

# Installation Note

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## Agilent Technologies Firmware Upgrade Kits E4400-60230 and E4400-60597 for PSG/ESG Signal Generators

The instructions in this installation note enable you to:

- use the PSG/ESG Upgrade Assistant 5.0.3 to upgrade firmware on PSG/ESG signal generators; this includes E4400B, E4420B - E4426B, E4430B - E4437B, E4438C, E8241A, E8244A, E8251A, E8254A.
- install the PSG/ESG Upgrade Assistant 5.0.3 on your computer from either the Agilent Technologies website or a CD-ROM

<b>Product Affected:</b>	<b>PSG/ESG Signal Generators</b>
Serial Numbers:	All
Options:	All
To be performed by:	(X) Agilent Technologies Service Center (X) Personnel Qualified by Agilent Technologies (X) Customer
Estimated installation time:	75 minutes (RS-232), 30 minutes (GPIB), 3 minutes (LAN)
Estimated verification time:	1 minute



**Agilent Technologies**

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## Overview of Upgrading Firmware

PSG/ESG Upgrade Assistant 5.0.3 is used for upgrading firmware on PSG/ESG signal generators:

- it is a Windows-based program
- it replaces ESG Upgrade Assistant 2.12, 2.22, and 3.3, as well as PSG/ESG Upgrade Assistant 5.0, 5.0.1, and 5.0.2.
- it allows new and previous versions of firmware installations to be performed using either:
  - RS-232 or GPIB on Agilent E44xxB ESG Family Signal Generators
  - GPIB or LAN on Agilent E4438C ESG Vector Signal Generators
  - GPIB or LAN on Agilent E824xA/5xA PSG Signal Generators
- it has an associated HTML page that describes the following information for each firmware upgrade version:
  - information about new features and enhancements
  - a list of improvements and defects that have been fixed
  - hardware compatibility

### **To upgrade firmware on PSG/ESG signal generators, perform the following procedures:**

1. “Checking Signal Generator Functionality” on page 4
2. “Confirming Required Equipment” on page 5
3. “Connecting an RS-232, GPIB, or LAN Interface to a PC” on page 7
4. “Installing PSG/ESG Upgrade Assistant 5.0.3 and Firmware Files” on page 10
5. “Using PSG/ESG Upgrade Assistant 5.0.3 with Firmware Files” on page 11
6. “Checking Signal Generator Functionality” on page 4

## Checking Signal Generator Functionality

Use the following procedure to confirm that the signal generator powers up and that the internal check identifies no errors. The internal check evaluates the operation of the signal generator and returns an error message if it detects a problem.

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<b>NOTE</b>	<p>Agilent E44xxB ESG Family Signal Generators must warm up for at least five minutes and all errors must be cleared from the error queue before a firmware upgrade can be successfully completed.</p> <p>If errors exist in the error queue and a firmware upgrade is attempted, the firmware upgrade will be unsuccessful; new DSP code cannot be upgraded until the error queue has been cleared.</p> <p>When Agilent E44xxB ESG Family Signal Generators with Option 1E5 are first connected to ac line power, the error message <code>ERROR 514, Reference Oven Cold</code> occurs which causes both the <code>OVEN COLD</code> annunciator and the <code>ERR</code> annunciator to turn on.</p> <p>After approximately five minutes, the <code>OVEN COLD</code> annunciator automatically clears, but the <code>ERR</code> annunciator remains on until all errors are cleared from the error queue.</p>
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### To check signal generator functionality

1. Turn on power to the signal generator and let it warm up for at least five minutes.
2. Cycle power on the signal generator. The green LED should light and the signal generator should perform a functionality check.
3. When the display lights, check to see if the `ERR` annunciator is on.
  - If the `ERR` annunciator is *on*, review the error messages in the error queue by pressing **Utility > Error Info > View Next Error Message**. The first error message in the error queue appears in the display text area. (Refer to the signal generator error messages document for information about each error message.)

After resolving all problems causing errors, press **Clear Error Queue(s)**.
  - If the `ERR` annunciator is *off*, the signal generator functionality check has passed.

## Confirming Required Equipment

This section lists the minimum computer, its associated hardware, operating system, and software that are required to perform firmware upgrades on PSG/ESG signal generators.

