

# Analog module - IB IL AI 4/EF-2MBD-PAC



2878641

<https://www.phoenixcontact.com/de/produkte/2878641>

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Inline, Analog input terminal, Analog inputs: 4, 0 V ... 5 V, -5 V ... 5 V, 0 V ... 10 V, -10 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection technology: 2-, 3-, 4-conductor, transmission speed in the local bus: 2 Mbps, degree of protection: IP20, including Inline connectors and marking fields

## Product Description

The terminal is designed for use within an Inline station. It is used to acquire analog voltage and current signals.

## Your advantages

- Bus-synchronous provision of input values with very low jitter ( $< 10 \mu\text{s}$ )
- Measured value acquisition with a resolution of 16 bits
- 4 differential signal inputs
- Connection of sensors in 2-, 3-, and 4-conductor technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA,  $\pm 20$  mA
- Voltage ranges: 0 V ... 10 V,  $\pm 10$  V, 0 V ... 5 V,  $\pm 5$  V
- Short-circuit
- Diagnostic and status indicators

## Commercial Data

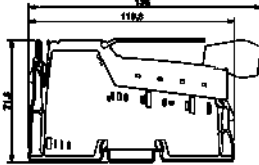
Item number	2878641
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	O1 - Automatisierungssys.
Product Key	DRI141
Catalog Page	Page 282 (AX-2009)
GTIN	4017918996413
Weight per Piece (including packing)	256,6 g
Weight per Piece (excluding packing)	210 g
Customs tariff number	85389091
Country of origin	DE

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## Technical Data

### Dimensions

Dimensional drawing	
Width	48.8 mm
Height	135 mm
Depth	71.5 mm

### Material specifications

Color	green
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### Interfaces

#### Inline local bus

Number of interfaces	2
Connection method	Inline data jumper
Transmission speed	2 Mbps

### System properties

#### Module

ID code (dec.)	223
ID code (hex)	DF
Length code (hex)	05
Length code (dec)	05
Process data channel	80 Bit
Input address area	10 Byte
Output address area	10 Byte
Register length	96 Bit
Required parameter data	28 Byte
Required configuration data	4 Byte

### Input data

#### Analog

Input name	Analog inputs
Description of the input	Differential input, including sensor supply (24 V DC)
Number of inputs	4
A/D conversion time	max. 10 $\mu$ s
A/D converter resolution	16 bit

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Connection method	Inline shield connector
Connection technology	2-, 3-, 4-conductor
Note regarding the connection technology	shielded
Current input signal	0 mA ... 20 mA 4 mA ... 20 mA -20 mA ... 20 mA
Input resistance current input	approx. 110 $\Omega$
Voltage input signal	0 V ... 5 V -5 V ... 5 V 0 V ... 10 V -10 V ... 10 V
Input resistance of voltage input	$\geq 300$ k $\Omega$
Data formats	IB IL, IB ST, standardized representation, S7 compatible
Limit frequency (3 dB)	500 Hz
Measured value resolution	16 bits (15 bits + sign bit)
Protective circuit	Transient protection; Yes, via arresters Overload protection; electronic

## Product properties

Type	modular
Product type	I/O component
Scope of delivery	including Inline connectors and marking fields
Operating mode	Process data mode with 5 words/1 word PCP
Diagnostics messages	Failure of the internal I/O supply I/O error message sent to the bus coupler Failure of or insufficient communications power $U_L$ I/O error message sent to the bus coupler I/O error Error message in the process data User error Error message in the process data

## Electrical properties

### Potentials

Power consumption	typ. 1140 mW (entire device) max. 1420 mW (entire device)
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### Potentials: Communications power ( $U_L$ )

Supply voltage	7.5 V DC (via voltage jumper)
Current draw	max. 125 mA typ. 110 mA

### Potentials: Supply of analog modules ( $U_{ANA}$ )

Supply voltage	24 V DC (via voltage jumper)
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current draw	max. 20 mA typ. 13 mA

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## Potentials: Main circuit supply ( $U_M$ )

Supply voltage	24 V DC (via voltage jumper)
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current draw	max. 200 mA

## Supply:

Designation	Sensor supply $U_{IS}$
Supply voltage	24 V DC (via feed-in from $U_M$ )
Current consumption	max. 50 mA (per channel)

## Connection data

### Connection technology

Connection name	Inline connector
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### Conductor connection

Connection method	Spring-cage connection
Conductor cross section solid	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	28 ... 16
Stripping length	8 mm

### Inline connector

Connection method	Spring-cage connection
Conductor cross section, rigid	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section, flexible	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	28 ... 16
Stripping length	8 mm

## Environmental and real-life conditions

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 55 °C
Degree of protection	IP20
Air pressure (operation)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Air pressure (storage/transport)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

## Standards and regulations

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
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## Mounting

