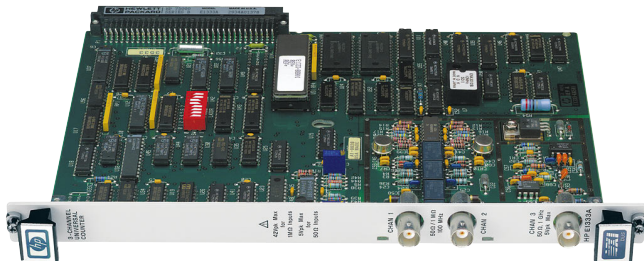

3-Channel Universal Counter HP E1333A

Technical Specifications

- Six counter functions
- 1 GHz frequency measurement
- 1 ns time interval/pulse width resolution (avg mode)
- Compatible with all HP Foundations
- Measure time interval between transitions



Description

The HP 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, and totalize.

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 HP 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 HP Website directory of addresses (URLs) for instrument driver availability and downloading instructions.

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: $\frac{1}{2^N}$

Input Signal Conditioning commands control all channels simultaneously.

Trigger level/sensitivity commands are available for each channel.

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

Frequency range:	
AC coupled:	100 Hz to 100 MHz
DC coupled:	DC to 100 MHz
Coupling:	Programmable AC or DC coupled
Input impedance (typical):	Programmable 1 M Ω shunted by 50 pF or 50 Ω
Filter:	Programmable Low-Pass Filter, 3 dB point at 100 kHz
Input attenuator:	Programmable x1 or x10 attenuator
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
Sensitivity:	
Low input range (DC to 100 MHz):	25 mV
High input range (DC to 100 MHz):	250 mV
Dynamic range:	
Low input range (DC to 100 MHz):	43 dB
High input range (DC to 100 MHz):	41 dB

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 dB
VSWR (typical):	1.5 @ 0 dBm

VXI Characteristics

VXI device type:	Register-based
Size:	B
Slots:	1
Connectors:	P1
Shared memory:	n/a
VXI busses:	n/a
C-size compatibility:	with HP E1403A Adapter

Instrument Drivers

See the HP Website (http://www.hp.com/go/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
HP VEE Drivers:	Yes
VXI plug&play Win Framework:	No
VXI plug&play Win95/NT Framework:	No
VXI plug&play HP-UX Framework:	No (not available at time of publication)

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 ₂ O:	0.08
Air Flow liter/s:	0.42

Ordering Information

Description	Product No.
3-channel universal counter	HP E1333A
Service manual	HP E1333A 0B3
Mil std 45662A calibration w/ test data	HP E1333A 1B3
Japan - Japanese localization	HP E1333A AB3
3 yr. retn. to HP to 1 yr. OnSite warr.	HP E1333A W01

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