CONPROSYS nano Series
Counter Module 32bit Counter Isolation

CPSN-CNT-3201I2

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 March 2026.

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.

Support for synchronization function *
Support for the synchronization control function provided by the installed CPU unit. The input/output timing can be controlled based on the synchronization signal from the CPU unit, and control and measurement with the timing of the entire system are realized.

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.

* For details of the functions, refer to the software manual of each CPU unit.

Specifications

Function specifications

Item		Description
Counter Input	Number of Channels	1
	Count system	Up/down counting
	Max. count	FFFFFFFFH (binary data, 32-bit)
	Counter input type	Opto-coupler isolated input (Compatible with current sink output) (Positive logic) *1
	Isolation	Opto-coupler Isolation
	Voltage Resistance	1500V
	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 *2	When external power is set as 5V: 900Ω When external power is set as 12V: 2700Ω When external power is set as 24V: 5700Ω
	Input ON current	1.77mA or more
	Input OFF current	0.47mA or less
	Response frequency	500kHz duty 50% (Max.)
	Interrupt level	One interrupt caused upon channel count match or timer time-out
	External power *2	5V ±5% or 12VDC ±10% or 24VDC ±10% Min. 200mA
	Opto-coupler input current	Opto-coupler primary current 15 - 25mA
	Digital filter	0.1µsec - 52.4288ms
	LED	A, B, Z, (Green)
General-Purpose Input	Input type	Opto-coupler Isolation Input (Compatible with current sink output) (Negative logic) *3
	Isolation	Opto-coupler Isolation
	Voltage Resistance	1500V
	Input Resistance *2	When external power is set as 5V: 900Ω When external power is set as 12V: 2700Ω When external power is set as 24V: 5700Ω
	Input ON current	1.77mA or more
	Input OFF current	0.47mA or less
	External power *2	5V ±5% or 12VDC ±10% or 24VDC ±10% Min. 200mA
	Response time	Within 0.1µsec
	Control input signal	- Preset (Select Rise or Fall) - Zero-clear (Select Rise or Fall) - Counter start/stop (Select Rise or Fall) - General-purpose input (positive logic) Software-selected from among the above four options
Match Signal Output	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

Item		Description
	Output protection circuit	Zener diode CMZB47 (Toshiba) or equivalence
	External power	5V - 24VDC±10%
	Control output signal	- Count match 0 output (one-shot pulse output) - Count match 1 output (one-shot pulse output) - Abnormal input error output (one-shot pulse output) - General-purpose output (Level output) Software-selected from among the above four options
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 Data "0" and "1" correspond to the Low and High levels, respectively.
*2 Use 5V, 12V or 24V power appropriately as an input resistance can be switched by DIP switch.
*3 Data "1" and "0" correspond to the Low and High levels, respectively.

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, ISED

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

List of Options

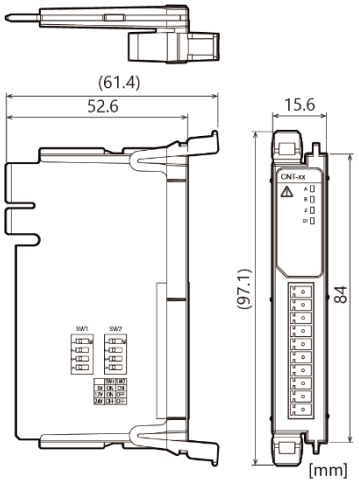
Product Name	Model type	Description
CPU unit	CPSN-MCB271-S1-041	Remote I/O CPU unit
	CPSN-MCB271-1-041	Remote I/O CPU unit LAN HUB *1
	CPSN-MCB271-1-081	Remote I/O CPU unit LAN HUB, 8slot *1
	CPSN-PCB271-S1-041	CODESYS Modbus Master CPU unit
	CPSN-EOB471EC-41	Remote I/O CPU unit (ETherCAT, 4slot)
	CPSN-EOB471EC-81	Remote I/O CPU unit (ETherCAT, 8slot)
USB I/O Unit - Module Type	CC-USB271-CPSN4	USB I/O Unit - Module Type (4 slot) *1
DIN rail fitting power supply	CPS-PWD-30AW24-01	Fitting power supply 30W (Input: 100 - 240VAC, Output: 24VDC 1.3 A)
	CPS-PWD-90AW24-01	Fitting power supply 90W (Input: 100 - 240VAC, Output: 24VDC 3.8 A)

*1 Available with our device driver API-TOOL.

