

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

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Axioline F, Temperature recording module, Analog inputs: 4 (4 inputs for thermocouples or linear voltage, plus 1 input -5 V to +5 V), connection method: 2-wire (shielded, twisted pair), transmission speed in the local bus: 100 Mbps, degree of protection: IP20, including bus base module and Axioline F 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.

Your advantages

- ✓ 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 ± 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 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



COMPLIANT

Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 780117
GTIN	4046356780117
Weight per Piece (excluding packing)	144.000 g
Custom tariff number	85389091

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Country of origin	Germany
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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
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 ²
Conductor cross section solid max.	1.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	1.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	8 mm

General

Mounting type	DIN rail
Color	traffic grey A RAL 7042
Net weight	144 g
Note on weight specifications	with connectors and bus base module
Mounting position	any (no temperature derating)

Interfaces

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

Axioline potentials

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Technical data

Axioline potentials

Designation	Axioline F local bus supply (U_{Bus})
Supply voltage	5 V DC (via bus base module)
Current consumption	typ. 112 mA
	max. 160 mA
Power consumption	typ. 0.54 W (logic)
	max. 0.8 W (logic)
Designation	Supply for analog modules (U_A)
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 (Peripherals)
	typ. 1.05 W (entire device)
	max. 1.76 W (entire device)
Protective circuit	Surge protection of the supply voltage electronic (35 V, 0.5 s)
	Polarity reversal protection of the supply voltage Polarity protection diode
	Transient protection Suppressor diode

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)
A/D converter resolution	24 bit
Type of protection	Short-circuit protection, overload protection of the inputs
	Transient protection of inputs
Input filter time	40 ms

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

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Standards and Regulations

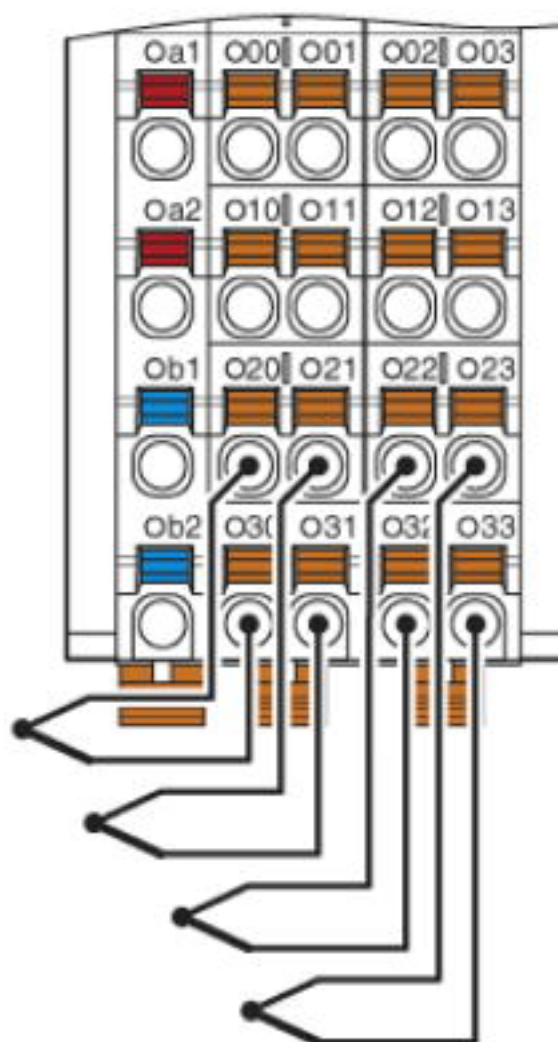
	Continuous shock according to EN 60068-2-27/IEC 60068-2-27 10g
Protection class	III (IEC 61140, EN 61140, VDE 0140-1)

