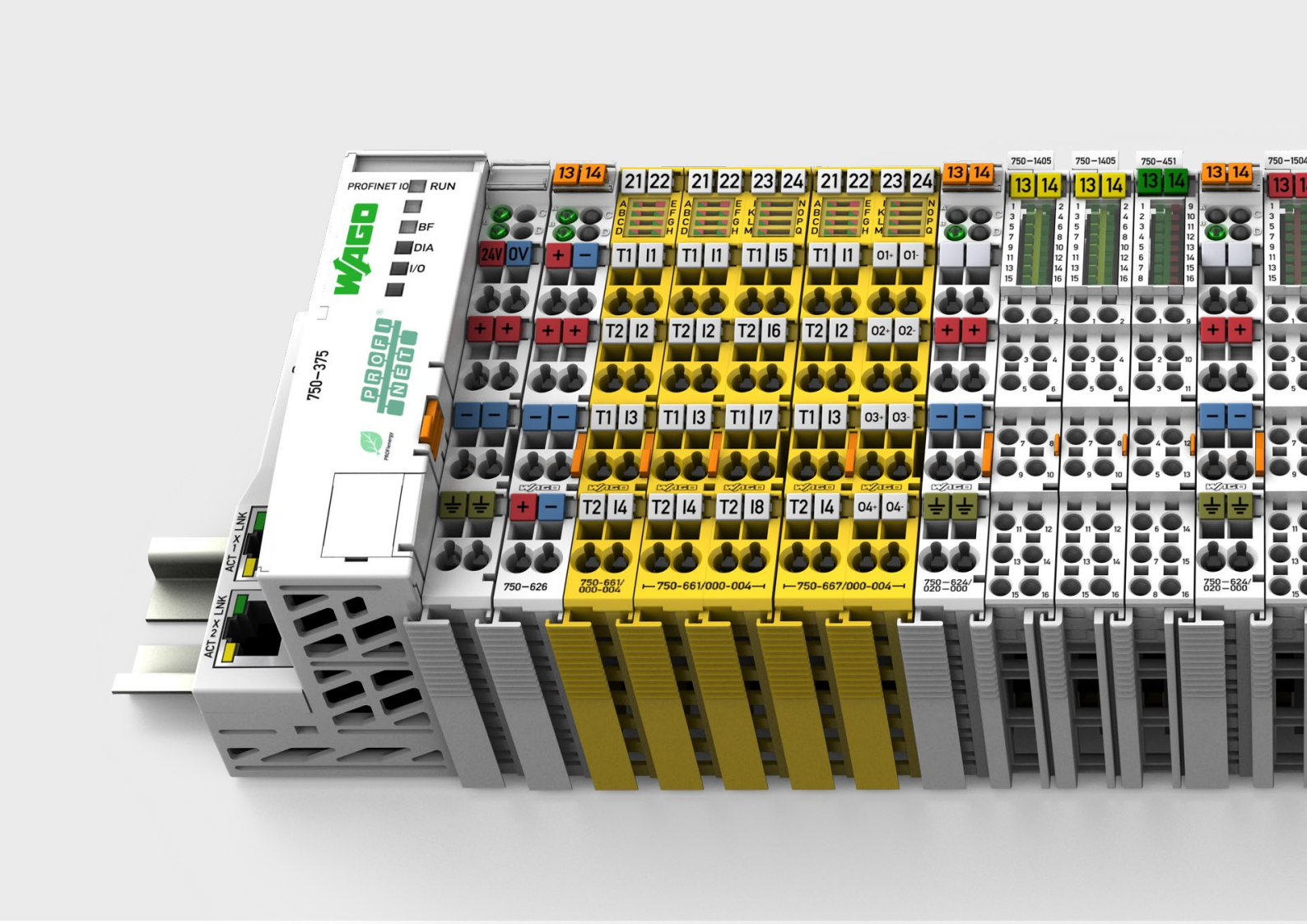
WAGO I/O System 750

Functional Safety with the New WAGO Safety I/O Generation



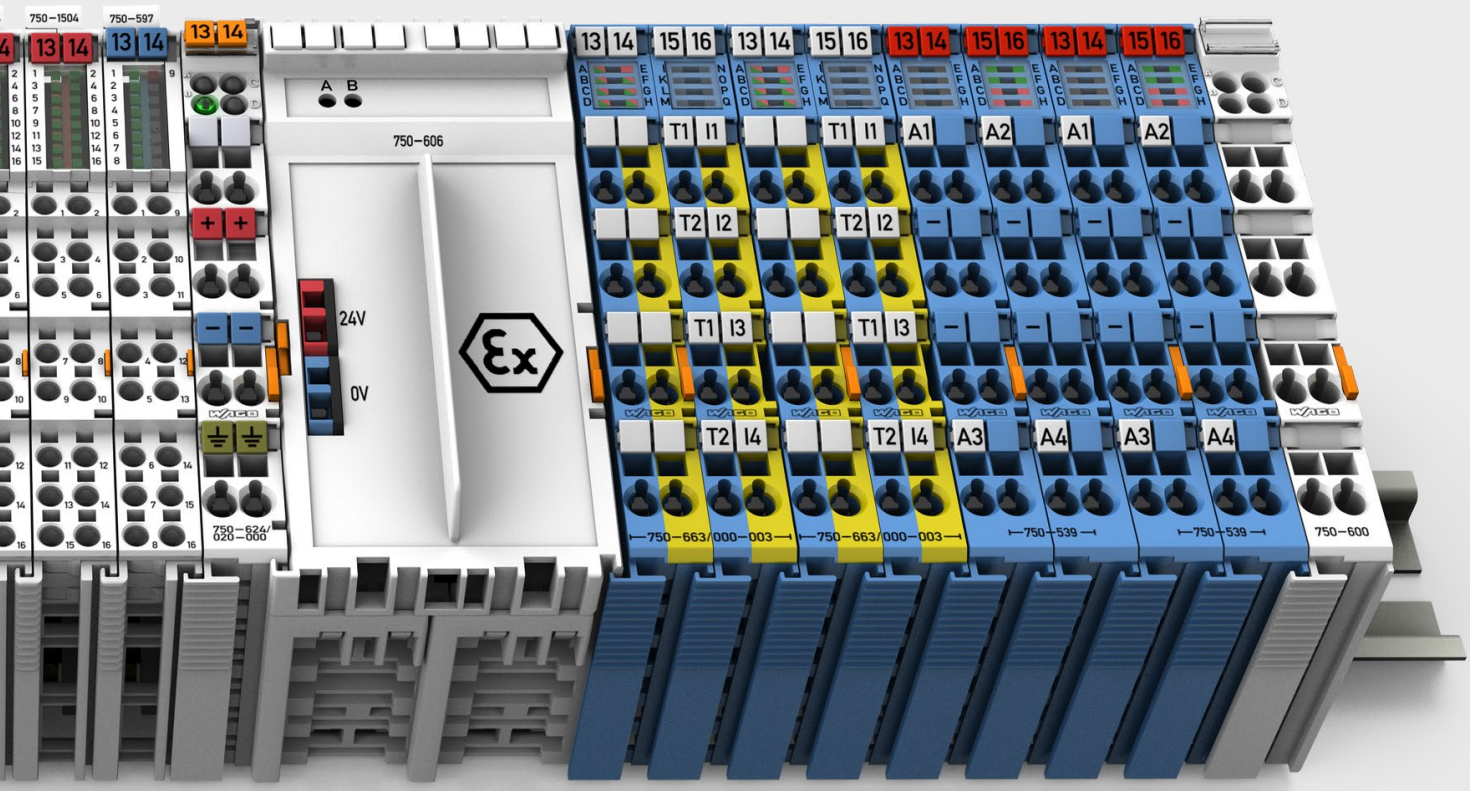
WAGO I/O System 750

Functional Safety for Control Cabinets

The WAGO I/O System 750 boasts universal use and an extensive product portfolio. With more than 500 different modules, it offers superior versatility and flexibility. WAGO also provides a wide range of products for functional safety applications with analog and digital signals.

With their compact design, the functionally safe modules of the WAGO I/O System 750 don't take up much space and offer a high signal density in a small footprint. The system's modularity allows flexible combination of standard, Ex i and PROFIsafe components. The color coding clearly identifies the different technologies.

The PROFIsafe modules offer easy diagnostic and service options. The system uses standard diagnostics according to the PROFIBUS® and PROFINET® specifications. With iPar server technology, device replacement is easy and requires no tooling. The modules can also be parameterized offline with PROFINET® or online via the WAGO Safety Editor (SEDI). They support safety functions up to SIL 3 and PLe/Cat. 4; they also meet the EN IEC 13849 and EN ISO 62061 safety standards. The modules can also be used in safety applications for the process industry per IEC 61511.

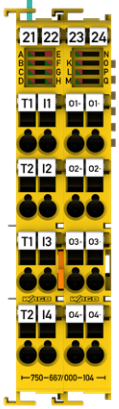


Key Benefits

- High signal density in a small footprint
- Easy diagnostic and service options
- Simple device replacement via iPar Server technology
- Suitable for safety functions up to SIL 3 and PLe/Cat. 4
- PROFINET® offline configuration
- Optional local LOGIC functions

