PAPERLESS RECORDER
Model: 73VR1100

Hardware & I/O – Connection & Setup

Users Manual

M·SYSTEM CO.,LTD.

INTRODUCTIONS

Thank you for choosing M-System's Paperless Recorder.

The Users Manual for model 73VR1100 describes necessary points of caution when you use this product, including installation, wiring procedure, connection to I/O devices and hardware setup. Please read this manual carefully to ensure the safe use before getting started.

A series of documents is provided for this product as listed below, each providing helpful instructions and suggestions for maximum use of the 73VR1100. They are available in the CD package, 73VRPAC2, that came with your product.

Title	Document No.	Details
73VR1100 Users Manual – Hardware & I/O Connection	EM-7399-B	Basic users manual explaining the hardware aspects of the product, including installation, connection and setup.
73VR1100 Users Manual – Software Operation	EM-7399-C	Basic users manual explaining the software aspects of the product, including operation and setting.
73VR11BLD Users Manual	EM-7399-D	Focuses on the features and operations of the PC Configurator program, model 73VR11BLD.
73VRWV Users Manual	EM-7394-D	Focuses on the features and operations of the 73VR Data Viewer program, model 73VRWV.
73VR1100 / 73VR21x Modbus/TCP Reference Guide	EM-7395-D	Focuses on the Modbus/TCP specifications and functions supported by the 73VR1100.

⚠ CAUTION !

If you intend to use the 73VR1100 in the following environments or conditions, redundant and/or failsafe system designs should be used to ensure the proper degree of reliability and safety.

• Environments or conditions which are not defined in this manual

• Nuclear power control devices, railway control devices, aircraft control devices, transportation vehicles, fuel control equipment, medical equipment, recreational equipment, safety equipment, and other critical equipment for which safety must be secured according to relevant laws.

• Those devices which inherently require extremely high level of safety and reliability.

PACKAGE INCLUDES...

1. Paperless Recorder .... (1)
2. Mounting bracket (Not included for desktop type) .... (2)
3. 73VRPAC2 CD.. (1)
4. 73VR1100 Startup Guide .... (1)

CONTENTS

1. BEFORE GETTING STARTED

1.1 POINTS OF CAUTION

■ CONFORMITY WITH EC DIRECTIVES

- This equipment is suitable for use in a Pollution Degree 2 environment and in Installation Category II. Reinforced insulation (alarm output to RUN contact output to power input to FG/Ethernet/RS-485: 300V) is maintained.* Prior to installation, check that the insulation class of this unit satisfies the system requirements.

- The equipment must be mounted on a panel surface. Once mounted on a panel, take appropriate precautions to prevent operators to be exposed to the terminal block*.

  In order to enable the operator to turn off the power input immediately, install a switch or a circuit breaker according to the relevant requirements in IEC 60947-1 and IEC 60947-3 and properly indicate it*.

- Altitude up to 2000 meters*

- Insert a noise filter for the power source and RS-485 line connected to the unit. NEC Tokin Noise Filter Model ESD-SR-250 or equivalent is recommended.

- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

*Except desktop type

■ SAFETY PRECAUTION

- Before you remove the unit, turn off the power supply and input signal for safety.

- Do not use the 73VR1100 in an environment where flammable gases are present. This may result in an explosion.

- Do not disassemble or modify the 73VR1100 in any way. Doing so may result in a fire or an electrical shock.

- Do not strike the panel of the 73VR1100 with a hard, heavy or pointed object, or press the panel with excessive force. Doing so may result in panel damage or injury.

- Do not block the 73VR1100's ventilation openings or use it in areas where heat accumulates. Additionally, do not store or use it under high-temperature conditions.

- Do not store or use the 73VR1100 in locations subject to direct sunlight, or where excessive dust or dirt is present.

- The 73VR1100 is a precision instrument. Do not store or use it where large shocks or excessive vibration can occur.

- Do not store or use the 73VR1100 in environments subject to chemical evaporation (such as that of organic solvents), or where there are chemicals and/or acids present in the air.

- Do not use paint thinner or organic solvents to clean the 73VR1100.

- Observe the environmental conditions when using the 73VR1100.

- Wait at least for 5 seconds before turning on the power supply after it has been turned off. The 73VR1100 may not start up if the time interval is less than 5 seconds.

■ ENVIRONMENT

- Indoor use

- The 73VR1100 is designed to be mounted on a vertical panel. It is not suitable for a slanted or a horizontal panel surface.

- Environmental temperature must be within 0 to 50°C (32 to 122°F) with relative humidity within 30 to 85% RH in order to ensure adequate life span and operation.

- Desktop type cannot be mounted on a panel surface.

- The handle and rubber feet cannot be detached from desktop type unit.

■ GROUNDING

• Be sure to determine in advance the most stable grounding point in the environment and earth the 73VR1100's FG terminal and that of connected devices (PC) to it in order to protect the devices from dielectric breakdown.

• Grounding is also effective to eliminate noise that could cause errors in the 73VR1100's operation.

■ LCD PANEL

• The LCD panel's liquid contains an irritant. If the panel is damaged and the liquid contacts your skin, rinse immediately the contact area with running water for at least 15 minutes. If the liquid gets in your eyes, rinse immediately your eyes with running water for at least 15 minutes and consult a doctor.

• The following phenomena are LCD characteristics, and NOT a product defect:

   - LCD screen may show uneven brightness depending upon displayed images or contrast settings.

   - The LCD screen pixels may contain minute black-and-white-colored spots.

   - The color displayed on the LCD screen may appear different when seen from outside the specified viewing angle.

   - When the same image is displayed on the screen for a long time period, an afterimage may appear when the image is changed. If this happens, turn off the 73VR1100 and wait 10 seconds before restarting it.

• To prevent an afterimage:

   - Set the screensaver when you plan to display the same image for a long time period.

   - Plan to change the screen image periodically so that the same image does not remain for the long time period.

■ INTERNAL CLOCK

• The internal clock data is stored in memory powered by a backup battery while the 73VR1100 is without external power supply.

• The data will be reset to its default status when the battery is used up while the 73VR1100 is left without power supply for a long time period. The clock adjustment will be necessary once the power is restored. Please refer to the 73VR1100 Users Manual (EM-7399-C, Section 6) for the procedure.

• Once the power is restored, the 73VR1100 starts recharging the battery. It will be full in approximately in 36 to 48 hours.

■ AND ....

• We recommend use of an UPS to supply power backups.

• The module is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

2. HARDWARE SETUP

2.1 73VR1100 COMPONENT IDENTIFICATIONS

■ FRONT VIEW

(1) Touch Panel Screen
(2) Front Cover
(3) CF Card Slot
(7) USB Connector
(4) Eject Button
(5) Reset Button
(6) CF Card Access Indicator LED

■ REAR VIEW

(14) Alarm Output Terminal
(8) RS-485 Terminal Block
(9) LAN Port
(10) RUN Output Indicator LED
(11) Power Indicator LED
(12) Power Input Terminal
(13) RUN Output Terminal
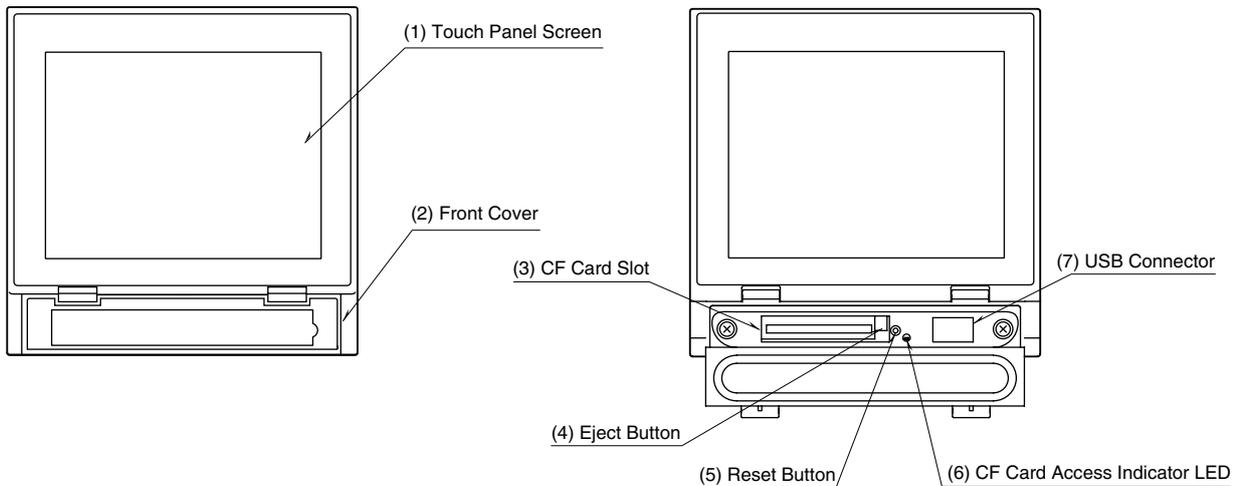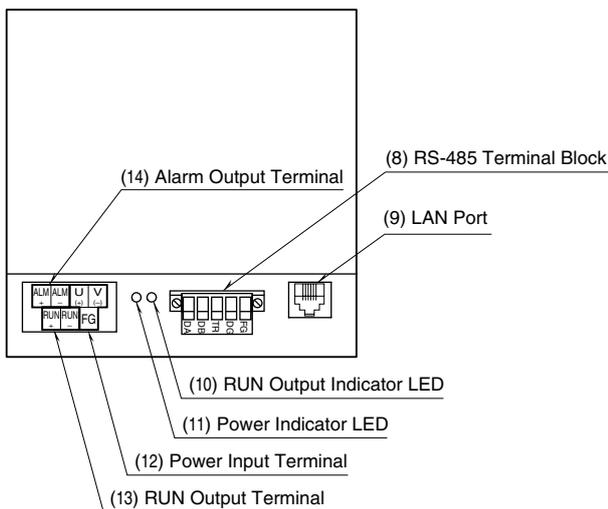
(1) Touch Panel Screen
   Trend chart and other data views and setup views are displayed.
(2) Front Cover
   Access to the CF Card Slot.
(3) CF Card Slot
(4) Eject Button
   Used to retrieve the CF Card.
(5) Reset Button
   Used to restart the 73VR1100.
(6) CF Card Access Indicator LED
   Red light turns on during the CF Card is accessed.
(7) USB Connector
   Connect an USB flash-memory.
(8) RS-485 Terminal Block
   Used to connect the 73VR1100 to its I/O devices via RS-485.
(9) LAN Port
   Connects the LAN cable (10BASE-T or 100BASE-TX)
(10) RUN Output Indicator LED
   Green light turns on in normal conditions; off when the RUN output contact is tripped in an abnormality of the unit.
(11) Power Indicator LED
   Light turns on while the power is supplied.
(12) Power Input Terminal
(13) RUN Output Terminal
(14) Alarm Output Terminal

2.2   INSTALLING THE 73VR1100

■ **EXTERNAL DIMENSIONS unit: mm (inch)**

• **PANEL MOUNT TYPE**
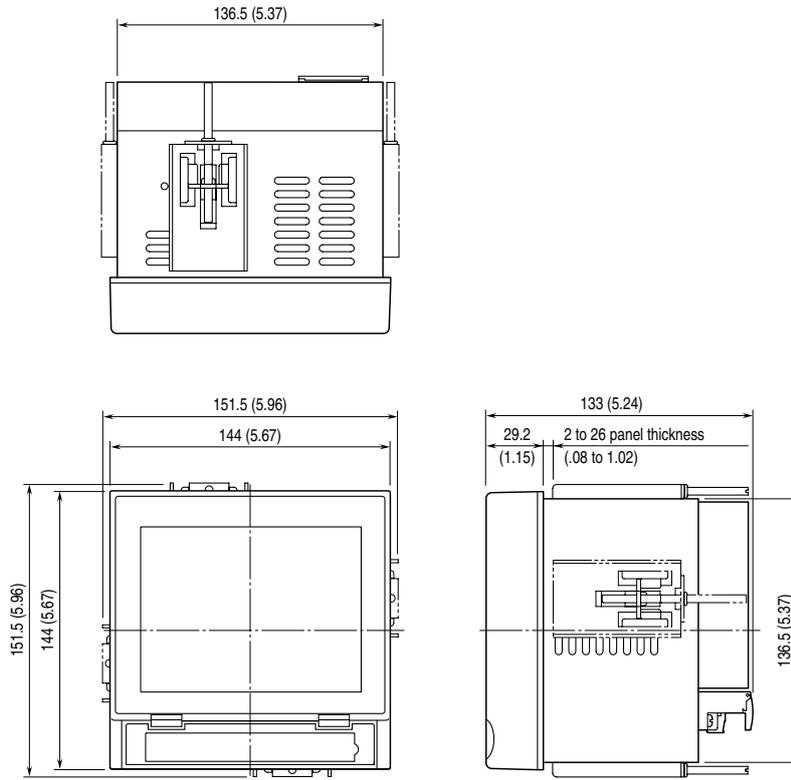
Attach the mounting bracket either on the top/bottom or on the sides.

