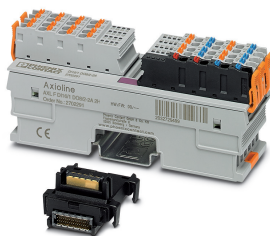


# I/O module - AXL F DI16/1 DO8/2-2A 2H - 2702291

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Axioline F, Digital I/O module, Digital inputs: 16, 24 V DC, connection technology: 1-conductor, Digital outputs: 8, 24 V DC, 2 A, connection technology: 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 digital signals. The filter times of the inputs can be adjusted to increase noise immunity. Filter times of 100 µs enable the user to implement a counter function with a maximum input frequency of 5 kHz in the application. The outputs are protected against short circuit and overload.

## Your advantages

- ✓ 16 digital inputs according to EN 61131-2 type 1 and type 3
- ✓ 24 V DC, 2.4 mA
- ✓ Connection of sensors in 1-conductor technology
- ✓ Filter times can be adjusted in three increments: < 100 µs, 1000 µs or 3000 µs
- ✓ Maximum input frequency: 5 kHz
- ✓ 8 digital outputs
- ✓ 24 V DC, 2 A
- ✓ Connection of actuators in 2-conductor technology
- ✓ Minimum update time of < 150 µs
- ✓ Device rating plate stored



## Key Commercial Data

|              |   |
|--------------|---|
| Packing unit | 1 pc  |
| GTIN         | <br>4 055626 071848 |
| GTIN         | 4055626071848   |

## Technical data

### Dimensions

|         |            |
|---------|------------|
| Caption | Dimensions |
| Width   | 35 mm      |

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## Technical data

### Dimensions

|                    |   |
|--------------------|---|
| Height             | 129.9 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 connectors (digital inputs)  |
| 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                    | 111 g                               |
| Note on weight specifications | with connectors and bus base module |
| Degree of pollution           | 2 (IEC 60664-1, EN 60664-1)         |
| Mounting position             | any (no temperature derating)       |

### Interfaces

|                      |                      |
|----------------------|----------------------|
| Designation          | Axioline F local bus |
| Number of interfaces | 2                    |
| Connection method    | Bus base module      |
| Transmission speed   | 100 Mbps             |

### Axioline potentials

|                |   |
|----------------|---|
| Designation    | Axioline F local bus supply (U <sub>Bus</sub> ) |
| Supply voltage | 5 V DC (via bus base module)                    |

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## Technical data

### Axioline potentials

|                      |  |
|----------------------|--|
| Current consumption  | max. 120 mA  |
| Power consumption    | max. 600 mW  |
| Designation          | Supply for digital input and output modules (U <sub>IO</sub> )   |
| Supply voltage       | 24 V DC  |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple)   |
| Current consumption  | max. 16 A (Provide external protection; if the total current of 8 A is exceeded, connect the supply at the power connector parallel via both terminal points.) |
| Power consumption    | max. 480 W (of which 6.4 W internal losses)  |
| Protective circuit   | Surge protection electronic (35 V, 0.5 s)  |
|                      | Reverse polarity protection parallel diode; with external 5 A fuse (only for commissioning)  |
| Protection           | max. 16 A (polarity reversal protection up to 5 A)   |

### Digital inputs

|  |   |
|--|---|
| Input name                               | Digital inputs  |
| Description of the input                 | EN 61131-2 types 1 and 3  |
| Connection method                        | Push-in connection  |
| Connection technology                    | 1-conductor   |
| Number of inputs                         | 16  |
| Protective circuit                       | Polarity reversal protection of the inputs parallel diode (30 V, 5 s) |
| Nominal input voltage U <sub>IN</sub>    | 24 V DC   |
| Nominal input current at U <sub>IN</sub> | 2.4 mA  |
| Input filter time                        | 3000 µs (Default)   |
|  | 1000 µs   |
|  | < 100 µs  |
| Input voltage range "0" signal           | -3 V DC ... 5 V DC  |
| Input voltage range "1" signal           | 11 V DC ... 30 V DC   |

### Digital outputs

|                              |   |
|------------------------------|---|
| Output name                  | Digital outputs   |
| Number of outputs            | 8   |
| Connection method            | Push-in connection  |
| Connection technology        | 2-conductor   |
| Protective circuit           | Short-circuit protection, overload protection of the outputs electronic   |
| Output voltage               | 24 V DC   |
| Nominal output voltage       | 24 V DC   |
| Output current per channel   | 2 A   |
| Output current of the device | 16 A (Provide external protection; if the total current of 8 A is exceeded, connect the supply at the power connector parallel via both terminal points.) |
| Nominal load, inductive      | max. 48 VA (1.2 H, 12 Ω, at nominal load)   |
| Nominal load, lamp           | max. 48 W (at nominal voltage)  |

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## Technical data

### Digital outputs

|  |   |
|--|---|
| Nominal load, ohmic                        | max. 48 W (12 Ω, at nominal load)                       |
| Switching frequency                        | max. 3000 per second (with at least 50 mA load current) |
| Load min.                                  | 10 kΩ   |
| Output voltage when switched off           | max. 1 V  |
| Output current when switched off           | max. 300 μA   |
| Behavior with overload                     | Shutdown with automatic restart                         |
| Behavior with inductive overload           | Output can be destroyed                                 |
| Reverse voltage resistance to short pulses | limited protection up to 0.5 A for 1 s                  |

