HP 3587S/E3238S Hardware Installation Note

This note describes the installation and configuration of measurement hardware for the HP 3587S Realtime Signal Analyzer and the E3238S Signals Development System. These systems are composed of the following modules:

- E1497A (V743/64) or E1498A (V743/100) VXI embedded controller
- E3249B system disk†
- E1430A or E1437A ADC module
- E1485A DSP module
- E1562E/F Throughput Disk modules*
- E1472A RF Multiplexer module*
- HP 89431A downconverter (VHF/UHF 2-1800 MHz)*
- WJ 9119 VXI downconverter modules (HF 0.5-32 MHz, 4 MHz IF BW)*
- WJ 9119-1 VXI downconverter modules (HF 0.5-32 MHz, 8 MHz IF BW)*
- HP E6401A/E6402A/E6403A 1.0/3.0 GHz VXI tuners*

Standard components for both the HP 3587S and E3238S systems:
V743, E3249B†, E1430A or E1437A, and E1485A.

Optional components for the HP 3587S:
HP 89431A and WJ 9119/WJ 9119-1 tuners and E1562E/F disk modules.

Optional components for the E3238S:
E1472A switch; HP 89430A/89431A, WJ-9119/WJ-9119-1, and E6500 tuners.

Most of the HP 3587S and E3238S systems are integrated at the factory by Hewlett-Packard. This note describes the recommended system configurations. **To setup, the only installation steps you should have to perform are to connect the cables to the peripherals (display, disk drive, keyboard, mouse) and the downconverter, if your system includes one.**

You should review the entire note and perform the required steps. This installation note should be retained for future reference.

†System disks other than the E3249B may be used. To install other type disks, refer to the disk's documentation for installation instructions.
*Optional hardware

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System Configuration

The following illustrations show module and cable placement. The configuration of each module is described in detail, later in this document.

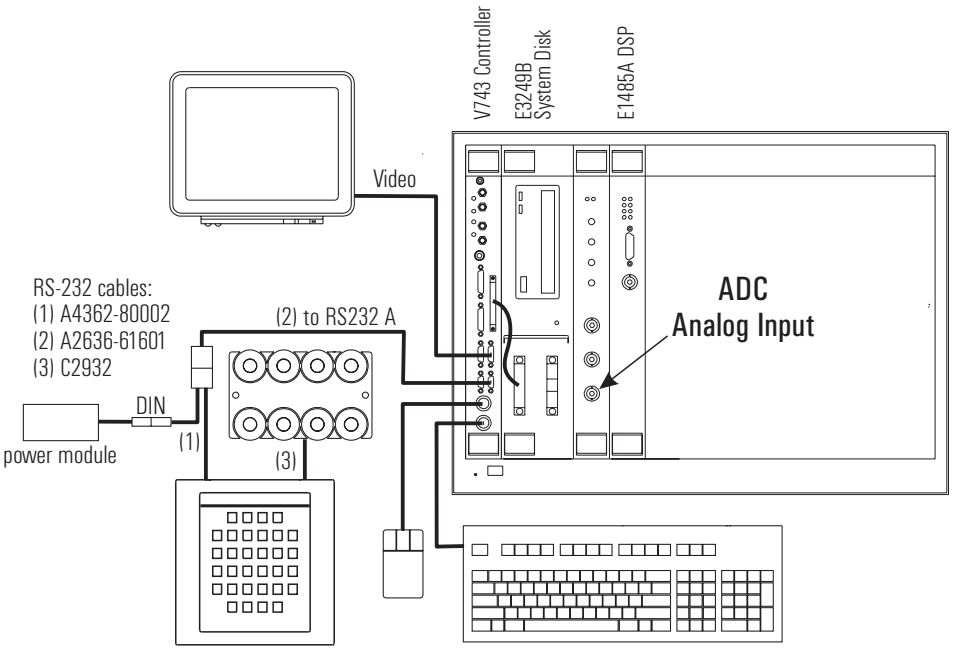


Figure 1.
HP 3587S System Hardware Configuration (standard)

