TECHNICAL DATA

Fluke 190 Series III ScopeMeter® Test Tools

High performance portable oscilloscopes engineered for harsh environments

Fluke 190 Series III ScopeMeter Test Tools are engineered to go where you go, and tackle just about any troubleshooting job along the way. These CAT III 1000 V/CAT IV 600V rated test tools combine rugged portability with the high performance of bench oscilloscopes to help you take on the challenges of installing, commissioning and maintaining industrial machinery, automation and process controls, and power conversion electronics with ease—from DC to 500 MHz.

Choose from two or four channel models with a wide range of bandwidth options. Fast sampling rates up to 5.0 GS/s, 200 ps resolution and deep memory of 10,000 samples per channel allow high-accuracy capture and display of waveform details, noise, and other disturbances. Perform timing or amplitude related measurements on three phases or three-axis control systems, or simply compare and contrast multiple test points in a circuit under test. Features like TrendPlot™ Paperless Recorder, ScopeRecord™ Mode, Connect-and-View™ Triggering and a unique 100-screen Replay function help you quickly diagnose issues to minimize repair costs and downtime. These features make the oscilloscopes easy to use especially when diagnosing the most difficult problems like complex waveforms, induced noise, intermittent events and signal fluctuations or drift.

- Up to four independent floating isolated inputs, up to 1000 V
- Up to 5 GS/s real time sampling (depending on model and channels used)
- Deep memory: 10,000 points per trace waveform capture (scope mode)
- CAT III 1000 V/CAT IV 600 V safety rated instrument for industrial environments
- Up to seven hours of battery operation using BP291
- Large, bright color display is easy to view in nearly any environment
- Easy to store and view historical data and transfer to a PC via USB or Wifi
- Convenient battery access door for quick battery swaps in the field
- IP51 rating, dust and drip-proof
- Connect-and-View triggering for intelligent, automatic triggering on fast, slow and even complex signals
- Frequency spectrum using FFT-analysis
- Automatic capture and REPLAY of 100 screens
- ScopeRecord mode gives 30,000 points per input channel for low frequency signal analysis
- TrendPlot Paperless Recorder mode with deep memory for long-term automatic measurements
- 5,000 count DMM included in the 2-channel models

SAFETY RATED FOR INDUSTRIAL ENVIRONMENTS

CAT III 1000 V/CAT IV 600 V rate portable oscilloscopes with up to four independent floating isolated inputs

AUTOMATICALLY CAPTURE, VIEW AND ANALYZE COMPLEX WAVEFORMS

Connect-and-View™ triggering automatically displays waveforms without having to adjust amplitude, timebase and trigger settings.

EASILY VIEW MEASUREMENTS IN THE FIELD OR ON YOUR PC

Large, bright color display for easy in-the-field viewing and both USB and Wi-Fi data download options for analyzing data with FlukeView® software

Measure from mV to kV safely

Independently isolated inputs allow you to make measurements in mixed circuits having different ground references reducing the risk of accidental short circuits. Conventional bench oscilloscopes without special differential probes and isolation transformers can only reference measurements to line power earth ground. ScopeMeter 190 Series III test tools are engineered to cover a wide application range from mV to kV, so you're ready for anything from microelectronics to heavy-duty higher voltage electrical applications. 190 Series III 60MHz and 100MHz configurations include VPS421 100:1 probes for higher voltage applications, while the 200MHz and 500MHz configurations include VPS410-II 10:1 probes suitable for both microelectronics and higher voltage applications.

