

Instructions Manual



TMSSPH1
PGA604 Socket F' Probe Head
Support

071-2001-00

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Preface

This manual contains specific information about the TMSSPH1 support product and is part of a set of documents on how to operate this product on compatible Tektronix logic analyzers.

If you are familiar with operating support products on logic analyzers, you only need this instructions document and the *TMSST2 LGA771,775, and PGA604 Hardware Support Manual* to set up and run this product.

Installation Instructions

This section contains information about how to install the probe head on the DUT (Device Under Test). The accompanying CD also contains a video about how to install the probe head on the DUT.

The TMSSPH1 product includes:

- CD with software and product manuals (PDF)
- TMSSPH1 probe head and heat-sink hardware

You need a compatible preprocessor unit, cables, and probes to acquire signals from the DUT and complete the connection between the logic analyzer and the DUT. Contact your Tektronix sales representative for information about these other products.

Connect the Probe Head to the DUT



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

Tools

- **Required.** Use a Pozidriv screwdriver (P1) to tighten the probe head to the DUT.
- **Required.** Use the extraction tool to remove the probe head from the DUT. (See page 2.)
- **Optional.** A torque wrench helps to ensure reliable connections by meeting the nominal torque values. Unless noted otherwise, tighten screws to 4 in-lbs.

Airflow Clearance

Table 1 lists airflow clearances for all sides of the preprocessor unit.

Table 1: Preprocessor airflow clearance

Side of the unit	Require clearance
Required airflow clearances for the preprocessor	
Front, top, and left side	5.08 cm (2 in)
Back	7.60 cm (3 in)
Bottom, and right side	0.635 cm (0.250 in)



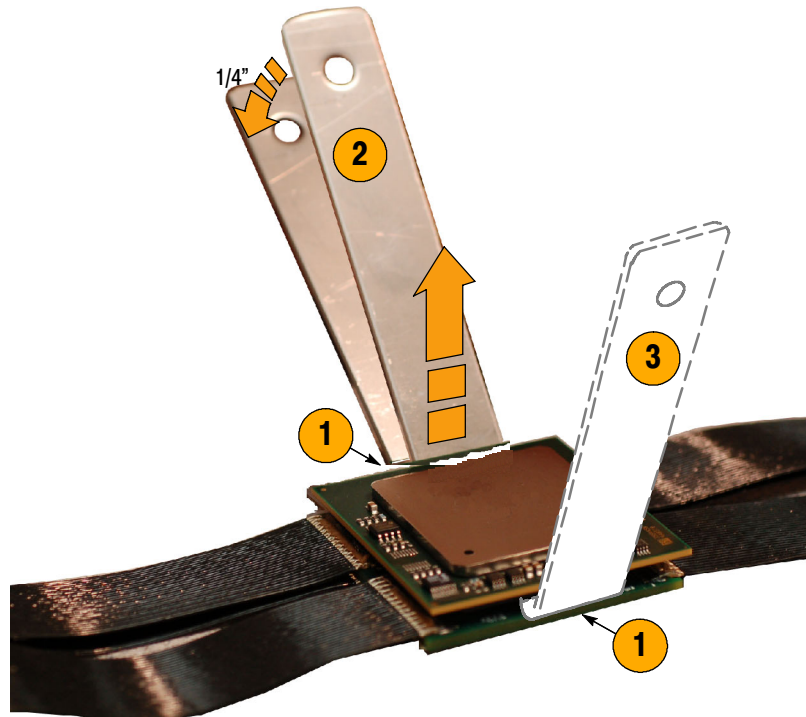
CAUTION. To prevent damage to the PGA604 Socket F', minimize the number of times the processor is inserted into the probe head. The probe head is designed to withstand 20 processor insertions. If the probe head PGA604 Socket F' is damaged, the probe head cannot be repaired. If great care is taken during processor insertion, the cycle life of the probe may be extended.

Extractor Tool

Use these steps and the extractor tool to remove the microprocessor from the DUT and probe-head socket:

Caution: To avoid damaging the probe head cable connections, only pry on the sides of the microprocessor that do not face the cables.

