
Installation Guide

HP J2438A
100VG Port Module
for the HP Router 650

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Product Numbers

This guide provides installation instructions for the following Hewlett-Packard Company product:

J2438A

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Ensure that you have the following items.

Introduction

The 100VG Interface provides a single 100VG port (an RJ-45 connector) for IEEE-802.3/Ethernet packet format to the HP Router 650. You can install up to four 100VG Interfaces in one HP Router 650 to connect the router to up to four routed 100VG segments.

For more information, refer to the *100VG-AnyLAN Technology Guide* (on the CD-ROM enclosed with this product) or the second edition of *Planning and Designing High Speed Networks Using 100VG-AnyLAN* by Janis Furtek Costa, Prentice Hall, 1995, ISBN 013439092X.

Installation

Ensure that you have the following items.

- 1 LED label strip (J2438-80012)
- 5 Interface card labels (5182-3315)
- 1 Cable tie (5182-1723)
- 1 Grounding wrist strap (9300-1408)
- 1 *Installation Guide* (this manual, 5963-6562)
- 1 *Caution: Static-Sensitive Devices* (5962-8318)

Prerequisite: Version A.09.60

Operating this 100VG Interface requires that the HP Router 650 be running with operating system version A.09.60 or later.

If you need to check which version is running—and power is on to your HP Router 650—then you can display the version number by using the Stamp command in NCL. This procedure is detailed on page 15 in the section titled “Prepare the router”.

If power is off to your HP Router 650, then install the card as described on the following pages and delay checking the version number until you get to page 15 within the material titled “Prepare the router”.

You can upgrade your operating system, if needed, using an A.09.60 (or a later version) diskette. See page 15 for instructions.

Installation

Install the interface card.

Install the interface card.

Notes

You can install the interface card without taking the system off line (that is, without switching the router off and taking all networks down); refer to “Installing the Interface Card (System Online)”, page 8. (Installing an interface card without taking the system off line is often called “hot swapping”.)

If you are installing the interface card in a slot that formerly was unused, or if you are installing the card in a slot that formerly held a different type of card (e.g., a WAN interface card), you must specify the new card in the configuration. (Refer to “Configure and boot the router” in chapter 1 of the *HP Router 650 Installation Guide*.)

Installing the Interface Card (System Offline)

If you will be installing the new interface card in a slot where another interface card is *not* currently installed, begin with step 2; otherwise, begin with step 1.

1. Disconnect all cables from the interface card you will be removing, and label them for reconnection when you install that card again.
2. Open the front door of the router by pulling its lock—the round post at the upper right—to the right. See figure 1.

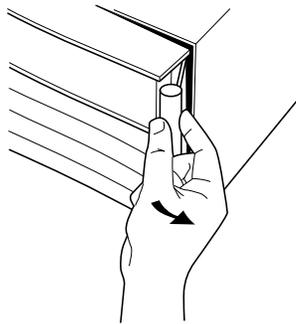


Figure 1. Opening the Router Door

Installation
Install the interface card.

3. Switch the power supply off by pressing the bottom of its switch (marked with “○”). If two power supplies are installed, switch both off.
4. Connect a grounding wrist strap (one is provided with the interface card) to your wrist and to the back of the router.
5. Press down slightly on the insides of both locks on the bezel of the old card or blank (see figure 2), then swing them outward until the bezel disengages (see figure 3).

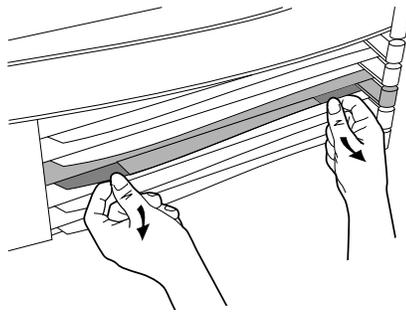


Figure 2. Unlocking the Card Bezel

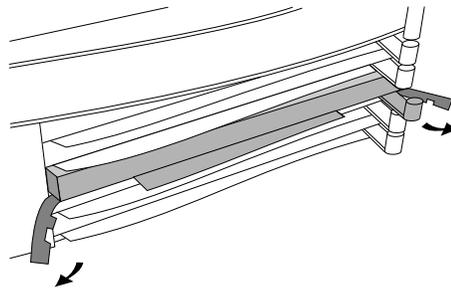


Figure 3. Disengaging the Card Bezel

6. Grasping the left and right edges of the bezel, pull out until the tray is about half exposed.
7. Grasping the sides of the tray, remove the card (or blank) from the router.

