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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## I/O module - AXL F AI4 I XC 1H - 2702007

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Axioline F XC, Analog input module, Analog inputs: 4, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection method: 2, 3, 4-wire, transmission speed in the local bus: 100 Mbps, integrated sensor supply, Extreme conditions version, including bus base module and Axioline F connectors

The figure shows the standard item

### Product Description


The module is designed for use within an Axioline F station. It is used to acquire analog current signals.

### Why buy this product

- 4 analog, bipolar input channels for the connection of current signals
- Connection of sensors in 2, 3, and 4-wire technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA,  $\pm 20$  mA
- Simultaneous scanning of all channels by means of simultaneous sampling
- High crosstalk attenuation between the channels, thanks to separate signal paths
- Particularly robust against electromagnetic interference
- Device rating plate stored
- Diagnostic and status indicators
- Can be used under extreme ambient conditions
- Extended temperature range of -40°C ... +70°C (see "Tested successfully: use under extreme ambient conditions" in the data sheet)
- Partially coated PCBs



### Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 900997
GTIN	4046356900997

### Technical data

#### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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## Technical data

### Dimensions

Width	35 mm
Height	126.1 mm
Depth	54 mm
Note on dimensions	The depth is valid when a TH 35-7,5 DIN rail is used (according to EN 60715).

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °C (Standard)
	-40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)
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)
Degree of protection	IP20

### Connection data

Designation	Axiline F connector
Connection method	Push-in connection
Note on the connection method	Please observe the information provided on conductor cross sections in the "Axiline F: system and installation" user manual.
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	1.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	1.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

### General

Mounting type	DIN rail
Net weight	145 g
Note on weight specifications	with connectors and bus base module

### Interfaces

Designation	Axiline F local bus
No. of channels	2
Connection method	Bus base module
Transmission speed	100 Mbps

### Axiline potentials

Designation	Axiline F local bus supply ( $U_{Bus}$ )
Supply voltage	5 V DC (via bus base module)

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### Technical data

#### Axioline potentials

Current consumption	typ. 120 mA
	max. 150 mA
Designation	Supply for analog modules ( $U_A$ )
Supply voltage	24 V DC (I/O supply and sensor supply)
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	typ. 38 mA ( $I_{IS} = 0$ mA)
	typ. 118 mA ( $I_{IS} = 4 \times 20$ mA (nominal load))
	max. 125 mA ( $I_{IS} = 4 \times 20$ mA (nominal load))
	typ. 238 mA ( $I_{IS} = 4 \times 50$ mA (full load))
	max. 245 mA ( $I_{IS} = 4 \times 50$ mA (full load))
Power consumption	typ. 1.5 W (at $U_{BUS}$ and $U_A$ )
	max. 1.83 W (at $U_{BUS}$ and $U_A$ )
Type of protection	Surge protection of the supply voltage
	Polarity reversal protection of the supply voltage
	Transient protection

#### Analog inputs

Description of the input	Differential inputs, current
Input name	Analog inputs
Number of inputs	4
Connection method	Push-in connection
Connection technology	2, 3, 4-wire
A/D conversion time	31.25 $\mu$ s
Resolution A/D	16 bit
Limit frequency (3 dB)	30 Hz
	12 kHz
Type of protection	Transient protection of inputs
	Overload protection of the current inputs
Data formats	IB IL, S7-compatible
Measured value representation	16 bits (15 bits + sign bit)
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA
	-20 mA ... 20 mA
Input resistance current input	104 $\Omega$ (typical)
Input filter	30 Hz, 12 kHz and mean-value generation (can be parameterized)

#### Electrical isolation

Test section	5 V communications power (logic), 24 V supply (I/O) 500 V AC 50 Hz 1 min.
	5 V supply (logic)/analog inputs 500 V AC 50 Hz 1 min.
	5 V supply (logic)/functional earth ground 500 V AC 50 Hz 1 min.
	24 V supply (I/O)/analog inputs 500 V AC 50 Hz 1 min.