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Drawings

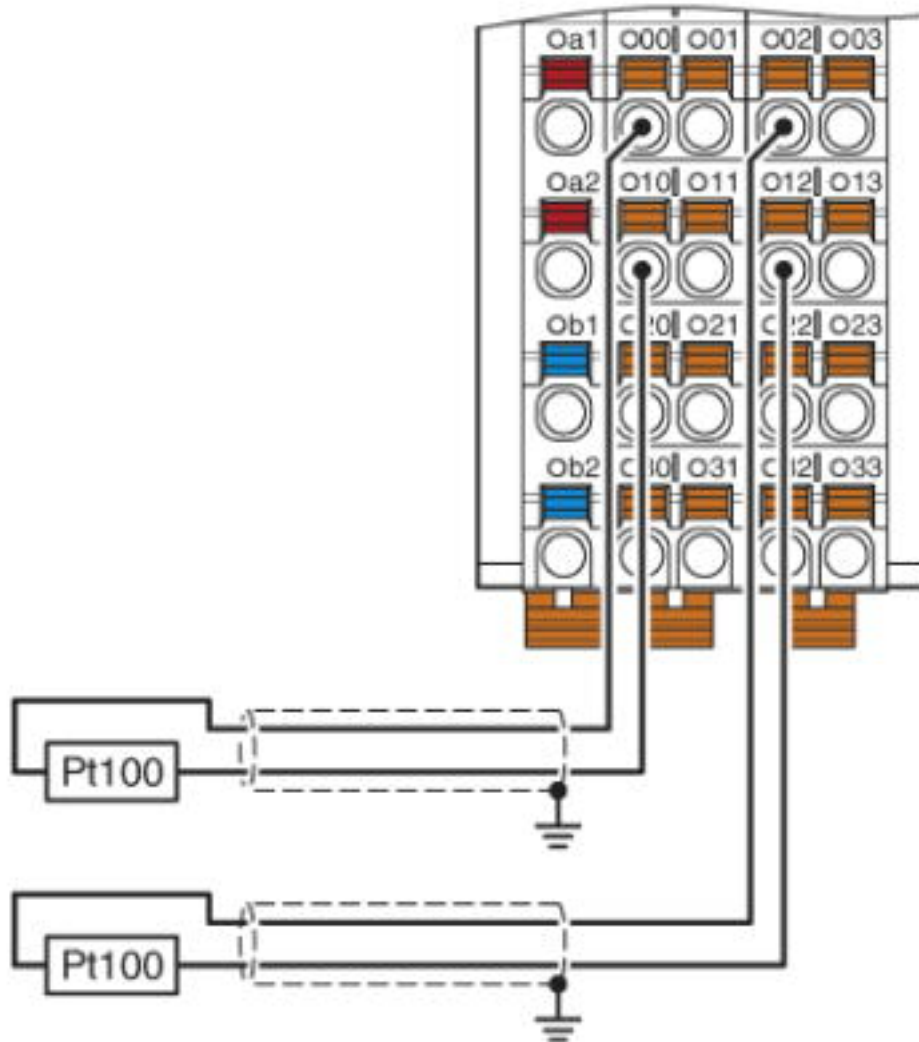
Connection diagram



Connection example: absolute temperature measurement

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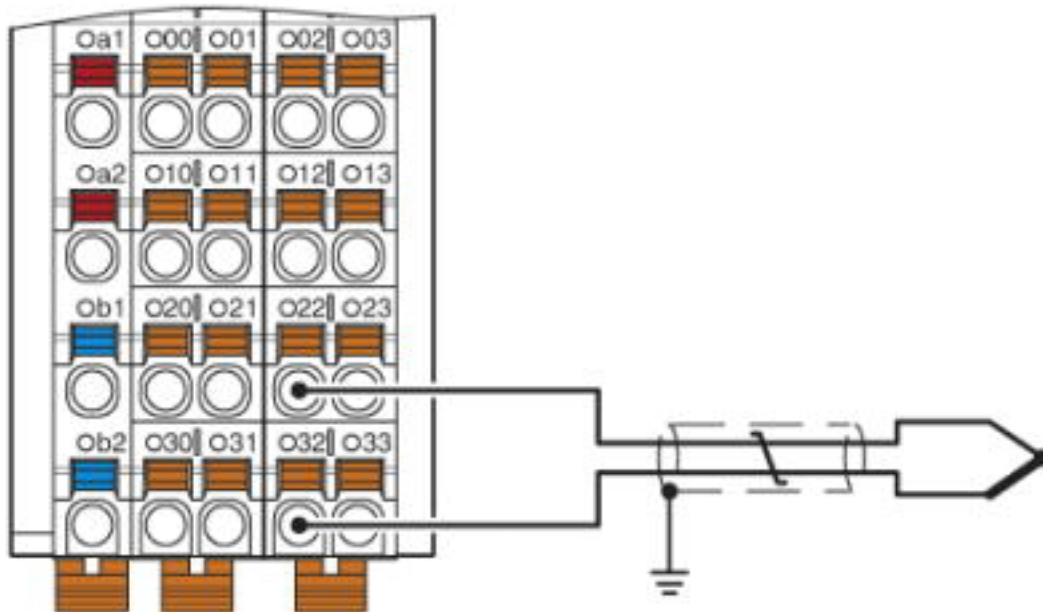
Connection diagram



