

# AXL F UTH4 1H - Temperature module



2688598

<https://www.phoenixcontact.com/us/products/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 technology: 2-conductor (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-conductor technology
- Internal detection and compensation of cold junction temperature (can be parameterized)
- External connection of Pt 100 cold junction sensors possible
- Low tolerances (typically  $\pm 0.01\%$  for sensor type K)
- Very low measuring tolerances, even in various mounting positions, due 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
- Installation monitoring with indication via diagnostic LED for each channel

## Commercial data

Item number	2688598
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR02
Product key	DRI243
GTIN	4046356780117
Weight per piece (including packing)	194.2 g
Weight per piece (excluding packing)	144 g
Customs tariff number	85389091
Country of origin	DE

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## Technical data

### Dimensions

Dimensional drawing	
Width	35 mm
Height	126.1 mm
Depth	54 mm
Note on dimensions	The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715).

### Notes

#### Note on application

Note on application	Only for industrial use
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### Material specifications

Color (Housing)	gray (RAL 7042)
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### Interfaces

#### Axioline F local bus

Number of interfaces	2
Connection method	Bus base module
Transmission speed	100 Mbps

### System properties

#### Programming data (LocalbusSlave)

Input address area	10 Byte
Output address area	10 Byte

#### Fieldbus data telegram (PROFIBUS)

Required parameter data	12 Byte
Required configuration data	7 Byte

### Input data

#### Analog:

Input name	Analog inputs
Description of the input	Inputs for thermocouples or linear voltage

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Number of inputs	4 + 1 (4 inputs for thermocouples or linear voltage, plus 1 input - 5 V to +5 V)
Connection method	Push-in connection
Connection technology	2-conductor (shielded, twisted pair)
A/D converter resolution	24 bit
Sensor types (RTD) that can be used	Pt 100 (2 external cold junctions, can also be used as a sensor input)
Sensor types that can be used (TC)	U, T, L, J, E, K, N, S, R, B, C, W, HK
Tolerance, relative	typ. 0.01 % (Thermocouple type K, NiCr-Ni) see tables for tolerance values
Tolerance, absolute	typ. ± 0.19 K (Thermocouple type K, plus tolerance of cold junction) see tables for tolerance values
Measuring principle	Sigma/Delta process
Measured value representation	16 bits (15 bits + sign bit)
Input filter time	40 ms 60 ms 100 ms 120 ms (adjustable)
Protective circuit	Short-circuit protection, overload protection of the inputs Transient protection of inputs

## Product properties

Product type	I/O component
Product family	Axioline F
Type	block modular
Mounting position	any (no temperature derating; Parameterize the mounting position using the object 0080 <sub>hex</sub> ParaTable!)
Scope of supply	including bus base module and Axioline F connectors

## 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	1.75 W
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### Potentials: Axioline F local bus supply ( $U_{BUS}$ )

Supply voltage	5 V DC (via bus base module)
Current draw	max. 160 mA typ. 112 mA

### Potentials: 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 draw	max. 40 mA typ. 23 mA

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Protective circuit	Surge protection; electronic (35 V, 0.5 s)
	Reverse polarity protection; Polarity protection diode
	Transient protection; Suppressor diode
Electrical isolation/isolation of the voltage ranges	
Test voltage: 5 V supply of the local bus ( $U_{BUS}$ ) / 24 V supply (I/Os)	500 V AC, 50 Hz, 1 min
Test voltage: 5 V supply of the local bus ( $U_{BUS}$ ) / functional ground	500 V AC, 50 Hz, 1 min
Test voltage: 24 V supply (I/O) / functional ground	500 V AC, 50 Hz, 1 min

## Connection data

### Connection technology

Connection name	Axioline F connector
Note on the connection method	Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual.

### 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, rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Environmental and real-life conditions

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °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)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

### Mechanical test

Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	5g
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	30g
Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27	10g

## Standards and regulations

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

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Mounting type	DIN rail mounting
Mounting position	any (no temperature derating; Parameterize the mounting position using the object 0080 <sub>hex</sub> ParaTable!)

