

Instructions



050-3642-00 and Above TPS2000 Series Oscilloscopes Backlight Inverter Board Replacement Kit 075-0934-00

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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For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

Only qualified personnel should perform service procedures.

Injury Precautions

Use Proper Power Cord. To avoid fire hazard, use only the power cord specified for this product.

Avoid Electric Overload. To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal.

Avoid Overvoltage. To avoid electric shock or fire hazard, do not apply potential to any terminal, including the common terminal, that varies from ground by more than the maximum rating for that terminal.

Avoid Electric Shock. To avoid injury or loss of life, 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.

Connect the Probe Properly. The probe ground lead is at ground potential. Do not connect the ground lead to an elevated voltage.

Do Not Operate Without Covers. To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

Use Proper Fuse. To avoid fire hazard, use only the fuse type and rating specified for this product.

Do Not Operate in Wet/Damp Conditions. To avoid electric shock, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere. To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Product Damage Precautions

Use Proper Power Source. Do not operate this product from a power source that applies more than the voltage specified.

Provide Proper Ventilation. To prevent product overheating, provide proper ventilation.

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

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:



DANGER
High Voltage



Earth Terminal



ATTENTION
Refer to Manual



Double
Insulated

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, disconnect the main power by means of the power cord or, if provided, the power switch.

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 electrical shock, do not touch conductive parts.

Kit Description

The Backlight Inverter Board (Tektronix part number 119-7259-00) in this kit replaces the Backlight Inverter Board 119-6930-00 which is no longer available.

This document is supported by Tektronix modification ECR30899.

Products

TPS2012
TPS2014
TPS2024

Minimum Tool and Equipment List

Required tools and equipment	Part number
Torx® T-15 torque-limiting screwdriver, long shank	Standard tool
Needle-nose pliers	Standard tool

Kit Parts List

Circuit/figure number	Quantity	Part number	Description
-----	1 EA	119-7259-00	Inverter board, DC-to-AC Inverter, Connector type, Dimming type, 4W, 1 bulb

Installation Instructions

These instructions are for personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the appropriate product manual. Contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service for installation assistance.



CAUTION. *To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this kit.*

Remove, Install, and Reassemble

You need to remove the Rear Case before you can access the Backlight Inverter board.

Remove the Rear Case

You will need a torque-limiting Torx T-15 screwdriver for this procedure. To remove the rear case, refer to Figure 1 and follow these steps:

1. Open the battery door and remove the batteries.
2. Place the oscilloscope face down on a soft surface, such as an anti-static mat.
3. Remove the five screws that secure the rear case to the chassis. Tilt the handle to gain better access to the top two screws.
4. Lift up and remove the rear case from the oscilloscope chassis.