1. Position the extractor tool between the probe head and the microprocessor.
2. Press down gently on the extractor tool to pry up this side of the microprocessor.
3. Repeat steps 1 and 2 on the opposite side of the microprocessor as shown.
4. Repeat steps 1 to 3 until the microprocessor lifts out easily.

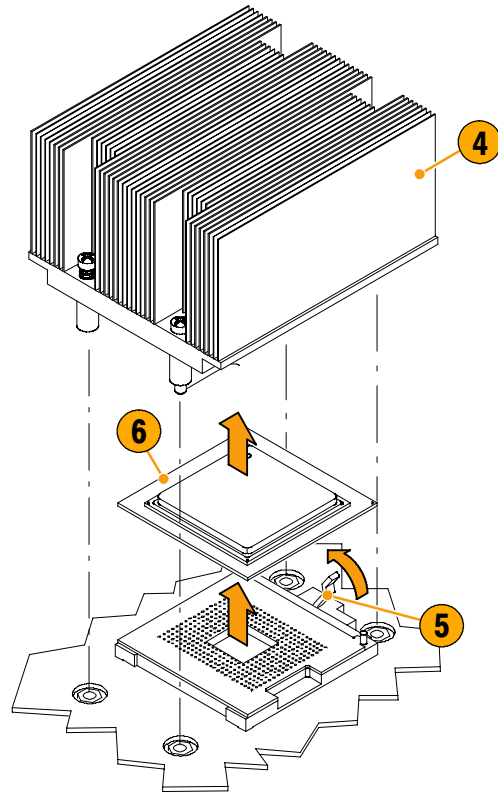


NOTE. Retain the black case (for the probe head), cardboard cartons, and packing material shipped with the product.

Basic Configuration

Use the following steps to install the microprocessor in the probe head:

1. Power off the DUT. It is not necessary to power off the logic analyzer.
2. Power off any probe heads (or preprocessor unit) that may be attached to the DUT.
3. Discharge any static electricity, by touching the ground connector located on the logic analyzer.
4. Remove the heat sink.
5. Open the ZIF lever.
6. Remove the microprocessor from the DUT using the extractor tool. See the *Extractor Tool* procedure on page 2.



Check that the pin protector is in place on the bottom of the probe head before inserting the microprocessor into the probe head and that you are wearing a grounding wrist strap.

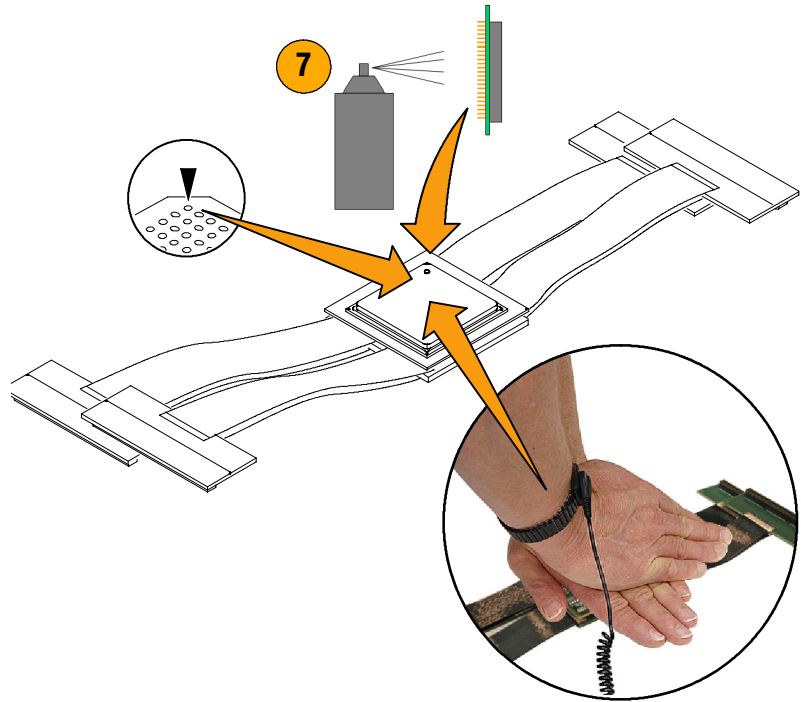
7. Lubricate the microprocessor pins, and then insert the microprocessor into the top of the probe-head socket, aligning pin 1 identifiers (▼).

