# Technical Specifications 190 Series

## OSCILLOSCOPE MODE
### VERTICAL DEFLECTION

|  | Fluke 199 | Fluke 196 | Fluke 192 |
|---|---|---|---|
| Bandwidth | 200 MHz | 100 MHz | 60 MHz |
| Rise time | 1.7 ns | 3.5 ns | 5.8 ns |

| | |
|---|---|
| Bandwidth limiter | User selectable 10 kHz or 20 MHz |
| Number of inputs | 2 plus external trigger. All isolated from each other and ground. |
| Input coupling | AC, DC with ground level indicator |
| Input sensitivity | 5 mV/div to 100 V/div |
| Input voltage | See general specifications for maximum rating. |
| Vertical resolution | 8 bit |
| Accuracy | ±(1.5% of reading + 0.04 x range/div) |
| Input impedance | 1 MΩ ± 1% // 15 pF ± 2 pF |

### HORIZONTAL

|  | Fluke 199 | Fluke 196 | Fluke 192 |
|---|---|---|---|
| Maximum real–time sample rate | 2.5 GS/s | 1 GS/s | 500 MS/s |
| Number of digitizers | 2 | 2 | 2 |
| Time base range | 5 ns/div to 5 s/div | | 10 ns/div to 5 s/div |

| | |
|---|---|
| Maximum record length | 1,000 points per input<br>27,500 points per input in ScopeRecord™-roll mode<br>(10 ms/div ... 2 min/div) |
| Accuracy | ± (0.01% of reading + 1 pixel) |
| Glitch capture | 50 nsec (5 µsec/div to 1 min/div)<br>Faster timebases have higher sample rates than 20 MS/s. |

### DISPLAY AND ACQUISITION

| | |
|---|---|
| Display modes | Input A, input B, dual, average, persistence, invert, replay |
| Acquisition modes | Normal, auto, single shot, ScopeRecord™, roll, glitch capture |

### TRIGGER AND DELAY

| | |
|---|---|
| Source | Input A, input B, external trigger input. All input references isolated from each other and ground. |
| Modes | Automatic Connect–and–View™, free run, single shot, edge, delay, video, video line, selectable pulse width |
| Connect–and–View™ | Advanced automatic triggering that recognizes signal patterns, auto–matically 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. |
| Video triggering | NTSC, PAL, PAL+, SECAM. Includes field 1 and 2 and line select. |
| Pulse width triggering | Pulse width qualified by time. Allows for triggering <t, >t, = t, ≠t, where t is selectable in minimal steps of 0.01 div or 50 nsec |
| Time delay | 9 divisions pre–trigger view to 1,000 divisions trigger delay. |

### AUTOMATIC CAPTURE OF 100 SCREENS

| | |
|---|---|
|  | The instrument ALWAYS memorizes last 100 screens (no user interaction or setup required). When an anomaly occurs on screen, there's 10 seconds to press HOLD and review it. If one sets up the instrument for triggering on glitches or intermittent anomalies the unit operates in "baby-sit" mode and will capture 100 events. |
| Replay | Manual or continuous replay. Displays the captured 100 screens as a "live" animation. The contents can also be viewed by manually scrolling backwards and forwards "screen by screen". |
| Replay storage | Up to 2 sets of 100 screens can be saved for later recall and analysis. |

### AUTOMATIC SCOPE MEASUREMENTS

VDC, VAC rms, VAC+DC, Vpeak max, Vpeak min, Vpeak to peak, frequency (Hz), positive pulse width, negative pulse width, positive duty cycle, negative duty cycle, amp AC, amp DC, amp AC+DC, power factor, watts, VA, VA reactive, phase, temperature °C, temperature °F, dBV, dBm into 50Ω and 600Ω

### CURSOR MEASUREMENTS

| | |
|---|---|
| Source | Input A or B |
| Dual horizontal lines | Voltage at cursor 1 and 2, voltage between cursors |
| Dual vertical lines | Time between cursors, voltage between markers |
| Single vertical line | Min–Max and Average voltage at cursor position |