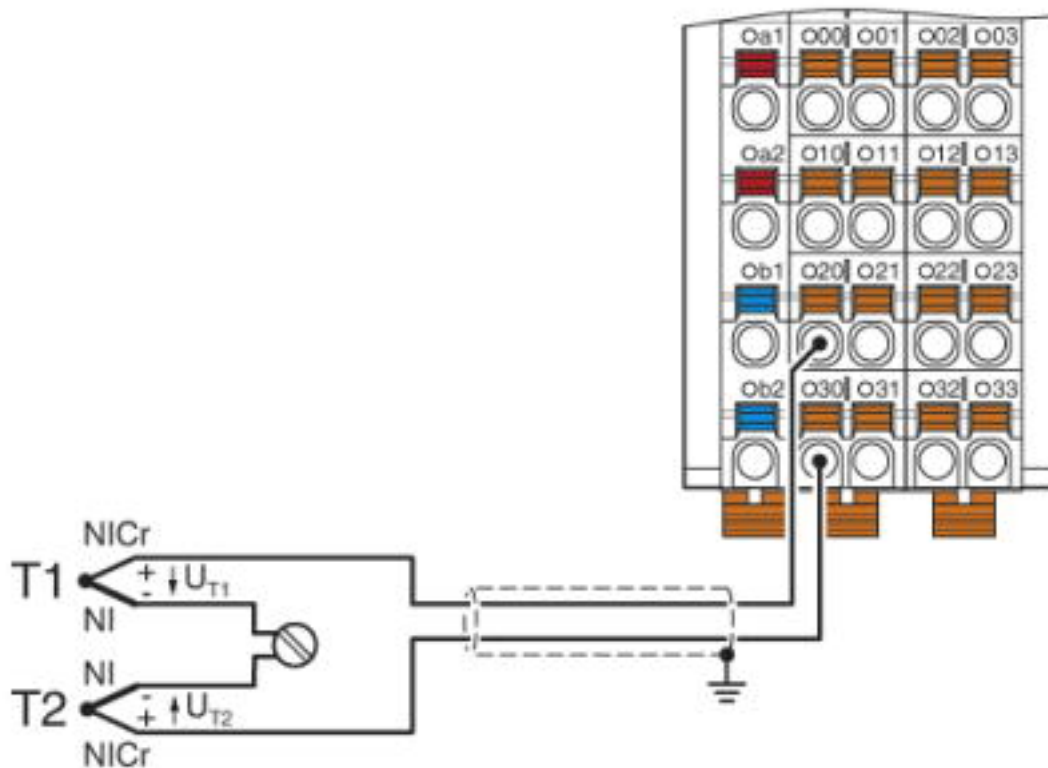
Pt 100 detection

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Connection diagram



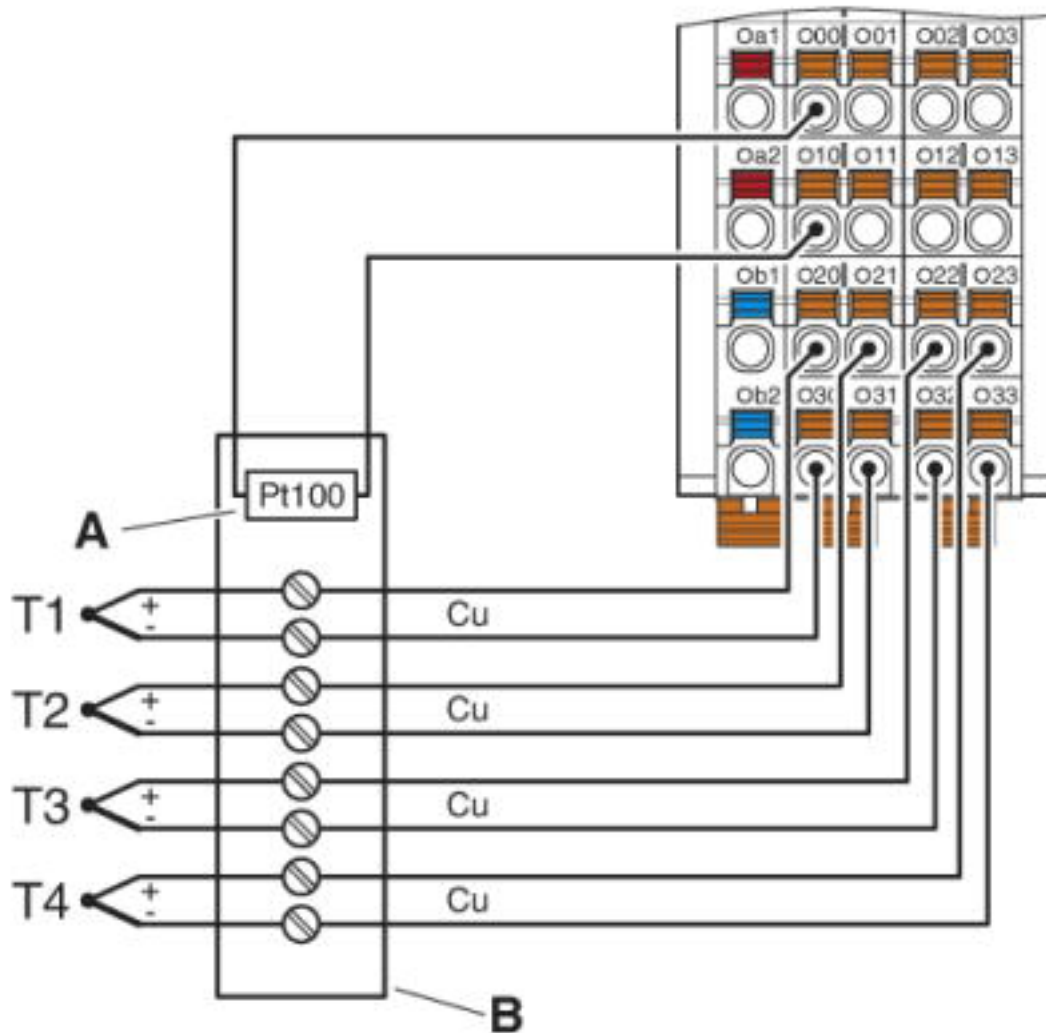
