35080M/199XRAY

Non-Invasive kVp Divider and Medical ScopeMeter

Technical Data

35080M Non-Invasive kVp Divider

The 35080M Non-Invasive kVp Divider quickly and accurately measures kVp for all modalities. The unit checks both above and below table tubes and displays the direct kVp values on either the 35050AT Dosimeter, the 199XRAY Medical ScopeMeter, or optional Excel Add-in software. The 35080M is highly portable and eliminates the need for bulky and heavy high-voltage divider tanks. In fact, it's so compact in size that it fits into a shirt pocket.

A patented* wide-range filter pack is included with the 35080M and provides accurate readings for the range of 50 kVp to 150 kVp. Four optional filter packs are available for use with the 35080M for CT, mammographic, and mobile applications.

199XRAY Medical Scopemeter

The 199XRAY Medical ScopeMeter has all of the normal oscilloscope functions, as well as the speed, performance, and analysis power for the more-demanding applications. This high-performance oscilloscope offers specifications 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, the 199XRAY is ideal for engineers who need the full capabilities of a high-performance oscilloscope in a handheld, battery-powered instrument.

In addition, the 199XRAY is especially designed for use with x-ray systems. This ScopeMeter displays kVp waveforms and direct kVp values simultaneously on an easy-to-read screen. Now you no longer have to waste time calculating scope traces to derive the kVp values.

The Winning Combination

The 35080M and 199XRAY are commonly used x-ray tools unmatched by traditional meters. This winning combination allows busy service engineers and biomedical personnel the ability to perform fast and accurate verification of kVp values for calibration or QA assessment. Fluke Biomedical is offering this combination in a convenient kit with all the accessories you need to get started.

*US Patent #4.843.619 and 4,916,727

35080M
Non-Invasive kVp Divider

Technical Specifications

Range
50 kVp to 150 kVp, using only the wide–range radiographic filter pack (Model 37617). Range and versatility are extended with the use of special optional filter packs.

Accuracy
± 2 % of reading in the range of 50 kVp to 150 kVp, exclusive of linearity, filtration, and gain effects. Linearity corrections automatically applied when using 35080M with either 35050AT Dosimeter or 199XRAY.

Response time
150 µs (10 % to 90 %)

Calibration
Internally generated signal provides a calibration check

Minimum time for valid reading
1 ms, 3-phase; one line cycle, single–phase

Tube current
Wide dynamic range from 4 mA to 3000 mA (3 phase), 2 mA to 1500 mA (single phase). Generator settings will vary in waveform and distance. Less than ± 1 kVp effect for wide–range radiographic filter pack covering 50 kVp to 150 kVp. Specialty filter packs may have different characteristics.

Environmental
Temperature range: 0 °C to 35 °C
Relative humidity: 20 % to 80 %
Storage temperature: –35 °C to 50 °C

Orientation
Long axis of the Model 35080M Non–invasive kVp Divider oriented perpendicular to axis of x–ray tube to eliminate heel effect

Power requirements
9 V battery, 60 hrs operation

Dimensions
2.38 in L x 3.5 in W x 8.25 in H
(6 cm L x 9 cm W x 21 cm H)

Weight
1.5 lb (0.68 kg)

Key Features

- New miniaturized configuration for convenient transport to the job site
- Fast/easy non–invasive kVp values for calibration/QA
- Non-invasive technology eliminates the hazards of high-voltage cables and the need for bulky divider tanks
- Auto ON/OFF when connected/disconnected
- Optional filter packs enable testing in all modalities
- Rh/Rh measurement capability when 35080M is used with Cadmium K–Edge and Linear Mammo Filter Pack Pair
- Convenient storage/carrying case

199XRAY
Medical ScopeMeter

Technical Specifications

Field Applications
- 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, similar to 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 1,000 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

mAs measurement calculates current over time
Using the cursors, you can now measure directly the amount of radiation produced by x-ray systems, or the total amount of charge applied to a system.

