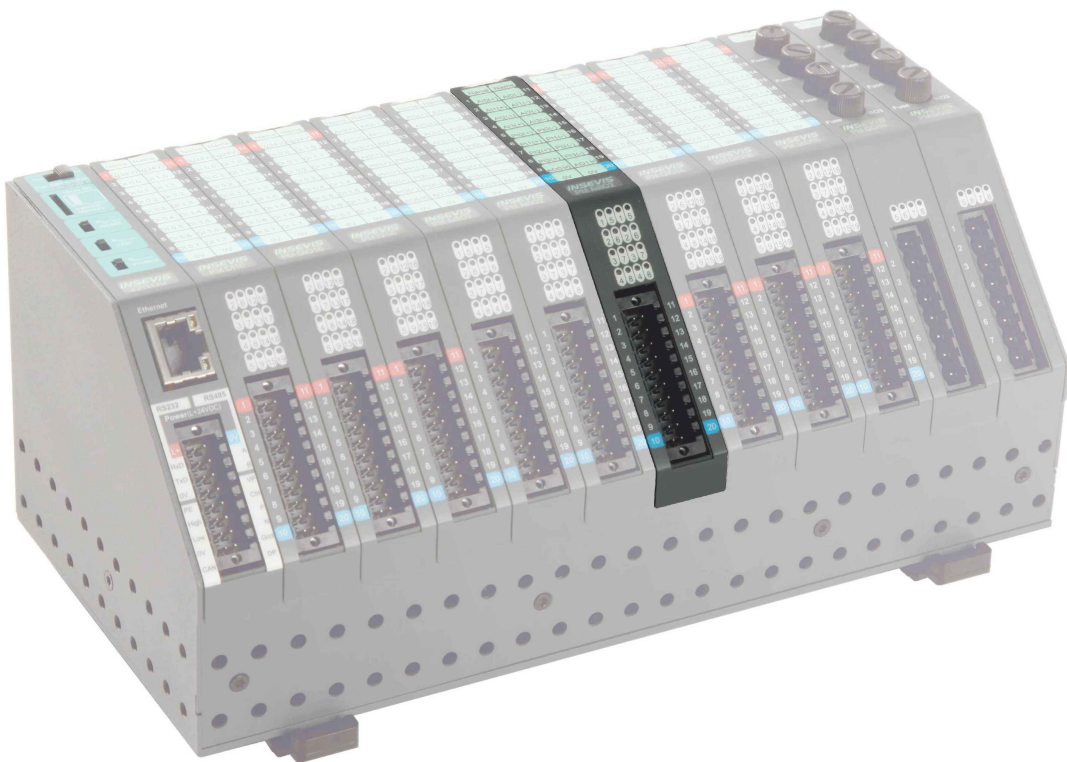


## Product Information

# Periphery module PM AI8



(valid from 02/2020 for all CPU-V/P from 2.5.1 and -T from 2.7.0 and with ConfigStage 1.0.14.40)

### Changes to older versions of this document

Changed in Rev. 2:

## Description

compact periphery module for

**- 8 analog inputs to be configured by software**

- 0...20mA,
- 4...20mA,
- 0...10 V
- ± 2,5V
- ± 5V
- ± 10V

Resolution 12 Bit

- green diagnostic LED for each input
  - LED 1 for AI0
  - LED 2 for AI1
  - LED 3 for AI2
  - LED 4 for AI3
  - LED 5 for AI4
  - LED 6 for AI5
  - LED 7 for AI6
  - LED 8 for AI7

- red diagnostic LED for each input for error (sensor-/ broken wire detection)
  - LED 1 for AI0
  - LED 2 for AI1
  - LED 3 for AI2
  - LED 4 for AI3
  - LED 5 for AI4
  - LED 6 for AI5
  - LED 7 for AI6
  - LED 8 for AI7

- Increase of the resolution of analog inputs by expanding the integration time up to 16Bit

- insertion stripe with description field for every signal

- cage-clamp connector with 2 bolt flanges on side

**INSEVIS-benefit:**

This module has an internal supply for the 2-wire encoders.

So it is not necessary to care for external supply!

**If you use these pins 1-8, do not apply external encoder supply!**

## for 2-wire encoders

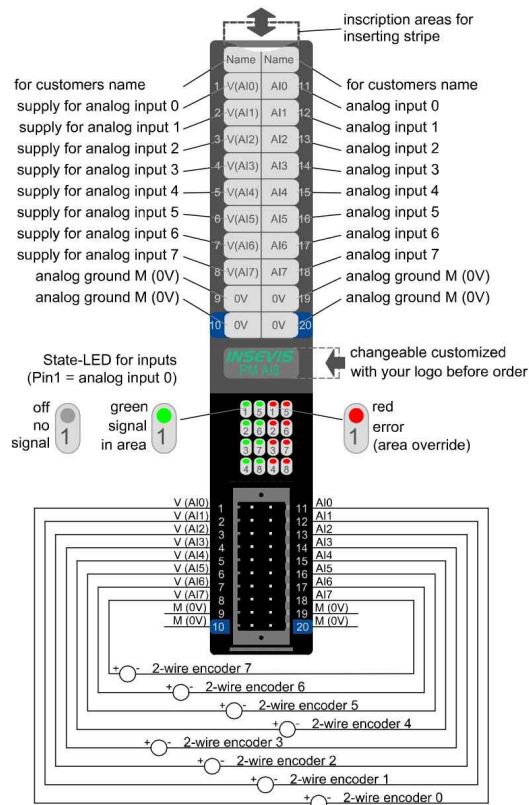


Figure above: Description and wiring of all connections of periphery module AI8 for 2-wire encoders

