

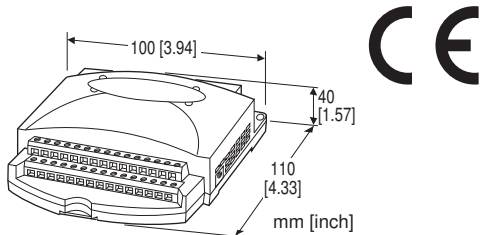
PC Recorders Series

PC RECORDER

(thermocouple input, 8 points; RS-232-C)

Functions & Features

- Industrial recorder on PC
- 8-point input
- One trigger input and one alarm output
- Recorded data exportable to spreadsheet applications



MODEL: R2M-2H3-R/MSR

ORDERING INFORMATION

- Code number: R2M-2H3-R/MSR
- Consult Factory for AC power input.

POWER INPUT

DC Power

R: 24 V DC

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

OPTIONS

PC Recorder Software Package (must be specified)

/MSR: With

PACKAGE INCLUDES...

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

GENERAL SPECIFICATIONS

Connection

Power, input, alarm output: Euro-type terminal block
(Applicable wire size: 0.14 - 1.5 mm², stripped length 6 mm)

RS-232-C: 9-pin D-sub connector (male)
(Lock screw No. 4-40 UNC)

Configurator: Miniature jack (rear); RS-232-C level

Housing material: Flame-resistant resin (black)

Isolation: Input or configurator jack to alarm output to RS-232-C or 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.

INPUT SPECIFICATIONS

Input: Thermocouple input, 8 points; differential (max. 3.0 V difference between inputs)

Input resistance: 300 k Ω min.

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

Sampling rate: 50 millisecc./8 points

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

Sensing: Approx. 5 V DC @ 1 mA

OUTPUT SPECIFICATIONS

■ **Alarm Output:** Photo MOSFET relay (no polarity); \leq 50 Ω at ON, \geq 1 M Ω at OFF; OFF when not powered

Peak load voltage: 50 V max.

Continuous load current: 50 mA max.

Peak load current: 300 mA max. (\leq 0.1 sec.)

INSTALLATION

Power consumption

• **DC:** Approx. 0.9 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: 300 g (0.66 lb)

PERFORMANCE (% of measuring range)

Accuracy: See the table next.

Cold junction compensation error: $\pm 1^{\circ}\text{C}$ or $\pm 1.8^{\circ}\text{F}$ max.

(at $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$ or $68^{\circ}\text{F} \pm 18^{\circ}\text{F}$)

Temp. coefficient: $\pm 0.01\% / ^{\circ}\text{C}$ ($\pm 0.006\% / ^{\circ}\text{F}$)

Response time: Approx. 0.5 sec. (0 - 90 %)

Insulation resistance: $\geq 100\ \text{M}\Omega$ with 500 V DC

Dielectric strength: 500 V AC @ 1minute

(ground terminal to input or configurator jack to RS-232-C or power)

2000 V AC @ 1 minute (input or configurator jack or power or ground terminal to alarm output)

T/C	USABLE RANGE		ACCURACY (%)
	$^{\circ}\text{C}$	$^{\circ}\text{F}$	
(PR)	0 to 1770	32 to 3218	$\pm 0.6^{*1}$
K (CA)	-270 to +1370	-454 to +2498	± 0.2
E (CRC)	-270 to +1000	-454 to +1832	± 0.2
J (IC)	-210 to +1200	-346 to +2192	± 0.2
T (CC)	-270 to +400	-454 to +752	± 0.4
B (RH)	100 to 1820	212 to 3308	$\pm 0.8^{*2}$
R	-50 to +1760	-58 to +3200	$\pm 0.6^{*1}$
S	-50 to +1760	-58 to +3200	$\pm 0.6^{*1}$
C (WRe 5-26)	0 to 2320	32 to 4208	± 0.5
N	-270 to +1300	-454 to +2372	± 0.3
U	-200 to +600	-328 to +1112	± 0.4
L	-200 to +900	-328 to +1652	± 0.2
P (Platinel II)	0 to 1395	32 to 2543	± 0.3

*1. $\geq 400^{\circ}\text{C}$ or $\geq 752^{\circ}\text{F}$

*2. $\geq 700^{\circ}\text{C}$ or $\geq 1292^{\circ}\text{F}$

The described accuracy may be partially not satisfied when the temperature ranges below 0°C .

