DATA SHEET

E1418A VXI D/A Converter

8/16 Channels, 16-bit, C-Size

KEYSIGHT TECHNOLOGIES

Description

The Keysight Technologies E1418A 8/16-Channel D/A Converter is a C–size, 1-slot, register-based VXI module. It consists of 8 or 16 fully independent, isolated or non-isolated, 16-bit D/As. Each channel can be set to voltage or current mode with local or remote sensing on voltage outputs. All outputs can be updated with register level programming to allow fast backplane access. Each channel can be updated individually, or by using the internal data buffer, synchronized so that all channels change simultaneously. The channel output mode is set with jumpers in the terminal block for each channel or by register programming. Each D/A converter can be calibrated without removal through software commands and use of the terminal block CALBUS in conjunction with a 5.5-digit multimeter. The on/off terminal block has standard screw terminals for field wiring.

Key Features

- 1-Slot, C-size, register-based
- 8/16 independent channels, flexible and configurable
- Individual isolation per channel
- 16-bit resolution D/A per channel
- Programmable selectable voltage/current modes
- Software controlled calibration

Fast Updates

All outputs can be updated with register-level programming to allow fast backplane access. Rates are limited by controller speed and analog settling time. Each channel can be updated individually, or by using the internal data buffer, synchronized so that all channels change at the same time. The channel output mode is set with jumpers in the terminal block for each channel or by register programming.

In-place Calibration

Each D/A converter can be calibrated without removal through software commands and use of the terminal block CALBUS in conjunction with a 5.5-digit multimeter. In addition, a built-in self-test command provides a high level of confidence that the module is operating properly.

Choice of Connectors

The easy-to-use on/off terminal block, a feature of QUIC, comes with standard screw terminals for field wiring (see Figure 1). Optional crimp and insert or ribbon cable connectors are available. Each channel contains a programmable output disconnect relay to open or close the channel.

Figure 1. Standard E1418A Terminal Block with screw terminals

Technical Specifications and Characteristics

DC Output (typ except where noted)	
Voltage Mode	
Amplitude	± 16 V
Resolution	16 bits (488 µV steps) Monotonic to 2.0 mV
DC amplitude accuracy (90 days)	± (0.05% + 3.0 mV) (spec)
Compliance current	>20 mA @ 0 to ± 12 V de-rated linearly to 5 mA @ ± 16 mV
Short circuit current	<60 mA (spec)
Differential ripple and noise	<2 mV rms (20 Hz - 250 kHz, into 10 kΩ load)
Current Mode (typ except where noted)	
Range	0 to ± 20.00 mA
Resolution	16-bit (610 nA steps) monotonic to 25 µA
Accuracy (90 days)[1]	± (0.09% + 5.0 µA) (spec)
Compliance voltage	± 12 V (spec)
Maximum open circuit voltage	<18 V
Differential ripple and noise	<2 µA rms (20 Hz - 250 kHz, into 250 Ω load)

AC Output (nom)	
Sample rate	1 kSa/s per channel
Modulation	No
Sweep	No
AC amplitude accuracy	Not specified
Standard waveforms	No
Arbitrary waveform function	No

General Characteristics (nom)	
Settling time	300 µs (+ full scale to – full scale step, single channel, to rated accuracy)
Isolation	42 Vdc/ac peak (channel-to-chassis or channel-to-channel)
Synchronization	• Software commands, external trigger inputs, or TTL backplane trigger lines provide a choice of synchronizing event. • Each individual channel can be updated by software command or all channels can be updated at the same time based upon a

[1]Temperature within ± 5 °C of calibration temperature and same load as at calibration)

VXI Characteristics (nom)	
VXI device type	Register-based, slave only
Data Transfer	A16 or A24, D16
Size	C
Slots	1
Connectors	P1/P2
Shared memory	None
VXI busses	None

Module current (typ)	+5 V		+12 V		+24 V		-24 V	
	I_{PM}	I_{DM}	I_{PM}	I_{DM}	I_{PM}	I_{DM}	I_{PM}	I_{DM}
8 Channel non-isolated	0.70	0.01	0.04	0.01	0.44	0.01	0.44	0.01
8 Channel isolated	0.75	0.01	0.04	0.01	0.88	0.01	0.00	0.00
16 Channel non-isolated	1.25	0.01	0.04	0.01	0.88	0.01	0.88	0.01
16 Channel isolated	1.40	0.01	0.04	0.01	1.60	0.01	0.00	0.00

Cooling/slot	8 channel configurations	16 channel configurations
Watts/slot	25.4	49.0
ΔP mm H_20	0.10	0.18
Air flow liters/s	2.0	3.9

Definitions and Conditions

Specification (spec)

The warranted performance of a calibrated instrument that has been stored for a minimum of 1 hour within the operating temperature range of 0 to 50 °C and after a 30-minute warm up period. All specifications account for the effects of measurement and calibration-source uncertainties and were created in compliance with ISO-17025 methods. In addition, a driver session must be opened to initialize the power supplies. This can be done programmatically or by opening SFP and connecting to the instrument. Data published in this document are specifications (spec) only where specifically indicated.

Typical (typ)

The characteristic performance, which 80% or more of manufactured instruments will meet. This data is not warranted, does not include measurement uncertainty or calibration-source, and is valid only at room temperature (approximately 25°C).

Nominal (nom)

The mean or average characteristic performance, or the value of an attribute that is determined by design such as a connector type, physical dimension, or operating speed. This data is not warranted and is measured at room temperature (approximately 25°C).

Measured (meas)

An attribute measured during the design phase for purposes of communicating expected performance, such as amplitude drift vs. time. This data is not warranted and is measured at room temperature (approximately 25°C).

Additional Information

All data are measured from multiple units at room temperature and are representative of product performance within the operating temperature range unless otherwise noted. The data contained in this document is subject to change.

Ordering Information

Model	Description
E1418A	8/16-Channel D/A Converter
E1418A-001	Add 8 channels for total of 16, non-isolated[1]
E1418A-002	Convert 8 channels to isolated[1]
E1418A-003	Add 8 channels and convert all 16 to isolated[1]
E1418A-A3E	Crimp/insert connectors[2]
E1418A-A3H	Ribbon cable connectors
E1418A-0B3	Service Manual
Accessories	
E1523A	1-Channel Isolation Plug-on for E1418A[3]
E1524A	8-Non-isolated-channel Expansion Kit for E1418A[4]
E1525A	8-Isolated-channel Expansion Kit for E1418A[4]
Related Products	
E8401A	13-slot, C-size, VXI Mainframe with 550W Power Supply and basic monitoring
E8403A	13-slot, C-size, VXI Mainframe with 1000W Power Supply and basic monitoring
E8404A	13-slot C-size VXI Mainframe, 1000W PS, Enhanced monitor, color graphic display
E1406A	VXI GPIB Command Module; C-size

[1]Includes standard screw terminal block
[2]Crimp-and-insert contacts are not included
[3]Adds isolation to single channels to existing E1418As
[4]Adds an 8-channel expansion kit to existing 8-channel units

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