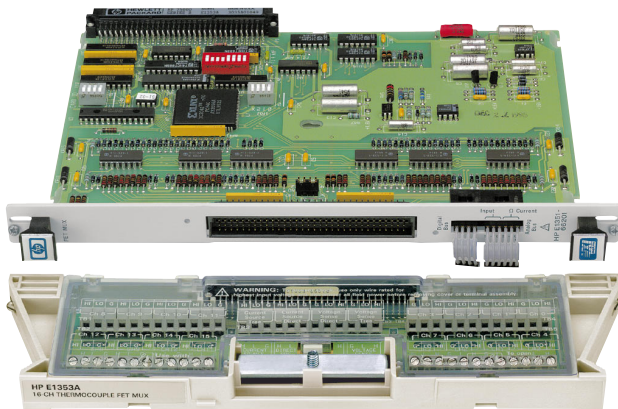

16-Channel T/C FET Multiplexer HP E1353A

Technical Specifications

- Up to 13,000 channels/s scanning with HP DMMs
- 100,000 switches/s from downloaded scan list
- Built-in thermistor reference junction
- Temperature, voltage, current, and Ohm readings
- 16 channel 3-wire, or 8-channel 4-wire multiplexer



Description

The HP E1353A FET multiplexer is a **B-size, 1-slot, register-based VXI module** that switches 16 channels each of high, low, and guard. When used with the HP E1326B DMM or HP E1411B DMM, it makes automatically compensated thermocouple temperature measurements. The FET 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 E1353A is functionally similar to the HP E1351A, E1352A, E1357A, and E1358A.

Common high, low, and guard signals are connected by tree switch to both the tree terminals on the terminal card and the analog bus connector. A digital bus cable is shipped with each module. It attaches to a digital bus connector on the faceplates, and is used to synchronize scanned measurements up to 13,000/s with the HP DMMS. Additionally, shunt and series signal conditioning elements can be added to each channel.

Refer to the HP Website for instrument driver availability and downloading instructions.

Configuration

Common high, low, and guard signals are connected by tree switch to both the tree terminals on the terminal card and the analog bus connector.

A digital bus cable is shipped with each module, which attaches to a digital bus connector on the faceplates and is used to synchronize scanned measurements up to 13,000/second with either the HP E1326B DMM or HP E1411B DMM. Use of this bus requires the SCPI command TRIG:SOUR:DBUS. To connect an external DMM to the FET multiplexer for high-speed scanning synchronization up to 100,000 switches/second, order the digital FET Mux-to-DMM cable below.

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 or HP E1301A, use the analog bus cable shipped with the HP E1326A DMM to connect it to the multiplexer(s).

C-size Adapter

For installing the HP E1343A in a C-size mainframe, the HP E1403B active adapter is recommended.

Specifications

Input

DC:

Maximum voltage (any terminal to any other terminal or chassis):	16 Vpk
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AC rms:

Maximum voltage (any terminal to any other terminal or chassis):	16 Vpk
Maximum current (per channel common, non-inductive):	1 mA
Maximum power per channel:	n/a

DC

Maximum thermal offset per channel, differential Hi-Lo:	25 μ V (0 to 28 °C), 250 μ V (28 to 55 °C)
Closed channel resistance:	<3.1 kOhm
Insulation resistance (between any two points):	10E8 Ohm, 10E3 Ohm $\pm$ 10% guard to chassis
Insulation resistance (Hi to Lo, power off):	>1 kOhm for $ V_{in} $ <14 V, >220 Ohm for $ V_{in} $ >14 V

AC

Minimum bandwidth (–3 dB, 50 Ohm source/load):	500 kHz (1 MOhm 10 pF termination)
Crosstalk (channel-to-channel):	
100 kHz:	n/a
10 MHz:	n/a
Both:	n/a
Closed channel capacitance:	<2000 pF Hi/Lo-Chassis, <200 pF Hi-Lo

General Characteristics

Relays:	FETs Break-before-make FETs open on power down FETs open on power up
Minimum relay life:	
No load:	unlimited
Rated load:	unlimited
Reference junction measurement accuracy (18 to 28 °C operating):	0.3°C
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.

