CONPROSYS nano Series
Digital Input Module 16ch, Built-in power supply
CPSN-DI-16BCL

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

This product is an expansion I/O module that adds an opto-coupler isolated input interface with a response speed of 200 μs or less to the CPU unit or USB I/O Unit - Module Type of the CONPROSYS nano series.

The product is equipped with 16 inputs and 1 common that support current sink/source output, and the internal circuit power supply of 12V and the external circuit power supply of 12-24V can be switched with the switch.

* 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 November 2023.

Features

- Opto-coupler isolated input

The product contains 16 channels of opto-coupler isolated input whose response speed is 200μsec or less. Also, current sink outputs and current source outputs are switchable with the switch.

- Internal circuit power supply and external power supply

The switch is equipped to switch between the internal circuit power supply of 12V and the external circuit power supply of 12-24V.

- All of the input signals are usable as interrupt events

You can use all of the input signals as interrupt events and also disable or enable the interrupt in bit units and select the interrupt edge.

- Equipped with a digital filter function to prevent false recognition of input signals due to noise and chattering

This product is equipped with a digital filter that can prevent input signal noise and chattering. The input digital filter can be applied to all input terminals individually, and configuration can be performed using the software.

- Input counter function

Digital input and counter input can be switched per channel.   The counter values are automatically saved upon turning off the power.

- Easy installation and removal

This product can be installed in and removed from the CPU unit or USB I/O Unit - Module Type without any tools.

- Adaptable to a wide range of temperature between -20 and +60℃

The product is capable of operating in the temperature between -20 and + 60℃. 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.

Specification

Function Specifications

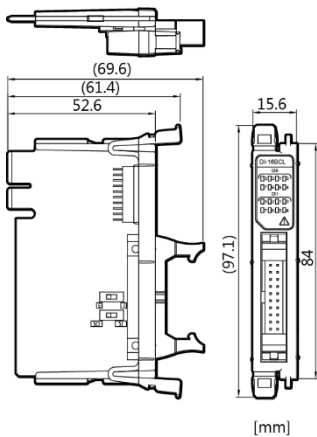| Item	Description
Input	
Input type	Opto-coupler isolated input (supports current sink [negative logic] output *1/current source [positive logic] output *2)
Isolation	Opto-coupler Isolation
Voltage Resistance	500VACrms
Input Resistance	8.2kΩ
Input ON current	1.0mA or more
Input OFF current	0.16mA or less
Interrupt	16 interrupt input signals are arranged into a single output of interrupt signal. An interrupt is generated at the falling edge (HIGH-to-LOW transition) and the rising edge (LOW-to-HIGH transition) or at both of the edges. (setting can be done by software)
Software filter (LPF)	1msec – 1000msec *3
Response time	Within 200μsec
Number of input signal channels	16 (shared common)
LED	DI00 – DI07 (Green), DI10 – DI17 (Green)
Common	
Connector	MIL connector 20-pin (2.54mm pitch 10 x 2 lines)
Applicable wire	Flat cable with MIL connector
External circuit power supply	12 - 24VDC (±10%)
Internal circuit power supply	12VDC Combined current output of 62 mA allowed as external output current for all inputs
Electricity consumption	5V 0.15A (Max.) 3.3V 0.10A (Max.)
Allowable distance of signal extension	Approx. 50m (depending on wiring environment)
Physical dimensions (mm)	15.6 (W) x 52.6(D) x 84(H) (not include projection)
Weight	50g

*1   Data "0" and "1" correspond to the High and Low levels, respectively.
*2   Data "0" and "1" correspond to the Low and High levels, respectively.
*3   To meet the specified CE EMC Directive, set the digital filter one meter or longer.

Packing List

Product [CPSN-DI-16BCL] ...1
Product Guide & Warranty Certificate ...1
Serial Number Label ... 1

Installation Environment Requirements

Item		Description
Operating ambient temperature *1		-20 - +60°C (Vertical installation) -20°C 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 *2 /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 Derating by way of the output current is necessary. (Refer to "Derating" of reference manual for details.)
*2 With the optional DIN rail fitting power supply: 10 - 55Hz (for details, see the user's guide of the optional power supply).

