JPO6000LP Series High Resolution Compact Oscilloscope

Product Introduction

The JPO6000LP Series high-resolution compact oscilloscope features a maximum bandwidth of 1 GHz and a sampling rate of up to 2.5 GSa/s. It is equipped with 4/8 analog channels, one EXT channel and one signal source output, with a maximum memory depth of up to 500 Mpts.Utilizing ultra-fast acquisition technology, it achieves an ultra-high waveform capture rate of 1,500,000 wfms/s. The innovative digital trigger system ensures high triggering sensitivity and minimal trigger jitter. It supports a rich set of advanced triggering, serial bus triggering and decoding functions. A comprehensive range of advanced acquisition and analysis modes are available, including spectrum analysis, power analysis, histogram, waveform recording, Enhanced Resolution (ERES), hardware-accelerated template testing, Search and Navigate. Additionally, it comes with a full suite of measurement and mathematical functions.

Characteristics and Advantages

- Analog channel bandwidth: 1 GHz/500 MHz/350 MHz
- The maximum real-time sampling rate of the analog channel is 2.5 GSa/s.
- 12-bit vertical resolution, up to 4096 points, with clear waveform details
- 4/8 analog channels + EXT + Gen, with a maximum memory depth of 500 Mpts
- The waveform capture rate reaches up to 800,000 wfms/s (sequential mode: 1,500,000 wfms/s)
- 8-in-1 integrated test instrument: Digital Oscilloscope, Function/Arbitrary Waveform Generator, Spectrum Analyzer, Digital Voltmeter, Frequency Counter, Protocol Analyzer, Bode Plot Analyzer, Power Analyzer
- Built-in 50 MHz Function/Arbitrary Waveform Generator, supports real-time loading of oscilloscope screen data to arbitrary waveform output, and comes with a variety of preloaded arbitrary waveforms
- Supports Bode plot loop test and analysis function for evaluating system stability
- Supports bus timing analysis for I^2C, SPI, CAN
- Add bar and line charts to display measurement statistics for parameter measurements
- Supports continuous recording and analysis of hardware real-time waveforms up to 400,000 frames per second, with export to USB storage devices
- Maximum 4M-point enhanced FFT with frequency adjustment, waterfall display, detection settings, and spectrum analyzer features including marking
- Enhanced resolution support, up to 4-bit
- Up to 54 parameters can be measured
- Multi-Windows supports multi-window display
- Multi-channel independent 7-digit hardware frequency counter, with adjustable refresh time and effective digit count
- DVM multi-channel independent true RMS measurement, supporting DC, ACRMS, and DC+ACRMS
- Rich trigger types: edge, pulse width, video, slope, under-amplitude pulse, over-amplitude pulse, delay, timeout, duration, hold, Nth edge, and code type
- Protocol triggering and decoding capabilities: RS232/UART, I2C, SPI, CAN, CAN-FD, LIN, FlexRay, Audio, MIL-STD-1553B, Manchester, SENT, ARINC429,1-WIRE, CAN-XL, I3C
- Practical Zone Trigger function, ideal for capturing sporadic signals and observing complex signals
- Super fluorescent display with up to 256 levels of grayscale
- Abundant peripheral interfaces: USB Host, USB Device, LAN, EXT Trigger, AUX Out (Trigger Out, Pass/Fail, DVM), Gen signal source output, HDMI, 10MHz Ref out and 10MHz Ref in
- Supports SCPI standard commands for programmable instruments
- Built-in WebServer allows browser-based access and control of the instrument, supporting PC and mobile operation modes for seamless cross-platform access.
- Supports online firmware upgrade

Design Features

High Resolution

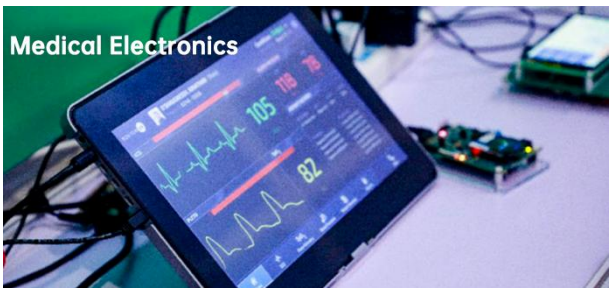
With 12-bit high-resolution ADC sampling and up to 4096 quantization levels — 16 times that of traditional 8-bit ADCs — it enables superior waveform detail reconstruction.

8-bit

12-bit

Exceptional intrinsic noise performance, with only 75 μVrms at 1 GHz full bandwidth, enables the 12-bit ADC to fully deliver its capabilities.

Application Scope



High Cost-Effective Multi-Function Integrated Oscilloscope

The JPO6000LP Series high-resolution compact oscilloscope integrates eight independent instruments in one unit, including a digital oscilloscope, function/arbitrary waveform generator, spectrum analyzer, digital voltmeter, high-precision frequency counter, protocol analyzer, Bode plot analyzer, and power analyzer. It provides users with the most flexible and economical solution tailored to their practical requirements.

Digital Oscilloscope

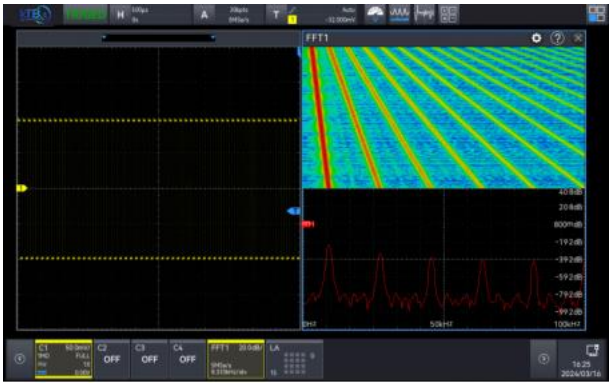
- Available bandwidth options: 1GHz, 500MHz, or 350MHz
- The maximum real-time sampling rate is 2.5 GSa/s
- Maximum memory depth: 500 Mpts
- 4/8 analog channels + 1 external trigger channel

Function/Arbitrary Waveform Generator (Optional)

- Dual-channel output with 50 MHz bandwidth and other selectable performance grades
- Sampling rate: 250 MSa/s
- 16-bit vertical resolution
- Built-in multiple standard waveforms: sine wave, square wave, pulse wave, ramp wave, arbitrary wave noise, DC
- Supports AM, FM, ASK, FSK, and frequency sweep output

Spectrum Analyzer

- Standard enhanced FFT, supporting signal analysis for up to 4 Mpts × 4 channels
- Frequency measurement range: 0 to 2.5GHz
- Waterfall display supported
- 4 trace types + 4 detection modes available
- Marker types: Auto, Manual and Threshold
- Marker point list display supported

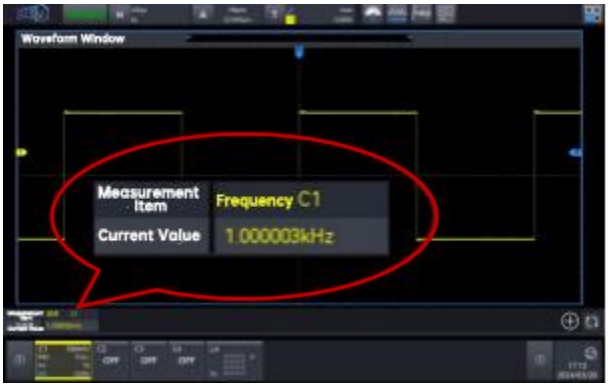


Digital Voltmeter

- 4-digit voltmeter display
- DC/ACRMS/AC+DCRMS three modes independent measurement
- Alarm function for out-of-limit conditions

High-Precision Frequency Counter

- 7-digit hardware frequency counter
- The frequency meter allows adjustment of refresh time and number of valid bits.
- Accumulative counter



Bode Plot Analyzer (Optional)

- built-in function/any wave generator
- frequency response analysis
- loop stability analysis
- filter analysis
- Amplifier analysis, etc.

