

CONPROSYS nano Series  
Counter Module 32bit Counter Isolation  
**CPSN-CNT-3201I**



**Features**

**Count two-phase signals**

This product can count two-phase and single-phase signals including encoders, and linear scales. It is equipped with one 32-bit up/down counter.

**Opto-coupler isolated input**

Opto-coupler isolated input of 500 kHz response frequency within.

**Interrupt, Output signal**

Generate an interrupt or output one-pulse signal when the count data of the channel matches a specified value.

**Digital filter to prevent input signals from carrying noise or a chattering**

This product has a digital filter to prevent input signals from carrying noise or a chattering. All input terminals can be added a digital filter, and the setting can be performed by software.

**Output circuit include zener diodes for surge voltage protection**

Zener diode is connected to the output circuit to protect against surge voltages. The rated output is 35VDC, 50mA to the maximum per channel.

**Easy installation and removal**

This product can be installed in and removed from the CPU unit without any tools

**Adaptable to a wide range of temperature between -20 and +60°C**

The product is capable of operating in the temperature between -20 and + 60°C. It can be installed in the various environments.

**Equipped with the LED for an operation check**

The product has the LED for an operation check, which helps you visually confirm the communication status of each interface.

**List of Options**

**CPU unit**

- CPSN-MCB271-S1-041: Remote I/O Model CPU unit
- CPSN-MCB271-1-041: Remote I/O CPU unit LAN 2-channel model
- CPSN-PCB271-S1-041: CODESYS Modbus Master CPU unit

**DIN rail mounting power supply**

- CPS-PWD-30AW24-01: DIN rail mounting power supply 30[W]  
Input: 100 - 240VAC, output: 24VDC 1.3 A)
- CPS-PWD-90AW24-01: DIN rail mounting power supply 90[W]  
Input: 100 - 240VAC, output: 24VDC 3.8 A)

\* Visit the Contec website regarding information on the optional products.

This product is a I/O module that adds the interface, which counts input pulse signals from external devices, to the CPU Unit of the CONPROSYS nano series.

It has one channel of 32-bit up/down counters, allowing external devices such as a rotary encoder and a linear scale to be connected.

Examples are given for “detecting a position of the table of a machine tool” and “detecting a change in weight”.

\* Specifications, color and design of the products are subject to change without notice.

\* The contents in this document are subject to change without notice.

\* Visit the CONTEC website to check the latest details in the document.

\* The information in the data sheets is as of July 2022.

**Specifications**

**Function specifications**

Item		Description
Counter Input	Number of Channels	1
	Count system	Up/down counting
	Max. count	FFFFFFFF (binary data, 32-bit)
	Counter input type	Opto-coupler isolated input (Compatible with current sink output) (Positive logic)
	Isolation	Opto-coupler Isolation
	Voltage Resistance	1000V
	Counter input signal	Phase-A/UP 1 x 1 channel Phase-B/DOWN 1 x 1 channel Phase-Z/CLR 1 x 1 channel
	Input register	When external power is set as 5V: 220Ω When it is set as 12V: 690Ω
	Input maximum voltage/current	Upon setting 5V external power: 5.25V 25mA Upon setting 12V external power:13.2V 25mA
	Input ON current	12mA or more
	Input OFF current	0.8mA or less
	Response frequency	500kHz duty 50% (Max)
	Interrupt level	One interrupt caused upon channel count match or timer time-out
	External power*1	5V ±5% or 12VDC ±10% Min. 200mA
General-Purpose Input	Opto-coupler input current	Opto-coupler primary current 15 - 25mA
	Digital filter	0.1μsec - 1056.1μsec
	LED	A, B, Z, (Green)
	Input type	Opto-coupler Isolation Input (Compatible with current sink output) (Negative logic)
	Isolation	Opto-coupler Isolation
	Voltage Resistance	1000V
	Number of input signal channels	1 x 1 channel
	Input Resistance	When external power is set as 5V: 220Ω When it id set as 12V: 690Ω
	Input ON current	8mA or more
	Input OFF current	0.16mA or less
Match Signal Output	Response time	Within 200μs
	External power*1	5V ±5% or 12VDC ±10% Min. 200mA
	LED	DI (Green)
	Output point	1 x 1 channel
	Output type	Opto-coupler isolated open collector output
	Output rating	35VDC (Max), 50mA (per 1 point)
	Residual Voltage with Output ON	0.5V or less
Output signal width	0 - 104.45msec	
Output protection circuit	Zener diode CMZB47 (Toshiba) or equivalence	

Item	Description
External power	5V - 12VDC±10%
Connector	2 pieces 3.81mm pitch 10-pin terminal
Applicable wire	AWG28 - 16
Current consumption	0.1A (Max)
Physical dimensions (mm)	15.6(W)×52.6(D)×84(H) (No projection included)
Weight	50g

\*1 Use 5V or 12V power appropriately as an input resistance can be switched by DIP switch.

