FLUKE®

Oscilloscopes for field applications

ScopeMeter® Test Tools provide:

- From 20 to 200 MHz bandwidth and up to 2.5 GS/s real-time sampling
- Large, high-resolution screen
- Digital Persistence and fast display update rate
- Fully isolated inputs and 4 hours battery operating time

All this power

ScopeMeter® 190 Series: Speed, performance and analysis power

For the more demanding applications, the ScopeMeter 190 Series high-performance oscilloscopes offer specifications usually found on top-end bench instruments. With up to 200 MHz bandwidth, 2.5 GS/s real-time sampling and a deep memory of 27,500 points per input they're ideal for engineers who need the full capabilities of a high-performance oscilloscope in a handheld, battery powered instrument.

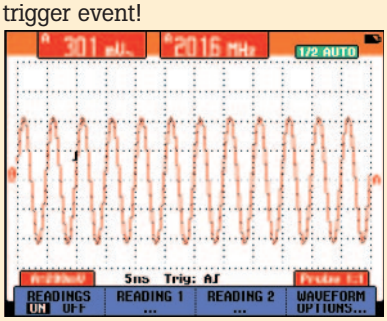
- Dual-input – 200, 100 or 60 MHz bandwidth
- Up to 2.5 GS/s real-time sampling per input
- Connect-and-View™ automatic triggering and a full range of manual trigger modes
- Digital Persistence for analyzing complex dynamic waveforms like on an analog scope
- Fast display update rate for seeing dynamic behavior instantaneously
- Automatic capture and replay of 100 screens
- 27,500 points per input record length using ScopeRecord mode
- TrendPlot paperless chart recorder for trend analysis up to 22 days
- Up to 1000 V independently floating isolated inputs
- Waveform reference for visual comparisons and automatic pass/fail testing of waveforms
- Vpwm function for motor drive and frequency inverter applications.
- 1000 V CAT II and 600 V CAT III safety certified
- Four hours rechargeable NiMH battery pack

FLUKE®

in your hand

A choice of bandwidth
The ScopeMeter 190C and 190B Series offer up to 200 MHz bandwidth for capturing high-frequency signals found in today's state-of-the-art electronics. For less demanding applications, there are also 100 MHz and 60 MHz models. You still get the same advanced functionality without paying for bandwidth you don't need.

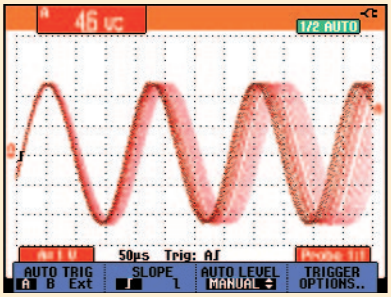
See what's really happening
With a maximum real-time sampling rate of 2.5 GS/s per input, you can see what really happens, with 400 ps resolution. Both inputs have their own digitizer, so you can simultaneously acquire two waveforms and analyze them with the highest resolution and detail. If an anomaly flashes by on the screen, just press the Replay button to see it again. And thanks to the wider screen, you will always see a 12 divisions time window – giving a far better overview of what's happening both before and after the trigger event!



High sampling rates give you the required resolution for detailed signal analysis.

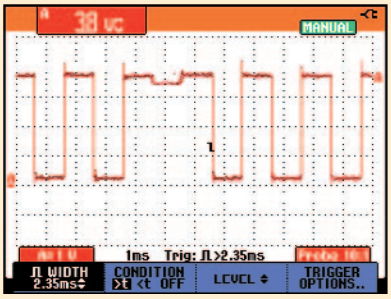
Easier identification of traces, everywhere
The full-color display makes identification of individual waveforms easier, particularly when displaying large amplitude or multiple overlapping waveforms on screen. On-screen color labels, measurements and warnings are clearly linked to specific waveforms. The bright, high-contrast display allows for clear reading under varying light conditions. And still a 4 hour battery operation time is assured!

See dynamic signal behavior instantaneously
The Digital Persistence mode (Fluke 190C) helps to find anomalies and to analyze complex dynamic signals by showing the waveforms amplitude distribution over time. Digital Persistence uses multiple intensity levels and user selectable decay time – it's as if you're looking at the display of an analog, real time oscilloscope! The fast display update rate that's standard on all models reveals signal changes instantaneously, useful for instance when making adjustments to a system under test.