### 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 ( $U_{BUS}$ ) / functional ground 500 V AC 50 Hz 1 min.  |
|              | 24 V supply (I/O) / 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, DC supply lines: ±0.5 kV/±0.5 kV (symmetrical/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  |
| Protection class                   | III (IEC 61140, EN 61140, VDE 0140-1)   |
| Overvoltage category               | II (IEC 60664-1, EN 60664-1)  |

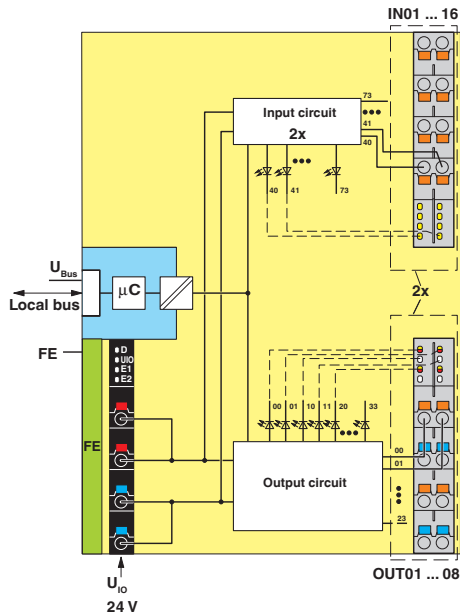
### Environmental Product Compliance

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

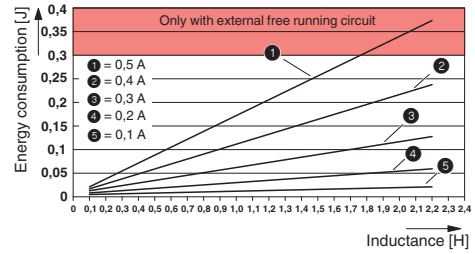
## Drawings

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Block diagram



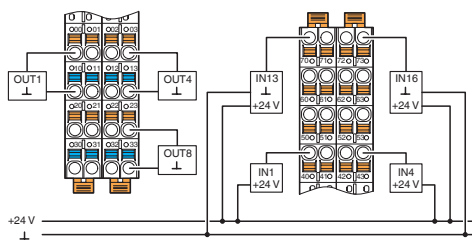
Diagram



Maximum outputs power consumption when inductive loads are switched off

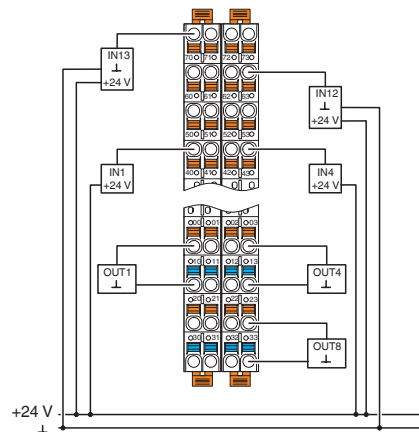
Internal wiring of the terminal points

Connection diagram



Connection example

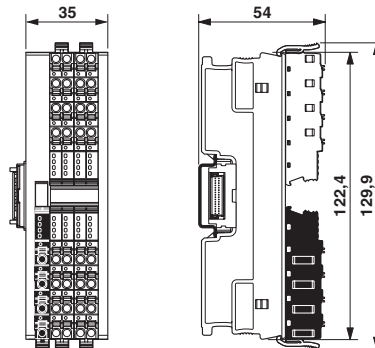
Connection diagram



Example of connection of sensors and actuators

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Dimensional drawing



Dimensions

## Classifications

### eCl@ss

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

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### Approvals

### cULus Listed

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### Ex Approvals

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## Approvals

### Approval details

|              |  |   |               |
|--------------|--|---|---------------|
| cULus 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 |
|--------------|--|---|---------------|

## Accessories

### Accessories

#### DIN rail connector

Bus connector - AXL F BS H - 2700992



Axioline F bus base module for housing type H

### System cable

Round cable - VIP-CAB-FLK14/AXIO/0,14/0,5M - 2901604



Round cable set; controller: Axioline Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 0.5 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/1,0M - 2901605



Round cable set; controller: Axioline Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 1 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/1,5M - 2901606



Round cable set; controller: Axioline Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 1.5 m

## I/O module - AXL F DI16/1 DO8/2-2A 2H - 2702291

### Accessories

Round cable - VIP-CAB-FLK14/AXIO/0,14/2,0M - 2901607



Round cable set; controller: AxioLine Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 2 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/2,5M - 2901608



Round cable set; controller: AxioLine Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 2.5 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/3,0M - 2901609



Round cable set; controller: AxioLine Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 3 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/4,0M - 2901610



Round cable set; controller: AxioLine Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 4 m

Round cable - VIP-CAB-FLK14/AXIO/0,14/6,0M - 2901611



Round cable set; controller: AxioLine Realtime I/O; connection 1: Single wires (8-position) (The wires are marked and fitted with ferrules); connection 2: IDC/FLK socket strip (1x 14-position, 90 °-out put); cable length: 6 m

### Terminal marking



## I/O module - AXL F DI16/1 DO8/2-2A 2H - 2702291

### Accessories

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

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