From a standing position and using the heels of both hands, apply a downward force to the microprocessor. You will feel the microprocessor slide into place.

Tektronix recommends that you use Miller Stephenson part number MS-381HM as the contact lubricant when inserting the microprocessor into the probe head. For more information about this lubricant, go to the following Web site: <http://www.miller-stephenson.com>.

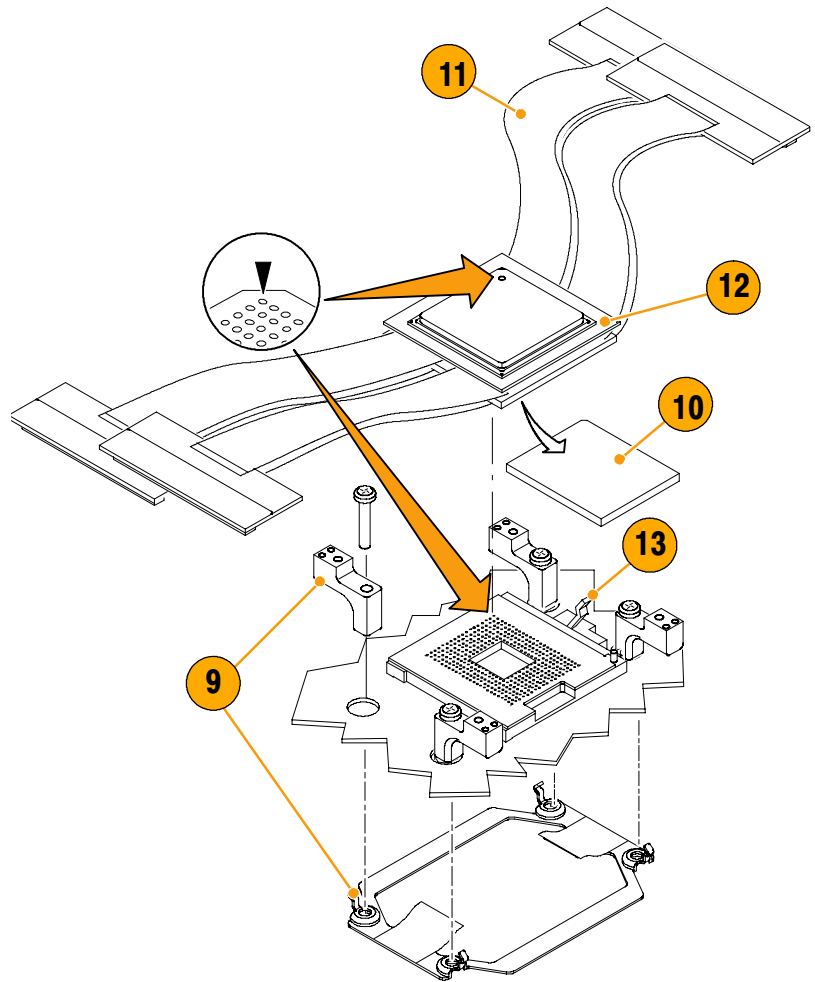
8. Check if the ZIF lever is oriented on the DUT as shown in step 13 on page 5 with the heat sink mounting holes on the same side as the ZIF lever. If it is, proceed with step 9 on page 5.

If the ZIF lever is oriented 90 degrees from the heat sink mounting holes as shown on step 5 on page 7, then go to page 7 to continue the probe head installation using the *90 Degree Rotated Configuration* procedure.

