

CONPROSYS nano Series
Analog Output Module 12bit DAC
CPSN-AO-1204LI



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

Features

Analog outputs with bus isolation type

Analog voltage output and analog current output with bus isolation type are equipped.

Supportable for various voltage output ranges and current output types

With the product, the output ranges of $\pm 5V$, 0 to +10V, 0 to +5V, and 0 to +20mA can be switched by software command.

Synchronization function supported

The synchronization control function provided by the installed CPU unit is supported.

You can control the timing of input and output according to the synchronization signal from the CPU unit, allowing for control and measurement that are aligned with the timing of the entire system.

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.

No electrolytic capacitor

Without an electrolytic capacitor, which has a limited life, we are creating the product with a longer life.

Included Items

Product [CPSN-AO-1204LI]...1

Please read the following...1

10-pin Connector...1 (attached to the product)

This product is an expansion I/O module that adds an analog output interface to the CPU Unit of the CONPROSYS nano series. The product has analog outputs with 12-bit resolution of bus isolation type.

Voltage output 4ch and current output 4ch are switchable with one module.

- * 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.

Optional Products

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 2-channel model
	CPSN-PCB271-S1-081	Remote I/O CPU Unit LAN 2-channel, 8slot model
	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.

Specifications

Function specification

Item	Description
Output type	Bus isolation Voltage Current Outputs
Output range	Voltage $\pm 10V$, $\pm 5V$, 0 - 5V, 0 - 10V
	Current 0 - 20mA, 4 - 20mA
Maximum output current	$\pm 5mA$ (For voltage output)
Load resistor	100 - 500 Ω (For current output)
Voltage output impedance	10 Ω or less
Output channel	4ch
Resolution	12-bit
Non-Linearity error *1	Voltage : $\pm 3LSB$ Current : $\pm 5LSB$
Settling time *2	Voltage : 10 μ sec/ch Current : 20 μ sec/ch
Data buffer	-
Isolation	Bus isolation
Voltage resistance	500VAC
Connector	2 pieces 3.81mm pitch 10-pin terminal
Applicable wire	AWG28 - 16
LED	-
Electricity consumption	5V 0.20A (Max) 3.3V 0.05A (Max)
Physical dimensions (mm)	15.6(W) \times 52.6(D) \times 84(H) (No projection included)
Weight	50g

*1 The non-linearity error means an error of approximately 0.18% occurs over the maximum range at -20°C and

60°C ambient temperature.

*2 Settling time is from when data is set in DAC IC until the change of the analog value stops.

Installation Environment Requirements

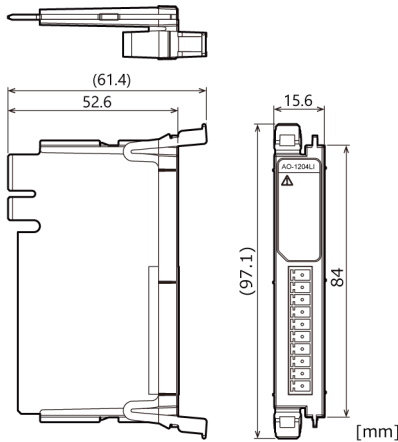
Item		Description
Operating ambient temperature		-20 - +60°C (Wall installation at an angle of 0°) *1
Operating ambient humidity		10 - 90%RH (No condensation)
Non-operating ambient temperature		-20 - +60°C
Non-operating ambient humidity		10 - 90%RH (No condensation)
Floating dust particles		Not to be 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, ISED

*1 The operating ambient temperature conditions are as follows.

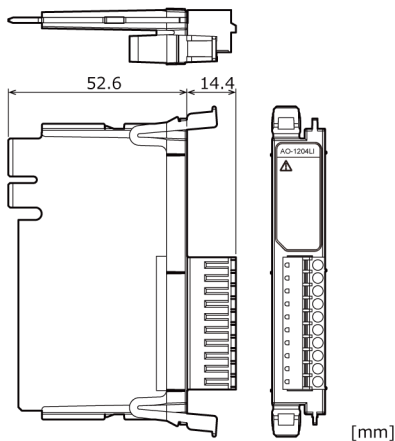
	Installation angle 0°	Installation angle: 90° to the right/left	Horizontal installation
At voltage output	60°C	55°C	55°C
At current output	55°C	40°C	45°C

