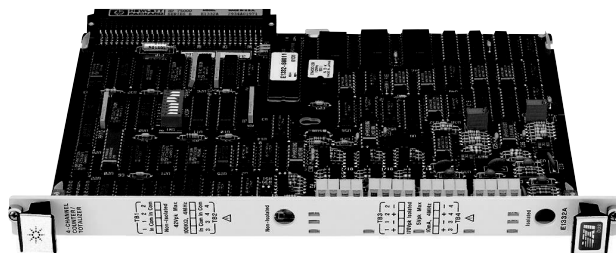


Agilent E1332A 4-Channel Counter/Totalizer

Data Sheet

- 1-Slot, B-size, register based
- Frequency range 4 MHz
- Seven counter functions
- Programmable direct or isolated inputs
- Programmable digital input filter and trigger levels
- Two input voltage ranges



Agilent E1332A

Description

The Agilent Technologies E1332A 4-Channel Counter/Totalizer is a **B-size, 1-slot, register-based VXI device**. It provides seven counter functions: frequency (up to 4 MHz), period average, pulse width, time interval, totalize, gated totalize, and up/down count.

With this module, you select either isolated or direct inputs through software commands. You can connect a total of eight channels to one counter card (only four can totalize simultaneously) by multiplexing between four isolated channels and four non-isolated channels. The digital input low-pass filter is also software selectable with Pass Frequency in 16 binary steps from 4 Hz to 131 kHz. It filters out the high-frequency noise of input signals, such as the bounce of mechanical switches.

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



Frequency Measurement

Channels 1 and 3 measure frequency up to 4 MHz (2 and 4 not available). You can select the resolution directly in Hz or the gate time from 2 ms to 65.5 s in 16 binary steps.

- Minimum pulse width: 125 ns
- Resolution: 1/gate time

Period Average Measurement

Channels 1 and 3 (2 and 4 not available) average 2^N periods of an input signal. Select the resolution directly in seconds or the number of periods to be averaged.

- Minimum pulse width: 125 ns
- Range of N: 1 to 16
- Resolution: $1 / (5 \times 10^6 \times 2^N)$ s

Pulse Width Measurement

Channels 2 and 4 (1 and 3 not available) measure pulse width (positive or negative) of an input signal.

- Minimum pulse width: 500 ns
- Maximum pulse width: 858 s
- Resolution: 200 ns

Time Interval Measurement

You can measure the time interval between transitions from channel 1 to channel 2 or from channel 3 to channel 4. You select the rising or falling edge via software commands.

- Minimum interval: 500 ns
- Maximum interval: 858 s
- Resolution: 200 ns

Totalizing

You can count the number of transitions (rising or falling edge) on channels 1, 2, 3 and 4.

- Minimum pulse width: 125 ns
- Range: 1 to $(2^{32}-1)$ Counts

Gated Totalizing

You count the number of transitions (rising or falling edges) on channels 1 and 3. Channel 2 is used as a gate for channel 1. Channel 4 is used for channel 3. The polarity of the gate is programmable.

- Minimum pulse width: 125 ns
- Range: 1 to $(2^{16}-1)$ Counts

Up/Down Counting

Channels 1-2 and channels 3-4 form the up/down pairs. The count on channel 2 (4) is subtracted from that on channel 1 (3), and the result is given.

- Minimum pulse width: 125 ns
- Range: $\pm (2^{31}-1)$

Input Signal Conditioning commands control all channels simultaneously.

Trigger level/sensitivity commands are available for each channel.

C-size adapter

This product is easily adapted for use in a C-size mainframe. See the Accessories section for a selection of adapters.

Product Specifications

Functions

| | |
|---------------------|---|
| Period: | Yes |
| Time interval: | Yes |
| Totalizer: | Yes |
| Gated totalizer: | Yes |
| Ratio: | No |
| Pulse width: | Yes |
| Rise/fall time: | No |
| Phase: | No |
| Vdc: | No |
| Vac: | No |
| Up/down counter: | Yes |
| Number of channels: | 4 |
| Frequency: | 4 MHz to 0.002 Hz (input filter is OFF) |

Pass Frequency of Input Digital Filter

4 Hz to 131 kHz in 16 binary steps

Time Base

| | |
|--------------------|--------------------|
| Frequency: | 10 MHz |
| Initial accuracy: | 2 ppm |
| Aging: | 2 ppm/year |
| Temperature drift: | 5 ppm (0 to 50° C) |

