

## I/O module - AXL F UTH4 1H - 2688598

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Axioline F temperature module, 4 inputs for connection of thermocouple sensors (including bus base module and connectors)

### Product Description

The module is designed for use within an Axioline F station.

It is used to acquire signals from standard thermocouples in industrial applications.

The module supports various types of thermocouple conforming to DIN EN 60584-1 and DIN 46710 as well as linear voltages from -100 mV to +100 mV.

It also offers a voltage input from -5 V to +5 V.

Heating currents can be monitored here, for example, using a measuring transducer.

Both Pt 100 inputs (CJ1 and CJ2) can each be used as a sensor input or as an external cold junction.

### Why buy this product

- ✓ 4 analog input channels to connect thermocouples or linear voltages from -100 mV to +100 mV
- ✓ 1 analog input channel for the connection of voltages from -5 V to +5 V
- ✓ Connection of sensors in 2-wire technology
- ✓ Internal detection and compensation of cold junction temperature (can be parameterized)
- ✓ External connection of Pt 100 cold junction sensors possible
- ✓ High level of accuracy (typically  $\pm 0.01$  % sensor type K)
- ✓ High level of accuracy, even in various mounting positions, thanks to built-in space compensation of the internal cold junction
- ✓ High temperature stability (typically 5 ppm/K)
- ✓ High temperature stability (typically 8 ppm/K)
- ✓ High resistance to electromagnetic interference (Class A)
- ✓ "Channel Scout" function
- ✓ Device rating plate stored
- ✓ Diagnostic and status indicators
- ✓ Installation monitoring with indication via diagnostic LED for each channel



### Key Commercial Data

Packing unit	1 STK
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## I/O module - AXL F UTH4 1H - 2688598

GTIN	 4 046356 780117
GTIN	4046356780117
Weight per Piece (excluding packing)	200.000 g
Custom tariff number	85389091
Country of origin	Germany

### 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
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	Axioline F connector
Connection method	Push-in connection
Note on the connection method	Please observe the information provided on conductor cross sections in the "Axioline 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	144 g
Note on weight specifications	with connectors and bus base module

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## Technical data

### Interfaces

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

### Axioline potentials

Supply voltage	5 V DC (via bus base module)
Current consumption	typ. 112 mA
	max. 160 mA
Power consumption	typ. 0.54 W
	max. 0.8 W
Designation	Supply for analog modules U <sub>A</sub>
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	typ. 23 mA
	max. 40 mA
Power consumption	max. 0.96 W
	typ. 1.05 W (entire device)
	max. 1.76 W (entire device)
Type of protection	Surge protection of the supply voltage
	Polarity reversal protection of the supply voltage
	Transient protection

### Analog inputs

Number of inputs	4 +1 (4 inputs for thermocouples or linear voltage, plus 1 input -5 V to +5 V)
Input name	Analog inputs
Description of the input	Inputs for thermocouples or linear voltage
Connection method	Spring-cage connection with direct connector-in method
Connection technology	2-wire (shielded, twisted pair)
Sensor types (RTD) that can be used	Pt 100 (2 external cold junctions, can also be used as a sensor input)
Measuring principle	Sigma/Delta process
Measured value representation	16 bits (15 bits + sign bit)
Resolution A/D	24 bit
Type of protection	Short-circuit protection, overload protection of the inputs
	Transient protection of inputs
Input filter time	40 ms

### Electrical isolation

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## Technical data

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

### Standards and Regulations

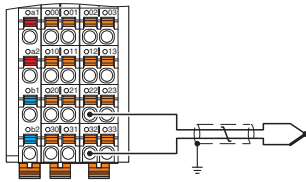
Mechanical tests	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6 5g
	Shock in acc. with EN 60068-2-27/IEC 60068-2-27 30g
	Continuous shock according to EN 60068-2-27/IEC 60068-2-27 10g
Protection class	III, IEC 61140, EN 61140, VDE 0140-1

### Environmental Product Compliance

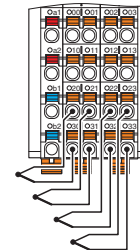
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

## Drawings

Connection diagram



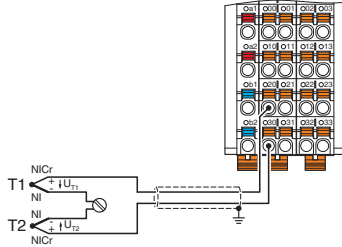
Connection diagram



Connection example: absolute temperature measurement

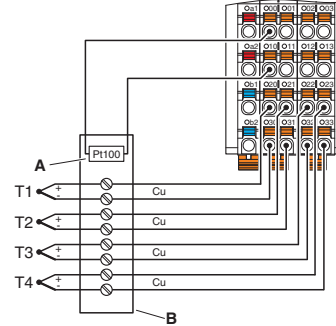
# I/O module - AXL F UTH4 1H - 2688598

Connection diagram



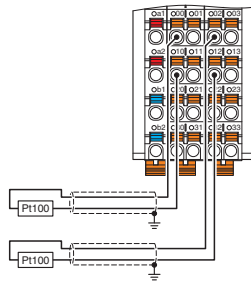
Differential temperature measurement

Connection diagram



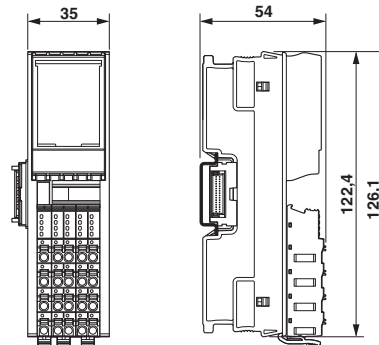
Thermocouple detection with external cold junction compensation at channel 1