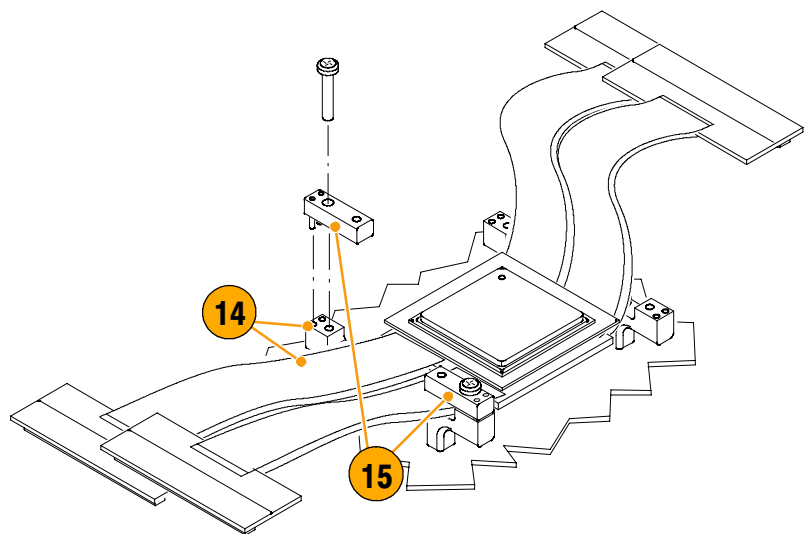


Follow these steps to attach the heat-sink brackets and the probe head to the DUT:

9. Attach the four bottom heat-sink brackets and screws to the DUT.
10. Remove the pin protector.
11. Fold cables up and away when attaching.
12. Attach the probe head to the DUT, aligning pin 1 identifiers (▼).
13. Close the ZIF lever on the ZIF socket.

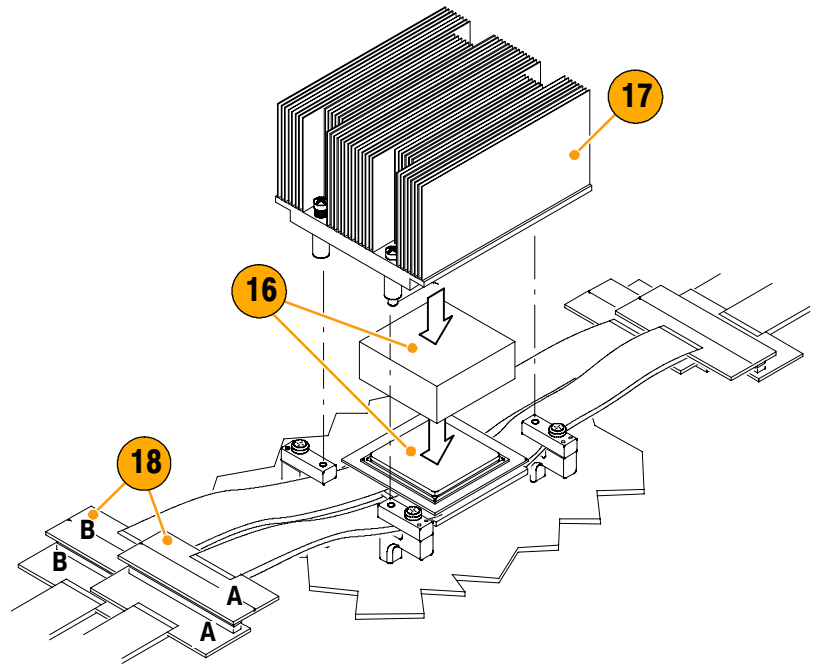


14. Dress the cables over the bottom heat-sink brackets.
15. Attach the four top heat-sink brackets and screws.



Follow these steps to attach the heat sink to the DUT:

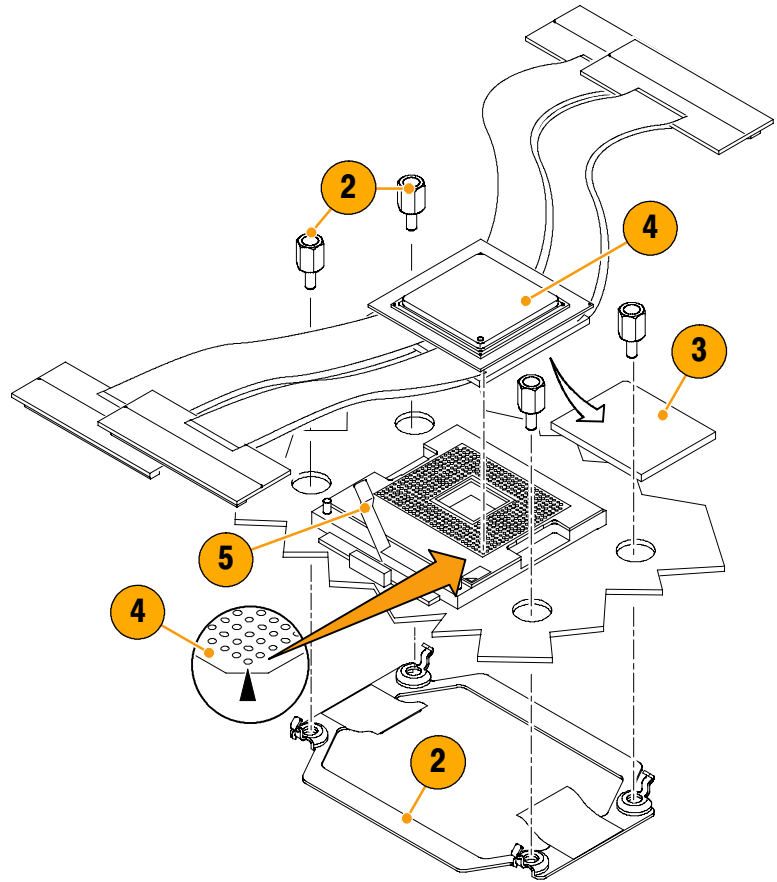
16. Apply thermal grease to the top of the copper spacer and the microprocessor.
17. Install the heat sink and copper spacer.
18. Attach the probe-head cables to the preprocessor-unit cables (snap into place) paying close attention that the labels on the paddle boards match, such as A to A.
19. Apply forced-air cooling across the microprocessor and heat sink to keep the microprocessor from overheating unless you are using a forced-air cooled heat sink and fan assembly.



90 Degree Rotated Configuration

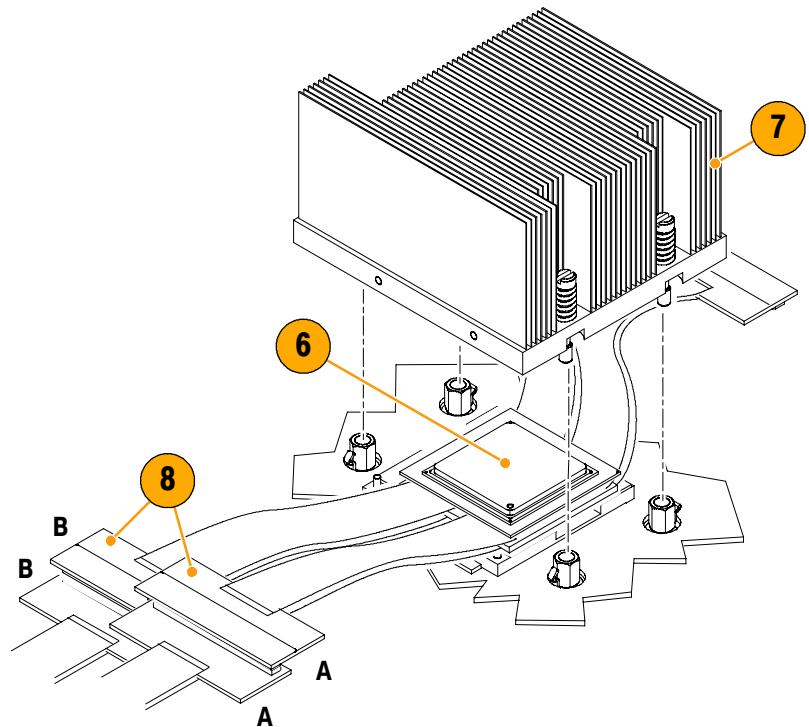
To attach the heat-sink spacer posts, the microprocessor, and the probe head to the DUT, follow these steps:

1. Complete steps 1 - 8. (See page 4.)
2. Attach four heat-sink spacer posts to the DUT.
3. Remove the pin protector.
4. Attach the probe head to the DUT, carefully aligning pin 1 identifiers (▲).
5. Close the ZIF lever on the ZIF socket.



