# TOTALIZED PULSE INPUT MODULE, 8 points
### (DeviceNet)

MODEL **R7D-PA8**

## BEFORE USE ....

Thank you for choosing us.  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 our sales office or representatives.

### ■ PACKAGE INCLUDES:

Totalized pulse input module .............................................(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.

### ■ EDS FILE

EDS files are downloadable at our web site.

## 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, 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.
  * For example, installation of noise filters and clamp filters for the power source, input and output connected to the unit, etc.

### ■ GENERAL PRECAUTIONS

• Before you remove the unit or mount it, turn off the power supply and input signal for safety.
• Before you remove the terminal block or mount it, make sure to turn off the power supply and input signal for safety.
• DO NOT set the switches on the module while the power is supplied.  The switches are used only for maintenance without the power.

### ■ 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 30 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 close the terminal cover for safety.

## COMPONENT IDENTIFICATION
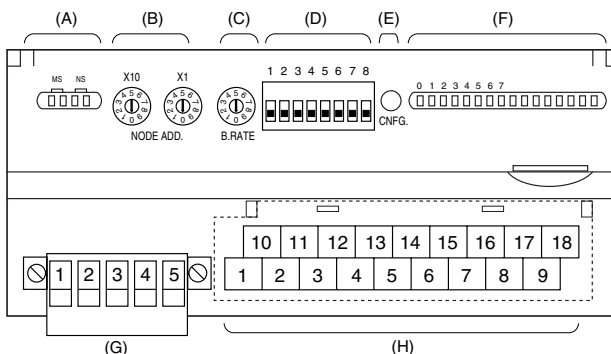


(A) Status Indicator LED
(B) Node Address Setting Rotary SW
(C) Baud Rate Setting Rotary SW
(D) Operating Mode Setting DIP SW (SW1)
(E) PC Configurator Jack
(F) Input Status Indicator LED
(G) DeviceNet, Power Supply Terminals
(H) Input Terminals

### ■ STATUS INDICATOR LED

| ID | STATE | FUNCTION |
|----|-------|----------|
| MS | Green | Operating in a normal condition |
|    | Blinking Green | Standby (needs commissioning) |
|    | Red | Critical failure |
|    | Blinking Red | Minor failure |
|    | OFF | No power supplied |
| NS | Green | Link on-line and connections in the established state |
|    | Blinking Green | Link on-line but no connections in the established state |
|    | Red | Critical link failure |
|    | Blinking Red | Minor link failure |
|    | OFF | No power supplied |

### ■ PULSE INPUT STATUS INDICATOR LED

LED red indicators show the signal status.
　ON  : LED ON
　OFF : LED OFF

### ■ NODE ADDRESS

Node Address is selected between 1 and 63 in decimal.  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)
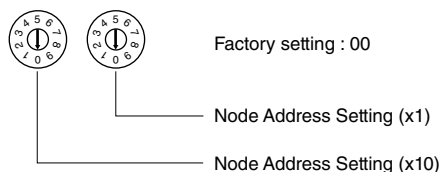
## ■ BAUD RATE

Baud Rate is selected with the rotary switch.



0 : 125 kbps (factory setting)
1 : 250 kbps
2 : 500 kbps
3 thr. 9 : Auto-tracking

Baud Rate Setting

The R7D communicates in the baud rate setting detected at the startup with the switch set to the positions 0 (125 kbps), 1 (250 kbps) or 2 (500 kbps).
For the settings 3 through 9, it analyzes the PLC's network to determine the baud rate on the network.
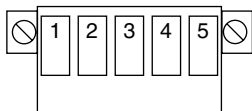
## ■ OPERATING MODE

• **Extension: SW1-1, 1-2**

| SW1-1 | SW1-2 | EXTENSION |
|---|---|---|
| OFF | OFF | No extension (*) |
| ON | OFF | Discrete input, 8 or 16 points |
| OFF | ON | Discrete output, 8 or 16 points |

(*) Factory setting
Note: Be sure to set unused SW1-3 through 1-8 to OFF.