<b>Computer</b>	IBM compatible PC with a 486 MHz processor or greater
<b>RAM Required</b>	64 MB or more
<b>Hard Disk Space Required</b>	20 MB or more  This could increase significantly if a large library of firmware upgrade files are expected to be maintained on the PC. A single firmware release consists of approximately 5 to 7 MB of data.
<b>CD-ROM Drive or Modem</b>	Use of a CD-ROM drive is only required when the computer being used does not have Internet access.  Use of a 56 k modem is only required for systems downloading firmware updated from the Internet.
<b>RS-232, GPIB, or LAN Connection</b>	<ul style="list-style-type: none"> <li>• If you plan to perform a firmware upgrade using RS-232, refer to the “RS-232 Installation Kit (Only for use with Agilent E44xxB ESG Family Signal Generators)” on page 6.  While making the RS-232 connection, a 5-mm nut driver, part number 8710-1219, is used to remove the screws from the serial interface (f) to (f) adapter.</li> <li>• If you plan to perform a firmware upgrade using GPIB, refer to “GPIB Interface Requirements” on page 6.</li> <li>• If you plan to perform a firmware upgrade using LAN, a 10-base LAN interface is required. Contact your network administrator if problems are encountered.</li> </ul>
<b>Operating System</b>	Windows 98, or Windows 2000, or Windows NT 4.0 (with Service Pack 5 or above)
<b>Internet Browser</b>	Use of an Internet Browser is only required for downloading firmware files from the Internet or for viewing firmware release information on your local PC or over the Internet.  Microsoft Internet Explorer 4.0 and above, or Netscape Navigator 4.0 and above  Either browser must be Java enabled with Java 1.02 or above.

**RS-232 Installation Kit  
 (Only for use with Agilent E44xxB ESG Family Signal Generators)**

Quantity	Description	Part Number
1	Installation Note	E4400-90549
1	PSG/ESG Firmware Upgrade CD-ROM	E4400-10501
1	RS-232 Cable Kit: <ul style="list-style-type: none"> <li>• Serial RS-232 Cable (8120-6188)</li> <li>• RS-232 Null Modem (5181-6639)</li> <li>• Adapter, (f) to (f) (1252-7825)</li> </ul>	E4400-60049

**GPIB Interface Requirements**

Interface Cards	Manufacturer	Driver Software	Revision	Windows Version
Agilent 82341C for ISA bus computers	Agilent Technologies	I/O Libraries SICL & VISA	J.01.01.00	98/2000/NT 4.0
Agilent 82350A for PCI bus computers				
PCI-GPIB	National Instruments	NI-488.2M	1.60	98/2000/NT 4.0
PCI-GPIB+				2000/NT 4.0
PCMCIA-GPIB				98/2000/NT 4.0

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## Connecting an RS-232, GPIB, or LAN Interface to a PC

### To connect the signal generator to a PC using an RS-232 interface (Only for use with Agilent E44xxB ESG Family Signal Generators)

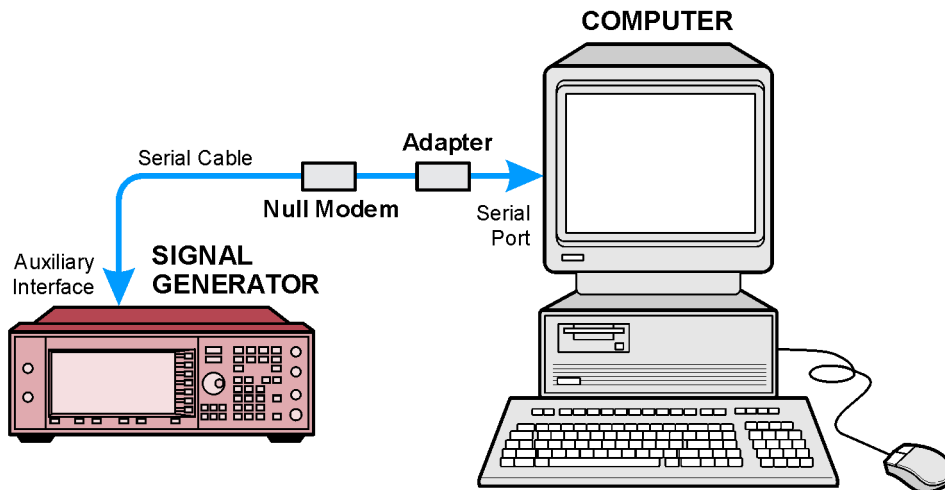
1. Connect the Agilent E44xxB ESG family signal generators to the PC as shown in the following diagram. Use a 5-mm nut driver to remove both standoffs (screws) from the female-to-female adapter.

