

# BIGGEST TOUCH. BEST VALUE.



WaveSurfer 3000z

100 MHz – 1 GHz Oscilloscopes



10.1" Capacitive Touch Screen

20 Mpts Memory

Powerful, Deep Toolbox

The WaveSurfer 3000z has
a 10.1" capacitive touch display,
the longest memory, and the
deepest toolbox – all at an affordable price.



# BIGGEST TOUCH. BEST VALUE.

WaveSurfer 3000z

# Biggest Touch



Best Value 30% Larger



Digital Voltmeter Logic Analysis with 16 Mixed Signal Capabilities

20 Mpts Powerful Triggering Superior Measurement Tools

History Mode Anomaly Detection
WaveScan LabNotebook Waveform Generator

Multi-Instrument Capabilities (AFG)

Protocol Analysis with Serial Trigger and Decode

Pass/Fail Deep Toolbox

Testing Advanced Math Fast Waveform Update



- 10.1" Capacitive Touch Screen
- 20 Mpts Memory
- 3 Powerful, Deep Toolbox



# Faster Time to Insight

# Insight alone is not enough.

Markets and technologies change too rapidly.

The **timing** of **critical design** decisions is significant.

Faster Time to Insight is what matters.



# THE WAVESURFER 3000Z ATTRIBUTES

The WaveSurfer 3000z provides the Most Advanced User Interface (MAUI) through a 10.1" capacitive touch screen. It promotes true versatility with 20 Mpts of memory, multi-instrument capabilities, a powerful, deep toolbox, and 100 MHz - 1 GHz of bandwidth.

#### **Key Attributes**

- 1. 10.1" widescreen capacitive touch screen display
- 2. MAUI Most Advanced User Interface
- **3.** Waveform Control Knobs for channel, zoom, math and memory traces
- **4.** "Push" Knobs push functionality provides shortcuts to common actions
- **5.** Dedicated buttons to quickly access popular debug tools.
- **6.** Mixed Signal Capability 16 channel mixed signal capability
- **7.** Easy connectivity with an ethernet and four USB 2.0 Ports
- **8.** Rotating and tilting feet for four different viewing positions







- WaveSource Ouput for Built-in Function Generator
- **10.** Micro SD Port 16 GB (or larger) micro SD card installed standard
- **11.** External Monitor DB-15 connector (Support resolution of 1024 x 600)
- **12.** USBTMC (Test and Measurement Class) over USB 2.0 for remote connectivity
- 13. Small Footprint



# **WAVESURFER 3000z AT A GLANCE**

#### **Key Features**

100 MHz, 200 MHz, 350 MHz, 500 MHz and 1 GHz bandwidths

Up to 4 GS/s sample rate

Long Memory - up to 20 Mpts

10.1" capacitive touch screen display

16 Digital Channel MSO option

#### **MAUI - Most Advanced User Interface**

- Designed for Touch
- Built for Simplicity
- Made to Solve

#### **Advanced Anomaly Detection**

- Fast Waveform Update
- History Mode Waveform Playback
- WaveScan Search and Find

#### **Multi-Instrument Capabilities**

- Protocol Analysis -Serial Trigger and Decode
- Waveform Generation Built-in Function Generator
- Digital Voltmeter and Frequency Counter

#### **Future Proof**

- Upgradeable Bandwidth
- Field Upgradable Software and Hardware Options



#### **Superior User Experience**

MAUI is the most advanced oscilloscope user interface. It is designed for touch, built for simplicity, and made to solve.

#### **Advanced Anomaly Detection**

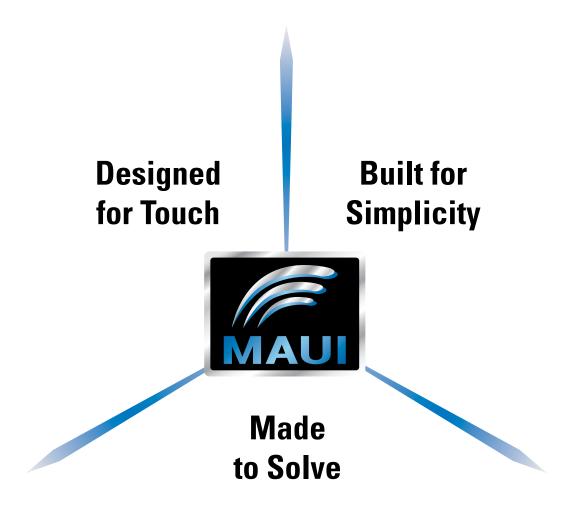
A fast waveform update rate, used in conjunction with history mode, WaveScan, sequence mode, and mask testing facilitates outstanding waveform anomaly detection.

#### **Biggest Touch Display**

A large capacitive touch screen enables accessible and responsive touch operation. The 10.1" display is 30% larger than competitive offerings, providing more waveform viewing area.

#### Powerful, Deep Toolbox

The standard collection of math, measurement, debug, and documentation tools provides unsurpassed analysis capabilities.