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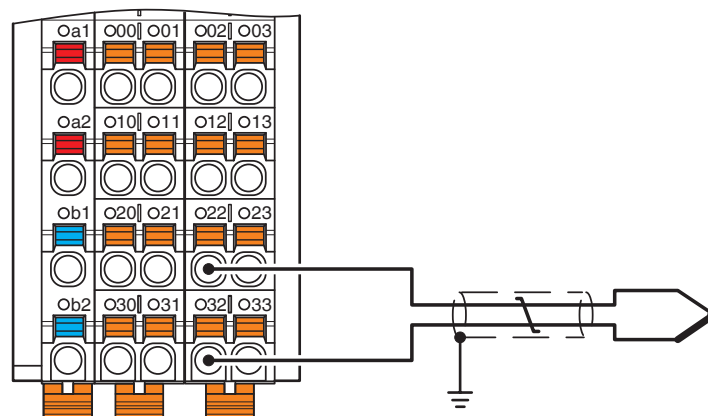
## Drawings

Dimensional drawing



Dimensions (in mm)

Connection diagram



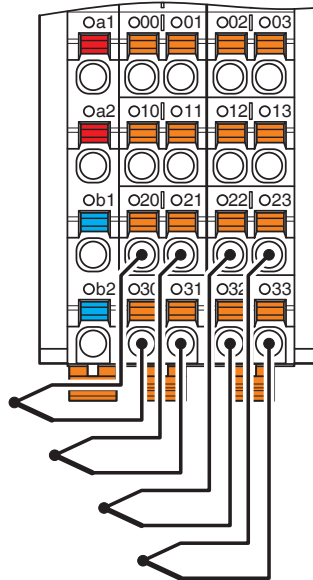
Connection example

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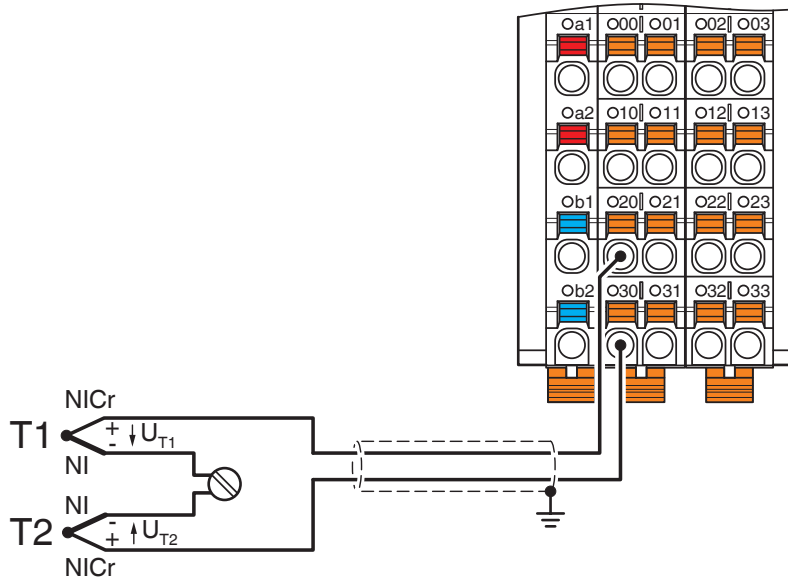
<https://www.phoenixcontact.com/us/products/2688598>