Nonisolated Input

| | |
|------------------|--|
| Input Impedance: | (typical) 100 k Ω shunted by 80 pF |
|------------------|--|

Input Ranges

(jumper selectable)

| | |
|-------------|------------|
| Low range: | ± 5 V |
| High range: | ± 42 V |

| | |
|--------------------------|-------------------------------|
| Trigger Level | |
| Low input range: | -2.56 to 2.54 V in 20 mV step |
| High input range: | -25.6 to 25.4 V in 0.2 V step |

| | |
|--------------------------|--------|
| Sensitivity | |
| Low input range: | |
| dc to 2 MHz: | 25 mV |
| 2 MHz to 4 MHz: | 50 mV |
| High input range: | |
| dc to 100 kHz: | 250 mV |
| 100 kHz to 1 MHz: | 500 mV |
| 1 MHz to 2.5 MHz: | 1 V |
| 2.5 MHz to 3.5 MHz: | 2 V |

| | |
|--------------------------------|-------|
| Frequency Dynamic Range | |
| Low input range: | |
| dc to 2 MHz: | 43 dB |
| 2 MHz to 4 MHz: | 37 dB |
| High input range: | |
| dc to 100 kHz: | 35 dB |
| 100 kHz to 1 MHz: | 29 dB |
| 1 MHz to 2.5 MHz: | 23 dB |
| 2.5 MHz to 3.5 MHz: | 17 dB |

| | |
|-------------------------------|---|
| Isolated Input | |
| V_{in} (High): | >4.2 V |
| V_{in} (Low): | <1 V |
| I_{in} (High): | >6.3 mA |
| I_{in} (Low): | <250 μ A |
| Isolation: | 170 V _p (Channel-to-channel, channel-to-chassis) |

| | |
|---|--|
| Maximum Screw Terminal Wire Size | |
| 16 AWG (1.5 mm) | |

General Specifications

| | |
|------------------------------|---------------------------|
| VXI Characteristics | |
| VXI device type: | Register based |
| Size: | B |
| Slots: | 1 |
| Connectors: | P1 |
| Shared memory: | n/a |
| VXI buses: | n/a |
| C-size compatibility: | Yes (with E1403C Adapter) |

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

| | |
|--|------|
| Command module firmware: | ROM |
| 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 |
| VXIplug&play Win Framework: | No |
| VXIplug&play Win 95/NT Framework: | No |
| VXIplug&play HP-UX Framework: | No |

| | | |
|-----------------------|-----------------------|-----------------------|
| Module Current | | |
| | I_{PM} | I_{DM} |
| +5 V: | 0.5 | 0.01 |
| +12 V: | 0.03 | 0.01 |
| -12 V: | 0.02 | 0.01 |
| +24 V: | 0 | 0 |
| -24 V: | 0 | 0 |
| -5.2 V: | 0 | 0 |
| -2 V: | 0 | 0 |

| | |
|--|------|
| Cooling/Slot | |
| Watts/slot: | 3.00 |
| ΔP mm H₂O: | 0.05 |
| Air Flow liter/s: | 0.25 |

Ordering Information

| | |
|--|--------------------|
| Description | Product No. |
| 4-Channel Counter/Totalizer | E1332A |
| Service Manual | E1332A 0B3 |
| Mil Std 45662A Calibration w/Test Data | E1332A 1BP |
| Japan - Japanese Localization | E1332A ABJ |

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

By internet, phone, or fax, get assistance with all your test & measurement needs.

Online assistance:

www.agilent.com/find/assist

Phone or Fax

United States:

(tel) 1 800 829 4444

Canada:

(tel) 1 877 894 4414

(fax) (905) 282 6495

China:

(tel) 800 810 0189

(fax) 800 820 2816

Europe:

(tel) (31 20) 547 2323

(fax) (31 20) 547 2390

Japan:

(tel) (81) 426 56 7832

(fax) (81) 426 56 7840

Korea:

(tel) (82 2) 2004 5004

(fax) (82 2) 2004 5115

Latin America:

(tel) (305) 269 7500

(fax) (305) 269 7599

Taiwan:

(tel) 0800 047 866

(fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100

(fax) (65) 6836 0252

(e-mail) tm_asia@agilent.com

Data Subject to Change

© Agilent Technologies, Inc. 2001

Printed in the U.S.A. May 1, 2004

5965-5546E



Agilent Technologies