



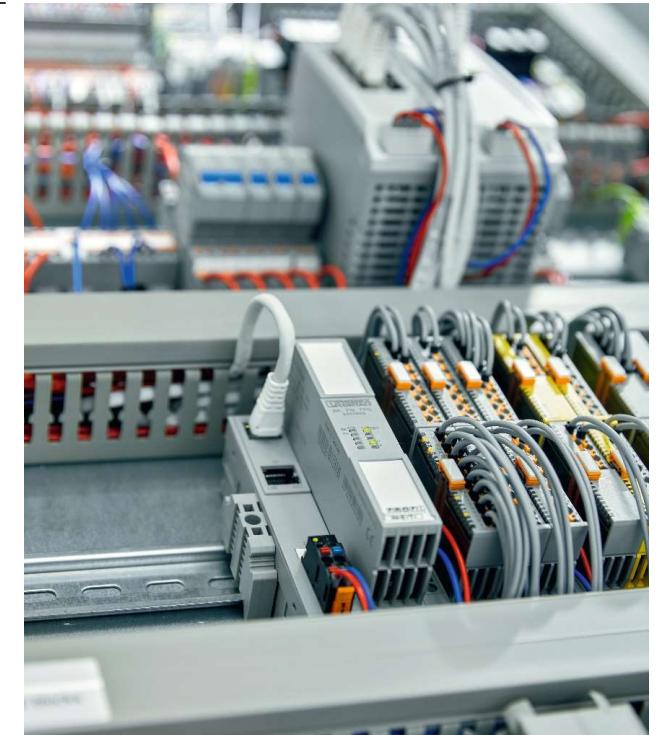
Welcome

Sistema modular Axioline F de Entradas y Salidas

Webinars

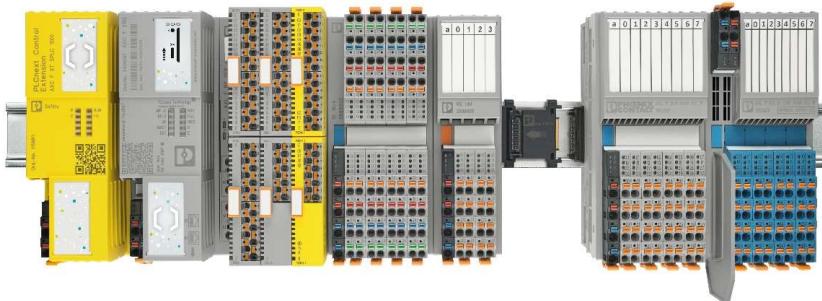
Agenda

- Oferta Axioline F
 - Actualización IO-Link
 - Project+ 3.6
 - Arquitecturas
-



Webinar IMA Enero 2021

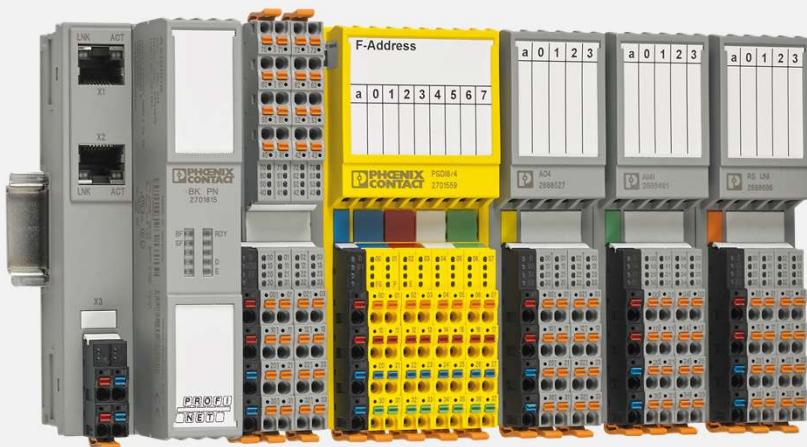
Sistema modular Axioline F de Entradas y Salidas



Fecha	14 Enero 2021
Hora	9:00
Hora	
Duración	1 hora
Costo	gratuito

Un mayor conocimiento sobre el Sistema modular Axioline F y sus alternativas de módulos de Control, nuevos módulos de control de seguridad, acopladores de bus y módulos especiales serán presentados.

En el desarrollo de la sesión se orientará con mayor profundidad de las reglas y todos los elementos disponibles de este Sistema modular Axioline F desde sus herramientas para selección, programación, puesta en marcha, diagnóstico así como descubrir las mejores arquitecturas al utilizar módulos Axioline SE, nuevos controladores de expansión para seguridad, Arquitecturas SBT y módulos especiales para áreas peligrosas.



Axioline F the block-based modular I/O system

TECHNICS

Axioline F - the block-based modular I/O system

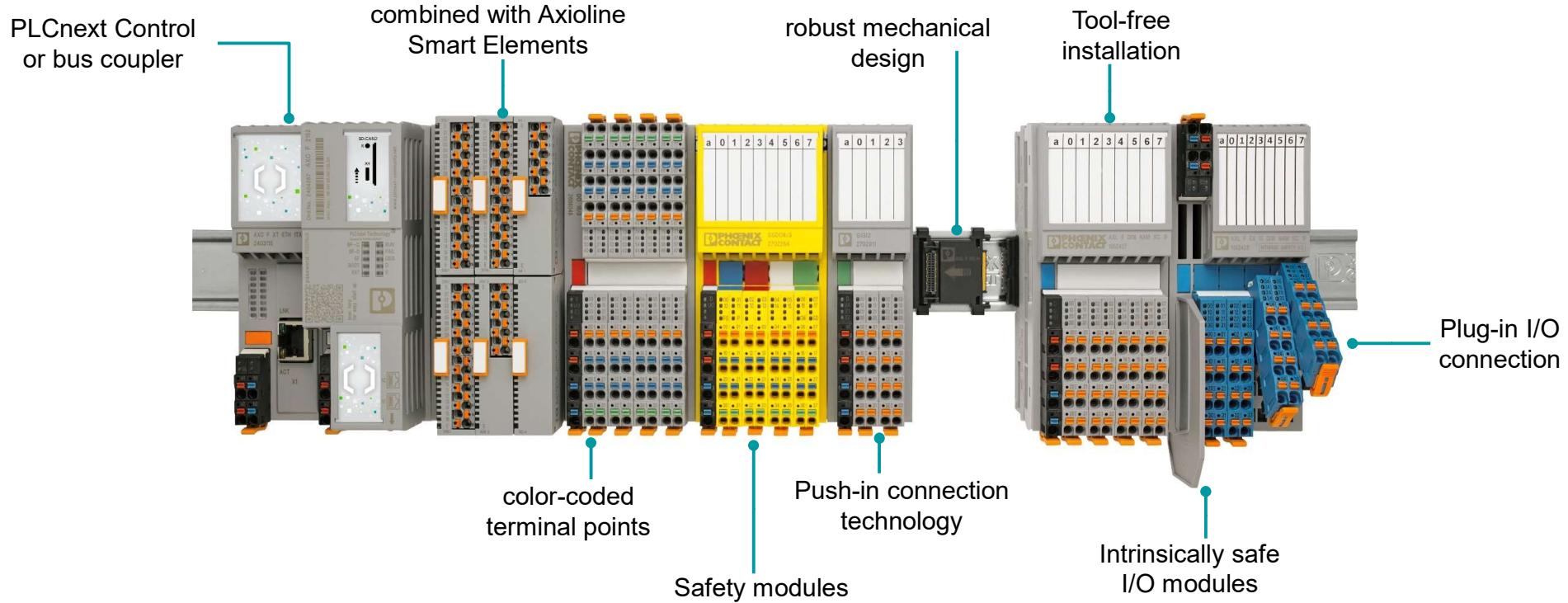
Agenda

- Overview / Basics Axioline F
 - Look, colors, LEDs, mechanical specifications
 - Power supply, wiring, labelling, shielding
 - STARTUP+ - Wiring Check for Axioline F
 - Technical data / Approvals
 - Axioline F XC (eXtreme Conditions)
 - Process data, PDI channel, Response times
 - SafetyBridge Technology
 - Product Portfolio
-



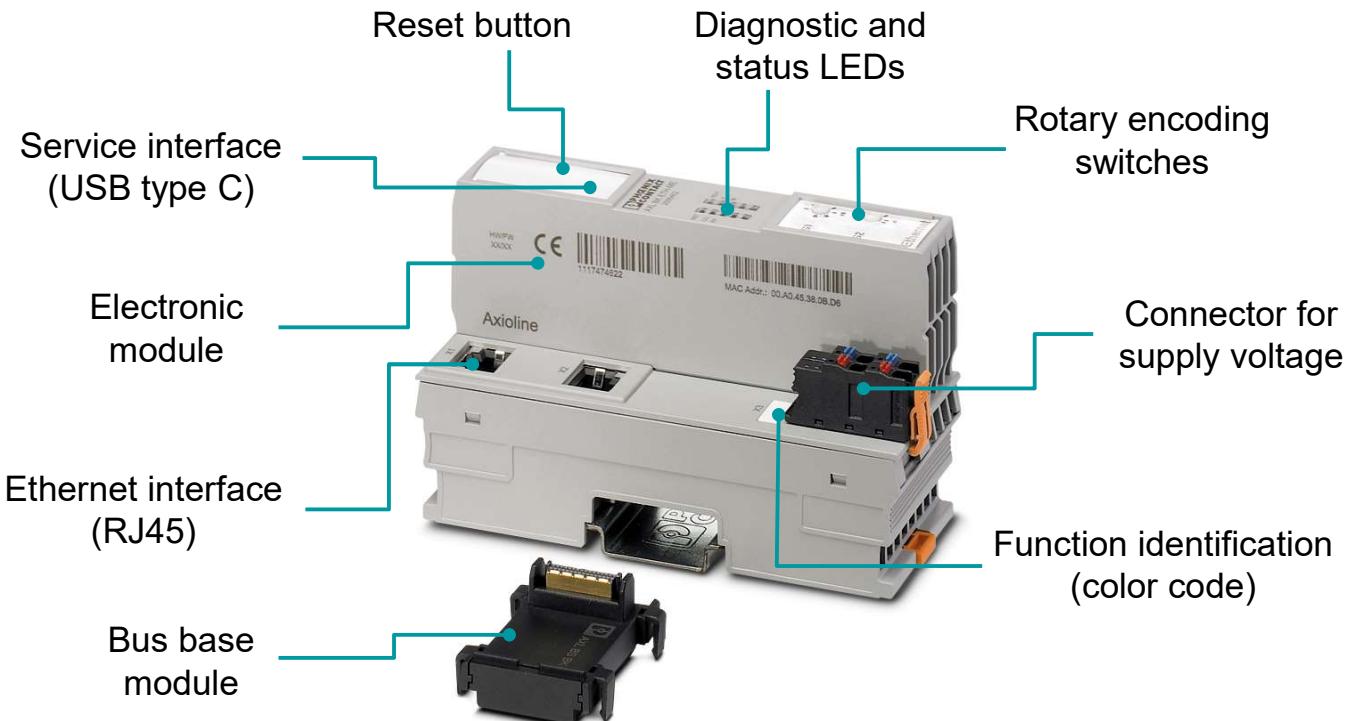
Axioline F - the block-based modular I/O system

Axioline F – the specialist in the control cabinet



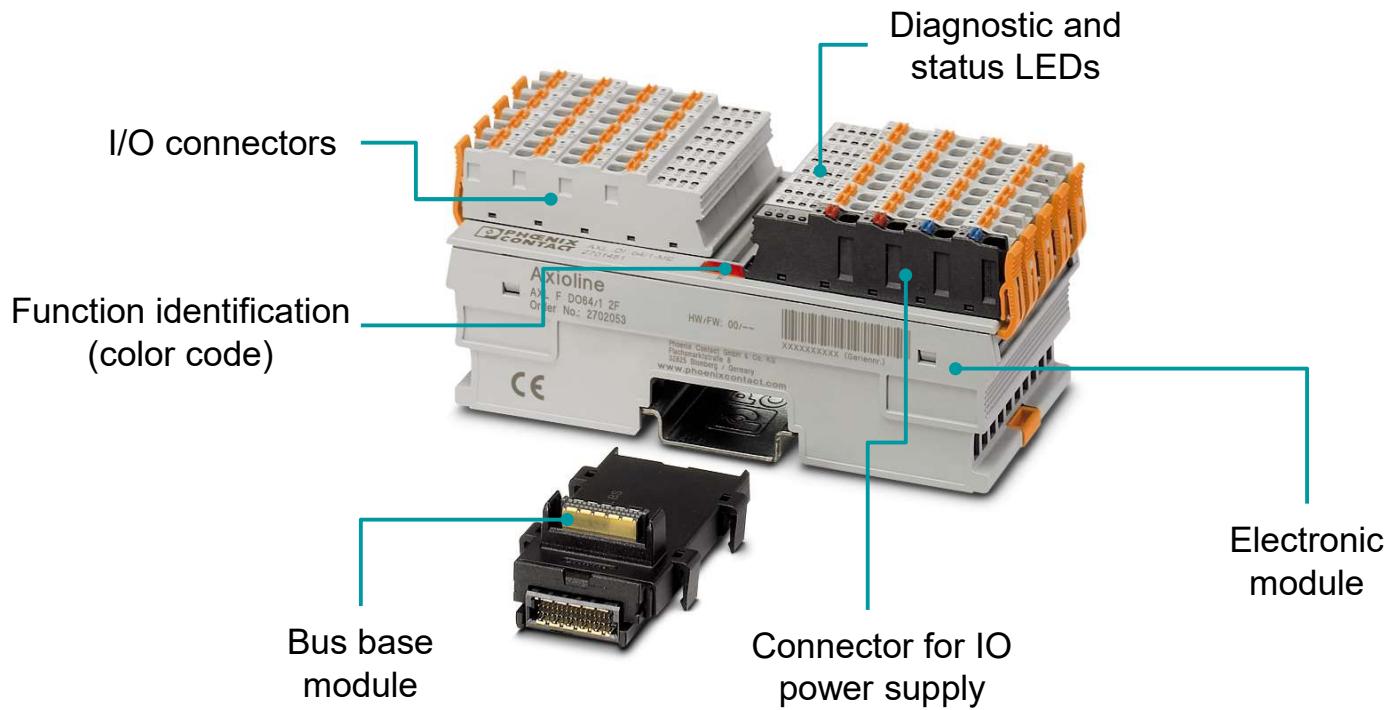
Axioline F - the block-based modular I/O system

Components of an Axioline F bus coupler



Axioline F - the block-based modular I/O system

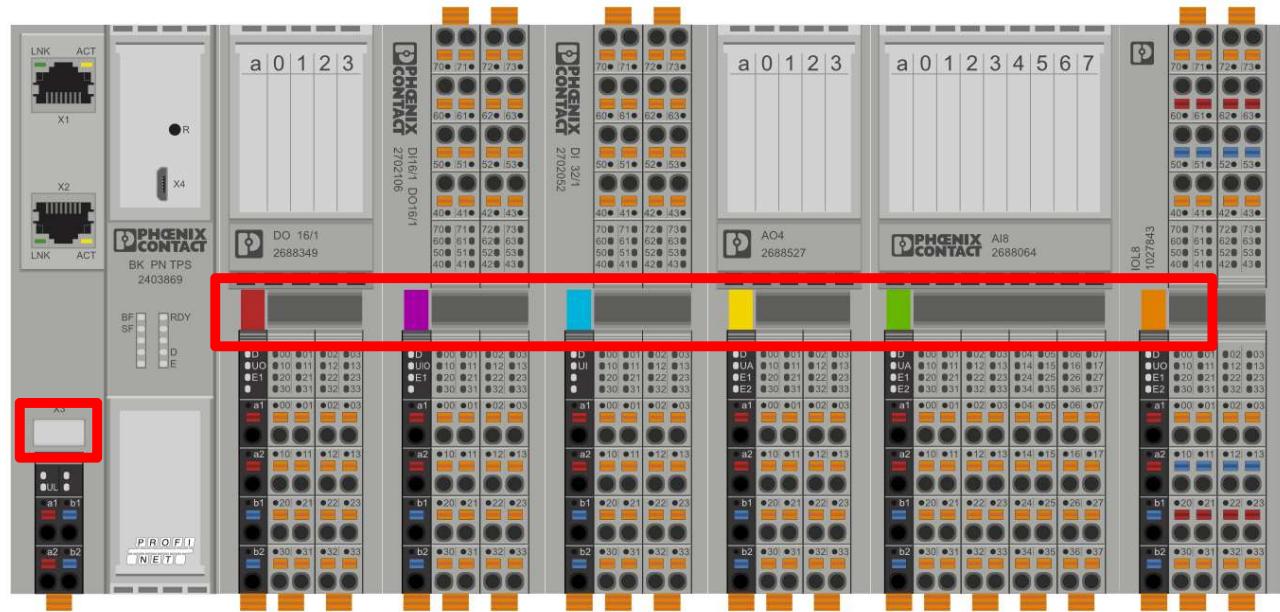
Components of an Axioline F I/O module



Axioline F - the block-based modular I/O system

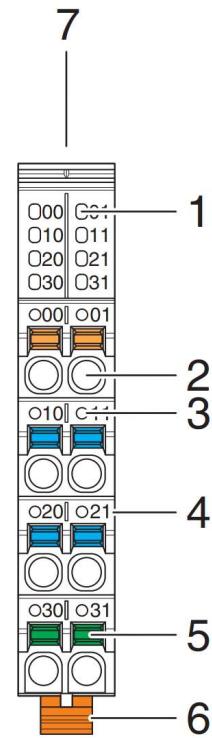
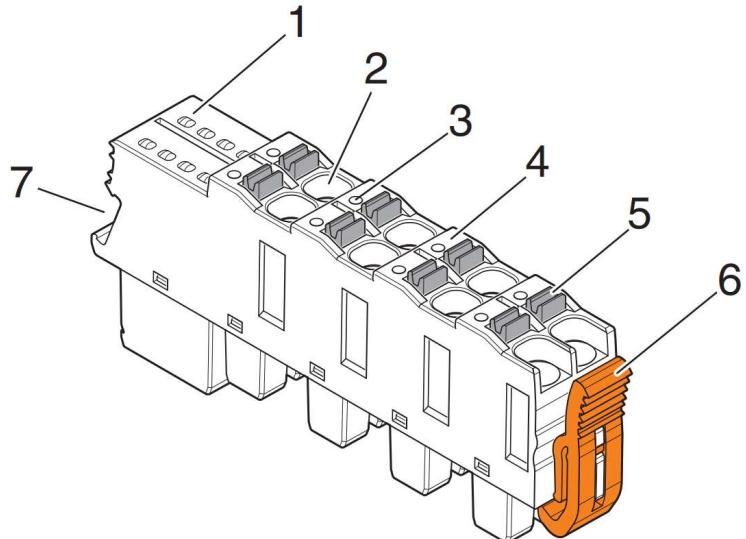
Function identification via color code

	Bus coupler / PWR
Blue	Digital input
Red	Digital output
Purple	Digital input / output
Green	Analog input
Yellow	Temperature measurement
Orange	Analog output
Black	Function / communication



Axioline F - the block-based modular I/O system

Basic design of an Axioline F connector

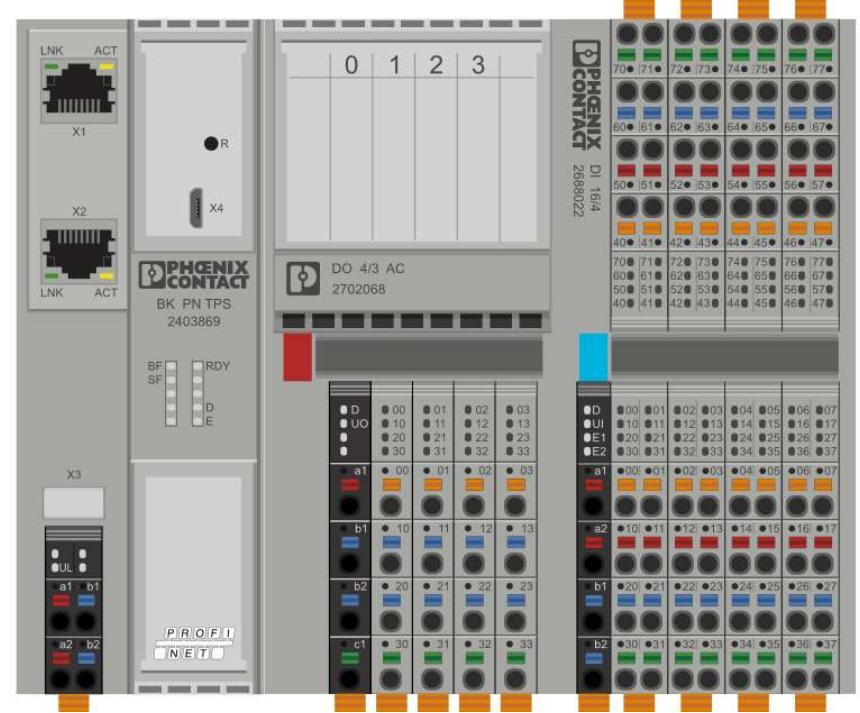


1. Local diagnostic and status LEDs
2. Terminal point
3. Touch connection (Measuring point)
4. Terminal point marking
5. Colored spring lever
6. Locking latch
7. Space for connector marking ("ZBF 10/5,8 AXL" or "ZBF 5")