### ZOOM

Up to 8x horizontal zoom

## METER MODE

*Via 4 mm banana inputs. Fully isolated from scope inputs and scope ground. The specified accuracy is valid over the temperature range 18 °C to 28 °C (15 °F to 33 °F). Add 10 % of specified accuracy for each degree °C below 18 °C or above 28 °C (15 °F to 33 °F).*

| | |
|---|---|
| **MAXIMUM RESOLUTION** | 5,000 counts |
| **VOLTMETER RANGES** | 500mV, 5V, 50V, 500V, 1,000V |

**ACCURACY**

| | |
|---|---|
| VDC | ± (0.5 % + 5 counts) |
| VAC true rms | |
|     15 Hz...60 Hz: | ± (1 % + 10 counts) |
|     60 Hz...1 kHz: | ± (2.5 % + 15 counts) |
| VAC+DC true rms | |
|     DC...60 Hz: | ± (1 % + 10 counts) |
|     60 Hz...1 kHz: | ± (2.5 % + 15 counts) |

**OHMS**

| | |
|---|---|
| Ranges | 500Ω, 5kΩ, 50kΩ, 500kΩ, 5MΩ, 30MΩ |
| Accuracy | ± (0.6 % + 5 counts) |

### OTHER METER FUNCTIONS

| | |
|---|---|
| Continuity | Beeper on < 30Ω (± 10Ω) |
| Diode test | Up to 2.8V |
| Amps | Amp DC, Amp AC, Amp AC+DC using an optional current clamp or shunt. Scaling factors: 0.1 mV/Amp ... 100 V/Amp |
| Temperature (°C, °F) | With optional accessories. Scale factors 1 mV/°C or 1 mV/°F |
| Input impedance | 1 MΩ ± 1% // 10 pF ± 2 pF |
| Advanced meter functions | Auto/manual ranging, relative measurements (Zero reference), TrendPlot recording |

## RECORDER MODE

### SCOPERECORD-ROLL MODE

Dual input waveform storage mode.

| | |
|---|---|
| Source and display | Input A, Input B, Dual |
| Memory depth | 27,500 points per input. Each point consist of Min–Max pair. |
| Min–Max values | Min–Max values are measured at high sample rate ensuring capture and display of glitches. |

| Time base range | 10 ms/div ... 1 min/div | 2 min/div |
|---|---|---|
| Recorded timespan | 11 sec ... 15 hrs | 30 hrs |
| Glitch capture | 50 nsec | 250 nsec |
| Sample rate | 20 MS/s | 4 MS/s |
| Resolution | 400 µsec ... 2 sec | 4 sec |

| | |
|---|---|
| Recording modes | Single sweep, continuous roll, start on external trigger. |
| Horizontal scale | Time from start, time of day |
| Zoom | Up to 100x / +8 |
| Memory | Up to 2 dual input ScopeRecordings can be saved for later recall and analysis. |
| **TRENDPLOT™ RECORDING** | Dual input electronic paperless chart recorder. Plots, displays and stores meter and scope measurements. |
| Source and display | Input A, Input B and DMM input |
| Memory depth | 13,500 points record per input. Per record point a minimum, maximum and average value, and a time and date stamp are stored. |
| Ranges | 10 s/div to 20 min/div in normal view mode. 10 min/div to 24 hour/div in view-all mode (overview of total record) |
| Recorded timespan | Up to 8 days with a resolution of 1 minute |
| Recording mode | Continuous roll |
| Measurement speed | 2.5 measurements per second maximum |
| Horizontal scale | Time from start, time of day |
| Zoom | Up to 64x zoom |
| Memory | Up to 2 TrendPlot recordings can be saved for later recall and analysis. |
| **CURSOR MEASUREMENTS – ALL RECORDER MODES** | |
| Source | Input A, B or DMM input |
| Dual vertical lines | Min–Max or Average voltage. Time between cursors |
| Single vertical line | Min–Max or Average voltage. Absolute date and time or time from start |