• **DESKTOP TYPE**
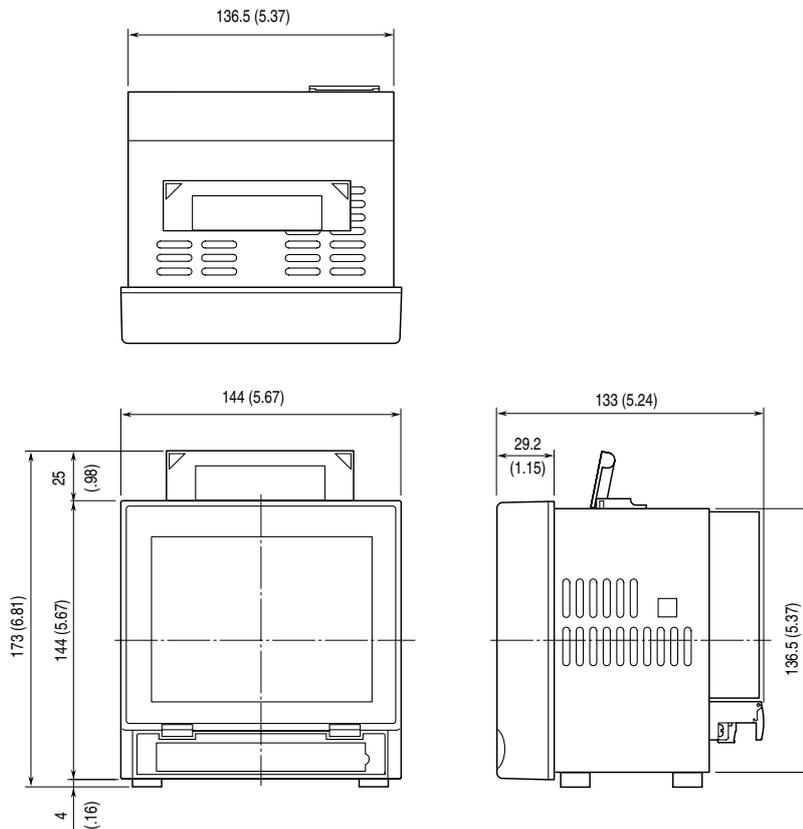
■ PANEL CUTOUT unit: mm

Usable panel thickness: 2 to 26 mm (0.08" to 1.02")
Usable panel material: Steel

■ SINGLE MOUNTING

137^{+2}_{0}

137^{+2}_{0}
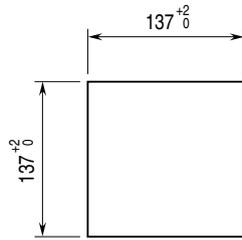
Number	L^{+2}_{0} (mm)
2	282
3	426
4	570
5	714
6	858
7	1002
8	1146
9	1290
10	1434
n	$(114 \times n) - 6$

■ VERTICAL CLUSTERED MOUNTING (max. 3 units)

137^{+2}_{0}

L^{+2}_{0}

175 min
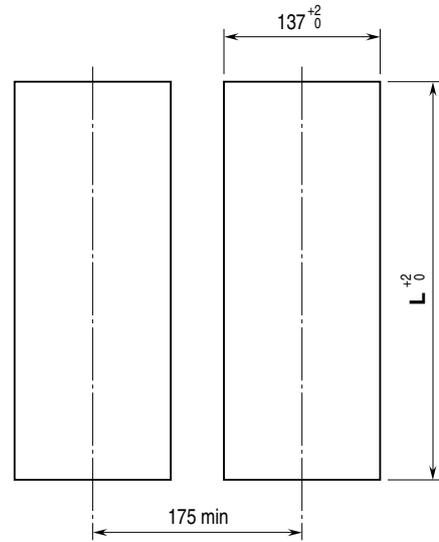
■ HORIZONTAL CLUSTERED MOUNTING

175 min

137^{+2}_{0}

L^{+2}_{0}

Notes
1. Dimensional tolerance ±3% unless otherwise specified.
(±0.3 mm for <10 mm)
2. Desktop type cannot be mounted on a panel surface.
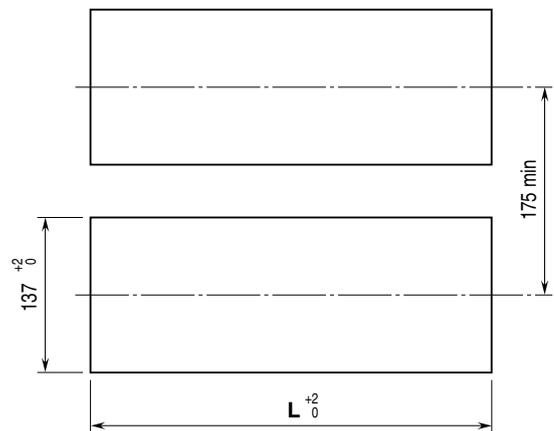
■ INSTALLATION PROCEDURE

1. Insert the 73VR1100 from the front side of the panel.
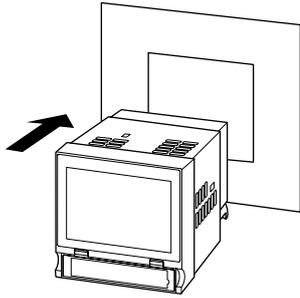
2. Remove the sheets covering the mounting bracket holes. Fix two mounting brackets either on the sides or on the top and bottom of the unit. Tighten screws.
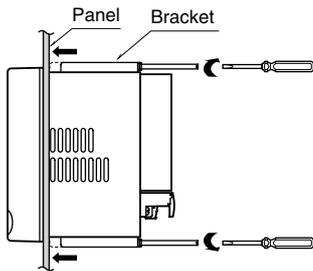
 CAUTION !

Adequate tightening torque for the screws used to mount the unit onto the panel is between 0.8 and 1.2 N·m. If an excessive force is applied, the unit's enclosure may be destroyed, or the panel may be distorted, which would cause a compromise in the unit's protection against water or liquid ingress.

2.3 TERMINAL WIRING

■ TERMINAL BLOCK

Connection: M3 screw terminal
Screw terminal material: Nickel-plated steel (torque 0.5 N·m)
Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)
Recommended manufacturer: Japan Solderless Terminal
MFG.Co.Ltd, Nichifu Co.,ltd
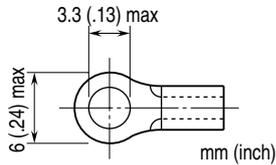
■ RUN OUTPUT, ALARM OUTPUT WIRES

• RUN OUTPUT, ALARM OUTPUT TERMINAL ASSIGNMENT

RUN Output, Alarm Output Terminals
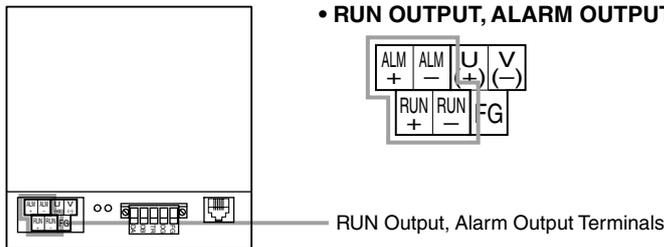
1. Confirm that the power supply is turned off and open the relevant output terminal cover.

2. Connect the wires to the terminal.

3. Close the cover.

■ POWER INPUT

• Power input rating & operational range: Check the power rating for the unit on the specification label.

    Rating 100 to 240V AC: 85 to 264V, 47 to 66 Hz, approx. 15VA at 100V, approx. 20VA at 240V
    Rating 24V DC: 24V ±10%, approx. 8W

• Supplying any level of power other than specified above can damage the 73VR1100 or the power source.

• The power cables and the signal I/O cables for the 73VR1100 must be located separately.

• The main circuit cables (high voltage and high current), the signal I/O cables, and the power cables should not be bundled together or placed near each other.

• POWER INPUT TERMINAL ASSIGNMENT

Power Input Terminals
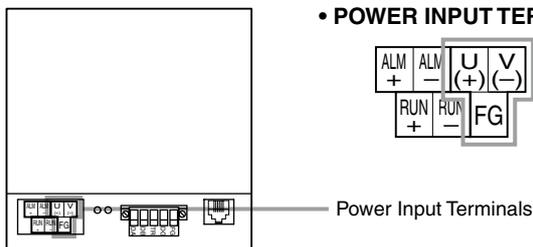
1. Confirm that the power supply is turned off and open the power input terminal cover.

2. Connect the wires to the terminal.

3. Close the cover.

2.4   CF CARD

■ CF CARD

A CF Card is required to store data in the 73VR1100. M-System will not guarantee the product's described performance if a CF Card other than purchased from M-System, or specified below, is used.

    1. Manufacturer: Hagiwara Solutions
      Model No.:   MCF10P-xxxxS (Alternative model: CFI-xxxxDG)
      Capacity: 128 MB through 1 GB
    2. Manufacturer: Apacer Technology
      Model name: CFC III

Model No.: AP-CFxxxxE3ER-ETNDNRK	Parts No.:	256 MB	... 81.2A010.1H34C
		512 MB	... 81.2B010.1H34C
		1 GB	... 81.2E010.1H34C
Model No.: AP-CFxxxxE3ER-ETNDNR	Parts No.:	256 MB	... 81.2A010.1H10C
		512 MB	... 81.2B010.1H10C
		1 GB	... 81.2E010.1H10C

      Capacity: 256 MB through 1 GB

⚠ CAUTION !

• DO NOT turn off the power supply to the 73VR1100 or reset it during data recording. The CF Card can be removed during recording, but observe a specifically described procedure.

• Confirm the sides of the CF Card and the connector position.

■ INSERTING THE CF CARD

1.   Open the front cover.

2.   Insert the CF Card maintaining its top side visible from above.
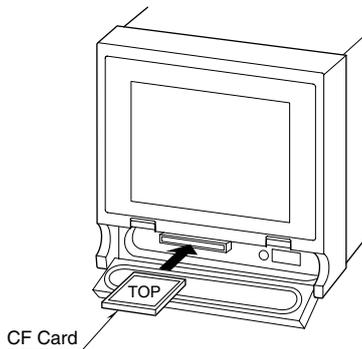
3.   Push it in until EJECT button is popped up.

4.   Close the front cover.

■ REMOVING THE CF CARD

1.   Open the front cover.

2.   If the power is supplied to the 73VR1100, confirm with the LED behind the cover that the CF Card is not accessed.

3.   Push EJECT button to extract the CF Card.

2.5 SD CARD

The recommended SD/CF conversion adapter and SD card described below are available for storing on SD card. The SD/CF conversion adapter, which has SD card incorporated, can be handled as CF card.

SD/CF conversion adapter: DeLOCK adaptor CF II to SDHC,SDXC, 61796

SD card: Hagiwara Solutions NSDA-004GT, NSDA-004GL

Note: The use of recommended device prevents loose of data, however correct operating it is not always guaranteed.

WARNING ! – SD card limitations
- SD card memory is 4 GB, however, only 1 GB will be used.

- Storing interval 100 m sec. setting is not available. Use the SD card in a storing interval slower than 0.5 sec.

- Do NOT hot swap the CF card every minute on the minute (at 00 second). The data of one cycle may be lost.

- FTP data transfer settng is not available. If FTP data transfer operation starts during storing data on SD card, data on SD card may be lost.

3. CONNECTING TO I/O DEVICES

3.1 I/O DEVICE SELECTIONS

• PC Recorder (R1, R2, RZ) Series

SIGNAL TYPE	MODELS
DC voltage input	R1M-GH2, R1MS-GH3, R2M-2G3, RZMS-U9
Thermocouple input	R1M-GH2 R1MS-GH3, R2M-2H3, RZMS-U9
RTD input	R1M-J3, RZMS-U9
Potentiometer input	R1M-J3, RZMS-U9
Contact input	R1M-A1
Contact output	R1M-D1
Totalized pulse input	R1M-P4, R1M-A1
Pulse input	R1M-P4

• R3 Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage input	R3-SV4, R3-SV4A, R3-SV4B, R3-SV4C, R3(Y)-SV8, R3-SV8A, R3-SV8B, R3-SV8C, R3(S/Y)-SV8N, R3-SV16N, R3Y-SV16
DC current input	R3-SS4, R3(Y)-SS8, R3(S/Y)-SS8N, R3(Y)-SS16N
Thermocouple input	R3-TS4, R3-TS8
RTD input	R3-RS4, R3(S)-RS4A, R3(Y)-RS8, R3-RS8A, R3-RS8B
Universal input	R3-US4
Discrete input	R3(S/Y)-DA16, R3(Y)-DA16A, R3-DA16B, R3-DA32A, R3-DA64A
Discrete output	R3(Y)-DC16, R3-DC16A, R3-DC16B, R3-DC16C, R3-DC32A, R3-DC32C, R3-DC64A, R3-DC64C
Discrete I/O	R3(S)-DAC16*, R3(S)-DAC16A*
4 – 20mA input with excitation supply	R3(Y)-DS4, R3-DS8N
Potentiometer input	R3-MS4, R3(Y)-MS8
CT input	R3-CT4
AC current input with clamp-on current sensor	R3-CT4A**, R3-CT4B**, R3-CT4C, R3-CT8A**, R3-CT8B**, R3-CT8C
PT input	R3-PT4
Zero-phase current input	R3-CZ4
AC power input	R3-WT4, R3-WT4A, R3-WT4B, R3-WTU
High speed pulse input	R3-PA4
Speed/position input	R3-PA2
Totalized pulse input	R3-PA4A, R3-PA4B, R3(Y)-PA16, R3(S)-PA8
Strain gauge input	R3-LC2
Alarm	R3-AD4, R3-AR4, R3-AS4, R3-AS8, R3-AT4, R3-AV4, R3-AV8
Gateway	R3-GC1, R3-GD1, R3-GE1, R3-GFL1, R3-GM1

* Only continuous output mode is available.

**. Data range must be setup with the PC Configurator Software R3CON and the dedicated cable.

• R5 Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage input	R5-SV, R5T-SV
DC current input	R5-SS, R5T-SS
Thermocouple input	R5-TS, R5T-TS
RTD input	R5-RS, R5T-RS
Discrete input	R5-DA4, R5T-DA4, R5-DA16
Discrete output	R5-DC4, R5T-DC4, R5-DC16
4 – 20mA input with excitation supply	R5-DS, R5T-DS
Potentiometer input	R5-MS
CT input	R5T-CT
AC current input with clamp-on current sensor*	R5T-CTA, R5T-CTB
PT input	R5T-PT

*Data range must be setup with the PC Configurator Software R5CON and the dedicated cable.

• R7M Series Remote I/O*

SIGNAL TYPE	MODELS
DC voltage/current input	R7M-SV4
Thermocouple input	R7M-TS4
RTD input	R7M-RS4
Potentiometer input	R7M-MS4
CT input	R7M-CT4E
Discrete input	R7M-DA16
Discrete output	R7M-DC16A, R7M-DC16B, R7M-DC8C
Discrete input (Extension)	R7M-EA8, R7M-EA16
Discrete output (Extension)	R7M-EC8A, R7M-EC16A, R7M-EC8B, R7M-EC16B

* Must be setup with R7X Configurator and the dedicated cable.

• R7E Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage/current input	R7E-SV4
Thermocouple input	R7E-TS4
RTD input	R7E-RS4
Potentiometer input	R7E-MS4
CT input	R7E-CT4E*
Discrete input	R7E-DA16
Discrete output	R7E-DC16A, R7E-DC16B
Discrete input (Extension)	R7E-EA8, R7E-EA16
Discrete output (Extension)	R7E-EC8A, R7E-EC16A, R7E-EC8B, R7E-EC16B

* Must be setup with R7X Configurator and the dedicated cable.

• Multi Power Monitor

SIGNAL TYPE	MODELS
AC power/energy	53U*

* Choose Code 1 for External Interface (53U-1xx1-AD4).

