

Start



# PL Functional Safety

EN ISO 12100

SIL PL e



# Smart safety solutions

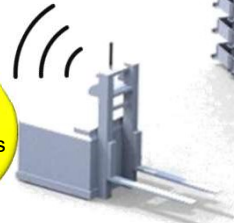
## Best fit for market needs



Cloud-based safety application



Mobile applications



Engineering and diagnostics

Safety door monitoring

Signal coupling and switching

Field Installation (IP67)

Motor control

Services

Technologies

Trends

Products

Safety services

Industries

Quality assurance



# Trends

## Inspiring safety technologies

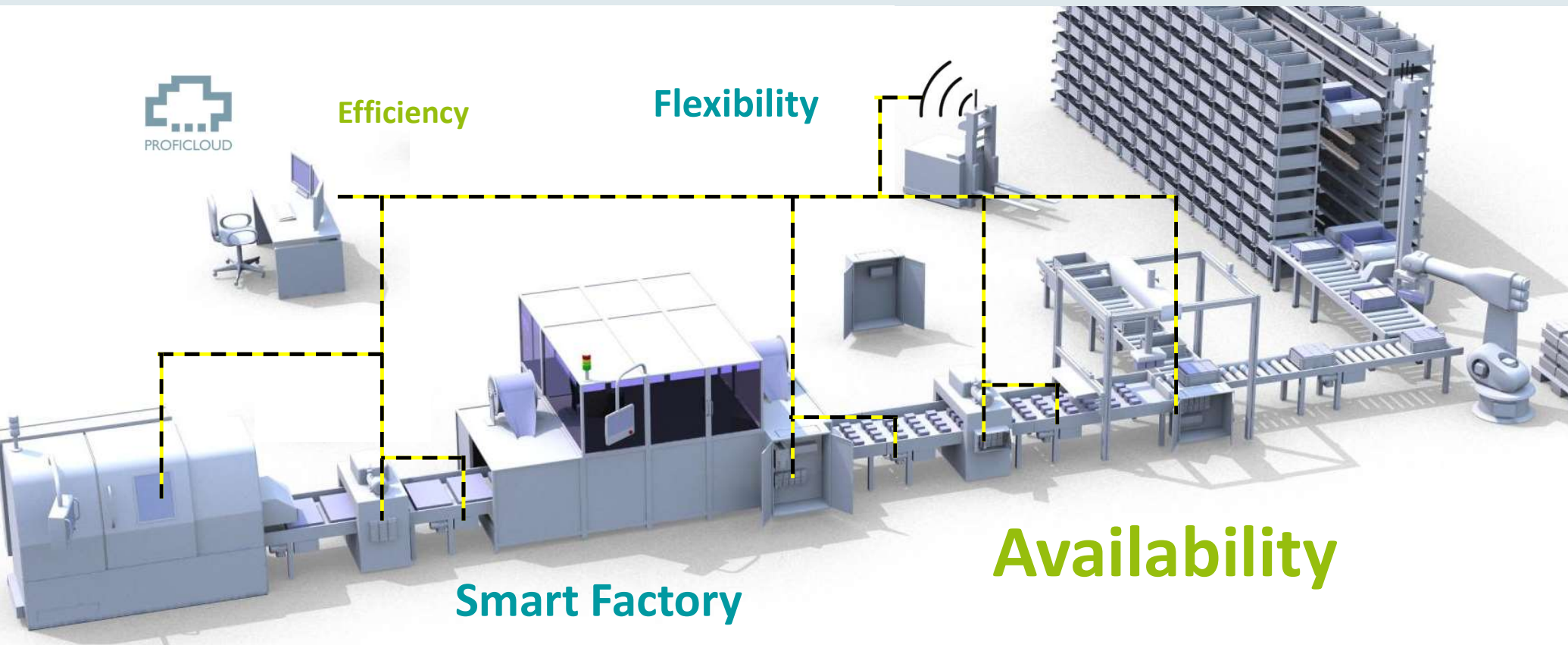


Efficiency

Flexibility

Availability

Smart Factory



Technologies

Products

Safety services

Industries

Quality assurance

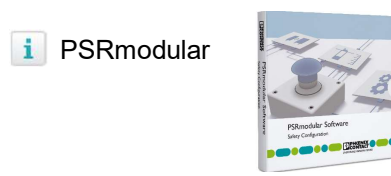


# Safety product portfolio

## From safety switches to safe controllers



### Configuration software



### Programming software



### Signal processing

**i** **Safety relay modules**  
PSRmini, PSRclassic,  
PSRmotion and PSRmultifunction



Sensors

**i** **Configurable safety system**  
PSRmodular



Signal conditioning

**i** **Safe I/O's**  
Axioline and Inline



Actuators

**i** **Performance controllers**  
RFC



Power

**i** **Safety switches**  
PSRswitch



**i** **Safe signal conditioners**  
MACX Safety



**i** **Safe motor starters**  
CONTACTRON



**i** **Safe power supplies**  
QUINT POWER



# Smart safety solutions

## Field installation (IP67)



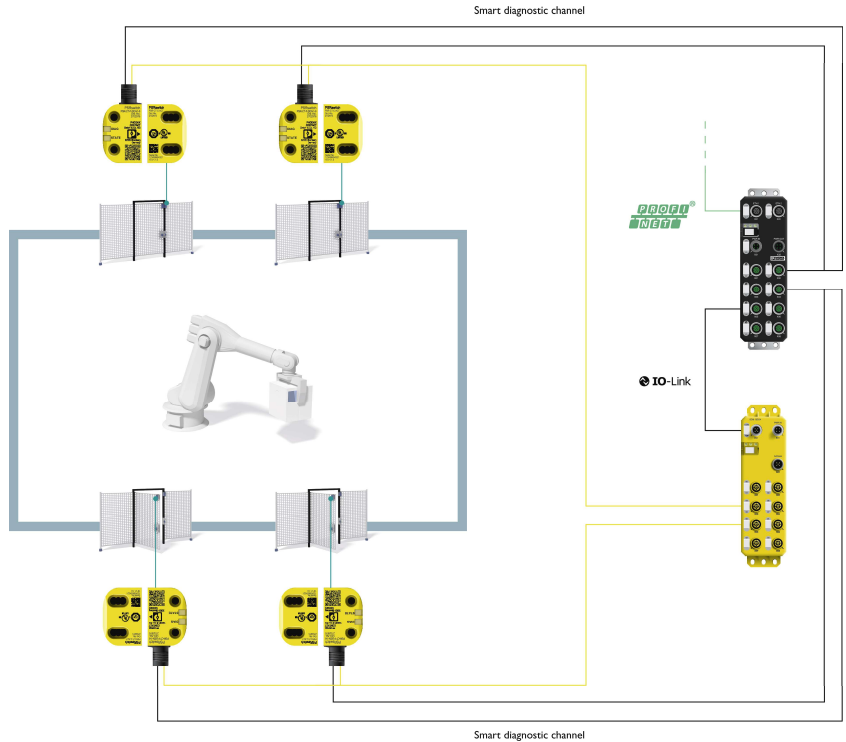
### Field installation

Integrated solutions with coordinated components from intelligent, safe sensors and control technology offer the machine designer a high potential for savings in procurement and installation as well as higher availability in operation.

[Learn more](#)

# Smart safety solutions

## Field installation (IP67)



### Safety-related signals in the field level

Acquire safety-related signals directly on site without a control cabinet. By mounting the safe IP67 I/O box directly on the machine, near the sensors or actuators, the wiring effort is significantly reduced. The safe I/O box can be coupled to the superior network via an IO-Link interface. Depending on the parameterization, the safe I/O box can work in a PROFI-safe system with a safety controller or in SafetyBridge Technology mode with a standard controller in the installed network.



**Safety door monitoring**  
with safety switch PSRswitch

# Smart safety solutions

## Field installation (IP67)



**Non-contact safety switches**  
PSRswitch



**SafetyBridge Technology**<sup>2</sup>

Designed by PHOENIX CONTACT



**IO-Link**



**Safe IP67 I/O box**  
Axioline E Safe  
with IO-Link



 **IO-Link**

### Safe IP67 I/O box Axioline E Safe with IO-Link

With the Axioline E Safe IP67 I/O box, safe inputs and outputs are processed outside the control cabinet. The safety protocol is transferred to the standard network via IO-Link.

- ✓ Can be used in SafetyBridge technology and PROFIsafe applications
- ✓ 8 safe inputs and 4 safe outputs, plus and minus switching
- ✓ SIL 3 to IEC 61508 / EN 61508, SILCL 3 to EN 62061
- ✓ UL und cUL
- ✓ PL e according to EN ISO 13849-1
- ✓ SPEEDCON quick locking system

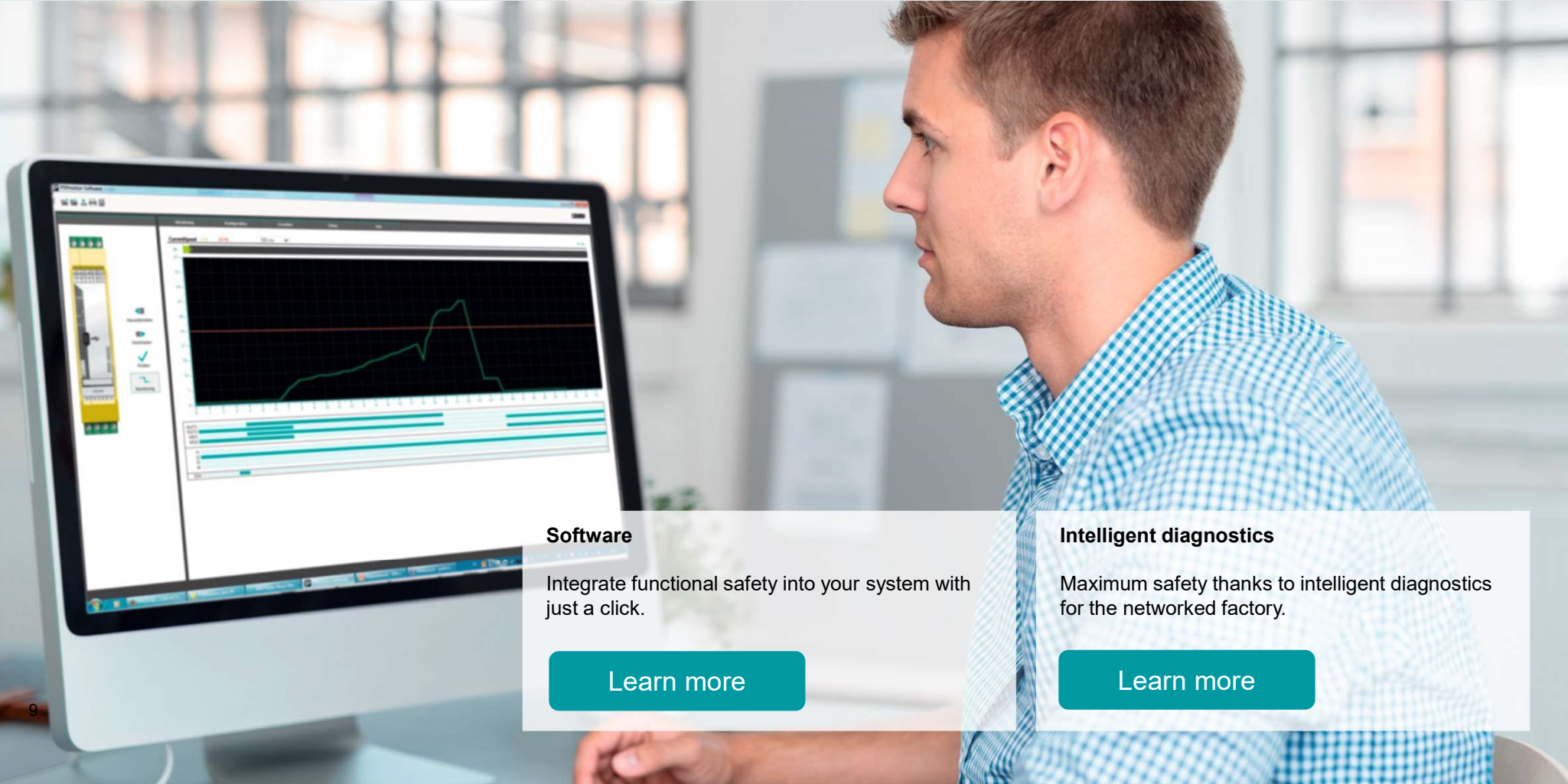


SafetyBridge Technology<sup>®</sup>

Designed by PHOENIX CONTACT



# Smart safety solutions Engineering and diagnostics



### Software

Integrate functional safety into your system with just a click.

[Learn more](#)

### Intelligent diagnostics

Maximum safety thanks to intelligent diagnostics for the networked factory.

[Learn more](#)

# Smart safety solutions

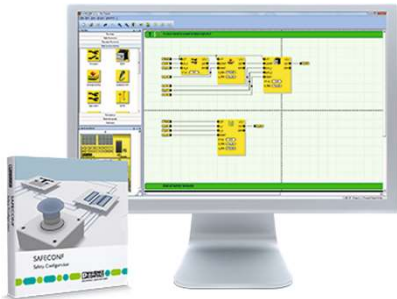
## Safety software



**Configuration software**  
PSRmotion



**Configuration software**  
PSRmodular



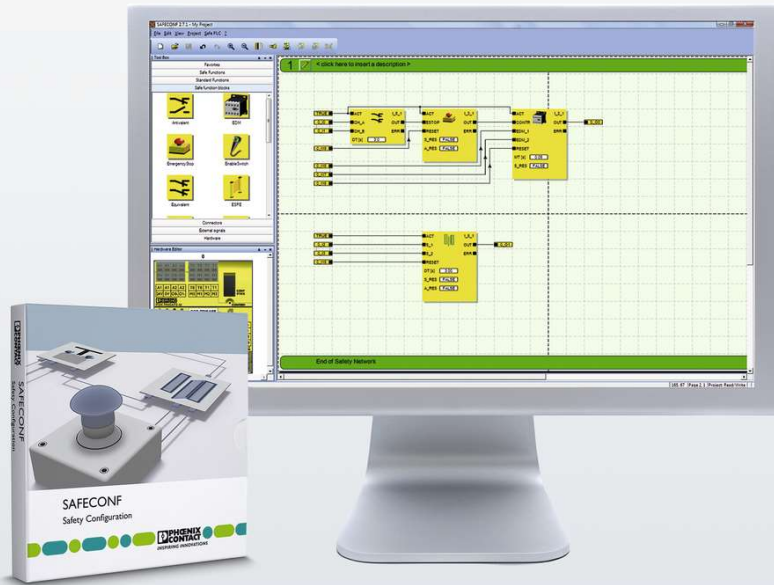
**Configuration software**  
SAFECONF



**Programming software**  
PLCnext Engineer

# Smart safety solutions

## Easy configuration with software SAFECONF



### Configuration software SAFECONF

- Easily create the safety logic for TRISAFE and SafetyBridge I/O modules using drag-and-drop
- Intuitive operation and certified blocks
- Simulation and diagnostics
- Application help
- Integrated e-learnings



Free download

# Smart safety solutions

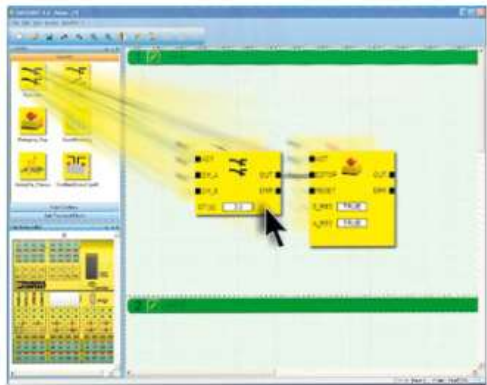
## Easy configuration with software SAFECONF



Easy configuration in three steps and with TÜV certified functions blocks

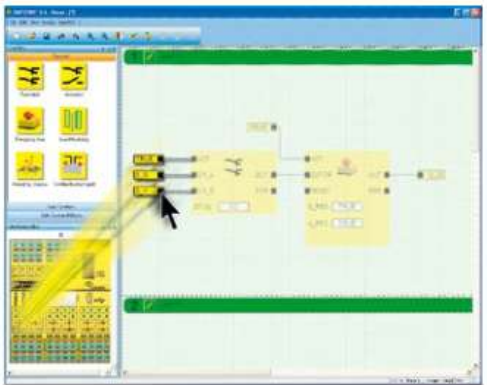
1

Select and drag and drop security features to configure.



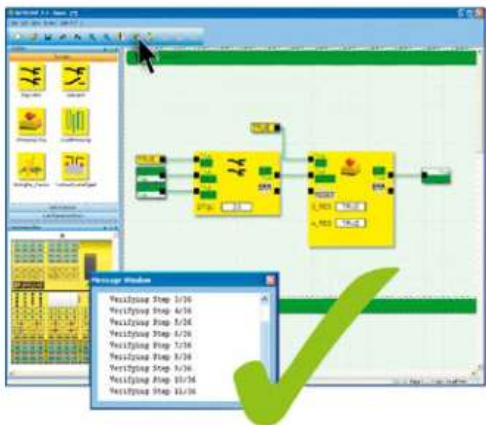
2

Connect the inputs and outputs of the modules to the safety functions.



3

Check and save safety functions. Done!



# Smart safety solutions

## Programming with software PLCnext Engineer



### Programming software PLCnext Engineer

- Develop safe applications with safety controllers
- PROFIsafe networks can be used

TÜV-certified programming tool guides help to go through development phases of a safety application:

- Compiling the project and sending it to the safety controller
- Controlling the safety controller, e.g., start, stop or reset
- Performing function tests and monitoring the safety controller
- Project documentation

# PROFIsafe



- PROFIsafe (PROFINET safety) es una tecnología de comunicación de seguridad para sistemas discretos de fabricación y automatización de procesos. ...
- El papel de **PROFIsafe** en el universo de seguridad es minimizar la posibilidad de un funcionamiento incorrecto del sistema de control.



