

I/O module - AXL F AI2 AO2 1H - 2702072

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Axioline F, Analog I/O module, Analog inputs: 2, 0 V ... 5 V, -5 V ... 5 V, 0 V ... 10 V, -10 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection method: 2-conductor, Analog outputs: 2, 0 V ... 5 V, -5 V ... 5 V, 0 V ... 10 V, -10 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection method: 2-conductor, 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 and output analog voltage and current signals.

Your advantages

- 2 analog differential input channels
- Connection of sensors in 2-conductor technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA, ± 20 mA
- Voltage ranges: 0 V ... 10 V, ± 10 V, 0 V ... 5 V, ± 5 V
- 2 analog outputs
- Connection of actuators in 2-conductor technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA, ± 20 mA
- Voltage ranges: 0 V ... 10 V, ± 10 V, 0 V ... 5 V, ± 5 V
- Process data update < 150 μ s
- Device rating plate stored



Key Commercial Data

| | |
|--------------------------------------|---|
| Packing unit | 1 pc |
| GTIN |  4 046356 933124 |
| GTIN | 4046356933124 |
| Weight per Piece (excluding packing) | 200.000 g |
| Custom tariff number | 85389091 |
| Country of origin | Germany |

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Technical data

Dimensions

| | |
|--------------------|---|
| Caption | Dimensional drawing |
| 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 | 195.8 g |
| Note on weight specifications | with connectors and bus base module |
| Mounting position | any (no temperature derating) |

Interfaces

| | |
|-------------|----------------------|
| Designation | Axioline F local bus |
| Number | 2 |

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Technical data

Interfaces

| | |
|--------------------|-----------------|
| Connection method | Bus base module |
| Transmission speed | 100 Mbps |

Axoline potentials

| | |
|----------------------|--|
| Designation | Axoline 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 |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
| Current consumption | typ. 40 mA |
| | max. 60 mA (2 voltage channels, 10 V output, 2 k Ω load) |
| | max. 80 mA (2 current channels, 24 mA output, 500 Ω load) |
| Power consumption | max. 1.92 W |
| Protective circuit | Surge protection electronic (35 V, 0.5 s) |
| | Reverse polarity protection Polarity protection diode |
| | Transient protection Suppressor diode |
| Power consumption | typ. 1.56 W (at U_{BUS} and U_A) |
| | max. 2.67 W (at U_{BUS} and U_A) |

Analog inputs

| | |
|--|--|
| Description of the input | Differential inputs, voltage or current can be chosen separately |
| Input name | Analog inputs |
| Number of inputs | 2 |
| Connection method | Push-in connection |
| Connection technology | 2-conductor |
| Note regarding the connection technology | shielded, twisted pair |
| A/D conversion time | 2 μ s |
| A/D converter resolution | 16 bit |
| Limit frequency (3 dB) | 30 Hz |
| | 12 kHz |
| Type of protection | Transient protection of inputs |
| | Overload protection of the current inputs |
| | Overload protection of the voltage inputs |
| Data formats | IB IL, S7-compatible, standardized representation |

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Technical data

Analog inputs

| | |
|---|--|
| 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 Ω (typical) |
| 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 k Ω (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) |

Analog outputs

| | |
|--|---|
| Number of outputs | 2 |
| Connection method | Push-in connection |
| Connection technology | 2-conductor |
| Note regarding the connection technology | shielded, twisted pair |
| Output name | Analog outputs |
| D/A converter resolution | 16 bit |
| Type of protection | Short-circuit and overload protection |
| | Transient protection |
| Protective circuit/component | electronic |
| | Suppressor diode |
| Data formats | IB IL, S7-compatible, standardized representation |
| Representation of output values | 16 bits (15 bits + sign) |
| Process data update | 150 μ s |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA |
| | -20 mA ... 20 mA |
| Load/output load current output | \leq 500 Ω |
| Voltage output signal | 0 V ... 5 V |
| | -5 V ... 5 V |
| | 0 V ... 10 V |
| | -10 V ... 10 V |
| Load/output load voltage output | \geq 2 k Ω |
| Precision | typ. 0.1 % (of output range final value) |

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Technical data

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 of the local bus (U_{Bus}) / analog inputs and outputs 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 and outputs 500 V AC 50 Hz 1 min. |
| | 24 V supply (I/O)/functional ground 500 V AC 50 Hz 1 min. |
| | Analog inputs and outputs/functional ground 500 V AC 50 Hz 1 min. |

