times, <i>Kay B. Magleby</i> The Kilomegacycle Sampling Oscilloscope, <i>Roderick Carlson</i> A Digital System For Automatic Measurements of Switching Times, <i>H. C. Stansch</i>
No. 8 Apr., 1962	A New 50 MC Oscilloscope Based on an Advanced CRT Design, <i>Floyd C. Siegel</i> Vertical Plug-Ins Horizontal Plug-Ins
No. 9-10 May-June, 1962	A Phase-Locking Synchronizer for Stabilizing Reflex Klystrons, <i>Albert Benjamminson</i> A New Wide-Application Klystron Power Supply, <i>Robert C. Allan</i> An Oscilloscope Camera with "Black Light" Graticule Illumination, <i>James A. Chesebrough</i>
No. 11 July, 1962	The Present Attainments of Adjustable Power Supplies
No. 12 Aug., 1962	A DC-500 KC Oscilloscope with Extended Measurement Capabilities, <i>John Strathman</i>

PART II

SUBJECT INDEX (Continued)

Issue Vol. No.	Model	Issue Vol. No.	Model
6 11	Counters, electronic, summary of...	5 11	Detector mount, coaxial, thermistor
7 11-12			477A
4 3	Counter, electronic, 100 kc.....	2 6	Detector mount, tunable
5 1-2	" "	6 12	" "
6 11	Counter, electronic, 120 kc.....	6 1-2	Detector mount, waveguide
12 9	Counter, electronic, 300 kc.....	2 7-8	" "
		2 7-8	" "
		3 3	" "
7 11-12	Counter, electronic, 1.1 mc.....	6 1-2	Detector mounts, waveguide, crystal
12 9	Counter, electronic, 1.2 mc.....		X421A
		5 11	Detector mount, waveguide, thermistor
8 3-4	Counter, frequency and time interval		487A
		1 8	Detector, VHF
7 11	Counter, frequency, 0 to 120 kc. ...	12 5	Detector, waveguide, crystal
2 5	Counter, frequency, 10 mc	9 9	Digital printer
4 11-12	" "	8 7	Digital recorder
		10 5	
8 3-4	Counter, telemetering	9 9	
7 2	Coupler, directional, coaxial, dual. .	10 5	
		12 9	
		7 2	Directional coupler, dual, coaxial. .
6 1-2	Coupler, directional, reflectometer use	7 2	
	752	7 2	
12 11-12	CRT uses internal graticule	7 2	
6 6	Crystal detector mount, coaxial 10 mc to 12 kmc.....	7 2	" "
	420A	7 2	" "
11 11-12	Current measurements, AC, the value of	3 7-8	Directional coupler, cross-guide ...
13 3-4	Current Measurements, DC, Clip-On	4 5-6	" "
	428B	3 7-8	Directional coupler, multi-hole ...
11 11-12	Current probe, clip-on AC.....	6 1-2	
10 9-10	Current waveform probe, clip-on, oscilloscope	4 5-6	Directional coupler, multi-hole, application data
	154A		752
		6 1-2	Directional coupler, multi-hole, reflectometer use
			752
		2 12	Distortion analyzer
		2 12	
		2 12	Distortion measuring equipment... ..
		11 3-4	Divider, frequency, and clock
		11 8-10	" "
		9 3-4	Doppler shift data analysis.....
		9 1-2	Doppler shift measurement: methods
		9 1-2	
			(Supp)
		12 5	Doublers, frequency
		7 8	Dual trace amplifier
		11 5-7	" "
		8 3-4	Dymec, Inc. (formerly Dynlac, Inc.) announcement and purpose
		12 2	Dymec, Inc. description of pur- pose and capabilities
			E
		3 3	E-H tuners
		11 1-2	Electrode coefficients, microwave tube, measurement of
			880A
			302A

PART II

SUBJECT INDEX (Continued)

Issue		F	Model
Vol.	No.		
12	10	Fan, DC	8-1003
8	3-4	Flow measurements , using adjustable gate time counter	DY-2500
5	3-4	Fourier transforms, table of	--
5	7-8	Frequency and time measurements. .	524B, etc.
5	7-8	Frequency converter, 10 to 100 mc	525A
5	7-8	Frequency converter, 100 to 220 mc	525B
12		Frequency converter , 100 to 510 mc	525C
6	11	Frequency counter , electronic, summary of	--
4	3	Frequency counter, electronic , 100 kc	522A, B
5	1-2	" " " "	522B
8	11	Frequency counter, electronic , 120 kc	521C
12	9	Frequency counter, electronic , 300 kc	5212A, 5512A
12	9	Frequency counter, electronic , 1.2 mc	5232A, 5532A
2	5	Frequency counter, high speed ...	524A
5	7-8		524B
7	11-12	Frequency counter, high speed, with time interval markers.	523B
7	11-12	Frequency counter readout sy	--
11	3-4	Frequency divider and clock.	113AR
11	8-10	" "	
12	5	Frequency doublers	938A, 940A
13	3-4	Frequency Measurements, Automatic, 200 mc to 12.4 gc	DY-5796
	5-6	Frequency measurement, microwave	--
1	2	Frequency measurements using secondary standard	100C, D
4	3	Frequency measurements, to 100 kc	522A, B
5	1-2	" " "	522B
2	5	Frequency measurements to 10 mc.	524A
4	11-12	Frequency measurement, 100 mc... .	512A, 524A
5	7-8	Frequency measurements to 220 mc	524B
6	12	Frequency measurements to 12 kmc	540A, etc.
7	1	Frequency meter, electronic	500B
3	3	Frequency meters, waveguide.	530A
		Frequency standard; see also "Frequency Counter"	
12	3	Frequency standard	103AR
1	2	Frequency standard and time interval generator	100D
10	8	Friis becomes consultant	--
2	10	Function generator , low frequency	202A
5	12	Fuse, signal generator output.	608A-95A

G

10	8	Gaither elected to <i>hp</i> - board of directors	--
9	8	Generator, delayed-pulse	218A
2	10	Generator , low frequency	202A

Issue		Model	
Vol.	No.		
12	8	Generator, marker	166B
13	3-4		1783A
1	6	Generator, pulse, 0.07-10 micro. second	212A
		Generator, signal; see "Signal Generator"	
6	9	Generator, square wave, 1 cps -1 mc	211A
12	8	Generator, sweep delay	166D
13	8		1781A
5	3-4	Generator, tachometer	508A, B
6	11		
8	11		
13	6	Guarded <i>DC</i> Measurements	DY-2401A

H

5	5-6	Hewlett elected IRE president	--
9	10-11	<i>hp</i> - board of directors enlarged.	--
6	3-4	Helix-forming machine	--
7	8	High gain amplifier	151A

I

3	11	Impedance measurements, audio frequency	--
1	8	Impedance measurements, direct, 50-500 mc	803A
1	5	Impedance measurements, UHF, greater reliability in	805A, B 415A
3	1	Impedance measurement, UHF.	--
3	2		--
8	11	Impedance measurements, using test oscillator	650A
2	9	Inexpensive quality	--
13	3-4	Ink Testing, Magnetic	428B

K

4	1-2	Klystron linearity, measurement of	--
7	1	Klystron residual <i>F-M</i> , measurement of	500B
13	9-10	Klystron Stabilized by Synchronizer	DY-2650A

PART II

SUBJECT INDEX (Continued)

Issue Vol. No.	Model	Issue Vol. No.	Model
11 5,7	Oscilloscope, DC-500 mc.	185A	
13 7	Oscilloscope, DC-1000 mc.	185B	
P			
12 11-12	Parallax-Free CRT	---	
2 5	Period measurements	524A	
4 3	"	522A, B	
5 7-8	"	524B	
5 1-2	Phase delay measurements	522B	
6 5	Phase shifter, precision, wave- guide, variable	X885A	
8 3-4	Photo-electric tachometry transducer	DY-2504A	
6 11	Pick-up, optical, tachometer	506A	
8 11	" " "		
12 8	Plug-in amplifiers, oscilloscope ...	---	
6 6	Plug-in decade counter	AC-4A	
2 7-8	Power measurements, bolometer mounts for	---	
4	Power measurements, low power, using "notch wattmeter" method	---	
5 11	Power measurements, microwave, modulated and unmodulated ...	430B, etc.	
1 9	Power measurements, UHF	430A, 475A, B	
2 7-8	Power measurements, 10 mc to 12.4 kmc	---	
9 12	Power meter, calorimetric, DC to 12.4 kmc	434A	
1 9	Power meter, microwave	430A	
2 7-8	"	430B	
5 11	"	430B	
6 7	" "	430C	
12 10	" "	431A	
13 11	Power Supplies, Adjustable	HL-520A HL-810B, etc.	
9 9	Power supply, current-limiting ...	721A 722AR, 723A 726AR	
12 6	"		
2 4	Power supply, klystron	715A	
13 9-10	"	716A	
6 1-2	"	717A	
1 10	Power supply, metered, regulated..	712A	
7 9-10	Power supply, regulated 500 v, 100 ma	711A	
5 10	Power supply regulated, 500 v 200 ma	712B	
7 8	Preamplifiers, plug-in, oscilloscope.	151A, 152A	
9 9	Printer, digital	565A	
2 6	Probe, broadband	442A	
11 11-12	Probe. clip-on, AC current	456A	
10 9-10	Probe, clip-on, oscilloscope, current waveform reading	154A	
10 9-10	Probe, clip-on, voltage dividing ...	AC-21	
13 3-4	Probe, Current, Large Aperture...	3528A	
2 6	Probe, untuned	444A	
3 3	"		
8 1-2	"	446A	
9 8	Pulse-duration unit, digital	219I	
1 6	Pulse generator, 0.07-10 micro- second	212A	
9 8	Pulse measurements, using delayed pulse generator	218A	
9 8	Pulse unit, dual	219B	
6 12	Pulsed carrier measurements	540A, etc.	
5 10	Pulses, multiple, a convenient source of	212A	
Q			
9 1-2	Q measurements using sweep oscillator	684A, 685A 686A, 687A	
R			
8 3-4	Radar signal simulation	---	
6 1-2	Ratio meter	416A	
	RC Oscillator: see "Oscillator" ...		
7 11-12	Readout system, frequency counter.	---	
9 6	R & D divisions of <i>hp</i> -described..	---	
	Receiver, VHF: see "Detector, VHF"		
8 7	Recorder, digital	560A	
9 9	Recorder, digital	561A	
10 5	"	H01 561B	
10 5	"	560A	
12 9	"	562A	
13 6	"		
9 1-2	Recording, satellite frequency (<i>supp</i>) doppler shift	523B, 560A	
4 5-6	Reflection coefficient, measure- ment of	---	
6 1-2	"	---	
7 2	Reflectometer measurements, co- axial, couplers for	---	
6 1-2	Reflectometers, microwave	---	
2 4	Repair of <i>hp</i> -instruments	---	
4 7-8	Repair stations, field	---	
4 1-2	Resistances, large, measurement of	410	
2 9	Resistor card machine	---	
7 11	Resonance measurements, using test oscillator	650A	

PART II

SUBJECT INDEX (Continued)

Issue			Model	Issue		Model	
Vol.	No.			Vol.	No.		
11	5-7	Sampling-type oscilloscope	185A	7	9-10	Square wave generator, modification for balanced output	211A
13	7		185B	6	9	Square wave generator, 1 cps-1 mc	211A
9	1-2	Satellite frequency, measurement and recording	523B, 560A	11	8-10	Stability, amplitude, in RC Oscillators	---
(Supp)							
9	3-4	Satellite microwave data analysis...	---	1	2	Standard, low frequency	10CC, D
2	2	Scaler, 10 mc	520A	12	3	Standard, frequency	103AR
12	8	Scanner, display	166C	6	1-2	Standard reflections	X916
13	8		1782A	1	5	Standing-wave indicator	415A
				6	7	" "	415B
				13	1-2	" " "	415C
3	2	SHF test sets	623B, 624A	6	1-2	Standing-wave measurement	---
3	3	Shorts, waveguide, adjustable	920A	9	1-2	Standing-wave measurements using sweep oscillator	684A, 685A 686A, 687A
6	1-2						
3	12	Signal generator, audio	205A, AG, 206A				
5	11	Signal generator output fuse	608A-95A				
3	12	Signal generator, supersonic	205AH				
10	8	Signal generator, 50 kc to 65 mc...	606A	12	4	Sweep frequency methods, use of in microwave testing	---
5	12	Signal generator, 10 to 420 mc...	608D	13	7	Switching Time Measurements	185A/B
5	12	Signal generator, 10 to 480 mc...	608C	13	7		186A
1	7	Signal generator, 10 to 500 mc...	608A	13	9-10	Synchronizer, Phase Locking	DY-2650A
4	7-8	Signal generator, 450 to 1230 mc...	612A				
3	9-10	Signal generator, 800 to 2100 mc..	614A				
3	9-10	Signal generator, 1800 to 4000 mc..	616A				
2	1	Signal generator, 3800 to 7600 mc..	618A				
4	1-2	" " " "	618B				
5	5-6	Signal generator, 7000 to 11,000 mc.	620A	5	3-4	Table of transforms	---
7	9-10	Signal generator, 10-15.5 kmc.	626A	5	3-4	Tachometer generator	508A, B
6	10	Signal generator, 15 to 21 kmc.	628A	6	11		
8	3-4	Signal simulation, radar	---	8	11		
3	5-6	Sliding load	X914A				
2	6	Slotted line, carriage assembly	809B	4	3	Tachometer head	506B
7	1-2	Slotted line carriage assembly micrometric	814A	7	1	Tachometer indicator, electronic...	500C
1	5	Slotted line, coaxial	805A, B	6	11	Tachometer pickup, optical .	506A
2	6	" "	806B	8	11		
3	3	" "		5	3-4	Tachometry measurements	508A, B
				6	11		---
3		Slotted line measurements; good practice in		8	3-4	Tachometry transducer, photoelectric	DY-2504A
3	2	" "		10	8	Termination, output	606A-34
2	6	Slotted line probe	442A	2	7-8	Termination, waveguide, high power	912A
2	6	Slotted line probe, untuned.	444A	2	6	Test equipment, waveguide	---
8	1-2	" " "	446A	7	3	Tests, linear system, using transient response	---
				3	2	Test sets, SHF	623B, 624A
2	6	Slotted line, waveguide	S810A	4	4	Test set, 8.5 to 10 kmc, increased power range	624B
8	1-2	" "	815A	13	7	Tester, Switching Time	185A/B
				13	7		186A
9	3-4	Small losses in short waveguides, measurement of	---	6	7	Thermistor mounts, broadband ...	---
9	1-2	Sputnik's doppler shift, measured and recorded	523B, 560A	4	11	Thermistor mount, coaxial	477A
(supp)				12	10		478A
7	3	Square wave and pulse testing of linear system	---				

PART II

SUBJECT INDEX (Continued)

Issue Vol.	Issue No.	Model	Issue Vol.	Issue No.	Model
12	10	Thermistor mount, waveguide	2	3	Voltmeter accessories
5	11	Thernnistor mount, waveguide, broadband	5	9	---
10	3-4	Time base control and test pro- cedures	12	1	Voltmeter accessory probes
			2	11	Voltmeters and oscillators, accu- racy in, calibration of
4	3	Time interval measurement	10	5	Voltmeter, digital, DC, automatic..
5	1-2	"			405AR
5	7-8	"	13	6	Voltmeter, digital, DC, guarded..
			10	11-12	Voltmeter, DC, precision
5	7-8	Time interval unit	9	7	Voltmeter, DC, microvolts
4	3	Time ratio measurements	2	11	Voltmeters, field checking of
6	6	Transformers, measurement, for balanced systems	7	4	Voltmeter, high accuracy
			8	9-10	Voltmeter, high db resolution.
3	4	Transformer, universal matching ..			400H
5	3-4	Transforms, table of			400H-DB
7	3	Transient response testing linear systems			400D-DB
			2	3	Voltmeter, multiplier, DC- 30,000 volts
6	3-4	Traveling wave tube amplifier	12	1	Voltmeter, RF, 10 mv to 10 v.
7	"	" "	6	8	Voltmeters, waveform effect on (I, II, III)
					459A
6	3-4	Traveling wave tubes, precision manufacture of	6	9	" "
			6	10	" "
9	8	Trigger unit, dual	6	8	Voltmeter, 10 cps-600 kc
3	3	Tuner, E-H	5	9	Voltmeter, 4 mc
6	1-2	Tuner, slide screw	2	3	Voltmeter, 700 mc
			3	5-6	VSWR measurement aids
					400AB
					400D
					410B
					X914A
U					
	5	UHF impedance measurement, greater reliability in			
1	9	UHF power measurements			
					805A,B, 415A
					430A, 475A,B
V					
1	7	VHF signal generator, 10 to 500 mc			
					608A
11	8-10	VLF broadcasts, use of for time- comparison			

2	3	Voltage divider, 2 kilovolt			
					453A
2	3	Voltage divider, 25 kilovolt			
					452A
2	3	Voltage measurements, high fre- quency			
					410B
12	2	Voltage-to-frequency converters ..			
					DY-2210, DY-2211A,B
W					
	11	Wave analyzer, 20 cps-50 kc			
					302A
	6	Waveform effect on Voltmeters (I, II, III)			

	6	" "			
	6	" "			
	13	Waveform Measuring System, Automatic			
					185B/187B DY-5844C
	13	Waveguide attenuators			
					370A, B, C
	2	Waveguide attenuator, precision, variable			
					382A
	2	Waveguide detector mounts			
					485A, B
	6	Waveguide detector mounts, crystal			
					X421A
	6	Waveguide detector mounts, un- tuned			
					S485A

PART II

SUBJECT INDEX (Continued)

Issue Vol. No.	Model	Instrument	Issue Vol. No.	Model	Instrument
9 3-4		Waveguide losses, small, measurement of	2 6		Waveguide slotted section
		---			S810A
2 6		Waveguide measuring equipment.	8 1-2		" " "
		---			815A
3 3			12 10		Waveguide thermistor mounts
8 1-2					486A
			5 11		Waveguide thermistor mounts, broadband
6 5		Waveguide phase shifter, precision, variable			487A
		X885A	6 12		Wavemeter calibration method

			1 11		Wide band amplifier
					460A, B.

PART III

INDEX BY MODEL NUMBER

(Model Numbers of Dymec and Harrison Laboratories Instruments listed at end)

Model	Instrument	Issue Vol. No.	Model	Instrument	Issue Vol. No.
100C	Low Frequency Standard	1 2	185B	Sampling Oscilloscope	13 7
100D	Low Frequency Standard	1 2	186A	Switching Time Tester	13 7
103AR	Frequency Standard	12 3	187A	Dual Trace Amplifier	11 5-7
113AR	Frequency Divider and Clock	11 3-4	187B	Dual Trace Amplifier	13 7
		11 8-10	196B	Oscilloscope Camera	13 9-10
120A	0-200 KC Oscilloscope	9 6	200A	Audio Oscillator	3 4
120B	0-450 KC Oscilloscope	12 11-12	200AB	Audio Oscillator	4 4
122A	Dual Trace Oscilloscope	10 1-2	200B	Audio Oscillator	3 4
130A	DC-300 KC Oscilloscope	7 7	200C	Audio Oscillator	3 4
130BR	DC-300 KC Oscilloscope	8 12	200CD	Audio Oscillator	4 4
130C	DC-500 KC Oscilloscope	13 12	200D	Audio Oscillator	3 4
150A	DC-10 MC Oscilloscope	7 8	200H	Audio Oscillator	3 4
151A	High Gain Amplifier	o	200I	Audio Oscillator	3 4
152A	Dual Channel Amplifier	7 8	200J	Audio Oscillator	7 6
154A	Voltage/Current Amplifier With AC-21F Clip-On Probe	10 9-10	200T	Test Oscillator	8 8
160B	Oscilloscope	12 8	201B	Audio Oscillator	3 4
162A	Plug-In Amplifier	12 8	201C	Audio Oscillator	7 6
162D	High Gain Vertical Amplifier	12 8	202A	Low Frequency Function Generator	2 10
162F	Fast Rise Preamplifier	12 8			3 4
166B	Marker Generator	12 8	202B	Low Frequency Oscillator	3 4
166C	Display Scanner	12 8	202C	Low Frequency Oscillator	7 6
166D	Sweep Delay Generator	12 8	202D	Low Frequency Oscillator	3 4
170A	Oscilloscope	12 8	204A	Audio Oscillator	3 4
175A	Oscilloscope	13 8	204B	5 CPS-500 KC Oscillator	13 5
185A	Oscilloscope	11 5-7	205A, AG	Audio Signal Generators	3 12
			205AH	Supersonic Signal Generator	3 12

PART III

INDEX BY MODEL NUMBER (Continued)

Model	Instrument	Issue		Model	Instrument	Issue	
		Vol.	No.			Vol.	No.
206A	Audio Signal Generator	3	12	420A	Wide Band Crystal Detector Mount.	6	6
207A	Audio Sweep Oscillator	8	5	X421A	Waveguide Crystal Detector Mount.	6	1-2
211A	Square Wave Generator	6	9	K/R422A	Waveguide Crystal Detectors	12	5
		7	9-10	425A	DC Micro Volt-Ammeter	9	7
212A	Pulse Generator	1	6	428A	Clip-On DC Milliammeter	9	10-11
		5	10	428B	Clip-On DC Milliammeter	13	3-4
		7	4	430A	Microwave Power Meter	1	9
		9	8	430B	Microwave Power Meter	2	7-8
218A	Signal Delay Generator	9	8			5	11
219A	Dual Trigger Unit	9	8	430C	Microwave Power Meter	6	7
219B	Dual Pulse Unit	9	8	431A	Power Meter	12	10
219C	Digital Pulse-Duration Unit	9	8	434A	Calorimetric Power Meter	9	12
230A	Audio Oscillator	3	4	440A	Detector Mount	2	6
231A	Audio Oscillator	3	4			6	12
232A	Audio Oscillator	3	4	442A	Broadband Probe	2	6
233A	Audio Oscillator	3	4	444A	Untuned Probe	2	6
281A	Waveguide-Coax Adapter	3	3			3	3
300A	Harmonic Wave Analyzer	2	12	446A	Untuned Probe	8	1-2
302A	Wave Analyzer	11	1-2	451A	Bridging Amplifier	1	10
320A, B	Distortion Analyzers	2	12	452A	Capacitive Voltage Divider	2	3
330B, C, D	Distortion Analyzers	2	12	456A	AC current Probe	11	11-12
335A, B	Attenuators	10	1-2	460A	Wide Band Amplifier	1	1
335C, D	Television Aural Channel Monitors	1	12	460B	Wide Band Amplifier	1	11
335E	TV Monitor	4	9-10	475A	Tunable Bolometer Mount	1	9
336C, D	Video Carrier Frequency Monitors	1	12	475B	Tunable Bolometer Mount	1	9
337A, B	FM Monitors	1	12	476A	Untuned Bolometer Mount	2	7-8
340A	Noise Figure Meter	9	5	477A	Coaxial Thermistor Mount	5	11
340B	Noise Figure Meter	10	6 7	478A	Coaxial Thermistor Mount	12	10
342A	Noise Figure Meter	10	6 7	S485A	Untuned Detector Mount	2	7-8
343A	VHF Noise Source	10	6 7			3	3
345A	IF Noise Source	9	5			6	1-2
345B	IF Noise Source	10	6 7	485B	Tuned Detector Mounts	2	7-8
347A	Waveguide Noise Source	9	5			3	3
		10	6 7	486A	Thermistor Mounts	12	10
370A, B, C	Fixed Waveguide Attenuators	2	7-8	487A	Broadband Waveguide Thermistor Mount	5	11
		6	1-2	489A	Microwave Amplifier	13	5
375A	Variable Flap Attenuator	6	1-2	490A	Microwave Amplifier	6	3-4
382A	Variable Attenuator	6	5	491A	Microwave Amplifier	6	3-4
X382A	Precision Attenuator	6	1-2	491C	Microwave Amplifier	13	5
400AB	Vacuum Tube Voltmeter	6	8	492A	Microwave Amplifier	7	5
400D	Vacuum Tube Voltmeter	5	9	493A	Microwave Amplifier	13	5
400D-DB	Vacuum Tube Voltmeter	8	9-10	494A	Microwave Amplifier	7	5
400H	High Accuracy Vacuum Tube Voltmeter	7	4	495A	Microwave Amplifier	13	5
400H-DB	Vacuum Tube Voltmeter	8	9-10	500B	Electronic Frequency Meter	7	1
405AR	Automatic DC Digital Voltmeter	10	5	500C	Electronic Tachometer Indicator	7	1
410B	High Frequency VTVM	2	3	506A	Optical Pickup	6	11
411A	RF Millivoltmeter	12	1			8	11
412A	DC Vacuum Tube Voltmeter	10	11-12	506B	Tachometer Head	4	3
415A	Standing Wave Indicator	1	5	508A, B	Tachometer Generator	5	3-4
415B	Standing Wave Indicator	6	7			6	11
415C	SWR Meter	13	1-2			8	11
416A	Ratio Meter	6	1-2	512A	Frequency Converter	4	11-12
417A	VHF Detector	1	8				

PART III

INDEX BY MODEL NUMBER (Continued)

Model	Instrument	Issue		Model	Instrument	Issue	
		Vol.	No.			Vol.	No.
520A	High Speed Decimal Scaler	2	2	687A	Sweep Oscillator	9	1-2
521A	Industrial Electronic Counter	6	11	711A	Power Supply	7	9-10
521C	Electronic Counter	8	11	712A	Regulated Power Supply ...	1	10
522A	Electronic Counter	4	3	712B	Regulated Power Supply ...	5	10
522B	Electronic Counter	4	3	715A	Klystron Power Supply	2	4
		5	1-2	716A	Klystron Power Supply	13	9-10
523B	Electronic Counter	7	11-12	717A	Klystron Power Supply	6	1-2
524A	Electronic Counter	2	5	721A	Power Supply	9	9
		3	5-6	722AR	DC Power Supply	12	6
		4	11-12	723A	DC Power Supply	12	6
524B	Electronic Counter	5	7-8	726AR	DC Power Supply	12	6
		6	12	750	Directional Couplers	3	7-8
524C	Electronic Counter	10	3-4			4	5-6
524D	Electronic Counter	10	3-4	752	Directional Couplers	3	7-8
525A	Frequency Converter	5	7-8			4	5-6
525B	Frequency Converter	5	7-8			6	1-2
525C	Frequency Converter Unit	12	5	764D	Coaxial Dual Directional Coupler ..	7	2
526A	Video Amplifier	5	7-8			8	9-10
526B	Time Interval Unit	5	7-8	765D	Coaxial Dual Directional Coupler ...	7	2
526C	Period Multiplier Unit	8	8			8	9-10
530A	Waveguide Frequency Meters	3	3	766D	Coaxial Dual Directional Coupler ...	7	2
540A	Transfer Oscillator	6	12			8	9-10
560A	Digital Recorder	8	7	767D	Coaxial Dual Directional Coupler ...	7	2
		10	5			8	9-10
561A	Digital Recorder	9	9	803A	VHF Bridge	1	8
H01-561B	Digital Recorder	10	5	805A, B	Slotted Line	1	5
562A	Digital Recorder	12	9	806B	Coaxial Slotted Section	2	6
		13	6			3	3
565A	Digital Printer	9	9	809B	Carriage Assembly	2	6
580A	Digital Analog Converter	12	9	S810A	Waveguide Slotted Section	2	6
		13	6	810B	Waveguide Slotted Sections	2	6
606A	Signal Generator	10	8	814A	Universal Probe Carriage ...	8	1-2
608A	VHF Signal Generator	1	7	815A	Waveguide Slotted Sections	8	1-2
608C, D	VHF Signal Generators	5	12	870A	Slide Screw Tuners	6	1-2
612A	UHF Signal Generator	4	7-8	880A	E-H Tuners	3	3
614A	UHF Signal Generator	3	9-10	X885A	Waveguide Phase Shifter	6	5
616A	UHF Signal Generator	3	9-10	912A	High Power Waveguide		
618A	SHF Signal Generator	2	1		Terminations	2	7-8
618B	SHF Signal Generator	4	1-2	914A	Moving Loads	6	1-2
620A	SHF Signal Generator	5	5-6	X914A	Sliding Load	3	5-6
623B	SHF Test Set	3	2	X916A	Standard Reflections	6	1-2
624A	SHF Test Set	3	2	920A	Adjustable Waveguide Shorts	3	3
624B	SHF Test Set	4	4			6	1-2
626A	SHF Signal Generator	7	9-10	938A	Frequency Doubler Set'	12	5
628A	SHF Signal Generator	6	10	940A	Frequency Doubler Set	12	5
650A	Test Oscillator	3	4	1750A	Dual Trace Amplifier	13	8
		8	11	1752A	High Gain Vertical Amplifier	13	8
670HM	SHF Oscillator	6	1-2	1753A	Single Channel Vertical Amplifier ...	13	8
670SM	UHF Oscillator	6	1-2	1780A	Auxiliary Plug-In	13	8
684A	Sweep Oscillator	9	1-2	1781A	Sweep Delay Generator	13	8
685A	Sweep Oscillator	9	1-2	1782A	Display Scanner	13	8
686A	Sweep Oscillator	8	6	1783A	Time Mark Generator	13	8
		9	1-2	3528A	Large Aperture Clip-On Probe	13	3-4

PART III

INDEX BY MODEL NUMBER (Continued)

Model	Instrument	Issue	
		Vol.	No.
5212A	Electronic Counter	12	9
5232A	Electronic Counter	12	9
5512A	Electronic Counter	12	9
5532A	Electronic Counter	12	9
<i>Accessories</i>			
AC-4A	Plug-In Decade Counter	6	6
AC-21	Voltage Division Probe	10	9-10
AC-60A	Line Matching Transformer	5	9
		6	6
AC-60B	Bridging Transformer	6	6
42A-95G	Diode Replacement Kit for 410A	2	3
46A-16A	Patch Cord	1	1
		1	11
46A-16B	Patch Cord	1	1
		1	11
46A-95A	Panel Jack	1	1
		1	11
46A-95B	Cable Plug	1	1
		1	11
46A-95C	50 ohm Adapter	1	1
		1	11
46A-95D	Voltmeter Probe Adapter	1	1
		2	3
4GA-95E	Connector Sleeve	1	1
		1	11
46A-95F	Adapter	1	11
46A-95G	Adapter	1	11
411A-21C	VHF Probe	12	1
411A-21D	Type N "Tee" Probe Tip	12	1
411A-21E	BNC Open Circuit Probe Tip	12	1
411A-21F	100:1 Capacity Divider Probe Tip	12	1
452A	Voltage Divider, 25 kv	5	9
453A	Capacitive Voltage Divider	2	3
454A	Voltage Divider, 1500 v	5	9
455A	Coaxial "T"	2	3
458A	"N" Adapter	2	3
459A	DC Voltage Multiplier	2	3
470 (A-F)	Shunt Resistors	5	9
606A-34	Output Termination	10	8
608A-95A	Signal Generator Output Fuse	5	12
812-52	Cable	1	1
		1	11
912-17	Universal Matching Transformer	3	4
Paeco 8-1003	DC Fan	12	10

Model	Instrument	Issue	
		Vol.	No.
DYMEC MODEL NUMBERS			
DY-2200	5 CPS-5 KC Sweep Oscillator	8	3-4
DY-2210	Voltage-to-Frequency Converter	12	2
DY-2211A, B	Voltage-to-Frequency Converter	12	2
DY-2401A	Integrating Digital Voltmeter	13	6
DY-2410A	AC/Ohms Converter	13	6
DY-2500	Adjustable Gate Time Counter	8	3-4
DY-2504A	Photo-Electric Tachometry Transducer	8	3-4
DY-2650A	Oscillator Synchronizer	13	9-10
DY-5020	Telemetry Counter	8	3-4
DY-5796	Synchronizer	13	3-4
DY-5844C	Automatic Waveform Measuring System	13	7
DY-5854	Frequency Measuring System	13	3-4

HARRISON LABORATORIES MODEL NUMBERS

HL-520A	Regulated Power Supply	13	11
HL-721A	Regulated Power Supply	13	11
HL-723A	Regulated Power Supply	13	11
HL-726AR	Regulated Power Supply	13	11
HL-801C	Regulated Power Supply	13	11
HL-802B	Regulated Power Supply	13	11
HL-809A	Regulated Power Supply	13	11
HL-810B	Regulated Power Supply	13	11
HL-814A	Regulated Power Supply	13	11
HL-850	Regulated Power Supply	1B	11
HL-855B	Regulated Power Supply	1B	11
HL-865B	Regulated Power Supply	13	11
HL-880	Regulated Power Supply	13	11
HL-881A	Regulated Power Supply	1B	11
HL-890A	Regulated Power Supply	13	11
HL-895A	Regulated Power Supply	13	11
HL-896A	Regulated Power Supply	13	11
HL-6224A	Regulated Power Supply	13	11
HL-6242A	Regulated Power Supply	13	11
HL-6346A	Regulated Power Supply	13	11
HL-6455A	Regulated Power Supply	13	11



*NBS standard tin
Vol. 17, NO3, Pg. 10*

INDEX VOLUMES 14-16 SEPTEMBER, 1962 — AUGUST, 1965 (A supplement to the index for vols. 1-13)

PART I CHRONOLOGICAL INDEX

VOLUME 14, SEPT., 1962—AUG., 1963

No. and Date of Issue

Title and Author

No. and Date of Issue

Title and Author

No. 1
Sept., 1962 A New Generation of High-speed Frequency Counters, *Charles M. Hill* and *Tracy S. Storer*
Counter Plug-ins

No. 2
Oct., 1962 A New Pulse Generator with Very Fast Rise Time, *Charles O. Forge*
Measuring Small, Stray L and C with Nano-second Pulses, *Charles O. Forge*

No. 3-4
Nov.-Dec., 1962 A Solid-state Operational Amplifier of High Stability, *Robert J. Strehlow*
Amplifier Plug-ins
A Portable Frequency-Response Test Set, *Don A. Wick*

No. 5-6
Jan.-Feb., 1963 A Versatile Wave Analyzer for the 1 kc to 1.5 Mc Range, *Stanley McCarthy*
A Quick, Convenient Method for Measuring Loop Gain, *Philip Spohn*

No. 7-8
Mar.-Apr., 1963 A New Microwave Modulator, *Nicholas J. Kuhn*
A Convenient Probe for Sensing Magnetic Fields, *Arndt Bergh*
Using the Smith Chart with Negative Real-Part Impedances or Admittances, *Luiz Peregrino* and *Harley L. Halverson*
New Submultiple Prefixes

No. 9-10
May-June, 1963 A New Multi-Function Voltmeter for General Laboratory Use, *Paul G. Baird*
A Guarded Amplifier for Increasing Digital Voltmeter Sensitivity, *Donald H. Jenkins*

No. 11
July, 1963 An 800-2400 Mc Signal Generator with Automatically-Leveled Output Power, *James R. Ferrell*

A Variable-Frequency AC Power Supply for General-Purpose Testing, *Duane P. Lingafelter*
Acknowledgment (Negative Real-Part Impedances and the Smith Chart)

No. 12
Aug., 1963 A Wide-Range RC Oscillator with Push-Button Frequency Selection, *Robert W. Colpitts*

Special Push-Button Audio Oscillator for Telephone Testing, *Robert W. Colpitts*
A Tunnel-Diode Pulse Generator with 0.1 Nano-second Risetime, *Roderick Carlson*
Visit *hp* at WESCON

VOLUME 15, SEPT., 1963—AUG., 1964

No. 1
Sept., 1963 A Basic New Wide-Band Oscilloscope with Planned Anti-Obsolescence, *Richard E. Monnier*

The Time Domain Reflectometer, *Lee R. Moffitt*
The Radial Field Cathode-Ray Tube
Amplifier Plug-ins
Sweep Generator Plug-ins

No. 2
Oct., 1963 A General Purpose Pulse Generator Producing High-Power, Fast-Rise Pulses, *George Kar* and *Johan Blokker*

A Clip-On Current Probe for Wide-Band Oscilloscope Measurements, *John G. Tatum*
NBS Inaugurates Higher Power VLF Standard Frequency Broadcasts

WHEN REQUESTING BACK ISSUES, PLEASE
BY NUMBER AND DATE OF ISSUE.

CHRONOLOGICAL INDEX (Continued)

No. and Date of Issue	Title and Author	No. and Date of Issue	Title and Author
No. 3 Nov., 1963	A New Multi-Purpose Digital Voltmeter, David S. Cochran and Charles W. Near Voltmeter Plug-ins A New Coaxial Crystal Detector with Extremely Flat Frequency Response, Russell B. Riley Tangential Sensitivity of the Model 423A Detector	No. 10 June, 1964	Precision Plug-in Frequency Measurements to 3000 Mc, Charles M. Hill Changes in Standard Broadcasts A New Oscilloscope Plug-in with Four 40-Mc Channels, James <i>R. Pettit</i>
No. 4 Dec., 1963	A New Series of Microwave Sweep Oscillators with Flexible Modulation and Leveling, Robert L. Dudley Examination of the Atomic Spectral Lines of a Cesium Beam Tube with the <i>-hp-</i> Frequency Synthesizer, Leonard S. Cutler	No. 11 July, 1964	A New Performance of the "Flying Clock" Experiment, Alan S. <i>Bagley</i> and Leonard S. Cutler A Measurement of the Ratio of the Zero-Field Hyperfine Splittings of Cesium 133 and Hydrogen, Leonard S. Cutler Plant Distribution of a One-Volt DC Standard, Richard Bean
No. 5 Jan., 1964	An RMS-Responding Voltmeter with High Crest Factor Rating, Gregory Justice The Significance of Crest Factor Long-Term Stability of the <i>-hp-</i> 130C Sensitive DC-500 kc Oscilloscope, John Strathman Precision of the United States Frequency Standard <i>-hp-</i> Factory Training Seminars	No. 12 Aug., 1964	A New Microwave Spectrum Analyzer, Harley L. <i>Halverson</i> Spectrum Signatures EMC/RFI Broad Spectrum Displays Spectrum Surveillance
VOLUME 16, SEPT., 1964—AUG., 1965			
No. 6 Feb., 1964	Time Domain Reflectometry, B. M. Oliver Time Domain Reflectometry with a Plug-in for the 140A Oscilloscope TDR with <i>-hp-</i> Sampling Scopes	No. 1 Sept., 1964	Our Preparations at Hewlett-Packard for the Instrumentation of Tomorrow, Frank J. <i>Burkhard</i>
No. 7 Mar., 1964	Broadband, Solid-state Amplifiers, Alfred F. Gort Papers Sought for Conference on Automotive Electronics Modifications in NBS Standard Frequency and Time Broadcasts An Air-Bearing Spindle for Highly Precise Machining, Edward H. Phillips International System of Units	No. 2 Oct., 1964	A VLF Comparator for Relating Local Frequency to U. S. Standards, Dexter Hartke Frequency Calibration Using LF Standard Broadcasts Tunable VLF Comparator, Albert <i>Benjaminson</i> and Cleaborn <i>Riggins</i>
No. 8 Apr., 1964	A New Instrument for Measuring Microwave Frequencies with Counter Accuracy, Rudolph F. Pasos A New DC-4000 Mc Sampling 'Scope Plug-in with Signal Feed-Through Capability, Wayne M. Grove New Time Information Added to WWV/WWVH Broadcasts Crest Factor and Pulse Trains . . .	No. 3 Nov., 1964	Absorption Modulators for Simple or Complex Microwave Modulation, Douglas A. Gray New Microwave Signal Sources with Signal Generator Capabilities, Douglas A. Gray
No. 9 May, 1964	A 0-50 Mc Frequency Synthesizer with Excellent Stability, Fast Switching, and Fine Resolution, Victor E. Van Duzer Digital Frequency Synthesis, Bernard M. Oliver 1 and 10 Mc Synthesizers Notes on the Application of Frequency Synthesizers, Victor E. Van Duzer Spectrum Extension to Above 500 Mc	No. 4 Dec., 1964	Microwave Harmonic Generation and Nanosecond Pulse Generation with the Step-Recovery Diode, Robert D. Hall and Stewart M. <i>Kraukauer</i> <i>hpa</i> Diode Application Notes
		No. 5 Jan., 1965	A New Instrumentation-Class Tape Transport of Simplified Design, Walter T. Selsted New Tape Transport in Sanborn Magnetic Data Recording Systems Bernard Oliver Elected IEEE President Senior Staff Engineers Appointed by <i>-hp-</i> Board of Directors
		No. 6 Feb., 1965	New Coaxial Couplers for Reflectometers, Detection, and Monitoring, Robert Prickett New Waveguide Crystal Detectors with Flat Response, Robert Prickett and Lawrence <i>Renihan</i> Atomic Time Adopted for WWVB

CHRONOLOGICAL INDEX (Continued)

No. and Date of Issue	Title and Author	No. and Date of Issue	Title and Author
No. 7 Mar., 1965	The Linear Quartz Thermometer — a New Tool for Measuring Absolute and Difference Temperatures, Albert <i>Benjaminson</i> The Linear Coefficient Quartz Resonator, Donald L. <i>Hammond</i> The Influence of Transistor Parameters on Transistor Noise Performance — a Simplified Presentation, Rolly <i>Hassun</i> and Michael C. Swiontek	No. 10 June, 1965	A New 10 c/s–10 Mc/s Test Oscillator with Enhanced Output Capabilities, Myles A. Judd A Low-Distortion Amplifier Supplying 10 Watts Peak from DC to Beyond 1 Mc/s, Robert J. Strehlow Cycles Per Second and Hertz, Editor
No. 8 April, 1965	Correlating Time from Europe to Asia with Flying Clocks, <i>LaThare</i> N. Bodily	No. 11 July, 1965	A Low-Frequency Oscillator with Variable-Phase Outputs for Gain-Phase Evaluations, Richard <i>Crawford</i> Extraterrestrial and Ionospheric Sounding with Synthesized Frequency Sweeps, G. H. Barry and R. B. <i>Fenwick</i> , Radioscience Laboratory, Stanford University Voltage and TDR Measurements to be Discussed at WESCON/65 Technical Session
No. 9 May, 1965	A Combined DC Voltage Standard and Differential Voltmeter for Precise Calibration Work, Robert E. Watson Phase Comparisons with LF Standard Broadcasts Controlled by "Atomic Time" Time Phase Adjustment Tone Transmissions Changed	No. 12 Aug., 1965	A Fast-Reading Digital Voltmeter with 0.005% Accuracy and Integrating Capability, William <i>McCullough</i> Guarded Measurements with a Floating Voltmeter Cable Testing with Time Domain Reflectometry

PART II SUBJECT INDEX

Issue Vol. No.	A	Model	Issue Vol. No.	Model
16 3	Absorption modulators, P-I-N.....	8730 Series	14 3-4	Amplifier, operational.....
15 5	AC current measurements, rms.....	3400A	16 9	Amplifier, precision.....
15 2	AC current measurements, wideband	1110A	16 10	Amplifier, wideband, power.....
14 11	AC power supply, variable frequency	4301A	15 7	Amplifier, pulse.....
14 9-10	AC voltage measurements, high frequency	410C	14 1	Amplifier, video plug-in.....
15 5	AC voltage measurements, rms.....	3400A	15 12	Analyzer, spectrum.....
15 8	AC voltage measurements, crest factor	(3400A)	14 5-6	Analyzer, wave.....
15 1	Accessories, oscilloscope.....	(140A)	15 11	Atomic clocks.....
15 2	.....	1110A	16 8	.....
15 8	.....	1103A	15 4	Atomic spectral lines, examination of
14 5-6	Accessory probes.....	(AC-21F)	16 6	Atomic time on WWVB.....
14 7-8	.....	3529A	16 9	Atomic Time LF phase comparisons
15 2	.....	1110A	14 3-4	Audio Oscillator, battery-powered
15 7	Air-bearing spindle.....	_____		
15 7	Amplifier, broadband.....	461A		B
15 2	Amplifier, current probe.....	1111A	14 3-4	Battery-powered audio oscillator..
14 9-10	Amplifier, guarded data.....	DY-2411A	15 7	Broadband amplifier.....

PART II

SUBJECT INDEX (Continued)

Issue Vol. No.	Model	Issue Vol. No.	Model
14 11	Power supply, AC, variable frequency 4301A	15 12	Spectrum Analyzer..... 8551A/851A
16 10	Power supply/amplifier 467A	15 9	Spectrum extension..... 10511A
15 5	Precision of U. S. Frequency Standard —	15 12	Spectrum signatures..... (8551/851A)
14 7-8	Prefixes, submultiple..... —	15 12	Spectrum surveillance..... (8551/851A)
16 1	Preparations at $-h_p-$ for instru- mentation of tomorrow..... —	15 7	Spindle, air-bearing..... —
14 7-8	Probe, magnetometer 3529A	15 5	Stability of $-h_p-$ 130C, long-term.. 130C
15 2	Probe, current, clip-on..... 1110A	16 6	Standard broadcasts, atomic time.. —
15 7	Pulse Amplifier..... 462A	15 2	VLF..... —
16 4	Pulse generation with step recovery diodes..... —	15 7	changes..... —
14 2	Pulse generator, fast rise..... 215A	15 10	" " —
15 2	Pulse generator, high power..... 214A	16 2	Standard broadcasts, phase comparisons to..... 117A
14 12	Pulse generator, tunnel-diode..... 213B	16 9	Standard broadcasts, time changes —
15 8	Pulsed rf, frequency measurement 2590A	16 9	Standard, DC..... 740A
14 12	Push-button RC oscillator..... 241A	15 11	Standard voltage, distribution of... —
Q			
16 7	Quartz resonator, linear..... —	16 4	Step-recovery diodes..... —
16 7	Quartz thermometer..... 2800A, 2801A	14 2	Stray L and C measurement..... (215A)
R			
16 11	Radar, FM, for sounding..... —	14 7-8	Submultiple prefixes..... —
15 11	Ratio of Cesium 133 and Hydrogen (5060A)	16 11	Sweep-frequency ionospheric sounding (5100A/5110A)
16 5	Recording systems, magnetic tape 3900	15 4	Sweep oscillator, microwave..... 690 Series
15 11	Reference voltage, distribution of.. (2460A)	16 11	Synthesized frequency sweep..... (5100A/5110A)
15 6	Reflectometer plug-in, time domain 1415A	15 9	Synthesizer, frequency..... 5100A/5110A
16 6	Reflectometers, coaxial..... 774D, etc.	15 4	Synthesizer, frequency, application (5100A/5110A)
15 6	Reflectometry, time domain..... —	15 9	..... (5100A/5110A)
16 12	..... (1415A)	15 7	System of units, international..... —
14 9-10	Resistance measurements..... 410C	16 10	System of units, use of Hertz..... —
15 5	RMS-responding voltmeter..... 3400A	T	
15 8	RMS voltage measurements, crest factor (3400A)	16 5	Tape transport..... 3520A, 3521A
S			
15 8	Sampling scope plug-in, 4000 Mc/s 188A	16 7	Temperature measurements..... 2800A
16 5	Sanborn tape recording systems... 3900 Series	14 3-4	Telephone Test Set..... 3550A
15 5	Seminars, factory training..... —	14 12	Telephone testing..... HO1-241A
16 5	Senior staff engineers appointed... —	15 7	Termination, 50-ohm feedthrough.. 11048A
14 11	Signal Generator, 800-2400 Mc/s.. 8614A	14 3-4	Test Set, frequency-response, portable 3550A
16 3	Signal Sources, microwave..... 8614B, 8616B	16 10	Test Oscillator, 10 c/s-10 Mc/s.... 651A
15 5	Significance of crest factor..... —	16 7	Thermometer, linear quartz..... 2800A, 2801A
15 8	" " —	16 6	Time, atomic for WWVB..... —
14 7-8	Smith chart, with negative Z..... —	15 8	Time changes, standard broadcasts —
16 11	Sounding, ionospheric and extraterrestrial —	15 11	Time comparison, international... (5060A)
		16 8	" " "
		15 6	Time domain reflectometry..... —
		16 12	" " —
		15 8	Time information, WWV/WWVH —
		14 1	Time interval plug-in..... 5262A
		16 9	Time phase adjustment, NBS..... —
		15 5	Training seminars, factory..... —
		15 8	Transfer oscillator..... 2590A
		15 7	Transformer, matching..... 11038A
		16 7	Transistor parameters, influence on noise..... —

PART II

SUBJECT INDEX (Continued)

Issue Vol. No.	Model	Issue Vol. No.	Model
15 8	Trigger count down, oscilloscope...	1103A	
14 12	Tunnel-diode pulse generator.....	213B	
U			
15 7	Units, international system of.....	—	
15 5	U. S. frequency standard, precision of.....	—	
V			
16 11	Variable Phase Function Generator	203A	
16 2	VLF broadcasts for frequency calibration	(117A)	
15 2	VLF broadcasts, higher power.....	—	
16 2	VLF comparator.....	117A	
16 9	"	—	
16 2	VLF comparator, tunable.....	DY-2365A	
16 9	Voltage calibration.....	740A	
14 9-10	Voltage measurements, AC high-frequency	410C	
15 5	Voltage measurements, AC rms....	3400A	
16 9	Voltage measurements, DC, differential	740A	
15 3	Voltage measurements, DC.....	3440A	
16 12	Voltage measurements, DC guarded	3460A	
16 9	Voltage standard, DC.....	740A	
15 11	Voltage standard, distribution of..	(2460A)	
16 9	Voltmeter, differential.....	740A	
16 12	Voltmeter, guarded digital.....	3460A	
14 9-10	Voltmeter, multi-function.....	410C	
15 3	Voltmeter, multi-purpose digital....	3440A	
15 5	Voltmeter, RMS-responding.....	3400A	
W			
14 5-6	Wave Analyzer 1 kc/s to 1.5 Mc/s	310A	
16 6	Waveguide crystal detectors.....	424A	
16 11	WESCON '65, technical session....	—	

PART III

INDEX BY MODEL NUMBER

(Model Numbers of Dymec, hpa, and Sanborn Instruments listed at end)

Model	Instrument	Issue Vol. No.	Model	Instrument	Issue Vol. No.
117A	VLF Comparator.....	16 2	423A	Crystal Detector	15 3
		16 9	424A	Waveguide Crystal Detectors.....	16 6
130C	DC-500 KC Oscilloscope.....	15 5	428B	Milliammeter	14 7-8
140A	Universal Oscilloscope	15 1	461A	Broadband Amplifier.....	15 7
188A	Dual Trace Amplifier, Sampling....	15 6	462A	Pulse Amplifier	15 7
		15 8	467A	Power Amplifier	16 10
203A	Variable Phase Function Generator	16 11	651A	Test Oscillator, 10 c/s-10 Mc/s....	16 10
HO7-204B	Audio Oscillator, battery-powered	14 3-4	691A, B		
213B	Tunnel-Diode Pulse Generator.....	14 12	to	Microwave Sweep Oscillator.....	15 4
214A	Pulse Generator.....	15 2	697A		
215A	Fast rise Generator.....	14 2	740A	DC Standard/Differential Voltmeter	16 9
241A	Push-Button Oscillator.....	14 12	774D		
HO1-241A	Push-Button Oscillator.....	14 12	to	Dual Directional Coupler.....	16 6
310A	Wave Analyzer, 1 kc/s to 1.5 Mc/s	14 5-6	777D		
353A	Patch Panel, Telephone Test Set....	14 3-4	X781A	Directional Detector.....	16 6
			786D		
403B	AC Voltmeter.....	14 3-4	to	Directional Detector	16 6
410C	Electronic Voltmeter	14 9-10	789C		

HEWLETT-PACKARD JOURNAL

TECHNICAL INFORMATION FROM THE LABORATORIES OF THE HEWLETT-PACKARD COMPANY PUBLISHED AT 1501 PAGE MILL ROAD, PALO ALTO, CALIFORNIA 94304

INDEX

VOLUMES 17, 18 and 19 September 1965 through August 1968

PART I: Chronological Index

VOLUME 17, September 1965 through August 1966

Month/Year	Title and Author	Month/Year	Title and Author
Sept. 1965	A Precision Analog Voltohmmeter with Automatic Ranging, <i>James F. Kistler</i>		A Technique for Making Ultra-Precise Measurements of Microwave Frequency Stability, <i>James A. Marshall</i>
	A Simple Method for Recording Fast and Low-Level Waveforms, <i>John N. Deans</i>		
Oct. 1965	A Precision AC-DC Differential Voltmeter/DC Standard with High Versatility, <i>William G. Smith</i>	Dec. 1965	Using the Hot Carrier Diode as a Detector, <i>Hans O. Sorensen</i>
	A 200 kc/s—500 Mc/s Frequency Conversion Unit for Mixing, Modulating, Phase-Detecting and Level-Controlling, <i>Victor E. Van Duzer</i>		The 'Hot Carrier' Diode as an Ultra-Fast Detector, Mixer and Switch
	500 kc/s—500 Mc/s Frequency Doubler, <i>Victor E. Van Duzer</i>		Hot Carrier Diodes
Nov. 1965	A Voltage-Programmable Low-Frequency Function Generator with Plug-in Versatility, <i>Robert L. Dudley</i>		New Standard Broadcast Frequency Offset for 1966
	'Hertz' Adopted by IEEE		Time Pulse Adjustments
	The Trigger Phase-Lock Plug-in, <i>Robert L. Dudley</i>	Jan. 1966	Using the Hot Carrier Diode as a Microwave Mixer, <i>Milton Crane</i>
	NBS Standard Frequency and Time Broadcast Schedules		A New High-Stability AC Voltmeter with a 10-MHz Frequency Range and 1% Accuracy, <i>Reid J. Gardner</i>
			Measurement of Liquid Layer Thickness with Time Domain Reflectometry, <i>James Brockmeier</i>
			Stratospheric Warming

**ALTHOUGH MANY BACK ISSUES ARE OUT OF PRINT,
REQUESTS WILL BE FILLED WHENEVER POSSIBLE.**

PART I Chronological Index (continued)

Month/Year	Title and Author	Month/Year	Title and Author
Feb. 1966	A New TV Waveform Oscilloscope for Precision Measurements of Video Test Signals, Richard E. Monnier and Ralph R. Reiser Continuous TV Monitoring with Vertical-Interval Test Signals, Richard E. Monnier and Ralph R. Reiser The 'VITS' Program for Intercity Television Network Testing, S. C. Jenkins Correction to: 'Measurement of Liquid Layer Thickness with Time Domain Reflectometry,' Jan. 1966	July 1966	A Sensitive New 1-GHz Sampling Voltmeter with Unusual Capabilities, Fred W. Wenninger, Jr. Coherent and Incoherent Sampling Measuring Attenuation, SWR, and Substitution Loss with a Low-Noise, High-Precision SWR Meter, Bradford G. Woolley Increasing Instrument Sensitivity with a Low-Noise Preamplifier, Robert B. Bump AT WESCON—Wideband Sampling Session
Mar. 1966	A Sensitive, Wide Range DC Null Voltmeter with an Internal Bucking Supply for Zero Loading Error, Charles D. Platz A Portable DC Voltage Standard Providing 10 ppm Transfer Accuracy, Robert E. Watson RFI Measurements Down to 10 kHz with Spectrum Analyzer Converter, John Cardoza Adjustment in WWVB Time Pulses	Aug. 1966	A New DC-50+ MHz Transistorized Oscilloscope of Basic Instrumentation Character, Floyd G. Siegel Short, Large Screen, High-Frequency CRT Compact, Wideband, Stripline Delay Line Electronically-Controlled Oscilloscope Camera World-Wide Time Synchronization, 1966, LaThare N. Bodily , Dexter Hartke , and Ronald C. Hyatt First Cesium-Beam Resonator The Benchmark
Apr. 1966	A New Distortion Analyzer with Automatic Nulling and Broadened Measurement Capability, Charles R. Moore Total Harmonic Distortion Measurements A Family of Distortion Analyzers An Adjustable Standard Resistor with Improved Accuracy and High Stability, E. Paul Hubbs Stability of Capacitively-Loaded Emitter Followers—A Simplified Approach, Glenn B. DeBella	VOLUME 18, September 1966 through August 1967	
May 1966	The RF Vector Voltmeter—An Important New Instrument for Amplitude and Phase Measurements from 1 MHz to 1000 MHz, Fritz K. Weinert Correction to: 'RFI Measurements Down to 10 kHz with Spectrum Analyzer Converter' March 1966 The Vector Voltmeter as a Precision Frequency Comparator Time Signal Adjustment Selected Vector Voltmeter Measurements A Portable Battery-Powered Multi-Function Meter with Lab-Quality Performance, James M. Colwell	Sept. 1966	A New Universal Impedance Bridge with Simplified, Semi-Automatic Tuning, Katsumi Yoshimoto A System for Automatic Control of the 'DQ' Resistor in an Impedance Bridge, Katsumi Yoshimoto , Haruo Itoh , and Hitoshi Noguchi Appendix, AC Bridge Loci, Hitoshi Noguchi A Plug-in Unit for Extending Counter-Type Frequency Measurements to 12.4 GHz, John N. Dukes New FCC Rules for FM Stereo Frequency Control A Frequency Comb Generator with a Range from 1 MHz to Beyond 5 GHz, Roderick Carlson Accurate Determination of a Signal Frequency on a Spectrum Analyzer
June 1966	An Advanced New DC-25 MHz Oscilloscope for Programmed Production Testing, John Strathman Eliminating DC Drift Time Domain Reflectometry in 75-Ohm Systems, Charles A. Donaldson Rise Time Converters for Simpler TDR Testing of Band-Limited Systems, Lee R. Moffitt A Calibrated Susceptance for TDR Measurements of Small Reactive Discontinuities, Richard W. Anderson A DC-Stabilized Oscilloscope Plug-in with 50- μ V/cm Sensitivity, James R. Pettit	Oct. 1966	An Ultra-Wideband Oscilloscope Based on an Advanced Sampling Device, Allan I. Best , Darwin L. Howard and James M. Umphrey Ultra-Fast Triggering and Ultra-Resolution TDR Second Symposium on Test Instrumentation New NBS Laboratories A DC to 12.4 GHz Feedthrough Sampler for Oscilloscopes and other RF Systems, Wayne M. Grove A Summary of Some Performance Characteristics of a Large Sample of Cesium-Beam Frequency Standards, LaThare N. Bodily Operation of the Portable Cesium-Beam Frequency Standard Frequency Standards in the Omega Navigation System

PART I Chronological Index (continued)

Month/Year	Title and Author	Month/Year	Title and Author
Nov. 1966	A Simplified DC Differential Voltmeter and Ratiometer for High-Precision Measurements, Lawrence J. Lopp, Jr. Using the DC Differential Voltmeter/Ratiometer to Construct a 100:1 Precision Divider ADAC—An Automatic System for Measuring Hall Effect in Semiconductors, Egon Loebner, T. J. Diesel and Cristy M. Schade Analysis of Solids with More than One Type of Carrier Typical ADAC Data Reduction Procedure A Study of Indium Arsenide Using ADAC Equipment		Phase Noise and Phase Modulation Measurements with the Analog Frequency Meter, Peter R. Roth
Dec. 1966	A New High-Performance 1.5 MHz Tape Recorder, Gerald L. Ainsworth Magnetic Tape Recording and Reproducing Square Wave Response of the —hp— Model 3950 Magnetic Tape Recording System A Current Preampfier for Magnetic Tape Playback Systems, Arndt B. Bergh Wideband Cavity-Type Coaxial Frequency Meters, Stephen E Adam and Anthony S. Badger Simplified Technique for Evaluating Diode RF Performance, Bernard Levine Swept-Frequency SWR Measurements in Coaxial Systems, Stephen J. Adam Standard Broadcast Frequency Offset for 1967	Apr. 1967	Frequency Divider Extends Automatic Digital Frequency Measurements to 12.4 GHz, Robert L. Allen Frequency Divider † Integrated-Circuit Counter = 12.4 GHz Digital Frequency Meter Precision Measurement of Ocean Temperatures, Albert Benjaminson Temperature Profile of the Ocean Improved Intermodulation Rejection in Mixers, A. Michael Cowley and Jack H. Lepoff
Jan. 1967	Methods of Measuring Impedance, Charles G. Gorss Some Basic Formulas Involving Q Comparison of Some Impedance Measuring Systems Direct-Reading, Fully-Automatic Vector Impedance Meters, Gerald J. Alonzo, Richard H. Blackwell and Hirsh V. Marantz Design Philosophy of Vector Impedance Meters	May 1967	Pinpointing Industrial Defects with Ultrasonic Ears, Robert L. Allen How to Recover Weak Signals Buried in Noise, Raymond C. Hanson Typical Applications of —hp— Model 3410A Using a Precision ac Amplifier for Measurement and Calibration, Rex James How the —hp— Model 463A Amplifier is Calibrated
Feb. 1967	An Advanced New Network Analyzer for Sweep-Measuring Amplitude and Phase from 0.1 to 12.4 GHz, Richard W. Anderson and Orthell T. Dennison The Engineer, Automated Network Analysis and the Computer—Signs of Things to Come, Paul C. Ely, Jr. S-Parameter Techniques for Faster, More Accurate Network Design, Richard W. Anderson Useful Scattering Parameter Relationships	June 1967	The Role of Electronic Medical Instrumentation in Patient Monitoring, H. Ronald Riggert Precision Thin-Film Coaxial Attenuators, Stephen F. Adam International Units, Multiple and Submultiple Prefixes
Mar. 1967	A Computer for Instrumentation Systems, Kay B. Magleby Successful Instrument-Computer Marriages Correction to: 'S-Parameter Techniques for Faster, More Accurate Network Design,' Feb. 1967 A Wideband Analog Frequency Meter and FM Discriminator, Peter R. Roth	July 1967	Pressurized Ink Recording on Z-Fold Strip Charts, Robert A. Sanderson Advantages of Direct-Coupled Differential Data Amplifiers, Morton H. Levin Errors in Data Amplifier Systems, Richard Y. Moss II
		Aug. 1967	Implementing Integrated Circuits in HP Instrumentation, Ian T. Band, Ed A. Hilton and Max J. Schuller High-Accuracy Laser-Interferometer Camera for IC Masks, Don M. Cross Integrated-Circuit Counters, Thomas P. O'Brien and John W. McMains Semiautomatic System for Production Testing of Electronics Circuits, Dee L. Larson and Emil E. Olander, Jr.
		Sept. 1967	Pseudo-Random and Random Test Signals, George C. Anderson, Brian W. Finnie and Gordon T. Roberts Testing with Pseudo-Random and Random Noise

VOLUME 19, September 1967 through August 1968

PART I Chronological Index (continued)

Month/Year	Title and Author	Month/Year	Title and Author
Oct. 1967	A System for Measuring the Thermal Resistance of Semiconductor Diodes, Norman R. Galassi and Bernard S. Siegal Digital Frequency Synthesizer Covering 0.1 MHz to 500 MHz in 0.1 Hz Steps, Alexander Tykulsky Phase Noise in Frequency Synthesizers Transform Methods for Linear Systems, Michael O'Flynn		Calibrated Real-Time Signal Averaging, J. Evan Deardorff and Charles R. Trimble Where Averaging Helps Off-Line Analysis of Averaged Data, Francis J. Yockey
Nov. 1967	Loudness Evaluation, Wolfgang E. Ohme Automatic Loudness Analysis, Heinz Blässer and Helmut Finckh Loudness Analyzer Aids Noise Reduction, Production Testing, Speech Analysis 1968 UTC Offset Announced	May 1968	Sweeping Four Decades at Low Frequencies, William T. Cowan Applications of Low-Frequency Sweepers Easier and Brighter Display of High-Frequency Signals, Charles A. Donaldson and Charles A. Gustafson Definition of Persistence Stanford Scientists Study Space Signals, Laurence D. Shergalis
Dec. 1967	Large-Screen High-Frequency X-Y-Z Display, Charles House Repeatability and Settling Time Factors in Designing a Large-Screen, Wideband CRT, Milton E. Russell 'Flying Clock' Comparisons Extended to East Europe, Africa and Australia, LaThare N. Bodily and Ronald C. Hyatt Flying Clocks	June 1968	High-Accuracy AC Voltage Calibration, Fred L. Hanson Effects of Distortion on Calibration Systems-Oriented Digital Power Sources, Brett M. Nordgren Digital Voltage Sources at Work
Jan. 1968	Three and One-Half Decades in One Clean Sweep, Robert B. Bump and Myles A. Judd Advances in Spectrum Analysis, John J. Dupre , Richard C. Keiter , and John R. Page, Jr. How a YIG Filter Works	July 1968	A Practical Time-Shared Computer System, Thomas C. Poulter, Jr. IEC Renames Noise Contour A Rubidium-Vapor Frequency Standard for Systems Requiring Superior Frequency Stability, Darwin H. Throne Comparing Frequency Standards
Feb. 1968	A Precision Solid-State Television Picture Monitor, John R. Hefele Measuring Spot Size and Interlace Factor Counting CW and Pulsed RF Frequencies to 18 GHz, Glenn B. DeBella Frequency Converter, Transfer Oscillator, or Both? Atomic Second Adopted by International Conference	Aug. 1968	Fully Calibrated Frequency-Domain Measurements, Brian D. Unter Design of a Third-Generation RF Spectrum Analyzer, Thomas L. Grisell , Irving H. Hawley, Jr. , Brian D. Unter , and Paul G. Winninghoff Analyzer/Tracking-Generator System Has Amplitude Range of 120 dB New Concepts in Signal Generation, Douglas C. Spreng and John R. Hearn Units Ambiguity Noted
Mar. 1968	Electronic Techniques in Gamma Ray Spectroscopy and Timing, Tracy S. Storer A Multichannel Pulse-Height Analyzer with a Very Fast Analog-Digital converter, W. A. Ross Differential Linearity A Charge-Sensitive Preamplifier for Nuclear Work, James K. Koch A Nuclear-Type Linear Amplifier with Plug-in pulse-shaping Delay Lines, Eric M. Ingman NIM Bin A Single-Channel Analyzer with Fast Multiple-Pulse Resolution, Robert G. Wagstrom		
Apr. 1968	What is Signal Averaging?, Charles R. Trimble		

PART II Subject Index

Month/Year	Subject	Model
	A	
Oct. 1965	AC-DC converter, precision	741A
Jan. 1966	AC-DC converter, voltmeter	400E/EL

PART II Subject Index (continued)

Month/Year	Subject	Model	Month/Year	Subject	Model
Oct. 1965	AC-DC differential voltmeter	741A	Jan. 1967	Bridges, impedance	—
May 1967	AC microvoltmeter	3410A	Sept. 1966	Bridges, impedance, universal	4260A
June 1968	AC voltage calibration	745A	July 1966	Broadband measurements using sampling voltmeter and low- frequency instruments	3406A
Oct. 1965	AC voltage measurement ^s , precision	741A	July 1966	Broadband sampling voltm	3406A
Jan. 1966	AC voltmeters, 10 Hz–10MHz, average responding	400E/EL	Mar. 1967	Burst frequency measurem	5210A
Nov. 1966	ADAC, an automatic measurement system	—	C		
June 1966	Adapter, 50 t	10457A, 10458A	May 1966	Cable length measurements with vector voltmeter	8405A
Apr. 1966	Adjustable standard resistor	11102A– 11105A	June 1966	Calibrated susceptance for TDR	874A
May 1966	Amplifier gain, phase, and group delay measurements with vector voltmeter	8405A	June 1968	Calibration, AC voltage	745A
July 1966	Amplifier, general-purpose	465A	June 1968	Calibration, distortion effects	745A
May 1967	Amplifier, precision	463A	May 1967	Calibration, precision amplifier	463A
Oct. 1965	Amplifier, precision	741A	Sept. 1966	Calibrator, frequency, spectrum analyzer	8406A
July 1967	Amplifiers, data	2470A, 8875A	Aug. 1967	Camera, IC masks	—
May 1966	Amplitude and phase measure- ments with RF vector voltmeter	8405A	Aug. 1967	Camera, laser interferometer controlled	—
Nov. 1967	Analyzer, loudness	8051A	Aug. 1966	Camera, oscilloscope	197A
Mar. 1968	Analyzer, multichannel	5400A	Apr. 1966	Capacitively-loaded emitter followers, stability of	—
Apr. 1968	Analyzer, signal	5480A	Dec. 1967	Cathode ray tube, large screen	1300A
Apr. 1966	Analyzers, distortion	331A–334A	Aug. 1966	Cathode ray tube, short, large screen, high frequency	—
Aug. 1968	Analyzer, spectrum	8552A/8553L	Apr. 1966	'Cell effect' in standard resistors	11102A– 11105A
Jan. 1968	Analyzer, spectrum	852A/8551B	Aug. 1966	Cesium-beam frequency standards	5060A
Feb. 1968.	Aperture characteristics of TV picture tube	6946A	Oct. 1966	Cesium-beam frequency standards performance of	5060A
Feb. 1968	Atomic Second adopted	—	Dec. 1967	Cesium beam frequency standard	5061A
July 1966	Attenuation measurements	415E	June 1967	Coaxial attenuators	8791A, 8491B, 8492A, 354A
May 1966	Attenuation measurements with vector voltmeter	8405A	Dec. 1966	Coaxial frequency meters	536A, 537A
Oct. 1965	Attenuator, current-controlled	10514A	July 1966	Coherent and incoherent sampling	3406A
June 1967	Attenuators, thin-film coaxial	8491A, 8491B, 8492A, 354A	Sept. 1966	Comb generator	8406A
Sept. 1966	Automatic control of 'DQ' resistor	4260A	Aug. 1967	Comparator	3434A
Apr. 1967	Automatic frequency divider	5260A	July 1968	Comparing frequency standards (quartz, cesium, rubidium, hydrogen)	—
Jan. 1967	Automatic impedance meters	4800A, 4815A	Feb. 1967	Complex impedance and gain measurements, swept frequency	8410A
Nov. 1966	Automatic measurement of semiconductor material characteristics	—	May 1966	Complex measurements with vector voltmeter	8405A
Apr. 1966	Automatic nulling distortion analyzers	333A/334A	Feb. 1967	Complex s-parameter measurements	8410A
Sept. 1965	Autoranging dc volt ohmmeter	414A	Feb. 1967	Computer-controlled network analysis	2116A, 8410A
Jan. 1966	Average-responding voltmeters	400E/EL	June 1968	Computer-controlled voltage source	6130A, 6933A
Apr. 1968	Averaging	5480A	Mar. 1967	Computer for instrumentation systems	2116A
B			July 1968	Computer, time-shared system	2000A
July 1968	BASIC computer language, used in time-shared computer system	2000A	Sept. 1965	Constant current ohmmeter	414A

PART II Subject Index (continued)

Month/Year	Subject	Model	Month/Year	Subject	Model
May 1966	Conversion of low-frequency instruments to sampling instruments	8405A	Oct. 1965	Doubler, 0.5–500 Mc/s	10515A
June 1966	Converters, rise time, for TDR	10452A–10456A	June 1966	Drift, eliminating in oscilloscopes ..	155A, 1407A
Mar. 1966	Converter, spectrum analyzer	K15-8551B	Aug. 1966	Dual channel vertical amplifier plug-in	1801A
Sept. 1966	Counters, for FM stereo measurements	—	E		
Aug. 1967	Counters, integrated-circuit	5216A, 5221A	Apr. 1966	Emitter follower stability	—
Sept. 1966	Counter plug-in, 12.4 GHz	5255A	July 1967	Errors in data amplifiers systems	2470A/8875A
Feb. 1968	Counter plug-ins, 18 GHz	5256A, 5257A	May 1967	Extending instrument ranges with preamplifier	463A
D			F		
Mar. 1967	Data acquisition system, computing	2116A, 2018A	Sept. 1966	FCC regulations, FM stereo frequency control	—
July 1967	Data amplifiers	2470A/8875A	May 1966	Feedback amplifier tuning with vector voltmeter	8405A
Nov. 1966	DC differential voltmeter/ratiometer	3420A/B	May 1966	Filter transfer function measurements with vector voltmeter	8405A
Mar. 1966	DC null voltmeter	419A	Dec. 1967	Flying clock experiments, 1967	5061A
Oct. 1965	DC standard	741A	Aug. 1966	Flying clocks, 1966	5060A
Mar. 1966	DC transfer standard	735A	Feb. 1968	FM measurements, using transfer oscillator	5257A
Sept. 1965	DC voltohmmeter, autoranging	414A	Aug. 1968	FM measurements, using spectrum analyzer	8552A/8553L
June 1967	Defibrillator equipment	780 Series	Sept. 1966	FM stereo, pilot subcarrier measurement	—
Aug. 1966	Delay line, stripline, compact, wideband	—	Nov. 1965	Frequency and time standard broadcasts	—
Dec. 1965	Detectors, hot carrier diodes	2350 Series	Sept. 1966	Frequency comb generator	8406A
July 1966	Detector square-law range	415E	May 1966	Frequency comparison with vector voltmeter	8405A
Jan. 1966	Dielectric constant, measurement of, with TDR	140A/1415A	Feb. 1968	Frequency converter plug-in for counters, 8–18 GHz	5256A
July 1967	Differential data amplifier	2470A/8875A	Sept. 1966	Frequency converter plug-in, 3–12.4 GHz	5255A
Nov. 1966	Differential voltmeter/ratiometer ..	3420A/B	Apr. 1967	Frequency divider, automatic	5260A
Mar. 1967	Digital computer	2116A	Aug. 1968	Frequency-domain measurements ..	8552A/8553L
Apr. 1967	Digital frequency meter, 12.4 GHz	5240A	Oct. 1965	Frequency doubler, 0.5–500 Mc/s ..	10515A
Oct. 1967	Digital frequency synthesizer	5105A/5110B	Sept. 1966	Frequency measurement, crystal calibrator	8406A
June 1968	Digital power supply	6130A	Feb. 1968	Frequency measurement, CW, pulsed RF, and FM to 18 GHz	5256A, 5257A
June 1968	Digital-to-analog converter, high-speed	6933A	Apr. 1967	Frequency meter, 12.4 GHz	5240A
June 1968	Digital voltage source	6130A, 6933A	Mar. 1967	Frequency meter/FM discriminator	5210A
Dec. 1966	Diode RF performance, evaluation of	—	Dec. 1966	Frequency meters, coaxial	536A, 537A
Dec. 1965	Diodes, hot carrier	2350 Series	Sept. 1966	Frequency response, impulse testing	8406A
Oct. 1967	Diodes, thermal resistance measurement	—	Aug. 1968	Frequency response measurements	8552A/8553L
July 1967	Direct-coupled differential data amplifier	2470A/8875A	Oct. 1965	Frequency stability measurements ..	10514A
Jan. 1967	Direct-reading impedance meters ..	4800A, 4815A	July 1968	Frequency standard, rubidium vapor	5065A
Mar. 1967	Discriminator, pulse, for FM measurements	5210A	Aug. 1966	Frequency standard, cesium-beam ..	5060A
Dec. 1967	Display, X-Y-Z, large-screen	1300A			
Apr. 1966	Distortion analyzers, automatic nulling	333A/334A			
Aug. 1968	Distortion measurements <i>with</i> spectrum analyzer	8552A/8553L			
May 1966	Distortion measurements with vector voltmeter	8405A			
Apr. 1967	Divider, frequency	5260A			

PART 11 Subject Index (continued)

Month/Year	Subject	Model
Dec. 1965	Microwave mixers, hot carrier diodes	2350 Series
Nov. 1965	Microwave stability measurement ..	2590A/5100A
May 1966	Miller effect detection with vector voltmeter	8405A
Oct. 1965	Mixer, double-balanced 0.2-500 MC/s	10514A
Aug. 1968	Mixer measurements with spectrum analyzer	8552A/8553L
Dec. 1965	Mixers, microwave, hot carrier diodes	2350 Series
May 1966	Modulation index measurement with vector voltmeter	8405A
Aug. 1968	Modulation index, measurement with spectrum analyzer	8552A/8553L
Oct. 1965	Modulator, balanced 0.2-500 Mc/s	10514A
Mar. 1968	Multichannel analyzer	5400A
May 1966	Multifunction meter	427A
Nov. 1965	Multiplier, signal	3302A/3300A

N

Oct. 1966	National Bureau of Standards, new laboratories	—
Nov. 1965	NBS standard frequency and time broadcasts	—
Feb. 1967	Network analyzer	8410A
Feb. 1967	Network design using s-parameters	—
May 1966	Network parameter measurements with vector voltmeter	8405A
Mar. 1968	NIM bin	5580A/B
Nov. 1967	Noise abatement	8051A
July 1968	Noise contour renamed	—
July 1966	Noise figure, SWR meter	415E
Sept. 1967	Noise generator, digital	3722A
Mar. 1966	Noise in a voltmeter	419A
Apr. 1968	Noise reduction, by averaging	5480A
Sept. 1967	Noise testing	3722A
Mar. 1968	Nuclear instruments	—
Mar. 1966	Null voltmeter	419A

O

Apr. 1967	Ocean temperature measurements ..	2800 Series
Sept. 1965	Ohmmeter, automatic ranging	414A
May 1966	Ohmmeter, multifunction voltmeter	427A
Oct. 1966	Omega navigation system	—
Aug. 1968	Oscillator measurements with spectrum analyzer	8552A/8553L
Aug. 1966	Oscilloscope camera	197A
Aug. 1966	Oscilloscope, 50-MHz, general purpose, portable	180A
June 1966	Oscilloscope measurements, expanded scale	155A, 1407A

Month/Year	Subject	Model
June 1966	Oscilloscope plug-in, dc stabilized ..	1407A
July 1966	Oscilloscope preamplifier	465A
June 1966	Oscilloscope, programmable, push-button, dc stabilized	155A
Feb. 1966	Oscilloscope, TV waveform	191A
Oct. 1966	Oscilloscope, wideband sampling ..	1410A, 1424A, 1425A, 1411A/1430-32A, (for 140A, 141A)
May 1968	Oscilloscopes, variable persistence ..	181A, 141A

P

June 1967	Patient monitoring equipment	780 Series
Oct. 1965	Phase detector 0.2-500 Mc/s	10514A
Nov. 1965	Phase-locked function generator	3302A/3300A
May 1966	Phase margin measurement with vector voltmeter	8405A
Feb. 1967	Phase measurements, swept-frequency	8410A
May 1966	Phase measurements with vector voltmeter	8405A
Oct. 1967	Phase noise in frequency synthesizers	—
Mar. 1967	Phase noise measurements with a pulse discriminator	5210A
May 1966	Phase tracking measurement with vector voltmeter	8405A
Mar. 1966	Picoammeter	419A
Feb. 1968	Picture monitor, TV	6946A
July 1966	Power measurement with sampling voltmeter	3406A
June 1968	Power supply, digital	6130A
Mar. 1968	Preamplifier, charge-sensitive	5554A
July 1966	Preamplifier, low noise	465A
Dec. 1966	Preamplifier, magnetic tape	—
May 1967	Precision ac amplifier	463A
Nov. 1966	Precision dc voltage measurements	3420A/B
Nov. 1966	Precision divider, how to construct	3420A/B
July 1968	Precision frequency standards	—
Feb. 1968	Precision TV picture monitor	6946A
Apr. 1966	Precision voltage divider	11102A-11105A
Jan. 1968	Preselector for spectrum analyzer ..	8441A
Aug. 1967	Production tests, high-go-low	3434A
May 1967	Production testing, ultrasonic	4950A
Nov. 1965	Programmable function generator ..	3300A
June 1966	Programmable oscilloscope	155A/1550A
Aug. 1968	Programmable signal generator	8601A
June 1968	Programmable voltage sources	6130A, 6933A
Sept. 1967	Pseudo-random noise	3722A
May 1968	Pulsar experiment	5480A
Mar. 1967	Pulse discriminator/frequency meter	5210A

PART II Subject Index (continued)

Month/Year	Subject	Model	Month/Year	Subject	Model
Oct. 1966	Pulse generator for TDR. 20-ps rise time	1105A/1106A	July 1966	Sampling voltmeter	3406A
Feb. 1968	Pulsed RF carrier frequency measurements to 18 GHz	5257A	Oct. 1967	Semiconductor diodes. thermal resistance measurement of	—
Q					
Jan. 1967	Q meter	190A, 260A	Nov. 1966	Semiconductor material characteristics. measurement of ..	—
Apr. 1967	Quartz thermometer	2800 Series	Apr. 1968	Signal analyzer and averager	5480A
R					
Sept. 1967	Random noise	3722A	May 1968	Signal analyzer. pulsar measurement	5480A
Nov. 1966	Ratiometer	3420A/B	Jan. 1968	Signal generator. sweeper	675A
May 1966	Receiver. vector voltmeter used as ..	8405A	Aug. 1968	Signal generator. sweeper	8601A
July 1967	Recorder. ink. eight channel	7848A	Sept. 1965	Signal-to-noise improvement with sampling recorder	1782A-1784A
Sept. 1965	Recorder. oscilloscope plug-in	1784A	Apr. 1968	Signal-to-noise improvement by averaging	5480A
Sept. 1965	Recording fast waveforms	1782A-1784A	Mar. 1968	Single-channel analyzer	5583A
Sept. 1965	Recording noisy signals	1782A-1784A	Oct. 1965	Single-sideband converter	10514A
Feb. 1967	Reflection coefficient measurements. swept-frequency	8410A	Sept. 1966	'Sliding nulls.' elimination of	4260A
May 1966	Reflection coefficient measurements with vector voltmeter	8405A	Nov. 1967	Sound analysis (loudness)	8051A
Apr. 1966	Resistor. adjustable standard	11102A-11105A	Feb. 1967	S-parameters for network design ...	—
Sept. 1965	Resistance measurements. with autoranging analog meter	414A	Feb. 1967	S-parameter measurements. swept-frequency	8410A
Feb. 1968	Resolution function of TV picture monitor	6945A	May 1966	S-parameter measurements with vector voltmeter	8405A
May 1966	RFI detection with vector voltmeter	8405A	Jan. 1968	Spectrum analysis	8441A, 852A, 8551B
Mar. 1966	RFI measurements. 10 kHz to 40 GHz	K15-8551B	Aug. 1968	Spectrum analyzer. 1 kHz to 110 MHz	8552A/8553L
May 1966	RF vector voltmeter	8405A	Sept. 1966	Spectrum analyzer calibrator	8406A
June 1966	Rise time converters for TDR	10452A-10456A	Mar. 1966	Spectrum analyzer converter	K15-8551B
July 1968	Rubidium vapor frequency standard	5065A	Jan. 1968	Spectrum analyzer. preselector for ..	8441A
Jan. 1967	RX meter	250A	Jan. 1968	Spectrum analyzer. variable-persistence display	852A
S					
July 1966	Sampling. coherent and incoherent ..	—	Nov. 1967	Speech analysis using loudness analyzer	8051A
May 1966	Sampling. conversion of low-frequency instruments with vector voltmeter	8405A	Feb. 1968	Spot profile of TV picture tube	6946A
July 1966	——— with sampling voltmeter	3406A	Nov. 1965	Square wave generator	3300A
Oct. 1966	Sampling device, wideband feedthrough	—	Apr. 1966	Stability. emitter follower	—
Oct. 1966	Sampling oscilloscope plug-ins dc to 12.4 GHz	1410A, 1424A, 1425A, 1411A/1430-32A	Nov. 1965	Stability measurement. microwave frequency	2590A/5100A
Sept. 1965	Sampling recorder	1782A-1784A	Oct. 1965	Stability measurements. frequency ..	10514A
S					
July 1966	Sampling. coherent and incoherent ..	—	Mar. 1966	Standard cell comparisons	419A, 735A
May 1966	Sampling. conversion of low-frequency instruments with vector voltmeter	8405A	Nov. 1965	Standard frequency and time broadcast	—
July 1966	——— with sampling voltmeter	3406A	Apr. 1966	Standard resistors	11102A-11105A
Oct. 1966	Sampling device, wideband feedthrough	—	Dec. 1966	Standing wave ratio. swept-frequency measurement in coax ..	817A
Oct. 1966	Sampling oscilloscope plug-ins dc to 12.4 GHz	1410A, 1424A, 1425A, 1411A/1430-32A	May 1968	Storage oscilloscopes	141A, 181A
Sept. 1965	Sampling recorder	1782A-1784A	Jan. 1966	Stratospheric warming	—
S					
July 1966	Sampling. coherent and incoherent ..	—	Aug. 1966	Stripline delay line. compact	—
May 1966	Sampling. conversion of low-frequency instruments with vector voltmeter	8405A	July 1966	Substitution loss measurement	415E
July 1966	——— with sampling voltmeter	3406A	June 1966	Susceptance. calibrated. for TDR ..	874A
Oct. 1966	Sampling device, wideband feedthrough	—	Mar. 1967	Sweep frequency measurements	5210A
Oct. 1966	Sampling oscilloscope plug-ins dc to 12.4 GHz	1410A, 1424A, 1425A, 1411A/1430-32A	May 1968	Sweeper plug-in	3305A
Sept. 1965	Sampling recorder	1782A-1784A	Jan. 1968	Sweeping signal generator	675A
S					
July 1966	Sampling. coherent and incoherent ..	—	May 1968	Sweeping signal generator	3300A/3305A

PART II Subject Index (continued)

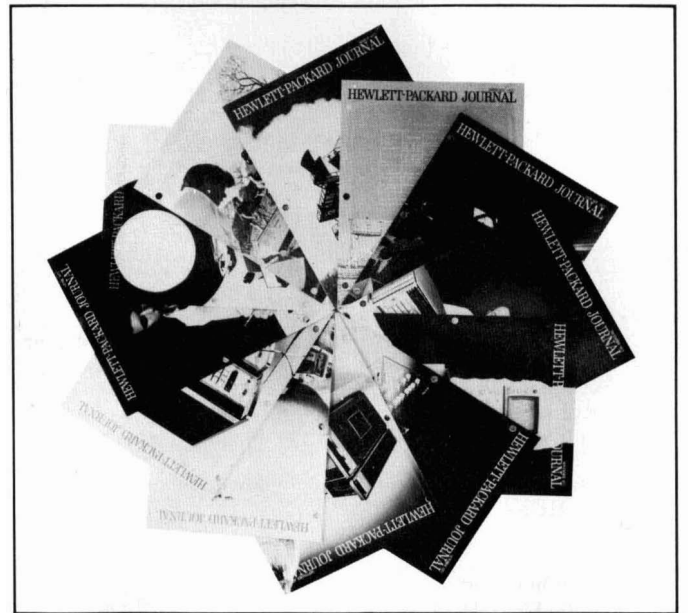
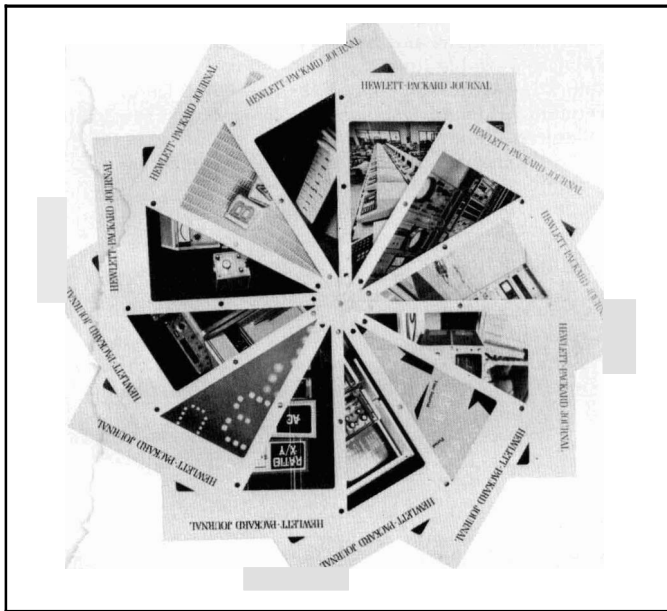
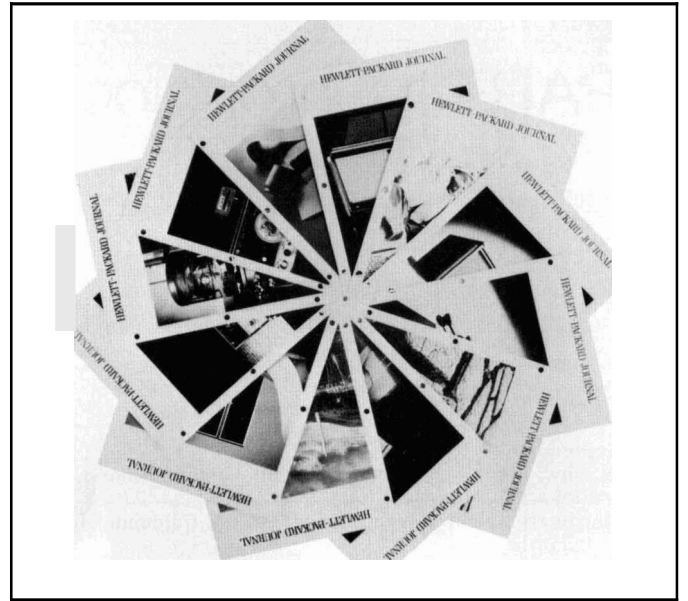
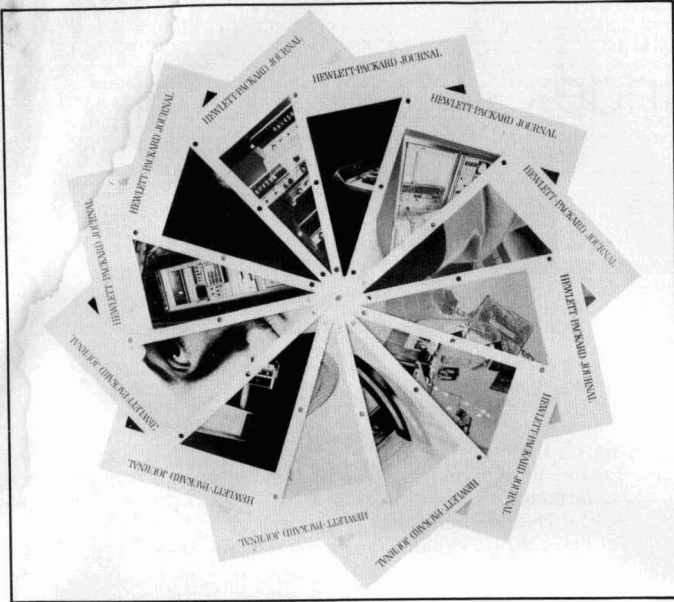
Month/Year	Subject	Model	Month/Year	Subject	Model
Aug. 1968	Sweeper/generator, 0.1 to 110 MHz	8601A	Feb. 1968	Units. changes in International System	—
July 1966	SWR meter	415E	Aug. 1968	Units. correction	—
Oct. 1967	Synthesizer. frequency	5105A/5110B	Sept. 1966	Universal bridge	4260A
June 1968	Systems-oriented digital power source	6130A	Jan. 1967	Universal bridge	4260A
T			V		
Dec. 1966	Tape recorder. 1.5 MHz	3950A	Jan. 1968	Variable-persistence display for spectrum analyzer	852A
June 1966	TDR, calibrated susceptance for	874A	May 1968	Variable persistence oscilloscopes ..	181A, 141A
Oct. 1966	TDR, 40-ps	1105A/1106A	Jan. 1967	Vector impedance meters	4800A, 4815A
Jan. 1966	TDR in liquids	140A/1415A	May 1966	Vector voltmeter	8405A
June 1966	TDR in 75Ω systems	10457A, 10458A	Feb. 1966	Vertical interval test signals (VITS)	191A
Feb. 1966	TDR measurement of liquids — Correction	1415A	Nov. 1965	Voltage-controlled function generator	3300A
June 1966	TDR, rise time converters for	10452A–10456A	Apr. 1966	Voltage divider. precision	11102A–11105A
Apr. 1967	Temperature measurements, ocean	2800 Series	June 1968	Voltage sources. digital	6130A, 6933A
Aug. 1967	Testing, production, high-go-low	3434A	Mar. 1966	Voltage standard. dc portable	735A
Oct. 1967	Thermal resistance of diodes	—	Jan. 1968	Voltage-tunable YIG filter	8441A
June 1968	Thermal transfer measurement	745A	Sept. 1965	Voltmeter. automatic ranging	414A
Apr. 1967	Thermometer, quartz	2800 Series	Oct. 1965	Voltmeter ac/dc differential	741A
July 1968	Time-shared computer system	2000A	May 1967	Voltmeter. ac microvolts	3410A
Aug. 1966	Time synchronization, world-wide 1966	5060A	May 1966	Voltmeter. multifunction. battery powered	427A
Dec. 1967	Time synchronization, 1967	5061A	July 1966	Voltmeter preamplifier	465A
Nov. 1965	Tone-burst generator	3302A/3300A	Nov. 1966	Voltmeter/ratiometer, dc	3420A/B
Apr. 1966	Total harmonic distortion measurements	331A, 334A	Mar. 1966	Voltmeter. dc null	419A
Aug. 1968	Tracking generator for spectrum analyzer	8601A, 8552A/8553L	Jan. 1966	Voltmeters. 10 Hz–10 MHz ac average-responding	400E/EL
May 1966	Transfer function measurements with vector voltmeter	8405A	July 1966	Voltmeter. sampling	3406A
Feb. 1968	Transfer oscillator plug-in for counters 50 MHz–18 GHz	5257A	May 1966	Voltmeter. vector	8405A
Mar. 1966	Transfer standard. dc voltage	735A	W		
Oct. 1967	Transform methods (tables)	—	June 1968	Waveform distortion. effects on calibration	745A
May 1966	Transistor parameter measurements with vector voltmeter	8405A	Dec. 1966	Wavemeters. coaxial	536A, 537A
Oct. 1966	Trigger countdown. 18 GHz	1104A/1106A	Oct. 1965	'Which DC Voltmeter'	AN 69
Nov. 1965	Trigger/phase-lock plug-in	3302A	Sept. 1965	Wideband amplifier. with oscilloscope	461A/462A
Oct. 1966	Tunnel diode mount	1106A	Jan. 1968	Wideband sweep generator	675A
Feb. 1966	TV network test signals	191A	X		
Feb. 1968	TV picture monitor	6946A	Sept. 1966	X-band frequency converter plug-in	5255A
Feb. 1966	TV waveform oscilloscope	191A	Sept. 1965	X-Y recorder, fast waveforms on ..	1782A
U			Dec. 1967	X-Y-Z Display. large-screen	1300A
May 1967	Ultrasonic translators	116, 117, 118, 4905A, 4917A, 4918A, 4950A	Y		
June 1967	Units. International System of. and prefixes	—	Jan. 1968	YIG filter	8441A

PART III Model Number Index

Model	Instrument	Month/Year	Model	Instrument	Month/Year
107AR	Frequency Standard (application of)	Nov. 1965	1425A	Plug-in Sampling Time Base and Delay Generator	Oct. 1966
116. 117. 118.			1430A	Remote Sampler for 1411A. $t_r < 28 \text{ ps}$	Oct. 1966
4905A,4917A, 4918A,4950A	Ultrasonic Translator	May 1967	1431A	Remote Sampler for 1411A. dc to 12.4 GHz	Oct. 1966
140A, 141S, 143S	Display Sections	Aug. 1968	1432A	Remote Sampler for 1411A, dc to 4 GHz	Oct. 1966
141A	Variable Persistence Oscilloscope ..	May 1968	1550A	Programmer	June 1966
155A	Programmable Oscilloscope	June 1966	1782A	Display Scanner Plug-in (for 175A)	Sept. 1965
180A	50 MHz Oscilloscope	Aug. 1966	1784A	Recorder Plug-in (for 175A)	Sept 1965
181A	Variable Persistence Oscilloscope ..	May 1968	1801A	Dual Channel Vertical Amplifier Plug-in	Aug. 1966
190A	Q Meter (application of)	Jan. 1967	1820A	Horizontal Time Base Plug-in	Aug. 1966
191A	Television Waveform Oscilloscope	Feb. 1966	1821A	Horizontal Time Base and Delay Generator Plug-in	Aug. 1966
197A	Oscilloscope Camera	Aug. 1966	2000A	Time-shared Computer System	July 1968
250A	RX Meter (application of)	Jan. 1967	2116A	Computer (application of)	Feb. 1967
260A	Q Meter (application of)	Jan. 1967	2116A	Computer	Mar. 1967
331A to 334A	Distortion Analyzers	Apr. 1966	2350 Series	Hot Carrier Diodes	Dec. 1965
354A	Coaxial Step Attenuators	June 1967	2470A	Data Amplifier	July 1967
400E/EL	10 Hz–10 MHz AC Voltmeter	Jan. 1966	2590A	Frequency Converter (application of)	Nov. 1965
414A	Autovoltmeter	Sept. 1965	2801A	Quartz Thermometer	Apr. 1967
415E	SWR Meter	July 1966	2832A	Temperature Sensor Assembly	Apr. 1967
419A	DC Null Voltmeter	Mar. 1966	2833A	Temperature Sensor Assembly	Apr. 1967
427A	Multifunction Voltmeter	May 1966	3300A	Function Generator	Nov. 1965
448A	Slotted-line Sweep Adapter	Dec. 1966	3301A	Auxiliary Plug-in for Function Generator	Nov. 1965
461A/462A	Wideband Amplifiers (application of)	Sept. 1965	3302A	Trigger/Phase-lock Plug-in	Nov. 1965
463A	Precision Amplifier	May 1967	3305A	Sweep Plug-in	May 1968
465A	Amplifier	July 1966	3406A	Sampling Voltmeter	July 1966
536A, 537A	Coaxial Frequency Meters	Dec. 1966	3410A	AC Microvoltmeter	May 1967
675A	Sweeping Signal Generator	Jan. 1968	3420A/B	DC Differential Voltmeter/ Ratiometer	Nov. 1966
735A	DC Transfer Standard	Mar. 1966	3434A	Comparator	Aug. 1967
741A	AC-DC Differential Voltmeter/ DC Standard	Oct. 1965	3722A	Noise Generator	Sept. 1967
745A	AC Calibrator	June 1968	3950 Series	Tape Recorder	Dec. 1966
780 Series	Patient Monitoring Equipment	June 1967	4260A	Universal Bridge	Sept. 1966
817A	Swept Slotted Line System	Dec. 1966	4260A	Universal Bridge (application of)	Jan. 1967
852A	Variable-persistence Display Unit for Spectrum Analyzer	Jan. 1968	4800A	Vector Impedance Meter	Jan. 1967
874A	Calibrated Susceptance	June 1966	4815A	RF Vector Impedance Meter	Jan. 1967
1104A/1106A	18-GHz Trigger Countdown	Oct. 1966	4905A,4917A, 4918A,4950A, 116. 117. 118	Ultrasonic Translator	May 1967
1105A/1106A	20-ps Pulse Generator	Oct. 1966	5060A	Cesium-beam Frequency Standard..	Aug. 1966
1106A	Tunnel Diode Mount	Oct. 1966	5060A	Cesium-beam Frequency Standard..	Oct. 1966
1300A	X-Y-Z Display	Dec. 1967	5061A	Cesium-beam Frequency Standard..	Dec. 1967
1407A	DC-stabilized Sensitive Plug-in	June 1966	5065A	Rubidium Vapor Frequency Standard	July 1968
1410A	Plug-in Sampling Vertical Amplifier, dc to 1 GHz	Oct. 1966	5100A/5110A	Frequency Synthesizer (application of)	Nov. 1965
1411A	Plug-in Sampling Vertical Amplifier	Oct. 1966			
1415A	Time Domain Reflectometer (application of)	Jan. 1966			
1424A	Plug-in Sampling Time Base	Oct. 1966			

PART III Model Number Index (continued)

Model	Instrument	Month/Year	Model	Instrument	Month/Year
5105A/5110B	Frequency Synthesizer	Oct. 1967	8405A	Vector Voltmeter	May 1966
5210A	Frequency Meter/FM Discriminator	Mar. 1967	8405A	Vector Voltmeter (application of)	Jan. 1967
5216A	Integrated-circuit Counter	Aug. 1967	8406A	Frequency Comb Generator	Sept. 1966
5221A	Integrated-circuit Counter	Aug. 1967	8410A, (8411A, 8413A,8414A, 8740A,8741A, 8742A)	Network Analyzer. 0.1 to 12.4 GHz	Feb. 1967
5240A	12.4 GHz Digital Frequency Meter	Apr. 1967	8441A	Preselector	Jan. 1968
5255A	Frequency Converter Plug-in, 3-12.4 GHz	Sept. 1966	8491A,8491B, 8492A	Coaxial Attenuators	June 1967
5256A	Frequency Converter Plug-in, 8-18 GHz	Feb. 1968	8551B	Spectrum Analyzer RF Unit	Jan. 1968
5257A	Transfer Oscillator Plug-in, 50 MHz-18 GHz	Feb. 1968	K15-8551B	Spectrum Analyzer Converter	Mar. 1966
5260A	Frequency Divider	Apr. 1967	8552A/8553L	Spectrum Analyzer	Aug. 1968
5400A	Multichannel Analyzer	Mar. 1968	8601A	Generator/Sweeper	Aug. 1968
5480A	Signal Analyzer and Averager	Apr. 1968	8875A	Data Amplifier	July 1967
5480A	Signal Analyzer and Averager (application of)	May 1968	10452A		
5554A	Preamplifier	Mar. 1968	to	Rise Time Converter	June 1966
5580A/B	NIM Bin	Mar. 1968	10456A		
5582A	Linear Amplifier	Mar. 1968	10457A		
5583A	Single Channel Analyzer	Mar. 1968	to	50- to 75-ohm Adapter	June 1966
6130A	Digital Voltage Source	June 1968	10458A		
6933A	Digital-to-analog Converter	June 1968	10514A	Double-balanced Mixer. 0.2-500 Mc/s	Oct. 1965
6945A, 6946A	Television Picture Monitor	Feb. 1968	10515A	Frequency Doubler. 0.5-500 Mc/s	Oct. 1965
7848A	Eight-channel Ink Recorder	July 1967	11102A		
7858A, 7868A,	Eight-channel Ink Recording Systems	July 1967	to	Standard Resistors	Apr. 1966
7878A			11105A		
8051A	Loudness Analyzer	Nov. 1967			



HEWLETT-PACKARD JOURNAL

Technical information from the laboratories of Hewlett-Packard Company

INDEX

VOLUMES 20, 21, 22,
23, and 24

September 1968 through
August 1973



PART I: Chronological Index

September 1968

A New Electronic Calculator with Computerlike Capabilities, Richard E. Monnier
Hardware Design of the Model 9100A Calculator. Thomas E. Osborne
Internal Programming of the 9100A Calculator, David S. Cochran
Computer-Testing the HP Model 9100A Calculator. Charles W. Near
How the Model 9100A Was Developed, Bernard M. Oliver

October 1968

Graphic Recorder Writing Systems, Dale R. Davis and Charles K. Michener
Low Voltage Electric Writing Recorders
Recording True-rms Voltages Over Wide Dynamic Ranges, John M. Wade
Atomic Hydrogen Masers — An Introduction and Progress Report, Robert F. C. Vessot

November 1968

BASIC—The Language of Time Sharing, Gerald L. Peterson
BASIC at Hewlett-Packard, Richard M. Moley
How to Correct for Errors in High-Frequency Oscilloscope Measurements, Wayne A. Kohl
Extending Precision Oscilloscope Measurements into the High Frequencies
Voltage Probe for High-Frequency Measurements, Eddie A. Evel
1969 UTC Offset Announced

December 1968

Rapid Analysis of Low Frequency Spectra, Larry A. Whatley
High Dynamic Performance X-Y Recorder, Otto S. Talle, Jr.
A Low-Cost, General-Purpose Oscillator with Low Distortion and High Stability. James M. Colwell and Paul F. Febvre
Amplitude Stability with a Zener Level Detector

January 1969

Broadband Passive Components for Microwave Network Analysis, Stephen F. Adam, George R. Kirkpatrick and Richard A. Lyon
Measuring High-Frequency Transistor Parameters, Richard H. Bauhaus
Printed-Circuit Slide Switches Save Panel Space
Recording Data for Computer Analysis, William J. Steinmetz and Robert L. Knapp

February 1969

Solid-State Displays, Howard C. Borden and Gerald P. Pighini
Solid-State Displays, Present and Future
Measuring Luminance
Hybrid Hot Carrier Diodes, Robert A. Zettler and A. Michael Cowley
Hybrid Technology Produces Many Useful New Devices

March 1969

Twelve Functions in a New Digital Meter, Bill Kay and Jerry L. Harmon
Peltier Heating and Cooling
A Computer-Controlled System for Testing Digital Logic Modules, William P. Cargile

April 1969

A New Programmable, Building-Block Pulse and Digital System. Gordon K. Blanz and Ronald L. Knauber
Why Use Variable Rise and Fall?
Generating Words for Digital Testing. Eddie Donn
Frequency-Domain Oscilloscope Now Measures to 1250 MHz, Siegfried Linkwitz
The Meaning of 'Frequency-Domain Oscilloscope: Excerpts from an informal talk by Roderick Carlson
Beyond Traditional Spectrum Analyzer Uses

May 1969

Introducing the Computing Counter. Gary B. Gordon and Gilbert A. Reeser
The Measurement Cycle and the Concept of Arming
An Electronic Counter for the 1970's, Gilbert A. Reeser
Computation for Measurement Flexibility, France Rod6 and Gary B. Gordon
Automatic Counter Inverts Period to Get Frequency, Ian T. Band

June 1969

Portable, Rugged Cable Fault Locator for VHF Communications and CATV, Ronald D. Lowe
Tradeoffs in Impulse Testing, James M. Hood
Compact Function Generator Covers 0.0005 Hz to 5 MHz, Raymond C. Hanson
IC Logic Checkout Simplified. Gary B. Gordon
Pulsar Optical and Radio Emissions Observed Simultaneously, Charles N. Taubman
Are Pulsars Rotating Neutron Stars?

