

## I/O module - AXL F DO16/3 2F - 2688048

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Axioline F, Digital output module, Digital outputs: 16, 24 V DC, 500 mA, connection method: 3-wire, 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 output digital signals.  
The outputs are protected against short circuit and overload.

### Your advantages

- ✓ 16 digital outputs
- ✓ 24 V DC, 500 mA
- ✓ Connection of actuators in 2 and 3-wire technology
- ✓ Minimum update time of < 100 µs
- ✓ Device rating plate stored
- ✓ Approved for use in applications which meet functional safety requirements



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 501583 |
| GTIN                                 | 4046356501583                                                                                           |
| Weight per Piece (excluding packing) | 280.000 g                                                                                               |
| Custom tariff number                 | 85389091                                                                                                |
| Country of origin                    | Germany                                                                                                 |

### Technical data

#### Dimensions

|       |         |
|-------|---------|
| Width | 53.6 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 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                            |
| Net weight                    | 234 g                               |
| Note on weight specifications | with connectors and bus base module |

### 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 <sub>BUS</sub> ) |
| Supply voltage | 5 V DC (via bus base module)                    |

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### Axioline potentials

|                      |                                                                    |
|----------------------|--------------------------------------------------------------------|
| Current consumption  | max. 120 mA (up to HW 04)                                          |
|                      | max. 60 mA (from HW 05)                                            |
| Power consumption    | max. 600 mW (up to HW 04)                                          |
|                      | max. 300 mW (from HW 05)                                           |
| Designation          | Supply for digital output modules (U <sub>O</sub> )                |
| Supply voltage       | 24 V DC                                                            |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
| Current consumption  | max. 8 A (provide external protection)                             |
| Power consumption    | max. 240 W (of which 560 mW with internal losses)                  |
| Type of protection   | Surge protection of the supply voltage                             |
|                      | Polarity reversal protection of the supply voltage                 |
| Protection           | max. 8 A (polarity reversal protection up to 5 A)                  |

### Digital outputs

|                                    |                                                              |
|------------------------------------|--------------------------------------------------------------|
| Output name                        | Digital outputs                                              |
| Connection method                  | Push-in connection                                           |
| Connection technology              | 3-wire                                                       |
| Number of outputs                  | 16                                                           |
| Type of protection                 | Short-circuit protection, overload protection of the outputs |
| Output voltage                     | 24 V                                                         |
| Nominal output voltage             | 24 V DC                                                      |
| Maximum output current per channel | 500 mA                                                       |
| Maximum output current per module  | 8 A (provide external protection)                            |
| Nominal load, inductive            | max. 12 VA (1.2 H, 48 Ω, with nominal voltage)               |
| Nominal load, lamp                 | max. 12 W (at nominal voltage)                               |
| Nominal load, ohmic                | max. 12 W (48 Ω, with nominal voltage)                       |

### Electrical isolation

|              |                                                                           |
|--------------|---------------------------------------------------------------------------|
| Test section | 5 V communications power (logic), 24 V supply (I/O) 500 V AC 50 Hz 1 min. |
|              | 5 V supply (logic)/functional earth ground 500 V AC 50 Hz 1 min.          |
|              | 24 V supply (I/O) / 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