• IT60 Tower Light

SIGNAL TYPE	MODELS
Discrete output	IT60RE

NOTES

• Use the resistor module (model: REM3-250) to accept DC current inputs for the R1M-GH2, R1MS-GH3 and RZMS-U9.

• The R1M-GH2 and the R1M-J3 are equipped with a trigger contact input (1 ch) which can be used for the 73VR1100.

• The R1MS-GH3, RZMS-U9, R2M-2G3 and R2M-2H3 are equipped with a trigger input (1 ch) and alarm output (1 ch) which can be used with the 73VR1100.

• The R7X configurator (model: R7CON) is required in order to set mode and parity of the R7M, and the temperature unit of R7M-TS4/R7E-TS4 and R7M-RS4/ R7E-RS4, and the scaling of R7M-CT4E/R7E-CT4E.

3.2 PC RECORDER (R1, R2, RZ SERIES)

3.2.1 SYSTEM CONFIGURATION & RS-485 TERMINAL WIRING

Figure 3.2.1a and 3.2.1b respectively show a system configuration example using PC Recorder, and details of RS-485 terminal wiring.

The R1M/RZMS is connected to the 73VR1100 via RS-485 twisted-pair cables.

Use the RS-232C/RS-485 converter (model: R2K-1) to connect only the R2M.

When connecting the R2M to the R1M/RZMS on the RS-485 network, use an RS-232C interlink/reverse cable.
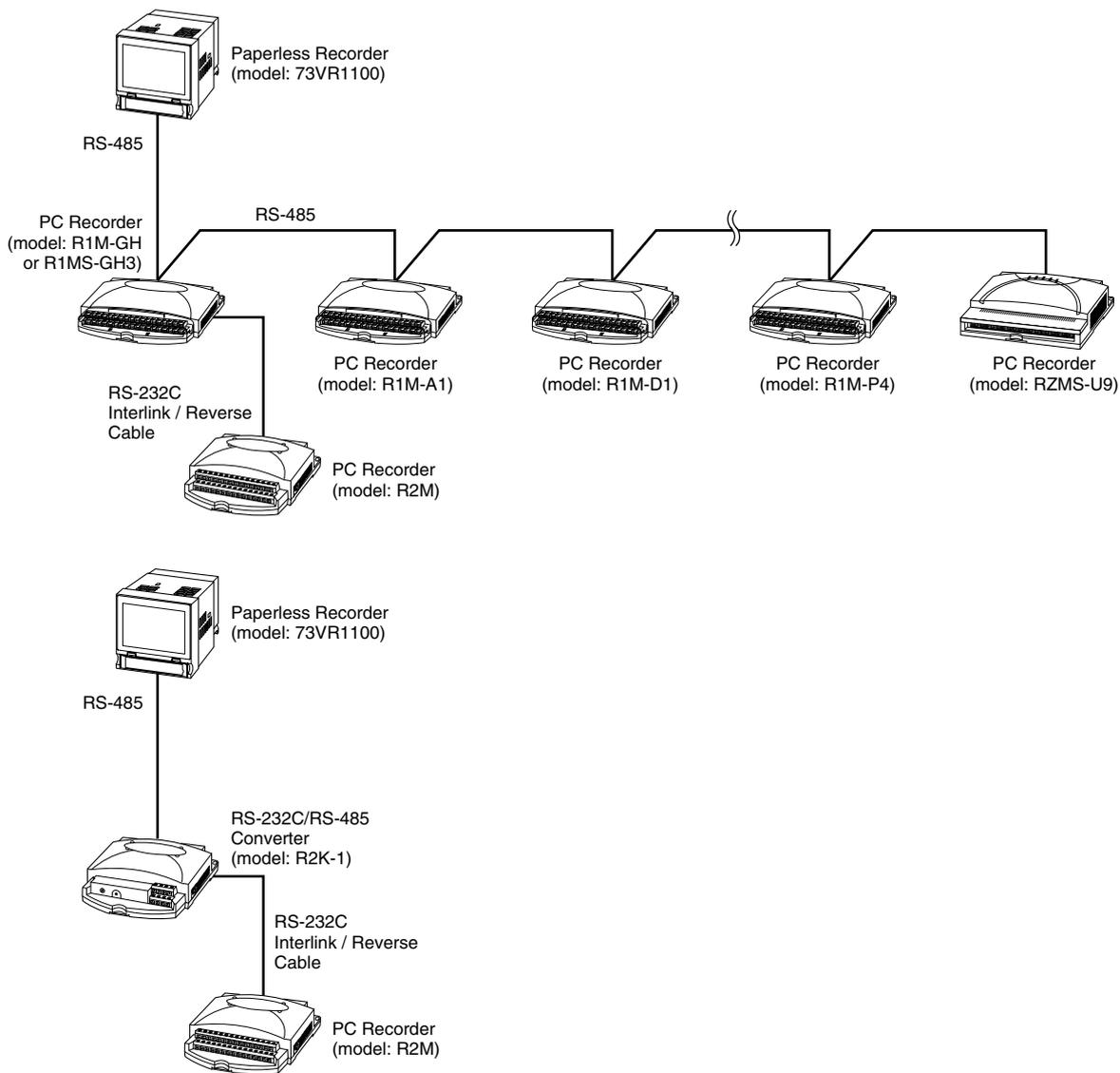
Figure 3.2.1a. System configuration example.
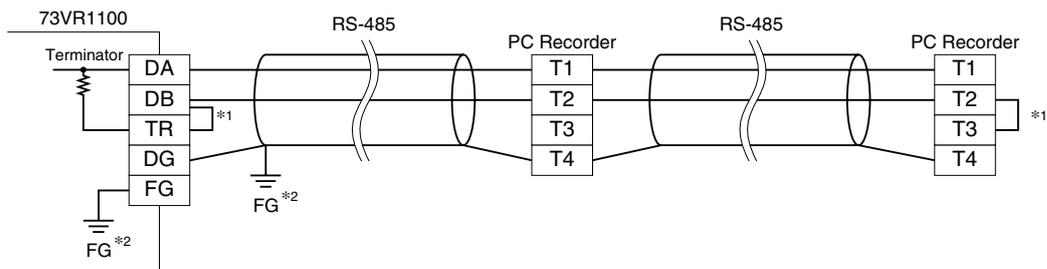
*1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
*2. Install shield cables to all sections and ground them at a single point.

Figure 3.2.1b. RS-485 terminal wiring.

3.2.2 MODEL R1M-GH2 HARDWARE SETTING

Set the bottom switches to match the input signal.
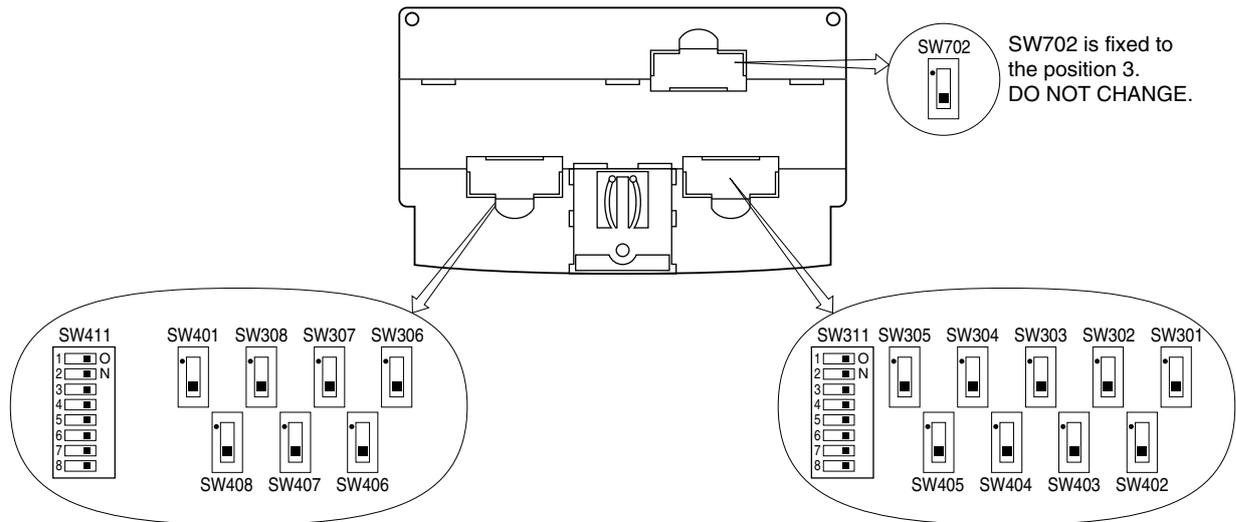
Figure 3.2.2. R1M-GH2 bottom view.

INPUT	SWITCHES	SETTING	NOTES
Thermocouple	SW301 ... SW308 (ch 1 ... ch 8) SW401 ... SW408 (ch 9 ... ch 16)	Set to position "1."	Attenuation OFF
	SW311 (ch 1 ... ch 8) SW411 (ch 9 ... ch 16)	OFF	
Voltage input, 0.8 V or less	SW301 ... SW308 (ch 1 ... ch 8) SW401 ... SW408 (ch 9 ... ch 16)	Set to position "1."	Attenuation OFF
	SW311 (ch 1 ... ch 8) SW411 (ch 9 ... ch 16)	ON	
Voltage input, above 0.8 V*	SW301 ... SW308 (ch 1 ... ch 8) SW401 ... SW408 (ch 9 ... ch 16)	Set to position "3."	Attenuation ON
	SW311 (ch 1 ... ch 8) SW411 (ch 9 ... ch 16)	ON	

*Factory default setting

Table 3.2.2. R1M-GH2 DIP switch setting.

3.2.3 MODEL R1M-P4 HARDWARE SETTING

Set the bottom switch to specify the count display type.
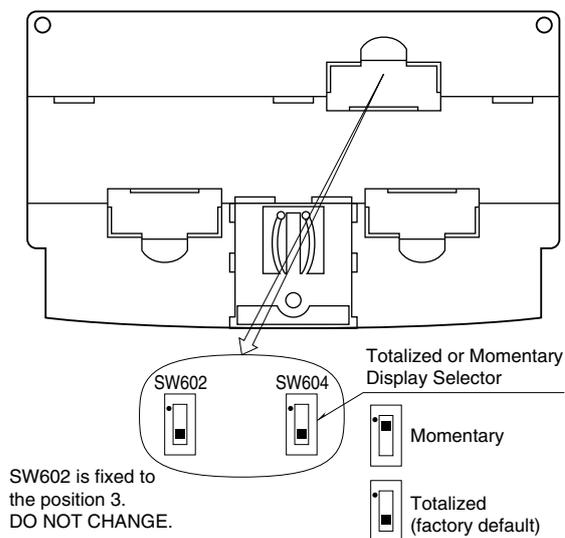
Figure 3.2.3. R1M-P4 bottom view.

3.2.4 MODEL R1MS-GH3 HARDWARE SETTING

Set the rear rotary switch for the R1MS's operating mode. Refer to Figure 3.2.6a to locate the rotary switch.

T/C Burnout			Line Noise Filter Frequency	T/C Cold Junction Compensation
None	Up	Down		
1 *	2	3	50 / 60 Hz	With
4	5	6	50 Hz	
7	8	9	60 Hz	
A	B	C	50 Hz	Without
D	E	F	60 Hz	

* Factory setting

Table 3.2.4. R1MS-GH3 DIP switch setting.

Note 1: AD conversion rate is half as long as the line frequency.
Note 2: Specifying an exact frequency (50 or 60 Hz) provides better protection then 50/60 Hz setting.

3.2.5 MODEL RZMS-U9 HARDWARE SETTING

Set the rear rotary switch for the RZMS's operating mode. Refer to Figure 3.2.6c to locate the rotary switch.

	T/C and RTD Burnout All Channels			Line Noise Filter Frequency	T/C Cold Junction Compensation	Service Channels	A/D Conversion Mode
	None	Up	Down				
Hardware Rotary SW Setting	1 *	2	3	50 / 60 Hz	With	12	Medium
	4	5	6	50 Hz			
	7	8	9	60 Hz			
	A	B	C	50 Hz	Without		
	D	E	F	60 Hz			
Software PC Setting **	Individual channels			All channels 50, 60, 50/60 Hz	Individual channels	12 or 6	All channels Fast, Med, Slow

* Factory setting
** Rotary switch set to 0 when the software setting is used.

Table 3.2.5. RZMS-U9 DIP switch setting.

3.2.6 NODE NUMBER SETTING

Node number setting (1 to F, up to 15 nodes) is required at the rear rotary switch when more than one module is connected. Each module must have an unique node number.

⚠ Before changing the node number, be sure to turn off the power supply to the module.
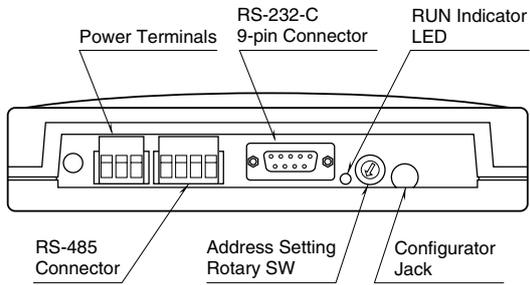
Figure 3.2.6a. R1M rear view.
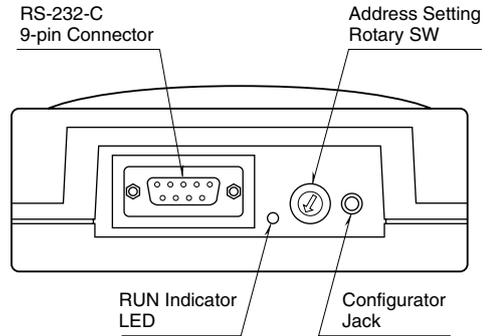
Figure 3.2.6b. R2M rear view.
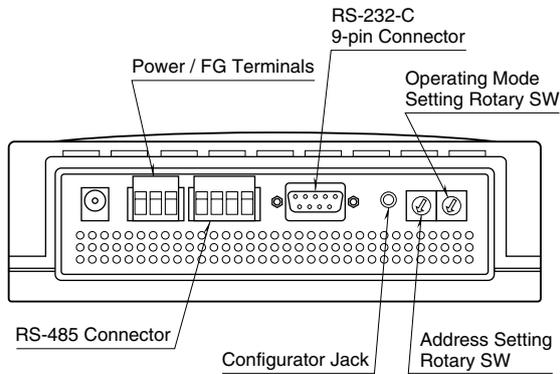
Figure 3.2.6c. RZMS rear view.

