DORA-I Intelligent Radiological Display and Control Unit

INTERNET READY	ETHERNET TCP/IP

Features:

- **Distributed display & control unit**
- **Single board low power ARM processor design**
- **Robust Communications including:**
  - → **RS485**
  - → **TCP/IP Ethernet**
- **Digital & Analog Input/Output circuitry**
- **Accepts up to two detector inputs**
- **Simultaneous data processing**
- **2 rows x20 character vacuum flourescent**
- **Normal, Fail, Alert Alarms**
- **Audible horn for alarm conditions**
- **Keypad for ease of controls**
- **Keylock security**

The DORA-I Series Radiological Activity Module is a single board low power ARM processor controlled digital ratemeter, designed to power, operate, and monitor various types of APANTEC, LLC smart radiation detectors. The DORA-I unit is a wall mounted unit that can be mounted to any vertical surface.

The DORA-I SERIES is equipped with a connection which provides isolated relay closures, isolated 4-20 mA current loop output, isolated RS-232/485 serial communications, and 10/100Base-T Ethernet.

The DORA-I SERIES ratemeter can operate with APANTEC Area Monitor type detectors and Process Monitor type preamplifiers and detectors. It can also be equipped with an internal G-M detector and optional checksource. With either detector type, the ratemeter provides all detector power and control signals required for operation. The Area Monitor type detectors consist of detectors designed for area detection of gamma or neutron radiation. The Process Monitor type detectors consist of detectors designed to be mounted in fluid or gas flow streams such as liquid piping systems, ventilation ducts and stacks.

The DORA-I SERIES provides the following user interface features:

a. 2 row by 20 character vacuum fluorescent display.
b. Six position membrane switch panel.
c. Three position key switch.
d. Four alarm indicators.

The DORA-I SERIES also provides the following control and communication circuitry:

a. Control and counting circuitry for two ‘smart’ detector channels.
b. voltage or current outputs with a range of 0 to 10 VDC, or 4-20 milliamp
c. communication port. (RS232C, RS485 ports, and Ethernet)
d. digital outputs.
e. Real time calendar and clock.

The DORA-I series units operate from 30-70 VDC Power-Over-Ethernet or +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.

SPECIFICATIONS

HOUSING:	NEMA 12 (JP 56) wall mount
WEIGHT:	8 lbs. each
OPERATING TEMPERATURE:	-10° to +50° Celsius
HUMIDITY	<95 % Non-condensing
INPUT POWER:	Power-Over-Ethernet, 30-70 VDC, (optional) 24VDC.
MAXIMUM INPUT CURRENT	0.50 Amps
DETECTOR INTERFACE:	Provides power, control and counting for two detector channels, one internal and one external. Compatible with APANTEC, LLC. smart detectors
INTERNAL DETECTOR:	G-M Tube with checksource (optional)
EXTERNAL DETECTOR:	As required. Specifically, can be neutron detector, GM detector or ion chamber detector
USER INTERFACE:	• Keypad: six position keypad • Key Switch: three position to provide unit ON, OFF and KEYPAD mode lock out feature • Display: vacuum fluorescent alphanumeric, two rows of 20 characters
PROCESSOR:	NXP LPC2388 ARM-7 microcontroller designed for real-time applications.
ALARM INDICATORS:	Red indicator: HIGH Amber indicator: ALERT White indicator: FAIL Green indicator: NORMAL
OUTPUTS:	Digital (1) RS232/485 and (2) TCP/IP Ethernet Analog (1) 0-10VDC, or (1) 4-20 mADC isolated

Two DPDT relays for FAIL, ALERT, HIGH and other alarms or controls, programmed as required

COMMUNICATION PROTOCOL:	MODBUS
DISPLAYS:	Dose rate Alert and high alarms Power-on indicator
KEYPAD ACCESSES:	Measurement range selection Set point adjustment Input power supply selection Stored data access Local reset of warn/high alarms
SECURITY:	Key switch
REMOTE CONTROLS:	Alarm setpoints Reading radiation data Write alarm acknowledge Forced alarm activation Read internal diagnostic features Alarm trip times
AUDIO AND VISUAL DISPLAYS	Flashing or steady, as desired Programmable duty cycle for flashing

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