

# I/O systems for the control cabinet

IP20 solutions for every application

# I/O systems for the control cabinet from PHOENIX CONTACT

Whether it's for all common bus systems and networks or for a system-integrated controller, with advanced I/O solutions you can communicate quickly and cost-effectively. The versatile range with IP20 protection provides reliable protection for your data and signal traffic and renders your systems usable at all transmission speeds. The function and structure can be designed according to your requirements.

## Find out more with the web code

You can find web codes in this brochure: a hash symbol followed by a four-digit number combination.

**i** Web code: #1234 (example)

This allows you to access information on our website quickly.

### It could not be easier:

1. Go to the Phoenix Contact website
2. Enter # and the number combination in the search field
3. Get more information and product versions

Or use the direct link:

[phoenixcontact.net/webcode/#1234](https://phoenixcontact.net/webcode/#1234)



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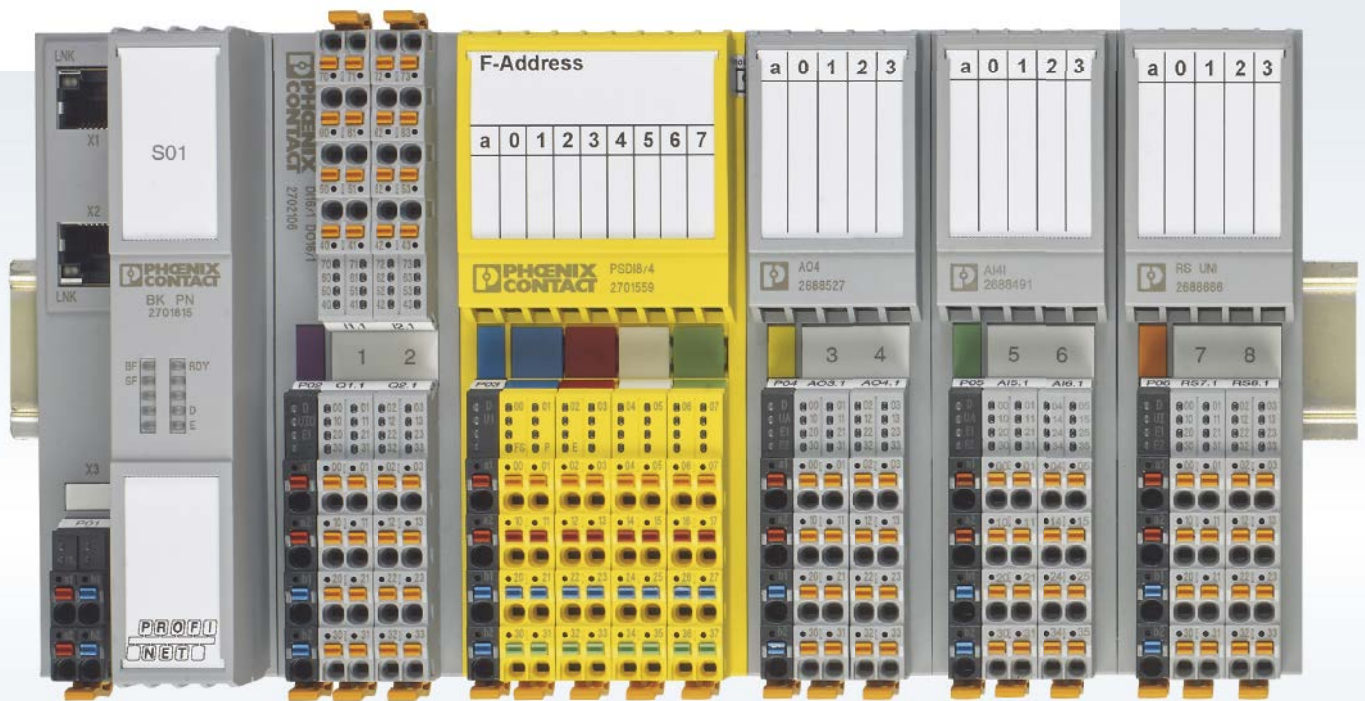
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# Two I/O systems for the control cabinet – the choice is yours

Phoenix Contact offers two I/O systems for the most diverse applications: from simple to complex requirements or for applications in extreme environments. Regardless of the system you opt for:

I/O modules with various functions as well as bus couplers and controllers give you freedom in your automation.



## Axioline F – fast, robust, easy

Axioline F enables the shortest response times and is characterized by its particularly robust design and easy handling.



Strong together in multiple networks

CANopen

DeviceNet

EtherCAT

EtherNet/IP



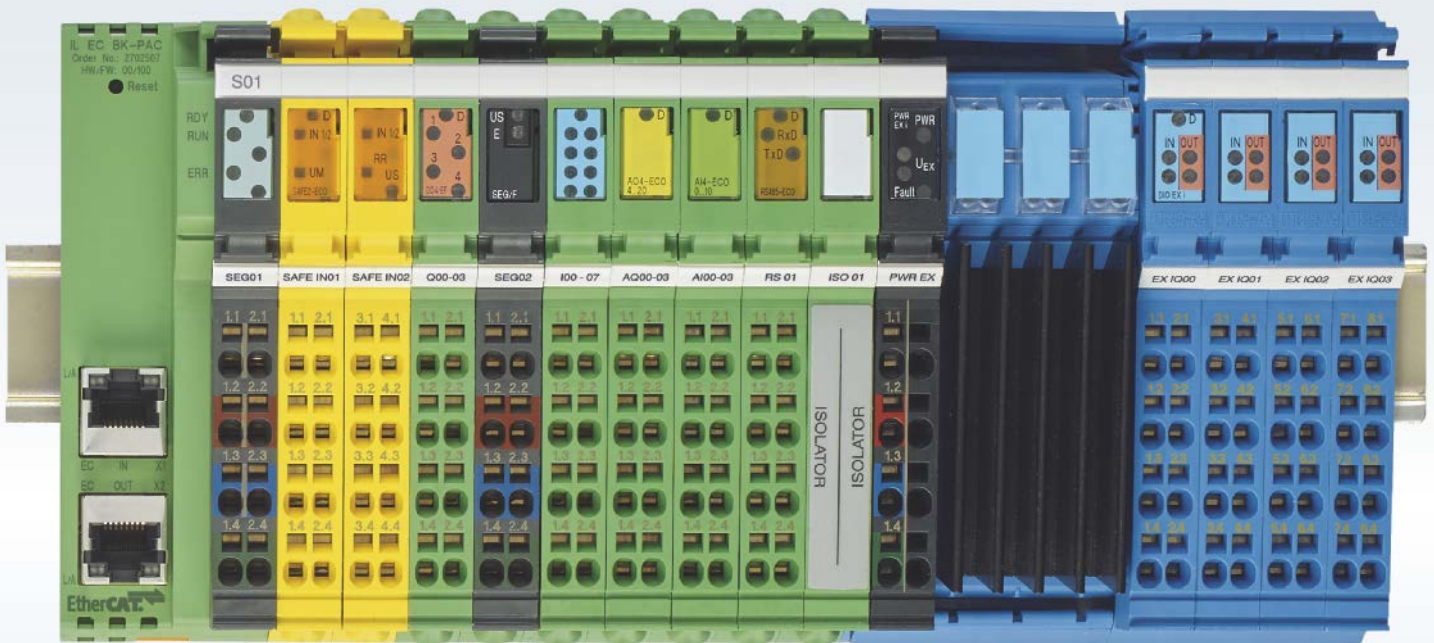
IEC 61850



PROFINET BUS

PROFINET

sercos  
the automation bus



## Inline – easy, flexible, reliable

Whether it's simple or complex applications, Inline provides flexibility in automation. Always cost-effectively adapted to your requirements.

## Axioline F I/O system

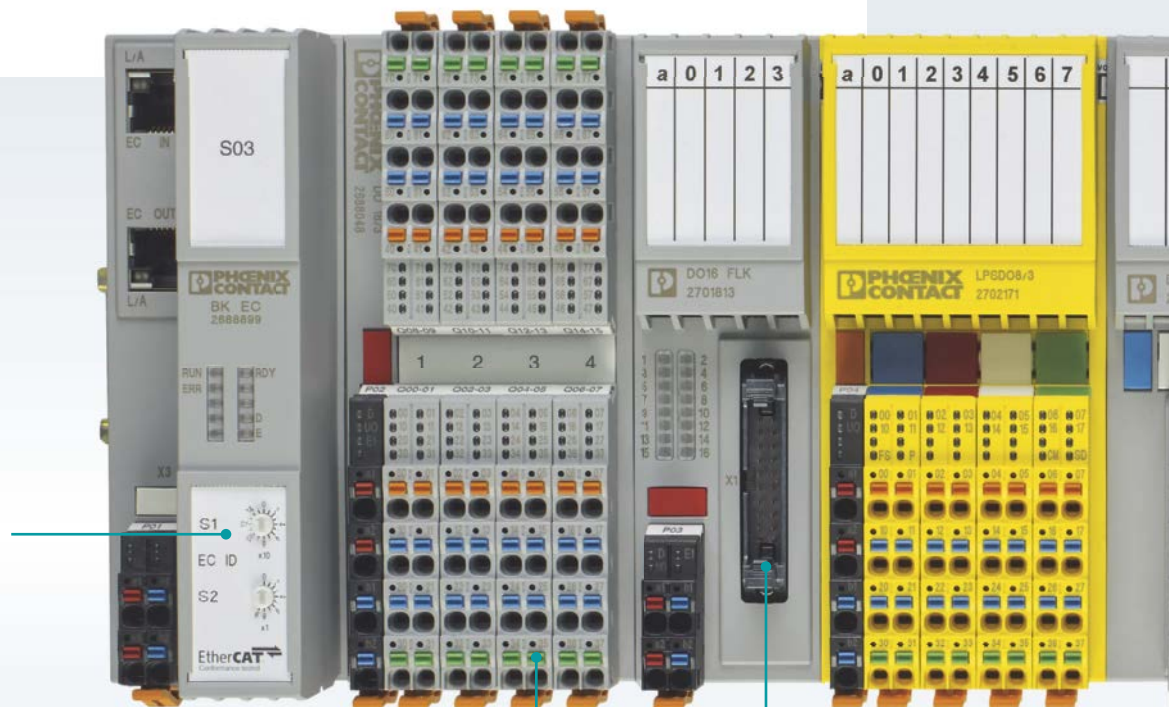
# The specialist in the control cabinet

Axioline F is the robust, modular I/O system. Transmit data in real time from the I/O level to the controller – the system is particularly resistant to interference and safe when it comes to EMC. Save time when connecting sensors and actuators and benefit from easy handling.

