

AXL F CNT2 INC2 XC 1F - Function module



2701239

<https://www.phoenixcontact.com/us/products/2701239>

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Axioline F, Function module, Counter inputs: 2, Incremental encoder inputs: 2, Symmetrical and asymmetrical encoders, Digital inputs: 8, 24 V DC, Digital outputs: 2, 24 V DC, Extreme conditions version, 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. On the one hand, it is used to acquire fast pulse sequences from sensors, and on the other hand to detect positions using incremental encoders. The module combines two counter inputs for the evaluation of fast counter pulses and two incremental encoder inputs for position detection.

Your advantages

- 2 channels, selectable for each channel: counter function or position detection using incremental encoder
- Maximum input frequency: 300 kHz (one channel wired) or 100 kHz (both channels wired)
- 32-bit counter (up and down)
- Output control according to two limit values
- Counter: counting (source) is controlled via a control input (gate)
- Counter: single or periodic counting
- Incremental encoder acquisition: Acquisition of digital signals from symmetrical and asymmetrical incremental encoders
- Incremental encoder acquisition: evaluation of linear or rotary axes
- Device rating plate stored
- 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

Commercial data

Item number	2701239
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR02
Product key	DRI263
Catalog page	Page 92 (C-6-2019)
GTIN	4046356730082
Weight per piece (including packing)	264.2 g
Weight per piece (excluding packing)	233.9 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

Utilization restriction	
EMC note	EMC: class A product, see manufacturer's declaration in the download area

Interfaces

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

System properties

Module	
ID code (hex)	none
Input address area	28 Byte
Output address area	28 Byte
Required parameter data	115 Byte
Required configuration data	7 Byte

Input data

Digital:	
Input name	Digital inputs
Description of the input	EN 61131-2, type 3
Number of inputs	8 (CNT: G1, G2, Dir1, Dir2; INC: Ref1, Ref2, L1, L2)
Connection method	Push-in connection
Connection technology	1-conductor (optional 2, 3-conductor)

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Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Nominal input voltage U_{IN}	24 V DC
Nominal input current at U_{IN}	2.5 mA (per channel)

Encoder

Number of inputs	2 (A1, /A1, B1, /B1, Z1, /Z1; A2, /A2, B2, /B2, Z2, /Z2)
Input name	Incremental encoder inputs
Encoder signals	Symmetrical and asymmetrical encoders
Cable length	max. 30 m

Counter:

Input name	Counter inputs
Description of the input	EN 61131-2, type 3
Connection method	Push-in connection
Number of inputs	2 (S1, S2)
Input voltage	24 V DC
Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Input frequency	max. 300 kHz (1 channel wired) max. 100 kHz (more than one channel wired or Z signal monitoring via the firmware)
Input current	2.5 mA (per channel)
Resolution	32 bits
Permissible cable length	max. 30 m

Output data

Digital:

Output name	Digital outputs
Connection method	Push-in connection
Connection technology	1-conductor
Number of outputs	2 (Out1, Out2)
Protective circuit	Short-circuit protection Overload protection
Output voltage	24 V DC
Maximum output current per channel	500 mA
Nominal output voltage	24 V DC
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)

Product properties

Product type	I/O component
Product family	Axioline F
Type	block modular

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Mounting position	any (no temperature derating)
Scope of delivery	including bus base module and Axioline F connectors
Special properties	Extreme conditions version