To attach the heat sink to the DUT, follow these steps:

6. Apply thermal grease to the top of the microprocessor.
7. Install the heat sink.
8. Attach the probe-head cables to the preprocessor-unit cables (snap into place), paying close attention that the labels on the paddle boards match, such as A to A.
9. Apply forced-air cooling across the microprocessor and heat sink to keep the microprocessor from overheating unless you are using a forced-air cooled heat sink and fan assembly.



Probe Head Removal

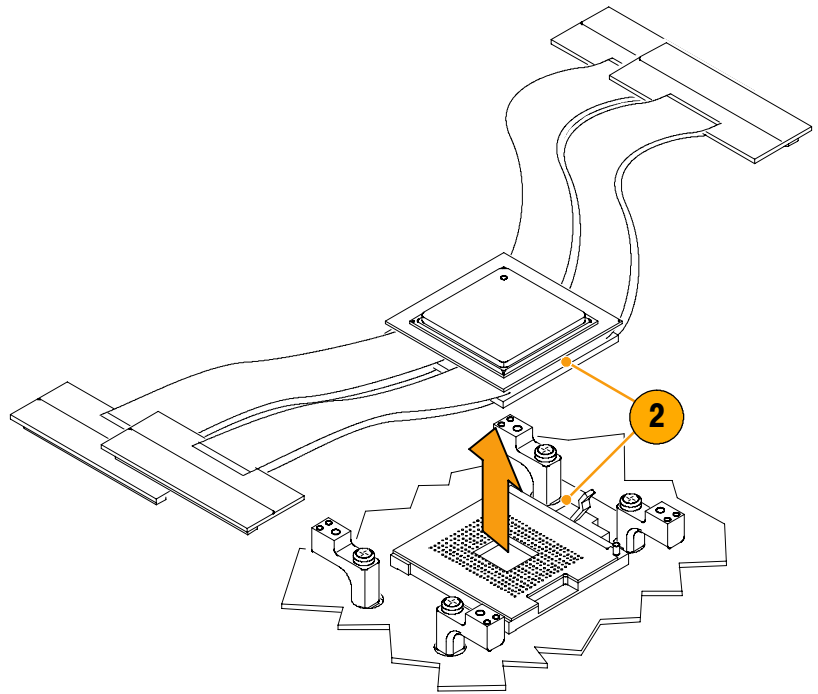
Follow these steps to remove the probe head from the DUT:

CAUTION. To prevent damage to the Socket F' pins on the probe head, use the provided extractor tool as shown on page 2.

1. Power off the DUT and preprocessor unit. It is not necessary to power off the logic analyzer.
2. If the ZIF lever is oriented on the DUT as shown with the heat sink mounting holes on the same side of the ZIF lever, reverse the steps in the *Basic Configuration procedure to remove the probe head*. (See *Basic Configuration* on page 2.)

If the ZIF lever is rotated 90 degrees from the heat sink mounting holes, reverse the steps in the *90 Degree Rotated Configuration procedure* to remove the probe head. (See *90 Degree Rotated Configuration procedure* on page 7.)

3. Store the probe head. (see page 13.)

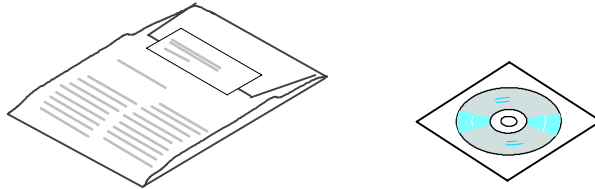


Applying and Removing Power

To apply or remove power, refer to the instruction manual that came with the compatible preprocessor unit.

Installing the Software

NOTE. Before you install any software, verify that the microprocessor support software is compatible with the logic analyzer software by comparing the version number on the CD to the Tektronix logic analyzer system software.