## PROFIsafe

# Controladores de seguridad



RFC 470S PN 3TX

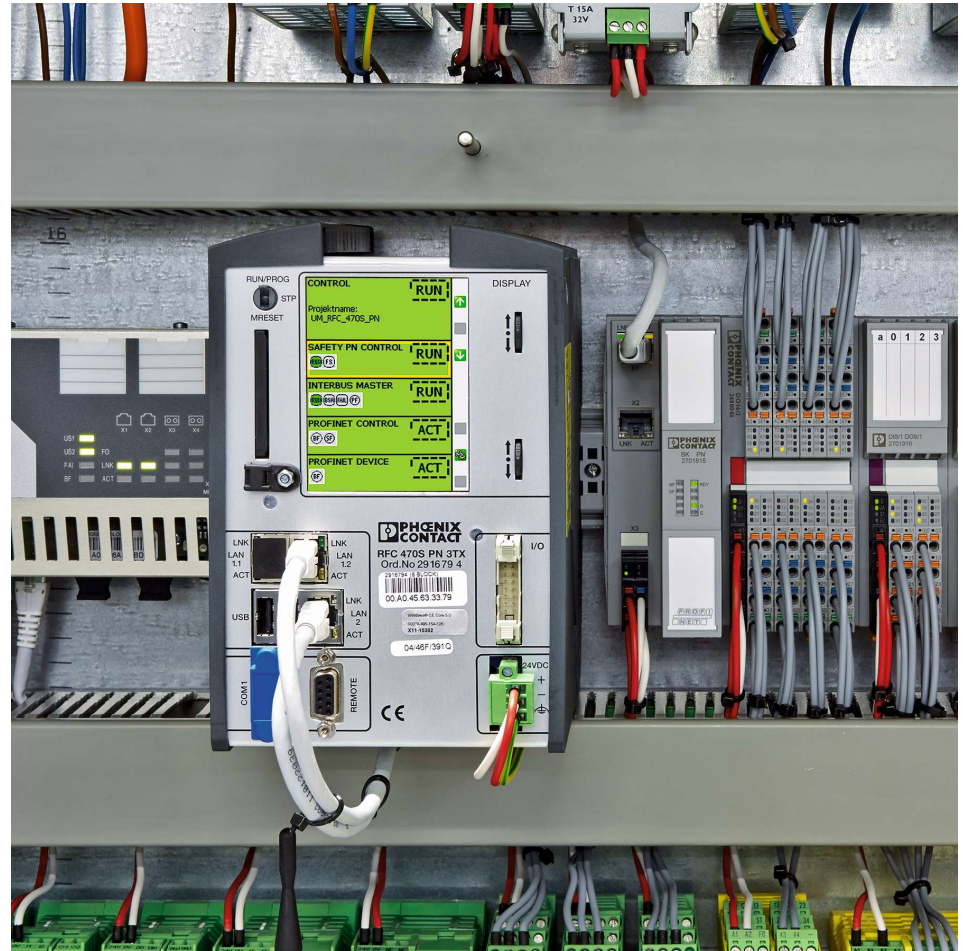


RFC 4072S



AXC F XT SPLC 1000

# RFC 470S PN 3TX



RFC 470S PN 3TX

# SafetyProg

The screenshot displays the SafetyProg 3.60 interface for a project named 'SafeLOGIC-1 - [SyncMovement:SyncMonitoring]'. The main workspace shows a ladder logic diagram with the following components:

- Inputs:** S\_Activate (SAFETRUE), S\_SpeedBA1, S\_SpeedBA2, S\_SpeedTolerance, S\_PosBA1, S\_PosBA2, S\_PosTolerance, S\_Activate (SAFEFALSE).
- Function Blocks:** EQ\_S (1), SUB\_S (8), MUL\_S (7), LE\_S (10), GE\_S (9), AND\_S (11), LE\_S (5), GE\_S (4), AND\_S (6), EQ\_S (12), OR\_S (14).
- Logic:** The diagram uses a combination of AND and OR gates to process the tolerance and activation signals. For example, S\_SpeedTolerance is processed by LE\_S (10) and GE\_S (9), which are then combined in AND\_S (11). Similarly, S\_PosTolerance is processed by LE\_S (5) and GE\_S (4), which are combined in AND\_S (6). The final output is S\_NoErrFUNK, generated by OR\_S (14).

The right-hand pane, titled 'Edit Wizard', lists various function blocks and their descriptions:

Name	Description
ADD	Addition
ADD_S	Addition
AND	Bitwise AND
AND_S	Bitwise AND
BIT_TEST	Reads the \
BITS_TO_BYTE	Assembles \
BITS_TO_WORD	Assembles \
BYTE_TO_BITS	Splits a byte
BYTES_TO_WORD	Assembles \
CalcTestSet	
CTD	Counter Down
CTD_S	Counter Down
CTU	Counter Up
CTU_S	Counter Up
CTUD	Counter Up
CTUD_S	Counter Up
CustomSLS	
DWORD_TO_WORDS	Splits a dword
EN_OUT	Enable Out
EQ	Equal =
EQ_S	Equal =
EvalSelValue	
ExtMonitoring	
F_TRIG	Falling Edge
F_TRIG_S	Falling Edge
GE	Greater Than
GE_S	Greater Than
GET_LSB	Reads the \
GET_MSB	Reads the \
GT	Greater Than
GT_S	Greater Than
I_BIT_IN_BYTE	Inverts a pa
I_BIT_IN_DWORD	Inverts a pa
I_BIT_IN_WORD	Inverts a pa
InOutMonitoring	
INT_TO_WORD	Converts IN
LE	Less Than
LE_S	Less Than
LookUpTable	
LT	Less Than
LT_S	Less Than

RFC 470S PN 3TX

# SafetyProg

The screenshot displays the SafetyProg 3.00 software interface for project RFC470PNS\_15. The main workspace shows a ladder logic diagram with three rungs:

- Rung 1: EmergencyStop (11S101)** - Contains a normally open contact labeled "EMERGENCYSTOP\_V1\_C0" and a normally closed contact labeled "EMERGENCYSTOP\_V1\_C1".
- Rung 2: GuardMonitoring (11B01)** - Contains a normally open contact labeled "GUARDMONITORING\_V1\_C0" and a normally closed contact labeled "GUARDMONITORING\_V1\_C1".
- Rung 3: MainPower (11K100)** - Contains a normally open contact labeled "MAINPOWER\_V1\_C0" and a normally closed contact labeled "MAINPOWER\_V1\_C1".

The interface also features a Project Tree on the left, an Edit Wizard on the right, and a Variable Declaration window at the bottom. The Variable Declaration window lists the following variables:

Variable	POU/Worksheet	Type	Access	Comment
Quit_EStop_F	Main/Variables	BOOL		
Start_11K100_F	Main/Main	BOOL	Read	
Start_Active_F	Main/Variables	BOOL		

# RFC 4072S



# License Structure


Free of charge


# PLCnext Engineer

Configuration  
Programming  
Visualization

## Licensed AddIns


...	Code Analysis	Reporting	 SAFE	FL Config	IEC 61850	 ACI	Safety Extended
 SFC	HMI Alarm	Safety Basic	HMI Trending	 MV	Source Code Management	....	Vis. Wizard

 Icon = available AddIn







 No icon = Idea about future AddIns

PLCnext Control

# PLCnext Control RFC 4072S



The image shows a grey industrial PLC unit with a color display. The display shows 'RFC 4072S' at the top, followed by 'Propolisware' and four colored buttons: 'Safety PLC' (yellow), 'DPC UA' (green), 'FN Controller' (green), and 'FN Device' (green). Below the display are various ports and a QR code.

Core	Working memory	Temperature
 <b>Intel i5 6300U 2 x 2,4 GHz processor</b> # control tasks (IEC 61131)  <b>32</b>	 <b>4 GB DDR 4 dual channel RAM</b> Min. cycle time (IEC 61131)  <b>500 µs</b>	 <b>0°C up to 55°C with fan</b> Security  <b>TPM integrated</b>

PLCnext Control

## PLCnext Control RFC 4072S


- Intel i5 6300U 2 x 2,4 GHz processor
- 4 GB DDR 4 dual channel RAM
- Profisafe integrated (up to 300 F-Devices)
- Operation Mode Switch
- Touch display
- SD Flash card slot
- 3 ETH-MAC interfaces (2 x 1 Gbit, 1 x 100 Mbit switched)
- Real-time clock
- Trusted platform module (TPM) for security
- Temperature range: 0°C up to 55°C with fan

PLCnext Technology   
Designed by PHOENIX CONTACT









PLCnext Control

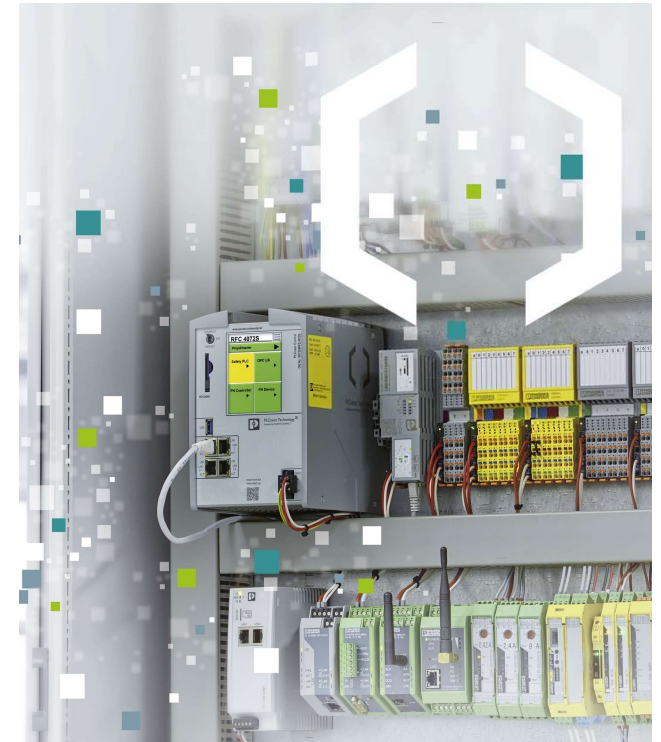
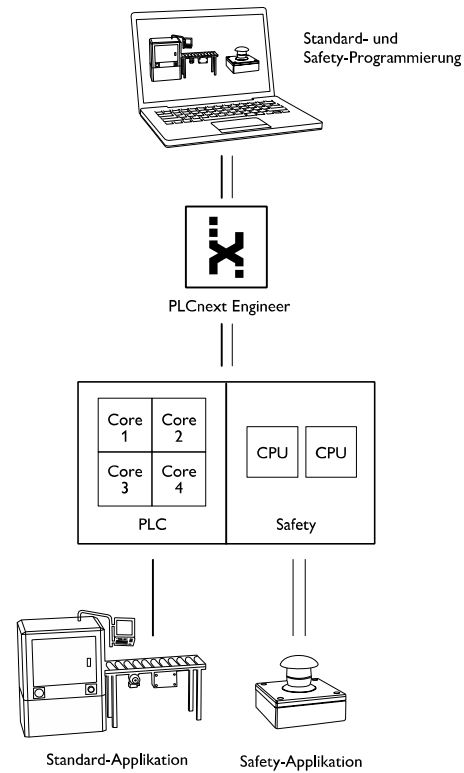
# PLCnext Control RFC 4072S



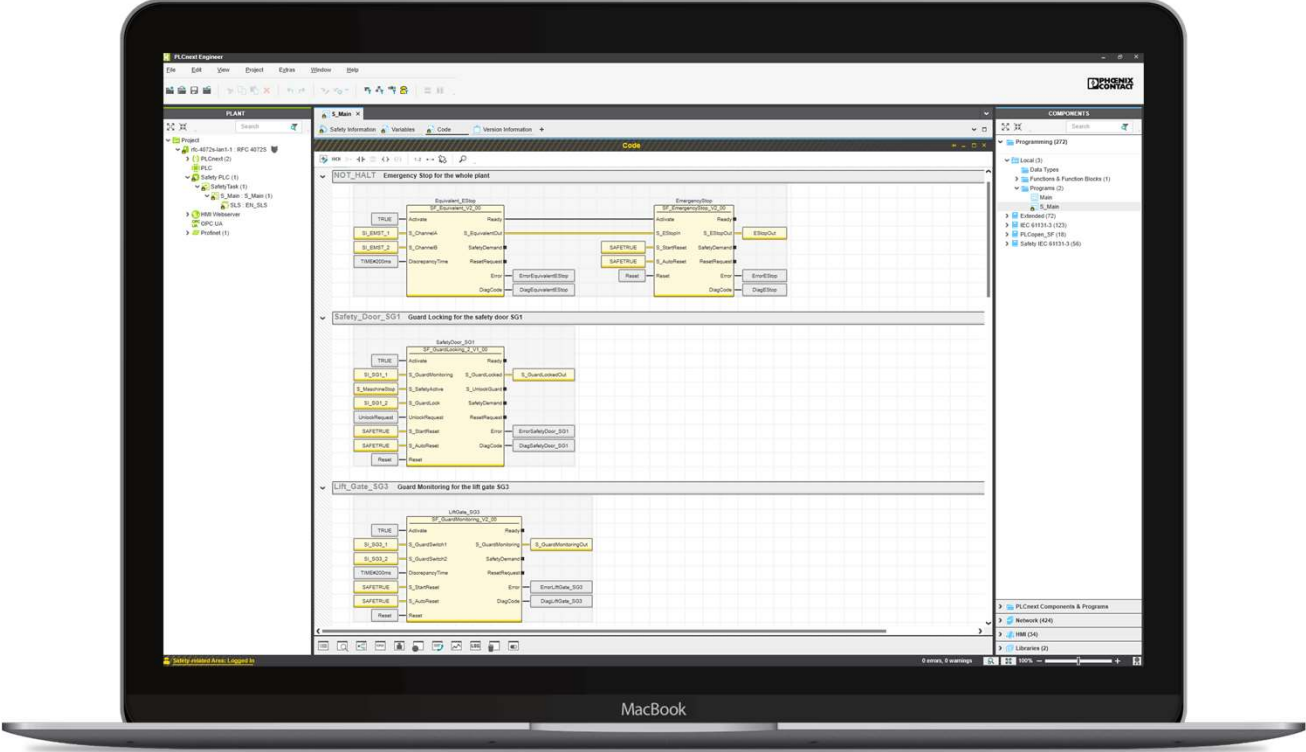
The image shows a white PLCnext Control RFC 4072S unit. The front panel features a color display showing 'RFC 4072S' and various control elements like 'Safety PLC', 'DPC UA', 'FN Controller', and 'FN Device'. There are also physical buttons and ports on the panel.

Core	Working memory	Temperature
 <b>Intel i5 6300U 2 x 2,4 GHz processor</b>	 <b>4 GB DDR 4 dual channel RAM</b>	 <b>0°C up to 55°C with fan</b>
<b># control tasks (IEC 61131)</b>  <b>32</b>	<b>Min. cycle time (IEC 61131)</b>  <b>0,5 ms</b>	<b>Security</b>  <b>TPM integrated</b>

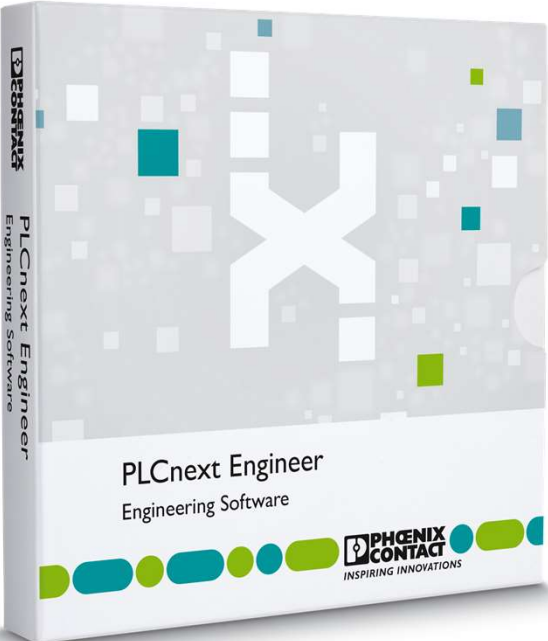
# Functional Safety Integration



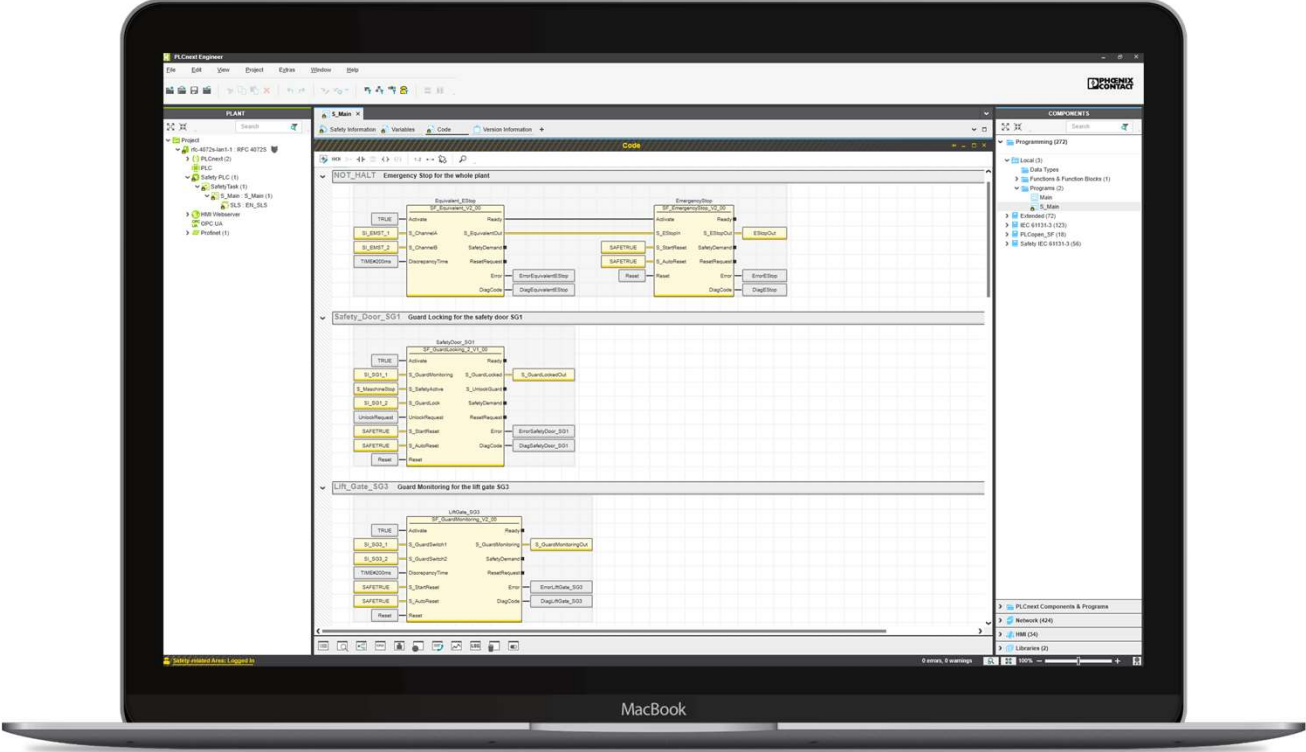
# Integration of standard and safety programming in PLCnext Engineer



