Fluke 190-204
4 Channel, 200 MHz, 2.5 GS/s, CAT IV Color ScopeMeter

FLUKE®

- IEC 61010 1000V CAT III/600V CAT IV safety rating
- Four fully isolated floating input channels with up to 2.5 GS/s real-time sampling rate
- 8ns glitch detect
- 10,000 sample deep memory per channel for displaying high resolution waveform details
- Four input channels let you log inputs and measurements over time:
  - Four meter measurements
  - Four TrendPlot traces
  - Four Scope Record traces
- High capacity Li-ion batteries offer up to seven hours operation
- Battery access door to easily swap out batteries for extended operation
- Two electrically isolated USB ports, mini USB-A for PC connectivity and a USB memory device port
- Security slot to lock down instrument using standard Kensington PC lock
- Screw insert for standard camera mounting accessories
- 200 MHz bandwidth, up to 2.5 GS/s real time sample rate and up to 400 pico seconds resolution
- Connect-and-View to easily trigger on and display even complex waveforms
- TrendPlot and ScopeRecord to capture or plot waveforms and measurements over extended time spans
- Replay last 100 screens to go back in time to see waveform anomalies
- Environmentally tested to meet IP51 dust-proof and drip-proof rating and withstand 3g vibration or 30 g shock
- For a more economical model, please see the Fluke 190-104 100 MHz 4 Channel ScopeMeters

Fluke now extends the 190 Series of portable oscilloscopes with new four-channel 190-204 model built for industrial plant maintenance professionals who work on:

- Heavy-duty electrical equipment
- Electro-mechanical machinery
- Plant automation control systems

The Fluke 190204 ScopeMeter oscilloscopes from Fluke, with electrically isolated channels, are safety rated for industrial applications. These scopes combine rugged portability with the high performance of bench oscilloscopes to take you from troubleshooting microelectronics all the way into power electronic applications.

The Fluke 190 Series II 190-204, with a wide range of bandwidth options. Fast sampling rates up to 2.5 GS/s, 400 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, ScopeRecord, and Connect-and-View help you quickly diagnose industrial machinery, automation and process controls, and power electronics to minimize repair costs and downtime. These features make the oscilloscopes easy to use especially when diagnosing the most difficult problems like complex waveforms, intermittent events and signal fluctuations or drift.

Introducing the first four-channel scope with CAT IV rating

The first CAT III 1000 V/CAT IV 600 V rated, four-channel portable scope on the market, the new Fluke 190 Series-II brings an unprecedented combination of performance and ruggedness into the field.

Take on new challenges in industrial machinery, automation and process controls, power conversion electronics

Analyze timing and amplitude relationships of multiple signals simultaneously, easily compare and contrast waveform traces spotting irregularities with ease.

- For three-phase power applications like industrial motors and drives, UPS and invert-ers for wind energy, and diesel locomotive controls for transportation
- For three-axis testing when you need to measure input, output and control signals simultaneously

The ultimate in portability
New high-performance batteries take advantage of Li-ion technology to keep you going strong for a full shift. With the easy-access battery door of the Fluke 190/104 & 190/204 you can make battery swaps fast.

New USB connectivity makes it easy to capture and share waveforms
The new Fluke 190 Series II offers two USB ports, electrically isolated from measurement input circuits. Easily transfer data to a PC. Archive and share waveforms with OEMs, colleagues and support staff. Store unlimited waveforms, screen captures and instrument setups onto USB memory devices.

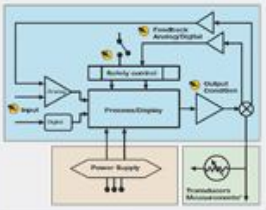
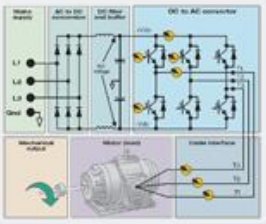
Easily diagnose timing-related issues with multiple signals

- Real-time inspection of multiple related signals simultaneously
- Measure a combination of input and output signals and system safety interlocks and feedback loops

Find problems in industrial systems including:

- Circuit voltage/current overloading
- Attenuation/input impedance mismatch
- Signal fluctuation/drift
- Conditioning circuits signal integrity
- Test point verification for critical signals
- Input/output/feedback timing issues
- Induced noise and disturbances
- Random shutdowns/reset

Diagnose VSDs or power inverters and converters

Take multiple measurements simultaneously and track down the root cause of your most complex troubleshooting challenges.	
	For industrial electronics, four channels allows you to perform three-dimensional testing, measuring input, output and feedback signals simultaneously.
	In three-phase systems like variable speed drives, UPS or back-up generators, use four channels to diagnose power input, dc to ac converters, or cable interface problems.

- Harmonics, transients and loads in three-phase power input
- Troubleshoot dc to ac converters for faulty control circuits or output IGBT gate stages
- Cable interface—test PWM output for reflections and transients

Fluke ScopeMeter test tools work harder to make your job easier
See what's happening with fast real-time high resolution sampling. ScopeMeter offers a sample rate of up to 2.5 GS/s with up to 400 ps resolution

Connect-and-View triggering for an instant, stable display
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.

ScopeRecord mode for high resolution waveform recording up to 48 hours
Included on both the Fluke 190204 ScopeRecord memory stores up to 27,000 data points per channel, capturing fast intermittents and glitches as short as 8 ns. (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 automatically recognizes a power failure and stores the wave-form data preceding it
- With the waveform zoom (up to 100x) you can look at the smallest details, like individual power cycles

TrendPlot paperless recorder—records up to 16 days to help you find intermittent faults
The toughest faults to find are those that happen once in a while. These intermittents can be caused by bad connections, dust, dirt, corrosion, or simply broken wiring or connectors. Line outages, sags or 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 II ScopeMeter will.

- Plot minimum and maximum peak values and average over time up to 16 days
- Plot any combination of volt-ages, amps, temperature, frequency and phase for all four inputs, all with time and date stamp to pinpoint faults

Look back in time with automatic capture and display of last 100 screens
It's frustrating to see a one-time anomaly flash and miss it. Fluke 190104 and 190204 ScopeMeter will solve the problem by letting you look back in time with a touch of the replay button.

- In normal use, the instrument continuously memorizes the last 100 screens. As each 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
- Use cursors for further analysis
- With advanced triggering you can capture up to 100 specific events (Two sets of 100 captured screens with individual time stamps can be stored for later recall or downloaded to a PC.)

Cursors and automatic waveform measurements
With 30 automatic measurements, cursors, zoom and a real-time clock, the Fluke 190-204 ScopeMeter will perform automatic power and Vrms measurements on the specific portion of th waveform you select within a specified time span.

Specifications

Bandwidth		200 MHz
Real-time sample rate		2.25 GS/s
Inputs		4
Independently floating isolated inputs		Up to 1000 V between inputs, references and ground
Timebase range		G5 ns - 2 min/div
Input sensitivity		2 mV-100 V/div
Trigger types		connect-and-View™, Free Run, Single Shot, Edge, Delay, Video, Selectable pulse width and External
Glitch capture		8 ns
Scope measurements	**Cursor**	7
	Automatic	30
Maximum Record length	**ScopeRecord mode**	27,500 pts per input
	Scope mode	10,000 pts per input
Memory	**Screens + Setups**	15
	Replay + Setups	2
Display		153 mm full color LCD with fast update rate
Persistence		Digital persistence giving analog oscilloscope-like waveform decay
Waveform Compare		Waveform reference with automatic Pass/Fail testing