Installation

Install the interface card.

8. Holding the new interface card by the sides of its tray, slide the back of the tray about half-way into the router.
9. Pull the locks on the bezel outward, then push evenly on both ends until the card engages fully and the locks swing inward to about 45°. See figure 4.

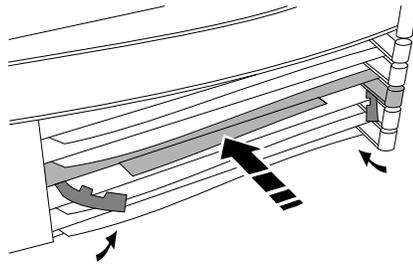


Figure 4. Installing the Interface Card

10. Push the two locks evenly to close them, pressing downward slightly to secure them in place.
11. Remove the old card's LED label strip or blank label strip in the router door from the position corresponding to the slot where you have installed the interface card. Then insert the LED label strip provided with the card as far as it will go.
12. Bend the end of the label strip toward the back of the router, creating a 90° fold.
13. Switch on the router's power supply by pressing the top of the switch (marked with "I"). If two power supplies are installed, switch on both supplies.
14. Close the router door.

Installation
Install the interface card.

15. To replace the label at the left of the slot that identifies the department or site served by the interface, slide the old label out from the right. On one of the new card labels (provided with the card and the router), write on the side that is *not* shiny. Position the new label with its shiny side facing the router, and slide it in from the right.

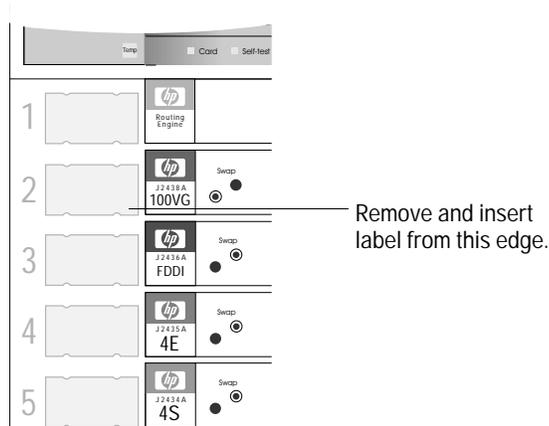


Figure 5. Interface Card Label Location

Go to the next installation step, "Connect network cables", on page 12.

Installation

Install the interface card.

Installing the Interface Card (System Online)

If you will be installing the new interface card in a slot where another interface card is *not* currently installed, skip steps 1 and 3.

1. Disconnect all cables from the interface card you will be removing, and label them for reconnection when you install that card again.
2. Connect a grounding wrist strap (one is provided with the interface card) to your wrist and to the back of the router.
3. If the Swap LED on the interface card you are removing is not lit (see figure 6), press the adjacent Swap button, and hold it until the Swap LED turns on (about 1-5 seconds).

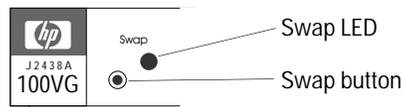


Figure 6. Swap Button and LED

4. Press down slightly on the insides of both locks on the old card's bezel (see figure 7), then swing them outward until the bezel disengages (see figure 8).