Connection diagram



Differential temperature measurement

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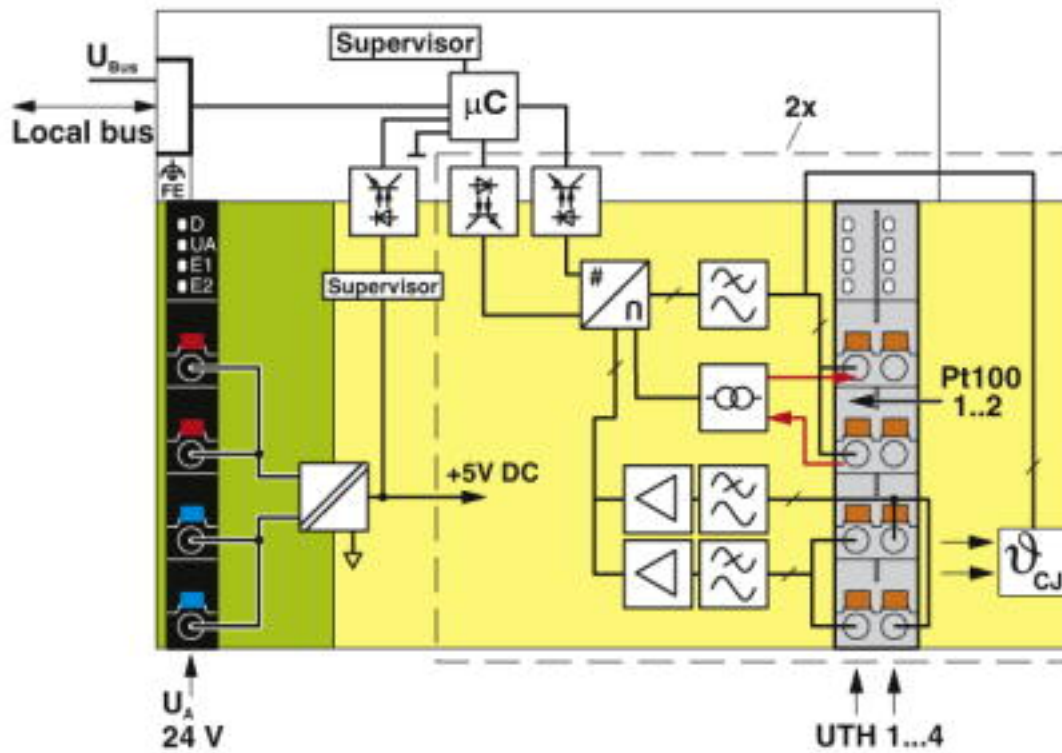
Connection diagram



