

IB IL AI 4/EF-PAC - Analog module



2878447
<https://www.phoenixcontact.com/us/products/2878447>

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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: 500 kbps, 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

- 4 differential signal inputs
- Connection of sensors in 2-, 3-, and 4-conductor technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA, ± 20 mA
- Voltage ranges: 0 V ... 10 V, ± 10 V, 0 V ... 5 V, ± 5 V
- The channels are parameterized independently of one another via the bus system
- Parameterization via process data or PCP
- Measured values can be represented in four different formats
- Resolution depends on the representation format and the measuring range
- Process data update of all channels in max. 1 ms
- Sensor supply with channel-specific integrated short-circuit and overload protection
- Bus-synchronous provision of input values with very low jitter ($< 10 \mu\text{s}$)

Commercial data

Item number	2878447
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR01
Product key	DRI141
Catalog page	Page 136 (C-6-2019)
GTIN	4017918996376
Weight per piece (including packing)	252 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
Note on dimensions		Housing dimensions

Notes

Note on application		
Note on application		Only for industrial use
Utilization restriction		
CCCex note		Use in potentially explosive areas is not permitted in China.

Interfaces

Inline local bus		
Number of interfaces		2
Connection method		Inline data jumper
Transmission speed		500 kbps

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: General

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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 µs
A/D converter resolution	16 bit
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	typ. 110 Ω
Voltage input signal	0 V ... 5 V
	-5 V ... 5 V
	0 V ... 10 V
	-10 V ... 10 V
Input resistance of voltage input	typ. 300 kΩ
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 of the current inputs; electronic

Product properties

Product type	I/O component
Product family	Inline
Type	modular
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

Insulation characteristics

Overvoltage category	II (IEC 60664-1, EN 60664-1)
Pollution degree	2 (IEC 60664-1, EN 60664-1)

Electrical properties

Maximum power dissipation for nominal condition	1.4 W
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Potentials: Communications power (U_L)

Supply voltage	7.5 V DC (via voltage jumper)
Current draw	max. 100 mA

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	typ. 85 mA
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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

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 min. 0 mA (No-load)

Supply:

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

Electrical isolation/isolation of the voltage ranges

Test voltage: 7.5 V supply (bus logic), 24 V supply U_{ANA} / I/O	500 V AC, 50 Hz, 1 min
Test voltage: 7.5 V supply (bus logic), 24 V supply U_{ANA} / functional ground	500 V AC, 50 Hz, 1 min
Test voltage: I/O/functional ground	500 V AC, 50 Hz, 1 min

Connection data

Connection technology

Connection name	Inline connector
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Conductor connection