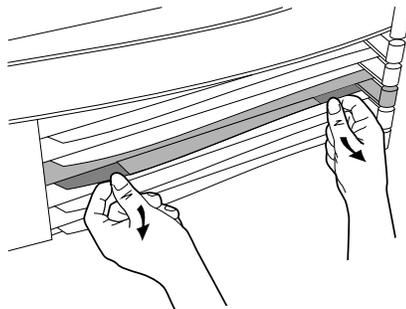


Figure 7. Unlocking the Card Bezel

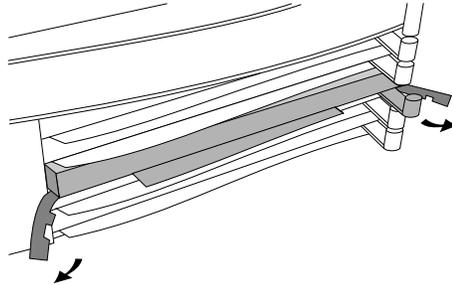


Figure 8. Disengaging the Card Bezel

1. Grasping the left and right ends of the bezel, pull out until the tray is about half exposed.
2. Grasping the sides of the tray, remove the card from the router.
3. Holding the new interface card by the sides of its tray, slide the back of the tray about half-way into the router.
4. Pull the locks on the bezel outward, then push evenly on both ends until the card fully engages and the locks swing inward to about 45°. See figure 9.

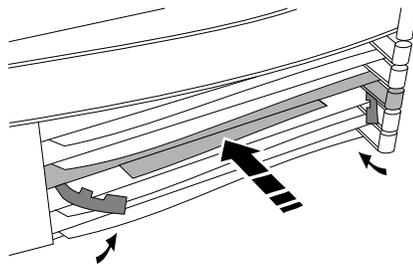


Figure 9. Installing the Interface Card

5. Push the two locks evenly to close them, pressing downward slightly to secure them in place. A self-test of the new interface card begins automatically.

Installation

Install the interface card.

6. The self-test requires about 5 seconds. If the new interface card's Card LED (the first LED in the row of LEDs in the router door) has turned green, and the Self-test LED (the second LED in the row) has turned off, then the self-test succeeded, and you can go to step 11. However:
 - If these LEDs continue flashing, the card is not seated properly. Adjust the position of the card by pushing evenly on both ends, and adjust the positions of the locks evenly.
 - If the Card LED remains orange and the Self-test LED remains lit, the card has failed the self-test. This could be due to a hardware failure or a router operating system version older than A.09.60. Do the following steps:
 - 1) Connect a console to the router and note any error messages in the event log, which can be displayed from the Main menu. (See "Connect a console" in chapter 1 of the *HP Router 650 Installation Guide*.)
 - 2) Switch the router's power off and then on, and then check the LEDs for failures as listed in table 3-1, "LED Error Patterns During Power-On Self-Test" in chapter 3 of the *HP Router 650 Installation Guide*.
 - 3) If the same LED pattern results (Card LED orange and Self-test LED lit), then check the software version according to "Checking the Software Version" on page 15 in the section titled "Prepare the Router". If the software version is correct, then investigate an "Interface Card/Slot" hardware failure according to the instructions in table 3-1, "LED Error Patterns During Power-On Self-Test" in chapter 3 of the *HP Router 650 Installation Guide*.
 - If the Card LED remains orange but the Self-test LED has turned off, look in the event log (which can be displayed from the Main menu) for the entry "Slot x HWID and Line configuration mismatch" (where x is the number of the slot). If that entry appears in the event log, specify the new card for that slot in the configuration (refer to "Configure and boot the router" in chapter 1 of the *HP Router 650 Installation Guide*). If that entry does not appear in the event log, call for service from your HP dealer or service provider.

7. Open the front door of the router by pulling its lock—the round post at the upper right—to the right. See figure 10.

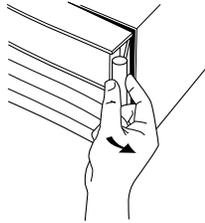


Figure 10. Opening the Router Door

8. Remove the old card's LED label strip from the position corresponding to the slot where you have installed the new card, then insert the LED label strip provided with the new card as far as it will go.
9. Bend the end of the label strip toward the back of the router, creating a 90° fold.
10. Close the router door.
11. To replace the label at the left of the slot that identifies the department or site served by the interface, slide the old label out from the right. On one of the new card labels (provided with the card and the router), write on the side that is *not* shiny. Position the new label with its shiny side facing the router, and slide it in from the right.