## Designed for Touch

MAUI is designed for touch. Operate the oscilloscope just like a phone or tablet with the most unique touch screen features on any oscilloscope. All important controls are always one touch away. Touch the waveform to position or zoom in for more details using intuitive actions.

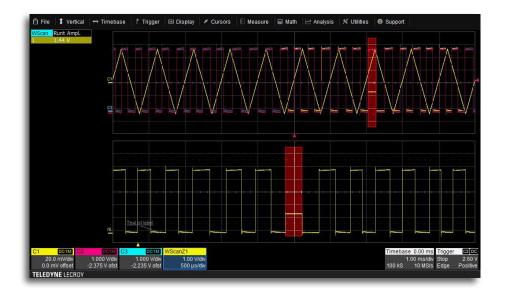
# **Built for Simplicity**

MAUI is built for simplicity. Basic waveform viewing and measurement tools as well as advanced math and analysis capabilities are seamlessly integrated in a single user interface. Time saving shortcuts and intuitive dialogs simplify setup and shorten debug time.

#### Made to Solve

MAUI is made to solve. A deep set of integrated debug and analysis tools help identify problems and find solutions quickly. Unsurpassed integration provides critical flexibility when debugging. Solve problems fast with powerful analysis tools.

# **ADVANCED ANOMALY DETECTION**



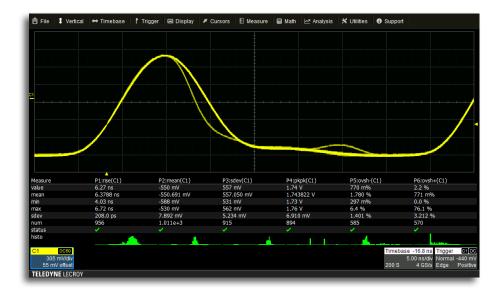
#### WaveScan Advanced Search

- Locate unusual events in a single capture or scan for an anomalies across many acquisitions
- More than 20 modes can be applied to analog or digital channels



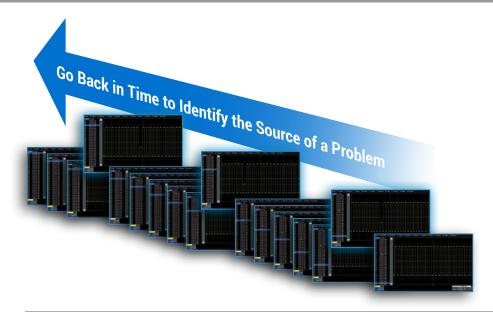
#### **Pass/Fail Mask Testing**

- Mask testing to quickly identify anomalies and mark their location.
- A history of these pass/fail results can be displayed



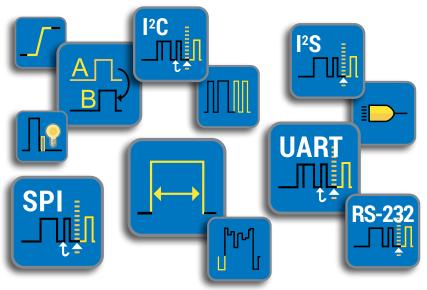
#### **Fast Waveform Update**

- An update rate of over 130,000 waveforms per second will easily display random or infrequent events
- Changes over time can be seen with the intensity graded persistence display



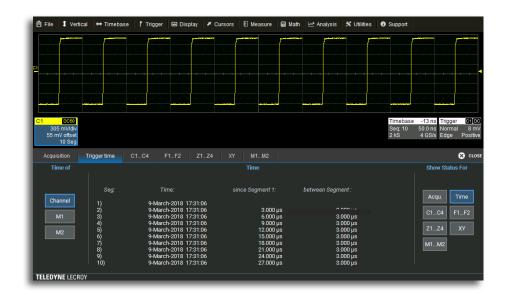
#### History Mode Waveform Playback

- View previous waveforms to discover past anomalies
- Use cursors and measurement parameters to quickly identify the source of problems
- History mode is always enabled and accessible through the click of a button



#### **Powerful Triggering**

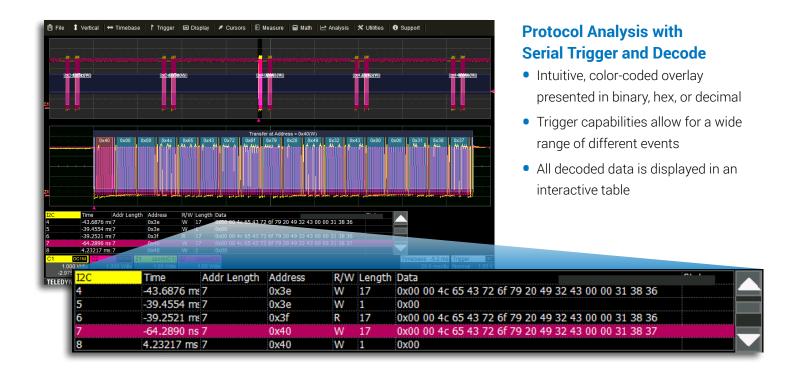
- Basic triggering such as edge or width can be used for everyday solutions
- Qualified triggering enables the ability to trigger across multiple channels
- Powerful logic triggering can be setup to catch a parallel pattern
- Smart triggers such as runt, dropout, or interval help isolate anomalies quickly
- Serial data triggering adds protocol specific triggers



#### Advanced Waveform Capture with Segmented Memory

- Save waveforms into segmented memory
- Capture fast pulses in quick succession or events separated by long time intervals
- Combine Sequence mode with advanced triggers to isolate rare events

# **MULTI-INSTRUMENT CAPABILITIES**





The DVM license key can be downloaded at no charge from *teledynelecroy.com/redeem/dvm*.