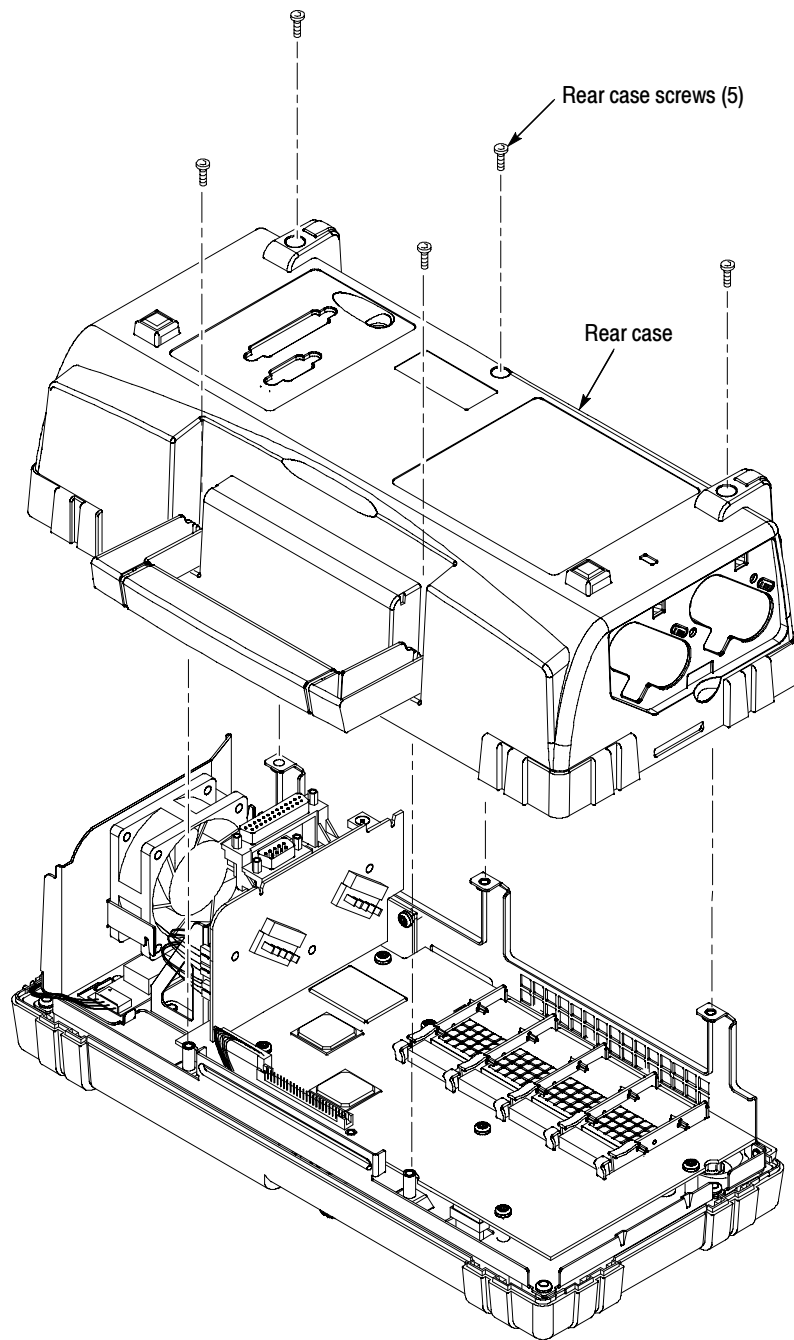


Figure 1: Removing and installing the rear case

Remove the Backlight Inverter Board

You will need needle-nose pliers for this procedure. To remove the Backlight Inverter board, refer to Figure 2 and follow these steps:

1. Remove the rear case. Follow the procedure on page 3.
2. Disconnect the display inverter cable from the Backlight Inverter board.
3. Disconnect the LCD inverter cable from the Backlight Inverter board.
4. Use the needle-nose pliers to carefully bend the two chassis-mounting tabs out of the way. Do not to bend the tabs more than needed.
5. Remove the Backlight Inverter board.