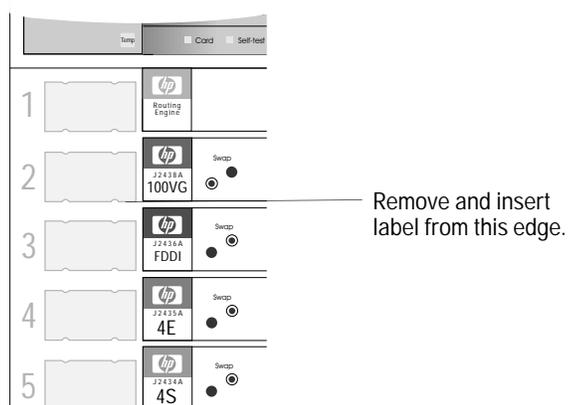


Figure 11. Interface Card Label Location

Installation

Connect the network cable.

Connect the network cable.

With the 100VG Interface installed, you are ready to connect the module to your network segment through a hub or switch.

Note

The 100VG Interface must be connected to a hub or a switch. Do not directly connect two 100VG Interface modules together.

To connect the interface card to a 100VG switch or hub on the network segment, press the RJ-45 plug on the cable from the hub or switch into the keyed RJ-45 connector labeled “100VG” until the retaining clip on the plug clicks. Ignore the connector labeled “Factory Test”. See figure 12.

