

Instruction Manual



TMSSN1 478 Pin Socket Hardware Support 071-0896-01

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Use Proper Power Cord. Use only the power cord specified for this product and certified for the country of use.

Connect and Disconnect Properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Connect the ground lead of the probe to earth ground only.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Use Proper Fuse. Use only the fuse type and rating specified for this product.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Symbols and Terms

Terms in this Manual. These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



CAUTION
Refer to Manual



WARNING
High Voltage



Protective Ground
(Earth) Terminal

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Preface

This instruction manual contains specific information about the TMSSN1 478 Pin Socket microprocessor support package and is part of a set of information on how to operate this product on compatible Tektronix logic analyzers.

If you are familiar with operating microprocessor support packages on the logic analyzer, all you need is this instruction manual to set up and run the support package.

If you are not familiar with operating microprocessor support packages, you need to supplement this instruction manual with information on basic operations from the Tektronix logic analyzer online help to set up and run the support package.

Manual Conventions

This manual uses the following conventions:

- A pound sign (#) following a signal name indicates an active low signal.
- The phrase “information on basic operations” refers to basic information in your logic analyzer online help.
- The terms “Master,” “Slave,” and “Slave2” refer to modules that are located in numbered slots (see Figure 1-1 on page 1-2).

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. Department or name (if known) 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 6:00 a.m. - 5:00 p.m. Pacific time

* **This phone number is toll free in North America. After office hours, please leave a voice mail message. Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.**



Getting Started

Getting Started

This section contains information on the TMSSN1 478 Pin Socket hardware support package and information on connecting the logic analyzer to the target system.

Support Package Description

The probe adapter is nonintrusive hardware that allows the logic analyzer to acquire data from a microprocessor in the operating environment with little effect on the target system.

The probe adapter is an interposer design. The probe adapter connects to the target system, and then the microprocessor connects to the probe adapter. Signals from the microprocessor-based system flow through the probe adapter into the P6434 probes and through the probe cables to the logic analyzer.

Support Software Compatibility

The probe adapter is compatible with the TMS116 IA32G7 software support package that provides timing analysis capabilities, synchronous transactions, and instruction decoding.

Logic Analyzer Configuration

To use the TMSSN1 478 Pin Socket hardware support package you need a Tektronix logic analyzer equipped with a minimum of three, 136-channel, 200 MHz merged modules for the IA32G7 support and a minimum of two, 136-channel, 200 MHz merged modules for the IA32G7_T. Both software support packages may be used in parallel in one logic analyzer mainframe. However, this is not a requirement.

The modules must be configured and merged as shown in Figure 1-1. The memory depth is chosen based on the shallowest memory depth of the three modules. The master module must have the deeper memory depth.

The TMSSN1 478 Pin Socket hardware and software package is compatible only with version 3.2 or later Tektronix logic analyzer application software.

The probe adapter requires a minimum of twelve P6434 Mass Termination Probes.

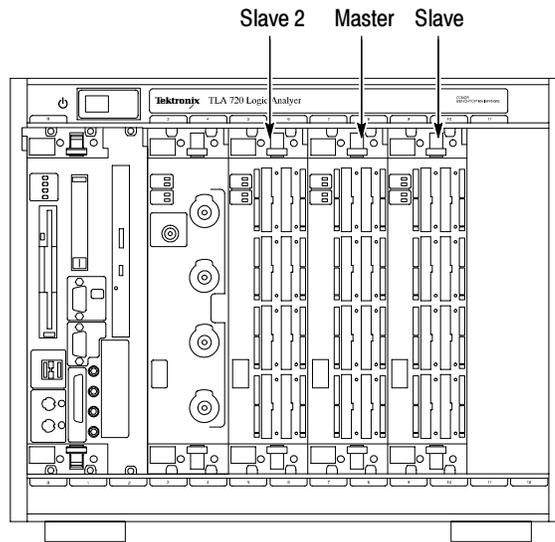


Figure 1-1: Configuration of the master, slave, and slave 2 modules

The term “Master module” refers to the middle module of a 3-way merge. The term “Slave module” refers to the module in the higher numbered slot than the master module. The term “Slave 2” module refers to the module in the lower numbered slot than the master module.

Probe Adapter Review



CAUTION. *To keep the microprocessor from overheating, a forced air cooling solution must be used.*

Review the information on basic operations of microprocessor support packages that is included with each logic analyzer product. Each logic analyzer includes information that describes how to perform tasks common to support packages on that platform. This information can be in the form of the logic analyzer online help, an installation manual, or a user manual.

Also, review electrical, environmental, and mechanical specifications in *Specifications* on page 2-1 as they pertain to the target system, as well as the following TMSSN1 478 Pin Socket probe adapter information.

System Clock Rate	<p>The probe adapter can acquire data from the 478 Pin Socket microprocessor operating at BCLK speeds of up to 133 MHz.</p> <p>Contact the Tektronix sales representative for current information on the fastest devices supported.</p>
Acquisition before Reset	<p>The data acquired by the logic analyzer will be inaccurate, if this data is acquired just before a power on Reset signal is observed by the target system.</p>
BCLK	<p>Refer to the BCLK specifications and restrictions listed on page 2-6, in the Specifications section.</p>
Data Bus	<p>The probe adapter supports only a quad-pumped data bus.</p>
Address Bus	<p>The probe adapter supports only a double-pumped address bus.</p>
Disabling the Cache	<p>The cache bus is not monitored, therefore, the cache must be disabled. Disabling the cache makes all instruction prefetches visible on the bus so they can be acquired, displayed, and correctly disassembled.</p>
Data Skew viewed at the Timing Mictors	<p>On the timing mictors, all data is skewed from the clock by approximately -900 ps. This means that when you use an oscilloscope, you will see the data changing approximately 900 ps earlier than you should as compared to the FSB clock. However, there is one exception; the RESET# signal is approximately 500 ps earlier than the FSB clock. The data skew seen when using the oscilloscope does not affect the state acquisitions in any way.</p>

Labeling P6434 Probes

The TMSSN1 478 Pin Socket hardware support package relies on the standard channel mapping and labeling scheme for P6434 probes. Apply labels using the standard method described in the *P6434 Mass Termination Probe Instructions*.

Standard Accessories

The TMSSN1 478 Pin Socket Support package is shipped with the following standard accessories:

- Technical manual (1)
- Heat sink and fan assembly (1)
- AC power cord (1)

Options

See the *Replaceable Parts List* on page 5-4 for more detailed information.

Configuring the Probe Adapter

The probe adapter is configured by the jumpers shown in Tables 1-1 and 1-2. Figure 1-2 shows the location of all jumpers.

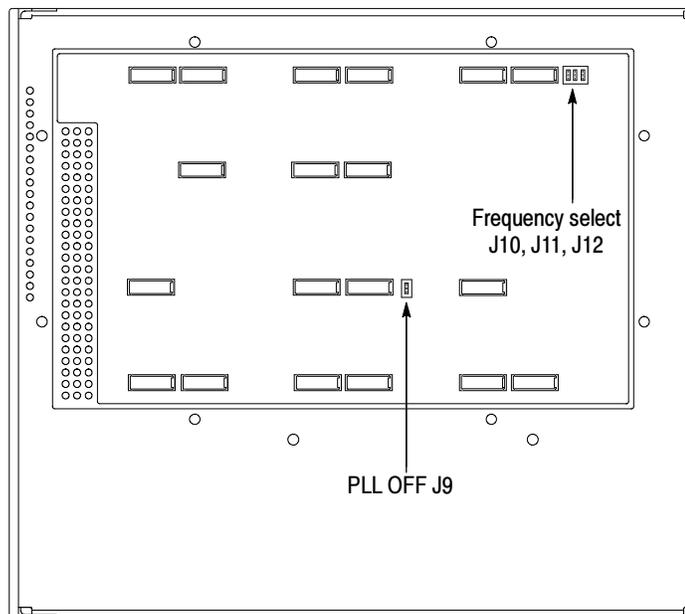


Figure 1-2: Jumper locations on the preprocessor unit

PLL OFF Jumper

Default jumper information is listed in Table 1-1. For operation frequencies below 20 MHz, place the jumper in the Pin 2-3 position. Placing the jumper in the Pin 2-3 position by passes the PLL.

Table 1-1: Default Jumper Positions

Jumper name	Default pin position	Jumper Designation
PLL OFF	1-2	J9
S1	1-2	J10
S2	1-2	J11
S3	1-2	J12

Frequency Select Jumper

For the Frequency Select Jumper settings see Table 1-2 for the appropriate operating frequency.

Table 1-2: Frequency Select Jumpers

Frequency	S1 (J10)	S2 (J11)	S3 (J12)
140 - 230 Mhz	1-2	2-3	2-3
70 - 140 Mhz	1-2	1-2	1-2
30 - 70 Mhz	1-2	1-2	2-3
20 - 30 Mhz	2-3	1-2	2-3
Below 20 MHz	PLL_OFF jumper (see Table 1-1)		

Connecting the Logic Analyzer to a Target System

CAUTION. To prevent static damage to the microprocessor, the probe adapter, the probes, and the module, you must handle components only in a static-free environment.

Always wear a grounding wrist strap, heel strap, or similar device while handling the microprocessor and probe adapter.

Before you connect the probe adapter to the target system, connect twelve P6434 probes to the Master, Slave, and Slave 2 modules. For reference, Figure 1-3 shows the configuration for the Master, Slave and Slave 2 modules.

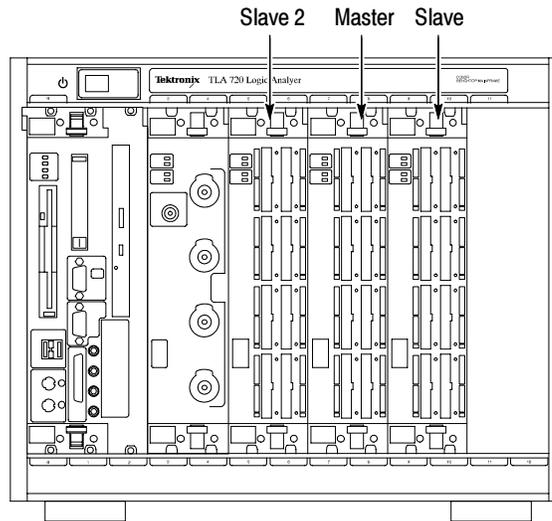


Figure 1-3: Configuration for master and slave modules

The target system must allow clearance for the probe adapter. Refer to the dimensions on page 2-9 for the required clearances.

Tools Required

The following are the required tools:

- Flat-bladed screwdriver (0.1 inch tip width) to remove the heat sink retention module
- POZIDRIV screwdriver (PZ1) to attach the probe head to the target system



CAUTION. To prevent static damage to the microprocessor, the probe adapter, the probes, and the module, handle components only in a static-free environment.

Always wear a grounding wrist strap, heel strap, or similar device while handling the microprocessor and probe adapter.

Read the following general instructions before removing parts.

To connect the logic analyzer to the target system, follow these steps:

1. Power off the target system. It is not necessary to power off the logic analyzer.
2. To discharge any static electricity, touch the ground connector located on the logic analyzer.
3. On the target system, remove the heat sink from the microprocessor and set the heat sink aside.

4. Deactivate the ZIF socket on the target system.
5. Remove the microprocessor from the target system following the removal procedure from the microprocessor vendor.
6. Remove the heat sink retention mechanism from the target system by removing the center post from each rivet (see Figure 1-4).

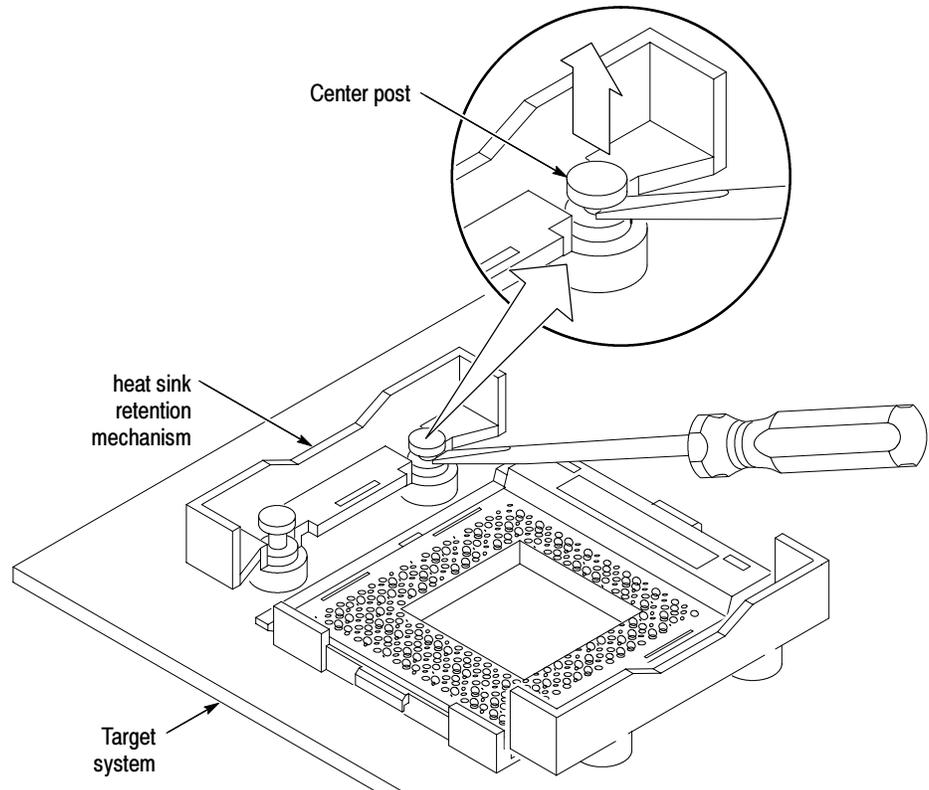


Figure 1-4: Removing the heat sink retention mechanism from the target system

The 478 Pin Socket probe head comes assembled, except for the alignment feet. It is recommended that you use the alignment feet to guide the probe head into position when connecting to the target system.

Steps 1 and 2 describe how to attach the alignment feet to the target system.

1. Slide the center pin down into the alignment foot (see Figure 1-5).

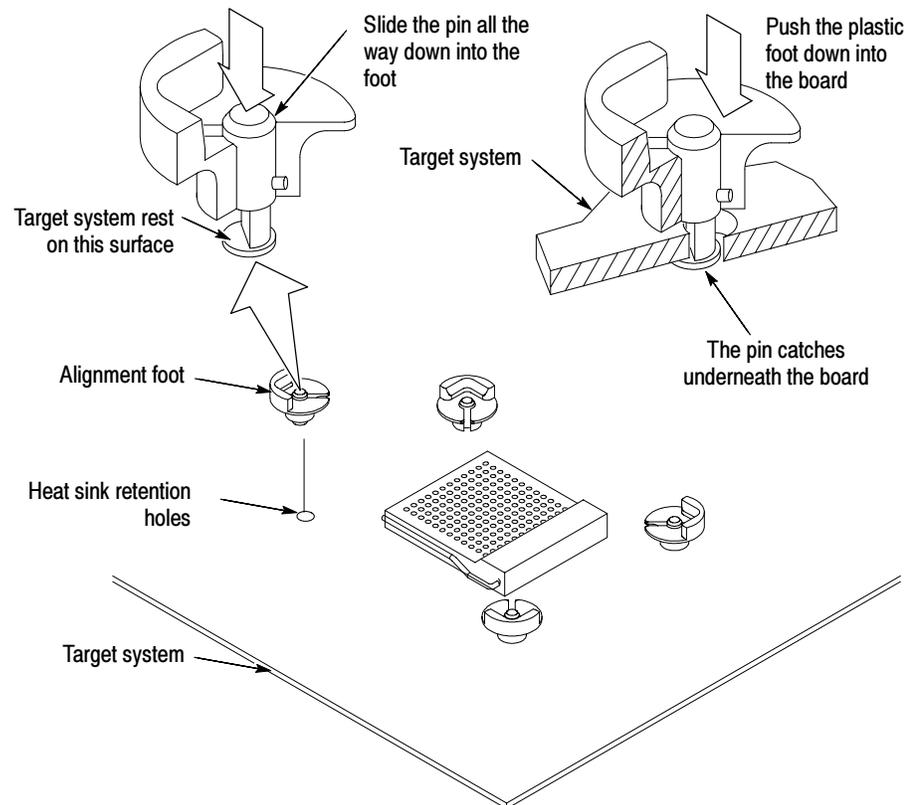


Figure 1-5: Install the base-bracket feet

2. Install the alignment foot into the heat sink retention holes on the target system (see Figure 1-5). Repeat steps 1 and 2 for each alignment foot.



CAUTION. To prevent damage to the probe head and pins, you must always handle the probe head carefully and use care to properly align the probe head pins to the ZIF socket on the target system. Also, reinstall the pin protector to the bottom of the probe head when the probe head is not in use.

3. Deactivate the ZIF socket on the target system (see Figure 1-6).
4. Remove the pin protector board from the bottom of the probe head.

5. Remove the tape that covers the socket holes on the probe head.
6. Connect the probe pin head to the socket on the target system. Use the alignment feet to guide the probe head into position. You must visually verify proper pin alignment between the probe-head pins and the socket on the target system.