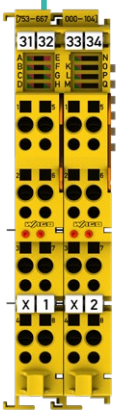
PROFIsafe

PROFIsafe
PROFINET®



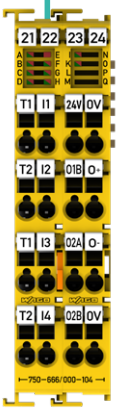
Input and Output Module with Logic

4FDI/4FDO 24 V 2 A Logic PROFIsafe
Item no. 750-667/000-104



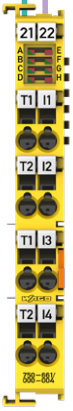
Input and Output Module with Logic

4FDI/4FDO 24 V 2 A Logic PROFIsafe
Item no. 753-667/000-104



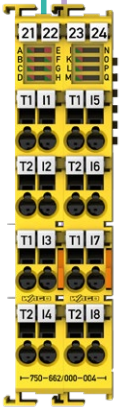
Input and Output Module with Logic

4FDI/2FDO 24 V 10 A Logic PROFIsafe
Item no. 750-666/000-104



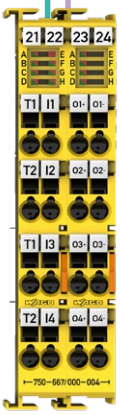
Input Module

4FDI 24 V PROFIsafe
Item no. 750-661/000-004



Input Module

8FDI 24 V PROFIsafe
Item no. 750-662/000-004



Input and Output Module

4FDI/4FDO 24 V/2 A PROFIsafe
Item no. 750-667/000-004

Input and Output Module

4FDI/2FDO 24 V/10 A PROFIsafe
Item no. 750-666/000-004

Functional Safety

WAGO I/O System 750 with PROFIsafe

Parameterizable Functions

Digital Inputs
- Input filter time
- Signal preprocessing
  - Valence/antivalence
  - Discrepancy time
  - Restart inhibit
  - Operating mode selector switch

Digital Outputs
- Test pulse length
  - Dark/light test
- Line break detection
- Active discharge

Analog Inputs
- Internal/external/automatic acknowledgment
- Passivation for each channel/module
- Analog value formats (e.g., RIOforPA)
- Sampling frequency
- Line break detection
- Mean calculation
- Substitute value

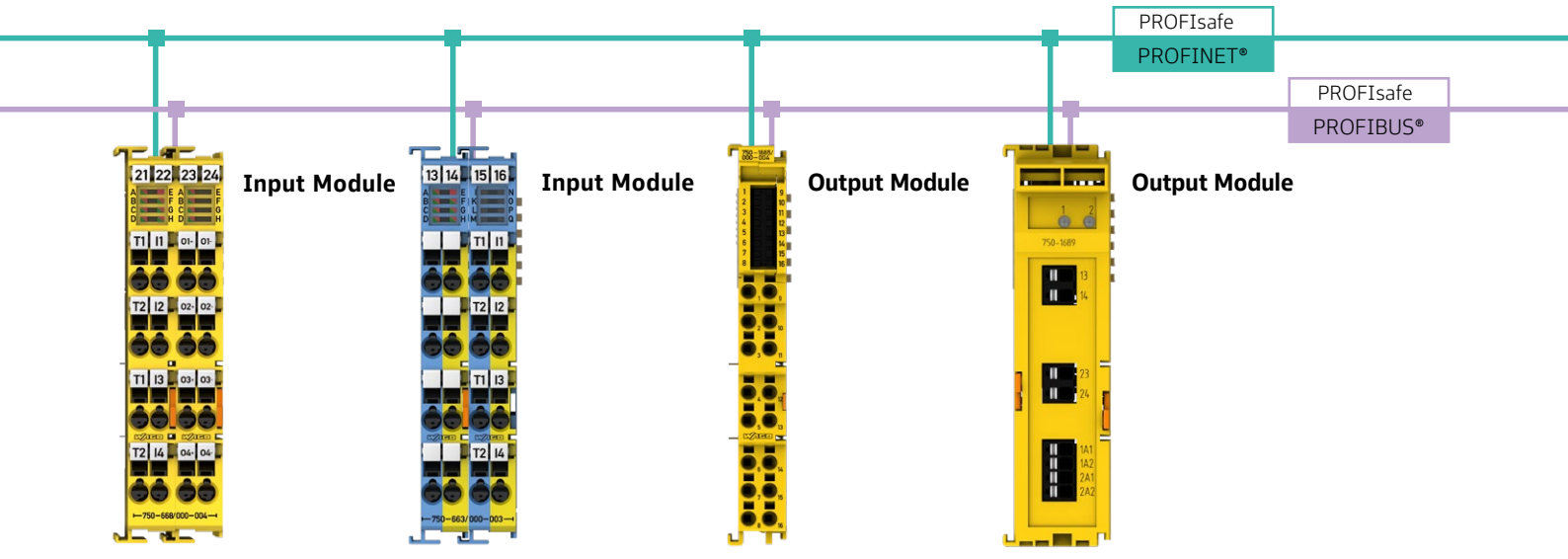
Safety Logic
- Implementation of safe applications on non-safe controllers (e.g., E-stop, EDM, two-hand control)
- Shorter safety response time
- Parameterization via the WAGO Safety Editor (SEDI)