IP-51 rated for harsh environments

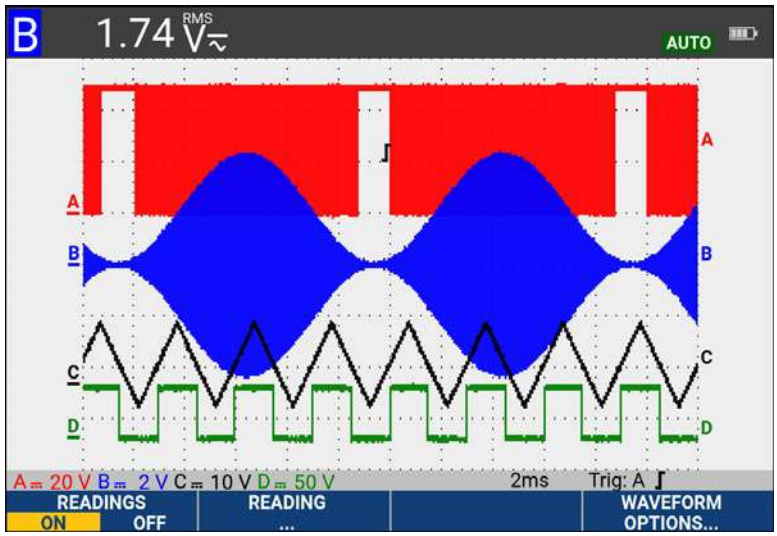
Rugged and shock-proof, ScopeMeter Test Tools are built for dirty, hazardous environments. With its sealed case, it can endure dust, drips, humidity and airborne pollutants. Every time you reach for ScopeMeter Test Tool you can be confident it will work reliably wherever your work takes you.

USB and Wi-Fi connectivity

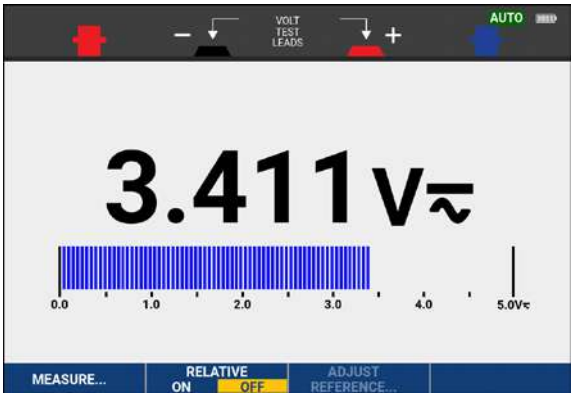
The Fluke 190 Series III offers two USB ports, electrically isolated from measurement input circuits allowing you to quickly and easily transfer data to a PC, archive and share waveforms with OEMs, colleagues and support staff, or store waveforms, screen captures and instrument setups onto USB memory devices for later use. Easily transfer saved files via USB stick, direct connection via the USB interface or optional Wi-Fi connectivity. These files can be used for further data handling or in FlukeView-2 Software to study waveforms in greater detail.

Connect-and-View triggering

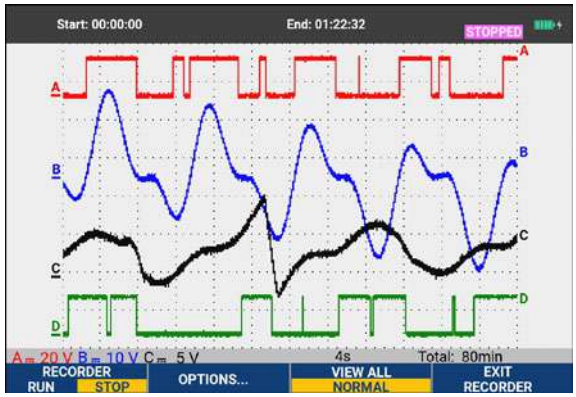
Connect-and-View triggering provides an instant, stable display without the need for adjusting settings. If you've used other scopes, you know how tricky triggering can be. If settings are incorrect, results can be unstable or incorrect. Connect-and-View automatically sets up correct triggering by recognizing signal patterns. Without touching a button, you get a stable, reliable and repeatable display of virtually any signal including motor drive and control signals. It's especially fast and convenient when you're measuring a number of test points in rapid succession.



Connect and View captures even the most complex signals without requiring additional setup



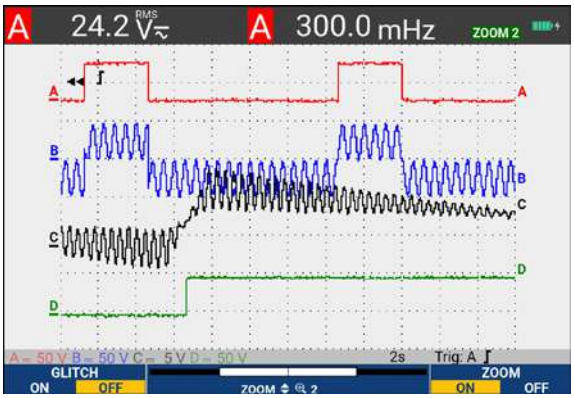
The built-in multimeter provides convenient precision measurements



Trend multiple measurements capturing signal intermittent events, signal drift or fluctuations

Built-in digital multimeter

Conveniently switch from waveform analysis to precise multimeter measurements using the built in 5000 count digital multimeter on two channel 190 Series III models. Measurement functions include Vdc, Vac, Vac+dc, resistance, continuity and diode test. Measure current and temperature using suitable shunt, probe or adapter with wide range of scaling factors.