July 1969

Real-Time Measurement and On-Line Processing of Acoustical and Other Audio-Frequency Spectra. Wisu T. Kapuskar and Christopher J. Balmforth
Monitoring Airport Noise. Wisu T. Kapuskar and Christopher J. Balmforth
Network Analysis at Low Frequencies, Charles A. Kingsford-Smith

August 1969

Automated Testing, Robert A. Grimm
Choosing An Automatic Test System, M. D. Ewy and Stephen C. Shank
Building An Automatic Test System, M. D. Ewy
Hewlett-Packard Automatic Test Systems, Robert A. Grimm

September 1969

Graphical Output for the Computing Calculator, Robert W. Colpitts, Dan Allen and Tom Vos

Plotter Applications

Antenna Plots

High-Resolution Time-Domain Reflectometry with a Portable 30-lb Instrument, *Jeffrey H. Smith*

Precision DC Current Sources, *Joseph C. Perkinson and Willis C. Pierce, Jr.*

Current Sources in the Laboratory and On the Production Line

October 1969

Direct Measurement of Transistor Noise Voltage, Noise Current and Noise Figure, *Haruo Itoh and Knud L. Knudsen*

Sources of Noise in Transistors, *Niladri R. Mantena*

Premonitory Heartbeat Patterns Recognized by Electronic Monitor, *Thomas C. Horth*

November 1969

Correlation, Signal Averaging, and Probability Analysis, *Richard L. Rex and Gordon T. Roberts*

A Calibrated Real-Time Correlator/Averager/Probability Analyzer, *George C. Anderson and Michael A. Perry*

Correlation in Action

December 1969

Network Analysis in the Range 100 kHz to 110 MHz, *William A. Rytand and David R. Gildea*

High Impedance Probing to 500 MHz, *Joel Zellmer*

January 1970

A DC-to-VHF Oscilloscope, *James Pettit*

A Fast-Writing, High-Frequency Cathode-Ray Tube, *David Chaffee*

A Wideband Oscilloscope Amplifier, *Alan J. DeVilbiss*

Monolithic Transistor Arrays for High-Frequency Applications, *Merrill Brooksby and Richard D. Pering*

A Fast Time Base for a High-Frequency Oscilloscope, *William Mordan*

February 1970

A System for Automatic Network Analysis, *Douglas Kent Rytting and Steven Neil Sanders*

Software for the Automatic Network Analyzer, *William A. Ray and Warren W. Williams*

Developing Accuracy Specifications for Automatic Network Analyzer Systems, *B. P. Hand*

Applications for the Automatic Network Analyzer, *Brian Humphries*

March 1970

The Computing Counter Gets Its Keyboard, *Keith M. Ferguson*
Protecting Hospitalized Patients from Electrical Hazards, *William F. Craven*

Calculator Processes Multichannel Analyzer Data, *Norman D. Marschke*

April 1970

Timer/Counter/DVM: A Synergistic Prodigy?, *Kenneth J. Jochim and Rolf Schmidhauser*

Measuring Nanosecond Time Intervals by Averaging, *Rolf Schmidhauser*

High Accuracy AC Calibration to 1100 Volts, *Fred L. Hanson*
A New Camera for High-Speed Oscilloscope Recording, *Dan Paxton*

May 1970

Design and Application of Silicon IMPATT Diodes, *A. Michael Cowley*

Measuring Capacitance Automatically, *Hitoshi Noguchi, Tadeo Shimizu and Koichi Maeda*

June 1970

Digital Fourier Analysis, *Peter R. Roth*

A Calibrated Computer-Based Fourier Analyzer, *Agoston Z. Kiss*

A Fourier Analyzer Makes Fundamental Measurements

July 1970

Solid-State Alphanumeric Displays, *Howard C. Borden and Robert L. Steward*

Noise in IMPATT Diodes

Adding More Precision to Spectrum Analyzer Measurements, *Patrick J. Barrett, Robert R. Hay, and Paul G. Winninghoff*

August 1970

A Two-Hundred-Foot Yardstick with Graduations Every Microinch, *John N. Dukes and Gary B. Gordon*

A New Tool for Old Measurements—and New Ones Too, *André F. Rudé and Kenneth J. Wayne*

Automatic Error Plotting—a Report Card for Nonlinear Behavior, *Jonathan D. Garman*

Machine Tool Evaluation by Laser Interferometer, *Richard R. Baldwin*

An Instant-On Laser for Length Measurement, *Glenn M. Burgwald and William P. Kruger*

September 1970

A Programmable, Modular, Bidirectional Data Coupler, *Gibson F. Anderson*

Instrumentation Systems Controlled by Time-Shared Computers, *Neal E. Walko*

Measuring Q—Easier and Faster, *Shiro Kito and Keiichi Hasegawa*

October 1970

More Memory for Desktop Calculators, *Russell Sparks*

Optical Card Reader for Fast Calculator Programming, *Gene Zeller*

Hard Copy Output for the System 9100 Computing Calculators, *Chuck McAfee*

November 1970

Sweeping the Microwave Spectrum with Solid-State Sources, *Robert H. Bathiany, Carl J. Enlow, Phillip G. Foster and Stephen Vitkovits*

Microcircuits for the Microwave Sweeper, *Ronald E. Pratt, Robert W. Austin and Arlen Dethlefsen*

December 1970

Computing-Counter Measurement Systems, *David Martin*

Programmer Is Key to Computing-Counter Systems, *Eric M. Ingman*

Measuring Noise and Level On International Telephone Systems, *Jim Plumb and Jacques Holtzinger*

January 1971

A New High-Speed Multifunction DVM, *Craig Walter, H. Mac Juneau and Lee Thompson*

February 1971

HP/CAI, *William G. Ansley and Samuel D. Edwards*

HP/CAI—In the Beginning

HP/CAI—The Future

Distortion in Complementary-Pair Class-B Amplifiers, *B. M. Oliver*

PART I Chronological Index (continued)

March 1971

- On-Line Data Reduction for Nuclear Analyzers, Jonathan R. Cross, James A. *Doub*, and John M. Stedman
Identifying Radioactive Materials
Multichannel Analyzers and People
Very High and Very Low Resistances—Why and How They Are Measured, Yoshihisa Kameoka and Jean E. Bonhomme

April 1971

- Manipulating Digital Patterns With a New Binary Sequence Generator, Edward S. Donn
How to Make a Nuclear Spectrum Hold Still, Steven Upshinsky
Astronomers Find Optical Timing of Pulsars More Accurate, Laurence D. Shergalis
Programmable Step Attenuators Use Distributed-Thin-Film Attenuator Cards. Stephen F. Adam

May 1971

- A Power-Thrifty Portable Oscilloscope, Thomas K. Bohley, Robert E. Mast, and Donald R. Bloyer
NBS Publishes Revised List of Physical Constants
Effective Stripline Device Characterization. George R. Kirkpatrick

June 1971

- The Routine Rotational Microwave Spectrometer, Howard W. Harrington, John R. Hearn, and Roger F. Rauskolb
Everything You Always Wanted to Know About Rotational Microwave Spectroscopy
An Easy Way to Analyze Graphs. Dean Millett and Ivar Larson

July 1971

- General-Purpose Test System Gets Digital Capability. Leif Gudnitz and Homer Tsuda
Digital Testing versus Digital Testing
Optical Power Measurements Made Easy, Charles L. Hicks and Michael R. Mellon
Multitudinous Applications
Units of Optical Power

August 1971

- Lilliputian Measuring System Does Much, Costs Little, *Ian T. Band*, Hans J. Jekat, and Eric E. May
A Package for Portability and Serviceability
An Almost All-Solid-state Strip-Chart Recorder, Charles K. Michener

September 1971

- The Spectrum Analyzer, Oscilloscope for the Frequency Domain: A Special Issue
A Fully Calibrated, Solid State Microwave Spectrum Analyzer, Richard C. Keiter
Tracking Generators, John Page
A Low Frequency Spectrum Analyzer. Irving H. Hawley, Jr.

October 1971

- Price, Performance, Architecture, and the 2100A Computer. Fred F. Coury
Microprogramming, ROM's, Firmware, and All That, Charles T. Leis
A Lot of Memory in a Small Space. Robert J. Frankenberg

- A Bantam Power Supply for a Minicomputer, Richard D. *Crawford* and Gregory Justice
UTC Time Scale to Change in 1972

November 1971

- A Scrutable Sampling Oscilloscope. William Farnbach
Frequency Stability Measurements by Computing Counter System, David Martin
More Informative Impedance Measurements, Swept from 0.5 to 110 MHz. Julius K. Botka
Time Step and Elimination of the Frequency Offset of the UTC System

December 1971

- Uniting Signal Generation and Signal Synthesis, John C. Shanahan
Remote Laser Interferometry, Richard R. *Baldwin*, Gary B. Gordon, and *André F. Rudé*

January 1972

- A Computer-Aided Hospital System for Cardiac Catheterization Procedures, John L. *Fanton*
Clip-and-Read Comparator Finds IC Failures. Mark Baker and Jesse *Pipkin*
The Well-Modulated Synthesizer, James E. Stinehelfer

February 1972

- Introducing the Automatic Spectrum Analyzer, Michael *Cunningham* and *Lynn* Wheelwright
Organizing the Automatic Spectrum Analyzer System, William H. Shaffer
Automating the 10-MHz-to-18-GHz Receiver, Steven Neil Sanders
Hewlett-Packard's Barney Oliver and John Cage Write The Book Fine-line Thermal Recording on Z-fold Paper. Walter R. *McGrath*, Jr., and Arthur Miller

March 1972

- Time Domain Reflectometry in Narrowband Systems. Gene A. Ware
Measuring High-Value Capacitors, Yoshihisa Kameoka
Measuring True RMS AC Voltages to 100 MHz, J. B. *Folsom*

April 1972

- An Effective ECG Telemetry System. James L. Larsen, Richard F. *Dillman*, Alfred M. Nardizzi, and Richard N. Tverdoch
A Human Interface for Automatic Measurement Systems, Kenneth A. Fox, Marc P. Pasturel, and Peter S. Showman
An Agile Graphic Display Device, John Riggen and Douglas *Fogg*

May 1972

- A Faster, Tougher Disc Drive for Small Computer Systems, James E. Herlinger and James R. Barnes
Inside the 7900 Disc Drive, James E. Herlinger and William J. Lloyd
Reading and Writing on the Fast Disc, William I. Girdner and Wallace H. *Overton*
An Efficient Disc Drive/Computer Interface, Donald J. Bowman
Narrowband Noise Immunity in a Broadband Gain-Phase Meter, Raymond C. Hanson

June 1972

- The 'Powerful Pocketful': an Electronic Calculator Challenges the Slide Rule. Thomas M. Whitney. France *Rodé*, and Chung C. Tung
Algorithms and Accuracy in the HP-35, David S. Cochran

Packaging the Pocket Calculator, Edward T. Liljenwall
New Capabilities in Digital Low-Frequency Spectrum Analysis,
Stephan G. Cline and Norman D. Marschke

July 1972

The Synthesized Test Oscillator—A New Signal Source for the
0.1 Hz-13 MHz Range, Ronald K. Tuttle
The Incremental Sweep Generator—Point-by-Point Accuracy with
Swept-Frequency Convenience, Charles A. Kingsford-Smith
Microprogramming and Writable Control Store, Fred F. Coury

August 1972

Compactness and Versatility in a New Plug-Together Digital
Multimeter, Albert **Gookin**
A New Five-Digit Multimeter That Can Test Itself, Lee Thompson
Functional Modularity Helps Designer and User of New Measure-
ment and Control Subsystem, James M. Kasson
Multiprogrammer Magnifies Minicomputer I/O Capacity, John
Mickowski

September 1972

Logic **Pulser** and Probe: A New Digital Troubleshooting Team,
Robin Adler and Jan R. Hofland
A New Microwave Link Analyzer with High-Frequency Test
Tones, Reid Urquhart
Microwave Radio Communications and Performance Measure-
ments, John Fisher
MLA Measures RF Performance with Down Converter, Michael
Crabtree
Communications-Oriented Microwave Solid-State Sweeper, Arlen
E. Dethlefsen

October 1972

A Practical Interface System for Electronic Instruments, Gerald
E. Nelson and David W. Ricci
A Common Digital Interface for Programmable Instruments: The
Evolution of a System, Donald C. Loughry
Faster Gain-Phase Measurements with New Automatic 50 Hz-to-
13 MHz Network Analyzers, Gerald E. Nelson, Paul L. Thomas,
and Robert L. Atchley

November 1972

A "Voltmeter" for the Microwave Engineer, Hugo **Vifian**, Frank K.
David, and Wayne L. Frederick
Versatile Display Unit Extends Correlator Capability, David J.
Morrison, Brian W. Finnie, **Rajni S. Patel**, and Kenneth H.
Edwards
Voltage Precision and High Current Capability—Both in One
Power Supply, George G. Emmermann

December 1972

A New Series of Programmable Calculators, Richard M. Spangler
Model 10 Maintains Compatibility, Expands Capability, Curtis D.
Brown and Jack M. Walden
Interactive Model 20 Speaks Algebraic Language, Rex L. James
and Francis J. Yockey
Basic-Language Model 30 Can Be Calculator, Computer, or
Terminal, Richard M. Spangler
9800 Processor Incorporates 8-MHz Microprocessor, Henry J.
Kohoutek
All-Semiconductor Memory System includes Read-Only and
Read/Write Chips, Calvin L. Finn
Versatile **Input/Output** Structure Welcomes Peripheral Variety,
Gary L. Egan
Development of the 9800 Series, Robert E. Watson

January 1973

An Economical **Full-Scale** Multipurpose Computer System, Bert E.
Forbes and Michael D. Green
Central Bus Links Modular HP 3000 Hardware, Jamshid Basiji
and Arndt B. Bergh
Software for a Multilingual Computer, William E. Foster
Single Operating System Serves All HP 3000 Users, Thomas A.
Blease and Alan Hewer

February 1973

A Solid-State VHF Signal Generator for Today's Exacting Require-
ments, Raymond M. Shannon, Kenneth L. **Astrof**, Michael S.
Marzalek, and Larry C. Sanders
Computer-Aided Design of Modular Power Supplies, **Willis C.**
Pierce, Jr., James S. **Gallo**, and William T. Walker

March 1973

High Performance Flame-Ionization Detector System for Gas
Chromatography, Douglas H. Smith
Synthesized Signal Generation to **1.3 GHz**, Roland **Hassun**,
Melvin Humpherys, Dieter Scherer, Young Dae Kim, Bradley
Stribling, and Charles Cook
A Greater Range of Capabilities for the Compact, Plug-on Digital
Multimeter, Reid Gardner, Arthur Dumont, and Stephen
Venzke

April 1973

A High-Performance Automatic Microwave Counter, Richard F.
Schneider
A **dc-to-20-GHz** Thin-Film Sampler for Microwave Instrumenta-
tion, Jerry Merkelo
Automating the Calibration Laboratory, E. Robert Aikin and John
L. Minck

May 1973

A Pocket-Sized Answer Machine for Business and Finance,
William L. **Crowley** and France Rod6
Laboratory Notebook—Thick Films Widen Attenuator Response
A More Rugged, Cleaner Writing Oscillographic Ink Recorder,
Lawrence **Brunetti**
A Quiet, Low-Cost, High-Speed Line Printer, Dick B. Barney and
James R. Drehle

June 1973

Schottky-Barrier Diodes Structured for Better High-Frequency
Performance, Jack H. Lepoff and Raymond A. Morris
DMM and DAC Modules Expand Low-Cost Measuring System,
James F. **Hornor**, Lewis W. Masters, and P. Thomas Mingle
Laser/Calculator System Improves Encoder Plate Measurements,
Glenn O. **Herreman**
Instrument Basics Without Pain, a book review

July 1973

A Second-Generation ESCA Spectrometer, Michael A. Kelly and
Charles E. Tyler
Compact Function Generator with Enhanced **Capability/Cost**
Ratio, E. Harry Heflin

August 1973

Automated Transceiver Testing, Dimitry A. Bobroff
Signal Processing Techniques for Automatic Transceiver Testing,
Robert G. Huenemann
Digitally-Controlled Current Sources for New Ways of Making
Automatic Measurements, **René Peerboom**

PART II: Subject Index

Month/Year	Subject	Model
A		
Apr. 1970	Ac calibration, high-voltage	745A/746A
Mar. 1972	Ac voltage, true-rms measurement	3403A
Nov. 1969	Acoustic measurements by correlation	3721A
Jan. 1969	Adapter, coaxial swivel	11588A
July 1969	Aircraft noise evaluation [aircraft certification)	80501A
July 1969	Aircraft noise monitoring system for airports	80500A
Nov. 1971	Allan variance	5360 System
July 1970	Alphanumeric displays, solid-state	5082-7100
July 1969	Amplifier measurement	675A/676A
Aug. 1972	Analog-digital interface	2440A
Feb. 1972	Analyzer, automatic spectrum	8580A
June 1970	Analyzer, Fourier	5450A
June 1972	Analyzer, Fourier	5451A
Sept. 1972	Analyzer, microwave link	3710A
Mar. 1970	Analyzer, multichannel, interface for calculator	10619A
Nov. 1969	Analyzer, probability	3721A
July 1969	Analyzer, real-time audio spectrum	8054A
Apr. 1969	Analyzer, spectrum	8554L, 8552A
July 1970	Analyzer, spectrum	8552B, 8553B
Sept. 1971	Analyzer, spectrum	8555A, 8556A
June 1971	Analyzing graphs	9107A
Dec. 1971	Angular measurements, by laser interferometer	5525B
Sept. 1969	Antenna plot by calculator	9125A
Oct. 1969	Arrhythmia monitor	7822A
Oct. 1972	ASCII-compatible interface	—
Apr. 1971	Attenuators, programmable	33300 Series
May 1973	Attenuators, thin-film, oscilloscope	—
July 1969	Audio data processor system	80501A
July 1969	Audio spectrum analyzer, real-time	8054A
Mar. 1969	AuTest language for logic module test programs	2060A
Nov. 1969	Autocorrelation	3721A
May 1970	Automatic capacitance measurement	4270A
May 1969	Automatic counter	5323A
July 1972	Automatic frequency synthesis	3330A/B
Feb. 1972	Automatic spectrum analyzer	8580A
Aug. 1969	Automatic test systems	—
Nov. 1969	Averager, signal	3721A
Apr. 1970	Averaging, time-interval	5326A/B
B		
June 1973	"Basic Electronic Instrument Handbook" review	—

Dec. 1972	Basic-language calculator	9830A
Aug. 1971	Battery-operated measuring system	5300
Aug. 1972	Battery-operated measuring system	3470
May 1971	Battery-operated oscilloscope	1700 Series
Apr. 1971	Binary sequence generator	1930A
Apr. 1971	Bit-error-rate detection	1930A
June 1973	Book review, "Basic Electronic Instrument Handbook"	—
Feb. 1972	Book review, "Electronic Measurements and Instrumentation"	—
May 1973	Business pocket calculator	HP-80

C

June 1969	Cable fault testing	4920A
Feb. 1971	CAI system	2000B/C
Sept. 1970	Calculator-based instrumentation systems	2570A
Oct. 1972	Calculator-based instrumentation systems	3042A
June 1973	Calculator/laser system for encoder plate checkout	5526A/9820A
Sept. 1969	Calculator plotter	9125A
June 1972	Calculator, pocket, scientific	HP-35
May 1973	Calculator, pocket, business	HP-80
Mar. 1970	Calculator processes multichannel analyzer data	10619A
Sept. 1968	Calculator, programmable	9100A
Dec. 1972	Calculators, programmable	9800 Series Models 10, 20, 30
Mar. 1971	Calculator system, multichannel analyzer	5403A
Apr. 1973	Calibration systems, instrument, automatic	9550
Apr. 1970	Camera, oscilloscope	195A
Mar. 1972	Capacitance measurement	4350A/B
May 1970	Capacitance measurement	4270A
Oct. 1969	Cardiac arrhythmia monitor	7822A
Jan. 1972	Cardiac catheterization system	5690A
Oct. 1970	Card reader, calculator	9160A
Jan. 1972	Catheterization system, cardiac	5690A
Jan. 1970	Cathode-ray tube, 250 MHz	183A
June 1969	CATV cable testing	4920A
Jan. 1969	Coaxial directional couplers	778D, 779D
Jan. 1969	Coaxial line stretcher	—
Jan. 1969	Coaxial rotary air line	11606A
Jan. 1969	Coaxial rotary joint	11588A
Jan. 1969	Coaxial switch	8761A
June 1970	Coherence function measurements	5450A
Oct. 1972	Common digital interface for programmable instruments	—

June 1969	Communications. cable system testing	4920A	Sept. 1970	Data coupler. programmable. bidirectional	2570A
Sept. 1972	Communications. microwave system testing	3710A	Sept. 1969	Dc current sources	CCB Series (6177/81/86B)
Sept. 1972	Communications sweep oscillator	8605A	Aug. 1973	Dc current sources. digital	6140A, 6145A
Jan. 1972	Comparator. logic	10529A	Mar. 1973	DCV/DCA/ Ω Meter plug-on	34703A
Mar. 1969	Comparison testing of logic modules	2060A	Sept. 1968	Desktop calculator	9100A
July 1971	Comparison testing of logic modules	28035A/9500	Dec. 1972	Desktop calculator	9800 Series
Oct. 1971	Computer	2100A	Mar. 1973	Detector. flame-ionization	5700A
Feb. 1973	Computer-aided design of power supplies	62000 Series	July 1971	Detector. optical	8334A
Feb. 1971	Computer-assisted instruction system	2000B/C	Nov. 1972	Detector. thin-film hybrid. microwave	8755L/11664A
Nov. 1968	Computer language: BASIC	—	Feb. 1969	Detectors. microwave hybrid hot-carrier	5082-2800
Jan. 1973	Computer system. multiprogramming. multilingual	3000A	Jan. 1969	Digital coupler	2547A
July 1972	Computer. 2100A, writable control store	2100A, 12908A	Sept. 1970	Digital coupler. bidirectional. programmable	2570A
Sept. 1968	Computing calculator	9100A	Oct. 1972	Digital interface. ASCII compatible	—
May 1969	Computing counter	5360A	Mar. 1969	Digital logic module test system	2060A
Mar. 1970	Computing counter keyboard	5375A	June 1969	Digital logic probe	10525A
Dec. 1970	Computing counter measurement systems	5360A/5376A	Sept. 1972	Digital logic probe	10525T
Nov. 1971	Computing counter measurement systems	5360A/5375A/5376A	June 1972	Digital low-frequency spectrum analysis	5451A
Dec. 1970	Computing counter programmer.	5376A	Mar. 1969	Digital multifunction meter	3450A
Apr. 1972	Console. system	8500A	Jan. 1971	Digital multifunction meter	3480A
Sept. 1969	Constant-current sources. dc	CCB Series (6177/81/86B)	Aug. 1972	Digital multimeter . 4½ digit	3470A
Aug. 1973	Constant-current sources. digital	6140A, 6145A	Aug. 1972	Digital multimeter. 5½ digit	3490A
Oct. 1968	Converter. logarithmic	7562A	Mar. 1973	Digital multimeter. 5% digit	34750A
June 1973	Converter module. digital-to-analog. for 5300	5311A	June 1973	Digital multimeter/counter	5306A
June 1970	Correlation by Fourier analyzer	5450A	Nov. 1972	Digital spectrum analysis by correlator/spectrum display ..	3721A/3720A
Nov. 1969	Correlator	3721A	July 1971	Digital testing. functional. with 9500-series systems	28035A
Nov. 1972	Correlator/spectrum display	3721A/3720A	June 1973	Digital-to-analog converter module for 5300 low-cost measuring system	5311A
May 1969	Counter. automatic	5323A	Apr. 1971	Digital transmission quality , measuring	1930A
May 1969	Counter. computing	5360A	Sept. 1972	Digital troubleshooting	10525T
Mar. 1970	Counter. computing. keyboard ..	5375A	Mar. 1969	Digital voltmeters	10526T
Dec. 1970	Counter. computing. programmer ..	5376A	Jan. 1971	Digital voltmeters	3450A
Apr. 1973	Counter. microwave	5340A	Jan. 1971	Digital voltmeters	3480A
June 1973	Counter/multimeter module for 5300 system	5306A	Aug. 1972	Digital voltmeters	3470 System. 3490A
Aug. 1971	Counter system. MOS/LSI	5300	Mar. 1973	Digital voltmeters	34703A/34750A
Apr. 1970	Counter/Timer/DVM	5326B	June 1973	Digital voltmeters	5306A
Sept. 1970	Coupler/Controller, bidirectional. programmable ..	2570A	Mar. 1972	Digital voltmeters	3403A
Jan. 1969	Coupler. directional	778D, 779D	Apr. 1969	Digital word generator	1925A
Jan. 1969	Coupler for recording digital data ..	2547A	Aug. 1973	Digitally controlled current source	6140A, 6145A
Nov. 1969	Crosscorrelation	3721A	June 1971	Digitizer	9107A
Apr. 1972	CRT's, large-screen	1310A, 1311A	June 1973	Diodes. beam-lead	5082-2709/16/68/69
Sept. 1969	Current sources. dc	CCB Series (6177/81/86B)	Feb. 1969	Diodes. hot-carrier hybrid	5082-2800
Aug. 1973	Current sources. digitally controlled	6140A, 6145A	May 1970	Diodes. IMPATT	5082-0400
Aug. 1972	Data acquisition and control systems. sensor-based , modular	9600 A, E, F, G	Feb. 1969	Diodes. light-emitting display ...	5082-7000
			July 1970	Diodes. light-emitting display ...	5082-7100
			June 1973	Diodes. Schottky quads	5082-2276/77/2830
			Nov. 1969	Direction finding by correlation ..	3721A
			Jan. 1969	Directional couplers	778D, 779D
			May 1972	Disc drives	7900A, 7901A

Nov. 1971 Impedance probe (0.5–110 MHz) **11655A/8407A**

Nov. 1969 Impulse response determination by correlation **3721A**

June 1969 Impulse testing **4920A**

Aug. 1972 Industrial data acquisition systems 9600 A, E, F, G **7402A**

May 1973 Ink recorder, oscillographic 9550 Series

Apr. 1973 Instrument calibration systems .

June 1973 Instrument handbook, review ... —

July 1972 Instruction-set alteration. **2100A** Computer **12908A**

June 1969 Integrated-circuit logic probe ... **10525A**

Jan. 1972 Integrated-circuit logic testers (clip. probe. comparator) **10529A**

Sept. 1972 Integrated circuit logic troubleshooting **10525T, 10526T, 7123A/B, Opt. 035**

Aug. 1971 Integrator, strip chart **8500A**

Apr. 1972 Interactive graphics console

Oct. 1972 Interface, instruments. ASCII compatible —

Mar. 1970 Interface, multichannel-analyzer/calculator **10619A**

Aug. 1970 Interferometer, laser **5525A**

Dec. 1971 Interferometer, remote **10565A/5525B**

July **1971** Irradiance measurements **8330A/8334A**

J

K

Mar. 1970 Keyboard for computing counter **5375A**

Sept. 1972 Kits, digital troubleshooting **5011T, 5015T**

Jan. 1972 Kits, IC troubleshooting **5010A**

L

May 1973 Laboratory Notebook: Thin-film attenuators, oscilloscope —

Nov. 1968 Language, computer: BASIC —

Mar. 1969 Language for logic module test programs **{AuTest}** **2060A**

June 1973 **Laser/calculator** system for encoder plate checkout **5526A/9820A**

Aug. 1970 Laser interferometer **5525A**

Aug. 1970 Length measurements, by laser interferometer **5525A**

July 1970 Light-emitting-diode displays, alphanumeric **5082–7100**

Feb. 1969 Light-emitting-diode displays, numeric **5082–7000**

Mar. 1969 Limit testing **3450A**

Aug. 1971 Linear-motor recorder **7123A/B, 7143A/B, 9866A**

May 1973 Line printer, 80-column —

Jan. 1969 Line stretcher —

Oct. 1968 Logarithmic converter **7562A**

Jan. 1972 Logic comparator **10529A**

Mar. 1969 Logic module test system **2060A**

July 1971 Logic module test system **28035A/9500**

June 1969 Logic probe **10525A**

Sept. 1972 Logic pulser and probe **10525T, 10526T**

Jan. 1972 Logic testers [clip. probe. comparator) **10529A**

Aug. 1971 Low-cost counter system **5300A**

Aug. 1972 Low-cost DVM system **3470**

July 1973 Low-cost function generator **3311A**

Oct. 1972 Low-frequency network analyzer **3570A**

July 1969 Low-frequency network analysis **675A/676A**

Sept. 1971 Low-frequency spectrum analyzer **8556A**

June 1972 Low-frequency spectrum analysis, digital **5451A**

Mar. 1971 Low-resistance measurements .. **4328A**

Feb. 1969 Luminance measurement —

M

Aug. 1970 Machine tool calibration by laser interferometer **5525A**

Dec. 1971 'Magic Cube.' interferometer ... **10565A/5525B**

Feb. 1971 Mathematics drill and practice program, computer-assisted instruction **2000B/C**

Mar. 1971 MCA/BASIC system **5402A**

Mar. 1971 MCA/Calculator system **5403A**

Aug. 1972 Measurement system **3470**

Mar. 1973 Measurement system, modules . **34703A, 34750A**

Aug. 1971 Measuring system, MOS/LSI ... **5300**

June 1973 Measuring system, multimeter & digital-to-analog converter modules **5306A, 5311A**

Oct. 1970 Memory, calculator **9101A**

Aug. 1970 Michelson interferometer —

Apr. 1969 Microcircuits, in spectrum analyzer **8554L/8552A**

Nov. 1970 Microcircuits, in sweeper **8620A/B**

July 1972 Microprogramming and writable control store **2100A/12908A**

Oct. 1971 Microprogramming, minicomputer **2100A**

Apr. 1973 Microwave frequency counter .. **5340A**

Nov. 1972 Microwave frequency-response measuring system **8755L**

Sept. 1972 Microwave link analyzer **3710A**

Jan. 1969 Microwave network analysis, passive components for —

Feb. 1970 Microwave network analyzer, automatic **8542A**

May 1970 Microwave power generation, solid-state **5082–0400/01**

Sept. 1972 Microwave radio communications —

June 1971 Microwave spectrometer **8460A**

Oct. 1971 Minicomputer **2100A**

Feb. 1969 Mixers, microwave hybrid hot-carrier **5082–2800**

June 1973 Mixers, Schottky diode quads .. **5082–2276/77/2830**

Nov. 1972 Modulator, on-off, microwave .. **8755L/11665A**

PART II: Subject Index (continued)

Aug. 1971 MOS/LSI measuring system 5300
 June 1971 MRR spectrometer 8460A
 Mar. 1970 Multichannel-analyzer/
 calculator interface 10619A
 Apr. 1971 Multichannel analyzer
 spectrum stabilizer 5586A
 Mar. 1971 Multichannel analyzer system .. 5402A,
 5403A, 5406B
 June 1973 **Multimeter/counter** module for
 5300 low cost measuring
 system 5306A
 Mar. 1969 Multimeter. digital 3450A
 Jan. 1971 **Multimeter**, digital 3480A/B
 Aug. 1972 Multimeter. low-cost
 plug together 3470
 Aug. 1972 Multimeter. 5½-digit, self testing 3490A
 Mar. 1971 Multiparameter analyzer system 5406B
 Aug. 1972 Multiprogrammer 6940A
 Jan. 1973 Multiprogramming computer
 system 3000A

N

Apr. 1970 Nanosecond time-interval
 measurements 5326A/B
 July 1969 Network analysis. low-frequency 675A/676A
 Jan. 1969 Network analysis. passive
 components for
 Oct. 1972 Network analyzer. automatic—
 50 Hz–13 MHz 3570A/3040A
 Apr. 1970 Network analyzer. digital
 readout for 5326B
 Dec. 1969 Network analyzer.
 100 kHz–110 MHz 8407A
 June 1969 Neutron star theory of pulsars .. —
 July 1969 Noise analysis. audio-frequency. 80501A
 Nov. 1969 Noise analysis by correlation ... 3721A
 June 1970 Noise analysis by Fourier
 analyzer 5450A
 Oct. 1969 Noise analyzer. transistor 4470A
 Dec. 1970 Noise measurements. telephone
 systems 3556A
 July 1969 Noise monitoring at airports ... 80500A
 Oct. 1969 Noise sources in transistors ... 4470A
 Dec. 1971 Noncontacting measurements. by
 laser interferometer 5525B
 Mar. 1971 Nuclear analyzer systems 5402A,
 5403A, 5406B
 Apr. 1971 Nuclear spectrum stabilizer 5586A
 Feb. 1969 Numeric indicators. solid-state . 5082–7000

O

Mar. 1971 On-line data reduction for
 nuclear analyzers 5402A, 5403A,
 5406B
 July 1969 One-port device measurements . 675A/676A
 July 1971 Optical power measurements ... 8330A/8334A
 Sept. 1972 Oscillator. communications
 sweep 8605A
 Dec. 1968 Oscillator. sine 204C
 Dec. 1968 Oscillator. **sine/square** 209A
 May 1970 Oscillators. microwave
 solid-state 5082–0400/01
 May 1973 Oscillographic ink recorder 7402A
 Feb. 1972 Oscillographic thermal recorder. 7414A, 7454A

Jan. 1970 Oscilloscope. dc-VHF 183A
 Apr. 1970 Oscilloscope photography 195A
 Nov. 1968 Oscilloscope plug-in, 100-MHz .. 1802A
 May 1971 Oscilloscopes. portable 1700A, 1701A
 Nov. 1971 Oscilloscope. sampling. 1 GHz .. 1810A/180A
 Jan. 1970 Oscilloscope time base.
 high-speed 1840A/183A

P

May 1973 Page printer 9866A
 Oct. 1969 Patient monitoring arrhythmia
 monitor 7822A
 Mar. 1972 **Patient-monitoring, ECG**
 telemetry 78100/78101A
 Mar. 1970 Patient safety —
 Mar. 1969 Peltier heating and cooling 3450A
 Oct. 1972 **Phase/amplitude** measurements.
 automatic. 50 Hz–13 MHz 3570A/3040A
 May 1972 Phase measurements 3575A
 Nov. 1971 Phase-noise measurements 5360 System
 May 1971 Physical constants —
 Dec. 1971 Pitch measurements. by laser
 interferometer 5525B
 Dec. 1968 Plotter. X-Y 7004A
 Aug. 1971 Plug-on measuring system 5300A
 Aug. 1972 Plug-on measurement system ... 3470A
 June 1972 Pocket calculator. scientific HP-35
 May 1973 Pocket calculator. business HP-80
 Sept. 1969 Power supplies. dc constant
 current CCB Series
 (6177/81/86B)
 Aug. 1973 Power supplies. constant
 current digital 6140A, 6145A
 Feb. 1973 Power supplies. modular.
 computer-aided design 62000 Series
 Nov. 1972 Power supply. high precision/
 high current 6104A/05A/
 14A/15A
 Oct. 1970 Printer. calculator 9120A
 May 1973 Printer. 80-column thermal 9866A
 Nov. 1969 Probability analysis 3721A
 Nov. 1968 Probe. 220 MHz. high impedance 1123A
 Dec. 1969 Probe. 500 MHz. high impedance 1120A
 Nov. 1971 Probe. impedance. (0.5–110 MHz) 11655A/
 8407A
 June 1969 Probe. logic 10525A
 Sept. 1972 Probe. logic 10525T
 Sept. 1968 Programmable calculator 9100A
 Dec. 1972 Programmable calculators 9800 Series
 Models
 10. 20. 30
 May 1969 Programmable counter 5360A
 Aug. 1973 Programmable current
 sources. digital 6140A, 6145A
 Sept. 1970 Programmable data coupler 2570A
 Sept. 1969 Programmable dc current
 sources CCB Series
 (6177/81/86B)
 Apr. 1969 programmable pulse generator . 1900 System
 Dec. 1970 Programmer. computing counter 5376A
 Aug. 1972 Programming multiple devices
 from one computer I/O
 channel 6940A
 Mar. 1970 Protecting hospitalized patients
 from electrical hazard —

Apr. 1971 Pseudorandom binary sequence generation 1930A
 Dec. 1970 Psophometer 3556A
 June 1969 Pulsar observations —
 Apr. 1969 Pulse generator 1900 System
 May 1969 Pulse-width measurements 5360A
 Apr. 1970 Pulse-width measurements, e.g. at half amplitude 5326B
 May 1969 Pulsed carrier frequency measurements 5360A, 5323A
 Sept. 1972 Pulser, logic 10526T

Q

Sept. 1970 Q Measurements 4342A
 Nov. 1969 Quantizer, equivalent gain of ... 3721A

R

July 1971 Radiant flux measurements 8330A/8334A
 May 1969 Ratio measurements, frequency . 5360A
 Mar. 1969 Ratio measurements, voltage ... 3450A
 Jan. 1971 Ratio measurements, voltage ... 3480A/B
 Oct. 1971 Read-only memory, minicomputer 2100A
 May 1973 Recorder, oscillographic, ink ... 7402A
 Feb. 1972 Recorder, oscillographic, thermal 7414A, 7454A
 Dec. 1968 Recorder, X-Y 7004A
 Oct. 1968 Recorders, graphic —
 Aug. 1971 Recorders, linear-motor 7123A/B, 7143A/B
 Oct. 1968 Recorders, strip-chart, electric writing 7100, 680
 Jan. 1969 Recording digital data for computer analysis 2547A
 Apr. 1970 Recording oscilloscope traces .. 195A
 Feb. 1969 Rectifiers, hybrid hot-carrier ... 5082-2800
 Jan. 1969 Reflection-transmission test unit 8743A
 Dec. 1971 Remote interferometer 10565A/5525B
 Mar. 1971 Resistance measurements 4328A, 4329A
 Dec. 1971 Resolution extender, electronic, for laser interferometer K02-5525A
 Apr. 1970 Rise-time measurements, e.g., 10 to 90% 5326B
 Jan. 1969 Rotary air line, coaxial 11606A
 Jan. 1969 Rotary joint, coaxial 11588A
 June 1971 Rotational microwave spectrometer 8460A

S

Jan. 1969 S-parameter test set 8745A
 May 1971 S-parameter test set 8746B
 Jan. 1969 S-parameters, transistor —
 Mar. 1970 Safety, patient —
 Apr. 1973 Sampler, thin-film hybrid 5340A
 Nov. 1971 Sampling oscilloscope, 1 GHz ... 1810A/180A
 Feb. 1969 Schottky-barrier diodes, hybrid. 5082-2800
 June 1973 Schottky-barrier diodes and quads —
 Apr. 1971 Scrambling digital messages 1930A
 Aug. 1972 Sensor-based data acquisition systems 9600A, E, F, G
 Nov. 1971 Short-term-stability measurements 5360 System

Nov. 1969 Signal averaging [recovery] by correlator 3721A
 Nov. 1969 Signal detection by correlation . 3721A
 Dec. 1971 Signal generator, synthesized .. 8660A/B
 Mar. 1973 Signal generator, synthesized 1-1300 MHz 86602A
 Feb. 1973 Signal generator, VHF, 0.5-512 MHz 8640A/B
 July 1972 Signal sources, synthesizers, 0.1 Hz-13 MHz 3320A/B, 3330A/B
 Dec. 1968 Sine wave oscillator 204C, 209A
 Apr. 1972 Slew-rate limiting, importance of 78100A
 Aug. 1971 Snap-on measuring system 5300
 Aug. 1972 Snap-on measurement system .. 3470
 Feb. 1969 Solid-state displays 5082-7000
 July 1970 Solid-state displays 5082-7100
 May 1970 Solid-state microwave oscillator 5082-0400/01
 Nov. 1970 Solid-state microwave sweeper. 8620A
 July 1969 Sound analysis, audio-frequency 80501A
 July 1969 Sound level meter, impulse 8052A
 Nov. 1971 Spectral density of oscillators, measurement of 5360 System
 July 1973 Spectrometer, ESCA 5950A
 Mar. 1971 Spectrometer, gamma-ray 5402A, 5403A, 5406B
 June 1971 Spectrometer, rotational microwave [MRR] 8460A
 June 1972 Spectrum analysis, digital low-frequency 5451A
 Aug. 1972 Spectrum analysis, digital low-frequency, correction —
 Dec. 1968 Spectrum analysis, low-frequency 3590A
 July 1969 Spectrum analyzer, audio real-time 8054A
 Feb. 1972 Spectrum analyzer, automatic .. 8580A
 Apr. 1969 Spectrum analyzer, 0.5-1250 MHz 8554L/8552A
 July 1970 Spectrum analyzer, 100 kHz-110 MHz 8552B/8553B
 Sept. 1971 Spectrum analyzers, 20 Hz to 40 GHz —
 Nov. 1972 Spectrum display for correlator. 3720A
 June 1970 Spectrum measurements by Fourier analyzer 5450A
 June 1972 Spectrum measurements by Fourier analyzer 5451A
 Apr. 1971 Spectrum stabilizer for multichannel analyzers 5586A
 Nov. 1969 Speech research by correlation . 3721A
 Dec. 1968 Square/sine oscillator 209A
 Nov. 1971 Stability measurements 5360 System
 Apr. 1971 Stabilizer, nuclear spectrum ... 5586A
 June 1972 Stack, operational HP-35
 Feb. 1971 Stanford mathematics program, computer-assisted instruction. —
 July 1970 Strobed displays 5082-7100
 Aug. 1971 Strip-chart recorders 7123A/B, 7143A/B
 Oct. 1968 Strip-chart recorders 7100, 680
 Feb. 1972 Strip-chart recorders 7414A, 7754A
 May 1971 Stripline device characterization 8746B
 July 1969 Stuttgart Airport noise monitoring system 80500A
 Nov. 1970 Sweep oscillator 8620A

PART II: Subject Index (continued)

Sept. 1972 Sweep oscillator,
communications oriented 8605A

July 1972 Swept frequency, incremental,
0.1 Hz-13 MHz 3330A/B

Nov. 1972 Swept frequency response,
0.1-18 GHz 8755L

Jan. 1969 Switch 8761A/B

Jan. 1969 Switches, printed-circuit, slide .. —

Jan. 1969 Swivel adapter, coaxial 11588A

Dec. 1971 Synthesized signal generator ... 8660A/B

Mar. 1973 Synthesizer, 1-1300 MHz 86602A

Jan. 1972 Synthesizer, well modulated 86632A

July 1972 Synthesizers, 0.1 Hz-13 MHz ... 3320A/B,
3330A/B

Apr. 1972 System console 8500A

Aug. 1972 System in a box 2440A

Nov. 1969 System identification by
correlation 3721A

Aug. 1969 Systems, automatic test —

Dec. 1970 Systems, computing counter 5376A

T

Apr. 1972 Telemetry, ECG 78100/78101A

Dec. 1970 Telephone system measurements 3556A

Dec. 1972 Terminal, programmable 9830A

July 1971 Testing, automatic, functional
digital 28035A/9500

May 1973 Thermal printer, 80-column 9866A

Feb. 1972 Thermal recorders 7414A, 7754A

Mar. 1969 Thermal transfer, automatic 3450A

May 1973 Thin-film attenuators
(Laboratory Notebook)

Jan. 1970 Time-base plug-in, 250 MHz
oscilloscope 1840A/183A

Sept. 1969 Time-domain reflectometry 1815A/B

June 1969 Time-domain reflectometry 4920A

Mar. 1972 Time-domain reflectometry,
narrow band 1580A

Apr. 1970 Time-interval averaging 5326A/B

May 1969 Time-interval measurements ... 5360A/5379A

Aug. 1971 Time-interval module 5304A

Oct. 1971 Time-scale change, UTC

Nov. 1971 Time-scale change, UTC

Sept. 1970 Time-shared-computer
instrumentation coupler 2570A

Apr. 1970 **Timer/counter** 5326A

Apr. 1970 **Timer/Counter/DVM** 5326B

July 1970 Tracking generator 8443A

Sept. 1971 Tracking generator 8444A

Aug. 1973 Transceiver test system 9540

Jan. 1969 Transistor bias supply 8717A

Jan. 1969 Transistor fixtures 11600A,
11602A

Jan. 1969 Transistor measurements —

Oct. 1969 Transistor noise analyzer 4470A

Jan. 1970 Transistors, high-frequency
monolithic arrays

Apr. 1970 Trigger levels, **counter/DVM**
measures own 5326B

Apr. 1970 Trigger lights, on counter 5326A/B

Sept. 1972 Troubleshooting, digital 10526T

Mar. 1972 True-rms ac voltage
measurement 3403A

Jan. 1971 True-rms ac voltage
measurement 3484A

U

Apr. 1970 Universal **counter/timer** 5326A/B

Aug. 1971 Universal counter 5302A

Jan. 1969 Universal extension, coaxial 11604A

Sept. 1972 Up-converter for microwave
link analyzer 8605A

Oct. 1971 UTC time-scale change —

Nov. 1971 UTC time-scale change —

V

Apr. 1969 Variable rise and fall pulse
generator 1900 System

Nov. 1971 Vector impedance (0.5-110 MHz) 11655A/
8407A

Nov. 1969 Velocity measurement by
correlation 3721A

July 1969 Vibration analysis 8054A

June 1970 Vibration analysis 5450A

June 1972 Vibration **analysis** 5451A

Nov. 1969 Vibration **analysis** by
correlation 3721A

Dec. 1971 Vibration measurements, with
laser interferometer 5525B

Jan. 1973 Virtual-memory computer 3000A

Nov. 1968 Voltage probe, 220 MHz 1123A

Dec. 1969 Voltage probe, 500 MHz 1120A

Nov. 1972 Voltage precision, high
current output 6104A/05A/
14A/15A

Mar. 1969 Voltmeter, multifunction,
digital 3450A

Jan. 1971 Voltmeter, multifunction,
digital 3480A

Aug. 1972 Voltmeter, multifunction,
digital 3490A

June 1973 Voltmeter, plug-on for 5300A ... 5306A

Mar. 1973 Voltmeter, plug-ons 34703A/
34750A

Aug. 1972 Voltmeter, plug-together
multifunction 3470

Aug. 1972 Voltmeter, self-testing digital ... 3490A

Mar. 1972 Voltmeter, true-rms 3403A

W

Dec. 1968 Wave analyzer, low-frequency .. 3590A

Apr. 1969 Word generator 1925A

July 1972 Writable control store 2100A/
12908A

X

Sept. 1969 X-Y plotter 9125A

Dec. 1968 X-Y recorder 7004A

Y

Dec. 1971 Yaw measurements, by laser
interferometer 5525B

Apr. 1969 YIG-tuned solid-state oscillator . 8554L/8552A

Z

Aug. 1970 Zeeman splitting, in
two-frequency laser 5525A

PART III: Model Number Index

Model	Instrument	Month/Year	Model	Instrument	Month/Year
HP-35	Pocket Calculator. Scientific ...	June 1972	3320A/B	Frequency Synthesizer	July 1972
HP-80	Pocket Calculator. Business	May 1973	3330A/B	Automatic Synthesizer	July 1972
183A	Oscilloscope	Jan. 1970	3403A/B	True RMS Voltmeter	Mar. 1972
195A	Oscilloscope Camera	Apr. 1970	3450A	Digital Multifunction Meter	Mar. 1969
204C	Oscillator	Dec. 1968	3470	Measurement Systems	Aug. 1972
209A	Sine/Square Wave Oscillator ...	Dec. 1968			Mar. 1973
236A-H10	Telephone Test Oscillator	Dec. 1970	3480A/B	Digital Multifunction Meter	Jan. 1971
675A/676A	0.01-32 MHz Network Analyzer .	July 1969	3490A	Digital Multimeter	Aug. 1972
680	Strip Chart Recorder	Oct. 1968	3556A	Psophometer	Dec. 1970
745A/746A	AC Calibrator/High Voltage Amplifier	Apr. 1970	3570A	Network Analyzer	Oct. 1972
778D	Dual Directional Coupler	Jan. 1969	3575A	Gain-Phase Meter	May 1972
779D	Directional Coupler	Jan. 1969	3590A	Wave Analyzer	Dec. 1968
1106A, 1108A	20 ps and 60 ps Tunnel Diode Mounts	Sept. 1969	3592A	Auxiliary Plug-in	Dec. 1968
1120A	500-MHz Probe	Dec. 1969	3593A	Sweeping Local Oscillator	Dec. 1968
1123A	220-MHz Probe	Nov. 1968	3594A	Sweeping Local Oscillator	Dec. 1968
1310A, 1311A	Graphic Displays	Apr. 1972	3710A/02B	Microwave Link Analyzer	Sept. 1972
1580A	Narrowband Time Domain Reflectometer	Mar. 1972	3720A	Spectrum Display	Nov. 1972
1700 Series	Portable Oscilloscopes	May 1971	3721A	Correlator	Nov. 1969
1802A	100-MHz Dual Channel Vertical Amplifier	Nov. 1968			Apr. 1971
1810A	1-GHz Sampling Oscilloscope Plug-In	Nov. 1971	3730A	MLA Down Converter	Sept. 1972
1815A/B	TDR/Sampler Plug-in	Sept. 1969	4270A	Automatic Capacitance Bridge ..	May 1970
1817A, 1816A	28 ps and 90 ps Samplers	Sept. 1969	4328A	Milliohmmer	Mar. 1971
1830A	250-MHz Oscilloscope Amplifier	Jan. 1970	4329A	High Resistance Meter	Mar. 1971
1840A	High-Speed Oscilloscope Time Base	Jan. 1970	4342A	Q Meter	Sept. 1970
1900	Pulse System	Apr. 1969	4350A/B	High Capacitance Meters	Mar. 1972
1900A, 1901A	Mainframe	Apr. 1969	4470A	Transistor Noise Analyzer	Oct. 1969
1905A	Rate Generator	Apr. 1969	4920A	Cable Fault Analyzer	June 1969
1908A, 1910A	Delay Generators	Apr. 1969	5010A	IC Troubleshooting Kit	Jan. 1972
1915A, 1917A	Variable Transition Time Outputs	Apr. 1969	5011T	Digital Troubleshooting Kit	Sept. 1972
1920A	350 ps Transition Time Output .	Apr. 1969	5015T	Digital Troubleshooting Kit	Sept. 1972
1925A	Word Generator	Apr. 1969	5065A	Rubidium Standard	Apr. 1971
1930A	PRBS Generator	Apr. 1971	5082-0400/01	IMPATT Diodes	May 1970
2000B/C	Time-shared system for computer-assisted instruction.	Feb. 1971	5082-2276/ 7712830	Schottky-Diode Quads	June 1973
2060A	Digital Logic Module Test System	Mar. 1969	5082-2709/ 16/68/69	Beam-lead Schottky-Barrier Diodes	June 1973
2100A	Computer	Oct. 1971	5082-2800 Series	Hybrid Hot-Carrier Diodes	Feb. 1969
2440A	Analog-Digital Interface	July 1972	5082-7000/01	Numeric Indicator	Feb. 1969
2547A	Coupler	Aug. 1972	5082-7100/02	Alphanumeric Indicator	July 1970
2570A	Coupler/Controller	Jan. 1969	5300	Measuring System	Aug. 1971
3000A	Computer System	Sept. 1970			June 1973
3000A	Computer System	Jan. 1973	5300A	Measuring System Mainframe ..	Aug. 1971
3040A/ 41A/42A	Network Analyzer Systems	Oct. 1972	5301A	10-MHz Counter Module	Aug. 1971
3310A	Function Generator (0.0005 Hz-5 MHz)	June 1969	5302A	50-MHz Universal Counter Module	Aug. 1971
3311A	Function Generator (0.1 Hz-1 MHz)	July 1973			Aug. 1971
			5303A	500-MHz Counter Module	Aug. 1971
			5304A	Timer/Counter Module	Aug. 1971
			5306A	Multimeter/Counter Module	June 1973
			5310A	Battery Pack	Aug. 1971
			5311A	Digital-to-Analog Converter	June 1973
			5323A	Automatic Counter	May 1969
			5326A/B	Timer/Counter	Apr. 1970
			5340A	Microwave Frequency Counter .	Apr. 1973
			5360A	Computing Counter	May 1969
			5360A/5376A	Computing Counter System	Dec. 1970
					Nov. 1971

PART III: Model Number Index (continued)

5375A	Computing Counter Keyboard ..	Mar. 1970	8554L	Spectrum Analyzer RF Section.	
5376A	Programmer	Dec. 1970		0.5-1250 MHz	Apr. 1969
5379A	Time Interval Plug-in	May 1969	8555A	Spectrum Analyzer RF Section.	
5401A/B	Multichannel Analyzer			Microwave	Sept. 1971
	(applications of)	June 1969			Feb. 1972
		Apr. 1971	8556A	Spectrum Analyzer LF Section.	
5401B/9100	Multichannel analyzer with			0.02-300 kHz	Sept. 1971
	calculator	Mar. 1971	8580A	Automatic Spectrum Analyzer ..	Feb. 1972
5402A	MCA/BASIC system	Mar. 1971	8605A	Communications Sweep	
5403A	MCA/Calculator system	Mar. 1971		Oscillator	Sept. 1972
5406B	Multiparameter analyzer system.	Mar. 1971	8620A	Solid-State Microwave Sweeper.	Nov. 1970
5450A	Fourier Analyzer	June 1970	8632A	Heterodyne Module	Nov. 1970
5451A	Fourier Analyzer	June 1972	8640A/B	Signal Generator	Feb. 1973
5470A	Fast Fourier Processor	June 1972	8660A/B	Synthesized Signal Generator ..	Dec. 1971
5471A	Fast Fourier Transform				Jan. 1972
	arithmetic unit	June 1972			Mar. 1973
5480A	Signal Analyzer (application of).	June 1969	8717A	Transistor Bias Supply	Jan. 1969
5525A	Laser Interferometer	Aug. 1970	8743A	Reflection-Transmission Test	
5525B	Laser Interferometer	Dec. 1971		Unit	Jan. 1969
5526A	Laser Interferometer				Feb. 1970
	(application of)	June 1973	8745A	S-Parameter Test Set	Jan. 1969
5586A	Nuclear spectrum stabilizer	Apr. 1971	8746B	S-Parameter Test Set	May 1971
5690A	Catheterization Lab System	Jan. 1972	8755L	Frequency Response Test Set	
5700A	Gas Chromatograph	Mar. 1973		(0.1-18 GHz)	Nov. 1972
5950A	ESCA Spectrometer	July 1973	8761A/B	Coaxial Switch	Jan. 1969
6104A/05A/ 14A/15A	Precision DC Power Supplies ..	Nov. 1972	9100A	Calculator	Sept. 1968
					Sept. 1969
6140A/6145A	Digital Current Source	Aug. 1973	9100A/B	Calculator	Oct. 1970
6177B/ 81B/86B	DC Current Sources	Sept. 1969	9101A	Extended Memory	Oct. 1970
			9107A	Digitizer	June 1971
6940A	Multiprogrammer	Aug. 1972	9120A	Calculator Printer	Oct. 1970
7004A	X-Y Recorder	Dec. 1968	9125A	Calculator X-Y Plotter	Sept. 1969
7100 Series	Strip Chart Recorders	Oct. 1968	9160A	Marked Card Reader	Oct. 1970
7123A/B	10-inch Strip Chart Recorder ...	Aug. 1971	9500 Series	Automatic Test System	Aug. 1969
Opt. 035	Electronic Chart Integrator	Aug. 1971			July 1971
7143A/B	5-inch Strip Chart Recorder	Aug. 1971	9540	Transceiver Test System	Aug. 1973
7402A	Oscillographic Recorder	May 1973	9550	Instrument Calibration System .	Apr. 1973
7414A	Four-channel Recorder	Feb. 1972	9600 A.	Data Acquisition and	
7562A	Logarithmic Converter	Oct. 1968	E, F, G	Control Systems	Aug. 1972
7754A	Four-channel Recorder	Feb. 1972	9800 Series	Programmable Calculators	Dec. 1972
7822A	Cardiac Arrhythmia Monitor ...	Oct. 1969	9810A	Programmable Calculator	Dec. 1972
7900A, 7901A	Disc Drive	May 1972	9820A	Programmable Calculator	Dec. 1972
8052A	Impulse Sound Level Meter	July 1969			June 1973
8054A	Real-Time Audio Spectrum		9830A	Programmable Calculator	Dec. 1972
	Analyzer	July 1969	9866A	Printer	May 1973
8330A/8334A	Radiant Flux Meter System	July 1971	10525A	Logic Probe	June 1969
8405A	Vector Voltmeter (application of]	Jan. 1969	10525T	Logic Probe	Sept. 1972
8407A	Network Analyzer. 0.1-110 MHz.	Dec. 1969	10526T	Logic Pulsar	Sept. 1972
		Nov. 1971	10529A	Logic Comparator	Jan. 1972
8410A	Network Analyzer		10565A	Remote Interferometer	Dec. 1971
	(applications of)	Jan. 1969	10619A	Analyzer/Calculator Interface ..	Mar. 1970
8443A	Tracking Generator/Counter,	May 1971	10667A	Calculator interface for	
	0.1-110 MHz	July 1970		multichannel analyzer	Mar. 1971
8444A	Tracking Generator/Counter,		11588A	Coaxial Rotary Joint	
	0.5-1300 MHz	Sept. 1971		(swivel adapter)	Jan. 1969
8445A	Preselector	Sept. 1971	11599A	Quick Connect Adapter	Jan. 1969
8460A	MRR Spectrometer	June 1971	11600A	Transistor Fixtures	Jan. 1969
8500A	System Console	Apr. 1972	11602A	Transistor Fixtures	Jan. 1969
8542A	Automatic Network Analyzer ...	Feb. 1970	11604A	Universal Extension	Jan. 1969
8552A	Spectrum Analyzer IF Section ..	Apr. 1969	11605A	Flexible Arm	Jan. 1969
8552B	Spectrum Analyzer IF Section ..	July 1970	11606A	Coaxial Rotary Air Line	Jan. 1969
		Feb. 1972	11608A	Transistor Fixture	May 1971
8553B	Spectrum Analyzer RF Section,	July 1970	11655A	Impedance Probe	Nov. 1971
	0.1-110 MHz	Feb. 1972	11664A	Detector	Nov. 1972
			11665A	Modulator	Nov. 1972

12908A	Writable Control Store for		78100A/	ECG Telemetry System	Apr. 1972
	2100A Computer	July 1972	78101A/		
16008A	Resistivity Cell	Mar. 1971	80500A	Aircraft Noise Monitoring	
28035A	Digital Test Subsystem for			System	July 1969
	9500 Series	July 1971	80501A	Audio Data Processor	July 1969
33300 Series	Attenuators	Apr. 1971	86601A	Synthesizer 0.01–110 MHz	
34702A	Multimeter plug-on	Aug. 1972		RF Section	Dec. 1971
34703A	DCV/DCA/ Ω Meter plug-on	Mar. 1973	86602A	Synthesizer 0.1–1.3 GHz	
34740A	4%-Digit DVM Display Section .	Aug. 1972		RF Section	Mar. 1973
34750A	5½-Digit DVM Display Section .	Mar. 1973	86632A	Synthesizer AM/FM Modulation	
62000 Series	Modular Power Supplies	Feb. 1973		Section	Jan. 1972

ALTHOUGH MANY BACK ISSUES ARE OUT OF PRINT, REQUESTS WILL
BE FILLED WHENEVER POSSIBLE.

If you receive this index stapled into an issue of the Hewlett-Packard Journal, you may remove it from the issue by opening the staples. Reclose the staples after removing the index.

Hewlett-Packard Company, 1501 Page Mill
Road, Palo Alto, California 94304

HEWLETT-PACKARD JOURNAL

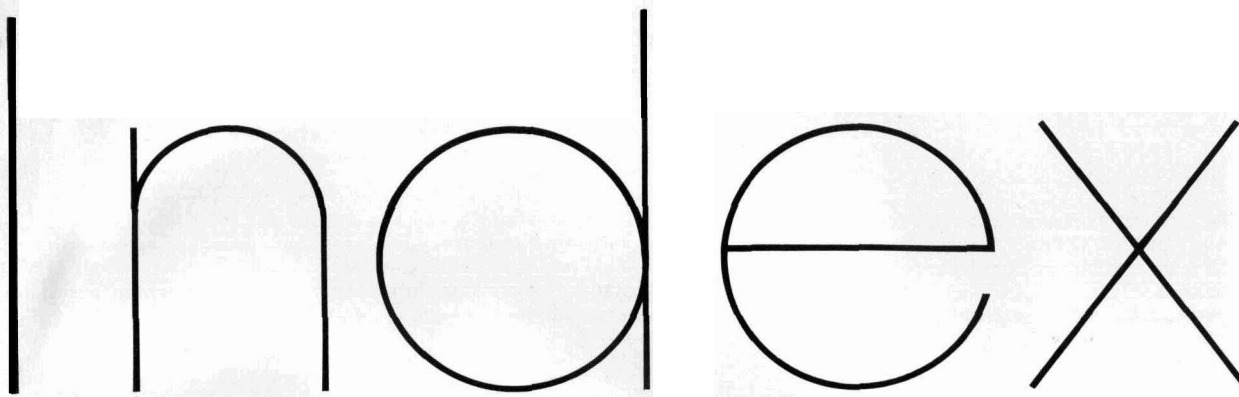
Technical Information from the Laboratories of
Hewlett-Packard Company

Hewlett-Packard S.A., CH-1217 Meyrin 2
Geneva, Switzerland

Yokagawa-Hewlett-Packard Ltd., Shibuya-Ku
Tokyo 151 Japan

Editorial Director • Howard L. Roberts
Managing Editor • Richard P. Dolan
Contributing Editors • Ross H. Snyder,
Laurence D. Shergalis

Art Director, Photographer • Arvid A. Danielson
Art Assistant • Sue M. Reinheimer
Administrative Services • Anne S. LoPresti
European Production Manager • Kurt Hungerbühler



HEWLETT-PACKARD JOURNAL

Volumes 25, 26, 27, 28

September 1973 through August 1977

Hewlett-Packard Company, 1501 Page Mill Road, Palo Alto, California 94304 U.S.A.

Hewlett-Packard Central Mailing Department, Van Heuven Goedhartlaan 121,

Amstelveen-1134 The Netherlands

Yokogawa-Hewlett-Packard Ltd., Shibuya-Ku, Tokyo 151 Japan

PART 1: Chronological Index

September 1973

- A Low-Frequency Spectrum Analyzer that Makes Slow Sweeps Practical, William L. Hale and Gerald E. Weibel
- A High-Performance Beam Tube for Cesium Beam Frequency Standards, Ronald C. Hyatt, Louis F. **Mueller** and Terry N. Osterdock

October 1973

- The Logic Analyzer: A New Kind of Instrument for **Observing** Logic Signals, Robin Adler, Mark Baker, and Howard D. **Marshall**
- A Pulse Generator for Today's Digital Circuits, **Reinhard** Falke and Horst Link

November 1973

- A Self-contained, Hand-Held Digital Multimeter—A New Concept in Instrument Utility, Robert L. Dudley and Virgil L. Laing
- A Portable High-Resolution Counter for Low-Frequency Measurements, Kenneth J. **MacLeod**
- A High-Speed Pattern Generator and an Error Detector for Testing Digital Systems, Thomas **Crawford**, James Robertson, John **Stinson**, and Ivan Young

December 1973

- A Go-Anywhere Strip-Chart Recorder That Has Laboratory Accuracy, Howard L. **Merrill** and Rick A. Warp
- Telecommunication Cable Fault Location from the Test Desk, Thomas R. Gmharn and James M. Hood
- High-Efficiency Modular Power Supplies Using Switching Regulators, B. William Dudley and Robert D. Peck

January 1974

- The Logic State Analyzer—Displaying Complex **Digital** Processes in Understandable Form, William A. Farnbach
- A Laser Interferometer that Measures Straightness of Travel, Richard R. **Baldwin**, Barbara E. Grote, and David A. Harland

February 1974

- Practical **Oscilloscopes** at Workaday Prices, Hans-Gunter Hohmann

- Laboratory Notebook—Sharp Cut-Off Filters for That Awkward UHF Band
- A Data Error Analyzer for Tracking Down Problems in Data Communications, Jeffrey R. **Duerr**

March 1974

- An Automatic, Precision 1-MHz Digital LCR Meter. Kohichi Maeda
- A Moderately Priced 20-MHz Pulse Generator with 16-Volt Output, **Günter** Krauss and Rainer **Eggert**
- Laboratory Notebook—Logarithmic Amplifier Accepts 100 dB Signal Range
- Versatile VHF Signal Generator Stresses Low Cost and Portability, Robert R. Hay

April 1974

- Mass Memory System Broadens Calculator Applications, **Havyn** E. Bradley and Chris J. Christopher
- An Easily Calibrated, Versatile Platinum Resistance Thermometer, Tony E. Foster
- Speeding the Complex Calculations Required for Assessing Left Ventricular Function of the Heart, Peter Dikernan and Chi-ning Liu

May 1974

- The "Personal Computer": A Fully Programmable Pocket Calculator, Chung C. Tung
- Programming the Personal Computer, R. Kent Stockwell
- Designing a Tiny Magnetic Card Reader, Robert B. **Taggart**
- Testing the **HP-65** Logic Board, Kenneth W. Peterson
- Economical Precision Step Attenuators for RF and Microwaves, George R. Kirkpatrick and David R. Veteran

June 1974

- A New Generation in Frequency and Time Measurements, James L. Sorden
- The **5345A** Processor: An Example of State Machine Design, Ronald E. Felsenstein
- Time **Interval** Averaging: Theory, Problems, and Solutions, David C. Chu

Part 1: Chronological Index (continued)

Third Input Channel Increases Counter Versatility, Arthur S. *Muto*
A Completely Automatic 4-GHz Heterodyne Frequency Converter, *Ali Bologlu*
Interface Bus Expands Instrument Utility, Bryce E. *Jeppsen* and Steven E. *Schultz*

July 1974

Powerful Data Base Management System for Small Computers, Richard E. *McIntire*
Quality Frequency Counters Designed for Minimum Cost, Lewis W. Masters and Warren J. *O'Buch*
A Versatile Bipolar Power Supply/Amplifier for Lab and Systems Use, Santo *Pecchio*
An Automatic Exposure Control for a Lab-Bench X-Ray Camera, John L. *Brewster*

August 1974

Measuring Analog Parameters of Voiceband Data Channels, Noel E. *Damon*
Transient Measurements, Paul G. *Winninghoff*
The 4940A Sine Wave Transmitter, Richard T. *Lee*
Nonlinear Distortion Measurements, Donald A. *Dmsch*
Envelope Delay Distortion Measurements, Richard G. *Fowles* and Johann J. *Heinzl*
Peak-to-Average Ratio Measurements, Erhard *Ketelsen*
Microwave Integrated Circuits Solve a Transmission Problem in Educational TV, James A. *Hall*, Douglas J. *Mellor*, Richard D. *Pering*, and Arthur *Fong*

September 1974

A 250-MHz Pulse Generator with Transition Times Variable to Less than 1 ns, Gert *Globas*, Joel *Zellmer*, and Eldon *Cornish*
Optimizing the Design of a High-Performance Oscilloscope, P. Kent *Hardage*, S. Raymond *Kushnir*, and Thomas J. *Zamborelli*
A Thin-Film/Semiconductor Thermocouple for Microwave Power Measurements, *Weldon H. Jackson*
Microelectronics Enhances Thermocouple Power Measurements, John *Lamy*

October 1974

A User-Oriented Family of Minicomputers, John M. *Stedman*
Microprogrammable Central Processor Adapts Easily to Special User Needs, Philip *Gordon* and Jacob R. *Jacobs*
Testing the 21MX Processor, Cleaborn C. *Riggins* and Richard L. *Hammons*
All Semiconductor Memory Selected for New Minicomputer Series, Robert J. *Frankenberg*
The Million-Word Minicomputer Main Memory, *John S. Elward*
A Computer Power System for Severe Operating Conditions, Richard C. *Van Brunt*

November 1974

Distributed Computer Systems, Shane *Dickey*
A Quality Course in Digital Electronics, James A. *Marrocco* and Barry *Bronson*
Simplified Data-Transmission Channel Measurements, David H. *Guest*

December 1974

Improved Accuracy and Convenience in Oscilloscope Timing and Voltage Measurements, Walter A. *Fischer* and William B. *Risley*
Laboratory Notebook—An Active Loop-Holding Device
A Supersystem for BASIC Timesharing, Nealon *Mack* and Leonard E. *Shar*
Deriving and Reporting Chromatograph Data with a Microprocessor-Controlled Integrator, Andrew *Stefanski*
Adapting a Calculator Microprocessor to Instrumentation, Hal *Barracough*

January 1975

The Hewlett-Packard Interface Bus: Current Perspectives, Donald C. *Loughry*
Putting Together Instrumentation Systems at Minimum Cost, David W. *Ricci* and Peter S. *Stone*
Filling in the Gaps—Modular Accessories for Instrument Systems, Steven E. *Schultz* and Charles R. *Trimble*
A Quiet, HP-IB-Compatible Printer that Listens to Both ASCII and

BCD, *Hans-Jürg Nadig*
A Multifunction Scanner for Calculator-Based Data Acquisition Systems, David L. *Wolpert*
Minimal Cost Measuring Instruments for Systems Use, Gary D. *Sasaki* and Lawrence P. *Johnson*
Visualizing Interface Bus Activity, Harold E. *Dietrich*

February 1975

High-Sensitivity X-Y Recorder Has Few Input Restrictions, Donald W. *Huff*, Daniel E. *Johnson*, and John M. *Wade*
Digital High-Capacitance Measurements to One Farad, Kunihiisa *Osada* and Jun-ichi *Suehiro*
Computer Performance Improvement by Measurement and Microprogramming, David C. *Snyder*

March 1975

A High-Performance 2-to-18-GHz Sweeper, Paul R. *Hernday* and Carl J. *Enlow*
Broadband Swept Network Measurements, John J. *Dupre* and Cyril J. *Yansouni*
The Dual Function Generator: A Source of a Wide Variety of Test Signals, Ronald J. *Riedel* and Dan D. *Danielson*

April 1975

A Portable 1100-MHz Frequency Counter, Hans J. *Jekat*
Big Timer/Counter Capability in a Portable Package, Kenneth J. *MacLeod*
A High-Current Power Supply for Systems that Use 5-Volt IC Logic Extensively, Mauro *DiFrancesco*
Band-Selectable Fourier Analysis, H. *Webber McKinney*

May 1975

An Understandable Test Set for Making Basic Measurements on Telephone Lines, Michael B. *Aken* and David K. *Deaver*
A Computer System for Analog Measurements on Voiceband Data Channels, Stephen G. *Cline*, Robert H. *Perdriau*, and Roger F. *Rauskolb*
A Precision Spectrum Analyzer for the 10-Hz-to-13-MHz Range, Jerry W. *Daniels* and Robert L. *Atchley*

June 1975

Cost-Effective, Reliable CRT Terminal Is First of a Family, James A. *Doub*
A Functionally Modular Logic System for a CRT Terminal, Arthur B. *Lane*
A High-Resolution Raster Scan Display, Jean-Claude *Roy*
Firmware for a Microprocessor-Controlled CRT Terminal, Thomas F. *Waitman*
A Microprocessor-Scanned Keyboard, Otakar *Blazek*
Packaging for Function, Manufacturability, and Service, Robert B. *Pierce*

July 1975

Modularity Means Maximum Effectiveness in Medium-Cost Universal Counter, James F. *Horner* and Bruce S. *Corya*
Using a Modular Universal Counter, Alfred *Langguth* and William D. *Jackson*
Synthesized Signal Generator Operation to 2.6 GHz with Wideband Phase Modulation, James A. *Hall* and Young Dae *Kim*
Applications of a Phase-Modulated Signal Generator, James A. *Hall*

August 1975

The Logic State Analyzer, a Viewing Port for the Data Domain, Charles T. *Small* and Justin S. *Morrill, Jr.*
Unravelling Problems in the Design of Microprocessor-Based Systems, William E. *Wagner*
A Multichannel Word Generator for Testing Digital Components and Systems, Arndt *Pannach* and Wolfgang *Kappler*

September 1975

ATLAS: A Unit-Under-Test Oriented Language for Automatic Test Systems, William R. *Finch* and Robert B. *Grady*
Automatic 4.5-GHz Counter Provides 1-Hz Resolution, *Ali Bologlu*
A New Instrument Enclosure with Greater Convenience, Better Accessibility, and High Attenuation of RF Interference, Allen F. *Inhelder*

Part 1: Chronological Index (continued)

October 1975

Digital Power Meter Offers **Improved** Accuracy, Hands-Off Operation, Systems compatibility, Allen P. Edwards
Very-Low-Level Microwave Power Measurements, Ronald E. Pratt
Active Probes Improve Precision of Time Interval Measurements, Robert W. **Offermann**, Steven E. Schultz, and Charles R. Trimble
Flow Control in High-Pressure Liquid Chromatography, Helge Schrenker

November 1975

Three New Pocket Calculators: Smaller, Less Costly, More Powerful, Randall B. Neff and Lynn **Tillman**
Inside the New Pocket Calculators, Michael J. Cook, George Fichter, and Richard Whicker
Packaging the New Pocket Calculators, Thomas A. Hender
A New Microwave Link Analyzer for Communications Systems Carrying Up to 2700 Telephone Channels, Svend Christensen and Ian **Matthews**

December 1975

A 100-MHz Analog Oscilloscope for Digital Measurements, **Allan I. Best**
An Oscilloscope Vertical-Channel Amplifier that Combines Monolithic, Thick-Film Hybrid, and Discrete Technologies, Joe K. Millard
A Real-Time Operating System with Multi-Terminal and **Batch/Spool** Capabilities, George A. **Anzinger** and Adele M. Gadol
Real-Time Executive System Manages Large Memories, Linda W. Averett

January 1976

An Automatic Selective Level Measuring Set for Multichannel Communications Systems, J. Reid Urquhart
Designing Precision into a Selective Level Measuring Set, Hugh P. Walker
Designing a Quiet Frequency Synthesizer for a Selective Level Measuring Set, John H. Coster
Making the Most of Micromprocessor Control, David G. Dack
Real-Time Multi-User BASIC, James T. Schultz

February 1976

Laser Transducer Systems for High-Accuracy Machine Positioning, Andre F. **Rudé** and Michael J. Ward
Electronics for the Laser Transducer, William E. Olson and Robert B. Smith
Using a Programmable Calculator as a Data Communications Terminal, James E. Carlson and Ronald L. Stickle

March 1976

A Cesium Beam Frequency Reference for Severe Environments, Charles E. **Heger**, Ronald C. Hyatt, and Gary A. Seavey
Calibrated FM, Crystal Stability, and Counter Resolution for a Low-Cost Signal Generator, Robert R. Collison and Ronald E. Kmetovicz
A **50-Mbit/s** Pattern Generator and Error Detector for Evaluating Digital Communications System Performance, Ivan R. Young, Robert **Pearson**, and Peter M. Scott

April 1976

Electronic Total Station Speeds Survey Operations, Michael L. Bullock and Richard E. Warren
Designing Efficiency into a Digital Processor for an Analytical Instrument, John S. Poole and Len Bilen

May 1976

New CRT Terminal Has Magnetic Tape Storage for Expanded Capability, Robert G. Nordman, Richard L. Smith, and Louis A. **Witkin**
Mini Data Cartridge: A Convincing Alternative for Low-Cost, Removable Storage, Alan J. Richards
Laboratory Notebook—A Logarithmic Counter

June 1976

Third-Generation Programmable Calculator Has Computer-Like Capabilities, Donald E. Morris, Chris J. Christopher, Geoffrey W. Chance, and Dick B. Barney
High-Performance NMOS LSI Processor, William D. Eads and

David S. Maitland

Character Impact Printer Offers Maximum Printing Flexibility, Robert B. Bump and Gary R. Paulson
Mid-Range Calculator Delivers More Power at Lower Cost, Douglas M. Clifford, F. Timothy Hickenlooper, and A. Craig Mortensen

July 1976

A Direct-Reading Network Analyzer for the **500-kHz-to-1.3-GHz** Frequency Range, Hugo Vifian
Processing Wide-Range Network Analyzer Signals for Analog and Digital Display, William S. **Lawson** and David D. Sharrit
A Precision RF Source and Down-Converter for the Model **8505A** Network Analyzer, Rolf Dalichow and Daniel R. **Harkins**

August 1976

Series **II** General-Purpose Computer Systems: Designed for Improved Throughput and Reliability, Leonard E. Shar
An All-Semiconductor Memory with Fault Detection, Correction, and Logging, Elio A. Toschi and Tak Watanabe
HP 3000 Series II Performance Measurement, Clifford A. **Jager**

September 1976

An Easier-to-Use Variable-Persistence/Storage Oscilloscope with Brighter, Sharper Traces, Van Harrison
An Automatic Wide-Range Digital LCR Meter, **Satoru** Hashimoto and Toshio Tamamura

October 1976

Continuous, Non-Invasive Measurements of Arterial Blood Oxygen Levels, Edwin B. Merrick and Thomas J. Hayes
Laboratory Notebook—A Signal-Level Reference
An Accurate Low-Noise Discriminator
Card-Programmable Digital IC Tester Simplifies Incoming Inspection, Eric M. Ingman

November 1976

A Pair of Program-Compatible Personal Programmable Calculators, Peter D. Dickinson and William E. **Egbert**
Portable Scientific Calculator Has Built-In Printer, Bernard E. Musch and Robert B. Taggart
The New Accuracy: Making $2^3 = 8$, Dennis W. Harms
High-Power Solid-State **5.9-12.4-GHz** Sweepers, Louis J. Kuhlman, Jr.
The **GaAs** FET in Microwave Instrumentation, Patrick H. Wang

December 1976

Current Tracer: A New Way to Find Low-Impedance Logic-Circuit Faults, John F. **Beckwith**
New Logic Probe Troubleshoots Many Logic Families, Robert C. Quenelle
A Multifunction, Multifamily Logic Pulser, Barry Bronson and Anthony Y. Chan
Probe Family Packaging, David E. Gordon
Multifamily Logic Clip Shows All Pin States Simultaneously, **Durward** Pdebe
Interfacing a Parallel-Mode Logic State Analyzer to Serial Data, Justin S. **Morrill, Jr.**

January 1977

A Logic State Analyzer for Microprocessor Systems, Jeffrey H. Smith
Firmware for a Microprocessor Analyzer, Thomas A. **Saponas**
A Versatile, Semiautomatic Fetal Monitor for Non-Technical Users, Erich **Courtin**, Walter Ruchsay, Peter **Salfeld**, and Heinz Sommer

February 1977

A Fast-Reading, High-Resolution Voltmeter that Calibrates Itself Automatically, Albert **Gookin**
A High-Speed System Voltmeter for Time-Related Measurements, John E. **McDermid**, James B. Vyduna, and Joseph M. Gorin
Contemporary Design Practice in General-Purpose Digital **Multimeters**, Roy D. Barker, Virgil L. Laing, Joe E. Marriott, and H. Mac Juneau

March 1977

A New Series of Small Computer Systems, Lee Johnson

Part 1: Chronological Index (continued)

HP 1000 Operating System is Enhanced Real-Time Executive, David L. Snow *and* Kathleen F. Hahn
 Development and Application of Microprograms in a Real-Time Environment, Harris Dean Drake
E-Series Doubles 21MX Performance, Cleaborn C. Riggins
How the E-Series Performance Was Achieved, Scott J. Stallard
 Microprogrammed Features of the 21MX E-Series, Thomas A. Lane
 OPNODE: Interactive Linear Circuit Design and Optimization, William A. Rytand
 Viewpoints — John Moll on HP's Integrated Circuit Technology
 April 1977
 Silicon-on-Sapphire Technology Produces High-Speed Single-Chip Processor, Bert E. Forbes
 CMOSISOS, David Farrington
 Miniature Oscilloscope Probes for Measurements in Crowded Circuits, Carolyn M. Finch, Marvin F. Estes, and Lawrence A. Gammill
 A Small, Solid-State Alphanumeric Display, John T. Uebbing, Peter B. Ashkin, and Jack L. Hines
 May 1977
 Signature Analysis: A New Digital Field Service Method, Robert A. Frohwerk
 Easy-to-Use Signature Analyzer Accurately Troubleshoots Complex Logic Circuits, Anthony Y. Chan
 Signature Analysis — Concepts, Examples, and Guidelines, Hans J. Nadig
 Personal Calculator Algorithms I: Square Roots, William E. Egbert
 June 1977
 A Wide-Ranging Power Supply of Compact Dimensions, Paul W.

Bailey, John W. Hyde, and William T. Walker
 Remote Programming of Power Supplies Through the HP Interface Bus, Emery Salesky and Kent Luehman
 Coaxial Components and Accessories for Broadband Operation to 26.5 GHz, George R. Kirkpatrick, Ronald E. Pratt, and Donald R. Chambers
 Personal Calculator Algorithms II: Trigonometric Functions, William E. Egbert

July 1977
 Small Computer System Supports Large-Scale Multi-User APL, Kenneth A. Van Bree
 APL Data: **Virtual Workspaces** and Shared Storage, Grant J. Munsey
 APLGOL: Structured Programming Facilities for APL, Ronald L. Johnston
 APL/3000 Summary
 A Dynamic **Incremental** Compiler for an Interpretive Language, Eric J. Van Dyke
 A **Controller** for the Dynamic Compiler, Kenneth A. Van Bree
 Extended Control Functions for Interactive Debugging, Kenneth A. Van Bree
 CRT Terminal Provides both APL and ASCII Operation, Warren W. Leong

August 1977
 New 50-Megabyte Disc Drive: High Performance and Reliability from High-Technology Design, Herbert P. Sticker
 An Individualized **Pulse/Word** Generator System for Sub-nanosecond Testing, Christian Hentschel, Gunter Riebesell, Joel Zellmer, and Volker Eberle

PART 2: Subject Index

Month/Year	Subject A	Model		Model	
Apr. 1974	Accounting system, desk-top computer	9880A	Apr. 1974	Angio analyzer	5693A
Sept. 1973	Adaptive sweep in a spectrum analyzer	3580A	July 1977	APL (a programming language)	3000
May 1977	Algorithm, personal calculator, square root	—	July 1977	APLGOL	3000
June 1977	Algorithms, personal calculator, trigonometric	—	July 1975	Applications for phase-modulated generator	86634A, 86635A
June 1974	Algorithmic state machine design	5345A	July 1975	Armed measurements, counter/timer/DVM	5328A*
Apr. 1977	Alphanumeric displays, solid-state	HDSP-2000	Sept. 1975	ATLAS (abbreviated test language for avionics systems)	9510D, option 100 9500D, option 180
Nov. 1975	AM-to-PM conversion, detection of	3790A	Sept. 1973	Atomic frequency standard (cesium), high-performance	5061A, option 004
July 1974	Amplifier/power supply	6825A/ 6A/7A	Mar. 1976	Atomic frequency reference (cesium)	5062C
Aug. 1974	Amplitude distortion, telephone measurements	4940A	May 1975	Attenuator, classical problem	3571A/ 3044A/ 3045A*
May 1975	Amplitude distortion, telephone measurements	5453A	May 1974	Attenuators, coaxial, step, dc-18 GHz	8495A/B 8496A/B
Nov. 1974	Amplitude/delay distortion	3770A	June 1977	Attenuators, coaxial, step, dc-26.5 GHz	8495D/K
Feb. 1974	Analyzer, data transmission errors	1645A	Feb. 1977	Autocalibration in a digital voltmeter	3455A*
Aug. 1975	Analyzer, digital pattern recognition	1620A	July 1974	Automatic exposure control for X-rays	43805
May 1977	Analyzer, digital signature	5004A	June 1974	Automatic 4-GHz frequency converter plug-in	5354A
Oct. 1973	Analyzer, logic (serial)	5000A	Sept. 1975	Automatic test system programming language (ATLAS)	9510D, option 100 9500D, option 180
Jan. 1974	Analyzer, logic state (parallel)	1601L	June 1974	Averaging, time interval, theory	5345A*
Aug. 1975	Analyzer, logic state	1600S	B		
Jan. 1977	Analyzer, logic state	1611A	Apr. 1975	Band-selectable Fourier analysis	5451B
Nov. 1975	Analyzer, microwave link	3790A	Jan. 1976	BASIC, real-time multi-user	92101A
July 1976	Analyzer, network, 0.5-1300 MHz	8505A*	Dec. 1974	BASIC13000 timeshared computer	
Sept. 1973	Analyzer, spectrum, 5 Hz to 50 kHz, portable	3580A			
May 1975	Analyzer, spectrum, 10 Hz to 13 MHz	3571A/ 3044A/3045A*			
May 1975	Analyzer, transmission parameter	5453A			
Aug. 1975	Analyzing microprocessor-based systems	1600S			
Apr. 1976	Angle measurements, surveying	3810A			

*Asterisk indicates instruments compatible with the HP interface bus (HP-IB).

