M·SYSTEM CO.,LTD.

PC Recorders Series

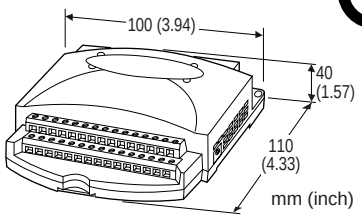
PC RECORDER
(thermocouple input, 8 points)

MODEL **R2M-2H3**

MODEL & SUFFIX CODE SELECTION

R2M–2H3–❑/MSR

MODEL
PC INTERFACE
RS-232C
I/O TYPE
Thermocouple input, 8 points
POWER INPUT
R : 24V DC
Consult Factory for AC power input.
OPTIONS
/MSR : PC Recorder software package



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

ORDERING INFORMATION

Specify code number. (e.g. R2M-2H3-R/MSR)

PACKAGE INCLUDES...

- PC Recorder Software CD (model: MSRPAC-2005)
- 9-pin D-sub connector, straight type (1 m or 3.3 ft)

GENERAL SPECIFICATIONS

Connection
DC power input, I/O: Euro-type terminal block; 0.14 – 1.5 mm² or AWG26 – 16; stranded and solid
AC adaptor: Miniature jack (side)
RS-232C: 9-pin D-sub connector (male)
Configurator: Miniature jack (rear); RS-232C level
Isolation: Input or configurator jack to alarm output to RS-232C or power
Address setting: rotary switch; 1 – F

RS-232C INTERFACE

Standard: Conforms to RS-232C, EIA
Baud rate: 38.4 kbps
Communication: Half-duplex, asynchronous, no procedure
Protocol: Modbus RTU
Transmission distance: 10 meters max.

INPUT & OUTPUT

■**INPUT**: Thermocouple input, 8 points; differential (max. 3.0V difference between inputs)
Input resistance: 300kΩ minimum
Thermocouple types: PR, K, E, J, T, B, R, S, C, N, U, L, P
Sampling rate: 50 millisec./8 points
Trigger input: Dry contact; detected ON at ≤1.5V; Sensing approx. 5V DC @1mA
Alarm output: Photo MOSFET (no polarity); ≤50Ω at ON, ≥1MΩ at OFF; OFF when not powered
Load voltage, peak: 50V max.
Load current, continuous: 50mA max.
Load current, peak: 300mA max. (≤0.1 sec.)

INSTALLATION

Power input
DC: Operational voltage range 24V ±10%; ripple 10% p-p max., approx. 0.9W
Operating temperature: -5 to +60°C (23 to +140°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: surface or DIN rail
Dimensions: W100×H110×D41 mm (3.94"×4.33"×1.61")
Weight: 300 g (0.66 lbs)

PERFORMANCE

Accuracy (at over 400°C or 750°F for R, S and PR; over 770°C or 1420°F for B)

T/C	USABLE RANGE		ACCURACY
	°C	°F	
(PR)	0 to 1770	32 to 3218	±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	±0.8*2
R	-50 to +1760	-58 to +3200	±0.6*1
S	-50 to +1760	-58 to +3200	±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. ≥400°C or ≥752°F
*2. ≥700°C or ≥1292°F

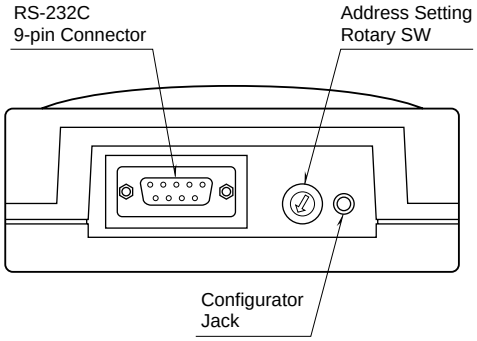
Cold junction compensation error: ±1°C or ±1.8°F maximum (at 20°C ±10°C or 68°F ±18°F)
Response time: approx. 0.5 sec. (0 – 90%)
Temp. coefficient: ±0.01%/°C (±0.006%/°F)
Insulation resistance: ≥100MΩ with 500V DC (RS-232C or DC power terminal or AC adaptor jack to ground terminal to alarm output to AC plug*)
Dielectric strength: 500V AC @1minute (ground terminal to input or configurator jack to RS-232C or DC power terminal or AC adaptor jack)
2000V AC @1 minute (input or configurator jack or DC power terminal or AC adaptor jack or ground terminal to alarm output)
2000V AC @1 minute (AC plug* to RS-232C or DC power terminal)
*Not for DC power.

