

Service Manual



WFM601 Serial Digital Component Monitor 070-8876-00

**Please check for change information at the rear
of this manual.**

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The WFM601 Serial Digital Component Monitor

German Postal Information

Certificate of the Manufacturer/Importer

We hereby certify that the WFM601 Serial Digital Component Monitor and all factory-installed options complies with the RF Interference Suppression requirements of Postal Regulation Vfg. 243/1991, Amended per Vfg. 46/1992

The German Postal Service was notified that the equipment is being marketed.

The German Postal Service has the right to re-test the series and to verify that it complies.

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Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das WFM601 Serial Digital Component Monitor und alle fabrikinstallierten Optionen in Übereinstimmung mit den Bestimmungen der Amtsblatt-Verfügung Vfg. 243/1991 und Zusatzverfügung 46/1992 funktentstört sind.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhalten der Bestimmungen eingeräumt.

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NOTICE to the user/operator:

The German Postal Service requires that Systems assembled by the operator/user of this instrument must also comply with Postal Regulation, Vfg. 243/1991, Par. 2, Sect. 1.

HINWEIS für den Benutzer/Betreiber:

Die vom Betreiber zusammengestellte Anlage, innerhalb derer dieses Gerät eingesetzt wird, muß ebenfalls den Voraussetzungen nach Par. 2, Ziff. 1 der Vfg. 243/1991, genügen.

NOTICE to the user/operator:

The German Postal Service requires that this equipment, when used in a test setup, may only be operated if the requirements of Postal Regulation, Vfg. 243/1991, Par. 2, Sect. 1.8.1 are complied with.

HINWEIS für den Benutzer/Betreiber:

Dieses Gerät darf in Meßaufbauten nur betrieben werden, wenn die Voraussetzungen des Par. 2, Ziff. 1. 8.1 der Vfg. 243/1991 eingehalten werden.

Standards Compliance

The WFM601 Serial Digital Component Monitor complies with the following safety standards:

- Underwriters Laboratories: UL1244 — Second Edition—*Standard for Electrical and Electronic Measuring and Testing Equipment*
- FM 3820 – “Approval Standard for Electrical Utilization Equipment.”
- Canadian Standards Association: C22.2 No. 231 Series–M89—*CSA Safety Requirements for Electrical and Electronic Measuring and Testing Equipment*
- American National Standard: ANSI/ISA–S82–1988—*Safety Standard for Electrical and Electronic Test, Measuring, Controlling and Related Equipment*
- International Standard: IEC1010–1 —“Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use.

The WFM601 Serial Digital Component Monitor complies with the following regulatory standards:

- U.S. EMI: FCC Rules, Part 15, Subpart J, Class A
- German EMI: VDE 0871.5 (Class B)—*Radio frequency Interference Suppression of Electrical Equipment and Systems*

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Safety Summary

This summary contains general safety information for operating and servicing personnel. Specific warnings and cautions are given throughout the manual where they apply, but may not appear in this summary.

Terms

In this manual

CAUTION statements identify conditions or practices that can damage the equipment or other property.

WARNING statements identify conditions or practices that can cause injury or loss of life.

As marked on equipment

CAUTION indicates an injury hazard not immediately accessible as one reads the marking, or a hazard to the equipment or other property.

DANGER indicates an injury hazard immediately accessible as one reads the marking.

Symbols

In this manual



This symbol shows where applicable cautionary or other information is to be found.

As marked on the equipment



DANGER — High voltage.



Protective ground (earth) terminal.



ATTENTION — refer to manual.

Power source

This product is intended to operate from a power source that applies no more than 250 volts RMS between the supply conductors or between either supply conductor and ground.

Ground the product

This product is grounded through the grounding conductor of the power module power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Danger arising from loss of ground

If the protective connection to ground is lost, all accessible conductive parts (including knobs and controls that may appear to be insulated) can render an electric shock.

Use the proper fuse

Use only the fuse of correct type, voltage rating, and current rating, as specified in the parts list for the product. Refer fuse replacement to qualified personnel.

Do not operate in an explosive atmosphere

Do not operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

Do not operate without covers

To avoid injury, do not operate the product without its covers and panels properly installed.

Do not service alone

Do not service or adjust this product unless another person capable of rendering first aid and cardio-pulmonary resuscitation is present.

Power supply shield

The plastic shield on the power supply board is required for protection from dangerous voltages that are present on the board. This shield must be in place at all times when operating the instrument.

Preface

This manual provides servicing information for the WFM601 Serial Digital Component Monitor. Material found in this volume is targeted at the service technician; additional operating information can be found in that instrument's "User" manual.

To date there are two manuals available for this instrument. This Service Manual and a User manual.

Service Level Supported This manual supports both Module Level (for module exchange) and Component Level servicing. Module Level servicing utilizes the block diagram and its descriptions to isolate a problem to the circuits on a particular etched circuit board. To support Component Level servicing there is additional theory of operation, schematic diagrams and circuit board parts locating illustration and cross reference indexes (part location charts) for each circuit board.

When contemplating the level of servicing that is appropriate for a specific facility, please consider the fact that this instrument contains etched circuit boards that utilize surface mount technology. Surface mounted components are not soldered to the circuit board in the traditional manner, they require special techniques and tools to remove and re-install.

Specific Content Much of the information in this manual is shared with the User manual; however, the depth of the material depends on the potential use. A quick comparison will reveal that there are installation instructions in both manuals, along with specifications, servicing, and operating instructions.

The installation instructions in both manuals are nearly identical. Installation of this instrument is so straight forward that anyone can install the instrument in its operating environment.

The operating instructions in the User manual are much more detailed than those in the Service manual. The need for a service technician is considerably less than that of an end user. If the operating instructions in this manual are not complete enough, please refer to the User manual for more detailed instructions.

The specifications contained in the Specification section of this manual should be used by the servicing technician. Its tables contain Performance Verification step numbers to make it possible to document the test methods used to verify the accuracy of the instrument.

The User manual contains some servicing instructions for quick, non dangerous operations; however, the bulk of the servicing instructions are located in this manual. Note that there are specific procedures for troubleshooting and disassembly in this manual, they should only be attempted by competent service technicians. Items in the maintenance section contain both *Warnings* and *Cautions* that should be read and followed when performing maintenance on the instrument.

The last sections of this manual contain the Replaceable Parts Lists, Circuit Board Illustrations, and Schematic Diagrams needed to isolate and replace faulty components. Note that replacement part ordering information can be found in the Maintenance section of this manual.

Readjustment These instruments are designed to be returned to operation within stated specifications through a PC-based adjustment procedure. The disk holder for this manual contains two computer disks: 1. A software disk containing instruments operating software (Version 2.2 or greater). 2. A calibration software disk.

An IBM compatible personal computer (PC) with a DOS 3.3 or higher operating system, and a 3¹/₂ inch high density floppy drive is required to perform the readjustment procedure or reload the operating software.

The spare software disk is provided in the event that the Main circuit board, which contains the software, requires replacement.

Specification

The WFM 601 is a half-rack width by three rack unit high serial component monitor. It employs a bright, white phosphor, post accelerated CRT with lighted internal graticule. The parallax free internal graticule structure contains markings for waveform functions. The lightning, diamond, vector, and audio graticules are electronic, in order to keep from complicating the waveform graticule.

The monitor is microprocessor controlled to provide greater versatility. Switch settings that affect the operation of the instrument are continuously polled by the processor, with any change in status acted upon immediately. Current operating conditions are preserved in Non-Volatile Random Access Memory (NOVRAM), which returns the front-panel settings to current ones, in the event of power interruption (either accidental or routine power down).

Many of the operational measurements are performed on a repetitive basis. These instruments provide a method of repeating common measurements by selecting stored measurement settings from a CRT menu list. The operator can store and name up to 9 common measurement front-panel settings. Measurement specific front-panel settings can then be recalled by pushing the Preset Menu and selecting the desired preset by name or number.

Many of the functions that were formerly selected by changing internal jumpers and/or wire straps are now accessible through on-screen menu selections. They are selected by pushing the appropriate front-panel menu select button. Menu items are then selected by pushing one or more of the assignable switches and/or turning the assigned front-panel control. Once selected these menu choices are retained until changed by subsequent reconfiguration, or turning off the function with a MENU button.

The front panel provides both assignable switches (located next to the CRT) and controls (located beneath the CRT), that operate with CRT readout to increase functionality without cluttering the limited front-panel area. Function of these switches and controls is dictated by the front-panel display and initial menu choices.

The WFM 601 is capable of measuring and monitoring 4–2–2 component serial digital. It incorporates a straight through (non-filtered) display or a differentiated step filter. The assignable cursors, along with the CRT readout can be used for time and voltage measurements. The system of menus and CRT readout simplifies the configuration of this monitor for measurement or monitoring of signal characteristics.

Major Features

The following list composes the feature set for the WFM 601.

- GBR or Y P_B P_R display format.
- Any or all of channels 1, 2, or 3 displayed.
- Parade or Overlay display.
- Flat or Diff'd Step filtering.
- X1, X5, X10, and Variable display gain.
- X25 Magnified sweep.
- 1 and 2 Line or Field sweep.
- Bar Cursors; amplitude, time, or amplitude + time, +marker.
- Line Select with readout; 1 line or 15 line, all fields or 1 of 2 fields.
- Picture Monitor Out with bright up (on Y or G channel only).
- Vector Display; fixed or variable gain, 75% or 100% bars, SMPTE/EBU N10.
- Lightning or Diamond display; vertical gain (same as waveform), horizontal gain fixed, magnified, or variable, 75% or 100% bars, SMPTE/EBU N10.
- Electronic graticules for Lightning, Diamond, Vector, and Audio displays.
- Displays audio input from the REMOTE connector as a lissajous pattern.
- Monitor Output; GBR or Y P_B P_R (follows A/B switching), gamut error bright up.
- EDH: (Follows A/B switching) LED for presence and an alarm, rear panel TTL low through the REMOTE connector.
- Reclocked Serial Component Digital output following A/B switching.
- Video Reference: Internal Serial Component signal (follows A/B switching), External Composite.

Characteristics Tables

The tables that follow specify instrument electrical characteristics, mechanical characteristics, environmental characteristics, and certification. The tables are logically grouped under specific functions, beginning with waveform input and vertical channel specifications and ending with the instrument's mechanical characteristics.

Categories Each table consists of a column that identifies the characteristics that are defined by the entries in the Description column. A single item in the category column might have multiple description items, which could include performance requirements, reference information, and performance verification step numbers.

Descriptions The second column of the two column format contains all of the descriptive material about the listed characteristic. In addition, the performance verification procedure step number, used to verify the characteristic, is also in this column.

Performance Requirements (*REQ*). Items with this designation are critical to instrument performance. In most cases they have a tolerance given and have a performance verification step number accompanying them. However, there are a few areas where instrument operation verifies that this performance requirement is met.

Reference Information (*REF*). This is information about the operation of the instrument that is important enough to place it with the performance requirements. In some cases there may be a tolerance listed, but these should be considered as typical, not absolute.

Performance Verification Procedure Step. This item identifies the location of the test method to prove the performance requirement. The procedure itself is located in Section 4. Section 5 contains calibration information, if readjustment becomes necessary.

Table 1-1: WAVEFORM VERTICAL DEFLECTION

CATEGORY	DESCRIPTION
Deflection Factor	<p>REQ: For Digital Input: 700 mV digital input = 700 mV \pm 2% screen display any magnifier setting.</p> <p>REF: Any one of the 3 channels.</p> <p>REF: RGB on screen accuracy \pm 3%.</p> <p>Performance Verification Procedure Step: 8</p>
Variable Gain Range	<p>REF: 0.2X to 1.4X.</p> <p>Performance Verification Procedure Step: 8</p>
Frequency Response	<p>REF: Luminance Channel (Y), to 5.0 MHz \leq 2% Color Difference Channels (P_B & P_R) to 2.5 MHz \leq 2%.</p> <p>REF: Typically \leq 1% to 5.75 MHz luminance (Y) channel and \leq 1% to 2.75 MHz for the color difference (P_B or P_R) channel.</p>
Transient Response	<p>REF: Preshoot \leq 1%.</p> <p>REF: Overshoot \leq 1%.</p> <p>REF: Ringing \leq 1%.</p> <p>REF: Pulse-to-Bar Ratio: 0.99:1 to 1.01:1.</p>
Offscreen Recovery	<p>REF: 1% variation in baseline of a 5 MHz modulated pulse when positioned anywhere on screen.</p> <p>REF: X1, X5, or X10 with any variable gain setting.</p>
Voltage Cursor Accuracy	<p>REQ: \pm 0.5%.</p> <p>Performance Verification Procedure Step: 9</p>
Differentiated Step Filter	<p>REF: Amplitude of pulses \leq 5% variation.</p>
Field Rate Tilt	<p>REF: \leq 1%.</p>
Line Rate Tilt	<p>REF: \leq 1%.</p>

Table 1-2: SERIAL DIGITAL INTERFACE (Serial A & Serial B)

CATEGORY	DESCRIPTION
Format	REF: 270 Mbit/s component. Complies with SMPTE 259M & CCIR 656.
Input Type	REF: Passive loop-through 75Ω compensated.
Input Level	REF: 800 mV peak-to-peak ± 10%. REF: Input voltages outside this range may cause reduced receiver performance.
Return Loss	REQ: ≥ 25 dB 1-270 MHz. channels on or off, power on. ≥ 15 dB 1 -270 MHz, power turned off. Performance Verification Procedure Step: 20
Insertion Loss	REQ: ≤ 1.5%.
Transmission Bandwidth	REQ: 50 kHz – 300 MHz ± 1.0 dB. REF: -3 dB at not less than 500 MHz. Performance Verification Procedure Step: 21
Loop-Through Isolation	REF: ≥ 50 dB to 300 MHz.
Serial Receiver Equalization Range	REQ: Proper operation with up to 17 dB loss at 135 MHz using coaxial cable having 1/√F loss characteristics. 800 mV launch amplitude. REF: Nominally 175 meters of Beldon 8281 coaxial cable. Performance Verification Procedure Step: 18

Table 1-3: SERIAL VIDEO OUTPUT (Follows Serial A/B Selection)

CATEGORY	DESCRIPTION
Format	REF: 270 Mbit/s component. Complies with SMPTE 259M & CCIR 656.
Output Level	REQ: 800 mV peak-to-peak ± 10%. REF: Internal jumper can change output to 740 mV peak-to-peak ± 10%. Performance Verification Procedure Step: 8
Return Loss	REQ: ≥ 15 dB 1-270 MHz. Performance Verification Procedure Step: 20

Table 1-4: SERIAL VIDEO DIAGNOSTICS (EDH)

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Video Error Detection	<p>REF: Type: Active picture and full field. Field rate resolution. Uses CRC check word system. System is known as EDH (Error Detection and Handling) in industry literature.</p> <p>REF: Complies with SMPTE RP 165.</p> <p>REF: Front panel EDH DET lamp.</p> <p>REF: Sets error flag output through rear-panel REMOTE connector.</p>
Alarm	<p>REF: Warns that a serial signal video error has occurred.</p> <p style="padding-left: 40px;">Detected Errors:</p> <ol style="list-style-type: none"> 1. Video missing. 2. FF CRC error. 3. AP CRC error. 4. Any ESP flag set. <p>REF: Front-panel ALARM lamp.</p> <p>REF: Sets error flag output through rear-panel REMOTE connector.</p>

Table 1-5: EXTERNAL REFERENCE

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Input	REF: Analog composite video, or black burst.
Maximum Operating Input Voltage	REF: -1.8V to +2.2V, dc plus peak ac.
Absolute Maximum Input Voltage	REF: -8.5V to +8.5V, dc plus peak ac.
DC Input Impedance	REF: $\geq 20\text{ k}\Omega$.
Return Loss	<p>REQ: $\geq 40\text{ dB}$ to 6 MHz.</p> <p>REF: Typically $\geq 46\text{ dB}$ to 6 MHz; $\geq 40\text{ dB}$ to 10 MHz.</p> <p>Performance Verification Procedure Step: 19</p>

Table 1-6: WAVEFORM HORIZONTAL DEFLECTION

CATEGORY	DESCRIPTION
Sweep	<p>REQ: Synchronization:</p> <p><u>Internal:</u> Proper horizontal and vertical synchronization with a component digital signal conforming to CCIR Rec. 601 and SMPTE 125M.</p> <p><u>External:</u> Proper horizontal and vertical synchronization with a composite sync signal of appropriate line and field rate.</p> <p>Performance Verification Procedure Step: 7</p> <p>REF: Sweep Length: ≈ 12 divisions.</p> <p>REF: Sweep freeruns without input.</p>
Sweep Timing Accuracy	<p>REQ: 1 Line: $5 \mu\text{s/division} \pm 1\%$. 2 Line: $10 \mu\text{s/division} \pm 1\%$.</p> <p>Performance Verification Procedure Step: 6</p> <p>REF: 1 Field: Displays 1 full field, including field rate sync. 2 Field: Displays 2 full fields and the field rate sync between them.</p>
Sweep Linearity	<p>REQ: $\pm 1\%$.</p> <p>Performance Verification Procedure Step: 6</p>
Magnified Sweep Accuracy	<p>REQ: 1 Line: $0.2 \mu\text{s/division} \pm 1\%$. 2 Line: $1.0 \mu\text{s/division} \pm 1\%$.</p> <p>Performance Verification Procedure Step: 6</p>
Magnified Sweep Linearity	<p>REQ: $\pm 1\%$.</p> <p>Performance Verification Procedure Step: 6</p>
Timing Cursors	<p>REQ: Accuracy: $\pm 1\%$.</p> <p>REF: $\leq \pm 0.5\%$ at 25°C</p> <p>Performance Verification Procedure Step: 9</p>
Horizontal Position Range	<p>REQ: Any portion of the synchronized sweep can be positioned on screen in all sweep modes.</p> <p>Performance Verification Procedure Step: 4</p>

Table 1-7: CALIBRATOR

CATEGORY	DESCRIPTION
Waveform Squarewave	<p>REQ: Amplitude: $0.700\text{V} \pm 1\%$. Performance Verification Procedure Step: 8</p> <p>REQ: Frequency: $100 \text{kHz} \pm 0.1\%$. Performance Verification Procedure Step: 5</p> <p>REF: Crystal controlled outputs a $10 \mu\text{s}$ squarewave that can be used for adjusting horizontal gain of the instrument.</p>

Table 1–8: ANALOG AUDIO MODE

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Input	<i>REF:</i> DC coupled, differential input.
Input Impedance	<i>REF:</i> 20 kΩ.
Full Scale Selection	<i>REF:</i> 0, 4, 8, & 12 dBu full scale. Menu selectable.
Full Scale Accuracy	<i>REQ:</i> ± 0.5 dB. <i>Performance Verification Procedure Step: 20</i>
Maximum Input Voltage	<i>REF:</i> ± 8 V peak.
Bandwidth	<i>REQ:</i> –3 dB ≥ 500 kHz. <i>Performance Verification Procedure Step: 21</i>
X & Y Input Phase Matching	<i>REQ:</i> ≤ 1° <i>Performance Verification Procedure Step: 21</i>

Table 1–9: COMPONENT VECTOR MODE

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Vector Display	<i>REF:</i> P _B is displayed on horizontal axis and P _R is displayed on vertical axis.
Vertical Bandwidth	<i>REF:</i> ≥ 1.0 MHz.
Horizontal to Vertical Bandwidth Matching	<i>REQ:</i> ≤ 2° at 500 kHz and 2 MHz. <i>Performance Verification Procedure Step: 12</i>
Vertical Gain Accuracy	<i>REQ:</i> ± 1%. <i>Performance Verification Procedure Step: 11</i>
Horizontal Gain Accuracy	<i>REQ:</i> ± 1%. <i>Performance Verification Procedure Step: 11</i>
Display to Graticule Registration	<i>REQ:</i> ≤ 0.25 box with the color bar black display dot centered in target. <i>Performance Verification Procedure Step: 13</i>
Electronic Graticule Shape	<i>REF:</i> No visible gaps or tails at corners of target boxes.

Table 1-10: LIGHTNING MODE

CATEGORY	DESCRIPTION
Vertical Gain Accuracy	REQ: $\pm 2\%$. <i>Performance Verification Procedure Step: 14</i>
Electronic Graticule Display	REF: Y is displayed vertically. P _B is displayed horizontally on top half of display. P _R is displayed horizontally on bottom half of display.

Table 1-11: BOWTIE MODE

CATEGORY	DESCRIPTION
Common Mode Rejection Ratio	REF: ≥ 34 dB at 2.5 MHz.
Accuracy	REF: $\pm 3\%$.
Interchannel Timing Match	REQ: 2.0 ns <i>Performance Verification Procedure Step: 15</i>

Table 1-12: PICTURE MONITOR OUTPUTS

CATEGORY	DESCRIPTION
Input Format	REF: EBU/N10.
Active Video Accuracy	REQ: 700 mV $\pm 3\%$ REF: Typically $<1\%$ <i>Performance Verification Procedure Step: 10</i>
Sync Amplitude Accuracy	REF: 300 mV $\pm 10\%$.
Monitor Output Impedance	REF: Nominally 75 Ω . Back porch clamped to 0V.

Table 1-13: POWER SOURCE

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Electrical Rating	REQ: 90 – 250V, 50/60 Hz, 1.5A maximum. REF: Continuous range from 90 to 250V ac. Performance Verification Procedure Step: 2
Supply Type	REF: Single Phase.
Supply Connection	REF: Detachable cord set.
Power Consumption	REF: <110 VA (70 watts).

Table 1-14: CRT DISPLAY

<i>CATEGORY</i>	<i>DESCRIPTION</i>
CRT Viewing Area	REF: 80 X 100 mm. Horizontal: 12.5 divisions. Vertical: 1.19V.
Accelerating Potential	REF: Nominally 13.75 kV.
Trace Rotation Range	REQ: Greater than + & – 1° from horizontal. REF: Total adjustment range is typically ≥ 8°. Performance Verification Procedure Step: 3
Graticule	REF: Internal with variable illumination.

Table 1-15: ENVIRONMENTAL CHARACTERISTICS

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Operating Temperature	REQ: 0° to 40°C (+32° to 122°F).
Storage Temperature	REQ: -40° to 75°C (-40° to 158°F).
Operating Altitude	REQ: To 15,000 feet (4572 meters). REF: (IEC 1010-1 compliant to 2000 meters).
Storage Altitude	REQ: To 50,000 feet (15,240 meters).
Vibration	REQ: 5 minutes at 5 – 15 Hz with 0.060 inch displacement. 5 minutes at 15 – 25 Hz with 0.040 inch displacement. 5 minutes at 25 – 55 Hz with 0.020 inch displacement. Military Specification: Mil-T-28800D, Paragraph 1.2.2, Class 3
Mechanical Shock	REQ: Non Operating: 50 g's 1/2 sine, 11 ms duration 3 shocks per surface (18 total).
Transportation	REQ: Qualified under NSTA Test Procedure 1A, Category II (24 inch drop).
Equipment Type	REF: Measurement.
Equipment Class	REF: IEC 1010-1, Annex H, Class I.
Installation Category	REQ: Indoor use only IEC 1010-1 (Category 2).
Pollution Degree	REQ: IEC 1010-1 Level 2 operating environment.
Humidity	REQ: Will operate at 95% relative humidity for up to five days. REF: Do not operate with visible moisture on the circuit boards.

Table 1-16: CERTIFICATION

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Safety	Designed to meet or exceed: UL1244 Factory Mutual 3820 CSA Standard 231 IEC 1010-1 (for operation up to 2000 meters)
EMI	Designed to meet or exceed: FCC EMI Compatibility (FCC Rules Part 15, Subpart J, Class A) VDE 0871.5 (Class B) Instrument must be installed in a cabinet equal to the shielding provided by Tektronix F00 or F02 cabinets to qualify for EMI certification.

Table 1-17: PHYSICAL CHARACTERISTICS

<i>CATEGORY</i>	<i>DESCRIPTION</i>
Dimensions	REQ: Height: 5 1/4 inches (133.4 millimeters). Width: 8 1/2 inches (215.9 millimeters). Depth: 18 1/8 inches (460.4 millimeters).
Weight	REQ: Net: 8 pounds (3.8 kilograms). Shipping: 15.7 pounds (7.2 kilograms) <i>approximate</i> .

Installation

The information contained here deals with the installation and operation of the WFM601 Serial Digital Component Monitor. If the instrument is to be removed from its installed position for servicing, this will provide the information needed to remove or reinstall it. Note that the repackaging information is located at the end of the Maintenance section.

Standard Accessories

This instrument is shipped with a set of standard accessories. These are the items necessary to place the instrument in service, such as the power cord. When the box for the instrument was opened it should have contained:

1. One User Manual.
2. One power cord assembly (see Options).
3. One cartridge fuse.
4. Two 75Ω End-Line Terminations, 26 dB to 300 MHz.
5. Four replacement graticule light bulbs.
6. Four replacement air filters.

Floppy Disks Included with this Manual

This manual is shipped with two 3.5-inch high density floppy disks. The disks will run on an IBM compatible PC with a DOS 3.3 or higher operating system and a 3.5-inch high density floppy disk drive.

One of the disks contains the current operating software for the instrument. All versions of software support the Adjustment Procedures contained on the second disk.

To determine the level of software loaded in an instrument perform the following steps:

1. Power up the WFM601.
2. Push the CONFIG menu button.
3. Select the REMOTE submenu.
4. Read the software version number from the lower right corner of the CRT.

The second disk contains the "Adjustment Procedures" software needed to return the instrument operation to its specified levels. This procedure works in conjunction with the Adjustment Procedures section of this manual.

Mechanical Installation

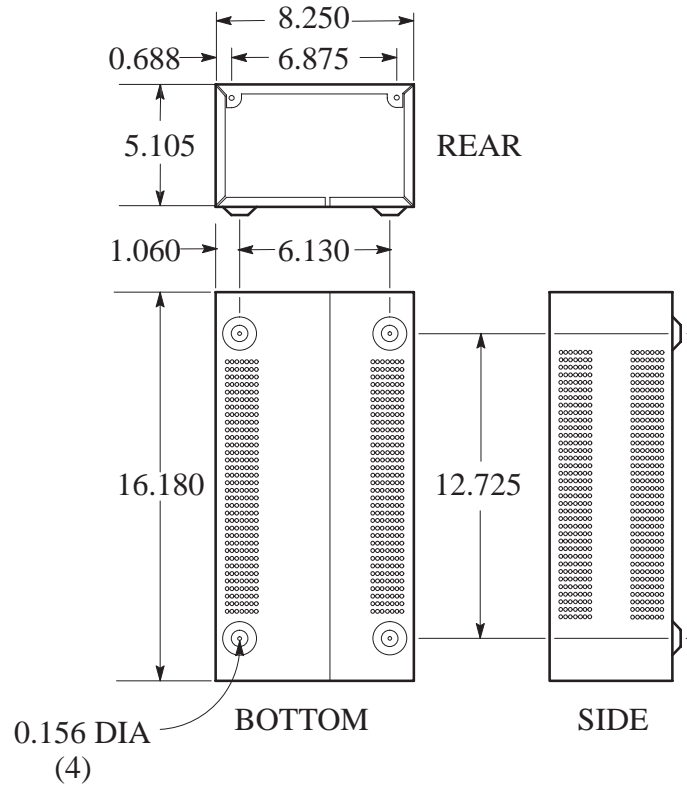


Figure 2-1: Dimensions of the 1700F00 Plain Cabinet

Cabinets

The cabinets available for this instrument not only provide necessary shielding and protection against accidental electrical shock, but also provide internal circuitry with protection against build up of dust. A supply of filtered, cooling air is provided from the rear panel and exits through the cabinet vent holes. Operation in air flow restricted environments may lead to excessive heat build up.

All qualification testing for the WFM601 was performed in a 1700F00 cabinet. To guarantee compliance with specifications, the instrument should be operated in a cabinet. The plain cabinet, 1700F00, is shown in Figure 2-1.

The optional 1700F00 cabinet is the basic element for all of the cabinets that fit this instrument. The 1700F02 portable carrying case is an enhanced version of this cabinet, as is the 1700F04 side-by-side rack mount assembly. All of these cabinets are available from Tektronix. If you need one of these cabinets, contact your nearest Tektronix field office or representative for assistance in ordering.

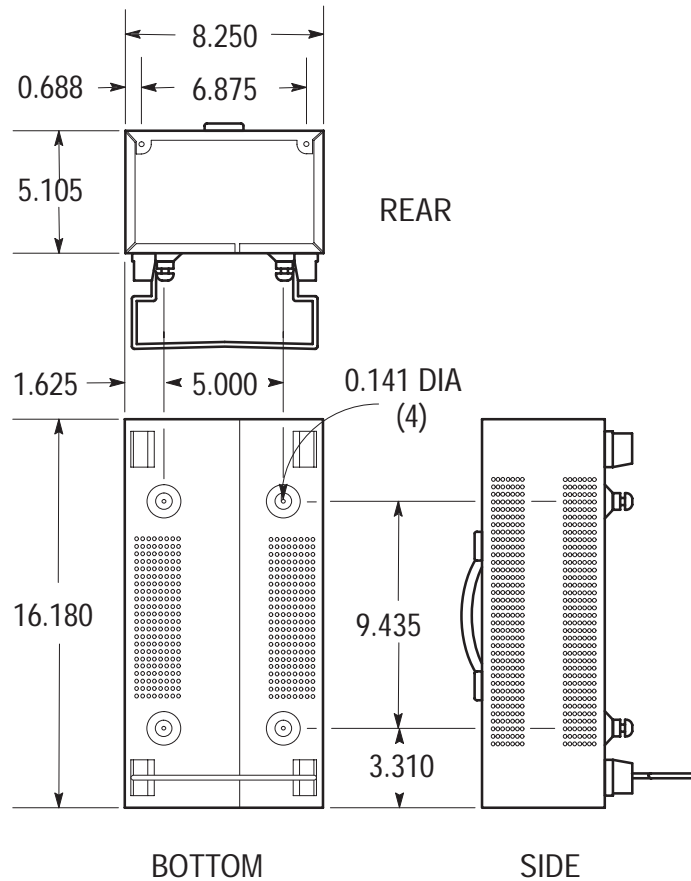


Figure 2-2: 1700F02 Portable Cabinet

The portable cabinet, 1700F02, is shown in Figure 2-2. The 1700F02 has a handle, four feet, and a flip-up stand. The mounting hole sizes and spacing are different from those of the 1700F00.

All of the 1700-Series metal cabinets (which also fit the WFM 601), that are available from Tektronix as Optional Accessories, provide the proper electrical environment for the instrument. They supply adequate shielding, minimize handling damage, and reduce dust accumulation within the instrument.

Cabinet Installation



CAUTION. Do not attempt to carry an instrument in its cabinet without installing the mounting screws. Without the mounting screws there is nothing to hold the instrument in the cabinet if it is tipped forward.

The instrument is secured to the cabinet by two 6-32 Pozidrive® screws, located in the upper corners of the rear panel. See Figure 2-3.

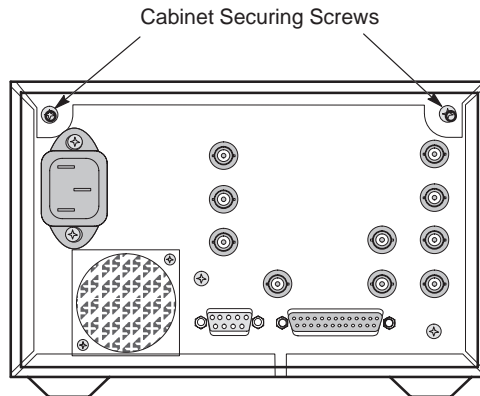


Figure 2-3: Rear View Showing the Securing Screws

Rack Adapter

The optional 1700F05 side-by-side rack adapter, shown in Figure 2-4, consists of two attached cabinets. It can be used to mount the WFM 601 and another half-rack width instrument, such as an analog component monitor (Tektronix 1760-Series), in a standard 19-inch rack.

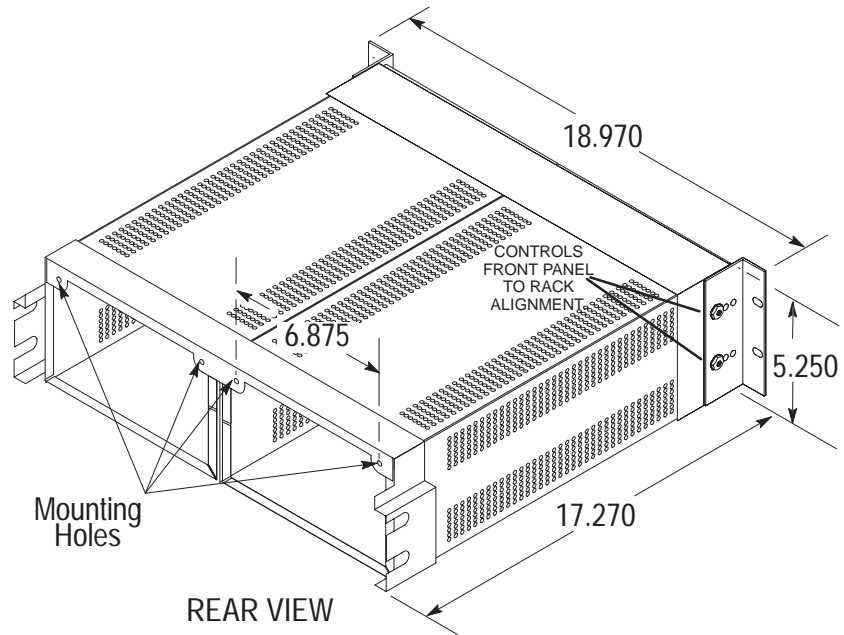


Figure 2-4: The 1700F05 Side-by-side Rack Adapter

The rack adapter is adjustable, so the instrument can be more closely aligned with other equipment in the rack. See Figure 2-4.

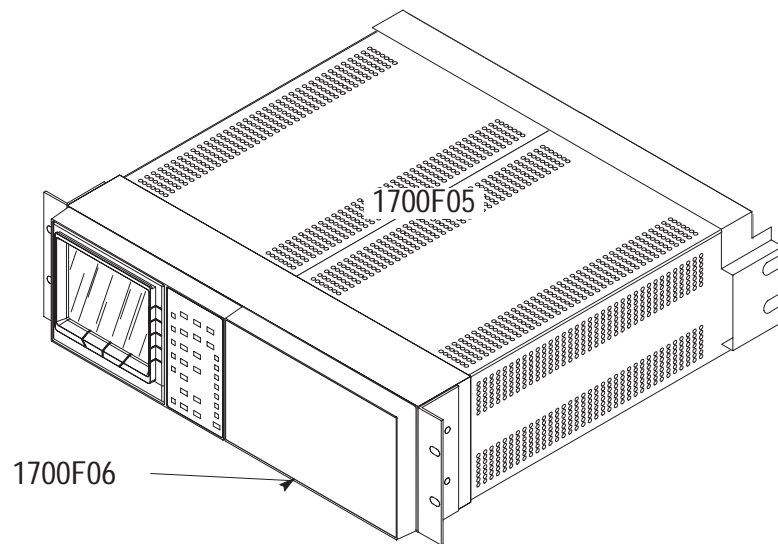


Figure 2-5: A 1700F05 with a Blank Front Panel (1700F06)

If only one side of the rack adapter is used, a 1700F06 Blank Panel can be inserted in the unused section. See Figure 2-5. The rack adapter and panel are available through your local Tektronix field office or representative.

When only one instrument is mounted in the side-by-side adapter an accessory drawer (1700F07) can be installed in the blank side of the cabinet. See Figure 2-6.

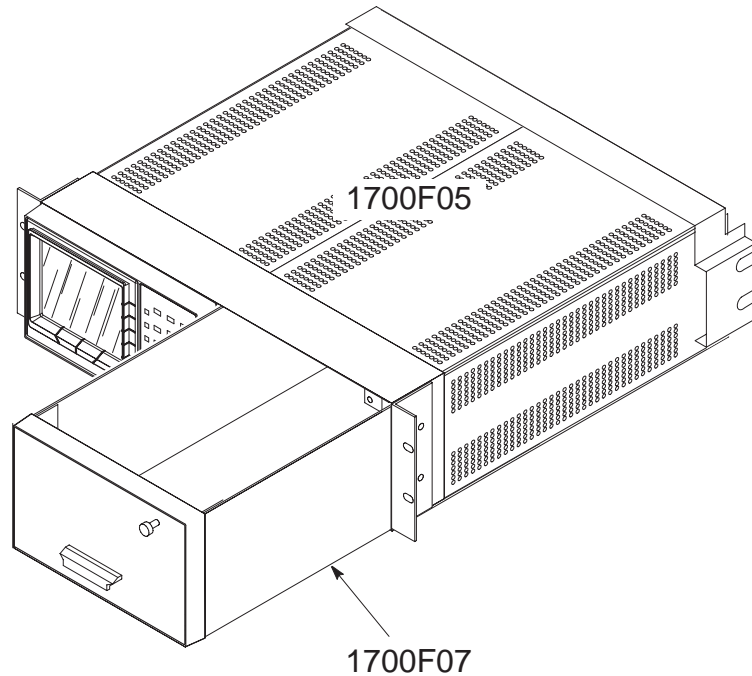


Figure 2-6: 1700F05 Rack Mounting with a 1700F07 Utility Drawer

Custom Installation

For applications such as consoles the instrument can be mounted with front molding flush or protruding from the console. In both cases, allow approximately 3 inches of rear clearance for BNC and power-cord connections.

To mount the instrument safely, attach it to a shelf strong enough to hold its weight. Install the mounting screws through the four 0.156-inch diameter holes in the bottom of the 1700F00 cabinet. See Figure 2-7.

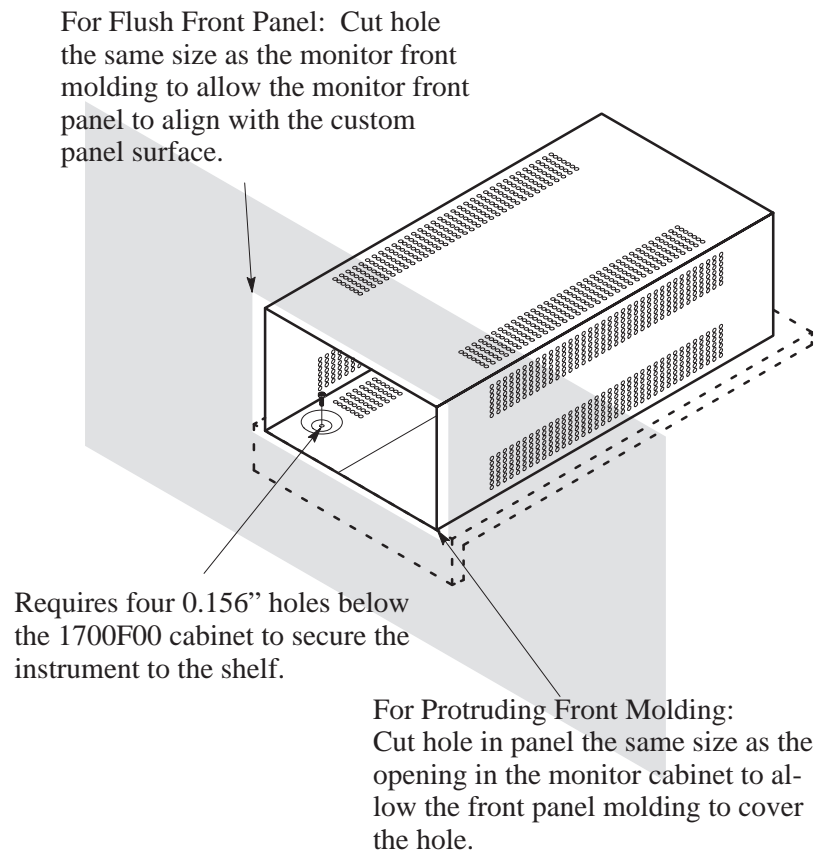


Figure 2-7: Custom Installation of an Instrument

Electrical Installation

Power Source

These monitors are designed to operate from a single-phase power source having one of its current-carrying conductors at or near earth ground (the neutral conductor). Only the line conductor is fused for over-current protection. Systems that have both current-carrying conductors live with respect to ground (such as phase-to-phase on multiphase systems) are not recommended as power sources. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.



WARNING. When power is supplied, line voltage will be present in the instrument, even if the POWER switch is set to STANDBY.

Mains Frequency and Voltage Range The WFM601 monitors operate at 50 and 60 Hz, over the range of 90–250 Volts, without operator adjustment.

Power Cord Options The WFM601 is delivered from the factory with a 60 Hz/117 V power cord, unless one of the power cord options was ordered. Table 2–1 provides a description of the available power cord options for these monitors.

Table 2–1: Power Cord Options

Power Cord Option	Description
Option A1.	Universal Europe, 220 V/16 A (Locking Power Cord).
Option A2.	United Kingdom, 240 V/15 A (Power Cord).
Option A3.	Australia, 240 V/10 A (Power Cord).
Option A4.	North America, 250 V/10 A (Power Cord).
Option A5.	Swiss, 240 V/6 A (Power Cord).

For additional information see the Accessories foldout at the back of the manual.

Operational Changes Jumper A5J4 selects the output amplitude of the reclocked serial video that the WFM 601 outputs. As shipped from the factory it is set to 1-2 and provides an output amplitude of 800 mV. Changing it to the other position, 2-3, changes the output amplitude to 740 mV, which may work better with some of the receiving equipment. See the Deserializer Diagram 2 (Section 9) and its illustration on the back of Diagram 1 for jumper location.

Rear Panel Connectors

Signals into and out of the instrument are connected via the rear panel. Video signals are input/output through the BNC connectors. General information about the rear-panel connectors is provided in the following paragraphs. Figure 2–8 shows the rear-panel configuration.

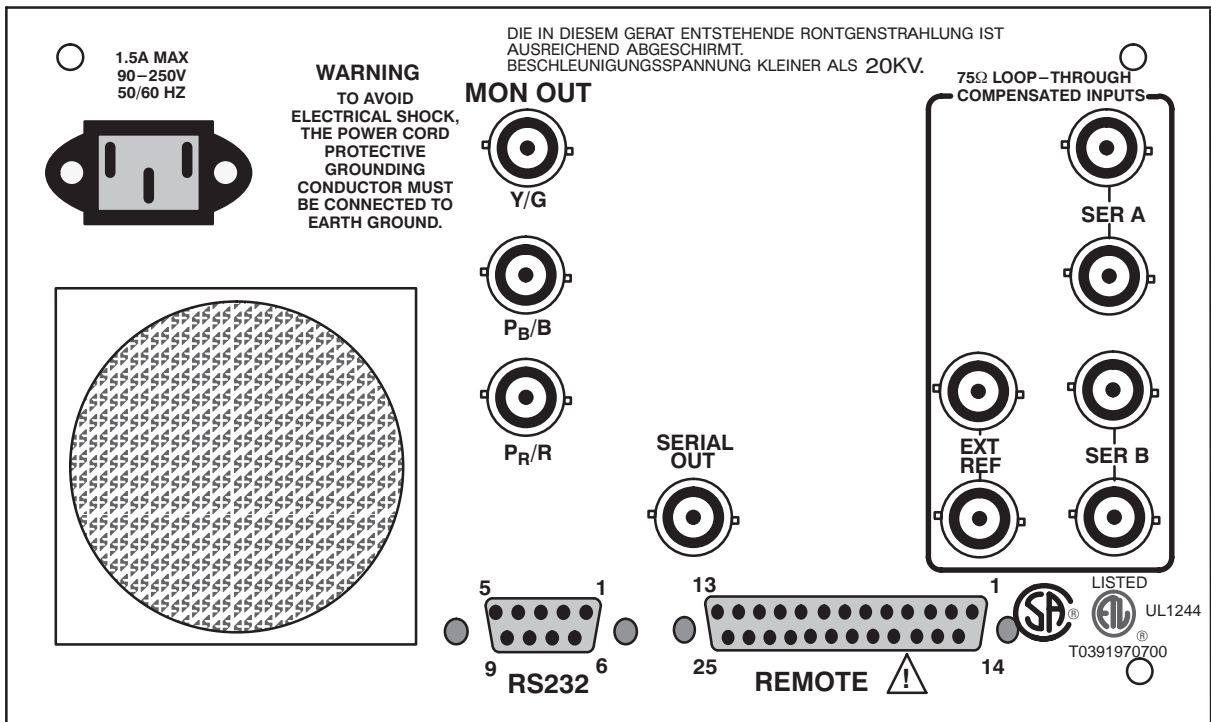


Figure 2-8: Rear-panel Connectors

75Ω Loop-through Video Inputs

There are two 75Ω compensated loop-through serial digital video input BNC connectors. These inputs are not internally terminated; inputs require 75Ω external termination to provide accurate measurement capabilities.

Maximum operating input voltage for all inputs is -1.8 V to +2.2 V dc plus peak ac. Absolute maximum input voltage is -8.5 V to +8.5 V dc plus peak ac.

External Reference (EXT REF)

The external reference input provides both external synchronizing signals and external subcarrier input to these instruments. Input is either black burst or composite video. It is a 75Ω compensated loop-through input, requiring external termination.

Serial Out

Reclocked serial digital component input signal following the SERIAL A/SERIAL B selection.

GBR Output

Three 75Ω outputs of either GBR (sync on the G output) or color difference signals (sync on Y).

Remote Connector

The rear-panel REMOTE connector is a 25-pin, D-type connector. It provides the input for stereo L and R audio. TTL signal or ground closure to designated pins are the enables. Eight front-panel setups can also be stored and recalled through the REMOTE connector. Table 2–2 shows pin assignments and Figure 2–9 shows the connector.

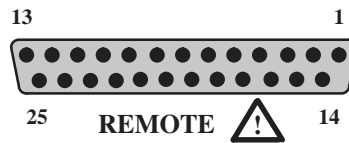


Figure 2–9: Rear-panel REMOTE connector

Table 2–2: Remote Connector

Pin No.	Function	Signal Requirement	Miscellaneous Information
1	Unused		
2	Ground		
3	Unused		
4	External Blanking Input	Negative-going signal (Low=Blanked)	Enabled by menu selection.
5	Ground		
6	Ground		
7	Ground		
8	+Y Audio Input	Max. Input ± 8 V peak.	Left in phase. Measured to Chassis Ground.
9	–Y Audio Input	Max. Input ± 8 V peak.	Left out of phase. Measured to Chassis Ground.
10	+X Audio Input	Max. Input ± 8 V peak.	Right in phase. Measured to Chassis Ground.
11	–X Audio Input	Max. Input ± 8 V peak.	Right out of phase. Measured to Chassis Ground.
12	Unused		
13	Unused		

Table 2-2: Remote Connector (Cont.)

Pin No.	Function	Signal Requirement	Miscellaneous Information
14	Ground		
15	Output 1		Reserved for future applications
16	Serial Video Alarm		Goes low when the front-panel ALARM indicator lights.
17	Preset 1	Ground (TTL low)	Grounding pin 17 recalls front-panel set-up from preset 1. Grounding pins 17 and 25 stores current front-panel setup at preset 1.
18	Preset 2	Ground (TTL low)	Grounding pin 18 recalls front-panel set-up from preset 2. Grounding pins 18 and 25 stores current front-panel setup at preset 2.
19	Preset 3	Ground (TTL low)	Grounding pin 19 recalls front-panel set-up from preset 3. Grounding pins 19 and 25 stores current setup at preset 3.
20	Preset 4	Ground (TTL low)	Grounding pin 20 recalls front-panel set-up from preset 4. Grounding pins 20 and 25 stores current setup at preset 4.
21	Preset 5	Ground (TTL low)	Grounding pin 21 recalls front-panel set-up from preset 5. Grounding pins 21 and 25 stores current setup at preset 5.
22	Preset 6	Ground (TTL low)	Grounding pin 22 recalls front-panel set-up from preset 6. Grounding pins 22 and 25 stores current setup at preset 6.
23	Preset 7	Ground (TTL low)	Grounding pin 23 recalls front-panel set-up from preset 7. Grounding pins 23 and 25 stores current setup at preset 7 .
24	Preset 8	Ground (TTL low)	Grounding pin 24 recalls front-panel set-up from preset 8. Grounding pins 24 and 25 stores current setup at preset 8.
25	Store	Ground (TTL low)	Grounding this pin along with one of the Preset pins stores the current front-panel setup at the selected Preset location.

RS232 Connector

The serial interface is 9-pin subminiature D-type connector that provides a serial interface for remote control. It has a driver built in for RS232 serial binary data interchange. The operational mode is full duplex. Data rate = 9600 baud; data type is asynchronous. Figure 2-10 shows both the pin assignments and the connector orientation.

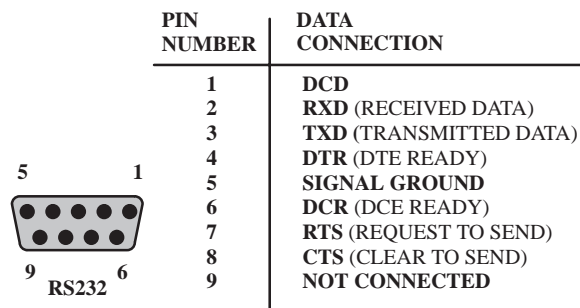


Figure 2-10: Rear-panel RS232 Connector

Installing Software

The versatility of these monitors allows them to be upgraded to perform additional measurements or to revise operations. Software code is contained in Flash EPROM that can be written over when upgrades become available.

In addition, if the Flash EPROM is replaced, it becomes essential to reinstall the software from the software floppy disk accompanying this manual.

If an upgrade is anticipated, it is essential to know the version of software resident in the instrument. The current version of software can be found by entering the CONFIG menu and going to the REMOTE submenu. The version number, preceded by the letter V, is displayed in the lower right corner of the screen.

Software Disk

The software disk is a 3.5" (1.44MB) high-density disk. It contains all programs necessary to reload the operating software in the Tektronix WFM 601 to its current software version. If a disk drive other than 3.5" is to be used, have the contents of the disk copied to the desired size disk or to a hard disk directory. The disk contents are:

- NVSAVE.EXE Saves calibration constants and user presets.
- CONVERT.EXE Updates format of calibration and preset data.

- UPGRADE.EXE Performs software upgrade.
- NVRESTOR.EXE Restores calibration constants and user presets.
- SOFTWARE.BIN Data file used by UPGRADE.EXE.

Equipment Required to Perform Software Upgrades

IBM Compatible PC with the following:

- DOS 3.3 or higher operating system.
- 640 K Bytes Random-Access Memory (RAM).
- High Density Floppy Drive (3.5"/1.44 MB).
- Available RS232 Port (COM 1, 2, 3, or 4).

RS232 Cable to connect PC to the WFM 601 RS232 connector.

Instrument Reset

Certain conditions, such as removing the power source while a program is running, may cause the WFM 601 front-panel controls to become locked.

Reset as follows:

Turn off instrument power, then depress CLEAR MENU and WAVEFORM, holding in both buttons until you have turned instrument power on again and the instrument has returned to its normal operating state.



CAUTION. Loading new software will result in loss of instrument calibration constants and user presets. Therefore, the program **NVSAVE** must be run before executing **UPGRADE**.



CAUTION. If a disk is used to upgrade more than one instrument, finish one upgrade, including the **NVRESTOR** program, before running **NVSAVE** on the next instrument. **NVSAVE** will overwrite the temporary files on the disk every time it is run; any previous files will be lost.



CAUTION. The programs are designed to read or create their respective files in the current DOS directory. If you choose to copy these files to a hard drive, be sure to run them from the directory in which they are contained.



CAUTION. *The instrument cannot be used during execution of any of the programs on this disk. If the operation of any of these programs is interrupted, that program must be rerun from the beginning to ensure a proper upgrade.*

Procedure for Loading Software

PC Hookup Connect the WFM 601 rear-panel RS232 connector to the COM 1, 2, 3, or 4 connector on the PC, as shown in Figure 2–11, Figure 2–12, or Figure 2–13. If pins two and three (RXD and TXD) are swapped, as in some MODEM connections, the upgrade will not operate.

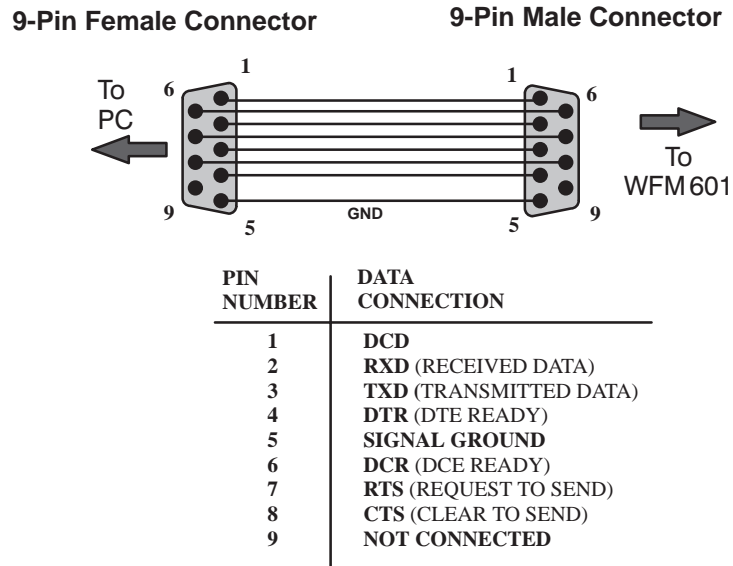


Figure 2–11: Hookup for 9-Pin PC Connector

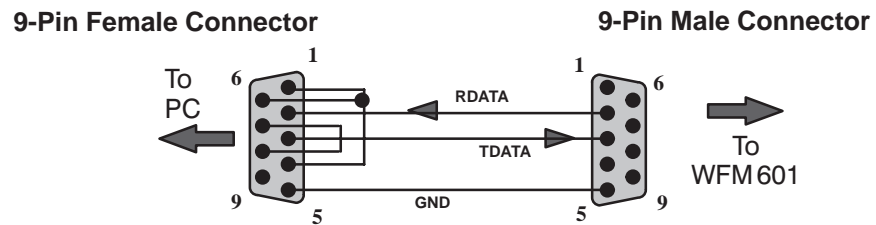


Figure 2-12: Alternate Hookup for 9-Pin PC Connector

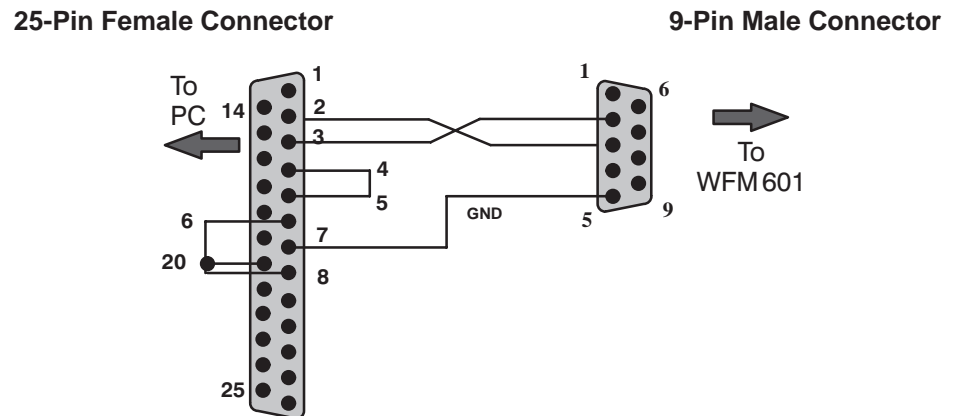


Figure 2-13: Wiring Adapter for PC with 25-Pin Connector

**1. Run NVSAVE
(Execution time <1 minute)**

- a. Turn on the WFM 601.

NOTE. *PC Floppy Drive or Hard Disk*

On PCs the drive letter for the floppy, or hard disk drive may be A, B, etc. Enter the appropriate letter for your floppy drive in the following steps. If the disk contents were copied to a hard disk directory, run the programs from that directory.

- b. Insert disk into PC 3.5 inch floppy drive.



CAUTION. The disk is not write protected in order to execute “NV SAVE”. Do not place in write protect mode.

- c. At the DOS prompt, type “**B:**” and ENTER.
- d. Type “**NVSAVE**” and ENTER. When asked for the COM port, respond with the number of the port you are using. (If you enter an incorrect port number, you will be prompted to try again.)
- e. Wait for the message that the program execution is completed.
- f. Note: This program stores the following temporary files on the floppy disk: **CALS.TMP** (calibration constants), **PRESET.CUR** (instrument’s current front-panel setup), **PRESET.001–009** (user-defined presets), and **PRESET.FCT** (factory-defined preset).

2. Run CONVERT
(Execution time <1 minute)

- a. Type “**CONVERT**” and ENTER.

3. Prepare Waveform Monitor for Upgrade

- a. Turn instrument power to STANDBY.



WARNING. When power is supplied, line voltage will be present in the instrument, even if the **POWER** switch is set to **STANDBY**.

- b. Move the plug jumper on J4 (Main board) to pins 1 and 2 (the pins closest to U14).
- c. Set switch 4 of SW1 to the open position. (SW1 is the red switch on the Main board, near the front of the instrument.)
- d. Turn on the instrument and allow it to boot (wait a few moments until the WFM601 CRT and front-panel LEDs are illuminated as for normal operation).

4. Run UPGRADE
(Execution time ≈12 minutes)

NOTE. If a power loss to either the PC or the WFM601 occurs during execution of the software loading, the instrument may lock up and not restart normally. A special recovery procedure can be found on page 2–17, should this problem occur.

- a. Be sure that **NVSAVE** was executed (step 1).

- b. At the DOS prompt, type “**A:**” and ENTER.
 - c. Type “**UPGRADE**” and ENTER. When asked for the COM port, respond with the number of the connector you are using.
 - d. Wait for the message that the program execution is completed.
 - e. Turn off the WFM 601 instrument power.
 - f. Return the plug jumper to pins 2 and 3, and return #4 of SW1 to the closed state.
 - g. Turn on instrument power to enable the new software.
5. **Run NVRESTOR**
(Execution time <1 minute)
- a. At the DOS prompt, type “**A:**” and ENTER.
 - b. Type “**NVRESTOR**” and ENTER. When asked for the COM port, respond with the number of the port you are using.
 - c. Wait for the message that the program execution is completed.
 - d. Verify that step 4f has been performed.
 - e. This completes the Software Upgrade Procedure.

Recovery Procedure for Power Loss During Execution of UPGRADE

If there is a power failure to either the instrument or the PC during the loading of the software, the following recovery procedure is necessary.

1. Turn the WFM 601 front-panel POWER switch to STANDBY.
2. Start the PC upgrade procedure program and proceed through the menus until the SELECT COM PORT menu is on the screen.
3. Type in the number of the COM PORT, but ***do not*** press the RETURN.
4. Turn the WFM 601 front-panel POWER switch to ON.
5. Within 6 seconds, press RETURN on the PC.

Operating Instructions

This section duplicates material contained in your instrument's User manual. The information is presented here for the convenience of service personnel. This section contains a brief introduction, "minimal" operating instructions (in six easy steps!), general menu information, an overview of the instrument functions, and brief instructions for displaying the desired signal. Please consult the User manual any time you need a more complete explanation of these or any other topics.

Getting Started

The Tektronix WFM601 Serial Digital Component Monitor has been designed for ease of operation. If you have previous experience with waveform monitors and vectorscopes, you may be able to operate the instrument without referring frequently to this section. However, you should be aware of the following "special characteristics" of the WFM601:

- Each type of Waveform display (one line, two line, one field, and two field) has one level of horizontal magnification that may be turned on and off with the MAG button. The level of magnification depends on the display type; you can sequentially display the four magnified views by repeatedly pressing the Line/Field SWEEP button (once SWEEP MAG has been selected).
- The Bowtie Display subtracts channels 2 and 3 from channel 1 and automatically displays the results in a "parade" format. This lets you use the Tektronix-developed Bowtie test signal to check and adjust inter-channel timing on component systems.
- Audio signals are input through the rear-panel REMOTE connector. See "Installation" for the pin assignments.
- The five buttons arranged vertically to the right of the display are called *Bezel Buttons*. Use these buttons to toggle or select the on-screen menu options that they are aligned with.
- The middle three knobs under the display are called *Bezel controls*. Turn these knobs to adjust the parameters—or scroll through the lists—that appear above them on the display screen.

Operating Instructions

1. Connect the serial digital signal to the instrument (SER A or SER B); add a termination to the loop-through connector, if necessary.

2. Plug the instrument in and switch it on. The On/Standby (POWER) switch is on the bottom-right corner of the front panel.
3. Select the CONFIG menu with its front-panel button and adjust the parameters as required for your particular installation.

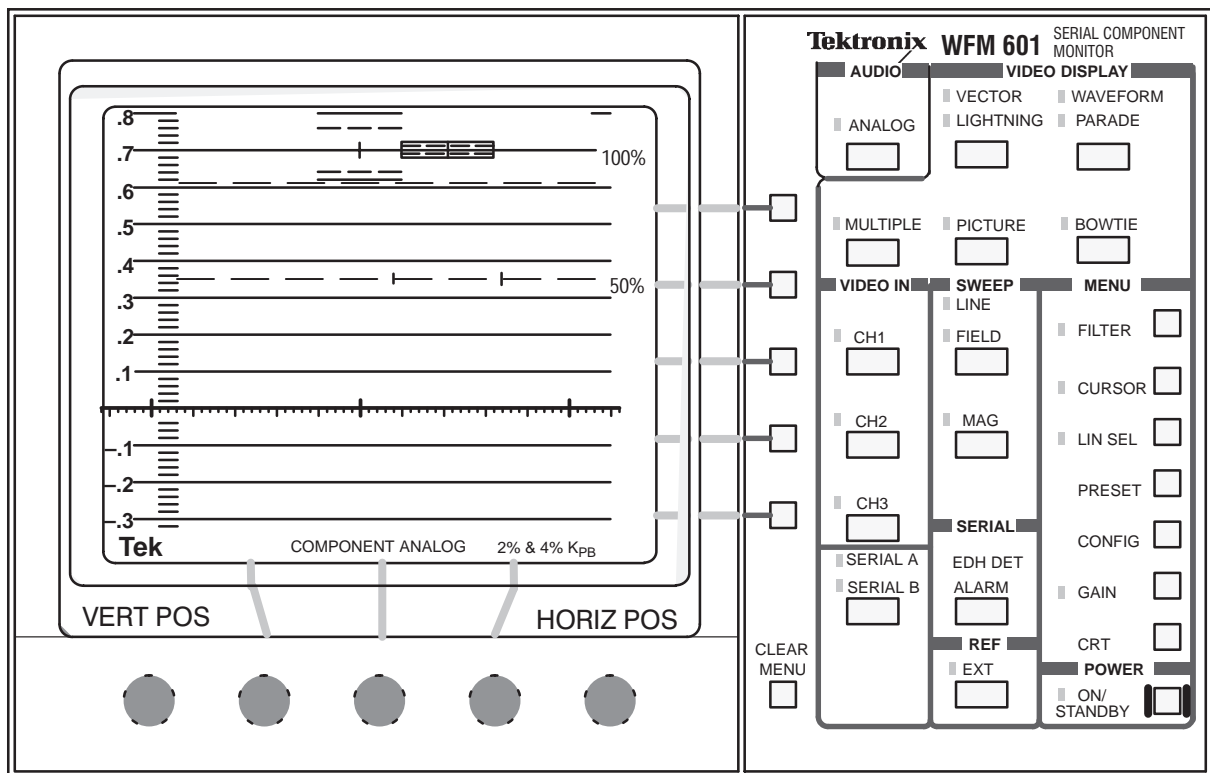


Figure 2-14: WFM601 Front Panel

4. Use the DISPLAY and INPUT buttons to view some aspect of the desired signal.
5. Select the CRT menu to adjust the waveform, readout, and scale brightness, and the waveform focus. Press the CLEAR MENU button to remove the menu from the display.
6. Use the front-panel controls to observe and measure the signal(s) of your choice. If necessary, see the following pages for limited details, or the User manual for complete instructions.

General Menu Information

The WFM 601 menus are almost self-explanatory. The next few paragraphs describe the general techniques. To get started, press the appropriate MENU button (on the far right of the front panel) to call up one of the on-screen menu readouts.

Multi-Use Bezel Controls and Buttons

Menu selections appear along the right side of the screen. Descriptive labels, when present, appear in *ITALIC* text. Actual selections appear in Roman (standard) text. Use the five bezel buttons along the right side of the CRT to change the selections.

Figure 2–15 shows the bezel controls and buttons.

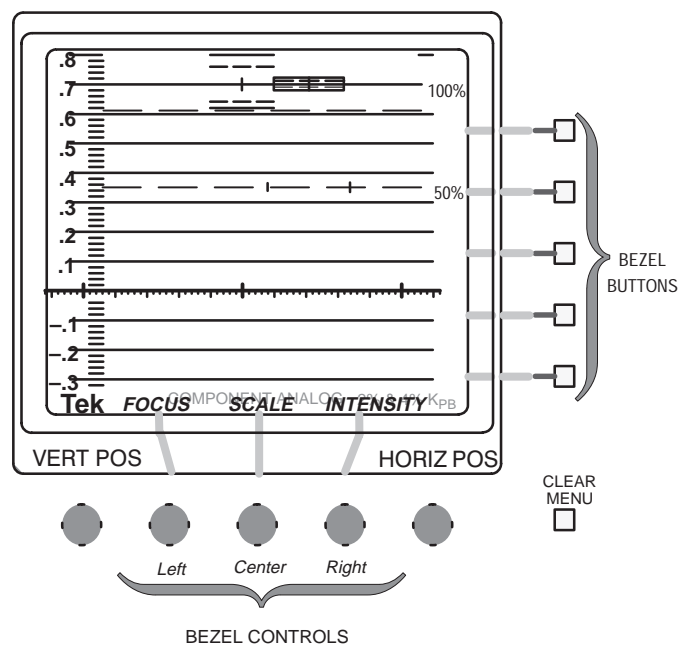


Figure 2–15: The CRT Menu, with the Bezel Controls and Buttons

The center three controls under the CRT are referred to as left, center, and right bezel controls. Control functions vary with menu choice; a readout just above each active knob shows its present function. The knobs are used as variable analog controls to set values such as phase, amplitude, and intensity. The left control is also used to scroll and select categories within the CONFIG menu.

Moving Between Menus

Selecting a second menu removes the present menu display, but the functions typically remain active (with the menu LED remaining lighted to show this state). To reinstate a menu display, push that menu button again.

CRT, PRESET, and CONFIG menus will be exited completely when another menu button is pushed.

Clear Menu

Push CLEAR MENU to clear part of the menu display, but leave essential readout elements such as control assignments and measurement readouts. (The menu LED remains lighted to show this state.) Push the menu button to bring back the full display.

CRT, PRESET, and CONFIG menus will be exited completely when CLEAR MENU is pushed.

Exiting a Menu Function

To exit a menu function while its display is present, push that menu button. (The menu button functions as an on-off toggle switch). If the menu display is not present, but the menu function is still in effect (LED is lighted), push the menu button to bring back the full display, then push it again to exit the menu.

Functional Overview

The *Functional Overview* describes the various ways a signal may be monitored with your instrument. For information on how to select a particular signal, see *Displaying a Signal*, on page 2–24.

Display Modes

The type of the signal will determine which display modes may be used. The displays that can be chosen with front-panel buttons are listed in Table 2–3 and explained in the following paragraphs.

Table 2–3: The Available Display Modes

Mode	Display Type
VECTOR	Component
WAVEFORM	Single Channel or Parade
AUDIO	Lissajous Display of Stereo Phase
LIGHTNING and DIAMOND	Displayed with Electronic Graticule
BOWTIE	CH1 – CH2 and CH1 – CH3
PICTURE	Monochrome Picture Monitor
MULTIPLE Displays	Waveform plus Vector, or Lightning (or Diamond), or Audio

- Vector** The vector mode presents an XY plot of demodulated chrominance phase and amplitude. The angle represents chrominance phase and the distance from the center represents chrominance amplitude. A bezel control adjusts vector phase.
- Waveform** The waveform monitor portion of the instrument provides a voltage-versus-time display of the video signal. The selected input can be displayed in one or two line, or one or two field sweeps. In line select mode, identified lines of any field can be selected and displayed. Multiple inputs can be displayed, or multiple filters can be used on one input for signal analysis. TIME and VOLTAGE cursors can be activated and positioned for reference or measurement.
- Audio** Audio amplitude and phase is monitored using a calibrated X/Y Lissajous display. The operator can verify that the program audio will be properly reproduced on both monaural and stereo receivers. Correct phasing between two audio channels is quickly verified by the direction of the display.
- Lightning and Diamond** The front-panel LIGHTNING button is used for both the Lightning and the Diamond displays. Use the *DISPLAY* button on the CONFIG/FORMAT menu to toggle between the Lightning and Diamond displays. Press the front-panel CLEAR MENU button to remove the menu from the screen.
- Selecting lightning mode forces the instrument to display CH1 -CH2 -CH3, from the selected SERIAL A input or SERIAL B.
- Bowtie** In bowtie mode, the display is forced to a two line or field sweep and CH1-CH2-CH3 are turned on. The left half of the display shows CH-1 minus CH-2 and the right half shows CH-1 minus CH-3. If the timing between channels is matched, the centers of the bowties will be centered and not skewed. If CH-2 is delayed with respect to CH-1, the skew moves to the right. If CH-2 is advanced with respect to CH-1, the skew moves to the left.
- Picture** The picture mode allows the operator to verify the signal source. In picture mode with line select on, a bright-up-marker identifies the selected line in the picture.
- Multiple** When MULTIPLE is pushed, WAVEFORM, and VECTOR, LIGHTNING (or DIAMOND), or AUDIO can be selected at the same time.
- When exiting MULTIPLE, the instrument will return to the previous (non MULTIPLE) display settings. When entering MULTIPLE again, the previous MULTIPLE display settings will be restored.

Displaying a Signal

The paragraphs below describe how to use the various front-panel buttons to display exactly the signal or signals you want.

Inputs

There are two rear-panel loop-through serial digital inputs. The inputs can be displayed singly or in several different combinations.

Only one input selection can be made at a time. SERIAL A/SERIAL B toggles between A and B inputs.

The input channels can be displayed in combination. Each channel button turns on an individual channel, then off. Pushing another channel button does not cancel the current selection, but adds to it.

SERIAL A/SERIAL B

Selecting SERIAL A can provide a side-by-side display of the CH-A1, CH-A2, and CH-A3, or any combination depending on which channels are selected, inputs (SERIAL B displays CH-B1, CH-B2, and CH-B3).

Sweep

Sweep buttons are used to select the waveform sweep rate. LINE/FIELD toggles through four sweep rate selections: one line, two line, one field, and two field. In parade mode, the LINE/FIELD button becomes a two-way switch, toggling between line and field.

The MAG button is used with LINE/FIELD to provide horizontal magnification of each rate as follows:

- One line magnified = 200 ns/division
- Two line magnified = 1 μ s/division
- One field or two field magnified = approximately X20 magnification.

Block Diagram Description

The WFM601 is a serial digital component monitor. Its inputs are serial only, and it offers no signal filters except a differentiated step filter. It provides waveform, parade, component vector, bowtie, lightning, and diamond displays. In addition there is a transcoded output providing GBR or Y, P_B, P_R outputs to drive component picture monitors.

With the exception of the power supplies, the block diagrams discussed here can be found in the Diagrams and Circuit Board Illustrations, at the rear of this volume. There are three large block diagrams.

Signal flow, microprocessor-generated levels, and feedback lines are shown as solid lines. Control lines are shown as dashed lines. Signal flow is from left to right on these diagrams.

Block Diagrams

Power Supplies

The low voltage power supply is of the switching high efficiency type. It is the universal supply that will operate over a mains range of 90 to 250 Vac. The high voltage power supply provides an acceleration potential of approximately 13.75 kV. See Figure 3-1.

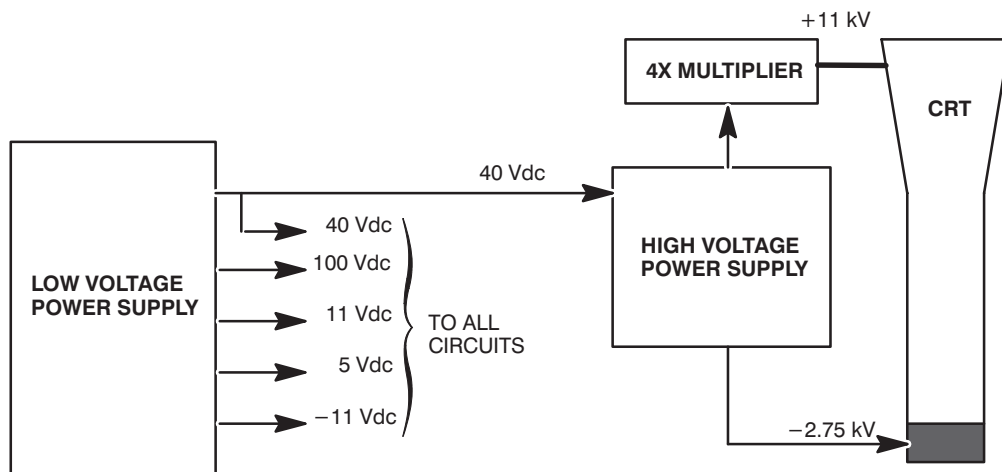


Figure 3-1: Power supply block diagram.

Block Diagram 1 Input and Waveform Monitor

This block diagram contains the serial inputs, outputs, and the vertical and horizontal amplifiers along with the crt and blanking.

Serial Input/Output

The component serial digital video signal is input through buffered, 75W compensated bridging loop-through circuits. After equalization, deserializing, and descrambling, the signal is input to a Coprocessor. The equalized serial component signal is also re-clocked to provide a serial video signal output to drive other equipment.

Input signal is selected by front-panel Serial A, Serial B selection switch. Only one input at a time may be displayed.

Coprocessor

The Coprocessor, which has parallel digital (deserialized) video as an input, generates signals used to display the video signal on the WFM601 CRT and provide transcoded analog outputs. The Coprocessor outputs a word synchronizing pulse to enable the recovery of the R-Y and B-Y channels from the multiplexed video data stream. In addition, it generates the signals used to clamp, re-establish the vertical blanking interval, and provide composite synchronization. The Coprocessor also removes nonvideo data from the signal, which includes End of Active Video (EAV), Start of Active Video (SAV) and ancillary data. Lastly the Coprocessor maintains a handshake with the Microprocessor over the Microprocessor data bus.

Y Delay, Half-Band Filters, and Digital to Analog Converters (DAC)s

The multiplexed video data stream from the Coprocessor is converted to analog components by three Digital to Analog Converters. Video data is delayed prior to application to the Y channel Half-Band Filter. Enable signals (Timing) for the Y Delay and the two color difference Half-Band Filters are generated by the Coprocessor.

The Half-Band Filters are clocked at twice the timing signal frequency by a signal that is equal to or counted down from the 27 MHz clocking signal. The clock signals are generated by the Phase-Locked Loop. Timing (enable) signals are 13.5 MHz for luminance and 6.75 MHz for color difference. Clocking signals are at 2X the timing signal. The half-band filtered digital component signals are input to three DACs that are clocked at 2X the timing frequency ($Y=27$ MHz, P_B and $P_R=13.5$ MHz.) The DAC outputs are the component analog signals (Y, P_B, P_R), whose gain is Microprocessor controlled through the DACs.

The component analog outputs of the three signal DACs are input to anti-aliasing Reconstruction Filters. The dc offsets of the component analog (Y, P_B, P_R) outputs, from the filters, are controlled by the Microprocessor and a 16 output DAC.

Input Multiplexer

The Line Rate Controller dictates the selection of display when color difference or RGB signals are being displayed. The output of the multiplexer drives the Flat, Luminance, and Differentiated Step Inputs of the Filter Multiplexer.

Filter Selection Multiplexer

The Filter Selection Multiplexer controlled by the Line Rate Controller selects the input to be displayed.

Squarewave Calibrator

The calibrator provides a 700 mV, 100 kHz output. Its amplitude is set by a microprocessor-controlled DAC, and its timing is set by the Line Rate Controller.

Vertical Amplifier

The Vertical Amplifier is a variable gain amplifier that has controlling inputs driven by either Microprocessor or synchronous Line Rate Controller outputs.

Stage gain is controlled by the microprocessor-generated DAC converted control voltages. Magnification is switched by a signal from the Line Rate Controller.

An offset voltage from the DACs vertically positions the display. When CRT readout is being processed the gain of the amplifier is changed by the Line Rate Controller. The differential output of the Vertical Amplifier drives the vertical output amplifier to normalize signal amplitude and drive the CRT deflection plates.

Horizontal Reference Multiplexer and Reference Switch

The Horizontal Reference Multiplexer selects either the internal video, from the Input Multiplexer or the External Reference input as the instrument sync reference. The Multiplexer is controlled by an output from the Line Rate Controller.

Sweep Generators and Horizontal Signal Multiplexer

Line and Field Rate signal generators are started and stopped by the retrace signals from the Line Rate Controller. Sweep ramp run up times (≈ 17 ms for the field sweep and $64 \mu\text{s}$ for the line sweep) are controlled by the Microprocessor.

The Horizontal Signal Multiplexer is controlled by the Line Rate Controller to select a signal to drive the horizontal circuitry.

Horizontal Amplifier

The Horizontal Amplifier is a variable gain amplifier with controlling inputs from either the Microprocessor or the Line Rate Controller. Stage gain is controlled by the Microprocessor-generated control voltages. Magnification is switched by a signal from the Line Rate Controller.

An offset voltage horizontally positions the display. The amount of positioning offset required for the Waveform mode is significantly greater than that required for the other display modes; therefore, a separate offset is required. When CRT readout is being processed the gain of the amplifier is changed by the Readout Select signal from the Line Rate Controller.

The differential output of the Horizontal Amplifier drives the horizontal output amplifier to normalize signal amplitude and drive the CRT deflection plates.

An additional amplifier stage within the Horizontal Amplifier provides a differential output that controls the intensity for the Picture Monitor mode. Picture Monitor contrast is controlled by the Microprocessor.

Blanking Logic

The Blanking Logic is a multiplexer that is controlled by the Line Rate Controller. It selects the blanking/unblanking signals that drive the Z-Axis Amplifier, which drives the CRT control grid.

Block Diagram 2 Component

Component Blanking Switching

The Y, P_B, P_R Reconstruction Filter outputs drive the Component/Blanking Switching matrix. Switch output is buffered and becomes the input to the Color Difference to GBR Transcoder, Bypass Switching, and Component display mode switching.

Color Difference to GBR Transcoder

The three channel outputs drive both the Component Display Switching matrix and the Color Difference to GBR Transcoder. Either the color difference input signal or the transcoded GBR signal can be buffered to drive the backporch clamped Picture Monitor Output Amplifiers.

Gamut Limit Comparator and Clamped Amplifiers

The Gamut Limit Detection circuit provides a flashing display on the Monitor output when GBR gamut limits are exceeded. The Monitor Out display can be either transcoded (GBR) or unprocessed components (Y/P_B/P_R). The Monitor Out signals are clamped by a pulse that is generated by the Coprocessor (always timed with the serial video). Composite sync, generated by the Coprocessor, is added to the G/Y channel of the Monitor Out. The Y/G, P_B/B, and P_R/R outputs are compensated in 75Ω.

GBR to Diamond Transcoder and Mode Switching

GBR signals from the Color Difference to GBR Transcoder are input to the GBR to Diamond Transcoder to be matrixed and applied to the Component Mode switching. The outputs from the Transcoder are 0.5 times G+B or R or B-G. These outputs drive the vertical and horizontal axes for the diamond display. Mode switching provides the inputs to the axes for Lightning, Diamond, Component Vector, and Bowtie displays.

Horizontal and Vertical Component Outputs

The Vertical Output Amplifier is a backporch clamped differential amplifier with unity gain. Its output is low-pass filtered (1.5 MHz) for all display modes except Bowtie, which bypasses the filter. The Horizontal Output Amplifier is a backporch clamped buffer whose output is low-pass filtered (1.5 MHz). The outputs of both the amplifiers are input into the Output Amplifier Switching.

Block Diagram 3 Microprocessor and Line Rate Controller

The heart of these instruments is a microprocessor. It controls all aspects of the instruments operation. Where synchronous control signals are required a Line Rate Controller is employed.

Microprocessor

The 16-bit Microprocessor has its program code stored in a Flash Erasable Programmable Read-Only Memory (EPROM). The Non-Volatile Random Access Memory (NOVRAM) stores all of the constants used by the Microprocessor. The Random Access Memory (RAM) is used to move system level code for execution by the Microprocessor. The Read-Only Memory (ROM) contains Microprocessor code that is output on the 8 most significant bits to the data bus.

The Address Buffer is unidirectional to select the addresses in the storage devices (RAM, ROM, and EPROM) while the Data Buffer is bidirectional for two-way communication with the storage devices.

Line Rate Controller

The Line Rate Controller is loaded from the Microprocessor, synchronized to the incoming video reference, and outputs the synchronous switching signals that are required to make the displays viewed on the CRT.

Sync Separators

Two sync separators are used to time the line Rate Controller. One strips sync from the internal video signal, while the second strips sync from the external reference video. Two separators are required to support color field identification (SCH).

Synchronous Outputs

Data from the Microprocessor is loaded into latches that are clocked by the Line Rate Controller to lock their outputs to the incoming video signal.

Readout State Machine	The Readout State Machine interprets the readout instructions from the Microprocessor and loads digital data into the DAC. Analog output of the DAC drives the stroke generators to create the readout segments that are displayed on the CRT.
Serial Static Outputs	This is a serial in/parallel out register for signals that do not need to be synchronized to the video signal.
Serial Interface	The Serial Interface is a latch, driven by the Microprocessor, that outputs the chip select and enables for the serial devices, such as the DACs and the serial/parallel registers used for the Remote and Front Panel.
Digital-to-Analog Converter	There are a number of D-to-A Converters (DACs) used to decode Microprocessor instructions and output positioning, gain, and level dc levels to the various circuits throughout the instrument. The DACs are part of serially loaded and clocked devices that are commonly referred to as Daculators.
RS232	The RS232 input consists of a 9-pin connector and a line driver. It is used to calibrate the instrument.
Remote	The Remote input consists of a 25-pin connector and parallel in/serial out registers to provide an external interface for remote control of the instrument.

Circuit Theory

The following discusses circuit theory for the WFM 601 Serial Digital Component Monitor to the component level. It is arranged on a diagram-by-diagram basis for the schematic diagrams located at the rear of the volume.

Diagram Serial Inputs

Input Amplifiers

The serial inputs are high return loss, 75Ω compensated (external termination required) passive loop-through inputs. Q1 and Q2 are buffers that, in conjunction with the printed circuit inductors (located on the BNC board), keep the return loss relatively constant across the frequency range.

Q3, Q5, Q6, and Q8 form a switching circuit. When the base of Q8 goes low, Q5 is turned on and Q3 is turned off allowing signal current from Q2 (Serial A) to flow into Q4. When the base of Q8 goes high the opposite condition occurs Q5 is turned off and Q3 is turned on allowing the signal current from Q1 (Serial B) to flow into Q4.

Q4 drives the 75Ω input of the Deserializer on diagram 2. The gain from input (bnc connector) to J1 is ≈ 0.85 .

Serial Out & Mon Out

The reclocked serial signal, from the Deserializer (Diagram 2) passes back through the Input board to the rear panel Serial Out connector. J8, J9, and J10 (bnc connectors on the rear panel) are the analog component outputs normally used to drive picture monitors. The component analog outputs originate on Diagram 8 (Transcoders and Picture Monitor Outputs).

External Reference Input

The EXT REF input is a high impedance bridging loop through compensated for operation in a 75Ω environment. Q7 is an emitter follower to provide the high input impedance. CR7 and CR8 prevent the power supply impedance from affecting the return loss characteristics of the loop through input when the power supply is turned off.

Diagram Deserializer

Deserializer

The serial signal from the input is applied to the AIX (pin 26) input of the Deserializer, U3. It equalizes the signal for coax cable loss, recovers the data clock, and converts the serial data to parallel data. R2 through Q1, an emitter

follower, sets the freerun frequency of the internal Voltage-Controlled Oscillator (VCO).

Pins 9 through 18 (D0 – D9) are the single-ended, parallel ECL output of the Deserializer. R35 and R36 are 1 k Ω pull-up resistor sets (7 resistors per set).

Signal Present Detector

The DPR (Data Present) output of U3 (pin 35) drives the gate of Q2, a Field Effect Transistor (FET). When the FET is turned on the drain, which outputs a level to the Coprocessor, pulls down to 0V to indicate that serial data is being received by the Deserializer. If the serial data stream is interrupted, Q2 turns off and the drain goes high (No Serial).

ECL Line Driver

The signal data bus to the Coprocessor is differential. U4 converts the single ended ECL signal from the Deserializer to a differential ECL for input to the Coprocessor circuitry.

Coax Cable Driver

The Deserializer, U3, outputs a differential reclocked serial digital video signal from pins 3 and 4 (SX and SY). This differential signal is converted to single ended Q4 and Q6 and limited. The output from Q7 (an emitter follower) can be either 800 mV or reduced to 740 mV (some “first generation” serial equipment requires a reduced level), to drive the 75 Ω rear-panel Serial Out.

Diagram  Coprocessor

ECL to TTL Converter

Data from the Deserializer is input to the Coprocessor as differential ECL. R5 -R16 are line terminating resistors. U1, U2, and U3 are ECL-to-TTL converters outputting 10-bit, single ended TTL levels for the Coprocessor.

The serial clock is converted to TTL levels by U1, and output as a differential signal to the DAC board (Diagram 4), where it is phase locked and regenerated before returning to clock the Coprocessor. It returns to the Coprocessor circuit board, as the internal clock, through J1 as 27 MHz and $\overline{27}$ MHz. Only the 27 MHz is used by the Coprocessor.

The No Signal from the Deserializer is the serial stream present indicator for the Coprocessor. It is low when the serial data stream is present.

Coprocessor

The Coprocessor relieves the Microprocessor of many line-by-line decisions as well as determining when there are errors in the data stream and flagging gamut errors.

The Coprocessor, U5, is clocked by the 27 MHz regenerated clock from Diagram 4. It provides 10-bit differential outputs (DACD0 - DACD9) to the DACs and

Digital Half-Band Filters on Diagrams 5 and 6. The Y Time signal is one of the inputs to the Clock PAL on Diagram 4, which selects the correct Y signal for the color difference signals through the DACs. If incorrect Y is used there will be a color phase shift apparent in the RGB output.

Control and interrogation of the Coprocessor is over data and address buses shared with the Component circuit board (Diagram 10). The buses connect through J2. The Coprocessor uses 8 bits (BD8 - BD15) of the data bus and 6 bits (BA0 - BA5) of the address bus. The address bus controls which internal input and output registers are being read or written to. In addition, there is an enable bit, BA15, that is high for the Coprocessor and low for the Component board.

There are five Coprocessor outputs that communicate directly with the Component circuit board.

COMPSYNC - Provides the composite sync signal used by the Component circuitry.

$\overline{\text{BLANK}}$ - An active low signal that controls switches that control the input levels to the Component Amplifiers during the vertical interval.

$\overline{\text{CLAMP PLS}}$ - An active low signal that controls when clamping of the Component Amplifiers occurs.

$\overline{\text{GAMUT ERR}}$ - Goes low when a gamut error is being detected on the Component circuit board. Error data is read out to the Microprocessor over data bits BD8 - BD15.

GAMUT INH - Turns off the flashing display, on the Monitor Out signal, when a gamut error is occurring.

CSPARES - Not used.

Line Buffer RAM This function is not used in the WFM601 current applications.

Serial PROM The Serial PROM is used to initialize the Coprocessor. When Power is applied the RESET line goes high, which automatically tells the Coprocessor to read the Serial PROM for its initial configuration. The Coprocessor generates a Clock signal for the Serial PROM, which begins to output the configuration data (CONFIG D) to the Coprocessor. When all the necessary configuration data is received the Coprocessor generates CONFIG DONE to disable the Serial PROM output.

Diagram Clocks, Power, & Interconnects

Phase Detector and Error Amplifier

U16 is a TTL to ECL converter whose noninverting output drives one input of an exclusive OR gate that serves as a phase detector to compare the regenerated clock to the input clock signal. The output of U24C drives an operational amplifier that serves as the error amplifier. U14A is compensated by a feedback circuit that sets the phase lock loop bandwidth. The placement of P1 dictates the bandwidth, which determines the speed of lockup. The output of U14A is the error signal that drives CR7, a varactor diode in the oscillator circuit.

OSC, Frequency Doubler, and Sideband Filter

U24A is an exclusive OR gate wired as a crystal controlled (Y1) 13.5 MHz oscillator. Its output is phase shifted, with one phase delayed, and applied to an exclusive OR gate, U24B to output a 27 MHz signal. The inverted output of U24B is fed back to one input of the phase detector to determine if the oscillator output and the incoming clock are in phase. The Side Band Filter cleans up the Frequency Doubler output prior to conversion back to TTL.

ECL to TTL Conversion

U27 is a differential ECL to TTL converter that outputs 27 MHz clocking signals for the Luminance Half-Band Filter and Digital-to-Analog Converter (DAC).

Clock PAL

U93 is a Programmable Logic Array (PAL) that generates the 13.5 and 6.75 MHz enable and clock signals for the recovery of the luminance and color difference signals from the digital input. Because the Y , P_B and P_R signals are present on the digital signal at different times it is necessary to clock the half-band filters at the correct times to convert the digital signal into the analog components. The Y Time signal, that enables the divided down outputs, is generated by the Coprocessor on Diagram 3. The clocking signal, to be divided down, is the 27 MHz regenerated clock.

-5.2 Supply

The -5.2V supply is a continuous mode flyback switching supply that uses the instruments +40V supply as a power source. The switch is Q1, a field-effect transistor (FET), running at a 100 kHz rate. Its duty cycle sets the output voltage. U23 is the controller whose switching rate is set by C42 and R88, connected to pin 4. The +5V supply, at pin 8, is the reference for the controller. C51 and R90 (pin 1) are the compensation for the controller internal error amplifier.

U22A is the voltage feedback amplifier for the controller. It is an inverting operational amplifier with a gain of -0.5. During normal operation its output is +2.5V, which is the voltage required by the controller.

CR101 and C171 limit any voltage spikes at the drain of Q1 to 100V. The snubber circuit is composed of C1, CR3, and the parallel network of R90, R91,

and R92, which reduces the rise time on the drain of Q1 which lowers the supply radiated noise.

CR1 is the supply rectifier. C46, L8, and C47 form the output pi filter.

Diagram Y Delay, Half-Band Filter, & DAC

Y Delay The luminance channel elements are clocked at twice the clock frequency of the color difference channels. In order to properly time the luminance and color difference signals, a solid state delay is used. U94 is clocked at the luminance rate by the Clock PAL to delay the Y signal prior to digital half-band filtering.

Digital Half-Band Filter In order to simplify the analog filtering at the output of the Digital-to-Analog Converters (DACs), the Digital Half-Band Filter, U29, clocks data out at twice the rate of the input data. The clock signal is the buffered, regenerated clock from Diagram 4. The clock synchronizing signal (which is at luminance frequency, 13.5 MHz) is from the Clock PAL, which is also on Diagram 4.

Y DAC The Y channel DAC is U9, which converts the 10-bit digital input data to an output analog current. The enable signal, from the regenerated clock, is at twice the luminance frequency (27 MHz). R271 is a 75 Ω terminating resistance that converts the output analog current to a voltage.

Gain of the DAC is controlled by a signal fed back from the gain and control circuitry on Component circuit board (A7) on Diagram 10.

