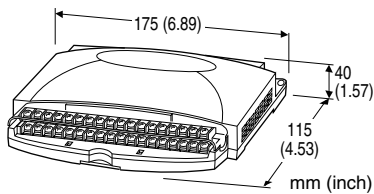## PC Recorders R1M Series

PC RECORDER
(4 totalized counter inputs, 8 contact inputs and outputs)

Functions & Features
• Industrial recorder on PC
• Totalized counter inputs
• Counts stored in E^{2}PROM
• Easy system expansion via Modbus RTU
• Recorded data exportable to spreadsheet applications

175 (6.89)
40 (1.57)
115 (4.53)
mm (inch)

MODEL: R1M-P4T-[1][2]

ORDERING INFORMATION
• Code number: R1M-P4T-[1][2]
Specify a code from below for each [1] and [2].
  (e.g. R1M-P4T-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 ±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 M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating

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^2 (AWG24 – 12), stripped
  length 7 mm)
  RS-232-C: 9-pin D-sub connector (male)
  (Lock screw No. 4-40 UNC)
  I/O: M3 screw terminals (torque: 0.6N·m)
Screw terminal: Nickel-plated steel
Housing material: Flame-resistant resin (gray)
Channel selector for the digital display: Rotary DIP switch;
  1 thr. 8: ch.1 thr. ch.8 contact input
  A thr. D: ch.A thr. ch.D totalized counter input
  0, 9, E, F: no display
Isolation: RS-232-C or RS-485 to I/O to power
Node address setting: Rotary switch; 1 – F (15 nodes)
RUN indicator LED: Green light blinks in normal conditions.
Count memory at power loss: Count value is saved in the
the non-volatile memory (E^{2}PROM) when the power supply is
lost.
  Number of rewritable times: 10^5 times
  Data storing characteristics: 10 years at 20°C

■ Indicators
Digital display: 6-digit red LED; 4.6 mm high; Shows either
totalized (lower 6 digits only) or momentary value;
selectable with internal DIP switch

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

■ **Totalized Counter Input (high speed)**: Dry contact, 4 points
Commons: All negatives
Max. input frequency: 10 kHz
Minimum pulse width: 50 μsec.
Max. counter value: 999 999 999 (reset to zero at overflow)
Sensing: Approx. 5 V DC (pull-up resistance 22 kΩ); ≤ 0.8 V at Lo; ≥ 4 V at Hi
Caution: The totalized counter itself can accept frequencies as high as 10 kHz. In order to eliminate unwanted input by chattering, be careful to choose an input device to be free of the problem (e.g. mercury relay).
■ **Contact Input**: Dry contact, 8 points
Commons: All negatives
Sensing: Approx. 5 V DC (pull-up resistance 22 kΩ); ≤ 0.8 V at Lo; ≥ 4 V at Hi
Sampling rate: 50 msec.
Totalizing counter function
  Number of input channels: 8
  Max. input frequency: 100 Hz
  Minimum pulse width: 5 msec.
  Max. counter value: 999 999 999 (reset to zero at overflow)
■ **Counter Reset Input**: Dry contact, 1 point
Commons: All negatives
Sensing: Approx. 5 V DC (pull-up resistance 22 kΩ); ≤ 0.8 V at Lo; ≥ 4 V at Hi
Sampling rate: 50 msec.
Logic: Enable at pulse edge sinking

OUTPUT SPECIFICATIONS

■ **Contact Output**: Open collector, 8 points
Commons: All negatives
Rating: 24 V DC @ 50 mA (resistive load)
Saturation voltage: 1.6 V DC
For use with inductive loads, external protection of contact and noise quenching is recommended.
Sampling rate: 50 msec.