#### Precise Measurements with Digital Voltmeter

- 4-digit digital voltmeter
- 5-digit frequency counter
- Any channel can be selected as a source
- Voltage readings can be set to DC, DC RMS, or AC RMS
- Measurements will continue to be updated even when triggering is stopped

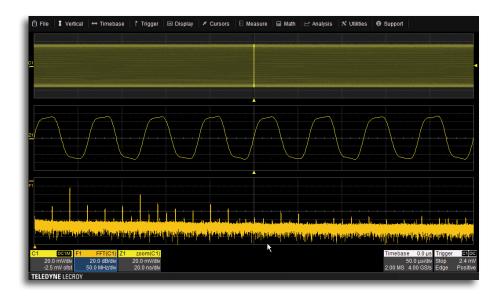




# **Waveform Generation with Built-in Function Generator**

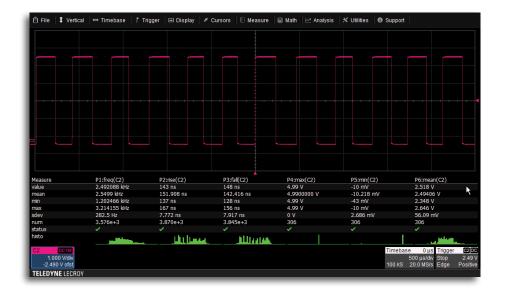
- Frequencies of up to 25 MHz
- Waveform Options: sine, square, pulse, ramp, triangle, noise and DC waveforms
- Rear panel BNC output
- Saved waveforms can be uploaded into the WaveSource to generate arbitrary waveforms

# POWERFUL, DEEP TOOLBOX



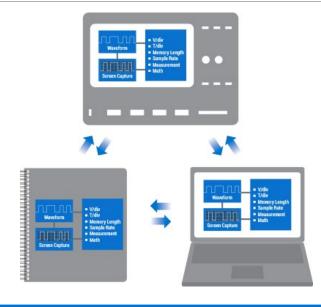
#### **Advanced Math Capabilities**

- A deep set of 20 math functions provide quick insight into waveforms
- Dedicated Grid for Math Traces
- Any Channel, Measurement, or Analysis Package can have a math function applied



#### **Superior Measurement Tools**

- 24 measurement parameters
- Additional statistics and histicons can be applied to each parameter
- Trends can be displayed for any measurement



# LabNotebook Documentation Tool

- Save all displayed waveforms, oscilloscope setup file, and a screen image with a single button press
- Recall LabNotebook files onto the oscilloscope
- View the LabNotebook files on a PC using WaveStudio

#### Teledyne LeCroy offers an extensive range of probes to meet virtually every probing need.

ZS Series High Impedance Active Probes (1 GHz - 1.5 GHz) ZS1000, ZS1000-QUADPAK

ZS1500, ZS1500-QUADPAK



The active voltage probe can become the everyday probe for all different types of signals and connection points.

Differential Probes (200 MHz – 1.5 GHz) ZD200, ZD500, ZD1000, ZD1500,



These active differential probes are ideal for applications such as automotive electronics and data communications.

Active Voltage/Power Rail Probe (4 GHz)

RP4030

AP033



The Active Rail Probe is specifically designed to probe a low impedance power/voltage rail.

High Voltage Fiber Optically-isolated Probe (60 MHz)

**HVF0103** 



The HVF0103 is ideal for measurement of small signals floating on an HV bus in power electronics designs or for EMC, EFT, ESD, and RF immunity testing sensor monitoring.

HVD Series High Voltage Differential Probes (120 MHz) HVD3102A, HVD3106A (1 kV) HVD3206A (2 kV) HVD3605A (6 kV)



HVDs are rated for wide differential voltage swings - ideal for power electronics circuits.

High Voltage
Passive Probes

HVP120 (1 kV), PPE4KV, PPE5KV, PPE6KV



High Voltage Single-ended passive probes that are ideal for lightning/surge or EFT testing, or for probing in-circuit beyond the range of a LV-rate passive probe.

Current Probes (100 MHz) CP030, CP030-3M, CP030A

CP031, CP031A CP150, CP150-6M CP500, DCS015



Current probes with peak currents of 700 A and sensitivities to 1 mA/div. Ideal for component or power conversion system input/output measurements.

**Probe Adapters** 

TPA10, TPA10-QUADPAK



TPA10 adapts supported Tektronix TekProbe-compatible probes to Teledyne LeCroy ProBus interface.