Diagram P_B & P_R Half-Band Filters & DACs

Digital Half-Band Filters The Digital Half-Band Filters, U17 and U20, clock data out at twice the rate of the input data. The clock signal is from the Clock PAL on Diagram 4, and is 13.5 MHz, which is twice the color difference frequency. The clock synchronizing signal (6.75 MHz) is also from the Clock PAL.

P_R DAC & P_B DAC The P_R channel DAC is U18, which converts the 10-bit digital input data to an output analog current. The enable signal, from the Clock PAL, is at twice the color difference frequency (13.5 MHz). R255 is a 75 Ω terminating resistance that converts the output analog current to a voltage.

Gain of the DAC is controlled by a signal fed back from the gain and control circuitry on Component circuit board (A7) on Diagram 10.

The P_B channel DAC is U19, which converts the 10-bit digital input data to an output analog current. The enable signal, from the Clock PAL, is at twice the color difference frequency (13.5 MHz). R256 is a 75Ω terminating resistance that converts the output analog current to a voltage.

Diagram Y, P_B , & P_R Reconstruction Filters

Y Filter The input to the Y Filter is band pass filtered by a 5th order elliptical filter with its 60 dB stop point at ≈ 16 MHz. Filter bandwidth is approximately twice that of the color difference filters P_R and P_B . U300 is an active all pass filter that also provides a delay compensation, C308, to match the propagating delay of the filter to the filter delay in the color difference channels.

U301 and U302 provide amplitude and group delay equalization. U301 is a 2nd order band pass filter. R312 is the frequency response adjustment for the luminance channel (Y). DC level offset, from the DAC on Diagram 10, is added to meet the signal display requirements. R325 and C325, in the feedback loop around U301, are the SIN X/X equalization. J300 is a 75Ω compensated output (not normally used).

P_B & P_R Filters These color difference filters are identical. The input is band pass filtered by a 5th order elliptical filter with a 60 dB stop point at ≈ 10 MHz. Filter bandwidth is approximately half that of the luminance (Y) filters. U400 and U500 are active all pass filters that also provide a delay compensation, C407 and C507, to match the propagating delay of the filter to the filter delay of the other color difference and luminance channels.

U401 and U402 (P_B), and U501 and U502 (P_R) provide amplitude and group delay equalization. U401 and U501 are 2nd order band pass filters. R410 (P_B) and R510 (P_R) are the frequency response adjustments for the color difference channels. DC level offset, from the DAC on diagram 10, is added to meet the signal display requirements. R425 and C425 (P_B) and R525 and C525 (P_R), in the feedback loops around U401 and U501, are the SIN X/X equalization. J400 and J500 are 75Ω compensated outputs (not normally used).

Diagram Transcoders & Picture Monitor Outputs

Input Selection Luminance and color difference signals (Y, P_B , and P_R) are input to three identical input amplifiers, which are switched between the component signals and blanking levels. Switching is controlled by the Coprocessor, Diagram 7. Blanking levels for P_B and P_R are set by the DAC on Diagram 10. Blanking level for Y is at ground. Output signals, Y/Blank, P_B /Blank, and P_R /Blank, from

the input amplifiers drive the Transcoder and inputs to the horizontal and vertical signal processing amplifiers on Diagram 9.

RGB Transcoder

Driven by Input Amplifiers, the Color Difference to RGB Transcoder consists of three operational amplifiers (U41, U51, and U61) and resistance matrices. The operational amplifiers and the resistance matrices are signal mixers. Subtraction and addition of signals is accomplished by presenting the color difference components to either the inverting or noninverting inputs of the amplifiers. The resultant signal proportions are shown in Table 3–1. Note that Y is input to the noninverting input of all three amplifiers (U41, U51, and U61), and that both P_B and P_R are input to the inverting input of U41 (the G transcoder). This makes the output mix for SMPTE format $G = Y - 0.3441 P_B - 0.7141 P_R$.

Table 3–1: Transcoder Signal Mixing

GBR	SMPTE
Green	$Y - 0.3441 P_B - 0.7141 P_R$
Blue	$Y + 1.772 P_B$
Red	$Y + 1.402 P_R$

The GBR outputs of the operational amplifiers drive clamped amplifiers (U45, U55, and U65) whose output is always GBR. Offset levels are from the DAC on Diagram 10. The clamping pulse is from the Coprocessor.

The Transcoder is in operation under all circumstances; however, the Monitor Output can display either color difference or RGB. When the desired monitor output is color difference, the Monitor output signal bypasses the Transcoder. U43, U53, and U63 are switchable input amplifiers driven by either the Transcoder output or color difference signals output by the Input Selection amplifiers.

Parade Output

These three identical switch/buffer amplifiers (U81, U82, and U83) drive the Vertical Input Multiplexer with either GBR or color difference signals. GBR input is driven by the output of the Transcoder, while the color difference input is driven directly by the Reconstruction Filters on Diagram 7. Switching signal is from the Microprocessor on Diagram 14.

Gamut Limit & Sync Insertion

Each of the components of the GBR signal, output by the Transcoder, is compared against limits from the DAC on Diagram 10. The plus limit is set at 735 mV (700 mV + 5%) and the minus limit at –35 mV (0 ± 5% of the 700 mV total amplitude). When one of the GBR signals exceeds a limit, the comparator output becomes the Gamut Error signal, which is monitored by the Coprocessor. In addition, it also drives a brightup circuit (Q76 driving U76), that causes the

G/Y component of the Monitor Output to increase in brightness whenever a gamut limit is exceeded, if the Monitor gamut alarm is enabled.

A gamut inhibit signal is generated by the Coprocessor, Diagram 4, which inhibits the Monitor gamut alarm brightup, if the function is not enabled. If the brightup is enabled, the gamut inhibit signal toggles on and off at about 2 Hz, which causes the brightup of gamut errors to flash on the monitor.

In addition to being the brightup amplifier for gamut limit errors, U76 inverting input is a summing junction where composite sync is inserted for the G/Y Monitor Output to synchronize a picture monitor. U74A is an inverter and Q441 an emitter follower driving both the Monitor Output and the Horizontal Reference Multiplexer on Diagram 11.

Monitor Output

The Monitor Output amplifiers are identical clamped amplifier circuits, capable of driving a component picture monitor. Input signal can be either color difference or GBR, with composite sync added to the G/Y component. Clamping is to ground, controlled by a clamping pulse generated by the Coprocessor. Each input has a flatness compensation, C711, C721, and C731. R85, R95, and R105 set the output impedance to 75Ω for each of the channels.

Diagram Lightning, Vector, & Bowtie Switching

Input Switching

Signal selection for the component displays is accomplished by a series of four-element switches (U101, U103, & U151) activated by the Controller switch enable signals SW1 – SW11. Signals to input for the various displays are routed to the vertical inverting and noninverting amplifier inputs and to the noninverting horizontal amplifier as shown in Table 3–2. Switch enable signals that are asserted to close the individual switches are included in parentheses.

Table 3–2: Component Display Output Switching

CRT Display	Line	Vertical Noninverting Input	Vertical Inverting Input	Horizontal Input (noninverting)
Component Vector	All	P _R (SW 4)	Ground (SW 5)	P _B (SW 6)
Lightning (Difference)	X	Y (SW 3)	Ground (SW 5)	P _B (SW 10)
	X+1	Ground (SW 2)	Y (SW 3)	P _R (SW 11)
Diamond (RGB)	X	G+B (SW 1)	Ground (SW 5)	B-G (SW 1)
	X+1	Ground (SW 2)	G+R (SW 8)	R-G (SW 8)
Bowtie (Difference)	X	Y (SW 3)	P _B (SW 6)	none
	X+1	Y (SW 3)	P _R (SW 9)	none

Vertical Amplifier

The vertical amplifier, U127, is a differential amplifier. It is used as a differencing amplifier in the bowtie mode and on alternating lines, and a noninverting amplifier in the lightning and diamond modes. In the bowtie mode Y is applied to the + input as well as the – input; P_B for one line and P_R for the second line. In the lightning mode Y is applied to the + input for the top half of the display and to the – input, which is inverted, for the bottom half of the display. The output of U127 drives either an active low-pass filter, Q136, Q137, and Q134, or is switched past the filter (U102A) for the bowtie display.

The low-pass filter consists of three emitter follower stages with an overall gain of slightly less than unity. C133 and C136 are adjusted to match the frequency response and phase of the vertical channel to that of the horizontal channel.

The output of the filter is clamped to re-establish the backporch near 0V. In the lightning and diamond modes, the offset correction is different depending on whether the signal was inverted or not; a separate restoring circuit is required for the top and bottom halves. The sample capacitors, C120 and C121, are charged whenever the CLAMP PLS (from the Controller on Diagram 10) goes low and

either $\overline{\text{TOP}}$ or $\overline{\text{BOTTOM}}$ (from the Controller on Diagram 10) is asserted, causing the output of U125A or U125B to go low and close either U124A or U124D. The clamped amplifiers, U126A and U126B, have a dc level (V Offset from the DAC on Diagram 10) at their noninverting inputs. This voltage is adjusted to position the clamped backporch levels to the center of the lightning graticule box vertically.

Diamond Transcoder

The Diamond Transcoder consists of resistance matrices, and an inverting operational amplifier, U70. The resultant outputs, input to the Vertical and Horizontal Amplifiers, are the four signals required to create the diamond display (G+R, G+B, B-G, and R-G). Signal gain is approximately 0.5. C74 is adjusted to match the phase of the inverted component (-G) to that of the B and R components, which results in a straight, vertical black-to-white transition on the diamond display.

Horizontal Amplifier

The horizontal amplifier is driven by Q180, an emitter follower to provide a high output impedance. Q151 and Q157 form an active low-pass filter that is used by all of the component outputs. U162A and U162B are clamped amplifiers. Their operation is very similar to that of the vertical amplifier clamps. The Horiz Offset, from the DAC (Diagram 10), positions the clamped backporch levels to the center of the lightning graticule box horizontally.

Display Switching

The selection of signals, driving Vertical and Horizontal Output Amplifiers to display vectors, lightning, diamond, bowtie and audio are controlled by DIP switches. LTNG Y is the vertical drive and LTNG X is the horizontal drive. Switches U77B and U77A are closed for audio signals. U84A (LTNG X) is closed for all other displays. U102A is closed for bowtie display (bypassing the vertical amplifier low-pass filter), while U102D is closed for all displays except bowtie and audio displays.

U74D is an inverter for the Z BRIGHT signal from the Coprocessor that intensifies the CRT display.

Diagram Control & Daculator

Controller

U206 is a First-In First-Out (FIFO) memory. It is written to asynchronously by the Microprocessor and synchronously read out. U207 controls the readout of the memory to synchronize the output to sync. U208 and U209 are shift registers that are also clocked by an output from U207 to ensure that the switching required to build the component displays remains synchronous. U202 is an address decoder enabling U206 so that the Microprocessor can write to it.

U204 is an asynchronous register that handles transactions that do not need to be synchronized to the instrument sync.

U210 is an 8-bit serial in/parallel out shift register whose outputs are asynchronous switching control lines. They control display switching (Diagrams 8 and 9). U203 is an 8-bit parallel load serial output shift register for use in identifying future options.

D/A Converter

U220 is an 8-bit serial in/parallel out shift register that generates DAC load and chip enable signals for U212.

U212 is a serial Digital-to-Analog Converter (DAC) with 16x12 static RAM. VOUT (0–15) are the analog outputs, each of which has a sample-and-hold for the output level. Serial data is loaded from the serial bus (BMOSI) when the LD goes low. The clock signal (BSCK) is from the Microprocessor. Output voltage levels provide the component processing operating levels (Diagrams 7, 8, and 9).

Diagram Vertical Input

Input MUX

The Input MUX is an 8-to-1 multiplexer (U79) controlled by the Line Rate Controller on diagram 15. It selects one of three (B1, B2, or B3) or a combination of the three to drive the Luminance Filter, Chrominance Filter, or the unfiltered (Flat) input to the Filter MUX on diagram 12. In addition, the INT VIDEO signal is recovered from the output of the Input MUX; Internal video signal is processed through the Sync Separator (on diagram 15) and becomes the internal sync reference for the instrument.

PIX Out (Not Used)

U81 and Q23 are on the circuit board; however, there is no composite PIX MON OUT for them to drive.

Luminance/Diff Step Filters

The output of the Input MUX drives the Luminance Filter through R302. L5 and L6 are adjusted for a white bar square corner while C131 is adjusted for minimum chrominance. The filtered output drives U72B to output the luminance signal for the Picture Monitor mode. The output signal from U72B also drives the Diff Step Filter.

The input stage of the Diff Step Filter is an active low-pass filter (U72A) that drives an integrator consisting of C111 and R249. The integrator circuit converts staircase risers into sharp spikes that are amplified by a factor of approximately 5 by U65.

Horiz Ref MUX

The multiplexer is made up of two 4-to-1, Line Rate Controller asserted multiplexers, U74 and U75. Selection of an internal reference channel is

controlled by two control lines and the chip selects. If neither chip select (REFCH SEL 2 or 3) is asserted, there will be no output. This condition exist when external reference is selected.

When the INT $\overline{\text{EXT}}$ control line is asserted, it goes low and U70D and U70A close to drive Q19 from the rear panel EXT REF input. Q19 is an emitter follower providing a high impedance output that drives Ref Video sync separator on Diagram 15. Q17 clamps the input side of U70A to ground when Internal Reference is selected.

Diagram Vertical Output

Square wave Calibrator

The input CAL LEVEL is from a DAC, shown on Diagram 17. It drives the inverting input of U47A, an operational amplifier. Q20 is a saturating switch driven by a 100 kHz output from the Line Rate Controller on Diagram 15. The squarewave output is 1.096V.

Filter MUX

The Filter MUX is an 8-to-1 multiplexer controlling the input selection for the Vertical Amplifier. In order to accommodate an additional three inputs U66 selects the signal to be applied to the AUX input of U67. Switches are closed when their control lines are asserted low by synchronous outputs from the Line Rate Controller shown on Diagram 15. The Y Audio and Time Code (not implemented) inputs are differential. U84A (Audio) and U88B (Time Code) are converters, for the differential inputs, that output a single ended signal to drive the Filter MUX.

Vertical Amplifier

The Vertical Amplifier, U55, contains two independent amplifiers. The external gain controlled Auxiliary amplifier is used as differential output chrominance amplifier. The output of the Chroma Filter Amplifier (Diagram 3) is input to the + input of the Aux amplifier. Its gain is controlled by the CHROM GAIN level from a DAC shown on Diagram 17. The differential output is converted to a single ended output by U73 to drive the Vector Chroma Amplifier shown on Diagram 15.

The main Vertical Amplifier has inputs for the filtered video signal and the differential readout signal. The single ended output from the Filter MUX is converted to the differential output required to drive the Vertical Deflection Amplifier. Output is switched between video signal and the readout by the V RO SEL signal from the Line Rate Controller.

Vertical control levels, such as Gain, and Position from the DACs (Diagram 17) and the Magnifier control signal from the Line Rate Controller (Diagram 15) control the output gain and positioning of the displayed signal. Gain and

frequency response characteristics of the CRT are compensated for by a network between the VOUT+ and VOUT– terminals of U55.

Vertical Deflection

Q10 and Q16 are power transistors that drive the CRT deflection plates. A sample of the horizontal output voltage is fed into the emitters of the transistors to compensate for CRT orthogonality error. U57A and B are noninverting buffer amplifiers driving U64B, which converts the differential signals to a single ended voltage that is applied through R168, the Y Align adjustment.

Diagram Horizontal

Sweep Generators

The sweep generators are nearly identical buffered integrators. They are started by either the line or field sweep speed signal from a DAC shown on Diagram 17. For purposes of simplicity we will discuss only the Field Sweep generator.

The FLD SWP SPD signal from the DAC is filtered by an input filter with a 0.1 second time constant, R83 and C55. U39A is a buffer to drive U62A, an integrator. C101 is the integrator capacitance. When retrace occurs, U63B closes and discharges C101. When the FLD SWP SPD goes high, and U63B is open, the output of U62A ramps up and provides the vertical sweep to the Vertical Input Switch (Picture mode) and the Horizontal Signal Multiplexer.

Horizontal Signal MUX

The Horizontal Signal input selection consists of dual in-line package (DIP) switch segments (U59, U63, U70, and U94) and an 3-to-8 line decoder (U60). The decoder is controlled by three synchronous outputs from the Line Rate Controller (Diagram 15). It is permanently enabled (pins 4, 5, and 6) so that any change in state of the control lines (pins 1, 2, and 3) will pull one of the six outputs (Y0–Y6) low and close the appropriate DIP switch segment.

Horizontal Amplifier

The Horizontal Amplifier, U56, contains two independent amplifiers. The external gain-controlled Auxiliary Amplifier is used as a single ended luminance amplifier. The output of the Luminance Filter Amplifier (Diagram 11) is input to the + input of the Aux amplifier. Its gain is controlled by the PIX CONTRAST level from a DAC shown on Diagram 17. The single ended output drives an inverting operational amplifier, U47B. The minus input of U47B is a summing junction for the PIX BK LVL (black level) and the luminance from U56. The output of U47B is the picture monitor intensity signal to the Z-Axis control circuit (Diagram 19).

The main Horizontal Amplifier, which has inputs for horizontal signals and the readout signal, converts the single ended input from the Horizontal MUX to a differential output. In addition, it amplifies the differential input of the readout

signal. U47D is an inverter to generate the $-H$ RO SIG. Output is controlled by the H RO SEL signal from the Line Rate Controller.

Horizontal levels, such as Gain and Position from the DACs (Diagram 17), and control signals, such as Mag from the Line Rate Controller (Diagram 15), are input through U56, the Horizontal Amplifier. Gain and frequency response characteristics of the CRT are compensated for by a network between the VOUT+ and VOUT- terminals. The + and $-H$ signals from the VOUT terminals are also supplied to the Vertical Deflection Amplifier (Diagram 6) for orthogonality adjustment (Y-Align).

Horizontal Deflection

The Horizontal Deflection circuit consists of seven discrete transistors to drive the horizontal deflection plates of the CRT with a differential signal.

Q28 is the current source for this paraphrase amplifier. The amplifier itself is driven from inputs Q12 and Q14. Their bases are a summing junction for the input signal and compensated feedback. Q11 and Q13 are common base amplifiers with the bases held at -3 V. Q8 and Q15 are driven independently. Shunting resistors across Q8 and Q15 lessen power dissipation in the current source (Q28).

CR8 is a boot strap circuit to divert current to the negative-going side when the amplifier is slewing rapidly.

Diagram Microprocessor

The Microprocessor controls the functions of the WFM601. It has a 32-bit internal architecture and operates with a 16-bit data bus and a 24-bit address bus.

Microprocessor & ROM

U18 is the Microprocessor. It is crystal controlled, with Y1 as the active element of the clock oscillator. DS1 is an indicator that turns on and holds when the 5V supply stabilizes during turn on. U7 senses the 5V supply and pulls the \overline{RESET} line low if the 5V supply goes low.

LS1 is a permanent magnet-type speaker for audible feedback that is driven by Q3. CR2 is an inductive compensation for the speaker voice coil.

U13 is a Read Only Memory (ROM) with 18 addresses; it outputs the 8 Most Significant Bits (MSB) to the data bus.

Data and Address Buffers

U5, U8, and U12 are the address buffers for the 24-bit address bus. The bus is enabled by $\overline{ADDR EN2}$ from the decoder. The DIR control line is held high allowing the processor to write to the buffer whenever the $\overline{ADDR EN2}$ is pulled down. The buffered address bus selects addresses in the NOVRAM, RAM, and FLASH EPROM.

The Data Buffers, U15 and U19, are bidirectional. When the DIR control line is low data from the NOVRAM, RAM, and FLASH EPROM is read into the Microprocessor data bus on the $\overline{\text{DATA EN2}}$. When DIR is pulled high, and $\overline{\text{DATA EN2}}$ is pulled down (by the Decoder), the Microprocessor writes to the Data Buffers on the data bus.

NOVRAM, RAM, & Flash EPROM

The NOVRAM (U14) stores all of the constants used by the Microprocessor. The Microprocessor writes the 8 MSBs into the NOVRAM when both $\overline{\text{CE}}$ and $\overline{\text{WE}}$ are pulled low. $\overline{\text{RW}}$ from the Microprocessor pulls down $\overline{\text{WE}}$. $\overline{\text{CE}}$ is pulled low by $\overline{\text{NOVRAM}}$ which is decoded by the address decoder. Content of the NOVRAM is read back out to the Microprocessor, through the Data Buffer (U19), when $\overline{\text{RW}}$ goes high and the $\overline{\text{CE}}$ and $\overline{\text{OE}}$ are pulled low by $\overline{\text{NOVRAM}}$.

System level code is loaded into RAM (for reading by the Microprocessor) from the Flash EPROM, where it is stored. Unless VPP is high (for programming purposes) the Flash EPROM, U10 & U16, functions as a 256k X 8 Read Only Memory (ROM). (Write instructions are ignored.) U10 stores the lower 8 bits and U16 the upper 8 bits. It is read out when $\overline{\text{FLASH}}$, $\overline{\text{RD LO}}$, and $\overline{\text{RD HI}}$ are pulled low.

Flash EPROM output is written into the Random Access Memory (RAM), U11 & U17, when $\overline{\text{SRAM}}$, $\overline{\text{WR LO}}$, and $\overline{\text{WR HI}}$ are pulled low. The Microprocessor reads the RAM when $\overline{\text{SRAM}}$, $\overline{\text{RD LO}}$, and $\overline{\text{RD HI}}$ are pulled low.

Decoders

The Address Decoder is U21. It is a 3-line to 8-line decoder using the three MSBs of the address bus to output five control signals. The decoder is enabled when the Microprocessor pulls $\overline{\text{DECODE}}$ and $\overline{\text{ADDR EN}}$ low.

U2 is a logic array that decodes Microprocessor outputs. It uses buffered address 0 (BA0) as a clock. Its outputs enable the data and address buffers, control read and write for the RAM and Flash EPROM, and output two control signals for digital expansion.

Buffered Output

U23 buffers five outputs and one input for the Microprocessor. It is permanently enabled by tying pin 1G low and pulling pin 2G low.

Diagram Dynamic Control

Microprocessor instructions are synchronized to line and field rates to generate time-dependent control signals by the circuitry on this diagram.

Sync Separator

The sync separator consists of U68 and U71. The V sync and H sync outputs are used to synchronize the Line Rate Controller (U34). The two integrated circuits

are identical, one is driven by the internal video that drives the vertical deflection circuits and the other is driven by the selected reference input.

Line Rate Controller

The Line Rate Controller (U34) is a programmable logic device. It is capable of logic and timing simulations. It has three separate clock signals: 6 MHz from U93, 16 MHz from the Microprocessor, and a 5 MHz clock signal from an ECL oscillator. In order to lock the internal clock to video, U34 asserts \overline{START} at the leading edge of H sync. When \overline{START} goes low, it remains low for approximately 60 μ s; it then goes high to shut off the oscillator (Q4, Q5, Q6, and U26C) until the next cycle.

U34 has 144 configurable blocks of RAM that are loaded from ROM at power up. U40 is a first-in/first-out RAM that is loaded from the Microprocessor, and read out to the Line Rate Controller and synchronous latches on command from the Line Rate Controller. U40 can be written to by the Microprocessor and read from by the Line Rate Controller independently.

Synchronous Outputs

Output signals from the Microprocessor are timed out to analog switches and DACs by the Line Rate Controller clocks synchronous latches (U42, U43, U44, U51, and U52). Each latch is clocked by its own individual output from the Line Rate Controller.

Diagram Readout

The Readout Control state machine interprets the readout instructions from the Microprocessor and loads digital data into the DAC. Analog output of the DAC drives the stroke generators to create the readout segments that are displayed on the crt.

Readout Control

The Readout Control is a programmable logic device, U27, configured as a state machine. It uses 13 buffered addresses and 8 buffered data bits to produce an 8-bit data word (R0 – R7) that is converted by an 8-bit DAC (U37). Device clock is the buffered 16 MHz from the Microprocessor. When Readout Control is off U36, a RAM, can be written to directly by the Microprocessor, through its 13-bit address port. A screen draw requires 13 bits.

U37 is a dual DAC that decodes the Microprocessor instructions. The A output drives the Vertical Readout Stroke Generator and the B half performs the same function for the Horizontal Readout Stroke Generator. Calibration constants are provided by the serial digital to analog DACs shown on Diagram 17.

Readout Stroke Generator

The Readout Stroke Generator consists of two identical circuits. Each generator has an inverting buffer amplifier, U48A or U48B, whose gain is unity. The output of the buffer amplifier drives a sample-and-hold, U54A or U54C. Timing

for the sample-and-holds is identical and determined by a single RC circuit (R376 and C87). The output of the sample-and-hold drives an integrator, U48C or U48D, whose output is a negative-going saw tooth waveform. Charging current is controlled by the Shape adjustment (R134 or R135). The output of the Readout Stroke Generator drives the Vertical and Horizontal deflection circuits when readout is enabled.

Diagram DACs & Serial

Serial Interface & Serial Static Outputs

U24 is a 4-line to 8-line decoder that outputs chip select and enable signals for the non-synchronous switching control lines. U9 is an 8-bit parallel load serial output shift register. Status of the A, B, C, and D input lines identify the Main circuit board revision level. SW1 is included for troubleshooting purposes. R28 is a set of pull-up resistors for 8 parallel inputs and 3 of the Microprocessor (Diagram 14) control lines.

U77 and U82 are 8-bit serial in/parallel out shift registers. Their outputs are asynchronous switching control lines. The AC/DC switching controlled by Q24 is not used by the WFM 601.

D/A Converters

U32 and U38 are 8-bit serial in/parallel out shift registers that generate DAC load and chip enable signals. These signals are used by the DACs, Remote interface parallel in/serial out shift registers (Diagram 18), and the chip selects for the Bezel Controls A/D converters on Diagram 19.

U31, U35, and U86 are serial digital-to-analog converters with 16x12 static RAM. VOUT (0–15) are the analog outputs, each of which has a sample-and-hold for the output level. Serial data is loaded from the serial bus (BMOSI) when the LD goes low. The clock signal (BSCK) is from the Microprocessor. Output voltage levels provide the instrument's operating levels.

U39C and U39D are buffer amplifiers. U45A and U45B are adders for horizontal and vertical positioning voltages. The RC circuits across the adders are low-pass filters.

Diagram Remote & Digital Bus Connectors

RS232

U92 is an RS232 line driver receiver. C175 is part of the internal voltage doubler circuit and C171 is part of a voltage inverter circuit. Input and output signals are TTL. Chip output will be low with an input signal of +2.4 V or more.

Remote U90 and U91 are 8-bit parallel-load, serial-output shift registers. Levels at the parallel inputs are loaded into the shift register and clocked out by the serial clock (BSCK). U90 and U91 are cascaded by taking the serial output of U91 and tying it to the serial input of U90. Inputs to the registers are asserted TTL low; R356 is a pull-up resistor to set the inputs to a TTL high when they are not asserted. Serial output, to the Microprocessor, is from pin 9 of U90.

Digital Bus Connectors The Component circuit board, assembly A7 plugs into J2 and J5. Not all signals routed through the connectors are used by the Component board.

Diagram Z-Axis & Control

Bezel Controls The bezel controls are the five, two-section, potentiometers located below the CRT. The outside two are dedicated controls for vertical and horizontal positioning. The center three potentiometers are assigned by menu selection.

U3 and U4 are 8-bit switched capacitor successive approximation A-to-D converters with serial output. Levels, from the potentiometers, are input on the AN inputs, converted, and output as serial data that can be read by the Microprocessor (Diagram 14) on the serial bus (MISO).

Blanking Logic U49 is a 4-section, Dual In-line Package (DIP) switch. Blanking selection signals, from the Dynamic Control (Diagram 15), going low close the switch elements. CR4 serves as an OR gate. The output of CR4 drives Q7, which is the current drive for the Z-Axis amplifier on Diagram 22. The higher the collector current the greater the CRT intensity.

CR5 is also an OR gate. The $\overline{\text{OPT BLANK}}$ originates on the Component circuit board. $\overline{\text{BLANK}}$ is from the Dynamic Control (Diagram 15) and pulls low, to ground the base of Q7 when the CRT is blanked.

Trace Rotation Trace rotation is controlled by an output from one of the DACs on Diagram 17. U5A drives a coil around the CRT that is located inside the CRT shield.

Graticule Lights U1D is an oscillator with a 600 ms period. Its output drives U1A directly and U1B through a comparator (U1C). The output of U1A and U1B is a 50% duty cycle, with each amplifier driving two of the four graticule light bulbs. Only two of the bulbs are lit at one time.

+&-8V Supplies and VPP1 Supply The + and - 8 V supplies are nearly identical. They consist of bipolar voltage regulators (U53 and U78) with output clamping and parallel resistance power dissipation compensation.

The VPP1 supply is a +12V source used to program the Flash EPROM. For normal operation P4 is in the 2-3 position. U20 is a voltage sensing regulator whose output voltage is established by R46 and R47.

Diagram Front Panel

Switching There are 28 momentary contact switches arranged in a matrix. When U7, a serial in/parallel out shift register, is loaded, shifted, and read, PB8 – PB10 are pulled low along with the CS (chip select and $\overline{\text{SH/LD}}$ (shift/load) for U6 and U8. When one or more of the push-button switches is closed a low state is loaded into one of the U6 parallel inputs. The levels on the inputs are clocked into and through the serial output by the BSCK (buffered serial clock). The serial output is put onto the MOSI (serial interface bus) to be read by the Microprocessor.

LED Drivers Low levels to complete the LED circuits are loaded into the serial in/parallel out shift registers (U2, U3, U4, and U5) from BMOSI (buffered serial interface bus). Levels are then shifted into the parallel register by the $\overline{\text{LED CS}}$ and clocked out by the $\overline{\text{LED EN}}$, which is delayed by U10A, a D-type flip-flop.

Diagram Low Voltage Power Supply

The Low Voltage Power Supply converts the mains line voltage (90–250 Vac) to supply the power requirements of the instrument. The voltages supplied by the Low Voltage Power Supply are +40 V, ± 11 V, and +5 V.

The Low Voltage Power Supply is a fly back switcher. When the switcher MOSFET (Q14) is turned on, its drain voltage drops to approximately 0 V. The current through the 350 μH primary winding of T3 begins ramping up. The voltages present at all secondaries is such that the rectifier diodes are reverse biased. Energy is being stored in the magnetic field of T3. When Q14 turns off, the drain voltage “flies back” in a positive direction. Current now flows in all of the secondary windings and supplies power.

Line Rectifier and Filter The input line voltage is filtered by the rear-panel connector to reduce the electrical noise conducted into or out of the instrument. R123 limits the initial charging current through the rectifier diodes and C71.

CR32, CR33, CR34, and CR35 form a bridge rectifier. C71 filters the 110 – 350 Vdc rectifier output. L8 filters the switching noise produced by the switcher. R116 reduces the circulating current in the parallel circuit consisting of L8 and C52. DS7, R116, and R118 form a line voltage indicator. R120 and R122

charge C62, which provides power to U6 until the primary housekeeping winding provides power through CR22.

VR3 is the source of the +5 V required by the transformer driver to operate the Power switch. When power is connected to the instrument, it gets enough current from R119 and R121 to Zener and provide the power required to operate the transformer driver oscillator.

Transformer Driver

The transformer driver is a Colpitts oscillator whose inductive resonator is the isolation transformer T2. The front-panel Power switch is a momentary push button that shorts the secondary of the transformer and causes the oscillator to stop when it's pushed. When the secondary shorts, Q13 stops oscillating. Q12 turns off and starts U5A, a one-shot multivibrator, that clocks U8A, which is the Power switch memory. It changes state every time the front-panel Power switch is pushed.

If power is removed from the instrument, U8A retains its memory due to the storage capacitor, C58. C58 is capable of holding its charge for a week or more at a time. In order to prevent the one-shot multivibrator, U5A, from tripping U8A if power is lost, a short time constant (C56 and R89) pulls V_{CC} for U5A down before Q13 quits oscillating.

Pulse Width Modulator

U6 is a current-mode pulse width modulator that uses two feedback loops. The inner current-feedback loop directly controls the switcher MOSFET peak current. The outer voltage-feedback loop programs the inner loop peak current trip point.

U6 pin 2 is the inverting input of an internal operational amplifier. The noninverting input is set to 2.5 V by an internal voltage reference. Current from the peak detector flows through R87 and R94. R86 provides a $100\ \mu\text{A}$ offset. The voltage at pin 1 will vary in order to maintain pin 2 at 2.5 V.

The voltage at U6 pin 1 is modified by an internal circuit and sets the trip point of the internal comparator. Pin 3 is the external input to the comparator. Pin 4 sets the internal oscillator to 80 kHz, R92 and C55 determine the frequency.

The pulse width modulator works as follows: The oscillator resets the latch and U6 pin 6 goes high, turning the switcher MOSFET on. The current through the switcher MOSFET increases, causing the voltage across R90 to increase. This voltage is divided across R91 and R92, to input to the comparator (pin 3). When the voltage at pin 3 reaches the comparator trip point, the latch toggles and the switcher MOSFET is turned off. This process is repeated at an 80-kHz rate. Switching the MOSFET oscillator on and off drives the power transformer, T3.

C53 increases the noise immunity by rolling off the internal operational amplifier frequency response. R97 holds the switcher MOSFET off as the circuit is powering up. R93 slows the turn-on of the switcher MOSFET while CR26 speeds up the turn off.

- Snubber** The primary winding (pins 1 and 2) has a shadow winding (pins 3 and 4) with one end connected to ground. The B+ end of the primary winding is in phase with the grounded end of the shadow winding. The signal ends of both windings are connected together through C51. Because both windings have the same number of turns and their signal ends are connected, the signal voltages on the windings are forced to be the same regardless of stray inductance in the transformer. CR23 ties the signal end of the shadow winding to the B+ end of the primary winding to prevent it from having a peak signal voltage greater than B+. This also prevents the primary winding from having a peak signal voltage greater than B+.
- The signal end of the primary winding can go no more than $2 \times B+$ (about 700 V with a 250 V mains) because the other end of its winding is at B+. Holding the signal voltage at 700 V or less protects the switching transistor, Q14.
- Risetime snubbing is done with CR25, R88, and C59. Slowing the risetime of Q14 reduces RF interference.
- Output Filters** The three output windings supply four output voltages. Each output is rectified by a single diode and filtered by an LC pi filter.
- Error Amplifier** The error amplifier regulates the +5 V output by feeding an error signal to the pulse width modulator. U3A is a voltage reference that outputs 2.5 V for the operational amplifier, U3B. R71 and R73 provide a feedback voltage for the error amplifier. C42 and R77 form a frequency-dependent network for loop stabilization. The output of the error amplifier operational amplifier drives the light emitting diode input stage of the optoisolator, U4.
- An optoisolator consists of a light emitting diode, as a transmitting device, and a light-sensitive transistor as a receiver. When the intensity of the LED changes the base current in the receiver changes equivalently to alter the pulse width modulator feedback voltage.
- Shutdown Logic** U7 is a quad comparator, whose outputs are open collectors. All four comparator outputs are connected in parallel and under normal operating conditions are high. Whenever the output of any one of the comparators goes low, Q15 will turn off and the pulse width modulator current sense line will go high and shut down the power supply.
- U7B is the comparator for the +16 V supply. U7C is the line voltage comparator, sensing the rectified ac primary. If either output is low, Q15 turns off to shut down the power supply. U7A senses the power switch status from the Q output of U8A. Whenever the output of Q8A is low, the output of U7A will also go low.

U7D prevents the power supply from running on in the event of a +5 V supply short. Shorting the 5 V supply disables the optoisolator, which causes the error voltage to fall below 2.5 V. After a short period of time C65 discharges and causes the output of U7D to go low and shut down the power supply.

Over Voltage Protection

Q11 is a silicon-controlled rectifier (SCR) that is triggered if the +5 V output rises above approximately 5.5 V. If the SCR triggers the +5 V is shorted to ground and the supply shuts down and waits a few milliseconds before attempting to restart. Over voltage shutdown can be tested by shorting R74 and R78 together.

DS6 is an LED that is internal to the instrument. It is lighted whenever the +5 V supply is running. This is simply a servicing aid making it possible to determine if the power supply is operating without having to look at the front panel.

Diagram High Voltage Power Supply

HV OSC and Error Amp

The High Voltage Power Supply is generated by a sinewave oscillator and step-up transformer. Q7 and T1 are the principal elements of an Armstrong oscillator running at about 22 kHz. Error amplifier U2 regulates the +100 V output and keeps the High Voltage Power Supply constant under varying load conditions by controlling the base current to Q7. The +100 V output is regulated directly, while the High Voltage Power Supply is indirectly regulated through a current feedback circuit.

R40, C15, R66, and R61 form the High Voltage Power Supply current feedback circuit. As the current from the High Voltage Power Supply is increased, the voltage to the + side of the error amplifier (U2) increases, which increases the base drive to Q7, the HV Osc. This current feedback compromises the regulation of the +100 V supply to keep the high voltage constant with varying intensities.

C26 and Q8 are a start delay circuit that holds the error amplifier output low, through CR12, until C26 is charged. Delaying the start of the high voltage oscillator allows the Low Voltage Power Supply to start, unencumbered by the load from the high voltage oscillator.

Power Supply Outputs

CR7 is the high voltage rectifier. Filter capacitors C6 and C7 work with CR7 to provide -2750 V to the CRT cathode. U1 is a four-times multiplier providing +11 kV to the CRT anode.

Focus Amplifier

Q1 and Q2 form an operational amplifier that sets the voltage at the bottom of the focus divider. The front-panel FOCUS pot determines what that voltage will be. The Center Focus control, R9, is set for optimum beam focus, as viewed on

the CRT, with the front-panel FOCUS control set to mid range. Once the Center Focus adjustment has been set, adjusting the front-panel FOCUS control changes the voltage at the bottom end of the divider and, consequently, the voltage on the CRT focus anode.

Grid Drive Circuit

The cathode of the CRT is at a -2750 V potential with the grid coupled to the Z-Axis Amplifier by the grid drive circuit. The grid is approximately 75 V negative with respect to the cathode. The 200 V p-to-p sinewave present at the cathode of CR11 is input to the grid drive circuit where it is clipped for use as CRT control grid bias.

The sinewave from the cathode of CR11 is coupled through R41 to a clipping circuit consisting of CR8 and CR9. Clipping level for the positive excursion of the sinewave is set by the CRT Bias adjustment, R53. The negative clipping level is set by the front-panel INTENSITY control through the Z-Axis Amplifier. The clipped sinewave is coupled through C12 to a rectifier made up of CR5 and CR6. The rectified, clipped sinewave is the CRT control grid bias voltage. C8 couples the blanking signal from the Z-Axis Amplifier to the CRT control grid. DS1 and DS2 limit the CRT grid to cathode voltage at instrument turn on or off. DS4 limits the CRT heater to cathode voltage.

Z-Axis Amplifier

The junction of R10 and R5 is the summing junction for the amplifier. It is at $+5$ Vdc. R6 and R17 are a voltage level shifter to bias the base of Q3 at 0 V, when the summing junction is at $+5$ V. R5 is the feedback resistor, which sets the overall amplifier gain at 36 V/mA of input current. Q3 is an emitter follower that drives Q4, a common emitter amplifier. Q6 is a common base stage driven from Q4. The collector of Q6 is the output of the amplifier. Q5 is a constant current source that is the collector load for Q6. C11 is a speedup capacitor that modulates the constant current source to increase amplifier risetime.

Performance Verification

The specifications for this instrument can be verified using the following step-by-step procedure. Equipment that is called out in this procedure is assumed to be operating correctly and within calibration.

An accuracy ratio of 4:1 or better for warranted measurement specifications will be obtained using the equipment called out in the “Recommended Equipment List” with the following exceptions. Accuracy ratio for the equipment used to measure:

Monitor Out Gain Accuracy is 1.5:1.

Audio Bandwidth is 1.5:1.

External Reference Return Loss is 3.1:1.

The performance verification procedures should be performed at regular intervals to ensure that instrument performance is within tolerance. The recommended interval for performance verification is 2000 hours of operation, or at least every 12 months, if the instrument is used intermittently.

Recommended Equipment List

The following equipment and accessory items are required to do the Performance Verification Procedure. Broad specifications are followed by an example of equipment that meets these specifications.

Electrical Instruments

1. Test Oscilloscope

Vertical Amplifier: 100 MHz Bandwidth, 2 mV Sensitivity.

For example: Tektronix 2245A 100 MHz Oscilloscope.

2. Oscilloscope Probe

For example: Tektronix P6101A X1 Passive Voltage Probe.

3. Serial Digital Television Signal Generator

Output conforming to CCIR 601/SMPTE 125.

For example: Tektronix TSG422 (Option 1S) Digital Component Generator with Serial Digital Video Output.

4. Leveled Sinewave Generator

Output Level Range: -11.55 dBm (200 mV) to 0.43 dBm (800 mV).
Frequency: 50 kHz to 10 MHz.

For example: Tektronix SG 503 installed in a TM500-Series Power Module.

5. Frequency Counter

Range: 10 Hz to 10 MHz. Accuracy: $\pm 0.001\%$.

For example: Tektronix DC 503A installed in a TM500-Series Power Module.

6. Audio Signal Source

Range: Frequency: 1 kHz to 20 kHz. Amplitude: 2 to 9 volts.

For example: Tektronix FG 503 installed in a TM500-Series Power Module.

7. Power Module

For powering and housing Tektronix SG 503, FG 503, and DC 503A.

For example: Tektronix TM506-Series Power Module.

8. Spectrum Analyzer (For Return Loss Measurements; Optional, see note with step 19.)

Bandwidth up to 10 MHz and sensitivity up to 50 dB; with internal tracking generator.

For example: Tektronix 2712 Option 04.

9. RF Bridge (Lower frequency, for External Reference Input Return Loss Measurements; Optional, see note with step 19.)

Range: At least 46 dB return loss sensitivity, 50 kHz to 10 MHz.

For example: Wideband Part No. A57T, and high-frequency terminator A56T75B.

10. RF Bridge (Higher frequency for Serial Digital Input and Output Return Loss Measurements; Optional, see note with step 19.)

Range: At least 46 dB return loss sensitivity, 50 kHz to 10 MHz.

For example: Wideband Part No. A57TGA/CR, and high-frequency terminator A56T75B.

11. Cable Network

A network having a $1/\sqrt{F}$ loss characteristic, and a loss of 17 dB at 1/2 the serial clock frequency.

For example: 175 meters (574 ft) of Belden 8281 low loss 75 Ω cable.

Auxiliary Equipment

12. 75 Ω Terminators

4 required. 3 should be end-line, 2 of which are for use on the Serial Inputs, and 1 should be a standard, for use on the External Reference Input. The fourth one should be a feed-through type.

For example: 2 - 75 Ω End-line Terminations, 26 dB to 300 MHz (Tektronix Part No. 011-0163-00) for use on Serial Inputs.

1 - 75 Ω End-line Termination (Tektronix Part No. 011-0102-00) for use on the External Reference Input.

1 - 75 Ω Feed-through Termination (Tektronix Part No. 011-0103-02).

13. Coaxial Cable

Three 75 Ω cables required, two 50 Ω cables required.

For example: 75 Ω – 42-inch (Tektronix Part No. 012-0159-00).
50 Ω – 42-inch (Tektronix Part No. 012-0057-01).

14. 2 - 50 Ω to 75 Ω Minimum Loss Attenuators (DC Coupled)

For example: Tektronix Part No. 011-0057-01.

15. 1 BNC female to female connector.

For example: Tektronix Part No. 103-0028-00.

16. Audio Cable Adapter (Shown in Figure 4–1.)

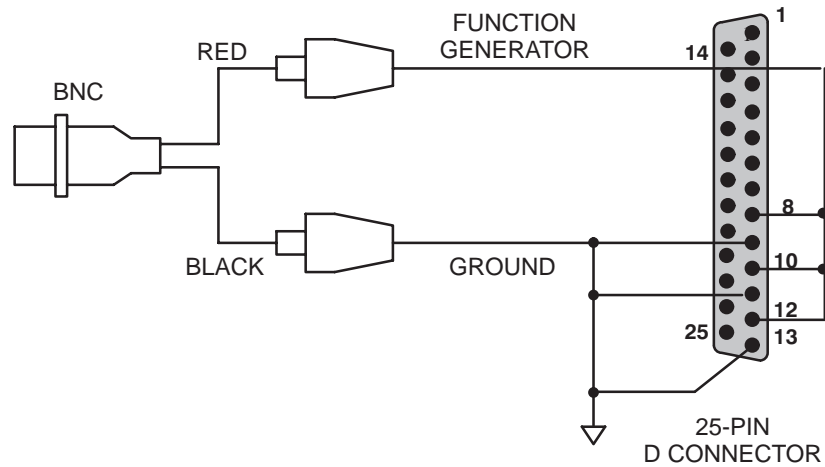


Figure 4-1: Audio Cable Adapter

Calibration Data Report

The Calibration Data Report that follows can be used to document instrument performance. In addition it can be used as a short form Performance Check for those familiar with the Performance Verification Procedure. Only steps that have numeric Performance Requirements are included in this report form (Steps 1, 2, 4, 12, 13, and 18 are omitted).



Calibration Data Report

Instrument **WFM601**

Cal. Date _____

Serial Number _____

Certificate Number ¹ _____

Technician _____

Procedure **070-8876-00**

Revision Date _____

Step	Operation	Minimum Tolerance	Maximum Tolerance	Incoming	Outgoing
3	Trace Rotation Range ²	+ & - 1°	---		
5	Calibrator Timing Frequency	999900 Hz	100100 Hz		
6	Timing Accuracy/Linearity	1-Line (5 μs/DIV) 1 cycle/2 div. ± 0.5 minor div.	---		
		2-Line (10 μs/DIV) 1 cycle/div. ± 0.5 minor div	---		
		2-Line Magnified (1 μs/DIV) 1 cycle/10 div. ± 0.5 minor div	---		
		1-Line Magnified (200 ns/DIV) 1 cycle/2 div. ± 0.5 minor div.	---		
8	Vertical Gain	686 mV	714 mV		
8	Calibrator Amplitude	693 mV	707 mV		
8	Variable Gain Range ²	0.2X	1.4X		
8	Serial Output	720 mV	880 mV		
9	Voltage Cursor Accuracy	696.5 mV = 700 mV	703.5 mV = 700 mV		
9	Timing Cursor Accuracy	.999 = 1.0	1.01 = 1.0		
10	PIX OUT Active Video Gain Accuracy	679 mV	721 mV		
11	Vector Horizontal Gain Accuracy	700 mV = 9.9 div.	700 mV = 10.1 div.		
11	Vector Vertical Gain Accuracy	700 mV = 7.92 div.	700 mV = 7.08 div.		
14	Lightning Vertical Gain Accuracy	9.8 div.	10.2 div.		

Step	Operation	Minimum Tolerance	Maximum Tolerance	Incoming	Outgoing
15	Bowtie Interchannel Matching	-2 ns	+2 ns		
16	Analog Audio Mode Full Scale Accuracy	-0.5 dB	+0.5 dB		
17	Audio X/Y Input Phase Match	$\leq 1^\circ$	---		
17	Audio Bandwidth	-3 dB at ≥ 500 kHz	---		
19	EXT REF Return Loss	≥ 40 dB to 6 MHz	---		
20	Serial Video Input Return Loss (Power on)	≥ 25 dB to 1 – 270 MHz	---		
20	Serial Video Input Return Loss (Power off)	≥ 15 dB to 1 – 270 MHz	---		
20	Serial Video Output Return Loss (Power on)	≥ 15 dB 1 – 270 MHz	---		
21	Transmission Bandwidth (50 kHz – 300 MHz)	± 1 dB	---		

¹ Certificate number not provided, unless “Certificate of Traceability” is issued.

² Checks are important for correct calibration; however, test data is not applicable.

Verification Procedure

1. Preliminary Setup

- a. Connect the WFM 601 ac power cord to the variable autotransformer. Set the mains Power switch for the autotransformer to On. Set the autotransformer to the local nominal mains voltage (110 V or 220 V).
- b. Connect a serial digital output from the digital component television test signal generator to the WFM 601 SER A input; terminate the remaining side of the loop-through connector with a 300 MHz, 75 Ω end-line termination.
- c. Connect a second serial digital output from the digital component television test signal generator to the SER B input; terminate the remaining side of the loop-through connector with a 300 MHz, 75 Ω end-line termination.
- d. Connect the digital component television test signal generator black burst signal to the WFM 601 EXT REF connector. Connect a 75 Ω end-line termination to the remaining side of the EXT REF loop-through connector.
- e. Turn the WFM601 POWER ON.
- f. Enter the CRT menu and adjust the controls for best viewing of the display. Exit the CRT menu.
- g. Set the WFM601 front-panel controls and menu selections to the factory settings by entering the PRESET menu and selecting FACTORY.

2. Check Power Supply Operation

REQUIREMENT – Stable operation over an ac input range of 90 – 250 V.

- a. Vary the autotransformer from low-line to high-line voltage (90 – 132 V for 110 V, or 180 – 250 V for 220 V operation).
- b. **CHECK** – for stable instrument operation over the prescribed voltage range, 90 – 132 V for 110 V, or 180 – 250 V for 220 V.
- c. Set the autotransformer to the nominal mains voltage.

3. Check Trace Rotation Range and Graticule Illumination

REQUIREMENT – Rotation of $\geq +$ & $- 1^\circ$ from the horizontal.

- a. Enter the CRT menu and select TRACE.
- b. Position the trace to the graticule baseline.

- c. **CHECK** – that the TRACE ROTATE control moves the trace $\geq +$ & $-$ 1° from the graticule baseline.
- d. Adjust the TRACE ROTATE control for a level trace across the graticule baseline.
- e. From the CRT menu select DISPLAY.
- f. **CHECK** – that the SCALE control changes the graticule illumination from completely extinguished to fully illuminated.
- g. Adjust the SCALE control for the desired graticule illumination.
- h. Exit the CRT menu.

***NOTE.** Intensity, readout intensity, and focus are also controlled from the CRT menu. If any of them needs adjusting during the performance of this procedure, select the CRT menu and adjust as necessary. The levels set will remain after the CLEAR MENU or CRT menu button is pushed.*

4. Check Horizontal Mag Registration and Position Range

REQUIREMENT – Any portion of the synchronized sweep can be positioned onscreen in all sweep modes.

- a. Horizontally center the display, and then turn on the MAG SWEEP.
- b. **CHECK** – that the start of the trace is displayed.
- c. **CHECK** – by adjusting the HORIZ POS control, that both ends of the display can be positioned past the center of the CRT.
- d. Turn Off the MAG SWEEP.

5. Check Calibrator Timing Frequency

REQUIREMENT – Frequency: 100 kHz \pm 0.1%.

- a. Set the frequency counter Timing to 1 μ s.
- b. Connect a X1 probe from the frequency counter to the ribbon cable side of A3R274 (Main board).
- c. Connect the probe ground to the metal shield adjacent to A3L5.
- d. Adjust the frequency counter controls for a stable readout.
- e. **CHECK** – that the counter reading is 100 kHz \pm 0.1 kHz.

- f. Remove the ground connection and the frequency counter probe from A3R274.

6. Check Timing and Linearity

REQUIREMENT – Sweep Timing Accuracy: 5 $\mu\text{s}/\text{Div}$. (1 Line), 10 $\mu\text{s}/\text{Div}$. (2 Line), 0.2 $\mu\text{s}/\text{Div}$. (1 Line + MAG), 1.0 $\mu\text{s}/\text{Div}$. (2 Line + MAG), $\pm 1\%$.
Sweep Linearity: 1 Line and 2 Line sweeps unmagnified or magnified, $\pm 1\%$.

- a. Enter the CONFIG menu and select CALIBRATE.
- b. Select CAL SIG ON.
- c. Push the SWEEP button several times, or until the LINE indicator comes on and there is a display of approximately 1 full cycle per major division (2-Line Sweep).
- d. **CHECK** – for one cycle of calibrator signal per major division ± 0.5 minor division over the center 10 divisions.
- e. Turn On the MAG SWEEP.
- f. **CHECK** – for one cycle of calibrator signal per 10 major divisions ± 0.5 minor division over the center 10 divisions.
- g. **CHECK** – both ends of the magnified sweep for one cycle of calibrator signal per 10 major divisions ± 0.5 minor division over the center 10 divisions.
- h. Turn Off the MAG SWEEP and select 1 LINE SWEEP (5 $\mu\text{s}/\text{Div}$), Line indicator on and approximately 1 cycle/2 divisions.
- i. **CHECK** – for one cycle of calibrator signal per two major divisions ± 1 minor division over the center 10 divisions.
- j. Press CONFIG menu to turn the calibrator signal off.
- k. Select the high frequency Timing Signal (2.5 MHz) from the serial component test generator.
- l. Turn On the MAG SWEEP.
- m. **CHECK** – for one cycle per 2 divisions ± 0.5 minor division.
- n. Turn Off the MAG SWEEP.

7. Check Sweep

REQUIREMENT – Synchronized sweep of approximately 12 divisions.

- a. Select the color bar signal from the serial component test generator.

- b. Select 1 FIELD SWEEP.
- c. **CHECK** – for approximately 12 divisions of signal.
- d. Select 2 FIELD SWEEP.
- e. **CHECK** – for approximately 12 divisions of signal.
- f. Select 2 LINE SWEEP (10 μ S/Div).
- g. **CHECK** – for approximately 12 divisions of signal.
- h. Select 1 LINE SWEEP (5 μ S/Div).
- i. **CHECK** – for approximately 12 divisions of signal.
- j. Push EXT REF.
- k. **CHECK** – for approximately 12 divisions of signal.
- l. Select 2 LINE SWEEP (10 μ S/Div).
- m. **CHECK** – for approximately 12 divisions of signal.
- n. Select 1 FIELD SWEEP.
- o. **CHECK** – for approximately 12 divisions of signal.
- p. Select 2 FIELD SWEEP.
- q. **CHECK** – for approximately 12 divisions of signal.
- r. Push EXT REF to turn it off.

8. Check Vertical Gain, Calibrator Amplitude, and Variable Gain Range

REQUIREMENT – 700 mV input = 700 mV \pm 2%. Calibrator Amplitude: 700 mV \pm 1%. Variable Gain Range: 0.2X to 1.4X. Serial Output Level = 800 mV \pm 10%.

- a. **CHECK** – that the signal display is 700 mV \pm 14 mV (1 minor division equals 20 mV).
- b. Select Serial B.
- c. **CHECK** – that the signal display is 700 mV \pm 14 mV (1 minor division equals 20 mV).
- d. Connect a 75 Ω coaxial cable, through a 75 Ω feed-through termination, from the WFM 601 rear-panel SERIAL OUT to the test scope vertical input.

- e. **CHECK** – the vertical amplitude of the scope display for 0.72 to 0.88 volts.
- f. Remove the cable from the SERIAL OUT.
- g. Enter the GAIN menu and turn on VARIABLE.
- h. Select X5 and adjust VAR GAIN to make the last step of the color bar staircase 4 divisions high.
- i. Select X10.
- j. **CHECK** – that the last step of the color bar staircase is now 8 divisions in amplitude.
- k. Select X1.
- l. Enter the CONFIG menu and select CALIBRATE. Turn CAL SIG ON. Press the CLEAR MENU button to turn off the readout.
- m. **CHECK** – for a calibrator signal display of 700 mV \pm 7 mV.
- n. Select X5.
- o. **CHECK** – adjust the VAR GAIN control for a 7 division signal amplitude. (Variable gain should still be turned on from step g.)
- p. Select X1.
- q. Adjust the VAR GAIN for maximum signal amplitude.
- r. Position the bottom of the display to the -3 graticule line.
- s. **CHECK** – for a display amplitude of ≥ 9.8 divisions (-3 to $+6.8$).
- t. Turn VARIABLE OFF and exit the GAIN menu.

9. Check Voltage and Timing Cursors

REQUIREMENT – Voltage Accuracy: $\pm 0.5\%$. Timing Accuracy $\pm 1\%$.

- a. Set the signal blanking level to the CRT graticule baseline.
- b. Enter the CURSOR menu (VOLT should be selected). Press the CLEAR MENU button if desired to remove the menu readout.
- c. Set the Volt1 cursor to the 0.7 V line on the graticule.
- d. Set the Volt2 cursor to the graticule baseline (0 V).
- e. **CHECK** – that the cursor reading is 697 to 703 mV.
- f. Go to the CURSOR MENU and select TIME.

- g. Set the Time1 cursor to the graticule left cardinal mark, and set the Time2 cursor to the graticule right cardinal mark. See Figure 4–2.

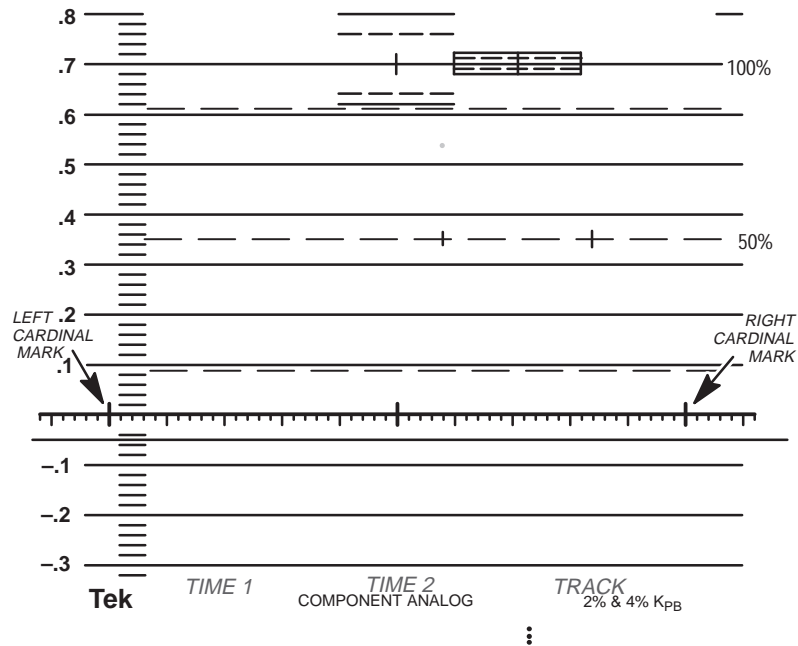


Figure 4–2: Timing Cursor Check

- h. **CHECK** – that the cursor reading of 99 to 101 μ S.
- i. Exit the CURSOR menu.

10. Check PIX OUT Gain

REQUIREMENT – Active Video Gain Accuracy: 700 mV \pm 3%.

- a. Connect the output from the MON OUT G to the test oscilloscope, through a 75 Ω feed-through termination.
- b. Obtain a stable, triggered display on the test oscilloscope.
- c. Go to the CONFIG menu (FORMAT) and set the MON OUT AS to GBR.
- d. **CHECK** – the test oscilloscope for a signal amplitude of 679 to 721 mV, excluding sync.
- e. **CHECK** – the test oscilloscope for a sync amplitude of 270 to 330 mV.
- f. Go to the CONFIG menu (FORMAT) and set the MON OUT AS to YPBPR.

- g. **CHECK** – the test oscilloscope for a signal amplitude of 679 to 721 mV, excluding sync.
- h. **CHECK** – the test oscilloscope for a sync amplitude of 270 to 330 mV.
- i. Move the 75 Ω cable, that leads to the test oscilloscope to the WFM 601 MON OUT B.
- j. **CHECK** – the test oscilloscope overall maximum signal peak-to-peak amplitude of 679 to 721 mV peak-to-peak (no single pulse >350 mV \pm 15.5 mV).
- k. Go to the CONFIG MENU (FORMAT) and set the MON OUT AS to GBR.
- l. **CHECK** – the amplitude of the signal on the test oscilloscope for 679 to 721 mV peak-to-peak.
- m. Move the 75 Ω cable, that leads to the test oscilloscope to the WFM601 MON OUT R.
- n. **CHECK** – the amplitude of the signal on the test oscilloscope for 679 to 721 mV peak-to-peak.
- o. Go to the CONFIG menu (FORMAT) and set the MON OUT AS to YPBPR.
- p. **CHECK** – for an overall maximum signal peak to peak amplitude of 679 to 721 mV peak-to-peak.
- q. Disconnect test oscilloscope cable from MON OUT R.

11. Check Vector Horizontal and Vertical Gain Accuracy

REQUIREMENT – Vertical: 700 mV = 10 divisions of deflection \pm 1%;
Horizontal: 700 mV = 8 divisions of deflection \pm 1%.

- a. Turn on CH 1 and turn off CH 3.
- b. Select the color bar signal from the serial digital component generator.
- c. Select VECTOR VIDEO DISPLAY.
- d. Turn off generator B–Y.
- e. Vertically position the display between the –0.3 and 0.7 graticule lines.
- f. **CHECK** – for 10 divisions of deflection \pm 0.5 minor divisions.
- g. Turn on generator B–Y.
- h. Turn off generator R–Y.

- i. Horizontally and vertically position the display over the center 8 divisions of the graticule 0 line.
- j. **CHECK** – for 8 divisions of deflection ± 0.4 minor divisions.

12. Check Vector Mode Bandwidth Matching

REQUIREMENT – Horizontal-to-Vertical Bandwidth Matching: $\leq 2^\circ$ loop opening at 500 kHz or 2 MHz.

- a. Select the multiburst signal from the serial digital component Generator. (It is located under the multipulse signal graphic; it toggles with the multipulse signal when the button is pushed.)
- b. Turn on generator R–Y.
- c. **CHECK** – that there is less than a trace width of loop opening.

13. Check Vector Registration

REQUIREMENT – ≤ 0.25 box with the X1 color black dot centered in box.

- a. Center the color black dot, with the HORIZ and VERT POS controls in the center box.
- b. Enter the GAIN menu and select X5.
- c. **CHECK** – that the color black dot is within $1/4$ inch of the center of its box.
- d. Change the vertical gain (GAIN menu) to X10.
- e. **CHECK** – that the color black dot is within $1/2$ inch of the center of its box.

14. Check Lightning Mode

REQUIREMENT – Y displayed on vertical axis, B–Y displayed horizontally on top half of the display, R–Y displayed horizontally on the bottom half of the display. Vertical Gain Accuracy: $\pm 2\%$.

- a. Select the color bar signal from the serial digital component generator.
- b. Turn on the LIGHTNING VIDEO DISPLAY.
- c. Turn off the generator B–Y and R–Y channels.
- d. **CHECK** – that the signal vertical amplitude is 10 divisions ± 1 minor division ($-.3$ to $.7$).
- e. Turn on generator B–Y and R–Y channels.

- f. **CHECK** – that there are dots in all targets.

15. Check Bowtie Interchannel Matching

REQUIREMENT – Null must occur within ± 2.0 ns of center marker.

- a. Select the high frequency (2.5 MHz) bowtie signal from the serial digital component generator.
- b. Turn on WFM601 BOWTIE VIDEO DISPLAY.
- c. Turn on SWEEP MAG.
- d. Position display to place the null and center marker of the Bowtie display onto the graticule area. See Figure 4–3.

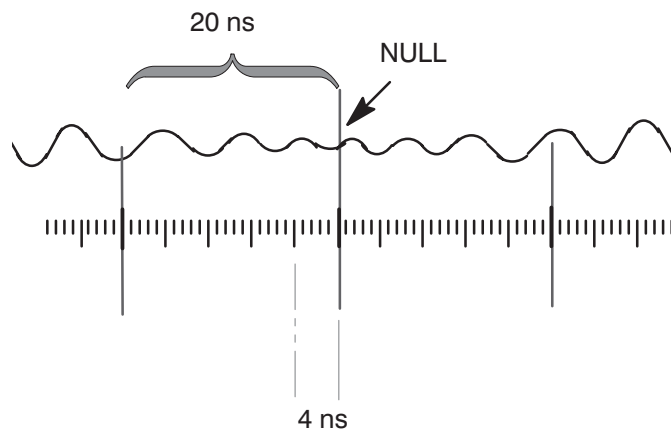


Figure 4–3: HF Bowtie Magnified to Measure Null Offset

- e. **CHECK** – that the Bowtie null point occurs within 0.5 divisions (2.0 ns) of the Bowtie center marker. See Figure 4–3.

16. Check Analog Audio Display Mode

REQUIREMENT – Audio Mode Full Scale Accuracy: ± 0.5 dB.

- a. Select AUDIO DISPLAY.
- b. Enter the GAIN menu and select 0 dBu.
- c. Center the display dot using the VERT and HORIZ POS controls.

- d. Connect the function generator output via the audio remote cable adapter to the WFM 601 rear-panel REMOTE INPUT connector pins 8 and 10. Ground pins 9 and 11 of the REMOTE INPUT connector.
- e. Set the function generator for a sinewave output. Adjust the frequency to 1 kHz and the amplitude to 2.19 V.
- f. **CHECK** – that the trace ends land on the audio box cross hairs.
- g. Repeat parts a. through f. using the Gain and signal amplitude settings in Table 4–1.

Table 4–1: Audio Values

GAIN	SIGNAL AMPLITUDE (V _{pp})
0 dBu	2.19 V
4 dBu	3.47 V
8 dBu	5.50 V
12 dBu	8.71 V

17. Check Audio Phasing and Bandwidth

REQUIREMENT – X/Y Input Phase Match: $\leq 1^\circ$ (measured at 20 kHz).
Audio Bandwidth: -3 dB at ≥ 500 kHz.

- a. Re-enter the GAIN menu and select 0 dBu.
- b. Set the function generator Frequency to 20 kHz and the amplitude to 2.19 V.
- c. Move the display onto the audio graticule using the VERT and HORIZ POS controls. Make sure that both ends of the display are in the $1/2$ dB target boxes.
- d. **CHECK** – for no more than a trace width of eye opening in the audio signal (1%).
- e. Set the function generator frequency to 500 kHz.
- f. Disconnect the signal from pin 8 of the rear-panel REMOTE connector.
- g. **CHECK** – for a horizontal line >5.6 divisions long.
- h. Reconnect the signal to pin 8 and disconnect it from pin 10 of the rear panel REMOTE connector.
- i. **CHECK** – for a vertical line >7 divisions long.

- j. Remove the function generator signal from the WFM601 REMOTE connector.

18. Check Serial Receiver Equalization Range

REQUIREMENT – Proper operation with up to 17 dB loss at 135 MHz using coaxial cable having $1/\sqrt{F}$ loss characteristics (800 mV launch amplitude).

- a. Connect 175 meters (574 ft) of Belden 8281 coaxial cable from the serial digital signal generator output to the WFM 601 SER A INPUT. Terminate the remaining side of the loop through with a high frequency terminator.
- b. Select SERIAL A INPUT.
- c. Select color bars from the serial digital signal generator.
- d. **CHECK** – that a video waveform appears.
- e. Press the WFM 601 EDH DET button.
- f. **CHECK** – that the EDH readout appears onscreen.
- g. Push the menu-designated RESET ERRORS button.
- h. Allow the instrument to run for at least 2.5 minutes.
- i. **CHECK** – that the Errored Seconds, onscreen, is zero.
- j. Press the CLEAR MENU.
- k. Move the Belden cable and terminator to the SER B INPUT.
- l. Select SERIAL B.
- m. Repeat steps d. through j. for the SERIAL B INPUT.

19. Check EXT REF Return Loss

REQUIREMENT – ≥ 40 dB to 6 MHz. Power on or off.

NOTE. *Return Loss Checks:*

The Return Loss Checks only need to be done if repairs have been made on the Input circuitry.

- a. Enter the PRESET menu and select RECALL FACTORY.
- b. Connect a precision 50Ω cable from the spectrum analyzer RF Input to the RF Output on the lower frequency RF Bridge.

- c. Connect a precision 50 Ω cable from the spectrum analyzer TG Output to the RF Input on the RF Bridge.
- d. Select Demod/TG on the spectrum analyzer. Turn on the Tracking Generator and set the Tracking Generator Fixed Level to 0.00 dBm.
- e. Set the spectrum analyzer Span/Div to 1 MHz and the Resolution Bandwidth to 3 kHz.
- f. Set the spectrum analyzer Reference Level to the first major division down from the top on the analyzer display.
- g. Set the Vertical Scale to 10 dB.
- h. Remove one of the cables from the RF Bridge.
- i. Set the spectrum analyzer Frequency Cursor to 5 MHz, and then set the Marker to 6 MHz.
- j. Reconnect the cable to the RF Bridge.
- k. **NOTE** – the Reference Level Readout.
- l. Adjust the spectrum analyzer External Attenuation Amplitude by the amount noted in the previous step. Note: The Reference Level Readout should now be 0.00 dBm.
- m. Connect the precision high-frequency terminator to the Device Under Test connector on the RF Bridge.
- n. **CHECK** – that the frequency response from 0 MHz to 6 MHz is ≥ 40 dBu.
- o. Return the spectrum analyzer frequency marker to 6 MHz if it was moved.
- p. Remove the precision high-frequency terminator from the RF Bridge.
- q. Connect the Device Under Test connector on the RF Bridge to one side of the WFM601 EXT REF loop through input. Terminate the remaining side of the loop-through with the precision high-frequency terminator used in step p.
- r. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 40 dBm.

20. Check Serial Video Return Loss

REQUIREMENT – Serial Video Inputs: ≥ 25 dB to 1 – 270 MHz. Power on.
Serial Video Inputs: ≥ 15 dB to 1 – 270 MHz. Power off. Serial Out: ≥ 15 dB
1 – 270 MHz. Power on.

- a. Remove the lower frequency RF Bridge and replace it with the higher frequency bridge. Reconnect the cables.
- b. Set the spectrum analyzer Span/Div to 50 MHz and the Resolution Bandwidth to 300 kHz.
- c. Set the spectrum analyzer Reference Level to the first major division down from the top on the analyzer display.
- d. Remove one of the cables from the RF Bridge.
- e. Set the spectrum analyzer Frequency Cursor to 250 MHz, and then set the Marker to 270 MHz.
- f. Reconnect the cable to the RF Bridge.
- g. **NOTE** – the Reference Level Readout.
- h. Adjust the spectrum analyzer External Attenuation Amplitude by the amount noted in the previous step. Note: The Reference Level Readout should now be 0.00 dBm.
- i. Connect the precision high-frequency terminator to the Device Under Test connector on the RF Bridge.
- j. **CHECK** – that the frequency response from 0 MHz to 270 MHz is ≥ 25 dBm.
- k. Return the spectrum analyzer frequency marker to 270 MHz if it was moved.
- l. Remove the precision high-frequency terminator from the RF Bridge.
- m. Connect the Device Under Test connector on the RF Bridge to one side of the WFM 601 SER A loop-through input. Terminate the remaining side of the loop through with the precision high-frequency terminator used in step l.
- n. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 25 dBm.
- o. Turn WFM 601 POWER to STANDBY.
- p. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 15 dBm.
- q. Turn WFM 601 POWER ON.
- r. Connect the Device Under Test connector on the RF Bridge to one side of the WFM 601 SER B loop through-input. Terminate the remaining side of the loop through with the precision high-frequency terminator used in step l.

- s. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 25 dBm.
- t. Turn WFM 601 POWER to STANDBY.
- u. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 15 dBm.
- v. Turn WFM 601 POWER ON.
- w. Connect the Device Under Test connector on the RF Bridge to one side of the WFM 601 SERIAL OUT.
- x. **CHECK** – that the Reference Level Readout on the spectrum analyzer is ≥ 15 dBm.
- y. Remove all cables and terminators from the WFM 601 Serial Component Monitor.

21. Check Transmission Bandwidth

REQUIREMENT – 50 kHz – 300 MHz ± 1.0 dB.

- a. Connect a precision 50 Ω cable from the spectrum analyzer TG Output to a 50 Ω -to-75 Ω minimum loss attenuator.
- b. Connect a precision 50 Ω cable from the spectrum analyzer RF Input to the 50 Ω -to-75 Ω minimum loss attenuator.
- c. Connect the two 50 Ω -to-75 Ω minimum loss attenuators together with a BNC female-to-female connector.
- d. Set the following spectrum analyzer controls:

Frequency	150 MHz
Span	30 MHz
R BW Filter	5 MHz
Reference Level	6 dB
Vertical Scale	1 dB/division
- e. Select Demod/TG on the spectrum analyzer. Turn on the tracking generator and set the tracking generator fixed level to 0.00 dBm.
- f. Select Save Enable on the spectrum analyzer.
- g. Select spectrum analyzer CH A.
- h. Select spectrum analyzer Display menu and B, C minus A.

- i. Turn on the CH B display.
- j. Adjust the Reference Level for a screen display.
- k. Turn off spectrum analyzer CH A and CH D display.
- l. Note the reference level of the straight trace.
- m. Select B Save A.
- n. Remove the bnc female-to-female connector coupling the 50 Ω -to-75 Ω minimum loss attenuators together.
- o. Connect the two cables, with the 50 Ω -to-75 Ω minimum loss attenuators to the WFM 601 SER A INPUT.
- p. **CHECK** – that the spectrum analyzer trace is within 1 major division (1 dB) of the reference level established in step l. (Channel selected or not.)
- q. Move the cables and the 50 Ω -to-75 Ω minimum loss attenuators to the WFM 601 SER B INPUT.
- r. **CHECK** – that the spectrum analyzer trace is within 1 major division (1 dB) of the reference level established in step l. (Channel selected or not.)
- s. Reverse cable to the WFM 601 SER B INPUT.
- t. **CHECK** – that the spectrum analyzer trace is within 1 major division (1 dB) of the reference level established in step l. (Channel selected or not.)

This completes the Performance Check procedure.

Adjustment Procedures

The Adjustment Procedures for the WFM601 are loaded on the 3.5 inch high-density disk (Tektronix Part No. 063-1796-00) included in this manual.

The instrument software version must be 1.3 or greater to use this Adjustment Procedure. To determine the software version loaded in the instrument check the lower right corner of the CALIBRATE submenu of the front-panel selected CONFIG menu. If the software version is lower than 1.3, see the Installation section for instructions.

The information contained in this section includes the following:

■ Recommended Equipment List	Page 5-1
■ Getting Started	Page 5-6
■ Functional Description of the PC Display	Page 5-7
■ Circuit Board Adjustment Locations	Page 5-9
■ Waveform Illustrations	Page 5-11
■ TSG422 Signal Illustrations	Page 5-16

Recommended Equipment List

The following equipment and accessory items are required to perform the Adjustment Procedures. Broad specifications are followed by an example of specific equipment that meet these specifications.

Electrical Instruments

1. IBM Compatible PC

System requirements:
DOS 3.3 or higher.
640K bytes of random-access memory (RAM).
High-density floppy drive (3.5 inch/144 MB).
Available RS232 Port (COM 1, 2, 3, or 4).

2. Test Oscilloscope

Vertical Amplifier:
300 MHz Bandwidth, 2 mV Sensitivity.

Time Base:

10 ns/div to 5 ms/div sweep speeds, Triggering to 150 MHz.

For example: A Tektronix 2465B Oscilloscope. Also 10X probe, P6109B, and 1X probe, P6119B.

3. Digital Component Television Signal Generator

For example: Tektronix TSG-422 Digital Component Generator, Option 1S.

4. Voltmeter

Range: 0 to > 100 Vdc. Accuracy: $\pm 0.1\%$.

For example: Tektronix DM504A installed in a TM500-Series Power Module.

5. Power Module

For powering and housing Tektronix FG501A and DM504A.

For example: Tektronix TM500-Series Power Module.

6. Function Generator

1-kHz output, 2 V to 9 V amplitude.

For example: Tektronix FG501A.

Auxiliary Equipment

7. 75 Ω Terminators

Six required; two should be end-line, and four should be feedthrough type.

For example:

High-frequency, 0.025% 75 Ω terminator (Tektronix Part No. 011-0102-01).

Feedthrough, 75 Ω terminator (Tektronix Part No. 011-0103-02).

8. Coaxial Cable

Two 75 Ω cables and one 50 Ω cable required.

For example:

75 Ω – 42-inch (Tektronix Part No. 012-0074-00).

50 Ω – 42-inch (Tektronix Part No. 012-0057-01).

9. Jumper Cable Adapter

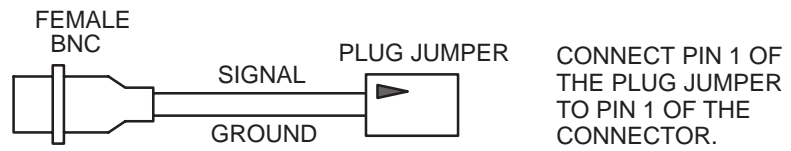


Figure 5-1: Jumper Cable Adapter

10. Audio Cable Adapter

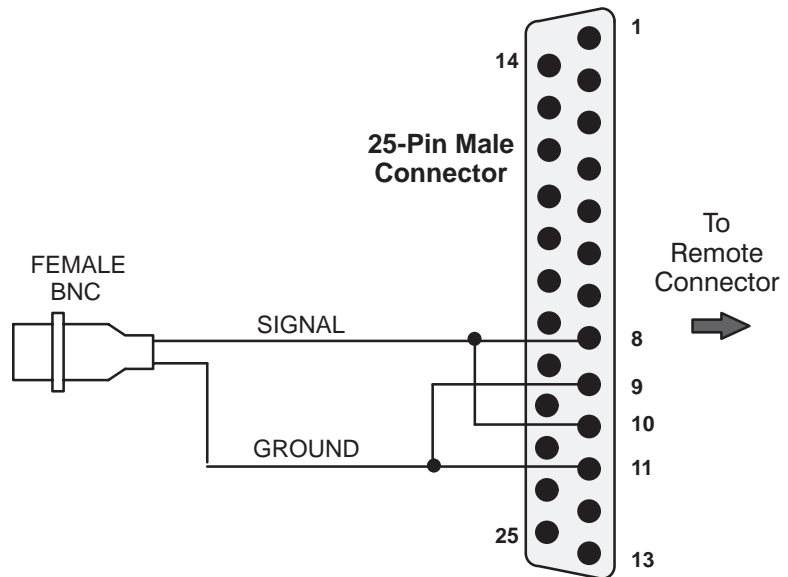


Figure 5-2: Audio Cable Adapter

11. RS232 Cable

Connector or adapter which allows hookup between the PC and the waveform monitor. Figure 5-3 shows the cable connections for a 9-pin PC connector. For a 25-pin to 9-pin adapter, construct one as shown in Figure 5-4 or purchase an RS232 DTE cable or adapter. Do not use a DCE or modem cable.

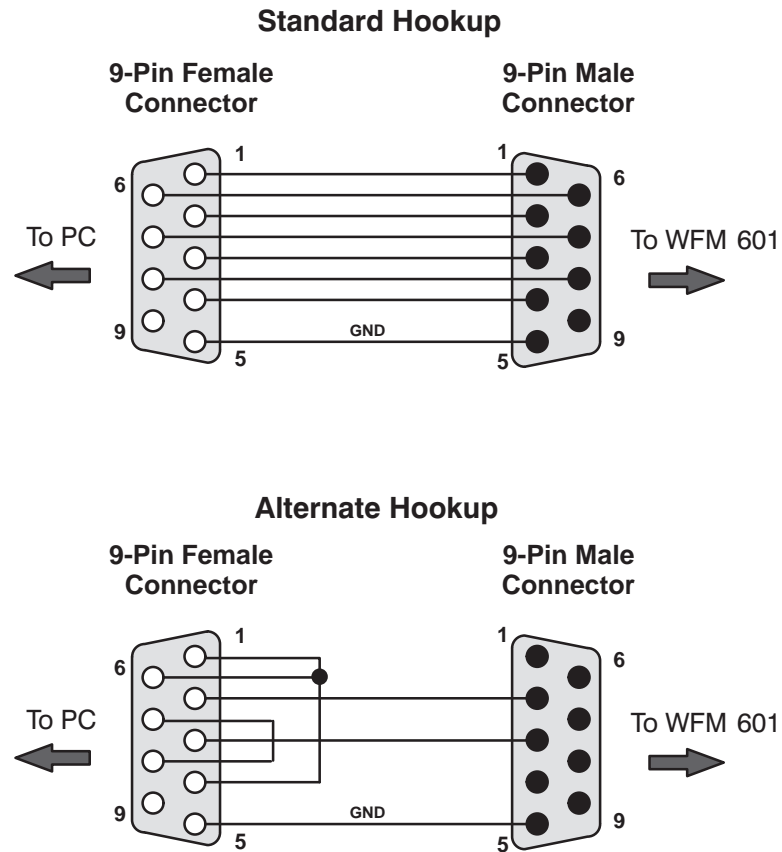


Figure 5-3: RS232 cable hookups for 9-pin PC connector

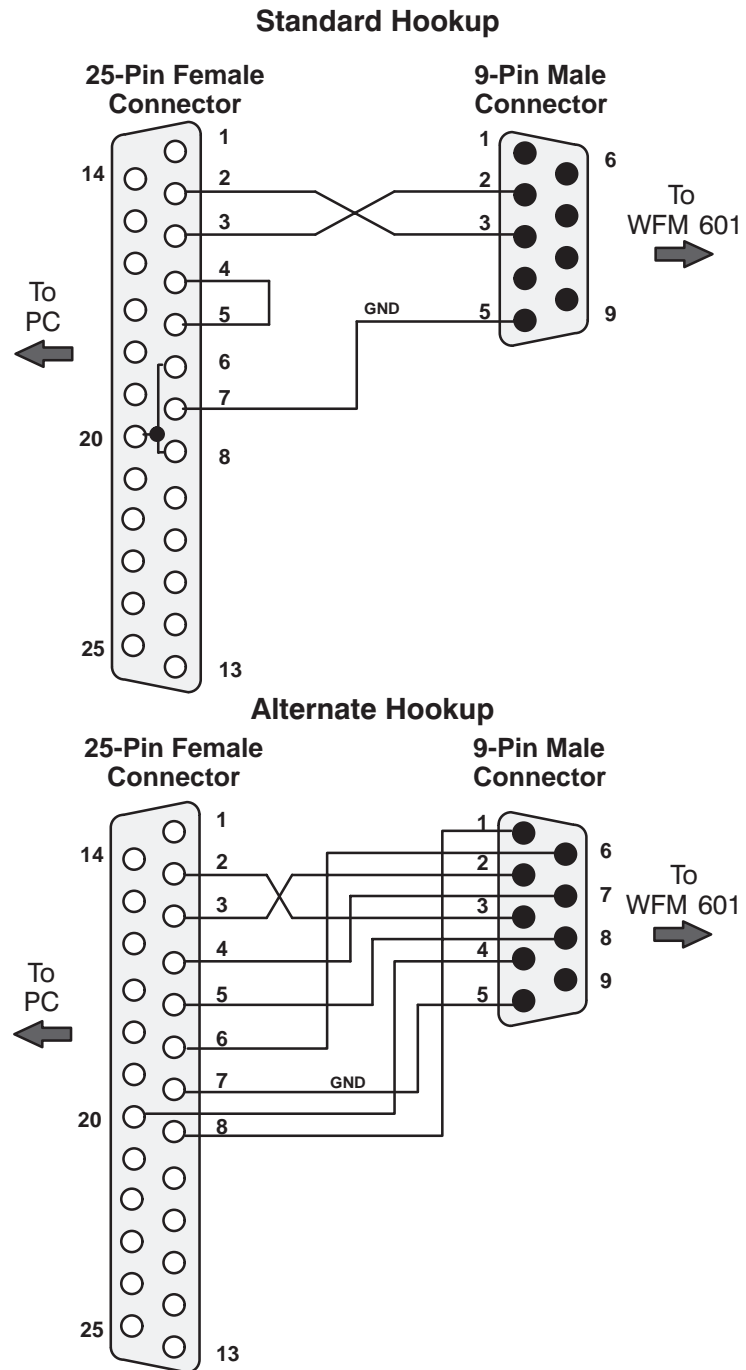


Figure 5-4: RS232 cable hookups for 25-pin PC connector

Optional Equipment

12. Magnifying Glass

For aid in viewing CRT graticule as necessary.

Getting Started

1. Initial Equipment Connections

- a. Connect an RS232 cable from the WFM601 rear-panel RS232 connector to the COM 1, 2, 3, or 4 connector on the PC. See the Required Equipment List for the cable wiring illustrations.

NOTE. Cable Wiring

If the RXD and TXD pins are swapped, as in some modem connections, the Adjustment Procedures program will not operate.

- b. Connect the WFM601 to power and turn on the instrument.

NOTE. Instrument Power

The WFM601 power switch must be set to ON before the Adjustment Procedures program is started. If the instrument is not turned on, the PC will not be able to establish communications with the instrument. Turning the instrument power ON after the Adjustment Procedures program is started can cause the PC to lock up, requiring a system reset.

2. Load the Adjustment Procedures Program

- a. Insert the Adjustment Procedures disk into the PC floppy drive.

NOTE. PC Floppy Drive

On PCs the drive letter for the floppy drive may be A or B. Enter the appropriate letter for your floppy drive in the following step.

- b. At the PC DOS prompt, type the drive letter for the floppy drive to be used followed by a colon, and then press the Return key.
For example, A: <RETURN>

NOTE. PC Hard Drive

The Adjustment Procedures program will run faster if loaded on the PC hard drive. To load the program on the PC hard drive, create a directory on the PC hard drive and copy the contents of the floppy disk into the directory.

- c. Type **CAL** and then press the Return key.

- d. The program will prompt the user for a few parameters before the actual adjustment steps start.

Functional Description of the PC Display

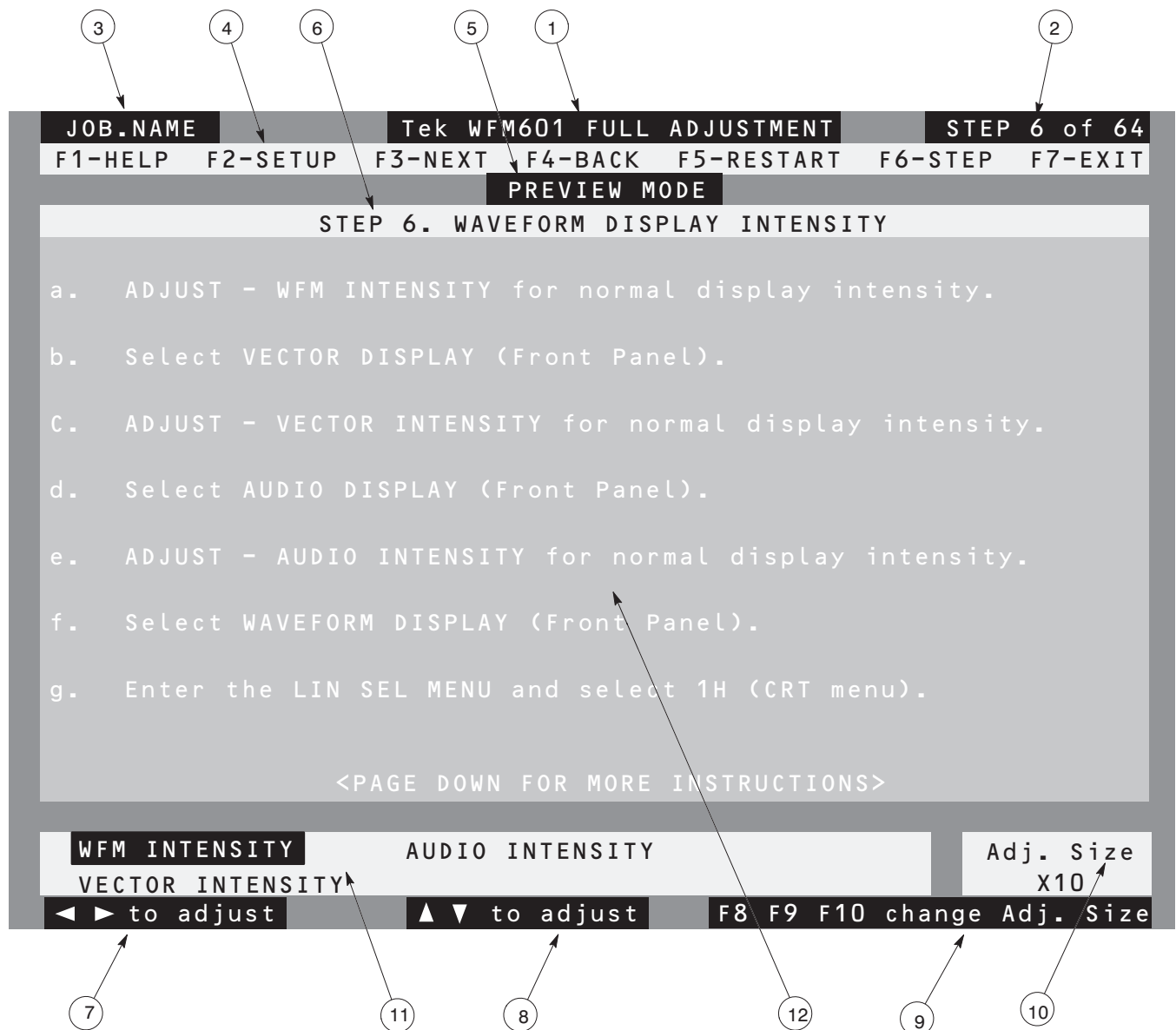


Figure 5-5: Typical Adjustment Procedures PC screen display

Display Description

- 1 This box lists the instrument type and which procedure is being performed.
- 2 This box lists the current step number and how many steps there are in the procedure being performed.
- 3 This box only appears when the procedure being performed is a saved job. The name of the job is displayed in the box.
- 4 This box lists the active function keys which can be pressed during the program. They function as follows:
 - F1 Pressing this key brings up the Help Menu.
 - F2 Pressing this key brings up the Setup Window which details the initial equipment connections for that particular step. Only those connections listed in the Setup Window should be in place when the step is started. All other connections from previous steps should be removed.
 - F3 Pressing this key sends the Adjustment Procedures program to the next step.
 - F4 Pressing this key sends the Adjustment Procedures program to the previous step.
 - F5 Pressing this key returns the Adjustment Procedures program to the beginning of the current step. All front-panel settings and internal instrument settings are returned to their former state (the same state they were in when the current step was started).
 - F6 Pressing this key brings up the Select Step window which allows the user to select any step in the procedure to perform. The current step is highlighted when the window opens. Selections are made by pressing the PAGE UP or PAGE DOWN keys on the PC. Pressing the ESC key will close the window and return the user to the current step.
 - F7 Pressing this key brings up the Exit Menu which allows the user to change procedure types, save the current Adjustment job, or to exit to DOS.
- 5 This box appears only when the procedure is in the Preview Mode.
- 6 This box displays the current step number and title.
- 7 This box appears when the current step has more than one PC adjustment. Pressing the PC Left/Right arrow keys will select which adjustment is currently controlled by the PC Up/Down arrow keys. The box serves as a reminder for which arrow keys control the adjustment selection.

- 8 This box appears when the current step has an adjustment controlled by the PC Up/Down arrow keys. The box serves as a reminder for which arrow keys control the adjustment.
- 9 This box appears when the current step has an adjustment controlled by the PC Up/Down arrow keys. Pressing the F8, F9, or F10 function key selects the amount of change each press of an Up or Down arrow key has on the adjustment. The current adjustment size is displayed above the box.
- F8 Selects X1 as the adjustment size. The X1 setting provides the smallest adjustment size and is used for fine tuning an adjustment to exact position.
- F9 Selects X10 as the adjustment size. X10 is the default adjustment size and is used to bring an adjustment close to proper position.
- F10 Selects X100 as the adjustment size. X100 is the largest adjustment size and is used to rough in adjustments that are far out of position.
- 10 This box displays the current arrow key adjustment size.
- 11 This window list the names of the adjustments for the current step. The active adjustment (the one currently assigned to be controlled by the PC Up/Down arrow keys) is highlighted. The Left/Right PC arrow keys control the adjustment selection.
- 12 This window displays the actual procedure steps to be performed. The message <PAGE DOWN FOR MORE INSTRUCTIONS> refers to the PAGE DOWN key on the PC and appears at the bottom of the procedure steps window when there are additional steps to be performed.