Protocol Analyzer

- 15 types of triggering protocols and decoding, covering computers and embedded systems Automotive, avionics, audio and other fields
- Supports decoding during pause and recording modes
- Supports event list display and search functions

Option Name	Description	Option Model	Is It Standard?
Computer Serial Bus Trigger & Decode	RS-232/422/485/UART	-	Standard
Embedded Serial Bus Trigger & Decode	I²C, SPI	-	Standard
Automotive Serial Bus Trigger & Decode	CAN	JPO6000LP-CAN	Optional
Automotive Serial Bus Trigger & Decode	LIN	JPO6000LP-LIN	Optional
Automotive Serial Bus Trigger & Decode	CAN-FD	JPO6000LP-CANFD	Optional
Automotive Serial Bus Trigger & Decode	CAN-XL	JPO6000LP-CANXL	Optional
Automotive Serial Bus Trigger & Decode	FlexRay	JPO6000LP-FLEX	Optional
Automotive Sensor Bus Trigger & Decode	SENT	JPO6000LP-SENT	Optional
Audio Serial Bus Trigger & Decode	Audio	JPO6000LP-AUDIO	Optional
Aerospace Serial Bus Trigger & Decode	MIL-STD-1553, ARINC 429	JPO6000LP-AERO	Optional
Wireless Communication Serial Bus Trigger & Decode	Manchester	JPO6000LP-MANCH	Optional
Sensor Bus Trigger & Decode	1-WIRE	JPO6000LP-1WIRE	Optional
Mobile Phone Smart Serial Bus Trigger & Decode	I3C	JPO6000LP-I3C	Optional

Power Analyzer (Optional)

With the advancement of chip manufacturing processes, power supply systems are subject to increasingly stringent requirements. The prevailing trend in power delivery networks is low voltage and high current, especially for power networks of chips or those composed of precision components. These systems require reliable power supply and effective noise suppression for all circuit sections, as well as seamless signal transmission between chips. This has brought greater challenges to power supply testing. Designers are more

concerned about the energy efficiency and response speed of power supplies to ensure stable and clean power delivery.

In this context, power integrity testing becomes particularly critical. Power integrity directly affects signal integrity, and vice versa, signal quality also reflects power quality. What is more, poor power quality can even trigger a series of electromagnetic interference issues, which are particularly troublesome for designers. Therefore, an oscilloscope equipped with power analysis capabilities is undoubtedly your ideal choice.

The JPO6000LP provides a full range of power analysis tools and evaluation results. You only need to select the appropriate analysis type, connect voltage and current probes to the test points of the power supply system or specific test fixtures as illustrated, connect them to the channels you wish to monitor, and then perform minor adjustments to obtain your desired results.

- Power quality
- harmonic analysis
- Switching Loss
- surge current
- Rds(on)
- slew rate
- area of safe operation
- modulation analysis
- ripple analysis

*Under continuous update. Power analysis support is subject to the latest firmware on the official website.

Timing Analyzer

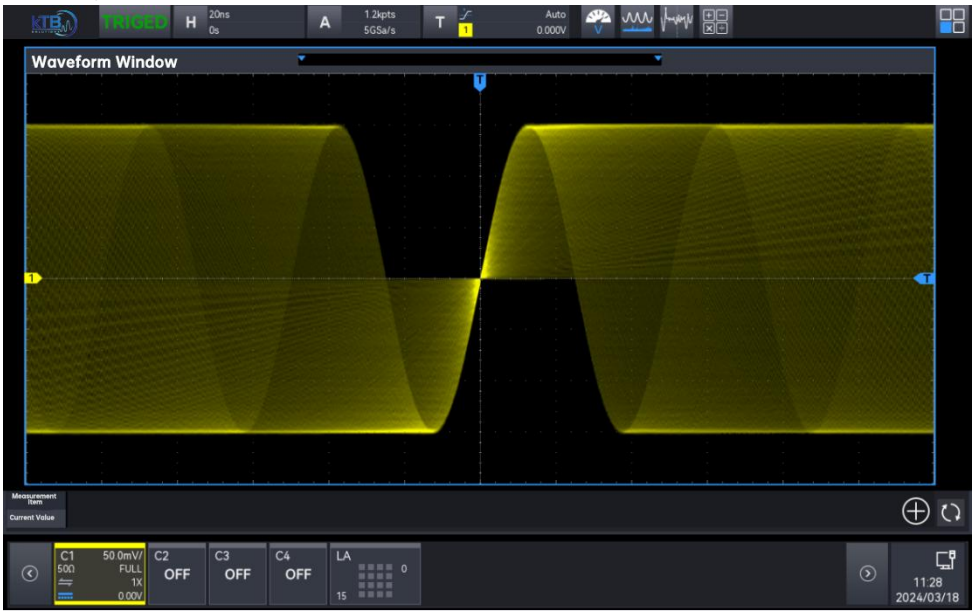
Smart devices such as mobile phones, wearables, home appliances, multimedia audio-visual systems, and automotive electronic accessories impose strict requirements on the timing consistency of internal bus communications. The JPO6000LP′ s innovative timing analysis function can analyze parameters including pulse width, amplitude, edge, setup time, and hold time for I^2C, SPI, and CAN signals, and supports the export of timing consistency test reports.

Ultrafast Acquisition Technology

Waveform capture rate is crucial when you are trying to identify and troubleshoot sporadic or intermittent anomalies in signals. The capture rate of an oscilloscope refers to its capability to capture waveforms per unit time, a parameter that reflects the speed at which the oscilloscope processes and analyzes signals.

The JPO6000LP series adopts an advanced hardware and software architecture, achieving 5−10 times higher data processing performance than its predecessor. Equipped with upgraded ultrafast acquisition technology, it supports 8-channel parallel graphic mapping with a processing rate of 20 Gbps and a maximum waveform capture

rate of 800,000 wfms/s. In sequential mode, it can capture 1.5 million fast-edge signals with a 750 ps edge rate, leaving no sporadic signals undetected.