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

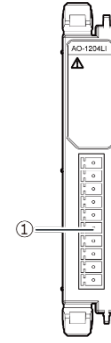
Physical Dimensions



With the connector attached



Name of each parts

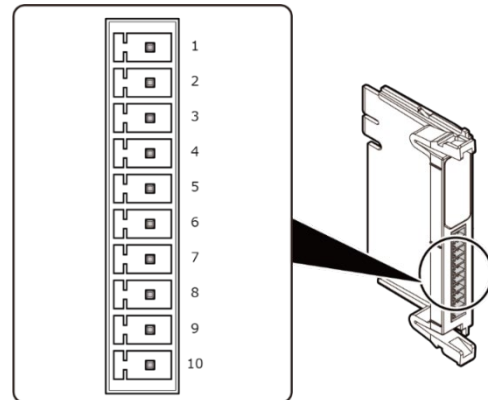


No.	Name	Function
1	Interface Connector	This is a connector for analog input. Use the 10-pin connector included in the package.

Analog Output Connector

This product has 2 channels of analog output. 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



Analog Output		
Pin No.	Signal Name	Description
1	AO0[V]	This indicates the analog output pin (voltage) of channel 0.
2	AO0[C]	This indicates the analog output pin (current) of channel 0.
3	AO1[V]	This indicates the analog output pin (voltage) of channel 1.
4	AO1[C]	This indicates the analog output pin (current) of channel 1.
5	AGND	This indicates the ground pin for the analog output signals.
6	AO2[V]	This indicates the analog output pin (voltage) of channel 2.
7	AO2[C]	This indicates the analog output pin (current) of channel 2.
8	AO3[V]	This indicates the analog output pin (voltage) of channel 3.
9	AO3[C]	This indicates the analog output pin (current) of channel 3.
10	AGND	This indicates the ground pin for the analog output signals.

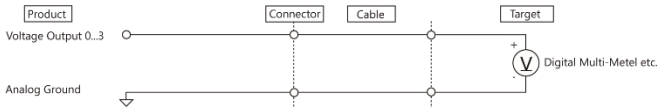
Analog Output Circuit

Output methods of analog signals are voltage outputs and current outputs. This section describes the example connections of each output method using a flat cable, a coaxial cable, and a shielded cable

Voltage Output

[Connection using a flat cable]

The example below uses a flat cable to connect the product to an external device. For each analog output channel, connect the input of external device and ground on one-to-one basis.

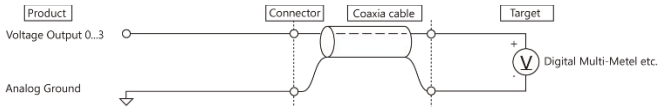


[Connection using a twisted cable]

The example below uses a coaxial cable to connect the product to an external device.

Use this type of cable if the external device is located at a distance from the product.

For each analog output channel, connect the core wires to the input of the external device and connect the shielding to ground.



CAUTION

- Do not short-circuit voltage output signals and analog ground, as it may cause failure on the product.
- Do not short-circuit voltage output signals and analog ground, as it may cause failure on the product.
- Do not connect voltage output signals to any other analog output, either on the product or on an external device, as it may cause failure on the product.
- To avoid any malfunction or damages, the connector plug should not be attached or detached when the power for the product or the external device is on.
- In situations where the connecting cable is subject to the effects of noise, the accurate voltage outputs can fail. The connecting cable should be installed away from any source of noise.
- The maximum current capacity for a voltage output signal is $\pm 5\text{mA}$. To avoid any malfunction, do not connect an external device that generates a load exceeding this range.
- In situations where the connecting cable is excessively long, the accurate voltage outputs can fail. The connection cable should therefore be within 1.5 meters.

Current Output

Floating Load and Fixed Load

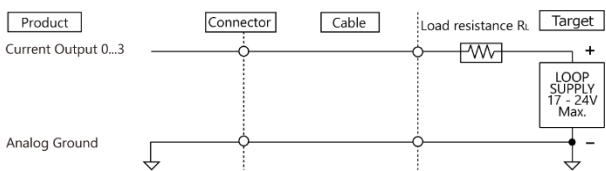
Two types of connection methods can be employed: fixed load and floating load. If the module is used as a load resistance, multiple current loops can be implemented by using the same power supply. The use of current output requires an external power supply (17 - 24V). In such a case, a power supply with a small ripple should be used in order to avoid an adverse impact on the conversion accuracy due to a large power supply ripple.