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

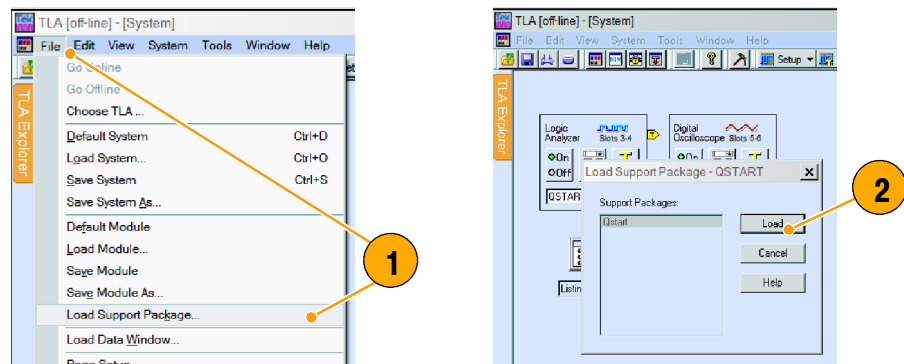
1. Insert the CD in the CD drive.
2. Select the Windows Start button > Control Panel > Add/Remove Programs.
3. Select the Add New Programs button on the left side of the display.
4. Select the CD or Floppy button.
5. Follow the on-screen instructions to install the software.

To remove or uninstall software, use the Add or Remove Programs utility in the Windows Control Panel. Close all windows before you uninstall any software.

Support Package Setup

After installing the software, you need to load the setup file. Follow these steps:

1. From the file menu, open a logic analyzer system window and select Load Support Package.
2. In the Load Support Package dialog box, select the support and click load.
3. Follow the on-screen instructions.



Replaceable Parts List

Table 2: Replaceable Parts List

Step & page number	Quantity	Description	Part number
12 - 5	1	PROBE HEAD BOARD W/CABLES & PADDLE BOARD;TESTED	TMSSPH1
9 - 5	4	COVER; BOTTOM,HEAT SINK ATTACH;	200-4861-XX
9 - 5	4	SCREW,MACHINE; 6-32 X 0.75, FLH,100 DEG,STL CD PL,POZ	211-0687-XX
15 - 5	4	COVER,TOP; HEAT SINK ATTACH;	200-4862-XX
15 - 5	4	SCREW,MACHINE; 6-32 X 0.5,PNH,STL CD PL, POZ	211-0511-XX
2 - 7	4	SPACER,POST	129-1638-XX
16 - 6	1	SPACER;HEAT SINK ATTACH	361-1807-XX
5 - 14	1	CASE, STORAGE: PLASTIC, W/ FOAM, 12.4X8.9X2.9;FLEX CABLE ASSEMBLY	016-1941-XX

Specifications

The environmental specifications below are for a probe head connected between a compatible Tektronix logic analyzer and a DUT. See Figure 1 for the probe-head dimensions. For other specifications, refer to the *TMSST2 LGA771, 775, and PGA604 Hardware Support Manual (071-1665-XX)*.

Table 3: Environmental specifications

Characteristic	Description
Temperature	Maximum operating: 0 °C to +55 °C (+32 °F to +131 °F) ¹ Nonoperating: -20 °C to +70 °C (-4 °F to +158 °F)
Electrostatic immunity	The probe adapter is static sensitive

¹ **Not to exceed microprocessor thermal considerations. You may need to supply cooling across the CPU.**

