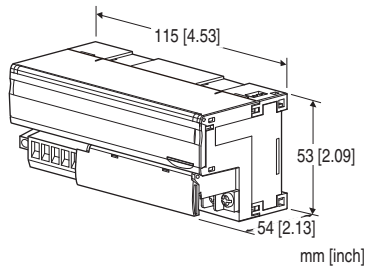
Remote I/O R7 Series

DeviceNet® I/O MODULE

(potentiometer input, 4 points, isolated)

Functions & Features

- 4 points potentiometer input module for DeviceNet
- Extension module can be connected
- Easy parameter setting of individual channels with the configurator software (model: R7CON)



MODEL:R7D-MS4[1]

ORDERING INFORMATION

- Code number: R7D-MS4[1]

Specify a code from below for [1].
(e.g. R7D-MS4/Q)

- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

MS4: Potentiometer input, 4 points

[1] OPTIONS

blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
EX-FACTORY SETTING
/SET: Preset according to the Ordering Information Sheet (No. ESU-7802-Q)

RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)
- PC configurator software (model: R7CON)
- EDS file

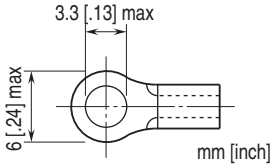
The EDS files and configurator software are downloadable at our web site.
(Extension modules are registered in the EDS file as a combination of a basic module)

- Discrete input extension module (model: R7D-EAx)
- Discrete output extension module (model: R7D-ECx)

GENERAL SPECIFICATIONS

Connection
DeviceNet: Euro type connector terminal
(applicable wire size: 0.2 to 2.5 mm^2, stripped length 7 mm)
Input: M3 separable screw terminal (torque 0.5 N·m)
Solderless terminal: Refer to the drawing at the end of the section.
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd., Nichifu Co., Ltd.
Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)
Screw terminal: Nickel-plated steel
Housing material: Flame-resistant resin (gray)
Isolation: Input 0 to input 1 to input 2 to input 3 to DeviceNet
Zero adjustments: Configurable via R7CON
Span adjustments: Configurable via R7CON
Extension: No extension (*), Discrete input 8 or 16 points, Discrete output 8 or 16 points
Selectable with the front DIP SW
(*) Factory default setting
Conversion rate: Selectable with the front DIP SW
Configurator connection: 2.5 dia. miniature jack

■Recommended solderless terminal



DeviceNet COMMUNICATION

Network cable: Approved for DeviceNet
Baud rate setting: 125 kbps (default), 250 kbps, 500 kbps, auto-tracking (rotary switch)
(Refer to the instruction manual.)
Status indicator LEDs: MS, NS
(Refer to the instruction manual for details.)
Node address setting: 1 - 63 (rotary switch, default:00)
(Refer to the instruction manual.)
Communication: Supports poll and cyclic
(Bit-strobe and COS (change of state) are not suported)

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INPUT SPECIFICATIONS

Potentiometer: Total resistance 100 Ω – 20 kΩ
Minimum span: 50 % of total resistance
Excitation: Approx. 0.2 V DC

INSTALLATION

Supply voltage to network: 11 – 25 V DC supplied through the network terminal block
Current Consumption:
Approx. 60 mA @ 24 V DC
Approx. 110 mA @ 11 V DC
Operating temperature: -10 to +55°C (14 to 131°F)
Storage temperature: -20 to +65°C (-4 to +149°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: DIN rail (35 mm rail)
Weight: 200 g (0.44 lb)

PERFORMANCE

Conversion rate / conversion accuracy:
10 msec./±0.8 %, 20 msec./±0.4 %, 40 msec./±0.2 %, 80 msec./±0.1 % (*)
(*) Factory setting
Data range: 0 – 10000 of the input range
(Scaling of converted data is configurable with the configurator software (model: R7CON))
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
Response time: Conversion rate × 2 + 50 msec. (0 – 90 %)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input 0 to input 1 to input 2 to input 3 to DeviceNet)