STANDARDS & APPROVALS

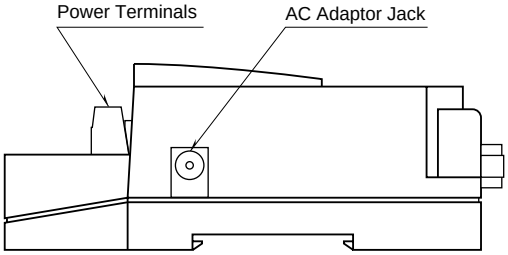
CE conformity: EMC Directive (89/336/EEC)
EMI EN61000-6-4
EMS EN61000-6-2

REAR & SIDE VIEWS

■REAR VIEW



■SIDE VIEW



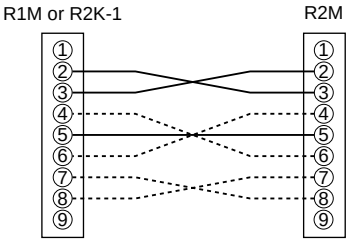
■RS-232C INTERFACE

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 4 6 9	Not Used. DO NOT connect. Connecting may cause malfunctions.

■RS-232C 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-232C 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.

Specifications subject to change without notice.

PC/HARDWARE ENVIRONMENTS (provided by the user)

■MSR128-V4

	NORMAL MODE (storing rates ≥500 ms)	HIGH SPEED MODE (storing rates 100 / 200 ms)
PC	IBM PC/AT or compatible	
Operating system	Microsoft Windows 2000 or Windows XP SP1, SP2	
CPU	Pentium III 800 MHz or higher	Pentium IV 2.0 GHz or higher
Screen area	1024 by 768 pixels or better resolution	
Display color	65000 colors (16 bits)	
Video memory	2 MB minimum; 4 MB recommended	4 MB minimum
Main memory	128 MB minimum; 256 MB recommended for Windows XP	256 MB minimum; 512 MB recommended for Windows XP
Hard disk area	Use an internal hard disk. *1 Max. approx. 100 MB required per day.	Use an internal hard disk. *1
I/O hardware	R1M-GH2, R1MS-GH3, R1M-J3, R1M-D1, R1M-A1, R1M-P4, R2M-2H3, R2M-2G3, 50HR, 73ET, 74ET, 75ET, R5-NM1, R5-NE1, R3-NM1, R3-NE1, RZMS-U9, RZUS-U9	R3-NE1
Printer	Use a printer for Windows. The programs use Standard System Fonts used in Windows. Use a printer driver for Standard System Fonts.	
CD-ROM drive	Used when installing the software program.	
Card reader drive	Used reading data from Compact Flash Card (50HR, 73ET, 74ET, 75ET)	——
Communication port	RS-232C port (COM1 through COM5) supported by Windows, LAN card	LAN card

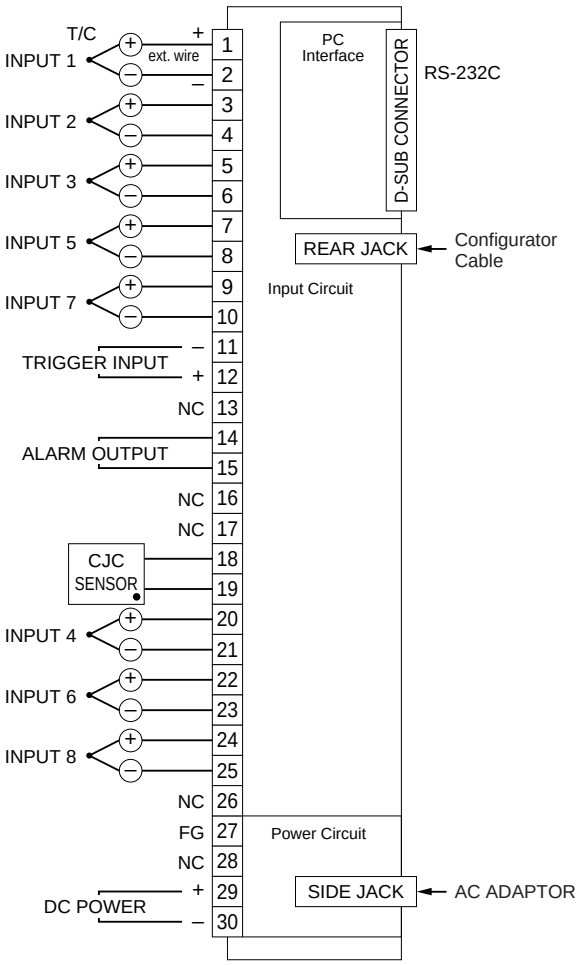
*1. External (e.g. SCSI) devices may impair appropriate performance.