Insulation characteristics

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

Electrical properties

Encoder

Number	2 (U_{E1} , U_{E2})
Nominal output voltage	5 V DC
Voltage range	5 V DC ... 5.5 V DC
Current carrying capacity	max. 250 mA
Protective circuit	Short-circuit protection; electronic
Number	2 (U_{S1} , U_{S2})
Nominal output voltage	24 V DC
Voltage range	19.2 V DC ... 30 V DC
Current carrying capacity	typ. 500 mA
Protective circuit	Short-circuit protection; electronic
Number	max. 2 (A, /A, B, /B, (Z, /Z))
Designation	Symmetrical incremental encoders
Type of connection of signals	Push-in connection
Encoder supply voltage	5 V DC
	24 V DC
Signal voltage level	Differential signal (signal – inverted signal) ± 0.5 V, minimum; ± 6 V, maximum
Common mode voltage range signal - ground	-10 V ... 13.2 V
Input frequency	max. 300 kHz (1 channel wired)
	max. 100 kHz (more than one channel wired or Z signal monitoring via the firmware)
Number	max. 2 (A, B, (Z))
Designation	Asymmetrical incremental encoder
Type of connection of signals	Push-in connection
Signal voltage level	Low ≤ 2.5 V, high ≥ 3.5 V (up to 27 V, maximum)
Input frequency	max. 300 kHz (1 channel wired)
	max. 100 kHz (more than one channel wired or Z signal monitoring via the firmware)

Potentials: Axioline F local bus supply (U_{Bus})

Supply voltage	5 V DC (via bus base module)
Current draw	max. 120 mA
	typ. 100 mA
Power consumption	max. 0.6 W
	typ. 0.5 W

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Potentials: Feed-in of supply voltage (U_i)

Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current draw	max. 2.5 A (dependent on the encoder or sensor type used and the load on the digital output.)
Power consumption	max. 60 W (of which 1.6 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)

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}) / functional ground	500 V AC, 50 Hz, 1 min.
Test voltage: 24 V supply (I/O) / 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 ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
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 ² ... 1.5 mm ²
Conductor cross section, flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16
Stripping length	8 mm

Environmental and real-life conditions

Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °C (Standard, applications with UL approval, use in zone 2 potentially explosive area) -40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.)
Degree of protection	IP20

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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)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

Standards and regulations

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

ATEX

Identification	Ex II 3 G Ex ec IIC T4 Gc
Certificate	UL 20 ATEX 2441X
References to standards	EN IEC 60079-0, EN IEC 60079-7

UKEX

Identification	Ex II 3 G Ex ec IIC T4 Gc
Certificate	PxCIMA22UKEX2701949X
References to standards	EN IEC 60079-0, EN IEC 60079-7

IECEX

Identification	Ex ec IIC T4 Gc
Certificate	IECEX ULD 20.0026X
References to standards	IEC 60079-0 Ed. 7, IEC 60079-7 Ed. 5.1

UL, USA/Canada

Identification	cULus
Certificate	E238705

UL Ex, USA / Canada

Identification	Class I, Zone 2, AEx ec IIC T4
	Class I, Division 2, Groups A, B, C, D, T4
	Ex ec IIC T4 Gc X
Certificate	E366272
References to standards	UL 60079-0 Ed. 7 / CSA C22.2 NO. 60079-0 Ed. 4
	UL 60079-7 Ed. 5 / CSA C22.2 NO. 60079-7 Ed. 2

CCC / China-Ex

Identification	Ex ec IIC T4 Gc
Certificate	CCC, 
References to standards	GB/T 3836.1-2021, GB/T 3836.3-2021

Mounting

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

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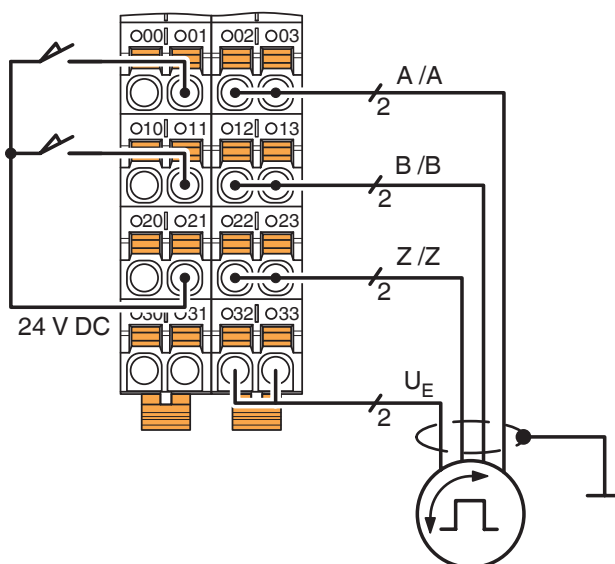
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Drawings