PART 2: Subject Index (continued)

	system	MPET/3000	Mar. 1976	Communications, digital, error detection	3780A
Dec. 1973	Battery-powered strip-chart recorder	7155A			
Dec. 1975	Batch/spool capability for RTE systems	960019700	May 1975	Communications, telephone test set	3551A, 3552A
July 1977	Beating (in APL/3000)	3000			
July 1974	Bipolar power supply/amplifier	6825A-27A	Nov. 1973	Communications test data generator I error detector	3760A/3761A
Nov. 1973	Bit-error rate detector (150 MHz)	3761A			
Mar. 1976	Bit-error rate detector (50 MHz)	3780A	Nov. 1975	Communications test, microwave link analyzer	3790A
Feb. 1974	Bit-error rate detector, terminal-to-terminal	1645A	Jan. 1976	Communications test, selective level measurements	3745A*
Oct. 1976	Blood oxygen levels, measurement of	47201A			
Nov. 1974	Breadboard, digital (logic lab)	5035T	Aug. 1974	Communications test, transmission impairment measuring set	4940A
Aug. 1975	Breakpoint register (pattern analyzer)	1620A	May 1975	Communications test, transmission parameter analyzer	5453A
Feb. 1975	Breakpoint register, use of	—	July 1977	Compiler, dynamic, APL	3000
	Bus, HP interface. See HP-IB.		Mar. 1977	Computer, increased performance	21MX
Nov. 1975	Business calculator, pocket	HP-22			E-Series*
Apr. 1974	Business software for desktop computer system	9880A	Feb. 1975	Computer performance improvement	—
			Aug. 1976	Computer performance measurements	3000 Series II
			Apr. 1975	Computer power supply, switching regulated	62605M
				Computers. Also see Desktop Computers	
Sept. 1975	Cabinets, system II	—	Oct. 1974	Computers	21MX*
July 1974	Cabinet X-ray system	43805	Mar. 1977	Computers	21MX-E*
Dec. 1973	Cable fault locator, test desk	4913A	Dec. 1974	Computer system, BASIC13000 timeshared	MPET13000
May 1977	Calculator algorithms, square root	—	May 1975	Computer system for voiceband data channel measurements	5453A
June 1977	Calculator algorithms, trigonometric	—	Mar. 1977	Computer systems	1000*
Nov. 1975	Calculator, business, pocket	HP-22	Aug. 1976	Computer systems	3000 Series II
June 1974	Calculator/counter systems, HP interface bus	5345A*	Nov. 1974	Computer systems, distributed	9700 Series
Apr. 1974	Calculator mass memory system	9880A	July 1977	Computer terminal, APL	2641A
May 1974	Calculator, pocket, programmable	HP-65	June 1975	Computer terminal, CRT	2640A
Nov. 1975	Calculator, pocket, programmable	HP-25	May 1976	Computer terminal, CRT with tape storage	2644A
Nov. 1976	Calculator, pocket, programmable	HP-67	June 1977	Connectors, coaxial APC-3.5	—
Nov. 1976	Calculators, portable, printing	HP-91, HP-97	June 1974	Counter systems, HP interface bus	5345A*
Nov. 1976	Calculators, portable, programmable	HP-97	June 1974	Counter, general-purpose	5345A*
	Calculator, programmable, desktop. See desktop computers.		Nov. 1973	Counter, high-resolution, module for 5300 system	5307A
Nov. 1975	Calculator, pocket, scientific	HP-21	May 1976	Counter, logarithmic (lab notebook)	—
Mar. 1974	Capacitance measurements	4271A*	July 1974	Counter, low-cost	5381A-82A
Sept. 1976	Capacitance measurements	4261A*	Apr. 1975	Counter, 1100-MHz	5305A
Feb. 1975	Capacitance meter	4282A	Sept. 1975	Counter, microwave frequency	5341A*
Jan. 1977	Cardiotocograph	8030A	June 1974	Counter plug-in, automatic frequency converter	5354A
May 1976	Cartridge, data, mini	—	June 1974	Counter plug-in, third input channel	5353A
Mar. 1976	Cesium beam frequency reference for severe environments	5062C	Mar. 1975	Counter/synchronizer for signal generator	8655A
Sept. 1973	Cesium beam frequency standard, high performance beam tube for	5061A, option 004	July 1975	Counter/timer/DVM, universal	5328A*
June 1974	Channel C plug-in for 5345A counter	5353A	Apr. 1975	Counter/timer, 75-MHz universal	5308A
Apr. 1976	Chromatography, gas, microprocessor control	5840A	June 1975	CRT terminal	2640A
Oct. 1975	Chromatography, liquid, flow control	1010B	July 1977	CRT terminal, APL	2641A
Dec. 1974	Chromatography, reporting integrator for	3380A	May 1976	CRT terminal with dual tape drives	2644A
Apr. 1974	Cineangiogram analysis	5693A	Dec. 1976	Current tracer	547A
Mar. 1977	Circuit design, computer-aided (OPNODE)	92817A	May 1977	Cyclic redundancy check codes (CRC), used in signature analysis	5004A
Apr. 1977	Clip for oscilloscope probing of IC's	10024A			
Dec. 1976	Clip, logic	548A			
Jan. 1975	Clock for systems using HP interface bus	59309A*			
June 1977	Coaxial components				
	attenuators, dc-26.5 GHz	8495D/K	Jan. 1975	Data acquisition systems, programmable	3050B*
	detectors, 0.01-26.5 GHz	8473C/33330C	Feb. 1977	Data acquisition systems, programmable	3052A*
	sliding load, 2-26.5 GHz	911C	July 1974	Data base management software (IMAGE)	24376B, 32215A, 16A
May 1974	Coaxial step attenuators, dc-18 GHz	8495A/B, 8496A/B			
Jan. 1975	Code converter, ASCII to parallel	59301A*	May 1976	Data cartridge, mini	—
Feb. 1975	Common driver circuit for guarded input	7047A	May 1975	Data channel measurements, analog, voiceband	5453A
Feb. 1976	Communications, data, desktop computer	9830A	Aug. 1974	Data channel measurements, analog, voiceband	4940A
Feb. 1974	Communications, digital, error detection	1645A	Nov. 1974	Data channel measurements, analog,	

PART 2: Subject Index (continued)

	voiceband	3770A	May 1974	Edgeline transmission in attenuators	8495A/B 8496A/B
Feb. 1974	Data channel measurements, error analyzer	1645A	Aug. 1974	Educational TV receiver	—
Feb. 1976	Data communications, desk-top computer	9830A	June 1974	Electronic counter, general-purpose	5345A*
Dec. 1975	Data domain, analog oscilloscope	1740A	Sept. 1975	Enclosures, electronic instrument	—
Nov. 1973	Data generator, 150 MHz PRBS	3760A	Aug. 1974	Envelope delay distortion measurements	4940A
Feb. 1977	Data logging systems, programmable	3051A*	Nov. 1974	Envelope delay distortion measurements	3770A
Aug. 1974	Delay distortion, Bell System	4940A	May 1975	Envelope delay distortion measurements	5453A
Nov. 1974	Delay distortion, CCITT recommendation	3770A	Feb. 1974	Error analyzer, data transmissions	1645A
Aug. 1977	Delay generator, 100-ps steps	8092A	Aug. 1976	Error-correcting memory	3000 Series II
June 1976	Desktop computers	9815A/9825A*	May 1977	Error detection by transition counting and signature analysis	5004A
Feb. 1976	Desktop computer, data communications	9830A	Nov. 1973	Error detector, communications test (150 MHz)	3761A
June 1977	Detector, 0.01-26.5 GHz	8473C/33330C	Mar. 1976	Error detector, communications test (50 MHz)	3780A
Oct. 1976	Digital IC tester	5045A	July 1974	Exposure control for X-ray system	43805
Dec. 1976	Digital IC trouble-shooting instruments and kits (logic probe, logic pulser, logic clip, current tracer)	545A,546A 547A,548A	Feb. 1977	Extending a digital multimeter's range	3435A, 3465A/B 3476A/B
Sept. 1976	Digital LCR meter	4261A*	F		
Mar. 1974	Digital LCR meter	4271A*	Aug. 1976	Fault control memory	3000 Series II
Oct. 1973	Digital logic analyzer	5000A	Dec. 1973	Fault locator, test desk	4913A
Nov. 1974	Digital logic course	5035T	Dec. 1976	Fault (low-impedance) localization in digital logic circuits	547A
Nov. 1973	Digital multimeter, hand-held	970A	Nov. 1976	FET, GaAs for microwaves	HFET-1000
Feb. 1977	Digital multimeters, low cost	3435A,3465A/B 3476A/B	Jan. 1977	Fetal monitoring	8030A
Aug. 1975	Digital pattern analyzer for triggering	1620A	Feb. 1974	Filters, VHF coaxial (lab notebook)	—
Nov. 1973	Digital pattern generator, communications test	3760A	Oct. 1975	Flow control in liquid chromatography	1010B
Mar. 1976	Digital pattern generator, communications test	3780A	Mar. 1976	F ^M calibrated, signal generator	8654B
Feb. 1974	Digital pattern generator, communications test	1645A	Apr. 1975	Fourier analysis, band selectable	5451B
Apr. 1976	Digital processor in a gas chromatograph	5840A	Feb. 1975	Fourier analyzer	5451B
Sept. 1973	Digital storage in a spectrum analyzer	3580A	June 1974	Frequency converter plug-in	5354A
Jan. 1975	Digital-to-analog converter for HP-IB	59303A*	Sept. 1975	Frequency counter, 4.5 GHz	5341A*
June 1977	Digital-to-analog converter for HP-IB	59501A*	June 1974	Frequency counter	5345A*
May 1977	Digital troubleshooting by signature analysis	5004A	Nov. 1973	Frequency counter, high-resolution module for 5300 system	5307A
Feb. 1977	Digital voltmeter, 5½ digit, auto-calibrating	3455A*	July 1974	Frequency counters, low cost	5381A,82A
Feb. 1977	Digital voltmeter, fast reading, systems	3437A*	Apr. 1975	Frequency counter, 1100-MHz	5305A
July 1975	Digital voltmeters, options, for universal counter	5328A*	June 1974	Frequency measurements, reciprocal	5345A*
Aug. 1975	Digital word generator, 8-bit parallel	8016A*	June 1974	Frequency profile measurements, pulsed RF	5345A*
Aug. 1977	Digital word generator, serial, 300 MHz	8084A/ 8080A 7920A 9880A	Mar. 1976	Frequency reference, cesium beam	5062C
Aug. 1977	Disc drive, 50 megabytes	7920A	Aug. 1974	Frequency shift measurements	4940A
Apr. 1974	Disc drive for desktop computer	9880A	Sept. 1973	Frequency standard, high-performance cesium beam	5061A, option 004
Oct. 1976	Discriminator (lab notebook)	—	Mar. 1975	Function generator, dual source	3312A
June 1975	Display, CRT terminal	2640A	May 1975	Function generator, low distortion	3551A/3552A
May 1976	Display, CRT terminal, magnetic tape	2644A	G		
Jan. 1975	Display, numeric for HP interface bus	59303A*	Nov. 1976	GaAs FET amplifier, chips	HFET 1000
Apr. 1977	Displays, small solid-state alphanumeric	HDSP-2000	Aug. 1974	Gain hits measurements	4940A
July 1977	Display station, APL	2641A	Apr. 1976	Gas chromatograph, digitally-controlled	5840A
Mar. 1974	Dissipation factor measurements	4271A*	Dec. 1974	Gas chromatograph reporting integrator	3380A
Sept. 1976	Dissipation factor measurements	4261A*	Nov. 1973	Generator, digital, 150 MHz	3760A
Feb. 1975	Dissipation factor measurements	4282A	July 1975	Generator, signal, phase modulated	86634A, 86635A
Apr. 1976	Distance measurements, surveying	3810A	July 1975	Generator, signal, synthesized 2.6 GHz	86603A
May 1975	Distortion measurements, amplitude	5453A	Generators, pulse; see pulse generators		
Aug. 1974	Distortion measurements, amplitude, phase, envelope delay, nonlinear	4940A	Generators, word; see word generators		
Nov. 1974	Distributed computer systems	9700 Series	Oct. 1975	Gradient programming, liquid chromatography	1010B, 8505A*
July 1977	Dragalong (in APL/3000)	3000	July 1976	Group delay detector	8505A*
Aug. 1974	Dropouts	4940A	Aug. 1974	Group delay measurements	4940A
E			Nov. 1974	Group delay measurements	3770A
Oct. 1976	Ear oximeter	47201A			

PART 2: Subject Index (continued)

May 1975	Group delay measurements	5453A	Dec. 1976	Logic-state analyzers, serial-to-parallel conversion	10254A
	H		Dec. 1975	Logic test, analog oscilloscope	1740A
Jan. 1977	Heart-rate monitoring, fetal	8030A	Aug. 1975	Logic trigger	1230A
Feb. 1975	High capacitance meter	4282A	May 1977	Logic troubleshooting by signature analysis	5004A
Sept. 1973	High-performance cesium beam tube	5061A, option 004	Aug. 1974	Loss measurements	4940A
Nov. 1973	High-resolution counter module for 5300 system	5307A	May 1975	Loss measurements	5453A
Feb. 1975	High-sensitivity X-Y recorder	7047A	Nov. 1974	Loss measurements	3770A
June 1976	HPL, desktop computer language	9825A*	May 1975	Loss measurements	3551A/3552A
Jan. 1975	HP-IB analyzer	59401A*	July 1974	Low-cost counters	5381A-82A
Jan. 1975	HP-IB, current status	—	Feb. 1977	Low-cost digital multimeters	3435A, 3465A/B,3476A/B
June 1974	HP-IB, counter systems	5345A*	Nov. 1973	Low-frequency measurements with high-resolution counter	5307A
Jan. 1975	HP-IB systems	—	Sept. 1973	Low-frequency spectrum analyzer	3580A
	HP interface bus, see HP-IB			M	
Apr. 1976	Horizontal distance and angle measurements	3810A	Feb. 1976	Machine positioning laser transducer	5501A*
	I		Jan. 1974	Machine tool calibration	5526A
Oct. 1976	IC tester, digital	5045A	May 1976	Magnetic tape cartridge, mini	—
Oct. 1976	IC testing, economic considerations	5045A	June 1976	Magnetic tape minicartridge, in desk-top computer	9815A/ 9825A*
Dec. 1976	IC troubleshooting instruments and kits	545A,546A, 547A,548A	May 1976	Magnetic tape storage, in CRT terminal	2644A
July 1974	IMAGE	24376B, 32215A-16A	Apr. 1974	Mass memory for desk-top computer	9880A
June 1976	Impact printer	9871A	Feb. 1977	Math functions in a digital voltmeter	3455A*
Aug. 1974	Impulse noise measurements	4940A	Oct. 1974	Memory, semiconductor	21MX*
May 1975	Impulse noise measurements	5453A	Sept. 1976	Meter, LCR digital	4261A*
Oct. 1976	Incoming inspection, digital ICs	5045A	Aug. 1977	MFM code, for magnetic recording	7920A
Mar. 1974	Inductance measurement	4271A*	Aug. 1974	Microcircuit TV receiver	—
Sept. 1976	Inductance measurement	4261A*	Apr. 1977	Micro-CPU chip (MC ²), CMOS/SOS	—
July 1974	Information management software	24376B, 32215A-16A	Aug. 1975	Microprocessors, logic-state analysis of	1600A
Mar. 1977	Integrated-circuit technology, viewpoint	—	Jan. 1977	Microprocessors, logic-state analyzer for	1611A
Dec. 1974	Integrator, chromatograph, reporting	3380A	Oct. 1974	Microprogrammable central processor	21MX
Jan. 1975	Interface, ASCII, for 5300-series instruments	5312A*	Mar. 1977	Microprogramming aids	1000*
	Interface bus, see HP-IB.		Feb. 1975	Microprogramming, performance improvement by	—
Jan. 1974	Interferometer, straightness	5526A, option 30	May 1974	Microwave attenuators, dc-18 GHz	8495A/B-96A/B
Apr. 1974	Inventory control system, desk-top computer	9880A	June 1977	Microwave attenuators, dc-26.5 GHz	8495D/K
	J		Sept. 1975	Microwave counter, 4.5 GHz	5341A*
	K		Nov. 1975	Microwave link analyzer, 140-MHz IF	3790A
	L		Nov. 1976	Microwave sweep oscillators, 5.9-12.4 GHz	86242C, 86250C
July 1977	Language, computer, APL	3000 Series II	July 1975	Modulator, phase, for signal generator	86634A, 86635A
Sept. 1975	Language, computer, ATLAS	9500D,9510D	Dec. 1974	MPET/3000, multiprogramming executive for timesharing	32010A
June 1976	Language, desktop computer, HPL	9825A*	Aug. 1976	Multilingual computer systems	3000 Series II
Jan. 1974	Laser interferometer, straightness	5526A, option 30	Nov. 1973	Multimeter, digital, hand-held	970A
Feb. 1976	Laser transducer system	5501A*	Feb. 1977	Multimeters, digital, low cost	3435A, 3465A/B,3476A/B
Sept. 1976	LCR meter, automatic, digital	4261A*	Feb. 1977	Multimeters, extending the ranges of	—
Mar. 1974	LCR meter, 1 MHz automatic, digital	4271A*	Jan. 1976	Multiplexed communications test, frequency division	3745A*
Apr. 1977	LED displays, alphanumeric	HDSP-2000	Aug. 1976	Multiprogramming computer systems	3000 Series II
July 1976	Line stretcher, electronic	8505A*	Jan. 1976	Multi-user real-time BASIC	—
Oct. 1975	Liquid chromatography, flow control	1010B		N	
June 1977	Load, sliding, 2-26.5 GHz	911C	July 1976	Network analyzer, 0.5-1300 MHz	8505A*
May 1976	Logarithmic counter (lab notebook)	—	Nov. 1974	Networks, computer	9700 Series
Oct. 1973	Logic analyzer	5000A	Mar. 1975	Network measurements, 2-18 GHz	—
Dec. 1976	Logic clip, multifamily	548A	June 1976	NMOS LSI processor	9825A*
Nov. 1974	Logic lab	5035T	Mar. 1974	Noise, types, in signal generators	8654A
Dec. 1976	Logic probe, multifamily	545A	Aug. 1974	Noise measurements, telephone	4940A
Dec. 1976	Logic pulser, multifamily	548A	May 1975	Noise measurements, telephone	5453A
Aug. 1975	Logic state analyzer	1600S	Aug. 1974	Nonlinear distortion measurements	4940A
Jan. 1974	Logic state analyzer	1601L	May 1975	Nonlinear distortion measurements	5453A
Jan. 1977	Logic state analyzer for microprocessors	1611A	Nov. 1975	Nonlinear distortion measurements on microwave links	3790A
				O	
			Dec. 1975	Operating systems, real-time	92001A,

PART 2: Subject Index (continued)

		(RTE-II, RTE-III)	92060A				
Mar.	1977	OPNODE	92817A	Mar.	1976	Pseudorandom binary sequences (50 MHz) for testing digital communications	3780A
Mar.	1977	Optimization, circuit, computer aided	92817A	Nov.	1973	Pseudorandom binary sequences, (150 MHz) for testing digital communications	3790A
Nov.	1976	Oscillators, sweep, 5.9-12.4 GHz	86242C, 86250C	June	1974	Pulsed RF frequency measurements	5345A*
Mar.	1975	Oscillator, sweep, 2-18 GHz	86290A	Mar.	1974	Pulse generator, 20 MHz, counted burst	8011A
Dec.	1975	Oscilloscope, 100 MHz	1740A	Oct.	1973	Pulse generator, 50 MHz, 16V, counted burst	8015A
Sept.	1974	Oscilloscope, 275 MHz	1720A	Aug.	1977	Pulse generator, 1 GHz	8080-Series
Dec.	1974	Oscilloscope, dual-delayed sweep, microprocessor-controlled, numeric display	1722A	Aug.	1977	Pulse generator, dual-output with 1/2 frequency	8092A/8080A
Apr.	1977	Oscilloscope probes, miniature	10017A et al.	Sept.	1974	Pulse generator, variable risetime to 1 ns	8082A
Feb.	1974	Oscilloscopes, low-cost, dc-15 MHz	1220A/1221A			Q	
Aug.	1975	Oscilloscope triggering on digital events	102501 1230A/1620A	July	1974	QUERY	24376B, 82215A-6A
Oct.	1973	Oscilloscope, used with logic analyzer	5000A			R	
Dec.	1975	Oscilloscope, used with logic-state analyzer	1740A	Jan.	1974	Ray-trace program	—
Sept.	1976	Oscilloscope, variable persistence/ storage	1741A	Jan.	1976	Real-time BASIC	92101A
Oct.	1976	Oximeter	47201A	Mar.	1977	Real-time executive operating system	1000*
Oct.	1976	Oxygen levels in blood, measurement of	47201A	Nov.	1974	Real-time executive systems, in distributed networks	9700 Series
		P		Dec.	1975	Real-time executive systems, RTE-II, RTE-III	92001A, 92060A
Nov.	1973	PCM systems, error detection	3760A/3761A	Dec.	1973	Recorder, strip-chart, portable	7155A
Mar.	1976	PCM systems, error detection	3780A	Feb.	1975	Recorder, X-Y, high-sensitivity	7047A
Aug.	1974	Peak-to-average ratio measurements on voiceband data channels	4940A	Jan.	1975	Relay actuator for HP interface bus	59306A*
Aug.	1974	Phase distortion measurements	4940A	Mar.	1974	Resistance measurements	4271A*
May	1975	Phase distortion measurements		Mar.	1975	RF plug-in, 2-18 GHz	86290A
Aug.	1974	Phase hits measurements		Dec.	1975	RTE-II real-time executive system	92001A
Aug.	1974	Phase jitter measurements		Dec.	1975	RTE-III real-time executive system for large memories	92060A
May	1975	Phase jitter measurements				S	
July	1975	Phase-modulated signal generator plug-in; also, applications for	86634A, 86635A	Nov.	1974	Satellite computer systems	9601, 9610
June	1974	Plug-in, automatic frequency converter	5354A	Aug.	1974	Satellite-relayed TV	—
June	1974	Plug-in, channel C	5353A	Jan.	1975	Scanner for calculator-based systems	3495A*
Nov.	1975	Pocket calculator, business	HP-22	Jan.	1975	Scanner option for printer	5150A*
May	1974	Pocket calculator, card programmable	HP-65	Jan.	1976	Selective level measuring set	3745A*
Nov.	1976	Pocket calculator, card programmable	HP-67	Dec.	1976	Serial-to-parallel conversion for logic-state display	10254A
Nov.	1975	Pocket calculator, key programmable	HP-25	May	1977	Servicing digital equipment by signature-analysis circuits	5004A
Nov.	1975	Pocket calculator, scientific	HP-21	Mar.	1974	Signal generator, 10-520 MHz	8654A
Nov.	1976	Portable calculators	HP-91, HP-97	Mar.	1976	Signal generator, calibrated FM	8654B
Dec.	1973	Portable strip-chart recorder	7155A	Mar.	1974	Signal generator noise specifications	8654A
Sept.	1974	Power meter	435A	July	1975	Signal generator, phase modulated	86635A
Oct.	1975	Power meter, digital	436A*	Mar.	1976	Signal generator synchronizer/counter	8655A/ 8654B
Oct.	1975	Power sensor, high-sensitivity	8484A	July	1975	Signal generator, synthesized 2.6 GHz	86603A
July	1976	Power splitter, 3-way	11850A/B	Oct.	1976	Signal-level reference (lab notebook)	—
June	1977	Power supplies, 200W, wide range	6002A*	May	1977	Signature analysis	5004A
July	1974	Power supply/amplifier, bipolar	6825A-27A	Apr.	1977	Silicon-on-sapphire (SOS), CPU chip	—
June	1977	Power supply programmer (HP-IB)	59501A*	Aug.	1974	Single-frequency interference measurements	4940A
Dec.	1973	Power supplies, switching regulator, modular, 4-28V, 300 W	62600J	May	1975	Single-frequency interference measurements	5453A
Apr.	1975	Power supply, switching regulated, 5V, 500 W	62605M	June	1977	Sliding load, 2-26.5 GHz	911C
June	1976	Printer, impact	9871A	Apr.	1976	Slope distance measurements	3810A
Dec.	1974	Printer-plotter for chromatographs	3380A	July	1976	Source, RF, tracking	8505A*
Jan.	1975	Printer, thermal, for instruments	5150A*	Mar.	1977	Sparse Y matrix, in circuit analysis	92817A
Jan.	1975	Printer with clock option	5150A*	Oct.	1976	Spectrophotometry applied to blood oxygen measurement	47201A
Nov.	1976	Printing calculators	HP-91, HP-97	Sept.	1973	Spectrum analyzer, 5 Hz to 50 kHz	3580A
Apr.	1977	Probes, oscilloscope, miniature	10017A et al.	May.	1975	Spectrum analyzer, 10 Hz to 13 MHz	3571A/ 3044A/3045A*
Oct.	1975	Probes, time interval	5363A*	Dec.	1975	Spooling, in RTE systems	—
June	1976	Processor, NMOS LSI	9825A	May	1977	Square root algorithm, calculator	—
Apr.	1977	Processor, CPU, CMOS/SOS	—	June	1974	State-machine design	5345A*
May	1974	Programmable calculator, pocket-sized	HP-65				
Nov.	1976	Programmable calculator, pocket-sized	HP-67				
Nov.	1975	Programmable calculator, pocket-sized	HP-25				
June	1976	Programmable computer, desk-top	9815A/9825A*				
Oct.	1976	Programmable IC tester	5045A				
July	1977	Programming language, APL	3000				
Sept.	1975	Programming language ATLAS	9500D, 9510D				
June	1976	Programming language HPL	9825A*				
May	1977	Pseudorandom binary sequences (PRBS) for signature analysis	5004A				

PART 2: Subject Index (continued)

Sept. 1976	Storage/variable persistence oscilloscope	1741A	Apr. 1975	Timer/counter, 75-MHz universal	5308A
Jan. 1974	Straightness interferometer	5526A, option 30	Dec. 1974	Timeshared system, BASIC/3000	MPET/3000
Dec. 1973	Strip chart recorder, portable, battery-powered	7155A	Jan. 1975	Timing generator for HP interface bus	59308A*
July 1977	Structured programming, APL/3000	3000	Apr. 1976	Total station	3810A
Apr. 1976	Surveying, distance and angle measurements	3810A	Feb. 1976	Transducer, laser	5501A*
Nov. 1976	Sweep oscillators, 5.9-12.4 GHz	86242C, 86250C	Aug. 1974	Transient measurements on voiceband data channels	4940A
Mar. 1975	Sweep oscillator, 2-18 GHz	86290A	Nov. 1976	Transistor, FET GaAs microwave	HFET 1000
Jan. 1975	Switch, VHF, for HP interface bus	59307A*	Apr. 1975	Transistor process, 5-GHz	—
Apr. 1975	Switching regulated power supply, 5V, 500W	62605M	May 1977	Transition counting algorithms	5004A
Dec. 1973	Switching regulated power supplies, modular, 4-28V, 300W	62600J	Aug. 1974	Transmission impairment measuring set	4940A
June 1977	Switches, microwave, dc-26.5 GHz	33311C	May 1975	Transmission parameter analyzer	5453A
Mar. 1976	Synchronizer/counter for signal generator	8655A	Aug. 1975	Trigger probes/recognizers	102501
July 1975	Synthesized signal generator, 2.6 GHz	86603A			1230A/1620A
Nov. 1974	Systems, distributed computer	9700 Series	June 1977	Trigonometric algorithms, calculator	—
Feb. 1977	Systems voltmeter, fast reading	3437A*	May 1977	Troubleshooting logic circuits by signature analysis	5004A
T					
May 1976	Tape cartridge, mini	—	U		
Nov. 1974	Telephone data channel measurements, analog	3770A	July 1975	Universal counter/timer/DVM	5328A*
Aug. 1974	Telephone data channel measurements, analog	4940A	Apr. 1975	Universal counter/timer, 75-MHz	5308A
May 1975	Telephone data channel measurements, analog	5453A	V		
Feb. 1974	Telephone data channel measurements, error analysis	1645A	Apr. 1974	Ventricular function, analysis of cineangiograms	5693A
Dec. 1974	Telephone measurements, loop-holding device	3770A	Feb. 1977	Voltmeters, digital	3455A*, 3437A*, 3435A, 3465A/B, 3476A/B
Jan. 1976	Telephone measurements, multichannel systems	3745A*	Sept. 1976	Variable-persistence/storage oscilloscope	1741A
May 1975	Telephone measurements, transmission test	3551A/3552A	Apr. 1976	Vertical distance measurements	3810A
Aug. 1974	Television by satellite, receiver for	—	Jan. 1975	VHF switch for HP interface bus	59307A*
Feb. 1976	Terminal (calculator), data communications	9830A	Aug. 1977	Vibrations, mechanical analogy for servo system	7920A
June 1975	Terminal, computer, CRT	2640A	Mar. 1977	Viewpoints, integrated-circuit technology	—
July 1977	Terminal, CRT, APL	2641A	Aug. 1976	Virtual-memory computer systems	3000 Series II
May 1976	Terminal, CRT, with dual tape drives	2644A	July 1977	Virtual workspace, APL/3000	3000
Dec. 1973	Test desk cable fault locator	4913A	May 1975	Voiceband data channel analyzer	5453A
July 1976	Test sets, network analysis	8502A/8503A	Aug. 1974	Voiceband data channel measurements, analog	4940A
Oct. 1976	Tester, digital IC	5045A	Nov. 1974	Voiceband data channel measurements, analog	3770A
Feb. 1977	Testing a multimeter abusively	3435A, 3465A/B, 3476A/B	July 1975	Voltmeter options for universal counter	5328A*
Nov. 1976	Thermal printer, calculator	HP-91, HP-97	W		
Sept. 1974	Thermocouple power meter	435A	Feb. 1977	Waveform measurements with digital voltmeter	3437A*
Apr. 1974	Thermometer, platinum, digital	2802A	Aug. 1977	Word generator, 300 MHz	8084A
Dec. 1975	Thick-film hybrid oscilloscope amplifier	1740A	Aug. 1975	Word generator, multichannel	8016A*
June 1974	Time-interval averaging	—	X		
Oct. 1975	Time interval probes	5363A*	July 1974	X-ray system for bench use	43805
Dec. 1974	Time interval measurements, very short	1722A	Feb. 1975	X-Y recorder, high-sensitivity	7047A
Feb. 1977	Time-related voltage measurements	3437A*	Y		
July 1975	Timer/counter/DVM, universal	5328A*	Mar. 1975	YIG-tuned oscillator	—
Z					
			Apr. 1976	Zenith angle measurements	3810A

PART 3: Model Number Index

Model	Instrument	Month/Year	HP-22	Calculator	Nov. 1975
HP-21	Calculator	Nov. 1975	HP-25	Calculator	Nov. 1975
*21MX	Computers	Oct. 1974	HP-65	Programmable Pocket Calculator	May 1974
*21MXE-Series	Computers	Mar. 1977	HP-67	Programmable Pocket Calculator	Nov. 1976
			HP-91	Printing Portable Calculator	Nov. 1976
			HP-97	Programmable Printing Portable Calculator	Nov. 1976

*Asterisk indicates instruments compatible with the HP interface bus (HP-IB)

Part 3: Model Number Index (continued)

435A	Power Meter	Sept. 1974	*5150A	Thermal Printer	Jan. 1975
*436A	Power Meter	Oct. 1975	5300B	8-Digit Mainframe	Apr. 1975
545A	Logic Probe	Dec. 1976	5305A	1100-MHz Frequency Counter	Apr. 1975
546A	Logic Pulser	Dec. 1976	5307A	High-Resolution Counter	Nov. 1973
547A	Current Tracer	Dec. 1976	5308A	75-MHz Universal Timer/Counter	Apr. 1975
548A	Logic Clip	Dec. 1976	*5312A	ASCII Interface	Jan. 1975
911C	Sliding Load	June 1977	*5328A	Universal Counter	July 1975
970A	Probe Multimeter	Nov. 1973	*5341A	Frequency Counter	Sept. 1975
HFET-1000	GaAs FET	Nov. 1976	*5345A	Electronic Counter	June 1974
*1000-Series	Small Computer Systems	Mar. 1977	5353A	Channel C Plug-In	June 1974
1010B	Liquid Chromatograph	Oct. 1975	5354A	Automatic Frequency Converter	June 1974
1220A/1221A	Oscilloscopes, 15 MHz	Feb. 1974		0.015-4.0 GHz	
1230A	Logic Trigger	Aug. 1975	*5363A	Time Interval Probes	Oct. 1975
1600A/S	Logic State Analyzer	Aug. 1975	5381A/5382A	Frequency Counters	July 1974
1601L	Logic State Analyzer	Jan. 1974	5451B	Fourier Analyzer	Feb. 1975
1607A	Logic State Analyzer	Aug. 1975	5451B	Fourier Analyzer with BSFA	
1611A	Logic State Analyzer	Jan. 1977		Capability	Apr. 1975
1620A	Pattern Analyzer	Aug. 1975	5453A	Transmission Parameter Analyzer	May 1975
645A	Data Error Analyzer	Feb. 1974	5468A	Transponder	May 1975
1720A	Oscilloscope, 275 MHz	Sept. 1974	*5501A	Laser Transducer System	Feb. 1976
1722A	Oscilloscope, dual-delayed sweep	Dec. 1974	5526A opt. 30	Straightness Interferometers	Jan. 1974
1740A	Oscilloscope, 100 MHz	Dec. 1975	5693A	Angio Analyzer	Apr. 1974
1741A	Variable Persistence/Storage		5840A	Gas Chromatograph	Apr. 1976
	Oscilloscope	Sept. 1976	*6002A	DC Power Supply, 200W	June 1977
HDSP-2000	Solid-State Alphanumeric Display	Apr. 1977	6825A/6A/7A	Bipolar Power Supply/Amplifiers	July 1974
IMAGE12000	Data Base Management System	July 1974	7047A	X-Y Recorder	Feb. 1975
2640A	Interactive Display Terminal	June 1975	7155A	Portable Strip-Chart Recorder	Dec. 1973
2641A	APL Display Station	July 1977	7920A	Disc Drive	Aug. 1977
2644A	CRT Terminal with Magnetic		8011A	Pulse Generator, 20 MHz	Mar. 1974
	Tape Storage	May 1976	8015A	Pulse Generator, 50 MHz	Oct. 1973
2802A	Platinum-Resistance Thermometer	Apr. 1974	*8016A	Word Generator	Aug. 1975
3000 Series II	Computer System	Aug. 1976	8030A	Cardiotocograph	Jan. 1977
APL/3000	A Programming Language	July 1977	8080-Series	High-Speed Pulse/Word Generator	Aug. 1977
IMAGE13000	Data Base Management System	July 1974	8082A	Pulse Generator, 250 MHz	Sept. 1974
MPET/3000	Multiprogramming Executive	Dec. 1974	8473C	Coaxial Detector, 0.01-26.5 GHz	June 1977
*3044A	Spectrum Analyzer, 10Hz to 13MHz	May 1975	8481A et al.	Power Sensors	Sept. 1974
		May 1975	8484A	Power Sensor, High Sensitivity	Oct. 1975
*3045A	Automatic Spectrum Analyzer	May 1975	8495A/B,		
*3050B	Automatic Data Acquisition System	Jan. 1975	8496A/B	Step Attenuators, dc-18 GHz	May 1974
		Feb. 1977	8495D/K	Step Attenuators, dc-26.5 GHz	June 1977
*3051A	Data Logging System	Feb. 1977	8502A	Transmission and Reflection	
*3052A	Programmable Data Acquisition System	Feb. 1977	8503A	Test Set	July 1976
3312A	Function Generator	Mar. 1975	*8505A	S-Parameter Test Set	July 1976
3380A	Chromatograph Integrator	Dec. 1974	8620A	Network Analyzer, 0.5-1300 MHz	July 1976
3435A	Digital Multimeter	Feb. 1977	8654A	Sweep Oscillator	Mar. 1975
*3437A	Digital Multimeter	Feb. 1977	8654B	Signal Generator, 10-520 MHz	Mar. 1974
*3455A	System Voltmeter	Feb. 1977	8655A	Signal Generator with FM	Mar. 1976
3465A/B	Digital Voltmeter	Feb. 1977	8660C	Synchronizer/Counter	Mar. 1976
3476A/B	Digital Voltmeter	Feb. 1977		Synthesized Signal Generator	
*3495A	Digital Multimeter	Feb. 1977		Mainframe	July 1975
3551A	Scanner	Jan. 1975	9500D opt. 180	ATLAS Compiler and Processors	Sept. 1975
3552A	Transmission Test Set	May 1975	9510D opt. 100	ATLAS Compiler and Processors	Sept. 1975
*3571A	Transmission Test Set	May 1975	960119610	Satellite Computer Systems	Nov. 1974
3580A	Tracking Spectrum Analyzer	May 1975	9700-Series	Distributed Computer Systems	Nov. 1974
*3745A/B	Spectrum Analyzer, 5Hz-50kHz	Sept. 1973	*9815A	Desktop Computer	June 1976
3760A/3761A	Selective Level Measuring Set	Jan. 1976	*9825A	Desktop Computer	June 1976
3770A	Data Generator/Error Detector	Nov. 1973	*9830A	Desktop Computer (application of)	Feb. 1976
	Amplitude/Delay		9871A	Impact Printer	June 1976
	Distortion Analyzer	Nov. 1974	9880A/B	Desktop Computer Mass	
3780A	Pattern Generator/Error Detector	Mar. 1976		Memory System	Apr. 1974
3790A	Microwave Link Analyzer	Nov. 1975	10017A et al.	Miniature Oscilloscope Probes	Apr. 1977
3810A	Total Station	Apr. 1976	10250-Series	Trigger Probes	Aug. 1975
*4261A	LCR Meter	Sept. 1976	10254A	Serial-to-Parallel Converter	Dec. 1976
*4271A	LCR Meter	Mar. 1974	11850A	Three-Way Power Splitter,	
4282A	High-Capacitance Meter	Feb. 1975		0.5-1300 MHz	July 1976
4913A	Test Desk Fault Locator	Dec. 1973	24376B	IMAGE/2000 Data Base	
4940A	Transmission Impairment			Management System	July 1974
	Measuring Set	Aug. 1974	32010A	MPET/3000 Operating System	Dec. 1974
5000A	Logic Analyzer	Oct. 1973	32105A	APL/3000 Subsystem	July 1977
5004A	Signature Analyzer	May 1977	32215A	IMAGE13000 Data Base	
5035T	Logic Lab	Nov. 1974		Management System	July 1974
5045A	IC Tester	Oct. 1976	32216A	QUERY13000 Data Base	
5061A opt. 004	High-Performance Cesium Beam			Inquiry Facility	July 1974
	Standard	Sept. 1973	33311C	Microwave Switch, dc-26.5 GHz	June 1977
5062C	Cesium Beam Frequency Reference	Mar. 1976	33321A/B	Step Attenuators, dc-18 GHz	May 1974

Part 3: Model Number Index (continued)

33321D/K	Step Attenuators, dc-26.5 GHz	June 1977	62605M	500W Switching Regulated Power Supply	Apr. 1975
33330C	Coaxial Detector, 0.01-26.5 GHz	June 1977			
43805	X-Ray System	July 1974	86242C,	RF Plug-Ins for 8620C Sweep Oscillator	Nov. 1976
47201A	Oximeter	Oct. 1976	86250C,		
*59301A	ASCII-Parallel Converter	Jan. 1975	86290A	2-18 GHz RF Plug-In	Mar. 1975
*59303A	Digital-to-Analog Converter	Jan. 1975	86603A	1-2600 MHz RF Section	July 1975
*59304A	Numeric Display	Jan. 1975	86634A	PM Modulation Section	July 1975
*59306A	Relay Actuator	Jan. 1975	86635A	FM/PM Modulation Section	July 1975
*59307A	VHF Switch	Jan. 1975	91700A et al.	Distributed Computer Systems	Nov. 1974
*59308A	Timing Generator	Jan. 1975	92001A	RTE-II Real-Time Executive System	Dec. 1975
*59309A	ASCII Digital Clock	Jan. 1975	92001B	RTE-II Real-Time Executive System	Mar. 1977
*59401A	Bus System Analyzer	Jan. 1975	92060A	RTE-III Real-Time Executive System	Dec. 1975
*59501A	Isolated D-A/Power Supply Programmer	June 1977	92060B	RTE-III Real-Time Executive System	Mar. 1977
62604J et al.	Switching Regulated Modular Power Supplies	Dec. 1973	92061A	RTE Microprogramming Package	Mar. 1977
			92101A	Real-Time BASIC Subsystem	Jan. 1976
			92817A	OPNODE	Mar. 1977

PART 4: Author Index

Author	A	Month/Year					
Adler, Robin		Oct. 1973	Corya, Bruce S.	July 1975	Forbes, Bert E.	Apr. 1977	
Ainsworth, Gerald		Oct. 1976	Coster, John H.	Jan. 1976	Foster, Tony E.	Apr. 1974	
Aken, Michael B.		May 1975	Courtin, Erich	Jan. 1977	Fowles, Richard G.	Aug. 1974	
Anzinger, George A.		Dec. 1975	Crawford, Thomas	Nov. 1973	Fox, Kenneth A.	Dec. 1975	
Arnold, David		May 1976	Crow, George	June 1975	Frankenberg, Robert J.	Oct. 1974	
Ashkin, Peter B.		Apr. 1977			Frederick, Wayne	July 1976	
Atchley, Robert L.		May 1975			Frohwerk, Robert A.	May 1977	
Averett, Linda W.		Dec. 1975					
	B		Dack, David G.	Jan. 1976			G
Bailey, Paul W.		June 1977	Dalichow, Rolf	July 1976	Gadol, Adele M.	Dec. 1975	
Baker, Mark		Oct. 19731	Damon, Noel E.	Aug. 1974	Gammill, Lawrence A.	Apr. 1977	
Baldwin, Richard R.		Oct. 1976	Daniels, Jerry W.	May 1975	Globas, Gert	Sept. 1974	
Barney, Dick B.		Jan. 1974	Danielson, Dan D.	Mar. 1975	Gookin, Albert	Feb. 1977	
Barker, Roy D.		Feb. 1977	Deaver, David K.	May 1975	Gordon, David E.	Dec. 1976	
Barraclough, Hal		Dec. 1974	Dickey, Shane	Nov. 1974	Gordon, Philip	Oct. 1974	
Basawapatna, Ganesh		Mar. 1975	Dickinson, Peter D.	Nov. 1976	Gorin, Joseph M.	Feb. 1977	
Beckwith, John F.		Dec. 1976	Diehl, Van	Dec. 1975	Grady, Robert B.	Sept. 1975	
Best, Allan I.		Dec. 1975	Dietrich, Harold E.	Jan. 1975	Graham, Thomas R.	Dec. 1973	
Bilen, Len		Apr. 1976	DiFrancesco, Mauro	Apr. 1975	Grote, Barbara E.	Jan. 1974	
Blazek, Otakar		June 1975	Dikeman, Peter	Apr. 1974	Guest, David H.	Nov. 19741	
Bologlu, Ali		June 19741	Dilman, Richard	Feb. 1974		Dec. 1974	
		Sept. 1975	DiPietro, David M.	Apr. 1975			
Botka, Julius		July 1976	Dresch, Donald A.	Aug. 1974			H
Bradley, Havyn E.		Apr. 1974	Drake, Harris Dean	Mar. 1977	Hahn, Kathleen F.	Mar. 1977	
Brewster, John L.		July 1974	Doub, James A.	June 1975	Hale, William L.	Sept. 1973	
Bronson, Barry		Nov. 19741	Dudley, B. William	Dec. 1973	Hall, James A.	Aug. 19741	
		Dec. 1976	Dudley, Robert L.	Nov. 1973		July 1975	
Buesen, Jürgen		Aug. 1975	Duerr, Jeffrey R.	Feb. 1974	Hammons, Richard L.	Oct. 1974	
Bullock, Michael L.		Apr. 1976	Dupre, John J.	Mar. 1975	Hardage, P. Kent	Sept. 1974	
Bump, Robert B.		June 1976			Harkins, Daniel R.	July 1976	
	C		Eads, William D.	June 1976	Harland, David A.	Jan. 1974	
Campbell, John W.		Dec. 1975	Eastham, Terry	June 1975	Harms, Dennis W.	Nov. 1976	
Carlson, James E.		Feb. 1976	Eberle, Volker	Aug. 1977	Harrison, Joel	Aug. 1977	
Chambers, Donald R.		June 1977	Edwards, Allen P.	Oct. 1975	Harrison, Van	Sept. 1976	
Chan, Anthony Y.		Dec. 19761	Egbert, William E.	Nov. 19761	Hashimoto, Satoru	Sept. 1976	
		May 1977		May 19771	Hay, Robert R.	Mar. 1974	
Chance, Geoffrey W.		June 1976	Eggert, Rainer	June 1977	Hayes, Thomas J.	Oct. 1976	
Chen, Philip		July 1976	Elward, John S.	Mar. 1974	Heger, Charles E.	Mar. 1976	
Christensen, Svend		Nov. 1975	Enlow, Carl Jr.	Oct. 1974	Heinzl, Johann J.	Aug. 1974	
Christopher, Chris J.		Apr. 19741	Estes, Marvin F.	Mar. 1975	Hender, Thomas A.	Nov. 1975	
		June 1976		Apr. 1977	Hentschel, Christian	Aug. 1977	
Chu, Alejandro		Mar. 1975			Hernday, Paul R.	Mar. 1975	
Chu, David C.		June 1974			Hickenlooper, F. Timothy	June 1976	
Clifford, Douglas M.		June 1976			Hines, Jack L.	Apr. 1977	
Cline, Stephan G.		May 1975			Hohmann, Hans-Giinter	Feb. 1974	
Collison, Robert R.		Mar. 1976			Hood, James M.	Dec. 19731	
Cornish, Eldon		Sept. 1974				Aug. 1977	
Cook, Michael J.		Nov. 1975			Horner, James F.	July 1975	
					House, Charles H.	Dec. 1975	
					Huff, Donald W.	Feb. 1975	
					Hyatt, Ronald C.	Sept. 19731	
						Mar. 1976	
						June 1977	

Part 4: Author Index (continued)

I								
Ingman, Eric M.	Oct.	1976	Mortensen, A. Craig	June	1976	Smith, Robert B.	Feb.	1976
Inhelder, Allen F.	Sept.	1975	Mueller, Louis F.	Sept.	1973	Snow, David L.	Mar.	1977
			Munsey, Grant J.	July	1977	Snyder, David C.	Feb.	1975
J			Musch, Bernard E.	Nov.	1976	Sommer, Heinz	Jan.	1977
Jackson, William D.	July	1975	Muto, Arthur S.	June	1974	Sorden, James L.	June	1974
Jackson, Weldon H.	Sept.	1974				Stallard, Scott J.	Mar.	1977
Jacobs, Jacob R.	Oct.	1974	N			Stancliff, Roger	Mar.	1975
Jager, Clifford A.	Aug.	1976	Nadig, Hans-Jiirg	Jan.	19751	Stedman, John M.	Oct.	1974
Jekat, Hans J.	Apr.	1975	Neff, Randall B.	May	1977	Stefanski, Andrew	Dec.	1974
Jensen, Ronald C.	Feb.	1976	Nordman, Robert G.	Nov.	1975	Stickel, Herbert P.	Aug.	1977
Jeppsen, Bryce E.	June	1974		May	1976	Stickle, Ronald L.	Feb.	1976
Jeremiasen, Robert	Mar.	1974	O			Stinson, John	Nov.	1973
Johnson, Daniel E.	Feb.	1975	O'Buch, Warren J.	July	1974	Stockwell, R. Kent	May	1974
Johnson, Lawrence P.	Jan.	1975	Offermann, Robert W.	Oct.	1975	Stone, Peter S.	Jan.	1975
Johnson, Lee	Mar.	1977	Olson, William E.	Feb.	1976	Suehiro, Jun-ichi	Feb.	1975
Johnston, Ronald L.	July	1977	Osada, Kunihisa	Feb.	1975	T		
Joly, Robert	Mar.	1975	Osterdock, Terry N.	Sept.	1973	Tabbutt, Richard D.	Dec.	1975
Juneau, H. Mac	Feb.	1977				Taggart, Robert B.	May	19741
			P				Nov.	1976
K			Pannach, Arndt	Aug.	1975	Tamamura, Toshio	Sept.	1976
Kappler, Wolfgang	Aug.	1975	Paulson, Gary R.	June	1976	Tang, Edward	June	1975
Keever, Jerome	June	1975	Pearson, Robert	Mar.	1976	Tillman, Lynn	Nov.	1975
Ketelsen, Erhard	Aug.	1974	Pecchio, Santo	July	1974	Trimble, Charles R.	Jan.	19751
Kim, Young Dae	July	1975	Peck, Robert D.	Dec.	1973		Oct.	1975
Kirkpatrick, George R.	May	19741	Perdriau, Robert H.	May	1975	Toschi, Elio A.	Aug.	1976
	June	1977	Pering, Richard D.	Aug.	1974	Tung, Chung C.	May	1974
Kmetovicz, Ronald E.	Mar.	1976	Peterson, Kenneth W.	May	1974	Tverdoch, Richard	Feb.	1974
Knorpp, Billy	Mar.	1975	Pierce, Robert B.	June	1975	U		
Krauss, Giinter	Mar.	1974	Poole, John S.	Apr.	1976	Uebbing, John T.	Apr.	1977
Kuhlman, Louis J. Jr.	Nov.	1976	Pope, Richard	Oct.	1976	Urquhart, J. Reid	Jan.	19761
Kushnir, S. Raymond	Sept.	1974	Pratt, Ronald E.	Oct.	19751		Oct.	1976
			Priebe, Durward	June	1977			
L				Dec.	1976	V		
Laing, Virgil L.	Nov.	19731	Q			Van Bree, Kenneth A.	July	1977
	Feb.	1977	Quenelle, Robert C.	Dec.	1976	Van Brunt, Richard C.	Oct.	1974
Lamy, John	Sept.	1974				Van Dyke, Eric J.	July	1977
Lane, Arthur B.	June	1975	R			Veteran, David R.	May	1974
Lane, Thomas A.	Mar.	1977	Rauskolb, Roger F.	May	1975	Vifian, Hugo	July	1976
Langguth, Alfred	July	1975	Ricci, David W.	Jan.	1975	Vyduna, James B.	Feb.	1977
Larsen, James	Feb.	1974	Richards, Alan J.	May	1976	W		
Lawson, William S.	July	1976	Riebesell, Giinter	Aug.	1977	Wade, John M.	Feb.	1975
Lee, Richard T.	Aug.	1974	Riedel, Ronald J.	Mar.	1975	Wagner, William E.	Aug.	1975
Leong, Warren W.	July	1977	Riggins, Cleaborn C.	Oct.	19741	Waitman, Thomas F.	June	1975
Link, Horst	Oct.	1973		Mar.	1977	Walker, Hugh P.	Jan.	1976
Liu, Chi-ning	Apr.	1974	Risley, William B.	Dec.	1974	Walker, William T.	June	1977
Loughry, Donald C.	Jan.	1975	Robertson, James	Nov.	1973	Wang, Patrick H.	Nov.	1976
Luehman, Kent	June	1977	Roos, Mark	July	1976	Ward, Michael J.	Feb.	1976
			Roy, Jean-Claude	June	1975	Warp, Rick A.	Dec.	1973
M			Rudé, André F.	Feb.	1976	Warren, Richard E.	Apr.	1976
Mack, Nealon	Dec.	1974	Ruchsay, Walter	Jan.	1977	Watanabe, Tak	Aug.	1976
MacLeod, Kenneth J.	Nov.	19731	Rytand, William A.	Mar.	1977	Weber, Lynn	Aug.	1977
	Apr.	1975				Weibel, Gerald E.	Sept.	1973
Maeda, Kohichi	Mar.	1974	S			Whicker, Richard	Nov.	1975
Maitland, David S.	June	1976	Salfeld, Peter	Jan.	1977	Wickliff, Robert G.	Sept.	1976
Marrriott, Joe E.	Feb.	1977	Salesky, Emery	June	1977	Winninghoff, Paul G.	Aug.	1974
Marrocco, James A.	Nov.	1974	Saponas, Thomas A.	Aug.	19751	Witkin, Louis A.	May	1976
Marshall, Howard D.	Oct.	1973		Jan.	1977	Wolpert, David L.	Jan.	1975
Masters, Lewis W.	July	1974	Sasaki, Gary D.	Jan.	1975	Woodhull, Frederick	July	1976
Matthews, Ian	Nov.	1975	Schrenker, Helge	Oct.	1975	X		
McDermid, John E.	Feb.	1977	Schultz, James T.	Jan.	1976	Y		
McIntire, Richard E.	July	1974	Schultz, Steven E.	June	19741			
McKinney, H. Webber	Apr.	1975		Jan.	19751	Yansouni, Cyril J.	Mar.	1975
Mellor, Douglas J.	Aug.	1974		Oct.	1975	Young, Ivan R.	Nov.	19731
Merrick, Edwin B.	Oct.	1976		Mar.	1976		Mar.	1976
Merrill, Howard L.	Dec.	1973		Dec.	1974/	Z		
Millard, Joe K.	Dec.	1975		Aug.	1976	Zamborelli, Thomas J.	Sept.	1974
Mingle, P. Thomas	Apr.	1975		July	1976	Zellmer, Joel	Aug.	19771
Misson, William	Mar.	1975		Aug.	1975		Sept.	1974
Moll, John	Mar.	1977		Jan.	1977			
Morrill, Justin S., Jr.	Aug.	19751		May	1976			
	Dec.	1976						
Morris, Donald E.	June	1976						

PART 1: Chronological Index

September 1977

A New Family of Intelligent Multicolor X-Y Plotters, Lawrence G. **Brunetti**

Easy-to-Use Interface Language Controls HP-IB Plotter, Thomas H. Daniels and Larry W. Hennessee

Remote Terminal Plotter Offers Simple Programming and Efficient Communications, David A. Bones and Marvin L. Patterson
Speed, Precision, and Smoothness Characterize Four-Color Plotter Pen Drive System, Marvin L. Patterson, Robert D. **Haselby**, and Richard M. Kemplin

Pen and Ink System Helps Assure Four-Color Plotter Line Quality, Leonard P. **Balazer**, George W. Lynch, Richard M. Kemplin, and Larry W. Hennessee

A Battery-Powered ECG Monitor for Emergency and Operating Room Environments, Sherry R. Grobstein and Ronald D. Gatzke

October 1977

Advanced Digital Signal Analyzer Probes Low-Frequency Signals with Ease and Precision, Richard H. Grote and H. Webber **McKinney**

Front End Design for Digital Signal Analysis, by Jean-Pierre Patkay, Frank R.F. Chu, and Hans A.M. **Wiggers**

Display and Storage Systems for a Digital Signal Analyzer, Walter M. **Edgerley, Jr.** and David C. Snyder

Digital Signal Analyzer Applications, Terry L. **Donahue** and Joseph P. **Oliverio**

Printing Financial Calculator Sets New Standards for Accuracy and Capability, Roy E. Martin

November 1977

Expanding Synthesized Signal Generation to the Microwave Range, James L. **Thomason**

Frequency Synthesis in a Microwave Signal Generator, Kenneth L. Astrof

Signal Generator Features for a Microwave Synthesizer, Bradley C. Stribling

Personal Calculator Algorithms III: Inverse Trigonometric Functions, William E. Egbert

Viewpoints—Tom Hornak on Fiber-Optic Communications

An NMOS Process for High-Performance LSI Circuits, Joseph E. **DeWeese** and Thomas R. Ligon

December 1977

Wrist Instrument Opens New Dimension in Personal Information, **André F.** Marion, Edward A. **Heinsen**, Robert Chin, and Bennie E. **Helms**

Higher Precision in Oscilloscope Measurements of Very Short Time Intervals, Ronald C. Westlund

A Wide-Ranging, Automatic LCR Meter for Stand-Alone or Systems Applications, **Masahiro** Yokokawa and Keiki Kanafuji

January 1978

Versatile Low-Cost Graphics Terminal is Designed for Ease of Use, Peter D. Dickinson

Raster Scan Graphics with Zoom and Pan, Otakar **Blazek** and Michael B. Raynham

Firmware Control of a Microprocessor-Based Graphics Terminal, John J. Moyer

Add-On Digital Signal Processing Enhances the Performance of Network and Spectrum Analyzers, Mark D. Roos, Jacob H. **Egbert**, Roger P. Oblad, and John T. **Barr**

February 1978

A Logic State Analyzer for Evaluating Complex State Flow, George

A. Haag

Viewpoints—Chuck House on the Ongoing Revolution in Digital Testing

Interactive Logic State and Timing Analyses for Tracking Down Problems in Digital Systems, John A. **Scharrer**, Robert G. **Wickliff, Jr.**, and William D. Martin

Entry Level Logic State Analyzer Has High-Level Capability, Charles T. Small and Alan J. **DeVilbiss**

Adapting the 1611A Logic State Analyzer to Work with the F8 Microprocessor Family, Deborah J. Ogden

March 1978

The Hewlett-Packard Distributed System Network, Andre' O. Schwager

Distributed Systems/3000, Philip M. Sakakihara

Distributed Systems/1000, Robert R. Shatzer

Data Entry and Communications Systems Have Network Capabilities, John R. Nielsen and David S. Kaplan

Experimenting with Satellite-Linked Computer Networks, Rita W. Williams

April 1978

A Highly Integrated Desktop Computer System, William D. Eads and Jack M. Walden

System 45 Hardware Design, John C. Keith, Ansel K. Vogen, and Louis T. Schulte

System 45 Product Design, Ray J. Cozzens

Advanced Thermal Page Printer Has High-Resolution Graphics Capability, Ray J. Cozzens

New Printhead Technology Developed for System 45, Eugene R. **Zeller**

Personal Calculator Algorithms IV: Logarithmic Functions, William E. Egbert

May 1978

Microprocessor-Controlled Harmonic Heterodyne Microwave Counter also Measures Amplitudes, Ali Bologlu and Vernon A. Barber

A Technique that Is Insensitive to FM for Determining Harmonic Number and Sideband, Luiz **Peregrino**

Generating High-Speed CRT Displays from Digital Data, Arnot L. Ellsworth and Kunio Hasebe

Laboratory Notebook—Swept-Frequency Measurements of High Levels of Attenuation at Microwave Frequencies

June 1978

The Next Generation RF Spectrum Analyzer, Steven N. **Holdaway** and M. Dee Humpherys

A Precision, Digitally-Controlled Spectrum Analyzer for the 20-Hz-to-40-MHz Frequency Range, Robert Temple

Signal Processing in the Model 8568A Spectrum Analyzer, Steven N. Holdaway, David H. Molinari, Siegfried H. Linkwitz, and Michael J. **Neering**

Enhanced Digital Storage in the Model 8568A Spectrum Analyzer, Michael J. **Neering** and Larry O. Bower

Developing the Digital Control System for the Model 8568A Spectrum Analyzer, Michael S. Marzalek and Lynn W. Wheelwright

Control of Model 8568A Spectrum Analyzer through the HP Interface Bus, Rex **Bullinger**

Designing Serviceability into the Model 8568A Spectrum Analyzer, David D. **Sharrit**

Computer-Based Production-Line Testing of the Model 8568A Spectrum Analyzer, John Faick

Part 1: Chronological Index (continued)

July 1978

An Intelligent Peripheral for Measurement and Control, **Ray H. Brubaker, Jr.**
 Measurement and Control Processor Monitors HP Facility, **Robert B. Grady**
 Firmware Intelligence for Measurement and Control Processing, **Donald E. Klaiss**
 Analog Input Card Calibration, Vincent J. Dauciuinas
 PHI, the HP-IB Interface Chip, **John W. Figueroa**
 An Easy-to-Use Data Capture Terminal for Industrial Operations, Jacques A. **Ripert**, Daniel C. **Berthier**, and **Michel E. Bernard**

August 1978

Universal Counter Resolves Picoseconds in Time Interval Measurements, David C. **Chu**, Mark S. Allen, and Allen S. Foster
 The Triggered Phase-Locked Oscillator, Dovid C. Chu
 Time Synthesizer Generates Precise Pulse Widths and Time Delays for Critical Timing Applications, **Keith M. Ferguson** and Leonard R. **Dickstein**
 Remotely-Controlled RFSwitch for Multipoint Tests in Communication Systems, Kevin J. Bradford
 Laboratory Notebook—A High-Level-Language Microprocessor Prototyping and **Debugging** System Using a Desktop Computer

September 1978

A High-Resolution, Low-Frequency Spectrum Analyzer, **Nixon A. Pendergrass** and John S. Furnbach
 Window Functions for Spectrum Analysis, Roger G. Cox
 Designing Programmable Digital **Filters** for LSI Implementation, Lynn A. Schmidt
 Desktop **Plotter/Printer** Does Both Vector Graphic Plotting and Fast Text Printing, Majid **Azmoon**, Jaime H. **Bohorquez**, and Rick A. **Warp**
Plotter/Printer Interface Languages: HP-GL and ASCII, Michael P. **Trego**

October 1978

Higher-Performance HP **1000** Computer Systems, Rodney K. **Juncker**
RTE-IV: The Megaword-Array Operating System, Eugene J. Wong and C. Michael **Manley**
 F-Series Extends Computing **Power** of HP **1000** Computer Family, Julia A. Cafes
 Microcoded Scientific Instruction Set Enhances Speed and Accuracy of F-Series Computers, **Charles R. Geber**
 New Memory Systems for HP **1000** Computers, **Alan H. Christensen** and David C. **Salomaki**
 Multipoint Terminals for HP 1000 Systems, **Denton B. Anderson**, Mitchell B. **Bain**, and Gary W. Johnson

November 1978

Printer and Printing Terminal Gain Versatility and Mechanical Simplicity with **Microprocessor** Control, Tadd M. **Woodcock**
 Managing Dot-Matrix Printing with a Microprocessor, John J. **Ignoffo, Jr.**, Michael J. **Sproviero**, Phillip R. Luque, and Kenneth A. **Wade**
 Versatile **400-lpm** Line Printer with a **Friction-Free** Mechanism that Assures **Long Life**, F. Duncan **Terry**
 Optimizing the **Performance** of an **Electromechanical** Print Mechanism, **Everett M. Baily**, William A. **McIlvanie**, Wallace T. Thrash, and **Douglas B. Winterrowd**

December 1978

Easy-to-Use, High-Resolution Digitizer Increases Operator Efficiency, Frank P. **Carau**
 Cursor Technology, Henry T. **Hetzl**
 Glass Platen Technology, **Lawrence E. Brown**
1-mHz-to-50-MHz Signal Source Combines Synthesizer Accuracy, Multimode Operation, and Easy Programming, **Tilman Schad**, Dieter Kible, and Peter Brunner
 A Compact Logging Multimeter that Can Manipulate Data, **John E. Scruggs**, **Marsh L. Faber**, and **David L. Walpert**

PART 2: Subject Index

Month/Year	Subject	Model			
	A				
Aug. 1978	Access switch for testing communications systems	3754A	Mag. 1978	Counter, microwave	5342A
Nov. 1977	Algorithms, personal calculator inverse trig.	—	Aug. 1978	Counter, universal time interval	5370A
Apr. 1978	Algorithms, personal calculator, logarithms	—	May 1978	CRT displays, translator for	1350A
May 1978	Amplitude measurements, microwave	5342A	Jan. 1978	CRT terminal, graphics	2648A
Oct. 1977	Analyzer, digital signal	5420A		D	
Feb. 1978	Analyzers, logic state	1602A, 1610A 1611A/0F8, 1615A	Oct. 1978	Data arrays, megaword (RTE-IV)	92067A
May 1978	Attenuation, measuring at microwaves	—	July 1978	Data capture terminals	3070B
	B		Mar. 1978	Data entry and communications systems	2026
Oct. 1977	Bond calculations	HP-92	Aug. 1978	Delay generator	5359A
	C		Dec. 1977	Delta-time oscilloscope	1743A
Nov. 1977	Calculator algorithms, inverse trig.	—	Apr. 1978	Desktop computer system	9845A
Apr. 1978	Calculator algorithms, logarithms	—	Oct. 1977	Digital filter design	5420A
Oct. 1977	Calculator, printing financial	HP-92	Sept. 1978	Digital filters for a spectrum analyzer	3582A
Oct. 1977	Coherence measurements	5420A	Oct. 1977	Digital signal analyzer	5420A
Sept. 1978	Coherence measurements	3582A	Jan. 1978	Digital storage for network and spectrum analyzers	8501A 8750A
Apr. 1978	Computer, desktop	9845A	June 1978	Digitally-controlled spectrum analyzer, to 1.5 GHz	8568A
Mar. 1978	Computer networks	—	June 1978	Digitally-controlled spectrum analyzer, to 40 MHz	3585A
Oct. 1978	Computer systems	HP 1000	Dec. 1978	Digitizer	9874A
Nov. 1978	Computer terminal, printing	2635A/39A	May 1978	Displays, CRT, translator for	1350A
May 1978	Computer-to-CRT interface	1350A	Mar. 1978	Distributed systems	HP 1000
Oct. 1978	Computers	HP 1000 F-Series	Mar. 1978	Distributed systems	HP 3000
July 1978	Control and measurement processor	2240A	Mar. 1978	Distributed systems network (computers)	—
Oct. 1977	Correlation measurements	5420A	Oct. 1978	Dynamic mapping system	—
Dec. 1977	Counter circuits in an oscilloscope	1743A		E	
			Sept. 1977	ECG monitor, portable, for hostile environments	78333A

Part 2: Subject Index (continued)

Sept. 1977	Electrosurgery interference	78333A			
July 1978	Energy management	2240A			
Oct. 1978	Extended memory area (RTE-IV)	92067A			
F					
July 1978	Facility monitoring	2240A			
Oct. 1977	Fast Fourier transform analyzer	5420A			
Sept. 1978	Fast Fourier transform in a spectrum analyzer	3582A			
Oct. 1978	Fault-control memory	HP 1000 F-Series			
Nov. 1977	Fiber-optic communications	—			
Oct. 1977	Filters, analog, FDNR	—			
Sept. 1978	Filters, digital, LSI implementation	3582A			
Oct. 1977	Financial calculator	HP-92			
Oct. 1978	Floating-point processor	HP 1000 F-Series			
Sept. 1977	Four-color X-Y plotters	7221A 9872A			
May 1978	Frequency conversion, harmonic heterodyne	5342A			
Oct. 1977	Frequency-dependent negative resistance (FDNR)	5420A			
Aug. 1978	Frequency measurements	5370A			
May 1978	Frequency measurements, microwave	5342A			
Nov. 1977	Frequency synthesizer, microwave	8671A/72A			
G					
Nov. 1977	Generator, microwave signal	8672A			
Dec. 1978	Generator, waveform, 1 mHz to 50 MHz	8165A			
Sept. 1978	Graphic plotter/printer	7245A			
Apr. 1978	Graphics, CRT	9845A			
Sept. 1977	Graphics Language, HP-GL	—			
Sept. 1978	Graphics language, HP-GL	—			
Nov. 1978	Graphics printers, dot-matrix	2608A 2631G			
Jan. 1978	Graphics terminal, CRT	2648A			
Apr. 1978	Graphics, thermal-printer	9845A			
May 1978	Graphics translator for CRTs	1350A			
H					
May 1978	Harmonic heterodyne frequency conversion	5342A			
May 1978	Harmonic number determination	5342A			
Mar. 1978	HP-DSN	—			
Sept. 1978	HP-GL graphics language	—			
July 1978	HP-IB interface chip (PHI)	—			
July 1978	HP-MCL, measurement and control language	2240A			
Oct. 1977	Histogram measurements	5420A			
I					
Oct. 1977	Interest calculations	HP-92			
May 1978	Interface, computer to CRT	1350A			
Sept. 1977	Interference caused by electrosurgery	78333A			
Oct. 1977	Internal rate of return (IRR)	HP-92			
Nov. 1977	Inverse trig-function algorithms	—			
J					
K					
L					
July 1978	Laboratory automation	2240A			
Sept. 1977	Language, graphics (HP-GL)	—			
Sept. 1978	Language, graphics (HP-GL)	—			
July 1978	Language, measurement and control (HP-MCL)	2240A			
Oct. 1978	Large program capability, RTE-IV	92067A			
Dec. 1977	LCR meter, automatic wide-range	4262A			
Feb. 1978	Logic state analyzers	—			
Sept. 1978	Long-axis plotter	7245A			
Oct. 1977	Low-frequency signal analysis	5420A			
Sept. 1978	Low-frequency signal analysis	3582A			
Nov. 1977	LSI circuits, NMOS II	—			
M					
July 1978	Measurement and control language (HP-MCL)	2240A			
July 1978	Measurement and control processor	2240A			
Oct. 1978	Memory systems	HP 1000 F-Series			
Nov. 1977	Microprocessor, NMOS II	—			
Aug. 1978	Microprocessor prototyping system	—			
Sept. 1977	Microstep control system	7221A 9872A			
May 1978	Microwave counter	5342A			
Nov. 1977	Microwave signal generator	8672A			
Sept. 1977	Multicolor X-Y plotters	7221A 9872A			
Dec. 1978	Multimeter, 4%-digit, logging	3467A			
Oct. 1978	Multipoint terminals for HP 1000 computer systems	12790A			
Oct. 1978	Mother partitions, in RTE-IV	92067A			
N					
Mar. 1978	Networks, computer	—			
Nov. 1977	NMOS II LSI circuits	—			
O					
Oct. 1978	Operating system, RTE-IV, for HP 1000 systems	92067A			
Aug. 1978	Oscillator, triggered phase-locked	—			
Dec. 1977	Oscilloscope, delta-time with counter	1743A			
P					
Sept. 1978	Paper drive, bidirectional	7245A			
Sept. 1977	Patient monitoring, hostile environment	78333A			
Aug. 1978	Period generator	5359A			
Aug. 1978	Period measurements	5370A			
July 1978	PHI (HP-IB interface chip)	—			
Sept. 1978	Plotter/printer	7245A			
Sept. 1977	Plotters, X-Y, four-color	7221A 9872A			
Nov. 1978	Printer, 400 lines per minute, dot-matrix	2608A			
Nov. 1978	Printer, 180 characters per second, dot-matrix	2631A/G			
Sept. 1978	Printer/plotter	7245A			
Apr. 1978	Printer, thermal, for 9845A	9845A			
Nov. 1978	Printing terminal	1635A/39A			
Sept. 1978	Printhead, thin-film thermal	7245A			
July 1978	Process control	2240A			
Mar. 1978	Program-to-program communication	HP 1000 HP 3000 2026			
Mar. 1978	Project Prelude	—			
Nov. 1977	Pulse modulator, microwave	11720A			
Aug. 1978	Pulse width and delay generator	5359A			
Q					
R					
Jan. 1978	Raster scan graphics	2648A			
Apr. 1978	Raster scan graphics	9845A			
July 1978	Reader, card, multifunction	3070B			
Oct. 1978	Real-time executive system (RTE-IV)	92067A			
Sept. 1977	Recorders, X-Y, four color	7221A 9872A			
Mar. 1978	Remote command processing	HP 1000 HP 3000			
Mar. 1978	Remote data base access	HP 3000			
Mar. 1978	Remote file access	HP 1000 HP 3000			
Mar. 1978	Remote job entry	2026			
S					
Sept. 1977	Safety problems in battery-powered medical instruments	78333A			

Part 2: Subject Index (continued)

Mar. 1978	Satellite-linked computer networks	—	July 1978	Terminal, multipoint for industrial use	3070B
Oct. 1978	Scientific instruction set	HP 1000	Nov. 1978	Terminal, printing	2635A/9A
		F-Series	June 1978	Test of a spectrum analyzer, automatic	8568A
Nov. 1977	Semiconductor processing, NMOS II	—	Apr. 1978	Thermal page printer for 9845A	9845A
July 1978	Serial link, terminals for	3070B	Sept. 1978	Thermal plotter/printer	7245A
Nov. 1977	Signal generator, synthesized, microwave	8672A	Aug. 1978	Time interval counter	5370A
			Aug. 1978	Time synthesizer	5359A
Dec. 1978	Signal source, programmable, 1 mHz to 50 MHz	8165A	Dec. 1977	Timing measurements, delta-time oscilloscope	1743A
May 1978	Signature analysis, application of	5342A	Oct. 1977	Transfer function measurements	5420A
July 1978	Silicon-on-sapphire (SOS) chip family	—	Aug. 1978	Triggered oscillator	—
Dec. 1978	Source, signal, programmable 1 mHz to 50 MHz	8165A	Nov. 1977	Trigonometric function algorithms, inverse	—
June 1978	Spectrum analyzer, 20 Hz to 40 MHz	3585A			
June 1978	Spectrum analyzer, 100 Hz to 1.5 GHz	8568A		U	
Sept. 1978	Spectrum analyzer, 0 to 25.5 kHz	3582A	Aug. 1978	Universal time interval counter	5370A
Oct. 1977	Spectrum measurements	5420A			
Aug. 1978	Startable oscillator	—		V	
Sept. 1977	Step motor control	7221A			
		9872A	Oct. 1977	Vibration measurements	5420A
Jan. 1978	Storage Normalizer	8501A			
		8750A		W	
Mar. 1978	Store and forward	HP 1000	Dec. 1978	Waveform generator, 1 mHz to 50 MHz	8165A
Aug. 1978	Switch, RF for testing multiplexed communications systems	3754A	Sept. 1978	Window functions for spectrum analysis	3582A
Nov. 1977	Synthesizer, microwave	8671A	Dec. 1977	Wrist instrument	HP-01
Nov. 1977	Synthesized signal generator, microwave	8672A			
Aug. 1978	Synthesizer, time	5359A		X	
Oct. 1978	Systems, RTE-based	HP 1000	Sept. 1977	X-Y plotters, four-color	7221A 9872A
				Y	
Aug. 1978	Telephone testing, switch for	3754A		Z	
Jan. 1978	Terminal, CRT, graphics	2648A			

PART 3: Model Number Index

Model	Instrument	Month/Year	Model	Instrument	Month/Year
RTE-IV	Operating System	Oct. 1978	DS/3000	Distributed Systems/13000	Mar. 1978
HP-01	Wrist Instrument	Dec. 1977	3070B	Terminal	July 1978
HP-92	Printing Financial Calculator	Oct. 1977	3467A	Logging Multimeter	Dec. 1978
1000	Computer Systems	Oct. 1978	3582A	Spectrum Analyzer, .02 Hz to 25.5 kHz	Sept. 1978
DS1000	Distributed Systems/1000	Mar. 1978			
1000 F-Series	Computers	Oct. 1978	3585A	Spectrum Analyzer, 20 Hz to 40 MHz	June 1978
1350A	Graphics Translator	May 1978			
1602A	Logic State Analyzer	Feb. 1978	3754A	Access Switch	Aug. 1978
1610A	Logic State Analyzer	Feb. 1978	4262A	LCR Meter, Automatic	Dec. 1977
1611A	Logic State Analyzer	Feb. 1978	5342A	Microwave Frequency Counter	May 1978
1615A	Logic Analyzer	Feb. 1978	5359A	Time Synthesizer	Aug. 1978
1743A	Oscilloscope, 100 MHz, A time	Dec. 1977	5370A	Universal Time Interval Counter	Aug. 1978
2026	Data Entry/Communications System	Mar. 1978	5420A	Digital Signal Analyzer	Oct. 1977
			7221A	X-Y Plotter	Sept. 1977
2102E	High-Performance Memory	Oct. 1978	7245A	Plotter/Printer	Sept. 1978
2102H	High-Performance Fault-Control Memory	Oct. 1978	8165A	Programmable Signal Source	Dec. 1978
			8501A	Storage Normalizer	Jan. 1978
2111F	HP 1000 F-Series Computer	Oct. 1978	8568A	Spectrum Analyzer, 100 Hz to 1.5 GHz	June 1978
2117F	HP 1000 F-Series Computer	Oct. 1978			
2170A/71A/72A	HP 1000 Model 30 Computer Systems	Oct. 1978	8671A	Synthesizer	Nov. 1977
			8672A	Synthesized Signal Generator	Nov. 1977
2174A/B	HP 1000 Model 20 Computer Systems	Oct. 1978	8750A	Storage Normalizer	Jan. 1978
2175A/B	HP 1000 Model 25 Computer Systems	Oct. 1978	9845A	Desktop Computer System	Apr. 1978
2176A/B	HP 1000 Model 40 Computer Systems	Oct. 1978	9872A	X-Y Plotter	Sept. 1977
2177A/B	HP 1000 Model 45 Computer Systems	Oct. 1978	9874A	Digitizer	Dec. 1978
			11720A	Pulse Modulator	Nov. 1977
2240A	Measurement and Control Processor	July 1978	12790A	Multipoint Interface for HP 1000 Computers	Oct. 1978
2608A	Printer, 400 lines per minute	Nov. 1978	32190A	DS/3000 Software	Mar. 1978
2631A/G	Printer, 180 characters per second	Nov. 1978	78333A	ECG Monitor, Portable	Sept. 1977
2635A/39A	Printing Terminal	Nov. 1978	91730A	Multipoint Driver for HP 1000 Computers	Oct. 1978
2648A	Graphics Terminal	Jan. 1978	91740A/B	DS1000 Software	Mar. 1978
			91741A	DS1000 Software	Mar. 1978
			92067A	RTE-IV Operating System	Oct. 1978

HEWLETT-PACKARD JOURNAL

Index

Volume 30 January 1979 through December 1979

Hewlett-Packard Company, 1501 Page Mill Road, Palo Alto, California 94304 U S A

Hewlett-Packard Central Mailing Department, Van Heuven Goedhartlaan 121, 1180 AM Amstelveen, The Netherlands
Yokogawa-Hewlett-Packard Ltd., Sugunami-ku, Tokyo 168 Japan

PART 1: Chronological Index

January 1979

- A Low-Cost, Microprocessor-Based 100-MHz Universal Counter, Lewis W. Masters, Karl M. Blankenship, and Michael J. Ward
- Lowest-Cost HP Universal Counter Developed Using LSI and Manufacturing Innovations, Michael D. Wilson and David M. George
- A High-Performance Bipolar LSI Counter Chip Using EFL and I²L Circuits, Bosco W. Wong and William D. Jackson
- A Synthesized Signal Source with Function Generator Capabilities, Dan D. Danielson and Stanley E. Froseth
- Viewpoints—Paul Baird on Electronic Equipment Reliability

February 1979

- A High-Quality Digital X-Y Plotter Designed for Reliability, Flexibility and Low Cost, John A. Fenoglio, Bessie W.C. Chin, and Terry R. Cobb
- Linear Step Motor Design Provides High Plotter Performance at Low Cost, Lung-Wen Tsai and Robert L. Ciardella
- Developing a Low-Cost Electrostatic Chart-Hold Table, Alec J. Babiarz
- Simple, Efficient Electronics for a Low-Cost X-Y Plotter, William G. Royce and Peter Chu
- A Closed-Loop System for Smoothing and Matching Step Motor Responses, Philip P. Maiorca and Norman H. MacNeil
- Multi-Frequency LCR Meters Test Components under Realistic Conditions, Kohichi Maeda and Yoh Narimatsu

March 1979

- Circuit-Board Testing: Cost Effective Production Test and Troubleshooting, Peter S. Stone and John F. McDermid
- Rapid Digital Fault Isolation with FASTRACE, William A. Groves
- Software Simulator Speeds Digital Board Test Generation, Kenneth P. Parker
- Virtual Memory for TESTAID and FASTRACE, Douglas L. Baskins
- Analog In-Circuit Component Measurements: Problems and Solutions, David T. Crook
- User-Oriented Software for an Automatic Circuit-Board Tester, Ed O. Schlotzhauser
- Testing the Tester, Roland H. Burger, John J. Ketchum, Scoff E. Woodward, and James M. Brown
- Hardware Design of an Automatic Circuit Board Tester, David T. Crook, Brian M. Wood, Francis F. Fiedler, Kamran Firooz, and Roland H. Burger
- Board Testing with Signature Analysis, Kamran Firooz

April 1979

- A Human-Engineered Small-Business Computer, A. Peter Hamilton
- Human-Engineering the Small-Business Computer, Barry Mathis
- Cost-Effective Electronics for the Small-Business Computer, Gerald L. Meyer and V. DeLloy Forbes
- HP 250 Input/Output System, Dennis L. Peery
- HP 250 BASIC: A Friendly, Interactive, Powerful System Language, Dennis L. Peery
- Low-Cost Data Base Management, Michael V. Hetrick
- Applications Software for the Small-Business Computer, Scott W. Y. Wang and Loyd V. Nelson
- Capacitance and Conductance Deep-Level Transient Spectroscopy Using HP-IB Instruments and a Desktop Computer, Leonard Forbes and Ulrich Kaempf

May 1979

- A Precision, Programmable Pulse Generator, Werner Huttemann,

Lutz Kristen, and Peter Aue

- Extending Possibilities in Desktop Computing, Sandy L. Chumbley
- Processor Enhancements Expand Memory, Damon R. Ujvarosy and Dyke T. Shaffer
- Designing to Meet Electromagnetic Interference Requirements, John C. Becker
- Assembly Programming Capability in a Desktop Computer, Robert M. Hallissy

June 1979

- A Business Computer for the 1980s, George R. Clark
- The Integrated Display System and Terminal Access Method, Eric P. L. Ha and James R. Groff
- Reducing the Cost of Program Development, Frederick W. Clegg
- Managing Data: HP 300 Files and Data Bases, Phillip N. Taylor, Alan T. Paré, and James R. Groff
- An Easy-to-Use Report Generation Language, Tu-Ting Cheng and Wendy Peikes
- HP 300 Business BASIC, May Y. Kovalick
- Innovative Package Design Enhances HP 300 Effectiveness, David A. Horine

July 1979

- Cost-Effective Hardware for a Compact Integrated Business Computer, Arndt B. Bergh and Kenyon C. Y. Mei
- A Computer Input/Output System Based on the HP Interface Bus, W. Gordon Matheson
- A Small, Low-Cost 12-Megabyte Fixed Disc Drive, Richard L. Smith
- An Innovative Programming and Operating Console, Alfred F. Knoll and Norman D. Marschke
- AMIGO/300: A Friendly Operating System, Ralph L. Carpenter
- Configuring and Launching the AMIGO/300 System, Donald M. Wise and James C. McCullough
- A Multiple-Output Switching Power Supply for Computer Applications, Dilip A. Amin and Thane Kriegel

August 1979

- New Performance Standards in Microwave Spectrum Analysis, Siegfried H. Linkwitz
- Broadband Input Mixers for a Microwave Spectrum Analyzer, John C. Lamy and Frank K. David
- A Synthesized Microwave Local Oscillator with Continuous-Sweep Capability, Larry R. Martin, Kenneth L. Lange, and Stephen T. Sparks
- A Digital Pattern Generator for Functional Testing of Bus-Oriented Digital Systems, Gunter Riebesell, Ulrich Hubner, and Bernd Moravek
- An HP-IB Extender for Distributed Instrument Systems, David H. Guest

September 1979

- SOS Technology Yields Low-Cost HP 3000 Computer System, Richard C. Edwards
- Adapting the Multiprogramming Executive to a New Hardware Environment, Claude Robinson, Jr.
- A Friendly, Easy-to-Service Computer, Yas Matsui and Manmohan Kohli
- A Remote Computer Troubleshooting Facility, David L. Nelson
- Philosophy of HP 3000 Series 33 Diagnostics, James H. Holl
- Controlling Electromagnetic Interference Generated by a Computer System, Daniel T.Y. Wong
- Automated Pulmonary Function Measurements, Maurice R. Blais

and John L. Fanton
Triggered X-Y Oscilloscope Displays, P. Guy Howard

October 1979

Microprocessor Lab Teaches Operation and Troubleshooting, Barry Bronson and Michael Slater
An Economical Network Analyzer for the 4-to-1300-MHz Range, James R. Zellers
Expanding Logic Analyzer Capabilities by Means of the HP-IB, Robert G. Wickliff, Jr. and Richard A. Nygaard, Jr.
A Serial Data Analyzer for Locating Faults in Decentralized Digital Systems, Robert E. Erdmann, Jr.

November 1979

Precise, Convenient Analysis of Modulated Signals, Allen P. Edwards
IF Filters for the 8901A Modulation Analyzer, Andrew H. Naegeli
A New Type of FM Demodulator, Russell B. Riley
Modulation Analyzer Applications, Allen P. Edwards
Assuring Accuracy in Modulation Measurements, Leslie E.

Brubaker
Interactive Modulation Analyzer Control, Paul J. Lingane
Special Signal Source Tests Modulation Analyzer, Leslie E. Brubaker

December 1979

High-Speed Fiber Optic Link Provides Reliable Real-Time HP-IB Extension, Robert B. Grady
A Ready-to-Use Fiber Optic Link for Data Communications, Delon C. Hanson
A Picoammeter with Built-in, Synchronized Voltage Sources, Hitoshi Noguchi
Annual Index
Personal Calculator Has Key to Solve Any Equation $f(x)=0$, William Kahan
Viewpoints—Don Loughry on ANSI/IEEE Standard 488 and the HP Interface Bus
Four Color Plotters Enhanced for Unattended Operation, Majid Azmoon, Randy A. Coverstone, and Richard M. Kemplin

PART 2: Subject Index

Month/Year	Subject	Model	
A			
Feb. 1979	Accelerometer, hybrid		
Apr. 1979	Accounts receivable,	HP 250	
May 1979	Address extension chip		
Sept. 1979	Air flow measurements in the pulmonary lab	47804S	
July 1979	AMIGO/300 operating system	HP 300	
Nov. 1979	Amplitude modulation measurements	8901A	
May 1979	Assembly language, desktop computer	9835A	
July 1979	Asynchronous data communications controller	31264A	
Mar. 1979	Automatic circuit board testing	DTS/70,3060A	
Dec. 1979	Automatic paper advance, X-Y plotter	9872S,7221S,7220S	
B			
June 1979	BASIC, business computer	HP 300	
Apr. 1979	BASIC, business computer	HP 250	
May 1979	BASIC, desktop computer	9835A	
Jan. 1979	Battery-powered universal counter	5314A,5315A	
Jan. 1979	Bipolar integrated circuit chip, MRC		
Mar. 1979	Board test language	9825A/3060A	
Mar. 1979	Board testing, automatic	DTS/70,3060A	
Dec. 1979	Bus extender, fiber optic	12050A	
Aug. 1979	Bus extender, telephone compatible	37201A	
Apr. 1979	Business computer, entry level	HP 250	
June 1979	Business computer	HP 300	
July 1979	Business computer	HP 300	
Sept. 1979	Business computer	HP 3000 Series 33	
C			
Dec. 1979	Calculator, handheld	HP-34C	
Apr. 1979	Capacitance DLTS		
Dec. 1979	Capacitance/voltage measurements	4140A	
Mar. 1979	Circuit-board testing, automatic	DTS/70,3060A	
Oct. 1979	Communications, data analyzer	1640A	
June 1979	Computer, business	HP 300	
July 1979	Computer, business	HP 300	
May 1979	Computer, desktop	9835A	
July 1979	Computer power supply	63312F	
Apr. 1979	Computer, small-business	HP 250	
Sept. 1979	Computer system, low-cost general-purpose	HP 3000 Series 33	
Apr. 1979	Conductance DLTS		
Feb. 1979	Control system, linear step motor	7225A	
May 1979	Controller, desktop	9835A	
Jan. 1979	Counter chip, multiple-register		
Jan. 1979	Counter, universal, 100-MHz, low-cost	5314A	
Jan. 1979	Counter, universal, 100-MHz, reciprocal	5315A/B	
Dec. 1979	Current measurements, picoampere	4140A	
D			
Apr. 1979	Data base management	HP 250	
June 1979	Data base management	HP 300	
Oct. 1979	Data communications analyzer	1640A	
Apr. 1979	Deep-level transient spectroscopy (DLTS)		
May 1979	Desktop computer	9835A	
Feb. 1979	Digital LCR meters, multifrequency	4274A/75A	
Aug. 1979	Digital pattern generator	8170A	
Feb. 1979	Digital X-Y plotter	7225A	
Nov. 1979	Discriminator, charge count	8901A	
Aug. 1979	Discriminator with controllable slope	8566A	
July 1979	Disc drive, Winchester type	HP 300, 7910K	
June 1979	Display, integrated	HP 300	
July 1979	Display, integrated	HP 300	
Sept. 1979	Displays, X-Y, selectively blanked	1741A/002	
E			
Sept. 1979	Electromagnetic interference suppression, computer	HP 3000 Series 33	
May 1979	EMI design	9835A	
Jan. 1979	Emitter function logic (EFL)		
Dec. 1979	Equation solver, handheld calculator	HP-34C	
Dec. 1979	Extender, HP Interface Bus, fiber optic	12050A	
Aug. 1979	Extender, HP Interface Bus, telephone	37201A	
F			
Mar. 1979	FASTRACE	DTS/70	
Mar. 1979	Fault isolation in analog circuit boards	3060A	
Mar. 1979	Fault isolation in digital circuit boards	DTS/70	
Dec. 1979	Fiber optic HP-IB link	12050A	
Nov. 1979	FM discriminator, charge count	8901A	
Aug. 1979	FM discriminator, controllable slope	8566A	
Nov. 1979	Frequency measurements	8901A	
Jan. 1979	Frequency measurements to 100 MHz	5314A,5315A/B	
Nov. 1979	Frequency modulation measurements	8901A	
Jan. 1979	Function generator/synthesizer, 0 to 21 MHz	3325A	
G			
July 1979	General I/O channel	31262A	
Aug. 1979	Generator, logic pattern	8170A	

May 1979 Generator, pulse, programmable 8160A

H

Dec. 1979 HP-IB extender, fiber optic 12050
Aug. 1979 HP-IB extender, telephone 37201A
Oct. 1979 HP-IB interface for logic analyzers 1610A/003,1615A/001

I

Apr. 1979 IMAGE1250 HP 250
June 1979 IMAGE300 HP 300
Mar. 1979 In-circuit board testing 3060A
Aug. 1979 Instrument systems, HP-IB extender for 37201A
Jan. 1979 Integrated-circuit chip, bipolar, MRC
June 1979 Integrated display system HP 300
July 1979 Integrated display system HP 300
Jan. 1979 Integrated injection logic (I²L)
Dec. 1979 Interface bus extender, fiber optic 12050A
Aug. 1979 Interface bus extender, telephone 37201A
Apr. 1979 Inventory control HP 250

L

June 1979 Language subsystem HP 300
Feb. 1979 LCR meters, multifrequency 4274A,4275A
Feb. 1979 Linear step motor plotter 7225A
Oct. 1979 Logic analyzers, HP-IB interfaces for 1610A/003,1615A/001
Aug. 1979 Logic pattern generator 8170A
Sept. 1979 Lung function measurements 47804S

M

Apr. 1979 Manufacturing reporting HP 250
Oct. 1979 Microprocessor lab 5036A
Aug. 1979 Microwave spectrum analyzer 8566A
Nov. 1979 Modulation analyzer 8901A
Oct. 1979 Monitorsimulator/analyzer for data communications 1640A
Jan. 1979 Multiple-register counter (MRC) chip
Sept. 1979 Multiprogramming executive operating system HP 3000 Series 33

N

Oct. 1979 Network analyzer, 4 to 1300 MHz 8754A

O

July 1979 Operating system, AMIGO/300 HP 300
Sept. 1979 Operating system, MPE-III HP 3000
Apr. 1979 Order entry HP 250
Sept. 1979 Oscilloscopes, selectively blanked X-Y displays 1741A/002
Aug. 1979 Oscillator, local, synthesized sweeping 8566A

P

Dec. 1979 Paper advance,automatic X-Y plotter 9872S,7221S,7220S
Jan. 1979 Period measurements 5314A,5315A/B
Nov. 1979 Phase modulation measurements 8901A
Dec. 1979 Picoammeter/dc voltage source synchronized 4140A
Feb. 1979 Plotter, digital X-Y 7225A
Dec. 1979 Plotter, X-Y, with paper advance 9872S,7221S,7220S
Sept. 1979 Pneumotach for pulmonary measurements 47804S
Jan. 1979 Portable universal counters 5314A,5315A
Nov. 1979 Power measurements 8901A
July 1979 Power supply, computer 63312F
Oct. 1979 "Practical Microprocessors" (coursebook) 5036A
May 1979 Pulse generator, 50 MHz, programmable 8160A
Aug. 1979 Pulse generator, logic patterns 8170A
Sept. 1979 Pulmonary function measurements, automated 47804S

R

Jan. 1979 Ramp generator, precision; synthesizer/function generator 3325A
Jan. 1979 Ratio measurements Recorder, X-Y, with paper advance 9872S,7221S,7220S
Jan. 1979 Reliability in electronic equipment Remote computer troubleshooting 3000 Series 33
Nov. 1979 RF modulation measurements 8901A
Oct. 1979 RF Network Analyzer 4 to 1300 MHz 8754A
Dec. 1979 Root finder, handheld calculator HP-34C
June 1979 RPG, business computer HP 300

S

Apr. 1979 Sales analysis HP 250
Apr. 1979 Semiconductor process development, DLTS system
Oct. 1979 Serial data analyzer 1640A
June 1979 Shipping container HP 300
Nov. 1979 Signal generator 11715A
Jan. 1979 Signal source, programmable synthesizer/function generator, 0 to 21 MHz 3325A
June 1979 Silicon-on-sapphire processor HP 300
July 1979 Silicon-on-sapphire processor HP 300
Dec. 1979 SOLVE: equation solver HP-34C
Sept. 1979 SOS processor HP 3000 Series 33
Mar. 1979 Simulator for digital board testing, TESTAID DTS-70
Nov. 1979 Source, AM/FM 11715A
Aug. 1979 Source, logic pattern 8170A
May 1979 Source, pulses, programmable 8160A
Aug. 1979 Spectrum analyzer, 100 Hz to 22 GHz 8566A
Feb. 1979 Step motors, linear 7225A
Jan. 1979 Synthesis, frequency, fractional-N 3325A
Jan. 1979 Synthesizer/function generator, 0 to 21 MHz 3325A
May 1979 System 35, 9800 Series 9835A
Aug. 1979 Systems, HP-IB extender for 37201A
Dec. 1979 Systems, HP-IB extender for 12050A

T

Mar. 1979 TESTAID program generator for digital board testing DTS-70
Jan. 1979 Time-interval measurements 5314A,5315A/B
Sept. 1979 Triggered X-Y oscilloscope displays 1741A/002
Mar. 1979 Troubleshooting circuit boards automatically DTS/70-3060A
Sept. 1979 Troubleshooting, computer, remote HP 3000 Series 33
Oct. 1979 Troubleshooting, microprocessor, training 5036A

U

Jan. 1979 Universal counter, 100-MHz, low-cost 5314A
Jan. 1979 Universal counter, 100-MHz, reciprocal 5315A/B

V

Nov. 1979 VCO measurements 8901A
July 1979 Virtual memory operating system HP 300
Mar. 1979 Virtual memory for digital board tester DTS-70

X

Sept. 1979 X-Y displays, selectively blanked 1741A/002
Feb. 1979 X-Y plotter 7225A
Dec. 1979 X-Y plotters with paper advance 9872S,7221S,7220S

Y

Aug. 1979 YIG-tuned mixer 8566A

Z

PART 3: Model Number Index

Model	Product	Month/Year	7220S	Plotter	Dec. 1979
HP-34C	Calculator	Dec. 1979	7221S	Plotter	Dec. 1979
System 35	Desktop Computer (9835A)	May 1979	7225A	Plotter	Feb. 1979
DTS-70	Digital Test System	Mar. 1979	7910K	Disc Drive	July 1979
HP 250	Small-Business Computer	Apr. 1979	8160A	Programmable Pulse Generator	May 1979
HP 300	Computer	June 1979	8170A	50-MHz	
1610A/003	Logic State Analyzer with HP-IB	July 1979	8566A	Logic Pattern Generator	Aug. 1979
1615A/001	Logic Analyzer with HP-IB	Oct. 1979	8754A	Spectrum Analyzer	Aug. 1979
1741A/002	Oscilloscope (triggered X-Y display)	Sept. 1979	8901A	100-Hz-2.5 GHz/2-22 GHz	
HP 3000, Series 33	Computer System	Sept. 1979	9835A/B	Network Analyzer,	Oct. 1979
3060A	Board Test System	Mar. 1979	9872S	4 to 1300 MHz	
3325A	Synthesizer/Function Generator	Jan. 1979	11715A	Modulation Analyzer	Nov. 1979
4140A	pA Meter/Dc Voltage Source	Dec. 1979	31262A	Desktop Computer	May 1979
4271A/B	LCR Meter (in DLTS System)	Apr. 1979	31264A	Plotter	Dec. 1979
4274A	LCR Meter, 100 Hz-100 kHz	Feb. 1979	37201A	AM/FM Test Source	Nov. 1979
4275A	LCR Meter, 10 kHz-10 MHz	Feb. 1979	47804A/S	Fiber Optic HP-IB Link	Dec. 1979
5036A	Microprocessor Lab	Oct. 1979	63312F	General I/O Channel	July 1979
5314A	100-MHz Universal Counter	Jan. 1979		Asynchronous Data Communications Controller	July 1979
5315A/B	100-MHz Universal Counter	Jan. 1979		HP-IB Extender	Aug. 1979
				Pulmonary Measurement Systems	Sept. 1979
				Power Supply	July 1979

PART 4: Author Index

Author	Month/Year	Author	Month/Year	Author	Month/Year
A		Groff, James R.	June 1979	N	
Amin, Dilip A.	July 1979	Groves, William A.	Mar. 1979	Naegeli, Andrew H.	Nov. 1979
Aue, Peter	May 1979	Guest, David H.	Aug. 1979	Narimatsu, Yoh	Feb. 1979
B		H		Nelson, David L.	Sept. 1979
Babiarz, Alec J.	Feb. 1979	Ha, Eric P.L.	June 1979	Nelson, Loyd V.	Apr. 1979
Baird, Paul	Jan. 1979	Hallissy, Robert M.	May 1979	Noguchi, Hitoshi	Dec. 1979
Baskins, Douglas L.	Mar. 1979	Hamilton, A. Peter	Apr. 1979	Nygaard, Richard A., Jr.	Oct. 1979
Becker, John C.	May 1979	Hanson, Delon C.	Dec. 1979	P	
Bergh, Arndt B.	July 1979	Hetrick, Michael V.	Apr. 1979	Paré, Alan T.	June 1979
Blais, Maurice R.	Sept. 1979	Holl, James H.	Sept. 1979	Parker, Kenneth P.	Mar. 1979
Blankenship, Karl M.	Jan. 1979	Horine, David A.	June 1979	Peery, Dennis L.	Apr. 1979
Bronson, Barry	Oct. 1979	Howard, P. Guy	Sept. 1979	Peikes, Wendy	June 1979
Brown, James M.	Mar. 1979	Hübner, Ulrich	Aug. 1979	R	
Brubaker, Leslie E.	Nov. 1979	Hüttemann, Werner	May 1979	Riebesell, Günter	Aug. 1979
Burger, Roland H.	Mar. 1979	J		Riley, Russell B.	Nov. 1979
C		Jackson, William D.	Jan. 1979	Robinson, Claude, Jr.	Sept. 1979
Carpenter, Ralph L.	July 1979	K		Royce, William G.	Feb. 1979
Cheng, Tu-Ting	June 1979	Kaempfer, Ulrich	Apr. 1979	5	
Chin, Bessie W.C.	Feb. 1978	Kahan, William	Dec. 1979	Schlottzauer, Ed O.	Mar. 1979
Chu, Peter	Feb. 1979	Ketchum, John J.	Mar. 1979	Shaffer, Dyke T.	May 1979
Chumbley, Sandy L.	May 1979	Knoll, Alfred F.	July 1979	Slater, Michael	Oct. 1979
Clardella, Robert L.	Feb. 1979	Kohli, Manmohan	Sept. 1979	Smith, Richard L.	July 1979
Clark, George R.	June 1979	Kovalick, May Y.	June 1979	Sparks, Stephen T.	Aug. 1979
Clegg, Frederick W.	June 1979	Kriegel, Thane	July 1979	Stone, Peter S.	Mar. 1979
Cobb, Terry R.	Feb. 1979	Kristen, Lutz	May 1979	T	
Crook, David T.	Mar. 1979	-		Taylor, Phillip N.	June 1979
D		Lamy, John C.	Aug. 1979	Tsai, Lung-Wen	Feb. 1979
Danielson, Dan D.	Jan. 1979	Lange, Kenneth L.	Aug. 1979	U	
David, Frank K.	Aug. 1978	Lingane, Paul J.	Nov. 1979	Ujvarosy, Damon R.	May 1979
E		Linkwitz, Siegfried H.	Aug. 1979	W	
Edwards, Allen P.	Nov. 1979	M		Wang, Scott W.Y.	Apr. 1979
Edwards, Richard C.	Sept. 1979	MacNeil, Norman H.	Feb. 1979	Ward, Michael J.	Jan. 1979
Erdmann, Robert E., Jr.	Oct. 1979	Maeda, Kohichi	Feb. 1979	Wickliff, Robert G., jr.	Oct. 1979
F		Maiorca, Philip P.	Feb. 1979	Wilson, Michael D.	Jan. 1974
Fanton, John L.	Sept. 1978	Marschke, Norman D.	July 1979	Wise, Donald M.	July 1979
Fenoglio, John A.	Feb. 1979	Martin, Larry R.	Aug. 1979	Wong, Bosco W.	Jan. 1979
Fiedler, Francis F.	Mar. 1979	Masters, Lewis W.	Jan. 1979	Wong, Daniel T.Y.	Sept. 1979
Firooz, Kamran	Mar. 1979	Matheson, W. Gordon	July 1979	Wood, Brian M.	Mar. 1978
Forbes, Leonard	Apr. 1979	Mathis, Barry	Apr. 1979	Woodward, Scott E.	Mar. 1979
Forbes, V. DeLloy	Apr. 1979	Matsui, Yas	Sept. 1979	Z	
Frosseth, Stanley E.	Jan. 1979	McCullough, James C.	July 1979	Zellers, James R.	Oct. 1979
G		McDermid, John F.	Mar. 1979		
George, David M.	Jan. 1979	Mei, Kenyon C.Y.	July 1979		
Grady, Robert B.	Dec. 1979	Meyer, Gerald L.	Apr. 1979		
		Moravsek, Bernd	Aug. 1979		

HEWLETT-PACKARD JOURNAL

Index

Volume 31 January 1980 through December 1980

Hewlett-Packard Company, 1501 Page Mill Road, Palo Alto, California 94304 U.S.A.