# SPLC 1000

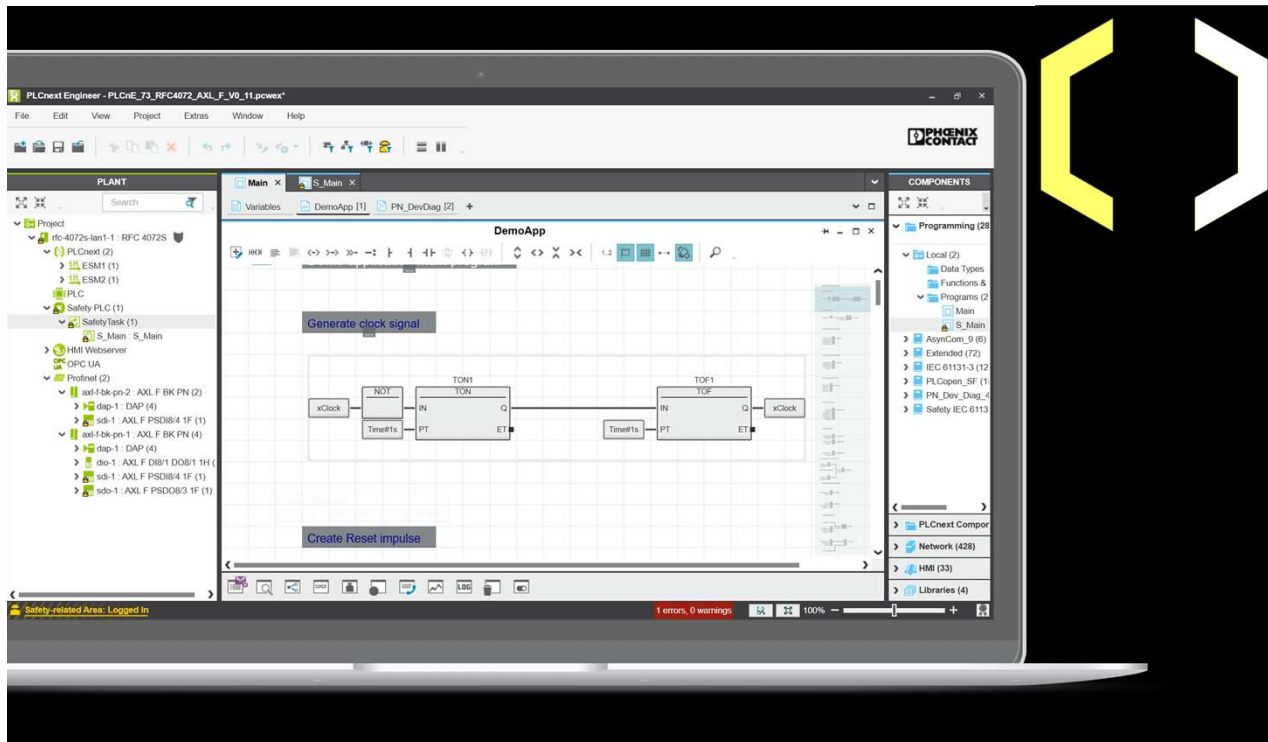


# Integration of standard and safety programming in PLCnext Engineer



Standard and safety programming in one engineering software

# PLCnext Engineer

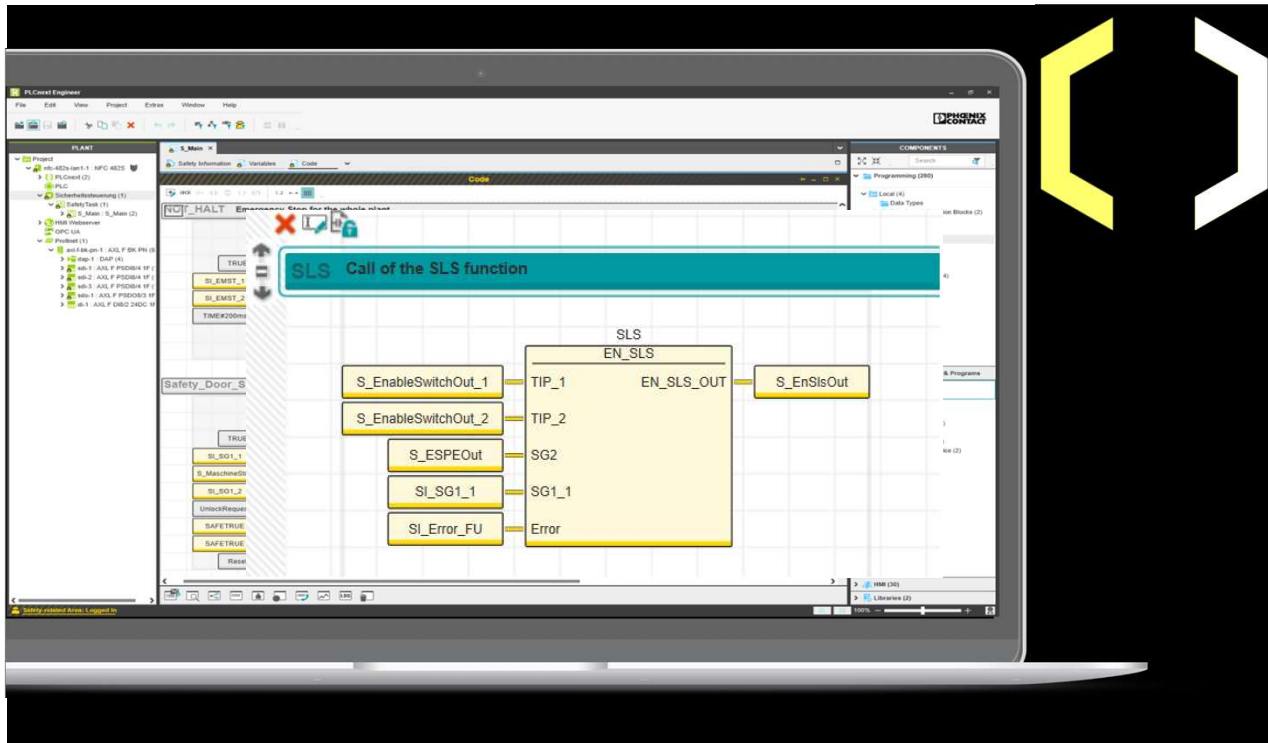


## Fully integrated Safety programming

- TÜV Rheinland certified according to IEC 61508
- Editor with common behavior as known from standard FBD or LD editors
- Low Variability Language support
- Network granular CRC checksums
- PROFIsafe Support

Standard and safety programming in one engineering software

# PLCnext Engineer

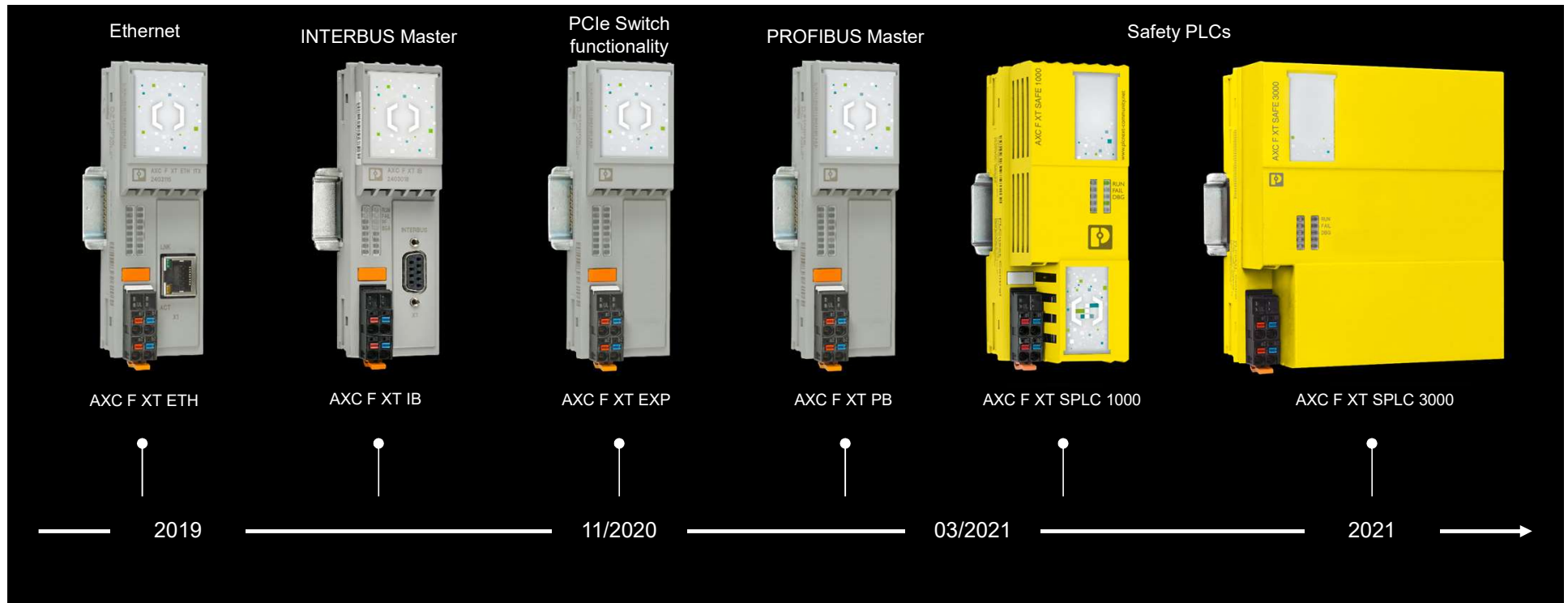


## Fully integrated Safety programming

- Individual safety functions can be protected by a verification function
- Background signal path analysis
- Background safe semantic analysis
- Diversely-redundant code generator

PLCnext Ecosystem – PLCnext Control

## Portfolio PLCnext Control Extensions



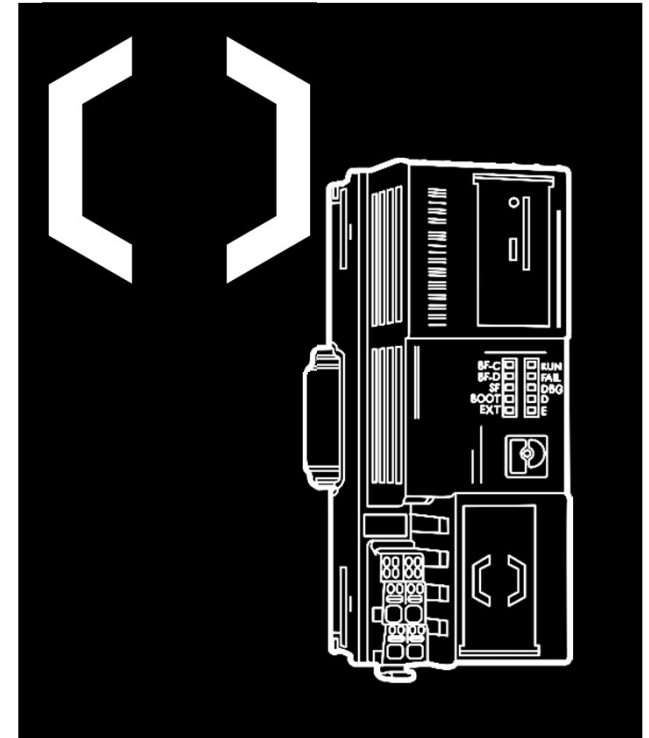
PLCnext Control

## PLCnext Extension AXC F XT SPLC 1000

PLCnext Technology   
Designed by PHOENIX CONTACT



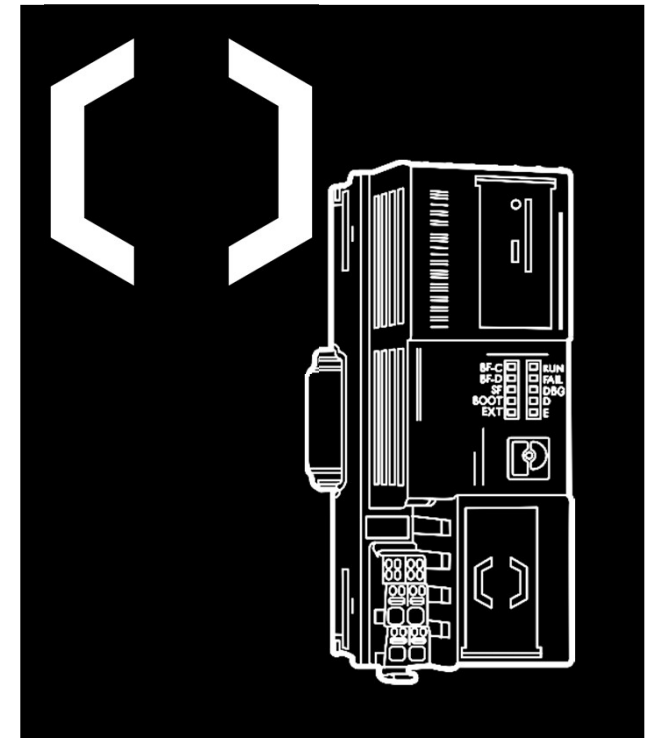
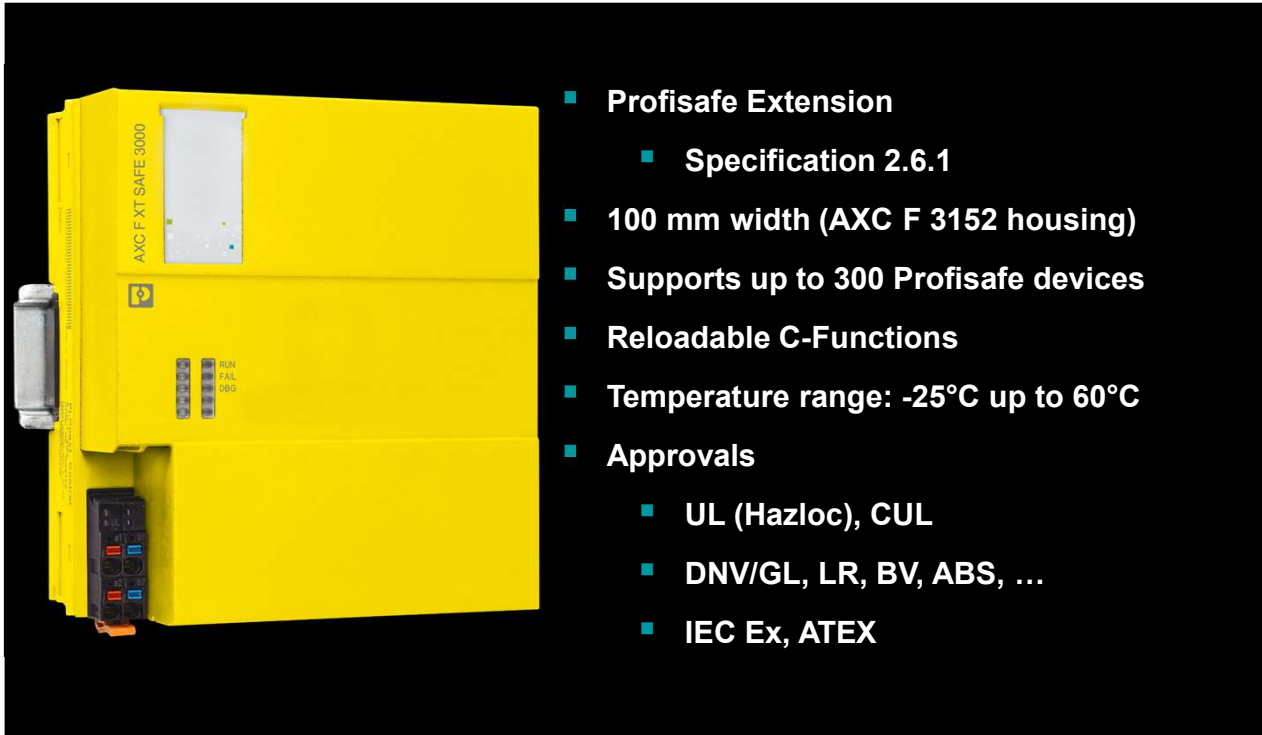
- Profisafe Extension
  - Specification 2.6.1
- Simultaneous operating as F-Host and F-Device
- 45 mm width (AXC F 2152 housing)
- Supports up to 32 Profisafe devices
- Reloadable C-Functions
- Temperature range: -25°C up to 60°C
- Approvals
  - UL (Hazloc), CUL
  - DNV/GL, LR, BV, ABS, ...
  - IEC Ex, ATEX



PLCnext Control

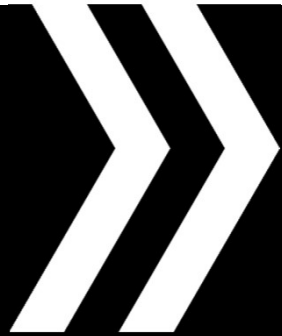
## PLCnext Extension AXC F XT SPLC 3000

PLCnext Technology   
Designed by PHOENIX CONTACT



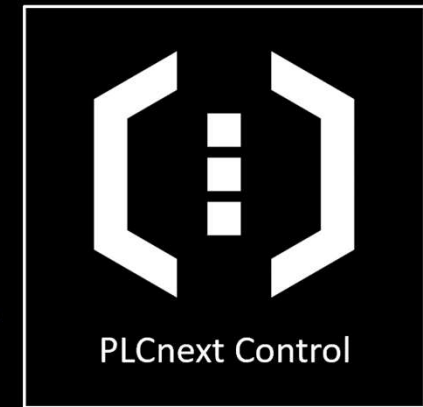
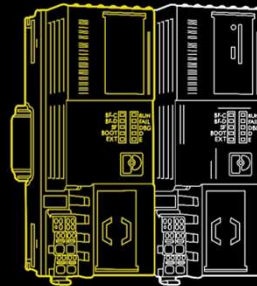
PLCnext Technology

## The open ecosystem for limitless automation



# Safety

with PLCnext Control



PLCnext Control

Discover flexible  
automation


PLCnext Technology

## Functional Safety Portfolio with PLCnext Technology



PLCnext Technology

# PLCnext Control Extension SPLC 1000



PLCnext Control Extension AXC F XT SPLC 1000

Out. No. 1158811

Safety

P C RUN FS

Width

45mm

Core

2 x Cortex M4

# of Profisafe devices

32

Temperature

-25°C - 60°C

Approvals

UL, CUL, etc


C Functions

Reloadable

PLCnext Extension AXC F XT SPLC 1000

PLCnext Technology







# PLCnext Control Extension SPLC 3000



AXC F XT SAFE 3000

RUN  
FAL  
DSD

PLCnext Extension AXC F XT SPLC 3000

 Core <b>ARM A8 &amp; A9</b>	 # of Profisafe devices <b>300</b>	 Temperature <b>-25°C - 60°C</b>
 Width <b>100mm</b>	 Approvals <b>UL, CUL, etc</b>	 C Functions <b>Reloadable</b>

PLCnext Controls

## PCIe SPLC 3000

PLCnext Technology   
Designed by PHOENIX CONTACT



**Highest performance for  
any automation application**



## Demostración en vivo de PROFIsafe

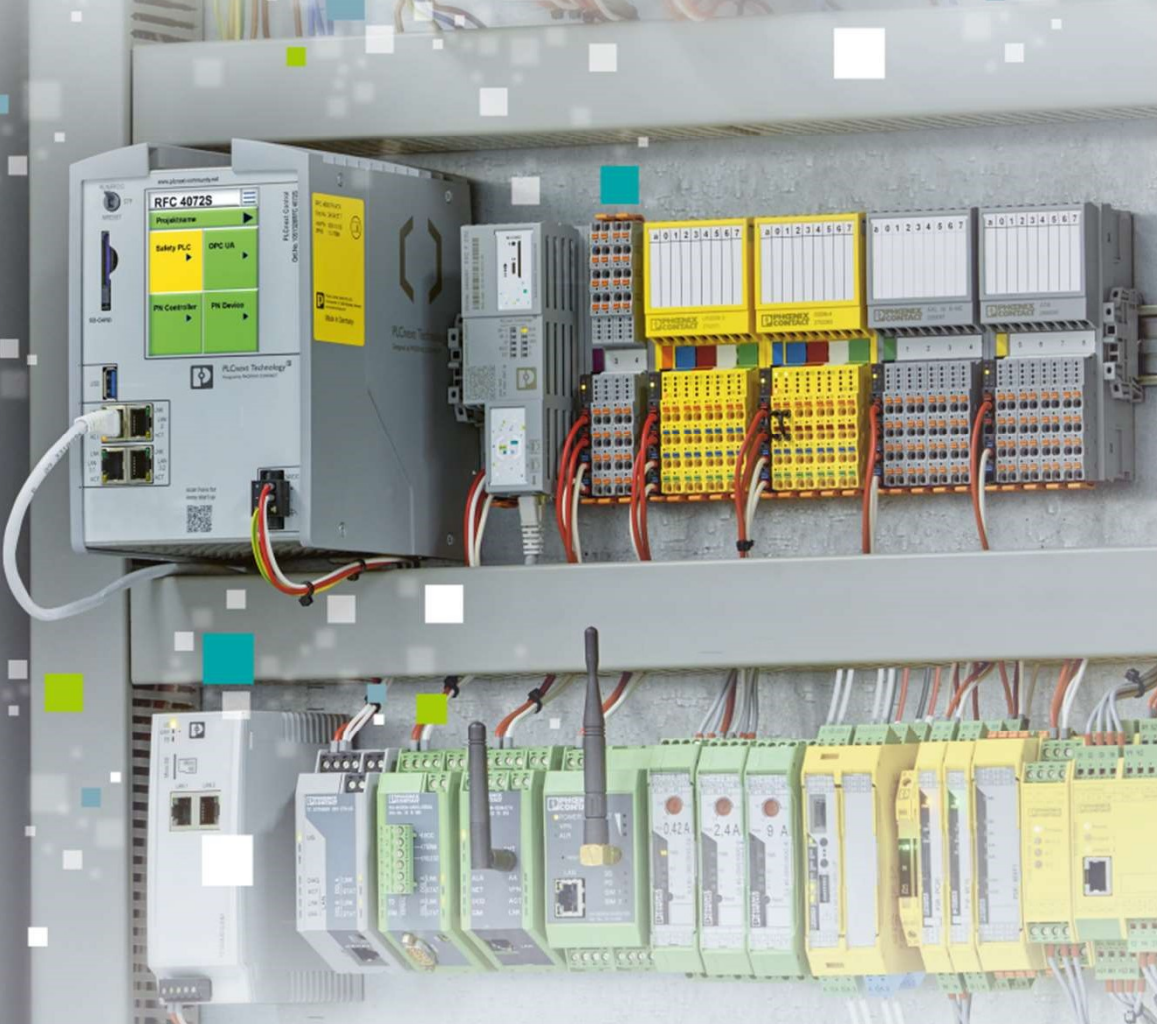
# Smart safety solutions Automation and networks



## Automation and networks

Wide range of safety functions, high numbers of I/O's, and large networks – the integration of safety in more complex and demanding automation systems requires matched interfaces and often a high-performance process technology.