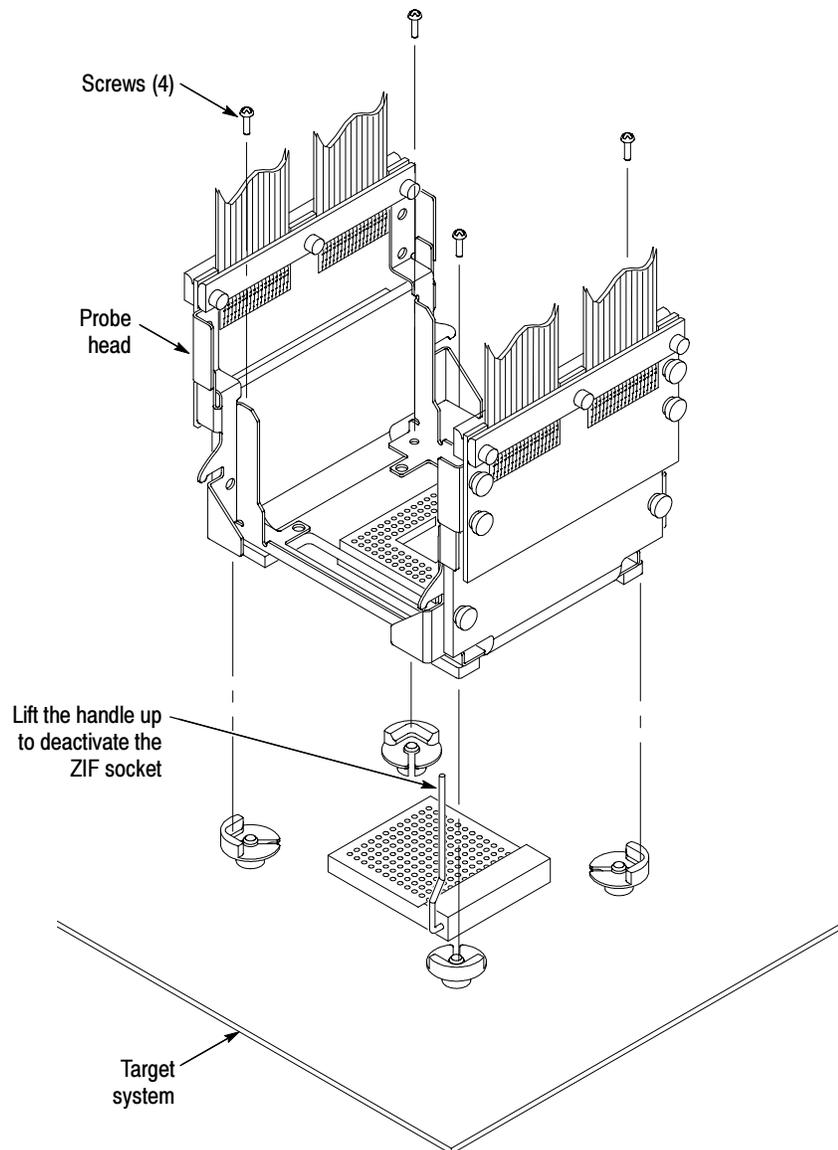


Figure 1-6: Connect the probe head to the target system

7. Activate the ZIF socket on the target system.

8. With a POZIDRIV® screwdriver (PZ1), gently attach the screws to the probe head using 2 in-lbs (0.2 Newton meters) of torque to secure the probe head to the target system (see Figure 1-6 on page 1-9).
9. Connect the microprocessor to the ZIF socket in the probe head. Align the microprocessor A1 pin indicator with the socket A1 pin indicator, and set the microprocessor into place as shown in Figure 1-7.

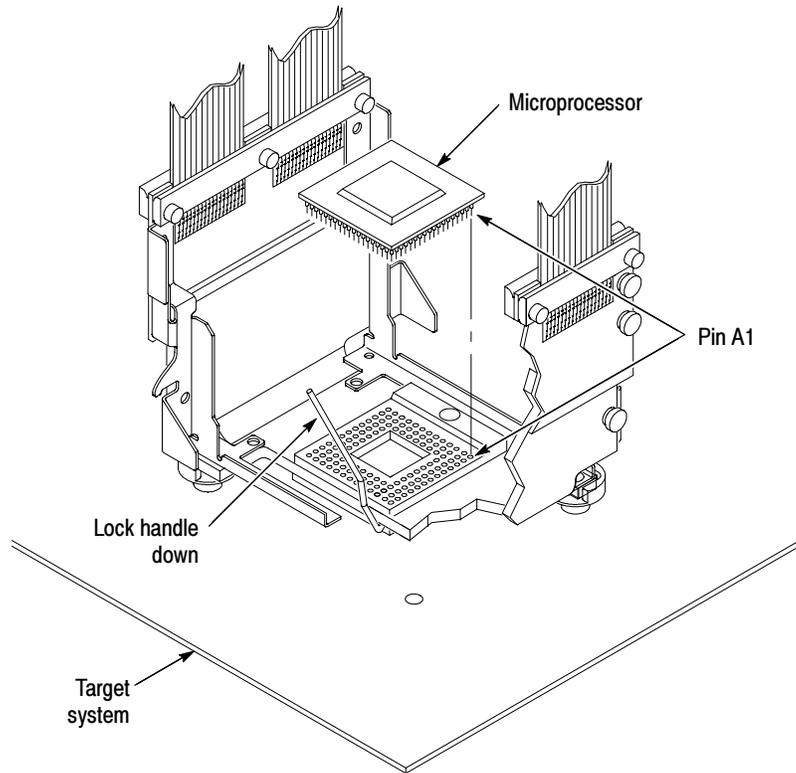


Figure 1-7: Connecting the microprocessor, probe head, and target system

10. Activate the ZIF socket on the probe head.

11. Place the air cooled heat sink and fan on top of the microprocessor as shown in Figure 1-8. You may need to use thermal grease for better contact between the heat sink and the microprocessor. For thermal requirements, refer to the microprocessor vendor information.



CAUTION. To prevent damage to the microprocessor, you must use the cooling fan that is provided with the heat sink whenever you operate the TMSSN1 478 Pin Socket probe adapter.

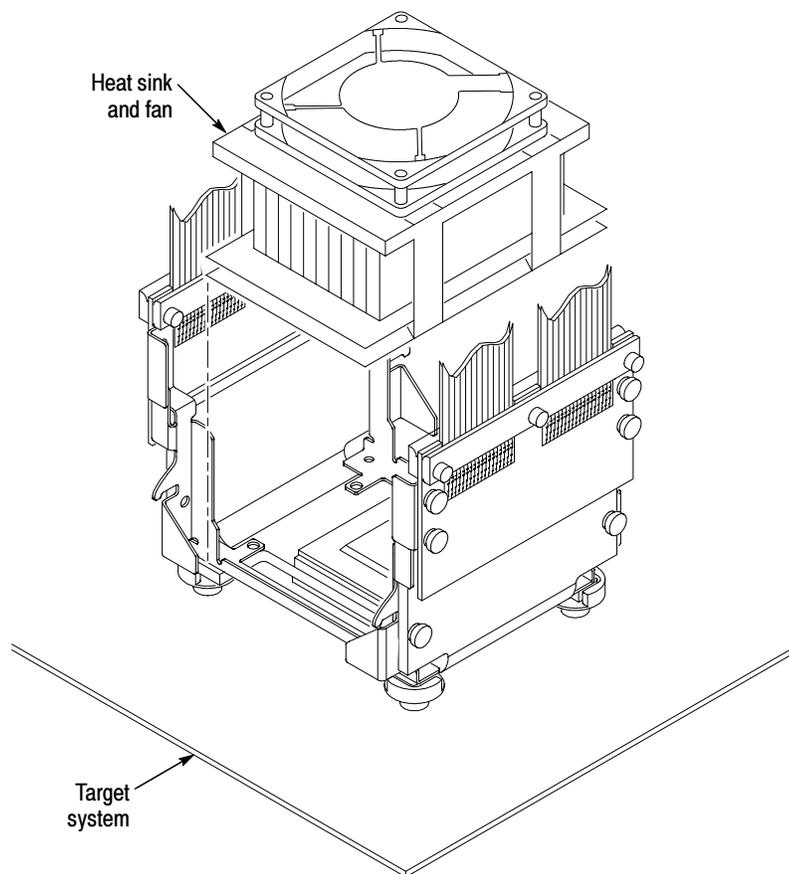


Figure 1-8: Placing the heat sink on the probe head

12. Attach the spring clips to both sides of the heat sink (see Figure 1-9).



CAUTION. To prevent damage to the microprocessor, you must not rock the probe head when attaching the spring clips. But you can press the top of the heat sink assembly to the microprocessor while installing the spring clips.

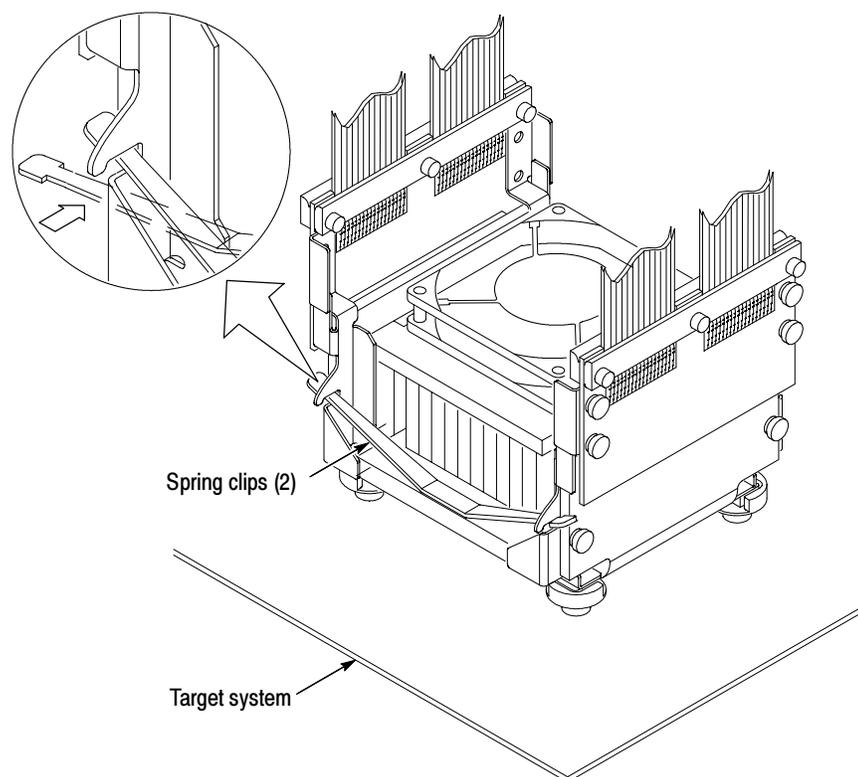


Figure 1-9: Attaching the spring clips to the heat sink

13. Connect the fan connector to the target system.

Removing the Probe Head from the Target System

To remove the probe head from the target system, follow these steps:

1. Power off the target system, and then the preprocessor unit. It is not necessary to power off the logic analyzer.
2. Disconnect the fan connector from the target system.
3. Remove both spring clips from the heat sink (see Figure 1-9 on page 1-12).
4. Remove the heat sink and fan assembly from the microprocessor (see Figure 1-8 on page 1-11).
5. Deactivate the ZIF socket on the target system (see Figure 1-7 on page 1-10).
6. Remove the microprocessor from the probe head and place in protective packaging.
7. Remove the screws (see Figure 1-6 on page 1-9) that connect the probe head to the target system using a POZIDRIV screwdriver (PZ1).
8. Disconnect the probe head from the 478 Pin Socket socket on the target system.
9. Install the pin-protector cover to the bottom of the probe head.
10. Disconnect the preprocessor unit from the Tektronix logic analyzer.
11. Store the probe head as describe in *Storage* on page 1-19.

Connect the P6434 Probes to the Preprocessor Unit

Mictor connectors (P6434) may be configured for timing or disassembly support functions. For reference, Figure 1-10 shows the Mictor connectors attached to the preprocessor unit.

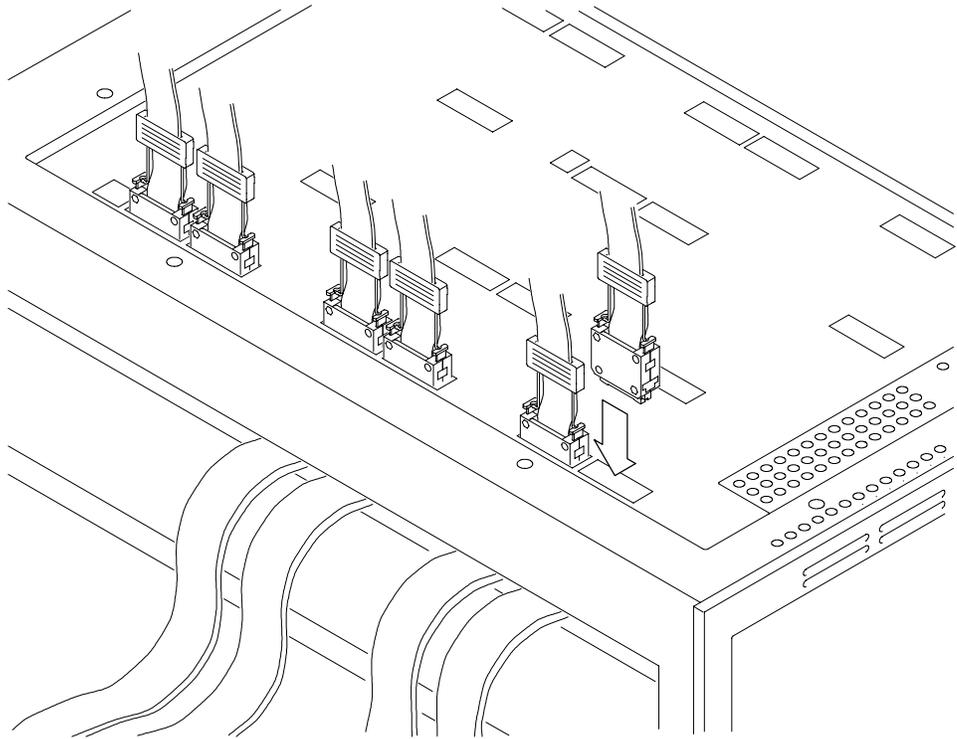


Figure 1-10: Connecting probes

Figure 1-11 shows the configuration for the Master, Slave, and Slave 2 modules.

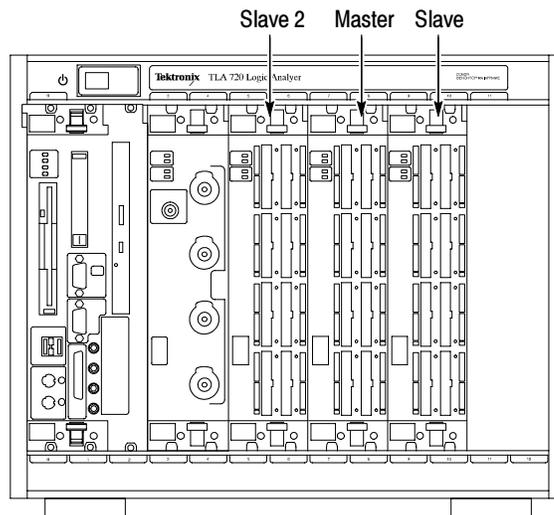


Figure 1-11: Configuration of the master, slave, and slave 2 modules

Disassembly. Following is the minimum configuration for disassembly support.

1. Match the A, D, C, and E probes from the Slave2 module with the corresponding S2_A_DIS, S2_D_DIS, S2_C_DIS, and S2_E_DIS probe connector labels on the preprocessor unit. Align the Pin 1 indicator on the probe label with the Pin 1 indicator of the connector on the preprocessor unit.



CAUTION. To prevent damage to the probe and preprocessor unit, you must always position the probe perpendicular to the mating connector with Pin 1s aligned and gently connect the probe. Incorrect handling of the P6434 probe while connecting to or disconnecting from the preprocessor can damage the probe or the mating connector on the preprocessor unit.

2. Position the probe tip perpendicular to the mating connector and gently connect the probe (see Figure 1-12).
3. When connected, push down on the latch releases on the probe to set the latch.

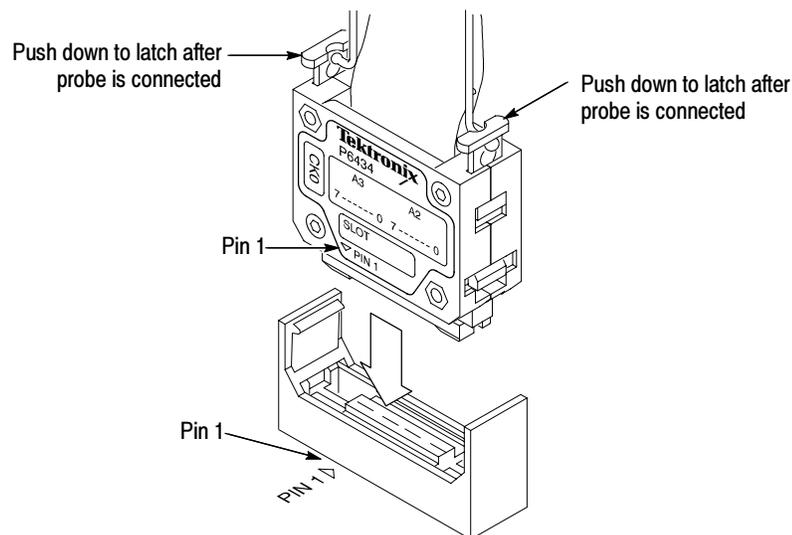


Figure 1-12: Operating the probe latches

4. Match the A, D, C, and E probes from the Master module with the corresponding M_A_DIS, M_D_DIS, M_C_DIS, and M_E_DIS probe connector labels on the preprocessor unit. Align the Pin 1 indicator on the probe label with the Pin 1 indicator of the connector on the preprocessor unit.
5. Repeat steps 2 and 3 to connect additional probes.

6. Match the A, D, C, and E probes from the Slave module with the corresponding S_A_DIS, S_D_DIS, S_C_DIS and S_E_DIS probe connector labels on the preprocessor unit. Align the Pin 1 indicator on the probe label with Pin 1 of the connector on the preprocessor unit (see Figure 1-12).
7. Repeat steps 2 and 3 to connect additional probes.

Timing. Following is the minimum configuration for timing support.

1. Match the A, D, C, and E probes from the Master module with the corresponding M_A_TM, M_D_TM, M_C_TM, and M_E_TM probe connector labels on the preprocessor unit. Align the pin 1 indicator on the probe label with the Pin 1 indicator of the connector on the preprocessor unit.