Axioline F - the block-based modular I/O system

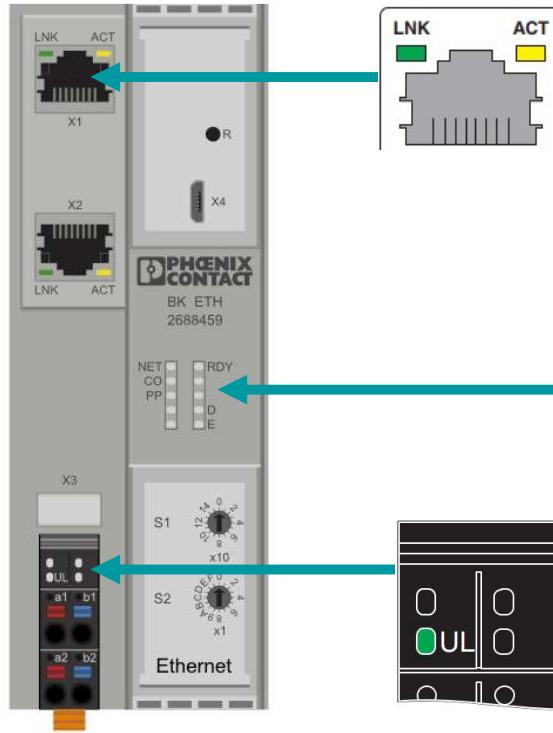
Color coded terminal points (spring lever)

Color	Function of the terminal points	
	Low-level signal	Low voltage
	Signal	Signal
	24 V DC	230 V AC, 220 V DC, relay main contact
	GND	N (neutral conductor)
	FE (functional ground)	PE (protective conductor)



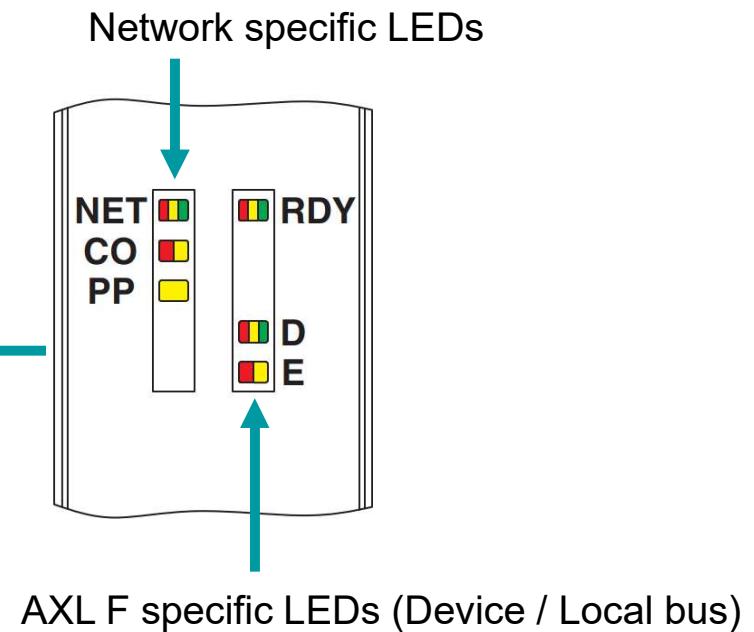
Axioline F - the block-based modular I/O system

Diagnostic LEDs of bus couplers



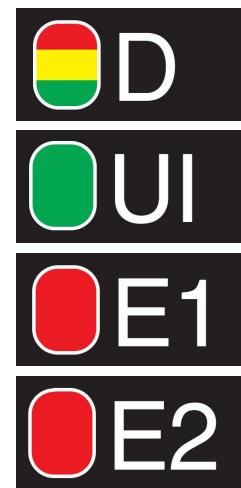
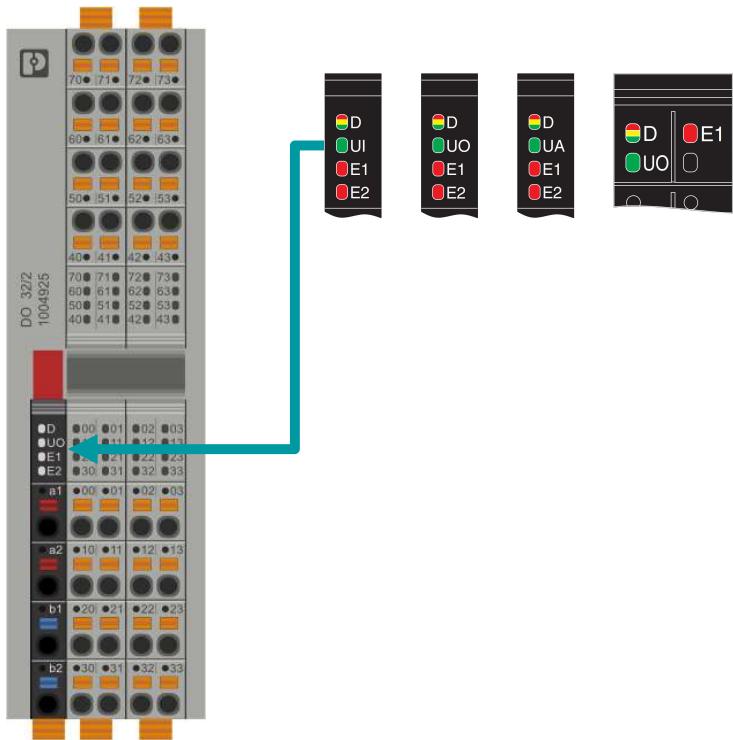
LINK: Connection
ACT: Transmission

Communications power supply (U_L)



Axioline F - the block-based modular I/O system

Diagnostic LEDs of I/O modules | PWR connectors



Diagnostics of local bus communication

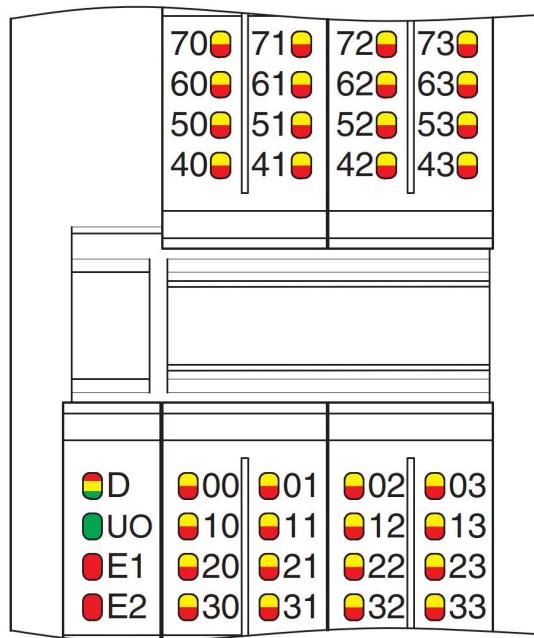
I/O supply (U_I , U_O , U_{IO} , U_A)

I/O error (entire device)

Channel error

Axioline F - the block-based modular I/O system

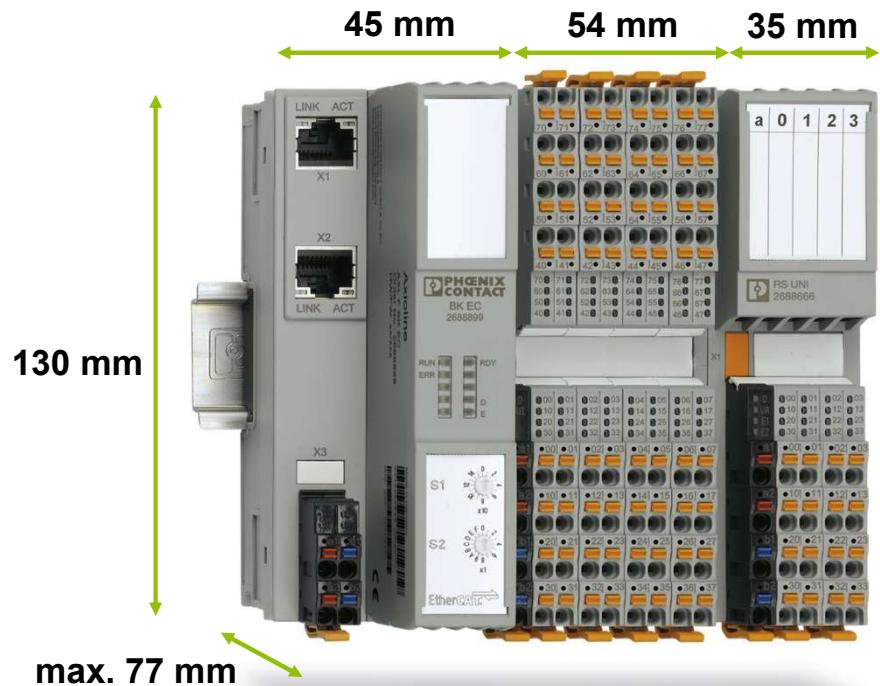
Diagnostic LEDs of I/O modules | I/O connectors



- LEDs are numbered according to terminal points
- Yellow → Status of the input or output
- Red → Diagnostics of the output

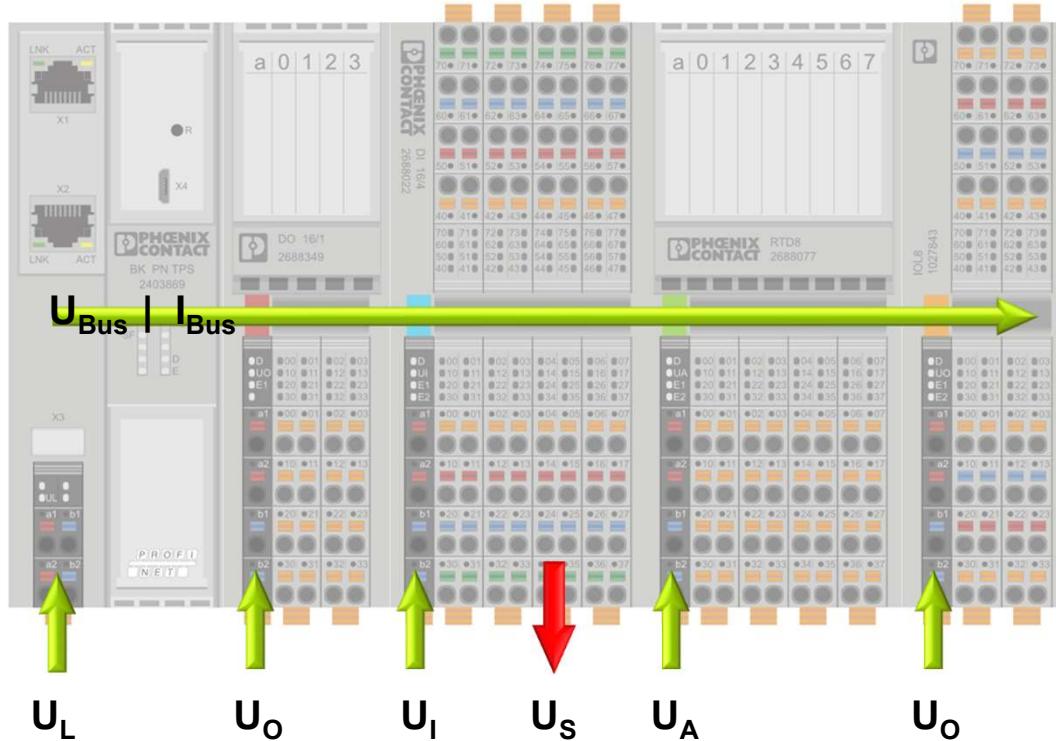
Axioline F - the block-based modular I/O system

Module dimensions



Axioline F - the block-based modular I/O system

Axioline F system supply

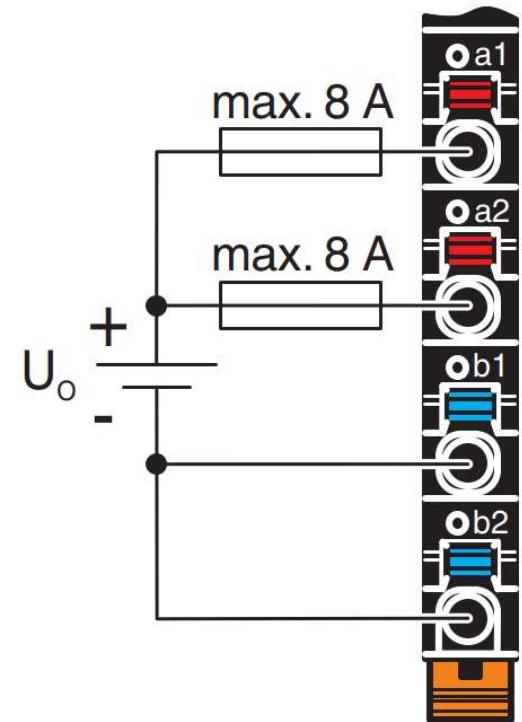


- U_L (U_{Logic}) Communications power supply
- I_{Bus} (I_{Bus}) Local bus
- U_{Bus} (U_{Bus}) Local bus (gen. from U_L)
- U_I (U_{Input}) Digital input modules
- U_S (U_{Sensor}) Sensor supply (gen. from U_I)
- U_O (U_{Output}) Digital output modules
- U_{IO} ($U_{\text{Input/Output}}$) Digital input/output modules
- U_A (U_{Analog}) Analog modules

Axioline F - the block-based modular I/O system

Parallel power supply for more than 8 A

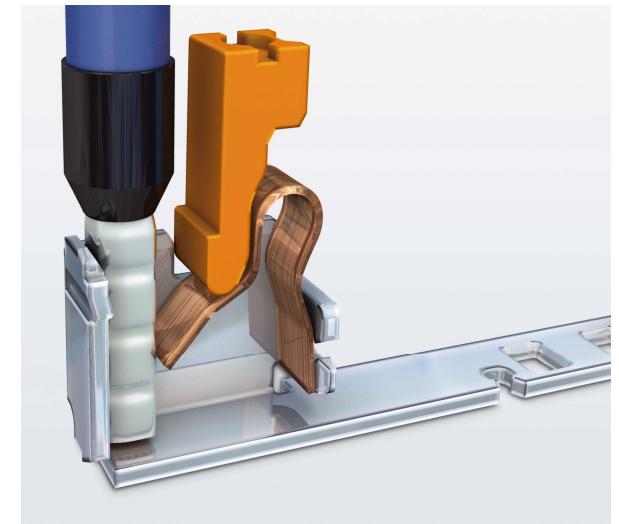
- Maximum current consumption of a terminal point → 8 A
- Example:
 - AXL F DO32/1 2H → 32 channels * 0,5 A = 16 A
 - Power supply (U_O) via one single terminal point limited up to 8 A
 - → Parallel power supply for U_O up to 16 A



Axioline F - the block-based modular I/O system

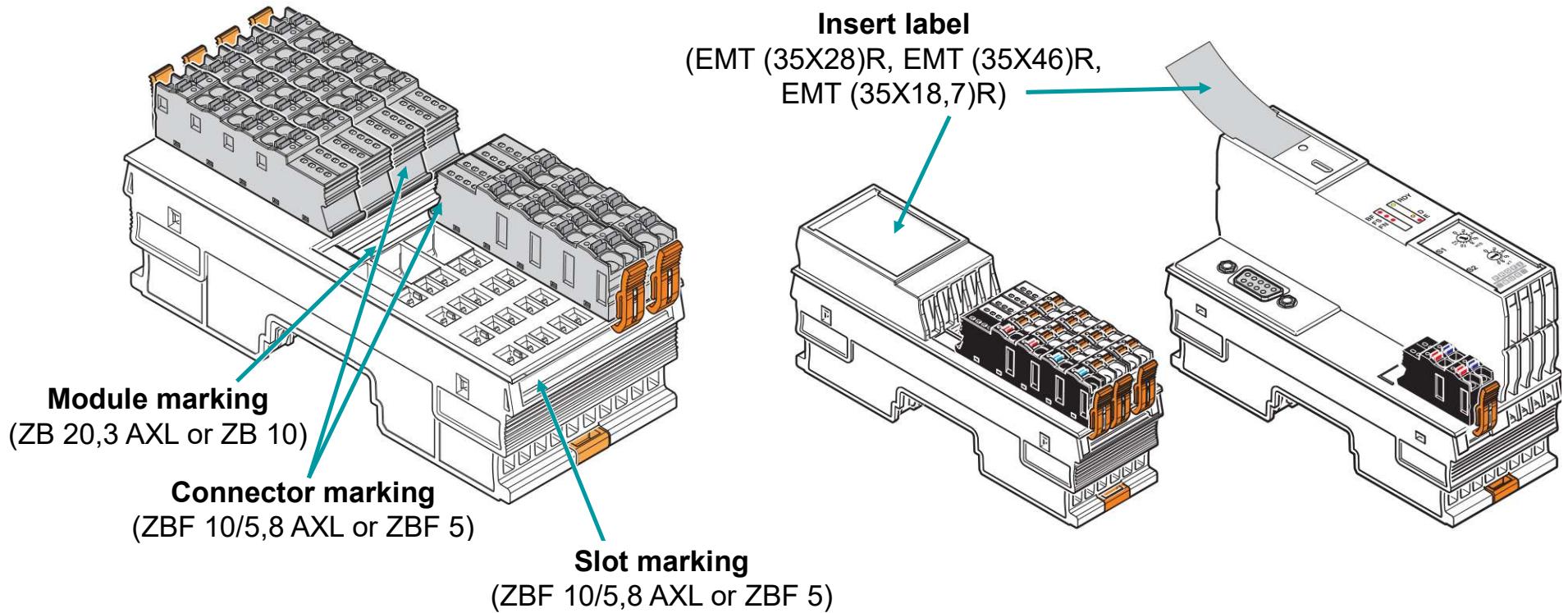
Conductor cross sections | Push-in Technology

Conductor	Push-in technology	using the spring lever
solid		min. 0,50 mm ² max. 1,50 mm ²
stranded		-
ferrule without collar		min. 0,25 mm ² max. 1,50 mm ²
ferrule with collar		min. 0,25 mm ² max. 1,50 mm ²



Axioline F - the block-based modular I/O system

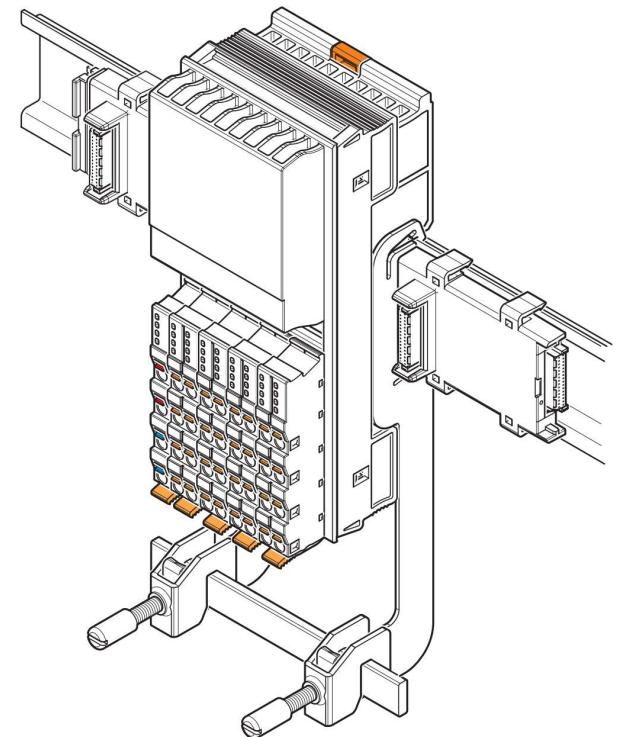
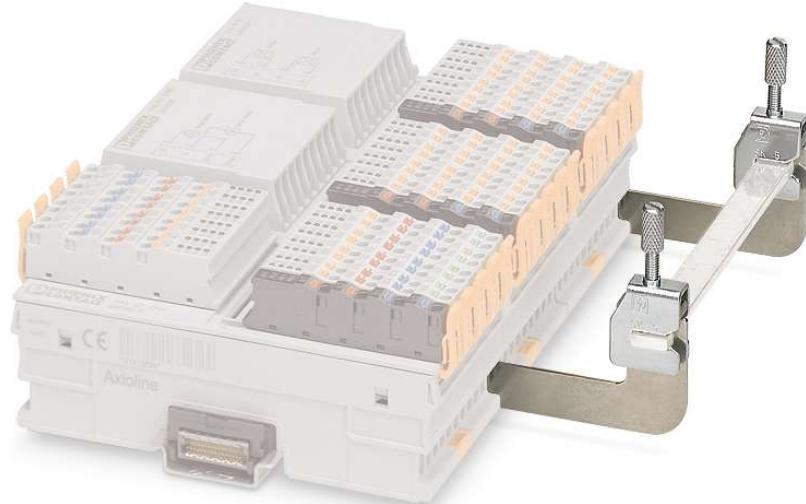
Individual marking with zack marker strips and labels



Axioline F - the block-based modular I/O system

Shielding of signal cables

- System integrated shielding set
 - AXL SHIELD SET - 2700518



Axioline F - the block-based modular I/O system

STARTUP+ – Wiring Check for Axioline F

- Connection to the bus coupler via RJ45 or USB interface
- Reading the connected bus; all modules will be displayed
- Reading and writing module process data (IO-Check)
- Parameterization of the modules
- I/O module and the bus coupler diagnostics
- Free to download



AVAILABLE AS FREE DOWNLOAD !