### SPECIFICATIONS

	WaveSurfer 30147	WaveSurfer 3024z	WaveSurfer 30347	WaveSurfer 30547	WaveSurfer 31047		
Analog - Vertical	Traveourier 50142	TraveSurier 30242	Travesurier 50542	Traveourier 30342	Traveourier 5104		
Analog Bandwidth @ 50Ω (-3dB)	100 MHz	200 MHz	350 MHz	500 MHz	1 GHz		
Rise time	3.5 ns (typical)	1.75 ns (typical)	1 ns (typical)	800 ps (typical)	430 ps (typical)		
Input Channels	4	(-)		(2)	1 2 (2)		
Vertical Resolution	8-bits; up to 11-bits with	h enhanced resolution (I	ERES)				
Sensitivity		r; 1 MΩ: 1 mV/div - 10 V/					
DC Gain Accuracy	±(1.5%) Full Scale, Offset at 0V, > 5mV/div; ±(2.5%) < 5 mV/div						
BW Limit	20 MHz 200 MHz						
Maximum Input Voltage	50 Ω: 5 Vrms, ±10 V Peak; 1 MΩ: 400 V max (DC + Peak AC ≤ 10 kHz)						
Input Coupling	50 Ω: DC, GND; 1 MΩ: AC, DC, GND						
Input Impedance	50 Ω ±2.0%, 1 MΩ ±2.0%    16 pF						
Offset Range	50 Ω: 1 mV - 19.8 mV: ±2 V, 20 mV - 100 mV: ±5 V, 102 mV - 198 mV: ±20 V, 200 mV - 1 V: ±50 V 1 MΩ: 1 mV - 19.8 mV: ±2 V, 20 mV - 100 mV: ±5 V, 102 mV - 198 mV: ±20 V, 200 mV - 1 V: ±50 V, 1.02 V - 1.98 V: ±200 V, 2 V - 10 V: ±400 V						
Offset Accuracy	±(1.0% of offset value +						
Analog - Acquisition							
Sample Rate (Single-shot)	1 GS/s		2 G	iS/s			
cample hate (chighe chet)	(2 GS/s interleaved)			iterleaved)			
Sample Rate (Repetitive)	50 GS/s						
Standard Memory ( 4 Ch / 2 Ch)	10 Mpts / 20 Mpts						
Acquisition Modes	Real Time, Roll, RIS (Ra	indom Interleaved Samr	olina)	·			
7. loquiottion modes		Memory up to 1,000 sec		um interseament time)			
Real Time Timebase Range	5 ns/div - 100 s/div		100 s/div	1 ns/div - 100 s/div	500 ps/div - 100 s/di		
RIS Mode Timebase Range	5 ns/div - 10 ns/div	2 ns/div -		1 ns/div - 10 ns/div	500 ps/div - 10 ns/di		
Roll Mode Timebase Range	Up to 100 s/div (roll mo						
Timebase Accuracy	±10 ppm measured ove						
Digital - Vertical and Acquisit	ion (MC2V MCO Ontio	n Only)					
Input Channels	16 Digital Channels	il Olliy)					
Threshold Groupings		7 00					
Threshold Selections	Pod 2: D15 - D8, Pod 1: D7 - D0 TTL(+1.4V), 5V CMOS (+2.5V), ECL (-1.3V) or User Defined						
Maximum Input Voltage	±30V Peak	2.37), LOL (1.37) 01 0361	Defined				
Threshold Accuracy	±(3% of threshold setting	n + 100m\Λ					
Input Dynamic Range	±20V	g + 100111V)					
Minimum Input Voltage Swing	500mVpp						
Input Impedance (Flying Leads)	100 kΩ    5 pF						
Maximum Input Frequency	125 MHz						
Sample Rate	500 MS/s			,			
Record Length	10MS - 16 Channels						
Minimum Detectable Pulse Width	4 ns						
Channel-to-Channel Skew	± (1 digital sample inter	val)					
User defined threshold range	±10V in 20mV steps						
Trigger System							
Modes	Auto, Normal, Single, St	on					
Sources	Any input channel, Exte		and level unique to eac	h cource (except for line	triager)		
Coupling	DC, AC, HFREJ, LFREJ	irriai, Ext/ 3, or lifte, slope	and lever unique to eac	il source (except for fille	trigger)		
Pre-trigger Delay	0-100% of full scale						
Post-trigger Delay	0-10,000 Divisions						
Hold-off	10ns up to 20s or 1 to 1	100 000 000 events					
Internal Trigger Level Range	±4.1 Divisions	100,000,000 evento					
External Trigger Level Range	Ext: ±610mV, Ext/5: ±3.0	05V					
Trigger Types		tern), TV (NTSC, PAL, SE	CAM HDTV - 720n 108	0i 1080n) Bunt Slew F	ate		
99)		ern), Dropout, Qualified (S					
Manager Zaam and Math Ta		,	3 /-	3	,		
Measure, Zoom and Math Too					. A D D. l		
Measurement Parameters	Up to 6 of the following parameters can be calculated at one time on any waveform: Amplitude, Area, Base, Delay, Duty Cycle, Fall Time (90%–10%), Fall Time (80%–20%), Frequency, Maximum, Mean, Minimum, Overshoot+, Overshoot-, Peak-Peak, Period, Phase, Rise Time (10%–90%), Rise Time (20%–80%), RMS, Skew, Standard Deviation, Top, Width+, Width Statistics and histicons can be added to measurements. Measurements can be gated.						
Zooming	Use front panel QuickZo						
Math Functions	Up to 2 of the following functions can be calculated at one time: Sum, Difference, Product, Ratio, Absolute Value, Average, Derivative, Enhanced Resolution, Envelope, Floor, Integral, Invert, Reciprocal, Rescale, Roof, SinX/x, Square, Square Root, Trend, Zoom and FFT (up to 1 Mpts with power spectrum output and rectangular, VonHann, and FlatTop windows).						
Probes							
Standard Prohes	One PP010 (5m	m) per channel	One	PP020 (5mm) per cha	nnel		