Extensive Diagnostics

LED Indicator
- Status for each channel
- Active diagnostics
- PROFIsafe status
- Parameterization status

Fieldbus
- Standard PROFIBUS® and PROFINET® diagnostics
- Undervoltage
- Overload
- Short circuit – external voltage/GND
- Temperature
- Wire break
- Measurement range error
- Parameterization error
- Signal preprocessing

4th Generation Behavior in the Event of an Error
- Module error – module passivation
- Channel error – channel-by-channel passivation



4FAI 0/4-20 mA Diff PROFIsafe
Item no. 750-668/000-004

4F-Ex i DI 24 V V2 iPar
Item no. 750-663/000-003

8FDO 24 V/0.5 A PROFIsafe
Item no. 750-1665/000-004

2FRO 250 V/6 A
Item no. 750-1689

Implement Safety Applications without a Safety Controller

New Safety Modules Can Be Operated with WAGO Controllers

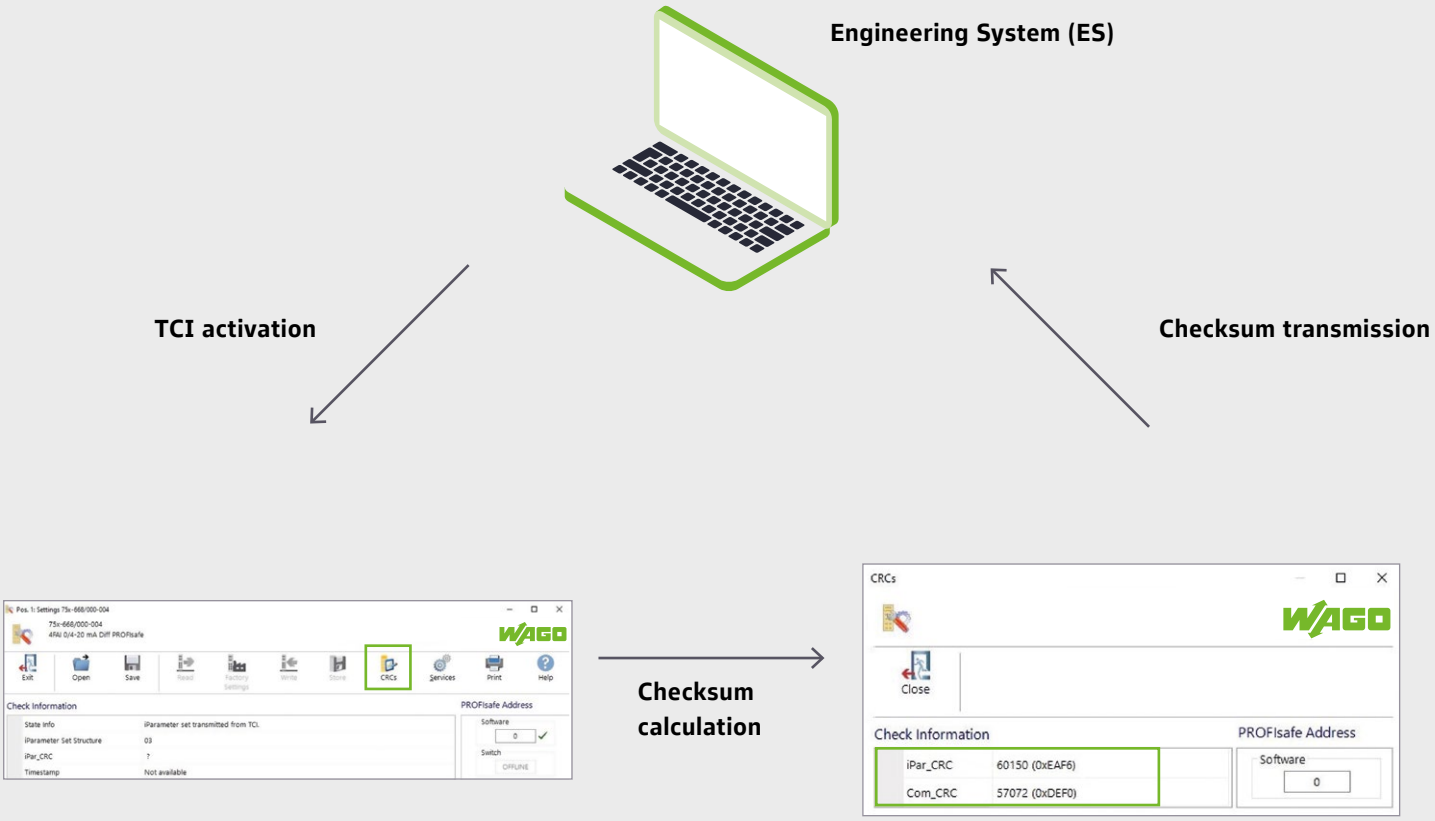
WAGO's new logic modules now enable users to implement safety applications, such as two-hand control or door locking, without a dedicated safety controller. These logic modules operate downstream of WAGO controllers and couplers, enabling shorter response times at the lowest field level by bypassing fieldbus communication.