**i** Web code: #1147

### Fast communication

Optimum performance thanks to fast local bus speed



Easy connection of relays by means of system cabling (FLK)

Fast and intuitive wiring thanks to color coding of the contact points – even in the case of multi-conductor connection

### Your advantages

- ✓ Increased machine output thanks to particularly fast and synchronous signal acquisition
- ✓ Particularly robust mechanics as well as shock and vibration resistance withstand even the most adverse conditions and increase system availability
- ✓ Installation time is reduced thanks to fast wiring and easy handling

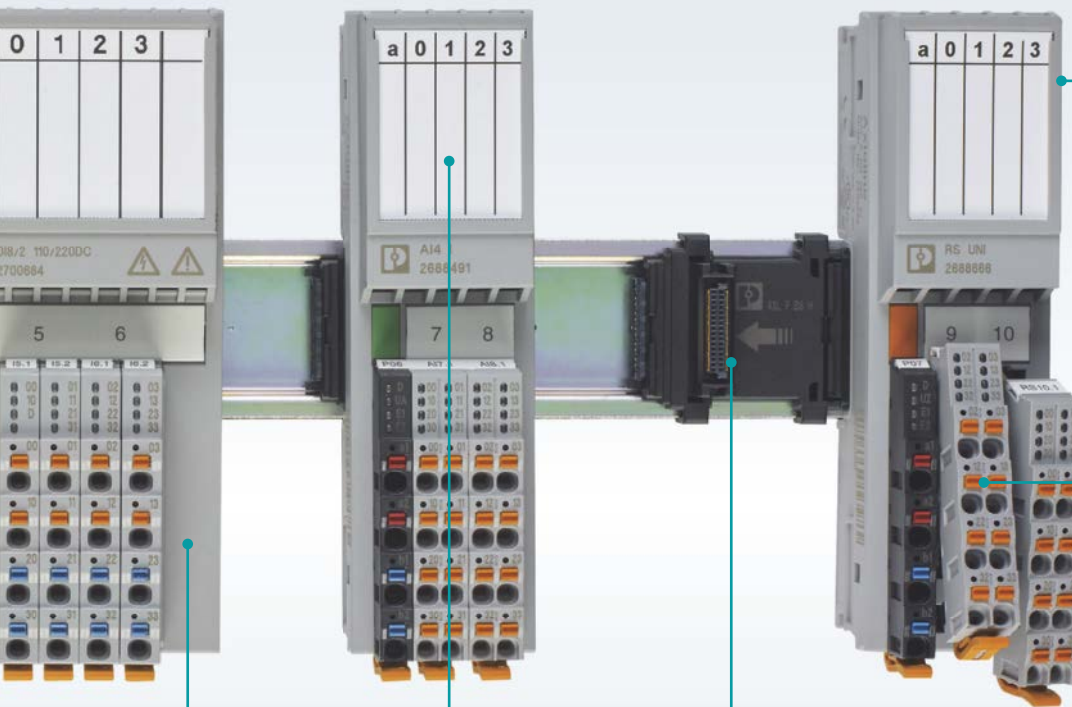
# Push-in Technology

Designed by PHOENIX CONTACT

Reduced installation time thanks to fast wiring



Rotary coding switches and USB ports simplify startup and maintenance



## Easy installation

Quick and easy station structure thanks to tool-free installation

Fast module replacement with existing wiring

Integration of modules for low voltage without the need for additional measures to protect the insulation

## Robust mechanics

Increased system availability thanks to particularly robust mechanics as well as shock and vibration resistance

Individual and fast marking thanks to MARKING system printing systems



## Axioline F I/O system

# From the component to the complete system

Controllers, bus couplers, and I/O modules – with Axioline F Phoenix Contact is offering a modular I/O system for every application. Fast and synchronous signal acquisition increases your machine output, whether you are using a Phoenix Contact controller or operating in all common networks.




## Controllers

With Axiocontrol and Axioline F, you can create a consistent solution for automation tasks with PROFINET or Modbus TCP. With small-scale and high-performance controllers, Axiocontrol offers the right PLC for every application. All Axiocontrol controllers can be seamlessly extended with up to 63 I/O modules from the Axioline F range.










## Bus coupler

Axioline F – the Ethernet specialist: open to all common bus systems and network protocols, it gives you maximum flexibility in your station structure. The bus coupler opens up a local bus for up to 63 further devices.

 Web code: #1148

 Web code: #1149

## I/O functions for Axioline F at a glance

- |   |  |
|---|--|
|  Digital inputs        |  Counters           |
|  Digital outputs       |  Path detection     |
|  Analog inputs         |  Position detection |
|  Analog outputs        |  Communication      |
|  Temperature recording |  |

## SafetyBridge Technology

Designed by PHOENIX CONTACT



### Safe I/O modules

With SafetyBridge technology, you can implement safety applications with complete ease. And you can do this without a safety controller and regardless of the network used. In PROFIBUS and PROFINET networks, the PROFIsafe modules are used to acquire and output safety-related signals.



### I/O modules

A large range of modules with digital and analog inputs and outputs and functions or for special applications. The versatile I/O modules give you flexibility in your station structure.

 Web code: #1150

 Web code: #1151

## Axioline F I/O system

# Fast and safe with high performance

In machine building in particular, fast and synchronous processes are often required. At the same time, safety must be taken into account. Thanks to the extremely short update time and the synchronous signal acquisition of the Axioline F system, you can increase clock frequencies and machine output while ensuring your processes.

Implement safety solutions easily and independently of the controller and network by integrating SafetyBridge technology.

 Web code: #1239



The image shows a close-up of the Axioline F I/O system control panel. At the top, a red LED display shows '00000' followed by 'B/h' and 'S/h' units. Below the display is a control panel with a grid of buttons, a yellow emergency stop button, and a red stop button. The panel is mounted on a grey industrial machine.

### Your advantages

- ✓ Implement network- and controller-independent safety applications with SafetyBridge technology
- ✓ Increased machine output thanks to particularly fast and synchronous signal acquisition
- ✓ Installation time is reduced thanks to fast wiring and easy handling
- ✓ Implement flexible machine and system concepts – open to all networks





## Matching products from our range

**Bus coupler**  
for Sercos® supports  
real time requirements



**SafetyBridge logic module**  
for safe, distributed communication  
without a safe PLC



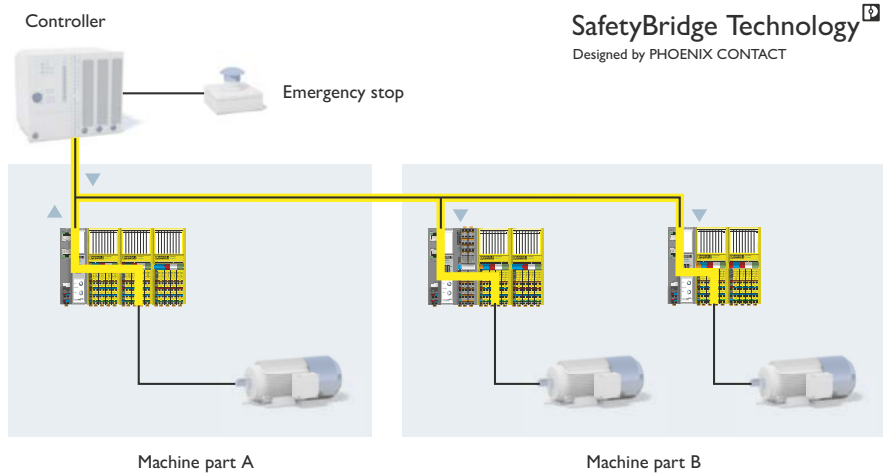
**Digital input module**  
with 16 digital high-speed inputs with a compact design



## How SafetyBridge technology works

With SafetyBridge technology, safety-related data packets are exchanged between safe input and output modules independently of the network and controller used.

- The standard controller and network are only used as a transport medium
- Easy configuration using the SAFECONF software
- Safety requirements up to SIL 3 and PL e are met



## Optimum performance at all times

With an update time of 1 μs per I/O module in the local bus, Axioline F is as fast as parallel cabling – as such the higher-level bus system determines the speed.

## Short installation times

Shorter installation times thanks to Push-in connection technology. Clear wiring: the design supports cabling from above and below.

## Optimum system connection

Axioline F is the Ethernet specialist for control cabinet installation. Alongside PROFIBUS DP, bus couplers are also available for today's leading Ethernet systems.

## Axioline F I/O system

# Robust under extreme conditions

In harsh conditions, reliable communication is essential. Axioline F features a particularly robust mechanical design. The system is also extremely immune to electromagnetic radiation. The XC versions with an extended operating temperature range of  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  and varnished PCBs are ideal for use under extreme conditions.

 Web code: #1240



### Your advantages

- ✓ High operational reliability thanks to cost-effective network redundancy
- ✓ Increased reliability thanks to particularly robust mechanics as well as shock and vibration resistance
- ✓ Low noise emission permits use on ships' bridges
- ✓ Extensive approvals permit versatile use in maritime applications

## Matching products from our range

**Bus coupler**  
for Modbus TCP for  
implementing cost-  
effective network  
redundancy



**Digital output module**  
with FLK connection for the cost-  
effective connection of plug-in relays

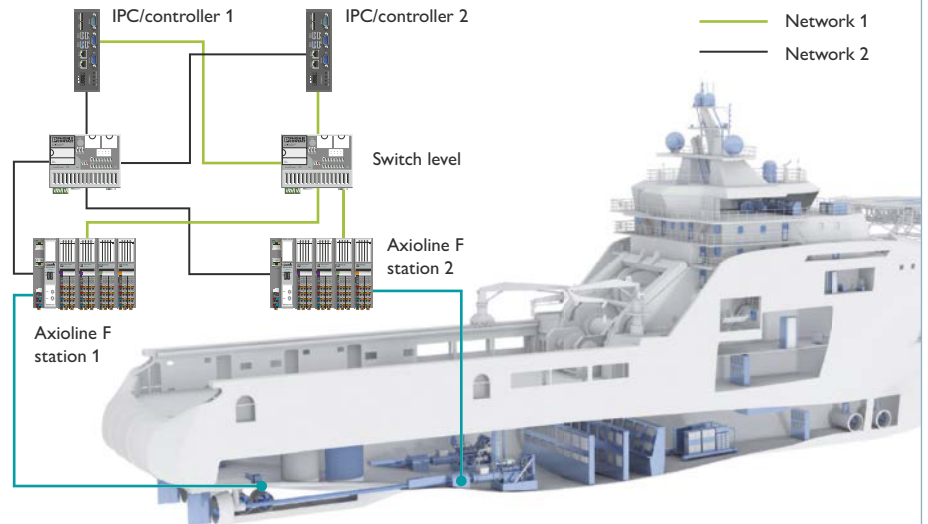


**XC modules**  
for an extended  
operating  
temperature range of  
-40°C to +70°C



## Cost-effective network redundancy

In maritime applications, network-redundant systems are required for operational reliability. These can be implemented cost-effectively with Axioline F. The bus coupler can be incorporated into redundant networks without redundancy components. The high-performance structure of the Axioline F system provides optimum, reliable data communication.



