INSTRUCTION MANUAL

UNIVERSAL INPUT MODULE
(4 points, isolated)

MODEL **R30US4**

BEFORE USE ....

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Universal input module (body + CJC sensor × 4).....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices and 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 CE conformity.

■ GENERAL PRECAUTIONS

- Before you remove the terminal block or mount it, turn off input signals for safety.

■ HOT INSERTION/REMOVAL OF MODULES

- It is possible to replace the module with the power supplied, provided that modules are of the same model number and that the same Installation Base slot is used.
- Turn off input signals before replacing the module for safety. Note that replacing multiple modules at once may greatly change line voltage levels. We recommend that you replace them one by one.

■ UNUSED CHANNEL

- Set unused channels to "CH disabled" with PC Configurator software (model: R30CFG). Otherwise, unused channels left open are to be burnout status, setting a data error at the PLC or other host devices.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 10 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
- Be sure to attach the terminal cover for safety.

■ AND ....

- The unit 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.

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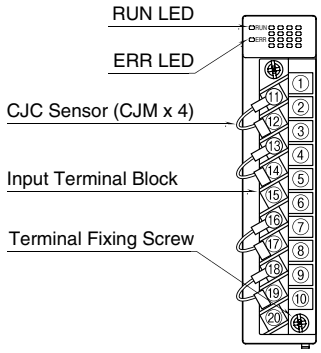
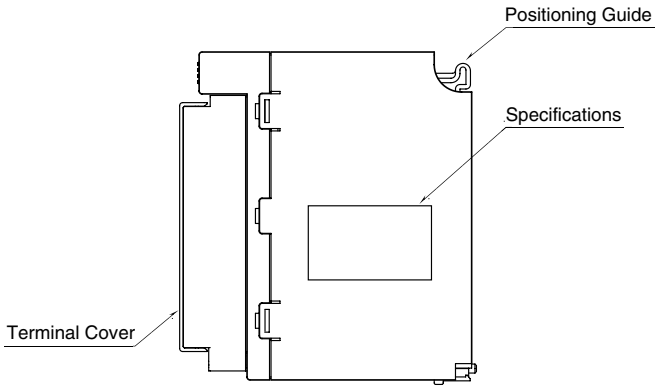
COMPONENT IDENTIFICATION

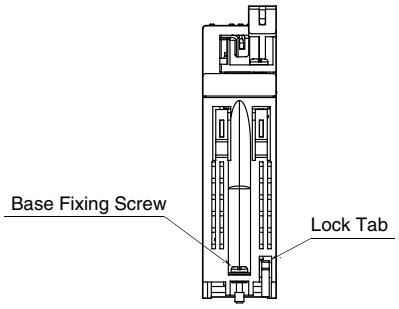
■ **FRONT VIEW**



■ **SIDE VIEW**



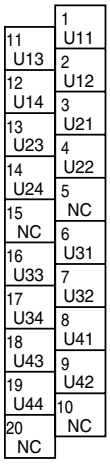
■ **BOTTOM VIEW**



■ STATUS INDICATOR LED

ID	COLOR	FUNCTION
RUN LED	Green	ON while network module operates normally OFF in network module error
ERR LED	Red	OFF when input circuit and internal bus operate normally Blinks in 1 sec. cycles when burnout is detected or with input value error (≤ -15%, ≥ +115%, becomes less than the lower limit or exceeds the upper limit of usable range). Blinks in 400 msec. cycles with input circuit error (AD converter response failure). ON with internal bus error

