

PLIO04 MULTIFUNCTION DIGITAL AND ANALOG I/O MODULE

PLIO04 is a highly flexible, programmable module extending your HMI applications.

- 10 optically isolated digital inputs
- 10 optically isolated digital outputs SSR
- 4 non-isolated 16 bit analog inputs configurable as 4 differential channels for voltage, resistance, temperature (PT100 and thermocouple) measurement
- 4 non-isolated 16 bit analog inputs for ratiometric voltage only
- 1 dedicated PT100 input for cold junction compensation of thermocouples

PLIO04 is a hardware module designed as plug-in for HMI products of Series 500/600/700.

Specifications

DIGITAL INPUTS

Description	Specifications
Input channels	10 digital optoisolated (industrial standard) source active high (+24VDC) inputs with separate pins for positive and negative connection
Input voltage range	12÷30VDC (min 3mA), 35VDC max for 500 ms
ON-state voltage/current	12÷30VDC (min 3mA) 6mA @ 24VDC, 9mA @ 30VDC
OFF-state voltage/current	5VDC max, 1mA
Input impedance	3,3K Ohm
Input filter delay	50 µs max
Debounce filter	Programmable 0.1ms to 20ms
Isolation	1500 Vrms
Connector type	Omnimate Range header/plugs 3.5mm-10 contacts (two piece terminal blocks) SL-SMT 3.5/180F Box + BLZF 3.5/180F

DIGITAL OUTPUTS

Description	Specifications
Output channels	10 digital optoisolated SSR type outputs, 2 contacts each.
Max load voltage	30VDC
Max load current	1.4A
Output delay time	5ms max
Isolation	1500 Vrms
Connector type	Omnimate Range header/plugs 3.5mm-10 contacts (two piece terminal blocks) SL-SMT 3.5/180F Box + BLZF 3.5/180F

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ANALOG SINGLE-ENDED VOLTAGE INPUTS

Description	Specifications
Input channels	4 single ended analog input channels: voltage inputs. All analog common inputs (AGND) are internally connected to M pin of panel supply connector
Input or measurement type	Voltage input
A/D resolution	16 bits
Accuracy @ 25 °C	0.2%
Connector type	Omnimate Range header/plugs 3.5mm-10 contacts (two piece terminal blocks) SL-SMT 3.5/180F Box + BLZF 3.5/180F
Voltage input type	4 Single-ended inputs
Voltage input range	Unipolar (0÷100mV, 0÷1V, 0÷5V, 0÷10V)
Voltage input linearity error	0.1%
Voltage input accuracy	Unipolar (0÷100mV): 0.1% F.S. Unipolar (0÷500mV): 0.2% F.S. Unipolar (0÷1V): 0.1% F.S. Unipolar (0÷5V): 0.1% F.S. Unipolar (0÷10V): 0.1% F.S.
Voltage input absolute maximum ratings	+15V (AGND referenced)
Voltage mode input	> 2 MΩ
Analog single-ended voltage inputs	CH_5, CH_6, CH_7, CH_8

Measurement temp. range	-100°C÷850°C
PT100 accuracy @ 25 °C	There are 4 selectable ranges for resistor measurements. Range 1: 0÷1570Ohm, 0.2% accuracy Range 2: 0÷5300Ohm, 0.3% accuracy Range 3: 0÷10200Ohm, 0.4% accuracy Range 4: 0÷88000Ohm, 0.5% accuracy
Connector type	Omnimate Range header/plugs 3.5mm-10 contacts (two piece terminal blocks) SL-SMT 3.5/180F Box + BLZF 3.5/180F

PT100 (RTD) INPUT

This input is dedicated to thermocouple cold junction compensation. The characteristics of this input are the same of PT100 as described in table above.