Capture high-resolution waveform details over extended period using ScopeRecord™ mode

ScopeRecord™ mode for high resolution waveform recording

ScopeRecord memory stores up to 30,000 or more data points per channel, capturing fast intermittent events and glitches as short as 8 ns. (Two sets of multiple channel recordings can be stored to internal memory for later analysis.)

- Records events like UPS, power supply or motor start-up cycles
- With the Stop on Trigger mode, the ScopeMeter Test Tool automatically recognizes a power failure and stores the waveform data preceding it

TrendPlot paperless recorder—records up to 11 days to help you find intermittent faults

The toughest faults to find are those that happen only once in a while. These intermittent events can be caused by bad connections, dust, dirt, corrosion, or simply broken wiring or connectors. Line outages, dips, swells and interruptions, or the starting and stopping of a motor can also cause a machine to stop. You may not be around when it happens, but the Fluke 190 Series III ScopeMeter Test Tool will be.

- Plot minimum and maximum peak values and average over time
- Plot any combination of up to four readings including voltages, amps, temperature, frequency and phase for all inputs, all with time and date stamp to pinpoint faults

FlukeView™ 2 ScopeMeter software for documenting, archiving and analysis

Get more out of your ScopeMeter Test Tool with FlukeView 2 ScopeMeter Software for Windows.

- Documentation—transfer waveforms, screens and data to your PC for printing or importing data into a report
- Add text to ScopeMeter Test Tool settings—give operators guidance when recalling settings
- Archive—create a library of waveforms for easy reference, or waveform comparison
- Analysis—use cursors or export data to another analysis program

FlukeView-2 ScopeMeter software

Oscilloscope modes

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Vertical deflection							
Number of channels	2	2	2	2	4	4	4
Bandwidth	60 MHz	100 MHz	200 MHz	500 MHz	100 MHz	200 MHz	500 MHz
Rise time	5.8 ns	3.5 ns	1.7 ns	0.7 ns	3.5 ns	1.7 ns	0.7 ns
Number of scope inputs	2 input channels plus external trigger				4 input channels		
Channel architecture	All inputs fully insulated from each other and from ground. Inputs may be activated in any combination						
Input coupling	AC or DC, with ground level indicator						
Input sensitivity	With 10:1 probe, 20 mV to 1000 V/div With 100:1 probe, 200 mV to 10 kV/div Direct (1:1), 2 mV to 100 V/div						
Bandwidth limiter	20 MHz and 10 kHz						
Polarity	Normal, Inverted, Variable						
Input voltage	CAT III 1000 V/CAT IV 600 V rated, see General specifications for further details						
Vertical resolution	8 bit						
Accuracy at 4 s to 10 µs/div	5 mV/div to 100 V/div, ±(1.5 % + 6 counts) 2 mV/div, ±(1.5 % + 10 counts)						
Input impedance	1 MΩ (± 1 %) // 15 pF (± 2.25 pF)						

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Oscilloscope modes (continued)

