FLUKE®

# ScopeMeter® 190 Series and ScopeMeter® 120 Series

## Technical Data

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

For demanding applications, the ScopeMeter 190C and 190B Series high-performance oscilloscopes offer specifications usually found on top-end bench instruments. They're ideal for engineers who need the full capabilities of a high-performance scope 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
- ☑ Choice between a high resolution Color (190C) or Black and White (190B) display
- ☑ Digital Persistence for analyzing complex dynamic waveforms like on an analog scope (190C Series)
- ☑ Fast display update rate for seeing dynamic behavior instantaneously
- ☑ 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
- ☑ TrendPlot™ paperless recorder for trend analysis up to 22 days
- ☑ Waveform reference for visual comparison and automatic pass/fail testing (190C) of waveforms
- ☑ Four hours rechargeable NiMH battery pack
- ☑ 1,000V CAT II and 600V CAT III safety certified
- ☑ Up to 1,000V independently floating isolated inputs

### ScopeMeter 120 Series: Three-in-one simplicity

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.

- ☑ A dual input 40 MHz or 20 MHz digital oscilloscope
- ☑ Two 5,000 counts true-rms digital multimeters
- ☑ Cursor measurements (Fluke 124)
- ☑ A dual input TrendPlot™ recorder
- ☑ Connect-and-View™ trigger simplicity for hands-off operation
- ☑ Shielded test leads for oscilloscope, resistance, continuity and capacitance measurements
- ☑ Up to seven hours battery operation
- ☑ 600V CAT III safety certified
- ☑ Optically isolated RS-232 interface
- ☑ Rugged, compact case

# Technical Specifications 190C and 190B Series

## *OSCILLOSCOPE MODE*

***VERTICAL DEFLECTION***

| | Fluke 199C<br>Fluke 199B | Fluke 196C,<br>Fluke 196B | Fluke 192B |
|---|---|---|---|
| Bandwidth | 200 MHz | 100 MHz | 60 MHz |
| Rise time | 1.7 ns | 3.5 ns | 5.8 ns |

| | |
|---|---|
| Bandwidth limiter | User selectable: 10 kHz, 20 MHz or off |
| Number of inputs | 2 plus external trigger. All inputs isolated from each other and ground. |
| Input coupling | AC or DC, with ground level indicator |
| Input sensitivity | 2 mV/div to 100 V/div (Fluke 190C Series);<br>5 mV/div to 100 V/div (Fluke 190B Series) |
| Variable Attenuator | Variable Gain on input channel A |
| Input voltage | 1000V CAT II, 600 V CAT III rated - See 'general specifications' for further details. |
| 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 199C<br>Fluke 199B | Fluke 196C<br>Fluke 196B | Fluke 192B |
|---|---|---|---|
| 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<br>to 5 s/div | | 10 ns/div<br>to 5 s/div |

| | |
|---|---|
| Maximum record length | 1,200 points per input in Scope mode;<br>27,500 points per input in ScopeRecord™ roll mode (5 ms/div … 2 min/div) |
| Accuracy | ± (0.01% of reading + 1 pixel) |
| Glitch capture | 50 nsec (5 µsec/div to 1 min/div) |

***DISPLAY AND ACQUISITION***

| | Fluke 199C,<br>Fluke 196C | Fluke 199B,<br>Fluke 196B, Fluke 192B |
|---|---|---|
| Display | 144 mm Full Color LCD | 144 mm Monochrome LCD |
| Display modes | Input A, input B, dual, average, invert, replay, Digital Persistence mode (short/medium/long/infinite) | Input A, input B, dual, average, invert, replay, persistence (on/off) |

| | |
|---|---|
| Visible screen width | 12 divisions in scope mode |
| Waveform Mathematics | A+B, A-B, A*B, all with user selectable scaling of resultant; A versus B (X-Y-mode) |
| Acquisition modes | Normal, auto, single shot, ScopeRecord™, roll, glitch capture, waveform compare, waveform compare with automatic "Pass / Fail testing" (in 199C and 196C only) |