New Fast Autoset Strategy

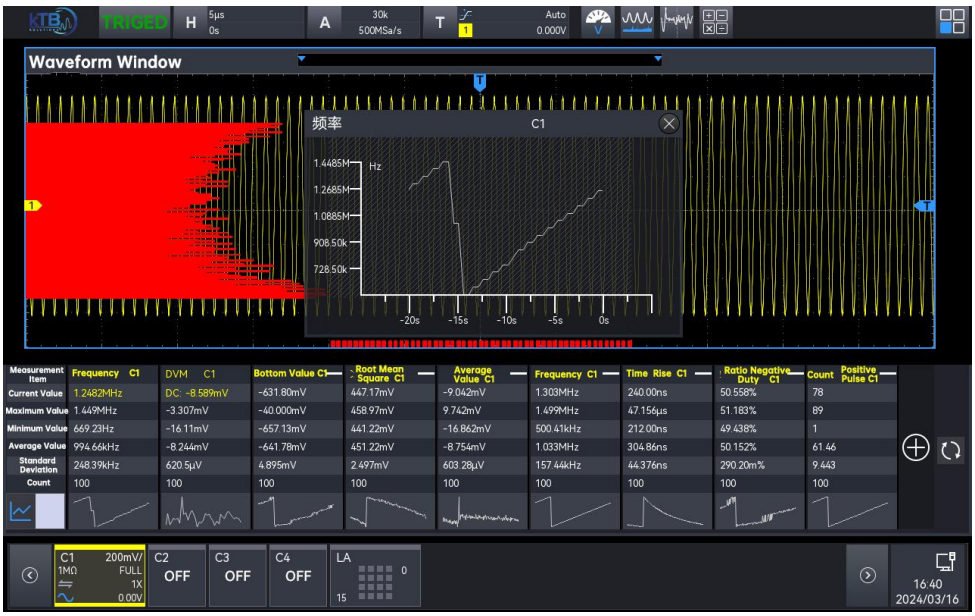
Fuzzy control is an intelligent control method based on fuzzy set theory, fuzzy linguistic variables, and fuzzy logic reasoning. The algorithm boasts advantages of fewer iterations, high speed, and strong anti-interference capability.

Conventional oscilloscopes use Autoset to find appropriate signal amplitude and frequency for display. However, the significant differences in implementation schemes among various oscilloscope manufacturers often lead to excessively large variations in oscilloscope response speed, and even affect the user experience of the oscilloscope. KTBhas redefined the execution mode of Autoset by adopting analog signal-based fast fuzzy algorithms combined with multi-channel parallel processing technology, and integrating it with a hardware 7-bit high-precision frequency counter. This allows the oscilloscope to quickly identify, process, and display the amplitude and frequency of unknown signals when executing the Autoset strategy. The execution time is no more than 1.5 seconds with all channels enabled, and no more than 1 second for a single channel. For users who need to frequently switch test objects or conduct rapid tests, this feature will greatly improve work efficiency and reduce the risk of user misoperation.

Comprehensive Parameter Measurement

Parameter measurement functionality is essential for engineers using oscilloscopes. The JPO6000LP series offers up to 54 measurement parameters and supports the simultaneous display of 27 selected parameters. Each page shows 9 measurement parameters, and for each parameter, it supports statistical display of its measured values as well as corresponding histograms and trend graphs. Histogram statistics can visually display the probability distribution of parameters, while trend graphs can reflect the variation trend of parameters over time. The parameter snapshot function can display 39 measurement items for a single channel, including voltage and time-related measurement parameters, with the measurement results continuously refreshed during operation.

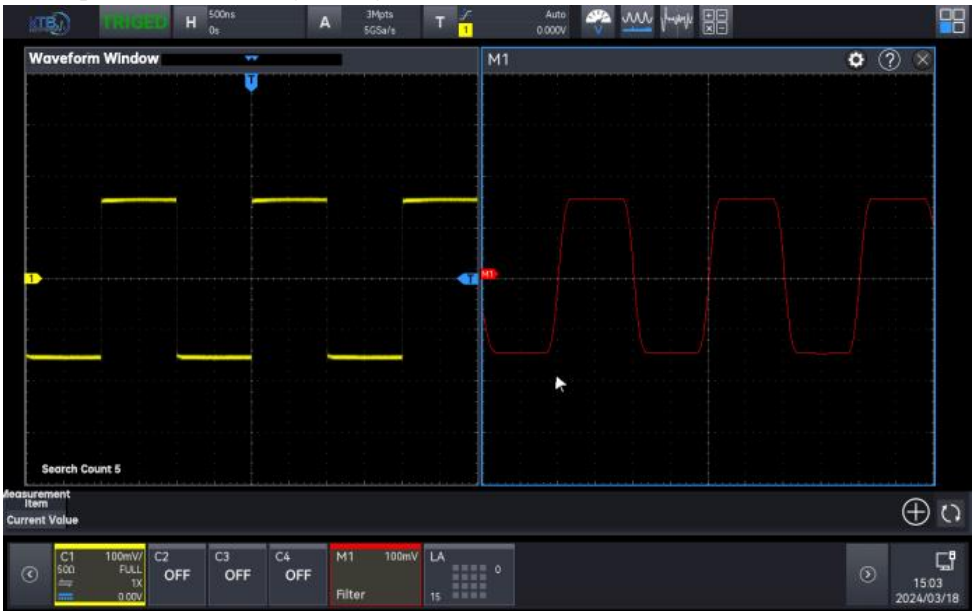
The JPO6000LP series also incorporates new features including amplitude calculation strategies, top-value strategies, and bottom-value strategies, allowing engineers to use the parameter measurement function more flexibly. In addition, a burst setting function has been added to the series, which can display burst-related parameters, facilitating timely and accurate access to the measurement data of the channels.



Mathematical Operations

The JPO6000LP is equipped with a comprehensive algorithm suite for complex waveform operations. You can use these algorithms to perform in-depth analysis on your waveforms, with the results displayed directly on the oscilloscope.

- Basic operations: +, -, *, ÷
- Digital filters (high-pass, low-pass, band-pass, band-stop)
- Custom function operations: including analog channels

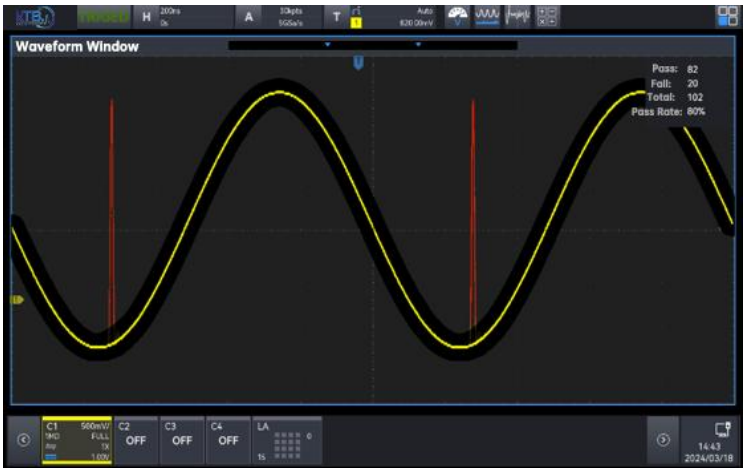


Navigation and Search

The JPO6000LP has an upgraded maximum memory depth of 500 Mpts. An oscilloscope with high memory depth can capture tens of thousands of waveform cycles in a single acquisition. Previously, engineers had to spend a great deal of time searching for the waveforms they needed. With the oscilloscope′ s search function, however, it can automatically search the acquired signals according to user-defined search criteria, and users can quickly locate the waveforms of interest by means of navigation. Leveraging the oscilloscope′ s analysis function for detailed event analysis eliminates the time-consuming and cumbersome process of manual searching. The navigation function supports navigation through search events, as well as navigation by time and markers.

