Instruction Manual

Tektronix

TMSST1
775-Pin Socket Hardware Support

071-1315-00

www.tektronix.com

Tektronix, Inc., P.O. Box 500, Beaverton, OR 97077

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In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

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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 TMSST1 775-Pin Socket Hardware support product 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 products on the logic analyzer, all you need is this instruction manual to set up and run the support product.

If you are not familiar with operating Microprocessor support products, 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 product.

Manual Conventions

This manual uses the following conventions:

- The terms “master” and “slave” refer to modules that are located in specific slots in a five-wide module chassis (see Figure 1–1 on page 1–2).
- The term “LAI” is an acronym for Logic Analyzer Interface.
- The term “interposer” refers to the probe head that is located between the target system and the microprocessor for the purpose of acquiring signals for circuit analysis.

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	www.tektronix.com/support 1-800-833-9200, select option 3* 6:00 a.m. – 5:00 p.m. Pacific Standard 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 the following information on the TMSST1 775-Pin Socket hardware product.

- Connecting the logic analyzer to the target system, see page 1–4
- Applying power to the probe adapter, see page 1–12
- Installing software, see page 1–13
- Caring for and maintaining the probe adapter, see page 1–14

Product Description

The TMSST1 probe adapter is an interposer design that allows the logic analyzer to acquire data from a Microprocessor in the operating environment with little effect on the target system.

To accomplish this, the probe adapter is connected to the target system, and then the microprocessor is connected to the probe adapter. Signals from the Microprocessor based system flow through the probe adapter probe cables and to the logic analyzer.

This software acquires signals for viewing along with timing signals. Included with the TMSST1 775-Pin Socket probe adapter is the following software:

- PUB32G9 software — acquires signals using four modules

***NOTE**. The TMSST1 probe Adapter is compatible with the TMS118 IA32G9 software support package. This software support package is available only to customers with a valid, restricted, secret nondisclosure agreement (RS-NDA) with Intel.*

Logic Analyzer Configuration

To use the probe adapter to acquire most signals, you need a Tektronix logic analyzer equipped with a minimum of four, 136-channel, 450 MHz merged modules. To also acquire auxiliary common clock signals, you need five, 136-channel, 450 MHz merged modules.

The modules must be configured and merged as shown in Figure 1–1. The memory depth is chosen automatically based on the shallowest memory depth of the four modules.

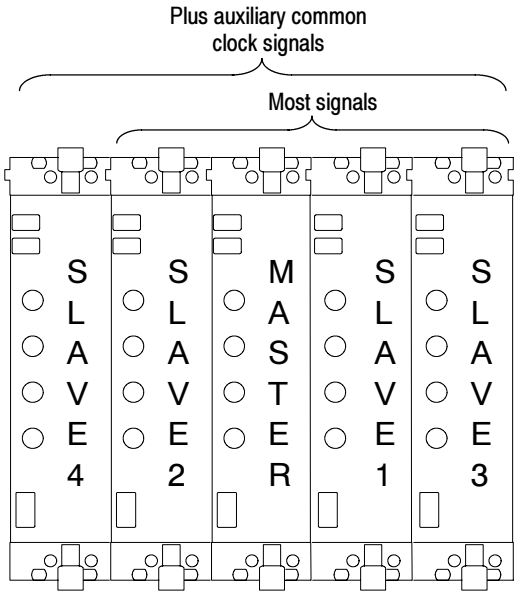

Figure 1–1: Master and Slave module configuration

The term *Master module* refers to the middle module of a 5-wide module merge. The term Slave module refers to the modules to the left or right of the Master module of a 4 or 5-wide module merge. Figure 1–1 shows the configuration for a 4- or 5-wide module merge.

P6860 Probes

You can use the TLA7AX, 450 MHz logic analyzer modules and P6860 probes to connect to the TMSST1 probe adapter.

For more information on connecting your P6860 probes to the preprocessor unit, see page 1–10.

Refer to the *P6810, P6860, and P6880 Logic Analyzer Probes Instruction Manual*, Tektronix part number 071-1059-XX, for more information. You can access this manual from the Tektronix.com web site. You can also find information about the P6860 probes in the logic analyzer online help.

LAI Cables

You can use the TLA7AX, 450 MHz logic analyzer modules, and LAI cables to connect to the TMSST1 probe Adapter. The LAI cables are specifically designed for use with the TMSST1 probe Adapter.

For more information on connecting your LAI cables to the preprocessor unit, see page 1–10.

Labeling P6860 Probes

The probe adapter relies on the default channel mapping and labeling scheme for the probes. Apply labels using the instructions described in the P6860 *High Density Logic Analyzer Probe Label Instructions,* Tektronix part number 071-1123-XX. This manual can be accessed from the Tektronix.com web site. This information is also located in the logic analyzer online help.

Labeling LAI Cables

To apply labels to the LAI cables, see page 1–9.

Standard and Optional Accessories

A complete list of standard and optional accessories is provided in the *Replaceable Parts List* on page 4–4.

Probe Adapter Review

Along with the TMSST1 instruction manual, each logic analyzer includes additional information that describes how to perform tasks common to support products on that platform.

This additional information is located in the logic analyzer online help, an installation manual, or a user manual. Review the additional information if you are unfamiliar with using support products on a logic analyzer product.

Review electrical, environmental, and mechanical specifications in the *Specifications* section on page 2–1 as they pertain to the target system, as well as the following information.

System Clock Rate

The TMSST1 hardware support can acquire data from the Microprocessor operating at speeds of up to 266 MHz.

Contact the Tektronix sales representative for current information on the fastest devices supported.

Acquisition before Reset

If data is acquired just before a power on Reset signal is observed by the target system, the data acquired by the logic analyzer will be inaccurate.

Data Bus

The TMSST1 probe Adapter supports only a quad-pumped data bus.

Address Bus

The TMSST1 probe Adapter supports only a double-pumped address bus.

Disabling the Cache

The cache bus is not monitored; therefore, the cache must be disabled. Disabling the cache makes all instruction prefetches visible on the bus so that they are acquired and displayed and correctly disassembled.

Connecting the Logic Analyzer to a Target System

WARNING. *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.*

To prevent harm to yourself or damage to the preprocessor unit, do not open the preprocessor unit. There are no operator serviceable parts inside the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only. External parts may be replaced by qualified service personnel.

You must allow airflow clearance for the preprocessor unit. Refer to the dimensions on page 2–6 for the required clearance.

Tools

Following is a list of tools:

- Use a flatbladed screwdriver (0.1 inch tip width) to tighten the probe head to the target system.
- **Optional Tool.** A torque wrench helps to ensure reliable connections by meeting the nominal torque values listed in these instructions. When attaching screws to the probe head use 4 in-lbs (0.451 N ▪ m) of torque, unless stated otherwise.

NOTE. *For storage and shipping, retain the cardboard cartons and packing material that is shipped with the probe adapter.*

Read the following instructions before installing 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. Power off any probe adapters that may be attached to your target system.
3. To discharge static electricity, touch the ground connector located on the logic analyzer.
4. Follow the steps in Figures 1–2 through 1–4 to install the probe head.