STANDARDS & APPROVALS

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

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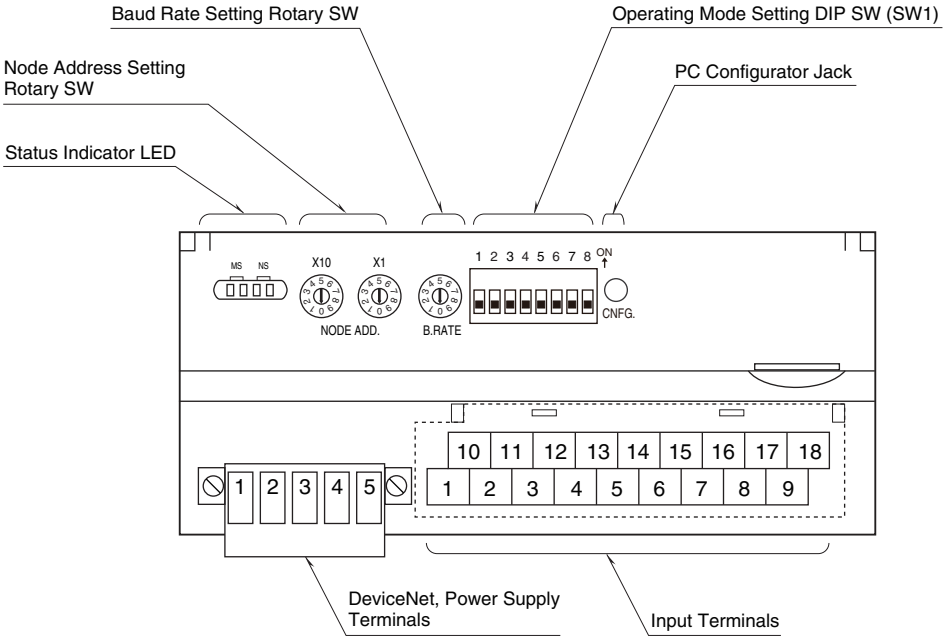
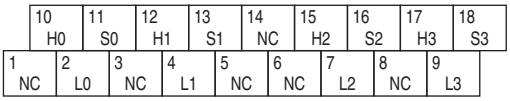
EXTERNAL VIEW



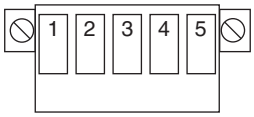
TERMINAL ASSIGNMENTS

■ INPUT TERMINAL ASSIGNMENT



NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	H0	Pot H0
2	L0	Pot L0	11	S0	Pot S0
3	NC	No connection	12	H1	Pot H1
4	L1	Pot L1	13	S1	Pot S1
5	NC	No connection	14	NC	No connection
6	NC	No connection	15	H2	Pot H2
7	L2	Pot L2	16	S2	Pot S2
8	NC	No connection	17	H3	Pot H3
9	L3	Pot L3	18	S3	Pot S3

■ DeviceNet TERMINAL ASSIGNMENT



PIN NO.	COLOR	ID	FUNCTION
1	Red	V+	Network power supply +
2	White	CAN_H	Network data High
3	–	Drain	Shield
4	Blue	CAN_L	Network data Low
5	Black	V–	Network power supply –

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DATA ALLOCATION

'Begin' address is determined by the R7D's node address and the master setting.

• Example 1. Analog Input Module, without Status

	Output Data		Input Data
Begin +0	Analog Input Module	CH0	None
+1		CH1	
+2		CH2	
+3		CH3	

• Example 2. Analog Input Module, with Status

	Output Data		Input Data
Begin +0	Analog Input Module	CH0	None
+1		CH1	
+2		CH2	
+3		CH3	
+4	Status		

• Example 3. Analog Input Module + R7D-EA16, with Status

	Output Data		Input Data
Begin +0	Analog Input Module	CH0	None
+1		CH1	
+2		CH2	
+3		CH3	
+4	R7D-EA16		
+5	Status		

• Example 4. Analog Input Module + R7D-EC16x, with Status

	Output Data			Input Data	
Begin +0	Analog Input Module	CH0	Begin +0	R7D-EC16x	
+1		CH1			
+2		CH2			
+3		CH3			
+4	Status				