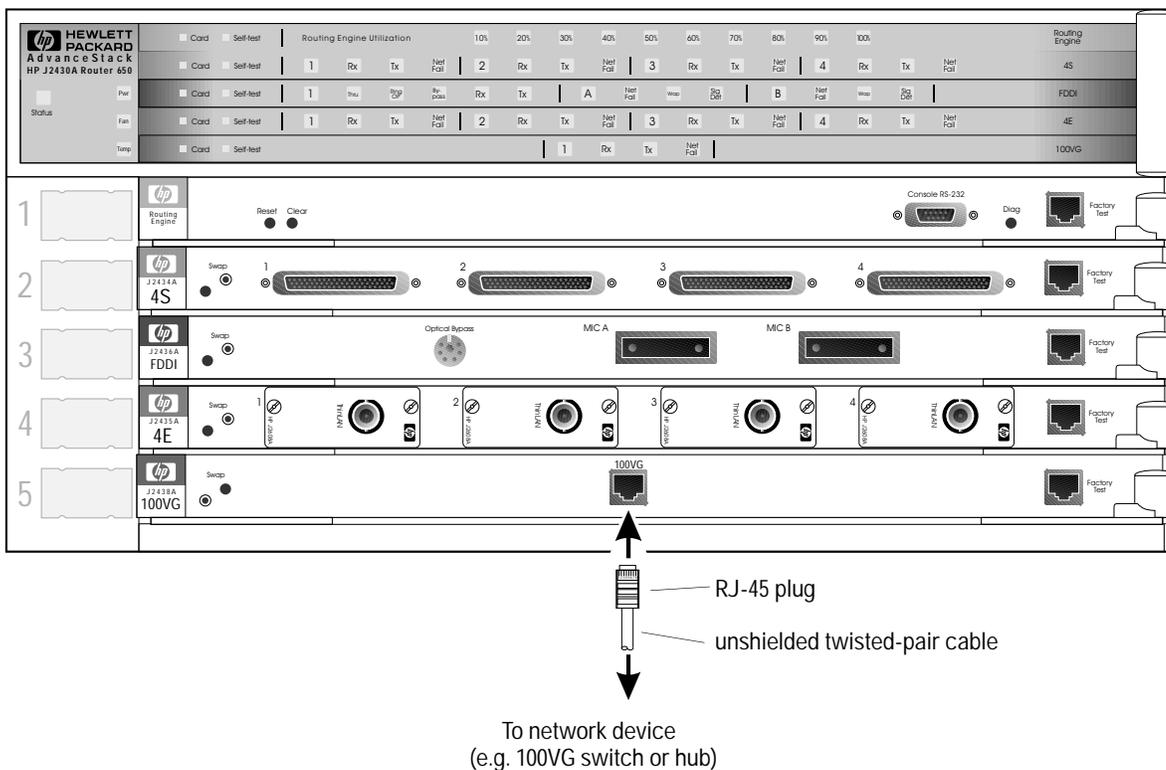


Figure 12. Connecting Devices to the 100VG Port

Arrange the network cable.

For information on cables and cable pinouts, see the “Recommended Cables” information on page 16.

Arrange the network cable.

To help keep the network cable orderly—and out of the way when interface cards are being removed or installed—arrange the cable over the bar at the right of the router.

The cable-management bar has a slot in it that you can use for tie-wrapping the network cable. Included with each interface card is a tie-wrap that you can use to wrap the cable and then attach it to the cable management bar, as shown in figure 13.

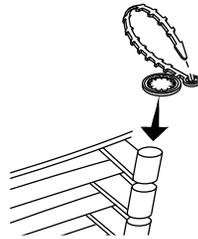


Figure 13. Cable-Management Bar and Tie-Wrap

Installation

Prepare the router.

Prepare the router.

To prepare the router after installing the new interface card, do the following procedures. These procedures are described in chapter 1 of the *HP Router 650 Installation Guide*, except for the third procedure listed with its own reference.

- Connect a console.
- Plug in and verify router hardware.
- Check that the operating software can recognize the card. Refer to the following “Checking the Software Version” procedure.
- Configure and boot the router.
- Verify router initialization and configuration.

Notes on Configuration

If you are installing the interface card in a slot that formerly was empty, you must specify the new card in the configuration.

If you are installing the interface card in place of a different type of interface card (for example, if the slot in which you are installing the interface card formerly held an Ethernet interface card), you will have a configuration conflict until you change the configuration for this slot. You can use Quick Configuration to replace this configuration easily; refer to the section titled “The HP Router 650” in chapter 3 of the *User’s Guide*.

The Default port name is “VG31G”, where “3” is the slot number, “1” is the port number, and “G” is the circuit group name.

Checking the Software Version

**Prerequisite:
Version A.09.60**

1. At the Main menu (see figure 1-14 in the *HP Router 650 Installation Guide*), press [2] to select “Network Control Language Interpreter”. The NCL prompt—DEFAULT_CONFIG: or another system name—then appears at the bottom of the screen (see figure 1-15 in the *HP Router 650 Installation Guide*).

2. At the NCL prompt, enter the Stamp command:

```
stamp 
```

The following is an example of the first three lines of the response:

```
Image stamp: /warp/code/build/w3o_f94 (f94)
Sep 10 1996 12:30:51
A.09.60
```

- If the version number on the third line is A.09.60 or greater, then the current operating system will support the 100VG Interface without upgrading the operating code. (Disregard the lines of text other than the third line.)
 - If the version number on the third line is lower than A.09.60, then you must upgrade the operating code to version A.09.60 or later, before the 100VG Interface can operate in the router. You can upgrade by loading the diskette for A.09.60 in a PC used as the console for the router. To download the code to the router, follow the instructions on the sheet “HP Router Software Upgrade: Release A.09.60” and/or the `readme.txt` file on the diskette. (Disregard the lines of text other than the third line.)
3. To exit from NCL and return to the Main menu, enter the Exit command at the NCL prompt:

```
exit 
```

Troubleshooting

For general information about troubleshooting problems using the 100VG Interface in the Router 650, refer to chapter 3 of the *HP Router 650 Installation Guide*.

