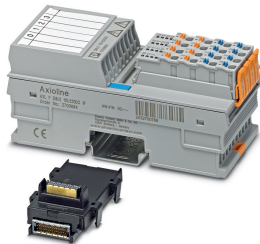


## I/O module - AXL F DI8/2 110/220DC 1F - 2700684

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Axioline F, Digital input module, Digital inputs: 8, 110 V DC / 220 V DC, connection method: 2-conductor, corresponds to standard IEC 61850-3, 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 digital DC voltage signals in the low-voltage range.  
You can use low-voltage and extra-low voltage modules directly next to each other within an Axioline F station.

### Your advantages

- ✓ 8 digital inputs according to EN 61131-2 type 1
- ✓ Connection of sensors in 2-conductor technology
- ✓ 110 V DC / 220 V DC, 1.5 mA
- ✓ Filter time of < 1 ms
- ✓ Inputs are reverse polarity protected
- ✓ Safe isolation according to EN 61010-2-201/IEC 61010-2-201
- ✓ Device rating plate stored
- ✓ Diagnostic and status indicators
- ✓ Meets the requirements of IEC 61850-3 and IEEE 1613



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 916448 |
| GTIN                                 | 4046356916448                                                                                           |
| Weight per Piece (excluding packing) | 219.000 g                                                                                               |
| Custom tariff number                 | 85389091                                                                                                |
| Country of origin                    | Germany                                                                                                 |

# I/O module - AXL F DI8/2 110/220DC 1F - 2700684

## Technical data

### Dimensions

|                    |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| Width              | 53.6 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 (Mounting position: wall mounting on horizontal DIN rail, input voltage: max. 264 V) |
|                                          | -25 °C ... 55 °C (Mounting position: any)                                                             |
| 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                    | 173 g                                                                                                              |
| Note on weight specifications | with connectors and bus base module                                                                                |
| Degree of pollution           | 2                                                                                                                  |
| Mounting position             | any (observe temperature and voltage derating);<br>Nominal mounting position: wall mounting on horizontal DIN rail |

### Interfaces

# I/O module - AXL F DI8/2 110/220DC 1F - 2700684

## Technical data

### Interfaces

|                    |                      |
|--------------------|----------------------|
| Designation        | Axioline F local bus |
| Number             | 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 | max. 120 mA                                |
| Power consumption   | max. 600 mW                                |
| Designation         | Supply for digital input modules ( $U_I$ ) |
| Protection          | max. 8 A (for startup only)                |

### Digital inputs

|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| Input name                        | Digital inputs                             |
| Description of the input          | EN 61131-2 type 1                          |
| Connection method                 | Push-in connection                         |
| Connection technology             | 2-conductor                                |
| Number of inputs                  | 8                                          |
| Protective circuit                | Polarity reversal protection of the inputs |
| Nominal input voltage $U_{IN}$    | 110 V DC                                   |
| Nominal input current at $U_{IN}$ | 1.5 mA                                     |
| Input filter time                 | < 1 ms                                     |
| Input voltage                     | 110 V DC (Nominal voltage)                 |
|                                   | 220 V DC (Nominal voltage)                 |
|                                   | max. 300 V DC                              |
| Input voltage range "0" signal    | -41 V DC ... 41 V DC                       |
| Input voltage range "1" signal    | 88 V DC ... 300 V DC                       |
| Input voltage range               | -300 V DC ... 300 V DC                     |

### Electrical isolation

|              |                                                                                                             |
|--------------|-------------------------------------------------------------------------------------------------------------|
| Test section | I/Os / logic 4 kV Rated surge voltage (safe isolation according to EN 61010-2-201/IEC 61010-2-201)          |
|              | I/Os / logic 5 kV Pulse test voltage according to EN 61850/IEC 61850                                        |
|              | I/O/functional ground 4 kV Rated surge voltage (safe isolation according to EN 61010-2-201/IEC 61010-2-201) |
|              | I/O/functional ground 5 kV Pulse test voltage according to EN 61850/IEC 61850                               |
|              | I/O / I/O (adjacent connectors) 2.5 kV Pulse test voltage according to EN 61850/IEC 61850                   |

# I/O module - AXL F DI8/2 110/220DC 1F - 2700684

## Technical data

### Electrical isolation

|  |                                                                                 |
|--|---------------------------------------------------------------------------------|
|  | Logic/functional ground 1 kV Pulse test voltage according to EN 61850/IEC 61850 |
|--|---------------------------------------------------------------------------------|

