ENVIRONMENTAL MONITORING RACK UNIT

SATURN I 5700 RTM

MAIN FEATURES

- Data and alarm statuses visualization on alphanumeric LCD display
- Continuous detector data management
- Storage of acquired data in internal non-volatile memory
- Supports several probe types
- Rack mounting
- Luminous and acoustic signalling of good operation, alarm and prealarm conditions
- Interfaces available for data communications: Ethernet, serial RS232, RS485 (or 422) for long distances (max 1 km)
- External keyboard for parameter settings
- Luminous and acoustic beacon available for remote alarm repetition
- Concentrator PC and software available for remote management

DESCRIPTION

The **SATURN I 5700 RTM** environmental monitoring unit is a compact and modular ratemeter, each designed to receive, process and visualize the dose measurement provided by one of the several probe available.

The **SATURN I 5700 RTM** is designed to be mounted in RACK; several ratemeter units can be installed at once, and each of them manages the data provided by the connected probe. The CPU board of each RTM unit continuously receives and processes the data, comparing the results to the memorized thresholds, and saving the data in its internal non-volatile memory. The alarm and pre-alarm threshold values, as well as every operational parameter are also saved in the memory, and can be locally set by the operator through an external keyboard, or remotely through the remote management software (optional). In both cases, a password is needed to access and modify the parameters; the external keyboard allows the operator to insert the password.

Events such alarms, pre-alarms or bad functioning are signaled by acoustic and luminous indicators, and optionally by a remote alarm beacon.

The measurement unit is able to receive data from several types of detectors, each one with different features and application; this feature provides a high adaptive potential. For the list of main compatible ELSE NUCLEAR detectors, see next page.

By default, the unit locally visualize the dose rate and average dose values; the operator can eventually select others available measurements, setting the proper parameters.

It is possible to connect the acquisition unit to a host PC through Ethernet communication. Alternatively, serial communication is available (RS232 up to 10 m distance, RS485/422 up to 1 km), or a wireless communication module can be provided.

The 5700 sMON software installed on the PC allows to completely and remotely manage the units in real time. Alternatively, an archive transferring software can be provided, which allows to save the monitoring data and to visualize them on the PC.
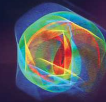
TECHNICAL SPECIFICATIONS

- Temperature range: 0 ÷ 40 °C
- Power supply: 230 Vac 50 Hz

Power supply and processing electronics (only for ICP series probes)

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

- Pulsed field electrometer (70 ns pulse length, 10 Hz repetition frequency, number of pulses: 1, 2, 10 with Linac currents 1, 2, 5, 10 and 15 mA):
    - 7 decades with automatic scale change
    - Single pulse detection up to 3.5 nC/pulse ~ 4.3 mGy/pulse (*)
- Environmental measurements electrometer:
    - 9 decades with automatic scale change
- Digital setting of calibration parameters
- Low-noise HV circuit: 0 – 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

- Dose rate measurements: instantaneous, 1 minute average and 1 minute maximum
- Integrated dose: referred to 10 minutes, 1 hour, 24 hours and total
- LCD display 2x16 characters with LED and siren for alarm, pre-alarm and good functioning
- Real time clock circuit
- Watchdog circuit for functioning control
- Interfaces: Ethernet 10/100, RS232, RS485/422 for long distances or wireless (upon request)
- Memory: E2PROM for parameters, DataFlash for measurements

Main parameters list

- Date and time
- Detector type
- Calibration factor
- Measurement unit
- Alarm and prealarm thresholds
- Minimum duration for prealarm/alarm conditions
- Local acoustic alarm muting option

- Manual reset of alarms/failures/doses/all
- Alarm autoreset option
- Fail-limit levels
- Background value
- Moving average settings
- Serial port communication speed
- Test mode with an external source for quality control purposes

Supported detectors[1]

The monitor SATURN I 5700 RTM supports any of the following detectors:

- Geiger-Müller counter series GM
- Proportional counter PCP
- Double Geiger detector MERCURY GMP WR
- Ionisation chamber ICP series, including electrometer board and HV
- Scintillation detector PNAI series
- Neutron probes: pulsed rem counter LUPIN 5401 series

OPTIONS

- Serial or wireless communication with concentrator host PC

ACCESSORIES AVAILABLE UPON REQUEST

1. Software utility for data archive download: model UTAS (connection cables included)
2. Data concentrator PC, with software application for complete remote management of the monitor, featuring a synoptic diagram: model 5700 sMON (connection cables on request)
3. Additional alarm unit for remote signalling: model ALU
4. Warranty extension from 12 months to 24 months

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[1] For more information and technical specifications concerning the detectors, see the relevant data sheets