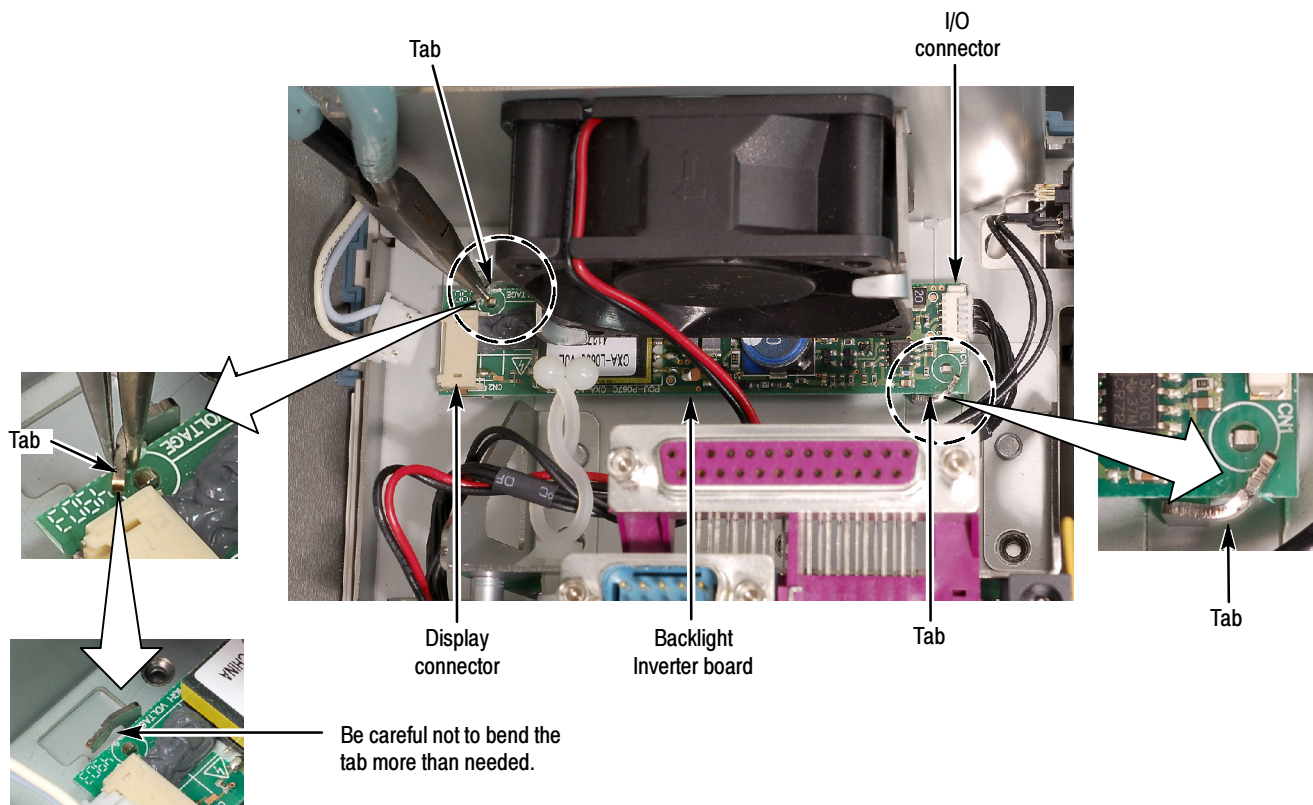


Figure 2: Removing and installing the Backlight Inverter board

Install the New Backlight Inverter Board

To install the new Backlight Inverter board, refer to Figure 2 and follow these steps:

1. Align the new Backlight Inverter board with the chassis-mounting tabs.
2. Use the needle-nose pliers to carefully bend the tabs into place to secure the board.
3. Connect the LCD inverter cable to the Backlight Inverter board.
4. Connect the display inverter cable to the Backlight Inverter board.
5. Install the rear case.

Install the Rear Case

You will need a torque-limiting Torx T-15 screwdriver for this procedure. To install the rear case, refer to Figure 1 and follow these steps:

1. Place the oscilloscope face down on a soft surface.
2. Ensure that all cables are routed within the internal chassis area.
3. Place the rear case over the assembled oscilloscope and ensure that:
 - All edges align with the chassis.
 - The RS-232, printer, and power connectors align and feed through the rear case without binding.
4. Use a torque-limiting Torx T-15 screwdriver to install the five screws to secure the rear case. Torque the screws to 8 in·lbs (.85 N·m). Tilt the handle to better access the top two holes.
5. Install the batteries.



CAUTION. *Avoid cross threading the screws that attach the rear case to the front case. An easy way to avoid this is to slip the screw into the hole and, using slight pressure, slowly rotate the screw counterclockwise until you feel the screw slip into the screw threads. Then tighten the screw clockwise. A properly started screw will have very little resistance going in.*

Upgrade the Firmware

The installation of the new Backlight Inverter board requires that you upgrade the TPS2000 series firmware. To upgrade the firmware, follow these steps:

1. Install a CompactFlash card into the CompactFlash reader on to your PC.
2. Open up a Web browser and go to www.tektronix.com/software. Use the Software and Firmware Finder to locate the most recent firmware upgrade.
3. To download the firmware to your CompactFlash card, press the **Download** button on the TPS2000 Instrument Firmware page and follow the on-screen instructions.
4. Unzip the downloaded file and save the file “TPS2000.TEK.”
5. Once the file is saved to your CompactFlash card, insert the CompactFlash card in your TPS2000 oscilloscope and power up the oscilloscope.
6. To update the firmware, push the **UTILITY** button on your oscilloscope. Then push the **File Utilities** bezel button, the **-more-** bezel button, the **Update Firmware** bezel button, and finally the **Update Firmware** bezel button again.
7. Your oscilloscope will reboot and the firmware update begins automatically. The update will take about five minutes.

Do not remove the CompactFlash card or power off the oscilloscope during the update.

8. At the end of the update process, the oscilloscope will display a message that the firmware update was successful. Press the **OK** bezel button to remove the message and return to the prior state of the oscilloscope.

Verify Operation

Refer to the TPS2000 series user manual and perform the Functional Check procedure.

This completes the Backlight Inverter board replacement.

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