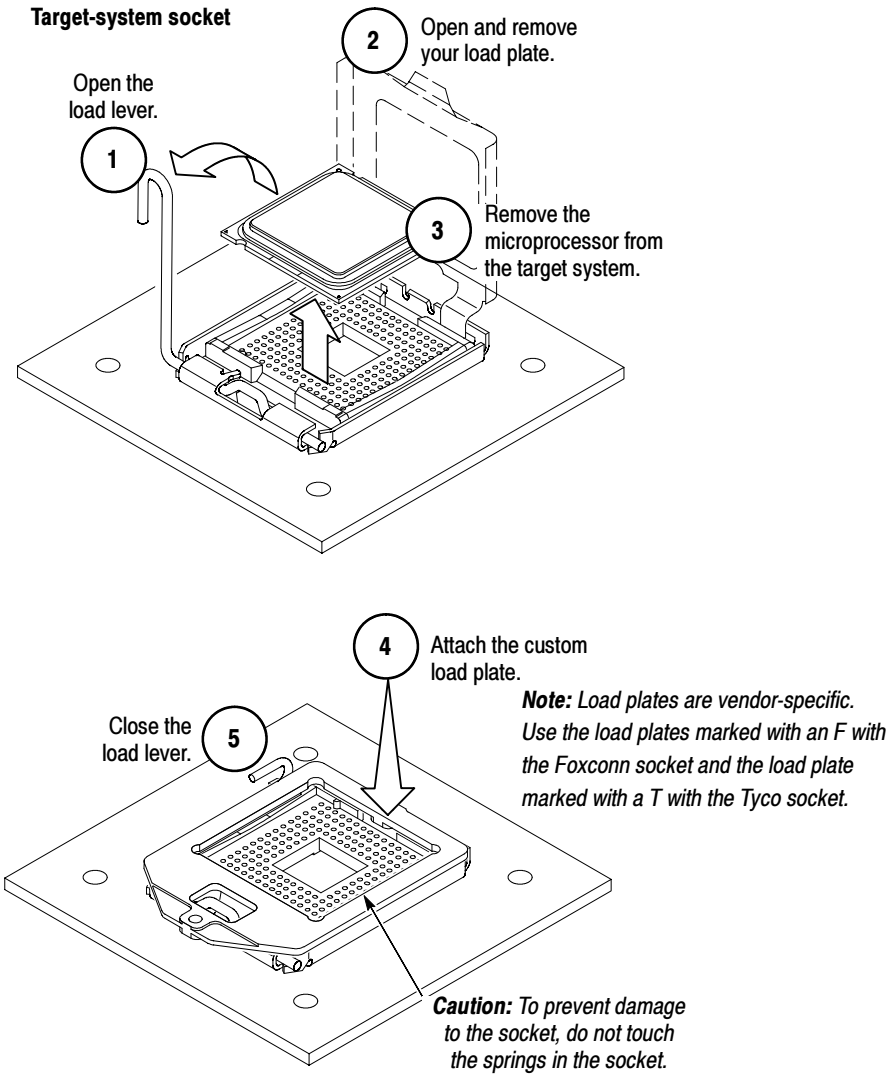

Figure 1–2: Attach the custom load plate to the target-system socket

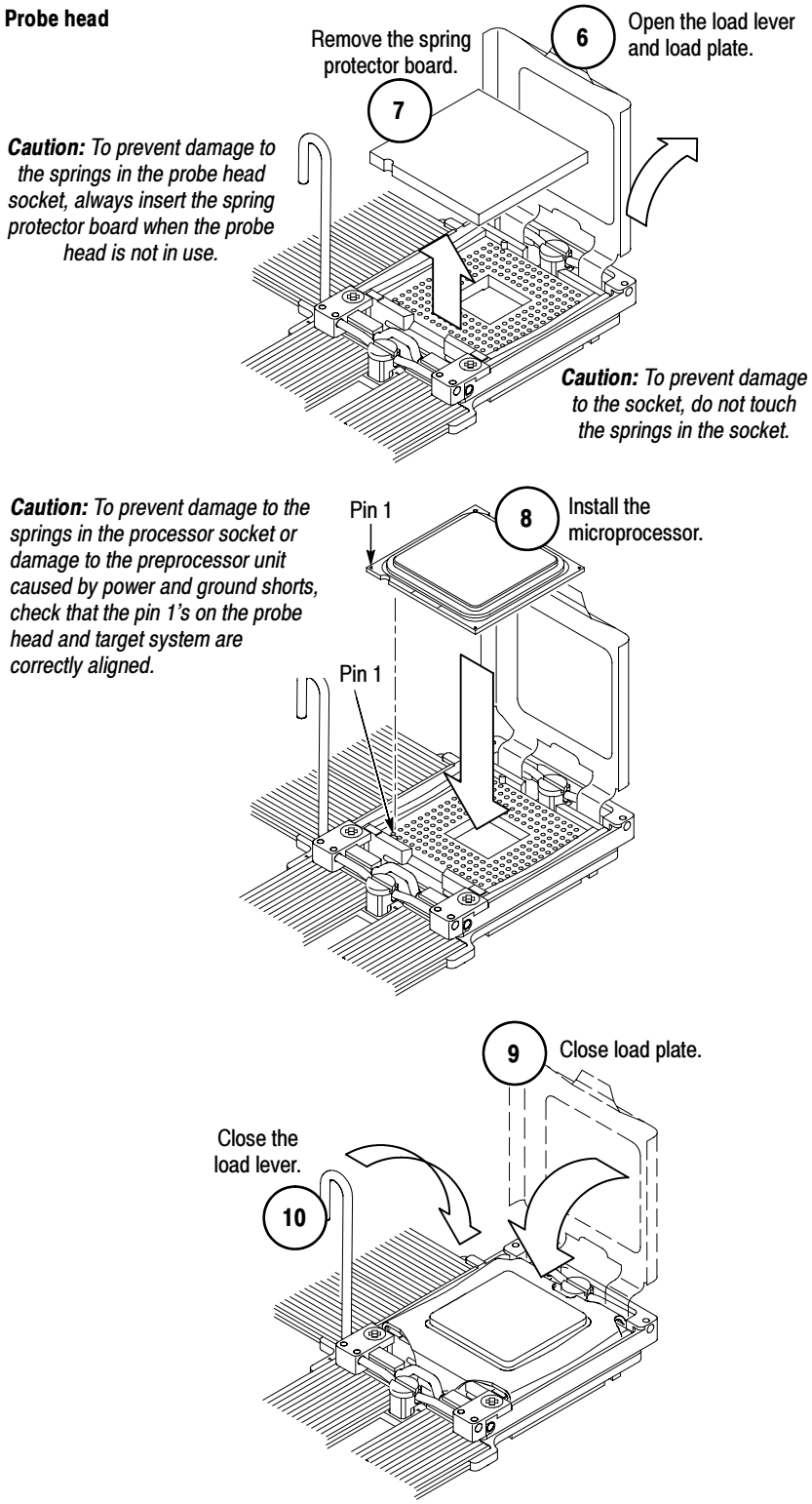

Figure 1-3: Connect the microprocessor to the probe-head socket

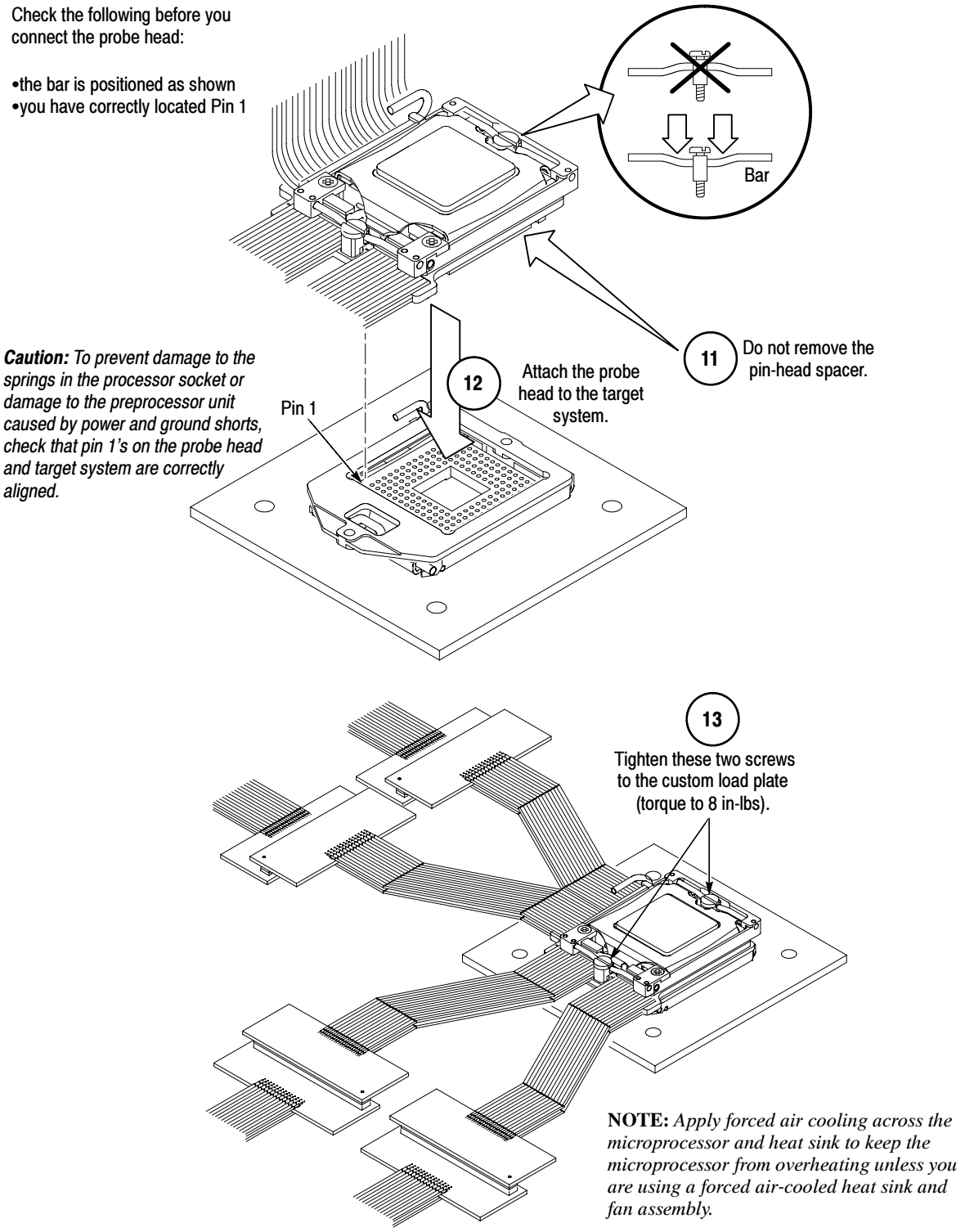

Figure 1–4: Attach the probe head to the target system

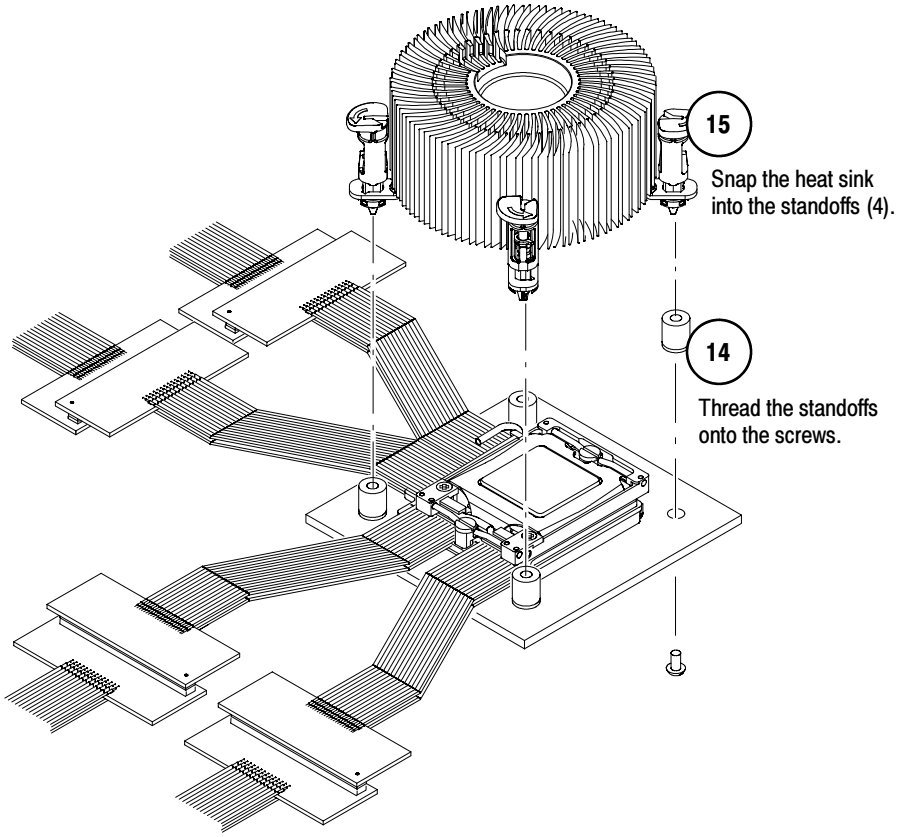

Figure 1–5: Attach the heat sink to the target system

Removing the Probe Head from the Target System

Follow these steps to remove the probe head from the target system:

1. Power off the target system, and unplug the AC power cord on the preprocessor unit. The power switch for the probe adapter is located on the back of the preprocessor unit. It is not necessary to power off the logic analyzer.
2. Reverse the steps in Figures 1–2 through 1–5 to remove the probe head.
3. Store the probe head (see page 1–15.)

Applying LAI Labels

Since the LAI cables are shipped without labels, you must attach labels to the module end and the preprocessor end of the LAI cables. Read the following note before you begin attaching labels.

NOTE. *Always use flat-nosed tweezers to remove the labels from the sheet of labels. Never peel labels with your fingers. The labels are made of soft vinyl and can stretch and distort easily. To avoid stretching the label, always grasp it from the top right corner while removing it from the sheet of labels.*

The adhesive on the vinyl labels is extremely strong. Carefully align the label to the indented outline on the module end and preprocessor unit end. Once labels are placed on the LAI cables, they are difficult to remove.

To attach labels, perform the following steps:

1. Determine which channel groups you are planning to use and identify the matching labels.
2. Follow the steps in Figure 1–6 while attaching the labels.