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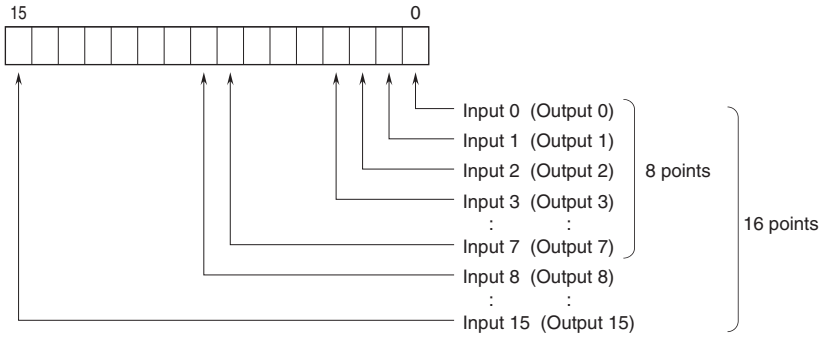
I/O DATA DESCRIPTIONS

■ ANALOG INPUT

16-bit binary data
Negative values represented in 2's complements

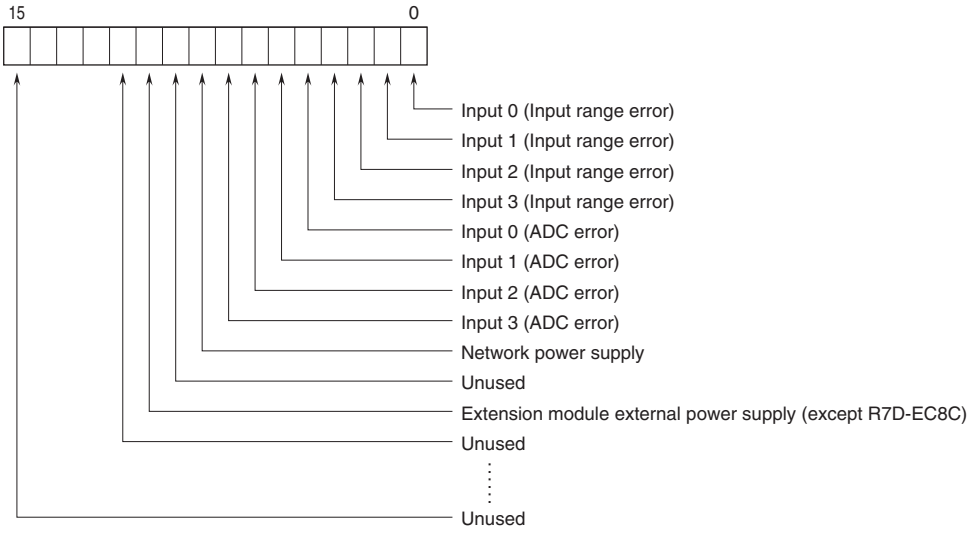
■ DISCRETE I/O



0 : OFF
1 : ON

■ STATUS

Bit 0 to 7: Analog input modules can show input status of each channel.
Bit 8 to 10: Shows the power supply status.



Input range error (≤ -15%, ≥ +115%)
0 : Normal 1 : Error
ADC error (no response from ADC)
0 : Normal 1 : Error
Power supply
0 : Normal 1 : Error

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TRANSMISSION DATA DESCRIPTIONS

■ BASIC MODULE

Transmitted data (word) depends upon the modules types.

MODEL	OUTPUT DATA*1 (R7D to Master)	INPUT DATA*2 (Master to R7D)
R7D-MS4	4	0

■ EXTENSION MODULE

Transmitted data (word) for the extension module is added.

MODEL	OUTPUT DATA*1 (R7D to Master)	INPUT DATA*2 (Master to R7D)
R7D-EAx	1	0
R7D-ECx	0	1