## GENERAL SPECIFICATIONS

### CASE
| | |
|---|---|
| Design | Rugged, shock proof with integrated protective holster |
| Drip and dust proof | IP51 according to IEC529 |
| Shock and Vibration | Shock 30g, Vibration 3g according to MIL 28800F type III, class 3, style B |

### DISPLAY
| | |
|---|---|
| | Bright LCD with CCFL backlight, 35/60 cd/m$^2$ without/with power adapter |
| Size | 105 x 79 mm (4.1 x 3.1 inches) |
| Resolution | 240 x 240 pixels |
| Contrast and brightness | User adjustable, temperature compensated |

### MEMORY SAVE AND RECALL
| | |
|---|---|
| Scope memories | 10 memory locations that each can contain two waveforms plus corresponding setup. |
| Recorder memories | 2 memory locations that each can contain 100 captured dual input scope screens, or a dual input ScopeRecord (27,500 Min–Max pairs per input), or a dual input Trendplot (13,500 Min–Max pairs per input). |

### REAL-TIME CLOCK
| | |
|---|---|
| | Time and date stamp for ScopeRecord, 100 captured screens and Trendplots. |

### POWER
| | |
|---|---|
| Line power | Country specific line voltage adapter/battery charger included. |
| Battery power | Rechargeable NiMH (installed) |
| Battery operating time | 4 hours |
| Battery charging time | 4 hours |
| Battery power saving functions | Auto power down with adjustable power down time. On screen battery power indicator |

### MECHANICAL DATA
| | |
|---|---|
| Size | 256 x 169 x 64 mm (10.1 x 6.6 x 2.5 inches) |
| Weight | 1.95 kg (4.3 lbs) |

### SAFETY
| | |
|---|---|
| Compliance | EN61010–1 (1993) Pollution degree 2 UL 3111–1 (1994) CAN/CSA C22.2 No.1010.1 (1992) ANSI/ISA S82.01 (1994) |

### INPUT VOLTAGE RATINGS
| | |
|---|---|
| Maximum probe voltage *(Maximum voltage between 10:1 probe tip (VP190) and reference lead)* | 1,000V CAT II, 600V CAT III |
| Floating voltage *(Maximum voltage between earth ground and any terminal (signal input or shielding))* | 1,000V CAT II, 600V CAT III |
| Independently isolated inputs *(Maximum voltage between any terminal of one input or probe (VP190) and any other terminal of another input or probe (VP190))* | 1,000V CAT II, 600V CAT III |
| Maximum voltage on BNC input directly (input A or B) | 300V CAT III |
| Maximum voltage on meter input | 1,000V CAT II, 600V CAT III |

### ENVIRONMENTAL
| | |
|---|---|
| Operating temperature | 0 °C to +50 °C |
| Storage temperature | –20 °C to +60 °C |
| Humidity | 10 °C to 30 °C: 95% RH non condensing 30 °C to 40 °C: 75% RH non condensing 40 °C to 50 °C: 45% RH non condensing |
| Maximum operating altitude | 3,000 m (10,000 feet) |
| Maximum storage altitude | 12 km (40,000 feet) |
| Electro–Magnetic Compatibility | EN 61326–1 for emission and immunity |

### OPTICALLY ISOLATED PC/PRINTER INTERFACE
| | |
|---|---|
| To printer | Supports HP Laserjet®, Deskjet®, Epson FX/LQ and postscript printers via optional PAC 91 |
| To PC | Transfer instrument settings, screen images and waveform data, compatible with FlukeView® software for Windows® via optional PM9080. |

### WARRANTY
| | |
|---|---|
| | 3 years |

# Technical Specifications ScopeMeter 123

## OSCILLOSCOPE MODE

### VERTICAL DEFLECTION

| | |
|---|---|
| Bandwidth | 20 MHz at inputs |
| | 20 MHz with BB120 and optional PM8918/VP190 10:1 probes |
| | 12.5 MHz with STL120 1:1 test leads |
| Rise Time | 17.5 ns |
| Number of inputs | 2 |
| Input coupling | AC, DC with ground level indicator |
| Input sensitivity | 5 mV ... 500 V/div (with included STL120 shielded test leads measure up to 600Vrms) |
| Vertical resolution | 8 bit |
| Accuracy | $\pm$ (2% of reading + 0.05 x range/div) |
| Input impedance | 1 M$\Omega$ $\pm$ 1% // 225 pF with STL120 shielded test leads |
| | 1 M$\Omega$ $\pm$ 1% // 20 pF $\pm$ 3 pF with BB120 |

