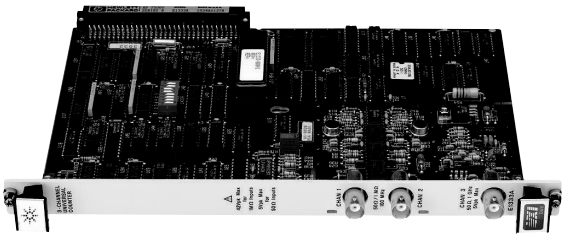
Agilent E1333A
3-Channel Universal Counter

Data Sheet

- **1-Slot, B-size, register based**
- **Six counter functions**
- **1 GHz frequency measurement**
- **1 ns time interval/pulse width resolution (avg mode)**
- **Compatible with all Agilent Foundations**
- **Measure time interval between transitions**



Agilent E1333A

Description

The Agilent Technologies E1333A 3-Channel Universal Counter is a **B-size, 1-slot, register-based VXI module.** It provides the capabilities needed for electronic test applications. You can connect three signals to one counter card and multiplex between them to measure frequency. Counter functions include frequency, period average, pulse width and pulse width average, time interval and time interval average, totalize, and ratio.

You can select the resolution directly in seconds, the number of periods to be averaged, the number of intervals (2^n to be averaged), or the number of transitions (2^n on one channel). Additionally, you can measure the time interval between transitions from one channel to another channel, or measure the frequency ratio between channels 1 and 2 or channels 2 and 1.

To complete the E1333A module's functionality, you may also select the rising or falling edge via software commands, and count the number of transitions on channels 1 and 2. Input Signal Conditioning commands control all channels simultaneously. Trigger level/ sensitivity commands are available for each channel.

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

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Frequency Measurement

- Minimum pulse width (Channels 1 and 2): 5 ns
- Resolution: 1/gate time

Period Average Measurement

Channels 1 or 2 average 2^N periods of an input signal. You select the resolution directly in seconds or the number of periods to be averaged.

- Minimum pulse width: 60 ns
- Range of N: 1 to 16
- Resolution: $1 / (10 \times 10^6 \times 2^N)$ s

Pulse Width (with Average Mode) Measurement

- Minimum pulse width: 200 ns
- Maximum pulse width: $(6871/2^N)$ s
- Range of N: 0 to 7
- Resolution: $(100/2^N)$ ns

Time Interval (with Average Mode) Measurement

You can measure the time interval between transitions from one channel to another channel. You select the resolution directly in seconds or the number of intervals, 2^N to be averaged. You select the rising or falling edge via software commands.

- Minimum interval: 200 ns
- Maximum interval: $(6871/2^N)$ s
- Range of N: 0 to 7
- Resolution: $(100/2^N)$ ns

Totalizing

You can count the number of transitions on channels 1 and 2.

- Minimum pulse width: 5 ns
- Range: 1 to $(2^{36}-1)$

Frequency Ratio Measurement

You can measure the frequency ratio between channels 1 and 2 or channels 2 and 1. You select the resolution directly or the number of transitions, 2^N on one channel.

- Minimum pulse width: 5 ns
- Range of N: 6 to 36
- Resolution: $½^N$

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:	No
Ratio:	Yes
Pulse width:	Yes
Rise/fall time:	No
Phase:	No
Vdc:	No
Vac:	No
Up/down counter:	No
Number of channels:	3

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

Channels 1 and 2	
Channel 3	
Frequency range:	75 MHz to 1 GHz, prescaled by 64
Coupling:	ac coupled
Input impedance:	50 Ω
Input range:	± 5 Vp
Sensitivity:	
75 MHz to 600 MHz:	10 mV
600 MHz to 900 MHz:	30 mV
900 MHz to 1 GHz:	40 mV
Dynamic range:	
75 MHz to 600 MHz:	51 dB
600 MHz to 900 MHz:	41 dB
900 MHz to 1 GHz:	39 B
VSWR (typical):	1.5 @ 0 dBm

Dynamic Range	
Low input range (dc to 100 MHz):	43 dB
High input range (dc to 100 MHz):	41 dB

Sensitivity

Low input range (dc to 100 MHz):	25 mV
High input range (dc to 100 MHz):	250 mV

Input range:
(select the input attenuator)

Low range:	± 5 V
High range:	± 42 V

Trigger level:

Low input range:	–2.56 V to 2.54 V in 20 mV step
High input range:	–25.6 V to 25.4 V in 0.2 V step
Input attenuator:	Programmable x1 or x10 attenuator
Filter:	Programmable Low-Pass Filter, 3 dB point at 100 kHz
Input impedance (typical):	Programmable 1 MΩ shunted by 50 pF or 50 Ω
Coupling:	Programmable ac or dc coupled

Frequency range:

ac coupled:	100 Hz to 100 MHz
dc coupled:	dc to 100 MHz

General Specifications

VXI Characteristics

VXI device type:	Register based
Size:	B
Slots:	1
Connectors:	P1
Shared memory:	n/a
VXI buses:	n/a

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
VXI*plug&play* Win Framework:	No
VXI*plug&play* Win 95/NT Framework:	No
VXI*plug&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:	5.00
ΔP mm H_2O:	0.08
Air Flow liter/s:	0.42

Ordering Information

Description	Product No.
3-Channel Universal Counter	E1333A
Service Manual	E1333A 0B3
Japan - Japanese Localization	E1333A ABJ

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