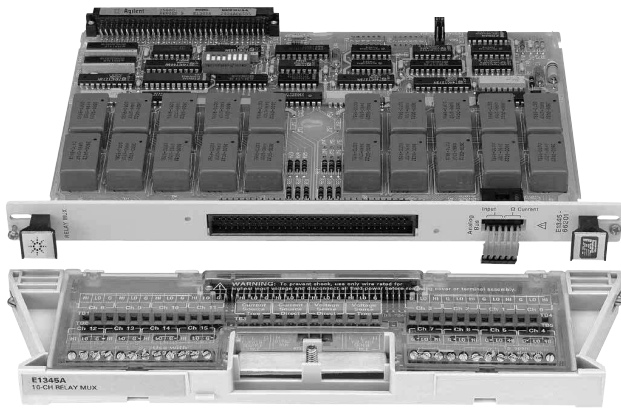# 16-Channel Low-Offset Relay Multiplexer

Data Sheet

- **1-Slot, B-size, register based**
- **General purpose, low-offset relay multiplexer**
- **Low thermal offset reed relays, <4 µV**
- **16-channel 3-wire or 8-channel 4-wire multiplexer**
- **Shunt/series signal conditioning elements**
- **Channel scanning with Agilent DMMs**

Agilent E1345A

Description

The Agilent E1345A General-Purpose Reed Relay Multiplexer is a **B-size, 1-slot, register-based VXI module** that switches 16 channels of high, low, and guard each. The multiplexer has low thermal offset performance. This module consists of a B-size component card (labeled E1345-66201) and a screw terminal block that plugs onto the component card. The E1345A is functionally similar to the E1347A.

The E1345A multiplexer is arranged into two banks of eight switches, each having its own common high, low, and guard screw terminals accessible on the terminal block. Tree-switched common high, low, and guard screw terminals and analog bus connections provide access to all 16 channels. The module may be programmed as either a single 1x16 three-wire multiplexer, two independent 1x8 three-wire multiplexers (for four-wire Ω), or a 1x8 six-wire multiplexer.

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

Configuration

One analog bus cable is shipped with each module, making it easy to connect common outputs together for slot-adjacent modules. If you are using a B-size mainframe, Agilent E1300B or E1301B, use the analog bus cable shipped with the E1326B DMM to connect it to the multiplexer(s).

C-size Adapter

For installing the E1345A in a C-size mainframe, the E1403C active adapter is recommended.

Agilent Technologies

Product Specifications

Input
DC:
Maximum voltage (any terminal to any other terminal or chassis):	120 Vdc

AC rms:
Maximum voltage (any terminal to any other terminal or chassis):	120 V rms
Maximum current (per channel common, non-inductive):	50 mA
Maximum power per channel:	1 VA

DC
Maximum thermal offset per channel, differential Hi-Lo:	4 µV
Closed channel resistance:	100 Ω ± 10%
Insulation resistance (between any two points):	10E9 Ω
Insulation resistance (Hi to Lo, power off):	n/a

AC
Minimum bandwidth (-3 dB, 50 Ω source/load):	10 MHz (protection resistors shorted)
Crosstalk (channel-to-channel):	
100 kHz:	−70 dB
10 MHz:	−20 dB
Both:	n/a
Closed channel capacitance:	<150 pF Hi-Lo, <150 pF Lo-Guard, <2000 pF Guard-Chassis

General Characteristics
Relays:	Reed relays
	Break-before-make
	Relays open on power down
	Relays open on power up
Minimum relay life:	
No load:	10E8 operations
Rated load:	10E7 operations
Screw terminal wire size:	16 to 26 AWG (1.5, 1.2, 0.9, 0.75, 0.5 mm)
Scanning rate:	600 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 E1403C

Instrument Drivers
See the Agilent Technologies Website (http://www.agilent.com/find/ inst_drivers) for driver availability and downloading.

Command module firmware:	Downloadable
Command module firmware rev:	A.01
I-SCPI Win 3.1:	Yes
I-SCPI Series 700:	Yes
C-SCPI LynxOS:	Yes
C-SCPI Series 700:	Yes
Panel Drivers:	Yes
VXI*plug&play* Win Framework:	Yes
***plug&play* Win 95/NT Framework:**	Yes
VXI*plug&play* HP-UX Framework:	No

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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 Low-Offset Relay Multiplexer	E1345A
Service Manual	E1345A 0B3
Japan - Japanese Localization	E1345A ABJ
Extra terminal block for the E1345A	E1345-80001

