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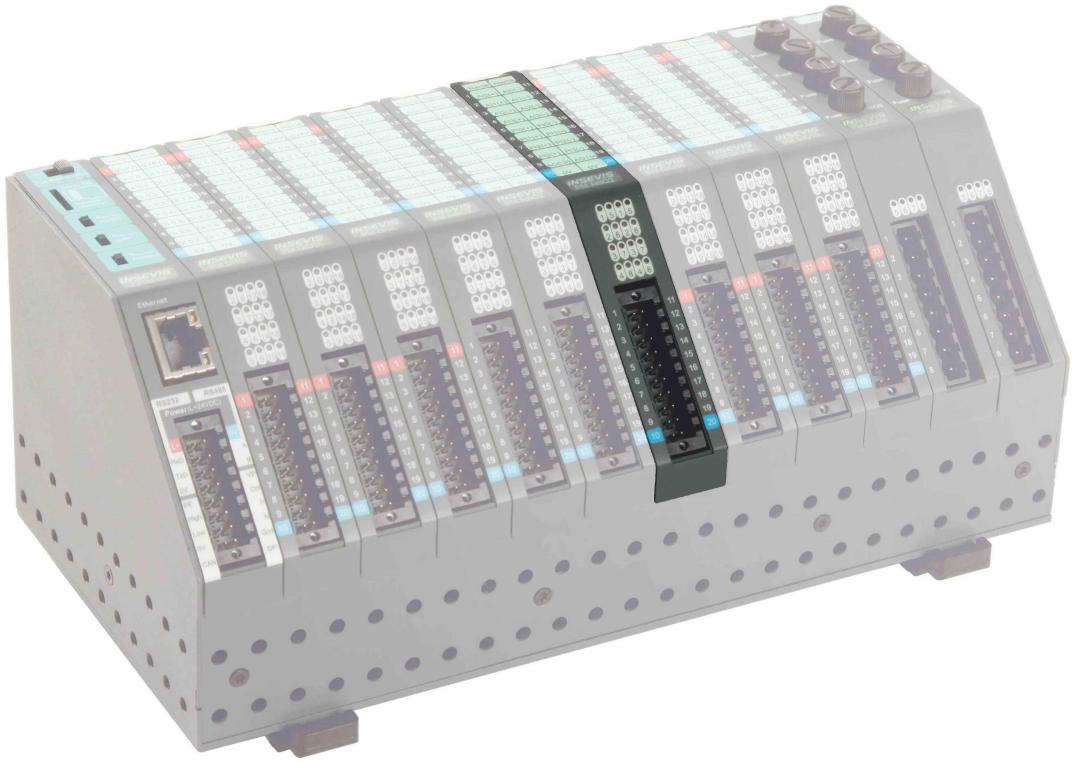
Product Information

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: Information for disposal of old equipment
Changed in Rev. 3: Drawing error in wiring 3/4-wire sensors corrected

Description for 2-wire encoders

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
- Increasement 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!

