

# AXL F AI8 W 1F - Analog module



2702525

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Axioline F, Analog input module, Analog inputs: 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 technology: 2-conductor, transmission speed in the local bus: 100 Mbps, for SAFE AI applications with service-free continuous operation, 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 analog voltage and current signals. The high long-term stability of the peripheral electronics ensures service-free continuous operation.

## Your advantages

- 8 analog, bipolar input channels for the connection of either voltage or current signals
- Connection of sensors in 2-conductor technology
- Voltage ranges: 0 V ... 10 V, ±10 V, 0 V ... 5 V, ±5 V
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA, ±20 mA
- High long-term stability of measuring inputs
- Device rating plate stored
- Safe analog value processing with SAFE AI and other components

## Commercial data

Item number	2702525
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR02
Product key	DRI241
GTIN	4055626210803
Weight per piece (including packing)	268.4 g
Weight per piece (excluding packing)	204 g
Customs tariff number	85389091
Country of origin	DE

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## Technical data

### Dimensions

Dimensional drawing	
Width	53.6 mm
Height	126.1 mm
Depth	54 mm
Note on dimensions	The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715).

### Notes

#### Note on application

Note on application Only for industrial use

### Interfaces

#### Axioline F local bus

Number of interfaces	2
Connection method	Bus base module
Transmission speed	100 Mbps

### System properties

#### Module

Input address area	16 Byte
Output address area	0 Byte
Required parameter data	11 Byte
Required configuration data	6 Byte

### Input data

#### Analog: General

Input name	Analog inputs
Description of the input	Differential inputs, voltage or current can be chosen separately
Number of inputs	8
A/D conversion time	2 µs
A/D converter resolution	16 bit
Connection method	Push-in connection
Connection technology	2-conductor

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Note regarding the connection technology	shielded, twisted pair
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 kΩ (typical)
Data formats	IB IL, S7-compatible
Input filter	30 Hz, 12 kHz and mean value generation (can be parameterized)
Filtering	RFI filtering / passive TP 1st order
Limit frequency (3 dB)	30 Hz
	12 kHz (in fast mode)
Common mode voltage range signal - ground	-50 V DC ... 50 V DC
Measured value representation	16 bits (15 bits + sign bit)
Protective circuit	Transient protection of inputs; Suppressor diode
	Overload protection of the current inputs; No; ±5.2 V DC, maximum, $I_{max} = 50$ mA
	Overload protection of the voltage inputs; ±30 V DC, maximum

## Product properties

Product type	I/O component
Product family	Axioline F
Type	block modular
Mounting position	any (no temperature derating)
Scope of supply	including bus base module and Axioline F connectors
Special properties	for SAFE AI applications with service-free continuous operation

## Insulation characteristics

Overvoltage category	II (IEC 60664-1, EN 60664-1)
Pollution degree	2 (IEC 60664-1, EN 60664-1)

## Electrical properties

Maximum power dissipation for nominal condition	4.2 W
Potentials: Axioline F local bus supply ( $U_{Bus}$ )	
Supply voltage	5 V DC (via bus base module)
Current draw	max. 130 mA (up to HW 04)
	max. 60 mA (from HW 05)
	typ. 105 mA (up to HW 04)
	typ. 45 mA (from HW 05)

## Potentials: Supply for analog modules ( $U_A$ )

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Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current draw	max. 55 mA (from HW 05) max. 45 mA (up to HW 04) typ. 43 mA (from HW 05) typ. 35 mA (up to HW 04)
Protective circuit	Surge protection; electronic (35 V, 0.5 s) Reverse polarity protection; Polarity protection diode Transient protection; Suppressor diode

## Electrical isolation/isolation of the voltage ranges

Test voltage: 5 V supply of the local bus ( $U_{Bus}$ ) / 24 V supply (I/Os)	500 V AC, 50 Hz, 1 min
Test voltage: 5 V supply of the local bus ( $U_{Bus}$ ) / analog inputs	500 V AC, 50 Hz, 1 min
Test voltage: 5 V supply of the local bus ( $U_{Bus}$ ) / functional ground	500 V AC, 50 Hz, 1 min
Test voltage: 24 V supply (I/O) / analog inputs	500 V AC, 50 Hz, 1 min
Test voltage: 24 V supply (I/O) / functional ground	500 V AC, 50 Hz, 1 min
Test voltage: Analog inputs / functional ground	500 V AC, 50 Hz, 1 min

## Connection data

### Connection technology

Connection name	Axioline F connector
Note on the connection method	Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual.

