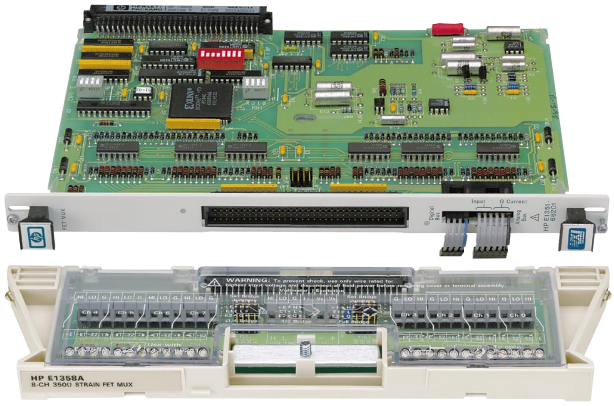
8-Channel 350 Ω Strain FET Multiplexer HP E1358A

Technical Specifications

- **Strain gage measurements with bridge completion**
- **+ 4.6 V excitation circuitry for bridge configurations**
- **Automatic conversions for bridge configurations**
- **Strain, voltage, current, and ohm measurements**



HP E1358A

Description

The HP E1358A 350 Ω Strain FET Multiplexer is a **B-size, 1-slot, register-based VXI module.** This relay multiplexer provides bridge completion and excitation voltage (4.6 V) circuitry for eight channels. Each multiplexer module consists of a B-size component card (labeled E1351-66201) and a screw terminal block that plugs onto the component card. The HP E1358A is functionally similar to the HP E1351A, E1352A, E1353A, and E1357A.

You can perform dynamic strain gage measurements with automatic conversions to engineering units on multiple multiplexer channels by sending SCPI commands to either the HP E1326B or HP E1411B. Strain measurements supported by SCPI with the HP E1326B and E1411B DMMs include: Quarter, Bending, Half, Poisson Half, Bending Full, Poisson Full, Bending Poisson Full. The FET multiplexer cannot perform tension shunt nor compression shunt diagnostics.

Refer to the HP Website for instrument driver availability and downloading instructions, as well as for recent product updates, if applicable.

Strain Measurements

Example SCPI commands with engineering units conversions follow:

Specify the gage factors:
—STRain:GFACtor 2.11E-6,(@100:107)

Measure the unstrained reference:
—CALibration:STRain (@100:107)

Measure a Half Poisson bridge:
—MEASure:STRain:HPOisson (@100:103)

Strain measurements supported in SCPI with the above HP DMMs include:
—Quarter
—Bending Half
—Poisson Half
—Bending Full
—Poisson Full
—Bending Poisson Full

Diagnostics include:
—Leadwire Resistance
—Internal Half Bridge Voltage
—Guard Voltage
—Bridge Excitation Voltage
—Tension Shunt Diagnostic (not available)
—Compression Shunt Diagnostic (not available)

Configuration

One analog bus cable is shipped with each module, making it easy to connect multiplexer common outputs together for slot-adjacent modules. If you are using a B-size mainframe, HP E1300A/B or HP E1301A/B, use the analog bus cable shipped with the HP E1326B DMM to connect it to the multiplexer(s).

C-size Adapter

For installing the HP E1358A in a C-size mainframe, the HP E1403C active adapter is recommended.

Product Specifications

Input

Maximum voltage (any terminal to any other terminal or chassis):	
DC:	16 Vpk
AC rms:	16 Vpk
Maximum current (per channel common, non-inductive):	1 mA

DC

Maximum thermal offset per channel, differential Hi-Lo:	25 µV (0 to 28 °C), 250 µV (28 to 55 °C)
Closed channel resistance:	<3.1 kΩ
Insulation resistance (between any two points):	10E8 Ω, 10E3 Ω ± 10% guard to chassis
Insulation resistance (Hi to Lo, power off):	>1 kΩ for |Vin| <14 V, >220 Ω for |Vin| >14 V

AC

Minimum bandwidth (–3 dB, 50 Ω source/load):	500 kHz (1 MΩ || 10 pF termination)
Closed channel capacitance:	<2000 pF Hi/Lo-Chassis, <200 pF Hi-Lo

General

Relays:	FETs Break-before-make
Power down state:	FETs open on power down
Power up state:	FETs open on power up
Minimum relay life:	
No load:	Unlimited
Rated load:	Unlimited
Reference junction measurement accuracy (18 to 28 °C operating):	n/a
Strain gage excitation:	4.63 V ± 10%, <400 mA
Screw terminal wire size:	16 to 26 AWG (1.5, 1.2, 0.9, 0.75, 0.5 mm)
Scanning rate:	13,000 channels/s typ.

General Specifications

VXI Characteristics

VXI device type:	Register based, A16, slave only
Size:	B
Slots:	1
Connectors	P1
Shared memory:	None
VXI busses:	None
C-size compatibility:	Requires HP E1403C

Instrument Drivers

See the HP Website (http://www.hp.com/go/inst_drivers) for driver availability and downloading.