## ■ DeviceNet TERMINAL ASSIGNMENT



| NO. | ID | FUNCTION, NOTES |
|---|---|---|
| 1 | V+ | Network power supply + |
| 2 | CAN_H | Network data High |
| 3 | Drain | Shield |
| 4 | CAN_L | Network data Low |
| 5 | V– | Network power supply – |

## ■ INPUT TERMINAL ASSIGNMENT
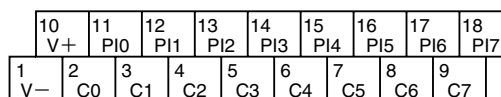
| 10 V+ | 11 PI0 | 12 PI1 | 13 PI2 | 14 PI3 | 15 PI4 | 16 PI5 | 17 PI6 | 18 PI7 |
|---|---|---|---|---|---|---|---|---|
| 1 V– | 2 C0 | 3 C1 | 4 C2 | 5 C3 | 6 C4 | 7 C5 | 8 C6 | 9 C7 |

| NO. | ID | FUNCTION | NO. | ID | FUNCTION |
|---|---|---|---|---|---|
| 1 | V– | Power (–) | 10 | V+ | Power (+) |
| 2 | C0 | Common | 11 | PI0 | Input 0 |
| 3 | C1 | Common | 12 | PI1 | Input 1 |
| 4 | C2 | Common | 13 | PI2 | Input 2 |
| 5 | C3 | Common | 14 | PI3 | Input 3 |
| 6 | C4 | Common | 15 | PI4 | Input 4 |
| 7 | C5 | Common | 16 | PI5 | Input 5 |
| 8 | C6 | Common | 17 | PI6 | Input 6 |
| 9 | C7 | Common | 18 | PI7 | Input 7 |

## ■ EXTENSION MODULE

Combinations with all extension modules are selectable.

# PC CONFIGURATOR

The following parameter items can be set with using PC Configurator Software (model: R7CON).
Refer to the users manual for the R7CON for detailed operation of the software program.

## ■ INTERFACE SETTING

| PARAMETER | SETTING RANGE | DEFAULT SETTING |
|---|---|---|
| Communication Timeout | 0.0 – 3276.7 (sec.) | 3.0 (sec.) |
| Status Data | OFF: Disable ON: Enable | OFF: Disable |
| Serial ID | English one-byte characters within 8 characters | |

## ■ CHANNEL INDIVIDUAL SETTING

| PARAMETER | SETTING RANGE | DEFAULT SETTING |
|---|---|---|
| Max | 1 000 – 4 294 967 295 | 9 999 999 |
| Carry | 0, 1 | 0 |
| Preset | 0 – 4 294 967 295 | |

## ■ EXTENSION MODULE SETTING

| PARAMETER | SETTING RANGE | DEFAULT SETTING |
|---|---|---|
| Output Hold/Clear | Output Hold Output Clear | Output Hold |

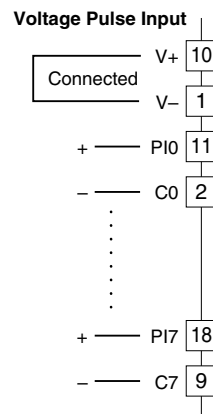## TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

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

115 (4.53)

18.5 (.73)

50 (1.97)

3 (.12)

| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----|----|----|----|----|----|----|----|----|

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|

3 (.12)

3 (.12)

TERMINAL BLOCK for DeviceNet, POWER

5.5 (.22)

6 (.24)

18–M3 SCREW TERMINALS for INPUT

17 (.66)    54 (2.13)

DIN RAIL 35mm wide

30 (1.18)    [5 (.20)]