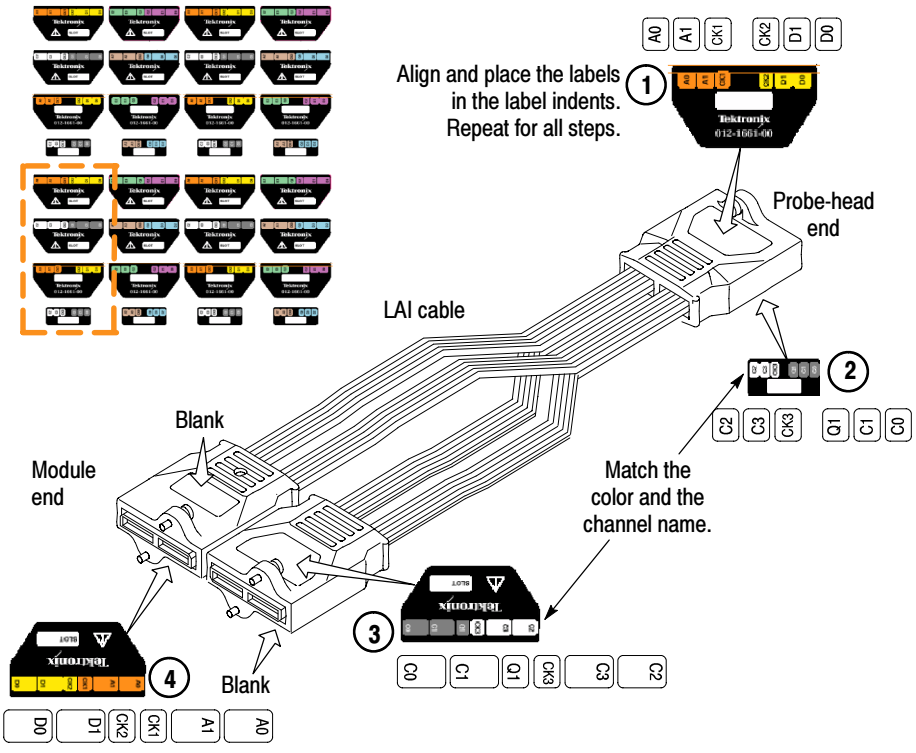

Figure 1–6: Apply LAI labels

Connect the Probes and LAI Cables

To configure the P6860 probes and LAI cables for the disassembly and timing support functions, you must determine if you are using a four or five module configuration (see Table 1–1 on page 1–11). Then, follow the probe and cable connection instructions on pages 1–11 and 1–12.

If you need to apply labels to the LAI cables, see page 1–9.

Figure 1–7 shows a P6860 probe, an LAI cable, and the preprocessor unit.

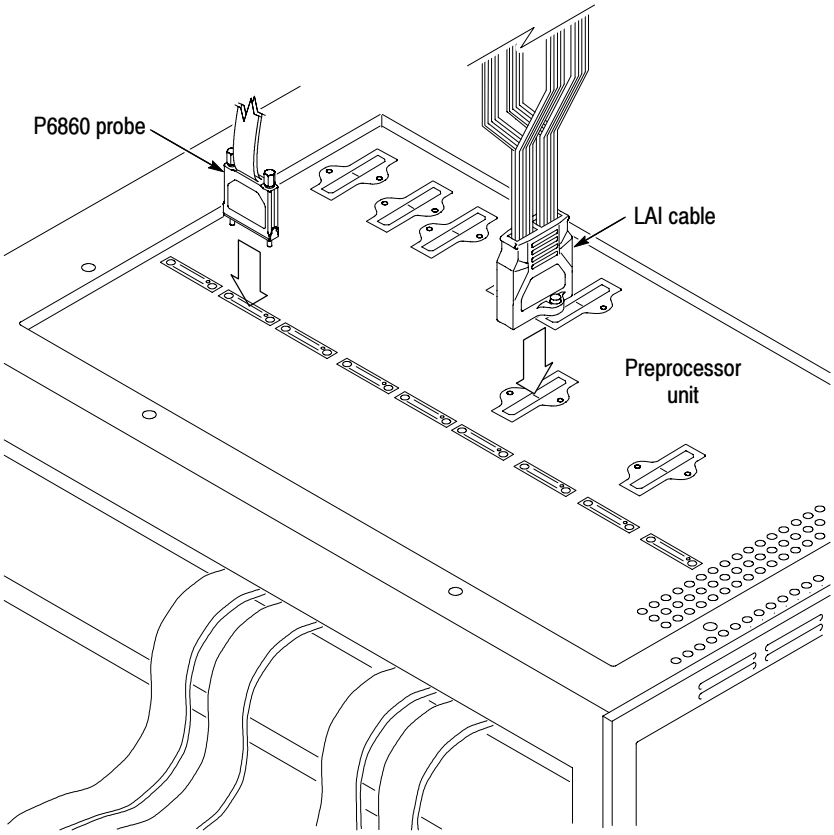

Figure 1–7: LAI cable, P6860 probe, and preprocessor unit

Table 1–1 lists the P6860 probe and LAI cable configurations for a 4- or 5-module configuration.

Table 1–1: P6860 probe and LAI cable configurations

Software support	Modules	LAI cables	P6860 probes	Description
PUB32G9 IA32G9 IA32G9NWT	4	6 (M,S1,S2)	4 (S3)	Does not acquire auxiliary common clock signals
IA32G9_5W IA32G9NWT_5W	5	7 (M, S1,S2,S4)	5 (S3, S4)	Acquires all signals, plus auxiliary common clock signals

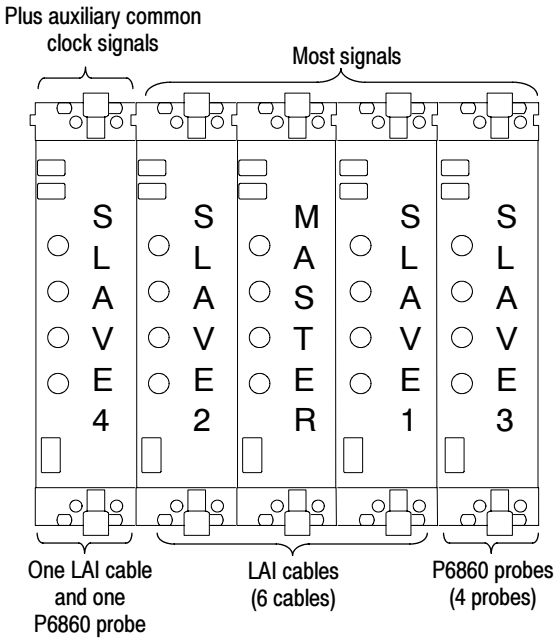

Figure 1–8: LAI cable, P6860 probe, and module configurations

LAI Cables (Four Module)

1. Match the A, D, C, and E LAI cables from the Master module with the corresponding D3/D2 and A3/A2, D1/D0 and A1/A0, C1/C0 and C3/C2, and M_E3/E2 and E1/E0 connector labels on the preprocessor unit. The LAI cable connector is keyed for correct alignment to the preprocessor unit.
2. Repeat step 1 to make LAI cable connections between Slave1 and Slave2 modules and the connector labels on the preprocessor unit.

CAUTION. *To prevent damage to the P6860 probe and preprocessor unit, you must always position the probes perpendicular to the foot print on the PCB. Incorrect handling of the P6860 probe while connecting to or disconnecting from the preprocessor unit can damage the probe.*

P6860 Probes (Four Modules)

3. Match the A, D, C, and E P6860 probes from the Slave3 module with the corresponding D3/D2 and A3/A2, D1/D0 and A1/A0, C1/C0 and C3/C2, and E3/E2 and E1/E0 connector labels on the preprocessor unit. The P6860 probe connector is keyed for correct alignment to the preprocessor unit.

Fifth Module

4. Make the additional P6860 probe and LAI cable connections between the Slave4 module and the connector labels on the preprocessor unit.

NOTE*. For more detailed information about how to attach a P6860 probe, refer to the probe manual information listed on page 1–2.*

Applying and Removing 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. If powered off, the zero (0) is visible on the power switch.
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 probe adapter at the back of the preprocessor unit. A green, power-on LED lights on the front of the preprocessor unit, indicating that the probe adapter is active.
5. Power on the target system.

To remove power from the target system and the probe adapter, reverse the preceding steps. You can skip step 1.