## Robust mechanics

Thanks to its increased mechanical robustness, Axioline F has a vibration resistance of 5 g, a continuous shock resistance of 10 g, and a shock resistance of 30 g.



## Low electromagnetic radiation

Thanks to the low noise emission of EMC Class B, Axioline F meets the high requirements of automation in shipbuilding.



## Approvals for marine automation

The Axioline F I/O system has been approved by all major maritime classification associations.



Axioline F I/O system

## Easy IEC 61850 integration

The particularly robust Axioline F I/O system is the perfect solution for applications in the energy sector. With the bus coupler for IEC 61850 and the I/O modules for increased nominal voltages and corresponding electric strength, you can easily integrate Axioline F into IEC 61850 applications. Here, you benefit in particular from easy handling and the flexible station structure.

 Web code: #1241

### Your advantages

- ✓ Maximum configuration flexibility thanks to simultaneous use of bus coupler and controller
- ✓ Free combination of small-scale and low-voltage modules without insulation plate simplifies the station structure
- ✓ Easy engineering thanks to web interface
- ✓ Problem-free use of Axioline F in IEC 61850 applications thanks to robust device design

## Matching products from our range

**Controller**  
for IEC 61850,  
allows IEC-61131  
programming



**Bus coupler**  
for IEC 61850, supports MMS and  
GOOSE communication

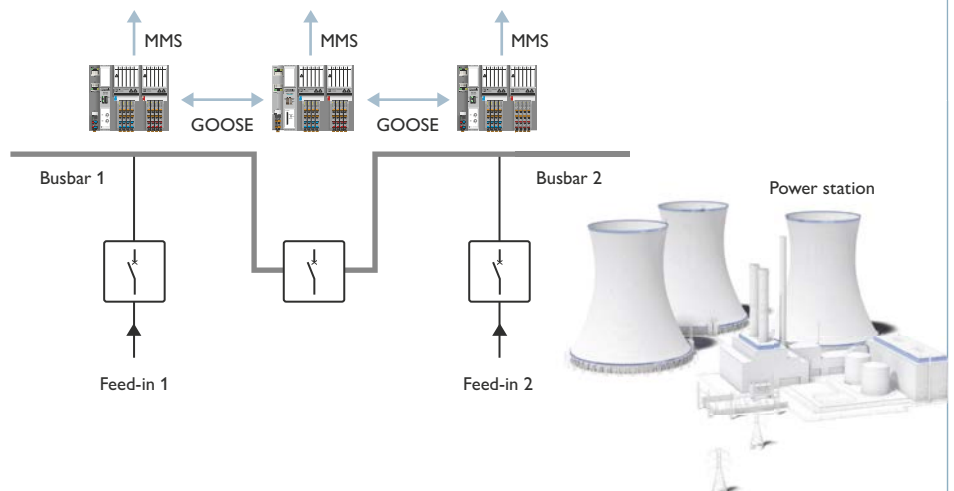


**Relay module**  
with four relay  
outputs, for  
220 V DC/230 V AC



## Energy technology with Axioline F and Axioccontrol

The integration of changeover devices for controlling busbars can be implemented easily by using GOOSE, the fast cross-communication. The simultaneous use of bus coupler and controller provides maximum flexibility.



### Simple station structure

Benefit from the comprehensive Axioline F product range and flexibly combine extra-low and low-voltage modules without insulation plates.



### Easy engineering

The web interface provides flexible online access to the product. This saves time during startup thanks to easy parameterization.



### Robust

Axioline F modules, which have been developed according to IEC 61850-3, meet extreme requirements, particularly when it comes to climate, mechanics, and EMC.

## Inline I/O system

# The all-rounder in the control cabinet

Discover the practical advantages of Inline: the bus and power supply do not have to be wired; they are connected automatically when the extension modules are plugged in. What's more, the system does not require an additional bus termination.

COMBICON spring-cage technology ensures fast I/O wiring. Thanks to the wiring level which is separated from the electronics, terminal replacement can be carried out quickly and easily.

**i** Web code: #1152

Diagnostic LEDs  
for network and  
local bus

Network or bus  
connection

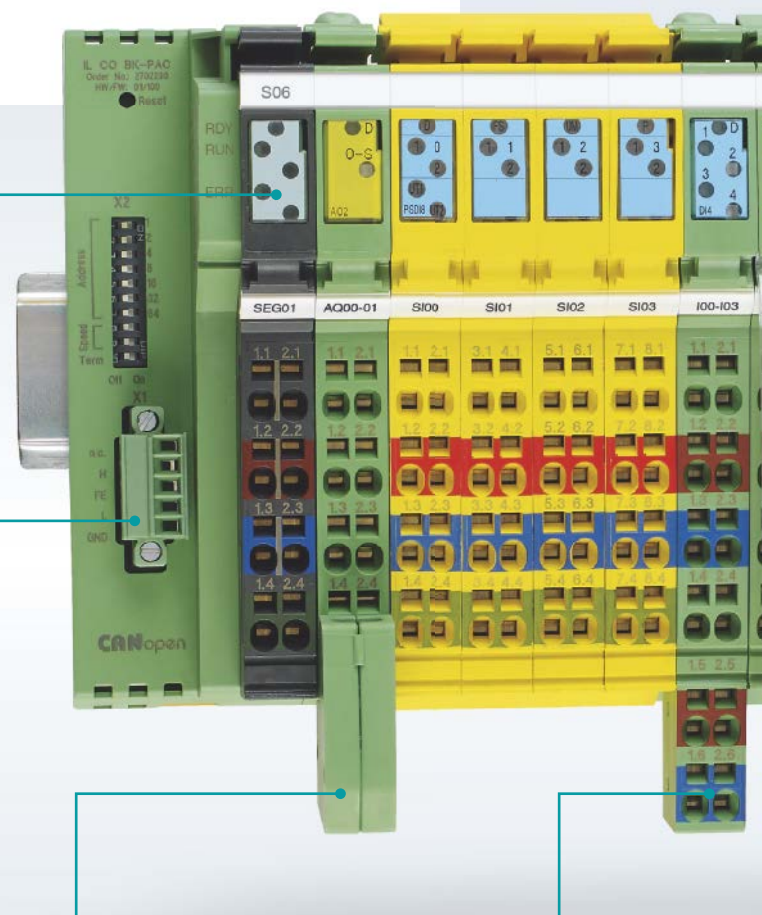
### Your advantages

- ✓ Maximum flexibility thanks to a large selection of I/O terminals, function terminals, bus couplers, and controllers
- ✓ The narrow overall width and tailored number of terminal channels save space in the control cabinet
- ✓ Local bus extension to the field without additional bus coupler thanks to the branch terminal

### Easy shield connection

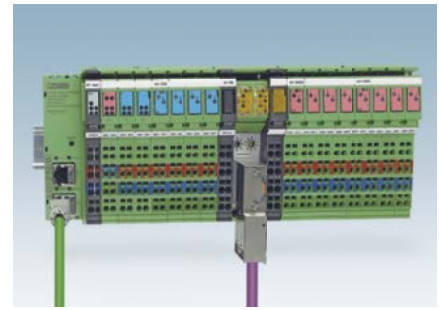
Thanks to the integrated shield connection on the terminal, shielded cables can be connected easily without further accessories

Color coding of  
the terminal points  
simplifies wiring

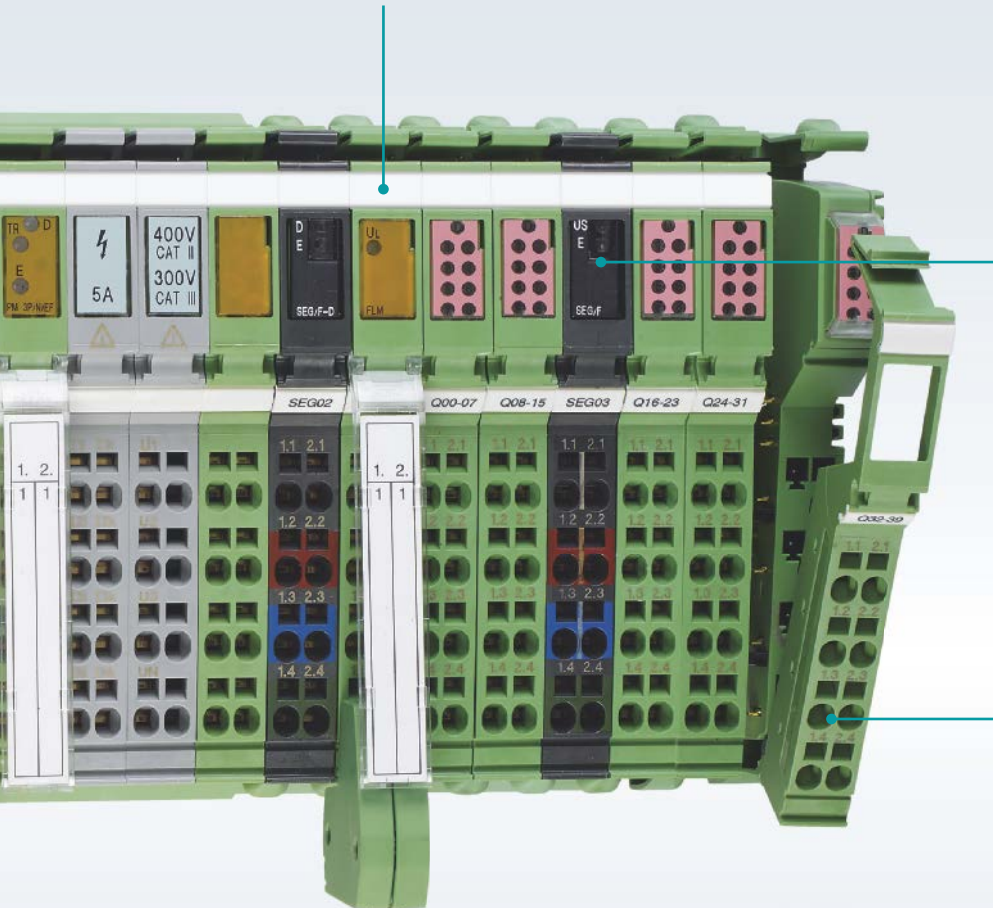




Terminals, conductors, cables, and devices can be marked quickly and easily using the MARKING system printing system



Various subsystems can be incorporated via communication master terminals



Thanks to targeted segmentation, you benefit from increased system safety with independently protected and separately switched station segments

### Easy handling

- Status and diagnostic LEDs
- Color coding to easily distinguish between I/O functions
- Clearly numbered terminal points

