TEKTRONIX

MSO71604C

The Tektronix MSO71604C is a high-performance 16 GHz, 4-channel mixed signal oscilloscope from the MSO70000C series. It features a maximum real-time sampling rate of 100 GS/s on 2 channels (50 GS/s on all 4 channels) and includes 16 logic channels with an 80 ps timing resolution. Designed for debugging and validating high-speed digital designs, it integrates iCapture multiplexing, Pinpoint® triggering, and embedded serial bus analysis capabilities.

SPECIFICATIONS

General

Interfaces	USB 2.0 Host/Device, LAN (10/100/1000 Base-T), GPIB, LXI Class C, DVI-D, VGA, Auxiliary Out, External Reference In/Out
Display	12.1-inch active-matrix color TFT-LCD touchscreen, 1024 x 768 (XGA)

Physical

Power Supply	100 to 240 V AC +/-10% (50/60 Hz), 115 V AC +/-10% (400 Hz), <1200 VA maximum power consumption
Operating Temperature	5 to 45 °C
Dimensions (W×H×D)	468 mm x 298 mm x 489 mm mm
Weight	24.1 kg

Analog Vertical System

Analog Input Channels	4
User-Selectable DSP Enhanced Bandwidth	16 GHz
Hardware Analog Bandwidth (-3 dB)	16 GHz (typical)
Calculated Rise Time (10% to 90%)	24.5 ps (typical)
Input Coupling	50 Ohm: DC
Input Impedance	50 Ohm +/-1.5%
Vertical Resolution	8 bit (11 bit with averaging)

Digital Vertical System

Digital Channels	16
Digital Channel Analog Bandwidth	2.5 GHz with P6780 logic probe, 350 MHz with P6717 logic probe
Digital Channel Vertical Resolution	1 bit
Logic Threshold Range	-2 to +4.5 V with P6780, -1.5 to +4.0 V with P6717
Digital Channel Maximum Input Voltage	+/-15 V non-destruct
Minimum Detectable Pulse Width	<400 ps
Maximum Number of Buses	16
Number of Channels per Bus	Up to 24 (16 logic, 4 analog, 4 math)

Horizontal System

Maximum Real-Time Sample Rate (2 Channels)	100 GS/s
Maximum Real-Time Sample Rate (4 Channels)	50 GS/s
Maximum Sample Rate (Digital Channels)	12.5 GS/s (all channels)
Digital Timing Resolution	80 ps
Time Resolution (ET/IT Mode)	100 fs
Channel-to-Channel Deskew Range	+/-75 ns
Time Base Delay Range	-5.0 ks to 1.0 ks
Maximum Record Length (Standard)	31.25 M on all 4 channels
Maximum Record Length (Digital Channels with option)	250 M on all channels
Maximum Duration at Highest Real-Time Resolution	0.625 ms (with standard memory)
Timebase Accuracy	±1.5 ppm (initial), <1 ppm/year (aging)
Equivalent Time Sample Rate	10 TS/s

Trigger System

Trigger Modes	Auto, Normal, Single
Trigger Sequences	Main, Delayed by Time, Delayed by Events, Reset by Time, Reset by State, Reset by Transition
Trigger Types (A Event & Delayed B Event)	Edge, Glitch, Runt, Width, Transition Time, Timeout, Pattern, State, Setup/Hold, Window
Logic State Qualification	Up to 2 channels (except Edge, Pattern, and State types)
Digital A then Analog B Triggering	Supported; identifies digital state/pattern then waits for analog event
Real-Time Serial Pattern Triggering Rate	Up to 6.25 Gb/s (hardware-based, NRZ or 8b/10b patterns)
Pinpoint Triggering	Supported
Trigger Jitter	<100 fs RMS (typical, Edge trigger with DSP)

Acquisition Modes

Sample Acquisition Mode	Acquires and displays sampled values
Averaging Mode	From 2 to 10,000 waveforms included in average
Envelope Mode	From 1 to 2x10^9 waveforms included in min-max envelope
Hi-Res Mode	Real-time boxcar averaging reduces random noise and increases resolution
FastAcq Mode	Optimized for dynamic signal analysis and infrequent event capture
Maximum FastAcq Waveform Capture Rate	>300,000 wfms/s on all 4 channels simultaneously
FastFrame Segmented Memory	Acquisition memory split into segments; maximum trigger rate >310,000 wfms/s
Waveform Database Mode	Accumulates 3D array of amplitude, time, and counts

Waveform Analysis & Measurements

iCapture (Digital to Analog Routing)	Routes any 4 of 16 logic channels to analog acquisition system for fine analog detail view
Embedded Serial Bus Decoding and Triggering	I2C, SPI
Search & Mark	Waveform pattern matching and software triggers for signals of interest

Vertical System (Analog)

DC Gain Accuracy	±2% of full scale
Vertical Sensitivity Range	10 mV/div to 1 V/div
Effective Number of Bits (ENOB)	5.1 bits (typical at 16 GHz, 50 mV/div, DSP on)

Vertical System (Digital)

Digital Probe Input Impedance	20 kΩ || 3 pF (with P6717A or P6750 digital probe)

Computer System

Operating System	Windows 7 Ultimate (64-bit)
System Memory	8 GB

Environmental

Operating Altitude	Up to 3,000 m (9,843 ft.)
Non-operating Altitude	Up to 12,000 m (39,370 ft.)
Operating Shock	15 g, 11 ms half-sine
Non-Operating Temperature	-20 °C to +60 °C
Operating Humidity	8% to 80% RH (at or below +32 °C), non-condensing
Non-Operating Humidity	5% to 95% RH (at or below +30 °C), non-condensing
Operating Vibration	0.22 g RMS (5 Hz to 500 Hz)
Non-Operating Vibration	2.28 g RMS (5 Hz to 500 Hz)

Compliance

Safety Standards	UL61010-1, CSA 61010-1, EN61010-1, IEC61010-1
EMC Standards	EN61326-1, EN61326-2-1

Vertical System

Rise Time (20% to 80%)	18 ps (typical)

Inputs & Outputs

Analog Input Connectors	TekConnect
Digital Probe Connector	17-channel high-density connector

TECHNOLOGY

Mixed Signal Oscilloscope

APPLICATIONS

High-speed digital debug, DDR memory, ASICs, FPGAs, SOCs, and digital RF

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.