CAUTION. *To prevent damage to the probe and preprocessor unit, always position the probe perpendicular to the mating connector and gently connect the probe. Incorrect handling of the P6434 probe while connecting to or disconnecting from the probe adapter can damage the probe or the mating connector on the preprocessor unit.*

2. Position the probe tip perpendicular to the mating connector, and gently connect the probe (see Figure 1-12).
3. When connected, push down the latch releases on the probe to set the latch.
4. Match the A, D, C, and E probes from the Slave module with the corresponding S_A_TM, S_D_TM, S_C_TM and S_E_TM probe connector labels on the preprocessor unit. Align the Pin 1 indicator on the probe label with Pin 1 of the connector on the preprocessor unit (see Figure 1-12).
5. Repeat steps 2 and 3 to connect additional probes.
6. Apply forced air cooling across the microprocessor to keep the microprocessor from overheating, if using an air-cooled heat sink.

Applying Power

To apply power to the probe adapter and target system, follow these steps:

1. Make sure the power switch on the preprocessor unit is in the off position (zero (0) is visible on the power switch). See Figure 4-2 on page 4-4 for the location of the power switch.



WARNING. *To prevent personal injury or damage to the preprocessor unit, there are no operator serviceable parts inside the cover of the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only.*

2. Plug the AC power cord into the IEC connector on the back of the preprocessor unit.
3. Plug the AC power cord into an electrical outlet that you know is working properly.
4. Power on the preprocessor unit. A green LED lights on the front of the preprocessor unit, indicating the probe is active. If the LED does not light, see page 1-18 to verify the probe operation.
5. Power on the target system.

Removing Power

To remove power from the target system and the probe adapter, follow these steps:

1. Power off the target system.
2. Power off the probe adapter at the back of the preprocessor unit.

Alternate Connections

Timing Connections. Timing connections are available. For the correct probe connections, see page 1-16 to connect from the logic analyzer to the preprocessor. Use the IA32G7_T software configuration for the timing function.

Software Support

Disassembly. Disassembly and Timing connections are available. For the correct probe connections, see page 1-14 to connect from the logic analyzer to the preprocessor unit. Use the IA32G7 software configuration for the disassembly function.

Timing Connections. For the correct probe connections, see page 1-16 to connect from the logic analyzer to the preprocessor unit. Use the IA32G7_T software configuration for the timing function.

Verifying Probe Operation

If you have trouble using the probe adapter to acquire data from the target system, you can use the following check list to ensure that the probe adapter and probe-head cables are working correctly.



WARNING. *To prevent personal injury or damage to the preprocessor unit, cables and fans need to be replaced by qualified service personnel only.*

There are no operator serviceable parts inside the cover of the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only.

1. Check that power is supplied to the preprocessor unit by observing the lighted green LED on the front of the case. If the LED is not lighted:
 - Check that the power switch on the back of the preprocessor unit is powered on. If powered off, a 0 (zero) is visible on the switch.
 - Check that the AC power cord is plugged into an electrical outlet that you know is working properly.
 - If the LED is still not lighted, unplug the unit from the electrical outlet and call a Tektronix Service representative. Only authorized service personnel can open the preprocessor unit to check the probe head cable connections.
2. Check that the phase-locked loop of the probe adapter is set to the proper frequency range. Use the following procedure to determine the clock frequency of the target system:
 - a. On top of the preprocessor unit, set the PLL-OFF jumper to the 2-3 pin position (phase-locked loop is off).
 - b. Acquire the BCLK using MagniVu.
 - c. Calculate the frequency based on the rising or falling BCLK edges.
 - d. On top of the preprocessor unit, set the frequency select jumpers (S3, S2, and S1) to the appropriate frequency range (see page 1-4).
 - e. On top of the preprocessor unit, set the PLL-OFF jumper to 1-2 position (phase-lock loop on) if the frequency of the target system is within the PLL range.
3. Check that the ASICs are being programmed by looking through the Mictor connector openings on top of the preprocessor unit. If the ASICs are being programmed, the six green “program-good” LEDs are visible and lighted. If

none of the LEDs are lighted, power off and on the probe adapter using the power switch.

4. Check that signals are passing through the Mictor connectors by using the following procedure:
 - a. Go to the Setup menu and select “show activity”.
 - b. Visually verify from the display that signals are transitioning on each Mictor connector.
 - c. If the signals are not transitioning, you can wiggle the Mictor connector on top of the preprocessor unit slightly to check that it is fully seated.
 - d. If the signals are still not transitioning, disconnect the Mictor probe from that socket in the preprocessor unit and connect that Mictor probe into a socket that indicates signal transitioning.
 - e. If the channels never transition:
 - Check the Mictor probe for bent contacts.
 - Check the probe adapter for bent Mictor contacts.

If performing the preceding bullets did not correct the problem, replace the existing Mictor probe with a new Mictor probe.

Storage

The storage instructions describe short- and long-term storage of the probe head, cables, and preprocessor unit.

Short-Term Storage

For short-term storage follow these steps:

1. Power off the probe adapter. You can leave the logic analyzer powdered on.
2. Disconnect the probe head from the target system (See page 1-13).
3. Wrap pink (antistatic) bubble wrap around the probe head, and store the probe head with the preprocessor unit.

Long-Term Storage

For long-term storage use the existing cardboard carton and packaging, and follow these steps:

1. Power off the probe adapter. You can leave the logic analyzer powdered on.
2. Disconnect the preprocessor unit from the logic analyzer by removing the P6434 probes from the top of the preprocessor unit.

3. Unplug the AC power cord from the IEC connector on the back of the preprocessor unit.
4. Disconnect the probe head from the target system (see page 1-13).
5. Place the foam end caps on both sides of the preprocessor unit. The depression on the foam end caps are in the up position.
6. Place the preprocessor unit inside the cardboard carton.
7. Place the pink-foam panel on top of the end caps.
8. Place the probe head in the center cutout of the pink-foam panel.



CAUTION. *To prevent damage to the sensitive probe head cables, dress the cables to not pinch or contact any sharp objects. When you fold the cables use a minimum of 0.25 (0.64 cm) radius at the fold.*

9. Place other accessories in the appropriate cutouts.
10. Place the cardboard accessory tray containing the P6434 probes on top of the pink-foam panel. Close the carton.

Care and Maintenance

Before cleaning this product, you must read the following information.



CAUTION. *Static discharge can damage the microprocessor, the probe adapter, the probes, and the module. To prevent static damage, you must handle components only in a static-free environment.*

The probe adapter does not require scheduled or periodic maintenance. However, to keep good electrical contact and efficient heat dissipation, keep the probe adapter free of dirt, dust, and contaminants. When not in use, store the probe adapter in the original shipping bags and cardboard carton (see *Storage* on page 1-19).

External Cleaning Only

Clean dirt and dust with a soft bristle brush. For more extensive cleaning, use only a damp cloth moistened with deionized water; do not use any other chemical cleaning agents.



WARNING. To prevent personal injury or damage to the preprocessor unit, cables and fans need to be replaced by qualified service personnel only.

There are no operator serviceable parts inside the cover of the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only.

Shipping the Probe Adapter

To commercially transport the probe adapter, package as follows:

NOTE. The probe head, cables, and preprocessor unit must be shipped assembled.

1. Use the existing cardboard shipping carton.

If the existing shipping carton is not available, use a double-walled, corrugated cardboard shipping carton with a diameter three inches (7.62 cm) on each side and top larger than the probe adapter.

2. If you are shipping the probe adapter to a Tektronix service center for Warranty service, attach a tag to the probe adapter showing the following:
 - Owner's name and address
 - Name of a person who can be contacted
 - Probe adapter type and serial number
 - Description of the problem
3. Using antistatic nongenerating tape, tape the pin-protector board onto the pin header on the bottom of the probe head.
4. Place the foam end caps on both sides of the preprocessor unit. The depression on the foam end caps are in the up position.
5. Place the preprocessor unit inside the cardboard carton.
6. Place the pink-foam panel on top of the end caps.
7. Place the probe head in the center cutout of the pink-foam panel.



CAUTION. To prevent damage to the sensitive probe head cables, you must dress the cables to not pinch or contact any sharp objects. When you fold the cables use a minimum of 0.25 (0.64 cm) radius at the fold.

8. Place other accessories in the appropriate cutouts.

9. Place the cardboard accessory tray containing the P6434 probes on top of the pink-foam panel.
10. Close and tape the cardboard carton.

To ship only the probe head and cables, read the warning page before the Maintenance section, see the *Removal and Installation Procedures* on page 4-3, and the *Shipping the Probe Head and Cables* on page 4-10.



Specifications

Specifications

This section contains specifications for the TMSSN1 478 Pin Socket hardware support.

Circuit Description

The TMSSN1 478 Pin Socket probe adapter hardware uses a custom ASIC to preprocess all signals on the 478 Pin Socket microprocessor prior to the signals being captured by the logic analyzer. The custom ASIC performs the following functions:

- Latches signals within a narrow valid window
- Demultiplexes double-pumped, source-synchronous signals
- Deterministically synchronizes source-synchronous signals to BCLK

Latched Operation

The ASIC latches all signals on the 478 Pin Socket microprocessor. The latched signals are processed in the ASIC according to their type. Following is a description of each type:

4x Quad-Pumped Signals. These signals include D[63:00]# and DP[3:0]#. The ASIC latches these signals using their dedicated strobes, STBP[3:0] and STBN[3:0], and then performs four-way demultiplexing on these signals. The ASIC also inverts the appropriate signals when the DBI[3:0] signals are active.

2x Double-Pumped Signals. These signals include A[53:03]# and AP[1:0]#. The ASIC latches these signals using their dedicated strobes, ASTB[1:0], and then performs two-way demultiplexing on these signals.

1x Common-Clock Signals. These signals include all of the remaining front-side bus signals. The ASIC latches these signals using the rising edge of BCLK.

Derived Signals The TMSSN1 478 Pin Socket probe adapter hardware derives several custom signals from the front-side bus signals captured by the ASIC. These signals are used by the logic analyzer support software to provide clocking, transaction phase linking, and disassembly. Following is a description of these custom signals:

PHASE_D. This signal can be used by the logic analyzer to store only bus cycles that contain active information. The PHASE_D signal is asserted when any of the following signals are asserted: ADS#, DRDY#, INIT#, RESET#, RS[2:0]#, and SNOOP_D.

TRACK_ERR_D. This signal is asserted whenever the request or snoop counters exceed their maximum or a minimum value. This signal is also asserted when ADS# has been observed active for two clock cycles in a row.

Signal Probing The 478 Pin Socket probe adapter uses passive series isolation to acquire data.

Bus Tracking Logic The 478 Pin Socket probe adapter uses a bus tracking PAL to aid the disassembly software in linking various bus phases.

Common Clock The IA32G7 software allows disassembly from a data bus operating at the common clock rate specified in Table 2-1. The setup and hold sample points are set to default timing numbers based on FSB specifications.

Probe Adapter Loading Diagrams

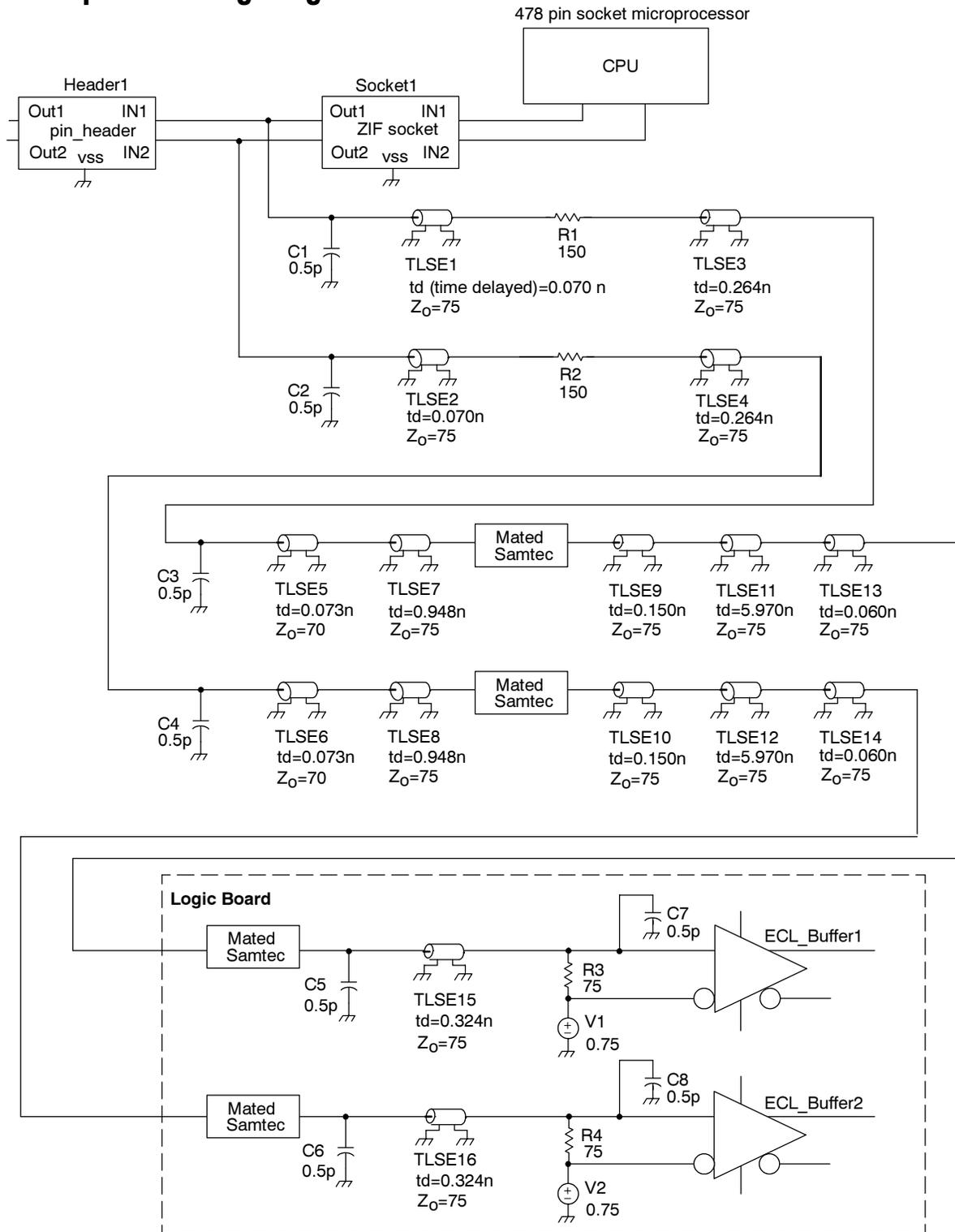


Figure 2-1: Electrical load model for typical signals

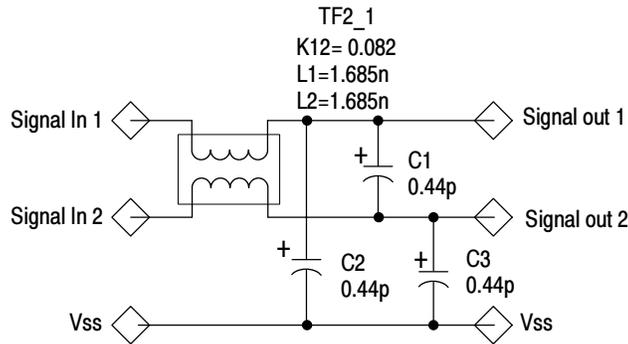


Figure 2-2: Pin header electrical load model for typical signals

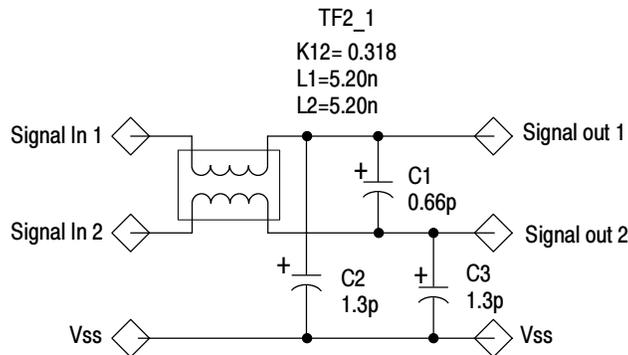


Figure 2-3: ZIF electrical load model for typical signals

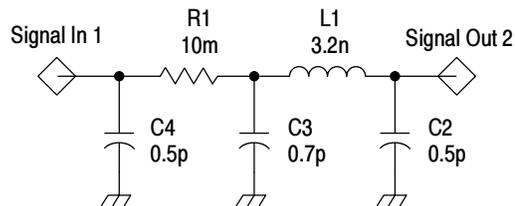


Figure 2-4: Mated Samtec model

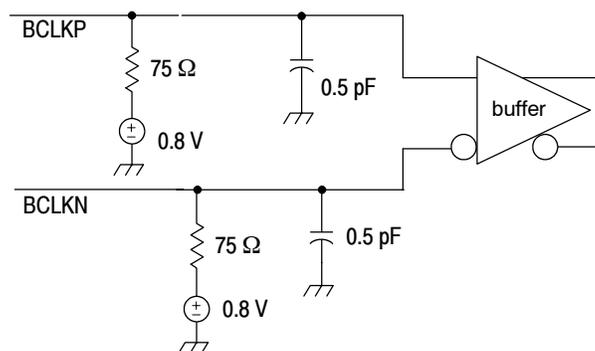


Figure 2-5: BCLK Receiver

Specification Tables

These specifications are for a probe adapter connected between a compatible Tektronix logic analyzer and a target system. Signal voltage swing in your target system must be at least $600 \text{ mV}_{\text{p-p}}$ around the GTL+ reference voltage.

Table 2-1 lists the electrical requirements of the target system. Table 2-2 lists the electrical requirements for the power supply that provides power to the 478 Pin Socket probe adapter. Table 2-3 lists the BCLK timing and electrical specifications. Table 2-4 lists the environmental specifications. Figure 2-5 lists Certifications and compliances.