Thermocouple detection with external cold junction compensation at channel 1

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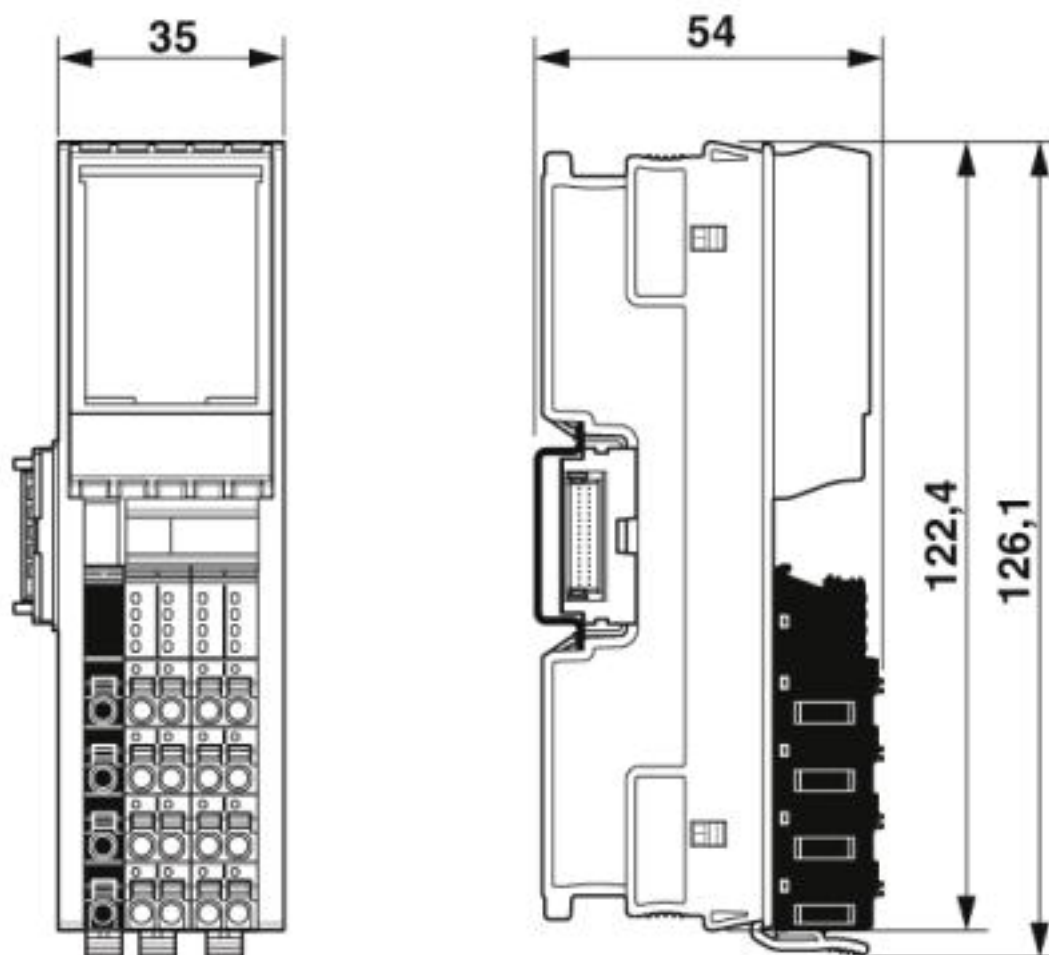
Block diagram



