

ENVIRONMENTAL GAMMA RADIATION MONITORING UNIT

DISCOVERY 5302 IC Series

MAIN FEATURES

- Detector: pressurized ion chamber
- Measurement range: 10 nSv/h ÷ 100 mSv/h (pulsed field version) or 10 nSv/h ÷ 10 Sv/h (environmental measurement version)
- Energy range: 80 keV ÷ 10 MeV (IC) extendable to 40 keV ÷ 10 MeV (IC-T)
- Local display of acquired data and alarm status
- Data storage in non-volatile circular memory buffer
- Host PC communication: RS485/422 for long distances
- Alternative PC communication: 10/100 Mbit/s Ethernet, Wireless LAN, Wireless communication 802.15.4/Multipoint Network Topologies (XBee), GSM modem
- GPS locator available
- Remote management software available, for data display and storage



DESCRIPTION

The **DISCOVERY 5302 IC Series** monitoring unit is a modular system for gamma dose measurements, assembled in a highly protected insulated PVC housing.

The detector is a pressurized ion chamber (IC); alternatively, the version IC-T is available, which allows to extend the lower energy range down to 40 keV, if needed.

DISCOVERY 5302 IC comes in two standard versions: with an electrometer for pulsed field measurements (7 decades) or with an electrometer for environmental measurements (9 decades).

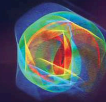
The Acquisition and control unit processes and locally displays the data coming from the detection unit (i.e. the dose rate or the integrated dose value) and eventually indicates the alarm or malfunctioning conditions, through acoustic and luminous signals. The measurements are automatically saved in a non-volatile circular memory buffer.

DISCOVERY 5302 IC can be used outdoor, and it can be easily mounted on a telescopic tripod with adjustable legs, to be positioned where needed. On the front side of the housing are installed the water proof LCD display and the function buttons panel; the connections to the power set, as well as the Ethernet or RS485 connection to the remote station and to other eventual external devices (i.e. alarm repetition), are on the back side of the housing.

The processed measurements can be shown by the local display or the remote Host PC, which can be connected to the unit through a cable or wireless communication. The alarm thresholds and the operative parameters are saved in the non-volatile memory, and can be set by the operator either locally or through the remote management software (option).

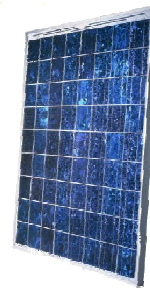
The low voltage power supply can be provided by the built-in rechargeable batteries, which have an autonomy of 4 hours, in case of remote measurements or should a power outage occur.

The XBee Pro wireless communication complies to standard 802.15.4/Multipoint Network Topologies, and allows communication up to 1 km in open space or 100 m indoor. A simple XBee compatible USB adaptor is needed on the PC. As an alternative to the XBee interface, a GSM modem can be used. In the monitoring unit can also be installed a satellite GPS locator, which associates the acquired measurements with the position. The Ethernet interface is also available in the IEEE 802.11b version (Wireless LAN).



TECHNICAL SPECIFICATION

- Temperature range: $-25 \div 50$ °C
- Protection: IP65
- Weight: 25 kg
- Dimensions: $\varnothing = 40$ cm, H = 67 cm
- Power supply: 12 VDC
- Power absorption: 15 W; maximum absorption: depending on the options and accessories



Measurement features

- Energy range:
 - 80 keV \div 10 MeV (IC); 40 keV \div 10 MeV (IC-T)
- Energy response: $\pm 20\%$ (80 keV \div 120 keV); $\pm 5\%$ (120 keV \div 2 MeV)
- Accuracy: $\pm 5\%$ at environmental background radiation levels

Detection unit

- Type: pressurized ion chamber (16 bar)
- Gas: Argon + Nitrogen

Power supply and processing electronics

Two alternative electrometers, one for pulsed fields (7 decades) and one for environmental measurements (9 decades):

- Pulsed field electrometer:
 - 7 decades with automatic scale change (10 nSv/h \div 100 mSv/h)
 - Single pulse detection (i.e. storage ring beam dump) up to 3,5 nC/pulse \sim 4,3 μ Gy/pulse (*)
- Environmental measurements electrometer:
 - 9 decades with automatic scale change (10 nSv/h \div 10 Sv/h)
- Digital setting of calibration parameters
- Low-noise HV circuit: 0 \div 1,3 kV digital control

(*) Test carried out at Elettra – Trieste Synchrotron “Development and Experimental Performance Evaluation of a Dose-Rate meter for Pulsed Beam”- RadSynch 2009

Acquisition and control unit

- Watchdog circuit for functioning control
- Interfaces: RS485/RS422, Ethernet 10/100 Mbit/s, XBee wireless communication
- LCD display 2x16 characters with LED and horn for alarm, pre-alarm and good functioning
- Dose rate measurement: instantaneous (μ Sv/h), average referred to 1 minute and maximum referred to 1 minute
- Integrated dose: referred to 1 hour, 24 hours and total
- 3 outputs for remote alarm repetition

ORDER GUIDE

Available versions	Options	Accessories
DISCOVERY 5302 IC	-PF	PC + 5700 sMON
DISCOVERY 5302 IC-T		ALU
		GPS
		Photovoltaic panel
		Warranty extension

OPTIONS

- Alternative communication with PC: Ethernet 10/100 Mbit/s (cable comm.), XBee Pro (wireless comm.), GSM (wireless comm.), Wireless LAN interface (wireless comm.)

ACCESSORIES AVAILABLE UPON REQUEST

1. Data concentrator PC with 5700 sMON software
2. ALU alarm unit for status remote signaling
3. GPS locator
4. Photovoltaic panel
5. Warranty extension from 12 months to 24 months