I/O module - AXL F DO16/3 2F - 2688048

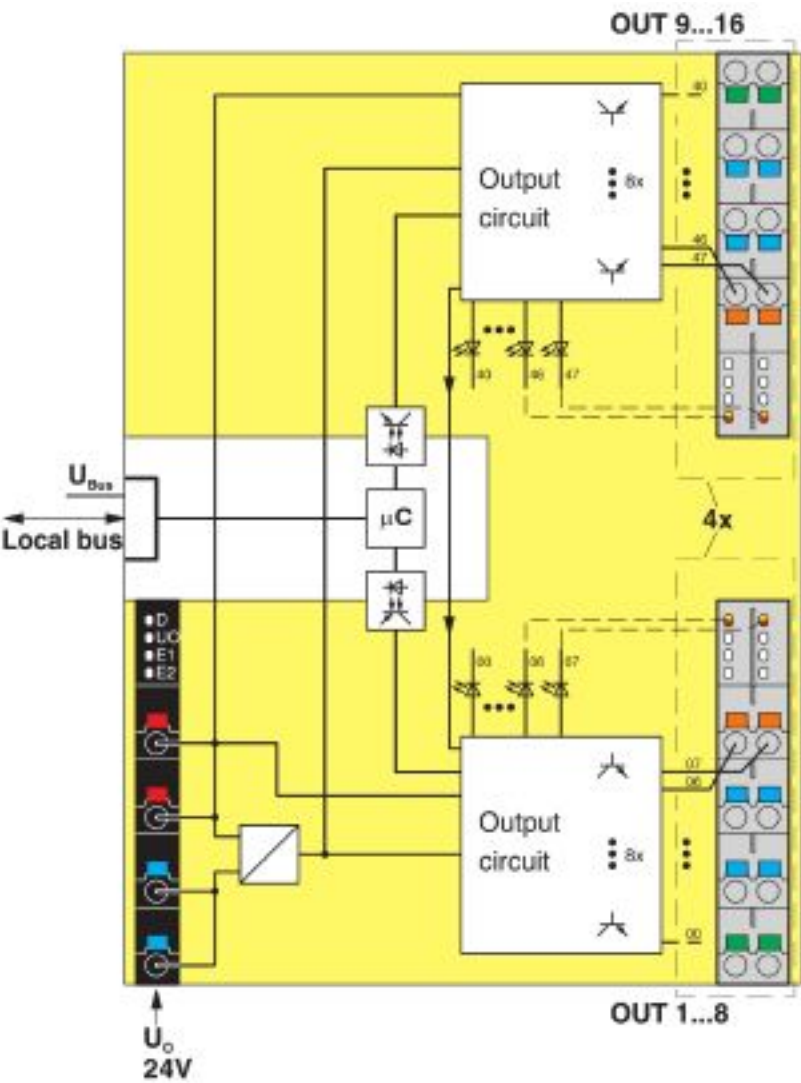
Technical data

Environmental Product Compliance

|            |                                                         |
|------------|---------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                          |
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