Table 2-1: Electrical specifications for the target system

Characteristics	Requirements
DC power requirements	
Voltage, V_{CC}	$1.2 \text{ V} \pm 5\%$
Current, V_{REF}	I maximum <20 mA, I typical <1 mA
Common clock rate	Maximum 133 MHz
Common clock capture	
Window	839 ps
T_{su}	630 ps
T_{hd}	209 ps
Source Synchronous capture (DBI enabled)	
Window	887 ps
T_{su}	345 ps
T_{hd}	526 ps
Source Synchronous capture (DBI disabled)	
Window	976 ps
T_{su}	450 ps
T_{hd}	526 ps

Table 2-2: Electrical specifications for the AC input to the preprocessor unit

Characteristic	Description
Input Voltage rating	100 - 240 VAC CAT II
Input Frequency Rating	50 - 60 Hz
Input Current Rating	6.0 A maximum

Table 2-3: BCLK timing and electrical specifications

Characteristics	Minimum	Maximum	Units	Notes
V_{in} (lo) min		$V_{REF} - 300$ mV	V	
V_{in} (hi) max	$V_{REF} + 300$ mV		V	
Duty Cycle	25	75	%	
t_{th}		1.25	ns	Monotonically increasing
t_{hl}		1.25	ns	Monotonically decreasing

Table 2-4: Environmental specifications

Characteristic ¹	Description
Temperature	
Maximum operating	+50° C (+122° F) ²
Minimum operating	0° C (+32° F)
Nonoperating	-55° C to +75° C (-67° to +167° F)
Humidity	10 to 95% relative humidity, noncondensing
Altitude	
Operating	3 km (10,000 ft) maximum
Nonoperating	15 km (50,000 ft) maximum
Electrostatic immunity	The probe adapter is static sensitive
Required airflow clearances (preprocessor unit)	
Sides	2 in (5.08 cm)
Back	3 in (7.62 cm)

¹ **Designed to meet Tektronix standard 062-2847-00 class 5.**

² **Not to exceed microprocessor thermal considerations. Customer supplied cooling might be required across the CPU.**

Table 2-5: Certifications and compliances

Category	Standard or description
EC Declaration of Conformity - Low Voltage	<p>Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:</p> <p>Low Voltage Directive 73/23/EEC, amended by 93/68/EEC</p> <p>EN 61010-1/A2:1995 Safety requirements for electrical equipment for measurement control and laboratory use.</p>
U.S. Nationally Recognized Testing Laboratory Listing	<p>UL3111-1 Standard for electrical measuring and test equipment.</p>
Canadian Certification	<p>CAN/CSA C22.2 No. 1010.1 Safety requirements for electrical equipment for measurement, control, and laboratory use.</p> <p>CAN/CSA C22.2 No. 1010.2.031:1994 Particular requirements for hand-held probe assemblies for electrical measurement and test equipment.</p>
Additional Compliance	<p>UL3111-1 Standard for electrical measuring and test equipment.</p>
Installation (Overvoltage) Category Descriptions	<p>Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:</p> <p>CAT III Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location.</p> <p>CAT II Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected.</p> <p>CAT I Secondary (signal level) or battery operated circuits of electronic equipment.</p>
Pollution Degree	<p>A measure of the contaminates that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.</p> <p>Pollution Degree 1 No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.</p> <p>Pollution Degree 2 Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.</p> <p>Pollution Degree 3 Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.</p> <p>Pollution Degree 4 Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.</p>
Equipment Type	Test and measuring
Safety Class	Class 1 (as defined in IEC 61010-1, Annex H) - grounded product
Overvoltage Category	Overvoltage Category II (as defined in IEC 61010-1, Annex J)
Pollution Degree Descriptions	Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.

Dimensions Figure 2-6 shows the dimensions of the 478 Pin Socket probe head.

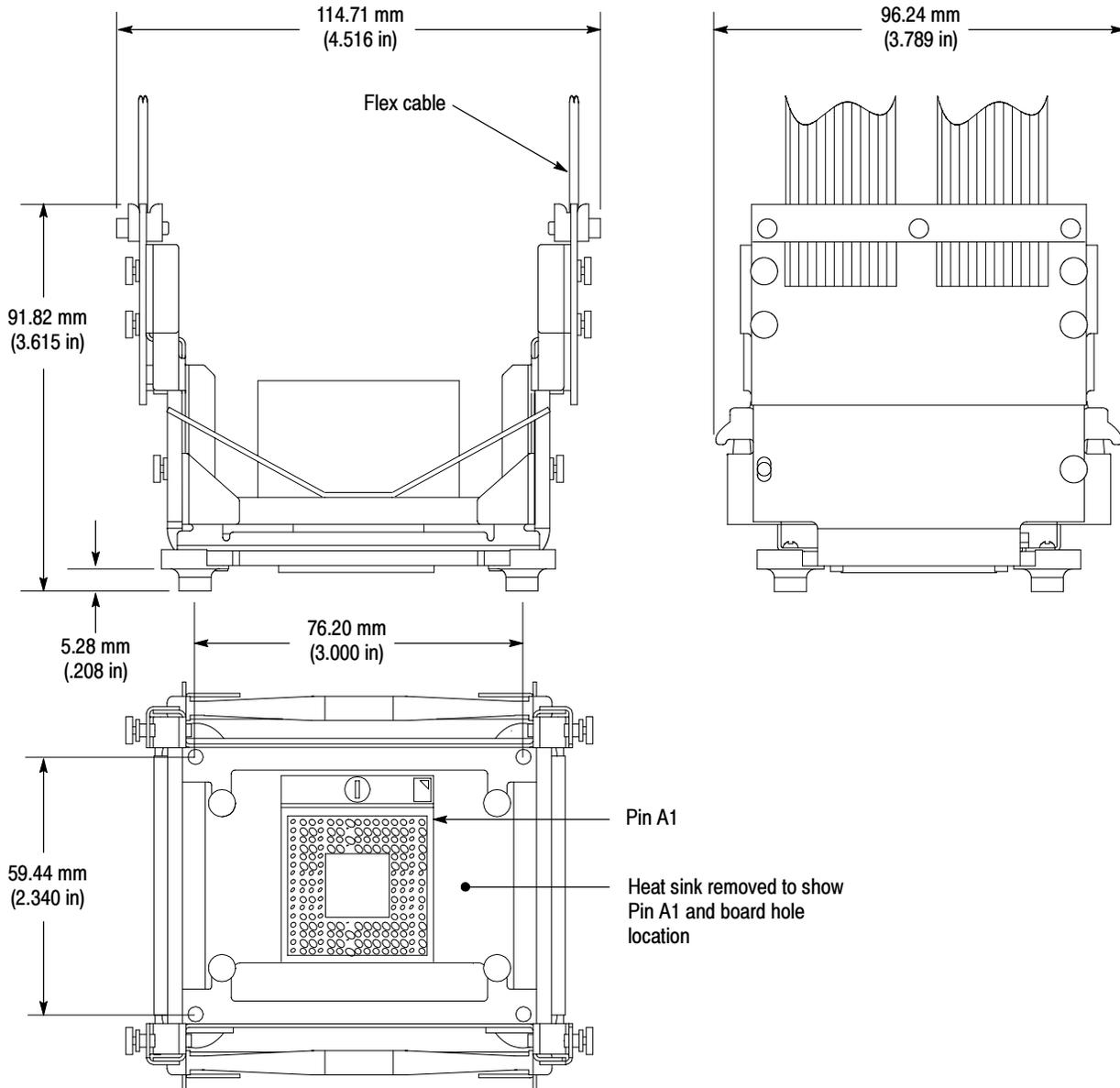


Figure 2-6: Dimensions of the 478 Pin Socket probe head

Figure 2-7 shows the dimensions of the preprocessor unit.



CAUTION. To prevent damage to the circuitry in the preprocessor unit, you must observe the required clearances in Table 2-4 on page 2-6 (clearances are not shown in Figure 2-7).

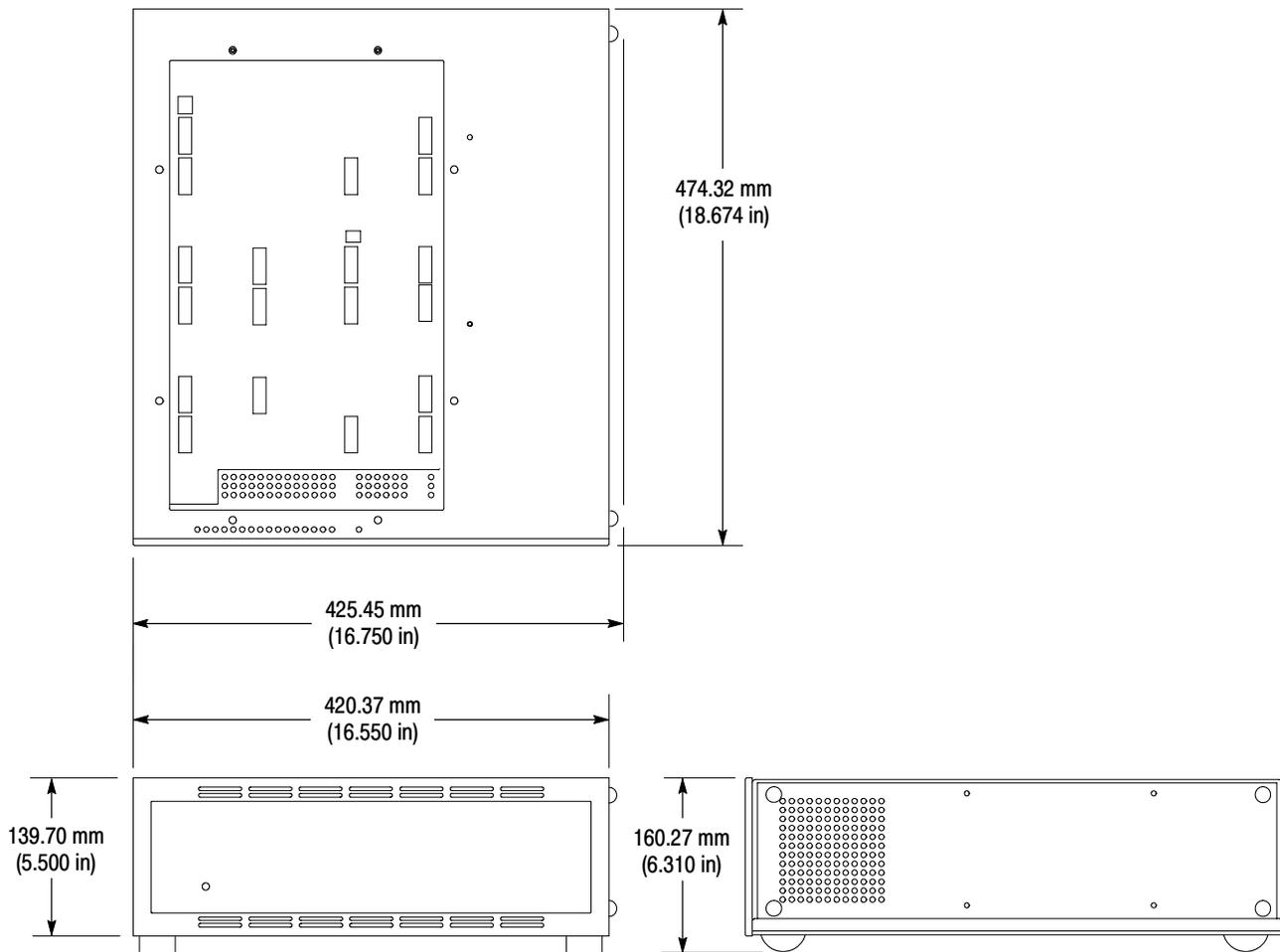


Figure 2-7: Dimensions of the preprocessor unit



Reference

Reference: Channel Assignment Tables

This section contains channel assignments and external probing tables for the TMSSN1 478 Pin Socket probe adapter.

Channel Assignments

Channel assignments, shown in Tables 3-3 through 3-14, use the following conventions:

- A pound sign (#) following a signal name indicates an active low signal.
- All signals are required by the support unless indicated otherwise.
- Channels are shown starting with the most significant bit (MSB) descending to the least significant bit (LSB).
- Signals with the prefix “M_” are on the master module, with the prefix “S_” are on the slave module, and with the prefix “S2_” are on the Slave 2 module.

The term Master module refers to the middle module of a 3-wide merge. The term Slave module refers to the module in the higher numbered slot than the master module. The term Slave 2 module refers to the module in the lower numbered slot than the master module.

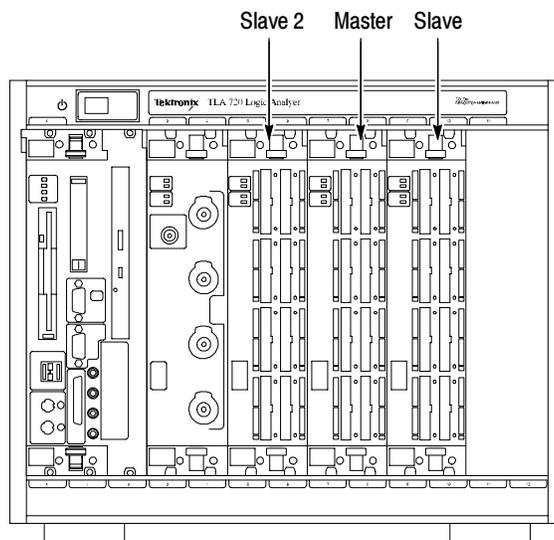


Figure 3-1: Configuration of the master, slave, and slave 2, modules

Table 3-1 lists the channel assignments for the Clock group and the corresponding support channel.

Table 3-1: Clock channel assignments

Logic analyzer acquisition channel	Clock, Qual, or Data	IA32G7 support channel name	IA32G7_T support channel name
M_Clock:3	Clock	BCLK	BCLK
M_Clock:2	Data	A03	---
M_Clock:1	Data	EXF0	REQ1
M_Clock:0	Data	REQb0	REQ4
S_Clock:3	Data	D0_DBI2	DSTBP3
S_Clock:2	Data	D1_DBI3	A30
S_Clock:1	Data	D3_DBI3	D35
S_Clock:0	Data	D2_DBI3	DSTBP2
S2_Clock:3	Data	D0_DBI1	(not available)
S2_Clock:2	Data	D1_DBI0	(not available)
S2_Clock:1	Data	D3_DBI0	(not available)
S2_Clock:0	Data	D2_DBI0	(not available)

Table 3-2 lists the channel assignments for the Qualifier group and the corresponding support channel.

Table 3-2: Qualifier channel assignments

Logic analyzer acquisition channel	Clock, Qual, or Data	IA32G7 support channel name	IA32G7_T support channel name
M_Clock:3	Clock	BCLK	BCLK
M_Clock:2	Data	A03	---
M_Clock:1	Data	EXF0	REQ1
M_Clock:0	Data	REQb0	REQ4
S_Clock:3	Data	D0_DBI2	DSTBP3
S_Clock:2	Data	D1_DBI3	A30
S_Clock:1	Data	D3_DBI3	D35
S_Clock:0	Data	D2_DBI3	DSTBP2
S2_Clock:3	Data	D0_DBI1	(not available)
S2_Clock:2	Data	D1_DBI0	(not available)

Table 3-2: Qualifier channel assignments (cont.)

Logic analyzer acquisition channel	Clock, Qual, or Data	IA32G7 support channel name	IA32G7_T support channel name
S2_Clock:1	Data	D3_DBI0	(not available)
S2_Clock:0	Data	D2_DBI0	(not available)

Table 3-3 lists the channel assignments for the Address group and the corresponding support channel.

Table 3-3: Master Module 32-channel Address assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_A3:7	REQb4	REQ4
M_A3:6	EXF1	REQ3
M_A3:5	EXF3	REQ2
M_A3:4	BE1	A04
M_A3:3	EXF2	A07
M_A3:2	BE7	ADSTB0
M_A3:1	BE5	A11
M_A3:0	BE2	A15
M_A2:7	BE6	A10
M_A2:6	ATTR0	A12
M_A2:5	DID5	A20
M_A2:4	ATTR4	A19
M_A2:3	ATTR7	A28
M_A2:2	ATTR1	---
M_A2:1	ATTR3	---
M_A2:0	DID6	---
M_A1:7	REQb3	REQ1
M_A1:6	REQb1	REQ0
M_A1:5	EXF4	A06
M_A1:4	REQb2	A03
M_A1:3	DID7	A09
M_A1:2	BE0	A05
M_A1:1	BE3	A08

Table 3-3: Master Module 32-channel Address assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_A1:0	DID0	A16
M_A0:7	BE4	A13
M_A0:6	DID4	A14
M_A0:5	DID3	A24
M_A0:4	ATTR2	A21
M_A0:3	ATTR6	---
M_A0:2	DID2	---
M_A0:1	ATTR5	---
M_A0:0	DID1	---

Table 3-4 lists the channel assignments for the Data group and the corresponding support channel.

Table 3-4: Master Module 32-channel Data assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_D3:7	REQA4	---
M_D3:6	A04	---
M_D3:5	A06	D00
M_D3:4	A09	D01
M_D3:3	A05	D06
M_D3:2	A15	DSTBN0
M_D3:1	A13	---
M_D3:0	A10	D12
M_D2:7	A14	D15
M_D2:6	A24	D10
M_D2:5	A21	D14
M_D2:4	A28	D05
M_D2:3	A31	DBI0
M_D2:2	A25	---
M_D2:1	A27	---
M_D2:0	A22	---

Table 3-4: Master Module 32-channel Data assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_D1:7	REQa3	---
M_D1:6	REQa1	---
M_D1:5	A07	D02
M_D1:4	REQa2	D03
M_D1:3	A23	D09
M_D1:2	A08	---
M_D1:1	A11	D07
M_D1:0	A16	D08
M_D0:7	A12	D13
M_D0:6	A20	D11
M_D0:5	A19	DP0
M_D0:4	A26	D04
M_D0:3	A30	---
M_D0:2	A18	---
M_D0:1	A29	---
M_D0:0	A17	GND

Table 3-5 lists the channel assignments for the Control group and the corresponding support channel.