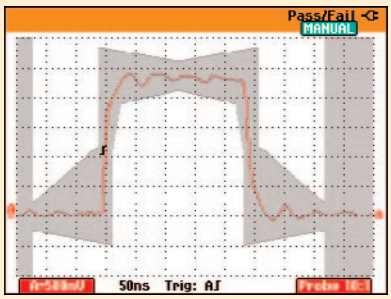
Digital Persistence mode gives analog scope like display of complex and modulated signals.

Advanced trigger modes
A wide choice of automatic and manual trigger modes gives you the flexibility to capture just about any signal you'll encounter. Connect-and-View™ triggering is ideal for fast and easy checking of multiple test-points. The manual modes include time delay, video and pulse width triggering. A fully isolated external trigger input is included for troubleshooting time relationships between two input signals synchronized to a third signal.



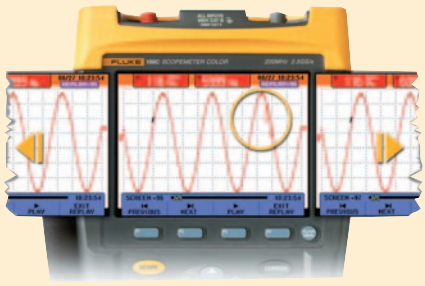
Pulse width triggering allows you to find anomalies like missing pulses

Waveform Pass/Fail Testing
"Waveform reference" allows an acquired trace to be stored and designated "reference trace" for visual comparisons, or it can be used as the reference for automatic "Pass/Fail" testing (190C). Up to 100 individually matching ("Pass") or non-matching ("Fail") waveforms can be stored in the replay memory, allowing you to monitor your system's behavior over a long period of time, without the need for you to be present!



Pass/Fail testing of actual signal against a reference template

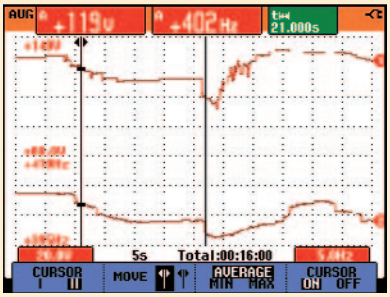
Automatic capture and replay of 100 screens
Scope users know how frustrating it is to see an one-time anomaly flash by never to be seen again. Not with the ScopeMeter 190 Series! Now you can look back in time with a touch of the replay button. In normal use, the instrument continuously memorizes the last 100 screens. Each time a new screen is acquired, the oldest is discarded. At any moment, you can "freeze" the last 100 screens and scroll through picture-by-picture or replay as a "live" animation. Cursors can be used for further analysis. You can even use the advanced trigger capabilities to capture up to 100 specific events. Two sets of 100 captured screens with individual time stamps can be stored for later recall or download to a PC.



ScopeMeter® 190 Series

Use TrendPlot™ to help find intermittents, fast

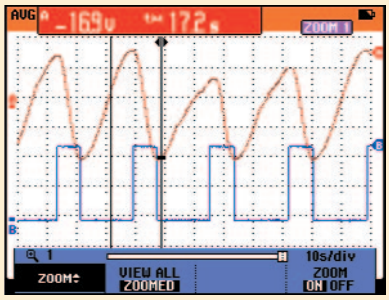
The toughest faults to find are those that happen only once in a while – intermittents. They can be caused by bad connections, dust, dirt, corrosion or simply broken wiring or connectors. You may not be around to see it – Fluke's ScopeMeter will. In this "paperless recorder" mode, you can plot the minimum and maximum peak values and average over time – up to 22 days. The two inputs can plot any combination of volts, amps, temperature, frequency and phase – with time and date stamp – to help lead you to the cause of those faults quickly.



Cursors and zoom featured by the 190 Series help you to analyze the captured TrendPlot.

Deep memory for high-resolution ScopeRecord™

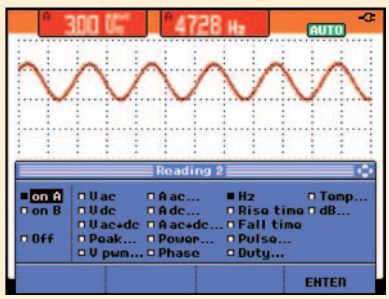
The ScopeRecord memory stores 27,500 points per input or more, for high-resolution recording of events up to 48 hours, and captures fast intermittents and glitches as short as 50 ns. This continuous roll mode, for example, stores events like motion profiles, UPS, power supply and motor start-ups. All models also have a "Stop-on-Trigger" in the ScopeRecord mode. This allows the ScopeMeter to store waveform data until the instrument is triggered or until a repetitive trigger signal is interrupted. This way, the instrument will, for example, automatically recognize a power failure and store the waveform data preceding it. And with 100 x zoom, you can look at the smallest details, like individual power cycles. Two of these 27,500 point recordings can be stored for later analysis.