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Horizontal							
Maximum real-time sample rate (sampled simultaneously)	625 MS/s (each channel)	1.25 GS/s (each channel)	2.5 GS/s (each channel)	5 GS/s (single channel) or 2.5 GS/s (dual channel)	1.25 GS/s (each channel)	2.5 GS/s (2ch) 1.25 GS/s (4ch)	5 GS/s (single ch) or 2.5 GS/s (2ch) or 1.25 GS/s (4ch)
Record length	Up to 10,000 samples per channel						
Time base range	10 ns/div to 4 s/div	5 ns/div to 4 s/div	2 ns/div to 4 s/div	1 ns/div to 4 s/div	5 ns/div to 4 s/div	2 ns/div to 4 s/div	1 ns/div to 4 s/div
	Time base in a 1-2-4-sequence Slower time/division settings using ScopeRecord™ Roll mode (see 'Recorder mode')						
Maximum record length	10,000 samples per channel in scope mode 30,000 points per channel in ScopeRecord™ Roll mode (see 'Recorder mode')						
Timing accuracy	± (0.01 % of reading + 1 pixel)						
Glitch capture	8 ns (10 µs/div to 2 min/div)						
Display and acquisition							
Display	133 mm x 90 mm (5.3 in x 3.5 in) full-color high brightness LCD						
Display modes	Any combination of channels; average on/off; replay.						
Visible screen width	12 divisions horizontally in scope mode						
Digital persistence modes	Off, short, medium, long, infinite and envelope mode						
Waveform mathematics	One (190-xx2) or two (190-x04) mathematical operations on 2 input channels (A and B, C and D): add, subtract, multiply; X-Y-mode; Frequency Spectrum using FFT						
Acquisition modes	Normal, Averaged, Auto, Single Shot, ScopeRecord™ roll, glitch capture, waveform compare with automatic "Pass/Fail testing"; Replay						
Trigger and delay							
Source	Input A, B or External (via meter input)				Input A, B, C or D		
Modes	Automatic, Edge, Pulse Width, N-Cycle, External (190-xx2)						
Connect-and-View™	Advanced automatic triggering that recognizes signal patterns, automatically sets up and continuously adjusts triggering, time base and amplitude. Automatically displays stable waveforms of complex and dynamic signals like motor drive and control signals. Can be switched off if preferred.						
Pulse width triggering (on channel A)	Pulse width qualified by time Allows for triggering <t, >t, =t, ≠ t, where t is selectable in minimum steps of 0.01 div or 50 ns						
Time delay	1 full screen of pre-trigger view or up to 100 screens (=1,200 divisions) of post-trigger delay						
Dual slope triggering	Triggers on both rising and falling edges alike						
N-cycle triggering	Triggers on N-th occurrence of a trigger event; N to be set in the range 2 to 99						

Oscilloscope modes (continued)

Automatic capture of 100 screens	
When in oscilloscope mode, the instrument ALWAYS memorizes the last 100 screens—no specific user setup required. When an anomaly is seen, the REPLAY button can be pressed to review the full sequence of screen events over and over. Instrument can be set up for triggering on glitches or intermittent anomalies and will operate in "baby-sit" mode capturing 100 specified events.	
Replay	Manual or continuous replay. Displays the captured 100 screens as a "live" animation, or under manual control. Each screen has date and time-stamp.
Replay storage	Ten sets of 100 screens each can be saved internally for later recall and analysis. Direct storage of additional sets on external flash memory drive through USB host port.
FFT—frequency spectrum analysis	
Shows frequency content of oscilloscope waveform using Fast Fourier Transform	
Window	Automatic, Hamming, Hanning or None
Automatic window	Digitally re-samples acquired waveform to get optimum frequency resolution in FFT resultant.
Vertical scale	Linear/Logarithmic (in volts or amps)
Frequency axis	Frequency range automatically set as a function of timebase range of oscilloscope
Waveform compare and pass/fail testing	
Waveform compare	Provides storage and display of a reference waveform for visual comparison with newly acquired waveforms. Reference is derived from an acquired waveform and can be modified in the oscilloscope.
Pass/Fail testing	In waveform compare mode, the oscilloscope can be set up to store only matching ("Pass") or only non-matching ("Fail") acquired waveforms in the replay memory bank for further analysis.
Automatic scope measurements	
V dc, V ac rms, V ac+dc, Vpeak max, Vpeak min, Vpeak to peak, A ac, A dc, A ac+dc, frequency (in Hz), rise time (using cursors), fall time (using cursors), Power Factor (PF), Watts, VA, VA reactive, phase (between 2 inputs A&B or C&D), pulse width (pos./neg.), duty cycle (pos./neg.), temperature °C, temperature °F (not for Japan), dBV, dBm into 50 Ω and 600 Ω, VPWM ac and VPWM(ac+dc) for measurement on pulse width modulated motor drives and frequency inverters, V/Hz ratio;	
Advanced power and motor drive functions	V/Hz ratio, Power Factor (PF), Watts, VA, VA reactive, V-PWM (ac) and V-PWM (ac+dc) for measurement on pulsewidth modulated motordrives and frequency inverters
Cursor measurements	
Source	On any input waveform or on mathematical resultant waveform (excl. X-Y-mode)
Dual horizontal lines	Voltage at cursor 1 and at cursor 2, voltage between cursors
Dual vertical lines	Time between cursors, 1/T between cursors (in Hz), voltage between markers, risetime with markers, falltime with markers; Vrms between cursors, Watts between cursors.
Single vertical line	Min-Max and Average voltage at cursor position; frequency and rms-value of individual frequency component in the FFT Resultant
Advanced functions	mA*s (current-over-time, between cursors); V*s (voltage over time, between cursors); W*s (energy, between cursors)
ZOOM	Ranges from full record overview to zoom in up to sample level, at any record length.