Table 3-5: Master Module 32-channel Control assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_C3:7	BPM2	FERR
M_C3:6	SLP	SMI
M_C3:5	BINIT	A20M
M_C3:4	Reserved	LINT0
M_C3:3	Reserved	HITM
M_C3:2	Reserved	HIT
M_C3:1	Reserved	RS2
M_C3:0	Reserved	LOCK

Table 3-5: Master Module 32-channel Control assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_C2:7	Reserved	BR0
M_C2:6	Reserved	RESET
M_C2:5	Reserved	THERMTRIP
M_C2:4	TRACK_ER_D	Reserved
M_C2:3	SNOOP_D	AP1
M_C2:2	RSVD1_D	---
M_C2:1	INIT	---
M_C2:0	RSP	---
M_C1:7	BPM5	IGNNE
M_C1:6	BPM1	BPRI
M_C1:5	AP0	---
M_C1:4	GND	DEFER
M_C1:3	A20M	RS0
M_C1:2	DP0	BNR
M_C1:1	DP1	RS1
M_C1:0	DP2	LINT1
M_C0:7	DP3	DBSY
M_C0:6	DBSY	TRDY
M_C0:5	ADS	PROCHOT
M_C0:4	HITM	Reserved
M_C0:3	BPM4	---
M_C0:2	MCERR	---
M_C0:1	BPM0	---
M_C0:0	IERR	---

Table 3-6 lists the channel assignments for the Extend group and the corresponding support channel.

Table 3-6: Master Module 32-channel Extend assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_E3:7	IGNNE	---
M_E3:6	FERR	D21
M_E3:5	DRDY	---
M_E3:4	LINT0	---
M_E3:3	RS0	DP1
M_E3:2	HIT	D20
M_E3:1	RS2	---
M_E3:0	LINT1	DSTBN1
M_E2:7	BR0	D31
M_E2:6	TRDY	D16
M_E2:5	THERMTRIP	D24
M_E2:4	Reserved	D30
M_E2:3	A35	---
M_E2:2	A34	---
M_E2:1	A33	---
M_E2:0	A32	---
M_E1:7	SMI	D23
M_E1:6	BPRI	DBI1
M_E1:5	Reserved	D17
M_E1:4	DEFER	---
M_E1:3	BNR	D22
M_E1:2	RS1	D25
M_E1:1	LOCK	D19
M_E1:0	BPM3	D18
M_E0:7	PROCHOT	D26
M_E0:6	AP1	D29
M_E0:5	STPCLK	D28
M_E0:4	Reserved	D27
M_E0:3	Ab35	---

Table 3-6: Master Module 32-channel Extend assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
M_E0:2	Ab34	---
M_E0:1	Ab33	---
M_E0:0	Ab32	---

Table 3-7 lists the channel assignments for the Address group and the corresponding support channel.

Table 3-7: Slave Module 32-channel Address assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_A3:7	D2_D52	---
S_A3:6	D2_D48	---
S_A3:5	D2_D49	D37
S_A3:4	D2_D50	D33
S_A3:3	D2_D51	DP2
S_A3:2	D2_D53	DSTBN2
S_A3:1	D2_D55	---
S_A3:0	D2_D57	DBI2
S_A2:7	D2_D60	D41
S_A2:6	D2_D62	D43
S_A2:5	D2_D58	D40
S_A2:4	D2_D56	D44
S_A2:3	D2_D61	---
S_A2:2	D2_D63	---
S_A2:1	D2_D54	---
S_A2:0	D2_D59	---
S_A1:7	D3_D52	---
S_A1:6	D3_D48	---
S_A1:5	D3_D49	D35
S_A1:4	D3_D50	D32
S_A1:3	D3_D51	D38

Table 3-7: Slave Module 32-channel Address assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_A1:2	D3_D53	D39
S_A1:1	D3_D55	D36
S_A1:0	D3_D57	D34
S_A0:7	D3_D60	D42
S_A0:6	D3_D62	D47
S_A0:5	D3_D58	D46
S_A0:4	D3_D56	D45
S_A0:3	D3_D61	---
S_A0:2	D3_D63	---
S_A0:1	D3_D54	---
S_A0:0	D3_D59	---

Table 3-8 lists the channel assignments for the Data group and the corresponding support channel.

Table 3-8: Slave Module 32-channel Data assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_D3:7	D0_D52	A26
S_D3:6	D0_D48	A31
S_D3:5	D0_D49	A25
S_D3:4	D0_D50	A17
S_D3:3	D0_D54	A22
S_D3:2	D0_D51	A23
S_D3:1	D0_D53	A29
S_D3:0	D0_D55	A35
S_D2:7	D0_D57	---
S_D2:6	D0_D60	---
S_D2:5	D0_D62	---
S_D2:4	D0_D59	---
S_D2:3	D0_D56	---

Table 3-8: Slave Module 32-channel Data assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_D2:2	D0_D63	---
S_D2:1	D0_D61	---
S_D2:0	D0_D58	---
S_D1:7	D1_D52	A30
S_D1:6	D1_D48	A18
S_D1:5	D1_D49	ADSTB1
S_D1:4	D1_D50	A32
S_D1:3	D1_D54	A27
S_D1:2	D1_D51	A33
S_D1:1	D1_D53	A34
S_D1:0	D1_D55	ADS
S_D0:7	D1_D57	---
S_D0:6	D1_D60	---
S_D0:5	D1_D62	---
S_D0:4	D1_D59	---
S_D0:3	D1_D56	---
S_D0:2	D1_D63	---
S_D0:1	D1_D61	---
S_D0:0	D1_D58	---

Table 3-9 lists the channel assignments for the Control group and the corresponding support channel.

Table 3-9: Slave Module 32-channel Control assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_C3:7	D0_D35	---
S_C3:6	D0_D40	---
S_C3:5	D0_D37	D52
S_C3:4	D0_D33	D49
S_C3:3	D0_D38	D50

Table 3-9: Slave Module 32-channel Control assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_C3:2	D0_D32	---
S_C3:1	D0_D39	DSTBN3
S_C3:0	D0_D34	D55
S_C2:7	D0_D41	D60
S_C2:6	D0_D36	D59
S_C2:5	D0_D42	D56
S_C2:4	D0_D43	DP3
S_C2:3	D0_D47	---
S_C2:2	D0_D44	---
S_C2:1	D0_D46	---
S_C2:0	D0_D45	---
S_C1:7	D1_D35	---
S_C1:6	D1_D40	---
S_C1:5	D1_D37	D48
S_C1:4	D1_D33	DBI3
S_C1:3	D1_D38	D51
S_C1:2	D1_D32	D54
S_C1:1	D1_D39	D53
S_C1:0	D1_D34	D57
S_C0:7	D1_D41	D58
S_C0:6	D1_D36	D62
S_C0:5	D1_D42	D63
S_C0:4	D1_D43	D61
S_C0:3	D1_D47	---
S_C0:2	D1_D44	---
S_C0:1	D1_D46	---
S_C0:0	D1_D45	---

Table 3-10 lists the channel assignments for the Extend group and the corresponding support channel.

Table 3-10: Slave Module 32-channel Extend assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_E3:7	D2_D35	STPCLK
S_E3:6	D2_D32	BPM4
S_E3:5	D2_D37	BPM0
S_E3:4	D2_D33	Reserved
S_E3:3	D2_D38	BPM5
S_E3:2	D2_D39	IERR
S_E3:1	D2_D34	MCERR
S_E3:0	D2_D41	---
S_E2:7	D2_D36	BPM1
S_E2:6	D2_D42	---
S_E2:5	D2_D43	---
S_E2:4	D2_D47	---
S_E2:3	D2_D40	---
S_E2:2	D2_D44	---
S_E2:1	D2_D45	---
S_E2:0	D2_D46	---
S_E1:7	D3_D35	---
S_E1:6	D3_D32	INIT
S_E1:5	D3_D37	BPM3
S_E1:4	D3_D33	BINIT
S_E1:3	D3_D38	RSP
S_E1:2	D3_D39	AP0
S_E1:1	D3_D34	---
S_E1:0	D3_D41	BPM2
S_E0:7	D3_D36	---
S_E0:6	D3_D42	---
S_E0:5	D3_D43	---
S_E0:4	D3_D47	---
S_E0:3	D3_D40	---

Table 3-10: Slave Module 32-channel Extend assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S_E0:2	D3_D44	---
S_E0:1	D3_D45	---
S_E0:0	D3_D46	---

Table 3-11 lists the channel assignments for the Address group and the corresponding support channel.

Table 3-11: Slave 2 Module 32-channel Address assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_A3:7	D2_D01	(not available)
S2_A3:6	D2_D03	(not available)
S2_A3:5	D2_D09	(not available)
S2_A3:4	D2_D06	(not available)
S2_A3:3	D2_D02	(not available)
S2_A3:2	D2_D07	(not available)
S2_A3:1	D2_D15	(not available)
S2_A3:0	D2_D12	(not available)
S2_A2:7	D2_D08	(not available)
S2_A2:6	D2_D13	(not available)
S2_A2:5	D2_D14	(not available)
S2_A2:4	D2_D10	(not available)
S2_A2:3	D2_D00	(not available)
S2_A2:2	D2_D04	(not available)
S2_A2:1	D2_D11	(not available)
S2_A2:0	D2_D05	(not available)
S2_A1:7	D3_D01	(not available)
S2_A1:6	D3_D03	(not available)
S2_A1:5	D3_D09	(not available)
S2_A1:4	D3_D06	(not available)
S2_A1:3	D3_D02	(not available)

Table 3- 11: Slave 2 Module 32-channel Address assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_A1:2	D3_D07	(not available)
S2_A1:1	D3_D15	(not available)
S2_A1:0	D3_D12	(not available)
S2_A0:7	D3_D08	(not available)
S2_A0:6	D3_D13	(not available)
S2_A0:5	D3_D14	(not available)
S2_A0:4	D3_D10	(not available)
S2_A0:3	D3_D00	(not available)
S2_A0:2	D3_D04	(not available)
S2_A0:1	D3_D11	(not available)
S2_A0:0	D3_D05	(not available)

Table 3-12 lists the channel assignments for the Data group and the corresponding support channel.

Table 3- 12: Slave 2 Module 32-channel Data assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_D3:7	D0_D00	(not available)
S2_D3:6	D0_D02	(not available)
S2_D3:5	D0_D03	(not available)
S2_D3:4	D0_D09	(not available)
S2_D3:3	D0_D06	(not available)
S2_D3:2	D0_D07	(not available)
S2_D3:1	D0_D15	(not available)
S2_D3:0	D0_D12	(not available)
S2_D2:7	D0_D08	(not available)
S2_D2:6	D0_D13	(not available)
S2_D2:5	D0_D14	(not available)
S2_D2:4	D0_D10	(not available)
S2_D2:3	D0_D01	(not available)

Table 3-12: Slave 2 Module 32-channel Data assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_D2:2	D0_D04	(not available)
S2_D2:1	D0_D11	(not available)
S2_D2:0	D0_D05	(not available)
S2_D1:7	D1_D00	(not available)
S2_D1:6	D1_D02	(not available)
S2_D1:5	D1_D03	(not available)
S2_D1:4	D1_D09	(not available)
S2_D1:3	D1_D06	(not available)
S2_D1:2	D1_D07	(not available)
S2_D1:1	D1_D15	(not available)
S2_D1:0	D1_D12	(not available)
S2_D0:7	D1_D08	(not available)
S2_D0:6	D1_D13	(not available)
S2_D0:5	D1_D14	(not available)
S2_D0:4	D1_D10	(not available)
S2_D0:3	D1_D01	(not available)
S2_D0:2	D1_D04	(not available)
S2_D0:1	D1_D11	(not available)
S2_D0:0	D1_D05	(not available)

Table 3-13 lists the channel assignments for the Control group and the corresponding support channel.

Table 3-13: Slave 2 Module 32-channel Control assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_C3:7	D0_D23	(not available)
S2_C3:6	D0_D16	(not available)
S2_C3:5	D0_D29	(not available)
S2_C3:4	D0_D21	(not available)
S2_C3:3	D0_D22	(not available)

Table 3-13: Slave 2 Module 32-channel Control assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_C3:2	D0_D17	(not available)
S2_C3:1	D0_D20	(not available)
S2_C3:0	D0_D19	(not available)
S2_C2:7	D0_D18	(not available)
S2_C2:6	D0_D25	(not available)
S2_C2:5	D0_D31	(not available)
S2_C2:4	D0_D26	(not available)
S2_C2:3	D0_D28	(not available)
S2_C2:2	D0_D24	(not available)
S2_C2:1	D0_D30	(not available)
S2_C2:0	D0_D27	(not available)
S2_C1:7	D1_D23	(not available)
S2_C1:6	D1_D16	(not available)
S2_C1:5	D1_D29	(not available)
S2_C1:4	D1_D21	(not available)
S2_C1:3	D1_D22	(not available)
S2_C1:2	D1_D17	(not available)
S2_C1:1	D1_D20	(not available)
S2_C1:0	D1_D19	(not available)
S2_C0:7	D1_D18	(not available)
S2_C0:6	D1_D25	(not available)
S2_C0:5	D1_D31	(not available)
S2_C0:4	D1_D26	(not available)
S2_C0:3	D1_D28	(not available)
S2_C0:2	D1_D24	(not available)
S2_C0:1	D1_D30	(not available)
S2_C0:0	D1_D27	(not available)

Table 3-14 lists the channel assignments for the Extended group and the corresponding support channel.

Table 3-14: Slave 2 Module 32-channel Extended assignments

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_E3:7	D2_D23	(not available)
S2_E3:6	D2_D29	(not available)
S2_E3:5	D2_D28	(not available)
S2_E3:4	D2_D21	(not available)
S2_E3:3	D2_D22	(not available)
S2_E3:2	D2_D17	(not available)
S2_E3:1	D2_D20	(not available)
S2_E3:0	D2_D19	(not available)
S2_E2:7	D2_D18	(not available)
S2_E2:6	D2_D25	(not available)
S2_E2:5	D2_D31	(not available)
S2_E2:4	D2_D26	(not available)
S2_E2:3	D2_D16	(not available)
S2_E2:2	D2_D24	(not available)
S2_E2:1	D2_D30	(not available)
S2_E2:0	D2_D27	(not available)
S2_E1:7	D3_D23	(not available)
S2_E1:6	D3_D29	(not available)
S2_E1:5	D3_D28	(not available)
S2_E1:4	D3_D21	(not available)
S2_E1:3	D3_D22	(not available)
S2_E1:2	D3_D17	(not available)
S2_E1:1	D3_D20	(not available)
S2_E1:0	D3_D19	(not available)
S2_E0:7	D3_D18	(not available)
S2_E0:6	D3_D25	(not available)
S2_E0:5	D3_D31	(not available)
S2_E0:4	D3_D26	(not available)

Table 3- 14: Slave 2 Module 32-channel Extended assignments (cont.)

Logic analyzer acquisition channel	IA32G7 support channel name	IA32G7_T support channel name
S2_E0:3	D3_D16	(not available)
S2_E0:2	D3_D24	(not available)
S2_E0:1	D3_D30	(not available)
S2_E0:0	D3_D27	(not available)

Table 3-15 lists signals not available on the probe adapter. If you want access to these signals you must find another way to probe them.

Table 3- 15: Signals not available on the probe adapter

Signal name
BSEL[1:0]
COMP[1:0]
GLTREF[3:0]
ODTEN#
PWRGOOD
SKTOCC#
TESTHI[10:0]
THERMDA
TMERMDC
VCC
VCCA
VCCIOPLL
VCCSENSE
VCCVIDPRG
VID[4:0]
VSSA
VSSSENSE

WARNING

The following servicing instructions are for use only by qualified personnel. To avoid injury, do not perform any servicing other than that stated in the operating instructions unless you are qualified to do so. Refer to all safety summaries before performing any service.





Maintenance

Maintenance

This section contains fuse information for the TMSSN1 478 Pin Socket probe adapter.

The TMSSN1 478 Pin Socket probe adapter, consists of the probe head, cables, and preprocessor unit, and does not require scheduled or periodic maintenance. However, to keep good electrical contact and efficient heat dissipation, keep the probe adapter free of dirt, dust, and contaminants. When not in use, store the probe adapter in the original shipping bags and shipping boxes (see *Storage* on page 1-19).



WARNING. *To prevent personal injury or damage to the preprocessor unit, there are no operator serviceable parts inside the cover of the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only.*

Fuses

There are four fuses in the preprocessor unit:

- Logic board:
 - F1, Part Number 159-0059-00; 5A, 125 V Fast blow
 - F2 and F3, Part Number 159-5015-00; 10 A, 125 V Fast blow
- Power Supply (1)
 - (1) Part Number 159-5015-00; 10 A, 125 V Fast blow

Removal and Installation Procedures

This section contains removal and installation procedures for the cables in the TMSSN1 478 Pin Socket probe adapter.



WARNING. To prevent personal injury or damage to the preprocessor unit, cables and fans should be replaced by qualified service personnel only.

There are no operator serviceable parts inside the cover of the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only.

Removing the Cables

The information in this section is designed for use by qualified service personnel. Read the Safety Summary at the front of this manual before attempting any procedures in this section.

Tools Required

Following are the tools required for the removal procedures:

- POZIDRIV screwdriver (PZ2) to remove the bottom cover
- Flat-bladed screwdriver to loosen the thumbscrews on the paddle boards, and remove the snap rivets from the fan guards and probe head cables)

Please read the following general instructions before removing parts.

Removing Cables from the Preprocessor Unit

You may need to remove the cables from the preprocessor unit to exchange the probe head or to replace the cables. Follow these steps to remove the cables.



CAUTION. Static discharge can damage the microprocessor, the probe adapter, the probes, and the module. To prevent static damage, you must handle components only in a static-free environment.

Always wear a grounding wrist strap, heel strap, or similar device while handling the microprocessor and probe adapter.

