

TEKTRONIX

TPS2014

The Tektronix TPS2014 is a 100 MHz, 4-channel Digital Storage Oscilloscope (DSO) designed to simplify floating and differential measurements. Featuring isolated channel architecture (IsolatedChannel™) and hot-swappable battery power, it delivers versatile performance on the bench, in the lab, or in challenging field environments.

SPECIFICATIONS

General

Interfaces	RS-232 (9-pin D-sub male), Centronics Parallel Port, CompactFlash Card Slot (Type I)
Display	5.7 in (144.8 mm) Active Matrix Color TFT, 320 × 240 (QVGA)
User Interface Languages	English, French, German, Italian, Spanish, Portuguese, Simplified Chinese, Traditional Chinese, Korean, Japanese, Russian
Cooling	Convection cooled (fanless)

Physical

Power Supply	AC Adapter (90 - 250 V AC, 50/60 Hz) or Li-Ion Battery Packs (TPSBAT)
Operating Temperature	0 °C to +50 °C °C
Dimensions (W×H×D)	336 mm × 161 mm × 130 mm (13.24 in × 6.33 in × 5.10 in) mm
Weight	2.7 kg (without batteries), 3.2 kg (with 1 battery), 3.7 kg (with 2 batteries) kg
Security Slot	Kensington lock slot

Vertical System (Analog Channels)

Analog Bandwidth (-3 dB)	100 MHz
Calculated Rise Time (10% to 90%)	3.5 ns
Number of Input Channels	4 isolated channels (IsolatedChannel™ architecture)
Input Coupling	AC, DC, GND
Input Impedance	1 MΩ ± 2% in parallel with 20 pF ± 3 pF
Vertical Sensitivity Range	2 mV/div to 5 V/div
Vertical Resolution (A/D Converter)	8 bits
DC Gain Accuracy	±3% for 5 mV/div to 5 V/div; ±4% for 2 mV/div
Maximum Input Voltage (Signal to Common)	300 V RMS CAT II
Maximum Input Voltage (Common to Earth Ground)	600 V RMS CAT II, 300 V RMS CAT III
Maximum Input Voltage (Channel to Channel Common)	600 V RMS CAT II, 300 V RMS CAT III
Channel-to-Channel Isolation	> 100:1 at 100 MHz
Offset Range (2 mV to 200 mV/div)	±2 V
Offset Range (>200 mV to 5 V/div)	±50 V
Hardware Bandwidth Limiters	20 MHz

Horizontal System & Acquisition

Maximum Real-time Sample Rate	1.0 GS/s per channel
Maximum Record Length	2.5k points per channel
Time Base Range	5 ns/div to 50 s/div
Time Base Accuracy	±50 ppm
Delay Range (Pre-trigger)	10 divisions
Delay Range (Post-trigger)	50 s

Trigger System

Trigger Sources	CH1, CH2, CH3, CH4, Ext, Ext/5, AC Line
Trigger Modes	Auto, Normal, Single Sequence
Trigger Coupling	AC, DC, Noise Reject, HF Reject, LF Reject
Trigger Sensitivity (Internal, DC-10 MHz)	0.35 div
Trigger Sensitivity (Internal, 10-100 MHz)	1 div
Trigger Sensitivity (External, DC-10 MHz)	50 mV
Trigger Sensitivity (External, 10-100 MHz)	100 mV
Trigger Level Range (Internal)	±8 divisions from screen center
Trigger Level Range (External)	±1.6 V (Ext); ±8 V (Ext/5)
Trigger Holdoff Range	500 ns to 10 s
Standard Trigger Types	Edge, Video, Pulse Width
Edge Trigger Slope	Rising, Falling
Video Trigger Formats	NTSC, PAL, SECAM
Video Trigger Lines	All lines, odd fields, even fields, specific line (1 to 525 for NTSC; 1 to 625 for PAL/SECAM)
Pulse Width Trigger Range	33 ns to 10 s
Pulse Width Trigger Conditions	<, >, =, ≠
Trigger Frequency Readout	6-digit hardware frequency counter