Smart averaging
Smart averaging gives the averaged waveform over successive acquisitions, reducing noise in the displayed waveform. Thanks to smart averaging, you can now also see an incidental curve of a different wave shape with no effect on the averaged curve. This allows you to see the averaged curve of a sequence of video lines, for example, while still seeing the incidental flyback line flash by. The oscilloscope gives an immediate response when the signal makes large changes.

Extended offset
Vertical offset is now extended to a maximum of 16 divisions, allowing vertical zoom-in for study of small details of the signal.

Selectable persistence
Persistence mode with selectable decay time helps to find anomalies in the wave shape and optimizes the display for color information when working with composite color video.

Key Features

- ScopeMeter displays kVp wave forms and direct kVp values simultaneously on an easy-to-read screen
- No more time spent calculating scope traces to derive kVp values
- Full medical oscilloscope scope functionality with color display
- ScopeMeter triggers on standard interlaced and high-resolution, non-interlaced video systems. Triggers on all lines nonselectively or select an individual video line — up to 2800 lines per frame
- mAs measurement calculates current over time
- Smart averaging capabilities
- Extended vertical offset
- Selectable persistence mode
- Extended video triggering
- FlukeView® for Windows® for documenting, enhancing, waveform analysis, and archiving results

Extended video triggering

Along with its triggering capability for standard, interlaced TV signals, the instrument also triggers on high–resolution, non–interlaced video systems. The ScopeMeter 199XRAY will trigger on all lines (nonselective), or can select an individual video line from systems with up to 2800 lines per frame.

FlukeView® for Windows®

Documenting
• Transfer waveforms, screens, and measurement data from the ScopeMeter to a PC. Print or import the data into your report.

Enhancing
• Add user text to individual ScopeMeter settings, providing guidance to the operator when recalling a setup.

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 backup purposes.

Waveform Comparison
• 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.

MA190 Accessory Kit

The MA190 accessory set enables interconnection of the Fluke 199XRAY for use in the field of Medical Imaging and Video systems. The kit is included in the Fluke 199XRAY as a standard. The accessory kit includes the following:
• 50 Ω BNC feedthrough terminator, in insulated enclosure, to maintain proper termination of test connections during measurement
• 50 Ω BNC terminator with 10:1 signal attenuation, to keep test terminal properly loaded while getting optimum signal amplitude to benefit from the instrument's extended offset range
• 1 Ω current shunt for current measurements, in insulated enclosure
• Safety–designed BNC cable, 1.5 m (5 ft), with plastic connectors for safe connection to test terminals even when not at ground potential
• Insulated BNC (f) to 4 mm banana–plug adapter
• Dual 4 mm banana receptacles (1 red, 1 black)

Dimensions
10.1 in L x 6.6 in W x 2.5 in H
(25.6 cm L x 16.9 W cm x 6.4 cm H)

Weight
4.4 lb (2 kg)

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Ordering Information

Model

35080M/199XRAY:	kVp Divider and Medical ScopeMeter Kit [includes Non-Invasive kVp Divider (35080M), wide-range filter pack (37617), carrying case (121002900), Medical ScopeMeter (199XRAY), Medical ScopeMeter Accessory Kit (MA190)]
199XRAY:	Medical ScopeMeter with kVp capabilities [includes the MA190 Medical ScopeMeter Accessory Kit]
35080M:	Non-Invasive kVp Divider [includes wide-range filter pack (37617) and carrying case (1210029000)]

199XRAY Standard Accessories

MA190:	Medical ScopeMeter Accessory Kit [includes FlukeView® for Windows® software, 50 Ω BNC feed-through terminator, 50 Ω BNC terminator with 10:1 signal attenuation, 1 Ω current shunt for current measurements, safety-designed BNC cable (1.5 m/5 ft), insulated BNC (f) to 4 mm banana-plug adapter, dual 4 mm banana receptacles (1 red, 1 black)]

35080M Standard Accessories

37617:	Wide-range filter pack
1210029000:	Carrying case

35080M Optional Accessories

33551:	CT filter pack
37351:	Linear mammo filter pack
37355:	Cadmium K-Edge filter pack
37946:	Mobile filter pack
38237:	Low range filter pack

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The accuracy you need from a company you can trust.