Command module firmware:	Downloadable
Command module firmware rev:	A.03
I-SCPI Win 3.1:	Yes
I-SCPI Series 700:	Yes
C-SCPI LynxOS:	Yes
C-SCPI Series 700:	Yes
HP Panel Drivers:	Yes
VXI*plug&play* Win Framework:	Yes
VXI*plug&play* Win 95/NT Framework:	Yes
VXI*plug&play* HP-UX Framework:	No

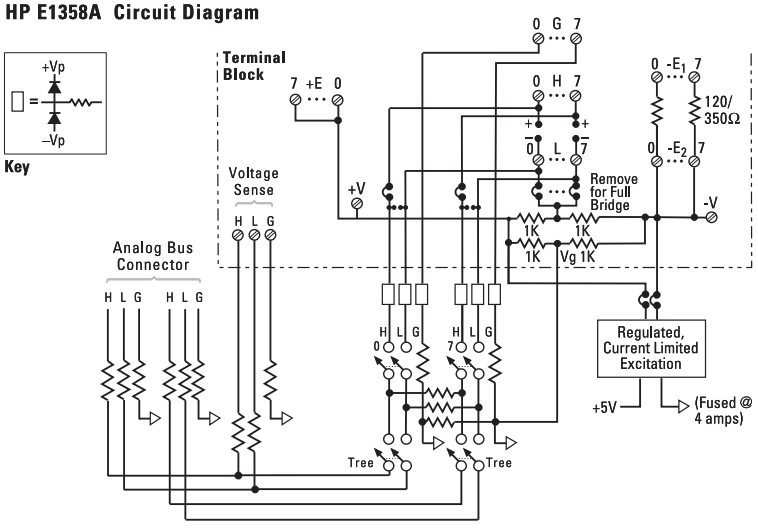
Module Current

	I_{PM}	I_{DM}
+5 V:	0.53	0.01
+12 V:	0.13	0.01
–12 V:	0	0
+24 V:	0	0
–24 V:	0	0
–5.2 V	0	0
–2 V:	0	0

Cooling/Slot

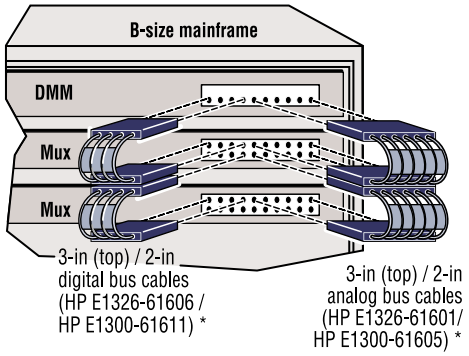
Watts/slot:	2.00
ΔP mm H_2O:	0.02
Air Flow liter/s:	0.10

HP E1358A Circuit Diagram

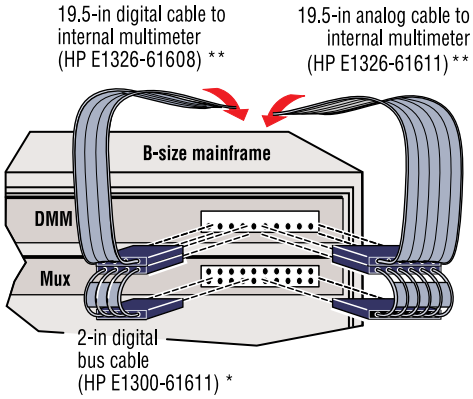


Ordering Information

Description	Product No.
8-Channel 350 Ohm Strain FET Multiplexer	HP E1358A
Service Manual	HP E1358A 0B3
3 Yr. Retn. to HP to 1 Yr. OnSite Warr.	HP E1358A W01
Term Card 8 Chan 350 Ohm Strain FET MUX	HP E1358-80001
Cable Kit, VM To B-Size FET Multiplexer	HP E1411-80001



Analog and Digital Bus Cables for MUX-to-MUX and MUX-to-Multimeter Connections



* DMM-to-Mux and Mux-to-Mux analog and digital bus cables are provided with the purchase of the DMM and Mux modules, respectively.

** 19.5-in analog and digital bus cable is provided with the purchase of HP E1300/01A Series B mainframe with internal DMM option.

Analog and Digital Bus Cables for MUX-to-MUX and MUX-to-Multimeter Connections

Related Literature

1998 Test System and VXI Products Data Book,
HP Pub. No. 5966-2812E

1998 Test System and VXI Products Catalog,
HP Pub. No. 5966-2815

Warranty

Standard Hewlett-Packard VXIbus hardware products are warranted against defects in materials and workmanship for a period of three years unless otherwise noted. HP software and firmware products that are designated by HP for use with a hardware product, when properly installed on that hardware product, are warranted not to fail to execute their programming instructions due to defects in materials and workmanship.

For a complete and detailed warranty statement please see the HP *Test System and VXI Products Data Book* or visit the HP Website at http://www.hp.com/go/vxi.

HP Website Directory

Main HP Website
http://www.hp.com

HP Test and Measurement
http://www.hp.com/go/tmdir

HP VXI Product Information
http://www.hp.com/go/vxi

HP VXI Channel Partners
http://www.hp.com/go/vxichanpart

HP VEE Application Website
http://www.hp.com/go/hpvee

Data Acquisition and Control Website
http://www.hp.com/go/data_acq

HP Instrument Driver Downloads
http://www.hp.com/go/inst_drivers

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For more information about Hewlett-Packard test & measurement products, applications, services, and for a current sales office listing, visit our website, *http://www.hp.com/go/tmdir*. **You can also contact one of the following centers and ask for a test and measurement sales representative.**

United States:
Hewlett-Packard Company
Test and Measurement Call Center
P.O. Box 4026
Englewood, CO 80155-4026
1 800 452 4844

Canada:
Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario L4W 5G1
(905) 206 4725

Europe:
Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
(31 20) 547 9900

Japan:
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