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

Inline connector

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

Environmental and real-life conditions

Ambient conditions

Ambient temperature (operation)	-25 °C ... 55 °C
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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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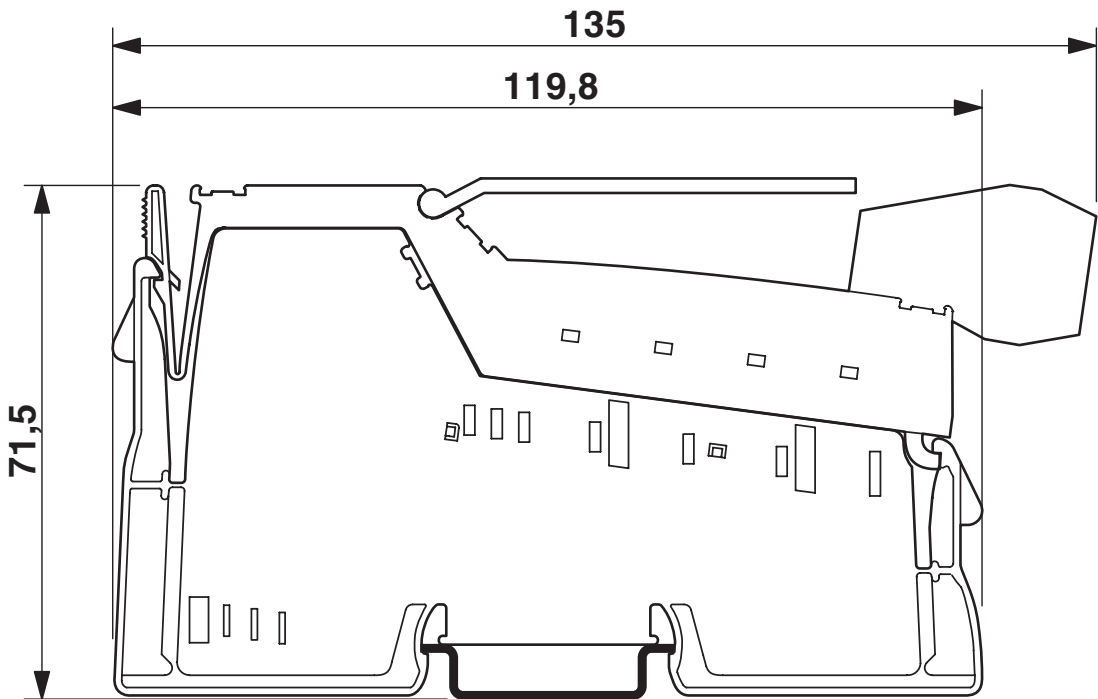
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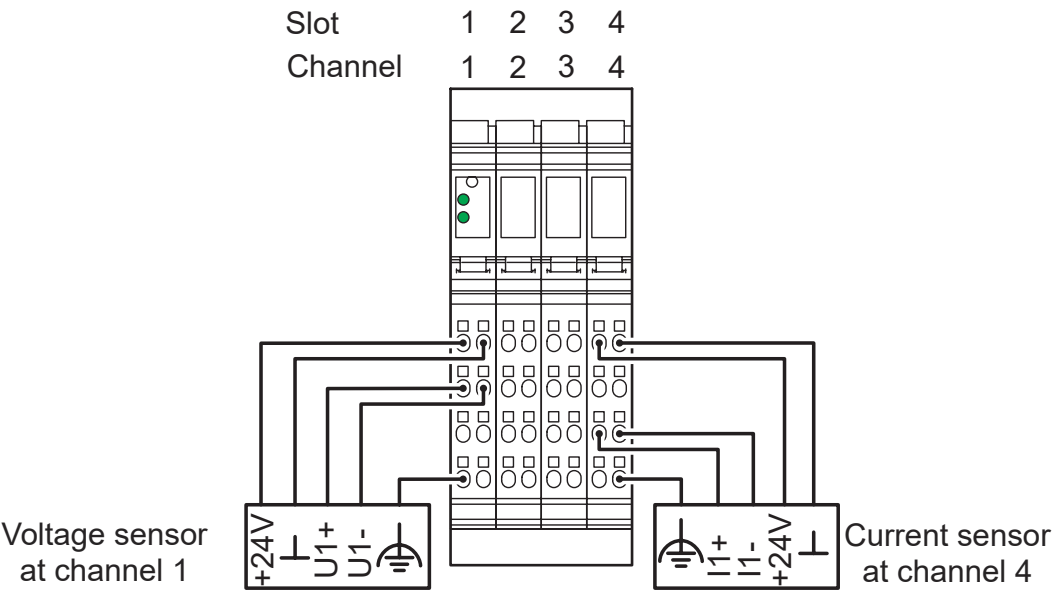
Drawings

Dimensional drawing



Dimensions (in mm)

Connection diagram



Connection example

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Approvals

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DNV GL

Approval ID: TAA00000BN



LR

Approval ID: LR23398855TA



BV

Approval ID: 20989/B2_BV

BSH

Approval ID: 658a



RINA

Approval ID: ELE121121XG

ABS

Approval ID: 22-2226444-PDA



cULus Recognized

Approval ID: E140324



cULus Listed

Approval ID: E199827

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Classifications

ECLASS

ECLASS-13.0	27242601
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ETIM

ETIM 9.0	EC001596
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UNSPSC

UNSPSC 21.0	32151600
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	65d3ee3f-eeca-4650-b44c-1b47cf964fe2

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