The safety logic is configured using the new WAGO Safety Editor. Thanks to the logic modules, it is now possible to implement a machine, including a safety application, with WAGO controllers like the WAGO PFC.

Another advantage is that the module can also be integrated downstream of a safety controller using PROFIsafe. This allows for shorter safety response times and facilitates the creation of more compact safety solutions.

Key Benefits

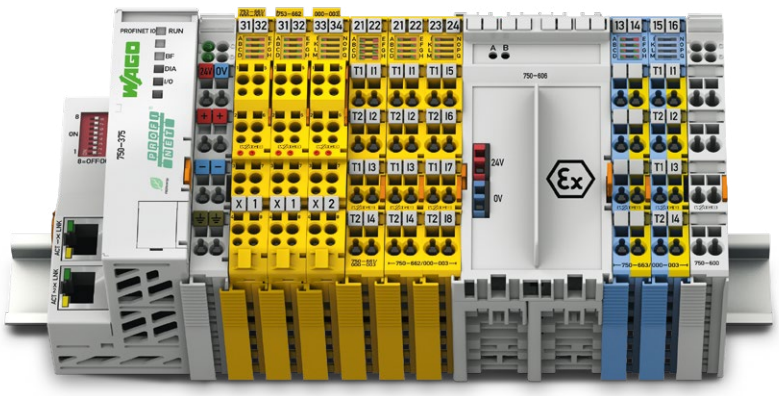
- Cost-effective solution for safety applications
- No need for a dedicated safety controller
- Shorter safety response times, since the logic is executed right in the module



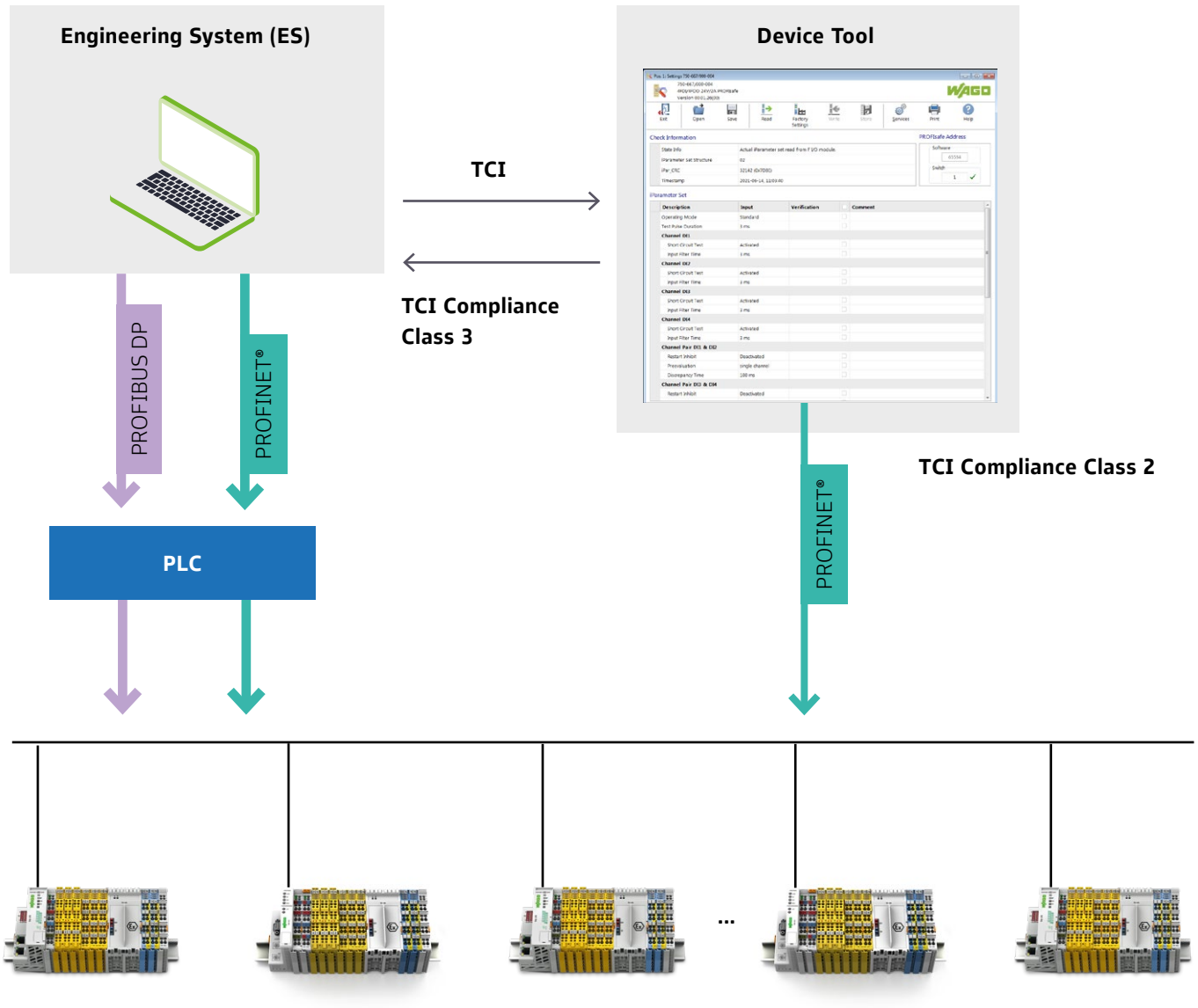
Offline Parameterization via GSD on PROFINET®