B-size mainframe

DMM

MUX

MUX

3-in (top) / 2-in
analog bus cables
(E1326-61601 / E1300-61605) *

Analog bus cables for MUX-to-MUX and MUX-to-multimeter connections

19.5-in analog bus cable to internal DMM
(E1326-61611) **

B-size mainframe

MUX

MUX
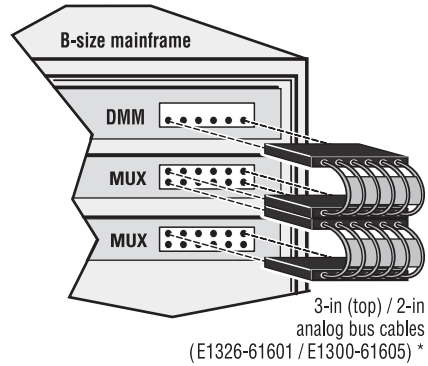
2-in analog
bus cable
(E1300-61605) *
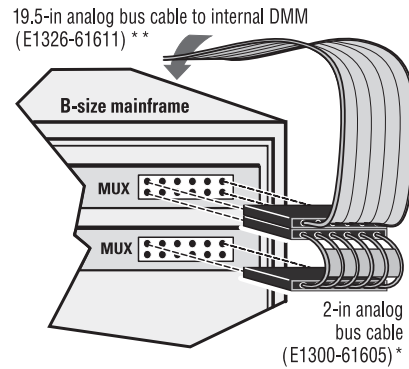
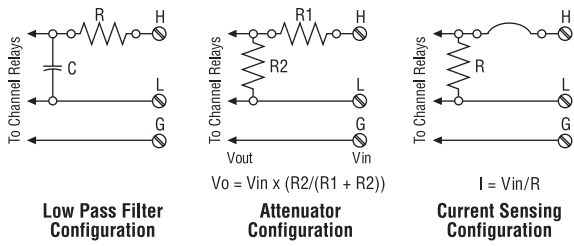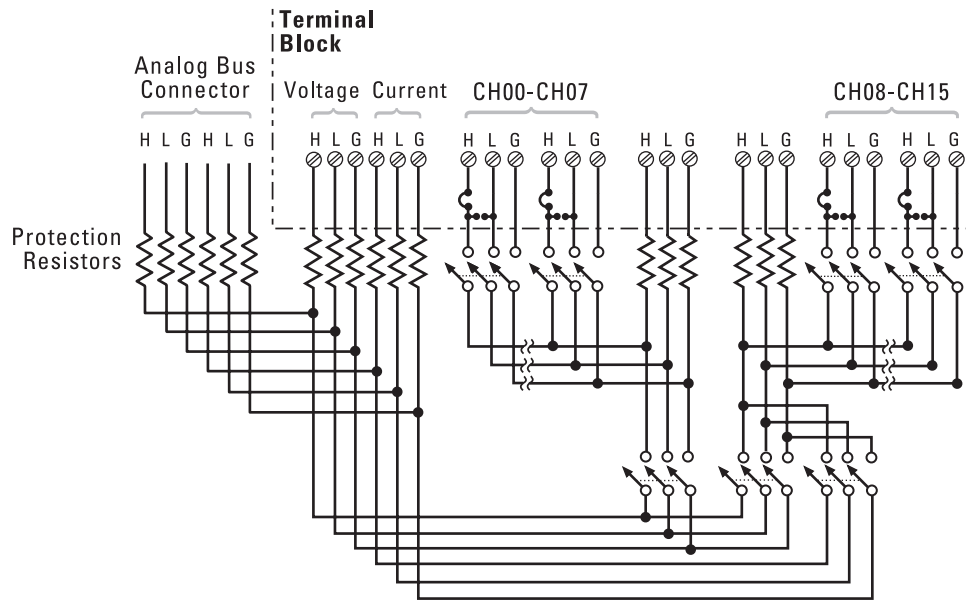 * DMM-to-MUX and MUX-to-MUX analog bus cables are
   provided with the purchase of the DMM and MUX
   modules respectively.

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

Analog bus cables for MUX-to-MUX and MUX-to-multimeter connections

www.valuetronics.com

E1345A Circuit Diagram

Signal Conditioning Components/Current Shunt

$$V_o = V_{in} \times (R_2/(R_1 + R_2))$$

$$I = V_{in}/R$$

Low Pass Filter Configuration

Attenuator Configuration

Current Sensing Configuration

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Related Literature

2000 Test System and VXI Catalog CD-ROM,
Agilent Pub. No. 5980-0308E (detailed specifications for VXI products)

2000 Test System and VXI Catalog,
Agilent Pub. No. 5980-0307E (overview of VXI products)

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

Online

Internet access for Agilent product information, services and support
www.agilent.com/find/tmdir

VXI product information
www.agilent.com/find/vxi

Defense Electronics Applications
www.agilent.com/find/defense_ATE

Agilent Technologies VXI Channel Partners
www.agilent.com/find/vxichanpart

Agilent Technologies' HP VEE Application Website
www.agilent.com/find/vee

Agilent Technologies Data Acquisition and Control Website
www.agilent.com/find/data_acq

Agilent Technologies Instrument Driver Downloads
www.agilent.com/find/inst_drivers

Agilent Technologies Electronics Manufacturing Test Solutions
www.agilent.com/go/manufacturing

Get assistance with all your test and measurement needs at
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