Oscilloscope

TENMA™

Technical Specification

Number of channels	4 Channels	
A/D converter	8-bit resolution	
Deflection graticule factor V / div range	2 mV / div to 5 V / div at input BNC	
Displacement range	±5 div	
Analog bandwidth	-	200 MHz
Single bandwidth	-	100 MHz
Selectable analog bandwidth limit (Typical)	20 MHz	
Low frequency response (AC coupling, -3 dB)	≤ 10 Hz at BNC	
Rise time	-	≤ 1.8 ns
DC gain accuracy	When vertical sensitivity is 2 mV / div : ±4% (sampling or average acquisition mode) When vertical sensitivity is 5 mV / div to 5 V / div : ±3% (sampling or average acquisition mode)	
DC measurement accuracy (average acquisition mode)	When vertical position is zero and N > 16 : ± (5% × reading + 0.1 div + 1 mV) and 2 mV / div is selected ± (3% × reading + 0.1 div + 1 mV) and 5 mV / div to 5 V / div is selected When vertical position is not zero and N > 16 : ± [3% × (reading + vertical shift reading) + (1% × vertical shift reading)] + 0.2 div). Set from 5 mV / div to 200 mV / div plus 2 mV Setup value > 200 mV / div to 5 V / div plus 50 mV	
Voltage difference (ΔV) measurement accuracy (average acquisition mode)	Under identical setup and environmental conditions, the voltage difference (ΔV) between two points of the waveform after the average of > 16 waveforms acquired waveforms is taken : ± (3% × reading + 0.05 div)	
Sampling		
Sampling modes	Real-time	Equivalent
Acquisition rates	CH1, CH2 : single channel 2 GS/s, two channels 1 GS/s CH3, CH4 : single channel 2 GS/s, two channels 1 GS/s	50 GS/s
Average	When all channels have made N acquisitions simultaneously, N is 2, 4, 8, 16, 32, 64, 128 to 256	

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Input		
Input coupling	DC, AC, GND	
Input impedance	1 ±2% MΩ in parallel with 16 ±3 pF	
Probe attenuation	1×, 10×, 100×, 1,000×	
Maximum input voltage	400 V (DC + AC peak, 1 MΩ input	
Time delay between channels (Typical)	150 ps	
Horizontal		
Waveform interpolation	sin (x) / x	
Recording length	1,024 k	
Storage depth	24 k (Max.)	
Equivalent storage depth (dual time base)	60 M	
Scanning range (s / div)	1 ns / div to 50 s / div (300 MHz) 2 ns / div to 50 s / div (200 MHz, 150 MHz) 5 ns / div to 50 s / div (100 MHz) at 1-2-5 increment	
Accuracy of sampling rate and delay time	±50 ppm (any time interval > 1 ms)	
Time interval (ΔT) Measurement accuracy (full bandwidth)	Single : ± (1 sampling time interval + 50 ppm × reading + 0.6 ns) > 16 average values : ± (1 sampling time interval + 100 ppm × reading + 0.4 ns)	
Trigger		
Trigger sensitivity	Internal trigger : 1 div ; external trigger : 100 mV	
Trigger level range	Internal	±8 div from the centre of the screen
	EXT	±800 mV
	EXT / 5	±4 V
Trigger level accuracy (Typical) applied on signals of > 20 ns rise or fall time	Internal	± (0.3 div × V / div) (within ±4 div from the of the screen)
	EXT	± (6% default value + 40 mV)
	EXT / 5	± (6% default value + 200 mV)
Pretrigger capability	Normal mode / scanning mode, pretrigger / delayed trigger	
Hold off range	96.0000 ns to 1.5 s	
Set level to 50% (Typical)	Input signal frequency > 50 Hz	

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Trigger		
Edge trigger Edge type Pulse trigger Trigger mode (Smaller than, greater than, or equal to) negative pulse Pulse width Slew rate trigger Slew rate condition Slew rate range Video trigger	Rise, Fall, Rise and Fall (Smaller than, greater than, or equalling to) positive pulse 20 ns to 10 s < (Smaller than), > (greater than), = (equalling to) 40 pV / s to 1.6 kV / s	
Trigger sensitivity (video trigger, Typical)	Internal	2 div
	EXT	400 mV
	EXT / 5	2 V
Video format	Supporting standard NTSC and PAL. Line ranges are 1 to 525 (NTSC) and 1 to 625 (PAL)	
Trigger frequency counter		
Reading resolution	6 bit	
Precision	±51 ppm	
Frequency range	10 Hz to full bandwidth at AC coupling	
Trigger type	Pulse or edge	
Measurement		
Cursor	Manual mode	Voltage difference (Δ V) between cursors; difference (ΔT) between cursors; time difference (ΔT) countdown (Hz) (1/Δ)
	Automatic mode	Cursor display is enabled during automatic
Automatic measurement	Amplitude, maximum, minimum, top, bottom, mean, peak-to-frequency, cycle, rising edge, falling edge, positive pulse, negative delay (advance measurement), phase (advance measurement)	
Math functions	+, - , × , ÷	
Saving waveforms	10 groups of waveforms and 10 setups	
FFT	Windows	Hanning, Hamming, Blackman, Rectangle
	Sampling points	1,024 points
Lissajous figure	Phase difference	±3 degrees

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Digital Multimeter	
DC voltage	Range : 400 mV, 4 V, 40 V, 400 V Precision : ± (1% +5 quantization words)
AC voltage (40 Hz to 400 Hz)	Range : 400 mV, 4 V, 40 V, 400 V Precision : ± (1.2% +5 quantization)
Resistance	Range : 400 Ω, 4 kΩ, 400 kΩ, 4 MΩ, 40 MΩ Precision : ± (1.5% +5 quantization)
On / Off test	< 70 Ω
Diode measurement	Forward voltage drop 0.5 V to 0.8 V
DC current (external current-voltage converter module)	Range : 4 mA, 40 mA, 400 mA Precision : ± (1% +5 quantization words) Range : 4 A Precision : ± (1.5% +5 quantization)
Display	
Display type	145 mm diagonal line (5.7”) LCD panel
Display resolution (display)	320 horizontal × RGB × 240 vertical pixels (colour)
Display colour	Colour
Backlight intensity	300 nit.
Display languages	English
Power	
Power	110 / 120 V ac (US Type Power Cord) 220 / 240 V ac (AU Power Cord)

Part Number Table

Description	Part Number
Oscilloscope, DSO, 4 Channel, 200 MHz	72-8727

תיאור פריט: אוסילוסקופ שולחני דיגיטלי – 4 ערוצים – 200MHZ

יצרן: TENMA

דגם: 72-8727

מק"ט טלמיר: 2061824

מיקום באתר: ציוד בדיקה ומכשירי מדידה / אוסילוסקופים / אוסילוסקופים שולחניים

יבואן: טלמיר אלקטרוניקה בע"מ

TENMA™

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