***TRIGGER AND DELAY***

| | |
|---|---|
| Source | Input A, input B, external trigger input. All input references isolated from each other and from ground. |
| Modes | Automatic Connect-and-View™, free run, single shot, edge, delay, video, video line, selectable pulsewidth |
| 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 so desired. |
| Video triggering | NTSC, PAL, PAL+, SECAM. Includes field 1, field 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 | 1 full screen of pre-trigger view or up to 100 screens of post-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, the HOLD button can be pressed to review the full screen sequence over and over. Instrument can be set up for triggering on glitches or intermittent anomalies and will operate in "baby-sit" mode and will capture 100 events. |
| Replay | Manual or continuous replay. Displays the captured 100 screens as a "live" animation. Each screen is labelled with date- and timestamp. The contents can also be viewed by manually scrolling backwards and forwards "screen by screen". |
| Replay storage | Up to 2 sets of 100 screens each can be saved for later recall and analysis. |

***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 ScopeMeter or externally using FlukeView Software. |
| Pass/Fail Testing (199C, 196C) | In waveform compare mode, the Color Scopemeter 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*** | Vdc, Vac rms, Vac+dc, Vpeak max, Vpeak min, Vpeak to peak, Aac, Adc, Aac+dc, frequency (Hz), risetime, falltime, power factor, Watts, VA, VA reactive, phase, pulsewidth (pos./neg.), dutycycle (pos./neg.), temperature °C, temperature °F, dBV, dBm into 50Ω and 600Ω<br>$V_{PWM}$ ac, $V_{PWM}$ ac+dc for measurement on pulsewidth modulated motordrives and frequency inverters |

***CURSOR MEASUREMENTS***

| | |
|---|---|
| Source | Input A, input B or the Mathematical Result trace |
| Dual horizontal lines | Voltage at cursor 1 and 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 |
| 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 (65 °F to 82 °F). Add 10 % of specified accuracy for each degree C below 18 °C or above 28 °C.*

| | |
|---|---|
| ***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 < 50Ω (± 30Ω) |
| Diode test | Up to 2.8V |
| Amps | Adc, Aac, Aac+dc using an optional current clamp or shunt. Scaling factors: 0.1 mV/A ... 100 V/A |
| Temperature (°C, °F) | With optional accessories. Scale factors 1 °C/mV or 1 °F/mV |
| Input impedance | 1 MΩ ± 1% // 10 pF ± 2 pF |
| Advanced meter functions | Auto/manual ranging, relative measurements (Zero reference), TrendPlot recording |

## RECORDER MODE

| | |
|---|---|
| ***SCOPE-RECORD-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* | 5 ms/div to 1 min/div | 2 min/div |
|---|---|---|
| Recorded timespan | 6 sec to 24 hr | 48 hr |
| Glitch capture | 50 ns | 250 ns |
| Sample rate | 20 MS/s | 4 MS/s |
| Resolution | 200 µsec to 2 sec | 4.8 sec |

| | |
|---|---|
| Recording modes | Single sweep, continuous roll, Start-on-Trigger (through external), Stop-on-Trigger (through external) |
| Stop-on-Trigger (through External) | ScopeRecord mode can be stopped by an individual trigger event, or by an interruption of a repetitive trigger signal. |
| Horizontal scale | Time from start, time of day |
| Zoom | Up to 100x |
| Memory | Up to 2 dual input ScopeRecord waveforms can be saved for later recall and analysis. |
| ***TRENDPLOT™ RECORDING*** | Single or dual input electronic paperless chart recorder. Plots, displays and stores meter and scope measurements. |
| Source and display | Input A, Input B or DMM input |
| Memory depth | 18,000 points record per input. Per record point a minimum, a maximum and an average value, plus a date- and timestamp are stored. |
| Ranges | |
| - normal view | 5 s/div to 30 min/div |
| - in view-all mode (overview of total record) | 5 min/div to 48 hr/div |
| Recorded timespan | Up to 22 days with a resolution of 1 minute |
| Recording mode | Continuous roll for the duration of the full recordeable timespan |
| Measurement speed | 5 measurements per second or more |
| 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 (sinusoidal) 3g according to MIL-PRF-28800F Class 2. |