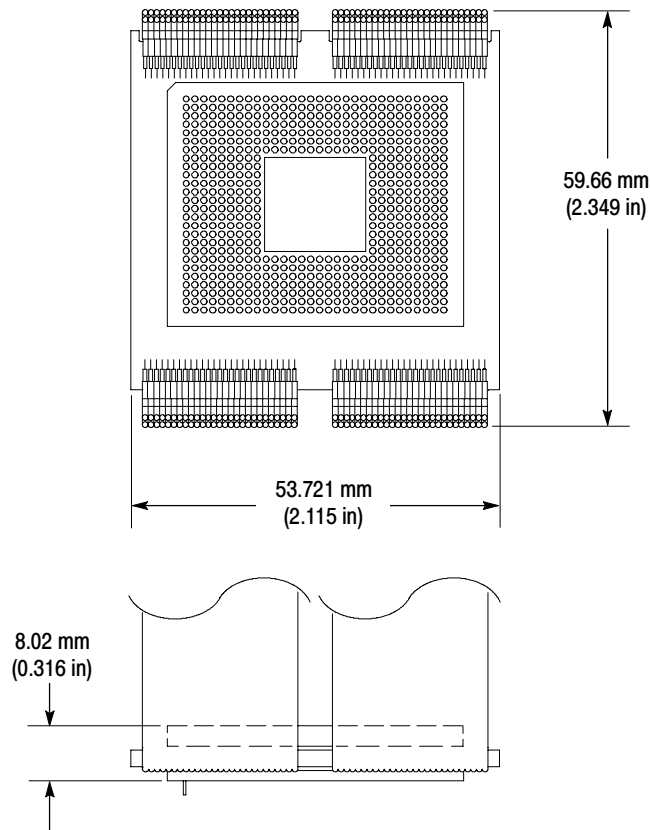


Figure 1: Dimensions of the probe head

Maintenance

Before cleaning this product, read the following information.



CAUTION. To prevent static damage to the microprocessor and the probe head, 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 head.

The probe head does not require scheduled or periodic maintenance. However, to keep good electrical contact and efficient heat dissipation, keep the probe head free of dirt, dust, and contaminants. When not in use, store the probe head in the original case 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 personal injury or damage to the probe head, do not allow any moisture inside the probe head. Refer servicing of external parts of the probe head to only Tektronix authorized personnel. External parts may be replaced by qualified service personnel.



CAUTION. To prevent damage to the sensitive probe-head cables, handle them with care.

To prevent damage to the pins on the probe-head socket and microprocessor, use the provided extractor tool. Refer to page 2.

Storage

For short-term storage, use the existing black case, and cushioning foam, and read the cautions on this page. Follow these steps:

NOTE. Use the extractor tool when you remove the microprocessor from the probe head. See page 2.

1. Power off the DUT and the preprocessor unit. It is not necessary to power off the logic analyzer.

2. To remove the heat sink, hardware, and probe head use the *Probe Head Removal* procedure. See page 9.
3. Dress the probe-head cables so they do not pinch or contact any sharp objects. When you fold the cables, use a minimum radius of 0.25 in (0.64 cm) at the fold.
4. Using non-static generating tape, tape the pin-protector board onto the pin header on the bottom of the probe head.
5. Store the probe head in the black case it was shipped in.



Long-Term Storage

For long-term storage, use the existing black case, and if you have these; the accessory tray and packaging:

1. Complete steps 1 through 5 in the *Short-Term Storage* procedure.
2. Place the black case in the accessory tray and carton, if you have these.
3. Close and tape the cardboard carton.

To ship the probe head, refer below to *Shipping the Instrument to the Service Center*.



Shipping the Instrument to the Service Center

Contact the Service Center to obtain an RMA (return material authorization) number.

To commercially transport the probe head, package as follows:

1. Use the existing probe-head case and a cardboard shipping carton. Follow the steps on page 13 to package the probe head.

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. If you are shipping a probe head to a Tektronix service center for warranty service, attach a tag to the probe head showing the following:

- The RMA number
- Owner's name and address
- Name of a person who can be contacted
- Probe-head type and serial number
- Description of the problem

Mark the address of the Tektronix Service Center and the return address on the shipping carton in two prominent locations.

Accessories

The following standard accessories are shipped with the probe head.

Table 4: Standard Accessories

Quantity	Accessory	Part number
1	SOFTWARE PKG; W/INSTRUCTIONS MANUAL, TMSSPH1 PUB32G16	063-3982-XX
1	TOOL, EXTRACTION;PGA SOCKET,TWO-SIDED,19 TEETH PER SIDE;1710-19	003-1884-XX

No optional accessories are available for the probe head.