### HORIZONTAL

| | |
|---|---|
| Maximum sample rate | 1.25 GS/s for repetitive signals |
| | 25 MS/s for single shot |
| Number of digitizers | 2 |
| Time base range | 20 ns/div ... 1 min/div |
| Maximum record length | 512 Min–Max points per input |
| Accuracy | $\pm$ (0.1% of reading + 1 pixel) |
| Glitch detect | 40 ns |

### DISPLAY AND ACQUISITION

| | |
|---|---|
| Display modes | Input A, input A and B, envelope, smooth |
| Acquisition modes | Normal, single shot, roll, glitch capture (always on) |

### TRIGGER AND DELAY

| | |
|---|---|
| Source | Input A, input B, external via optional ITP120 |
| Modes | Automatic Connect–and–View™, Free Run, Edge, Single Shot, Video, Video Line |
| Connect–and–View™ | Advanced automatic triggering that recognizes signal patterns and automatically sets up and continuously adjusts triggering, time base and amplitude. Automatically displays stable pictures of complex and dynamic signals like motor drive and control signals. |
| Video triggering | NTSC, PAL, PAL+, SECAM. Includes line select |
| Time delay | Up to 10 divisions pre-trigger view |

### MEASUREMENTS

VDC, VAC, VAC+DC, Vpeak max, Vpeak min, Vpeak to peak, frequency (Hz), positive pulse width, negative pulse width, positive duty cycle, negative duty cycle, Amp AC, Amp DC, Amp AC+DC, Phase, Temperature °C, Temperature °F, dBV, dBm into 50$\Omega$ and 600$\Omega$. (Amps, °C or °F with optional probes)

## DUAL INPUT METER

*The specified accuracy is valid over the temperature range 18 °C to 28 °C (15 °F to 33 °F). Add 10 % of specified accuracy for each degree °C below 18 °C or above 28 °C (15 °F to 33 °F).*

| | |
|---|---|
| Max. meter bandwidth | 20 MHz |

### VDC

| | |
|---|---|
| Ranges | 500mV, 5V, 50V, 500V, 1,250V |
| Max. Resolution | 5,000 counts |
| Accuracy | $\pm$ (0.5% + 5 counts) |

### VAC RMS

| | |
|---|---|
| Ranges | 500mV, 5V, 50V, 500V, 1,250V |
| Max. Resolution | 5,000 counts |
| Accuracy | 1 Hz...60 Hz: $\pm$(1% + 10 counts) |
| | 60 Hz...1 kHz: $\pm$(2.5% + 15 counts) |
| | 20 kHz...1 MHz (5% + 20 counts) |

### VAC+DC TRUE RMS

| | |
|---|---|
| Ranges | 500mV, 5V, 50V, 500V, 1,250V |
| Max. Resolution | 5,000 counts |
| Accuracy | DC ... 60 Hz: $\pm$(1% + 10 counts) |
| | 60 Hz...1 kHz: $\pm$(2.5% + 15 counts) |
| | 20 kHz...1 MHz (5% + 20 counts) |

### OHMS

| | |
|---|---|
| Ranges | 500$\Omega$, 5k$\Omega$, 50k$\Omega$, 500k$\Omega$, 5M$\Omega$, 30M$\Omega$ |
| Max. Resolution | 5,000 counts |
| Accuracy | $\pm$ (0.6% of reading + 5 counts) |

### CAPACITANCE

| | |
|---|---|
| Ranges | 50 nF ... 500$\mu$F |
| Max. Resolution | 5,000 counts |
| Accuracy | $\pm$ (2% of reading + 10 counts) |

