

# Survey Meters & Probes

## Portable GM Survey Meter



### Surveyor Meter 50™ And 200™

Both the Surveyor 50 and the Surveyor 200 models are portable survey meters designed for gamma/x-ray exposure rate measurements. This makes them both suited for alpha, beta, gamma and x-ray count rate measurements with an appropriate GM probe and calibration.

Each is ruggedly constructed of quality components that make them durable and simple to service. Internal components are laid out on modular circuit boards for ease of service and calibration.

The exclusive high voltage check assures that the detector is operating at its proper voltage (critical for operation near the "edge" of a GM detector plateau). The anti-saturation circuit keeps the meter reading off scale when the detector saturates in a high radiation field, providing an added margin of safety.

Both the Surveyor 50 and 200 have automatic dead time compensation which assures the accuracy of higher exposure rate reading for linear response on all ranges. A single 9 volt battery powers each instrument. The Surveyor 50 and the Surveyor 200 are compatible with probes on the following pages.

### FEATURES

- ★ Alpha, beta, gamma and x-ray detection
- ★ Exclusive HV check
- ★ Choice of GM probes
- ★ Wide view meter
- ★ Anti-Saturation Circuit
- ★ Dead time compensation
- ★ Calibration adjustment for each range
- ★ Audio alarm

### SPECIFICATION

- Radiation Detected: Alpha, beta, gamma and x-ray, depending upon the GM probe used.
- Detector: Choice of GM probes
- Range: Three linear ranges of:  
 SURVEYOR 50:  
 0-0.5 mR/h 0-600 cpm  
 0-5 mR/h 0-6000 cpm  
 0-50 mR/h 0-60000 cpm  
 SURVEYOR 200:  
 0-2 mR/h 0-2400 cpm  
 0-20 mR/h 0-24000 cpm  
 0-200 mR/h 0-240000 cpm
- Accuracy: Within 15% of reading for Cs-137; between 25% and 100% of full scale on any range
- High Voltage: Electronically stabilized, factory set at 900 V
- Connector: MHV
- Warm-up Time: None
- Saturation: Typically > 1000R/h on all ranges for most GM probes; >5 R/h for pancake GM probes
- Display: Rugged, recessed, high-torque 1 mA meter with 3.35" (8.51 cm) scale marked as follows:  
 SURVEYOR 50:  
 0-0.5 mR/h, 0-600 cpm, Bat. OK, HV OK.  
 SURVEYOR 200:  
 0-2 mR/h, 0-2400 cpm, Bat. OK, HV OK
- Size: 4.25" x 8" x 6.8" (10.8 cm x 20.3 cm x 17.3 cm) including handle and probe clip
- Weight: 2.2 lb (1 kg) excluding probe.
- Audio option- click or alarm sound

ITEM #	DESCRIPTION
5250-0001	Surveyor 50 Portable Survey Meter
5250-0003	Surveyor 200 Portable Survey Meter

## Surveyor 2000E™ Portable Survey Meter

The Surveyor 2000E is a energy compensated portable survey meter, scaled either in rem or in Sieverts, for dose rate measurements with BICRON RMPs ECPGM probe. An internal GM probe provides the response on the highest range (2000 mrem/h or 20mSv/h).

The Surveyor 2000E is also scaled in count rate to measure alpha, beta, gamma and x-rays. The ECPGM probe's energy shield can be detached for this purpose.

The unit can also be used with other GM probes operating at 900 V high voltage. It has been tested against ANSI 42.17A and meets or exceeds the requirements of NRC Reg. Guide 10.8 and 10CFR35.

The Surveyor 2000E includes HV and battery check sectors on the meter display, and automatic dead time correction for a linear response on all ranges with improved accuracy of the higher readings.

The anti-saturation circuit keeps the meter reading beyond full scale in radiation fields high enough to saturate the detector, providing an extra safety feature.

