

451B MONITOR DE RADIACIÓN AMBIENTAL EN MODO CÁMARA DE IONIZACIÓN Y CON VENTANA PARA RADIACIÓN BETA

451P MONITOR DE RADIACIÓN AMBIENTAL EN MODO CÁMARA DE IONIZACIÓN PRESURIZADA

Descripción

Fluke Biomedical ofrece dos monitores en modo de cámara de ionización. El 451P dispone de una cámara de ionización presurizada para lecturas con resolución de μS y el 451B incorpora una pantalla protectora deslizante beta que sirve como un espesor de equilibrio para las mediciones de fotones y permite la discriminación beta.

Ambos modelos disponen de auto-rango y miden la tasa de radiación y dosis acumulada de varios tipos de fuentes de radiación (451P: rayos X y gamma; 451B: beta, rayos X y gamma). El detector de cámara de ionización permite un tiempo de respuesta rápido a la radiación de una fuga, rayos dispersos y poros. Además, la tensión de alimentación de la cámara de bajo ruido proporciona un tiempo rápido de estabilización de fondo.

La pantalla digital dispone de una barra gráfica analógica, lectura digital de 2.5, descarga de pilas y congelación (detección de pico), indicador de modo y una función de retroiluminación automática. Los controles de usuario consisten en un botón ON/OFF y un botón de MODO. El mueble está construido de materiales ligeros y resistentes y está sellado contra humedad.

El interfaz RS232 puede ser conectado directamente a un ordenador para utilizarlo con el programa opcional basado en Windows Excel (451EXL), ampliando la funcionalidad del instrumento. Este software permite la recuperación de los datos, la selección de parámetros de uso y suministra una pantalla de instrumento virtual con señal acústica (requiere tarjeta de sonido) e indicación de alarma visual.



Características principales

- Resolución μS – sólo 451P
- Mediciones de dosis de piel (ventana abierta) y dosis profunda (ventana cerrada) – sólo 451B
- Medición de alta sensibilidad simultánea de tasa y dosis, con capacidad de registrar la tasa de pico
- Auto-rango y auto-cero
- Interfaz de comunicaciones con programa opcional basado en Windows Excel para registro de datos
- Ergonómico, asa antifatiga con empuñadura sustituible, correa de muñeca y montaje en trípode
- Pantalla LCD con "flashing" programable y alarma acústica
- Puerta de pilas fácilmente accesible en el exterior de la parte inferior del mueble (funciona con dos pilas alcalinas de 9V)
- Disponible con dosis de energía equivalente (unidades SI)

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	451P	451B
Detector	Pressurized ion chamber (125 psi)**	Ion chamber
End users	<ul style="list-style-type: none"> • x-ray manufacturers • state inspectors • government agencies • biomedical technicians • maintenance technicians for airport baggage scanners 	<ul style="list-style-type: none"> • x-ray manufacturers • state inspectors • government agencies • police and fire departments • emergency response and HAZMAT teams • nuclear medicine labs • hospital radiation safety officers • nuclear power workers
Radiation detected	gamma, x-ray	beta, x-ray, gamma

**Due to the pressurized ion chamber, the 451P is considered U.S. Department of Transportation (DOT) Dangerous Goods and must be shipped via IAW DOT special permit DOT-SP 13187.



Technical specifications

Radiation detected

Alpha: > 7.5 MeV
 Beta: > 1 MeV (451P);
 > 100 keV (451B)
 Gamma: > 25 keV (451P);
 > 7 keV (451B)

Operating ranges, response time (451P)

0 µR/h to 500 µR/h (5 sec)
 0 mR/h to 5 mR/h (2 sec)
 0 mR/h to 50 mR/h (1.8 sec)
 0 mR/h to 500 mR/h (1.8 sec)
 0 R/h to 5 R/h (1.8 sec)

Operating ranges, response time (451B)

0 mR/h to 5 mR/h (8 sec)
 0 mR/h to 50 mR/h (2.5 sec)
 0 mR/h to 500 mR/h (2 sec)
 0 R/h to 5 R/h (2 sec)
 0 R/h to 50 R/h (2 sec)

Accuracy

Within 10 % of readings between 10 % and 100 % of full scale indication on any range, exclusive of energy response

Detector

Chamber (cc volume air ionization):
 230 cc (451P); 349 cc (451B)
 Chamber wall (phenolic):
 246 mg/cm² (451B)
 Chamber window (mylar):
 6.6 mg/cm² (451B)
 Beta slide:
 440 mg/cm² (451B)
 Controls: ON/OFF and MODE (451P)