### Flexible through to the field

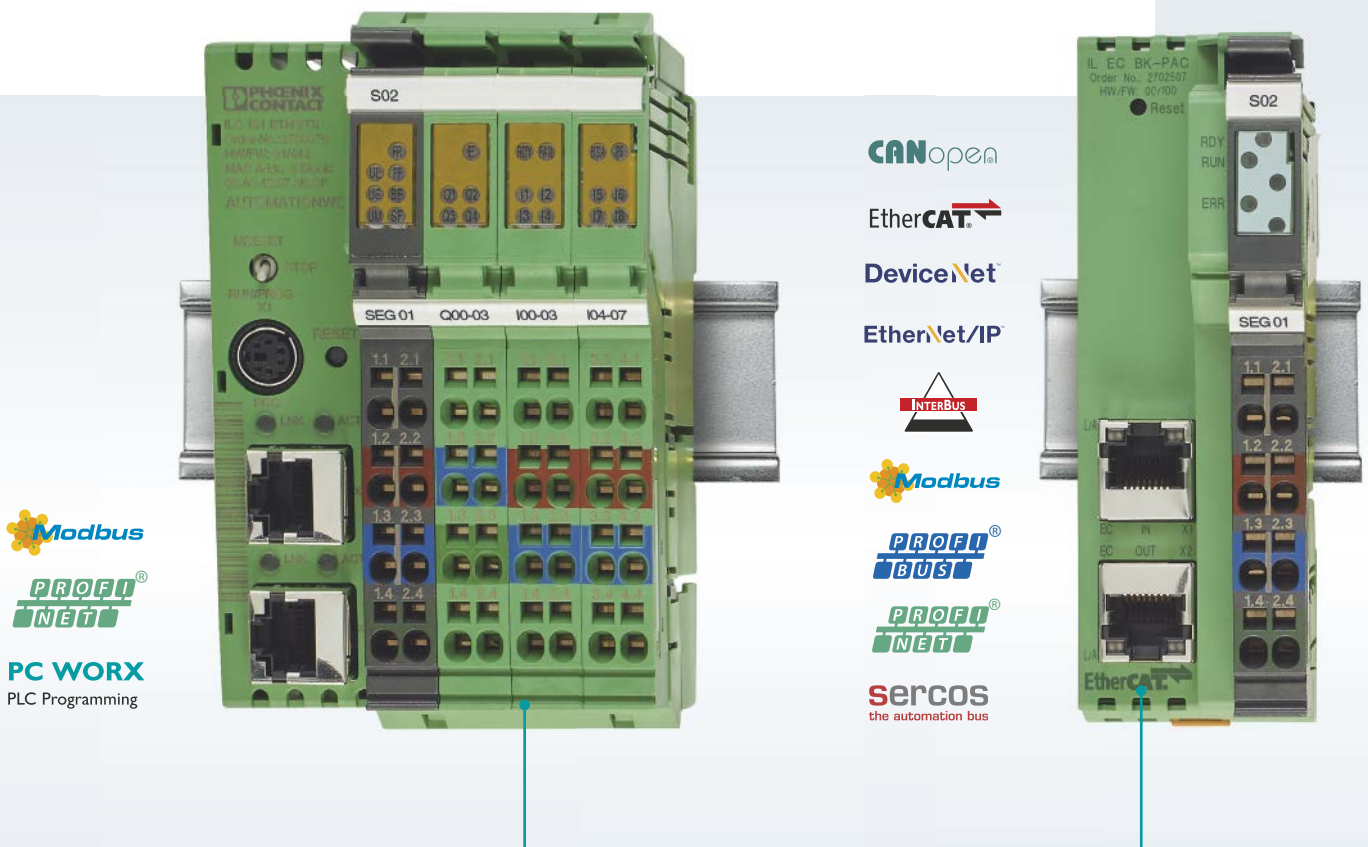
Connection of Fieldline modular devices with IP65/67 degree of protection without additional bus coupler



## Inline I/O system

# Controller, bus coupler or I/O terminals – maximum flexibility and versatility

Inline is the flexible all-rounder designed down to the last detail for use in control cabinets. You can design your automation functions to suit your specific requirements with a wide range of controllers and bus couplers for all common networks and a variety of I/O terminals with comprehensive approvals.



## Controllers

Inline controllers support all common communication technologies such as Ethernet, mobile communication or fixed-line network. In addition, they can be easily extended with Inline I/O terminals and offer an integrated web server.











## Bus coupler

Thanks to the free choice of bus coupler, the Inline I/O system can be integrated into all common fieldbus systems and Ethernet networks.

 Web code: #1153

 Web code: #1154

## I/O functions for the Inline I/O system:

- |   |   |
|---|---|
|  Digital inputs        |  Counters                |
|  Digital outputs       |  Impulse encoders        |
|  Analog inputs         |  Position detection      |
|  Analog outputs        |  Energy data acquisition |
|  Temperature recording |  Communication           |

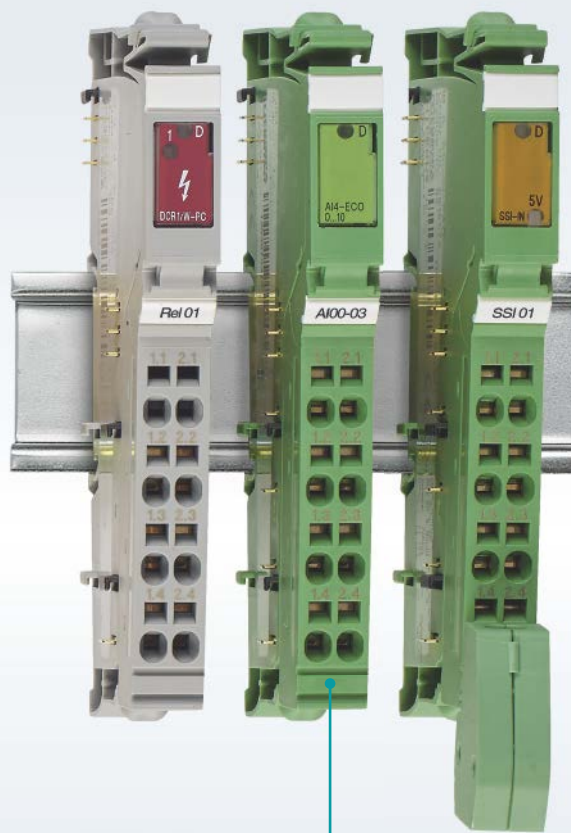
**SafetyBridge Technology**   
Designed by PHOENIX CONTACT



### Safe I/O terminals

With Inline the choice is yours: implement the simplest solutions for functional safety with the Inline ECO Safe terminal or complex safety solutions with SafetyBridge technology or PROFIsafe.

 Web code: #1155



### I/O terminals

I/O terminals with and without parameterization. A wide range of versatile functions with comprehensive approvals give you the freedom to choose any topology. The fine granularity serves as the basis for the design.


 Web code: #1156



## Inline I/O system

# Easy and cost-effective automation

The Inline ECO terminals allow you to solve automation tasks easily and cost-effectively. Following the principle of “One terminal, one function”, you will always find the right function for your automation application in the range of Inline ECO terminals. No special terminal parameterization is required. Make your application safe by using the safe Inline ECO Safe I/O terminal – without any additional software.

 Web code: #1242

### Your advantages

- ✓ Easy safety integration without complex parameterization
- ✓ More flexibility, as Inline standard terminals can be combined with Inline ECO terminals
- ✓ Reduced startup costs thanks to easy integration of Inline ECO terminals without parameterization
- ✓ Easy implementation of distributed safety solutions thanks to SafetyBridge technology



## Matching products from our range

### Bus coupler

for the easy integration of Inline ECO and standard terminals into your EtherCAT® network



### Analog value acquisition

for easy startup without parameterization



### Safe I/O terminal

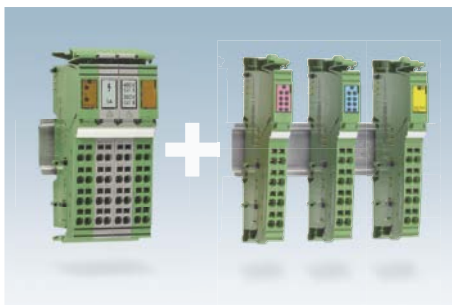
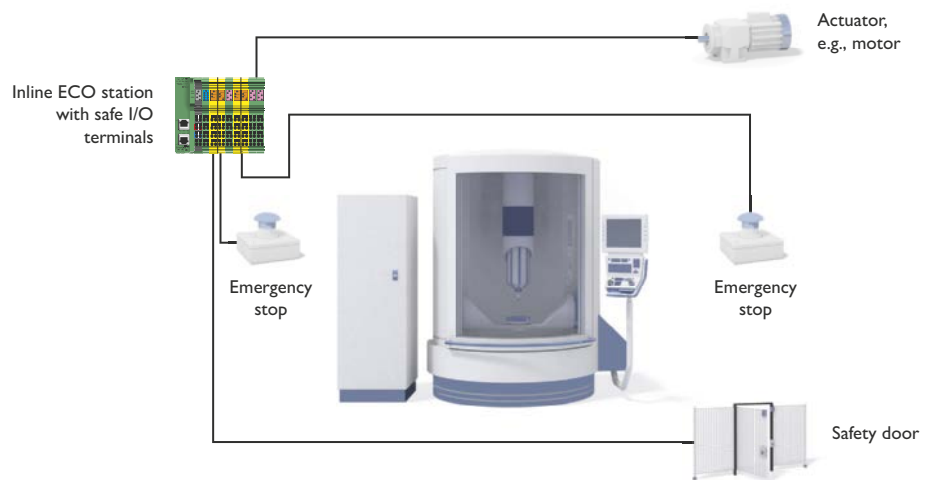
for the safe shutdown of connected output terminals



## Simple, central solution for functional safety in compact machines

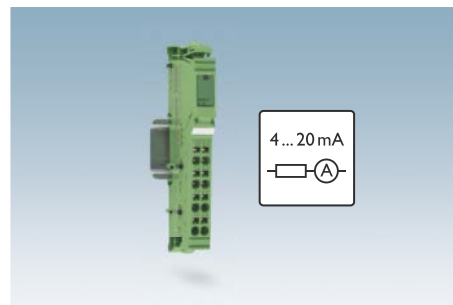
Integrate the safe I/O terminal by simply plugging it into your Inline I/O station. Digital output terminals with approval for the safety-relevant segment circuit are then installed to the right of the safe I/O terminal.

When a sensor is activated, e.g., emergency stop, the actuator voltage supply for the connected output modules is shut down for safety reasons. Up to two dual-channel sensor circuits can be connected to one safe I/O terminal. All status and error messages are forwarded to the standard controller.



### Flexible combination

The Inline ECO terminals can be combined with all Inline terminals and other Inline components.



### One terminal, one function

Every Inline ECO terminal is particularly easy to handle, as no parameters need to be preset.



### Distributed safety solution

The safe I/O terminals with SafetyBridge technology can be distributed in a modular fashion throughout your standard network – entirely without a safety controller and independently of the network.