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## Technical data

### Electrical isolation

	24 V supply (I/O) / functional earth ground 500 V AC 50 Hz 1 min.
	Analog inputs/functional earth ground 500 V AC 50 Hz 1 min.

### Standards and Regulations

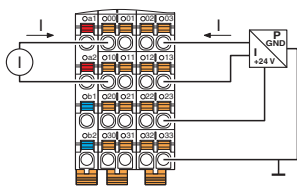
Mechanical tests	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6 5g
	Shock in acc. with EN 60068-2-27/IEC 60068-2-27 30g
	Continuous shock according to EN 60068-2-27/IEC 60068-2-27 10g
Protection class	III, IEC 61140, EN 61140, VDE 0140-1

### Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

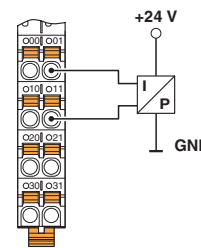
## Drawings

Connection diagram



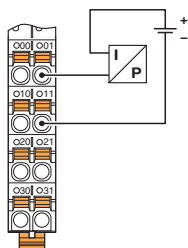
Connection for current measurement

Connection diagram



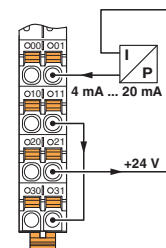
Passive pressure sensor at a differential current input

Connection diagram



Differential current input with passive 2-wire transmitter (current loop)

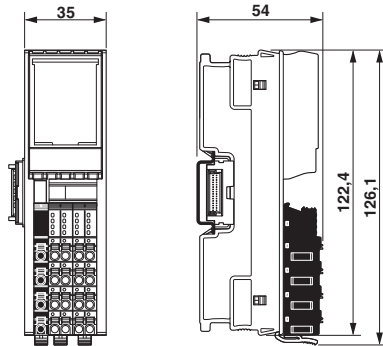
Connection diagram



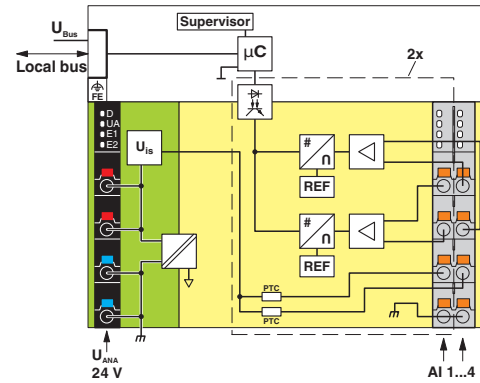
Differential current input with passive 2-wire transmitter (current loop)

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Dimensional drawing



Block diagram



## Approvals

### Approvals

### Approvals

UL Listed / cUL Listed / LR / ABS / NK / BV / DNV GL / PRS / RINA / BSH / KR / cULus Listed

### Ex Approvals

### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
LR		<a href="http://www.lr.org/en">http://www.lr.org/en</a>	14-20019
ABS		<a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>	17-HG1669996-PDA
NK		<a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>	14A006

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## Approvals

BV		<a href="http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials">http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials</a>	36433/A2 BV
DNV GL		<a href="http://exchange.dnv.com/tari/">http://exchange.dnv.com/tari/</a>	TAA00000DF
PRS		<a href="http://www.prs.pl/">http://www.prs.pl/</a>	TE/2106/880590/16
RINA		<a href="http://www.rina.org/en">http://www.rina.org/en</a>	ELE0078216XG
BSH		<a href="http://www.bsh.de/de/index.jsp">http://www.bsh.de/de/index.jsp</a>	840
KR		<a href="http://www.krs.co.kr/eng/main/main.aspx">http://www.krs.co.kr/eng/main/main.aspx</a>	HMB17372-AC002
cULus Listed			

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PHOENIX CONTACT GmbH & Co. KG  
Flachsmarktstr. 8  
32825 Blomberg  
Germany  
Tel. +49 5235 300  
Fax +49 5235 3 41200  
<http://www.phoenixcontact.com>