

## I/O module - AXL F AI4 U XC 1H - 2702008

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Axioline F XC, Analog input module, Analog inputs: 4, 0 V ... 5 V, -5 V ... 5 V, 0 V ... 10 V, -10 V ... 10 V, connection method: 2, 3, 4-wire, transmission speed in the local bus: 100 Mbps, integrated sensor supply, Extreme conditions version, degree of protection: IP20, 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 voltage signals.

### Your advantages

- ✓ 4 analog, bipolar input channels for the connection of voltage signals
- ✓ Connection of sensors in 2, 3, and 4-wire technology
- ✓ Voltage ranges: 0 V ... 10 V,  $\pm 10$  V, 0 V ... 5 V,  $\pm 5$  V
- ✓ 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
- ✓ 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 pc  |
| GTIN                                 | <br>4 055626 008400 |
| GTIN                                 | 4055626008400   |
| Weight per Piece (excluding packing) | 220.000 g   |
| Custom tariff number                 | 85389091  |
| Country of origin                    | Germany   |

## I/O module - AXL F AI4 U XC 1H - 2702008

### Technical data

#### Note

|                         |   |
|-------------------------|---|
| Utilization restriction | EMC: class A product, see manufacturer's declaration in the download area |
|-------------------------|---|

#### 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                           | 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                            |
| Color                         | traffic grey A RAL 7042             |
| Net weight                    | 215 g                               |
| Note on weight specifications | with connectors and bus base module |
| Mounting position             | any (no temperature derating)       |

## I/O module - AXL F AI4 U XC 1H - 2702008

### Technical data

#### Interfaces

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

#### Axioline potentials

|                      |   |
|----------------------|---|
| Designation          | Axioline F local bus supply ( $U_{Bus}$ )   |
| Supply voltage       | 5 V DC (via bus base module)  |
| Current consumption  | typ. 120 mA   |
|                      | max. 150 mA   |
| Power consumption    | typ. 0.6 W  |
|                      | max. 0.75 W   |
| 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  | max. 45 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 $U_A$ )   |
| Protective circuit   | Surge protection of the supply voltage electronic (35 V, 0.5 s)   |
|                      | Polarity reversal protection of the supply voltage up to HW 02: polarity protection diodeas of HW 03: parallel diode; with external 5 A fuse (for startup only) |
|                      | Transient protection supply voltage Suppressor diode  |

#### Analog inputs

|  |                              |
|--|------------------------------|
| Description of the input                 | Differential inputs, voltage |
| Input name                               | Analog inputs                |
| Number of inputs                         | 4                            |
| Connection method                        | Push-in connection           |
| Connection technology                    | 2, 3, 4-wire                 |
| Note regarding the connection technology | shielded, twisted pair       |
| A/D conversion time                      | 31.25 $\mu$ s                |
| A/D converter resolution                 | 16 bit                       |
| Limit frequency (3 dB)                   | 30 Hz                        |

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### Technical data

#### Analog inputs

|   |  |
|---|--|
|   | 12 kHz   |
| Type of protection                        | Transient protection of inputs                                 |
|   | Overload protection of the voltage inputs                      |
| Data formats                              | IB IL, S7-compatible   |
| Measured value representation             | 16 bits (15 bits + sign bit)                                   |
| Voltage input signal                      | 0 V ... 5 V  |
|   | -5 V ... 5 V   |
|   | 0 V ... 10 V   |
|   | -10 V ... 10 V   |
| Input resistance of voltage input         | 268 kΩ (typical)   |
| Common mode voltage range signal - ground | -50 V DC ... 50 V DC   |
| Input filter                              | 30 Hz, 12 kHz and mean-value generation (can be parameterized) |

#### Electrical isolation

|              |  |
|--------------|--|
| Test section | 5 V supply of the local bus ( $U_{Bus}$ ) / 24 V supply (I/Os) 500 V AC 50 Hz 1 min. |
|              | 5 V supply (logic)/analog inputs 500 V AC 50 Hz 1 min.                               |
|              | 5 V supply of the local bus ( $U_{Bus}$ ) / functional ground 500 V AC 50 Hz 1 min.  |
|              | 24 V supply (I/O)/analog inputs 500 V AC 50 Hz 1 min.                                |
|              | 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)                           |

