

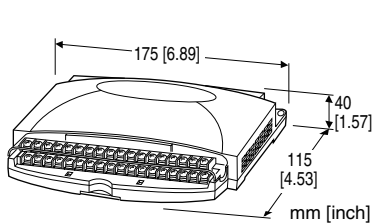
## PC Recorders R1M Series

### PC RECORDER

(thermocouple or DC input, 16 points)

#### Functions & Features

- Industrial recorder on PC
- 16-point thermocouple or DC inputs
- Easy system expansion via Modbus RTU
- Recorded data exportable to spreadsheet applications



### MODEL: R1M-GH2T-[1][2]

#### ORDERING INFORMATION

- Code number: R1M-GH2T-[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. R1M-GH2T-M2/MSR/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### FIELD TERMINAL TYPE

T: M3 screw terminals

#### [1] POWER INPUT

AC Power

**M2:** 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

DC Power

**R:** 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

#### [2] OPTIONS (multiple selections)

PC Recorder Software Package (must be specified)

**/MSR:** With

Other Options

**blank:** none

**/Q:** Option other than the above (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)

**/C01:** Silicone coating

**/C02:** Polyurethane coating

**/C03:** Rubber coating

#### RELATED PRODUCTS

- Resistor module (model: REM3-250)

#### PACKAGE INCLUDES...

- PC Recorder Software CD
- 9-pin D-sub connector, straight type (1 m or 3.3 ft)

#### GENERAL SPECIFICATIONS

##### Connection

**Power input, transmission:** Euro type connector terminal  
(Applicable wire size: 0.2 - 2.5 mm<sup>2</sup> (AWG24 - 12), stripped length 7 mm)

**RS-232-C:** 9-pin D-sub connector (male)

(Lock screw No. 4-40 UNC)

**Input:** M3 screw terminals (torque: 0.6N·m)

**Screw terminal:** Nickel-plated steel

**Housing material:** Flame-resistant resin (gray)

**Isolation:** Input to RS-232-C or RS-485 to power

**Node address setting:** Rotary switch; 1 - F (15 nodes)

**RUN indicator LED:** Green light blinks in normal conditions.

#### COMMUNICATION

**Baud rate:** 38.4 kbps

**Communication:** Half-duplex, asynchronous, no procedure

**Protocol:** Modbus RTU

##### ■ RS-232-C

**Standard:** Conforms to RS-232-C, EIA

**Transmission distance:** 10 meters max.

##### ■ RS-485

**Standard:** Conforms to TIA/EIA-485-A

**Transmission distance:** 500 meters max.

**Transmission media:** Shielded twisted-pair cable (CPEV-S 0.9 dia.)

## INPUT SPECIFICATIONS

**Input:** Thermocouple or DC input, 16 points  
(Common negative for DC input)

**Measuring Range:**

±20 V, ±5 V, ±1 V, ±0.8 V, ±0.2 V, ±50 mV, ±10 mV

**Input resistance:** 300 kΩ

**Thermocouple types:** PR, K, E, J, T, B, R, S, C, N, U, L, P

**Sampling rate:** 100 millise./16 points

50 millise./8 points

• **Trigger input:** Dry contact; ON detected at ≤1.5 V

**Sensing:** Approx. 5 V DC @ 1 mA

## INSTALLATION

**Power consumption**

• **AC:** Approx. 10 VA

• **DC:** Approx. 7 W

**Operating temperature:** -5 to +60°C (23 to 140°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** 400 g (0.88 lb)

## PERFORMANCE (% of measuring range)

**Accuracy**

**DC input:** ±0.3 %

**Thermocouple input:** See the table on the end of this section.

**Cold junction compensation error:** ±3°C or ±5.4°F max.  
(at 20°C ±10°C or 68°F ±18°F)

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)  
±0.05 %/°C (±0.03 %/°F) for 10 mV range and T/C B (RH)

**Response time:** Approx. 0.1 sec. (0 - 90 %)

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 2000 V AC @ 1 minute (input to RS-232-C or RS-485 to power to FG)

