## Agilent E8462A
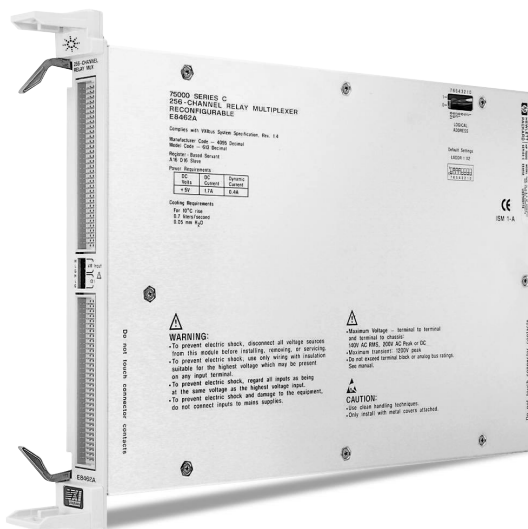# 256-Channel Relay Multiplexer
Data Sheet

- **1-Slot, C-size, register based**
- **High-density, low-cost multiplexer**
- **Flexible reconfiguration**
- **Armature non-latching relay channels**
- **Contact protection for reliable operation**
- **Three different easy-to-use terminal blocks available as options**



**Agilent E8642A**

The E8462A can be programmed into individual topologies; some common examples are shown in the table below. Many other combinations of these topologies are supported (in addition to those shown in the table). Two-wire, three-wire, and four-wire measurements can be configured.

**Common Multiplexer Configurations**

| | |
|---|---|
| One 256 x 1 | Four 64 x 1 |
| One 128 x 2 | Two 32 x 4 |
| One 64 x 3 | Eight 32 x 1 |
| • | • |
| • | • |
| • | • |

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

## Accessories

A terminal block does not come with the module. Three different terminal blocks are available as options: one for crimp-and-insert connectors, one for ribbon cable connectors, and the other for fault-tolerant protection of DUT inputs, where each channel has a positive temperature coefficient resistor that behaves like a resettable fuse and will increase impedance when excessive current is flowing in a channel.

## Description

The Agilent E8462A High-Density Relay Multiplexer is a **C-size, 1-slot, register-based** VXI module. This 256-channel multiplexer, using non-latching armature relays, offers a fast, reconfigurable, high point-count switching topology. This single-slot multiplexer extends the choices of multiplexers available to the system engineer.

**Agilent Technologies**
Innovating the HP Way

One 2.5-in. analog bus cable (E1400-61605) is included to connect the analog buses of multiple slot-adjacent E8462A modules or a slot-adjacent E1411B multimeter module. The analog bus cable, easily installed at the faceplate of the component card, lets you connect the E8462A with the E1411B DMM.

## Product Specifications

### Input

Note: *These limits apply only if no connection is made to power mains.*

### Maximum Input

|  | With Opt. 012 Terminal Card | With Opt. 014 or Opt. 015 Terminal Card | Analog Bus |
|---|---|---|---|
| **Maximum DC voltage:** | *250 V | 60 V | 60 V |
| **Maximum ACrms voltage:** | *250 V | 50 V | 30 V |
| **Maximum ACpeak voltage:** | 350 V | 70.7 V | 42 V |
| **Maximum current per channel:** |  |  |  |
| **Switching:** | 2 A @ 30 V | 100 mA | n/a |
| **Carry:** | 2 A | 100 mA | n/a |

*Limited to 15,000 hours of voltage stress above 80 V.*

### DC Performance

**Typical thermal offset per channel:**
- **1-wire:** $\pm$ 3 $\mu$V
- **2-wire:** $\pm$ 1.5 $\mu$V

**Typical closed channel resistance:**
- **1-wire:** <0.9$\Omega$*

*With output protection resistor shorted; protection resistor adds 100 $\Omega$.*

### AC Performance

**Bandwidth, 50 $\Omega$ Source/Load**

| Configuration | 100 $\Omega$ Protection Resistor Shorted |
|---|---|
| **256 x 1:** | 6 MHz |
| **128 x 1:** | 12.0 MHz |
| **32 x 1:** | 30.0 MHz |

### Closed Channel Capacitance

| Configuration | To Chassis | To Open Channel |
|---|---|---|
| 256 x 1: | 620 pF | 410 pF |
| 128 x 1: | 340 pF | 220 pF |
| 32 x 1: | 160 pF | 100 pF |

Open channel to either open channel or to chassis (capacitance): 30 pF

### Hi-to-Low Capacitance (2-Wire-Mode)

| Configuration | Capacitance |
|---|---|
| 128 x 2: | 410 pF |
| 64 x 2: | 230 pF |
| 16 x 2: | 100 pF |

### Crosstalk

| Configuration | 10 kHz | 100 kHz | 1 MHz | 10 MHz |
|---|---|---|---|---|
| **256 x 1 (1-wire):** | 70 dB | 53 dB | 33 dB | 15 dB |
| **128 x 1 (2-wire):** | 85 dB | 65 dB | 45 dB | 30 dB |
| **16 x 1 (2-wire):** | 85 dB | 65 dB | 45 dB | 30 dB |