Use the 27,500 points memory of ScopeRecord and zoom in for maximum detail.

Analysis power

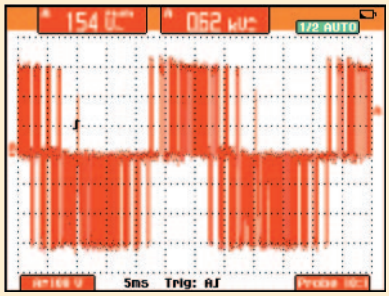
For analysis of waveforms, ScopeRecords and TrendPlot recordings, the ScopeMeter 190C and 190B features 30 automatic measurements, cursors, zoom and real-time clock. The analysis can be made directly or later when back in the office. Up to two recordings and 10 scope screens can be stored for analysis, print-out or download to a PC.



A wide variety of measurements can be made on either Channel A or B.

Measure from mV to kV – fully isolated and safely!

The ScopeMeter 190C and 190B series have three independently floating isolated inputs. While conventional oscilloscopes can only make measurements referenced to the line power ground, measurements on each of the Fluke ScopeMeter 190 series inputs can be referenced to a different "low" level. This enables measurements in mixed circuits having different ground references, and also eliminates the risk of accidental ground short circuits. All inputs are safety certified for measurements in 1000 V CAT II and 600 V CAT III environments. And the standard probes cover a wide application range from mV to kV, making the 190C and 190B ScopeMeter ideal for micro electronics to electrical applications.



Vpwm measures effective voltage on motor drive and frequency inverter outputs.

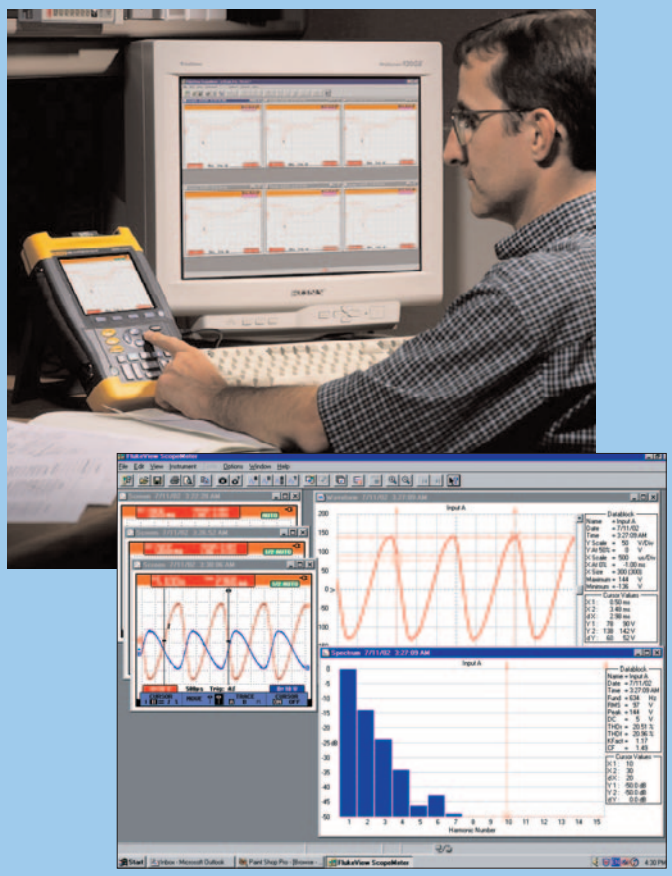
Many more new functions

- Variable gain on channel A helps you compare signals on the two inputs.
- The Vpwm measurement is for measuring the effective rms output voltage of variable speed motor drives and frequency inverters.
- The high-sensitivity setting of 2 mV/div allows for measurements on low-level signals, that are hard to make with the average oscilloscope. (Fluke 190C)
- For medical imaging diagnostics or high-resolution video applications, an optional configuration is available with current over time (mAs), high-resolution video triggering (up to 2800 lines) and more.