Logic Analyzer Software Compatibility

The disc label on the software support disc states that the version 4.3 SP1+ of the logic analyzer software is compatible with this support.

Installing the Software

Now you are ready to install the software. If you have not used a support product, you may want to refer to information on general tasks and functions in the Tektronix logic analyzer online help or the user manual.

NOTE. *Before you install any software, it is recommended you verify that the microprocessor support software is compatible with the logic analyzer software.*

To install the software on your Tektronix logic analyzer, follow these steps:

1. Insert the disc in the disc drive.
2. Click the Windows Start button, point to Settings, and click Control Panel.
3. In the Control Panel window, double-click Add/Remove Programs.
4. Follow the instructions on the screen for installing the software from the disc.

To remove or uninstall software, follow the above instructions except select Uninstall. You must close all windows before you uninstall any software.

Care and Maintenance

Before cleaning this product, read the following information.

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

The probe adapter, consisting of the probe head and preprocessor unit, 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.

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 harm to yourself or damage to the preprocessor unit, do not open the preprocessor unit for cleaning and do not allow any moisture inside the preprocessor unit. There are no operator serviceable parts inside the preprocessor unit. Refer servicing of internal parts in the preprocessor unit to Tektronix authorized personnel only. External parts may be replaced by qualified service personnel.*

Fuses

The fuses in the preprocessor unit are not replaceable by the customer (operator). If the probe adapter is not functioning correctly, contact your Tektronix sales representative.

Short-Term Storage

Follow steps 1 through 4 for short-term storage of the probe head:

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.

1. Power off the target system, and unplug the AC power cord on the preprocessor unit. The power switch for the probe adapter is located on the back of the preprocessor unit. It is not necessary to power off the logic analyzer.

CAUTION. *To prevent damage to the probe head or microprocessor, use the provided extraction tool and follow the procedure from the extraction tool vendor to remove the microprocessor from the probe head.*

2. Reverse the steps in Figures 1–2 through 1–5 to remove the probe head.

CAUTION. *To prevent damage to the sensitive probe head cables, you must dress the cables so they are not pinched or contacting any sharp objects. When you fold the cables use a minimum radius of 0.25-in (0.64 cm) at the fold.*

3. Using nonstatic generating tape, tape the pin-protector board to the pin header on the bottom of the probe head.

4. Store the probe head in the black case it was shipped in.

Figure 1–9: Nonspecific probe head and case

Long-Term Storage

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

1. Disconnect the preprocessor unit from the logic analyzer by removing the probes and LAI cables from the top of the preprocessor unit.
2. Follow Figures 1–10 through 1–14 to repackage the probe adapter.

Figure 1–10: Use static-shielding bags.

Figure 1–11: Place foam in the cardboard carton

Figure 1-12: Place the preprocessor unit in the cardboard carton

Figure 1-13: Place the cables carefully over the preprocessor unit

Figure 1-14: Place the foam and probe head in place

3. Place the accessory box on top of the foam.
4. Close and tape the cardboard carton.

To ship the probe adapter, Refer to *Shipping the probe Adapter.*

Shipping the probe Adapter

To commercially transport the TMSST1 probe Adapter, package as follows:

1. Use the existing cardboard shipping carton and cushioning material to ship the probe adapter.

   If the existing shipping carton is not available, use a double-walled, corrugated cardboard shipping carton that allows a 3 inch (7.62 cm) minimum on all sides of the product.

2. Follow Figures 1–10 through 1–14 starting on page 1–16 to repackage the probe head and preprocessor unit.

3. If you are shipping a 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

Specifications

Specifications

This section contains specifications for the TMSST1 775-Pin Socket hardware support.

Circuit Description

The TMSST1 probe adapter hardware uses a custom ASIC to preprocess all signals on the microprocessor before the signals are 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 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 DBI[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[35:03]#and REQ[4:0]#. 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 TMSST1 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 probe adapter uses passive series isolation to acquire data.

Bus Tracking Logic

The probe adapter uses a bus tracking PAL to aid the disassembly software in linking various bus phases.

Common Clock

The IA32G9 software allows disassembly from a data bus operating at the common clock rate specified in Table 2–1 on page 2–4. The setup and hold sample points are set to default timing numbers based on FSB specifications.

