



# EP5012

## 12 AI Multisensor PIFA

PIFA with 12 analog inputs for measuring temperature, pressure, level etc., for mounting in an EXOflex house.

- Handles 0...20 mA, 0...10 V, 0...200 mV, Pt100, Pt1000, Ni1000, DIN, LG-Ni1000, resistance 0...2000 ohm, etc.
- 12-bit resolution

- Measurement ranges can be set individually
- Digital filter, scaling factor and offset
- Monitoring of measurement range

EP5012 has 12 analog inputs of the type Multisensor AI. EP5012 is also intended for 0...20 mA transmitters.

### EXOflex

EXOflex is a general system for control, regulation, supervision and communication in general automation installations. The system offers great possibilities when constructing many different types of control and regulation systems: outstations in distributed systems, controllers in building automation systems, service gateways in LANs and on the Internet, etc.

The system is of a modular design and provides unique opportunities for adapting the number and type of inputs and outputs required, as well as the type of communication needed.

EXOflex consists of a housing and a selection of PIFA units. One power-PIFA must always be present in each house.

### Installation

EP5012 can generally be mounted in any of the compartments in an EXOflex house. It is of a standard design and size and can quickly and simply be slotted into place.

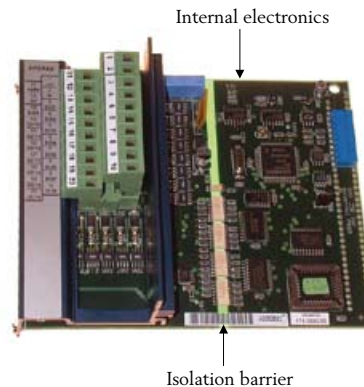


All electrical connections to external equipment are easily attainable on plug-in screw connectors.

For more information on how to install PIFA:s, see the instruction for EH11-S...41-S / EH10-S...40-S / ECX2.

### EP5012 handles difficult electrical environments

The process connections are, as a group, galvanically insulated from each other and from the internal control logic circuits by a protective barrier, which is bridged by optocouplers. If necessary, the isolation from other circuits can be retained by using a separate power supply. Each process connection has active transient protection, which is led to a special EMI ground (disturbance protection ground) or to protective ground. This provides for optimal handling of difficult electrical environments.



The principles of the isolation barrier

### Prepared for redundant power supply

The parts of the PIFA closest to the process get their power from an external source, which is normally the same as the source supplying the whole EXOflex-unit with power. To handle power outage situations, it could also be power supplied from an alternative source, e. g. 9035 with external battery. See the product sheets for EP1011 and 9035.

## Connections

- **Power supply**

The EMI earth must be connected to the earth rail or equivalent, to prevent disturbances.

The 0 V connection must also be grounded. This is normally done at the power unit's negative pole.

- **Multisensor AI**

This type of input is mainly intended for use with sensors using voltage outputs and resistance elements or measuring temperature, pressure, flow, etc.

In the range 0...20 mA, the internal current shunt resistor is activated by software-controlled electronic circuits. The shunt resistor has an active current limiter that limits the current to approximately 25 mA. However, the input voltage must not exceed 12 V on the input, as each input also has active transient protection that activates at this voltage level.

All analog inputs have active transient protection that activates at an in-voltage of >12 V. This means that if you mistakenly allow 24 V on an input for longer than approx. 0.5 seconds the input will be permanently damaged and the guarantee will not be valid!

If you connect an active transmitter (4...20 mA) and power it with 12 V, the analog input will not be damaged if the transmitter is mistakenly short-circuited.

### Process Connections

Voltage signals are connected between the input and AGnd.

The cable screen is connected to the connector SCR.

The +C output is current limited. External transmitters for 4...20 mA can be powered from a +C output. A fast fuse should be fitted in serial with the transmitter to protect the input from short circuits in the transmitter.

All AGnd are internally linked to each other and to 0 V (terminal 19). To attain maximum accuracy on analog input measurements and according to specifications, each respective AGnd should be used as a reference for each respective group of AI. As an example, the AGnd-connection 6 acts as an accurate reference pole for AI1 and AI2.

