








Survey meter selection guide

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Ion chamber survey meters					Survey meters		
							
Product	Ion Chamber Survey Meter with Beta Slide	Pressurized µR Ion Chamber Survey Meter	Low Energy RF Shielded Survey Meter	Panoramic Survey Meter	Advanced Survey Meter (ASM)	Portable Neutron Survey Meter	190 Meter with GM Pancake Probe on Telescoping Assembly
Model	451B	451P	440RF/D	470A	ASM-990 Series	190N	190EX
Specifications							
Detector	Ion chamber	Pressurized ion chamber (125 psi)	Ion chamber	Ion chamber	Dependent on probe selected (992 & 993 include internal energy compensated 1 R/h GM tube)	BF ₃ proportional counter and neutron energy compensating material	Halogen quenched “pancake” GM tube
Operating modes	Rate, integrate, freeze	Rate, integrate, freeze	Rate	Rate, integrate	Rate, integrate, scaler (based on time or measurement), timed peak-hold, data logging	Rate, integrate	Rate, integrate
Alpha radiation	> 7.5 MeV	—	—	> 8 MeV	Probe dependent	—	> 3.5 MeV
Beta radiation	> 100 keV	> 1 MeV	> 150 keV	> 120 keV	Probe dependent	—	> 35 keV
Gamma radiation	> 7 keV	> 25 keV	> 12 keV	> 10 keV	> 60 keV for for internal 1 R/h GM tube (992 & 993); otherwise probe dependent	No response in ¹³⁷ Cs gamma radiation in fields up to 500 R/h	> 6 keV
Operating ranges (response time)	0 to 5 mR/h (8 sec) 0 to 50 mR/h (2 sec) 0 to 500 mR/h (2 sec) 0 to 5 R/h (2 sec) 0 to 50 R/h (2 sec)	0 to 500 µR/h (5 sec) 0 to 5 mR/h (2 sec) 0 to 50 mR/h (1.8 sec) 0 to 500 mR/h (1.8 sec) 0 to 5 R/h (1.8 sec)	0 to 1 mR/h (7 sec) 0 to 3 mR/h (7 sec) 0 to 10 mR/h (5 sec) 0 to 30 mR/h (5 sec) 0 to 100 mR/h (5 sec)	0 to 3 mR/h (8 sec) 0 to 10 mHR/h (3 sec) 0 to 30 mR/h (2 sec) 0 to 100 mR/h (1.5 sec) 0 to 300 mR/h (1.5 sec) 0 to 1,000 mR/h 0 to 3, 10, 30, 100, 300, 1,000 R/h	Dependent on probe selected 0.1 mR/h to 1 R/h for internal GM tube (992 & 993)	—	Background ~80 mR/h
Integrate range	—	—	—	0 to 3, 10, 30, 100, 300, 1,000 mR	Probe dependent	0 µRem to 1,000 Rem	—
Typical background (shielded)	—	—	—	—	Probe dependent	—	30 CPM
Sensitivity	—	—	—	—	Probe dependent	2,000 counts/mRem	3,500 CPM/mR/h
Accuracy	Within 10 % of readings between 10 % and 100 % of full scale indication on any range, exclusive of energy response	Within 10 % of readings between 10 % and 100 % of full scale indication on any range, exclusive of energy response	Within 10 % of readings between 10 % and 100 % of full scale indication on any range, exclusive of energy response	Within 10 % of readings between 10 % and 100 % of full scale indication on any range, exclusive of energy response	Probe dependent	10 % of theoretical ICRP dose rate	(Same as ion chamber survey meters)
Temperature range	-20 °C to 70 °C (-4 °F to 158 °F)	-20 °C to 50 °C (-4 °F to 122 °F)	20 °C to 40 °C (68 °F to 104 °F)	-30 °C to 50 °C (-22 °F to 122 °F) Alkaline batteries below: 0 °C (32 °F)	-10 °C to 50 °C (14 °F to 122 °F)	-10 °C to 40 °C (14 °F to 104 °F) Detector assembly: -80 °C to 80 °C (-112 °F to 176 °F)	-10 °C to 60 °C (14 °F to 140 °F)
Relative humidity	0 to 100 % (at 140 °F)	0 to 100 %	0 to 95 % (non-condensing)	0 to 99 % (non-condensing)	0 to 95 % (non-condensing)	—	0 to 95 % (non-condensing)
Geotropism	< 1 %	Negligible	Within 2 % of full scale in any orientation	Within 2 % of full scale in any orientation	—	—	—
Features and benefits							
Auto-ranging digital display	yes	yes	no	no	yes	yes	yes
Data logging	yes	yes	no	no	yes	yes	yes
Other key features	Measures skin dose (slide open) and deep dose (slide closed)	µR resolution	Ideal for applications in high RF fields	Very low energy response	Advanced data-logging, user-defined protocols, IrDA communications, barcode reader (optional)	Portable, self-contained unit with flexible detector assembly	Lightweight, ergonomic design to survey remote locations
End-users	Homeland security – first responders Nuclear power industry Hospital radiation safety officers X-ray manufacturers Government agencies State inspectors Nuclear medicine labs	X-ray manufacturers Airports – baggage screeners State inspectors Government agencies Biomedical technicians Research labs	TV manufacturers (cabinet x-ray)	X-ray manufacturers Radiation oncology centers Isotope production Diagnostic x-ray suites (mammography)	Radiation safety officers Nuclear medicine labs Diagnostic x-ray Hospital emergency room technicians Environmental health physicists Homeland security – first responders Nuclear power industry	Radiation oncology centers Nuclear power industry	State agencies Nuclear power industry

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

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

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