Hewlett-Packard Central Mailing Department, Van Heuven Goedhartlaan 121, 1180 AM Amstelveen, The Netherlands
Yokogawa-Hewlett-Packard Ltd., Suginami-ku, Tokyo 168 Japan

PART 1: Chronological Index

January 1980

Automated Testing of PCM Communications Equipment with a Single Self-Contained Instrument, Robert **Pearson**, Mark Dykes, Virgil **Marton**, Andrew **Batham**, and Mike Bryant
Software for an Automatic Primary Multiplex Analyzer, Mark Dykes
Vector Impedance Analysis to 1000 MHz, **Toshio** Ichino, Hideo Ohkawara, and **Noriyuki** Sugihara

February 1980

Design and Performance of a Highly Integrated Parallel Access Spectrophotometer, Barry G. **Willis**
A Task-Oriented Approach to Spectrophotometry, Arthur Schleifer and Barry G. **Willis**
An Optical System for Full-Spectrum Measurements, George W. Hopkins and Alfred Schwartz
Light Detection and Measurement in a High-Performance Spectrophotometer, Knud L. Knudsen and Robert W. Widmayer
Servo-Controlled Beam Director Provides Major Benefits, Mark P. Morgenthaler and Lynn Weber
A Microcomputer System for Spectrophotometric Data Processing, Glenn C. Steiner
How the **8450A** Was Developed, Richard E. Monnier

March 1980

Powerful Personal Calculator System Sets New Standards, Bernard E. Musch, John J. Wong, and David R. **Conklin**
Packaging the **HP-41C**, Gerald W. Steiger
Card Reader Offers Compatibility and Expanded Capability, David J. **Lowe** and Patrick V. Boyd
Evolutionary Printer Provides Significantly Better Performance, Roger D. Quick and Donald L. Morris
Bulk CMOS Technology for the **HP-41C**, Norman L. Johnson and Vijay V. **Marathe**
The **First** HP Liquid Crystal Display, **Craig** Maze
High Density and Low Cost with Printed Circuit Hybrid Technology, James H. Fleming and Robert N. Low
An Economical, Portable Microwave **Spectrum** Analyzer, David H. **Molinari** and Richard L. Belding

April 1980

Microwave CW and Pulse Frequency Measurements to 40 **GHz**, Richard F. Schneider, Ronald E. Felsenstein, and Robert W. **Offermann**
A **400-to-1600-MHz** $\div 8$ **Prescaler**, Hans J. Jekat
An Automatic Microwave Frequency Counter Test System, Larry L. Koepke
40-GHz Frequency Converter Heads, Mohamed M. Sayed
A **26.5-GHz** Automatic Frequency Counter with Enhanced Dynamic Range, Ali **Bologiu**
Microwave Counter Applications, Richard F. Schneider
Laboratory Notebook—A Flexible Software Development Technique, Ronald E. Felsenstein

May 1980

A Programmable Selective Level Meter (Wave Analyzer) with Synthesized Tuning, Autoranging, and Automatic Calibration, Paul L. Thomas
Precision **Synthesizer/Level** Generator Has High Spectral Purity for Telecommunications Testing, Phillip D. **Winslow**
A Monolithic Thermal Converter, Peter M. **O'Neill**
Increased Versatility for a Versatile Logic State Analyzer, Justin S. **Morrill**, Jr. and John D. Hansen
General-Purpose Module Adapts Dedicated Logic State Analyzer to Almost Any Microprocessor, Deborah J. Ogden

June 1980

Electronic Distance Measurement for Industrial and Scientific Applications, David E. Smith
Industrial Distance Meter Applications, David E. Smith and Troy L. Brown
Mass Storage Management—A Unified Approach, William A. Hanna

July 1980

A New World of **Personal/Professional** Computation, Todd R. Lynch
Adding **I/O** Capability to the **HP-85**, John H. **Nairn**, Tim I. **Mikkelsen**, and David J. Sweetser
A Compact Tape Transport Subassembly Designed for Reliability and Low Cost, Douglas J. Collins and Brian G. Spreadbury
A High-Quality CRT Display for a Portable Computer, James F. Bausch
A Compact Thermal Printer Designed for Integration into a Personal Computer, Clement C. Lo and Ronald W. **Keil**
Enhanced BASIC Language for a Personal Computer, Nelson A. Mills, Homer C. Russell, and Kent R. Henscheid

August 1980

A Complete Self-Contained Audio Measurement System, James D. Foote
Audio Analyzer Applications
Making the Most of a Microprocessor-Based Instrument Controller, **Corydon J. Boyan**
Design for a Low-Distortion, Fast-Settling Source, George D. Pontis
Floating a Source Output, George D. **Pontis**
A Digitally Tuned Notch Filter, Chung Y. Lau
A Custom LSI Approach to a Personal Computer, Todd R. Lynch
Handheld Calculator Evaluates Integrals, William M. Kahan

September 1980

A Fully Integrated, Microprocessor-Controlled Total Station, Alfred F. Gort
Mechanical Design Constraints for a Total Station, Ronald K. Kerschner
A Compact Optical System for Portable Distance and Angle Measurements, Charles E. Moore and David J. Sims
An Approach to Large-Scale Non-Contact Coordinate Measurements, Douglas R. Johnson
Interfacing the **3820A** via the HP-IB, Gerald F. Wasinger
Automatic Measurements with a High-Performance Universal Counter, Gary D. **Sasaki** and Ronald C. Jensen
Third Input Extends Range to 1300 MHz, David M. **DiPietro**
A Voltmeter for a Universal Counter, Val D. **McOmber**
5335A Self Test and Diagnostics, Robert J. **LaFollette**

October 1980

Logic Development System Accelerates Microcomputer System Design, Thomas A. **Saponas** and Brian W. Kerr
Resource Sharing in the Logic Development System, Alan J. **DeVilbiss**
Emulators for Microprocessor System Development, James B. Donnelly, Gordon A. Greenley, and Milo E. Muterspaugh
The **Pascal/64000** Compiler, **Izagma** I. Alonso-Velez and Jacques Gregori Bourque
Program Debugging with **Pascal/64000**, P. Alan **McDonley**
The 64000 Linker, James B. Stewart
An **Assembler** for All **Microprocessors**, **Brad** E. Yackle
Viewpoints—chuck House on the Electronic Bench

November 1980

Patient Monitoring Enhanced by New Central Station, Timothy B. Blancke and Larry L. Nielsen
 High-Speed Raster Technique Provides Flexible Display, Robert L. Stettiner and George L. Adleman
 Multi-Processor Architecture and Communications for Patient Monitoring, James M. Rueter
 Self-Test and Serviceability for Dependable Central Patient Monitoring, Jeffrey M. **Goldberg**
 Firmware for a Patient Monitoring Station, Kim L. Hanna
 An Interactive HP 3000/IBM Mainframe Link, Connie J. Ishida

December 1980

Color Enhances Computer Graphics System, John B. Frost and William L. Hale
 The System 45C User's Firmware Interface, Robert A. Jewett and Robert W. Fredrickson
 Light Pen Aids User Interaction with Display, Frederick J. Porter
 A Precision Color Raster-Scan Display for Graphics Applications, Warren C. Pmtt
 Display System Designed for Color Graphics, Harold L. **Baeverstad, Jr.** and Clark C. **Bruderer**
 System 45C Power Supply Considerations, J. Steven Becker

PART 2: Subject Index

Month/Year	Subject	Model
A		
Feb. 1980	Absorbance measurements	8450A
Sept. 1980	Aircraft inspection	9845T, 3820A
Nov. 1980	Alarms, heart-rate monitoring	78501A, 78502A
Nov. 1980	Alarms, system self-test	78501A, 78502A
July 1980	Amplifier, horizontal, CRT display	HP-85
July 1980	Amplifier, vertical, CRT display	HP-85
Aug. 1980	Analyzer, audio	8903A
May 1980	Analyzer, logic state	1610B
May 1980	Analyzer, logic state	1611A Opt 001
May 1980	Analyzer, wave	3586A/B/C
Sept. 1980	Angle measurement, electronic	3820A
Sept. 1980	Antenna assembly	9845T, 3820A
Dec. 1980	Area fill, graphics images	9845C
Nov. 1980	Arrhythmia monitoring	78501A, 78502A
Oct. 1980	Assembler, table driven	64000
Aug. 1980	Audio analyzer	8903A
B		
July 1980	BASIC, personal computer	HP-85
Dec. 1980	BASIC language, graphics	9845C
Aug. 1980	Buffer IC	HP-85
C		
Mar. 1980	Calculator system, personal	HP-41C
Aug. 1980	Calculator with integrate key	HP-34C
Mar. 1980	Card reader	82104A
Nov. 1980	Cardiotach	78501A, 78502A
Apr. 1980	Carrier return loss measurements	
Sept. 1980	Cassegrain structure, telescope	3820A
Nov. 1980	Central station	78501A, 78502A
Feb. 1980	Chemical analysis, spectrophotometric	8450A
Mar. 1980	CMOS, bulk	HP-41C
Dec. 1980	Color graphics, CRT	9845C
Dec. 1980	Color specification models	9845C
Jan. 1980	Communications system measurements	3779A/B
Oct. 1980	Compiler, Pascal	64000
July 1980	Computer, personal	HP-85
Apr. 1980	Converter, frequency, 40 GHz	5355A
Sept. 1980	Coordinate measurements, large-scale, non-contact	9845T, 3820A
Apr. 1980	Counter, microwave, 26.5 GHz	5343A
Apr. 1980	Counter system, 40 GHz	5345A/55A/56A
Apr. 1980	Counter, universal	5345A
Aug. 1980	CPU design	HP-85
Dec. 1980	Cursor, tracking	9845C
Apr. 1980	CW frequency measurements	5355A, 5345A
D		
Sept. 1980	Deflection measurement	9845T, 3820A
July 1980	Delta-distance code, tape storage	HP-85
May 1980	Demultiplexing buses	1610B, 1611A
Oct. 1980	Development system, logic	64000
Feb. 1980	Diffraction gratings, holographic	
July 1980	Digital servo design	HP-85
Oct. 1980	Directed-syntax softkeys	64000
June 1980	Disc management software	
Sept. 1980	Distance correction, air temperature and pressure	3820A
June 1980	Distance measurement, electronic	3850A
Sept. 1980	Distance measurement, electronic	3820A
Aug. 1980	Distortion measurements	8903A
Dec. 1980	Dominant/nondominant color	9845C
June 1980	Dynamic distance measurements	3850A
E		
Nov. 1980	ECG monitoring	78501A, 78502A
Nov. 1980	Echoplex	78501A, 78502A
Oct. 1980	Electronic bench	
June 1980	Electronic distance meter	3850A
Sept. 1980	Electronic total station	3820A
Nov. 1980	Emulator, IBM 3270	32229A
Oct. 1980	Emulators, microprocessor	64000
Jan. 1980	End-to-end measurements	3779A/B
May 1980	FDM system testing	3586A/B/C
Nov. 1980	Fibrillation detector	78501A, 78502A
Jan. 1980	Fixtures, impedance test	16091/2/3/4A
Aug. 1980	Floating audio source	8903A
Apr. 1980	Frequency measurements to 26.5 GHz	5343A
Apr. 1980	Frequency measurements to 40 GHz	5355A
G		
May 1980	Generator, level, synthesized	3336A/B/C
Sept. 1980	Glossary, optical and mechanical terms	3820A
Dec. 1980	Graphical peripheral control	9845C
Dec. 1980	Graphics, color, CRT	9845C
July 1980	Graphics, personal computer	HP-85
Sept. 1980	Gravity sensing system	3820A
Apr. 1980	Harmonic heterodyne frequency converter, 40 GHz	5355A
Apr. 1980	Heads, frequency converter	5356A/B/C
Sept. 1980	Height-of-standards error	3820A
July 1980	HP-IB interface, personal computer	82937A
Sept. 1980	HP-IB interface, distance meter	38001A
I		
Nov. 1980	IBM/HP 3000 interactive mainframe link (3270 emulator)	32229A
Jan. 1980	Impedance analyzer, 1-1000 MHz	4191A
June 1980	Industrial distance meter	3850A
Nov. 1980	Inquiry and development facility (IDF)	32229A
July 1980	Integer processing, fast	HP-85
July 1980	Integrated circuit, buffer	HP-85
Aug. 1980	Integrated circuit, CPU	HP-85
July 1980	Integrated circuit, CRT controller	HP-85
Aug. 1980	Integrated circuit, keyboard controller	HP-85
July 1980	Integrated circuit, printer controller	HP-85
Aug. 1980	Integrated circuit, RAM controller	HP-85
July 1980	Integrated circuit, read/write amplifier	HP-85
July 1980	Integrated circuit, ROM	HP-85

Aug. 1980	Integrated circuit, ROM		Aug. 1980	Polysilicon resistors	HP-85
July 1980	Integrated circuit, tape controller	HP-85	June 1980	Position control	3850A
Aug. 1980			July 1980	Power supply, personal computer	HP-85
July 1980	Integrated circuit, translator(TC)	82937A	July 1980	Preallocation, variable	HP-85
Aug. 1980	Integration, numerical, by calculator	HP-34C	Apr. 1980	Prescaler, 0.4-1.6 GHz	
Nov. 1980	Intelligent network processor (INP)		Jan. 1980	Primary multiplex analyzer	3779A/B
Nov. 1980	Interactive Mainframe Link/3000 (IML/3000)	32229A	Mar. 1980	Printed circuit hybrid technology	HP-41C
Oct. 1980	Intermediate language	64000	Mar. 1980	Printer, thermal	82143A
Sept. 1980	Interpolation, sinusoidal patterns	3820A	July 1980	Printhead, thermal	HP-85
Nov. 1980	Intrinsics, IML/3000	32229A	Oct. 1980	PROM programmer	64500A
July 1980	I/O interfaces, personal computer	82937A	Apr. 1980	Pulsed RF frequency measurements	5355A
K					
Aug. 1980	Key, calculator, for integration	HP-34C	Q		
Aug. 1980	Keyboard controller IC	HP-85	Nov. 1980	QRS-matched filter	78501A, 78502A
L					
Oct. 1980	LALR parsing	64000	R		
Sept. 1980	Lasing diode, GaAs	3820A	Aug. 1980	RAM cell, two-read/one-write	HP-85
May 1980	Level generator	3336A/B/C	Aug. 1980	RAM controller IC	HP-85
Dec. 1980	Light pen, raster-scan CRT	9845C	July 1980	Random number generation	HP-85
Oct. 1980	Linker, table-driven	64000	Nov. 1980	Reconfiguration, automatic	78501A, 78502A
Mar. 1980	Liquid crystal display	HP-41C	Jan. 1980	Reflection coefficient measurements, 1-1000 MHz	4191A
Oct. 1980	Logic development system	64000	Sept. 1980	Refractive index, air, group velocity	3820A
May 1980	Logic state analyzer	1610B	Oct. 1980	Resource allocation	64000
May 1980	Logic state analyzer	1611A Opt 001	Jan. 1980	RF impedance analyzer	4191A
Aug. 1980	LSI circuit design	HP-85	Sept. 1980	Roelof's prism adaptor	11429A
M					
June 1980	Mass storage management software		Nov. 1980	SDLC	78501A, 78502A
Dec. 1980	Memory design, color graphics display	9845C	May 1980	Selective level meter	3586A/B/C
Mar. 1980	Memory modules	82106A	Nov. 1980	Self-test system, four-level	78501A, 78502A
Apr. 1980	Microcode development technique		May 1980	Signal generator, synthesized	3336A/B/C
Oct. 1980	Microprocessor development system	64000	Aug. 1980	Signal-to-noise measurements	8903A
May 1980	Microprocessor testing	1610B, 1611A	Aug. 1980	SINAD measurements	8903A
Apr. 1980	Microwave frequency measurements	5343A	Aug. 1980	Software development system	HP-85
Apr. 1980	Microwave frequency measurements	5355A	June 1980	Software for mass storage management	
Mar. 1980	Microwave spectrum analyzer	8559A	Feb. 1980	Spectrophotometer, ultraviolet/visible	8450A
Sept. 1980	Mirror mount	3820A	Mar. 1980	Spectrum analyzer 0.1 to 21 GHz	8559A
June 1980	Moving target measurements	3850A	Aug. 1980	State-variable filters	8903A
Sept. 1980	Multifunction sequence	3820A	June 1980	Static monitoring	3850A
May 1980	Multiphase clocking	1610B, 1611A	Nov. 1980	Superaster	78510A
Jan. 1980	Multiplex system analyzer	3779A/B	May 1980	Synthesizer/level generator	3336A/B/C
Nov. 1980	Multi-processor architecture	78501A, 78502A	T		
N					
Aug. 1980	NMOS circuit design	HP-85	Sept. 1980	Telescopes, catadioptric	3820A
Aug. 1980	Notch filter, digitally tuned	8903A	Jan. 1980	Telephone system measurements	3779A/B
Aug. 1980	Numerical integration by calculator	HP-34C	May 1980	Thermal converter, rms-to-dc	
O					
Sept. 1980	Optical angle encoder	3820A	Dec. 1980	3-D graphics, dominant area shading	9845C
Feb. 1980	Optical system, folded	8450A	Sept. 1980	Tilt meter, gravity sensing	3820A
Sept. 1980	Optical system, total station	3820A	Nov. 1980	Trends monitoring	78501A, 78502A
Aug. 1980	Oscillator, audio	8903A	Sept. 1980	Triangulation measurements	9845T, 3820A
July 1980	Output control, vectored	HP-85	Aug. 1980	Two-read/one-write memory	HP-85
P					
Oct. 1980	Pascal compiler	64000	U		
Nov. 1980	Patient information center	78501A, 78502A	Feb. 1980	Ultraviolet/visible spectrophotometer	8450A
Nov. 1980	Patient monitoring	78501A, 78502A	V		
Jan. 1980	PCM system analyzer	3779A/B	Dec. 1980	Vector generation	9845C
Q					
R					
S					
T					
U					
V					
W					
May 1980	Wave analyzer		June 1980	Velocity measurements	3850A
			May 1980	Wave analyzer	3586A/B/C

PART 3: Model Number Index

Model	Product	Month/Year	1611A Opt 001	Logic State Analyzer	May 1980
HP-34C	Calculator	Aug. 1980	3336A/B/C	Synthesizer/Level Generator	May 1980
HP-41C	Calculator System	Mar. 1980	3586A/B/C	Selective Level Meter	May 1980
HP-85	Personal Computer	July 1980	3779A/B	Primary Multiplex Analyzer	Jan. 1980
		Aug. 1980	3820A	Total Station	Sept. 1980
		Aug. 1980	3822A	Coordinate Determination System (9845T, 3820A)	Sept. 1980
1610B	Logic State Analyzer	May 1980			

3850A	Industrial Distance Meter	June 1980	16094A	Probe Fixture	Jan. 1980
4191A	RF Impedance Analyzer	Jan. 1980	32229A	IML/3000	Nov. 1980
5316A	Universal Counter	Sept. 1980	38001A	HP-IB Distance Meter Interface	June 1980
5335A	Universal Counter	Sept. 1980			Sept. 1980
5343A	Microwave Frequency Counter	Apr. 1980	64000	Logic Development System	Oct. 1980
5345A	Electronic Counter	Apr. 1980	64100A	Development Station	Oct. 1980
5355A	Automatic Frequency Converter	Apr. 1980	64300A	Logic Analyzer	Oct. 1980
5356A/B/C	Frequency Converter Heads	Apr. 1980	64500A	PROM Programmer	Oct. 1980
8450A	UV/Vis Spectrophotometer	Feb. 1980	78501A	Patient Information Center	Nov. 1980
8559A	Spectrum Analyzer 0.1-21 GHz	Mar. 1980	78502A	Patient Information Center Display	Nov. 1980
8903A	Audio Analyzer	Aug. 1980	78510A	Equipment Cabinet	Nov. 1980
9845C	Color Graphics Computer	Dec. 1980	78511A	Single-Channel Recorder	Nov. 1980
9876A	Thermal Graphics Printer	Nov. 1980	78572A	Dual-Channel Recorder	Nov. 1980
10264A	General-Purpose Personality Module for 1611A	May 1980	82104A	Card Reader	Mar. 1980
11429A	Roelof's Prism Adaptor	Sept. 1980	82106A	Memory Modules	Mar. 1980
14451A	Circuit Analyzer Board	Nov. 1980	82143A	Thermal Printer	Mar. 1980
16091A	Coaxial Fixture Set	Jan. 1980	82903A	HP-85 16K RAM Module	July 1980
16092A	Spring Clip Fixture	Jan. 1980	82936A	HP-85 ROM Module	July 1980
16093A/B	Binding Post Fixture	Jan. 1980	82937A	HP-85 HP-IB Interface	July 1980

PART 4: Author Index

A		House, Charles H.	Oct. 1980	Nielsen, Larry L.	Nov. 1980
Adleman, George L.	Nov. 1980			O	
Alonso-Velez, Izagma I.	Oct. 1980			Offermann, Robert W.	Apr. 1980
B		Ichino, Toshio	Jan. 1980	Ogden, Deborah J.	May 1980
Baeverstad, Harold L., Jr.	Dec. 1980	Ishida, Connie J.	Nov. 1980	Ohkawara, Hideo	Jan. 1980
Batham, Andrew	Jan. 1980			O'Neill, Peter M.	May 1980
Bausch, James F.	July 1980	J			
Becker, J. Steven	Dec. 1980	James, Gerald E.	Feb. 1980	P	
Belding, Richard L.	Mar. 1980	Jekat, Hans J.	Apr. 1980	Pearson, Robert	Jan. 1980
Blancke, Timothy B.	Mar. 1980	Jensen, Ronald C.	Sept. 1980	Pontis, George D.	Aug. 1980
Blologlu, Ali	Nov. 1980	Jewett, Robert A.	Dec. 1980	Porter, Frederick J.	Dec. 1980
Bourque, Jacques Gregori	Apr. 1980	Johnson, Douglas R.	Sept. 1980	Pratt, William C.	Dec. 1980
Boyan, Corydon J.	Oct. 1980	Johnson, Norman L.	Mar. 1980		
Boyd, Patrick V.	Aug. 1980			Q	
Brown, Troy L.	Mar. 1980	K		Quick, Roger D.	Mar. 1980
Bruderer, Clark C.	June 1980	Kahan, William M.	Aug. 1980		
Bryant, Mike	Dec. 1980	Keil, Ronald W.	July 1980	R	
Buck, Dean	Dec. 1980	Kerr, Brian W.	Oct. 1980	Rueter, James M.	Nov. 1980
	Jan. 1980	Kerschner, Ronald K.	Sept. 1980	Russell, Homer C.	July 1980
	June 1980	Knudsen, Knud L.	Feb. 1980	S	
C		Koepke, Larry L.	Apr. 1980	Saponas, Thomas A.	Oct. 1980
Collins, Douglas J.	July 1980			Sasaki, Gary D.	Sept. 1980
Conklin, David R.	Mar. 1980	L		Sayed, Mohamed M.	Apr. 1980
Cox, Roger	Oct. 1980	LaFollette, Robert J.	Sept. 1980	Schleifer, Arthur	Feb. 1980
D		Lau, Chung Y.	Aug. 1980	Schneider, Richard F.	Apr. 1980
DeVilbiss, Alan J.	Oct. 1980	Lo, Clement C.	July 1980	Schwartz, Alfred	Feb. 1980
DiPietro, David M.	Sept. 1980	Low, Robert N.	Mar. 1980	Sims, David J.	Sept. 1980
Donnelly, James B.	Oct. 1980	Lowe, David J.	Mar. 1980	Smith, David E.	June 1980
Dykes, Mark	Jan. 1980	Lynch, Todd R.	July 1980	Spreadbury, Brian G.	July 1980
			Aug. 1980	Steiger, Gerald W.	Mar. 1980
F		M		Steiner, Glenn C.	Feb. 1980
Felsenstein, Ronald E.	Apr. 1980	Marathe, Vijay V.	Mar. 1980	Stettiner, Robert L.	Nov. 1980
Fleming, James H.	Mar. 1980	Marton, Virgil	Jan. 1980	Stewart, James B.	Oct. 1980
Foote, James D.	Aug. 1980	Maze, Craig	Mar. 1980	Sugihara, Noriyuki	Jan. 1980
Fredrickson, Robert W.	Dec. 1980	McDonley, P. Alan	Oct. 1980	Sweetser, David J.	July 1980
Frost, John B.	Dec. 1980	McOmber, Val D.	Sept. 1980		
G		Mikkelsen, Tim I.	July 1980	T	
George, David M.	Sept. 1980	Mills, Nelson A.	July 1980	Thomas, Paul L.	May 1980
Goldberg, Jeffrey M.	Nov. 1980		Aug. 1980	W	
Gort, Alfred F.	Sept. 1980	Molinari, David H.	Mar. 1980	Ward, Michael J.	Sept. 1980
Greenley, Gordon A.	Oct. 1980	Monnier, Richard E.	Feb. 1980	Wasinger, Gerald F.	Sept. 1980
		Moore, Charles E.	Sept. 1980	Weber, Lynn	Feb. 1980
H		Morganthaler, Mark P.	Feb. 1980	Widmayer, Robert W.	Feb. 1980
Hale, William L.	Dec. 1980	Morris, Donald L.	Mar. 1980	Willis, Barry G.	Feb. 1980
Hanna, Kim L.	Nov. 1980	Morrill, Justin S., Jr.	May 1980	Winslow, Phillip D.	May 1980
Hanna, William A.	Nov. 1980	Musch, Bernard E.	Mar. 1980	Wong, John J.	Mar. 1980
Hansen, John D.	June 1980	Muterspaugh, Milo E.	Oct. 1980		
Hansen, John D.	May 1980			Y	
Henscheid, Kent R.	July 1980	N		Yackle, Brad E.	Oct. 1980
Hopkins, George W.	Feb. 1980	Nairn, John H.	July 1980		

PART 1: Chronological Index

January 1981

Handheld Scanner Makes Reading Bar Codes Easy and Inexpensive, John J. Uebbing, Donald L. Lubin, and Edward G. Weaver, Jr.

Reading Bar Codes for the HP-41C Programmable Calculator, David R. Conklin and Thomas L. Revere III

A High-Quality Low-Cost Graphics Tablet, Donald J. Stavely

Capacitive Stylus Design, Susan M. Cardwell

Programming the Graphics Tablet, Debra S. Bartlett

Tablet/Display Combination Supports Interactive Graphics, David

A. Kinsell

Programming for Productivity: Factory Data Collection Software,

Steven H. Richard

A Terminal Management Tool, Francois Gaullier

February 1981

A High-Purity, Fast-Switching Synthesized Signal Generator,

Roland Hassun

Digital Control for a High-Performance Programmable Signal

Generator, Hamilton C. Chisholm

8662A Power-On and Self-Test Sequences, Albert W. Kovalick

Low-Noise RF Signal Generator Design, Dieter Scherer, Bill S.

Chan, Fred H. Ives, William J. Crilly, Jr., and Donald W.

Mathiesen

A Switching Power Supply for a Low-Noise Signal Generator,

Gerald L. Ainsworth

A High-Purity Signal Generator Output Section, David L. Platt

and Donald T. Borowski

Product Design for Precision and Purity, Robert L. DeVries

Verifying High Spectral Purity and Level Accuracy in Production,

John W. Richardson

March 1981

New Display Station Offers Multiple Screen Windows and Dual

Data Communications Ports, Gary C. Stass

Display Station's User Interface is Designed for Increased Pro-

ductivity, Gordon C. Graham

Hardware and Firmware Support for Four Virtual Terminals in

One Display Station, Srinivas Sukumar and John D. Wiese

A Silicon-on-Sapphire Integrated Video Controller, Jean-

Claude Roy

SC-Cut Quartz Oscillator Offers Improved Performance, J.

Robert Burgoon and Robert L. Wilson

The SC Cut, a Brief Summary, Charles A. Adams and John A.

Kusters

Flexible Circuit Packaging of a Crystal Oscillator, James H. Stein-

metz

New Temperature Probe Locates Circuit Hot Spots, Marvin F.

Estes and Donald Zimmer, Jr.

April 1981

An Interactive Material Planning and Control System for Manu-

facturing Companies, Nancy C. Federman and Robert M. Steiner

A Novel Approach to Computer Application System Design and

Implementation, Loretta E. Winston

Automating Application System Operation and Control, Barry D.

Kurtz

Precision DVM Has Wide Dynamic Range and High Systems Speed,

Lawrence T. Jones, James J. Ressimyer, and Charles A. Clark

May 1981

A Precision High-Speed Electron Beam Lithography System, John

C. Eidson, Wayne C. Haase, and Ronald K. Scudder

A Precision, High-Current, High-Speed Electron Beam Lithog-

raphy Column, John Kelly, Timothy R. Groves, and Heui Pei Kuo

A Precision X-Y Stage and Substrate Handling System for Electron

Beam Lithography, Earl E. Lindberg and Charles L. Merja

Software Control for the HP Electron Beam Lithography System,

Bruce Hamilton

Pattern Data Flow in the HP Electron Beam System, Michael J.

Cannon, Howard F. Lee, and Robert B. Lewis

Calibration of the HP Electron Beam System, Faith L. Bugely,

Ian F. Osborne, Geraint Owen, and Robert B. Schudy

Digital Adaptive Matched Filter for Fiducial Mark Registration,

Tsen-gong Jim Hsu

June 1981

Viewpoints—Marco Negrete on Structured VLSI Design,

VLSI Design Strategies and Tools, William J. Haydamack and

Daniel J. Griffin

Advanced Symbolic Artwork Preparation (ASAP), Kyle M. Black

and P. Kent Hardage

Design and Simulation of VLSI Circuits, Louis K. Scheffer, Rich-

ard I. Dowell, and Ravi M. Apte

Transistor Electrical Characterization and Analysis Program,

Ebrahim Khalily

An Interactive Graphics System for Structured Design of Inte-

grated Circuits, Diane F. Bracken and William J. McCalla

IC Layout on a Desktop Computer, Thomas H. Baker

VLSI Design and Artwork Verification, Michael G. Tucker and

William J. Haydamack

University and Industrial Cooperation for VLSI, Merrill W.

Brooksby and Patricia L. Castro

A Process Control Network, Christopher R. Clare

Benefits of Quick-Turnaround Integrated Circuit Processing,

Merrill W. Brooksby, Patricia L. Castro and Fred L. Hanson

Viewpoints—David Packard on University and Industry Coopera-

tion

July 1981

Instrument System Provides Precision Measurement and Control

Capabilities, Virgil L. Laing

Precision Data Acquisition Teams up with Computer Power,

Lawrence E. Heyl

Data Logging Is Easy with an HP-85/3054A Combination, David L.

Wolpert

Versatile Instrument Makes High-Performance Transducer-

Based Measurements, James S. Epstein and Thomas J. Heger

Plug-in Assemblies for a Variety of Data Acquisition/Control

Applications, Thomas J. Heger, Patricia A. Redding, and Rich-

ard L. Hester

Desktop Computer Redesigned for Instrument Automation, Vin-

cent C. Jones

A Unifying Approach to Designing for Reliability, Kenneth F.

Watts

Designing Testability and Serviceability into the 9915A, David

J. Sweetser

Operator Interface Design, Robert A. Gilbert

Cost-Effective Industrial Packaging, Eric L. Clarke

August 1981

200-kHz Power FET Technology in New Modular Power Supplies,

Richard Myers and Robert D. Peck

Magnetic Components for High-Frequency Switching Power

Supplies, Winfried Seipel

Laboratory-Performance Autoranging Power Supplies Using

Power MOSFET Technology, Dennis W. Gyma, Paul W. Bailey,

John W. Hyde, and Daniel R. Schwartz
 The Vertical Power MOSFET for High-Speed Power Control,
 Karl H. Tiefert, **Dah Wen Tsang**, Robert L. Myers, and Victor Li
 Power Line Disturbances and Their Effect on Computer Design and
 Performance, Arthur W. **Duell** and W. Vincent Roland

September 1981

A Reliable, Accurate CO₂ Analyzer for Medical Use, Rodney
 J. Solomon
 A Miniature Motor for the CO₂ Sensor, Edwin B. Merrick
 An **End-Tidal Respiration-Rate** Algorithm, John J. Krieger
 In-Service CO₂ Sensor Calibration, Russell A. Parker and Rodney
 J. Solomon
 Making Accurate CO₂ Measurements, John J. Krieger
 A Versatile Low-Frequency Impedance Analyzer with an Integral
 Tracking Gain-Phase Meter, Yoh Narimatsu, **Kanuyaki Yagi**,
 and Takeo Shimizu
 A Fast, Programmable Pulse Generator Output Stage, Peter Aue

October 1981

Development of a High-Performance, Low-Mass, Low-Inertia
 Plotting Technology, Wayne D. Baron, Lawrence **LaBarre**,
 Charles E. Tyler, and Robert G. Younge
 Plotter Servo Electronics Contained on a Single IC, Clement C. Lo
 An Incremental Optical Shaft Encoder Kit with Integrated Opto-
 electronics, Howard C. **Epstein**, Mark G. Leonard, and **John**
 J. Uebbing
 New Plotting Technology Leads to a New Kind of Electrocardio-
 graph, **Peter H. Dorward**, Steven J. Koerper, Martin K. Mason,
 and Steven A. Scampini

November 1981

Development of a Large Drafting Plotter, Marvin L. Patterson
 and George W. Lynch
 Aspects of Microprocessor and I/O Design for a Drafting Plotter,
 Lowell J. Stewart, Dale W. Schaper, Neal J. Martini, and **Hatem**
 E. Mostafa
 Motor Drive Mechanics and Control Electronics for a High-Per-
 formance Plotter, Terry L. Flower and Myungsae Son
 Firmware Determines Plotter Personality, Larry W. Hennessee,
 Andrea K. **Frankel**, Mark A. **Overton**, and Richard B. Smith
 Y-Axis Pen Handling System, Robert D. **Haselby**, David J. Perach,
 and Samuel R. **Haugh**
 X-Axis Micro-Grip Drive and Platen **Design**, **Ronald J.** Kaplan and
 Robert S. **Townsend**

December 1981

Surface-Acoustic-Wave Delay Lines and Transversal Filters,
 Waguih S. **Ishak**, H. Edward Karrer, and William R. Shreve,
 Surface-Acoustic-Wave Resonators, Peter S. Cross and Scott
 S. Elliott
 SAWR Fabrication, Robert C. **Bray** and Yen C. Chu
 280-MHz Production SAWR, Marek E. **Mierzwinski** and Mark E.
 Terrien
 Physical Sensors Using SAW Devices, J. Fleming Dias
 Proximity Effect Corrections by Means of Processing: Theory
 and Applications, Paul Rissman and Michael P.C. Watts
 Monte **Carlo** Simulations for Electron Beam Exposures, **Armand P.**
 Neukermans and Steven G. **Eaton**

PART 2: Subject Index

Month/Year	Subject	Model			
	A				
Apr. 1981	A-to-D conversion	3456A			
Aug. 1981	Ac line conditioning				
Apr. 1981	Ac resistive attenuator	3456A			
July 1981	Actuator plug-in	3497A,44428A			
Nov. 1981	Adaptive dash pattern length	7580A			
Sept. 1981	Airway adaptor	14361A			
Sept. 1981	Algorithms, end-tidal respiration rate	47210A			
May 1981	Algorithm, overlap removal				
July 1981	Analog multiplexer	3497A,44421A,44422A			
Apr. 1981	Application customizer	32260A			
Apr. 1981	Application monitor	32260A			
Nov. 1981	Arc-generated characters	7580A			
Nov. 1981	Arc generator	7580A			
June 1981	Artwork verification, VLSI				
	B				
Jan. 1981	Bar-code programs	HP-41C,82153A			
Jan. 1981	Bar-code reading wand	HEDS-3000,82153A			
May 1981	Bootstrap calibration				
	C				
May 1981	Calibration, electron beam system				
Jan. 1981	Calculator, bar code input	HP-41C, 82153A			
Jan. 1981	Capacitive stylus	9111A/T			
Aug. 1981	Capacitors, film	65000A			
Sept. 1981	Capnometer	47210A			
Sept. 1981	Carbon dioxide analyzer	47210A			
July 1981	Channel scanning	3497A			
Nov. 1981	Character fonts	7580A,9872B			
Sept. 1981	CO ₂ sensor	14360A			
Oct. 1981	Code wheel	HEDS-5000			
Dec. 1981	Computer model, electron beam exposure and development				
Aug. 1981	Computer site wiring				
July 1981	Control signal interface	9915A			
Aug. 1981	Converter, flyback	6012A/6024A			
Aug. 1981	Converter, sine-wave	65000A			
July 1981	Counter	3497A,44426A			
Mar. 1981	CRT terminal	2626A			
Mar. 1981	Crystal oscillator, SC cut	10811A/B			
Dec. 1981	Crystals, bulk-wave				
July 1981	Current D-to-A converter	3497A,44430A			
Apr. 1981	Customizer, application	32260A			
	D				
July 1981	D-to-A converter, current	3497A,44430A			
July 1981	D-to-A converter, voltage	3497A,44429A			
July 1981	Data acquisition I control	3054A/C/DL,3497A/3498A			
Jan. 1981	DATA CAP/1000 data capture software	92080A			
Mar. 1981	Data communication ports, dual	2626A			
July 1981	Data logging	3054DL			
May 1981	Decompressor, pattern data				
May 1981	Deflector, octopole and quadrupole				
Dec. 1981	Delay lines, SAW				
June 1981	Design, VLSI				
Oct. 1981	Detector IC	HEDS-5000			
July 1981	Digital input	3497A,44425A			
July 1981	Digital output	3497A,44428A			
Oct. 1981	Digitally controlled plotter	4700A			
Jan. 1981	Digitizing, capacitive-coupling	9111A/T			
Mar. 1981	Display station	2626A			
Aug. 1981	DMOS process	HPWR-6501			
Aug. 1981	Downprogrammer, power supply	6012A/6024A			
Apr. 1981	DVM	3456A			
July 1981	DVM module	3497A			
	E				
Oct. 1981	ECG	4700A			
Sept. 1981	ECL, 10k and 100k, pulse generator for	8161A			
Oct. 1981	Electrocardiograph	4700A			
Dec. 1981	Electron beam lithography, proximity effect				
May 1981	Electron beam lithography system				
Oct. 1981	Encoder, shaft, optoelectronic	HEDS-5000,4700A			
	F				
Jan. 1981	Factory data collection software	92080A			
Feb. 1981	Fast switching signal generator	8662A			
Aug. 1981	FET, power	HPWR-6501			
May 1981	Fiducial mark registration				
May 1981	Filter, adaptive matched				
Nov. 1981	Firmware development tools	7580A			
Mar. 1981	Flexible circuit packaging	10811A/B			

G			
Sept. 1981	Gain-phase measurement	4192A	
Sept. 1981	Gas measurements, static station	47210A	
Feb. 1981	Generator, signal, 0.01-1280 MHz	8662A	
June 1981	Graphics for VLSI design		
Jan. 1981	Graphics, interactive system	9111T,1350S	
Jan. 1981	Graphics tablet	9111A/T	
Dec. 1981	Grating reflectors		
Oct. 1981	Grit-wheel paper drive	4700A	
Nov. 1981	Grit-wheel technology	7580A	
Aug. 1981	Grounding of computer systems		
July 1981	Guarded measurements	3497A,44421A	

H			
June 1981	Hierarchical design, VLSI		
Feb. 1981	High-purity signal generator	8662A	
May 1981	High-speed electron beam system		
May 1981	High-speed processor (HAL)		

I			
Dec. 1981	IDT		
Sept. 1981	Impedance analyzer, low-frequency	4192A	
Sept. 1981	Impedance test fixtures	16095A	
Aug. 1981	Inductor, control	65000A	
Aug. 1981	Inductor, resonating	65000A	
July 1981	Industrial packaging	9915A	
Sept. 1981	Infrared absorption	47210A	
June 1981	Integrated circuit design, VLSI		
June 1981	Integrated circuit process control network (PCS)		
June 1981	Integrated circuit processing, rapid		
June 1981	Interactive graphics system (IGS)		
Dec. 1981	Interdigital transducer		
Sept. 1981	Interfering gas compensation	47210A	
Apr. 1981	Inventory control system	32260A	
Nov. 1981	I/O bus, drafting plotter	7580A	

J

K

L

Aug. 1981	Laboratory power supplies	6012A/6024A	
May 1981	Lithography, electron beam		
June 1981	Logic simulation, VLSI		
Feb. 1981	Low-noise signal generator	8662A	

M

Aug. 1981	Magnetic components, 200 kHz	65000A	
Apr. 1981	Materials management system	32260A	
May 1981	Memory, pattern		
Nov. 1981	Micro-grip drive	7580A	
Dec. 1981	Model, electron beam exposure and development		
July 1981	Modular computer	9915A	
Apr. 1981	Monitor, application	32260A	
Aug. 1981	MOSFET fabrication	HPWR-6501	
Aug. 1981	MOSFET, power	HPWR-6501	
Sept. 1981	Motor, filter wheel, miniature	47210A	
Dec. 1981	Multilayer resist techniques		
Apr. 1981	Multi-Slope II	3456A	

N

O

Aug. 1981	OEM power supplies	65000A	
Apr. 1981	Ohms measurement, wide dynamic range	3456A	
July 1981	Operator interface card	9915A	
Oct. 1981	Optoelectronic modules	HEDS-5000	
Mar. 1981	Oscillator, crystal, SC cut	10811A/B	

P

Oct. 1981	Paper drive, plotter	4700A	
Nov. 1981	Paper drive, plotter	7580A	
Apr. 1981	Parts and bills of material	32260A	
Nov. 1981	Pen capping and selection	7580A	
Nov. 1981	Pen carousel	7580A	
Nov. 1981	Pen carriage design	7580A	

Nov. 1981	Pen control, velocity and position	7580A	
Nov. 1981	Pen-lift control electronics	7580A	
Nov. 1981	Pen-lift mechanism	7580A	
Feb. 1981	Phase-locked loops, signal generator	8662A	
Feb. 1981	Phase noise, low, signal generator	8662A	
Nov. 1981	Platen design	7580A	
Oct. 1981	Plotting, low-mass, low-inertia	4700A	
Nov. 1981	Plotting, low-mass, low-inertia	7580A	
July 1981	Plug-in assemblies	3497A,3054A,3498A	
Aug. 1981	Power disturbances		
Aug. 1981	Power supplies, autoranging	6012A/6024A	

Aug. 1981	Power supplies, modular, 50W	65000A	
Feb. 1981	Power supply, switching, signal generator	8662A	
Mar. 1981	Robe, temperature	10023A	
June 1981	Process control network, integrated circuit		
June 1981	Processing, IC, rapid		
Apr. 1981	Production scheduling system	32260A	
Jan. 1981	Programmable calculator, bar-code input	HP-41C,82153A	

Dec. 1981	Proximity effect in electron beam lithography		
Sept. 1981	Pulmonary monitor	47210A	
Sept. 1981	Pulse generator, 100 MHz, 1.3 ns	8161A	
Apr. 1981	Purchase order tracking system	32260A	

Q

June 1981	Quick-turnaround IC processing		
-----------	--------------------------------	--	--

R

Aug. 1981	Rectifier, Schottky	65000A	
Jan. 1981	Reflected-light sensor	HEDS-3000,HEDS-1000	
July 1981	Real-time clock, nonvolatile	3497A	
July 1981	Reliability testing	9915A	
Dec. 1981	Resonators, SAW		
Oct. 1981	Rhythm function	4700A	
Apr. 1981	Routings and workcenters	32260A	

S

Dec. 1981	SAW fabrication		
Dec. 1981	Scattering, electron, in resist		
Mar. 1981	SC cut crystal oscillator	10811A/B	
June 1981	Schematic input, VLSI		
Sept. 1981	Schottky TTL, pulse generator for	8161A	
July 1981	Self-test capability	9915A	
Dec. 1981	Sensors, SAW		
Nov. 1981	Servomechanism, drafting plotter	7580A	
Oct. 1981	Servomechanism IC		
Feb. 1981	Shearing wedge	8662A	
Feb. 1981	Signal generator 0.01-1280 MHz	8662A	
June 1981	Simulation of VLSI circuits		
Dec. 1981	Simulation of electron beam exposures		
Aug. 1981	Sine-wave power conversion	65000A	
Dec. 1981	Small-beam approach in electron beam lithography		
Nov. 1981	Smart pen module	7580A	
Feb. 1981	Spectral purity	8662A	
Sept. 1981	Staircase generator	8161A	
Apr. 1981	Standard product cost system	32260A	
July 1981	Strain gauge/bridge plug-in	3497A,44427A/B	
Mar. 1981	Stress compensated crystal cut		
June 1981	Structured design, VLSI		
Dec. 1981	Surface-acoustic-wave devices		
Oct. 1981	Sweetheart technology	4700A	
Nov. 1981	Sweetheart technology	7580A	
Aug. 1981	Switching regulated power supplies, 200 kHz	65000A	
June 1981	Symbolic artwork preparation, VLSI		
Feb. 1981	Synthesized signal generator 0.1-1280 MHz	8662A	

T

Mar. 1981	Temperature probe	10023A	
Dec. 1981	Temperature, turnover		
Mar. 1981	Temperature, turnover		
Mar. 1981	Terminal, computer, CRT	2626A	
Jan. 1981	Terminal management tool	92080A	
July 1981	Thermocouple compensation	3497A,44422A	

F									
Federman, Nancy C.	Apr.	1981	Lee, Howard F.	May	1981	Schaper, Dale W.	Nov.	1981	
Flower, Terry L.	Nov.	1981	Leonard, Mark G.	Oct.	1981	Scheffer, Louis K.	June	1981	
Frankel, Andrea K.	Nov.	1981	Lewis, Robert B.	May	1981	Scherer, Dieter	Feb.	1981	
			Li, Victor	Aug.	1981	Schudy, Robert B.	May	1981	
G			Lindberg, Earl E.	May	1981	Schwartz, Daniel R.	Aug.	1981	
Gaullier, Francois	Jan.	1981	Lo, Clement C.	Oct.	1981	Scudder, Ronald K.	May	1981	
Gilbert, Robert A.	July	1981	Lubin, Donald L.	Jan.	1981	Seipel, Winfried	Aug.	1981	
Graham, Gordon C.	Mar.	1981	Lynch, George W.	Nov.	1981	Shimizu, Takeo	Sept.	1981	
Griffin, Daniel J.	June	1981				Shreve, William R.	Dec.	1981	
Groves, Timothy R.	May	1981	M			Smith, Richard B.	Nov.	1981	
Gyma, Dennis W.	Aug.	1981	Martini, Neal J.	Nov.	1981	Solomon, Rodney J.	Sept.	1981	
			Mason, Martin K.	Oct.	1981	Son, Myungsae	Nov.	1981	
H			Mathiesen, Donald W.	Feb.	1981	Staas, Gary C.	Mar.	1981	
Haase, Wayne C.	May	1981	McCalla, William J.	June	1981	Stavely, Donald J.	Jan.	1981	
Hamilton, Bruce	May	1981	Merja, Charles L.	May	1981	Steiner, Robert M.	Apr.	1981	
Hanson, Fred L.	June	1981	Merrick, Edwin B.	Sept.	1981	Steinmetz, James H.	Mar.	1981	
Hardage, P. Kent	June	1981	Mierzwinski, Marek E.	Dec.	1981	Stewart, Lowell J.	Nov.	1981	
Haselby, Robert D.	Nov.	1981	Mostafa, Hatem E.	Nov.	1981	Sukumar, Srinivas	Mar.	1981	
Hassun, Roland	Feb.	1981	Myers, Richard	Aug.	1981	Sweetser, David J.	July	1981	
Haugh, Samuel R.	Nov.	1981	Myers, Robert L.	Aug.	1981				
Haydamack, William J.	June	1981				T			
Heger, Thomas J.	July	1981	N			Terrien, Mark E.	Dec.	1981	
Hennessee, Larry W.	Nov.	1981	Narimatsu, Yoh	Sept.	1981	Tiefert, Karl H.	Aug.	1981	
Hester, Richard L.	July	1981	Negrete, Marco	June	1981	Tsang, Dah Wen	Aug.	1981	
Heyl, Lawrence E.	July	1981	Neukermans, Armand P.	Dec.	1981	Townsend, Robert S.	Nov.	1981	
Hsu, Tsen-gong Jim	May	1981				Tucker, Michael G.	June	1981	
Hyde, John W.	Aug.	1981	O			Tyler, Charles E.	Oct.	1981	
			Osborne, Ian F.	May	1981				
			Overton, Mark A.	Nov.	1981	U			
			Owen, Geraint	May	1981	Uebbing, John J.	Jan.	1981	
I						Ura, Frank	Oct.	1981	
Ishak, Waguih S.	Dec.	1981	P				May	1981	
Ives, Fred H.	Feb.	1981	Packard, David	June	1981				
			Parker, Russell A.	Sept.	1981	V			
			Patterson, Marvin L.	Nov.	1981				
J			Peck, Robert D.	Aug.	1981	W			
Jones, Lawrence T.	Apr.	1981	Perach, David J.	Nov.	1981	Watts, Kenneth F.	July	1981	
Jones, Vincent C.	July	1981	Platt, David L.	Feb.	1981	Watts, Michael P.C.	Dec.	1981	
						Weaver, Edward G., Jr.	Jan.	1981	
K			Q			Wiese, John D.	Mar.	1981	
Kaplan, Ronald J.	Nov.	1981	Redding, Patricia A.	July	1981	Wilson, Robert L.	Mar.	1981	
Karrer, H. Edward	Dec.	1981	Ressmeyer, James J.	Apr.	1981	Winston, Loretta E.	Apr.	1981	
Kelly, John	May	1981	Revere, Thomas L., III	Jan.	1981	Wolpert, David L.	July	1981	
Khalily, Ebrahim	June	1981	Richard, Steven H.	Jan.	1981				
Kinsell, David A.	Jan.	1981	Richardson, John W.	Feb.	1981	X			
Koerper, Steven J.	Oct.	1981	Rissman, Paul	Dec.	1981	Yagi, Kanuyaki	Sept.	1981	
Kovalick, Albert W.	Feb.	1981	Roland, W. Vincent	Aug.	1981	Younge, Robert G.	Oct.	1981	
Krieger, John J.	Sept.	1981	Roy, Jean-Claude	Mar.	1981				
Kuo, Huei Pei	May	1981				Y			
Kurtz, Barry D.	Apr.	1981	R						
Kusters, John A.	Mar.	1981	Redding, Patricia A.	July	1981	Z			
			Ressmeyer, James J.	Apr.	1981	Zimmer, Donald, Jr.	Mar.	1981	
			Revere, Thomas L., III	Jan.	1981				
			Richard, Steven H.	Jan.	1981				
			Richardson, John W.	Feb.	1981				
			Rissman, Paul	Dec.	1981				
			Roland, W. Vincent	Aug.	1981				
			Roy, Jean-Claude	Mar.	1981				
			S						
L			Scampini, Steven A.	Oct.	1981				
LaBarre, Lawrence	Oct.	1981							
Laing, Virgil L.	July	1981							

Hewlett-Packard Company, 3000 Hanover Street, Palo Alto, California 94304

HEWLETT-PACKARD JOURNAL

Volume 32 • Number 12

Technical Information from the Laboratories of

Hewlett-Packard Company

Hewlett-Packard Company, 3000 Hanover Street

Palo Alto, California 94304 U.S.A.

Hewlett-Packard Central Mailing Department

Van Heuven Goedhartlaan 121

1181 KK Amstelveen, The Netherlands

Yokogawa-Hewlett-Packard Ltd., Suginami-Ku Tokyo 168 Japan

Hewlett-Packard (Canada) Ltd

6877 Goreway Drive Mississauga Ontario L4V 1M8 Canada

Bulk Rate
U.S. Postage
Paid
Hewlett-Packard
Company

CHANGE OF ADDRESS • To change your address or delete your name from our mailing list please send us your old address label. Send changes to Hewlett-Packard Journal, 3000 Hanover Street, Palo Alto, California 94304 U.S.A. Allow 60 days.

Index

HEWLETT-PACKARD JOURNAL

Volume 33 January 1982 through December 1982

Hewlett-Packard Company, 3000 Hanover Street, Palo Alto, California 94304 U.S.A.
Hewlett-Packard Central Mailing Dept., Van Heuven Goedhartlaan 121, 1181 KK Amstelveen, The Netherlands
Hewlett-Packard (Canada) Ltd., 6877 Goreway Drive, Mississauga, Ontario L4V 1M8 Canada
Yokogawa-Hewlett-Packard Ltd., Sugiyama-ku, Tokyo 168 Japan

PART 1: Chronological Index

January 1982

- Signal Processing Using Surface Acoustic Waves, William R. **Shreve**
Retrofitting for Signature **Analysis** Simplified, Robert **Rhodes-Burke**
A Fast, Compact High-Quality Digital Display for Instrumentation Applications, Kunio Hasebe, William R. **Mason**, and Thomas J. **Zamborelli**

February 1982

- A Broadband, Fully Programmable Microwave Sweep Oscillator, Rolf Dalichow and Douglas E. Fullmer
A New Series of Programmable Sweep Oscillator Plug-ins, Gary W. Holmlund, Glenn E. **Elmore**, and **Duaine** C. Wood
Portable Defibrillator-Monitor for Cardiac Resuscitation, Paul I. Bennett and Victor C. Jones

March 1982

- High-Performance** Computing with Dual ALU Architecture and ECL Logic, **Frederic** C. **Amerson**, Mark S. **Linsky**, and Elio A. **Toschi**
Dual ALU Micromachine Has Powerful Development Tools, Richard D. **Murillo**
Powerful Diagnostic Philosophy Reduces Downtime, David J. **Ashkenas** and Richard F. **DeGabriele**
A **High-Performance Memory** System with Growth Capability, Ken M. **Hodor** and **Malcolm** E. **Woodward**
An **Input/Output** System for a 1-MIPS Computer, W. Gordon **Matheson** and J. Marcus **Stewart**
The Advanced Terminal Processor: A New Terminal **I/O** Controller for the HP 3000, James E. **Beetem**
GUEST—A Signature Analysis Based Test System for ECL Logic, Edward R. Holland and James L. Robertson
Designing for Testability with GUEST, Karen L. **Meinert**
Packaging the HP 3000 Series 64, Manmohan Kohli and Bennie E. **Helmso**

April 1982

- An Integrated Test Set for Microwave Radio Link Baseband Analysis, **Richard** J. Roberts
Design of a Precision Receiver for an Integrated Test Set, J. Guy Douglas and David **Stockton**
Control and Display System for a Baseband Analyzer, Lawrence **Lowe** and Brian W. **Woodroffe**
A Combined Tracking and White-Noise Generator, John R. Pottinger and Stephen A. Biddle
Wideband, Fast-Writing Oscilloscope Solves Difficult Measurement Problems, Danny J. **Oldfield** and James F. **Haley**

May 1982

- Advanced Multilingual Computer Systems for Measurement Automation and Computer-Aided Engineering Applications, John L. **Bidwell** and David W. **Palermo**
Hardware Design for an Integrated **Instrumentation** Computer System, Don D. Stewart, Robert J. **Horning**, Ken L. Burgess, Ronald G. Rogers, and James W. **McLucas**
I/O Philosophy and Architecture for **Instrumentation** Control, **Loyd** F. Nelson
Low-Cost Printers for the **9826A** and **9836A** Computers, Michael J. **Sprovierio**

- The **9826A/9836A** Language Systems, Kathryn Y. **Kwinn**, Robert M. **Hallissy**, and Roger E. **Ison**
Data Communications for the **9826A** and **9836A** Computer Systems, Carl M. **Dierschow** and Robert P. **Uhrich**

June 1982

- Laser Printing System Provides Flexible, High-Quality, **Cost-Effective** Computer Output, James A. Hall
Six Steps to a Printed Page, Robert R. Hay
Laser Printing System Architecture, James T. **Langley**
Interactive Software for Intelligent Printers, Kathleen A. **Fitzgerald**
Electrostatic Image Formation in a Laser Printer, **Erwin** H. **Schwibert** and Paul R. Spencer
Laser Printer Image Development System, Thomas **Camis**
Laser Printer Fusing System, Roger D. Archibald
Monitoring the Laser Printing Process, Ronald A. Juve and David K. Donald
Specialized High-Speed **Electronics** for Document Preparation Flexibility, Philip Gordon
The People Who Made the Product, Billie J. **Robison**

July 1982

- Optical System Design for the Laser Printing System, John R. Lewis and Laurence M. Hubby, **Jr.**
Laser Printer Optics Control and Diagnostic **Circuit**, Gary L. Holland
A Synchronous Mirror-Motor **Drive** for the Laser Printer, Gary L. Holland
Laser Printer **Machine** Control System, James D. **Crumly** and Von L. Hansen
Sensing Paper Jams, Gary L. Holland
Solid-State Microwave Signal Generators for Today's Exacting Requirements, Donald R. Chambers and Steven N. Sanders
High-Performance **Wideband** Cavity-Tuned Solid-State Oscillators, Edward G. **Cristal**, Arthur N. Woo, Phillip G. Foster, and Ronald F. Stiglich
A Wide-Dynamic-Range Pulse Leveling Scheme, James F. Catlin
Microwave Solid-State Amplifiers and Modulators for Broadband Signal Generators, Kim Potter Kihlstrom

August 1982

- Viewpoints—IC Process Technology: VLSI and Beyond, **Frederic** N. Schwettmann and John L. Moll
Optical IC Lithography Using **Trilayer** Resist, Michael M. **O'Toole**, E. David **Liu**, and Gary W. Ray
Silicon Integrated **Circuits** Using Beam-Recrystallized Polysilicon, Theodore I. Kamins
X-Ray Lithography, Garrett A. **Garrettson** and Armand P. **Neukermans**
Dry Etching: An Overview, Paul J. **Marcoux**
Thin Films Formed by Plasma-Enhanced Chemical Vapor Deposition, **Dragan** B. **Ilic**
Electromigration: An Overview, Paul P. Merchant
SWAMI: A Zero-Encroachment Local Oxidation Process, Kuang **Yi** Chiu
High-Pressure Oxidation, William A. Brown

PART 3: Model Number Index

HP-41C	Programmable Calculator	Dec.	8350A	Sweep Oscillator	Feb.
HP-85A	Personal Computer	Dec.	8683A/B	Signal Generator	July
HP-86A	Personal Computer	Dec.	8684A/B	Signal Generator	July
HP-87XM	Personal Computer	Dec.	9130A	Flexible Disc Drive	Dec.
1345A	Digital Display Module	Jan.	14570A	AC Power Controller	Dec.
1727A	Storage Oscilloscope (275 MHz)	Apr.	16058A	Test Fixture	Oct.
1980A/B	Oscilloscope Measurement System	Sept.	19860A	Digital Waveform Storage	Sept.
2671A	Printer	May	30142A	1M-Byte Memory Module	Mar.
2671G	Graphics Printer	May	30143A	I/O Adapter Module	Mar.
2673A	Intelligent Graphics Printer	May	32460A	HP 3000 Series 64 System	
2680	Laser Printing System	June		Processing Unit	Mar.
		July	78660A	Defibrillator-Monitor	Feb.
HP 3000 Series 64	Computer System	Mar.	78668A	Quick Mount Power Base	Feb.
3724A	Baseband Analyzer	Apr.	82160A	HP-IL Module, HP-41C	Dec.
3725A	Display	Apr.	82184A	Plotter Module, HP-41C	Dec.
3726A	Filter Mainframe	Apr.	82900A	CP/M System	Dec.
4145A	Semiconductor Parameter Analyzer	Oct.	82901M	Flexible Disc Memory	Dec.
5001A/B/C/D	Microprocessor Exerciser	Jan.	82937A	HP-IB Interface Module	Dec.
5180A	Waveform Recorder	Nov.	83500 Series	RF Plug-ins	Feb.
5181A	Display/Tape Storage Module	Nov.	98261A	Add-on Language for	
5344S	Source Synchronizer	Sept.		9826A/9836A Computers	May
6024A	Autoranging DC Power Supply	Oct.	98628A	Data Communications Card	May
7470A	Graphics Plotter	Dec.			

PART 4: Author Index

Allen, Mark S.	Nov.	Fazarinc, Zvonko	Sept.	Landgraf, Robert M.	Sept.	Rick, David	Jan.
Amerson, Frederic C.	Mar.	Fedraw, Ken	May	Langley, James T.	June	Risley, William B.	Sept.
Archibald, Roger D.	June	Fitzgerald, Kathleen A.	June	Lewis, John R.	July	Roberts, Richard J.	Apr.
Armour, John	May	Folchi, Jack A.	Nov.	Linsky, Mark S.	Mar.	Robertson, James L.	Mar.
Ashkenas, David. J.	Mar.	Fong, Waymond	Jan.	Liu, E. David	Aug.	Robertson, Raymond A.	Dec.
Azmoon, Majid	Dec.	Foster, Phillip G.	July	Lowe, Lawrence	Apr.	Robison, Billie J.	June
		Frolik, William R.	Dec.			Rogers, Ronald G.	May
		Fu, Horng-Sen	Oct.	Ma, Peter L.	Dec.	Rubinstein, Jon	May
Balliew, Pat	May	Fullmer, Douglas E.	Feb.	Maeda, Kohichi	Oct.		
Barber, V. Alan	Sept.	Furukawa, Michio	Feb.	Marcoux, Paul J.	Aug.	Sakayori, Hiroshi	Oct.
Beetern, James E.	Mar.			Martini, Neal J.	Dec.	Sanders, Steven N.	July
Bennett, Paul I.	Feb.	Garrettson, Garrett A.	Aug.	Mason, William R.	Jan.	Schwettmann, Frederic N.	Aug.
Biddle, Stephen A.	Apr.	Gordon, Philip	June	Matheson, W. Gordon	Mar.	Schwiebert, Erwin H.	June
Bidwell, John L.	May	Goris, Andy	May	McDonald, Bill	Feb.	Shreve, William R.	Jan.
Bird, Steven C.	Nov.	Grinolds, Hugh	Aug.	McLucas, James W.	May	Sorden, James L.	Nov.
Brown, Dave	May			McTigue, Mike	Sept.	Spencer, Paul R.	June
Brown, William A.	Aug.	Haley, James F.	Apr.	Meinert, Karen L.	Mar.	Sproviero, Michael J.	May
Burgess, Ken L.	May	Hall, James A.	June	Merchant, Paul P.	Aug.	Stewart, Don D.	May
		Hallissy, Robert M.	May	Meredith, John	Sept.	Stewart, J. Marcus	Mar.
Camis, Thomas	June	Hansen, Von L.	July	Miller, Robert M.	Dec.	Stiglich, Ronald F.	July
Campbell, John W.	Sept.	Harding, Russell J.	Sept.	Moll, John L.	Aug.	Stockton, David	Apr.
Campbell, Monte R.	Sept.	Harper, Timothy V.	Dec.	Murrillo, Richard D.	Mar.	Szeto, Christina M.	Nov.
Catlin, James F.	July	Hasebe, Kunio	Jan.	Muto, Arthur S.	Nov.	Szeto, Roger To-Hoi	Oct.
Chambers, Donald R.	July	Hay, Robert A.	June				
Chen, Devereaux C.	Oct.	Helms, Bennie E.	Mar.	Neil, J. Martin	Nov.	Ta, Chuong C.	Dec.
Chiang, Shang-yi	Aug.	Hodor, Ken M.	Mar.	Nelson, Loyd F.	May	Takeda, Teruo	Oct.
Chiu, Kuang Yi	Aug.	Holland, Edward R.	Mar.	Neukermans, Armand P.	Aug.	Takagi, Susumu	Oct.
Chorak, Steve	May	Holland, Gary L.	July			Taylor, Wilhelm	Sept.
Coverstone, Randy A.	Dec.	Holmlund, Gary W.	Feb.	Obara, Michitaka	Oct.	Thalmann, James	July
Cristal, Edward G.	July	Horning, Robert J.	May	Oh, Soo-Young	Oct.	Toschi, Elio A.	Mar.
Crumly, James D.	July	Hubby, Laurence M., Jr.	July	Okada, Susan	Aug.	Tribolet, David C.	Dec.
				Oldfield, Danny J.	Apr.	Tsuruda, Fumiro	Oct.
Dalichow, Rolf	Feb.			Orr, Jerry	Feb.		
Davidson, Andrew W.	Dec.			O'Toole, Michael M.	Aug.	Uhlrich, Robert P.	May
Deane, Pat	Nov.						
DeGabriele, Richard F.	Mar.			Palermo, David W.	May	Wang, Albert S.	Sept.
Dejenfelt, Anders T.	Oct.			Pecenco, Irene V.	Sept.	Watry, William E.	Sept.
Detro, Michael C.	Nov.			Peetz, Bruce E.	Nov.	Welsh, Robert	Jan.
Dierschow, Carl M.	May			Petersen, David M.	Dec.	Wilson, Arthur K.	Dec.
Donald, David K.	June			Peterson, Val	Feb.	Wilson, John R.	Sept.
Douglas, J. Guy	Apr.			Porcalli, Robert J.	Dec.	Woo, Arthur N.	July
Duffy, William	Sept.			Pottinger, John R.	Apr.	Wood, Duaine C.	Feb.
						Woodroffe, Brian W.	Apr.
				Ray, Gary W.	Aug.	Woodward, Malcolm E.	Mar.
Eaton, John T.	Dec.			Rahner, Robert C., Jr.	Nov.		
Ekstedt, Tom	Aug.			Rhodes-Burke, Robert	Jan.	Zamborelli, Thomas J.	Jan.
Ellement, David M.	Dec.			Rhymes, Lynn	Feb.		
Elmore, Glenn E.	Feb.						
Evel, Eddie A.	Sept.						

PART 1: Chronological Index

January 1983

HP-IL: A Low-Cost Digital Interface for Portable Applications, Roger D. Quick and Steven L. **Harper**
 HP-IL Interconnect System, James H. Fleming
 The Electronics Interface for the Hewlett-Packard Interface Loop, Carl J. Landsness
 A CMOS Integrated Circuit for the HP-IL Interface, Steven L. Harper
 CMOS: Low-Power Technology for Personal Computers, David E. Hackleman, Norman L. Johnson, Craig S. Lage, John J. **Vietor**, and Robert L. **Tillman**
 Advanced Oven Design Assures Repeatability in New Gas Chromatography, Paul C. **Dryden**, Homce R. Johnson, Jr., and Douglas H. Smith
 What Is Gas Chromatography?, Fred W. **Rowland**
 Electronic Flow Control: A New Level of Automation for Gas Chromatography, Kurt B. Augenblick, Michael A. Casale, J. Edwin Cusack, and Andrew J. Murphy

February 1983

A Portable, Low-Cost, High-Performance Digital Multimeter for the HP-IL, Jack P. **Trautman** and Lawrence A. **Desjardin**
 Low-Cost and Portability Come to Data Acquisition/Control Products, James J. **Ressemeyer**
 Data Acquisition and Control Software for the 3421A Using the HP-85 Computer, David F. Leonard
 Low-Cost Instrument Control: A New ROM for the HP-41 Handheld Computers, David L. Wolpert
 Electronic Mail for the Interactive Office, Ian J. Fuller
 Integrated Tools Improve Programmer Productivity, Anil K. Shenoy and Carolyn M. Bircher

March 1983

Extensive Logic Development and Support Capability In One Convenient System, Michael W. Davis, John A. **Scharrer**, and Robert G. **Wickliff, Jr.**
 HP 64000 Terminal Software, Paul D. Bame
 The HP 64000 Measurement System, Kipper K. **Fulghum**
 Mainframe Design for an Integrated Engineering Workstation, Jeffrey H. Smith, Carlton E. Glitzke, and Alan J. **DeVilbiss**
 A Modular Analyzer for Software Analysis in the 64000 System, Richard A. Nygaard, Jr., Frederick J. Palmer, Bryce S. **Goodwin**, Jr., Stan W. **Bowlin**, and Steven R. Williams
 A Modular Logic Timing Analyzer for the 64000 System, Joel A. **Zellmer**, John E. Hanna, and David L. Neuder
 Emulators for 16-Bit Microprocessors, David B. Richey and John P. Romano
 High-Level Language Compilers for Developing Microprocessor Systems, Martin W. Smith and Joel D. Tesler

April 1983

A New Microcomputer-Controlled Laser Dimensional Measurement and Analysis System, Robert C. **Quenelle** and Lawrence J. Wuen
 Dimensional Metrology Software Eases Calibration, Lawrence J. Wuen and Christopher Burns
 Automatic Compensation, Deane A. **Gardner**
 Laser Optical Components for Machine Tool and Other Calibrations, Richard R. **Baldwin**, Larry E. **Truhe**, and David C. Woodruff
 Manufacturing the Laser Tube, Richard H. Grote
 Mechanical Design Features of the Laser Head, Charles R. Steinmetz

Noise Figure Meter Sets Records for Accuracy, Repeatability, and Convenience, Howard L. Swain and Rick M. Cox
 Laboratory Notebook—Mass Storage Unit Exerciser

May 1983

2-to-26.5-GHz Synthesized Signal Generator Has Internally Leveled Pulse Modulation, William W. Heinz and Paul A. Zander
 Sample-and-Hold Leveling System, Ronald K. **Larson**
 A Wideband YIG-Tuned Multiplier and Pulsed Signal Generation System, Ronald K. **Larson** and Lawrence A. Stark
 Autopeaking, Paul A. **Zander**
 Compact Digital Cassette Drive for Low-Cost Mass Storage, William A. **Buskirk**, Charles W. Gilson, and David J. Shelley
 Scientific Pocket Calculator Extends Range of Built-In Functions, Eric A. Evett, Paul J. **McClellan**, and Joseph P. Tanzini
 A Pocket Calculator for Computer Science Professionals, Eric A. Evett

June 1983

A Portable Computer for Field, Office, or Bench Applications, Donald E. Morris, Anthony S. Ridolfo, and Donald L. Morris
 A Telephone Interface for HP-IL Controllers, Sidnee **Snell** and Brian G. Spreadbury
 HP-IL and the HP-75 Portable Computer, Dennis C. York
 High-Capability Electronics Systems for a Compact, Battery-Operated Computer, Elizabeth Brooks, Robert J. Livengood, Rex C. Smith, and Timothy F. Myers
 Handpulled Magnetic Card, Mass Storage System for a Portable Computer, Kenneth R. Hoecker, James R. Schwartz, Francis A. Young, and Dean R. Johnson
 The HP-75 Production Card Recorder, David B. **Patton**
 Integration of the HP-75's Handpulled Card Reader Electronics in CMOS, Thomas J. Arnold and Billy E. Thayer
 A New Family of Pulse and Pulse/Function Generators, Michael Fleischer, Helmut **Rossner**, and Uwe Neumann
 Designing Bipolar Integrated Circuits for a Pulse/Function Generator Family, Christian Hentschel, Adolf **Leiter**, Stephan Tmub, Horst Schweikardt, and Volker **Eberle**

July 1983

A High-Speed System for AC Parametric Digital Hardware Analysis, Andreas Wilbs and Klaus-Peter Behrens
 A High-Speed Data Generator for Digital Testing, Ulrich Hiibner, Werner Berkel, Heinz Niissle, and Josef **Becker**
 High-Speed Data Analyzer Tests Threshold and Timing Parameters, Dieter **Kible**, Bernhard Roth, Martin Dietze, and Ulrich Schottmer
 Data Analyzer Software/Firmware Design, Roberto **Mottola** and Eckhard Paul
 Power Supplies for the Stimulus/Response System, Ulrich **Otto** and Horst Link
 New Multi-Frequency LCZ Meters Offer Higher-Speed Impedance Measurements, Tomio Wakasugi, Takeshi Kyo, and Toshio Tamamura

August 1983

VLSI Technology Packs 32-Bit Computer System into a Small Package, Joseph W. Beyers, Eugene A. Zeller, and S. Dana Seccombe
 An 18-MHz, 32-Bit VLSI Microprocessor, Kevin P. **Burkhart**, Mark A. **Forsyth**, Mark E. Hammer, and Darius F. **Tanksalvala**

Instruction Set for a Single-Chip 32-Bit Processor, James G. Fiasconaro
 VLSI I/O Processor for a 32-Bit Computer System, Fred J. Gross, William S. **Jaffe**, and Donald R. Weiss
 High-Performance VLSI Memory System, Clifford G. Lob, Mark J. Reed, Joseph P. Fucetola, and Mark A. Ludwig
 18-MHz Clock Distribution System, Clifford G. Lob and Alexander **O. Elkins**
 128K-Bit NMOS Dynamic RAM with Redundancy, John **K.** Wheeler, John R. Spencer, Dale R. **Beucler**, and Charlie G. Kohlhardt
 Finstrate: A New Concept in VLSI Packaging, **Arun K. Malhotra**, Glen E. **Leinbach**, **Jeffery** J. Straw, and Guy R. Wagner
 NMOS-III Process Technology, James M. **Mikkelsen**, Fung-Sun Fei, **Arun K. Malhotra**, and S. Dana Secombe
 Two-Layer Refractory Metal IC Process, James P. Roland, Norman E. Hendrickson, Daniel D. **Kessler**, Donald E. **Novy**, Jr., and David W. Quint
 NMOS-III Photolithography, Howard E. **Abraham**, Keith G. **Bartlett**, Gary L. **Hillis**, Mark Stolz, and Martin S. Wilson

September 1983

A Color **Presentation** Graphics Workstation, Sharon **O.** Mead, William R. Taylor, Kenneth A. Mintz, and Catherine M. Potter
 Designing Software for High-Performance Graphics, Robert R. Burns and Dale A. Luck
 Logic Design for a Graphics Subsystem, Cmig W. Diserens, Curtis L. Dowdy, and William R. Taylor
 A High-Resolution Color Monitor, Mark Hanlon, Geoffrey G. Moyer, and Paul G. Winninghoff
 The Graphics Workstation as an Extensible Computer Terminal, Edward Tang, **Otakar** Blazek, Thomas K. **Landgraf**, Paula H. Ng, and Stephen P. Pacheco
 A Computer-Aided Test and Tracking System, Michael R. **Perkins**, Susan Snitzer, and Charles W. **Andrews**
 Product Design of a Friendly Color Graphics Workstation, Dennis C. Thompson, Kenneth D. **Boetzer**, Mark A. Della Bona, and Badir M. Mousa
 AUTO PLOT/2700: A Single Approach to Custom Chart Generation, Stanley A. **Balazer** and John M. **Perry**
 PAINTBRUSH/2700: A General-Purpose Picture Creator, John R. **Alburger**, Jim L. Davis, Diane A. Rodriguez, and **Barbara** A. Stanley

October 1983

Ultrasound Imaging: An Overview, H. Edward **Karrer** and Arthur

M. Dickey
 History of **HP's** Ultrasound System, John T. Hart
 An Ultrasound Imaging System, Lawrence W. Banks
 Quantitative Analysis for Ultrasound Imaging, Rachel M. **Kinicki**
 A Physician's View of Echocardiographic Imaging, Richard L. **Popp**, MD.
 An Acoustic Transducer Array for Medical Imaging—Part I, John Larson, **III**
 An Acoustic Transducer Array for Medical Imaging—Part II, David G. Miller
 Transducer Test System Design, George A. Fisher
 Radiated Power Characteristics of Diagnostic Ultrasound Transducers, Thomas L. Szabo and Gary A. Seavey
 A Scan Conversion Algorithm for Displaying Ultrasound **Images**, Steven C. Leavitt, Barry F. Hunt, and Hugh C. **Larsen**
 Ultrasound Image Quality, Richard A. Snyder and Richard J. Conmd
 Coherent Speckle in Ultrasound Images, Paul A. Magnin

November 1983

Device-Independent Software for Business Graphics, Yvonne Temple
 A Decision Support **Chartmaker**, Janet Elich Morris and Richard J. Simms, Jr.
 An Easy-to-Use Chartmaker, Martha Seaver, Robert W. Dea, and Richard J. Simms, **Jr.**
 Convenient Creation and Manipulation of Presentation Aids, Chayaboon Purnaveja and Janet Swift
 Graphics Capabilities on a Laser Printer, **Tamara** C. Baker, William J. Toms, James C. Bmtnober, and Gemld T. Wade
 Special Report: The Center for Integrated Systems, Frederick H. Gardner

December 1983

Control Hardware for an Ultrasound Imaging System, Richard H. Jundanian, Janet R. Accettum, and John N. Dukes
 Ultrasound System Software, Joseph M. Luszcz, William A. Koppes, David C. Hempstead, and Robert J. **Kunz**
 Electronic Scanner for a Phased-Array Ultrasound Transducer, Ronald D. Gatzke, James T. **Fearnside**, and Sydney M. Karp
 A **Mixing** Scheme to Focus a Transducer Array Dynamically, Robert N. **McKnight**
 Display System for Ultrasound Images, Raymond G. **O'Connell**, James R. Mniece, and Alwyn P. **D'Sa**
 Fused Silica Capillary Columns for Gas Chromatography, Paul A. Larson, Bruce L. **Ryder**, and Thomas J. Stark

PART 2: Subject Index

Subject	Month	C		
A				
Acoustic imaging	Oct.	Calculator, handheld, computer science	May	Color graphics
Acoustic lens	Oct.	Calculator, handheld, scientific	May	Color palettes
A-to-D interface, card reader	June	Calibration, electronic	Jan.	Columns, fused silica capillary
Autopeaking	May	Cardiac analysis, ultrasound	Jan.	Comparator, LCZ measurement
		Card reader, handpulled	Oct.	Compatibility, system testing
		Card recorder, production	Oct.	Compensation, laser measurements
B		Cassette drive, HP-IL	June	Compilers, high-level languages,
Bank switching, memory	Dec.	Center for Integrated Systems	June	logic development
Bit manipulation, handheld calculator	May	Chart files	May	Complex function calculations,
Booster integrated circuit	June	Chartmaker software packages	Nov.	handheld calculator
Bresenham algorithm	June	Chromatograph, gas	Nov.	Complex matrix calculations,
B-tree	Nov.	Chromatograph columns	Nov.	handheld calculator
Bt-tree	Feb.	Clock, IC, 18-MHz	Jan.	Component testing
Bucket Brigade	Feb.	Clock , IC, 18-MHz	Dec.	Computer, portable
Business graphics software	Nov.	CMOS IC, analog plus digital circuits	Aug.	Contacts, external, VLSI
Bus, internal, HP-IB based design	Nov.	CMOS IC, card reader	Aug.	Controller, memory, VLSI
Bus, memory processor	Dec.	CMOS IC, HP-IL interface	June	Controller, ultrasound system
	Aug.	CMOSC process	Jan.	CPU , 32-bit, VLSI
		Code, MFM	June	
		Code, three-level, HP-IL	Jan.	D
				Data acquisition/control , HP-IL
				Data bases, HPMAIL
				Data logging
				Sept.
				Nov.
				Dec.
				July
				Mar.
				Apr.
				Mar.
				May
				July
				June
				Aug.
				Aug.
				Dec.
				Aug.
				Feb.
				Feb.
				Feb.

64600S	Timing Analyzer	Mar.	82160A	HP-IL Interface Module	Jan.
64620S	Logic State/Software Analyzer	Mar.	82161A	Digital Cassette Drive	May/June
77020A	Ultrasound Imaging System	Oct./Dec.	82166A	HP-IL Converter	Jan.
77200A	Scanner	Oct./Dec.	82166C	HP-IL Interface Kit	Jan.
77400A	Display Subsystem	Oct./Dec.	82168A	Acoustic Coupler	June
77900A	Controller	Oct./Dec.	92233B	Book	July/Nov.

PART 4: Author Index

Abraham, Howard E.	Aug.	Fucetola, Joseph P.	Aug.	Luszcz, Joseph M.	Dec.	Seavey, Gary A.	Oct.
Accettura, Janet R.	Sept.	Fulghum, Kipper K.	Mar.	Lutnesky, Gary G.	June	Seccombe, S. Dana	Aug.
Alburger , John R.	Sept.	Fuller, Ian J.	Feb.			Shelley, David J.	May
Andrews , Charles W.	Sept.			Magnin , Paul A.	Oct.	Shenoy, Anil K.	Feb.
Arnold, Thomas J.	June	Gardner, Deane A.	Apr.	Malhotra, Arun K.	Aug.	Simms , Richard J., Jr.	Nov.
Augenblick, Kurt B.	Jan.	Gardner, Frederick H.	Nov.	Mason, Lee S.	June	Slutz, Robert	Aug.
		Gatzke, Ronald D.	Dec.	May, Gregory J.	June	Smith, Douglas H.	Jan.
Baker, Tamara C.	Nov.	Gilson, Charles W.	May	McClellan , Paul J.	May	Smith, Jeffrey H.	Mar.
Balazer , Stanley A.	Sept.	Glitzke, Carlton E.	Mar.	McKnight , Robert N.	Dec.	Smith, Martin W.	Mar.
Baldwin , Richard R.	Apr.	Goodwin , Bryce S., Jr.	Mar.	Mead, Sharon O.	Sept.	Smith, Rex C.	June
Bame, Paul D.	Mar.	Gross, Fred J.	Aug.	Mikkelson, James M.	Aug.	Snell, Sidnee	June
Banks, Lawrence W.	Oct.	Grote, Richard H.	Apr.	Miller, David G.	Oct.	Snitzer , Susan	Sept.
Bartlett , Keith G.	Aug.	Hackleman, David E.	Jan.	Mintz, Kenneth A.	Sept.	Snyder, Richard A.	Oct.
Becker, Josef	July	Hall, Lawrence A.	Aug.	Mniece, James R.	Dec.	Spencer, John R.	Aug.
Behrens, Klaus-Peter	July	Hammer, Mark E.	Aug.	Morris, Donald E.	June	Spreadbury, Brian G.	June
Berkel, Werner	July	Hanlon , Mark	Sept.	Morris, Donald L.	June	Stanley, Barbara A.	Sept.
Beucler, Dale R.	Aug.	Hanna, John E.	Mar.	Morris, Janet Elich	Nov.	Stark, Lawrence A.	May
Beyers, Joseph W.	Aug.	Harper, Steven L.	Jan.	Mottola , Roberto	July	Stark, Thomas J.	Dec.
Bircher, Carolyn M.	Feb.	Hart, John T.	Oct.	Mousa, Badir M.	Sept.	Steinmetz , Charles R.	Apr.
Blazek, Otakar	Sept.	Heinz, William W.	May	Moyer, Geoffrey G.	Sept.	Stolz, Mark	Aug.
Boetzer , Kenneth D.	Sept.	Hempstead, David C.	Dec.	Murphy, Andrew J.	Jan.	Straw, Jeffery J.	Aug.
Bowlin , Stan W.	Mar.	Hendrickson, Norman E.	Aug.	Myers, Timothy F.	June	Swain, Howard L.	Apr.
Bratnobar , James C.	Nov.	Hentschel, Christian	June	Neuder, David L.	Mar.	Swift, Janet	Nov.
Brooks, Elizabeth	June	Hillis , Gary L.	Aug.	Neumann, Uwe	June	Szabo, Thomas L.	Oct.
Bunting, Harry	Apr.	Hoecker, Kenneth R.	June	Ng, Paula H.	Sept.		
Burkhart, Kevin P.	Aug.	Hiibner, Ulrich	July	Novy , Donald E., Jr.	Aug.	Tamamura, Toshio	July
Burns, Christopher	Apr.	Hunt, Barry F.	Oct.	Niisse, Heinz	July	Tang, Edward	Sept.
Burns, Robert R.	Sept.			Nygaard, Richard A., Jr.	Mar.	Tanksalvala , Darius F.	Aug.
Buskirk , William A.	May	Ikemoto, Jin-ichi	Apr.			Tanzini , Joseph P.	May
				O'Connell , Raymond G.	Dec.	Taylor, William R.	Sept.
Casale, Michael A.	Jan.	Jaffe, William S.	Aug.	Otto, Ulrich	July	Temple, Yvonne	Nov.
Chambers, Donald R.	Apr.	Johnson, Dean R.	June			Terrell, William C.	Aug.
Conrad, Richard J.	Oct.	Johnson, Horace R., Jr.	Jan.	Pacheco, Stephen P.	Sept.	Tesler, Joel D.	Mar.
Cox, Rick M.	Apr.	Johnson, Norman L.	Jan.	Palmer, Frederick J.	Mar.	Thayer, Billy E.	June
Cusack, J. Edwin	Jan.	Jundanian, Richard H.	Dec.	Patton , David B.	June	Thompson, Dennis C.	Sept.
				Paul, Eckhard	July	Tillman , Robert L.	Jan.
Davis, Jim L.	Sept.	Karp, Sydney M.	Dec.	Perkins , Michael R.	Sept.	Toms, William J.	Nov.
Davis, Michael W.	Mar.	Karrer , H. Edward	Oct.	Perry, John M.	Sept.	Traub, Stephan	June
Dea, Robert W.	Nov.	Kessler, Daniel D.	Aug.	Popp, Richard L., M.D.	Oct.	Trautman , Jack P.	Feb.
DeBoer , Douglas F.	Aug.	Kible, Dieter	July	Potter, Catherine M.	Sept.	Truhe, Larry E.	Apr.
Della Bona, Mark A.	Sept.	Kinicki , Rachel M.	Oct.	Purnaveja, Chayaboon	Nov.		
DesJardin , Lawrence A.	Feb.	Kohlhardt, Charlie G.	Aug.			Vietor , John J.	Jan.
DeVilbiss , Alan J.	Mar.	Koppes, William A.	Dec.	Quenelle, Robert C.	Apr.		
Dickey, Arthur M.	Oct.	Kunz, Robert J.	Dec.	Quick, Roger D.	Jan.	Wade, Gerald T.	Nov.
Dietze, Martin	July	Kyo, Takeshi	July	Quint, David W.	Aug.	Wagner, Guy R.	Aug.
Diserens , Craig W.	Sept.					Wakasugi , Tomio	July
Dowdy, Curtis L.	Sept.	Lage, Craig S.	Jan.	Reed, Mark J.	Aug.	Weiss, Donald R.	Aug.
Dryden , Paul C.	Jan.	LaMaster , Frederick P.	Aug.	Ressmeyer, James J.	Feb.	Wheeler, John K.	Aug.
D'Sa , Alwyn P.	Dec.	Landgraf , Thomas K.	Sept.	Richey, David B.	Mar.	Wickliff, Robert G., Jr.	Mar.
Dukes, John N.	Dec.	Landsness, Carl J.	Jan.	Ridolfo, Anthony S.	June	Wilbs, Andreas	July
		Larsen, Hugh C.	Oct.	Rodriguez, Diane A.	Sept.	Williams, Steven R.	Mar.
Eberle, Volker	June	Larson, John D., III	Oct.	Roland, James P.	Aug.	Wilson, Martin S.	Aug.
Elkins , Alexander O.	Aug.	Larson, Paul A.	Dec.	Romano, John P.	Mar.	Winninghoff, Paul G.	Sept.
Evelt, Eric A.	May	Larson, Ronald K.	May	Rossner, Helmut	June	Wolpert, David L.	Feb.
		Leavitt, Steven C.	Oct.	Roth, Bernhard	July	Woodruff, David C.	Apr.
Fearnside , James T.	Dec.	Leinbach, Glen E.	Aug.	Rowland , Fred W.	Jan.	Wuerz, Lawrence J.	Apr.
Fei, Fung-Sun	Aug.	Leiter, Adolf	June	Ryder, Bruce L.	Dec.		
Fiasconaro, James G.	Aug.	Leonard, David F.	Feb.			York, Dennis C.	June
Fisher, George A.	Oct.	Link, Horst	July	Scharrer , John A.	Mar.	Young, Francis A.	June
Fleming, James H.	Jan.	Livengood, Robert J.	June	Schöttmer , Ulrich	July		
Fleischer, Michael	June	Lob, Clifford G.	Aug.	Schwartz, James R.	June	Zeller, Eugene R.	Aug.
Fogg, O. Douglas	Aug.	Luck, Dale A.	Sept.	Schweikardt, Horst	June	Zellmer, Joel A.	Mar.
Forsyth , Mark A.	Aug.	Ludwig, Mark A.	Aug.	Seaver, Martha	Nov.	Zander, Paul A.	May

PART 1: Chronological Index

January 1984

Two High-Capacity Disc Drives, Kent Wilken
 A Command Language for Improved Disc Protocol, Douglas L. Voigt
 Second-Generation Disc Read/Write Electronics, Robert M. Batey and James D. Becker
 Disc Drive Error Detection and Correction Using VLSI, Peter M. Galen
 Head Positioning in a Large Disc Drive, R. Frank Bell, Eric W. Johnson, R. Keith Whitaker, and Roger V. Wilcox
 Mechanical Design of a Large Disc Drive, James H. Smith
 High-Capacity Disc Drive Servomechanism Design, Stephen A. Edwards
 Speech Output for HP Series 80 Personal Computers, Loren M. Koehler and Timothy C. Mackey
 Speech Output for HP 1000 and HP 3000 Computer Systems, Elizabeth R. Hueftle and Jeffrey R. Murphy

February 1984

A New Series of High-Performance Real-Time Computers, Marlu E. Allan, Nancy Schoendorf, Craig B. Chatterton, and Don M. Cross
 An Adaptable 1-MIPS Real-Time Computer, David A. Fotland, Lee S. Moncton, and Leslie E. Neft
 Designing a Low-Cost 3-MIPS Computer, Donald A. Williamson, Steven C. Steps, and Bruce A. Thompson
 Floating-Point Chip Set Speeds Real-Time Computer Operation, William H. McAllister and John R. Carlson
 Comprehensive, Friendly Diagnostics Aid A-Series Troubleshooting, Michael T. Winters and John F. Shelton
 New Real-Time Executive Supports Large Programs and Multiple Users, Douglas O. Hartman, Steven R. Kusmer, Elizabeth A. Clark, Douglas V. Larson, and Billy Chu
 New Software Increases Capabilities of Logic Timing Analyzer, David L. Neuder

March 1984

A New 32-Bit VLSI Computer Family: Part 11—Software, Michael V. Hetrick and Michael L. Kolesar
 HP-UX: Implementation of UNIX on the HP 9000 Series 500 Computer System, Scott W. Y. Wang and Jeff B. Lindberg
 An Interactive Run-Time Compiler for Enhanced BASIC Language Performance, David M. Landers, Timothy W. Tillson, Jack D. Cooley, and Richard R. Rupp
 A Local Area Network for the HP 9000 Series 500 Computers, John J. Balza, H. Michael Wenzel, and James L. Willits
 Data Communications for a 32-Bit Computer Workstation, Vincent C. Jones
 A General-Purpose Operating System Kernel for a 32-Bit Computer System, Dennis D. Georg, Benjamin D. Osecky, and Stephen D. Scheid
 The Design of a General-Purpose Multiple-Processor System, Benjamin D. Osecky, Dennis D. Georg, and Robert J. Bury
 An OS Subsystem for a 32-Bit Computer Operating System, Robert M. Lenk, Charles E. Mear, Jr., and Marcel E. Meier
 Viewpoints—Coping with Prior Invention, Donald L. Hammond

April 1984

Low-Dispersion Liquid Chromatography, Robert J. Jonker and Gerard P. Rozing
 Identification and Quantitation of PTH Amino Acids, Bernd Glatz

and Rainer Schuster
 Design of the HP 1090 Control System, Herbert Wiederoder, Roland Martin, and Juergen Ziegler
 A New Solvent Delivery System, Wolfgang Geiger and Heinrich Vollmer.
 Automatic Liquid Chromatograph Injection and Sampling, Wolfgang Kretz and Hans-Georg Hartl
 Mobile Phase Preheater Ensures Precise Control of LC Column Temperature, Helge Schrenker
 A Low-Cost LC Filterphotometric Detection System, Axel Wiese, Bernhard Dehmer, Thomas Dörr, and Gunter Hoschele
 A High-Speed Spectrophotometric LC Detector, Joachim Leyrer, Günter E. Nill, Detlev Hadbawnik, Gunter Hoschele, and Joachim Dieckmann
 New Technologies in the HP 1090 Liquid Chromatograph, Alfred Maute

May 1984

Putting a 32-Bit Computer System in a Desktop Workstation, Jack L. Burkman, Robert L. Brooks, Ronald P. Dean, Paul F. Febvre, and Michael K. Bowen
 Color Graphics Display for an Engineering Workstation, Daniel G. Schmidt
 BASIC Language Graphics Subsystem for a 32-Bit Workstation, Kenneth W. Lewis, Alan D. Ward, and Xuan Bui
 I/O Features of Model 520 BASIC, Gary D. Fritz and Michael L. Kolesar
 A Compact, Reliable Power Supply for an Advanced Desktop Computer, Jack L. Burkman, Howell R. Felsenthal, Thomas O. Meyer, and Warren C. Pratt
 Compact 32-Bit System Processing Units, Kevin W. Allen, Paul C. Christofanelli, Robert E. Kuseski, Ronald D. Larson, David Maitland, and Larry J. Thayer

June 1984

A Parametric Test System for Accurate Measurement of Wafer-Stage ICs, Yoh Narimatsu and Keiki Kanafuji
 Powerful Test System Software Provides Extensive Parametric Measurement Capability, Takuo Banno
 A High-Speed 1-MHz Capacitance/Conductance Meter for Measuring Semiconductor Parameters, Tomoyuki Akiyama and Kenzo Ishiguro
 An Electronic Tool for Analyzing Software Performance, Gail E. Hamilton, Andrew J. Blasciak, Joseph A. Hawk, and Brett K. Carver
 Counter Module Simplifies Measurements on Complex Waveforms, Donald J. Smith, Johnnie L. Hancock, and Thomas K. Bohley

July 1984

A New Handheld Computer for Technical Professionals, Susan L. Wechsler
 Soft Configuration Enhances Flexibility of Handheld Computer Memory, Nathan Meyers
 Custom CMOS Architecture for a Handheld Computer, James P. Dickie
 Packaging the HP-71B Handheld Computer, Thomas B. Lindberg
 Module Adds Curve-Fitting and Optimization Routines to the H71B, Stanley M. Blascow, Jr. and James A. Donnelly
 ROM Extends Numerical Function Set of Handheld Computer,

Laurence W. Grodd and Charles M. **Patton**
 Plug-In Module Adds FORTH Language and Assembler to a Hand-
 held Computer, Robert M. Miller

August 1984

Touchscreen Personal Computer Offers Ease of Use and Flexibility,
 Srinivas Sukumar
 Operating System and Firmware of the HP 150 Personal Computer,
 Laurie E. **Pollero** Wood and Charles H. **Whelan**
 The HP 150 Touchscreen: An Interactive User Input Device for a
 Personal Computer, Peter R. **Straton**, Scott R. **McClelland**, and
 Thomas E. **Kilbourn**
 Applications Software for the Touchscreen Personal Computer,
 Peter S. Showman, Karl W. Pettis, **Karlie J. Arkin**, Jeffrey A. **Spoel-**
stra, John Price, W. Bruce Culbertson, and Robert D. **Shurtleff**, Jr.
 Hardware Design of the HP 150 Personal Computer, **John E. Watkins**,
 Patricia A. Brown, George Szeman, and Susan E. Carrie
 Software Graphics in the HP 150
 Personal Computer Printer Is User Installable, Joseph D. **Barbera**
 A Standard Keyboard Family for HP Computer Products, Lorenzo
 Dunn and Michael R. **Perkins**

September 1984

Transmission Impairment Measuring Set Simplifies Testing of
 Complex Voice and Data Circuits, David R. Novotny, **Jeffrey**
Tomberlin, Charles P. Hill, James P. Quan, Gordon A. Jensen,
 and Jerry D. Morris
 TIMS Mechanical Design
 Weight, Size, and Noise Impact Power Supply and Display Design
Master/Slave TIMS Operation Improves Productivity, Teresa L. Reh
 How **Master/Slave** Mode Works
 Testing the **TIMs**, **Allan W. Dodge**, Scott S. Neal, and Kurt R.
 Goldsmith
 Semiconductor Research Corporation: A Perspective on Coopera-
 tive Research, Richard A. Lucic
 A Hyphenation Algorithm for **HPWord**, Paul R. Smit
 Designing Software for the International Market, Heather Wilson
 and Michael J. **Shaw**

October 1984

The HP 3065 Board Test Family: A System Overview, Thomas
 R. Fay and John E. **McDermid**
 HP Q-STAR

Confirmation-Diagnostics
 Automatic Test Program Generation for Digital Board Testing,
 Robert E. Balliew
 Board Test Connection Terminology
 Digital Subsystem for a Board Test System, Matthew L. Snook
 and Michael A. Teska
 Digital Test Throughput
 Safeguarding Devices Against Stress Caused by In-Circuit Test-
 ing, Vance R. **Harwood**
 Extensive Library Simplifies **Digital** Board Test Setup, Randy W.
Holmberg
 An Interpreter-Based Board Test Programming Environment,
 Mark A. Mathieu
 Testing for Short-Circuit Failures, T. Michael Hendricks
 Reducing Errors in Automated Analog In-Circuit Test Genera-
 tion, John E. **McDermid**

November 1984

An Advanced 5-Hz-to-200-MHz Network Analyzer, Robert A.
 Witte and Jerry W. Daniels
 User-Defined Vector Math Expands Measurement Capabilities
 A Broadband Two-Port S-Parameter Test Set, William M. Spaulding
 An ADC for a Network Analyzer Receiver, Alan J. Baker
 An Industrial Workstation Terminal for Harsh Environments, Jean
 Bounaix, Jean-Claude Dureau, and Jacques Firdmann
 How Do You Describe Terminal Ruggedness?
 High-Quality, Dot-Matrix Impact Printer Family, **Mark J. DiVittorio**
 Custom IC Controls Dot-Matrix Printers, Thomas B. Pritchard and
 David S. Lee.

December 1984

Versatile Instrument Simplifies Dynamic Signal Analysis at
 Low Frequencies, James S. Epstein
 Dynamic Signal Analysis for Machinery Maintenance
 Hardware Design for a Dynamic Signal Analyzer, James S. Epstein,
 Glenn R. **Engel**, Donald R. Hiller, **Glen L. Purdy, Jr.**, Bryan C.
 Hoog, and Eric J. **Wicklund**
 Instrument Software for Dynamic Signal Analysis, Glenn R. **Engel**
 and Donald R. Hiller
 FFT Implementation
 Custom Digital Filters for Dynamic Signal Analysis, Charles R.
 Panek and Steven F. Kator

PART 2: Subject Index

Subject	Month	Subject	Month	Subject	Month
A					
Acoustic measurements	Dec.	Analyzer, dynamic signal	Dec.	BASIC, HP 9000 Model 520	Mar.
Active input and output		Analyzer, logic timing	Feb.	BASIC, I/O, HP 9000 Model 520	May
circuits, TIMS	Sept.	Analyzer, network	Nov.	BASIC, multiprogramming	May
Actuator, disc drive	Jan.	Analyzer, software performance	June	Bed-of-nails test fixture	Oct.
ADC, dynamic signal analyzer	Dec.	Architecture, 32-bit processing units	May	Bell-standard transmission	
ADC, receiver, network analyzer	Nov.	Architecture, handheld computer	July	measurements	Sept.
ADC, 16-bit, low-cost	Apr.	Architecture, parametric test system	June	BIOS	Aug.
Algorithm, board test connections	Oct.	Array redimensioning	July	Bit-slice data acquisition processor	Apr.
Algorithm, Booth	Feb.	Assembly language ROM	July	Board testing, in-circuit	Oct.
Algorithm, Fletcher-Powell	July	Autocalibration, dynamic signal		Bond-wire heating, in-circuit testing	Oct.
Algorithm, hyphenation	Sept.	analyzer	Dec.	Booster pump	Apr.
Algorithm, short-circuit testing	Oct.	Autoinjector, LC	Apr.	Booth algorithm	Feb.
Algorithm, touchscreen scanning	Aug.	Autosampler, LC	Apr.	Bridge, reflectometer, configurations	Nov.
Alignment, automatic,		Averaging, time interval	June	Bubblejet	Mar.
disc drive head	Jan.	B			
Amino acid analysis	Apr.	Baluns, broad frequency range	Nov.	Buffer, circular, I/O	May
Amplifier, prescaling, ADC	Nov.	BASIC programmable computer	July	C	
Analog testing, in-circuit	Oct.	BASIC, 3-D graphics	May	Cable compensation, capacitance	
		BASIC, Board Test	Oct.	measurements	June
				Cable connections, sealed	Nov.

Cache memory	Feb.	Development, parallel	Mar.		
Cache memory, I/O	Mar.	Di-bit integrator	Jan.		H
CALC mode, HP-71B	July	Diagnostic control system	Feb.	Head alignment, automatic, disc drive	Jan.
Capacitance measurement subsystem	June	Diagnostics, 32-bit SPU's	May	Head positioning system, disc drive	Jan.
Card file software, personal computer	Aug.	Digital filter	Dec.	High-pressure pump	Apr.
Card reader/recorder, handpulled	July	Digital subsystem, board test	Oct.	High-speed columns, LC	Apr.
Case, sealed	Nov.	Digital testing, in-circuit	Oct.	Holographic diffraction grating	Apr.
Ceramic disc, rotary valve	Apr.	Diode array detector	Oct.	Horner's method, polynomial roots	July
Clock recovery, disc drive	Jan.	Disc drives, 404M-byte	Jan.	HPLC	Apr.
CMOS, handheld computer system	July	Dispersion, holographic grating	Apr.	HPWord hyphenation algorithm	Sept.
CMOS testing, latchup prevention	Oct.	Dispersion, LC	Apr.	HP-IB transformer	Apr.
Code and data separation	Feb.	Display, color graphics	May	HP-IL , interface module	July
Code segment mapping	Feb.	Display, dynamic signal analyzer	Dec.	HP Q-STAR, network, software	Oct.
Code, intermediate	Mar.	Display, tilt mechanism	May	HP-UX operating system	Mar.
Codes, disc drive	Jan.	Dithering, dynamic signal analysis	Dec.	HP-UX, corporate strategy	Mar.
Coding, linear predictive	Jan.	Dot-matrix printer family	Nov.	Hyphenation algorithm	Sept.
Coherence breaking by phase modulation	June	Duty cycle measurements	June		
Columns, liquid chromatography	Apr.			I	
Command Set 80 (for disc drives)	Jan.	E		IEEE floating-point standard	July
Communications processor (COM)	Apr.	EMI design, rope gasket	May	In-circuit device testing	Oct.
Communications units	Apr.	Environmental IP rating	Nov.	Industrial workstation terminal	Nov.
Compiler, run-time, interactive	Mar.	Environments, industrial, terminal for	Nov.	Infrared array touchscreen	Aug.
Complex data type	July	Error correcting memory	Feb.	Injector, LC	Apr.
Complex mathematics	July	Error correction, capacitance measurements	June	Ink jet printing, thermal	Mar.
Computer, 32-bit	Mar.	Error detection and correction, disc drive	June	Integral function	July
	May	Errors, analog in-circuit testing	Jan.	Integrals, nesting	July
Computer, handheld	July	Events measurements	Oct.	Interfaces, I/O, TIMS	Sept.
Computer, personal, LC controller	Apr.	Exchanges	June	Intermodulation distortion, measurement circuit	Sept.
Computer, touchscreen, personal	Aug.		Aug.	Interrupt handling	Mar.
Computers, HP 1000 A-Series	Feb.			IP rating	Nov.
Configuration, automatic	June	F		IPG-II , automatic test program generator	Oct.
Confirmation/Diagnostics	Oct.	Fast Fourier transform	July	ISO substitution tables	Sept.
Connection modes, capacitance measurements	June	Fasteners, tolerance design	Dec.	I-to-V converter	June
Connector, custom power transistor	May	FFT analysis, low-frequency	May	I/O drivers	Mar.
Contexts, SUN operating system	Mar.	File management system	Dec.	I/O subsystem, 32-bit computer	Mar.
Control system, LC	Apr.	File manager, personal computer	July	I/O, BASIC, examples	May
Cooling, desktop workstation	May	File security	Aug.	I/O, TRANSFER statement	May
Cooling, power supply	May	Filter, digital	July	I/O, unified	May
Cooperative research	Sept.	Filterphotometric detector	Dec.		
Counter, gated universal	June	Financial calculator software, personal computer	Apr.	J	
Co-injection molding	Sept.	Fire code	Aug.	Junction temperature, in-circuit testing	Oct.
Crystal, quartz, measurements	Nov.	Fletcher-Powell method	Jan.		
Curve fitting	July	Floating-point chip set	July	K	
Custom IC, printer control	Nov.	Flow cell	Feb.	Keep/toggle vectors	Oct.
Custom ICs, counter	June	FM code, Manchester	Apr.	Key redefinition	July
Custom ICs, digital filter	Dec.	FORTH language ROM	Jan.	Keyboardfamily, computer products	Aug.
C-HIGH RESOLN function	June	FORTH/BASIC conversion	July	Keyboard, detached design	May
C-t measurements	June	Fractional-N synthesizer board	July	Keyboard, sealed	Nov.
C-V measurements	June	Fractional-N synthesizer, modified	Nov.		
		Frequency measurements	Sept.	L	
D		Front panel, virtual	June	Laguerre's method, polynomial roots	July
Daisy-chain configuration	July		June	LAN 9000, local area networking	Mar.
Damping, LC	Apr.	G	June	Level measurements, TIMS	Sept.
Data acquisition processor (DAP)	Apr.	Gated universal counter	Sept.	Library, digital test	Oct.
Data circuit testing, Bell-standard	Sept.	Generic research	Sept.	Library, speech	Jan.
Data communications, workstation	Mar.	Graphics software, personal computer	Aug.	Library, waveform measurement	June
Data storage and retrieval, logic analysis	Feb.	Graphics, 3-D, BASIC	May	Lightweight frame, TIMS	Sept.
Datacom drivers	Aug.	Graphics, asynchronous input	May	Limit cycles, digital filter	Dec.
Debugger, software	Mar.	Graphics, input device tracking	May	Linguistic rules	Sept.
Degradation table	Sept.	Graphics, text	May	Liquid chromatograph	Apr.
Detector, touchscreen	Aug.	Grating, holographic diffraction	Apr.	LO board, network analyzer	Nov.
Detectors, liquid chromatography	Apr.	Group delay, measurement	Nov.	Localization, software	Sept.

Test system, in-circuit board	Oct.	Touchscreen personal computer	Aug.	UV/Vis detectors, LC	Apr.
Test system, parametric	June	Track follower, disc drive	Jan.		
Testing, automatic program generation	Oct.	Transactions, disc drives	Jan.	V	
Testing, EMI, computer	May	Transient analysis	Dec.	Valve, rotary, LC	Apr.
Testing, environmental, computer	May	Translation, software	Sept.	VCL, vector control language	Oct.
Testing, environmental, TIMS	Sept.	Transmission Impairment Measuring Set	Sept.	Vector math, network analysis	Nov.
Testing, open-circuit	Oct.	Transmitter, TIMS	Sept.	Vibration measurements	Dec.
Testing, safeguards	Oct.	Tree, linguistic rules	Sept.	Virtual control panel	Feb.
Testing, short-circuit	Oct.	Triggers, counter, main and delayed	June	Virtual front panel	June
Test programming, interpreter-based	Oct.	Two-counter time interval measurement	June	VLFM code	Jan.
Thermal printer, personal computer	Aug.			Voice circuit testing, Bell-standard	Sept.
ThinkJet	Mar.	Twisted-pair test wiring	June		
Throughput, digital testing	Oct.		Oct.	W	
Time capture measurements	Dec.			Waveform measurement library	June
Time interval averaging	June	U		Wire frame, TIMS	Sept.
Time interval measurements	June	Universal counter, gated	June	Word processing software	Aug.
Timing diagram, logic analysis	Feb.	UNIX, implementation, HP 9000 Computers	Mar.	Workstation, engineering	Mar.
TIMS	Sept.		Feb.		Z
Toleranced design	May	User microprogramming	Feb.	Zoom operation, digital filter	Dec.

