TOTALIZED PULSE INPUT MODULE
(pi 2 points, 32 bits)

MODEL **R30PA2**

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.

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.

■ GENERAL PRECAUTIONS

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

■ HOT SWAPPABLE MODULES

• It is possible to replace a module with the power supplied provided that the module is replaced with one with the same model number and installed in the same base slot.
• Turn off input signals before replacing the module for safety. Note that replacing multiple modules at once may greatly change line voltage levels. We highly recommend to replace them one by one.

■ 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.
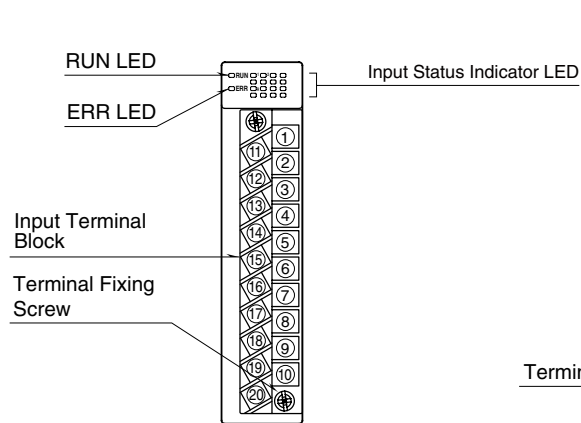
■ WIRING

• 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.
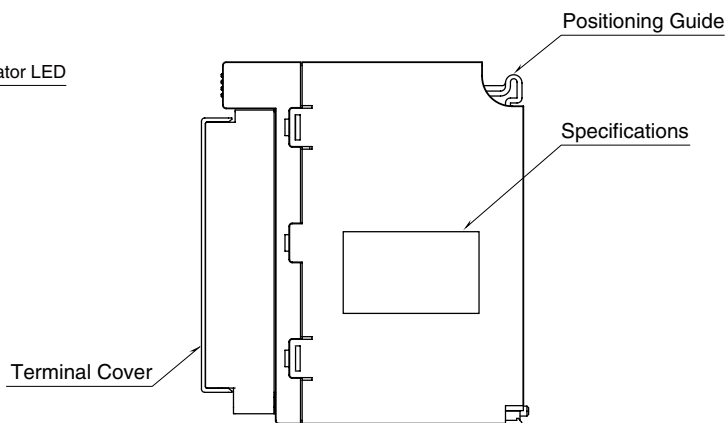• Be sure to attach the terminal cover for safety.

■ 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.
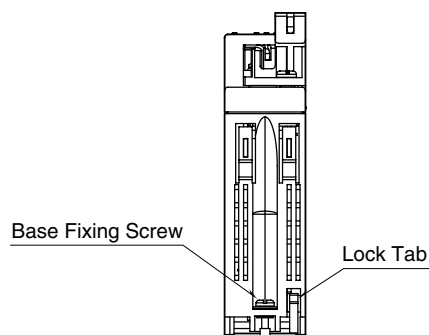
COMPONENT IDENTIFICATION

■ **FRONT VIEW**

■ **SIDE VIEW**

RUN LED

ERR LED

Input Status Indicator LED

Input Terminal Block

Terminal Fixing Screw

Positioning Guide

Specifications

Terminal Cover

■ **BOTTOM VIEW**

Base Fixing Screw

Lock Tab

■ **STATUS INDICATORS**

ID	COLOR	FUNCTION
RUN	Green	ON in normal host communication OFF in host communication error
ERR	Red	OFF when internal bus operates normally ON when an internal bus error occurs ON during reset/preset processing (approx. 1 sec.)
Input Status Indicator	Green	1, 2: Totalized pulse input 　ON: LED On 　OFF: LED Off R: Reset input 　ON: LED On 　OFF: LED Off

■ **TERMINAL ASSIGNMENTS**

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	PI1	Input 1	11	C1	Common
2	PI2	Input 2	12	C2	Common
3	NC	No connection	13	NC	No connection
4	NC	No connection	14	NC	No connection
5	NC	No connection	15	NC	No connection
6	NC	No connection	16	NC	No connection
7	NC	No connection	17	NC	No connection
8	NC	No connection	18	NC	No connection
9	RST+	Reset input (+)	19	RST−	Reset input (−)
10	V+	External Excitation (+)	20	V−	External Excitation (−)

COUNT RESET

There are two different ways to reset count value.

■ COUNT RESET WITH RESET SIGNAL

With the configurator software (model: R30CFG), enable the external reset input setting. The count reset signal becomes enabled.