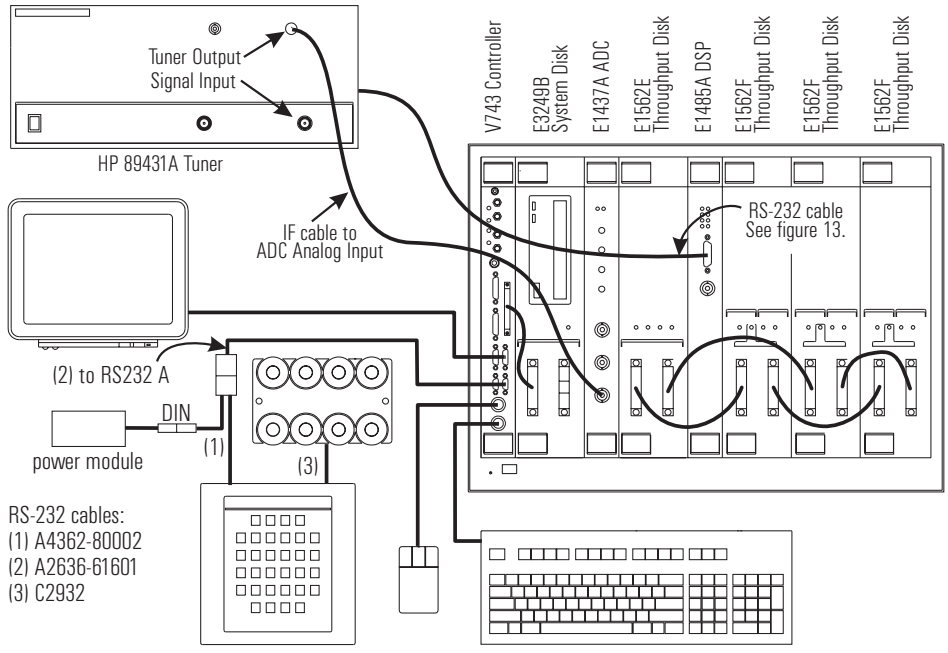
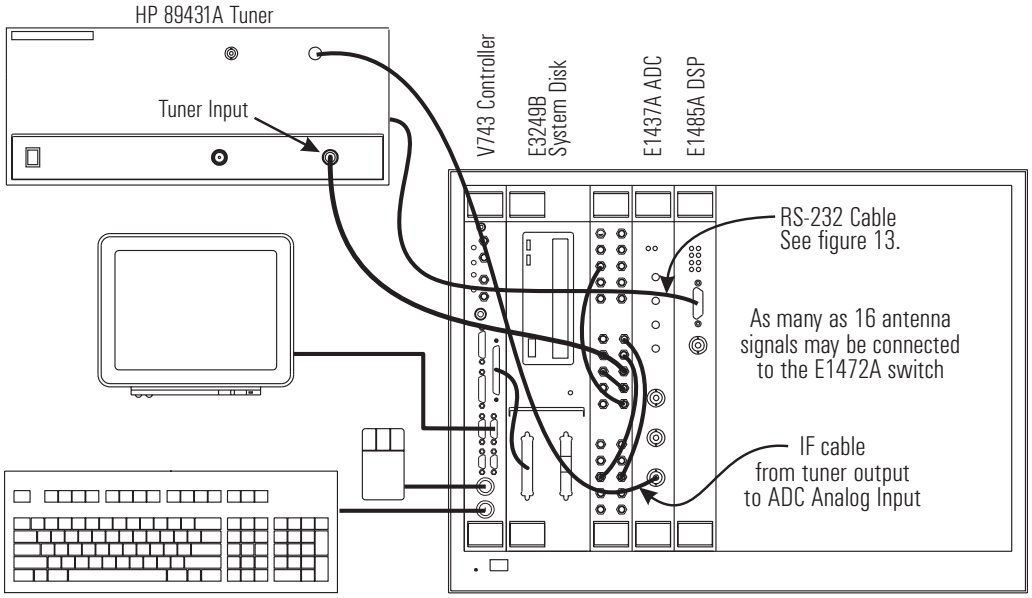


Figure 2.
HP 3587S System Hardware Configuration incl. optional 2.65 GHz tuner & option ATR with 4 E1562 throughput disk modules

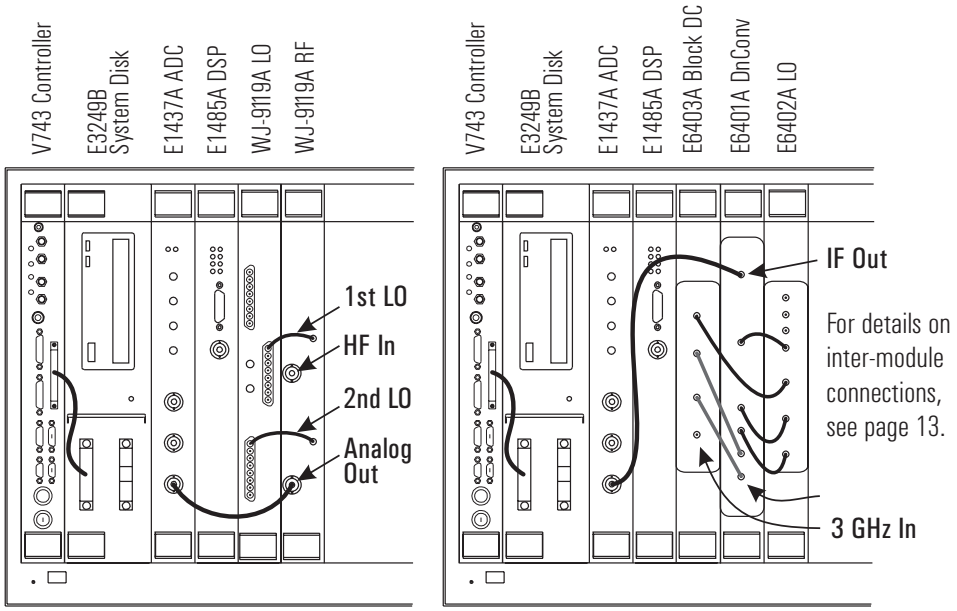
To configure a LAN printer, see page 14.

Figure 3.
HP E3238S System Hardware Configuration incl. optional 2.65 GHz tuner and RF switch



If the RF switch is not installed, connect the antenna signal to the tuner input. To install the VHF/UHF tuner, see page10 .

Figure 4.
Optional Tuners



HF VXI Tuner

WJ-9119 module configuration information is on page 12. E6400 module configuration and detailed cabling information appears on page 13. The tuner module placement shown here is for cabling convenience; the specific slots in which they are installed or order of placement is not critical.