3.3   R3 SERIES REMOTE I/O, R3-NM1 MODBUS MODULE

3.3.1   SYSTEM CONFIGURATION & RS-485 TERMINAL WIRING

Figure 3.3.1a and 3.3.1b respectively show a system configuration example using the R3-NM1, and details of RS-485 terminal wiring.

The R3-NM1 is connected to the 73VR1100 via RS-485 twisted-pair cables.
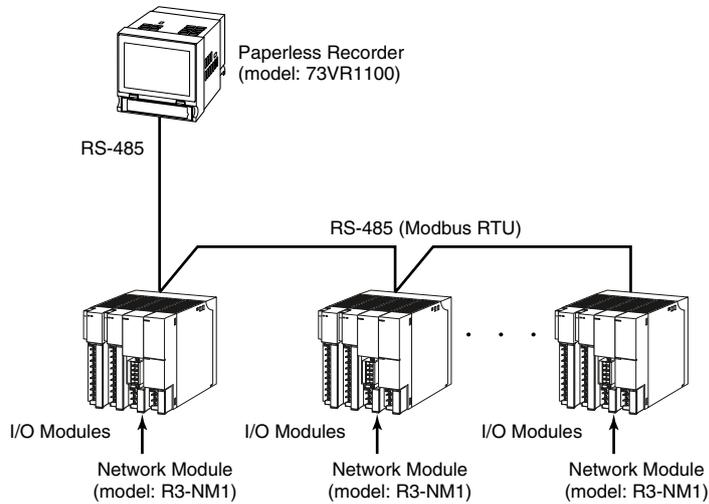
Figure 3.3.1a. System configuration example.
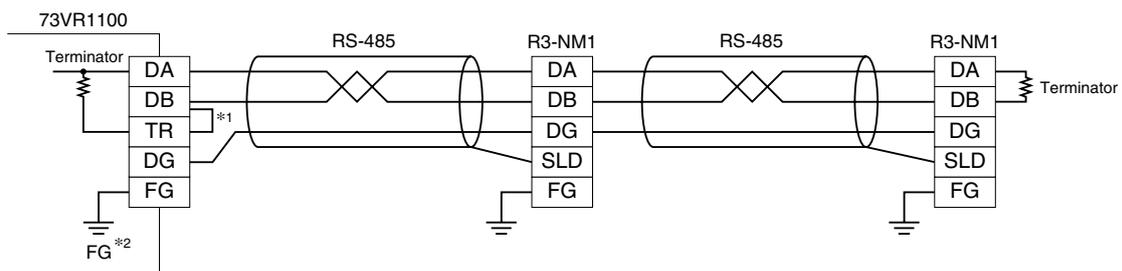
∗1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
∗2. Install shield cables to all sections and ground them at a single point.

Figure 3.3.1b. RS-485 terminal wiring.

3.3.2 MODEL R3-NM1 HARDWARE SETTING

The R3-NM1 Modbus Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100. For I/O Modules, refer to instruction manuals for a specific model.

For the Modbus Module, set the DIP switches on the front and side as explained below.
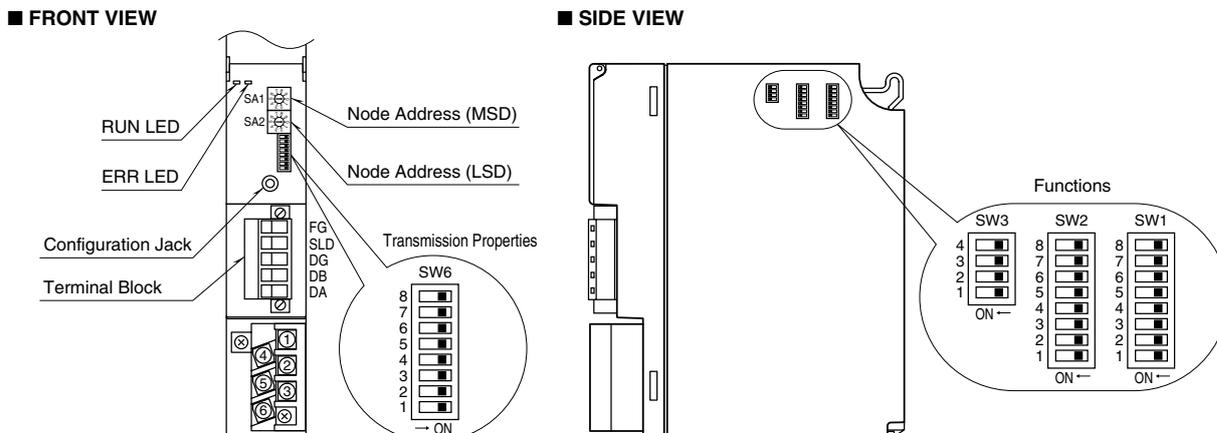
Figure 3.3.2. R3-NM1 component identification.

FRONT ROTARY SWITCH, SA1 & SA2: NODE ADDRESS

Choose a number from 1 to F. The R3-NM1 itself can set up to 256 numbers, however, is limited to 16 (1 to F) in conjunction with the 73VR1100.

FRONT DIP SWITCH, SW6: BAUD RATE, PARITY, DATA MODE

Set as follows referring to the table to the right:

Baud rate: 38.4 kbps
Parity: Odd
Data mode: RTU

SW	BAUD RATE (bps)			
	38.4 k (*)	19.2 k	9600	4800
SW6-1	OFF	ON	OFF	ON
SW6-2	OFF	OFF	ON	ON
SW	PARITY			
	NONE (*)	ODD	EVEN	N/A
SW6-3	OFF	ON	OFF	ON
SW6-4	OFF	OFF	ON	ON
SW	DATA MODE			
	RTU (Binary) (*)		ASCII	
SW6-5	OFF		ON	

(*) Factory setting

SIDE DIP SWITCH, SW1 & SW2: DATA ALLOCATION

Data Allocation Type must be assigned to each I/O module position to specify how many data areas (four types) are to be occupied by each.

Two bits from SW1 and SW2 are assigned to each position, and data areas can be specified from the module No. 1 through 8. Setting for No. 9 and later modules is identical to No. 8.

SW ASSIGNMENT		MODULE NO.
SW1-1	SW1-2	1
SW1-3	SW1-4	2
SW1-5	SW1-6	3
SW1-7	SW1-8	4
SW2-1	SW2-2	5
SW2-3	SW2-4	6
SW2-5	SW2-6	7
SW2-7	SW2-8	8
SW SETTING		DATA ALLOCATION
OFF	OFF	1
ON	OFF	4
OFF	ON	8
ON	ON	16

SIDE DIP SW, SW3: FUNCTIONS

• Dual Communication: SW3-1

When two network modules are mounted, one must be 'Main' (OFF) network and the other must be 'Sub' (ON) network. For single communication, the network module must always be set to 'Main' (OFF).

SW	DUAL COMMUNICATION	
	MAIN (*)	SUB
SW3-1	OFF	ON

SW	INPUT ERROR DATA	
	HOLD (*)	SET '0'
SW3-2	OFF	ON

(*) Factory setting

• Input Error Data: SW3-2

Hold: When the communication from an input module is lost due to the input module error, the network module holds the signal and stands by until the communication recovers.

Set to '0': When the communication from an input module is lost due to the input module error, the network module outputs '0.'

• LED Function: SW3-4

Functions assigned to the front RUN and ERR LEDs can be selected.

SW3-4	LED	
	RUN	ERR
OFF (*)	Green when normal	Green when abnormal
ON	Red when receiving	Red when transmitting

(*) Factory setting

3.3.3   CONFIGURING THE CLAMP-ON CURRENT SENSOR INPUT MODULES R3-CTxA, R3-CTxB

In order to use models R3-CT4A, R3-CT8A, R3-CT4B and R3-CT8B, the data range must be set up with the R3 Configurator Software (model: R3CON). The original data range is defined by an equation: Engineering unit data x 100, but this change of setting may lower the resolution of recorded data for certain input ranges.

For example, If you have an input range of 0 – 500A, the normal data range is 0 – 50000. However, the 73VR1100's data format is fixed at 0 – 10000. By changing the data range from 0 – 50000 to 0 – 10000, the data resolution will be lowered by the one-fifth.

The data range of the R3-CTxA and the R3-CTxB needs to be changed using the PC Configurator Software (model: R3CON) in order to store data adequately on the 73VR1100.

GETTING READY

The R3CON is available for downloading at M-System's web site: http://www.m-system.co.jp. Download the program and install it in your PC.

In order to connect the R3 module to the PC, the PC Configurator Cable (model: MCN-CON or COP-US) is required.

CONNECTING

Connect with the MCN-CON or COP-US between the Configurator Jack at the front of the R3 Network Module and the COM port of your PC.

HOW TO CHANGE THE DATA RANGE

1. Choose Start > Program > R3CON on the Windows task bar and start up the R3CON. The initial view appears as below.
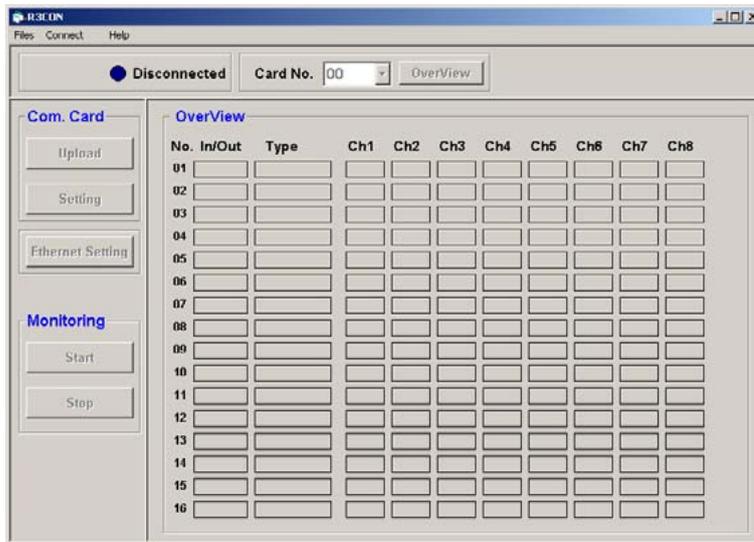
2. Choose Connect > Connect on the menu bar. COM Port Setting dialog box appears on the screen.
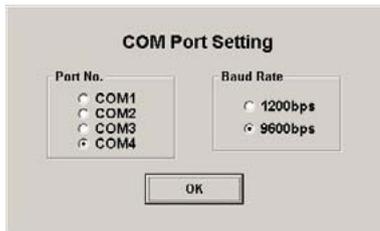
3. Choose the COM port number to which the R3 module is connected and specify 9600 bps as baud rate.

4. When a connection is successful, 'Disconnected' indicator is switched to 'Connected.'
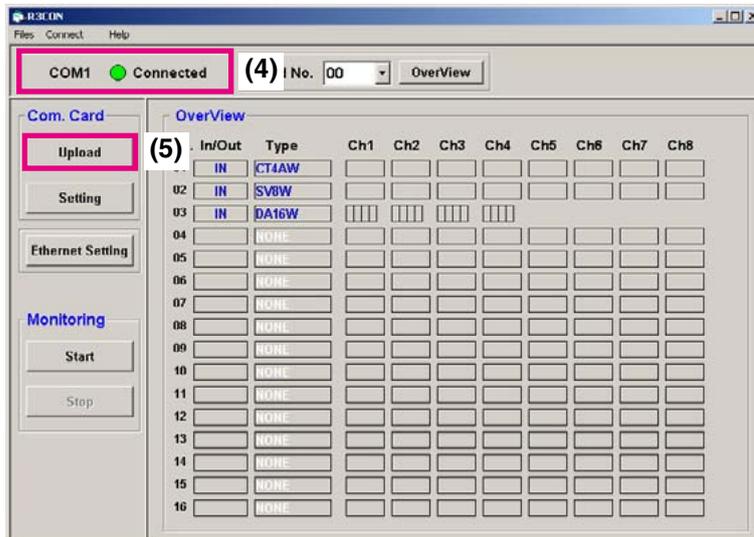
5. Click Upload on the left control panel and upload information on the I/O module. The screen now shows I/O module types assigned to each slot.

6. Choose the slot number of the R3-CTxA or R3-CTxB under Card No. selections on the top.
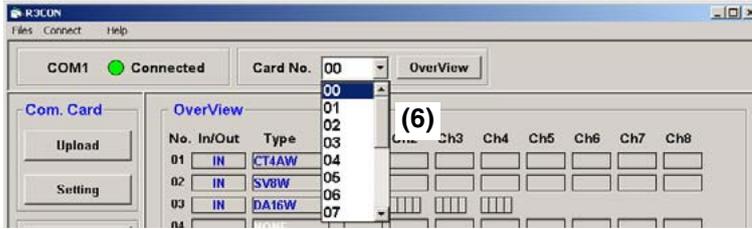
7. Click Upload button at the bottom of the window to read in the present setting of the module.

8. Enter new values as explained below:

Zero Scale: 0% scaling value. Set to '0.'
Full Scale: 100% scaling value. Set to '10000.'
Zero Base: 0% input value (in engineering unit). Set to '0.'
Full Base: 100% input value (in engineering unit). Set to the input upper range (e.g. 500 for 0 – 500A).
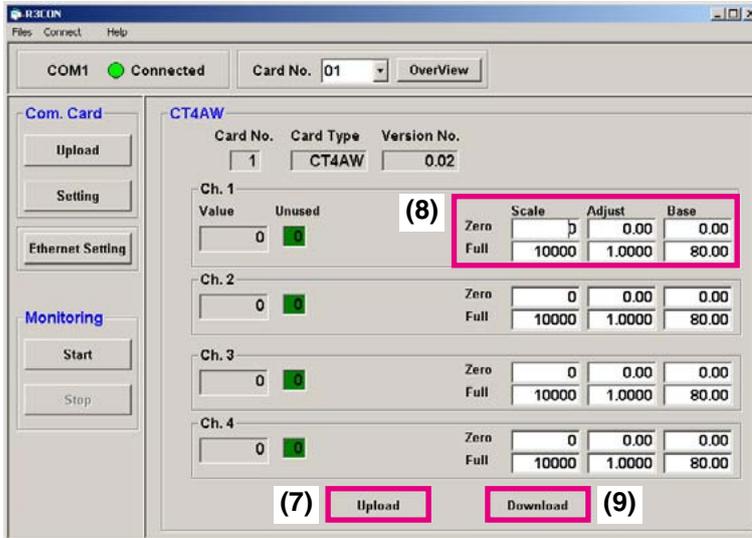
9. Click Download button at the bottom of the window to write the new setting to the module.