Connection diagram



Connection example: absolute temperature measurement

Connection diagram



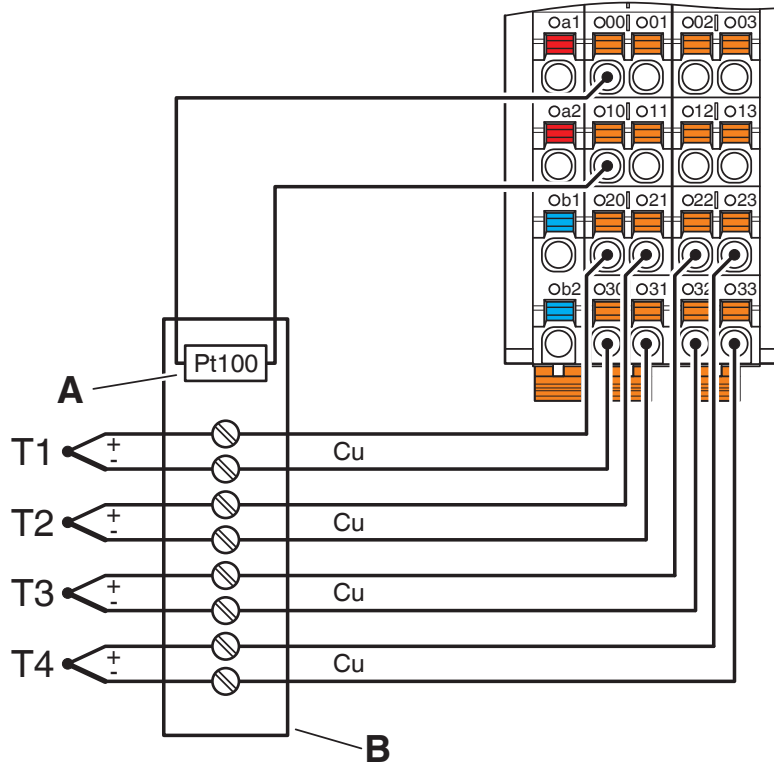
Differential temperature measurement

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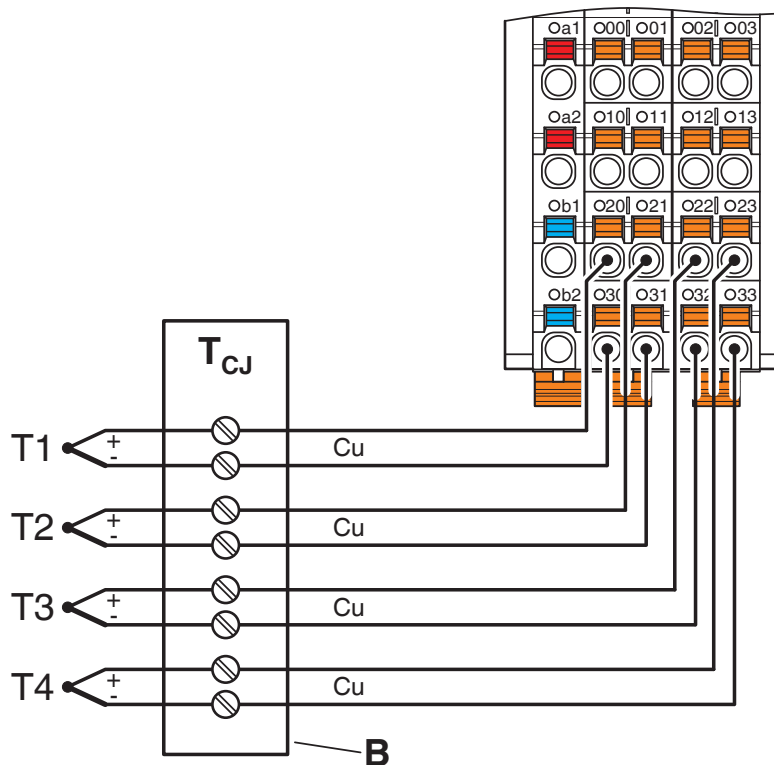
<https://www.phoenixcontact.com/us/products/2688598>

Connection diagram



Thermocouple detection with external cold junction compensation at channel 1

Connection diagram



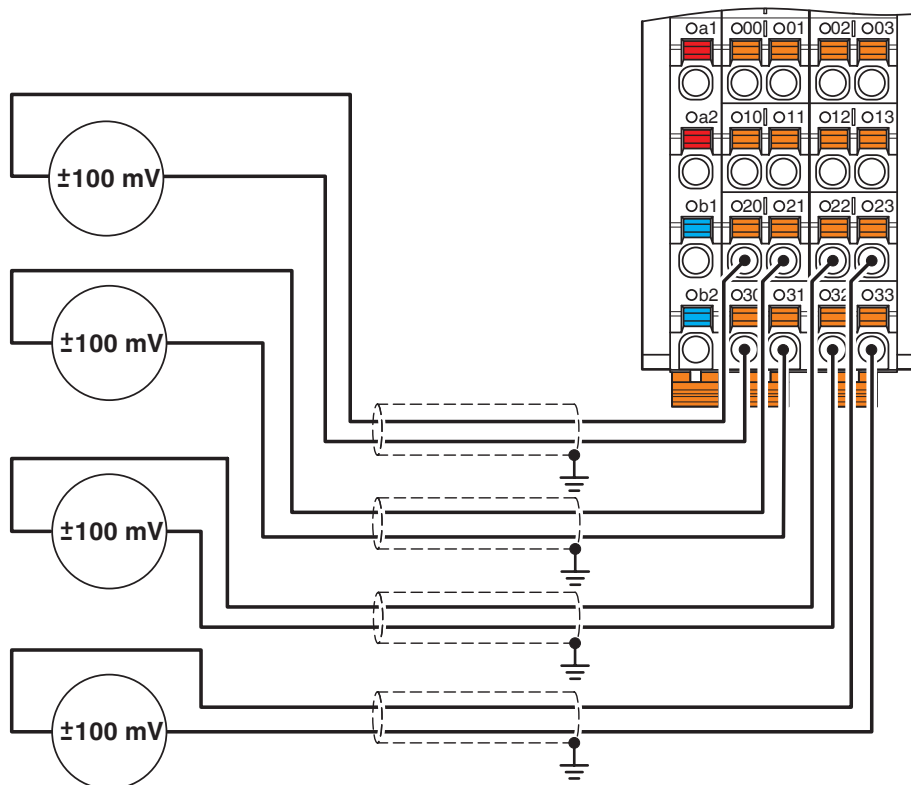
Thermocouple detection with cold junction temperature specification via process data

