



Victoreen Model 451B

Ion Chamber Survey Meter with Beta Slide



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
Choice of 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 1/2 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
- Freeze mode indicates peak reading
- Automatic, ultra-bright LCD display
- Excel add-in for Windows ® (optional)
- Real-time data logging
- Downloading of 2700 data sets stored in instrument
- Virtual instrument display with audible and visual alarm indication
- Supports user instrument configuration and parameter selection
- User selectable modes

SPECIFICATIONS

Radiation Detected

Alpha above 4 MeV

Beta above 100 keV

Gamma above 7 keV

Operating Ranges

0-5 mR/h or 0-50 µSv/h

0-50 mR/h or 0-500 µSv/h

0-500 mR/h or 0-5 mSv/h

0-5 R/h or 0-50 mSv/h

0-50 R/h or 0-500 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 Cs

Detector Chamber: 349 cc volume air ionization

Chamber wall: 246 mg/cm² thick phenolic
 Chamber window: 1.7 mg/cm² mylar, protected by steel mesh, 46 cm² detection area
 Beta slide: 440 mg/cm²

Controls ON/OFF and MODE

Automatic Features

Auto-zeroing, auto-ranging, and auto-backlight

Response Time

Range	Response in Seconds
0-5 mR/h (0-50 μSv/h)	8
0-50 mR/h (0-500 μSv/h)	2.5
0-500 mR/h (0-5 mSv/h)	2
0-5 R/h (0-50 mSv/h)	2
0-50 R/h (0-500 m Sv/h)	2

Power Two 9-volt alkaline, 200 hours operation

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 1/2 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 1/4 in (6.4 mm) high. Low battery and freeze indicators are also provided on the display

Warm-Up Time One minute

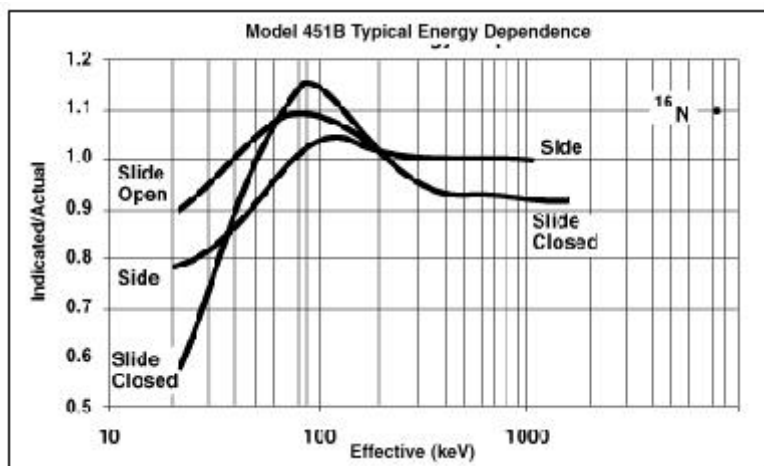
Environmental

Temperature Range - 40°C to + 70°C

Relative Humidity 0 to 100%, @ + 60°C

Geotropism Less than 1%

Typical Energy Dependence



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

Weight 2 lb 7 oz (1.11 kg)

451B Models

Model 451B-RYR 451B w/standard chamber

Model 451B-YGG 451B w/standard chamber

Model 451B-DE-SI-RYR 451B w/Dose

Equivalent chamber

Model 451B-DE-SI-YGG 451B w/Dose

Equivalent chamber

Suffix designation RYR = Red/yellow/red

Suffix designation YGG = Yellow/gray/gray

Options Model 451EXL Excel add-in software and

RS-232 interface cable

Model 190HPS Single unit carrying case

Model 190HPC Multiple unit carrying case

Model 451UCS 238 Uranium .064 μ C check source, impregnated 2 in x 2 in yellow card

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

Indicated/ Actual

Model 451B Typical Energy Dependence

Effective (keV)

Specifications are subject to change without notice.

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Regulatory Compliance

Certified to meet European EMC directive 89/336/EEC and FCC Part 15 Class B

This includes EN55022 Class B, EN50082-1. Meets safety standards EN61010-1 and CSA 22.2 No. 950

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