SPG8000
Master Sync / Clock Reference Generator
SPG8UP Field Upgrade

Instructions

www.tektronix.com

075-1046-00

Tektronix

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

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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 a larger system. Read the safety sections of the other component 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.

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.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Power disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do not operate without covers. Do not operate this product with covers or panels removed.

Do not operate with suspected failures. If you suspect that there is damage to this product, have it inspected by qualified service personnel.

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

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.

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.*

Symbols and 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.

The following symbol(s) may appear on the product:

CAUTION
Refer to Manual

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.

Introduction

This document provides instructions for installing the following field upgrades for the SPG8000 Master Sync / Clock Reference Generator:

- Option DPW – adds a second, hot-swappable redundant (backup) Power Supply module
- Option 3G – adds 3G SDI format support for instruments with Option SDI installed

These instructions are composed of the following sections:

- *How to install and configure Option DPW* describes how to install the backup Power Supply module into the SPG8000 generator. This section also describes how to configure one of the Power Supply module as the preferred (active) supply. (See page 6.)
- *How to install Option 3G* describes how to enter the option key that is required to enable Option 3G. This option allows the instrument to generate 3G SDI signals. Option SDI must already be installed in the instrument before you can upgrade to Option 3G. (See page 11, *How to install Option 3G*.)

Firmware upgrade

An upgrade of the instrument firmware is not required as part of the upgrades covered by these field upgrade instructions.

Tektronix releases software and firmware updates for products to add new features and to fix product problems. You can find the latest firmware for your product at the Tektronix Web site (www.tektronix.com/software).

The instructions for how to upgrade the instrument firmware are located in the *SPG8000 Quick Start User Manual*.

Standard accessories

The following accessories are shipped with the field upgrade kit:

- *SPG8UP Field Upgrade Instructions* (this document)
  Tektronix part number: 075-1046-XX
- Option DPW only: Power Supply module with the power cord option you ordered (see list below)
- Option 3G only: Document listing the unique module ID and Option Key for the instrument you are upgrading

International power cord options

All of the available power cord options listed below include a lock mechanism to keep the power cord attached to the instrument.

- Opt. A0 – North America power (standard)
- Opt. A1 – Universal EURO power
- Opt. A2 – United Kingdom power
- Opt. A3 – Australia power
- Opt. A5 – Switzerland power
- Opt. A6 – Japan power
- Opt. A10 – China power
- Opt. A11 – India power
- Opt. A12 – Brazil power
- Opt. A99 – No power cord

Product documentation

The user documentation for your product is listed in the following table. Check the Tektronix Web site for the latest version of the documents (www.tektronix.com/downloads).

Table 1: Product documentation

Document	Tektronix Part Number	Description	Availability		
			Print	Web	CD
Quick Start User Manual	071-3080-xx (English)	Describes how to install the instrument and provides basic operating information	✓	✓	✓
	077-0745-xx (Japanese)			✓	✓
	077-0746-xx (Russian)			✓	✓
Technical Reference	077-0747-xx	Provides detailed operating information		✓	✓
Specifications and Performance Verification	077-0748-xx	Lists the product specifications and provides procedures for verifying the performance of the instrument		✓	✓
Service Manual	077-0749-xx	Describes how to service the instrument to the module level (such as circuit boards and fuses)		✓	
Declassification and Security Instructions	077-0750-xx	Describes how to clear or sanitize the data storage (memory) devices in the product for customers with data security concerns.		✓	
Release Notes	077-0751-xx	Describes the new features, improvements, and limitations of the instrument firmware		✓	
Video Sync Pulse Generator and Electronic Changeover Unit System Integration Technical Reference	077-0563-xx	Provides information for system integrators who are designing systems for high-definition (HD) and standard-definition (SD) digital video content where Tektronix electronic changeover units and video sync pulse generators are to be deployed.		✓	✓

How to install and configure Option DPW

This section provides the following information on how to install the Option DPW backup Power Supply module into the SPG8000 generator:

- Guidelines for preventing component damage
- Instructions for installing or replacing the Power Supply module
- Instructions for how to configure the preferred (active) supply

Required equipment

No equipment is required to install the backup Power Supply module.

To prevent component damage

CAUTION. *Electrostatic discharge (ESD) can damage components on the modules and mainframe. To prevent ESD or other component damage, follow the steps below when installing, removing, or handling modules:*

- Wear a grounded antistatic wrist strap to discharge the static voltage from your body while installing or removing modules from the mainframe.
- Transport and store modules in a static-protected bag or container.
- Do not slide the module over any surface.
- Handle modules as little as possible.
- Do not touch module components or connector pins.
- Do not use any devices capable of generating or holding a static charge in the work area where you remove, install, or handle modules.
- Avoid handling modules in areas that have a floor or work-surface covering capable of generating a static charge.

