Wireless I/O Interface Transmitter/Receiver Set MCR-RAD-...

Class I, Div. 2 approved

Data Sheet 1483A

November 2001

Features

- 1 watt transmit power
- Wireless conduit for one 4-20 mA and two digital signals
- Interference free - Frequency Hopping Spread Spectrum technology
- License free 902-928 MHz Industrial, Scientific and Medical (ISM) band
- Easy to use, wire in – wire out, no setup or programming
- Range: 600 – 1000 feet in-plant, no line-of-sight
- Class I, Division 2 approved for hazardous area installation (UL, CUL and CSA approved)

Applications

- SCADA systems
- PLC/RTU extensions
- Pump control
- Water/wastewater
- Oil and gas
- Petro-chem
- Tank level
- Mills/quarries/factories
- Sensor monitoring
- Utilities
- Irrigation systems

Benefits

- Reduce cost of labor and installation
- Eliminate conduit and wiring
- Reliable and dependable operation



1483A001

Frequency Hopping Spread Spectrum Technology

The Phoenix Contact MCR-RAD is an integrated radio & I/O module designed to eliminate cable and conduit for one 4-20 mA current loop and two digital signals in harsh industrial environments. This unique addition to the Phoenix Contact signal conditioning line utilizes 902-928 MHz ISM band spread spectrum frequency hopping technology to guarantee a license free, interference free link between remote devices and the control room. Costly cable and conduit runs on new projects, or retrofitting of existing systems, are eliminated and replaced with a maintenance free, reliable and versatile wireless solution.

Table 1. Technical Specifications

MCR-RAD-Transmitter

Transmit power ..... 1 watt

Range ..... 600-1000 feet, in-plant, no line of sight
4-5 miles, line-of-sight, flat terrain, raised antennas
20+ miles, line-of-sight, flat terrain, professional propagation study, installation and directional antennas

Frequency ..... 902-928 MHZ

Power source ..... 12 V to 30 Vdc (regulated)

Power consumption ..... 8.4 watt peak, 1.8 watt average (350 mA @ 24 Vdc peak, 75 mA @ 24 Vdc average)

Inputs ..... 1 x 4-20 mA analog (250 Ω input impedance)
2 x 5 to 30 Vac/dc digital
(for 120 Vac discrete inputs use relays to convert to specified voltage levels. Consult factory for relay options)

MCR-RAD-Receiver

Frequency ..... 902-928 MHZ

Power Source ..... 12 V to 30 Vdc (regulated)

Power consumption ..... 3 watt (125 mA @ 24 Vdc)

Outputs ..... 1 x 4-20 mA analog (12-bit resolution)
3 x 120 Vac 0.5 A digital (dry contact)

Max. Loop Impedance ... 450 to 1350 Ω for power supply voltages of 12-30 Vdc

$$\text{Maximum Loop Impedence} = \frac{(\text{Supply Voltage} - 3)\text{V}}{20\ \text{mA}}$$

Repeatability 0.02%

Accuracy ..... 0.2% of full scale

General Specifications

Temperature range ..... -40° to +70°C (-40° to +158°F)

Dimensions ..... 102 x 114 x 17.5 (mm)
4 x 4.5 x 0.7 (inch)

Approvals ..... UL listed (Class 1, Division 2 Groups A, B, C and D) CSA approved

1483A004

Ordering Information

Part Description	Part Number
MCR-RAD-DIN System	**56 03 12 1**

Accessories Ordering Information

Part Description	Part Number
MINI-PS-120-230AC/24DC/0-65 (universal voltage input 650 mA, 24 Vdc power supply)	**29 38 49 7**
Class I, Div. 2 Approved Power Supplies	
QUINT PS 120AC/24DC/1(1A,24VDC)	**56 02 77 1**
QUINT PS 120AC/24DC/2.5(2.5A,24VDC)	**56 02 76 9**
CM50-PS120/230/24DC/2.5IF	**29 39 42 5**
CM125-PS120/230/5IF	**29 39 52 2**
Class I, Div. 2 Approved Signal Converters	
MCR-T/UI-E (thermocouple or RTD to 4-20 mA converter)	**28 14 11 3**
MCR-C-UI/UI-DCI (converters for current to voltage or vice versa)	**28 10 91 3**
MCR-S1/5-UI-SW-DCI-NC (transducer for 0-11 A AC/DC)	**28 14 73 1**
MCR-S10/50-UI-SW-DCI-NC (current transducer for 0-55 A AC/DC)	**28 14 74 4**
MCR-F-UI-DC (frequency converter for 0-120 kHz)	**28 14 60 5**

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