Circuit Board Adjustment Locations

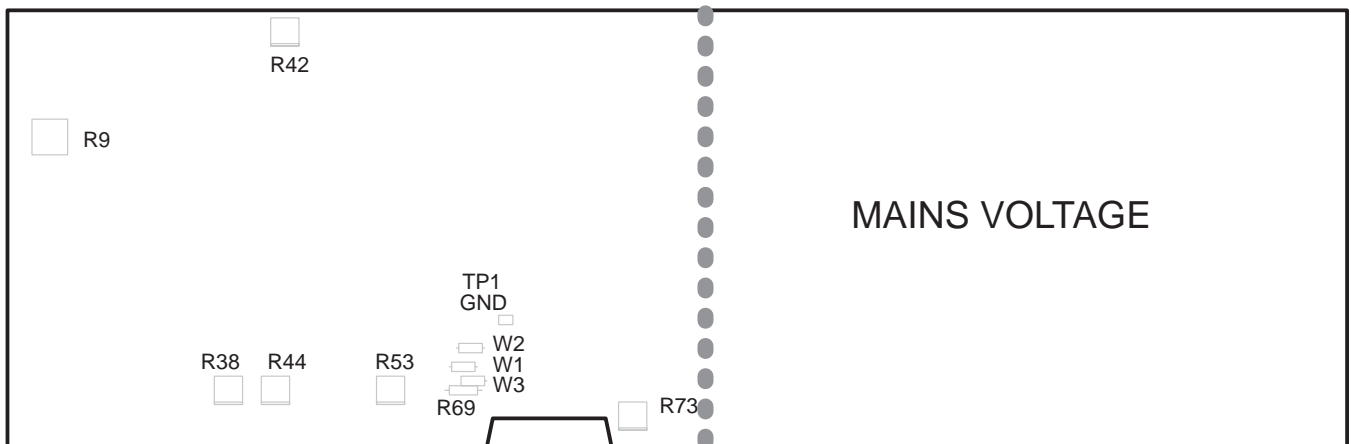


Figure 5-6: A1 Power Supply Board

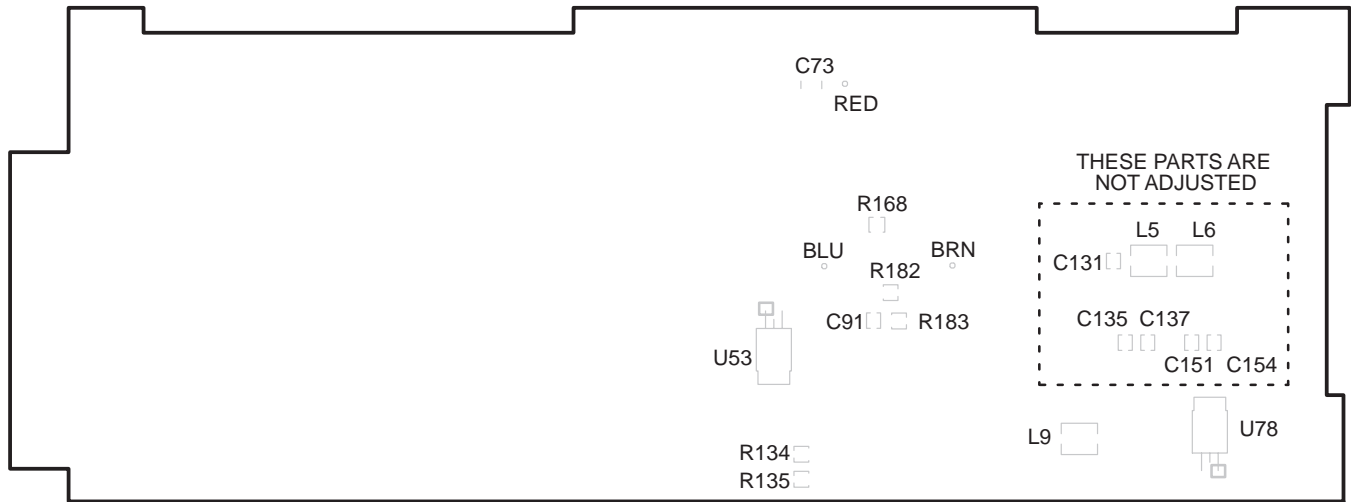


Figure 5-7: A3 Main Board

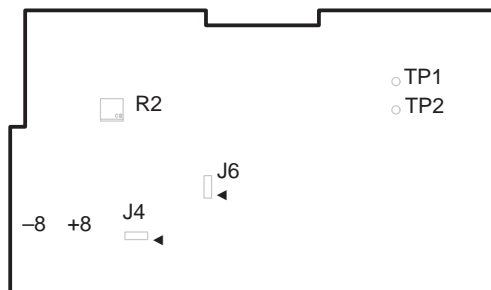


Figure 5-8: A5 Deserializer Board

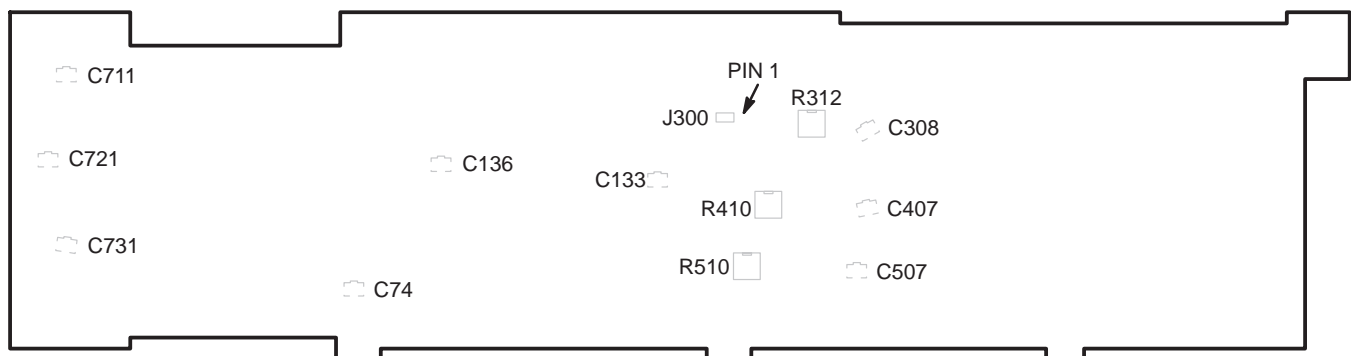


Figure 5-9: A7 Component Board

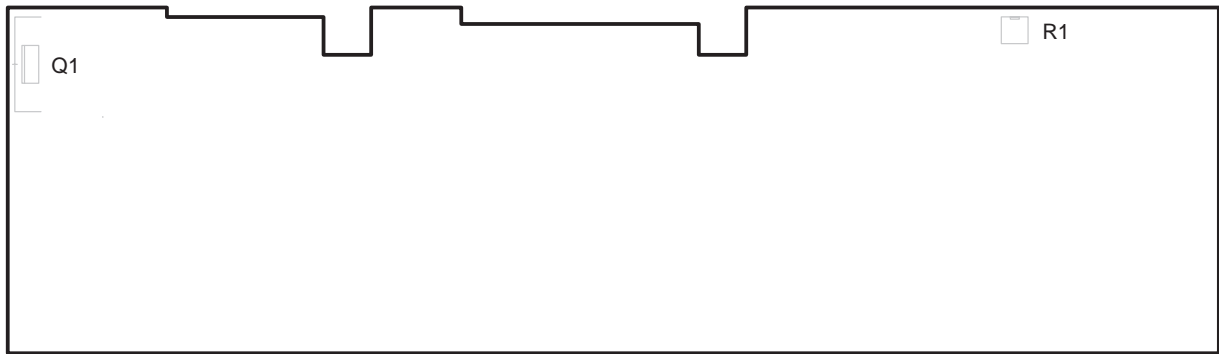


Figure 5-10: A8 DAC Board

Waveform Illustrations

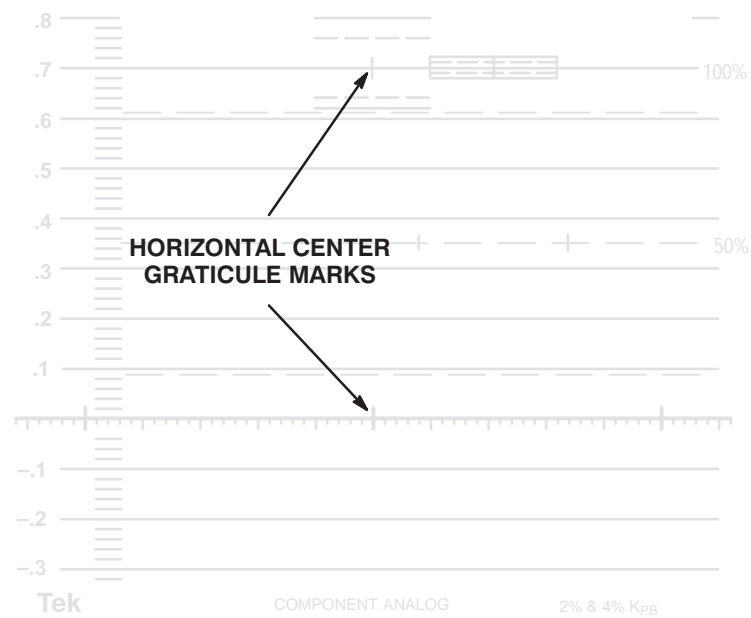


Figure 5-11: Graticule horizontal center marks

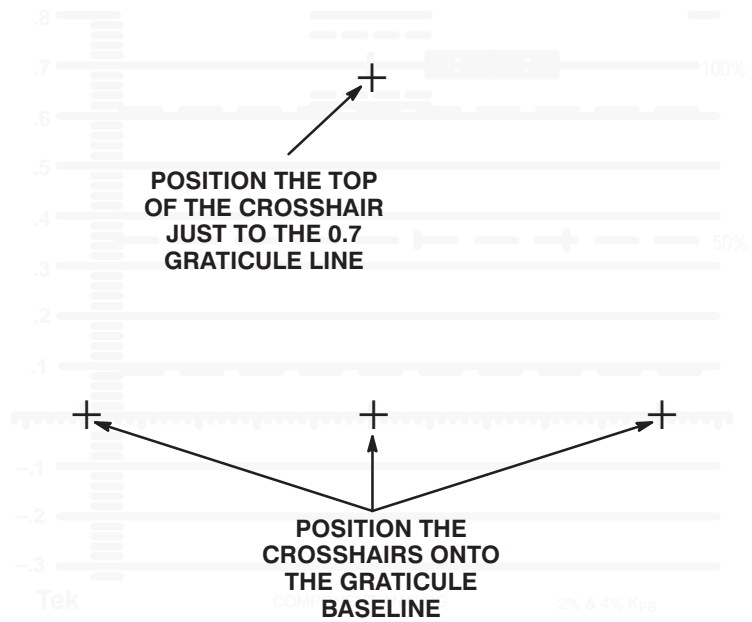


Figure 5-12: Adjusting post readout and gain

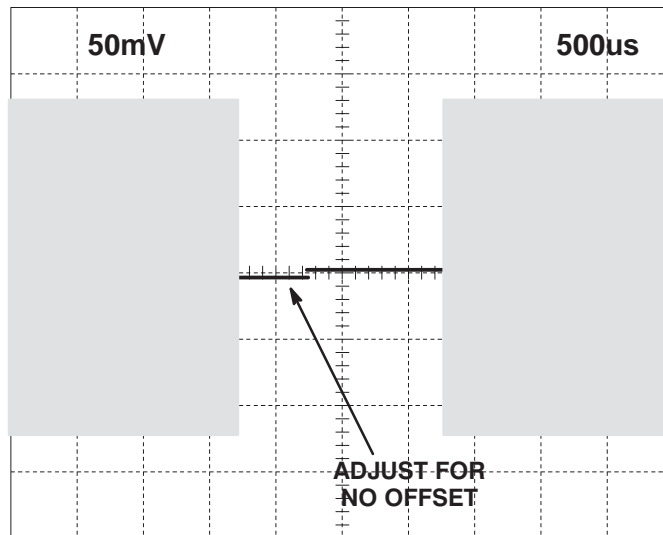


Figure 5-13: Adjusting the vertical interval blanking level offset

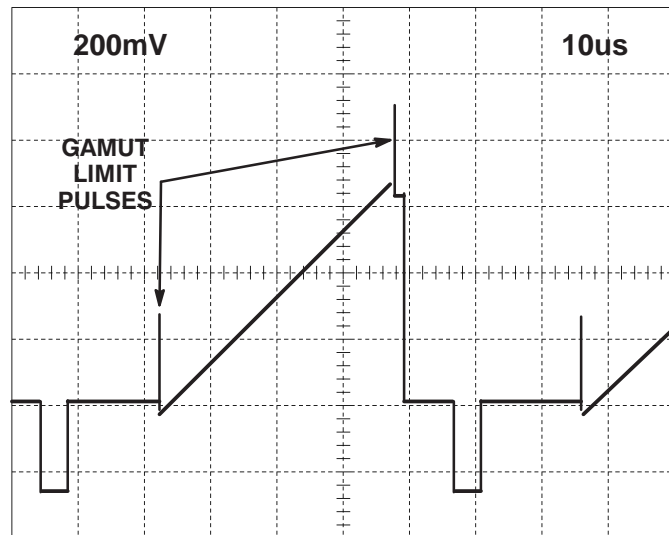


Figure 5-14: Gamut limit pulses

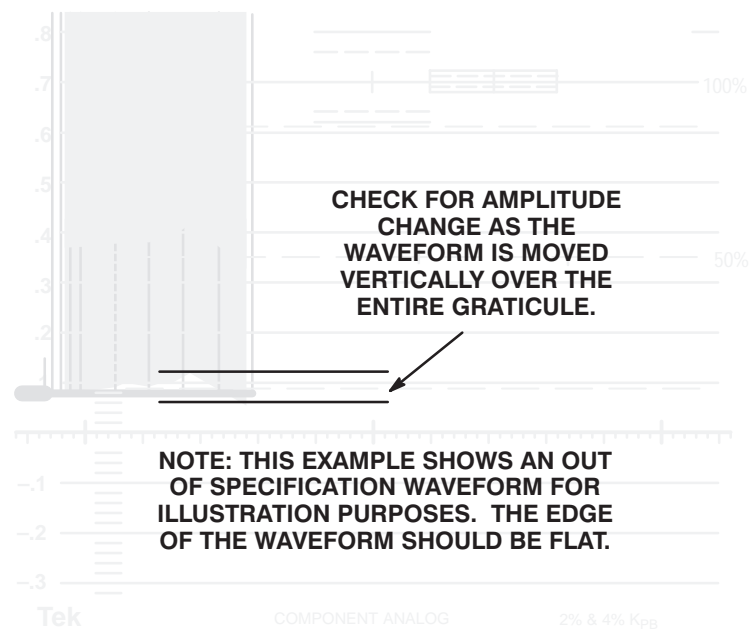


Figure 5-15: Checking the on-screen frequency response

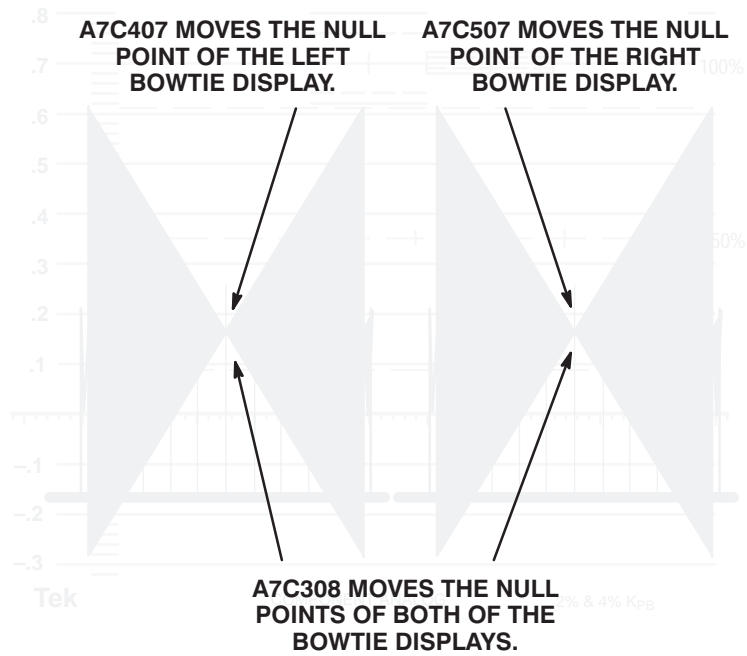


Figure 5-16: Adjusting the Bowtie display

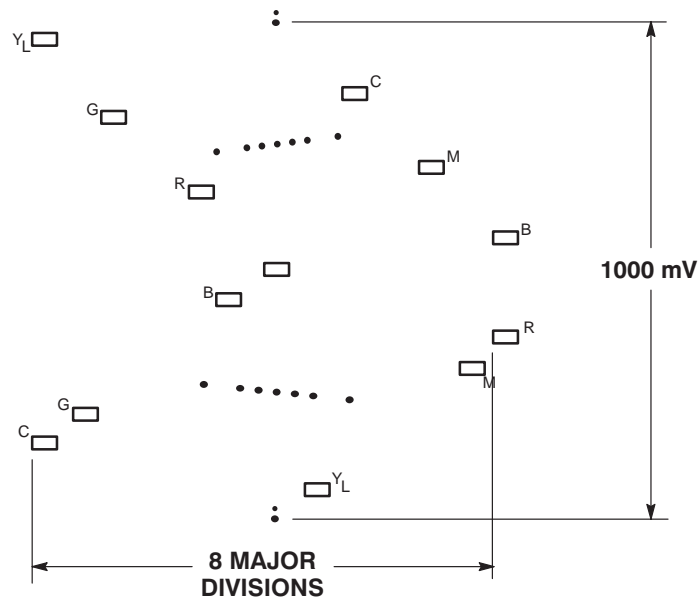


Figure 5-17: Adjusting the Lightning display electronic graticule

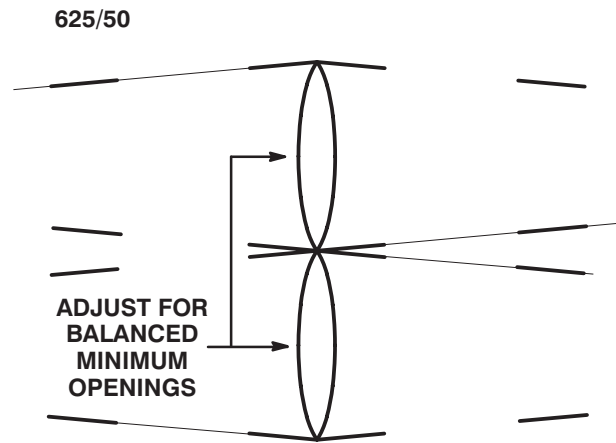


Figure 5-18: Adjusting Diamond Display phase

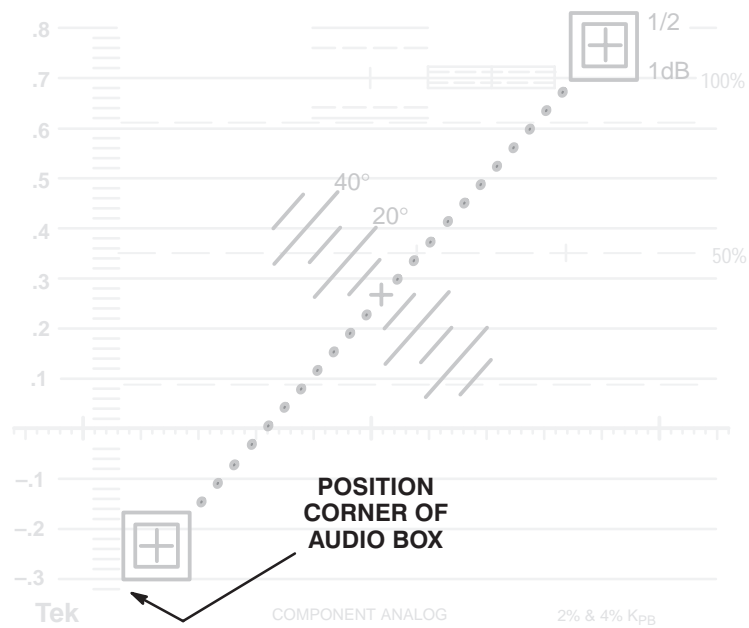


Figure 5-19: Adjusting the position of the Audio graticule

TSG422 Signal Illustrations

The TSG422 signal illustrations on the following pages are provided as a reference. They are shown in a three channel parade as they would appear on the WFM 601 in the Waveform display mode.

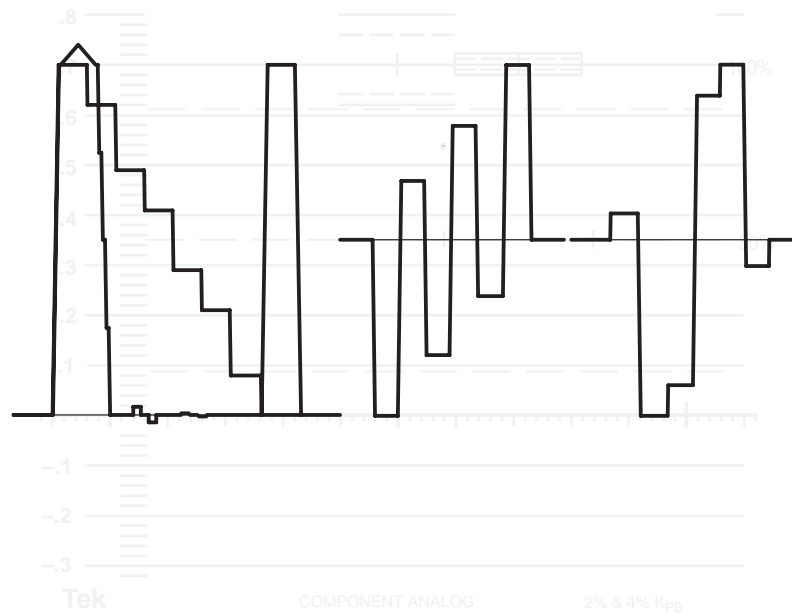


Figure 5-20: 100% color bars with level reference

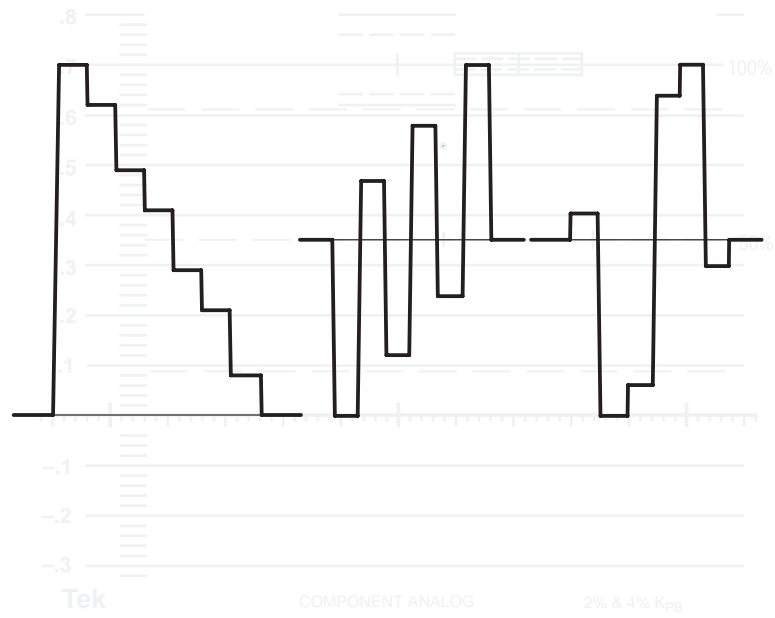


Figure 5-21: 100% color bars without level reference signal

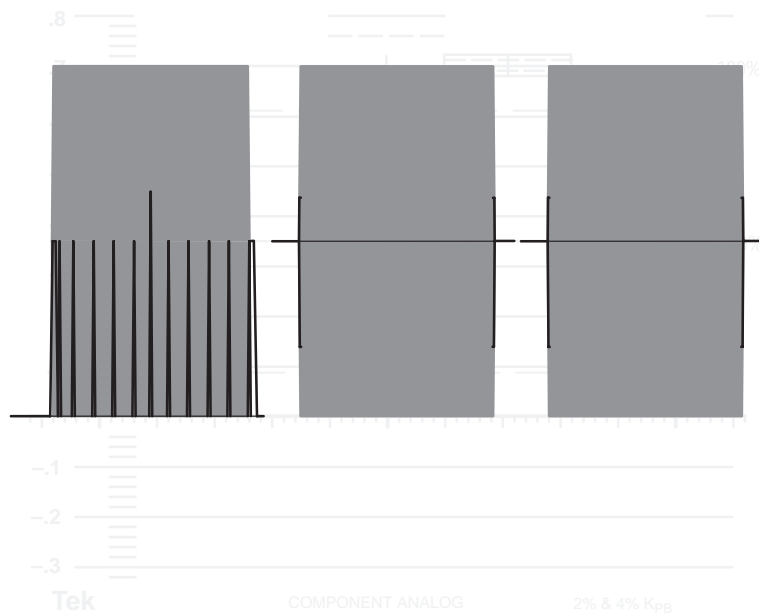


Figure 5-22: 2.5 MHz bowtie signal

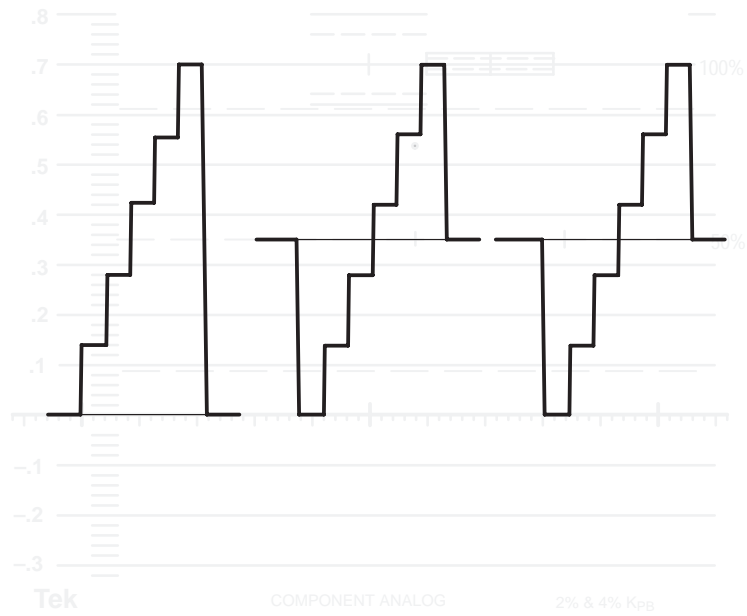


Figure 5-23: 5-step staircase signal

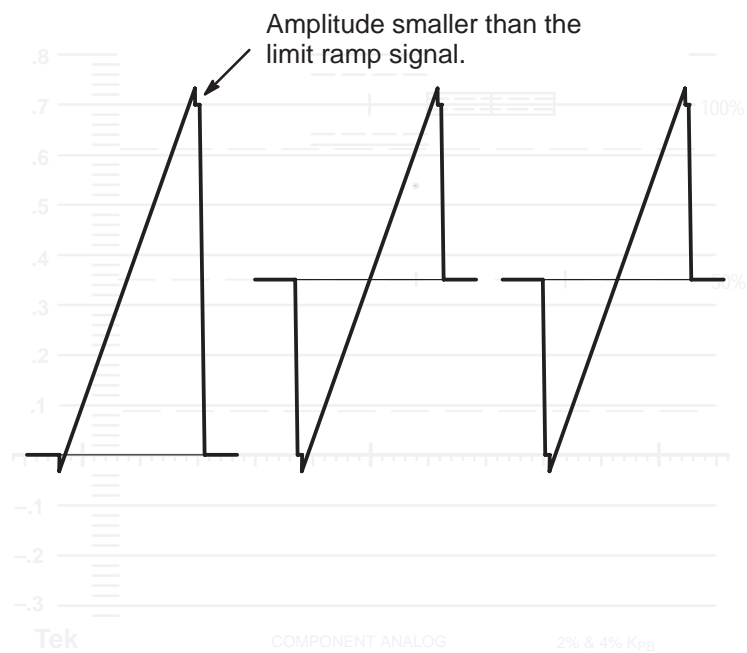


Figure 5-24: Oversized ramp signal

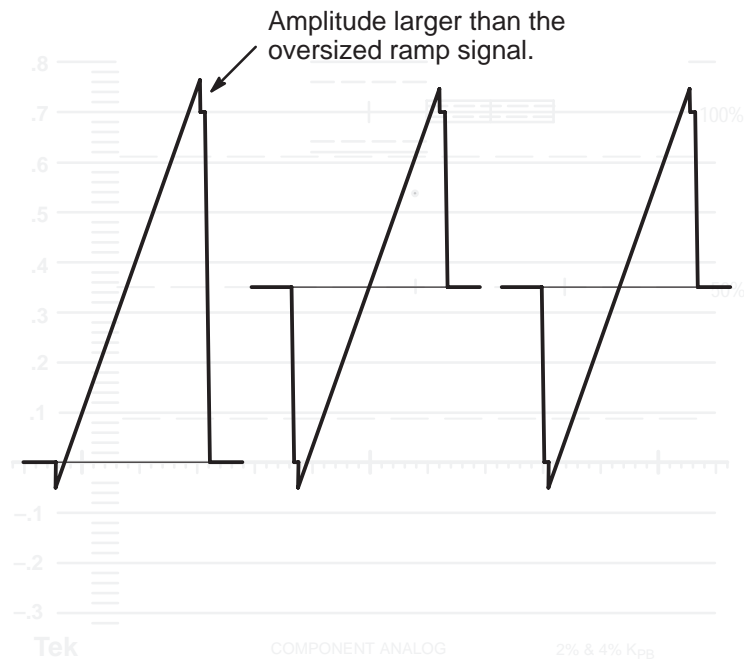


Figure 5-25: Limit ramp signal

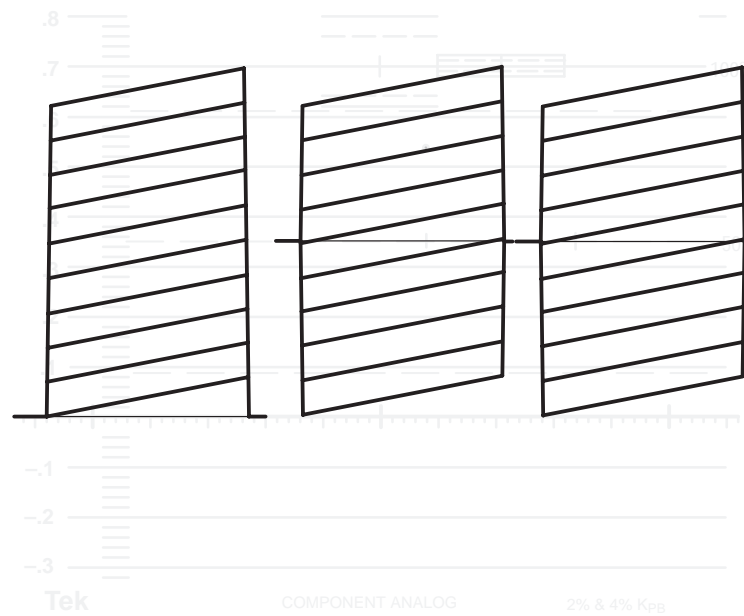


Figure 5-26: Shallow ramp signal

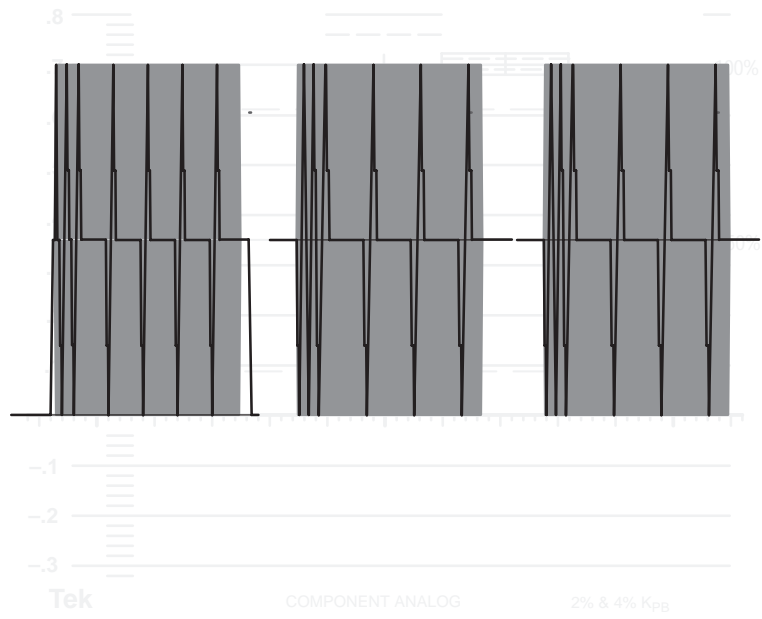


Figure 5-27: 100% line sweep signal

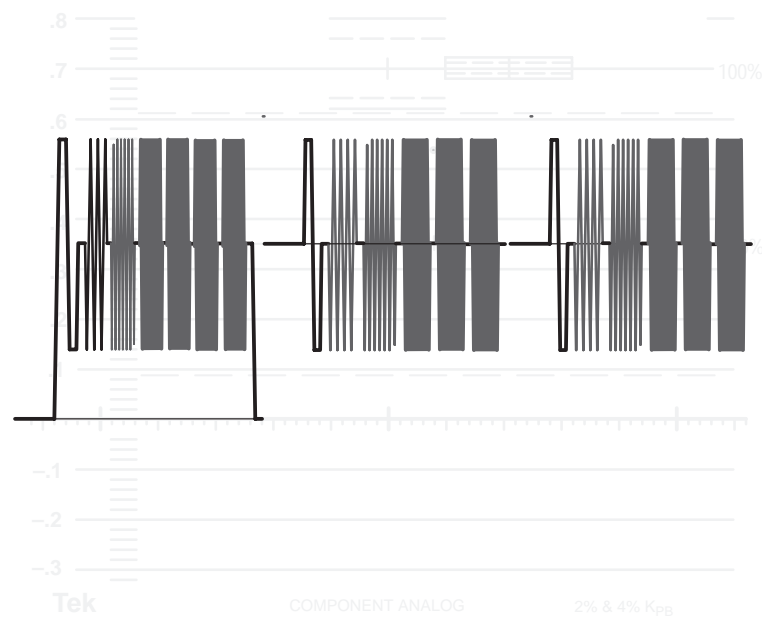


Figure 5-28: Multiburst signal

Maintenance

This section discusses the various options available for servicing the Tektronix WFM 601 Serial Digital Component Monitor. It also contains instructions for preventive maintenance, general troubleshooting, and corrective maintenance. If the instrument does not function properly, troubleshooting and corrective measures should be taken immediately to circumvent additional problems.

Service Options

A number of servicing options are available. They range from returning the instrument to Tektronix for repair and/or recalibration, to a major assembly exchange, to full component level servicing by the customer (at the installation site). Each of these options should be investigated as to which will be the most time efficient and cost effective.

Tektronix Service

Tektronix maintains service centers around the world to provide quick turn-around repair and recalibration services. When this service is used, even during the warranty period, the instrument should be tagged and repackaged according to the instructions at the end of this section.

Preventive Maintenance

Preventive maintenance consists of cleaning, visual inspection, performance checking, and, if needed, readjustment. The preventive maintenance schedule established for the instrument should be based on the environment in which it is operated and the amount of use. Under average conditions, scheduled preventive maintenance should be performed every 2000 hours of operation.

Cleaning

The instrument should be cleaned often enough to prevent dust or dirt from accumulating. Dirt acts as a thermal insulating blanket that prevents effective heat dissipation, and can provide high-resistance electrical leakage paths between conductors or components in a humid environment.

Exterior. Clean the dust from the outside of the instrument by wiping with a soft cloth or small brush. A brush is especially useful to remove dust from around the selector buttons, knobs, and connectors. Hardened dirt may be removed with a cloth dampened in water that contains a mild detergent. Abrasive cleaners should not be used.

CRT. Clean the CRT protective shield, light filter, and CRT face with a soft, lint-free cloth dampened in denatured alcohol.

Interior. Clean the interior of the instrument by loosening the accumulated dust with a dry, soft brush. Once the dirt is loosened remove it with low-pressure air (high-velocity air can damage some parts). Hardened dirt or grease may be removed with a cotton-tipped applicator dampened with a solution of mild detergent and water. Abrasive cleaners should not be used. If the circuit board assemblies must be removed for cleaning, follow the instructions for removal/replacement under the heading of Corrective Maintenance.

After cleaning, allow the interior to thoroughly dry before applying power to the instrument.



CAUTION. Do not allow water to get inside any enclosed assembly or component. Do not clean any plastic materials with organic cleaning solvents, such as benzene, toluene, xylene, acetone, or similar compounds, because they may damage the plastic.

Replacing and Cleaning the Air Filter

In order to operate in all environmental conditions these instruments require clean unrestricted internal air flow. The air filter is located on the rear panel and should be checked frequently for dust and grime buildup. A supply of replacement filters was shipped with this instrument.

Filter Replacement. Replacement consists of removing two screws from the fan cover, lifting out the old filter and replacing it. The cover is remounted with the two mounting screws. Do not over tighten the screws.

Filter Cleaning. The air filters supplied with this instrument can easily be cleaned and used again. All that is required is to wash them in warm water and mild detergent.

Additional Air Filters. Additional air filters can be ordered directly from Tektronix. The part number for the air filters is listed with the optional accessories at the rear of the Replaceable Mechanical Parts list, at the back of the book.

Visual Inspection

After cleaning, carefully check the instrument for defective connections, damaged parts, and improperly seated transistors or integrated circuits. The remedy for most visible defects is obvious; however, if heat-damaged parts are discovered, determine the cause of overheating before replacing the damaged part, to prevent additional damage.

Periodic checks of the transistors and integrated circuits are not recommended. The best measure of performance is the actual operation of the component in the circuit.

Static-Sensitive Components

This instrument contains electrical components that are susceptible to damage from static discharge. Static voltages 1 kV to 30 kV are common in unprotected environments. Table 6–1 shows the relative static discharge susceptibility of various semiconductor classes.

Table 6–1: Static Susceptibility

Relative Susceptibility Levels		Voltage
2	ECL	200 V – 500 V
3	SCHOTTKY SIGNAL DIODES	250 V
4	SCHOTTKY TTL	500 V
5	HF BIPOLAR TRANSISTORS	400 to 600 V
6	JFETS	600 to 800 V
7	LINEAR μ CIRCUITS	400 to 1000 V est.
8	LOW POWER SCHOTTKY TTL	900 V
9	TTL	1200 V

Observe the following precautions to avoid damage:

1. Minimize handling of static-sensitive components.
2. Transport and store static-sensitive components or assemblies in their original containers, on a metal rail, or on conductive foam. Label any package that contains static-sensitive components or assemblies.
3. Discharge the static voltage from your body, by wearing a wrist grounding strap, while handling these components. Servicing static-sensitive assemblies or components should be done only at a static-free workstation by qualified personnel.
4. Nothing capable of generating or holding a static charge should be allowed on the workstation surface.
5. Keep the component leads shorted together whenever possible.
6. Pick up the components by the body, never by the leads.
7. Do not slide the components over any surface.
8. Avoid handling components in areas that have a floor or work surface covering capable of generating a static charge.
9. Use a soldering iron that is connected to earth ground.

NOTE. A 2% RMA flux content solder is recommended for making repairs in this instrument. Cleaning of rosin residue is not recommended. Most cleaning solvents tend to reactivate the rosin and spread it under components where it may cause corrosion under humid conditions. The rosin residue, if left alone, does not exhibit these corrosive properties.

10. Use only special antistatic, suction, or wick-type desoldering tools.

Determining the Software Version

Operation of this instrument is dependent on the software, which is loaded in Flash EPROM. It is possible that an instrument may contain older software and therefore not be performing up to the level expected. It may save considerable time and troubleshooting effort to determine which software version the instrument contains. The User Manual that was shipped with the instrument contains the software version level when the instrument was first delivered. However, it is possible that the instrument was upgraded, or possibly a particular instrument was missed for a field upgrade and therefore does not perform up to expectation. Prior to servicing it is wise to determine that the instrument has software that matches the level specified at the front of the User Manual.

Finding the Version Number. The version number for the software contained in the instrument's Flash EPROM can be displayed on the CRT. The number appears in the lower right hand corner of the CRT when the REMOTE submenu is entered from the main CONFIG menu. The number, which is preceded by the letter V, will contain a whole number followed by a decimal.

Updating Software. To update the operating software loaded in the instrument, see the instructions in the Installation section of this manual. Both the software disk and the Adjustment software disk are included in this manual.

Performance Checks and Readjustments

Instrument performance should be checked after each 2000 hours of operation, or every 12 months. This will help to ensure maximum performance and assist in locating defects that may not be apparent during regular operation. The Performance Check and the Adjustment Procedures are included in this manual.

Corrective Maintenance

The following procedure is designed to assist in isolating problems, which in turn expedites repairs and minimizes down time.

General Troubleshooting Techniques

1. Ensure that the malfunction exists in the instrument. This is done by making sure that the instrument is operating as intended by Tektronix (see Operating Instructions), and by checking that a malfunction has not occurred up stream from the waveform monitor.
2. Determine and evaluate all trouble symptoms. This is accomplished by isolating the problem to a general area such as an assembly. The block diagram is a valuable aid in signal tracing and circuit isolation.



CAUTION. Use extreme care when probing with meter leads or probes, because of the high component density and limited access within the instrument. The inadvertent movement of leads or a probe could cause a short circuit or transient voltages capable of destroying components.

3. Determine the nature of the problem. Attempt to make the determination of whether the instrument is out of calibration or if there has been a component failure. Once the type of failure has been determined, proceed on to identify the functional area most likely at fault.
4. Visually inspect the suspect assembly for obvious defects. Most commonly these will be broken or loose components, improperly seated components, overheated or burned components, chafed insulation, etc. Repair or replace all obvious defects. In the case of overheated components, determine the cause of overheating and correct the cause before re-applying power.
5. Use successive electrical checks to locate the source of the problem. The primary tool for problem isolation is the oscilloscope. Use the Performance Check Procedure to determine if a circuit is operating within specifications. At times it may be necessary to change a calibration adjustment to determine if a circuit is operational, but since this can destroy instrument calibration, care should be exercised. Before changing an adjustment, note its position so that it can be returned to its original setting.
6. Determine the extent of the repair. If the necessary repair is complex, it may be advisable to contact your local Tektronix field office or representative before continuing. If the repair is minor, such as replacing a component, see the parts list for replacement information. Removal and replacement procedures for the assemblies can be found under Corrective Maintenance.



CAUTION. Always remove the assembly from the instrument prior to attempting to replace a soldered-in component. See *Corrective Maintenance* for the correct procedure.

Line Fuse Replacement

This instrument is protected with an F-type cartridge fuse, located internally on the Power Supply (A1) circuit board. See Figure 6–1. The fuse should only be replaced with the correct type and value. Using a higher rated or slo blo fuse could cause circuit damage. The correct value and type is silk screened on the circuit board, adjacent to the fuse holder.

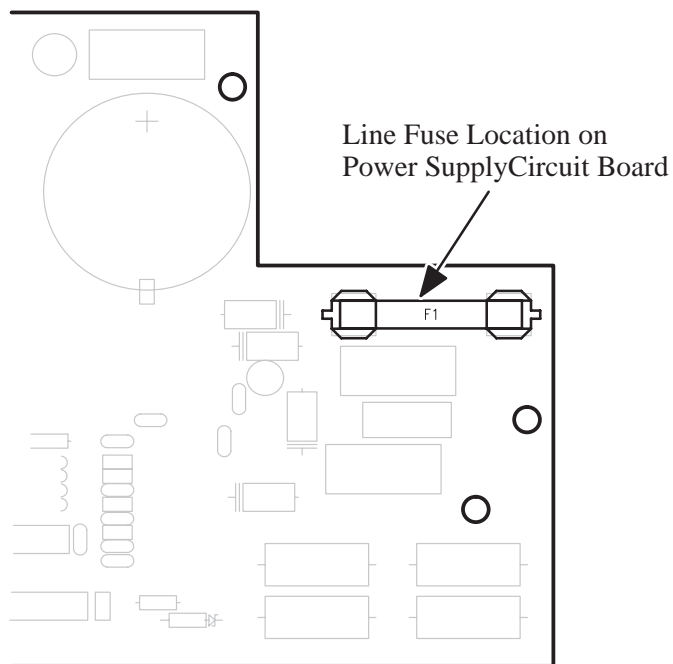


Figure 6–1: Location of Line Fuse on Power Supply Board

Specific Troubleshooting Techniques

Power Supply

The Power Supply is a switching type and requires a specific troubleshooting procedure to avoid personal danger or instrument damage.



WARNING. Read Instructions! Do not attempt to troubleshoot this Power Supply without reading the following instructions.

This power supply presents special troubleshooting problems, if a fault occurs. The Troubleshooting procedure that follows will help to isolate a problem to a specific circuit. The circuit can then be analyzed to find the defective component(s), or part substitution can be tried.

Troubleshooting Procedure

The equipment needed to troubleshoot the power supply:

- Digital Multimeter (DMM), with a diode check function
- Oscilloscope
- 20 Vdc Variable Power Supply
- 5 Vdc Power Supply
- High Voltage Probe, $\geq 1 \text{ G}\Omega$ input resistance

NOTE. Reading the power supply Theory of Operation is recommended before attempting repairs.

Introduction

The Troubleshooting Procedure for the Power Supply (Assembly A1) is split into two sections, the Low Volts and High Volts Supplies. Start the procedure by determining which section of the Power Supply the problem is in. With the Power Supply installed in the instrument, apply ac power and turn on the front-panel POWER switch. From Table NO TAG, determine which symptom the Power Supply exhibits and refer to the corresponding procedure.

Table 6-2: Power Supply Fault Symptoms

Symptom	Procedure
Line fuse open	Rectifier/Switcher/Snubber Check
Power Supply cycles OFF/ON Note: Check instrument for shorts.	Output Check Error Amplifier Check Shutdown Logic Check
Does not power up	Controller/Gate Drive Check Transformer Driver Check Error Amplifier Check Shutdown Logic Check Rectifier/Switcher/Snubber Check

Table 6-2: Power Supply Fault Symptoms (Cont.)

Symptom	Procedure
+5 V not regulating	Error Amplifier Check
Improper CRT display	High Volts Supply Checks

Low Volts Supply

1. Preliminary Checks

- a. A properly functioning and loaded Low Volts Supply will output the voltages listed in Table 6-3. Use the DMM to measure the voltages between TP1 and the voltage test points. If the supply is not regulating properly, continue with the procedure.

Table 6-3: Low Volts Supply Voltages

Test Point	Voltage Range
W1 – (+5 V)	+5.0 V
W4 – (+11 V)	+10.5 to +12.0 V
W3 – (-11 V)	-10.5 to -12.0 V
W2 – (+40 V)	+39.0 to +41.0 V

NOTE. The Low Volts power supply troubleshooting is performed without applying ac power.

- b. Disconnect ac power from the instrument. Disconnect the instrument from the Power Supply by removing the jumper from J4.
- c. Use the digital multimeter to measure the voltage between TP2 and the tab (drain) of Q14. Check that the voltage is near 0 V.



CAUTION. Do not proceed until the drain of Q14 is near 0 V. Dangerous voltage potentials are present in the circuit until the capacitors discharge.

2. Rectifier/Switcher/Snubber Check

- a. Use the digital multimeter to measure the voltage between TP2 and TP3. Be sure the voltage is near 0 V before proceeding.
- b. Remove jumper P7.

- c. With the negative lead of the digital multimeter connected to TP3 and the positive lead connected to TP2, measure the circuit resistance. A resistance of less than 20 k Ω indicates a shorted mosfet (Q14). If the mosfet is shorted, replace it and perform the Control Circuit Check.
- d. Using the digital multimeter diode test function, test CR32, CR33, CR34, and CR35 for shorts. Diode replacements must be fast reverse recovery (300 ns) types to reduce conducted noise.
- e. Using the digital multimeter diode test function, test the snubber diodes CR23 and CR25 for shorts.
- f. Replace P7.

3. Output Check

- a. Connect the negative output from the 20 Vdc Power Supply to TP1 and its positive output to W3 (+11 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR16 or U2 (High Volts power supply).

NOTE. *The variable power supply used in the following checks must have a current limit of 1 ampere or less.*

- b. Connect the negative output from the 20 Vdc Power Supply to TP1 and the positive output to R69 (+40 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR19 or Q7 (High Volts Power Supply).
- c. Connect the positive output from the 20 Vdc Power Supply to TP1 and the negative output to W2 (-11 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR18.
- d. Connect the negative output from the 5 Vdc Power Supply to TP1 and the positive output to W1 (+5 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR17 or Q1 and Q2 (High Volts Power Supply).

4. Controller/Gate Drive Check

- a. Connect the negative 20 Vdc Power Supply output to TP3. Connect the positive output to the cathode of CR22. Short the emitter and base of Q15 together. Connect the oscilloscope probe ground to TP3.
- b. Table 6-4 shows the signals present when the control circuit functions properly.

Table 6–4: Control Circuit Test Points

Circuit Location	Signal
U6, pin 1	Approximately 5 Vdc
U6, pin 2	Approximately 1 to 2 Vdc
U6, pin 3	0 V
U6, pin 4	80 kHz triangle wave, 2 V p-p
U6, pin 6	80 kHz square wave, 18 V p-p

- c. Use the oscilloscope to observe the signal at the anode of CR26. It should be an 80 kHz square wave, switching between -1 and 12 volts. The fall time is $0.2 \mu\text{s}$ and the rise time is $1 \mu\text{s}$.
- d. Remove the short from across Q15.

5. Transformer Driver Check

- a. Connect the negative output from the 20 Vdc Power Supply to TP3. Connect the positive output to the cathode of CR22.
- b. Connect the negative output from the 5 Vdc Power Supply to TP3. Connect the positive output to the cathode of VR3.
- c. Connect the oscilloscope probe ground to TP3.
- d. Using the oscilloscope, observe the signal at U8, pin 5. It should toggle between 0 and 5 Vdc when J3 is shorted and unshorted. If the pulse is not present, continue with the check.
- e. Using the oscilloscope, observe the signal at U8, pin 3. A positive-going, 100 ms pulse should occur when J3 is shorted and unshorted. If the pulse is not present, continue with the check.
- f. Using the oscilloscope, observe the signal at U5, pin 1. It should be a logical high when J3 is unshorted and a logical low when it is shorted. If the signal is not present, continue with the check.
- g. Using the oscilloscope, observe the signal at the collector of Q13. With J3 unshorted this point should have a 1 V, 170 kHz sine wave riding on 5 Vdc. With J3 shorted this point should be at 5 Vdc.

6. Error Amplifier/Voltage Reference/Over Voltage Check

- a. Set the variable Power Supply to 4.6 Vdc. Connect the negative lead to TP1 and the positive output to W1 (+5 V).
- b. Connect the digital multimeter common lead to TP1.

- c. Using the digital multimeter measure the voltage at U3, pin 6. It should be 0 V.
- d. Using the digital multimeter measure the voltage at U3, pin 1. It should be 2.5 V.
- e. Set the variable Power Supply to 5.4 V.
- f. Using the digital multimeter measure the voltage at U3, pin 6. It should be 5 V.
- g. Slowly increase the voltage of the variable Power Supply. Before 6 V is reached the over voltage protection circuit should fire and pull the voltage below 1 V.

7. Shut Down Logic Check

- a. Connect the negative output of the 20 Vdc Power Supply to TP3. Connect the positive output to the cathode of CR22.
- b. Connect the digital multimeter common lead to TP3.
- c. Measure the voltages according to Table 6–5 to see if the shut down logic circuit is functioning properly.

Table 6–5: Shut Down Logic Levels

Circuit Location	Approximate Voltage
U7, pin 1	0 V
U7, pin 4	2 Vdc
U7, pin 6	3 Vdc
U7, pin 7	4.15 Vdc
U7, pin 9	0.3 Vdc

- d. Using the digital multimeter, measure the voltage at U6, pin 3. It should be approximately 5 Vdc. Short the base to the emitter of Q15. Pin 3 should now measure 0 V.

High Volts Supply



WARNING. Dangerous potentials exist on this circuit board. Extreme care should be exercised in troubleshooting these circuits.

1. Preliminary Checks

- a. Table 6–6 lists the High Volts Supply fault symptoms and procedures.

Table 6–6: High Volts Supply Fault Symptoms

Symptom	Procedure
Unable to focus CRT using the front-panel control	Focus Amplifier Check
Unable to adjust CRT intensity using the front-panel control	Z-Axis Amplifier Check Grid Drive Check
No CRT display	High Voltage Oscillator Check CRT Voltage Check

2. Focus Amplifier Check

- a. Using the digital multimeter, measure the voltage between TP1 and the collector of Q2.
- b. It should vary from 0 to –300 Vdc when the front-panel FOCUS control is rotated.

3. Z-Axis Amplifier Check

- a. Use the digital multimeter to measure the voltage between TP1 and the collector of Q6.
- b. Short together the base and emitter of Q3. The collector of Q6 should be near 0 V.
- c. Short together the base and emitter of Q4. The collector of Q6 should be near 0 V.

4. Grid Drive Check

- a. Turn off the Power to Standby. Use the diode check on the digital multimeter to test CR2, CR5, CR6, CR8, and CR9 for shorts.
- b. Turn the Power On.

- c. Using the digital multimeter, measure the voltage between TP1 and the cathode of CR8. It should vary between approximately +40 and +170 V as R58 (CRT Bias) is adjusted.

5. High Voltage Oscillator Check

- a. Connect the oscilloscope probe to T1 pin 3 (Q6 collector) and the probe ground to TP1. The signal should be a +70 V p-p, 22 kHz sine wave.
- b. Check the voltages listed in Table 6–7 using the digital multimeter:

Table 6–7: High Voltage Oscillator Test Points

Circuit Location	Voltage
T1, pin 4	Approximately +40 V
T1, pin 13	Less than +2 V
U2, pin 2	Approximately +4.8 V
U2, pin 6	+4 to +11 V
CR9, cathode	Approximately +100 V

6. CRT Voltage Check

NOTE. This check requires a high-voltage probe having an input resistance of 1 G Ω or more.

- a. Connect the high-voltage probe ground to TP1.
- b. Use the high-voltage probe to measure the voltage at the anode of CR4. It should be approximately –2750 V.
- c. Measure the voltage at the anode end of CR3. It should be 50 - 150 V more negative than the reading from the anode of CR4.

Tektronix Service Offerings

Tektronix maintains a service organization that can provide a number of services to assist in maintaining the instrument's operation at its specified levels. They range from complete repair and adjustment, at a convenient location, to supplying replacement parts. In addition, there are training programs that are available for service technicians.

NOTE. *When considering which service offerings best suit the current need, remember that Tektronix provides a limited parts and service warranty for all its products. No customer repairs should be attempted during the warranty period for this instrument.*

Service Training

Tektronix provides service training in a number of programs. In addition to classes held at our Beaverton campus, special classes at convenient locations can be arranged. To find out more about service training programs contact your local Tektronix field office or representative. US customers can call our service organization directly using 1 (800) TEK WIDE [835-9433]; ask for “Service Training.” The 800 number is a 24-hour service, but service training specialists are only available between 8 am and 4 pm pacific coast time.

Field Service Centers

Tektronix maintains service centers world wide. These centers provide repair and calibration services for Tektronix instruments. They can be contacted through your Tektronix field office or representative. In addition, US and Canadian customers can call 1 (800) TEK WIDE [835-9433] for assistance in contacting their nearest service center. Not all service centers are equipped to repair or calibrate all of our instruments; be ready to give the operator the instrument type and operating options when calling for assistance.

Module Exchange

The module exchange program provides an easily accessible means of returning an instrument to operational status. The defective module is exchanged for a calibrated module at a cost less than the new module price. The process begins by contacting one of the module exchange centers. They can be contacted through your Tektronix field office or representative. In addition, US customers can call 1 (800) TEK WIDE [835-9433] for assistance in contacting the Television Board Exchange Center. The center will provide information on the cost of the module and returning the failed module.

NOTE. *Circuit boards that are damaged due to mishandling or containing modifications not originated by Tektronix are not acceptable for the exchange program.*

When calling in to arrange for a circuit board exchange it is essential that you have some key information ready to relay to our technician. The instrument type and serial number, along with installed options are absolutely essential. In addition the Assembly number (AX) and the 9-digit circuit board part number (67X-XXXX-XX) will help to ensure that you are getting a direct replacement. Finally, if you know or are able to provide the software version number it will further ensure that the circuit board you receive will return instrument performance to what it was before the failure occurred.

The following paragraphs and Table 6–8 are intended to assist in ordering the exact circuit board replacement. Note that this information is important whether you are ordering a circuit board from the Moduleexchange Center or as a new replacement part from Tektronix.

Table 6–8: WFM 601 Replacement Circuit Boards

Circuit Board Assembly Number	Assembly Name	First Seven Digits of the Part Number	Part Number Suffix
A1	Power Supply	67X-XXXX-	XX
A2	Front Panel	67X-XXXX-	XX
A3	Main	67X-XXXX-	XX
A4	Input and A4A1 BNC	67X-XXXX	XX
A5	Deserialzer	67X-XXXX	XX
A6	Coprocessor	67X-XXXX	XX
A7	Component	67X-XXXX	XX
A8	Digital-to-Analog Converter	67X-XXXX	XX

Circuit Board Assembly Number. This is the number used in the Replaceable Electrical Parts list, Circuit Board Illustrations, and on the schematic diagrams to identify the assembly.

Assembly Name. The actual name applied to the circuit board. It will usually be related to the function of the assembly.

First Seven Digits of the Part Number. These digits make up the general part number. They are often the same for several members of the same instrument family. Always look up this number in the parts list. Be sure that it is for the serial number of your instrument. See the Replaceable Electrical Parts list Serial Number/Assembly Effective/Discontinued column for the range in which your instrument serial number falls.

Part Number Suffix. This portion of the part number often varies between members of the same family to denote various types or because the circuit board contains factory-modified circuitry. Always look up this number in the parts list. Be sure that it is for the serial number of your instrument. See the Replaceable Electrical Parts list Serial Number/Assembly Effective/Discontinued column for the range in which your instrument serial number falls.

Having the four pieces of information from Table 6–8 plus the instrument type, serial number, and software version number (if known) ensures that you will receive the module required to return the instrument to complete operation.

Factory Replacement Parts

Replacement parts are available through the local Tektronix field office or representative. However, many common electronic parts are available through local sources. Using a local source, where possible, will eliminate shipping delays.

Changes to Tektronix instruments are sometimes made to accommodate improved components, as they become available, and to improve circuit performance. Therefore, it is important to include the following information when ordering parts:

1. Part Number.
2. Instrument Type or Number.
3. Serial Number.
4. Modification or Option Number (if applicable).

If a part has been replaced with a new or improved part, the new part will be shipped, if it is a direct replacement. If not directly replaceable the local Tektronix field office or representative will contact the customer concerning any changes. After any repair, circuit readjustment may be required.

Etched Circuit Boards

The instrument consists of etched circuit boards. All of the circuit boards are designated as assemblies. Each assembly has an alphanumeric designation (A1 through A8). These assemblies are listed at the beginning of the Replaceable Electrical Parts list of this manual.

NOTE. A 2% RMA flux content solder is recommended for making repairs in this instrument. Cleaning of rosin residue is not recommended. Most cleaning solvents tend to reactivate the rosin and spread it under components where it may cause corrosion under humid conditions. The rosin residue, if left alone, does not exhibit these corrosive properties.

Figure 6-2 shows the locations of all circuit board assemblies for the WFM601 Serial Digital Component Monitor.

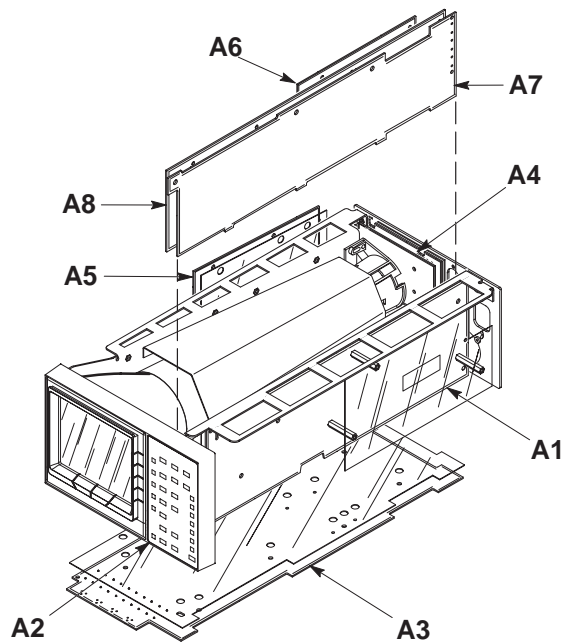


Figure 6-2: Instrument Etched Circuit Board Assemblies

Major Assembly Interconnection

Signals and power supply voltages are passed through the instrument with a system of interconnecting cables. The connector holders, on these cables, have numbers that identify terminal connectors; numerals are used from pin 2 up. A triangular key symbol is used to identify pin 1 on the circuit board to assist in aligning connector with correct square pins. Figure 6-3 shows the numbering scheme (and the triangular marking) on the etched circuit board.

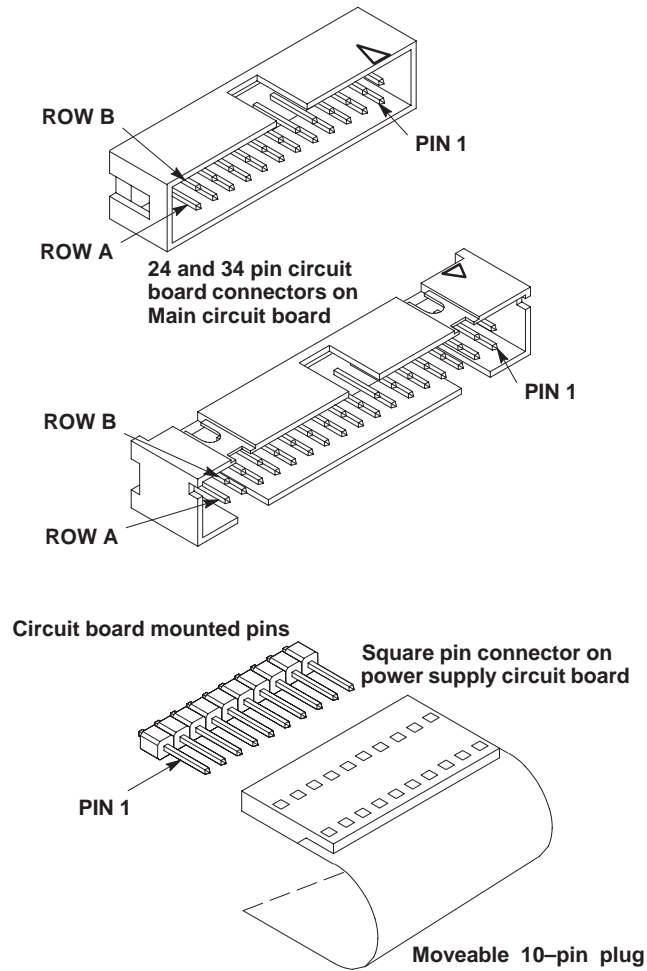


Figure 6-3: Multiple Pin Connectors

Mechanical Disassembly/Assembly

The instructions contained here are for disassembly. Reassembly is performed by reversing the order of the steps used to disassemble the instrument.



WARNING. Before attempting any disassembly of the instrument be sure to disconnect the power cord and wait until DS7 on the Power Supply circuit board (A1) extinguishes.



CAUTION. Do not reinsert screws in the rear panel when the instrument is removed from the cabinet.

Bezel Removal

1. Remove the five knobs located below the CRT, using a $\frac{1}{16}$ -inch Allen wrench. See Figure 6-4.

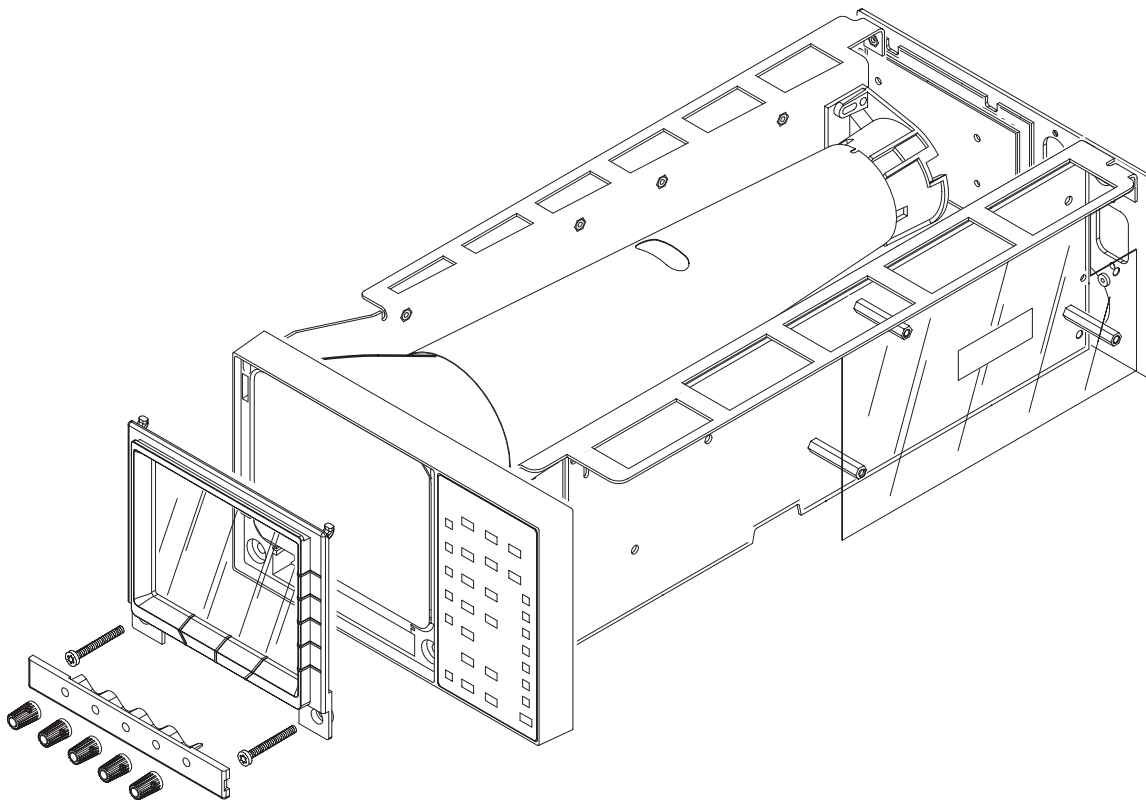


Figure 6-4: CRT Bezel Removal

2. Use the screwdriver tip to push out on the inside of the center of the small panel located immediately below the CRT. This exposes the two bezel mounting screws.

NOTE. All screws, unless otherwise noted, are TORX screws and can be removed with a T15 screwdriver tip (Tektronix part number 003-0966-00). The exception is #2 Pozidrive screws which can be removed with a #1 Pozidrive tip (Tektronix part number 003-0443-00).

3. Remove the two bezel screws.
4. Grasping the bottom of the bezel, pull straight out and upward. There are two hinges at the top of the bezel that hold it in place; once the bezel is at an approximate 45° angle with the front panel they will disengage.
5. To replace, reverse the procedure, pushing in on the small panel instead of out.

Graticule Light Removal and Replacement

For graticule light removal and replacement, tweezers with curved, serrated tips are recommended. For example, Miltex PL312, 6-100 (equivalent to PL312) or PL317 (longer than PL312).

Replacement bulbs are supplied with this instrument as Standard Accessories. Additional bulbs can be purchased from Tektronix (see Replaceable Electrical Parts list) or from local electronics distribution sources.



CAUTION. Needle-nosed pliers are not recommended for bulb replacement.

Procedure

1. Remove the bezel according to the preceding instructions.
2. To remove a bulb, position the tweezer tips or grasp the thin, flat portion of the bulb (close to the plastic socket). Carefully pull the bulb straight out. See Figure 6-5.

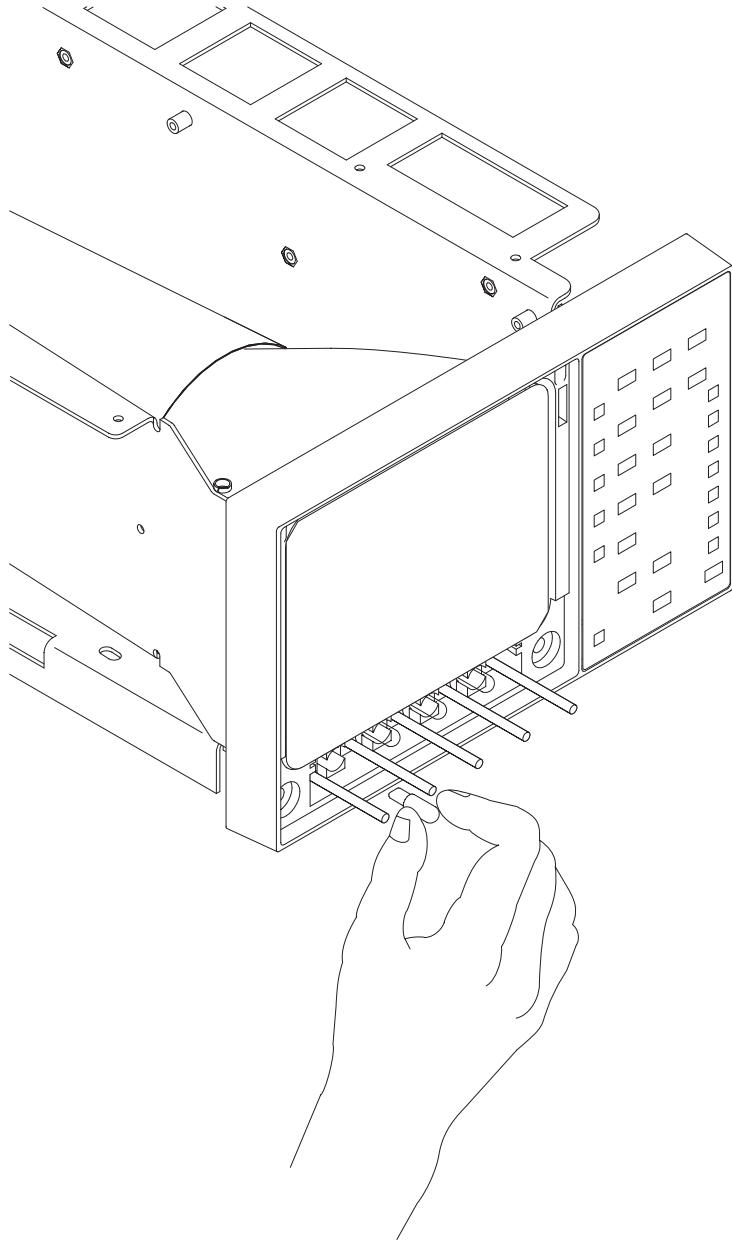


Figure 6-5: Replacing Graticule Light Bulbs

- 3.** To install a bulb, hold it with the tweezers or fingers as described in step two, position it in front of the socket, and push the bulb until it snaps into place.
- 4.** Replace the bezel.

CRT Removal

1. Remove the bezel.



WARNING. *The CRT may retain a dangerous charge. Ground the conductor of the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.*

2. Disconnect the anode, by separating the connector. Do not touch the exposed tip of the connector. Discharge the connector tip to the chassis. See Figure 6-6.

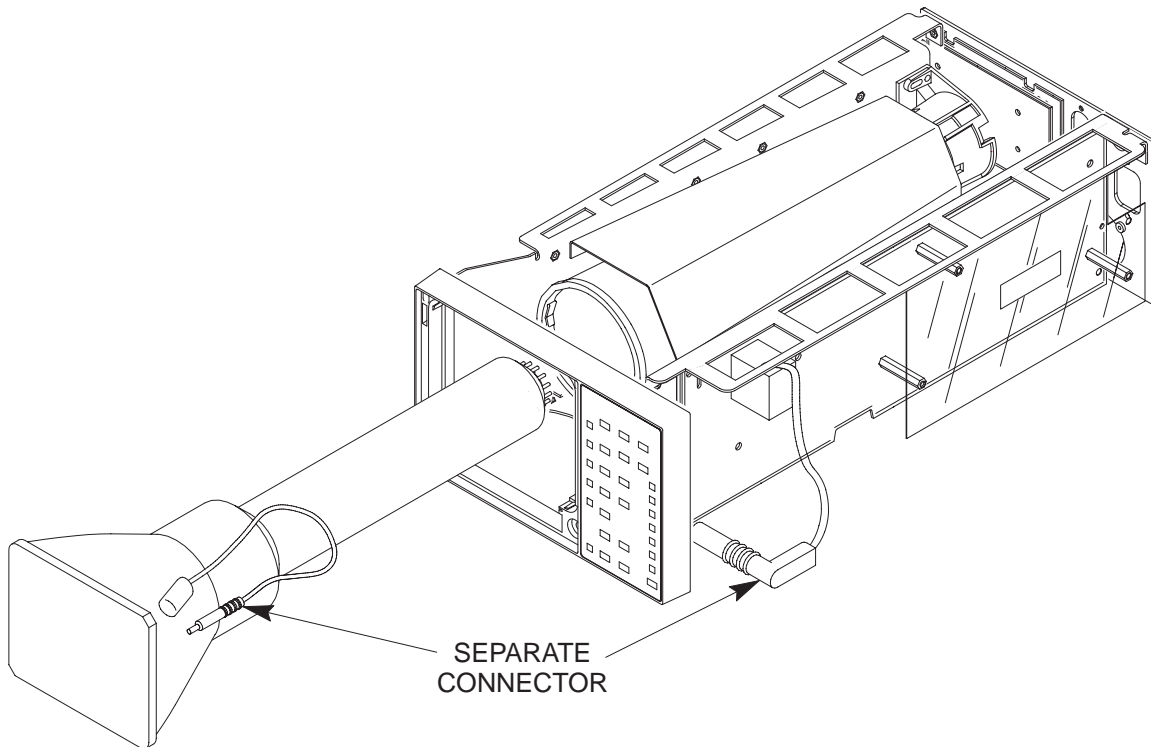


Figure 6-6: Removing the CRT

3. Disconnect the plug from A3J3 (trace rotation connector) on the Main board and push the connector through the hole in the board.



WARNING. *The CRT is a high vacuum device and must be handled with care. Safety glasses, gloves, and protective clothing should always be worn when handling CRTs.*

Replacement of the CRT

4. Hold one hand in front of the CRT. Grasp the CRT just behind the anode cap and push the CRT straight out (some pressure is needed).
1. Reposition the metal CRT shield on the CRT base mounting.
2. Remove the clear plastic cover from the back of the CRT holder. This will make it easier to line up the connections on the CRT holder.
3. Slip the CRT part way back into position, so that the wires (and plug) from the trace rotation coil can be fed back through the hole in the Main board.
4. Slide the CRT back into the rear CRT socket. Align the socket and CRT base. The screws holding the rear mount down may be loosened slightly, if necessary. The CRT should fit securely in place.
5. Press the CRT the rest of the way in by pressing straight back on the corners of the faceplate.
6. Replace the clear rear cover on the CRT holder and screw the holder screws back down (if they were loosened).
7. Wipe off the faceplate of the CRT to remove fingerprints.
8. Reconnect the anode connector and the trace rotation (A3J3 Main board) plug. (To ensure the correct orientation of J3, the red lead is toward the front of the instrument.)
9. Replace the bezel.

Removing the Rear Panel and the Input and BNC Circuit Boards

1. Remove the nine rear screws. See Figure 6–7.

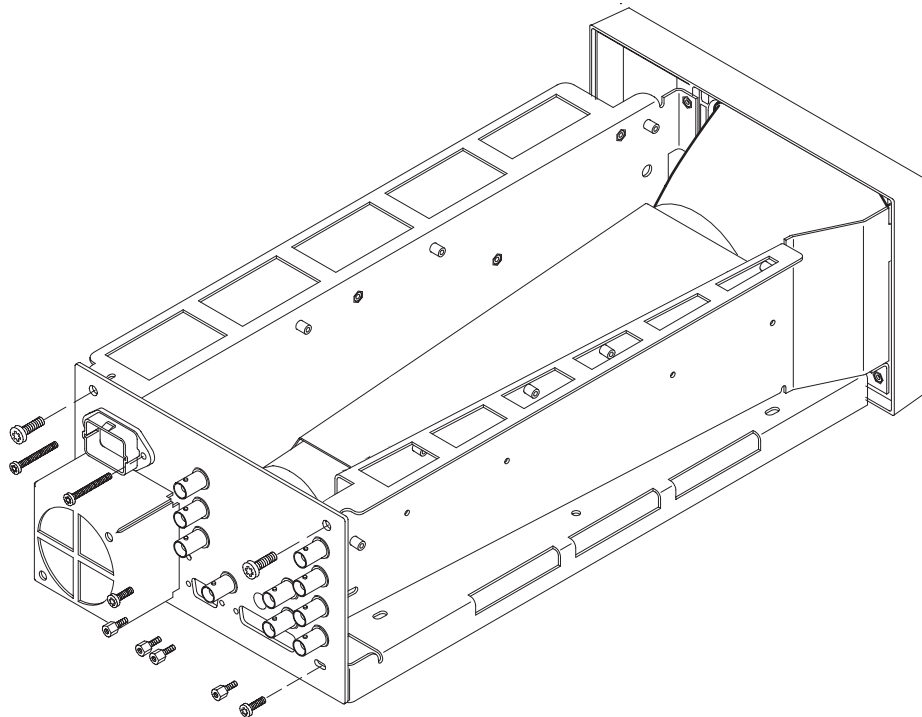


Figure 6–7: Removing the Rear Panel And Input/BNC Assembly

2. Unplug A3J13 and A3J12 on the Main circuit board.
3. Unplug A4J3 and A4J2 on the Input circuit board.
4. Unplug A7J84 on the Component circuit board.
5. Pull the rear panel free from the main chassis enough to be able to slip P12 through the notch in the chassis.
6. Unplug the fan leads, A1J5 on the Power Supply circuit board assembly, and carefully slip the fan cable free.
7. Once A3P12 is free from the chassis notch, the rear panel can be removed to gain access to the Input (A4) assembly.

To Remove Input/BNC Assembly

8. Use a $\frac{5}{16}$ -inch nut driver or box end wrench to remove the four securing screws. See Figure 6–8.

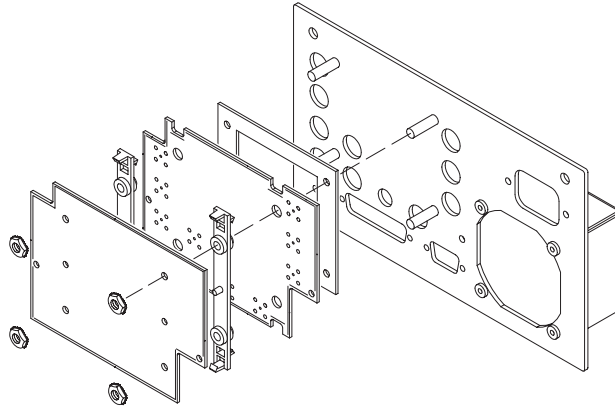


Figure 6–8: Disassembling Input/BNC Assembly A4/A4–A1



CAUTION. *The Input circuit board assembly uses surface mount components. Do not attempt to solder on this board unless you have been trained in micro soldering and have the proper tools available.*

9. To replace the rear panel and Input assembly, reverse the procedure.

Removing the Front Panel and the Front Panel Circuit Board

1. Remove the blue multiwire connector from A3J1.
2. Push down on the clip located on the top of the front-panel assembly and push outward on the upper part of the assembly. See Figure 6–9.

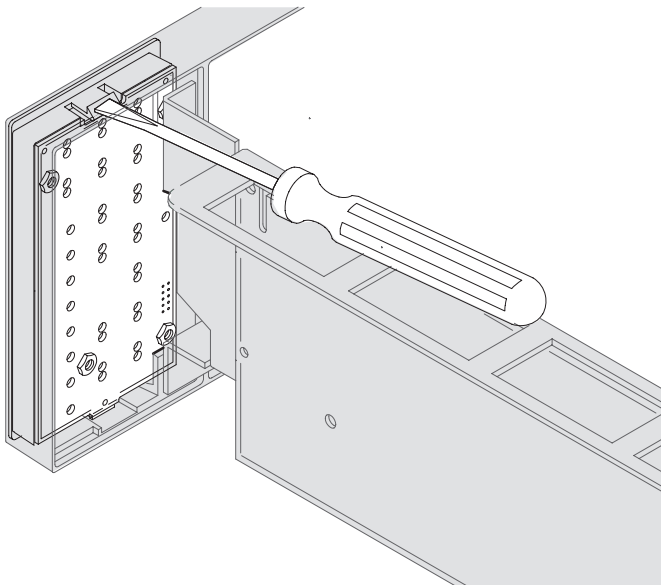


Figure 6-9: Removing the Front-panel Assembly

3. Remove the board by slipping it through the front-panel opening.
4. To access the Front Panel board components:
 - a. Use a $\frac{1}{4}$ inch nut driver or box end wrench to remove the four nuts holding the assembly together. See Figure 6–10.

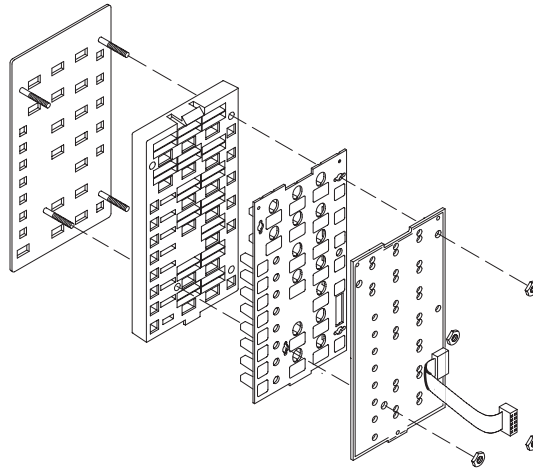


Figure 6-10: Front Panel Circuit Board Assembly

- b. The board should now separate from the front panel, spacer, and the keypad.
5. To re-assemble, reverse the procedure.

Removing the Main Board

1. Remove the plugs from the connectors as shown in Table 6-9.

Table 6-9: Main Board Plug Connections

Plug Number	Location	From
A3P1	Main Circuit Board	Front Panel Circuit Board
A3P2	Main Circuit Board	Component Circuit Board
A3P3	Main Circuit Board	Trace Rotation Coil (CRT)
A3P5	Main Circuit Board	Component Circuit Board
A3P9	Main Circuit Board	Deserializer Circuit Board
A3P12	Main Circuit Board	Input Circuit Board
A3P13	Main Circuit Board	Component Circuit Board
A1P4	Power Supply Circuit Board	Main Circuit Board

2. Use a $\frac{1}{16}$ -inch Allen wrench to remove the five front-panel knobs immediately below the CRT. Remove the small panel from immediately below the CRT bezel. See Bezel removal instructions.

3. Unsolder the four (red, green, blue, and brown) CRT deflection leads.
4. Slip the CRT and trace rotation leads through the appropriate holes in the Main board.
5. Use a $\frac{3}{16}$ -inch nut driver or box end wrench to remove the mounting studs for the rear-panel RS232 and REMOTE connectors.
6. Remove the eight screws that are holding the board in place. See Figure 6-11 for their locations.

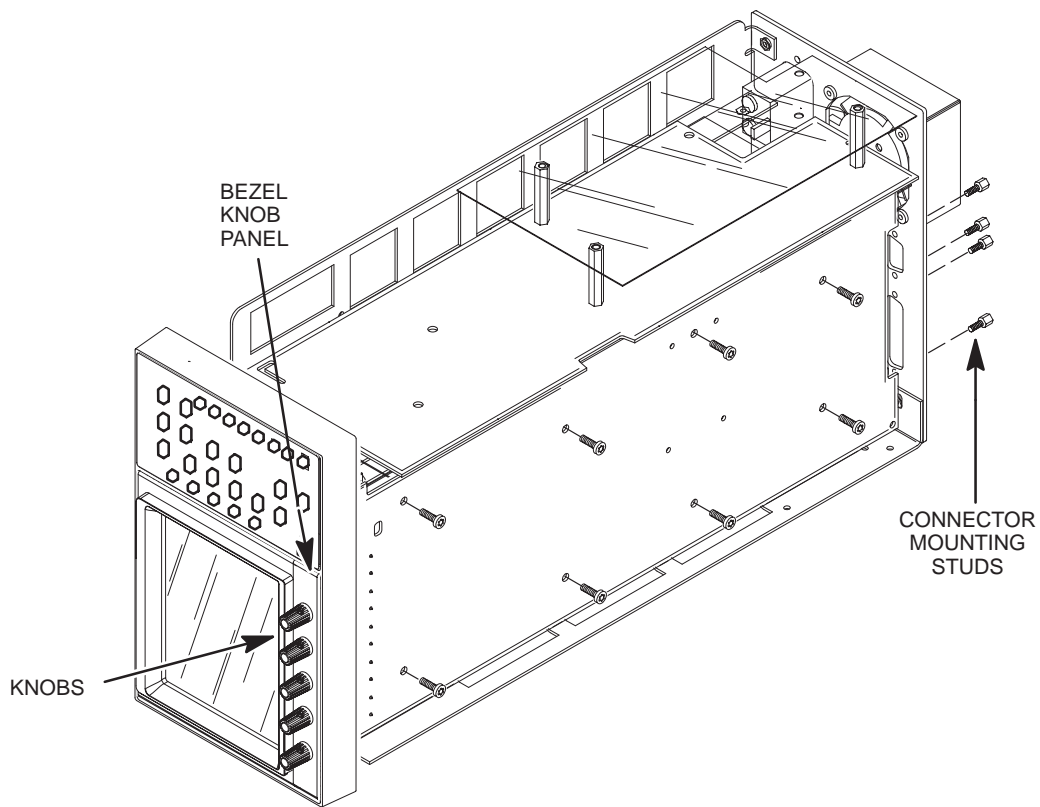


Figure 6-11: Screws Holding the Main Circuit Board in Place

7. Slide the Main circuit board as far forward as space allows to remove the REMOTE and RS232 connectors from the rear panel.
8. Remove the board by sliding it slightly upward and toward the rear panel until the control shafts on the front of the board clear the front, then lift out.
9. To replace the Main board, lay the board flat and slide it back into place.
10. To complete the replacement of the board, reverse the rest of the steps.

Removing the Power Supply Board



1. Be sure that the instrument is unplugged from the mains and that DS7 on the Power Supply is extinguished.

WARNING. Circuitry beneath the plastic shield is at line potential. Do not remove this shield when instrument is plugged into the mains source. DS7 can be used as an indicator. If it is lighted or flashing, dangerous potentials exist beneath the plastic shield.

2. Remove the plug from A1J4 on the Power Supply board, This is the connection to the Main board.
3. Disconnect the CRT anode connection at its disconnect point and discharge it to ground. See Figure 6–12.

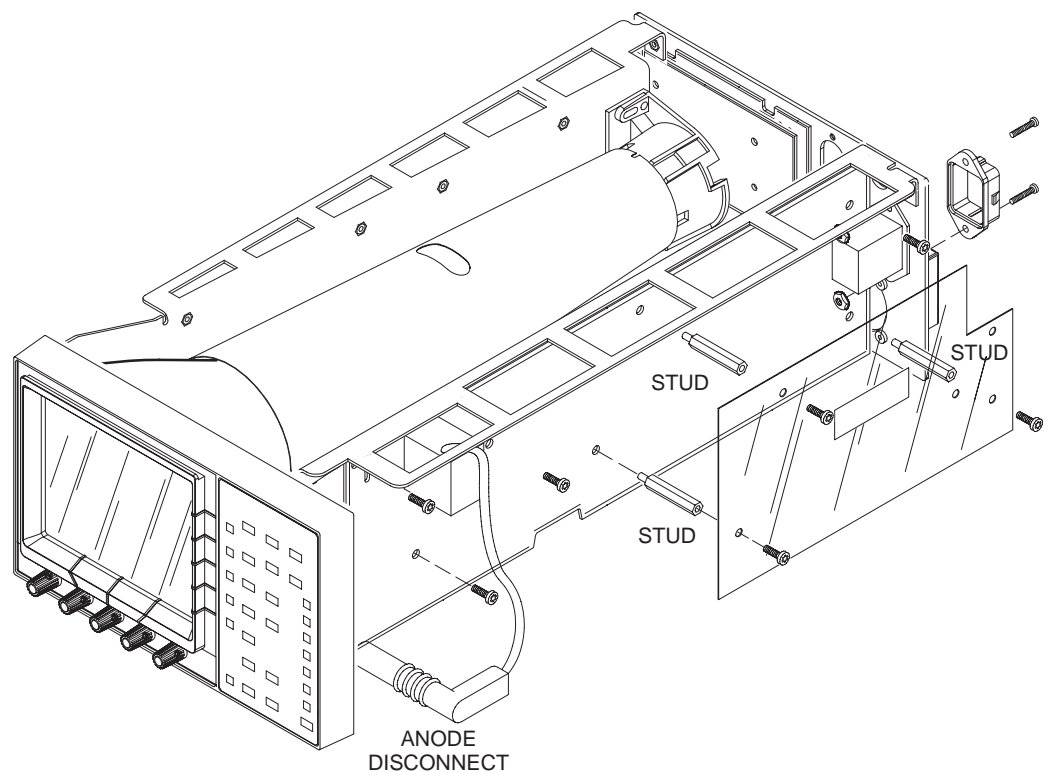


Figure 6–12: Securing Screws for the Power Supply Circuit Board



WARNING. The CRT may retain a dangerous charge. Ground the conductor of the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.

4. Unplug A1J1, A1J2, and A1J5 on the Power Supply board.
5. Remove the four screws that hold the Power Supply board down, and the three screws that hold the plastic shield in place. See Figure 6–12.
6. Use a 1/4-inch nut driver or box end wrench to remove the 3 studs that support the plastic shield.
7. Remove the board by sliding it forward and lifting it up.
8. To replace the board, reverse this procedure.

Removing the Deserializer Board

1. Unplug the cable to A3J9 (Main circuit board) and feed the cable and plug through the chassis.
2. Unplug the cable from A5J5.
3. Unplug the cable from A5J8.
4. Unplug the cable from the Input board A4J1.
5. Unplug the cable from A5J1.
6. Remove the screws holding the circuit board in place. See Figure 6–13.