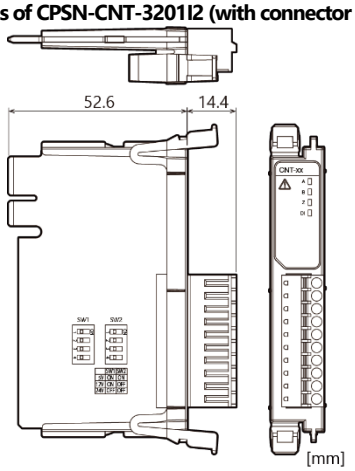
* Visit the Contec website regarding information on the optional products.

Physical Dimensions

Physical dimensions of CPSN-CNT-3201I2.



Physical dimensions of CPSN-CNT-3201I2 (with connector attached)

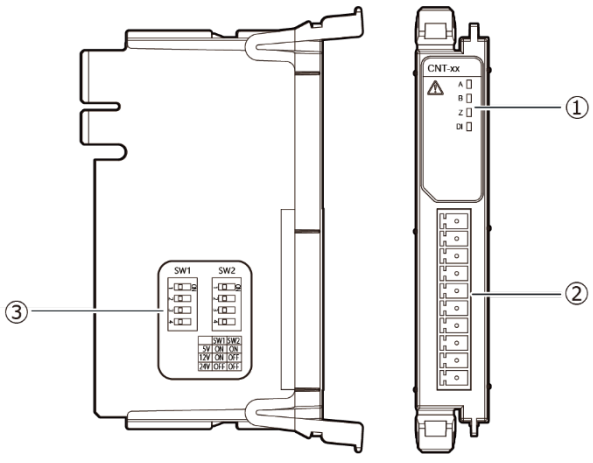


Packing List

Product ...1
10-pin connector (attached to the product) ...1
Please read the following ... 1

* This product is verified in conformity with our recommended power supply. In case you use other power supplies, thus, it may not be able to fulfil certification requirements. Please see the CONTEC website regarding power supply recommendation (https://www.contec.com/).

Name of each parts



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.

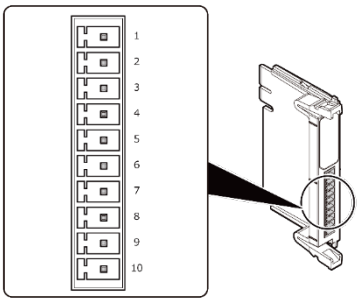
Counter Input Connector

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.

- Mounted Connector
  10-pin European style terminal block (3.81mm pitch, 10 x 1 row)
  MC 1.5/10-G-3,81 P26 THR [Phoenix Contact] or equivalent

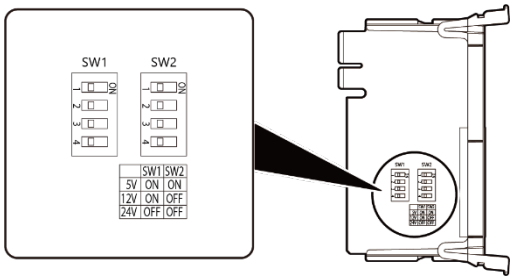
- Compatible Connector
  10-pin European style terminal block (3.81mm pitch, 10 x 1 row)
  FK-MCP 1.5/10-ST-3,81 [Phoenix Contact] or equivalent)



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	EQ.P	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.

DIP Switch

A DIP Switch is used for external power supply voltage setting.
By switching on or off, it can support both 5V, 12V and 24V external power.



*The factory default of all switches are set to "OFF".

SW Number	Description
1	This switches phase-A input resistance. The setting is 5 V when both SW1 and 2 are ON, 12 V when SW1 is ON and SW2 is OFF, and 24 V when both SW1 and 2 are OFF.
2	This switches phase-B input resistance. The setting is 5 V when ON for both SW1 and 2, 12 V when ON for SW1 and OFF for SW2, and 24 V when OFF for both SW1 and 2.
3	This switches phase-Z input resistance. The setting is 5 V when ON for both SW1 and 2, 12 V when ON for SW1 and OFF for SW2, and 24 V when OFF for both SW1 and 2.
4	This switches input resistance of general-purpose input signals. The setting is 5 V when ON for both SW1 and 2, 12 V when ON for SW1 and OFF for SW2, and 24 V when OFF for both SW1 and 2.