One PP019 (5mm) per channel

BNC and Teledyne LeCroy ProBus for Active voltage, current and differential probes

One PP020 (5mm) per channel

Standard Probes

Probing System

# **SPECIFICATIONS**

Display System		Wavedurer 50142 Wavedur		34z WaveSurfer 3054z WaveSurfer 3104z		
Diaminu Cina		10.1"idaaaaaaa aasaaitia taah				
Display Size		10.1" widescreen capacitive touch s	screen			
Display Resolution		1024 x 600				
Connectivity						
Ethernet Port		10/100Base-T Ethernet interface (RJ-45 connector)				
Removable Storage		(1) MicroSD Port - 16 GB micro SD of	card installed standard			
USB Host Ports		(4) USB 2.0 Ports Total – (2) Front USB 2.0 Ports				
USB Device Port		(1) USBTMC				
GPIB Port (Optional)		Supports IEEE – 488.2				
External Monitor Port		Standard DB-15 connector (support	resolution of 1024x600)			
Remote Control		Via Windows Automation, or via Tel	edyne LeCroy Remote Comma	nd Set		
Network Communicat	ion	VICP and LXI compatible				
Standard						
<b>Power Requiremen</b>	ts					
Voltage		100 - 240 VAC + 10% at 50-60 Hz +	/-5%: 100 - 120 VAC + 10% at 4	00 Hz +/- 5%; Automatic AC Voltage Selection		
Power Consumption (		80 W / 80 VA	120 VNO 1 100 dt 1	00 112 17 070, Natornatio No Voltage delection		
Power Consumption (		150 W / 150 VA (with all PC periphe	rals digital leadset and active	probes connected to 4 channels)		
Tower concumption (	iviany	100 W, 100 W (With all 1 0 periphe	raio, digital leadoct and dolive	probes sommested to 1 sharmely		
Environmental						
Temperature		Operating: 0 °C to 50 °C; Non-Opera				
Humidity		Operating: 5% to 90% relative humidity (non-condensing) up to $\leq$ 30 °C, Upper limit derates to 50% relative humidity (non-condensing) at +50 °C				
		Non-Operating: 5% to 95% relative h				
Altitude		Operating: 3,048 m (10,000 ft) max	at ≤ 25C; Non-Operating: Up to	12,192 meters (40,000 ft)		
Physical						
Dimensions (HWD)		10.63"H x 14.96"W x 4.92"D (270 m	m x 380 mm x 125 mm)			
Weight		4.81 kg (10.6 lbs)	117 000 111117 120 11111)			
		1.0 r kg (10.0 150)				
Regulatory						
CE Certification		Low Voltage Directive 2014/35/EU; EN 61010-1:2010, EN 61010-2-030:2010				
		MC Directive 2014/30/EU; EN 61326-1:2013, EN61326-2-1:2013; RoHS2 Directive 2011/65/EU				
UL and cUL Listing		UL 61010-1, UL 61010-2-030:2010,	3rd Edition; CAN/CSA C22.2 N	o. 61010-1-12		
Digital Voltmeter (c	optional)					
Functions		AC <sub>rms</sub> , DC, DC <sub>rms</sub> , Frequency				
Resolution		ACV/DCV: 4 digits, Frequency: 5 dig				
			ite			
Measurement Rate				second		
Measurement Rate Vertical Settings Autor		100 times/second, measurements	update on the display 5 times/			
Measurement Rate Vertical Settings Autor			update on the display 5 times/			
Vertical Settings Auto	range	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/			
Vertical Settings Autor  WaveSource Function	range	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/: ettings to maximize the dynam			
Vertical Settings Autor  WaveSource Funct General	range ion Generato	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/settings to maximize the dynam	ic range of measurements		
Vertical Settings Autor  WaveSource Function  General  Max Frequency	range ion Generato 25 MHz	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/settings to maximize the dynamic of	ic range of measurements ±3V (HiZ); ±1.5V (50 Ω)		
WaveSource Function  General  Max Frequency Channels	ion Generato  25 MHz 1	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/settings to maximize the dynam	ic range of measurements		
WaveSource Functing Max Frequency Channels Sample Rate	ion Generato  25 MHz 1 125 MS/s	100 times/second, measurements Automatic adjustment of vertical se	update on the display 5 times/ettings to maximize the dynamic of t	ic range of measurements ±3V (HiZ); ±1.5V (50 Ω)		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform	ion Generato  25 MHz 1	100 times/second, measurements Automatic adjustment of vertical se	pupdate on the display 5 times/settings to maximize the dynamic of	ic range of measurements  ±3V (HiZ); ±1.5V (50 Ω)  ±(1% of offset value + 3 mV)		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length	ion Generato 25 MHz 1 125 MS/s 16 kpts	100 times/second, measurements Automatic adjustment of vertical se	pupdate on the display 5 times/settings to maximize the dynamical	