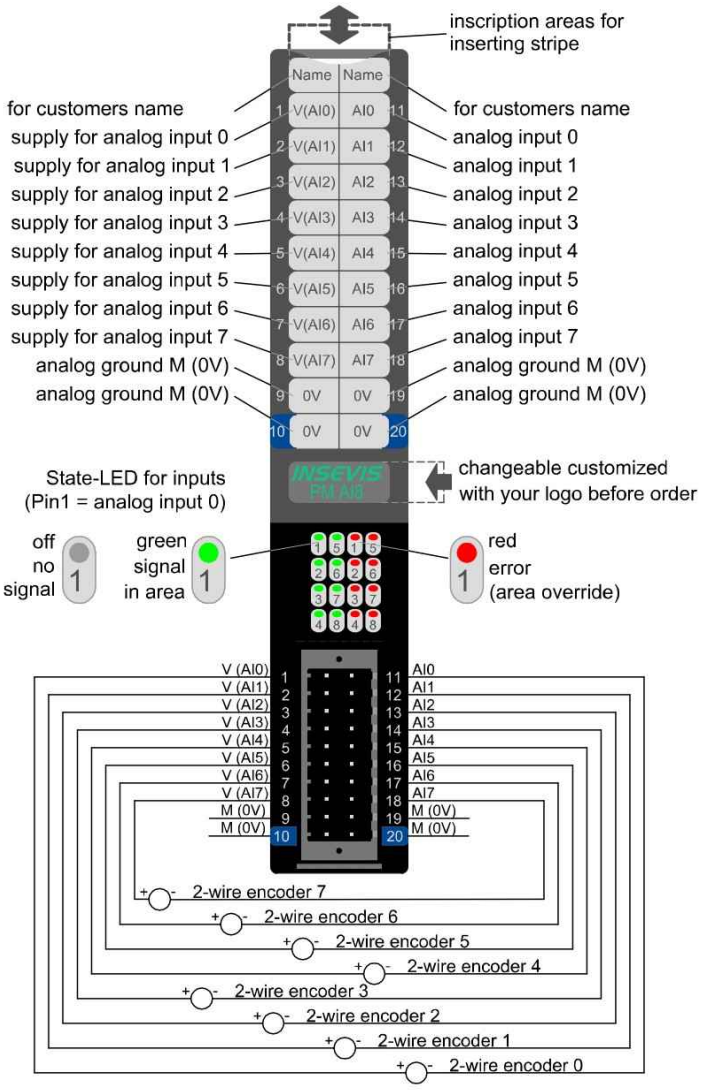


Figure above: Description and wiring of all connections of periphery module AI8 for 2-wire encoders

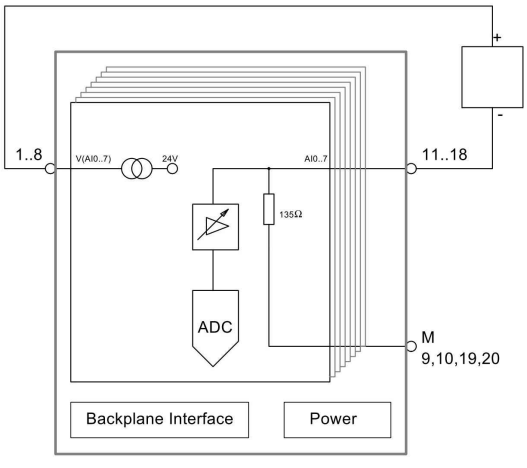


Figure above: Block diagram PM AI8 for wire encoders

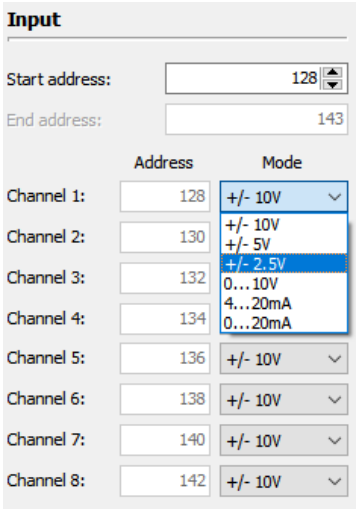


Figure above: configuration block of 2-start-/ end addresses of AI8-inputs (in words) in the ConfigStage

Description

for 3- / 4-wire encoders

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
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  - LED 5 for AI4
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  - LED 7 for AI6
  - LED 8 for AI7
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- insertion stripe with description field for every signal
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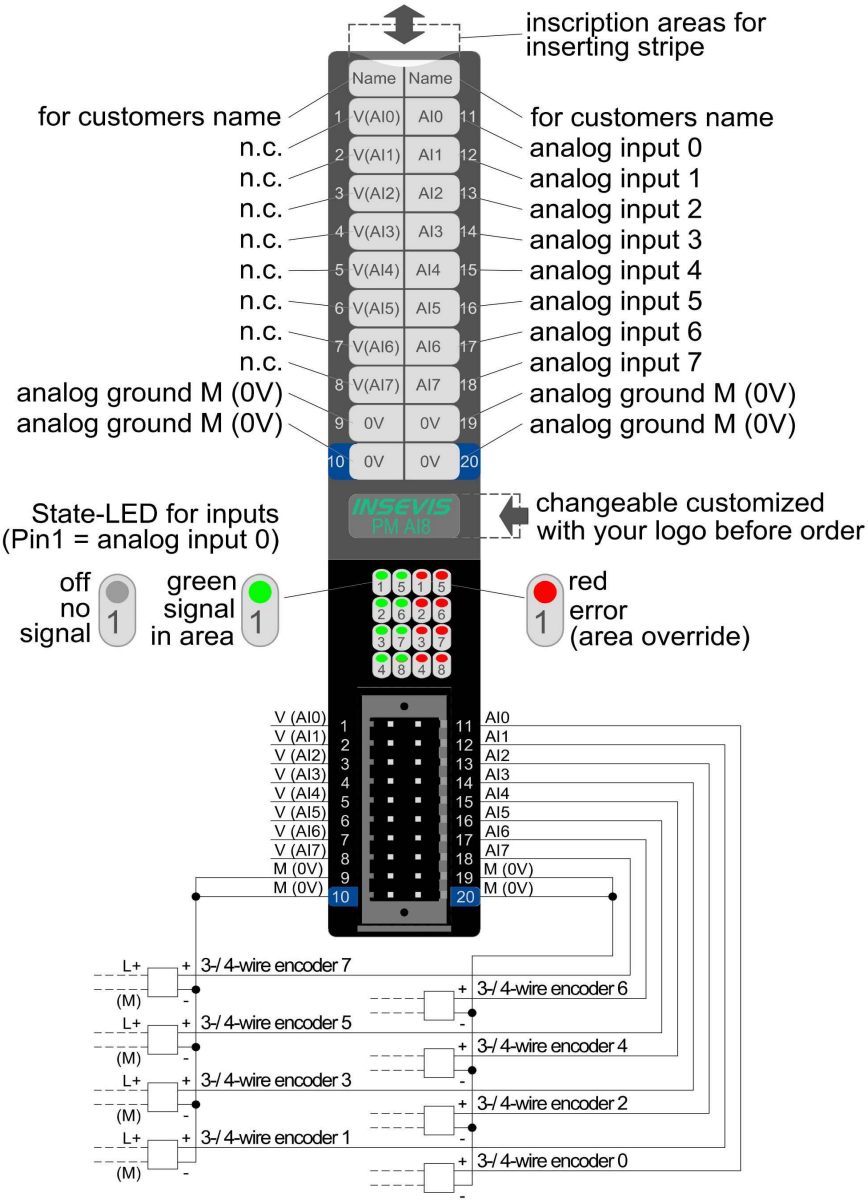