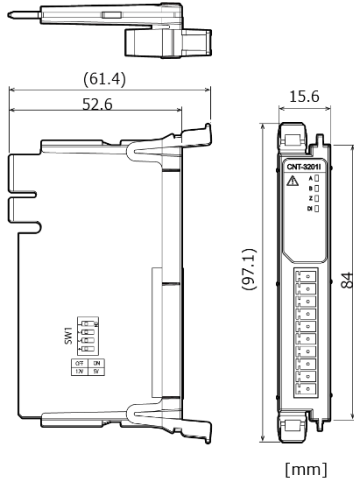
**Installation Environment Requirements**

Item	Description
Operating ambient temperature	-20 - +60°C (Vertical installation) -20 to +55°C with a vertical installation at an angle of 90° to the left/right or with a horizontal installation.
Operating ambient humidity	10 - 90%RH (No condensation)
Non-operating ambient temperature	-20 - +60°C
Non-operating ambient humidity	10 - 90%RH (No condensation)
Floating dust particles	Not to be excessive
Corrosive gases	None
Line-noise resistance	Line noise Signal Line /±1kV (IEC61000-4-4 Level 3, EN61000-4-4 Level 3)
	Static electricity resistance Touch /±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2) Air /±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)
Vibration resistance	Sweep resistance 10 - 57Hz *1 /semi-amplitude vibration 0.15mm, 57 - 150Hz/2.0G 40minutes each in X, Y, and Z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
	Shock resistance 15G half-sine shock for 11ms in X, Y, and Z directions (JIS C 60068-2-27-compliant, IEC 60068-2-27-compliant)
Standard	VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

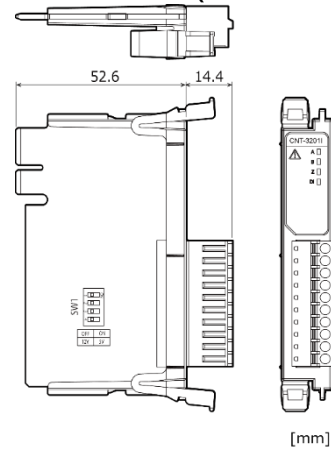
\*1 With the optional DIN rail fitting power supply: 10 - 55Hz (for details, see the user's guide of the optional power supply).

**Physical Dimensions**

**Physical dimensions of CPSN-CNT-32011.**



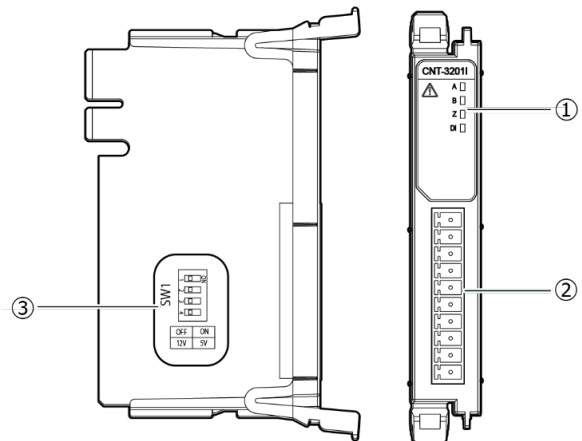
**Physical dimensions of CPSN-CNT-32011 (with connector attached)**



**Packing List**

- Product ...1
- 10-pin connector (attached to the product)...1
- Product Guide & Warranty Certificate... 1
- Serial Number Label ...1

**Name of each parts**



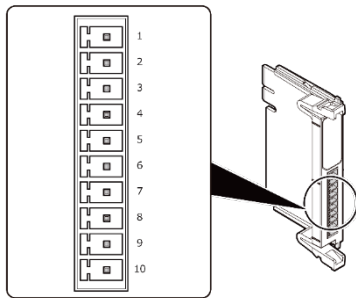
- (1) LED Indicator : This indicates status of the product.
- (2) Interface Connector : Connector for Relay Output.  
Use the 10-pin connector included in the package.

No.	Name	Function
1	LED Indicator	This indicates status of the product.
2	Counter Input Connector	This is a connector for counter input. (Use the 10-pin connector, included in the package)
3	DIP Switch	Used for voltage setting of external power supply.

## Counter Input Connector

This product has phase-A, phase-B, phase-Z, general-purpose input signals, and match signal output of counters.