ENVIRONMENTAL CONDITIONS

Description	Specifications
Operating Temperature	0÷50 °C
Storage Temperature	-20÷70 °C
Operating Humidity	5÷85% relative humidity, non condensing

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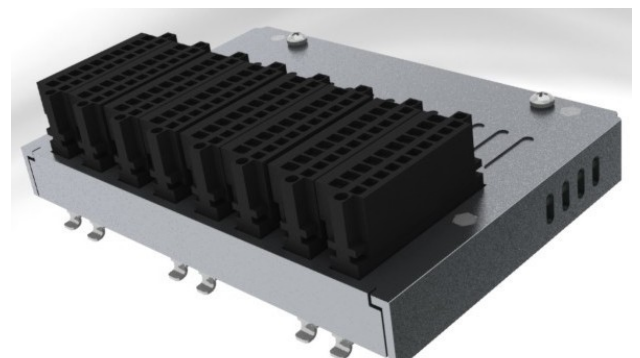
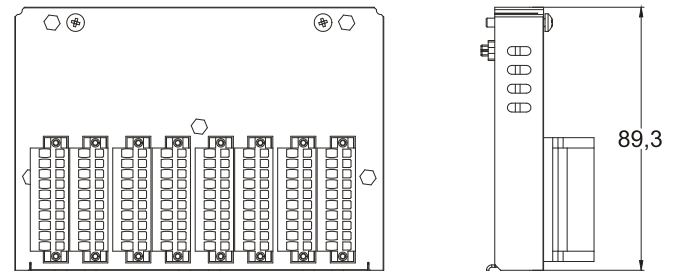
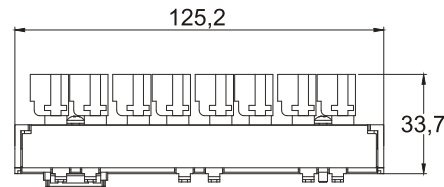
ANALOG MULTIFUNCTION INPUTS

Description	Specifications
Input channels	4 multifunction analog not isolated input channels. All analog common inputs (AGND) are internally connected to M pin of panel supply connector
Input or measurement type	Voltage input Temperature measurement (various types of thermocouples or PT100 RTD) with external cold junction compensation
A/D resolution	16 bits
Accuracy @ 25 °C	0.2%
Connector type	Omnimate Range header/plugs 3.5mm-10 contacts (two piece terminal blocks) SL-SMT 3.5/180F Box + BLZF 3.5/180F
Voltage input type	Single-ended (up 8 inputs) or differential configuration (up 4 inputs)
Voltage input range	Bipolar (±100mV, ±1V, ±5V, ±10V) Unipolar (0÷100mV, 0÷1V, 0÷5V, 0÷10V)
Voltage input linearity error	0.1%
Voltage input accuracy	Bipolar (±100mV) or unipolar (0÷100mV): 0.1% F.S. Bipolar (±500mV) or unipolar (0÷500mV): 0.2% F.S. Bipolar (±1V) or unipolar (0÷1V): 0.1% F.S. Bipolar (±5V) or unipolar (0÷5V): 0.1% F.S. Bipolar (±10V) or unipolar (0÷10V): 0.1% F.S.
Voltage input absolute maximum ratings	±15V (AGND referenced)
Voltage mode input	> 2 MΩ
Thermocouple inputs	4 with tested break condition
Thermocouple types	E (-270/1000°C) J (-210/760°C) K (-270/1370°C) R (0/1768°C) S (0/1768°C) T (-270/400°C)
Cold Junction Compensation	External via dedicated PT100 input (see note below)
PT100 (RTD) input	4 for two, three or four wires configuration (in two and three wires configuration, 4 inputs remain free for single-ended measurements); break or short circuit detected
Supply	Local 1.2 mA
Analog multifunction inputs	CH_1, CH_2, CH_3, CH_4

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Dimensions

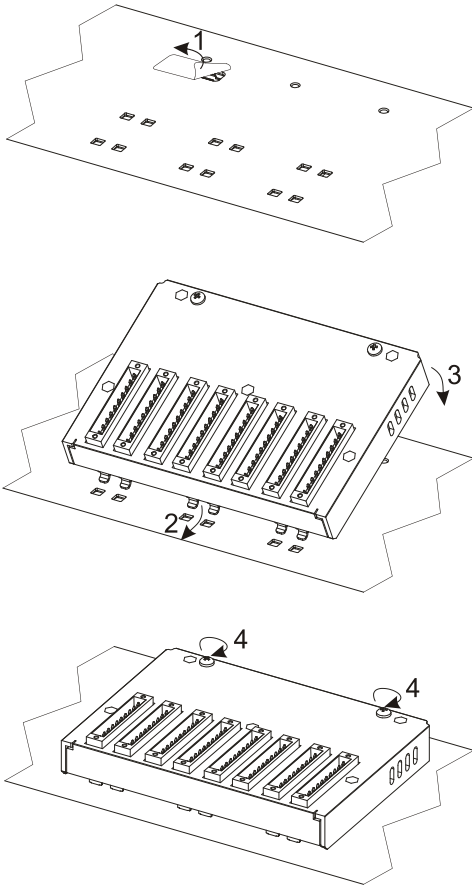


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Mounting the Module

Remove the connector protective cover from the equipment before installing the module.



