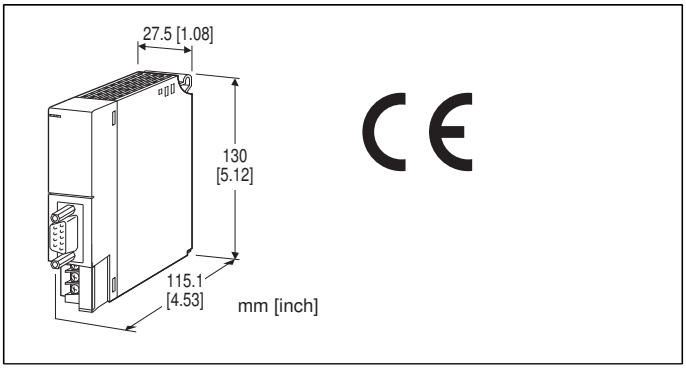
Remote I/O R3 Series

PROFIBUS-DP INTERFACE MODULE



MODEL: R3-NP1-[1][2]

ORDERING INFORMATION

• Code number: R3-NP1-[1][2]
Specify a code from below for each of [1] and [2].
(e.g. R3-NP1-R/CE/Q)
• Specify the specification for option code /Q
(e.g. /C01)

[1] POWER INPUT

N: No power supply
AC Power
K3: 100 – 120 V AC
(Operational voltage range 85 - 132 V, 47 - 66 Hz) *
(CE not available)
L3: 200 – 240 V AC
(Operational voltage range 170 - 264 V, 47 - 66 Hz) *
(CE not available)
DC Power
R: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.) *
* Not selectable for use with independent power modules or network modules with the internal power input options.

[2] OPTIONS (multiple selections)

Standards & Approvals
blank: Without CE
/CE: CE marking
Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating

CAUTION

■ **Mounting on 2-slot base**
Use a dedicated base (R3-BS02P) for R3-NP1.

GENERAL SPECIFICATIONS

Connection
PROFIBUS: 9-pin D-sub connector, female
Internal bus: Via the Installation Base (model: R3-BSx)
Internal power: Via the Installation Base (model: R3-BSx)
Power input, RUN contact output: M3 separable screw terminal (torque 0.5 N·m)
Screw terminal: Nickel-plated steel
Isolation: PROFIBUS to internal bus or internal power to power supply to RUN contact output to FG
Input error data setting: Input value setting at input module error with side DIP SW
Dual communication setting: Set with the side DIP switch
RUN indicator: Bi-color (green/Amber) LED
(Function selected with DIP SW)
ERR indicator: Bi-color (green/red) LED
(Function selected with DIP SW)
■ **RUN CONTACT OUTPUT**
RUN contact: Turns ON while the green RUN LED is ON.
(PROFIBUS in normal communication)
Rated load: 250 V AC @ 0.5 A (cos ø = 1)
30 V DC @ 0.5 A (resistive load)
(Less than 50 V AC to conform with EU Directive)
Maximum switching voltage: 250 V AC or 30 V DC
Maximum switching power: 250 VA or 150 W
Minimum load: 1 V DC @ 1 mA
Mechanical life: 2×10^7 cycles (300 cycles/min.)
When driving an inductive load, external contact protection and noise quenching recommended.

PROFIBUS COMMUNICATION

Interface: PROFIBUS-DP, slave (RS-485 isolation)
Max. baud rate: 12 Mbps
Protocol: DPV1
Station No. setting: Rotary switch; 00 - 7D
(Address is 7D even setting greater value)
GSD file: Msys093F.GSD
GSD files are downloadable at our web site or at PROFIBUS International site (www.profibus.com).
Input data: Max. 240 bytes
Output data: Max. 240 bytes

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Total I/O data: Max. 480 bytes
Diagnostics: Module-related, Status (devicerelated), Channel-related (max. 32 channels, maskable)
Acyclic communication (MSAC2): 2 channels

INSTALLATION

Power consumption
•**AC**: Approx. 20 VA
•**DC**: Approx. 12 W
Current consumption (no power supply): 130 mA
Output current (power supply): 220 mA continuous at 20 V DC; 370 mA for 10 minutes
Operating temperature: -10 to +55°C (14 to 131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: Installation Base (model: R3-BSx)
Weight: 200 g (0.44 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (PROFIBUS to internal bus or internal power to power input to RUN output to FG)