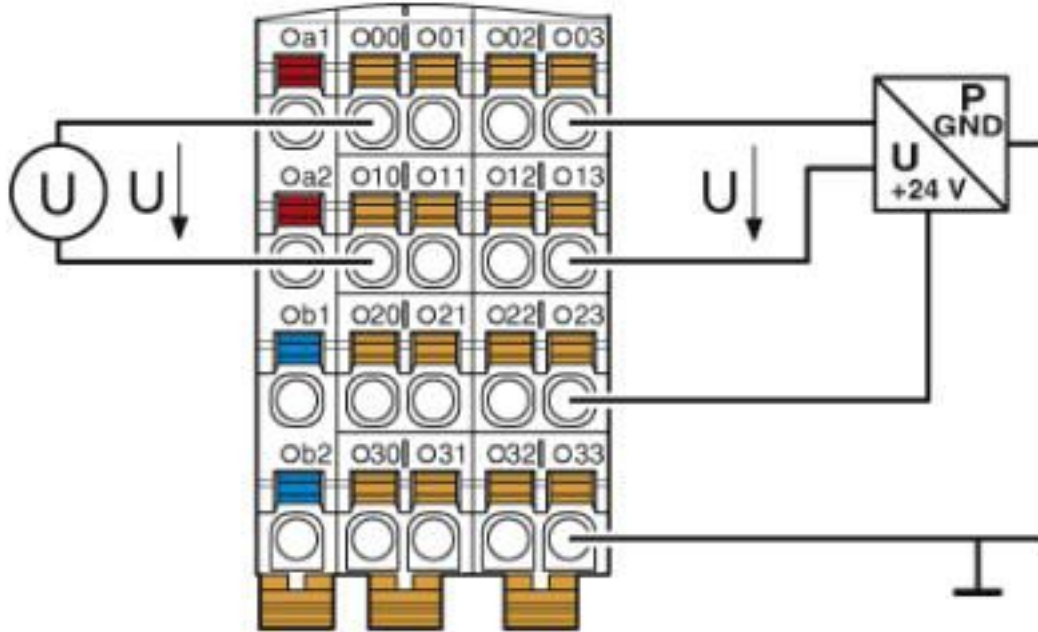
#### Environmental Product Compliance

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

### Drawings

# I/O module - AXL F AI4 U XC 1H - 2702008

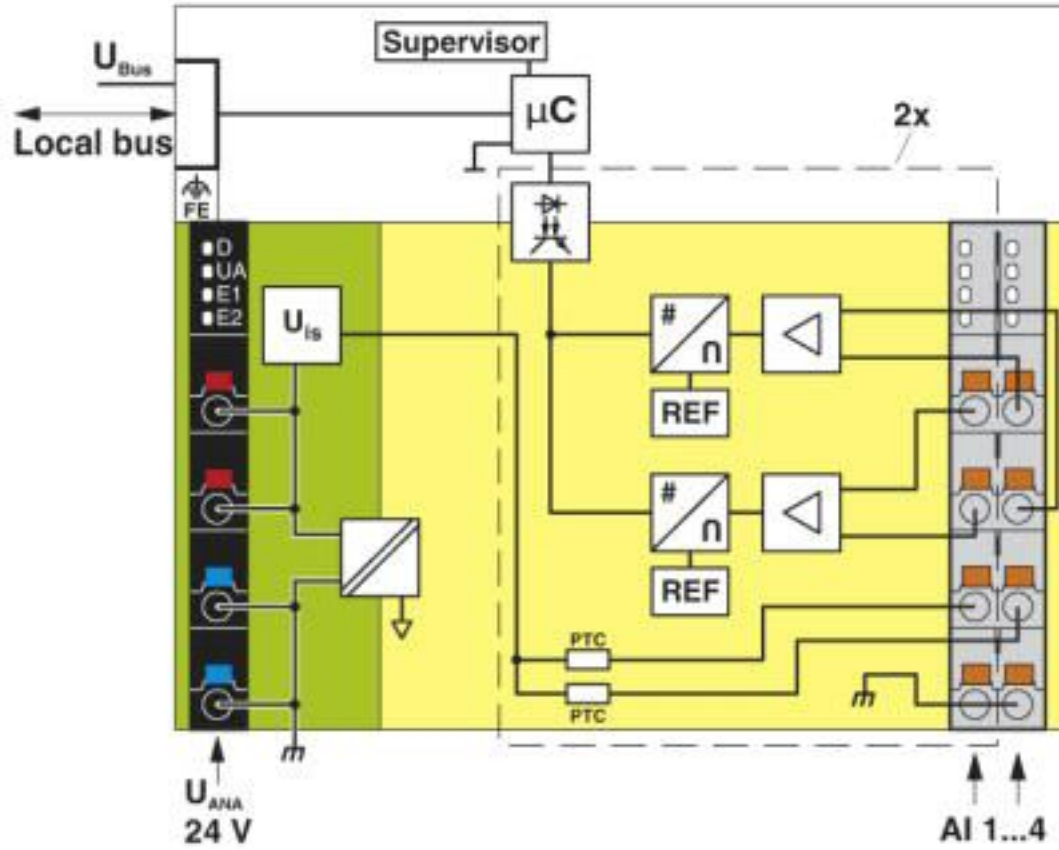
Connection diagram



Connector for voltage measurement

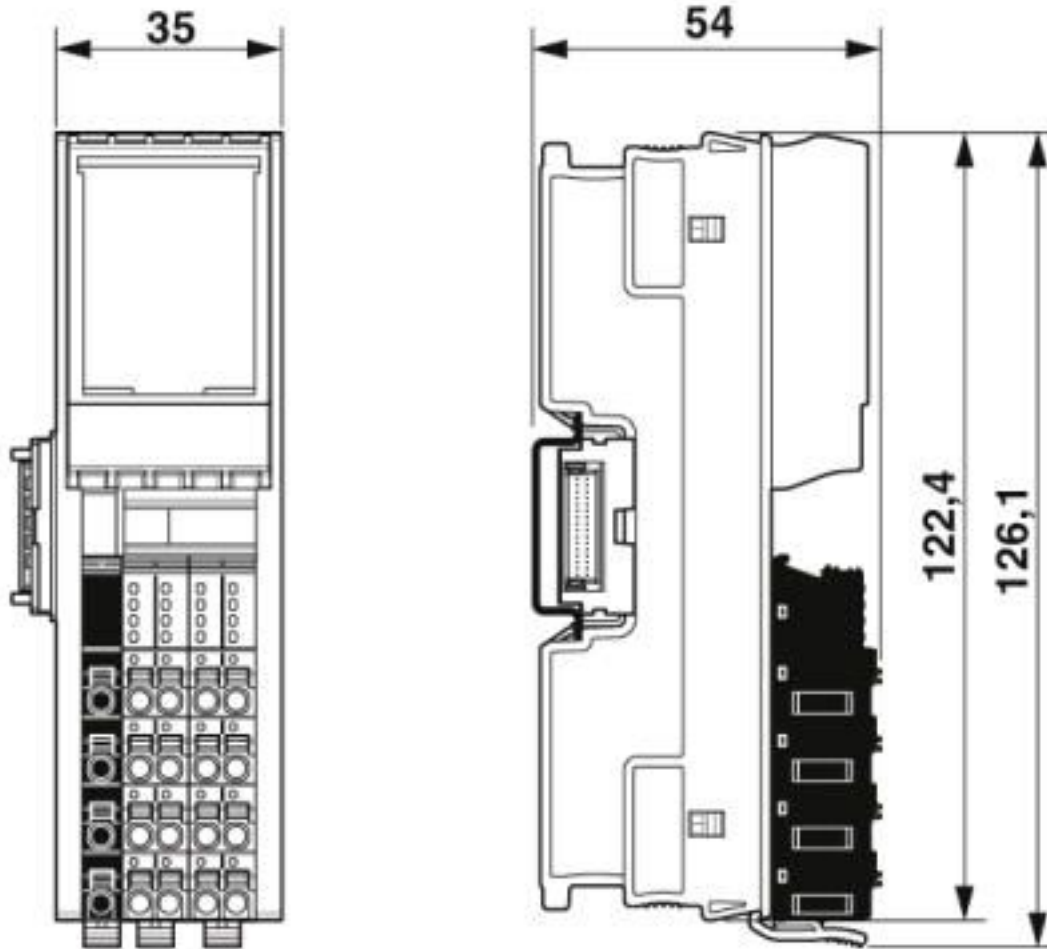
# I/O module - AXL F AI4 U XC 1H - 2702008

Block diagram



# I/O module - AXL F AI4 U XC 1H - 2702008

Dimensional drawing



## Classifications

### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27242601 |
| eCl@ss 5.1    | 27242600 |
| eCl@ss 6.0    | 27242600 |
| eCl@ss 7.0    | 27242601 |
| eCl@ss 8.0    | 27242601 |
| eCl@ss 9.0    | 27242601 |

### ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC001596 |
| ETIM 6.0 | EC001596 |

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## Classifications

### ETIM

|          |          |
|----------|----------|
| ETIM 7.0 | EC001596 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 13.2 | 32151602 |
| UNSPSC 18.0 | 32151602 |
| UNSPSC 19.0 | 32151602 |
| UNSPSC 20.0 | 32151602 |
| UNSPSC 21.0 | 32151602 |

## Approvals

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#### Approvals

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

#### Ex Approvals

### Approval details

|     |   |   |                   |
|-----|---|---|-------------------|
| PRS |  | <a href="http://www.prs.pl/">http://www.prs.pl/</a> | TE/2239/880590/19 |
|-----|---|---|-------------------|

|    |   |   |             |
|----|---|---|-------------|
| 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/B1 BV |
|----|---|---|-------------|

|    |   |   |          |
|----|---|---|----------|
| LR |  | <a href="http://www.lr.org/en">http://www.lr.org/en</a> | 14-20019 |
|----|---|---|----------|

|    |   |   |                |
|----|---|---|----------------|
| 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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## Approvals

|              |  |   |               |
|--------------|--|---|---------------|
| NK           |  | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>   | 14A006        |
| RINA         |  | <a href="http://www.rina.org/en">http://www.rina.org/en</a>   | ELE256518XG   |
| DNV GL       |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>   | TAA00000DF    |
| 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 |
| 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

## I/O module - AXL F AI4 U XC 1H - 2702008

### Accessories

Bus connector - AXL F BS H - 2700992



Axioline F bus base module for housing type H

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### Shield connection

Shield connection - AXL SHIELD SET - 2700518



Axioline shield connection set (contains 2 shield bus 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 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

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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