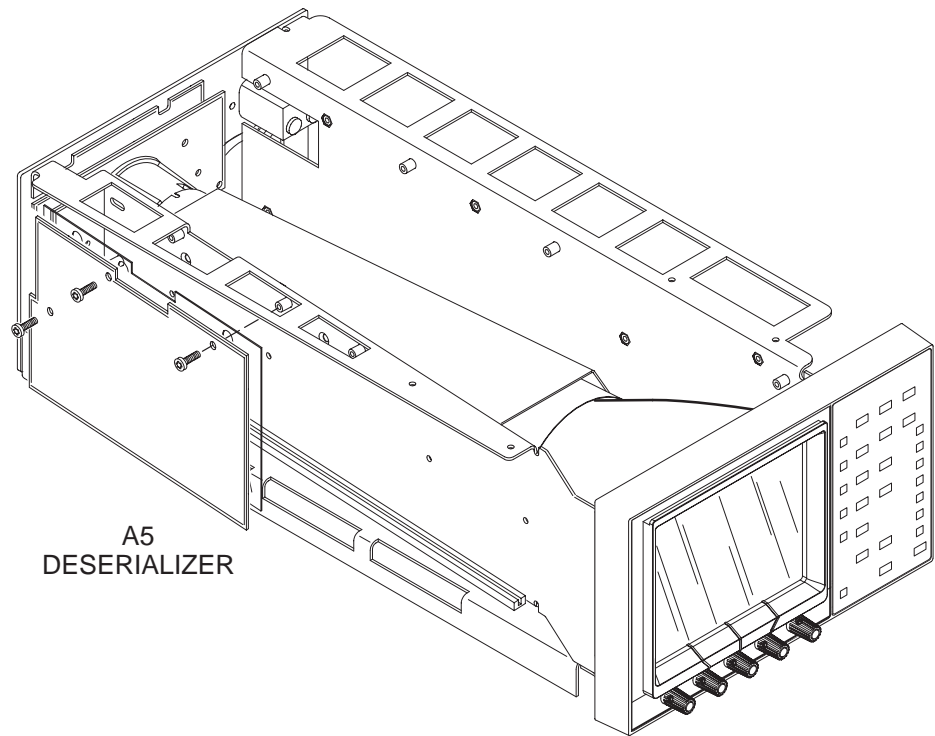


Figure 6–13: Securing Screws for the Deserializer Board

7. Remove the circuit board.
8. To reinstall the circuit board reverse the procedure.

Removing the Coprocessor, Component, and DAC Boards

1. Unplug the cable to A4J5 (Input circuit board).
2. Use a pair of long nose pliers to loosen and remove the plugs from A7J9, A7J14, A7J12, and A7J13. See Figure 6–14.

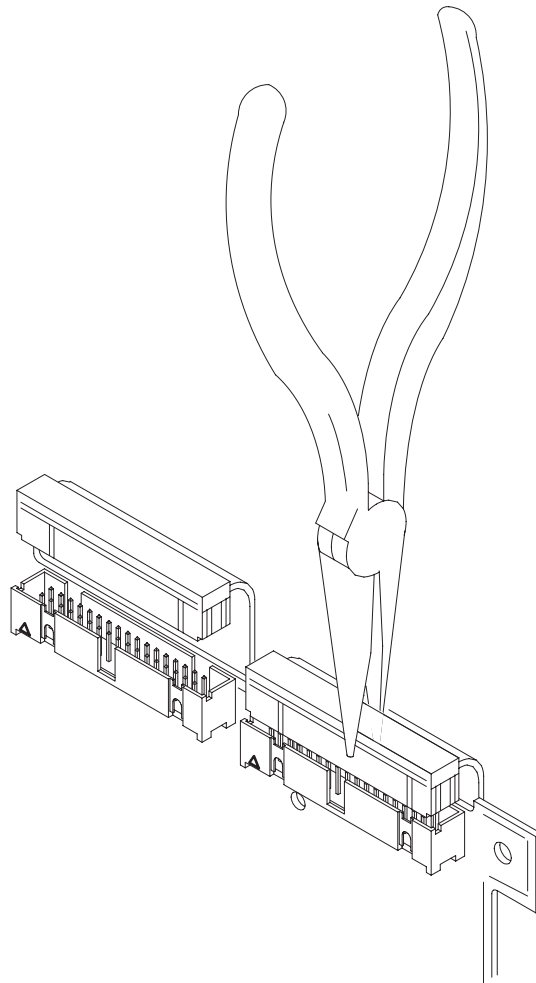


Figure 6–14: Pulling the Plugs from the Component Board Jacks

3. Remove the four screws that hold the Component board (and Coprocessor, and Digital-to-Analog Converter [DAC] boards) See Figure 6–15.

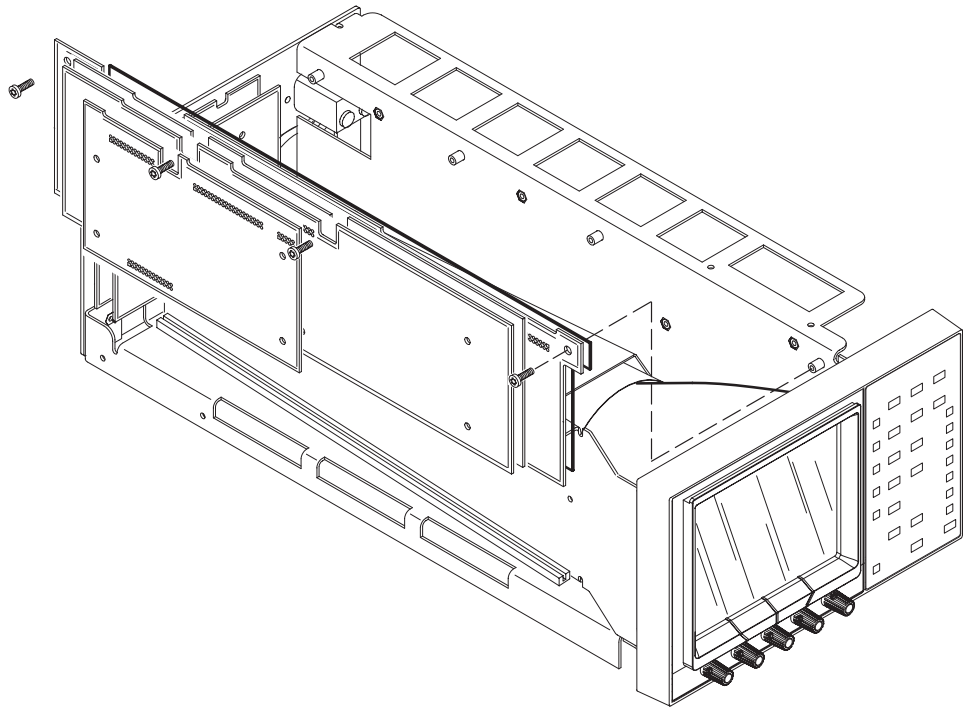


Figure 6-15: Securing the Component, Coprocessor, and DAC Board

4. Pull out the three circuit-board module.
5. Separate the Component, Coprocessor, and Digital-to-Analog (DAC) circuit boards:
 - a. Remove the plugs from A8J11, A6J1, A6J2, A6J7, and A6J8. See Figure 6-14.
 - b. Use a $\frac{5}{16}$ -inch nut driver or box end wrench to remove the four nuts securing the Coprocessor board to the Component and DAC circuit boards. See Figure 6-16.

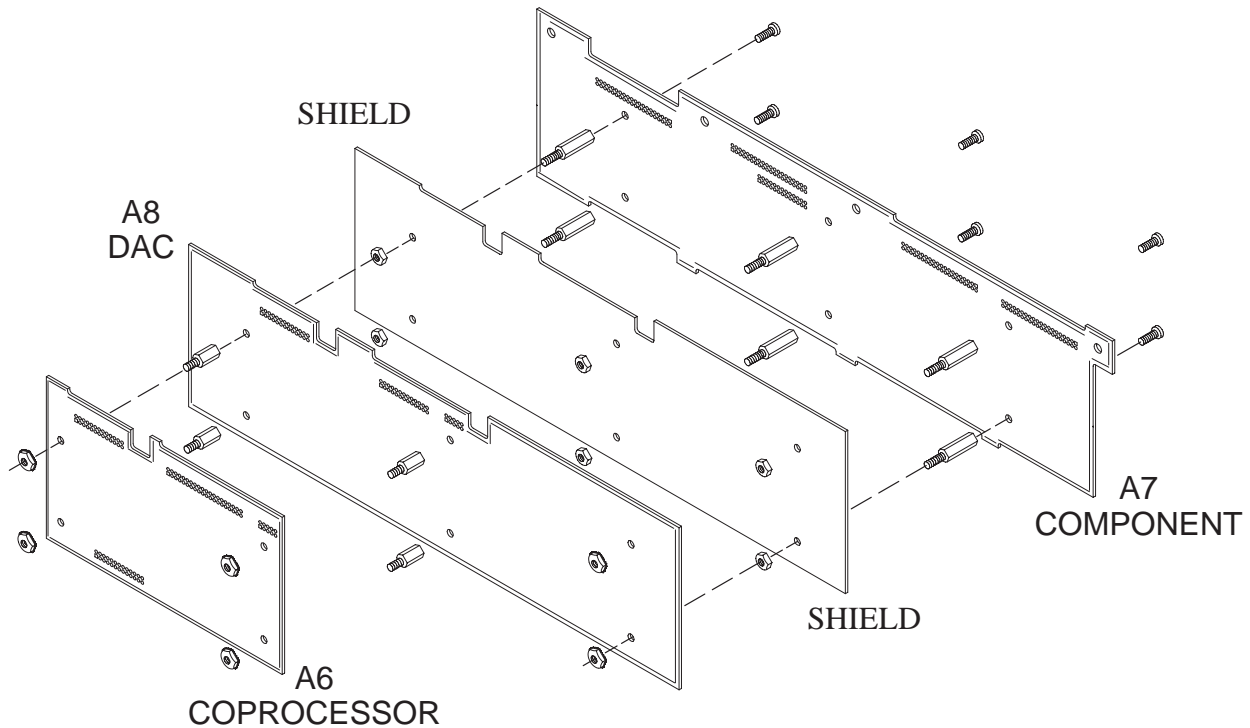


Figure 6-16: Separating the Component, Coprocessor, and DAC Boards

- c. Remove the plug from A8J10.
 - d. Use a $\frac{5}{16}$ -inch nut driver or box end wrench to remove the four stand offs and two nuts securing the DAC circuit board.
 - e. Use a $\frac{5}{16}$ -inch nut driver or box end wrench to remove the six nuts securing the shield to the Component circuit board.
 - f. To reassemble reverse the procedure by performing steps e. through a. in reverse order, substituting replace for remove.
6. To reinstall the circuit boards reverse steps 4 through 1.

Repackaging

Identification Tag

If the instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag to the instrument showing:

1. Owner (with complete address) and the name of the person at your firm that can be contacted.
2. Instrument serial number and a description of the service required.

Repackaging for Shipment

Repackage the instrument in the original manner to provide adequate protection (see Figure 6–17). If the original packaging is not available or is unfit for use, repackage the instrument as follows:

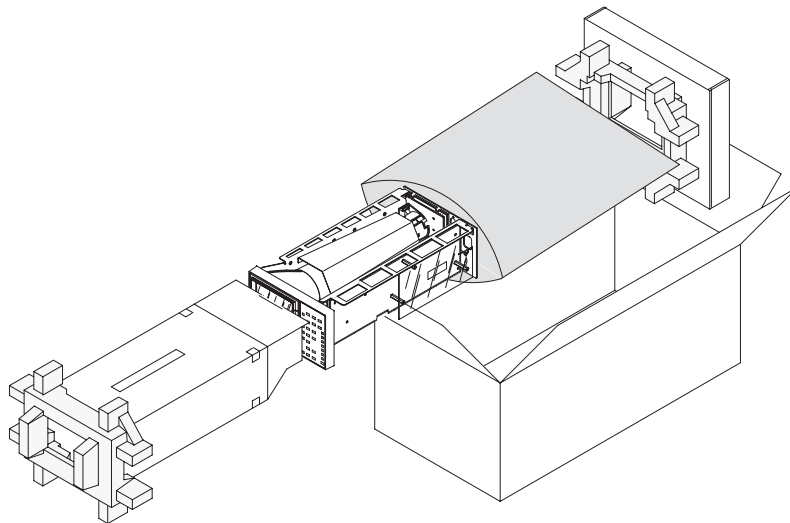


Figure 6–17: Repackaging a WFM 601 Serial Component Monitor

1. Obtain a corrugated cardboard carton whose inside dimensions are at least six inches greater than the dimensions of the instrument to allow room for cushioning. The shipping carton should have a test strength of at least 275 pounds.

2. Surround the instrument with polyethylene sheeting to protect the finish.
3. Cushion the instrument on all sides by tightly packing dunnage or urethane foam between the carton and the instrument. Allow three inches on all sides for cushioning.
4. Seal the carton with shipping tape or an industrial stapler.

Options

Orderable Options

All three instruments of this series are orderable with an A option to accommodate the various national electrical power connections. A number of field upgrade kits, to add cabinets, are available also. See “Cabinets” for more information.

Applicable Options

Options and Field Upgrades for this instrument include:

- Option A1 through A5 (Power Cords)
- 1700F00 Cabinet
- 1700F02 Portable Cabinet
- 1700F05 19-inch rack adapter
- 1700F06 Blank Panel for use with 1700F05
- 1700F07 Utility Drawer for use with 1700F05

Power Cord Options

Any of the following power cord options can be ordered for the WFM601. If no power cord option is ordered, instruments are shipped with a North American 125 V power cord.

Table 7-1: Power Plugs Available for These Instruments

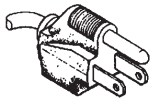
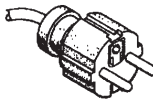
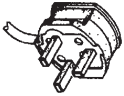

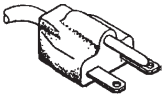
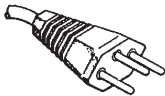
Power Plug	Description
	Standard 120 V 3-prong power plug, on a 2.5 meter long power cord, for use with common ground systems in North America.
	Option A1 Universal Europe 220 V/16 A Locking Power Plug, on a 2.5 meter long power cord.

Table 7-1: Power Plugs Available for These Instruments (Cont.)

Power Plug	Description
	Option A2 United Kingdom 240 V/15 A Power Plug, on a 2.5 meter long power cord.
	Option A3 Australian 240 V/10 A Power Plug, on a 2.5 meter long power cord.
	Option A4 North American 250 V/18 A Power Plug, on a 2.5 meter long power cord.
	Option A5 Swiss 240 V/6 A Power Plug, on a 2.5 meter long power cord.

Unless otherwise specified, power cords for use in North America are UL listed and CSA certified. Cords for use in areas other than North America are approved by at least one test house acceptable in the country to which the product is shipped. Power cord part numbers are shown on the “Accessories” pull-out.

Cabinets

All of the Safety and EMI tests used to qualify the WFM601 were performed in a cabinet. There are two optional cabinets and a dual rack adapter available for the installation of these instruments. Only a brief description is provided here; for more information contact a Tektronix field office or distributor.

Plain Cabinet (1700F00)

This is a plain, silver-gray cabinet that is designed for permanent mounting. See Figure 7-1. The pattern of ventilating holes in top, bottom, and sides provides adequate air circulation for any heat generated within the instrument. When being permanently mounted, care must be taken to allow the free circulation of

air to and from these ventilating holes. A dimensional drawing of this cabinet, that can be used as an installation guide is located in “Installation.”

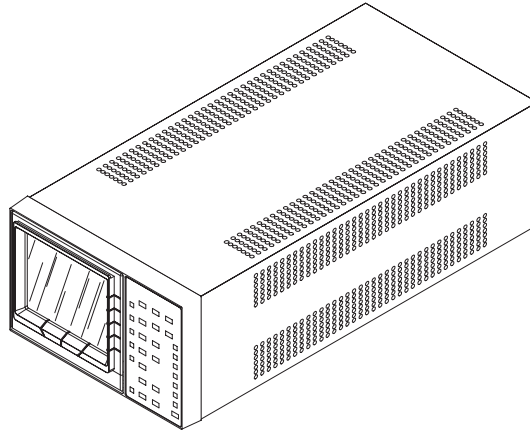


Figure 7-1: The 1700F00 Metal Cabinet

Carrying Case (1700F02)

This is a gray, metal cabinet, with feet, front elevating bail, and carrying handle designed for portable applications. See Figure 7-2.

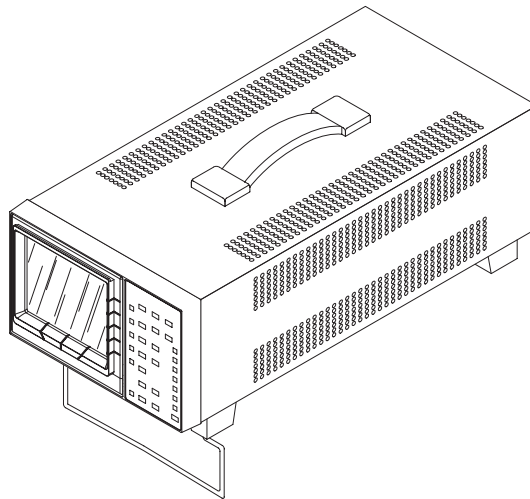


Figure 7-2: The 1700F02 Portable Carrying Case

Side-by-Side Rack Adapter (1700F05)

This is a 19-inch, rack mounting adapter that accepts two 1700-Series instruments in a side-by-side configuration. See Figure 7-3. These instrument cabinets are 1700F00 that are connected together for this installation.

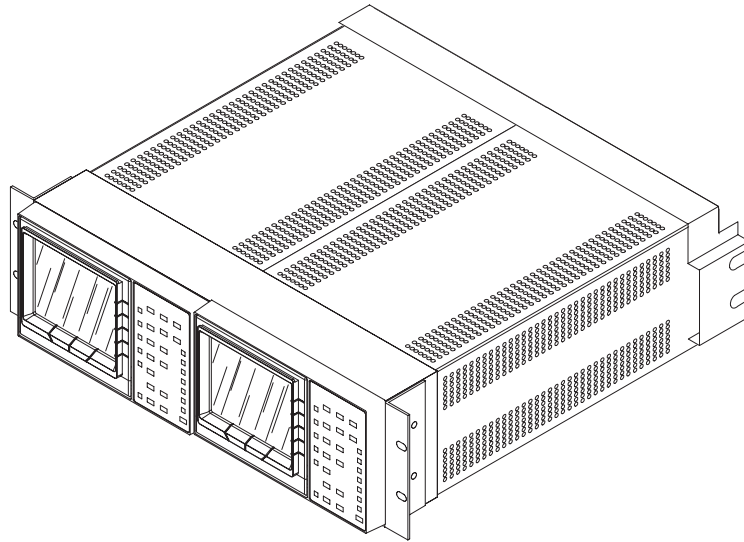


Figure 7-3: A 1700F05 with Two Half-rack instruments

Blank Panel (1700F06)

If only one 1700-Series instrument is to be installed in the Side-by-Side Rack Adapter, a blank panel (1700F06) can be installed for air flow protection and appearance. See Figure 7-4.

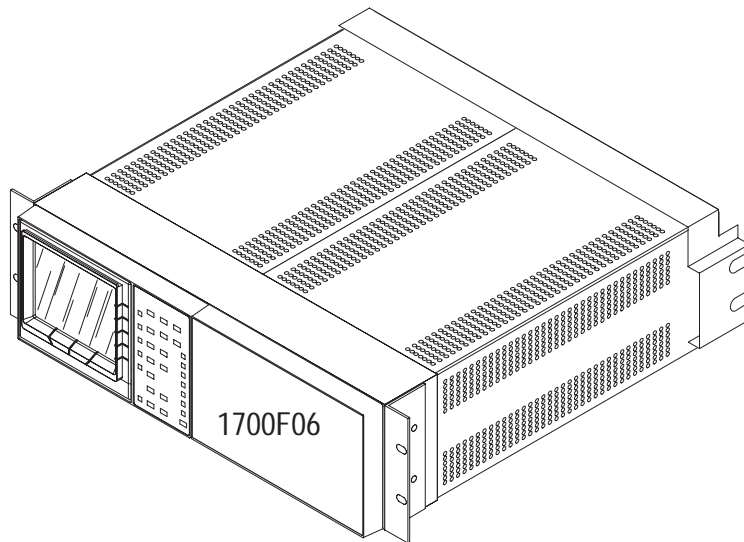


Figure 7-4: A 1700F05 with a Blank Front Panel (1700F06)

Utility Drawer (1700F07)

When only one side of a dual rack adapter is used, an alternate to the blank panel is the 1700F07 utility drawer. See Figure 7-5. This drawer provides over $\frac{1}{3}$ -cubic foot of accessory storage. The drawer kit includes a permanently mounted tray.

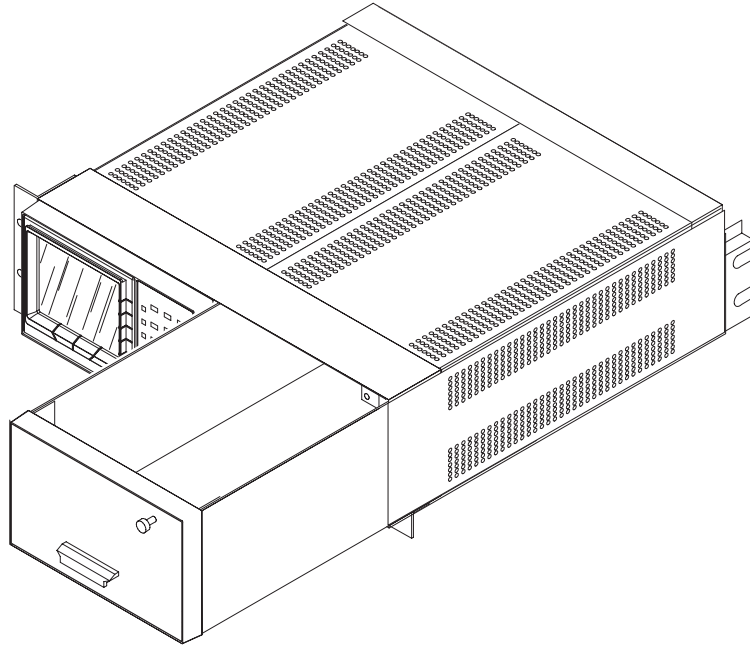


Figure 7-5: 1700F05 Rack Mounting with a 1700F07 Utility Drawer

Ordering

Any of these items can be ordered with the WFM601 Serial Component Monitor. In addition, these items are available, along with accessory items listed in this manual, from your nearest Tektronix field office or distributor. Be sure to include both the name and number of any Field Upgrade Kits ordered.



Replaceable Electrical Parts

This section contains a list of the components that are replaceable for the WFM 601. Use this list to identify and order replacement parts. There is a separate Replaceable Electrical Parts list for each instrument.

Parts Ordering Information

Replacement parts are available from or through your local Tektronix, Inc., Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest circuit improvements. Therefore, when ordering parts, it is important to include the following information in your order.

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc., Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

Using the Replaceable Electrical Parts List

The tabular information in the Replaceable Electrical Parts list is arranged for quick retrieval. Understanding the structure and features of the list will help you find all of the information you need for ordering replaceable parts.

Cross Index–Mfr. Code Number to Manufacturer

The Mfg. Code Number to Manufacturer Cross Index for the electrical parts list is located immediately after this page. The cross index provides codes, names, and addresses of manufacturers of components listed in the electrical parts list.

Abbreviations

Abbreviations conform to American National Standards Institute (ANSI) standard Y1.1.

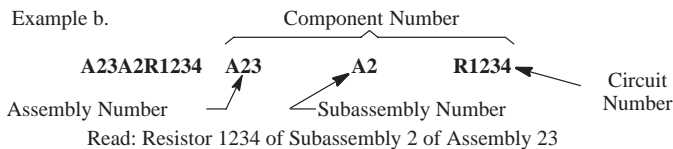
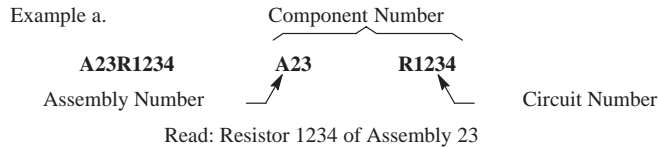
List of Assemblies

A list of assemblies can be found at the beginning of the electrical parts list. The assemblies are listed in numerical order. When the complete component number of a part is known, this list will identify the assembly in which the part is located.

Column Descriptions

Component No. (Column 1)

The component circuit number appears on the diagrams and circuit board illustrations, located in the diagrams section. Assembly numbers are also marked on each diagram and circuit board illustration, in the Diagram section and on the mechanical exploded views, in the mechanical parts list. The component number is obtained by adding the assembly number prefix to the circuit number.



The electrical parts list is arranged by assemblies in numerical sequence (A1, with its subassemblies and parts, precedes A2, with its subassemblies and parts).

Mechanical subparts to the circuit boards are listed in the electrical parts list. These mechanical subparts are listed with their associated electrical part (for example, fuse holder follows fuse).

Chassis-mounted parts and cable assemblies have no assembly number prefix and are located at the end of the electrical parts list.

Tektronix Part No. (Column 2)

Indicates part number to be used when ordering replacement part from Tektronix.

Serial/Assembly No. (Column 3 and 4)

Column three (3) indicates the serial or assembly number at which the part was first used. Column four (4) indicates the serial or assembly number at which the part was removed. No serial or assembly number entered indicates part is good for all serial numbers.

Name and Description (Column 5)

An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.

The mechanical subparts are shown as *ATTACHED PARTS* / *END ATTACHED PARTS* or *MOUNTING PARTS* / *END MOUNTING PARTS* in column five (5).

Mfr. Code (Column 6)

Indicates the code number of the actual manufacturer of the part. (Code to name and address cross reference can be found immediately after this page.)

Mfr. Part No. (Column 7)

Indicates actual manufacturer's part number.

Cross Index – Mfr. Code Number To Manufacturer

Mfr. Code.	Manufacturer	Address	City, State, Zip Code
S4246	JAPAN SERVO CO LTD	7 KANDA MITOSHIRO-CHO CHIYODA-KU	TOKYO JAPAN
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609-3320
TK0509	H V C INC	600 S MILWAUKEE STREET	FREDONIA WI 53021
TK0515	EVOX-RIFA INC	100 TRI-STATE INTERNATIONAL SUITE 290	LINCOLNSHIRE IL 60015
TK0860	LABEL GRAPHICS	6700 SW BRADBURY CT	PORTLAND OR 97224
TK0891	MICONICS	1 FAIRCHILD AVE	PLAINVIEW NY 11803
TK1146	MITSUBISHI ELECTRONICS	1050 E ARQUES AVENUE	SUNNYVALE CA 94086
TK1386	PYRAMID ELECTRONICS SUPPLY INC	9757 JUANITA DRIVE NE	KIRKLAND WA 98034
TK1462	YAMAICHI ELECTRONICS CO LTD 2ND FLOOR NEW KYOEI BLDG 17-11	3-CHROME SHIBAURA MINATO-KU	TOKYO JAPAN
TK1727	PHILIPS NEDERLAND BV AFD ELONCO	POSTBUS 90050	5600 PB EINDHOVEN THE NETHERLANDS
TK1743	UNITRODE (UK) LTD	6 CRESSWELL PARK BLACKHEATH	LONDON SE 3 9RD ENGLAND
TK1913	WIMA THE INTER-TECHNICAL GROUP IND	2269 SAW MILL RIVER ROAD PO BOX 127	ELMSFORD NY 10523
TK2058	TDK CORPORATION OF AMERICA	2055 GATEWAY PLACE SUITE 200	SAN JOSE CA 95110
TK2073	TOKYO AMERICA INC	565 W GULF ROAD	ARLINGTON HEIGHTS IL 60005
TK2096	KELVIN ASSOCIATES	14724 VENTURA BLVD SUITE 1003	SHERMAN OAKS CA 91403-3501
TK2441	INTERNATIONAL MICROELECTRONICS PROD- UCTS INC	2830 NORTH 1ST STREET	SAN JOSE CA 95134-5134
TK2469	UNITREK CORPORATION	3000 LEWIS & CLARK WAY SUITE #2	VANCOUVER WA 98601
TK2540	SONY CORPORATION OF AMERICA COMPONENT PRODUCTS DIVISION SEMICONDUCTOR DIVISION	10833 VALLEY VIEW STREET	CYPRESS CA 90630-0016
0B0A9	DALLAS SEMICONDUCTOR CORP	4350 BELTWOOD PKWY SOUTH	DALLAS TX 75244
0GV52	SCHAFFNER EMC INC	9-B FADEM ROAD	SPRINGFIELD, NJ 07081
0GZV8	HUBER AND SUHNER INC	ONE ALLEN MARTIN DRIVE	EXXEX VT 05451
0H1N5	MARCON AMERICA CORP	998 FIRST EDGE DRIVE	VERNON HILLS IL 60061
0JR03	ZMAN MAGNETICS INC	7633 S 180th	KENT WA 98032
0JR04	TOSHIBA AMERICA INC ELECTRONICS COMPONENTS DIV	9775 TOLEDO WAY	IRVINE CA 92718
0J260	COMTEK MANUFACTURING OF OREGON (METALS)	PO BOX 4200	BEAVERTON OR 97076-4200
0J9R2	HARISON ELECTRIC CO LTD	ASAHIMACHI 5-CHOME IMABARI	EHIME JAPAN
0MS63	QUALITY TECHNOLOGIES CORP	610 N MARY AVENUE	SUNNYVALE CA 94086
00779	AMP INC	2800 FULLING MILL PO BOX 3608	HARRISBURG PA 17105
01295	TEXAS INSTRUMENTS INC SEMICONDUCTOR GROUP	13500 N CENTRAL EXPY PO BOX 655303	DALLAS TX 75262-5303
02113	COILCRAFT INC	1102 SILVER LAKE RD	CARY IL 60013-1658

Replaceable Electrical Parts

Mfr. Code.	Manufacturer	Address	City, State, Zip Code
04222	AVX CERS DIV OF AVX CORP	19TH AVE SOUTH P O BOX 867	MYRTLE BEACH SC 29577
04713	MOTOROLA INC SEMICONDUCTOR PRODUCTS SECTOR	5005 E MCDOWELL RD	PHOENIX AZ 85008-4229
05292	ITT COMPONENTS DIV		CLIFTON NJ
05828	GENERAL INSTRUMENT CORP GOVERNMENT SYSTEMS DIV	600 W JOHN ST	HICKSVILLE NY 11802
09023	CORNELL-DUBILIER ELECTRONICS DIV FEDERAL PACIFIC ELECTRIC CO	2652 DALRYMPLE ST	SANFORD NC 27330
09969	DALE ELECTRONICS INC	EAST HIGHWAY 50 P O BOX 180	YANKTON SD 57078
1CH66	PHILIPS SEMICONDUCTORS	811 E ARQUES AVENUE PO BOX 3409	SUNNYVALE CA 94088-3409
1ES66	MAXIM INTEGRATED PRODUCTS INC	120 SAN GABRIEL DRIVE	SUNNYVALE CA 94086
1W344	UNITED CHEMI-CON INC	9801 W HIGGINS SUITE 430	ROSEMONT IL 60018-4704
11236	CTS CORPORATION RES NETWORKS DIVISION	406 PARR ROAD	BERNE IN 46711-9506
11502	INTERNATIONAL RESISTIVE CO INC	GREENWAY RD PO BOX 1860	BOONE NC 28607-1860
12697	CLAROSTAT MFG CO INC	LOWER WASHINGTON ST	DOVER NH 03820
12954	MICROSEMI CORP - SCOTTSDALE	8700 E THOMAS RD P O BOX 1390	SCOTTSDALE AZ 85252
12969	MICROSEMI CORPORATION WATERTOWN DIVISION	530 PLEASANT STREET	WATERTOWN MA 02172
13103	THERMALLOY CO INC	2021 W VALLEY VIEW LN PO BOX 810839	DALLAS TX 75381
14301	ANDERSON ELECTRONICS INC	PO BOX 89	HOLLIDAYSBURG PA 16648-0089
14552	MICROSEMI CORP	2830 S FAIRVIEW ST	SANTA ANA CA 92704-5948
15454	KETEMA RODAN DIVISION	2900 BLUE STAR STREET	ANAHEIM CA 92806-2591
17554	AVX CORPORATION	ONE COMPONENTS DR	BIDDEFORD ME 04005-4319
17856	SILICONIX INC	2201 LAURELWOOD RD	SANTA CLARA CA 95054-1516
18796	MURATA ELECTRONICS NORTH AMERICA INC. STATE COLLEGE OPERATIONS	1900 W COLLEGE AVE	STATE COLLEGE PA 16801-2723
22526	BERG ELECTRONICS INC (DUPONT)	857 OLD TRAIL RD	ETTERS PA 17319
24355	ANALOG DEVICES INC	1 TECHNOLOGY DRIVE	NORWOOD MA 02062
24546	DALE ELECTRONICS A VISHAY INTERTECHNOLOGY INC CO	550 HIGH ST	BRADFORD PA 16701-3737
24931	SPECIALTY CONNECTOR CO INC	2100 EARLYWOOD DR PO BOX 547	FRANKLIN IN 46131
25403	PHILIPS COMPONENTS DISCRETE PRODUCTS DIVISION DISCRETE SEMICONDUCTOR GROUP	GEORGE WASHINGTON HWY	SMITHFIELD RI 02917
26364	COMPONENTS CORP	6 KINSEY PLACE	DENVILLE NJ 07834-2611
27014	NATIONAL SEMICONDUCTOR CORP	2900 SEMICONDUCTOR DR	SANTA CLARA CA 95051-0606
32997	BOURNS INC TRIMPOT DIV	1200 COLUMBIA AVE	RIVERSIDE CA 92507-2114
33096	COLORADO CRYSTAL CORP	2303 W 8TH ST	LOVELAND CO 80537-5268

Mfr. Code.	Manufacturer	Address	City, State, Zip Code
34335	ADVANCED MICRO DEVICES	901 THOMPSON PL PO BOX 3453	SUNNYVALE CA 94086-3413
37964	GENNUM CORPORATION	970 FRASER DRIVE PO BOX 489, STA A	BURLINGTON, ONTARIO, CANADA L7R 3Y3
44648	SAMSUNG SEMICONDUCTOR INC	3725 N FIRST STREET	SAN JOSE CA 95134-1708
48726	UNITRODE INTEGRATED CIRCUITS CORP (UICC)	7 CONTINENTAL BLVD PO BOX 399	MERRIMACK NH 03054-0399
50139	ALLEN-BRADLEY CO ELECTRONIC COMPONENTS	1414 ALLEN BRADLEY DR	EL PASO TX 79936
50434	HEWLETT-PACKARD CO OPTOELECTRONICS DIV	370 W TRIMBLE RD	SAN JOSE CA 95131-1008
51406	MURATA ELECTRONICS NORTH AMERICA INC HEADQUARTERS AND GEORGIA OPERATIONS	2200 LAKE PARK DR	SMYRNA GA 30080
52769	SPRAGUE-GOODMAN ELECTRONICS INC	134 FULTON AVE	GARDEN CITY PARK NY 11040-5352
53387	MINNESOTA MINING MFG CO	PO BOX 2963	AUSTIN TX 78769-2963
54583	TDK ELECTRONICS CORP	12 HARBOR PARK DR	PORT WASHINGTON NY 11550
55285	BERGQUIST CO INC THE	5300 EDINA INDUSTRIAL BLVD	MINNEAPOLIS MN 55435-3707
55335	JKL COMPONENTS CORP	13343 PAXTON STREET	PACOIMA CA 91331
55680	NICHICON /AMERICA/ CORP	927 E STATE PKY	SCHAUMBURG IL 60195-4526
56845	DALE ELECTRONICS INC	2300 RIVERSIDE BLVD PO BOX 74	NORFOLK NE 68701-2242
57668	ROHM CORPORATION	15375 BARRANCA PARKWAY SUITE B207	IRVINE CA 92718
57924	BOURNS INC INTEGRATED TECHNOLOGY DIVISION	1400 NORTH 1000 WEST	LOGAN UT 84321
58050	TEKA PRODUCTS INC	45 SALEM ST	PROVIDENCE RI 02907
59660	TUSONIX INC	7741 N BUSINESS PARK DR PO BOX 37144	TUCSON AZ 85740-7144
60705	CERA-MITE CORPORATION	1327 6TH AVE	GRAFTON WI 53024-1831
61058	MATSUSHITA ELECTRIC CORP OF AMERICA PANASONIC INDUSTRIAL CO DIV	TWO PANASONIC WAY	SECAUCUS NJ 07094
61429	FOX ELECTRONICS DIV OF FOX ELECTRONICS INC	5842 CORPORATION CIRCLE	FOR MEYERS FL 33905
62104	CALIFORNIA EASTERN LABORATORIES INC	4590 PATRICK HENRY DR	SANTA CLARA CA 95054-3309
62839	COMLIN CORP	4800 WHEATON DR PO BOX 20600	FT COLLINS CO 80525
63058	MCKENZIE TECHNOLOGY	910 PAGE AVENUE	FREMONT CA 94538
63791	STAR MICRONICS INC	200 PARK AVE SUITE 2308	NEW YORK NY 10166-0001
64762	ELANTEC INC	1996 TAROB COURT	MILPITAS CA 95035-6824
66958	SGS THOMSON MICROELECTRONICS	1000 E BELL RD	PHOENIX AZ 85022-2649
68994	XILINX INC	2100 LOGIC DRIVE	SAN JOSE CA 95124
71400	BUSSMANN DIV OF COOPER INDUSTRIES INC	114 OLD STATE RD PO BOX 14460	ST LOUIS MO 63178
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076-9749
75042	IRC ELECTRONIC COMPONENTS PHILADELPHIA DIV TRW FIXED RESS	401 N BROAD ST	PHILADELPHIA PA 19108-1001
75498	MULTICOMP INC	3005 SW 154TH TERRACE #3	BEAVERTON OR 97006

Replaceable Electrical Parts

Mfr. Code.	Manufacturer	Address	City, State, Zip Code
75915	LITTELFUSE INC SUB TRACOR INC	800 E NORTHWEST HWY	DES PLAINES IL 60016-3049
76493	BELL INDUSTRIES INC JW MILLER DIV	19070 REYES AVE PO BOX 5825	COMPTON CA 90224-5825
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001
81073	GRAYHILL INC	561 HILLGROVE AVE PO BOX 10373	LA GRANGE IL 60525-5914
83701	ELECTRONIC DEVICES INC	21 GREY OAKS AVE	YONKERS NY 10710-3205
92527	VTC INC	2800 EAST OLD SHAKOPEE ROAD	BLOOMINGTON MN 55245
91637	DALE ELECTRONICS INC	2064 12TH AVE PO BOX 609	COLUMBUS NE 68601-3632
95263	LIGHTING COMPONENTS AND DESIGN INC.	3800 SOUTH CONGRESS AVE.	BOYNTON BEACH, FL 33426

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A1	671-2939-00	B010100	B010115	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293900
A1	671-2939-01	B010116	B010202	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293901
A1	671-2939-02	B010203	B010259	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293902
A1	671-2939-03	B010260	B010608	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293903
A1	671-2939-04	B010609		CIRCUIT BD ASSY:POWER SUPPLY	80009	671293904
A2	671-2356-00			CIRCUIT BD ASSY:FRONT PANEL	80009	671235600
A3	671-2958-00	B010100	B010153	CIRCUIT BD ASSY:MAIN	80009	671295800
A3	671-2958-01	B010154	B010480	CIRCUIT BD ASSY:MAIN	80009	671295801
A3	671-2958-02	B010479	B010799	CIRCUIT BD ASSY:MAIN	80009	671295802
A3	671-2958-03	B010800		CIRCUIT BD ASSY:MAIN	80009	671295803
A4	672-1421-00			CIRCUIT BD ASSY:INPUT & BNC	80009	672142100
A4A1	-----			CIRCUIT BD ASSY:BNC		
A5	671-2941-00	B010100	B010115	CIRCUIT BD ASSY:DESERIALIZER	80009	671294100
A5	671-2941-02	B010116		CIRCUIT BD ASSY:DESERIALIZER	80009	671294102
A6	671-2699-00	B010100	B010109	CIRCUIT BD ASSY:COPROCESSOR	80009	671269900
A6	671-2699-01	B010110	B010115	CIRCUIT BD ASSY:COPROCESSOR	80009	671269901
A6	671-2699-02	B010116		CIRCUIT BD ASSY:COPROCESSOR	80009	671269902
A7	671-2720-00	B010100	B010109	CIRCUIT BD ASSY:COMPONENT	80009	671272000
A7	671-2720-01	B010110	B010223	CIRCUIT BD ASSY:COMPONENT	80009	671272001
A7	671-2720-02	B010224		CIRCUIT BD ASSY:COMPONENT	80009	671272002
A8	671-2676-00	B010100	B010109	CIRCUIT BD ASSY:DAC	80009	671267600
A8	671-2676-01	B010110	B010780	CIRCUIT BD ASSY:DAC	80009	671267601
A8	671-2676-02	B010781	B010919	CIRCUIT BD ASSY:DAC	80009	671267602
A8	671-2676-03	B010920		CIRCUIT BD ASSY:DAC	80009	671267603
A1	671-2939-00	B010100	B010115	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293900
A1	671-2939-01	B010116	B010202	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293901
A1	671-2939-02	B010203	B010259	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293902
A1	671-2939-03	B010260	B010608	CIRCUIT BD ASSY:POWER SUPPLY	80009	671293903
A1	671-2939-04	B010609		CIRCUIT BD ASSY:POWER SUPPLY	80009	671293904
A1C1	283-0429-00			CAP,FXD,CER DI:270PF,20%,2000V	18796	DHR12-Z5U271M-2
A1C2	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C3	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	18796	DE1310B102K6KV
A1C4	283-0639-01			CAP,FXD,MICA DI:56PF,1%,500V,TAPE & AMMO PACK	09023	CDA15ED560F03
A1C5	283-0339-01			CAP,FXD,CER:MCL:0.22UF,10%,50V,X7R,0.300 X 0.300	04222	SR305C224KAAAP2
A1C6	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	TK0509	HV043
A1C7	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	TK0509	HV043
A1C8	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	TK0509	HV043
A1C9	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC TAPE & AMMO PACK	TK1913	MKS 2 0.1UF 20%
A1C10	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C11	283-0000-04			CAP,FXD,CER DI:0.001UF,+100-0X,500V,T&A	18796	DD05-90HAY5U102
A1C12	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	18796	DE1310B102K6KV
A1C13	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C14	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC,T&A	TK1913	MKS 2 0.1UF 20%
A1C15	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	0H1N5	CEUSM1H100-E
A1C16	283-0084-02			CAP,FXD,CER DI:270PF,5%,1000V,DISC,T&A	60705	562CRE102EF271J
A1C17	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC,T&A	TK1913	MKS 2 0.1UF 20%
A1C18	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C19	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC,T&A	TK1913	MKS 2 0.1UF 20%
A1C20	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C21	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	0H1N5	CEUSM1H100-E
A1C22	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	1W344	LX100VB10RM10X2
A1C23	285-1189-00			CAP,FXD,MTLZD:0.1 UF,5%,100 V	05292	PMT 3R .1J 100
A1C24	285-1328-00			CAP,FXD,PLASTIC:METALIZED FILM;0.01UF,5%,2000V, POLYPROPYLENE,1.25X.95	TK1913	FKP1 .01/2000/5

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1C25	290-1310-00			CAP,FXD,ALUM:10UF,20%,160V,13 X 20MM	0H1N5	CEJSM2C100M
A1C26	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	0H1N5	CEUSM1H100-E
A1C27	283-0339-01			CAP,FXD,CER:MLC:0.22UF,10%,50V,X7R,0.300 X 0.300	04222	SR305C224KAAAP2
A1C28	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C29	290-1301-00			CAP,FXD,ALUM:2700UF,20%,10V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1A272M7
A1C30	290-1310-00			CAP,FXD,ALUM:10UF,20%,160V,13 X 20MM	0H1N5	CEJSM2C100M
A1C31	290-1302-00			CAP,FXD,ALUM:1000UF,20%,35V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1V102M7
A1C32	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	0H1N5	CEEFM1J101M6-T4
A1C33	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	0H1N5	CEEFM1J101M6-T4
A1C34	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	0H1N5	CEEFM1J101M6-T4
A1C35	290-1301-00			CAP,FXD,ALUM:2700UF,20%,10V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1A272M7
A1C36	290-1301-00			CAP,FXD,ALUM:2700UF,20%,10V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1A272M7
A1C37	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	0H1N5	CEEFM1J101M6-T4
A1C38	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C40	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	0H1N5	CEEFM1J101M6-T4
A1C41	290-1302-00			CAP,FXD,ALUM:1000UF,20%,35V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1V102M7
A1C42	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V	TK1743	CGB103KEX
A1C43	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C44	285-1420-00			CAP,FXD,PLASTIC:FILM&FOIL:4700PF,63V,5%,POLYPROPYLENE,6X7.2MM,RDL, 5 MM LS	TK1913	FKP2 4700/63/5
A1C45	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C47	281-0813-00			CAP,FXD,CER:MLC:0.047UF,20%,50V,0.100 X	04222	SA105E473MAA
A1C48	283-0111-04			CAP,FXD,CER DI:0.1UF,20%,50V	04222	SR595C104MAAAP1
A1C49	281-0813-00			CAP,FXD,CER:MLC:0.047UF,20%,50V,0.100 X	04222	SA105E473MAA
A1C51	285-1329-00			CAP,FXD,PLASTIC:METALIZED FILM:680PF,10%,1600V,POLYPROPYLENE,.70X.43	TK1913	FKP1 680/1600/1
A1C52	285-1331-00			CAP,FXD,MTLZD:0.47UF,5%,400V	TK1913	MKS4 .47/400/5
A1C53	281-0823-00			CAP,FXD,CER DI:470PF,10%,50V	04222	SA101A471KAA
A1C55	281-0786-00			CAP,FXD,CER:MLC:150PF,10%,100V,0.100 X 0.170	04222	SA101A151KAA
A1C56	290-1315-00			CAP,FXD,ALUM:47UF,20%,35V,6 X 11MM;LOW IMP,RDL,T&A	55680	UPL1V470MEH1TD
A1C58	290-1264-00			CAP,FXD,ELCTLT:0.047F,-20%/+80%,5.5V,0.53OD	61058	PANASONIC EECF5
A1C59	285-1470-00			CAP,FXD,PLASTIC:METALIZED FILM:330PF,1600VD C/500VAC,POLYPROPYLENE,11 X 18	TK1913	FKP1 330/1600/5
A1C60	285-1420-00			CAP,FXD,PLASTIC:FILM&FOIL:4700PF,63V,5%,POLYPROPYLENE,6X7.2MM,RDL, 5 MM LS	TK1913	FKP2 4700/63/5
A1C61	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C62	290-1314-00			CAP,FXD,ALUM:330UF,20%,63V,12.5 X 25MM;LOW-IMP,RDL,T&A	55680	UPL1J331MRH1TD
A1C63	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C64	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C65	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C66	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC,	TK0515	PME 289 MB 5220
A1C67	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C68	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C69	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C70	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C71	290-1275-00			CAP,FXD,AL:330UF,20%,400V,35 X 35;105 DEG,SNAP IN,BULK	55680	LGO2G331MHSC
A1C72	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A1C74	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC,	TK0515	PME 289 MB 5220
A1C75	285-1222-00			CAP,FXD,PLASTIC:0.068UF,20%,250V,	TK0515	PME 271 M 568
A1C76	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C77	283-0339-01			CAP,FXD,CER:MLC:0.22UF,10%,50V,X7R,0.300 X 0.300	04222	SR305C224KAAAP2
A1C100	285-1222-00			CAP,FXD,PLASTIC:0.068UF,20%,250V,	TK0515	PME 271 M 568
A1C101	281-0812-00			CAP,FXD,CER:MLC:1000PF,10%,100V,0.100 X	04222	SA101C102KAA
A1C102	290-1301-00			CAP,FXD,ALUM:2700UF,20%,10V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1A272M7
A1C103	281-0813-00			CAP,FXD,CER:MLC:0.047UF,20%,50V,0.100 X	04222	SA105E473MAA
A1C104	281-0772-00	671-2939-00	671-2939-02	CAP,FXD,CER:MLC:4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A1C104	281-0767-00	671-2939-03		CAP,FXD,CER:MLC:330PF,20%,100V,0.100 X 0.170	04222	SA102C331MAA
A1C105	281-0775-01	671-2939-03		CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1CR1	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR2	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR3	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR4	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR5	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR6	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR7	152-0409-00			DIO,RECT:FAST RCVRY;12KV,10MA,250NS	83701	CRVT150
A1CR8	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR9	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR10	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS	14552	MB2501
A1CR11	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS	14552	MB2501
A1CR12	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR13	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR14	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR15	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS	14552	MB2501
A1CR16	152-0720-00			DIO,RECT:ULTRA FAST;200V,8A,25NS,100A IF SM	25403	BYW29-200
				ATTACHED PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XSTR,TO-220:VERT MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
				END ATTACHED PARTS		
A1CR17	152-0884-00			DIO,RECT:SCHTKY;35V,16A,150A IFSM,630MVF	04713	MBR1635
				ATTACHED PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XSTR,TO-220:VERT MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
				END ATTACHED PARTS		
A1CR18	152-0720-00			DIO,RECT:ULTRA FAST;200V,8A,25NS,100A IF SM	25403	BYW29-200
				ATTACHED PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XSTR,TO-220:VERT MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
				END ATTACHED PARTS		
A1CR19	152-0863-00			DIO,RECT:ULTRA FAST;600V,1A,30A IFSM,30NS	25403	BYV26C
A1CR21	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR22	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS	14552	MB2501
A1CR23	152-0897-00			DIO,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY	25403	BYV96E
A1CR24	152-0601-01			DIO,RECT:ULTRA FAST;150V,25NS,35A IFSM	04713	MUR115RL
A1CR25	152-0897-00			DIO,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY	25403	BYV96E
A1CR26	152-0601-01			DIO,RECT:ULTRA FAST;150V,25NS,35A IFSM	04713	MUR115RL
A1CR27	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR29	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR30	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1CR31	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR32	152-0661-00	671-2939-00	671-2939-03	DIO,RECT:FAST RCVRY;600V,3A,200NS	12954	DR850701B (40SL
A1CR32	152-1165-00	671-2939-04		DIO,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR33	152-0661-00	671-2939-00	671-2939-03	DIO,RECT:FAST RCVRY;600V,3A,200NS	12954	DR850701B (40SL
A1CR33	152-1165-00	671-2939-04		DIO,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR34	152-0661-00	671-2939-00	671-2939-03	DIO,RECT:FAST RCVRY;600V,3A,200NS	12954	DR850701B (40SL
A1CR34	152-1165-00	671-2939-04		DIO,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR35	152-0661-00	671-2939-00	671-2939-03	DIO,RECT:FAST RCVRY;600V,3A,200NS	12954	DR850701B (40SL
A1CR35	152-1165-00	671-2939-04		DIO,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1DS1	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS2	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS3	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS4	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS5	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS6	150-1152-00			DIO,OPTO:LED;HIGH EFFIC. RED,635NM,INTEGRAL RES	50434	HLMP-1600-002
A1DS7	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1F1	159-0021-00			FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW	71400	AGC-2
				MOUNTING PARTS		
A1F1	344-0326-00			CLIP,ELECTRICAL:FUSE,BRASS (QUANTITY 2)	75915	102071
				END MOUNTING PARTS		
A1J1	131-5338-00			CONN,HDR:PCB/WIREWRAP;MALE,STR,1 X 7,0.15CTR, 0.230 MLG X 0.285 TAIL,30 GLD,SIDE BY SIDE STACKABLE	22526	65561-107
A1J2	131-5337-00			CONN,HDR:PCB/WIREWRAP;MALE,STR,1 X 4,0.15CTR, 0.230 MLG X 0.285 TAIL,30 GLD,SIDE BY SIDE STACKABLE	22526	65561-104
A1J3	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A1J4	131-3392-00			CONN,HDR:PCB;MALE,STR,1 X 10,0.1 CTR,0.230	00779	1-102844-1
A1J5	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A1J6	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A1J7	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A1J9	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A1L1	108-1262-00			INDUCTOR,FXD:POWER:100UH,10%,I<0.75A,RDC<0. 23 OHM,Q>15,SRF>5.4MHZ	54583	TSL0807-101KR75
A1L2	108-1262-00			INDUCTOR,FXD:POWER:100UH,10%,I<0.75A,RDC<0. 23 OHM,Q>15,SRF>5.4MHZ	54583	TSL0807-101KR75
A1L3	108-1412-00			INDUCTOR,FXD:POWER:4.7UH,20%,I<3.7A,RDC<0.0 17 OHM,Q>10,SRF>30MHZ	54583	TSL0807-4R7M3R0
A1L4	108-1411-00			INDUCTOR,FXD:POWER:47UH,10%,I<0.96A,RDC<0.1 7 OHM,Q>20,SRF>7.6MHZ	54583	TSL0707-470KR94
A1L5	108-1411-00			INDUCTOR,FXD:POWER:47UH,10%,I<0.96A,RDC<0.1 7 OHM,Q>20,SRF>7.6MHZ	54583	TSL0707-470KR94
A1L6	108-1411-00			INDUCTOR,FXD:POWER:47UH,10%,I<0.96A,RDC<0.1 7 OHM,Q>20,SRF>7.6MHZ	54583	TSL0707-470KR94
A1L7	108-1412-00			INDUCTOR,FXD:POWER:4.7UH,20%,I<3.7A,RDC<0.0 17 OHM,Q>10,SRF>30MHZ	54583	TSL0807-4R7M3R0
A1L8	108-0205-00			COIL,RF:INDUCTOR:FXD,1MH,+/-5%, DCR 2.12 OH MS, FERRITE CORE	76493	8209
A1P6	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0. 385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A1P7	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0. 385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A1Q1	151-0190-00			XSTR,SIG:BIPOLAR,NPN:40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q2	151-0749-00			XSTR,SIG:BIPOLAR,PNP:400V,500MA,50MHZ,AMPL	04713	MPSA94
A1Q3	151-0188-00			XSTR,SIG:BIPOLAR,PNP:40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q4	151-0190-00			XSTR,SIG:BIPOLAR,NPN:40V,200MA,300MHZ,AMPL	04713	2N3904

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1Q5	151-0350-03			XSTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A1Q6	151-0347-02			XSTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A1Q7	151-0476-00			XSTR,PWR:BIPOLAR,NPN;100V,3.0A,3.0MHZ,AMPL	04713	TIP31C
	210-0406-00			*MOUNTING PARTS*		
	211-0008-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	214-3841-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
				HTSK,SEMIC:XSTR,TO-220;VERTICAL MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
				END MOUNTING PARTS		
A1Q8	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A1Q9	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q10	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q11	151-0528-00			THYRISTOR,PWR:BIPOLAR,SCR;50V,16A RMS,PHASE	04713	2N6400
A1Q12	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q13	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q14	151-1300-00			XSTR,PWR:MOS,N-CH;800V,8.0A,1.2 OHM	66958	STH8N80FI
	210-0406-00			*MOUNTING PARTS*		
	211-0008-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	214-4197-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
				HTSK:XSTR,TO-218,ALW/SOLDERABLE ROLL PINS,5298B	13103	6298B MODIFIED
				END MOUNTING PARTS		
A1Q15	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1R1	301-0225-02			RES,FXD,CMPSN:2.2M OHM,5%,0.5W	50139	EB2255
A1R2	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R3	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R4	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R5	322-3344-00			RES,FXD,FILM:37.4K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G37401F
A1R6	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0TAPED &	91637	CCF501G40200F
A1R8	322-3097-00			RES,FXD,METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R9	311-1256-00			RES,VAR,TRMR:CERMET;2.5M OHM,10%,0.5W,0.375	32997	3386F-1-255
A1R10	322-3385-00			RES,FXD,METAL FILM:100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R11	322-3097-00			RES,FXD,METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R12	322-3097-00			RES,FXD,METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R13	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R14	322-3339-00			RES,FXD,METAL FILM:33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R15	322-3481-00			RES,FXD,FILM:1M OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G10003F
A1R16	315-0101-03			RES,FXD,CMPSN:100 OHM,5%,0.25W	50139	CB1015
A1R17	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A1R18	322-3162-00			RES,FXD,METAL FILM:475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A1R19	315-0223-03			RES,FXD,CMPSN:22K OHM,5%,0.25 WALLE BRADLEY ONLY MI	50139	CB2235 ALLEN BR
A1R20	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	50139	CB1025 (CARD PA
A1R21	322-3306-00			RES,FXD,METAL FILM:15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A1R22	322-3105-00			RES,FXD,METAL FILM:121 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G121R0F
A1R23	322-3385-00			RES,FXD,METAL FILM:100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R24	322-3222-00			RES,FXD,METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R25	322-3034-00			RES,FXD,METAL FILM:22.1 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G22R10F
A1R26	315-0470-03			RES,FXD,CMPSN:47 OHM,5%,0.25W	50139	CB4705
A1R27	322-3162-00			RES,FXD,METAL FILM:475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A1R28	322-3222-00			RES,FXD,METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R29	322-3001-00			RES,FXD,METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R30	315-0226-01			RES,FXD,CMPSN:22 M OHM,5%,0.25WALLE BRADLEY ONLY	50139	CB2265
A1R31	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R32	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R33	322-3354-00			RES,FXD,METAL FILM:47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A1R34	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R35	322-3273-00			RES,FXD,METAL FILM:6.81K OHM,1%,0.2W,TC=100	91637	CCF50-2-G68100F

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1R36	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	50139	CB1025 (CARD PA
A1R37	322-3385-00			RES,FXD:METAL FILM:100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R38	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R39	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R40	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G30100F
A1R41	322-3435-00			RES,FXD:METAL FILM:332K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-33202FT
A1R42	311-2240-00			RES,VAR,NONWW:TRMR,200K OHM,20%,0.5W LIN,T&R	TK2073	GF06UT2 204 M L
A1R43	322-3273-00			RES,FXD:METAL FILM:6.81K OHM,1%,0.2W,TC=100	91637	CCF50-2-G68100F
A1R44	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R45	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R46	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R47	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R48	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R49	322-3024-00			RES,FXD,FILM:17.4 OHM,1%,0.2W,TC=T0,T&R,SM BODY	91637	CCF50-2-G17R40F
A1R50	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R51	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R52	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R53	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R54	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R55	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G10003F
A1R56	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R57	322-3235-00			RES,FXD:METAL FILM:2.74K OHM,1%,0.2W,TC=100	91637	CCF501G27400F
A1R58	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R59	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R60	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	91637	CCF501G49900F
A1R61	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=TOMI,SMALL BODY	91637	CCF50G5111FT
A1R62	322-3097-00			RES,FXD:METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R63	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R64	322-3001-00			RES,FXD:METAL FILM:10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R65	322-3201-00			RES,FXD:METAL FILM:1.21K OHM,1%,0.2W,TC=100	91637	CCF501G12100F
A1R66	322-3385-00			RES,FXD:METAL FILM:100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R67	322-3385-00			RES,FXD:METAL FILM:100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R68	322-3339-00			RES,FXD:METAL FILM:33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R69	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	50139	CB47G5
A1R70	308-0441-00			RES,FXD,WW:3 OHM,5%,3W	TK2096	KM 300 3 OHM +-
A1R71	322-3222-00			RES,FXD:METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R72	322-3289-00			RES,FXD:METAL FILM:10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R73	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197	TK2073	GF06UT2 503 M L
A1R74	322-3289-00			SQ,SIDE ADJUST		
A1R75	322-3306-00			RES,FXD:METAL FILM:10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R76	322-3306-00			RES,FXD:METAL FILM:15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A1R77	322-3222-00			RES,FXD:METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R78	322-3352-00			RES,FXD,FILM:45.3K OHM,1%,0.2W,TC=TOMI,SMALL BODY	91637	CCF501G45301F
A1R79	322-3225-00			RES,FXD,FILM:2.15K OHM,1%,0.2W,TC=T0	91637	CCF501G21500F
A1R80	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R81	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=TOMI,SMALL BODY	91637	CCF50-2-G24901F
A1R82	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R83	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R84	322-3418-00			RES,FXD:METAL FILM:221K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G22102F
A1R85	322-3235-00			RES,FXD:METAL FILM:2.74K OHM,1%,0.2W,TC=100	91637	CCF501G27400F
A1R86	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G10003F
A1R87	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=TOMI,SMALL BODY	91637	CCF502G4321FT
A1R88	322-3289-00			RES,FXD:METAL FILM:10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R89	305-0242-00			RES,FXD,CMPSN:2.4K OHM,5%,2W	11502	GF-3 OR GS-3 24
A1R90	308-0793-00			RES,FXD:0.51 OHM,5%,1WTC=150PPM/DEG C,MI T&R	75042	BW20 .51OHM 5PE
A1R91	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R92	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	91637	CCF501G13300F
A1R94	322-3347-00			RES,FXD,FILM:40.2K OHM,1%,0.2W,TC=TOMI,SM BODY	91637	CCF50-2-G40201F

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1R95	322-3260-00	671-2939-00	671-2939-00	RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	91637	CCF501G49900F
A1R96	322-3034-00			RES,FXD:METAL FILM:22.1 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G22R10F
A1R97	322-3289-00			RES,FXD:METAL FILM:10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R98	322-3256-00			RES,FXD,FILM:4.53K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G4531FT
A1R99	322-3222-00			RES,FXD:METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R100	322-3414-00	671-2939-00	671-2939-02	RES,FXD:METAL FILM:200K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20002F
A1R100	322-3431-00	671-2939-03		RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,T&R,SM BODY	91637	CCF501G30102F
A1R101	322-3222-00			RES,FXD:METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R102	322-3193-00			RES,FXD:METAL FILM:1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R103	322-3289-00			RES,FXD:METAL FILM:10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R104	322-3435-00			RES,FXD:METAL FILM:332K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-33202FT
A1R105	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,T&R,SM BODY	91637	CCF501G30102F
A1R106	322-3339-00			RES,FXD:METAL FILM:33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R107	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A1R108	322-3222-00			RES,FXD:METAL FILM:2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R109	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,T&R,SM BODY	91637	CCF501G30102F
A1R110	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R111	322-3351-00			RES,FXD:METAL FILM:44.2K OHM,1%,0.2W,TC=100	91637	CCF501G4422FT
A1R112	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0MI,SM	91637	CCF50-2-G4993FT
A1R113	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0MI,SM	91637	CCF50-2-G4993FT
A1R114	322-3339-00			RES,FXD:METAL FILM:33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R115	322-3401-00			RES,FXD,FILM:147K OHM,1%,0.2W,TC=T0MI,SM	57668	CRB20 FXE 147K
A1R116	308-0441-00			RES,FXD,WW:3 OHM,5%,3W	TK2096	KM 300 3 OHM +-
A1R117	322-3393-00			RES,FXD:METAL FILM:121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A1R118	322-3393-00			RES,FXD:METAL FILM:121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A1R119	305-0154-00			RES,FXD,CMPSN:150K OHM,5%,2W	50139	HB1545
A1R120	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	24546	FP42 OR FP2 100
A1R121	305-0154-00			RES,FXD,CMPSN:150K OHM,5%,2W	50139	HB1545
A1R122	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	24546	FP42 OR FP2 100
A1R123	307-0746-00			RES,THERMAL:5 OHM,10%,7A/DEG C,	15454	SG200-S STRAI
A1R124	322-3322-00			RES,FXD:METAL FILM:22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R125	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G10003F
A1R126	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A1R127	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25W,MI	TK1727	SFR25 2322-181-
A1T1	120-1695-00			XFMR,PWR:SWITCHING 25KHZ,PRI 36V, SEC FEEDBACK 3V,RESONANT 231V,100V 1MA,2750 3.3MA,6.3V 86 MA	75498	120-1695-00
A1T2	120-1532-00			XFMR,RF:TOROID,ISOLATION,RATIO 1:1,IND 100-300 UH, DCR 1.5 OHM POTTED, PKG 0.8X 0.65,0.55 HIGH	75498	128-8036-01
A1T3	120-1953-00			TRANSFORMER,PWR:129-303G-EA	75498	129-3039-EA
A1TP1	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A1TP2	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A1TP3	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A1U1	152-0900-00			MODULE,HV:7.5KVAC IN,15KVDC OUT,POTTED MODULE	51406	MSL2556
A1U1	334-2363-00			MARKER,IDENT:MKD DANGER,HIGH VOLTAGE	TK0860	ORDER BY DESC
A1U2	156-0067-00			IC,LIN:BIPOLAR,OP-AMP;	01295	UA741CP
A1U3	156-1719-00			IC,LIN:BIPOLAR,OP-AMP;LOW VOLTAGE OPERATION,W/ VOLTAGE REFERENCE	27014	LM10CN
A1U4	156-0885-00			CPLR,OPTOELECTR:LED,5KV ISOLATION	0MS63	H11AX861
A1U5	156-0750-03			IC,DGTL:CMOS,MULTIVIBRATOR:DUAL MONOSTABLE	27014	MM74C221N
A1U6	156-2524-00			IC,LIN:BIPOLAR,SW-REGULATOR CONTROLLER;PWM, CURRENT MODE,SINGLE TOTEM POLE OUT	48726	UC3842N
A1U7	156-0411-00			IC,LIN:BIPOLAR,COMPTR:QUAD,SINGLE SUPPLY,300NS	01295	LM339N
A1U8	156-2009-00			IC,DGTL:HCMOS,FLIP FLOP:DUAL D-TYPE	04713	MC74HC74AN
A1VR1	152-0195-00			DIO,ZENER:5.1V,5%,0.4W	14552	CD332125
A1VR3	152-0175-00			DIO,ZENER:5.6V,5%,0.4W	04713	SZG35008 (1N752
A1W1	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A1W2	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A1W3	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A2	671-2356-00			CIRCUIT BD ASSY:FRONT PANEL	80009	671235600
A2CR1	152-5038-00			DIO,SIG:SCHTKY;30V,1.5PF,VF = 600MV @ 10 MA	04713	MMBD301LT1
A2CR2	152-5038-00			DIO,SIG:SCHTKY;30V,1.5PF,VF = 600MV @ 10 MA	04713	MMBD301LT1
A2CR3	152-5038-00			DIO,SIG:SCHTKY;30V,1.5PF,VF = 600MV @ 10 MA	04713	MMBD301LT1
A2CR4	152-5038-00			DIO,SIG:SCHTKY;30V,1.5PF,VF = 600MV @ 10 MA	04713	MMBD301LT1
A2DS1	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS2	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS3	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS4	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS5	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS6	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS7	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS8	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS9	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS10	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS11	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS12	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS13	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS14	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS15	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS16	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS17	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS18	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS19	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS20	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS21	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS22	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS23	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS24	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS25	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS26	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS27	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS28	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS29	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS30	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS31	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS32	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS33	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS34	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS35	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS36	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS37	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2DS38	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A2J2	174-1168-00			CA ASSY,SP:RIBBON;IDC,10,28 AWG,4.25 L,2X5 ,PCB,0.1 CTR X 2X5,BOX,0.1 CTR,CTR PLZ	TK1386	174-1168-00
A2R2	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R3	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R4	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R5	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R6	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R7	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R8	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R9	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R10	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R11	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Serial / Assembly Number Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A2R12	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R13	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R14	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R15	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R16	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R17	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R18	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R19	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R20	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R21	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R22	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R23	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R24	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R25	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R26	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R27	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R28	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R29	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R30	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R31	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R32	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R33	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R34	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R35	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R36	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R37	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R38	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R39	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R40	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R41	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R42	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R43	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R44	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R45	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R47	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A2R48	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R49	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R50	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R51	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R52	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2U1	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE	01295	SN74HCT125DR
A2U2	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U3	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U4	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U5	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U6	156-5358-01			IC,DGTL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	01295	SN74HC165DR
A2U7	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U8	156-5358-01			IC,DGTL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	01295	SN74HC165DR
A2U9	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A2U10	156-5074-02			IC,DGTL:HCMOS,FLIP FLOP;DUAL D-TYPE	01295	SN74HC74DR
A3	671-2958-00	B010100	B010153	CIRCUIT BD ASSY:MAIN	80009	671295800
A3	671-2958-01	B010154	B010480	CIRCUIT BD ASSY:MAIN	80009	671295801
A3	671-2958-02	B010479	B010799	CIRCUIT BD ASSY:MAIN	80009	671295802
A3	671-2958-03	B010800		CIRCUIT BD ASSY:MAIN	80009	671295803
				ATTACHED PARTS		
	337-0607-00			PLATE,ELEC SHLD:CIRCUIT BOARD	0J260	337-0607-00
				END ATTACHED PARTS		

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3C1	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C2	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C3	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C4	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C5	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C6	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C7	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C8	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C9	290-5024-00			CAP,FXD,TANT:3.3UF,20%,25V,0.236 X 0.126,6032	04222	TAJC335M025
A3C10	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C11	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C12	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C13	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C14	283-5107-00			CAP,FXD,CER:MLC:22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C15	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C16	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C17	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C18	283-5107-00			CAP,FXD,CER:MLC:22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C19	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C20	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C21	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C22	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C26	283-5267-00			CAP,FXD,CER:MLC:1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C29	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C30	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C31	283-5267-00			CAP,FXD,CER:MLC:1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C32	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C33	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C34	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C35	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C36	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C37	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C38	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C39	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C40	283-0620-01			CAP,FXD,MICA DI:470PF,1%,500V,T&A	09023	CDA15FD471F03
A3C41	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C42	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C43	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C44	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C45	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C46	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C48	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C49	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C50	283-5197-00			CAP,FXD,CER:MLC:330PF,5%,100V,NPO,1206	04222	12061A331JAT1A
A3C51	283-5267-00			CAP,FXD,CER:MLC:1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C52	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C53	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C54	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C55	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A3C56	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A3C57	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C58	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C59	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C60	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C61	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C62	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C63	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C64	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Serial / Assembly Number Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A3C65	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C66	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C67	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C68	283-5109-00			CAP,FXD,CER:MLC;680PF,5%,100V,NPO,1206	04222	12061A681JAT1A
A3C69	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C70	283-5109-00			CAP,FXD,CER:MLC;680PF,5%,100V,NPO,1206	04222	12061A681JAT1A
A3C71	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C72	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C73	283-5256-00			CAP,FXD,CER:MLC;0.1UF,10%,200V,X7R,180X.250	04222	18252C104KATRA
A3C74	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C75	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C76	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C77	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C78	283-5314-00			CAP,FXD,CER:MLC;0.7PF,+/-0.1PF,100V,+20	80009	283531400
A3C79	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C80	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C81	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C82	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A3C83	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C84	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C85	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C86	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C87	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C88	283-5259-00			CAP,FXD,CER:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A3C89	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C90	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C91	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C92	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C93	283-5259-00			CAP,FXD,CER:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A3C94	283-5314-00			CAP,FXD,CER:MLC;0.7PF,+/-0.1PF,100V,+20	80009	283531400
A3C95	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C96	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C97	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C98	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C99	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C100	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C101	285-1349-00			CAP,FXD,MTLZD:0.1UF,5%,63VDC	80009	285134900
A3C102	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C103	290-5034-01	671-2958-00	671-2958-02	CAP,FXD,ALUM::33UF,20%,10V,5.7MM(0.224)	1W344	MVK10VC33RME60T
A3C103	290-5037-01	671-2958-03		CAP,FXD,ALUM::10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C104	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C105	283-0934-00			CAP,FXD,PLASTIC:0.0022UF,5%,100VVDC	TK1913	FKP2 2200/100/5
A3C106	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C107	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C108	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C110	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C111	283-5203-00	671-2958-00	671-2958-02	CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A3C111	283-5189-00	671-2958-03		CAP,FXD,CERAMIC:MLC;220PF,5%,100V,NPO,1206	04222	12061A221JAT1A
A3C112	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C113	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C115	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C116	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C117	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C118	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C119	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C120	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C121	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C122	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3C123	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C124	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C125	283-0698-01			CAP,FXD,MICA DI:390PF,1%,500V,T&A	09023	CDA15FD391F03
A3C126	283-5108-00			CAP,FXD,CER:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C127	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C128	283-5201-00			CAP,FXD,CER:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A3C129	283-5195-00			CAP,FXD,CER:MLC;10PF,5%,100V,NPO,1206	04222	12061A100JAT1A
A3C130	283-5107-00			CAP,FXD,CER:MLC;22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C131	281-5007-00			CAP,VAR,CER:4.5-20PF,100V,N750+/-300PPM/C,4 X 4.5 X 2.7MM	52769	GKG20066-##
A3C132	283-0640-01			CAP,FXD,MICA DI:160PF,1%,100V,T&A	TK0891	ADVISE
A3C133	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C134	283-5108-00			CAP,FXD,CER:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C135	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C136	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C139	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A3C140	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C141	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C142	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C143	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C144	283-0639-01			CAP,FXD,MICA DI:56PF,1%,500V,T&A	09023	CDA15ED560F03
A3C145	283-5108-00			CAP,FXD,CER:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C146	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A3C149	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C150	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C151	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C157	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C158	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C162	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C163	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C164	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C170	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	1W344	MVK16VC22RME60T
A3C171	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	1W344	MVK16VC22RME60T
A3C172	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	1W344	MVK16VC22RME60T
A3C173	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C174	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C175	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	1W344	MVK16VC22RME60T
A3C176	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C177	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C178	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A3C179	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C180	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C181	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A3C182	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C183	283-0603-01			CAP,FXD,MICA DI:113PF,2%,500V,T&A	09023	CDA15FD(113)G03
A3C184	283-0766-01			CAP,FXD,MICA DI:47PF,1%,500V,T&A	09023	CDA15ED470D03
A3CR1	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A3CR2	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR3	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR4	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR5	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR6	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A3CR8	152-5047-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-CATH	27014	MMBD1204
A3CR9	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A3DS1	150-5008-00			DIO,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A3DS2	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT	55335	73W

MOUNTING PARTS

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
	136-1185-00			SOCKET,LP HLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328H X 0.172 TAIL,TIN,T-1.75	95263	53-35XP11
A3DS3	150-0168-00			*END MOUNTING PARTS* LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT	55335	73W
	136-1185-00			*MOUNTING PARTS* SOCKET,LP HLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328H X 0.172 TAIL,TIN,T-1.75	95263	53-35XP11
A3DS4	150-0168-00			*END MOUNTING PARTS* LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT	55335	73W
	136-1185-00			*MOUNTING PARTS* SOCKET,LP HLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328H X 0.172 TAIL,TIN,T-1.75	95263	53-35XP11
A3DS5	150-0168-00			*END MOUNTING PARTS* LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT	55335	73W
	136-1185-00			*MOUNTING PARTS* SOCKET,LP HLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328H X 0.172 TAIL,TIN,T-1.75	95263	53-35XP11
A3J1	131-3718-00			*END MOUNTING PARTS* CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120 TAIL,SHRD/4 SIDES,CTR PLZ,30 GLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A3J2	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J3	131-4752-00			CONN,HDR:PCB;MALE,45 DEG,1 X 2,0.1 CTR,0. 240 MLG X 0.110 TAIL,30 GLD	58050	082-0243-AS10
A3J4	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	00779	104344-1
A3J5	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J6	175-9797-00			CA ASSY,SP:FLAT FLEX;FLX,10,27 AWG,2.5 L,1 X10,BOX X STR,SLDR TAB,CONN NON PLZ	00779	487729-1
A3J9	131-3364-00			CONN,HDR:PCB;MALE,STR,2 X 17,0.1 CTR,0.365D	53387	2534-6002UB
A3J12	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1 CTR,0.3 30 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 G OLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A3J13	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J14	174-2743-00			CA ASSY SP:RBN;IDC,34,28 AWG,2X17,0.1 CTR,PCB X 25 POS,DSUB,THD INSERTS,1.2 L & 9POS,DSUB,FEM,THD INSERTS,2.2 L	53387	174-2743-00
A3L1	108-5018-00			COIL,RF:INDUCTOR;FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A3L2	108-5018-00			COIL,RF:INDUCTOR;FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A3L3	108-5002-00			COIL,RF:INDUCTOR;FXD,15UH,10%,Q=50,SRF=20M HZ,DCR=2.5 OHM,IMAX=200MA	54583	NL453232T-150K
A3L4	108-5002-00			COIL,RF:INDUCTOR;FXD,15UH,10%,Q=50,SRF=20M HZ,DCR=2.5 OHM,IMAX=200MA	54583	NL453232T-150K
A3L5	114-0482-00			COIL,RF:VAR,32.0-48.0UH,NOM 40UH,SHIELDED,ECORE,Q @ NOM 32,25MHZ,0.411 SQ,0.512 HIGH,SLOT TEN TYPE	02113	SLOT TEN-04-11
A3L6	114-0482-00			COIL,RF:VAR,32.0-48.0UH,NOM 40UH,SHIELDED,ECORE,Q @ NOM 32,25MHZ,0.411 SQ,0.512 HIGH,SLOT TEN TYPE	02113	SLOT TEN-04-11
A3L7	108-5002-00			COIL,RF:INDUCTOR;FXD,15UH,10%,Q=50,SRF=20M HZ,DCR=2.5 OHM,IMAX=200MA	54583	NL453232T-150K
A3L8	108-5002-00			COIL,RF:INDUCTOR;FXD,15UH,10%,Q=50,SRF=20M HZ,DCR=2.5 OHM,IMAX=200MA	54583	NL453232T-150K
A3L9	114-0447-00			COIL,RF:VAR,0.8-1.2UH,SHIELDED E CORE,SLOT TEN TYPE	02113	SLOT TEN-4-01
A3LS1	119-2101-00			XDCR,AUDIO:6V NOM,40 MA,IMP 90 OHM,OUT 85 DB MIN @ 10 CM,FREQ 2K-2.5K,MACH INSERTABLE/WASHABLE	63791	SMX-06
A3P4	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0. 385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A3Q1	151-5021-00			XSTR,SIG:BIPOLAR,NPN;40V,600MA,300MHZ,AMPL	04713	MMBT2222ALT1
A3Q2	151-5021-00			XSTR,SIG:BIPOLAR,NPN;40V,600MA,300MHZ,AMPL	04713	MMBT2222ALT1

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3Q3	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q4	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q5	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q6	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q7	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q8	151-0350-03			XSTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A3Q9	151-5022-00			XSTR,SIG:BIPOLAR,NPN;15V,50MA,600MHZ,AMPL	04713	MMBT918LT1
A3Q10	151-0211-00			XSTR,SIG:BIPOLAR,NPN;30V VCEO,55V VCB0, 400MA,500MHZ,AMPL	04713	2N3866
				ATTACHED PARTS		
	214-2593-00			HEAT SINK,SEMIC:XSTR/IC,TO-5/TO-39;PR ESS-ON,0.5" DIA,ALUMINUM,BLACK ANODIZE	13103	2257B
				END ATTACHED PARTS		
A3Q11	151-0347-02			XSTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A3Q12	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q13	151-0347-02			XSTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A3Q14	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q15	151-0350-03			XSTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A3Q16	151-0211-00			XSTR,SIG:BIPOLAR,NPN;30V VCEO,55V VCB O,400MA,500MHZ,AMPL	04713	2N3866
				ATTACHED PARTS		
	214-2593-00			HEAT SINK,SEMIC:XSTR/IC,TO-5/TO-39;PR ESS-ON,0.5" DIA,ALUMINUM,BLACK ANODIZE	13103	2257B
				END ATTACHED PARTS		
A3Q17	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q19	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q20	151-5029-00			XSTR,SIG:BIPOLAR,NPN;15V,500MA,SWITCHING	04713	MMBT2369LT1
A3Q23	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q24	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A3Q25	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q26	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3Q28	151-5002-00			XSTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A3Q29	151-5001-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	MMBT3904LT1
A3R1	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R2	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R3	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R4	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R5	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R6	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LIN,CONT INIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R7	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LIN,CONT INIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R8	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LIN,CONT INIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R9	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LIN,CONT INIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R10	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LIN,CONT INIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R11	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R12	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R13	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R14	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R15	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R16	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R17	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R18	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R19	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R20	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R21	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R22	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R23	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R24	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R25	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R26	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R27	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R28	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R29	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R30	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R31	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R32	321-5208-00			RES,FXD:THICK FILM;10M OHM,5%,0.125W,TC=100	91637	CRCW1206-106JT
A3R33	321-5048-00			RES,FXD:THICK FILM;332K OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA332K
A3R34	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R35	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R36	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R37	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R38	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R39	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R40	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R41	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R42	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R43	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R44	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R45	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R46	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R47	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R48	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R49	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R50	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R51	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R52	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R53	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-47502F
A3R54	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A3R55	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R56	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R57	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R58	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R59	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R60	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R61	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-47502F
A3R62	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R63	321-5093-00			RES,FXD,FILM:200 OHM,1%,0.125W,1206,8MM T&R	91637	CRCW12062000FT
A3R64	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R65	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R66	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R67	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R68	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R69	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R70	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A3R71	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R72	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R73	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R74	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R75	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R76	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R77	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R78	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R79	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R80	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R81	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R82	307-5041-00			RES NTWK,FXD,Fl:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R83	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R84	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R85	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R86	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R87	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R88	321-5122-00			RES,FXD,FILM:499 OHM,1%,0.125W,1206,8MM T&R	91637	CRCW1206-4990FT
A3R89	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A3R90	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A3R91	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R92	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R93	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R94	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R95	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R96	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A3R97	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R99	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R100	321-5031-00			RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A3R101	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A3R102	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A3R103	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R104	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R105	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R106	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R107	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R108	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R109	321-5122-00			RES,FXD,FILM:499 OHM,1%,0.125W,1206,8MM T&R	91637	CRCW1206-4990FT
A3R110	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R111	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R112	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R113	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R114	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R115	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R116	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R117	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R118	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R119	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A3R120	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R121	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R122	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R123	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R124	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R125	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R126	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A3R128	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R129	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R130	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R131	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R132	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R133	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R134	311-5036-00			RES,VAR,TRMR:CERMET;5K OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT502E
A3R135	311-5036-00			RES,VAR,TRMR:CERMET;5K OHM,25%,0.25W,4MM SQ ,TOP ADJ	TK2073	G4DT502E
A3R136	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R137	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R138	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R139	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R140	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R141	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R142	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R143	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R144	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R145	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R146	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R147	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R148	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R149	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R150	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R151	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R152	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A3R153	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R154	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R155	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R156	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R157	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R158	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R159	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R160	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R161	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R162	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R163	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R164	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R165	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R166	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R167	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R168	311-5041-00			RES,VAR,TRMR:CERMET;100K OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT104-M
A3R169	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&R	91637	CRCW12063010FT
A3R170	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R171	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R172	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R173	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R174	321-5028-00	671-2958-00	671-2958-02	RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R174	321-5027-00	671-2958-03		RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R175	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R176	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R177	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R178	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R179	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R180	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&R	91637	CRCW12063010FT
A3R181	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R182	311-5032-00			RES,VAR,TRMR:CERMET;200 OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT201M
A3R183	311-5032-00			RES,VAR,TRMR:CERMET;200 OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT201M
A3R184	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R185	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R186	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R187	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R188	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R189	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R190	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R191	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R192	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R193	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R194	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R195	321-5046-00	671-2958-00	671-2958-00	RES,FXD:THICK FILM;82.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK82R5FT
A3R195	321-5113-00	671-2958-01		RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R196	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R197	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R198	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R199	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R200	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R201	321-5087-00			RES,FXD,FILM:620 OHM,5%,0.125W	50139	BCK6200JT
A3R202	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R203	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R204	321-5024-00	671-2958-00	671-2958-02	RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R204	321-5030-00	671-2958-03		RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R205	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R206	307-0250-00	671-2958-01		RES,THERMAL:390 OHM,10%,0.125W	01295	TG1/8 391K
A3R210	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R211	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R212	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R213	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R214	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R215	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R216	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R217	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R218	321-5087-00			RES,FXD,FILM:620 OHM,5%,0.125W	50139	BCK6200JT
A3R219	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R220	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R221	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R224	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R225	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R226	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R227	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R228	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R229	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R230	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R231	321-5041-00			RES,FXD:THICK FILM;82.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK8252FT
A3R232	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R234	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R235	321-5055-00			RES,FXD:THICK FILM;681K OHM,1%,0.125W,TC=100 PPM	91637	CRCW120668102FT
A3R237	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R241	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R242	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R243	321-5055-00			RES,FXD:THICK FILM;681K OHM,1%,0.125W,TC=100 PPM	91637	CRCW120668102FT
A3R244	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R245	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R246	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R247	321-5014-00	671-2958-00	671-2958-02	RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R247	321-5023-00	671-2958-03		RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R248	321-5028-00	671-2958-00	671-2958-02	RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R248	321-5026-00	671-2958-03		RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R249	321-5006-00	671-2958-00	671-2958-02	RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R249	321-5014-00	671-2958-03		RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R250	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R251	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R252	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R253	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R254	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R255	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R258	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R259	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R260	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R261	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R262	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R263	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R264	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R267	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R268	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R269	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R270	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R271	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R272	321-5212-00			RES,FXD:THICK FILM;4.99K OHM,1%,0.125W,TC=100 PPM	91637	CRCW-1206-4991F
A3R273	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R274	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R275	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R276	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R277	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R278	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R279	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R280	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R281	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R282	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R283	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R284	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R285	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R286	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R287	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A3R289	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R290	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R293	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A3R294	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R298	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R299	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R300	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R301	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R302	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R303	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R309	321-5044-00			RES,FXD:THICK FILM;56.2 OHM,1%,0.125W,TC=100 PPM	50139	BCD56R2FT
A3R310	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R311	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R312	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R316	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R317	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R318	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R319	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A3R320	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R321	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R322	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R323	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R324	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R325	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R326	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R327	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R328	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R329	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R330	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3R331	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R332	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R333	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R336	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-47502F
A3R337	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R338	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R339	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R340	321-5031-00			RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A3R341	321-5029-00			RES,FXD:THICK FILM;8.25K OHM,1%,0.125W,TC=100 PPM	50139	BCK8251FT
A3R342	321-5090-00			RES,FXD:THICK FILM;20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R343	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R344	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R345	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R346	321-5090-00			RES,FXD:THICK FILM;20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R347	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R348	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R352	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R353	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R354	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R355	321-5090-00			RES,FXD:THICK FILM;20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R356	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R357	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R358	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R359	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R360	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R361	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R362	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R363	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R364	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R365	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R366	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R367	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R368	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R369	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R370	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R371	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R372	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R373	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R374	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R375	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R376	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R377	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R378	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A3R379	321-5003-00			RES,FXD:THICK FILM;18.2 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120618R2FT
A3R380	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3S1	260-1965-00			SWITCH,ROCKER:DIP;RAISED ROCKER,4 POSITION, TOP SEALED,150MA 30VDC	81073	76SB04S
A3T1	120-1057-00			TRANSFORMER,RF:TOROID	OJR03	120-1057-00
A3T2	120-1057-00			TRANSFORMER,RF:TOROID	OJR03	120-1057-00
A3U1	156-2051-01			IC,LIN:BIFET,OP-AMP;QUAD	01295	LF347DR
A3U2	160-8970-00			IC,DGTL:CMOS,PLD:EEPLD,16V8,15NS,90MA	80009	160897000
A3U3	156-6007-00			IC,CONV:CMOS,A/D:8-BIT,13US,11 CHAN MUX,SERIAL OUT	01295	TLC540IFN
A3U4	156-6007-00			IC,CONV:CMOS,A/D:8-BIT,13US,11 CHAN MUX,SERIAL OUT	01295	TLC540IFN
A3U5	156-6256-01			IC,LIN:BIPOLAR,OP-AMP;DUAL,HIGH OUT CURRENT	04713	MC33178DR2
A3U6	156-5058-01			IC,DGTL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U7	156-5489-01			IC,MISC:BIPOLAR,PWR SUPPLY SUPERVISOR;MPU RESET GENERATOR,5V SUPPLY SENSING	01295	TL7705ACDR
A3U8	156-5058-01			IC,DGTL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR

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Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A3U9	156-5358-01			IC,DGTL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	01295	SN74HC165DR
A3U10	156-6461-01			IC,MEM:CMOS,EPROM;256K X 8,150NS FLASH	34335	AM28F020-150C3J
A3U11	156-6151-00			IC,MEM:CMOS,SRAM;128K X 8,100NS,15UA,OE	TK1146	M5M51008FP-10LL
A3U12	156-5058-01			IC,DGTL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U13	160-9720-00			IC,MEM:CMOS,EPROM,128K X 8,120NS,PLCC32	80009	160972000
	136-5011-00			*MOUNTING PARTS* SOCKET,PLCC:SMD;32 POS,0.05 CTR,0.800 X 0.700 INCH WIDE,0.200 H,BE/CU,TIN,W/O PLZ POSTS *END MOUNTING PARTS*	22526	69802-132
A3U14	156-4224-00			IC,MEM:CMOS,NVRAM;8K X 8,100NS,INTEGRALBATTERY	0B0A9	DS1225D-100
A3U15	156-5058-01			IC,DGTL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U16	156-6461-01			IC,MEM:CMOS,EPROM;256K X 8,150NS FLASH	34335	AM28F020-150C3J
A3U17	156-6151-00			IC,MEM:CMOS,SRAM;128K X 8,100NS,15UA,OE	TK1146	M5M51008FP-10LL
A3U18	156-6454-00			IC,PROCESSOR:HCMOS,MICROCONT;32-BIT,16.78MHZ,2K RAM	04713	MC68332CFC
A3U19	156-5058-01			IC,DGTL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U20	156-5441-01			IC,LIN:BIPOLAR,VR;POSITIV E,ADJUSTABLE,100MA,2%MICROPOWER	27014	LP2951CMX
A3U21	156-5190-01			IC,DGTL:FTTL,DEMUX/DECODER;1-OF-8 DECODER	01295	SN74F138DR
A3U22	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE,	01295	SN74HCT125DR
A3U23	156-5057-01	671-2958-00	671-2958-01	IC,DIGITAL:FTTL,BFR;OCTAL,3-STATE	01295	SN74F244DWR
A3U23	156-5819-00	671-2958-02		IC,DIGITAL:ACTCMOS,BFR;OCTBFRLAL /DRIVER, 3-STATE	0JR04	TC74ACT244FN
A3U24	156-5123-00			IC,DGTL:HCTCMOS,DEMUX/DECODER;4-TO-16 DECODER	1CH66	74HCT154D
A3U25	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE,	01295	SN74HCT125DR
A3U26	156-5863-00			IC,DGTL:ECL,GATE;QUAD 2-INPUT OR	04713	MC10H103FN
A3U27	156-6147-00			IC,DGTL:CMOS,PLD;FPGA,XC3000 FAMILY,3030 ,100 CLBS,80 IOBS,74 I/O,70 MHZ	68994	XC3030-70PC84C
A3U28	156-5052-01			IC,DGTL:FTTL,GATE;HEX INV	01295	SN74F04DR
A3U29	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE	01295	SN74HCT125DR
A3U30	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE	01295	SN74HCT125DR
A3U31	156-6224-00			IC,CONV:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A3U32	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A3U33	156-5299-01			IC,LIN:BIPOLAR,VR;NEG,-5V,100MA,5%	01295	MC79L05ACDR
A3U34	156-6194-00			IC,DGTL:CMOS,PLD;FPGA,XC3000 FAMILY,3042 ,144 CLBS,96 IOBS,74 I/O,70 MHZ	68994	XC3042-70PC84C
A3U35	156-6224-00			IC,CONV:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A3U36	156-5011-01			IC,MEM:CMOS,SRAM;8K X 8,150NS,OE	44648	KM6264BLG-12T
A3U37	156-6425-01			IC,CONV:CMOS,D/A;DUAL,12 BIT,US,VOLTAG E OUT,8-BIT MPU COMPATIBLE,REFERENCE	24355	AD7237JR-REEL
A3U38	156-5480-01			IC,DGTL:HCMOS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A3U39	156-2051-01			IC,LIN:BIFET,OP-AMP;QUAD	01295	LF347DR
A3U40	156-6619-01			IC,MEM:CMOS,FIFO;512 X 9,35NS	34335	AM7201-35JCTR
A3U41	156-5073-01	671-2958-00	671-2958-02	IC,MISC:HCMOS,ANALOG MUX;TRIPLE SPDT	1CH66	74HC4053DT
A3U41	156-5571-00	671-2958-03		IC,MISC:CMOS,ANALOG MUX;TRIPLE,2 CHAN	04713	MC14053BD
A3U42	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A3U43	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A3U44	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A3U45	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U46	156-5073-01	671-2958-00	671-2958-02	IC,MISC:HCMOS,ANALOG MUX;TRIPLE SPDT	1CH66	74HC4053DT
A3U46	156-5571-00	671-2958-03		IC,MISC:CMOS,ANALOG MUX;TRIPLE,2 CHAN	04713	MC14053BD
A3U47	156-2051-01			IC,LIN:BIFET,OP-AMP;QUAD	01295	LF347DR
A3U48	156-2051-01			IC,LIN:BIFET,OP-AMP;QUAD	01295	LF347DR
A3U49	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U50	156-5073-01	671-2958-00	671-2958-02	IC,MISC:HCMOS,ANALOG MUX;TRIPLE SPDT	1CH66	74HC4053DT
A3U50	156-5571-00	671-2958-03		IC,MISC:CMOS,ANALOG MUX;TRIPLE,2 CHAN	04713	MC14053BD