Meter modes

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Meter inputs	Via 4 mm banana inputs, fully isolated from scope inputs and scope ground				Via BNC scope inputs		
Number of readings	One at a time via DMM input				Up to 4 automatic scope measurements simultaneously		
Maximum resolution	5,000 counts				± 999 counts (frequency: 9999 counts)		
Input impedance	1 MΩ (± 1 %) // 14 pF (± 1.5 pF)				1 MΩ (± 1 %) // 15 pF (± 2.25 pF)		
Advanced meter functions	Auto/manual ranging, relative measurements (Zero reference), TrendPlot™ recording						
	The specified accuracy is valid over the temperature range 18 °C to 28 °C Add 10 % of specified accuracy for each degree C below 18 °C or above 28 °C						
Voltage							
V dc accuracy	± (0.5 % + 6 counts)				± (1.5 % + 6 counts)		
V ac true rms accuracy							
15 Hz to 60 Hz	± (1 % + 10 counts)				± (1.5 % + 10 counts)		
60 Hz to 1 kHz	± (2.5 % + 15 counts)				–		
60 Hz to 20 kHz	–				± (2.5 % + 15 counts)		
V ac+dc true rms accuracy							
15 Hz to 60 Hz	± (1 % + 10 counts)				± (1.5 % + 10 counts)		
60 Hz to 1 kHz	± (2.5% + 15 counts)				–		
60 Hz to 20 kHz	–				± (2.5 % + 15 counts)		
Voltmeter ranges	500 mV, 5 V, 50 V, 500 V, 1,100 V						
Resistance							
Ranges	500 Ω, 5 kΩ, 50 kΩ, 500 kΩ, 5 MΩ, 30 MΩ				–		
Accuracy	± (0.6 % + 6 counts)				–		
Other meter functions							
Continuity	Beeper on < 50 Ω (± 30 Ω)				–		
Diode test	Up to 2.8 V				–		
Current (A)	A dc, A ac, A ac+dc using an optional current clamp or shunt Scaling factors: 0.1 mV/A, 1 mV/A to 100 V/A and 400 mV/A						
Temperature	With optional accessories. Scale factors 1mV/°C or 1mV/°F						