## Technical data

Supply voltage	24 V DC
tolerance	18...30 V DC
power consumption with max load	electronically fused to 300 mA
power consumption with no load	80 mA
Internal power consumption	5 V, 70 mA
<b>CE</b>	This product conforms with the requirements of European EMC standards CENELEC EN 61000-6-1 and EN 61000-6-3 and carries the CE-mark.

## Analog inputs

Number of inputs	12
Basic resolution	12 bits
Measurement range	individually configurable, determined by program parameters
Current	0...22 mA
input resistance	10 Ohm
current limit	25 mA (active up to 12V, then transient protection is activated)
accuracy (% of value)	±0.1% ±20 uA
Temperature Ni1000, Pt1000	-50...150°C
accuracy (excluding sensor)	±0.2°C
Temperature Pt100	-50...150°C
accuracy (excluding sensor)	±0.3°C
Temperature Pt100, (extended range)	0...600°C
accuracy	±0.6°C
Voltage	0...10 V, 0...200 mV
input resistance	10 MOhm
accuracy (% of full scale)	±0.1 %
Resistance	0...2000 Ohm
accuracy	±3 Ohm
Conversion time	see software description
+C output for feeding of sensor, level	= Supply voltage
current limit, electronically fused	250 mA

## Connections

Pin no	Signal	Function
1		
2	EMI ground	This terminal is connected internally to the PIFA's frame and to internal protective circuits. It should be connected to the ground rail with a separate, heavy wire.
3	+C	+24 V DC. Output for analog inputs AI1 and AI2.
4	AI1	Analog input 1, type Multisensor
5	AI2	Analog input 2, type Multisensor
6	AGnd	Reference pole for AI1 and AI2
7	SCR	Connection for screen, AI1 and AI2
8	+C	+24 V DC. Output for analog inputs AI3 and AI4.
9	AI3	Analog input 3, type Multisensor
10	AI4	Analog input 4, type Multisensor
11	AGnd	Reference pole for AI3 and AI4
12	SCR	Connection for screen, AI3 and AI4
13	+C	+24 V DC. Output for analog inputs AI5 and AI6.
14	AI5	Analog input 5, type Multisensor
15	AI6	Analog input 6, type Multisensor
16	AGnd	Reference pole for AI5 and AI6
17	SCR	Connection for screen, AI5 and AI6
18	+24 V	Power supply +24 V DC
19	0 V	Power supply 0 V. The 0 V-connection is normally grounded at the supply source, so as to define the potential to earth reference and to compensate for disturbances and transients from I/O signals.
20	+C	+24 V DC. Output for analog inputs AI7 and AI8.
21	AI7	Analog input 7, type Multisensor
22	AI8	Analog input 8, type Multisensor
23	AGnd	Reference pole for AI7 and AI8
24	SCR	Connection for screen, AI7 and AI8
25	+C	+24 V DC. Output for analog inputs AI9 and AI10.
26	AI9	Analog input 9, type Multisensor
27	AI10	Analog input 10, type Multisensor
28	AGnd	Reference pole for AI9 and AI10
29	SCR	Connection for screen, AI9 and AI10
30	+C	+24 V DC. Output for analog inputs AI11 and AI12.
31	AI11	Analog input 11, type Multisensor
32	AI12	Analog input 12, type Multisensor
33	AGnd	Reference pole for AI11 and AI12
34	SCR	Connection for screen, AI11 and AI12

### Analog input connections

Voltage and resistance measuring (PT100 etc.) is relative to AGnd. Screened cables must be used and the screens connected to the SCR-connector next to the input connection. Alternatively, the screen can be connected to the ground rail. In most cases, this alternative connection will give a measurement result that is accurate enough. However, in harsh electrical environments we recommend that the screen is connected to SCR. Power supply for transmitters etc. is from the fused +C output.

AGnd	Reference pole for analog inputs AI.
SCR	Connection for screen.
+C	+24 V DC. Output for analog inputs AI.

## Product documentation

Document	Type
EH11-S...41-S / EH10-S...40-S / ECX2 EXO System Manual	Instruction for EXOflex houses and the EXOflex processor ECX2 Manual covering the EXO System

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