■ STATUS

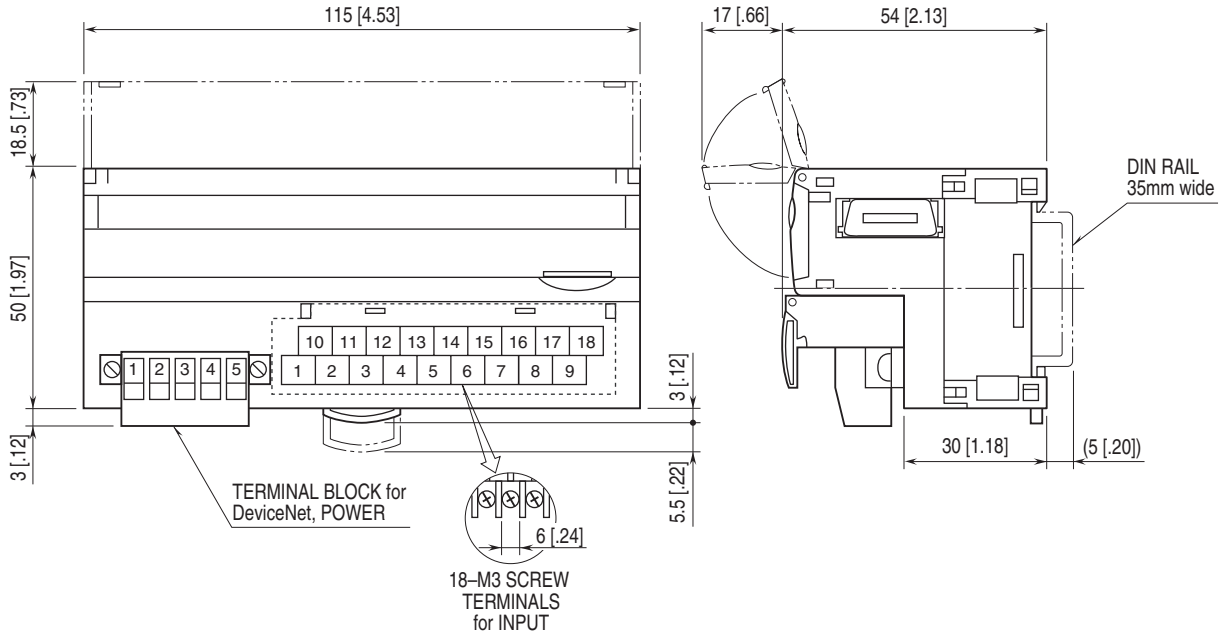
Status signal can be included in the transmission data when the setting is enabled using the PC Configurator software (model: R7CON). For details, refer to “STATUS in I/O DATA DESCRIPTIONS”.

STATUS	OUTPUT DATA*1 (R7D to Master)	INPUT DATA*2 (Master to R7D)
Enabled	1	0
Disabled	0	0

*1. Output Data means those sent to the master.

*2. Input Data means those received from the master.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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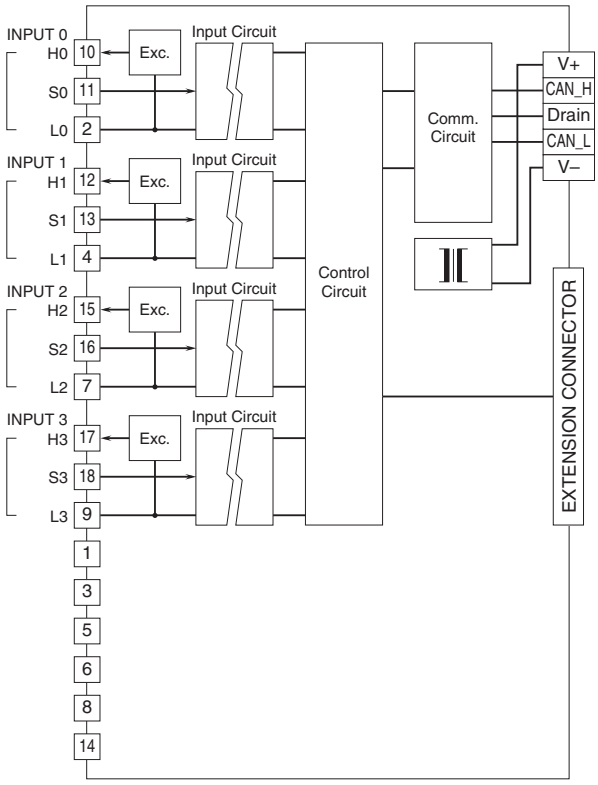
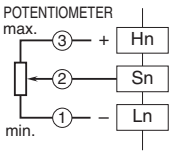
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



■ **Input Connection Example**



⚠ Specifications are subject to change without notice.

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