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Recorder mode

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
ScopeRecord™ Roll Mode							
Dual or multiple input waveform storage mode, using deep memory							
Source and display	Input A, Input B, Dual All channels sampled simultaneously				Any combination of inputs, up to 4 channels. All channels sampled simultaneously		
Memory depth	30,000 data points per channel, each holding min/max pair of information						
Min/max values	Min/max values are created at samples that are measured at high sample rate ensuring capture and display of glitches.						
Recording modes	Single sweep, continuous roll; Start-on-Trigger (through external); Stop-on-Trigger (through external)				Single sweep, continuous roll; Start-on-Trigger (through any channel); Stop-on-Trigger (through any channel)		
Stop-on-trigger	ScopeRecord mode can be stopped by an individual trigger event, or by an interruption of a repetitive trigger signal, through any input channel (through External on 190-XX2 Series)						
Horizontal scale	Time from start, time of day						
Zoom	Ranges from full record overview to zoom in up to sample level						
Memory	Two multiple input ScopeRecord waveforms can be saved internally for later recall and analysis.						
ScopeRecord™ Roll mode sample rate and recording timespan							
Time base range	4 ms/div to 2 min/div						
Recorded timespan	4.8 sec to 40 hr						
Time/division in 'view all' mode	0.4 s/div to 4 h/div						
Glitch capture	8 ns						
Sample rate	125 MS/s						
Resolution	160 µsec ~ 4.8 sec						
Trendplot™ Recording							
Multiple channel electronic paperless recorder. Graphically plots, displays and stores results of up to four automatic scope measurements or a DMM-reading over time.							
Source and display	Any combination of scope measurements, made on any of the input channels, or DMM reading (2-channel instruments)						
Memory depth	19,200 points (sets) per recording. Each recorded sample point contains a minimum, a maximum and an average value, plus a date- and time-stamp.						
Ranges	Normal view: 5 s/div to 30 min/div; In view-all mode: 5 min/div to 48 hr/div (overview of total record)						
Recorded time span	Up to 22 days, with a resolution of 102 seconds; up to 5.5 days for 4 readings.						
Recording mode	Continuous recording, starting at 5 s/div with automatic time-scale compression						
Measurement speed	Three automatic measurements per second or more						
Horizontal scale	Time from start, time of day						
Zoom	Up to 64x zoom-out for full record overview, up to 10x zoom-in for maximum detail						
Memory	Two multiple input TrendPlot records can be saved internally for later recall and analysis.						
Cursor measurements—all recorder modes							
Source	Any waveform trace in any waveform display mode (Scope, ScopeRecord or TrendPlot)						
Dual vertical lines	Cursors may be used to identify Min, Max or Average value of any datapoint in a record, with time between cursors, time from start or absolute time.						

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General specifications

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Input voltage range							
Rated maximum floating voltage	CAT III 1000 V / CAT IV 600 V (maximum voltage between any contact and earth-ground voltage level)						
Probe input voltage VPS410-II	CAT III 1000 V / CAT IV 600 V (Maximum voltage between standard 10:1 probe tip and reference lead)						
Probe input voltage VPS421	CAT III 1000V / CAT IV 600V (Maximum voltage between probe tip or reference lead to GND, 2000V max between probe tip and reference lead)						
Maximum BNC input voltage	CAT IV 300 V (maximum voltage on BNC input directly)						
Maximum voltage on meter input	CAT III 1000 V / CAT IV 600 V (safety designed banana input connectors)				—		
Memory save and recall							
Memory locations (internal)	30 waveform memories plus 10 recording memories plus 9 screen copy memories						
30 waveform memories	Each memory can contain up to 2 or 4 waveforms plus corresponding setups.						
10 recording memories	Each may contain: a 100 Screen Replay sequence, or a ScopeRecord Roll-mode recording (2 or 4 traces), or a TrendPlot recording of up to 4 measurements						
External data storage	On PC, using FlukeView™-2 Software, or direct storage on external flash memory drive (maximum 32 GB) through USB host port						
Screencopies	On PC, using FlukeView™-2 Software, or internally (in instrument) which can be copied on to external flash memory drive as .BMP-file, through USB host port						
Volatility	Saving is done in non-volatile Flash-ROM and all data is secured, independent of battery or power status.						
Real-time clock	Provides date and time stamp information for ScopeRecord, for 100 Screen Replay sequences and for TrendPlot recordings.						
Case							
Design	Rugged, shock-proof with integrated protective holster. Handstrap and hangstrap included as standard. Kensington lock supported to lock down instrument when left unattended.						
Drip and dust proof	IP 51 according to IEC60529						
Shock and vibration	Shock 30 g, vibration (sinusoidal) 3 g / 0.03 g^2/Hz (Random), according to MIL-PRF-28800F Class 2						
Display size	133 mm x 90 mm (5.3 in x 3.5 in) LCD						
Resolution	1120 pixels x 765 pixels						
Brightness	User-adjustable, up to 300 cd/m^2						
Mechanical data							
Size	265 mm x 192 mm x 70 mm (10.5 in x 7.6 in x 2.8 in)						
Weight (including battery)	2.1 kg (4.6 lb)			2.2 kg (4.8 lb)			

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General specifications (continued)