Axioline F - the block-based modular I/O system

Technical Data – Environment & mechanical tests

Ambient temperature (operation)	-25°C ... +60°C
Ambient temperature (storage/transport)	-40°C ... +85°C
Permissible humidity	5% ... 95% (non-condensing)
Permissible air pressure	70 kPa ... 106 kPa (up to 3000 m above sea level) (> 3000 m with restraints, see user manual)
Degree of protection	IP20
Vibration resistance (IEC 60068-2-6)	5g
Shock testing (IEC 60068-2-27)	30g
Bump endurance test (IEC 60068-2-27)	10g
Noise emission test (EN 61000-6-3)	Class B (residential area)

Axioline F - the block-based modular I/O system

Approvals

Local approvals



Marine approvals



Ex approvals*



Class 1 Div. 2

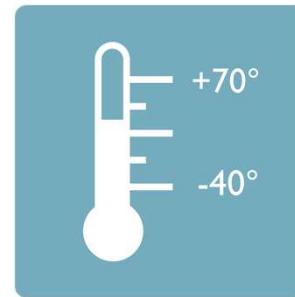
* XC modules only



Axioline F - the block-based modular I/O system

Axioline F XC (eXtreme Conditions)

- Axioline F XC modules for rough environment
 - 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
 - Ex approvals for many XC modules (July 2020)
 - ATEX (Zone 2)
 - IEC Ex (Zone 2)
 - UL haz. loc. Class 1 Div 2



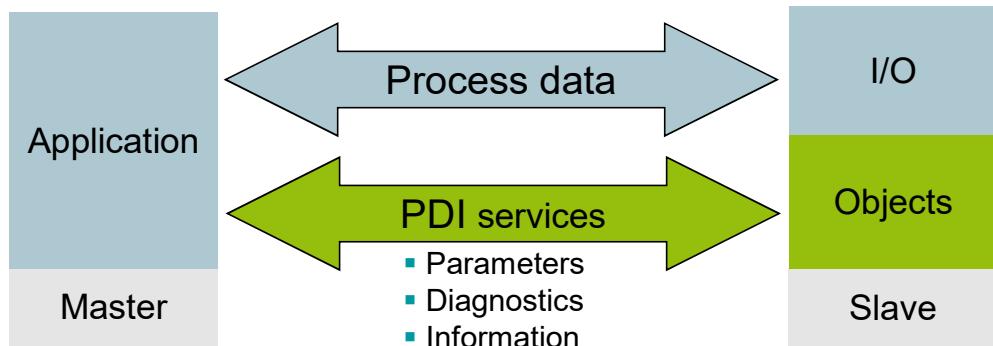
Class 1 Div. 2



Axioline F - the block-based modular I/O system

Process data and PDI channel

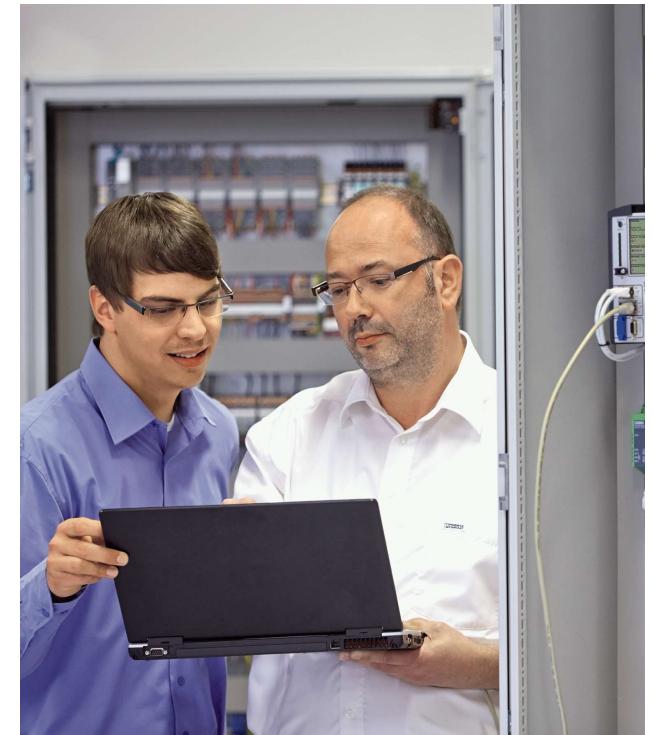
- Process data
 - Every AXL F device has at least one byte process data
 - Motorola format (Big Endian)
- PDI = Parameters, Diagnostics, and Information
 - Demand-oriented, acyclic transmission of parameter and diagnostic data



Axioline F - the block-based modular I/O system

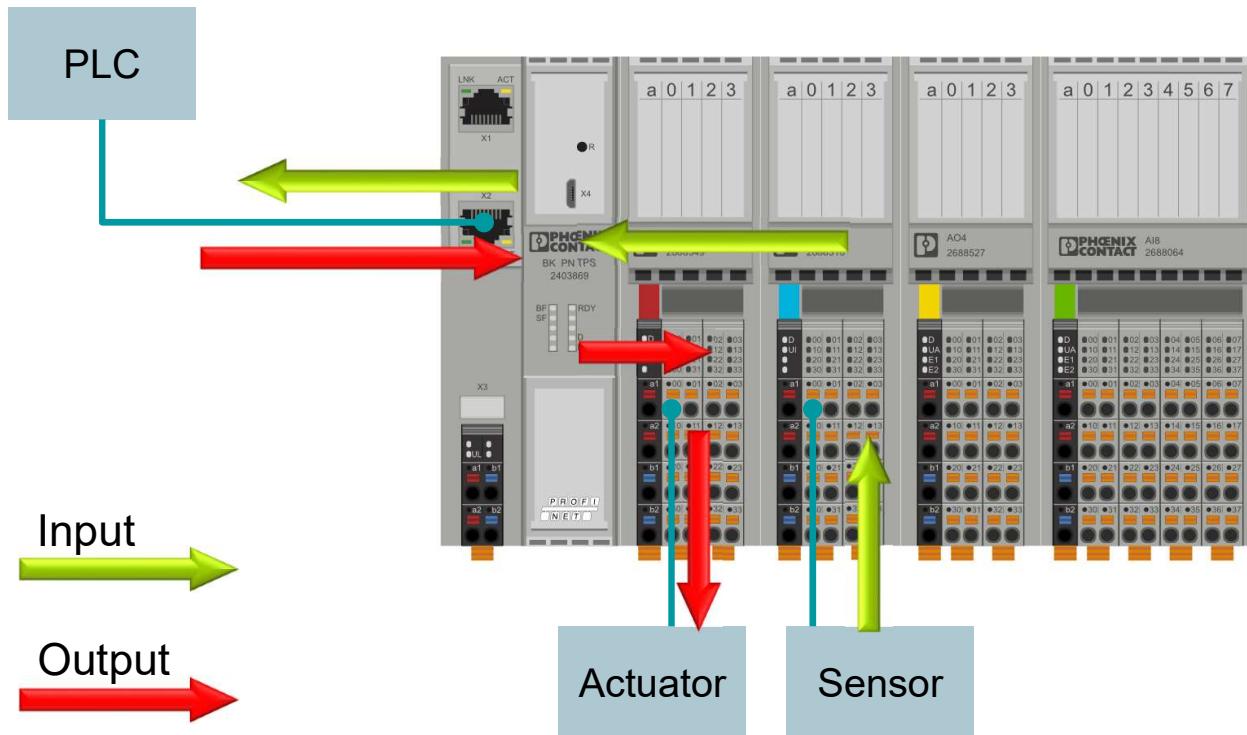
Diagnostic state (0018_{hex}: DiagState)

Index [hex]	Object name	Meaning
0018	DiagState	Diagnostic state
.01	Consec. no.	Consecutive error number since the last power up or error memory reset
.02	Priority	Priority of the message. 1: highest priority
.03	Channel	Channel on which the error occurred (FF _{hex} : entire device)
.04	Code	Error code
....
.0B	Text	Device-specific explanation of the malfunction that occurred; Default: "Status OK"



Axioline F - the block-based modular I/O system

Response times for an Axioline F system

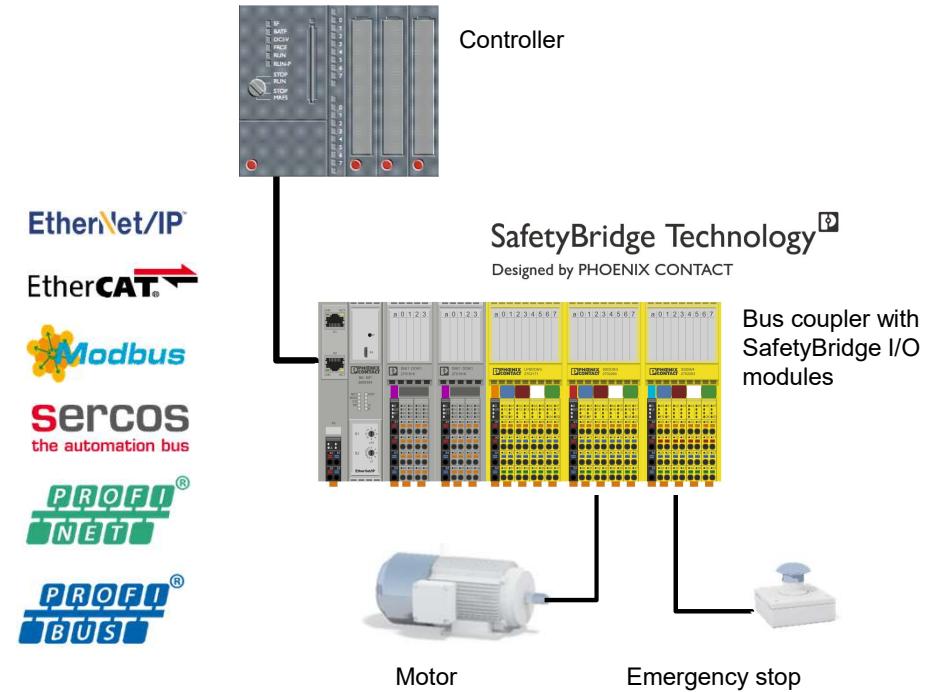


- Response time = time from reading in the input, processing in the controller to setting the output
- When determining the response time of the overall system, Axioline F represents the smallest proportion by far and therefore can normally be ignored.

Axioline F - the block-based modular I/O system

SafetyBridge Technology

- Safety I/O modules exchange safety-related signals with each other
- The standard controller and network is only used for transport purposes
- Safety I/O modules process the safety functions themselves
- All safety requirements up to SIL 3 or PL e
 - Cost-effective solution for functional safety in standard applications



Axioline F - the block-based modular I/O system

Axiocontrol

PLCnext Control	Extensions (for AXC F 2152 / 3152)	Conventional PLCs
 AXC F 1152 1151412 8 tasks, 16 PN devices, ARM® Cortex® A9 single core, 800 MHz	 AXC F XT ETH 1TX 2403115 Left-alignable Ethernet interface, Independent MAC-Address, PROFINET support	 AXC 1050 2700988 8 tasks, 16 PN devices, Altera® NIOS® II processor, 100 MHz
 AXC F 2152 2404267 32 tasks, 64 PN devices, ARM® Cortex® A9 dual core, 2x 800 MHz	 AXC F XT IB 2403018 Left-alignable INTERBUS-master, up to 512 INTERBUS devices, 500K / 2MBD (automatic detection)	 AXC 3050 2700989 16 tasks, 256 PN devices, Intel® Atom™ E660, 1.3 GHz
 AXC F 3152 1234567 32 tasks, 128 PN devices, Intel® Atom™ E3930 dual core, 2x 1.3 GHz	 AXC F IL ADAPT 1020304 Right-alignable Inline adapter terminal (INTERBUS master), 500K / 2MBD (automatic detection)	

Axioline F - the block-based modular I/O system

Bus coupler

PROFINET PROFIBUS	EtherCAT® Sercos	Modbus/TCP (UDP) EtherNet/IP™	Ethernet (IEC 61850)
  	  AXL F BK EC 2688899	  AXL F BK ETH 2688459	  AXL F BK SAS 2701457
   AXL F BK PB 2688530	  AXL F BK S3 2701686	  AXL F BK EIP 2688394	

Axioline F - the block-based modular I/O system

Digital Input

16 Channels	32 channels	64 channels	8 channels (IEC 61850)
 AXL F DI16/4 2F 2688022 24 V DC, 4-wire	 AXL F DI32/1 2H 2702052 24 V DC, 1-wire	 AXL F DI64/1 2F 2701450 24 V DC, 1-wire	 AXL F DI8/2 24DC 1F 2702783 24 V DC, IEC 61850-3
 AXL F DI16/1 1H 2688310 24 V DC, 1-wire	 AXL F DI32/1 1F 2688035 24 V DC, 1-wire		 AXL F DI8/2 48/60DC 1F 2702654 48 / 60 V DC, IEC 61850-3
 AXL F DI16/1 HS 1H 2701722 24 V DC, 1-wire, high speed			 AXL F DI8/2 110/220DC 1F 2700684 110 / 220 V DC, IEC 61850-3

Axioline F - the block-based modular I/O system

Digital Output

4 / 8 Channels	16 channels	16 / 32 channels	64 channels
 AXL F DO8/2 2A 1H 2688381 24 V DC, 2 A, 2-wire	 AXL F DO16/3 2F 2688048 24 V DC, 500 mA, 3-wire, safety circuit	 AXL F DO16 FLK 1H 2701813 24 V DC, 500 mA, FLK connection	 AXL F DO64/1 2F 2702053 24 V DC, 500 mA, 1-wire
 AXL F DO4/3 AC 1F 2702068 Triac, 230 V AC, 2 A, 3-wire	 AXL F DO16/1 1H 2688349 24 V DC, 500 mA, 1-wire	 AXL F DO32/1 2H 1004925 24 V DC, 500 mA, 1-wire	
 AXL F DOR4/2 AC/220DC 1F 2700608 Relay, 8A, 220 V DC / 230 V AC	 AXL F DO16/2 2H 1027904 24 V DC, 500 mA, 2-wire, safety circuit	 AXL F DO32/1 1F 2688051 24 V DC, 500 mA, 1-wire	

Axioline F - the block-based modular I/O system

Digital Input / Output

16 Channels	24 channels	32 channels
 AXL F DI8/1 DO8/1 1H 2701916 8 DI, 24 V DC, 1-wire 8 DO, 24 V DC, 500 mA, 1-wire	 AXL F DI16/1 DO8/2-2A 2H 2702291 16 DI, 24 V DC, 1-wire 8 DO, 24 V DC, 2 A, 2-wire	 AXL F DI16/1 DO16/1 2H 2702106 16 DI, 24 V DC, 1-wire 16 DO, 24 V DC, 500 mA, 1-wire
 AXL F DI8/3 DO8/3 2H 2702071 8 DI, 24 V DC, 3-wire 8 DO, 24 V DC, 500 mA, 3-wire		

Axioline F - the block-based modular I/O system

Analog Input / Analog Output

Analog Input 4 Channels	Analog Input 8 Channels	Analog Output 4 / 8 Channels	Analog Input / Output 4 Channels
 AXL F AI4 I 1H 2688491 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-, 3-, 4-wire	 AXL F AI8 1F 2688064 0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire	 AXL F AO4 1H 2688527 0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, 2-wire	 AXL F AI2 AO2 1H 2702072 0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire
 AXL F AI4 U 1H 2688501 0 ... 5 V, -5 ... 5 V, 0 ... 10 V, -10 ... 10 V, 2-, 3-, 4-wire	 AXL F AI8 W 1F 2702525 0 V ... 5 V, -5 ... +5 V, 0 V ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire, high long-term stability	 AXL F AO8 1F 2688080 0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire	

Axioline F - the block-based modular I/O system

Temperature measurement / Strain Gauge Input

RTD (Resistive Temperature Sensors)	UTH (Thermocouple Sensors)	SGI (Strain Gauge Input)
 AXL F RTD4 1H 2688556 4 channels; Pt, Ni, KTY, Cu sensors; linear resistance measuring; 2, 3, 4-wire (shielded)	 AXL F UTH4 1H 2688598 4 channels; Sensor types: U, T, L, J, E, K, N, S, R, B, C, W, HK; linear voltage measuring; 2-wire (shielded, twisted pair)	 AXL F SGI2 1H 2702911 2 channels; high-precision, 4-, 6-wire connection; 2-point adjustment, path-adjustment, PD update time 0,2 ... 100 ms
 AXL F RTD8 1F 2688077 8 channels, Pt, Ni, KTY, Cu sensors; linear resistance measuring; 2, 3, 4-wire (shielded)	 AXL F UTH8 1F 2688417 8 channels; Sensor types: U, T, L, J, E, K, N, S, R, B, C, W, HK; linear voltage measuring; 2-wire (shielded, twisted pair)	

Axioline F - the block-based modular I/O system

Communication / Master

IO-Link Master, Serial (RS-232, RS-422/485)	Conventional Subbus Masters / Interfaces	Building Automation Subbus Master
 <p>AXL F IOL8 2H 1027843</p> <p>8 IO-Link class A ports, 3-wire, IO-Link-Spec V1.1.2, Parameter data storage</p>	 <p>AXL F IF CAN 1H 2702668</p> <p>1 CAN interface; transparent protocol, max. speed of 1 Mbps</p> <p>Restricted distribution</p>	 <p>AXL F MA DALI2 1H 2702864</p> <p>DALI master, two channels, integrated DALI power supply, single master operation, protected up to 250 V AC</p> <p>only for AXC / RFC</p>
 <p>AXL F RS UNI 1H 2688666</p> <p>1 interface, RS-485/422 or RS-232; Speed: 110 bps ... 250 kbps; Protocols: Transparent, end-to-end, XON/XOFF, Modbus/RTU</p>	 <p>AXL F MA IB 1H 2702148</p> <p>1 INTERBUS-Master, 9-pos. D-SUB socket, max. 64 byte process data width, 500K / 2MBD (automatic detect.), Automatic startup of INTERBUS</p> <p>Restricted distribution</p>	 <p>AXL F MA MBUS 1H 1104545</p> <p>M-Bus master, 2-wire connection, up to 80 devices, transmission speed up to 38.4 kbps, Integrated isolated M-Bus power supply</p> <p>only for AXC / RFC</p>

Axioline F - the block-based modular I/O system

Function / Power Measurement / Power feed

SSI, PWM	Power Measurement, Counter, Incremental Encoder	Logic power supply
 AXL F SSI1 AO1 1H 2688433 1 SSI interface for absolute encoder, 62.5 kHz to 2 MHz; 1 analog output	 AXL F PM EF 1F 2702671 Power measurement, 4 inputs, 0 ... 400 V AC (phase/neutral), 0 ... 690 V AC (phase/phase), 0 ... 5 AAC	 AXL F PWR 1H 2688297 Logic supply U_{Bus} , max. 4 A
 AXL F PWM2 1H 1007352 pulse width modulation, 2 independent channels, 24 V DC, 500 mA, 5 V DC, 10 mA, Frequency output (0 ... 65535 Hz)	 AXL F CNT2 INC2 1F 2688093 2 Counter inputs, 32 Bit, 2 Incremental encoder inputs, Input frequency up to 300 kHz	

Axioline F - the block-based modular I/O system

SafetyBridge / PROFIsafe

SafetyBridge logical module	SafetyBridge I/O	PROFIsafe I/O
 AXL F LPSDO8/3 1F 2702171 integrated safety logic; 4 safe DOs (two-channel occupancy) or 8 safe DOs (single-channel occupancy)	 AXL F SSDI8/4 1F 2702263 4 safe DIls (two-channel occupancy) or 8 safe DIls (single-channel occupancy)	 AXL F PSDI8/4 1F 2701559 4 safe DIls (two-channel occupancy) or 8 safe DIls (single-channel occupancy)
	 AXL F SSDO8/3 1F 2702264 4 safe DOs (two-channel occupancy) or 8 safe DOs (single-channel occupancy)	 AXL F PSDO8/3 1F 2701560 4 safe DOs (two-channel occupancy) or 8 safe DOs (single-channel occupancy)