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

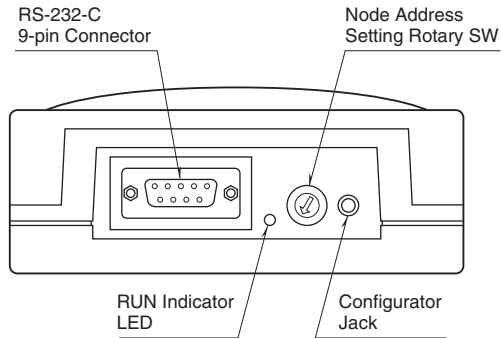
PC RECORDER SOFTWARE

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

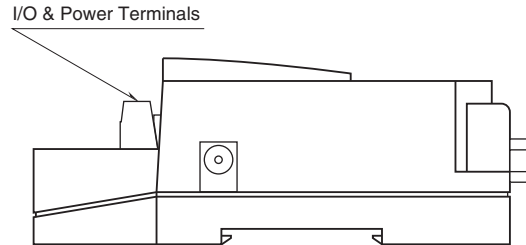
Refer to the MSRPAC-2010 data sheet for the contents of the package and the requirements for the PC to be prepared by the user.

EXTERNAL VIEW

REAR VIEW



SIDE VIEW



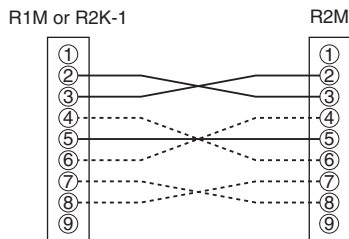
RS-232-C CABLE

- When connecting a R2M directly to a PC, use a 'straight' cable. A short 'straight' cable is included in the product package.
- When connecting a R2M to a R1M or R2K-1, use a RS-232-C Interlink/Reverse cable.

This cable should meet the following conditions:

- Must include wires indicated in solid lines in the figure below.
- Must not connect between Pins No. 8 of the both connectors. (May cause failure)

Pin Assignments



The above example with solid and broken lines shows an 'interlink' type cable.

RS-232-C INTERFACE

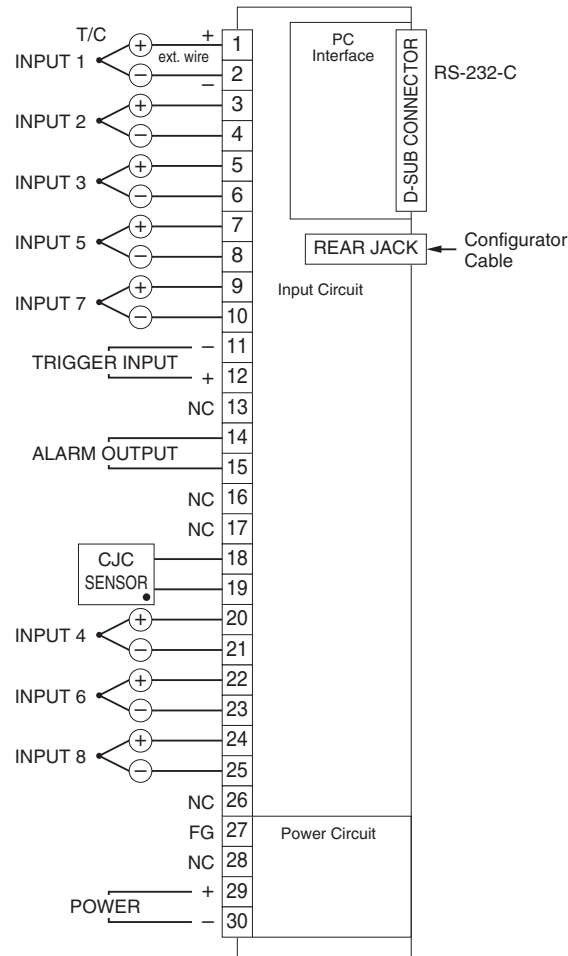


ABBR.	PIN NO.	EXPLANATION OF FUNCTION
BA (SD)	2	Transmitted Data
BB (RD)	3	Received Data
AB (SG)	5	Signal Common
CB (CS)	7	Clear to Send
CA (RS)	8	Request to Send
	1	Not Used.
	4	DO NOT connect. Connecting may cause malfunctions.
	6	
	9	

CONNECTION DIAGRAM

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

Caution: FG terminal is NOT a protective conductor terminal.



Note 1: DO NOT connect the terminals 13, 16, 17, 26 and 28 (NC: No Connection).

Wrong connection may cause failures of the module.

Note 2: Use shielded twisted cables for the input or take other necessary measures so that there is no noise interference.