The load resistance R_L that is connected to the current output of each channel should be less than 500Ω , including the wire resistance.

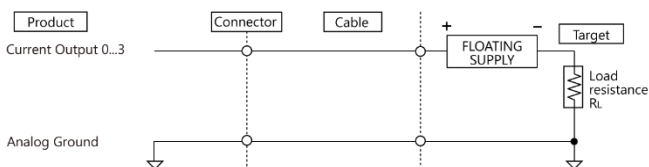
[Connection using a flat cable]

Use a flat cable to connect the voltage output and the analog ground of each channel to the load resistance R_L .

Connecting to a Floating Load



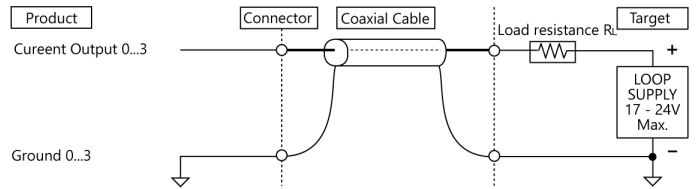
Connecting to a Fixed Load



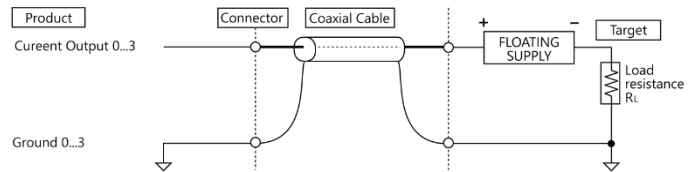
Example of Connecting with a Coaxial Cable

A coaxial cable can be used in situations where the module is at a relatively large distance from the external device or when the noise immunity of the module must be improved. In this case, the current output and the analog ground for each channel are connected to the load resistance R_L of the external device by using the core wire and the shield braid of the coaxial cable.

Connecting to a Floating Load



Connecting to a Fixed Load



CAUTION

- When the power is turned on or the module is reset, the current output signal will be 0 mA.
- To avoid any malfunction, the current output signal should not be connected to the analog ground.
- To avoid any malfunction, the current output signal should not be connected to another analog output signal or the output signal of an external device.
- To avoid any malfunction, the connector plug should not be attached or detached when the power for the module or the external device is on.
- In situations where the connecting cable is subject to the effects of noise, the accurate current output can fail. The connecting cable should be installed away from any source of noise.

Differences between this product and our earlier models

The CPSN-AO-1204LI is designed as a successor to the F&EIT Series DAI12-4(FIT)GY and can be used in the same way.

The differences between the CPSN-AO-1204LI's specifications and those of the DAI12-4(FIT)GY are shown below.

Differences between CPSN-AO-1204LI and DAI12-4(FIT)GY

Item		CPSN-AO-1204LI	DAI12-4(FIT)GY
Output range	Current	0 - 20mA, 4 - 20mA	0 - 20mA
Connector		2 pieces 3.81mm pitch 10-pin terminal	FK-MC 0.5/12-ST-2.5 (made by PHOENIX CONTACT) or equivalent
Interrupt		*1	Either IRQ5, IRQ7, IRQ9 *2
Internal pacer timer		*1	10μsec - 1,073,741,824μsec *3
Electricity consumption		5V 0.20A (Max) 3.3V 0.05A (Max)	5 V 400mA (Max)
Physical dimensions (mm)		15.6(W) x 52.6(D) x 84(H) (No projection included)	25.2(W) x 64.7(D) x 94.0(H) (No projection included)
Weight		50g	100g

*1 This product updates analog output during command execution; therefore, the pacer function is outside the scope of this specification.

*2 Available only when the DAI12-4(FIT)GY is connected to the CPU-SBxx(FIT)GY.

*3 If connected to a DAI12-4(USB)GY, uses the internal timer in the DAI12-4(USB)GY. The setting range is from 1000 to 1,073,741,000 μsec.