Opto-coupler Isolated Input Circuit

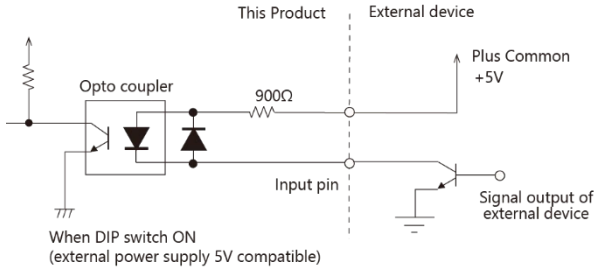
Opto-coupler isolated input connection with a rotary encoder or a linear scale open collector output circuit is shown in the figure below.

[The maximum input frequency] : 500 kHz.

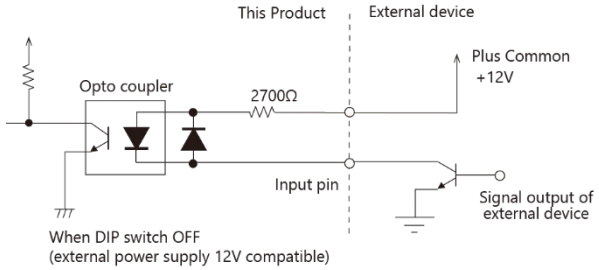
For a two-phase input, connect both phase A and phase B.
For a single phase input, connect to either phase A or phase B.
If not using the Z phase, this does not need to be connected.

Connecting to an external device

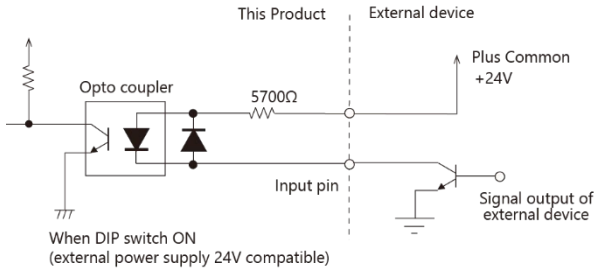
- When external power supply is 5V



- When external power supply is 12V



- When external power supply is 24V

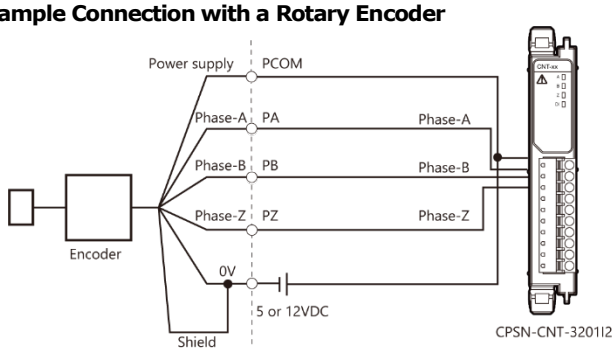


*The general-purpose input signals use the same circuit structure.

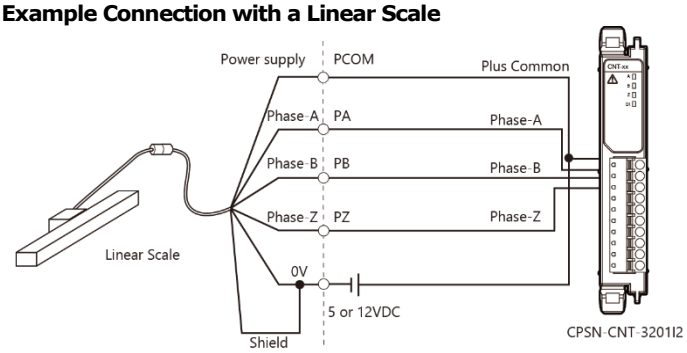
⚠ CAUTION

- To use external power 5V, turn on all the DIP switches on the side of the product.
- To use external power 12V, turn on all the DIP switches 1 and turn off all the DIP switches 2 on the side of the product.
- To use external power 24V, turn off all the DIP switches on the side of the product.

Example Connection with a Rotary Encoder

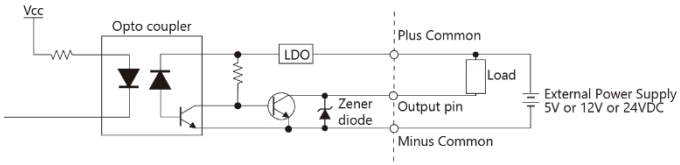


Example Connection with a Linear Scale



One-shot Pulse Output Connection

When the count value of each channel and the user set value match, the circuit outputs a matched signal for one shot (1 pulse).



* The pulse wide setting can be done on Web browser menu. Refer to the Reference Manual (Software) for setting procedure.