### ■ CONNECTION DIAGRAM

V+ 10
V− 1
PI0 11
PI1 12
PI2 13
PI3 14
PI4 15
PI5 16
PI6 17
PI7 18
C0 2
C1 3
C2 4
C3 5
C4 6
C5 7
C6 8
C7 9

V+
CAN_H
Drain
CAN_L
V−

EXTENSION CONNECTOR
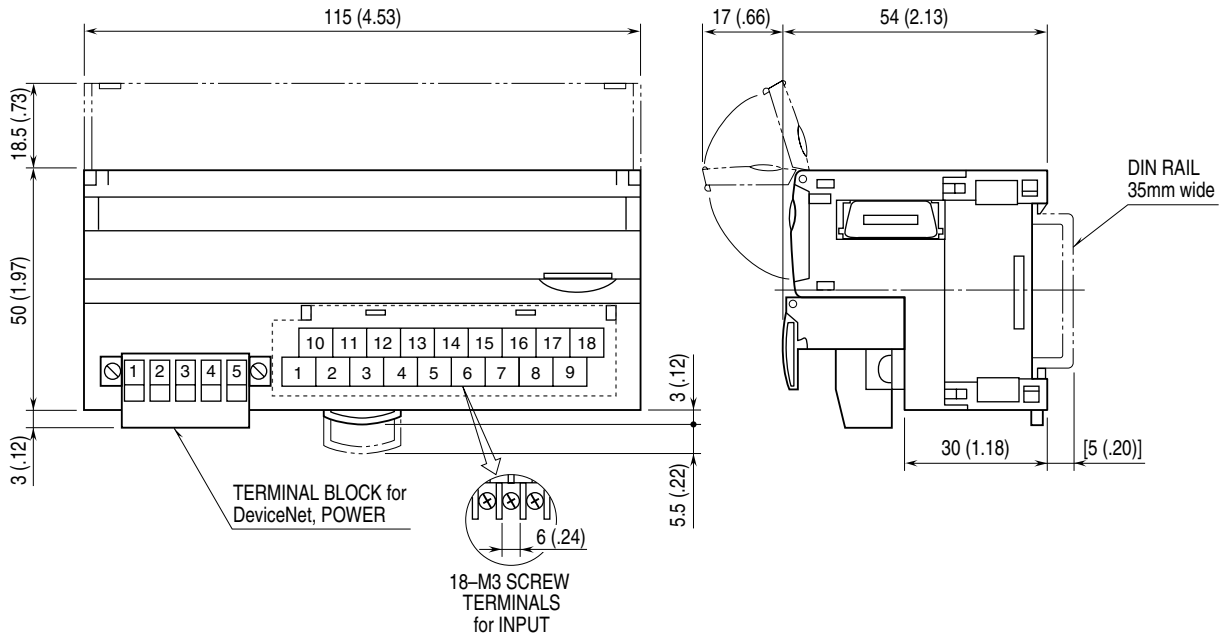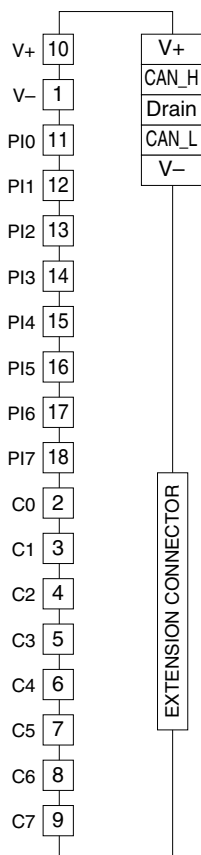
### ■ Input Connection Examples

**PNP connection**

V+ 10
V− 1
PI0 11
C0 2
PI7 18
C7 9

**NPN connection**

V+ 10
V− 1
PI0 11
C0 2
PI7 18
C7 9

**Voltage Pulse Input**

Connected

V+ 10
V− 1
+ PI0 11
− C0 2
+ PI7 18
− C7 9
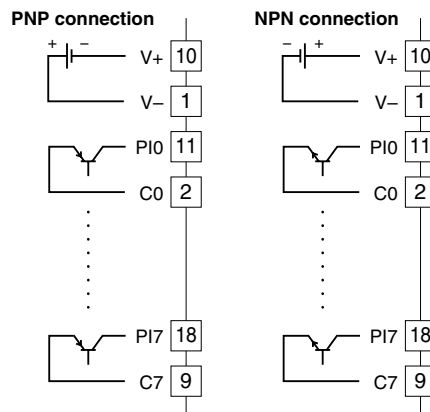
# DATA ACQUISITION & SETTING

The table below shows data allocation of R7D-PA8. Parameter preset and other settings are available with command setting of R7D-PA8. Set the commands according to the procedure explained next.