### 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 A; 8 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, 20 V/m up to 1 GHz, 10 V/m up to 3 GHz                     |
| 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 A, 4 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 A, $\pm 2$ kV (symmetrical), $\pm 4$ kV (asymmetrical) |
| 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                                                                                                                |
| Developed according to standard    | IEC 61850-3 Electrostatic discharge (ESD) EN 61000-4-2/IEC 61000-4-2 Criterion A; 8 kV contact discharge; 8 kV air discharge                                                  |
|                                    | IEC 61850-3 Electromagnetic fields EN 61000-4-3/IEC 61000-4-3 Criterion A, 20 V/m up to 1 GHz, 10 V/m up to 3 GHz                                                             |
|                                    | IEC 61850-3 Fast transients (burst) EN 61000-4-4/IEC 61000-4-4 Criterion A, 4 kV                                                                                              |
|                                    | IEC 61850-3 Transient overvoltage (surge) EN 61000-4-5/IEC 61000-4-5 Criterion A, $\pm 2$ kV (symmetrical), $\pm 4$ kV (asymmetrical)                                         |
|                                    | IEC 61850-3 Conducted interference EN 61000-4-6/IEC 61000-4-6 Criterion A, Test voltage 10 V                                                                                  |
|                                    | IEC 61850-3 Immunity to magnetic fields, EN 61000-4-8/IEC 61000-4-8 300 A/m continuous, 1000 A/m for 1 s                                                                      |
|                                    | IEC 61850-3 Immunity to attenuated oscillating magnetic fields, EN 61000-4-10/IEC 61000-4-10 100 A/m                                                                          |
|                                    | IEC 61850-3 Immunity to conducted common-mode interference, EN 61000-4-16/IEC 61000-4-16 30 V continuous, 300 V for 1 s                                                       |
|                                    | IEC 61850-3 Attenuated oscillating waves, EN 61000-4-18/IEC 61000-4-18 1 kV symmetrical, 2.5 kV asymmetrical                                                                  |
|                                    | IEC 61850-3 Radio interference properties EN 55022 Class B                                                                                                                    |
| Overvoltage category               | III (EN 61010-2-201/UL 61010-2-201), up to 2000 m above sea level<br>II (EN 61010-2-201/UL 61010-2-201), up to 3000 m above sea level                                         |

### Environmental Product Compliance

|            |                |
|------------|----------------|
| REACH SVHC | Lead 7439-92-1 |
|------------|----------------|

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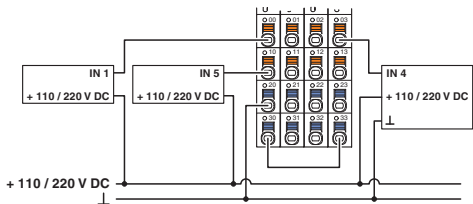
Technical data

Environmental Product Compliance

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

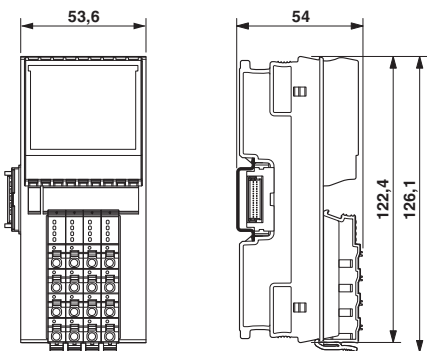
Drawings

Connection diagram

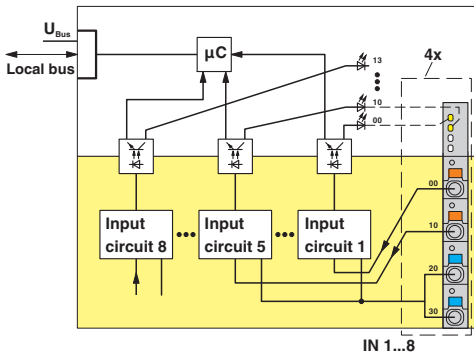


Connection of sensors when using external busbars

Dimensional drawing



Block diagram



Internal wiring of the terminal points

Classifications

eCI@ss

|               |          |
|---------------|----------|
| eCI@ss 10.0.1 | 27242604 |
| eCI@ss 11.0   | 27242604 |
| eCI@ss 5.1    | 27242600 |

## I/O module - AXL F DI8/2 110/220DC 1F - 2700684

### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 6.0 | 27242600 |
| eCl@ss 7.0 | 27242604 |
| eCl@ss 9.0 | 27242604 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 6.0 | EC001599 |
| ETIM 7.0 | EC001599 |

#### UNSPSC

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

### Approvals

#### Approvals

#### Approvals

UL Listed / cUL Listed / 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 |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

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

## I/O module - AXL F DI8/2 110/220DC 1F - 2700684

### 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 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 46 mm, Number of individual labels: 500

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#### DIN rail connector

Bus connector - AXL F BS F - 2688129



Axioline F bus base module for housing type F

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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 7,5:UNBEDRUCKT - 0809942



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: 7.5 mm, lettering field size: 5.15 x 7.4 mm, Number of individual labels: 10