Hardware-Accelerated Template Testing

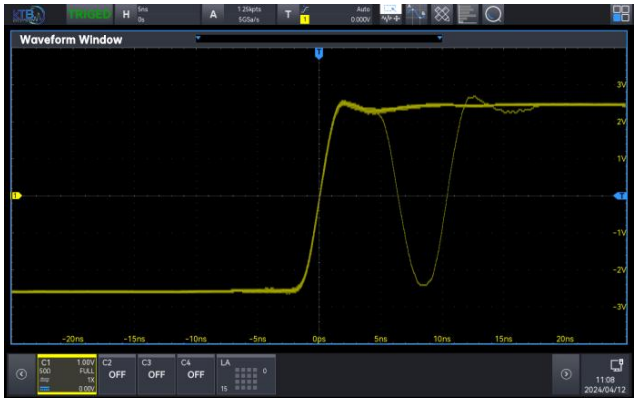
Hardware-accelerated template testing enables waveform testing that complies with specific standards to be completed within seconds.



Region Trigger

The region trigger function serves two primary purposes: first, isolating sporadic abnormal signals; second, stabilizing waveform display. Stable display can only be achieved with stable triggering. Therefore, when engineers are debugging complex and variable signals, they can use the oscilloscope′ s region trigger function to

capture these sporadic signals and stabilize them. This function eliminates the need to spend time learning how to use certain advanced triggering functions, as it features simple and intuitive operation. By drawing a rectangle on the screen with gestures, engineers can quickly isolate the signals they want to observe. Even if the waveform is not fully stably triggered, the region trigger function can still capture the waveforms that meet the set criteria and stabilize their display.

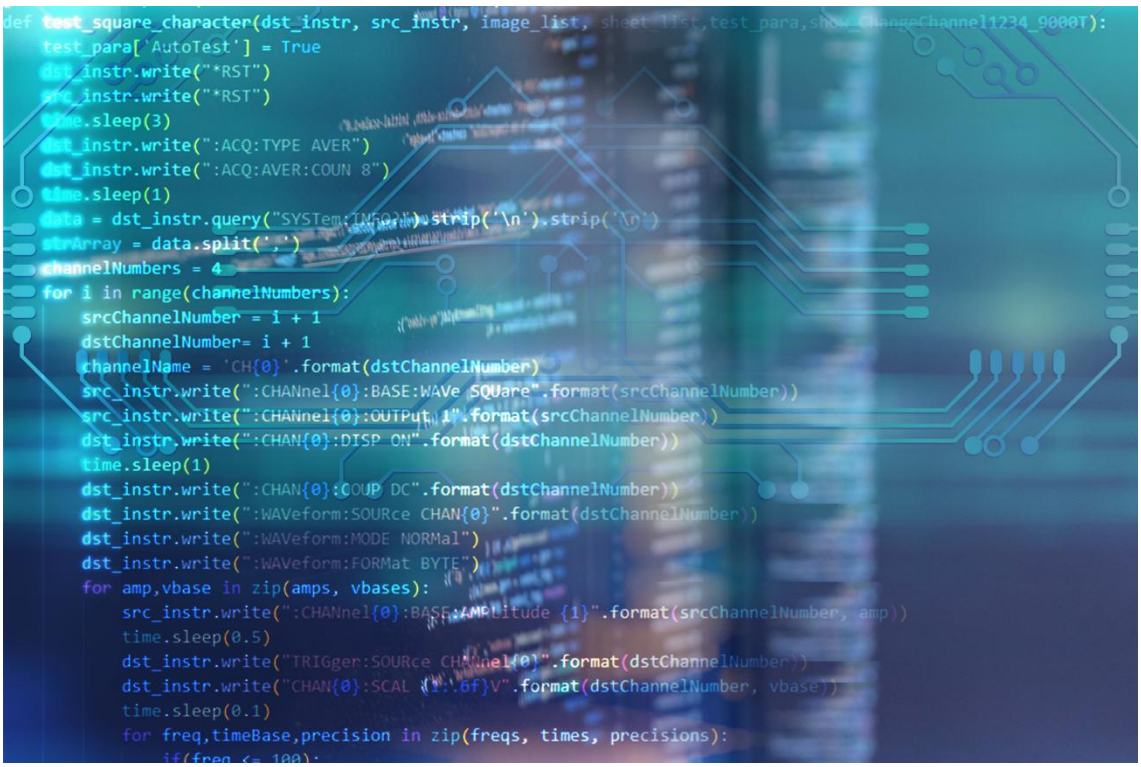


Multiple Interfaces

The JPO6000LP series provides versatile connectivity options, delivering unprecedented flexibility and convenience.

Diverse Control Methods

Control or secondary development is supported via an instruction set compliant with SCPI standards.



Control via KTB's Free Instrument Manager

The oscilloscope can be controlled via LAN or USB Device by installing the instrument management software on a PC.

Control via WebServer

SCPI Remote Control: Remote Viewing & Control

The system supports high-speed data transmission for 100-channel integrated systems, with synchronous acquisition of 1 M sample points per channel. Data is transmitted via the Ethernet port and stored as CSV data files in the main control system, with the total process time less than 1 minute.

Waveform File Export & Online Manual Browsing

Supports access from PCs and mobile phones

Technical Specifications

All specifications except those marked "Typical" are guaranteed.

Unless otherwise specified, all technical specifications apply to probes with the attenuation switch set to 10 × and the JPO6000LP series high-resolution compact oscilloscopes. To meet these specifications, the oscilloscope must first satisfy the following two conditions:

- The instrument must operate continuously for more than 30 minutes at the specified operating temperature.
- If the operating temperature variation reaches or exceeds 5°C, the self-calibration function must be performed.

Specification	**JPO6108LP** **JPO6104LP**	**JPO6058LP** **JPO6054LP**	**JPO6038LP** **JPO6034LP**
Analog Bandwidth (50Ω)	1GHz	500MHz	350MHz
Analog Bandwidth (1 MΩ)	500MHz	500MHz	350MHz
Rise Time (Typical)	≤0.35ns	≤0.70ns	≤1.00ns
Input/Output Channels	Analog channels: 8: JPO6108LP, JPO6058LP, JPO6038LP 4: JPO6104LP, JPO6054LP, JPO6034LP		
	1 EXT channel input		
	1-channel signal source output		
Sampling Method	real-time sampling		
Acquisition Modes	Sampling, peak detection, high resolution, average, enhanced resolution		
Enhance resolution	Enhanced bits: 1, 1.5, 2, 2.5, 3, 4 (12 to 16 bits)		
real time sampling rate	2.5 GSa/s (all channels fully open)		
Averaging	When all channels reach N samples simultaneously, the value of N can be selected from 2, 4, 8, 16,32,64,128,256,512,1024,2048,4096, or 8192.		
Memory Depth	When all 4/8 channels are enabled, each channel supports 500Mbps.		
waveform capture rate	800,000wfms/s		
	1,500,000wfms/s (sequential mode)		
sequential acquisition	Maximum 400,000 frames, minimum trigger interval <700 ns		
Hardware Real-time Waveform Record & Playback	400,000 frames		
Display	No built-in display; External display supported (shared across all models)		
Vertical System (Analog Channels)			
input coupling	DC, AC, Ground (shared across all models)		
Input Impedance	(1MΩ±2%) ‖ (16pF±2pF) ; (50Ω±1%)		
Probe Attenuation/Sensitivity	Voltage probe ratio: 0.001X,0.01X,0.1X,1X,10X,100X,1000X, custom Current probe sensitivity: 5mV/A, 10mV/A, 50mV/A, 100mV/A, 200mV/A, 500mV/A, 1V/A, and customizable		
maximum input voltage	1MΩ：400V(DC+ACVpk) $135V_{RMS}$		