One pulse supplied at the Count reset input terminal will be recognized as a reset signal.

1) ERR LED turns on (red color) when the reset signal is received.

2) In 1 second, the module starts resetting its counter.

3) After 1 second, ERR LED turns back to the state before the reset signal has been received.

Note: Reset signals received while the module is processing (1) through (3) are ignored. Even when the count overflow set value is 1, the counter is reset to 0.

■ COUNT RESET FROM HOST PC/PLC

Refer to "COUNTER SETTING FROM HOST PC/PLC" section hereafter.

COUNTER SETTING FROM HOST PC/PLC

■ COUNT RESET

(Available for R30NECT1, R30NCIE1)

In n+0 word of the output data from host PC/PLC, the bits to reset the totalized value of each channel are allocated.

By changing the bits from 0 to 1, the totalized value data of each channel is reset. When it is confirmed that the totalized values are reset, return the bits to 0.

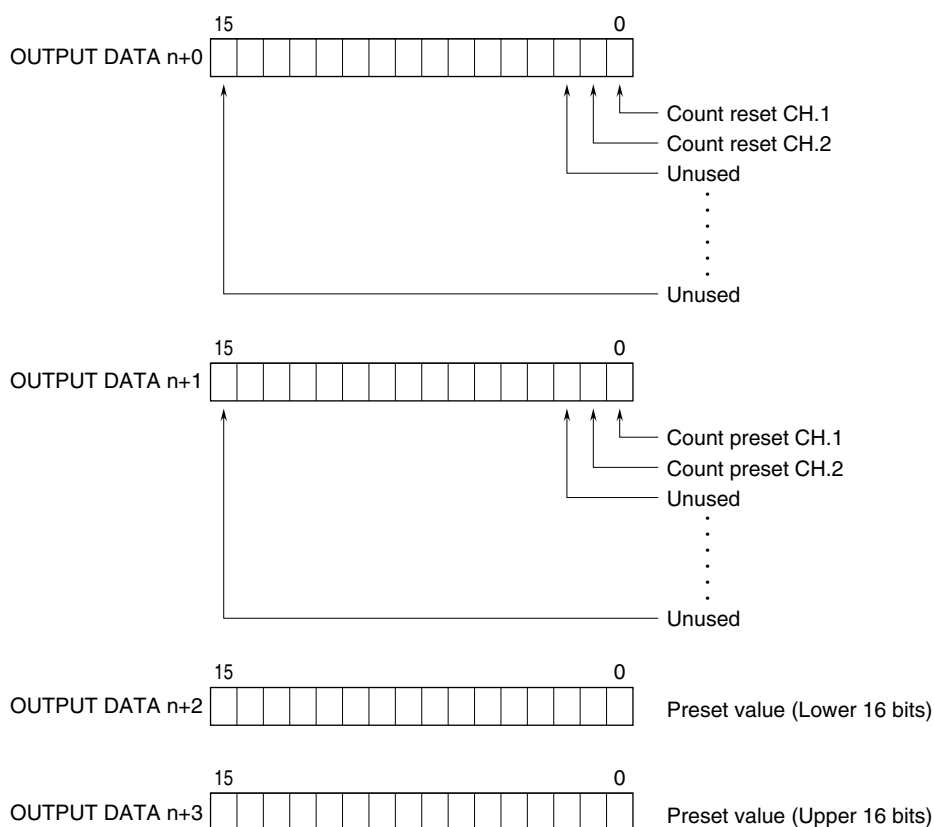Notice that if the reset bit remains at 1, the next reset will not work.

■ COUNT PRESET

(Available for R30NECT1, R30NCIE1)

Write the preset values in n+2 and n+3 word of the output data from host PC/PLC. As the bits to preset the totalized value of each channel are allocated in n+1 word, by changing the bits from 0 to 1, the preset values are reflected to the totalized value data of each channel.

When it is confirmed that the totalized values are preset, return the bits to 0.

Notice that if the preset bit remains at 1, the next preset will not work.

OUTPUT DATA n+0

15															0

- Count reset CH.1
- Count reset CH.2
- Unused
  :
  :
- Unused

OUTPUT DATA n+1

15															0

- Count preset CH.1
- Count preset CH.2
- Unused
  :
  :
- Unused

OUTPUT DATA n+2

15															0

Preset value (Lower 16 bits)

OUTPUT DATA n+3

15															0

Preset value (Upper 16 bits)

Note: When reset and preset are simultaneously output, reset overrides preset.