[Learn more](#)



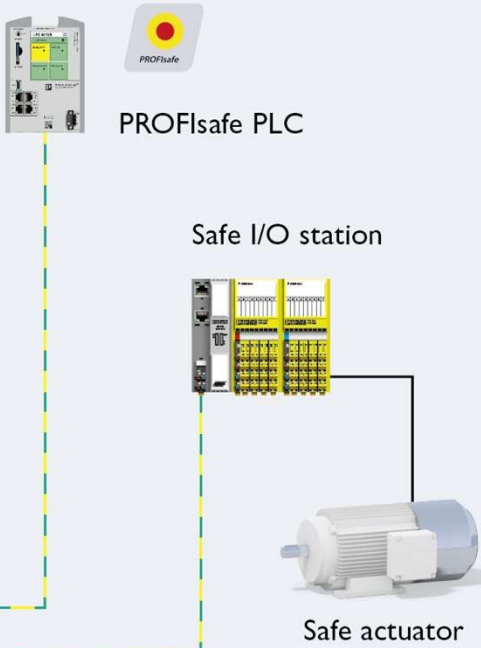
# Smart safety solutions Automation and networks



**PROFINET system 1**



**PROFINET system n**

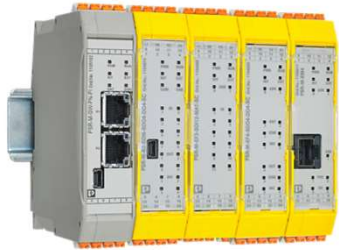


### Safe control technology for complex applications

With the powerful safety controllers from Phoenix Contact, functional safety can be reliably integrated into PROFIsafe or PROFINET networks. Both systems can be coupled. This enables you to implement manufacturer-independent functional safety, such as emergency stop concepts, across systems.



# Smart safety solutions Automation and networks



**Modular safety system**  
PSRmodular



**Safe I/O's for IP67**  
Axioline E



**Safe I/O's for IP20**  
Axioline F and Inline



**Safe I/O's for IP20**  
Axioline Smart Elements

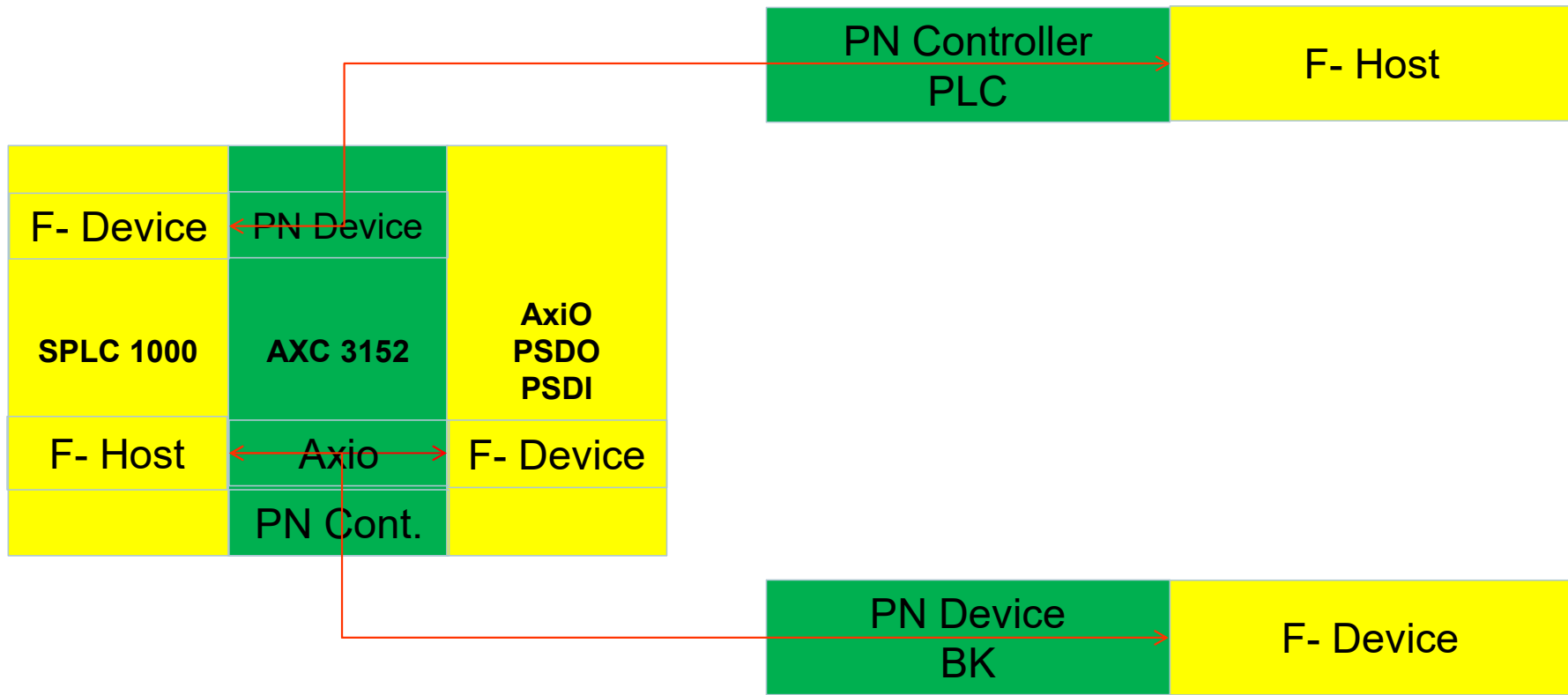


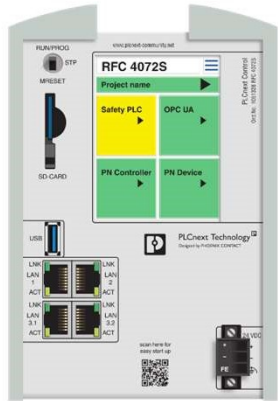
**Performance controllers**  
RFC

# Possibilities of left sided combination with AXC F 2152 & 3152

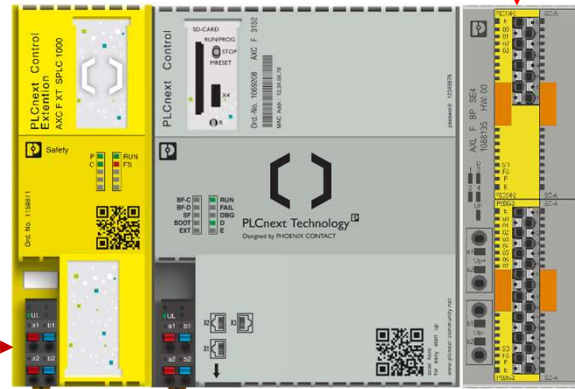


# USE Case(s)



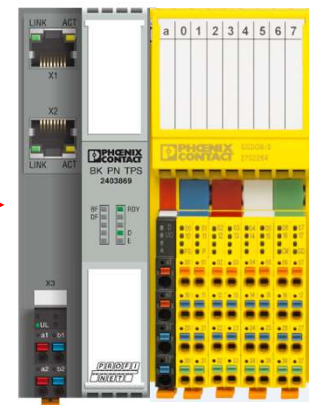


F-Host via Axiobus



F-Device via PROFINET

F-Host via PROFINET





PROFIsafe PLC  
3<sup>rd</sup> Party

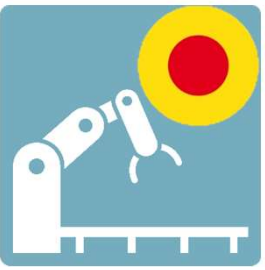


F-Host via Axiobus



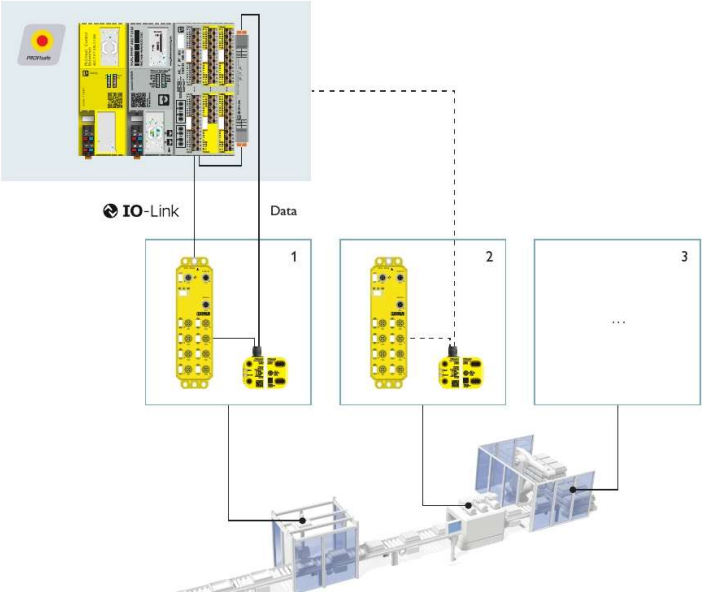
F-Device via PROFINET

F-Host via PROFINET



PROFIsafe Device  
3<sup>rd</sup> Party

# Applications



Modular Design



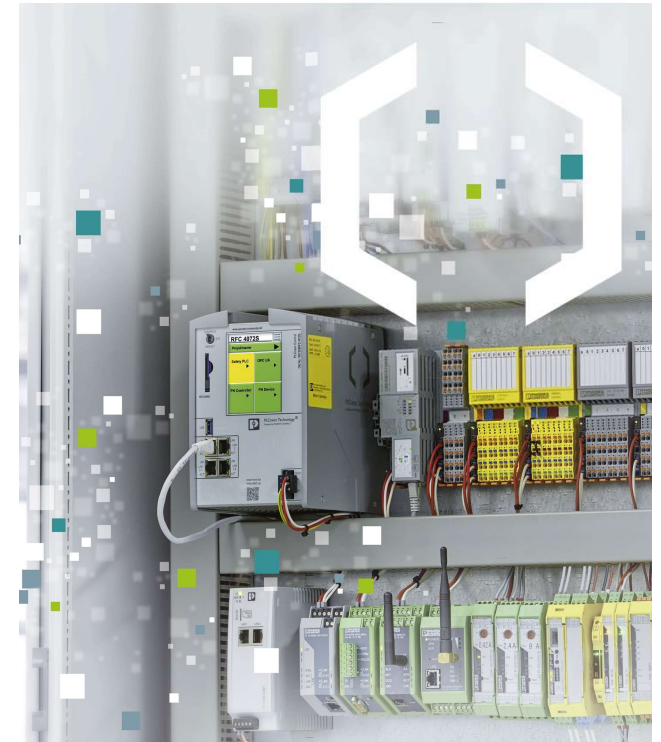
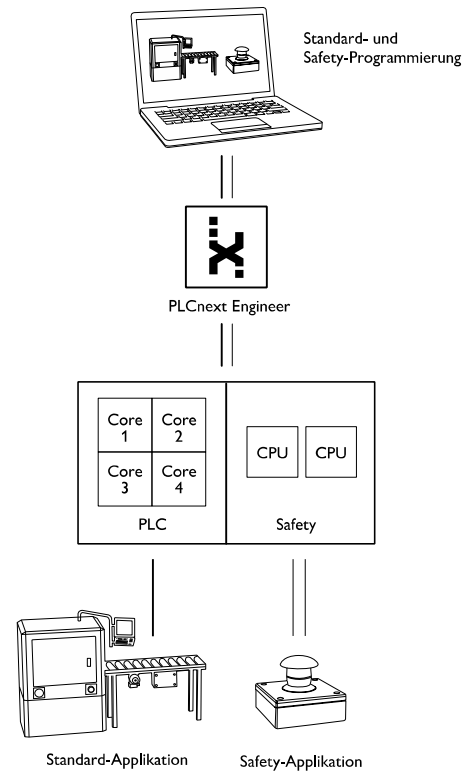
Compact Design

# AXC XC SPLC 1000 Release Roadmap

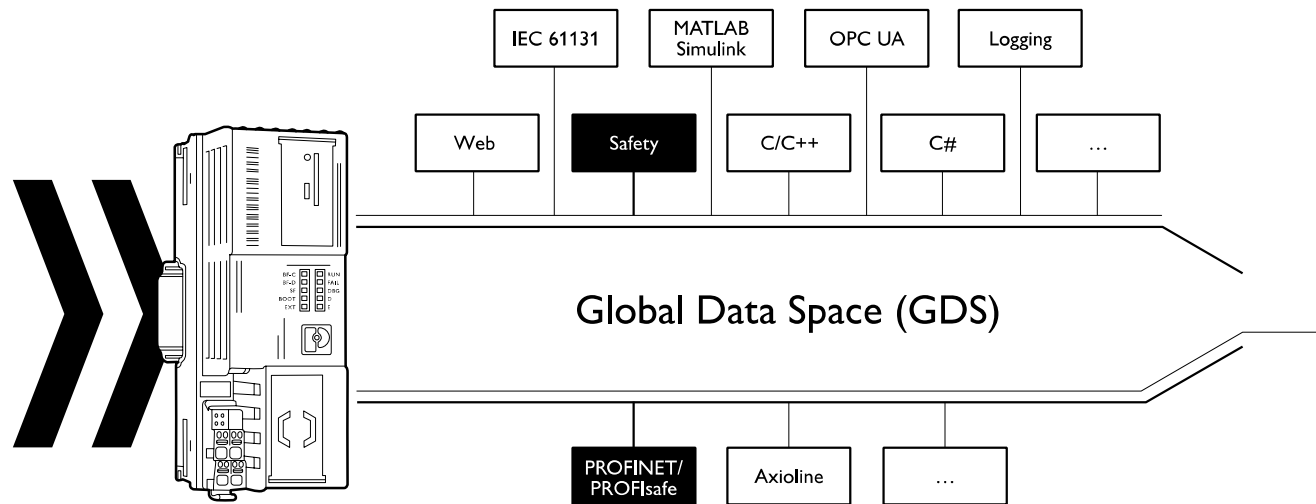


Release date 30<sup>th</sup> September 2021

# Functional Safety Integration

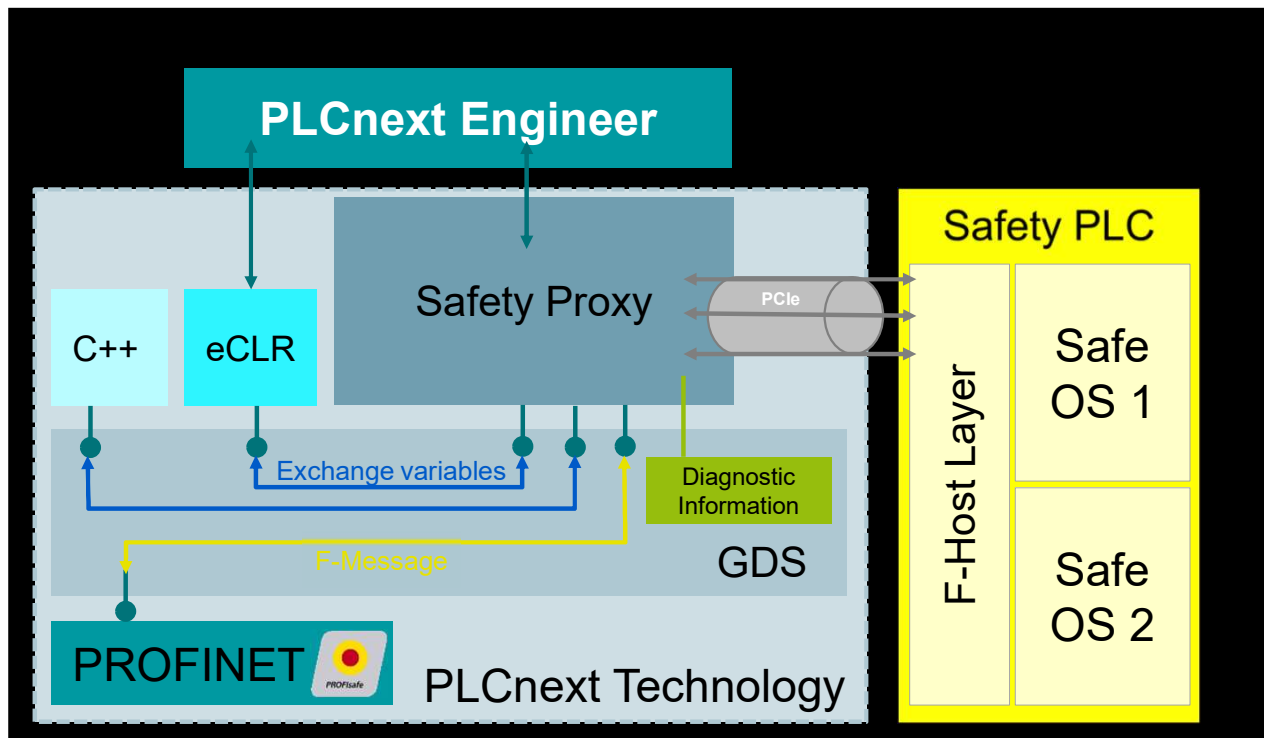


# Safety integrated



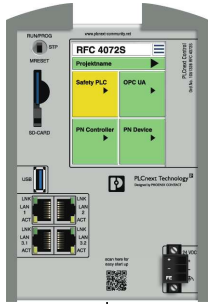
## Functional Safety Integration

# Safety integrated



- Safety integrated (programming, hardware configuration)
- Consistent usability
- SIL 3
- Separate Safety PLC
  - 2 different cores