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Power							
Line power	Universal mains adapter/battery charger BC190/830 included, with detachable 2-wire power cords 100 Vac to 240 Vac, ±10 %, 50-60 Hz						
Battery power	Re-chargeable Li-Ion battery (included). Battery swappable through easily accessible battery door at the rear of the instrument						
Battery type (incl.) and capacity [+opt. battery]	BP290: 10.8V, 2500 mAh [BP291 (5000 mAh) optional]			BP291: 10.8V, 5000 mAh			
Battery charge indicator	Battery has built-in status indicator for use with external charger, next to battery status indicator on instrument screen.						
Battery operating time (with backlight low)	Up to 3.5 using BP290 (included), up to 7 hours using BP291 (optional)			Up to 7 hours using BP291 (included)			
Battery charging time	2½ hours using BP290; 5 hours using BP291			Five hours for BP291			
Battery power saving functions	Auto 'power down' with adjustable power down time. Automatic 'display off' with adjustable power down time. On-screen battery power indicator						
Safety							
Compliance	EN61010-1-2001, Pollution Degree 2; IEC 61010-2-030: CAT IV 600 V / CAT III 1000 V						
Environmental							
Operating temperature	Battery discharging: 0 °C to 40 °C (32 °F to 104 °F) Battery charging: 0 °C to 40 °C (32 °F to 104 °F)						
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F)						
Humidity	0 °C to 10 °C (32 °F to 50 °F): noncondensing 10 °C to 30 °C (50 °F to 86 °F): 95 % (±5 %) 30 °C to 40 °C (86 °F to 104 °F): 75 % (±5 %) 40 °C to 50 °C (104 °F to 122 °F): 45 % (±5 %)						
Maximum operating altitude	CAT IV 600 V, CAT III 1000 V: up to 2000 m (6 600 feet) CAT IV 300 V, CAT III 600 V, CAT II 1000 V: up to 4000 m (13 000 feet)						
Maximum storage altitude	12 km (40,000 ft)						
Electro-Magnetic Compatibility (EMC)	IEC 61326-1: Industrial; CISPR 11: Group 1, Class A; Korea (KCC): Class A Equipment (Industrial Broadcasting and Communication Equipment): USA (FCC): 47 CFR 15 subpart C.						
Interfaces	Two USB-ports provided. Ports are fully insulated from instrument's floating measurement circuitry. USB-host port directly connects to external flash memory drive (up to 32 GB) for storage of waveform data, measurement results, instrument settings and screen copies. Alternatively, this USB-A port may be used to connect a WiFi Adapter for wireless PC connectivity. A mini-USB-B is provided which allows for interconnection to PC for remote control and data transfer under PC-control using FlukeView-2.						
Probe calibration output	Dedicated probe-cal output with reference contact provided, fully insulated from any measurement input channel. Generator Output: 1.225 Vpp / 500 Hz square wave						
Warranty	3 years on main instrument, 1 year on battery and accessories						

General specifications (continued)

	190-062	190-102	190-202	190-502	190-104	190-204	190-504
Included accessories							
Battery charger/ mains adapter	BC190/830						
Li-Ion battery pack	BP290 (10.8V, 2500 mAh)			BP291 (10.8V, 5000 mAh)			
Voltage probe sets Each set includes ground lead, hook clip; ground spring and probe tip insulation sleeve with VPS410-II-x.	2 pcs VPS421-x, ruggedized industrial-grade probes, 100:1, 150MHz with shrouded 4mm banana tip and large jaw alligator clips (one red, one blue)		2 pcs VPS410-II-x, 10:1 voltage probes, 500 MHz, (one red, one blue)		4 pcs VPS421-x, ruggedized probes, 100:1, 150 MHz, (red, blue, grey, green)	4 pcs VPS410-II-x, 10:1 voltage probes, 500 MHz, (one red, one grey, one blue, one green)	
Test leads	TL175 (one red, one black) with test pins				–		
Other	Li-Ion battery (BP290 or BP291, see above), Battery charger (BC190) with universal power cord set, Hangstrap, Handstrap (user selectable for left- or right hand use), download information for user manual and FlukeView®-2 demo package (with restricted functionality), and USB interface cable for PC connectivity. Feedthrough cable terminator, 50 Ω (one per channel, 190-50x only).						
Optional configuration	Each model is available as a 'boxed' version, described above, or with the optional SCC293 set included. SCC293 comprises: CXT293 rugged protective carrying case, full-version FlukeView PC software (activation code) and a WiFi dongle for wireless PC-connectivity using FlukeView-2 software.						
Optional accessories	SCC293, VPS101 – 1:1 voltage probe; VPS510-x – wide bandwidth compact probes; i400s–current clamp; HH290–hanging hook; CXT293–protective carrying case; TRM50–BNC Feedthrough cable terminator, 50 Ω, safety designed; EBC290–battery charging bay						