Parameter of each channel is two-word integer not signed. Make sure that data is written or read in a two-word unit.
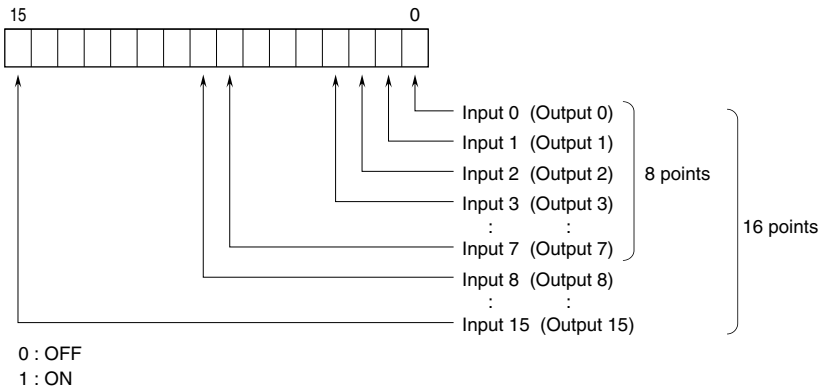
When overflowing, the value to which response can be set is "0" or "1". The maximum range available is 1000 to 4294967295. (Factory setting: 9999999)

Parameters may be preset to a value between the overflow response value and the maximum value.

OUTPUT DATA (bit 15 ... 0)

| Address | Data | CH |
|---|---|---|
| Begin +0 | Data to write (upper) | CH0 |
| +1 | Data to write (lower) | CH0 |
| +2 | Data to write (upper) | CH1 |
| +3 | Data to write (lower) | CH1 |
| +4 | Data to write (upper) | CH2 |
| +5 | Data to write (lower) | CH2 |
| +6 | Data to write (upper) | CH3 |
| +7 | Data to write (lower) | CH3 |
| +8 | Data to write (upper) | CH4 |
| +9 | Data to write (lower) | CH4 |
| +10 | Data to write (upper) | CH5 |
| +11 | Data to write (lower) | CH5 |
| +12 | Data to write (upper) | CH6 |
| +13 | Data to write (lower) | CH6 |
| +14 | Data to write (upper) | CH7 |
| +15 | Data to write (lower) | CH7 |
| +16 | Command setting<br>• Command address<br>　CH0: Bit 0, 1<br>　CH1: Bit 2, 3<br>　CH2: Bit 4, 5<br>　CH3: Bit 6, 7<br>　CH4: Bit 8, 9<br>　CH5: Bit 10, 11<br>　CH6: Bit 12, 13<br>　CH7: Bit 14, 15<br>• Command<br>　00: Read data<br>　01: Preset<br>　10: Overflow response value<br>　11: Maximum value | |
| +17 | Extension discrete output data | |
| +18 | – | |

INPUT DATA (bit 15 ... 0)

| Address | Data | CH |
|---|---|---|
| Begin + 0 | Data to read (upper) | CH0 |
| +1 | Data to read (lower) | CH0 |
| +2 | Data to read (upper) | CH1 |
| +3 | Data to read (lower) | CH1 |
| +4 | Data to read (upper) | CH2 |
| +5 | Data to read (lower) | CH2 |
| +6 | Data to read (upper) | CH3 |
| +7 | Data to read (lower) | CH3 |
| +8 | Data to read (upper) | CH4 |
| +9 | Data to read (lower) | CH4 |
| +10 | Data to read (upper) | CH5 |
| +11 | Data to read (lower) | CH5 |
| +12 | Data to read (upper) | CH6 |
| +13 | Data to read (lower) | CH6 |
| +14 | Data to read (upper) | CH7 |
| +15 | Data to read (lower) | CH7 |
| +16 | Command setting<br>• Command address<br>　CH0: Bit 0, 1<br>　CH1: Bit 2, 3<br>　CH2: Bit 4, 5<br>　CH3: Bit 6, 7<br>　CH4: Bit 8, 9<br>　CH5: Bit 10, 11<br>　CH6: Bit 12, 13<br>　CH7: Bit 14, 15<br>• Command<br>　00: Read data<br>　01: Preset<br>　10: Overflow response value<br>　11: Maximum value | |
| +17 | Extension discrete input data | |
| +18 | Status | |

