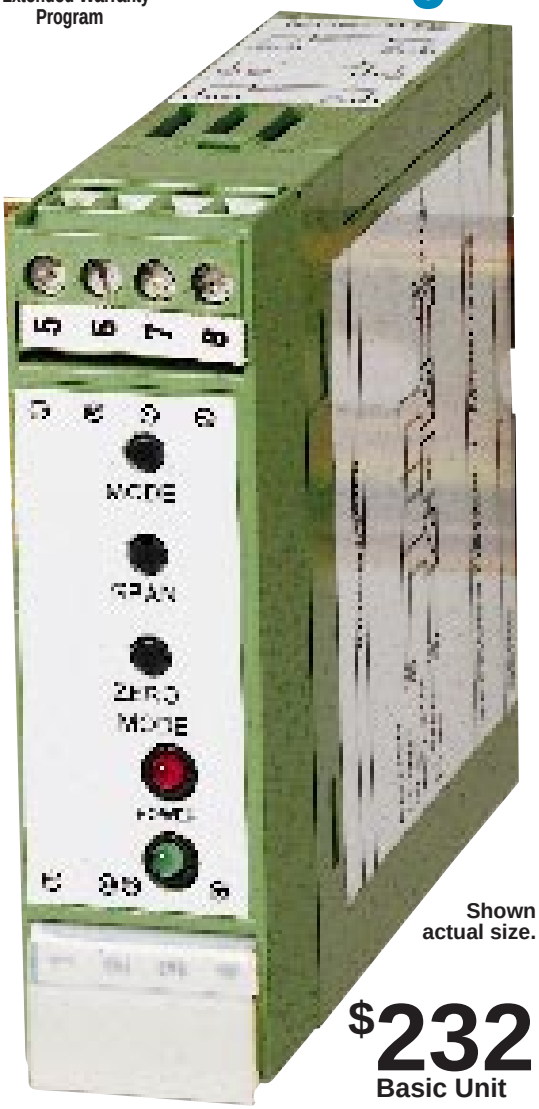
OMEGACARE℠
Extended Warranty Program

DIN Rail RTD Signal Conditioners MCR Series

1 YEAR® WARRANTY



Shown actual size.

$232
Basic Unit

- **Four Basic Module Types: Current or Voltage Output, Isolated or Nonisolated**
- **Voltage and Current Configurable Outputs: 0-5 V, 0-10 V, ±5 V, ±10 V, 0-20 mA or 4-20 mA**
- **Platinum, Copper or Nickel Sensor, 2, 3 or 4-Wire**
- **-200 to +800°C Configurable Temperature Range (Min 20°C Span)**
- **0.06% FS Accuracy**
- **0.06% FS Repeatability**

The MCR-RTD universal Signal Conditioner features full configuration of sensor input variables and process signal outputs. The MCR-RTD module is fully configured by the factory or by utilizing IBM PC pull-down menu software. The modules EEPROM stores all configuration options. These configuration options are:

–RTD TYPE (ALPHA: DIN or SAMA)
–SENSOR LEADS
–Signal Output
–Temperature Range
–Sensor Break (Output)
–Scale: °C or °F

The MCR-RTD module configuration software is capable of storing configurations of all of the modules I/O data. A simple print command produces a label for the module's current configuration. The onboard Intel processor is capable of addressing RTDs not currently offered.

A highly accurate delta-sigma processor, analog to digital converter, assures precise temperature conversion over a wide or narrow temperature span.

All MCR-RTD module outputs are linearized and scaled by the Intel microcontroller, which yields an approximate 12 bits of outputs resolution.

A combination of through hold and surface mount technology provides stable low drift temperature processing even in harsh industrial environments.

MCR-RTD modules snap onto standard 35 mm flat DIN-rail and utilize the unique "COMBICON" terminal block for module wiring.

Module Isolation

The MCR-RTD modules are available in isolated or nonisolated versions. The isolated MCR-RTD modules feature a combination of optical and transformer isolation. The optical isolation provides common mode voltage (CMV) isolation up to 1 kV between the sensor input and process signal output. The module's power supply is isolated from the process signal output by a DC/DC transformer isolation circuit. Isolation assures that there will be no measurement errors introduced by currents that are developed by sensor to measurement impedance differences.

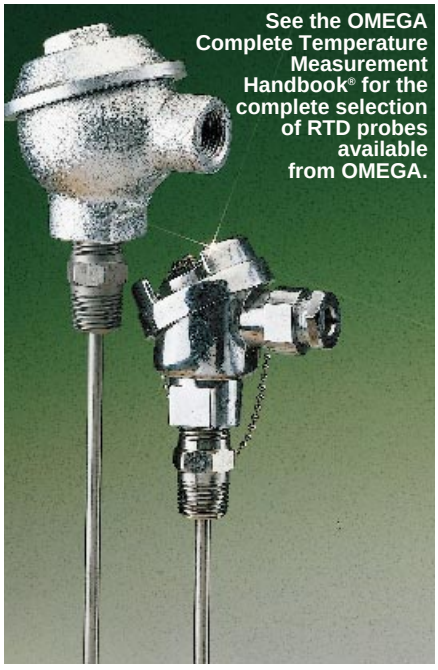
Surge & Short Circuit Protection

The MCR-RTD module is designed for use in industrial environments. Stringent IEC testing has shown that the MCR-RTD modules pass the IEC 801.2 (Electrostatic Discharge) and IEC 801.4 (Electrical Fast Transient/Burst) tests. Suppressor diodes protect both input and output circuits from wiring errors and shorting.