Ordering information

Fluke 190-504-III Color ScopeMeter, 500 MHz, 4 channels

Fluke 190-504-III-S Color ScopeMeter, 500 MHz, 4 channels, with SCC-293 kit included

Fluke 190-204-III Color ScopeMeter, 200 MHz, 4 channels

Fluke 190-204-III-S Color ScopeMeter, 200 MHz, 4 channels, with SCC-293 kit included

Fluke 190-104-III Color ScopeMeter, 100 MHz, 4 channels

Fluke 190-104-III-S Color ScopeMeter, 100 MHz, 4 channels, with SCC-293 kit included

Fluke 190-502-III Color ScopeMeter, 500 MHz, 2 channel plus DMM/Ext, input

Fluke 190-502-III-S Color ScopeMeter, 500 MHz, 2 channel plus DMM/Ext, input, with SCC-293 kit included

Fluke 190-202-III Color ScopeMeter, 200 MHz, 2 channels plus DMM/Ext. input

Fluke 190-202-III-S Color ScopeMeter, 200 MHz, 2 channels plus DMM/Ext. input, with SCC-293 kit included

Fluke 190-102-III Color ScopeMeter, 100 MHz, 2 channels plus DMM/Ext. input

Fluke 190-102-III-S Color ScopeMeter, 100 MHz, 2 channels plus DMM/Ext. input, with SCC-293 kit included

Fluke 190-062-III Color ScopeMeter, 60 MHz, 2 channels plus DMM/Ext. input

Fluke 190-062-III-S Color ScopeMeter, 60 MHz, 2 channels plus DMM/Ext. input, with SCC-293 kit included

Accessories

BC190 Mains adapter/battery charger

BP290 Li-ion battery pack, 2500 mAh

BP291 Li-ion battery pack, 5000 mAh

EBC290 External battery charger for BP290 and BP291 (uses BC190 mains adapter)

CXT293 Rugged Protective Carrying Case, IP67 rated

HH290 Hanging Hook for 190 Series II and III instruments

VPS510-R Electronic Voltage Probe set, 10:1, 500 MHz, one set red

VPS510-G Electronic Voltage Probe set, 10:1, 500 MHz, one set grey

VPS510-B Electronic Voltage Probe set, 10:1, 500 MHz, one set blue

VPS510-V Electronic Voltage Probe set, 10:1, 500 MHz, one set green

VPS410-II-G Industrial Voltage Probe set, 10:1, one set grey

VPS410-II-R Industrial Voltage Probe set, 10:1, one set red

VPS410-II-B Industrial Voltage Probe set, 10:1, one set blue

VPS410-II-V Industrial Voltage Probe set, 10:1, one set green

VPS421-R High working voltage ruggedized probe set, 100:1, 150 MHz, (bicolored, red/black)

VPS421-G High working voltage ruggedized probe set, 100:1, 150 MHz, (bicolored, grey/black)

VPS421-B High working voltage ruggedized probe set, 100:1, 150 MHz, (bicolored blue/black)

VPS421-V High working voltage ruggedized probe set, 100:1, 150 MHz; (bicolored green/black)

MP1-MAGNET PROBE 1–Magnet Probes for 4 mm banana, Set of 4

SCC293 FlukeView-2 ScopeMeter Software package (full version) with CXT293 Carrying Case and WiFi dongle

TL175 TwistGuard™ safety designed test leads set (1 red, 1 black)

TRM50 BNC Feedthrough 50 Ω terminator (set of 2 pieces, black)

AS400 Probe Accessory Extension Set for VPS410-series probes

RS400 Probe Accessory Replacement Set for VPS410-series probes

RS421 Probe accessory replacement set for VPS421-series series probes

RS500 Probe Accessory Replacement Set for VPS500-series probes

FlukeView-2 Software for ScopeMeter 190 Series III Test Tools

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