ic range of measurements $ \pm 3 \text{V (HiZ); } \pm 1.5 \text{V (50 } \Omega \text{)} \\ \pm (1\% \text{ of offset value } + 3 \text{ mV)} $ $ 50 \ \Omega \pm 2\% $		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution	ion Generato 25 MHz 1 125 MS/s 16 kpts 1 µHz	100 times/second, measurements Automatic adjustment of vertical se	pupdate on the display 5 times/settings to maximize the dynamical	ic range of measurements $\frac{\pm 3 \text{V (HiZ); } \pm 1.5 \text{V (50 }\Omega)}{\pm (1\% \text{ of offset value} + 3 \text{ mV)}}$ $\frac{50 \ \Omega \pm 2\%}{\text{Short-circuit protection}}$		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution	ion Generato 25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit	100 times/second, measurements Automatic adjustment of vertical se or (optional)	pupdate on the display 5 times/settings to maximize the dynamical	ic range of measurements $\frac{\pm 3 \text{V (HiZ); } \pm 1.5 \text{V (50 }\Omega)}{\pm (1\% \text{ of offset value} + 3 \text{ mV)}}$ $\frac{50 \ \Omega \pm 2\%}{\text{Short-circuit protection}}$		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range	z5 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ±	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω)	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic	ic range of measurements		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types	z5 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar	100 times/second, measurements Automatic adjustment of vertical se or (optional)	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic) DC-1 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specification	ion Generato 25 MHz 1 125 MS/s 16 kpts 1 μHz 14-bit ±3V (HiZ); ± Sine, Squar	100 times/second, measurements Automatic adjustment of vertical se or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specification Sine	z5 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse	z5 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz  MHz	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion of	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc @1.265Vpp		
WaveSource Funct General Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specificati Sine Square/Pulse Ramp/Triangular	25 MHz 1 125 MS/s 16 kpts 1 μHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 μHz - 25 N 1 μHz - 300	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion of DC - 5 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) (@1.265Vpp -60dBc -55dBc -50dBc (@1.265Vpp -50dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specificati Sine Square/Pulse Ramp/Triangular Noise	25 MHz 1 125 MS/s 16 kpts 1 μHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 μHz - 25 N 1 μHz - 300 25 MHz (-30	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion of	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc @1.265Vpp		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specificati Sine Square/Pulse Ramp/Triangular Noise Resolution	25 MHz 1 125 MS/s 16 kpts 1 μHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 μHz - 25 N 1 μHz - 10 N 1 μHz - 300 25 MHz (-300 1 μHz	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz HB)	DC Offset Range (DC) Offset Accuracy Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz Harmonic Distortion of DC - 5 MHz 5 MHz - 25 MHz 5 MHz - 25 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) (@1.265Vpp -60dBc -55dBc -50dBc (@1.265Vpp -50dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specificati Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-30) 1 µHz (-30) 25 MHz (-30) 25 ppm, o	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz HB) ver temperature	DC Offset Range (DC) Offset Accuracy Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic DC - 5 MHz 5 MHz - 25 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  C) (@1.265Vpp -60dBc -55dBc -50dBc (@1.265Vpp -50dBc -45dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Resolution Vertical Range Waveform Types Frequency Specificati Sine Square/Pulse Ramp/Triangular Noise Resolution	25 MHz 1 125 MS/s 16 kpts 1 μHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 μHz - 25 N 1 μHz - 10 N 1 μHz - 300 25 MHz (-300 1 μHz	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz HB) ver temperature	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic DC - 