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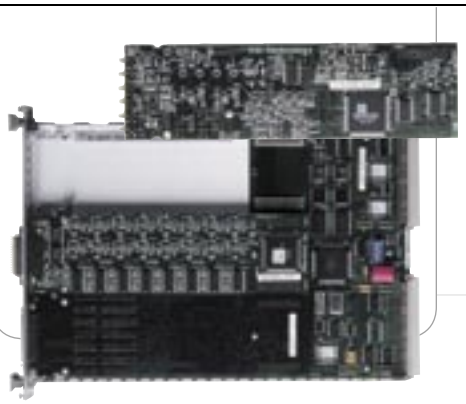
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200 MHz, 1 ns Universal Counter (VMIP™)



Overview

The VM2164 is a high-performance system level universal counter, designed to outperform traditional rack-and-stack and other C-size VXIbus counters, but with a considerably smaller footprint. Being part of the VMIP™ family, the VM2164 can be combined with up to two other high-performance instruments on a single C-Size card.

A powerful combination for any automated test set is our single VXIbus module, VT2000, combining a 6.5 digit system DMM (VM2710A), 1 ns universal counter (VM2164), and a 50 MSa/s arbitrary waveform/function generator (VM3640A).

Performance

For ATE applications, making high-speed precise measurements and passing these measurements back to the host controller is critical. The VM2164 allows over 200 readings per second over the backplane, while providing extensive arming and triggering capability, allowing the VM2164 to be easily synchronized to external events, or other measurement devices. Add a built-in TCXO or OCXO time base option for improved measurement stability.

Features

Frequency:	Frequency Frequency ratio Freq in Burst Burst Rep Rate
Period and Time:	Period [Single] Period [Average] Positive Pulse Width Negative Pulse Width Rise Time Fall Time Time Interval Time Interval Avg
Phase:	Phase
Voltage:	Vdc Vp Vmax Vmin
Totalize [Counts]	2nd Ch Start/Stop 2nd Ch Gate Gated by Time Ext Arm Start/Stop Ext Arm Gate TTLT Start/Stop TTLT Gate
Positive Duty Cycle	
Negative Duty Cycle	

Features

- 200 MHz Frequency Range for both A and B Channels
- 1 ns Time Interval Resolution (100 ps with Averaging)
- 9-digit Resolution in 1 Second Gate Time
- Greater than 200 Readings/second Over the VXIbus
- Up to 32,000 On-board Readings with Direct Register Access for Fast Data Throughput
- Part of the VMIP™ Family, Combine With up to two other Instruments on a Single C-size Card (i.e. DMM/AWG)
- Built-in DVM, for Simple Voltage Measurement

VM2164

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Built-in Software Functions

Auto-Set, Auto-level, Pulse Characterization, Period, Frequency, Pos Pulse Width, Neg Pulse Width, Pos Duty Cycle, Rise Time, Fall Time, Burst Characterization, Burst Frequency, Burst Rep Rate, Math [slope, a=mx+b], RPM [Revolutions per Minute], BIT [Built In Test], Clock Out On/Off – IN/OUT

Measurement Storage

[On Board]
1k Measurements Standard

Arming

Trigger Source:	ChA, ChB, Ext, VXI TTLT
Trigger Slope:	Positive, Negative
Trigger Level:	TTL
Arming Start Delay:	Events/Timed
Hold Off:	Timed
Burst Sync Delay:	Timed

Oscillator Options

No Oscillator		Use VXI 10 MHz
TCXO		High Performance
	Aging:	$\pm 1 \times 10^{-6}$/year
	Temp Stability:	$\pm 1 \times 10^{-6}$ (0 ˚C to 50 ˚C)
	Adj Range:	$\pm 3 \times 10^{-6}$ min.
OCXO		Ultra High Perf
	Aging:	$\pm 1 \times 10^{-7}$/year $\pm 1 \times 10^{-9}$/day
	Temp Stability:	$\pm 1 \times 10^{-7}$ (0 ˚C to 50 ˚C)
	Adj Range:	$\pm 4 \times 10^{-7}$ min.
	Warm up time:	<3 min.

Front Panel Connectors

Channel A Input, Channel B Input
Ext Arm Input, Gate/Edge
Ext Clock Input/Output

Specifications

Frequency

Input A & B:	500 µHz to 200 MHz 20 Hz to 200 MHz (ac)
Resolution:	9 digits/s measuring time, max.10 digits resolution

Period

Input A & B:	5 ns to 2000 s
Resolution:	1 ns [single] 9 digits/s measuring time, max. 10 digits resolution [averaged]

Frequency Ratio

A/B & B/A:	500 µHz to 200 MHz

Time Interval

Range:	2 ns to 1e6 s
Resolution:	1 ns

Positive/Negative Pulse Width

Range:	5 ns to 20 ms
Resolution:	1 ns

Rise/Fall Time

Range:	10 ns to 1000 s
Resolution:	1 ns

Phase

Range:	0.00 ˚ to +360.00 ˚

Totalize

Range:	0 to 10^{10} counts

Peak Voltage

Voltage:	5.00 V, 50.0 V
Resolution:	10 mV, 100 mV

DC Voltage

Voltage:	5.00 V, 50.0 V
Resolution:	10 mV, 100 mV

Coupling: dc or ac

Signal Operating Range: +50 V (1 MΩ, w/attn), +5 V (50 Ω)

Trigger Level Range: +50 V, +5.0 V,

Resolution: 25 mV, 2.5 mV

Trigger Sensitivity

+50 V Range:	200 mV rms Sine wave (up to 50 MHz) 400 mV rms sine wave (50 MHz to 200 MHz)
+5.0 V Range:	20 mV rms (up to Range 50 MHz) 40 mV rms (50 MHz to 200 MHz)

Auto Trigger Level: Automatically set at 50% of the input signal's Vp value.10% to 90% is used if measuring rise and fall times.

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Impedance: 50 Ω
1 MΩ/20 pf
1 MΩ x10/20 pf

Low Pass Filter: <50 kHz

Maximum Input Voltage:
1 MΩ input
<2 kHz: 240 V rms (dc + ac rms), decreasing linearly to +5 V at 1 kHz

>100 kHz: +5 V to 200 MHz 1 MΩ input x10 attn

50 Ω input: 5.0 Vrms (dc + ac)

Crosstalk:
100 MHz @ 50 Ω: <36 dB channel separation

External Arm Input Coupling: dc only

Pulse Width: >50 ns

Transition Time: <250 ns

Voltage Range: TTL or ECL

Impedance: Approx. 1 kΩ

TTL Trigger Bus Arming Input: Any TTLT may be selected for arming, by edge or level (polarity is also programmable)

Output: Any TTLT may be selected to follow the measurement gate signal (polarity is programmable)

External Reference Input Coupling: ac only

Frequency Range: 10 MHz

Voltage Range: 500 mV rms to 12 V rms

Impedance External Reference: Approx. 1 kΩ
ac only

Output Coupling Frequency Range 10 MHz

Voltage Range: TTL/CMOS

Impedance: Approx. 50 Ω

Gate Time: Programmable from 200 µs to 99.999 s

Note: The gate time may be extended by one period of the input signal on frequency A or B and Ratio A/B, B/A.

Ordering Information

VM2164

VM2164	200 MHz Universal Timer/Counter
Option 15	TCXO Oscillator
Option 16	OCXO Oscillator

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