Axioline F - the block-based modular I/O system

XC - Axiococontrol and bus coupler

Conventional PLCs	PROFINET PROFIBUS	Modbus/TCP (UDP) EtherNet/IP™
 AXC 1050 XC 1089334 8 tasks, 16 PN devices, Altera® NIOS® II processor, 100 MHz	 AXL F BK PN TPS XC 1068857	 AXL F BK ETH XC 2701949
	 AXL F BK PB XC 2702463	 AXL F BK EIP XC 1167192

Axioline F - the block-based modular I/O system

XC - Digital Input / Output

Digital Input	Digital Output	Digital Output Digital Input/Output
 AXL F DI16/4 XC 2F 2701224 24 V DC, 4-wire	 AXL F DO16/3 XC 2F 2701228 24 V DC, 500 mA, 3-wire, safety circuit	 AXL F DO8/2 2A XC 1H 1035427 24 V DC, 2 A, 2-wire
 AXL F DI32/1 XC 1F 2701226 24 V DC, 1-wire	 AXL F DO32/1 XC 1F 2701230 24 V DC, 500 mA, 1-wire	 AXL F DI8/1 DO8/1 XC 1H 2702017 8 DI, 24 V DC, 1-wire 8 DO, 24 V DC, 500 mA, 1-wire

Axioline F - the block-based modular I/O system

XC Process I/Os - Digital Input / Output

Digital Input	Digital Output
 AXL F DI16 NAM XC 1F 1052427 16 digital inputs for NAMUR proximity sensors (IEC/EN 60947-5-6), 2-wire	 AXL F EX IS DO4 SD 24-48 XC 1F 1086901 Intrinsically safe, 4 digital outputs, 24 V DC, 48 mA, 3-wire
 AXL F EX IS DI16 NAM XC 1F 1052423 Intrinsically safe, 16 digital inputs for NAMUR proximity sensors (IEC/EN 60947-5-6), 2-wire	 AXL F EX IS DO4 SD 21-60 XC 1F 1086902 Intrinsically safe, 4 digital outputs, 21 V DC, 60 mA, 3-wire

Axioline F - the block-based modular I/O system

XC - Analog Input / Output

Analog Input	Analog Input Analog Input/Output	Analog Output
AXL F AI4 I XC 1H 2702007  0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-, 3-, 4-wire	AXL F AI8 XC 1F 2701232  0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire	AXL F AO4 XC 1H 2702153  0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, 2-wire
AXL F AI4 U XC 1H 2702008  0 ... 5 V, -5 ... 5 V, 0 ... 10 V, -10 ... 10 V, 2-, 3-, 4-wire	AXL F AI2 AO2 XC 1H 1035429  0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire	AXL F AO8 XC 1F 2701237  0 ... 5 V, -5 ... +5 V, 0 ... 10 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA, 2-wire

Axioline F - the block-based modular I/O system

XC Process I/Os - Analog Input / Output (HART)

Analog Input	Analog Output
 AXL F AI8 HART XC 1F 1052434 8 analog inputs, HART enabled, 4 ... 20 mA, 2-wire	 AXL F AO4 HART XC 1F 1087080 4 analog outputs, HART enabled, 4 ... 20 mA, 2-wire
 AXL F EX IS AI8 HART XC 1F 1052432 Intrinsically safe, 8 analog inputs, HART enabled, 4 ... 20 mA, 2-wire	 AXL F EX IS AO4 HART XC 1F 1087081 Intrinsically safe, 4 analog outputs, HART enabled, 4 ... 20 mA, 2-wire

Axioline F - the block-based modular I/O system

XC - Temperature measurement / Communication / Function

RTD (Resistive Temperature Sensors)	UTH (Thermocouple Sensors) Serial (RS-232, RS-422/485)	Counter, Incremental Encoder Impulse-Input
 AXL F RTD4 XC 1H 1035430 4 channels; Pt, Ni, KTY, Cu sensors; linear resistance measuring; 2, 3, 4-wire (shielded)	 AXL F UTH8 XC 1F 2702464 8 channels; Sensor types: U, T, L, J, E, K, N, S, R, B, C, W, HK; linear voltage measuring; 2-wire (shielded, twisted pair)	 AXL F CNT2 INC2 XC 1F 2701239 2 Counter inputs, 32 Bit, 2 Incremental encoder inputs, Input frequency up to 300 kHz
 AXL F RTD8 XC 1F 2701235 8 channels, Pt, Ni, KTY, Cu sensors; linear resistance measuring; 2, 3, 4-wire (shielded)	 AXL F RS UNI XC 1H 2702006 1 interface, RS-485/422 or RS-232; Speed: 110 bps ... 250 kbps; Protocols: Transparent, end-to-end, XON/XOFF, Modbus/RTU	 AXL F IMPULSE2 XC 1H 2702655 2 channels for magnetostrictive position sensors with start/stop interface, 5 stop events per channel, 4 digital inputs



Designation	Order No.
AXL F IOL8 2H	1027843
AXL SE IOL4	1088132

Axioline F IO-Link

IO / Software



IO / Software



Software

IOL-CONF

The advantage of IO-Link devices is that manufacturers can design them more universally than conventional sensors/actuators. It is only when in use, i.e., during startup, that the IO-Link devices are parameterized for their specific application. To do this, Phoenix Contact provides the IOL-CONF parameterization software. IOL-CONF is a browser-based software tool for the easy parameterization of IO-Link devices.

The IOL-CONF software supports the operation of IO-Link masters from the modular Axioline automation system for the control cabinet (AXL F IOL8 2H and AXL SE IOL4). To use the software, the IO-Link master must be operated on selected bus couplers of the Axioline F system.

Using the Phoenix Contact AXL F IOL8 2H and AXL SE IOL4 IO-Link masters, the software enables the easy and efficient parameterization of IO-Link devices from Phoenix Contact and other manufacturers.



IOL-CONF

Functions

Use of the IOL-CONF software offers the following options:

- ONLINE and OFFLINE parameterization of IO-Link masters from Phoenix Contact and any IO-Link devices over the network.
 - Setting parameters
 - Loading parameters from an IO-Link device
 - Writing parameters to IO-Link devices
 - Storing and loading parameter records to/from a file
 - Writing/copying parameters to multiple IO-Link devices
- Graphical representation of process values
 - Evaluation of measured values
 - Writing process data
 - Exporting displayed measured values



Figure 3-1 “LIMITED” marking in the user interface

IOL-CONF

Supported....

Supported IO-Link masters (used downstream of one of the above bus couplers):

Designation	Order No.	As of hardware	As of firmware
AXL F IOL8 2H	1027843	02 or later	1.01 or later
AXL SE IOL4	1088132	00 or later	1.00 or later

Supported IO-Link devices:

Any, all IO-Link devices of IO-Link specification V1.1.1 or later

Supported bus couplers:

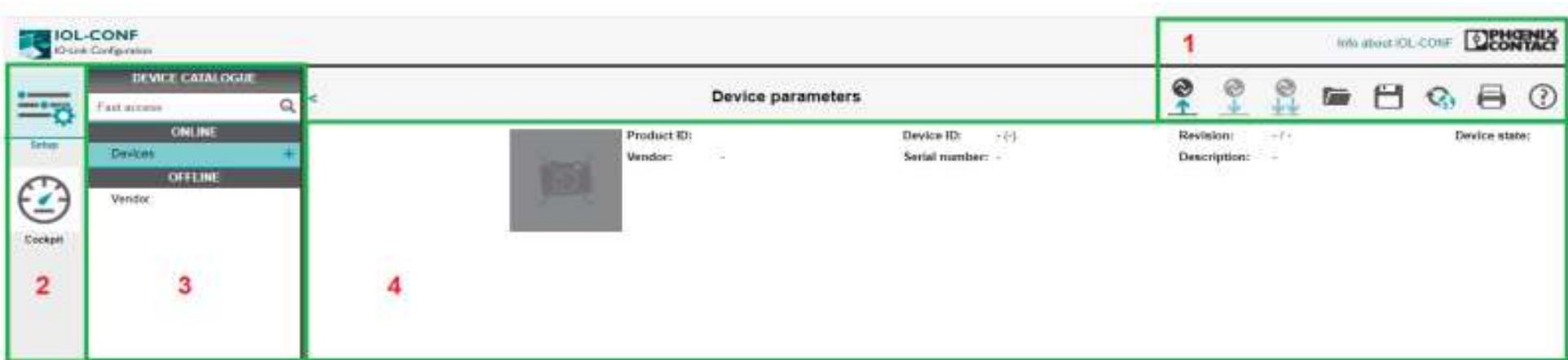
Designation	Order No.	As of hardware	As of firmware
AXL F BK PN TPS	2403869	02 or later	1.31 or later
AXL F BK ETH	2688459	05 or later	1.30 or later
AXL F BK EIP	2688394	05 or later	1.30 or later
AXL F BK EC	2688899	05 or later	1.30 or later
AXL F BK PN TPS XC	1068857	01 or later	1.31 or later
AXL F BK ETH XC	2701949	05 or later	1.30 or later
AXL F BK EIP XC	2403869	05 or later	1.30 or later



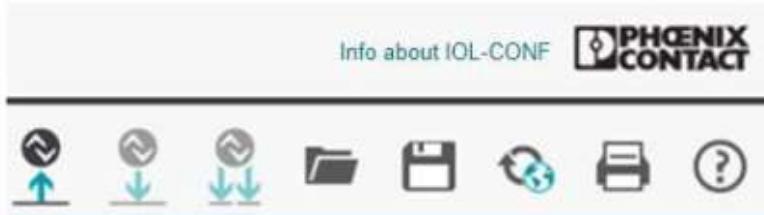
IOL-CONF

Software Interface

1. Tool bar/information area
2. View
3. Device catalog
 - ONLINE
 - FILE (not shown in the screenshot below)
 - OFFLINE
4. Device-specific area

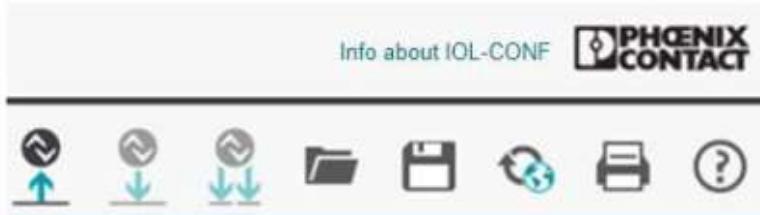


Tool bar



Info IOL-Conf	Info about IOL-CONF	Product and contact information, such as the software version, legal information, open-source license terms and conditions
	Read from device	Read IO-Link-specific device parameters from IO-Link masters and devices Scan network for available devices
	Write to device	Write modified IO-Link-specific device parameters to one IO-Link master or IO-Link device
	Write to multiple selected devices	Write modified IO-Link-specific device parameters to multiple selected IO-Link devices (from OFFLINE mode)
	Load parameters from a file	Load IO-Link-specific device parameters of one IO-Link master and/or one or more IO-Link devices from a project-specific lrp file.

Tool bar



	Save parameters to a file	Save IO-Link-specific device parameters of one IO-Link master and/or one or more IO-Link devices to a project-specific lrp file in the "Downloads" folder in Windows.
	IODD Manager Search for updates	Import IODD files from the local storage location or from the ONLINE database (IODDfinder) Delete selected IODD files from the device catalog Search for updates to already installed IODD files
	Print displayed parameters	Print preview of parameters from the "Device-specific view"
	User manual	Open the item page for the IOL-CONF software in the Phoenix Contact e-shop The latest software versions, information, and documentation can be accessed under Download.

IOL-CONF

View



Parameteriza- tion	View for the parameterization of IO-Link masters and/or IO-Link de- vices
Cockpit	Display mode for all online, available process data including visualiza- tion and the option to set outputs

IOL-CONF

Device Catalog



When there is an active TCP/IP connection between IOL-CONF and AXL F stations, the AXL F station along with the connected IO-Link devices can be displayed and parameterized in the ONLINE area (numbering).

In the OFFLINE area of the device catalog, you can virtually create and parameterize IO-Link masters with connected IO-Link devices and save them to files. To do this, the description files (IODDs) of IO-Link masters and IO-Link devices from Phoenix Contact are stored in IOL-CONF (pre-installed).

You can import IODDs later to extend the range of pre-installed devices.

IOL-CONF

Device Area

Device parameters

Parameter	Value	Unit	Min	Max	Description
Application Specific Tag	Device Reset		0	32	Application Specific Tag
Standard Command	Restore Factory Settings				
Resolution: TC1	0.01				Resolution
Resolution: TC2	0.1				Resolution
Resolution: TC3	0.1				Resolution
Resolution: TC4	0.1				Resolution
Unit: TC1 ... TC4	°C				Unit
Path calibration function: offset (0x266)	0		-32768	32767	Path calibration function: offset
Path calibration function: reference (0x267)	0		-32768	32767	Path calibration function: offset
Comparison of reference junctions					
Cold junction temperature (0x268)	Path calibration function: offset: TC1	0	-32768	32767	Path calibration function: offset
Comparison of reference junctions: offset (0x269)	Path calibration function: offset: TC2	0	-32768	32767	Path calibration function: offset
Comparison of reference junctions: reference (0x26A)	Path calibration function: offset: TC3	0	-32768	32767	Path calibration function: offset
	Path calibration function: offset: TC4	0	-32768	32767	Path calibration function: offset
	Path calibration function: reference: TC1		-2147483648	2147483647	Path calibration function: reference
	Path calibration function: reference: TC2		-2147483648	2147483647	Path calibration function: reference
	Path calibration function: reference: TC3		-2147483648	2147483647	Path calibration function: reference
	Path calibration function: reference: TC4		-2147483648	2147483647	Path calibration function: reference

Device parameters

IOL-CONF

Parametrization ONLINE

The screenshot shows the IOL-CONF software interface for online configuration. On the left, there's a sidebar with icons for Device Catalogue, Devices (selected), and Sensors. The main area has tabs for Device catalogue, Device parameters, and Device status. The Device parameters tab is active, displaying the following information:

Parameter	Value	Unit	Min	Max	Description
IP address	192.168.0.6				Set IP address of AXL F BK PN TPS.
Subnet mask	255.255.255.0				Set Subnet mask of AXL F BK PN TPS.
IP gateway address	0.0.0.0				Set IP gateway address of AXL F BK PN TPS.
Ethernet name	axl-fbps				Name for Ethernet. Allowed characters: 'a-z' (lower case letters), '0-9' (digits), '-' (minus), '.' (point, separator between labels).
MAC address	00:00:00:00:00:00				MAC address of AXL F BK PN TPS.

At the bottom of the interface, there are buttons for Device parameters, Device status, and Device catalogue.

IOL-CONF

Starting up IO-Link Master

The screenshot shows the IOL-CONF software interface. On the left, there's a sidebar with icons for Setup, Device Catalogue, and Cockpit. The Device Catalogue section is expanded, showing a list of online devices under 'Fast access' and 'Devices'. One device, 'AXL F BK PN TPS (192.168.0.6)', is selected and highlighted in blue. Below it, under 'OFFLINE', is a 'Vendor' section. The main panel is titled 'Device parameters' and displays the following information for the selected device:

Parameter	Value	Unit	Min	Max	Description
Port1 mode	DI				Port mode
Port2 mode	DI				Port mode
Port3 mode	DI				Port mode
Port4 mode	DI				Port mode
Port5 mode	DI				Port mode
Port6 mode	DI				Port mode
Port7 mode	DI				Port mode
Port8 mode	DI				Port mode

At the bottom of the main panel, there's a green button labeled 'Device parameters'.

IOL-CONF

Parametrization Port 1

The screenshot shows the IOL-CONF software interface for configuring an AXL F IO Link device. The left sidebar displays a device catalog with various models listed under 'ONLINE' and 'OFFLINE' sections. The main area is titled 'Device parameters' and shows the configuration for Port 1 of the selected device. The device is identified as an AXL F IOL8.2H, Vendor: Phoenix Contact, with a serial number of 0123456789. The configuration table includes the following parameters:

Parameter	Value	Unit	Min	Max	Description
Port1 mode	IO-Link				Port mode
Port1 IO-Link Device ID	0	0	16777215		IO-Link Device ID to validate
Port1 IO-Link Vendor ID	0	0	65535		IO-Link Vendor ID to validate
Port1 IO-Link Compatibility check and data storage	No device check				Degree of severity of the compatibility check and the data storage behavior
Port1 IO-Link Cycle time	As fast as possible				IO-Link cycle time
Port1 alarm	Enabled				Report or ignore unexpected port state
Port1 IO-Link diagnostics	Enabled				Report or ignore IO-Link device diagnostics
Port2 mode	DI				Port mode
Port3 mode	DI				Port mode
Port4 mode	DI				Port mode
Port5 mode	DI				Port mode
Port6 mode	DI				Port mode
Port7 mode	DI				Port mode
Port8 mode	DI				Port mode

IOL-CONF

Parameter records (OFFLINE)

You have the option of creating a file in OFFLINE mode. In this file, you can save the parameters of an IO-Link device or the parameters of an IO-Link master together with its devices. If the parameter record of an IO-Link master is written to a file, the parameters of the master and all the parameters of the devices configured for it will be saved. If just one device is selected in the OFFLINE catalog, only its parameters will be saved to a file.

- Under "Vendor" in the OFFLINE area of the device catalog, select your IO-Link master or your IO-Link device.

The screenshot shows the IOL-CONF software interface. On the left, the 'DEVICE CATALOGUE' sidebar has tabs for 'ONLINE' (selected), 'Devices', 'OFFLINE', 'Vendor' (highlighted in red), 'Phoenix Contact GmbH & Co. KG', and 'AOE SE'. Below these are lists for Port 1 through Port 4. The 'AOE SE' entry is highlighted. At the bottom of the sidebar is a 'Device parameters' button. The main right panel shows 'Device parameters' for an AOE SE IO-LA device. The top header includes 'Info about IOL-CONF', the 'PHOENIX CONTACT' logo, and a help icon. The main table has columns for 'Parameter', 'Value', 'Unit', 'Min', 'Max', and 'Description'. Key parameters shown include Port1 mode (set to IO-Link), Port1 IO-Link Device ID (0), Port1 IO-Link Vendor ID (0), Port1 IO-Link Validation / DataStorage (No check and clear), Port1 IO-Link Cycle time (As fast as possible), Port1 alarm (Enabled), Port1 IO-Link diagnostics (Enabled), Port1 IO-Link device substitute value (Apply substitute value of the connected), Port1 Input substitute value (Set input value to zero value), Port2 mode (DE), Port3 mode (DE), and Port4 mode (DE). The 'Description' column provides detailed explanations for each setting.

IOL-CONF

Device Catalog Parameter

The screenshot shows the IOL-CONF software interface for configuring device parameters. On the left, there's a sidebar with 'DEVICE CATALOGUE' and a search bar. Below it, there are tabs for 'Tether' (selected), 'Devices' (with an 'Add' button), and 'OFFLINE'. Under 'Devices', there's a list of 'Vendor' entries, with 'Phoenix Contact GmbH & Co. KG' selected. Under 'AXL SE', the entry 'AXL SE (0100132)' is selected. To its right, a red box highlights the 'Port 1' section. The main panel displays 'Device parameters' for the selected device. The top row shows the product ID (AXL SE IOL4), vendor (Phoenix Contact GmbH & Co. KG), device ID (6918 d (176 d)), serial number, revision, description (set to 'IO-Link Master'), and device state. Below this, a table lists various parameters with their descriptions:

Parameter	Description
Port mode	IO-Link Device ID to validate
IO-Link Vendor ID to validate	IO-Link Validation / Data Storage
IO-Link cycle time	Report or ignore unexpected port state
Report or ignore IO-Link device diagnostics	IO-Link device substitute value behavior (PDOUT) in case of invalid output process data
Input substitute value behavior (PDIN) in case of invalid IO-Link data	Port mode
Port mode	Port mode
Port mode	Port mode

At the bottom of the configuration window, there are buttons for 'Save device from chosen port', 'Cancel', and 'OK'.