STANDARDS & APPROVALS

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

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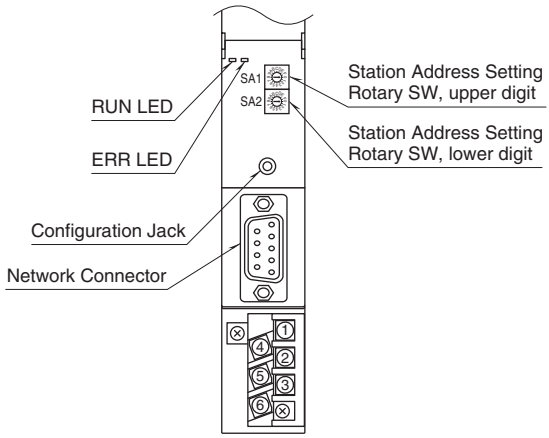
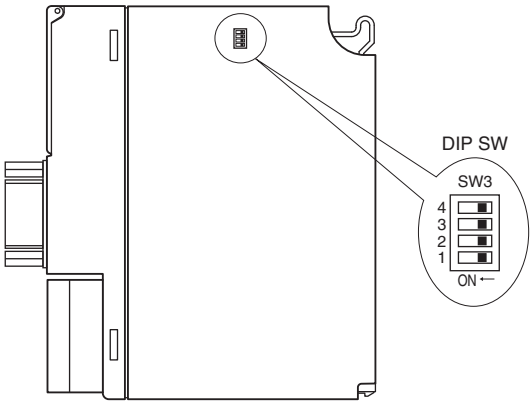
EXTERNAL VIEW

■ **FRONT VIEW**



■ **SIDE VIEW**



■ **PROFIBUS INTERFACE**

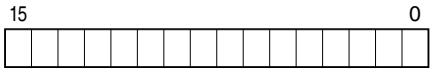
PIN No.	SIGNAL	SIGNIFICANCE
1	NC	Not used
2	NC	Not used
3	B_line	Network, B-line
4	RTS	RTS signal
5	GND	0V
6	P5V	5V
7	NC	Not used
8	A_line	Network, A-line
9	NC	Not used

I/O DATA DESCRIPTIONS

The data allocations for typical I/O modules are shown below.
Refer to the manual for each module for detailed data allocations.

■ ANALOG DATA (16-bit data, models: R3-SV4, YV4, DS4, YS4, US4, etc.)

16-bit binary data.
Basically, 0 to 100% of the selected I/O range is converted into 0 to 10000 (binary).
-15 to 0 % is a negative range represented in 2's complement.
In case of R3-US4, -10 to 0% is a negative range represented in 2's complement.



■ TEMPERATURE DATA (16-bit data, models: R3-RS4, TS4, US4, etc.)

16-bit binary data.
With ℃ temperature unit, raw data is multiplied by 10. For example, 25.5℃ is converted into 255.
With ℉ temperature unit, the integer section of raw data is directly converted into the data.
For example, 135.4℉ is converted into 135.
Minus temperature is converted into negative values, represented in 2's complements.

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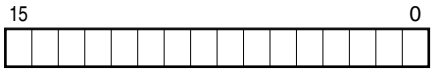
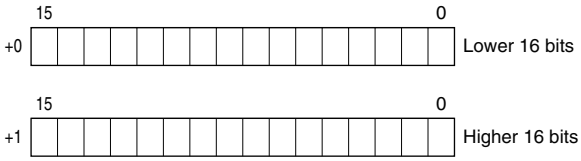
■ ANALOG DATA (16-bit data, models: R3-CT4A, CT4B, etc.)

16-bit binary data.
Integer obtained by multiplying unit value (A) by 100.
In case of CLSE-R5, integer obtained by multiplying unit value (A) by 1000.



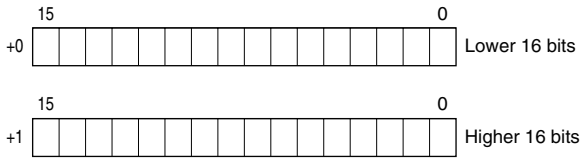
■ ACCUMULATED COUNT DATA (32-bit data, models: R3-PA2, PA4A, WT1, WT4, etc.)

32-bit binary data is used for accumulated counts and encoder positions.
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.