Drawings

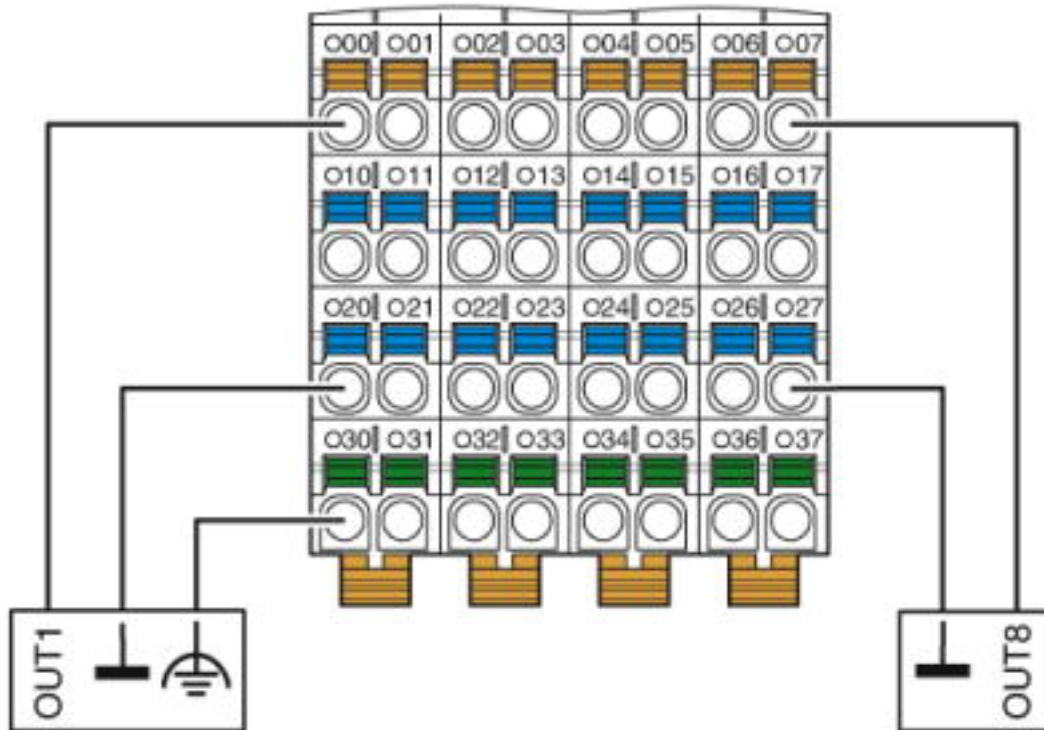
Block diagram



Internal wiring of the terminal points

## I/O module - AXL F DO16/3 2F - 2688048

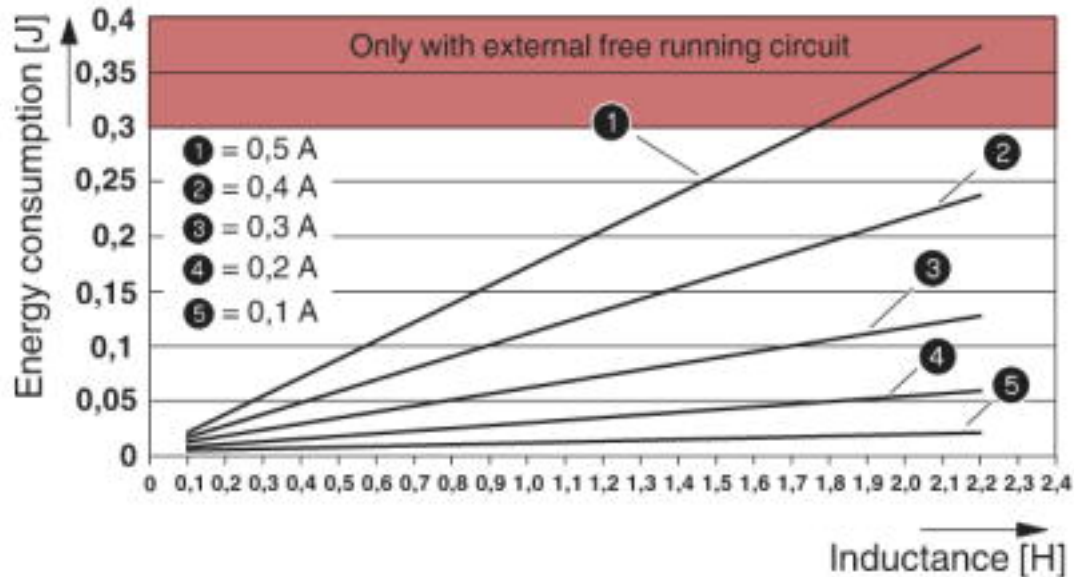
Connection diagram



Connection example

## I/O module - AXL F DO16/3 2F - 2688048

Diagram



Maximum energy consumption of the outputs when switching off inductive loads

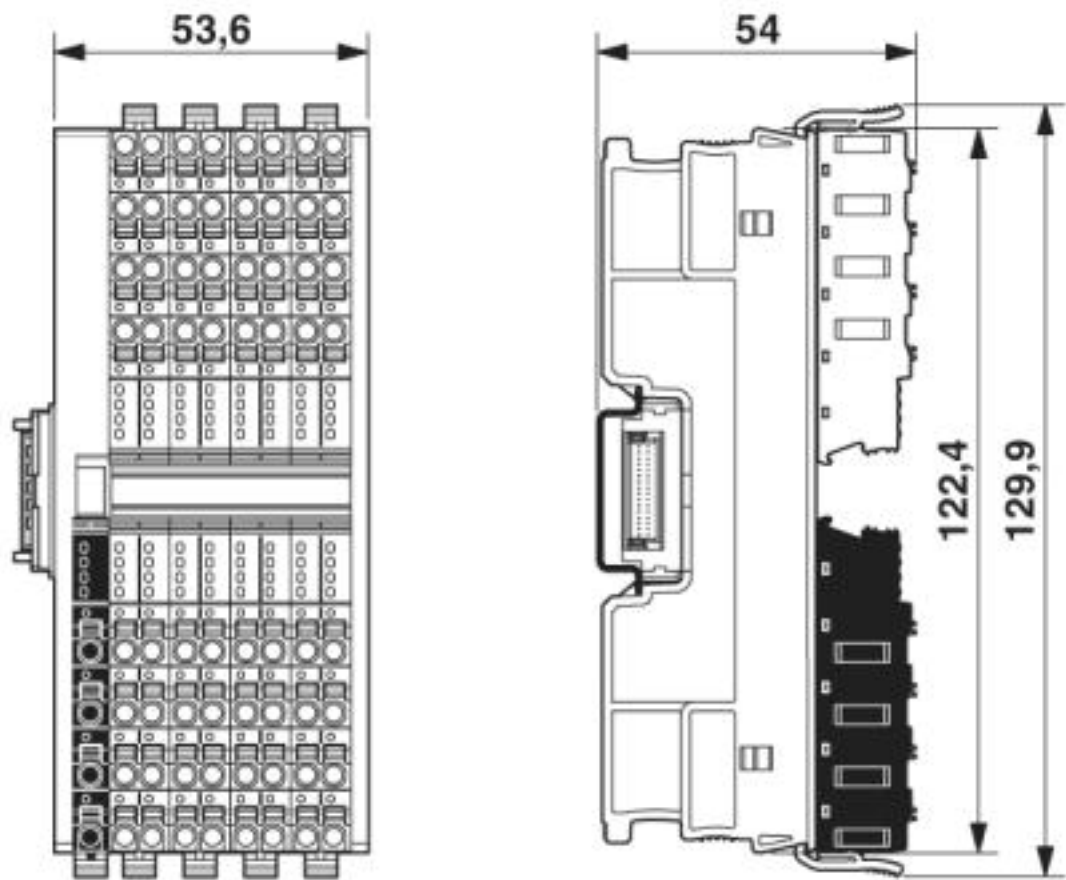
The diagram shows the maximum amount of energy that may be fed back into the corresponding output groups (outputs 1 to 4, 5 to 8, 9 to 12, 13 to 16) for each switch off procedure when switching off an inductive load without external freewheeling circuit.