## Inline I/O system

# Flexible acquisition and evaluation

The Inline I/O system offers a wide range of analog and function terminals. The range covers easy analog value acquisition right through to the high-performance metering terminal. Use the wide range of parameterization options provided by these I/O terminals and adapt the functions to suit your application.

**i** Web code: #1243



### Your advantages

- ✓ Large range of analog and function terminals for versatility when it comes to measured value acquisition
- ✓ Simplified application programming thanks to a wide range of function blocks
- ✓ Flexibility thanks to versatile parameterization
- ✓ Reduced programming effort thanks to pre-processing in the terminals

# Matching products from our range

## Analog value acquisition

with high resolution and accuracy for highly precise value acquisition



## Position detection

for connecting highly precise incremental value encoders



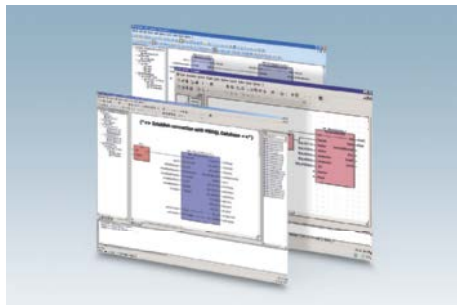
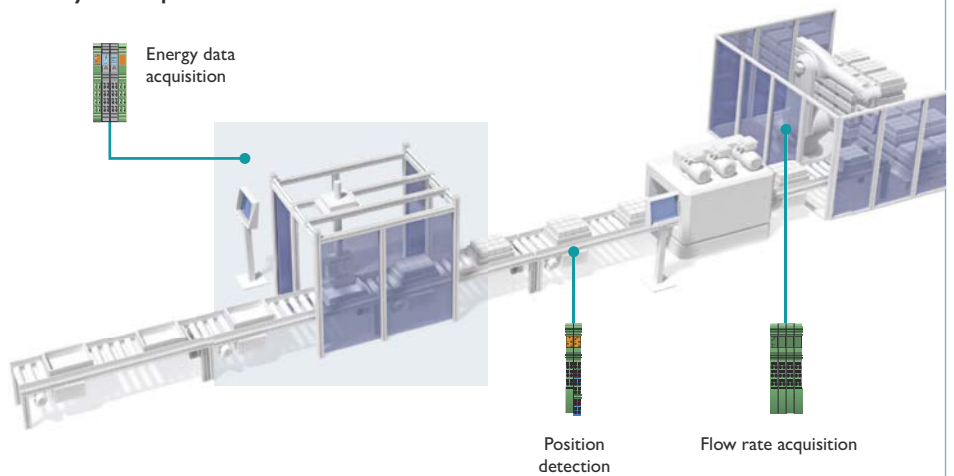
## Energy data acquisition

e.g., for recording phase currents and neutral conductor current



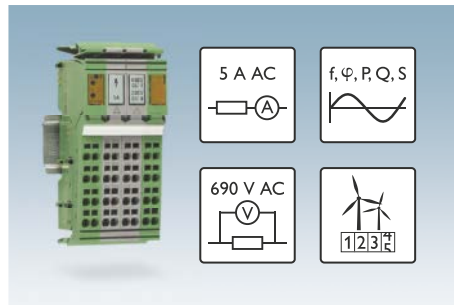
## Versatile measured value acquisition in system parts

Flexible installation of the Inline function terminals according to your application. With analog input terminals you can record flow rates, pressures or weights cost-effectively and with high precision. You can determine the positions of your workpieces with an incremental encoder input terminal or define an absolute position with a terminal for evaluating SSI encoders. Analyze your energy consumption with the Inline power measurement terminal and save energy costs by optimizing your application.



## IEC 61131 programming

A wide range of blocks for IEC 61131 programming simplifies application programming.



## One terminal, multiple functions

The standard function and analog terminals offer a wide range of options for setting parameters and operating modes. All functions can be flexibly adapted to the task.



## Function terminals

Wide range of function terminals with pre-processing reduces programming effort.



## Inline I/O system

# Reliable up to Zone 2

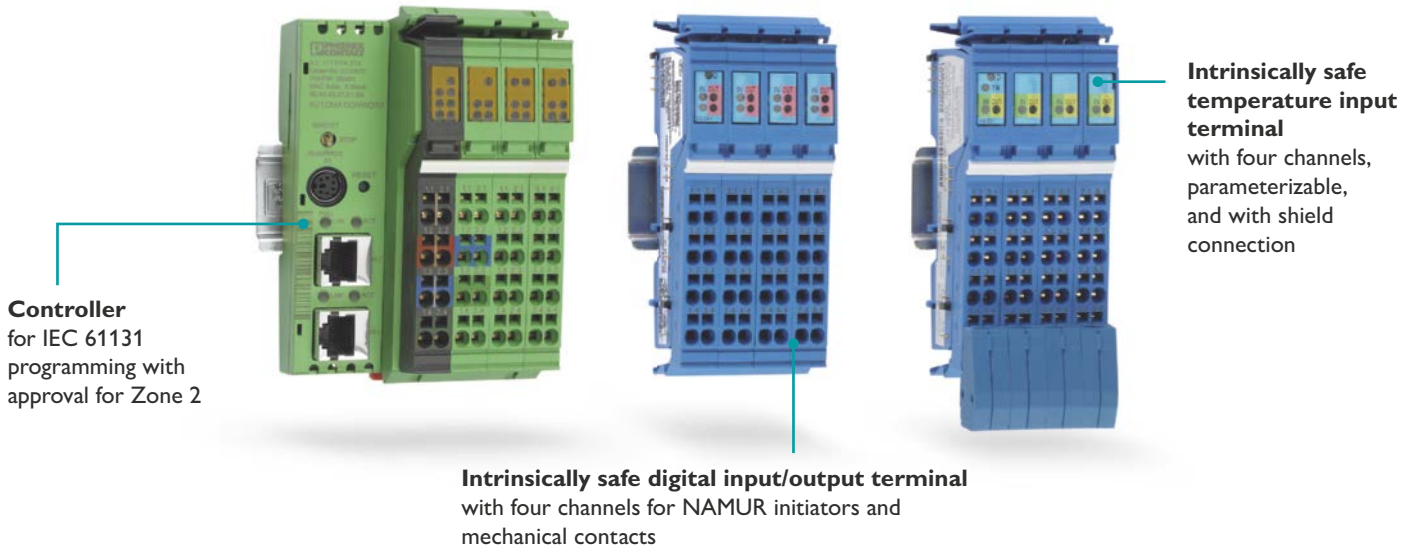
Communicate in potentially explosive areas – with intrinsically safe Inline I/O terminals. There is a range of I/O terminals for use in potentially explosive areas up to Zone 2. With just three intrinsically safe I/O terminals you can solve the most diverse automation tasks in sensitive areas thanks to the wide range of parameterization options.

**i** Web code: #1244

### Your advantages

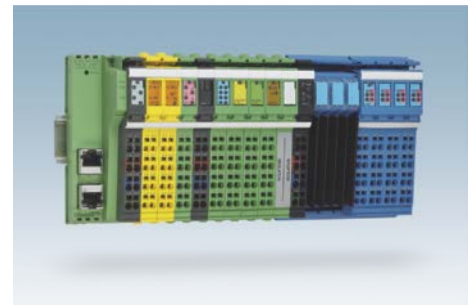
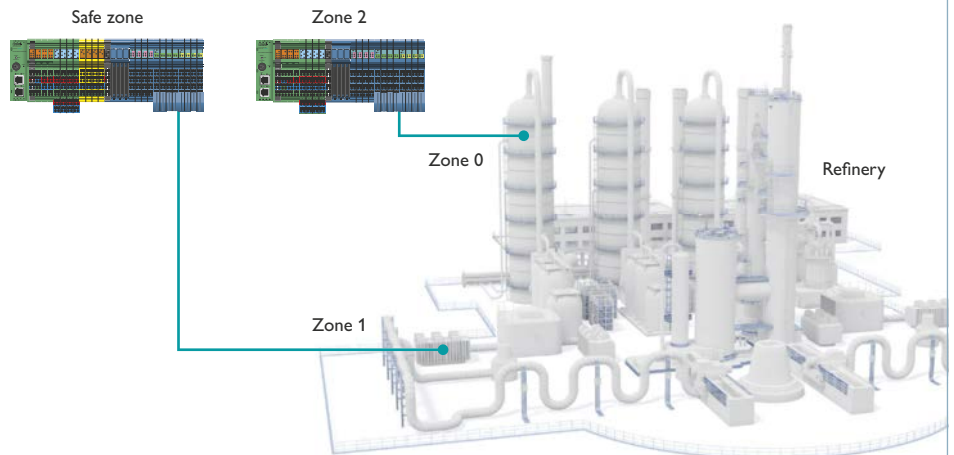
- ✓ Reliable acquisition and output of signals from Zone 0 thanks to intrinsically safe I/O terminals
- ✓ Comprehensive approvals provide a high degree of flexibility through to potentially explosive areas
- ✓ A wide range of connection options to sensors and actuators thanks to parameterizable I/O terminals
- ✓ Easy station extension with the addition of an intrinsically safe power supply

## Matching products from our range



### Reliable and safe signal acquisition in the Ex area

With the blue I/O terminals, you can acquire and output additional input and output signals from potentially explosive areas of Zones 1 and 0. The Inline station can be installed either inside or outside the potentially explosive area (Zone 2). Standard I/O terminals and intrinsically safe I/O terminals can be combined at any stage.



### Approvals

With all major approvals for use in potentially explosive areas.

### Versatile connection

Implement versatile functions with just three I/O terminals: digital and analog input and output plus recording of resistance and thermocouple sensors.

### Easy to extend

Extend your existing Inline station with intrinsically safe components. Separate intrinsically safe and non-intrinsically-safe Inline terminals with the isolator terminal.



## Software

# From planning to startup

Software is the key to more efficient automation. Phoenix Contact offers software from configuration to system operation. All products interact perfectly and impress with their innovative functions and intuitive, user-friendly operation. Use software for all engineering stages. We offer software tools and libraries as well as interfaces and drivers for industrial automation.