### OTHER METER FUNCTIONS

| | |
|---|---|
| Frequency | Up to 40 MHz |
| Continuity | Beeper on $<$ 30$\Omega$ |
| Diode test | Up to 2.8V |
| Amps | Amp DC, Amp AC, Amp AC+DC using an optional current clamp or shunt. |
| | Scaling factors: |
| | 0.1 mV/Amp ... 100 V/Amp |
| Temperature (°C, °F) | With optional accessories. Scale factors 1 mV/°C or 1 mV/°F |
| Number of inputs | 2 |
| Input impedance | 1M$\Omega$ $\pm$ 1% // 10 pF $\pm$ 2 pF |
| Advanced meter functions | Auto/manual ranging |
| | TouchHold® |
| | Relative measurements (zero reference) |
| | TrendPlot recording |

## RECORDER MODE

| | |
|---|---|
| **TRENDPLOT™ RECORDING** | Dual input electronic paperless chart recorder. Plots and displays the actual, minimum, maximum and average of any measurement. |
| Source and display | Input A, Input A and B |
| Range | 15 s/div till 2 days per division (automatic) |
| Recorded timespan | Up to 16 days with a resolution of 1.5 hours |
| Recording mode | Continuous with automatic vertical scaling and horizontal time compression |
| Measurement speed | 2.5 measurements per second maximum |
| Horizontal scale | Time from start |

## GENERAL SPECIFICATIONS

### CASE

| | |
|---|---|
| Design | Rugged, shock proof with integrated protective holster |
| Drip and dust proof | IP51 according to IEC529 |
| Shock and Vibration | Shock 30g, Vibration 3g according to MIL-T28800E, Type III, Class 3, Style B |

### DISPLAY

| | |
|---|---|
| | Bright LCD with CCFL backlight, 35/60 cd/m$^2$ without/with adapter |
| Size | 72 x 72mm (2.8 x 2.8 inch) |
| Resolution | 240 x 240 pixels |
| Contrast and brightness | User adjustable, temperature compensated |

| | |
|---|---|
| **MEMORY SAVE AND RECALL** | 2 screens, 10 user setups |
| **REAL-TIME CLOCK** | Time and date stamp TrendPlot recording |

**POWER**

| | |
|---|---|
| Line power | Country specific line voltage adapter/battery charger included |
| Battery power | Rechargeable NiCd (installed) |
| Battery operating time | Up to 5 hours |
| Battery charging time | 4 hours |
| Battery refresh cycle | 8 ... 14 hours depending on remaining capacity at start of refresh cycle |
| Battery power saving functions | Auto power down with adjustable power down time. On screen battery power indicator |

**MECHANICAL DATA**

| | |
|---|---|
| Size | 50 x 115 x 232 mm (2 x 4.5 x 9.1 inches) |
| Weight | 1.2 kg (2.5 lb.) |

**SAFETY**

| | |
|---|---|
| Compliance | EN61010.1 (1993) Pollution degree 2 UL3111-1 (1994) CAN/CSA-C22.2 No. 1010.1 (1992) ANSI/ISA S82.01 (1994) |

**INPUT VOLTAGE RATINGS**

| | |
|---|---|
| Maximum input voltage *(Maximum voltage between input and reference lead)* | 600V CAT III |
| Floating voltage *Maximum voltage between earth ground and any terminal (signal input or reference lead)* | 600V CAT III |

| | |
|---|---|
| Maximum voltage between reference leads | Instrument has common grounds connected via selfrecovering fault protection. For different ground potential measurements between inputs use DP120 differential voltage probe. |

**ENVIRONMENTAL**

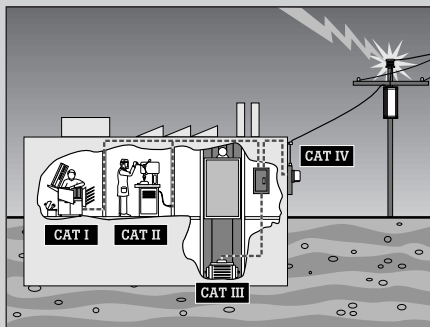| | |
|---|---|
| Operating Temperature | 0°C to +50°C |
| Storage temperature | –20°C to +60°C |
| Humidity | 10°C to 30°C, 95% RH non condensing 30°C to 40°C, 75% RH non condensing 40°C to 50°C, 45% RH non condensing |
| Maximum operating altitude | 2,000m (6,500 feet) 3,000m (10,000 feet) voltages $\leq$ 400V |
| Maximum storage altitude | 12 km (40,000 feet) |
| Electro–Magnetic | Emission EN50081–1 (EN55022 and EN60555-2) |
| Compatibility | Immunity EN50082-2 (IEC1000–4-2, -3, -4, -5) |