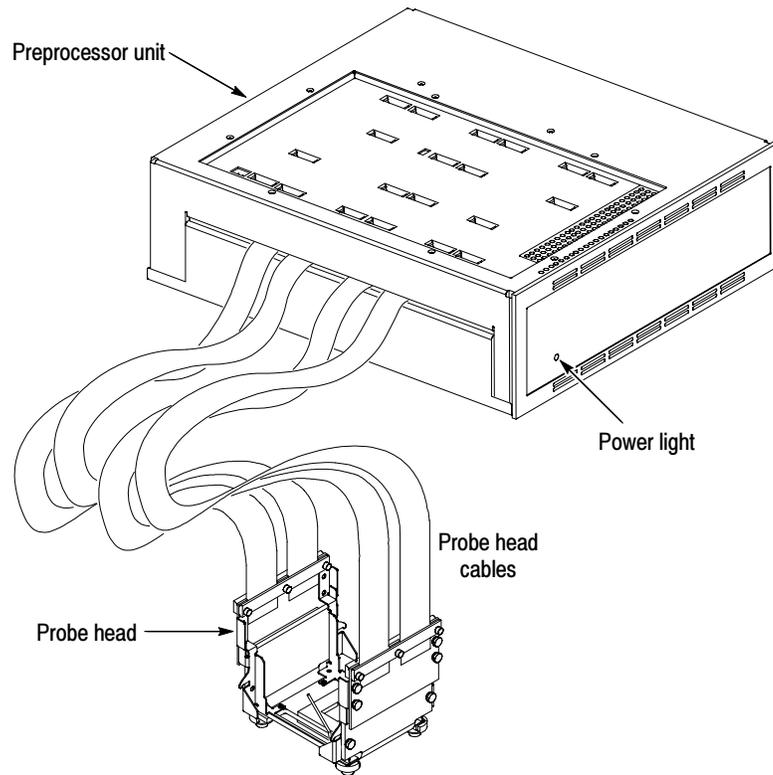


Figure 4-1: Probe head and preprocessor unit

1. Power off the preprocessor unit. The power switch is located on the back of the preprocessor unit (see Figure 4-2).
2. Unplug the AC power cord from the preprocessor unit.



Figure 4-2: Remove AC power cord

3. If necessary, remove the P6434 probes, and turn the preprocessor unit over onto its topside (see Figure 4-3). To disconnect the P6434 probes, refer to the *P6434 Mass Termination Probe* manual, Tektronix part number 070-9793-XX, for more information on mechanical specifications.

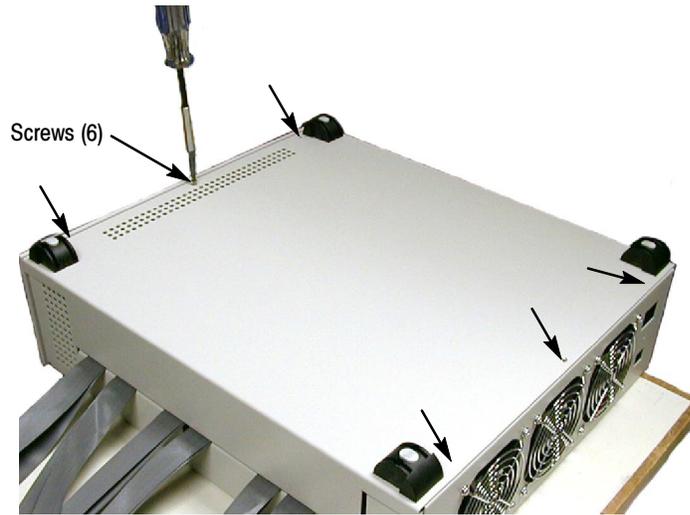


Figure 4-3: Remove the attaching screws



WARNING. To prevent serious injury or death, check that the power cord is disconnected from the line voltage source.

4. With a POZIDRIV screwdriver (PZ2), remove the screws and bottom cover from the preprocessor unit, and set them aside (see Figure 4-3 and 4-4).

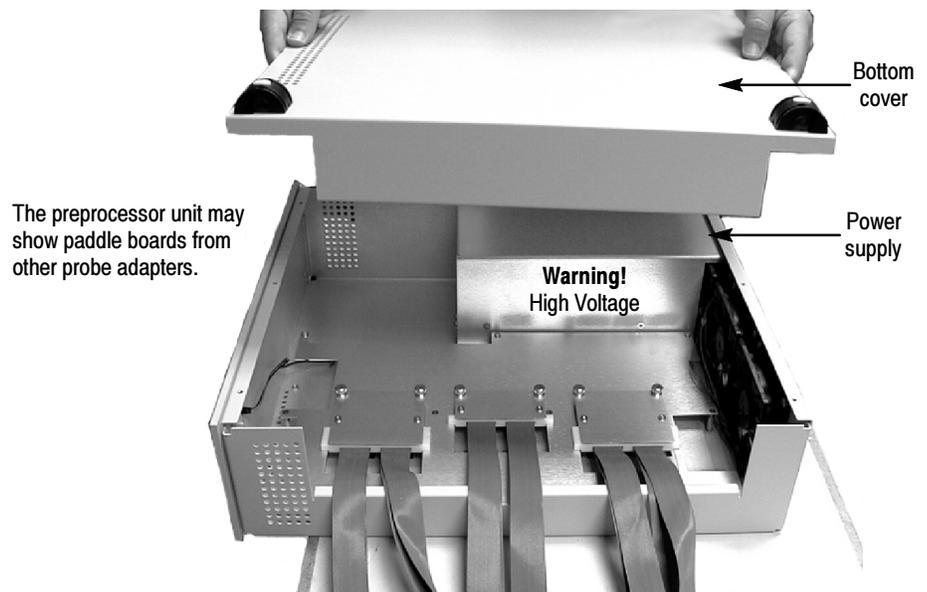


Figure 4-4: Remove the bottom cover

5. With a flat-bladed screwdriver, loosen the captive thumb screws from the Logic board cover plate, and disconnect each paddle board from the bottom of the Logic board (see Figure 4-5).

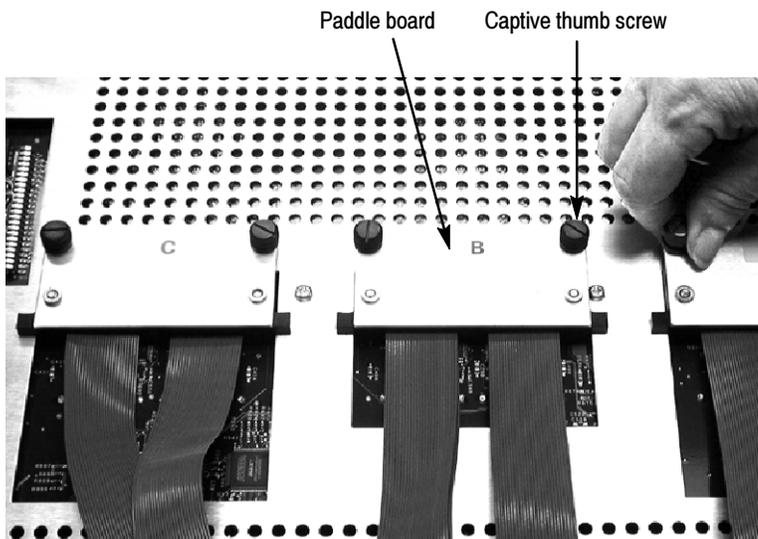


Figure 4-5: Remove the cables from the logic board

Removing the Cables from the Probe Head

For probe head and cable exchange you do not need to disconnect the cables from the probe head. If you need to disconnect the cables from the probe head for other applications, continue with the following steps:

NOTE. You must remove the heat sink and fan assembly before removing the probe head cable ends. Complete Steps 1 through 6 starting on page 1-13, and then continue with the following steps.

1. Remove the rivets from the probe head cable end (see Figure 4-6):
 - a. Using a flat-bladed screwdriver, pry the rivet halfway out of the rivet holder.
 - b. Remove the rivet and its holder from the probe head circuit board.

NOTE. To prevent a loose-rivet fastener, you may want to replace the rivets after each removal and replacement operation. The rivets also become difficult to reinsert after one use because of an expanded rivet tip.

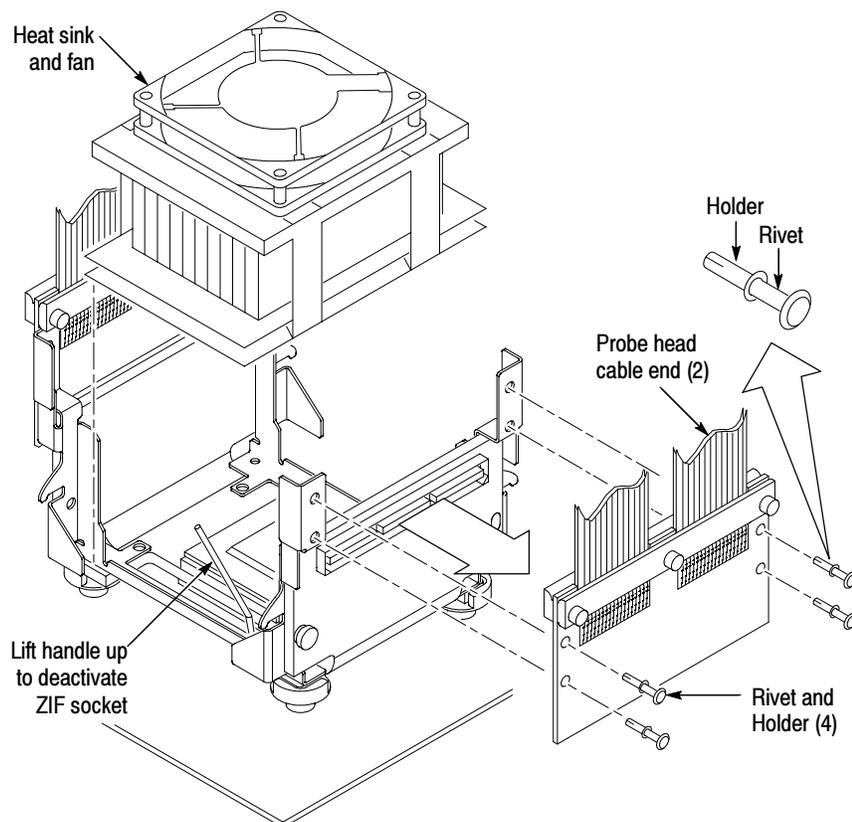


Figure 4-6: Remove the cables from the probe head

2. Repeat step 1 for the other cable.

To ship the probe head and cables, see *Shipping the Probe Head and Cables* on page 4-10.

Replacing the Cables

To replace the cables between the preprocessor unit and the probe head, you must have already completed all the previous steps (removing the cables from the preprocessor unit and probe head) before continuing with steps 1 through 9:

Probe-head cable end.

1. Remove the screws from the strain-relief bars on the probe-head cable end (see Figure 4-7). Set the strain-relief bars and screws aside.
2. Discard the old cable and retrieve the new cable.
3. Align the strain-relief bar holes and the probe-head cable-end holes.
4. With the new cable between the two strain-relief bars, reattach the screws to the strain-relief bars (see Figure 4-7) using a flat-bladed screwdriver.

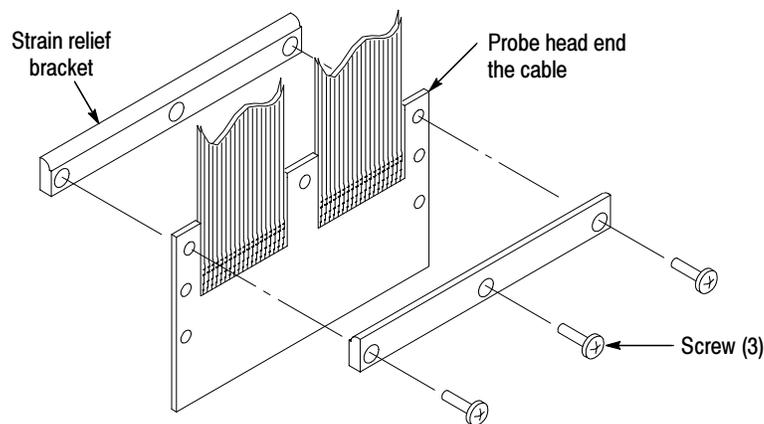
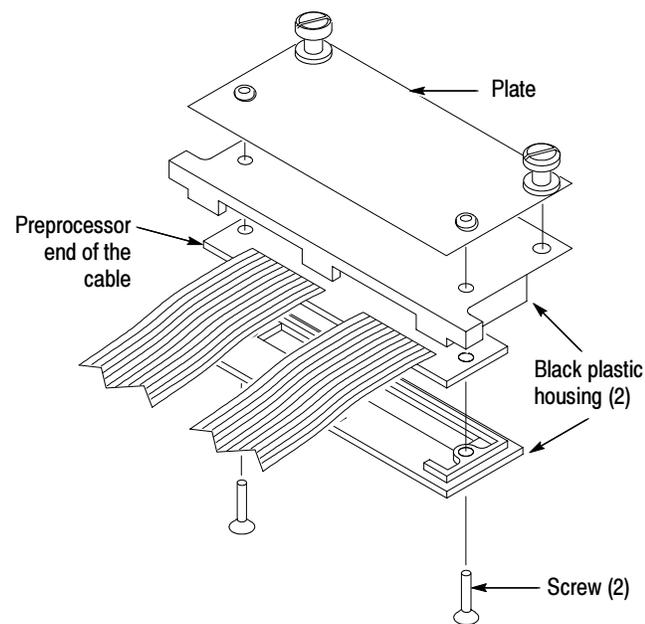


Figure 4-7: Probe-head cable end

Preprocessor cable end.

5. Remove the screws that hold the black plastic housing to the plate (see Figure 4-8). Set the screws aside.
6. Snap open the black plastic housing holding the cable. Set the housings aside.
7. Place the preprocessor end of the new cable between the housing covers and snap the housings closed around the cable.

**Figure 4-8: Preprocessor cable end**

NOTE. Check that all four corners on the black plastic housing are squarely seated in each corner (see Figure 4-9).

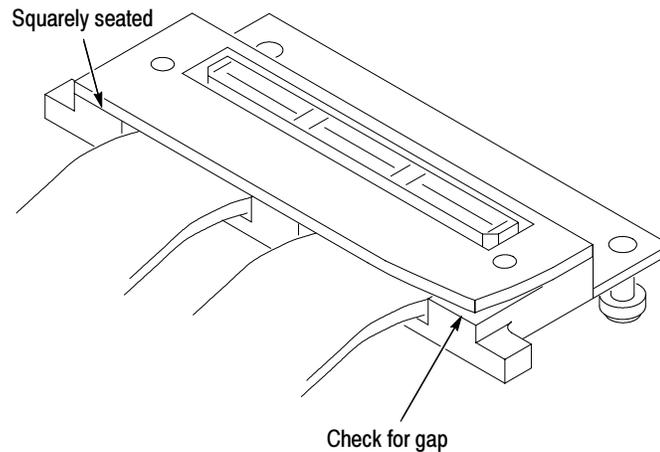


Figure 4-9: Check corners

8. Using the screws, attach the black plastic housing to the plate.
9. Repeat steps 1 through 9 for the other cable.

To ship the cables and probe head, see *Shipping the Probe Head and Cables* on page 4-10. To reconnect the cables to the preprocessor and probe head, see *Reconnecting the Cables to the Probe Head* on page 4-15.

Shipping the Probe Head and Cables

To commercially transport the TMSSN1 478 Pin Socket probe head assembly, package as follows:

1. Use a double-walled, corrugated cardboard shipping carton with an inside diameter of three inches (7.62 cm) larger on each side and top than the probe head assembly.
2. If you are shipping the probe head assembly to a Tektronix service center for Warranty service, attach a tag to the probe head showing the following:
 - Owner's name and address
 - Name of a person who can be contacted
 - Probe adapter type and serial number

■ Description of the problem

3. Using antistatic nongenerating tape, tape the probe head pin-protector board onto the pin header.
4. Wrap pink poly (antistatic) bubble wrap around the probe head.
5. Wrap the three paddle boards in pink poly (antistatic) bubble wrap or antistatic bags.



CAUTION. *To avoid breaking the cable connections, you must handle the cables carefully to reduce stress on the cable connections. If you need to fold a cable, use a minimum of a 0.25 in (0.64 cm) radius at the fold.*

6. Place the probe head and cables in the cardboard carton on top of the packing material.
7. Tightly pack dunnage or urethane foam between the card board carton and the probe adapter (allowing three inches (7.62 cm) on each side) to cushion the probe adapter.
8. Close and tape the cardboard carton.

Reinstalling the Cables

Reinstalling the Cables on the Preprocessor Unit

You may need to reinstall the cables on the preprocessor unit. Follow these steps:

1. Power off the preprocessor unit and disconnect the power cord (see Figure 4-10 for power switch and power cord locations). Check that the P6434 probes are removed from the top of the preprocessor unit before turning it over.
2. Turn the preprocessor unit over.



CAUTION. Static discharge can damage the microprocessor, the probe adapter, the probes, and the module. To prevent static damage, you must handle components only in a static-free environment.

Always wear a grounding wrist strap, heel strap, or similar device while handling the microprocessor and probe adapter.



Figure 4-10: Power switch location



WARNING. To prevent serious injury or death, disconnect the power cord from the preprocessor unit.

3. With a POZIDRIV® screwdriver (PZ2), remove the bottom cover.
4. Dress the cables through the notched side of the preprocessor unit (see Figure 4-11).

