

# Fluke 190-502/S ScopeMeter® Test Tool



## Tính năng chính

The Fluke ScopeMeter 190-502/S combine the highest safety ratings and rugged portability with the high performance of a bench oscilloscope. Designed for plant maintenance engineers and technicians, these tough ScopeMeter test tools go into harsh, dirty, and hazardous industrial conditions to test everything from micro-electronics to power electronics applications.

The ScopeMeter 190-502/S is the one test tool you will reach for to tackle just about any troubleshooting task. They include a multimeter, TrendPlot™ and ScopeRecord™ roll paperless recorder modes and hands free operation with Connect-and-View™ triggering, and much more:

- Two electrically isolated inputs
- CAT III 1000 V / CAT IV 600 V safety rated
- 500 MHz bandwidth model
- 5 GS/s
- Deep memory: 10,000 samples per channel waveform capture so you can zoom in on the details
- Dedicated 5000 Count digital multimeter
- Connect-and-View continuous auto-trigger, single shot, pulse width, and video triggering
- ScopeRecord roll mode, capture waveform sample data for up to 48 hours
- TrendPlot, trend measurement readings for up to 22 days
- Advanced automatic measurements, power (V<sub>pwm</sub>, VA, W, PF) and time (mAs, V/s, w/s)
- IP-51 rated for dust and drip proof to withstand harsh environments
- Isolated USB ports for memory devices and PC connectivity
- Li-Ion battery for extended operating timespan: up to 4 hours (BP290 included standard) or up to 8 hour with optional BP291
- Charge spare battery using optional external battery charger (EBC290)
- Easy-access battery door to make it easy to swap batteries
- A handy slot to tether and lock down the oscilloscope while unattended using a standard Kensington® lock

## Tổng quan sản phẩm: Fluke 190-502/S ScopeMeter® Test Tool

### Fluke 190-502/S - 20 years of ScopeMeter® Test Tool Innovation

As the first two-channel portable scope safety rated CAT III 1000 V / CAT IV 600 V, the Fluke ScopeMeter 190-502/S combines an unprecedented level of performance, ruggedness, and portability with 500 MHz bandwidth and real-time sampling rates up to 5 GS/s and 200 ps resolution to capture noise and other disturbances. This model features deep memory up to 10,000 samples per channel; so you can examine very small parts of the waveform in detail, and it is IP-51 rated to withstand dust, drips, humidity, and wide temperature variations. Fluke ScopeMeter test tools are hand-held battery operated, designed to meet the demands of field service professionals.

### Gain Four Times the Diagnostic Power Plus CAT IV Safety Rating

The Fluke ScopeMeter 190-502/S portable scope is double-insulated two-channel floating oscilloscopes safety rated for measurements in CAT III 1000 V/CAT IV 600 V environments.

### Three-dimensional testing for industrial systems

Inspect input signals, output feedback loops or safety interlocks simultaneously to find a range of problems including:

- Circuit voltage/current overloading
- Signal timing measurements and synchronization issues

- Attenuation/input impedance mismatch
- Signal fluctuation/drift

### **Three-phase testing for diagnosing VSD, power inverters, and converters**

- Test for harmonics, transients and loads at the three-phase power input
- Troubleshoot DC to AC converters for faulty IGBT gates or filter circuits
- Test PWM output for reflections and transients or voltage unbalance

### **Safely measure from mV to kV**

Standard probes that cover a wide application range from mV to kV prepare you for anything from micro-electronics to heavy duty medium voltage electrical applications. Independent isolated inputs eliminate the risk of accidental ground short circuits by allowing you to make measurements in mixed circuits with separate ground references.

### **Take on the harshest conditions with the only IP-51-rated Scope on the Market**

Rugged and shock-proof, all ScopeMeter portable oscilloscopes are built for harsh environments. Their sealed cases protect them from dust, water vapor, drips, humidity and airborne pollutants ensuring reliable accurate performance every time you need them.

### **Built in multimeter to quickly and conveniently perform precise measurements**

Built-in digital multimeter 2-channel models with isolated dual input scope and dedicated digital multimeter. Conveniently switch from waveform analysis to precise multimeter measurements using the built in 5000 count digital multimeter. 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.

### **Work a Full Shift on a Single Charge**

New high-performance batteries take advantage of Li-ion technology to keep you going strong for up to four hours. And with the easy-access battery door you can make battery swaps fast.

### **Capture and Share Waveforms Easily with New USB connectivity**

Two USB ports, electrically isolated from measurement input circuits offer you easy USB connectivity to a PC or USB memory devices. Store unlimited waveform, screen captures or instrument setups to a USB memory device. Connect to a PC USB interface to transfer and archive critical measurement data using FlukeView software for windows.

### **See a Stable Display Instantly with Connect-and-View™ Triggering**

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. Expedites measuring several test-points in rapid succession.

### **Record Up to 48 Hours of High-Resolution Waveforms with ScopeRecord™**

ScopeRecord memory stores up to 30,000 data points per channel, capturing intermittents and fast glitches. (Two sets of multiple-channel recordings can be stored for later analysis.)