Installing the V743 VXI Controller and E3249B VXI System Disk

E1497A/E1498A V743 VXI Controller

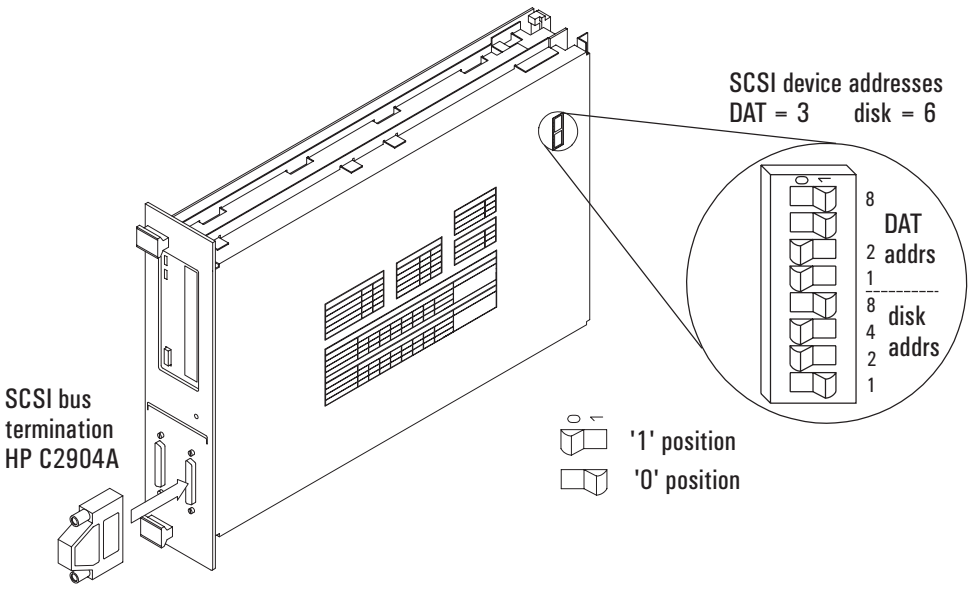
Please refer to the "Installation Guide Model V743 VXI Controller" (HP P/N E1497-90010) for instructions on how to install and configure the V743 controller in the VXI mainframe. This guide covers the procedures for proper installation of the keyboard, mouse, display, disk drive and other external peripherals. Once these devices are installed, refer to the "Models V743/64 and V743/100 Owner's Guide" (HP P/N E1497-90014) for information on how to:

- Configure the controller's path to the HP-UX operating system.
- Boot the HP-UX operating system.
- Learn how to use the HP-UX operating system and HP Vue.
- Optionally learn how to use the HP Standard Instrument Control Library (SICL) to do instrument interfacing.

E3249B VXI System Disk

The E3249B module should be installed next to the V743 module and the SCSI cable connected between the two as shown in figures 1 and 2. This module has no VXI address settings. The DAT and disk each have a SCSI address which should be set to 3 for the DAT and 6 for the disk as shown in figure 4. Also, a SCSI terminator (C2904A) should be connected to either SCSI connector.

Figure 5.
E3249B settings



Installing the Main VXI Components

This section covers configuration of the following VXI modules.

- E1430A or E1437A ADC
- E1485A DSP
- E1472A RF Multiplexer
- E1562E/F Throughput Disk

Note

If this system has been integrated at the HP factory, this procedure can be skipped entirely. The system uses only one ADC module; either the E1430A or the E1437A. Verify that the ADC and E1485A modules are installed in the VXI mainframe in adjacent slots with the ADC to the left of the E1485A. Option ATR for the HP 3587S adds an E1562E between them.

1. Before installing the VXI modules, turn off the power to the VXI mainframe and disconnect the power cord. This prevents damage to the modules during installation.
2. Set the DIP switches on the VXI modules as described on the following pages.
3. Firmly seat the modules in the VXI Mainframe with the ADC in the slot immediately to the left of the E1485A with the following exception:

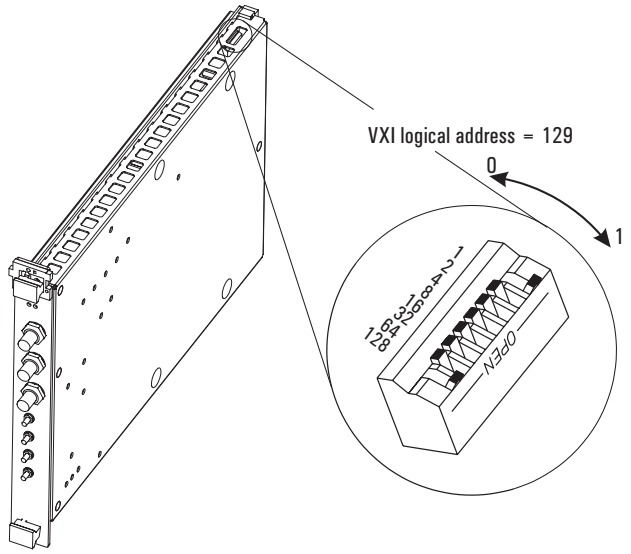
   For the HP 3587S with option ATR (from left to right), the order should be:

   a. ADC (either the E1430A or E1437A)
   b. E1562E disk module
   c. E1485A DSP module
   d. E1562F disk modules, if any. See figure 2.
4. Secure the modules by tightening the captive screws that hold each module into the mainframe. This must be done to insure meeting performance specifications.

E1430A VXI ADC

The E1430A VXI ADC module must be installed in a VXI slot left of the E1485A module and should have a logical address of 129. In a 3587S system with option ATR, the E1562E module should be between the E1430A and the E1485A.