### FEATURES

- ★ Single 9 V battery
- ★ HV and battery check sectors
- ★ Variable response time
- ★ Built-in audio
- ★ Five linear ranges for dose rate
- ★ Four linear ranges for count rate
- ★ Anti-saturation circuit
- ★ Dead time compensation
- ★ Up to 2000 mrem/h (20 mSv/h)
- ★ Up to 720,000 cpm (12 kcps)
- ★ Rugged and durable



### SPECIFICATIONS

- Radiation Detected: Alpha, beta, gamma, and x-ray depending upon detector used.
- Detector: Choice of GM probes, external; GM tube, internal
- Range: Five linear ranges of:
 

0-0.2 mrem/h	720 cpm
0.2 mrem/h	7,200 cpm
0-20 mrem/h	72,000 cpm
0-200 mrem/h	720,000 cpm
0-2000 mrem/h	(internal detector)
- Accuracy: Within 10% of reading for Cs-137 when calibrated according to NRC Reg. Guide 10.8
- Energy Response: ±20% from 40 keV to 1.2 MeV (external detector)
- High Voltage: Electronically stabilized, factory set at 900 V.
- Warm-up Time: None
- Saturation: Typically > 1000rem/h on all ranges for most GM probes; (>5 rem/h for pancake GM probes)
- Response Time: Switch-selectable, optimized for each range, 0-90% of final reading as follows:
 

Range	Fast	Slow
X0.1	6 sec	25 sec
X1	2 sec	6 sec
X10	1 sec	3 sec
X100	<1 sec	1 sec
X1000	<1 sec	1 sec
- Size: 4.25" x 8" x 6.8" (10.8 x 20.3 x 17.3 cm) including handle and probe clip.
- Weight: 2.2lb

ITEM #	DESCRIPTION
5250-0098	Surveyor 2000E Rate Meter
5250-0104	Probe for 2000E

## Surveyor 2000™ Portable Survey Meter

The Surveyor 2000 model is a portable survey meter designed for gamma and x-ray with internal probe; plus measurements of alpha, beta and gamma count-rate with the appropriate external GM probe.


The Surveyor 2000 combines an internal energy-compensated GM tube (for the 2 R/h range) with a choice of external GM probes to meet or exceed the survey instrument requirements of 10CFR 35 for Nuclear Medicine use.

The unit checks HV to insure the detector is operating at its proper voltage. An anti-saturation circuit keeps the meter reading off scale when the detector saturates in a high radiation field. Automatic dead time compensation assures the accuracy of higher exposure rate reading for linear response on all ranges.

The Surveyor 2000 is the perfect Survey Meter for your Nuclear Medicine Department and eliminates the need for two survey instruments for high and low radiation readings.



### FEATURES

- ★ Alpha, beta, gamma and x-ray detection
- ★ Internal GM tube and optional external probe
- ★ Anti-saturation circuit
- ★ Built-in audio
- ★ Counts up to 2000 mR/h
- ★ Exceeds 10CFR35 requirements
- ★ 

### SPECIFICATIONS

- Radiation Detected: Alpha, beta, gamma, and x-ray depending upon detector used.
- Detector: Choice of GM probes, external; GM tube, internal
- Range: Five linear ranges of:
 

0-0.2 mR/h	0-240 cpm
0.2 mR/h	0-2,400 cpm
0-20 mR/h	0-24,000 cpm
0-200 mR/h	0-240,000 cpm
0-2000 mR/h	(internal detector)
- Accuracy: Within 10% of reading for Cs-137 when calibrated according to NRC Reg. Guide 10.8
- Energy Response: ±20% from 40 keV to 1.2 MeV (internal detector)
- High Voltage: Electronically stabilized, factory set at 900 V. Contains self-test to verify detector HV power supply.
- Warm-up Time: None
- Saturation: Typically > 1000R/h on all ranges for most GM probes; (>5 R/h for pancake GM probes)
- Response Time: Switch-selectable, optimized for each range, 0-90% of final reading as follows:
 

Range	Fast	Slow
X0.1	6 sec	25 sec
X1	2 sec	6 sec
X10	1 sec	3 sec
X100	<1 sec	1 sec
X1000	<1 sec	1 sec
- Size: 4.25" x 8" x 6.8" (10.8 x 20.3 x 17.3 cm) including handle and probe clip.
- Weight: 2.2 pounds (1 kg) excluding external probe

ITEM #	DESCRIPTION
5250-0019	Surveyor 2000 Rate Meter

## Surveyor-M Portable Count Rate Meter

### Anti-Saturation Protection For GM Probes

The Surveyor M is a portable count-rate meter designed to use GM or scintillation detectors in a wide variety of monitoring applications. Built-in scaler and mR/h meter scale options add to the versatility of the instrument.