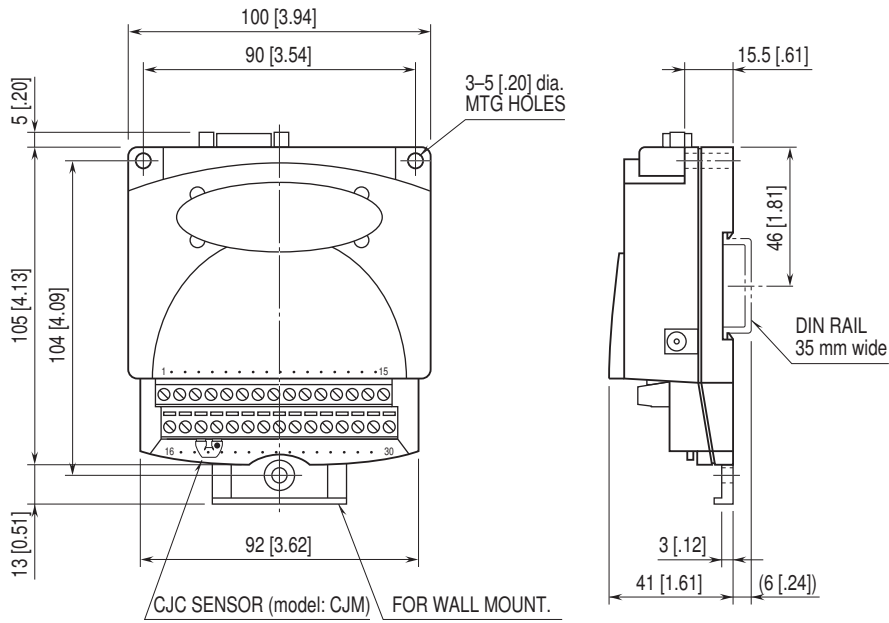
Thermocouples must not be grounded.

Note 3: Ground the terminal 27 (FG) for safety.

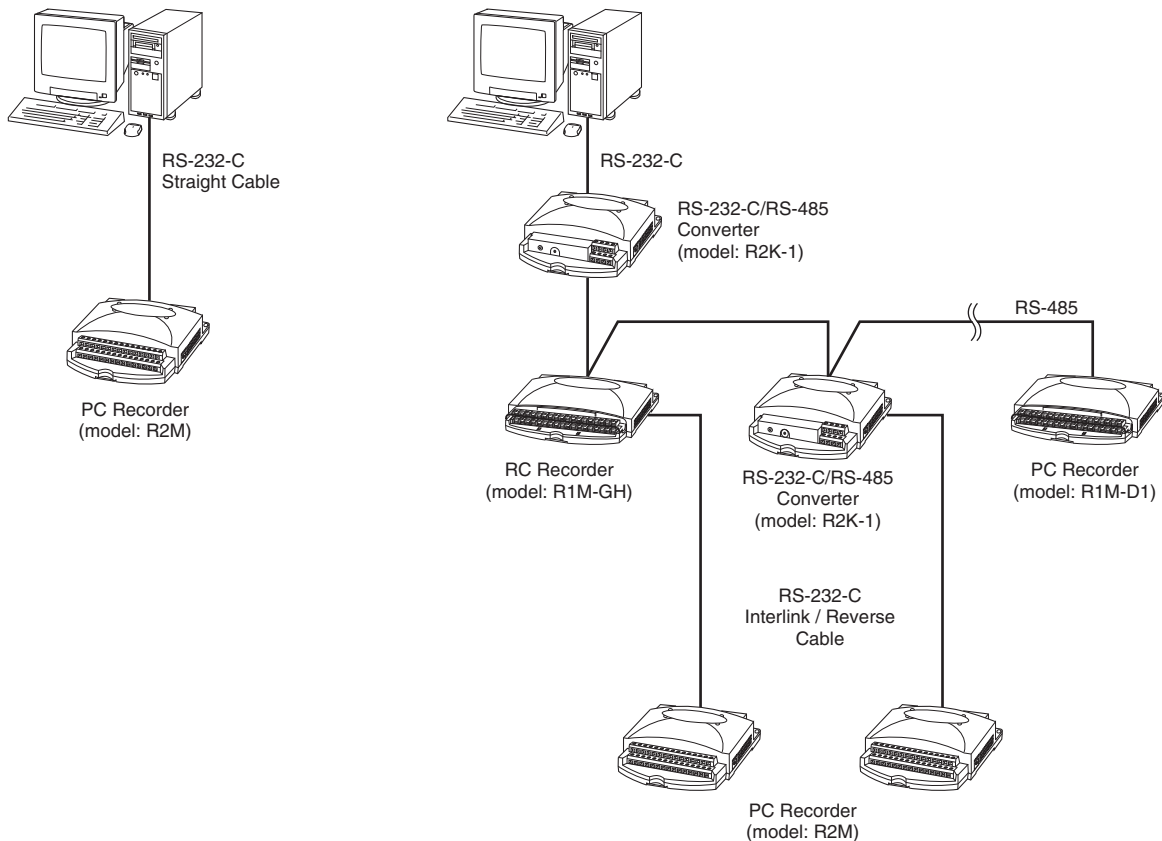
Note 4: The terminal 30 (Power -) and the signal ground (SG) of the D-sub connector are internally connected.

The terminal 27 (FG) is used to lead noise from R2M's I/O terminals to the ground. For protecting your PC and the R2M, we recommend that both the terminal 27 and 30 be connected to the PC's ground before connecting an RS-232-C cable between the PC and the R2M.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SYSTEM CONFIGURATION EXAMPLES



Specifications are subject to change without notice.