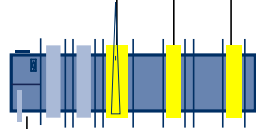
RFC 4072S  
(F-Host)



Emergency Stop



Safety I/Os



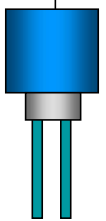
Standard I/Os



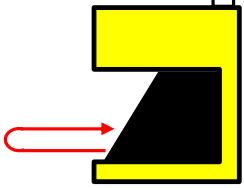
**Standard and safety devices in common ethernet network**



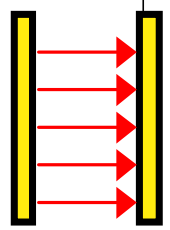
DP/PA



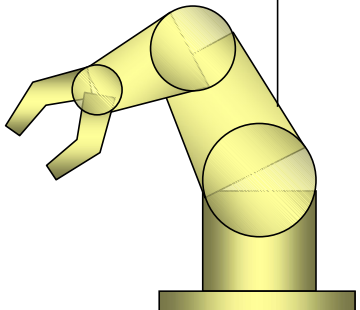
Limit switch



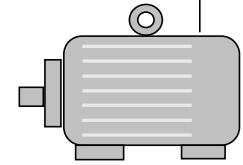
Sick  
Safety  
Scanner



Light curtain



Kuka Robot



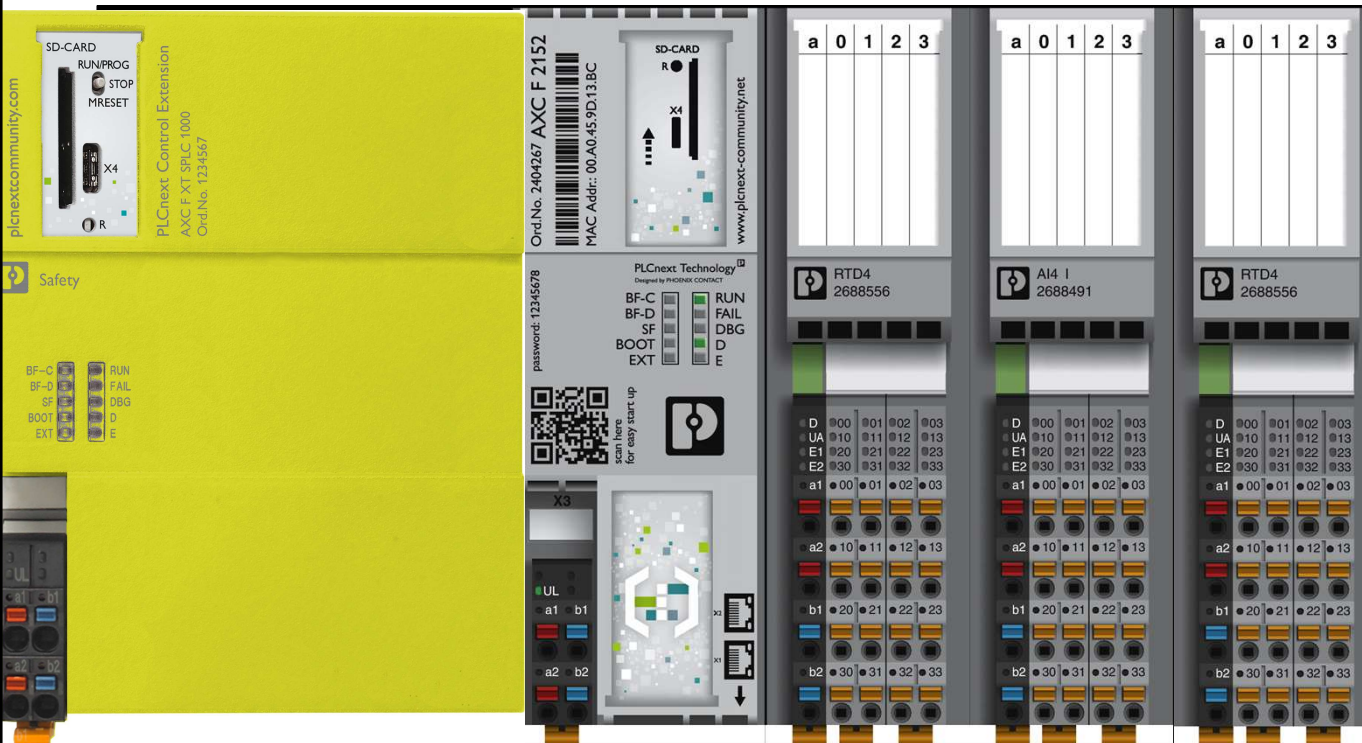
E Motors

Scalable Safe PLCs

PLCnext Technology   
Designed by PHOENIX CONTACT

# AXC F XT SPLC 3000 – High-Scale Modular Safe PLC

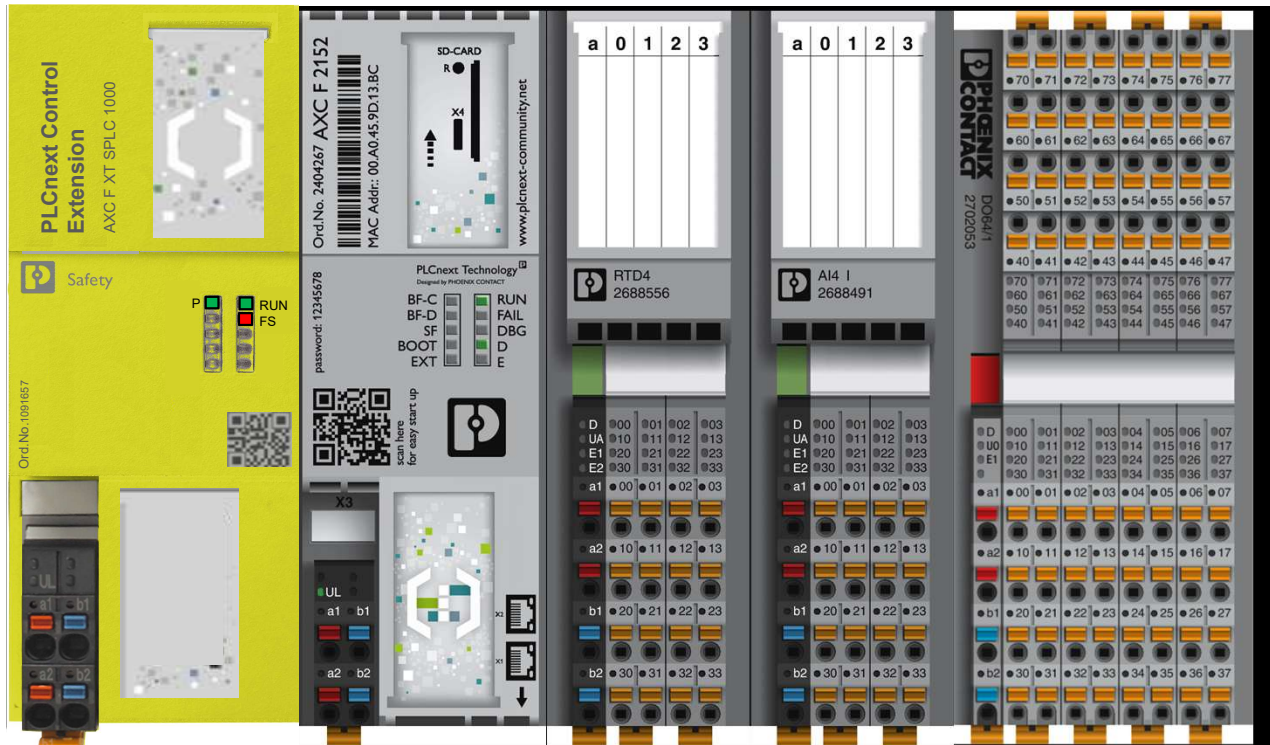
Outlook:  
Mid 2021



- Centralized Safe PLC
- Left-hand side connectable to PLCnext Controls
- Supported Safety Protocols:
  - PROFIsafe V2.61 (300 instances)
- Connectable to higher-layer SPLC
  - as F-Device
  - via new OPC UA Safety Protocol

Scalable Safe PLCs

# AXC F XT SPLC 1000 – Low-Scale Modular Safe PLC



- Decentralized Small Safe PLC
- Left-hand side connectable to PLCnext Controls
- Supported Safety Protocols:
  - PROFIsafe V2.61 (32 instances)
- Connectable to higher-layer SPLC
  - as F-Device
  - via new OPC UA Safety Protocol

Scalable Safe PLCs

# AXC F XT SPLC 1000 Categorization

## Centralized Safe PLC

- e.g. SPLC 3000 @ AXC F 3152, alternatively RFC 480S / RFC 4072S
- Higher-layer plant control

## Higher-layer network

- Step 1: PROFIsafe via PROFINET
- Step 2: Safety via OPC UA

## Decentralized small-scale Safe PLC

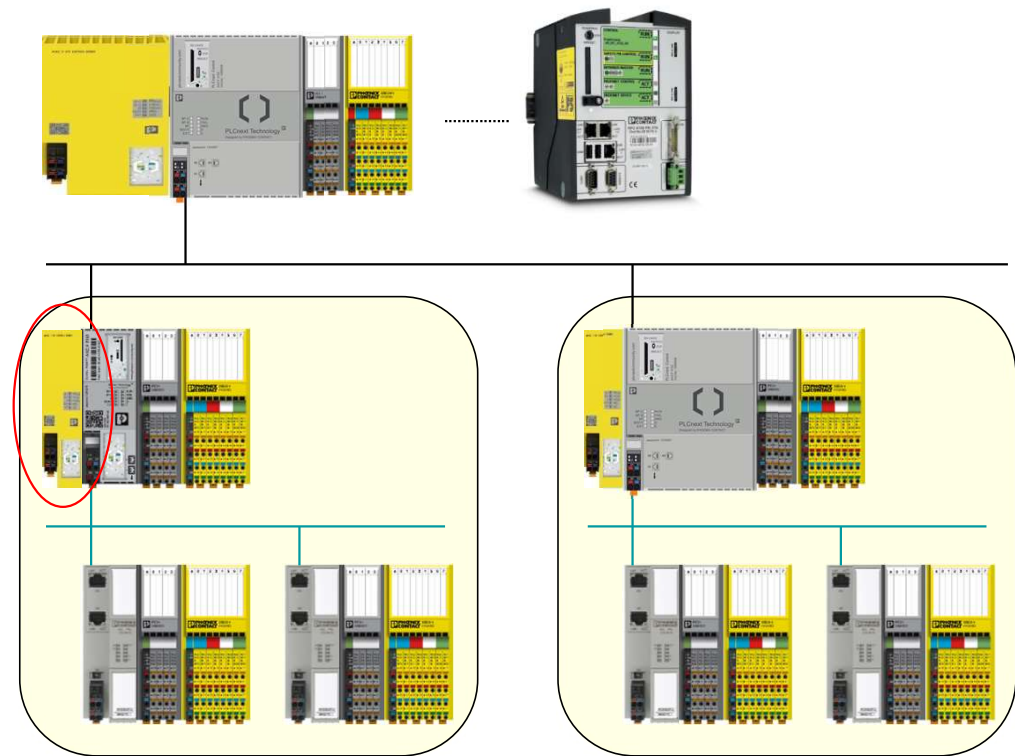
- **AXC F XT SPLC 1000 @ AXC F 2152 (or 3152)**
- decentralized machine control incl. Safety

## Machine network

- PROFIsafe via PROFINET

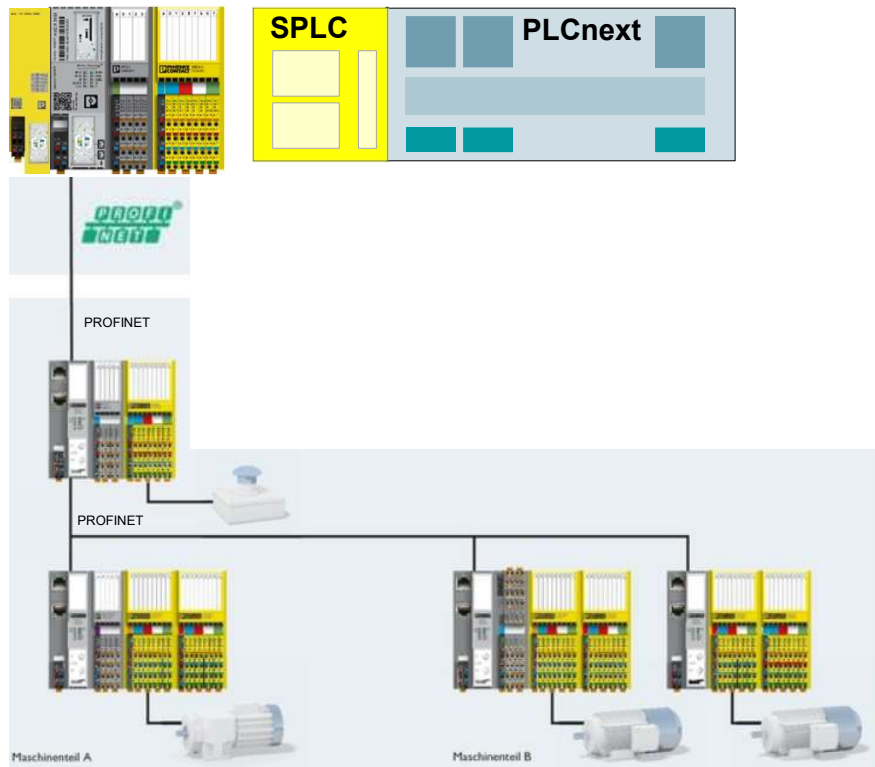
## Field layer

- PROFIsafe IO + intelligent field devices



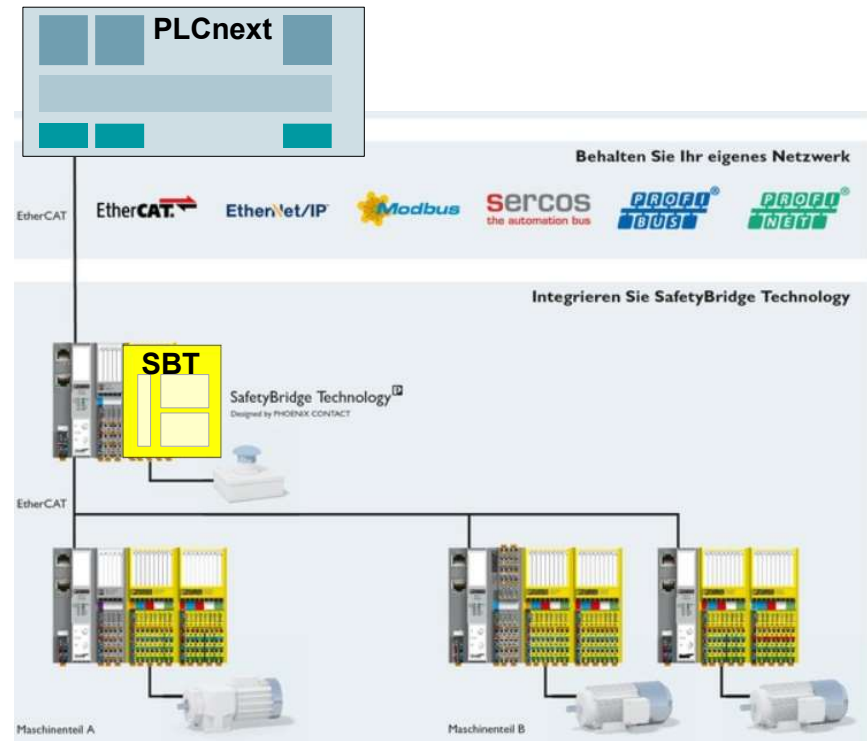
PLCnext Safety / SafetyBridge Categorization

# PLCnext Safety



PLCnext Technology   
Designed by PHOENIX CONTACT

# SafetyBridge Technology



# Products

## Detailed diagnostics



### Diagnostics on HMI:

- Device information
- Safety function status information
- Consistently available in all common automation networks

### Diagnostics on device:

- LED status information
  - Channel information
  - Module status

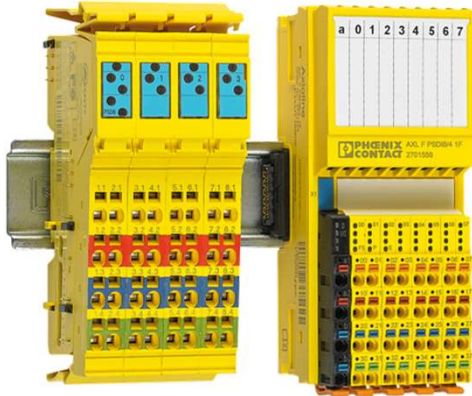
**Bidirectional communication** for machine control functions

Smart safety solutions

Safe I/O's for field installation (IP67) and control cabinet (IP20)



Safe I/O's for IP67  
Axioline E



Safe I/O's for IP20  
Inline and Axioline F



Safe I/O's for IP20  
Axioline Smart Elements



Inline I/O system

Axioline F I/O system

 SafetyBridge Technology<sup>®</sup>  
Designed by PHOENIX CONTACT

### Safe I/O's for the I/O systems Axioline F and Inline

Inline comprises safe I/O terminals for easy, central integration of safety functions into compact machines.

Axioline offers safe I/O modules with SafetyBridge Technology to implement complex, distributed safety solutions in an existing network solution.

- ✓ Cost-effective system configuration, because safety PLCs and safe fieldbus systems are not required
- ✓ Compatibility with all common bus systems
- ✓ Safe data transmission via **wireless systems** and into the cloud possible
- ✓ Easy configuration with the **SAFECONF software**





### Safe I/O terminal Inline ECO Safe

Deactivate connected standard output terminals safely with the safe Inline I/O terminal. The standard output terminals are mounted to the right of the safe I/O terminal. When a sensor is activated, e.g. emergency stop, the actuator voltage supply for the output terminals is switched off.