PART 3: Model Number Index

HP-71B	Handheld Computer	July	HP 9000	Model 530 System Processing Unit	May
HP Series 80	Computers	Jan.		Model 540 System Processing Unit	May
		Apr.	HP 9000	Detached Keyboard, HP 9000 Model 520 Computer	May
HP 150	Personal Computer	Aug.		Pin Board	June
A600	Computers	Feb.	HP 9000 Option G02	Waveform Measurement Library	June
A700	Computers	Feb.		Waveform Measurement Library	June
A900	Computers	Feb.	16320A	Speech Output Module	Jan.
HP 1000 A-Series	Computers	Feb.	19800A/B	Speech Library	Jan.
HP 1000	Computer	Jan.	19801A/B	Speech Library	Jan.
		Oct.	27201A	Single Bin Sheet Feeder	Nov.
1040A	HPLC Detection System	Apr.	27203A	S-Parameter Test Sets	Nov.
1090	Liquid Chromatograph	Apr.	27205A	VisiCalc® 150	Aug.
1345A	Digital Graphics Display	Nov.	29340S	Series 100/Graphics	Aug.
1965A	Gated Universal Counter	June	35677A/B	MemoMaker	Aug.
1980A/B	Oscilloscope Measurement System	June	45405A	Personal Card File	Aug.
		Feb.	45410A	Financial Calculator	Aug.
2199C/D, 2439, 2139A	A900 Computer	Feb.	45420A	Keyboard	Aug.
2197C/D, 2437, 2137A	A700 Computer	Feb.	45422A	Logic Development System	Feb.
2107AK			45423A		June
2196C/D, 2436, 2136A	A600 Computer	Feb.	46010	Software Performance Analyzer	June
2106AK		Aug.	64000	Logic Timing Analyzer	Feb.
2674A	Thermal Printer	Nov.	64310A	Solvent Delivery System	Apr.
2932A	General Purpose Printer	Nov.	64600S	Autoinjector	Apr.
2933A	Factory Data Printer	Nov.	79835A	Autosampler	Apr.
2934A	Office Printer	Jan.	79846A	HPLC Detection System	Apr.
HP 3000	Computer	Oct.	79847A	Filterphotometric Detector	Apr.
3065	Board Test System	Oct.	79880A	Card Reader Module	July
3065C	Controller	Oct.	79881A	HP-IL Interface Module	July
3065H	Test Station	Oct.	79881A	4K Memory Module	July
3081A	Industrial Workstation Terminal	Nov.	82400A	FORTH/Assembler Pac	July
3561A	Dynamic Signal Analyzer	Dec.	82401A	Math Pac	July
3577A	Network Analyzer	Nov.	82420A	Curve Fitting Pac	July
4062A	Semiconductor Parametric Test System	June	82441A	Speech Synthesis Module, Series 80	Jan.
4084A	Switching Matrix Controller	June	82480A	Character Fonts	Nov.
4085A	Switching Matrix	June	82484A	BASIC Language System, HP 9000 Model 520	Mar.
4141A	DC Source/Monitor	June	82967A	3D Graphics, HP 9000 Model 520	May
4280A	1-MHz C Meter/C-V Plotter	June		HP-UX, HP 9000 Model 520, single-user	Mar.
4945A	Transmission Impairment Measuring Set	Sept.	92188	HP-UX, HP 9000, Models 530 and 540, single-user	Mar.
7933	Disc Drive	Jan.	97050A		
7935	Disc Drive	Jan.	97052A		
HP 9000	Series 200 Computers	Mar.	97070A		
HP 9000	Series 500 Computers	Mar.			
		May	97079A		
HP 9000	Model 520 Computer	May			

97080A	HP-UX, HP 9000 Model 520, multiuser	Mar.	98760A	Color Monitor Assembly	May
97089A	HP-UX, HP 9000 Models 530 and 540, multiuser	Mar.	98770A	High-Performance Color Display	May
97935A	Data Pack	Jan.	98780A	Monochromatic Monitor Assembly	May

PART 4: Author Index

Abell, Stephen	July	Epstein, James S.	Dec.	Larson, Douglas V.	Feb.	Schmidt, Daniel G.	May
Akiyama, Tomoyuki	June			Larson, Ronald D.	May	Schoendorf, Nancy	Feb.
Allan, Marlu E.	Feb.	Fay, Thomas R.	Oct.	Lee, David S.	Nov.	Schrenker, Helge	Apr.
Allen, Kevin W.	May	Febvre, Paul F.		Lenk, Robert M.	Mar.	Schuster, Rainer	Apr.
Anderson, Steven R.		Felsenthal, Howell R.	May	Lewis, Kenneth W.	May	Shaw, Michael J.	Sept.
Arkin, Karlie J.	Aug.	Firdmann, Jacques	Nov.	Leyrer, Joachim	Apr.	Shelton, John F.	Feb.
		Fotland, David A.	Feb.	Lindberg, Jeff B.	Mar.	Showman, Peter S.	Aug.
Baker, Alan J.	Nov.	Fritz, Gary D.	May	Lindberg, Thomas B.	July	Shults, Gerrie L.	Mar.
Balliew, Robert E.	Oct.			Lucic, Richard A	Sept.	Shurtleff, Robert D, Jr.	Aug.
Balza, John J.	Mar.	Galen, Peter M.	Jan.			Silverstein, Alan	Mar.
Banno, Takuo	June	Geiger, Wolfgang	Apr.	Mackey, Timothy C.	Jan.	Smit, Paul R	Sept.
Barbera, Joseph D.	Aug.	Georg, Dennis D.	Mar.	Maitland, David	May	Smith, Donald J.	June
Batey, Robert M.	Jan.	Glatz, Bernd	Apr.	Martin, Roland	Apr.	Smith, James H.	Jan.
Becker, James D.	Jan.	Goldsmith, Kurt R.	Sept.	Mathieu, Mark A.	Oct.	Snook, Matthew L.	Oct.
Bell, R. Frank	Jan.	Grodd, Laurence W.	July	Maute, Alfred	Apr.	Spaulding, William M.	Nov.
Blasciak, Andrew J.	June			McAllister, William H.	Feb.	Spoelstra, Jeffrey A.	Aug.
Blascow, Stanley M. Jr.	July	Hadbawnik, Detlev	Apr.	McClelland, Scott R.	Bug.	Steps, Steven C.	Feb.
Bohley, Thomas K.	June	Hamilton, Gail E.	June	McDermid, John E.	Oct.	Straton, Peter R.	Aug.
Bounaix, Jean	Nov.	Hammond, Donald L.	Mar.	Mear, Charles E., Jr.	Mar.	Sukumar, Srinivas	Aug.
Bowen, Michael K.	May	Hancock, Johnnie L.	June	Meier, Marcel E.	Mar.	Szeman, George	Aug.
Brooks, Robert L.	May	Härtl, Hans-Georg	Apr.	Meyer, Thomas O.	May		
Brown, Patricia A	Aug.	Hartman, Douglas O.	Feb.	Meyers, Nathan	July	Teska, Michael A.	Oct.
Bui, Xuan	May	Harwood, Vance R.	Oct.	Miller, Robert M.	July	Thayer, Larry J.	May
Burkman, Jack L.	May	Hastings, Ernie	Sept.	Milner, Joseph R.	May	Thompson, Bruce A.	Feb.
Bury, Robert J.	Mar.	Hawk, Joseph A.	June	Moncton, Lee S.	Feb.	Tillson, Timothy W.	Mar.
	May	Hendricks, T. Michael	Oct.	Morris, Jerry D.	Sept.	Tomberlin, Jeffrey	Sept.
		Hetrick, Michael V.	Mar.	Murphy, Jeffrey R.	Jan.		
		Hill, Charles P.	Sept.				
Carlson, John R.	Feb.	Hiller, Donald R.	Dec.	Narimatsu, Yoh	June	Voelker, Kenneth M.	Nov.
Carrie, Susan E.	Aug.	Holmberg, Randy W.	Oct.	Neal, Scott S.	Sept.	Voigt, Douglas L.	Jan.
Carver, Brett K.	June	Hoog, Bryan C.	Dec.	Neft, Leslie E.	Feb.	Völlmer, Heinrich	Apr.
Chatterton, Craig B.	Feb.	Höschle, Giinter	Apr.	Neuder, David L.	Feb.		
Christofanelli, Paul C.	May	Huefle, Elizabeth R	Jan.	Nill, Günter E.	Apr.	Wang, Scott W.Y.	Mar.
Chu, Billy	Feb.	Hunt, Jackie	July	Novotny, David R.	Sept.	Ward, Alan D.	
Clark, Elizabeth A.	Feb.					Watkins, John E.	Aug.
Connor, Michael L.	Mar.	Ishiguro, Kenzo	June	Osecky, Benjamin D.	Mar.	Wechsler, Susan L.	July
Cooley, Jack D.	Mar.					Wenzel, H. Michael	Mar.
Cross, Don M.	Feb.	Jensen, Gordon A.	Sept.	Panek, Charles R.	Dec.	Whelan, Charles H.	Aug.
Culbertson, W. Bruce	Aug.	Johnson, Eric W.	Jan.	Patton, Charles M.	July	Whitaker, R. Keith	Jan.
		Jones, Vincent C.	Mar.	Perkins, Michael R.	Aug.	Wicklund, Eric J.	Dec.
Daniels, Jerry W.	Nov.	Jonker, Robert J.	Apr.	Pettis, Karl W.	Aug.	Wiederoder, Herbert	Apr.
Dean, Ronald P.	May			Pratt, Warren C.	May	Wiese, Axel	Apr.
Dehmer, Bernhard	Apr.	Kanafuji, Keiki	June	Price, John	Aug.	Wilcox, Roger V.	Jan.
Dickie, James P.	July	Kator, Steven F.	Dec.	Pritchard, Thomas B.	Nov.	Wilken, Kent	Jan.
Dieckmann, Joachim	Apr.	Kilbourn, Thomas E.	Aug.	Purdy, Glen L., Jr.	Dec.	Williamson, Donald A.	Feb.
DiVittorio, Mark J.	Nov.	Koehler, Loren M.	Jan.			Willits, James L.	Mar.
Dodge, Allan W.	Sept.	Kolesar, Michael L.	Mar.	Quan, James P.	Sept.	Wilson, Heather	Sept.
Donnelly, James A.	July		May			Winters, Michael T.	Feb.
Dorr, Thomas	Apr.	Kretz, Wolfgang	Apr.	Reh, Teresa L.	Sept.	Witte, Robert A.	Nov.
Dunn, Lorenzo	Aug.	Kuseski, Robert E.	May	Rozing, Gerard P.	Apr.	Wood, Laurie E. Pollero	Aug.
Dureau, Jean-Claude	Nov.	Kusmer, Steven R.	Feb.	Rupp, Richard R.	Mar.		
Edwards, Stephen A.	Jan.	Landers, David M.	Mar.	Scheid, Stephen D.	Mar.	Zelle, Nathan	July
Engel, Glenn R.	Dec.					Ziegler, Juergen	Apr.

PART 1: Chronological Index

January 1985

Optical Stimulus and Receivers for Parametric Testing in Fiber Optics, Achim Eckert and Wolfgang Schmid
 Handling Fiber Optic Components
 A Precise, Programmable 850-nm Optical Signal Source, Wolfgang Schmid, Bernhard Flade, Klaus Hoeng, and Rainer Eggert
 Laser Safety Practices
 A Versatile, Programmable Optical Pulse Power Meter, Werner Berkel, Hans Huning, Volker Eberle, Josef Becker, Bernd Maisenbacher, Wilfried Pless, and Michael Goder
 An Optical Receiver for 550 to 950 nm, Michael Fleischer-Reumann, Emmerich Müller, and Gerd Koffmane
 Optical Standards, Werner Berkel and Joachim Vobis

February 1985

HP TechWriter: Illustrated Documents for Engineers, Elaine C. Regelson and Roy E. Anderson
 HP TechWriter Security
 Magnetostatic-Wave Devices for Microwave Signal Processing, Waguih S. Ishak and Kok-Wai Chang
 Magnetic Resonance and YIG-Sphere Devices
 Spin Waves and Magnetostatic Waves
 Disc Caching in the System Processing Units of the HP 3000 Family of Computers, John R. Busch and Alan J. Kondoff
 Glossary
 Disc Cache Performance Tools
 The MPE-IV Kernel

March 1985

HP Maintenance Management: A New Approach to Software Customer Solutions, Joseph L. Malin and Irving Bunton, Jr.
 The Need for Plant Maintenance
 Development of a High-Performance, Half-Inch Tape Drive, Hoyle L. Curtis and Richard T. Turley
 LSI Simplifies Tape Drive Electronic Design
 System Integration
 Write and Read Recovery Systems for a Half-Inch Tape Drive, Wayne T. Gregory
 Digital Formatting and Control Electronics for Half-Inch Tape Data Storage, Jimmy L. Shafer
 Streaming Tape Drive Hardware Design, John W. Dong, David J. Van Maren, and Robert D. Emmerich
 Firmware for a Streaming Tape Drive, David W. Ruska, Virgil K. Russon, Bradfred W. Culp, Alan J. Richards, and John A. Ruf
 Low-Cost, Highly Reliable Tape Backup for Winchester Disc Drives, John C. Becker, Donald A. DiTommaso, and Sterling J. Mortensen
 A Design Methodology for Today's Customers
 Tape/Disc Controller Serves Integrated Peripherals, Craig L. Miller and Mark L. Gembarowski

Cartridge Tape Data Integrity Ensured at Five Levels, K. Douglas Gennetten
 Controlling the Head/Tape Interface, Walter L. Auyer, Charles H. McConica, David J. Schmeling, and Mark E. Wanger
 Software Methodology Preserves Consistency and Creativity, Mark L. Gembarowski

April 1985

A Low-Cost, Compact, Block-Mode Computer Terminal, Jean-Louis Chapuis and Michele Prieur
 A Reliable, Low-Cost Keyboard Interface
 Mechanical Design of a Low-Cost Terminal, Michel Cauzid
 VLSI Design in the HP 2392A Terminal, Jean-Jacques Simon
 A Fast Gate Array Companion for a CRT Controller
 How to Scroll Smoothly
 Fully Automated Production of Display Terminal Printed Circuit Assemblies, Christian-Marcel Dulphy
 A Low-Cost, Reliable Analog Video Display Terminal Design, René Martinelli and Jean Yves Chatron
 An Intelligent Plotter for High-Throughput, Unattended Operation, Martin L. Stone, Peter L. Ma, Jeffery W. Groenke, and Todd L. Russell
 Low-Mass, Low-Cost Pen-Lift Mechanism for High-Speed Plotting, Tammy V. Herr and Hatem E. Mostafa
 The HP 7550A X-Y Servo: State-of-the-Art Performance on a Budget, by David C. Tribolet, Kenneth A. Regas, and Thomas J. Halpenny
 Firmware Provides Simple and Powerful Plotter Operation, Thomas J. Halpenny

May 1985

History of ThinkJet Printhead Development, Niels Nielsen
 Mass-Producing Thermal Ink-Jet Printheads
 Preventing Hydraulic Crosstalk
 An Inexpensive, Portable Ink-Jet Printer Family, Cheryl V. Katen and Thomas R. Braun
 Alignment of Bidirectional Text
 Printhead Interconnect
 Custom VLSI Microprocessor System
 Home Switch Design
 Development of the Thin-Film Structure for the ThinkJet Printhead, Eldurkar V. Bhaskar and J. Stephen Aden
 Where the Ink Hits the Paper...
 The ThinkJet Orifice Plate: A Part with Many Functions, Gary L. Siewell, William R. Boucher, and Paul H. McClelland
 Electroforming
 Viewpoints—Managing the Development of a New Technology, Frank L. Cloutier
 Thermodynamics and Hydrodynamics of Thermal Ink Jets, Ross R. Allen, John D. Meyer, and William R. Knight

June 1985

A New Family of Dot Matrix Line Printers, Bryce E. Jeppsen
Design for Reliability in the HP 256X Family of Line Printers
Dot Matrix **Printbar** Design and Manufacturing, John S. Craven
Shuttle System and Packaging of a Low-Cost, High-Reliability,
300-lpm Line Printer, by Jeffrey M. **Lantz** and Ben B. Tyson
Mechanical Design of a Family of High-Speed Impact Line Printers,
George V. **McIlvaine**, Stephen L. Testardi, Daniel D. Wheeler,
and Peter Gysling
Computer Modeling of a Paper Drive Mechanism
Resonance Search Technique
Cost-Effective, Versatile Line Printer Electronics and Firmware,
Philip Gordon, Phillip R. Luque, and Donald K. **Wadley**
Vector Graphics for Dot Matrix Printers
Printer Command Language Provides Feature Set Standard for HP
Printers, Ernest F. Covelli, Von L. Hansen, and David L. Price
Native Language Support for Computer Systems, Jonathan E. Bale
and Harry E. **Kellogg**
Native Language Collating Sequences for Europe

July 1985

A Protocol Analyzer for EDP Centers and Field Service, Aileen
C. Appleyard, Roger W. Ruhnnow, William Grant Grovenburg,
and Wayne M. Angevine
How Protocol Analysis Can Help
Protocol Analyzer Software Development
Simple Architecture Provides High Performance for Protocol
Analysis, Stephen H. Witt and Roger W. Ruhnnow
Protocol Analyzer Power Supply Design
Protocol Analyzer Mechanical Design
Making a Protocol Analyzer Producibile and Serviceable
Serial Data Acquisition and Simulation for a High-Speed Protocol
Analyzer, Mark D. Keisling, Dorothy J. Yackle, David B. **Karlin**,
and Elizabeth Gates Moore
A Low-Cost, Portable Field Service Protocol Analyzer, Vonn L.
Black, Alan Delwiche, Chris L. **Odell**, and Stephen B. Tursich
Remote Monitoring and Control of Semiconductor Processing,
Wesley H. Higaki
SECS

August 1985

Beyond RISC: High-Precision Architecture, Joel S. Birnbaum and
William S. Worley, Jr.
Architecture Genealogy
Development of a Two-Channel Frequency Synthesizer, Michael
B. Aken and William M. Spaulding
Discrete Sweep
Two-Channel Synthesizer Phase Calibration
Applications of a Two-Channel Synthesizer, Michael B. Aken
Measuring Intermodulation Distortion with a Two-Channel Syn-
thesizer
Synthesizer Firmware for User Interface and Instrument Control,
David A. **Bartle** and Katherine F. Potter
A High-Level Active Mixer, William M. Spaulding
Automated Test Data Collection for IC Manufacturing, Reed I. White
EA-10 Data Analysis System

September 1985

VLSI Delivers Low-Cost, Compact HP 3000 Computer System,
James H. **Holl** and Frank E. La Fetra, Jr.
High-Volume Test Strategy
Simplicity in a Microcoded Computer Architecture, Frederic C.
Amerson
Using a Translator for Creating Readable Microcode
Bootting 64-Bit WCS Words from a 32-Bit-Wide ROM Word
Simulation Ensures Working First-Pass VLSI Computer System,
Patria G. Alvarez, Greg L. Gilliom, John R. Obermeyer, Paul L.
Rogers, and Malcolm E. **Woodward**

Creative Ways to Obtain Computer System Debug Tools, William
M. Parrish, Eric B. Decker, and Edwin G. Wong
The Role of a Programmable Breakpoint Board
Virtual Microcode Memory
New Cardiograph Family with ECG Analysis Capability, Robert
H. Banta, Jr., Peter H. **Dorward**, and Steven A. **Scampini**
ECG Storage and Transmission
Artifact Indication
Computer-Aided ECG Analysis, John C. Doue and Anthony G.
Vallance
ECG Criteria Language
Pediatric Criteria

October 1985

A Multitasking Personal Computer System for the Technical Pro-
fessional, Tim J. Williams and Nelson A. Mills
Electronics System for a Transportable Computer, David L.
Kepler and James A. Espeland
Custom Graphics Processor Unit for the Integral PC, Dean M. Heath
High-Quality Electroluminescent Display for a Personal Worksta-
tion, Marvin L. Higgins
Mechanical Design of the Integral PC: Not Just a Desktop Computer
with a Handle, Thomas A. Pearo
Reducing Glare with Circular Polarizers
A UNIX Operating System Adapted for a Technical Personal Com-
puter, Ray M. **Fajardo**, Andrew L. Rood, James R. **Andreas**, and
Robert C. Cline
A Friendly UNIX Operating System User Interface, Jon A. Brewster,
Karen S. **Helt**, and James N. Phillips
Personal Applications Manager
Data Communications
Printer and Plotter Drivers

November 1985

Thin-Film Memory Disc Development, James E. Opfer, Bruce F.
Spenner, **Bangalore R.** Natarajan, Richard A. Baugh, Edward S.
Murdock, Charles C. Morehouse, and David J. **Bromley**
M-H Loop Measurements
A Laser Particle Scanner
Dynamic Testing of Thin-Film Magnetic Recording Discs, John
Hodges, Keith S. Roskelley, and Dennis R. Edson
In-Line Sputtering Deposition System for Thin-Film Disc Fabrication,
George A. Drennan, Robert J. **Lawton**, and Michael B. Jacobson
Thin-Film Disc Reliability—The Conservative Approach, Clifford
K. Day, C. Girvin **Harkins**, Stephan P. Howe, and Paul **Poorman**
Manufacturing Thin-Film Discs, Glenn E. Moore, Jr., Richard S.
Seymour, and **Darrel R. Bloomquist**
Thin-Film Discs: Magnetic, Electrical, and Mechanical Design,
Michael C. **Allyn**, Peter R. **Goglia**, and Scott R. Smay

December 1985

A High-Performance Signal Generator for RF Communications
Testing, Robert E. Burns
User Interface and Internal Controller for an RF Signal Generator,
Albert Einstein Lassiter and Charles R. **Kogler**
Display Design
Signal Generator Service Features Maximize Uptime, Michael T.
Wende
Electrically Erasable PROM Storage for Calibration Data
Internally Modular Signal Generator Mechanical Design, Michael
B. **Jewell** and Mark W. Johnson
Wide-Frequency-Range Signal Generator Output Section Design,
Robert R. **Collison**, James B. Summers, Marvin W. Wagner, and
Bryan D. **Ratliff**
Signal Generator Frequency Synthesizer Design, Thomas R.
Faulkner, Earl C. Herleikson, Ronald J. Mayer, Brian M. Miller,
and Mark A. Niemann
Computer Analysis of Oscillator Loop Gain, Phase, and Q
Audio Modulation Section for an RF Signal Generator, Gary L. Tong

PART 2: Subject Index

Subject	Month	Subject	Month	Subject	Month
Air bearing, thin-film disc, surface characterization	Nov.	CRT controller chip	Apr.	characterization	Nov.
ALC loops	Dec.	Customizable software	Mar.	Extinction ratio	Jan.
Algorithm, Autoconfigure	July			Extractor	Sept.
Algorithm, curved-line	Apr.	D			
Algorithm, motor startup	June	Data acquisition, protocol analyzer	July	F	
Algorithm, trigger search	July	Data base stuffer, TC-10	Aug.	Faster Than Light simulator	Sept.
Alignment, bidirectional text	May	Data capture buffer	July	Ferrimagnetic films	Feb.
Alpha window, The Integral	Oct.	Data communications, The Integral	Oct.	Fiber optic measurements	Jan.
Amplifiers, wideband pulse	Jan.	Data detect and deskew	Mar.	File extent	Feb.
Analyzers, protocol	July	Data formatting, TC-10	Aug.	File mapping	Feb.
Angle modulation	Dec.	Data integrity	Mar.	File system, HP-UX , The Integral	Oct.
Architecture, computer, high-precision	Aug.	Data link control	July	Filters, MSW	Feb.
Architecture, computer, microcoded	Sept.	Data link interface	July	Firmware, graphics plotter	Apr.
Area fill, plotter	Apr.	Data protection	Mar.	Firmware, streaming tape drive	Mar.
Artifact indication	Sept.	Data separation	Mar.	Flexures, printbar and counterweight	June
Attached processors	Aug.	Data streams, SECS	July	FM loop	Dec.
Attenuators, optical	Jan.	Data transport records, TC-10	Aug.	FM, synthesizer	Dec.
Audio modulation, RF synthesizer	Dec.	Debug tools, computer	Sept.	Force balance theory	June
Autoconfigure , protocol analyzer	July	Delay-line oscillators, MSW	Feb.	Fractional-N synthesis	Aug.
Automated assembly, printed circuit	Apr.	Delay lines, MSW	Feb.	Frequency multipliers, MSW	Feb.
Automated logic drawings	Sept.	Delayed branch instructions	Aug.	Frequency switching time reduction	Dec.
Azimuth adjustment, tape head	Mar.	Design methodology	Mar.	Friction, thin-film memory disc	Nov.
		Development, thin-film disc	Nov.	Front-end processor	July
		Dewrinkling , towel ribbon	June		
B		Disc access time	Feb.	G	
Backup, disc	Mar.	Disc backup, Winchester	Mar.	Gate array, CPU	Sept.
BASIC, HP Technical, The Integral	Oct.	Disc caching	Feb.	Gate array, CRT control	Apr.
Bit error rate test	July	Disc domain	Feb.	GCR format, tape drive	Mar.
Bit-oriented protocol	July	Discrete sweep	Aug.	Glare reduction, circular polarizer	Oct.
Bubble nucleation, thermal ink jet	May	Disc, thin-film magnetic recording	Nov.	Glide head, thin-film disc, evaluation	Nov.
		Dispersion relations, MSW	Feb.	Graphics, custom processor unit	Oct.
C		Display drive, energy recovery	Oct.	Graphics, ink-jet printer	May
Cache memories	Aug.	Display, flat-panel, bit-mapped	Oct.	Graphics window, The Integral	Oct.
Caching, disc	Feb.	Display terminal	Apr.		
Capacitive encoder	June	Documentation , computer design	Sept.		
Calibration, self	Aug.	Documents, illustrated, software	Feb.	H	
Calibration, signal generator	Dec.	Dot generation logic	June	Half-shifting model, terminal	Apr.
Capture point, printbar hammer	June	Doubler output section	Dec.	Hammer design, printbar	June
Cardiograph	Sept.	Drivers, electroluminescent display	Oct.	Hammer drivers	June
Cartridge, tape, certified	Mar.	Drivers, printer and plotter	Oct.	Head mounting, tape drive	Mar.
Character-oriented protocol	July	DTS, SPN Data Transport Standard	Aug.	Heterodyne output section	Dec.
Cleanable connectors, optical	Jan.			Hierarchy charts	Mar.
Clock recovery	Mar.	E		High-precision architecture	Aug.
Clock recovery board, tape drive	Mar.	EA-10 , data analysis software	Aug.	Hit rate	Feb.
Cocking distance, printbar hammer	June	ECG analysis, storage, and transmission	Sept.	Home switch	May
Collating sequences, native language	June	ECG waveform criteria	Sept.	HP Draft application	Apr.
Compiler technology	Aug.	ECL, ECG criteria language	Sept.	HP-UX operating system	Oct.
Computer, HP 3000 Series 37	Sept.	E-flexures	June	HP Windows	Oct.
Computer, The Integral	Oct.	Electrical-to-optical transducer	Jan.	Hydrodynamics, thermal ink jet	May
Console, maintenance	Sept.	Electroforming, orifice plate	May		
Controller, tape/disc	Mar.	Electroluminescent display	Oct.	I	
Coprocessors	Aug.	EMI suppression, terminal	Apr.	IC manufacturing software	July
Corebar , dot matrix line printer	June	Energy recovery drive scheme	Oct.	IC, Read	Aug.
Corrosion, thin-film memory disc	Nov.	Equilibrium mode distribution	Oct.	IC, Write	Mar.
CPU, VLSI gate array	Sept.	Ergonomic design, terminal	Jan.	IC-10 , SPN module	July
Crosstalk, hydraulic	May	Error correction, tape drive	Apr.	IF loop	Mar.
Crowning of flexures	June	Errors , measurement,	Mar.	Illustrated document software	Dec.

Series 37 Computer	Sept.	Swivel mechanism, CRT	Apr.	Two-channel synthesizer	Aug.
Servo, half-inch tape drive	Mar.	Synthesizer, RF	Dec.	Two-phase operation	Aug.
Servo systems, printbar	June	Synthesizer, two-channel	Aug.	Two-tone operation	Aug.
Servo, X-Y, graphics plotter	Apr.	System integration	Mar.		
Shadow paging	Feb.			L	
Shift register, dot sequencing	June			UHF output section	Dec.
Shuttle system, line printer	June	T		UNIX operating system	Oct.
Signal generator, RF	Dec.	Tape drive, half-inch	Mar.		
Signal generator, two-channel	Aug.	Tape drive, ¼-inch	Mar.	V	
Signal processing, ECG	Sept.	TC-10 , test data collection software	Aug.	Vector buffer	Apr.
Signal-to-noise enhancers	Feb.	Terminal, low-cost	Apr.	Vector graphics, dot matrix printer	June
Simulation, gate array chips	Sept.	Testers, modular design	Nov.	Video display terminal	Apr.
Simulation, protocol analyzer	July	Testing, data collection	Aug.	Virtual microcode memory	Sept.
Smooth scrolling	Apr.	Testing, dynamic, thin-film		VLSI CRT controller	Apr.
Soft fonts	Oct.	memory discs	Nov.	VLSI, custom microprocessor	May
SoftPanel	Sept.	Text and graphics, side by side	Feb.	VLSI, HP 3000 Series 37 Computer	Sept.
Software, data collection	Aug.	Text editing software with graphics	Feb.		
Software debugging panel	Sept.	Thermodynamics, thermal ink jet	May	W	
Software, maintenance management	Mar.	Thin-film disc technology	Nov.	Wait probability	Feb.
Software methodology	Mar.	Thin-film structure, ink-jet		Waveform boundary indicator,	
Software, multilingual	June	printhead	May	ECG	Sept.
Software, process control	July	Thin films, YIG	Feb.	Wear, thin-film memory disc	Nov.
Software security	Feb.	ThinkJet Printer	May	Winchester disc backup	Mar.
Software, translation	Mar.	ThinkJet, The Integral,		Work order control	Mar.
Special function units	Aug.	internal printer	Oct.	Workstation, personal	Oct.
Spectrum program	Aug.	Tilt mechanism, CRT	Apr.	Write-ahead logging	Feb.
Spike elimination	Dec.	Time base loop	Dec.	Write system, half-inch tape drive	Mar.
Spin waves	Feb.	Towel ribbon control	June	Write wait probability	Feb.
SPN, PC-10 Module	July	Tractor positioning, power	June		
SPN, TC-10 Module	Aug.	Transaction management	Feb.	X	
Spurious response minimization	Dec.	Translators, PC-10	July		
Sputtering, in-line system	Nov.	Transportable computer	Oct.	Y	
Stack architecture	Sept.	Trap machine	July	YIG, thin films	Feb.
Start/stop tape drive	Mar.	Triggers, simultaneous, protocol			
State variable oscillator	Dec.	analyzer	July	Z	
Streaming tape drive	Mar.	TRS, SPN Test Result Standard	Aug.		
Sum loop	Dec.	Two-channel operation	Aug.		

PART 3: Model Number Index

DC600	High-Density Data Cartridge	Mar.	8150A	Optical Signal Source	Jan.
EA-10	Data Analysis System	Aug.	8151A	Optical Pulse Power Meter	Jan.
IC-10	Integrated Circuit Manufacturing		8642A/B	RF Signal Generator	Dec.
	Information System	July	9144A	¼-Inch Cartridge Tape Drive	Mar.
PC-10	Process Control System	July	9807A	The Integral Computer	Oct.
TC-10	Tester Collection System	Aug.	26061A	Vector Graphics Option	June
2225A/B/C/D	ThinkJet Printer	May	32276A	HP Maintenance Management	Mar.
2392A	Display Terminal	Apr.	46060A	HP Mouse	Oct.
2563A	300-lpm Line Printer	June	47611A	Adult Criteria Module	Sept.
2565A	600-lpm Line Printer	June	47612A	Pediatric Criteria Module	Sept.
2566A	900-lpm Line Printer	June	47619A	ECG Collection Module	Sept.
HP 3000	Computer	Feb.	81511A	Optical Head	Jan.
		Mar.	81512A/B	Optical Head	Jan.
HP 3000 Series 37	Computer	Sept.	81519A	Optical Receiver	Jan.
3326A	Two-Channel Synthesizer	Aug.	82815J	Datacom Package	Oct.
4760A/AI/AM.	Cardiograph	Sept.	82860J	HP-UX Technical BASIC	Oct.
4951A	Protocol Analyzer	July	97501A	3%-Inch 10-Mbyte	
4953A	Protocol Analyzer	July		MicroWinchester Disc Drive	Nov.
4955A	Protocol Analyzer	July	98819A	HP TechWriter	Feb.
5600C	ECG Management System	Sept.	SPN	Semiconductor Productivity	
7550A	8-Pen Graphics Plotter	Apr.		Network	July
7978A	Magnetic Tape Subsystem	Mar.			Aug.

PART 4: Author Index

Aden, J. Stephen	May	Edson, Dennis R.	Nov.	Krizan, Brock	Oct.
Aken, Michael B.	Aug.	Eggert, Rainer	Jan.		
Allen, Ross R.	May	Elder, Richard E.	Nov.	La Fetra, Frank E., Jr. (Skip)	Sept.
Allyn, Michael C.	Nov.	Emmerich, Robert D.	Mar.	Lantz, Jeffrey M.	June
Alvarez, Patria G.	Sept.	Ernst, Stephen M.	July	Lassiter, Albert Einstein	Dec.
Amerson, Frederic C.	Sept.	Espeland, James A.	Oct.	Lawton, Robert J.	Nov.
Anderson, Roy E.	Feb.			Lowe, Dave	May
Andreas, James R.	Oct.	Fajardo, Ray M.	Oct.	Luque, Phillip R.	June
Angevine, Wayne M.	July	Faulkner, Thomas R.	Dec.		
Appleyard, Aileen C.	July	Flade, Bernhard	Jan.	Ma, Peter L.	Apr.
Auyer, Walter L.	Mar.	Fleischer-Reumann, Michael	Jan.	Maisenbacher, Bernd	Jan.
				Malin, Joseph L.	Mar.
Baily, Everett M.	June	Gembarowski, Mark L.	Mar.	Martinelli, René	Apr.
Bale, Jonathan E.	June	Gennetten, K. Douglas	Mar.	Mayer, Ronald J.	Dec.
Banta, Robert H., Jr.	Sept.	Giffard, Robin P.	Nov.	McClelland, Paul H.	May
Barbut, Freddie	Apr.	Gilliom, Greg L.	Sept.	McConica, Charles H.	Mar.
Bartle, David A.	Aug.	Goder, Michael	Jan.	McIlvaine, George V.	June
Baugh, Richard A.	Nov.	Goglia, Peter R.	Nov.	Meyer, John D.	May
Becker, John C.	Mar.	Gordon, Philip	June	Miller, Brian M.	Dec.
Becker, Josef	Jan.	Green, Gary W.	June	Miller, Craig L.	Mar.
Berkel, Werner	Jan.	Gregory, Wayne T.	Mar.	Mills, Nelson A.	Oct.
Bhaskar, Eldurkar V.	May	Groenke, Jeffery W.	Apr.	Monroe, Charles C.	Sept.
Birnbaum, Joel S.	Aug.	Grovenburg, William Grant	July	Moore, Elizabeth Gates	July
Black, Vonn L.	July	Gysling, Peter	June	Moore, Glenn E., Jr.	Nov.
Bloomquist, Darrel R.	Nov.			Morehouse, Charles C.	Nov.
Boucher, William R.	May	Hackleman, David	May	Mortensen, Sterling J.	Mar.
Bowers, Dennis	Sept.	Halpenny, Thomas J.	Apr.	Mostafa, Hatem E.	Apr.
Brabant, Richard	Apr.	Hansen, Von L.	June	Miller, Emmerich	Jan.
Braun, Thomas R.	May	Harkins, C. Girvin	Nov.	Murdock, Edward S.	Nov.
Brewster, Jon A.	Oct.	Heath, Dean M.	Oct.		
Bromley, David J.	Nov.	Helt, Karen S.	Oct.	Natarajan, Bangalore R.	Nov.
Buck, Roy T.	May	Herleikson, Earl C.	Dec.	Nielsen, Niels J.	May
Bunton, Irving, Jr.	Mar.	Herr, Tammy V.	Apr.	Niemann, Mark A.	Dec.
Burns, Robert E.	Dec.	Hesterman, Victor W.	Nov.		
Busch, John R.	Feb.	Higaki, Wesley H.	July	Obermeyer, John R.	Sept.
		Higgins, Marvin L.	Oct.	Odell, Chris L.	July
		Hodges, John	Nov.	Opfer, James E.	Nov.
Callaway, Robert P.	May	Hoeing, Klaus	Jan.		
Cauzid, Michel	Apr.	Holl, James H.	Sept.	Panyasak, Khambao	Apr.
Chang, Kok-Wai	Feb.	Howe, Stephan P.	Nov.	Parrish, William M.	Sept.
Chapuis, Jean-Louis	Apr.	Huning, Hans	Jan.	Pearo, Thomas A.	Oct.
Chatron, Jean-Yves	Apr.			Phillips, James N.	Oct.
Cline, Robert C.	Oct.	Ishak, Waguih S.	Feb.	Pickup, Ray L.	May
Cloutier, Frank L.	May			Pless, Wilfried	Jan.
Collison, Robert R.	Dec.	Jacobson, Michael B.	Nov.	Poorman, Paul	Nov.
Covelli, Ernest F.	June	Jam, Mehraban	Sept.	Potter, Katherine F.	Aug.
Craven, John S.	June	Jeppsen, Bryce E.	June	Price, David L.	June
Culp, Bradfred W.	Mar.	Jewell, Michael B.	Dec.	Prieur, Michble	Apr.
Curtis, Hoyle L.	Mar.	Johnson, Mark W.	Dec.		
		Jones, Sharon E.	June	Rader, John R.	July
Day, Clifford K.	Nov.			Ratliff, Bryan D.	Dec.
Decker, Eric B.	Sept.	Karlin, David B.	July	Regas, Kenneth A.	Apr.
Delwiche, Alan	July	Katen, Cheryl V.	May	Regelson, Elaine C.	Feb.
DiTommaso, Donald A.	Mar.	Keisling, Mark D.	July	Richards, Alan J.	Mar.
Dong, John W.	Mar.	Kellogg, Harry E.	June	Rogers, Paul L.	Sept.
Dorward, Peter H.	Sept.	Kepler, David L.	Oct.	Rood, Andrew L.	Oct.
Doue, John C.	Sept.	Kogler, Charles R.	Dec.	Roskelley, Keith S.	Nov.
Drennan, George A.	Nov.	Knight, William R.	May	Ruf, John A.	Mar.
Dulphy, Christian-Marcel	Apr.	Koffmane, Gerd	Jan.	Ruhnnow, Roger W.	July
		Kondoff, Alan J.	Feb.	Ruska, David W.	Mar.
Eberle, Volker	Jan.	Krebs, Ken	July	Russell, Todd L.	Apr.
Eckert, Achim	Jan.				

Russon, Virgil K.	Mar.	Spenner, Bruce F.	Nov.	Wadley, Donald K.	June
Scampini, Steven A.	Sept.	Stone, Martin L.	Apr.	Wagner, Marvin W.	Dec.
Schmeling, David J.	Mar.	Summers, James B.	Dec.	Wanger, Mark E.	Mar.
Schmid, Wolfgang	Jan.	Taft, Fred	Oct.	Wende, Michael T.	Dec.
Schneider, Marla	Nov.	Testardi, Stephen L.	June	Wheeler, Daniel D.	June
Scholten, Alvin D.	June	Tong, Gary L.	Dec.	White, Reed I.	Aug.
Seymour, Richard S.	Nov.	Tribolet, David C.	Apr.	Williams, Tim J.	Oct.
Shafer, Jimmy L.	Mar.	Turley, Richard T.	Mar.	Witt, Stephen H.	July
Shaker, Chris	Sept.	Tursich, Stephen B.	July	Wong, Edwin G.	Sept.
Siewell, Gary L.	May	Tyson, Ben B.	June	Woodward, Malcolm E.	Sept.
Simon, Jean-Jacques	Apr.	Vallance, Anthony G.	Sept.	Worley, William S., Jr.	Aug.
Sleeper, Andrew D.	May	Van Maren, David J.	Mar.	Yackle, Dorothy J.	July
Smay, Scott R.	Nov.	Vobis, Joachim	Jan.	Zarlingo, Ben	Aug.
Spaulding, William M.	Aug.				

PART 1: Chronological Index

January 1986

Compilers for the New Generation of Hewlett-Packard Computers, Deborah S. Coutant, Carol L. Hammond, and Jon W. **Kelley**
 Components of the Optimizer
 An Optimization Example
 A Stand-Alone Measurement Plotting System, Thomas H. Daniels and **John Fenoglio**
 Eliminating Potentiometers
 Digital Control of Measurement **Graphics**, Steven T. Van Voorhis
 Measurement Graphics Software, **Francis E. Bockman** and Emil **Maghakian**
 Analog **Channel** for a Low-Frequency Waveform Recorder, **Jorge Sanchez**
 Usability Testing: A Valuable Tool for PC Design, Daniel B. Harrington

February 1986

Gallium **Arsenide** Lowers Cost and Improves Performance of Microwave Counters, Scott **R. Gibson**
 Creating Useful Diagnostics
 Manufacturing Advances
 A New Power Transformer
 Optimum Solution for IF Bandwidth and LO Frequencies in a Microwave Counter, **Luiz Peregrino**
 Seven-Function Systems **Multimeter** Offers Extended **Resolution** and Scanner Capabilities, Scott D. **Stever**, Joseph E. Mueller, Thomas G. **Rodine**, Douglas W. Olsen, and Ronald K. Tuttle
 Advanced Scalar Analyzer System **Improves** Precision and Productivity in R&D and Production Testing, Jacob H. Egbert, Keith F. Anderson, **Frederic W. Woodhull II**, Joseph **Rowell, Jr.**, Douglas C. Bender, Kenneth A. Richter, and John C. Faick
 Filter **Measurement** with the Scalar Network Analyzer
 Scalar **Analyzer** System Error Correction
 Calibrator Accessory
 Voltage-Controlled Device Measurements

March 1986

An Introduction to Hewlett-Packard's **AI** Workstation Technology, Martin R. Cagan
HP's University **AI** Program
 A Defect Tracking System for the UNIX **Environment**, Steven R. Blair
 A Toolset for Object-Oriented Programming in C, Gregory D. Burroughs
 Tools for Automating Software Test Package Execution, Craig D. Fuget and Barbara J. Scott
 Using Quality Metrics for Critical Application Software, William T. Ward
 P-PODS: A Software Graphical Design Tool, Robert W. Dea and Vincent J. **D'Angelo**
 Triggers: A Software Testing Tool, John R. **Bugarin**
 Hierarchy Chart Language Aids Software Development, Bruce A. Thompson and David J. Ellis
 Module Adds Data Logging Capabilities to the **HP-71B** Computer, James A. Donnelly
 System **Monitor Example**

April 1986

A Data Acquisition System for a 1-GHz Digitizing Oscilloscope, Kenneth Rush and Danny J. **Oldfield**
 General-Purpose 1-GHz Digitizing Oscilloscopes
 High-Performance Probe System for a 1-GHz Digitizing Oscilloscope, Kenneth Rush, William H. Escovitz, and Arnold S. **Berger**
 Waveform Graphics for a 1-GHz Digitizing Oscilloscope, Rodney T. Schlater
 Hardware Implementation of a High-Performance Trigger System, Scott A. **Genther** and Eddie A. **Evel**
 1-GHz Digitizing Oscilloscope Uses Thick-Film Hybrid Technology, Derek E. Toeppen
 A Modular Power Supply, Jimmie D. Felps
 Program Helps Teach Digital Microwave Radio Fundamentals, Christen K. **Pedersen**

May 1986

Low-Cost Automated Instruments for Personal Computers, Charles J. Rothschild, **3rd**, Robert C. Sismilich, and William T. Walker
PC Instruments Modules
Instrumentless Front-Panel Program Demonstrates Product Concept
 Versatile **Microcomputer** is Heart of PC Instruments Oscilloscope Module
 Mechanical and Industrial Design of the PC Instruments Cabinet
PCIB: A Low-Cost, Flexible Instrument Control Interface for Personal Computers, William L. Hughes and Kent W. Luehman
 A Custom **HQMOS** Bus Interface IC
 Interactive Computer Graphics for Manual Instrument Control, Robert C. Sismilich and William T. Walker
 Mouse in Danger: Managing Graphics Objects
 Oscilloscope Software Leverages Previous Concepts and **Algorithms**
 Automated Testing of Interactive Graphics User Interfaces
 Industrial Design of Soft Front Panels
HP-IB Command Library for MS-DOS Systems, David L. Wolpert
 Case Study: **PC Instruments** Counter Versus Traditional Counters, Edward Laczynski and Robert V. Miller
 Reciprocal Counting in **Firmware**
 Salicide: Advanced Metallization for Submicrometer **VLSI** Circuits, Jun Amano

June 1986

Integrated Circuit Procedural Language, Jeffrey A. Lewis, Andrew A. Berlin, **Allan J. Kuchinsky**, and Paul K. Yip
 Knowledge-Assisted Design and the Area Estimation Assistant
 Software Development for Just-in-Time Manufacturing **Planning** and Control, Raj K. **Bhargava**, Teri L. Lombardi, Alvina Y. Nishimoto, and Robert A. **Passell**
 Comparing Manufacturing Methods
 The Role of Doppler Ultrasound in Cardiac Diagnosis, Raymond G. **O'Connell, Jr.**
 Doppler Effect: History and Theory, Paul A. **Magnin**
Johann Christian Doppler
 Power and Intensity Measurements for Ultrasonic Doppler Imaging Systems, James Chen
 Extraction of Blood Flow **Information** Using Doppler-Shifted

Ultrasound, Leslie I. Halberg and Karl E. Thiele
 Continuous-Wave Doppler Board
 Observation of Blood Flow and Doppler Sample Volume
 Modifying an Ultrasound Imaging Scanner for Doppler
 Measurements, Sydney M. Karp
 Digital Processing Chain for a Doppler Ultrasound Subsystem,
 Barry F. Hunt, Steven C. Leavitt, and David C. Hempstead

July 1986

Design of HP's Portable Computer Family, John T. Eaton, Carl B. Lantz, Clifford B. Cordy, Jr., James W. Pearson, Michael J. Barbour, Courtney Loomis, and Ella M. Duyck
 Inside the LCDs for The Portable and Portable Plus
 Low-Power Modes for Portable Computers
 Hollow Studs for Package Assembly
 UO and Data Communications in Portable Computers, Andrew W. Davidson and Harold B. Noyes
 Personal Applications Manager for HP Portable Computers, Robert B. May and Alesia Duncombe
 Memory Management for Portable Computers, Mark S. Rowe
 A Hybrid Solution for a 25-Line LCD Controller, Glenn J. Adler
 Creating Plug-in ROMs for the Portable Plus Computer, William R. Frolik
 Structure of a Plug-In ROM
 New HP-UX Features for HP 9000 Series 300 Workstations, Andrew G. Anderson, David L. Frydendall, Robert D. Gardner, Robert M. Lenk, Robert J. Schneider, Bonnie Dykes Stahlin, and Ronald G. Tolley
 A Protocol Analyzer for Local Area Networks, Gordon A. Jensen, Stephen P. Reames, Jerry D. Morris, Jeffrey H. Smith, Jeffrey Tomberlin, and James M. Umphrey

August 1986

Hewlett-Packard Precision Architecture: The Processor, Michael J. Mahon, Ruby Bei-Loh Lee, Terrence C. Miller, Jerome C. Huck, and William R. Bryg
 Floating-Point Coprocessor
 HP Precision Architecture Caches and TLBs
 Hewlett-Packard Precision Architecture: The Input/Output System, David V. James, Stephen G. Burger, and Robert D. Odineal
 Hewlett-Packard Precision Architecture Performance Analysis, Joseph A. Lukes
 The HP Precision Simulator, Daniel J. Magenheimer
 Remote Debugger

September 1986

Advanced Modular Engineering Workstations, Gilbert I. Sandberg, Daryl E. Knoblock, John C. Keith, Michael K. Bowen, and Ronald P. Dean
 Modular Computer Low-End Processor Board Design, Martin L. Speer and Nicholas P. Mati
 High-Performance SPU for a Modular Workstation Family, Jonathan J. Rubinstein
 Custom VLSI Circuits for Series 300 Graphics, James A. Brokish, David J. Hodge, and Richard E. Warner
 Display Custom IC Design Methodology
 Software Compatibility for Series 200 and Series 300 Computers, Rosemarie Palombo
 Implementing a Worldwide Electronic Mail System, Luis Hurtado-Sanchez, Amy Tada Mueller, Robert A. Adams, Kristy Ward Swenson, and Rebecca A. Dahlberg

October 1986

Hewlett-Packard and the Open Systems Interconnection Reference Model, Gertrude G. Reusser and Donald C. Loughry
 HP AdvanceNet: A Growth-Oriented Computer Networking Architectural Strategy, Robert J. Carlson, Atul Garg, Arie Scope, Craig Wassenberg, and Lyle A. Weiman
 Network Services and Transport for the HP 3000 Computer, Kevin J. Faulkner, Charles W. Knouse, and Brian K. Lynn
 A Local Area Network for HP Computers, Tonia G. Graham and Charles J. de Sostoa
 Network Services for HP Real-Time Computers, David M. Tribby
 Networking Services for HP 9000 Computers, J. Christopher Fugitt and Dean R. Thompson
 Connecting NS/9000 and NS/3000
 Leaf Node Architecture
 X.25 Wide Area Networking for HP Computers, Pierry Mettetal
 DMI/3000: A Move Toward Integrated Communication, Nancy L. Navarro, Deepak V. Desai, and Timothy C. Shafer
 Glossary of DMI Terms
 Companies Supporting the DMI Standard

November 1986

Molecular-Scale Engineering of Compound Semiconductor Materials, Douglas M. Collins
 Compound Semiconductor Alloys and Heterojunctions
 The Modulation-Doped Heterojunction
 Extending Millimeter-Wave Diode Operation to 110 GHz, Eric R. Ehlers, Sigurd W. Johnsen, and Douglas A. Gray
 26.5-to-40-GHz Waveguide Detector
 Diode Integrated Circuits for Millimeter-Wave Applications, Mark P. Zurakowski, Domingo A. Figueredo, Scott S. Elliott, George A. Patterson, William J. Anklam, and Susan R. Sloan
 Unbiased Subharmonic Mixers for Millimeter-Wave Spectrum Analysis, Robert J. Matreci
 Predictive Support: Anticipating Computer Hardware Failures, David B. Wasmuth and Bruce J. Richards
 Systems Design for Worldwide Delivery of Customer Support
 Logging Event Data in the Trend Log
 AIDA: An Expert Assistant for Dump Readers, Lynn R. Slater, Jr., Keith A. Harrison, and Craig M. Myles
 What Is a Memory Dump?
 A Troubleshooting Aid for Asynchronous Data Communications Links, Brian T. Button, R. Michael Young, and Diane M. Ahart
 Hierarchies
 A Rule-Based System to Diagnose Malfunctioning Computer Peripherals, George R. Gottschalk and Roy M. Vandoorn
 Multilevel Constraint Based Configuration, Robert I. Marcus

December 1986

The HP-UX Operating System on HP Precision Architecture Computers, Frederick W. Clegg, Gary Shiu-Fan Ho, Steven R. Kusmer, and John R. Sontag
 A UNIX System V Compatible Implementation of 4.2BSD Job Control
 Decreasing Real-Time Process Dispatch Latency Through Kernel Preemption
 Data Base Management for HP Precision Architecture Computers, Alan S. Brown, Thomas M. Hirata, Ann M. Koehler, Krishnan Vishwanath, Jenny Ng, Michael J. Pechulis, Mark A. Sikes, David E. Singleton, and Judson E. Veazey
 Data Storage in ALLBASE

PART 2: Subject Index

Subject

Month

A

Access control	Aug.	Address resolution	Oct.	AIDA	Nov.
Access, data base	Dec.	Addressing model, HP Precision	Aug.	AI Workstation	Mar.
Active probe	Apr.	AdvanceNet	Oct.	Algorithm, averaging	Apr.

Graphics, digital microwave radio Apr.
 Graphics, display subsystem Sept.
 Graphics, interactive, instrument control May
 Graphics, managing objects May
 Graphics, oscilloscope Apr.
 Graphics software, measurement Jan.

H

Hash indexes Dec.
HDLC Oct.
 Heap Dec.
 Heterojunction devices Nov.
 Heuristic test selection Nov.
 Hierarchical I/O system Dec.
 Hierarchical model, data base Dec.
 Hierarchies Nov.
 Hierarchy chart language Mar.
 Hole, printed-through Apr.
 Hollow studs, package assembly July
 HP DeskManager, HP system Sept.
 HP-HIL, keyboard Sept.
 HP-IB, command library, MS-DOS ... May
HPIMAGE Dec.
 HP JIT June
 HP Precision Architecture Jan.
 Aug.
 Dec.
HP-RL Mar.
 HPSQL Dec.
 HP-UX operating system and DBMS Dec.
 HP-UX 5.0 operating system,
 Series 300 July
 HPWindows/9000, HP-UX 5.0 July
 HQMOS, bus interface IC May
 Hybrid circuit, LCD controller July
 Hybrids, oscilloscope Apr.
 Hydrophone, calibration June

I

IC advisor, AI Mar.
 IC, bus interface May
 ICPL, integrated circuit procedural language June
 Ideality factor, barrier diodes Nov.
 ID module, Series 300 Sept.
 IEEE 802.3 LANs Oct.
 IEEE 802.3 protocol analyzer July
 IEEE P1003 Dec.
 IF bandwidth, counter, optimum Feb.
 Immediates, HP Precision Aug.
 Industrial design, PC Instruments ... May
 Industrial design, soft front panels ... May
 Inference engine Nov.
 Infinite persistence Apr.
 In-phase modulation Apr.
Input/output system, HP-UX July
 Dec.
 Instruction distributions Aug.
 Instructions, HP Precision Aug.
 Instrument control, AI Mar.
 Instruments, personal computers May
 Integrated Services Digital Network Oct.
 Intelligent Peripheral Troubleshooter (IPT) Nov.
 Intensity measurement, Doppler

ultrasound June
Interface IC May
 Interfaces, portable computer July
 Interfacing, AI Workstation Mar.
 Interpolator, oscilloscope Apr.
 Interprocess communication Oct.
 Interrupt groups hardware Aug.
 Interrupt servicing, HP-UX Dec.
 Interruptions, HP Precision
 Architecture Aug.
 Interval analysis Jan.
 Inventory control, **JIT** June
 I/O architecture, HP Precision Aug.
 I/O dependent code Aug.
 I/O, device, HP-UX 5.0 July
 I/O, PC Instruments May
 VO, portable computers July
 I/O services, HP-UX Dec.
 IP (internet protocol) Oct.
I-Q Tutor Apr.
IQUERY Dec.
ISDN Oct.
ISO OSI model Oct.

J

Jabbering frames July
 JIT (just-in-time) manufacturing
 software June
 Job control, HP-UX Dec.

K

Kernel, HP-UX Dec.
 Keyboard compatibility, Series 200
 and Series 300 Sept.
 Knowledge-assisted design June
 Knowledge base Nov.
 Knowledge representation Nov.

L

Language cap, PC Instruments May
 LANIC Oct.
 LAN protocol analyzer July
 LANs Oct.
 LAP-B Oct.
 LAP-D Oct.
 LCD controller July
 Leaf node architecture Oct.
 LESS machine Aug.
 Levels, constraint Nov.
 Limit testing Feb.
 Linear programming solution Feb.
 Linkage registers Jan.
 Link-level access Oct.
 Liquid-crystal display, portable
 computer July
 Lisp Mar.
 Lisp, ICPL June
 Local area networks Oct.
 Localization, HP-UX July
 Dec.
 Localization, PAM July
 Lock modes, DBMS Dec.
 L₀ frequencies, counter, optimum ... Feb.
 Log, trend Nov.
 Logarithmic amplifier Feb.
 Logging, DBMS Dec.
 Long-pointer addressing Aug.

Low-power modes July

M

M/A-COM Oct.
Managers, I/O Dec.
Managing, AI Workstation Mar.
Manufacturing software,
just-in-time June
 Material requirements planning, JIT June
 MBE, molecular beam epitaxy Nov.
Measurement graphics software
 (MGS) Jan.
 Mechanical design, PC Instruments May
Mechanical design, portable
 computer July
 Media access unit July
 Medical instruments, Doppler
 ultrasound imaging June
 Medical software, testing Mar.
 Medium attachment unit Oct.
 Memory dump reader Nov.
 Memory management, HP-UX Dec.
 Memory management, portable
 computer July
 Memory management, Series 300 ... Sept.
 Memory mapped I/O Aug.
 Dec.
 Messages, HP-UX Dec.
 Metallization, IC May
 Metrics, software quality Mar.
 Microscope Mar.
 Microwave counters Feb.
 Microwave radio tutorial program ... Apr.
 Migration analysis utility (MAU) Dec.
 Migration, data base Dec.
 Migration, HP-UX Dec.
 Millicode Jan.
 Millimeter-wave devices Nov.
 MIPS computation Aug.
 Mixers, millimeter-wave Nov.
 Model, addressing and protection ... Aug.
 Model, communications system Apr.
 Model, control flow Aug.
 Model, execution Aug.
 Model, thick-film resistor Apr.
 Modems, portable computer July
 Modular computers Sept.
 Modules, I/O Aug.
 MPE XL DBMS Dec.
 MS-DOS, HP-IB command library ... May
 Multilevel constraints Nov.
 Multimeter, systems Feb.
 Multipath impairments Apr.
 Multiple test environments Mar.
 Multiplexer, oscilloscope probe Apr.
 Mycon Nov.

N

Native language support, HP-UX Dec.
 Native language support, HP-UX 5.0 July
 Natural language understanding
 system, AI Mar.
 Network analyzer, scalar Feb.
 Network file transfer Oct.
 Network, HP electronic mail Sept.
 Network layer, OSI Oct.
 Network model, data base Dec.

Network protocol analyzer July
 Network Services, HP 1000 Oct.
 Network Services, HP 3000 Oct.
 Network Services, HP 9000 Oct.
 Networking strategy, HP Oct.
 Networks, local area Oct.
 Networks, wide area Oct.
 Nodal management Oct.
 Noise degradation, microwave radio Apr.
 Noise rejection, DMM Feb.
 Nonlinearities, microwave radio Apr.
 Nullification Aug.

O

Object-oriented programming Mar.
 Object-oriented programming
 toolset, C Mar.
 Obsewables Nov.
 One-sewer model Oct.
 Open systems interconnection Oct.
 Operating system, HP-UX Dec.
 Operations, HP Precision Aug.
 Optimizing compilers Jan.
 Optimum IF and LO, counter Feb.
 Oscilloscope, PC Instruments May
 Oscilloscopes, digitizing Apr.
 Oxygen redistribution, TiSi₂ May

P

Packet switched networks Oct.
 Paging management Aug.
 PAM, Personal Applications
 Manager, portable computer July
 PANELS program, PC Instruments ... May
 Parallel communications channel,
 PCIB May
 Parent-child relationships Dec.
 Patching Jan.
 Path reports Oct.
 Paths, DBMS Dec.
 Paths, protocol Oct.
 Patient care software, testing Mar.
 PBX-based communication Oct.
 PC design, testing Jan.
 PCIB May
 PC Instruments May
 Performance analysis methods Aug.
 Performance model, JIT software June
 Peripheral processor unit (PPU),
 portable computer July
 Peripheral troubleshooter Nov.
 Persistence, variable Apr.
 Personal Applications Manager,
 portable computer July
 Phase formation, TiSi₂ May
 Physical layer, OSI Oct.
 Plotting algorithm Apr.
 Plotting system, measurement Jan.
 Portable computers July
 Portable Plus July
 Port/HP-UX Dec.
 Ports Oct.
 Postamplifier, oscilloscope Apr.
 Post-deduct transaction June
 Potentiometer elimination Jan.
 Power measurement, Doppler
 ultrasound June

Power modes, portable computer July
 Power supply, oscilloscope Apr.
 Power transformer Feb.
 Powerfail recovery Dec.
 P-PODS Mar.
 Preallocation of disc space Dec.
 Preamplifier, oscilloscope Apr.
 Precision Architecture, HP Aug.
 Predictive support Nov.
 Preemption latency, HP-UX Dec.
 Presentation layer, OSI Oct.
 Privileged groups, HP-UX system July
 Probabilities, expert systems Nov.
 Probe hybrids Apr.
 Probe system, oscilloscope Apr.
 Procedure calls Jan.
 Process model, UNIX Dec.
 Process scheduling, HP-UX Dec.
 Process status word Aug.
 Process synchronization, HP-UX Dec.
 Processing, GaAs ICs Nov.
 Processing, IC May
 Processor architecture Aug.
 Processor board, 10-MHz, 68010 Sept.
 Processor board, 16.67-MHz, 68020 Sept.
 Product design, Series 300 Sept.
 Production scheduling and
 reporting, JIT June
 Programming, AI Workstation Mar.
 Programming environment,
 unified, AI Mar.
 Programs, protocol analyzer July
 Program-to-program communication Oct.
 Proper interval Jan.
 Protection model, HP Precision Aug.
 Protocol analyzer July
 Protocols, network Oct.
 Prototyping, software June
 Pseudoinstructions Jan.
 PSNs Oct.
 Pulse width modulator chip Apr.
 PXP (packet exchange protocol) Oct.

Q

Quadrature modulation Apr.
 Quadrature sampler June
 Quality metrics, software Mar.
 Queries Nov.
 Query processing Dec.

R

RAM disc, portable computer July
 Random-repetitive sampling Apr.
 Random values testing Mar.
 Rate-based production scheduling ... June
 Real-time extensions, HP-UX Dec.
 Real-time extensions, HP-UX 5.0 July
 Reciprocal counting, firmware May
 Recovery, DBMS Dec.
 Recovery time Apr.
 Reduced instruction set computers ... Jan.
 Aug.
 Register assignment Jan.
 Registers, HP Precision Aug.
 Relational model, data base Dec.
 Relations Dec.
 Relationships Dec.
 Remote data base access Oct.

Remote debugger Aug.
 Remote file access Oct.
 Remote process management Oct.
 Remote servers Oct.
 Response tuning, thick-film hybrid Apr.
 RISC Jan.
 Aug.
 Rollback recovery Dec.
 Rollforward recovery Dec.
 ROM, data acquisition Mar.
 ROM disc, portable computer July
 ROM IMAGE Development Package,
 portable computer July
 ROMs, plug-in July
 RTE migration to HP-UX Dec.
 Rule-based programming Mar.
 Rule-based systems Nov.
 Runt packet filter July

S

Salicide, IC metallization May
 Sampler, GaAs Feb.
 Sampler, oscilloscope Apr.
 Sampling, random repetitive Apr.
 Scaffold test package
 tool/standard Mar.
 Scalar network analyzer Feb.
 Scanner, imaging, Doppler
 measurements June
 Scatter read Dec.
 Schema file Dec.
 Schooner Nov.
 Schottky barrier diodes Nov.
 Screen update rate Apr.
 Security, data base Dec.
 Security, electronic mail Sept.
 Semaphores, HP-UX Dec.
 Sequence numbers Jan.
 Serial communications channel,
 PCIB May
 Serializability Dec.
 Series 300 Computers, design Sept.
 Series 300 Computers, HP-UX 5.0 ... July
 Servo design, plotting system Jan.
 Session layer, OSI Oct.
 Shared memory, HP-UX Dec.
 Shell, HP-UX Dec.
 Short-pointer addressing Aug.
 Signals, HP-UX Dec.
 Silicon compilation June
 Simulation, digital microwave radio Apr.
 Simulations, AI Mar.
 Simulator, HP Precision Aug.
 Single-cycle execution Aug.
 Skeletons, data structure Mar.
 Socket registry Oct.
 Soft front panel May
 Software compatibility, Series 200
 and Series 300 Sept.
 Software development Mar.
 Software development, JIT June
 Software engineering, AI Mar.
 Software graphical design tool Mar.
 Software, oscilloscope May
 Software quality metrics Mar.
 Software testing tool, Triggers Mar.
 Space registers Aug.
 Special function units Aug.

Special values testing Mar.
 Specifications testing Mar.
 Spectral moment, calculations June
 Spectrum program Jan.
 Aug.
 Dec.

SRQ response times, **HP 9000 Model**
 310, 320, and 550 Computers July
 Stability, **DMM** Feb.
 Stack Dec.
 Standard, test package Mar.
 Static link Jan.
 Stitch bonding Apr.
 Stock flow methods June
 Stored queries Dec.
 Structured Query Language (SQL) Dec.
 Subsystem formatting Nov.
 Supervisor module Aug.
 Support, computer Nov.
 Support, electronic mail Sept.
SVID Dec.
 Sync comparator hybrid Apr.
 System monitor, example Mar.
 System V, UNIX Dec.

T

T1 carrier Oct.
 Table formatting Nov.
 Taken branch list Aug.
 TCP (transmission control protocol) Oct.
 Temperature monitor, darkroom Mar.
 Testing, interactive graphics May
 Testing, software, automation Mar.

Tests Nov.
 The Portable July
 Thick-film hybrids, oscilloscope Apr.
 Thread Dec.
 Time-based scheduling, HP-UX Dec.
 Time qualification, trigger Apr.
 Titanium silicide May
 Tools, software testing Mar.
 Toolset, object oriented
 programming in C Mar.
 Topological problem Mar.
 Training, electronic mail Sept.
 Transaction management, data base Dec.
 Transactions, I/O Aug.
 Transitive closure Jan.
 Translation lookaside buffer Aug.
 Transport layer, OSI Oct.
 Trap machine July
 Trend detection Nov.
 Trend log Nov.
 Trigger hybrids Apr.
 Trigger system, oscilloscope Apr.
 Triggers, software testing Mar.
 Tuples Dec.
 Troubleshooting systems, expert Nov.
 Two-server model Oct.

U

Ultrasound, Doppler imaging June
 University **AI** grants program Mar.
 UNIX defect tracking system Mar.
 UNIX operating system Dec.
 Usability testing Jan.

/usr/group Dec.

V

Valvular stenosis, Doppler
 analysis June
 Variable persistence Apr.
 Vector diagram Apr.
 Vector profiler, algorithm Jan.
 Vernier gain stage Jan.
 Video DAC IC Sept.
 Virtual cache Dec.
 Virtual memory addressing Aug.
 Virtual memory management, HP-UX Dec.
 Virtual terminal protocol Oct.
 Virtual terminal tool Mar.
 VLSI design language June
 VLSI metallization May
 VLSI, Series 300 graphics Sept.
 Voltage-controlled device
 measurements Feb.

W

Waveform recorder, low-frequency ... Jan.
 Wedge bonding Apr.
 Workload data Aug.
 Workstations, modular Sept.
 Write-ahead log Dec.

X

X.25 extensions, HP-UX 5.0 July
 X.25 networking Oct.
 X/OPEN Dec.
 X-Y recorder Jan.

PART 3: Product Index

ALLBASE Data Base Management System Dec.
 ALLBASE/HP-UX Dec.
 ALLBASE/XL Dec.
 DMI/3000 Oct.
 HP DeskManager Sept.
 HP-IB HP 150 Command Library May
 HP-IB MS-DOS Command Library May
 HP **JIT**(Just-in-time manufacturing software) June
 HP-UX July
 Dec.
 May

HP Vectra/IBM PC/AT PC Instruments Software May
 I-Q Tutor Apr.
 LAN/3000 Oct.
 Network Services11000 Oct.
 Network Services13000 Oct.
 Network Services19000 Oct.
 PC Instruments May
 Portable Plus Computer July
 The Portable Computer July
 HP-71B Computer Mar.
 HP 150 PC Instruments Software May
 HP 3000 Computer Nov.
 HP 3000 Series 930 Computer Jan.
 Aug.
 Dec.

3421A Data Acquisition/Control Unit Mar.
 3457A Digital Multimeter Feb.
 4971S LAN Protocol Analyzer July
 5314A Universal Counter May
 5350A Microwave Counter Feb.
 5351A Microwave Counter Feb.

5352A Microwave Counter Feb.
 7090A Measurement Plotting System Jan.
 8757A Scalar Network Analyzer Feb.
 HP 9000 Series 200 Computer Sept.
 HP 9000 Series 300 Computers July
 Sept.
 July

HP 9000 Model 310 Computer July
 Sept.
 July

HP 9000 Model 320 Computer July
 Sept.
 Dec.

HP 9000 Model 550 Computer July
 HP 9000 Model 840 Computer Aug.
 Dec.

11664D Detector Nov.
 11970V/W Harmonic Mixers Nov.
 14857A HP-IB HP 150 Command Library May
 17090A Measurement Graphics Software Jan.
 46020A HP-HIL Keyboard Sept.
 46084A ID Module Sept.
 54100A/D Digitizing Oscilloscope Apr.
 54110D Digitizing Oscilloscope Apr.
 61010A Digital I/O Module May
 61011A Relay Multiplexer Module May
 61012A Dual Voltage DAC Module May
 61013A Digital Multimeter Module May
 61014A Function Generator Module May
 61015A Universal Counter Module May
 61016A Digitizing Oscilloscope Module May
 61017A Relay Actuator Module May
 61060AA HP 150 PC Instruments Software May
 61061BA HP Vectra/IBM-PC/AT PC Instruments Software May

61062AA/BA HP-IB MS-DOS Command Library May
 77020A Phased Array Medical Ultrasound Imaging System June
 77200B Scanner June
 77410A Doppler Imaging Subsystem June

82479A Data Acquisition Pac Mar.
 98203A/B Keyboards Sept.
 98204B Video Board Sept.
 98546A Display Compatibility Interface Sept.

PART 4: Author Index

Adams, Robert A.	Sept.	Escovitz, William H.	Apr.	Leavitt, Steven C.	June
Adler , Glenn J.	July	Evel, Eddie A.	Apr.	Lee, Ruby Bei-Loh	Aug.
Ahart, Diane M.	Nov.	Faick, John C.	Feb.	Lenk, Robert M.	July
Amano, Jun	May	Faulkner , Kevin J.	Oct.	Lennert , David C.	Dec.
Anderson, Andrew G.	July	Fearey, Seth G.	Mar.	Levine, Allan	May
Anderson, Keith F.	Feb.	Felps , Jimmie D.	Apr.	Lewis, Jeffrey A.	June
Anklam , William J.	Nov.	Fenoglio, John	Jan.	Lombardi, Teri L.	June
Barbour , Michael J.	July	Figueredo , Domingo A.	Nov.	Loomis , Courtney	July
Beaudoin, Mimi	May	Frolik , William R.	July	Loughry , Donald C.	Oct.
Beckman , Tom	Feb.	Frydendall , David L.	July	Luehman, Kent W.	May
Bender, Douglas C.	Feb.	Fuget, Craig D.	Mar.	Lukes, Joseph A.	Aug.
Berger , Arnold S.	Apr.	Fugitt , J. Christopher	Oct.	Lynn, Brian K.	Oct.
Bergmann , Bruce P.	Sept.	Gardner, Robert D.	July	Magenheimer, Daniel J.	Aug.
Berlin, Andrew A.	June	Garg, Atul	Oct.	Maghakian, Emil	Jan.
Bhargava, Raj K.	June	Garrison, Bo	Feb.	Magnin , Paul A.	June
Blair, Steven R.	Mar.	Genther , Scott A.	Apr.	Mahon, Michael J.	Aug.
Bockman , Francis E.	Jan.	Gibson, Scott R.	Feb.	Marcus, Robert I.	Nov.
Bostick, Diana G.	May	Goodman, Stephen D.	Jan.	Mariani, Blenda	Nov.
Bowen , Michael K.	Sept.	Gottschalk, George R.	Nov.	Martin, Daniel J.	May
Brokish , James A.	Sept.	Graham, Tonia G.	Oct.	Martin, Sally	Feb.
Brown, Alan S.	Dec.	Gray, Douglas A.	Nov.	Mati , Nicholas P.	Sept.
Bryg, William R.	Aug.	Halberg , Leslie I.	June	Matreci, Robert J.	Nov.
Bugarin , John R.	Mar.	Hammond , Carol L.	Jan.	May, Robert B.	July
Burger, Stephen G.	Aug.	Harrington, Daniel B.	Jan.	Mettetal, Pierry	Oct.
Burroughs, Gregory D.	Mar.	Harrison, Keith A.	Nov.	Miller, Robert V.	May
Button, Brian T.	Nov.	Hempstead, David C.	June	Miller, Terrence C.	Aug.
Cagan, Martin R.	Mar.	Hirata, Thomas M.	Dec.	Morris, Jerry D.	July
Carlson, Robert J.	Oct.	Ho, Gary Shiu-Fan	Dec.	Mueller, Amy Tada	Sept.
Chan, Buck H.	May	Hodge, David J.	Sept.	Mueller , Joseph E.	Feb.
Chen, James	June	How, Michael	June	Muterspaugh, Helen	May
Clegg, Frederick W.	Dec.	Huck, Jerome C.	Aug.	Myles, Craig M.	Nov.
Collins, Douglas M.	Nov.	Hughes, William L.	May	Navarro, Nancy L.	Oct.
Cordy, Clifford B., Jr.	July	Hunt, Barry F.	June	Ng, Jenny	Dec.
Coutant, Deborah S.	Jan.	Hurtado-Sanchez, Luis	Sept.	Nishimoto, Alvina Y.	June
Dahlberg , Rebecca A.	Sept.	Jain, Suneel	Jan.	Noyes , Harold B.	July
D'Angelo , Vincent J.	Mar.	James, David V.	Aug.	O'Connell , Raymond G., Jr.	June
Daniels, Thomas H.	Jan.	Jensen, Gordon A.	July	Odineal, Robert D.	Aug.
Davidson, Andrew W.	July	Johnsen , Sigurd W.	Nov.	Oldfield, Danny J.	Apr.
De Sostoa, Charles J.	Oct.	Jundanian, Rich	June	Olsen , Douglas W.	Feb.
Dea, Robert W.	Mar.	Karp, Sydney M.	June	Palombo, Rosemarie	Sept.
Dean, Ronald P.	Sept.	Keith, John C.	Sept.	Pan, Benjamin Y. M.	June
DeLeon , Tim	Oct.	Kelley, Jon W.	Jan.	Passell , Robert A.	June
Desai, Deepak V.	Oct.	Knoblock, Daryl E.	Sept.	Patterson, George A.	Nov.
Dierschow, Carl	Oct.	Knouse , Charles W.	Oct.	Pearson , James W.	July
Donnelly, James A.	Mar.	Koehler, Ann M.	Dec.	Pechulis, Michael J.	Dec.
Duncombe, Alesia	July	Kononenko, George	May	Pedersen, Christen K.	Apr.
Duyck , Ella M.	July	Kuchinsky, Allan J.	June	Peregrino , Luiz	Feb.
Eaton , John T.	July	Kusmer, Steven R.	Dec.	Pettit , Ricky L.	May
Egbert, Jacob H.	Feb.	Laczynski, Edward	May	Porter, Arthur W.	Apr.
Ehlers, Eric R.	Nov.	Lantz, Carl B.	July	Reames, Stephen P.	July
Elliott, Scott S.	Nov.			Reusser, Gertrude G.	Oct.
Ellis, David J.	Mar.				

Richards, Bruce J. Nov.
 Richter, Kenneth A. Feb.
Rodine, Thomas G. **Feb.**
Rothschild, Charles J., 3rd **May**
Rowe, Mark S. **July**
Rowell, Joseph, Jr. **Feb.**
Rubinstein, Jonathan J. **Sept.**
Rush, Kenneth **Apr.**

Sanchez, Jorge **Jan.**
Sandberg, Gilbert II **Sept.**
 Sandberg, Kenneth P. **Sept.**
 Schlater, Rodney T. **Apr.**
Schlesinger, David **May**
 Schneider, Robert J. **July**
 Scope, h i e **Oct.**
 Scott, Barbara J. **Mar.**
Shafer, Timothy C. **Oct.**
 Sikes, Mark A. **Dec.**
 Singleton, David E. **Dec.**
Sismilich, Robert C. **May**

Slater, Lynn R. Jr. **Nov.**
Sloan, Susan R. **Nov.**
 Smith, **Jeffrey H.** **July**
Sontag, John R. **Dec.**
Speer, Martin L. **Sept.**
Stahlin, Bonnie Dykes **July**
Stever, Scott D. **Feb.**
Swenson, Kristy Ward **Sept.**

Thiele, Karl E. **June**
 Thompson, **Bruce A.** **Mar.**
 Thompson, **Dean R.** **Oct.**
 Toepen, **Derek E.** **Apr.**
Tolley, Ronald G. **July**
 **Dec.**
Tomberlin, Jeffrey **July**
Tribby, David M. **Oct.**
Tuttle, Ronald K. **Feb.**
Tykulsky, Al **June**

Umphrey, James M. **July**

Upham, Herb **Nov.**

Vandoorn, Roy M. **Nov.**
Van Voorhis, Steven T. **Jan.**
Veazey, Judson E. **Dec.**
Vishwanath, Krishnan **Dec.**

Walker, **William T.** **May**
 Ward, **William T.** **Mar.**
 Warner, **Richard E.** **Sept.**
 Wasmuth, **David B.** **Nov.**
Wassenberg, Craig **Oct.**
Weiman, Lyle A. **Oct.**
 Weller, **Dennis J.** **May**
Wolpert, David L. **May**
 Woodhull, **Frederic W., II** **Feb.**

Yip, Paul K. **June**
 Young, R. Michael **Nov.**

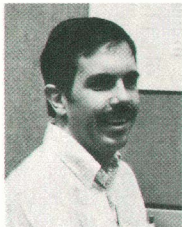
Zurakowski, Mark P. **Nov.**

Authors

December 1986

4 HP-UX Operating System

John R. Sontag



A native of Pittsburgh, Pennsylvania, John Sontag attended Carnegie-Mellon University, receiving his BSEE degree in 1979. After coming to HP's Data Systems Division the same year, he contributed to the development of RTE drivers for HP 1000 Computers

and to the HP Micro/1000 Computer. He later worked on HP-UX and is now the HP-UX I/O project manager. John and his wife, who is also an HP engineer, live in Santa Clara, California and have one son. He's active in his church, leading a youth group and a marriage preparation program. During his leisure time he enjoys sailing, skiing, volleyball, and taking his son to the park.

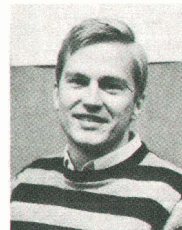
Gary Shlu-Fan Ho



Born in Hong Kong, Gary Ho studied computer science and electrical engineering at the University of California at Berkeley. He earned his BS degree in 1975, his MS degree in 1977, and his PhD degree in 1979 and worked at Bell Laboratories before coming to HP in 1982. He has held several engineering and management positions and is currently section manager for HP-UX for HP Precision Architecture. He's named as inventor on two patents related to multiprocessor virtual memory management and distributed update verification. Gary and his wife live in San Jose, California and have one child.

to HP in 1982. He has held several engineering and management positions and is currently section manager for HP-UX for HP Precision Architecture. He's named as inventor on two patents related to multiprocessor virtual memory management and distributed update verification. Gary and his wife live in San Jose, California and have one child.

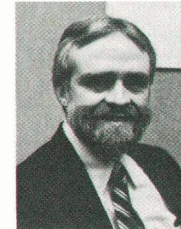
Steven R. Kusmer



With HP since 1979, Steve Kusmer is the project manager for HP-UX operating systems for HP 9000 Series 800 Computers. Before working on HP-UX, he contributed to the development of hardware and operating systems for HP 1000 Computers. An alumnus of Cor-

nell University, he holds a 1979 BSEE degree. He's a member of the ACM and coauthor of two papers, one a 1984 HP Journal article on RTE system software for HP 1000 Computers. Steve is married and lives in San Francisco. He holds a black belt in Korean karate and likes running and backpacking.

Frederick W. Clegg



With HP since 1975, Fred Clegg is one of the R&D section managers responsible for software development for HP 9000 Series 800 Computers. He has held management and engineering positions for several computer development efforts, including the

HP 300 and HP 9000 Series 500 Computers. Born in Atlanta, Georgia, he holds a BS degree in engineering science from Oakland University (1965) and MS and PhD degrees in electrical engineering from Stanford University (1967 and 1970). He was an assistant professor in electrical engineering at Santa Clara University before coming to HP. He's the author or coauthor of 11 papers and other material related to fault-tolerant computing, user interfaces, and the implementation of the UNIX operating system on HP computers. Fred and his wife and daughter live in Cupertino, California. An avid pilot, he moonlights as a certified flight instructor. He's also an skier and amateur radio operator (W6IYO).

Index

HEWLETT-PACKARD JOURNAL

Volume 38 January 1987 through December 1987

Hewlett-Packard Company, 3200 Hillview Avenue, Palo Alto, California 94304 U.S.A.
Hewlett-Packard Central Mailing Dept., P.O. Box 529, Startbaan 16, 1180 AM Amstelveen, The Netherlands
Hewlett-Packard (Canada) Ltd., 6877 Goreway Drive, Mississauga, Ontario L4V 1M8 Canada
Yokogawa-Hewlett-Packard Ltd., Sugiyama-ku, Tokyo 168 Japan

PART 1: Chronological Index

January 1987

Low-Frequency Analyzer Combines Measurement Capability with **Modeling** and Analysis Tools, Edward S. Atkinson, **Gaylord L. Wahl, Jr.**, Michael L. Hall, Eric J. Wicklund, and Steven K. Peterson
Applications
Measurement Modes and Digital Demodulation for a **Low-Frequency Analyzer**, Raymond C. Blackham, James A. Vasil, Edward S. Atkinson, and Ronald W. Potter
Demodulation Example
Analyzer Synthesizes Frequency Response of Linear Systems, James L. **Adcock**
Curve Fitter for Pole-Zero Analysis, James L. **Adcock**
Performance Analysis of the HP 3000 Series **70** Hardware Cache, James R. **Callister** and Craig W. Pampeyan

February 1987

A New Family of Precise, Reliable, and Versatile Fiber Optic Measurement Instruments, Michael **Fleischer-Reumann**
A Color-Coding Scheme for Fiber Optic **Instruments** and **Accessories**
Stable LED Sources for a Wide Range of Applications, **Michael Fleischer-Reumann**
An Accurate Two-Channel Optical Average Power Meter, **Horst Schweikardt**
Optical Power Meter Firmware Development, **Bernhard Flade** and Michael **Goder**
Detectors for Optical Power Measurements, Josef **Becker**
Precision Optical Heads for **850** to **1700** and **450** to **1020** Nanometers, Hans Huning, **Emmerich Müller**, Siegmund Schmidt, and **Michael Fleischer-Reumann**
Optical Power Splitter
A **High-Precision** Optical Connector for Optical Test and **Instrumentation**, Wilhelm **Radermacher**
Design Approach for a Programmable Optical Attenuator, **Bernd Maisenbacher**, Siegmund Schmidt, and Michael **Schlicker**
A Programmable Fiber Optic Switch, **Michael Fleischer-Reumann**
Quality **Microwave** Measurement of Packaged Active Devices, Glenn E. **Elmore** and Louis J. Salz
HP **8510** Software Signal Processing

March 1987

Hardware Design of the First HP Precision Architecture Computers, David A. Fotland, John F. Shelton, William R. **Bryg**, Ross V. La Fetm, Simin I. Boschma, **Allan S. Yeh**, and Edward M. Jacobs
An Automated Test System for the First HP Precision Architecture Computers, Thomas B. **Wylegala**, Long C. Chow, and Randy J. Teegarden
A **Distributed** Terminal Controller for HP Precision Architecture Computers **Running** the MPE XL Operating System, **Gregory F. Buchanan**, François Gaullier, **Olivier Krumeich**, Eric Lecesne, **Jean-Pierre Picq**, and Heng V. Te
Hewlett-Packard Precision Architecture Compiler Performance, Karl W. Pettis and William B. Buzbee
Viewpoints—A Viewpoint on Calculus, **Zvonko Fazarinc**

April 1987

Digital Signal Generator Combines **Digital** and **Analog** Worlds, Uwe Neumann, Michael Vogt, Friedhelm **Brilhaus**, and Frank Husfeld
User Interface and Software Architecture for a Data and Arbitrary Waveform Generator, **Ulrich Hakenjos**, Wolfgang **Srok**, and **Rüdiger Kreiser**
A Planning Solution for the Semiconductor Industry, Edward L. Wilson, Kelly A. Sznajder, and Clemen Jue
A Study of Panel Deflection of **Partially** Routed **Printed** Circuit Boards, George E. **Barrett** and John H. Lau
Deflections, Forces, and Moments of a Printed Circuit Board
Reliability Theory Applied to Software **Testing**, H. Dean Drake and Duane E. **Wolting**
Appendix: Derivation of the Software Reliability Model

May 1987

State-of-the-Art CAD Workstations for Mechanical Design, **Wolfgang Kurz**, Dieter Sommer, **Karl-Heinz** Werner, Dieter Deyke, and Heinz P. **Arndt**
Example Macro
ME Series **10** Link to **HP-FE**
The ME Series **10** NC Links
ME CAD Geometry **Construction**, Dimensioning, Hatching, and Part **Structuring**, **Karl-Heinz** Werner, Stephen Yie, **Friedhelm Ottliczky**, Harold B. Prince, and Heinz Diebel
Alpha Site Evaluation of ME **Series 5/10**, Paul Harmon
Intrabuilding Data Transmission Using Power-Line **Wiring**, Robert A. Piety

June 1987

Permutated Trace Ordering Allows Low-Cost, High-Resolution Graphics Input, Thomas **Malzbender**
The **Hewlett-Packard** Human Interface Link, **Robert R. Starr**
HP-HIL Input **Devices**
Software Verification Using Branch **Analysis**, Daniel E. Herington, Paul A. Nichols, and Roger D. **Lipp**
Advantages of Code Inspections
Viewpoints—**Direction** of VLSI CMOS Technology, Yoshio Nishi
Software Architecture and the UNIX Operating System: An Introduction to Interprocess Communication, **Marvin L. Watkins**
Benchmarking UNIX **IPC** Facilities

July 1987

Dedicated Display **Monitors** Digital Radio Patterns, David J. **Haworth**, John R. Pottinger, and **Murdo J. McKissock**
Automated Timing Jitter **Testing**
Constellation Measurement: A Tool for Evaluating Digital Radio, **Murdo J. McKissock**
A Digital Radio Noise and Interference Test Set, Geoffrey Waters
Noise Crest Factor Enhancement
Noise Bandwidth Measurement
Microprocessor-Enhanced Performance in an Analog Power Meter, Anthony Lymer
An Accurate **Wideband** Noise Generator and a **High-Stability** Reference Source, Dayananda K. Rasamnam

General-Purpose **Wideband** Thick-Film Hybrid Amplifier
Automated Radio Testing Shortens Test Time and Enhances Accuracy, John A. Duff
A Reusable Screen Forms Package

August 1987

A Handheld Business Consultant, Susan L. Wechsler
Cash Flow Analysis Using the **HP-18C**
The Equation Solver Menu in the **HP-18C**
History and Inspiration of the Solve Interface
An Evolutionary **RPN** Calculator for Technical Professionals; William C. Wickes

Example Problem

HP-28C Plotting

Mechanical Design of the HP-18C and HP-28C Handheld Calculators, Judith A. Layman and Mark A. Smith

Symbolic Computation for Handheld Calculators, Charles M. Patton
A Multichip Hybrid Printed Circuit Board for Advanced Handheld Calculators, Bruce R. Hauge, Robert E. Dunlap, Cornelis D. Hoekstra, Chong Num Kwee, and Paul R. Van Loan

An Equation Solver for a Handheld Calculator, Paul J. McClellan
Electronic Design of An Advanced Technical Handheld Calculator, Preston D. Brown, Gregory J. May, and Megha Shyam

September 1987

A VLSI Processor for HP Precision Architecture, Steven T. Mangelsdorf, Darrell M. Burns, Paul K. French, Charles R. Headrick, and Darius F. Tanksalvala

Pin-Grid Array VLSI Packaging

HP Precision Architecture **NMOS-III** Single-Chip CPU, Jeffrey D. Yetter, Jonathan P. Lotz, William S. Jaffe, Mark A. Forsyth, and Eric R. DeLano

Execution Unit

A Precision Clocking System

Design, Verification, and Test Methodology for a VLSI Chip Set, Charles Kohlhardt, Tony W. Gaddis, Daniel L. Halperin, Stephen R. Undy, and Robert A. Schuchard

VLSI Test Methodology

A Midrange VLSI Hewlett-Packard Precision Architecture Computer, Cmig S. Robinson, Leith Johnson, Robert J. Homing, Russell W. Mason, Mark A. Ludwig, Howell R. Felsenthal, Thomas O. Meyer, and Thomas V. Spencer

VLSI-Based High-Performance HP Precision Architecture Computers, Gemld R. Gassman, Michael W. Schrempf, Ayee Goundan, Richard Chin, Robert D. Odineal, and Marlin Jones

October 1987

In-Service Transmission Impairment Testing of Voice-Frequency

Data Circuits, Norman Carder, William I. Dunn, James H. Elliott, David W. Grieve, and W. Gordon Rhind
Processing **Passband** Signals in Baseband
LMS Algorithm for Equalizer Update
Digital Phase-Locked Loops

An Infrared Link for Low-Cost Calculators and Printers, Steven L. Harper, Robert S. Worsley, and Bruce A. Stephens

A Low-Cost Wireless Portable Printer, David L. Smith and Masahiko Muranami

Manufacturing **State-of-the-Art** Handheld Calculators, Richard W. Ripper

Information Technology and Medical Education, G. Octo Barnett, MD, Judith L. Piggins, Gordon T. Moore, MD, and Ethan A. Foster

A Framework for Program Development, Derek Coleman and Robin M. Gallimore

December 1987

Vector Signal Generation and Analysis, Allen P. Edwards
Hardware System Design for a Vector Analyzer, Andrew H. Naegeli and Juan Gmu

Quadrature and Phase Errors in Vector Demodulation
Firmware System Design for a Vector Analyzer, Brian S. Messenger, Peter H. Fisher, and Stanley P. Woods

Vector Modulation in a Signal Generator, David L. Gildea and Donald R. Chambers

Firmware for a Vector Signal Generator, James E. Jensen and Eric D. McHenry

Low-Noise Synthesizer Design, Thomas J. Carey, John C. Lovell, and Thomas L. Grisell

Digital and Vector Baseband Circuits for a Vector Signal Generator, Chung Y. Lau

A **GaAs** IC Current Switch

Describing Signals in the I-Q Domain

A **Wideband** FM Subsystem for a Low-Noise Synthesizer Module, Eric D. McHenry

Vector Modulator, Output Amplifier, and Multiplier Chain Assemblies for a Vector Signal Generator, Wayne M. Kelly, Mark J. Woodward, Eric B. Rodal, Pedro A. Szente, and James D. McVey

Baseband Calibration

A Combinational Board Test System, Michael E. Gravitz

Interactive Graphical Debugging Package

MPE XL: The Operating System for **HP's** Next Generation of Commercial Computer Systems, John R. Busch, Alan J. Kondoff, and Darryl Ouye

HP 3000 Emulation on HP Precision Architecture Computers, Arndt B. Bergh, Keith Keilman, Daniel J. Magenheimer, and James A. Miller

PART 2: Subject Index

Subject

Month

A

Abstraction function	Oct.	Alignment, optical connector	Feb.	Analyzer, vector	Dec.
Accelerating factor, software test	Apr.	Alpha site testing, ME Series 5/10	May	Arbitrary waveform generator	Apr.
Access rights	Dec.	Amplifier, output, vector signal generator	Dec.	Architecture, HP-HIL	June
Active device measurements	Feb.	Amplifier, transimpedance	Feb.	Architecture, HP Precision	Mar.
Adaptive enhancer	Oct.	Amplifier, wideband, thick-film	July		Sept.
Adaptive equalizer	Oct.	Amplitude distortion measurements	Oct.	Architecture, UNIX	Dec.
Algorithm, LMS	Oct.	Analyzer, low-frequency	Jan.	Associativity, cache	Mar.
Algorithm, motor control	Feb.			Attenuation measurements	Oct.
Algorithm, timing, infrared link	Oct.				

Attenuators, optical Feb.
Autocalibration, low-frequency analyzer Jan.
Autolearn module, board testing Dec.
Automath processing Jan.
Autosequence, low-frequency analysis Jan.

B

Baseband circuitry, vector signal generator Dec.
Baseband processing Oct.
Benchmark testing Jan.
Benchmarking, UNIX June
Binning, multiple parts manufacture Apr.
Bolometer Feb.
Branch analysis June
B-trees Dec.
Bus converter Sept.
Bypassing, cache Mar.

C

Cache bus Sept.
Cache controller Sept.
Cache design Sept.
Cache design and performance Mar.
Cache simulation Jan.
CAD, mechanical engineering workstation May
CAD, portable printer Oct.
Calculator manufacturing Oct.
Calculus, Viewpoints Mar.
Calendars, planning data base Apr.
Calibration firmware Dec.
Calibration, optical power Feb.
Calibration plane Feb.
Cash flow analysis, HP-18C Aug.
Channel adapter Sept.
Channel model Oct.
Characterization, chips and boards Sept.
CIO bus Sept.
Circuit board testing Dec.
Clock generator, 2x Sept.
Clocking system Sept.
Closed-loop system design Jan.
CMOS, VLSI, Viewpoints June
Code expansion Mar.
Code inspections June
Coding, infrared transmission Oct.
Color coding, fiber optic instruments Feb.
Combinational board tester Dec.
Compatibility mode Dec.
Compiler performance, HP Precision Architecture Mar.
Compile-time information Mar.
Complex operations Mar.
Component level testing June
Computers, HP Precision Architecture Mar.
..... Sept.
Configurator, MPE XL Dec.
Connector, optical Feb.

Constellation diagram Oct.
..... Dec.
Constellation display July
Constellation measurement, digital radio evaluation July
Context-sensitive keys Aug.
Conveyor, final assembly Oct.
Coprocessor, floating point Mar.
..... Sept.
Coupled environment Dec.
Coupling loss, optical fibers Feb.
CPU, NMOS-III VLSI Sept.
Crest factor, effect on symbol error .. July
Critical word first Mar.
Curve fitter, low-frequency analysis .. Jan.
Cycles per instruction (CPI) Mar.

D

Data cache and TLB Mar.
Data circuit testing Oct.
Data generator Apr.
Data logging, circuit board testing Dec.
Data logging, ITIMS Oct.
Data management, MPE XL Dec.
Data transmission, intrabuilding May
Data type nodes Oct.
Debugger, symbolic Dec.
Debugging, interactive graphical testing Dec.
De-embedding Feb.
Deflection, printed circuit board Apr.
Delay distortion measurements Oct.
Delay element Sept.
Demodulation, digital Jan.
Demodulation, quadrature and phase errors Dec.
Demodulation, vector signal Dec.
Design graph Oct.
Detectors, optical Feb.
Device control protocol Mar.
Diagnostics, MPE XL Dec.
Diamond™ HMS-10/HP Connector Feb.
Digital modulation July
..... Dec.
Digital phase-locked loops Oct.
..... Dec.
Digital radio, instrumentation July
..... Oct.

E

Digital radio, vector generation and analysis Dec.
Digital signal generator Apr.
Dimensioning, ME Series 5/10 May
Direct mapped cache Mar.
Direct solver Aug.
Display driver, handheld calculator Aug.
Display refresh control Dec.
Display, vector graphics generator .. July
Distributed terminal controller Mar.
Drafting software, ME Series 5/10 May
Dump analysis tool Dec.

Emulator, MPE V Dec.
Enhancer, adaptive Oct.
Equalizer, adaptive Oct.
Equation solver, handheld calculator Aug.
Error adapter Feb.
Error correcting memory Mar.
Error correction, cache Sept.
Error correction, network analyzer Feb.
Error handling, MPE XL Dec.
Estimating software reliability Apr.
Execution-time theory Apr.
Execution unit Mar.
..... Sept.
Explode and roll forward planning . Apr.
Extension, software design Oct.

F

FFT analyzer, two-channel Jan.
Fiber optic test instruments Feb.
File system, MPE XL Dec.
Files, mapped Dec.
Filter design, examples Jan.
Financial calculator Aug.
Finite element analysis, link, ME Series 5/10 May
Finite element analysis, panel deflection Apr.
Firmware, vector analyzer Dec.
Firmware, vector signal generator Dec.
Fixture, microwave transistor Feb.
Floating-point coprocessor Mar.
..... Sept.
Flow control protocol Mar.
FM, wideband subsystem Dec.
Formal methods, software design Oct.
Forms, screen, reusable July
Framework for program development Oct.
Frequency response synthesis Jan.
Frozen cycles Jan.
Functional testing, circuit boards Dec.
Functional testing, software June

G

Geometry construction, ME Series 5/10 May
Grant program, HP, medical education Oct.
Graphics tablet June

H

Handheld calculators Aug.
Harvard New Pathway curriculum Oct.
Hatching, ME Series 5/10 May
Hilbert transform filters Oct.
Hinge link, handheld calculator Aug.
Hit rates, cache Jan.
..... Jan.
HP-18C calculator Aug.
HP-28C calculator Aug.
HP 3000 Series 930 Computer Mar.

Dec.
 HP 3000 Series 950 Computer Sept.
 Dec.
 HP 3000 Series 825S Computer Sept.
 HP 9000 Model 840 Computer Mar.
 HP 9000 Model 850S Computer Sept.
 HP DesignCenter, ME Series 5/10 May
 HP-FE, link with ME Series 10 May
 HP-HIL June
 HP-IB firmware, vector analyzer Dec.
 HP Precision Architecture Mar.
 Sept.
 Dec.

Hybrid circuit, handheld
 calculator Aug.
 Hybrid circuit, wideband amplifier .. July

I

Identifiers, protection Dec.
 IEEE 488.2, instrument Dec.
 Impairments, data circuit Oct.
 In-circuit testing Dec.
 Infrared printer Oct.
 Input devices, HP-HIL June
 Input/output, MPE XL Dec.
 In-service transmission impairment
 measurements Oct.
 Instantiation, software design Oct.
 Instruction cache and TLB Mar.
 Instruction gatherer Jan.
 Instruction unit Mar.
 Interface, user, CAD May
 Interference testing, digital radio July
 Interprocess communication, UNIX .. June
 Interrupt processing Dec.
 Invariant predicate Oct.
 I-Q splitter Dec.
 Iterative solver Aug.
 ITIMS Oct.

J

Jitter, low-level one-shot circuit July
 Jitter, automated testing July

K

Kernel, MPE XL Dec.

L

LAN, power-line May
 Language, MUMPS Oct.
 Language, RPL Aug.
 Latency, terminal controller Mar.
 Launch plane Feb.
 LCD assembly, calculator Oct.
 LCD interconnect Aug.
 Oct.
 LED sources Feb.
 Line size, cache Mar.
 Links, ME Series 5/10 May
 LMS algorithm Oct.
 Localization, calculator Aug.
 Lock manager Dec.
 Log manager Dec.
 Logging, transmission impairments .. Oct.
 Looping, program-controlled Apr.
 Low-noise synthesizer Dec.