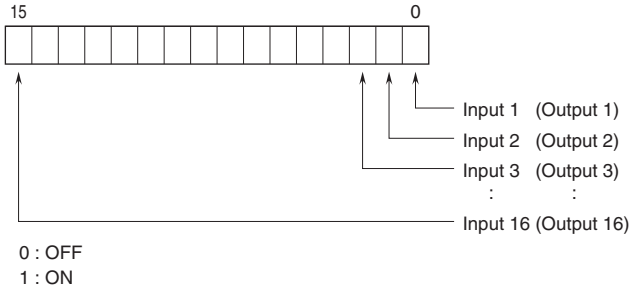


■ BCD DATA (32-bit data, models: R3-BA32A, BC32A, etc.)

32-bit binary data is used for BCD.
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



■ 16-POINT DISCRETE DATA (models: R3-DA16, DC16, etc.)



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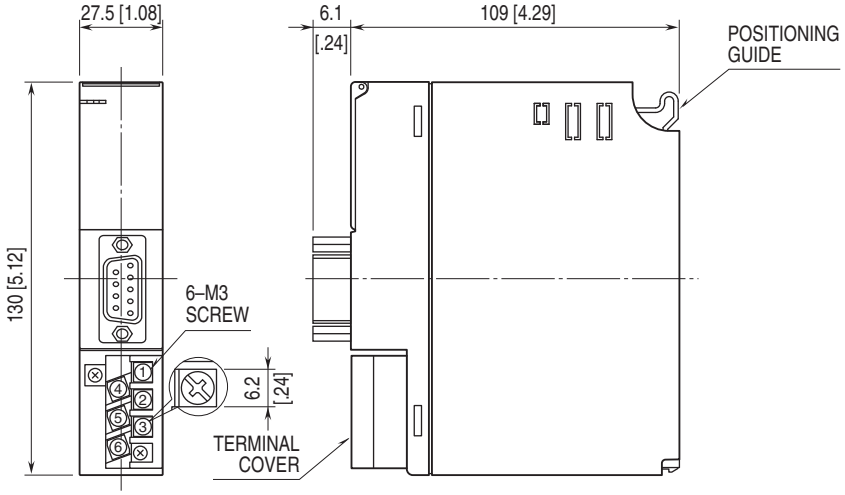
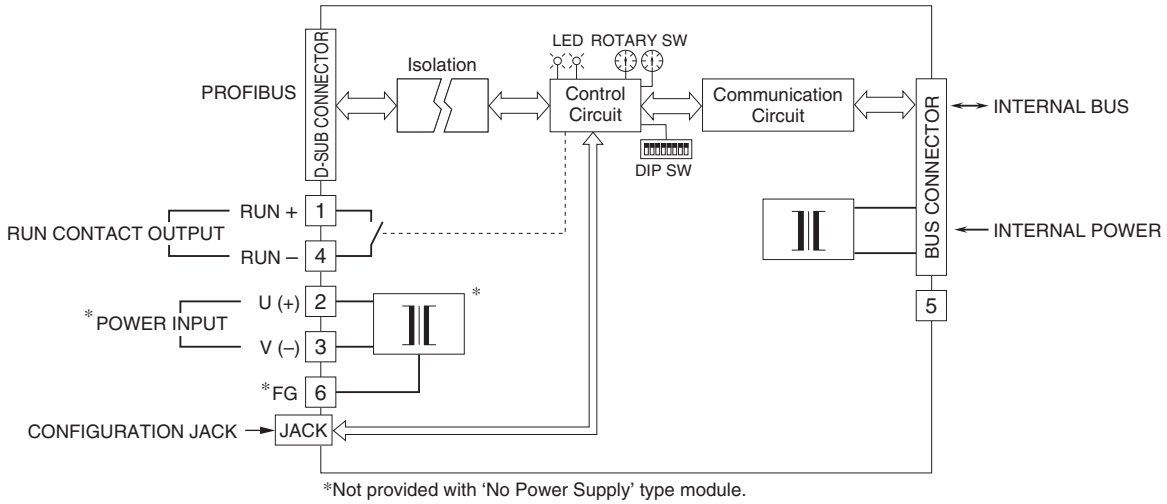
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.
Caution: FG terminal is NOT a protective conductor terminal.



*Not provided with 'No Power Supply' type module.

⚠ Specifications are subject to change without notice.

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