- ✓ Safe I/O terminal with two two-channel sensor circuits
- ✓ Cascadable switch-off of segment circuits
- ✓ Diagnostic and status messages in the controller
- ✓ Reduced wiring effort, thanks to the enable principle
- ✓ Up to SILCL 3 in accordance with IEC 62061 and up to PL e in accordance with ISO 13849, UL and cUL

 Relay Technology<sup>®</sup>  
Designed by PHOENIX CONTACT

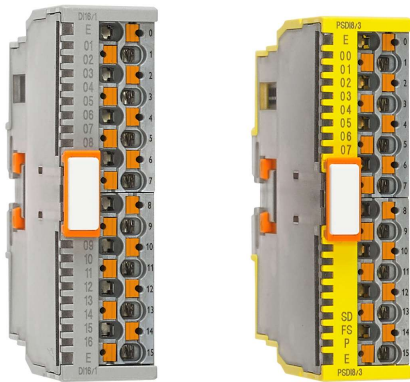
# Safe I/O's for control cabinet (IP20) Decentralised approach with Inline ECO Safe



### Safe I/O terminal with the function of two safety relays

With the safe I/O terminal, safety functions can be integrated into the Inline I/O station. Digital output terminals are mounted to the right of the safe I/O terminal. In the event of a fault, the actuator voltage for the I/O terminals arranged in a block is safely switched off. Up to two two-channel sensor circuits can be connected to one Inline ECO Safe. Status and error messages are forwarded to the controller.





### Compact and flexible I/O's Axioline Smart Elements

- ✓ Compact, plug-in, and system-independent I/O elements
- ✓ Very easy handling when it comes to configuration, installation, and startup
- ✓ Portfolio includes an IO-Link master, digital/analog input and output modules, safety modules for PROFI-safe, and further function modules



Push-in Technology<sup>®</sup>  
Designed by PHOENIX CONTACT

COMPLETE line

# Safe I/O's for control cabinet (IP20) Intelligent and cost-effective automation

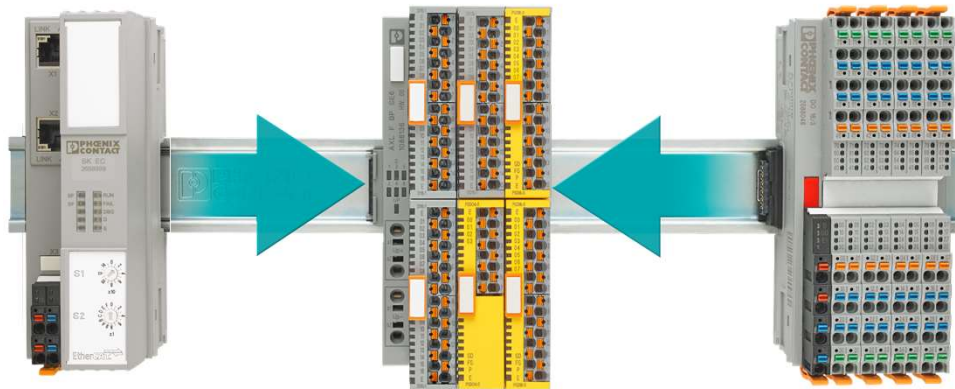


## Compact, System-independent, Easy handling

- ✓ 32 channels within 15 mm in the Axioline F system
- ✓ Tailored I/O configuration on a single Axioline F backplane
- ✓ High degree of flexibility with reduced product variance
- ✓ Less space needed on the DIN rail enables compact control cabinet solutions
- ✓ Reduced installation time and connection time thanks to Push-in Technology

# Safe I/O's for control cabinet (IP20)

## Compatibility of the Axioline Smart Elements



### Axioline Smart Elements in a modular automation system

Within an I/O station, Axioline F modules and Axioline Smart Elements can be freely combined as desired. They can therefore be operated on existing Axioline F bus couplers or Axiocontrol devices (PLCnext Control devices and conventional PLCs). Choose from a range of more than 80 I/O's, bus couplers, and control components.

Axioline Smart Elements

# Axioline Smart Elements



Axioline Smart Elements

MORE SPACE FOR  
YOUR CREATIVITY



Axioline Smart Elements

## Axioline Smart Elements

---

- AXC F XT SPLC 1000 and Safety IO's
  - The SafetyBridge Smart Elements
  - What is the difference between AXL F and AXL SE
- 



AXC F XT SPLC 1000 and Safety IO's

## Remember: PROFIsafe Axioline Smart Elements

- PROFIsafe modules available from stock
- Slim solution together with SPLC 1000
- Space saving in the control cabinet



What is new?

## AXL SE SSDI8/3

- SafetyBridge Satellite module
- **Compatible with the AXL F Logicmodule AXL F LPSSDO8/3 1F**
- Same parameters like Axioline F
- 8 inputs single channel use, 4 inputs two-channel use
- Connection method: 3-conductor
- Up to SILCL 3 and cat. 4/PL e

Available  
from stock



What is new?

## AXL SE SSSDO4/2 2A

- SafetyBridge Satellite module
- **Compatible with the AXL F Logicmodule AXL F LPSSDO8/3 1F**
- Same parameters like Axioline F
- 4 outputs single channel use, 2 outputs two-channel use
- Connection method: 2-conductor
- Up to SILCL 3 and cat. 4/PL e

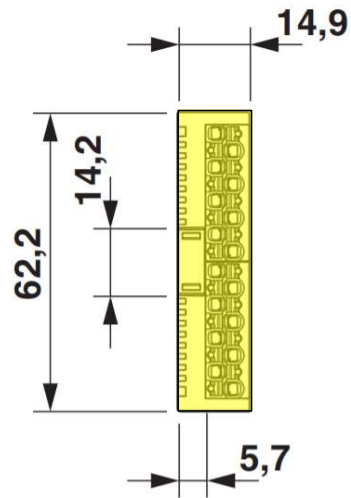
Available  
from stock



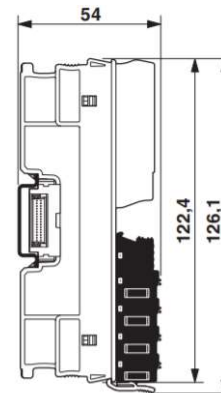
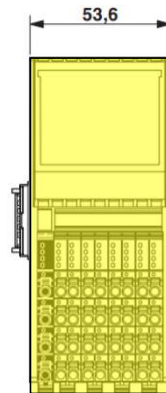
What is the difference?

## The main difference

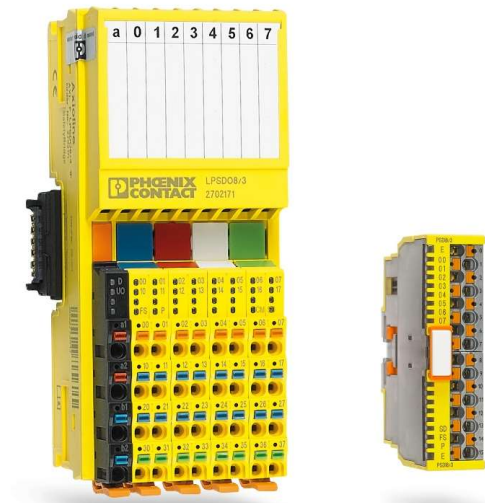
- Space requirement in the control cabinet (here for the PSDI8)



8 Signals on 927mm<sup>2</sup>



8 Signals on 6759mm<sup>2</sup>



Axioline F PSAI

## Axioline F PSAI



- ✓ Safe analog current signals directly in the Safety PLC
- ✓ 8 analog input channels for the connection of current signals using the PROFIsafe protocol.
- ✓ Can be used with safety controllers from Phoenix Contact and Siemens
- ✓ Fast connection of the sensors to the module, thanks to the Push-in Technology

# Products

## High-performance safety controller



### High-performance safety controller RFC 4072S

The performance safety controller for high-level languages is ideal for PROFIsafe applications with the highest safety demands.

- ✓ Based on PLCnext Technology with independent CPUs for safety calculations
- ✓ Standard and safety programming codes can be realized in just one engineering tool with PLCnext Engineer
- ✓ Extended networks with up to 300 safety-relevant devices
- ✓ Connection to Proficloud and the potential integration of open source software



PLCnext Technology<sup>®</sup>  
Designed by PHOENIX CONTACT

# Products

## PROFIsafe gateway



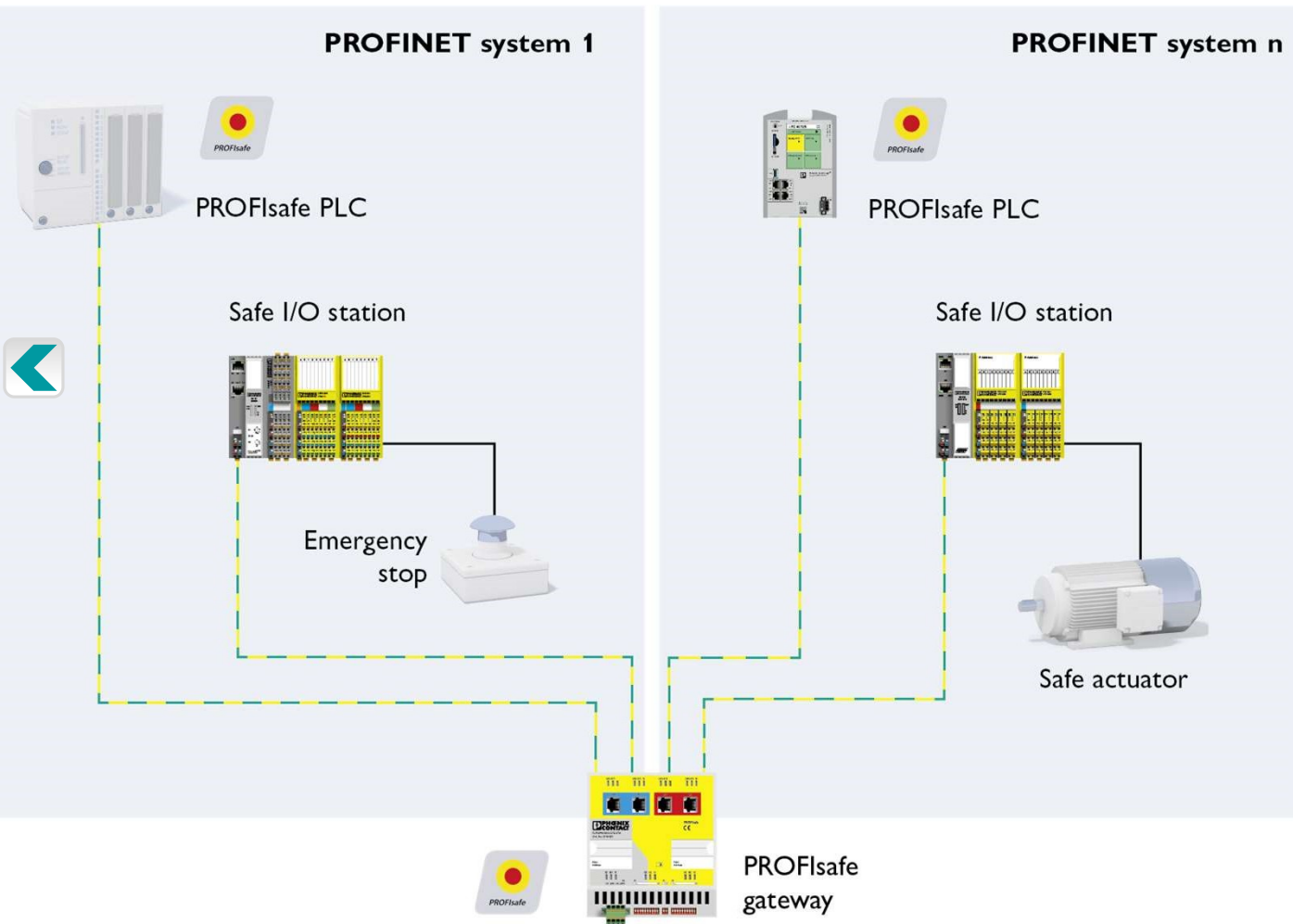
### PROFIsafe gateway

The PROFIsafe gateway is made for PLC-PLC-communication and network insulation

- ✓ Two PROFINET and PROFIsafe-devices in one housing
- ✓ Redundant insulated power supply concept
- ✓ Makes different PLC-types compatible to each other:  
Phoenix, Siemens, ABB,...
- ✓ Simple in parameterization and handling,  
good in transmission time and diagnostics
- ✓ 2..11 bytes safety exchange data
- ✓ 2..128 bytes standard exchange data

# High-performance safety controller

## Reliably integrated into PROFIsafe or PROFINET networks



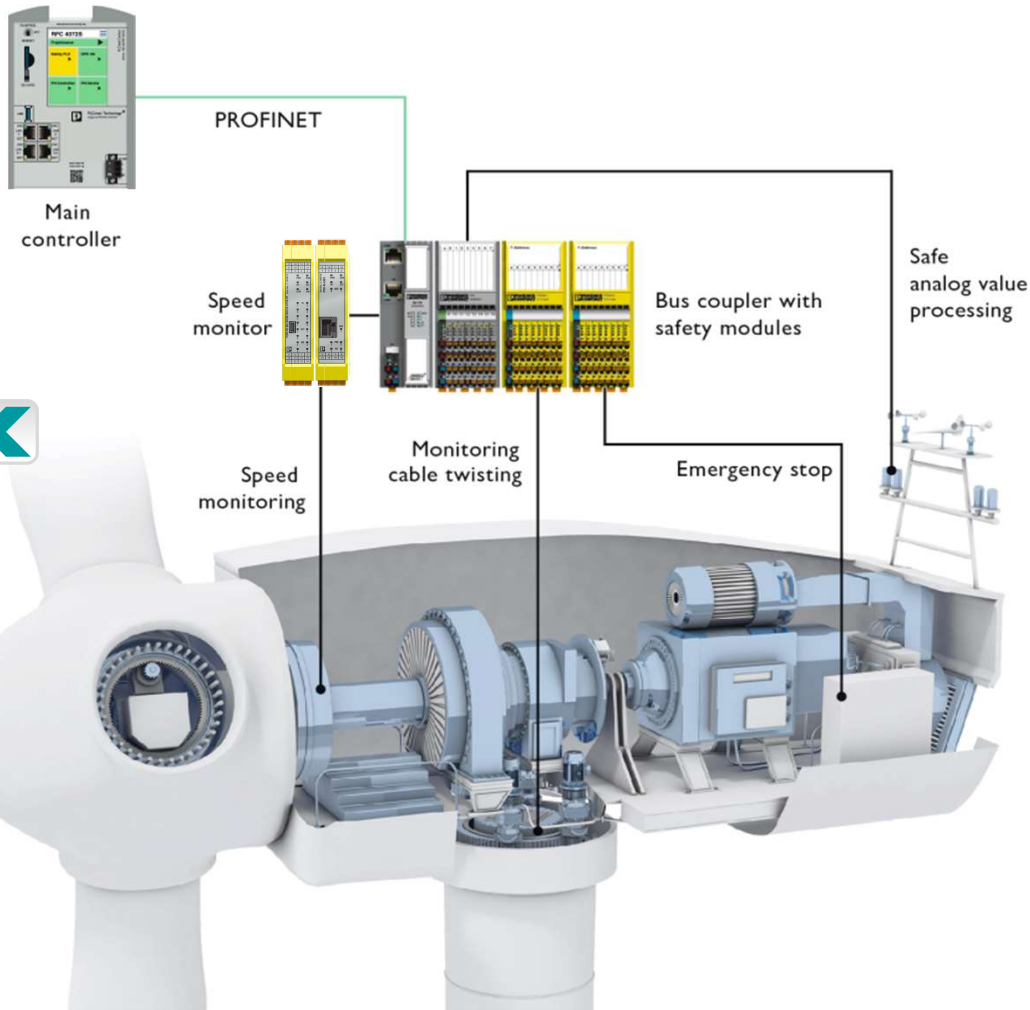
### Safe control technology for complex applications

With the powerful safety controllers from Phoenix Contact, functional safety can be reliably integrated into PROFIsafe or PROFINET networks. Both systems can be coupled. This enables you to implement manufacturer-independent functional safety, such as emergency stop concepts, across systems.



# High-performance safety controller

## Performance controllers for wind applications



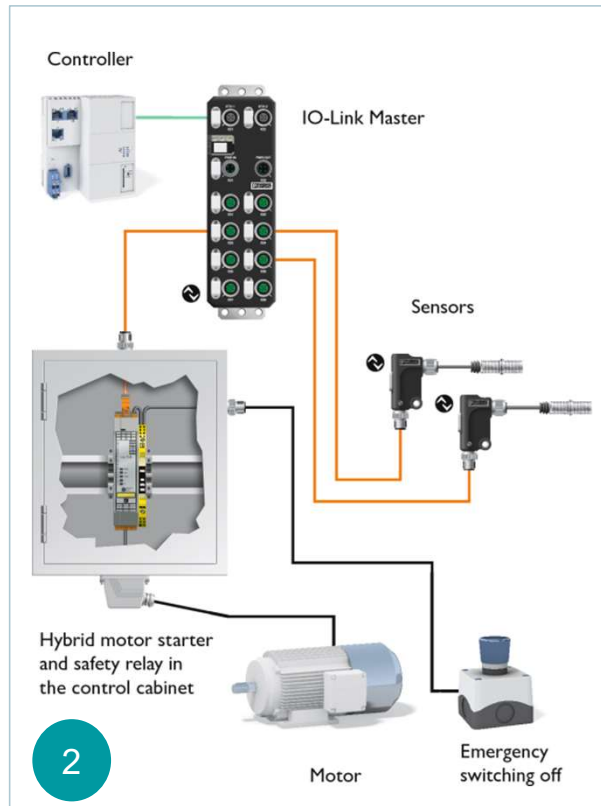
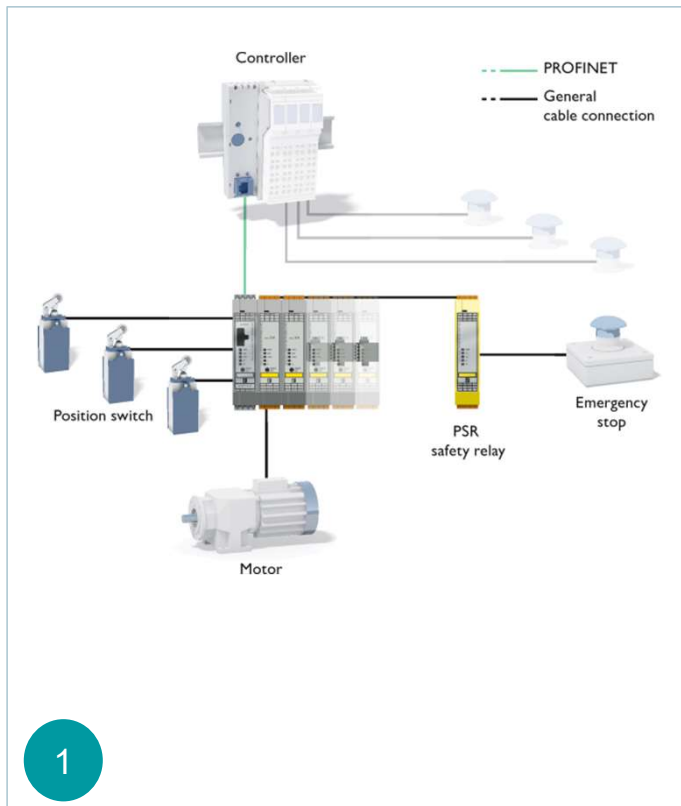
### Safe monitoring of the wind turbine generators

Safe monitoring of a wide range of signals is a challenge when controlling WTGs. With the SAFE AI solution package, for example, safety-related analog I/O modules are no longer required in order to process safe signals from wind measurement. This takes place using TÜV-certified software and enables you to implement safety functions up to SIL 3 and PL e in your WTG.