Loading Diagrams

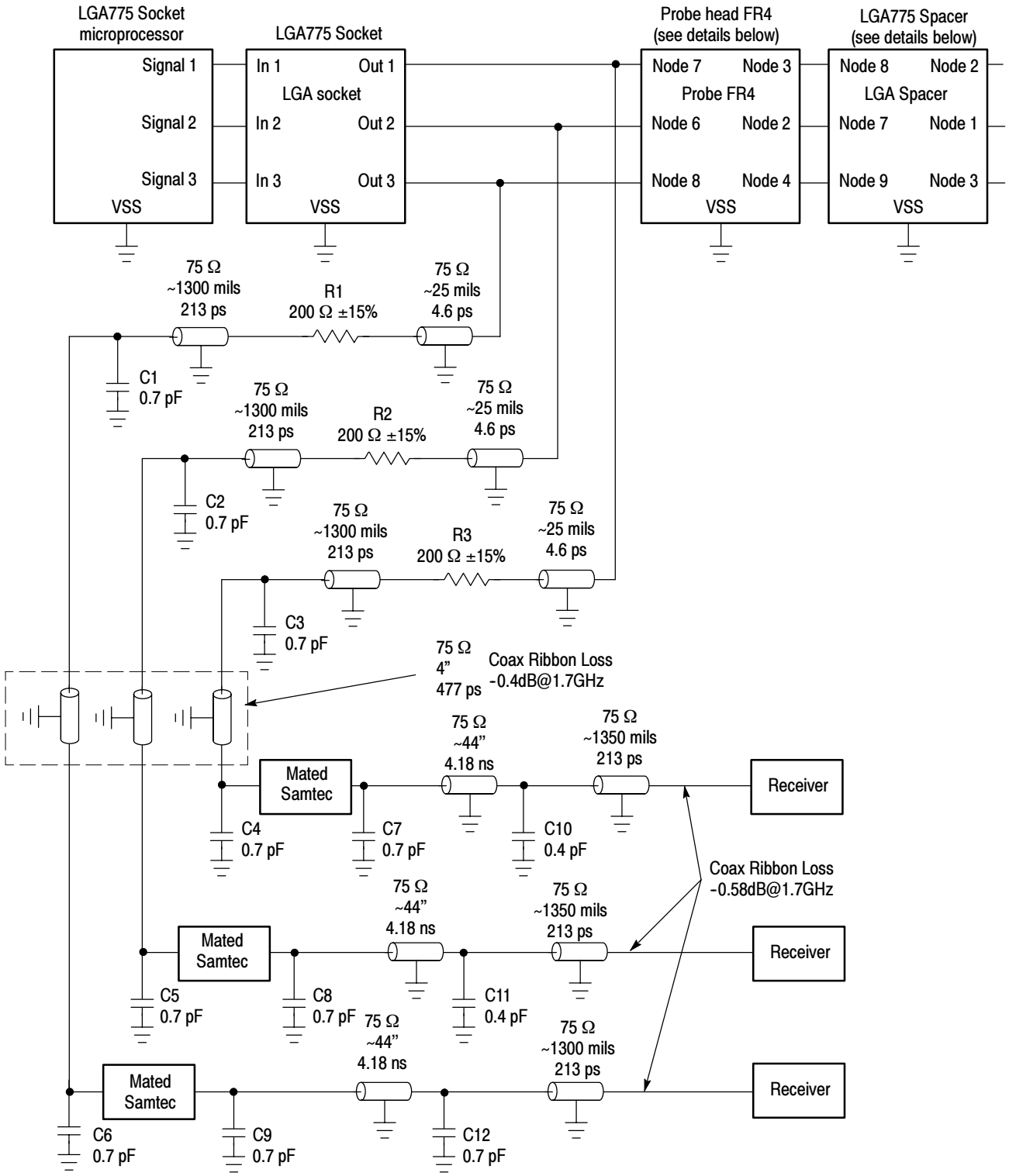

Figure 2-1: Electrical load model for typical signals

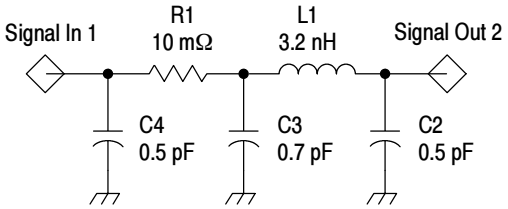

Figure 2-2: Mated Samtec load model

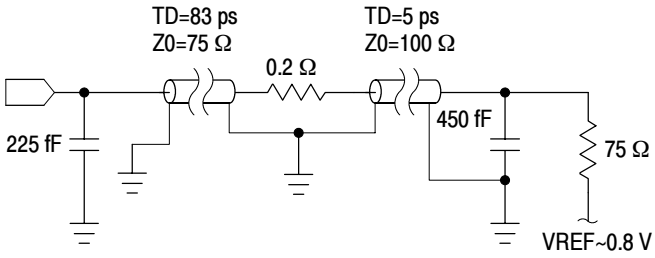

Figure 2-3: Receiver load model

Specification Tables

These specifications are for a probe adapter connected between a compatible Tektronix logic analyzer and a target system. The signal voltage swing in your target system must be at least 600 mV_{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 probe adapter. Table 2–3 lists the environmental specifications.

Table 2-1: Electrical specifications for the target system

Characteristics	Requirements (Typical)
DC power requirements	
Typical - V_{cc} = 1.2 V, V_{REF} = 0.8 V, at 25 °C	
Voltage, V_{cc}	1.2 V ± 5%
Common clock rate	Maximum 266 MHz
Common clock capture	
Typical - V_{cc} = 1.2 V, V_{REF} = 0.8 V, V_{IH} = V_{REF}, +400 mV, V_{IL} = V_{REF} -400 mV, at 25 °C	
Window	750 ps
T_{su}	1 ns
T_{hd}	-250 ps

Table 2-1: Electrical specifications for the target system (cont.)

Characteristics	Requirements (Typical)
2x Source-Synchronous capture	
Window	500 ps
T_{su}	250 ps
T_{hd}	250 ps
4x Source-Synchronous capture (DBI disabled)	
Window	350 ps
T_{su}	175 ps
T_{hd}	175 ps

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

Characteristics	Description
Input Voltage rating	100 – 240 VAC CAT II
Input Frequency Rating	50 – 60 Hz
Input Current Rating	60 A maximum

Table 2-3: 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 °F to +167 °F)
Humidity	10 to 90% relative humidity, noncondensing
Altitude	
Operating	3 km (10,000 ft) maximum
Nonoperating	12 km (40,000 ft) maximum

Table 2-3: Environmental specifications (cont.)

Characteristic[1]	Description
Electrostatic immunity	The probe adapter is static sensitive
Required airflow clearances for the preprocessor unit	
Front, top, left side	5.08 cm (2 in)
Back	7.62 cm (3 in)
Bottom, right side	0.635 cm (0.250 in)

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 2-4: Certifications and compliances

Category	Standards or description	
EC Declaration of Conformity - Low Voltage	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Essential requirements of the Low Voltage Directive 73/23/EEC, amended by 93/68/EEC	
U.S. Nationally Recognized Testing Laboratory Listing	UL61010B:2003	Standard for electrical measuring and test equipment.
Canadian Certification	CAN/CSA C22.2 No. 1010.1	Safety requirements for electrical equipment for measurement, control, and laboratory use.
Additional Compliance	IEC61010-1/A2:1995	Safety requirements for electrical equipment for measurement, control, and laboratory use
Installation (Overvoltage) Category Descriptions	Terminals on this product may have different installation (overvoltage) category designations. The installation categories are: CAT III CAT II CAT I	 Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location. Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected. Secondary (signal level) or battery operated circuits of electronic equipment.
Equipment Type	Test and measuring	
Safety Class	Class 1 (as defined in IEC 61010-1, Annex H) - grounded product	
Overvoltage Category	Mains input: Overvoltage Category II (as defined in IEC 61010-1, Annex J) All other inputs and outputs: 5 V maximum	
Pollution Degree	Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.	

Dimensions Figure 2–4 shows the dimensions of the probe head.

