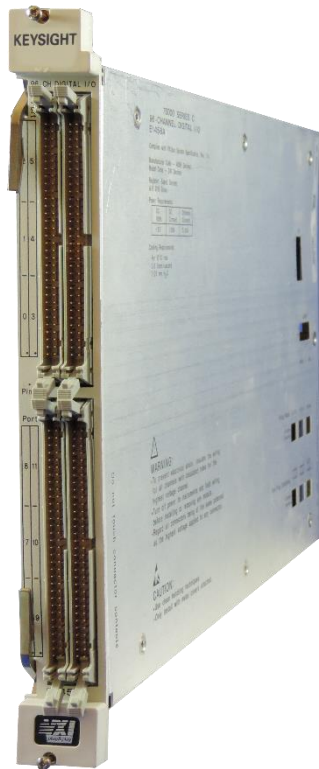


# E1458A VXI Digital I/O

96-Channel, 12-ports, C-Size



## Description

The Keysight Technologies E1458A 96-Channel Digital Input/Output module is a C-size, 1-slot, register-based VXI module that offers twelve 8-bit bi-directional data ports. It provides block memory transfers and six GPIO handshake protocols (none, leading edge, trailing edge, pulse, partial, and strobe) for a wide range of applications.

The E1458A is intended for digital I/O control applications such as digital subassembly test or data acquisition and control. Each of the 12 identical ports consists of eight data lines and six handshake/control lines. Each 8-bit port is individually configured for positive/negative true logic and read/write or tri-state condition. The E1458A is arranged into three banks of four ports each. Ports can be combined within a bank, allowing data transmission using bytes, words (16-bit), or long words (32-bit). Data transmission can be from a single port (8 bits) or from multiple ports up to all 12 ports.

## Key Features

- 1-Slot, C-size, register based
- Twelve 8-bit input or output data ports for acquisition
- Wide variety of output data types
- Data port readback on a per-port basis
- Control of interface driver tri-state capability
- Block mode transfer to/from memory

## Handshake and Control Lines

Three handshake and control lines for each port can be controlled with SCPI programming. These lines provide the following functions:

- FLAG: Data handshaking line input to the digital I/O module
- CTL: Data handshaking line output by the digital I/O module
- I/O: Input/output status line

Each port has three additional control lines available for custom handshaking and interrupt functions: PIR (peripheral interrupt), /RES (peripheral reset), and STS (status). Control of these three lines is done through register-based programming.

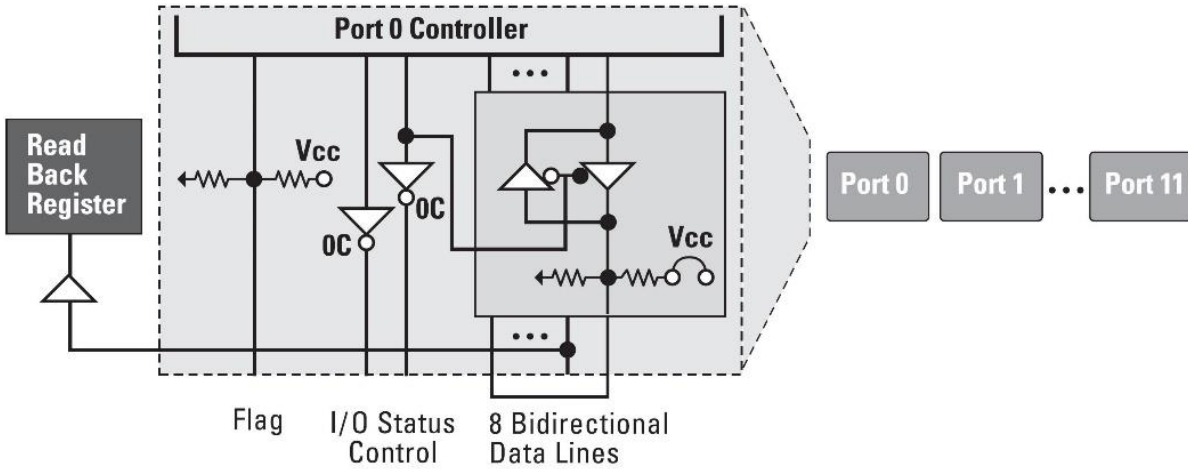


Figure 1. E1458A Block Diagram

## Cables

The E1458A ships with four 2-meter cables. For ordering each additional 2-meter cable, order Agilent part number E1458-61601. An Opto 22 component cable may be ordered separately as Option 022.