# I/O DATA DESCRIPTIONS

■ **DISCRETE I/O**

```
15                           0
┌─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┐
└─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘
```

```
Input 0  (Output 0)  ┐
Input 1  (Output 1)  │
Input 2  (Output 2)  │ 8 points
Input 3  (Output 3)  │
  :          :        │        16 points
Input 7  (Output 7)  ┘
Input 8  (Output 8)
  :          :
Input 15 (Output 15)
```

0 : OFF
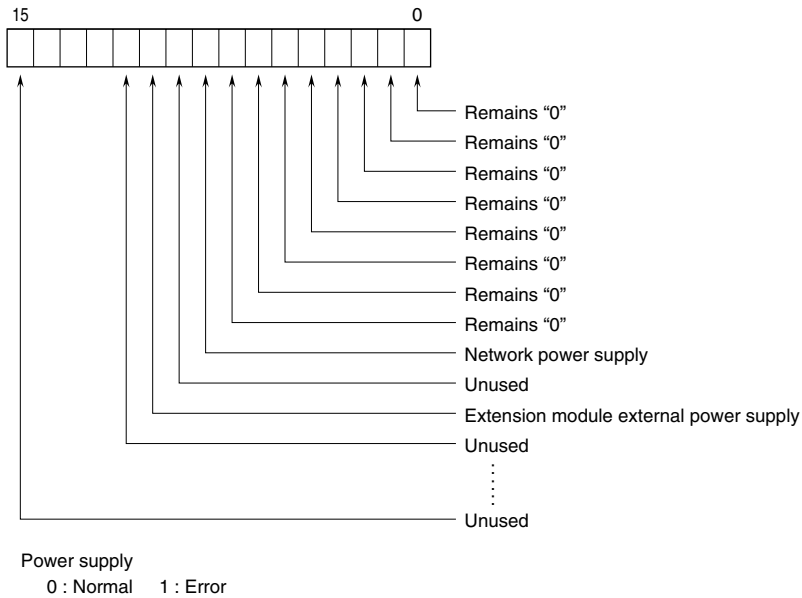1 : ON

■ **STATUS**

Bit 0 to 7: Totalized pulse input module shows '0' at the same address.
Bit 8 to 10: Shows the power supply status.

```
15                           0
┌─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┐
└─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘
```

Remains "0"
Remains "0"
Remains "0"
Remains "0"
Remains "0"
Remains "0"
Remains "0"
Remains "0"
Network power supply
Unused
Extension module external power supply
Unused
  :
Unused

Power supply
  0 : Normal    1 : Error

# TRANSMISSION DATA DESCRIPTIONS

## ■ BASIC MODULE

Transmitted data (word) depends upon the modules types.

| MODEL | OUTPUT DATA*1 | INPUT DATA*2 |
|---|---|---|
| | (R7D to Master) | (Master to R7D) |
| R7D-PA8 | 17 | 17 |

## ■ EXTENSION MODULE

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

| MODEL | OUTPUT DATA*1 | INPUT DATA*2 |
|---|---|---|
| | (R7D to Master) | (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 | INPUT DATA*2 |
|---|---|---|
| | (R7D to Master) | (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.
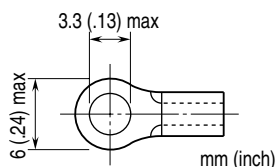
# WIRING INSTRUCTIONS

## ■ SCREW TERMINAL (Input)

Torque: 0.5 N·m

## • SOLDERLESS TERMINAL

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable.
Applicable wire size: 0.25 to 1.65 mm² (AWG 22 to 16)
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd, Nichifu Co., Ltd



## ■ EURO TYPE CONNECTOR TERMINAL (DeviceNet)

Applicable wire size: 0.2 – 2.5 mm²
Stripped length: 7 mm