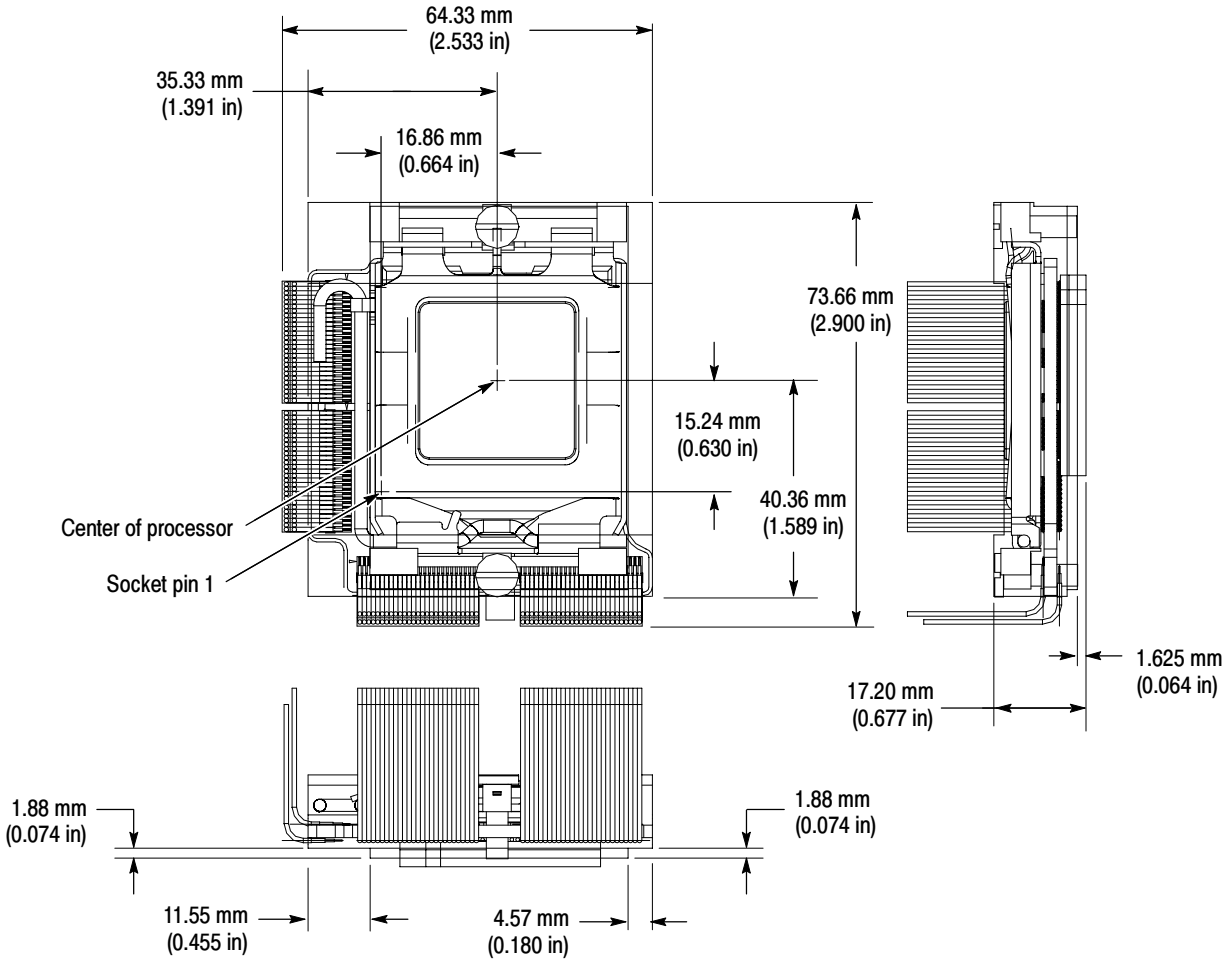

Figure 2–4: Dimensions of the probe head

Figure 2–5 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 2–3 on page 2–6 (clearances are not shown in Figure 2–5).*

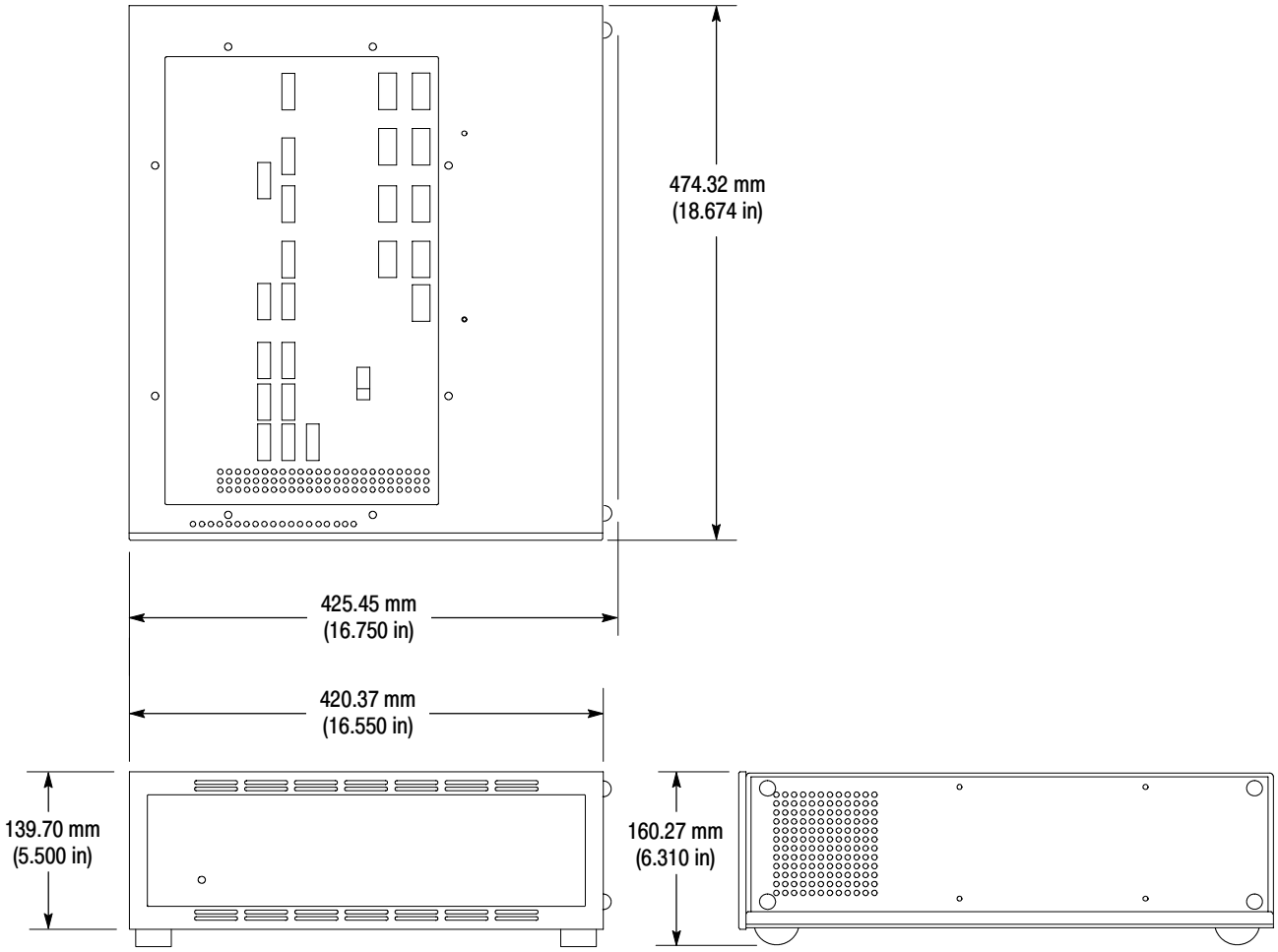

Figure 2–5: Dimensions of the preprocessor unit

Reference

Reference Tables

The TMSST1 software floppy contains the following reference tables. Viewing a table is not a requirement when preparing the module for use. You can view the reference tables without connecting the TLA to your target system. These tables are provided to assist you when you are debugging a target system.

- **Channel and Group Definition Tables** — The TMSST1 software automatically defines channel groups. These groups define the channel assignments and the groups for a software support set up. If you want to know what the group definition is for a channel group or which signal is in which channel group, refer to these tables.
- **Symbol Tables** — Symbol files are files of alphanumeric symbol names and associated data values. Symbol files are used to map a channel group value to a text string and/or color. For example, a symbol file could map an address group value to a function name. This is faster and easier to interpret than a numeric value.

NOTE. *The Color symbol table is not associated with any channel groups.*

Viewing Reference Tables

You must load your support and merge the modules before completing the following steps.

To view a symbol table, follow these steps:

1. In the System window under System, select Symbol to display the Symbol window.
2. Select Load to display the Load Symbol File window.
3. Select and right click one of the .tsf files to display the Select menu.
4. Select Open and select the appropriate editor, (Word Pad for example) to view the symbol table.

To Extract Groups

To extract a channel group or a group definition table, follow these steps:

1. Open a System window.
2. Select the Setup icon.
3. In the Setup window, open the Window menu and select Setup: <support file name>.
4. In the Setup window under Group Name, select a group.
5. Open File > Export Channel Setup to display a Channel Setup Export window. Notice the Export Path name to locate your exported file later.

   In the Channel Setup Export window under Export Selections, check that the Export Channel Information and the Export Group Information boxes are checked.

   The Field delimiter box controls how the tables are displayed. See the Tektronix logic analyzer online help for more information.
6. Select Export.

