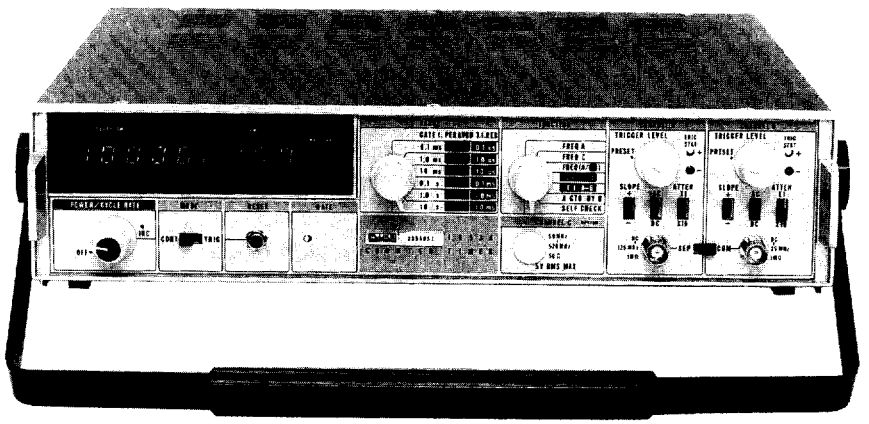
1953A

GPIB IEEE-488



(NSN 6625-01-046-4912) **1953A**

1953A Universal Counter/Timer

- Frequency to 125 MHz (options 520 MHz, 1000 MHz, 1250 MHz)
- Time interval measurements to 100 ns (single shot); 0.1 µs (averaged)
- Gated totalizing, frequency ratio and period measurements
- Fully GPIB/IEEE-488 programmable, including trigger levels
- 9 digit display

The 1953A is a systems counter with a wide array of options allowing you to select just the capability you need.

The 1953A can provide a variety of measurements: frequency, frequency ratio, period, period averaging, time interval, and gated totalizing. Trigger level controls allow selection of a preset level (0V dc), or adjustment to suit conditions. DMM output jacks and LED status indicators help the user to set the trigger levels properly.

Signal conditioning switches permit the operator to select positive or negative slope trigger, ac or dc coupling, and X1 or X10 attenuation. A marker output is provided for use with an oscilloscope for accurate determination of trigger points.

The GPIB/IEEE-488* interface option (1953A-15) allows full programming of function, range, and signal conditioning, including trigger levels. Data output includes 9 digits of display information, decimal point, and exponent. Front panel lockout is provided. TTL level parallel remote programming (1953A-12) is also available. (Both these options are built into the unit and must be ordered at the time of purchase.)

Specifications

Technical Specifications

Frequency Measurements

Range: 0 MHz to 125 MHz (dc coupled); 5 Hz to 125 MHz (ac coupled)
Gate Time: 0.1 ms to 10s in 6 decade steps
Resolution: 1/gate time (in Hz)

Period Measurements

Range: 0 MHz to 25 MHz (dc coupled); 5 Hz to 25 MHz (ac coupled)
Periods Averaged: 1 period to 10^5 in decade steps
Resolution: 10^{-7}/periods

Time Interval Measurements

Range: 0.1 µs to 10^7s
Input: Channels A and B, common or separate
Resolution: 10 ms to 0.1 µs in 6 decade steps

Totalize Measurements

Range: 0 MHz to 125 MHz (dc coupled); 5 Hz to 125 MHz (ac coupled)

Ratio Measurements

Display: Ch A/Ch B

Range
Channel A: 0 MHz to 125 MHz (dc coupled); 5 Hz to 125 MHz (ac coupled)
Channel B: 0 MHz to 25 MHz (dc coupled); 5 Hz to 25 MHz (ac coupled)

Sensitivity

Channel A: 30 mV rms sinewave to 75 MHz, increasing to 50 mV at 125 MHz; 100 mV pulse amplitude with minimum pulse width of 10 ns
Channel B: 30 mV rms sinewave to 25 MHz; 100 mV with minimum pulse width of 50 ns

Channel C
520 MHz Channel C Input (-07)
Covers frequency range of 50 MHz to 520 MHz, using a scaling ratio of 4. Sensitivity is 15 mV rms (AGC). Maximum allowable input is 5V rms (fuse protected). VSWR less than 2:1 into 50Ω for levels less than 1V rms