Connection diagram

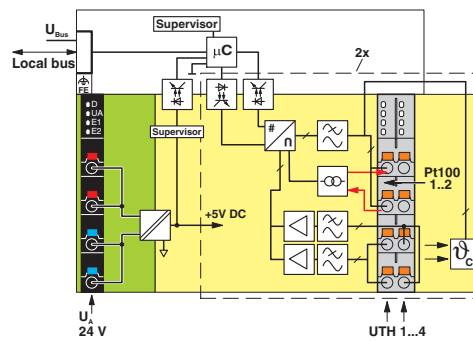


Pt 100 detection

Dimensional drawing



Block diagram



Internal wiring of the terminal points

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## Classifications

### eCl@ss

eCl@ss 4.0	27240405
eCl@ss 4.1	27240405
eCl@ss 5.0	27242201
eCl@ss 5.1	27242601
eCl@ss 6.0	27242601
eCl@ss 7.0	27242601
eCl@ss 8.0	27242601
eCl@ss 9.0	27242601

### ETIM

ETIM 3.0	EC001599
ETIM 4.0	EC001599
ETIM 5.0	EC001596
ETIM 6.0	EC001596

### UNSPSC

UNSPSC 6.01	43172015
UNSPSC 7.0901	43201404
UNSPSC 11	39121311
UNSPSC 12.01	39121311
UNSPSC 13.2	32151602

## Approvals

### Approvals

#### Approvals

UL Listed / cUL Listed / BSH / RINA / NK / BSH / DNV GL / ABS / 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
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## Approvals

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
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BSH		<a href="http://www.bsh.de/de/index.jsp">http://www.bsh.de/de/index.jsp</a>	840
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RINA		<a href="http://www.rina.org/en">http://www.rina.org/en</a>	ELE0078216XG
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NK		<a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>	14A006
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BSH		<a href="http://www.bsh.de/de/index.jsp">http://www.bsh.de/de/index.jsp</a>	840
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DNV GL		<a href="http://exchange.dnv.com/tari/">http://exchange.dnv.com/tari/</a>	TAA00000DF
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ABS		<a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>	17-HG1669996-PDA
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KR		<a href="http://www.krs.co.kr/eng/main/main.aspx">http://www.krs.co.kr/eng/main/main.aspx</a>	HMB17372-AC002
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cULus Listed			
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## Accessories

### Accessories

### Device marking

Insert label - EMT (35X46)R - 0801604



Insert label, for the Axioline F series from Phoenix Contact, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, THERMOMARK S1.1, mounting type: snapped into marker carrier, lettering field size: 35 x 46 mm

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### Accessories

DIN rail connector

Bus connector - AXL F BS H - 2700992



Axiline F bus base module for housing type H

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### Feed-through terminal block

Thermoelectric voltage terminal block pair - MTKD-CU/CUNI - 3100059



Thermoelectric voltage terminal block pair, USA type T, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section:0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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Thermoelectric voltage terminal block pair - MTKD-FE/CUNI - 3100046



Thermoelectric voltage terminal block pair, USA type J, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section:0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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Thermoelectric voltage terminal block pair - MTKD-NICR/CUNI - 3100075



Thermoelectric voltage terminal block pair, USA type E, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section:0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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Thermoelectric voltage terminal block pair - MTKD-NICR/NI - 3100062



Thermoelectric voltage terminal block pair, USA type K, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section:0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

## I/O module - AXL F UTH4 1H - 2688598

### Accessories

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#### Thermoelectric voltage terminal block pair - MTKD-E-CU/A-CU - 3100091



Thermoelectric voltage terminal block pair, USA type R, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section: 0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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#### Thermoelectric voltage terminal block pair - MTKD-S-CU/E-CU - 3100101



Thermoelectric voltage terminal block pair, USA type B, nom. voltage: 400 V, nominal current: 1 A, connection method: Screw connection, number of connections: 4, number of positions: 2, cross section: 0.2 mm<sup>2</sup> - 4 mm<sup>2</sup>, AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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### Mounting material

#### Shield connection - AXL SHIELD SET - 2700518



Axiline shield connection set (contains 2 busbar holders and 2 SK 5 shield connection clamps)

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### Terminal marking

#### Zack marker strip - ZB 20,3 AXL UNPRINTED - 0829579



Zack marker strip for Axiline F (device labeling), in 2 x 20.3 mm pitch, unprinted, 25-section, for individual labeling with B-STIFT 0.8, X-PEN, or CMS-P1-PLOTTER

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## I/O module - AXL F UTH4 1H - 2688598

### Accessories

Zack Marker strip, flat - ZBF 10/5,8 AXL UNPRINTED - 0829580



Zack marker strip, flat, in 10 mm pitch, unprinted, 10-section, for individual labeling with M-PEN 0,8, X-PEN, or CMS-P1-PLOTTER