Use the 10-pin connector, included in the package to connect to external power. Connector type: DEGSON 15EDGKC-3.81-10P-13-00AH (or equivalent)



Pin No.	Signal Name	Description
1	PCOM	Positive common of input signal. It connects the positive side of external power.
2	PA	For phase-A input.
3	PB	For phase-B input.
4	PZ	For phase-Z input.
5	PDI	For general purpose input.
6	EQP	Positive common of match signal output. It connects the positive side of external power.
7	EQ	Count match output.
8	EQ.N	Negative common of match signal output. It connects the negative side of external power.
9	N.C.	This pin is left unconnected.
10	N.C.	This pin is left unconnected.

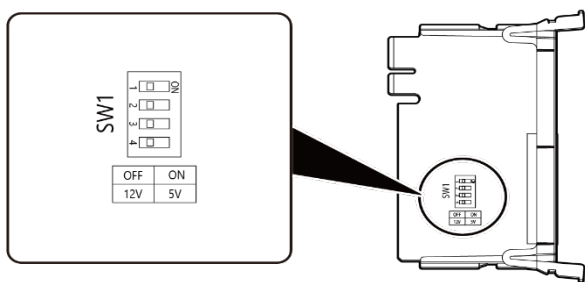
### Cable

Use the counter input cable described below.

<b>Cable</b>	Use copper wires that tolerate the temperature of 75°C and higher.
<b>Applicable wire</b>	AWG28 - 16
<b>Cable Length</b>	The length differs depending on the actual use environment.

## DIP Switch

A DIP Switch is used for external power supply voltage setting. By switching on or off, it can support both 5V and 12V external power.



SW Number	Description
1	This switches phase-A input resistance. Turning on for 5 V. Turning off for 12V.
2	This switches phase-B input resistance. Turning on for 5 V. Turning off for 12V.
3	This switches phase-Z input resistance. Turning on for 5 V. Turning off for 12V.
4	This switches input resistance of general-purpose input signals. Turning on for 5 V. Turning off for 12V.

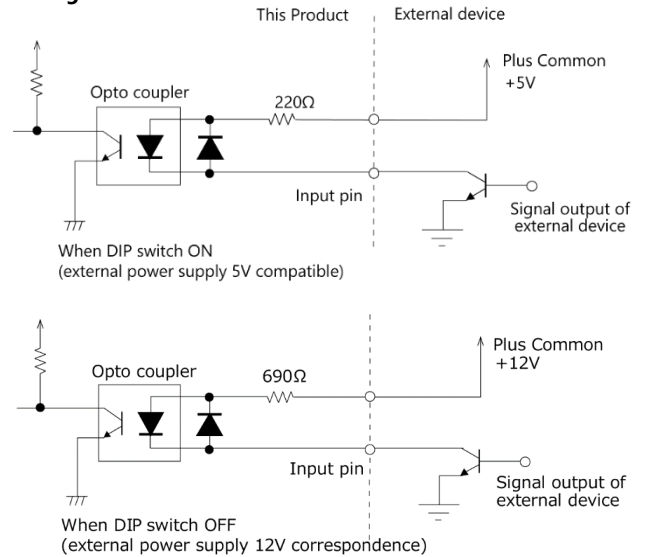
## Opto-coupler Isolated Input Circuit

Opto-coupler isolated input connection with a rotary encoder or a linear scale open collector output circuit is shown in the figure below.

[The maximum input frequency] : 500 kHz

For a two-phase input, connect both phase A and phase B.  
For a single phase input, connect to either phase A or phase B.  
If not using the Z phase, this does not need to be connected.

### Connecting to an external device

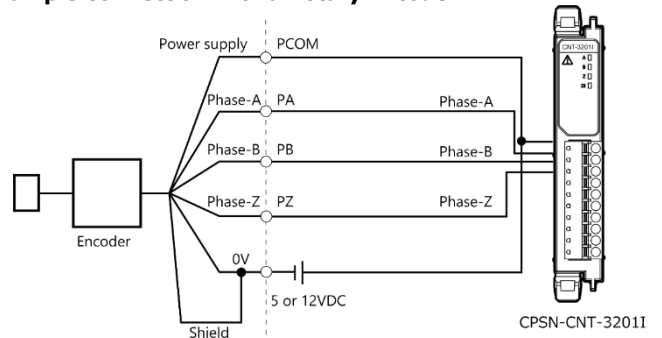


\*The general-purpose input signals use the same circuit structure.

### CAUTION

- To use external power 5V, turn on all the DIP switches on the side of the product.
- To use external power 12V, turn off all the DIP switches on the side of the product.

### Example Connection with a Rotary Encoder



### Example Connection with a Linear Scale