RS-232 communications are connected to one of the COM ports on the PC using an RS-232 serial cable with a null-modem connected between the COM port and the signal generator's RS-232 connector. (Refer to "RS-232 Installation Kit (Only for use with Agilent E44xxB ESG Family Signal Generators)" on page 6.)

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**NOTE** Ensure that the selected COM port is not used by any other device while PSG/ESG Upgrade Assistant 5.0.3 is being used.

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2. Set the RS-232 parameters as follows on the Agilent E44xxB ESG family signal generators:
  - a. Press the following keys for the model being set:

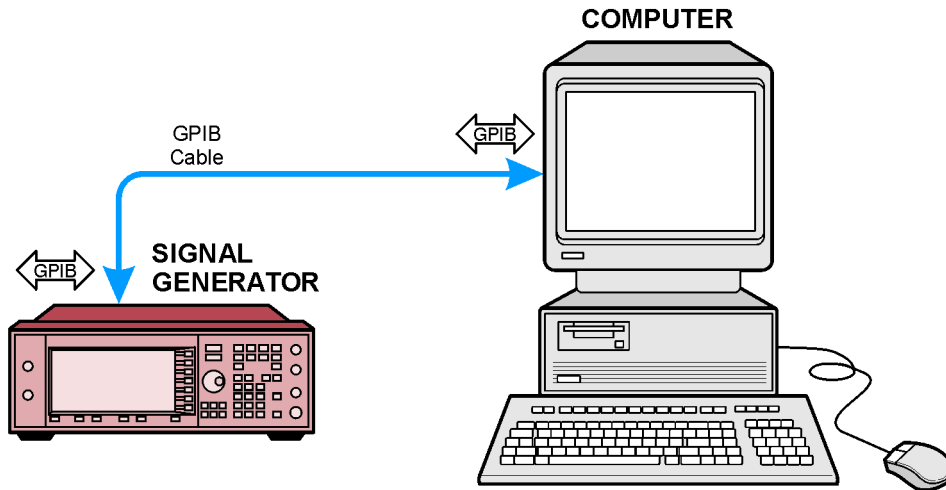
<b>Preset (factory defined)</b>
<b>Utility &gt; GPIB/RS-232</b>
<b>RS-232 Baud Rate &gt; 19200</b>
<b>RS-232 Echo &gt; Off</b>
<b>RS-232 Pace &gt;</b>
<b>    Transmit Pace &gt; None</b>
<b>    Receiver Pace &gt; Xon</b>
<b>    RTS/CTS &gt; RTS On</b>

**To connect the signal generator to a PC using a GPIB interface card**

1. Connect the signal generator to the PC as shown in the following diagram.

GPIB communications require a GPIB interface card installed in the PC and a GPIB cable connected between the interface card and the signal generator's GPIB connector.

Two common GPIB interface cards are the National Instruments PCI-GPIB and the Agilent GPIB interface cards. (Refer to "GPIB Interface Requirements" on page 6 and refer to the documentation that came with the GPIB interface card for information related to installing and configuring the GPIB interface card in your computer.)



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2. Set GPIB parameters as follows on PSG/ESG signal generators:
  - a. Press the following keys for the model being set:

Agilent E44xxB ESG Family Signal Generators	Agilent E4438C ESG Vector Signal Generators	Agilent E824xA/5xA PSG Signal Generators
Utility > GPIB/RS-232 >	Utility > GPIB/RS-232/LAN >	Utility > GPIB/RS-232/LAN >
GPIB Address > 19	GPIB Address > 19	GPIB Address > 19

- b. Use the numeric keypad, the arrow keys, or rotate the front panel knob to set the desired address and press **Enter**.

