Product Specifications

The 2130 Mini-ION is setting new standards in versatility, accuracy, operational simplicity and reliability for the measurement of Gamma, Beta and X-ray.

2130 Mini-ION

Portable survey meter

- Portable and battery operated
- Can be remotely calibrated using a remote PC
- Cost-effective
- Clear easy-to-read display
- Convenient meter functions
- Tested against the requirements of standard IEC 60846
- Complies with SDI communication protocol

The Model 2130 Mini-ION is a portable, battery operated ion chamber survey meter. It is intended for use in cost-sensitive applications where sophisticated features such as digital readout, data logging and autoranging are not necessary. The meter covers a wide gamma energy range from 10 keV to over 6 MeV and includes a movable window shield to facilitate gamma only measurement in mixed beta/gamma fields. The effective dose rate range is from 1.0 $\mu Sv\ h^{-1}$ to 500 $mSv\ h^{-1}$ in five ranges.

The dose rate or dose value is displayed on a clearly scaled analogue meter. Special circuitry ensures that the effect of physical meter movement on the readings is minimized without compromising the response time.

Meter functions are accessed via sealed, wipe-clean membrane switches. Operation is simple with the appropriate dose or dose rate range being selected by range up/down buttons. The buttons are situated on the carrying handle for convenient single-handed use. The selected range is indicated by a bright, high efficiency LED.

The key characteristic of the 2130 is ability to be calibrated using a remote link to a PC. The link is established by attaching an RS232 interface between the meter and PC and running software provided. This has a number of advantages. It makes the calibration process more efficient by reducing calibration time (no controls to adjust), improves accuracy and ensures secure storage of calibration data in non-volatile memory.

The 2130 will meet the majority of survey meter applications where mixed gamma and beta fields are encountered, for example, as found in nuclear power or fuel processing plants.

2130 Mini-ION Specifications

Response Time:	0 to 45 µSv h^{-1} (0 to 4.5 mR/h)		6 s
(time to reach 63% of final indication)	0 to 450 µSv h^{-1} (0 to 45 mR/h)		6 s
	0 to 4.5 mSv h^{-1} (0 to 450 mR/h)		1 s
	0 to 45 mSv h^{-1} (0 to 4.5 R/h)		1 s
	0 to 450 mSv h^{-1} (0 to 45 R/h)		1 s
Energy Dependence:	E (keV)	Shield	
(relative to ^{137}Cs)		closed (H*(10))	open (H'(0.07))
	5.9	-	1.14
	16	1.08	1.23
	33	1.05	1.25
	60 (^{241}Am)	1.05	1.26
	248	0.95	1.03
	1250 (^{60}Co)	1.02	-
H' (0.07) Beta Response Factor:	^{90}Sr/^{90}Y (Emax 2.27 MeV)	1.01	
	^{204}Tl (Emax 0.77 MeV)	0.59	
	^{147}Pm (Emax 0.23 MeV)	0.68	
Overload:	Recovery from 10 Sv h^{-1} (1000 R/h) to background levels < 30 s		
Geotropism:	< ± 6% for 90^0 change in meter orientation		
Warm Up Time:	1 minute		
Temperature Range:	-10 to 50 °C (14 to 122 °F)		
Applicable Standard:	IEC 60846		
Electromagnetic Compatibility:	Emission BSEN50081-1		
	Immunity BSEN50082-1		
Communications Facility:	RS232 9-pin interface		
Power Supply:	2 x 'D' (IEC LR20) alkaline manganese cells. Life = 100 h at 8 h per day. Chamber bias from 15 x lithium cells, life - 5 yr.		
Sealing:	Splashproof, not fully sealed		
Size:	10.5 × 23.5 × 22.5 cm (over handle) (4.1 × 9.3 × 8.9 in)		
Weight:	1.5 kg. (3.5 lb.)		

General Characteristics:	Ion Chamber vented to atmosphere. Walls of resin bonded paper: 250 mg cm^{-2}, windows of aluminized polyester with a total density of 7 mg cm^{-2}. Collecting potential 45 V.		
Measurement Quantity and Units:			
(three versions available)	2130S	H*(10) and H'(0.07)	Sv
	2130G	Air Kerma	Gy
	2130R	Exposure	R
Range of Measurement:	Doserate = 0-500 mSv h^{-1}		
	(0-50 R/h) in 5 ranges:	0-50 µSv h^{-1} (0-5 mR/h)	
		0-500 µSv h^{-1} (0-50 mR/h)	
		0-5 mSv h^{-1} (0-500 mR/h)	
		0-50 mSv h^{-1} (5.0 R/h)	
		0-500 mSv h^{-1} (50 R/h)	
Integrating Dose:	0 - 500 µSv (50 mR)		
Effect of Doserate on Aggregated			
Dose Accuracy:	-3% @ 2mSv h^{-1} (200 mR/h)		
	-10% @ 200 mSv h^{-1} (20 R/h)		
	-20% @ 500 mSv h^{-1} (50 R/h)		
Effective Range:	1 µSv h^{-1} to 500 mSv h^{-1} (100 µR/h to 50 R/h)		
Display:	Analog meter scaled 0-5		
Display Resolution:	2% of scale maximum in each range		
Linearity:	±15%		
Statistical fluctuations:	2.5 µSv h^{-1} (0.25 mR/h)	33%	
	6 µSv h^{-1} (0.6 mR/h)	4 %	
	22 µSv h^{-1} (2.2 mR/h)	1 %	
	45 µSv h^{-1} (4.5 mR/h)	1%	

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