■ TERMINAL ASSIGNMENT

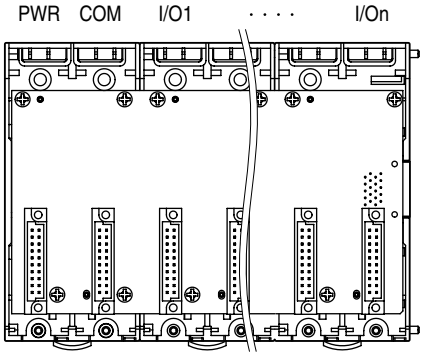


NO.	ID	FUNCTION					
		Wide Span Voltage Range / Current	Narrow Span Voltage Range	T/C	RTD/Resistor (3-wire)	RTD/Resistor (2-wire)	Potentiometer
1	U11	Wide Span volt. range / Current 1	—	—	—	—	—
2	U12	—	Narrow Span volt. range 1	T/C 1	RTD 1-b	—	Input S1
3	U21	Wide Span volt. range / Current 2	—	—	—	—	—
4	U22	—	Narrow Span volt. range 2	T/C 2	RTD 2-b	—	Input S2
5	NC	No connection					
6	U31	Wide Span volt. range / Current 3	—	—	—	—	—
7	U32	—	Narrow Span volt. range 3	T/C 3	RTD 3-b	—	Input S3
8	U41	Wide Span volt. range / Current 4	—	—	—	—	—
9	U42	—	Narrow Span volt. range 4	T/C 4	RTD 4-b	—	Input S4
10	NC	No connection					
11	U13	—	—	CJM 1	RTD 1-B	RTD 1-B	Input L1
12	U14	Common 1	Common 1	COM 1	RTD 1-A	RTD 1-A	Input H1
13	U23	—	—	CJM 2	RTD 2-B	RTD 2-B	Input L2
14	U24	Common 2	Common 2	COM 2	RTD 2-A	RTD 2-A	Input H2
15	NC	No connection					
16	U33	—	—	CJM 3	RTD 3-B	RTD 3-B	Input L3
17	U34	Common 3	Common 3	COM 3	RTD 3-A	RTD 3-A	Input H3
18	U43	—	—	CJM 4	RTD 4-B	RTD 4-B	Input L4
19	U44	Common 4	Common 4	COM 4	RTD 4-A	RTD 4-A	Input H4
20	NC	No connection					

INSTALLATION

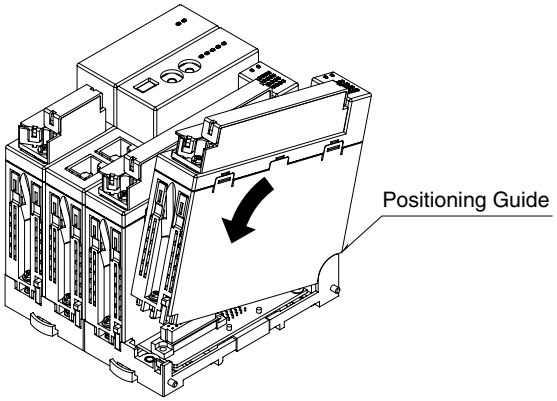
■ INSTALLATION TO THE BASE

Use the Installation Base (model: R30BS).
The I/O slots are numbered in the ascending order starting from the one on the immediate right side of the network module (slot 1, slot 2...).
A code indicating the I/O slot number is assigned to each I/O slot and I/O data is allocated in the order of this code.
When an I/O slot is vacant, blank data is sent or received to/from the PLC, etc.

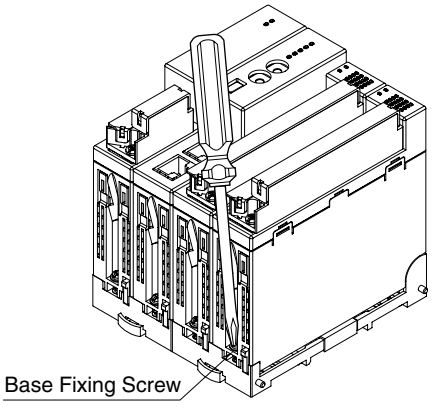


■ HOW TO MOUNT THE MODULE

1) Engage the positioning guide of the module with the Installation Base.
2) Pivot the module on the positioning guide and press it down until the lock tab sits into place.

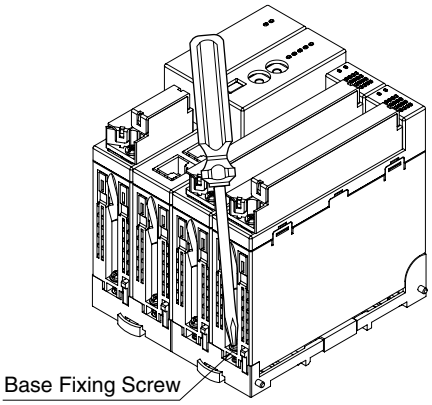


3) Tighten the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more) (torque 0.5 N·m).