	50Ω：5Vrms Max
vertical resolution	12-bit
Vertical Range	500μV/div to 10V/div (1 MΩ) 500μV/div to 1V/div (50Ω)
Offset Range	500 μV/div to 100 mV/div：± 2 V（50 Ω and 1 MΩ） 101 mV/div to 1 V/div：± 5 V（50 Ω） 101 mV/div to 1 V/div：± 20 V（1 MΩ） 1.01V/div to 10 V/div：± 200 V（1 MΩ） Displayed as reading V (shared across all models)
Bandwidth Limit (Typical)	50Ω：20 MHz , Full 1MΩ：20 MHz , Full
Low Frequency Response	(AC coupling, -3dB); ≤5 Hz (on BNC)
DC gain accuracy	<5mV: ±2% full scale, ≥5mV: ±1.5% full scale
DC Offset Accuracy	±（2%+0.1div+2mV）
units	W, A, V, and U are the default values: V
channel isolation	DC to maximum bandwidth:>40 dB (100:1)
Horizontal System (Analog Channels)	
Time Base Range	500 ps/div ~ 1 ks/div Supported (current sampling rate & memory depth displayed simultaneously) (shared across all models)
Time Base Accuracy	Initial accuracy: ±1ppm; First-year aging rate: ±1ppm; Ten-year aging rate: ±3.5ppm
Delay range	Pre-trigger (negative delay): ≥1 screen width Delayed trigger (positive delay): 1s to 5ms
time base modes	Y-T (Default)
	X-Y
	Roll, with a time base of ≥50 ms/div. The horizontal time base knob allows automatic entry or exit from Roll mode.
	Scan mode, time base ≥50ms/div. Users can choose between Roll or Scan mode.
Trigger	
Trigger Sensitivity	CH1～CH4/CH8： ≤ 10mV/div, 1div or 5mVpp of the larger value > 10mV/div，0.5div EXT： 400mVpp， DC～10MHz 800 mVpp, 10MHz to 250 MHz for external trigger bandwidth
	Trigger sensitivity is reduced by half when noise suppression is enabled
trigger level range	Internal: ± 5 div from the screen center EXT：± 5V
trigger modes	Automatic, Normal, Single

Holdoff Range	8ns to 10s
Trigger Coupling (Typical)	DC: Pass all components of the signal
	AC: DC component of the input signal
	High-Frequency Rejection: Suppresses high-frequency components above 40 kHz in the signal
	Low-Frequency Rejection: Suppresses low-frequency components below 40 kHz in the signal
Noise Suppression	Suppresses high-frequency noise in the signal and reduces the probability of false triggering of the oscilloscope
Trigger Jitter (Typical)	Typical value: <100psRMS (minimum <200ps) Normal sampling mode with edge triggering, the trigger level is around 50% of the EXT input signal.
Region Trigger	
region	Supports up to 2 regions. Source: CH1 ~ CH4/CH8. Attribute: Intersection, Non-Intersection
Edge Trigger	
Edge type	Rising edge, falling edge, or any edge
Source	CH1 ~ CH4/CH8, mains power, EXT
Runt Pulse Trigger	
pulse width conditions	Greater than, less than, within range, unrelated
polarity	Positive polarity, negative polarity
pulse width range	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Overrange Pulse Trigger	
Overrange Type	Rising edge, falling edge, or any edge
Trigger Position	Overrange entry, Overrange exit, Overrange duration
Overrange Duration	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Nth Edge Trigger	
Edge type	rising edge, falling edge
Idle Time	3.2 ns to 10s
edge count	1 to 65535
Source	CH1 ~ CH4/CH8
Delayed Trigger	
Edge type	rising edge, falling edge
Delay Condition	Greater than, less than, within range, outside range
delay time	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Timeout Trigger	
Edge type	Rising edge, falling edge, or any edge

Timeout Duration	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Duration Trigger	
Pattern Setting	H、L、X
Trigger condition	Greater than, less than, within the range
Duration Range	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Setup & Hold Trigger	
Edge type	rising edge, falling edge
data type	H、L
Setup Time Range	3.2 ns to 10s
Hold Time Range	3.2 ns to 10s
Source	CH1 ~ CH4/CH8
Pulse Width Trigger	
pulse condition	Positive polarity (greater than, less than, within specified range) Negative polarity (greater than, less than, within specified range)
Pulse Width Range	0.8 ns to 4s
Source	CH1 ~ CH4/CH8, mains power, EXT
Slope Trigger	
slope condition	Positive slope (greater than, less than, within specified range) Negative slope (greater than, less than, within a specified range)
Time Range	3.2 ns to 1s
Source	CH1 ~ CH4/CH8
Video trigger	
signal system line frequency range	Trigger Position: All lines, specified lines, odd fields, or even fields that comply with video standards Supported Video Standards: PAL, NTSC, SECAM, 525p/60, 625p/50, 720p/24, 720p/25, 720p/30, 720p/50, 720p/60, 1080i/25, 1080i/30, 1080p/24, 1080p/25, 1080p/30, 1080pfs/24
Source	CH1 ~ CH4/CH8
Pattern Trigger	
Pattern Settings	H, L, X, rising edge, falling edge
Source	CH1 ~ CH4/CH8
RS232/UART trigger (optional)	
Trigger conditions	Frame start, error frame, parity error, data
Baud rate	2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps, Custom
data bit width	5, 6, 7, 8
Source	CH1 ~ CH4/CH8
I2C Trigger (Optional)	