■MSR128LS, MSR128LV

	MSR128LS	MSR128LV
PC	IBM PC/AT or compatible	
Operating system	Microsoft Windows 98 (98SE), Windows 2000 SP3, Windows XP SP1 or Windows NT4.0 SP6. For High Speed Mode (Group 0, 50-msec. storing cycle), use Windows 2000 SP3, Windows XP SP1, SP2, Windows NT4.0 SP6, or higher.	
CPU	Pentium II 233 MHz or higher *2	
Screen area	800 by 600 pixels or better resolution	640 by 480 pixels or better resolution
Display color	65000 colors (16 bits)	
Main memory	64 MB minimum; 128 MB for Windows 2000, 256 MB for Windows XP	
Hard disk area	200 MB minimum *3 Follow the respective OS's standard Windows 2000 and XP.	
I/O hardware	High Speed Mode (Group 0, 50-msec. storing cycle): R1M-GH2, R2M-2H3, R2M-2G3, R1MS-GH3 Normal Mode (Group 1 thr. 10, 500-msec. storing cycle): R1M-GH2, R1MS-GH3, R1M-J3, R1M-D1, R1M-A1, R1M-P4, R2M-2H3, R2M-2G3, R5-NM1, R5-NE1, R3-NM1, R3-NE1, RZMS-U9, RZUS-U9	
CD-ROM drive	Used when installing the software program.	
Communication port	RS-232C port (COM1 through COM5) supported by Windows *4 or LAN communication card	

*2. Alternately, Celeron 300 MHz or higher with the secondary cache
For High Speed Mode (Group 0, 50-msec. storing cycle), Pentium III 800 MHz or higher.
*3. External (e.g. SCSI) devices may impair appropriate performance.
*4. The RS-232C port may be predefined for other purposes than for COM port.
Driver software change or system configuration may be required before using such a port.
Note: At 50-msec. storing cycle (Group 0), the MSR128LS/LV may not be able to store every bit of data depending upon the PC's performance levels. These missing data will be substituted by the last stored data. Only one (1) node is connectable in the high speed mode.

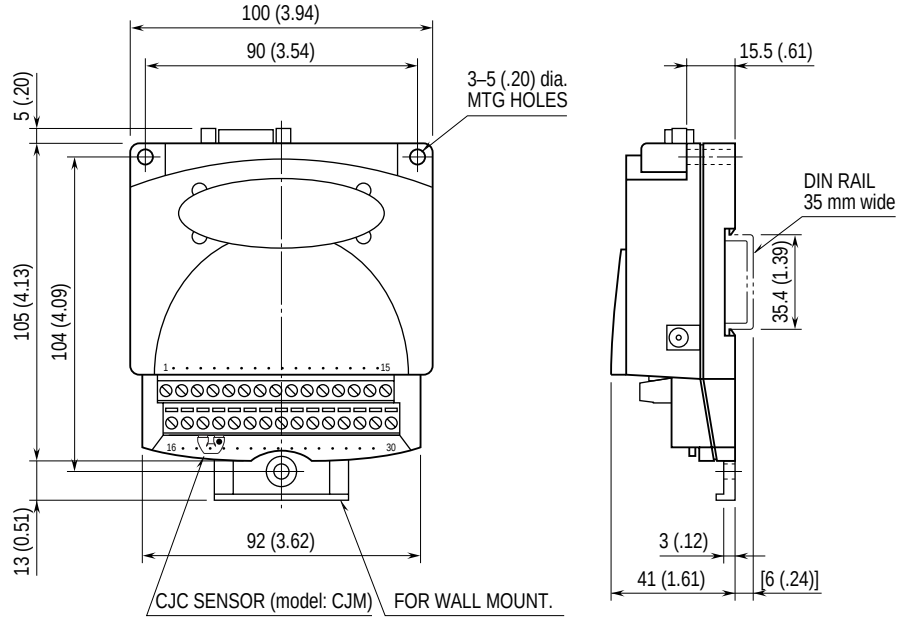
CONNECTION DIAGRAM



Remarks

1) DO NOT connect the terminals 13, 16, 17, 26 and 28 (NC: No Connection).
   Wrong connection may cause failures of the module.
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.
3) Ground the terminal 27 (FG) for safety.
4) The terminal 30 (DC 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 termimal 27 and 30 be connected to the PC's ground before connecting an RS-232C cable between the PC and the R2M.
5) The AC adaptor jack and the DC power input terminals 29 and 30 are directly connected. Supplying at the both sides may damage the power sources connected to the terminals/jack.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS mm (inch)



SYSTEM CONFIGURATION EXAMPLE