M

Macros, MPE XL Dec.
 Mail, electronic, medical
 education Oct.
 Managers, MPE XL Dec.
 Manufacturing, calculator Oct.
 Manufacturing, semiconductor,
 planning tool Apr.
 Mapped files Dec.
 Math interface unit Sept.
 Math subsystem Sept.
 Measurement modes, low-frequency
 analysis Jan.
 Measurement, noise bandwidth July
 Measurement, phase and amplitude
 distortion Oct.
 Measurement plane Feb.
 Measurement tools, computer
 performance Jan.
 Measurement, transient Oct.
 Mechanical design, HP-18C and
 HP-28C Aug.
 Mechanical design software May
 Medical education Oct.
 Memory bus Sept.
 Memory controller Sept.
 Memory, data pattern Apr.
 Memory management, ME CAD May
 Memory management, MPE XL Dec.
 Memory subsystem Sept.
 Memory system Mar.
 ME Series 5/10 May
 Message system, MPE XL Dec.
 Methodology, verification
 and test Sept.
 Metrics, software testing June
 Microsampler Jan.
 Microwave transistor
 measurements Feb.
 MidBus Sept.
 Millicode Mar.
 Dec.
 MIPS Mar.
 Miss, cache Sept.
 Miss penalty, cache Mar.
 Model filter Oct.
 Model, printed circuit board Apr.
 Model, transistor fixture Feb.
 Modeling, computer Jan.
 Modem receiver Oct.
 Modulation, digital July
 Oct.
 Dec.
 Modulation, vector July
 Dec.
 Monitor, system Mar.
 Motor control algorithm Feb.
 MPE XL operating system Dec.
 MPE V emulation Dec.
 Multiplier chain, vector signal
 generator Dec.
 MUMPS language Oct.

N

Namespace resolution Dec.
 Native mode Dec.

NC links, ME Series 10 May
 Network analyzer transistor
 measurements Feb.
 Network management protocol Mar.
 New Pathway, medical curriculum .. Oct.
 NMOS-III processor, HP Precision
 Architecture Sept.
 Noise bandwidth measurement July
 Noise crest factor enhancement July
 Noise generator, wideband July
 Noise measurement, digital radio July

O

Object code translator Dec.
 Operating system, MPE XL Dec.
 Operating system, UNIX IPC Aug.
 Optical attenuators Feb.
 Optical connector Feb.
 Optical filters, fixed and variable Feb.
 Optical heads Feb.
 Optical interface Feb.
 Optical power meter Feb.
 Optical power splitter Feb.
 Optical sources Feb.
 Optical switch Feb.
 Oscillator, delay line Apr.
 Overlapped processing Mar.

P

Package design, handheld
 calculator Aug.
 Package design, portable printer Oct.
 Packaged device measurements Feb.
 Packaging, VLSI Sept.
 Panel deflection, printed circuit Apr.
 Part structures, ME Series 5/10 May
 Patient simulation Oct.
 Pattern data capture Dec.
 Pattern generator Apr.
 Paused cycles Jan.
 Performance, cache Jan.
 Performance, compilers, HP Precision
 Architecture Mar.
 Performance, HP 9000 Model 840 .. Mar.
 Performance, terminal controller Mar.
 Performance, UNIX IPC facilities June
 Permuted trace ordering,
 graphics tablet June
 Phase distortion measurements Oct.
 Photodiodes Feb.
 Physiology simulation Oct.
 Pin-grid array Sept.
 Pipeline, CPU Sept.
 Pipelines, processor and TLB Mar.
 PL-10 Apr.
 Planning module, IC manufacturing . Apr.
 Plotting, HP-28C Aug.
 Pole-zero analysis Jan.
 Ports, MPE XL Dec.
 Posting, disc Dec.
 Power-line characteristics,
 data transmission May
 Power meter, analog July
 Power meter, optical Feb.
 Power splitter, optical Feb.
 Precharge/pulldown bus Sept.
 Primitives, software design Dec.

Printed circuit board
 construction Sept.
 Printed circuit board deflection Apr.
 Printer, portable, infrared Oct.
 Privilege levels Dec.
 Procedural language, **RPL** Aug.
 Procedure calling Mar.
 Procedure calls Dec.
 Procedure level testing June
 Process management, **MPE XL** Dec.
 Processor, **VLSI**, **HP Precision**
 Architecture Sept.
 Program development framework Oct.
 Program nodes Oct.
 Program specifications Oct.
 Programming, data generator Apr.
 Property specifications Oct.
 Protection, **MPE XL** Dec.
 Protocol, **HP-HIL** June
 Protocols, terminal control Mar.
 Pyroelectric detector Feb.

Q

Quantum detectors Feb.
 Queuing theory Mar.

R

Radio, digital, measurements July
 Radio, digital, signal generation
 and analysis Dec.
 Realizations Oct.
 Recovery manager Dec.
 Reference loops, RF and IF Dec.
 Reference source, high-stability July
 Register file board Mar.
 Reliability, software Apr.
 Remote maintenance protocol Mar.
 Responsivity, optical detectors Feb.
 Rigorous software development Oct.
RMS thermal converter July
 Robotic loading Oct.
 ROM, **512K-bit**, handheld
 calculator Aug.
RPL, ROM-based procedural
 language Aug.
RPN calculator Aug.

S

Samplers, vector analyzer Dec.
 Scan paths Sept.
 Screen forms, reusable July
 Servo design, example Jan.
 Signal generator, digital Apr.
 Signal generator, vector Dec.
 Simulation, patient Oct.
 Simulation, physiology Oct.
 Simulator, cache Jan.
 Size, cache Mar.
 Snapshot, **HP 3000** measurement tool Jan.
 Software, board testing Dec.
 Software design Oct.
 Software reliability Apr.
 June
 Software testing Apr.
 Software, **UNM IPC** June
 Software verification June

Solve Interface, **HP-18C** Aug.
 S-plane calculator Jan.
 Splines Apr.
 Splitter, optical power Feb.
SPN, Semiconductor Productivity
 Network Apr.
 Spread spectrum, data transmission May
SPU design, **HP Precision**
 Architecture Sept.
 Structural testing, software June
 Stubs, **MPE XL** Dec.
 Stylus design, graphics tablet June
 Sum loop, low-noise synthesizer Dec.
 Support, **MPE XL** Dec.
 Surface mount, deflection
 effects Apr.
 Switch, **MPE XL** Dec.
 Switch, optical Feb.
 Symbolic computation Aug.
 Symbolic debugger, **MPE XL** Dec.
 Symbolic entry, handheld
 calculator Aug.
 Synthesis, low-frequency response Jan.
 Synthesizer, low-noise Dec.
 System clock Sept.
 System interface unit Sept.
 System level testing June
 System main bus (**SMB**) Sept.

T

Tables, standard Dec.
 Team testing, software June
 Temperature control, optical
 detector Feb.
 Terminal controller, **MPE XL** Mar.
 Test methodology, **VLSI** Sept.
 Test system, **HP Precision**
 Architecture computers Mar.
 Testing, additive interference July
 Testing, calculator hybrid
 circuit Aug.
 Testing, circuit boards Dec.
 Testing, computer-based Oct.
 Testing, computer system Jan.
 Testing, in-service transmission
 impairment Oct.
 Testing, radio, automated July
 Testing, software June
 Testing, software, **ME Series 5/10** May
 Testing, timing jitter July
 Thermal converter, **RMS** July
 Thermal design, processor Sept.
 Thermal detectors Feb.
 Thermopile Feb.
 Thick-film circuit, **wideband**
 amplifier July
 3-D display, vector analysis Dec.
 Time base, low-noise synthesizer Dec.
 Timing algorithm, infrared link Oct.
 Timing jitter testing July
 Timing, variable Apr.
TIMS Oct.
TLB Mar.
TLB controller Sept.
 Trace ordering, graphics tablet June
 Transaction management,
MPE XL Dec.

Transient measurements Oct.
 Transimpedance amplifier Feb.
 Transistor measurements,
 microwave Feb.
 Transistor test fixture Feb.
 Translation lookaside buffer Mar.
 Sept.
 Translator, **MPE** object code Dec.
 Transmission, data, infrared Oct.
 Transmission, data, intrabuilding May
 Transmission impairment
 measuring set Oct.
 Triggering, vector analyzer Dec.

U

Unidirectional link Oct.
UNIX, interprocess
 communication June
 User mapped files Dec.

V

Variable stack, **HP-28C** Aug.
 Variable timing Apr.
 Vector address sequencer Dec.
 Vector analysis Dec.
 Vector demodulation Dec.
 Vector graphics generator,
 constellation display July
 Vector modulator Dec.
 Vector signal generation Dec.
 Verification methodology,
 software June
 Verification, **VLSI** chip set Sept.
 Video signal processing Dec.
 Viewpoints: calculus Mar.
 Viewpoints: **VLSI**, **CMOS** June
 Virtual logic analyzer Dec.
 Virtual space management,
MPE XL Dec.
VLSI, **CMOS**, Viewpoints June
VLSI packaging Sept.
VLSI processor, **HP Precision**
 Architecture Sept.
VLSI test methodology Sept.
 Voice-frequency data circuit
 testing Oct.

W

Walkthroughs June
 Waveform generator, arbitrary Apr.
 Workstation, **CAD**, **ME Series 5/10** May
 Write-to vs. write-through caches Mar.

X

Y

Yield, **VLSI** chip set Sept.

Z

Zero-catching receiver Sept.

PART 3: Product Index

ME Series 5 ME Drafting Package	May	8510 Microwave Network Analyzer	Feb.
ME Series 10 ME Design and Drafting Package	May	HP 9000 Model 825S Computer	Sept.
MPE-XL Operating System	Dec.	HP 9000 Model 840 Computer	Mar.
PL-10 Integrated Circuit Manufacturing Planning System	Apr.	HP 9000 Model 850S Computer	Sept.
HP-18C Business Consultant	Aug.	35723A HP-HIL Touch Accessory	June
	Oct.	45911A Graphics Tablet	June
HP-28C Scientific Professional Calculator	Aug.	46021A HP-HIL Keyboard	June
	Oct.	46030A HP-HIL Keyboard	June
1345A Digital Display	Dec.	46060A HP-HIL Mouse	June
2345A Distributed Terminal Controller	Mar.	46083A HP-HIL Rotary Control Knob	June
HP 3000 Series 70 Computer	Jan.	46084A HP-HIL Security ID Module	June
HP 3000 Series 930 Computer	Mar.	46085A HP-HIL Control Dial Module	June
	Dec.	46086A HP-HIL 32-Button Box	June
HP 3000 Series 950 Computer	Sept.	46087A HP-HIL Digitizer	June
	Dec.	46088A HP-HIL Digitizer	June
3065AT Combinational Board Test System	Dec.	46094A HP-HIL Quadrature Port	June
3562A Dynamic Signal Analyzer	Jan.	81000AS/BS Optical Power Splitter	Feb.
3708A Noise and Interference Test Set	July	81520A Optical Head	Feb.
3709A Constellation Display	July	81521B Optical Head	Feb.
4948A In-Service Transmission Impairment Measuring Set	Oct.	82240A Infrared Printer	Aug.
8152A Optical Average Power Meter	Feb.		Oct.
8154B LED Sources	Feb.	85014A Active Device Measurements Pac	Feb.
8158B Optical Attenuators	Feb.	85041A Transistor Test Fixture	Feb.
8159A Optical Switch	Feb.	8780A Vector Signal Generator	Dec.
8175A Digital Signal Generator	Apr.	8980A Vector Analyzer	Dec.
		92916A HP-HIL Bar-Code Reader	June

PART 4: Author Index

Adcock, James L.	Jan.	Chow, Long C.	Mar.	Gaddis, Tony W.	Sept.
Arndt, Heinz P.	May	Coleman, Derek	Oct.	Gallimore, Robin M.	Oct.
Atkinson, Edward S.	Jan.			Gassman, Gerald R.	Sept.
Aziz, Asad	Sept.	DeLano, Eric R.	Sept.	Gaullier, François	Mar.
		Deyke, Dieter	May	Gildea, David R.	Dec.
Barnett, G. Octo	Oct.	Diebel, Heinz	May	Grieve, David W.	Oct.
Barrett, George E.	Apr.	Drake, H. Dean	Apr.	Goder, Michael	Feb.
Becker, Josef	Feb.	Duff, John A.	July	Goundan, Ayea	Sept.
Bergh, Arndt B.	Dec.	Dunlap, Robert E.	Aug.	Grau, Juan	Dec.
Blackham, Raymond C.	Jan.	Dunn, William I.	Oct.	Gravitz, Michael E.	Dec.
Boschma, Simin I.	Mar.			Grisell, Thomas L.	Dec.
Booth, George	Dec.	Edwards, Allen P.	Dec.		
Brilhaus, Friedhelm	Apr.	Eisenstein, Gabe L.	Aug.	Hakenjos, Ulrich	Apr.
Brown, Preston D.	Aug.	Elliot, James H.	Oct.	Hall, Michael L.	Jan.
Bryg, William R.	Mar.	Elmore, Glenn E.	Feb.	Halperin, Daniel L.	Sept.
Buchanan, Gregory F.	Mar.			Harmon, Paul	May
Bunsen, Chris M.	Aug.	Fazarinc, Zvonko	Mar.	Harper, Steven L.	Oct.
Burns, Darrell M.	Sept.	Felsenthal, Howell R.	Sept.	Hauge, Bruce R.	Aug.
Busch, John R.	Dec.	Fisher, Peter H.	Dec.	Haworth, David J.	July
Buzbee, William B.	Mar.	Flade, Bernhard	Feb.	Headrick, Charles R.	Sept.
		Fleischer-Reumann, Michael	Feb.	Herington, Daniel E.	June
Callister, James R.	Jan.	Forsyth, Mark A.	Sept.	Hoekstra, Cornelis D.	Aug.
Carder, Norman	Oct.	Foster, Ethan A.	Oct.	Horning, Robert J.	Sept.
Carey, Thomas J.	Dec.	Fotland, David A.	Mar.	Hug, Berthold	May
Chambers, Donald R.	Dec.	French, Paul K.	Sept.	Huning, Hans	Feb.
Chin, Richard	Sept.			Husfeld, Frank	Apr.

Jacobs, Edward M.	Mar.	Nichols, Paul A.	June	Teegarden, Randy J.	Mar.
Jaffe, William S.	Sept.	Nishi, Yoshio	June	Undy, Stephen R.	Sept.
Jensen, James E.	Dec.	Odineal, Robert D.	Sept.	Van Loan, Paul R.	Aug.
Johnson, Leith	Sept.	Ottliczky, Friedhelm M.	May	Vasil, James A.	Jan.
Jones, Marlin	Sept.	Ouye, Darryl	Dec.	Vogt, Michael	Apr.
Jue, Clemen	Apr.			Voss, Guenter	May
Keilman, Keith	Dec.	Pampeyan, Craig W.	Jan.	Wahl, Gaylord L., Jr.	Jan.
Kelly, Wayne M.	Dec.	Patton, Charles M.	Aug.	Waters, Geoffrey	July
Kohlhardt, Charles	Sept.	Peterson, Steven K.	Jan.	Watkins, Marvin L.	June
Kondoff, Alan J.	Dec.	Pettis, Karl W.	Mar.	Wechsler, Susan L.	Aug.
Kreiser, Rüdiger	Apr.	Picq, Jean-Pierre	Mar.	Weiss, Don	Sept.
Krumeich, Olivier	Mar.	Piety, Robert A.	May	Werner, Karl-Heinz	May
Kurz, Wolfgang	May	Piggins, Judith L.	Oct.	Wickes, William C.	Aug.
Kwee, Chong Num	Aug.	Potter, Ronald W.	Jan.	Wicklund, Eric J.	Jan.
La Fetra, Ross V.	Mar.	Pottinger, John R.	July	Wilson, Edward L.	Apr.
Lau, Chung Y.	Dec.	Prince, Harold B.	May	Wolting, Duane E.	Apr.
Lan, John H.	Apr.	Rhind, W. Gordon	Oct.	Woods, Stanley P.	Dec.
Layman, Judith A.	Aug.	Riper, Richard W.	Oct.	Woodward, Mark J.	Dec.
Lecesne, Eric	Mar.	Robertson, David	July	Worsley, Robert S.	Oct.
Lipp, Roger D.	June	Robinson, Craig S.	Sept.	Wylegala, Thomas B.	Mar.
Lotz, Jonathan P.	Sept.	Radermacher, Wilhelm	Feb.	Yeh, Allan S.	Mar.
Lovell, John C.	Dec.	Rasaratnam, Dayananda K.	July	Yetter, Jeffrey D.	Sept.
Ludwig, Mark A.	Sept.	Rodal, Eric B.	Dec.	Yie, Stephen	May
Lymer, Anthony	July	Rosenblatt, Peter	Sept.		
Magenheimer, Daniel J.	Dec.	Salz, Louis J.	Feb.		
Maisenbacher, Bernd	Feb.	Schlicker, Michael	Feb.		
Malzbender, Thomas	June	Schmidt, Siegmur	Feb.		
Mangelsdorf, Steven T.	Sept.	Schrempp, Michael W.	Sept.		
Mason, Russell W.	Sept.	Schuchard, Robert A.	Sept.		
Matthews, Ian M.	July	Schweikardt, Horst	Feb.		
May, Gregory J.	Aug.	Shelton, John F.	Mar.		
McClellan, Paul J.	Aug.	Shyam, Megha	Aug.		
McHenry, Eric D.	Dec.	Smith, David L.	Od.		
McKissock, Murdo J.	July	Smith, Mark A.	Aug.		
McVey, James D.	Dec.	Sommer, Dieter	May		
Messenger, Brian S.	Dec.	Spencer, Thomas V.	Sept.		
Meyer, Thomas O.	Sept.	Srok, Wolfgang	Apr.		
Miller, James A.	Dec.	Stafford, Paul S.	Dec.		
Moffatt, John E.	Sept.	Starr, Robert R.	June		
Moore, Gordon T.	Oct.	Stephens, Bruce A.	Oct.		
Müller, Emmerich	Feb.	Swadener, Paul	Aug.		
Muranami, Masahiko	Oct.	Szente, Pedro A.	Dec.		
		Sznaider, Kelly A.	Apr.		
Naegeli, Andrew H.	Dec.	Tanksalvala, Darius F.	Sept.		
Neering, Michael	Feb.	Te, Heng V.	Mar.		
Neumann, Uwe	Apr.				

Hewlett-Packard Company, 3200 Hillview
Avenue, Palo Alto, California 94304

HEWLETT-PACKARD JOURNAL

December 1987 Volume 38 • Number 11

Technical Information from the Laboratories of
Hewlett-Packard Company

Hewlett-Packard Company, 3200 Hillview Avenue
Palo Alto, California 94304 U S A
Hewlett-Packard Central Mailing Department
P O Box 529

1180 AM Amstelveen The Netherlands
Yokogawa-Hewlett-Packard Ltd Sugimaki-Ku Tokyo 168 Japan

Hewlett-Packard (Canada) Ltd
6877 Goreway Drive, Mississauga Ontario L4V 1M8 Canada

00199127
GEORGE PONTIS
SUITE 409
1742 SAND HILL RD
PALO ALTO, CA

HPJ 10/87

94304

Bulk Rate

U.S. Postage
Paid

Hewlett-Packard
Company

CHANGE OF ADDRESS:

5953-8566

Journal, 3200 Hillview Avenue, Palo Alto, CA 94304 U.S.A. Include your old address label if you have it. 60 days.

PART 1: Chronological Index

February 1988

Precision Digital Oscilloscopes and Waveform Recorders, James L. Sorden
 Waveform Recorder Software Design
 Signal Conditioning and Analog-to-Digital Conversion for a 4-MHz, 12-Bit Waveform Recorder, Albert Gee and Ronald W. Young
 Adaptive Sample Rate: A First-Generation Automatic Time Base, Richard W. Page and Nancy W. Nelson
 Waveform Reconstruction Techniques for Precision Digitizing Oscilloscopes, Richard W. Page and Allen S. Foster
 Digital Design of a High-Speed Waveform Recorder, Rayman W. Pon, Steven C. Bird, and Patrick D. Deane
 Printed Circuit Board Transmission Lines
 Waveform Recorder Design for Dynamic Performance, Brian J. Frohring, Bruce E. Peetz, Mark A. Unkrich, and Steven C. Bird
 Fixed-Frequency Sine Wave Curve Fit
 Packaging a High-Performance 250-Megasample-per-Second Analog-to-Digital Converter, Patrick D. Deane, Simcoe Walmsley, Jr., and Farid Dibachi
 Precision Digitizing Oscilloscope Waveform Analysis, Display, and Input/Output, Douglas C. Nichols
 Handling of Significant Digits
 Developing a Printed Circuit Board Design System, Elaine C. Regelson
 Automating the Printed Circuit Board Design Process, Gary Jackoway
 Finding Paths in a Gridded Data Structure
 Managing HP PCDS with the Design System Manager, Paul S. Reese and Mark E. Mayotte
 Use of Filesets in HP PCDS
 Version Strings
 A Multidevice Spooler for Technical Applications, Deborah A. Lienhart
 Integrating Applications in a Design Management System, Mark E. Mayotte
 HP PCDS Library Module
 Software Quality Assurance on the HP Printed Circuit Design System Project, David E. Martin
 Silicon-on-Insulator MOS Devices for Integrated Circuit Applications, Jean-Pierre Colinge

April 1988

Millimeter-Wave Sources and Instrumentation, Mohamed M. Sayed and John R. Regazzi
 A New Generation of Millimeter-Wave Calibration and Verification Standards
 Millimeter-Wave Vector Network Analysis, Robert G. Dildine and James D. Grace
 Millimeter-Wave Source Modules, Robert D. Albin
 Millimeter-Wave Source Module Interface
 2-GHz-to-20-GHz Amplifier
 High-Power Microwave Source for Millimeter-Wave Generation, Alan R. Bloom, Roger R. Graeber, Kenneth A. Richter, Andrew N. Smith, and Ronald T. Yamada
 Millimeter-Wave Detectors Extend Range of Scalar Network Analyzer, Herbert L. Upham

Waveguide Reflectometer Calibration
 Design and Performance of Millimeter-Wave Thermocouple Sensors, Lee H. Colby
 Adapting UNIX Logon Mechanisms to Automation Applications, Marvin L. Watkins
 A Virtual User Simulation Utility, Kjell A. Olsson and Mark Bergman
 user Run String Options
 An HP-UX Kernel Load and Measurement System, Kjell A. Olsson and Grace T. Yee
 Process Measures to Improve R&D Scheduling Accuracy, Richard M. LeVitt
 An Arbitrary Waveform Synthesizer for DC to 50 MHz, Roland Hassun and Albert W. Kovalick
 Address Sequencer
 Sampling Clock Requirements
 A 125-MHz 12-Bit Digital-to-Analog Converter System, Wilfredo T. Sagun, Fred H. Ives, Gary L. Baldwin, and Thomas Hornak
 Arbitrary Waveform Synthesizer Applications in Magnetic Recording and Radar, Albert W. Kovalick and Roland Hassun
 A Waveform Generation Language for Arbitrary Waveform Synthesis, Derrick T. Kikuchi, Rafael F. Miranda, and Peter A. Thysell

June 1988

Statistical Issues in Setting Product Specifications, Sherry L. Read and Timothy R.C. Read
 Robust Estimators
 Propagation of Error with Multiple Sources of Variability
 Boxplots
 Circuit Design Using Statistical Data Analysis, Karen Kafadar and Lynn M. Plouse
 Statistical Calibration of a Vector Demodulator, Karen Kafadar
 Appendix: Solving Nonlinear Least Squares Problems
 An Availability and Reliability Tool for Computer Systems, Wulf D. Rehder
 The Language of Dependability
 Project Management Using Software Reliability Growth Models, Gregory A. Kruger
 A Reliable, Autoloading, Streaming Half-Inch Tape Drive, John W. Dong, Kraig A. Proehl, Ronald L. Abramson, Leslie G. Christie, Jr., and Douglas R. Domel
 Streaming Tape Drive Control Electronics, Bradfred W. Culp, Douglas R. Domel, Wayne T. Gregory, Jeffery J. Kato, Gerod C. Melton, Kraig A. Proehl, David W. Ruska, Virgil K. Russon, and Peter Way
 A One-Gigasample-per-Second Digitizing Oscilloscope, Joe K. Millard
 A One-Gigasample-per-Second Analog-to-Digital Converter, John J. Corcoran, Ken Poulton, and Knud L. Knudsen
 Repetitive versus Single-Shot Bandwidth
 Digitizer Hybrid
 Front-End Signal Conditioning for a High-Speed Digitizing Oscilloscope, Thomas K. Bohley, Mark E. Mathews, Lewis R. Dove, Joe K. Millard, David W. Bigelow, and Donald D. Skarke
 Digital Filtering in a High-Speed Digitizing Oscilloscope, B. Allen Montijo

Dithering in the HP 54111D
Digital Filters

August 1988

Design and Development of a Color Thermal **Inkjet** Print Cartridge,
Jeffrey P. Baker, David A. Johnson, Vyomesh Joshi, and Stephen
J. Nigro

Capillary Forces in a Foam Matrix

Print Quality and Pen Development

Development of a Color Graphics Printer, James C. Smith, David
C. Tribolet, **Hatem** E. Mostafa, and Emil Maghakian

Color Communication Standard

Manufacturability of the PaintJet Printer

Mechanical Design of a Color Graphics Printer, Chuong Cam Ta,
Lawrence W. Chan, P. Jeffrey Wield, and Ruben Nevarez

The Second-Generation Thermal **Inkjet** Structure, Ronald A.
Askeland, Winthrop D. Childers, and William R. Sperry

High-Volume Microassembly of Color Thermal **Inkjet** Printheads
and Cartridges, Cheryl A. Boeller, Timothy J. Carlin, Peter M.
Roessler, and Steven W. Steinfield

Automatic Alignment Machines

JULIO

Factory Systems

Ink Retention in a Color Thermal **Inkjet** Pen, Erol Erturk, Brian
D. Gragg, Mary E. Haviland, W. Wistar **Rhoads**, Jim L. Ruder, and
Joseph E. Scheffelin

Activating the Pen

Ink and Media Development for the HP PaintJet Printer, Donald
J. Palmer, John **Stoffel**, Ronald J. Selensky, Peter C. Morris, M.
Beth Heffernan, and Mark S. **Hickman**

Color Thermal **Inkjet** Printer Electronics, Jennie L. Hollis, Philip
C. Schultz, and William J. Walsh

Low-Cost Servo Design

Red **AlGaAs** Light-Emitting Diodes, Frank M. Steranka, Dennis
C. **DeFevere**, Michael D. Camms, Chin-Wang Tu, David K.
McElfresh, Serge L. Rudaz, Louis W. Cook, and **Wayne L.** Snyder

LED Ratings

HP-RL: An Expert Systems Language, Steven T. Rosenberg

About HP-RL

Microscope: An Integrated Program Analysis Toolset, James P.
Ambras, Lucy M. Berlin, Mark L. Chiarelli, Alan L. Foster,
Vicki **O'Day**, and Randolph N. Splitter

The Browser Construction Toolkit

Using Templates in Cross-Reference Analysis

Rule-Based Execution Monitoring

October 1988

Discless HP-UX Workstations, Scott W. Wang
Program Management

A Discless HP-UX File System, Debra S. Bartlett and Joel D. Tesler

Discless Program Execution and Virtual Memory Management,
Ching-Fa Hwang and William T. **McMahon**

The Design of Network Functions for Discless Clusters, David O.
Gutierrez and Chyuan-Shiun Lin

Crssh Detection and Recovery in a Discless HP-UX System,
Annette **Randel**

Boot Mechanism for Discless HP-UX, Perry E. Scott, John S.
Marvin, and Robert D. Quist

Discless System Configuration Tasks, Kimberly S. Wagner

Small Computer System Interface, Paul Q. Perlmutter

SCSI and HP-IB

X: A Window System Standard for Distributed Computing Environ-

ments, Frank E. Hall and James B. Byers

Managing the Development of the HP DeskJet Printer, John D.
Rhodes

Market Research as a Design Tool

Human Factors and Industrial Design of the HP DeskJet Printer
Development of a High-Resolution Thermal **Inkjet** Printhead,

William A. **Buskirk**, David E. Hackleman, Stanley T. Hall, Paula
H. Kanarek, Robert N. Low, Kenneth E. **Trueba**, and Richard R.
Van de Poll

Integrating the Printhead into the HP DeskJet Printer, J. Paul
Harmon and John A. Widder

DeskJet Printer Chassis and Mechanism Design, Larry A. Jackson,
Kieran B. Kelly, David W. Pinkernell, Steve O. Rasmussen, and
John A. Widder

Data to Dots in the HP DeskJet Printer, Donna J. May, Mark D. Lund,
Thomas B. Pritchard, and Claude W. Nichols

The DeskJet Printer Custom Integrated Circuit

DeskJet Printer Font Design

Firmware for a Laser-Quality Thermal **Inkjet** Printer, Mark J.
DiVittorio, Brian Cripe, Claude W. Nichols, Michael S. Ard,
Kevin R. Hudson, and David J. Neff

Slow-Down Mode

Robotic Assembly of HP DeskJet Printed Circuit Boards in a Just-in-
Time Environment, P. David Gast

DeskJet Printer Design for Manufacturability

Fabricated Parts Tooling Plan

CIM and Machine Vision in the Production of Thermal **Inkjet**
Printheads, Mark C. Huth, Robert A. Conder, Gregg P. Ferry,
Brian L. Helterline, Robert F. **Aman**, and Timothy S. **Huble**

Whole Wafer Assembly of Thermal **Inkjet** Printheads

Production Print Quality Evaluation of the DeskJet Printhead
Economical, High-Performance Optical Encoders, Howard C.
Epstein, Mark G. Leonard, and Robert Nicol

Basics of Optical Incremental Encoders

A Complete Encoder Based on the HEDS-9000 Encoder Module

December 1988

A High-Speed Optical Time-Domain Reflectometer with Improved
Dynamic Range, Michael Fleischer-Reumann and **Franz** Sischka

Technical Risk Reduced by Joint Development Effort

Complementary Correlation Optical Time-Domain Reflectometry,
Fmz Sischka, Steven A. Newton, and Moshe Nazarathy

Optical Component Design for a Correlation-Based Optical **Time-**
Domain Reflectometer, **Jürgen** Beck, Siegfried Gross, and Robin
Giffard

Signal-to-Noise Ratio for Detection Using a PIN Diode

Data Processing in the Correlating Optical Time-Domain **Reflec-**
tometer, Jochen Rivoir and Wilfried Pless

Optical Time-Domain Reflectometer User Interface Design, Joachim
Vobis

Printing on Plain Paper with a Thermal **Inkjet** Printer, Steven J.
Bares

Host Independent Microprocessor Development Systems, Arnold
S. Berger

Host Independent Emulator Software Architecture, William A.
Fischer, Jr.

Expanded Memory for the HP Vectra ES Personal Computer, Gary
W. Lum, Milton J. Lau, and Wesley H. Stelter

LIM EMS 3.2 and 4.0

Expanded versus Extended Memory

Generalization of the Redfield-Kunz Treatment of Quadrature
Phase Time Data, Alexander Keller and Ulrich H. Haeberlen

PART 2: Subject Index

Subject Month

A

Acceleration factor, software testing June
 Adaptations, UNIX boot/logon Apr.
 Absorption rate, ink Dec.
 Adapters, millimeter-wave Apr.
 Adaptive sample rate Feb.
 ADC error Dec.
 Address sequencer Apr.
 Adhesive placement, DeskJet printhead Oct.
 Adhesives, inkjet pen Aug.
 Air system, tape drive June
 AlGaAs LEDs Aug.
 Algorithm, code and gain selection .. Dec.
 Algorithm, fixed-frequency sine wave curve fit Feb.
 Algorithm, Markov chain June
 Algorithm, statistical calibration June
 Algorithms, character enhancement Oct.
 Alignment machines, printhead Aug.
 Amplifier, source module Apr.
 Amplifier, transimpedance Dec.
 Amplifier, 2-to-20-GHz Apr.
 Analog-to-digital converter, 1-gigasample/s June
 Analog-to-digital converter, 4-MHz, 12-bit Feb.
 Analog-to-digital converter, 250-MHz, 8-bit Feb.
 Analysis, waveform Feb.
 Application integration Feb.
 Arbitrary waveform synthesizer Apr.
 ADC hybrid Feb.
 Asynchronous data transfer, SCSI ... Oct.
 Attach machines Oct.
 Attenuation, optical fiber Dec.
 Attenuator, digitizing oscilloscope .. June
 Autoloading tape drive June
 Automatic execution Feb.
 Automation, UNIX applications Apr.
 Autoplacement, circuit board design Feb.
 Autorouter module, HP PCDS Feb.
 Availability tool June
 Averaging, digitizing oscilloscope Feb.
 Averaging, optical TDR Dec.

B

Backscatter, optical fiber Dec.
 Backshort, finline Apr.
 Bandwidth, repetitive vs. single-shot June
 Barrier, ink Aug.
 Bend location, optical fiber Dec.
 BEST Aug.
 Bi-trigger, ADC Feb.
 Bold algorithm, DeskJet characters ... Oct.
 Boot ROM, HP-UX 6.0 Oct.

Boot ROM loader, HP-UX 6.0 Oct.
 Boot, UNIX adaptations Apr.
 Boxplots June
 Breakpoint command, emulator Dec.
 Bristow apparatus Dec.
 Broadcast failure datagrams, HP-UX 6.0 Oct.
 Browsers Aug.
 Bubbles, inkjet pen Aug.
 Buffer arm, tape drive June
 Burst time base Feb.
 Bus access phases, SCSI Oct.

C

Cables, emulator Dec.
 Cache performance, HP-UX 6.0 Oct.
 CAE/CAD system Feb.
 Calibration, automatic June
 Calibration, statistical June
 Capillary forces Aug.
 Carriage, DeskJet printer Oct.
 Cartridge, print, color Aug.
 Cation concentration Aug.
 CATS Apr.
 Character design, DeskJet printer Oct.
 Chassis, DeskJet printer Oct.
 Chassis, emulator Dec.
 Choke, radial Apr.
 Chunk map, HP-UX 6.0 Oct.
 Chunk table, HP-UX 6.0 Oct.
 CIM Oct.
 Circuit design, statistical June
 Clock generator Feb.
 Clogging, ink Aug.
 Cluster node Oct.
 Cluster server process Oct.
 CMOS, SOI Feb.
 Cnode Oct.
 Code correlation, optical TDR Dec.
 Code length, optical TDR Dec.
 Code wheel selection Oct.
 Codes, complementary Dec.
 Color communication standard Aug.
 Communication link, common June
 Comparator delay, ADC Feb.
 Compare mode Dec.
 Complementary Golay codes Dec.
 Component variation June
 Compressed-width algorithm Oct.
 Concurrent state machines June
 Connector loss, optical fiber Dec.
 Context dependent files Oct.
 Control electronics, tape drive June
 Controller, automation, UNIX Apr.
 Converter, analog-to-digital June
 Converter, vector and polygon to raster Aug.
 Coordinated measurement bus Dec.
 Copier paper Dec.

Correlation, complementary, OTDR . Dec.
 Correspondence paper Dec.
 Coupler, probe, millimeter-wave Apr.
 Crash detection, HP-UX 6.0 Oct.
 Crash recovery, HP-UX 6.0 Oct.
 Cross-reference analysis Aug.
 Cross talk, inkjet pen Aug.
 Cross talk, thermal inkjet Oct.
 Crusting, ink Aug.
 Curve fit test, ADC Feb.

D

DAC/sampler microcircuit Apr.
 Damping, thermal inkjet Oct.
 Data compactor Aug.
 Data correlation optical TDR Dec.
 Data deceleration IC Feb.
 Data, library module Feb.
 Data storage, synchronous Feb.
 Data structure, gridded Feb.
 Data synchronizer Feb.
 Deceleration, data Feb.
 Decimation, optical TDR Dec.
 Defect rates, software June
 Defect tracking Feb.
 De Marco EQF Apr.
 Design history Feb.
 Design module, HP PCDS Feb.
 Design system manager (DSM)..... Feb.
 DeskJet printer Oct.
 Detectors, millimeter-wave Apr.
 De-teeter circuit Feb.
 DH LEDs Aug.
 Diaper chip Aug.
 Digital filtering June
 Digital-to-analog converter, 125-MHz, 12-bit Apr.
 Digital signal processing engine (DSPE) Dec.
 Digitally controlled write June
 Digitizer June
 Digitizing oscilloscope, 1-gigasample/s June
 Digitizing oscilloscopes Feb.
 Diode tripler Apr.
 Diplexer, millimeter-wave Apr.
 Directionality, inkjet pen Aug.
 Disc transaction, SCSI Oct.
 Discless boot mechanism Oct.
 Discless cluster Oct.
 Discless crash detection Oct.
 Discless crash recovery Oct.
 Discless file system Oct.
 Discless message interface functions Oct.
 Discless network functions Oct.
 Discless network protocol Oct.
 Discless network recovery Oct.

Discless networking buffer management, Oct.
Discless program execution Oct.
Discless system configuration Oct.
Discless workstations Oct.
Discontinuity detection Dec.
Distortion, ADC Feb.
Distributed systems, HP-UX 6.0 Oct.
Dithering June
Double-width algorithm Oct.
Draft-quality algorithm Oct.
DRAM system, waveform recorder ... Feb.
Drop diameter, **inkjet** Dec.
Drop generation, **inkjet** Aug.
Drop volume, **inkjet** Dec.
Dye concentration Aug.
Dynamic load, HP-UX Apr.
Dynamic range, optical TDR Dec.

E

Effective bits Feb., June
Electronics, color **inkjet** printer Aug.
Emulators, microprocessor Dec.
Encapsulant placement, DeskJet printhead Oct.
Encoder, analog June
Encoders, optical Oct.
Encoding, ADC Feb.
End location, optical fiber Dec.
Enhancement algorithm, character ... Oct.
Environment initialization, DSM Feb.
Environmental delta June
Epson FX-80 emulation Oct.
Error propagation June
Error, shaft **runout** Oct.
Error sources, vector network analysis Apr.
Errors, optical encoder Oct.
Estimates, software project duration . Apr.
Estimation June
Estimation quality factor Apr.
Examples, UNIX automation adaptations Apr.
Execution monitoring Aug.
Execution, UNIX modes and initiation Apr.
Expanded memory Dec.
Expect statements Apr.
Expert systems language Aug.
Extended memory Dec.

F

Fabricated parts tooling plan Oct.
Failure rates, software June
Fiber optic measurements Dec.
Fidelity, digitizing oscilloscope June
FIFO files, HP-UX Oct.
File security, DSM Feb.
File server, HP-UX 6.0 Oct.
Filesets, HP PCDS Feb.
File system I/O, HP-UX 6.0 Oct.
Filter, DAC Apr.
Filtering, digital June
Film, color **inkjet** printing Aug.
Finite impulse response Feb.
Finline, millimeter-wave

devices Apr.
Firmware, emulator Dec.
Firmware, optical TDR Dec.
Firmware, thermal **inkjet** Oct.
Firmware, waveform recorder Feb.
Flanges, waveguide Apr.
Fluid barrier Aug.
Foam matrix, **inkjet** pen Aug.
Font design, DeskJet printer Oct.
Force-directed placement Feb.
Formula, OTDR maker's Dec.
FOURIER transform, computation Dec.
FOURIER transform, short-time Feb.
Frames Aug.
Fresnel reflections Dec.

G

GaAs chips June
GaAs FETs, millimeter-wave circuits Apr.
Gain, correlation Dec.
Gain selection, optical TDR Dec.
Gap, optical encoder Oct.
Generic layer, emulator **firmware** Dec.
Generic **printer** code Oct.
Geometric intimacy Oct.
Goel-Okamoto model June
Golay codes Dec.
Guardband, customer June

H

Half-height algorithm Oct.
Half-hold sampling Apr.
Head attach machine Oct.
Heterostructures, LED Aug.
Homostructures, LED Aug.
Host independent microprocessor development systems Dec.
Host user interface, emulator Dec.
HP EGS Feb.
HP PCDS Feb.
HP-RL Aug.
HP-UX **discless** workstations Oct.
HP-UX kernel measurement Apr.
HP-UX utility, virtual user Apr.
Hub lock mechanism June
Hybrid, attenuator June
Hybrid circuit, ADC Feb.
Hybrid circuit, preamplifier Feb.
Hybrid, digitizer June
Hybrid, preamplifier June

I

IC technology, **SOI** Feb.
Idempotent messages, HP-UX 6.0 Oct.
Incremental encoders, optical Oct.
Infinite impulse response Feb.
Information transfer phases, SCSI Oct.
Ink absorption rate, plain paper Dec.
Ink, DeskJet printer Oct.
Ink, thermal **inkjet** Aug.
Inkjet printer, color Aug.
Inkjet printing on plain paper Dec.
Integration, optical TDR Dec.
Interconnect, DeskJet printhead Oct.
Interconnect, print cartridge Aug.

Interface, source module, millimeter-wave Apr.
Interleaved digitizers June
Interpolation Feb., June

J

Job flow, DSM spooler Feb.
JULIO Aug.
Just-in-time manufacturing Oct.

K

Kernel measurement, HP-UX 6.0 Oct.
Key data structure Apr.
Klopfenstein combiner Apr.
Knowledge base Aug.

L

Language, expert systems Aug.
Language, waveform generation Apr.
LAN failure detection, HP-UX 6.0 Oct.
LAN link level address Oct.
Laser driver, optical TDR Dec.
Latching, print cartridge Aug.
Layout, circuit June
Layout, ground plane June
LED types Aug.
Level diagram Dec.
Library module, HP PCDS Feb.
Light-emitting diodes, red Aug.
LIM Expanded Memory Specification (EMS) Dec.
Linearity, optical TDR Dec.
Lin/log conversion Dec.
Lisp program analysis Aug.
Load generation and measurement, HP-UX Apr.
Load programs Apr.
Loader, secondary, HP-UX 6.0 Oct.
Lockf Oct.
Logic development systems Dec.
Logic length, autorouting Feb.
Logon, UNM adaptations Apr.
Loss, optical fiber Dec.

M

Machine vision Oct.
Magnetic recording Apr.
Maintenance, DeskJet pen Oct.
Map table, expanded memory Dec.
Market research Oct.
Markov chain algorithm June
Measures, software scheduling Apr.
Mechanisms, DeskJet printer Oct.
Media drive, **inkjet** printer Aug.
Memory system, waveform recorder . Feb.
Meniscus dynamics Aug.
Metrics, software quality June
Microprocessor development systems Dec.
Microscope Aug.
Microwave source, high-power Apr.
Millimeter-wave devices Apr.
Model, media drive Aug.

Monitoring program execution Aug.
MOS, **SOI** Feb.
Mounting tolerance, optical encoder . Oct.
MPBF, print cartridge Aug.
MTBF, print cartridge Aug.
Multiprocessor emulation Dec.

N

Negative head, **inkjet** pen Aug.
Network file system, HP-UX 6.0 Oct.
Networks, design system manager Feb.
NMR time data Dec.
Noise, digitizing oscilloscope June
Noise, optical TDR Dec.
Nonidempotent messages, HP-UX 6.0 Oct.
Nonlinear least squares problems June
Nozzle, **inkjet** Aug.
NS-ARPA internet address Oct.

O

Objects Aug.
Operating system, HP-UX 6.0 Oct.
Opnode program Apr.
Optical balance Oct.
Optical encoders Oct.
Optical system, **TDR** Dec.
Optical time-domain reflectometry ... Dec.
Orifice attach machine Oct.
Orifice plate Aug.
Oscilloscope, 1-gigasamples June
Oscilloscopes, digitizing Feb., June
Overhead transparency film Aug.
Oversampling, ADC Feb.

P

Packaging, ADC Feb.
Packet, waveform synthesis Apr.
PaintJet printer Aug.
Paper absorbency Dec.
Paper, color **inkjet** Aug.
Paper handling, **DeskJet** printer Oct.
Paper, **inkjet** printing Oct.
Paper, plain, for **inkjet** printing Dec.
Parts library, circuit board design Feb.
Peel tests, adhesive Aug.
Penetration depth, ink Dec.
Perforation, paper Aug.
Performance, expanded memory card Dec.
Performance measurements, HP-UX 6.0 Oct.
Periodic rms function Feb.
Peristaltic pump Oct.
Phase errors, optical encoder Oct.
Photometric efficiency, **LEDs** Aug.
PID regulator, HP-UX load Apr.
Pin diode detection Dec.
Pipelined architecture, ADC Feb.
Plain paper for **inkjet** printing Dec.
Plain-paper printing Oct.
Polyurethane foam Aug.
Postprocessing, ADC Feb.
Postprocessors Apr.
Power sensors, millimeter-wave Apr.

Preamplifier, differentiating June
Presetting circuit Dec.
Priming, **inkjet** pen Aug.
Print cartridge, color Aug.
Print quality evaluation Aug., Oct.
Print quality, plain paper Dec.
Printed circuit board design Feb.
Printer, color graphics Aug.
Printer, **DeskJet** Oct.
Printhead energy window budget Oct.
Printhead, 180-dpi **inkjet** Aug.
Printhead, thermal **inkjet**, high-resolution Oct.
Probe coupler Apr.
Probe pulse, optical TDR Dec.
Process EQF Apr.
Process IDs, HP-UX 6.0 Oct.
Process measures, software scheduling Apr.
Processor-specific code Dec.
Production, **inkjet** printhead Aug.
Production margin June
Production, printhead Oct.
Program analysis Aug.
Program management, HP-UX 6.0 Oct.
Program, thermal analysis Feb.
Project management, software June
Project progress rate Apr.
Pseudorandom dither, ADC Feb.
Pulse detector chip June
Pulse modulation, high-performance Apr.

Q

Q-band source module Apr.
Quadrature encoders, optical Oct.
Quadrature phase time data Dec.
Quality assurance, software Feb.
Quality, print Aug.
Quantile-quantile plots June
Quantization noise Apr.
Quantizer IC Feb.
Query facility, DSM Feb.
Query language Aug.
Quickie pattern Oct.

R

Radar simulation Apr.
Radial choke Apr.
RAS calculations June
Rayleigh scattering Dec.
R-band source module Apr.
Read/write system, tape drive June
Receiver, optical TDR Dec.
Reconstruction, sampled waveform Feb.
Recorders, waveform Feb.
Redfield-Kunz method Dec.
Red **LEDs** Aug.
Redundancy modeling June
Refill time, **inkjet** pen Aug.
Reflections, optical fiber Dec.
Reflectometer calibration Apr.
Regeneration time constant Feb.
Release criteria, software June
Reliability, **DeskJet** printer Oct.
Reliability growth modeling,

software June
Reliability, **inkjet** printer Aug.
Reliability, optical encoder Oct.
Remote maintenance protocol Oct.
Repetitive bandwidth June
Reservoir, ink Aug.
Resolution, ADC June
Resolution, optical TDR Dec.
Retention, ink Aug.
Risk, technical Dec.
Robotic assembly Oct.
Robust estimators June
Root server, HP-UX 6.0 Oct.
Routing, circuit board design Feb.
Rules, Microscope Aug.

S

Sample-and-hold circuits, ADC June
Sampling June
Sampling, half-hold Apr.
Sampling scheme compensation, waveform recorder Dec.
SAW oscillator Feb.
Scalar network analysis, millimeter-wave Apr.
Scaling for graphics emulation Oct.
Scan, waveform synthesis Apr.
Scattering, optical fiber Dec.
Scheduling, software R&D Apr.
SCSI and HP-IB Oct.
SCSI bus Oct.
SCSI bus phases Oct.
SCSI bus signals Oct.
Select statements Apr.
Self-test, microwave source Apr.
Send statements Apr.
Sensitivity analysis June
Sequencer, address Apr.
Service station, **DeskJet** printer Oct.
Servo, carriage motion Oct.
Servo design Aug.
Servo system, hybrid June
Shear tests, adhesive Aug.
SH LEDs Aug.
Sidelobes, code correlation Dec.
Signal conditioning, oscilloscope ... June
Signal-to-noise ratio, pin diode detection Dec.
Significant digits, display of Feb.
Silicon-on-insulator technology Feb.
Simulation, magnetic recording Apr.
Simulation, radar Apr.
Simulation, thermal **inkjet** Oct.
Simulation utility, **vuser** Apr.
Simultaneous sampling, time data ... Dec.
Sine wave curve fit, fixed-frequency Feb.
Single-shot bandwidth June
Sizing, plain paper Dec.
Slab, microwave source design Apr.
Sleeps Apr.
Slip rate Apr.
Slow-down mode Oct.
Small computer system interface (SCSI) Oct.

Software, circuit board design	Feb.	Terminal interface, emulator	Dec.	Vector demodulator, calibration	June
Software, quality assurance	Feb.	Test line limit	June	Vector network analysis, millimeter-wave	Apr.
Software R&D scheduling	Apr.	Testing, inkjet printer	Aug.	Vectra ES/12	Dec.
Software reliability growth models ..	June	Thermal inkjet printer	Oct.	Velocity, inkjet drop	Aug.
Software, waveform recorder	Feb.	Thermal inkjet printer, color	Aug.	Version control, DSM	Feb.
SOI	Feb.	Thermal performance, ADC	Feb.	Version strings, DSM	Feb.
Source, microwave, high-power	Apr.	Thermocouple sensors, millimeter-wave	Apr.	Vias, multiple	Aug.
Source modules, millimeter-wave ...	Apr.	Third-party testing	Aug.	Virtual memory management, HP-UX 6.0	Oct.
Specifications, statistical issues	June	Threshold voltage, SOI MOS	Feb.	Virtual user simulator	Apr.
Spectrum, quadrature phase time data	Dec.	Throughput performance, HP-UX 6.0	Oct.	Vision, machine	Aug.
Speed, OTDR measurements	Dec.	Time base, waveform recorder	Feb.	vuser	Apr.
Speed sensor, tape drive	June	Time data, quadrature phase	Dec.		
Spider chip	Aug.	Time domain reflectometer, optical	Dec.	W	
Spittoon	Aug.	Timing uncertainty	Feb.	Waveform analysis	Feb.
Splices, optical fiber	Dec.	Time-outs	Apr.	Waveform generation language (WGL)	Apr.
Splitter, power, Wilkinson	Apr.	Transistor physics, SOI MOS	Feb.	Waveform reconstruction	Feb.
Spooler, multidevice	Feb.	Transmission lines, PC board	Feb.	Waveform recorder sampling scheme compensation	Dec.
Spouting	Aug.	Transparency film, color inkjet	Aug.	Waveform recorders	Feb.
Spread factor, inkjet printing	Dec.	Trigger, analog-digital	Feb.	Waveguide, millimeter-wave	Apr.
Spread-spectrum optical TDR	Dec.	Trigger, digital	Feb.	Waveguide, precision flanges	Apr.
Standard cell phase-locked loop	June	Trigger, dropout	Feb.	Waveguide-to-coax transition	Apr.
Standard, color communication	Aug.	Trigger, high frequency	Feb.	W-band source module	Apr.
Starch, paper surface	Dec.	Tripler, diode	Apr.	Wilkinson splitter	Apr.
State machine, optical TDR	Dec.	Trivial file transfer protocol	Oct.	Window manager, X Window System	Oct.
Static load	Apr.	Twist cap, cam-actuated	Oct.	Window systems	Oct.
Static program analysis	Aug.				
Statistics applications	June	U			
Stitching	Dec.	U-band source module	Apr.	X	
Streaming tape drive	June	Uncertainty, measurement	June	X Window System	Oct.
Swap space management, HP-UX 6.0	Oct.	Undersampling	Feb.		
Switch assembly	June	UNIX, file system	Oct.	Y	
Synchronous data transfer, SCSI	Oct.	UNIX logon mechanisms	Apr.		
Synthesizer, arbitrary waveform	Apr.	User interface, microprocessor development system	Dec.	Z	
		User interface, optical TDR	Dec.	Zero-filled spectrum	June
		User simulation utility	Apr.		
T					
Tape drive, %-inch	June	V			
Tape positioning	June	Vacuum-fluorescent display	June		
Taper, constant impedance	Apr.	Variability, sources	June		
Target processor	Dec.	V-band source module	Apr.		
Target system	Dec.				
Temperature testing	June				

PART 3: Product Index

DeskJet Printer	Oct., Dec.	HP-UX 6.0	Oct.
HEDS-5500 Optical Encoder	Oct.	PaintJet Color Graphics Printer	Aug.
HEDS-9000 Shaft Encoder Module	Oct.	5180A Waveform Recorder	Feb., Dec.
HDSP-X10X Seven-Segment Displays	Aug.	5180T/U Precision Digitizing Oscilloscope	Feb.
HDSP-X15X Seven-Segment Displays	Aug.	5183A Waveform Recorder	Feb.
HLCP-X100 Light Bars	Aug.	5183T/U Precision Digitizing Oscilloscope	Feb.
HLMP-X150 Low-Current Lamps	Aug.	5185A Waveform Recorder	Feb.
HLMP-4100 High-Intensity Lamps	Aug.	5185T Precision Digitizing Oscilloscope	Feb.
HP DesignCenter Family	Feb.	7980A Tape Drive	June
HP Design System Manager	Feb.	8145A Optical Time-Domain Reflectometer	Dec.
HP Engineering Graphics System	Feb.	8340/1 Synthesized Sweeper	Apr.
HP Printed Circuit Design System	Feb.	8349B Microwave Amplifier	Apr.

8486A Power Sensors	Apr.	64700 Series Emulators	Dec.
8510B Network Analyzer	Apr.	83550A RF Plug In	Apr.
8757A Scalar Network Analyzer	Apr.	83554/5/6A Millimeter-Wave Source Modules	Apr.
8770A Arbitrary Waveform Synthesizer	Apr.	85025C Detector Adapter	Apr.
11776A Waveform Generation Language	Apr.	85026A Millimeter-Wave Detectors	Apr.
45944A Vectra ES Expanded Memory Card	Dec.	85100V/W Source Modules	Apr.
51089A Analysis, Display, and Input/Output Module	Feb.	88780A Tape Drive	June
54111D Digitizing Oscilloscope	June		

PART 4: Author Index

Abramson, Ronald L.	June	Deane, Patrick D.	Feb.	Ho, May Fong	Aug.
Agosta, John M.	Feb.	DeFevere, Dennis C.	Aug.	Hollis, Jennie L.	Aug.
Albin, Robert D.	Apr.	Dibachi, Farid	Feb.	Hornak, Thomas	Apr.
Aman, Robert F.	Oct.	Dildine, Robert G.	Apr.	Hubley, Timothy S.	Oct.
Ambras, James P.	Aug.	DiVittorio, Mark J.	Oct.	Hudson, Kevin R.	Oct.
Ard, Michael S.	Oct.	Domel, Douglas R.	June	Huth, Mark C.	Oct.
Armstrong, Diane	Aug.	Dong, John W.	June	Hwang, Ching-Fa	Oct.
Askeland, Ronald A.	Aug.	Dove, Lewis R.	June		
		Ellement, David	Aug.	Ives, Fred H.	Apr.
Baker, Jeffrey P.	Aug.	Epstein, Howard C.	Oct.	Jackoway, Gary	Feb.
Baldwin, Gary L.	Apr.	Erturk, Erol	Aug.	Jackson, Larry A.	Oct.
Bares, Steven J.	Dec.	Evans, Stan	Aug.	Johnson, Allen D.	Aug.
Bartlett, Debra S.	Oct.			Johnson, David A.	Aug.
Beamer, Carol	Aug.	Fenwick, John	Feb., Apr.	Joshi, Vyomesh	Aug.
Beamer, Dan	Aug.	Ferry, Gregg P.	Oct.		
Beck, Jürgen	Dec.	Fischer, William A., Jr.	Dec.	Kafadar, Karen	June
Beemer, Jeff	Aug.	Fisher, Diane	Aug.	Kanarek, Paula H.	Oct.
Berger, Arnold S.	Dec.	Fleischer-Reumann, Michael	Dec.	Kato, Jeffery J.	June
Bergman, Mark	Apr.	Foster, Alan L.	Aug.	Keller, Alexander	Dec.
Bergstedt, Don	Aug.	Foster, Allen S.	Feb.	Kelly, Kieran B.	Oct.
Berlin, Lucy M.	Aug.	Frohring, Brian J.	Feb.	Ketchum, John	Feb.
Beyster, Mary Ann	Aug.			Kikuchi, Derrick T.	Apr.
Bigelow, David W.	June	Gast, P. David	Oct.	Klein, Matt	Apr.
Bird, Steven C.	Feb.	Gee, Albert	Feb.	Knudsen, Knud L.	June
Bloom, Alan R.	Apr.	Giffard, Robin	Dec.	Koenig, Mary K.	Apr.
Boeller, Cheryl A.	Aug.	Grace, James D.	Apr.	Kovalick, Albert W.	Apr.
Bohley, Thomas K.	June	Graeber, Roger R.	Apr.	Kruger, Gregory A.	June
Borer, Mike	Aug.	Gragg, Brian D.	Aug.		
Botka, Julius K.	Apr.	Gregory, Wayne T.	June	Larson, Douglas A.	Apr.
Buskirk, William A.	Oct.	Gross, Siegfried	Dec.	Lau, Milton J.	Dec.
Byers, James B.	Oct.	Grube, Alan	Oct.	Leonard, Mark G.	Oct.
		Gutierrez, David O.	Oct.	Levinson, Mitch	Aug.
Camras, Michael D.	Aug.			LeVitt, Richard M.	Apr.
Carlin, Timothy J.	Aug.	Hackleman, David E.	Oct.	Lienhart, Deborah A.	Feb.
Chan, Lawrence W.	Aug.	Haeberlen, Ulrich H.	Dec.	Lin, Chyuan-Shiun	Oct.
Chiarelli, Mark L.	Aug.	Halbert, Doug	Apr.	Low, Robert N.	Oct.
Childers, Winthrop D.	Aug.	Hall, Frank E.	Oct.	Lum, Gary W.	Dec.
Christie, Leslie G., Jr.	June	Hall, Stanley T.	Oct.	Lund, Mark D.	Oct.
Clarke, Eric	Aug.	Harmon, J. Paul	Oct.		
Colby, Lee H.	Apr.	Harring, Don	Oct.	Maghakian, Emil	Aug.
Colinge, Jean-Pierre	Feb.	Hassun, Roland	Apr.	Majette, Mark	Aug.
Conder, Robert A.	Oct.	Haswell, Walter T., III	Aug.	Martin, David E.	Feb.
Cook, Louis W.	Aug.	Haviland, Mary E.	Aug.	Martini, Neal J.	Aug.
Corcoran, John J.	June	Heffernan, M. Beth	Aug.	Marvin, John S.	Oct.
Cripe, Brian	Oct.	Helterline, Brian L.	Oct.	Mathews, Mark E.	June
Culp, Bradfred W.	June	Hickman, Mark S.	Aug.	May, Donna J.	Oct.

Mayotte, Mark E.	Feb.	Proehl, Kraig A.	June	Steinfield, Steven W.	Aug.
McElfresh , David K.	Aug.	Quist, Robert D.	Oct.	Stelter, Wesley H.	Dec.
McClelland , Don	Oct.	Randel , Annette	Oct.	Steranka , Frank M.	Aug.
McMahon , William T.	Oct.	Rasmussen, Steve O.	Oct.	Stoffel , John	Aug.
Melton , Gerod C.	June	Read, Sherry L.	June	Ta, Chuong Cam	Aug.
Meyer, Jeffrey W.	Apr.	Read, Timothy R.C.	June	Tesler, Joel D.	Oct.
Millard, Joe K.	June	Reese, Paul S.	Feb.	Thysell , Peter A.	Apr.
Miranda, Rafael F.	Apr.	Regazzi, John R.	Apr.	Togami , Chris	Oct.
Montijo, B. Allen	June	Regelson, Elaine C.	Feb.	Trego , Mick	Aug.
Morris, Peter C.	Aug.	Rehder, Wulf D.	June	Tribolet, David C.	Aug.
Mostafa, Hatem E.	Aug.	Rhoads , W. Wistar	Aug.	Trueba, Kenneth E.	Oct.
Motta, Ricardo J.	Aug.	Rhodes , John D.	Oct.	Tu, Chin-Wang	Aug.
Nazarathy , Moshe	Dec.	Richter, Kenneth A.	Apr.	Unkrich, Mark A.	Feb.
Neff, David J.	Oct.	Rivoir, Jochen	Dec.	Upham , Herbert L.	Apr.
Nelson, Nancy W.	Feb.	Roessler, Peter M.	Aug.	Van de Poll, Richard R.	Oct.
Nevarez, Ruben	Aug.	Rosenberg, Steven T.	Aug.	Vobis, Joachim	Dec.
Newton, Steven A.	Dec.	Rudaz, Serge L.	Aug.	Wagner, Kimberly S.	Oct.
Nichols, Claude W.	Oct.	Ruder, Jim L.	Aug.	Walmsley, Simcoe, Jr.	Feb.
Nichols, Douglas C.	Feb.	Ruska, David W.	June	Walsh, William J.	Aug.
Nicol, Robert	Oct.	Russon, Virgil K.	June	Wang, Scott W.	Oct.
Nigro , Stephen J.	Aug.	Sagun, Wilfredo T.	Apr.	Ward, Jeff	Oct.
O'Day , Vicki	Aug.	Sayed, Mohamed M.	Apr.	Watkins , Marvin L.	Apr.
Oldenburg, Glen	Aug.	Scheffelin, Joseph E.	Aug.	Watson, Paul B.	Apr.
Olsson, Kjell A.	Apr.	Schultz, Philip C.	Aug.	Way, Peter	June
Page, Richard W.	Feh.	Scott, Perry E.	Oct.	Widder, John A.	Oct.
Palmer, Donald J.	Aug.	Selensky, Ronald J.	Aug.	Wield, P. Jeffrey	Aug.
Peetz, Bruce E.	Feb.	Sischka, Franz	Dec.	Wiesmeier, Ed	Aug.
Perlmutter, Paul Q.	Oct.	Skarke, Donald D.	June	Yamada, Ronald T.	Apr.
Pinkernell, David W.	Oct.	Smith, Andrew N.	Apr.	Yano , Bruce	Oct.
Pless, Wilfried	Dec.	Smith, James C.	Aug.	Yee, Grace T.	Apr.
Plouse, Lynn M.	June	Snyder, Wayne L.	Aug.	Young, Ronald W.	Feb.
Pon, Rayman W.	Feb.	Sorden, James L.	Feb.		
Poulton , Ken	June	Sperry , William R.	Aug.		
Pritchard, Thomas B.	Oct.	Splitter, Randolph N.	Aug.		

ming the compliance voltage of the tester's parametric measurement units (PMU). Since R_s and the forced current are known, the actual output level can easily be calculated with sufficient accuracy. It is:

$$V_{out} = V_{measure} - V_{drop} = V_{measure} - R_s I_f \quad (16)$$

For best results, 0.1% resistors are recommended for R_s .

Summary

In the HP 82000 IC Evaluation System, the resistive divider method offers advantages in operating speed and

measurement accuracy. The method has its restrictions and does not ensure testability of every DUT.

References

1. D. Royle, "Rules tell whether interconnections act like transmission lines," EDN, June 23, 1988, pp. 131-136.
2. M.R. Barber, "Timing measurements on CMOS VLSI devices designed to drive TTL loads," International Test Conference 1986, Paper 4.4.
3. High-Speed CMOS, Volume 3, Motorola Semiconductor Corporation, 1984.
4. G.C. Cox, "Transmission line testing of CMOS," International Test Conference 1987, Paper 20.1.

Index

HEWLETT-PACKARD JOURNAL

Volume 40 January 1989 through December 1989

Hewlett-Packard Company, 3200 Hillview Avenue, Palo Alto, California 94304 U S A
 Hewlett-Packard Marcom Operations Europe, P.O. Box 529, 1180 AM Amstelveen, The Netherlands
 Hewlett-Packard (Canada)Ltd., 6877 Goreway Drive, Mississauga, Ontario L4V 1M8 Canada
 Yokogawa-Hewlett-PackardLtd., Sugunami-ku, Tokyo 168 Japan

PART 1: Chronological Index

February 1989

Characterization of Time Varying Frequency Behavior Using Continuous Measurement Technology, Mark Wechsler
 Analyzing Microwave and Millimeter-Wave Signals
 Firmware System Design for a Frequency and Time Interval Analyzer, Terrance K. Nimori and Lisa B. Starnbaugh
 Table-Driven Help Screen Structure Provides On-Line Operating Manual, Lisa B. Starnbaugh
 Input Amplifier and Trigger Circuit for a 500-MHz Frequency and Time Interval Analyzer, Johann J. Heinzl
 Phase Digitizing: A New Method for Capturing and Analyzing Spread-Spectrum Signals, David C. Chu
 Reading a Counter on the Fly
 Frequency and Time Interval Analyzer Measurement Hardware, Paul S. Stephenson
 Multifunction Synthesizer for Building Complex Waveform, Fred H. Ives
 Mechanical Design of the HP 8904A
 Digital Waveform Synthesis IC Architecture, Mark D. Talbot
 Development of a Digital Waveform Synthesis Integrated Circuit
 Craig A. Heikes, James O. Barnes, and Dale R. Beucler
 Analog Output System Design for a Multifunction Synthesizer, Thomas M. Higgins, Jr.
 Generating a Phase-Locked Binary Reference Frequency
 Firmware Design for a Multiple-Mode Instrument, Mark D. Talbot
 Multifunction Synthesizer Applications, Kenneth S. Thompson
 Testing and Process Monitoring for a Multifunction Synthesizer, David J. Schwartz and Alan L. McCormick
 Assuring Reliability
 An Integrated Voice and Data Network Based on Virtual Circuits, Robert Coackley and Howard L. Steadman

April 1989

An 8%-Digit Digital Multimeter Capable of 100,000 Readings per Second and Two-Source Calibration, Scott D. Stever

An 8%-Digit Integrating Analog-to-Digital Converter with 16-Bit, 100,000-Sample-per-Second Performance, Wayne C. Goeke
 Precision AC Voltage Measurements Using Digital Sampling Techniques, Ronald L. Swerlein
 Calibration of an 8%-Digit Multimeter from Only Two External Standards, Wayne C. Goeke, Ronald L. Swerlein, Stephen B. Venzke, and Scott D. Stever
 Josephson Junction Arrays
 A High-Stability Voltage Reference
 Design for High Throughput in a System Digital Multimeter, Gary A. Ceely and David J. Rustici
 Firmware Development System
 Custom UART Design
 High-Resolution Digitizing Techniques with an Integrating Digital Multimeter, David A. Czenkusch
 Time Interpolation
 Measurement of Capacitor Dissipation Factor Using Digitizing
 A Structural Approach to Software Defect Analysis, Takeshi Nakajo, Katsuhiko Sasabuchi, and Tadashi Akiyama
 Dissecting Software Failures, Robert B. Grady
 Defect Origins and Types
 Software Defect Prevention Using McCabe's Complexity Metric, William T. Ward
 The Cyclomatic Complexity Metric
 Object-Oriented Unit Testing, Steven P. Fiedler
 Validation and Further Application of Software Reliability Growth Models, Gregory A. Kruger
 Comparing Structured and Unstructured Methodologies in Firmware Development, William A. Fischer, Jr. and James W. Jost
 An Object-Oriented Methodology for Systems Analysis and Specification, Barry D. Kurtz, Donna Ho, and Teresa A. Wall
 VXIbus: A New Interconnection Standard for Modular Instruments, Kenneth Jessen
 VXIbus Product Development Tools, Kenneth Jessen

June 1989

A Data Base for Real-Time Applications and Environments, Feyzi Fatehi, Cynthia Givens, Le T. Hong, Michael R. Light, Ching-Chao Liu, and Michael J. Wright
New Midrange Members of the Hewlett-Packard Precision Architecture Computer Family, Thomas O. Meyer, Russell C. Brockmann, Jeffrey G. Hargis, John Keller, and Floyd E. Moore
Double-Sided Surface Mount Process
Data Compression in a Half-Inch Reel-to-Reel Tape Drive, Mark J. Bianchi, Jeffery J. Kato, and David J. Van Maren
Maximizing Tape Capacity by Super-Blocking, David J. Van Maren, Mark J. Bianchi, and Jeffery J. Kato
High-Speed Lightwave Component Analysis, Roger W. Wong, Paul Hernday, Michael G. Hart, and Geraldine A. Conrad
OTDR versus OFDR
Design and Operation of High-Frequency Lightwave Sources and Receivers, Robert D. Albin, Kent W. Leyde, Rollin F. Rawson, and Kenneth W. Shaughnessy
High-Speed PIN Infrared Photodetectors for HP Lightwave Receivers
Videoscope: A Nonintrusive Test Tool for Personal Computers, Myron R. Tuttle and Danny Low
Videoscope Signature Analyzer Operation
Neural Data Structures: Programming with Neurons, J. Barry Shackelford
A New 2D Simulation Model of Electromigration, Paul J. Marcoux, Paul P. Merchant, Vladimir Naroditsky, and Wulf D. Rehder

August 1989

An Overview of the HP NewWave Environment, Ian J. Fuller
An Object-Based User Interface for the HP NewWave Environment, Peter S. Showman
The NewWave Object Management Facility, John A. Dysart
The NewWave Office, Beatrice Lam, Scott A. Hanson, and Anthony J. Day
Agents and the HP NewWave Application Program Interface, Glenn R. Stearns
AI Principles in the Design of the NewWave Agent and API
An Extensible Agent Task Language, Barbara B. Packard and Charles H. Whelan
A NewWave Task Language Example
The HP NewWave Environment Help Facility, Vicky Spilman and Eugene J. Wong
NewWave Computer-Based Training Development Facility, Lawrence A. Lynch-Freshner, R. Thomas Watson, Brian B. Egan, and John J. Jencek
Encapsulation of Applications in the NewWave Environment, William M. Crow
Mechanical Design of a New Quarter-Inch Cartridge Tape Drive, Andrew D. Topham
Reliability Assessment of a Quarter-Inch Cartridge Tape Drive, David Gills
Use of Structured Methods for Real-Time Peripheral Firmware, Paul F. Bartlett, Paul F. Robinson, Tracey A. Hains, and Mark J. Simms
Product Development Using Object-Oriented Software Technology, Thomas F. Kmemer
Objective-C Coding Example
Object-Oriented Life Cycles

October 1989

40 Years of Chronicling Technical Achievement, Charles L. Leath
A Modular Family of High-Performance Signal Generators, Michael D. McNamee and David L. Platt
Firmware Development for Modular Instrumentation, Kerwin D. Kanago, Mark A. Stambaugh, and Brian D. Watkins

RF Signal Generator Single-Loop Frequency Synthesis, Phase Noise Reduction, and Frequency Modulation, Brad E. Andersen and Earl C. Herleikson
Fractional-N Synthesis Module
Delay Line Discriminators and Frequency-Locked Loops
Design Considerations in a Fast Hopping Voltage-Controlled Oscillator, Barton L. McJunkin and David M. Hoover
High-Spectral-Purity Frequency Synthesis in a Microwave Signal Generator, James B. Summers and Douglas R. Snook
Microwave Signal Generator Output System Design, Steve R. Fried, Keith L. Fries, and John M. Sims
"Packageless" Microcircuits
Design of a High-Performance Pulse Modulation System, Douglas R. Snook and G. Stephen Curtis
Reducing Radiated Emissions in the Performance Signal Generator Family, Larry R. Wright and Donald T. Borowski
Processing and Passivation Techniques for Fabrication of High-Speed InP/InGaAs/InP Mesa Photodetectors, Susan R. Sloan
Providing Programmers with a Driver Debug Technique, Eve M. Tanner
HP-UX Object Module Structure
Identifying Useful HP-UX Debug Records
Solder Joint Inspection Using Laser Doppler Vibrometry, Catherine A. Keely
Laser Doppler Vibrometry
A Model for HP-UX Shared Libraries Using Shared Memory on HP Precision Architecture Computers, Anastasia M. Martelli
User-Centered Application Definition: A Methodology and Case Study, Lucy M. Berlin
Interviewing Techniques
Storyboarding Techniques
Partially Reflective Light Guides for Optoelectronics Applications, Carolyn F. Jones

December 1989

System Design for Compatibility of a High-Performance Graphics Library and the X Window System, Kenneth H. Bronstein, David J. Sweetser, and William R. Yoder
The Starbase Graphics Package
The X Window System
Managing and Sharing Display Objects in the Starbase/X11 Merge System, James R. Andreas, Robert C. Cline, and Courtney Loomis
Sharing Access to Display Resources in the Starbase/X11 Merge System, Jeff R. Boyton, Sankar L. Chakrabarti, Steven P. Hiebart, John J. Lang, Jens R. Owen, Keith A. Marchington, Peter R. Robinson, Michael H. Stroyan, and John A. Waitz
Sharing Overlay and Image Planes in the Starbase/X11 Merge System, Steven P. Hiebart, John J. Lang, and Keith A. Marchington
Sharing Input Devices in the Starbase/X11 Merge System, Ian A. Elliot and George M. Sachs
X Input Protocol and X Input Extensions
Sharing Testing Responsibilities in the Starbase/X11 Merge System, John M. Brown and Thomas J. Gilg
A Compiled Source Access System Using CD-ROM and Personal Computers, B. David Cathell, Michael B. Kalstein, and Stephen J. Pearce
Transmission Line Effects in Testing High-Speed Devices with a High-Performance Test System, Rainer Plitschka
CMOS Device Measurement Results
Custom VLSI in the 3D Graphics Pipeline, Larry J. Thayer
Global Illumination Modeling Using Radiosity, David A. Burgoon

PART 2: Subject Index

Subject Page/Month

A

Ac voltage measurements.
 digital 15/Apr.
 Adaptive subdivision 86/Dec.
 ADC. 16-to-28-bit 8/Apr.
 Agent 32/Aug.
 Agile signal generator 14/Oct.
 Air jet. lead inspection 81/Oct.
 ALC loop 34,48,49/Oct.
 Algorithm. data compression 26/June
 Algorithm. electromigration
 simulation 80/June
 Algorithm. hemicube 81/Dec.
 Algorithm. multislope runup 10/Apr.
 Algorithm. routing 48/Feb.
 Algorithm. subsampled ac 17/Apr.
 Algorithm. substructuring 86/Dec.
 Amplifier. GaAs 41/Oct.
 Amplifier. power 34,48/Oct.
 Amplitude modulation 59/Feb.
 Analyzer. frequency and time
 interval 6/Feb.
 Analyzer. lightwave component . 35/June
 Animation object 54/Aug.
 Anniversary. 40 years 6/Oct.
 Antenna. tuned dipole 62/Oct.
 Anti-aliasing filters 67/Feb.
 Aperture. ADC 14,41/Apr.
 Application definition 90/Oct.
 Application program interface
 (API) 34/Aug.
 Application-specific encapsula-
 tion 63/Aug.
 Architecture. voice and data
 network 43/Feb.
 Arming 9/Feb.
 Audit testing. tape drive 77/Aug.

B

Backing store 30/Dec.
 Bandwidth measurements. laser . 41/June
 Behavior specifications 88/Apr.
 Blocking. tape drive 32/June

C

Cabinet RFI design 60/Oct.
 Calibration. electrooptical 40,45/June
 Calibration firmware 24/Oct.
 Calibration. two-source 22/Apr.
 Capacitor dissipation factor 46/Apr.
 Capstan motor 75/Aug.
 CBT display object 52/Aug.
 CBT sample lesson 49/Aug.
 CD-ROM. source code 50/Dec.
 Class 70/Apr.,91/Aug.
 Clip list 11,23/Dec.
 CMOS IC testing 61/Dec.
 Codewords. data compression 26/June
 Color map 11/Dec.
 Color map type 35/Dec.

Combined mode 11,34/Dec.
 Combined mode clipping 37/Dec.
 Compaction. tape 26,33/June
 Comparator hybrid 26/Feb.
 Complexity metric 64,66,85/Apr.
 Compound data objects 13/Aug.
 Computer. midrange HP Precision
 Architecture 18/June
 Computer-based training 48/Aug.
 Concept diagram 88/Apr.
 Container objects 13,24/Aug.
 Context diagrams 80/Aug.
 Context switching 57/Aug.
 Continuous measurement
 technique 7/Feb.
 Controller. floating-point 21/June
 Concurrency. 16/June, 96/Aug.
 Converter. A-to-D, 16-to-28-bit 8/Apr.
 Coprocessor. floating-point 21/June
 Core alignment 72/Aug.
 Core input devices 39/Dec.
 Crack growth. thin-film 82/June
 Create process 26/Aug.
 Current flow simulation 81/June
 Cyclomatic complexity
 metric 64,66,85/Apr.

D

Dark current 69/Oct.
 Data base backup 16/June
 Data base data structures 9/June
 Data base performance 15/June
 Data base schema 15/June
 Data base tables 9/June
 Data compression, tape drive 26/June
 Data flow diagrams 80/Aug.
 Data link layer 45/Feb.
 Data pointer 87/Oct.
 Data structures, neural 69/June
 Dc measurements, calibration 24/Apr.
 Dc offset hybrid 25/Feb.
 Debug technique, driver 76/Oct.
 Decompression, data 28/June
 Definition, application 90/Oct.
 Delay line 30,35/Oct.
 Deviations (frequency. time.
 phase) 30/Feb.
 DFT test, ADC 40/Apr.
 Diagnostic firmware 25/Oct.
 Dictionary, data compression 26/June
 Dielectric passivation 72/Oct.
 Dielectrics, reflectivity 99/Oct.
 Differential linearity, ADC 22/Apr.
 Digital signature analysis 62/June
 Digital synthesis 53/Feb.
 Digital waveform synthesizer
 IC 53,57/Feb.
 Digitized FM 32/Oct.
 Digitizing, multimeter 39/Apr.

Direct hardware access (DHA). 11,22/Dec.
 Discriminator. delay line 30,32/Oct.
 Dissipation factor measure-
 ments 46/Apr.
 Dithering 77/Dec.
 Divided output section 42/Oct.
 Divider. GaAs 40/Oct.
 Doppler vibrometry. laser 82/Oct.
 DOS programs service 58/Aug.
 Double-sided surface mount
 process 23/June
 Drawable 11/Dec.
 Driver debugging 76/Oct.
 Dual-slope ADC 8/Apr.
 DWSIC 53,57/Feb.
 Dynamic range. lightwave
 measurements 50/June

E

Effective bits 39/Apr.
 Eight queens problem 73/June
 Electrical-to-optical device
 measurements 36/June
 Electromigration simulation
 model 79/June
 Electrophotography. erase bar 98/Oct.
 EMI. signal generator 59/Oct.
 Encapsulation 57,89/Aug.
 Equilibrium. neural network 71/June
 Erase bar. LED 98/Oct.
 Errors. digital ac 18/Apr.
 Errors. ratio measurements 22/Apr.
 Extensible task language 35,38/Aug.

F

Faceless instruments 94/Aug.
 Factor. super-blocking
 advantage 34/June
 Failure. thin metal lines 82/June
 FET models 56/Oct.
 Fiber optic component analysis .. 35/June
 File locking and concurrency 16/June
 Filler. dielectric 99/Oct.
 Filters. CD-ROM 53/Dec.
 Firmware design 13/Feb.
 Firmware design. multimeter 31/Apr.
 Firmware design. synthesizer 70/Feb.
 Firmware. signal generator 20/Oct.
 Floating output amplifier 69/Feb.
 Floating-point coprocessor 21/June
 Flow control 46/Feb.
 FOCUS command 41/Aug.
 Form factor. illumination 80/Dec.
 Forty years of HP Journal 6/Oct.
 Four-color map problem 74/June
 Fractional-N frequency
 synthesis 18,28/Oct.
 Frame buffer 11,21/Dec.
 Frame engine 44/Feb.

Frequency agile signals 31,35/Feb.
 Frequency agile signal generator . 14/Oct.
 Frequency analyzer 6/Feb.
 Frequency estimation 17,30/Feb.
 Frequency-locked loop 27,30/Oct.
 Frequency modulation 29,32,38/Oct.
 Frequency reference 68/Feb.
 Frequency response calibration .. 27/Apr.
 Frequency synthesis 27,37/Oct.
 Fresnel reflection 98/Oct.
 FURPS 83/Apr.

G

GaAs ICs 41/Oct.
 Gain calibration. ac 28/Apr.
 Gain errors 24/Apr.
 Gate arrays 32/Apr.
 Gating 9/Feb.
 Generic encapsulation 58/Aug.
 Global illumination modeling 78/Dec.
 Global inhibition 71/June
 Graded-index lens 54/June
 Grain structure 80/June
 Graph sectioning problem 77/June
 Graphics accelerator 20,74,87/Dec.
 Graphics context 11,24/Dec.
 Graphics. illumination modeling . 78/Dec.
 Graphics resource manager
 (GRM) 11,12/Dec.
 Graphics subsystem. VLSI 74/Dec.
 GRM daemon 16/Dec.
 Group-V passivation 71/Oct.

H

Hash indexes 12/June
 H-bridge 53/June
 Help facility 43/Aug.
 Help screen structure 21/Feb.
 Hemicube algorithm 81/Dec.
 Heterodyne output section 44/Oct.
 Hierarchical block design. HBD ... 63/Feb.
 High-resolution digitizing 39/Apr.
 High Sierra standard 52/Dec.
 High-speed IC testing 58/Dec.
 History. HP Journal 6/Oct.
 Holdoff 10/Feb.
 Hopfield neuron 69/June
 Hopping signal generator 14/Oct.
 Hop RAM 59/Feb.
 HP-HIL and testing 44/Dec.
 HP-HIL input devices 39/Dec.
 HP Journal. 40 years 6/Oct.
 HP-UX driver debugging 76/Oct.
 HP-UX semaphores 16/June,26/Dec.
 HP-UX shared libraries 86/Oct.
 Hysteresis 26/Feb.

I

IC testing. transmission
 line effects 58/Dec.
 Illumination modeling 78/Dec.
 Image planes 11,33/Dec.
 Inguard section 31/Apr.

Inhibition 71/June
 InP/InGaAs/InP diodes 69/Oct.
 Input amplifier 24/Feb.
 Input areas 13/June
 Instantaneous frequency 9/Feb.
 Integral linearity. ADC 14,22/Apr.
 Interpolation. time 40/Feb.,42/Apr.
 Interview techniques 92/Oct.

J

Joints. solder. surface mount 81/Oct.
 Josephson junction arrays 24/Apr.
 Journal. HP 6/Oct.

K

Keyboard/HP-HIL
 emulator 64/June,44/Dec.
 Keyword scanner 21/Oct.
 Kink. laser output 53/June

L

Laser Doppler vibrometry 82/Oct.
 Laser measurements 41/June
 Lateral inhibition 71/June
 Launch. optical 53/June
 Leads. surface mount. unsoldered . 81/Oct.
 LED erase bar 98/Oct.
 Level accuracy 50/Oct.
 Light guides 98/Oct.
 Light pipes 100/Oct.
 Lightwave component analysis ... 35/June
 Lightwave sources and receivers . 52/June
 Linear FM 32/Oct.
 Linearity. ADC 14,22/Apr.
 Links. trunk and access 44/Feb.
 Localizability 47/Aug.
 Locking strategy 25/Dec.

M

Mastering 54/Dec.
 Masters 28/Aug.
 McCabe's complexity metric
 64,66,85/Apr.
 Measurement objects 97/Aug.
 Memory board. 16M-byte 25/June
 Merge program 77/Oct.
 Merge system. Starbase/X11 6/Dec.
 Messages and methods 19,89/Aug.
 Microwave extender output section
 49/Oct.
 Microwave signal generators 14/Oct.
 Millimeter-wave analysis 8/Feb.
 Mixer/detector 8/Feb.
 Model. electromigration 79/June
 Models. PET 56/Oct.
 Models. termination 59/Dec.
 Modular instrument systems 91/Apr.
 Modular signal generators 14/Oct.
 Modulation transfer function.
 lightwave 36,41/June
 Modulator. pulse 54/Oct.

MOMA (multiple. observable.
 movable. and accelerated
 windows 11,25/Dec.
 MPE source access system 50/Dec.
 MS-DOS objects 28/Aug.
 Multifunction synthesizer 52/Feb.
 Multimeter. 8%-digit 6/Apr.
 Multislope rundown 9/Apr.
 Multislope runup 10/Apr.

N

Network. voice and data 42/Feb.
 Neural data structures 69/June
 Neuron programming 69/June
 NewWave agent 32/Aug.
 NewWave application program
 interface (API) 32/Aug.
 NewWave computer-based training
 (CBT) 48/Aug.
 NewWave encapsulation 57/Aug.
 NewWave environment.
 overview 6/Aug.
 NewWave help facility 43/Aug.
 NewWave object management
 facility (OMF) 17/Aug.
 NewWave Office 23/Aug.
 NewWave windows 23/Aug.
 N-flops 70/June
 NMOS-III chip 62/Feb.
 Noise. ADC 13/Apr.
 Noise floor. optical measure-
 ments 49/June
 Noise. signal generator 27/Oct.
 Numeric data parser 70/Feb.
 Nusselt analog 82/Dec.

O

Object-based user interface 9/Aug.
 Object class 18,91/Aug.
 Object encapsulation 89/Aug.
 Object life cycle 19/Aug.
 Object links 10,18/Aug.
 Object management facility 17/Aug.
 Object model 11/Aug.
 Object models and views 94/Aug.
 Object module. HP-UX 78/Oct.
 Object-oriented 69,86/Apr.
 Object-oriented language 93/Aug.
 Object-oriented life cycle 98/Aug.
 Object-oriented technology 87/Aug.
 Object properties 18/Aug.
 Object-relationship diagrams 87/Apr.
 Objective-C 95/Aug.
 Objects 70,86/Apr.
 Objects. graphic 13/Dec.
 Objects. NewWave 9,17/Aug.
 Office metaphor 12/Aug.
 Office. NewWave 23/Aug.
 Offscreen memory 11,15/Dec.
 Offset errors 23/Apr.
 Ohms calibration 25/Apr.
 On-the-fly counter readings 33/Feb.
 Optical device measurements 42/June
 Optical frequency-domain
 reflectometry 43/June

Optical reflection measurements	42/June
Optical time-domain reflectometry	43/June
Optical-to-electrical device measurements	36/June
Optoelectronic erase bar	98/Oct.
Oscillator, fast hopping	34/Oct.
Oscillator, YIG-tuned	39/Oct.
Outguard section	31/Apr.
Output system, signal generator ..	42/Oct.
Overlay planes	11,33/Dec.
Oxide passivation	70/Oct.

P

"Packageless" microcircuits	44/Oct.
Packets	43/Feb.
Parser, command	22/Oct.
Partially reflective light guides ...	98/Oct.
Passivation, photodetectors	69/Oct.
PC/CD-ROM source access system ...	50/Dec.
P-code	39/Aug.
Peak detector	48/Oct.
Performance signal generators	14/Oct.
Phase digitizing	28/Feb.
Phase-locked binary reference frequency	68/Feb.
Phase-locked loop	27,45/Oct.
Phase noise	27,39/Oct.
Phase progression plot	30/Feb.
Phase modulation	59/Feb.
Photodetectors, pin, high-speed ..	56/June
Photodetector processing	69/Oct.
Photodiode measurements	42/June
Pin photodetectors	56/June
Pipeline, graphics	74/Dec.
Pixel cache	76/Dec.
Pixel processor	77/Dec.
Pixel value	11/Dec.
Pixmap	11/Dec.
Platform definition	90/Oct.
Pointers, updating	79/Oct.
Polymorphism	90/Aug.
Port/HP-UX (PORT/RX)	86/Oct.
Power compression measurements, laser	41/June
Precision Architecture computer, midrange	18/June
Precision Architecture, HP-UX shared libraries	86/Oct.
Premastering	54/Dec.
Processor board, midrange computer	19/June
Program faults	51/Apr.
Programming with neurons ...	69,72/June
Progressive refinement	86/Dec.
Pulse modulation system	51/Oct.
Pulse modulator IC	56/Oct.

Q

Quarter-inch cartridge tape drive ...	67/Aug.
Query/debug	17/June

R

Radiosity	79/Dec.
Ray tracing	78/Dec.

Reading storage, multimeter	37/Apr.
Receivers, lightwave	52/June
Real-time data base	6/June
Real-time firmware	79/Aug.
Recognizing code quality	65/Apr.
Reference frequency	68/Feb.
Reference voltage	28/Apr.
Reflection in light guides	98/Oct.
Reflection measurements, optical	42/June
Reflection sensitivity measurements, laser	41/June
Reflectivity, dielectric	98/Oct.
Refractive index	98/Oct.
Reliability, tape drive	74/Aug.
Reliability, IC	79/June
Reliability, software	75/Apr.
Rendering	11/Dec.
Resistive divider, IC testing	62/Dec.
Resolution, ADC	13,39/Apr.
Responsivity, electrooptical device	40/June
Result objects	99/Aug.
Return loss measurements, optical	44/June
Reusability	83/Apr.
Reverse power protection	50/Oct.
RF signal generator	14/Oct.
RFI, signal generator	59/Oct.
Routing, network	47/Feb.

S

Sampling	9/Feb.
Sampling, equivalent time	16/Apr.
SA/SD and design process	54/Apr.
Scan conversion	75/Dec.
Scan paths	64/Feb.
Semaphores	16/June,17/Dec.
Sequencer IC	38/Feb.
Shared libraries, HP-UX	86/Oct.
Shared memory	86/Oct.,11,12/Dec.
Sharing cursors	27/Dec.
Sharing fonts	27/Dec.
Sharing objects	16/Aug.,14/Dec.
Sharing the color map	28/Dec.
Signal generators	14/Oct.
Signal handling, shared libraries ...	88/Oct.
Signature analysis	62/June
Simulation, electromigration,	79/June
Single-loop frequency synthesis	16,39/Oct.
Slope responsivity	40/June
Slot 0 Module	93,96/Apr.
Snapshots	21/Aug.
Software defect analysis	50/Apr.
Software defect causes	59/Apr.
Software defect data collection ...	57/Apr.
Software defect perspectives	57/Apr.
Software defect prevention	64/Apr.
Software defect data validation ..	58/Apr.
Software defect types	62/Apr.
Software failure rate	75/Apr.
Software process improvement ...	65/Apr.
Software productivity	81/Apr.
Software release goals	77/Apr.
Software reliability	75/Apr.
Software test tool	58/June

Solder joint inspection	81/Oct.
Source code access system	50/Dec.
Source code, lack of	76/Oct.
Sources, lightwave	52/June
Spectra, lead vibration	83/Oct.
SPUs, HP Precision Architecture ...	18/June
SRX graphics subsystem	74/Dec.
Stacked screens mode	34/Dec.
Starbase	7,87/Dec.
State net	89/Apr.
State transition diagram	80/Aug.
Storyboard techniques	95/Oct.
Strip file	77/Oct.
Strip program	77/Oct.
Structured testing	83/Aug.
Structured analysis and structured design	54,80/Apr.
Structured methods	79/Aug.
Subsampling, synchronous	16/Apr.
Substructuring	84/Dec.
Super-blocking	32/June
Surface mount leads, unsoldered ...	81/Oct.
Surface mount process, double-sided	23/June
Switching engine	44/Feb.
Symbolic debug, driver	76/Oct.
Synthesized signal generators	14/Oct.
System analysis	86/Apr.

T

Tape cartridge mechanics	69/Aug.
Tape drive, ¼-inch	67/Aug.
Tape drive, data compression ...	26/June
Tape head wear	74/Aug.
Task automation	34/Aug.
Task language, agent	35,38/Aug.
Task language parser	40/Aug.
Tear/build engine	44/Feb.
Temperature distribution, thin-film	81/June
Termination models, IC test	59/Dec.
Test plan	72/Apr.
Test process	71/Apr.
Test script	58/June
Testing, Starbase/X11 Merge	42/Dec.
Thermal control, laser	52/June
Throughput, multimeter	31/Apr.
Time interval analyzer	6/Feb.
Time to failure, thin metal lines	82/June
Time variation display	11/Feb.
Tokens	21/Oct.
Track density	70/Aug.
Track-and-hold circuit	19/Apr.
Track seeking	72/Aug.
Transform engine	75/Dec.
Transform, time-domain	38/June
Transmission line effects, IC testing	58/Dec.
Transparency	75,77/Dec.
Traveling salesman problem	75/June
Trigger circuit	24/Feb.
Transparent color	37/Dec.
Troubleshooting, HP 3000	50/Dec.
Tuned dipole antenna	62/Oct.
Tuples	7/June

Turbo SRX graphics subsystem 12,74/Dec.

U

UART, custom 36/Apr.
 Unit testing 69/Apr.
 Unsoldered leads, surface mount. 81/Oct.
 User-centered application definition 90/Oct.

V

Vectored interrupts 73/Feb.
 VCO, fast hopping 34/Oct.
 VCO, YIG-tuned 39/Oct.
 Vibration spectrum, SMT leads ... 83/Oct.
 Vibrometry, laser 82/Oct.
 Video feedthrough 58/Oct.
 Videoscope 58/June
 Video signature analyzer 62/June

Views 20/Aug.
 Virtual circuits 43/Feb.
 Virtual instruments 96/Aug.
 VISTA 93/Aug.
 Visual type 12,35/Dec.
 VLSI, graphics 74/Dec.
 Voice and data network 42/Feb.
 Void formation, electro-migration 81/June
 Voltage reference, high-stability. 28/Apr.
 VMEbus 91/Apr.
 Vscope 59/June
 VXIbus 91/Apr.
 VXIbus development tools 96/Apr.

W

Waveform analysis library 47/Apr.
 Wave impedance 64/Oct.

Windows, NewWave 23/Aug.
 WYSIWYG 10/Aug.

X

X driver interface (XDI) 9,12/Dec.
 X11 8/Dec.
 X server 6,12/Dec.
 X Window System 8/Dec.

Y

YIG-tuned oscillator 39/Oct.

Z

Z-buffer 75,76/Dec.
 Z-cache 76/Dec.
 Zero-dead-time counters 16,33/Feb.

PART 3: Product Index

HP E1400A VXIbus Mainframe Apr.	HP 11889A RF Interface Kit June
HP E1404A VXIbus Slot 0 Module Apr.	HP 11890A Lightwave Coupler June
HP E1490A VXIbus Breadboard Module Apr.	HP 11891A Lightwave Coupler June
HP E1495A VXIbus Development Software Apr.	HP 82000 IC Evaluation System Dec.
HP 3000 Series 935 Computer June	HP 83400A Lightwave Source June
HP 3458A Multimeter Apr.	HP 83401A Lightwave Source June
HP 5364A Microwave Mixer/Detector Feb.	HP 83402A Lightwave Source June
HP 5371A Frequency and Time Interval Analyzer Feb.	HP 83403A Lightwave Source June
HP 7980XC Tape Drive June	HP 83410B Lightwave Receiver June
HP 8644A Synthesized Signal Generator Oct.	HP 83411A Lightwave Receiver June
HP 8645A Agile Signal Generator Oct.	HP 98646A VMEbus Interface Apr.
HP 8665A Synthesized Signal Generator Oct.	HP NewWave Environment Aug.
HP 8702A Lightwave Component Analyzer June	HP Real-Time Data Base June
HP 8904A Multifunction Synthesizer Feb.	HP Starbase Graphics Library Dec.
HP 9000 Model 835 Computer June	HP VISTA Aug.
HP 9000 Series 3001800 Turbo SRX 3D Graphics Subsystem . Dec.	X Window System Version 11 Dec.
HP 9145A %-Inch Cartridge Tape Drive Aug.	

PART 4: Author Index

Akiyama, Tadashi Apr.	Borowski, Donald T. Feb., Oct.	Chakrabarti, Sankar L. Dec.
Albin, Robert D. June	Boyton, Jeff R. Dec.	Chu, David C. Feb.
Andersen, Brad E. Oct.	Brockmann, Russell C. June	Cline, Robert C. Dec.
Andreas, James R. Dec.	Bronstein, Kenneth H. Dec.	Coackley, Robert Feb.
Barnes, James O. Feb.	Brown, John M. Dec.	Conrad, Geraldine A. June
Bartlett, Paul F. Aug.	Burgoon, David A. Dec.	Crow, William M. Aug.
Berlin, Lucy M. Oct.		Curtis, G. Stephen Oct.
Beucler, Dale R. Feb.	Cathell, B. David Dec.	Czenkusch, David A. Apr.
Bianchi, Mark J. June	Ceely, Gary A. Apr.	

Day, Anthony J.	Aug.	Keller, John	June	Schwartz, David J.	Feb.
Dysart, John A.	Aug.	Kraemer, Thomas F.	Aug.	Shackleford, J. Barry	June
Egan, Brian B.	Aug.	Kruger, Gregory A.	Apr.	Shaughnessy, Kenneth W.	June
Elliot, Ian A.	Dec.	Kurtz, Barry D.	Apr.	Showman, Peter S.	Aug.
Fatehi, Feyzi	June	Lam, Beafrice	Aug.	Simms, Mark J.	Aug.
Fiedler, Steven P.	Apr.	Lang, John J.	Dec.	Sims, John M.	Oct.
Fischer, William A., Jr.	Apr.	Leath, Charles L.	Oct.	Sloan, Susan	June, Od.
Fletcher, Cathy	Oct.	Leyde, Kent W.	June	Smith, David E.	Apr.
Fried, Steve R.	Oct.	Light, Michael R.	June	Snook, Douglas R.	Oct.
Fried, Keith L.	Oct.	Liu, Ching-Chao	June	Spilman, Vicky	Aug.
Fuller, Ian J.	Aug.	Loomis, Courtney	Dec.	Stambaugh, Lisa B.	Feb.
Giem, John	Apr.	Low, Danny	June	Stambaugh, Mark A.	Od.
Gilg, Thomas J.	Dec.	Lynch-Freshner, Lawrence A.	Aug.	Steadman, Howard L.	Feb.
Gills, David	Aug.	Marchington, Keith A.	Dec.	Stearns, Glenn R.	Aug.
Givens, Cynthia	June	Marcoux, Paul J.	June	Stephenson, Paul S.	Feb.
Goeke, Wayne C.	Apr.	Martelli, Anastasia M.	Oct.	Stever, Scott D.	Apr.
Grady, Robert B.	Apr.	McCabe, Thomas J.	Apr.	Stroyan, Michael H.	Dec.
Hains, Tracey A.	Aug.	McCormick, Alan L.	Feb.	Summers, James B.	Oct.
Hanson, Scott A.	Aug.	McJunkin, Barton L.	Oct.	Sweetser, David J.	Dec.
Hargis, Jeffrey G.	June	McNamee, Michael D.	Oct.	Sweetser, Victoria K.	Apr.
Hart, Michael G.	June	Merchant, Paul P.	June	Swerlein, Ronald L.	Apr.
Heikes, Craig A.	Feb.	Meyer, Thomas O.	June	Talbot, Mark D.	Feb.
Heinzl, Johann J.	Feb.	Moore, Floyd E.	June	Tanner, Eve M.	Oct.
Helms, Bernie E.	Oct.	Nakajo, Takeshi	Apr.	Thayer, Larry J.	Dec.
Herleikson, Ead C.	Oct.	Naroditsky, Vladimir	June	Thompson, Kenneth S.	Feb.
Hernday, Paul	June	Nimori, Terraace K.	Feb.	Topham, Andrew D.	Aug.
Hiebert, Steven P.	Dec.	Owen, Jens R.	Dec.	Tuttle, Myron R.	June
Higgins, Thomas M., Jr.	Feb.	Packard, Barbara B.	Aug.	Van Maren, David J.	June
Ho, Donna	Apr.	Pearce, Stephen J.	Dec.	Venzke, Stephen B.	Apr.
Hong, Le T.	June	Platt, David L.	Oct.	Vogen, Andy	June
Hoover, David M.	Oct.	Plitschka, Rainar	Dec.	Waitz, John A.	Dec.
Ives, Fred H.	Feb.	Rawson, Rollin F.	June	Wall, Teresa A.	Apr.
Jencak, John J.	Aug.	Rehder, Wulf D.	June	Ward, William T.	Apr.
Jessen, Kenneth	Apr.	Robinson, Paul F.	Aug.	Watkins, Brian D.	Qot.
Jones, Carolyn F.	Oct.	Robinson, Peter R.	Rec.	Watson, R. Thomas	Aug.
Jost, James W.	Apr.	Rustici, David J.	Apr.	Wechsler, Mark	Feb.
Kalstein, Michael B.	Dec.	Sachs, George M.	Dec.	Whelan, Charles H.	Aug.
Kanago, Kerwin D.	Oct.	Sasabuchi, Katsuhiko	Apr.	Wong, Eugene J.	Aug.
Kato, Jeffery J.	June	Schneider, Richard	Feb.	Wong, Roger W.	June
Keely, Catherine A.	Oct.			Wright, Larry R.	Feb., Oct.
				Wright, Michael J.	June
				Yoder, William R.	Dec.

