

***i-RAD* RADIATION MONITOR**

4 – 20mA Current Loop Output

i-RAD is a device designed to monitor radioactive contamination providing a 4-20 mA logarithmic or linear scaled current loop output over a programmable range.

Features

- Low voltage (12VDC) operation (mains power pack supplied)
- Large backlit LCD alphanumeric display and LED indicators for power and status
- Digital to analog conversion of radiation level to provide a 4 – 20 mA current loop output over a programmable range
- PC interface for programming current loop output parameters
- Selection of either logarithmic or linear scaled current loop output
- Programmable, dynamic smoothing algorithm for low count/dose-rate 4 -20 mA stabilisation
- User programmable current loop span over the dynamic range of the connected probe
- Display of probe radiation level and status; updated every second
- Compatible with probes from the Rotem R-200 series ruggedised radiation monitor
- Power-up initialisation and diagnostic of processor and probe interface
- Continuous self-test of probe interface with data error checking
- Automatic identification of radiation units by probe connection: dose-rate in microSievert per hour ($\mu\text{Sv/h}$) or count-rate in counts per second (cps)



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Package contents

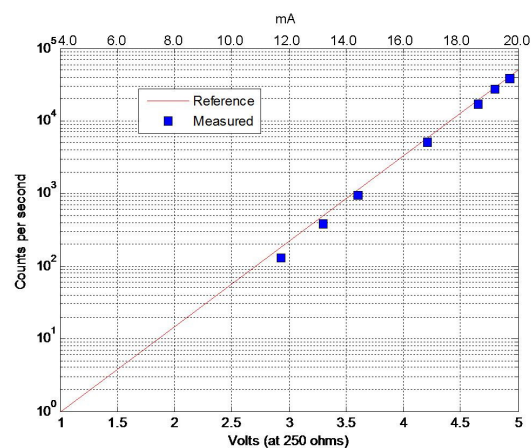
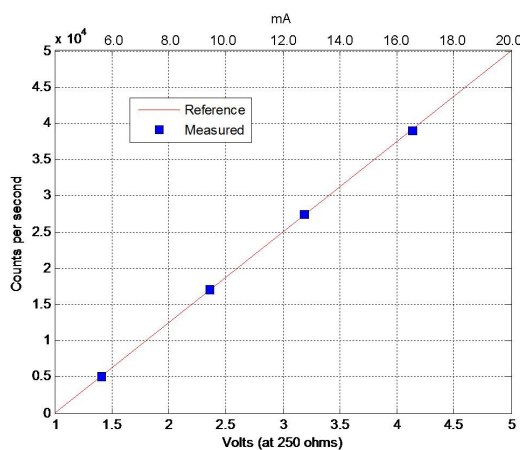
- Model SP100607 i-RAD Processor
- Mains power adapter with 1.8 M cable and 3.5mm phono plug
- Probe cable (1.2 M standard) DB9M to Fisher
- Serial PC programming cable (DB9M – DB9F)
- Optional probe extension cable (customised length; maximum 20 meters)
- Operation Manual including calibration certification
- Optional probe(s) - Rotem Model RG-10, RG-12, RG-42 or RP-11



Operation

Scale or Curve

The 4-20mA current loop can be programmed for either linear or logarithmic output.



Smoothing

The 4-20mA current loop uses an integration algorithm that is PC programmable. This is designed to stabilize the output in applications involving low count/dose-rate responses. The integration period can be programmed from 0 (off) or 1 - 60 (seconds). The algorithm is dynamic in that the integration period will automatically decrease as counts/dose-rate increase.

Span

i-RAD can be optimised so that the 4 – 20mA current loop output is located within a PC programmable count/dose-rate window. An upper count/dose-rate limit can be set within the dynamic range of the radiation units using a PC programmed variable.



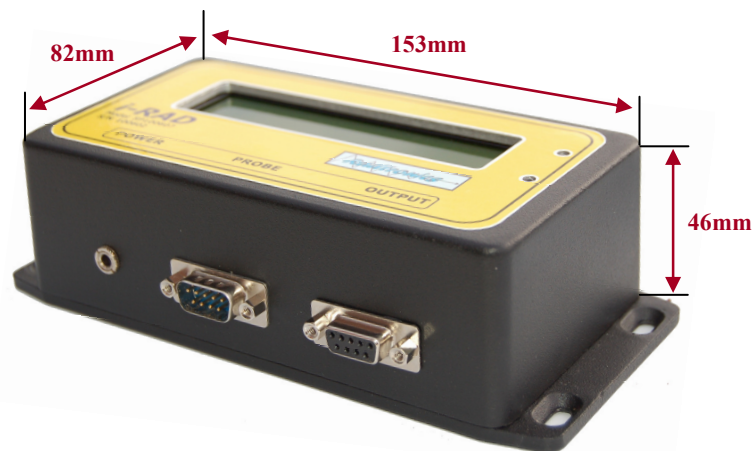
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Calibration

All *i-RAD* probes include a Manufacturer's Calibration Certificate issued by Rotem Industries, traceable to an IAEA affiliated Secondary Standard in compliance with the US NCRP 112 requirements). In addition, calibration plots are supplied verifying the 4-20mA current loop calibration. Calibration plots include full span response in linear and logarithmic scales.

Technical specifications

Voltage:	240V Mains Plug Pack 12VDC to 3.5mm phono plug
Power:	< 25 mA (dependent on probe type connected)
Processor:	ATMEL Atmega8 - 8KB self-programming Flash Program Memory, 1KB SRAM, 512 Byte EEPROM, 6 or 8 Channel 10-bit A/D-converter. Up to 16 MIPS throughput at 16 Mhz. 2.7 - 5.5 Volt operation
Output -Display:	Large backlit alphanumeric
Output-Current:	4 – 20mA load resistance of < 300 ohms (compliance < 6 volts)
40-20mA Scale:	Linear or logarithmic (programmable)
Span:	Programmable within the dynamic range of probe output.
Indicators:	LED POWER (green) power-on LED STATUS (red) error
Probe Connection:	DB9M
Output 4-20mA:	DB9F
Enclosure:	Aluminium to IP 54
Weight:	475 grams (excluding probe & cables)
Operating Temp:	0°C - 70°C
Dimensions:	153mm (L) x 82mm (W) x 46mm (D)



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