IOL-CONF

Parametrization IO-Link Device

IOL-CONF IO-Link Configuration

DEVICE CATALOGUE

Fast access: **ONLINE** **OFFLINE**

Devices: **All** Identification Parameter

Vendor: Phoenix Contact GmbH & Co. KG AXL SE AXL SE IOL4 (1088132) **01: AXL E IOL TC&K M12** -02 -03 -04

System commands Resolution (0x0003) Unit (0x0204) Path calibration function: offset (0x206) Path calibration function: reference (0x207) Comparison of reference junctions Cell junction temperature (0x2558) Comparison of reference junctions: offset (0x0269) Comparison of reference junctions: reference (0x026A)

Device parameters

Product ID: AXL E IOL TC&K M12 Vendor: Phoenix Contact GmbH & Co. KG Device ID: 69131 d (175 d) Serial number: Revision: Description: Axoline E IO-Link/analog converter with 4 analog TC inputs (K)

Parameter	Value	Unit	Min	Max	Description
Application Specific Tag	---		0	32	Application Specific Tag
Standard Command	Normal mode				
Standard Command	Normal mode				
Resolution TC1	0.1				Resolution
Resolution TC2	0.01				Resolution
Resolution TC3	0.001				Resolution
Resolution TC4	0.01				Resolution
Unit: TC1 ... TC4	°F				Unit
Path calibration function: offset: TC1	10		-32768	32767	Path calibration function: offset
Path calibration function: offset: TC2	200		-32768	32767	Path calibration function: offset
Path calibration function: offset: TC3	3000		-32768	32767	Path calibration function: offset
Path calibration function: offset: TC4	0		-32768	32767	Path calibration function: offset
Path calibration function: reference: TC1	0		-2147483648	2147483647	Path calibration function: reference
Path calibration function: reference: TC2	0		-2147483648	2147483647	Path calibration function: reference
Path calibration function: reference: TC3	0		-2147483648	2147483647	Path calibration function: reference
Path calibration function: reference: TC4	0		-2147483648	2147483647	Path calibration function: reference

Device parameters

IOL-CONF

Device Catalog IODD

ONLINE via the IODDfinder portal

Device description files (IODD): download and install

Updates Remove device description files (IODDs)

Vendor	Device	Available version
itm electronic gmbh	AL2205_Acyclic (AL2205), AL2605_Acyclic (AL2605)	1.0.0.43
	AL2205_Cyclic (AL2205), AL2605_Cyclic (AL2605)	1.0.0.43
	AL2221, AL2225, AL2321, AL2325	1.0.0.43
	AL2230, AL2330	1.3.35.401927
	AL2231, AL2331	1.3.42.0
	AL2240, AL2340	1.3.42.0
	AL2241, AL2341	1.3.42.0
	AL2400	1.2.13.4
	AL2401	1.2.13.4
	AL2430	1.3.14.3
	AL2441	1.3.14.3
	DF2100	1.0.19
	DF2101	1.0.21
	DI9204, DI9306, DI9324, DI9344	1.3.34.82
	DI9327, DI9334, DI9339, DI9360	1.3.14.30
	DI9331, DI9332	1.3.14.8
	DI9333, DI9344	1.2.14.4
	DP1213	1.3.31.710097
	DP1222	1.3.31.717098
	DP1223	1.3.31.717098
	DP2200	1.3.16.317010
	DT1410, DT1411, DT1420, DT1421, DT1424, DT1425, DT1430, DT143...	1.3.42.304028
	DV1500, DV1510, DV1520, DV1530	1.0
	DV1500 Status B (DV1500), DV1510 Status B (DV1510), DV1520 Sta...	1.0
	DV2120, DV2121	1.0
	DV2130	1.0
	DV2131	1.0
	DV2500, DV2510, DV2520, DV2530	1.0
	DV2500 Status B (DV2500), DV2510 Status B (DV2510), DV2520 Sta...	1.0
	DV2645, DV2655	1.0
	E30391_AB (E30391)	1.0.0.13

Ok Cancel Search

IOL-CONF

Device Catalog IODD

Manually from the local file system of your PC

You can search for the file on your computer and install it in IOL-CONF from there.

- To do this, click on the “Search” button in the bottom right corner.
- Click “OK” to load the IODD in the IOL-CONF software.

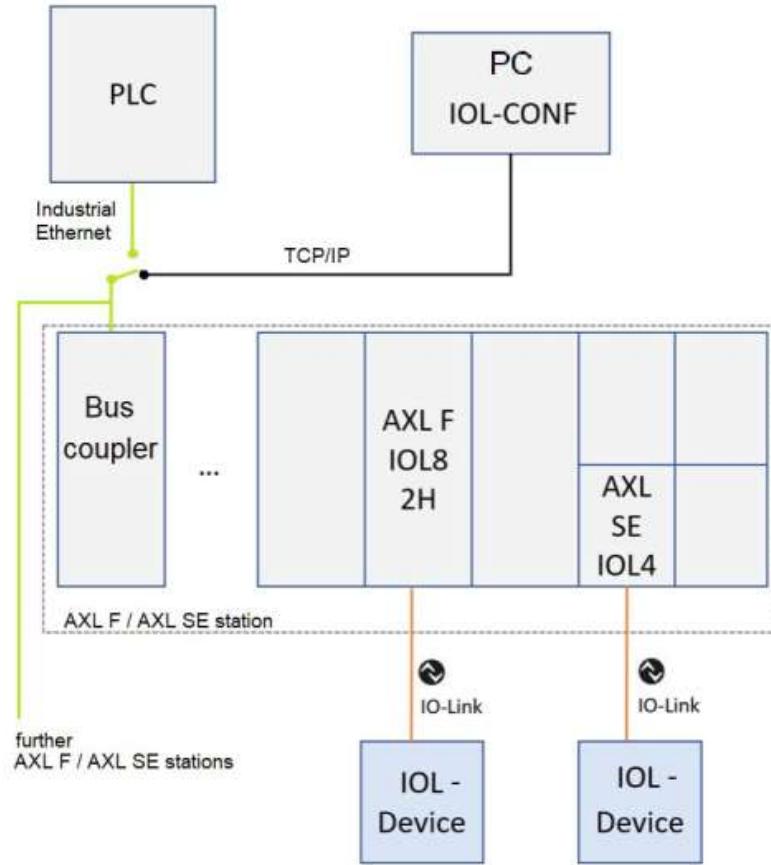
	IODD Manager Search for updates	Import IODD files from the local storage location or from the ONLINE database (IODDfinder) Delete selected IODD files from the device catalog Search for updates to already installed IODD files
------------------------------------------------------------------------------------	------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

IOL-CONF

IO-Link Topology example



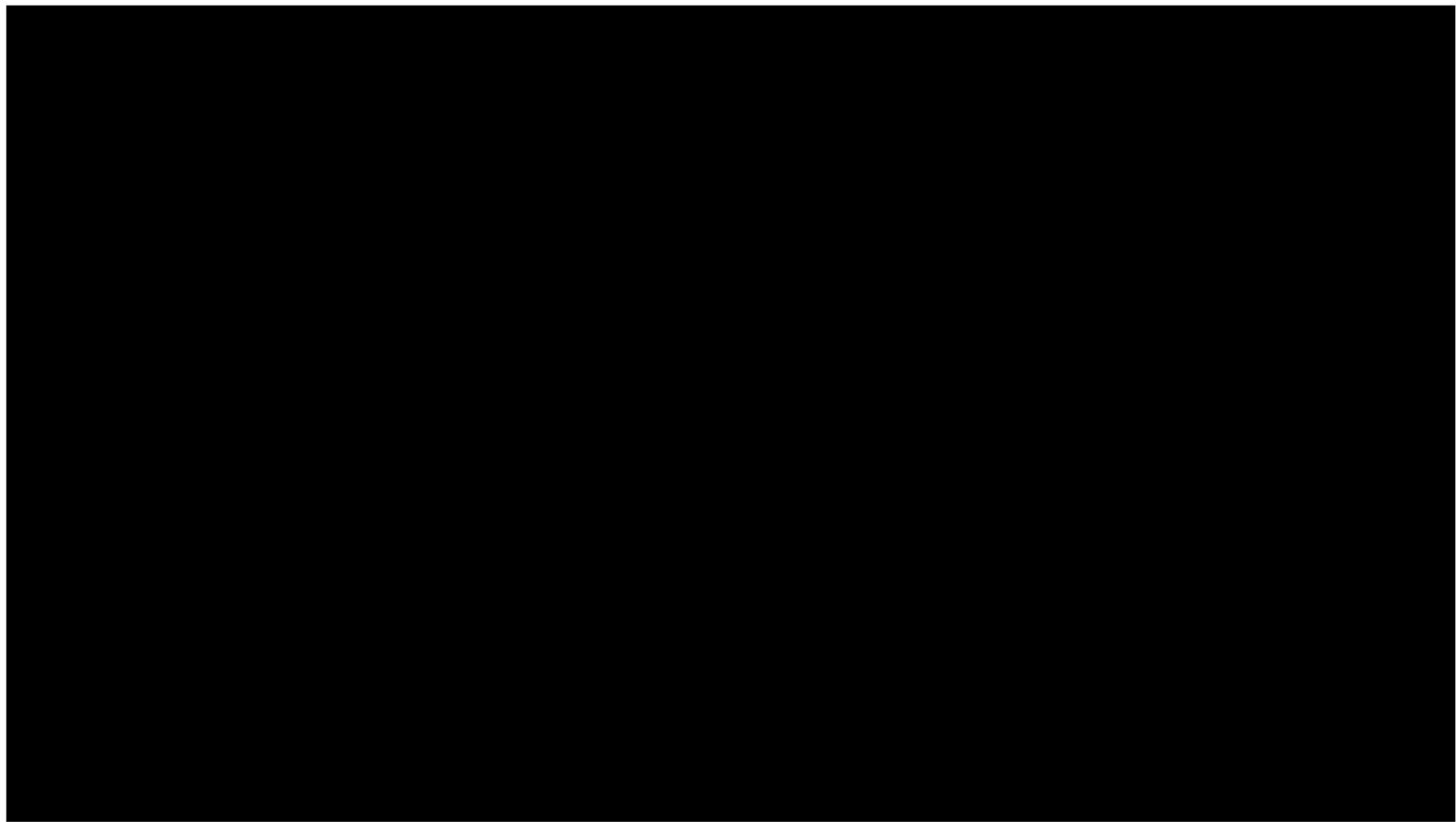
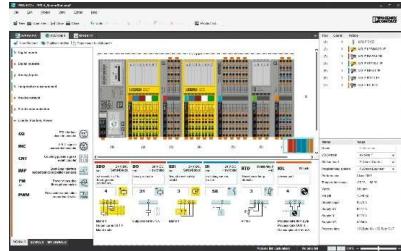
Designation	Order No.
AXL F IOL8 2H	1027843
AXL SE IOL4	1088132



Project+ 3.6

PROJECT+3

I/O Project Planning



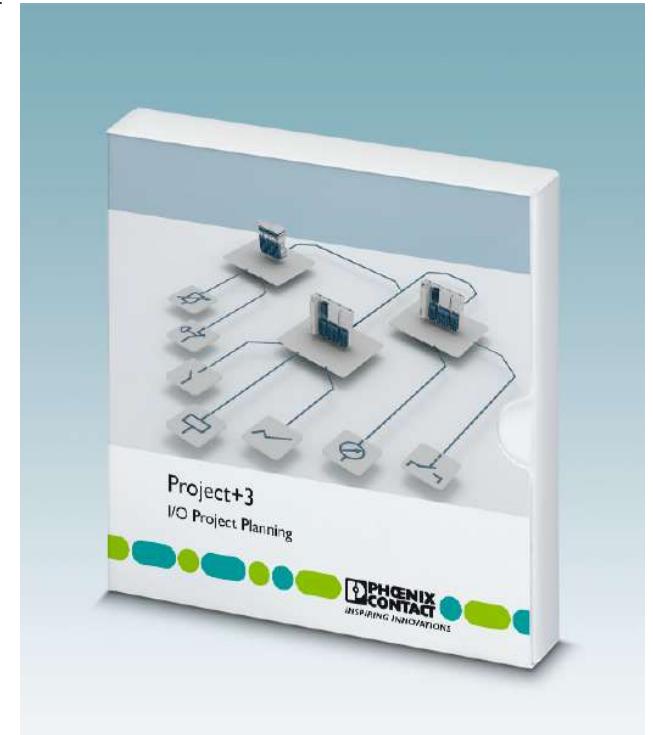
Project+ 3.6



Axioline F System

Project+ 3.6

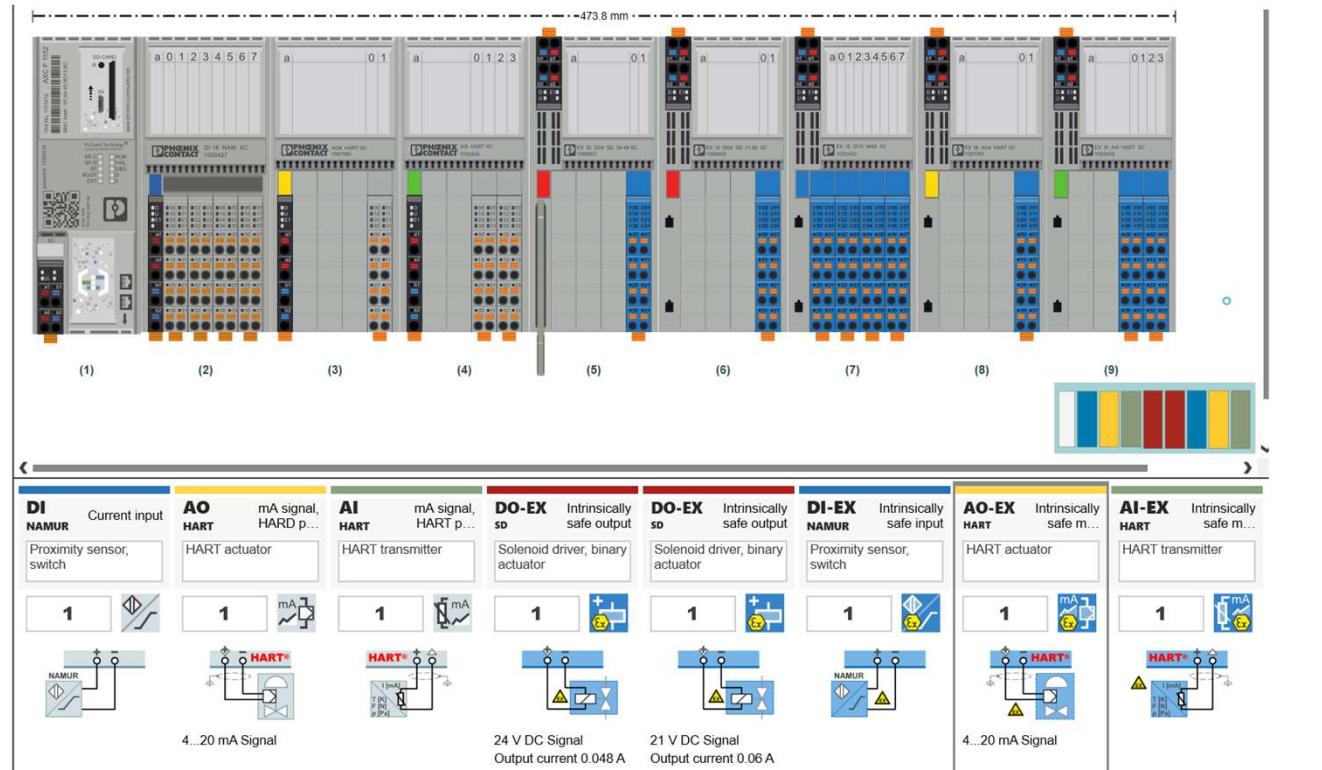
- Axioline F I/O modules for connecting process signals;
standard area and potentially explosive atmospheres
- Planning of signals switched via relay contacts
Inline and Axioline F relay modules
- New Smart Elements Modules DI/DO-NPN
Axioline F I/O module for CAN
- Integrated call of Project+ from PROJECT complete



Overview - new Axioline F modules for connecting process signals

Axioline F modules for connecting process signals

I/O group	Item no.	Designation
Axioline F		
		Digital input modules
	1052427	AXL F DI16 NAM XC 1F
	1052423	AXL F EX IS DI16 NAM XC 1F
		Digital output modules
	1086901	AXL F EX IS DO4 SD 24-48 XC 1F
	1086902	AXL F EX IS DO4 SD 21-60 XC 1F
		Analog input modules
	1052434	AXL F AI8 HARD XC 1F
	1052432	AXL F EX IS AI8 HARD XC 1F
		Analog output modules
	1087080	AXL F AO4 HARD XC 1F
	1087081	AXL F EX IS AO4 HARD XC 1F
		Infrastructure modules
	1100201	AXL F/P IO EX PP



Axioline F I/O modules for connecting process signals

NAMUR signals in the standard range (XC)

InterfaceType: **IDigitalInFeature**

SignalType: **DI NAMUR**

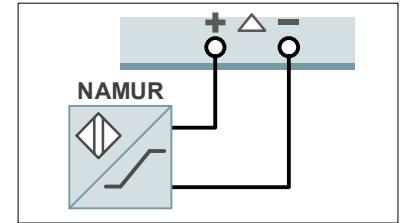
Digital inputs	
DI PNP	PNP input 24 V DC, + switching
DI 5 kV	DC/5 kV surge-resistant DC voltage signals
SDI SBT	Safety input 24 V DC, SafetyBridge
SDI PROFIsafe	Safety input 24 V DC, PROFIsafe
DI NAMUR	Current input NAMUR sensor
DI-EX NAMUR	Intrinsically safe input potentially explosive atmosphere

Identifier: Current input

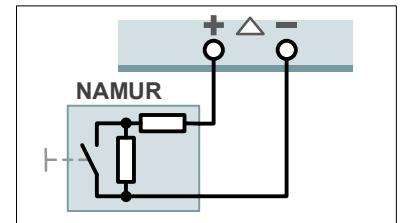
Description: NAMUR sensor

Connection scenario:

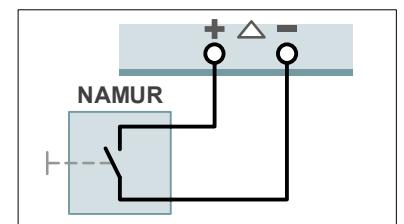
Proximity switch



Contact with resistor circuit



Unconnected contact



Axioline F I/O modules for connecting process signals

NAMUR signals in potentially explosive atmospheres (XC)

InterfaceType: **IDigitalInFeature**

SignalType: **DI-EX NAMUR**

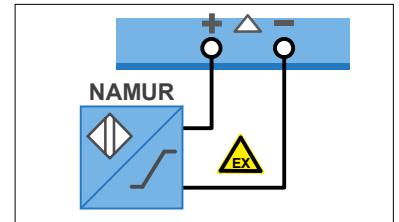
Digital inputs	
DI PNP	PNP input 24 V DC, + switching
DI 5 kV	DC/5 kV surge-resistant DC voltage signals
SDI SBT	Safety input 24 V DC, SafetyBridge
SDI PROFIsafe	Safety input 24 V DC, PROFIsafe
DI NAMUR	Current input NAMUR sensor
DI-EX NAMUR	Intrinsically safe input potentially explosive atmosphere

Identifier: Intrinsically safe input

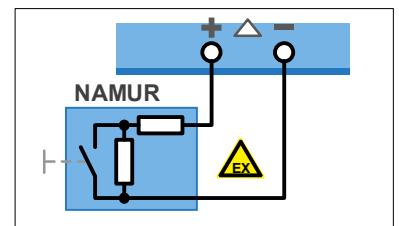
Description: potentially explosive atmosphere

Connection scenario:

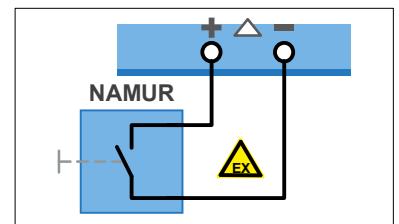
Proximity switch



Contact with resistor circuit



Unconnected contact



Axioline F I/O modules for connecting process signals

Digital output signals in potentially explosive atmospheres

InterfaceType: **IDigitalOutFeature**

SignalType: **DO-EX SD**

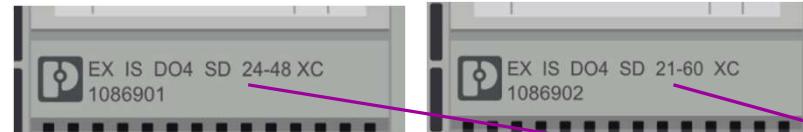
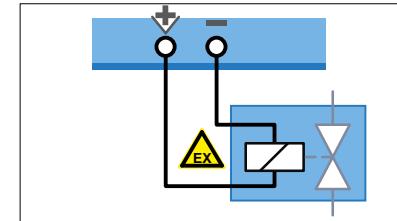
Digital outputs	
DO PNP	PNP output 24 V DC, + switching
DO NPN	NPN output 24 V DC, - switching
DO AC	AC load, single phase low voltage range
SDO SBT	Safety output 24 V DC, SafetyBridge
SDO PROFIsafe	Safety output 24 V DC, PROFIsafe
DO-EX SD	Intrinsically safe output potentially explosive atmosphere