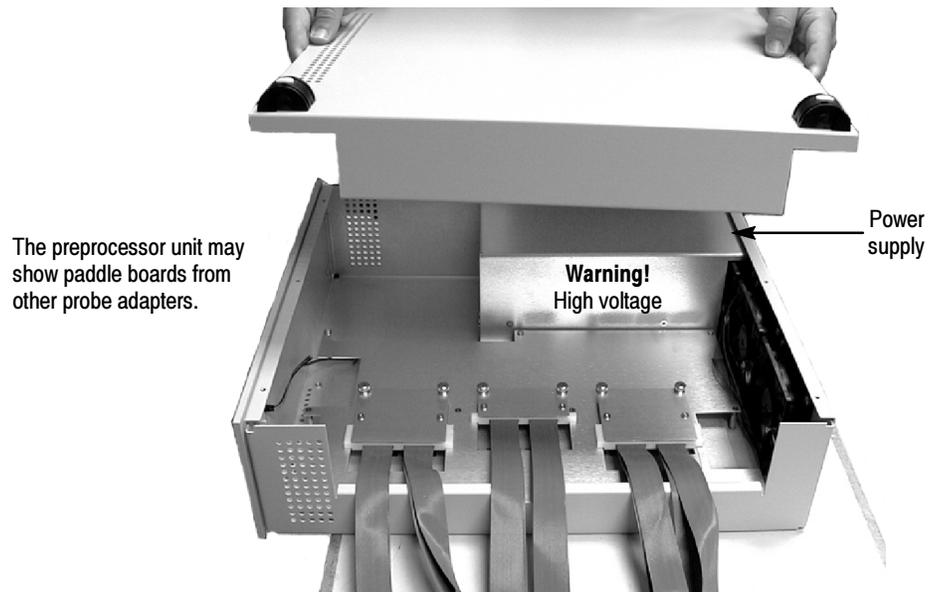


Figure 4-11: Dress the cables through the side opening

5. Connect each cable housing to the corresponding location (A-A, B-B, C-C) on the bottom of the Logic board. Secure the cable housings to the Logic board cover plate using the captive thumb screws (see Figure 4-12).

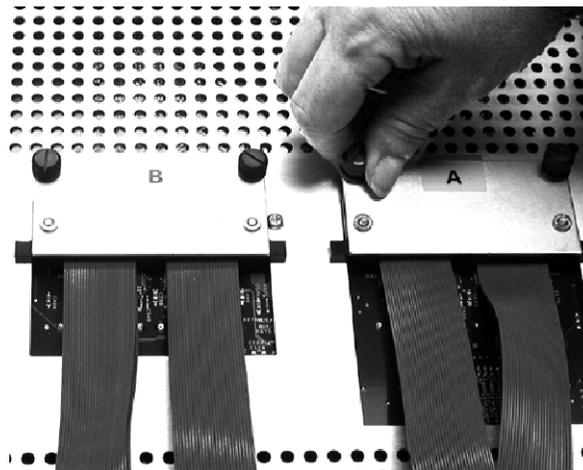


Figure 4-12: Attach the cables to the logic board cover plate

6. With a POZIDRIV® screwdriver (PZ2), attach the bottom cover to the preprocessor unit using the attaching screws (see Figure 4-13).

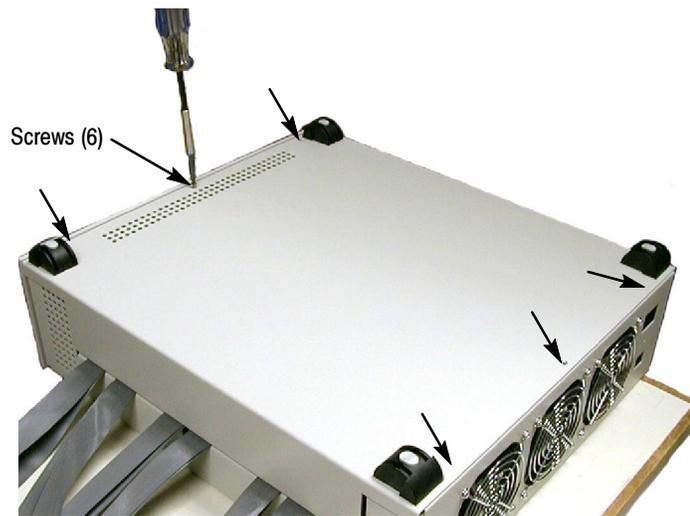


Figure 4-13: Attach the bottom cover

7. Turn the preprocessor unit over.
8. Reconnect the P6434 probes (see pages 1-10 through 1-14) to the top of the preprocessor unit.
9. Plug the AC power cord into the back of the preprocessor unit.

Reconnecting the Cables on the Probe Head

If you need to reconnect the cables to the probe head continue with the following steps:

1. Align the rivet holes on the probe-head end of the cable with the probe head.
2. Attach the rivets:
 - a. Pull the center rivet pin halfway out of the rivet assembly.
 - b. Press the rivet assembly through the rivet holes of the probe head and circuit board.

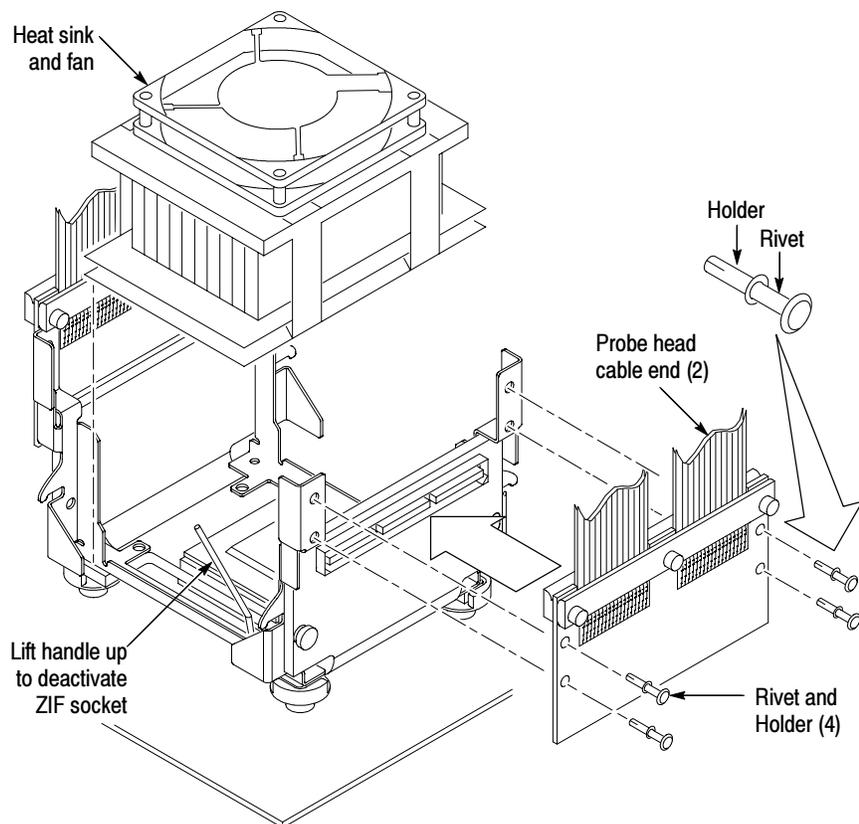


Figure 4-14: Place the heat sink on the probe head

3. Repeat steps 1 and 2 for the other cable.

NOTE. To prevent a lose-rivet fastener, you may want to replace the rivets after each removal and replacement operation. The rivets also become difficult to reinsert after one use because of an expanded rivet tip.

After reconnecting the cables, you may need to complete Steps 9 through 12 starting on page 1-10 to replace the microprocessor, and heat sink and fan assembly.

Removing and Installing a Fan

You may need to remove and install a fan in the preprocessor unit for repair purposes. To replace a fan follow these steps:

If all three fans are not working, check that the power cord is connected to the preprocessor unit or the electrical outlet. If the power cord is connected, contact a Tektronix service representative.



CAUTION. Static discharge can damage the microprocessor, the probe adapter, the probes, and the module. To prevent static damage, you must handle components only in a static-free environment.

Always wear a grounding wrist strap, heel strap, or similar device while handling the microprocessor and probe adapter.

1. Power off the preprocessor unit. The power switch is located on the back of the preprocessor unit (see Figure 4-15). To disconnect the P6434 probes, refer to the *P6434 Mass Termination Probe* manual, Tektronix part number 070-9793-XX, for more information on mechanical specifications.
2. Unplug the AC power cord from the preprocessor unit.



Figure 4-15: Power switch and AC power cord locations



WARNING. To prevent serious injury or death, check that the power cord is disconnected from the preprocessor unit.

3. Turn the preprocessor unit over, and remove the screws (see Figure 4-16) and bottom cover from the preprocessor unit. Set the bottom cover aside.

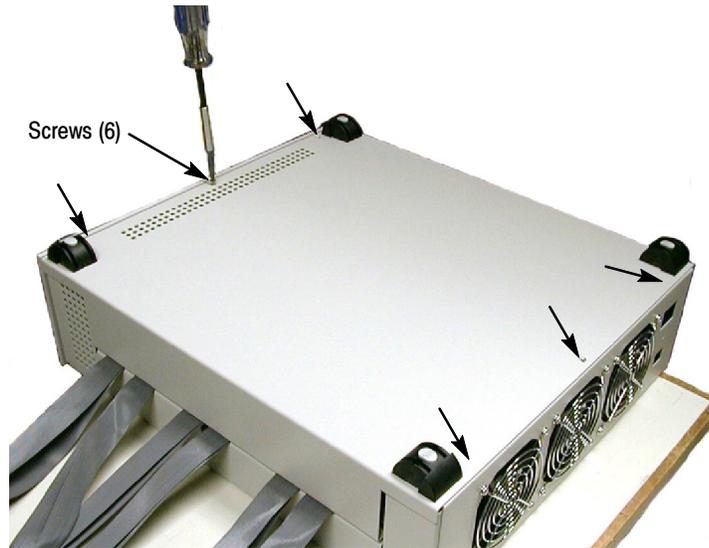


Figure 4-16: Remove the attaching screws

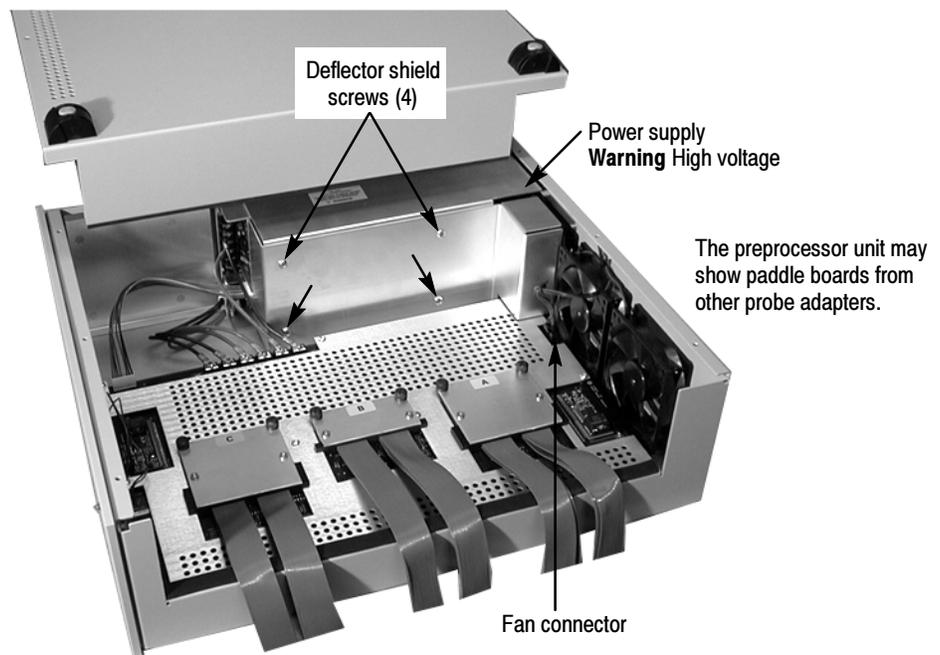


Figure 4-17: Remove the bottom cover

Removing a Fan

4. If you are replacing the fan behind the power supply, remove the screws and deflector shield from the power supply shield. If not, skip to step 5.
5. Disconnect the fan connector from the logic-board connector by pressing the release tab on the fan connector.

6. Cut the two cable ties that bundle the fan wires together.

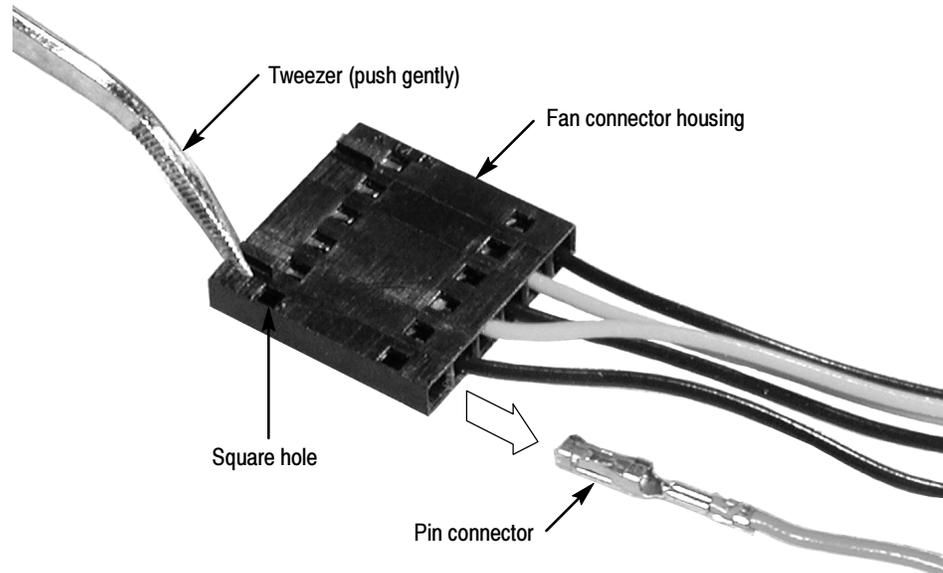


Figure 4-18: Remove the pin connectors

7. Remove the fan pin from the fan connector housing (at the logic board connector side) by following steps a through c:
 - a. Using a dental pick (or tweezer point), place the tool point in the top square hole of the fan connector housing.
 - b. Gently press and slide the pin a little with the tool point. This small movement releases the pin from the fan connector housing.



CAUTION. To prevent damage to the fan pin and the fan connector, do not gouge at the pin with the tool point.

- c. Gently slide the pin from the fan connector housing using your hand. The pin removal procedure may take a couple of tries, unless you are experienced with pin removal.
8. Remove the rivets, fan guard, and fan from the preprocessor unit. When removing the rivets, pull the rivet center pin halfway out and then remove the whole rivet assembly.

NOTE. To prevent a loose-rivet fastener, you may want to replace the rivets after each removal and replacement operation. The rivets also become difficult to reinsert after one use because of an expanded rivet tip.

9. Remove the fan from the preprocessor unit.

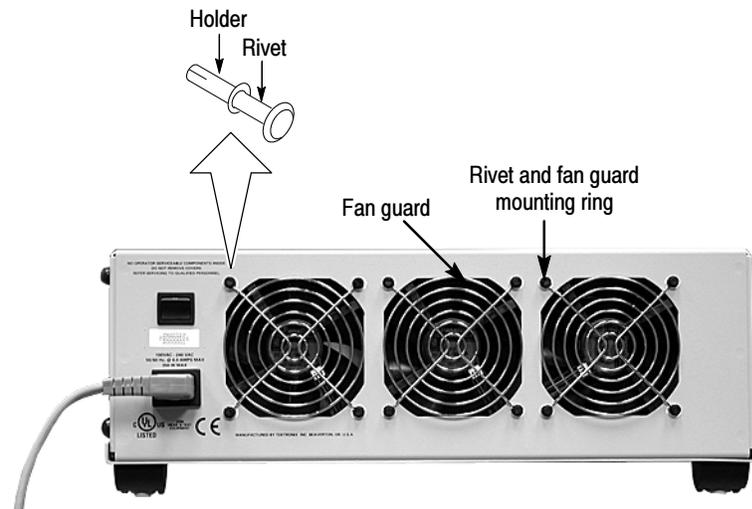


Figure 4-19: Back of the preprocessor unit

Installing a Fan

10. Position the writing on the fan hub to point toward the back of the preprocessor unit.
11. With the rivet pin pulled halfway out of the rivet assembly, insert the rivet assembly through the fan grill mounting ring, preprocessor hole, and fan hole (see Figure 4-19).
12. Press the rivet pin into the rivet assembly.
13. Repeat steps 11 and 12 for the other rivet installations.
14. Slide and snap the fan pin into the fan connector housing. Gently pull on the fan pin to insure the fan pin has seated in the fan connector.

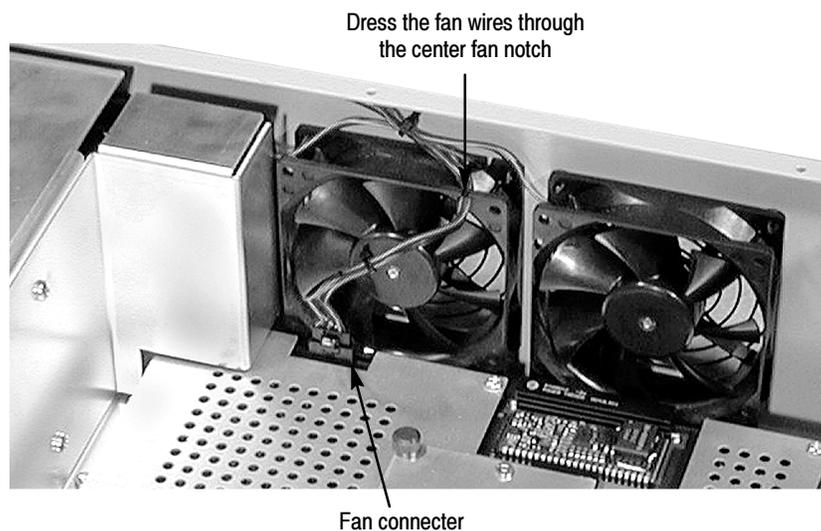


Figure 4-20: Location of fan connector

15. Connect the fan connector to the logic-board connector (see Figure 4-17 on page 4-17).
16. Dress the fan wire over the top of the fans and through the notch on the top of the center fan (see Figure 4-20).
17. Attach two cable ties to the bundle of fan wires securing the fan wires in place.
18. Attach the bottom cover to the preprocessor unit using the attaching screws (see Figure 4-16 on page 4-17).
19. Turn the preprocessor unit right-side up.
20. Plug the AC power cord into the preprocessor unit.
21. Power on the preprocessor unit and check that the fans are rotating.