Trigger conditions	Start, Restart, Stop, Acknowledge lost, Address, Data, Address + Data
address bit width	7-digit, 10-digit
Address range	0 to 7F,0 to 3FF
Byte length	1 to 5
data qualifier	Equal, greater than, less than
Source	CH1 ~ CH4/CH8
SPI Trigger (Optional)	
Mode	Chip Select, Idle Time
Trigger conditions	Start, Data
Timeout Range	100 ns to 1s
Data Bit Count	4 to 32 bits
Clock edge	rising edge, falling edge
Source	CH1 ~ CH4/CH8
CAN Trigger (Optional)	
Signal type	CAN_H、CAN_L
Trigger conditions	Frame header, data frame, remote frame, error frame, overload frame, identifier, data, ID and data, frame footer, lost acknowledgment, bit stuffing error, CRC error, all errors
signal rate	10kbps, 19.2kbps, 20kbps, 33.3kbps, 38.4kbps, 50kbps, 57.6kbps, 62.5kbps, 83.3kbps, 100kbps, 115.2kbps, 125kbps, 230.4kbps, 250kbps, 490.8kbps, 500kbps, 800kbps, 921.6kbps, 1Mbps, 2Mbps, 3Mbps, 4Mbps, 5Mbps, Customizable
Source	CH1 ~ CH4/CH8
CAN-FD Trigger (Optional)	
Signal type	CAN_H、CAN_L
Trigger conditions	Frame header, data frame, remote frame, error frame, overload frame, identifier, data, ID and data, frame footer, lost acknowledgment, bit stuffing error, CRC error, all errors
signal rate	10kbps, 19.2kbps, 20kbps, 33.3kbps, 38.4kbps, 50kbps, 57.6kbps, 62.5kbps, 83.3kbps, 100kbps, 115.2kbps, 125kbps, 230.4kbps, 250kbps, 490.8kbps, 500kbps, 800kbps, 921.6kbps, 1Mbps, 2Mbps, 3Mbps, 4Mbps, 5Mbps, Customizable
FD bit rate	250kbps, 500kbps, 800kbps, 1Mbps, 1.5Mbps, 2Mbps, 4Mbps, 6Mbps, 8Mbps, and Customizable
Source	CH1 ~ CH4/CH8
LIN Trigger (Optional)	
Trigger conditions	Sync, identifier, data, ID, and data, wake-up frame, sleep frame, error
Signal Version	V1, V2, Any
bit rate	1.2kbps, 2.4kbps, 4.8kbps, 9.6kbps, 10.417kbps, 19.2kbps, 20kbps, Customizable
Data Length	1 to 8 bytes
Source	CH1 ~ CH4/CH8
FlexRay Trigger (Optional)	
Trigger conditions	Frame header, indicator, identifier, loop count, header fields, data, ID and data, frame footer, error

polarity	BM, BDiff, or BP
bit rate	2.5Mbps, 5Mbps, 10Mbps, Custom
Source	CH1 ~ CH4/CH8
Audio Trigger (Optional)	
Trigger conditions	Word trigger, Left channel data, Right channel data, Any channel data
Format	Standard, Left Align, Right Align, TDM
Source	CH1~CH4/CH8
MIL-STD-1553B Trigger (Optional)	
Trigger conditions	Sync, command, status, data, error
polarity	normal polarity, inversion
polarity	normal polarity, inversion
Source	CH1~CH4/CH8
SENT Trigger (Optional)	
Trigger conditions	Fast mode: synchronization, status, data, CRC, status+data, status+data+CRC, fast CRC error, continuous pulse error Slow mode: synchronous, short ID, short data, short CRC, short ID+data, enhanced ID, enhanced data, enhanced CRC, enhanced ID+data, slow channel CRC error
Source	CH1~CH4/CH8
Manchester Trigger (Optional)	
Trigger conditions	Trigger at the frame header, header segment, data segment, tail segment, and error
Baud rate	500bps ~ 10Mbps
Source	CH1~CH4/CH8
ARINC 429 Trigger (Optional)	
Trigger conditions	Start bit, End bit, Label, SDI, Data, SSM, Label+bit count, Parity bit error, Bit error, Space error, All errors
Source	CH1~CH4/CH8
Decode Function (Optional)	
Decode Channel Count	4
Decode Types:	Standard features: RS232/UART, I2C, SPI
	Optional: CAN, CAN-FD, LIN, FlexRay, Audio, MIL-5TD-1553B, SENT, ARINC 429, Manchester
Parallel Bus Decode	Supports up to 18-bit parallel bus decoding and analog channels. Custom clock settings are available.
Source	CH1 ~ CH4/CH8
Search & Navigation	
Search Types	Edge, Pulse width, Slope, Runt, Overrange, Delay, Timeout, Duration, Setup & Hold, Nth Edge, Pattern
Source	Any analog channel
Amplitude Reference	Copy from trigger, Copy to trigger

result display	Event list or navigation; jump to specific events via event list entries
Navigation Objects	Search events, Time, Markers
Waveform Recording	
source	All enabled analog channels
analyse	Supports frame-by-frame or continuous playback. You can perform calculations and measurements on the waveform.
Pass/Fail Test	
source	Any analog channel
Test Triggers	Pass/fail events can trigger immediate stop, buzzer alert, and screenshot capture
Histogram	
source	Any analog channel
type	Horizontal, vertical
Measurable Parameters	Sample points, Peak value, Maximum value, Minimum value, Peak-to-peak value, Average value, Median value, Mode value, Bin Width, Standard deviation
Supported Modes	All modes except Roll mode
measure	
Cursor Measurement	Voltage difference between cursors (△Y) Time difference between cursors (△X) The reciprocal of △X (Hz) (1/△X)
	Voltage and time values of waveform points
	Cursors can be displayed during automatic measurement
Automatic Measurement	Analog Channel Parameters (56 types in total): Maximum, Minimum, Top Value, Bottom Value, Median Value, Peak-to-Peak, Amplitude, Average, Periodic Average, RMS, Periodic RMS, AC RMS, Area, Periodic Area, Positive Area, Negative Area, Periodic Positive Area, Periodic Negative Area, Positive Overshoot, Negative Overshoot, Positive Preshoot, Negative Preshoot, Frequency, Period, Rise Time, Fall Time, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, Rise Delay, Fall Delay, Phase, Ratio, Periodic Ratio, Setup Time, Hold Time, Setup-Hold Ratio, FRFR, FRFF, FFFR, FFFF, FRLF, FRLR, FFLR, FFLF, Positive Pulse Count, Negative Pulse Count, Rising Edge Count, Falling Edge Count, Burst Width, Burst Interval, Burst Cycle, Burst Cycle Count, Phase (r-r), Phase (f-f), Delay (r-r), Delay (f-f)
Measurement Modes	Standard measurement and precision measurement (full-memory hardware measurement)
Simultaneous Display	Display 27 measurements simultaneously
Measurement Range	Main time base, Extended time base, Cursor area
Measurement statistics	Average, Maximum, Minimum, Standard deviation, Measurement count, Line chart, Bar chart
Supported Display Modes	Time, Cartesian coordinates, Polar coordinates, Product, Ratio
Source	C1~C8、M1~M8
Integrated Analysis Tools	Frequency counter, DVM, Pass/Fail Test, Waveform Recording, Bode Plot, Power Analysis
Power Analysis (Optional)	
Analysis items	Power quality, harmonic analysis, surge current, Rds(on), switching loss, switching speed, safe operating area, modulation analysis, ripple analysis, startup/shutdown time, transient