With offline parameterization, you can parameterize your safety modules using the device description in PROFINET®. This makes it easy to create your safety application offline and duplicate it on similar machines.

When the application restarts, the offline parameters automatically transfer to the modules, so devices can be replaced at any time, even without tooling.



PROFINET IO
RUN
BF
DIA
I/O
WAGO
PROFINET
00:30:DE:40:B6:B8
750-375
1001217652
4915
050104
030334
E 624
A 624
E 670
A 670
24V
0V
ON
8-011:DCP
-50K4.3



Easy Parameterization via Tool Calling Interface (TCI)

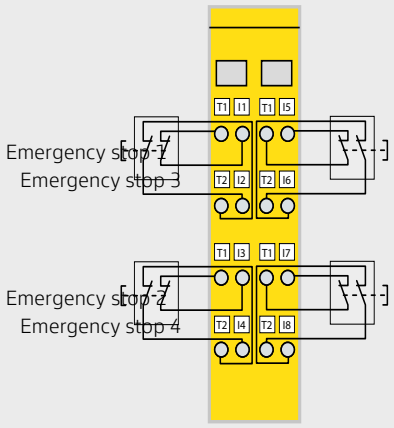
The Tool Calling Interface (TCI) is a standard interface developed by the PROFIBUS® and PROFINET® user organizations. It provides direct access to the product parameterization from the engineering system. TCI also allows an existing control system's communication structures to be used.

Functional Safety

Application Examples

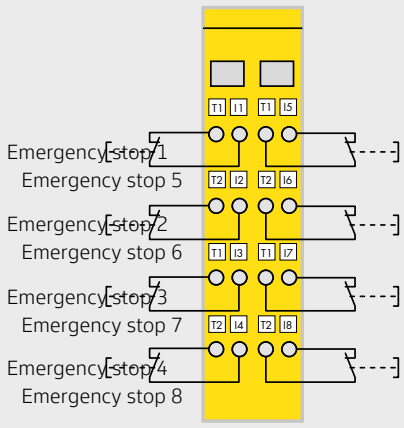
Four Emergency Stops, 2-Channel, SIL CL 3, PL e, Cat. 4

Item no. 75x-662/000-004



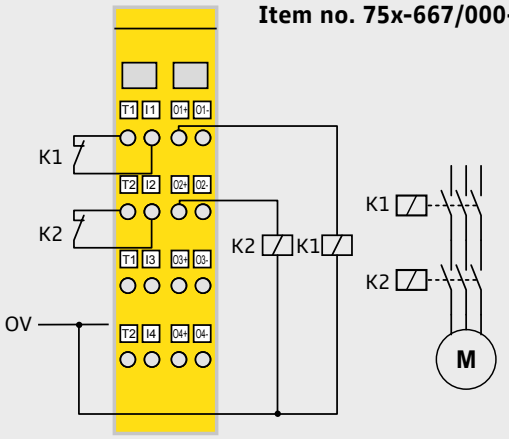
Eight Emergency Stops, 1-Channel, SIL CL 2, PL d, Cat. 2

Item no. 75x-662/000-004



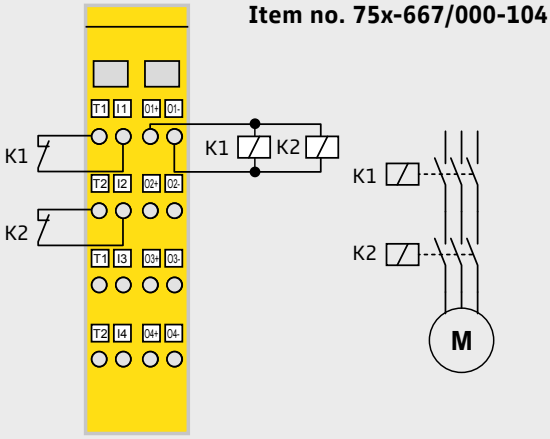
Out1+/Out2+ Loads Connected to 0 V (Ground), SIL CL 3, PL e Cat. 4

