FLUKE®

Biomedical

ASM-993

Advanced Survey Meter

Technical Data

The ASM-993 Advanced Survey Meter can detect alpha, beta, gamma, or x-ray radiation within an operating range of 1 µR/hr to 1 R/hr (1 to 5,000,000 CPM). The 993 features a fully calibrated internal pancake detector, as well as an internal energy-compensated 1 R/hr GM detector. This meter can be used as a general survey meter, an area monitor, and a contamination monitor.

Designed to meet the high-technology requirements of health physics, medical physics, and nondestructive testing applications, the ASM-993 Series is well-suited for a wide range of end users, including: radiation safety officers, nuclear medicine laboratories, diagnostic x-ray and hospital emergency-room technicians, environmental-health physicists, and emergency responders. The unit is shipped calibrated and ready-to-use.

Key features

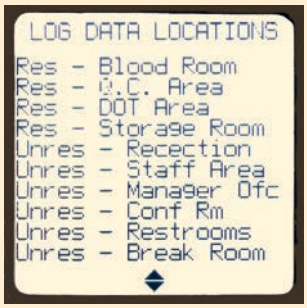
- One hand operation
- Simultaneous auto-scaling measurement of rate and dose, with the capability to record peak rate
- Two on-board detectors
- Data-logging survey mode feature allows user to store up to five separate survey sequences
- Saved data can be uploaded to a PC via included Infrared Data (IrDA) transmitter
- Easy-to-use multifunction keypad for intuitive menu navigation
- Backlit analog/digital LCD display with full-range audio output capability
- Barcode scanner (optional)
- Auto power-down feature extends battery life

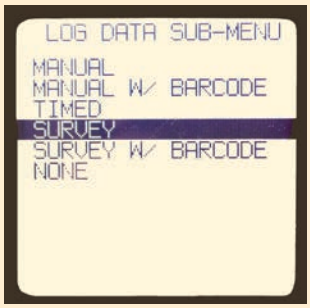
Data logging modes

The ASM-993's Log Data feature can easily be accessed via the setup sub-menu. The unit can log/save a maximum of 500 data points in any of three separate modes (manual and survey modes can utilize the optional barcode scanner).

Manual: Individual rate data points can be saved by pressing the Start/Stop/Rst/Save button.

Timed: A data point will automatically be saved at user-selectable time intervals in the range of 1 second to 255 seconds.





Survey: Programmed sequences can be accessed via the menu system. Pressing the Start/Stop/Rst/Save button saves the current reading and displays the next survey location.

Programming of survey sequences, as well as retrieval of logged data, is accomplished via the built-in IrDA port.

Label names up to 20 characters can be programmed into the unit to identify the individual survey locations.

Specifications

<table>
<tr><th colspan="2">ASM-993</th></tr>
<tr><td>Operating modes</td><td>Rate, timed-peak hold, integrate, data logging, and scaler (dual option: "based on measurement" or "based on time")</td></tr>
<tr><td>Operating rate ranges (dependent on selected probe):</td><td>Complementary units in the integrate mode with the integrated time value in seconds
<table>
<tr><th>µR/hr</th><th>mR/hr</th><th>R/hr</th></tr>
<tr><td>µrem/hr</td><td>mrem/hr</td><td>rem/hr</td></tr>
<tr><td>µSv/hr</td><td>mSv/hr</td><td>Sv/hr</td></tr>
<tr><td>CPM</td><td>CPS</td><td></td></tr>
<tr><td>DPM</td><td></td><td></td></tr>
<tr><td>Bq</td><td>kBq</td><td>MBq</td></tr>
<tr><td>µCi</td><td>mCi</td><td>Ci</td></tr>
<tr><th>µR</th><th>mR</th><th>R</th></tr>
<tr><td>µrem</td><td>mrem</td><td>rem</td></tr>
<tr><td>µSv</td><td>mSv</td><td>Sv</td></tr>
<tr><td>C (counts)</td><td></td><td></td></tr>
<tr><td>D (distintigrations)</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Temperature range</td><td>–10 °C to 50 °C (14 °F to 122 °F)</td></tr>
<tr><td>Relative humidity</td><td>0 % to 95 %, non-condensing</td></tr>
</table>

Warm up time	5 second diagnostic check
Power requirements	Two “D” cells, 150 hours operation, automatically indicates when battery is low
Housing material	Proprietary polycarbonate, splash-proof case
Display	Liquid crystal display, 5.6 cm x 5.6 cm (2.2 in x 2.2 in)
ASM-993 Internal GM Detector	
Range	0.1 mR/hr to 1 R/hr
Radiation detected	Gamma above 60 keV
Accuracy	± 10 % of reading between 10 % and 100 % of full scale on any range, exclusive of energy dependence
ASM-993 Internal GM ‘Pancake’ Detector	
Range	Background to 80 mR/hr
Radiation detected	Alpha above 3.5 MeV, beta above 35 keV and gamma above 6 keV
Window	15 cm^2 (1.75 in Ø) mica, 1.4 mg/cm^2 to 2.0 mg/cm^2
Typical background	30 CPM
Protective screen	Stainless steel, hexagonal pattern providing 86 % open area
Accuracy	± 10 % of reading between 10 % and 100 % of full scale on any range, exclusive of energy dependence (protective cover open)
Efficiency	The internal pancake detector efficiency is shown below. In a recent performance check, the numbers shown represent typical results obtained:

Isotope		% Efficiency	
^{14}C	^{241}Am	5 %	8 %
^{99}Tc	^{129}I	12 %	2 %
^{137}Cs	^{230}Th	24 %	15 %
^{90}Sr	^{239}Pu	59 %	12 %
^{36}Cl		26 %	

Note: The efficiency formula used to calculate the % Efficiency is: Eff. % = (CPM x 100)/DPM

Dimensions (LxWxH)	10.5 cm x 27.7 cm x 6.4 cm (4.1 in x 10.9 in x 2.5 in)
Weight	1.09 kg (2.4 lb)

Typical energy dependence