

## Bus coupler - AXL F BK ETH XC - 2701949

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Axioline F XC, Bus coupler, Modbus/TCP(UDP), RJ45 jack, Extreme conditions version, transmission speed in the local bus: 100 Mbps, degree of protection: IP20, including bus base module and Axioline F connector

The figure shows the standard item

### Product Description

The bus coupler is intended for use within a Modbus/TCP (UDP) network. The bus coupler creates the link to the Axioline F I/O system and the industrial I/O signals connected to it. Up to 63 Axioline F devices can be connected to the bus coupler.

### Your advantages

- 2 Ethernet ports (with integrated switch)
- Transmission speed of 10 Mbps and 100 Mbps
- Rotary coding switches for setting the IP address assignment and other functions
- Firmware can be updated
- Runtime in the bus coupler is negligible (almost 0 µs) (for Modbus/UDP)
- Typical cycle time of the Axioline F local bus is around 10 µs
- Web-based management
- Supports the operation of Axioline Smart Elements
- Supports the AXL SE SC slot cover (firmware version 1.30 and later)
- Supports IOL-CONF (firmware version 1.30 and later)
- Supports Diag+
- Can be used under extreme ambient conditions
- Extended temperature range of -40 °C ... +70 °C (see "Tested successfully: use under extreme ambient conditions" in the data sheet)
- Partially coated PCBs



### Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 901239

## Bus coupler - AXL F BK ETH XC - 2701949

GTIN	4046356901239
Weight per Piece (excluding packing)	240.000 g
Custom tariff number	85176200
Country of origin	Germany

### Technical data

#### Dimensions

Width	45 mm
Height	126.1 mm
Depth	74 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 (Standard, applications with UL approval, use in zone 2 potentially explosive area; mounting position: wall mounting on horizontal DIN rail)
	-25 °C ... 55 °C (Standard, applications with UL approval, use in zone 2 potentially explosive area; mounting position: any)
	-40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.)
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 mounting
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## Technical data

### General

Color	traffic grey A RAL 7042
Net weight	177 g
Note on weight specifications	with connector and bus base module
Degree of pollution	2 (IEC 60664-1, EN 60664-1)
Mounting type	DIN rail mounting
Mounting position	any (observe temperature derating)

### Interfaces

Designation	Modbus/TCP (UDP)
Number of interfaces	2
Connection method	RJ45 jack
Note on the connection method	Auto negotiation and autocrossing
Transmission speed	10/100 Mbps (Half or full duplex mode (automatic detection, can be adjusted manually))
Transmission physics	Ethernet in RJ45 twisted pair
Designation	Axioline F local bus
Number of interfaces	1
Connection method	Bus base module
Transmission speed	100 Mbps
Designation	Service
Number of interfaces	1
Connection method	USB type C (as of HW 02)
	Micro USB type B (up to HW 01)

### Network/bus system

Number of supported devices	max. 63 (per station)
Number of local bus devices that can be connected	max. 63
Protocol	Modbus/TCP (UDP)
	SNMP
	HTTP
	TFTP
	FTP
	BootP
	DHCP
	DCP

### Axioline potentials

Designation	Communications power $U_L$ feed-in (the supply of the Axioline F local bus $U_{Bus}$ is generated from $U_L$ )
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## Technical data

### Axioline potentials

Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	max. 583 mA (2 A at $U_{Bus}$ , $U_L = 24$ V, up to HW 01)
	max. 670 mA (2.5 A at $U_{Bus}$ , $U_L = 24$ V, HW 02 or later)
	max. 583 mA (2.0 A at $U_{Bus}$ , $U_L = 24$ V, applications with UL approval, use in zone 2 potentially explosive area)
Power consumption	max. 14 W (2 A at $U_{Bus}$ , $U_L = 24$ V, up to HW 01)
	max. 16 W (2.5 A at $U_{Bus}$ , $U_L = 24$ V, HW 02 or later)
Type of protection	Surge protection
	Reverse polarity protection
Designation	Axioline F local bus supply ( $U_{Bus}$ )
Supply voltage	5 V DC (via bus base module)
Power supply unit	max. 2 A (up to HW 01)
	max. 2.5 A (as of HW 02)
	max. 2 A (Applications with UL approval, use in zone 2 potentially explosive area)

### Electrical isolation

Test section	Ethernet interface 1 / Ethernet interface 2 1500 V AC 50 Hz 1 min.
	Ethernet interface 1 / 24 V communications voltage ( $U_L$ ) feed-in 1500 V AC 50 Hz 1 min.
	Ethernet interface 2 / 24 V communications voltage ( $U_L$ ) feed-in 1500 V AC 50 Hz 1 min.
	Ethernet interface 1 / functional ground 1500 V AC 50 Hz 1 min.
	Ethernet interface 2 / functional ground 1500 V AC 50 Hz 1 min.
	24 V communications voltage ( $U_L$ ) feed-in / 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: $\pm 0.5$ kV/ $\pm 0.5$ kV (symmetrical/asymmetrical), fieldbus cable shield: $\pm 1$ kV
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