5 MHz 5 MHz - 25 MHz 6 Square/Pulse Rise/fall time	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV) 50 Ω ± 2% Short-circuit protection (C) (@1.265Vpp -60dBc -55dBc -50dBc (@1.265Vpp -50dBc (@1.265Vpp -50dBc -45dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types  Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-30) 1 µHz (-30) 25 MHz (-30) 25 ppm, o	100 times/second, measurements Automatic adjustment of vertical se  or (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHz MHz KHz HB) ver temperature	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 4 Harmonic Distortion of DC - 5 MHz 5 MHz - 25 MHz 5 MHz - 25 MHz 5 MHz - 25 MHz 6 Square/Pulse Rise/fall time Overshoot	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (a) (b) (a)1.265Vpp -60dBc -55dBc -50dBc (a)1.265Vpp -50dBc (a)1.265Vpp -50dBc -45dBc -45dBc -45dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging Output Specification	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-3) 1 µHz ±50 ppm, o ±3 ppm/yea	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHZ  MHZ  KHZ  dB) ver temperature ar, first year	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic DC-5 MHz DC - 5 MHz SMHz - 25 MHz	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  S) (a) 1.265Vpp -60dBc -55dBc -50dBc (a) 1.265Vpp -50dBc -45dBc -45dBc -45dBc -45dBc -45dBc -45dBc -50dBc -45dBc -50dBc -45dBc		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging Output Specification Amplitude	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-3) 1 µHz ±50 ppm, o ±3 ppm/yea	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHZ  MHZ  KHZ  dB)  ver temperature ar, first year	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion (DC - 5 MHz 5 MHz - 25 MHz Square/Pulse Rise/fall time Overshoot Pulse Width Jitter	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (a) (b) (c) (@1.265Vpp  -60dBc  -55dBc  -50dBc  @1.265Vpp  -50dBc  @1.265Vpp  -50dBc  24 ns (10% - 90%) 3% (typical - 1 kHz, 1 Vpp)		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging Output Specification Amplitude Vertical Accuracy	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-3) 1 µHz ±50 ppm, o ±3 ppm/yea	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHZ  MHZ  KHZ  dB)  ver temperature ar, first year	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion (DC - 5 MHz 5 MHz - 25 MHz Square/Pulse Rise/fall time Overshoot Pulse Width Jitter Ramp/Triangle	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc @1.265Vpp -50dBc @1.265Vpp -50dBc 24 ns (10% - 90%) 3% (typical - 1 kHz, 1 Vpp) 50 ns min. 500ps + 10ppm of period (RMS cycle to cycle)		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging Output Specification Amplitude	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-3) 1 µHz ±50 ppm, o ±3 ppm/yea	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHZ  MHZ  KHZ  dB)  ver temperature ar, first year	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion (DC - 5 MHz 5 MHz - 25 MHz Square/Pulse Rise/fall time Overshoot Pulse Width Jitter	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc @1.265Vpp -50dBc -45dBc -45dBc  24 ns (10% - 90%) 3% (typical - 1 kHz, 1 Vpp) 50 ns min. 500ps + 10ppm of period (RMS cycle to cycle)		
Vertical Settings Autor  WaveSource Funct General  Max Frequency Channels Sample Rate Arbitrary Waveform Length Frequency Resolution Vertical Range Waveform Types Frequency Specification Sine Square/Pulse Ramp/Triangular Noise Resolution Accuracy Aging Output Specification Amplitude Vertical Accuracy	25 MHz 1 125 MS/s 16 kpts 1 µHz 14-bit ±3V (HiZ); ± Sine, Squar ion 1 µHz - 25 N 1 µHz - 10 N 1 µHz - 300 25 MHz (-3) 1 µHz ±50 ppm, o ±3 ppm/yea	100 times/second, measurements Automatic adjustment of vertical second (optional)  1.5V (50 Ω) e, Pulse, Ramp, Noise, DC  MHZ  MHZ  KHZ  dB)  ver temperature ar, first year	DC Offset Range (DC) Offset Accuracy  Waveform Output Impedance Protection Sine Spectrum Purity SFDR (Non Harmonic DC-1 MHz 1 MHz - 5 MHz 5 MHz - 25 MHz Harmonic Distortion (DC - 5 MHz 5 MHz - 25 MHz Square/Pulse Rise/fall time Overshoot Pulse Width Jitter Ramp/Triangle	±3V (HiZ); ±1.5V (50 Ω) ±(1% of offset value + 3 mV)  50 Ω ± 2% Short-circuit protection  (c) @1.265Vpp -60dBc -55dBc -50dBc @1.265Vpp -50dBc @1.265Vpp -50dBc -45dBc -45dBc -45dBc -45dBc -50dBc -45dBc -45dBc		