| | Fluke 199C & 196C | Fluke 199B, 196B, 192B |
|---|---|---|
| ***DISPLAY*** | Bright full-color LCD with CCFL backlight, 80 (50) Cd/m² with (without) power adapter | Bright LCD with CCFL backlight, 125 (75) Cd/m² with (without) power adapter |

| | |
|---|---|
| Display Size | 115.2 x 86.4 mm (4.54 x 3.4 inches) |
| Resolution | 320 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 (18,000 min-max pairs). |
| ***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 | 2 kg (4.4 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 | 1,000V CAT II, 600V CAT III *(Maximum voltage between 10:1 probe tip (VPS200) and reference lead)* |
| Floating voltage | 1,000V CAT II, 600V CAT III *(Maximum voltage between earth ground and any terminal (signal input or shielding))* |
| Independently isolated inputs | 1,000V CAT II, 600V CAT III *(Maximum voltage between any terminal of one input or probe (VPS200) and any other terminal of another input or probe (VPS200))* |
| 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<br>30 °C to 40 °C: 75% RH non condensing<br>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 (EMC) | 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 (parts and labor) on main instrument, 1 year on accessories. |

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# Technical Specifications ScopeMeter 120 Series

## OSCILLOSCOPE MODE

### VERTICAL DEFLECTION

| Bandwidth and risetime | Fluke 124 | Fluke 123 |
|---|---|---|
| • with VPS40 probes | 40 MHz | 20 MHz |
| • input A and B directly | 40 MHz | 20 MHz |
| • with STL120 Shielded Test Leads | 12.5 MHz | 12.5 MHz |
| Instrument risetime (input directly) | 8.75 ns | 17.5 ns |

| | |
|---|---|
| Number of inputs | 2 |
| Input coupling | AC, DC with ground level indicator |
| Input sensitivity | 5 mV ... 500 V/div (with included VPS40 (Fluke 124) and STL120 shielded test leads measure up to 600Vrms CAT III) |
| Vertical resolution | 8 bit |
| Accuracy | ± (2% of reading + 0.05 x range/div) |
| Input impedance | 1 MΩ ± 1% // 225 pF with STL120 shielded test leads<br>1 MΩ ± 1% // 20 pF ± 3 pF with BB120<br>5 MΩ ( ±1 % // 15.5 pF with VPS40, 10:1 Voltage probe |

### HORIZONTAL

| | |
|---|---|
| Maximum sample rate | Fluke 124: 2.5 GS/s for repetitive signals; 25 MS/s for single shot<br>Fluke 123: 1.25 GS/s for repetitive signals; 25 MS/s for single shot |
| Number of digitizers | 2 |
| Time base range | 10 ns/div to 1 min/div (Fluke 124); 20 ns/div to 1 min/div (Fluke 123) |
| Maximum record length | 512 Min-Max points per input |
| Accuracy | ± (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 50Ω and 600Ω. (Amps, °C or °F with optional probes)

### CURSOR MEASUREMENTS (124 only)

| | |
|---|---|
| Sources | Input A, Input B |
| Modes | Single or dual vertical cursor, dual horizontal cursor, rise- or falltime |
| Measurements: | |
| Single vertical line | Average, min value, max value, time from start of recording in roll mode |
| Dual vertical lines | ΔV at markers, time between cursors, 1/T between cursors (in Hz) |
| Dual horizontal lines | High, low or ΔV - readout, rise- and falltime: transition time, 0 %-level, 100 %-level, with markers at 10 % and 90 % |
| Accuracy | As oscilloscope |