10. Click Upload again to confirm the new setting.

11. Choose Connect > Disconnect on the menu bar.

For detailed information, refer to the users manual for the R3CON.

Cautions !
1. Stop data recording by the 73VR1100 while the R3CON's monitoring is operational.
2. The R3CON Version 1.02 or later versions are compatible. The version number can be confirmed on the menu bar: Help > Version.

3.4   R3 SERIES REMOTE I/O, R3-NE1 MODBUS/TCP MODULE

3.4.1   SYSTEM CONFIGURATION

Figure 3.4.1 shows how the R3-NE1 module and other modules are connected to the PC via an Ethernet HUB/ Switch. For directly connecting the R3-NE1 to the PC, use a reverse (interlink) cable.
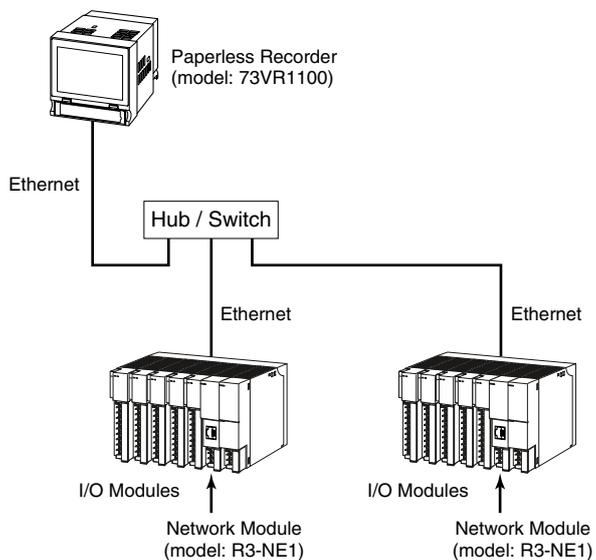
Figure 3.4.1. System configuration example.

3.4.2 MODEL R3-NE1 HARDWARE SETTING

The R3-NE1 Modbus/TCP Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100. For I/O Modules, refer to instruction manuals for a specific model. Refer to Section 3.3.3 to set up the R3-CTxA and R3-CTxB.

To set or change the IP address and the subnet mask of the R3-NE1, the R3 Series PC Configurator Software R3CON is available.

For the Modbus/TCP Module, set the DIP switches on the front and side as explained below.

■ FRONT VIEW   ■ SIDE VIEW
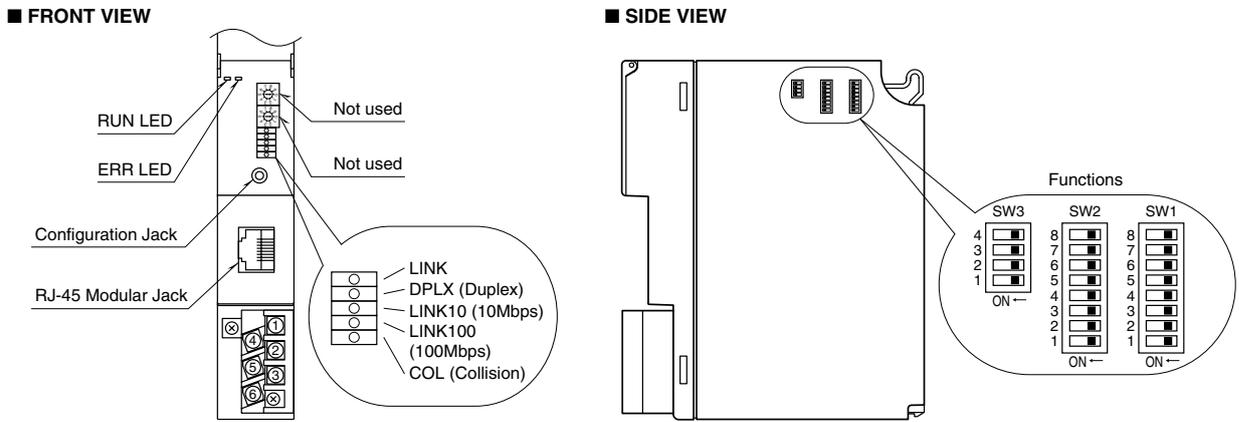
Figure 3.4.2. R3-NE1 component identification.

SIDE DIP SWITCH, SW1 & SW2: DATA ALLOCATION

Data Allocation Type must be assigned to each I/O module position to specify how many data areas (four types) are to be occupied by each.

Two bits from SW1 and SW2 are assigned to each position, and data areas can be specified from the module No. 1 through 8. Setting for No. 9 and later modules is identical to No. 8.

SIDE DIP SW, SW3: FUNCTIONS

• Dual Communication: SW3-1
When two network modules are mounted, one must be 'Main' (OFF) network and the other must be 'Sub' (ON) network. For single communication, the network module must always be set to 'Main' (OFF).

• Input Error Data: SW3-2

Hold: When the communication from an input module is lost due to the input module error, the network module holds the signal and stands by until the communication recovers.

Set to '0': When the communication from an input module is lost due to the input module error, the network module outputs '0.'

• LED Function: SW3-4
Functions assigned to the front RUN and ERR LEDs can be selected.

SW ASSIGNMENT		MODULE NO.
SW1-1	SW1-2	1
SW1-3	SW1-4	2
SW1-5	SW1-6	3
SW1-7	SW1-8	4
SW2-1	SW2-2	5
SW2-3	SW2-4	6
SW2-5	SW2-6	7
SW2-7	SW2-8	8
SW SETTING		DATA ALLOCATION
OFF	OFF	1
ON	OFF	4
OFF	ON	8
ON	ON	16

SW	DUAL COMMUNICATION	
	MAIN (*)	SUB
SW3-1	OFF	ON
SW	INPUT ERROR DATA	
	HOLD (*)	SET '0'
SW3-2	OFF	ON

(*) Factory setting

SW3-4	LED	
	RUN	ERR
OFF (*)	Green when normal	Green when abnormal
ON	Red when receiving	Red when transmitting

(*) Factory setting

3.5 R5 SERIES REMOTE I/O, R5-NM1 MODBUS MODULE

3.5.1 SYSTEM CONFIGURATION & RS-485 TERMINAL WIRING

Figure 3.5.1a and 3.5.1b respectively show a system configuration example using the R5-NM1, and details of RS-485 terminal wiring.

The R5-NM1 is connected to the 73VR1100 via RS-485 twisted-pair cables.
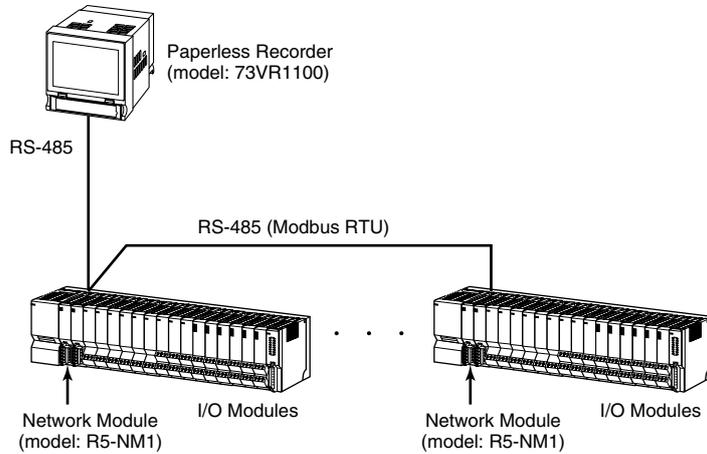
Figure 3.5.1a. System configuration example.
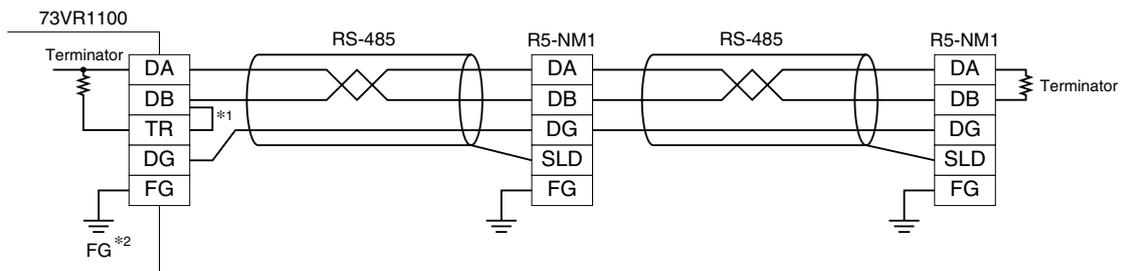
*1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
*2. Install shield cables to all sections and ground them at a single point.

Figure 3.5.1b. RS-485 terminal wiring.

3.5.2 MODEL R5-NM1 HARDWARE SETTING

The R5-NM1 Modbus Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100. For I/O Modules, refer to instruction manuals for a specific model.

For the Modbus Module, set the DIP switches on the front and side as explained below.
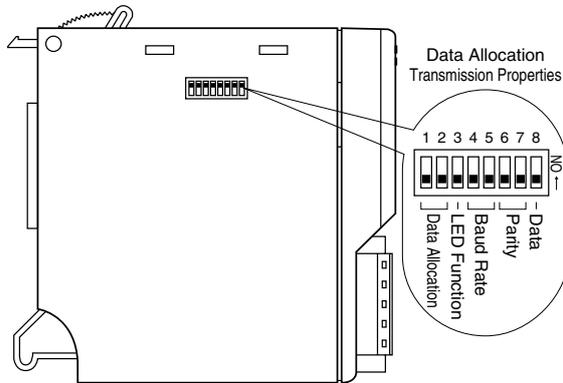
■ SIDE VIEW   ■ FRONT VIEW
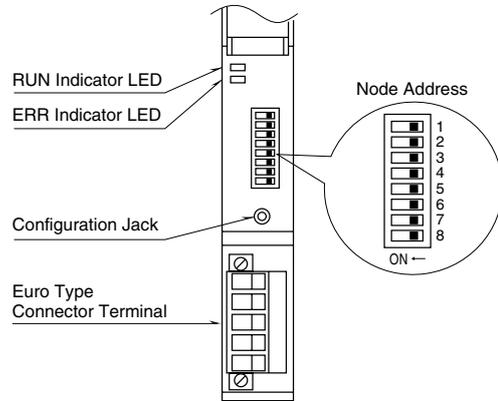
Figure 3.5.2. R5-NM1 component identification.

SIDE DIP SWITCH: DATA ALLOCATION MODE

The Data Allocation Mode 1 is used when all analog I/O modules are single-channel types. The second channel on the dual-channel analog modules cannot be used.

The Data Allocation Mode 2 is used when one or more analog I/O modules are dual-channel types.

SW	DATA ALLOCATION MODE	
	2	1
SW1	OFF (*)	ON
SW2	OFF (*)	OFF

(*) Factory setting

SIDE DIP SWITCH: LED FUNCTION

RUN and ERR lamps can be used to show either transmission diagnostic status (normal/abnormal) or sending/receiving status.

SW3	LED	
	RUN	ERR
OFF (*)	Green when normal	Green when abnormal
ON	Red when receiving	Red when transmitting

(*) Factory setting

SIDE DIP SWITCH: BAUD RATE, PARITY, DATA MODE

Set as follows:

Baud rate:	38.4 kbps
Parity:	Odd
Data mode:	RTU

SW	BAUD RATE (bps)			
	38.4 k (*)	19.2 k	9600	4800
SW4	OFF	ON	OFF	ON
SW5	OFF	OFF	ON	ON
SW	PARITY			
	NONE (*)	ODD	EVEN	N/A
SW6	OFF	ON	OFF	ON
SW7	OFF	OFF	ON	ON
SW	DATA MODE			
	RTU (Binary) (*)		ASCII	
SW8	OFF		ON	

(*) Factory setting

FRONT DIP SWITCH: NODE ADDRESS

Choose a number from 1 to F. The R5-NM1 itself can set up to 256 numbers, however, is limited to 16 (1 to F) in conjunction with the 73VR1100.

ADD.	DIP SW							
	1	2	3	4	5	6	7	8
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
3	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
5	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
7	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
8	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
9	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
0	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
A	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
B	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
C	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
D	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
E	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
F	ON	ON	ON	ON	OFF	OFF	OFF	OFF

3.5.3 CONFIGURING THE CLAMP-ON CURRENT SENSOR INPUT MODULES R5T-CTA, R5T-CTB

In order to use models R5T-CTA and R5T-CTB, the data range must be set up with the R5 Configurator Software (model: R5CON). The original data range is defined by an equation: Engineering unit data x 100, but this change of setting may lower the resolution of recorded data for certain input ranges.

For example, If you have an input range of 0 – 500A, the normal data range is 0 – 50000. However, the 73VR1100's data format is fixed at 0 – 10000. By changing the data range from 0 – 50000 to 0 – 10000, the data resolution will be lowered by the one-fifth.

The data range of the R5T-CTA and the R5T-CTB needs to be changed using the PC Configurator Software (model: R5CON) in order to store data adequately on the 73VR1100.

GETTING READY

The R5CON is available for downloading at M-System's web site: http://www.m-system.co.jp. Download the program and install it in your PC.

In order to connect the R5 module to the PC, the PC Configurator Cable (model: MCN-CON or COP-US) is required.

CONNECTING

Connect with the MCN-CON or COP-US between the Configurator Jack at the front of the R5 Network Module and the COM port of your PC.