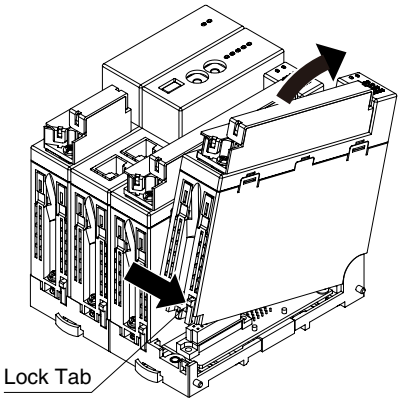


■ HOW TO REMOVE THE MODULE

1) Loosen the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more).



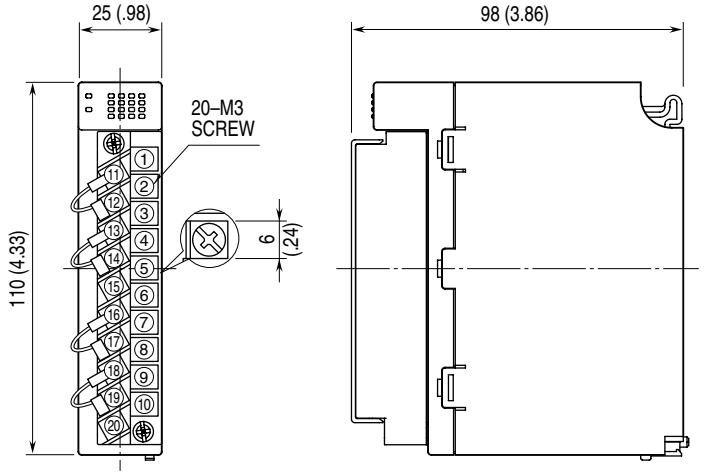
2) While pressing the projection on the lock tab, push the module upward.
3) Detach the positioning guide of the module from the Installation Base.



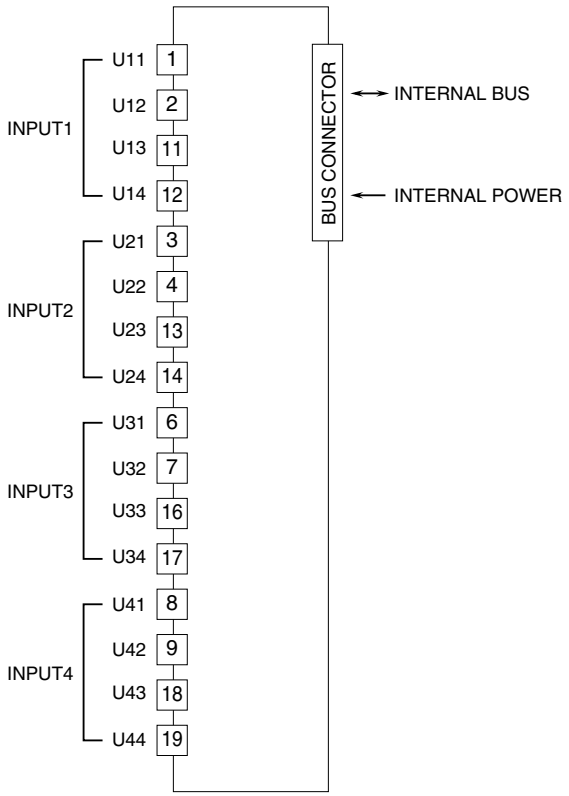
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.
For thermocouple input, attach the CJC sensor together with input wining to the input screw terminals.

■ EXTERNAL DIMENSIONS unit : mm (inch)

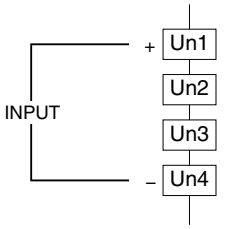


■ CONNECTION DIAGRAM

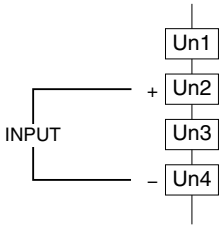


■ UNIVERSAL INPUT CONNECTION

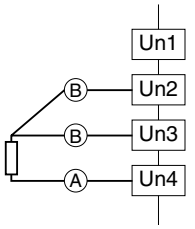
• **DC Voltage** (-10 – +10 V)
• **DC Current** (-20 – +20 mA)