The current data refers to the ohmic DC voltage component of the inductive load.

Note: Restrict freewheeling voltage to a maximum of -15 V when using an external freewheeling circuit. The external freewheeling circuit has no function in the event of a higher negative voltage.

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Dimensional drawing



Classifications

eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27240400 |
| eCl@ss 4.1 | 27240400 |
| eCl@ss 5.0 | 27242200 |
| eCl@ss 5.1 | 27242600 |
| eCl@ss 6.0 | 27242600 |
| eCl@ss 7.0 | 27242604 |
| eCl@ss 8.0 | 27242604 |
| eCl@ss 9.0 | 27242604 |

ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC001599 |
| ETIM 4.0 | EC001599 |

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### Classifications

#### ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC001599 |
| ETIM 6.0 | EC001599 |
| ETIM 7.0 | EC001599 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 43172015 |
| UNSPSC 7.0901 | 43201404 |
| UNSPSC 11     | 39121311 |
| UNSPSC 12.01  | 39121311 |
| UNSPSC 13.2   | 32151602 |

### Approvals

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

#### Ex Approvals

#### Approval details

|        |                                                                                     |                                                                                                                                                                                                                               |                   |
|--------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| DNV GL |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                                                                                             | TAA00000DF        |
| 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/B0 BV       |

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### Approvals

|            |                                                                                     |                                                                                                                                                       |                  |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 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   |
| NK         |    | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>                                                                         | 14A006           |
| ABS        |                                                                                     | <a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>                                               | 18-HG1767360-PDA |
| RINA       |   | <a href="http://www.rina.org/en">http://www.rina.org/en</a>                                                                                           | ELE256518XG      |
| 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    |
| EAC        |  |                                                                                                                                                       | EAC-Zulassung    |
| LR         |  | <a href="http://www.lr.org/en">http://www.lr.org/en</a>                                                                                               | 14-20019         |
| 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    |

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### Approvals

|            |                                                                                     |                                                                                                                                                                                                                               |                   |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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     |
| NK         |    | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>                                                                                                                                                 | 14A006            |
| ABS        |                                                                                     | <a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>                                                                                                                       | 18-HG1767360-PDA  |
| PRS        |    | <a href="http://www.prs.pl/">http://www.prs.pl/</a>                                                                                                                                                                           | TE/2239/880590/19 |
| DNV GL     |   | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                                                                                             | TAA00000DF        |
| 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/B0 BV       |
| RINA       |  | <a href="http://www.rina.org/en">http://www.rina.org/en</a>                                                                                                                                                                   | ELE256518XG       |
| KR         |  | <a href="http://www.krs.co.kr/eng/main/main.aspx">http://www.krs.co.kr/eng/main/main.aspx</a>                                                                                                                                 | HMB17372-AC002    |
| BSH        |                                                                                     | <a href="http://www.bsh.de/de/index.jsp">http://www.bsh.de/de/index.jsp</a>                                                                                                                                                   | 840               |
| EAC        |  |                                                                                                                                                                                                                               | EAC-Zulassung     |

### Accessories

### Accessories

## I/O module - AXL F DO16/3 2F - 2688048

### Accessories

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 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