PART 1: Chronological Index

February 1990

An Overview of the HP OSI Express Card, William R. Johnson
 The HP OSI Express Card Backplane Handler, Glenn F. Talbott
 Custom VLSI Chips for DMA
 CONE: A Software Environment for Network Protocols, Steven M. Dean, David A. Kumpf, and H. Michael Wenzel
 The Upper Layers of the HP OSI Express Card Stack, Kimball K. Banker and Michael A. Ellis
 Implementation of the OSI Class 4 Transport Protocol in the HP OSI Express Card, Rex A. Pugh
 Data Link Layer Design and Testing for the HP OSI Express Card, Judith A. Smith and Bill Thomas
 The OSI Connectionless Network Protocol
 HP OSI Express Design for Performance, Elizabeth P. Bortolotto
 The HP OSI Express Card Software Diagnostic Program, Joseph R. Longo, Jr.
 Support Features of the HP OSI Express Card, Jayesh K. Shah and Charles L. Hamer
 Integration and Test for the HP OSI Express Card's Protocol Stack, Neil M. Alexander and Randy J. Westra
 High-Speed Lightwave Signal Analysis, Christopher M. Miller
 A Broadband Instrumentation Photoreceiver
 Linewidth and Power Spectral Measurements of Single-Frequency Lasers, Douglas M. Baney and Wayne V. Sorin

April 1990

A New Modular High-Performance Liquid Chromatograph, Herbert Wiederoder
 An Introduction to Liquid Chromatography
 Industrial Design and Ergonomics
 Quality Engineering for a Liquid Chromatography System, Helge Schrenker and Wolfgang Wilde
 Design for Manufacturing
 A Compact, Programmable Sample Injector and Autosampler for Liquid Chromatography, Wolfgang Kretz and Gerhard Ple
 Flexible, Precise Solvent Delivery for Liquid Chromatography, Fred Strohmeier and Klaus Witt
 Pump Control Chip
 A New Generation of LC Absorbance Detectors, Axel Wiese, Konrad Teitz, Volker Brombacher, Günter Hoschele, and Hubert Kuderer
 Firmware Development for a Modular Liquid Chromatography System, Christian Büttner, Fromut Fritze, and Gerhard Ple
 HP OpenView Network Management Overview, Anthony S. Ridolfo
 HP OpenView Network Management Architecture, Keith S. Klemba, Mark L. Hoerth, Hui-Lin Lim, and Maureen C. Mellon
 HP OpenView Windows: A User Interface for Network Management Solutions, Catherine J. Smith, Arthur J. Kulakow, and Kathleen L. Gannon
 HP OpenView BridgeManager: Network Management for HP LAN Bridges, Andrew S. Fraley and Tamra I. Perez
 HP OpenView Data Line Monitor, Michael S. Hurst
 Network Management for the HP 3000 Datacom and Terminal

Controller, Serge Y. Amar and Michele A. Prieur
 Developing a Distributed Network Management Application Using HP OpenView Windows, Atul R. Garg and Lisa M. Cole

June 1990

Making Computer Behavior Consistent: The HP OSF/Motif Graphical User Interface, Axel O. Deininger and Charles V. Fernandez
 OSF/Motif
 The HP OSF/Motif Window Manager, Brock C. Krizan and Keith M. Taylor
 Interclient Communication Conventions
 Programming with HP OSF/Motif Widgets, Donald L. McMinds and Benjamin J. Ellsworth
 The Evolution of Widgets
 The HP SoftBench Environment: An Architecture for a New Generation of Software Tools, Martin R. Cagan
 Architectural Support for Automated Testing
 Broadcast Message Server Message Structure
 Distributed Execution, Data, and Display
 Schemes: Interface Consistency
 Pervasive Editing in the HP SoftBench Environment
 Native Language Support
 Mechanisms for Efficient Delivery
 Application of a Reliability Model to the HP SoftBench Environment
 A New Generation of Software Development Tools, Colin Gerety
 Development Manager
 Program Editor
 Program Builder
 Static Analyzer
 Program Debugger
 Integrated Help
 HP Encapsulator: Bridging the Generation Gap, Brian D. Fromme
 HP Encapsulator CASE Case Study
 Introduction to Particle Beam LC/MS, James A. Apffel, Jr. and Robert G. Nordman
 Advances in ICTesting: The Membrane Probe Card, Farid Matta

August 1990

HP Manufacturing Automation Protocol 3.0, Collin Y. W. Park and Bruce J. Talley
 Overview of the OSI Reference Model
 Upper Layer Architecture for HP MAP 3.0 OSI Services, Sanjay B. Chikarmane
 Directory Services in the HP MAP 3.0 Environment, Beth E. Cooke, Colleen S. Fettig, Paul B. Koski, Darrell O. Swope, and Roy M. Vandoorn
 HP MAP 3.0 File Transfer, Access, and Management/800, Steven W. Manweiler
 HP MAP 3.0 Manufacturing Message Specification/800, Peter A. Lagoni, Christopher Crall, and Thomas G. Bartz
 HP MMS/800 Services
 HP-UX Kernel Communications Modules for a Card-Based OSI

Protocol Stack, Eric C. Scoredos, Kimberly K. Scott, and Richard H. Van Gaasbeck
Interoperability Testing for HP MAP 3.0, Jeffrey D. Meyer
The HP MAP 3.0 Software Integration **Lifecycle**, Douglas R. Gregory
The Integrated Personal Development Environment
500-MHz and 300-MHz Programmable Pulse Generators, Werner Berkel, Gerd Koffmane, Frederick L. Eatock, Patrick Schmid, Heino Hopke and Hans-Jurgen Snackers
Hybrid Assembly
A 500-MHz Pulse Generator Output Section, Stefan G. **Klein** and **Hans-Jürgen** Wagner
A 300-MHz, Variable-Transition-Time Pulse Generator Output Section, Peter Schinzel, Volker Eberle, and Gunter Steinbach

October 1990

An Overview of the HP Interactive Visual Interface, Roger K. Lau and Mark E. Thompson
HP IVI Project Management
Quality Function Deployment and HP M
The HP IVI Object-Oriented Toolkit, **Mydung** Thi Tran and David G. Wathen
HP IVI Application Program Interface Design, Pamela W. Munsch, Warren I. Otsuka, and Gary D. Thomsen
Object-Oriented Design in HP IVI
HP IVI Build: Interactive User Interface Builder for HP IVI, Steven P. **Witten** and Hai-Wen L. Bienz
Creating an Effective User Interface for HP IVI Build, Steven R. Anderson and Jennifer Chaffee
26.5-to-75-GHz Preselected Mixers Based on Magnetically Tunable Barium Ferrite Filters, Dean B. Nicholson, Robert J. Matreci, and Michael J. **Levernier**
Hexagonal **Ferrites** for Millimeter-Wave Applications, Dean B. Nicholson
HP DIS: A Development Tool for Factory-Floor Device Interfaces, Kent L. Garliepp, Irene Skupniewicz, John U. **Frolich**, and Kathleen A. Fulton
Finite State Machine
Matching Messages
Action Routines

Measurement of R, L, and C Parameters in VLSI Packages, David W. Quint, **Asad** Aziz, Ravi **Kaw**, and Frank J. Perezalonso
Statistical Circuit Simulation of a **Wideband** Amplifier: A Case Study in Design for Manufacturability, Chee K. Chow
System Level Air Flow Analysis for a Computer System Processing Unit, Vivek Mansingh and Kent P. Misegades

December 1990

A Rewritable Optical Disk Library System for Direct Access Secondary Storage, Donald J. Stavely, Mark E. Wanger, and **Kraig** A. Proehl
Magneto-optical Recording Technology
Integrating the Optical Library Unit into the HP-UX Operating System,
Mechanical Design of an Optical Disk Autochanger, Daniel R. Dauner, Raymond C. Sherman, Michael L. Christensen, Jennifer L. Methlie, and Leslie G. Christie, Jr.
Optical Disk Autochanger Servomechanism Design, Thomas C. Oliver and Mark J. Bianchi
Data Capture System
Error Injection
Qualification of an Optical Disk Drive for Autochanger Use
Kevin S. Saldanha and Colette T. Howe
A CD-ROM Drive for HP 3000 and HP 9000 Computer Systems, Edward W. Sponheimer and John C. Santon
Error Correction Implementation and Performance in a CD-ROM Drive, John C. Meyer
Error Detection and Correction Primer
Providing Software Protection Capability for a CD-ROM Drive, Kenneth R. Nielsen
Support for the **ISO 9660/HSG** CD-ROM File System Format in the HP-UX Operating System, Ping-Hui Kao, William A. Gates, Bruce A. Thompson, and Dale K. **McCluskey**
X.25 Packet **Assembler/Disassembler** Support in the HP 3000 Data Communications and Terminal Controller, Jean-Pierre **Allègre** and **Marie-Thérèse** Sarrasin
An Object-Oriented Message Interface for Testing the HP 3000 Data Communications and Terminal Controller, **Frédéric** Maioli
Effect of Fiber Texture on the Anisotropic Dimensional Change of Cu 1.8 wt% Be, Frank E. **Hauser** and Nguyen P. Hung

PART 2: Subject Index

Subject Page/Month

A

Absolute referencing 31/Apr.
 Absorbance detectors. LC 36/Apr.
 Abstract Syntax Notation One (ASN.1) 32/Feb.,25,37/Aug.
 ACSE (Association Control Service Element) 6,31/Feb.,11/Aug.
 Action routines 63,69/Oct.
 Actions. HP Softbench 62/June
 Aging. cold-drawn **CuBe** 88/Dec.
 Air flow simulation 82/Oct.
 AK (acknowledgment) TPDU 38/Feb.
 Algorithm. circuit simulation 79/Oct.
 Algorithm. optical disk swapping . 11/Dec.
 Amplifier. **GaAs** 81/Aug.
 Amplifier performance prediction 78/Oct.
 Amplifier. variable-gain linear 91/Aug.
 Analog-to-digital converter 41/Apr.
 Analyzer. lightwave signal 80/Feb.
 Anisotropic dimensional changes. **CuBe** 88/Dec.
 Appearance and behavior. **mwm** 13/June
 Application Layer Structure 11/Aug.
 Application program interface 38/June,11,21/Oct.
 Archival storage. optical 6/Dec.
 Arglists 12/Oct.
 ASE (application service element) 11,22/Aug.
 Asynchronous event handling 17/Feb.
 Autochanger. optical disk 6/Dec.
 Autosampler. LC 17/Apr.

B

Backplane handler. OSI Express card 8/Feb.
 Backplane message interface (BMI)..... 27/Feb.
 Barium ferrite 52,59/Oct.
 Bounce-back module. OSI Express card 73/Feb.
 Bridge Manager. HP **OpenView** .. 66/Apr.
 Broadcast message server 39/June
 Bubble detection 34/Apr.
 Builder. program 52/June
 Bumped wafer probing 83/June
 Byte-code message 74/Dec.

C

Calibration. lightwave analyzer ... 88/Feb.
 Calibration. millimeter-wave mixers 58/Oct.
 Callback handling. HP **M** 23/Oct.
 Callback procedures. **OSF/Motif** widgets 33/June
 Capacitance measurement 74/Oct.
 Capacitive step 87/Aug.
 CD audio standard 42/Dec.

cdgen 58/Dec.
cdnode 56/Dec.
 CD-ROM 38/Dec.
 CD-ROM file system 55/Dec.
 CD-ROM, HP-UX integration 54/Dec.
 CD-ROM standard 39,42/Dec.
 Channel bits 39/Dec.
 Chirp. laser frequency 92/Feb.
 Chromatograph. liquid 6/Apr.
CIRC1, CIRC2 39,42/Dec.
 Class 4 transport layer 36/Feb.
 CMS (card management services). **OSI Express card** 68/Feb.
 Cold-drawn **CuBe** 88/Dec.
 Common management information protocol (**CMIP**) 56/Apr.
 Compilation. message 76/Dec.
 Compiler. Encapsulator 67/June
 Completion list entry. **OSI Express card** 11/Feb.
 Component graphics. **mwm** 24/June
 Compressibility 25,28/Apr.
 Compression volume 27/Apr.
CONE 18,29,32/Feb.
CONE interface adapter. **HP MAP 3.0** 44/Aug.
 Conformance testing 50/Aug.
 Congestion avoidance 41/Feb.
 Congestion control 37,41,43/Feb.
 Consistent behavior. **OSF/Motif** 6/June
 Contact resistance. wafer probe .. 81/June
 Controller. autochanger 13/Dec.
 Controller. CD-ROM 40/Dec.
 Coordinate systems. **HP IVI** 25/Oct.
 Copper beryllium alloy 88/Dec.
Cray computers 82/Oct.
 Credit window. **OSI Express card** . 41/Feb.
 Cross interleaved Reed-Solomon code (**CIRC**) 42/Dec.
CS-80 (Command Set 80) 38,49/Dec.

D

Data capture system 29/Dec.
 Datacom and terminal controller . 63/Dec.
 Data editing. network 69/Dec.
 Data line monitoring 71/Apr.
 Data link layer 45/Feb.
 Data storage. optical 6,8,38/Dec.
 Data quad 9/Feb.
 Debugger. program 55/June
 Decoder. **OSI Express card** 35/Feb.
 Decompile. message 76/Dec.
 Decompression volume 27/Apr.
 Delay compensation. filter drive .. 55/Oct.
 Delayed self-homodyne technique 94/Feb.
 Demand-page **exec**. CD-ROM file system 58/Dec.
 Dependencies. automatic

generation 52/June
 Desolvation chamber 70/June
 Detectors. LC 36/Apr.
 Development manager. **HP Softbench** 49/June
 Development methodology. **PAD** software 70/Dec.
 Device interface system 62/Oct.
 Diagnostic tools. **OSI Express card** 59/Feb.
 Dialog box. **OSF/Motif** 11/June
 Diode array detector 39/Apr.
 Dimensional changes. **CuBe** 88/Dec.
 Direct access secondary storage 6/Dec.
 Directory services. **HP MAP 3.0** 15,19/Aug.
 Directory system agent. **X.500** 17/Aug.
 Directory user agent. **X.500** 17/Aug.
 Distributed communications infrastructure 57/Apr.
 Distributed execution 40/June
 Distributed support. **HP Softbench** 41/June
 Distributed feedback lasers 93/Feb.
 Distributions. production. prediction 78/Oct.
DMA chaining 10/Feb.
 Driver. autochanger 11/Dec.
DTC Manager. **HP OpenView** 76/Apr.,64/Dec.
DTC PAD support 63/Dec.
DUALIB 20/Aug.

E

ECC/EDC (error correction code/error detection code) 39,42,46/Dec.
 Edit widget 42/June
 Editor. program 51/June
EFM (eight-to-fourteen modulation) 39/Dec.
 Elasticity. pump chamber 29/Apr.
 Encapsulation. software tools 59/June
 Encapsulator description language 61/June
 Encapsulator facility 59/June
 Encoder. **OSI Express card** 34/Feb.
 Enterprise network 54/Apr.
 Ergonomics. LC 9/Apr.
 Error injection 33/Dec.
 Error protection. CD-ROM 42/Dec.
 Error recovery. autochanger 31/Dec.
 Errors. **RLC** measurement 76/Oct.
 Event logging. **OSI Express card** .. 68/Feb.
 Event processing. **mwm** 19/June
 Event triggers 39/June
 Events. **HP Softbench** 61/June
 Exception generator. **OSI Express card** 72/Feb.

F

Factory-floor device interfaces 62/Oct.
 Failure message 39,63/June
 Fast slope generator 87/Aug.
 Fiber optic interferometer 92/Feb.
FIDAP 82/Oct.
 File access data unit (FADU) 25/Aug.
 Filters. barium ferrite
 preselection 52/Oct.
 Finite element airflow analysis 82/Oct.
 Finite state machine 65/Oct.
 Firmware. LC 44/Apr.
 Firmware. lightwave signal
 analyzer 87/Feb.
 Firmware. pulse generator 74/Aug.
 Firmware. optical disk auto-
 changer 26/Dec.
 Flip mechanism 20/Dec.
 Flow cell 37/Apr.
 Flow control. OSI
 Express card 36,39/Feb.
 Flow rates. fan 86/Oct.
 Flow symmetry analysis 34/Apr.
 Forward optics detector 38/Apr.
 Force sense of touch 26/Dec.
 Four-sphere barium ferrite
 filter 53/Oct.
FTAM (File Transfer. Access and
 Management) 24/Aug.

G

Gated delayed self-homodyne
 technique 95/Feb.
 General-behavior resources.
 mwm 19/June
 Gradient programming 32/Apr.
 Graphics. HP IVI 21,28/Oct.
 Group access map 50/Dec.
 GP zones 89/Dec.

H

Habit planes 89/Dec.
 Help. **HP SoftBench** 57/June
 Hexagonal ferrite filters 52/Oct.
 Hexagonal ferrites 59/Oct.
 High Sierra Group (HSG) 54/Dec.
 Hog time 11/Dec.
 Horizontal carriage 17/Dec.
 HP and MAP 6/Aug.
 HP DIS 62/Oct.
 HP Encapsulator facility 59/June
 HP M Build 6,32,41/Oct.
 HP **OpenView** Network Management
 Architecture 54/Apr.
 HP MAP 3.0 and FTAM 27/Aug.
 HP MMSWOO 34/Aug.
 HP MMS/800 services 38/Aug.
 HP **OpenView** object model 56/Apr.
 HP OSI Express card 6/Feb., 40/Aug.
 HP Precision bus interface chip ... 15/Feb.
 HP **SoftBench** environment 36/June
 HP window manager (hpwm) 12/June
 HP-UX integration. CD-ROM 54/Dec.
 HP-UX integration. optical library . 11/Dec.
 HP-UX networking model 41/Aug.
 Hybrid assembly 76/Aug.

I

IC. fast slope generator 87/Aug.
 IC. **GaAs** amplifier 80/Aug.
 IC package model verification 74/Oct.
 IC. pulse timing 69/Aug.
 IC. pump control 30/Apr.
 Independent noise 37/Feb.
 Inductance measurement 75/Oct.
 Industrial design. LC 9/Apr.
 Inheritance. objects 30,34/Oct.
 Initialization. autochanger 28/Dec.
 Injector. LC 17/Apr.
 inode 56/Dec.
 Input handling. HP IVI 22,34/Oct.
 Integrated personal development
 environment. HP MAP 3.0 50/Aug.
 Integration and test. OSI Express
 card 72,75/Feb.
 Intensity noise. laser 89/Feb.
 Interclient communication conventions
 (ICC) 23/June
 Interferometer. fiber optic 92/Feb.
 Interleaving. CD-ROM file system . 58/Dec.
 Interoperability testing.
 HP MAP 3.0 38,50/Aug.
 Interpreter. Encapsulator 68/June
 IPDE 50/Aug.
 Iris-coupled filter 52/Oct.
ISO 9660/HSG CD-ROM file system
 standard 54/Dec.

J

K

L

Lambert-Beer law 36/Apr.
 LAN bridge 66/Apr.
 Lands. CD-ROM 38/Dec.
 Language. Encapsulator Descrip-
 tion 61/June
 Laser measurements 87,92/Feb.
LC/MS particle beam interface 69/June
 Leak drainage system 9/Apr.
 Level shifter 89/Aug.
 Lightwave receiver 81/Feb.
 Lightwave signal analysis 80/Feb.
 Line driver 82/Aug.
 Linewidth measurements, laser ... 93/Feb.
 Link quad 10/Feb.
 Linking. HP Encapsulator 66/June
 Liquid chromatograph 6/Apr.
 List manipulation. HP IVI 17/Oct.
LLC (logical link control) 45/Feb.
 Local area network (LAN) 66/Apr.
 Loop-back, OSI Express card 49/Feb.

M

MAC (media access control) 45/Feb.
 Magazines. optical disk 22/Dec.
MAGIC LC/MS 70/June
 Magneto-optical storage technology . 8/Dec.
 Mail management. LC firmware .. 48/Apr.
Mailslot 21/Dec.

mailx encapsulation 60/June
 Makefiles 52/June
 Manager objects. HP Softbench ... 62/June
 Manufacturing. LC 14/Apr.
Mapconf 9/Aug.
 Mapping. network request 68/Dec.
 Mastering. CD-ROM 39/Dec.
 Mechanical design. optical disk
 autochanger 14/Dec.
 Membrane probe card 77/June
 Memory controller chip 15/Feb.
 Memory management. OSI Express
 card 25/Feb.
 Menu handling. mwm 22/June
 Merge bits. CD-ROM 39/Dec.
 Message compilation/
 decompilation 76/Dec.
 Message interface 74/Dec.
 Message interface. Encapsulator . 62/June
 Message machine 74/Dec.
 Message matching. **HP DIS** 67/Oct.
 Message script 74/Dec.
 Message trace 74/Dec.
 Messaging. objects 29/Oct.
 Metafields 78/Dec.
 Metamessages 78/Dec.
 Metering device, LC 20/Apr.
 Mixers. preselected millimeter-
 wave 49/Oct.
MMS (Manufacturing Message
 Specification) 31/Aug.
MMS services 33/Aug.
 Model. computer air flow 83/Oct.
 Model. IC package 73/Oct.
 Modulation response. laser 88,90/Feb.
 Module design. LC 6/Apr.
 Momentum separator 70/June
 Multiple symbol registration 64/Apr.
 Multiple wavelength detector 39/Apr.
mwm (HP **OSF/Motif** window
 Manager) 12/June
 Multivariate statistics 78/Oct.

N

Native language support 42/June
 Nebulizer 70/June
 Network management 55/Apr.
 Noise, LC detector 37/Apr.
 Notification message 39,63/June

O

Object hierarchy. HP IVI 11/Oct.
 Object-oriented design 22,29/Oct.
 Object-oriented message machine . 74/Dec.
 Objects 11,29/Oct.
 Objects. HP Encapsulator 62/June
 Offset elimination 85/Aug.
 One-line editables 42/June
 Open Software Foundation (OSF). 8/June
 Optical disk drives. qualification . 35/Dec.
 Optical disk library system 6/Dec.
 Optical library. HP-UX
 integration 11/Dec.
OSF/Motif 6,8/June
 OSI addressing 19/Feb.

OSI connectionless network
 protocol 49/Feb.
 OSI Express card 6/Feb.
 OSI Express card driver 45/Aug.
 OSI object model 56/Apr.
 OSI reference model 8/Aug.
 OSI system management model .. 56/Apr.
 Output section, 500-MHz
 pulse generator 79/Aug.
 Output section, variable-slope
 pulse generator 85/Aug.
 Overshoot adjustment 84/Aug.
 OVRrun, OVAdmin, OVDraw 60,72-74/Apr.

P

PAD support software 63/Dec.
 Particle beam interface 69/June
 Particle traces 86/Oct.
 Pattern matching 64/June
 PDUs (protocol data units) 32/Feb.
 Performance. HP DIS 71/Oct.
 Performance. OSI Express card 51/Feb.
 Photoreceiver 84/Feb.
 Picker 19/Dec.
 Pits. CD-ROM 38/Dec.
 Plunge motion 15/Dec.
 Polymorphism 12,30,34/Oct.
 Pop-up menus. check boxes. and
 pushbuttons. OSF/Motif 11/June
 Power spectrum measurements.
 laser 94/Feb.
 Preamplifier 82/Aug.
 Precompression phase 25/Apr.
 Preselected mixers 49/Oct.
 Presentation layer 31/Feb.
 Pressure drop 86/Oct.
 Pressure monitoring 34/Apr.
 Primary channel 33/Apr.
 Primitive objects 62/June
 Principal component analysis 78/Oct.
 Probe cards. wafer test 77/June
 Process defects. diagnosis 80/Oct.
 Process integration 65/June
 Process model. OSI Express card . 24/Feb.
 Process specifications 65/June
 Profiles. X.3 67/Dec.
 Program test. HP Softbench 54/June
 Programmable pulse generators .. 64/Aug.
 Programming. OSF/Motif
 widgets 26/June
 Project management. HP M 7/Oct.
 Proportional noise 37/Apr.
 Protocol interface. HP DIS 62/Oct.
 Protocol module interfaces. OSI
 Express card 20/Feb.
 Protocol Specification Language .. 63/Oct.
 Protocols. X.25 network 65/Dec.
 Pulse generators. 500-MHz 64/Aug.
 Pump module. LC 24/Apr.

Q

Qualification. optical disk drives . 35/Dec.
 Quality engineering. LC 11/Apr.
 Quality function deployment
 (QFD) 9/Oct.
 Quaternary pump module 32/Apr.

R

Real-time procedure tracer. OSI
 Express card57/Feb.
 Receiver. lightwave 81/Feb.
 Red book standard.
 CD-ROM 39,42/Dec.
 Reed-Solomon product-like
 code39,44/Dec.
 Region access map 50/Dec.
 Register sets9/Feb.
 Reliability, LC 12/Apr.
 Reliability model, software 46/June
 Remote builds 53/June
 Remote execution 42/June
 Request message.
 HP Softbench 39,63/June
 Responder process. FTAM 28/Aug.
 Reuse. code 44/Apr.
 Reverse optics detector 39/Apr.
 Rewritable optical technology 8/Dec.
 RIN (relative intensity noise) 90/Feb.
 Ripple. flow 26/Apr.
 Ripple measurement 34/Apr.
 RLC measurement in VLSI
 packages 73/Oct.
 Roll-off, flow 28/Apr.
 ROSE (Remote Operation Service
 Entity) 11,22/Aug.

S

Sampling unit. LC 19/Apr.
 SAP selectors. OSI Express card .. 20/Feb.
 Saturation. servo 18/Dec.
 Scanning absorbance detector 38/Apr.
 Scenario interpreter agent, OSI Express
 card73/Feb.
 Schemes, HP Softbench 41/June
 Schottky noise 37/Apr.
 Security, CD-ROM 49/Dec.
 Security, network 68/Dec.
 Security toolbox, CD-ROM 49/Dec.
 Self-homodyne measure-
 ments 94,95/Feb.
 Sense of touch 26/Dec.
 Service provider process.
 HP MAP 3.0 12,28,35/Aug.
 Servo design. optical disk
 autochanger 24/Dec.
 Session layer 29/Feb.
 Shaper 82/Aug.
 Shrinkage. cold-drawn CuBe 88/Dec.
 Signal-to-noise ratio. LC
 detector 37/Apr.
 Simulation. statistical 78/Oct.
 Single-frequency laser measure-
 ments 92/Feb.
 Slope generator 85/Aug.
 Slow slopes 85/Aug.
 SoftBench environment 36/June
 Software development environ-
 ment 36/June
 Software environment tools 48/June
 Software integration.
 HP MAP 3.0 54/Aug.
 Solvent delivery system 24/Apr.
 Specifications. projection 80/Oct.

Spheres. barium ferrite 52,61/Oct.
 Spike generator 70/Aug.
 State machine, HP IVI 34/Oct.
 Statement table 67/June
 Static analysis. OSI Express card . 51/Feb.
 Static analyzer 54/June
 Statistical simulation 78/Oct.
 Structure definition utility, OSI Express
 card 59/Feb.
 Symbolic programming 77/Dec.
 Syndrome, CD-ROM 43/Dec.
 System interface, OSI Express
 card 27/Feb.
 Swapping, optical disk 11/Dec.

T

Tables. LC firmware 48/Apr.
 Task configuration. LC 48/Apr.
 Tasks. DTC 64/Dec.
 Temperature compensation.
 filter drive 55/Oct.
 Testing. HP MAP 3.0 29,50/Aug.
 Testing. CD-ROM drive 45/Dec.
 Testing. mwm 25/June
 Testing. OSI Express card 50/Feb.
 Testing. PAD support
 software 68,70/Dec.
 3D appearance. OSF/Motif 14/June
 3D appearance. HP M 40/Oct.
 Timer management. OSI Express
 card 26/Feb.
 Timing generator 71/Aug.
 Timing IC 69/Aug.
 Timing parameter generation 67/Aug.
 Tool communication 38/June
 Tool execution 41/June
 Tool integration 59/June
 Tools. software development 48/June
 Tool triggers 64/June
 Touchdowns. wafer probe 82/June
 TPDU (transport protocol data
 unit)36/Feb.
 Tracing. OSI Express card 71/Feb.
 Translate mechanism 17/Dec.
 Transport interface compatibility
 layer 69/Apr.
 Triggers, event 39/June
 Triggers, tool 64/June
 TSDU (transport service data
 unit)38/Feb.
 Two-sphere barium ferrite filter .. 52/Oct.

U

Uniaxial anisotropy 59/Oct.
 Upper layer architecture.
 HP MAP 3.0 11/Aug.
 Upper layer interprocess communication
 (ULIPC) 40,41/Aug.
 Upper layers. OSI Express card .. 28/Feb.
 User interface. Encapsulator 62/June
 User interface management 44/June
 User process. HP MAP 3.0 . 12,27,35/Aug.
 Utility commands. CD-ROM
 drive 52/Dec.

V

Valve, active LC inlet 27/Apr.
 Variable-gain output amplifier 91/Aug.
 Variable-slope pulse generator 64/Aug.
 Variable stroke volume 26,29/Apr.
 Variable wavelength detector 38/Apr.
 Vertical carriage 15/Dec.
 Virtual file store (VFS) 24/Aug.
 VLSI package RLC measurements . 73/Oct.
 vnode 55/Dec.

W

Wafer test probe 77/June
 Wait time 11/Dec.
 Widget program 30/June
 Widgets 26,27/June
 Widgets and windows 16/June
 Widgets, HP IVI 22,39/Oct.
 Windowing, HP IVI 21,24/Oct.
 Windows, HP OpenView 60/Apr.

X

X.25 37/Feb.
 X.25 PAD support 63/Dec.
 X.500 17/Aug.
 X Window System 6,26/June

Y

Yellow book standard,
 CD-ROM39,42/Dec.

Z

PART 3: Product Index

HP 1050 Series liquid chromatography modules Apr.
 HP 2345A data communications and terminal controller ... Dec.
 HP Series 6100 Model 600/A HP-IB CD-ROM drive Dec.
 HP Series 6300 Model 20GB/A rewritable optical disk
 library system Dec.
 HP 8130A 300-MHz variable-slope pulse generator Aug.
 HP 8131A 500-MHz pulse generator Aug.
 HP 11974A/Q/U/V preselected mixers Oct.
 HP 11980A fiber optic interferometer Feb.
 HP 59980A particle beam LC interface June
 HP 70810A lightwave receiver Feb.
 HP 71400A lightwave signal analyzer Feb.
 HP 71401A lightwave signal analyzer Feb.
 HP 79853A variable wavelength detector Apr.
 HP 79854A multiple wavelength detector Apr.
 HP Device Interface System Oct.
 HP Encapsulator tool integration facility June
 HP Interactive Visual Interface Oct.
 HP MAP 3.0 Aug.
 HP MAP 3.0 FTAM/800 Aug.
 HP MAP 3.0 MMS/800 Aug.
 HP OpenView Bridge ManagerApr.
 HP OpenView Data Line MonitorApr.
 HP OpenView DTC ManagerApr.
 HP OpenView Windows Apr.
 HP OSF/Motif graphical user interface June
 HP OSF/Motif Window ManagerJune
 HP OSI Express MAP 3.0 linkFeb.
 HP SoftBench software development environment June

PART 4: Author Index

Alexander, Neil M.	Feb.	Hamer , Charles L.	Feb.	Prieur , Michele A.	Apr.
Allègre , Jean-Pierre	Dec.	Hauser , Frank E.	Dec.	Proehl, Kraig A.	Dec.
Amar , Serge Y.	Apr.	Heckendorn, Robert B.	June	Quint, David W.	Oct.
Anderson, Steven R.	Oct.	Hoerth, Mark L.	Apr.	Ridolfo, Anthony S.	Apr.
Apffel, James A., Jr.	June	Hopke, Heino	Aug.	Robinson, Chuck	Oct.
Aziz, Asad	Oct.	Hoschele, Giinter	Apr.	Saldanha, Kevin S.	Dec.
Baney, Douglas M.	Feb.	Howe, Colette T.	Dec.	Sands, Sam	June
Banker, Kimball K.	Feb.	Hung, Nguyen P.	Dec.	Santon, John C.	Dec.
Bartz, Thomas G.	Aug.	Hurst, Michael S.	Apr.	Sarrasin, Marie-Thérèse	Dec.
Berkel, Werner	Aug.	Johnson, William R.	Feb.	Schinzel, Peter	Aug.
Bianchi, Mark J.	Dec.	Kao, Ping-Hui	Dec.	Schmid, Patrick	Aug.
Bienz, Hai-Wen L.	Oct.	Kato, Rick	Dec.	Schrenker, Helge	Apr.
Bortolotto, Elizabeth P.	Feb.	Kaw, Ravi	Oct.	Scoredos, Eric C.	Aug.
Breckwoldt, Heiko	Apr.	Klein, Stefan G.	Aug.	Scott, Kimberly K.	Aug.
Brombacher, Volker	Apr.	Klemba , Keith S.	Apr.	Seitz, Manfred	Apr.
Büttner , Christian	Apr.	Koffmane, Gerd	Aug.	Shah, Jayesh K.	Feb.
Cagan, Martin R.	June	Koski, Paul B.	Aug.	Sherman, Raymond C.	Dec.
Chaffee , Jennifer	Oct.	Kretz, Wolfgang	Apr.	Skupniewicz, Irene	Oct.
Chao, Kent	Oct.	Krizan , Brock C.	June	Smith, Catherine J.	Apr.
Ching , Robin	Od.	Kuderer, Hubert	Apr.	Smith, Judith A.	Feb.
Chikarmane, Sanjay B.	Aug.	Kulakow , Arthur J.	Apr.	Snackers, Hans-Jürgen	Aug.
Chow, Chee K.	Oct.	Kumpf, David A.	Feb.	Sorin, Wayne V.	Feb.
Christensen, Michael L.	Dec.	Kwinn , Kathryn Y.	June	Sponheimer, Edward W.	Dec.
Christie, Leslie G., Jr.	Dec.	Kwinn, William A.	June	Stavelly, Donald J.	Dec.
Cole, Lisa M.	Apr.	Lagoni , Peter A.	Aug.	Steinbach, Günter	Aug.
Cooke, Beth E.	Aug.	Lau, Roger K.	Oct.	Stolte, Daryl C.	Dec.
Crall , Christopher	Aug.	Levernier, Michael J.	Oct.	Strohmeier, Fred	Apr.
Dauner, Daniel R.	Dec.	Lim, Hui-Lin	Apr.	Swope, Darrell O.	Aug.
Dean, Steven M.	Feb.	Longo, Joseph R., Jr.	Feb.	Talbott, Glenn F.	Feb.
Deininger, Axel O.	June	Maioli, Frédéric	Dec.	Talley , Bruce J.	Aug.
Derickson, Dennis	Feb.	Mansingh , Vivek	Oct.	Taylor, Keith M.	June
Desinger, Bob	June	Manweiller , Steven W.	Aug.	Teitz, Konrad	Apr.
Diamant, John R.	June	Mattreci, Robert J.	Oct.	Thomas, Bill	Feb.
Dinter, Raoul	Apr.	Matta, Farid	June	Thompson, Bruce A.	Dec.
Duggan , Gerald P.	June	McCluskey , Dale K.	Dec.	Thompson, Mark E.	Oct.
Dutton, John P.	June	McMinds , Donald L.	June	Thomsen, Gary D.	Oct.
Eatock, Frederick L.	Aug.	Mellon, Maureen C.	Apr.	Thunquest, Gary L.	June
Eberle, Volker	Aug.	Methlie, Jennifer L.	Dec.	Tillson , Tim	June
Ellis, David	Dec.	Meyer, Jeffrey D.	Aug.	Tran, Mydung Thi	Oct.
Ellis, Michael A.	Feb.	Meyer, John C.	Dec.	Vandoorn, Roy M.	Aug.
Ellsworth, Benjamin J.	June	Miller, Christopher M.	Feb.	Van Gaasbeck, Richard H.	Aug.
Fernandez, Charles V.	June	Misegades, Kent P.	Oct.	van Nieuwerkerk, Henry J.	Apr.
Fettig, Colleen S.	Aug.	Morain, Robert A.	June	Wagner, Hans-Jiirgen	Aug.
Fraley , Andrew S.	Apr.	Munsch, Pamela W.	Oct.	Walicki, Jack	June
Fritze, Fromut	Apr.	Nicholson, Dean B.	Oct.	Walker, Anthony P.	June
Frolich, John U.	Oct.	Nielsen, Kenneth R.	Dec.	Wanger, Mark E.	Dec.
Fromme, Brian D.	June	Nordman, Robert G.	June	Wathen, David G.	Oct.
Fulton, Kathleen A.	Oct.	Oliver, Thomas C.	Dec.	Wenzel, H. Michael	Feb.
Gannon , Kathleen L.	Apr.	Otsuka, Warren I.	Oct.	Westra, Randy J.	Feb.
Garg , Atul R.	Apr.	Park, Collin Y.W.	Aug.	Wichelman, James W.	June
Garliepp, Kent L.	Oct.	Perez, Tamra I.	Apr.	Wiederoder, Herbert	Apr.
Gates, William A.	Dec.	Perezalonso, Frank J.	Oct.	Wiese, Axel	Apr.
Gerety, Colin	June	Ple, Gerhard	Apr.	Wilde, Wolfgang	Apr.
Gregory, Douglas R.	Aug.	Pugh, Rex A.	Feb.	Witt , Klaus	Apr.
Greving, Warren J.	June			Witten , Steven P.	Oct.

HEWLETT-PACKARD JOURNAL INDEX

Volume 42 January 1991 through December 1991

Hewlett-Packard Company, P.O. Box 51827, Palo Alto, California 94303-0724 U.S.A.
Yokogawa-Hewlett-Packard Ltd., Sugunami-Ku Tokyo 168 Japan
Hewlett Packard (Canada) Ltd. 6877 Goreway Drive, Mississauga, Ontario L4V 1M8 Canada

Part 1: Chronological Index

February 1991

High-Speed Lightwave Component Analysis to 20 GHz, *Roger W. Wong, Paul R. Hernday, and Daniel R. Harkins*

Design of a **20-GHz Lightwave Component Analyzer**, *Paul R. Hernday, Geraldine A. Conrad, Michael G. Hart, and Rollin F. Rawson*
Measurement Capabilities of the HP 8703A Lightwave Component Analyzer and the HP 71400C Lightwave Signal Analyzer

20-GHz Lightwave Test Set and Accessories, *Joel P. Dunsmore and John V. Vallelunga*

Accuracy Considerations and Error Correction Techniques for **20-GHz Lightwave Component Analysis**, *Daniel R. Harkins and Michael A. Heinzelman*

Development of an **Optical Modulator for a High-Speed Lightwave Component Analyzer**, *Roger L. Jungerman and David J. McQuate*

High-Performance Optical Isolator for Lightwave Systems, *Kok-Wai Chang, Siegmund Schmidt, Wayne V. Sorin, Jimmie L. Yarnell, Harry Chou, and Steven A. Newton*

A **Broadband, General-Purpose Instrumentation Lightwave Converter**, *Christopher M. Miller and Roberto A. Collins*

A **Lightwave Multimeter for Basic Fiber Optic Measurements**, *Bernd Maisenbacher and Wolfgang Reichert*

Design of a Series of **High-Performance Lightwave Power Sensor Modules**, *Jochen Rivoir, Horst Schweikardt, and Emmerich Müller*

Calibration of Fiber Optic Power Meters, *Christian Hentschël*

Semiconductor Laser Sources with Superior Stability for Optical Loss Measurements, *Frank A. Maier*

Lightwave Multimeter Firmware Design, *Wilfried Pless, Michael Pott, and Robert Jahn*

A **Visual User Interface for the HP-UX and Domain Operating Systems**, *Mark A. Champine*

Open Dialogue

HP Visual User Interface, Version 2.0

April 1991

A **Family of High-Performance Synthesized Sweepers**, *Roger P. Oblad, John R. Regazzi, and James E. Bossaller*

Designing for Low Cost of Ownership
Strife Testing the Alphanumeric Display
Front Panel Designed for Manufacturability

Built-in Synthesized Sweeper Self-Test and Adjustments, *Michael J. Seibel*

Automatic Frequency Span Calibration

Accessing a Power Meter for Calibration

A **High-Performance Sweeper Output Power Leveling System**, *Glen M. Baker, Mark N. Davidson, and Lance E. Haag*

Mismatch Error Calculation for Relative Power Measurements with Changing Source Match

A **0.01-to-40-GHz Switched Frequency Doubler**, *James R. Zellers*

A **High-Speed Microwave Pulse Modulator**, *Mary K. Koenig*

New technology in Synthesized Sweeper Microcircuits, *Richard S. Bischof, Ronald C. Blanc, and Patrick B. Harper*

Modular Microwave Breadboard System
Quasi-Elliptic Low-Pass Filters

DC-to-50-GHz Programmable Step Attenuators, *David R. Veteran*

50-to-110-GHz High-Performance Millimeter-Wave Source Modules, *Mohamed M. Sayed and Giovonnae F. Anderson*

The Use of the HP Microwave Design System in the W-Band Tripler Design

The use of HP ME 10/30 in the W-Band Tripler Design

Flatness Correction

High-Power W-Band Source Module

An Instrument for Testing North American Digital Cellular Radios, *David M. Hoover*

HP 11846A Filtering Technique

Measuring the Modulation Accuracy of $\pi/4$ DQPSK Signals for Digital Cellular Transmitters, *Raymond A. Birgenheier*

A Test Verification Tool for C and C++ Programs, *David L. Neuder*

June 1991

HP 48SX Scientific Expandable Calculator: Innovation and Evolution, *William C. Wickes and Charles M. Patton*

The HP 48SX Interfaces and Applications, *Ted W. Beers, Diana K. Byrne, Gabe L. Eisenstein, Robert W. Jones, and Patrick J. Megowan*

HP Solve Equation Library Application Card, *Eric L. Vogel*

Hardware Design of the HP 48SX Scientific Expandable Calculator, *Mark A. Smith, Lester S. Moore, Preston D. Brown, James I. Dickie, David L. Smith, Thomas B. Lindberg, and M. Jark Muranami*

Industrial Design of the HP 48SX Calculator

HP 48SX Custom Integrated Circuit

Mechanical Design of the HP 48SX Memory Card and Memory Card Connector

The HP 48SX Calculator Input/Output System, *Steven L. Harper and Robert S. Worsley*

Manufacturing the HP 48SX Calculator, *Richard W. Ripper*

A **10-Hz-to-150-MHz Spectrum Analyzer with a Digital IF Section**, *Kirsten C. Carlson, James H. Cauthorn, Timothy L. Hillstrom, Roy L. Mason, Joseph F. Tamantino, Jay M. Wardle, and Eric J. Wicklund*

Spectrum Analyzer Self-Calibration

Adaptive Data Acquisition

Help System with Hypertext

User Interface Compiler

Easy-to-Use Performance Tools with a Consistent User interface across HP Operating Systems, *Rex A. Backman*

Design Prototyping for HP GlancePlus

The Performance Tool Quadrant

Improving the Product Development Process, *Spencer B. Graves, William I. Carmichael, Douglas Daetz, and Edith Wilson*

DSEE: A Software Configuration Management Tool, *David C. Lubkin*

A Mechanism to Support Parallel Development via RCS, *John W. Goodnow*

Building and Managing an Integrated Project Support Environment, *Ronald F. Richardson*

October 1991

Introduction to the HP Component Monitoring System, *Christoph Westerteicher*

Medical Expectations of Today's Patient Monitors

Component Monitoring System Hardware Architecture, *Christoph Westerteicher and Werner E. Heim*

Component Monitoring System Software Architecture, *Martin Reiche*

Component Monitoring System Software

Component Monitoring System Software Development Environment

Component Monitoring System Parameter Module Interface, *Winfried Kaiser*

Measuring the ECG Signal with a Mixed Analog-Digital Application-Specific IC, *Wolfgang Grossbach*

A Very Small Noninvasive Blood Pressure Measurement Device, *Rainer Rometsch*

A Patient Monitor Two-Channel Stripchart Recorder, *Leslie Bank*

Patient Monitor Human Interface Design, *Gerhard Tivig and Wilhelm Meier*

Globalization Tools and Processes in the HP Component Monitoring System, *Gerhard Tivig*

The Physiological Calculation Application in the HP Component Monitoring System, *Steven J. Weisner and Paul Johnson*

Mechanical Implementation of the HP Component Monitoring System, by *Karl Daumüller and Erwin Flachsländer*

An Automated Test Environment for a Medical Patient Monitoring System, *Dieter Göring*

Production and Final Test of the HP Component Monitoring System, *Otto Schuster and Joachim Weller*

Calculating the Real Cost of Software Defects, *William T. Ward*

A Case Study of Code Inspections, *Frank W. Blakely and Mark E. Boles*

The HP Vectra 486 Personal Computer, *Larry Shintaku*

The HP Vectra 486 EISA SCSI Subsystem

The HP Vectra 486/33T

The EISA Connector, *Michael B. Raynham and Douglas M. Thom*
EISA Configuration Software

The HP Vectra 486 Memory Controller, *Marilyn J. Lang and Gary W. Lum*

The HP Vectra 486 Basic I/O System, *Viswanathan S. Narayanan, Thomas Tom, Irvin R. Jones, Jr., Philip Garcia, and Christophe Grosthor*

Performance Analysis of Personal Computer Workstations, *David W. Blevins, Christopher A. Bartholomew, and John D. Graf*

December 1991

HP Software Integration Sockets: A Tool for Linking Islands of Automation, *Mitchell J. Amino, Cynthia Givens, Mark Ikemoto, Alan C. Miranda, Scott A. Gulland, Kathleen A. Fulton, and Irene S. Smith*

Configuration Files

Performance in the HP Sockets Domain

HP Sockets Gateway

Rigorous Software Engineering: A Method for Preventing Software Defects, *Stephen P. Bear and Tony W. Rush*

Specifying an Electronic Mail System with HP-SL, *Patrick G. Goldsack and Tony W. Rush*

Specification of State in HP-SL

Specifying Real-Time Behavior in HP-SL, *Paul D. Harry and Tony W. Rush*

History specifications

Using Formal Specification for Product Development, *B. Robert Ladeau and Curtis W. Freeman*

Formal Specification and Structured Design in Software Development, *Judith L. Cyrus, J. Daren Bledsoe and Paul D. Harry*

Telecommunications Network Monitoring System, *Nicola De Bello, Giuseppe Mazzucato, Antonio Posenato, and Marco Silvestri*

Part 2: Subject Index

Subject	Page/Month		Page/Month
A			
Absorption bands	50/Apr.	Calibration. lightwave analyzer	20, 34/Feb.
Abstract data type	32/Dec.	Calibration. optical power meter	70/Feb.
Access routines. HP Sockets	9/Dec.	Calibration. self. spectrum analyzer	47/June
Adapters. HP Sockets	9/Dec.	Calibration. sweeper	19, 21, 22, 26/Apr.
Adaptive data acquisition	51/June	Call record	60/Dec.
Administration node.		Cardiac work (LCW/RCW)	41/Oct.
HP Sockets	15/Dec.	Cellular system (NADMCS)	65/Apr.
Alarm monitor	40/Dec.	Central plane	7, 12/Oct.
Alarms	16, 32/Oct.	Central unit. network monitor	62/Dec.
ALC	30/Feb.	Check out and check in	87/June
ALC, sweeper	24/Apr.	Chromatic dispersion	9/Feb.
Amplifier doubler. R-band	58/Apr.	Circular interpolation	32/Feb.
Amplifier doubler. V-band	56/Apr.	Client server model	20/Dec.
Amplifier tripler, W-band	54/Apr.	Code inspections	58/Oct.
Analyzer. lightwave component	13/Feb.	Common data representation	20/Dec.
Application management. HP 48SX	9/June	Communication model	16/Oct.
Array of choices	34/Oct.	Communication protocol	20/Oct.
ASICs	11, 22, 23/Oct.	Compiler (mtc)	15/Oct.
ASN.1	21/Dec.	Compiler, NLS text	39/Oct.
Atmospheric windows	50/Apr.	Compiler. user interface	57/June
Attenuators, programmable. step	47/Apr.	Component Monitoring System	6/Oct.
AUTOMAN keypusher	50/Oct.	Computer module	7/Oct.
AUTOTEST	49/Oct.	Computing environment	90/June
B			
Basic Encoding Rules (BER)	21/Dec.	Computing support model	94/June
BIOMON (backplane I/O activity monitor)	94/Oct.	Configuration. automated	17/Oct.
BIOS (Basic I/O System).		Configuration files	13/Dec.
Vectra 486	83/Oct.	Configuration threads. DSEE	80/June
Birefringent crystals	46/Feb.	Converter. lightwave	51/Feb.
Bismuth-substituted YIG films	46/Feb.	Cost of ownership. sweeper	10/Apr.
Blood pressure	6, 25/Oct.	Coupler detectors. V and W bands	53/Apr.
Bondless microcircuits	38/Apr.	CPU cards	7/Oct.
Bottom case assembly. HP 48SX	30/June	Crossover frequency. amplifier	52/Feb.
Branch analysis	83/Apr.	Customization, HP 48SX	15/June
Branches. DSEE	78/June	D	
Breadboard system, microwave	41/Apr.	Daemon. HP Sockets	14/Dec.
Break-even time (BET)	71/June	Database. real-time	63/Dec.
Build management	85/June	Data definition language @DL)	21/Dec.
Burst-mode read. Vectra 486	81/Oct.	Data flow diagrams	52/Dec.
Bus master	73/Oct.	Data management package	41/Oct.
C			
C++, HP Branch		Data manipulation	8, 20/Dec.
Validator	91/Apr.	Data manipulation language (DML)	22/Dec.
Cache memory. Vectra 486	78/Oct.	Data transceivers. Vectra 486	80/Oct.
Cache simulator	95/Oct.	De-to-dc converter	7/Oct.
Calculation evaluator	42/Oct.	Decision points	68/Apr.
Calculator. scientific expandable	6/June	Design for manufacturability	15/Apr.
		Design prototyping,	
		HP GlancePlus	69/June
		Digital cellular radios	65/Apr.
		Digital cellular transmitters	73/Apr.
		Digital IF, spectrum analyzer	44, 49/June
		Digital modulation	66/Apr.
		Digital value placement	34/Oct.
		Directory links	86/June
		Disless workstation	84/June
		Display front assembly	45/Oct.
		Displays. patient monitor	7, 12/Oct.
		Domain O/S	77/June
		Double-width parameter module	27/Oct.
		Doubler. 40-GHz switched	31/Apr.
		DQPSK modulation	67/Apr.
		Dual laser source	76/Feb.
		Dual-wavelength capability	16/Feb.
		dword	78/Oct.
		E	
		ECG waves	46/Dec.
		Edgeline attenuator design	47/Apr.
		EISA configuration software	75, 84/Oct.
		EISA connector	73, 75/Oct.
		EISA consortium	74/Oct.
		EISA (Extended Industry Standard Architecture)	69, 73/Oct.
		EISA initialization	84/Oct.
		Elaboration. network data	63/Dec.
		Electrocardiogram (ECG)	6, 21/Oct., 40/Dec.
		Electronic mail system. HP-SL	32/Dec.
		Equation library card	22/June
		EquationWriter application	15/June
		Error correction, lightwave	21, 34/Feb.
		Error vector magnitude	73/Apr.
		Event types	41/Dec.
		Exception-based reporting	66/June
		Execution model	16/Oct.
		Execution trees	16/Oct.
		Extension. Command Set 80	81/Feb.
		Extinction ratio	44/Feb.
		F	
		Fabry-Perot sensors	11/Feb.
		Feedforward ALC	25/Apr.
		Filtering. HP 11846A	71/Apr.
		Filters. quasi-elliptic	42, 44/Apr.
		FIR filter. HP 11846A	69/Apr.
		Firmware. lightwave multimeter	77/Feb.
		Firmware. patient monitor	14/Oct.
		Firmware. spectrum analyzer	57/June
		Flatness correction	59/Apr.
		Formal specification	46, 51/Dec.
		Formal specification language	26/Dec.

Function cards 7/Oct.
Functions, HP-SL 29/Dec.

G

Gate **array**, power sensor 68/Feb.
Globalization 37/Oct.
Graded-index lens 63/Feb.
Graphics, HP 48SX 17/June

H

Hardware architecture,
patient monitor 10/Oct.
Hardware design, HP 48SX 25/June
Harmonic analysis 60/Apr.
Help, context **sensitive** 32/Oct.
Heterogeneous configuration
management 81/June
Heterogeneous environment,
HP Sockets 8/Dec.
Hexpander 39/Oct.
Hifsim 30/Oct.
High-resolution ADC 67/Feb.
History specifications 43/Dec.
History types, HP-SL 41/Dec.
HP Specification Language
(HP-SL) 27/Dec.
HP StarLan 10 91/June
HP Sockets management
daemon (SMD) 14/Dec.
HP VUE 2.0 97/Feb.
Human interface, patient monitor 29/Oct.
Hypertext help system 53/June

I

IF amplifier 42/Apr.
Indexes, network quality 64/Dec.
In-process **project** retrospective
reviews 73/June
Input/output system, HP 48SX 35/June
Integral contacts 38/Apr.
Integration, **test system** 53/Oct.
Intel 486 69, 78/Oct.
Interface, **parameter** module 17, 19/Oct.
Interfaces, HP 48SX 36, 37/June
ISA (Industry Standard
Architecture) 73/Oct.
Isolator, optical 16/Feb.

J

K

Kermit protocol 36, 39/June
Keypad, patient monitor 34/Oct.

L

Laser FM response 9/Feb.
Laser source 59, 73/Feb.

Lightwave component **analysis**,
20-GHz 6/Feb.
Lightwave **multimeter** 58/Feb.
Lightwave receiver 19, 30/Feb.
Lightwave source 7, 15, 29, 73/Feb.
Lightwave test set 15, 23/Feb.
Lithium **niobate** 42/Feb.
LO amplifier 40/Apr.
LO feedthrough nulling 47/June
Local **oscillator**, spectrum
analyzer 50/June
Localization 37/Oct.
Loss measurements, optical 60/Feb.
Low-band microcircuit 36, 39/Apr.

M

Mach-Zender interferometer 42/Feb.
Magneto optic isolator 46/Feb.
Mainline 77, 84/June
Manufacturing, HP 48SX 40/June
Manufacturing, patient monitor 52/Oct.
Maps, HP-SL 28/Dec.
Master CPU 60/Dec.
Material flow, vertical 52/Oct.
Measurement interface model 68/June
Mechanical design,
patient monitor 44/Oct.
Memory architecture, Vectra 486 79/Oct.
Memory card and connector 32/June
Memory controller, Vectra 486 78/Oct.
Memory initialization,
Vectra 486 90/Oct.
Memory subsystem simulator 95/Oct.
Message classes 16/Oct.
Message passing bus 8, 11/Oct.
Metrics database 55/Oct.
Microcircuit design techniques 36/Apr.
Micro-DIN 87/Oct.
Microwave design system, HP 48SX 53/Apr.
Mismatch error 28/Apr.
Mixer, **triple** balanced 40/Apr.
Modsplitter, microcircuit 36, 43/Apr.
Modulator, optical 18, 41/Feb.
Modulator, pulse 34/Apr.
Module rack 7/Oct.
Module specifications 53/Dec.
Module tables 17/Oct.
Monitor configuration table 17/Oct.
Monitor, patient 6/Oct.
Monitor, telephone network 59/Dec.
Multimeter, lightwave 58/Feb.
Multiple equation solver 23/June
Multiplying DAC 66/Feb.
Multiprocessor system 10/Oct.

N

Network interface 12/Dec.

Network **monitoring system**,
telephone 59/Dec.
North American dual-mode
I-Q **diagrams** 66/Apr.
NLS database 38/Oct.
NLS tools 39/Oct.
Nulling, LO **feedthrough** 47/June

O

Object types, RPL 8/June
Open Dialogue, HP VUE 93/Feb.
Optical launch measurement 10/Feb.
Optical power measurements 58/Feb.
Optical reflection and transmission
measurements 9, 25/Feb.
OSF/Motif, HP VUE 90/Feb.

P

$\pi/4$ DQPSK **modulation** 65/Apr.
Pace pulse **detection** circuit 23/Oct.
Parameter modules 7, 19, 47/Oct.
Parameterized outer loop 13/June
Patient monitoring system 6/Oct.
Patient **simulators** 50/Oct.
Performance, HP Sockets 16/Dec.
Performance, software 65/June
Performance tool quadrant 70/June
Performance, Vectra 486 92/Oct.
Peripheral units 60/Dec.
Personal computer, Vectra 486 69/Oct.
Physiological calculations 40/Oct.
Plotting, HP 48SX 17/June
Plug-in management, HP 48SX 9/June
PMON (process activity
monitor) 92/Oct.
Poiseuille's law 41/Oct.
Polarization controller 17/Feb.
Post-introduction product
reviews 72/June
Power leveling, sweeper 24/Apr.
Power measurements, optical 58/Feb.
Power sensors, optical 63/Feb.
Precision, HP-SL 48/Dec.
Preprocessors, HP Branch
Validator 84/Apr.
Printed circuit assembly, HP 48SX 29/June
Printhead control 28/Oct.
Process specification, HP-SL 54/Dec.
Product development process 71/June
Programmable-gain amplifier 66/Feb.
Project management, DSEE 79/June
Pulmonary vascular resistance
(PVR) 41/Oct.
Pulse **oximeter** (SaO₂) 6/Oct.
Pump assembly 25/Oct.

Q

QPSK modulation 67/Apr.
 Quadratic gradient constant 64/Feb.
 Quality function deployment
 (QFD) 74/June
 Quality manufacturing process 54/Oct.
 Quasi-elliptic low-pass filters 42, 44/Apr.

R

R2 signaling system 59/Dec.
 Rack interface controller 20/Oct.
 RCS (revision control system) 84/June
 Real-time specifications. HP-SL 40/Dec.
 Receiver. lightwave 19, 30/Feb.
 Receiver. spectrum analyzer 45/June
 Recorder. stripchart 26/Oct.
 Reference/trigger section. spectrum
 analyzer 53/June
 Refinement. HP-SL 38/Dec.
 Reflection measurements.
 lightwave 11/Feb.
 Remapping. Vectra 486 89/Oct.
 Report generator.
 HP Branch Validator 88/Apr.
 Resolution bandwidth filters,
 sweeping 55/June
 Resting display 33/Oct.
 RF deck. sweeper 8/Apr.
 RF test set 13/Feb.
 Rigorous software engineering 25/Dec.
 ROMPART 9/June
 ROMPIR 10/June
 RPL operating system 7/June
 Rutile crystals 47/Feb.

S

Satellite module rack 7/Oct.
 Scan table 20/Oct.
 Screen cookbook 31/Oct.
 SCPI 16/Apr.
 SCPI driver 81/Feb.
 SCSI-2 (Small Computer System
 Interface), Vectra 486 73/Oct.
 Security, Vectra 486 87/Oct.
 Self-test design. sweeper 17/Apr.
 Sequences. HP-SL 28/Dec.
 Serial distribution network (SDN) 11/Oct.
 Shadowing. Vectra 486 88/Oct.
 Signal processing. HP 11847A 74/Apr.

SIMM (single in-line memory
 module) 78/Oct.
 Simulation tool 30/Oct.
 Slave module 61/Dec.
 Slotline-to-microstrip transition 32/Apr.
 SoftBench interface. HP Branch
 Validator 89/Apr.
 Software architecture.
 patient monitor 13/Oct.
 Software configuration
 management 77, 79, 84/June
 Software defects 55, 58, 91/Oct.
 Software defect costs 55/Oct.
 Software defect profit loss
 calculation 57/Oct.
 Software development
 environment 84/June, 15/Oct.
 Software integration.
 HP Sockets 6/Dec.
 Software lifecycle 24/Dec.
 Software metrics 55, 58/Oct.
 Software performance tools 65, 70/June
 Solve. HP 48SX 22/June
 Source. lightwave 7, 15, 29, 73/Feb.
 Source match. changing 28/Apr.
 Source. millimeter-wave 50/Apr.
 Source. spectrum analyzer 52/June
 Source temperature control 16/Feb.
 Spectrum analyzer. 150-MHz 44/June
 Split-band amplifier 52/Feb.
 SS#7 59/Dec.
 ST segments 46/Dec.
 Standard display 34/Oct.
 Standard parameter
 interface 17, 19/Oct.
 Startup and shutdown.
 HP Sockets 14/Dec.
 State histories 41/Dec.
 State specifications 38/Dec.
 Strife testing. display 13/Apr.
 Stroke index (SI) 41/Oct.
 Structure chart 53/Dec.
 Structured analysis 53/Dec.
 Structured design 53/Dec.
 Sweep dynamics. spectrum
 analyzer 55/June
 Sweepers, to 50 GHz 6/Apr.
 Symbolic identification 16/Oct.
 Syntax checker 39/Oct.

System administration 93/June
 System integrator. HP Sockets 8/Dec.
 System invariants. HP-SL 37/Dec.
 Systemic vascular resistance
 (SVR) 41/Oct.

T

TAB ICs 41/June
 Tagged queuing 70/Oct.
 Task windows 35/Oct.
 Telephone network monitoring
 system 59/Dec.
 Test automation. HP Branch
 Validator 83/Apr.
 Test environment. automated 49/Oct.
 Test opportunities, HP Branch
 Validator 83/Apr.
 Test sets. RF and lightwave 13, 20/Feb.
 Testing. software 83/Apr., 91/Oct.
 Topcase assembly, HP 48SX 26/June
 Transimpedance amplifier 65/Feb.
 Translation tool 40/Oct.
 Transmission measurements.
 lightwave 11/Feb.
 Types, HP-SL 27/Dec.

U

Unequally spaced diodes 34/Apr.
 Usability tests 31/Oct.
 User interface compiler 57/June
 User interface. lightwave analyzer 19/Feb.
 User interface. patient monitor 29/Oct.
 User interface. sweeper 12/Apr.

V

Values. HP-SL 27/Dec.
 Variable speed control 85/Oct.
 Ventricular stroke work
 (LVSW/RVSW) 41/Oct.
 Version control 77/June
 Virtual processor 15/Oct.
 Vision. automated 43/June
 Visual shell (vsh) 89/Feb.

W

Walk-off 46/Feb.

Part 3: Product Index

Domain software engineering environment (DSEE)	June	HP 83425A lightwave CW source	Feb.
HP 11846A $\pi/4$ DQPSK I-Q generator	Apr.	HP 83557A millimeter-wave source module	Apr.
HP 11847A $\pi/4$ DQPSK modulation measurement software	Apr.	HP 83558A millimeter-wave source module	Apr.
HP 11982A lightwave converter	Feb.	HP 8360 Series synthesized sweepers	Apr.
HP 33324M attenuator	Apr.	HP 83620A synthesized sweeper	Apr.
HP 33326M attenuator	Apr.	HP 83621A synthesized sweeper	Apr.
HP 33327M attenuator	Apr.	HP 83622A synthesized sweeper	Apr.
HP 3588A spectrum analyzer	June	HP 83623A synthesized sweeper	Apr.
HP 48SX scientific expandable calculator	June	HP 83624A synthesized sweeper	Apr.
HP 81210LI isolator	Feb.	HP 83630A synthesized sweeper	Apr.
HP 81310LI isolator	Feb.	HP 83631A synthesized sweeper	Apr.
HP 81520A detector	Feb.	HP 83640A synthesized sweeper	Apr.
HP 81521B detector	Feb.	HP 83642A synthesized sweeper	Apr.
HP 8153A lightwave multimeter	Feb.	HP 83650A synthesized sweeper	Apr.
HP 81530A power sensor	Feb.	HP 83651A synthesized sweeper	Apr.
HP 81531A power sensor	Feb.	HP 83810A lightwave signal analyzer	Feb.
HP 81532A power sensor	Feb.	HP 8703A lightwave component analyzer	Feb.
HP 81536A power sensor	Feb.	HP Branch Validator	Apr.
HP 81533A head adapter	Feb.	HP Component Monitoring System	Oct.
HP 81551MM laser source	Feb.	HP E3500A network monitoring system	Dec.
HP 81552SM laser source	Feb.	HP GlancePlus/UX	June
HP 81553SM laser source	Feb.	HP GlancePlus/V	June
HP 81554SM laser source	Feb.	HP GlancePlus/XL	June
HP 83420A lightwave test set	Feb.	HP Sockets Gateway	Dec.
HP 83421A lightwave source	Feb.	HP Software Integration Sockets	Dec.
HP 83422A lightwave modulator	Feb.	HP Vectra 486/25T	Oct.
HP 83423A lightwave receiver	Feb.	HP Vectra 486/33T	Oct.
HP 83424A lightwave CW source	Feb.	HP VUE 1.0	Feb.

Part 4: Author Index

Amino, Mitchell J.	Dec.	Grosthor, Christophe	Oct.	Pless, Wilfried	Feb.
Anderson, Giovonnae F.	Apr.	Gulland, Scott A.	Dec.	Posenato, Antonio	Dec.
Backman, Rex A.	June	Haag, Lance E.	Apr.	Pott, Michael.	Feb.
Baker, Glen M.	Apr.	Harkins, Daniel R.	Feb.	Rawson, Rollin F.	Feb.
Bank, Leslie	Oct.	Harper, Patrick B.	Apr.	Raynham, Michael B.	Oct.
Bartholomew, Christopher A.	Oct.	Harper, Steven L.	June	Regazzi, John R.	Apr.
Bear, Stephen P.	Dec.	Harry, Paul D.	Dec.	Reiche, Martin	Oct.
Beers, Ted W.	June	Hart, Michael G.	Feb.	Reichert, Wolfgang.	Feb.
Birgenheier, Raymond A.	Apr.	Heim, Werner E.	Oct.	Richardson, Ronald F.	June
Bischof, Richard S.	Apr.	Heinzelman, Michael A.	Feb.	Riper, Richard W.	June
Blakely, Frank W.	Oct.	Hentschel, Christian	Feb.	Rivoir, Jochen	Feb.
Blanc, Ronald C.	Apr.	Hernday, Paul R.	Feb.	Rochlitzer, Frank	Oct.
Bledsoe, J. Daren	Dec.	Hillstrom, Timothy L.	June	Rometsch, Rainer	Oct.
Blevins, David W.	Oct.	Hoover, David M.	Apr.	Rush, Tony W.	Dec.
Boles, Mark E.	Oct.	Ikemoto, Mark	Dec.	Sayed, Mohamed M.	Apr.
Bossaller, James E.	Apr.	Jahn, Robert	Feb.	Schmidt, Siegmar	Feb.
Brown, Preston D.	June	Jerbic, Mike	Oct.	Schuster, Otto.	Oct.
Byrne, Diana K.	June	Johnson, Paul	Oct.	Schweikardt, Horst	Feb.
Carlson, Kirsten C.	June	Jones, Irvin R., Jr.	Oct.	Seibel, Michael J.	Apr.
Carmichael, William P.	June	Jones, Robert W.	June	Shintaku, Larry	Oct.
Cauthorn, James H.	June	Jungerman, Roger L.	Feb.	Silvestri, Marco	Dec.
Champine, Mark A.	Feb.	Kaiser, Winfried	Oct.	Sorin, Wayne V.	Feb.
Chang, Kok-Wai	Feb.	Koenig, Mary K.	Apr.	Smith, David L.	June
Chou, Harry	Feb.	Ladeau, B. Robert	Dec.	Smith, Irene S.	Dec.
Collins, Roberto A.	Feb.	Lang, Marilyn J.	Oct.	Smith, Mark A.	June
Conrad, Geraldine A.	Feb.	Lindberg, Thomas B.	June	Smith, Mark M.	June
Cyrus, Judith L.	Dec.	Linsky, Mark	Oct.	Stead, James R.	Apr.
Daetz, Douglas.	June	Lubkin, David C.	June	Tarantino, Joseph F.	June
Daumüller, Karl	Oct.	Lum, Gary W.	Oct.	Thom, Douglas M.	Oct.
Davidson, Mark N.	Apr.	Maier, Frank A.	Feb.	Thomas, Joe	June
Dearden, Lon	Apr.	Maisenbacher, Bemd	Feb.	Tivig, Gerhard	Oct.
DeBello, Nicola	Dec.	Marciulionis, Roy M.	Apr.	Tom, Thomas	Oct.
Derocher, Michael	June	Mason, Roy L.	June	Vallelunga, John V.	Feb.
Dickie, James P.	June	Mazzucato, Giuseppe	Dec.	Veteran, David R.	Apr.
Dowden, Tony	Oct.	McQuate, David J.	Feb.	Vogel, Eric L.	June
Dunsmore, Joel P.	Feb.	Megowan, Patrick J.	June	Ward, William T.	Oct.
Dupre, Jack.	Feb.	Meier, Wilhelm	Oct.	Wardle, Jay M.	June
Eisenstein, Gabe L.	June	Miller, Christopher M.	Feb.	Weisner, Steven J.	Oct.
Flachsländer, Erwin.	Oct.	Miranda Alan C.	Dec.	Weller, Joachim	Oct.
Freeman, Artis W.	Dec.	Moore, Lester S.	June	Westerteicher, Christoph	Oct.
Fulton, Kathleen A.	Dec.	Müller, Emmerich	Feb.	Wickes, William C.	June
Garcia, Philip	Oct.	Muranami, M. Jack.	June	Wicklund, Eric J.	June
Givens, Cynthia	Dec.	Murray, Bryan P.	June	Williams, David A.	Feb.
Goldsack, Patrick G.	Dec.	Narayanan, Viswanathan S.	Oct.	Wilson, Edith.	June
Goodnow, John W.	June	Neuder, David L.	Apr.	Wong, Roger W.	Feb.
Goring, Dieter.	Oct.	Newton, Steven A.	Feb.	Worsley, Robert S.	June
Graf, John D.	Oct.	Oblad, Roger P.	Apr.	Yarnell, Jimmie L.	Feb.
Graves, Spencer B.	June	Patton, Charles M.	June	Zellers, James R.	Apr.
Grossbach, Wolfgang	Oct.				

HEWLETT-PACKARD JOURNAL INDEX

Volume 43 January 1992 through December 1992

Hewlett-Packard Company, P.O. Box 51827, Palo Alto, California 94303-0724 U.S.A.
Yokogawa-Hewlett-Packard Ltd., Suginami-Ku Tokyo 168 Japan

Part 1: Chronological Index

February 1992

Low-Cost, 100-MHz Digitizing Oscilloscopes, *Robert A. Witte*
A High-Throughput Acquisition Architecture for a 100-MHz Digitizing Oscilloscope, *Matthew S. Hokomb and Daniel P. Timm*
Sample Rate and Display Rate in Digitizing Oscilloscopes
A Fast, Built-In Test System for Oscilloscope Manufacturing, *Stuart O. Hall and Jay A. Alexander*
Verification Strategy
Stimulus/Response Defect Diagnosis in Production
Measuring Frequency Response and Effective Bits Using Digital Signal Processing Techniques, *Martin B. Gmve*
Calculating Effective Bits from Signal-To-Noise Ratio
Mechanical Design of the HP 54600 Series Oscilloscopes, *Robin I? Yergenson and Timothy A. Figge*
EMC Design of the HP 54600 Series Oscilloscopes, *Kenneth D. Wyatt*
Digital Oscilloscope Persistence, *James A. Kahkoska*
A High-Resolution, Multichannel Digital-to-Analog Converter for Digital Oscilloscopes, *Grosvenor H. Garnett*
Using the High-Resolution, Multichannel DAC in the HP 54601A Oscilloscope
Comparing Analog and Digital Oscilloscopes for Troubleshooting, *Jerald B. Murphy*
An Introduction to Neural Nets, *John McShane*
Design Challenges for Distributed LAN Analysis, *William W. Crandall*
Poor Network Partitioning

April 1992

VXIbus: A Standard for Test and Measurement System Architecture, *Lawrence A. DesJardin*
The HP VXIbus Mainframes
VXIbus Terminology
The VXIbus From an Instrument Designer's Perspective, *Steven J. Narciso and Gregory A. Hill*
Examples of Message-Based VXIbus Instruments
Small, Low-Cost Mainframe with a Register-Based Interface
Design of Mainframe Firmware in an Open Architecture Environment, *Paul B. Worrell*
Real-Time Multitasking of Instruments in the VXIbus Command Modules, *Christopher P. Kelly*
VXI Programming in C, *Lee Atchison*

Achieving High Throughput with Register-Based Dense Matrix Relay Modules, *Sam S. Tsai and James B. Durr*

Mass Interconnect for VXIbus Systems, *Calvin L. Erickson*

A Manufacturing-Oriented Digital Stimulus/Response Test Instrument, *David P. Kjosness*

Digital Test Development Software for a VXIbus Tester, *Kenneth A. Ward*

The VXIbus in a Manufacturing Test Environment, *Larry L. Carlson and Wayne H. Willis*

The Peak Power Analyzer, a New Microwave Tool, *Dieter Scherer, William E. Strasser, James D. McVey, and Wayne M. Kelly*

Multilayer Shielding Protects Microvolt Signals in High-Interference Environment

GaAs Technology in Sensor and Baseband Design, *Michael C. Fischer, Michael J. Schoessow, and Peter Tong*

Harmonic Errors and Average versus Peak Detection

Automatic Calibration for Easy and Accurate Power Measurements, *David L. Barnard, Henry Black, and James A. Thalmann*

Testing the Peak Power Analyzer Firmware

An Advanced 5-Hz-to-500-MHz Network Analyzer with High Speed, Accuracy, and Dynamic Range, *Koichi Yanagawa*

A High-Performance Measurement Coprocessor for Personal Computers, *Mike Mom and Eric S. Gullerud*

Measurement Coprocessor ASIC

Measurement Coprocessor History

June 1992

HP-UX Operating System Kernel Support for the HP 9000 Series 700 Workstations, *Karen Kerschen and Jeffrey R. Glasson*

An Example of the FTEST Instruction

Providing HP-UX Kernel Functionality on a New PA-RISC Architecture, *Donald E. Bollinger, Frank I? Lemmon, and Dawn L. Yamine*

New Optimizations for PA-RISC Compilers, *Robert C. Hansen*

Link-Time Optimizations

HP 9000 Series 700 FORTRAN Optimizing Preprocessor, *Robert A. Gottlieb, Daniel J. Magenheimer, Sue A. Meloy, and Alan C. Meyer*

Vector Library

Register Reassociation in PA-RISC Compilers, *Vatsa Santhanam*

Software Pipelining in the PA-RISC Compilers, *Sridhar Ramakrishnan*

Shared Libraries for HP-UX, *Cary A. Coutant and Michelle A. Ruscetta*

Deferred Binding, Relocation, and Initialization of Shared Library Data

Integrating an Electronic Dictionary into a Natural Language Processing System, *Diana C. Roberts*

Application of Spatial Frequency Methods to Evaluation of Printed Images, *Dale D. Russell*

Parallel Raytraced Image Generation, *Susan S. Spach and Ronald W. Putleyblank*

August 1992

Midrange PA-RISC Workstations with Price/Performance Leadership, *Andrew J. DeBaets and Kathleen M. Wheeler*

HP 9000 Series 700 Workstation Firmware

VLSI Circuits for Low-End and Midrange PA-RISC Computers, *Craig A. Gleason, Leith Johnson, Steven T. Mangelsdorf, Thomas O. Meyer, and Mark A. Forsyth*

PA-RISC Performance Modeling and Simulation

ECL Clocks for High-Performance RISC Workstations, *Frank J. Lettang*

HP 9000 Series 700 Input/Output Subsystem, *Daniel Li and Audrey B. Gore*

Design Verification of the HP 9000 Series 700 PA-RISC Workstations, *Ali M. Ahi, Gregory D. Burroughs, Audrey B. Gore, Steve W. LaMar, Chi-Yen R. Lin, and Alan L. Wiemann*

HP Standard PA-RISC Test Programs

Simulation Toolset

Debugging Tools

Metrics

Mechanical Design of the HP 9000 Models 720 and 730 Workstations, *Arlen L. Roesner and John I. Hoppal*

Meeting Manufacturing Challenges for PA-RISC Workstations, *Spacer M. Ure, Kevin W. Allen, Anna M. Hargis, Samuel K. Hammel, and Paul Roeber*

High-Performance Designs for the Low-Cost PA-RISC Desktop, *Craig R. Frink, Robert J. Hammond, John A. Dykstal, and Don C. Soltis, Jr.*

Low-Cost Plain-Paper Color Inkjet Printing, *Daniel A. Kearl and Michael S. Ard*

Thermal Inkjet Review, or How Do Dots Get from the Pen to the Page?

Ink and Print Cartridge Development for the HP DeskJet 500C/DeskWriter C Printer Family, *Craig Maze, Loren E. Johnson, Daniel A. Kearl, and James I. Shields*

Color Science in Three-Color Inkjet Print Cartridge Development Making HP Print Cartridges Safe for Consumers Around the World

Automated Assembly of the HP DeskJet 500C/DeskWriter C Color Print Cartridge, *Lee S. Mason and Mark C. Hulh*

Color Inkjet Print Cartridge Ink Manifold Design

Adhesive Material and Equipment Selection for the HP DeskJet 500C/DeskWriter C Color Print Cartridge, *Douglas J. Reed and Terry M. Lambright*

Machine Vision in Color Print Cartridge Production, *Michael J. Monroe*

HP DeskWriter C Printer Driver Development, *William J. Allen, Toni D. Courville, and Steven O. Miller*

An Interactive User Interface for Material Requirements Planning, *Alvina Y. Nishimoto, William J. Gray, and Barbara J. Williams*

HP MRP Action Manager Project Management

October 1992

The HP Network Advisor: A Portable Test Tool for Protocol Analysis, *Edmund G. Moore*

Network Advisor Product Enhancement Philosophy

Embedding Artificial Intelligence in a LAN Test Instrument, *Scott Godlew, Rod Unverrich, and Stephen Will*

The User Interface for the HP 4980 Network Advisor Protocol Analyzer, *Thomas A. Doumas*

Object-Oriented Design and Smalltalk

The Forth Interpreter

The Network Advisor Analysis and Real-Time Environment, *Sunil Bhat*

Network Advisor Protocol Analysis: Decodes, *Rona J. Pruffer*

Mechanical Design of the HP 4980 Network Advisor, *Kenneth R. Krebs*

The Microwave Transition Analyzer: A New Instrument Architecture for Component and Signal Analysis, *David J. Balló and John A. Wendler*

Frequency Translation as Convolution

Design Considerations in the Microwave Transition Analyzer, *Michael Dethlefsen and John A. Wendler*

A Visual Engineering Environment for Test Software Development, *Douglas C. Beethe and WiUiam L. Hunt*

Object-Oriented Programming in a Large System

Developing an Advanced User Interface for HP VEE, *WiUiam L. Hunt*

HP VEE: A Dataflow Architecture, *Douglas C. Beethe*

A Performance Monitoring System for Digital Telecommunications Networks, *Gwvanni Nieddu, Fernando M. Secco, and Alberto Vallerini*

G-Link: A Chipset for Gigabit-Rate Data Communication, *Chu-Sun Yen, Richard C. Walker, Patrick T. Petruno, Cheryl Stout, Benny WH. Lai, and WiUiam J. McFarland*

Bang-Bang Loop Analysis

December 1992

A Large-Format Thermal Inkjet Drafting Plotter, *Robert A. Boeller, Samuel A. Stodder, John F. Meyer, and Victor T. Escobedo*

DesignJet Plotter User Interface Design: Learning the Hard Way about Human Interaction

Electronic and Firmware Design of the HP DesignJet Drafting Plotter, *Alfred Holl Mebane IV, James R. Schmedake, Iue-Shuenn Chen, and Anne P. Kadonaga*

Pen Alignment in a Two-Pen, Large-Format, Inkjet Drafting Plotter, *Robert D. Haselby*

DesignJet Plotter Chassis Design: A Concurrent Engineering Challenge, *Timothy A. Longust*

DesignJet Plotter End Covers Produced by Coinjection

DesignJet Plotter Mechanical Architecture Development Process, *David M. Pelersen and Chuong Ta*

Improved Drawing Reliability for Drafting Plotters, *Robert W. Beauchamp, Josep Giraldo Adroher, Joan Uroz, and Isidre Rosello*

Average User Plot

Acceptable Quality Level Index

An Automatic Media Cutter for a Drafting Plotter, *Ventura Caamaño Agrafojo, David Perez, and Josep Abella*

Definitions and Measurement Procedures for Cut Quality Parameters

Reengineering of a User Interface for a Drafting Plotter. *Jordi Gonzalez, Jaume Ayats Ardite, and Carles Castellsague Pique*

A Multiprocessor HP-UX Operating System for HP 9000 Computers. *Douglas V. Larson and Kyle A. Polychronis*

Next-Generation Multiprocessor HP-UX

Advances in Integrated Circuit Packaging: Demountable TAB. *Farid Matta*

The EISA Standard for the HP 9000 Series 700 Workstations. *Vicente V. Cavanna and Christopher S. Liu*

EISA Cards for the HP 9000 Series 700 Workstations. *David S. Clark, Andrea C. Lantz, Christopher S. Liu, Thomas E. Parker, and Joseph H. Steinmetz*

Board-Level Simulation of the Series 700 EISA Cards

Software for the HP EISA SCSI Card. *Bill Thomas, Alan C. Berkema, Eric G. Tausheck, and Brian D. Mahaffy*

Update on the SCSI Standard

Adapting the NCR 53C710 to Minimize Interrupt Impact on Performance

An Architecture for Migrating to an Open Systems Solution. *Michael E. Thompson, Gregson P. Siu, and Jonathan van den Berg*

Part 2: Subject Index

Subject	Page/Month	Subject	Page/Month
	0-9	Amplifier, sensor	83, 91/Apr.
1SJ2 DAC chip	49/Feb.	Amplitude @ time markers	87/Apr.
1TL1 HP-IB controller chip	89/Dec.	Analysis and real-time (ART) environment	8, 22, 29/Oct.
	A	Analysis data unit	36/Oct.
Acceptable quality level index	37/Dec.	Analysis items	30, 36/Oct.
Accuracy. cut	47/Dec.	Analytic signal	55, 70/Oct.
Accuracy. dynamic. network analyzer	107/Apr.	Analyzer. microwave transition	48, 63/Oct.
Acquisition architecture. oscilloscope	11/Feb.	Analyzer. network	101/Apr.
Acquisition. peak power analyzer	85/Apr.	Analyzer. peak power	81/Apr.
Acquisition processor IC	9, 12/Feb.	Appearance-based color selection	101/Aug.
Acquisition unit.		Application portability	61/Dec.
Network Advisor	30/Oct.	Architecture. acquisition. oscilloscope	11/Feb.
Active data rule	88/Oct.	Architecture development. plotter	32/Dec.
Address generator	86, 87/Dec.	Architecture. multiprocessor	56/Dec.
Address prediction	85, 88/Dec.	Architecture. Network Advisor	8/Oct.
Address verification	88/Dec.	Architecture. neural nets	64/Feb.
Adhesive technology	84/Aug.	Architecture. parallel image generation	76/June
Alert manager	67/Feb.	Archive library	46/June
Algorithm. edge smoothing. effects of	71/June	ARP (address resolution protocol)	24/Oct.
Algorithm. effective bits	32/Feb.	ART (Analysis and real-time environment)	8, 22, 29/Oct.
Algorithm. frequency response	29/Feb.	Artificial intelligence. Network Advisor	11/Oct.
Algorithm. "fill and flush"	72/Feb.	ASICs, plotter	18/Dec.
Algorithm. "fill and lock"	72/Feb.	Assembly. print cartridge	77/Aug.
Algorithm. raytracing	76/June	Assembly tooling	30/Dec.
Algorithms. halftoning	99/Aug.	Assertion checks. HP EISA cards	95/Dec.
Algorithms. network data reduction	71/Feb.	Audio design. workstation	61/Aug.
Algorithms. network data transmission	72/Feb.	Autostore	7, 17, 45/Feb.
Algorithms. print	70/June	Average detection	94/Apr.
		Averageuserplot	36/Dec.
		Averaging. peak power analyzer	86/Apr.
			B
		Backplane interface. PC (ISA)	111/Apr.
		Backward chaining rules	16/Oct.
		Banding	94/Aug., 9/Dec.
		Bang-bang phase-locked loop	104, 108, 110/Oct.
		Baseband circuits. peak power analyzer	85, 92/Apr.
		BASIC. PC	110/Apr.
		Bayer's dither	99/Aug.
		Behavioral models	94/Dec.
		Benchmarks. VXi bus	46/Apr.
		Binary quantized phase-locked loop	104, 108, 110/Oct.
		Binary rate multiplier	51/Feb.
		Binding libraries	47/June
		Blackboard	16/Oct.
		Blade. rotating and linear	42/Dec.
		Bleed. color	69/Aug.
		Block diagram model	72/Oct.
		Board-level simulation	94/Dec.
		Boot process. multiprocessor HP-UX	60/Dec.
		Booting HP-UX, HP EISA cards	98/Dec.
		BPS (Busy-system Program Synthesizer)	37/Aug.
		Branch scheduling	35/June
		Built-in SCSI	30/Aug., 98/Dec.
		Bus exerciser	31/Aug.
		Bus gasket	83, 84/Dec.
		Bus master	83, 84/Dec.
		Byte swapping	81, 91/Dec.

C

C++, Network Advisor 29/Oct.
 Cable-length compensation 66/Apr.
 Cable test tool 67/Feb.
 Cache.
 Series 700 7, 16/June, 13, 14, 19/Aug.
 Calibration. automatic 95/Apr.
 Calibration. oscilloscope 24, 54/Feb.
 Canned tests 9, 24/Oct.
 CCITT G.821 89/Oct.
 CELEX dictionary 55, 59/June
 Certification process. HP-UX 12/June
 Channel resistance
 compensation 97/Apr.
 Chassis design. plotter 28/Dec.
 Check source.
 peak power analyzer 85/Apr.
 Chipset, gigabit-link 103/Oct.
 Chipset, PCX-S 8, 12/Aug.
 Chroma-based color selection 101/Aug.
 CIELAB 71/Aug.
 CIMT code 104, 105/Oct.
 Class hierarchy 81/Oct.
 Client/server 109, 111/Dec.
 Clock extraction 108/Oct.
 Clocks. workstation 13, 23, 59/Aug.
 Cockle 9/Dec.
 Coinjection 31/Dec.
 Color inkjet printers 64/Aug.
 Color science 71/Aug.
 Commentators 9/Oct.
 Communication.
 interprocessor 113, 115/Apr.
 Communication protocols.
 VXIbus 11/Apr.
 Compensation code.
 software pipelining 44/June
 Component test 57/Oct.
 Composite spring 71/Dec.
 Compositing chips 80/June
 Compression/translation 54/Oct.
 Concurrency control 58/Dec.
 Concurrent engineering 28/Dec.
 Conditional inversion
 with master transition 104, 105/Oct.
 Cone angle 42/Dec.
 Constant folding 35/June
 Contexts 86/Oct.
 Contrast function 70/June
 Contrast transfer function 68/June
 Coprocessor.
 floating-point 8/June, 9, 15, 56/Aug.
 Coprocessor. measurement 110/Apr.
 Counter. synchronous binary 51/Feb.
 CPU chip 8, 13, 42, 56/Aug.
 Curl-set 13/Dec.

Cut quality 46/Dec.
 Cutter. media 7, 42/Dec.

D

Data flow diagrams 113/Dec.
 Data linkage table 47/June
 Data locality 26/June
 Data models 85/Oct.
 Data presentation, network 74/Feb.
 Data reduction, network 71/Feb.
 Data transmission. network 72/Feb.
 Data transport 114/Oct.
 Database management 96/Oct.
 Data flow architecture 84/Oct.
 Dc-to-dc converter 20/Apr.
 Deadlock avoidance 58/Dec.
 Debugger 23/Dec.
 Decodes 9, 34, 37, 39/Oct.
 Defect diagnosis 27/Feb.
 Defects. user interface 50/Dec.
 Deferred binding 52/June
 Degraded minute 90/Oct.
 Demountable TAB 62/Dec.
 Demux capability 99/Oct.
 Dense matrix relay modules 41/Apr.
 Dependency graph.
 software pipelining 43/June
 Design and code reviews 12/June
 Detection. average versus peak 94/Apr.
 Detectors, peak power 81, 90/Apr.
 Development
 environment 107/Aug., 22/Dec.
 Development process.
 HP MRP Action Manager 109/Aug.
 Device models 86/Oct.
 Dictionaries, electronic 54/June
 Differential SCSI 97/Dec.
 Digital patterns 62, 71/Apr.
 Digital test software 69/Apr.
 Digital tester 59/Apr.
 Digital timing 63, 70/Apr.
 Digital-to-analog converter 48/Feb.
 Digitizing oscilloscopes, 100-MHz 6/Feb.
 Disk array 102/Dec.
 Display rate, oscilloscope 18/Feb.
 DMA state machines 91/Dec.
 Document input 63/June
 Document management 64/June
 Dot size. printer. effects of 71/June
 Drafting plotter. inkjet 6/Dec.
 Drafting plotter. pen 35/Dec.
 Driver, color printer 93/Aug.
 Dry time, ink 13/Dec.
 Dye selection 70/Aug.
 Dynamic loader 52/June

E

Edge effect. cut 47/Dec.
 Edge enhancement 100/Aug.
 Edge smoothing effects 71/June
 Effective bits measurement 32/Feb.
 EISA 78/Dec.
 EISA adapter 79/Dec.
 EISA address map 80/Dec.
 EISA and DMA 89/Dec.
 EISA configuration 99/Dec.
 EISA I/O space 81/Dec.
 EISA pipelining 84/Dec.
 Electrical performance,
 IC package 66/Dec.
 Electronic dictionaries 54/June
 EMC design, oscilloscope 39, 41/Feb.
 Emulation, device 111/Apr.
 Emulation, workstations 7/June
 Emulator strategy 20/Dec.
 Encoding circuitry 107/Oct.
 End covers, plotter 31/Dec.
 Engagement and driving device 43/Dec.
 Engineering graphics 76/Oct.
 Envelope mode,
 peak power analyzer 86/Apr.
 Error correction, plotter 25, 26/Dec.
 Errored second 89/Oct.
 Ethernet 6/Oct.
 Event log 67/Feb.
 Exception management 88/Oct.
 Execution flow 87/Oct.
 Execution unit 14/Aug.
 Expert system 11/Oct.
 Explicit loading 50/June
 Explicit processor affinity 59/Dec.
 Extended Industry Standard
 Architecture (EISA) 78/Dec.

F

False locking 109/Oct.
 Fault finder 9, 11/Oct.
 FIFO buffer. HP EISA cards 90/Dec.
 Filters. DAC output 52/Feb.
 Firmware design. plotter 22/Dec.
 Firmware design. VXIbus 24/Apr.
 Firmware. network analyzer 108/Apr.
 Firmware.
 peak power analyzer 95, 98/Apr.
 Firmware. workstation 9/Aug.
 First-level processor 92/Oct.
 Fixtures. network analyzer 109/Apr.
 Floating-point
 coprocessor 8/June, 9, 15, 56/Aug.
 Floating-point registers 16/June, 16/Aug.
 FORTH 25/Oct.

FORTRAN compiler 24/June
 FORTRAN optimizing
 preprocessor 24/June
 Forward chaining rules 16/Oct.
 Fourier transform. image
 evaluation 69, 75/June
 Frame synchronization 109/Oct.
 Frames. LAN protocol 104/Oct.
 Frameworks. Network Advisor . . . 23/Oct.
 Frequency compression 52/Oct.
 Frequency files 38/Aug.
 Frequency response.
 detector 82/Apr.
 Frequency response
 measurement 29/Feb.
 Frequency translation 52, 61/Oct.
 Friction, plotter media 13/Dec.
 Front-panel design, VXIbus 21/Apr.
 FTEST 9, 10/June

G

GaAs detectors 90/Apr.
 Gate-level models.
 HP EISA cards 94/Dec.
 General-purpose
 environment 22, 23, 29/Oct.
 Gigabit-link chipset 103/Oct.
 Graphics. workstation 10, 60/Aug.
 Grey balancing 100/Aug.

H

Half-toning 99/Aug.
 Hardware models 94/Dec.
 Harmonic errors 82, 94/Apr.
 Heuristic processor **affinity** 59/Dec.
 Hierarchical data abstraction 16/Oct.
 Hierarchical uniform grid 78/June
 HIPPI 114/Oct.
 HP Cooperative Services 105/Aug.
 HP EISA HP-IB card 89/Dec.
 HP EISA LAN card 85/Dec.
 HP EISA PSI card 92/Dec.
 HP EISA SCSI card 87, 97/Dec.
 HP-NL 57/June
 HP-UX 8.06 (multiprocessor) 56/Dec.
 HyperChannel 113/Apr.
 Hypothetical reference
 connection 89/Oct.

I

IC, acquisition processor 9, 12/Feb.
 IC, carriage 19/Dec.
 IC, CPU 8, 13, 42, 56/Aug.
 IC, DAC, 1SJ2 49/Feb.
 IC, floating-point
 coprocessor 9, 15, 56/Aug.

IC, measurement coprocessor . . . 112/Apr.
 IC, memory and system bus
 controller 17, 57/Aug.
 IC, PA 7100 21, 41/Aug.
 IC packaging 62/Dec.
 IC, pen interface 19/Dec.
 IC, processor support 18/Dec.
 IC, waveform translator 10, 15/Feb.
 ICs, gigabit-link 103/Oct.
 ICA (interface connector
 assembly) 8, 52/Apr.
 ICE. Image Compute Engine . . . 76, 79/June
 IEEE 488.2 24/Apr.
 IEPC (interenvironment process
 communication) 25, 29/Oct.
 IF corrections 66/Oct.
 Illumination models 76/June
 Image Compute Engine 76, 79/June
 Image evaluation 68/June
 Image generation. raytraced.
 parallel 76/June
 Implicit loading 50/June
 Index shifting 35/June
 Indirect DAC 48/Feb.
 Inference engine 14/Oct.
 Information engineering 113/Dec.
 Information retrieval 64/June
 Information technology 109/Dec.
 Initial system loader 101/Dec.
 Initiation interval 41/June
 Ink design. color printer 69/Aug.
 Inkjet color printers 64/Aug.
 Instruction scheduling 17, 30/June
 Instrument control 76/Oct.
 Instrument library 35/Apr.
 Interface driver. EISA SCSI card . 101/Dec.
 Interprocedural transformations . . 26/June
 Interrupt handling 59, 105/Dec.
 Interspace calls 50/June
 I/O controller chip 29/Aug.
 I/O dependent code (IODC) . . . 98, 99/Dec.
 I/O process. HP EISA cards 105/Dec.
 I/O system. workstation . . . 10, 26, 62/Aug.
 ISA 78/Dec.
 ISA backplane interface IC 112/Apr.
 ITA (interface test adapter) 8, 52/Apr.
 I_T_L nexus 103/Dec.
 I_T_L_Q nexus 103/Dec.

K

Kernel code 6/June, 56/Aug.
 Knowledge base 13/Oct.

L

LAN analysis 66/Feb.

LAN monitoring 66/Feb.
LanProbe 67/Feb.
 LAN troubleshooting 11/Oct.
 Latching relays 41/Apr.
 Level translation circuit 24/Aug.
 Lexicographical information 56/June
 Lexicon development 59/June
 Line code, gigabit-link 105/Oct.
 Line sensor 24, 36/Dec.
 Linear function test replacement . . 35/June
 Linguistics. computational 54/June
 Link controller 84/Dec.
 Linkage tables. shared libraries . . . 47/June
 Linker optimizations 19, 22/June
 Linker, shared library 47/June
 Logic synthesis 21/Dec.
 Logical model 110/Dec.
 Loop invariants 35/June
 Loop optimization 33/June
 Loops scheduling 39/June

M

Mainframes. VXIbus 9/Apr.
 Manifold. print cartridge 82/Aug.
Manufacturability, IC package . . . 67/Dec.
Manufacturing, PA-RISC
 workstations 49/Aug.
 Manufacturing. print cartridge . . . 77/Aug.
Manufacturing test 75/Apr.
 Mass interconnect. VXIbus 52/Apr.
 Master transition 104, 105/Oct.
 Mastered burst reads 85/Dec.
 Materials management 103/Aug.
 Matrix topology. relays 42/Apr.
 Measurement system architecture . . 7/Apr.
 Mechanical architecture. plotter . . 32/Dec.
 Mechanical design.
 Network Advisor 41/Oct.
 Mechanical design.
 oscilloscope 36/Feb.
 Mechanical design. workstation . . 43/Aug.
 Media cutter 7, 42/Dec.
 Media. **drafting** plotter 11/Dec.
 Media stacker. **drafting** plotter . . . 13/Dec.
 Mediation devices 90/Oct.
 Memory access transformations . . 26/June
 Memory and system bus
 controller 9/June, 17, 57/Aug.
 Message-based interface. VXIbus . . 11/Apr.
 Metrics. verification 41/Aug.
 Microwave transition
 analyzer 48, 63/Oct.
 Mismatch error 82/Apr.
 Model. optical line sensor 37/Dec.
 Model-view architecture 83, 84/Oct.

Modulation transfer function 68/June
 Monitor characterization 102/Aug.
 Morphology 56/June
 MRP [materials requirements
 planning) 103/Aug.
 MSBurst* 87/Dec.
 Multiple application
 management 77/Oct.
 Multiprocessor HP-UX 56/Dec.

N

Natural language
 processing 54, 57, 63/June
 Network Advisor 6/Oct.
 Network analyzer 101/Apr.
 Network elements 90/Oct.
 Network map 67/Feb.
 Network monitoring system 89/Oct.
 Network planning tool 75/Feb.
 Neural nets 62/Feb.
 Nexus 103/Dec.
 Node aging 71/Feb.
 Node discovery 9/Oct.
 Node traffic chart 67/Feb.
 Noise reduction 53/Oct.
 Nonlinear device measurements 48/Oct.
 Nonlinearity. detector 81/Apr.

O

Object-oriented design 23, 24/Oct.
 Object-oriented programming 76/Oct.
 Objects 81/Oct.
 Offline software, HP EISA cards 97/Dec.
 Offset voltage compensation 97/Apr.
 Online software. HP EISA cards 97/Dec.
 Open systems 109/Dec.
 Operating system. VXiBus 29/Apr.
 Operations systems 90/Oct.
 Optimization. Series 700 17/June
 Oscilloscopes. 100-MHz 6/Feb.

P

PA 7100 chip 21, 42/Aug.
 Packaging. IC 62/Dec.
 Packet size display 67/Feb.
 Packet trace tool 67/Feb.
 Parallel raytraced image
 generation 76/June
Parallelism, cut 46/Dec.
 PA-RISC 1.1 architecture 15/June
 PA-RISC extensions 18/Aug.
 PA-RISC multiprocessor
 architecture 56/Dec.
 PA-RISC simulation 21, 34, 36/Aug.
 PA-RISC workstations 6, 55/Aug.