DATA ALLOCATION

| ADDRESS	CONTENTS
+0	Input 1 totalized value (lower 16 bits)
+1	Input 1 totalized value (upper 16 bits)
+2	Input 2 totalized value (lower 16 bits)
+3	Input 2 totalized value (upper 16 bits)

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 codes. When an I/O slot is vacant, blank data is sent or received to/from the PLC, etc.
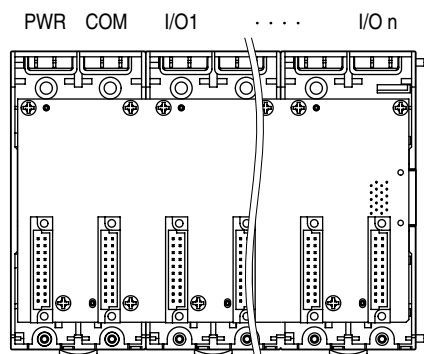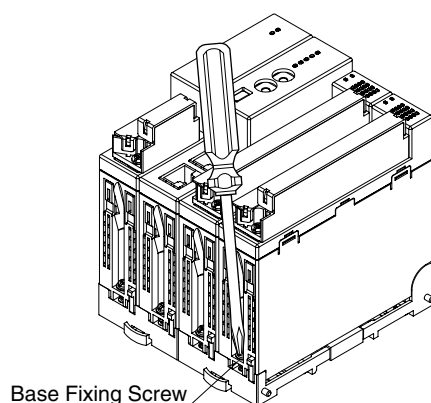

■ HOW TO MOUNT THE MODULE

1) Engage the positioning guide of the module with the Installation Base.

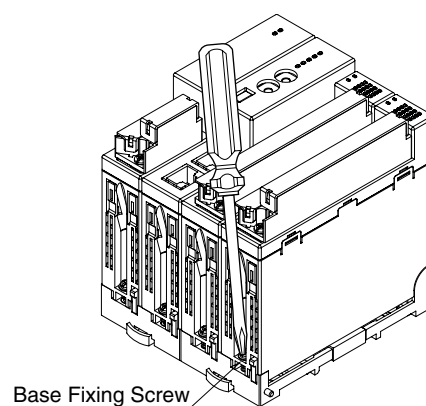2) Pivot the module on the positioning guide and press it down until the lock tab clicks into place.

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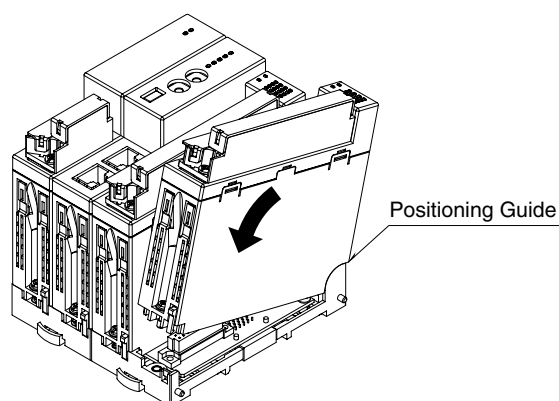
3) Tighten the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more) (torque 0.5 N·m).
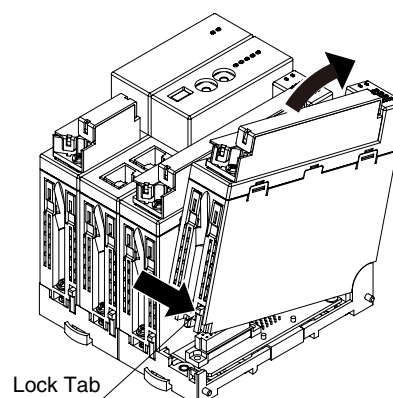

Base Fixing Screw

■ HOW TO REMOVE THE MODULE

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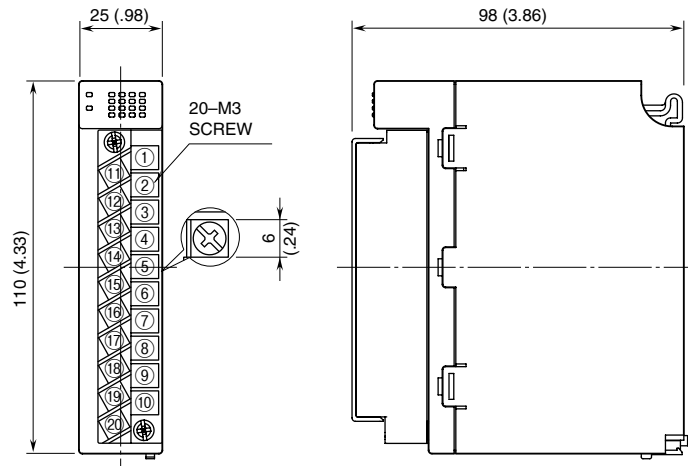

Base Fixing Screw

2) While pressing the projection on the lock tab, push the module upward.