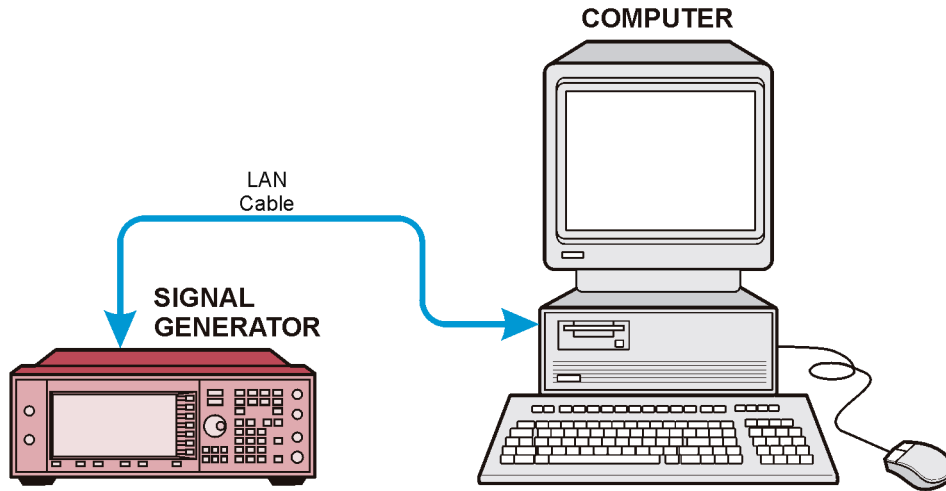
The signal generator's GPIB address is set to 19 at the factory. The acceptable range of addresses is 0 through 30. Once initialized, the state of the GPIB address is not affected by a signal generator preset or by a power cycle. Other instruments on the GPIB cannot use the same address as the signal generator.



**To connect the signal generator to a PC using a LAN interface card**

1. Connect the signal generator to the PC as shown in the following diagram.

LAN communications require a LAN interface card installed in the PC and a LAN cable connected between the interface card and the signal generator's LAN connector. LAN communications require a 10-base LAN interface. Contact your network administrator if problems are encountered.



2. Set LAN parameters as follows on PSG/ESG signal generators:

- a. Press the following keys for the model being set:

<b>Agilent E44xxB ESG Family Signal Generators</b>	<b>Agilent E4438C ESG Vector Signal Generators</b>	<b>Agilent E824xA/5xA PSG Signal Generators</b>
LAN is not available on E44xxB ESG signal generators.	Utility > GPIB/RS-232/LAN >	Utility > GPIB/RS-232/LAN >
	LAN Setup >	LAN Setup >
	Hostname > (enter the Instrument Name) or IP Address	Hostname > (enter the Instrument Name) or IP Address

- b. Use the numeric keypad to set the desired address and press **Enter**.

The signal generator's LAN address is not set to at the factory.

## Installing PSG/ESG Upgrade Assistant 5.0.3 and Firmware Files

PSG/ESG Upgrade Assistant 5.0.3 is used along with firmware files to upgrade the firmware on PSG/ESG signal generators. They are both available for download from the Agilent Technologies website or from a CD-ROM.

### To install the PSG/ESG Upgrade Assistant 5.0.3 and firmware files from the Agilent Technologies website

1. Access the Agilent Technologies website by typing:  
`http://www.agilent.com/find/upgradeassistant`  
or type “Upgrade Assistant” in the Quick Search box from the Agilent Technologies website.
2. Download and install the PSG/ESG Upgrade Assistant 5.0.3 installation program onto your computer.

The installation program places the PSG/ESG Upgrade Assistant 5.0.3 in a default installation folder (C:\Program Files\Agilent\PSG-ESG Upgrade Assistant). The default installation folder can be changed using the **Browse** button.

3. Download and install a firmware release onto your computer.

The installation program places the firmware release in a default installation folder (C:\Program Files\Agilent\PSG-ESG Upgrade Assistant). The default installation folder can be changed using the **Browse** button.

4. After installing both the PSG/ESG Upgrade Assistant 5.0.3 program and a version of firmware upgrade files, proceed to “Using PSG/ESG Upgrade Assistant 5.0.3 with Firmware Files” on page 11.

### To install PSG/ESG Upgrade Assistant 5.0.3 and firmware files from CD-ROM

1. Insert the firmware upgrade CD-ROM into the computer’s CD-ROM drive.
2. Install the PSG/ESG Upgrade Assistant 5.0.3:
  - **Install\_PSG-ESG\_Upgrade\_Assistant\_5.0.exe** places PSG/ESG Upgrade Assistant 5.0.3.

The installation program places the PSG/ESG Upgrade Assistant 5.0.3 in a default installation folder (C:\Program Files\Agilent\PSG-ESG Upgrade Assistant). The default installation folder can be changed using the **Browse** button.

After installation, run PSG/ESG Upgrade Assistant 5.0.3.

3. After installation, run PSG/ESG Upgrade Assistant 5.0.3 and proceed to “Using PSG/ESG Upgrade Assistant 5.0.3 with Firmware Files” on page 11.

## Using PSG/ESG Upgrade Assistant 5.0.3 with Firmware Files

PSG/ESG Upgrade Assistant 5.0.3 is used with firmware files to upgrade the firmware on PSG/ESG signal generators.