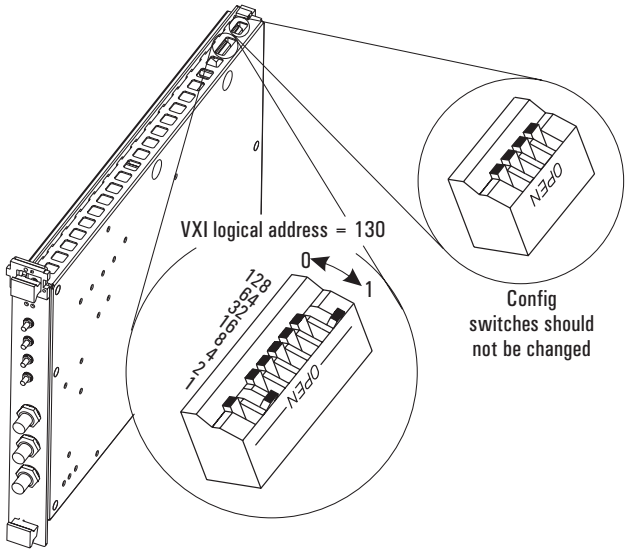
Figure 6.
E1430A Logical Address Setting



E1437A VXI ADC

The E1437A VXI ADC module must be installed in a VXI slot left of the E1485A module and should have a logical address of 130. In a 3587S system with option ATR, the E1562E module should be between the E1437A and the E1485A.

Figure 7.
E1437A Logical Address Setting

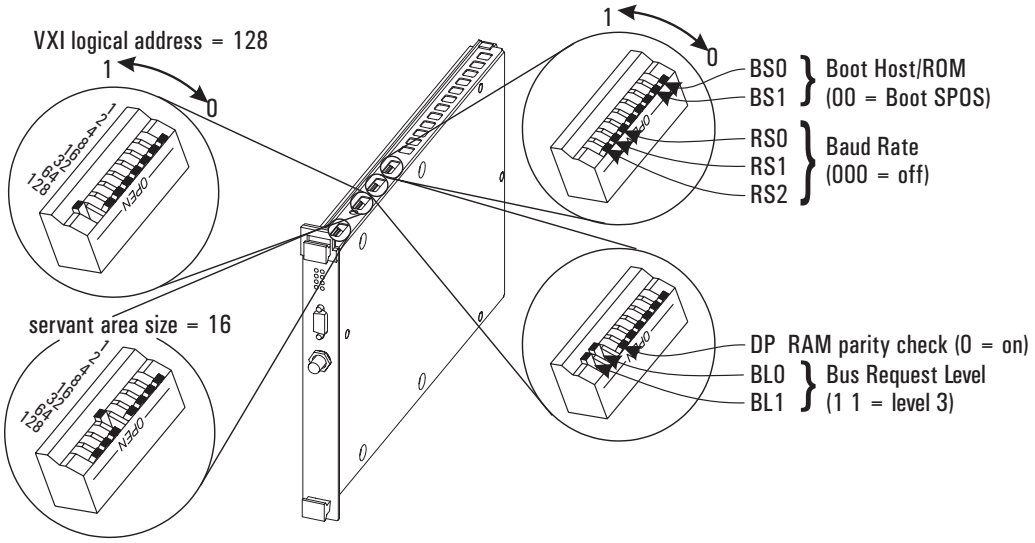


E1485A VXI DSP

The E1485A VXI DSP module should be configured as follows:

- It should contain 1 to 4 Motorola 96000 DSP daughter boards (option 1FL)
- Set the VXI logical address (LA) to 128
- Set the servant area switch setting (SASS) to 16
  (Servant Area = LA through LA+SASS = 128 through 144)
- Set the other switches as shown in figure 8.

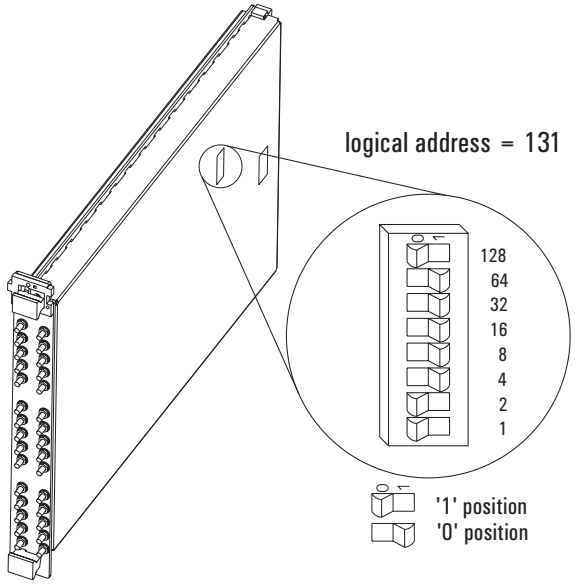
Figure 8.
E1485A Settings



E1472A VXI RF Multiplexer (optional)

The E1472A VXI RF Multiplexer module should be installed as shown in figure 3. The E1472A logical address should be set to 131.