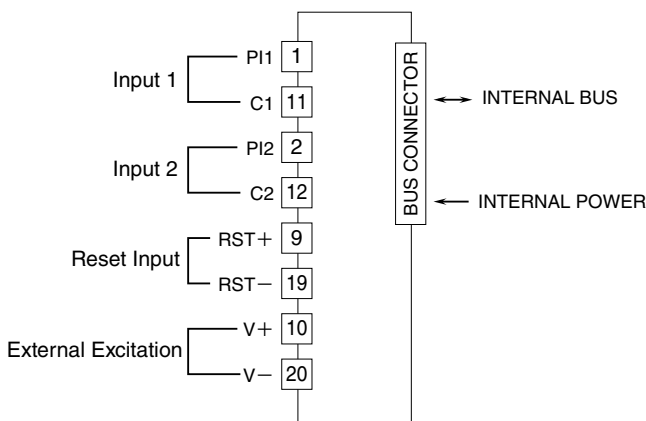3) Detach the positioning guide of the module from the Installation Base.

Lock Tab

TERMINAL CONNECTIONS

Connect the unit as in the diagram below.
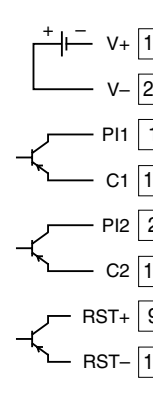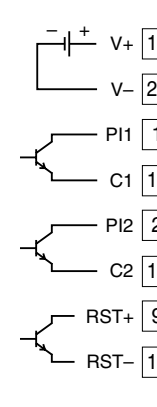
■ EXTERNAL DIMENSIONS unit: mm (inch)

25 (.98)

20–M3 SCREW

110 (4.33)

6 (.24)

98 (3.86)

■ CONNECTION DIAGRAM

Input 1 — PI1 | 1
— C1 | 11

Input 2 — PI2 | 2
— C2 | 12

Reset Input — RST+ | 9
— RST− | 19

External Excitation — V+ | 10
— V− | 20

BUS CONNECTOR ↔ INTERNAL BUS
← INTERNAL POWER

■ Input Connection Examples

PNP Connection

V+ | 10
V− | 20

PI1 | 1
C1 | 11

PI2 | 2
C2 | 12

RST+ | 9
RST− | 19

NPN Connection

V+ | 10
V− | 20

PI1 | 1
C1 | 11

PI2 | 2
C2 | 12

RST+ | 9
RST− | 19

Voltage pulse input

Short

V+ | 10
V− | 20

+ — PI1 | 1
− — C1 | 11

+ — PI2 | 2
− — C2 | 12

+ — RST+ | 9
− — RST− | 19
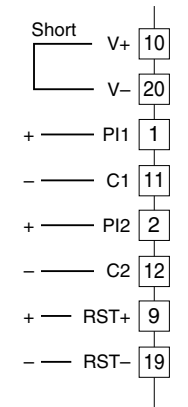
WIRING INSTRUCTIONS

■ 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.
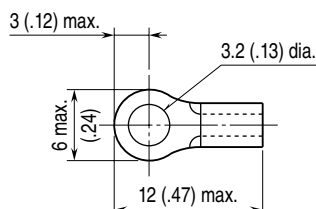
■ HOW TO REMOVE SEPARABLE SCREW TERMINAL

The terminal block is separable in two pieces. Evenly loosen two screws on top and bottom of the terminal block to separate.

PC CONFIGURATOR

The following parameter items can be set with using PC Configurator Software (model: R30CFG).
Refer to the users manual for the R30CFG for detailed operation of the software program.

■ CHANNEL INDIVIDUAL SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Max no. of totalized pulse	1 – 4,294,967,295	4,294,967,295
Count at overflow (value to which the count returns)	0 1	0
Preset value	0 – Max no. of totalized pulse	0

■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Count pulse edge	Falling edge (DI-ON)/ Rising edge (DI-OFF)	Falling edge (DI-ON)
External reset pulse edge to detect	Falling edge (DI-ON)/ Rising edge (DI-OFF)	Falling edge (DI-ON)
External reset detection	Disable Enable	Disable
Reset/preset from host PC/PLC	Disable Enable	Disable
Simulate input	Normal input Simulate input	Normal input