## Thermocouple Accuracy

| T/C             | USABLE RANGE (°C) | ACCURACY (%) | CONFORMANCE RANGE (°C) |
|-----------------|-------------------|--------------|------------------------|
| (PR)            | 0 to 1770         | ±0.5         | 400 to 1770            |
| K (CA)          | -270 to +1370     | ±0.3         | 0 to 1370              |
| E (CRC)         | -270 to +1000     | ±0.7         | 0 to 1000              |
| J (IC)          | -210 to +1200     | ±0.7         | 0 to 1200              |
| T (CC)          | -270 to +400      | ±1.0         | 0 to 400               |
| B (RH)          | 100 to 1820       | ±0.7         | 700 to 1820            |
| R               | -50 to +1760      | ±0.7         | 400 to 1760            |
| S               | -50 to +1760      | ±0.7         | 400 to 1760            |
| C (WRe 5-26)    | 0 to 2320         | ±0.7         | 0 to 2320              |
| N               | -270 to +1300     | ±0.5         | 0 to 1300              |
| U               | -200 to +600      | ±0.5         | 0 to 600               |
| L               | -200 to +900      | ±0.3         | 0 to 900               |
| P (Platinel II) | 0 to 1395         | ±0.5         | 0 to 1395              |

| T/C             | USABLE RANGE (°F) | ACCURACY (%) | CONFORMANCE RANGE (°F) |
|-----------------|-------------------|--------------|------------------------|
| (PR)            | 32 to 3218        | ±0.5         | 752 to 3218            |
| K (CA)          | -454 to +2498     | ±0.3         | 32 to 2498             |
| E (CRC)         | -454 to +1832     | ±0.7         | 32 to 1832             |
| J (IC)          | -346 to +2192     | ±0.7         | 32 to 2192             |
| T (CC)          | -454 to +752      | ±1.0         | 32 to 752              |
| B (RH)          | 212 to 3308       | ±0.7         | 1292 to 3308           |
| R               | -58 to +3200      | ±0.7         | 752 to 3200            |
| S               | -58 to +3200      | ±0.7         | 752 to 3200            |
| C (WRe 5-26)    | 32 to 4208        | ±0.7         | 32 to 4208             |
| N               | -454 to +2372     | ±0.5         | 32 to 2372             |
| U               | -328 to +1112     | ±0.5         | 32 to 1112             |
| L               | -328 to +1652     | ±0.3         | 32 to 1652             |
| P (Platinel II) | 32 to 1395        | ±0.5         | 32 to 1395             |

Note: CJC error is not included.

## STANDARDS & APPROVALS

**EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Installation Category II

Pollution Degree 2

Input or RS-232-C/RS-485 to power: Reinforced insulation (300 V)

Input to RS-232-C/RS-485: Basic insulation (300 V)

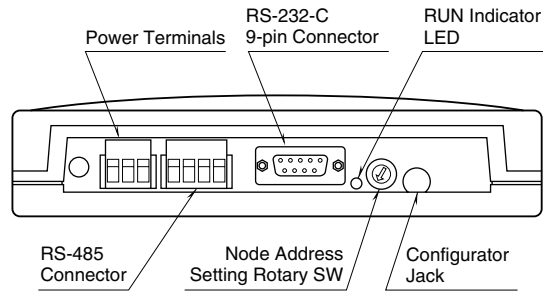
RoHS Directive

## PC RECORDER SOFTWARE

PC Recorder Software Package (model: MSRPAC-2010) is included with purchases of this model.

Refer to the MSRPAC-2010 data sheet for the contents of the package and the requirements for the PC to be prepared by the user.