Figure 9.
E1472A settings

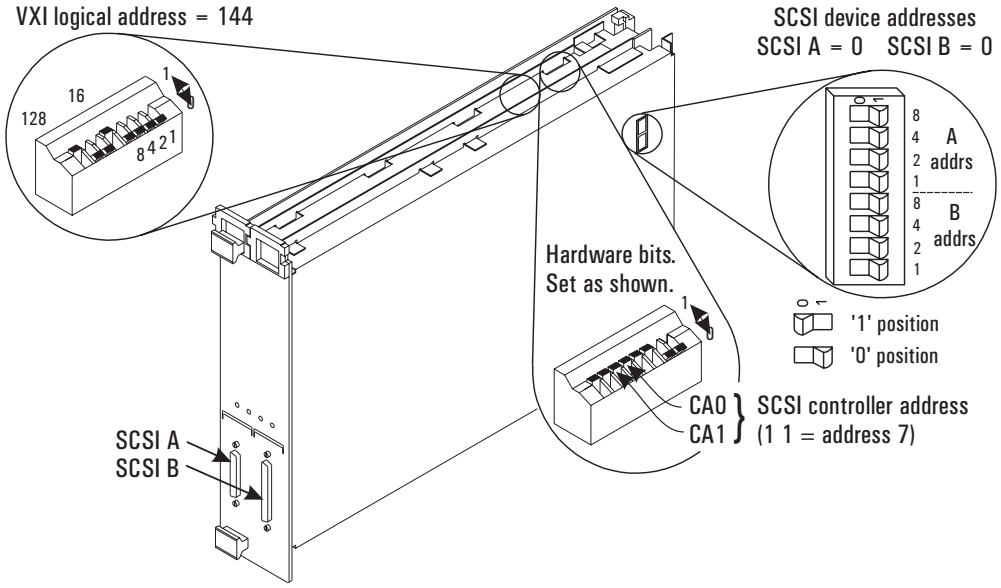


E1562E VXI SCSI Interface/Throughput Disk Module (HP 35687B option ATR)

Note If your system does not include option ATR, this procedure is not applicable.

The E1562 disks are part of option ATR for the HP 3587S system. The E1562E should be installed between the ADC module and E1485A as shown in figure 2. Set the other switches as shown in figure 10.

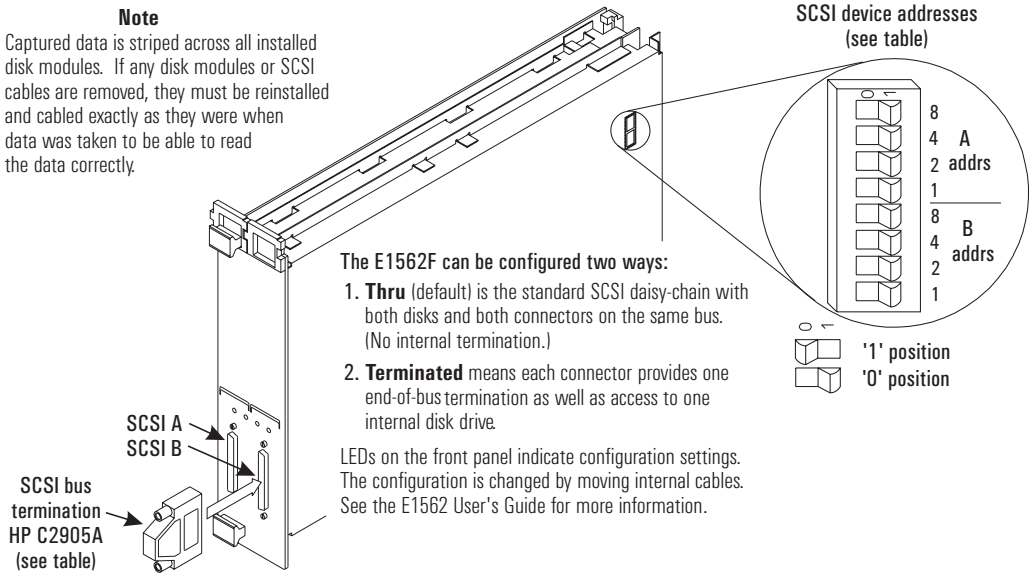
Figure 10. E1562E settings



E1562F Throughput Disk Module (part of HP 356878 option ATR)

The E1562F(s) should be installed right of the E1485A as shown in figure 2.

Figure 11. E1562F settings



SCSI Addresses

The E1562E contains two 4 GB disk drives and two SCSI controllers. The E1562F module contains two disk drives. In a multi-module system, the E1562E splits the data and sends it out the two SCSI connectors on the front panel. Each bus has 15 device addresses, one of which is taken by the SCSI controller in the E1562E (default = 7).

SCSI Terminations

Each end of a SCSI bus must be terminated. The default configuration of the E1562F modules is thru; i.e. both disks are connected to the bus and the second SCSI connector is used to extend the bus to another module. The alternate configuration uses each connector to access one disk drive and provides termination for each of the two busses. LEDs on the front panel indicate configuration settings. The configuration is changed by moving internal cables as described in the E1562 User's Guide.

The configuration of the last E1562F(s) on the bus depends on the number of disk modules in the system. See the following table. A *terminated* E1562F is required at the end of a system with an even number of disk modules. For systems with an odd number of E1562 disk modules, external terminations are used (HP C2905A).