# **ORDERING INFORMATION**

Product Description	<b>Product Code</b>	Product Description	Product Code
WaveSurfer 3000z Oscilloscopes		Probes (Cont'd)	
100 MHz, 2 GS/s, 4 Ch, 10 Mpts/Ch with V 10.1" Capacitive Touch Screen Display	VaveSurfer 3014z	Power/Voltage Rail Probe. 4 GHz bandwidth, 1.2x attenuation, ±30V offset, ±800mV	RP4030
20 Mpts /Ch in interleaved mode		Browser for use with RP4030 RP-	4000-BROWSER
	VaveSurfer 3024z	1,500 V, 120 MHz High-Voltage Differential Probe	HVD3106A
10.1" Capacitive Touch Screen Display		1kV, 80 MHz High Voltage Differential Probe with 6m cable	HVD3106A-6M
20 Mpts /Ch in interleaved mode			/D3106A-NOACC
	VaveSurfer 3034z	without tip Accessories	
10.1" Capacitive Touch Screen Display		1,500 V, 25 MHz High-Voltage Differential Probe	HVD3102A
20 Mpts /Ch in interleaved mode		, , , , , , , , , , , , , , , , , , , ,	/D3102A-NOACC
	VaveSurfer 3054z	tip Accessories	
10.1" Capacitive Touch Screen Display		2kV, 120 MHz High Voltage Differential Probe	HVD3206A
20 Mpts /Ch in interleaved mode		2kV, 80 MHz High Voltage Differential Probe with 6m cable	HVD3206A-6M
1 GHz, 4 GS/s, 4 Ch, 10 Mpts/Ch with	VaveSurfer 3104z	6kV, 100 MHz High Voltage Differential Probe	HVD3605A
10.1" Capacitive Touch Screen Display		High Voltage Fiber Optic Probe, 60 MHz	HVF0103
20 Mpts /Ch in interleaved mode		(requires accessory tip) ±1V (1x) Tip Accessory for HVFO103	HVF0100-1X-TIP
Included with Standard Configurations			HVF0100-1X-11P
÷10 Passive Probe (Total of 1 Per Channel), 1 Micro SD card	d (Installed)		VF0100-3X-11P
Micro SD card adapter, Protective Front Cover, Getting Star		30 A; 100 MHz Current Probe – AC/DC; 30 A <sub>rms</sub> ; 50 A <sub>peak</sub> Puls	
Commercial NIST Traceable Calibration with Certificate, Po		30 A; 100 MHz High Sensitivity Current Probe – AC/DC;	CP031A
the Destination Country, 3-year Warranty		30 A <sub>rms</sub> ; 50 A <sub>peak</sub> Pulse	CFUSTA
General Accessories		30 A; 50 MHz Current Probe – AC/DC; 30 A <sub>rms</sub> ; 50 A <sub>peak</sub> Pulse	e CP030
External GPIB Accessory	USB2-GPIB	30 A; 50 MHz High Sensitivity Current Probe – AC/DC; 30 Arn	
<u> </u>	WS3K-SOFTCASE	50 A <sub>peak</sub> Pulse	113,
Rack Mount Accessory	WS3K-RACK	150 A; 10 MHz Current Probe – AC/DC; 150 A <sub>rms</sub> ; 500 A <sub>peak</sub> F	Pulse CP150
nack Mount Accessory	WSSINTACIN	500 A; 2 MHz Current Probe – AC/DC; 500 A <sub>rms</sub> ; 700 A <sub>peak</sub> Pu	
Local Language Overlays		Deskew Calibration Source for CP031, CP030 and AP015	DCS025
	/S3K-FP-GERMAN	500 MHz Differential Probe	AP033
	VS3K-FP-FRENCH	200 MHz, 3.5 pF, 1 M $\Omega$ Active Differential Probe, ±20 V,	ZD200
	WS3K-FP-ITALIAN	60V common-mode	
· · · · · · · · · · · · · · · · · · ·	VS3K-FP-SPANISH	1 GHz, 1.0 pF, 1 M $\Omega$ Active Differential Probe, ±8 V,	ZD1000
<u> </u>	3K-FP-JAPANESE	10V common-mode	701500
	VS3K-FP-KOREAN	1.5 GHz, 1.0 pF, 1 MΩ Active Differential Probe, ±8 V, 10V common-mode	ZD1500
	3K-FP-CHNES-TR	1 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe	ZS1000
	S3K-FP-CHNES-SI		S1000-QUADPAK
Russian Front Panel Overlay W	/S3K-FP-RUSSIAN	1.5 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe	ZS1500
Multi-Instrument Options		• • • • • • • • • • • • • • • • • • • •	S1500-QUADPAK
MSO software option and 16 Channel Digital probe leadset	: WS3K-MS0	$\frac{2}{100:1}$ 400 MHz 50 MΩ 1 kV High-voltage Probe	HVP120
	3K-MSO-LICENSE	100:1 400 MHz 50 MΩ 4 kV High-voltage Probe	PPE4KV
Function Generator Option	WS3K-FG	1000:1 400 MHz 50 MΩ 5 kV High-voltage Probe	PPE5KV
·	WS3K-Audiobus TD	1000:1 400 MHz 50 M $\Omega$ 6 kV High-voltage Probe	PPE6KV
CAN and LIN Trigger and Decode Option	WS3K-AUTO	Probe Adapters	
	3K-CAN FDbus TD	TekProbe to ProBus Probe Adapter	TPA10
I <sup>2</sup> C, SPI, UART and RS-232 Trigger and Decode Option	WS3K-EMB		TPA10-QUADPAK
	3K-FlexRaybus TD	Includes soft carrying case.	
Power Analysis Option	WS3K-PWR		
Probes	DD010		
250 MHz Passive Probe 10:1, 10 MΩ	PP019		
500 MHz Passive Probe 10:1, 10 MΩ	PP020		
700 V, 15 MHz High-Voltage Differential Probe	AP031		

#### **Customer Service**

Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year. This warranty includes:

• No charge for return shipping • Long-term 7-year support • Upgrade to latest software at no charge



1-800-5-LeCroy teledynelecroy.com

Local sales offices are located throughout the world. Visit our website to find the most convenient location.