Item no. 75x-667/000-004
Item no. 75x-667/000-104

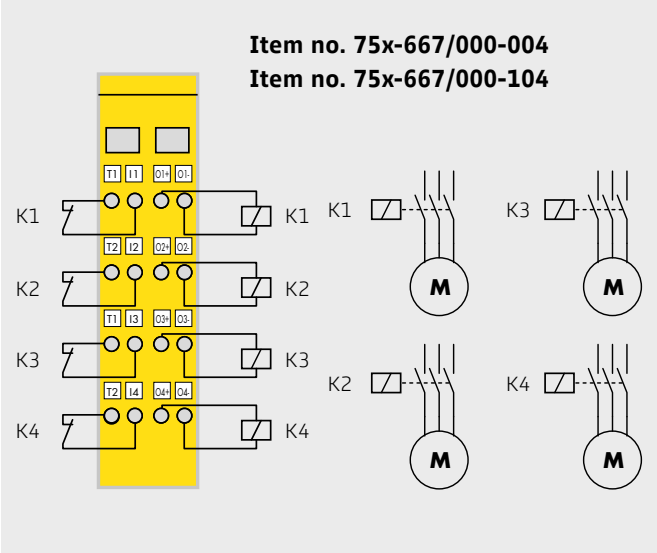


Two Parallel Loads Connected to One Digital Power Output, SIL CL 3, PL e, Cat. 4

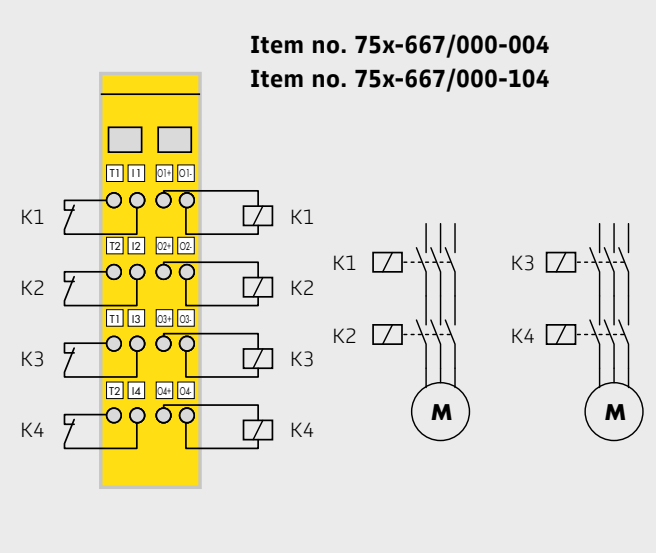
Item no. 75x-667/000-004
Item no. 75x-667/000-104



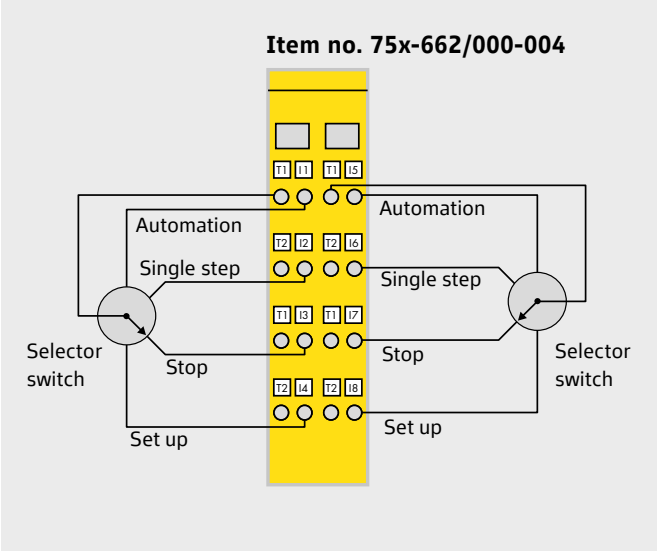
Four Motors, 1-Channel, with Feedback, SIL CL 2, PL d, Cat. 2



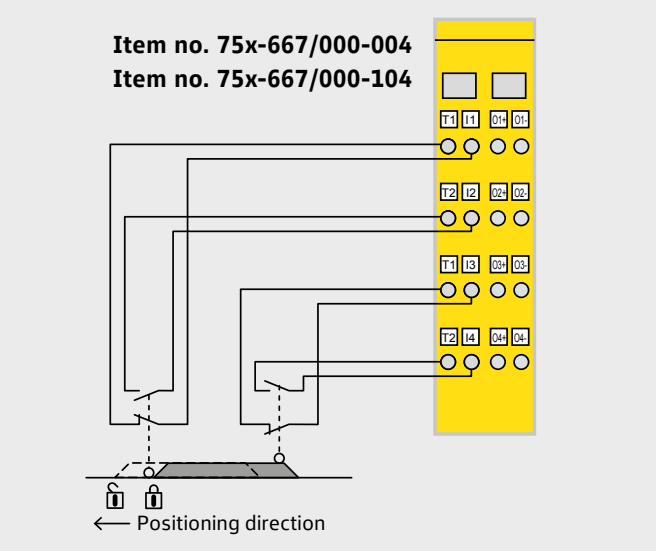
Two Motors, 2-Channel, with Feedback, SIL CL 3, PL e Cat. 4