### General Characteristics

| | |
|---|---|
| **Relays:** | Armature relays |
| **Open/close time:** | 5 ms max. |
| **Minimum relay life:** | |
| **1.0 V & 10 mA:** | 1 M operations |
| **Rated full resistive load (60 VA):** | 100 K operations |
| **Power up/down state:** | All open |
| **Minimum permissible load:** | |
| | 10 m Vdc, 10 $\mu$A |

## General Specifications

### VXI Characteristics

| | |
|---|---|
| **VXI device type:** | Register based, A16/D16 |
| **Data transfer bus:** | A16, slave only |
| **Size:** | C |
| **Slots:** | 1 |
| **Connectors:** | P1/P2 |
| **Shared memory:** | None |
| **VXI busses:** | None |
| **C-size compatibility:** | n/a |

### 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.08 |
| **I-SCPI Win 3.1:** | No |
| **I-SCPI Series 700:** | No |
| **C-SCPI LynxOS:** | No |
| **C-SCPI Series 700:** | No |
| **Panel Drivers:** | No |
| **VXI*plug&play* Win Framework:** | No |
| **VXI*plug&play* Win 95/NT Framework:** | Yes |
| **VXI*plug&play* HP-UX Framework:** | No |

### Module Current

| | $I_{PM}$ (A) | $I_{DM}$ (A) |
|---|---|---|
| **+5 V:** | *1.0 | *0.5 |
| **+12 V:** | 0.0 | 0.0 |
| **–12 V:** | 0.0 | 0.0 |
| **+24 V:** | — | — |
| **–24 V:** | — | — |
| **–5.2 V:** | — | — |
| **–2 V:** | — | — |

*\* Specified in worst case typical MUX configuration (eight 32x1). Add 30 mA per additional relay.*

### Cooling/Slot

| | |
|---|---|
| **Watts/slot:** | 30 W max., 10 W typ. |
| **$\Delta$P mm H$_2$O:** | 0.1 |
| **Air Flow liter/s:** | 3.0 |

## Ordering Information

| Description | Product No. |
|---|---|
| 256-Channel Relay Multiplexer* | E8462A* |
| Crimp and Insert Terminal Block** | E8462A 012** |
| Fault Tolerant Terminal Block | E8462A 014*** |
| Ribbon Cable Connector Terminal Block | E8462A 015*** |
| Service Manual | E8462A 0B3 |
| 3 yr. Retn. to Agilent to 1 yr. OnSite Warr. | E8462A W01 |

**\* Note: Standard unit does not include terminal block. One of the terminal block options must be ordered.**
**\*\* Note: Crimp-and-Insert Contacts are not included. See the Interconnect and Wiring section for information on ordering Crimp-and-Insert Contacts.**
**\*\*\* Ribbon cables and mating connectors are not included. See ordering details below:**

### Recommended 3M Mating Socket and Cable

| Part Description | Qty Required per Terminal Card | 3M Part Number |
|---|---|---|
| Socket (without strain relief) | 8 sockets either with or without strain relief | 3414-6600 |
| Socket * (with strain relief) | 8 sockets either with or without strain relief | 3414-6606 |
| Metal strain relief *(low profile) | 8 * | 3448-2034 |
| Flat cable (34 conductor) | Length as needed | 3365/34 |

* Required only for socket with strain relief.

## Manufacturer Ordering Information

3M Electronic Products Division
6801 River Place Blvd.
Austin, TX 78726-9000
Phone 800-225-5373

## 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
*www.agilent.com/find/assist*
**or check your local phone book for the Agilent office
near you.**

## Agilent Technologies' test and measurement service/support commitment

Agilent strives to maximize the value our test and measurement products give you, while minimizing your risk and service/support problems. We work to ensure that each product is realistically described in the literature, meets its stated performance and functionality, has a clearly stated global warranty, and is supported at least five years beyond its production life. Our extensive self-help tools include many online resources (www.agilent.com).

Experienced Agilent test engineers throughout the world offer practical recommendations for product evaluation and selection. After you purchase an Agilent product, they can provide no-charge assistance with operation verification and basic measurement setups for advertised capabilities. To enhance the features, performance, and flexibility of your test and measurement products—and to help you solve application challenges—Agilent offers free or extra-cost product options and upgrades, and sell expert engineering, calibration, and other consulting services.

**Phone and fax**
United States:
Agilent Technologies
(tel) 1 800 452 4844

Canada:
Agilent Technologies Canada Inc.
(tel) 1 877 894 4414

Europe:
Agilent Technologies
Test & Measurement
European Marketing Organisation
(tel) (31 20) 547 2000

Japan:
Agilent Technologies Japan Ltd.
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
Agilent Technologies
Latin American Region Headquarters, U.S.A.
(tel) (305) 267 4245
(fax) (305) 267 4286

Australia/New Zealand:
Agilent Technologies Australia Pty Ltd.
(tel) 1 800 629 485 (Australia)
(fax) (61 3) 9272 0749
(tel) 0 800 738 378 (New Zealand)
(fax) (64 4) 802 6881

Asia Pacific:
Agilent Technologies, Hong Kong
(tel) (852) 3197-7777
(fax) (852) 2506-9284

**Agilent Technologies**
Innovating the HP Way