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A3U51	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A3U52	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A3U53	156-4234-00			IC,LIN:BIPOLAR,VR;NEGATIVE,-8.0 VOLTS,1.0A,2%	80009	156423400
A3U54	156-6446-01			IC,MISC:CMOS,SAMPLE/HOLD;QUAD,9US TO 0.01	24355	SMP04ESR
A3U55	234-0739-21			IC,ASIC:BIPOLAR,VIDEO PREAMPL;QC6-40,M639B-039	80009	234073921
A3U56	234-0739-21			IC,ASIC:BIPOLAR,VIDEO PREAMPL;QC6-40,M639B-039	80009	234073921
A3U57	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U59	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U60	156-5088-01			IC,DGTL:HCTCMOS,DEMUX/DECODER;3-TO-8 DECODER	0JR04	TC74HCT138AFN(E
A3U62	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U63	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U64	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U65	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A3U66	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U67	234-0728-21			IC,ASIC:BIPOLAR,ANALOG MUX;QC6-40,M639-028	80009	234072821
A3U68	156-5694-00			IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;SYNC SEPARATOR	27014	LM1881M
A3U70	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U71	156-5694-00			IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;SYNC SEPARATOR	27014	LM1881M
A3U72	156-5138-01	671-2958-00	671-2958-02	IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U72	156-6279-01	671-2958-03		IC,LINEAR:BIFET,OP-AMP;DUAL,TWO POLE FREQ COMP	04713	MC33282DR2
A3U73	156-6415-01			IC,LIN:BIPOLAR,OP-AMP;CURRENT FEED- BACK,100MHZ,W/DISABLE,1 TO 10 GAIN RANGE	64762	EL2120CS (T&R)
A3U74	156-6462-01			IC,MISC:BIPOLAR,ANALOG MUX;VIDEO CROSSPOINT	37964	GX214ACTB
A3U75	156-6462-01			IC,MISC:BIPOLAR,ANALOG MUX;VIDEO CROSSPOINT	37964	GX214ACTB
A3U76	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A3U77	156-5480-01			IC,DGTL:HCMS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A3U78	156-2959-00			IC,LIN:BIPOLAR,VR;POSITIVE,8.0V,1.0M,2%	04713	MCT7808CT
A3U79	234-0728-21			IC,ASIC:BIPOLAR,ANALOG MUX;QC6-40,M639-028	80009	234072821
A3U80	156-6415-01			IC,LIN:BIPOLAR,OP-AMP;CURRENT FEED- BACK,100MHZ,W/DISABLE,1 TO 10 GAIN RANGE	64762	EL2120CS (T&R)
A3U81	156-6415-01			IC,LIN:BIPOLAR,OP-AMP;CURRENT FEED- BACK,100MHZ,W/DISABLE,1 TO 10 GAIN RANGE	64762	EL2120CS (T&R)
A3U82	156-5480-01			IC,DGTL:HCMS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	0JR04	TC74HC595AFN(EL
A3U84	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U85	156-5299-01			IC,LIN:BIPOLAR,VR;NEGATIVE,-5V,100MA,5%	01295	MC79L05ACDR
A3U86	156-6224-00			IC,CONV:CMOS,D/A:12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A3U87	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE,	01295	SN74HCT125DR
A3U88	156-5138-01			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U89	156-5000-01			IC,LIN:BIPOLAR,COMPTR;OPEN COLLECTOR,200NS	01295	LM311DR
A3U90	156-5358-01			IC,DGTL:HCMS,RGTR;8-BIT PISO SHIFT RGTR	01295	SN74HC165DR
A3U91	156-5358-01			IC,DGTL:HCMS,RGTR;8-BIT PISO SHIFT RGTR	01295	SN74HC165DR
A3U92	156-5776-01			IC,MISC:CMOS,INTERFACE;DUAL RS-232 LINE DRI VER/RECEIVER,+5V VCC,EXTERNAL CAPS REQUIRED	1ES66	MAX232CWE-T
A3U93	158-5024-00			OSCILLATOR,RF:CRYSTAL CONTROLLED;6MHZ,+/-0 .01%,TTL OUT,SMD,FSO TYPE,24MM T&R	61429	FSO 6 MHZ
A3U94	156-5073-01	671-2958-00	671-2958-02	IC,MISC:HCMS,ANALOG MUX;TRIPLE SPDT	1CH66	74HC4053DT
A3U94	156-5571-00	671-2958-03		IC,MISC:CMOS,ANALOG MUX;TRIPLE,2 CHAN	04713	MC14053BD
A3U95	156-5298-01			IC,LIN:BIPOLAR,VR;POSITIVE,5V,100MA,5%	01295	UA78L05ACDR
A3Y1	158-5013-00			XTAL UNIT QTZ:32.768KHZ,+/- 0.002%, RS 60KOHM,CS 0.85PF,SMT,FSM PKG0.41 X 0.16,0.14 HIGH, T&R	61429	FSM327
A3VR1	152-5011-00			DIO,ZENER:6.2V,5%,225MW	80009	152501100
A3VR2	152-5011-00			DIO,ZENER:6.2V,5%,225MW	80009	152501100
A3VR3	152-5011-00			DIO,ZENER:6.2V,5%,225MW	80009	152501100
A3VR4	152-5002-00			DIO,ZENER:3.6V,5%,225MW	04713	MMBZ5227LBT1
A4	672-1421-00			CIRCUIT BD ASSY:INPUT & BNC;	80009	672142100
A4C1	283-5004-00			CAP,FXD,CER:MLC;0.1UF,10%,25V,X7R,1206	04222	12063C104KAT3A

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A4C2	283-5004-00			CAP,FXD,CER:MLC;0.1UF,10%,25V,X7R,1206	04222	12063C104KAT3A
A4C3	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C4	283-5004-00			CAP,FXD,CER:MLC;0.1UF,10%,25V,X7R,1206	04222	12063C104KAT3A
A4C5	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C6	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C7	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C8	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C9	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C10	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C11	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A4C12	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A4C14	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A4C15	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A4C16	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A4C17	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A4CR1	152-5045-00			DIO,SIG:SCHTKY;20V,1.2PF,24 OHM	50434	HSMS-2810-T31
A4CR2	152-5045-00			DIO,SIG:SCHTKY;20V,1.2PF,24 OHM	50434	HSMS-2810-T31
A4CR3	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A4CR4	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A4CR5	152-5045-00			DIO,SIG:SCHTKY;20V,1.2PF,24 OHM	50434	HSMS-2810-T31
A4CR6	152-5045-00			DIO,SIG:SCHTKY;20V,1.2PF,24 OHM	50434	HSMS-2810-T31
A4CR7	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A4CR8	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A4J1	131-0391-00			CONN,RF JACK:SMB;50 OHM,STR,PCB,GLD/GLD,0.293 H X 0.155 TAIL,3/0.045 SQ TAIL 0.038DIA CTR COND,0.2 SQ PCB,0.312 HEX	24931	32JR105-1
A4J2	131-3718-00			CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120TAIL,SHRD/4 SIDES,CTR PLZ,30 GLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A4J3	131-0265-00			CONN,RF PLUG:SMB;PCB,MALE,RTANG,50 OHM,0.381 H X 0.15 TAIL,0.043 DIA CTR COND,0.040 SQ TAIL	0GZV8	85SMB-50-0-1
A4J4	174-2745-00			CA ASSY,SP,ELEC:40,20 AWG,8.25 L,RIBBON	53387	174-2745-00
A4J5	131-3718-00			CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120 TAIL,SHRD/4 SIDES,CTR PLZ,30 GLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A4L1	108-5101-00			COIL,RF:INDUCTOR;FXD,100NH,5%,Q=28,SRF=700 MHZ,DCR=0.44 OHM,IMAX=450MA	TK2058	NL322522T-R10J
A4L2	108-5101-00			COIL,RF:INDUCTOR;FXD,100NH,5%,Q=28,SRF=700 MHZ,DCR=0.44 OHM,IMAX=450MA	TK2058	NL322522T-R10J
A4Q1	151-5008-00			XSTR,SIG:BIPOLAR,NPN;12V,70MA,3.0GHZ,AMPL	62104	NE02133-T1B (2S
A4Q2	151-5008-00			XSTR,SIG:BIPOLAR,NPN;12V,70MA,3.0GHZ,AMPL	62104	NE02133-T1B (2S
A4Q3	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A4Q4	151-5008-00			XSTR,SIG:BIPOLAR,NPN;12V,70MA,3.0GHZ,AMPL	62104	NE02133-T1B (2S
A4Q5	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A4Q6	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A4Q7	151-5012-00			XSTR,SIG:BIPOLAR,PNP;15V,10MA,2.0GHZ,AMPL	04713	MMBTH69LT1
A4Q8	151-5000-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	MMBT3906LT1
A4R1	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A4R2	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A4R4	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A4R5	321-5043-00			RES,FXD:THICK FILM;47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A4R6	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A4R7	321-5043-00			RES,FXD:THICK FILM;47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A4R8	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A4R9	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A4R11	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R12	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A4R13	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A4R14	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R15	321-5043-00			RES,FXD:THICK FILM;47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A4R16	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A4R17	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R18	321-5043-00			RES,FXD:THICK FILM;47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A4R19	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A4R20	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R21	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A4R23	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A4R24	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A4R25	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A4R26	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R27	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R28	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R29	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A4R30	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R31	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R32	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A4R33	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A4R34	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R35	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A4R36	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A4R37	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A4U1	156-5299-01			IC,LIN:BIPOLAR,VR;NEGATIVE,-5V,100MA,5%	01295	MC79L05ACDR
A4W5	174-3134-00			CA ASSY,SP:RIBBON;IDC,10,28 AWG,1.75 L,2 X5,0.1 CTR PCB X 2 X 5,0.1 CTR,RCPT,W/CTR PLZ	TK2469	174-3134-00
A4A1	-----			CIRCUIT BD ASSY:BNC		
A4A1J1	131-5647-00			CONN,RF,JACK:BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON0.25 CTR,0.038 DIA CTR COND	24931	28JR469-1
A4A1J2	131-5647-00			CONN,RF,JACK:BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON0.25 CTR,0.038 DIA CTR COND	24931	28JR469-1
A4A1J3	131-5647-00			CONN,RF,JACK:BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON0.25 CTR,0.038 DIA CTR COND	24931	28JR469-1
A4A1J4	131-5647-00			CONN,RF,JACK:BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON0.25 CTR,0.038 DIA CTR COND	24931	28JR469-1
A4A1J5	131-5436-00			CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J6	131-5436-00			CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J7	131-5647-00			CONN,RF,JACK:BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON0.25 CTR,0.038 DIA CTR COND	24931	28JR469-1
A4A1J8	131-5436-00			CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J9	131-5436-00			CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J10	131-5436-00			CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A5	671-2941-00	B010100	B010115	CIRCUIT BD ASSY:DESERIALIZER	80009	671294100
A5	671-2941-02	B010116		CIRCUIT BD ASSY:DESERIALIZER	80009	671294102
A5C1	290-0944-01			CAP,FXD,ELCTLT:220UF,20%,10V,T&A,LEADSPACING 0.2	0H1N5	CEBSM1C221M-T4
A5C2	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C3	290-0974-03			CAP,FXD,ALUM:10UF,20%,50V,5 X 11MM;RDL,T&R,0.1 LEAD SPAN	55680	UVX1H100MAA1TD
A5C4	290-0944-01			CAP,FXD,ELCTLT:220UF,20%,10V,T&A,LEADSPACING 0.2	0H1N5	CEBSM1C221M-T4
A5C5	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C6	290-0974-03			CAP,FXD,ALUM:10UF,20%,50V,5 X 11MM;RDL,T&R,0.1 LEAD SPAN	55680	UVX1H100MAA1TD
A5C7	290-0974-03			CAP,FXD,ALUM:10UF,20%,50V,5 X 11MM;RDL,T&R,0.1 LEAD SPAN	55680	UVX1H100MAA1TD
A5C8	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A5C9	281-0797-00	671-2941-00	671-2941-01	CAP,FXD,CER:MLC;15PF,10%,100V,	04222	SA102A150KAA
A5C9	281-0819-00	671-2941-02		CAP,FXD,CER:MLC;33 PF,5%,50V,0.100 X 0.170	04222	SA102A330JAA
A5C10	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A5C11	281-0797-00	671-2941-00	671-2941-01	CAP,FXD,CER:MLC;15PF,10%,100V,	04222	SA102A150KAA
A5C11	281-0819-00	671-2941-02		CAP,FXD,CER:MLC;33 PF,5%,50V,0.100 X 0.170	04222	SA102A330JAA
A5C12	281-0811-00			CAP,FXD,CER:MLC;10PF,10%,200V,0.100 X 0.170	04222	SA102A100KAA
A5C13	290-0974-03			CAP,FXD,ALUM:10UF,20%,50V,5 X 11MM;RDL,T&R,0.1 LEAD SPAN	55680	UVX1H100MAA1TD
A5C14	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A5C15	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C16	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C17	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C18	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A5C19	281-0537-00	671-2941-01		CAP,FXD,CER:MLC;0.68PF,20%,500V,0.170 X	54583	DA12COG2HR68M
A5CR1	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5CR2	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5CR3	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5CR4	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5CR5	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5CR6	152-0066-00			DIO,RECT:400V,1A,IFSM=30A,1.2VF,2US	05828	GP10G-020
A5J1	131-3360-01			CONN,HDR:PCB;MALE,STR,2 X 10,0.1 CTR,0.365 D,BD RETENTION	53387	2520-60K2UB
A5J3	131-0391-00			CONN,RF JACK:SMB;50 OHM,STR,PCB,GLD/GLD, 0.293 H X 0.155 TAIL,3/0.045 SQ TAIL 0.038 DIA CTR COND,0.2 SQ PCB,0.312 HEX	24931	32JR105-1
A5J4	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	00779	104344-1
A5J5	131-3361-00			CONN,HDR:PCB;MALE,RTANG,2 X 13,0.1 CTR,0.33 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD	53387	2526-5002UB
A5J6	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	00779	104344-1
A5J7	174-2744-00			CA ASSY,SP,ELEC:34,28 AWG, 3.25 L,RIBBON	53387	174-2744-00
A5J8	131-0391-00			CONN,RF JACK:SMB;50 OHM,STR,PCB,GLD/GLD, 0.293 H X 0.155 TAIL,3/0.045 SQ TAIL 0.038 DIA CTR COND,0.2 SQ PCB,0.312 HEX	24931	32JR105-1
A5L1	108-1412-00			INDUCTOR,FXD:POWER;4.7UH,20%,1<3.7A,RDC<0.0 17 OHM,Q>10,SRF>30MHZ	54583	TSL0807-4R7M3R0
A5P4	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0.385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A5P6	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0.385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A5Q1	151-0188-00	671-2941-00	671-2941-00	XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A5Q1	151-0190-00	671-2941-01		XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A5Q2	151-1078-00			XSTR,SIG:JFET,N-CH;3.5V,75MA,90 OHM,SWITCH	04713	MPF4393
A5Q3	151-0139-00			XSTR,SIG:BIPOLAR,NPN;15V,50MA,600MHZ,AMPL,DUAL	80009	151013900
A5Q4	151-0711-02			XSTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A5Q5	151-0711-02			XSTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A5Q6	151-0965-00			XSTR,SIG:BIPOLAR,NPN;10V,80MA,6.0GHZ,AMPL	04713	MPS571
A5Q7	151-0965-00			XSTR,SIG:BIPOLAR,NPN;10V,80MA,6.0GHZ,AMPL	04713	MPS571
A5R1	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R2	311-2234-00	671-2941-00	671-2941-00	RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197 SQ,TOP ADJUST	TK2073	GF06UT2 502 M L
A5R2	311-2233-00	671-2941-01		RES,VAR,TRMR:CERMET;3K OHM,20%,0.5W,0.197 SQ,TOP ADJUST	TK2073	GF06UT2 302 M L
A5R3	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R4	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A5R5	322-3097-00	671-2941-00	671-2941-00	RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R5	322-3193-00	671-2941-01		RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A5R6	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A5R7	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R8	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R9	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A5R10	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R11	322-3329-00	671-2941-00	671-2941-00	RES,FXD,FILM:26.1K OHM.1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G26101F
A5R12	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R13	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A5R14	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G10003F
A5R15	322-3246-00			RES,FXD,FILM:3.57K OHM,1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G35700F
A5R16	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=TOMI,SM BODY	91637	CCF501G200R0F
A5R17	322-3153-00			RES,FXD,FILM:383 OHM,1%,0.2W,TC=TOMI,SM BODY	57668	CRB20 FXE383
A5R18	322-3085-00			RES,FXD:METAL FILM;75 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G75R00F
A5R19	322-3068-00			RES,FXD:METAL FILM;49.9 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G49R90F
A5R20	322-3114-00			RES,FXD:METAL FILM;150 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1500F
A5R21	322-3114-00			RES,FXD:METAL FILM;150 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1500F
A5R22	322-3068-00			RES,FXD:METAL FILM;49.9 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G49R90F
A5R23	322-3018-00			RES,FXD:METAL FILM;15 OHM,1%,0.2W,TC=100 PPM	57668	CRB20FXE15E0
A5R24	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R25	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R26	322-3085-00			RES,FXD:METAL FILM;75 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G75R00F
A5R27	322-3068-00			RES,FXD:METAL FILM;49.9 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G49R90F
A5R28	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A5R29	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R30	322-3068-00			RES,FXD:METAL FILM;49.9 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G49R90F
A5R31	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A5R32	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A5R33	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R34	322-3068-00			RES,FXD:METAL FILM;49.9 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G49R90F
A5R35	307-0541-00			RES NTWK,FXD,FI:(7)1K OHM,10%,1W	11236	750-81-R1 KOHM
A5R36	307-0541-00			RES NTWK,FXD,FI:(7)1K OHM,10%,1W	11236	750-81-R1 KOHM
A5R37	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R38	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A5R39	322-3085-00			RES,FXD:METAL FILM;75 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G75R00F
A5R40	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=TOMI,SMBODY	91637	CCF501G200R0F
A5R41	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODYMI,DUM RES	91637	FRJ-50
A5R42	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A5R43	322-3114-00			RES,FXD:METAL FILM;150 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1500F
A5R44	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A5R45	322-3082-00			RES,FXD,FILM:69.8 OHM,1%,0.2W,TC=T0,T&R,SM BODY	57668	CRB20 FXE 69E8
A5R46	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A5R47	322-3001-00	671-2941-00	671-2941-00	RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A5R48	322-3289-00	671-2941-00	671-2941-00	RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A5TP1	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A5TP2	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A5U1	156-4234-00			IC,LIN:BIPOLAR,VR:NEGATIVE,-8.0 VOLTS,1.0A,2%	80009	156423400
A5U2	156-2959-00			IC,LIN:BIPOLAR,VR:POSITIVE,8.0V,1.0M,2%	04713	MCT7808CT
A5U3	156-4158-00			IC,MISC:ECL,DECODER;SERIAL DATA TRANSMISSIO N TO PARALLEL DATA *MOUNTING PARTS*	TK2540	SBX1602A
	136-1159-00			SOCKET,PGA:PCB;37 POS,10 X 10,0.1 CTR,0.16 5 H X 0.125 TAIL,GLD/GLD,NON SYMMETRICAL, PAT 1032,W/CORNER POS & 3 PLUGS *END MOUNTING PARTS*	63058	PGA 63160-001
A5U4	156-5933-00			IC,DGTL:ECL,LINE DRIVER;10-BIT VIDEO DIF F OUT,SMPTE RP-125 COMPATIBLE,10KH *MOUNTING PARTS*	9Z527	VS620PLJ

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Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
	136-0959-00			SOCKET,PLCC:PCB;52 POS,0.361 H X 0.147 TAIL,TIN,OPT PLZ POST *END MOUNTING PARTS*	00779	821551-1
A6	671-2699-00	B010100	B010109	CIRCUIT BD ASSY:COPROCESSOR	80009	671269900
A6	671-2699-01	B010110	B010115	CIRCUIT BD ASSY:COPROCESSOR	80009	671269901
A6	671-2699-02	B010116		CIRCUIT BD ASSY:COPROCESSOR	80009	671269902
A6C1	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C2	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C3	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C4	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C5	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C6	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C7	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C8	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C9	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C10	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C11	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C12	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C13	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C14	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C15	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C16	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C17	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A6C18	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A6C19	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A6C20	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A6C21	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A6C22	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A6C23	290-5022-00			CAP,FXD,TANT:68UF,20%,6V,0.287 X 0.170;7343,SMD,T&R	17554	TAJD686M006R
A6C24	290-5022-00			CAP,FXD,TANT:68UF,20%,6V,0.287 X 0.170;7343,SMD,T&R	17554	TAJD686M006R
A6C25	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C26	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C27	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C28	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C29	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A6C30	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A6J1	131-3358-00			CONN,HDR:PCB;MALE,RTANG,2 X 5.0.1 CTR,0.390 MLG X 0.112 TAIL,0.33 H,SHRD/4 SIDES,MILPLZ,30 GLD	53387	2510-5002UB
A6J2	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20.0.1 CTR,0.330 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A6J7	131-3361-00			CONN,HDR:PCB;MALE,RTANG,2 X 13.0.1 CTR,0.33 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD	53387	2526-5002UB
A6J8	174-3128-00			CA ASSY,SP:26 COND,28 AWG.6.800 L	TK2469	174-3129-00
A6L1	108-0858-00			COIL,RF:INDUCTOR;FXD,3.0UH,10%,12 TURNS,22AWG,276-0120-00 FERRITE COIL FORM,0.243 DIA,0.775 LONG	0JR03	108-0858-00
A6L2	108-5000-00			COIL,RF:INDUCTOR;FXD,1UH,20%,Q=50,SFR=140MHZ,DCR=0.5 OHM,IMAX=450MA	54583	NL453232T-1ROM
A6R1	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A6R2	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A6R3	321-5051-00	671-2699-00	671-2699-00	RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A6R5	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R6	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R7	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R8	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R9	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R10	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R11	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM

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		Effective	Discontinued			
A6R12	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R13	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R14	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6R16	321-5106-00			RES,FXD,FILM:110 OHM,1%,0.125W,1206,8MM T&R	50139	BCK1100FKM
A6U1	156-5324-01			IC,DGTL:ECL,TRANSLATOR:QUAD ECL-TO-TTL	04713	MC10H125FN2
A6U2	156-5324-01			IC,DGTL:ECL,TRANSLATOR:QUAD ECL-TO-TTL	04713	MC10H125FN2
A6U3	156-5324-01			IC,DGTL:ECL,TRANSLATOR:QUAD ECL-TO-TTL	04713	MC10H125FN2
A6U4	160-9719-00	671-2699-00	671-2699-01	IC,MEM:CMOS,PROM;128K X 1,SERIAL	80009	160971900
A6U4	160-9719-01	671-2699-02		IC,MEM:CMOS,PROM;128K X 1,SERIAL,XC17128,DIP08.3	80009	160971901
A6U5	156-6657-00			IC,DGTL:CMOS,PLD:FPGA,XC4000A FAMILY,400 5A,196 CLBS,112 IOBS,112 I/O,5 NS	68994	XC4005A-5PQ208C
A6U7	156-6656-00	671-2699-00	671-2699-02	IC,MEM:CMOS,SRAM;16K X 18,15NS	80009	156665600
A6W21	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A6W22	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A6W23	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A6W24	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A7	671-2720-00	B010100	B010109	CIRCUIT BD ASSY:COMPONENT	80009	671272000
A7	671-2720-01	B010110	B010223	CIRCUIT BD ASSY:COMPONENT	80009	671272001
A7	671-2720-02	B010224		CIRCUIT BD ASSY:COMPONENT	80009	671272002
A7C1	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C2	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C3	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C4	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C5	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C6	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C9	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A7C10	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A7C11	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C12	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C13	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C14	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C36	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A7C40	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C41	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C42	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C43	281-0895-00	671-2720-00	671-2720-00	CAP,FXD,CER DI:6.8PF,100VDC	04222	SA102A6R8DAA
A7C43	283-5259-00	671-2720-01		CAP,FXD,CER:MCL:6.8PK,+/-0.25PF,100V,NPO;SMD,8MM	80009	283525900
A7C45	281-0895-00	671-2720-00	671-2720-00	CAP,FXD,CER DI:6.8PF,100VDC	04222	SA102A6R8DAA
A7C45	283-5259-00	671-2720-01		CAP,FXD,CER:MCL:6.8PK,+/-0.25PF,100V,NPO;SMD,8MM	80009	283525900
A7C50	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C63	281-0895-00	671-2720-00	671-2720-00	CAP,FXD,CER DI:6.8PF,100VDC	04222	SA102A6R8DAA
A7C63	283-5259-00	671-2720-01		CAP,FXD,CER:MCL:6.8PK,+/-0.25PF,100V,NPO;SMD,8MM	80009	283525900
A7C71	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C72	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C73	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C74	281-0139-00			CAP,VAR,CER DI:2.5-9PF,100V	59660	518-031 A 2.5-9
A7C75	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C80	283-5203-00			CAP,FXD,CER:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C90	283-5203-00			CAP,FXD,CER:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C91	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C92	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C94	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C100	283-5203-00			CAP,FXD,CER:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C101	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C118	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A7C119	283-5003-00			CAP,FXD,CER:MLC;0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A7C120	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7C121	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C125	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C126	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C130	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,T&A	09023	CDA15ED770F03
A7C131	283-0647-01			CAP,FXD,MICA DI:70PF,1%,500V,T&A	09023	CDA15ED700F03
A7C132	283-0649-01			CAP,FXD,MICA DI:105PF,1%,500V,T&A	09023	CDA15FD(105)F03
A7C133	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C134	283-0779-00			CAP,FXD,MICA DI:27 PF,2%,500V	TK0891	RDM15ED270G03
A7C136	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C151	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,T&A	09023	CDA15ED770F03
A7C152	283-0647-01			CAP,FXD,MICA DI:70PF,1%,500V,T&A	09023	CDA15ED700F03
A7C155	283-0649-01			CAP,FXD,MICA DI:105PF,1%,500V,T&A	09023	CDA15FD(105)F03
A7C156	283-0636-01			CAP,FXD,MICA DI:36PF,1%,500V,T&A	09023	CDA15ED360G03
A7C162	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C163	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C164	283-5003-00			CAP,FXD,CER:MLC:0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A7C165	283-5003-00			CAP,FXD,CER:MLC:0.01UF,10%,50V,X7R,1206	04222	12065C103KAT1A
A7C180	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C181	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A7C190	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C191	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A7C202	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C206	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C207	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C208	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C209	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C210	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C301	283-0646-01			CAP,FXD,MICA DI:170PF,1%,500V,T&A	09023	CDA15FD171F03
A7C302	281-0756-00			CAP,FXD,CER:MLC:2.2PF,+/-0.5PF,200V,NPO,0.100 X 0.170	04222	SA102A2R2DAA
A7C303	283-0648-01			CAP,FXD,MICA DI:10PF,5%,500V,T&R	TK0891	RDM15CD100D03
A7C304	283-0698-01			CAP,FXD,MICA DI:390PF,1%,500V,T&A	09023	CDA15FD391F03
A7C305	283-0782-00			CAP,FXD,MICA DI:39 PF,5%,500V	TK0891	RDM15ED390J03
A7C306	283-0646-01			CAP,FXD,MICA DI:170PF,1%,500V,T&A	09023	CDA15FD171F03
A7C307	283-5195-00			CAP,FXD,CER:MLC:10PF,5%,100V,NPO,1206	04222	12061A100JAT1A
A7C308	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C309	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C310	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C311	283-0728-01			CAP,FXD,MICA DI:120PF,1%,500V,T&A	09023	CDA15FD121F03
A7C312	283-0728-01			CAP,FXD,MICA DI:120PF,1%,500V,T&A	09023	CDA15FD121F03
A7C315	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C316	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C321	283-5041-00			CAP,FXD,CER:MLC:7PF,+/-0.5PF,50V,NPO,1206	04222	12065A7R0DAT1A
A7C322	283-5196-00			CAP,FXD,CER:MLC:47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C323	283-5200-00			CAP,FXD,CER:MLC:0.47UF,+80%-20%,50V,Z5U,180X.120	04222	18125E474ZAT1A
A7C325	281-0799-00			CAP,FXD,CER DI:62PF,2%,100V	04222	SA102A620GAA
A7C350	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C400	283-5203-00			CAP,FXD,CER:MLC:1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C401	283-0752-01			CAP,FXD,MICA DI:345PF,1%,500V,T&A	09023	CDA15FD(345)F03
A7C402	283-0779-00			CAP,FXD,MICA DI:27 PF,2%,500V	TK0891	RDM15ED270G03
A7C403	283-0645-01			CAP,FXD,MICA DI:790PF,1%,300V,T&A	09023	CDA15FC791F03
A7C404	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,T&A	09023	CDA15ED770F03
A7C405	283-0752-01			CAP,FXD,MICA DI:345PF,1%,500V,T&A	09023	CDA15FD(345)F03
A7C407	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C408	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C409	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C410	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A7C411	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A7C412	283-5098-00			CAP,FXD,CER:MLC:0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7C414	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C415	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C420	283-5203-00			CAP,FXD,CER:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C421	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C422	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C423	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A7C424	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C425	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A7C431	283-5005-00			CAP,FXD,CER:MLC;4PF,+/-0.25PF,50V,NPO,1206	04222	12065A4R0CAT1A
A7C442	283-5107-00			CAP,FXD,CER:MLC;22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A7C446	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C450	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C501	283-0752-01			CAP,FXD,MICA DI:345PF,1%,500V,T&A	09023	CDA15FD(345)F03
A7C502	283-0779-00			CAP,FXD,MICA DI:27 PF,2%,500V	TK0891	RDM15ED270G03
A7C503	283-0645-01			CAP,FXD,MICA DI:790PF,1%,300V,T&A	09023	CDA15FC791F03
A7C504	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,T&A	09023	CDA15ED770F03
A7C505	283-0752-01			CAP,FXD,MICA DI:345PF,1%,500V,T&A	09023	CDA15FD(345)F03
A7C507	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C508	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C509	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C510	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A7C511	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A7C514	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C515	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C522	283-5196-00			CAP,FXD,CER:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A
A7C523	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A7C525	283-5001-00			CAP,FXD,CER:MLC;100PF,5%,50V,NPO,1206	04222	12065A101JAT1A
A7C550	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C601	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C602	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C610	283-5203-00			CAP,FXD,CER:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A7C611	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A7C711	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C712	283-5201-00			CAP,FXD,CER:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A7C713	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7C714	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7C721	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C722	283-5201-00			CAP,FXD,CER:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A7C723	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7C724	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7C731	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C732	283-5201-00			CAP,FXD,CER:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A7C733	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7C734	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A7CR180	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A7CR190	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A7CR470	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A7J2	174-3130-00			CA ASSY,SP:26 COND,28 AWG,2.0 L	53387	80-6107-1874-6
A7J9	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1 CTR,0.3 30 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 G OLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A7J12	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1 CTR,0.3 30 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 G OLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A7J13	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1 CTR,0.3 30 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 G OLD,0.390 MLG,HIGH TEMP	22526	69155-440R

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7J14	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1 CTR,0.3 30 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 G OLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A7J84	131-3718-00			CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120 TAIL,SHRD/4 SIDES,CTR PLZ,30 GLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A7J300	131-1425-00			CONN,HDR:PCB;MALE,RTANG,1 X 36,0.1 CTR,0.2 30 MLG X 0.090 TAIL,30 GLD,STACKABLE	22526	65521-136
A7J400	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A7J500	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	53387	2402-6112 UB
A7L1	108-1263-00			INDUCTOR,FXD:POWER;10UH,10%,I<2.1A,RDC<0.04 3 OHM,Q>20,SRF>19MHZ	54583	TSL0707-100K1R9
A7L2	108-1263-00			INDUCTOR,FXD:POWER;10UH,10%,I<2.1A,RDC<0.04 3 OHM,Q>20,SRF>19MHZ	54583	TSL0707-100K1R9
A7L3	108-1263-00			INDUCTOR,FXD:POWER;10UH,10%,I<2.1A,RDC<0.04 3 OHM,Q>20,SRF>19MHZ	54583	TSL0707-100K1R9
A7L4	108-1263-00			INDUCTOR,FXD:POWER;10UH,10%,I<2.1A,RDC<0.04 3 OHM,Q>20,SRF>19MHZ	54583	TSL0707-100K1R9
A7L301	108-1561-00			COIL,PWR:INDUCTOR;FXD,TOROID,1.9UH,5%,Q=20 0,0.478 DIA,0.20 THICK	0JR03	108-1561-00
A7L302	108-1558-00			COIL,PWR:INDUCTOR;FXD,TOROID,1.75UH,5%,Q=20 0,0.478 DIA,0.02 THICK	0JR03	108-1558-00
A7L401	108-1560-00			COIL,PWR:INDUCTOR;FXD,TOROID,3.8UH,5%,Q=20 0,0.478 DIA,0.20 THICK	0JR03	108-1560-00
A7L402	108-1559-00			COIL,PWR:INDUCTOR;FXD,TOROID,3,6UH,5%,Q=20 0,0.478 DIA,0.20 THICK	0JR03	108-1559-00
A7L501	108-1560-00			COIL,PWR:INDUCTOR;FXD,TOROID,3.8UH,5%,Q=20 0,0.478 DIA,0.20 THICK	0JR03	108-1560-00
A7L502	108-1559-00			COIL,PWR:INDUCTOR;FXD,TOROID,3,6UH,5%,Q=20 0,0.478 DIA,0.20 THICK	0JR03	108-1559-00
A7Q76	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7Q131	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7Q134	151-5016-00			XSTR,SIG:BIPOLAR,PNP;20V,30MA,600MHZ,AMPL	04713	MMBTH81LT1
A7Q136	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7Q151	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7Q157	151-5016-00			XSTR,SIG:BIPOLAR,PNP;20V,30MA,600MHZ,AMPL	04713	MMBTH81LT1
A7Q180	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7Q441	151-5035-00			XSTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	04713	MMBTH10LT1
A7R11	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R12	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R13	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R14	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R15	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A7R36	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R40	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R41	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R42	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R43	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R44	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R45	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R46	321-5241-00			RES,FXD,FILM:34.0K,0.1%,0.125W	91637	TNPW1206-3402-B
A7R47	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R48	321-5212-00			RES,FXD:THICK FILM;4.99K OHM,1%,0.125W,TC=100 PPM	91637	CRCW-1206-4991F
A7R51	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A7R52	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&RED	91637	CRCW12063010FT
A7R53	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A7R54	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&RED	91637	CRCW12063010FT
A7R55	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7R56	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R61	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R62	321-5017-00			RES,FXD:THICK FILM:825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A7R63	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R64	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R65	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R66	321-5017-00			RES,FXD:THICK FILM:825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A7R70	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R71	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R72	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R73	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R74	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R75	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R76	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R77	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R78	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R79	321-5305-00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W,1206 PKG,T&R	91637	TNPW1206-2001BT
A7R80	321-5014-00			RES,FXD:THICK FILM:475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A7R81	321-5012-00			RES,FXD:THICK FILM:332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A7R82	321-5281-00			RES,FXD:THICK FILM:2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R84	321-5020-00			RES,FXD:THICK FILM:1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A7R85	321-5113-00			RES,FXD:THICK FILM:75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A7R86	321-5023-00			RES,FXD:THICK FILM:2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R87	321-5043-00			RES,FXD:THICK FILM:47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A7R88	321-5043-00			RES,FXD:THICK FILM:47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A7R89	321-5043-00			RES,FXD:THICK FILM:47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A7R90	321-5013-00			RES,FXD:THICK FILM:392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A7R91	321-5013-00			RES,FXD:THICK FILM:392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A7R92	321-5281-00			RES,FXD:THICK FILM:2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R95	321-5113-00			RES,FXD:THICK FILM:75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A7R96	321-5022-00			RES,FXD:THICK FILM:2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A7R100	321-5013-00			RES,FXD:THICK FILM:392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A7R101	321-5013-00			RES,FXD:THICK FILM:392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A7R102	321-5281-00			RES,FXD:THICK FILM:2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R105	321-5113-00			RES,FXD:THICK FILM:75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A7R106	321-5022-00			RES,FXD:THICK FILM:2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A7R110	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R118	321-5026-00			RES,FXD:THICK FILM:4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R120	321-5030-00			RES,FXD:THICK FILM:10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R121	321-5030-00			RES,FXD:THICK FILM:10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R122	321-5030-00			RES,FXD:THICK FILM:10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R123	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R125	321-5009-00			RES,FXD:THICK FILM:182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A7R126	321-5027-00			RES,FXD:THICK FILM:5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A7R127	321-5006-00			RES,FXD:THICK FILM:100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R128	321-5006-00			RES,FXD:THICK FILM:100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R129	321-5006-00			RES,FXD:THICK FILM:100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R130	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R131	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R132	321-5023-00			RES,FXD:THICK FILM:2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R133	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R134	321-5018-00			RES,FXD:THICK FILM:1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R135	321-5023-00			RES,FXD:THICK FILM:2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R136	321-5013-00			RES,FXD:THICK FILM:392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A7R137	321-5023-00			RES,FXD:THICK FILM:2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R138	322-3097-00	671-2720-00	671-2720-01	RES,FXD:METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R138	321-5006-00	671-2720-02		RES,FXD:THICK FILM:100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R149	322-3097-00	671-2720-00	671-2720-01	RES,FXD:METAL FILM:100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7R149	321-5006-00	671-2720-02		RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R150	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A7R151	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R152	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R153	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R155	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R156	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R157	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R162	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R163	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R164	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A7R165	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R166	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R180	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R181	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A7R213	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R214	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R215	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R216	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R217	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R218	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R219	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R220	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A7R221	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R222	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A7R223	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R302	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R304	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R305	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R306	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R308	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R310	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A7R311	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A7R312	311-2280-00			RES,VAR,NONWW:TRMR,10 OHM,20%,0.5WLIN,MI	TK2073	GF06VT2 100 M L
A7R313	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R314	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&RED	91637	CRCW12063010FT
A7R315	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R318	321-5050-00			RES,FXD:THICK FILM;33.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA33E2
A7R320	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R322	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R323	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R324	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R325	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R326	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75R0FT
A7R350	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R351	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A7R402	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R403	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R404	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R405	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R407	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R409	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R410	311-2280-00			RES,VAR,NONWW:TRMR,10 OHM,20%,0.5WLIN,MI	TK2073	GF06VT2 100 M L
A7R411	321-5046-00			RES,FXD:THICK FILM;82.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK82R5FT
A7R412	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&RED	91637	CRCW12063010FT
A7R414	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R416	321-5050-00			RES,FXD:THICK FILM;33.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA33E2
A7R418	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7R419	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A7R420	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A7R421	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A7R422	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R423	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A7R424	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R425	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R426	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A7R427	321-5039-00			RES,FXD:THICK FILM;56.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK5622FT
A7R428	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A7R429	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R430	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R431	321-5039-00			RES,FXD:THICK FILM;56.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK5622FT
A7R432	321-5039-00			RES,FXD:THICK FILM;56.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK5622FT
A7R441	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A7R442	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R443	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R446	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A7R447	321-5029-00			RES,FXD:THICK FILM;8.25K OHM,1%,0.125W,TC=100 PPM	50139	BCK8251FT
A7R448	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A7R449	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R450	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A7R451	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R470	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R496	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A7R497	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R502	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R503	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R504	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R505	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R507	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R509	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A7R510	311-2280-00			RES,VAR,NONWW:TRMR,10 OHM,20%,0.5WLIN,MI	TK2073	GF06VT2 100 M L
A7R511	321-5046-00			RES,FXD:THICK FILM;82.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK82R5FT
A7R512	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WT&RED	91637	CRCW12063010FT
A7R514	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R515	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-47502F
A7R516	321-5050-00			RES,FXD:THICK FILM;33.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA33E2
A7R520	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A7R521	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A7R522	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R523	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A7R524	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R525	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A7R526	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A7R550	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A7R551	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R600	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R601	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A7R602	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A7R603	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R610	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R611	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A7R612	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R613	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R620	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A7R621	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A7R623	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT

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Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7R624	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A7R700	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A7R711	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A7R712	321-5237-00			RES,FXD,FILM:619 OHM,0.5%,25PPM,1206 PKG	91637	TNPW1206-6190DT
A7R713	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R721	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A7R722	321-5237-00			RES,FXD,FILM:619 OHM,0.5%,25PPM,1206 PKG	91637	TNPW1206-6190DT
A7R723	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7R731	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A7R732	321-5237-00			RES,FXD,FILM:619 OHM,0.5%,25PPM,1206 PKG	91637	TNPW1206-6190DT
A7R733	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A7U1	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U2	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U3	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U41	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A7U43	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U45	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U51	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A7U53	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U55	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U61	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A7U63	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U65	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U70	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A7U71	156-5119-00			IC,LIN:BIPOLAR,COMPTR:DUAL,OPEN COLLECTOR,80NS	1CH66	LM319D
A7U72	156-5119-00			IC,LIN:BIPOLAR,COMPTR:DUAL,OPEN COLLECTOR,80NS	1CH66	LM319D
A7U73	156-5119-00			IC,LIN:BIPOLAR,COMPTR:DUAL,OPEN COLLECTOR,80NS	1CH66	LM319D
A7U74	156-5098-01			IC,DGTL:HCTCMOS,GATE:QUAD 2-INPUT NAND	01295	SN74HCT00DR
A7U76	156-5853-01			IC,LIN:BIPOLAR,OP-AMP;35MHZ,UNITY GAIN STABLE	27014	LM6361MX
A7U77	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U80	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U81	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U82	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U83	156-6645-01			IC,LIN:BIPOLAR,OP-AMP;140MHZ,HIGH OUT	1ES66	MAX442CSA-T
A7U84	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U90	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U100	156-6407-01			IC,LIN:BIPOLAR,AMPL;CURRENT FEEDBAC K,100MHZ,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CM(T&R)
A7U101	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U102	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U103	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U124	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U125	156-5085-01			IC,DGTL:HCTCMOS,GATE:QUAD 2-INPUT OR	0JR04	TCHCT32AFN(ELP)
A7U126	156-6279-01			IC,LIN:BIFET,OP-AMP;DUAL,TWO POLE FREQ COMP	04713	MC33282DR2
A7U127	156-6644-00			IC,LIN:BIPOLAR,AMPL;TRANSCONDUCTANC E,DIFFERENTIAL INPUT,275MHZ,CURRENT OUT	1ES66	MAX436CSD
A7U151	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U161	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	17856	DG444DY-T1
A7U162	156-6279-01			IC,LIN:BIFET,OP-AMP;DUAL,TWO POLE FREQ COMP	04713	MC33282DR2
A7U180	156-2959-00			IC,LIN:BIPOLAR,VR:POSITIVE,8.0V,1.0M,2%	04713	MCT7808CT
A7U190	156-4234-00			IC,LIN:BIPOLAR,VR:NEGATIVE,-8.0 VOLTS,1.0A,2%	80009	156423400
A7U202	156-5088-01			IC,DGTL:HCTCMOS,DEMUX/DECODER:3-TO-8 DECODER	0JR04	TC74HCT138AFN(E)
A7U203	156-5358-01			IC,DGTL:HCMOS,RGTR:8-BIT PISO SHIFT RGTR	01295	SN74HC165DR

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A7U204	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A7U206	156-6619-01			IC,MEM:CMOS,FIFO:512 X 9,35NS	34335	AM7201-35JCTR
A7U207	160-9401-00			IC,DGTL:CMOS,PLD;EEPLD,22V10,130MA,25NS,PLCC28	80009	160940100
A7U208	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A7U209	156-5289-01			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,3-STATE	04713	MC74HCT574ADWR 2
A7U210	156-5480-01			IC,DGTL:HCMS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	OJR04	TC74HC595AFN(EL
A7U211	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE,	01295	SN74HCT125DR
A7U212	156-6224-00			IC,CONV:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A7U213	156-5304-01			IC,DGTL:HCTCMOS,BFR;QUAD BFR, /OE,	01295	SN74HCT125DR
A7U220	156-5480-01			IC,DGTL:HCMS,RGTR;8-BIT SHIFT RGTR, WITH OUT LCH	OJR04	TC74HC595AFN(EL
A7U300	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ,W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A7U301	156-6603-00			IC,LIN:BIPOLAR,OP-AMP;200MHZ,1.5MV VOS,HI OUT CUR	64762	EL2073CS
A7U302	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ, W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A7U400	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ,W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A7U401	156-6603-00			IC,LIN:BIPOLAR,OP-AMP;200MHZ,1.5MV VOS,HI OUT CUR	64762	EL2073CS
A7U402	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ, W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A7U500	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ, W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A7U501	156-6603-00			IC,LIN:BIPOLAR,OP-AMP;200MHZ,1.5MV VOS,HI OUT CUR	64762	EL2073CS
A7U502	156-6647-00			IC,LIN:BIPOLAR,OP-AMP;CUR FDBK,200MHZ,W/DISABLE,1 TO 8 GAIN RANGE	62839	CLC410AJE
A8	671-2676-00	B010100	B010109	CIRCUIT BD ASSY:DAC	80009	671267600
A8	671-2676-01	B010110	B010780	CIRCUIT BD ASSY:DAC	80009	671267601
A8	671-2676-02	B010781	B010919	CIRCUIT BD ASSY:DAC	80009	671267602
A8	671-2676-03	B010920		CIRCUIT BD ASSY:DAC	80009	671267603
				ATTACHED PARTS		
	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIAPCB,0.015 X 0.032 BRS,W/ RED NYLON COLLAR(LOCATED @ GND,PB,PR,Y)	26364	104-01-02
				END ATTACHED PARTS		
A8C1	283-0420-00			CAP,FXD,CER DI:1000PF,20%,1KV	59660	0838 562 Z5U0 1
A8C2	283-5098-00	671-2676-02		CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C14	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C15	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C16	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C18	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C19	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C25	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C27	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A8C33	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C37	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	1W344	MVK35VC10RME60T
A8C41	283-5109-00			CAP,FXD,CER:MLC;680PF,5%,100V,NPO,1206	04222	12061A681JAT1A
A8C42	283-5109-00			CAP,FXD,CER:MLC;680PF,5%,100V,NPO,1206	04222	12061A681JAT1A
A8C43	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	1W344	MVK16VC22RME60T
A8C44	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C45	290-0939-00			CAP,FXD,ELCTL:10UF,+100-10%,100V	1W344	LX100VB10RM10X2
A8C46	290-1302-00			CAP,FXD,ALUM:1000UF,20%,35V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1V102M7
A8C47	290-1034-00			CAP,FXD,ALUM:330UF,20%,25V,13 X 25MM	0H1N5	CEUFM1E331
A8C49	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C50	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C51	283-0111-04			CAP,FXD,CER DI:0.1UF,20%,50V	04222	SR595C104MAAAP1

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A8C54	283-5211-00			CAP,FXD,CER:MLC;4700PF,10%,50V,X7R	04222	12065C472KT2A
A8C55	290-5008-00			CAP,FXD,TANT:1UF,20%,35V,0.138 X 0.110:3528,SMD,T&R	04222	TAJB105M035
A8C56	290-5008-00			CAP,FXD,TANT:1UF,20%,35V,0.138 X 0.110:3528,SMD,T&R	04222	TAJB105M035
A8C57	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C58	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C59	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C60	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C63	283-5188-00			CAP,FXD,CER:MLC;100PF,5%,100V,NPO,1206	04222	12061A101JAT1A
A8C64	283-5188-00			CAP,FXD,CER:MLC;100PF,5%,100V,NPO,1206	04222	12061A101JAT1A
A8C66	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C67	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C68	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C69	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C70	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C71	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C72	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C170	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C171	290-0758-00			CAP,FXD,ELCTLT:2.2UF,+50-10%,200V	0H1N5	CEUSM2F2R2
A8C172	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%~20%,25V,Y5V,1206	04222	12063G105ZAT1A
A8C173	283-5267-00			CAP,FXD,CER:MLC;1UF,+80%~20%,25V,Y5V,1206	04222	12063G105ZAT1A
A8C174	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C175	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C176	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C177	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C178	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C179	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C180	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C181	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C182	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C183	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C190	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C191	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C192	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C193	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C194	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C211	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C215	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C216	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C217	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C218	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C219	283-5006-00			CAP,FXD,CER:MLC;5PF,+/-0.25PF,50V,NPO,1206	04222	12065A5R0CAT1A
A8C221	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C225	283-5022-00			CAP,FXD,CER DI:47PF,5%,50V	04222	12065A470JAT1A
A8C226	283-5022-00			CAP,FXD,CER DI:47PF,5%,50V	04222	12065A470JAT1A
A8C227	283-5007-00			CAP,FXD,CER:MLC;8PF,+/-0.5PF,50V,NPO,1206	04222	12065A8R0DAT1A
A8C228	283-5259-00			CAP,FXD,CER:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A8C229	283-5259-00			CAP,FXD,CER:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A8C230	283-5042-00			CAP,FXD,CER:MLC;27PF,5%,50V,NPO,1206	04222	12065A270JAT1A
A8C231	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A8C232	283-5187-00			CAP,FXD,CER:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A8C233	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C234	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C235	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C236	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C237	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C238	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C239	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8C240	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%~20%,50V,Z5U,1206	04222	12065E104ZAT3A

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A8C241	283-5108-00			CAP,FXD,CER:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A8C242	283-5098-00			CAP,FXD,CER:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A8CR1	152-0720-00			DIO,RECT:ULTRA FAST;200V,8A,25NS,100A IFSM	25403	BYV29-200
A8CR1	214-3841-00			HEAT SINK,SEMIC:XSTR,TO-220;VERT MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
A8CR2	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A8CR3	152-0864-00			DIO,RECT:ULTRA FAST;150V,2A,25NS,IFSM=50A,SOFT REC	25403	BYV27-150
A8CR4	152-0864-00			DIO,RECT:ULTRA FAST;150V,2A,25NS,IFSM=50A,SOFT REC	25403	BYV27-150
A8CR6	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A8CR7	152-0612-00			DIO,SIG:VVC;50V,15-20PF,C4/30=2.33,Q=15	04713	SMV1561
A8CR100	152-5018-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203-HIGH
A8CR101	152-0864-00			DIO,RECT:ULTRA FAST;150V,2A,25NS,IFSM=50A,SOFT REC	25403	BYV27-150
A8J1	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	00779	104344-1
A8J3	131-3361-00			CONN,HDR:PCB;MALE,RTANG,2 X 13,0.1 CTR,0.3 3 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD	53387	2526-5002UB
A8J9	131-3358-00			CONN,HDR:PCB;MALE,RTANG,2 X 5,0.1 CTR,0.39 0 MLG X 0.112 TAIL,0.33 H,SHRD/4 SIDES,MILPLZ,30 GLD	53387	2510-5002UB
A8J10	131-3361-00			CONN,HDR:PCB;MALE,RTANG,2 X 13,0.1 CTR,0.3 3 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD	53387	2526-5002UB
A8J11	131-3718-00			CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120 TAIL,SHRD/4 SIDES,CTR PLZ,30 GLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A8L4	108-5018-00			COIL,RF:INDUCTOR:FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A8L5	108-5018-00			COIL,RF:INDUCTOR:FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A8L6	108-5018-00			COIL,RF:INDUCTOR:FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A8L7	108-1412-00			INDUCTOR,FXD:POWER:4.7UH,20%,I<3.7A,RDC<0.0 17 OHM,Q>10,SRF>30MHZ	54583	TSL0807-4R7M3R0
A8L8	108-1412-00			INDUCTOR,FXD:POWER:4.7UH,20%,I<3.7A,RDC<0.0 17 OHM,Q>10,SRF>30MHZ	54583	TSL0807-4R7M3R0
A8L10	108-5106-00			COIL,RF:INDUCTOR:FXD,680NH,10%,Q=30,SRF=34 0MHZ,DCR=1.47 OHM,IMAX=540MA	80009	108510600
A8L106	108-5018-00			COIL,RF:INDUCTOR:FXD,4.7UH,20%,Q=50,SRF=45 MHZ,DCR=1.0 OHM,IMAX=315MA	54583	NL453232T-4R7M
A8L107	108-1262-00			INDUCTOR,FXD:POWER:100UH,10%,I<0.75A,RDC<0. 23 OHM,Q>15,SRF>5.4MHZ	54583	TSL0807-101KR75
A8L108	108-5072-00			COIL,RF:INDUCTOR:FXD,1UH,5%,Q=33,SRF=290MH Z,DCR=1.75 OHM,IMAX=460MA	02113	1008CS-102XJBA
A8L109	108-5072-00			COIL,RF:INDUCTOR:FXD,1UH,5%,Q=33,SRF=290MH Z,DCR=1.75 OHM,IMAX=460MA	02113	1008CS-102XJBA
A8P1	131-0993-00			CONN,BOX:SHUNT;FEMALE,STR,1 X 2,0.1 CTR,0. 385 H,30 GLD,BLACK,JUMPER	22526	65474-006
A8Q1	151-1136-00			XSTR,PWR:MOS,N-CH;100V,14A,0.16 OHM *ATTACHED PARTS*	04713	MTP12N10E
	210-1178-00			WASHER,SHLDR:U/W TO-220 XSTR	13103	7721-7PPS
	214-3841-00			HEAT SINK,SEMIC:XSTR,TO-220;VERT MT,(2)SOLDERABLE TABS,ALUM,BLACK ANODIZE	13103	6021PB
	342-0355-00			INSULATOR,PLATE:XSTR,SILICONE RUBBER *END ATTACHED PARTS*	55285	7403-09FR-51
A8R1	311-2271-00	671-2676-02		RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST	TK2073	GF06VT2 502 M L
A8R2	321-5166-00	671-2676-02		RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-1503FT
A8R26	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A8R42	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R43	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R44	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A8R45	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A8R48	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT

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Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A8R49	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610R0FT
A8R50	321-5086-00			RES,FXD:THICK FILM;36.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK36R5FT
A8R51	321-5086-00			RES,FXD:THICK FILM;36.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK36R5FT
A8R57	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R58	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R59	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A8R62	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A8R71	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A8R76	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A8R81	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A8R82	321-5039-00			RES,FXD:THICK FILM;56.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK5622FT
A8R83	321-5281-00			RES,FXD:THICK FILM;2K OHM,1%,0.125W,TC=100 PPM	91637	CRCW1206-2001FT
A8R84	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R85	321-5004-00	671-2676-02		RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R88	321-5031-00	671-2676-00	671-2676-01	RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A8R88	321-5266-00	671-2676-02		RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	91637	CRCW1206-1102FT
A8R89	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R90	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A8R91	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R92	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R93	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R94	308-0677-00			RES,FXD,WW:1 OHM,5%,2W	75042	SPH 1 OHM 5 PER
A8R118	321-5030-00	671-2676-00	671-2676-00	RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R118	321-5031-00	671-2676-01		RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A8R119	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R122	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A8R123	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A8R126	321-5018-00	671-2676-00	671-2676-00	RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R126	321-5019-00	671-2676-01		RES,FXD:THICK FILM;1.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK1211FT
A8R127	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R128	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A8R129	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A8R130	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A8R131	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A8R132	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A8R133	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A8R134	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A8R135	321-5044-00			RES,FXD:THICK FILM;56.2 OHM,1%,0.125W,TC=100 PPM	50139	BCD56R2FT
A8R136	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A8R137	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A8R138	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A8R139	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A8R146	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R147	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R148	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R149	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R150	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R151	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R152	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R153	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R200	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R201	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R202	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R203	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R204	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R205	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R206	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R207	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
A8R208	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R209	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R210	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R211	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R212	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R213	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R214	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R215	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R216	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R219	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R220	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R221	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R222	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R223	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R224	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R225	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R226	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R227	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R228	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R229	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R230	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A8R231	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A8R233	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R235	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R237	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R238	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R239	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R241	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R243	321-5086-00			RES,FXD:THICK FILM;36.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK36R5FT
A8R244	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R245	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R246	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A8R247	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A8R249	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A8R250	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R252	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R253	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R254	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A8R255	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A8R256	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A8R257	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R259	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R261	321-5044-00			RES,FXD:THICK FILM;56.2 OHM,1%,0.125W,TC=100 PPM	50139	BCD56R2FT
A8R263	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A8R264	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R265	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A8R266	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610ROFT
A8R267	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	91637	CRCW120610ROFT
A8R268	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A8R269	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R270	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A8R271	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A8T1	120-1851-00			XFMR,PWR,STPDN:FLYBACK,100KHZ,40V INPUT,5 V	75498	128-9033-EA
A8TP4	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A8TP5	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02

REV OCT 1994

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number Effective	Discontinued	Name & Description	Mfr. Code	Mfr. Part Number
A8TP6	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A8TP7	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A8TP8	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A8TP9	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRASS,W/ RED NYLON COLLAR	26364	104-01-02
A8U8	156-2959-00			IC,LIN:BIPOLAR,VR:POSITIVE,8.0V,1.0M,2%	04713	MCT7808CT
A8U9	156-6345-00			IC,CONV:BIPOLAR,D/A;12 BIT,80MHZ,TTL I NPUT,W/LCH,CURRENT OUT,REFERENCE	24355	AD9713BAP
A8U14	156-1989-00			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CD
A8U16	156-5325-01			IC,DGTL:ECL,TRANSLATOR;QUAD TTL-TO-ECL	04713	MC10H124FNR2
A8U17	156-6233-00			IC,ASIC:CMOS,CUSTOM;HALF BAND FILTER	27014	MM9217-V4/SZ107
A8U18	156-6345-00			IC,CONV:BIPOLAR,D/A;12 BIT,80MHZ,TTL I NPUT,W/LCH,CURRENT OUT,REFERENCE	24355	AD9713BAP
A8U19	156-6345-00			IC,CONV:BIPOLAR,D/A;12 BIT,80MHZ,TTL I NPUT,W/LCH,CURRENT OUT,REFERENCE	24355	AD9713BAP
A8U20	156-6233-00			IC,ASIC:CMOS,CUSTOM;HALF BAND FILTER	27014	MM9217-V4/SZ107
A8U22	156-1989-00			IC,LIN:BIFET,OP-AMP;DUAL	01295	TL072CD
A8U23	156-4386-00			IC,LIN:BIPOLAR,SW-REGULATOR CONTROLLER;P WM,CURRENT MODE,SINGLE TOTEM POLE OUT	04713	UC3845BN
A8U24	156-5973-00			IC,DGTL:ECL,GATE;TRIPLE 2-INPUT XOR/XNOR	04713	MC10H107FN
A8U27	156-5324-01			IC,DGTL:ECL,TRANSLATOR;QUAD ECL-TO-TTL	04713	MC10H125FNR2
A8U29	156-6233-00			IC,ASIC:CMOS,CUSTOM;HALF BAND FILTER	27014	MM9217-V4/SZ107
A8U90	156-4234-00			IC,LIN:BIPOLAR,VR:NEG,-8.0 VOLTS,1.0A,2%	80009	156423400
A8U93	160-9718-00			IC,DGTL:CMOS,PLD;EPLD,16V8,10NS,115MA	80009	160971800
A8U94	156-6146-00			IC,ASIC:CMOS,CUSTOM;12-BIT,32 STAGE PIPELINE RGTR,ADG234	27014	SCX6244UEC/V2
A8Y1	158-0319-00	671-2676-00	671-2676-00	XTAL UNIT,QTZ:13.5 MHZ,+/- 5 PPM, PARALLEL, CL=32 PF, HC-43/U PKG	33096	CCAT102118
A8Y1	158-0445-00	671-2676-01		CRYSTAL:PARALLEL;13.5MHZ,30PPM,LC=25PF,ESR=25 OHMS	14301	016-210-00278
B1	119-5040-01			FAN,DC:TUBEAXIAL;12V,1.4W,3,500 RPM,14.8 CFM,30DBA,60MM X 60MM X 25.4MM,BALL BEARING,8" LEAD W/CONN,HEAT SHRINK	S4246	TUDC12B4
FL1	119-0420-00			FILTER,RFI:6A,250VAC,400HZ	0GV52	FN323B-6/01
	198-5808-00			*ATTACHED PARTS* WIRE SET,ELEC:DESCRETE;CUT/KIT,3,18 AWG,4.0 L,2,0.375 X 0.25 CUT,1,0.375 X 0.375 CUT *END ATTACHED PARTS*	TK2469	198-5808-00
V1	154-0909-16			ELECTRON TUBE:CRT,T1710-4-3.41,	80009	154090916
W1	174-3126-00			CABLE ASSY,RF:75 OHM COAX,2.7 L (CONNECTED @ A4J1 & A5J3)	TK2469	174-3126-00
W2	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J2 & A7J13)	53387	80-6105-18179
W3	174-2652-00	B010100	B010655	CA ASSY,RF:COAXIAL;SLDR,75 OHM,12.0 L,SMB, RTANG,MALE X SMB,RTANG,MALE	TK2469	174-2652-00
W3	174-2652-01	B010656		CA ASSY,RF:COAXIAL,SLDR,75 OHM,12.0 L,SMB,R TANG,MALE X SMB,RTANG,MALE (CONNECTED @ A4J3 & A5J8)	80009	174265201
W5	174-3134-00			CA ASSY,SP:RIBBON;IDC,10,28 AWG,1.75 L,2 X5,0.1 CTR PCB X 2 X 5,0.1 CTR,RCPT,W/CTR PLZ (CONNECTED @ A4J5 & A8J84)	TK2469	174-3134-00
W7	174-3127-00			CA ASSY,SP:26 COND,28 AWG,0.950 L (CONNECTED @ A6J7 & A8J3)	TK2469	174-3128-00
W9	174-3131-00			CA ASSY,SP:10 COND,28 AWG,0.950 L (CONNECTED @ A6J1 & A8J9)	80009	174313100

Replaceable Electrical Parts

Component Number	Tektronix Part Number	Serial / Assembly Number		Name & Description	Mfr. Code	Mfr. Part Number
		Effective	Discontinued			
W11	174-3125-00			CA ASSY,SP,BR:RIBBON,DESERIALIZER PWR;IDC,20,28 AWG,2 X 10,4.0 IN TO 2 X 5,18.0 IH TO2 X 5 (CONNECTED @ A4J2,A5J1 & A8J11)	TK2469	174-3125-00
W12	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J5 & A7J12)	53387	80-6105-18179
W13	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J13 & A7J9)	53387	80-6105-18179
W14	174-3129-00			CA ASSY,SP:40 COND,28 AWG.1.750 L (CONNECTED @ A6J2 & A7J14)	TK2469	174-3129-00

Diagrams/Circuit Board Illustrations

Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2–1975.

Logic symbology is based on ANSI Y32.14–1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

Overline, parenthesis, or leading slash indicate a low asserting state.

Example: $\overline{\text{ID CONTROL}}$, (ID CONTROL), or /ID CONTROL.

Abbreviations are based on ANSI Y1.1–1972.

Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

Y14.15, 1966 -- Drafting Practices.

Y14.2, 1973 -- Line Conventions and Lettering.

Y10.5, 1968 -- Letter Symbols for Quantities Used in Electrical

Science and
Electrical Engineering.

American National Standard Institute
1430 Broadway, New York, New York 10018

Component Values

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors: Values one or greater are in picofarads (pF).

Values less than one are in

microfarads (μF).

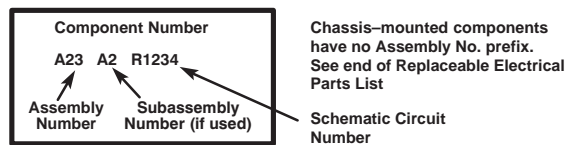
Resistors = Ohms (Ω).

The following information and special symbols may appear in this manual.

Assembly Numbers

Each assembly in the instrument is assigned an assembly number (e.g., A20). The assembly number appears on the diagram (in circuit board outline), circuit board illustration title, and lookup table for the schematic diagram.

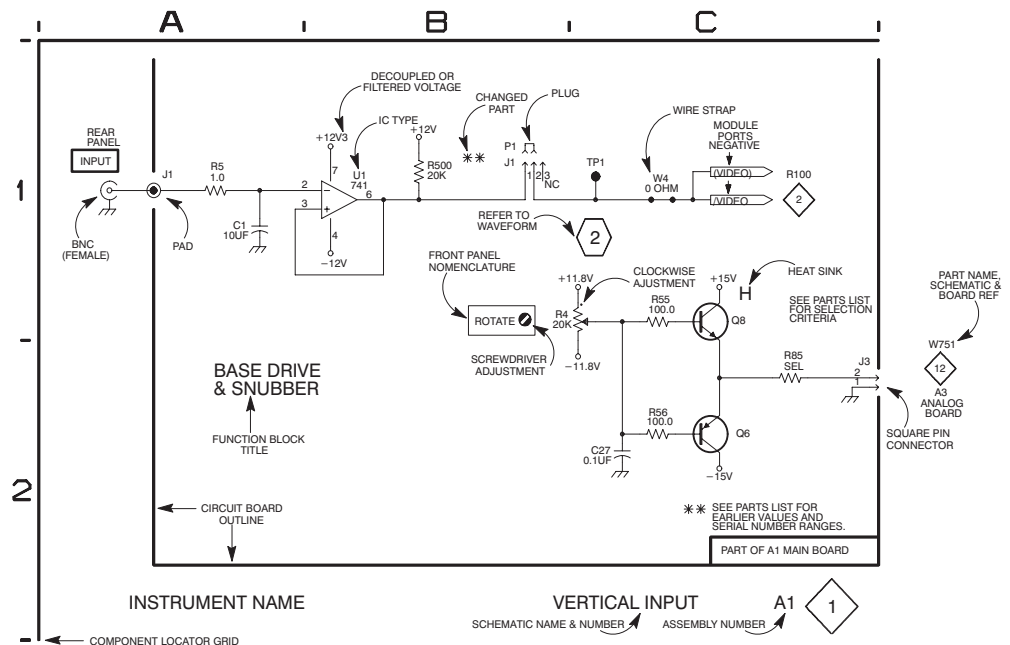
The Replaceable Electrical Parts List is arranged by assembly number in numerical sequence; the components are listed by component number. Example:

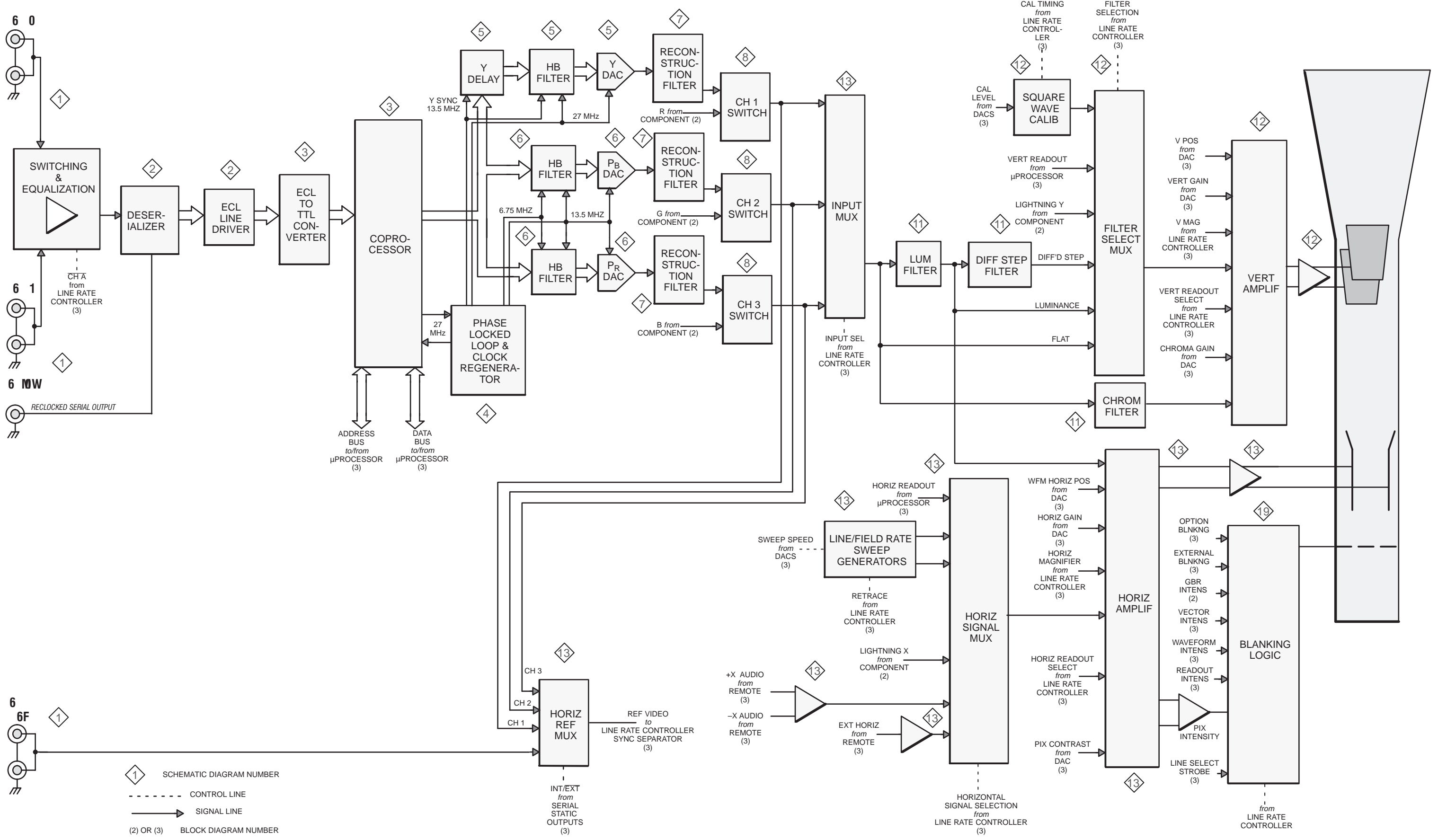


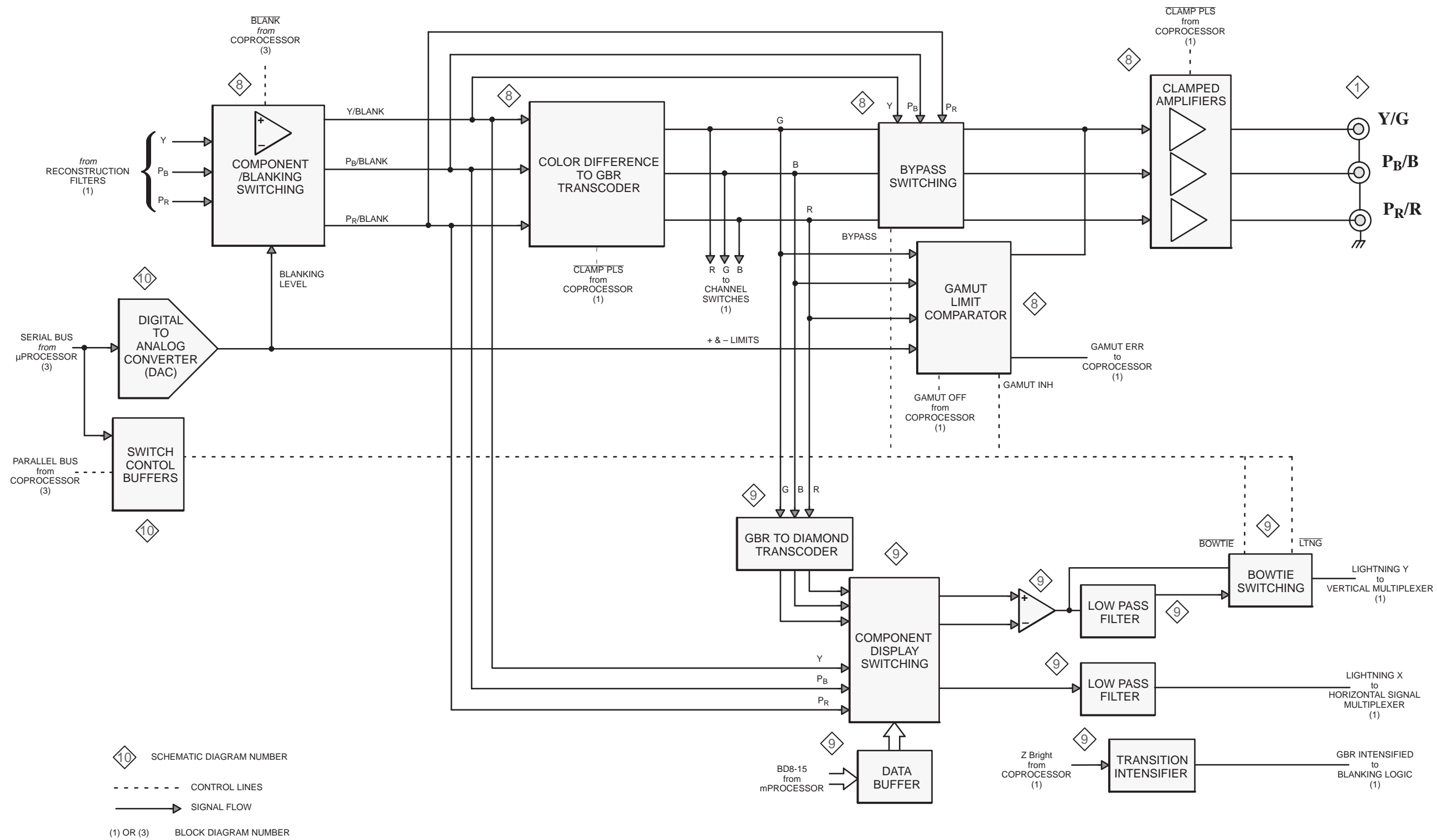
Grid Coordinates

The schematic diagram and circuit board component location illustration have grids. A lookup table with the grid coordinates is provided for ease of locating the component. Only the components illustrated on the facing diagram are listed in the lookup table.

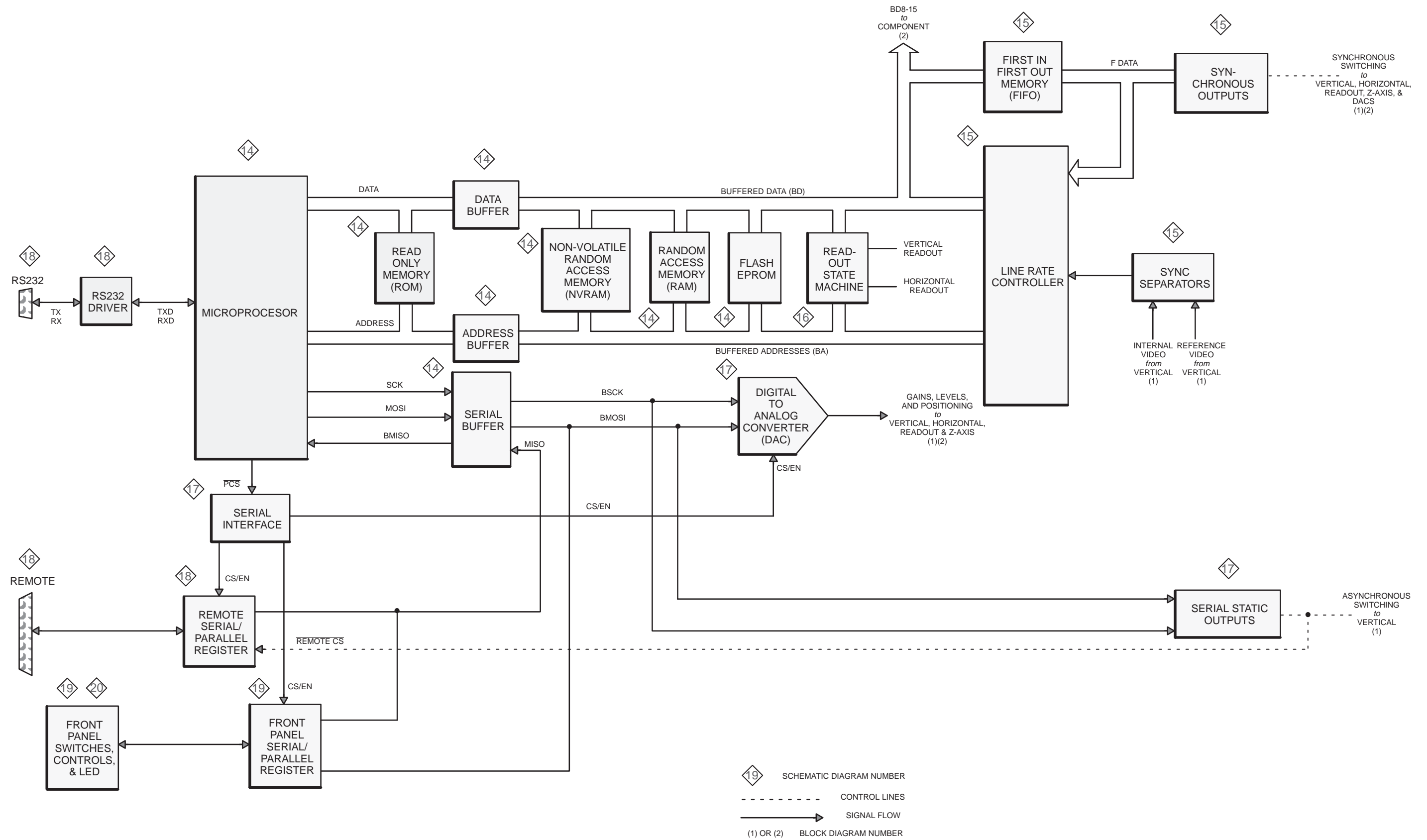
When more than one schematic diagram is used to illustrate the circuitry on a circuit board, the circuit board illustration will only appear opposite the first diagram; the lookup table will list the diagram number of other diagrams that the other circuitry appears on.

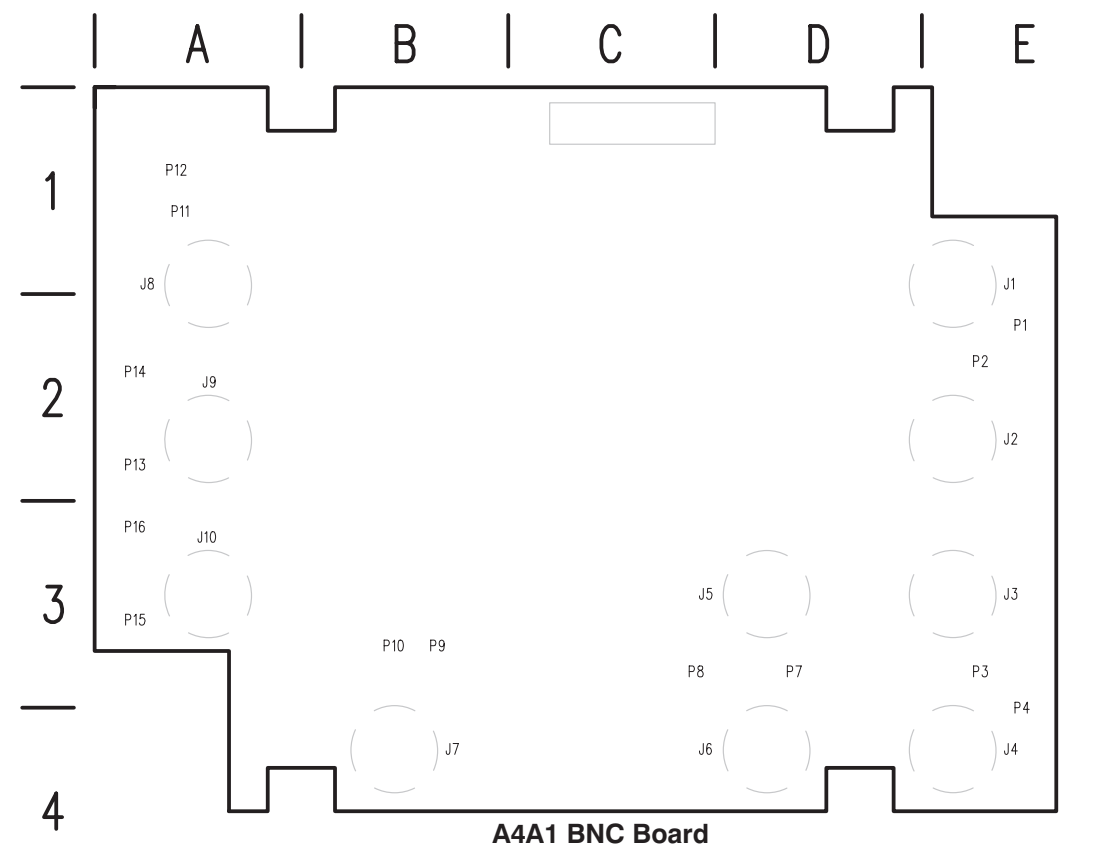
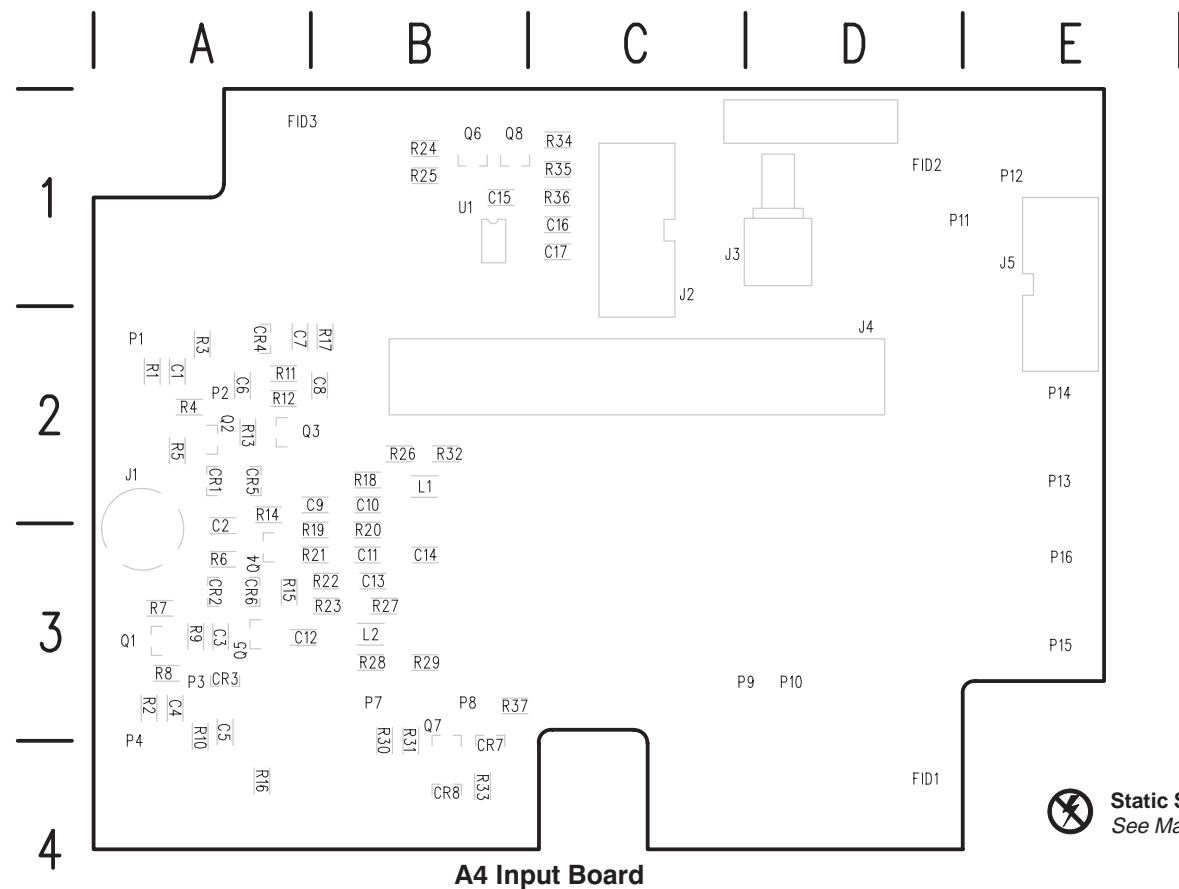






COMPONENT BLOCK DIAGRAM 2





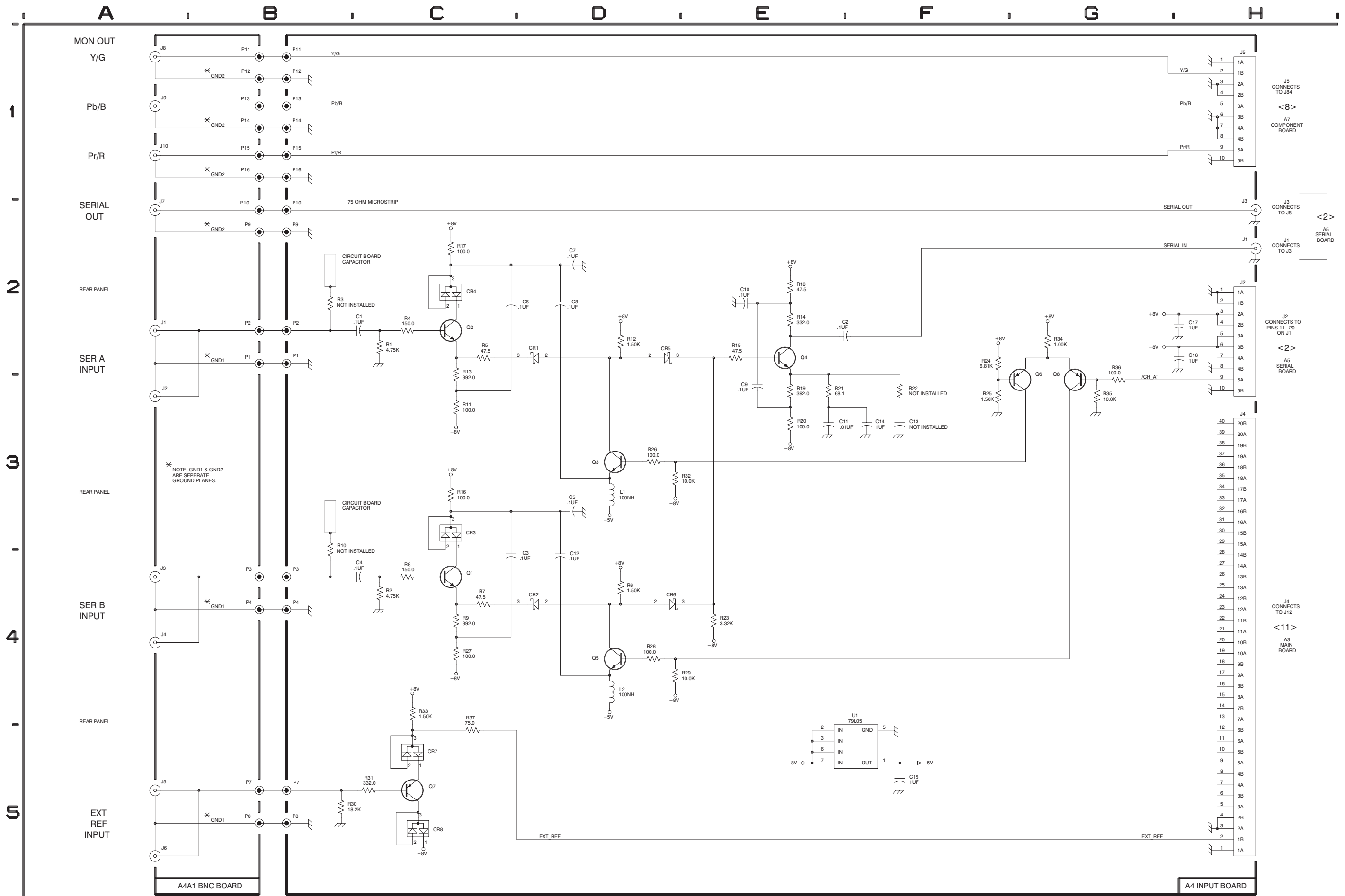
Static Sensitive Devices
See Maintenance Section

Schematic Diagram <1> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

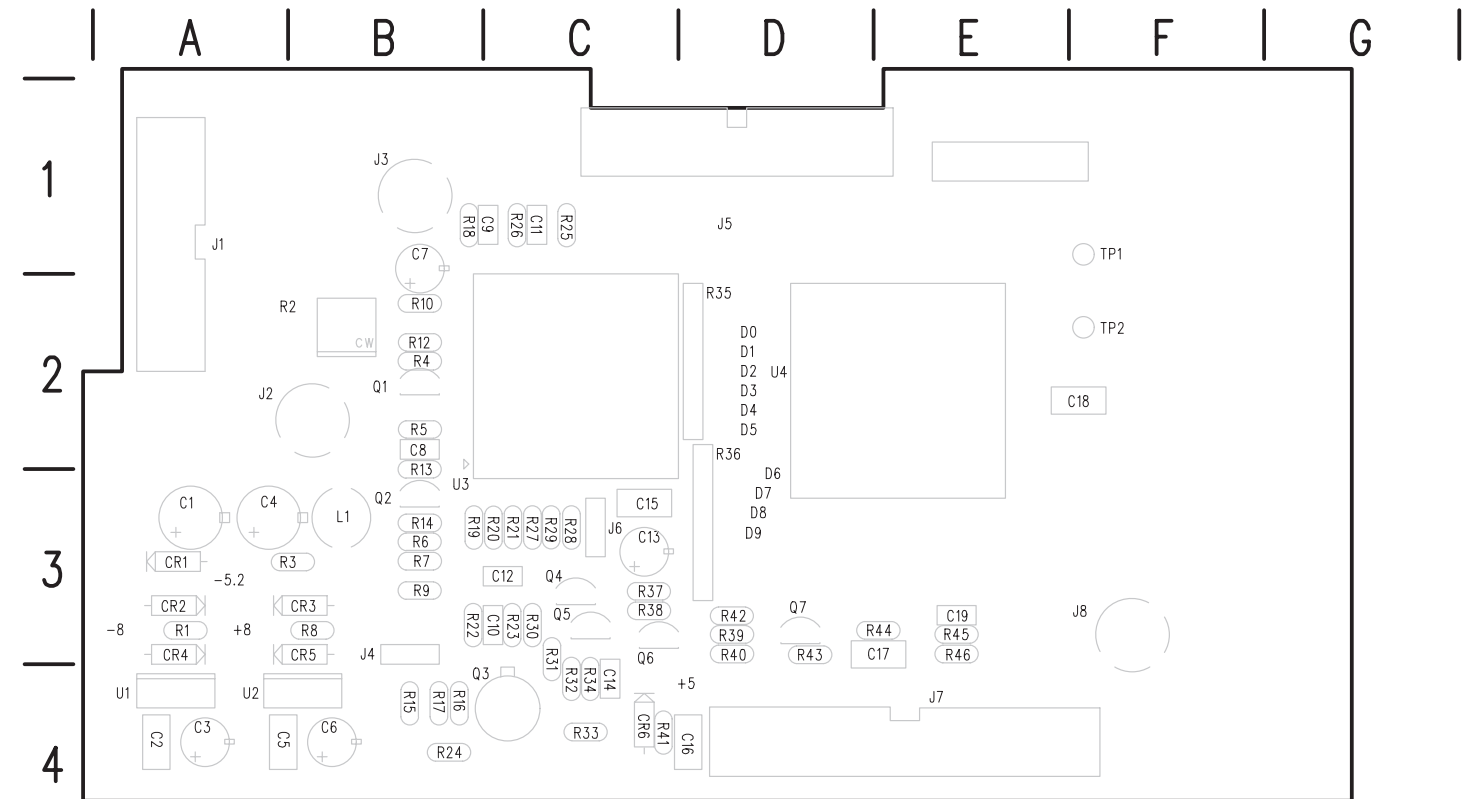
Assembly A4 and A4A1.