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Connection diagram



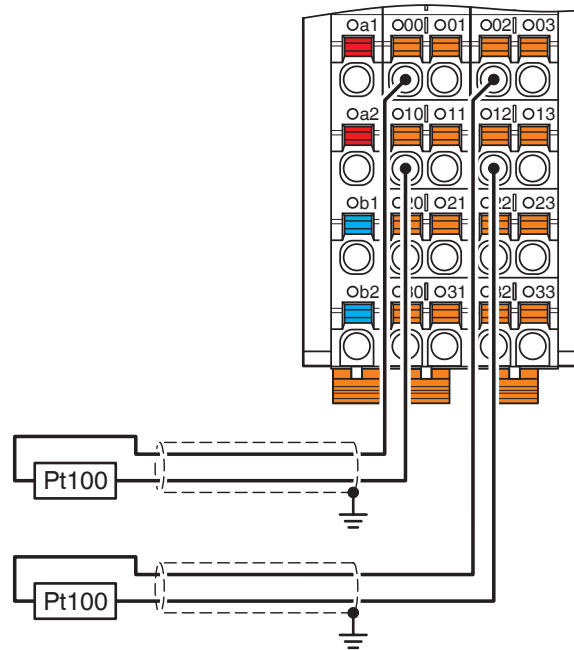
Measurement of linear voltages  $\pm 100$  mV

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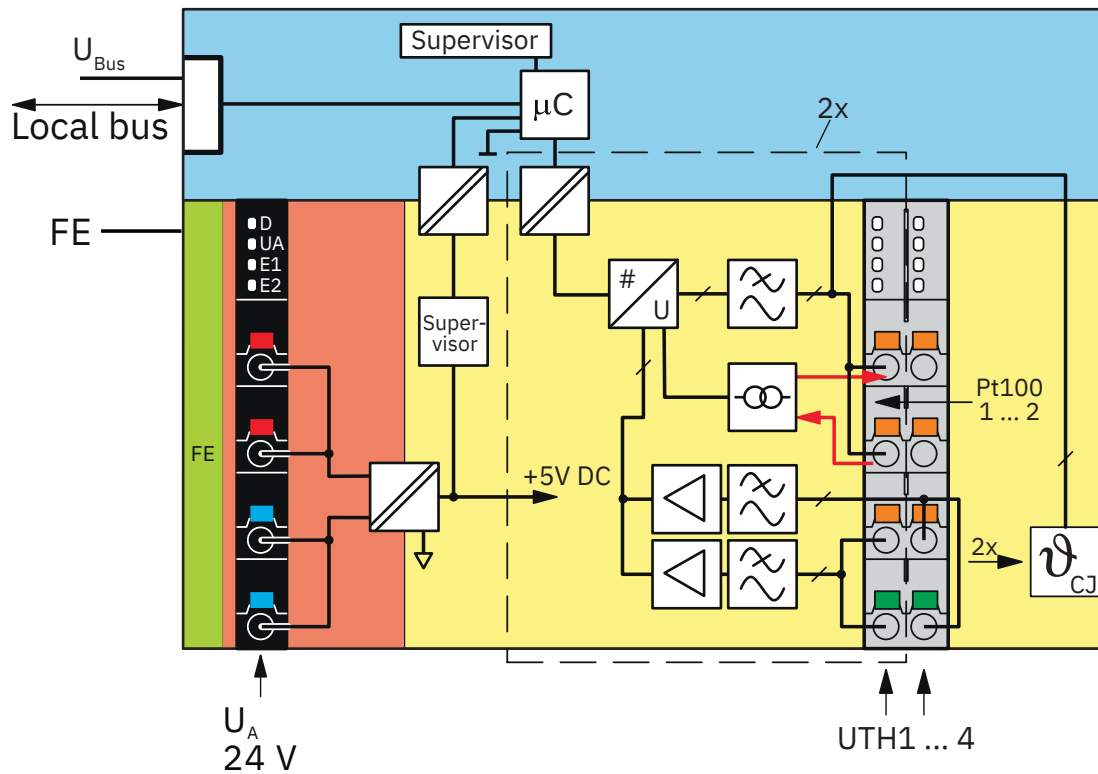
<https://www.phoenixcontact.com/us/products/2688598>

Connection diagram



Pt 100 detection

Block diagram



Internal wiring of the terminal points

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2688598>



**DNV GL**

Approval ID: TAA00000DF



**LR**

Approval ID: LR2480202TA-02



**PRS**

Approval ID: TE/1020/880590/21

**BSH**

Approval ID: 840



**RINA**

Approval ID: ELE008423XG001

**ABS**

Approval ID: 23-2449604-PDA



**cULus Listed**

Approval ID: E238705

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## Classifications

### ECLASS

ECLASS-13.0	27242601
ECLASS-15.0	27242601

### ETIM

ETIM 10.0	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-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1)
SCIP	a5ee3d70-01ec-429f-9e3a-fb4b5e9ba999

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