## Your advantages

- ✓ Save time thanks to reduced engineering effort with interconnected software tools
- ✓ Fast startup thanks to simulation and diagnostics
- ✓ Few errors thanks to automated functions
- ✓ High system availability thanks to fast troubleshooting with effective diagnostic tools

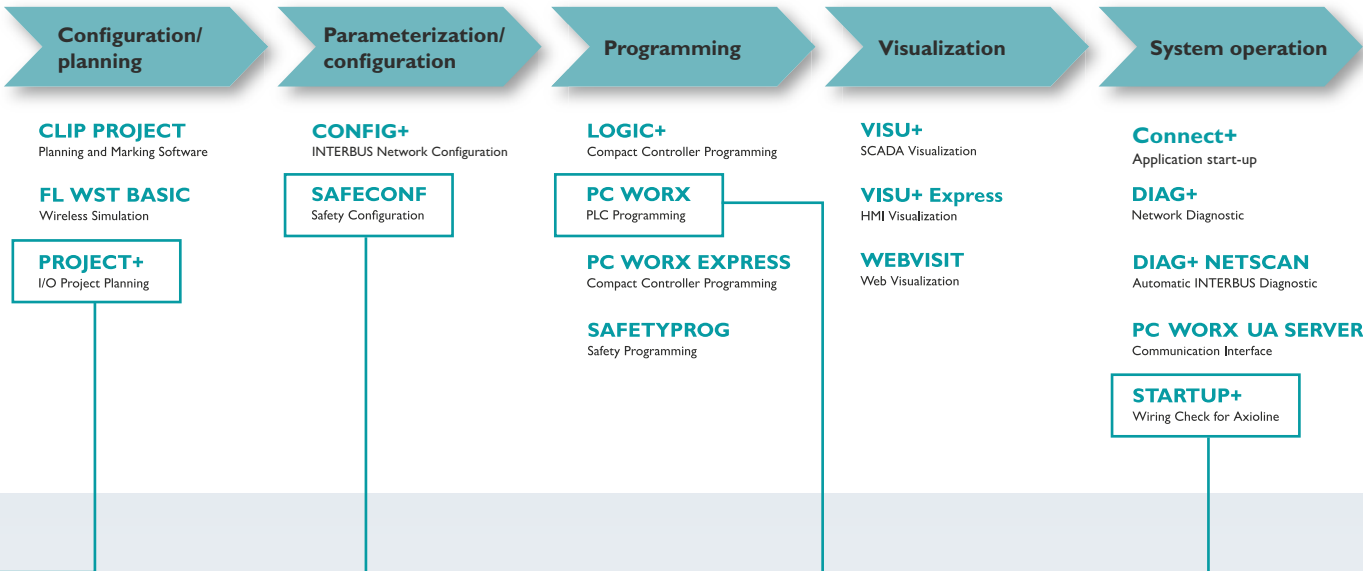
## Planning

When it comes to configuring electrotechnical equipment for an automation application, Project+, the expert solution, is there to help. With no training required, you can create a functional Axioline F or Inline I/O station according to your specifications very quickly with Project+.

**i** Web code: #1161



## Software for all engineering stages



## Configuration

The user-friendly safety software for functional safety. Configure SafetyBridge modules with SAFECONF. Simply drag and drop to create a safety system that is tailored to your requirements.

## Programming


PC Worx is the consistent engineering software for all controllers from Phoenix Contact. It combines programming according to IEC 61131, fieldbus configuration for INTERBUS, PROFINET, and Modbus, as well as system diagnostics.

## Operation

The software is specifically designed for the Axioline F I/O system. Startup+ can be used, for example, to test the wiring of your Axioline F station, without having to connect it to a network.

 Web code: #1162

 Web code: #1163

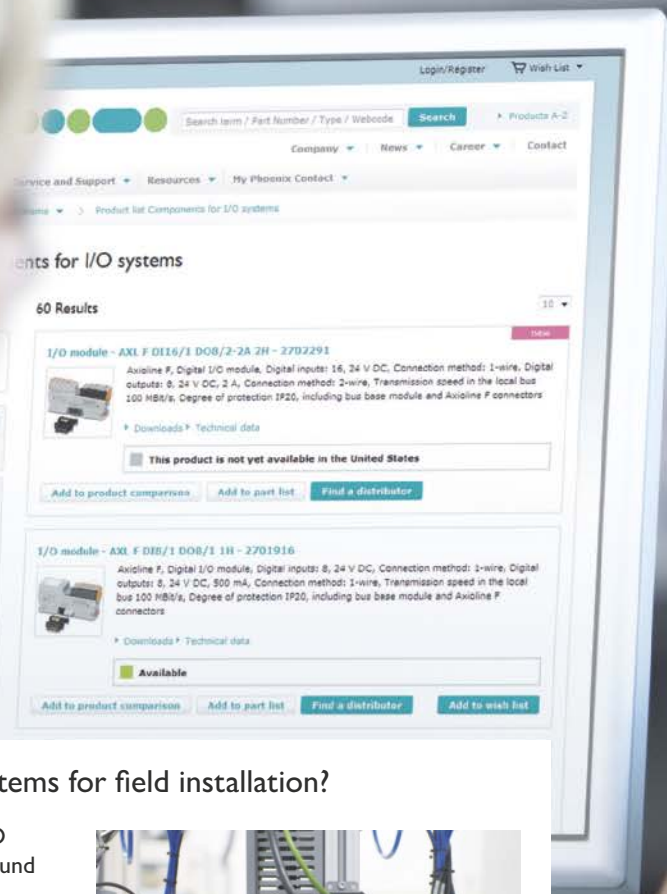
 Web code: #1164

## Product overview

# Get an overview

Our engineers are constantly developing new products. The following pages contain technical data and product data for Axioline F and Inline I/O components.

Use the web codes provided to access an up-to-date product list.



### Are you looking for I/O systems for field installation?

Further information on IP65/IP67 I/O systems for use in the field can be found under the specified web code:

 **Web code: #1246**





# Axioline F product overview

Technical data			
Ambient conditions		Electromagnetic compatibility	
Relative humidity (operation)	5% ... 95% (non-condensing)	Noise emission	Class B according to EN 61000-6-3 (residential area)
Temperature range (operation)	-25°C ... +60°C	Noise immunity	according to EN 61000-6-2
Extended temperature range for XC modules (operation)	-40°C ... +70°C		
Vibration	5 g according to IEC 60068-2-6		
Shock	30 g according to IEC 60068-2-27		
Continuous shock	10 g according to IEC 60068-2-27		
Degree of protection	IP20		


The current and complete range of Axioline F I/O components can be accessed via our homepage.

**i** Web code: #1157

Bus coupler		
<p>The Axioline F bus couplers are the link between the Axioline F system and the higher-level network.</p>		
Type	Designation	Order No.
Bus coupler for PROFINET	AXL F BK PN	<a href="#">2701815</a>
Bus coupler for EtherCAT®	AXL F BK EC	<a href="#">2688899</a>
Bus coupler for EtherNet/IP™	AXL F BK EIP	<a href="#">2688394</a>
Bus coupler for EtherNet/IP™ with enhanced functions	AXL F BK EIP EF	<a href="#">2702782</a>
Bus coupler for Sercos®	AXL F BK S3	<a href="#">2701686</a>
Bus coupler for Modbus TCP	AXL F BK ETH	<a href="#">2688459</a>
Bus coupler for Modbus TCP for an extended temperature range	AXL F BK ETH XC	<a href="#">2701949</a>
Bus coupler for Modbus TCP with two independent network ports	AXL F BK ETH NET2	<a href="#">2702177</a>
Bus coupler for Ethernet (IEC 61850)	AXL F BK SAS	<a href="#">2701457</a>
Bus coupler for PROFIBUS DP	AXL F BK PB	<a href="#">2688530</a>

Axiocontrol controllers		
<p>Axiocontrol controllers (AXC) for small to complex applications.</p>		
Controller type	Designation	Order No.
Small-scale controller	AXC 1050	<a href="#">2700988</a>
Small-scale controller for an extended temperature range	AXC 1050 XC	<a href="#">2701295</a>
High-performance controller	AXC 3050	<a href="#">2700989</a>

# Axioline F product overview

Safe I/O modules			
Solutions for functional safety with SafetyBridge technology or PROFI-safe.			
PROFI-safe	Designation	Order No.	Overall width
8 digital inputs, 1-channel	AXL F PSDI8/4 1F	<a href="#">2701559</a>	54 mm
8 digital outputs, 1-channel	AXL F PSDO8/3 1F	<a href="#">2701560</a>	54 mm
SafetyBridge technology			
8 digital inputs, 1-channel	AXL F SSDI8/4 1F	<a href="#">2702263</a>	54 mm
8 digital outputs, 1-channel	AXL F SSDO8/3 1F	<a href="#">2702264</a>	54 mm
... with integrated safety logic	AXL F LPSDO8/3 1F	<a href="#">2702171</a>	54 mm

Digital input and output modules			
Digital I/O modules with 4 to 64 channels and a 35 mm or 54 mm housing width.			
Digital input	Designation	Order No.	Overall width
8 channels, 2-conductor, 24 V DC	AXL F DI8/2 24DC 1F	<a href="#">2702783</a>	54 mm
8 channels, 2-conductor, 48, 60 V DC	AXL F DI8/2 48/60DC 1F	<a href="#">2702654</a>	54 mm
8 channels, 2-conductor, 110, 220 V DC	AXL F DI8/2 110/220DC 1F	<a href="#">2700684</a>	54 mm
16 channels, 1-conductor, 24 V DC	AXL F DI16/1 1H	<a href="#">2688310</a>	35 mm
... with fast inputs	AXL F DI16/1 HS 1H	<a href="#">2701722</a>	35 mm
16 channels, 4-conductor, 24 V DC	AXL F DI16/4 2F	<a href="#">2688022</a>	54 mm
... for an extended temperature range	AXL F DI16/4 XC 2F	<a href="#">2701224</a>	54 mm
32 channels, 1-conductor, 24 V DC	AXL F DI32/1 2H	<a href="#">2702052</a>	35 mm
32 channels, 1-conductor, 24 V DC	AXL F DI32/1 1F	<a href="#">2688035</a>	54 mm
... for an extended temperature range	AXL F DI32/1 XC 1F	<a href="#">2701226</a>	54 mm
64 channels, 1-conductor, 24 V DC	AXL F DI64/1 2F	<a href="#">2701450</a>	54 mm
Digital output	Designation	Order No.	Overall width
4 channels, 3-conductor, 230 V AC, 2 A, Triac	AXL F DO4/3 AC 1F	<a href="#">2702068</a>	54 mm
4 channels, 2-conductor, 220 V DC / 230 V AC, relay	AXL F DOR4/2 AC/220DC 1F	<a href="#">2700608</a>	54 mm
8 channels, 2-conductor, 24 V DC, 2 A	AXL F DO8/2 2A 1H	<a href="#">2688381</a>	35 mm
16 channels, 1-conductor, 24 V DC	AXL F DO16/1 1H	<a href="#">2688349</a>	35 mm
... with FLK connection	AXL F DO16 FLK 1H	<a href="#">2701813</a>	35 mm
16 channels, 3-conductor, 24 V DC	AXL F DO16/3 2F	<a href="#">2688048</a>	54 mm



# Axioline F product overview

Digital output	Designation	Order No.	Overall width
... for an extended temperature range	AXL F DO16/3 XC 2F	<a href="#">2701228</a>	54 mm
32 channels, 1-conductor, 24 V DC	AXL F DO32/1 1F	<a href="#">2688051</a>	54 mm
... for an extended temperature range	AXL F DO32/1 XC 1F	<a href="#">2701230</a>	54 mm
64 channels, 1-conductor, 24 V DC	AXL F DO64/1 2F	<a href="#">2702053</a>	54 mm
Digital input/output			
8 inputs, 8 outputs, 1-conductor, 24 V DC	AXL F DI8/1 DO8/1 1H	<a href="#">2701916</a>	35 mm
... for an extended temperature range	AXL F DI8/1 DO8/1 XC	<a href="#">2702017</a>	35 mm
8 inputs, 8 outputs, 3-conductor, 24 V DC	AXL F DI8/3 DO8/3 2H	<a href="#">2702071</a>	35 mm
16 inputs, 16 outputs, 1-conductor, 24 V DC	AXL F DI16/1 DO16/1 2H	<a href="#">2702106</a>	35 mm
16 inputs, 1-conductor, 8 outputs, 2-conductor, 24 V DC, 2 A	AXL F DI16/1 DO8/2-2A 2H	<a href="#">2702291</a>	35 mm


## Analog input/output modules


Analog I/O modules with 2 to 8 channels, 16-bit, 35 mm or 54 mm housing width.