To install the backup Power Supply module

Perform the following steps to install the backup Power Supply module or to replace a failed supply:

1. If your instrument was shipped with only one Power Supply module, remove the blank power supply cover from the Power Supply 2 slot by pushing the retaining latch to the left, and then pulling the cover out of the instrument as shown in the following figure. Proceed to step 3.

Figure 1: Removing the shield from the Power Supply 2 slot

2. If your instrument has two Power Supply modules installed, perform the following steps to install the new supply:

   a. Remove the power cable from the Power Supply module that you are replacing.

WARNING. *Disconnect the power cord from a Power Supply module before you remove the module from the instrument. Also, do not connect a power cord to a Power Supply module while the module is not installed in the instrument. There are dangerous high voltages on the module when the power cord is connected.*

CAUTION. *To prevent an unexpected shutdown of the instrument, be sure to unplug the correct power cord if you are replacing a faulty Power Supply module. (See Figure 2.)*

When viewed from the front of the instrument, Power Supply 1 is the left Power Supply module and Power Supply 2 is the right Power Supply module. This matches the orientation of the PWR1 and PWR2 indicators on the front panel. The STATUS LED on the rear panel of each Power Supply module will match the status shown by the front-panel PWR1 and PWR 2 indicators.

b. Pull out the handle located at the bottom of the supply. (See Figure 2.)

c. While pushing the retaining latch to the left, use the handle to pull the Power Supply module out of the instrument.

3. Insert the replacement supply into the instrument until it latches into place.
4. If necessary, push the handle of the supply into the storage position.
5. Connect the power cable to the Power Supply module you installed.
6. Check that the status of the Power Supply module you just installed is bright green or dim green.
7. If desired, change the preferred supply configuration. (See page 9, *To configure the preferred (active) supply*.)

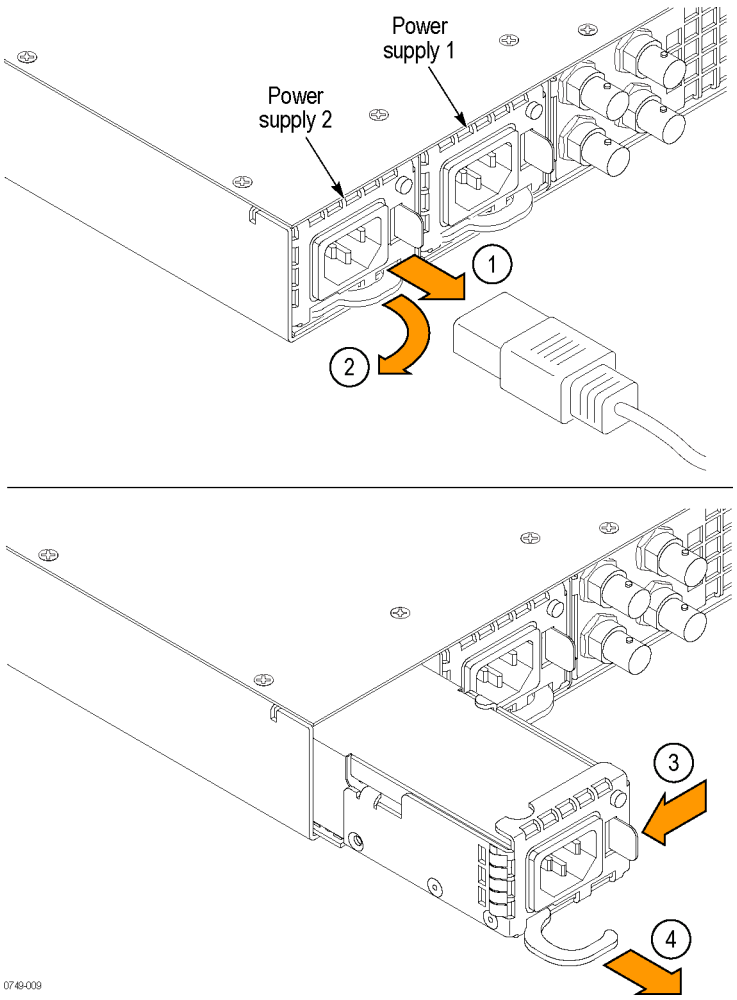


Figure 2: Removing an installed Power Supply module

To configure the preferred (active) supply

When two Power Supply modules are installed in the instrument, one is configured as the primary supply and the other is configured as the backup supply. In the event that the primary supply fails, the backup supply automatically provides power to maintain instrument operation.

NOTE. *The preferred supply configuration only applies if two Power Supply modules are installed and both of the supplies are connected to a power source. If there are two Power Supply modules installed but one of the supplies has a failure, the good supply will be used to power the instrument regardless of the preferred supply configuration.*

The recommended usage strategy is to configure one supply as preferred, and use the second supply only in case the first supply has a failure. This usage strategy allows the backup supply to have the maximum remaining life when it is needed.

The preferred supply configuration is not saved as part of the preset system. Therefore, the preferred supply configuration will not change when you activate any of the system presets, including the Factory Default preset.