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## Technical data

### Standards and Regulations

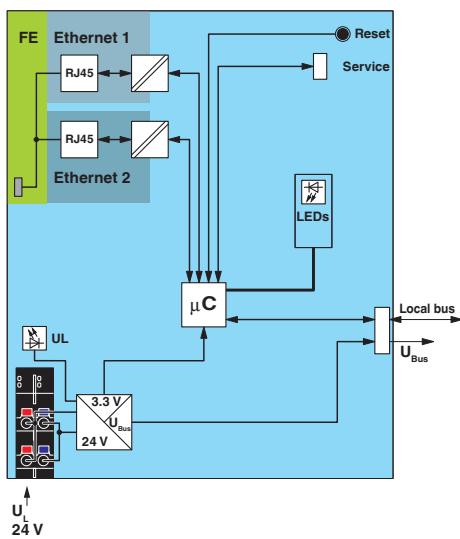
Interference emission	Noise emission test according to EN 61000-6-3 Class B
Mechanical tests	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6 5g
	Shock in acc. with EN 60068-2-27/IEC 60068-2-27 30g
	Continuous shock according to EN 60068-2-27/IEC 60068-2-27 10g
ATEX	# II 3 G Ex ec IIC T4 Gc
IECEx	Ex ec IIC T4 Gc
UL, USA/Canada	cULus
	Class I, Zone 2, AEx ec IIC T4, Ex ec IIC T4 Gc X
	Class I, Div. 2, Groups A, B, C, D T4
Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
Overvoltage category	II (IEC 60664-1, EN 60664-1)

### Environmental Product Compliance

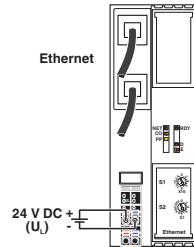
REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Drawings

Block diagram



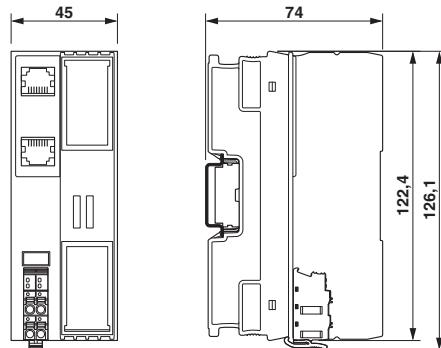
Connection diagram



Internal wiring of the terminal points

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Dimensional drawing



### Classifications

#### eCl@ss

eCl@ss 10.0.1	27242608
eCl@ss 11.0	27242608
eCl@ss 5.1	27242600
eCl@ss 6.0	27242600
eCl@ss 7.0	27242608
eCl@ss 9.0	27242608

#### ETIM

ETIM 6.0	EC001604
ETIM 7.0	EC001604

#### UNSPSC

UNSPSC 13.2	32151602
UNSPSC 18.0	32151602
UNSPSC 19.0	32151602
UNSPSC 20.0	32151602
UNSPSC 21.0	32151602

### Approvals

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

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### Approvals

#### Ex Approvals

ATEX / cULus Listed / IECEx

#### Approval details

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
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
BSH			840
RINA		<a href="http://www.rina.org/en">http://www.rina.org/en</a>	ELE030120XG
DNV GL		<a href="https://approvalfinder.dnvg.com/">https://approvalfinder.dnvg.com/</a>	TAA00000DF

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### Approvals

UL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 238705

cUL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 238705

UL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 238705

cUL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 238705

### Accessories

#### Accessories

##### Data cable by the meter

Network cable - FL CAT5 HEAVY - 2744814



CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable, 2 x 2 x 0.22 mm<sup>2</sup>, solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0.15 mm diameter

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Installation cable - FL CAT5 FLEX - 2744830



By the meter, Installation cable, Ethernet CAT5 (100 Mbps), shielded, PUR halogen-free, water blue RAL 5021, 4-wire (2x2xAWG26/7; SF/UTP), color single wire: white/orange-orange, white/green-green, cable length: Free entry (1.0 ... 1000.0 m)

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Data plug

## Bus coupler - AXL F BK ETH XC - 2701949

### Accessories

Assembly tool - FL CRIMPTOOL - 2744869



Crimping pliers, for assembling the RJ45 plugs FL PLUG RJ45..., for assembly on site

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### Device marking

Insert label - EMT (35X18,7)R - 0801831



Insert label, 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 18.7 mm, Number of individual labels: 500

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### DIN rail connector

Bus connector - AXL BS BK - 2701422



Axioline F bus base module for housing type BK

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### Plug

RJ45 connector - FL PLUG RJ45 GR/2 - 2744856



RJ45 connector, shielded, with bend protection sleeve, 2 pieces, gray for straight cables, for assembly on site. For connections that are not crossed, it is recommended that you use the connector set with gray bend protection sleeve.

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### Accessories

RJ45 connector - FL PLUG RJ45 GN/2 - 2744571

RJ45 connector, shielded, with bend protection sleeve, 2 pieces, green for crossed cables, for assembly on site. For connections that are crossed, it is recommended that the connector set with green bend protection sleeves is used.



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### Programming cable

Connecting cable - CAB-USB A/ USB C/1,8M - 2404677

Connecting cable, for connecting the controller to a PC from USB A to USB C



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Connecting cable - CAB-USB C/ USB C/1,8M - 1021809

Connecting cable, for connecting the controller to a PC from USB C to USB C



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Connecting cable - CAB-USB A/MICRO USB B/2,0M - 2701626

Connecting cable, for connecting the controller to a PC for PC Worx and LOGIC+, USB A to micro USB B, 2 m in length.



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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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### Accessories

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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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