## EXTERNAL VIEW

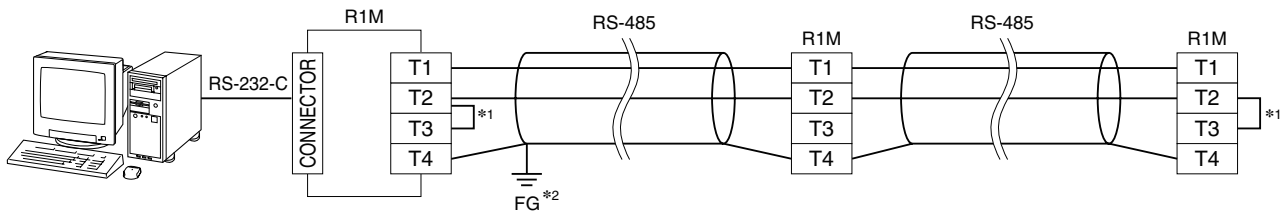


### ■ RS-232-C INTERFACE



| ABBR.   | PIN NO. | EXPLANATION OF FUNCTION                            |
|---------|---------|--|
| BA (SD) | 2       | Transmitted Data                                   |
| BB (RD) | 3       | Received Data                                      |
| AB (SG) | 5       | Signal Common                                      |
| CB (CS) | 7       | Clear to Send                                      |
| CA (RS) | 8       | Request to Send                                    |
|         | 1       | Not Used.  |
|         | 4       | DO NOT connect. Connecting may cause malfunctions. |
|         | 6       |  |
|         | 9       |  |

## MODBUS WIRING CONNECTION

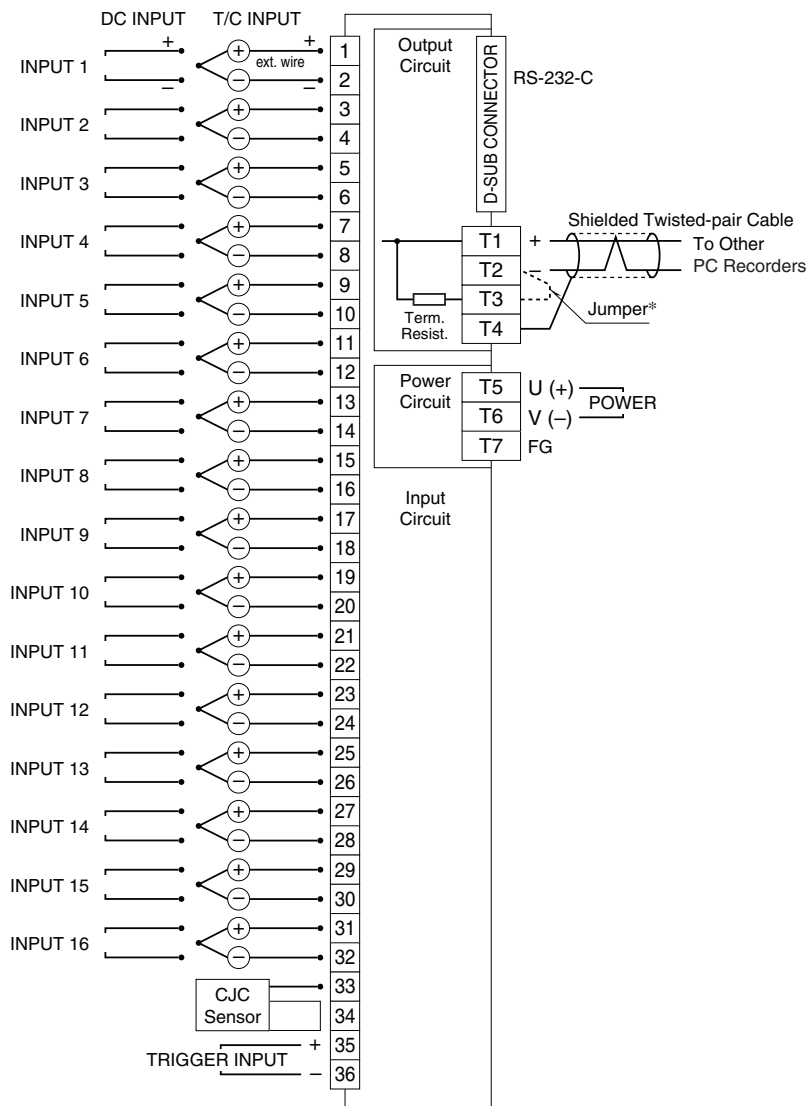


- \*1. Internal terminating resistor is used when the device is at the end of a transmission line.
- \*2. Install shielded cables to all sections and ground them at single point.

## CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.

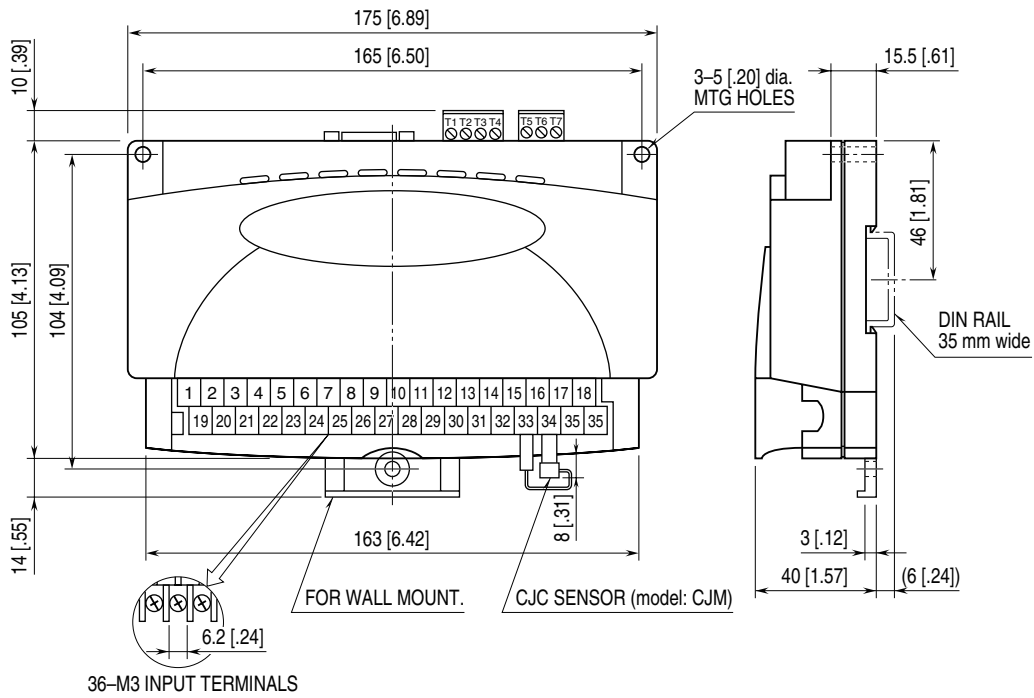


- \* When the device is located at the end of a transmission line via twisted-pair cable, (when there is no cross-wiring), close across the terminal T2 – T3 with the attached jumper pin (or with a leadwire).  
When the device is not at the end, remove the jumper pin.

- Note 1: This device is not designed to cancel noise included in the input signals.  
Be careful to eliminate such noise by using shielded cables.
- Note 2: Be sure to maintain the same potential at all the common negative terminals for DC input.

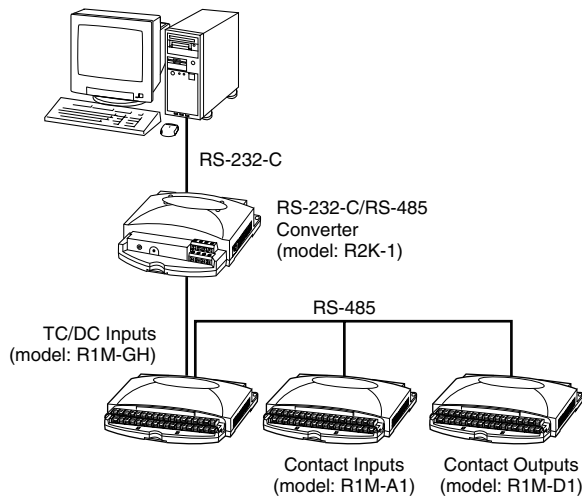
# MODEL: R1M-GH

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



## SYSTEM CONFIGURATION EXAMPLES

### ■ For MSR128



When the cable distance between the PC and the R1Ms is long, insert an RS-232-C/RS-485 Converter for isolation. Only one (1) node is connectable for the MSR16H software.



Specifications are subject to change without notice.