Identifier: Intrinsically safe output

Description: potentially explosive atmosphere

Connection scenario:

Solenoid valve, binary actuator



Name	Value
Name	Solenoid driver, binary act
Description	2-wire-connection
Signal	24 V DC
Circuitry	21 V DC
Switch design	Transistor
Output current	0.048 A (0...0.06 A)

Axioline F I/O modules for connecting process signals

Analog input signals with HART communication

InterfaceType: **IAnalogInFeature**

SignalType: **AI HART**
AI-EX HART

Analog inputs	
AI	Measuring mA signal current measuring signal
AI_U	Measuring V signal voltage measuring signal
AI_{2-wire}	4...20 mA current loop 2-wire transmitter
AI_Ω	Measuring Ω linear Resistance measurement
SGI	Strain gauge bridge load cells, force transducer
AI_{HART}	mA signal, HART protocol HART transmitter
AI-EX_{HART}	Intrinsically safe mA signal potentially explosive atmosphere

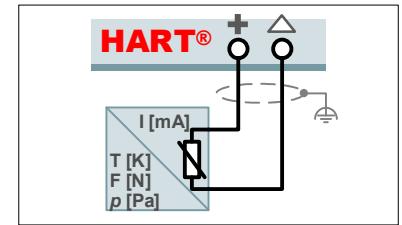
Identifier: mA signal, HART protocol

Description: HART transmitter

Connection scenario:

HART transmitter

Current loop, point-to-point connection



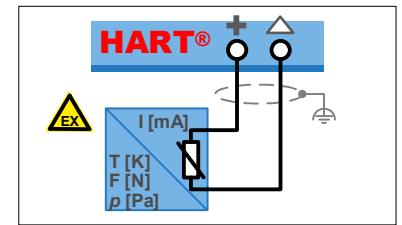
Identifier: Intrinsically safe mA signal

Description: potentially explosive atmosphere

Connection scenario:

HART transmitter

Intrinsically safe current loop



Axioline F I/O modules for connecting process signals

Analog output signals with HART communication

InterfaceType: **IAnalogOutFeature**

SignalType: **AO HART**
AO-EX HART

Analog outputs	
AO I	mA signal, set value current control signal
AO U	V signal, set value voltage control signal
AO HART	mA signal, HART protocol HART analog controller
AO-EX HART	Intrinsically safe mA signal potentially explosive atmosphere

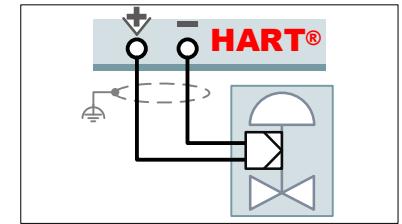
Identifier: mA signal, HART protocol

Description: HART analog controller

Connection scenario:

HART actuator

Current loop, point-to-point connection



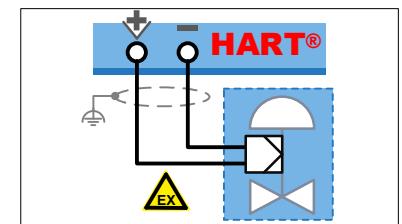
Identifier: Intrinsically safe mA signal

Description: Hazardous area

Connection scenario:

HART actuator

Intrinsically safe current loop



Planning I/O modules with relay outputs via signals

Signal types for planning signals switched via relay contacts

▼ Relay outputs

DOR CTRL

Decouple control signal
Relay contact, 24 V control sig...



DOR AC

Switching AC load
Relay contact, AC load circuit



DOR DC

Relay contact, DC-load
Relay contact, DC load circuit



DOR-CTRL - Galvanic isolation of control signals in the extra-low voltage range; switching of low powers to control electronic inputs, e.g. a PLC

Switching voltages - 24 V DC

- V AC

DOR-AC - Design of signals for switching AC loads in the low voltage range

Switching voltages - 120 V AC

- 0 V AC

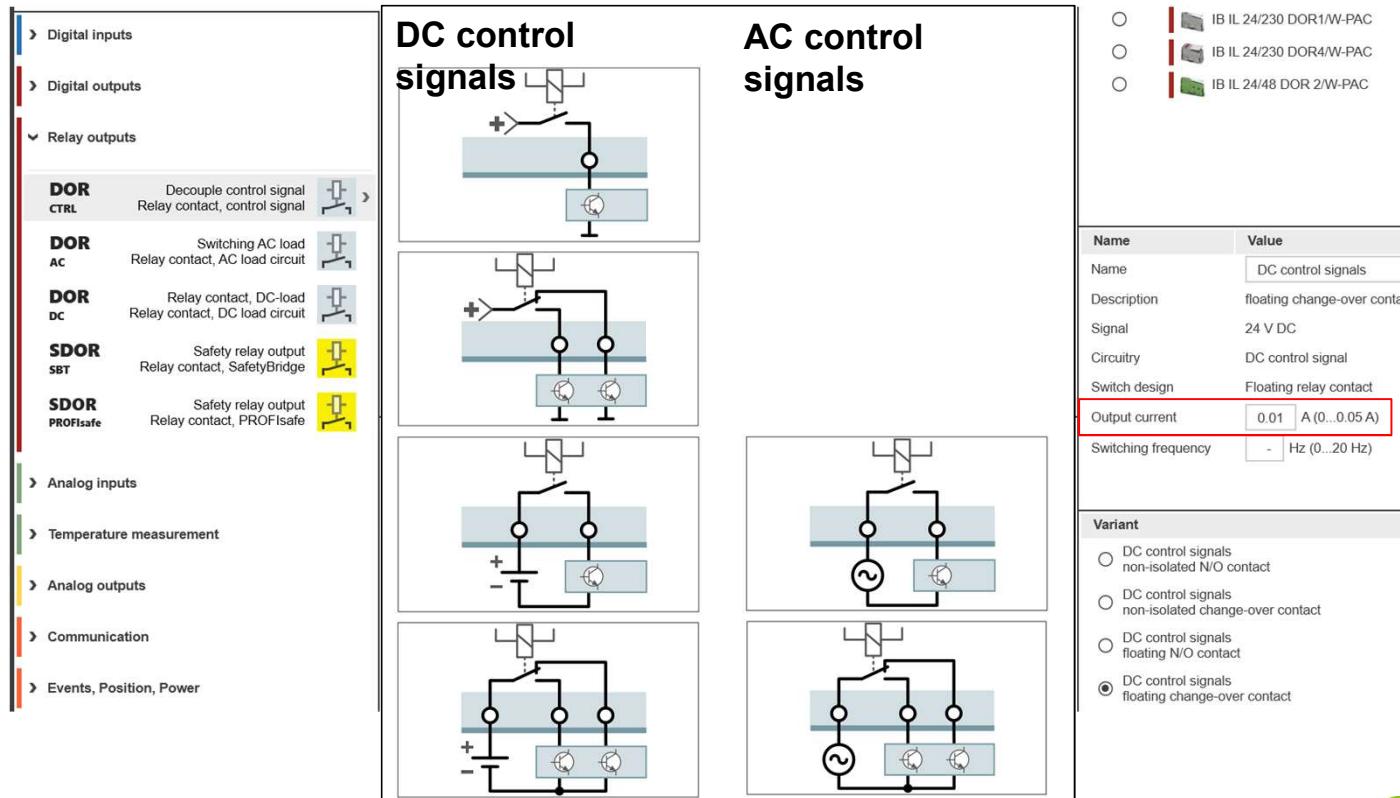
DOR-DC - Design of signals for switching of DC loads in the low and extra-low voltage range

Switching voltages - 24 V DC

- V DC
- 0 V DC
- 0 V DC

Planning I/O modules with relay outputs via signals

DOR-CTRL – floating separation of control signals

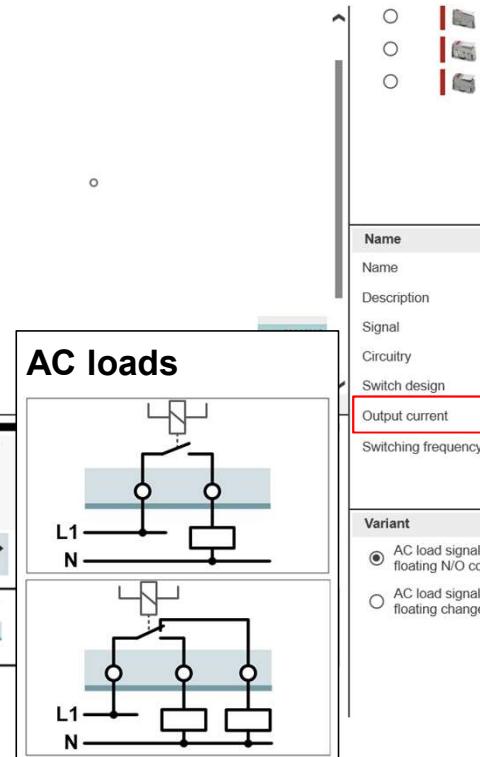
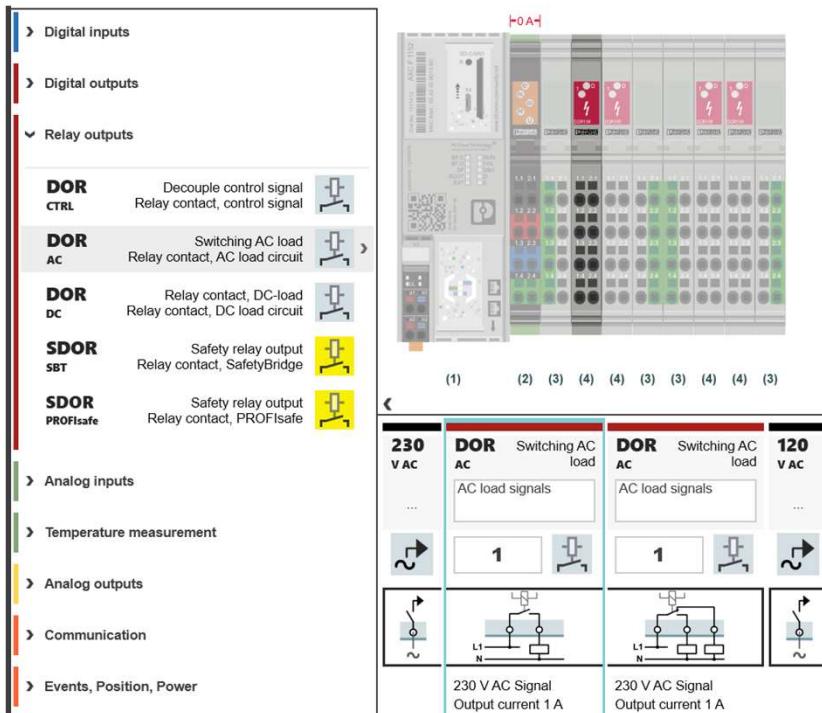


Control signals in the extra-low voltage range (24 V DC / 24 V AC) for controlling electronic inputs

– Relay contacts with gold plating, these have only a very limited switching capacity

Planning I/O modules with relay outputs via signals

DOR-AC – Project engineering of signals for switching AC loads in the low-voltage range



○	IB IL 24/230 DOR1/W-PAC
○	IB IL 24/230 DOR4/HC-PAC
○	IB IL 24/230 DOR4/W-PAC

Name	Value
Name	AC load signals
Description	floating N/O contact
Signal	230 V AC
Circuitry	AC load
Switch design	Floating relay contact
Output current	1 A (0.01...10 A)
Switching frequency	- Hz (0...1 Hz)

Variant

AC load signals floating N/O contact

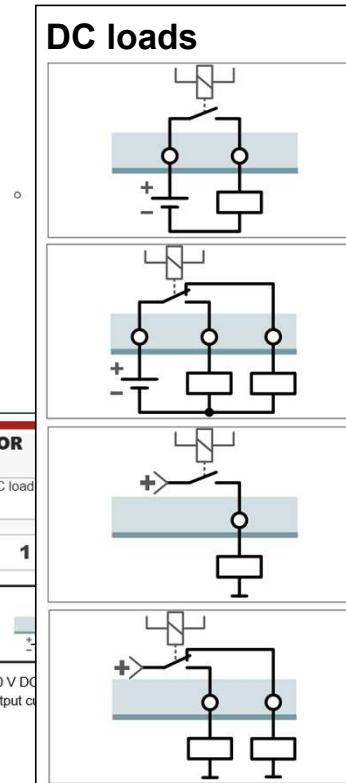
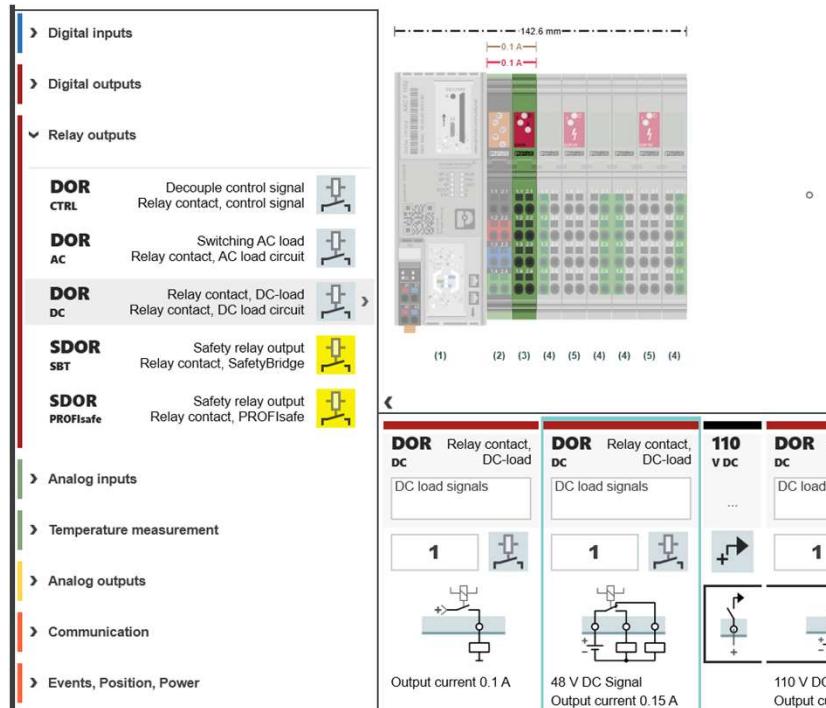
AC load signals floating change-over contact

for AC loads, the relay contact can switch the maximum switching current over the entire voltage range

since the arc is extinguished at the zero crossing of the switching current

Planning I/O modules with relay outputs via signals

DOR-DC – Project engineering of signals for switching DC loads in the low and extra-low voltage range



<input type="radio"/> IB IL 24/230 DOR1/W-PAC
<input type="radio"/> IB IL 24/230 DOR4/W-PAC
<input type="radio"/> IB IL 24/48 DOR 2/W-PAC

Name	Value
Name	DC load signals
Description	floating change-over contact
Signal	48 V DC
Circuitry	DC load
Switch design	Floating relay contact
Output current	0.15 A (0.01...3 A)
Switching frequency	- Hz (0...1 Hz)

Variant

- DC load signals floating N/O contact
- DC load signals floating change-over contact
- DC load signals non-isolated N/O contact
- DC load signals non-isolated change-over contact

Selection of the switching voltage:

- 24 V DC
- 48 V DC
- 110 V DC
- 220 V DC

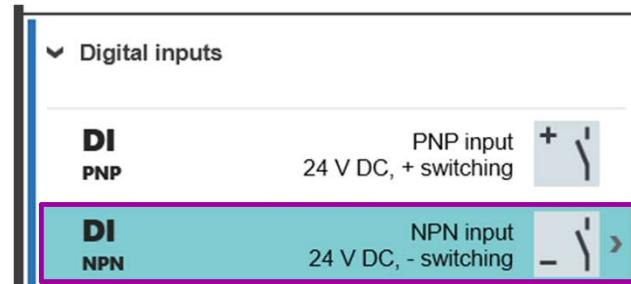
for DC voltages, the maximum switching current is strongly dependent on the level of the switching voltage

Axioline Smart Elements modules for connection of sensors/actuators in NPN circuit

Smart Elements DI & DO module for NPN circuits

InterfaceType: **IDigitalInFeature**

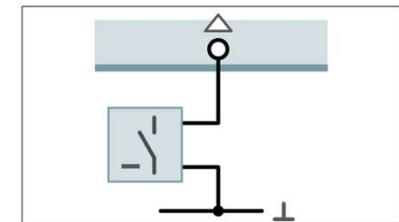
SignalType: **DI NPN**



Identifier: NPN input

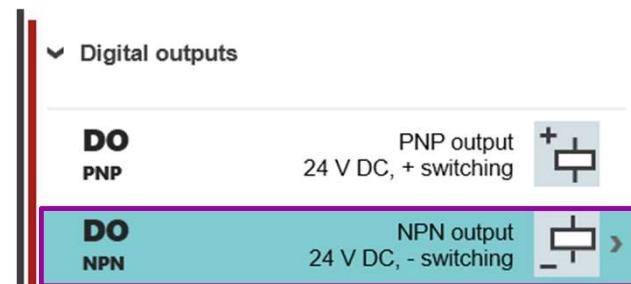
Description: 24 V DC, - switching

Connection scenario: 1-wire connection



InterfaceType: **IDigitalOutFeature**

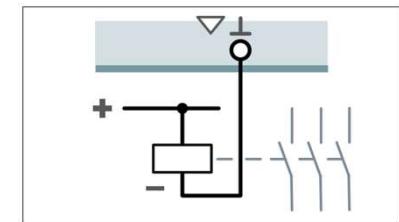
SignalType: **DO NPN**



Identifier: NPN output

Description: 24 V DC, - switching

Connection scenario: 1-wire connection



Axioline F communication modules

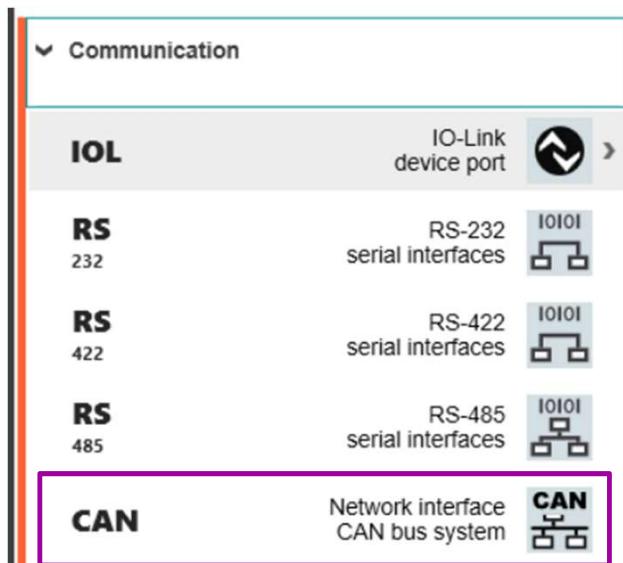
Axioline F I/O module for connection to a CAN bus system

InterfaceType: **ICANInterfaceFeature**

SignalType: **CAN**

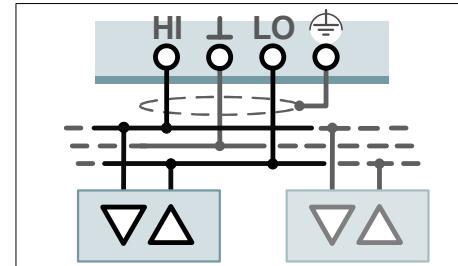
Identifier: Network interface

Description: CAN bus system



Connection scenario:

Connection to a CAN bus system



Integrated call of Project+ from PROJECT complete



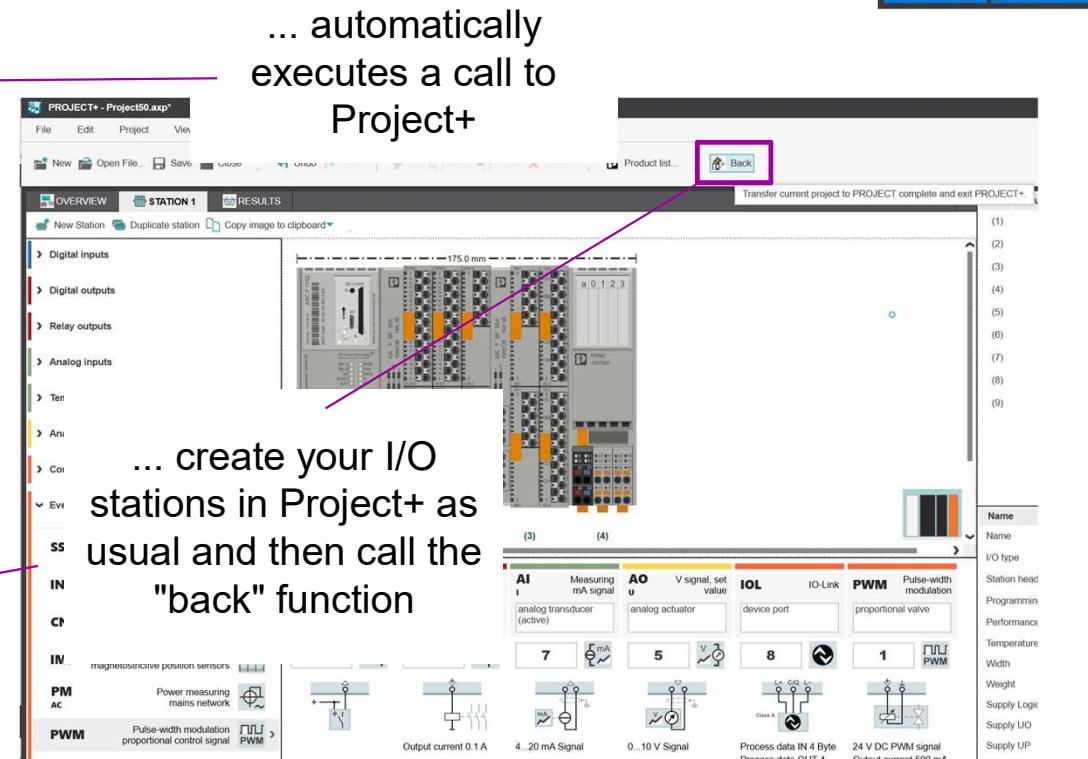
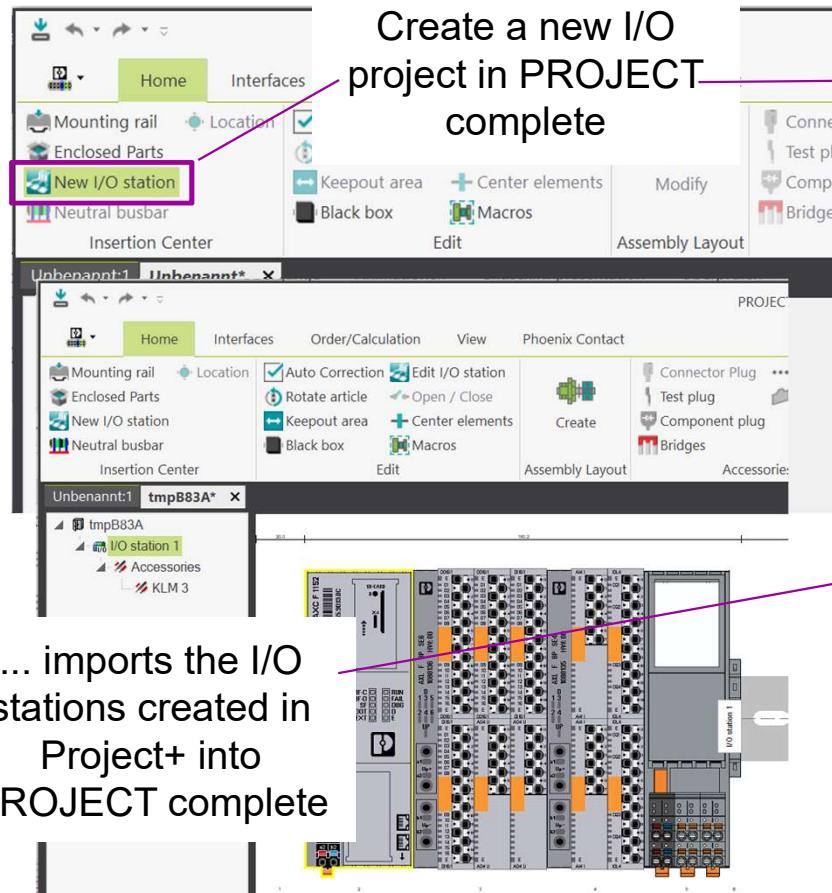
A screenshot of the PROJECT complete software's 'Project Settings' dialog. The left sidebar shows options like 'New', 'Open...', 'Close', 'Save', 'Save As...', 'Recent projects', 'Project Settings' (which is selected), 'Print/PDF', and 'Options'. The main area shows 'Project settings' with a gear icon, 'Unbenannt' (Untitled) as the project file name, and 'Last modification:' and 'Last editor:' fields. Below it is a 'Revision' section with a document icon. A purple rectangular box highlights the 'Project-Version: 1.7.4527, DB v6.45' field.

Creation and editing of I/O stations via integrated call of Project+ from PROJECT complete Planning

➤ as of version 1.7.4527 with Project+ 3.6.182

Coupling of PROJECT complete and Project+ for the creation and editing of I/O stations

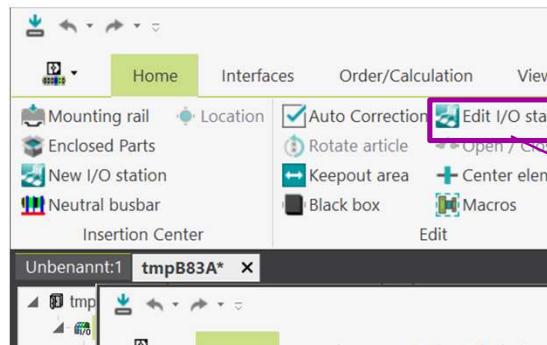
Integrated call of Project+ from PROJECT complete



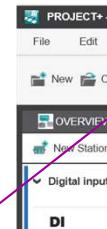
PHOENIX CONTACT
INSPIRING INNOVATIONS

Coupling of PROJECT complete and Project+ for the creation and editing of I/O stations

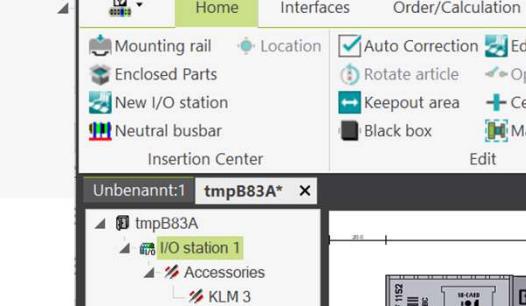
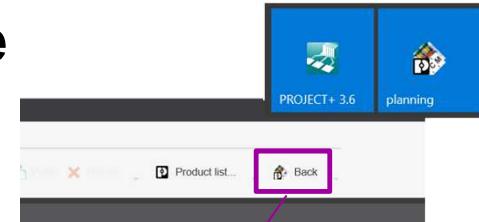
Integrated call of Project+ from PROJECT complete



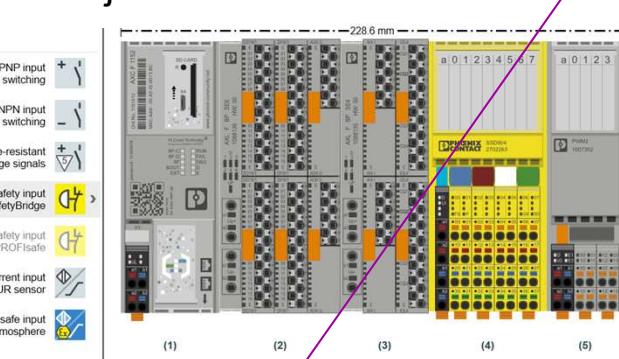
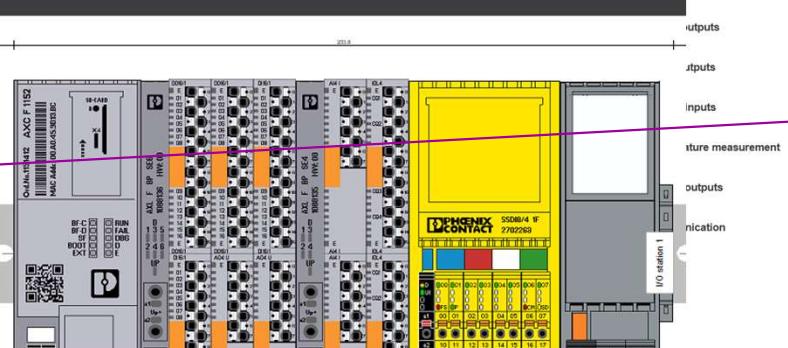
Edit an existing I/O station



... takes over the I/O project back into Project+



... imports the revised I/O stations back into PROJECT complete

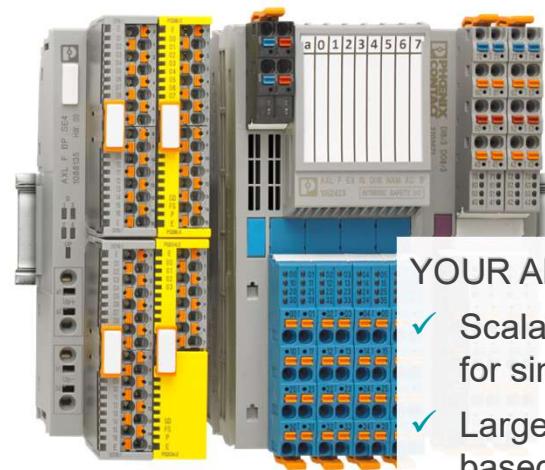


... edit the I/O stations in Project+ and apply the changes with "back"



Axioline F

Arquitecturas



YOUR ADVANTAGES

- ✓ Scalable automation system for simple to complex tasks
- ✓ Large selection of modules based on the modular principle
- ✓ Systemic configuration to different networks using various front modules

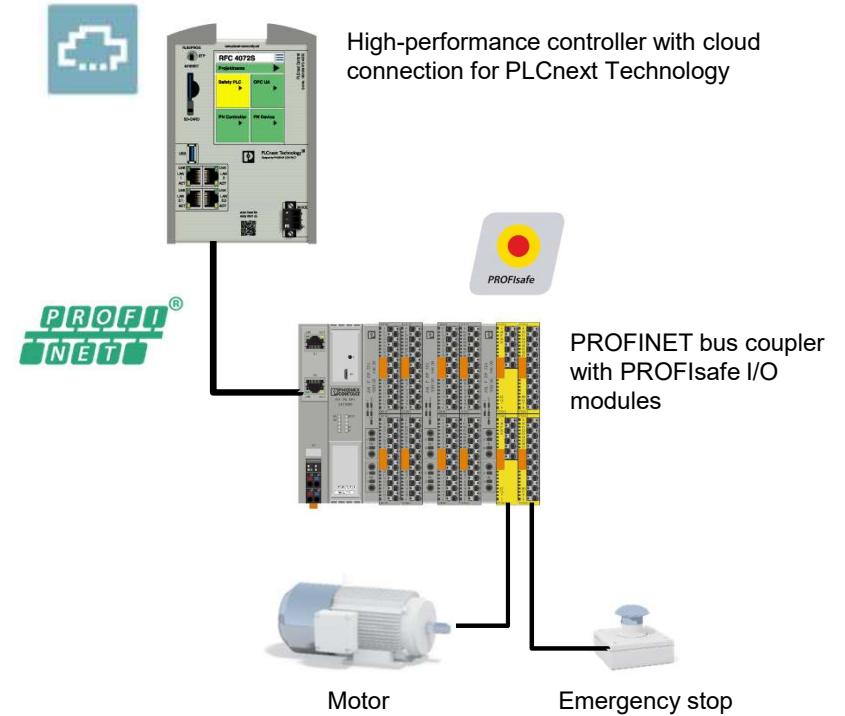
Details of each „discipline“



Bus coupler

Safety in the system

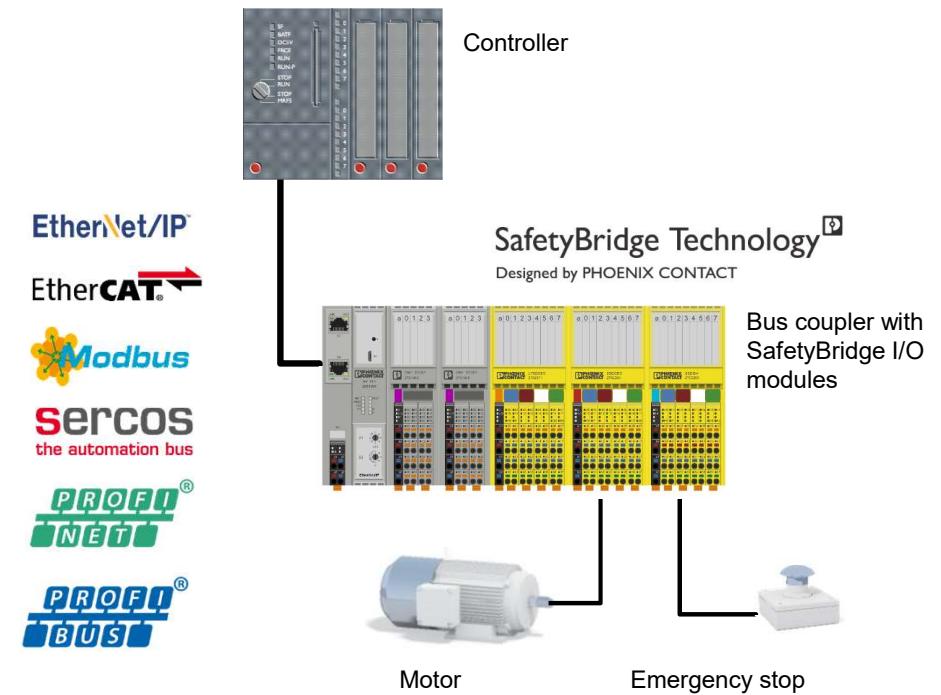
“ Implement PROFIsafe solutions systemically in PROFINET networks. This can be easily done through the lower-level connection of PROFINET bus couplers with PROFIsafe I/O modules to a Phoenix Contact PROFIsafe controller. ”



Bus coupler

SafetyBridge Technology

“ Use bus couplers to integrate I/Os into all common ethernet networks and bus systems. SafetyBridge Technology enables the network- and controller-independent implementation of safety applications – even without a safety controller. ”



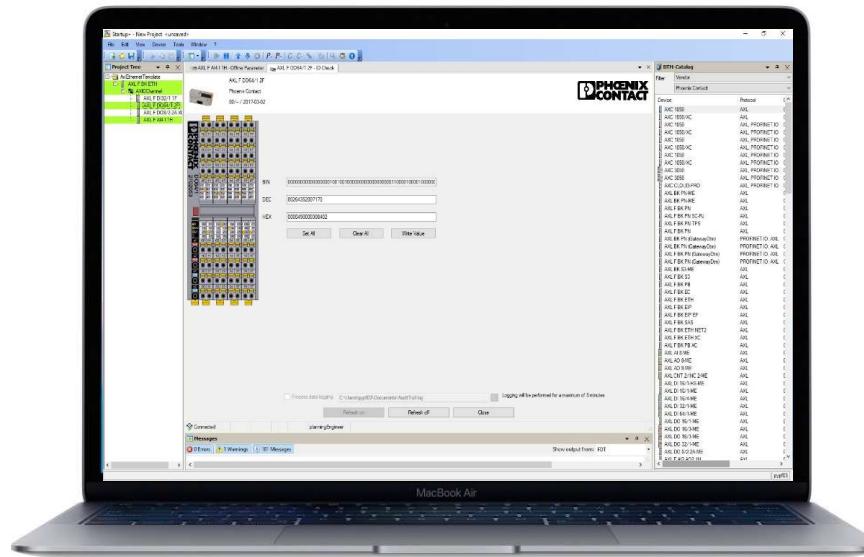
Bus coupler

Easy offline parameterization - Startup+

“ The Startup+ software is specifically designed for the AxioLine F I/O system. Each bus coupler provides an interface for the data exchange with the software. ”

Your benefits

- Easily check the wiring of the AxioLine F I/O station
- Parameterization of the I/O modules used
- Comprehensive diagnostics during operation

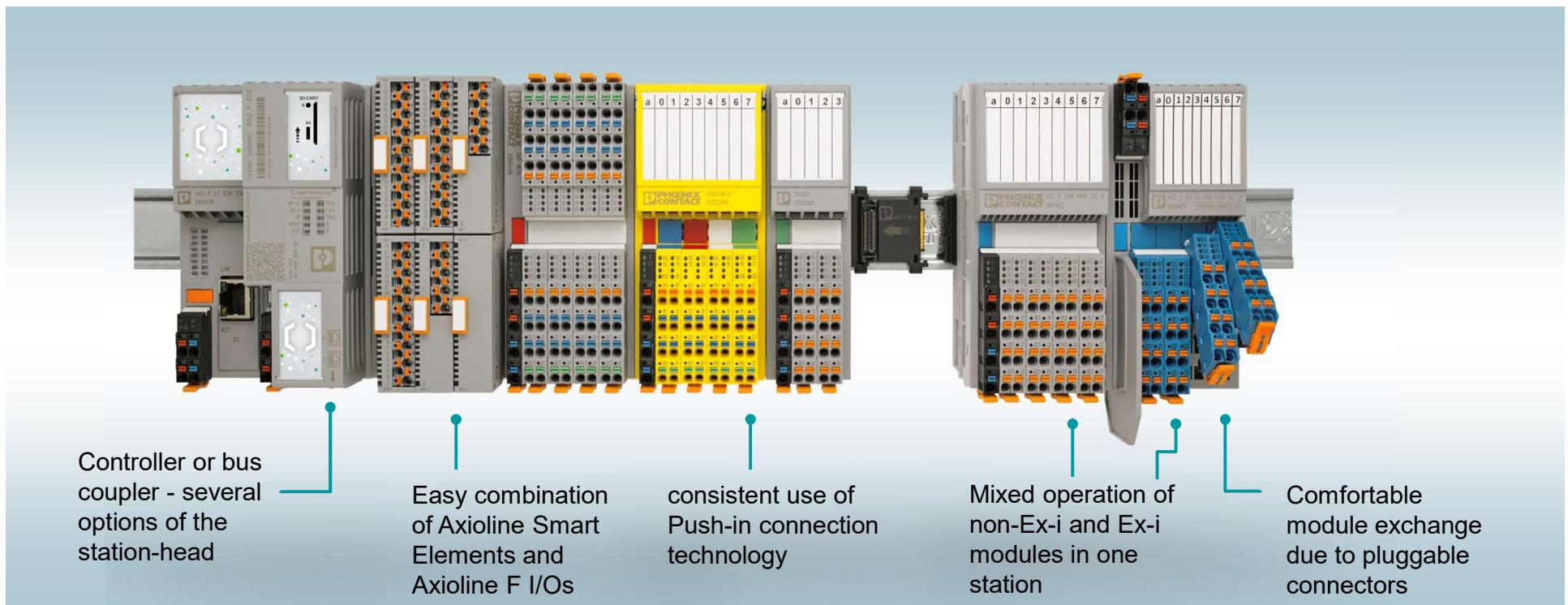


AVAILABLE AS FREE DOWNLOAD !