## SCPI

The E1458A SCPI command set allows existing E1330B SCPI application programs to run on the E1458A. The E1458A SCPI command set supports additional queries to read back port data and control values, plus new E1458A capabilities, including monitoring of actual output port data. The E1458A driver is supported on all C-SCPI/ISCPi platforms and also as a downloadable driver for the Keysight E1406A command modules.

## Technical Specifications and Characteristics

General Characteristics	
Number of channels	96
Channel type	Input or output
Logic levels	TTL compatible, 5 V maximum
Memory	None
32-bit block transfer	325 Kb/s
Test synchronization	Software triggers, hardware

Data Lines	
Output characteristics	
$I_{out} \text{ (High)}$	-5.2 mA @ $V_{out} = 2.5 \text{ V}$ (pull-up)
$I_{out} \text{ (Low)}$	48 mA @ $V_{out} = 0.5 \text{ V}$
Input characteristics	
$I_{in} \text{ (High)}$	<2.5 mA @ $V_{in} = 2.5 \text{ V}$
$I_{in} \text{ (Low)}$	<-3.2 mA @ $V_{in} = 0.4 \text{ V}$
$V_{in} \text{ (High)}$	>2.0 V (5.0 V maximum)
$V_{in} \text{ (Low)}$	<0.8 V

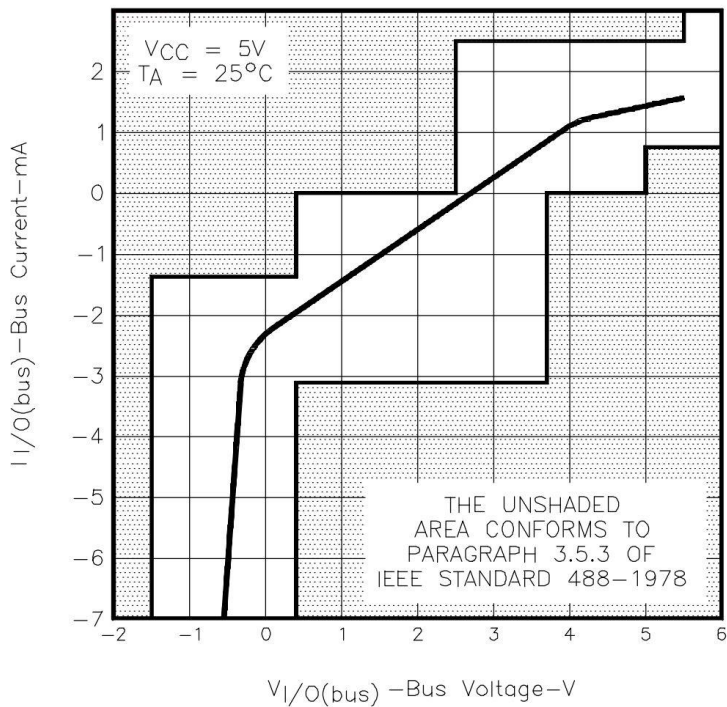


Figure 2. Typical Data Line Current vs. Data Line Voltage

Handshake Lines	
Output characteristics	
I <sub>out</sub> (High)	250 $\mu$ A @ V <sub>out</sub> = 5 V
I <sub>out</sub> (Low)	40 mA @ V <sub>out</sub> = 0.7 V 16 mA @ V <sub>out</sub> = 0.4 V
Input characteristics	
I <sub>in</sub> (Low)	<1.75 mA
V <sub>in</sub> (High)	>2.0 V
V <sub>in</sub> (Low)	<0.8 V

Block Mode Transfers	
8-bit wide	90 KB/s
32-bit wide	325 KB/s

VXI Characteristics		
VXI device type	Register-based	
Size	C	
Slots	1	
Connectors	P1/P2	
Shared memory	None	
VXI busses	None	
Module current	I <sub>PM</sub>	I <sub>DM</sub>
+5 V	1.2	0.1
+12 V	0	0
-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	2.50	
$\Delta$ P mm H <sub>2</sub> O	0.04	
Air flow liters/s	0.21	

## 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
E1458A	96-Channel Digital Input/Output
E1458A-022	Opto 22 components cable
E1458A-0B3	Service manual
E1458-61601	Additional 2-Meter Cable
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

Learn more at: [www.keysight.com](http://www.keysight.com)

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