### Conductor connection

Connection method	Push-in connection
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

### 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, rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Environmental and real-life conditions

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °C
	-10 °C ... 35 °C (annual average)

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Degree of protection	IP20
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)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (Non-condensing, annual average < 75%)
Permissible humidity (storage/transport)	5 % ... 95 % (Non-condensing, annual average < 75%)

## Standards and regulations

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
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## Mounting

Mounting type	DIN rail mounting
Mounting position	any (no temperature derating)

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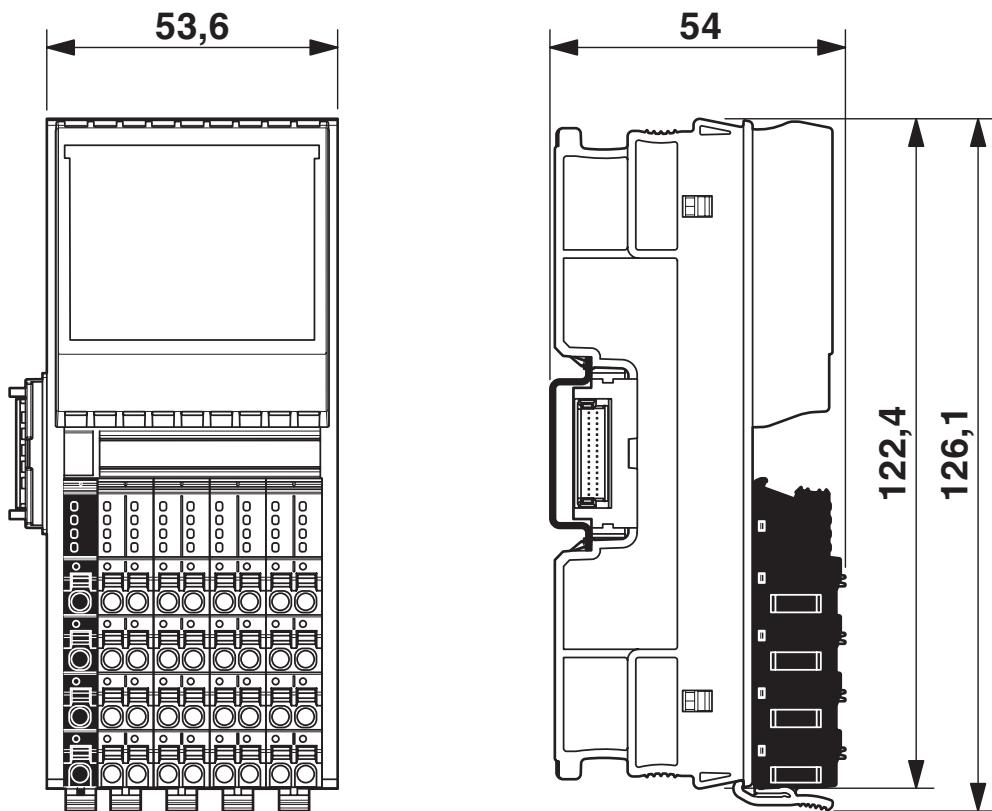


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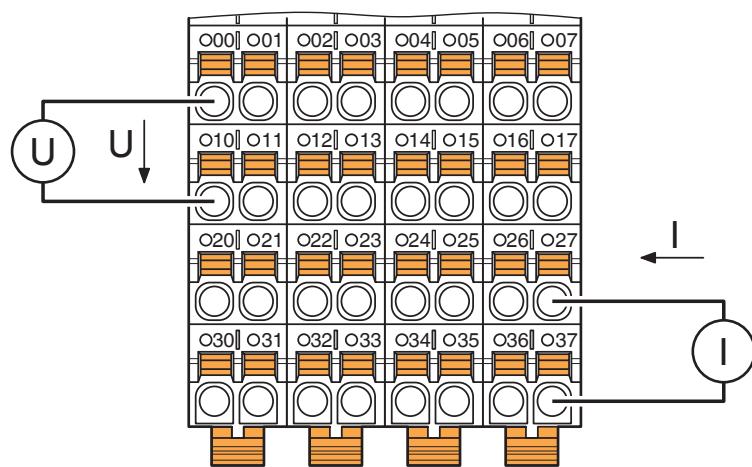
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## Drawings