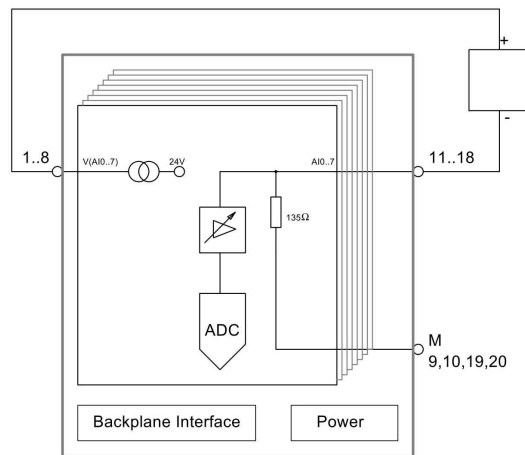


Figure above: Block diagram PM AI8 for wire encoders

Input		
Start address:	128	
End address:	143	
Channel	Address	Mode
Channel 1:	128	+/- 10V
Channel 2:	130	+/- 10V
Channel 3:	132	+/- 5V
Channel 4:	134	+/- 2.5V
Channel 5:	136	0...10V
Channel 6:	138	4...20mA
Channel 7:	140	0...20mA
Channel 8:	142	+/- 10V

Figure above: configuration block of 2-start-/ end addresses of AI8-inputs (in words) in the ConfigStage

## Description

## for 3- / 4-wire encoders

compact peripheral module for

**- 8 analog inputs to be configured by software**

- 0...20mA,
- 4...20mA,
- 0...10 V
- ± 2,5V
- ± 5V
- ± 10V

Resolution 12 Bit

**• green diagnostic LED**

- for each input
- LED 1 for AI0
- LED 2 for AI1
- LED 3 for AI2
- LED 4 for AI3
- LED 5 for AI4
- LED 6 for AI5
- LED 7 for AI6
- LED 8 for AI7

**• red diagnostic LED**

- for each input for error (sensor-/ broken wire detection)
- LED 1 for AI0
- LED 2 for AI1
- LED 3 for AI2
- LED 4 for AI3
- LED 5 for AI4
- LED 6 for AI5
- LED 7 for AI6
- LED 8 for AI7

**• Increase of the resolution of analog inputs by expanding the integration time up to 16Bit**

**• insertion stripe with description field for every signal**

**• cage-clamp connector with 2 bolt flanges on side**

**INSEVIS-benefit:**

This module has an internal supply for the 2-wire encoders.

So it is not necessary to care for external supply!

**If you use these pins 1-8, do not apply external encoder supply!**

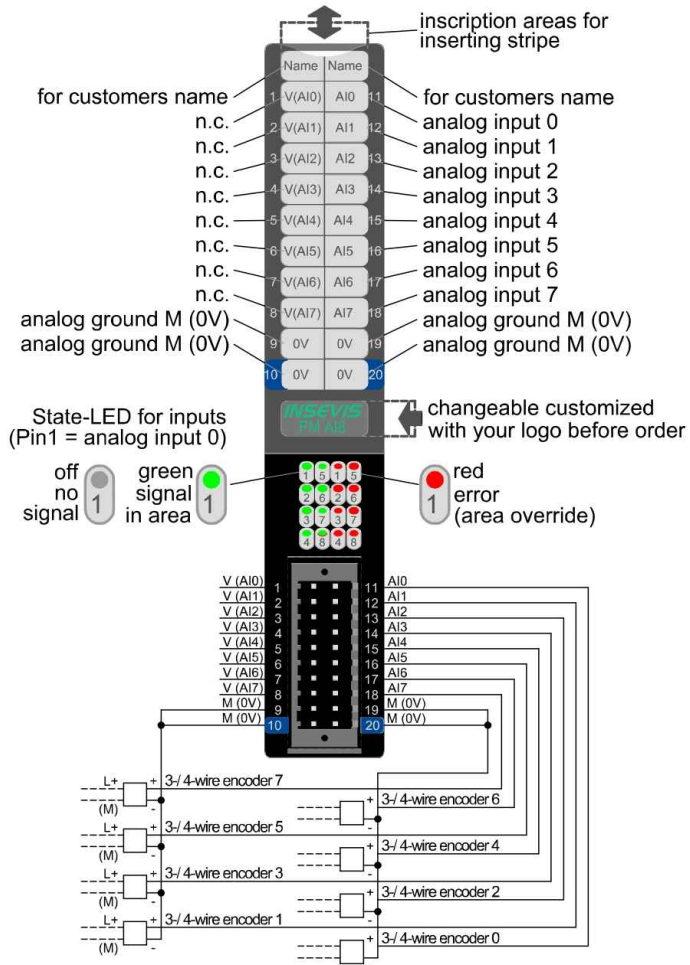


Figure above: Description and wiring of all connections of module AI8 for 3-/ 4-wire encoders