	response, efficiency
histogram	
source	CH1~CH4/CH8
type	Horizontal, vertical
Mathematical Operations	
Waveform Calculations	A+B, A-B, A×B, A÷B, advanced operations, digital filtering
digital filtering	Low-pass, High-pass, Band-pass, Band-stop
Advanced Operations	0,1,2,3,4,5,6,7,8,9,(,+,-,*,/,^,>,<,&&,||,==,!=,)
mathematical functions	Sin, Cos, Sinc, Tan, Sqrt, Exp, Lg, ln, Floor, ABS, Acos, Asin, Atan, Sinh, Tanh, Ceil, Cosh, Fabs, intg, diff, sign
FFT Analysis	
Channel Count	8
FFT window types	Hanning, Hamming, Rectangular, Blackman
Max FFT Points	4 Mpts
Vertical Scale	Vrms、dB
FFT	Waterfall Plot: On, Off
	Spectrum range settings: Start frequency, Stop frequency, Center frequency, Span
	Trace Display Modes: Normal, Average, Max Hold, Min Hold
	Marker Functions: Marker type, Marker count, Marker list
Storage	
Instrument Settings	Save/load as *.set
Waveform Data	Save as *.dat, *.csv, *.bsv (arbitrary waveform)
Image Capture	Save formats: *.bmp, *.png, *.jpg
Report Export	Decode event list saved as *.csv, *.html, *.pdf
Optional Signal Source (Gen)	
Channel count	1
sampling rate	312.5MSa/s
vertical resolution	16-bit
Maximum Output Frequency	50 MHz
standard waveforms	Sine wave, square wave, pulse, ramp (triangular wave), noise, DC, and arbitrary wave
built-in waveforms	200 types including Sinc, Exponential Rise, Exponential Fall, ECG, Gaussian, Lorentz, Sinc, Half-sine
Sine Wave	Frequency range: 1 μHz to 50 MHz
	Flatness: ±0.5 dB (relative to 1 kHz)
	Harmonic distortion: -40 dBc
	Spurious (Non-harmonic): -40 dBc

	Total harmonic distortion: 1% (DC to 20kHz, 1Vpp)
	Signal-to-noise ratio: 40 dB
Square wave/pulse	Frequency range: Square wave: 1 μHz to 15 MHz; Pulse: 1 μHz to 15 MHz
	Rise/Fall Time: <13 ns (typical value 1kHz, 1Vpp, 50Ω)
	Overshoot: Typical value 2% (1kHz, 1Vpp, 50Ω)
	Duty cycle: Square wave: 1% to 99%, adjustable; Pulse: 1% to 99%, adjustable
	Duty Cycle Resolution: 1% or 10 ns (whichever is greater)
	Minimum pulse width: 20 ns
	Pulse width resolution: 10 ns
	Jitter: 2ns
sawtooth wave	Frequency range: 1 μHz to 400 kHz
	Linearity: 1%
	Symmetry: 0.1% -99.9%
noise	Bandwidth: 50 MHz (typical)
Arbitrary Waveform	Frequency range: 1 μHz to 5MHz
	Waveform length: 16k
	Internal Storage: 200 waveforms
frequency	Accuracy: ±1ppm initial accuracy; ±1ppm aging rate in the first year; ±3.5ppm aging rate after 10 years
	Resolution: 1μHz
Amplitude	Output range: 20 mVpp to 6 Vpp (high resistance); 10 mVpp to 3 Vpp (50 Ω)
	Resolution: 1mV
	Accuracy (Typical value: 1kHz sine wave, 0V offset): ±(5% of the set value + 2mVpp)
DC offset	Range: ±3 V (high resistance); ±1.5 V (50 Ω)
	Resolution: 1mV
	Precision: ±(5% of the offset setting value + 2mV)
AM Modulation	
Carrier Waveform	Sine, Square Wave, Sine Wave, and Any Wave
Carrier source	Internal
Modulation Waveform	Sine, Square, Rising Ramp, Falling Ramp, Noise, Arbitrary Wave
Modulation Frequency Range	2mHz ~ 50kHz
Modulation Depth	0% ~ 120%
FM modulation	
Carrier Waveform	Sine, Square, Ramp, Arbitrary Wave
Carrier source	Internal

Modulation Waveform	Sine, Square, Rising Ramp, Falling Ramp, Noise, Arbitrary Wave
Modulation Frequency Range	2mHz ~ 50kHz
Maximum Frequency Deviation	12.5MHz (Maximum)
ASK Modulation	
Carrier Waveform	Sine, Square, Ramp, Arbitrary Wave
modulation waveform	50% duty cycle square wave
Modulation Frequency Range	2mHz ~ 50kHz
FSK Modulation	
Carrier Waveform	Sine, Square, Ramp, Arbitrary Wave
modulation waveform	50% duty cycle square wave
Modulation Frequency Range	2mHz ~ 50kHz
Frequency Hopping Range	Any frequency within the carrier signal frequency range
Frequency Sweep	
Sweep Mode	Linear, logarithmic
Sweep Time Range	1ms ~ 500s
Frequency Range Setting	Any start/stop frequency within the waveform frequency range
Display	
Persistence Time	Auto, 50ms, 100ms, 200ms, 500ms, 1s,5s,10s,20s, Unlimited, Off
display type	Dot, Vector
real-time clock	User-adjustable time and date
waveform brightness	1% to 100% (default 50%)
Grid brightness	0%~100% (default 50%)
backlight brightness	1% to 100% (default 50%)
Window transparency	0%~100% (default 50%)
Bode Plot (Optional)	
Operating Mode	Porter diagram, power supply rejection ratio
initial frequency	50 Hz ~ 50 MHz
Stop frequency	60 Hz ~ 50 MHz
Sweep Points	1 ~ 1000
output amplitude	High Impedance: 20 mVpp to 6 Vpp 50Ω:10 mVpp to 3 Vpp
Digital Voltmeter (DVM) (Typical Values)	

Source	Any analog channel
Measurement Functions	DC、AC+DC RMS、AC RMS
resolution	4-digit
Alarm Function	Issue a warning when the value meets or exceeds the specified limit range
Measurement Range	Vertical range of the channel
Measurement Window	100ms
High-precision Frequency Counter	
Source	Any analog channel, Trigger channel
Measurement Parameters	Frequency, Period, and Accumulation
Counter Performance	Maximum valid bits: 7. Refresh time and valid bits are adjustable.
maximum measurement frequency	maximum analog channel bandwidth
Time reference	Internal reference: initial accuracy of ±1 ppm; aging rate of ±1ppm in the first year; aging rate of ±3.5 ppm after 10 years
Interfaces	
USB-Host 3.0	2 ports on front panel, 2 ports on rear panel
USB-Device 3.0	1 port on rear panel
LAN	LAN(VXI11)，10/100/1000 Base-T，RJ-45
AUX Out	Trig Out，Pass/Fail，DVM
Gen output	1 port on rear panel
10MHz reference input	50 Ω, amplitude 400 mVpp to 4.5 Vpp(-3.979dBm,17.044dBm), frequency 10 MHz ± 10 ppm
10MHz reference output	50Ω,1.65 Vpp square wave
HDMI1	1 port; Supports external monitor/projector/touchscreen; Max resolution: 1920×1080
outline specification	
Probe compensator output	
output voltage	3 Vpp
Frequency Options	10Hz, 100Hz, 1kHz (default), 10kHz
Power Supply	
supply voltage	100V ~ 240VAC (fluctuation: ±10%), 50Hz/60Hz 100V ~ 120VAC (fluctuation: ±10%), 400Hz
Maximum Power Consumption	140 W (200 W peak)
fuse	3A, F class, 250V
Environmental Specifications	
temperature range	Operation: 0℃ ~ +50℃