1-module system

E1562E/F	E
A addrs	0
B addrs	0
config	n/a
cabling	SCSI A (no external SCSI B term required)

6-module system (for more than 4 modules, another mainframe is required)

E1562E/F	E	F	F	F	F	F
A addrs	0	1	1	3	3	5
B addrs	0	2	2	4	4	5
config	n/a	thru	thru	thru	thru	term
cabling	SCSI A——————A B——————————A B——————————A SCSI B——————————A B——————————A B——————B					

2-module system

E1562E/F	E	F
A addrs	0	1
B addrs	0	1
config	n/a	term
cabling	SCSI A——————A SCSI B——————B	

5-module system

E1562E/F	E	F	F	F	F
A addrs	0	1	1	3	3
B addrs	0	2	2	4	4
config	n/a	thru	thru	thru	thru
cabling	SCSI A——————A B——————————A B—term* SCSI B——————————A B——————————A B—term*				

3-module system

E1562E/F	E	F	F
A addrs	0	1	1
B addrs	0	2	2
config	n/a	thru	thru
cabling	SCSI A——————A B—term* SCSI B——————————A B—term*		

4-module system (this configuration shown in figure 2)

E1562E/F	E	F	F	F
A addrs	0	1	1	3
B addrs	0	2	2	3
config	n/a	thru	thru	term
cabling	SCSI A——————A B——————————A SCSI B——————————A B——————B			

term* is the HP C2905A (external) termination shown in figure 11.

The table above shows configurations for systems with from 1 to 6 disk modules to illustrate the connections and terminations used to expand the number of disk modules. More than 6 disk modules may be installed. The number of disk modules used is limited by the number of SCSI addresses.

Installing the optional downconverters

This section cover the installation of the following components:

- HP 89431A (2.65 GHz)
- WJ-9119 VXI HF downconverter
- HP 6402A local oscillator, HP 6401A 1GHz downconverter, HP 6403A 3 GHz block downconverter

HP 89431A RF downconverter

Note If your system does not include a 89430A or 89431A downconverter, this procedure is not applicable.

The installation of the 89431A RF down converter requires the AFU cable kit. This kit contains the RS-232 cable that connects the downconverter to the E1485A and a 50Ω BNC IF signal cable that connects the downconverter to the E1430A. (See figure 2.)

1. Turn power off.

Turn the power to the RF downconverter off and disconnect the power cord before installing or configuring the 89431A to avoid damage.

2. Set the baud rate jumper.

If this system has been integrated at the HP factory, skip this step and proceed to step 3.

Before the 89431A RF downconverter can be used in the 3587S or E3238S system, an internal jumper must be set to the proper position.

To access this jumper, remove the top cover from the downconverter and set the jumper in the DEBUG position as shown in figure 12.

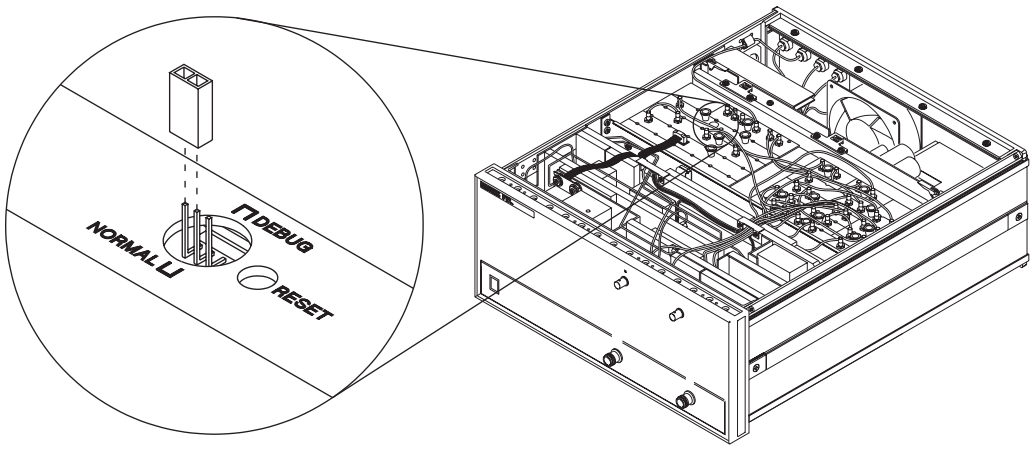


Figure 12. Move jumper to the DEBUG position

When the jumper is in the correct position, replace the top cover and securely tighten the retaining screw.

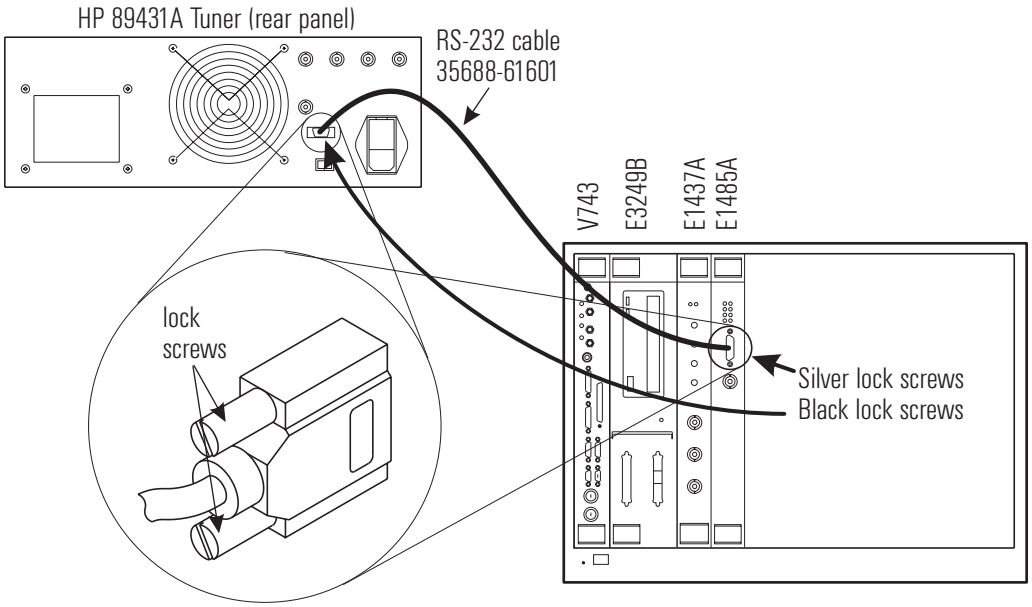
3. Connect the RS-232 cable.