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

Multi-transmission time: 5 msec.
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @ 1 minute (RS-232-C or RS-485 to I/O to power to ground)
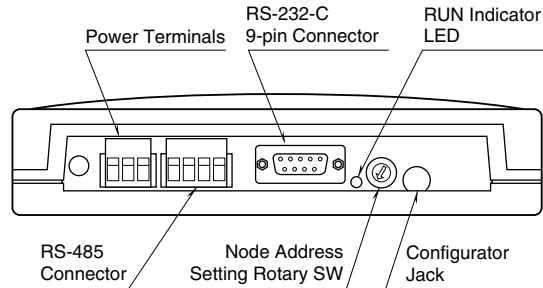
PC RECORDER SOFTWARE

PC Recorder Software Package (model: MSRPAC-2010) is included with purchases of this model.
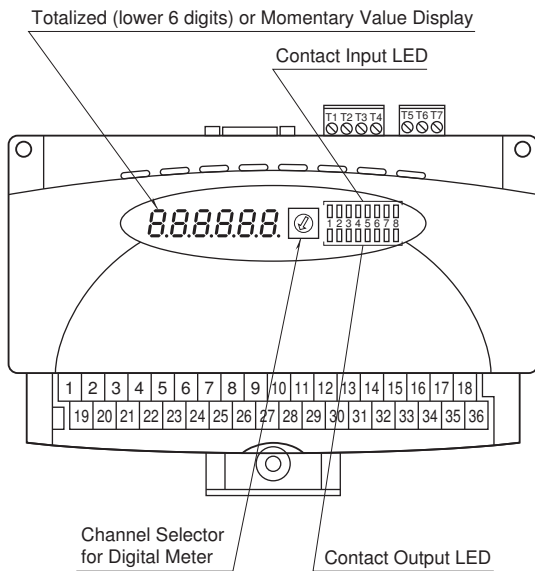
Refer to the MSRPAC-2010 data sheet for the contents of the package and the requirements for the PC to be prepared by the user.
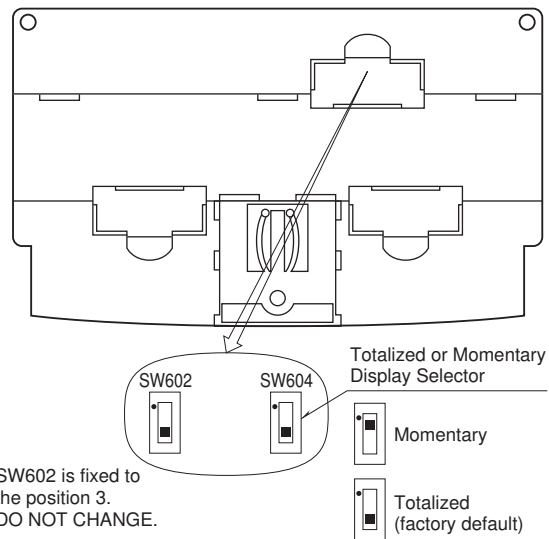
EXTERNAL VIEW

■ **REAR VIEW**

Power Terminals
RS-232-C 9-pin Connector
RUN Indicator LED
RS-485 Connector
Node Address Setting Rotary SW
Configurator Jack

TOP VIEW

Totalized (lower 6 digits) or Momentary Value Display
Contact Input LED
Channel Selector for Digital Meter
Contact Output LED

BOTTOM VIEW

Totalized or Momentary Display Selector
SW602   SW604
Momentary
Totalized (factory default)
SW602 is fixed to the position 3. DO NOT CHANGE.

■ **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
	6	cause malfunctions.
	9	