The consultation service provided by our safety experts for the wind industry completes the package.

# Hybrid motor starters

## Consistent networking via the interface system IO-Link



### Network-capable motor starters

In addition to standard devices for parallel wiring, network-capable versions are also available.

The network-capable versions enable consistent communication between the field and control level. The integration into all common fieldbus systems is realized via the interface system or IO-Link.

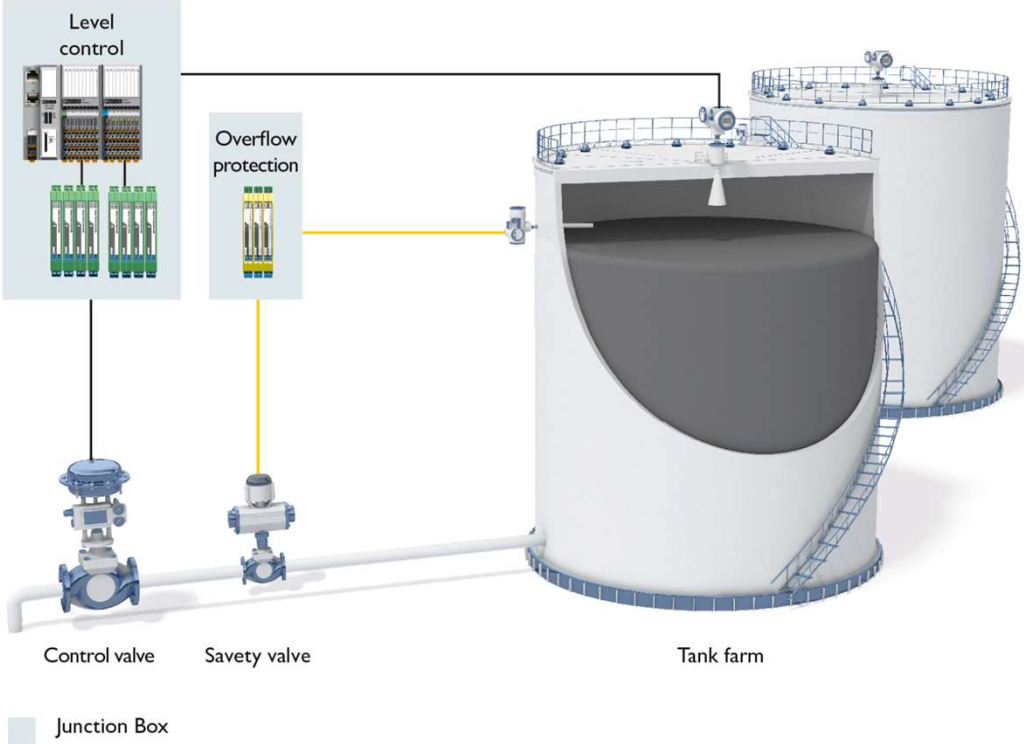
1. Fieldbus connection via interface system (IFS)
2. Hybrid motor starters for networking with IO-Link

# Safe coupling relays Tank monitoring



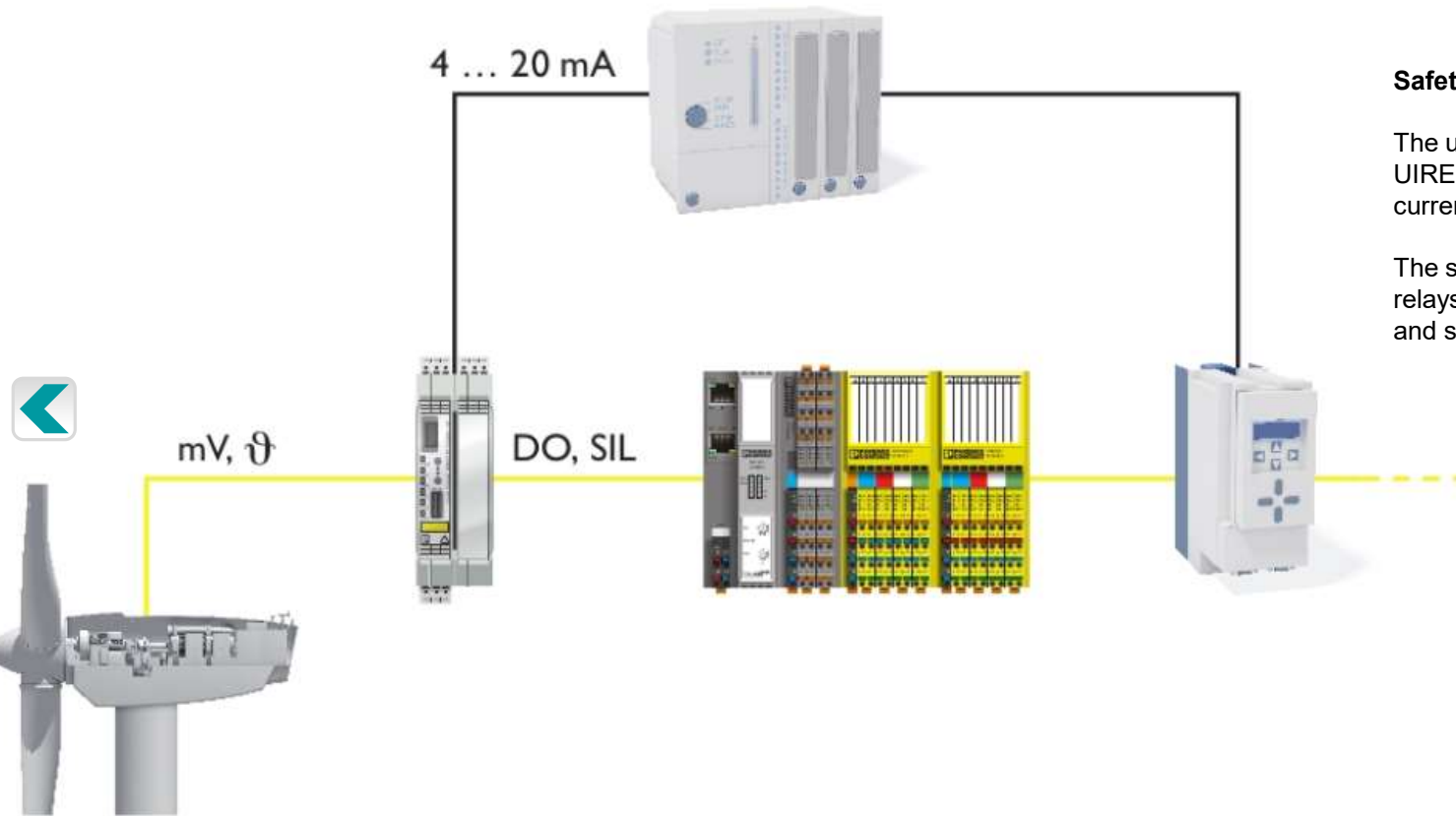
## Complete solutions for automated tank farm management

With a broad portfolio of SIL-certified technology for functional safety, Ex-i signal conditioners and modular control systems, you can design efficient level control. An overflow protection is installed parallel to the level control, which activates a safety valve in an emergency and immediately stops the flow of the conveyed material.



# Safe signal conditioners

## Safe signal conditioning with functional safety



### Safety-relevant temperature monitoring

The universal temperature transducer (MACX TTT-UIREL) has two switching outputs, in addition to a current output.

The safety-relevant switching output, to which two relays are connected, switches limit values directly and safely without an additional safety controller.



### Safe power supplies QUINT POWER

The high-performance power supplies QUINT POWER ensure superior availability of your system. It satisfies the requirements in accordance with functional safety (SIL) and ensures maximum operational safety.

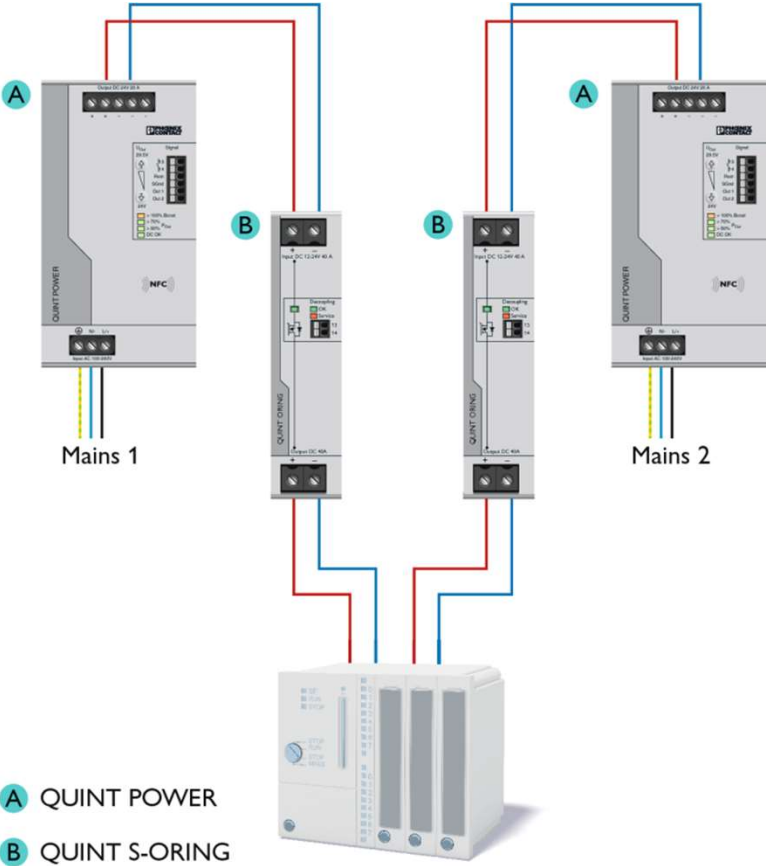
- ✓ Superior system availability, thanks to SFB Technology and preventive function monitoring
- ✓ Safe supply for your application, thanks to SIL certification in accordance with IEC 61508
- ✓ Fully functional monitoring, thanks to redundant system



[Product overview](#)

# Safe power supply

## Increased demands on functional safety



### Redundant system for functional safety

The 1+1 redundant power supply system provides symmetrical load distribution and increases system availability. Thanks to isolated conductor routing, consistent redundancy through to the load is assured.

Thanks to the SIL 3 certification in accordance with IEC 61508, the system can be integrated into redundant applications with the greatest demands on functional safety and superior system availability.



# Safe power supplies

## Product overview



Product overview



Type	Applications	Output current				Safety approvals						Dimensions W x H x D [mm]	Order No.
		Nominal output current	Static boost	Dynamic boost	SFB Technology	IEC 60950-1	SIL in accordance with IEC 61508	ATEX / IECEx / Class I zone 2	UL ANSI / ISA-12.12.01 Class I Division 2	DNV GL	HART-compatible		
<b>High-performance power supplies, single phase</b>													
Input voltage: 85 V AC ... 264 V AC, 90 V DC ... 350 V DC Output voltage: 24 V DC ... 29.5 V DC													
QUINT4-PS/ 1AC/24DC/20	For the safe supply of your systems	20 A	25 A	30 A (5 s)	120 A (15 ms)	•	SIL 2	–	•	•	•	70 x 130 x 125	<a href="#">2904602</a>
QUINT4-PS/ 1AC/24DC/20+	For the safe supply of your systems	20 A	25 A	30 A (5 s)	120 A (5 ms)	•	SIL 3	•	•	•	•	70 x 130 x 125	<a href="#">2904617</a>
<b>Active redundancy module, Plus version</b>													
Input voltage: 8 V DC ... 26 V DC Output voltage: $U_n - 0.1$ V DC													
QUINT4-S-ORING/ 12-24DC/1X40/+	For decoupling	40 A	45 A	60 A (5 s)	240 A (15 ms)	•	SIL 3 <sup>1)</sup>	•	•	•	–	32 x 130 x 125	<a href="#">2907753</a>



# Smart safety solutions

## Mobile applications



### Mobile applications

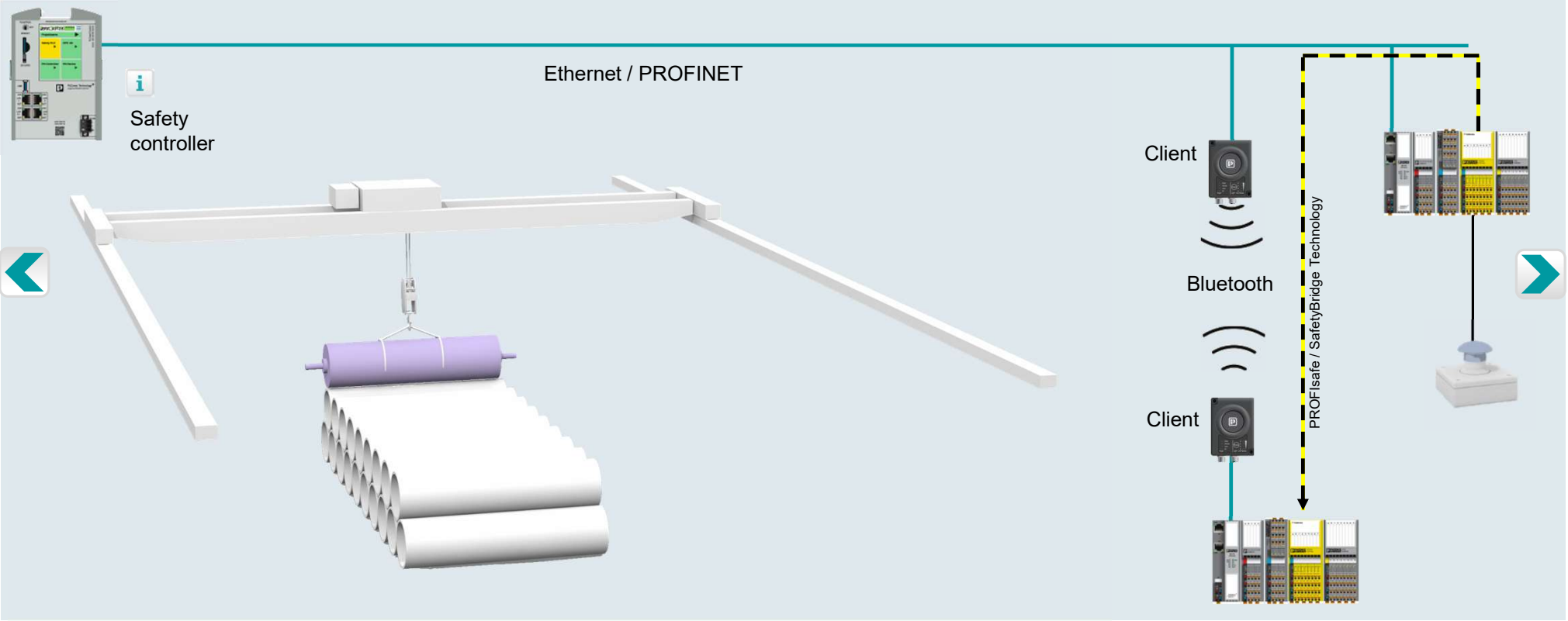
With regard to passengerless transport systems, airport bridges or the like, functional safety is also becoming increasingly important. In addition, the combination of safety and wireless has many advantages.

[Learn more](#)



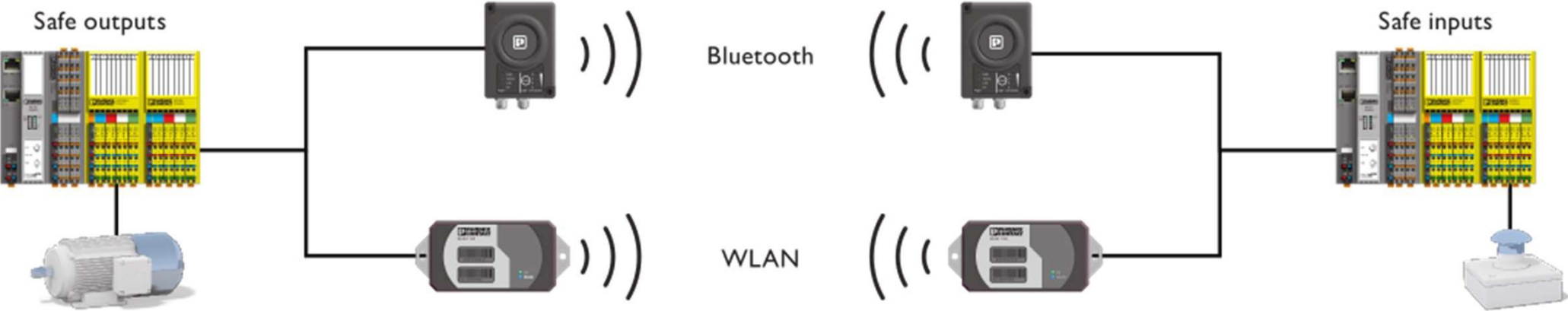
# Smart safety solutions

## Transmitting safe data via wireless systems



# Smart safety solutions

## Transmitting safe data via wireless systems



**SafetyBridge Technology** enables the safe and reliable wireless transmission of safety-related data signals. You can choose between the two wireless technologies, WLAN and Bluetooth. Cable and slip ring transmission systems can thus be replaced, with the wireless paths, without having to change the security passwords for the safety application.