Replaceable Parts List

Replaceable Parts List

This section contains a list of the replaceable components or modules for the TMSST1 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 TMSST1 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
TK2548	XEROX CORPORATION	7431 EVERGREEN PARKWAY	HILLSBORO, OR 97124
	PACKAGING RESOURCES	12555 SW TUALATIN SHERWOOD RD	TUALATIN, OR US 97062-8051
060D9	TENSOLITE COMPANY	PRECISION HARNESS AND ASSEMBLY~3000 COLUMBIA HOUSE BLVD~#120	VANCOUVER, WA 98661
0B445	ELECTRI-CORD MFG CO INC	312 EAST MAIN STREET	WESTFIELD, PA 16950
0KB01	STAUFFER SUPPLY CO	810 SE SHERMAN	PORTLAND, OR 97214-4657
1K3Q9	PACKAGING RESOURCES	12555 SW TUALATIN SHERWOOD RD	TUALATIN, OR 97062-8051
1WNW6	ACCRA-FAB INC	23201 E APPLEWAY	LIBERTY LAKE, WA 99019
S3109	FELLER U.S. CORPORATION	10B VAN DYKE AVENUE	NEW BRUNSWICK, NJ 08901
TK1373	PATELEC-CEM	10156 TORINO~VAICENTALLO~62/456	ITALY,
TK6121	TUMBLER CORP	4241 BUSINESS CENTER DR	FREMONT, CA 94538
TK6585	TRESKE PRECISION MACHINE INC	14140 SW GALBREATH DRIVE	SHERWOOD, OR 97140
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001

Replaceable parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
4-1-1	672-5701-50 *			1	CIRCUIT BD ASSY; TMSST1 PROBE HEAD W/CABLES & PADDLE BD;TESTED	80009	672-5701-50
-2	386-7379-00			1	BRACKET SUPPORT;FILTER MOUNT		386737900
-3	200-4843-00			1	COVER,SOCKET;TMSST1	TK6585	200-4843-00
-4	386-7400-00			1	LOAD PLATE,BOTTOM;TYCO;ELECTROLESS NICKEL FINISH;S7 TOOL STEEL;TMSST1		
-5	386-7401-00			1	LOAD PLATE,TOP;ELECTROLESS NICKEL FINISH;S7 TOOL STEEL;SUB PART OF 136140000;TMSST1	TK6585	386740100
-6	361-1808-00			4	STANDOFF,HEATSINK ATTACH;BRASS WITH NYLON INSERT;TMSST1	TK6585	361-1808-00
-7	211-1187-00			4	SCREW; M3.5 X 8MM,FLT,PHL,STL 18-8;.3C8MXFS	0KB01	.3C8MXFS
-8	065-0701-00			1	SHIPPING KIT;TMSST1		065070100
-9	016-1940-00			1	CASE,STORAGE; PLASTIC,W/FOAM,12.4X8.9X2.9;FLEX CABLE ASSEMBLY	1K3Q9	016194000
					STANDARD ACCESSORIES		
	071-1315-XX			1	MANUAL,TECH;INSTRUCTION,HARDWARE/SOFTWARE;PUB 32G9;TMSST1	TK2548	071-1315-XX
	161-0104-00			1	CABLE ASSY,PWR; 3,18 AWG,98.0 L,125V/10AMP,RIGHT ANGLE,IEC320,NEMA 15-5P,WITH CORD GRIP,US,SAFETY CONTROLLED	TK6121	3572WV88.2GI
-10	012-1661-00			6-7	CA ASSY; INTCON,SHLD RIBBON,MCP,72 L	060D9	012-1661-00
					OPTIONAL ACCESSORIES		
	----------			4-5	P6860 PROBE	80009	ORDER BY DESCRIPTION
	161-0104-05			1	CABLE ASSY,PWR; 3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,AUSTRALIA,SAFETY CONTROLLED	TK1373	161-0104-05
	161-0104-06			1	CABLE ASSY,PWR; 3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,EUROPEAN,SAFETY CONTROLLED	S3109	1923
	161-0104-07			1	CABLE ASSY,PWR; 3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT X 13A,FUSED,UK PLUG,(13A FUSE),UNITED KINGDOM,SAFETY CONTROLLED	TK6121	21072WH518.2
	161-0167-00			1	CABLE ASSY,PWR; 3,0.75MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,SWISS,NO CORD GRIP,SAFETY CONTROLLED	0B445	161-0167-00

* Return the preprocessor unit to the factory for service.

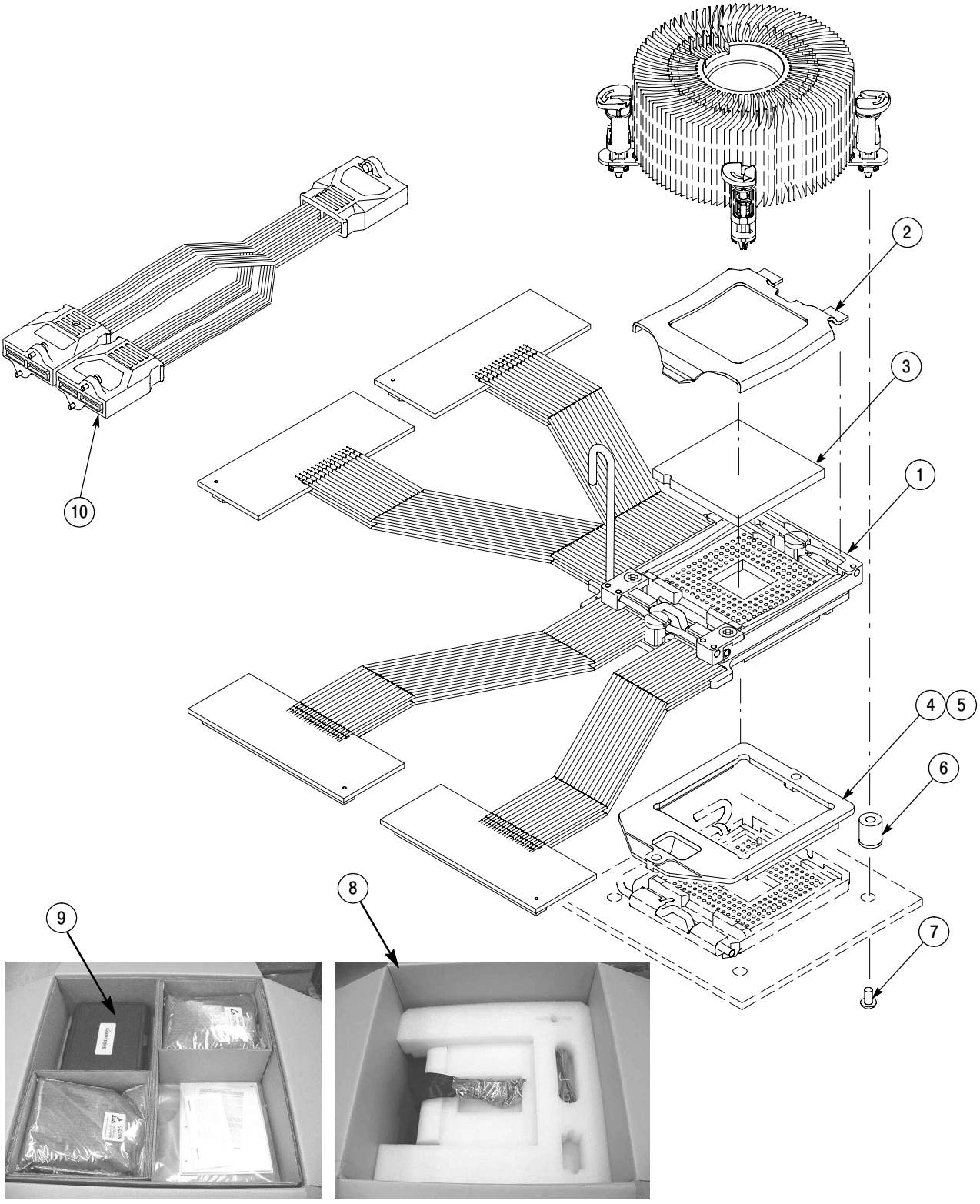

Figure 4-1: Probe adapter exploded view

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