Physical Dimensions

(69.6)
(61.4)
52.6
15.6
(97.1)
84
[mm]

List of Options

Product Name	Model type	Description
CPU unit	CPSN-MCB271-S1-041	Remote I/O CPU unit *1
	CPSN-MCB271-1-041	Remote I/O CPU unit LAN HUB model *1
	CPSN-PCB271-S1-041	CODESYS Modbus Master CPU unit
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 for the latest optional products.
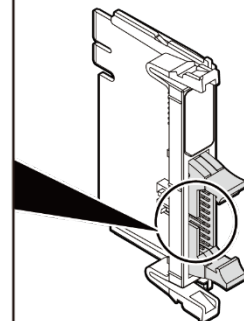
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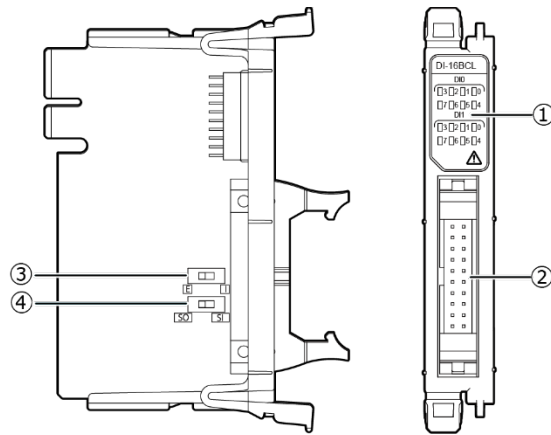
No.	Name	Function
1	LED Indicator	Displays the digital input status.
2	Interface Connector	This is a connector for digital input.
3	Power Supply Switching Switch	Use this switch to switch between the internal circuit power supply and the external circuit power supply.
4	Output Type Switching Switch	Sink Output or Source Output: Use this switch to switch the output types.

Digital Input Connector

This product has 16 channels of digital input. Connect with the 20-pin MIL connector.

Connector used on the product: XG4A-2034 (OMRON)
Compatible connector type: XG4M-2030 (OMRON)

PCOM	1			2	PCOM
MCOM	3			4	MCOM
DI17	5			6	DI07
DI16	7			8	DI06
DI15	9			10	DI05
DI14	11			12	DI04
DI13	13			14	DI03
DI12	15			16	DI02
DI11	17			18	DI01
DI10	19			20	DI00

Pin Assignment

Pin No.	Signal Name	Description
1, 2	PCOM	When connecting to sink output, connect these pins to the positive side of the external circuit power supply. There is one common for all inputs of DI00 - DI07 and DI10 - DI1. When external circuit power supply and source output are set, they are left unconnected (N.C).
3, 4	MCOM	When connecting to source output, connect these pins to the negative side of the external circuit power supply. There is one common for all inputs of DI00 - DI07 and DI10 - DI1. When external circuit power supply and sink output are set, they are left unconnected (N.C).
6, 8, 10, 12, 14, 16, 18, 20	DI00 - DI07	This indicates the input signals. It connects the output signals from the other devices.
5, 7, 9, 11, 13, 15, 17, 19	DI10 - DI17	This indicates the input signals. It connects the output signals from the other devices.

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Switching Switch

The product has switches to switch between internal and external circuit power supplies, and also between sink and source outputs.
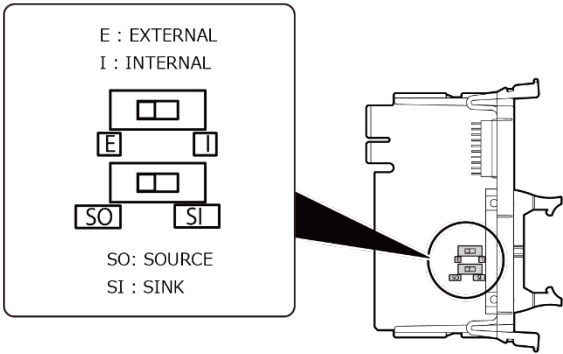
Switch

Switch	Description
Power Supply Switching Switch	Use this switch to switch between the internal and external circuit power supplies. I: Use the internal circuit power supply of 12V. (INTERNAL, Factory settings.) E: Use the external circuit power supply. (EXTERNAL)
Output Type Switching Switch	Use this switch to switch the output types. SI: Sink output (SINK, Factory settings.) SO: Source output (SOURCE)

The signals on the interface connector change as listed below according to the switch setting

Power Supply Switching		EXTERNAL	EXTERNAL	INTERNAL	INTERNAL
Output Type Switching		SINK	SOURCE	SINK	SOURCE
Pin No.	1, 2	PCOM	N.C.	PCOM	PCOM
	3, 4	N.C.	MCOM	MCOM	MCOM