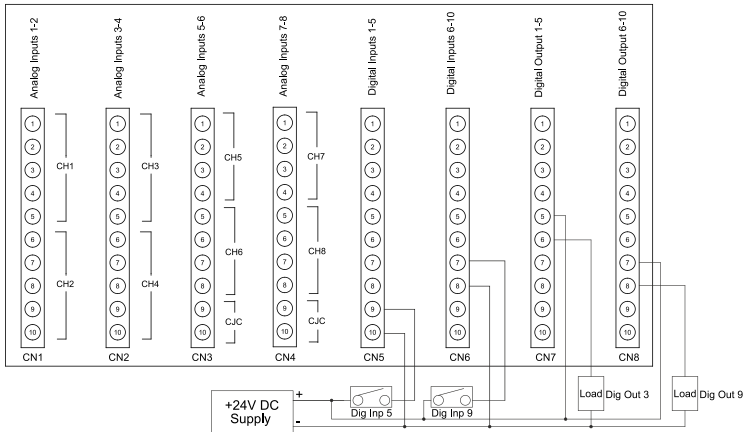
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Wiring Examples (standard digital inputs and outputs)

Note on wiring

The cables must not be longer than 30m.

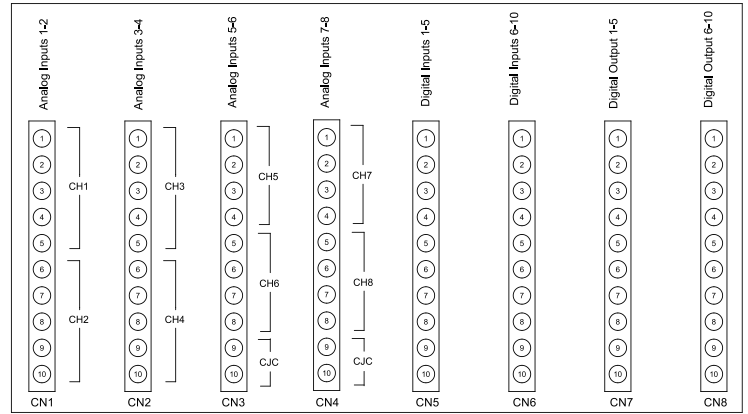


Example: Two digital inputs (switches) and two digital outputs connection.

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Pin Assignment/Connector View



CN1 (An. Inp.)

- 1 PT100_1 supp.
- 2 CH_1 + input
- 3 CH_1 - input
- 4 AGND
- 5 SHIELD (case)
- 6 PT100_2 supp.
- 7 CH_2 + input
- 8 CH_2 - input
- 9 AGND
- 10 SHIELD (case)

CN2 (An. Inp.)

- 1 PT100_3 supp.
- 2 CH_3 + input
- 3 CH_3 - input
- 4 AGND
- 5 SHIELD (case)
- 6 PT100_4 supp.
- 7 CH_4 + input
- 8 CH_4 - input
- 9 AGND
- 10 SHIELD (case)

CN3 (mixed)

- 1 +5V sup.
- 2 CH_5 + input
- 3 AGND
- 4 SHIELD (case)
- 5 +5V sup.
- 6 CH_6 + input
- 7 AGND
- 8 SHIELD (case)
- 9 T/R+
- 10 T/R-

CN4 (mixed)

- 1 +5V sup.
- 2 CH_7 + input
- 3 AGND
- 4 SHIELD (case)
- 5 +5V sup.
- 6 CH_8 + input
- 7 AGND
- 8 SHIELD (case)
- 9 T/R+
- 10 T/R-

CN5 (Dig inp.)

- 1 Dig. input 1+
- 2 Dig. input 1-
- 3 Dig. input 2+
- 4 Dig. input 2-
- 5 Dig. input 3+
- 6 Dig. input 3-
- 7 Dig. input 4+
- 8 Dig. input 4-
- 9 Dig. input 5+
- 10 Dig. input 5-

CN6 (Dig inp.)