The 89431 RF downconverter is connected to the E1485A DSP VXI module by the 35688-61601 RS-232 cable included in the AFU kit. See figure 13.

Caution

The 35688-61601 RS-232 cable must be installed properly to avoid damaging the E1485A or the downconverter. It has lock screws with English threads on one end of the cable and screws with metric threads on the other end.

Figure 13. Connecting the RS-232 cable



a. Attach the cable end with the black (dark-colored) lock screws to the "SERIAL 2" port on the rear panel of the 89431A RF section.
b. Attach the cable end with the silver (light-colored) lock screws to the "RS-232" port on the front panel of the E1485A DSP VXI module.
c. Tighten all lock screws firmly. Do not over-tighten.

4. Connect the IF signal cable.

The 89431A RF downconverter is connected to the ADC module by a 50Ω BNC cable included in the AFU kit. (See figure 2.)

a. First, attach one end of the BNC cable to the front panel connection on the 89431A RF downconverter labeled "OUT (to channel 1)".
b. Second, attach the other end of the BNC cable to the front panel connection on the ADC module labeled "Analog In".

5. Reconnect the power cable.

This concludes the hardware installation procedure for either an HP 3587S or E3238S system. Refer to the respective software installation notes (35687B or 35688B) for information on software installation.

WJ-9119 or WJ-9119-1 VXI HF downconverters

Note

If your system does not include either a WJ-9119 or a WJ-9119-1 downconverter, this procedure is not applicable to your installation.

The Watkins-Johnson VXI HF downconverter is supported in both the HP 3587S and the E3238S systems. Configure the modules as described in figure 14 and then install them in the VXI mainframe as described in figure 4.

- Set the logical address of the LO module to 140.
- Set the logical address of the RF module to 142.

See the following illustration.

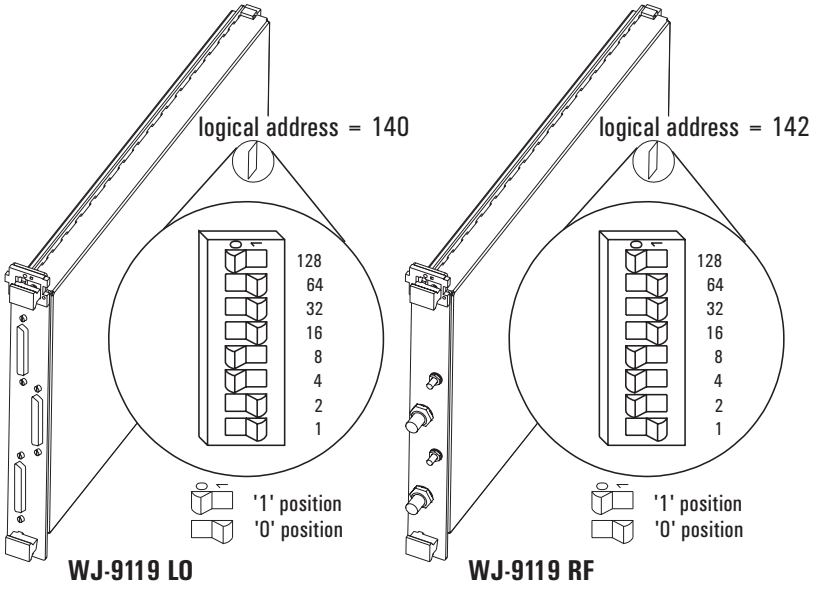


Figure 14. Configuring the WJ-9119 tuner.

HP E6401A, E6402A, E6403A VXI RF downconverter

Note

If your system does not include a HP E6500-Series downconverter, this procedure is not applicable to your installation.

The E6401A must have option 001 installed to work properly with the E3238S. This is the baseband IF output option.

The HP E6400-Series VXI RF downconverter is supported in the E3238S. Configure the modules as described below and then install the modules in the VXI mainframe as shown in figure 4. To configure the individual VXI modules:

- Set the logical address of the E6402A LO module to 138.
- Set the logical address of the E6401A 20-1000 MHz Downconverter to 139.
- If your system includes the E6403A Block Downconverter module, set its logical address to 137.

See the following illustration.