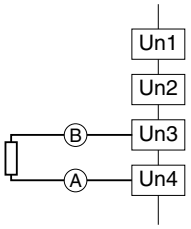
• **DC Voltage** (-1000 – +1000 mV)



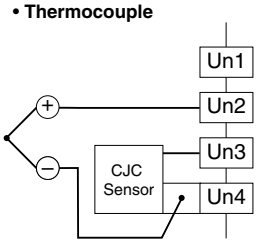
• **RTD or Resistor (3-wire)**



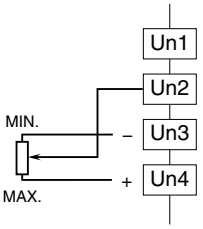
• **RTD or Resistor (2-wire)**



• **Thermocouple**



• **Potentiometer**



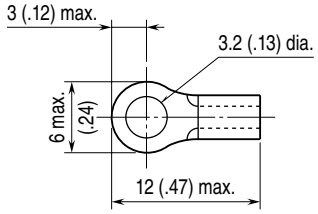
WIRING INSTRUCTIONS

■ TIGHTENING TORQUE

Separable screw terminal wiring screw: 0.5 N·m
Separable screw terminal fixing screw: 0.5 N·m

■ SOLDERLESS TERMINAL unit : mm (inch)

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable. Solderless terminals with insulation sleeve do not fit.
Applicable wire size: 0.25 to 0.75 mm2
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd., Nichifu Co., Ltd.

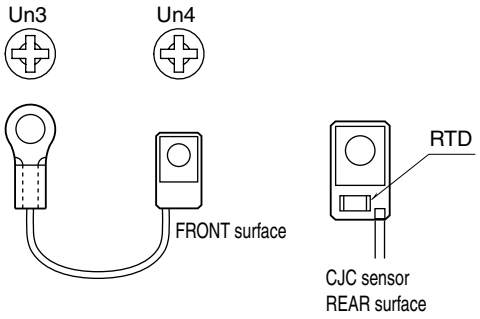


■ HOW TO REMOVE SEPARABLE SCREW TERMINAL

The terminal block is separable into two pieces. Loosen two screws on top and bottom of the terminal block to separate.

■ HOW TO ATTACH CJC SENSOR

In re-attaching once removed CJC sensor, connect it to terminals Un3 and Un4 as shown below.
A RTD is attached on the REAR surface of the CJC sensor. In order to measure accurate reference junction temperature, be sure to connect the sensor to terminal Un4 with its upside FRONT surface.



CONFIGURATOR SOFTWARE SETTING

With configurator software, settings shown below are available. Refer to the software manual of R30CFG for detailed operation.

■ CHANNEL INDIVIDUAL SETTING

FEATURES	PROGRAMMABLE RANGE	DEFAULT SETTING
Unused Setting	CH enabled CH disabled	CH enabled
Input Type	-10 – +10 V DC -1000 – +1000 mV DC -20 – +20 mA DC POT 0 – 4000 Ohm POT 0 – 2500 Ohm POT 0 – 1200 Ohm POT 0 – 600 Ohm POT 0 – 300 Ohm POT 0 – 150 Ohm OHM 0 – 4000 Ohm RTD Pt 100 RTD Pt 500 RTD Pt 1000 RTD Pt 50 Ω RTD JPt 100 RTD Ni 508.4 Ω RTD Cu 10 TC (PR) TC K TC E TC J TC T TC B TC R TC S TC C TC N TC U TC L TC P	-10 – +10 V DC
Wiring	2-wire 3-wire	–
Burnout	Upscale Downscale None	–
CJC	enabled disabled	–
Unit	degC degF K	–
Fine zero adjustment	-320.00 – +320.00 (%)	0.00 (%)
Fine gain adjustment	-3.2000 – +3.2000	1.0000
Zero base	depends on input types*1	-10.000 V DC
Full base	depends on input types*1	10.000 V DC
Scaled range Zero	-32 000 – +32 000	0
Scaled range Span	-32 000 – +32 000	10 000
First Order Lag filter	0.0, 0.5 – 60.0 sec.	0.0 sec.

* For details, refer to the users manual of R30CFG .