- 1 Dig. input 6+
- 2 Dig. input 6-
- 3 Dig. input 7+
- 4 Dig. input 7-
- 5 Dig. input 8+
- 6 Dig. input 8-
- 7 Dig. input 9+
- 8 Dig. input 9-
- 9 Dig. input 10+
- 10 Dig. input 10-

CN7 (Dig outp.)

- 1 Dig. output 1A
- 2 Dig. output 1B
- 3 Dig. output 2A
- 4 Dig. output 2B
- 5 Dig. output 3A
- 6 Dig. output 3B
- 7 Dig. output 4A
- 8 Dig. output 4B
- 9 Dig. output 5A
- 10 Dig. output 5B

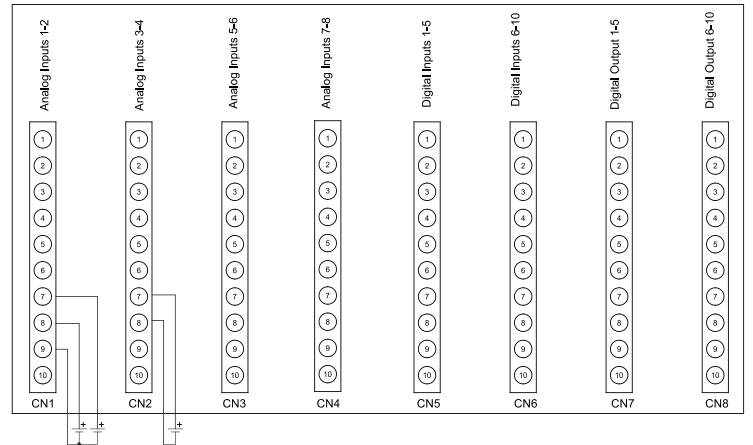
CN8 (Dig outp.)

- 1 Dig. output 6A
- 2 Dig. output 6B
- 3 Dig. output 7A
- 4 Dig. output 7B
- 5 Dig. output 8A
- 6 Dig. output 8B
- 7 Dig. output 9A
- 8 Dig. output 9B
- 9 Dig. output 10A
- 10 Dig. output 10B

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Wiring examples (voltage single ended, differential inputs)



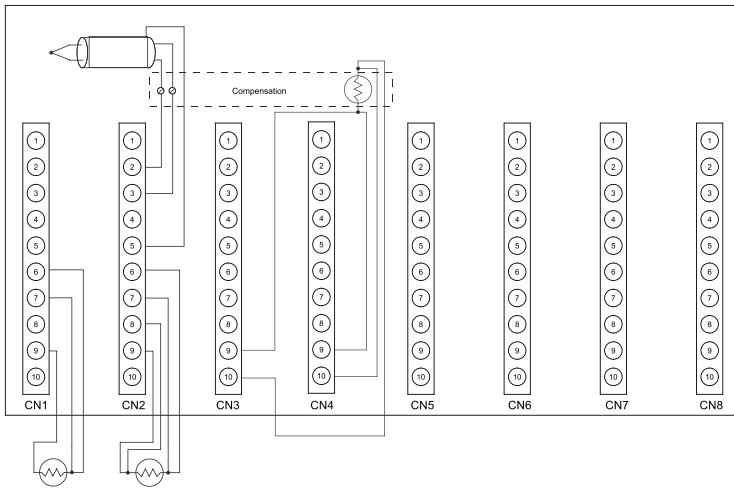
Example: Logic connection for various configurations:

- 1) Two single ended analog inputs on the same channel (for example used CH_2+, CH_2- and AGND).
- 2) One differential voltage source, connected as differential channel at CH_4+ CH_4- pair.

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Wiring examples (PT100, Thermocouple)



Example: Logic connection for various configurations:

- 1) One PT100 (three wire) connected to CH2.
- 2) One PT100 (four wire) connected to CH4.
- 3) One thermocouple, connected to CH3.
- 4) One PT100 connected to CJC and used for thermocouple input compensation.

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The product has been designed for use on Exor products with expansion slot for plugin module for use in an industrial environment in compliance with the 2014/30/EU directive

The product has been designed in compliance with:

EN 61000-6-4	EN 55011 Class A
EN 61000-6-3	EN 55022 Class B
EN 61000-6-2	EN 61000-4-2
EN 61000-6-1	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8



This device cannot be disposed of as a domestic waste but according to WEEE European Directive 2012/19/EU



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