- Stores events like motion profiles, UPS, power supply, and motor start-ups
- With the Stop-on-Trigger mode, the ScopeMeter 190-502/S automatically recognizes a power failure and stores the waveform data preceding it
- With the waveform zoom (up to 100x) you can look at the smallest details, like individual power cycles

### **Record up to 22 days with TrendPlot™ paperless recorder to find intermittent faults**

Intermittent faults can be caused by bad connections, dust, dirt, corrosion, or simply broken wiring or connectors. Line

outages, sags, or starting and stopping a motor can also cause a machine to stop. The TrendPlot function in the Fluke ScopeMeter test tool helps find those faults by:

- Plotting minimum and maximum peak values and average over time up to 22 days
- Plotting any combination of voltages, amps, temperature, frequency and phase for all four inputs, all with time and date stamp to pinpoint faults

### Tektronix THS3000 Handheld Oscilloscope

The Tektronix THS3000 Handheld Oscilloscope has been discontinued, but customers can find a nearly identical replacement with the Fluke 190 ScopeMeter® Test Tool.

See how the models compare:

	THS3000	Fluke 190 ScopeMeter	Feature / Capability Differences
<b>Platform</b>	The Tektronix THS 3000 and Fluke 190 ScopeMeter Test Tool share the same electronics, with some feature differences highlighted below		
<b>Sampling size</b>	2.5 GS/s max real time sampling rate; 5 GS/s max sequential sampling rate	2.5 GS/s max real time sampling rate	Real time sampling rate to capture all the details for troubleshooting electronic circuits
<b>Safety rating</b>	CAT III	CAT IV	Fluke 190 Series II covers all application installations from CAT II to CATIV
<b>IP rating according to IEC529</b>	IP 41	IP 51	Fluke 190 Series with IP51 rating is less susceptible to harm caused by environmental conditions no matter where it is used in a lab or the field
<b>Software</b>	OpenChoice	FlukeView®	FlukeView® makes it easy to extract, analyze and document waveforms
<b>Probe size</b>	Lab size	Industrial size	Optional Fluke VPS-510-x Probes offer same size and performance as standard lab grade scope probe

## Thông số kỹ thuật: Fluke 190-502/S ScopeMeter® Test Tool

Specifications	
Bandwidth	500 MHz
Number of channels	500 MHz: 2 channels
Real-time sample rate	5 GS/s
Inputs	2 scope plus DMM input
Independently floating isolated inputs	Up to 1000 V CAT III/600 V CAT IV between inputs, references and ground
Input sensitivity	2 mV-100 V/div
Trigger types	Connect-and-View™, Free Run, Single Shot, Edge, Delay, Dual Slope, Video, Video Line, Selectable pulse width, N-Cycle
Trigger source	Any scope input channel, or external via DMM input
Glitch capture	8 ns
Scope measurements	Cursor: 7
	Automatic: 30

Maximum record length	ScopeRecord mode: 30,000 pts
	Scope mode: 10,000 pts per input
Persistence	Digital persistence giving analog oscilloscope-like waveform decay
Waveform compare	Waveform reference with automatic Pass/Fail testing
<b>DMM Specification</b>	
Meter inputs (also used as External Trigger Input for the Oscilloscope Mode)	4 mm banana inputs, fully isolated from scope inputs and from scope ground
Maximum resolution	5000 counts
Measurements	VDC, VAC rms, VAC + DC rms, Resistance, Continuity, Diode Test, Current (through clamp or shunt), Temperature °C or °F (using optional converter)
Memory	Screen + Setup: 30
	Recording: 10
Display	153 mm full color LCD with fast update rate
<b>Environmental Specifications</b>	
Operating temperature	0°C to 40°C Including Batteries
	0°C to 50°C Excluding Batteries
Storage temperature	-20°C to +60°C
Operating altitude	Up to 2,000 m (6666 ft) for CAT IV 600 V, CAT III 1000 V
	Up to 3,000 m (10,000 ft) for CAT III 600 V, CAT II 1000 V
<b>Safety Specifications</b>	
Electrical safety	1,000V CAT III/600V CAT IV (EN61010-1)
<b>Mechanical and General Specifications</b>	
Size	270 x 190 x 70 mm
Weight	2.2 kg
Warranty	3-years on main instrument, 1-year on accessories
Li-Ion battery	BP290 2400 mAh battery up to 4 Hours included standard
<b>Included Accessories</b>	
	VPS410 Voltage Probe Sets (one red, one blue)
	TL175 TwistGuard™ safety designed Test Lead Set (red and black)
	BC190 Battery Charger/mains Adapter
	BP290 2400 mAh Li-ion Battery
	Handstrap (affixed to instrument)
	Hangstrap
	Multi-Language User Manuals on CD-Rom
	FlukeView ScopeMeter® demo package (restricted functionality)
	USB Interface Cable



Warranty	Three years on main instrument, one year on accessories
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## Model

### **Fluke 190-502/AM/S**

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Color ScopeMeter, 500 MHz, 2 channels plus DMM/Ext.input, with SCC-290 kit included

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**Fluke.** *Giữ cho thế giới của bạn. không ngừng vận động.*

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