Rugged construction, quality components and modular design make the unit durable and easy to service. Internal components are laid out on modular circuit boards. Span, calibration pots (one for each range) and other internal controls are clearly marked. The adjustable HV with external control and readout on the meter makes changing from one type of detector to another an easy procedure.

A switch-selectable anti-saturation circuit is provided for use with GM detectors. This feature keeps the meter reading off-scale when the detector saturates in a high radiation field, providing an added safety margin. A scaler option provides three preset counting times. A single push-button controls the operation, and readout is on a 6 digit LCD.

The mR/h option provides exposure rate readings (Cs-137 calibration) when a Bicron EWGM or SWGM probe is used with the unit (see next Page for information). The Surveyor M's high count rate (106 cpm) makes it ideal for alpha surveys when equipped with the Bicron A50 probe.

### FEATURES

- ★ Utilizes GM or scintillation detectors
- ★ Built-in digital scaler option
- ★ Front panel HV adjustment
- ★ HV readout on the meter
- ★ Built-in audio
- ★ Four linear ranges
- ★ Optional mR/h scale

ITEM #	DESCRIPTION
5250-0004	Surveyor-M Portable CountRate Meter



### SPECIFICATIONS

- Radiation Detected: Alpha, beta, gamma and x-ray depending upon detector used
- Detector: Choice of GM or scintillation probes
- Connector: MHV
- Range: Linear ranges of  
STANDARD:  
0-1000 cpm  
0-10,000 cpm  
0-100,000 cpm  
0-1,000,000 cpm
- Accuracy: Within 10% of reading between 20% and 100% of full scale on any range
- High Voltage: Electronically stabilized, adjustable to > 1600V, with readout on the meter; HV can support 100 megohm loads
- Warm-up Time: None
- Saturation: Typically > 1000R/h on the X1, X10, and X100 ranges for most GM detectors (>5R/h for pancake GM probes) when anti-saturation circuit is activated
- Controls: Seven position rotary switch as illustrated; two position rotary switches for response, and audio; and HV adjustment with guard
- Display: Rugged, recessed, high-torque 1 mA meter with 3.35 inch scale marked:  
Standard: 0-1000 counts per minute and 0-2.0 kilovolts, with Battery. OK check band  
mR/h Option: 0-0.20 mR/h, 0-320 cpm, and 0-2.0 kilovolts, with Battery OK check band
- Audio: A built-in speaker (with panel mounted on/off switch) provides an audible "click" for each pulse.
- Size: 4.25 x 8 x 6.8 inch (10.8 x 20.3 x 17.3 cm) including handle and probe clip
- Weight: 3.1 pounds (1.4 kg)

## Side Window GM Probe-SWGM

The SWGM is another general purpose Geiger-Mueller probe for health physics survey applications involving betas or gammas. It detects betas when the outer housing is slid back to expose the sides of the GM tube. The outer housing serves as a beta shield and provides energy compensation (for a flat gamma energy response).



SWGM

## Pancake GM Probe-PGM

The PGM is ideal for low-level monitoring equipment, clothing, floors, tabletops, hands, feet and other surfaces for low-level alpha and beta-gamma contamination. BeCu protective screens cut down on GM tube replacements by reducing physical damage to the tubes. The PGM mounts its pancake GM tube in an aluminum housing which has a spatula-type handle. The probe design lets you change the BeCu screen and GM tube easily.



PGM

## End Window GM Probe-EWGM

The EWGM is a general purpose Geiger-Mueller probe for health physics contamination survey applications. The probe detects low energy gammas, betas, and relatively high-energy alphas through its thin end window. Higher energy gammas can be detected through the probe's sides.