Connection diagram



Quadrature encoder with 5 V supply

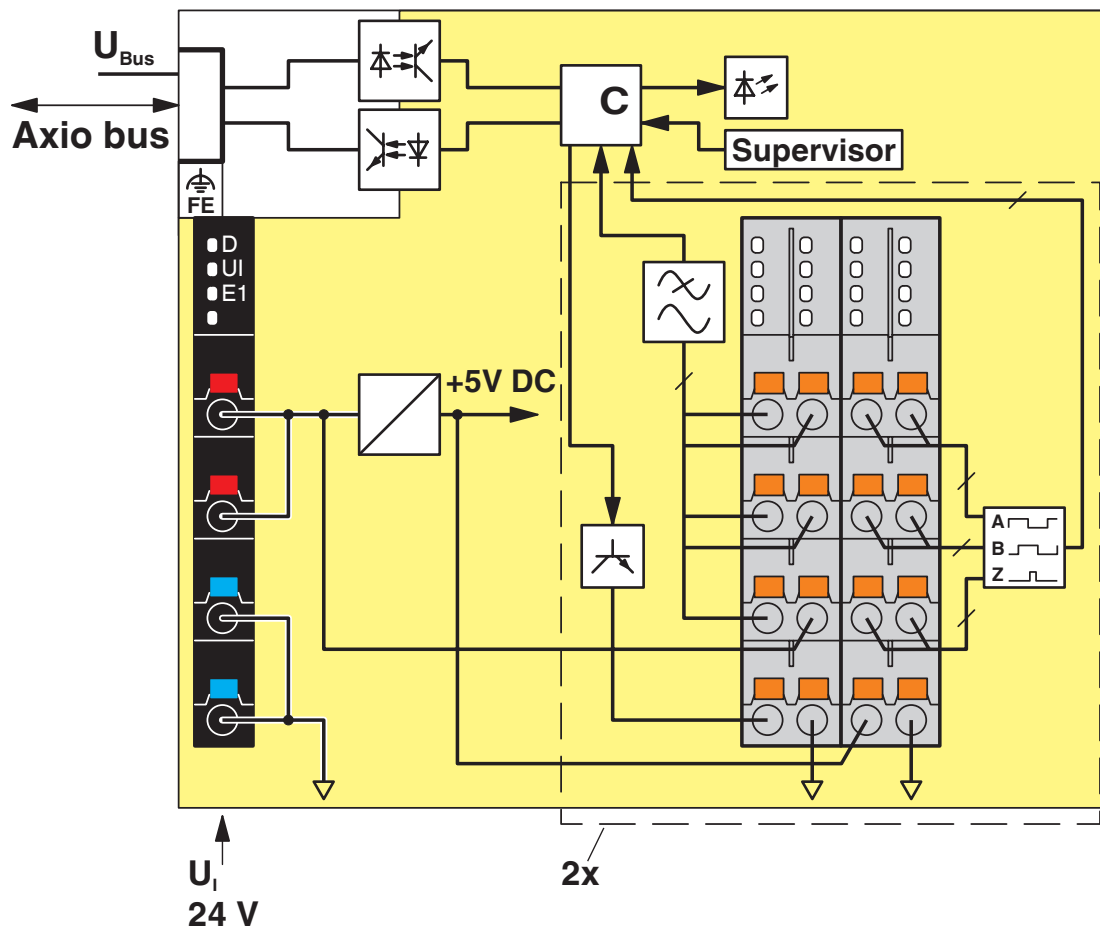
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Block diagram