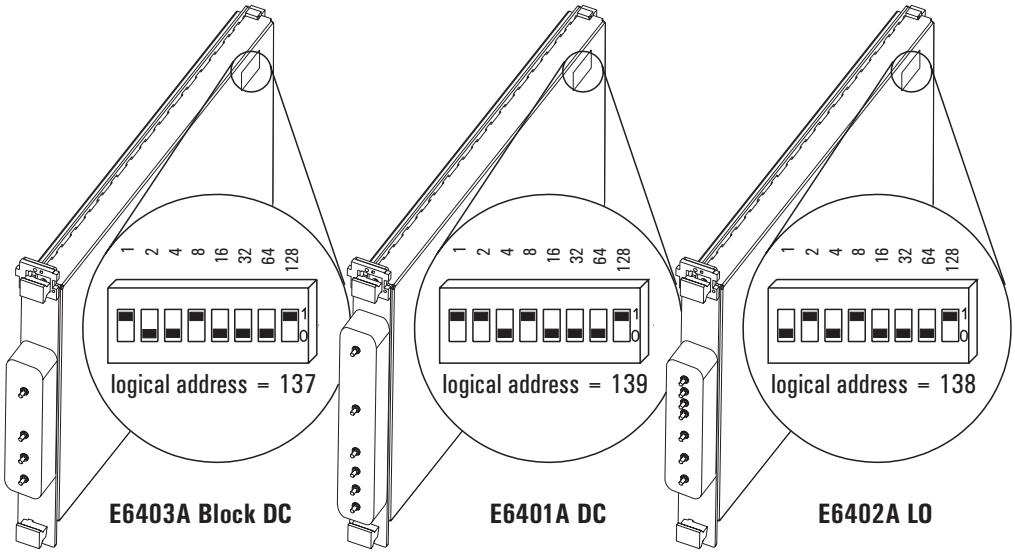


Figure 15. Configuring the HP 6400-Series downconverter modules.

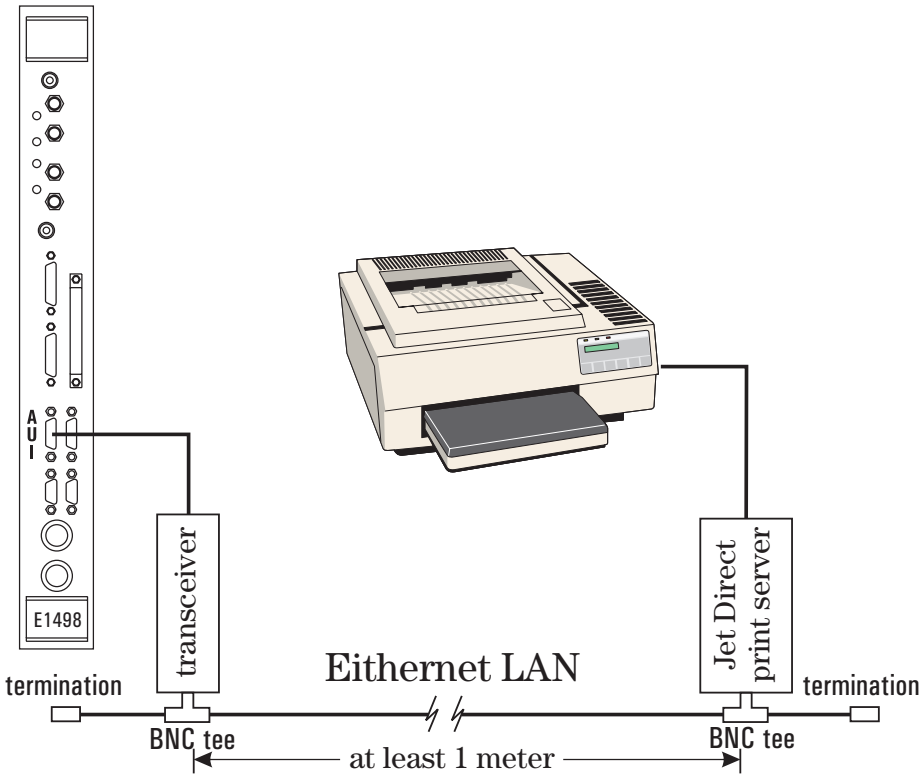
Inter-module connections

1 GHz configuration		3 GHz configuration	
E6401A	**Connected to:**	**E6401A**	**Connected to:**
IF Output	System ADC Analog In	IF Output	System ADC Analog In
3rd LO Input	E6402A 3rd LO Out	3rd LO Input	E6402A 3rd LO Out
2nd LO Input	E6402A 2nd LO Out	2nd LO Input	E6402A 2nd LO Out
1st LO Input	E6402A 1st LO Out	1st LO Input	E6402A 1st LO Out
20-1000 MHz	RF Signal Input	Block DC	E6403A Block DC Output (rigid coax)
		20-1000MHz	E6403A 20-1000 MHz Out (rigid coax)
		E6403A	**Connected to:**
		BD LO Input	E6402A BD LO Out
		20-3000 MHz	RF Signal Input

Printer Configuration

The printer configuration with the best performance and flexibility is the ethernet LAN configuration shown in figure 16. The VXI module shown is the slot-0 controller. The rest of the VXI chassis and other VXI modules are not shown for clarity.

Figure 16. LAN printer configuration.



If you are not connecting to an existing LAN cable, you can use a coaxial cable with BNC connectors as shown in the figure above. The 50Ω terminations may be connected directly to the BNC tee connectors on the LAN interface modules. Make sure there is no coax between the BNC tees and their associated interface module.

Connect the LAN transceiver to the AUI connector on the E1498 V743 controller. The BNC connector can be inserted in the run of ethernet coaxial cable at any convenient junction as long as it is at least 1 meter from any other tee connection. The printer's ethernet interface should be connected to the ethernet coax in the same manner.

See the HP-UX System Administration documentation for information about the `sam` utility. This utility can be used to perform printer configuration.