Perform the following steps to configure which Power Supply module is the preferred (active) supply:

1. Check the status of the front-panel PWR1 and PWR2 indicators:
   - Bright green indicates the preferred (active) supply.
   - Dim green indicates the inactive (backup) supply.

   NOTE. *If the color of the PWR1 or PWR2 indicators is other than bright or dim green, service the faulty Power Supply module before proceeding.*

2. Check the temperature weighted hours of the installed supplies:

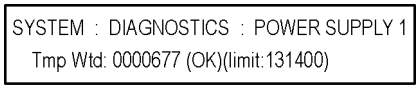
NOTE. *It is recommended that you configure the supply with the most temperature weighted hours to be used as the primary preferred supply. This allows for the newer supply to be preserved so it can provide the best possible backup should the primary supply fail. For more information about temperature weighted hours, see the SPG8000 Quick Start User Manual.*

   a. Press the **SYSTEM** button to access the SYSTEM menu.

   b. Press the up (▲) or down (▼) arrow button to select **SYSTEM : DIAGNOSTICS**, and then press the **ENTER** button to access the DIAGNOSTICS menu.

c. Press the up (▲) or down (▼) arrow button to select **SYSTEM : DIAGNOSTICS : POWER SUPPLY 1**. The second line of the display will list the number of hours the supply has been the active supply and the backup supply.

d. Press the right (►) arrow button to display the number of temperature weighted hours of the first supply as shown below. Note the number of hours of hours shown.



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e. Press the up (▲) or down (▼) arrow button to select **SYSTEM : DIAGNOSTICS : POWER SUPPLY 2**.

f. Press the right (►) arrow button to display the number temperature weighted hours of the second supply. Note the number of hours of hours shown.

3. If the Power Supply module with the greatest number of temperature weighted hours is not the currently the preferred supply, then continue this procedure. Otherwise, you do not need to change the preferred supply configuration.

4. If you want to change the preferred supply configuration, press the **SYSTEM** button to access the SYSTEM menu.

5. Press the up (▲) or down (▼) arrow button to select **SYSTEM : POWER SUPPLY PREFERRED SELECT**.

6. Press the left (◄) or right (►) arrow button to display the supply you want to be the primary (active) supply: Power Supply 1 or Power Supply 2. The second line of the display shows the supply status: **Active, Preferred** or **Inactive**.

NOTE. *When viewed from the front of the instrument, Power Supply 1 is the left Power Supply module and Power Supply 2 is the right Power Supply module. This matches the orientation of the PWR1 and PWR2 indicators on the front panel.*

7. If status of the supply is Inactive, press the **ENTER** button to change the status to Active, Preferred. The front-panel indicator for the selected supply should change to bright green.

How to install Option 3G

To enable the 3G SDI software option, you must enter the option key supplied with this kit. Each option key applies to only one instrument. You will need to enter the option key only once.

Locate the option key document, and then perform the following steps to enter the option key:

NOTE. *This procedure uses the instrument front panel to enter the option key. You can also use the SPG8000 Web interface to remotely enter the option key. Refer to the SPG8000 Technical Reference manual for information about using the SPG8000 Web interface to enter the option key.*

1. Press the front-panel **SYSTEM** button to access the SYSTEM menu.
2. Press the up (▲) or down (▼) arrow button until **SYSTEM : OPTIONS** is displayed.
3. The second line of the display lists the options installed in the instrument. As shown below, check that **SDI** is listed and that **3G** is not listed. This verifies that Option SDI is installed and that Option 3G is not enabled.

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4. Press the **ENTER** button to enter the OPTIONS submenu.
5. Press the up (▲) or down (▼) arrow button until **SYSTEM : OPTIONS : UNIQUE ID** is displayed.
6. Verify that the displayed unique ID matches the module ID listed on the option key document.

7. Enter the option key:

   a. Press the up (▲) or down (▼) arrow button to select **SYSTEM : OPTIONS : KEY**. The existing option key string is displayed.

   b. Press the **ENTER** button to enter the option key edit mode. The underscore character (_) appears under the first character of the option key.

   c. Use the up (▲) or down (▼) arrow button to select the first character of the option key.

   d. Use the left (◄) or right (►) arrow button to move the underscore character to the next character in the option key.

   e. Enter all of the option key characters, and then press **ENTER** button to confirm the selection.

   f. Press the **BACK** button to exit the OPTIONS submenu.

8. Verify that Option 3G is enabled:

   a. Press the up (▲) or down (▼) arrow button until **SYSTEM : OPTIONS** is displayed.

   b. Verify that **3G** is displayed in the second line of the display. This verifies that Option 3G has been enabled.

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   c. If Option 3G is not enabled, use the SYSTEM : OPTIONS : UNIQUE ID display and the SYSTEM : OPTIONS : KEY display to verify that you are updating the correct instrument and that you entered the new option key correctly.