1. From the program's **Setup Parameters** dialog box, select the **Connection Type** to be either RS-232, GPIB, or LAN:

- If **RS-232** is selected (only for use with Agilent E44xxB ESG family signal generators), specify the settings for RS-232 Setup. Use either COM Port 1, 2, 3, or 4; the COM port that is selected is dependent on the number of serial ports that are available on the PC model to be used.

— Main firmware must be loaded at a Baud Rate of 19200, but DSP code can be loaded at Baud Rates up to 57600.

- If **GPIB** is selected, specify the settings for GPIB Setup. Use GPIB Port 0 and Address 19. These values should correspond with the values that are set on your signal generator.

For example, the signal generator is usually set to GPIB Port 0 and Address 19 and the GPIB interface card in the computer is usually set to GPIB Port 0 and Address 21. These values are chosen by convention, but any address in the range 0-30, inclusive, may be used. (For further information, refer to the documentation that came with your GPIB interface card.)

- If **LAN** is selected (not available with Agilent E44xxB ESG family signal generators), specify the settings for LAN Setup. Enter the IP address or the Instrument Name (alias name) that has been assigned to the signal generator.

For example, the signal generator could be assigned an Instrument Name or an IP address such as 141.xxx.xxx.xxx (where each x can be any digit from 0 to 9). Each Instrument Name or IP address is assigned by a system administrator at your facility. (For further information, refer to the documentation that came with your LAN interface card or contact your system administrator.)

2. From the program's **Setup Parameters** dialog box, under **Firmware Release**, click the Browse button.
3. From the **Select Release File** dialog box, double-click the folder for the version of firmware that you would like to install (for example, double-click B\_03\_84\_2001\_Sep).
4. When the folder opens, double-click the filename for the version of firmware that you would like to install (for example, B\_03\_84.esg).
  - a. Click the **View Release Information** button and review all firmware release information.
  - b. Click any Special Case that may apply to the upgrade:
    - Select the **Added New Hardware** checkbox if new hardware has been added to the signal generator.
    - Select the **Recover Failed Upgrade** checkbox if a previous firmware upgrade had been aborted or failed and a recovery is required. This checkbox can only be used on E44xxB ESG family signal generators.
  - c. Click the **Next** button to proceed.
5. From the program's **Select Components** dialog box:
  - a. Verify, under **Selected Release**, that the correct firmware version has been selected.

- If the firmware version needs to be changed, use the **Back** button and return to step 3 of this procedure.
  - b. Verify, under **Firmware Revision**, that the version of the firmware designated as Installed is to be replaced by the version designated as New.
    - If an old revision of firmware is to be installed, select the **Allow Old Revisions** checkbox. Installing old revisions of firmware with new hardware may generate errors.
  - c. Verify, under **Upgrade Selection**, that all firmware components are to be upgraded.

By default, all upgrade components are selected:

    - If you want to perform a partial upgrade and do not *already* know the requirements for each upgrade component, use the **Back** button and return to step 4 of this procedure.
    - If all components are not to be upgraded:
      1. Click the **Options** button and review the cards installed in the signal generator along with their corresponding option.
      2. Click the **OK** button when done reviewing available options.
      3. Click the components to be upgraded.
  - d. Click the **Next** button when all upgrade selections have been made.
6. From the program's **Confirm Upgrade** dialog box, click the **Next** button to begin the firmware upgrade.

Note that once an upgrade is started, it cannot be aborted and must be completed; failing to complete an upgrade may leave the signal generator in a non-operational state.

The Upgrade in progress area is displayed that indicates the estimated time remaining to complete the upgrade process.

The program performs a number of checks to confirm proper configuration for the PC and the signal generator and depending on the version of firmware that is being upgraded, the hardware and software options on the signal generator may need to be configured before DSP code can be installed. This is accomplished by first upgrading the main firmware. Once the main firmware has been upgraded, hardware and software options may need to be configured.

- **To Configure Hardware Options on ESG signal generators:**
    - a. Press **Utility > Instrument Adjustments > Hardware Options**
    - b. Highlight the desired option.
    - c. Press **Proceed with Reconfiguration > Confirm Change**
  - **To Configure Software Options on ESG signal generators:**
    - a. Press **Utility > Instrument Adjustments > Software Options > Modify License Key**
    - b. Enter the license key.
    - c. Press **Proceed with Reconfiguration**.
7. Perform the procedure, "Checking Signal Generator Functionality" on page 4.