Standards and Regulations

| | |
|------------------------------------|---|
| Immunity to ESD | Noise immunity test in accordance with EN 61000-6-2 Electrostatic discharge (ESD) EN 61000-4-2/IEC 61000-4-2 Criterion B, 6 kV contact discharge, 8 kV air discharge |
| Immunity to EF | Noise immunity test in accordance with EN 61000-6-2 Electromagnetic fields EN 61000-4-3/IEC 61000-4-3 Criterion A, Field intensity: 10 V/m |
| Immunity to burst | Noise immunity test in accordance with EN 61000-6-2 Fast transients (burst) EN 61000-4-4/IEC 61000-4-4 Criterion B, 2 kV |
| Immunity to surge | Noise immunity test in accordance with EN 61000-6-2 Transient overvoltage (surge) EN 61000-4-5/IEC 61000-4-5 Criterion B, supply lines DC: ± 0.5 kV/ ± 0.5 kV (symmetrical/asymmetrical), ± 1 kV to shielded I/O cables |
| Immunity to conducted interference | Noise immunity test in accordance with EN 61000-6-2 Conducted interference EN 61000-4-6/IEC 61000-4-6 Criterion A, Test voltage 10 V |
| Interference emission | Noise emission test according to EN 61000-6-3 Class B |
| 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) |

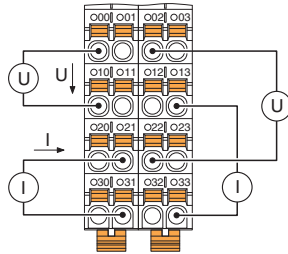
Environmental Product Compliance

| | |
|------------|---|
| 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" |

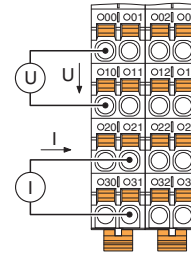
Drawings

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Connection diagram

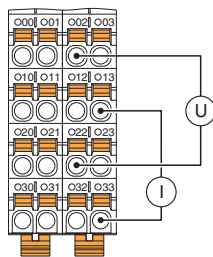


Connection diagram



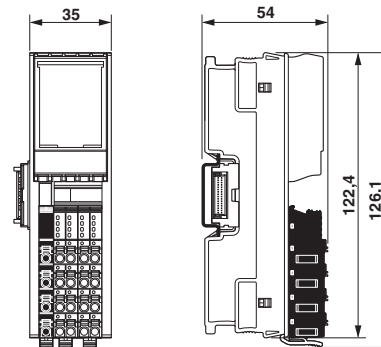
Connection for voltage and current measurement

Connection diagram



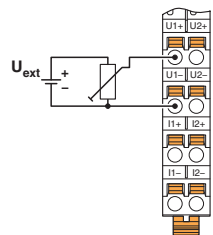
Connection for voltage and current output

Dimensional drawing



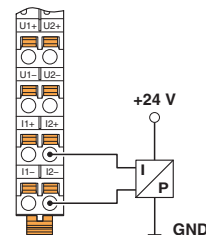
Dimensional drawing

Connection diagram



Connection of potentiometric position sensors

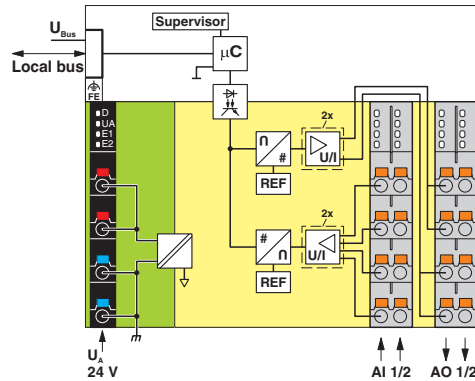
Connection diagram



Passive pressure sensor at a differential current input

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Block diagram



Internal wiring of the terminal points

Classifications

eCl@ss

| | |
|---------------|----------|
| eCl@ss 10.0.1 | 27242601 |
| eCl@ss 11.0 | 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 |
| 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

Approvals

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Approvals

Approvals

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

Ex Approvals

Approval details

| | | | |
|--------|--|---|-------------------|
| KR | | http://www.krs.co.kr/eng/main/main.aspx | HMB17372-AC002 |
| NK | | http://www.classnk.or.jp/hp/en/ | 14A006 |
| ABS | | http://www.eagle.org/eagleExternalPortalWEB/ | 18-HG1767360-PDA |
| BSH | | | 840 |
| RINA | | http://www.rina.org/en | ELE030120XG |
| LR | | http://www.lr.org/en | LR2001902TA |
| PRS | | http://www.prs.pl/ | TE/2239/880590/19 |
| BV | | http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials | 36433/B1 BV |
| DNV GL | | https://approvalfinder.dnvgl.com/ | TAA00000DF |

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Approvals

| | | | |
|-----------|--|---|---------------|
| 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 |
|------------|--|---|---------------|

| | | | |
|--------------|--|--|--|
| 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

Bus connector - AXL F BS H - 2700992



Axioline F bus base module for housing type H

Shield connection

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Accessories

Shield connection - AXL SHIELD SET - 2700518



Axiline 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 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

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