## DUAL INPUT METER

*The specified accuracy is valid over the temperature range 18 °C to 28 °C (65 °F to 82 °F). Add 10 % of specified accuracy for each degree C below 18 °C or above 28 °C.*

| | |
|---|---|
| Max. meter bandwidth | 40 MHz (for Fluke 124) and 20 MHz (for Fluke 123) |

### VDC

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

### VAC RMS

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

### OHMS

| | |
|---|---|
| Ranges | 500Ω, 5kΩ, 50kΩ, 500kΩ, 5MΩ, 30MΩ |
| Max. Resolution | 5,000 counts |
| Accuracy | ± (0.6% of reading + 5 counts) |

### CAPACITANCE

| | |
|---|---|
| Ranges | 50 nF ... 500µF |
| Max. Resolution | 5,000 counts |
| Accuracy | ± (2% of reading + 10 counts) |

### OTHER METER FUNCTIONS

| | |
|---|---|
| Frequency | Up to 70 MHz (Fluke 124) and up to 40 MHz (Fluke 123) |
| Continuity | Beeper on < 30Ω |
| Diode test | Up to 2.8V |
| Amps | Amp DC, Amp AC, Amp AC+DC using an optional current clamp or shunt.<br>Scaling factors:<br>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 | 1MΩ ± 1% // 10 pF ± 2 pF |
| Advanced meter functions | Auto/manual ranging<br>TouchHold®<br>Relative measurements (zero reference)<br>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 |

# Technical Specifications ScopeMeter 120 Series

| | |
|---|---|
| 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/m² 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*** | 20 (Fluke 124) and 10 (Fluke 123) instrument screens with user set-ups and user text |
| ***REAL-TIME CLOCK*** | Time and date stamp TrendPlot recording |

***POWER***

| | |
|---|---|
| Line power | Country specific line voltage adapter/battery charger included |
| Battery power | Rechargeable Ni-MH BP130 (installed in Fluke 124) or rechargeable NiCd BP120 (installed in Fluke 123) |
| Battery operating time | Up to 7 hours using BP130, up to 5 hours using BP120 |
| Battery charging time | 5 hours (Fluke 123), 7 hours (Fluke 124) |
| 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<br>UL3111-1 (1994)<br>CAN/CSA-C22.2 No. 1010.1 (1992)<br>ANSI/ISA S82.01 (1994) |

***INPUT VOLTAGE RATINGS***

| | |
|---|---|
| Maximum input voltage | 600V CAT III |
| *(Maximum voltage between input and reference lead)* | |
| Maximum input voltage using VPS40 Probe | 600 V CAT III, 1000 V CAT II |
| *(Maximum voltage between probe tip input and reference lead)* | |
| Floating voltage | 600V CAT III |
| *Maximum voltage between earth ground and any terminal (signal input or reference lead)* | |
| 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<br>30°C to 40°C, 75% RH non condensing<br>40°C to 50°C, 45% RH non condensing |
| Maximum operating altitude | 2,000m (6,500 feet)<br>3,000m (10,000 feet) voltages ≤ 400V |
| Maximum storage altitude | 12 km (40,000 feet) |
| Electro-Magnetic-Compatibility (EMC) | Emission EN50081-1 (EN55022 and EN60555-2)<br>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 (parts and labor) on main instrument, 1 year on accessories |

# FlukeView® ScopeMeter® Software

FlukeView ScopeMeter software helps you get more out of your ScopeMeter:

- Store instrument's screen copies on the PC, in color (with Fluke 190C-Series only) or in black&white
- Copy screen images into your reports and documentation
- Capture and store waveform data from your ScopeMeter on your PC
- Create and archive waveform references for automatic (Fluke 190C Series) or visual (Fluke 190B and 190C Series) comparison
- Includes waveform analysis, e.g. FFT spectrum analysis
- Copy waveform data into your spreadsheet for detailed analysis
- Use cursors for parameter measurement
- Extended recording of up to four user-selected measurements help you monitor and analyze slow moving signals and related events
- Logging of other readings directly into other application programs, eg., spreadsheet
- Add user text to instrument setups and send these to the instrument for operator reference and instructions
- Capture complete Replay sequence into the PC for further analysis and documentation
- English, French and German versions included on a single CD-ROM