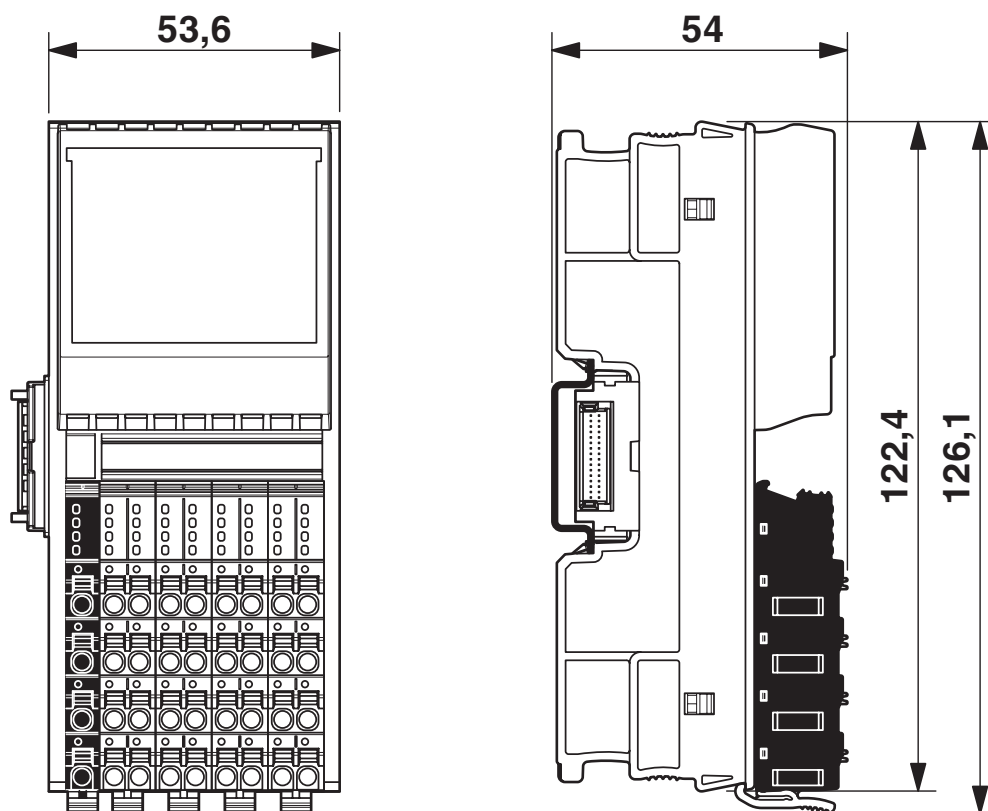
Internal wiring of the terminal points

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Dimensional drawing



Dimensional drawing

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2701239>



DNV GL

Approval ID: TAA00000DF



LR

Approval ID: LR2001902TA-08



NK

Approval ID: 14A006



BV

Approval ID: 36433/B4 BV



PRS

Approval ID: TE/1020/880590/21



UL Listed

Approval ID: FILE E 238705



cUL Listed

Approval ID: FILE E 238705

BSH

Approval ID: 840



RINA

Approval ID: ELE008423XG

ABS

Approval ID: 23-2449604-PDA

UAE-RoHS

Approval ID: 23-02-63243

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IECEx

Approval ID: IECEx ULD 20.0026X



ATEX

Approval ID: UL 20 ATEX 2441X



cULus Listed

Approval ID: E366272



CCC

Approval ID: 2021122309114456_CN

cULus Listed

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Classifications

ECLASS

ECLASS-11.0	27242605
ECLASS-12.0	27242605
ECLASS-13.0	27242605

ETIM

ETIM 9.0	EC001601
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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)

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Accessories

AXL F BS F - Bus connector

2688129

<https://www.phoenixcontact.com/us/products/2688129>

Axioline F bus base module for housing type F



AXL SHIELD SET - Shield connection

2700518

<https://www.phoenixcontact.com/us/products/2700518>

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



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ZB 20,3 AXL UNPRINTED - Zack marker strip

0829579

<https://www.phoenixcontact.com/us/products/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

ZBF 10/5,8 AXL UNPRINTED - Zack Marker strip, flat

0829580

<https://www.phoenixcontact.com/us/products/0829580>



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 10.15 mm, lettering field size: 4 x 10, 15 x 5 mm, 1 x 5.8 x 5 mm, Number of individual labels: 50

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EMT (35X46)R - Insert label

0801604

<https://www.phoenixcontact.com/us/products/0801604>



Insert label, for marking the Axioline F series from Phoenix Contact, Roll, white, unlabeled, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMaster 300/600, THERMOMARK X1.2, mounting type: insert, lettering field size: 35 x 46 mm, Number of individual labels: 500

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