1000 MHz Channel C Input (-13)
Covers 50 MHz to 1000 MHz using a scaling ratio of 8. Sensitivity is 15 mV rms, and maximum allowable input is 5V rms (fuse protected). VSWR is less than 2.5:1 for levels less than 1V rms

1250 MHz Channel C Input (-14)
Covers 50 MHz to 1250 MHz using a scaling ratio of 8. Sensitivity is 15 mV to 1000 MHz, decreasing to 30 mV rms at 1250 MHz. Maximum input is 5V rms (fuse protected). VSWR is less than 2.5:1 (50Ω) for levels less than 1V rms

Input Impedance

Channel A or B: 1 MΩ ≤30 pF
Channel C: 50Ω nominal

Rear Panel Signals

External Time Base: 10 MHz, 250 mV to 8V
Gate Time: High True, TTL level output
Time Interval Marker: Low True, TTL level output
Trigger Level Output: Channels A & B only

**The terms GPIB and IEEE-488 may be used interchangeably throughout this catalog.*

Time Bases

	Standard	-04 Option	-10 Option	-20 Option
Frequency	10.00 MHz	10.00 MHz	10.00 MHz	10.00 MHz
Aging Rate (Constant Temp)	$\pm 3 \times 10^{-7}$/mo 1 ppm/yr	$\pm 3 \times 10^{-7}$/mo 1 ppm/yr	$\pm 1 \times 10^{-7}$/mo	$\pm 1.5 \times 10^{-8}$/mo
Temp Accuracy 0°C-50°C	$\pm 2 \times 10^{-6}$	$\pm 5 \times 10^{-7}$	$\pm 1 \times 10^{-8}$	$< 7 \times 10^{-9}$*
Line Voltage (±10%)	$\pm 2 \times 10^{-8}$	$\pm 2 \times 10^{-8}$	$\pm 3 \times 10^{-9}$	$\pm 1 \times 10^{-9}$

**Peak-to-peak variation*

General Specifications

Temperature: 0°C to 50°C, operating; -40°C to +75°C, non-operating
Power: 115V or 230V ac ±10% (100V available), 50 Hz to 400 Hz, 30W nominal
Size: 8.8 cm H x 36.2 W x 34.3 cm D (3.45 in H x 14.25 in W x 13.5 in D)
Weight: 4.32 kg (9.5 lb)

Included with Instrument: Instruction manual, power cord. Order Y9111 or Y9112 coaxial cable(s) separately.

Ordering Information

Models

January 1990 prices

1953A Universal Counter/Timer $2095
1953A-12 w/Full Remote Programming (Option -12) Installed 2555
1953A-15* w/GPIB/IEEE-488 Interface (Option -15) Installed 2675

** Not compatible with Option -11*

Options

-04** Superior TCXO ..... $ 305
-05 Time Base Multiplier 125
-07* 520 MHz Channel C Input 575
-10** Oven-Stabilized Time Base 475
-11** Basic Remote Programming 400
-13* 1000 MHz Channel C Input 725
-14* 1250 MHz Channel C Input 925
-16** Rear Inputs (Channels A,B,C) 95
-20** Superior Oven-Stabilized Time Base 950

**Factory or Service Center installation only. Options -04, -10, and -20 are mutually exclusive in one mainframe.*
***Factory installation only*

Accessories (Also see Section 17)

A53 Whip Antenna ..... $ 30
Y7201 Attenuator/Filter 65
M00-200-622 3½" Rack Mount Kit 65
M00-200-626 3½" Rack Mount Kit w/18" slides, for DEC cabinets 135
Y7206 3½" Adapter w/24" slides, for non-DEC cabinets 120
Y8021 IEEE-488 Bus Cable, 1m 130
Y8022 IEEE-488 Bus Cable, 2m 145
Y8023 IEEE-488 Bus Cable, 4m 155
Y9103 50Ω BNC Feed-thru Terminator . 35
Y9111 Coaxial Cable 50Ω, BNC to BNC 3 ft (0.93m) 20
Y9112 Coaxial Cable 50Ω, BNC to BNC 6 ft (1.85m) 20

Customer Support Services

Warranty

One-year product warranty. See Section 16 for further information on warranty terms and conditions.

Extended Warranty

A 10% discount is available when you order the following at the time of the instrument purchase or when ordered within the factory warranty period.

SC1-1953A Repair ..... $ 135
SC2-1953A Calibration 204
SC3-1953A Full Service 321
SC4-1953A Performance Verification-Plus 122

Note: Incoming and/or outgoing calibration readings are available as an option.