Partitioning. network 76/Feb.
 Pattern halftoning 96, 99/Aug.
 Pattern. test 69/June
 PCX-S chipset 8, 12/Aug.
 Peak detect 8/Feb.
 Peak detection 94/Apr.
 Peak measurements. microwave 81/Apr.
 Peak power analyzer 81/Apr.
 Pen alignment 24/Dec.
 Pen problems 35/Dec.
 Penetration depth 42/Dec.
 Performance. EISA SCSI card 104/Dec.
 Performance.
 multiprocessor HP-UX 60/Dec.
 Performance. printhead 74/Aug.
Performance, Series 700
 workstation 20/June, 10, 21, 55, 62/Aug.
 Performance. Series 700
 FORTRAN 31/June
 Peripheral device driver 101/Dec.
 Peripheral units 92/Oct.
 Perpendicularity. cut 46/Dec.
 Persistence. oscilloscope 45/Feb.
 Persistence.
 peak power analyzer 86/Apr.
 Phase-locked loop. binary 108/Oct.
 Phase trigger 56/Oct.
 Photorealistic rendering 76/June
Ping 13/Oct.
 Pipeline. CPU 13, 20/Aug.
 Pipeline scheduling 41/June
 Pipeline stall 40/June
 plabel 49/June
 Plotter, drafting. inkjet 6/Dec.
 Plotter, drafting. pen 35/Dec.
 Position independent code.
 HP-UX shared library 48/June
 Power environment 65/Dec.
 Preprocessor. FORTRAN 24/June
 Print algorithm effects 70/June
 Print cartridge. color 69/Aug.
 Print engine control 17/Dec.
 Print quality. drafting plotter 8, 35/Dec.
 Print quality tester 91/Aug.
 Printer characterization 102/Aug.
 Printers. color inkjet 64/Aug.
ProbeView 67/Feb.
 Procedure linkage table 47/June
 Process development 30/Dec.
 Processing unit.
 Network Advisor 31/Oct.
 Processor dependent code
 (PDC) 98/Dec.
 Processor scheduling 59/Dec.
 Profile-based procedure
 repositioning 22/June

Project delay 50/Dec.
 Project management.
 HP MRP Action Manager 108/Aug.
 PROLOG abi 11, 16/Oct.
 Protocol analysis 6, 34/Oct.
 Protocol analyzer 6, 12/Oct.
 Protocol decodes 9, 34/Oct.
 Protocol following 7/Oct.
 Protocol stack 22, 35/Oct.
 Protocols. data link 91/Oct.
Prototyping, rapid 50/Dec.
 Pseudoinstruments 26/Apr.
 Pseudorandom test technology 37/Aug.
 Pulsed-RF measurements 48/Oct.
 Pull in 103/Aug.
 Push out 103/Aug.

Q

Quad photodiode sensor 24/Dec.
 Quality control plan. Series 700 12/June
 Quality. telecom circuit 89/Oct.
QuickView 67/Feb.

R

Race avoidance 58/Dec.
Rasterization 94/Aug.
 Ratioing. peak power analyzer 87/Apr.
Raytracing 76/June
 Receiver. network analyzer 106/Apr.
 Receiver chip. gig t-link 104/Oct.
 Reentrancy 31/Apr.
 Register allocation 17/June
 Register-based interface. VXiBus 19/Apr.
 Register reassociation 33/June
 Regression testing 108/Dec.
 Relationship matrix 42/Dec.
 Reliability. cutter 45/Dec.
 Reliability. drafting plotter 35/Dec.
 Reliability. DTAB 75/Dec.
 Remote links 92/Oct.
 Remote test system, network 89/Oct.
 Rendering. photorealistic 76/June
 Repainting 82/Oct.
 Resolution, effects of printer 71/June
 Resource management 32/Apr.
 Resource reservation table 42/June
 Reuse. code 22/Dec.
 Rework estimation 51/Dec.
 RF filtering 68/Oct.
 RISC. Network Advisor 8, 22, 29/Oct.
 RISC workstations 6, 55/Aug.
 Risk assessment 50/Dec.

S

Safety. print cartridge 76/Aug.
 Sample rate. oscilloscope 18/Feb.
 Sampler operation 63/Oct.
 Sampling. periodic 50/Oct.
 Sampling. random repetitive 85/Apr.
 Scalability. CPU 20/Aug.
 Scalar transformations 25/June
 Scatter **half**toning 96/Aug.
 SCI-FI 115/Oct.
 SCPI (Standard Commands for Programmable Instruments) 15, 25, 42/Apr.
 Screen update rate. oscilloscope .. 19/Feb.
 SCSI 30/Aug., 87, 97/Dec.
 SCSI-2 103/Dec.
 SCSI LUNs 103/Dec.
 SCSI SCRIPTS 106/Dec.
 SCSI target emulator 107/Dec.
 Segment map 67/Feb.
 Semaphore data trap analysis 58/Dec.
 Semaphores 57/Dec.
 Sensitivity. oscilloscope 82/Apr.
 Sensor. optical color line 36/Dec.
 Sensor. quad photodiode 24/Dec.
 Sensors. peak power 82, 90/Apr.
 Serviceability. IC package 67/Dec.
 Shadow registers 7/June, 13/Aug.
 Shared library 46/June
 Sharpness. media cutter 42/Dec.
 Shear angle 42/Dec.
 Shear joint 82/Aug.
 Shielding. **multilayer** 84/Apr.
Shingling 97/Aug.
 Signal environment 64/Dec.
 Signal test 57/Oct.
 Signal-to-noise ratio 34/Feb.
 Simulation. behavioral. ASIC 20/Dec.
 Simulation. functional 21/Dec.
 Slitting device 43/Dec.
Smalltalk (Network Advisor) .. 23, 24/Oct.
 Software. network monitoring 95/Oct.
 Software **pipelining** 39/June
 Software release process 51/Aug.
 Source. network analyzer 105/Apr.
 Sparse-page directory 8/June
 Spatial frequency methods 68/June
 Spatial subdivision 78/June
 Specification. user interface 51/Dec.
SPECmarks 20, 32/June
 Speech technology 63/June
 Spinlocks 57/Dec.
 Stacker. plotter media 13/Dec.
 Stage count 43/June

Startup. data link 109/Oct.
 Stationary sampling 58/Oct.
 Statistics. Network Advisor 7/Oct.
 Statistics tool 67/Feb.
Stiffness, plotter media 13/Dec.
 Stimulus modeling 95/Dec.
 Storage. oscilloscope 7, 45/Feb.
 Straightness. cut 46/Dec.
 Straightness. line 9/Dec.
 Strength reduction 34/June
Subviews 82/Oct.
SurePlot drawing system 35/Dec.
 Symbol binding. shared library ... 53/June
 System bus interface chip 17, 60/Aug.
 System deskew 66/Apr.
 System integration. **VX**ibus 56/Apr.
 System migration 111/Dec.

T

TAB. demountable 62/Dec.
 Tagged queuing 103/Dec.
 Technical architecture 110/Dec.
 Telecommunicationsnetwork monitoring 89/Oct.
 Temperature dependence. detector 81/Apr.
 Test cases 50/Dec.
 Test cases. **EISA** SCSI driver 107/Dec.
 Test pattern 69/June
 Test plan. **EISA** SCSI driver 106/Dec.
 Test program generation 72/Oct.
 Test system. oscilloscope. built-in 21/Feb.
 Testability 21/Dec.
 Testing. **EISA** SCSI driver 106/Dec.
 Testing. Series 700 13, 14/June, 18, 31, 34/Aug.
 Testing. Series 700 FORTRAN 30/June
 Thermal performance. IC package 66/Dec.
 Threads 86, 87/Oct.
 Time windowing 86/Apr.
 Timing analysis 21/Dec.
 TLB 8/June
 TLB design 15/Aug.
 TMN architecture 90/Oct.
 Token ring network 18/Oct.
 Toner. effects of 72/June
 Tooling and molding. Network Advisor 45/Oct.
 Transformations, FORTRAN compiler 25/June
 Transition analyzer. microwave 48, 63/Oct.
 Translation/compression 54/Oct.

Translation

lookaside buffer 8/June, 15/Aug.
 Transmitter chip. gigabit-link 104/Oct.
 Bends displays 67/Feb.
 Triggerconditioning 86/Apr.
 Triggering. microwave transition analyzer 53/Oct.
 Troubleshooting. oscilloscopes for 57/Feb.

U

Unavailable second ... 90/Oct.
 Uniprocessor emulation 59/Dec.
 Uniprocessor overhead 60/Dec.
 User interface. HP VEE 78/Oct.
 User interface. microwave transition analyzer 59/Oct.
 User interface. Network Advisor 8, 22/Oct.
 User interface. plotter 12, 49/Dec.
 User objects 82, 86/Oct.
 User panels ... 81/Oct.

V

Vector library 29/June
 Vector modeling 94/Dec.
 Vector-to-raster converter 16/Dec.
 Vector transformations 26/June
 Verification vs. characterization 21, 22/Feb.
 Verification, **VLSI** 34/Aug.
 Version control. HP-UX shared library 53/June
 Vertical calibration 98/Apr.
 Video response 82/Apr.
 Views 81, 84/Oct.
 Virtual instruments 26/Apr.
 Virtual memory, PA-RISC 49/June
 Virtual ribbon cable 103, 113/Oct.
 Visual engineering environment ... 72/Oct.
 Vision, machine 87/Aug.
VLSI packaging 62/Dec.
VLSI, workstation 8, 12, 18/Aug.
VMEbus 6/Apr.
 Voxels ... 78/June
VXI-OS ... 29/Apr.

W

Waveform translator IC 10, 15/Feb.
 Waviness. cut 46/Dec.
 Word classes 58/June
Word-serial protocol ... 12/Apr.
 Workstations. 6, 55/Aug.

Part 3: Product Index

HP 4980A (IEEE 802.3 and IEEE 802.5) Network Advisor	Oct.	HP 87512A transmission/reflection test set	Apr.
HP 4981A (IEEE 802.3) Network Advisor	Oct.	HP DesignJet large-format inkjet drafting plotter	Dec.
HP 4982A (IEEE 802.5) Network Advisor	Oct.	HP DeskJet 500C printer	Aug.
HP 4990A ProbeView network monitoring software	Feb.	HP DeskWriter C printer	Aug.
HP 4990S LanProbe distributed LAN analysis system	Feb.	HP DraftMaster Plus large-format drafting plotter	Dec.
HP 4992A node locator	Apr.	HP E1300 Series B mainframe	Apr.
HP 8751A network analyzer	Apr.	HP E1400 VXIbus mainframe	Apr.
HP 8990A peak power analyzer	Feb.	HP E1405 VXIbus command module	Apr.
HP 9000 Series 700 FORTRAN optimizing preprocessor	June	HP E1416A RF power meter	Apr.
HP 9000 Series 700 workstations	Aug.	HP E1426A digitizing oscilloscope	Apr.
HP 25525A EISA SCSI-II host adapter	Dec.	HP E1440A synthesized function/sweep generator	Apr.
HP 25560A EISA HP-IB host adapter	Dec.	HP E1465A dense matrix relay module	Apr.
HP 25567A EISA LAN/9000 host adapter	Dec.	HP E1466A dense matrix relay module	Apr.
HP MRP Action Manager	Aug.	HP E1467A dense matrix relay module	Apr.
HP 41802A 1-M Ω input adapter	Apr.	HP E1496A digital test development software	Apr.
HP 54600A oscilloscope	Feb.	HP E3560 digital performance monitoring and remote test system	Oct.
HP 54601A oscilloscope	Feb.	HP E3720A VXIbus interface connector assembly	Apr.
HP 54655A/56A test automation module	Feb.	HP E3722A hinged interface connector assembly	Apr.
HP 54657A/58A measurement/storage module	Feb.	HP E3730A interface terminal module terminal board	Apr.
HP 70004A MMS mainframe	Oct.	HP HDMP-1000 gigabit link chipset	Oct.
HP 70820A microwave transition analyzer module	Oct.	HP J2159A EISA X.25/9000 Series 700	Dec.
HP 71500A microwave transition analyzer	Oct.	HP LanProbe network monitor	Feb.
HP 75000 Model D20 digital functional tester	Apr.	HP ProbeView network monitoring software	Feb.
HP 75000 VXIbus instruments	Apr.	HP ScopeLink oscilloscope-to-PC software	Feb.
HP 82324A measurement coprocessor	Apr.	HP-UX 8.06 multiprocessor operating system	Dec.
HP 84812A, 84813A, 84814A peak power sensors	Apr.	HP VEE visual engineering test generation environment	Oct.
HP 87511A s-parameter test set	Apr.		

Part 4: Author Index

Abella, Josep	Dec.	Bollinger, Donald E.	June	Doumas, Thomas A.	Oct.
Ahi, Ali M	Aug.	Burch, Carl	June	Dun, James B.	Apr.
Alexander, Jay A.	Feb.	Burroughs, Gregory D.	Aug.	Dyckstal, John A.	Aug.
Allen, Kevin W.	Aug.	Caamaño Agrafojo, Ventura	Dec.	Erickson, Calvin L.	Apr.
Allen, William J.	Aug.	Campbell, Von	Apr.	Escobedo, Victor T.	Dec.
Ard, Michael S.	Aug.	Card, Steven R.	Dec.	Figge, Timothy A.	Feb.
Atchison, Lee	Apr.	Carlson, Larry L.	Apr.	Fischer, Michael C.	Apr.
Ayats Ardite, Jaume	Dec.	Castellsague Pique, Carles	Dec.	Forsyth, Mark A.	Aug.
Ballo, David J.	Oct.	Cavanna, Vicente V.	Dec.	Fowles, Richard G.	Aug.
Barnard, David L.	Apr.	Chen, Iue-Shuenn	Dec.	Frink, Craig R.	Aug.
Beauchamp, Robert W.	Dec.	Clark, David S.	Dec.	Fuget, Craig	June
Beethe, Douglas C.	Oct.	Cook, Charles W.	Apr.	Garnett, Grosvenor H.	Feb.
Berkema, Alan C.	Dec.	Courville, Toni D.	Aug.	Giralt Adroher, Josep	Dec.
Bertsch, James L.	Apr.	Coutant, Cary A.	June	Glasson, Jeffrey R.	June
Bhat, Sunil	Oct.	Crandall, William W.	Feb.	Gleason, Craig A.	Aug.
Black, Henry	Apr.	DeBaets, Andrew J.	Aug.	Godlew, Scott	Oct.
Blythe, Gregory W.	Aug.	DesJardin, Lawrence A.	Apr.	Gonzalez, Jordi	Dec.
Boeller, Robert A.	Dec.	Dethlefsen, Michael	Oct.	Gore, Audrey B.	Aug.

Gottlieb, Robert A.	June	Matta, Farid	Dec.	Sennewald, Helmut	Apr.
Gray, William J.	Aug.	Mattes, Harald	Apr.	Shah, Jayesh K.	Apr.
Grove, Martin B.	Feb.	Maze, Craig	Aug.	Shields, James P.	Aug.
Gullerud, Eric N.	Apr.	McFarland, William J.	Oct.	Siu, Gregson P.	Dec.
Hall, Stuart O.	Feb.	McShane, John	Feb.	Skene, John M.	Aug.
Hammel, Samuel K.	Aug.	McVey, James D.	Apr.	Smith, Don	Apr.
Hammond, Robert J.	Aug.	Mebane IV, Alfred Holt	Dec.	Soltis, Jr., Don C.	Aug.
Hansen, Robert C.	June	Meloy, Sue A.	June	Spach, Susan S.	June
Hargis, Anna M.	Aug.	Meyer, Alan C.	June	Steinmetz, Joseph H.	Dec.
Haselby, Robert D.	Dec.	Meyer, John F.	Dec.	Stodder, Samuel A.	Dec.
Hill, Gregory A.	Apr.	Meyer, Thomas O.	Aug.	Stout, Cheryl	Oct.
Holcomb, Matthew S.	Feb.	Miller, Steven O.	Aug.	Strasser, William E.	Apr.
Holcomb, Michael L.	Aug.	Monroe, Michael J.	Aug.	Ta, Chuong	Dec.
Hoppal, John P.	Aug.	Moore, Edmund G.	Oct.	Tausheck, Eric G.	Dec.
Hunt, William L.	Oct.	Moore, Mike	Apr.	Thalmann, James A.	Apr.
Huth, Mark C.	Aug.	Murphy, Jerald B.	Feb.	Thomas, Bill	Dec.
Johnson, Leith	Aug.	Narciso, Steven J.	Apr.	Thompson, Michael E.	Dec.
Johnson, Loren E.	Aug.	Nasworthy, Jr., George F.	Dec.	Timm, Daniel P.	Feb.
Kadonaga, Anne P.	Dec.	Nieddu, Giovanni	Oct.	Tong, Peter	Apr.
Kahkoska, James A.	Feb.	Nishimoto, Alvina Y.	Aug.	Tsai, Sam S.	Apr.
Kearl, Daniel A.	Aug.	Parker, Thomas E.	Dec.	Unverrich, Rod	Oct.
Kelly, Christopher P.	Apr.	Perez, David	Dec.	Ure, Spencer M.	Aug.
Kelly, Wayne M.	Apr.	Petersen, David M.	Dec.	Uroz, Joan	Dec.
Kerschen, Karen	June	Petruno, Patrick T.	Oct.	Vallerini, Alberto	Oct.
Kjosness, David P.	Apr.	Polychronis, Kyle A.	Dec.	van den Berg, Jonathan	Dec.
Krebs, Kenneth R.	Oct.	Prufer, Rona J.	Oct.	Vixie, Robert L.	Oct.
Lai, Benny WH.	Oct.	Pulleyblank, Ronald W.	June	Walker, Richard C.	Oct.
LaMar, Steve W.	Aug.	Ramakrishnan, Sridhar	June	Ward, Kenneth A.	Apr.
Lambright, Terry M.	Aug.	Reed, Douglas J.	Aug.	Wendler, John A.	Oct.
Lantz, Andrea C.	Dec.	Roberts, Diana C.	June	Wheeler, Kathleen M.	Aug.
Larson, Douglas V.	Dec.	Roeber, Paul	Aug.	Wield, P. Jeffrey.	Dec.
Lemmon, Frank P.	June	Roesner, Arlen L.	Aug.	Wiemann, Alan L.	Aug.
Lettang, Frank J.	Aug.	Rosello, Isidre	Dec.	Williams, Barbara J.	Aug.
Li, Daniel	Aug.	Ruscetta, Michelle A.	June	Willis, Wayne H.	Apr.
Lin, Chi-Yen R.	Aug.	Russell, Dale D.	June	Witt, Stephen	Oct.
Liu, Christopher S.	Dec.	Sabatella, Marc	June	Witte, Robert A.	Feb.
Longust, Timothy A.	Dec.	Santhanam, Vatsa	June	Worrell, Paul B.	Apr.
Lymer, Tony	Apr.	Savage, Deborah A.	Aug.	Wyatt, Kenneth D.	Feb.
Mahaffy, Brian D.	Dec.	Scherer, Dieter	Apr.	Yamine, Dawn L.	June
Mqenheimer, Daniel J.	June	Schmedake, James R.	Dec.	Yanqawa, Koichi	Apr.
Magnuson, Chris J.	Feb.	Schnaible, Mark P.	Feb.	Yen, Chu-Sun	Oct.
Mangelsdorf, Steven T.	Aug.	Schoessow, Michael J.	Apr.	Yergenson, Robin P.	Feb.
Mason, Lee S.	Aug.	Secco, Fernando M.	Oct.		

Hewlett-Packard Company, P.O. Box 51827
Palo Alto, CA 94303-0724

ADDRESS CORRECTION REQUESTED

Bulk Rate
U.S. Postage
Paid
Hewlett-Packard
Company



CHANGE OF ADDRESS:

To subscribe, change your address, or delete your name from our mailing list, send your request to Hewlett-Packard Journal, PO Box 51827, Palo Alto, CA 94303-0724 U.S.A. Include your old address label, if any. Allow 60 days.

Part 1: Chronological Index

February 1993

Photonic Technology for Lightwave Communications Test Applications, *Waguih S. Ishak, Kent W. Carey, Steven A. Newton, and William R. Trutna, Jr.*

Tunable Laser Sources for Optical Amplifier Testing, *Bernd Maisenbacher, Edgar Leckel, Robert Jahn, and Michael Pott*

External-Cavity Laser Design and Wavelength Calibration, *Emmerich Müller, Wolfgang Reichert, Clemens Rück, and Rolf Steiner*

External-Cavity Laser Temperature Stabilization and Power Control, *Horst Schweikardt and Edgar Leckel*

Dual-Output Laser Module for a Tunable Laser Source, *Roger L. Jungerman, David M. Braun, and Kari K. Salomaa*

Research on External-Cavity Lasers, *William R. Trutna, Jr. and Paul Zombedian*

Design of a Precision Optical Low-Coherence Reflectometer, *D. Howard Booster, Harry Chou, Michael G. Hart, Steven J. Mifsud, and Rollin F. Rawson*

Averaging Measurements to Improve Sensitivity

Fabrication of Diffused Diodes for HP Lightwave Applications, *Patricia A. Beck*

High-Resolution and High-Sensitivity Optical Reflection Measurements Using White-Light Interferometry, *Harry Chou and Wayne V. Sorin*

A Modular All-Haul Optical Time-Domain Reflectometer for Characterizing Fiber Links, *Josef Beller and Wilfried Pless*

A High-Performance Signal Processing System for the HP 8146A Optical Time-Domain Reflectometer, *Josef Beller*

Improving SNR by Averaging

Design Considerations for the HP 8146A OTDR Receiver, *Frank Maier*

User Interface Design for the HP 8146A OTDR, *Robert Jahn and Harald Seeger*

Analyzing OTDR Traces on a PC with a Windows User Interface

High-Performance Optical Return Loss Measurement, *Siegmar Schmidt*

High-Speed Time-Domain Lightwave Detectors, *Randall King, David M. Bmun, Stephen W. Hinch, and Karl Schubert*

InP/InGaAs/InP P-I-N Photodetectors for High-Speed Lightwave Detectors

Calibration of Lightwave Detectors to 50 GHz, *David J. McQuate, Kok Wai Chang, and Christopher J. Madden*

April 1993

A New Family of Microwave Signal Generators for the 1990s, *William W. Heinz, Ronald E. Pratt, and Peter H. Fisher*

Broadband Fundamental Frequency Synthesis from 2 to 20 GHz, *Brian R. Short, Thomas L. Grisell, and Edward G. Cristal*

A New High-Performance 0.01-to-20-GHz Synthesized Signal Generator Microwave Chain, *William D. Baumgartner, John S. Brenneman, John L. Imperato, Douglas A. Larson, Ricardo de Mello Peregrino, and Gregory A. Taylor*

Internal Pulse Generator

Concurrent Signal Generator Engineering and Manufacturing, *Christopher J. Bostak, Camala S. Kolseth, and Kevin G. Smith*

A Design for Manufacturability, Design for Testability Checklist

A New Generation of Microwave Sweepers, *Alan R. Bloom, Jason A. Chodora, and James R. Zellers*

Third-Order Curve-Fit Algorithm

A Digitally Corrected Fractional-N Synthesizer

Microcircuits for the HP 83750 Series Sweepers, *Eric V.V. Heyman, Rick R. James, and Roger R. Graeber*

A Programmable 3-GHz Pulse Generator, *Hans-Jibyen Wagner*

Pulse/Data Channel Extends Programmable Pulse Generator Applications, *Christoph Kalkuhl*

Design of a 3-GHz Pulse Generator, *Peter Schinzel, Andreas Pfaff, Thomas Dippon, Thomas Fischer, and Allan R. Armstrong*

Cooling of the Frequency Divider IC

A Multirate Bank of Digital Bandpass Filters for Acoustic Applications, *James W. Waite*

Continuous Monitoring of Remote Networks: The RMON MIB, *Matthew J. Burdick*

The HP 64700 Embedded Debug Environment: A New Paradigm for Embedded System Integration and Debugging, *Robert D. Gronlund, Richard A. Nygaard Jr., and John T. Rasper*

The Value of Usability

The Debug Environment Connection to HP SoftBench

A Red-Time Operating System Measurement Tool

A New Perspective on Emulation Hardware Modularity

Software Performance Analysis of Real-Time Embedded Systems, *Andrew J. Blasciak, David L. Neuder, and Arnold S. Berger*

June 1993

ORCA: Optimized Robot for Chemical Analysis, *Gary B. Gordon, Joseph C. Roark, and Arthur Schleifer*

The HP ORCA System Outside the Analytical Laboratory

Gravity-Sensing Joy Stick

Absolute Digital Encoder

HP **OpenODB**: An **Object-Oriented** Database Management System for Commercial Applications, *Rafiu Ahad and Tu-Ting Cheng*
The HP Ultra VGA Graphics Board, *Myron R. Tuttle, Kenneth M. Wilson, Samuel H. Chau, and Yong Deng*
POSIX Interface for **MPE/ix**, *Rajesh Lalwani*
A Process for Preventing Software Hazards, *Brian Connolly*
Configuration Management for Software Tests, *Leonard T. Schroath*
Implementing and **Sustaining** a Software Inspection Program in an R&D Environment, *Jean M. MacLeod*
The Use of **Total** Quality Control Techniques to Improve the Software **Localization** Process, *John W. Goodnow, Cindie A. Hammond, William A. Koppes, John J. Krieger, D. Kris Rovell-Rixx, and Sandra J. Warner*
Tools for the Language Translation Process
A Transaction Approach to Error Handling, *Bruce A. Rafnel*
Error Definition
User Interface Management System for **HP-UX** System Administration Applications, *Mark H. Notess*
SAM versus Manual Administration

August 1993

High-Efficiency Aluminum Indium Gallium **Phosphide** Light-Emitting Diodes, *Robert M. Fletcher, Chihping Kuo, Timothy D. Osentowski, Jiann Gwo Yu, and Virginia M. Robbins*
The Structure of **LEDs**: **Homojunctions** and **Heterojunctions**
HP Task Broker: A Tool for Distributing Computational Tasks, *Terrence P. Graf, Renato G. Assini, John M. Lewis, Edward J. Sharpe, James J. Turner, and Michael C. Ward*
HP Task Broker and Computational Clusters
Task Broker and DCE Interoperability
HP Task Broker Version 1.1
The HP-RT Real-Time Operating System, *Kevin D. Morgan*
An Overview of Threads
Managing PA-RISC Machines for Real-Time Systems, *George A. Anzinger*
Context Switching in HP-RT
Protecting Shared Data Structures
The Shadow Register Environment
C Environment
The HP **Tsutsuji** Logic Synthesis System, *W. Bruce Culbertson, Toshiki Osame, Yoshisuke Otsuru, J. Barry Shackleford, and Motoo Tanaka*
Designing a Scanner with Color Vision, *K. Douglas Gennetten and Michael J. Steinle*
Mechanical Considerations for an Industrial Workstation, *Brad Clements*
Online **CO₂ Laser** Beam **Real-Time** Control Algorithm for Orthopedic Surgical Applications, *Franco A. Canestri*
Online Defect Management via a **Client/Server** Relational Database Management System, *Brian E. Hoffmann, David A. Keefer, and Douglas K. Howell*
Client/Server Database Architecture
Realizing Productivity Gains with C++, *Timothy C. O'Konski*
Glossary
Bridging the Gap between **Structured** Analysis and **Structured** Design for Real-Time Systems, *Joseph M. Luszc and Daniel G. Maier*
Structured Analysis and **Structured** Design Refresher

October 1993

An **8-Gigasample-per-Second** Modular **Digitizing** Oscilloscope System, *John A. Scharrer*
An **8-Bit** Data Acquisition System for a Sampling Digital **Oscilloscope**, *Michael T. McTigue and Patrick J. Byrne*
A **Digitizing** Oscilloscope **Time** Base and **Trigger** System Optimized for Throughput and Low Jitter, *David D. Eskeldson, Reginald Kellum, and Donald A. Whiteman*
A Rugged **2.5-GHz** Active Oscilloscope Probe, *Thomas F. Uhling and John R. Sterner*
Accuracy in Interleaved ADC Systems, *Allen Montijo and Kenneth Rush*
Dither and Bits
Filter Design for Interpolation
A Study of Pulse Parameter Accuracy in Real-Time Digitizing Oscilloscope Measurements, *Kenneth Rush*
Architectural Design for a Modular Oscilloscope System, *Dana L. Johnson and Christopher J. Magnuson*
A Survey of Processes Used in the Development of Firmware for a Multiprocessor Embedded System, *David W. Long and Christopher P. Duff*
Developing Extensible Firmware
Mechanical Design of a New Oscilloscope **Mainframe** for Optimum Performance, *John W. Campbell, Kenneth W. Johnson, Wayne F. Helgoth, and William H. Escovitz*
A Probe Fixture for **Vector** Testing **High-Performance** Data Acquisition Integrated Circuits, *Daniel T. Hamling*
A High-Performance **1.8-GHz** **Vector** Network and Spectrum Analyzer, *Shigeru Kawabata and Akira Nukiyama*
Receiver Design for a Combined RF Network and Spectrum Analyzer, *Yoshiyuki Yanagimoto*
DSP Techniques for Digital IF
A **Fast-Switching**, High-Isolation Multiplexer, *Yoshiyuki Yanagimoto*
A **10-Megasample-per-Second** Analog-to-Digital Converter with **Filter** and Memory, *Howard E. Hilton*
A **10-MHz** Analog-to-Digital Converter with **110-dB** Linearity, *Howard E. Hilton*

December 1993

Vector Signal Analyzers for Difficult Measurements on Time-Varying and Complex Modulated Signals, *Kenneth J. Blue, Robert T. Cutler, Dennis R. O'Brien, Douglas R. Wagner, and Benjamin R. Zartingo*
The **Resampling** Process
Applications for Demodulation
A Firmware Architecture for Multiple High-Performance Measurements, *Dennis R. O'Brien*
Run-Time-Configurable Hardware Drivers
Remote Debugging
Baseband **Vector** Signal Analyzer Hardware Design, *Manfred Bartz, Keith A. Bayern, Joseph R. Diederichs, and David F. Kelley*
ADC Bits, Distortion, and Dynamic Range
What Is Dithering?
RF **Vector** Signal Analyzer Hardware Design, *Robert T. Cutler, William J. Ginder, Timothy L. Hillstrom, Kevin L. Johnson, Roy L. Mason, and James Pietsch*
Microwave Plate Assembly
A Versatile Tracking and Arbitrary Source

Vector Measurements beyond 1.8 GHz

Optical **Spectrum Analyzers** with High Dynamic Range and Excellent Input Sensitivity. *David A. Bailey and James R. Stimple*

Optical Spectrum Analysis

A Double-Pass **Monochromator** for Wavelength Selection in an Optical **Spectrum Analyzer**. *Kenneth R. Wildnauer and Zoltan Azary*

Diffraction Grating

Polarization Sensitivity

A High-Resolution Direct-Drive Diffraction Grating Rotation System. *Joseph N. West and J. Douglas Knight*

A **Two-Axis** Micropositioner for Optical Fiber Alignment. *J. Douglas Knight and Joseph N. West*

A Standard Data Format for Instrument Data Interchange. Michael L. *Hall*

North American Cellular **CDMA**. *David P. Whipple*
Cellular Technologies

DECT Measurements with a Microwave Spectrum Analyzer. Mark A. *Elo*

Part 2: Subject Index

Subject	Page/Month
A	
Abstract data types	85/Aug.
Access control definition	45/June
Access control. HP OpenODB	28/June
Accuracy. oscilloscope	8, 38, 47/Oct.
Acoustics. industrial workstation	65/Aug.
Acquisition system. oscilloscope	9, 11, 13/Oct.
Active measurement mode	23/Dec.
Active probe	31/Oct.
Activity measurements	108/Apr.
ADARTS (Ada-based Design Approach to Real-Time Systems)	90/Aug.
ADC, 10-MSa/s	100/Oct.
ADC bits. distortion. dynamic range	38/Dec.
ADC chips	14/Oct.
ADC, large-scale dithered	36/Dec.
ADC system. 8-GSa/s	13/Oct.
Address alignment	111/Apr.
Affinity value	17/Aug.
Agent. RMON	85/Apr.
Aggregate object	24/June
Airflow management. industrial workstation	65/Aug.
Algorithm. laser surgery	68/Aug.
Algorithm. third-order curve fit	41/Apr.
AlInGaP LEDs	6/Aug.
All-haul optical time-domain reflectometry	60/Feb.
Amplifier , output	24, 65/Apr., 36/Dec.
Amplifier. shaping	63/Apr.
Amplifier. switchable gain	35/Dec.
Amplifier. transimpedance	42/Feb., 71/Dec.
Amplifier. traveling-wave	22/Apr.
Amplitude modulation	25/Apr.
Analytical robot	6/June
Analyzer. real-time frequency	73/Apr.
Analyzer. software performance	98, 107/Apr.
Analyzers. vector signal	6/Dec.
Anti-alias filtering	41, 101/Oct., 36/Dec.
Antireflection coating	20, 32/Feb.
Aperture wheel	69, 76/Dec.
Application development. robot	13/June
Arbitration. multiprocess	95/Apr.
Architecture. multiprocess	94/Apr.
Architecture. oscilloscope	51/Oct.
ASIC design system	38/Aug.
Assault handling	27/Dec.
Atomic object	24/June
Attenuator. optical	14/Feb.
Attenuators	34, 49/Dec.
Attenuators , FET	22/Apr.
B	
Baseband vector analyzer	31/Dec.
Batch	31/Aug.
Bipolar sampler	17/Oct.
Bistability	36/Feb.
Block diagram design entry	43/Aug.
Bone characteristics	68/Aug.
Bricks	66/Aug.
Bright LEDs	6/Aug.
Burst timing. DECT	102/Dec.
C	
C++	85/Aug.
C/C++ debugger	93/Apr.
C environment	35/Aug.
Calibration. ADC	39/Oct.
Calibration. ADC residue gain	109/Oct.
Calibration. DAC	109/Oct.
Calibration. lightwave detectors	87/Feb.
Calibration. pulse generator	69/Apr.
Calibration. tunable laser	25, 30/Feb.
Calibration. vector signal analyzer	54/Dec.
Call stack	111/Apr.
Callee-saves and caller-saves registers	36/Aug.
Carrier frequency determination	13/Dec.
CCD detector	53, 55/Aug.
CDMA. North American cellular	90/Dec.
Cellular CDMA system	90/Dec.
Cellular technologies	92/Dec.
Ceramic substrate breakage	34/Oct.
CGA	31/June
Chief moderator	61/June
Chromatic dispersion	56/Feb.
Client/server architecture	77/Aug.
Client/server database architecture	22/June, 78/Aug.
Clocks. oscilloscope	29/Oct.
Coating. antireflection	20, 32/Feb.
Collective computing	15, 16/Aug.
Color Graphics Adapter	31/June
Color matching	54/Aug.
Color science	52/Aug.
Color separation, scanner	54, 55/Aug.
Complex objects	20/June
Component interface specifications	95/Aug.
Component versions	54/June
Computational clusters	16/Aug.

Computed function 27/June
Concrete data types 85/Aug.
Configuration file.
HP Task Broker 16/Aug.
Configuration management 53/June
Connectivity, industrial workstation 63/Aug.
Contact strip, oscilloscope cabinet 68/Oct.
Context independent error codes 72/June
Context switching 32/Aug.
Control, measurement 23/Dec.
Converter, analog-to-digital see ADC
Cooling, IC 61/Apr.
Correction of time data
Correlator, ADC 39/Dec.
Cost of a variable 46/Aug.
Counter circuit, UHF 52/Dec.
Coupler, leveling 20/Apr.
Coupling, low-noise 26/Oct.
Curve-fit algorithm 41/Apr.
Customization, measurement 22, 26/Dec.
Cyanate ester

D

Daemon, emulation system 95/Apr.
Data interchange format 85/Dec.
Data narrowing 87/Aug.
Data vector architecture 18/Dec.
Data viewer 47/Aug.
Database, object-oriented 20/June
DCE interoperability 19/Aug.
Debug environment, embedded system 90/Apr.
Debugger macros 105/Apr.
Debugging, remote 29/Dec.
Decimation, HP 8146A 64/Feb.
Decimation filtering 102/Oct., 41/Dec.
Decimation, sample rate 76/Apr.
DECT 98/Dec.
Defect causes 62/June
Defect management system (DMS) 73/Aug.
Defect prevention 63/June
Defect sharing 77/Aug.
Defect tracking system 74/Aug.
Delay loop 58/Apr.
Delay, switched 62/Apr.
Delay, variable 62/Apr.
Demodulation, AM, FM, PM ... 11, 12/Dec.
Demodulation, DECT 103/Dec.
Derived function 27/June
Design for manufacturability 30/Apr.

Detectors, lightwave 83/Feb.
Development environment, HP-RT 24/Aug.
Diffraction grating ... 12, 20/Feb., 70/Dec.
Diffraction grating rotator 77/Dec.
Diffused diodes 49/Feb.
Diffusion barrier 50/Feb.
Digital signal processing 40, 74/Apr., 8, 73/Dec.
Digitizing oscilloscopes 6/Oct.
Dim and burst signaling 93/Dec.
Direct-drive diffraction grating system 75/Dec.
Directory structure, MPE/iX 41/June
Display driver, HP Ultra VGA ... 32, 38/June
Distortion, ADC 106, 107/Oct.
Distributed feedback lasers 66/Dec.
Dither, ADC 41, 42, 44/Oct.
Dithering, large-scale 36, 44/Dec.
Dividers, binary frequency 18.24, 58/Apr.
Double-balanced mixer 86/Oct.
Double-pass monochromator 68/Dec.
Down-converter, vector analyzer ... 58/Dec.
Drivers, run-time-configurable ... 20/Dec.
DSP techniques 90/Oct.
Dual YG oscillator 46/Apr.
Duration measurements 109/Apr.
Duroid 17, 19/Apr.
Dynamic typing 21/June

E

EDFAs 11/Feb.
EGA 31/June
Embedded system debugging 90/Apr.
EMC design 70/Apr.
Emissions due to modulation ... 101/Dec.
Emulator/analyzer 92/Apr.
Encoder, absolute digital 14/June
Enhanced Graphics Adapter ... 31/June
Ergonomics, HP Ultra VGA 36/June
Error definition 72/June
Error handling 71/June
Errors, time base 24/Oct.
Etalon 13, 21/Feb.
ETSI 98/Dec.
Event tree analysis 50/June
Exceptions 88/Aug.
External-cavity lasers 7, 11, 20, 28, 32, 35/Feb.
External function 27/June

F

Fabry-Perot lasers 65/Dec.

Failure modes and effects analysis 49/June
Fault tree analysis 49/June
FFT in analyzers 8/Dec.
Held solver program 19/Apr.
File access and control, MPE/iX ... 44/June
File naming, MPE/iX 43/June
Filter, anti-aliasing ... 41, 101/Oct., 36/Dec.
Filter, bandwidth limit 44/Oct.
Filter, IF 19/Oct.
Filter, interpolation 45/Oct.
Filtering, zoom and decimation .. 102/Oct.
Filters, decimation 41/Dec.
Filters, harmonic 25/Apr.
Filters, low-pass switched 23/Apr.
Filters, multirate digital 73/Apr.
Finesse 23/Feb.
Firmware development, oscilloscope 59, 64/Oct.
Firmware, optical source 15/Feb.
Firmware, signal generator 10/Apr.
Firmware, vector signal analyzer .. 17/Dec.
Fishbone diagram 66/June
FISO memory 14/Oct.
Flash ADC 14/Oct.
Flexure plate 81/Dec.
Flow graph optimization 78/Apr.
Form factor 65/Aug.
Forward link encoding 94/Dec.
Fractional-N phaselocked loop 14, 42, 44/Apr.
Free spectral range 23/Feb.
Frequency control 39/Apr.
Frequency conversion ... 49, 50, 51/Dec.
Frequency diversity 92/Dec.
Frequency measurement 63/Apr.
Frequency modulation 13/Apr.
Frequency selective analysis 9/Dec.
Frequency synthesis, broadband fundamental 12, 38/Apr.
Frequency synthesis subsystem 12, 42/Apr.
Full width at half maximum (FWHM) 54/Feb., 64/Dec.
Function duration measurements 110/Apr.
Functions, HP OpenODB 26/June

G

Gate array, data 57/Apr.
Gear backlash 77/Dec.
Ghost elimination 75/Feb.
Graphics engine, HP Ultra VGA ... 32/June

Grating.
diffraction 12, 20/Feb., 68, 70 Dec.
Gravity-sensing joy stick 12/June

H

Handle classes. C++ 87/Aug.
Hard floor 38, 40/Dec.
Harmonic drive reduction 11/June
Hazard avoidance process 48/June
Hercules Graphics Card 31/June
Heterodyne band microcircuit 49/Apr.
Heterogeneity 15, 79/Aug.
Heterojunction LEDs 8/Aug.
HGC 31/June
High-isolation shielding 98/Oct.
High-speed multiplexer 95/Oct.
Homojunction LEDs 8/Aug.
HP CMOS. HP Ultra VGA 38/June
HPVGA utility 37/June
Hybrid ADC channel 14/Oct.

I

IF detection 88/Oct.
Impulse response. photoreceiver 88/Feb.
Industrial workstation 62/Aug.
Input. analog 32/Dec.
Input sensitivity. HP 71450A/51A 62/Dec.
Input trip 34/Dec.
Integration, discrete 78/Apr.
Integrity and security, DMS 79/Aug.
Interconnect. plug-in 68/Oct.
Interface classes, C++ 86/Aug.
Interleaved ADC system 15, 38/Oct.
Interleaving (HP 8146A) 64/Feb.
Interpolation. waveform 45/Oct.
Interpolator. time base 27/Oct.
Interrupt handling 33/Aug.
Interruptability 25/Aug.
Intersymbol interference 43/Oct.
Intertask communication 94/Aug.
Interval duration
measurements 109/Apr.
I/O architecture 33/Aug.
ISA bus 33/June
Isolators, optical 7/Feb.

J

Jitter. oscilloscope 25/Oct.
Joint space. robot 11/June
Joint servos 13/June
Joystick 12/June

K

kCode 26/Dec.

Kernel semaphores 27/Aug.
Kemel software. HP-RT 24, 25/Aug.
Kinematics processor 11/June

L

Laboratory robot 6/June
Language translation 68/June
Laplacian potential solver 19/Apr.
Laser control algorithm 68/Aug.
Laser module 32/Feb.
Lasers,
external-cavity 7, 11, 20, 28, 32, 35/Feb.
Lasers. semiconductor 7/Feb.
Lasers. YAG 7/Feb.
Late binding 21/June
Lathe/robot system 9/June
Layered manufacturing 30/Apr.
LEDs 6/Aug.
Lifetime of a variable 46/Aug.
Light-emitting diodes 6/Aug., 63/Dec.
Linear actuator 82/Dec.
Linearity. ADC 105/Oct.
Linearity correction. ADC 42/Oct.
Literal object 24/June
IO feedthrough cancellation 49/Dec.
IO loop 15/Apr.
IO. vector analyzer 41, 51/Dec.
Logic synthesis system 38/Aug.
Logical Description Format 43/Aug.
Long code 94/Dec.
Low-band output section 23/Apr.
Low-coherence reflectometer 39/Feb.
Low-transient design 97/Oct.
Luminous performance. LED 12/Aug.

M

Manufacturing. signal generator 30/Apr.
Markers 111/Apr.
Maximum power curve 18/Feb.
MDA 31/June
Measurement sequencers 21/Dec.
Mechanical design. oscilloscope 66/Oct.
Mechanical design.
pulse generator 71/Apr.
Medical information
and monitoring system 47/June
Memory chip 14/Oct.
Memory depth. oscilloscope 14, 20/Oct.
Memory leaks 87/Aug.
Mesa p-i-n diodes 49/Feb.
Message distribution 96/Apr.
Metamerism 53/Aug.
Metrics. software inspections 62/June
Methods developments software 8/June

MIB 82/Apr.
Michelson interferometer 39, 53/Feb.
Microcircuits.
hybrid 19, 21, 46, 62, 63, 65/Apr., 14/Oct.
Microwave chain 17/Apr.
Microwave plate assembly 50/Dec.
Mixer. GaAs RFIC 49/Apr.
Modulation module 21/Apr.
Modulation transfer function
(MTF) 55/Aug.
Modulator amplifier
microcircuit 50/Apr.
Modulator-based
optical test system 89/Feb.
Modulators. optical 7/Feb.
Module generators 39/Aug.
Monochrome Display Adapter 31/June
Mooz mode 42/Dec.
Motion, robot 14/June
MPE directory structure 41/June
MPE/IX directory structure 42/June
Multimeter, lightwave 81/Feb.
Multimodiig 37/Feb.
Multipath 92/Dec.
Multiple inheritance 21/June
Multiplexer 95/Oct.
Multiprocessing
operating system 72/Feb.
Multirate digital bandpass filters 73/Apr.
Multithreaded kernel 25/Aug.

N

Native language help text 73/Feb.
Negative delay 58/Apr.
Netlists 38/Aug.
Network analyzer 76/Oct.
Network monitoring 82/Apr.
Node classes, C++ 86/Aug.
Noise, ADC 106/Oct.
Nonlinearities, time base 25/Oct.

O

Object action manager (ObAM) 81/June
Object. HP OpenODB 24/June
Object models 23/June
Object-oriented modeling 20/June
Object-oriented
programming language 24/June
Octave-band analysis 73/Apr.
Offset loop 14/Apr.
OMVPE 8/Aug.
OOP 24/June
OpenODB model 23/June
Optical deck 45/Feb.

Optical frequency-domain reflectometry 52/Feb.
Optical heterodyne test system ... 88/Feb.
Optical impulse test system 87/Feb.
Optical spectrum analysis 62/Dec.
Optical spectrum analyzers 60/Dec.
Optical sources, tunable 11/Feb.
Optical time-domain reflectometry (OTDR) 52, 61/Feb.
Optimization, filter 77, 78/Apr.
Optimization, logic 41/Aug.
Optoblock 13, 24/Feb.
ORCA robot 6/June
Orthopedic surgery laser control .. 68/Aug.
Oscillator transient measurements 12/Dec.
Oscilloscopes, 8-GSa/s 6/Oct.
OTDR receiver 69/Feb.
Output module 19/Apr.
Overloaded functions 21, 28/June

P

Package structuring 94/Aug
Packet capture 87/Apr.
PA-RISC machines 31, 32/Aug.
PC video 31/June
Peephole optimizations 41/Aug.
Performance verification 57/Dec.
Period generation 60/Apr.
Phase accuracy 77/Apr.
Phase noise 14/Apr.
Phase noise measurements 12/Dec.
Photodetectors 8, 49, 83, 85, 87/Feb.
Photodiode, HP 71450A/51A 71/Dec.
Photoluminescence 9/Feb.
Photonic technology 6/Feb.
Physical layer, DECT 99/Dec.
PID servo loop 14/Feb.
Pilot signal 94/Dec.
P-i-n photodetectors, HP 8504A ... 49/Feb.
Pixel viewer 47/Aug.
Planar p-i-n diodes 50/Feb.
Plug-ins, oscilloscope 11, 68/Oct.
PMMA characteristics 68/Aug.
Polarimeters 8/Feb.
Polarization 55/Feb., 69/Dec.
Polarization diversity receiver 42, 55/Feb.
Polarization sensitivity 71/Dec.
Polytope optimization 77/Apr.
Portable Operating System Interface 41/June
POSIX 41/June
Power control, cellular 93/Dec.
Power control, laser 29/Feb.

Power leveling 26/Apr.
Power spectral density 64/Dec.
Preamplifier 35/Dec.
Preliminary hazard analysis 51/June
Prestressing 36/Oct.
Pretests 31/Apr.
Pretrigger, oscilloscope 7/Oct.
Priority inheritance 27, 29/Aug.
Priority inversion 28/Aug.
Privileges, HP OpenODB 29/June
Probe, active 31/Oct.
Probe fixture, wafer test 73/Oct.
Process, HP-RT 27/Aug.
Process scheduling, HP-RT 30/Aug.
Program activity measurements 109/Apr.
Protocol, DECT 98/Dec.
Pulse/data channel 56/Apr.
Pulse formatter 65/Apr.
Pulse height accuracy 49/Oct.
Pulse generator 27, 52/Apr.
Pulse modulation 25/Apr.
Pulse parameter accuracy 47/Oct.
Pulse width accuracy 48/Oct.
Pulse width generation 64/Apr.

Q

Quantizing error 107/Oct.
Quantum efficiency 11/Aug.
Quantum wells 7/Feb.

R

RAKE receiver 92/Dec.
RAMDACs 36/June
Real-time operating systems .. 23, 31/Aug.
Real-time systems 23, 31, 90/Aug.
Receiver design, HP 4396A 81, 85/Oct.
Receivers, lightwave 83/Feb.
Reconstruction, waveform 45/Oct.
Reentrancy 25/Aug.
Reference loop 16/Apr.
Referential integrity 20/June
Reflectometry 8, 39, 60/Feb.
Register allocation, logic synthesis 46/Aug.
Reliability, industrial workstation
Remote access 15/Aug.
Remote debugging 29/Dec.
Resampling 10/Dec.
Residual interpolator 28/Oct.
Resolution bandwidth 79/Oct.
Retroreflector 41/Feb.

Return loss measurement, HP 8146A 78/Feb.
Return loss measurement, optical 79/Feb.
Reverse link encoding 95/Dec.
RF shield design 82/Oct.
RF source 54/Dec.
RF vector analyzer 47/Dec.
RFI suppression 33/Dec.
Rise time accuracy 47/Oct.
RMON MIB 82/Apr.
Robot system 6/June
RTOS measurement tool 97/Apr.
Rules 80/Aug.
Run-time-configurable hardware drivers 20/Dec.

5

SAFD microcircuit 47/Apr.
Sample rate, oscilloscope 14, 21/Oct.
Sample-and-filter technique 16/Oct.
Sampler chip 14, 17/Oct.
Sampler, microwave 15/Apr.
Sampling, electrooptic 9/Feb.
Scale fidelity 78/Oct.
Scaling, fixed-point 79/Apr.
Scallop error 91/Oct.
Scanner, color desktop 52/Aug.
Scroll bars, sticky 102/Apr.
Self-calibration 44/Apr.
Self-test 43/Apr.
Semaphores 28/Aug.
Sensitivity tests, DECT 104/Dec.
Separator, color 55/Aug.
Serviceability, industrial workstation 63/Aug.
Setjmp and longjmp 37/Aug.
Shadow registers 34/Aug.
Shaft encoder 78/Dec.
Shared data structures 33/Aug.
Short codes 94/Dec.
Side-mode filter 13, 21/Feb.
Side mode suppression ratio 67/Dec.
Signal averaging 44, 63/Feb.
Signal generators 6/Apr.
Signal processing, HP 8504A 43/Feb.
Signal-to-noise ratio 54, 63/Feb.
Simulation, logic synthesis system 44/Aug.
Simultaneous RF/baseband measurements 14/Dec.
SNMP 82/Apr.
Soft handoff 92/Dec.

SoftBench 93/Apr.
Software defect management 73/Aug.
 Software, DSP 79/Apr.
 Software hazards 47/June
 Software **inspections** 60/June
 Software localization 64/June
Sound intensity 74/Apr.
Sound pressure 75/Apr.
 Source,
 vector **signal** analyzer 43, 54/Dec.
 Sources, tunable **laser** 11/Feb.
 Spatial **diversity** 92/Dec.
 spatial resolution 54/Feb.
spectral power **distribution** 52/Aug.
spectral reflectance 52/Aug.
 Spectrum analyzer 76/Oct.
Spectrum analyzer
 DECT measurements..... 98/Dec.
 Spectrum resolution 90/Oct.
 Speech encoding, **cellular** 93/Dec.
 Spontaneous emission, LEDs 63/Dec.
 Standard **data** format 85/Dec.
 Standard **observers**,
 CIE and NTSC 53/Aug.
State machines 23/Dec.
Statistics 111/Apr.
Stimulated emission,
Fabry-Perot lasers 65/Dec.
 Stitching, HP 8146A 64/Feb.
 Storage, oscilloscope..... 7/Oct.
 Stored function..... 26/June
 Stored procedures 80/Aug.
 Strain gauge amplifier 83/Dec.
Strain gauges 83/Dec.
 Structured **analysis**
 and **structured** design 90/Aug.
 Subscription, message..... 96/Apr.
 Super VGA 31/June
Surgical laser control 68/Aug.
 Surrogate object 24/June
 SVGA 31/June
 Switches, p-i-n 23/Apr.
Sweepers, microwave 38/Apr.
Synthesized signal generators 6/Apr.

System administration
 manager (SAM) 80/June
 System start 95/Apr.

T

Task Broker 15/Aug.
Task structuring 92/Aug.
Taunel etalon 23/Feb.
 Teach pendant, robot 12/June
Temperature calibration 70/Apr.
Temperature stabilization, laser. . . 28/Feb.
Templates 88/Aug.
 Test library management **system**
 53/June
 Test **set**, optical **return loss** 82/Feb.
 Test suite hierarchy 55/June
 Threads 27/Aug.
Time base, oscilloscope 24/Oct.
Time diversity.. 92/Dec.
Time-domain corrections 10/Dec.
Time gated measurement 92/Oct.
Time selective
 frequency **analysis** 15/Dec.
Timeshare 31/Aug.
 Timing board, pulse generator 60/Apr.
 Topology **graphs** 40, 44/Aug.
TQC 64/June
Tramp errors 71/June
Transaction error handling 72/June
Transceiver, DECT 100/Dec.
Transimpedance amplifier,
 HP 8504A 42/Feb.
Transimpedance amplifier,
 HP 71450A/51A 71/Dec.
Traveling-wave amplifier..... 22/Apr.
Trigger system 24/Oct.
Trigger, vector analyzer..... 45/Dec.
Triggers 80/Aug.
Tsutsuji system 38/Aug.
Tunable laser sources 11/Feb.
Two-axis micropositioner 80/Dec.
Two-step decimation 90/Oct.
Type, HP OpenODB 25/June

U

Ultrasound **transducer** analysis ... 13/Dec.
 Uncertainty, **return loss** 80/Feb.
 User **interface** 47, 72/Feb.
 User interface, HP 71450A/51A ... 61/Dec.
 User interface management system
 (UIMS) 80/June

V

Vector **signal** analyzers 6/Dec.
 VGA 31/June
 Video Graphics **Array** 31/June
Video image procedures,
 assembly and test. 35/Apr.
 Video RAM 34/June
 Virtual **instruments** 46/Aug.
VMEbus 23, 33, 64/Aug.
Vocoder 93/Dec.
VRAM 34/June

W

Wafer **test**, amplifier 68/Apr.
 Wafertest fixture 73/Oct.
Walsh codes 93/Dec.
 Water vapor absorption 58/Feb.
 Wavelength calibration, **laser** 25/Feb.
 Wavelength sweep 18/Feb.
 WDM 11/Feb.
White-light interferometry 39/Feb.
 Width board, pulse **generator** 64/Apr.
Windows display driver 39/June
Windows, synchronous 101/Apr.
 Work groups, HP Task Broker 20/Aug.
 Worm drive 77/Dec.

XYZ

YIG oscillator 51/Dec.
YIG oscillators 12, 46/Apr.
Zero-span measurements 12/Dec.
 Zeroing and chopping,
 HP 71450A/51A 73/Dec.
Zoom filtering 102/Oct.

Part 3: Product Index

HP 3569A Portable Real-Time Frequency Analyzer	Apr.	HP 8371% Synthesized Signal Generator	Apr.
HP 4396A 1.8-GHz Vector Network and Spectrum Analyzer	Oct.	HP 83731A Synthesized Signal Generator	Apr.
HP 8133A 3-GHz Pulse Generator	Apr.	HP 83732A Synthesized Signal Generator	Apr.
HP 8146A Optical Time-Domain Reflectometer	Feb.	HP 83750 Series Microwave Sweepers	Apr.
HP 8153A Lightwave Multimeter	Feb.	HP 83751A Microwave Sweeper	Apr.
HP 8167A Tunable Laser Source	Feb.	HP 83751B Microwave Sweeper	Apr.
HP 8168A Tunable Laser Source	Feb.	HP 83752A Microwave Sweeper	Apr.
HP 8370 Series Signal Generators and Sweepers	Apr.	HP 83752B Microwave Sweeper	Apr.
HP 8504A Precision Reflectometer	Feb.	HP 85723A DECT Measurement Personality	Dec.
HP 8590 E-Series Spectrum Analyzers	Dec.	HP 89410A Vector Signal Analyzer	Dec.
HP 54701A Active Probe	Oct.	HP 89411A 1.8-GHz Down-Converter	Dec.
HP 54710A/D Oscilloscope	Oct.	HP 89440A RF Section	Dec.
HP 54711A Attenuator Plug-in	Oct.	HP 89440A Vector Signal Analyzer	Dec.
HP 5471% Amplifier Plug-in	Oct.	HP 9000 Model 742rt Computer	Aug.
HP 54713A Amplifier Plug-in	Oct.	HP E1430A ADC module	Oct.
HP 54714A Amplifier Plug-in	Oct.	HP HLMA-BL00, CL00, DL00, KL00, CH00, DH00, KH00, DG00 Light-Emitting Diodes	Aug.
HP 54720A/D Oscilloscope	Oct.	HP Lan Probe II RMON MIB Network Monitor	Apr.
HP 54721A Amplifier Plug-in	Oct.	HP OpenODB	June
HP 54722A Attenuator Plug-in	Oct.	HP ORCA Robot System	June
HP 64700 Embedded Debug Environment	Apr.	HP-RT Operating System	Aug.
HP 70340A Synthesized Signal Generator	Apr.	HP ScanJet IIc Scanner	Aug.
HP 70341A Synthesized Signal Generator	Apr.	HP Task Broker	Aug.
HP 71450A and 71451A Optical Spectrum Analyzers	Dec.	HP Tsutsuji Logic Synthesis System	Aug.
HP 81534A Return Loss Module	Feb.	HP Ultra VGA	June
HP 83440 Series Lightwave Detectors	Feb.	MPE/iX Operating System	June
HP 83711A Synthesized Signal Generator	Apr.		

Part 4: Author Index

Adams, Nancy	June	Booster, D. Howard	Feb.	Cristal, Edward G.	Apr.
Ahad, Rafiul	June	Bostak, Christopher J.	Apr.	Culbertson, W. Bruce	Aug.
Anzinger, George A.	Aug.	Braun, David M.	Feb.	Cutler, Robert T.	Dec.
Armstrong, Allan R.	Apr.	Brenneman, John S.	Apr.	D'Alessandro, John	Apr.
Assini, Renato G.	Aug.	Burdick, Matthew J.	Apr.	Deng, Yong	June
Azary, Zoltan	Dec.	Byrne, Patrick J.	Oct.	Diederichs, Joseph R.	Dec.
Bailey, David A.	Dec.	Campbell, John W.	Oct.	Dippon, Thomas	Apr.
Bartz, Manfred	Dec.	Canestri, Franco A.	Aug.	Dotseth, Mike	Apr.
Baumgartner, William D.	Apr.	Carey, Kent W.	Feb.	Duff, Christopher P.	Oct.
Bayern, Keith A.	Dec.	Chang, Kok Wai	Feb.	Elo, Mark A.	Dec.
Beck, Patricia A.	Feb.	Chau, Samuel H.	June	Engel, Glenn R.	Dec.
Beller, Josef	Feb.	Cheng, Tu-Ting	June	Escovitz, William H.	Oct.
Berger, Arnold S.	Apr.	Chodora, Jason A.	Apr.	Eskeldson, David D.	Oct.
Blasciak, Andrew J.	Apr.	Chou, Harry	Feb.	Ferguson, Thomas C.	Apr.
Bloom, Alan R.	Apr.	Clements, Brad	Aug.	Fischer, Thomas	Apr.
Blue, Kenneth J.	Dec.	Connolly, Brian	June	Fisher, Peter H.	Apr.

Fletcher, Robert M	Aug.	Leckel, Edgar	Feb.	Salomaa, Kari K	Feb.
Gennetten, K Douglas	Aug.	Lewis, John M	Aug.	Scharrer, John A	Oct.
Ginder, William J.	Dec.	Long, David W.	Oct.	Schinzel, Peter	Apr.
Goodnow, John W.	June	Luszcz, Joseph M.	Aug.	Schlater, Rodney T.	Oct.
Gordon, Gary B.	June	MacLeod, Jean M	June	Schleifer, Arthur	June
Graeber, Roger R.	Apr.	Madden, Christopher J.	Feb.	Schmidt, Siegmar	Feb.
Graf, Terrence F?	Aug.	Magnuson, Christopher J.	Oct.	Schroath, Leonard T.	June
Grisell, Thomas L.	Apr.	Maier, Daniel G.	Aug.	Schweikardt, Horst	Feb.
Gronlund, Robert D.	Apr.	Maier, Frank	Feb.	Seeger, Harald	Feb.
Hall, Michael L.	Dec.	Maisenbacher, Bernd	Feb.	Shackelford, J. Barry	Aug.
Hamling, Daniel T.	Oct.	Mason, Roy L.	Dec.	Sharpe, Edward J.	Aug.
Hammond, Cindie A.	June	McQuate, David J.	Feb.	Short, Brian R.	Apr.
Hart, Michael G.	Feb.	McTigue, Michael T.	Oct.	Shubert, Karl	Feb.
Heinz, William W.	Apr.	Mifsud, Steven J.	Feb.	Sloan, Susan	Feb.
Helgoth, Wayne F.	Oct.	Montijo, Allen	Oct.	Smith, Kevin G.	Apr.
Heyman, Eric V.V.	Apr.	Morgan, Kevin D.	Aug.	Sorin, Wayne V.	Feb.
Hiller, Don	Dec.	Müller, Emmerich	Feb.	Steiner, Rolf	Feb.
Hillstrom, Timothy L.	Dec.	Neuder, David L.	Apr.	Steinle, Michael J.	Aug.
Hilton, Howard E.	Oct.	Newton, Steven A.	Feb.	Sterner, John R.	Oct.
Hinch, Stephen W.	Feb.	Notess, Mark H.	June	Stimple, James R.	Dec.
Hoffmann, Brian E.	Aug.	Nukiyama, Akira	Oct.	Tanaka, Motoo	Aug.
Howell, Douglas K.	Aug.	Nygaard, Richard A., Jr.	Apr.	Tarantino, Joe	Dec.
Imperato, John L.	Apr.	O'Brien, Dennis P.	Dec.	Taylor, Gregory A.	Apr.
Ishak, Waguih S.	Feb.	O'Konski, Timothy C.	Aug.	Trutna, William R., Jr.	Feb.
Jahn, Robert	Feb.	Osame, Toshiki	Aug.	Turner, James J.	Aug.
James, Rick R.	Apr.	Osentowski, Timothy D.	Aug.	Tuttle, Myron R.	June
Johnson, Dana L.	Oct.	Otsuru, Yoshisuke	Aug.	Uhling, Thomas F.	Oct.
Johnson, Kenneth W.	Oct.	Peregrino, Ricardo de Mello	Apr.	Wagner, Douglas R.	Dec.
Johnson, Kevin L.	Dec.	Pfaff, Andreas	Apr.	Wagner, Hans-Jürgen	Apr.
Jungerman, Roger L.	Feb.	Pietsch, James	Dec.	Waite, James W.	Apr.
Kalkuhl, Christoph	Apr.	Pless, Wilfried	Feb.	Ward, Michael C.	Aug.
Kawabata, Shigeru	Oct.	Pott, Michael	Feb.	Warner, Sandra J.	June
Keefer, David A.	Aug.	Pratt, Ronald E.	Apr.	West, Joseph N.	Dec.
Kellum, Reginald	Oct.	Rafnel, Bruce A.	June	Whipple, David P.	Dec.
Kelley, David F.	Dec.	Rasper, John T.	Apr.	Whiteman, Donald A.	Oct.
King, Randall	Feb.	Rawson, Rollin F.	Feb.	Wildnauer, Kenneth R.	Dec.
Knight, J. Douglas	Dec.	Reichert, Wolfgang	Feb.	Wilson, Kenneth M.	June
Kolseth, Camala S.	Apr.	Roark, Joseph C.	June	Yanagimoto, Yoshiyuki	Oct.
Koppes, William A.	June	Robbins, V i a M	Aug.	Yu, Jiann Gwo	Aug.
Krieger, John J.	June	Rom, George	June	Zellers, James R.	Apr.
Kuo, Chihping	Aug.	Rovell-Rixx, D. Kris	June	Zorabedian, Paul	Feb.
Lalwani, Rajesh	June	Rück, Clemens	Feb.	Zarlingo, Benjamin R.	Dec.
Larson, Douglas A.	Apr.	Rush, Kenneth	Oct.		

HEWLETT-PACKARD JOURNAL INDEX

Volume 45 January 1994 through December 1994

Part 1: Chronological Index

February 1994

High-Quality Color Inkjet Office Printers, *Douglas R. Watson and Hatem E. Mostafa*

Laser-Comparable Inkjet Text Printing, *Jaime H. Bobórzquez, Brian P. Canfield, Kenneth J. Courian, Frank Drogo, Corrina A.E. Hall, Clayton L. Holstun, Aneesa R. Scandalis, and Michele E. Shepard*

An Inside View of the Drop Generation Process

Modifying Office Papers to Improve Inkjet Print Quality

High-Quality Inkjet Color Graphics Performance on Plain Paper, *Catherine B. Hunt, Ronald A. Askeland, Leonard Slevin, and Keshava A. Prasad*

Polyester Media Development for Inkjet Printers, *Daniel L. Briley*

Inkjet Printer Print Quality Enhancement Techniques, *Corinna A.E. Hall, Aneesa R. Scandalis, Damon W. Broder, Shelley I. Moore, Reza Movaghar, W. Wistar Rboads, and William H. Schwiebert*

The Third-Generation HP Thermal InkJet Printhead, *J. Stephen Aden, Jaime H. Bobórzquez, Douglas M. Collins, M. Douglas Crook, André García, and Ulrich E. Hess*

Development of the HP DeskJet 1200C Print Cartridge Platform, *the Platform Development Team*

Print Cartridges for a Large-Format Color Inkjet Drafting Plotter

Environmentally Friendly Packaging

HP DeskJet 1200C Printer Architecture, *Kevin M. Bockman, Anton Tabar, Erol Erturk, Robert R. Giles, and William H. Schwiebert*

CAD System Organization

Product Design Effect on Environmental Responsibility and Distribution Costs

A New Product Development Model

Print Cartridge Fixturing and Maintenance in the HP DeskJet 1200C Printer, *Michael T. Dangelo, Reza Movaghar, and Arthur K. Wilson*

Media Path for a Small, Low-Cost, Color Thermal Inkjet Printer, *Damon W. Broder, David C. Burney, Shelley I. Moore, and Stephen B. Witte*

Stepper Motor Simulation Model

Automated Assembly and Testing of HP DeskJet 1200C Print Cartridges, *William S. Colburn, Randell A. Agadoni, Michael M. Johnson, Edward Wiesmeier, III, and Glen Oldenburg*

Connectivity of the HP DeskJet 1200C Printer, *Anthony D. Parkhurst, Ramchandran Padmanabhan, Steven D. Mueller, and Kirt A. Winter*

April 1994

Development of a Multimedia Product for HP Workstations, *Gary P. Rose, Jeffery T. Oesterle, Joseph E. Kasper, and Robert J. Hammond*

HP MPower: A Collaborative Multimedia Environment, *William R. Yoder*

X Stations in HP MPower

The HP Instant Ignition Program

Diagnosing and Reporting Problems in the Multimedia Environment

A Graphical User Interface for a Multimedia Environment, *Charles V. Fernandez*

HP SharedX: A Tool for Real-Time Collaboration, *Daniel Garfinkel, Bruce C. Welti, and Thomas W. Yip*

X Window System Client/Server Architecture

Graphics Glossary

Whiteboard: A New Component of HP SharedX

Imaging Services in a Multimedia Environment, *Andrew Munro and Ahmad H. Shekarabi*

HP Image Library Scaling Functions

A Printing Solution for a Multimedia Environment, *John Mandler*

Faxing Documents in HP MPower, *Francis P. Sung and Mark A. Johnson*

Audio Support in HP MPower, *Ellen N. Brandt, Thomas G. Fincher, and Monish S. Sbab*

Overview of A-law and μ -law Data Formats

Video Support in a Multimedia Environment, *Craig S. Richard*

Mail Facilities in a Multimedia Environment, *Robert B. Williams, Harry K. Phinney, and Kenneth L. Steege*

MIME Header Fields

A Fast and Intuitive Online Help System, *Michael R. Wilson, Lori A. Cook, and Steven P. Hiebert*

WYSIWYG Printing in an X Application

Developing Online Application Help, *Dex Smith*

June 1994

Corporate Business Servers: An Alternative to Mainframes for Business Computing, *Thomas B. Alexander, Kenneth G. Robertson, Dean T. Lindsay, Donald L. Rogers, John R. Obermeyer, John R. Keller, Keith Y. Oka, and Marlin M. Jones, II*

Package Design Using 3D Solid Modeling

PA-RISC Symmetric Multiprocessing in Midrange Servers, *Kirk M. Bresniker*

SoftBench Message Connector: Customizing Software Development Tool Interactions, *Joseph J. Courant*

Six-Sigma Software Using Cleanroom Software Engineering Techniques, *Grant E. Head*

Legal Primitive Evaluation

Fuzzy Family Setup Assignment and Machine Balancing, *Jan Krucky*

The Greedy Board Family Assignment Heuristic

August 1994

An Advanced Scientific Graphing Calculator, *Diana K. Byrne, Charles M. Patton, David Arnett, Ted W. Beers, and Paul J. McClellan*

User Versions of Interface Tools

HP-PAC: A New Chassis and Housing Concept for Electronic Equipment, *Johannes Mahn, Jürgen Häberle, Siegfried Kopp, and Tim Schwegler*

High-Speed Digital Transmitter Characterization Using Eye Diagram Analysis, *Christopher M. Miller*

Thermal Management in Supercritical Fluid Chromatography, *Connie Natban and Barbara A. Hackbarth*

What is SFC?

Linear Array Transducers with Improved Image Quality for Vascular Ultrasonic Imaging, *Matthew G. Mooney and Martha Grewe Wilson*

Structured Analysis and Design in the Redesign of a Terminal and Serial Printer Driver, *Catherine L. Kilcrease*

Data-Driven Test Systems, *Adele S. Landis*

October 1994

Customer-Driven Development of a New High-Performance Data Acquisition System, *Von C. Campbell*

A Compact and Flexible Signal Conditioning System for Data Acquisition, *John M. da Cunha*

High-Throughput Amplifier and Analog-to-Digital Converter, *Ronald J. Riedel*

Binary Ranges Speed Processing

On-the-Fly Engineering Units Conversion, *Christopher P.J. Kelly*

Built-In Self-Test and Calibration for a Scanning Analog-to-Digital Converter, *Gerald I. Raak and Christopher P.J. Kelly*

A Hierarchy of Calibration Commands

Manufacturing Test Optimization for VXI-Based Scanning Analog-to-Digital Converters, *Bertram S. Kols and Rodney K. Village*

Design Leverage and Partnering in the Design of a Pressure Scanning Analog-to-Digital Converter, *Richard E. Warren and Conrad R. Proft*

Integrated Pin Electronics for Automatic Test Equipment, *James W. Grace, David M. DiPietro, Akito Kishida, and Kenji Kinsbo*

CMOS Programmable Delay Vernier, *Masaharu Goto, James O. Barnes, and Ronnie E. Owens*

Theoretical Approach to CMOS Inverter Jitter

Real-Time Digital Signal Processing in a Mixed-Signal LSI Test System, *Keita Gunji*

Vector Error Testing by Automatic Test Equipment, *Koji Karube*

High-Frequency Impedance Analyzer, *Takanori Yonekura*

Virtual Remote: The Centralized Expert, *Hamish Butler*

Frame Relay Conformance Testing, *Martin Dubuc*

Glossary

The FDDI Ring Manager for the HP Network Advisor Protocol Analyzer, *Sunil Bhat, Bob Kroboth, and Anne L. Driesbach*

FDDI Topology Mapping, *Sunil Bhat*

Automation of Electrical Overstress Characterization for Semiconductor Devices, *Carlos H. Diaz*

December 1994

Fast DDS-2 Digital Audio Tape Drive, *Damon R. Ujvarosy*

DDS-2 Tape Autoloader: High-Capacity Data Storage in a 5¼-Inch Form Factor, *Steven A. Dimond*

Autoloader Control Electronics

Autoloader Firmware Design

Network Backup with the HP C1553A DDS Autoloader

Automatic State Table Generation, *Mark J. Simms*

Using State Machines as a Design and Coding Tool, *Mark J. Simms*

An Event-Based, Retargetable Debugger, *Arun K. Iyengar, Thaddeus S. Grzesik, Valerie J. Ho-Gibson, Tracy A. Hoover, and John R. Vasta*

Compiler Optimizations and Debugging

A Short Primer on Debugger Internals

Wavelet Analysis: Theory and Applications, *Daniel T.L. Lee and Akio Yamamoto*

Approaches to Verifying Operational Test Release Vectors, *Joy Xiao Han*

Overview of the Test Access Port

Estimating the Value of Inspections and Early Testing for Software Projects, *Louis A. Franz and Jonathan C. Shih*

Clock Design and Measurement Issues in Pentium™ Systems, *Michael K. Williams and Andreas Pfaff*

Tolerance Mechanisms in Clock Distribution Networks

Enterprise Modeling and Simulation: Complex Dynamic Behavior of a Simple Model of Manufacturing, *M. Shabid Mujtaba*

Glossary of Terms and Abbreviations

Enterprise Modeling and Simulation Applications in Reengineering

Enterprise Modeling and Simulation Research at HP Laboratories

The Simple Model: Sponsor's Perspective

Appendix I: Mathematics of Production and Material Planning for the Simple Model

Appendix II: Weekly Event Sequence

Appendix III: Details of Part Commonality Experiments

Appendix IV: Details of Explanations for Experiments 0 and 1a

Part 2: Subject Index

Subject	Page/Month	Subject	Page/Month
A		Calibration, delay	56/Oct.
Abstract test suite	84/Oct.	Calibration, impedance, modified OSL	70/Oct.
Accuracy, media drive	78/Feb.	Callback functions	37/Dec.
Acoustic impedance	43/Aug.	Capability index	40/June
Actual-to-forecast ratio	91/Dec.	Cavitation	42/Feb.
Algorithm, logical mapping	100/Oct.	CHAMP (channel-reseller and manufacturing process)	17/Apr.
Algorithm, physical mapping	102/Oct.	Chaining, tool interaction	35/June
Alignment, print cartridge	39/Feb.	Charged-device model	107/Oct.
A-law and μ -law data formats	65/Apr.	Chassis, foam	23/Aug.
Analyzer, eye diagram	31/Aug.	Chirplet analysis	52/Dec.
Analyzer, impedance	67/Oct.	Chirplet transform	52/Dec.
Analyzer, protocol	88/Oct.	Choose boxes	15/Aug.
Analyzing wavelet	45/Dec.	Cleanroom software engineering	41/June
Annotating images	28/Apr.	Client/server architecture, HP MPower	13, 25, 64/Apr.
Antibacklash device	75/Feb.	Clock distribution, Pentium	68/Dec.
Aperture, ultrasound	45/Aug.	Clock measurements	74/Dec.
Application help use model	90/Apr.	Coalescence	19/Feb.
Arbitration	12/June	Cockle	18/Feb.
Architecture, inkjet printer	56/Feb.	Coherent write buffers	15/June
Area fill quality	18/Feb.	Collaboration	23/Apr.
Assembly, print cartridge	79/Feb.	Color degradation	88/Apr.
Audio editor	62/Apr.	Color flow imaging	44/Aug.
Audio file types	63/Apr.	Color management	31/Apr.
Audio hardware	66/Apr.	Color matching	32/Apr.
Authoring, help system	94/Apr.	Color optimization	24/Feb.
Autoloader, DDS tape	12/Dec.	Color quality, inkjet	18/Feb.
Automatic test pattern generator (ATPG)	55/Dec.	Color ramp	32/Apr.
Availability	82, 95/Dec.	Colorants	33/Feb.
B		Commentator, FDDI	90/Oct.
Backup, data	6, 12, 18/Dec.	Comparator, pin	43, 45/Oct.
Bag, ink	49/Feb.	Compiler optimizations	37/Dec.
Balinkin transformation	24/Feb.	Component placement machines	51/June
Banding	19/Feb.	Computers, business servers	6, 31/June
Basis functions	44/Dec.	Conditioners, for IC testing	58/Dec.
Beam width, ultrasound	45/Aug.	Connector, HP SharedX	26/Apr.
Bill of materials (BOM)	85/Dec.	Contact angle, ink	30/Feb.
Bit error ratio tests	29/Aug.	Content types, MIME	76/Apr.
Bitonal	37/Apr.	Context diagram	56/Aug.
Bleed	19, 29/Feb.	Contextual help	81/Apr.
Blocking	20, 31/Feb.	Control flow diagram	54/Aug.
Branching, tool interaction	35/June	Control specification	54/Aug.
Bus converters	17/June	Core server, HP SharedPrint	47/Apr.
Busying a transaction	11/June	Covered ROM	9/Aug.
C		Cracking	31/Feb.
Calculator, scientific	6/Aug.	Crystallization	32/Feb.
Calibration, HP E1413	19, 25/Oct.	Curl	18/Feb.
		Current-mode amplifier	17/Oct.
		Current-voltage impedance method	68/Oct.
		Cyanate ester	28/June
D			
		DAT drive	6/Dec.
		Data dictionary	54/Aug.
		Data-driven test systems	62/Aug.
		Data flow diagram	54/Aug.
		Daubechies wavelet	47/Dec.
		DDS autoloader	12/Dec.
		DDS-2 tape drive	6/Dec.
		Debugger internals	39/Dec.
		Debugging optimized code	34/Dec.
		Defect-free software	40/June
		Delay line structures	53/Oct.
		Delay vernier, CMOS	51/Oct.
		Design leveraging	35/Oct.
		Design margin	19/Dec.
		Design plots	99/Dec.
		DesignJet 650C printer	6, 50/Feb.
		DeskJet 1200C printer	6/Feb.
		Desktop configurations	14/Apr.
		Detector, flame ionization, SFC	41/Aug.
		Diagnostics, HP MPower	18/Apr.
		Differential equations	21/Aug.
		Digital signal processing, LSI tester	59/Oct.
		Digital transmitter characterization	29/Aug.
		Digital video	8/Apr.
		Directional bridge	68/Oct.
		Display modules	95/Oct.
		Display resources and rendering	31/Apr.
		Distributed multimedia	12/Apr.
		Distributed priority list arbitration	12/June
		Dithering	40/Apr.
		Dot gain	26, 30/Feb.
		Drawing modes	87/Feb.
		Drive roller, inkjet printer	74/Feb.
		Driver, pin	43, 44/Oct.
		Driver redesign	52/Aug.
		Dr_MPower	18/Apr.
		Drill-down	94/Oct.
		Drop detection	82/Feb.
		Drop generation, inkjet	11/Feb.
		Drop placement errors	18/Feb.
		Drop size, inkjet	10/Feb.
		Drop volume, inkjet	12, 20/Feb.
		Drum, tape drive	9/Dec.

Drying time 28/Feb.
 DSP module 61/Oct.
 Dual-frequency transducers 50/Aug.
 Duplicate cache tags 14/June
 Dye selection 24/Feb.

E

Edge quality, inkjet 18/Feb.
 Electrical overstress testing 106/Oct.
 Electrical system, inkjet printer 62/Feb.
 Electrostatic discharge testing 106/Oct.
 Engineering units conversion 21/Oct.
 Enterprise modeling
 and simulation 80/Dec.
 EPP foam chassis 23/Aug.
 Error diffusion 91/Feb.
 Error trace capture 36/Aug.
 Event-based debugging 33/Dec.
 Event matrix 55/Aug.
 Events, calculator 16/Aug.
 Evolutionary delivery,
 cleanroom 42/June
 Excitation supply 14/Oct.
 Executable test suite 84/Oct.
 Expanded polypropylene 23/Aug.
 Expression evaluation 39/Dec.
 Extinction ratio 30/Aug.
 Eye diagram analyzer 31/Aug.
 Eyeline diagram 32/Aug.

F

Fax client 54/Apr.
 Fax databases 55/Apr.
 Fax server 55, 59/Apr.
 Faxing documents 9, 53/Apr.
 FDDI Ring Manager 88/Oct.
 FGI 82, 85/Dec.
 File manager, HP VUE 3.0 21/Apr.
 Filters, printing 49/Apr.
 Filters, root raised-cosine 64/Oct.
 Firmware design, autoloader 15/Dec.
 Firmware, inkjet printer 64, 85/Feb.
 Fixtures, impedance
 measurement 73/Oct.
 Foam chassis 23/Aug.
 Forecast quality 80, 85/Dec.
 Foreign language format,
 HP Help System 85/Apr.
 Frame relay
 conformance testing 83/Oct.
 Functional verification 43/June
 Fuzzy composition 56, 61/June
 Fuzzy family assignment
 heuristic 57/June
 Fuzzy logic 51/June

Fuzzy logic, HP E1413 33/Oct.
 Fuzzy relations 56/June
 Fuzzy set theory 54/June

G

Gabor transform 44/Dec.
 Gamut, color 18/Feb.
 General help 92/Apr.
 Graphical user interface 20/Apr.
 Grayscale 37/Apr.
 Greedy board heuristic 53/June
 Grid-centered method 90/Feb.
 Grid-intersection method 90/Feb.

H

Haar wavelet 46/Dec.
 Hatley-Pirbhai state machine 28/Dec.
 Heads, tape drive 7/Dec.
 Heater, inkjet 15, 23, 32, 36, 73/Feb.
 Help dialogs 81, 84/Apr.
 Help entry points 81, 91/Apr.
 Help file compression
 and decompression 84/Apr.
 Help file system 80/Apr.
 Help information models 92/Apr.
 Help-smart application 82/Apr.
 Help use model 90/Apr.
 Help volumes 82/Apr.
 High-Q measurements 70/Oct.
 High-throughput amplifier 16/Oct.
 HP-PAC 23/Aug.
 Human body model 106/Oct.
 Hypertext links 93/Apr.

I

IC, delay vernier 51/Oct.
 IC, pin electronics 42, 44/Oct.
 IC, processor interface 14/June
 IC test system, mixed signal 42/Oct.
 IFVM function 43/Oct.
 Image compression
 and decompression 39/Apr.
 Image conversion 41/Apr.
 Image files 37/Apr.
 Image manipulation 41/Apr.
 Image processor 86/Feb.
 Image scaling 41/Apr.
 Impedance analyzer 67/Oct.
 Industry standard file types 39/Apr.
 Ink design, black 13/Feb.
 Ink design, color 23/Feb.
 Ink level indicator 53/Feb.
 Ink-receptive coating 28/Feb.
 Inks, inkjet 33/Feb.

Input forms 13/Aug.
 Input/output subsystem 16/June
 Inspections, code 61/Aug.
 Instrumentation amplifier 17/Oct.
 Integrated driver printhead 41/Feb.
 Intellectual control 43/June
 Interpreter, state table 24/Dec.
 Interprocess communication 14/Apr.
 Interval, monitor 99/Oct.
 Interval, update 99/Oct.
 Inventory 85, 88/Dec.
 ISS
 (Instrument Software System) 76/Oct.
 Item help 82/Apr.
 I-V impedance method 68/Oct.

J

Jitter, clock 68/Dec.
 Jitter, CMOS inverter 54/Oct.
 Jitter, transmitter 36/Aug.
 "Just-enough-test" strategy 30/Oct.

K

Khoros system 48/Dec.
 Knowledge worker 10/Apr.

L

L*a*b* system 24/Feb.
 Language interface 92/Feb.
 Language, test plan 62/Oct.
 Language, TTCN 84/Oct.
 Languages, test suite 84/Oct.
 Large-format plotter 50/Feb.
 Lead time 82, 85/Dec.
 Legal primitive evaluation 45, 47/June
 Level 1 diagram 56/Aug.
 Library, operation modular 62/Oct.
 Line quality, inkjet 18/Feb.
 Linear phased-array transducers 46/Aug.
 Linearity, tape drive 9/Dec.
 Load, active 43, 45/Oct.
 Localizability 89/Apr.
 LSI test system, mixed signal 42/Oct.

M

Machine balancing 53, 59/June
 Machine model, ESD 106/Oct.
 MACless nodes 105/Oct.
 Magazine, tape autoloader 14/Dec.
 Mail composer 74/Apr.
 Mail system 71/Apr.
 Mail transfer agent 73/Apr.
 Mail user agents 72/Apr.

Management information base (MIB) 88, 98/Oct.
 Managing shared windows 30/Apr.
 Manufacturing, computer 28/June
 Manufacturing enterprise model 82, 90/Dec.
 Manufacturing test optimization ... 30/Oct.
 Map, physical 89, 97, 102/Oct.
 Map, logical 89, 97, 100/Oct.
 Mapping, FDDI ring topology 89, 94, 97/Oct.
 Mask measurements 36/Aug.
 Matching fonts 34/Apr.
 Mathematics, calculator 19/Aug.
 Maxiclient 15/Apr.
 Mealy state machine 27/Dec.
 Measurement modules, HP HD2000 7/Oct.
 Mechanical design, tape autoloader 14/Dec.
 Mechanical design, computer 26/June
 Mechanical design, inkjet printer .. 58/Feb.
 Media path, inkjet printer 72/Feb.
 Memory configurations, HP 48GX . 7/Aug.
 Memory interleaving 19/June
 Memory size conventions 9/June
 Memory system 19/June
 Message Connector, SoftBench ... 34/June
 Metamail 75/Apr.
 Meyer wavelet 46/Dec.
 MIME (Multipurpose Internet Mail Extensions) 72, 75/Apr.
 Mimetypes 78/Apr.
 Miniclient 15/Apr.
 Modes, inkjet printer 21, 35/Feb.
 Mottling 19/Feb.
 Model, development 65/Feb.
 Model, stepper motor 75/Feb.
 Modeling, enterprise 80/Dec.
 Models, manufacturing enterprise 90/Dec.
 Module testing 63/Dec.
 Moore state machine 27/Dec.
 Morlet wavelet 46/Dec.
 Mother wavelet 44/Dec.
 Motions, tape autoloader 14/Dec.
 MPEG-1 (Moving Pictures Expert Group) ... 8/Apr.
 Multimedia editor 73/Apr.
 Multimedia environment 10/Apr.
 Multimedia mail 71/Apr.
 Multiprocessing computers 6, 31/June
 Munsell system 24/Feb.

N

Neighbor information 98/Oct.
 Network Advisor, FDDI 88/Oct.
 Network backup 18/Dec.

O

Office Paper Program 16/Feb.
 Online application help 90/Apr.
 Online help 12, 79/Apr.
 Operational test release vectors .. 55/Dec.
 Order-to-delivery time 82, 85/Dec.
 Overvoltage protection 9/Oct.

P

Packages, HP DDE 38/Dec.
 Packaging, print cartridge 53/Feb.
 Packaging technology, foam 23/Aug.
 Palette 37/Apr.
 Paper advance, inkjet printer 39/Feb.
 Paper, inkjet 16/Feb.
 PA-RISC 6, 31/June
 Part commonality 99/Dec.
 Partnerships 38/Oct.
 PCL 5C language 85/Feb.
 Peltier cooler 40/Aug.
 Pentium clock design 68/Dec.
 Performance, multiprocessor 21/June
 Pigment dispersion 13/Feb.
 Pipeline, CPU 15/June
 Pipeline, printing 51/Apr.
 Pipelining, HP E1413 20/Oct.
 Pixel mapping 34/Apr.
 Placement machines 51/June
 Plotting, 3D calculator 17/Aug.
 Polyester media, inkjet 28/Feb.
 PostScript printer 6/Feb.
 Precision Bus, HP 19/June
 Preheater, inkjet printer ... 15, 37, 73/Feb.
 Pressure scanner 37/Oct.
 Prewarming, printhead 13/Feb.
 Primary family 52/June
 Priming, inkjet cartridge 71/Feb.
 Print cartridge alignment 39/Feb.
 Print cartridge development 46/Feb.
 Print cartridge fixturing 67/Feb.
 Print cartridge maintenance 67/Feb.
 Print client 46/Apr.
 Print quality, inkjet 9, 16, 18, 22, 35, 55/Feb.
 Print quality tester 80/Feb.
 Printers, color inkjet 6/Feb.

Printhead, inkjet 41/Feb.
 Printing pipeline 51/Apr.
 Process specification 54/Aug.
 Processor board 13/June
 Processor interface chip 14/June
 Processor memory bus 10/June
 Processor modules 13/June
 Product-specific files 63/Aug.
 Production cost flowthrough (PCFT) 82, 85/Dec.
 Progressive disclosure 92/Apr.
 Pseudorandom binary sequence . 29/Aug.
 Puddling 21/Feb.
 Pump, SFC 40/Aug.

Q

QFD house of quality 47/Aug.
 Quad 10/June
 Quick help 81, 91/Apr.

R

Range switching 18/Oct.
 Raster operations 87/Feb.
 Receiver service 26/Apr.
 Reengineering 86/Dec.
 Remote debugging 36, 40/Dec.
 Resolution enhancement 36/Feb.
 Retargetable debugger 33/Dec.
 Return-on-investment model, software inspections 65/Dec.
 Risk assessment, software testing 63/Dec.
 ROMPTRs 9/Aug.
 Rotation, magazine 16/Dec.
 Routine editor 35/June
 Routine engine 35/June
 Routine manager 35/June
 RPI 82, 85/Dec.

S

Safety stock 82/Dec.
 Sales and inventory tracking system 60/Dec.
 Sallen and Key filter 11/Oct.
 Sampling, harmonic repetitive ... 32/Aug.
 Scale, wavelet 45/Dec.
 Scan cell 57/Dec.
 Screen calibrator 95/Feb.
 Seam teams 6/Feb.
 Self-test 25/Oct.
 Sender/receiver architecture, HP SharedX 24/Apr.

sendmail 73/Apr.
 Servers, business 6, 31/June
 Service processor 22/June
 Signal conditioning plug-on (SCP) .. 9/Oct.
 Simple Model 82/Dec.
 Simulation, enterprise 80/Dec.
 Six-sigma 40/June
 Snoopy protocol 11/June
 SoftBench Message Connector ... 34/June
 Software, data driven 62/Aug.
 Software inspections 48/June, 61/Dec.
 Software metrics 61/Dec.
 Software testing 62/Dec.
 Speculative prefetch 18/June
 Speed, inkjet printer 9, 14/Feb.
 Split bank 51/June
 Spray 19/Feb.
 Spring-bag print cartridge 49/Feb.
 Stability, statistical 68/Dec.
 State table generation 21/Dec.
 State machines 21, 27/Dec.
 Statistical testing 47/June
 Stepper motor 75/Feb.
 Strain gauges 13/Oct.
 Structure chart 59/Aug.
 Structured analysis and design ... 52/Aug.
 Structured data, cleanroom 47/June
 Structured specifications,
 cleanroom 42/June
 Style manager 22/Apr.
 Supercritical fluid
 chromatography 38/Aug.
 Symbol table 38/Dec.
 Syntax trees 39/Dec.

T

Tape, DDS-2 7/Dec.
 Tape drive, DDS-2 6/Dec.
 Telephony 9/Apr.
 Temperature control, printhead ... 12/Feb.
 TEMPOB 9/Aug.
 Test access port (TAP) 56/Dec.
 Test executive 64/Aug.
 Test patterns 55/Dec.
 Test planning 62/Dec.
 Test software, data-driven 62/Aug.
 Test system, LSI 42/Oct.
 Test vector development 55/Dec.
 Testing, print cartridge 79/Feb.
 Text quality, inkjet 9, 35/Feb.
 Thermal cycling 42/Feb.
 Thermoelectric cooler 40/Aug.
 Three-opamp amplifier 17/Oct.
 Time shift, wavelet 45/Dec.
 Timing environment 69/Dec.
 Tolerance mechanisms 70/Dec.
 Tool interaction 34/June
 Transducers, linear ultrasound ... 43/Aug.
 Transition information, state 23/Dec.
 Transmitter characterization 29/Aug.
 Transparency film, inkjet 28/Feb.
 Trapezoidal imaging 50/Aug.
 Turbine test 9/Oct.

U

Ultrasound transducers,
 vascular 43/Aug.
 User interface, calculator 13/Aug.

V

Vascular ultrasound transducers .. 43/Aug.
 Video software 70/Apr.
 Video technology 68/Apr.
 View volume 17/Aug.
 Virtual DMA 67/Apr.
 Viscosity, ink 30/Feb.
 Voice 45/Dec.
 Vuepad 74/Apr.
 Vuemime 76/Apr.
 VXibus 6/Oct.

W

Wait time banding 19/Feb.
 Ward-Mellor state machine 28/Dec.
 Waveform database 55/Dec.
 Wavelet analysis 44/Dec.
 Wavelet transform 45/Dec.
 Wait the bus 11/June
 Whiteboard 28/Apr.
 WIP 84, 85/Dec.
 Workspace manager,
 HP VUE 3.0 21/Apr.
 Wrinkling 31/Feb.
 WYSIWYG printing 86/Apr.

XYZ

X stations 16/Apr.
 X video software 70/Apr.
 YCbCr 37/Apr.

Part 3: Product Index

HP 48G/GX Scientific Graphing Calculator	Aug.	HP DeskJet 1200C/PS PostScript printer	Feb.
HP 3000 Series 987/200 Business Computer	June	HP Distributed Debugging Environment (DDE)	Dec.
HP 3000 Series 991/995 Corporate Business Systems	June	HP G1205A Supercritical Fluid Chromatograph	Aug.
HP 8133A 3-GHz Pulse Generator	Dec.	HP HD2000 data acquisition system	Oct.
HP 9000 Model G70, H70, I70 Servers	June	HP Help Developer's Kit	Apr.
HP 9000 Model T500 Corporate Business Server	June	HP Help System	Apr.
HP 21255B Linear Phased-Array Vascular Ultrasound Transducer	Aug.	HP Image Library	Apr.
HP 21258B Linear Phased-Array Vascular Ultrasound Transducer	Aug.	HP Instant Ignition	Apr.
HP 71501A Eye Diagram Analyzer	Aug.	HP MPower	Apr.
HP C1533A DDS-2 Tape Drive	Dec.	HP-PAC Chassis and Packaging Technology	Aug.
HP C1553A DDS Tape Autoloader	Dec.	HP SharedPrint	Apr.
HP E1413 64-channel scanning analog-to-digital converter	Oct.	HP SharedX	Apr.
HP E1414 pressure scanning analog-to-digital converter	Oct.	HP Sonos 1000 Cardiovascular Ultrasound Imaging System	Aug.
HP DesignJet 650C plotter	Feb.	HP Teleshare	Apr.
HP DeskJet 1200C printer	Feb.	HP VUE 3.0	Apr.
		SoftBench Message Connector	June
		Whiteboard	Apr.

Part 4: Author Index

Aden, J. Stephen	Feb.	Carlin, Tim	Feb.	Goto, Masaharu	Oct.
Agadoni, Randell A.	Feb.	Clugston, Donald	Feb.	Grace, James W.	Oct.
Alexander, Thomas B.	June	Coiner, Erich	Feb.	Grzesik, Thaddeus S.	Dec.
Arnett, David	Aug.	Colburn, William S.	Feb.	Gunji, Keita	Oct.
Askeland, Ronald A.	Feb.	Collins, Douglas M.	Feb.	Häberle, Jürgen	Aug.
Barnes, James O.	Oct.	Cook, Lori A.	Apr.	Hackbarth, Barbara A.	Aug.
Bauer, Steve	Feb.	Courant, Joseph J.	June	Hall, Corrina A.E.	Feb.
Beamer, Carol	Feb.	Courian, Kenneth J.	Feb.	Hamlin, Mindy	Feb.
Beers, Ted W.	Aug.	Crook, M. Douglas	Feb.	Hammond, Robert J.	Apr.
Bertagne, Michael G.	Dec.	da Cunha, John M.	Oct.	Han, Joy Xiao	Dec.
Bhat, Sunil	Oct.	Dangelo, Michael T.	Feb.	Harmon, Jerry	Dec.
Blair, Dustin	Feb.	Deininger, Axel	Apr.	Head, Grant E.	June
Bockman, Kevin M.	Feb.	Diaz, Carlos H.	Oct.	Hess, Ulrich E.	Feb.
Bohórquez, Jaime H.	Feb.	Dimond, Steven A.	Dec.	Hiebert, Steven P.	Apr.
Brandt, Ellen N.	Apr.	DiPietro, David M.	Oct.	Hock, Scott W.	Feb.
Bresniker, Kirk M.	June	Driesbach, Anne L.	Oct.	Hockley, Debbie R.B.	Feb.
Briley, Daniel L.	Feb.	Drogo, Frank	Feb.	Ho-Gibson, Valerie J.	Dec.
Broder, Damon W.	Feb.	Dubuc, Martin	Oct.	Holstun, Clayton L.	Feb.
Brooks, David W.	Feb.	Erturk, Erol	Feb.	Hoover, Tracy A.	Dec.
Brower, Hendrick	Feb.	Fernandez, Charles V.	Apr.	Hunt, Catherine B.	Feb.
Burney, David C.	Feb.	Fincher, Thomas G.	Apr.	Hunt, Dave	Feb.
Butler, Hamish	Oct.	Franz, Louis A.	Dec.	Iyengar, Arun K.	Dec.
Byrne, Diana K.	Aug.	García, André	Feb.	Johnson, Mark A.	Apr.
Campbell, Von C.	Oct.	Garfinkel, Daniel	Apr.	Johnson, Michael M.	Feb.
Canfield, Brian P.	Feb.	Giles, Robert R.	Feb.	Jones, Marlin M., II	June

Kaplinsky, George	Feb.	Oesterle, Jeffery T.	Apr.	Simms, Mark J.	Dec.
Karube, Koji	Oct.	Oka, Keith Y.	June	Slevin, Leonard	Feb.
Kasper, Joseph E.	Apr.	Oldenburg, Glen	Feb.	Smith, Dex	Apr.
Keller, John R.	June	Owens, Ronnie E.	Oct.	Steege, Kenneth L.	Apr.
Kelly, Christopher P.J.	Oct.	Padmanabhan, Ramchandran	Feb.	Sung, Francis P.	Apr.
Kilcrease, Catherine L.	Aug.	Panah, Tony	Feb.	Tabar, Anton	Feb.
Kinsho, Kenji	Oct.	Parkhurst, Anthony D.	Feb.	Thoman, Jeff	Feb.
Kishida, Akito	Oct.	Patton, Charles M.	Aug.	Timm, Dale	Feb.
Kolts, Bertram S.	Oct.	Peterson, John V.	Apr.	Tousi, Susan H.	Feb.
Kopp, Siegfried	Aug.	Pfaff, Andreas M.R.	Dec.	Towery, David	Feb.
Kroboth, Robert H.	Oct.	Phinney, Harry K.	Apr.	Trezise, Greg K.	Dec.
Krucky, Jan	June	Prasad, Keshava A.	Feb.	Ujvarosy, Damon R.	Dec.
Landis, Adele S.	Aug.	Proft, Conrad R.	Oct.	Van Liew, Amy	Feb.
Lee, Daniel T.L.	Dec.	Raak, Gerald I.	Oct.	Vasta, John R.	Dec.
Lindsay, Dean T.	June	Reid, Bruce	Feb.	Village, Rodney K.	Oct.
Little, Rob	Feb.	Riedel, Ronald J.	Oct.	Warren, Richard E.	Oct.
Magenis, Sue	Apr.	Rhoads, W. Wistar	Feb.	Watson, Douglas R.	Feb.
Mahn, Johannes	Aug.	Richard, Craig S.	Apr.	Welti, Bruce C.	Apr.
Mandler, John	Apr.	Ritter, Robert	Dec.	Wiesmeier, Edward, III	Feb.
McClellan, Paul J.	Aug.	Robertson, Kenneth G.	June	Williams, Michael K.	Dec.
Miller, Christopher M.	Aug.	Rogers, Donald L.	June	Williams, Robert B.	Apr.
Mooney, Matthew G.	Aug.	Rose, Gary P.	Apr.	Wilson, Arthur K.	Feb.
Moore, Shelley I.	Feb.	Scandalis, Aneesa R.	Feb.	Wilson, Martha Grewe	Aug.
Mostafa, Hatem E.	Feb.	Scheffelin, Joe	Feb.	Wilson, Michael R.	Apr.
Movaghar, Reza	Feb.	Schwegler, Tim	Aug.	Winter, Kirt A.	Feb.
Mueller, Steven D.	Feb.	Schwiebert, William H.	Feb.	Witte, Stephen B.	Feb.
Mujtaba, M. Shahid	Dec.	Shah, Monish S.	Apr.	Yip, Thomas W.	Apr.
Munro, Andrew	Apr.	Shekarabi, Ahmad H.	Apr.	Yoder, William R.	Apr.
Nathan, Connie	Aug.	Shepard, Michele E.	Feb.	Yamamoto, Akio	Dec.
Obermeyer, John R.	June	Shih, Jonathan C.	Dec.	Yonekura, Takanori	Oct.