MODBUS WIRING CONNECTION
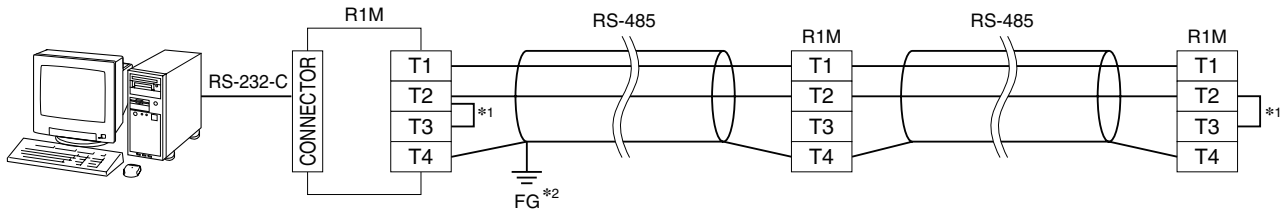
*1. Internal terminating resistor is used when the device is at the end of a transmission line.
*2. Install shielded cables to all sections and ground them at single point.
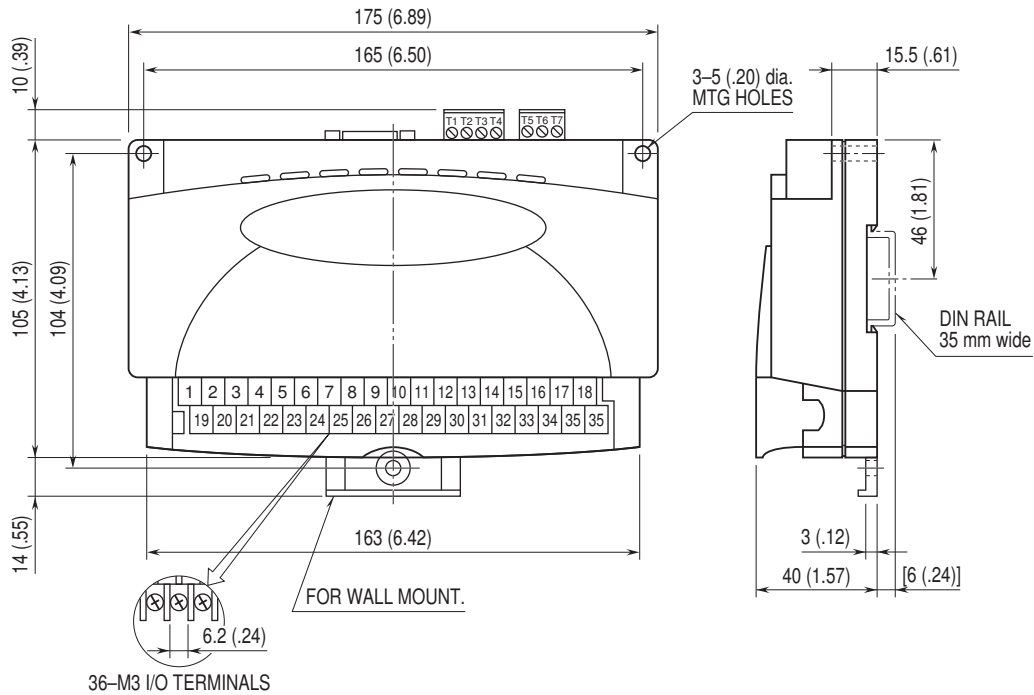
CONNECTION DIAGRAM
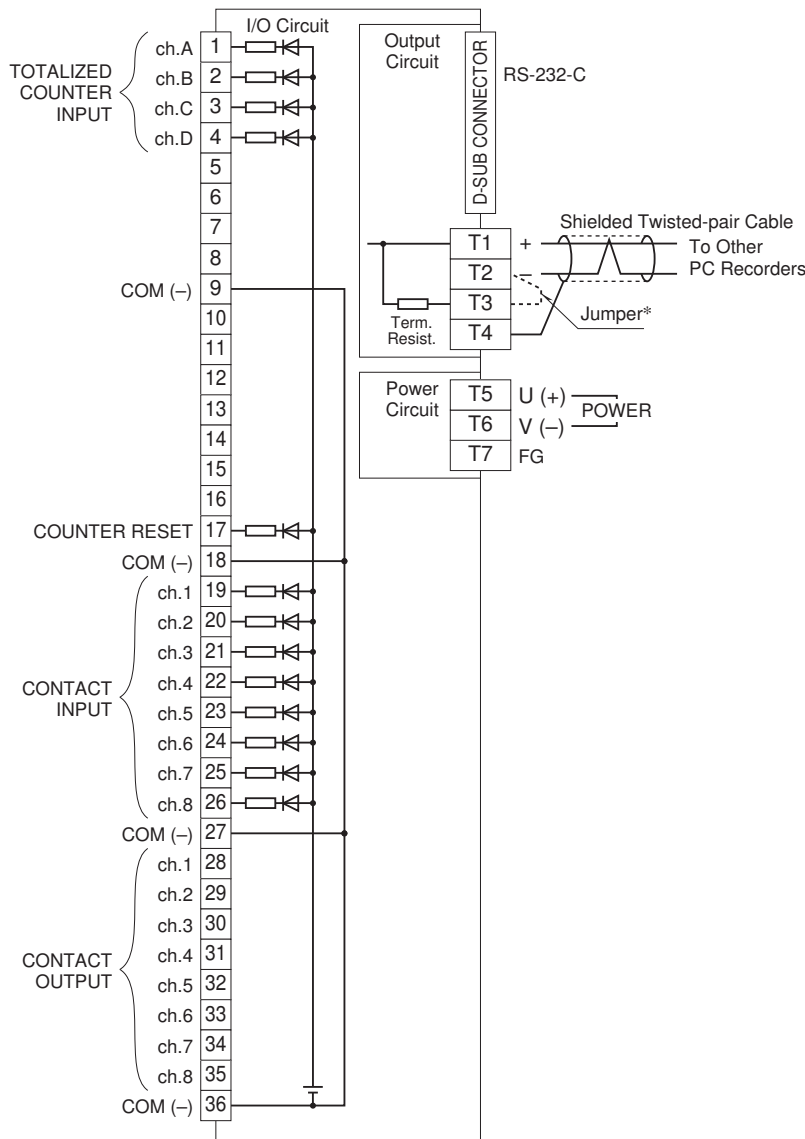
* When the device is located at the end of a transmission line via twisted-pair cable,
  (when there is no cross-wiring), close across the terminal T2 –T3 with the attached
  jumper pin (or with a leadwire).
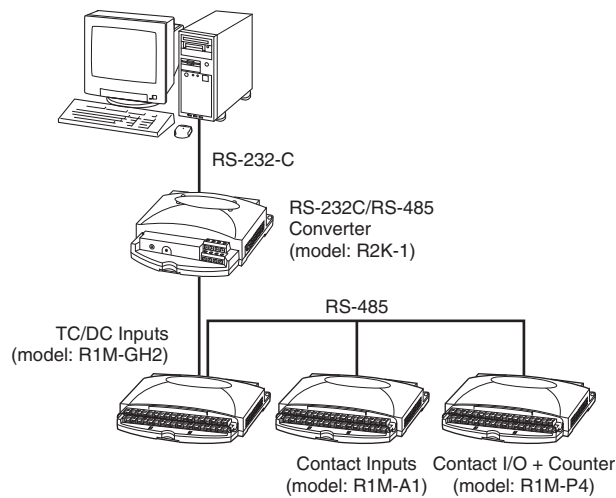 When the device is not at the end, remove the jumper pin.

DO NOT CONNECT to the terminals 5 thr. 8 or 10 thr. 16.
Wrong connection may cause failure of the device.

Caution: FG terminal is NOT a protective conductor terminal.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

175 (6.89)
165 (6.50)
10 (.39)
3–5 (.20) dia. MTG HOLES
15.5 (.61)
46 (1.81)
DIN RAIL 35 mm wide
105 (4.13)
104 (4.09)
14 (.55)
163 (6.42)
FOR WALL MOUNT.
6.2 (.24)
36–M3 I/O TERMINALS
3 (.12)
40 (1.57)
[6 (.24)]

T1 T2 T3 T4 T5 T6 T7

SYSTEM CONFIGURATION EXAMPLES

RS-232-C

RS-232C/RS-485 Converter (model: R2K-1)

RS-485

TC/DC Inputs (model: R1M-GH2)

Contact Inputs (model: R1M-A1)

Contact I/O + Counter (model: R1M-P4)

When the cable distance between the PC and the R1Ms is long, insert an RS-232-C/RS-485 Converter for isolation.

⚠ Specifications are subject to change without notice.