Dimensional drawing



Connection diagram



Connection for voltage and current measurement

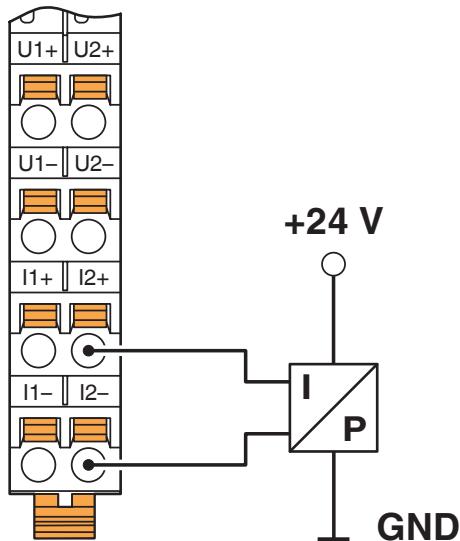
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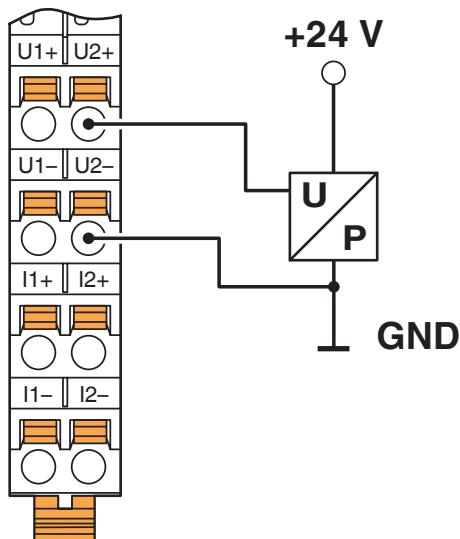
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Connection diagram



Passive pressure sensor at a differential current input

Connection diagram



Differential voltage input with active 3-conductor transmitter

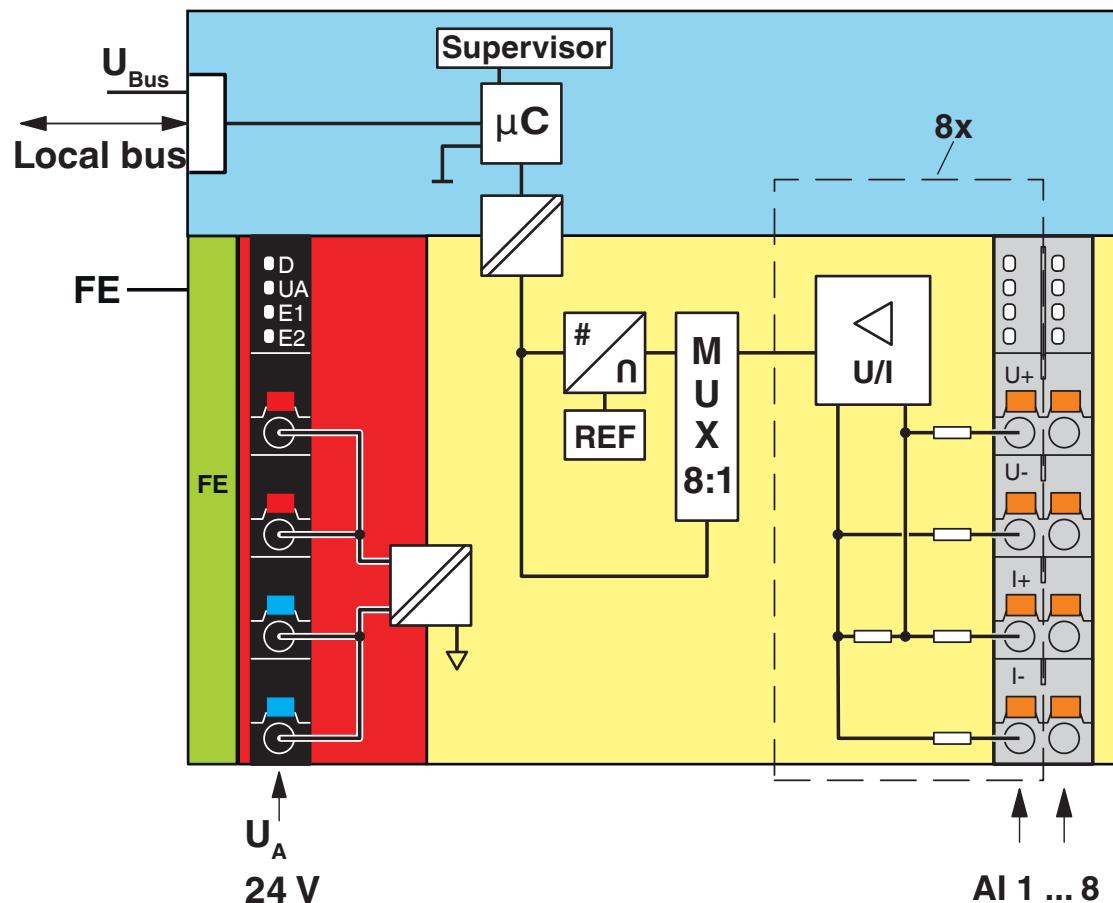
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Block diagram



Internal wiring of the terminal points

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## Approvals

ⓘ To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702525>



**cULus Listed**

Approval ID: E238705



**Functional Safety**

Approval ID: 968/EL 916.05/24

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## Classifications

### ECLASS

ECLASS-13.0	27242601
ECLASS-15.0	27242601

### ETIM

ETIM 9.0	EC001596
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### UNSPSC

UNSPSC 21.0	32151600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.	

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	1b73886c-f0b9-428b-bdbc-02ada21852ac

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### Phoenix Contact USA

586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)