Acquisition Modes & Signal Processing

Acquisition Modes	Sample, Peak Detect, Average, Single Sequence
Peak Detect Mode	Captures high-frequency glints down to 12 ns
Waveform Average	Selectable (4, 16, 64, or 128 waveforms)
Waveform Math Operators	+, -, ×, FFT
FFT Window Types	Hanning, Flat Top, Rectangular
FFT Source Channels	CH1, CH2, CH3, CH4

Measurements & Analysis

Automatic Measurements	11 standard measurements
Time Measurements	Period, Frequency, +Width, -Width, Rise Time, Fall Time
Voltage Measurements	Max, Min, Peak-to-Peak, Mean, Cycle RMS
Cursor Measurements	Amplitude (Voltage), Time, Frequency (1/Δt)
Autoset Menu	Single-button automatic setup of vertical, horizontal, and trigger systems
Autorange Function	Continuous active adjustment of vertical and horizontal scales

Display & User Interface

Display Contrast / Brightness	Adjustable background contrast and backlit keys
Waveform Persistence Settings	Off, 1 s, 2 s, 5 s, Infinite
Display Graticule Styles	Full, Grid, Crosshair, Frame

Input/Output Interfaces

CompactFlash Card Support	Supports Type I CF cards up to 2 GB
Printer Port	Centronics parallel port for direct printing
Serial Port	RS-232 9-pin D-sub male
Probe Compensator Output	5.0 V into $\geq 1\text{ M}\Omega$ load at 1 kHz
Waveform Storage Capacity	Up to 96,000 waveforms on a 1 GB CF card

Power & Physical Characteristics

AC Line Voltage Range	90 V to 250 V AC
AC Line Frequency Range	45 Hz to 66 Hz (90-250 V); 360 Hz to 440 Hz (90-132 V)
Battery Pack Type	TPSBAT Lithium-Ion battery pack
Battery Run Time	4 hours per battery (up to 8 hours with 2 battery packs)
Battery Hot-Swapping	Supported (with 2 batteries installed)
Battery Charging Time	3 hours inside instrument (turned off)

Environmental & Compliance

Storage Temperature Range	-40 °C to +71 °C (without battery)
Operating Humidity ($\leq +30\text{ °C}$)	90% RH
Operating Humidity (30 °C to 50 °C)	60% RH
Operating Altitude	Up to 3,000 m (9,842 ft)
Non-Operating Altitude	Up to 15,000 m (49,212 ft)
Safety Certifications	UL61010-1, CSA22.2 No. 1010.1, EN61010-1
Electromagnetic Compatibility (EMC)	Meets Directive 89/336/EEC, EN61326 Class A

Accessories & Ordering Options

Standard Included Probes	P2220 200 MHz 1X/10X passive probe (one per channel)
Optional Power Analysis Software	TPS2PWR1 Power Measurement and Analysis Software

Isolated Channel Performance

Common Mode Rejection Ratio (CMRR)	1000:1 at 60 Hz, 100:1 at 1 MHz, 5:1 at 50 MHz (typical, with P2220 probe at 10X)
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Acquisition System

Waveform Interpolation	Sin (x)/x
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Power System

External DC Power Input	15 V DC $\pm 10\%$, 3 A
Battery Slots	2

Storage

CompactFlash Card Compatibility	Type I CompactFlash cards up to 2 GB (FAT16 format)
Waveform Save Formats	CSV, ISF
Screen Capture Formats	TIFF, BMP, PCX, EPS, RLE
Internal Setup Storage	10 setups
Supported CompactFlash Capacity	Up to 2 GB (Type I)

Vertical System

Vertical Zoom	Vertically expand or compress a live or stopped waveform
Vertical Volts/Div Steps	1-2-5 sequence

Display

Display Resolution	320 x 240 pixels (QVGA)
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Environmental

Shock and Vibration	Meets MIL-PRF-28800F, Class 3 limits
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Software & Control

Connectivity Software	OpenChoice Desktop
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Compliance & Safety

Pollution Degree	Pollution Degree 2
Overvoltage Category	CAT II

Optional Accessories

Optional External Battery Charger	TPSCHG
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Horizontal System

Time Base Sec/Div Steps	1-2.5-5 sequence
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TECHNOLOGY

Digital Storage Oscilloscope

APPLICATIONS

Floating and differential measurements, industrial power systems, motor drive troubleshooting, and field service

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