

## I/O module - AXL F AO8 1F - 2688080

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Axioline F, Analog output module, Analog outputs: 8, 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 output analog voltage and current signals.

### Your advantages

- ✓ 8 analog, bipolar output channels for the connection of either voltage or current signals
- ✓ Connection of actuators in 2-conductor technology
- ✓ Voltage ranges: 0 V ... 10 V,  $\pm 10$  V, 0 V ... 5 V,  $\pm 5$  V
- ✓ Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA,  $\pm 20$  mA
- ✓ Short-circuit-proof outputs
- ✓ Device rating plate stored
- ✓ Safe analog value processing with SAFE AI and other components



### Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 501446
GTIN	4046356501446
Weight per Piece (excluding packing)	260.000 g
Custom tariff number	85389091
Country of origin	Germany

### Technical data

#### Dimensions

# I/O module - AXL F AO8 1F - 2688080

## 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
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	Axiline F connector
Connection method	Push-in connection
Note on the connection method	Please observe the information provided on conductor cross sections in the "Axiline 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	260 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	Axiline F local bus
Number	2
Connection method	Bus base module

# I/O module - AXL F AO8 1F - 2688080

## Technical data

### Interfaces

Transmission speed	100 Mbps
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### Axioline potentials

Designation	Axioline F local bus supply ( $U_{BUS}$ )
Supply voltage	5 V DC (via bus base module)
Current consumption	typ. 105 mA
	max. 130 mA
Power consumption	typ. 0.525 W
	max. 0.65 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. 110 mA (8 voltage channels, 10 V output)
	max. 235 mA (8 current channels, 20 mA output)
Power consumption	max. 5.64 W (8 current channels, 20 mA output)
Protective circuit	Surge protection electronic (35 V, 0.5 s)
	Reverse polarity protection up to HW 03: polarity protection diodes of HW 04: parallel diode; with external 5 A fuse (for startup only)
	Transient protection Suppressor diode
Power consumption	typ. 1.725 W (to $U_{BUS}$ and $U_A$ , power input; no load, output 0 V)
	max. 6.29 W (to $U_{BUS}$ and $U_A$ ; 8 current channels, output 20 mA)

### Analog outputs

Number of outputs	8
Connection method	Push-in connection
Connection technology	2-conductor
Note regarding the connection technology	shielded, twisted pair
Output name	Analog outputs
D/A conversion time	5 $\mu$ s
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
Representation of output values	16 bits (15 bits + sign)
Process data update	300 $\mu$ s
Current output signal	0 mA ... 20 mA

# I/O module - AXL F AO8 1F - 2688080

## Technical data

### Analog outputs

	4 mA ... 20 mA
	-20 mA ... 20 mA
Load/output load current output	to 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	> 2 kΩ
Precision	typ. 0.1 % (of output range final value)
Permissible cable length	max. 250 m (Reference cable type LiYCY (TP) n*2*0.5 mm <sup>2</sup> )

### Electrical isolation

Test section	5 V supply of the local bus (U <sub>Bus</sub> ) / 24 V supply (I/Os) 500 V AC 50 Hz 1 min.
	5 V supply of the local bus (U <sub>Bus</sub> )/analog outputs 500 V AC 50 Hz 1 min.
	5 V supply of the local bus (U <sub>Bus</sub> ) / functional ground 500 V AC 50 Hz 1 min.
	24 V supply (I/O)/analog outputs 500 V AC 50 Hz 1 min.
	24 V supply (I/O) / functional ground 500 V AC 50 Hz 1 min.
	Analog 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 up to HW 03: Criterion B, DC supply lines: ±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)
Overvoltage category	II (IEC 60664-1, EN 60664-1)

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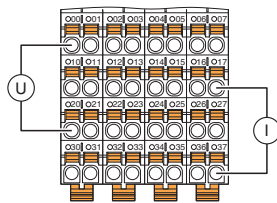
## Technical data

### 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"

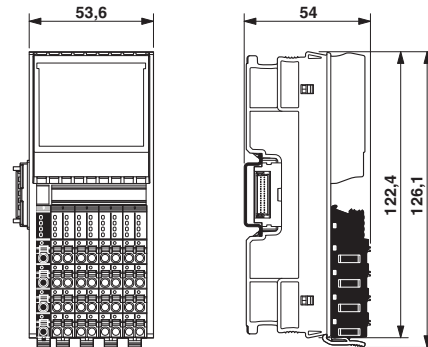
## Drawings

Connection diagram

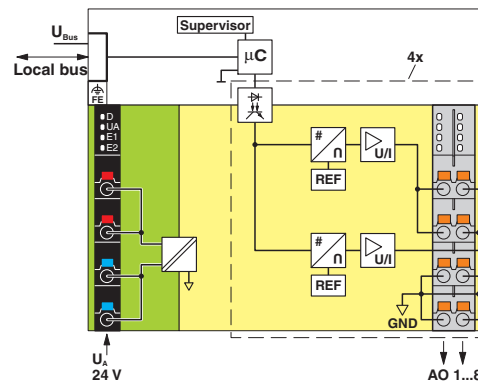


Connection for voltage and current output

Dimensional drawing



Block diagram



Internal wiring of the terminal points

## Classifications

eCI@ss

eCI@ss 10.0.1	27242601
eCI@ss 11.0	27242601

# I/O module - AXL F AO8 1F - 2688080

## 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	27242601
eCl@ss 9.0	27242601

### ETIM

ETIM 3.0	EC001599
ETIM 4.0	EC001599
ETIM 6.0	EC001596
ETIM 7.0	EC001596

### UNSPSC

UNSPSC 6.01	43172015
UNSPSC 7.0901	43201404
UNSPSC 11	39121311
UNSPSC 12.01	39121311
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

PRS / BV / LR / KR / ABS / RINA / BSH / EAC / DNV GL / UL Listed / cUL Listed / Functional Safety / cULus Listed

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#### Ex Approvals

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### Approval details

# I/O module - AXL F AO8 1F - 2688080

## Approvals

PRS		<a href="http://www.prs.pl/">http://www.prs.pl/</a>	TE/1117/880590/20
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/B2 BV
LR		<a href="http://www.lr.org/en">http://www.lr.org/en</a>	LR2001902TA
KR		<a href="http://www.krs.co.kr/eng/main/main.aspx">http://www.krs.co.kr/eng/main/main.aspx</a>	HMB17372-AC002
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>	ELE030120XG
BSH			840
EAC			EAC-Zulassung
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

## I/O module - AXL F AO8 1F - 2688080

### Approvals

Functional Safety		968/EL 916.03/17
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cULus Listed	
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### Accessories

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#### 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

#### DIN rail connector

Bus connector - AXL F BS F - 2688129



Axioline F bus base module for housing type F

#### Shield connection

Shield connection - AXL SHIELD SET - 2700518



Axioline shield connection set (contains 2 shield bus holders and 2 SK 5 shield connection clamps)

#### Software library

## I/O module - AXL F AO8 1F - 2688080

### Accessories

Function block - SAFE AI - 2400057



Function block library for safety-related analog value acquisition with standard I/O modules. Please contact the safety hotline (+49 5281 9-462777) before ordering the SAFE AI article.

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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