Internal wiring of the terminal points

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Dimensional drawing



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	27242600
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

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Classifications

ETIM

ETIM 6.0	EC001596
ETIM 7.0	EC001596

UNSPSC

UNSPSC 6.01	43172015
UNSPSC 7.0901	43201404
UNSPSC 11	39121311
UNSPSC 12.01	39121311
UNSPSC 13.2	32151602
UNSPSC 18.0	32151602
UNSPSC 19.0	32151602
UNSPSC 20.0	32151602
UNSPSC 21.0	32151602

Approvals

Approvals

Approvals

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

Ex Approvals

Approval details

DNV GL		https://approvalfinder.dnvgl.com/	TAA00000DF
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KR		http://www.krs.co.kr/eng/main/main.aspx	HMB17372-AC002
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NK		http://www.classnk.or.jp/hp/en/	14A006
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ABS		http://www.eagle.org/eagleExternalPortalWEB/	18-HG1767360-PDA
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BSH		http://www.bsh.de/de/index.jsp	840
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Approvals

RINA		http://www.rina.org/en	ELE256518XG
UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 238705
LR		http://www.lr.org/en	14-20019
PRS		http://www.prs.pl/	TE/2239/880590/19
BV		http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials	36433/B0 BV
cULus Listed			

Accessories

Accessories

Device marking

Insert label - EMT (35X28)R - 0801602



Insert label, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLLMaster 300/600, THERMOMARK X1.2, THERMOMARK ROLL X1, THERMOMARK ROLL 2.0, THERMOMARK ROLL, mounting type: snapped into marker carrier, lettering field size: 35 x 28 mm, Number of individual labels: 500

DIN rail connector

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Accessories

Bus connector - AXL F BS H - 2700992



Axoline F bus base module for housing type H

Feed-through terminal block

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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Accessories

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

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



Thermoelectric voltage terminal block pair, TC 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 mm² - 4 mm², AWG: 24 - 12, width: 10.4 mm, color: gray, mounting type: NS 35/7,5, NS 35/15, NS 32

Shield connection

Shield connection - AXL SHIELD SET - 2700518



Axioline shield connection set (contains 2 shield bus holders and 2 SK 5 shield connection clamps)

Terminal marking

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



Zack marker strip for Axioline 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

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



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snap into flat marker groove, for terminal block width: 10.15 mm, lettering field size: 4 of 10.15 x 5 mm and 1 of 5.8 x 5 mm, Number of individual labels: 50