Analog input	Designation	Order No.	Overall width
4 channels, current	AXL F AI4 I 1H	<a href="#">2688491</a>	35 mm
... for an extended temperature range	AXL F AI4 I XC 1H	<a href="#">2702007</a>	35 mm
4 channels, voltage	AXL F AI4 U 1H	<a href="#">2688501</a>	35 mm
... for an extended temperature range	AXL F AI4 U XC 1H	<a href="#">2702008</a>	35 mm
8 channels, current/voltage can be configured	AXL F AI8 1F	<a href="#">2688064</a>	54 mm
... for an extended temperature range	AXL F AI8 XC 1F	<a href="#">2701232</a>	54 mm
Analog output			
4 channels, current/voltage can be configured	AXL F AO4 1H	<a href="#">2688527</a>	35 mm
... for an extended temperature range	AXL F AO4 XC 1H	<a href="#">2702153</a>	35 mm
8 channels, current/voltage can be configured	AXL F AO8 1F	<a href="#">2688080</a>	54 mm
... for an extended temperature range	AXL F AO8 XC 1F	<a href="#">2701237</a>	54 mm
Analog input/output			
2 inputs, 2 outputs, current/voltage can be configured	AXL F AI2 AO2 1H	<a href="#">2702072</a>	35 mm
Temperature recording			
4 channels, for temperature resistors (RTD)	AXL F RTD4 1H	<a href="#">2688556</a>	35 mm
4 channels, for thermocouples (UTH)	AXL F UTH4 1H	<a href="#">2688598</a>	35 mm
8 channels, for temperature resistors (RTD)	AXL F RTD8 1F	<a href="#">2688077</a>	54 mm
... for an extended temperature range	AXL F RTD8 XC 1F	<a href="#">2701235</a>	54 mm
... with a high dynamic measuring range	AXL F RTD8 S 1F	<a href="#">2702120</a>	54 mm
8 channels, for thermocouples (UTH)	AXL F UTH8 1F	<a href="#">2688417</a>	54 mm

# Axioline F product overview

Function modules, feed-in module			
<p>Various function and communication modules, 35 mm or 54 mm housing width.</p> 			
Serial communication	Designation	Order No.	Overall width
Can be configured as RS-485/422 or RS-232	AXL F RS UNI 1H	<a href="#">2688666</a>	35 mm
... for an extended temperature range	AXL F RS UNI XC 1H	<a href="#">2702006</a>	35 mm
Position detection			
1 SSI interface, 1 analog output	AXL F SSI1 AO1 1H	<a href="#">2688433</a>	35 mm
2 digital impulse interfaces for an extended temperature range	AXL F IMPULSE2 XC 1H	<a href="#">2702655</a>	35 mm
2 counter inputs, 2 incremental encoder inputs	AXL F CNT2 INC2 1F	<a href="#">2688093</a>	54 mm
... for an extended temperature range	AXL F CNT2 INC2 XC 1F	<a href="#">2701239</a>	54 mm
Feed-in			
Boost module for the logic supply $U_{Bus}$	AXL F PWR 1H	<a href="#">2688297</a>	35 mm


Accessories		
<p>The current and complete range of specific accessories for the Axioline F I/O system can be accessed via our homepage.</p> <p><b>i</b> Web code: <a href="#">#1158</a></p> 		
Type	Designation	Order No.
Bus base module for housing type H	AXL F BS H	<a href="#">2700992</a>
Bus base module for housing type F	AXL F BS F	<a href="#">2688129</a>
Connector set	AXL CNS 8L-ORBG/D/UI/E1/E2	<a href="#">2700980</a>
Shield connection set	AXL SHIELD SET	<a href="#">2700518</a>
Zack marker strip, unprinted	ZB 20,3 AXL UNPRINTED	<a href="#">0829579</a>
Insert label, roll, white, unmarked	EMT (35X28)R	<a href="#">0801602</a>

# Inline product overview


Technical data			
Ambient conditions		Electromagnetic compatibility	
Relative humidity (operation)	5% ... 95% (non-condensing)	Noise emission	Class A according to EN 61000-6-4
Temperature range (operation)	-25°C ... +55°C	Noise immunity	according to EN 61000-6-2
Temperature range (operation) for Inline ECO terminals	0°C ... +55°C		
Vibration	5 g according to EN 60068-2-6		
Shock	25 g according to EN 60068-2-27		
Degree of protection	IP20		

The current and complete range of Inline I/O components can be accessed via our homepage.

 **Web code: #1159**

Bus coupler		
<p>The Inline bus couplers are the link between the Inline system and the higher-level network.</p>		
Type	Designation	Order No.
Bus coupler for PROFINET	IL PN BK D18 DO4 2TX-PAC	<a href="#">2703994</a>
Bus coupler for PROFINET with FO connection	IL PN BK D18 DO4 2SCRJ-PAC	<a href="#">2878379</a>
Bus coupler for EtherCAT®	IL EC BK-PAC	<a href="#">2702507</a>
Bus coupler for EtherNet/IP™	IL EIP BK D18 DO4 2TX-PAC	<a href="#">2897758</a>
Bus coupler for Sercos®	IL S3 BK D18 DO4 2TX-PAC	<a href="#">2692380</a>
Bus coupler for Modbus TCP	IL ETH BK D18 DO4 2TX-PAC	<a href="#">2703981</a>
Bus coupler for PROFIBUS DP	IL PB BK D18 DO4/EF-PAC	<a href="#">2692322</a>
Bus coupler for CANopen®	IL CO BK-PAC	<a href="#">2702230</a>
Bus coupler for DeviceNet™	IL DN BK D18 DO4-PAC	<a href="#">2897211</a>
Bus coupler for INTERBUS	IBS IL 24 BK-T/U-PAC	<a href="#">2861580</a>
Bus coupler for INTERBUS with D-SUB connection	IBS IL 24 BK-DSUB-PAC	<a href="#">2861593</a>
Bus coupler for INTERBUS with FO connection	IBS IL 24 BK-LK/45-PAC	<a href="#">2862165</a>

## Inline product overview

Inline controllers		
<p>Inline controllers (ILC) for all common communication paths, such as Ethernet, mobile communication or fixed-line network.</p>		
Controller type	Designation	Order No.
Class 100 small-scale controller	ILC 131 ETH	<a href="#">2700973</a>
Class 100 small-scale controller	ILC 151 ETH	<a href="#">2700974</a>
Small-scale controller with two Ethernet ports	ILC 171 ETH 2TX	<a href="#">2700975</a>
Small-scale controller with integrated FPU	ILC 191 ETH 2TX	<a href="#">2700976</a>
Small-scale controller with integrated GSM/GPRS modem	ILC 151 GSM/GPRS	<a href="#">2700977</a>
Class 300 controller	ILC 350 PN	<a href="#">2876928</a>
Class 300 controller	ILC 370 PN 2TX-IB/M	<a href="#">2985576</a>
Highest performance class 300 controller	ILC 390 PN 2TX-IB	<a href="#">2985314</a>

Feed-in, boost, and segment terminals		
<p>Various feed-in, boost, and segment terminals with and without fuse.</p>		
Feed-in terminals	Designation	Order No.
24 V DC, ( $U_M$ , $U_S$ ), without fuse	IB IL 24 PWR IN-PAC	<a href="#">2861331</a>
24 V DC, ( $U_M$ , $U_S$ ), with fuse	IB IL 24 PWR IN/2-F-PAC	<a href="#">2862136</a>
24 V DC, ( $U_M$ , $U_S$ ), with fuse and diagnostics	IB IL 24 PWR IN/F-D-PAC	<a href="#">2861894</a>
120 V DC, (L, N), without fuse	IB IL 120 PWR IN-PAC	<a href="#">2861454</a>
230 V DC, (L, N), without fuse	IB IL 230 PWR IN-PAC	<a href="#">2861535</a>
230 V DC, (L, N), with fuse and diagnostics	IB IL 230 PWR IN/F-D-PAC	<a href="#">2878971</a>
Boost terminals		
24 V DC, without fuse ( $U_L$ , $U_{ANA}$ , $U_M$ , $U_S$ )	IB IL 24 PWR IN/R-PAC	<a href="#">2861674</a>
24 V DC, without fuse ( $U_L$ )	IB IL 24 PWR IN/R/L-0,8A-PAC	<a href="#">2693020</a>
Segment terminals		
24 V DC, without fuse	IB IL 24 SEG-PAC	<a href="#">2861344</a>
24 V DC, with fuse	IB IL 24 SEG/F-PAC	<a href="#">2861373</a>
24 V DC, with fuse and diagnostics	IB IL 24 SEG/F-D-PAC	<a href="#">2861904</a>
24 V DC, with electronic fuse	IB IL 24 SEG-ELF-PAC	<a href="#">2861409</a>



# Inline product overview

## Digital input and output terminals

Digital I/O terminals with 1 to 32 channels.