**OPTICALLY ISOLATED PC/PRINTER INTERFACE**

| | |
|---|---|
| To printer | Supports HP Laserjet®, Deskjet®, Epson FX/LQ and postscript printers via optional PAC91 |
| To PC | Transfer instrument settings, screen images and data, compatible with FlukeView® software for Windows® via optional PM9080. |

**WARRANTY** 3 years

# International Safety Standards



To protect your instrument and –more importantly– yourself, choose a test tool that can withstand the electrical hazards present in the environment in which you plan to use it. EN61010 establishes international safety requirements for electrical measurement equipment. It separates the various electrical environments into installation categories based on the danger from high voltage–energy transients. To choose the right tool the voltage rating alone does not determine the safety. It is the combination of voltage rating and installation category that determines maximum transient withstand capability of the tool. CAT III rated instruments are recommended for measurement on industrial power distribution systems.

| Overvoltage Category | Summary description |
|---|---|
| CAT IV* | Three phase at utility connection, any outdoors conductors (under 1,000V) |
| CAT III | Three–phase distribution (under 1,000V), including single phase commercial lighting and distribution panels |
| CAT II | Single-phase receptable connected loads |
| CAT I | Electronic |

# Ordering Information

| | | | | |
|---|---|---|---|---|
| FLK–192 | Fluke 192 ScopeMeter (60 MHz) | | FLK–123 | Fluke 123 Industrial ScopeMeter |
| FLK–192S | Fluke 192 ScopeMeter (60 MHz) with SCC190 kit | | FLK–123S | Fluke 123 Industrial ScopeMeter with SCC120 kit |
| FLK–1963 | Fluke 196 ScopeMeter (100 MHz) | | SCC120 | Software – Cable – Case kit for Fluke 123 |
| FLK–196S | Fluke 196 ScopeMeter (100 MHz) with SCC190 kit | | | |
| FLK–199 | Fluke 199 ScopeMeter (200 MHz) | | | |
| FLK–199S | Fluke 199 ScopeMeter (200 MHz) with SCC190 kit | | | |
| SCC190 | Software – Cable – Case kit for Fluke 190 Series | | | |

- Fluke ScopeMeter test tools come standard with a complete accessory package including line voltage adapter, and battery pack (installed). ScopeMeter 123 includes the shielded test leads, ScopeMeter 190 Series comes with probes, probe accessories and multimeter test leads.
- SCC kit includes: Hard-shell carrying case, optically isolated RS-232 interface cable, and FlukeView® for Windows® software.