FlukeView® Software for documenting, archiving and analysis

FlukeView® for Windows® helps you get more out of your ScopeMeter® by:

- **Documenting** – transfer waveforms, screens and measurement data from the ScopeMeter to a PC. Print or import the data into your report.
- **Adding user text to individual ScopeMeter settings** – providing guidance to the operator when recalling a set-up.
- **Archiving** – create a library of waveforms with your comments for easy reference and comparison. Store complete Replay cycles for analysis of waveform changes. Store complete memory content of the ScopeMeter on your PC for back-up purposes.
- **Waveform Compare** – store reference waveforms, add operator instructions, and send both to the ScopeMeter for waveform comparison and "Pass/Fail" testing.
- **Analysis** – use cursors, perform spectrum analysis or export data to other analysis programs.



ScopeMeter test tools are connected to a PC via an optically-isolated RS-232 interface cable. Software and cable come as separate items or as part of a special value kit. This kit also includes a protective hard shell carrying case for safe and convenient storage of instrument and accessories.

ScopeMeter® Special Value Kit

FlukeView Software and the optically isolated serial interface cable come as separate items, or as part of the special value SCC-Kit. This kit contains:

- FlukeView Software (SW90W)
- Optically Isolated Interface Cable (PM9080)
- Protective Hard-Shell Carrying Case (C190 or C120)

The SCC-kit can be ordered separately, or with the main instrument by adding an "S" to the main instrument type number, e.g., Fluke 199CS (see Ordering Information on back cover for more detailed information).

SCC190 Kit

SCC120 Kit

As simple as

ScopeMeter® 120 Series

The compact ScopeMeter 120 Series is the rugged solution for industrial troubleshooting and installation applications. It's a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control and power systems.

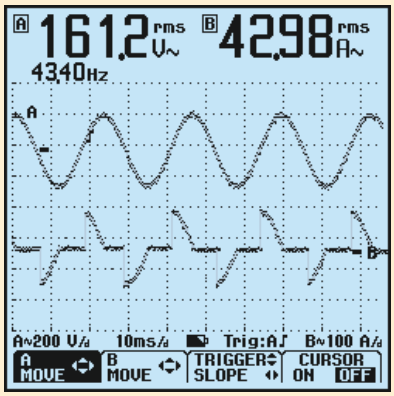
- Dual-input 40 MHz or 20 MHz digital oscilloscope
- Two 5,000-count true-rms digital multimeters
- A dual-input TrendPlot™ recorder
- Connect-and-View™ trigger simplicity for hands-off operation
- Shielded test leads for oscilloscope, resistance and continuity measurements
- 10:1 Voltage Probe included with Fluke 124 for reduced circuit loading
- Up to seven hours battery operation
- 600 V CAT III safety certified
- Optically isolated RS-232 interface
- Rugged compact case

In today's complex systems, a meter measurement just doesn't give enough detail to determine the cause of a fault. Signal anomalies, dropouts and glitches that might cause a machine to go down are best displayed with an oscilloscope.

The ScopeMeter 124 and 123 meet today's need of simultaneously measuring and checking waveforms. The unique Connect-and-View™ triggering automatically displays stable waveforms of virtually any signal. It really is as easy as one-two-three!

A three-in-one tool

ScopeMeter 120 Series combines a 40 or 20 MHz dual input digital storage oscilloscope, two true-rms digital multimeters and a dual input TrendPlot™ recorder all in a compact, battery powered instrument. Leave all other test tools behind because the ScopeMeter 120 Series test tool is the only one you'll need.

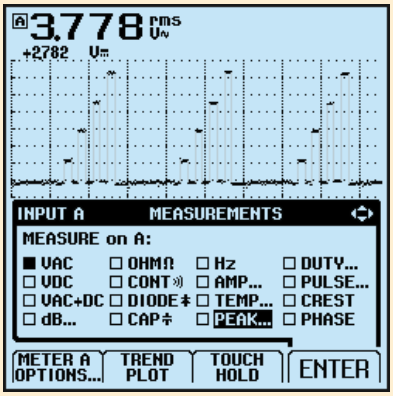


Dual-input measurement shows both meter reading and waveform at the same time.

ScopeMeter 120 Series test tools include innovative shielded test leads covering all scope and meter functions. The bright display shows scope waveforms and meter readings in one screen. The integrated holster stands up to the roughest treatment.

