

RM1R & RM1W

Radiological Activity Monitor & Control Unit



Features:

- Distributed display & control unit
- Single board PC/AT compatible design
- Robust Communications including:
 - RS485
 - TCP/IP Ethernet
- Digital & Analog Input/Output circuitry
- Accepts up to Three (3) different types of detector inputs
- Simultaneous data processing
- 240x128 pixel bit-mapped LCD display
- Normal, Fail, Alert Alarms
- Audible horn for alarm conditions
- Keypad for ease of controls
- Keylock security

The RM1 Radiological Activity Monitor series instruments are used as distributed display and control units with multi-function capabilities. The units utilize a single board PC/AT compatible design.

This configuration includes robust communication capabilities such as RS485 serial ports and TCP/IP Ethernet communication for networking. Digital and analog Input/Output (I/O) circuitry that allows the RM1 units to operate as data concentrators and controllers for devices external to the RM1 unit. The RM1 design has three counting channels, allowing simultaneous processing of radiological data from up to three "smart" sensor channels. Information is displayed on a 2 line by 20 character vacuum florescent display mounted on the front panel of the RM1 unit. In addition to the bit mapped main display, the RM1 also provides discreet radiation alarms, and Fail/Malfunction conditions. An audible sounder is also included for audible annunciation of a radiological alarm. Operators interface with RM unit using a keypad switch that is protected using a key lock switch and/or password. The keypad switch is located on the front panel and provides controls for setting and viewing alarms, and in establishing parameters for detector operation, alarm acknowledgement, check source operation, and administrative functions such as setting the channel identification information. When used with process or effluent monitoring channels, the RM1 unit acts as a data concentrator/processing unit and integrates external signals such a flow rate and pressure into the radiological measurement. Analog signals are integrated into the RM1 microprocessor circuit with 16 bit resolutions analog-to-digital converters (ADC). Four ADC circuits are included for external sensors. The RM accepts up to eight digital input signals for operation with external digital devices. Outputs from the RM1 include three RS485 serial communications ports, one TCP/IP Ethernet port, four 4-20 mADC or 0-10 VDC analog outputs, eight digital output circuits and five DPDT form C relays and one SPDT relay.



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The relays are factory programmable to provide a customized configuration. Typically this will include a relay for high radiation alarm, warning radiation alarm, fail conditions, check source activation, and miscellaneous alarm circuits such as low flow conditions. The analog outputs are scaled to the dynamic range of the measurement channel and are provided via a 16-bit resolution DAC device. The analog output signals are optically isolated. The RS485 serial communications ports and Ethernet TPC/IP port are provided for networking the RM units with database software or other remote display and control units.



The RM1 series units operate from 24 VDC, which is supplied using an AC to DC converter. The converter accepts universal AC input power ranging from 90 VAC to 260 VAC, 47 Hz to 63 Hz, single-phase power. The power supply is UL and CE certified and is filtered to prevent disruptions due to dropouts, voltage variations, surges and spiking. Critical operating parameters are stored in non-Volatile EEPROM memory to ensure that the system quickly recovers from power outages without operator intervention. Historical data is retained in non-volatile memory. Operating parameters are field configurable allowing customer personnel to use a common design platform for multi-function channel and display configurations.

The RM1 series is available in two configurations. The model RM1W is provided as a NEMA12 enclosed wall-mounted instrument with a separate termination enclosure for field wiring to terminal blocks. The RM1R is similar in function to the RM1W but is packaged in a NIM style bin for mounting in a 19" standard rack/cabinet. The RM1 series ratemeters are qualified for seismic, EMI/RFI and environmental conditions per the latest Nuclear Industry Standards for use in the Safety Grade Class 1E applications.

RM1W & RM1R SPECIFICATIONS

PROCESSOR:

32-Bit High Performance 133Mhz integrated microcontroller designed for Real-time & PC/AT-compatible embedded applications. Robust automotive Telcom grade technology w/Watchdog timer

I/O PROCESSOR:

Dedicated / High Performance I/O Co-Processing via FPGA / 100 MHz Industry's first, fully application programmable hardware allowing customized I/O Processing With Zero Wiring or Harness Changes

DISPLAY:

2 x 20 character vacuum fluorescent Analog/Digital Auto ranging and Auto-zeroing Alarm/Status Indicators:

Red indicator: HIGH
Amber indicator: ALERT
White indicator: FAIL
Green indicator: NORMAL

OUTPUTS:

Digital:
(3) RS485 and (1) TCP/IP Ethernet
Analog:
(4) 0-10VDC, or (4) 4-20 mADC isolated +5 DPDT & 1 SPDT relay for FAIL, ALERT, HIGH & other alarms Relay contact rating 5A @ 115VAC

POWER:

90-260VAC, single phase, 47 to 63 Hz, 15 watts

TEMPERATURE:

-10^o to +50^o C

HUMIDITY: 0-95% RH, non-condensing



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