Inputs

The MCR-RTD can accept a wide variety of standard RTD sensor types. Platinum and nickel RTDs are standard. Special alphas are available as long as a DIN or SAMA reference is available for the desired RTD type. 2, 3 or 4-wire RTD sensor configurations are possible options for the MCR-RTD module. 2, 3 and 4-wire RTD configurations require both software and hardware adjustments. A maximum input lead resistance of ≤200 ohms can be handled by the sensor input circuit.

The RTDs sensor input is digitized to a 24 bit resolution and then is read by the on board Intel 8752 microcontroller. The Intel processor is equipped with an integrated



See the OMEGA Complete Temperature Measurement Handbook® for the complete selection of RTD probes available from OMEGA.



The MCR series is a complete family of DIN rail signal conditioners for thermocouples, RTDs, frequency, current, as well as setpoint alarm, isolation and threshold switch modules

memory that contains programming, sequencing, scaling and linearization routines. Once programmed, all user configurations are stored in the microcontrollers EEPROM (Electrically Erasable Read Only Memory). All user configurations are retained in the EEPROM even after the 24 V dc module power supply is disconnected.

The MCR-TC module input circuit detects several types of sensor fault conditions. They are:
–sensor wire break (open circuit)
–sensor wire short

Upon any sensor fault condition, the red MODE LED will remain constantly in the ON state until the fault is corrected.

Once a basic module type has been selected, the output signal type is then software configured. After linearization and D/A conversion the MCR-RTD module's output signal resolution is 12 bit at ≤.06% FS accuracy.

Zero and Span

Since the MCR-RTD module is capable of a minimum temperature span of only 20°C, a large zero suppression and temperature span adjustment is not needed. The MCR-RTD module provides a ±5% zero and span fine calibration adjustment.

Computer Configuration

To configure the MCR-RTD temperature signal conditioning module. The configuration software, MCR-CONF, must be used. The MCR-CONF includes a programming manual, programming software and interface programming cable, and module labels to place on the module once the configuration has be completed.

Any standard IBM PC or compatible computer with an Intel 80286 or better microprocessor is capable of operating the MCR-CONF software. An EGA or VGA color graphic card, serial port COM1 or COM2, 384 kbytes of free memory and DOS versions 3.2 or higher are the remaining software/hardware requirements.

Specifications

INPUT

Temperature Range:
Platinum (DIN): -200°C to 850°C (-328°F to 1562°F) 100, 120, 200, 500, 1000Ω
Platinum (SAMA): -200°C to 850°C (-328°F to 1562°F) 100, 120, 200, 500, 1000Ω
Nickel (DIN): -60°C to 180°C (-76°F to 356°F) 100, 120, 200, 500, 1000Ω
Nickel (SAMA): -60°C to 180°C (-76°F to 356°F); 100, 120, 200, 500, 1000Ω software programmable
10Ω Copper: Linear up to 800Ω

Minimum Temperature Span: 20°C (36°F); software programmable

Sensor Types: 2, 3 or 4-Wire; software programmable



Input Lead Resistance: ≤200Ω

Input Protection: Surge suppressing diodes

OUTPUT

Lead Line Resistance or Burden:
≤500Ω current units
>1 KΩ voltage units

Output Types: Current 0-20 mA, 4-20 mA Voltage: 0-5 V, ±5 V, 0-10 V, ±10 V; software programmable

Open Circuit/Fault:
±5 V Open circuit: 5.5 V;
0-20 mA Open circuit: 22 mA
±10 V Open circuit: 11 V;
4-20 mA Open circuit: 3 mA
0-5 V Open circuit: 5.5 V;
4-20 mA Open circuit: 22 mA
0-10 V Open circuit: 11 V;
software programmable.

Output Protection: Surge suppressing diodes

Sensor Break Detection: 4-20 mA units only (3 mA or 22 mA); software programmable

Zero & Span Adjustments: ±5% FS; software programmable

General Specifications

Modules Current Consumption: ≤80 mA

Isolation (Isolated Versions): 1 kV common mode

Operating Ambient: -20 to 65°C (-4 to 149°F)

Storage Temperature: -30 to 85°C (-22 to 185°F)

Overall Accuracy: ≤.06% FS

Resolution of Output Signal: 12-Bit

Repeatability: ≤.06% FS

Temperature Coefficient: ≤100 ppm/K

Input/Output Protection: 250 Vac continuous

Max. Wire Size: 14 AWG

Dimensions: 22.5 W x 105 H x 75 mm D

Mounting: DIN Standard EN50022

To Order *(Specify Model Number)*

Model Number	Price	Description
MCR-RTD/U/NC	**$232**	Nonisolated, voltage output
MCR-RTD/I/NC	**232**	Nonisolated, current output
MCR-RTD/U-E/NC	**299**	Isolated, voltage output
MCR-RTD/I-E/NC	**299**	Isolated, current output

Ordering Example: *MCR-RTD/I/NC universal RTD transmitter, nonisolated, with current output,* ***$232****.*

Accessories

Model Number	Price	Description
MCR-CONF	**$155**	Programming software for IBM PC
RAIL-35-2	**15**	35 mm DIN Rail, 2 Meter Length

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