If the replaced fan is not working:

- Check that the fan pin is seated properly in the fan connector housing.
- Check that the fan connector has snapped in place.



Replaceable Parts List

Replaceable Parts List

This section contains a list of the replaceable components or modules for the TMSSN1 478 Pin Socket Hardware Support package.

Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest 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 you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

Module Servicing

Modules can be serviced by selecting one of the following three options. Contact your local Tektronix service center or representative for repair assistance.

Module Exchange. In some cases you may exchange your module for a remanufactured module. These modules cost significantly less than new modules and meet the same factory specifications. For more information about the module exchange program, call 1-800-833-9200. Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices: www.tektronix.com.

Module Repair and Return. You may ship your module to us for repair, after which we will return it to you.

New Modules. You may purchase replacement modules in the same way as other replacement parts.

Using the Replaceable Parts List

This section contains a list of the mechanical and/or electrical components that are replaceable for the TMSSN1 478 Pin Socket Hardware Support package. Use this list to identify and order replacement parts. The following table describes each column in the parts list.

Parts list column descriptions

Column	Column name	Description
1	Figure & index number	Items in this section are referenced by figure and index numbers to the exploded view illustrations that follow.
2	Tektronix part number	Use this part number when ordering replacement parts from Tektronix.
3 and 4	Serial number	Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entry indicates the part is good for all serial numbers.
5	Qty	This indicates the quantity of parts used.
6	Name & description	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.
7	Mfr. code	This indicates the code of the actual manufacturer of the part.
8	Mfr. part number	This indicates the actual manufacturer's or vendor's part number.

Abbreviations Abbreviations conform to American National Standard ANSI Y1.1-1972.

Mfr. Code to Manufacturer Cross Index The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.

Manufacturers cross index

Mfr. code	Manufacturer	Address	City, state, zip code
0KB01	STAUFFER SUPPLY CO	810 SE SHERMAN	PORTLAND, OR 97214-4657
5Y400	TRIAx METAL PRODUCTS INC	1880 SW MERLO DRIVE	BEAVERTON, OR 97006
60381	PRECISION INTERCONNECT CORP.	16640 SW 72ND AVE	PORTLAND, OR 97224
73893	MICRODOT INC	50631 E RUSSELL SCHMIDT BLVD	MT CLEMENS, MI 48045
74594	COMPONENT RESOURCES INC	BUSSMAN PARTS C/O CASEY LAKEY 14525 SW WALKER ROAD	BEAVERTON, OR 97006
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001
93907	CAMCAR DIV OF TEXTRON INC	ATTN: ALICIA SANFORD 516 18TH AVE	ROCKFORD, IL 611045181
TK1943	NEILSEN MANUFACTURING INC	3501 PORTLAND RD NE	SALEM, OR 97303
06915	RICHCO	5825 N TRIPP AVE P.O. BOX 804238	CHICAGO, IL 60646
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001
TK0588	UNIVERSAL PRECISION PRODUCT	1775 NW CORNELIUS PASS RD	HILLSBORO, OR 97124

Replaceable parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
5-1-1	671-5438-00			1	CIRCUIT BD ASSY:PROBE HEAD,259-0172-00 WIRED,TMSSN1	80009	671-5438-00
-2	672-1648-00 †			1	CIRCUIT BD ASSY:CABLE INTERFACE 671-5395-00 & INTERFACE SHORT 671-5396-00,W/4 4.0 FT COAX CABLES	60381	672-1648-00
-3	672-1649-00			1	CIRCUIT BD ASSY:CABLE INTERFACE 671-5395-00 & (2) INTERFACE SHORT 671-5396-00,W/4 4.0 FT COAX CA	60381	672-1649-00
-4	211-0012-00			6	SCREW,MACHINE:4-40 X 0.375,PNH,STL CD PL,POZ	93907	ORDER BY DESCRIPTION
-5	343-1670-00			2	CLAMP:STRAIN RELIEF,INNER,ABS PLASTIC,TMSSN1	5Y400	343-1670-00
-6	407-4874-00			2	BRACKET:HEATSINK RETAINER,SST	5Y400	407-4874-00
-7	344-0589-00			2	CLIP:SPRING,PROBERETAINER,STAINLESSSTEEL,TMSSN1	5Y400	344-0589-00
-8	210-0127-00			8	RIVET,SNAP:0.118 TO 0.157 THICK,NYLON,BLACK	06915	SR-3055B
-9	343-1671-00			2	CLAMP:STRAIN RELIEF,OUTER,ABS PLASTIC,TMSSN1	5Y400	343-1671-00
-10	210-0196-00			8	RIVET,SNAP:0.140L X 0.120,BLACK, NYLON	06915	SR-3035B
-11	214-4995-00			4	FASTENER,CLIP:SST,AISI 303 (BOARD TO BOARD),TMSSN1	TK0588	214-4995-00
-12	211-0001-00			4	SCREW,MACHINE:2-56 X 0.25,PNH,STL CD PL,POZ	93907	ORDER BY DESCRIPTION
-13	386-7305-00			3	PLATE,SUPPORT:SHORT INTERFACE,AL,TMSSK1	5Y400	386-7305-00
-14	380-1146-00			3	HOUSING,BOTTOM:SHORT INTERFACE,PLASTIC,TMSSK1	5Y400	380-1146-00
-15	211-0512-00			4	SCREW,MACHINE:6-32 X 0.5,FLH,100 DEG,STL CD PL POZ	73893	ORDER BY DESCRIPTION
-16	380-1148-00			3	HOUSING,TOP:SHORT INTERFACE,PLASTIC,TMSSK1	5Y400	380-1148-00
STANDARD ACCESSORIES							
	071-0896-01			1	MANUAL,TECH:INSTRUCTION,478 PIN SOCKET HARDWARE SUPPORT,TMSSN1,DP	TK2548	071-0896-01
	161-0104-00			1	CA ASSY,PWR:3,18 AWG,98 L,250V/10AMP,98 INCH,RTANG,IEC320,RCPT X STR,NEMA 15-5P,W/CORD GRIP	S3109	ORDER BY DESCRIPTION
	214-4999-00			1	HEAT SINK,SEMIC:IC,PROCESSOR,FOLDED FIN HEAT SINK,W/FAN,FOR INTEL PENTIUM 4 WILLAMETTE PROCESSOR	0C5R7	ITTS-1028
OPTIONAL ACCESSORIES							
	-----			1	P6434 MASS TERMINATION PROBE	80009	ORDER BY DESCRIPTION
	161-0104-05			1	CA ASSY,PWR:3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,AUSTRALIA,SAFTEY CONTROLLED	TK1373	161-0104-05
	161-0104-06			1	CA ASSY,PWR:3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,EUROPEAN,SAFTEY CONTROLLED	TK1373	ORDER BY DESCRIPTION
	161-0104-07			1	CA ASSY,PWR:3,1.0MM SQ,240V/10A,2.5 METER,RTANG,IEC320,RCPT X 13A,FUSED,UK PLUG,(13A FUSE),UK PLUG,(13A FUSE),UNITED KINGDOM,SAFTEY CONTROL	TK2541	ORDER BY DESCRIPTION

Replaceable parts list (cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discontinued	Qty	Name & description	Mfr. code	Mfr. part number
	161-0167-00			1	CA ASSY,PWR:3,0.75MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,SWISS,NO CORD GRIP,SAFTEY CONTR	S3109	ORDER BY DESCRIPTION

* Check the *P6434 Probe* manual for detailed replaceable part number information.

† Replace the snap rivets whenever you replace the cable assembly.

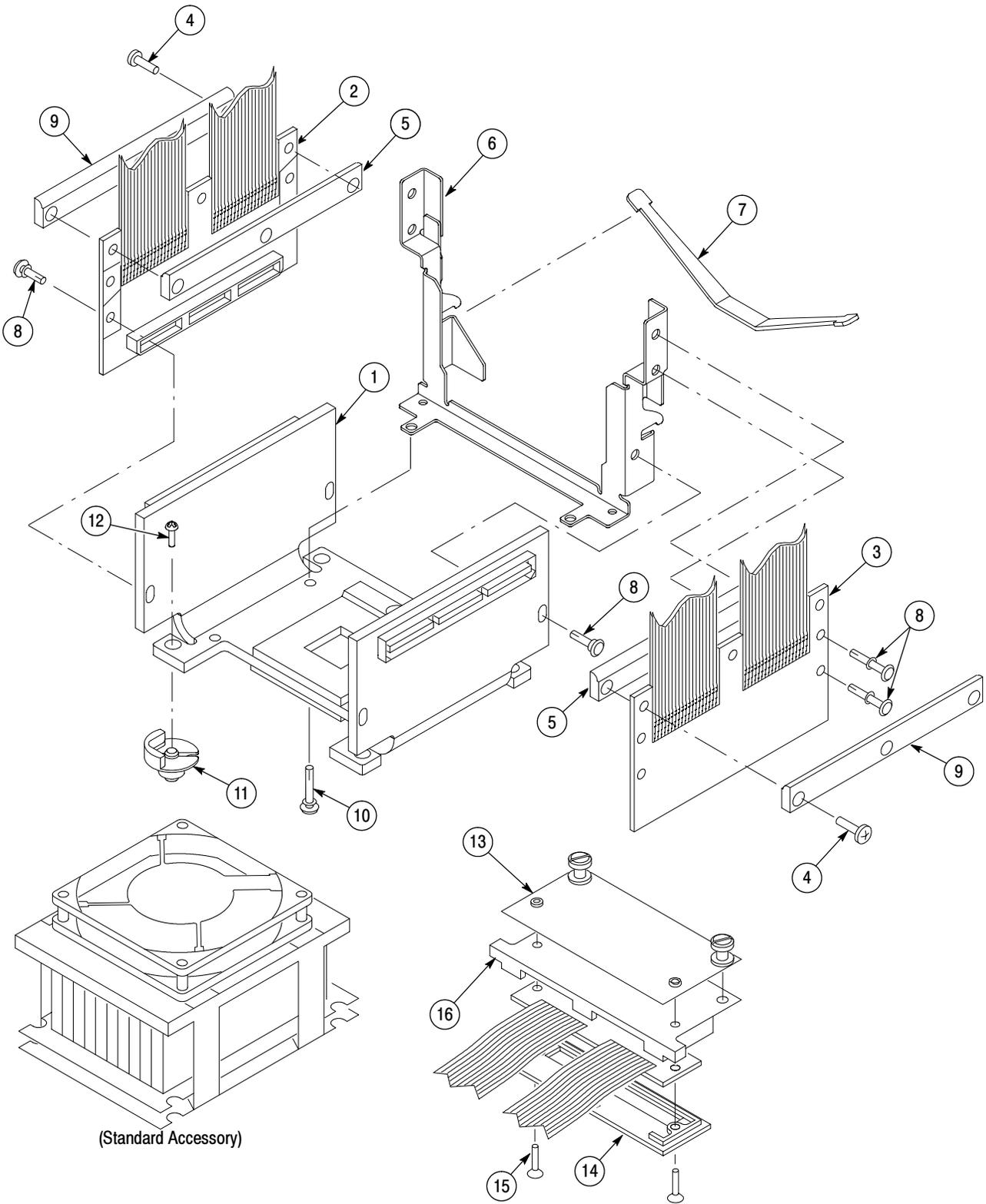


Figure 5-1: 478 Pin Socket probe adapter exploded view

Replaceable parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discontinued	Qty	Name & description	Mfr. code	Mfr. part number
5-2-1	671-5337-00			1	CIRCUIT BD ASSY:LOGIC,MPGA 479 PIN,389-3206-00 WIRED,TMSSN1	80009	671-5337-00
-2	174-2699-00			1	CA,ASSY SP:DISCRETE,SLDR/CRIMP,26 AWG,10.0 L,1 X 2,0.1 CTR RCPT X GRN LED	TK1547	174-2699-00
-3	210-0390-00			12	RIVET,SNAP:0.501 LONG,WHEN INSTALLED,BLACK,NYLON,SR-4100B	06915	SR-4100B
-4	119-5832-00			1	FILTER,RFI:LINE FILTER,6A,50/60 HZ,115/260 VAC,LEAKAGE CURRENT 0.4MA AT 250VAC/60HZ,06GENG	0ADN8	06GENG3E
-5	260-1961-00			1	SWITCH,ROCKER:DPST,6(4)A,250V UL APVD	7W718	1802.1121
-6	212-0023-00			4	SCREW,MACHINE:8-32 X 0.375,PNH,STL CD PL,POZ	93907	ORDER BY DESCRIPTION
-7	348-0430-00			4	BUMPER,PLASTIC:POLYURETHANE,BLACK	2K262	ORDER BY DESCRIPTION
-8	131-4356-00			6	CONN,SHUNT:SHUNT/SHORTING,FEMALE,1 X 2,0.1 CTR,0.63 H,BLK,W/HANDLE,JUMPER,30 GOLD,	26742	9618-302-50
-9	119-5637-00			1	POWER SUPPLY:375W,CUSTOM AC-DC,85-264VRMS 47-63HZ IN,+5V@40A,5V@3A,+12V10A,12V@6A,ACTIVE PFC,	54407	PFC375-4000
-10	211-0538-00			6	SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG,STL CD PL,POZ	93907	ORDER BY DESCRIPTION
-11	119-5935-00 †			3	FAN,TUBEAXIAL:DC,12V,0.15 A,1.8 W,48CFM,2450 RPM,30 DBA,SLEEVE,92MM X 92MM X 26 MM,10.6 LEAD,	61058	FBA09A12M1A
-12	378-0454-00 †			3	GUARD,FAN:4 POSITION,	0D1M6	055013
-13	212-0070-00			2	SCREW,MACHINE:8-32 X 0.312,FLH,100 DEG,STL CD PL,POZ	0KB01	ORDER BY DESCRIPTION

† Replace the snap rivets whenever you replace a fan or fan guard.

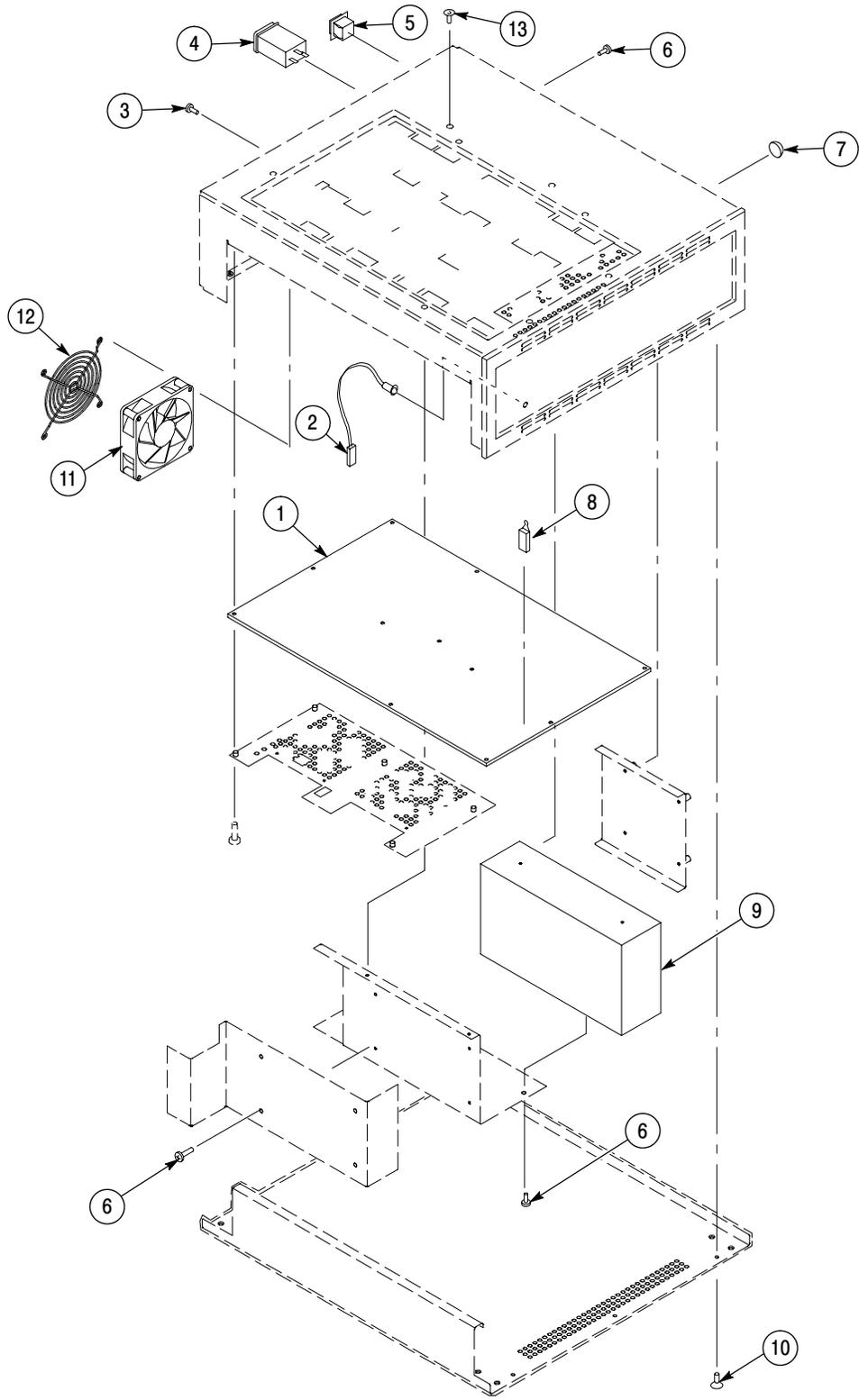


Figure 5-2: Preprocessor unit exploded view



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