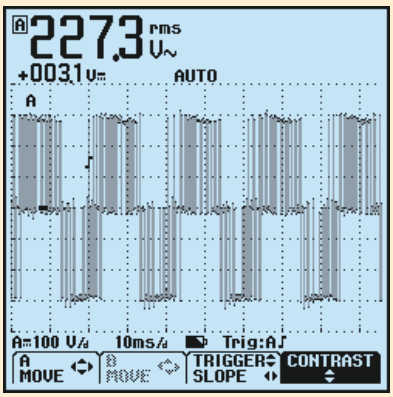
one-two-three

The confidence to do a better job
Working under time pressure and in cramped or difficult-to-reach locations means you want to focus on the job at hand, not on the test tool in your hand. That's why the ScopeMeter 120 Series has Connect-and-View automatic triggering. You don't have to worry about triggering and instrument settings and you have all the information on screen to do the job right.



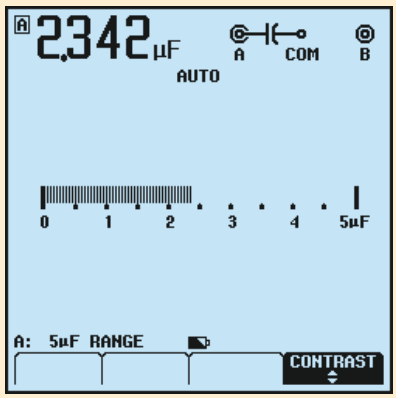
Switch-on and open measure menu to select from 26 scope and meter measurements.

Connect-and-View™ triggering for an instant, stable display
Scope users know how difficult triggering can be. Incorrect settings show unstable and sometimes incorrect results. Fluke's unique Connect-and-View recognizes signal patterns and automatically sets up correct triggering. It provides a stable, reliable and repeatable display of virtually any signal, including motor drive and control signals, without touching a button. Signal changes are instantly recognized and settings adjusted for a stable display. Benefit from the speed and convenience when measuring a number of test-points in quick succession.



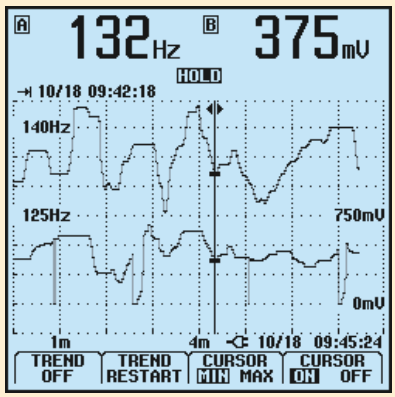
Connect-and-View captures even the most complex motor drive signals.

One test lead measures all
High frequency waveform, meter, capacitance and resistance measurements as well as continuity checks are all covered by the shielded test leads. No time wasted finding or swapping leads. The included accessories allow hook-up at test objects of every dimension.



Check the starting capacitor of a motor with the ScopeMeter 120 Series.

Use TrendPlot™ to help find intermittents, fast
The toughest faults to find are those that happen only once in a while – intermittents. They can be caused by bad connections, dust, dirt, corrosion or simply broken wiring or connectors. Other factors, like line outages and sags or the starting and stopping of a motor, can also cause a machine to stop. You may not be around to see it – your Fluke ScopeMeter will. In this "paperless recorder" mode, you can plot the minimum and maximum peak values and average over time – up to 16 days. The two inputs can plot any combination of volts, amps, temperature, frequency and phase – with time and date stamp – to help lead you to the cause of those faults quickly.



Cursors featured in the Fluke 124 can help analyze the captured Trendplot.

Battery powered mobility
Up to seven hours of battery operation frees you from mains outlets for true on-the-move working. The handheld format and the weight of just 1.2 kg make the instrument easy to carry and to fit comfortably in your hand. The rugged and drip proof case assures long life and reliable operation in the harshest industrial environments. (See technical specifications for details on battery life.)

Floating measurements, safety certified
While conventional oscilloscopes can only make measurements referenced to power line ground, the Fluke 120 Series makes floating measurements so there's no risk of an accidental ground short circuit when making a connection.

The Fluke ScopeMeter 120 Series test tools and the included shielded test leads are safety certified for measurements on 600 V CAT III industrial power systems. Using the VPS40 probe, measurements up to 1000 V CAT II are fully supported. Via the optically isolated RS-232 interface, the ScopeMeter 120 can be safely connected to a printer for direct print-out or to a PC for later analysis and documentation using FlukeView® Software (for additional details about FlukeView software see page 5).