Figure above: Description and wiring of all connections of module AI8 for 3-/ 4-wire encoders

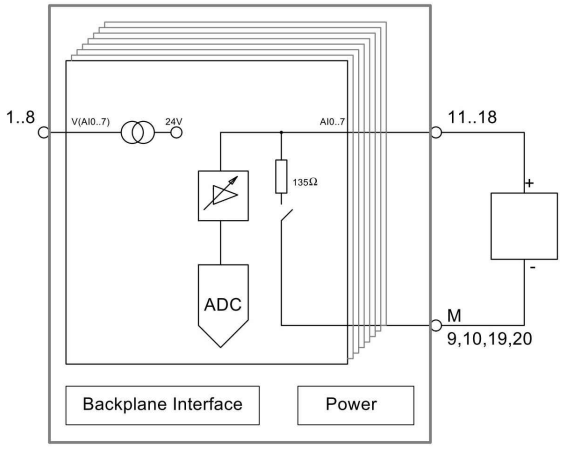

Figure above: Block diagram PM AI8 for 3- / 4-wire encoders

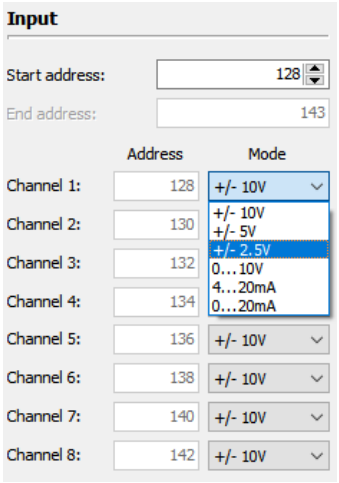

Figure above: configuration block of start-/ end addresses of AI8-inputs (in words) in the ConfigStage

Technical data

Operating temperature range Storage temperature range Dime. WxHxD (mm) | Weight Relative humidity	-20°C ... +60°C (without condens.) -30°C ... +80°C 20 x 108 x 70 mm | ca. 150 g up to 96% (without condensation)	Load voltage L+ Current consumption Power dissapation	24V DC (11V ... 30V DC, connected by device supply) 100 mA (max.) 2 W (max.)
IP-protection class Vibrations	IP41 Frequency range 2 -100Hz, amplitude 1mm peak < 13,2Hz acceleration 0,7g >13,2Hz	Wire length unshielded (max.) shielded (max.) Connection technology	 30 m 100 m for cross section up to max. 1,5mm²

Analog inputs 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)	Specifity (based on input area)	< 2%

*** 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 (+sign)	17...64ms → 13Bit (+sign)	65...256ms → 14Bit (+sign)	> 265ms → 15Bit (+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

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.

Manuals, sample programs: Additional documentation by manuals is available as well sample applications at the download area of www.insevis.com in English language for free download.

Disclaimer: All technical details in this documentation were created by INSEVIS with highest diligence. Anyhow mistakes could not be excluded, so no responsibility is taken by INSEVIS for the complete correctness of this information. This documentation will reviewed regularly and necessary corrections will be done in next version. With publication of this data all other versions are no longer valid.

Disposal: Do not throw old appliances in the household waste! In the interest of environmental protection, old appliances must be collected separately from unsorted municipal waste. You can find out more about the proper disposal / return of your old appliance at www.insevis.com/disposal.
Attention: The deletion of personal data on the old devices to be disposed of is the responsibility of the end user.

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