HOW TO CHANGE THE DATA RANGE

1. Choose Start > Program > R5CON on the Windows task bar and start up the R5CON. The initial view appears as below.
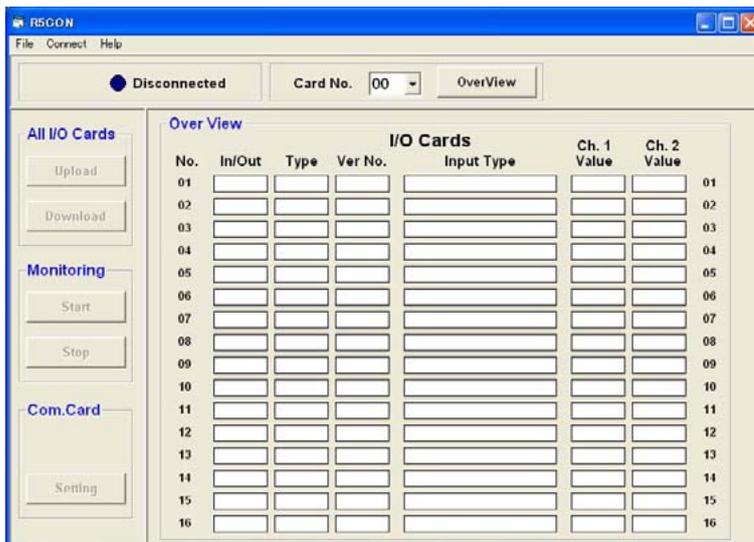
2. Choose Connect > Connect on the menu bar. COM Port Setting dialog box appears on the screen.

3. Choose the COM port number to which the R3 module is connected.

4. When a connection is successful, 'Disconnected' indicator is switched to 'Connected.'

5. Click Upload on the left control panel and upload information on the I/O module. The screen now shows I/O module types assigned to each slot.
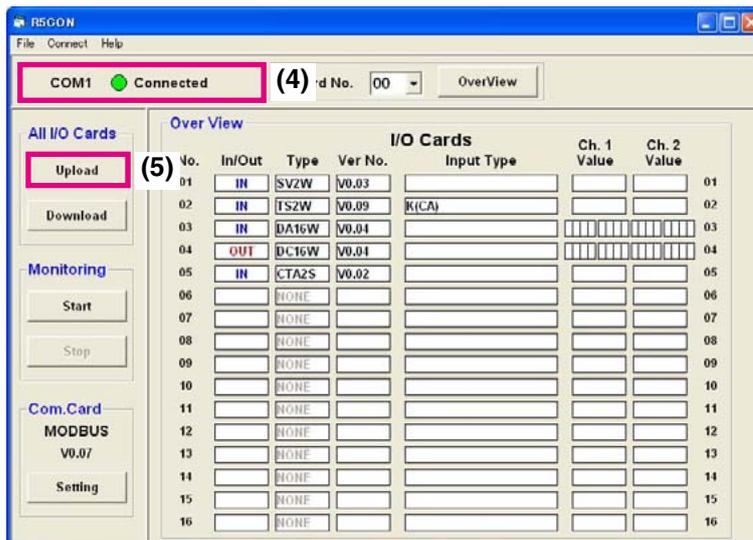
6. Choose the slot number of the R5T-CTA or R5T-CTB under Card No. selections on the top.

7. Click Upload button at the bottom of the window to read in the present setting of the module.

8. Enter new values as explained below:

Zero Scale: 0% scaling value. Set to '0.'
Full Scale: 100% scaling value. Set to '10000.'
Zero Base: 0% input value (in engineering unit). Set to '0.'
Full Base: 100% input value (in engineering unit). Set to the input upper range (e.g. 500 for 0 – 500A).
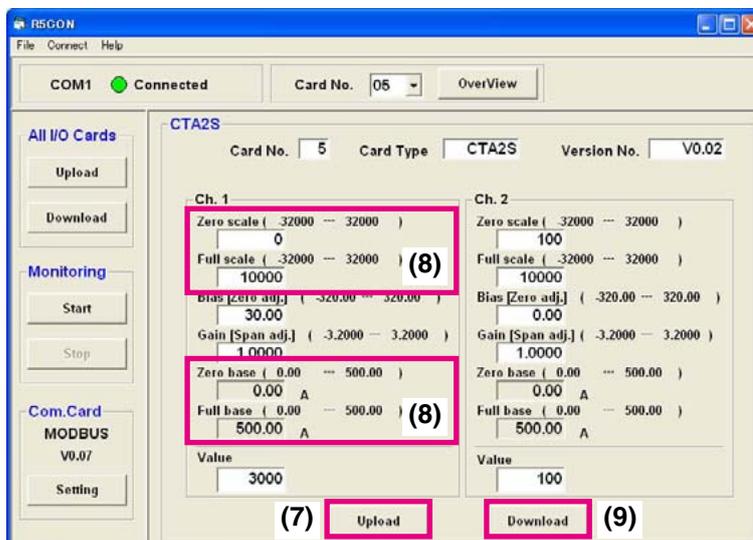
9. Click Download button at the bottom of the window to write the new setting to the module.

10. Click Upload again to confirm the new setting.

11. Choose Connect > Disconnect on the menu bar.

For detailed information, refer to the users manual for the R5CON.

Cautions !
1. Stop data recording by the 73VR1100 while the R5CON's monitoring is operational.
2. The R5CON Version 1.13 or later versions are compatible. The version number can be confirmed on the menu bar: Help > Version.

3.6 R5 SERIES REMOTE I/O, R5-NE1 MODBUS/TCP MODULE

3.6.1 SYSTEM CONFIGURATION

Figure 3.6.1 shows how the R5-NE1 module and other modules are connected to the PC via an Ethernet HUB/ Switch. For directly connecting the R5-NE1 to the PC, use a reverse (interlink) cable.
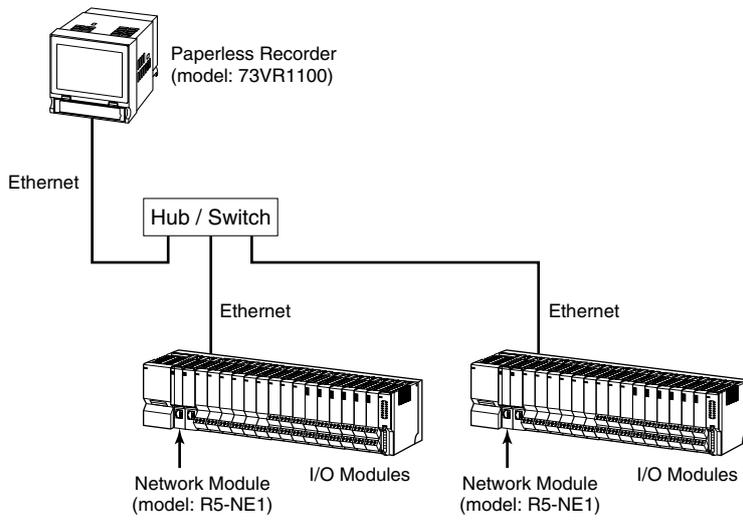
Figure 3.6.1. System configuration example.

3.6.2 MODEL R5-NE1 HARDWARE SETTING

The R5-NE1 Modbus/TCP Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100. For I/O Modules, refer to instruction manuals for a specific model. Refer to Section 3.5.3 to set up the R5T-CTA and R5T-CTB.

To set or change the IP address and the subnet mask of the R5-NE1, the R5 Series PC Configurator Software R5CON is available.

For the Modbus/TCP Module, set the DIP switches on the front and side as explained below.

■ SIDE VIEW
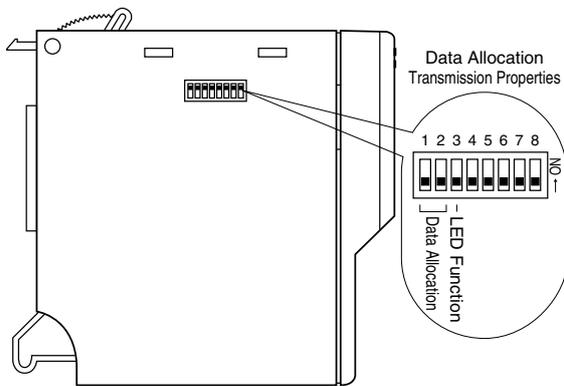
■ FRONT VIEW
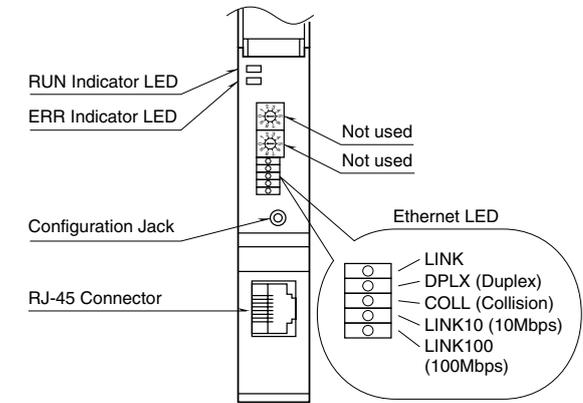
Figure 3.6.2. R5-NE1 component identification.

SIDE DIP SWITCH: DATA ALLOCATION MODE

The Data Allocation Mode 1 is used when all analog I/O modules are single-channel types. The second channel on the dual-channel analog modules cannot be used.

The Data Allocation Mode 2 is used when one or more analog I/O modules are dual-channel types.

SW	DATA ALLOCATION MODE	
	2	1
SW1	OFF (*)	ON
SW2	OFF (*)	OFF

(*) Factory setting

SIDE DIP SWITCH: LED FUNCTION

RUN and ERR lamps can be used to show either transmission diagnostic status (normal/abnormal) or sending/receiving status.

SW3	LED	
	RUN	ERR
OFF (*)	Green when normal	Green when abnormal
ON	Red when receiving	Red when transmitting

(*) Factory setting

3.7 R7 SERIES REMOTE I/O, R7M MODBUS MODULE

3.7.1 SYSTEM CONFIGURATION & RS-485 TERMINAL WIRING

Figure 3.7.1a and 3.7.1b respectively show a system configuration example using the R7M, and details of RS-485 terminal wiring.

The R7M is connected to the 73VR1100 via RS-485 twisted-pair cables.
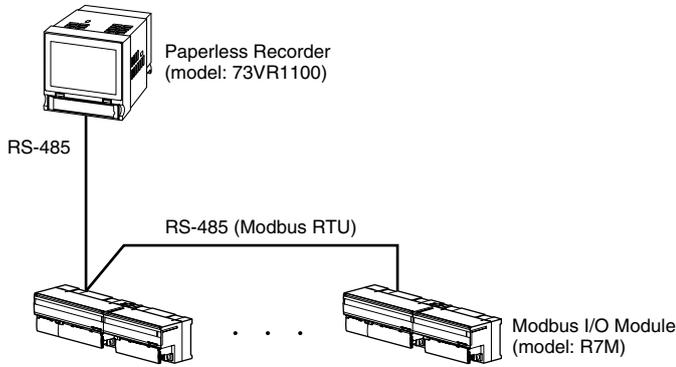
Figure 3.7.1a. System configuration example.
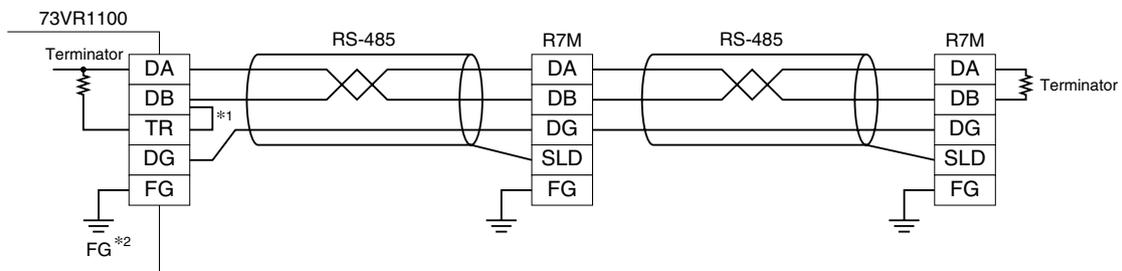
*1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
*2. Install shield cables to all sections and ground them at a single point.

Figure 3.7.1b. RS-485 terminal wiring.

3.7.2 MODEL R7M HARDWARE SETTING

The R7M Modbus Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100.
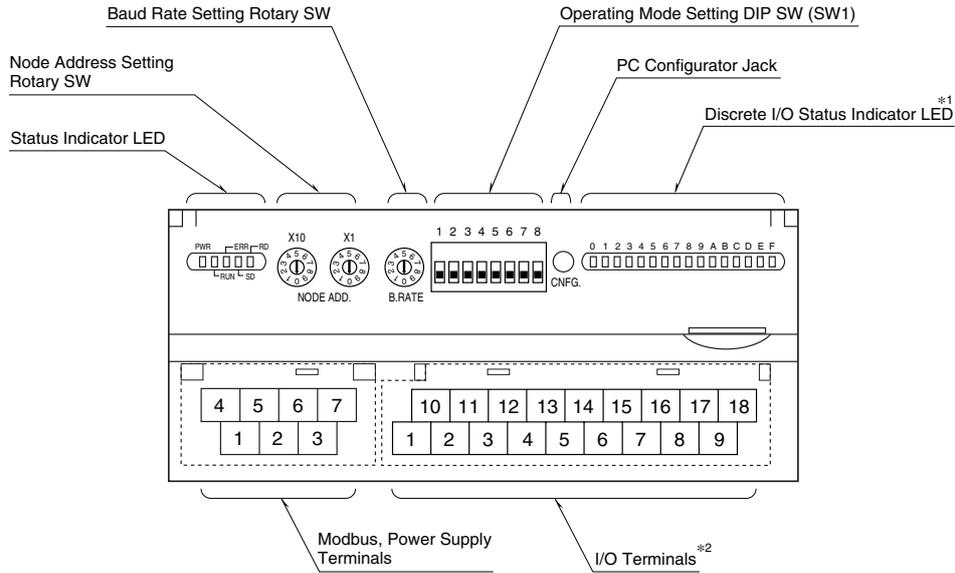
*1. Not available with analog I/O modules.
*2. 10 screw terminals for analog output modules.

Figure 3.7.2. R7M component identification.

ROTARY SWITCH: NODE ADDRESS

The left switch determines the tenth place digit, while the right switch does the ones place digit of the address.

Factory setting : 00

Node Address Setting (x1)

Node Address Setting (x10)
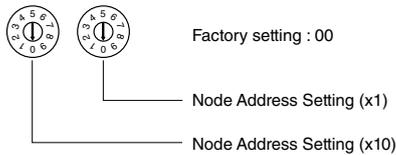
ROTARY SWITCH: BAUD RATE

Set to 38.4 kbps.
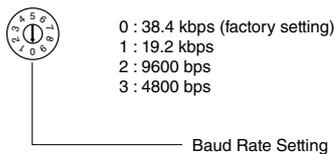
0 : 38.4 kbps (factory setting)
1 : 19.2 kbps
2 : 9600 bps
3 : 4800 bps

Baud Rate Setting

DIP SWITCH: OPERATING MODE

Operating mode setting depends upon I/O types. Refer to the tables in the following pages.