I/Os

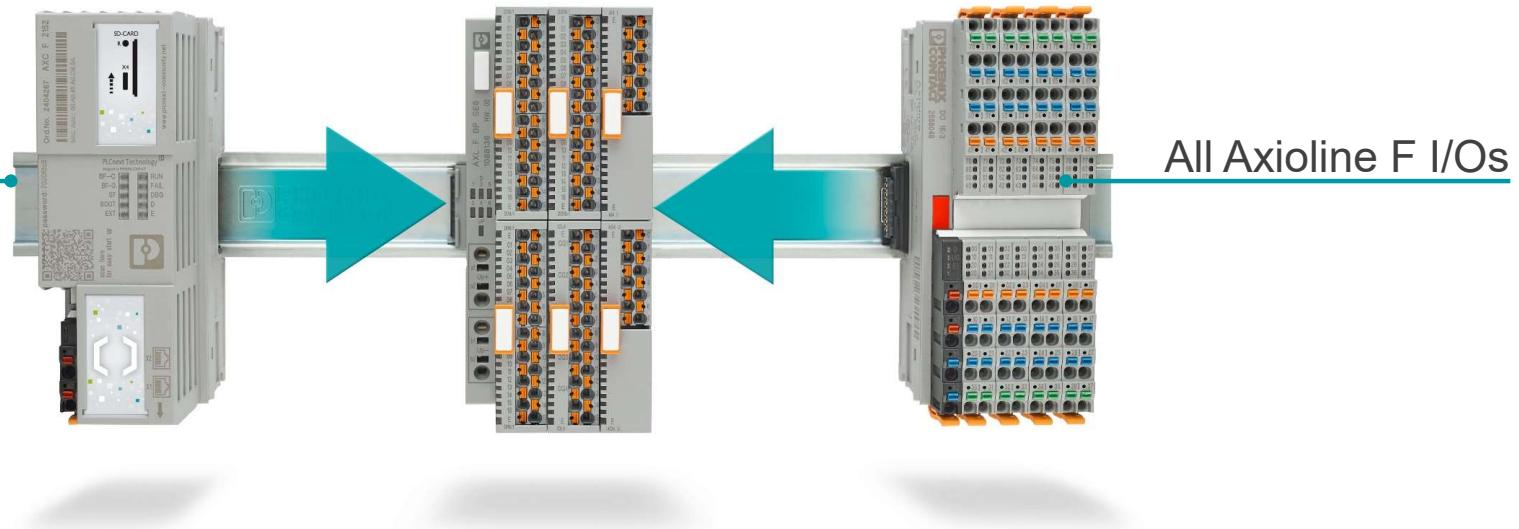
Modularity in the system



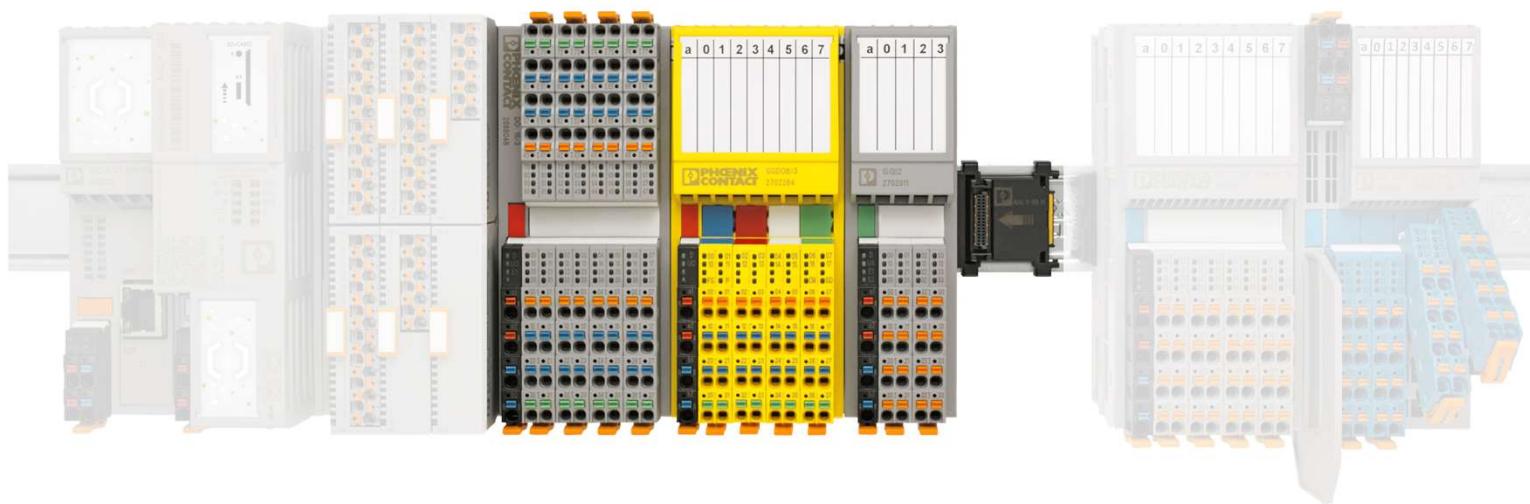
Axioline Smart Elements

Full compatibility

All Axiocontrols
All bus couplers



Choose out of a portfolio of more than 80 I/Os, bus couplers
and controls

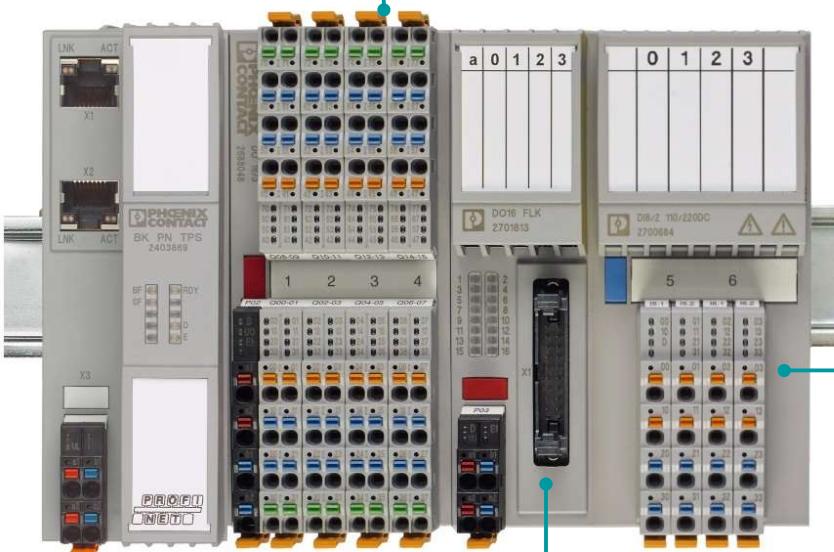


AXIOLINE F: Standard I/O modules

I/Os

Various connection methods

Multi-conductor



Up to
220 V DC
connectable
WITHOUT
separating plate

VERSATILE CONNECTABLE
Axioline F impresses with its
versatile connection methods.
Just as you need it.

I/Os

Functions for every application



IEC 61850



SafetyBridge Technology
Designed by PHOENIX CONTACT



IO-Link

LAGRE RANGE OF I/Os

Axioline F is a modular I/O system designed to meet every requirement and it offers a large range of I/O modules with digital and analog inputs and outputs, functions or for special applications. Implement safety applications with PROFIsafe or SafetyBridge Technology.

DIGITAL

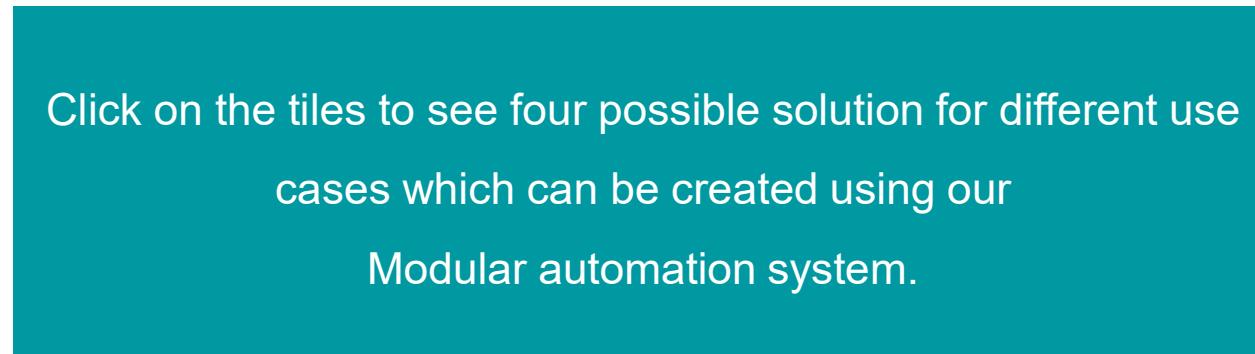
ANALOG

FUNCTION

SAFETY

The modular automation system

The right automation solution for every requirement



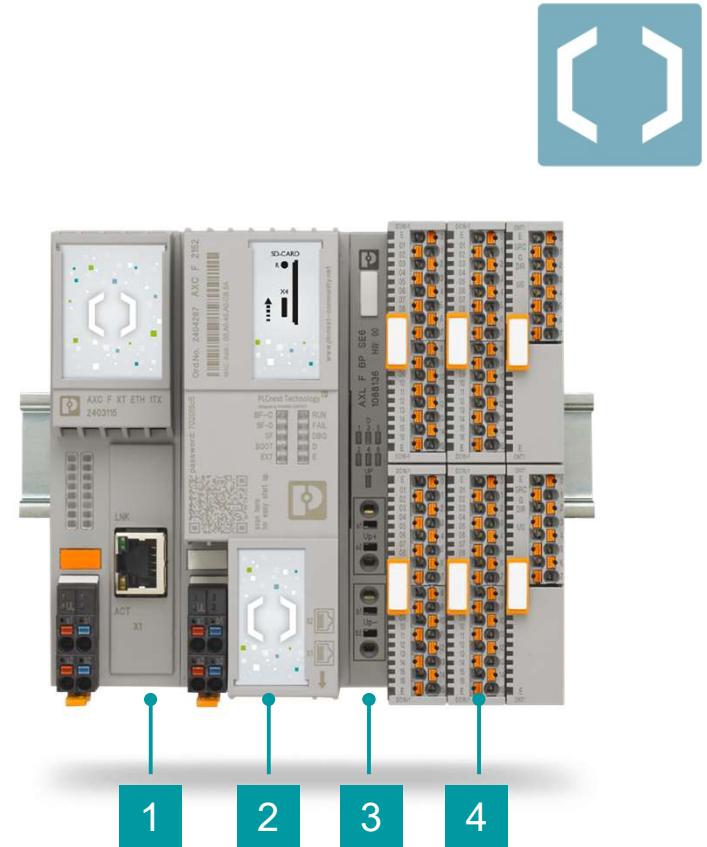
The modular automation system

Some solutions

OPEN AND FUTUREPROOF

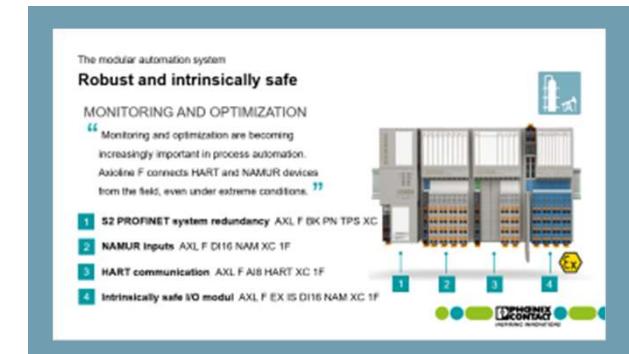
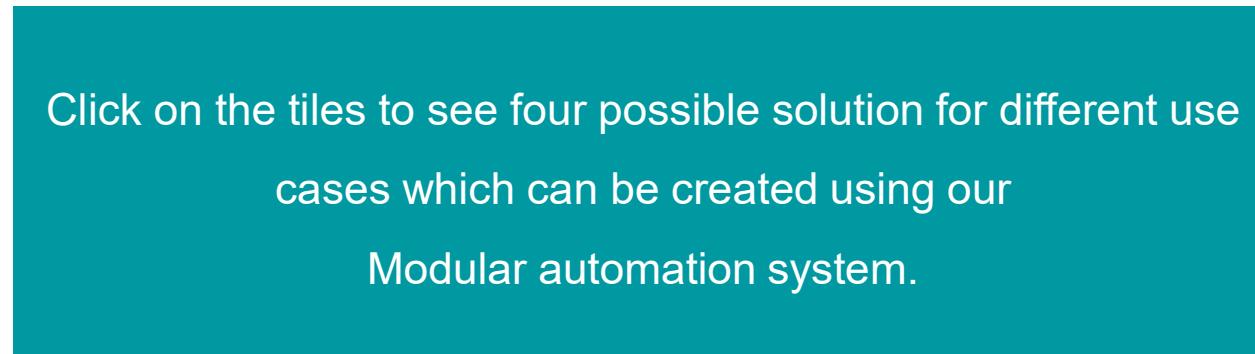
“ Create a compact I/O solution with AxioLine Smart Elements and a PLCnext Control. Use parallel programming such as IEC 61131-3 or high-level-languages and easy access to cloud services. ”

- 1 Functional expansion of the PLC AXC F XT ETH 1TX**
- 2 Open control platform AXC F 2152**
- 3 Backplane for AxioLine Smart Elements AXC F BP SE6**
- 4 Digital signal processing AXL SE DI16/1**



The modular automation system

The right automation solution for every requirement



The modular automation system

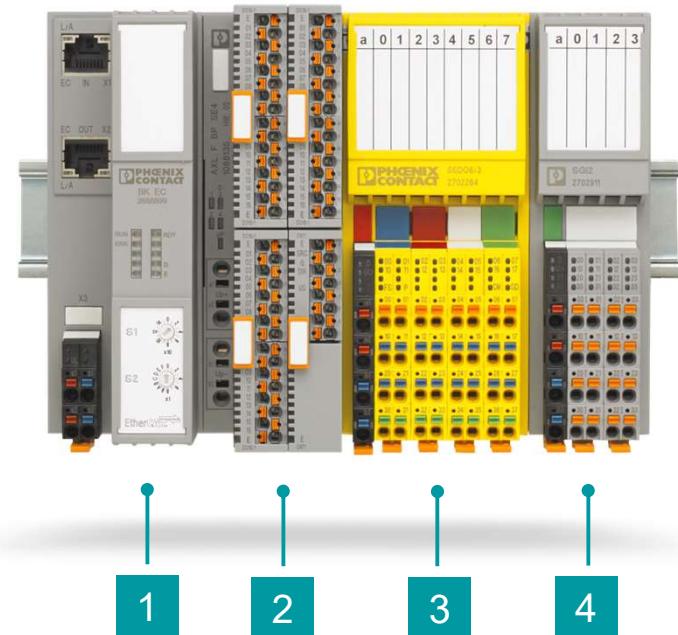
Some solutions



NUMEROUS POSSIBILITIES

“ Many machine variants require a high degree of flexibility with respect to the station structure and a wide range of function modules. Axioline F offers many products to provide an optimal solution for this type of application. ”

- 1 EtherCAT communication AXL F BK EC
- 2 Digital signal processing AXL SE DO16
- 3 SafetyBridge Technology AXL F SSDO8/3
- 4 Connection of strain gauge AXL F SGI2



Sistema Axioline

Axioline SE en

EtherNet/IP

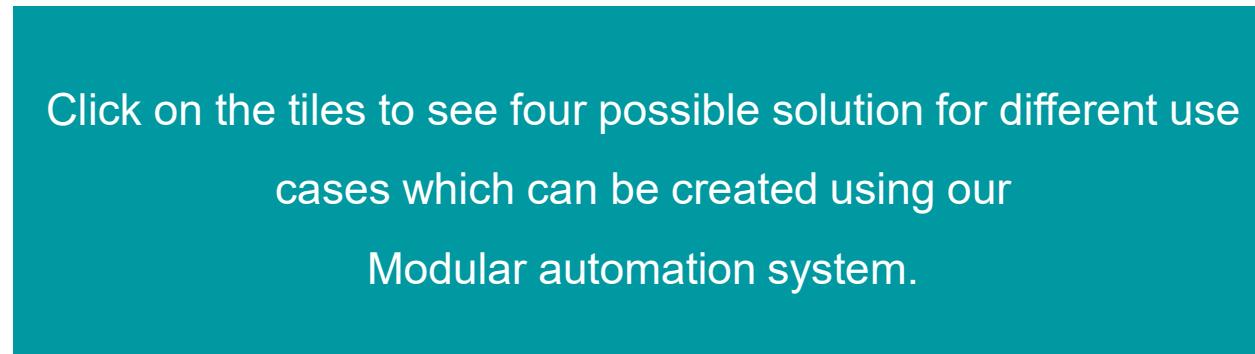
Studio 5000 (software)



Axioline Smart Element configuration with EtherNet/IP integration

The modular automation system

The right automation solution for every requirement



The modular automation system

Digital and communicative

EQUIPPED WITH APPROVALS

“The digitalization of ships in all service life phases requires new technologies and solutions that meet future requirements to operate ships more efficiently and digitally.”

- 1 Open control platform AXC F 2152
- 2 Digital signal processing AXL F DO16/3
- 3 Analog signal processing AXL F AI2 AO2
- 4 Serial communication protocols AXL F RS UNI



The modular automation system

The right automation solution for every requirement

The modular automation system
Some solutions

OPEN AND FUTUREPROOF

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1 Functional expansion of the PLC AXC F XT ETH 1T X
2 Open control platform AXC F 2152
3 Backplane for Axoline Smart Elements AXC F BP SE/S
4 Digital signal processing AXL SE DI16/T



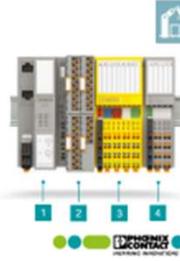
PHOENIX CONTACT
INNOVATIVE AUTOMATION

The modular automation system
Some solutions

NUMEROUS POSSIBILITIES

“Many machine variants require a high degree of flexibility with respect to the station structure and a wide range of function modules. Axoline F offers many products to provide an optimal solution for this type of application.”

1 EtherCAT communication AXL BK EC
2 Digital signal processing AXL SE DO16
3 SafetyBridge Technology AXL F SBD08/3
4 Connection of strain gauge AXL F SG2



PHOENIX CONTACT
INNOVATIVE AUTOMATION

The modular automation system
Digital and communicative

EQUIPPED WITH APPROVALS

“The digitalization of ships in all service life phases requires new technologies and solutions that meet future requirements to operate ships more efficiently and digitally.”

1 Open control platform AXC F 2152
2 Digital signal processing AXL F DO16/3
3 Analog signal processing AXL F AI2/AQ2
4 Serial communication protocol AXL F RS UNI



PHOENIX CONTACT
INNOVATIVE AUTOMATION

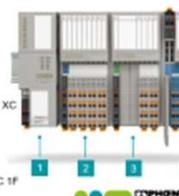
Click on the tiles to see four possible solution for different use cases which can be created using our Modular automation system.

The modular automation system
Robust and intrinsically safe

MONITORING AND OPTIMIZATION

“Monitoring and optimization are becoming increasingly important in process automation. Axoline F connects HART and NAMUR devices from the field, even under extreme conditions.”

1 S2 PROFINET system redundancy AXL F BK PN TPS XC
2 NAMUR Inputs AXL F DI16 NAM XC 1F
3 HART communication AXL F AI8/HART XC 1F
4 Intrinsically safe I/O modul AXL F EX IS DI16 NAM XC 1F



PHOENIX CONTACT
INNOVATIVE AUTOMATION

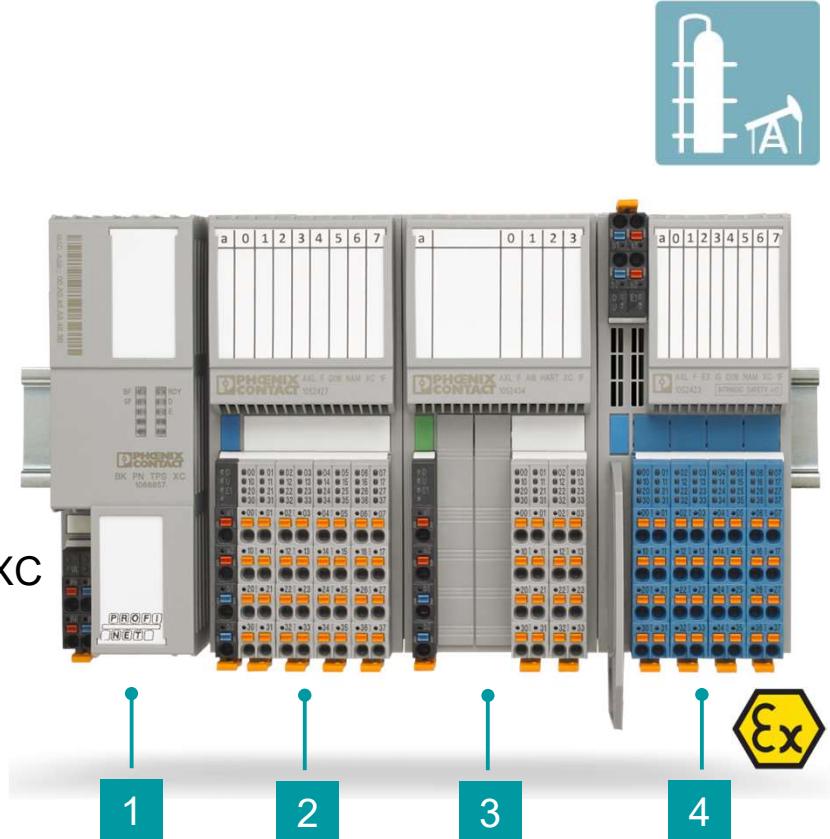
The modular automation system

Robust and intrinsically safe

MONITORING AND OPTIMIZATION

“ Monitoring and optimization are becoming increasingly important in process automation. Axioline F connects HART and NAMUR devices from the field, even under extreme conditions. ”

- 1 **S2 PROFINET system redundancy** AXL F BK PN TPS XC
- 2 **NAMUR inputs** AXL F DI16 NAM XC 1F
- 3 **HART communication** AXL F AI8 HART XC 1F
- 4 **Intrinsically safe I/O modul** AXL F EX IS DI16 NAM XC 1F



Axioline F

Profinet

Inside TIA Portal



Axioline F - Profinet

Set up

Linking a Profinet I/O station
into the TIA Portal V13



How to set up an Axioline F Profinet I/O station in the TIA Portal



Scope of applications

IP20 I/O Systems



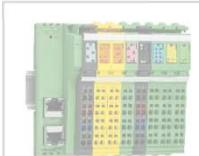
SIMPLE



APPLICATIONS



COMPLEX



IO-Link



IO-Link



Ex HART
COMMUNICATION PROTOCOL



Ex HART
COMMUNICATION PROTOCOL

MODULAR AUTOMATION SYSTEM



Webinar IMA 2020

Mayor información



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ventas@phoenixcontact.com.mx

55 1101 1380

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