	Non-operational: -40℃ to +70℃		
Cooling Method	Forced air cooling (fan)		
Humidity range	Working conditions: below +10℃, any relative humidity; +10℃ ~ +30℃ 5% ~ 95% relative humidity; +30℃ ~ +40℃ 5% ~ 75% relative humidity; +40℃ ~ +50℃ 5% ~ 45% relative humidity. Non-working: 5% ~ 95% relative humidity.		
Altitude Limit:	Operable: below 4600 meters; Non-operable: below 15,000 meters		
Pollution Degree	2		
Operating Environment	Indoor use only		
Mechanical Specifications			
Dimensions (W × H×D)	8-channel model: 429mm×43mm×450mm, supports rack mounting, 1U height, and 19-inch standard cabinet width. 4-channel model: 214mm×43mm×400mm, supports rack mounting, 1U height, and 19-inch standard cabinet width.		
weight	8-channel model: 5.60kg; 4-channel model: 3.60kg;		
Calibration Interval			
Recommended calibration interval	1 year		
Regulatory standards			
electromagnetic compatibility	Complies with EMC Directive (2014/30/EU), complies with IEC 61326-1:2021/EN61326-1:2021, IEC 61326-2-1:2021/EN61326-2-1:2021, GB/T 18268.1-2020		
	Conducted Emissions	CISPR 11/EN 55011	CLASS B group 1，150kHz-30MHz
		GB4824	CLASS A group 1，150kHz-30MHz
	Radiated Emissions	CISPR 11/EN 55011	CLASS B group 1，30MHz-1GHz
		GB4824	CLASS A group 1，30MHz-1GHz
	Electrostatic Discharge (ESD) Immunity	IEC 61000-4-2/ EN 61000-4-2/ GB/T 17626.2	4.0 kV (contact), 8.0 kV (air)
	Radio frequency electromagnetic field immunity	IEC 61000-4-3/ EN 61000-4-3/ GB/T 17626.6	3V/m（80 MHz to 1 GHz）; 3V/m（1.4 GHz to 2 GHz）; 1V/m（2.0 GHz to 2.7GHz）
	Electrical Fast Transient (EFT) Immunity	IEC 61000-4-4/ EN 61000-4-4/	2kV (AC input port)
		GB/T 17626.4	1kV (AC input port)
	Surge Immunity	IEC 61000-4-5/ EN 61000-4-5/ GB/T 17626.5	1kV (hot wire to neutral wire) 2kV (hot/neutral to ground)
	RF Conducted Immunity	IEC 61000-4-6/ EN 61000-4-6/ GB/T 17626.6	3V, 0.15-80MHz

	Voltage Sag & Short Interruption Immunity	IEC 61000-4-11/ EN 61000-4-11/ GB/T 17626.11	Voltage sag: 0% UT during 1/2-1 cycle; 40% UT during 10/12 cycles; 70% UT during 25/30 cycles Short interruption: 0% UT during 250/300 cycles
Environmental Adaptability	Vibration Resistance	GB/T 6587	Class 2 random vibration
	Shock Resistance	GB/T 6587-2012	Class 2 random oscillation
		IEC 60068-2-27	Class 3 random oscillation
		(Non-working conditions: 30 g, half-sinusoidal wave, 11 ms duration, along 3 oscillations per spindle, total 18 oscillations	
	Requirements for harmful substances	The maximum concentration limits for restricted substances are as follows: lead (Pb): 0.1%; mercury (Hg): 0.1%; cadmium (Cd): 0.01%; hexavalent chromium (Cr6+): 0.1%; polybrominated biphenyls (PBBs): 0.1%; polybrominated diphenyl ethers (PBDEs): 0.1%; di(2-ethylhexyl) phthalate (DEHP): 0.1%; butylbenzyl phthalate (BBP): 0.1%; dibutyl phthalate (DBP): 0.1%; diisobutyl phthalate (DIBP): 0.1%.	
Safety Standards Compliance	EN 61010-1:2010+A1:2019 EN IEC61010-2-030:2021+A11:2021 UL61010-1:2012 Ed.3+ R:19 Jul2019 UL61010-2-030:2018 Ed.2 CSA C22.2#61010-1:2012 Ed.3+U1:U2:A1 CSA C22.2#61010-2-030:2018 Ed.2 GB 4793.1/GB/T 42125.1		

Notes ：

1. Only standard HDMI interfaces are supported; adapter connections are not recommended

Order information and warranty terms

Order Information

	description	number of order
8-channel models	High-resolution compact oscilloscope with 1GHz sampling rate and 8 analog channels	JPO6108LP
	High-resolution compact oscilloscope with 500MHz frequency and 8 analog channels	JPO6058LP
	High-resolution compact oscilloscope with 350MHz sampling rate and 8 analog channels	JPO6038LP
4-channel models	High-resolution compact oscilloscope with 1GHz sampling rate and 4 analog channels	JPO6104LP
	High-resolution compact oscilloscope with 500MHz frequency and 4 analog channels	JPO6054LP
	High-resolution compact oscilloscope with 350MHz frequency and 4 analog channels	JPO6034LP
Standard Accessories	Power cord compliant with local standards (1 unit)	
	USB 3.0 data cable, 1 unit	UT-D30
	BNC-BNC straight-through cable, 1 unit	UT-L45
	Passive probe (500MHz) (1 per channel)	UT-P07A
Optional Accessories & Upgrades	Upgrade from 500MHz to 1GHz bandwidth	JPO6000LP-BW5MT1G
	All serial bus trigger & decode options	JPO6000LP-BND
	Automotive serial bus trigger & decode option (includes CAN, CAN-FD, LIN, FlexRay)	JPO6000LP-AUTO
	CAN Trigger/Decode Option	JPO6000LP-CAN
	CAN-FD trigger & decode option	JPO6000LP-CANFD
	LIN Trigger/Decode Option	JPO6000LP-LIN
	FlexRay Trigger/Decode Option	JPO6000LP-FLEX
	SENT Trigger/Decode Option	JPO6000LP-SENT
	Audio Trigger/Decode Options	JPO6000LP-AUDIO
	MIL-STD-1553 Trigger/Decode Option	JPO6000LP-MIL1553
	ARINC429 trigger/decode option	JPO6000LP-ARINC429
	MANCHESTER Trigger/Decode Option	JPO6000LP-MANCH
	Function/arbitrary waveform generator option (includes Gen & Bode Plot)	JPO6000LP-AWG
	Power Analysis Option	JPO6000LP-PWR
	delay correction fixture	UT-DF01
	isolation transformer	UT-ISOT
	high pressure probe	UT-V23/UT-P21/UT-P20
	high pressure differential probe	UT-P30/UT-P31/UT-P32/ UT-P33/UT-P35/UT-P36

	active single-ended probe	UT-PA2000
	current probe	UT-P40/UT-P41/UT-P42/ UT-P43/UT-P44/UT-P4030D/UT -P4150/UT-P4500/P4100A/P410 0B

Note: All host units, accessories, and optional items must be ordered through authorized local KTB dealers.

Warranty Period

The host comes with a 1-year warranty, excluding probes and accessories.