SafetyBridge Technology<sup>®</sup>   
Designed by PHOENIX CONTACT

### Advantages of combing safety and wireless:

- ✓ Easy integration in existing automation networks
- ✓ Transmission of safety signals over long distances
- ✓ Cost savings with a decentralised or mobile machine design



Quality assurance

**Certified products and processes**



#### Quality assurance over the product lifecycle

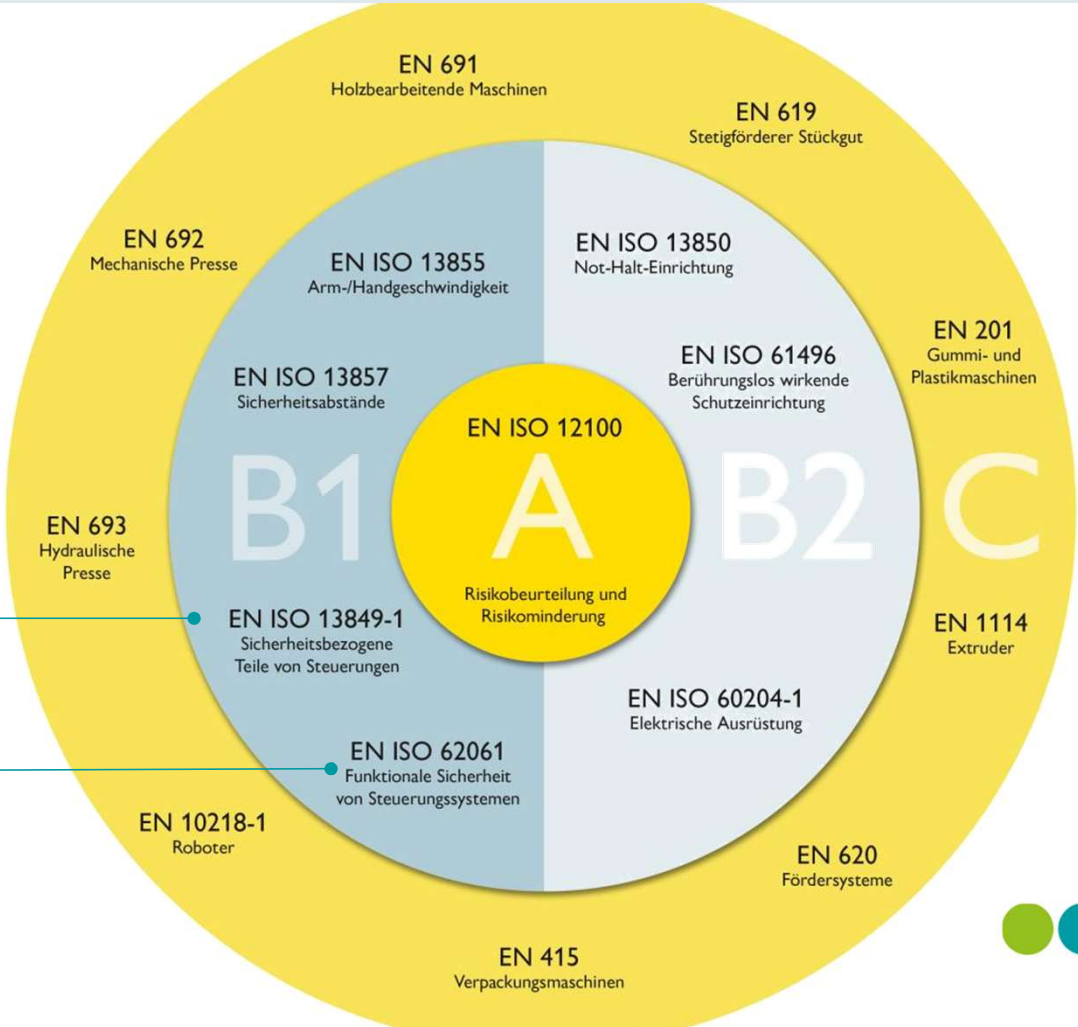
- Certified Functional Safety Management (FSM)
- Independent product certifications
- Qualified personnel (FS Engineers)
- Application oriented services and support
- Qualified training programs

#### Certified and tested for your application

- EN 50205 force-guided contacts
- EN ISO 13849-1 and EN 62061 for machine building
- IEC 61508/61511 for the process industry
- EN 50156 for use in furnaces, steam generators, waste heat boilers, rotary furnaces and hot gas generators
- Germanic Lloyd (GL) for use in shipbuilding and offshore systems
- SIL 1, 2 and 3

# Safety standards and regulations

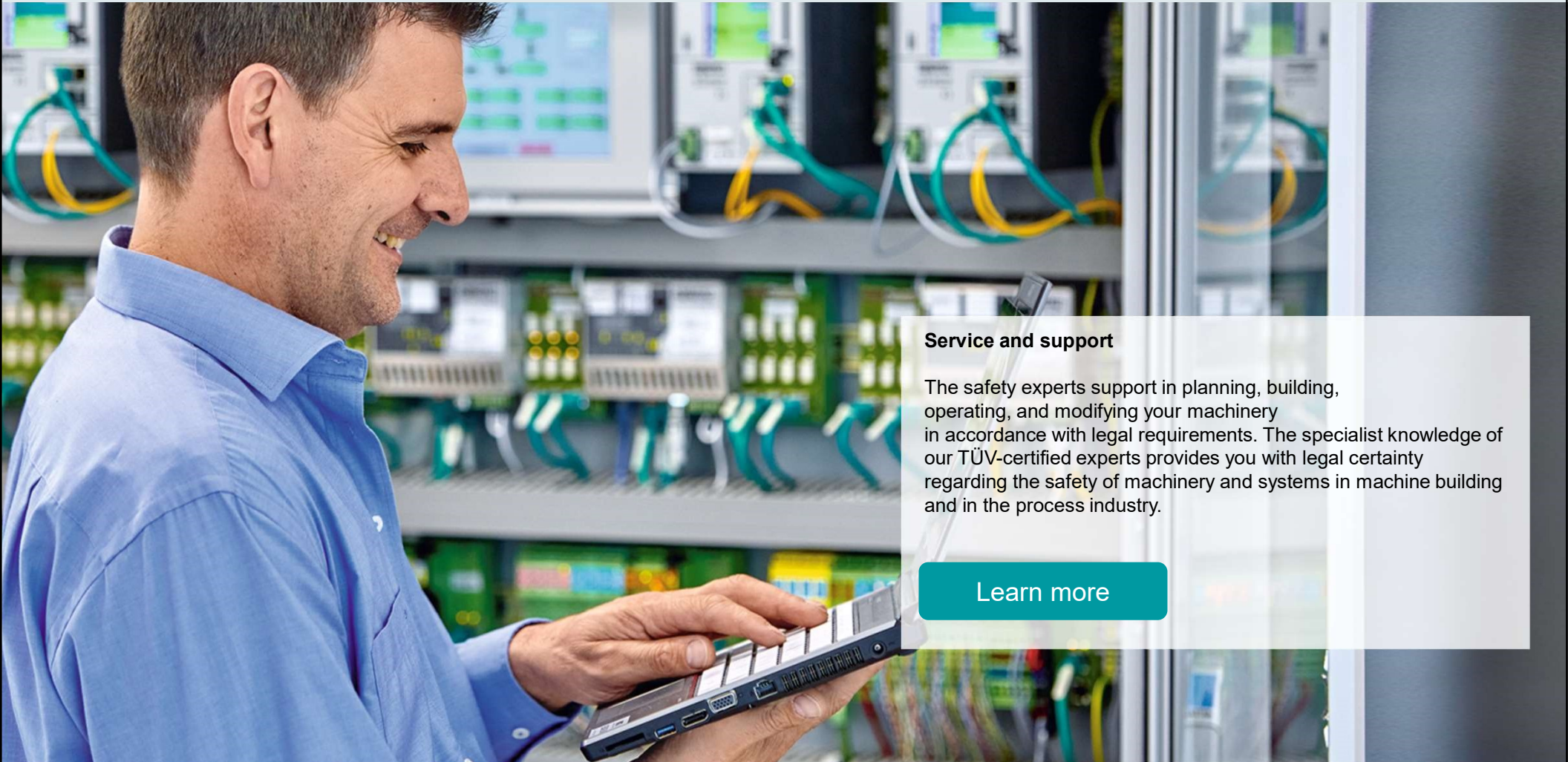
## to better control your safety critical processes



EN ISO 13849-1 describes the design of safety-related parts of control systems. An important parameter for the reliability of safety-related functions is the Performance Level (PL).

DIN EN 62061 describes the functional safety aspects of safety-related electrical, electronic and programmable control systems.

## Safety service and support Worldwide support from TÜV certified experts



### Service and support

The safety experts support in planning, building, operating, and modifying your machinery in accordance with legal requirements. The specialist knowledge of our TÜV-certified experts provides you with legal certainty regarding the safety of machinery and systems in machine building and in the process industry.

[Learn more](#)

# Safety service and support

## Services for machine and system safety



### Consulting

We provide advice on various subjects in the planning and implementation of your system:

- Design of the safety lifecycle: standards and their implementation
- Machinery Directive
- Changes to machinery and systems



### Engineering

To assess the safety integrity, we determine the SIL of the safety functions with the help of your technical documentation. These must be sufficiently robust to withstand random errors. In the case of Machinery Directive requirements, we implement the entire **safety lifecycle process**.



### Product support

We provide support regarding any Phoenix Contact safety hardware and software questions. You can contact our support team regarding anything – from the preliminary technical clarification, through planning and implementation, right through to operation



### Seminars and trainings

We offer instruction and practical training that is tailored to your individual requirements, e.g. safety application software:

- Demands on safety-related software
- Specification of safety requirements and software
- Realization of safety functions

# Safety service and support

## Services for safety in the process industry



### Demands on safety in the process industry

Design guidelines relating to functional safety are in place for the requirements on the safe operation of systems in the process industry. The internationally harmonized procedure is described in IEC 61511. A significant component of this is the safety lifecycle in conjunction with functional safety management.

### Seminars for functional safety in the process industry in accordance with EN 61511:

- Risk analysis
- Safety lifecycle
- Creation of process control technology

# Successful in use Industries



**Machine building** [i](#)



**Automotive** [i](#)



**Process industry** [i](#)

## Industries

### Machine building



- ✓ Wide product portfolio with compatibility to a large number of sensors
- ✓ In-house mechanical engineering supports all business fields of Phoenix Contact as well as the developing and producing sites worldwide
- ✓ Approvals for markets around the world such as EN ISO 13849-1 and EN 62061

# Industries

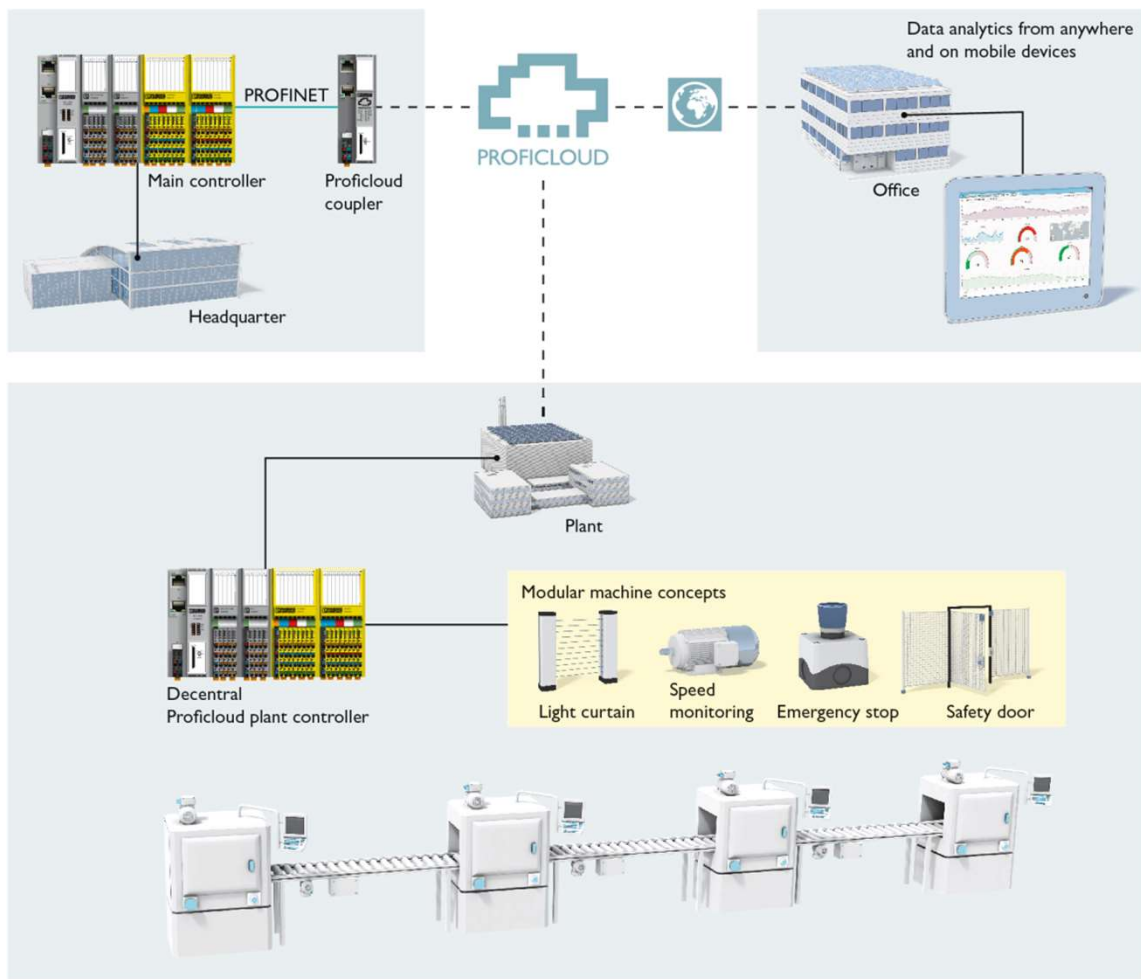
## Automotive



- ✓ Reliable automation developed specially for high-end applications with efficient PROFIsafe safety controllers
- ✓ EN ISO 13849-1 and EN 62061
- ✓ Labs-free components to prevent defects on the end product (substances which interfere the lacquering process)

# Safety trends

## Safety in the cloud



### Safety in the Cloud

Transmit safety-related data via the Internet to the PROFICLOUD to further increase your operational performance.

- Transfer safety-related data to the cloud with cloud devices
- Combine and monitor process and safety data in the cloud continuously
- Evaluate collected information on mobile end devices from anywhere and at any time

[Learn more](#)

## Phoenix Contact 360 Grad Security concept



- Secure Development processes according IEC 62443-4-1
- Security certified products according IEC 62443-4-2
- Security certified Services according IEC 62443-2-4
- Blueprints and customer specific solutions certified according IEC 62443-3-3
- Product Security Incident Response Team  
Market Vulnerabilities scans and publishing updates and advisories

Security nach IEC 62443

# Cyber Security



**CERTIFICATE**  
No. Q4B 029429 0008 Rev. 00

Holder of Certificate: PHOENIX CONTACT GmbH & Co. KG  
Flächenmarktstr. 8  
32825 Blomberg  
GERMANY

Certification Mark:

Scope of Certificate: ICS Security Service Provider

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

Report No.: 16CR119207  
Valid until: 2022-03-17  
Date: 2016-03-18

Page 1 of 2  
TÜV SÜD Product Service GmbH • Certification Body • Riederstraße 65 • 80339 Munich • Germany

TÜV SÜD

Security nach IEC 62443

# Cyber Security



# Security Certifications

## Certifications according to IEC 62443



**CERTIFICATE**  
 No. Q4B 029429 0008 Rev. 00

**Holder of Certificate:** PHOENIX CONTACT GmbH & Co. KG  
 Flachmarkstr. 6  
 32825 Blomberg  
 GERMANY

**Certification Mark:** 

**Scope of Certificate:** ICS Security Service Provider

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

**Report No.:** 18CR11S007  
**Valid until:** 2022-03-17  
**Date:** 2019-03-18  
 (Andreas Barwald)

3-1-3	IEC-62443-1-4	Security metrics	IACS security life-cycle and use-cases
3-2-3	IEC-62443-2-4	Management in environment	Security program requirements for IACS service providers
3-3-3	IEC-62443-2-5	Security events and levels	Implementation guidance for IACS asset owners




**CERTIFICATE**  
 No. Q4B 029429 0007 Rev. 00

**Holder of Certificate:** PHOENIX CONTACT GmbH & Co. KG  
 Flachmarkstr. 6  
 32825 Blomberg  
 GERMANY

**Factory(ies):** PHOENIX CONTACT Electronics GmbH  
 Industry Management and Automation  
 Business Unit Control Systems  
 Dtingenauer Strasse 30, 31812 Bad Pyrmont, GERMANY  
 PHOENIX CONTACT Software GmbH  
 Langenbruch 6, 32657 Lemgo, GERMANY

**Certification Mark:** 

**Scope of Certificate:** Secure Product Development Lifecycle

**Applied Standard(s):** IEC 62443-4-1:2018  
 PPP 15002A:2018 (IEC 62443-4-1 Full Process Profile)

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

**Report No.:** 18CR11S007  
**Valid until:** 2021-07-29  
**Date:** 2018-08-01  
 (Andreas Barwald)

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ICS-Security Service Provider

# IEC 62443-2-4 – ICS-Security Service Provider Certificate



As an ICS service provider we are offering

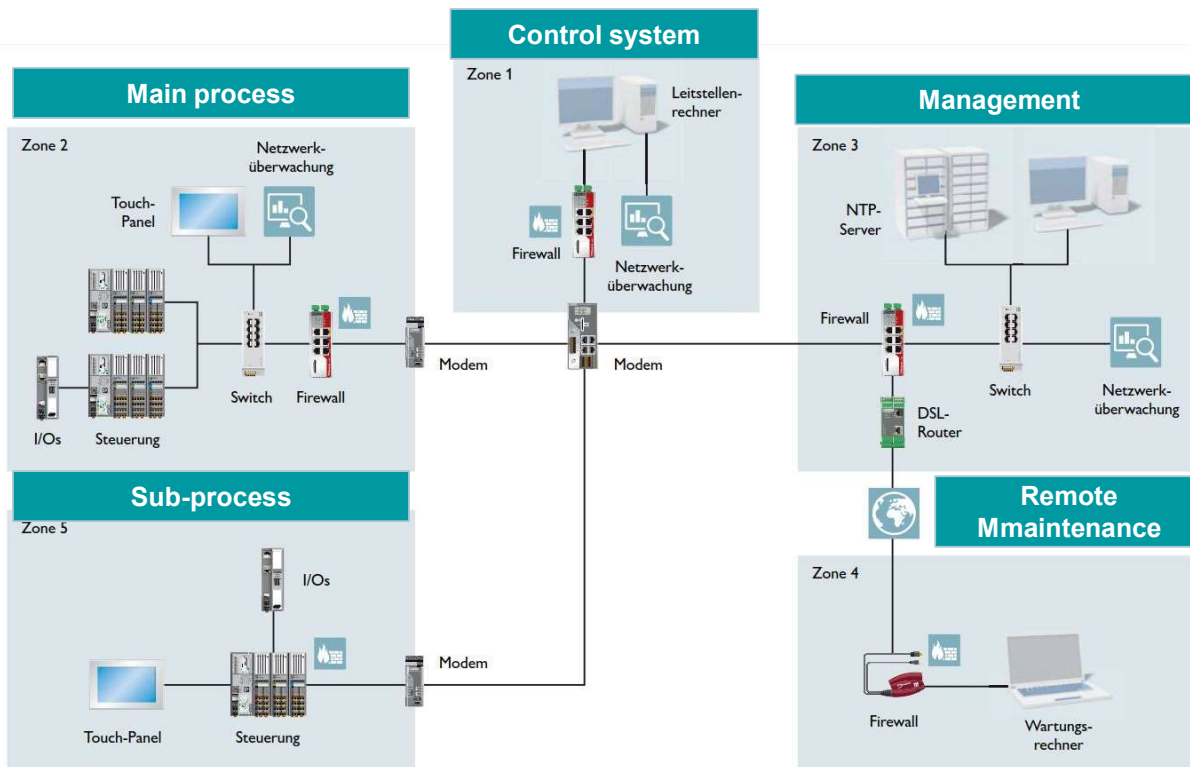
- Security services
- Design and commissioning of an automation system for acceptance as system integrator



ICS = Industrial Control System



# Security Context: Security Blueprint Certification



## Security Context:

- describes the environment
- describes the operating conditions
- defines the data criticality
- defines the zones and communication relationships
- assumptions the environment must fulfill.
- threat evaluation and priorities

**AIO65 Standalone  
Panel PCs**

**&**

**Push-button Box with  
SE Safety Module**



Push-button Box for Modular Operator Station with SE Safety Module

# Push-button Box with SE Safety Module

