

# Ion Chamber Survey Meter with Beta Slide

Victoreen® Model 451B



- High sensitivity measurements of exposure and exposure rate
- Available with dose equivalent energy response (SI units)
- Fast response to measure radiation from leakage, scatter beams and pinholes
- Ergonomic, anti-fatigue handle with replaceable grip and wrist strap
- Sliding shield for alpha and beta discrimination
- Excel add-in for Windows® for data logging and selection of instrument operating parameters (optional)
- Low noise chamber bias supply for fast background settling time
- Bright, highly visible colors
- Easy touch keys

## Introduction

The Model 451B state-of-the-art ion chamber survey meter is a hand-held battery operated unit designed for use in both rugged and normal environments. The Model 451B measures alpha, beta, gamma and x-ray radiation. The Model 451B employs microprocessor and LCD technology and features a rugged ionization chamber with a mylar window and protective steel mesh. An integral beta shield serves as an equilibrium thickness for photon measurements. The ergonomic handle, features a large diameter cushioned grip and is designed to reduce fatigue associated with extended use. The case is constructed of lightweight, high strength materials and is sealed against moisture. The user must specify R or Sv when ordering.

The display features an analog bar graph, 2.5 digit digital readout, low battery and freeze mode indicators. User controls consist of an ON/OFF button and a MODE button. The unit is auto-zeroing and auto-ranging. The display features circuitry that automatically activates the backlight in low ambient light conditions.

The RS-232 interface can be connected directly to a computer for use with the Excel add-in for Windows, enhancing the functionality of the instrument. The software allows for data retrieval, user parameter selection and provides a virtual instrument display with audible (requires sound card) and visual alarm indication. The software may be customized by the user for specific applications.

## Applications

The Model 451B is ideal for site surveys and a wide range of medical and health physics applications. It is regularly used by Police and Fire Departments, x-ray manufacturers, government agencies, state inspectors, emergency response and HAZMAT teams, nuclear medicine labs, hospital radiation safety officers, and nuclear power industry.

## Features

- Ideal for a wide range of applications including NDT, x-ray, and environmental
- Battery operated
- Auto-ranging and auto-zeroing
- RS-232 communications interface
- Measures rate and dose simultaneously
- Tripod mount for stationary, area monitor applications
- Freeze mode indicates peak reading
- Programmable flashing display and audible alarm
- Automatic, ultra-bright LCD
- Excel add-in for Windows (optional)

## Specifications

**Radiation detected** Alpha above 4 MeV, Beta above 100 keV, and Gamma above 7 keV

### Operating ranges

0 to 5 mR/h	or	0 to 50 $\mu$ Sv/h
0 to 50 mR/h	or	0 to 500 $\mu$ Sv/h
0 to 500 mR/h	or	0 to 5 mSv/h
0 to 5 R/h	or	0 to 50 mSv/h
0 to 50 R/h	or	0 to 500 mSv/h

**Accuracy** Within 10% of reading between 10% and 100% of full scale indication on any range, exclusive of energy response. Calibration source is  $^{137}\text{Cs}$

### Detector

**Chamber** 349 cc volume air ionization

**Chamber wall** 246 mg/cm<sup>2</sup> thick phenolic

**Chamber window** 1.7 mg/cm<sup>2</sup> mylar, protected by steel mesh, 46 cm<sup>2</sup> detection area

**Beta slide** 440 mg/cm<sup>2</sup>

**Controls** ON/OFF and MODE

**Automatic features** Auto-zeroing, auto-ranging, and auto-backlight

### Response time

Range	Response
0 to 5 mR/h (0 to 50 $\mu$ Sv/h)	8 sec
0 to 50 mR/h (0 to 500 $\mu$ Sv/h)	2.5 sec
0 to 500 mR/h (0 to 5 mSv/h)	2 sec
0 to 5 R/h (0 to 50 mSv/h)	2 sec
0 to 50 R/h (0 to 500 mSv/h)	2 sec

**Power requirements** Two 9 V alkaline, 200 hours operation

**Warm-up time** One minute

**Display** LCD analog/digital with backlight

**Analog** 100 element bar graph 6.4 cm long. Bar graph is divided into 5 major segments, each labeled with the appropriate value for the range of the instrument

**Digital** 2.5 digit display is followed by a significant zero digit depending on the operating range of the instrument. The units of measurement are indicated on the display at all times. Digits are 0.25 in (6.4 mm) high. Low battery and freeze indicators are also provided on the display

### Modes

**Integrate mode** Operates continuously 30 seconds after the instrument has been turned on. Integration is performed even if the instrument is displaying in mR/h or R/h

**Freeze mode** Will place a tick mark on the bar graph display to hold on the peak displayed value. The unit will continue to read and display current radiation values

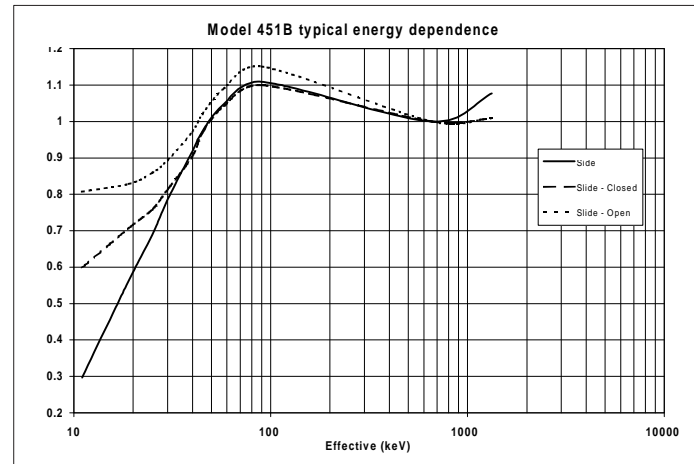
## Environmental

**Temperature range** - 4° to + 158°F (- 20° to + 70°C)

**Relative humidity** 0 to 100%, @ + 60°C

**Geotopism** Less than 1%

## Typical energy dependence



**Dimensions** 4 (w) x 8 (d) x 6 in (h) (10 x 20 x 15 cm)

**Weight** 2.5 lb (1.11 kg)

### Optional accessories

**451 Assistant for Excel** (Model 451EXL), includes RS-232 interface cable

**Single Unit Carrying Case** (Model 190HPS)

**Check Source,  $^{238}\text{Uranium}$ , 0.064  $\mu\text{Ci}$ , impregnated 2 x 2 in yellow card** (Model 450UCS)

### Available Model(s)

**451B-RYR** Ion Chamber Survey Meter with Beta Slide and standard chamber

**451B-DE-SI-RYR** Ion Chamber Survey Meter with Beta Slide and dose equivalent chamber

**CE Tested. Meets applicable standards.**

For more information, receive our full product catalog, or order online, contact **Radiation Management Services** business of **Fluke Biomedical**: 440.248.9300 or [www.flukebiomedical.com/rms](http://www.flukebiomedical.com/rms).

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