**System requirements**

- Pentium 90 or better
- CD-ROM drive
- Windows® 95 / 98 / Me / NT 4.0 / 2000 / XP
- One free RS 232 port
- PM9080 Optically isolated RS232 adapter/cable, available separately or included in SCC120 / SCC190 kit and in ScopeMeter 'S'versions

**Supported Instruments**

Full support for Fluke 199C, 199B, 199, 196C, 196B, 196, 192B, 192, 124 and 123.

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# Accessories

| Standard Accessories | Fluke 199C, 196C, 199B, 196B, 192B | Fluke 123, 124 |
|---|---|---|
| Rechargeable battery pack (installed) | BP190 | BP120 (Fluke 123), BP130 (Fluke 124) |
| Line voltage adapter / Battery charger | BC190 | PM8907 |
| Voltage probes (1 set red, 1 set grey) and accessories | 10:1 voltage probe (VPS200) including hook clip, ground lead with hook clip, ground lead with mini alligator clip, 4 mm add-on probe tip, ground lead to 4 mm banana plug | STL120 Shielded Test lead set VPS40 high impedance 10:1 probe, 40 MHz (1 black, included with Fluke 124 only); HC120 hook clips,ground leads with mini alligator clips, AC120 alligator clips, BB120 BNC-to-Shielded-banana adapter |
| Multimeter testleads | TL75 Hard Point testlead set (1red, 1 black) | TL75 Hard Point test lead (1 black) |
| User manual | 9 language versions on CD-ROM, "Getting Started" booklet included with instrument | 14 language versions on CD-ROM. "Getting Started" booklet included with instrument |

Next to the above standard accessories, Fluke offers a wide range of optional accessories like temperature probes, current clamps, high voltage probes, cables, adapters and carrying cases to further assist you in your job.
See the Fluke web-site or contact your distributor for details.

## SCC190 and SCC120 - Software, Case, Cable kits

The Fluke ScopeMeters are connected to a PC using an optically isolated RS-232 interface cable PM9080.
Software and cable can be ordered seperately, or as part of a special value kit: the SCC190 kit or the SCC120 kit. Each of these include a protective hard shell carrying case (model depending on the ScopeMeter model) for safe and convenient storage of instrument and accessories, the FlukeView ScopeMeter Software for Windows and the PM9080 interface cable.

# Ordering Information

| | |
|---|---|
| Fluke 123 | Industrial ScopeMeter |
| Fluke 123/S | Industrial ScopeMeter with SCC120 kit |
| Fluke 124 | Industrial ScopeMeter (40 MHz) |
| Fluke 124/S | Industrial ScopeMeter (40 MHz) with SCC120 kit |
| Fluke 192B | ScopeMeter (60 MHz) |
| Fluke 192B/S | ScopeMeter (60 MHz) with SCC190 kit |
| Fluke 196B | ScopeMeter (100 MHz) |
| Fluke 196B/S | ScopeMeter (100 MHz) with SCC190 kit |
| Fluke 199B | ScopeMeter (200 MHz) |
| Fluke 199B/S | ScopeMeter (200 MHz) with SCC190 kit |
| Fluke 196C | Color ScopeMeter (100 MHz / 1 GS/s) |
| Fluke 196C/S | Color ScopeMeter (100 MHz / 1 GS/s) with SCC190 kit |
| Fluke 199C | Color ScopeMeter (200 MHz / 2.5 GS/s) |
| Fluke 199C/S | Color ScopeMeter (200 MHz / 2.5 GS/s) with SCC190 kit |
| SW90W | FlukeView ScopeMeter Software for Windows |
| PM9080 | Optically isolated RS232 adapter/cable |
| SCC120 | Software – Cable – Case kit for Fluke 120 Series |
| SCC190 | Software – Cable – Case kit for Fluke 190 Series |

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