USING PC CONFIGURATOR SOFTWARE

PC Configurator Software (model: R7CON) is required to go through the following settings. The R7CON is downloadable at M-System's web site (http://www.m-system.co.jp).

Install the downloaded software program to your PC, and connect the R7M to it via the PC configurator cable (model: MCN-CON or COP-US).

For more details on the R7CON, please refer to the R7CON users manual.

• Modbus Mode
Set to RTU.

• Parity
Set to 'Odd.' (Caution! - Factory setting: None)

• Temperature Unit
Choose either '°C,' '°F' or 'K.'

■ R7M-DA16

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

(*) Factory setting
Caution ! - SW1-3, 1-4, 1-5, 1-6, 1-7, 1-8 are unused.
Be sure to turn off unused ones.

■ R7M-DC16A, R7M-DC16B

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Output at the loss of communication (SW1-4)

SW1-4	Output at the loss of communication
OFF	Reset the output (turned off)
ON	Hold the output (*) (maintains the last data received normally)

(*) Factory setting
Caution ! - SW1-3, 1-5, 1-6, 1-7, 1-8 are unused.
Be sure to turn off unused ones.

■ R7M-SV4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Conversion rate / Accuracy (SW1-3, 1-4)

SW1-3	SW1-4	Conversion rate / Accuracy
OFF	OFF	80 msec. / ≤0.1% (*)
ON	OFF	40 msec. / ≤0.2%
OFF	ON	20 msec. / ≤0.4%
ON	ON	10 msec. / ≤0.8%

• Input range (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	Input range
OFF	OFF	OFF	OFF	-10 – +10V DC (*)
ON	OFF	OFF	OFF	-5 – +5V DC
OFF	ON	OFF	OFF	-1 – +1V DC
ON	ON	OFF	OFF	0 – 10V DC
OFF	OFF	ON	OFF	0 – 5V DC
ON	OFF	ON	OFF	1 – 5V DC
OFF	ON	ON	OFF	0 – 1V DC
ON	ON	ON	OFF	-0.5 – +0.5V DC
ON	OFF	OFF	ON	-20 – +20mA DC
OFF	ON	OFF	ON	4 – 20mA DC
ON	ON	OFF	ON	0 – 20mA DC
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

■ R7M-TS4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Thermocouple type (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	Thermocouple type
OFF	OFF	OFF	OFF	K (CA) (*)
ON	OFF	OFF	OFF	E (CRC)
OFF	ON	OFF	OFF	J (IC)
ON	ON	OFF	OFF	T (CC)
OFF	OFF	ON	OFF	B (RH)
ON	OFF	ON	OFF	R
OFF	ON	ON	OFF	S
ON	ON	ON	OFF	C (WRe 5-26)
OFF	OFF	OFF	ON	N
ON	OFF	OFF	ON	U
OFF	ON	OFF	ON	L
ON	ON	OFF	ON	P (Platinel II)
OFF	OFF	ON	ON	(PR)
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

• Conversion rate (SW1-3)   • Burnout (SW1-4)

SW1-3	Conversion rate		SW1-4	Burnout
OFF	250 msec. (*)		OFF	Upscale (*)
ON	500 msec.		ON	Downscale

(*) Factory setting

■ R7M-RS4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Conversion rate (SW1-3)   • Burnout (SW1-4)

SW1-3	Conversion rate		SW1-4	Burnout
OFF	250 msec. (*)		OFF	Upscale (*)
ON	500 msec.		ON	Downscale

(*) Factory setting

• RTD type (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	RTD type
OFF	OFF	OFF	OFF	Pt 100 (JIS '97/IEC) (*)
ON	OFF	OFF	OFF	Pt 100 (JIS '89)
OFF	ON	OFF	OFF	JPt 100 (JIS '89)
ON	ON	OFF	OFF	Pt 50 (JIS '81)
OFF	OFF	ON	OFF	Ni 100
ON	OFF	ON	OFF	Cu 10 (25°C)
OFF	OFF	OFF	ON	Cu 50
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

3.8 R7 SERIES REMOTE I/O, R7E MODBUS/TCP MODULE

3.8.1 SYSTEM CONFIGURATION

Figure 3.8.1 shows how the R7E module and other modules are connected to the 73VR1100 via Ethernet HUB/ Switch. For directly connecting the R7E to the 73VR1100, use a reverse (interlink) cable.
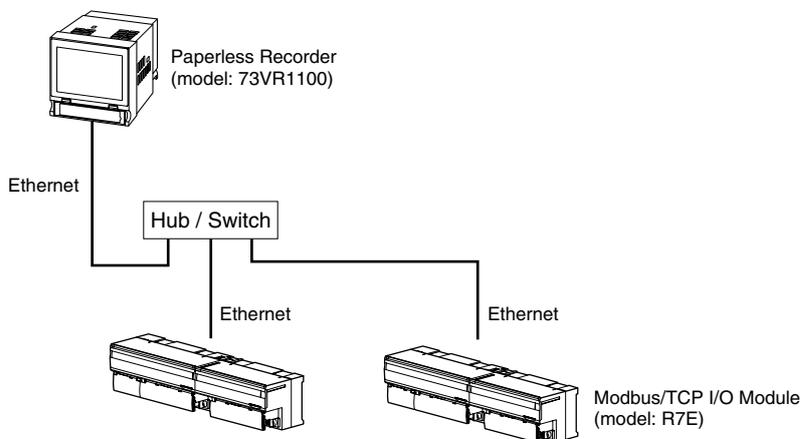
Figure 3.8.1. System configuration example.

3.8.2 MODEL R7E HARDWARE SETTING

The R7E Modbus Module and connected I/O modules must be set to proper DIP switch configuration before connecting to the 73VR1100.
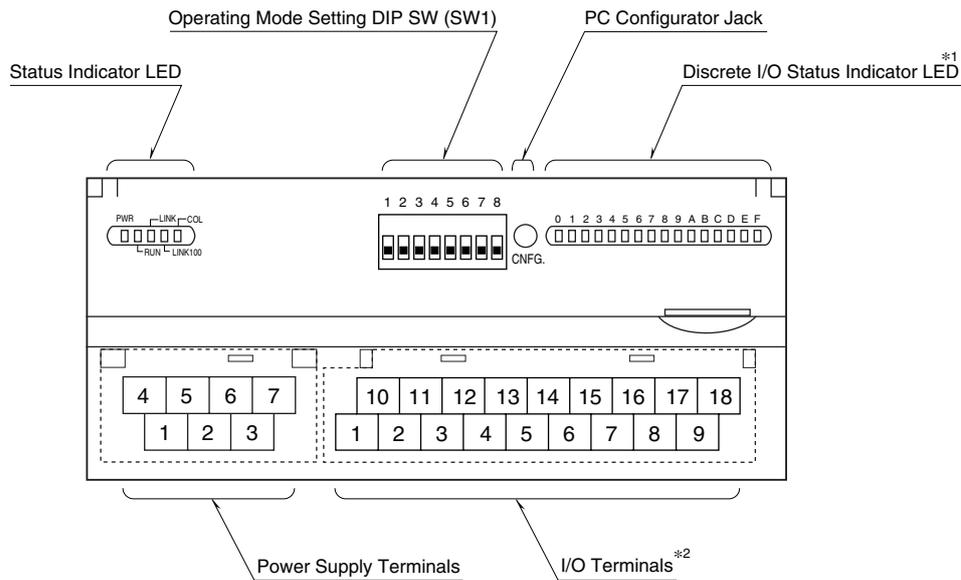
*1. Not available with analog I/O modules.
*2. 10 screw terminals for analog output modules.

Figure 3.8.2. R7E component identification.

DIP SWITCH: OPERATING MODE

Operating mode setting depends upon I/O types. Refer to the tables in the following pages.

USING PC CONFIGURATOR SOFTWARE

PC Configurator Software (model: R7CON) is required to go through the following settings. The R7CON is downloadable at M-System's web site (http://www.m-system.co.jp).

Install the downloaded software program to your PC, and connect the R7E to it via the PC configurator cable (model: MCN-CON or COP-US).

For more details on the R7CON, please refer to the R7CON users manual.

• Temperature Unit
Choose either '°C,' '°F' or 'K.'

■ R7E-DA16

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

(*) Factory setting

Caution ! - SW1-3, 1-4, 1-5, 1-6, 1-7, 1-8 are unused.
Be sure to turn off unused ones.

■ R7E-DC16A, R7M-DC16B

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Output at the loss of communication (SW1-4)

SW1-4	Output at the loss of communication
OFF	Reset the output (turned off)
ON	Hold the output (*) (maintains the last data received normally)

(*) Factory setting

Caution ! - SW1-3, 1-5, 1-6, 1-7, 1-8 are unused.
Be sure to turn off unused ones.

■ R7E-SV4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Conversion rate / Accuracy (SW1-3, 1-4)

SW1-3	SW1-4	Conversion rate / Accuracy
OFF	OFF	80 msec. / ≤0.1% (*)
ON	OFF	40 msec. / ≤0.2%
OFF	ON	20 msec. / ≤0.4%
ON	ON	10 msec. / ≤0.8%

• Input range (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	Input range
OFF	OFF	OFF	OFF	-10 – +10V DC (*)
ON	OFF	OFF	OFF	-5 – +5V DC
OFF	ON	OFF	OFF	-1 – +1V DC
ON	ON	OFF	OFF	0 – 10V DC
OFF	OFF	ON	OFF	0 – 5V DC
ON	OFF	ON	OFF	1 – 5V DC
OFF	ON	ON	OFF	0 – 1V DC
ON	ON	ON	OFF	-0.5 – +0.5V DC
ON	OFF	OFF	ON	-20 – +20mA DC
OFF	ON	OFF	ON	4 – 20mA DC
ON	ON	OFF	ON	0 – 20mA DC
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

■ R7E-TS4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Thermocouple type (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	Thermocouple type
OFF	OFF	OFF	OFF	K (CA) (*)
ON	OFF	OFF	OFF	E (CRC)
OFF	ON	OFF	OFF	J (IC)
ON	ON	OFF	OFF	T (CC)
OFF	OFF	ON	OFF	B (RH)
ON	OFF	ON	OFF	R
OFF	ON	ON	OFF	S
ON	ON	ON	OFF	C (WRe 5-26)
OFF	OFF	OFF	ON	N
ON	OFF	OFF	ON	U
OFF	ON	OFF	ON	L
ON	ON	OFF	ON	P (Platinel II)
OFF	OFF	ON	ON	(PR)
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

• Conversion rate (SW1-3)   • Burnout (SW1-4)

SW1-3	Conversion rate		SW1-4	Burnout
OFF	250 msec. (*)		OFF	Upscale (*)
ON	1 sec.		ON	Downscale

(*) Factory setting

■ R7E-RS4

• Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input, 16 points
OFF	ON	Discrete output, 16 points

• Conversion rate (SW1-3)   • Burnout (SW1-4)

SW1-3	Conversion rate		SW1-4	Burnout
OFF	250 msec. (*)		OFF	Upscale (*)
ON	1 sec.		ON	Downscale

(*) Factory setting

• RTD type (SW1-5, 1-6, 1-7, 1-8)

SW1-5	SW1-6	SW1-7	SW1-8	RTD type
OFF	OFF	OFF	OFF	Pt 100 (JIS '97/IEC) (*)
ON	OFF	OFF	OFF	Pt 100 (JIS '89)
OFF	ON	OFF	OFF	JPt 100 (JIS '89)
ON	ON	OFF	OFF	Pt 50 (JIS '81)
OFF	OFF	ON	OFF	Ni 100
ON	OFF	ON	OFF	Cu 10 (25°C)
OFF	OFF	OFF	ON	Cu 50
ON	ON	ON	ON	PC Configurator setting

(*) Factory setting

3.9 53U MULTI POWER MONITOR

3.9.1 SYSTEM CONFIGURATION & RS-485 TERMINAL WIRING

Figure 3.9.1a and 3.9.1b respectively show a system configuration example using the 53U, and details of RS-485 terminal wiring.

The 53U is connected to the 73VR1100 via RS-485 twisted-pair cables.
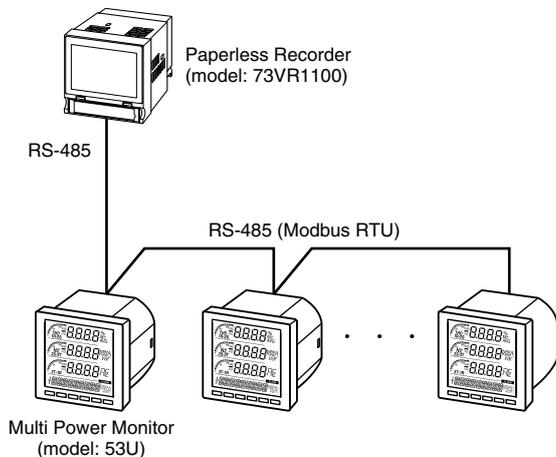
Figure 3.9.1a. System configuration example.
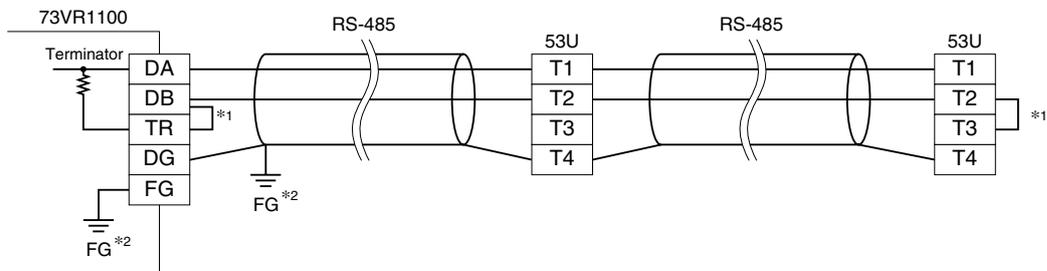
*1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
*2. Install shield cables to all sections and ground them at a single point.

Figure 3.9.1b. RS-485 terminal wiring.

CAUTION !
The 73VR1100 cannot be connected to the 53U at the same as the PMCFG PC Configurator Software.