# Accessories

| Standard accessories: | 190 Series | 123 |
|---|---|---|
| Rechargeable battery pack (installed) | BP190 | BP120 |
| Line voltage adapter / battery charger | BC190 | PM 8907 |
| Two probes, red & gray | VP190–R & VP190–G | – |
| Two shielded test-leads, red & gray | | STL120 |
| Test lead, black | – (*1) | TL75 |
| Two hook clips, black | – (*1) | HC120 |
| Three alligator clips | – (*2) | AC120 |
| Shielded banana to BNC adapter | | BB120 |
| Probe accessory Set, red & gray | AS190 – R/G (*2) | – |
| User's manual | 9 language versions | 13 language versions |
| **Optional accessories and replacements: (*3)** | | |
| *Safety designed oscilloscope probes* | | |
| Differential voltage probe | DP120 | DP120 |
| Optically isolated trigger probe | – | ITP120 |
| 10:1 Voltage probe red or grey | VP190–R or VP190–G (*4) | |
| Probe accessory set red or grey | AS190–R or AS190–G (*4) | |
| Probe replacement set | RS190 | |
| *Safety designed test leads* | | |
| Hard point right angle test lead set | TL75 | |
| Test lead set | TL20 | |
| Hook clips for use with TL75 & STL120 | HC120 | |
| Alligator clips for use with TL75 & STL120 | AC120 | |
| Pin–grabber test clips for banana plug | AC83 | |
| Large jaw alligator clips for banana plug | AC85A | |
| Hook style clips for banana plug | AC80 | |
| Alligator clips for banana plug | AC20 | |
| Industrial test probes for banana plug | TP20 | |
| Electronic test probes for banana plug | TP80 | |
| Test probe flat blade for banana plug | TP1 | |
| Test probe 2mm for banana plug | TP2 | |
| Test probe 4mm for banana plug | TP4 | |
| *Current probes* | | |
| AC/DC current probe 50mA to 100A | 80i–110s (*4) | |
| AC current probe 0.1A to 1,000A | 80i–1000s (*4) | |
| Flexible AC current probe 1A to 2,000A | i2000flex (*4) | |
| AC current probe 1A to 3,000A | i3000s (*4) | |
| AC current probe 1A to 200A | i200s (*4) | |
| Current shunt 4–20mA | CS20MA | |
| *Temperature probes* | | |
| Universal temperature probe | 80T–150U | |
| Thermocouple module | 80TK | |
| Infrared temperature probe | 80T–IR | |
| *Cables and adapters* | | |
| Printer adapter cable | PAC91 | |
| Optically isolated RS-232 adapter/cable | PM 9080/001 (*6) | |
| Dual banana plug to female BNC adapter | PM 9081/001 | |
| Dual banana jack to male BNC adapter | PM 9082/001 | |
| 1.5m 50Ω coaxial BNC cable | PM 9091/001 | |
| Male BNC to female BNC adapter | PM 9093/001 | |
| *Protective cases* | | |
| Software cable case package | SCC190 (*5) | SCC120 (*5) |
| Hard carrying case | C190 (*6) | C120 (*6) |
| Soft carrying case | C195 | C125 |
| *PC software* | | |
| FlukeView software for Windows® | SW90W/033EFG (*5) | |

(*1) Probe accessory VP190 set includes test leads, hook clips. (*2) The Fluke 196 and 199 include red and grey probe, accessory set AS190, with 4 heavy duty alligator clips. (*3) This is a selection of a broader range of optional accessories that support ScopeMeter products, for information on additional available accessories, contact your Fluke distributor. (*4) Connects to BNC, for connection to Fluke 123 input use BB120. (*5) Software Cable Case Package includes RS-232 cable, FlukeView software & hard carrying case. (*6) Included in SCC package.

# ScopeMeter® 190 Series
# ScopeMeter® 123    Technical Data

**Connect and View**

ISO 9001

LISTED
UL    CSA

## ScopeMeter 190 Series: Speed, performance and analysis power

For 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 scope in a handheld, battery powered instrument.

☑ Dual input - 60, 100 or 200 MHz bandwidth
☑ Up to 2.5 GS/s real-time sampling per input
☑ Connect-and-View™ automatic triggering, a full range of manual trigger modes plus external triggering
☑ 27,500 points per input record length using ScopeRecord™ mode
☑ Automatic capture and replay of 100 screens
☑ 24 automatic waveform measurements
☑ Cursors, zoom and real-time clock
☑ Four hours rechargeable NiMH battery pack
☑ 1,000V CAT II and 600V CAT III safety certified
☑ Up to 1,000V independently floating isolated inputs
☑ Includes a 5,000 counts true-rms multimeter and a TrendPlot™ paperless recorder

## ScopeMeter 123: Three-in-one simplicity

The compact ScopeMeter 123 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.

☑ A dual input 20 MHz digital oscilloscope
☑ Two 5,000 counts 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
☑ Up to five hours battery operation
☑ 600V CAT III safety certified
☑ Optically isolated RS-232 interface
☑ Rugged compact case