Mounting type	DIN rail mounting
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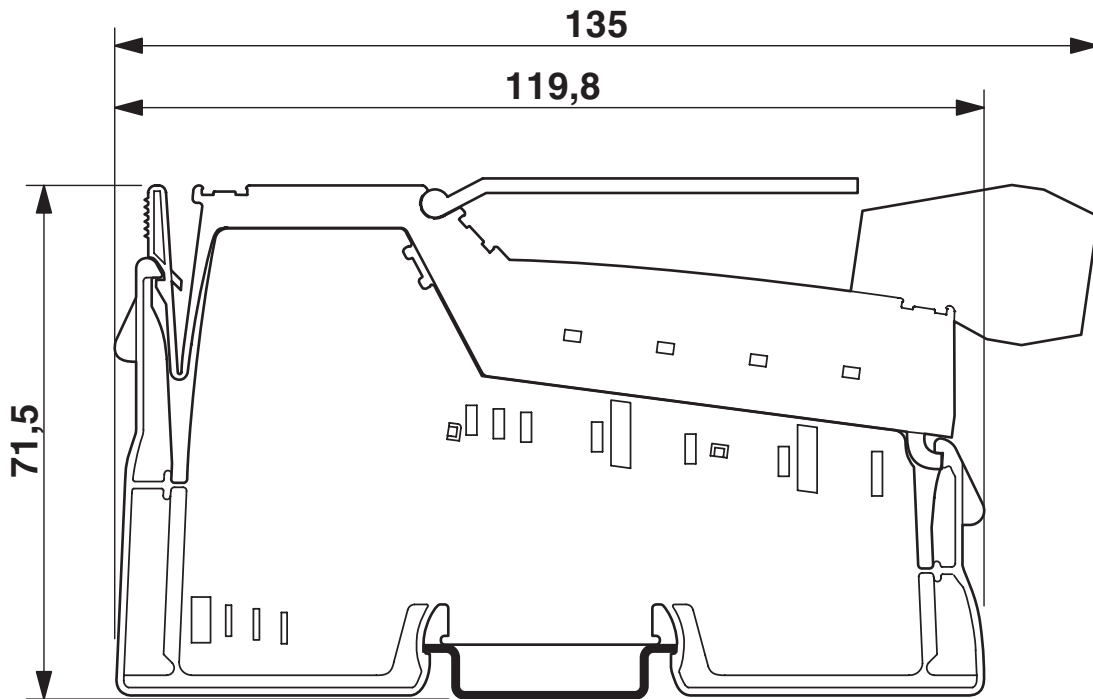
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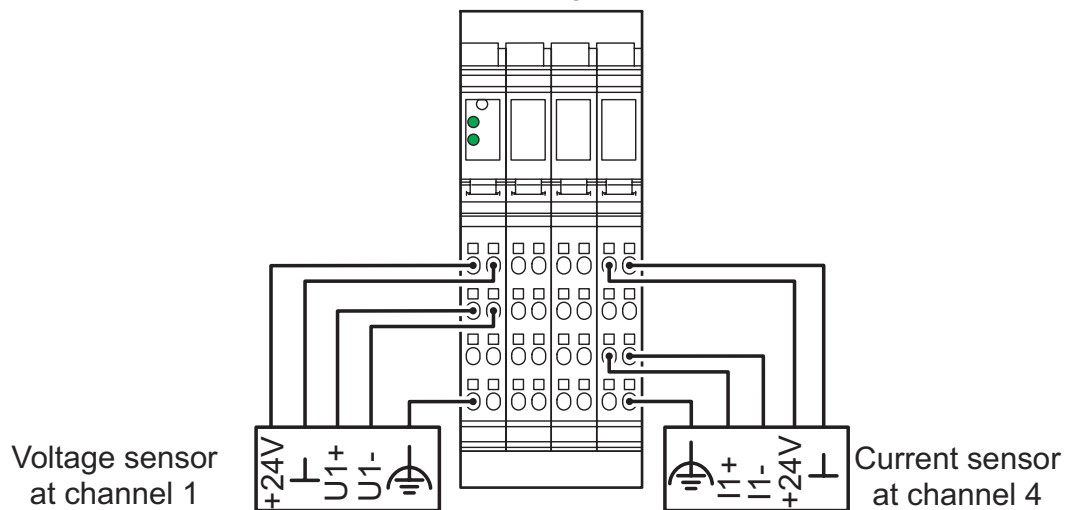
## Drawings

Dimensional drawing



Connection diagram

Slot	1	2	3	4
Channel	1	2	3	4



Connection example

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## Approvals



**cUL Recognized**  
Approval ID: FILE E 140324



**UL Recognized**  
Approval ID: FILE E 140324

**cULus Recognized**

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## Classifications

### ECLASS

ECLASS-9.0	27242601
ECLASS-10.0.1	27242601
ECLASS-11.0	27242601
ECLASS-12.0	27242601

### ETIM

ETIM 8.0	EC001596
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### UNSPSC

UNSPSC 21.0	32151600
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## Environmental Product Compliance

REACH SVHC

Lead 7439-92-1

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