ASR	C L	N	ASR	C L	N	ASR	C L	N	ASR	C L	N	ASR	C L	N	ASR	C L	N
I S	ESM	ESM	I S	ESM	ESM	I S	ESM	ESM	I S	ESM	ESM	I S	ESM	ESM	I S	ESM	ESM
A4			CR1	D2	A2	P7	B5	B3	R2	C4	A3	R21	E3	A3	A4A1		
C1	B2	A2	CR2	D4	A3	P8	B5	B3	R3	B2	A2	R22	F3	B3	P4	B4	E4
C2	E2	A3	CR3	C3	A3	P9	B2	C3	R4	C2	A2	R23	E4	B3	P7	B5	D3
C3	C4	A3	CR4	C2	A2	P10	B2	D3	R5	C2	A2	R24	F2	B1	P8	B5	C3
C4	B4	A3	CR5	D2	A2	P11	B1	D1	R6	D4	A3	R25	F3	B1	P9	B2	B3
C5	D3	A3	CR6	D4	A3	P12	B1	E1	R7	C4	A3	R26	D3	B2	P10	B2	B3
C6	C2	A2	CR7	C5	B4	P13	B1	E2	R8	C4	A3	R27	C4	B3	P11	B1	A1
C7	D2	A2	CR8	C5	B4	P14	B1	E2	R9	C4	A3	R28	D4	B3	P12	B1	A1
C8	D2	B2	J1	H2	A2	P15	B1	E3	R10	B3	A3	R29	D4	B3	P13	B1	A2
C9	E3	A2	J2	H2	C1	P16	B1	E3	R11	C3	A2	R30	B5	B3	P14	B1	A2
C10	E2	B2	J3	H2	C1	Q1	C4	A3	R12	D2	A2	R31	C5	B3	P15	B1	A3
C11	E3	B3	J4	H3	D2	Q2	C2	A2	R13	C2	A2	R32	D3	B2	P16	B1	A3
C12	D4	A3	J5	H1	E1	Q3	D3	A2	R14	E2	A2	R33	C4	B4	P1	B2	E2
C13	F3	B3	L1	D3	B2	Q4	E2	A3	R15	E2	A3	R34	G2	C1	P2	B2	E2
C14	F3	B3	L2	D4	B3	Q5	D4	A3	R16	C3	A4	R35	G3	C1	P3	B4	E3
C15	F5	B1	P1	B2	A2	Q6	F2	B1	R17	C2	B2	R36	G3	C1			
C16	G2	C1	P2	B2	A2	Q7	C5	B3	R18	E2	B2	R37	C5	B3			
C17	G2	C1	P3	B4	A3	Q8	G2	B1	R19	E3	A3	U1	E5	B1			
			P4	B4	A4	R1	C2	A2	R20	E3	B3						



WFM 601 SERIAL COMPONENT MONITOR

BNC & INPUT BOARDS <1>



A5 Deserializer Board

Static Sensitive Devices
See Maintenance Section

Schematic Diagram <2>
Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A5.

C	N	L	L	C	N	L	L	C	N	L	L	C	N	L	L
C1	B4	A3		D0	F1	D2		Q1	C2	B2		R14	D3	B3	
C2	C5	A4		D1	F1	D2		Q2	D3	B3		R15	E5	B4	
C3	D5	A4		D2	F1	D2		Q3A	F5	C4		R16	F5	B4	
C4	B4	A3		D3	F2	D2		Q3B	F5	C4		R17	E5	B4	
C5	C5	B4		D4	F2	D2		Q4	F4	C3		R18	C1	B1	
								Q5	F4	C3		R19	E4	B3	
C6	D5	B4						Q6	G4	C4		R20	E4	C3	
C7	E2	B1		D5	F2	D2		Q7	G4	D3		R21	E4	C3	
C8	D3	B2		D6	F2	D3						R22	E4	B3	
C9	C1	C1		D7	F2	D3		R1	D5	A3		R23	F4	C3	
C10	F4	C3		D8	F2	D3		R2*	B2	C2		R24	F5	B4	
				D9	F2	D3		R3	B4	B3		R25	D2	C1	
C11	D1	C1						R4	D2	B2		R26	D1	C1	
C12	E4	C3		J1	A4	A1		R5*	C2	C2		R27	E4	C3	
C13	D2	C3		J2	H3	A2		R6	D3	B3		R28	D2	C3	
C14	F5	C4		J3	A1	B1		R7	G3	B3		R29	D2	C3	
C15	D3	C3		J4	E5	B4		R8	D5	B3		R30	E4	C3	
				J5	H1	D1		R9	A3	B3					
C16	A2	D4						R10	E2	B2					
C17	G4	E4		J6	C3	C3						R31	F4	C3	
C18	G3	F2		J7	A2	E4						R32	F4	C4	
				J8	H4	F3						R33	F5	C4	
CR1	B4	A3										R34	F5	C4	
CR2	D5	A3		L1	B4	B3		R11*	B2	B2		R35	E1	D2	
CR3	D5	B3						R12	H3	B2					
CR4	C5	A4		P4	E5			R13	D3	B3					
CR5	C4	B4		P6	C3										
CR6	B2	C4													

A B C D E F G H

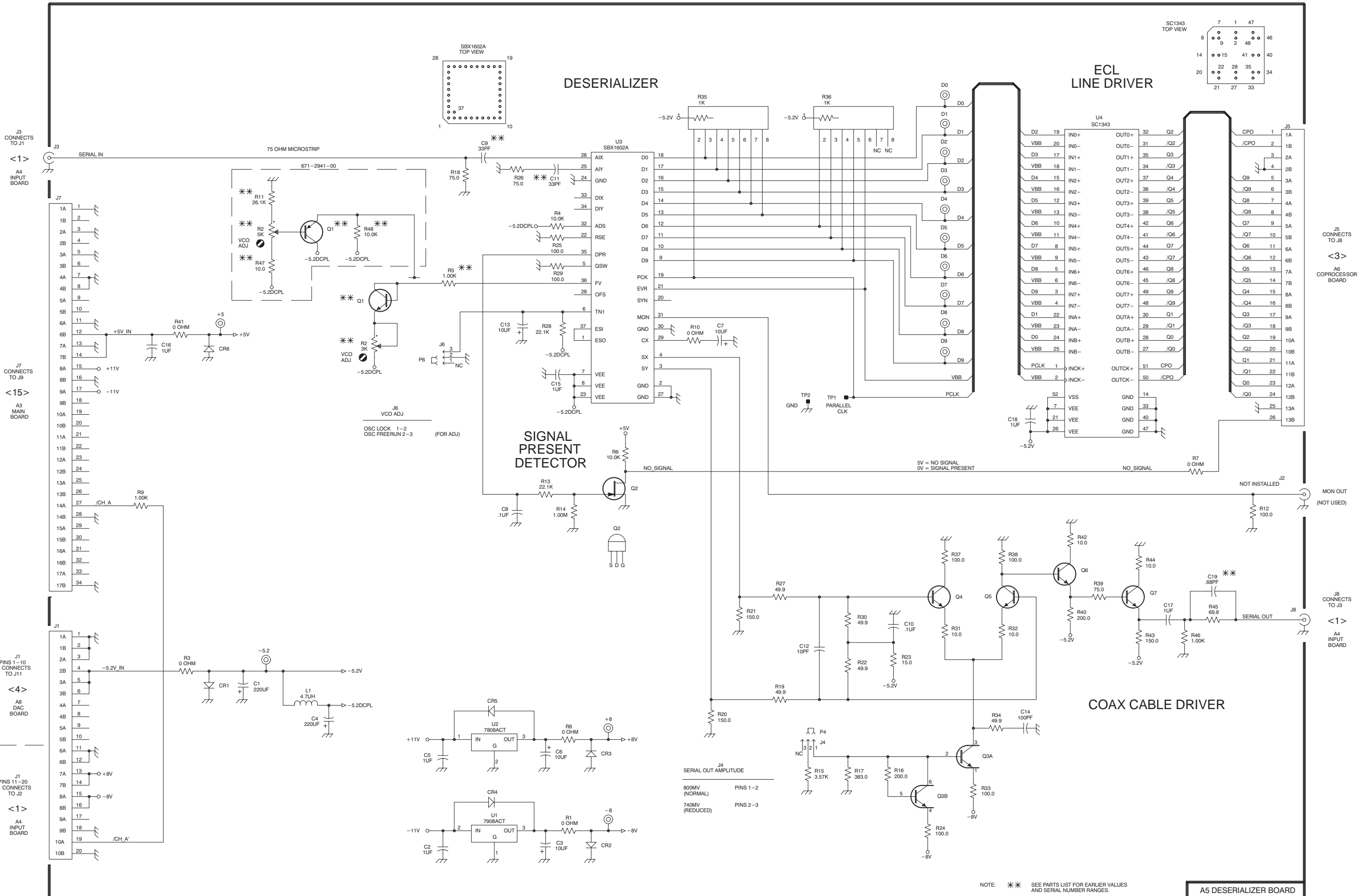
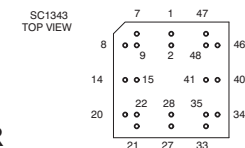
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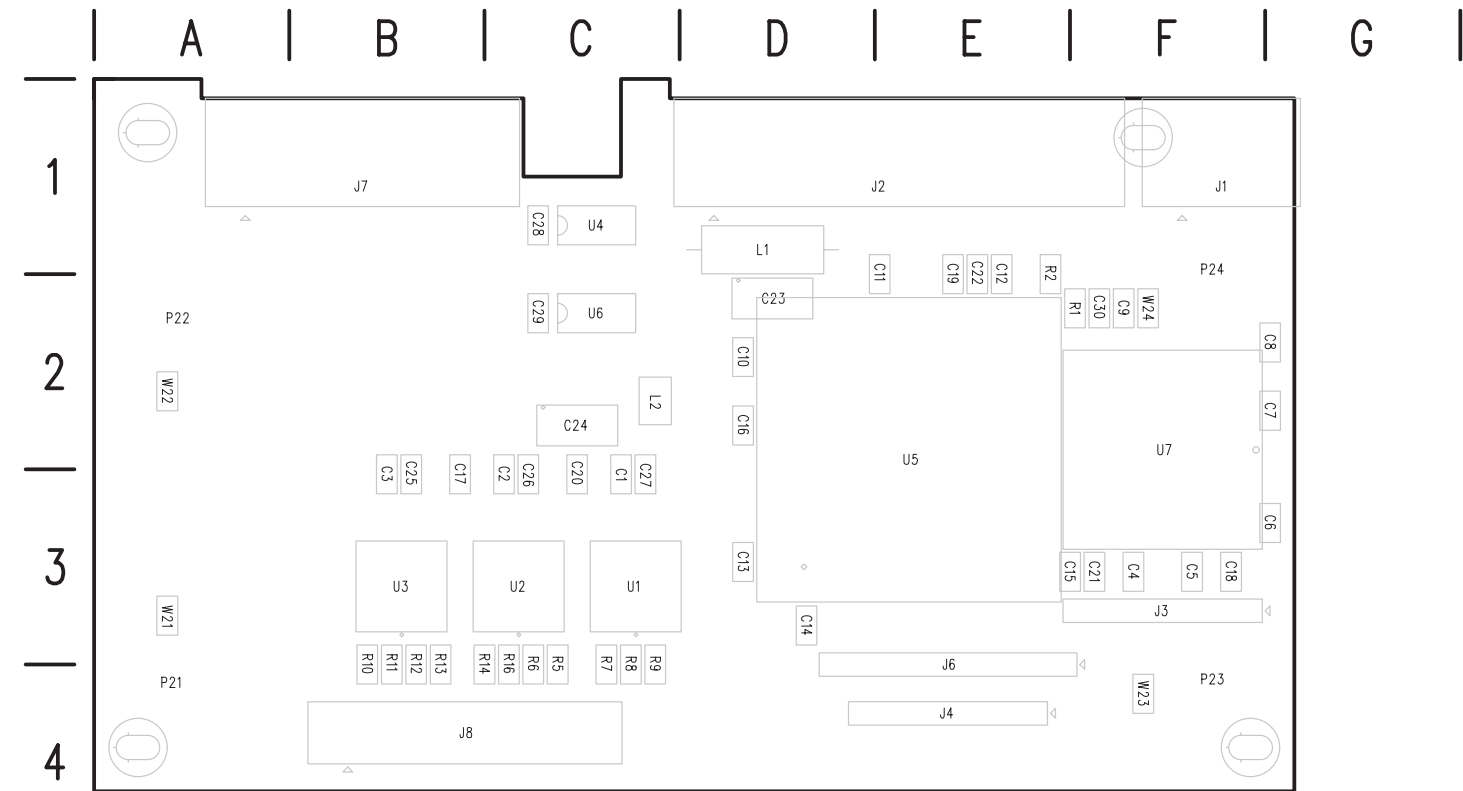
4

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NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

A5 DESERIALIZER BOARD



A6 Coprocessor Board

 **Static Sensitive Devices**
See Maintenance Section

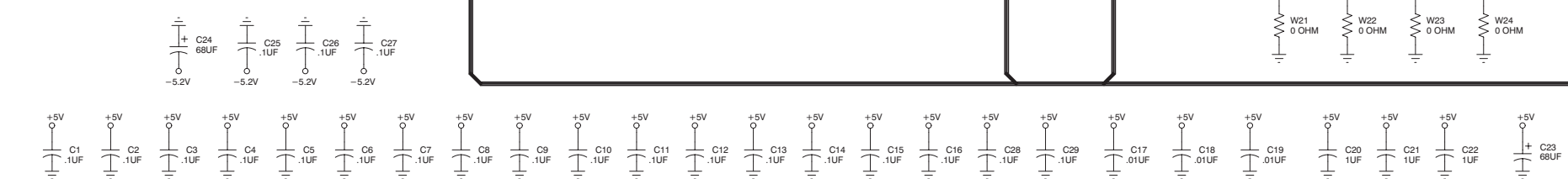
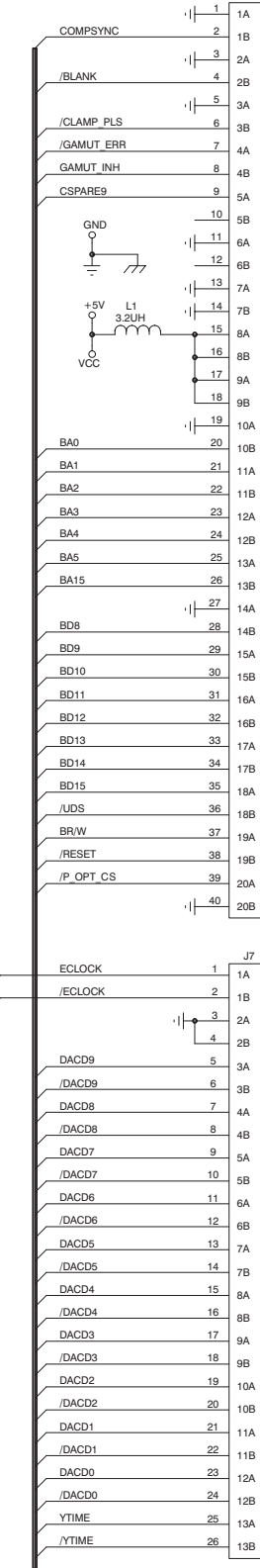
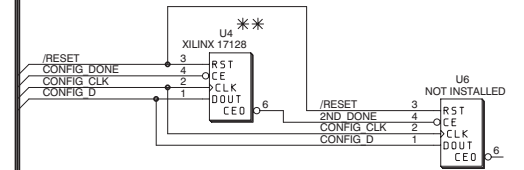
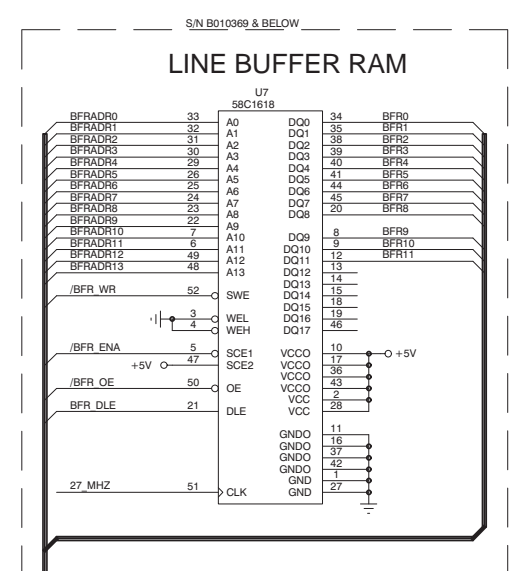
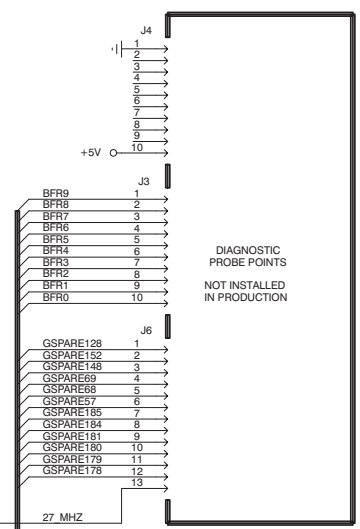
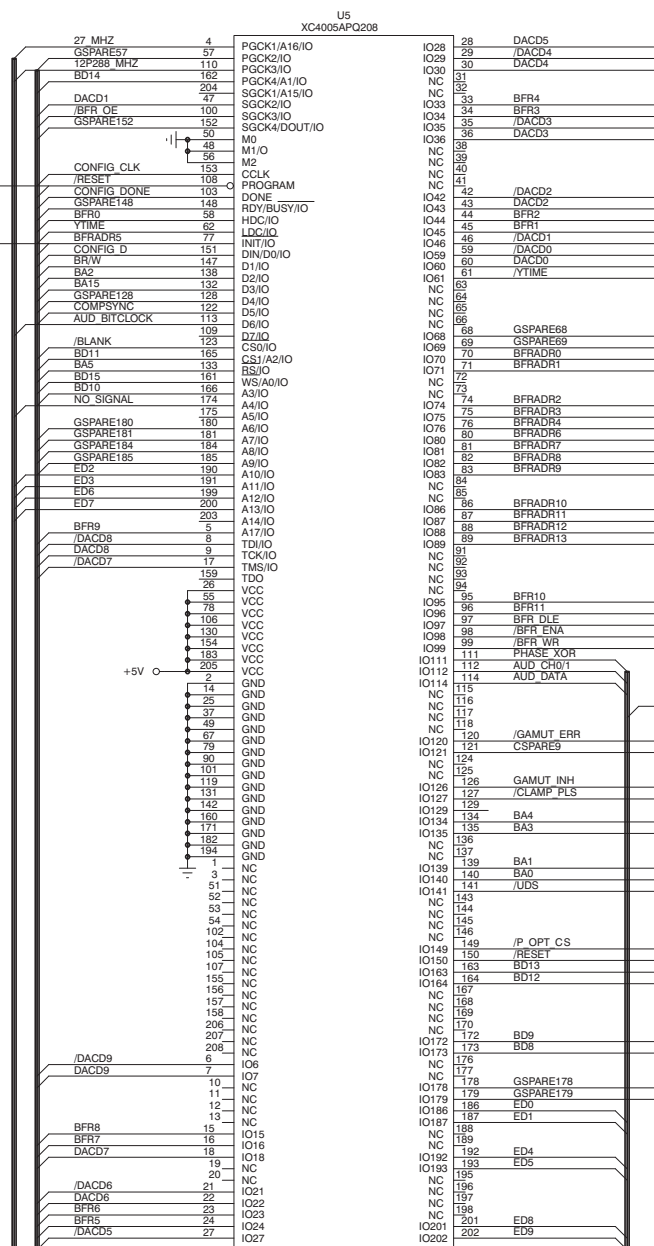
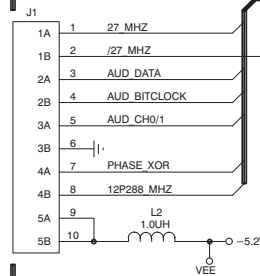
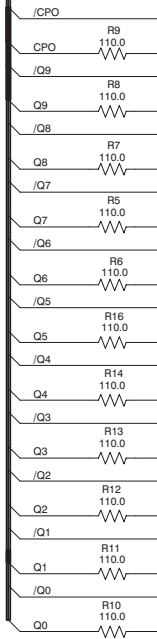
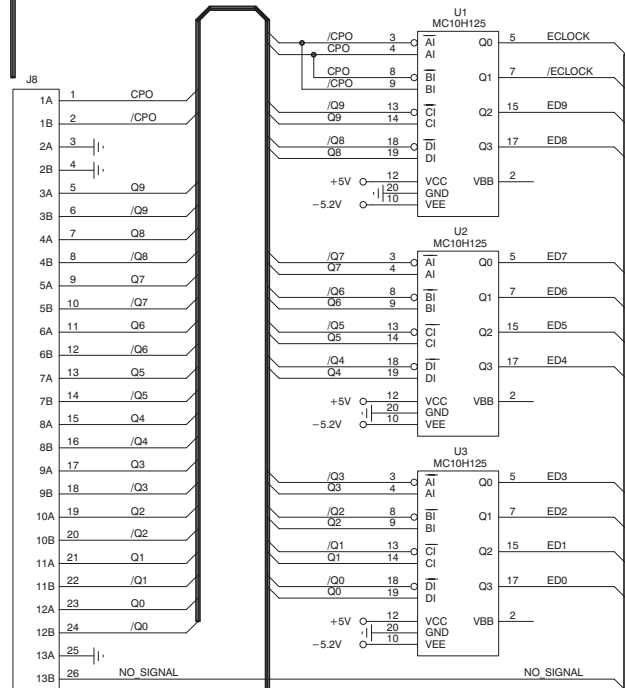
**Schematic Diagram <3>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A6.

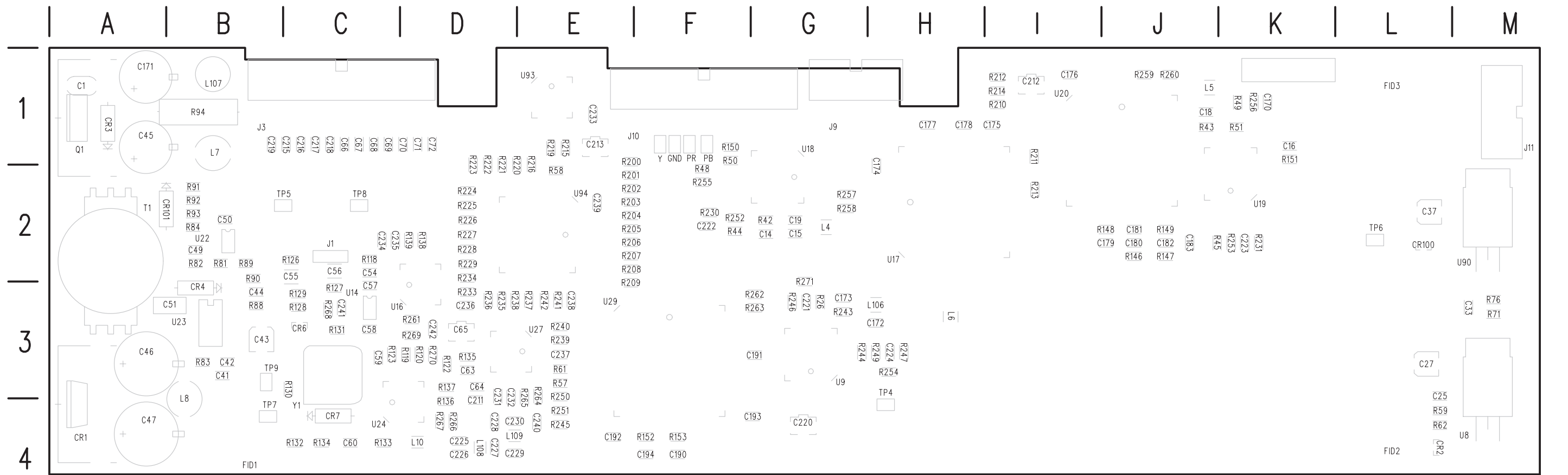
ASR I S	C L ESM	N ESM	ASR I S	C L ESM	N ESM	ASR I S	C L ESM	N ESM
C1	B5	C3	C25	C5	B2	R7	B3	C3
C2	B5	C2	C26	C5	C2			
C3	B5	B2	C27	C5	C2	R8	B3	C3
C4	B5	F3	C28	E5	C1	R9	B3	C3
C5	C5	F3	C29	E5	C2	R10	B4	B3
			C30	B5	F2	R11	B4	B3
						R12	B4	B3
C6	C5	G3						
C7	C5	G2	J1	A5	F1			
C8	C5	G2	J2	H1	D1	R13	B4	B3
C9	C5	F2	J3	F1	F3	R14	B4	B3
C10	D5	D2	J4	F1	E4	R16	B4	C3
			J6	F2	E4			
C11	D5	E1	J7	H3	B1	U1	B1	C3
C12	D5	E1	J8	A1	B4	U2	B1	C3
C13	D5	D3				U3	B2	B3
C14	D5	D3	L1	H2	D1	U4	F4	C1
C15	E5	E3	L2	A5	C2	U5	D1	E2
C16	E5	D2	P21	F5	A4	U6	G4	C2
C17	E5	B2	P22	F5	A2	U7	F2	F2
C18	F5	F3	P23	G5	F4			
C19	F5	E1	P24	G5	F2			
C20	F5	C2				W21	F5	A3
						W22	F5	A2
						W23	G5	F4
						W24	G5	F2
C21	F5	F3	R1	C2	F2			
C22	G5	E1	R2	C1	E1			
C23	G5	D2	R5	B3	C3			
C24	B5	C2	R6	B3	C3			

ECL TO TTL CONVERTER



** NOTE: SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

A6 COPROCESSOR BOARD



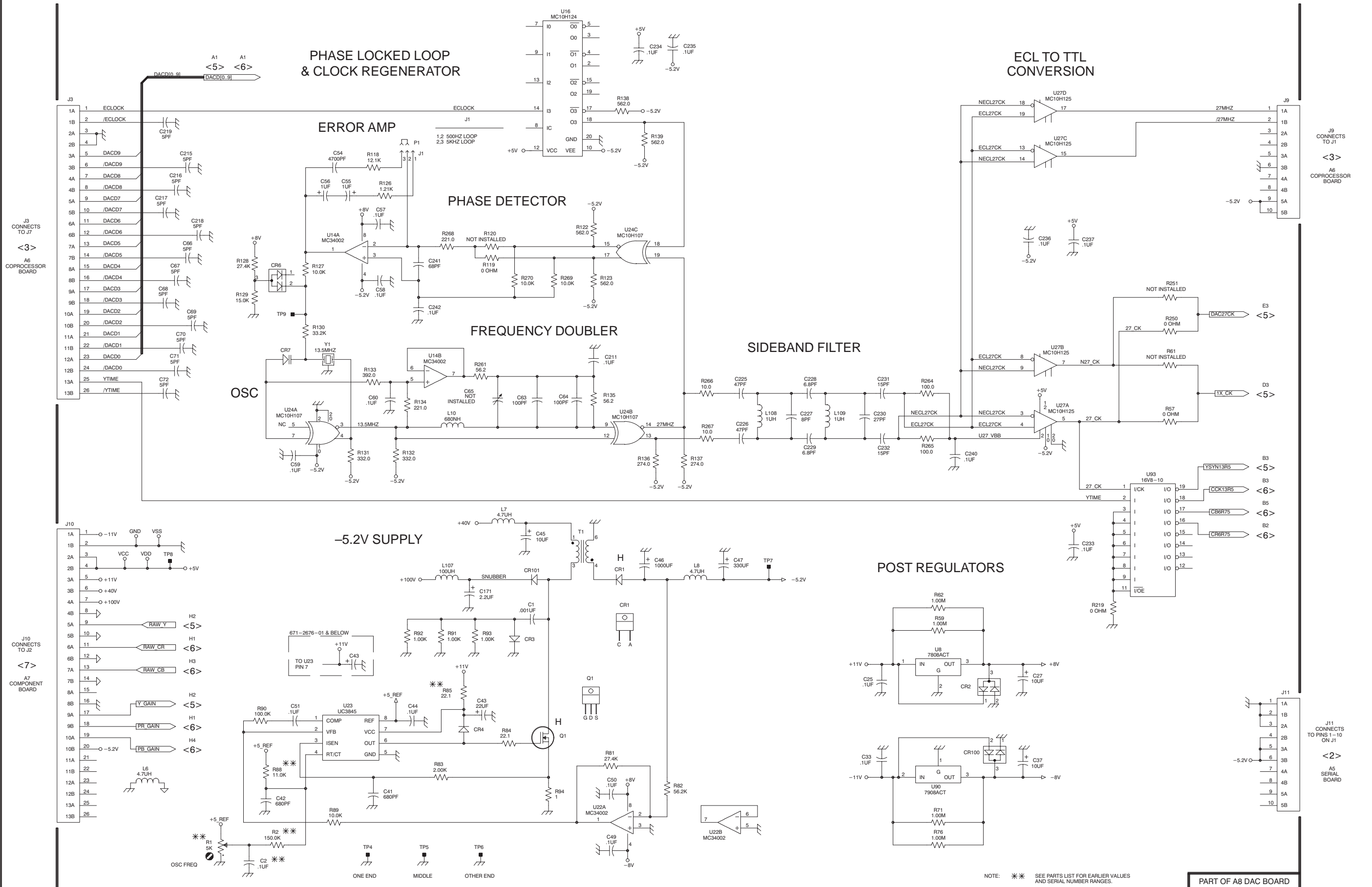
A8 DAC Board

 **Static Sensitive Devices**
See Maintenance Section

A8 DAC Board Component Locator

(with cross-references to schematic diagrams 4, 5, and 6).

C				C				C				C				C				C				C				C											
N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L				
C1	4	D4	A1	C64	4	D3	D3	C194	5	G4	F4	C239	5	E4	E2	L109	4	E3	D4					R147	6	C3	J2	R223	5	B2	D1	R251	4	G2	E4	TP9	4	B2	B3
C14	6	F2	G2	C65	4	C3	D3	C211	4	D3	D4	C240	4	F3	E4	P1	4	C1		R88	4	B5	B3	R148	6	C4	I2	R224	5	B2	D2	R252	6	G1	F2	U8	4	F4	M4
C15	6	E2	G2					C212	6	E4	I1	C241	4	C2	C3	CR100	4	F5	L2	R89	4	B5	B2	R149	6	C5	J2	R225	5	B2	D2	R253	6	G4	K2	U9	5	F2	G3
C16	6	F4	K1	C66	4	B2	C1	C213	6	E2	E1	C242	4	C2	D3	PB	6	G3	F1	R90	4	B5	B3	R150	6	E1	F1	R226	5	B2	D2	R254	5	G2	H3	U14A	4	C2	C3
C18	6	F4	J1	C67	4	A2	C1	C215	4	B1	C1					R91	4	C4	B2	R91	4	C4	B2	R227	5	B2	D2					U14B	4	C3	C3				
				C68	4	A2	C1					CR1	4	D4	A4	R92	4	C4	B2	R151	6	E3	K1	R228	5	B2	D2	R255	6	G1	F2	U16	4	D1	C3				
C19	6	F1	G2	C69	4	B2	C1	C216	4	A2	C1	CR2	4	F4	L4	R93	4	C4	B2	R152	5	D3	F4	R229	5	B2	D2	R256	6	G3	K1								
C25	4	F4	L4	C70	4	A2	D1	C217	4	A2	C1	CR3	4	C4	A1	R94	4	D5	B1	R153	5	D4	F4	R230	6	G1	F2	R257	6	C2	G2	U17	6	D1	H2				
C27	4	F4	L3					C218	4	B2	C1	CR4	4	C5	B3	R99	4	C4	B2	R200	6	B1	E2	R231	6	G4	K2	R258	6	C2	G2	U18	6	F1	G1				
C33	4	F5	M3	C71	4	A3	D1	C219	4	A1	B1					R99	4	C4	B2	R201	6	B1	E2	R232	5	A3	D3	R259	6	C5	J1	U19	6	F3	K2				
C37	4	F5	L2	C72	4	A3	D1	C220	5	F3	G4	CR6	4	B2	C3	R99	4	C4	B2	R202	6	B1	E2	R233	5	A3	D3	R260	6	C5	J1	U20	6	D3	I1				
				C70	4	A2	D1					CR7	4	B3	C4	R99	4	C4	B2	R203	6	B1	E2	R234	5	A3	D2	R261	4	C3	D3	U22A	4	D5	B2				
C41	4	C5	B3	C171	4	C4	A1	C221	5	G2	G3	CR100	4	F5	L2	R99	4	C4	B2	R204	6	B1	E2	R235	5	A3	D3	R262	5	C3	F3								
C42	4	B5	B3	C172	5	G3	H3	C222	6	G1	F2	CR101	4	D4	A2	R99	4	C4	B2	R205	6	B2	E2	R236	5	A3	D3	R263	5	D3	F3	U22B	4	E5	B2				
C43	4	C5	B3					C223	6	G4	K2					R99	4	C4	B2	R206	6	B2	E2	R237	5	A3	E3	R264	4	F3	E3	U23	4	B5	B3				
C44	4	C5	B3	C173	5	F3	G3	C224	5	G2	H3	GND	5	H2	F1	R99	4	C4	B2	R207	6	B2	E2	R238	5	A4	D3	R265	4	F3	E3	U24A	4	B3	C4				
C45	4	D4	A1	C174	6	E3	H1	C225	4	E3	D4					R99	4	C4	B2	R208	6	B2	E2	R239	5	B4	E3	R266	4	E3	D4	U24B	4	D3	C4				
				C175	6	E3	H1					J1	4	C1	C2	R99	4	C4	B2	R209	6	B2	E3	R240	5	B4	E3	R267	4	E3	D4	U24C	4	D2	C4				
C46	4	D4	A3	C176	6	E3	I1	C226	4	E3	D4	J3	4	A1	B1	R99	4	C4	B2	R210	6	C2	I1	R241	5	B4	E3	R268	4	C2	C3	U27A	4	G3	E3				
C47	4	E4	A4	C177	6	F3	H1	C227	4	E3	D4	J9	4	H1	G1	R99	4	C4	B2	R211	6	C2	I1	R242	5	B4	E3	R269	4	D2	D3	U27B	4	G3	E3				
C49	4	D5	B2					C228	4	E3	D4	J10	4	A3	E1	R99	4	C4	B2	R212	6	C4	I1	R243	5	G2	H3	R270	4	C2	D3	U27C	4	G1	E3				
C50	4	D5	B2	C178	6	F3	H1	C229	4	E3	D4	J11	4	H4	M1	R99	4	C4	B2	R213	4	C3	C4	R244	5	F2	G3	R271	5	H2	G3	U27D	4	G1	E3				
C51	4	B5	A3	C179	6	E5	I2	C230	4	F3	D4					R99	4	C4	B2	R214	6	E4	I1	R245	5	E3	E4	R272	4	H2	G3	U29	5	D2	E3				
				C180	6	E5	J2					L4	6	F2	G2	R99	4	C4	B2	R215	6	E2	E1	R246	5	G2	G3												
C54	4	B1	C2	C181	6	E5	J2	C231	4	F3	D3	L5	6	F4	J1	R99	4	C4	B2	R216	5	B3	E1	R247	5	G2	H3	TP4	4	C5	H3	U90	4	F5	M2				
C55	4	C2	C2	C182	6	F5	J2	C232	4	F3	D3	L6	4	A5	H3	R99	4	C4	B2	R217	4	D3	D3	R248	5	H2	H3	TP5	4	C5	B2	U93	4	G3	E1				
C56	4	B2	C2					C233	4	G4	E1	L7	4	C4	B1	R99	4	C4	B2	R218	4	D1	D2	R249	5	H2	H3	TP6	4	C5	L2	U94	5	C2	E2				
C57	4	C2	C3	C183	6	F5	J2	C234	4	D1	C2	L8	4	E4	B4	R99	4	C4	B2	R219	4	G4	E1					TP7	4	E4	B4								
C58	4	C2	C3	C190	5	F4	F4	C235	4	D1	C2	L9	4	C3	D4	R99	4	C4	B2	R220	5	B1	D1	R250	4	G2	E4	TP8	4	A4	C2	Y1	4	B3	C4				
				C191	5	F4	F3					L10	4	C3	D4	R99	4	C4	B2	R221	5	B1	D1																
C59	4	B3	C3	C192	5	F4	E4	C236	4	G2	D3	L106	5	F3	H3	R99	4	C4	B2	R222	5	B2	D1																
C60	4	C3	C4	C193	5	F4	F4	C237	4	G2	E3	L107	4	C4	B1	R99	4	C4	B2																				
C63	4	D3	D3					C238	5	D4	E3	L108	4	E3	D4	R99	4	C4	B2																				



J3 CONNECTS TO J7
<3>
A6 COPROCESSOR BOARD

J10 CONNECTS TO J2
<7>
A7 COMPONENT BOARD

J9 CONNECTS TO J1
<3>
A6 COPROCESSOR BOARD

J11 CONNECTS TO PINS 1-10 ON J1
<2>
A5 SERIAL BOARD

NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A8 DAC BOARD

**Schematic Diagram <5>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A8. Partial Assembly A8 also shown on Diagrams 4 and 6.

C	N	L	L
C172	G3	H3	
C173	F3	G3	
C190	F4	F4	
C191	F4	F3	
C192	F4	E4	
C193	F4	F4	
C194	G4	F4	
C220	F3	G4	
C221	G2	G3	
C224	G2	H3	
C238	D4	E3	
C239	E4	E2	
TP214	H2	F1	
L106	F3	H3	
R26	G2	G3	
R58	D3	E2	
R152	D3	F4	
R153	D4	F4	
R216	B3	E1	
R220	B1	D1	
R221	B1	D1	
R222	B2	D1	
R223	B2	D1	
R224	B2	D2	
R225	B2	D2	
R226	B2	D2	
R227	B2	D2	
R228	B2	D2	
R229	B2	D2	
R233	A3	D3	
R234	A3	D2	
R235	A3	D3	
R236	A3	D3	
R237	A3	E3	
R238	A4	D3	
R239	B4	E3	
R240	B4	E3	
R241	B4	E3	
R242	B4	E3	
R243	G2	G3	
R244	F2	G3	
R245	E3	E4	
R246	G2	G3	
R247	G2	H3	
R249	H2	H3	
R254	G2	H3	
R262	C3	F3	
R263	D3	F3	
R271	H2	G3	
U9	F2	G3	
U29	D2	E3	
U94	C2	E2	

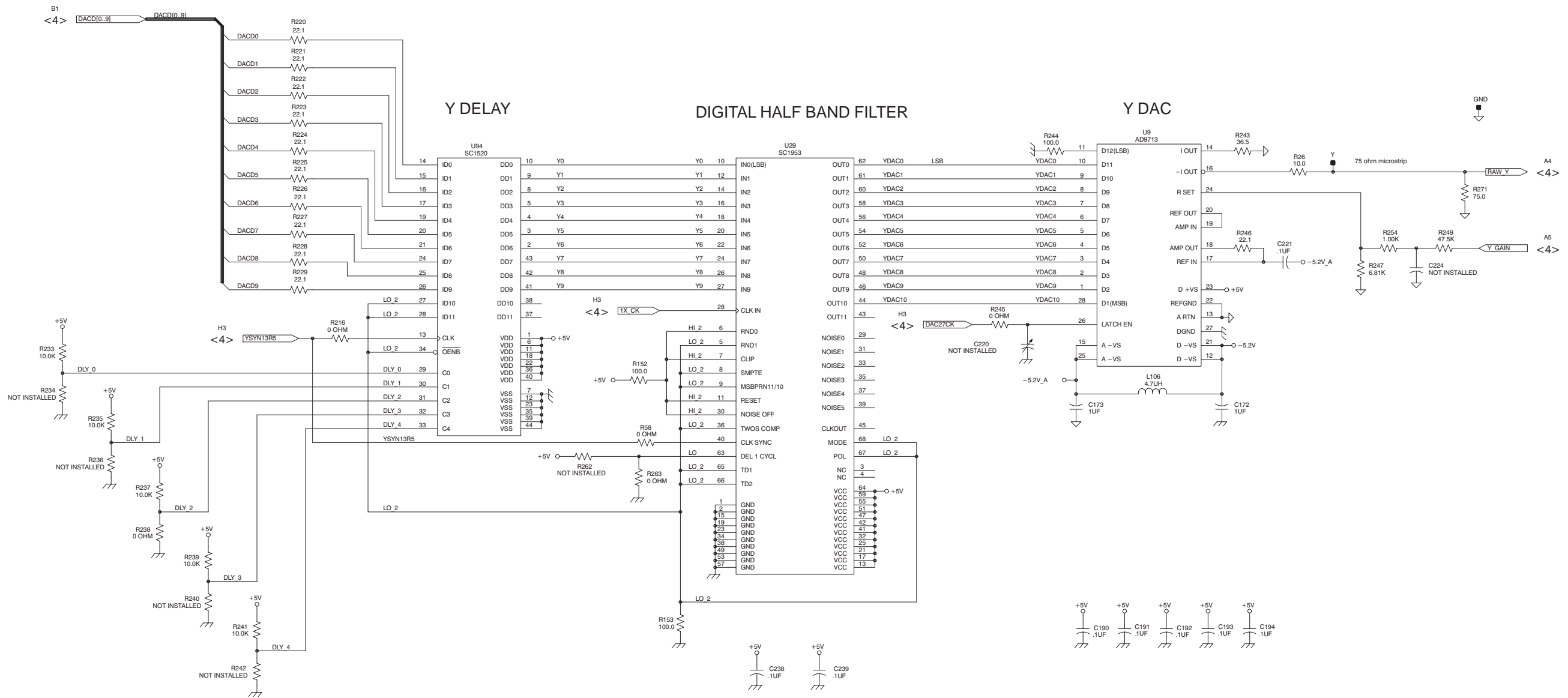
1

2

3

4

5



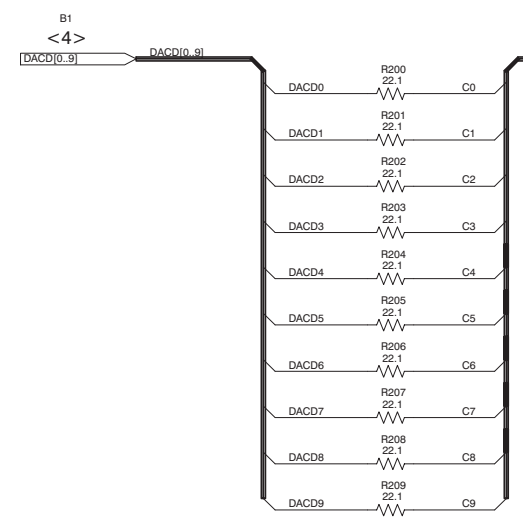
PART OF A8 DAC BOARD

**Schematic Diagram <6>
Component Locator Chart**

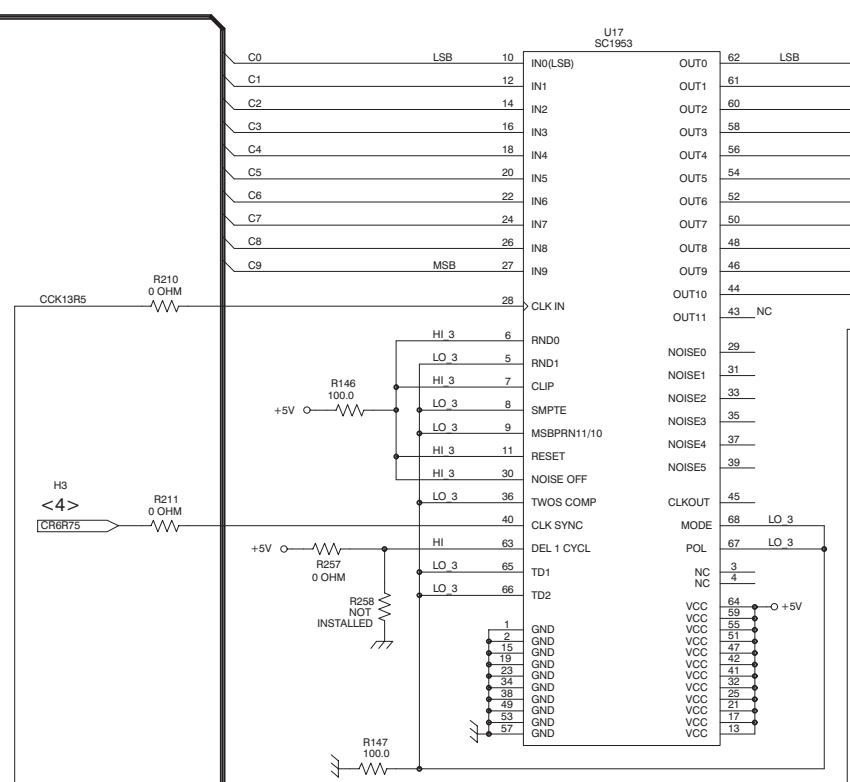
The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A8. Partial Assembly A8 also shown on Diagrams 4 and 5.

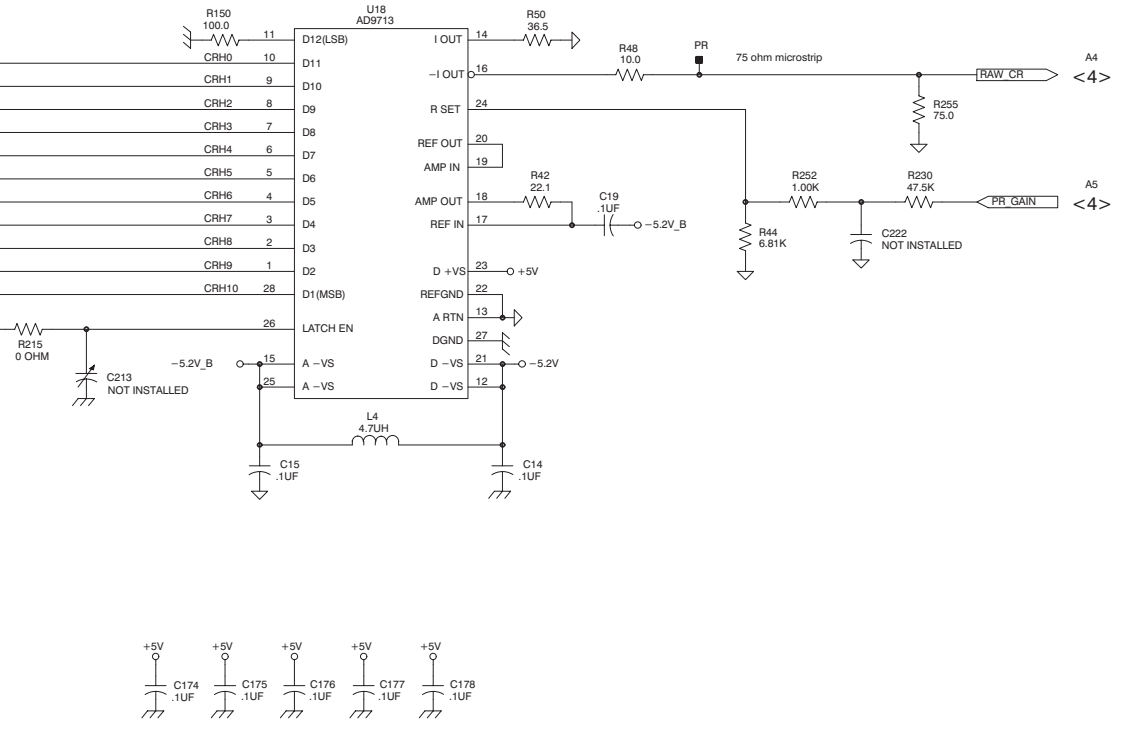
C	N	L	L
C223	G4	K2	
L4	F2	G2	
L5	F4	J1	
PB	G3	F1	
PR	G1	F1	
R42	F1	G2	
R43	F4	J1	
R44	G1	F2	
R45	G4	J2	
R48	F1	F2	
R49	F3	K1	
R50	F1	F1	
R51	F3	K1	
R146	C2	J2	
R147	C3	J2	
R148	C4	I2	
R149	C5	J2	
R150	E1	F1	
R151	E3	K1	
R200	B1	E2	
R201	B1	E2	
R202	B1	E2	
R203	B1	E2	
R204	B1	E2	
R205	B2	E2	
R206	B2	E2	
R207	B2	E2	
R208	B2	E2	
R209	B2	E3	
R210	C2	I1	
R211	C2	I1	
R212	C4	I1	
R213	C5	I2	
R214	E4	I1	
R215	E2	E1	
R230	G1	F2	
R231	G4	K2	
R252	G1	F2	
R253	G4	K2	
R255	G1	F2	
R256	G3	K1	
R257	C2	G2	
R258	C2	G2	
R259	C5	J1	
R260	C5	J1	
U17	D1	H2	
U18	F1	G1	
U19	F3	K2	
U20	D3	I1	



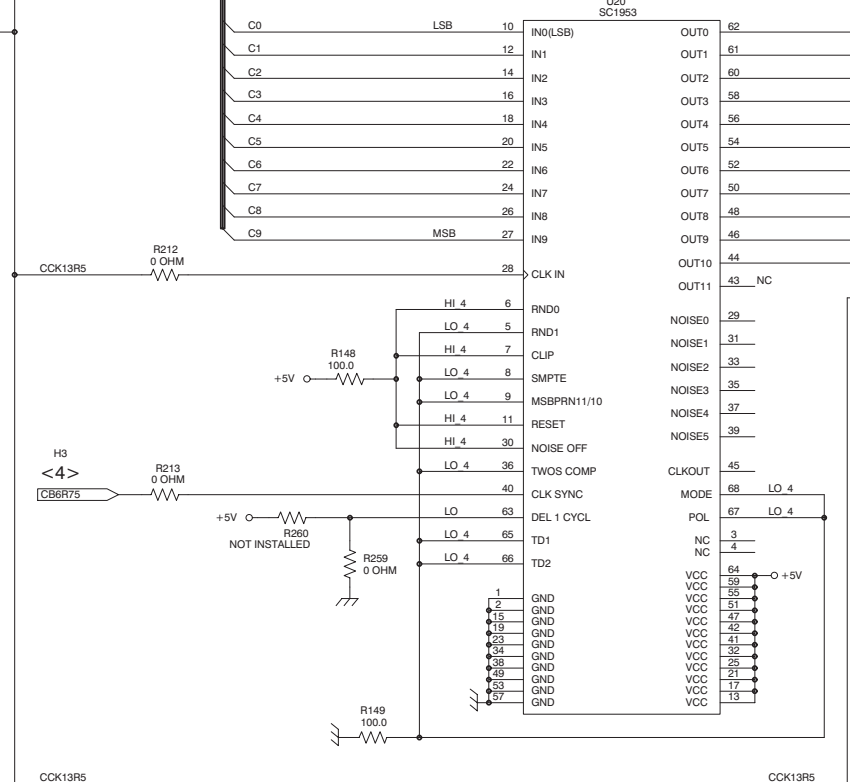
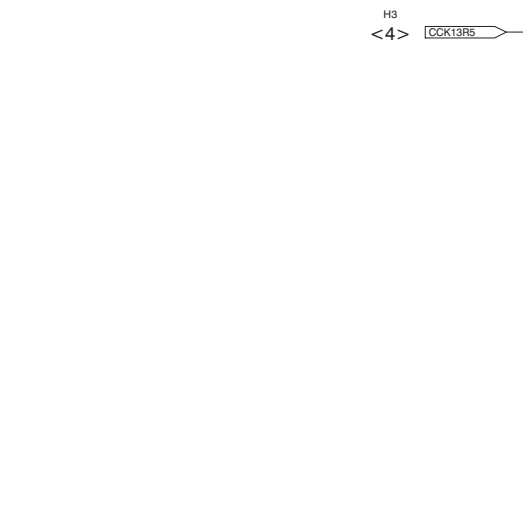
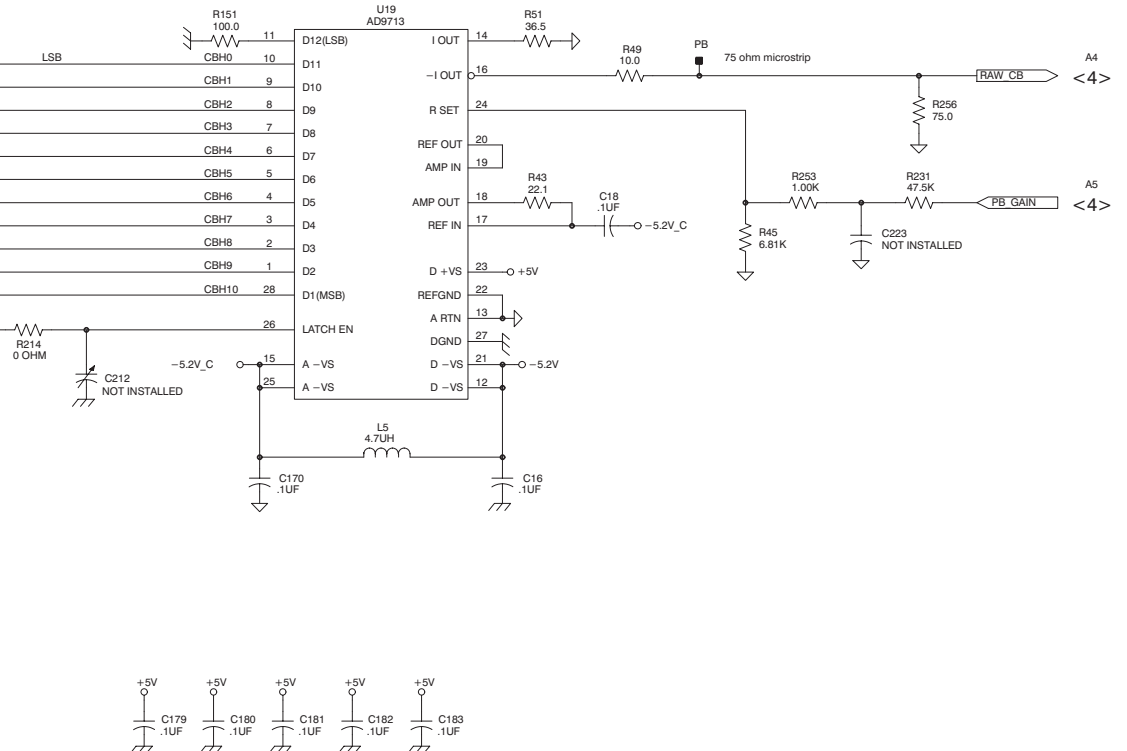
DIGITAL HALF BAND FILTERS

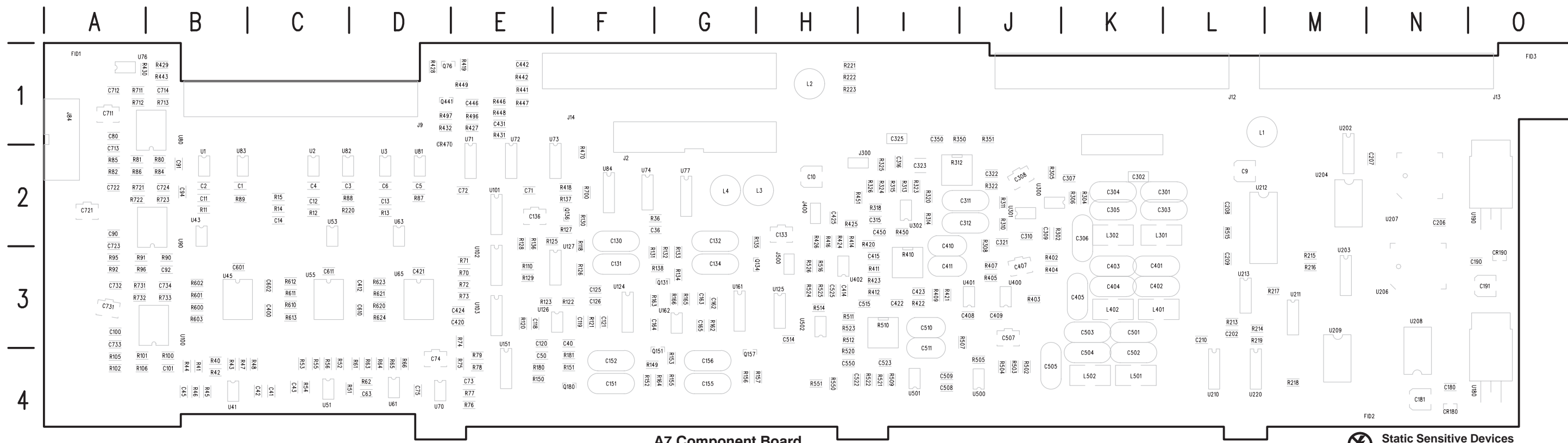


Pr DAC



Pb DAC





A7 Component Board

Static Sensitive Devices
See Maintenance Section

A7 Component Board Component Locator (with cross-references to schematic diagrams 7, 8, 9, and 10).

C				C				C				C				C				C				C				C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
C1	8	B1	B2	C136	9	D1	E2	C404	7	D3	K3	C714	8	G1	B1	R15	8	A2	C2	R91	8	G1	A3	R418	8	F3	F2	R524	7	G4	H3	U73A	8	F5	E1	U127	9	C1	F3	C2	8	B1	B2	C151	9	E5	F4	C405	7	D3	K3	C721	8	F2	A2	R36	10	H2	F2	R92	8	G2	A3	R181	9	D5	F4	R419	8	G5	E1	R525	7	G4	H3	U73B	8	F5	E1	U127	9	C1	F3	C3	8	B2	C2	C152	9	E5	F4	C407	7	D3	J3	C722	8	F2	A2	R40	8	C2	B4	R95	8	H2	A3	R213	10	F2	L3	R420	7	F3	I3	R526	7	H4	H3	U74A	8	G4	F2	U151A	9	B5	E3	C4	8	B2	C2	C155	9	F5	G4	C408	7	E3	J3	C723	8	G1	A3	R41	8	C2	B4	R214	10	E3	L3	R421	7	F3	I3	R550	7	F5	H4	U151B	9	B4	E3	C5	8	B3	D2	C156	9	F5	G4	C409	7	E3	J3	C724	8	G2	B2	R42	8	C2	B4	R215	10	C2	M3	R422	7	F3	I3	R551	7	F5	H4	U151C	9	B4	E3	C6	8	B3	D2	C162	9	F4	G3	C410	7	E2	I3	C731	8	F3	A3	R100	8	G3	B4	R216	10	D2	M3	R423	7	F3	I3	R600	8	D2	B3	R424	7	G3	H2	R601	8	E1	B3	U151D	9	B4	E3	C9	7	A2	L2	C163	9	F4	G3	C411	7	E3	I3	C732	8	F3	A3	R101	8	G2	A4	R217	10	D2	M3	R425	7	G3	H2	R602	8	E1	B3	U161A	9	F4	G3	C10	7	A4	H2	C164	9	E4	F3	C412	8	D3	D3	C733	8	G2	A3	R102	8	G3	A4	R218	10	D2	M4	R426	7	H3	H2	R603	8	E1	B3	U161B	9	E4	G3	C11	8	B1	B2	C165	9	E4	G3	C413	7	G3	H3	C734	8	G2	B3	R106	8	G2	A4	R219	10	D2	L3	R427	8	G5	E1	R608	8	E1	B3	U161C	9	E4	G3	C12	8	B2	C2	C180	10	B5	N4	C414	7	G3	H3	C734	8	G2	B3	R47	8	D1	B4	R220	10	H2	C2	R428	8	G5	D1	R608	8	E1	B3	U161D	9	F4	G3	C13	8	B3	D2	C181	10	C5	N4	C415	7	G3	I3	CR180	10	C5	N4	R48	8	D1	C4	R221	10	G3	H1	R610	8	D3	C3	U162A	9	E4	G3	C14	8	A2	C2	C190	10	B5	O3	C420	8	D4	E3	CR190	10	C5	O3	R51	8	C2	C4	R222	10	G4	H1	R611	8	E3	C3	U162B	9	E4	G3	C36	10	G2	F2	C202	10	C3	L3	C421	8	D4	D3	CR470	9	G3	D2	R52	8	C2	C4	R223	10	G4	H1	R612	8	E3	C3	U180	10	B4	O4	C40	9	C5	F3	C206	10	E4	N2	C422	7	F3	I3	J2	7	A2	F2	R53	8	C2	C4	R224	10	G4	H1	R613	8	E3	C3	U190	10	B5	O2	C41	8	D1	C4	C207	10	D5	N2	C423	7	F3	I3	J9	9	H3	D1	R54	8	C3	C4	R225	10	G4	H1	R618	8	E5	D1	U202	10	C4	M1	C42	8	D2	C4	C208	10	E3	L2	C424	8	D4	E3	J12	10	A3	L1	R55	8	C3	C4	R226	10	G3	H1	R620	8	E1	B3	U203	10	C1	M3	C43	8	C3	C4	C209	10	F3	L3	C425	7	G3	H2	J13	10	B1	O1	R56	8	D2	C4	R227	10	G3	H1	R621	8	E1	B3	U204	10	D4	M2	C44	8	C1	B4	C210	10	F2	L3	C431	8	G5	E1	J14	10	H2	F1	R57	8	D3	C4	R228	10	G4	H1	R622	8	E1	B3	U206	10	E3	N3	C50	9	D5	E4	C210	10	F2	L3	C432	7	F3	I3	J8	8	H2	A1	R58	8	D4	D4	R229	10	G4	H1	R623	8	E1	B3	U207	10	E4	N2	C63	8	C4	D4	C209	10	F3	L3	C433	7	F3	I3	J300	7	H1	I2	R59	8	D4	D4	R230	10	G4	H1	R624	8	E1	B3	U208	10	F5	N3	C71	8	G3	E2	C210	10	F2	L3	C434	7	F4	I2	J400	7	H3	H2	R60	8	C3	D4	R231	10	G4	H1	R64	8	C4	D4	R443	8	H4	B1	U209	10	F4	M3	C72	8	G3	E2	C301	7	C2	K2	C501	7	C4	K3	J500	7	H4	H3	R61	8	C3	D4	R232	10	G4	H1	R64	8	C4	D4	R444	8	H4	E1	U210	10	F1	L4	C73	9	A4	E2	C302	7	C1	K2	C502	7	C4	K4	L1	7	A2	L1	R62	8	C3	D4	R233	10	G4	H1	R65	8	D4	D4	U211A	10	C1	M3	C74	9	A4	D4	C303	7	C1	K2	C503	7	C4	K3	L2	7	A4	H1	R63	8	C4	D4	R234	10	G4	H1	R66	8	D4	D4	U211B	10	E2	M3	C75	9	A5	D4	C306	7	D2	K2	C504	7	C4	K4	L3	7	A3	H2	R64	8	C4	D4	R235	10	G4	H1	R67	9	A1	E3	U211C	10	C3	M3	C80	8	G1	A1	C307	7	D2	K2	C505	7	D4	J4	L4	7	A3	G2	R72	9	A3	E3	R236	10	G4	H1	R68	8	D4	D4	U211D	10	D1	M3	C90	8	G2	A2	C308	7	D2	K2	C507	7	D5	J3	L301	7	C1	K2	R73	9	A3	E3	R237	10	G4	H1	R68	8	D4	D4	U212	10	F2	L2	C91	8	G3	B2	C309	7	E1	J2	C508	7	E4	I4	L401	7	C3	K3	R74	9	A5	E3	R238	10	G4	H1	R69	8	D4	D4	U213A	10	E2	L3	C92	8	H3	B3	C310	7	E2	J2	C509	7	E4	I4	L402	7	C3	K3	R75	9	A4	E4	R239	10	G4	H1	R70	9	A1	E3	U213B	10	E2	L3	C94	8	H3	B2	C311	7	E1	J2	C510	7	E4	I3	L403	7	C3	K3	R76	9	B4	E4	R240	10	G4	H1	R71	9	A1	E3	U213C	10	E2	L3	C100	8	G3	A3	C312	7	E1	J2	C511	7	E4	I4	L501	7	C4	K4	R77	9	B4	E4	R241	10	G4	H1	R72	9	A3	E3	U213D	10	D1	L3	C101	8	G3	B4	C315	7	G1	I2	C514	7	G4	H3	L502	7	C4	K4	R78	9	B5	E4	R242	10	G4	H1	R73	9	A3	E3	U220	10	C2	L4	C118	9	E2	E3	C316	7	G2	I2	C515	7	G5	I3	Q76	8	G5	D1	R79	9	B5	E4	R243	10	G4	H1	R74	9	A5	E3	U220	10	C2	L4	C119	9	E3	F3	C321	7	E1	J2	C522	7	F5	H4	Q131	9	E1	F3	R80	8	G1	B2	R244	10	G4	H1	R75	9	A4	E4	U220	10	C2	L4	C120	9	F2	E3	C322	7	F2	J2	C523	7	F4	I4	Q134	9	E1	G3	R81	8	G1	A2	R245	10	G4	H1	R76	9	B4	E4	U220	10	C2	L4	C121	9	F3	F3	C323	7	F2	I2	C525	7	G4	H3	Q136	9	F1	G3	R82	8	G1	A2	R246	10	G4	H1	R77	9	B4	E4	U220	10	C2	L4	C125	9	C1	F3	C325	7	G1	I1	C550	7	F5	H4	Q151	9	E5	F4	R84	8	F1	B2	R247	10	G4	H1	R78	9	B5	E4	U220	10	C2	L4	C126	9	D1	F2	C601	8	D2	B3	C602	8	D2	C3	Q157	9	F5	G4	R85	8	H1	A2	R248	10	G4	H1	R79	9	B5	E4	U220	10	C2	L4	C130	9	E2	F3	C610	8	D3	D3	Q180	9	D5	F4	Q441	8	H4	D1	R86	8	G1	A2	R249	10	G4	H1	R80	8	G1	B2	U220	10	C2	L4	C131	9	E1	F3	C611	8	D3	C3	Q441	8	H4	D1	R87	8	B5	D2	R250	10	G4	H1	R81	8	G1	A2	U220	10	C2	L4	C132	9	F1	G2	C711	8	F1	A1	R11	8	B1	B2	R88	8	B4	C2	R251	10	G4	H1	R82	8	G1	A2	U220	10	C2	L4	C133	9	F2	H2	C712	8	F1	A1	R12	8	B2	C2	R89	8	B4	B2	R252	10	G4	H1	R83	8	B3	D2	U220	10	C2	L4	C134	9	F2	G3	C713	8	G1	A2	R13	8	B3	D2	R90	8	G2	B3	R253	10	G4	H1	R84	8	B4	C2	U220	10	C2	L4

A B C D E F G H

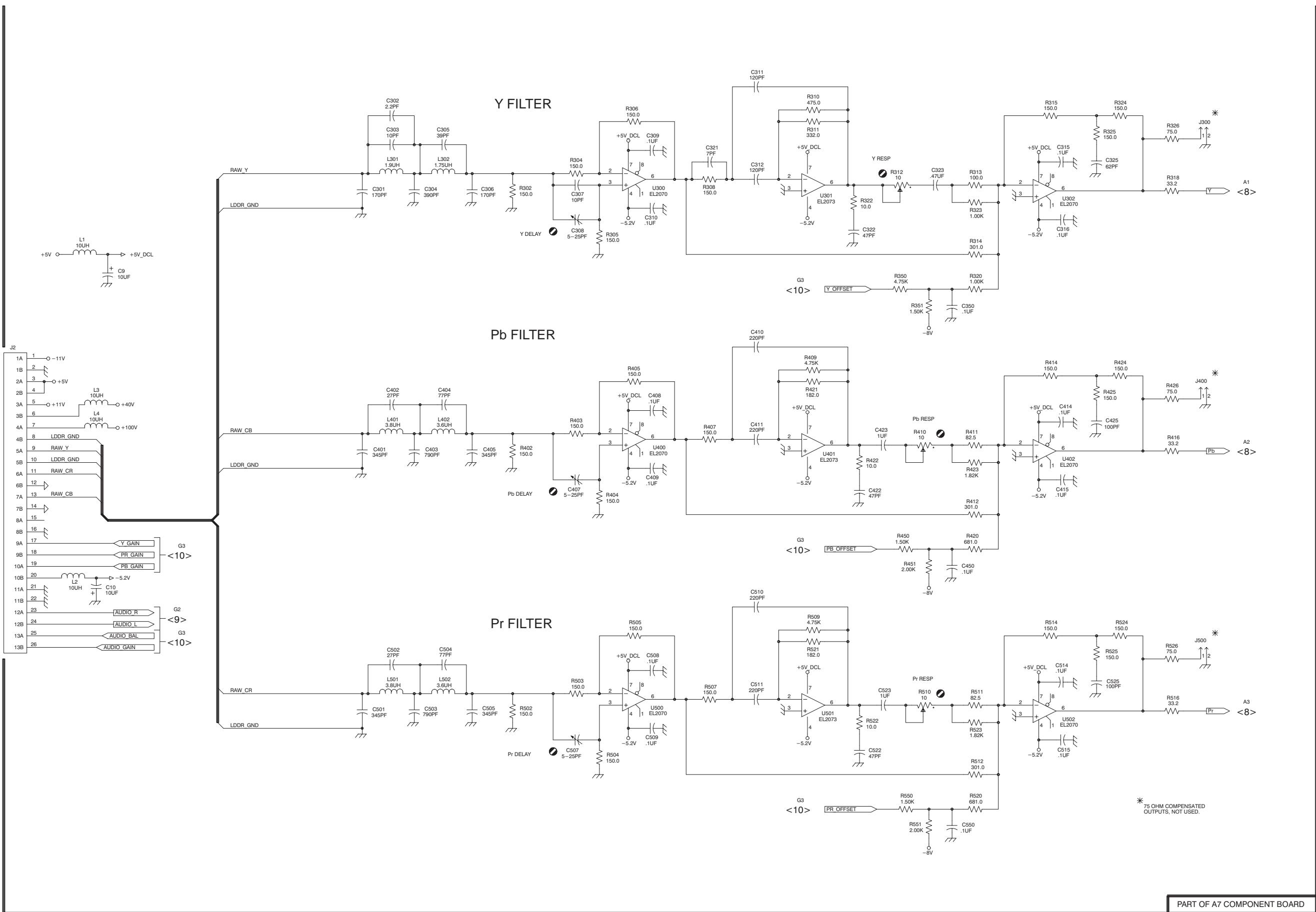
1

2

3

4

5



J2
 1A 1 -11V
 2 2
 3 3 +5V
 4 4
 5 5 +11V
 6 6
 7 7
 8 8 LDDR GND
 9 9 RAW Y
 10 10 LDDR GND
 11 11 RAW CR
 12 12
 13 13 RAW CB
 14 14
 15 15
 16 16
 17 17
 18 18
 19 19
 20 20
 21 21
 22 22
 23 23
 24 24
 25 25
 26 26

<4>
 AS
 DAC
 BOARD

G3
 Y GAIN
 PR GAIN
 PB GAIN

G2
 AUDIO R
 AUDIO L
 AUDIO BAL

G3
 <9>
 <10>

* 75 OHM COMPENSATED
 OUTPUTS, NOT USED.

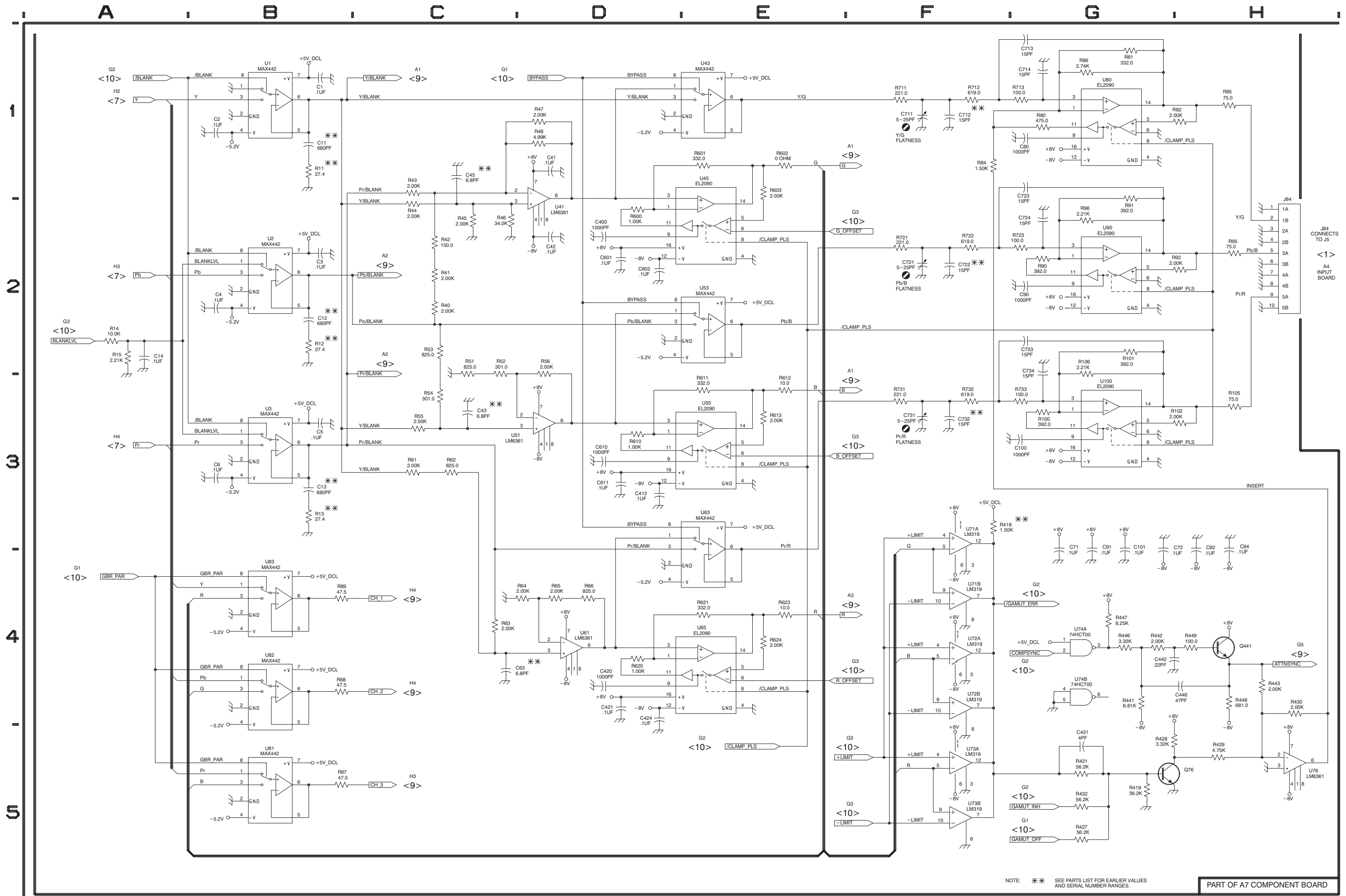
PART OF A7 COMPONENT BOARD

**Schematic Diagram <8>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A7. Partial Assembly A7 also shown on Diagrams 7, 9, and 10.

ASR I S	C L ESM	N ESM	ASR I S	C L ESM	N ESM	ASR I S	C L ESM	N ESM
C1	B1	B2	R13	B3	D2	R443	H4	B1
C2	B1	B2	R14	A2	C2	R446	G4	E1
C3	B2	C2	R15	A2	C2	R447	G4	E1
C4	B2	C2				R448	H4	E1
C5	B3	D2	R40	C2	B4	R449	H4	E1
			R41	C2	B4			
C6	B3	D2	R42	C2	B4	R600	D2	B3
C11	B1	B2	R43	C1	B4	R601	E1	B3
C12	B2	C2	R44	C2	B4	R602	E1	B3
C13	B3	D2				R603	E1	B3
C14	A2	C2	R45	C2	B4	R610	D3	C3
			R46	C2	B4			
C41	D1	C4	R47	D1	B4	R611	E3	C3
C42	D2	C4	R48	D1	C4	R612	E3	C3
C43	C3	C4	R51	C2	C4	R613	E3	C3
C45	C1	B4				R620	D4	D3
C63	C4	D4	R52	C2	C4	R621	E4	D3
			R53	C2	C4			
C71	G3	E2	R54	C3	C4	R623	E4	D3
C72	G3	E2	R55	C3	C4	R624	E4	D3
C80	G1	A1	R56	D2	C4	R711	F1	A1
C90	G2	A2				R712	F1	A1
C91	G3	B2	R61	C3	D4	R713	F1	B1
			R62	C3	D4			
C92	H3	B3	R63	C4	D4	R721	F2	A2
C94	H3	B2	R64	C4	D4	R722	F2	A2
C100	G3	A3	R65	D4	D4	R723	F2	B2
C101	G3	B4				R731	F3	A3
C400	D2	C3	R66	D4	D4	R732	F3	A3
			R80	G1	B2	R733	F3	B3
C412	D3	D3	R81	G1	A2			
C420	D4	E3	R82	G1	A2	U1	B1	B2
C421	D4	D3	R84	F1	B2	U2	B2	C2
C424	D4	E3				U3	B3	D2
C431	G5	E1	R85	H1	A2	U41	D1	B4
			R86	G1	A2	U43	D1	B2
C442	G4	E1	R87	B5	D2			
C446	G4	E1	R88	B4	C2	U45	D1	B3
C601	D2	B3	R89	B4	B2	U51	D3	C4
C602	D2	C3				U53	D2	C2
C610	D3	D3	R90	G2	B3	U55	D3	C3
			R91	G1	A3	U61	D4	D4
C611	D3	C3	R92	G2	A3			
C711	F1	A1	R95	H2	A3	U63	D3	D2
C712	F1	A1	R96	G2	A3	U65	D4	D3
C713	G1	A2				U71A	F3	E1
C714	G1	B1	R100	G3	B4	U71B	F4	E1
			R101	G2	A4	U72A	F4	E1
C721	F2	A2	R102	G3	A4			
C722	F2	A2	R105	H3	A4	U72B	F4	E1
C723	G1	A3	R106	G2	A4	U73A	F5	E1
C724	G2	B2				U73B	F5	E
C731	F3	A3	R418	F3	F2	U74A	G4	F2
			R419	G5	E1	U74B	G4	F2
C732	F3	A3	R427	G5	E1			
C733	G2	A3	R428	G5	D1	U76	H5	A1
C734	G2	B3	R429	H5	B1	U80	G1	B1
						U81	B5	D2
J84	H2	A1	R430	H4	A1	U82	B4	C2
			R431	G5	E1	U83	B4	B2
Q76	G5	D1	R432	G5	D1	U90	G2	B2
Q441	H4	D1	R441	G4	E1	U100	G3	B3
			R442	G4	E1			
R11	B1	B2						
R12	B2	C2						



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

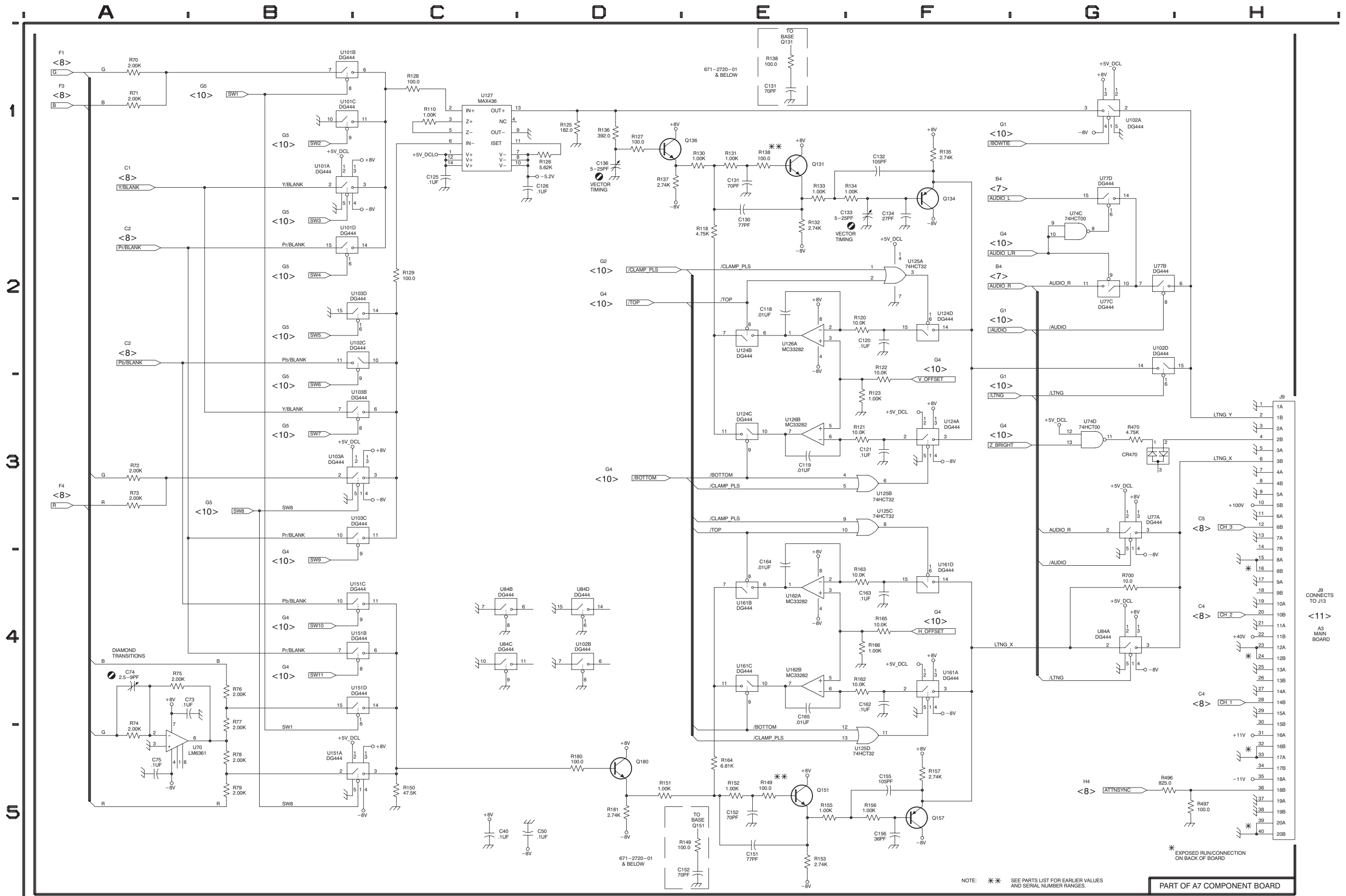
PART OF A7 COMPONENT BOARD

**Schematic Diagram <9>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A7. Partial Assembly A7 also shown on Diagrams 7, 8, and 10.

C			C			C		
N	L	L	N	L	L	N	L	L
C40	C5	F3				U77A	G3	G2
C50	D5	E4	R110	C1	E3	U77B	G2	G2
C73	A4	E4	R118	E2	F2	U77C	G2	G2
C74	A4	D4	R120	F2	E3			
C75	A5	D4	R121	F3	F3	U77D	G1	G2
			R122	F3	F3	U84A	G4	F2
C118	E2	E3				U84B	C4	F2
C119	E3	F3	R123	F3	E3	U84C	C4	F2
C120	F2	E3	R125	D1	E2	U84D	D4	F2
C121	F3	F3	R126	D1	F3			
C125	C1	F3	R127	D1	F2	U101A	B1	E2
			R128	C1	E2	U101B	B1	E2
C126	D1	F3				U101C	B1	E2
C130	E2	F2	R129	C2	E3	U101D	B2	E2
C131	E1	F3	R130	E1	F2	U102A	G1	E3
C132	F1	G2	R131	E1	F3			
C133	F2	H2	R132	E2	G3	U102B	D4	E3
			R133	E1	G3	U102C	B2	E3
C134	F2	G3				U102D	G2	E3
C136	D1	E2	R134	E1	G3	U103A	B3	E3
C151	E5	F4	R135	F1	G2	U103B	B3	E3
C152	E5	F4	R136	D1	E2			
C155	F5	G4	R137	D1	F2	U103C	B3	E3
			R138	E1	F2	U103D	B2	E3
C156	F5	G4				U124A	F3	F3
C162	F4	G3	R149	E5	F4	U124B	E2	F3
C163	F4	G3	R150	C5	E4	U124C	E3	F3
C164	E4	F3	R151	D5	F4			
C165	E4	G3	R152	E5	F4	U124D	F2	F3
			R153	E5	G4	U125A	F2	H3
CR470	G3	D2				U125B	F3	H3
			R155	E5	G4	U125C	F3	H3
J9	H3	D1	R156	F5	G4	U125D	F5	H3
			R157	F5	H4			
Q131	E1	F3	R162	F4	G3	U126A	E2	E3
Q134	F1	G3	R163	F4	F3	U126B	E3	E3
Q136	D1	F2				U127	C1	F3
Q151	E5	F4	R164	E5	G4	U151A	B5	E3
Q157	F5	G4	R165	F4	G3	U151B	B4	E3
Q180	D5	F4	R166	F4	G3			
			R180	D5	E4	U151C	B4	E3
R70	A1	E3	R181	D5	F4	U151D	B4	E3
R71	A1	E3				U161A	F4	G3
R72	A3	E3	R470	G3	F2	U161B	E4	G3
R73	A3	E3	R496	G5	E1	U161C	E4	G3
R74	A5	E3	R497	H5	D1			
			R700	G4	F2	U161D	F4	G3
R75	A4	E4				U162A	E4	G3
R76	B4	E4	U70	A5	D4	U162B	E4	G3
R77	B4	E4	U74C	G2	F2			
R78	B5	E4	U74D	G3	F2			
R79	B5	E4						



WFM 601 SERIAL COMPONENT MONITOR

LIGHTNING, VECTOR, & BOWTIE SWITCHING <9>

NOTE: * * * SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A7 COMPONENT BOARD

J9
CONNECTS
TO J13
<11>
A3
MAIN
BOARD

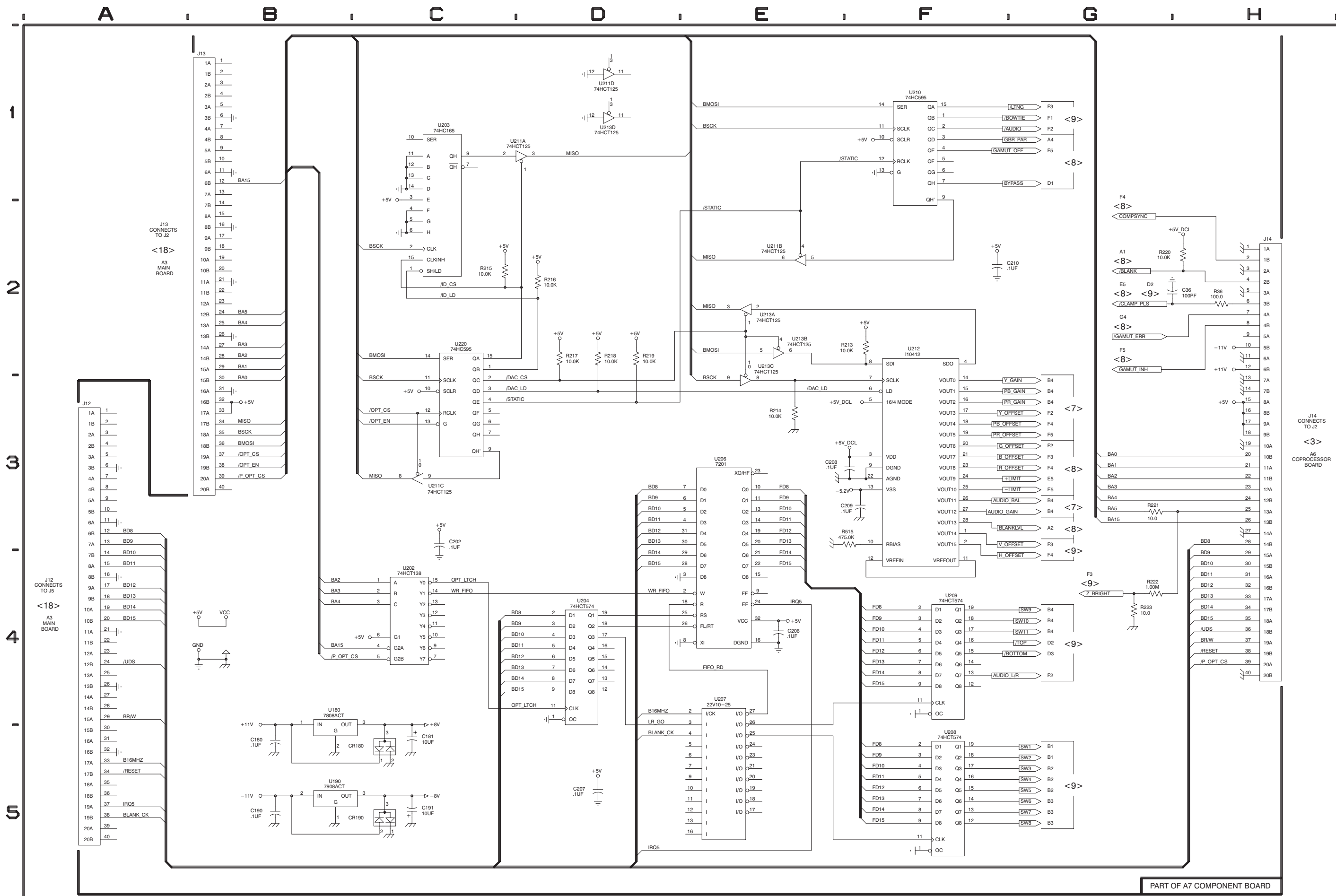
* EXPOSED RUN CONNECTION
ON BACK OF BOARD

**Schematic Diagram <10>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A7. Partial Assembly A7 also shown on Diagrams 7, 8, and 9.