Automatic features

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

Power requirements

Two 9 V alkaline, 200 hours operation

Warm-up time

Less than two minutes for initial operation when the instrument is in equilibrium with ambient temperature (451P)
 One minute (451B)

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 6.4 mm (0.25 in) 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 °F to 122 °F (451P);
 -4 °F to 158 °F (451B)
 Relative humidity:
 0 % to 100 % (451P);
 0 % to 100 % (at 140 °F) (451B)
 Geotropism:
 Negligible (451P);
 < 1 % (451B)

Typical energy dependence

¹⁶Nitrogen gamma rays are 110 % to 120 % of indicated readings as determined at the University of Lowell

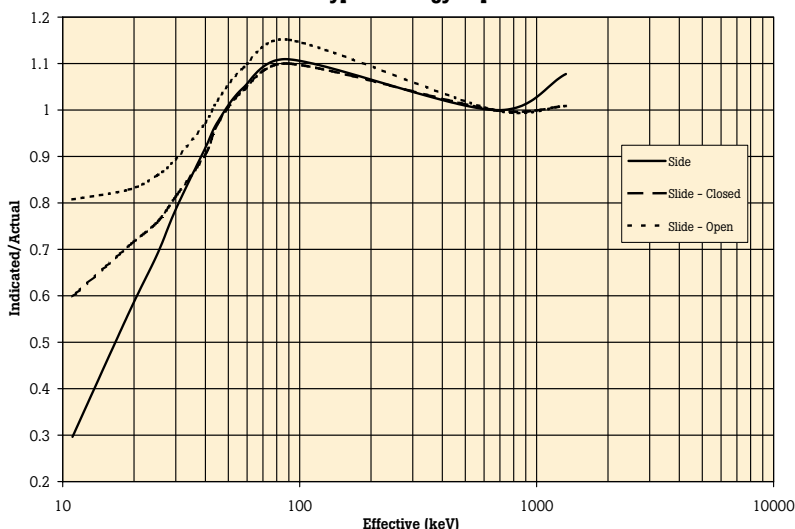
Dimensions (WxDxH)

10 cm x 20 cm x 15 cm
 (4 in x 8 in x 6 in)

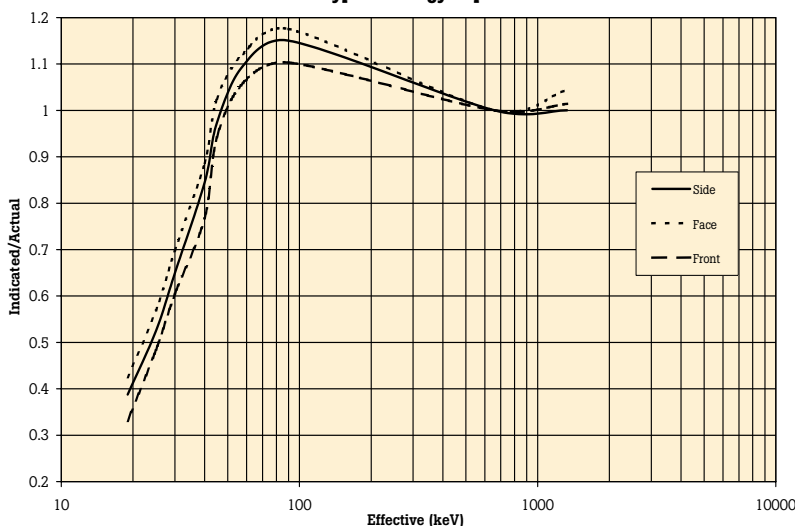
Weight

451P: 1.07 kg (2.4 lb)
 451B: 1.11 kg (2.5 lb)

451B typical energy dependence



451P typical energy dependence



Ordering Information

Models

451P-RYR Pressurized μR Ion Chamber Survey Meter with standard chamber

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

451P-DE-SI-RYR Pressurized μR Ion Chamber Survey Meter with dose equivalent chamber

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

Optional accessories

451EXL 451 Assistant for Excel, includes RS-232 interface cable

190HPS Single Unit Carrying Case

62-103 Check Source, ^{137}Cs , 10 μCi . Flat disc, 1-inch diameter

450UCS Check Source, $^{238}\text{Uranium}$, 0.064 μCi , impregnated, 2 in x 2 in yellow card

About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

Fluke Biomedical Regulatory Commitment

As a medical device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 certified and our products are:

- FDA Compliant
- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required

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