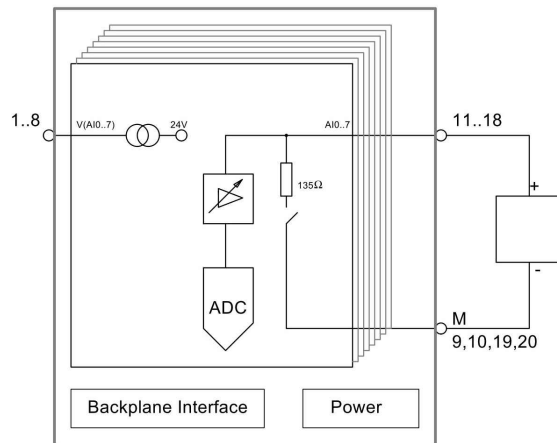


Figure above: Block diagram PM AI8 for 3- / 4-wire encoders

Input	
Start address:	128
End address:	143
Address	Mode
Channel 1: 128	+/- 10V
Channel 2: 130	+/- 10V
Channel 3: 132	+/- 5V
Channel 4: 134	+/- 2.5V
Channel 5: 136	0...10V
Channel 6: 138	4...20mA
Channel 7: 140	0...20mA
Channel 8: 142	+/- 10V

Figure above: configuration block of start-/ end addresses of AI8-inputs (in words) in the ConfigStage

Technical data			
Operating temperature range Storage temperature range Dimensions W x H x D (mm) Weight	-20°C ... +60°C (without condens.) -30°C ... +80°C 20 x 108 x 70 mm ca. 150 g	Load voltage L+  Current consumption Power dissipation	24V DC (11V ... 30V DC, connected by device supply) 100 mA (max.) 2 W (max.)
Connection technology	connector with cage clamp technology for cross section up to max. 1,5mm <sup>2</sup>	Wire length unshielded (max.) shielded (max.)	30 m 100 m
<b>Analog inputs</b> Input area (nominal values)	8 (to be configured by software) 0...10V, 0...20mA, 4...20mA ±10V, ±5V, ±2,5V,	Valid voltage between inputs and A-GND (max.)	-15 ... +24 V DC
Diagnostic LEDs	8 green: signal in valid area 8 red: override (mA) or saturation no indication broken wires and open inputs	Error message during override metering area	adjustable diagnosis- and limit value alert on request
Value number format	0000 ... 6C00 (hexadecimal) for range mA and 1...5/ 0...10V all other 9400 ... 6C00 (hex.)	Broken wire detection	by overrun/ shortfall of metering area
Override area	20 mA ... 22 mA (only at mAs)	Access of sensor	unsymmetric against A-GND (single ended)
Input resistance	150Ω (typ.) metering area current 100kΩ (typ.) metering area voltage	Metering principle / conversion principle Resolution depending on integration time *	successive approximation  12 Bit ... 16 Bit
Sampling cycle time = Integration time *	adjustable 1ms ... 35767 ms default: 100 ms (=Net frequency filter 50Hz and 60Hz)	Specify (based on input area)	< 1%

### \* Increasement of the resolution of analog inputs by expanding the integration time

(configurable in ConfigStage at the PM-AI8 directly)

for 1...5V / 0...10V:	0...16ms → 13Bit	17...64ms → 14Bit	65...256ms → 15Bit	
for 0(4)...20mA:	0...16ms → 12Bit	17...64ms → 13Bit	65...256ms → 14Bit	> 265ms → 15Bit
for ±2,5V, ±5V, ±10V:	0...16ms → 12Bit	17...64ms → 13Bit	65...256ms → 14Bit	> 265ms → 15Bit
	(+sign)	(+sign)	(+sign)	(+sign)

**Configuration of the process image:** the module allocates 8 input words in the process image (Offset 0, 2, 4, 6, 8)

Offset	I/O	Function	Description
0, 2, 4, 6, 8, 10, 12, 14	I	Input AI 0...AI 7	Measuring range according to configuration

## Ordering data module and accessoires

Identification	Order-no.	Packaging unit
Periphery module AI8	PM-AI8-02	PU: 1 piece
Connector 2x10pin with pin markings and bolt flanges on side	E-CONS20A-00	PU: 1 piece

### Qualified personnel

All devices described in this manual may only be used, built up and operated together with this documentation. Installation, initiation and operation of these devices might only be done by instructed personnel with certified skills, who can prove their ability to install and initiate electrical and mechanical devices, systems and current circuits in a generally accepted and admitted standard.

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