EWGM

## NaI Scintillation Probes

### G-1 NaI (Tl) Scintillation Probe

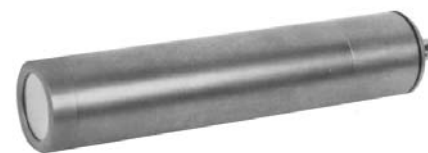
The G-1 probe is a compact, lightweight general-purpose probe useful for detecting small changes in background. This probe is used in the detection of gamma radiation >60 keV, with a crystal size of 1" x 1". The G-1 Scintillation Probe is used with the SURVEYOR M, Frisk-Tech and Labtech.



G1

### G-1-LE NaI (Tl) Thin Window Scintillation Probe

The G-1-LE probe has a thin crystal and entrance window (aluminum or beryllium) for enhanced detection of I-125 and other low energy sources. This probe is used in the detection of gamma radiation 10 to 60 keV, with a crystal size of 1" x 0.04". The G-1-LE Scintillation Probe is used with the SURVEYOR M.



G1LE

ITEM #	DESCRIPTION
5250-0005	Side Window GM Probe (SWGM)
5250-0006	End Window GM Probe (EWGM)
5250-0007	Pancake GM Probe (PGM)
5250-0104	Pancake For 2000E

ITEM #	DESCRIPTION
1200-0041	G-1 NaI Scintillation Probe 1" x 1"
1200-0042	G-1-LE NaI Probe, 1" x 0.04" Al window
1200-0043	G-1-LE NaI Probe, 1" x 0.04" Be window
0975-0023	Cs-137 Check Source for Survey Meter
0670-0021	Holder for Check Source for Survey Meter

## Frisk-Tech (Ratemeter/Monitor with Alarm)

The Frisk-Tech has an alarming ratemeter designed to use GM or scintillation detectors in a wide variety of “frisking” or monitoring applications. Built-in scaler and mR/h meter scale options add to the versatility of the instrument.

The Frisk-Tech’s compatibility with many different GM and scintillation probes makes it suitable for such applications as area monitoring, personnel “frisking” and contamination monitoring. Its size and weight make it portable enough for use as a survey instrument. The built-in scaler option provides a practical alternative to higher priced scaler devices. Call for Specifications.



### FEATURES

- ★ GM or Scintillation Detectors
- ★ Built-in digital scaler option
- ★ Audible/Visual alarm
- ★ Optional mR/h scale
- ★ Regulated battery recharge/AC

ITEM #	DESCRIPTION
5250-0051	LABTECH (Scaler/Ratemeter/Analyzer)
5250-0052	FRISK-TECH (Ratemeter/Monitor with Alarm)



## Monitor 4EC Survey Meter

The Monitor 4EC is a compact general purpose easy-to-use survey meter capable of detecting alpha, beta, gamma and x-rays over 3 selectable ranges. A red counting light flashes and audible beep will sound with rising radiation levels. The Monitor 4 EC is accurate for reading gamma and x-rays above 40 keV.

The Halogen-quenched GM tube, energy compensated sidewall detects activity down to 10 keV through the window. The meter reads in Sv or R units and will hold full scale in activity 100 times maximum reading. Size: 145 x 72 x 38mm (5.7" x 2.8" x 1.5") Weight: 178 grams (6.3 oz)



## Inspector Deluxe Radiation Monitor

The Inspector is a microprocessor controlled radiation measuring instrument which offers excellent sensitivity to low level (0.001 to 50 mR/hr) activity. The digital readout is displayed with a red count light and audible beep, providing instant indication of the radiation level. The Inspector includes an adjustable timer and external calibration controls.

The Inspector is a must for all Nuclear Medicine Departments because of its ease-of-use and accuracy. Small size does not limit the power of its performance. Dual miniature jack drives CMOS or TTL devices with count to computer or data logger.

### FEATURES

- ★ 4 Digit liquid crystal display
- ★ Set counting periods from 1 min to 24 hours
- ★ For counting alpha, beta, gamma or x-rays

ITEM #	DESCRIPTION
5250-0046	Monitor 4EC Survey Meter
5250-0047	Inspector Deluxe Radiation Monitor