Digital input	Designation	Order No.
1 channel, 2-conductor, 120 V DC	IB IL 120 DI 1-PAC	2861917
1 channel, 2-conductor, 230 V DC	IB IL 230 DI 1-PAC	2861548
2 channels, 4-conductor, 24 V DC	IB IL 24 DI 2-PAC	2861221
2 channels, 4-conductor, 24 V DC with NPN logic	IB IL 24 DI 2-NPN-PAC	2861483
4 channels, 3-conductor, 24 V DC	IB IL 24 DI 4-PAC	2861234
8 channels, 1-conductor, 24 V DC	IB IL 24 DI8/HD-PAC	2700173
... as ECO version	IB IL 24 DI 8/HD-ECO	2702792
8 channels, 4-conductor, 24 V DC	IB IL 24 DI 8-PAC	2861247
16 channels, 3-conductor, 24 V DC	IB IL 24 DI 16-PAC	2861250
16 channels, 3-conductor, 24 V DC with NPN logic	IB IL 24 DI 16-NPN-PAC	2863520
32 channels, 1-conductor, 24 V DC	IB IL 24 DI 32/HD-PAC	2862835
32 channels, 1-conductor, 24 V DC with NPN logic	IB IL 24 DI 32/HD-NPN-PAC	2878243
Digital output		
1 channel, 2-conductor, 230 V AC	IB IL DO 1 AC-PAC	2861920
1 relay output, 24 V AC / 230 V AC, 3 A	IB IL 24/230 DOR1/W-PAC	2861881
2 channels, 4-conductor, 24 V DC	IB IL 24 DO 2-PAC	2861470
2 channels, 4-conductor, 24 V DC with 2 A outputs	IB IL 24 DO 2-2A-PAC	2861263
2 channels, 4-conductor, 24 V DC with NPN logic	IB IL 24 DO 2-NPN-PAC	2861496
2 relay outputs, 24 V AC / 48 V AC, 2 A	IB IL 24/48 DOR 2/W-PAC	2863119
4 channels, 3-conductor, 24 V DC	IB IL 24 DO 4-PAC	2861276
4 channels, 3-conductor, 24 V DC, for safety-relevant segment circuit	IB IL 24 DO 4/EF-PAC	2701009
... as ECO version	IB IL 24 DO 4/EF-ECO	2702825
4 channels, 3-conductor, 230 V AC, 1 A	IB IL DO 4 AC-1A-PAC	2861658
4 relay outputs, 24 V AC / 230 V AC, 3 A	IB IL 24/230 DOR4/W-PAC	2861878
4 relay outputs, 24 V AC / 230 V AC, 10 A	IB IL 24/230 DOR4/HC-PAC	2897716
8 channels, 4-conductor, 24 V DC	IB IL 24 DO 8-PAC	2861289
8 channels, 4-conductor, 24 V DC with 2 A outputs	IB IL 24 DO 8-2A-PAC	2861603
8 channels, 1-conductor, 24 V DC	IB IL 24 DO8/HD-PAC	2700172
... as ECO version	IB IL 24 DO 8/HD-ECO	2702793
8 channels, 1-conductor, 24 V DC with NPN logic	IB IL 24 DO 8-NPN-PAC	2863546
16 channels, 3-conductor, 24 V DC	IB IL 24 DO 16-PAC	2861292
32 channels, 1-conductor, 24 V DC	IB IL 24 DO 32/HD-PAC	2862822
32 channels, 1-conductor, 24 V DC with NPN logic	IB IL 24 DO 32/HD-NPN-PAC	2878340

## Inline product overview

Analog input and output terminals		
Analog I/O terminals with 2 to 8 channels.		
Analog input	Designation	Order No.
2 channels, current/voltage can be configured	IB IL AI 2/SF-PAC	<a href="#">2861302</a>
2 channels, HART functionality	IB IL AI 2-HART-PAC	<a href="#">2862149</a>
4 channels, 0–20 mA, 4–20 mA	IB IL AI 4/I-PAC	<a href="#">2700458</a>
4 channels, 0–10 V, ± 10 V	IB IL AI 4/U-PAC	<a href="#">2700459</a>
4 channels, current/voltage can be configured	IB IL AI 4/EF-PAC	<a href="#">2878447</a>
4 channels, 4–20 mA, ECO version	IB IL AI 4/I/4-20-ECO	<a href="#">2702495</a>
4 channels, 0–10 V, ECO version	IB IL AI 4/U/0-10-ECO	<a href="#">2702496</a>
8 channels, current, can be configured	IB IL AI 8/IS-PAC	<a href="#">2861661</a>
8 channels, current/voltage can be configured	IB IL AI 8/SF-PAC	<a href="#">2861412</a>
Analog output		
1 channel, current/voltage can be configured	IB IL AO 1/SF-PAC	<a href="#">2861315</a>
2 channels, current/voltage can be configured, 12-bit	IB IL AO 2/UI-PAC	<a href="#">2700775</a>
2 channels, 0–10 V, ± 10 V	IB IL AO 2/U/BP-PAC	<a href="#">2861467</a>
2 channels, current/voltage can be configured	IB IL AO 2/SF-PAC	<a href="#">2863083</a>
4 channels, 4–20 mA, ECO version	IB IL AO 4/I/4-20-ECO	<a href="#">2702497</a>
4 channels, 0–10 V, ECO version	IB IL AO 4/U/0-10-ECO	<a href="#">2702498</a>
8 channels, voltage can be configured	IB IL AO 4/8/U/BP-PAC	<a href="#">2878036</a>
Temperature recording		
2 channels, RTD, can be configured	IB IL TEMP 2 RTD-PAC	<a href="#">2861328</a>
2 channels, thermocouple, can be configured	IB IL TEMP 2 UTH-PAC	<a href="#">2861386</a>
4 channels, RTD PT100, ECO version	IB IL RTD 4/PT100-ECO	<a href="#">2702499</a>
4 channels, RTD PT1000, ECO version	IB IL RTD 4/PT1000-ECO	<a href="#">2702501</a>
4 channels, UTH type J, ECO version	IB IL UTH 4/J-ECO	<a href="#">2702502</a>
4 channels, UTH type K, ECO version	IB IL UTH 4/K-ECO	<a href="#">2702503</a>
4 channels, UTH type L, ECO version	IB IL UTH 4/L-ECO	<a href="#">2702504</a>
8 channels, RTD, can be configured	IB IL TEMP 4/8 RTD/EF-PAC	<a href="#">2897402</a>
8 channels, thermocouple/RTD, can be configured	IB IL TEMP 8 UTH/RTD-PAC	<a href="#">2701000</a>
Measurement terminals for strain gauges		
Can be calibrated	IB IL SGI 1/CAL	<a href="#">2700064</a>
With fast inputs	IB IL SGI 2/F-PAC	<a href="#">2878638</a>
With precise and fast inputs	IB IL SGI 2/P/EF-PAC	<a href="#">2702373</a>

## Inline product overview

### Safe I/O terminals

Solutions for functional safety with SafetyBridge technology or PROFIsafe.



Safe input	Designation	Order No.
8 digital inputs, 1-channel	IB IL 24 PSDI 8-PAC	2985688
16 digital inputs, 1-channel	IB IL 24 PSDI 16-PAC	2700994
Safe output		
4 digital outputs, 4-conductor, 1-channel	IB IL 24 PSDO 4/4-PAC	2916493
4 safe relay outputs each with 2 contacts	IB IL 24 PSDOR 4-F-PAC	2700563
8 digital outputs, 4-conductor, 1-channel	IB IL 24 PSDO 8-PAC	2985631
... with integrated safety logic	IB IL 24 LPSDO 8 V3-PAC	2701625
Safe segment shut-down		
For the safe shutdown of the actuator voltage supply	IB IL SAFE 2-ECO	2702446

### Intrinsically safe terminals

Intrinsically safe terminals for use up to Zone 2.



Type	Designation	Order No.
Isolator terminal	IB IL EX PWR-ISO-PAC	2869909
Intrinsically safe power supply	IB IL EX-IS PWR IN-PAC	2869910
4 digital inputs, 4 digital outputs	IB IL EX-IS DIO 4/NAM-PAC	2869911
4 analog inputs, 4 analog outputs	IB IL EX-IS AIO 4/EF-PAC	2869912
4 temperature inputs, can be configured	IB IL EX-IS TEMP 4 RTD/TC-PAC	2869913



# Inline product overview

Function terminals		
Various function terminals, categorized into communication terminals and terminals for control and acquisition.		
Communication terminals	Designation	Order No.
INTERBUS branch terminal	IBS IL 24 RB-T-PAC	2861441
INTERBUS FO branch terminal	IBS IL 24 RB-LK	2878117
Branch terminal for connecting Fieldline Modular M8	IB IL 24 FLM MULTI-PAC	2737009
Local bus extension terminal for opening up a new Inline station	IB IL 24 LSKIP-PAC	2897457
RS-232, RS-485/422 serial communication, can be parameterized	IB IL RS UNI-PAC	2700893
RS-232 serial communication, ECO version	IB IL RS 232-ECO	2702795
RS-485 serial communication, ECO version	IB IL RS 485-ECO	2702141
DALI master including power supply unit	IB IL DALI/PWR-PAC	2897813
DALI master, extension to IB IL DALI/PWR-PAC	IB IL DALI-PAC	2897910
DALI master including power supply unit, multi-master-capable	IB IL DALI/MM-PAC	2700605
M-bus master	IB IL MBUS-PAC	2701927
INTERFACE system bus master	IB IL IFS-MA-PAC	2692720
PROFIBUS master/slave	IB IL PB MA-PAC	2700630
CAN master	IB IL CAN-MA-PAC	2700196
IO-Link master, 4 IO-Link ports, 12 digital inputs	IB IL 24 IOL 4 DI 12-PAC	2692717
AS-Interface gateway, specification 2.1	ASI MA IL UNI	2736628
Terminals for control and acquisition		
Energy data acquisition	IB IL PM 3P/N/EF-PAC	2700965
Acquisition for position encoder	B IL INC-IN-PAC	2861755
Acquisition for absolute encoder	IB IL SSI-IN-PAC	2819574
Acquisition for position encoder	IB IL IMPULSE-IN-PAC	2861768
1 absolute encoder, with 4 digital inputs and 4 digital outputs	IB IL SSI-PAC	2861865
Counter with 1 counter input and 1 control input, 1 output	IB IL CNT-PAC	2861852
Pulse width and frequency modulation	IB IL PWM/2-PAC	2861632

## Power-level terminals

Direct starter and reversing load starter.



Type	Designation	Order No.
Electronic direct starter, up to 1.5 kW / 400 V AC	IB IL 400 ELR 1-3A	<a href="#">2727352</a>
Electronic reversing load starter, up to 1.5 kW / 400 V AC	IB IL 400 ELR R-3A	<a href="#">2727378</a>
Electromechanical direct starter, up to 3.7 kW / 400 V AC	IB IL 400 MLR 1-8A	<a href="#">2727365</a>
Extension module for brake control	IB IL 400 BR	<a href="#">2727394</a>

## Accessories

The current and complete range of specific accessories for the Inline I/O system can be accessed via our homepage.

 **Web code:** [#1160](#)



Type	Designation	Order No.
Cover plate	I-L ATP GN	<a href="#">2740850</a>
Inline connector, with color print	IB IL SCN-8-CP	<a href="#">2727608</a>
Inline shield plug	IB IL SCN 6-SCHIELD-TWIN	<a href="#">2740245</a>
Coding profile	IL CP	<a href="#">2742683</a>
Marking field, 12.2 mm width	IB IL FIELD 2	<a href="#">2727501</a>
Marking field, 48.8 mm width	IB IL FIELD 8	<a href="#">2727515</a>

## In dialog with customers and partners worldwide

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