3.9.2 MODEL 53U HARDWARE SETTING

The following explanations cover the 53U setting necessary to communicate with the 73VR1100.
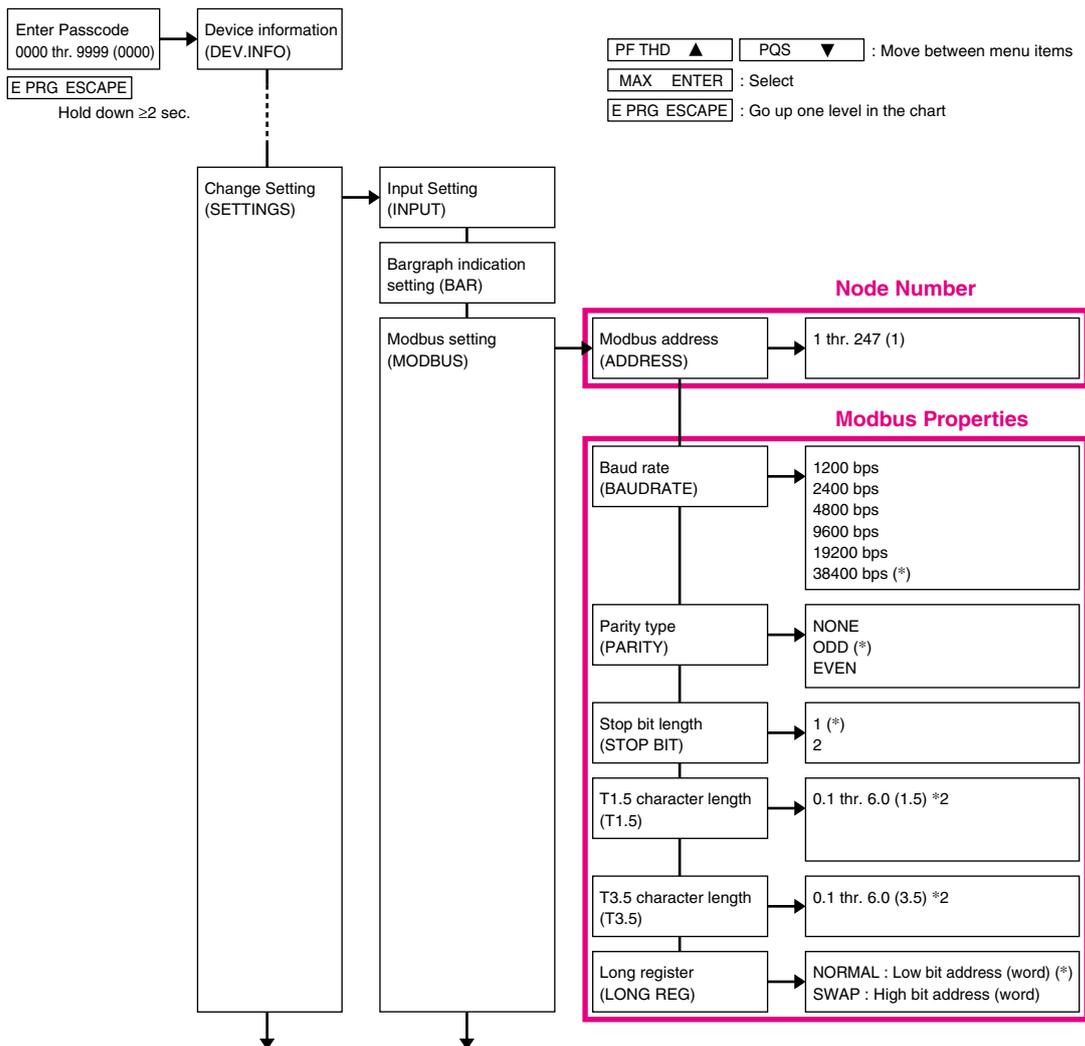
Figure 3.9.2. Hardware setting flowchart with the 53U.

NODE NUMBER SETTING

Each 53U module connected to the 73VR1100 must have an unique node number (1 to F, up to 15 nodes).

MODBUS SETTING

Confirm the baud rate, parity and stop bit setting on the 53U module. All these settings must be equal to the factory default setting in order to communicate with the 73VR1100.

Refer to the figure above or the operating manual of the 53U to set the node number. Leave all the Modbus property settings to the 53U's factory default values.

Once a new node number is set, the power supply to the device must be turned off and on to implement it.

3.10 MODEL 72EM2-M4 ETHERNET COMMUNICATION ADAPTOR

Figure 3.10a shows a system configuration example using the 72EM2-M4. Figures 3.9b and 3.9c show details of RS-485 terminal wiring.

The 72EM2-M4 is connected to the 73VR1100 via Ethernet.
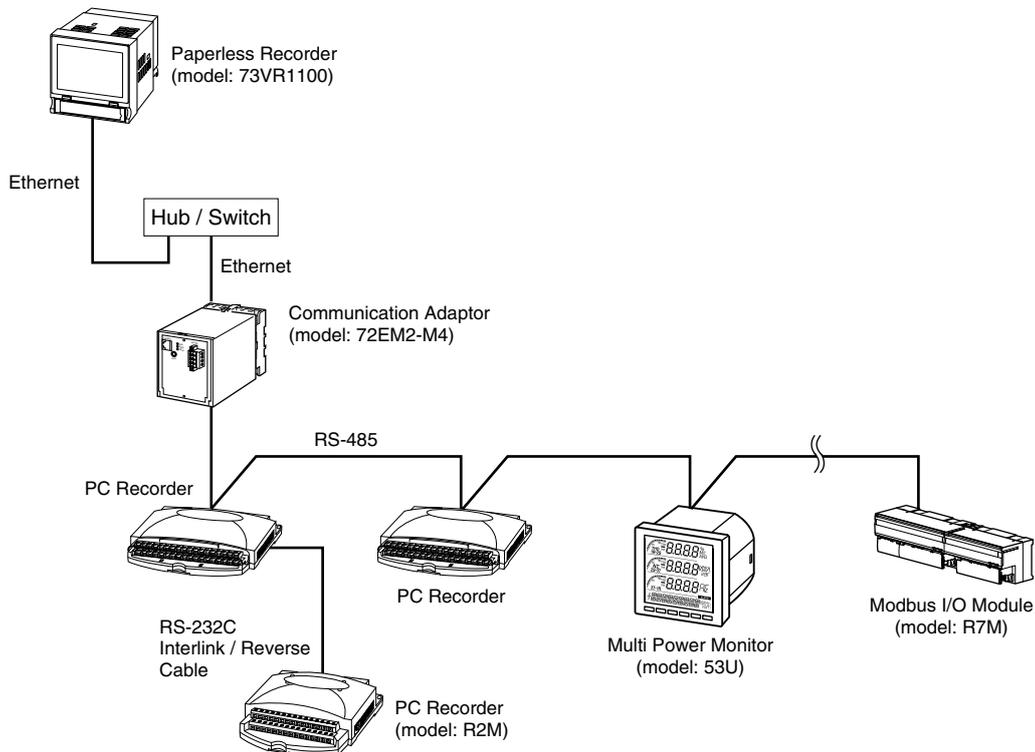
Figure 3.10a. System configuration example.
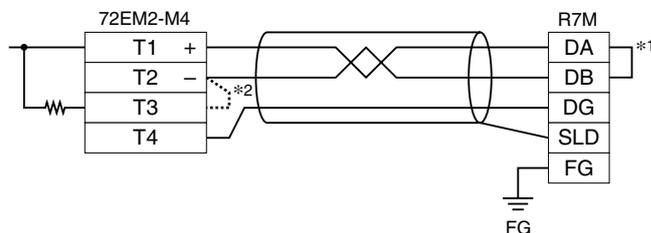
*1. Internal terminating resistor is used when the device is at the end of a transmission line.
*2. When the 72EM2 unit is located at an end of transmission line via twisted-pair cable (= when there is no cross wiring),
    close across the terminal T2 – T3 with the terminating resistor attached to the product.
    Remove the resistor from those located between the end points.

Figure 3.10b. RS-485 terminal wiring for the R7M.
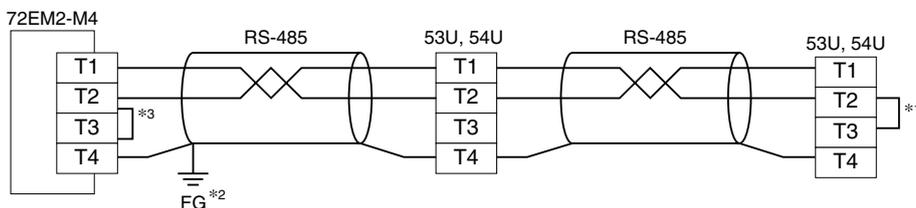
*1. Internal terminating resistor is used when the device is at the end of a transmission line.
*2. Install shield cables to all sections and ground them at single point.
*3. When the 72EM2 unit is located at an end of transmission line via twisted-pair cable (= when there is no cross wiring),
    close across the terminal T2 – T3 with the terminating resistor attached to the product.
    Remove the resistor from those located between the end points.

Figure 3.10c. RS-485 terminal wiring for the PC Recorder and 53U.

3.11 IT60RE ETHERNET TOWER LIGHT

3.11.1 SYSTEM CONFIGURATION

Figure 3.11.1 shows how the IT60RE module and other modules are connected to the 73VR1100 via an Ethernet HUB/Switch. For directly connecting the IT60RE to the 73VR1100, use a reverse (interlink) cable.
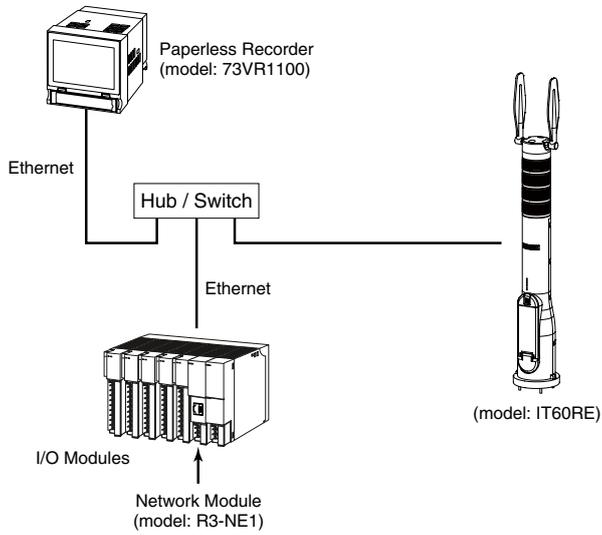
Figure 3.11.1. System configuration example.

3.11.2 MODEL IT60RE HARDWARE SETTING

■ **FRONT VIEW**   ■ **BOTTOM VIEW**

Lamp 1
Lamp 2
Lamp 3
Lamp 4, Lamp 5

Buzzer Aperture
Status Indicator LED
Control Cover Lock

Operating Mode
DIP SW

Configurator Jack

Control Panel Cover

Gasket

BOTTOM

○ Power
○ Run
○ Link
○ Link100
○ COL
○ WLAN 1
○ WLAN 2

→On
1
2
3
4
5
6
7
8

Config

Power Input Connector   FRONT

Ethernet
Modular Jack

ETHERNET

1 U (+)
2 V (−)
3 NC
4 NC
5 FE1

REAR
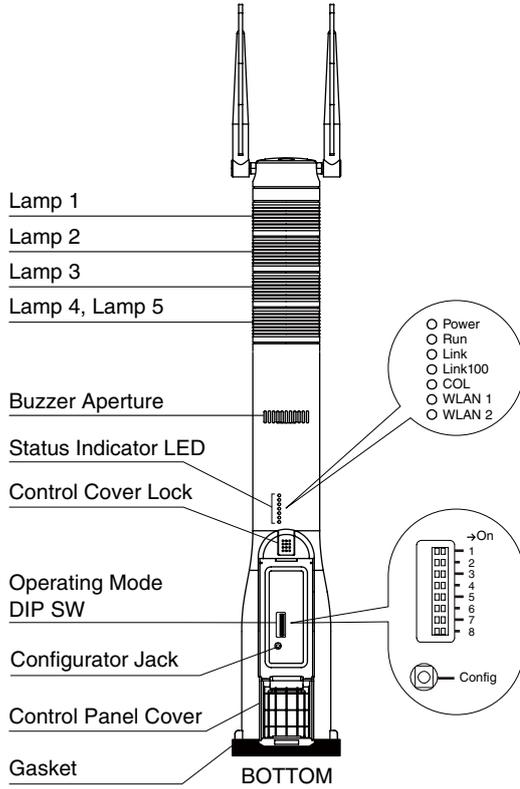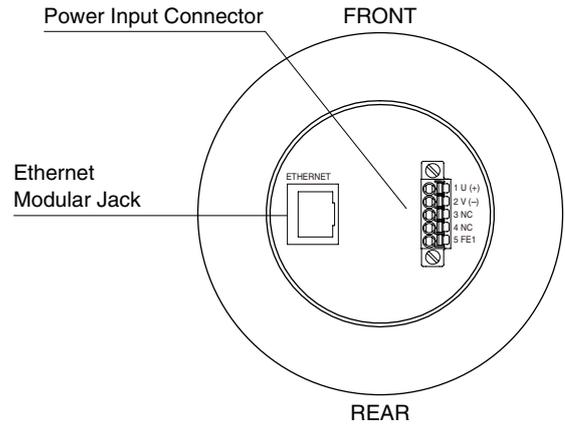
Figure 3.11.2. Figure 3.11.2 IT60RE component

■ **OPERATING MODE**
• **Lamp blinking frequency**

SW1-1	Frequency
OFF	Approx. 2 Hz (*)
ON	Approx. 10 Hz

• **Buzzer intermittent frequency**

SW1-2	Frequency
OFF	Approx. 2 Hz (*)
ON	Approx. 10 Hz

• **Buzzer volume**

SW1-3	SW1-4	Volume
OFF	OFF	Quiet (*)
OFF	ON	Middle
ON	OFF	Loud
ON	ON	Maximum

• **Output at the loss of communication**

SW1-6	Output at the loss of communication
OFF	Reset the output (turned off) (*)
ON	Hold the output (maintains the last data received normally)

(*) Factory setting

Caution ! - SW1-5, 1-7 and 1-8 are unused. Be sure to turn off unused ones.

■ **CONFIGURATOR SOFTWARE**

The IT60RE is configurable with the configurator software for communication etc.

For detailed information on the PC configuration, refer to the ITCFG users manual.

■ **IP ADDRESS**

The IT60RE does not support BootP Table Software. The IP Address and Subnet Mask can be configured using the ITCFG Configurator Software.

The Modbus/TCP Port No. is fixed at 502.

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