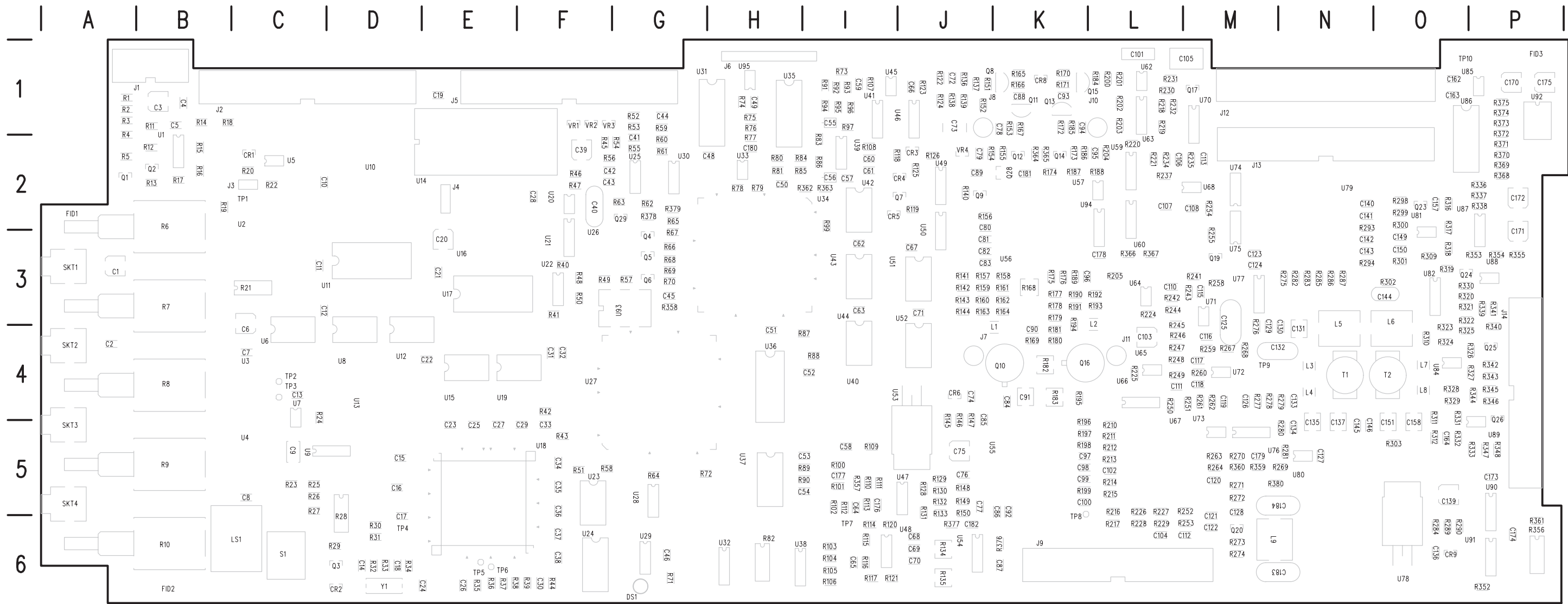
C	N	L	L
C36	G2	F2	
C180	B5	N4	
C181	C5	N4	
C190	B5	O3	
C191	C5	O3	
C202	C3	L3	
C206	E4	N2	
C207	D5	N2	
C208	E3	L2	
C209	F3	L3	
C210	F2	L3	
CR180	C5	N4	
CR190	C5	O3	
J12	A3	L1	
J13	B1	O1	
J14	H2	F1	
R36	H2	F2	
R213	F2	L3	
R214	E3	L3	
R215	C2	M3	
R216	D2	M3	
R217	D2	M3	
R218	D2	M4	
R219	D2	L3	
R220	H2	C2	
R221	G3	H1	
R222	G4	H1	
R223	G4	H1	
R515	E3	L2	
U180	B4	O4	
U190	B5	O2	
U202	C4	M1	
U203	C1	M3	
U204	D4	M2	
U206	E3	N3	
U207	E4	N2	
U208	F5	N3	
U209	F4	M3	
U210	F1	L4	
U211A	C1	M3	
U211B	E2	M3	
U211C	C3	M3	
U211D	D1	M3	
U212	F2	L2	
U213A	E2	L3	
U213B	E2	L3	
U213C	E2	L3	
U213D	D1	L3	
U220	C2	L4	



WFM 601 SERIAL COMPONENT MONITOR

CONTROL & DACULATOR <10>

PART OF A7 COMPONENT BOARD



A3 Main Board

* Note: Board Lookup Chart is on the back of Diagram 11.

 **Static Sensitive Devices**
See Maintenance Section

**Schematic Diagram <11>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A7 also shown on Diagrams 12, 13, 14, 15, 16, 17, 18, and 19.

C			C			C			C			C			C			C								
N	L	L	N	L	L	N	L	L	N	L	L	N	L	L	N	L	L	N	L	L	N	L	L			
C43	E2	F2	C132	D4	M4	C149	F1	O3	L8	E5	O4	R255	F2	M2	R279	F4	N4	R299	F1	O2	R371	A5	P2	U72A	F3	M4
C45	E2	G3	C133	F5	N4	C151	F5	O5	Q17	F3	M1	R258	G2	M3	R280	E5	N5	R300	F1	O2	R372	A4	P2	U72B	E3	M4
C103	G3	L4	C134	F4	N5	C158	F5	O5	Q19	F2	M3	R259	F3	M4	R281	D5	N5	R301	E1	O3	R373	A4	P1	U74	E2	M2
C111	F3	L4	C135	F4	N5	J12	A3	M1	Q23	F1	O2	R260	F3	M4	R282	B3	N3	R302	D4	O3	R374	A5	P1	U75	E2	M3
C117	F4	M4	C137	F4	N5	J13	H1	M2	R261	D1	M4	R261	D1	M4	R303	F5	O5	R375	A5	P1	U76A	G5	M5			
C118	F4	M4	C140	C2	N2	L3	E5	N4	R267	F3	M4	R283	B3	N3	R309	F2	O3	T1	E4	N4	U76B	H4	M5			
C123	C3	M3	C141	C2	N2	L4	E4	N4	R232	F3	L1	R285	B2	N3	R316	F1	O2	T2	E5	O4	U76C	H4	M5			
C124	C2	M3	C142	C2	N3	L5	D4	N4	R247	G4	L4	R287	B3	N3	R317	F2	O2	TP9	D4	M4	U76D	G4	M5			
C125	E4	M3	C143	C3	N3	L6	D4	O3	R248	G4	L4	R287	B2	N3	R318	F2	O3	U76E	G4	M5						
C126	D4	M4	C144	D4	O3	L7	E5	O4	R249	G4	L4	R293	C2	N3	R368	A3	P2	U79	C1	N2						
C129	E4	M3	C145	F5	N4	R251	D1	M4	R275	B3	N3	R294	C2	N3	U65	G3	L4	U80	D5	N5						
C130	D3	M3	C146	F5	N4	R254	E2	M2	R276	E4	M3	R298	F1	O2	U70A	F2	M1	U81	F1	O2						
C131	D3	N4							R277	D5	M4				U70D	E2	M1									

A B C D E F G H

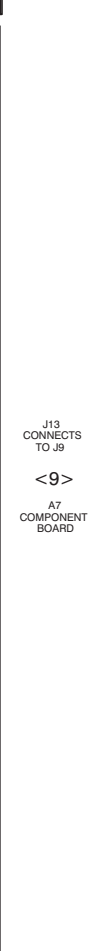
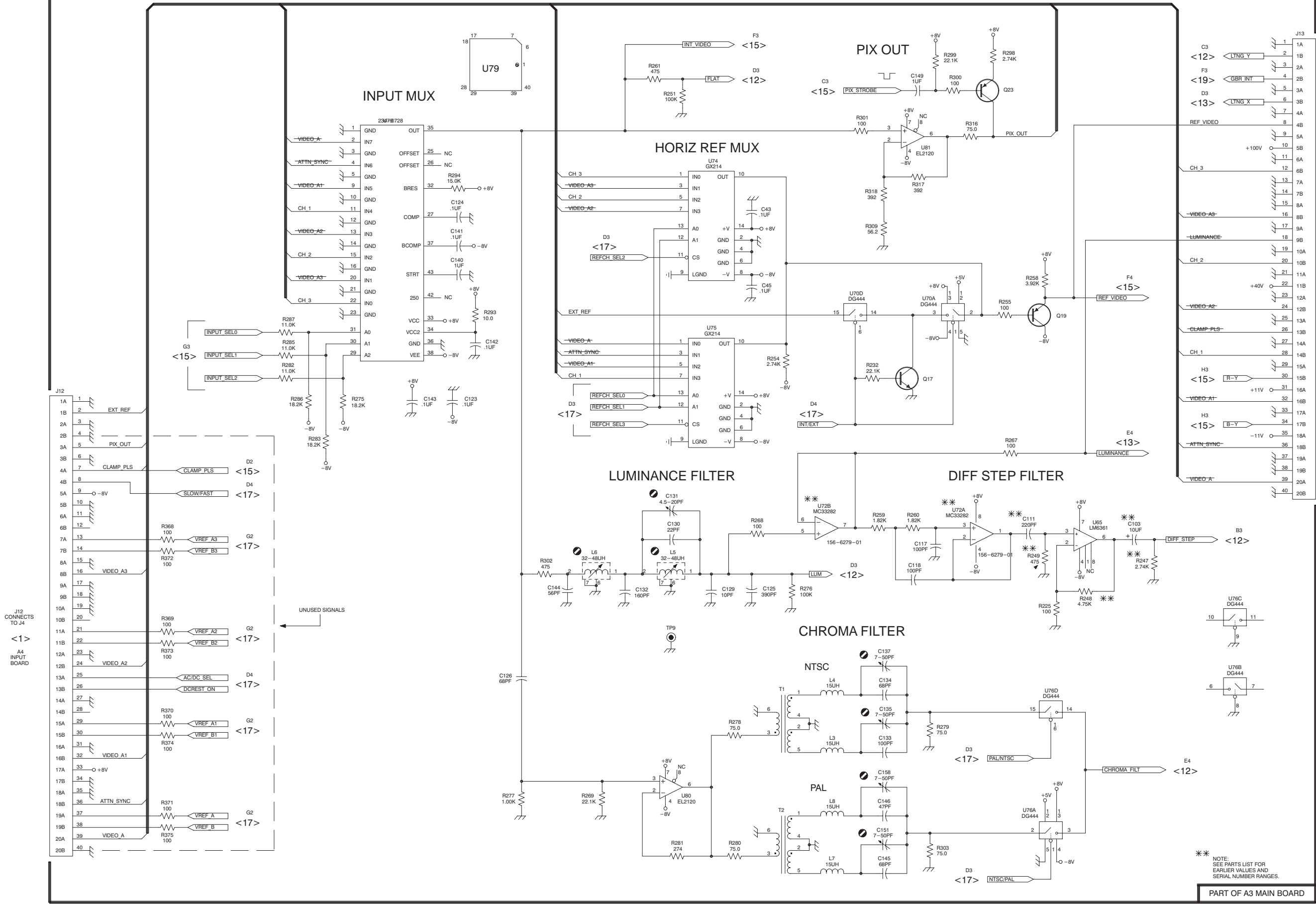
1

2

3

4

5



NOTE: SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

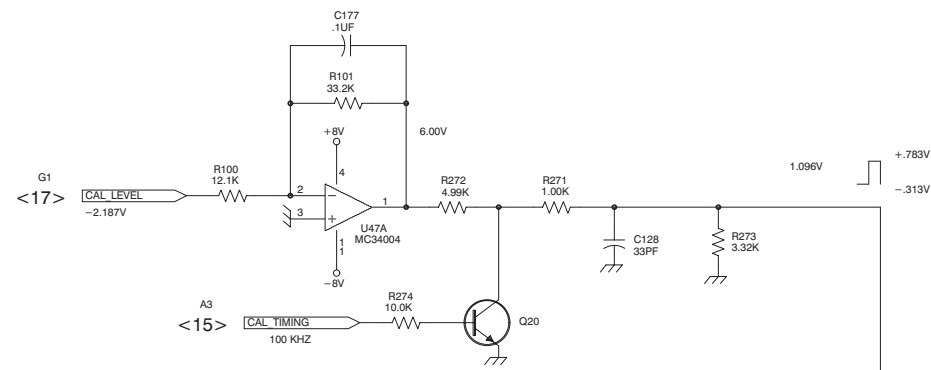
PART OF A3 MAIN BOARD

A3 MAIN BOARD Component Locator (with cross-references to schematic diagrams 11, 12, 13, 14, 15, 16, 17, 18, and 19).

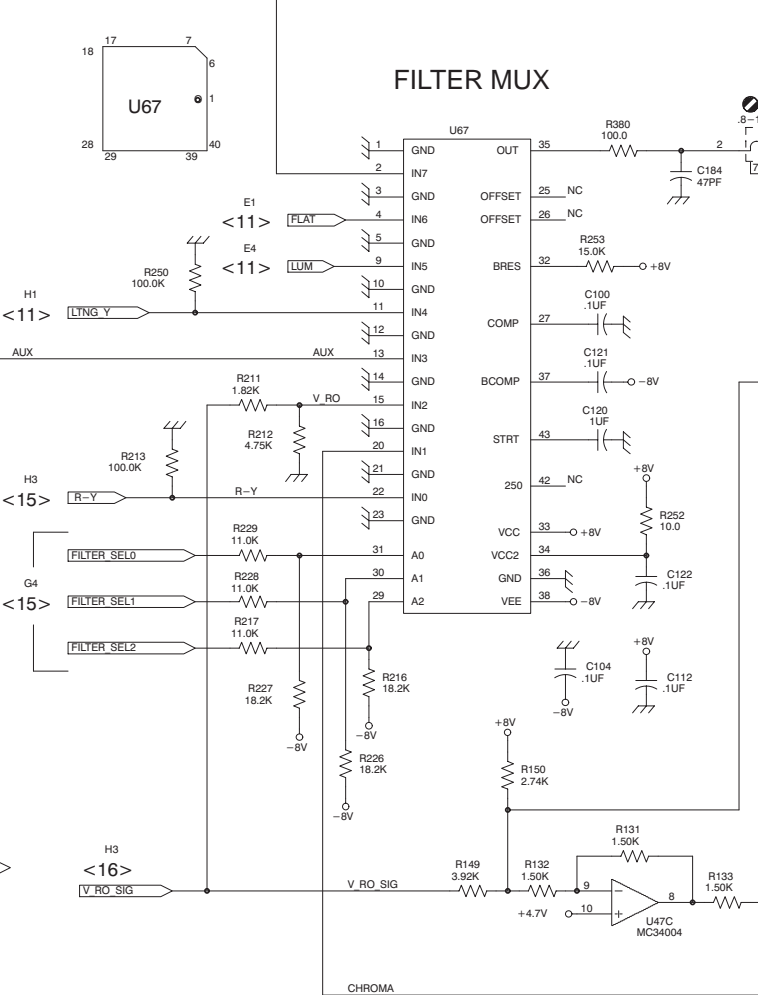
NOTE: Use this table for components on Schematic diagram <12>.

C				C				C				C				C				C				C				C																																																																																			
N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L																																																																				
C1	19	A5	A3	C79	13	F2	J2	C174	18	E5	P6	R1	19	G1	A1	R78	15	D2	H2	R156	13	D4	J2	R242	12	F2	L3	R338	17	F1	P2	U13	14	D1	D4	U50C	17	H1	J2																																																																								
C2	19	A5	A4	C80	13	F5	J3	C175	18	B1	P1	R2	19	G1	A1	R79	15	D2	H2	R157	12	F1	J3	R243	15	E3	M3	R339	13	B4	P3	U14	14	F1	D2	U51	15	F3	I3																																																																								
C3	19	G1	B1	C81	13	F4	J3	C176	13	G5	I5	R3	19	G1	A1	R80	17	G3	H2									R340	13	B4	P4	U15	14	E1	E4	U52	15	F4	I3																																																																								
C4	19	E2	B1					C177	12	B1	I5	R4	19	H1	A2	R81	17	G3	H2	R158	12	F1	K3	R244	12	E2	L3	U16	14	H2	E3					R341	13	B4	P3					U53	19	C1	I4																																																																
C5	19	F2	B1	C82	13	E4	J3	C178	13	E4	L3	R5	19	G2	A2	R82	17	C2	H6	R159	12	F1	J3	R245	12	E1	L4	R342	13	B3	P4	U17	14	G3	E3	R343	13	B3	P4	U18	14	B1	F5	U54A	16	G3	J6																																																																
C6	14	B1	C4	C83	13	E4	J3	C179	12	G4	M5	R6	19	B3	B2	R83	13	B1	I1	R160	12	F1	J3	R246	12	E1	L4	U19	14	E2	E4	U54B	16	D4	J6	R344	12	B3	P4	U20	19	B2	F2	U54C	16	G5	J6																																																																
C7	19	D5	C4	C84	12	G3	K4					R7	19	B5	B3	R84	17	G2	H2	R161	12	F1	K3	R247	11	G4	L4	U21	14	E3	F3	U54D	16	D5	J6	R345	12	A3	P4																																																																								
C8	19	D4	C5	C85	12	G3	J4	C180	17	E3	H2	R8	19	B4	B4	R85	17	G3	H2	R162	12	F1	K3	R248	11	G4	L4																																																																																				
C9	14	A4	C5	C86	12	F3	K5	C181	13	F3	K2	R9	19	B4	B5																																																																																																
C10	14	H1	C2					C182	16	D5	J6	R10	19	B3	B6	R86	13	B2	I2	R163	12	F1	J3	R249	11	G4	L4	R346	12	A3	P4	U22A	14	C5	F3	U55	12	F3	J5	R347	12	B4	P5	C183	12	E3	N6	C184	12	E3	N5	R11	19	G1	B1	R12	19	G2	B2	R87	15	C4	H4	R88	15	C2	I4	R89	16	E4	H5	R90	16	E4	H5	R164	12	F1	K3	R250	12	C3	L4	R348	18	C4	P5	U22B	14	C2	F3	U56	13	F4	K3																
C11	14	G2	C3	C87	16	G3	K6	C184	12	E3	N5	R11	19	G1	B1	R88	15	C2	I4	R165	13	F1	K3	R251	11	D1	M4	R349	12	B4	P5	U22C	14	C5	F3	U57A	12	E2	K2																																																																								
C12	14	D3	C3	C88	13	G2	K1	CR1	19	G4	C2	R12	19	G2	B2	R89	16	E4	H5	R166	13	F2	K1	R252	12	E4	L5	U22D	14	C4	F3	U57B	12	E1	K2																																																																												
C13	14	A4	C4	C89	13	F4	J2	CR2	14	A1	D6	R13	19	G2	B2	R90	16	E4	H5	R167	13	F2	K1	R253	12	D3	L6	U23	14	G4	F5	U59A	13	D2	L2																																																																												
C14	14	C4	D6	C90	12	G1	K4	CR3	19	G3	J2	R14	19	E2	B1																																																																																																
C15	14	A4	D5	C91	12	G3	K4	CR4	19	F3	I2	R15	19	E2	B2	R91	17	G4	I1	R168	12	G2	K3	R254	11	E2	M2	R352	18	D3	P6	U24	17	A1	F6	U59B	13	D3	L2																																																																								
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C16	14	A4	D5	C93	13	F2	K1	CR6	19	D1	J4	R17	19	F2	B2	R93	17	G4	I1	R170	13	G1	K1	R256	11	G2	M3	R354	12	A4	P3	U25B	17	C4	G2	U59D	13	D4	L2																																																																								
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C18	14	C4	D6	C95	13	G3	L2	CR8	13	F2	K1	R19	19	A5	B2	R95	17	G3	I1	R172	13	G2	K1	R260	11	F3	M4	R356	18	D1	P6	U25D	17	E4	G2	U62A	13	C1	L1																																																																								
C19	14	F2	E1	C96	13	F4	K3	CR9	19	B1	O6	R20	19	H5	C2	R96	17	G3	I1	R173	13	G3	K2	R261	11	D1	M4	R357	13	G5	I5	U26A	15	A5	F3	U62B	13	B2	L1																																																																								
C20	14	H2	E3	C97	12	F3	K5	DS1	14	A2	G6	R21	14	E3	C3	R97	17	G5	I1	R174	13	G4	K2	R262	15	H2	M4	R358	15	A3	G3	U26B	15	A5	F3	U63A	13	D1	L2																																																																								
				C98	12	E3	K5	DS2	19	H1	R22	19	H5	C2	R98	15	A4	I2	R175	12	G1	K3	R263	12	G4	M5	R359	12	G4	M5	U26C	15	B5	F3	U63B	13	C1	L2																																																																									
C21	14	G3	E3	C99	12	G4	K5	DS3	19	H1	R23	17	B5	C5	R99	15	A4	I2	R176	12	G1	K3	R264	12	G4	M5	R360	12	G4	M5	U26D	15	A5	F3	U63C	13	B2	L2																																																																									
C22	14	E2	E4	C100	12	D3	K5	DS4	19	H2	R24	14	B4	C4	R100	12	B2	I5	R177	12	G1	K3	R265	11	F3	M4	R361	15	C3	P6	U27	16	B1	F4	U63D	13	D2	L2																																																																									
C23	14	B4	E5	C101	13	C1	L1	DS5	19	H2	R25	17	B5	C5	R101	12	B1	I5	R178	12	G1	K3	R266	11	E3	M4	R362	17	E3	H2	U28A	14	G5	G5	U64B	12	F1	L3																																																																									
C24	14	C4	D6	C102	12	G4	L5	J1	19	H3	A1	R26	17	B5	C5	R102	13	D4	I5	R179	12	G1	K3	R267	11	F3	M4	R363	17	E4	I2	U28B	14	H3	G5	U65	11	G3	L4																																																																								
C25	14	A5	E5	C103	11	G3	L4	J2	18	F2	B1	R27	17	B5	C5	R103	16	F4	I6	R180	12	G2	K4	R270	12	G4	M5	R364	13	F3	K2	U28C	14	H4	G5	U66A	12	B2	L4																																																																								
				C104	12	D4	L6	J3	19	H4	B2	R28	17	A4	D6	R104	16	F5	I6	R181	12	G1	K4	R271	12	C2	M5	R365	13	G3	K2	U28D	14	H4	G5	U66B	12	B4	L4																																																																								
C27	14	A5	E5	C105	13	B2	L1	J4	19	C2	E2	R29	14	A1	D6	R105	16	F3	I6	R182	12	G3	K4	R272	12	B2	M5	R366	13	F3	L3	U28E	14	H4	G5	U66C	12	B3	L4																																																																								
C28	14	E3	F2	C106	15	E4	L2	J5	18	G2	E1	R30	14	B2	D6	R107	17	G3	I1	R183	12	G3	K4	R273	12	C2	M6	R367	13	F3	L3	U29A	14	A2	G6	U66D	12	B3	L4																																																																								
C29	14	A5	F5									R31	14	B3	D6	R108	17	G1	I2	R184	13	G1	L1	R274	12	B2	M6	R368	11	A3	P2	U29B	14	A2	G6	U67	12	D3	L5																																																																								
C30	14	B5	F6	C107	19	E1	L2	J6	19	H3	H1	R32	14	C4	D6	R109	15	C2	I5	R185	13	G2	K1	R275	11	B3	N3	R369	11	A4	P2	U29C	19	F3	G6	U68	15	E4	M2																																																																								
				C108	15	E4	M2	J7	12	H2	J4	R33	14	C4	D6	R110	13	G5	I5	R186	13	F3	K2	R276	11	E4	M3	R370	11	A4	P2	U30A	17	E2	G2	U70A	11	F2	M1																																																																								
C31	16	C4	F4	C109	15	E3	L3	J8	13	H2	J1	R34	14	C3	D6	R111	13	G5	I5	R187	13	G4	K2	R277																																																																																							

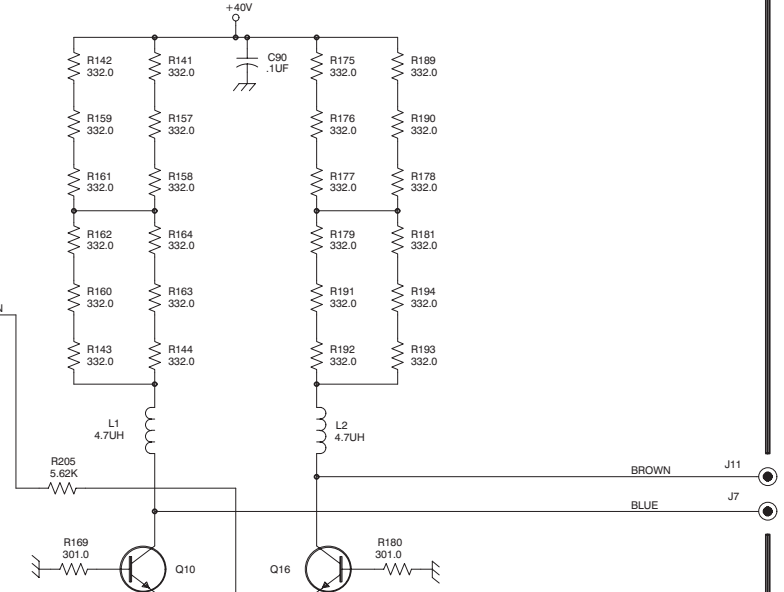
SQUARE WAVE CALIBRATOR



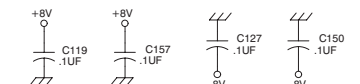
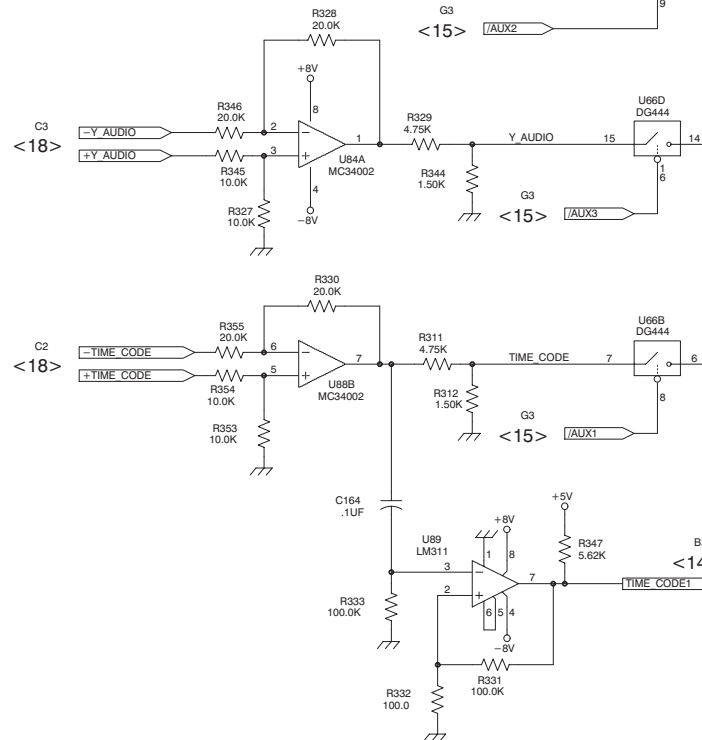
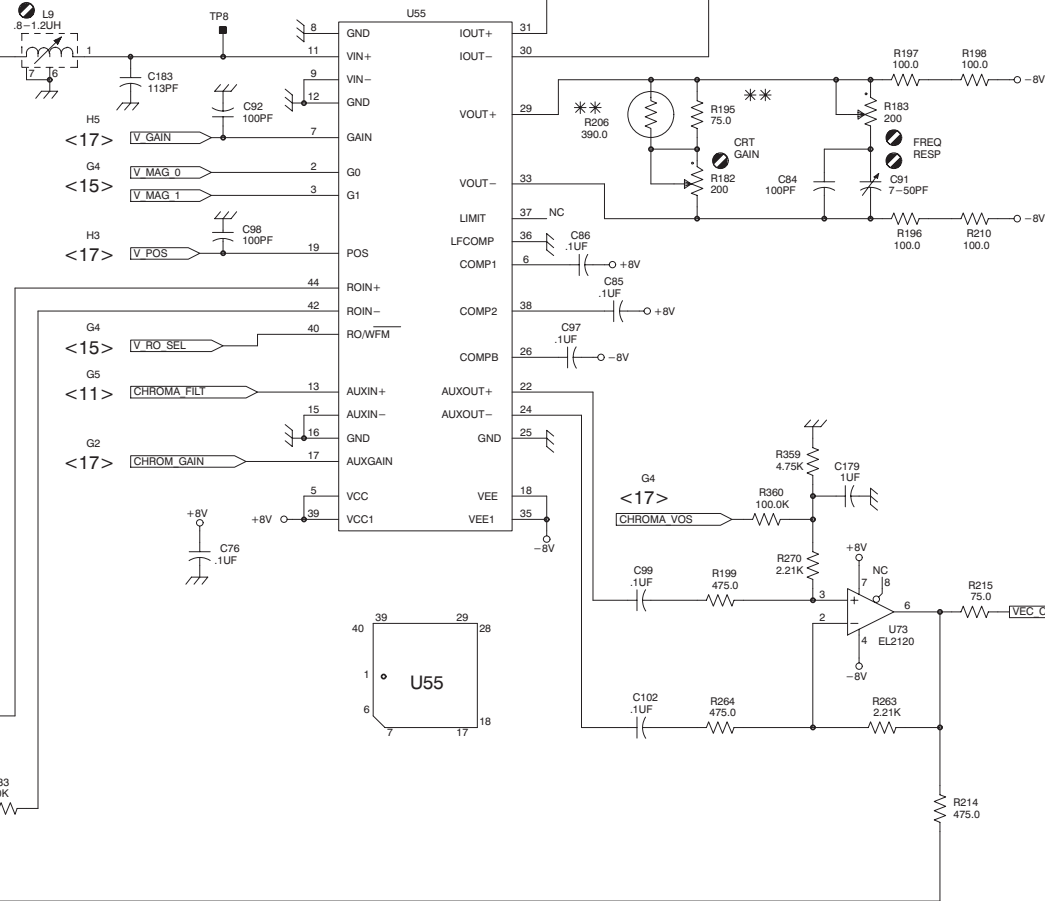
FILTER MUX



VERTICAL DEFLECTION



VERTICAL AMPLIFIER



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A3 MAIN BOARD

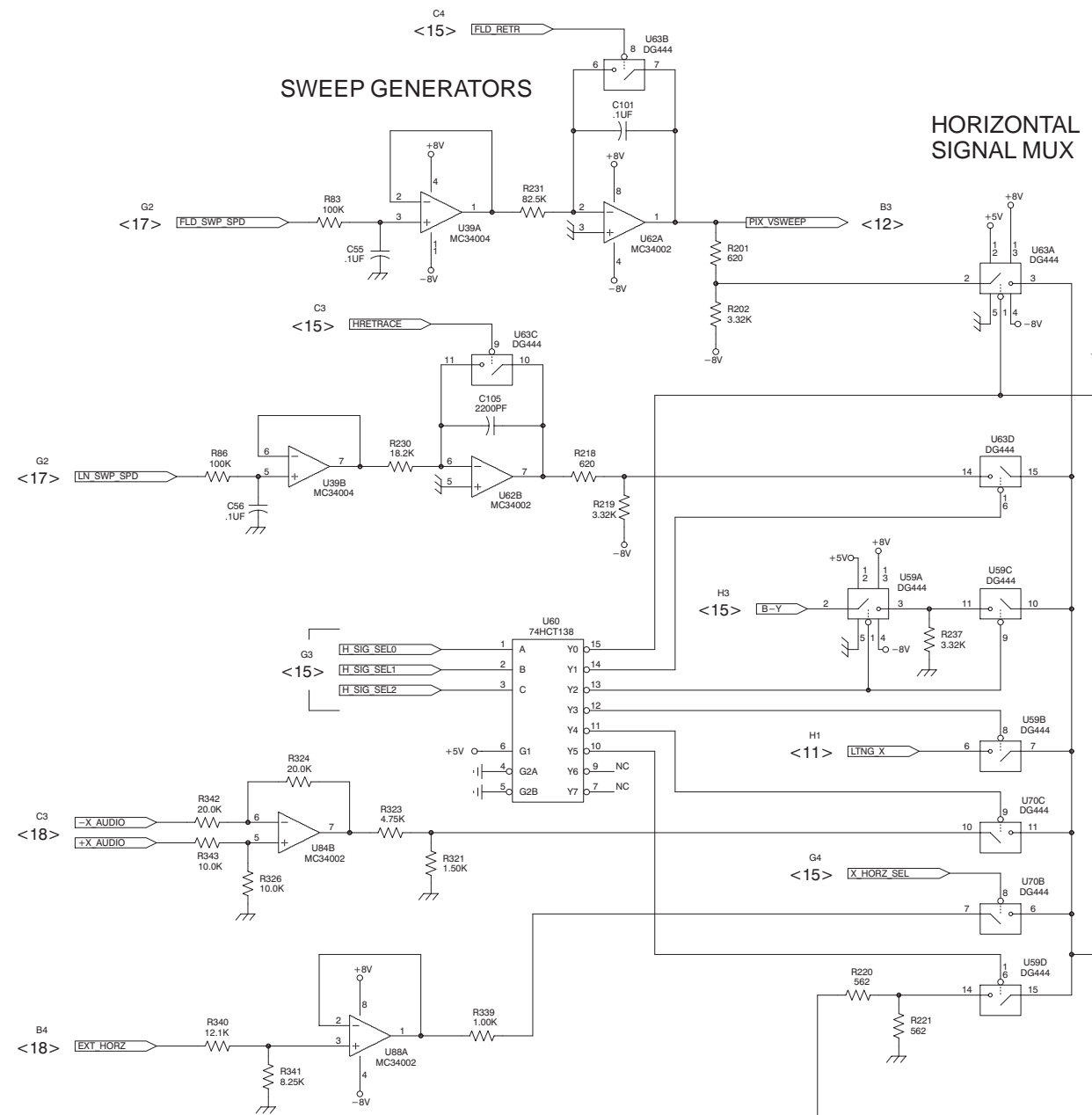
**Schematic Diagram <13>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

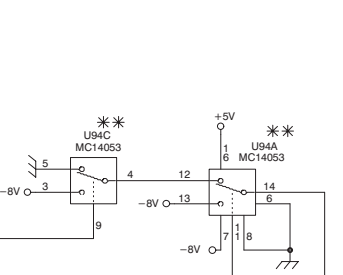
Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 14, 15, 16, 17, 18, and 19.

C N	L	L	C N	L	L	C N	L	L	C N	L	L
C55	B1	I1	Q14	G3	K2	R170	G1	K1	R343	B3	P4
C56	B2	I2	Q15	G1	L1	R171	G2	K1	R357	G5	I5
C64	D5	I5	Q28	F3	K2	R172	G2	K1	R364	F3	K2
C72	F1	J1									
C73	G1	J1	R83	B1	I1	R173	G3	K2	R365	G3	K2
			R86	B2	I2	R174	G4	K2	R366	F3	L3
C78	F2	K1	R102	D4	I5	R184	G1	L1	R367	F3	L3
C79	F2	J2	R110	G5	I5	R185	G2	K1			
C80	F5	J3	R111	G5	I5	R186	F3	K2	U39A	B1	I2
C81	F4	J3							U39B	B2	I2
C82	E4	J3	R112	D5	I5	R187	G4	K2	U47B	G5	J5
			R113	G5	I5	R188	G4	L2	U47D	D5	J5
C83	E4	J3	R122	G1	J1	R200	G1	L1	U56	F4	K3
C88	G2	K1	R124	F1	J1	R201	C1	L1			
C89	F4	J2	R128	D4	J5	R202	C2	L1	U59A	D2	L2
C93	F2	K1							U59B	D3	L2
C94	G2	K1	R129	D4	J5	R203	G4	L1	U59C	D2	L2
			R130	D4	J5	R204	G4	L2	U59D	D4	L2
C95	G3	L2	R136	F1	J1	R218	C2	L1	U60	C3	L3
C96	F4	K3	R137	F1	J1	R219	C2	L1			
C101	C1	L1	R138	F1	J1	R220	D4	L2	U62A	C1	L1
C105	B2	L1							U62B	B2	L1
C176	G5	I5	R139	F1	J1	R221	D4	L2	U63A	D1	L2
C178	E4	L3	R140	G4	J2	R230	B2	L1	U63B	C1	L2
C181	F3	K2	R148	D4	J5	R231	C1	L1	U63C	B2	L2
			R151	F1	J1	R237	D3	L2			
CR8	F2	K1	R152	G2	J1	R321	B3	O3	U63D	D2	L2
									U70B	D3	M1
J8	H2	J1	R153	F2	K1	R323	B3	O4	U70C	D3	M1
J10	H2	L1	R154	F3	J2	R324	B3	O4	U84B	B3	O4
			R155	F3	K2	R326	B3	O4	U88A	B4	P3
Q8	F1	J1	R156	D4	J2	R339	B4	P3	U94A	E2	K2
Q9	G4	J2	R165	F1	K1	R340	B4	P4	U94C	E2	K2
Q11	F3	K1									
Q12	F3	K2	R166	F2	K1	R341	B4	P3	VR4	F2	J2
Q13	G3	K1	R167	F2	K1	R342	B3	P4			

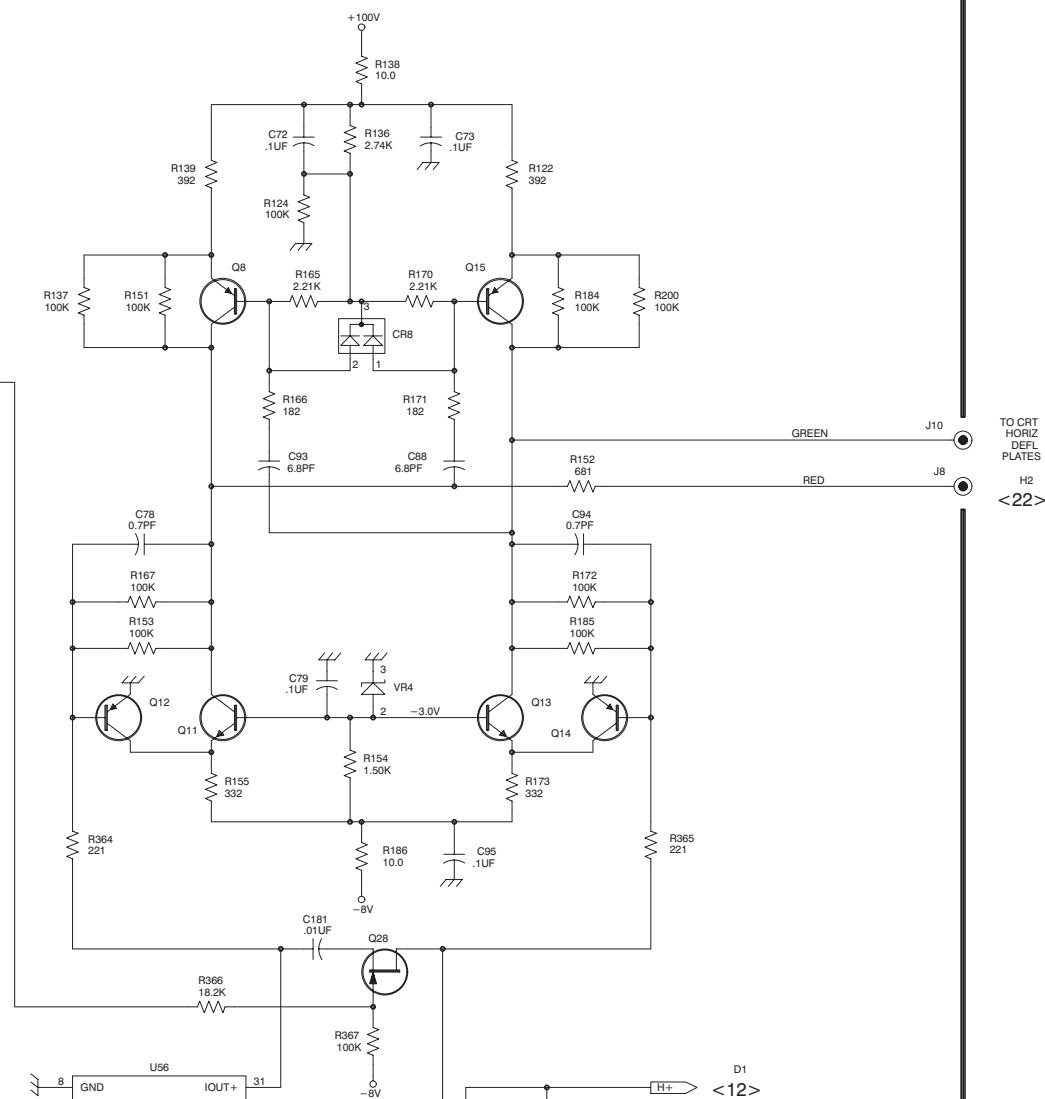
SWEEP GENERATORS



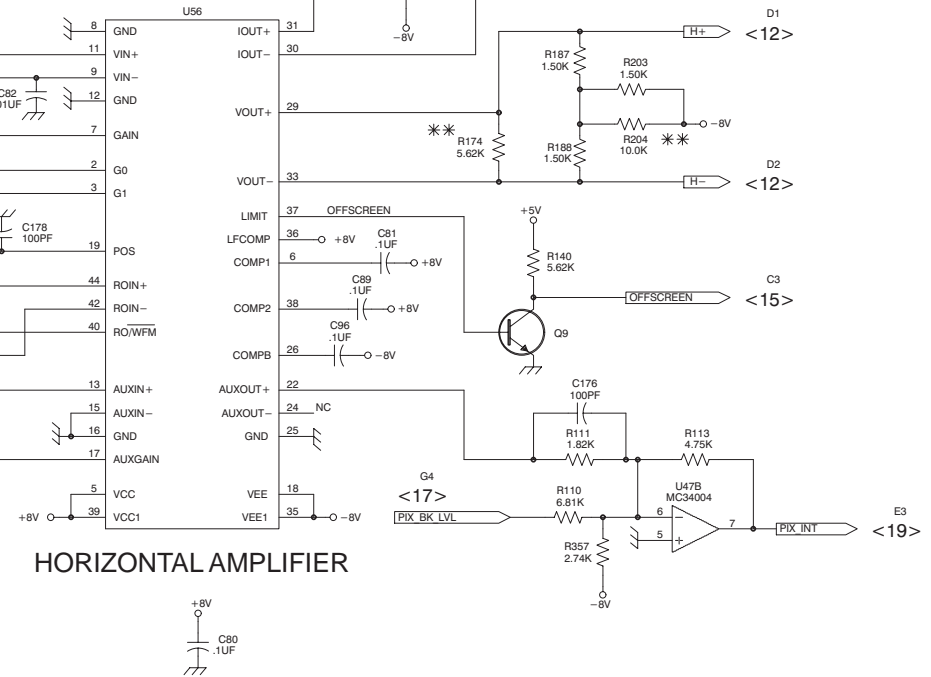
HORIZONTAL SIGNAL MUX



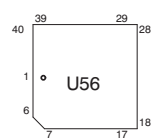
HORIZONTAL DEFLECTION



HORIZONTAL AMPLIFIER



TO CRT
HORIZ
DEFL
PLATES
H2
<22>



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

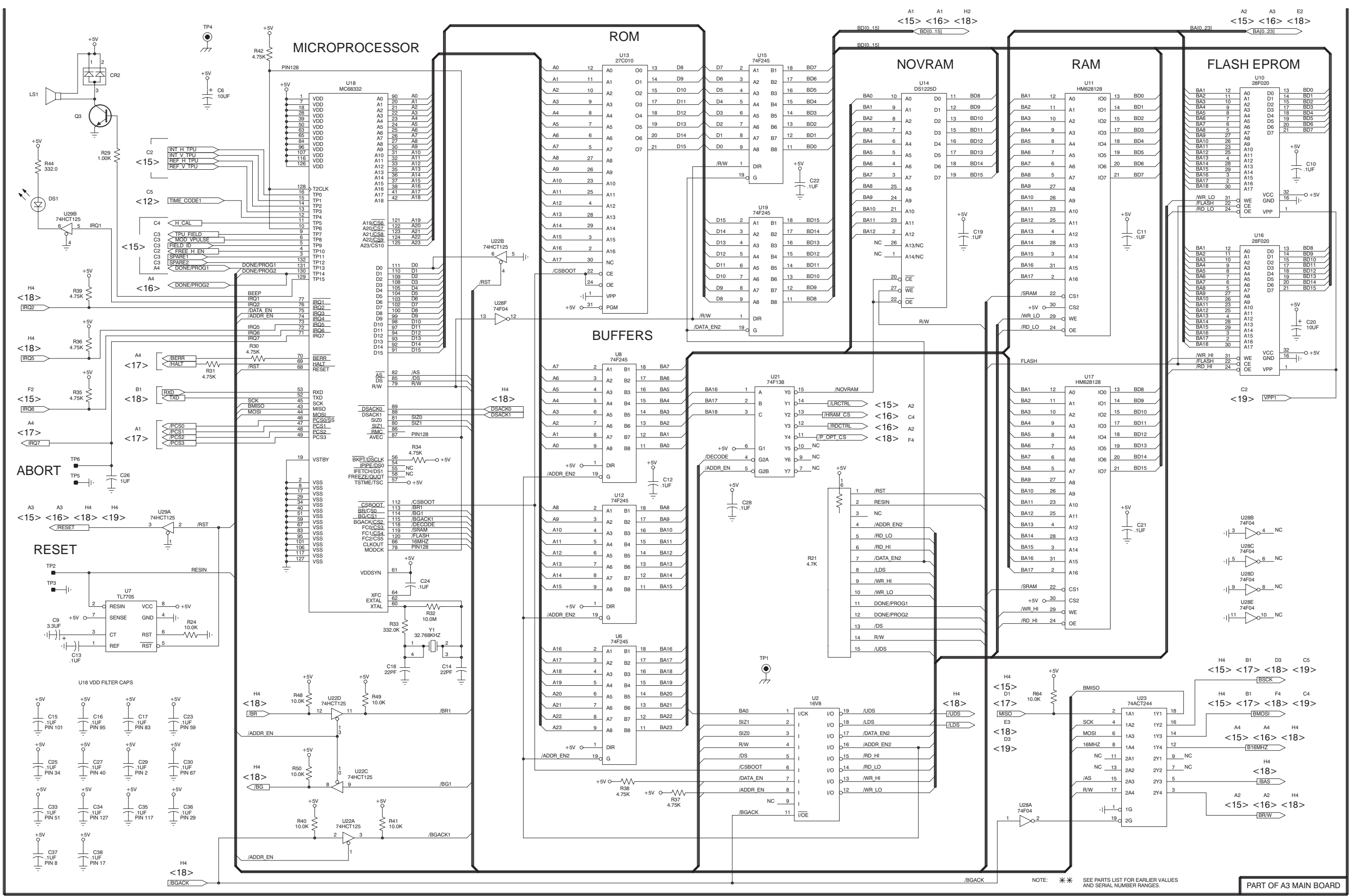
PART OF A3 MAIN BOARD

**Schematic Diagram <14>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13, 15, 16, 17, 18, and 19.

C N	L	L	C N	L	L	C N	L	L
C6	B1	C4	DS1	A2	G6			
C9	A4	C5				U2	E4	C2
C10	H1	C2	LS1	A1	C6	U6	D4	C4
C11	G2	C3				U7	A4	C4
C12	D3	C3	Q3	A1	D6	U8	D3	D4
						U10	H1	D2
C13	A4	C4	R21	E3	C3			
C14	C4	D6	R24	B4	C4	U11	G1	C3
C15	A4	D5	R29	A1	D6	U12	D3	D4
C16	A4	D5	R30	B2	D6	U13	D1	D4
C17	A4	D6	R31	B3	D6	U14	F1	D2
						U15	E1	E4
C18	C4	D6	R32	C4	D6			
C19	F2	E1	R33	C4	D6	U16	H2	E3
C20	H2	E3	R34	C3	D6	U17	G3	E3
C21	G3	E3	R35	A3	E6	U18	B1	F5
C22	E2	E4	R36	A2	E6	U19	E2	E4
						U21	E3	F3
C23	B4	E5	R37	E5	E6			
C24	C4	D6	R38	D5	E6	U22A	C5	F3
C25	A5	E5	R39	A2	F6	U22B	C2	F3
C26	A3	E6	R40	B5	F3	U22C	C5	F3
C27	A5	E5	R41	C5	F3	U22D	C4	F3
						U23	G4	F5
C28	E3	F2	R42	B1	F4			
C29	A5	F5	R44	A1	F6	U28A	G5	G5
C30	B5	F6	R48	B4	F3	U28B	H3	G5
C33	A5	F5	R49	C4	F3	U28C	H4	G5
C34	A5	F5	R50	B5	F3	U28D	H4	G5
			R64	G4	G5	U28E	H4	G5
C35	A5	F5						
C36	B5	F5	TP1	E4	C2	U28F	C2	G5
C37	A5	F6	TP2	A4	C4	U29A	B3	G6
C38	A5	F6	TP3	A4	C4	U29B	A2	G6
			TP4	B1	D6			
CR2	A1	D6	TP5	A3	E6	Y1	C4	D6
			TP6	A3	E6			

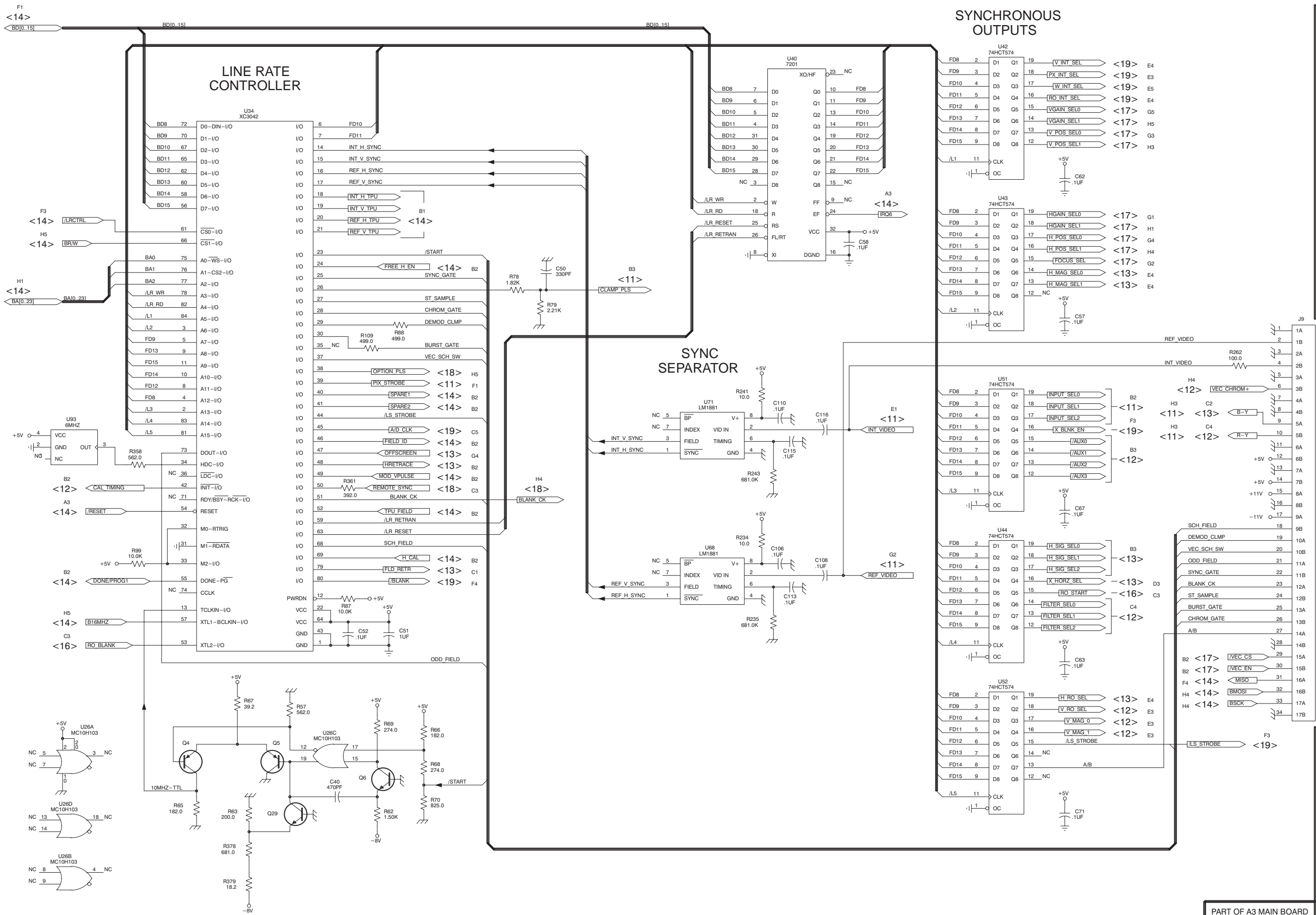


**Schematic Diagram <15>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13, 14, 16, 17, 18, and 19.

C	L		C	L	
N	L	L	N	L	L
C40	C5	F2	R78	D2	H2
C50	D2	H2			
C51	C4	H4	R79	D2	H2
C52	C4	I4	R87	C4	H4
C57	G2	I2	R88	C2	I4
			R99	A4	I2
C58	E2	I5	R109	C2	I5
C62	G1	I3			
C63	G4	I3	R234	E3	L2
C67	G3	J3	R235	E4	M2
C71	G5	J3	R241	E3	M3
			R243	E3	M3
C106	E4	L2	R262	H2	M4
C108	E4	M2			
C110	E3	L3	R358	A3	G3
C113	E4	M2	R361	C3	P6
C115	E3	M3	R378	B5	G2
C116	E3	M4	R379	B5	G2
J9	H2	K6	U26A	A5	F3
			U26B	A5	F3
Q4	B5	G3	U26C	B5	F3
Q5	B5	G3	U26D	A5	F3
Q6	C5	G3	U34	B1	I2
Q29	B5	G2			
			U40	E1	I4
R57	B4	G3	U42	F1	I2
R62	C5	G2	U43	F2	I3
R63	B5	G2	U44	F3	I3
R65	B5	G2	U51	F3	I3
R66	C4	G3			
			U52	F4	I3
R67	B4	G3	U68	E4	M2
R68	C5	G3	U71	E3	M3
R69	C4	G3	U93	A3	G3
R70	C5	G3			



PART OF A3 MAIN BOARD

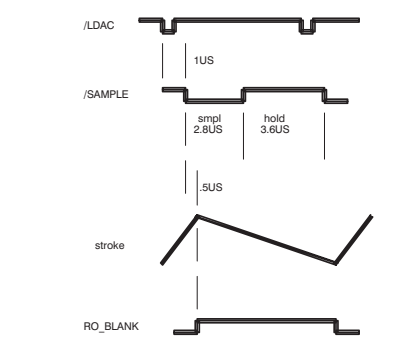
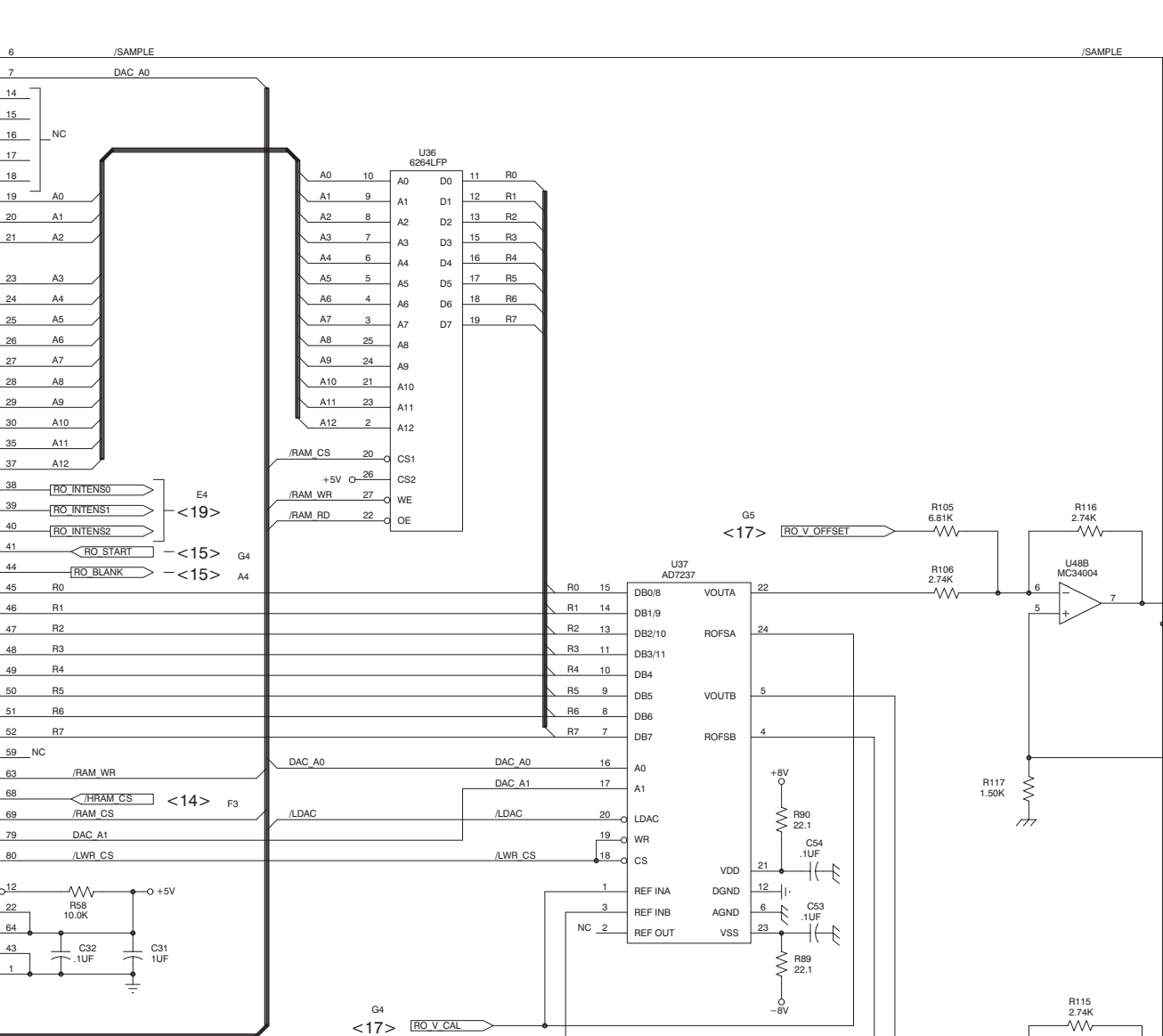
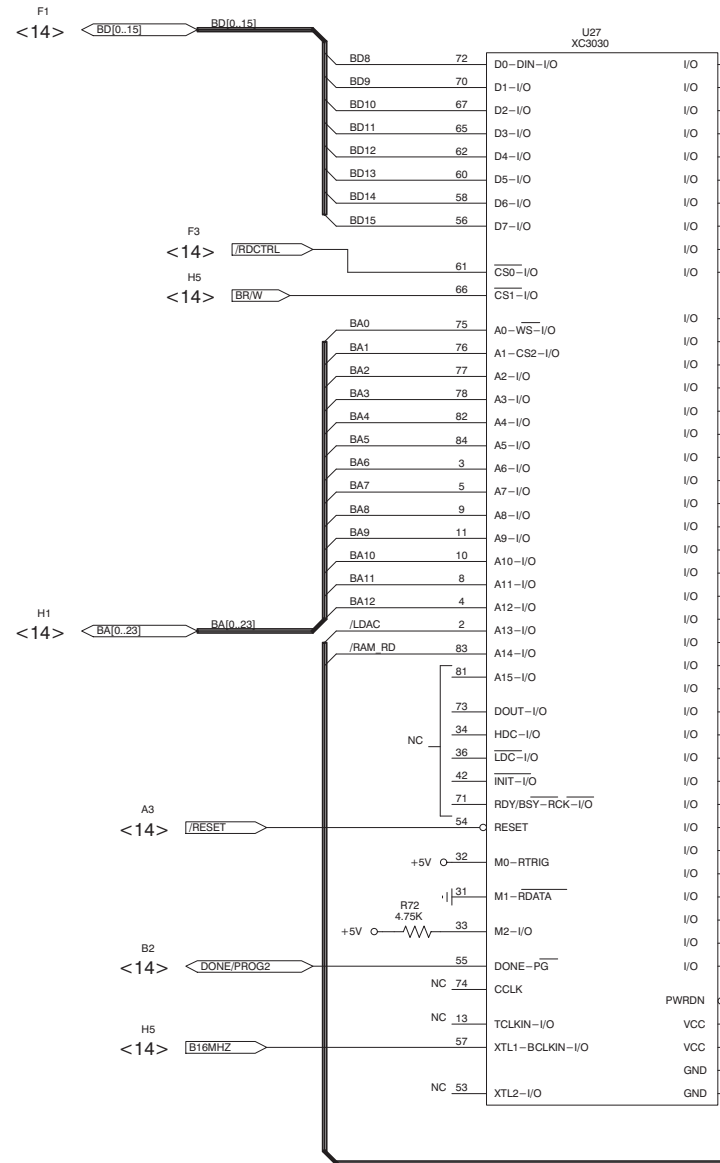
**Schematic Diagram <16>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

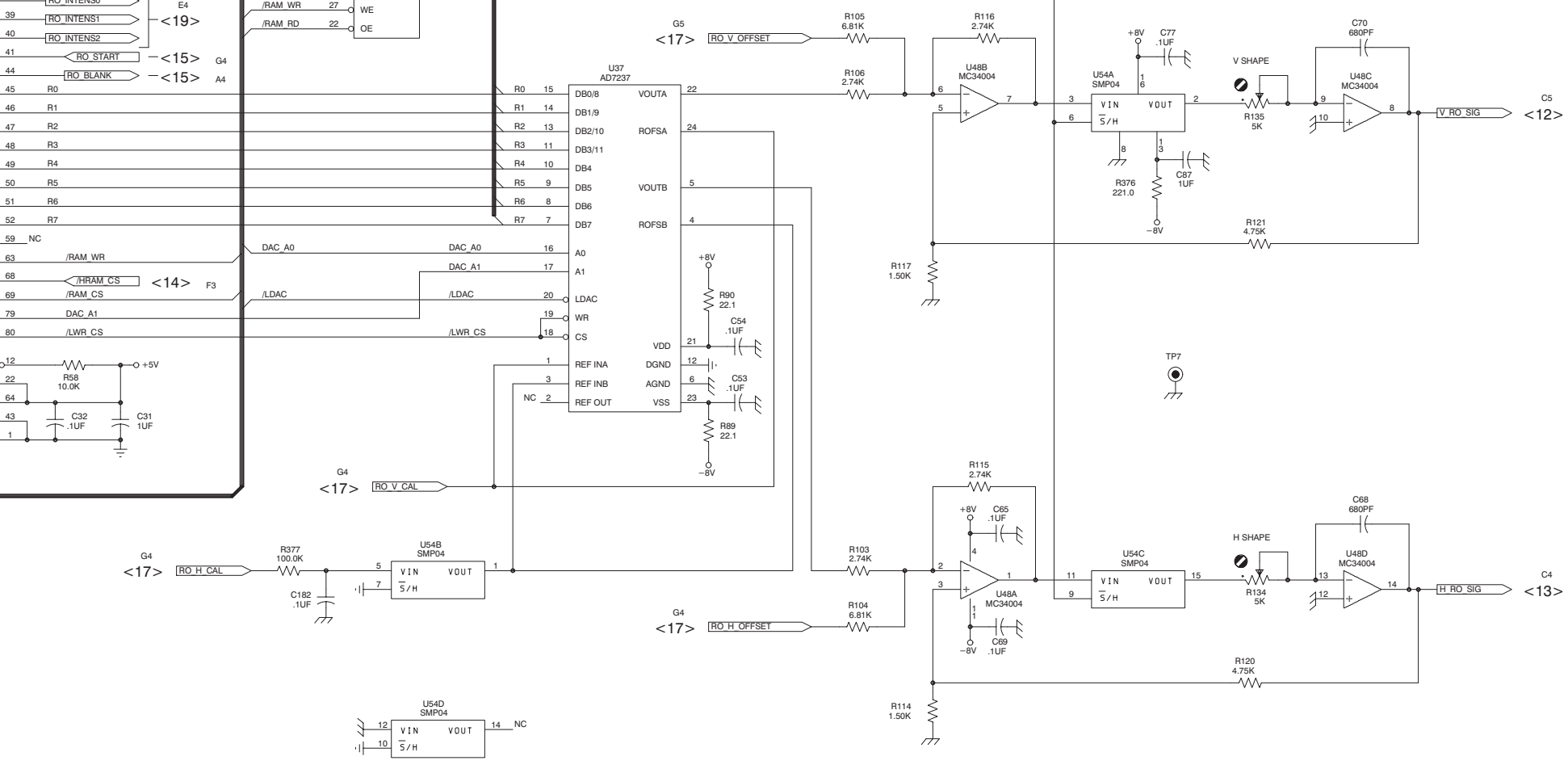
Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13, 14, 15, 17, 18, and 19.

C	N	L	L
C31	C4	F4	
C32	C4	F4	
C53	E4	H5	
C54	E4	H5	
C65	F4	I6	
C68	H4	J6	
C69	F5	J6	
C70	H3	J6	
C77	G3	J5	
C87	G3	K6	
C182	D5	J6	
R58	C4	F5	
R72	B4	G5	
R89	E4	H5	
R90	E4	H5	
R103	F4	I6	
R104	F5	I6	
R105	F3	I6	
R106	F3	I6	
R114	F5	I6	
R115	F4	I6	
R116	F3	I6	
R117	F3	I6	
R120	G5	I6	
R121	G3	I6	
R134	G4	J6	
R135	G3	J6	
R376	G3	K6	
R377	D4	J6	
TP7	G4	I6	
U27	B1	F4	
U36	D2	H4	
U37	E3	H5	
U48A	F4	J6	
U48B	F3	J6	
U48C	H3	J6	
U48D	H5	J6	
U54A	G3	J6	
U54B	D4	J6	
U54C	G5	J6	
U54D	D5	J6	

READOUT CONTROL



READOUT STROKE GENERATOR



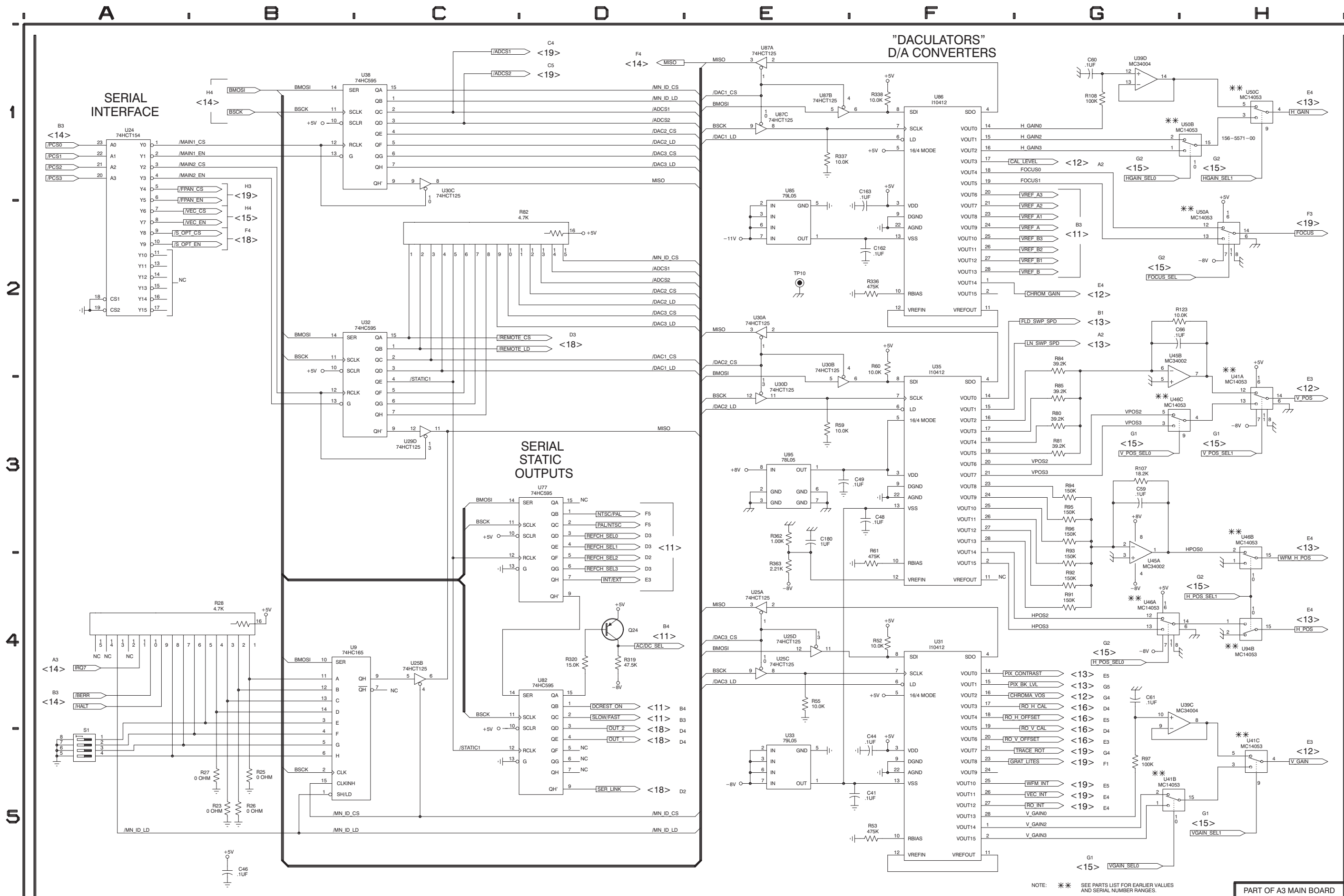
PART OF A3 MAIN BOARD

**Schematic Diagram <17>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13,14, 15, 16, 18, and 19.

C	N	L	L	C	N	L	L	C	N	L	L
C41		E5	G2	R91		G4	I1				
C44		F5	G1	R92		G4	I1	U30D		E3	G2
C46		B5	G6	R93		G4	I1	U31		F4	G1
C48		F3	G2					U32		B2	H6
C49		E3	H1	R94		G3	I1	U33		E5	H2
				R95		G3	I1	U35		F3	H1
C59		G3	I1	R96		G3	I1				
C60		G1	I2	R97		G5	I1	U38		B1	H6
C61		G4	I2	R107		G3	I1	U39C		G4	I2
C66		G2	J1					U39D		G1	I2
C162		F2	O1	R108		G1	I2	U41A		H3	I1
				R123		G2	J1	U41B		G5	I1
C163		F2	O1	R319		D4	O3				
C180		E3	H2	R320		D4	O3	U41C		H5	I1
				R336		F2	P2	U45A		G3	I1
Q24		D4	O3					U45B		G2	I1
				R337		E1	P2	U46A		G4	I1
R23		B5	C5	R338		F1	P2	U46B		H3	I1
R25		B5	C5	R362		E3	H2				
R26		B5	C5	R363		E4	I2	U46C		G3	I1
R27		B5	C5					U50A		H2	J2
				S1		A5	C6	U50B		G1	J2
R28		A4	D6					U50C		H1	J2
R52		F4	G1	TP10		E2	O1	U77		C3	M3
R53		F5	G1								
R55		E4	G2	U9		B4	C5	U82		C4	O3
R59		E3	G1	U24		A1	F6	U85		E2	O1
				U25A		E4	G2	U86		F1	O1
R60		F2	G2	U25B		C4	G2	U87A		E1	O2
R61		F4	G2	U25C		E4	G2	U87B		E1	O2
R80		G3	H2								
R81		G3	H2	U25D		E4	G2	U87C		E1	O2
R82		C2	H6	U29D		C3	G6	U94B		H4	K2
				U30A		E2	G2	U95		E3	H1
R84		G2	H2	U30B		E2	G2				
R85		G3	H2	U30C		C1	G2				



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A3 MAIN BOARD

**Schematic Diagram <18>
Component Locator Chart**

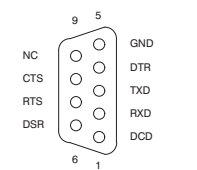
The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13, 14, 15, 16, 17, and 19.

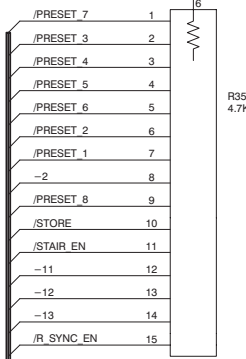
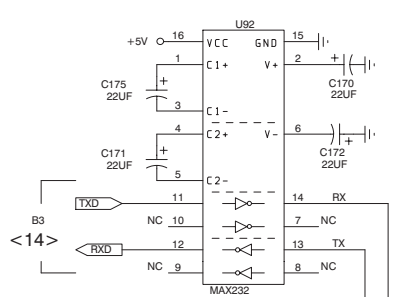
C	N	L	L
C170	C1		P1
C171	B1		P3
C172	C1		P2
C173	D5		P5
C174	E5		P6
C175	B1		P1
J2	F2		B1
J5	G2		E1
J14	B2		P3
Q25	C4		P4
Q26	C4		P5
R43	H3		F5
R51	H3		F5
R310	C4		O4
R322	C4		O3
R325	C4		O4
R348	C4		P5
R352	D3		P6
R356	D1		P6
U87D	E3		O2
U90	D3		P5
U91	D2		P6
U92	C1		P1

1
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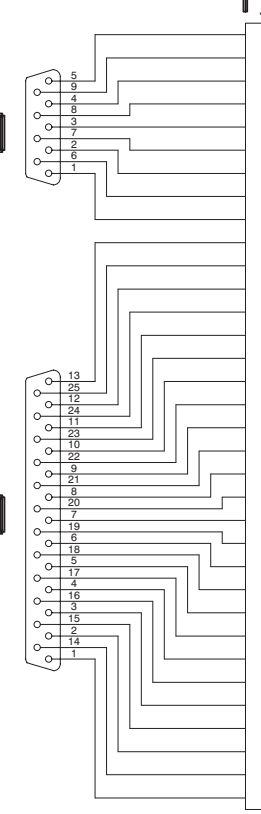
SERIAL PORT



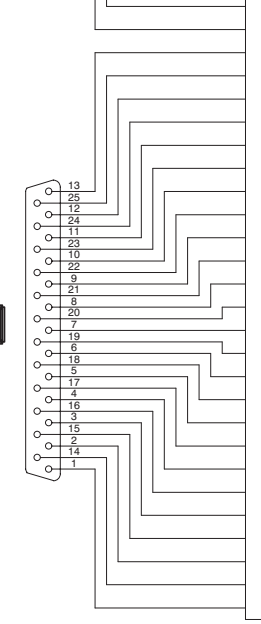
RS232



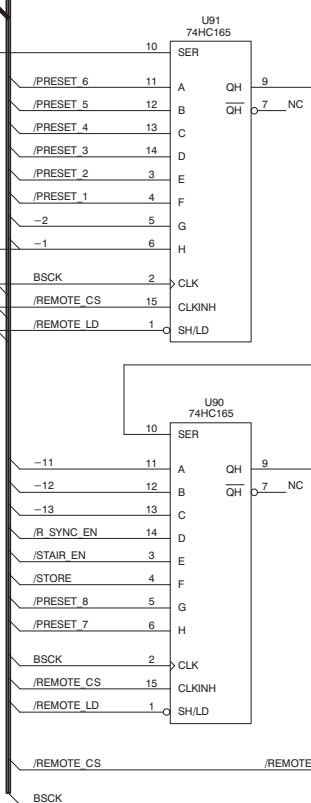
REAR PANEL



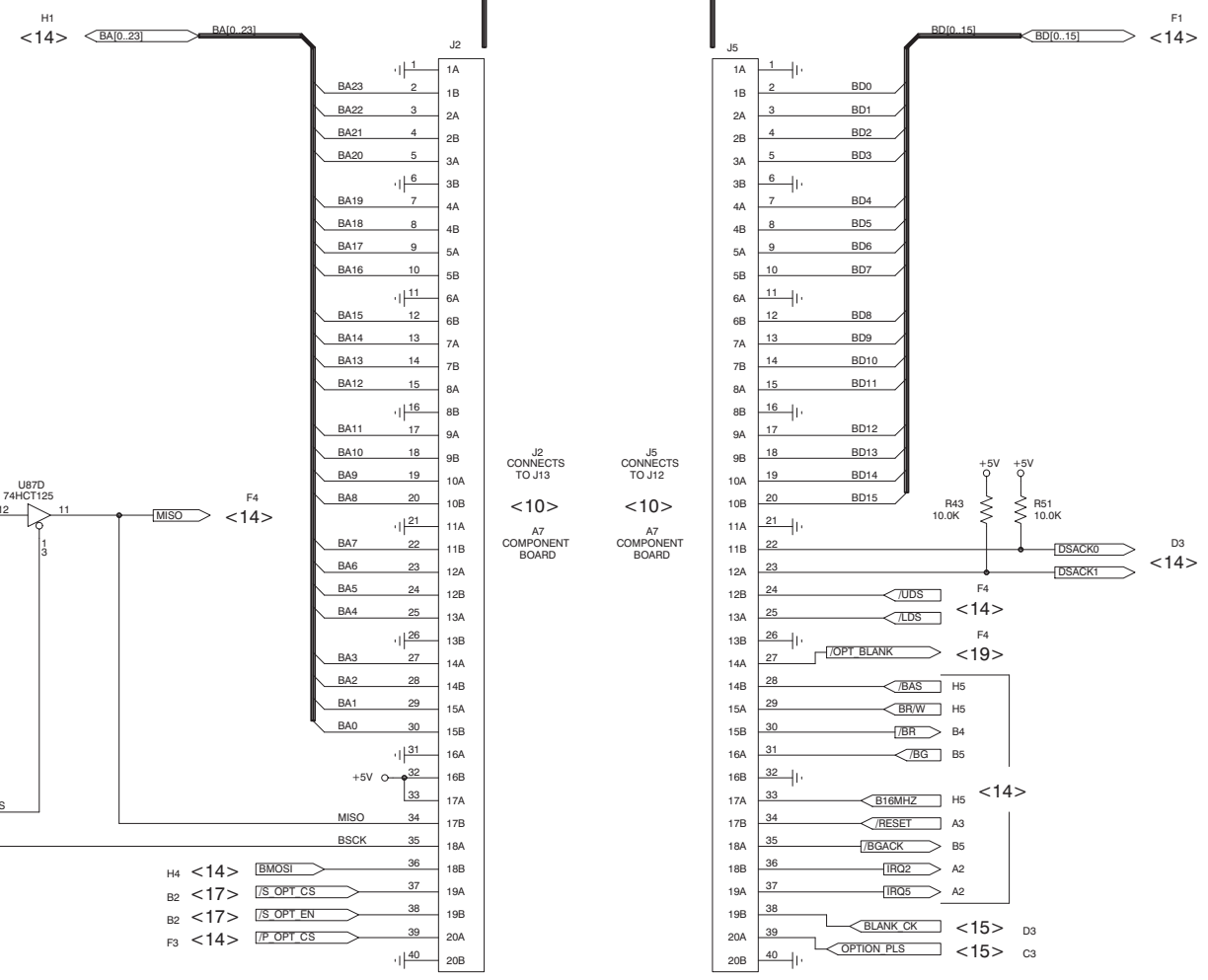
REMOTE



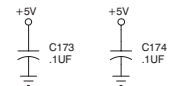
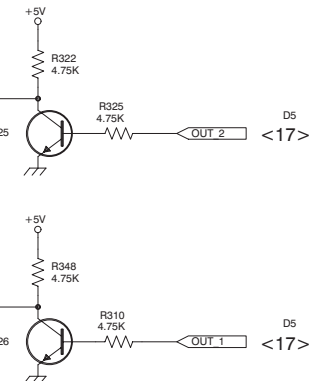
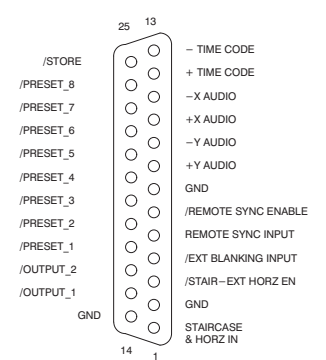
REMOTE



DIGITAL BUS CONNECTORS



REMOTE PORT



PART OF A3 MAIN BOARD

**Schematic Diagram <19>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Diagrams 11, 12, 13, 14, 15, 16, 17, and 18.

C	N	L	L	C	N	L	L	C	N	L	L
C1		A5	A3	R1		G1	A1	R125		G3	J2
C2		A5	A4	R2		G1	A1				
C3		G1	B1	R3		G1	A1	R126		G3	J2
C4		E2	B1	R4		H1	A2	R145		C1	J4
C5		F2	B1	R5		G2	A2	R146		C1	J4
								R147		C2	J4
C7		D5	C4	R6		B3	B2	R284		B1	O6
C8		D4	C5	R7		B5	B3	R289		B1	O6
C39		C2	F2	R8		B4	B4	R290		B1	O6
C42		B2	F2	R9		B4	B5				
C74		C1	J4	R10		B3	B6	SKT1		H2	A3
								SKT2		H2	A4
C75		D1	J5	R11		G1	B1	SKT3		H1	A5
C107		E1	L2	R12		G2	B2	SKT4		H1	A5
C136		B1	O6	R13		G2	B2				
C139		C1	O5	R14		E2	B1	U1A		F1	B2
				R15		E2	B2	U1B		F2	B2
CR1		G4	C2					U1C		F2	B2
CR3		G3	J2	R16		F2	B2	U1D		E2	B2
CR4		F3	I2	R17		F2	B2	U3		C4	C4
CR5		F4	I2	R18		E2	B1				
CR6		D1	J4	R19		A5	B2	U4		C3	C5
CR9		B1	O6	R20		H5	C2	U5A		G4	C2
								U5B		G5	C2
DS2		H1		R22		H5	C2	U20		B2	F2
DS3		H1		R45		A2	F2	U29C		F3	G6
DS4		H2		R46		B2	F2				
DS5		H2		R47		B2	F2	U49A		E3	J2
				R54		A2	G2	U49B		E4	J2
J1		H3	A1					U49C		E4	J2
J3		H4	B2	R56		A2	F2	U49D		E5	J2
J4		C2	E2	R71		F3	G6	U53		C1	I4
J6		H3	H1	R73		G3	I1	U78		B1	O6
				R74		E4	H1				
P4		C2		R75		E4	H1	VR1		A2	F1
								VR2		A2	F1
Q1		G2	A2	R76		E4	H1	VR3		A2	F1
Q2		G1	B2	R77		E4	H2				
Q7		G4	I2	R118		F3	I2				
				R119		G4	J2				

A B C D E F G H

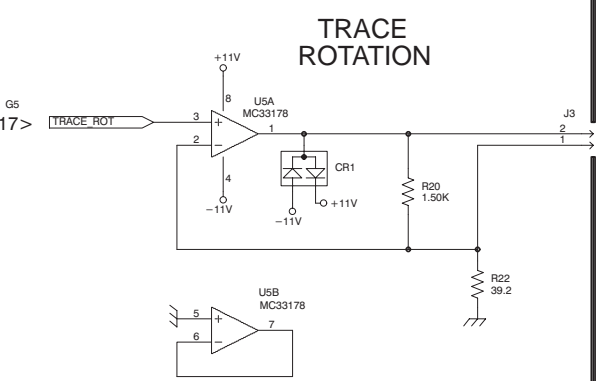
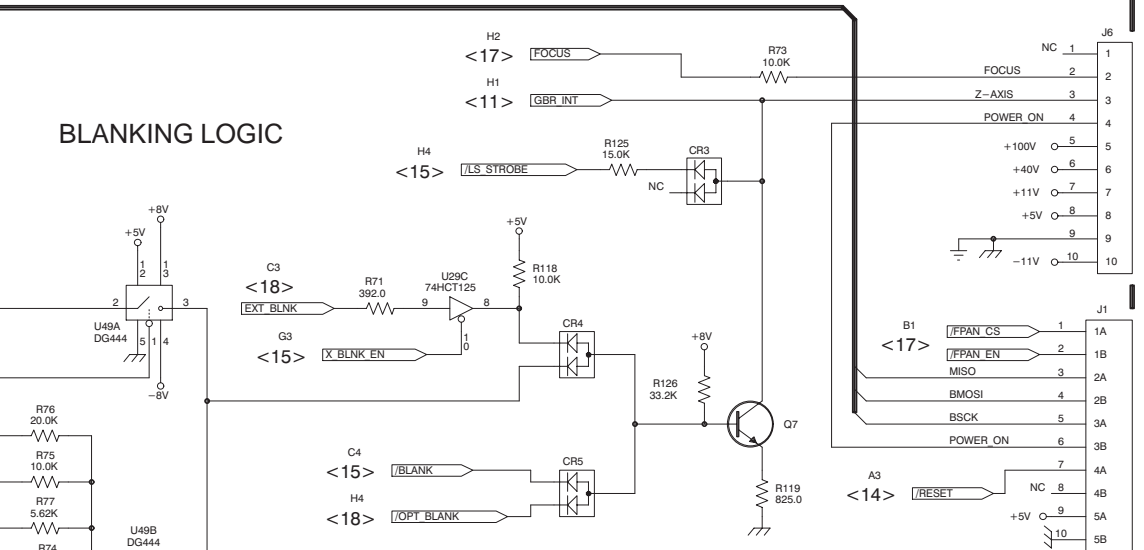
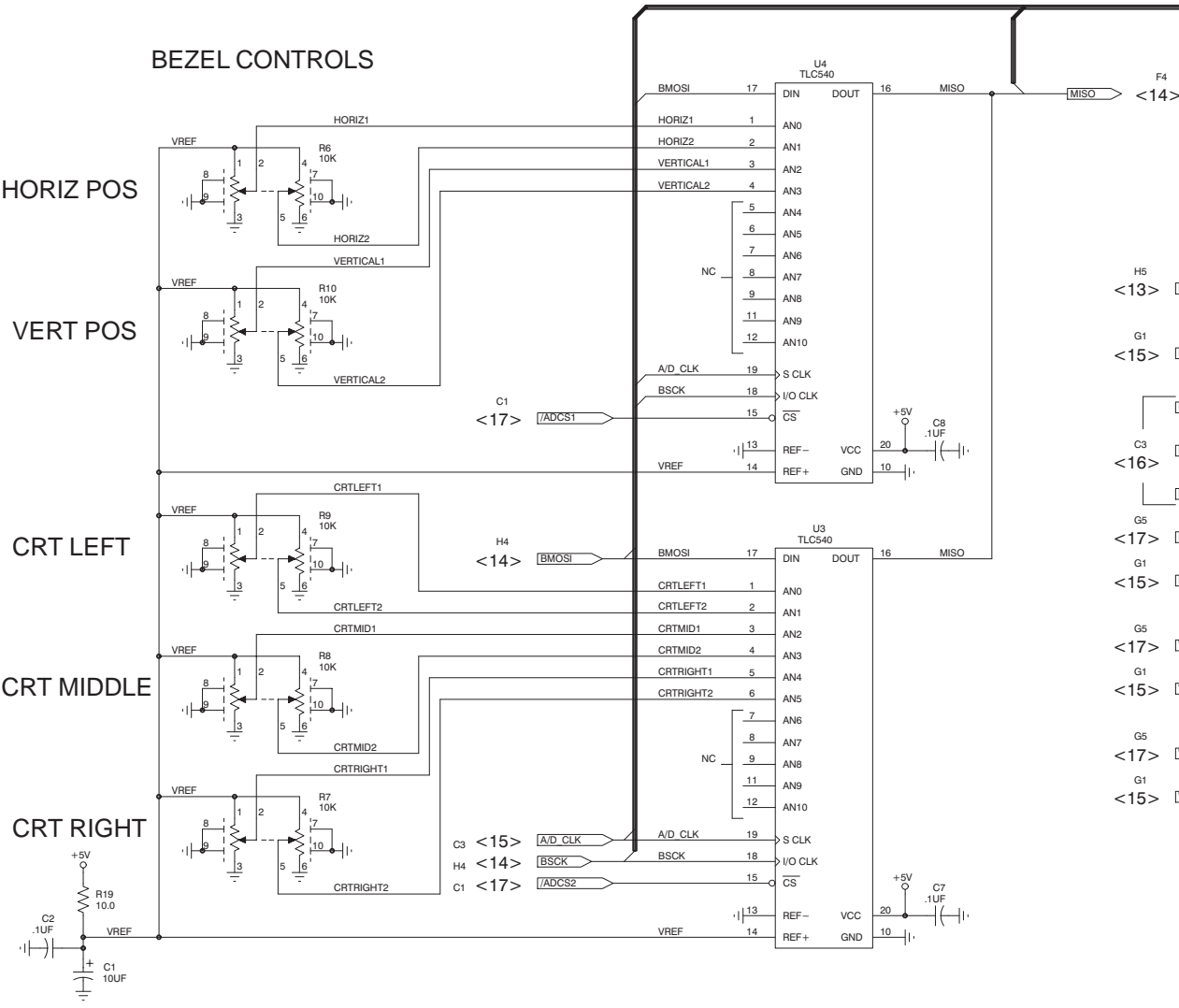
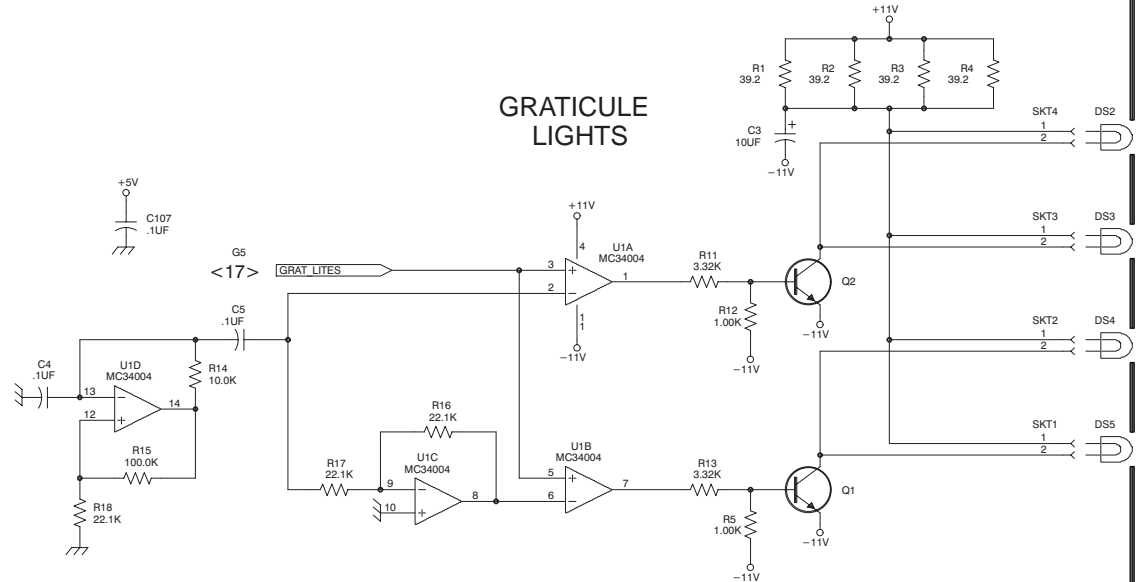
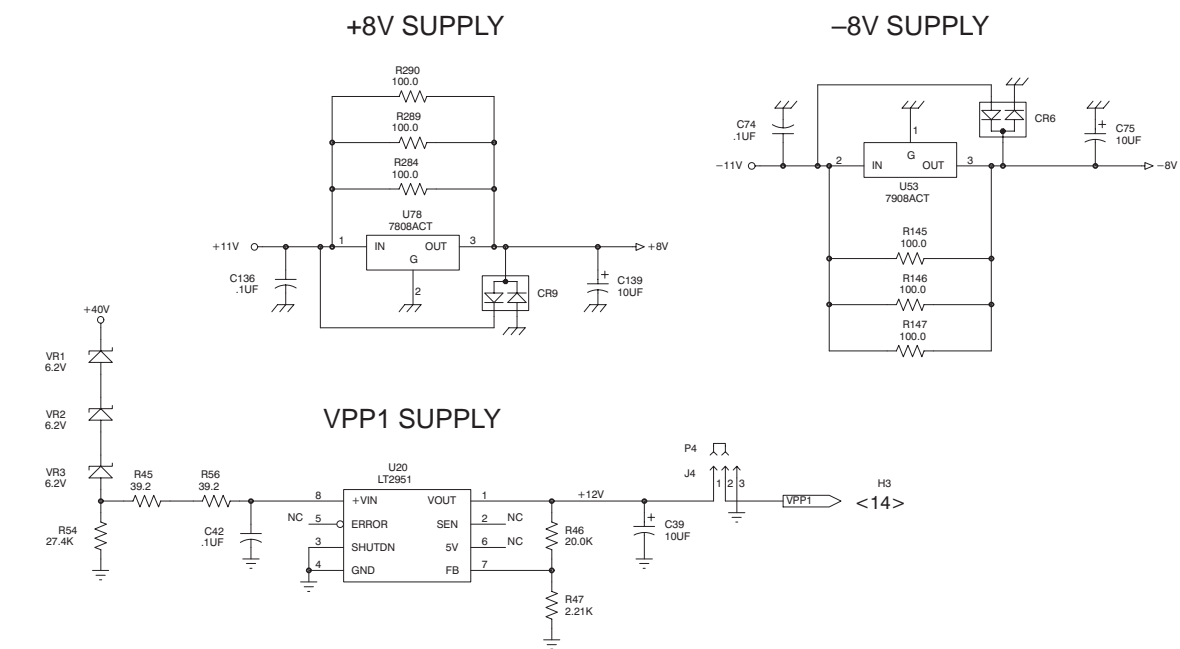
1

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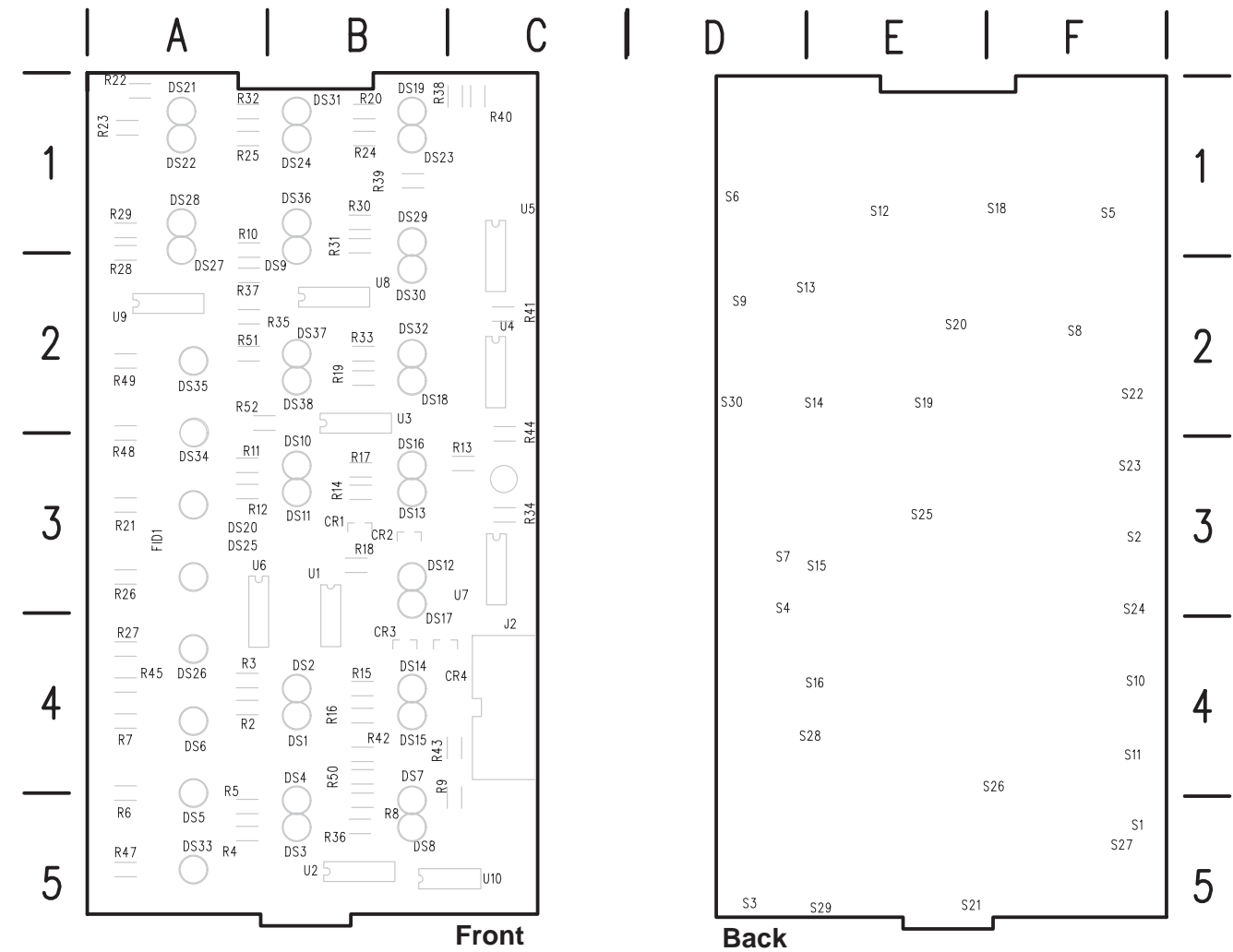


FRONT PANEL GRATICULE LIGHTS

SKT4 DS2
SKT3 DS3
SKT2 DS4
SKT1 DS5

J6 CONNECTS TO J4
A1 POWER SUPPLY
J1 CONNECTS TO J2
A2 FRONT PANEL
J3 CONNECTS TO P320 ON CRT
H1 <22>

PART OF A3 MAIN BOARD



A2 Front Panel Board

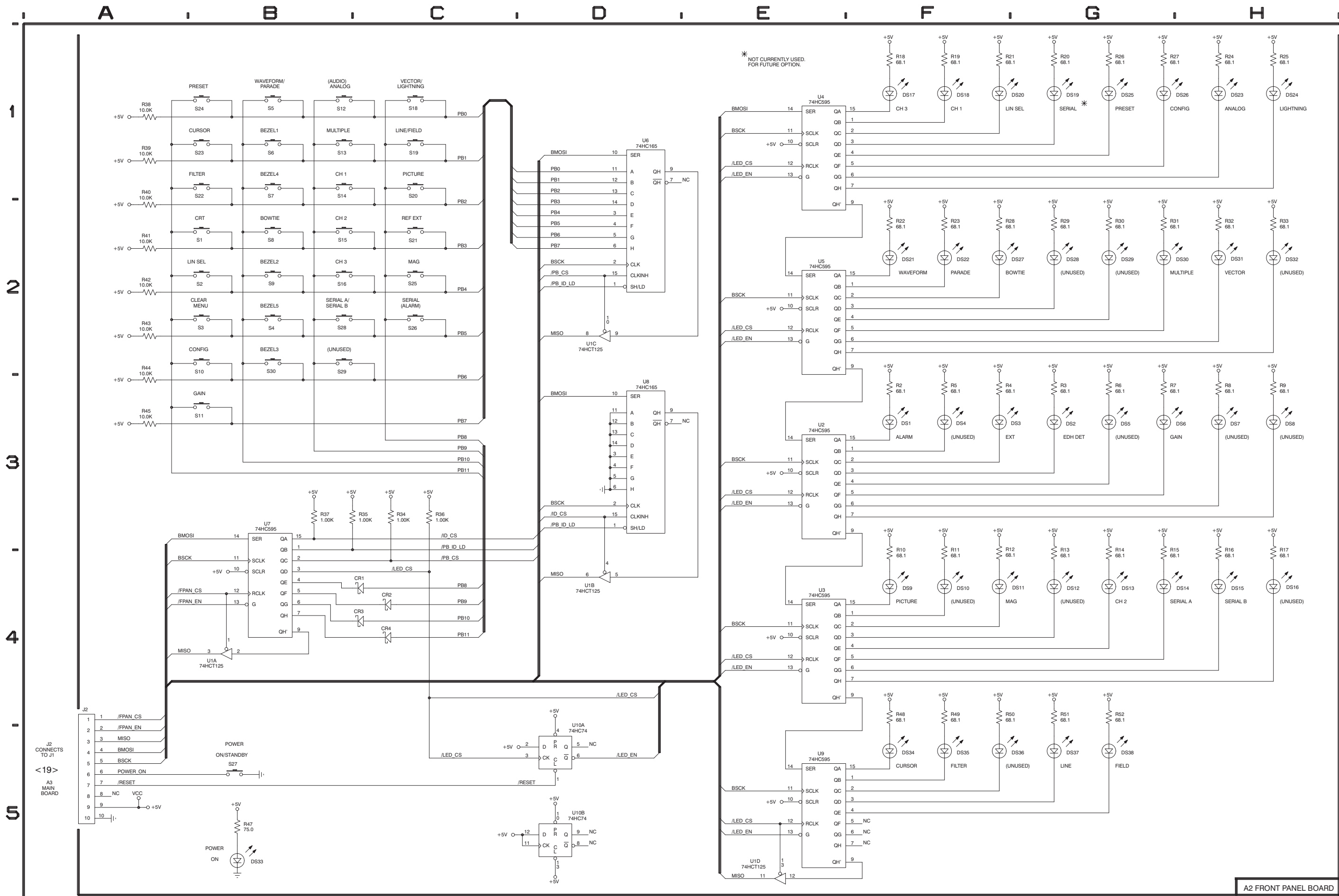
 **Static Sensitive Devices**
See Maintenance Section

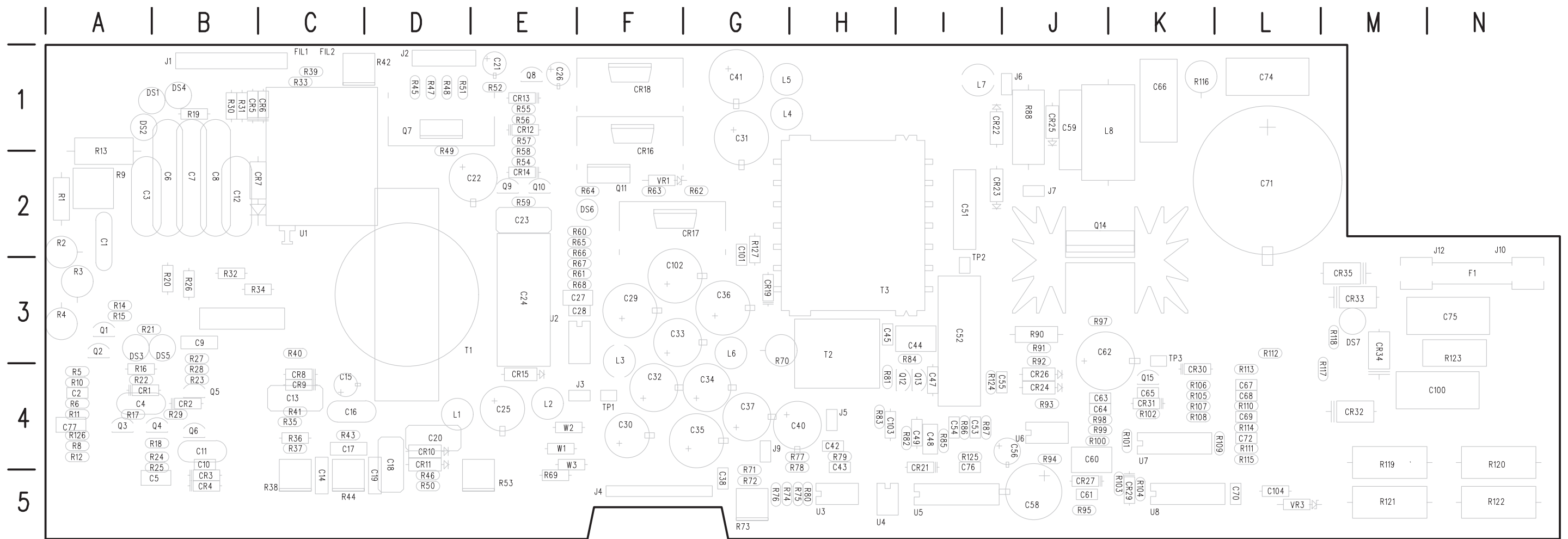
Schematic Diagram <20>Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.