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 E1403B

Instrument Drivers

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

Command module firmware:	ROM
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 VEE Drivers:	Yes
VXIplug&play Win Framework:	Yes
VXIplug&play Win95/NT Framework:	Yes
VXIplug&play HP-UX Framework:	No (not available at time of publication)

Module Current

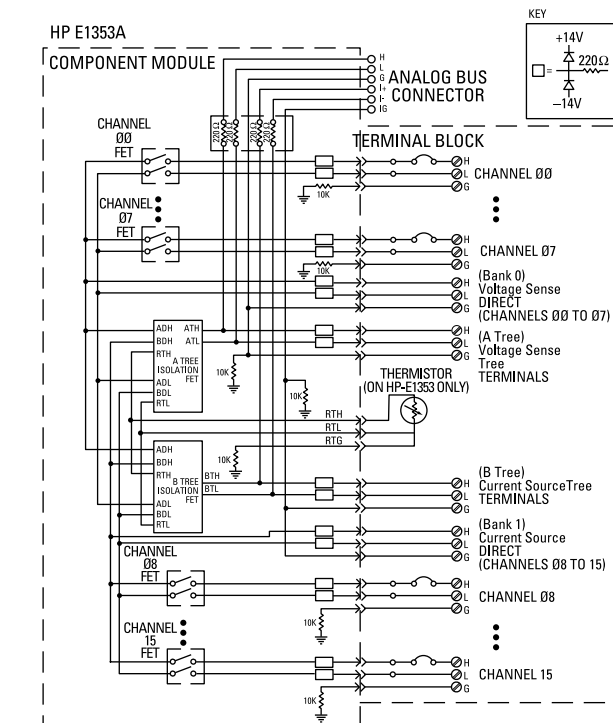
	I_{PM}	I_{DM}
+5 V:	0.2	0.01
+12 V:	0.13	0.01
-12 V:	0	0
+24 V:	0	0
-24 V:	0	0
-5.2 V:	0	0
-2 V:	0	0

Cooling/Slot

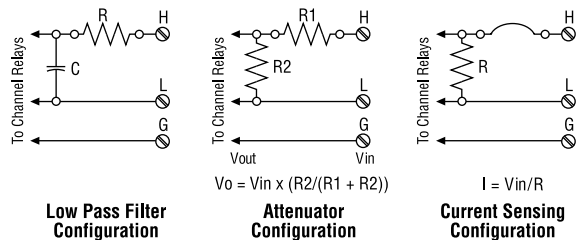
Watts/slot:	1.00
ΔP mm H ₂ O:	0.02
Air Flow liter/s:	0.10

Ordering Information

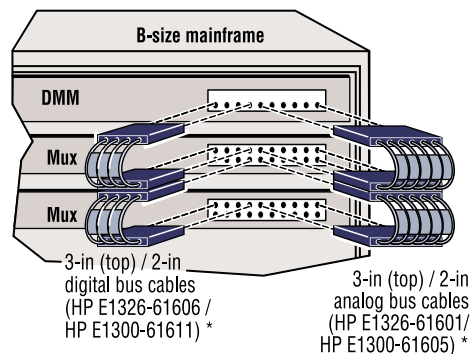
Description	Product No.
16-channel thermocouple FET multiplexer	HP E1353A
Service manual	HP E1353A 0B3
3 yr. retn. to HP to 1 yr. OnSite warr.	HP E1353A W01
TERM CARD 16 CHAN THERMOCOUPLE FET	
MUX	HP E1353-80001
CABLE KIT, VM to B-SIZE FET	
MULTIPLEXER	HP E1411-80001



HP E1353A Circuit Diagram



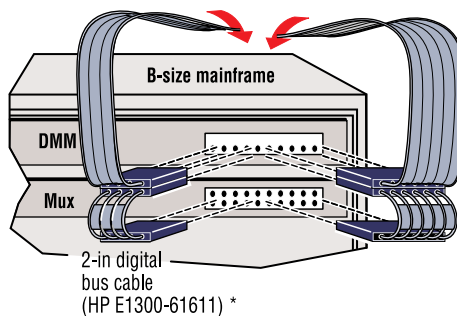
Signal conditioning components and current shunt for HP E1353A



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

19.5-in digital cable to internal multimeter (HP E1326-61608) **

19.5-in analog cable to internal multimeter (HP E1326-61611) **



* 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

Data Subject to Change
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