Interpreting LED Error Patterns

Use tables 3-1 and 3-2 in chapter 3 in the *HP Router 650 Installation Guide* as your guide to interpreting LED patterns for diagnosis of problems with the router and its interface cards (e.g., 100VG Interface).

Recommended Cables

The following table lists cables that have been tested and verified for use with the 100VG Interface.

Cable or Connector	HP Product Number
Twisted-pair "straight-through" cable	
4-pair, 4 meters	92268A
4-pair, 8 meters	92268B
4-pair, 16 meters	92268C
4-pair, 32 meters	92268D
4-pair, 300 meters	92268N
25-pair	92214R, S, or T

You can contact your HP dealer or call HP at 1-800-538-8787 to order these parts.

Minimum Cable Pinouts

If you wish to use a cable not listed in the preceding table, verify that cable used in your installation are wired according to the following pinout information. Note that each pin-out diagram does not necessarily match the pin-out for the corresponding HP cable, but cables manufactured to follow the minimum pin-out will function correctly.

Incorrectly wired cabling is the most common cause of problems for LAN communications. HP recommends that you work with a qualified LAN cable installer for assistance with your cabling requirements.

Twisted-Pair Cable for 100VG Interface to Hub or Switch Connection

To connect the 100VG port to network segments through hubs or 100VG switches, use a “straight-through” 10Base-T cable wired in accordance to EIA/TIA 568B.

Note

The EIA/TIA 568A standards may also be used as long as the cable is wired straight-through from the interface card to the hub or switch, and remains twisted throughout its run.

Figure 14 illustrates the EIA/TIA 568B pin assignments for an 8-pin RJ-45 plug, the color code identification, and the pair configuration for an 8-wire, 4-pair UTP cable.

- If you are currently running a token ring network, using 4-pair UTP, you are probably using pairs 1 and 3.
- If you are currently running a 10Base-T network using 4-pair UTP, you are probably using pairs 2 and 3.
- 100VG AnyLAN requires all 4 pairs (pairs 1, 2, 3, and 4).

Data transmission or data reception requires all four pairs at once, in one direction, either from the interface card to the hub or switch or from the hub or switch to the interface card. The Demand Protocol access protocol requires the control signals:

- from the interface card to the hub or switch to occur on pairs 1 and 4
- from the hub or switch to the interface card to occur on pairs 2 and 3

Recommended Cables
Minimum Cable Pinouts

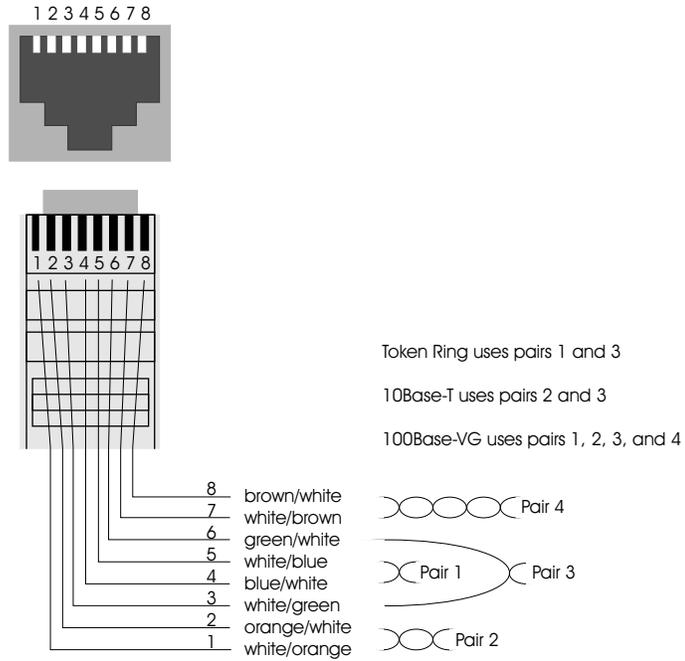


Figure 14. RJ-45 Cable Pin-outs

Recommended Cables
Minimum Cable Pinouts



Part Number: 5963-6562
E0895
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