Assembly A2.

C	N	L	L	C	N	L	L	C	N	L	L	C	N	L	L	C	N	L	L				
CR1	C4	B3		DS21	F2	A1		R5	F3	A5		R28	F2	A2		R52	G4	A2		S23	B1	F3	
CR2	C4	B3		DS22	F2	A1		R6	G3	A5		R29	G2	A1		S1	B2	F5		S24	B1	F3	
CR3	C4	B4		DS23	H1	B1		R7	G3	A4		R30	G2	B1		S2	B2	F3		S25	C2	E3	
CR4	C4	B4		DS24	H1	B1		R8	H3	B5		R31	G2	B2		S3	B2	D5		S26	C2	F4	
DS1	F3	B4		DS25	G1	A3		R9	H3	B4		R32	H2	A1		S4	B2	D3		S27	B5	F5	
DS2	G3	B4		DS26	G1	A4		R10	F3	A1		R33	H2	B2		S5	B1	F1		S28	B2	E4	
DS3	F3	B5		DS27	F2	A2		R11	F3	A3		R34	C3	C3		S6	B1	D1		S29	B2	E5	
DS4	F3	B4		DS28	G2	A1		R12	F3	A3		R35	B3	B2		S7	B1	D3		S30	B2	D2	
DS5	G3	A5		DS29	G2	B1		R13	G3	C3		R36	C3	B5		S8	B2	F2		U1A	B4	B3	
DS6	G3	A4		DS30	G2	B2		R14	G3	B3		R37	B3	A2		S9	B2	D2		U1B	D4	B3	
DS7	H3	B4		DS31	H2	B1		R15	G3	B4		R38	A1	B1		S10	B2	F4		U1C	D2	B3	
DS8	H3	B5		DS32	H2	B2		R16	H3	B4		R39	A1	B1		S11	B3	F4		U1D	E5	B3	
DS9	F4	A2		DS33	B5	A5		R17	H3	B3		R40	A2	C1		S12	B1	E1		U2	E3	B5	
DS10	F4	B3		DS34	F5	A3		R18	F1	B3		R41	A2	C2		S13	B1	E2		U3	E4	B2	
DS11	F4	B3		DS35	F5	A2		R19	F1	B2		R42	A2	B4		S14	B1	E2		U4	E1	C2	
DS12	G4	B3		DS36	F5	B1		R20	G1	B1		R43	A2	B4		S15	B2	E3		U5	E2	C1	
DS13	G4	B3		DS37	G5	B2		R21	F1	A3		R44	A3	C3		U6	D1	A3					
DS14	G4	B4		DS38	G5	B2		R22	F2	A1		R45	A3	A4		U7	B3	C3					
DS15	H4	B4		J2	A4	C4		R23	F2	A1		R47	B5	A5		U8	D3	B2					
DS16	H4	B3						R24	H1	B1		R48	F4	A3		U9	E5	A2					
DS17	F1	B4						R25	H1	A1		R49	F4	A2		U10A	D5	C5					
DS18	F1	B2						R26	G1	A3		R50	F4	B4		U10B	D5	C5					
DS19	G1	B1						R27	G1	A4		R51	G4	A2									
DS20	F1	A3																					





A1 Power Supply Board

 **Static Sensitive Devices**
See Maintenance Section

A1 Power Supply Board Component Locator (with cross-references to schematic diagrams 21 and 22).

C				C				C				C				C				C				C				C				C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L	N	N	L	L																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
C1	22	F4	A2	C32	21	G2	F4	C67	21	A3	L4	CR17	21	F2	G2	J4	21	H4	F5	Q14	21	E3	J2	R31	22	E3	B1	R62	21	F3	G2	R93	21	D3	J4	R125	21	C5	I4	C2	22	B4	A4	C33	21	F2	F3	C68	21	A3	L4	CR18	21	F2	F1	J5	21	H1	H4	Q15	21	B2	K4	R94	21	C3	J4	R126	22	C5	A4	C3	22	D3	A2	C34	21	G1	G4	C69	21	A4	L4	CR19	21	F2	G3	J6	21	D2	J1	R1	22	E4	A2	R63	21	F3	F2	R95	21	B4	J5	R127	21	F3	G2	C4	22	B5	A4	C35	21	G2	G4	C70	21	A4	L5	CR20	21	F2	G4	J7	21	D1	J2	R2	22	E4	A2	R64	21	G3	F2	R97	21	D3	J3	R128	21	F3	G2	C5	22	C5	A5	C71	21	A1	L2	CR21	21	F2	G3	J8	21	D1	J1	R3	22	E4	A3	R65	22	B2	E2	R98	21	C3	J4	T1	22	C2	D3	C6	22	D3	B2	C72	21	A3	L4	CR22	21	E2	I1	J9	21	H1	G4	R4	22	E4	A3	R66	22	C2	E2	R99	21	B2	J4	T2	21	E5	H3	C7	22	D3	B2	C73	21	A1	N2	CR23	21	E2	I2	J10	21	A1	N2	R5	22	D5	A4	R36	22	F1	C4	R100	21	B4	J4	T3	21	E2	H3	C8	22	E2	B2	C74	21	B1	L1	CR24	21	D3	J4	J11	21	A1	N2	R6	22	B4	A4	R37	22	F2	C4	R101	21	B3	K4	TP1	21	F5	F4	C9	22	D4	B3	C75	21	B1	N3	CR25	21	D2	J1	J12	21	A1	N2	R7	22	E4	A4	R38	22	F2	C5	R102	21	A4	K4	TP2	21	E3	I3	C10	22	C4	B4	C76	21	C5	I5	CR26	21	D3	J4	L1	22	B2	D4	R8	22	A4	A4	R39	22	E3	C1	R103	21	B5	K5	TP3	21	A5	K3	C11	22	C4	B4	C77	22	C5	A4	L2	22	D1	E4	R9	22	F4	A2	R40	22	C2	C3	R104	21	B5	K5	U1	22	D1	C2	C12	22	E2	B2	C78	21	F4	H4	L3	21	G2	F3	R10	22	B4	A4	R41	22	D2	C4	R105	21	B3	K4	U2	22	B2	E3	C13	22	D2	C4	C79	21	F2	G2	L4	21	G1	G1	R11	22	B4	A4	R42	22	E3	D1	R106	21	A3	K4	U3A	21	G4	H5	C14	22	F2	C5	C80	21	F2	F3	L5	21	G2	G1	R12	22	D5	A4	R43	22	F3	C4	R107	21	A3	K4	U3B	21	F4	H5	C15	22	C2	C4	C81	21	H1	H4	L6	21	G2	G3	R13	22	E3	A2	R44	22	F2	C5	R108	21	A2	K4	U4	21	E4	H5	C16	22	D2	C4	C82	21	F2	G1	L7	21	E2	I1	R14	22	E5	A3	R45	22	F2	D1	R109	21	B3	L4	U5A	21	C5	I5	C17	22	F3	C4	C83	21	E5	I4	L8	21	D1	J1	R15	22	E5	A3	R46	22	D2	D5	R110	21	A4	L4	U5B	21	C4	I5	C18	22	D2	D4	C84	21	E5	H3	L9	21	D1	J1	R16	22	D4	A4	R47	22	F2	D1	R111	21	A3	L4	U6	21	C3	J4	C19	22	F2	D5	C85	21	E5	I4	L10	21	D1	J1	R17	22	C5	A4	R48	22	F3	D1	R112	21	B2	L3	U7A	21	B4	K5	C20	22	C2	D4	C86	21	E5	I4	L11	21	D1	J1	R18	22	C4	A4	R49	22	B3	D2	R113	21	A2	L4	U7B	21	B3	K5	C21	21	H3	E1	C87	21	E5	I4	L12	21	D1	J1	R19	22	D3	B1	R50	22	D2	D5	R114	21	A4	L4	U7C	21	B3	K5	C22	22	B2	D2	C88	22	E2	B1	L13	21	D1	J1	R20	22	D3	B3	R51	22	F3	D1	R115	21	A3	L4	U7D	21	B4	K5	C23	22	B3	E2	C89	22	E2	C4	L14	21	D1	J1	R21	22	E5	A3	R52	21	G3	E1	R116	21	D1	K1	U8A	21	B5	K5	C24	22	B2	E3	C90	22	E2	C4	L15	21	D1	J1	R22	22	B5	A4	R53	22	D2	E5	R117	21	C1	L3	U8B	21	A5	K5	C25	22	D1	E4	C91	21	D2	J1	L16	21	D1	J1	R23	22	C4	B4	R54	22	B2	E2	R118	21	C1	M3	VR1	21	F3	F2	C26	22	A2	E1	C92	21	D2	D4	L17	21	D1	J1	R24	22	C4	A4	R55	22	A2	E1	R119	21	B2	M4	VR2	21	C2	L5	C27	22	B1	E3	C93	21	D3	J4	L18	21	D1	J1	R25	22	C5	A5	R56	22	A2	E1	R120	21	C2	N4	VR3	21	C2	L5	C28	22	B1	E3	C94	21	C3	J4	L19	21	D1	J1	R26	22	D3	B3	R57	22	B2	E1	R121	21	C2	M5	W1	21	G2	E4	C29	21	F2	F3	C95	21	A4	K4	L20	21	D1	J1	R27	22	D4	B3	R58	22	A2	E2	R122	21	D2	N5	W2	21	G2	E4	C30	22	D1	F4	C96	21	A4	K4	L21	21	D1	J1	R28	22	C4	B4	R59	22	B3	E2	R123	21	B1	N3	W3	21	G2	E4	C31	21	F1	G1	C97	21	B1	K1	L22	21	D1	J1	R29	22	D4	B4	R60	22	B1	E2	R124	21	D5	I4					J1	22	F2	D1	R61	22	C2	E3					J2	22	F2	D1					J3	21	F5	F4					J4	21	F5	F4					J5	21	F5	F4					J6	21	D2	J1					J7	21	D1	J2					J8	21	D1	J1					J9	21	H1	G4					J10	21	A1	N2					J11	21	A1	N2					J12	21	A1	N2				

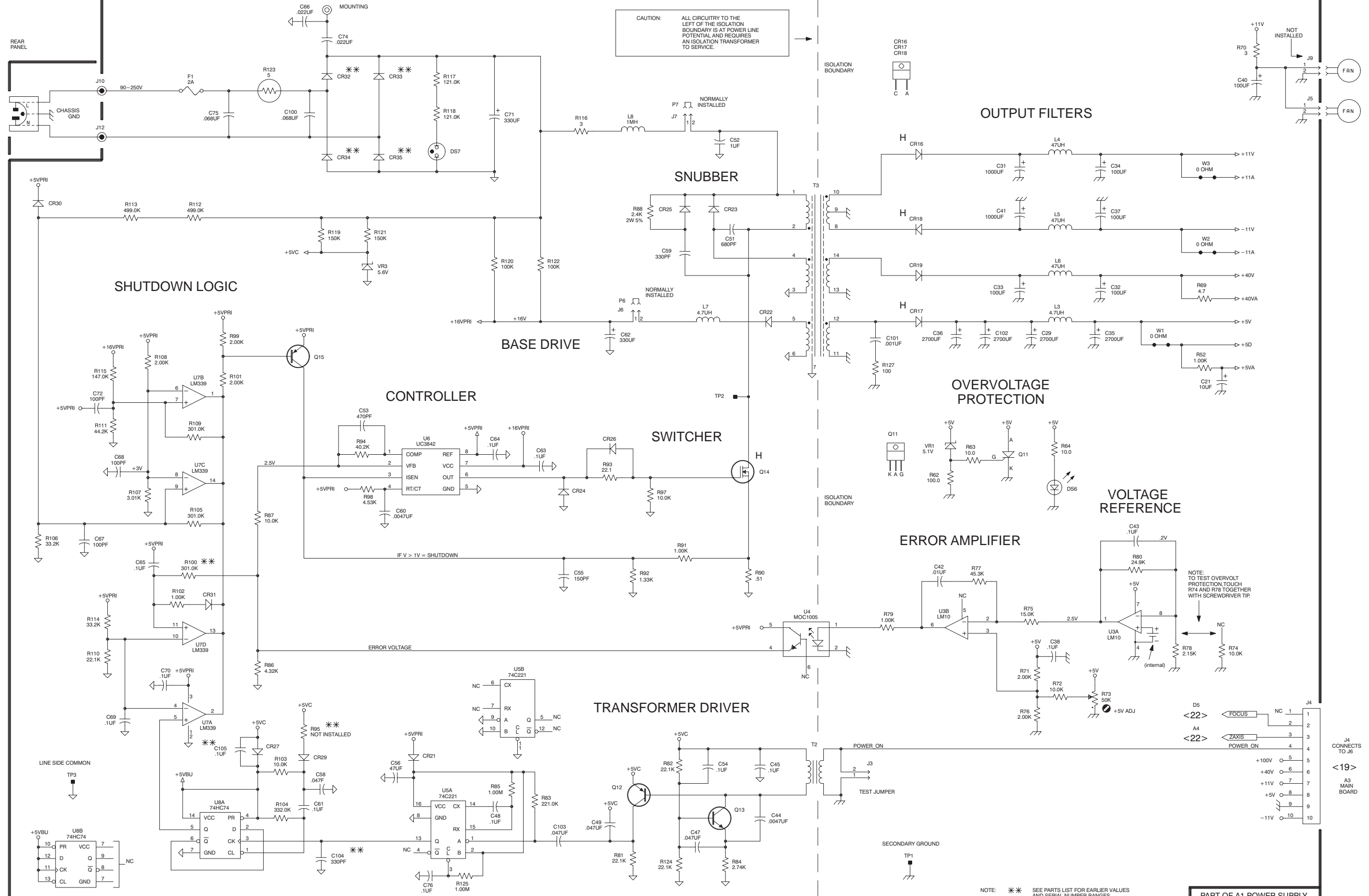
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CAUTION: ALL CIRCUITRY TO THE LEFT OF THE ISOLATION BOUNDARY IS AT POWER LINE POTENTIAL AND REQUIRES AN ISOLATION TRANSFORMER TO SERVICE.

OUTPUT FILTERS

SNUBBER

BASE DRIVE

SHUTDOWN LOGIC

CONTROLLER

SWITCHER

OVERVOLTAGE PROTECTION

VOLTAGE REFERENCE

ERROR AMPLIFIER

TRANSFORMER DRIVER

PART OF A1 POWER SUPPLY

NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.



**Schematic Diagram <22>
Component Locator Chart**

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A1. Partial Assembly A1 also shown on Diagram 21.

C	N	L	L	C	N	L	L	C	N	L	L
C1		F4	A2	DS3		E4	A3	R27		D4	B3
C2		B4	A4	DS4		D3	B1	R28		C4	B4
C3		D3	A2	DS5		E4	B3				
C4		B5	A4					R29		D4	B4
C5		C5	A5	FIL1		C3	C1	R30		E2	B1
C6		D3	B2	FIL2		C3	C1	R31		E3	B1
C7		D3	B2					R32		E2	B3
				J1		F3	B1	R33		E3	C1
C8		E2	B2	J2		F2	D1				
C9		D4	B3					R34		D2	B3
C10		C4	B4	L1		B2	D4	R35		F3	C4
C11		C4	B4	L2		D1	E4	R36		F1	C4
C12		E2	B2					R37		F2	C4
				Q1		E5	A3	R38		F2	C5
C13		D2	C4	Q2		E5	A3				
C14		F2	C5	Q3		C4	A4	R39		E3	C1
C15		C2	C4	Q4		D4	B4	R40		C2	C3
C16		D2	C4	Q5		D4	B4	R41		D2	C4
C17		F3	C4					R42		E3	D1
				Q6		D4	B4	R43		F3	C4
C18		D2	D4	Q7		B2	D1				
C19		F2	D5	Q8		A2	E1	R44		F2	C5
C20		C2	D4	Q9		A2	E2	R45		F2	D1
C22		B2	D2	Q10		B2	E2	R46		D2	D5
C23		B3	E2					R47		F2	D1
				R1		E4	A2	R48		F3	D1
C24		B2	E3	R2		E4	A2				
C25		D1	E4	R3		E4	A3	R49		B3	D2
C26		A2	E1	R4		E4	A3	R50		D2	D5
C27		B1	E3	R5		D5	A4	R51		F3	D1
C28		B1	E3	R6		B4	A4	R53		D2	E5
C30		D1	F4	R8		A4	A4	R54		B2	E2
C77		C5	A4								
				R9		F4	A2	R55		A2	E1
CR1		C4	A4	R10		B4	A4	R56		A2	E1
CR2		D4	B4	R11		B4	A4	R57		B2	E1
CR3		C4	B5	R12		D5	A4	R58		A2	E2
				R13		E3	A2	R59		B3	E2
CR4		D5	B5								
CR5		E2	B1	R14		E5	A3	R60		B1	E2
CR6		E2	C1	R15		E5	A3	R61		C2	E3
CR7		D3	B2	R16		D4	A4	R65		B2	E2
CR8		D2	C4	R17		C5	A4	R66		C2	E2
				R18		C4	A4	R67		C1	E3
CR9		E2	C4								
CR10		D2	D4	R19		D3	B1	R68		B1	E3
CR11		D2	D4	R20		D3	B3	R126		C5	A4
CR12		A2	E1	R21		E5	A3				
CR13		A2	E1	R22		B5	A4	T1		C2	D3
CR14		B2	E2	R23		C4	B4				
CR15		C1	E4					U1		D1	C2
				R24		C4	A4	U2		B2	E3
DS1		E2	A1	R25		C5	A5				
DS2		E3	A1	R26		D3	B3				

A B C D E F G H

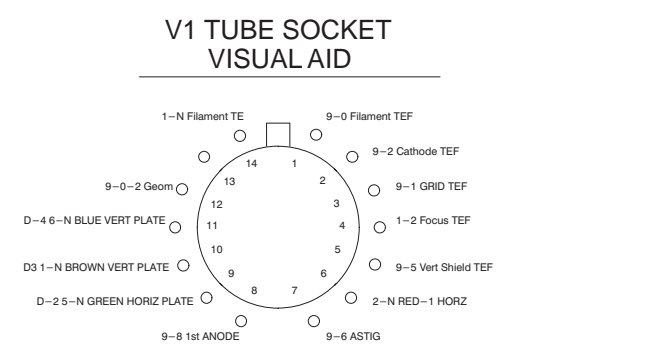
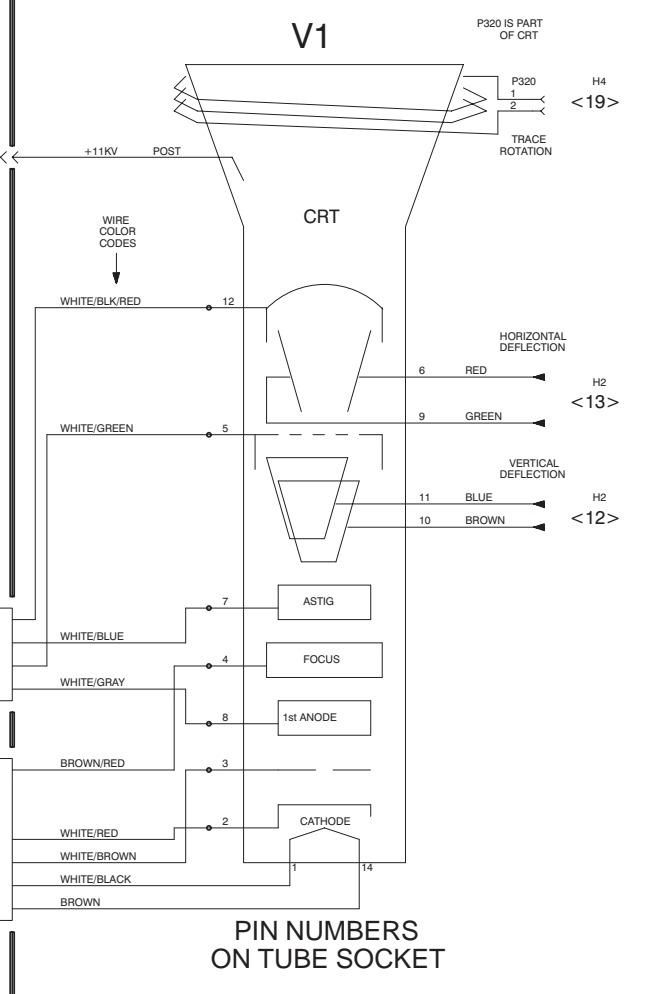
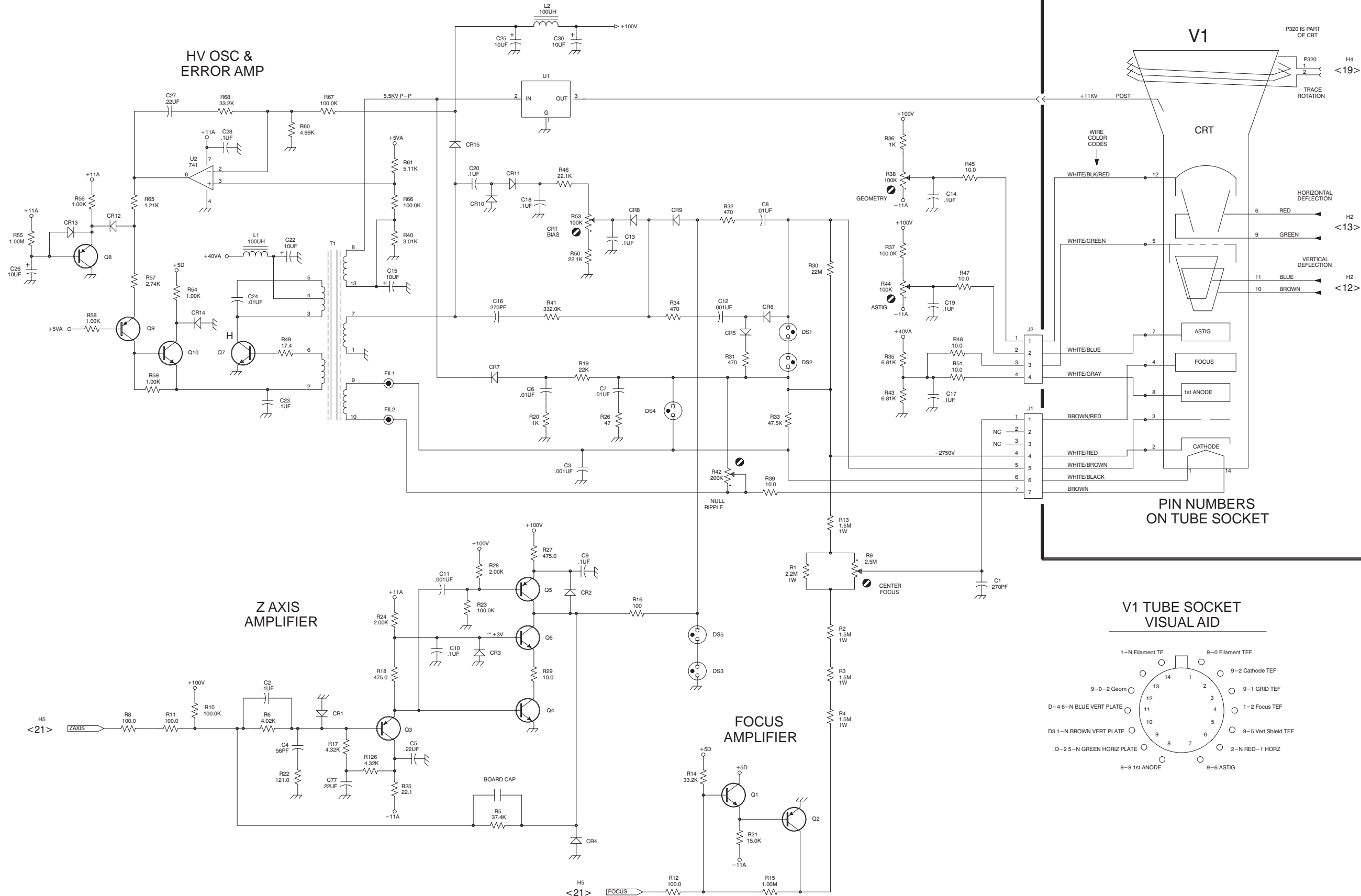
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PART OF A1 POWER SUPPLY

Replaceable Mechanical Parts

This section contains a list of the components that are replaceable for the WFM 601. Use this list to identify and order replacement parts. There is a separate Replaceable Mechanical Parts list for each instrument.

Parts Ordering Information

Replacement parts are available from or through your local Tektronix, Inc., Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest circuit improvements. Therefore, when ordering parts, it is important to include the following information in your order.

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc., Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

Using the Replaceable Mechanical Parts List

The tabular information in the Replaceable Mechanical Parts list is arranged for quick retrieval. Understanding the structure and features of the list will help you find all of the information you need for ordering replaceable parts.

Cross Index–Mfr. Code Number to Manufacturer

The Mfg. Code Number to Manufacturer Cross Index for the mechanical parts list is located immediately after this page. The cross index provides codes, names, and addresses of manufacturers of components listed in the mechanical-parts list.

Abbreviations

Abbreviations conform to American National Standards Institute (ANSI) standard Y1.1.

Chassis Parts

Chassis-mounted parts and cable assemblies are located at the end of the Replaceable Electrical Parts list.

Column Descriptions

Figure & Index No. (Column 1)	Items in this section are referenced by figure and index numbers to the illustrations.																																																												
Tektronix Part No. (Column 2)	Indicates part number to be used when ordering replacement part from Tektronix.																																																												
Serial No. (Column 3 and 4)	Column three (3) indicates the serial number at which the part was first used. Column four (4) indicates the serial number at which the part was removed. No serial number entered indicates part is good for all serial numbers.																																																												
Qty (Column 5)	This indicates the quantity of mechanical parts used.																																																												
Name and Description (Column 6)	<p>An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.</p> <p>Following is an example of the indentation system used to indicate relationship.</p> <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 5px;">1</td> <td style="padding-right: 5px;">2</td> <td style="padding-right: 5px;">3</td> <td style="padding-right: 5px;">4</td> <td style="padding-right: 5px;">5</td> <td>Name & Description</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Assembly and/or Component</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Mounting parts for Assembly and/or Component</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>*MOUNTING PARTS*/*END MOUNTING PARTS*</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Detail Part of Assembly and/or Component</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Mounting parts for Detail Part</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>*MOUNTING PARTS*/*END MOUNTING PARTS*</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Parts of Detail Part</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Mounting parts for Parts of Detail Part</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>*MOUNTING PARTS*/*END MOUNTING PARTS*</td> </tr> </table> <p>Mounting Parts always appear in the same indentation as the Item it mounts, while the detail parts are indented to the right. Indented items are part of and included with, the next higher indentation. Mounting parts must be purchased separately, unless otherwise specified.</p>	1	2	3	4	5	Name & Description						Assembly and/or Component						Mounting parts for Assembly and/or Component						*MOUNTING PARTS*/*END MOUNTING PARTS*						Detail Part of Assembly and/or Component						Mounting parts for Detail Part						*MOUNTING PARTS*/*END MOUNTING PARTS*						Parts of Detail Part						Mounting parts for Parts of Detail Part						*MOUNTING PARTS*/*END MOUNTING PARTS*
1	2	3	4	5	Name & Description																																																								
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					Mounting parts for Parts of Detail Part																																																								
					MOUNTING PARTS/*END MOUNTING PARTS*																																																								
Mfr. Code (Column 7)	Indicates the code number of the actual manufacturer of the part. (Code to name and address cross reference can be found immediately after this page.)																																																												
Mfr. Part Number (Column 8)	Indicates actual manufacturer's part number.																																																												

CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code.	Manufacturer	Address	City, State, Zip Code
02777	HOPKINS ENGINEERING CO	12900 FOOTHILL BLVD	SAN FERNANDO CA 91342-4928
06383	PANDUIT CORP	17301 RIDGELAND	TINLEY PARK IL 07094-2917
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039-2410
OKB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
18677	SCANBE MFG CO DIV OF ZERO CORP	3445 FLETCHER AVE	EL MONTE CA 91731
34785	DEK INC	3480 SWENSON AVE	ST CHARLES IL 60174-3450
70903	COOPER BELDEN ELECTRONICS WIRE AND C SUB OF COOPER INDUSTRIES INC		
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076-9749
75915	LITTELFUSE INC SUB TRACOR INC	800 E NORTHWEST HWY	DES PLAINES IL 60016-3049
78189	ILLINOIS TOOL WORKS INC SHAKEPROOF DIV	ST CHARLES ROAD	ELGIN IL 60120
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001
80126	PACIFIC ELECTRICORD CO	747 W REDONDO BEACH PO BOX 10	GARDENA CA 90247-4203
83385	MICRODOT MFG INC GREER-CENTRAL DIV	3221 W BIG BEAVER RD	TROY MI 48098
83486	ELCO INDUSTRIES INC	1101 SAMUELSON RD	ROCKFORD IL 61101
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61108-5181
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609-3320
TK1373	PATELEC-CEM (ITALY)	10156 TORINO	VAICENTALLO 62/45S ITALY
TK1543	CAMCAR/TEXTRON	600 18TH AVE	ROCKFORD IL 61108-5181

Replaceable Mechanical Parts

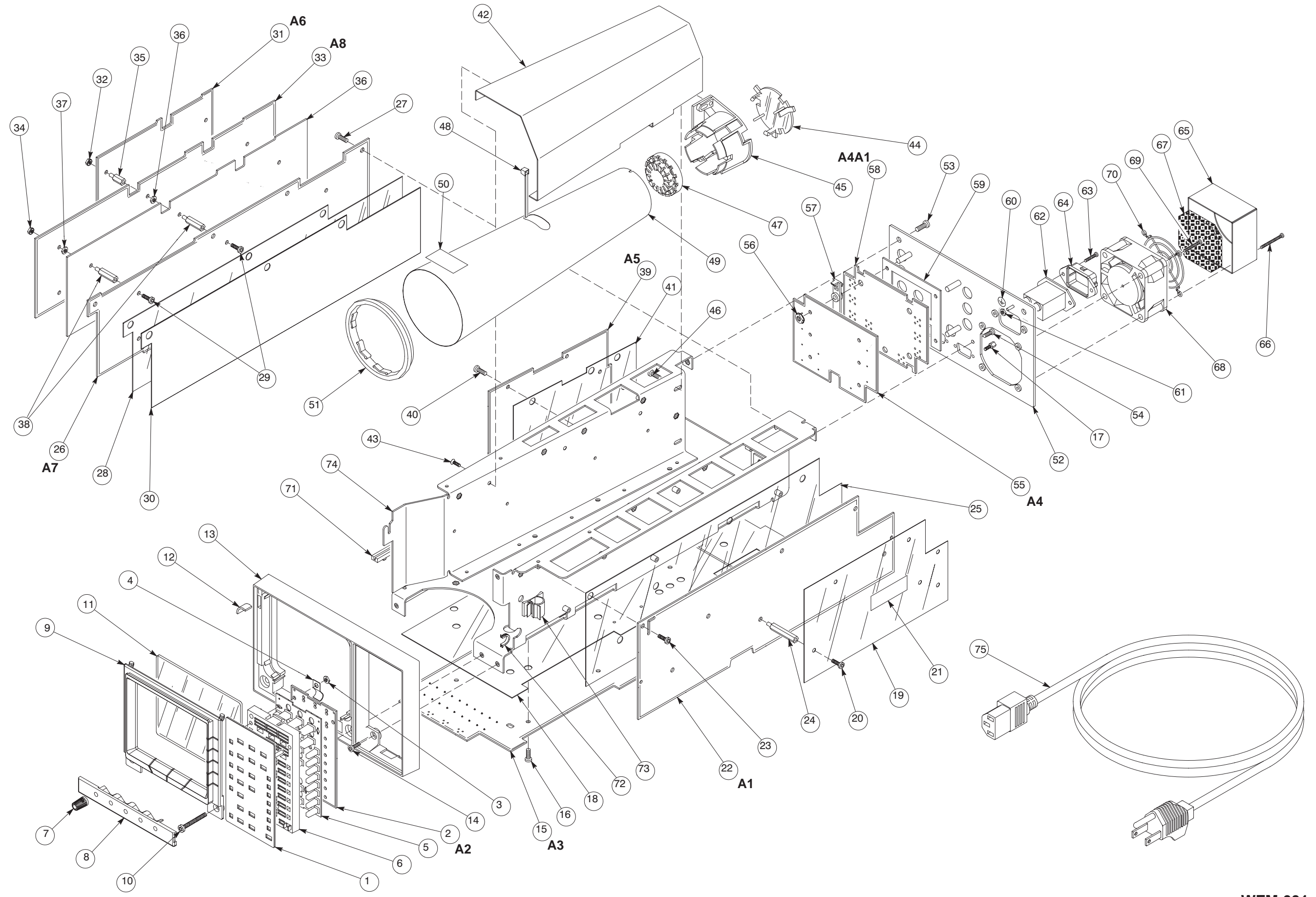
Fig. & Index No.	Tektronix Part No.	Serial Number Effective	Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
1-1	333-4104-00			1		PANEL,FRONT:WFM601	80009	333-4104-00
-2	-----			1		CIRCUIT BD ASSY:FRONT PANEL (SEE A2 REPL) *MOUNTING PARTS*		
-3	210-0407-00			4		NUT,PLAIN,HEX:6-32 X 0.25,BRS CD PL *END MOUNTING PARTS*	73743	3038-402
-4	214-4528-00			1		SPRING,GROUND:STAINLESS STEEL	80009	214-4528-00
-5	119-4381-00			1		KEYPAD ASSY:1740A	80009	119-4381-00
-6	361-1620-00			1		SPACER,FR PNL:POLYCARBONATE	80009	361-1620-00
-7	366-0649-00			5		KNOB:GY,0.127 ID X 0.392 OD X 0.5 H	80009	366-0649-00
-8	333-4023-00			1		PANEL,FRONT:CRT,1740A/1750A	80009	333-4023-00
-9	426-2455-00			1		FRAME,CRT:BEZEL *MOUNTING PARTS*	80009	426-2455-00
-10	211-0690-02			2		SCREW,MACHINE:6-32 X 0.875,PNH,SST *END MOUNTING PARTS*	TK1543	B20-70430
-11	378-0258-00			1		FLTR,CONTRASTIN:GRAY,POLYCARBONATE	80009	378-0258-00
-12	348-0660-00			4		CUSHION,CRT:POLYURETHANE	80009	348-0660-00
-13	426-2456-00			1		FRAME SECT,CAB:FRONT *MOUNTING PARTS*	80009	426-2456-00
-14	211-0721-00			2		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-15	-----			1		CIRCUIT BD ASSY:MAIN (SEE A3 REPL) *MOUNTING PARTS*		
-16	211-0721-00			8		SCREW,MACHINE:6-32 X 0.375,PNH,STL	83486	ORDER BY DESCR
-17	214-3903-01			4		SCREW,JACK:4-40 X 0.312 EXT THD,4-40 INT THD,0.188 HEX,STEEL,CAD PLATE *END MOUNTING PARTS*	80009	214-3903-01
-18	337-3837-00			1		SHEILD,ELEC:PLASTIC,MAIN	80009	337-3837-00
-19	337-3952-00			1		SHIELD,ELEC:POWER SUPPLY,TOP,PLASTIC *MOUNTING PARTS*	80009	337-3952-00
-20	211-0721-00			4		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-21	334-3003-00			1		MARKER,IDENT:MKD DANGER	80009	334-3003-00
-22	-----			1		CIRCUIT BD ASSY:POWER SUPPLY (SEE A1 REPL) *MOUNTING PARTS*		
-23	211-0721-00			3		SCREW,MACHINE:6-32 X 0.375,PNH,STL	83486	ORDER BY DESCR
-24	129-1410-00			4		SPACER,POST: *END MOUNTING PARTS*	80009	129-1410-00
-25	337-3951-00			1		SHIELD,ELEC:POWER SUPPLY,PLASTIC	80009	337-3951-00
-26	-----			1		CIRCUIT BD ASSY:COMPONENT (SEE A7 REPL) *MOUNTING PARTS*		
-27	211-0721-00			4		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-28	337-3838-00			1		SHIELD,ELEC:COMPONENT	80009	337-3838-00
-29	337-3948-00			1		SHIELD,ELEC:COMPONENT	80009	337-3948-00
-30	-----			1		CIRCUIT BD ASSY:COPROCESSOR (SEE A6 REPL) *MOUNTING PARTS*		
-31	210-0457-00			4		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL *END MOUNTING PARTS*	78189	511-061800-00
-32	-----			1		CIRCUIT BD ASSY:DAC (SEE A8 REPL) *MOUNTING PARTS*		
-33	210-0457-00			2		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL	78189	511-061800-00

Replaceable Mechanical Parts

Fig. & Index No.	Tektronix Part No.	Serial Number		Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
		Effective	Dscont					
-34	129-0962-00			4		SPACER,POST:0.5 L,6-32 ONE END,BRS,CU SN ZN PL,0.25 HEX *END MOUNTING PARTS*	80009	129-0962-00
-35	389-1730-00			1		CIRCUIT BOARD:SHIELD *MOUNTING PARTS*	80009	389-1730-00
-36	210-0407-00			6		NUT,PLAIN,HEX:6-32 X 0.25,BRS CD PL *END MOUNTING PARTS*	73743	3038-402
-37	129-1444-00			6		SPACER,POST:6-32 X 0.200,0.975 L,0.250 *MOUNTING PARTS*	80009	129-1444-00
-38	211-0721-00			6		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-39	-----			1		CIRCUIT BD ASSY:DESERIALIZER (SEE A5 REPL) *MOUNTING PARTS*		
-40	211-0721-00			3		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-41	337-3839-01			1		SHIELD,ELEC:PLASTIC,VECTOR	80009	337-3839-01
-42	337-3947-00			1		SHIELD,ELEC:CRT *MOUNTING PARTS*	80009	337-3947-00
-43	213-0881-00			6		SCREW,TPG,TR:6-32 X 0.25 TYPE TT,FILH,STL *END MOUNTING PARTS*	83385	ORDER BY DESCR
-44	200-4042-00			1		CAP,CRT SOCKET:	80009	200-4042-00
-45	426-2096-01			1		MOUNT,RESILIENT:1740A *MOUNTING PARTS*	80009	426-2096-01
-46	211-0721-00			2		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-47	136-1167-00			1		SKT,CRT ASSY:	80009	136-1167-00
-48	346-0120-00			2		STRAP,TIEDOWN,E:5.5 L MIN,PLASTIC,WHITE	06383	SST1.5M
-49	337-3487-00			1		SHIELD,ELEC:CRT,STL	80009	337-3487-00
-50	334-1379-00			1		MARKER,IDENT:MKD HI VACUUM	07416	ORDER BY DESCR
-51	386-4443-00			1		SUPPORT,SHIELD:CRT,FRONT,PLASTIC	80009	386-4443-00
-52	333-4091-00			1		PANEL,REAR:WFM601 *MOUNTING PARTS*	80009	333-4091-00
-53	211-0720-01			2		SCREW,MACHINE:6-32 X 0.50,PNH,STL,TORX T-15 WITH SLOT	0KB01	211-0720-01
-54	211-0721-00			2		SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-55	-----			1		CIRCUIT BD ASSY:INPUT & BNC (SEE A4 REPL) *MOUNTING PARTS*		
-56	210-0457-00			4		NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL *END MOUNTING PARTS*	78189	511-061800-00
-57	344-0467-00			2		CLIP,INPUT:POLYCARBONATE	80009	344-0467-00
-58	-----			1		CIRCUIT BD ASSY:BNC (SEE A4A1 REPL)		
-59	361-1655-00			1		SLEEVE,SPACER:	80009	361-1655-00
-60	334-3379-01			1		MARKER,IDENT:MARKED GROUND SYMBOL	80009	334-3379-01
-61	210-0586-00			1		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-62	-----			1		FILTER,RFI:6A,250VAC,400HZ (SEE FL1 REPL) *MOUNTING PARTS*		
-63	211-0014-00			2		SCREW,MACHINE:4-40 X 0.5,PNH,STL *END MOUNTING PARTS*	93907	ORDER BY DESCR
-64	131-4131-00			1		CONN,PLUG,ELEC:MALE W/LOCKING ADPTR,EXT MTG	80009	131-4131-00
-65	200-4150-00			1		COVER,FAN:2.5 X 2.5 X 1.39 THK,WFM601 SAFETY CONTROLLED *MOUNTING PARTS*	80009	200-4150-00

Replaceable Mechanical Parts

Fig. & Index No.	Tektronix Part No.	Serial Number Effective	Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
-66	211-0027-00			2		SCREW,MACHINE:4-40 X 1.5,PNH,STL *END MOUNTING PARTS*	83385	ORDER BY DESCR
-67	378-0415-00			1		FILTER,AIR:2.360 X 2.360,220PPI,0.188 THK	80009	378-0415-00
-68	-----			1		FAN,DC: (SEE B1 REPL) *MOUNTING PARTS*		
-69	211-0020-00			2		SCREW,MACHINE:4-40 X 1.125,PNH,STL *END MOUNTING PARTS*	TK0435	ORDER BY DESCR
-70	200-4151-00			1		GUARD,FAN:2.75 INCHS,WIRE FORM,NICKEL CHROME PLATED,FG238	80009	200-4151-00
-71	351-0688-00			1		GUIDE,CKT BOARD:NYLON,12.0 L	18677	11633-5
-72	348-0171-00			1		GROMMET,PLASTIC:BLACK,U-SHAPED,0.276 ID	80009	348-0171-00
-73	343-0916-00			1		CLAMP,LOOP:0.5 ID,NYLON	34785	029-500
-74	426-2497-00			1		FRAME,CHASSIS:ALUMINUM	80009	426-2497-00
						STANDARD ACCESSORIES		
	011-0163-00			2		TERM,COAXIAL:BNC,TERMINATION SINGLR ENDED;75 OHM,26DB TO 300MHZ,50 OHM INTERMATABLE	80009	011-0163-00
	070-8471-00			1		MANUAL,TECH:OPER,WFM601	80009	070-8471-00
	150-0168-00			4		LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75 FOR SOCKET MOUNT	80009	150-0168-00
	159-0021-00			1		FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW	75915	312 002
	378-0335-00			4		FILTER,AIR:1.6 X 1.6,30PPI,0.188 THK	80009	378-0335-00
-75	161-0216-00			1		CABLE ASSY,PWR:3,18 AWG,2.5M L,BLACK (STANDARD ONLY)	80126	C7120-25M-BL
						OPTIONAL ACCESSORIES		
	161-0215-00			1		CABLE ASSY,PWR:3,0.75MU,2.5MM L,GREY (EUROPEAN OPTION A1 ONLY)	80009	161-0215-00
	161-0066-10			1		CABLE ASSY,PWR: (UNITED KINGDOM OPTION A2 ONLY)	TK1373	24230
	161-0066-11			1		CABLE ASSY,PWR:3,0.75MM,240V,96.0 L (AUSTRALIAN OPTION A3 ONLY)	80009	161-0066-11
	161-0066-12			1		CABLE ASSY,PWR:3,18 AWG,98 L,SVT,GREY/BLK,60 DEG C,BME X STR,IEC RCPT,10A/250V (NORTH AMERICAN OPTION A4 ONLY)	70903	CH-77893
	161-0154-00			1		CABLE ASSY,PWR:3,1.00MM SQ,250V,10A,2.5METER, SWISS (SWISS OPTION A5 ONLY)	80009	161-0154-00
	016-0475-00			1		VIEWING HOOD:	80009	016-0475-00
	070-8876-00			1		MANUAL,TECH:SERVICE,WFM601	80009	070-8876-00
	200-3897-01			1		COVER,FRONT:1700F02,HOT STAMPED	80009	200-3897-01
	-----			1		CAMERA,SCOPE:C9 (OPTION 20 ONLY)		
	-----			1		PLAIN,CASE:1700F00		
	-----			1		PTD CASE ASSY:1700F02		
	-----			1		RACK ADAPTER,SIDE-BY-SIDE:1700F05		
	-----			1		FILLER PANEL:1700F06		
	-----			1		DRAWER,UTILITY:1700F07		



Glossary

AC Coupled A connection which removes the constant voltage (DC component) on which the signal (AC component) is riding. Usually implemented by passing the signal through a capacitor.

APL (Average Picture Level.) The average signal level (with respect to blanking) during active picture time, expressed as a percentage of the difference between the blanking and reference white levels.

Back Porch The portion of the video signal which lies between the trailing edge of the horizontal sync pulse and the start of the active picture time. Burst is located on back porch.

Bandwidth The range of frequencies over which signal amplitude remains constant (within some limit) as it is passed through a system.

Baseband Refers to the composite video signal as it exists before modulating the picture carrier. Composite video distributed throughout a studio and used for recording is at baseband.

Black Burst (NTSC) Also called "color black," black burst is a composite video signal consisting of all horizontal and vertical synchronization information, burst, and usually setup. Typically used as the house reference synchronization signal in television facilities.

Black Burst (PAL) Also called "color black," black burst is a composite video signal consisting of all horizontal and vertical synchronization information and burst. Typically used as the house reference synchronization signal in television facilities.

Blanking Level Refers to the 0 IRE level for NTSC systems (0.3 volt level, with respect to sync tip, for PAL systems) which exists before and after horizontal sync and during the vertical interval.

Bowtie Bowtie display. A display used to assess relative timing and gain through a three channel component system.

Breezeway The portion of the video signal which lies between the trailing edge of the horizontal sync pulse and the start of burst. Breezeway is part of back porch.

Broad Pulses Another name for the vertical synchronizing pulses in the center of the vertical interval. These pulses are long enough to be distinguished from all others, and are the part of the signal actually detected by vertical sync separators.

Bruch Blanking (PAL) A 4-field burst blanking sequence employed in PAL signals to ensure that burst phase is the same at the end of each vertical interval.

Burst (NTSC) A small reference packet of the subcarrier sine wave, typically 8 or 9 cycles, which is sent on every line of video. Since the carrier is suppressed, this phase and frequency reference is required for synchronous demodulation of the color information in the receiver.

Burst (PAL) A small reference packet of the subcarrier sine wave sent during the horizontal blanking interval on every line of video. Since the carrier is suppressed, this phase and frequency reference is required for synchronous demodulation of the color difference signals in the receiver.

B–Y (NTSC) One of the color difference signals used in the NTSC system, obtained by subtracting luminance from the blue camera signal. This is the signal which drives the horizontal axis of a vectorscope.

B–Y (PAL) One of the color difference signals used in the PAL system, obtained by subtracting luminance (Y) from the blue camera signal (B).

Chrominance Chrominance refers to the color information in a television picture. Chrominance can be further broken down into two properties of color: hue and saturation.

Chrominance Signal The high-frequency portion of the video signal which is obtained by quadrature amplitude modulation of a 3.58 MHz (NTSC) or 4.43 MHz (PAL) subcarrier with R–Y and B–Y information.

Color Black See Black Burst.

Color Difference Signals Signals used by color television systems to convey color information in such a way that the signals go to zero when there is no color in the picture. R–Y, B–Y, I, and Q are all color difference signals for the NTSC system; U and V are color difference signals for the PAL system. Component system color difference signal is Y, P_B, P_R as specified by SMPTE and CCIR standards.

Color Gamut The area between minimum and maximum reproducible limits for elements of the color difference or RGB signals.

Component Video Video which exists in the form of three separate signals, all of which are required in order to completely specify the color picture. For example, R, G, and B; or Y, R–Y, and B–Y.

Composite Video A single video signal containing all of the necessary information to reproduce a color picture. Created by adding quadrature amplitude modulated R–Y and B–Y to the luminance signal for NTSC systems or U and V to the luminance signal for PAL systems.

CW Continuous Wave. Refers to a separate subcarrier sine wave used for synchronization of chrominance information.

dB (Decibel) A decibel is a logarithmic unit used to describe signal ratios. For voltages, $\text{dB} = 20 \text{Log}_{10} (V_1/V_2)$.

DC-Coupled A connection configured so that both the signal (AC component) and the constant voltage on which it is riding (DC component) are passed through.

DC Restorer A circuit used in picture monitors and waveform monitors to clamp one point of the waveform to a fixed DC level.

Demodulator In general, this term refers to any device which recovers the original signal after it has modulated a high-frequency carrier. In television it may refer to:

- (1) An instrument, such as a TEKTRONIX 1450, which takes video in its transmitted form (modulated onto the picture carrier) and converts it to baseband.
- (2) The circuits which recover R-Y and B-Y for NTSC systems or U and V for PAL systems from the composite signal.

Diamond Diamond display. A simplified vector display for RGB signals that defines the valid gamut limits in the form of two diamonds.

Distortion If a sine wave of a single frequency is put into a system, and harmonic content at multiples of that frequency appears at the output, there is harmonic distortion present in the system. Harmonic distortion is caused by non-linearities in the system.

Equalizer The pulses which occur before and after the broad pulses in the vertical interval.

Envelope Detection A demodulation process in which the shape of the RF envelope is sensed. This is the process used by a diode detector.

Field In interlaced scan systems, the information for one picture is divided up into two fields. Each field contains one half of the lines required to produce the entire picture. Adjacent lines in the picture are in alternate fields.

Frequency Modulation (FM) is the process by which the frequency of a carrier signal is varied in proportion to the signal of interest. In both the NTSC and PAL television systems, audio information is transmitted using FM.

Frame A frame (sometimes called a "picture") contains all the information required for a complete picture. For interlaced scan systems, there are two fields in a frame.

Front Porch The portion of the video signal between the end of active picture time and the leading edge of horizontal sync.

Gamma (NTSC) Since picture monitors have a non-linear relationship between the input voltage and brightness, the signal must be correspondingly predistorted. Gamma correction is always done at the source (camera) in television systems: the R, G, and B signals are converted to $R^{1/\gamma}$, $G^{1/\gamma}$, and $B^{1/\gamma}$. Values of about 2.2 are typically used for gamma.

Gamma (PAL) Since picture monitors have a non-linear relationship between the input voltage and brightness, the signal must be correspondingly predistorted. Gamma correction is always done at the source (camera) in television systems: the R, G, and B signals are converted to $R^{1/\gamma}$, $G^{1/\gamma}$, and $B^{1/\gamma}$. Values for gamma range from 2.2 to 2.8.

Gamut See Color Gamut.

GBR The same signals as RGB, but rearranged in sequence to correspond with SMPTE specification.

Gen Lock The process of locking both sync and burst of one signal to sync and burst of another, making the two signals completely synchronous.

Graticule The scale which is used to quantify the information on a waveform monitor or vectorscope display. Graticules may either be screened onto the faceplate of the CRT itself (internal graticule), or onto a piece of glass or plastic which fits in front of the CRT (external graticule). They can also be electronically generated.

Horizontal Blanking Horizontal blanking is the entire time between the end of the active picture time of one line and the beginning of active picture time of the next line. It extends from the start of front porch to the end of back porch.

Horizontal Sync Horizontal sync is the -40 IRE pulse in NTSC systems (-300 mV pulse for PAL systems) occurring at the beginning of each line. This pulse signals the picture monitor to go back to the left side of the screen and trace another horizontal line of picture information.

Hue Hue is the property of color which allows us to distinguish between colors such as red, yellow, purple, etc.

Hum Hum refers to the undesirable coupling of the 60 Hz power sine wave for NTSC systems (50 Hz power sine wave in PAL systems) into other electrical signals.

ITS (PAL) Insertion Test Signal. A test signal which is inserted in one line of the vertical interval to facilitate in-service testing.

IRE (NTSC) A unit equal to 1/140 of the peak-to-peak amplitude of the video signal, which is typically 1 volt. The 0 IRE point is at blanking level, with sync tip at -40 IRE and white extending to +100 IRE. IRE stands for Institute of Radio Engineers, the organization which defined the unit.

Lightning Lightning display. A display, for use with SMPTE specified color difference signal (Y, P_B, P_R), that plots the two color difference signals against luminance to create a display similar in appearance to a lightning bolt.

Linear Distortion Refers to distortions which are independent of signal amplitude.

Luminance The signal which represents brightness, or the amount of light in the picture. This is the only signal required for black and white pictures, and for color systems it is obtained as a weighted sum ($Y = 0.3R + 0.59G + 0.11B$) of the R, G, and B signals.

Modulated (NTSC) When referring to television test signals, this term implies that chrominance information is present. (For example, a modulated staircase has subcarrier on each step.)

Modulated (PAL) When referring to television test signals, this term implies that chrominance information is present. (For example, a modulated ramp has subcarrier on each step.)

Modulation A process which allows signal information to be moved to other frequencies in order to facilitate transmission or frequency-domain multiplexing. See **AM** and **FM** for details.

Non-Linear Distortion Refers to distortions which are amplitude-dependent.

NTSC National Television System Committee. The organization which developed the television standard currently in use in the United States, Canada, and Japan. Now generally used to refer to that standard.

PAL Phase Alternate Line. Refers to one of the television systems used in Europe and many other parts of the world. The phase of one of the color difference signals alternates from line to line to help cancel out phase errors.

Quadrature AM A process which allows two different signals to modulate a single carrier frequency. The two signals of interest Amplitude Modulate carrier signals which are the same frequency but differ in phase by 90 degrees (hence the Quadrature notation). The two resultant signals can be added together, and both signals recovered at the other end, if they are also demodulated 90 degrees apart.

Quadrature Distortion Distortion resulting from the asymmetry of sidebands used in vestigial sideband television transmission. Quadrature distortion appears when envelope detection is used, but can be eliminated by using a synchronous demodulator.

RF Radio Frequency. In television applications, RF generally refers to the television signal after the picture carrier modulation process

RGB Red, Green, and Blue. Also referred to as GBR. The three primary colors used in color television's additive color reproduction system. These are the three color signals generated by the camera and used by the picture monitor to produce a picture.

R–Y One of the color difference signals is obtained by subtracting luminance (Y) from the red camera signal.

Saturation The property of color which relates to the amount of white light in the color. Highly saturated colors are vivid, while less saturated colors have more white mixed in and, therefore, appear pastel. For example, red is highly saturated, while pink is the same hue, but much less saturated.

In signal terms, saturation is determined by the ratio between luminance level and chrominance amplitude. It should be noted that a vectorscope does not display saturation; the length of the vectors represents chrominance amplitude. In order to verify that the saturation of the colors in a color bar signal is correct, you must check luminance amplitudes with a waveform monitor in addition to observing the vectors.

SCH The timing relationship between the horizontal sync pulses and the zero crossings of the reference subcarrier (burst).

Setup In NTSC systems, video black is typically 7.5 IRE above the blanking level. This 7.5 IRE level is referred to as the black setup level, or simply as setup.

Subcarrier The modulation sidebands of the color subcarrier contain the R–Y (V) and B–Y (U) information. For NTSC, subcarrier frequency is 3.579545 MHz. For PAL, subcarrier frequency is 4,433,618.75 Hz.

Synchronous Detection A demodulation process in which the original signal is recovered by multiplying the modulated signal with the output of a synchronous oscillator locked to the carrier.

Termination In order to accurately send a signal through a transmission line, there must be an impedance at the end which matches the impedance of the source and of the line itself. Amplitude errors and reflections will otherwise result. Video is a 75 Ω system, so a 75 Ω terminator must be put at the end of the signal path.

Time Code, Longitudinal (LTC) LTC is an 80-bit signal with information which makes it possible to accurately identify an individual frame. The LTC signal is typically recorded on an audio channel.

Time Code, Vertical (VITC) VITC is a signal in the vertical interval of video, which makes it possible to accurately identify an individual field.

U The B–Y signal after a weighting factor of 0.493 has been applied. The weighting is necessary to reduce peak modulation in the composite signal.

Unmodulated When used to describe television test signals, this term refers to pulses and pedestals which do not have high-frequency chrominance information added to them.

V The R–Y signal after a weighting factor of 0.877 has been applied. The weighting is necessary to reduce peak modulation in the composite signal.

Vectorscope A specialized oscilloscope which demodulates the video signal and presents a display of R–Y versus B–Y in NTSC systems (or V versus U in PAL systems). The angle and magnitude of the displayed vectors are respectively related to hue and saturation.

Vertical Interval The synchronizing information which appears between fields and signals the picture monitor to go back to the top of the screen to begin another vertical scan.

Waveform Monitor A specialized oscilloscope that plots voltage versus time to evaluate television signals.

Y Abbreviation for luminance.

Zero Carrier Reference A pulse in the vertical interval which is produced by the demodulator to provide a reference for evaluating depth of modulation.

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Manual Change Information

Tektronix products are constantly under development for increased performance or lower cost to the customer. Often, changes are incorporated into a product as soon as they are shown to meet the highest quality standards.

This aggressive policy of product improvement can result in changes that are not reflected in the appropriate sections of the manual. Information regarding such changes will appear on the following pages. If no change notices are inserted after this page, the manual is correct as printed.

Please review any included change information and note the changes that will affect your use of the product. A single change may apply to several sections of the manual. Because change information sheets are inserted until all the changes are incorporated into every applicable section of the manual, some duplication may result.

Date: 4/28/94

Change Reference: M81012

Product: See List

Manual Part Number: See List

Product	Effective S/N	Manual P/N
1740A Series	B014459	070-8469-00
1750A Series	B014450	070-8469-00
1760 Series	B014581	070-8469-00
WFM601	B010951	070-8876-00

ELECTRICAL PARTS LIST AND SCHEMATIC CHANGES

1740/1750A/1760-Series ONLY

CHANGE TO READ:

DIAG.

A3	671-2355-08	CIRCUIT BD ASSY: MAIN (1760-Series ONLY)	
A3	671-2978-02	CIRCUIT BD ASSY: MAIN (1740A/1750A-Series ONLY)	
A3C68	283-5203-00	CAP, FXD, CERAMIC: MLC; 1000PF, 10%, 100V, X7R	8
A3C70	283-5203-00	CAP, FXD, CERAMIC: MLC; 1000PF, 10%, 100V, X7R	8
A3C82	283-5068-00	CAP, FXD, CERAMIC: MLC; 2200PF, 10%, 50V, X7R	5

ADD:

A3R127	322-3185-00	RES, FXD: METAL FILM; 825 OHM, 1%, 0.2W, TC=100 PPM	9
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WFM601 ONLY

CHANGE TO READ:

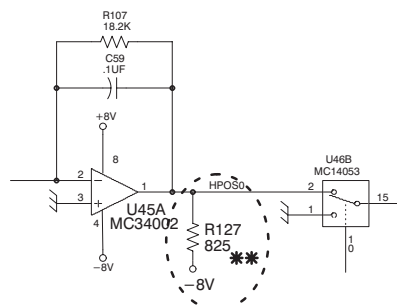
DIAG.

A3	671-2958-04	CIRCUIT BD ASSY: MAIN	
A3C82	283-5068-00	CAP, FXD, CERAMIC: MLC; 2200PF, 10%, 50V, X7R	13

ADD:

A3R127	322-3185-00	RES, FXD: METAL FILM; 825 OHM, 1%, 0.2W, TC=100 PPM	17
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PARTIAL SCHEMATIC SHOWING THE ADDED PART



DACS & SERIAL

Date: 9/23/94Change Reference: M81435

Product:	Manual P/N:	Effective S/N:
WFM601	070-8876-00	B011472
WFM601i	070-8967-00	B010663

Eff F/W Ver 1.4

Replaceable Electrical Parts and Schematic Changes

Section 7 Replaceable Electrical Parts

Change to Read:

A3	671-2958-06	CKT BD ASSY:MAIN BOARD (WFM601 ONLY)
A3	671-3155-02	CKT BD ASSY:MAIN BOARD (WFM601i ONLY)
A3U13	160-9720-01	IC, MEMORY:CMOS, EPROM;128K X 8;PRGM 27C010
A3U62	156-5854-01	IC, LINEAR:BIFET, OP-AMP;DUAL;AD712JR, SO8

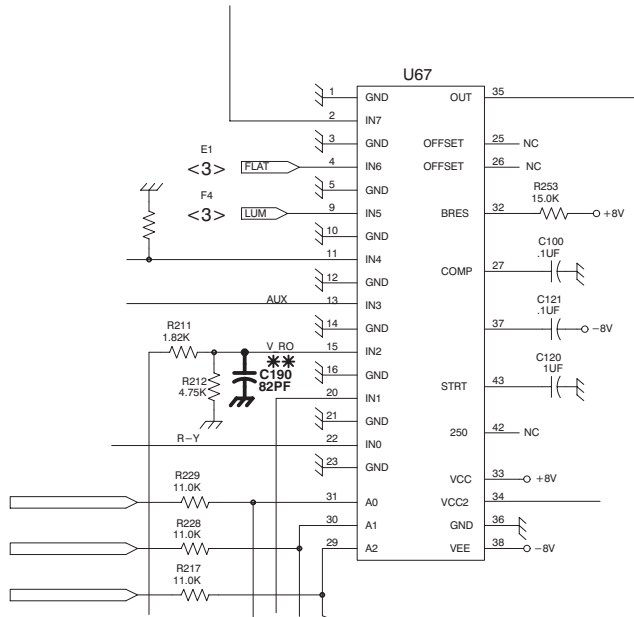
Delete:

A3LS1 119-2101-00
Also delete 136-5011-00 IC socket at A3U13

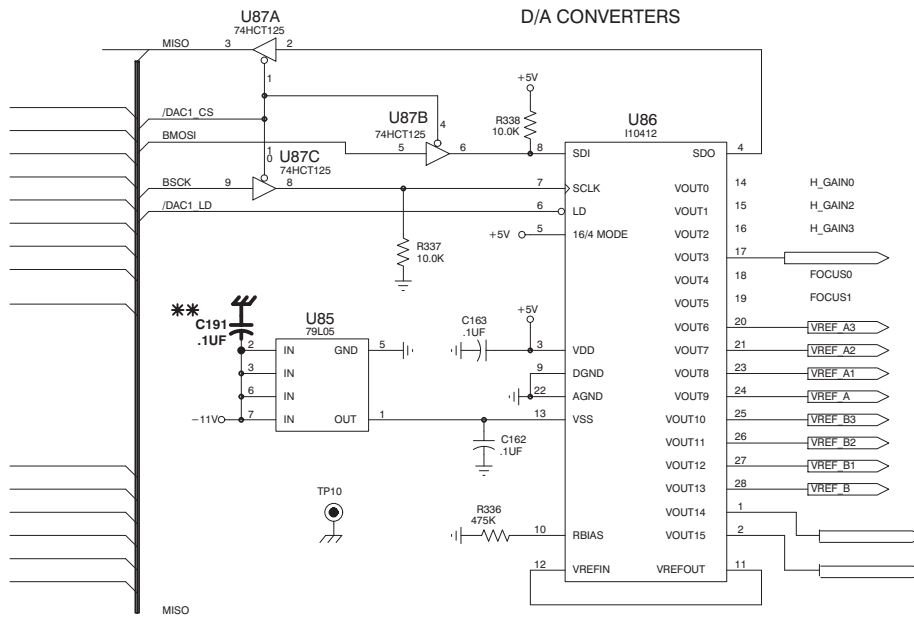
Add:

A3C190	283-5248-00	CAP,FXD,CERAMIC:MLC;82PF,5%,200V
A3C191	283-0024-00	CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V

Added parts are shown on the following partial schematics:



Part of A3 Main board Schematic 12, Vertical Output, showing added part.



Part of A3 Main board Schematic 17, DACs & Serial, showing added part.

Product: Manual P/N: Effective S/N:
 WFM601 070-8876-00 B011727

Replaceable Parts List, Schematic, and Illustration Changes

Section 8 Replaceable Electrical Parts

Change to Read:

A8	671-2676-04	CKT BD ASSY:DAC BOARD
A8C171	290-1312-00	CAP,FXD,ALUM:2.2UF,20%,315V;RADIAL,105 DEG
A8R85	321-5042-00	RES,FXD:THICK FILM;39.2 OHM,1%,0.125W
A8R88	321-5032-00	RES,FXD:THICK FILM;15.0K OHM,1%,0.125W

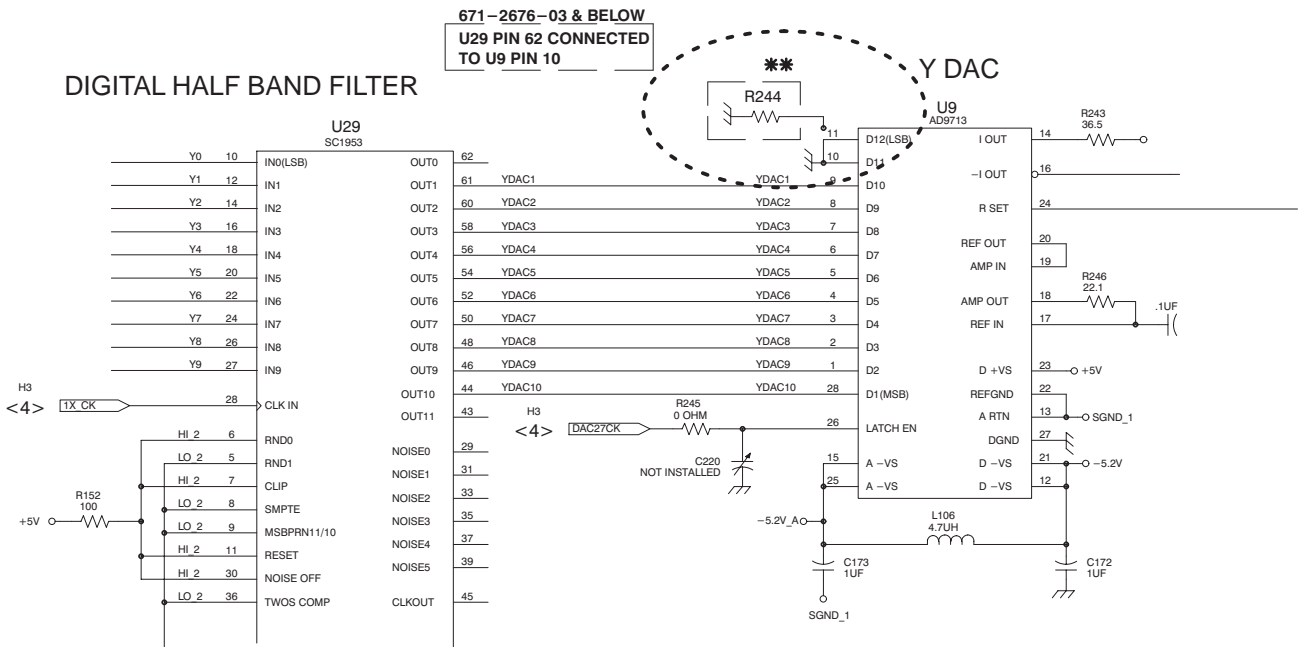
Add:

A8C243	283-5109-00	CAP,FXD,CER DI:MLC;680PF,5%,100V,NPO,1206;SMD
A8C244	283-5098-00	CAP,FXD,CER DI:MLC;0.1UF,+80%-20%,50V,Z5U,1206;SMD
A8R272	321-5043-00	RES,FXD:THICK FILM;47.5 OHM,1%,0.125W
A8U95	163-0458-00	IC,DGTL:CMOS;EEPLD,16V8-25,PRGM

Delete:

A8C2 A8R1 A8R2 A8R150 A8R151 A8R244

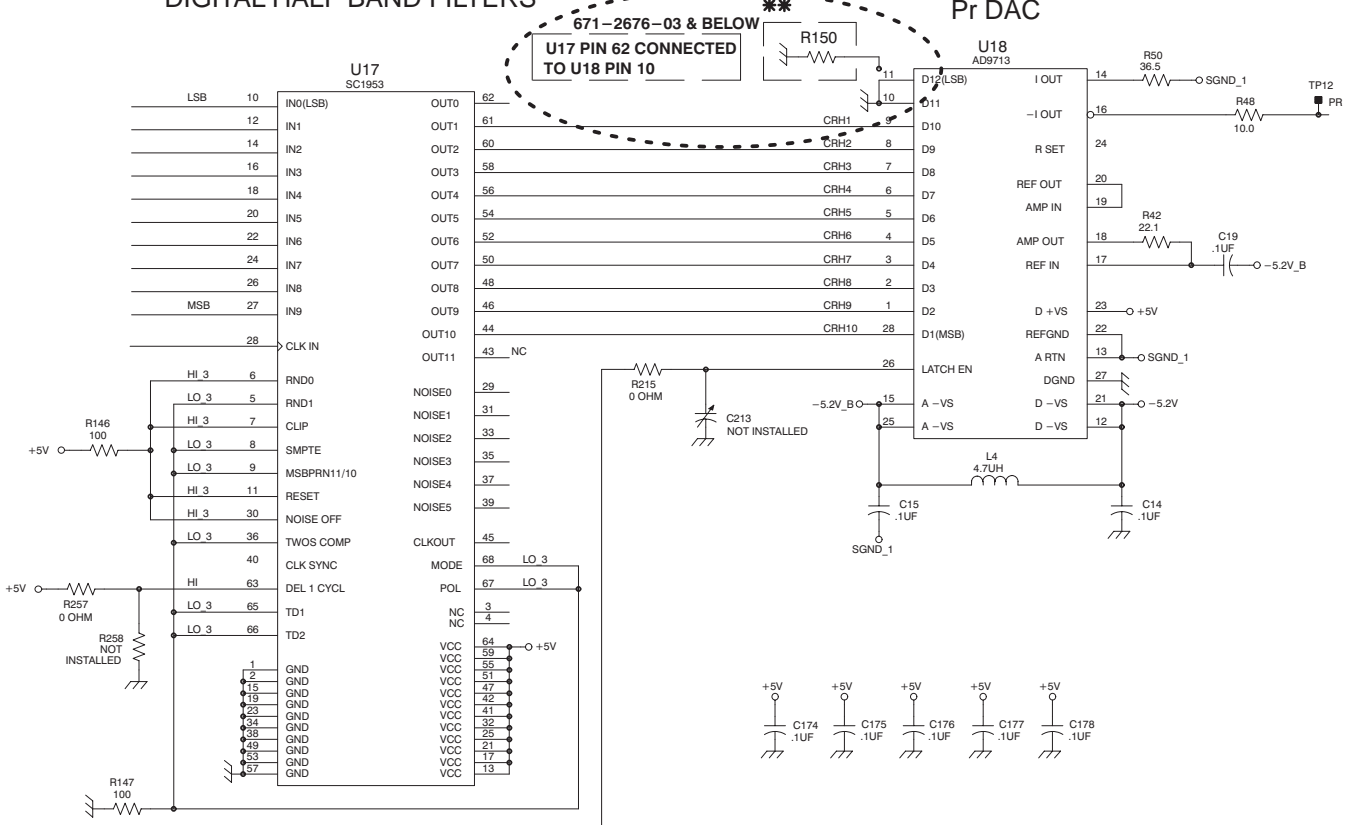
Added parts and circuitry changes are shown on the following schematics:



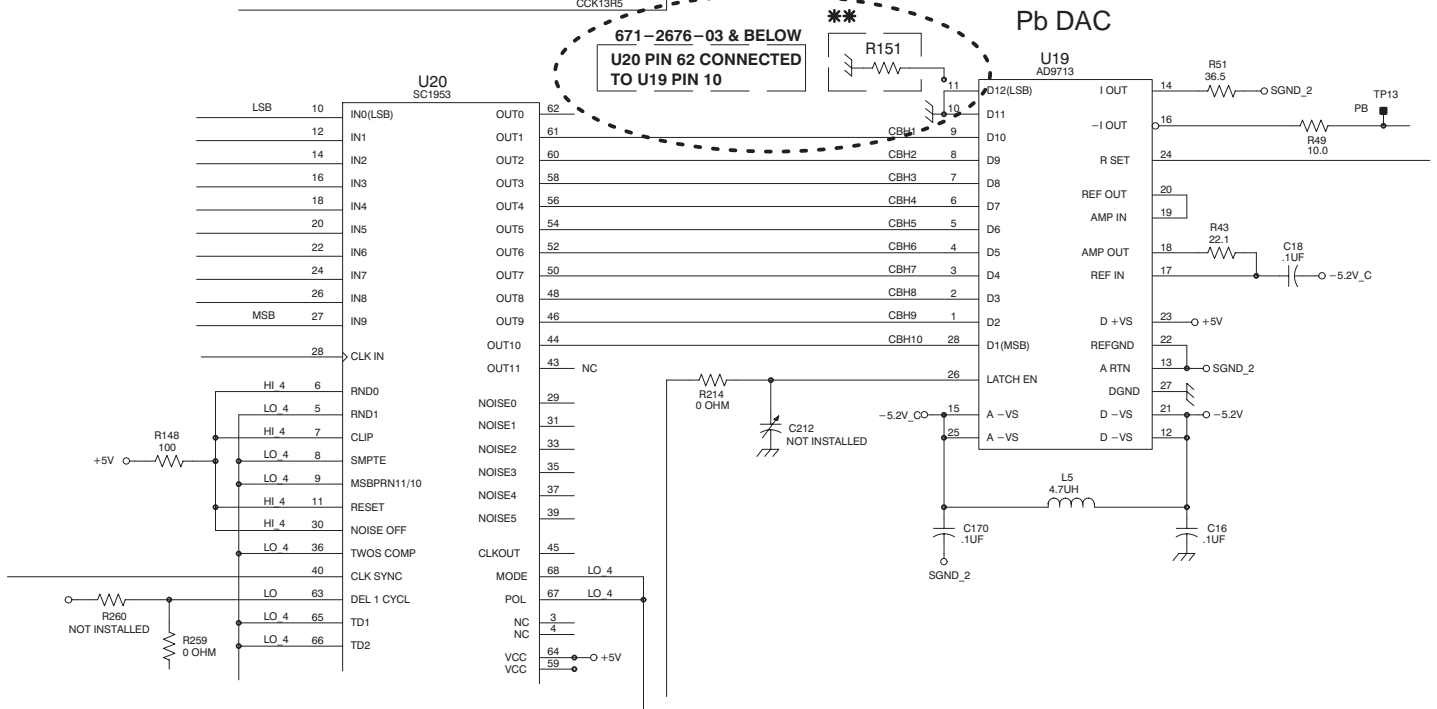
Part of Schematic 5, A8 DAC board, showing circuitry changes.

DIGITAL HALF BAND FILTERS

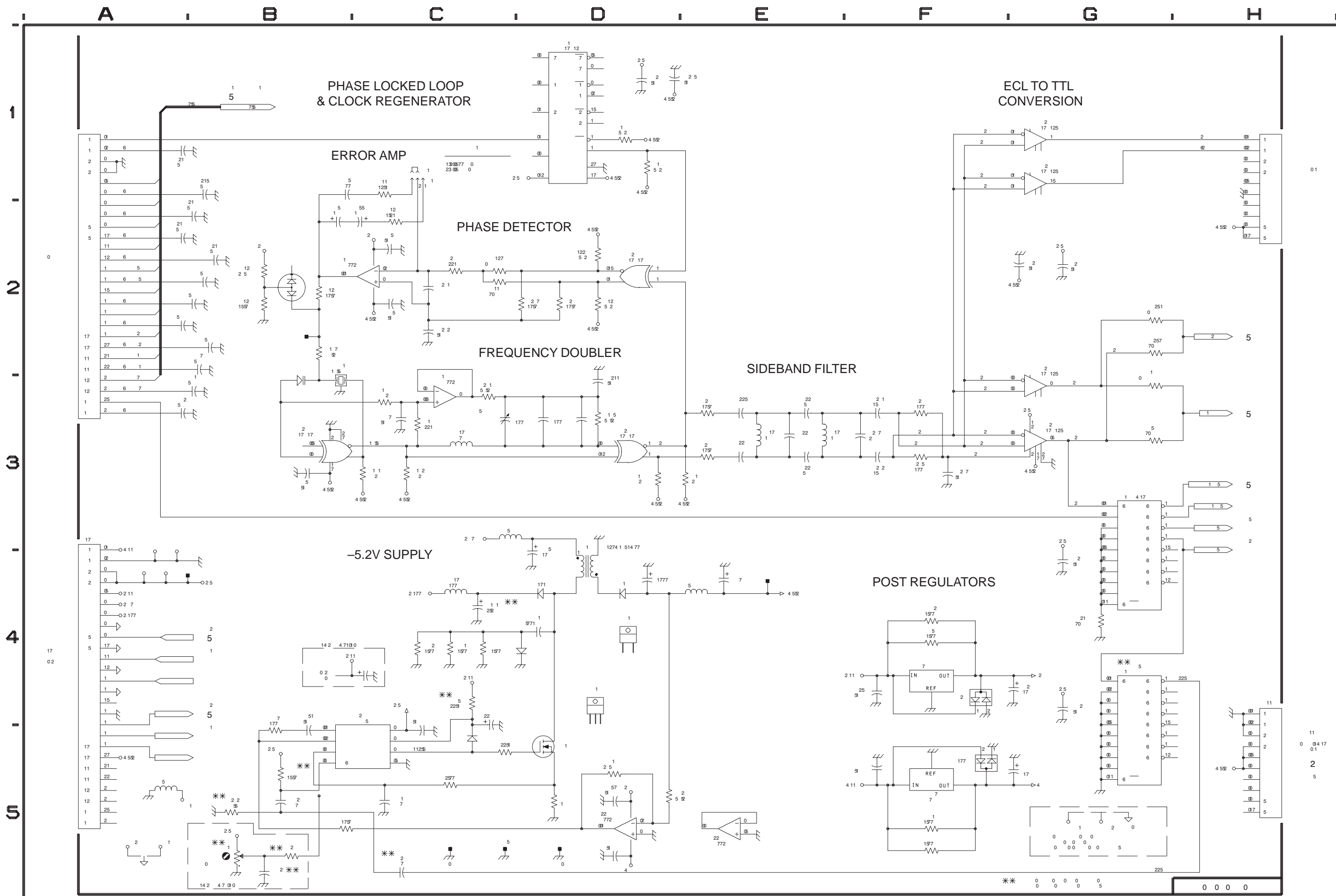
Pr DAC

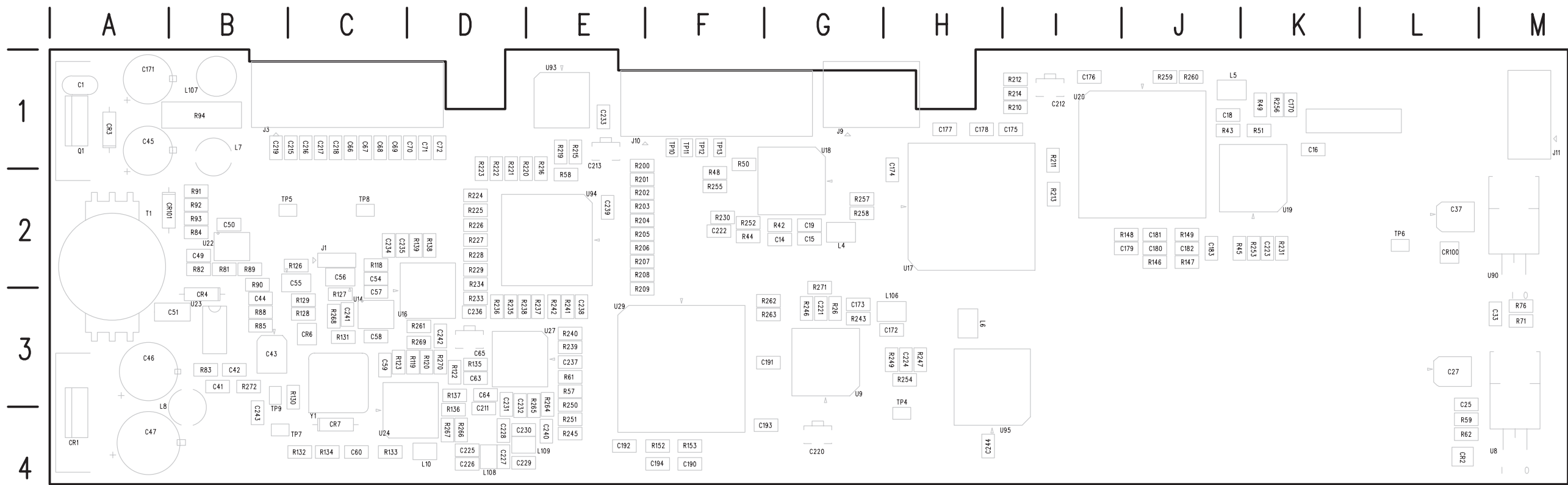


Pb DAC



Part of Schematic 6, A8 DAC board, showing circuit changes.





A8 DAC Board

671-2676-04