FLUKE®

Selection Table

	190C ScopeMeter Series		190B ScopeMeter Series			120 ScopeMeter Series	
	Fluke 199C	Fluke 196C	Fluke 199B	Fluke 196B	Fluke 192B	Fluke 124	Fluke 123
Bandwidth	200 MHz	100 MHz	200 MHz	100 MHz	60 MHz	40 MHz	20 MHz
Max Real Time Sample Rate	2.5 GS/s	1.0 GS/s	2.5 GS/s	1.0 GS/s	0.5 GS/s	25 MS/s	25 MS/s
Max Record Length (per input)	1200 Points					512 Points (min/max pairs)	
Number of Inputs	2 Scope and 1 DMM (Isolated)					2 Scope Or DMM	
Input Sensitivity	2 mV/div. to 100 V/div.		5 mV/div. to 100 V/div.			5 mV/div. to 500 V/div.	
Independently Isolated floating Inputs	●					–	
Display & Display Modes							
Display	Color		Monochrome			Monochrome	
Persistence	Digital with variable decay		On/Off			–	
Envelope Mode	●					●	
Waveform Compare	●					–	
Pass/Fail Testing	●		–			–	
Triggering							
Connect-and-View™ Trigger	●					●	
Edge, Single, Free Run	●					●	
Video	●					●	
Video Lines	●					●	
Pulse Width	●					–	
External	●					With ITP 120 Option	
Advanced Functions							
Cursors	●					●	–
Zoom	●					–	
Dual Input Trendplot™	●					●	
ScopeRecord™ Mode	●					–	
Automatic Capture and Replay last 100 Screens	●					–	
Waveform Mathematics	●					–	
Save Setups & Screens	10					20	10
True RMS Multimeter	5000 Counts Volts, Amps, Ohms, Continuity, Diode, Temp						
Safety, Power & Warranty							
Safety (EN61010-1)	1000 V CAT II / 600 V CAT III					600 V CAT III *(1)*	
Battery	4 hr Ni-MH					7 hr NiMH	5 hr NiCd
Line Power	Adapter / battery charger included						
PC Printer Interface	Using Optional Optically Isolated RS-232 adapter cable PM9080						
Warranty	3 Year on main instrument. 1 year on standard accessories						

(1) Max Input voltage 1000 V CAT III with VPS40, 40 MHz 10:1 Voltage probe.

Ordering Information

Fluke 199C	Color ScopeMeter 200 MHz / 2.5 GS/s
Fluke 199C/S	Color ScopeMeter 200 MHz / 2.5 GS/s with SCC190
Fluke 196C	Color ScopeMeter 100 MHz / 1 GS/s
Fluke 196C/S	Color ScopeMeter 100 MHz / 1GS/s with SCC190
Fluke 199B	ScopeMeter 200 MHz / 2.5 GS/s
Fluke 199B/S	ScopeMeter 200 MHz / 2.5 GS/s with SCC190 kit
Fluke 196B	ScopeMeter 100 MHz / 1 GS/s
Fluke 196B/S	ScopeMeter 100 MHz / 1 GS/s with SCC190 kit
Fluke 192B	ScopeMeter 60 MHz / 500 MS/s
Fluke 192B/S	ScopeMeter 60 MHz / 500 MS/s with SCC190 kit
Fluke 124/S	Industrial ScopeMeter, 40 MHz, with SCC120 kit
Fluke 124	Industrial ScopeMeter, 40 MHz
Fluke 123/S	Industrial ScopeMeter, 20 MHz, with SCC120 kit
Fluke 123	Industrial ScopeMeter, 20 MHz
PM9080	Optically Isolated RS232 adapter/cable
SW90W	FlukeView ScopeMeter Software for Windows
VPS40	40 MHz, 10:1 probe set for use with Fluke 120 Series
BP120	Rechargeable NiCd Battery for use with Fluke 120 Series
BP130	Rechargeable NiMH Battery for use with Fluke 120 Series
BP190	Rechargeable NiMH Battery for use with Fluke 190 Series
SCC190	FlukeView Software + Cable + Case kit for Fluke 190 and 190C Series
SCC120	Software - Cable - Case kit for Fluke 120 Series

- ScopeMeter test tools come standard with a complete accessory package including line voltage adapter and battery pack (installed), a set of voltage probes (one red and one grey) and test leads.
- Optional accessories ordering information can be found in the technical datasheet or on the Fluke web site.

Take an on-line demonstration of ScopeMeter Series test tools or download a fully functional software simulation based on the real instrument. Go to **www.fluke.com/scopemeter**.

Fluke. *Keeping your world up and running.*

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