Two 4-Way Selector Switches, SIL CL 3, PL e, Cat. 4



Protective Door Monitoring, SIL CL 3, PL e, Cat. 4

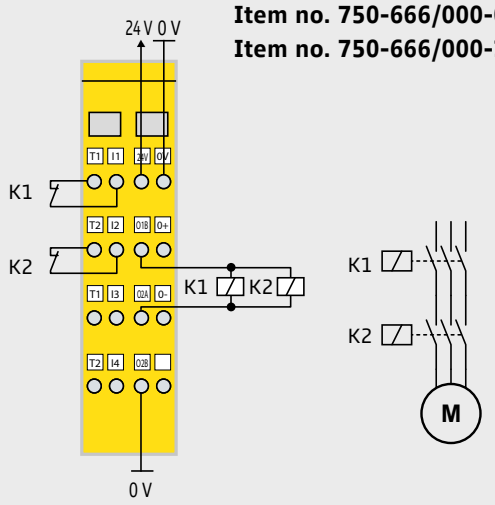


Functional Safety

Application Examples

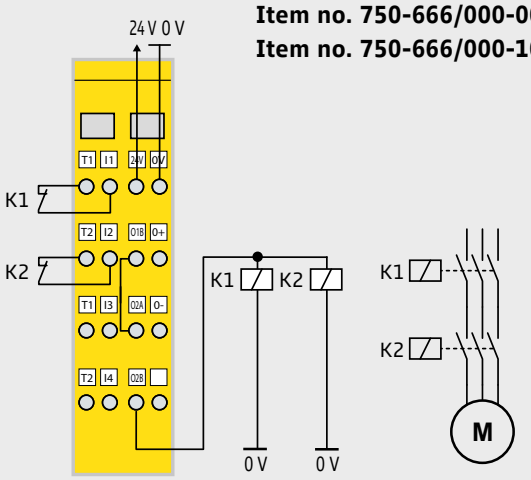
Connection of One Motor, “H-Side/L-Side 1” Output Configuration

Item no. 750-666/000-004
Item no. 750-666/000-104



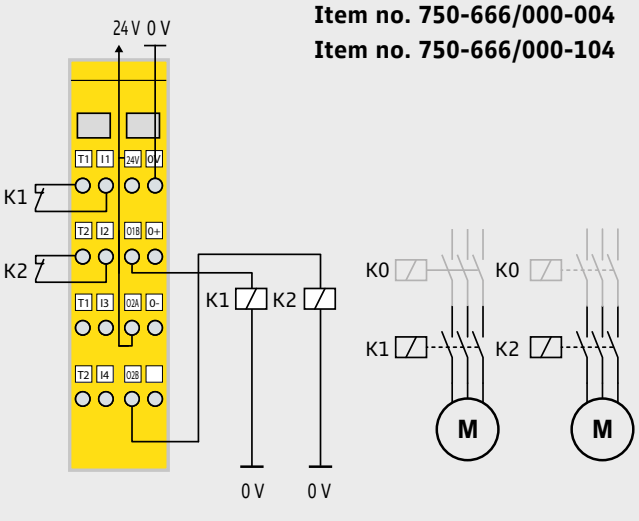
Connection of One Motor, “H-Side/L-Side 1” Output Configuration, 2-Channel

Item no. 750-666/000-004
Item no. 750-666/000-104



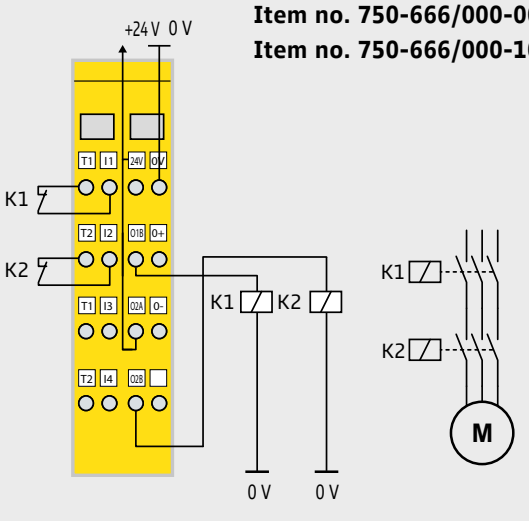
Connection of Two Motors, “H-Side/L-Side 2” Output Configuration, 1-Channel

Item no. 750-666/000-004
Item no. 750-666/000-104

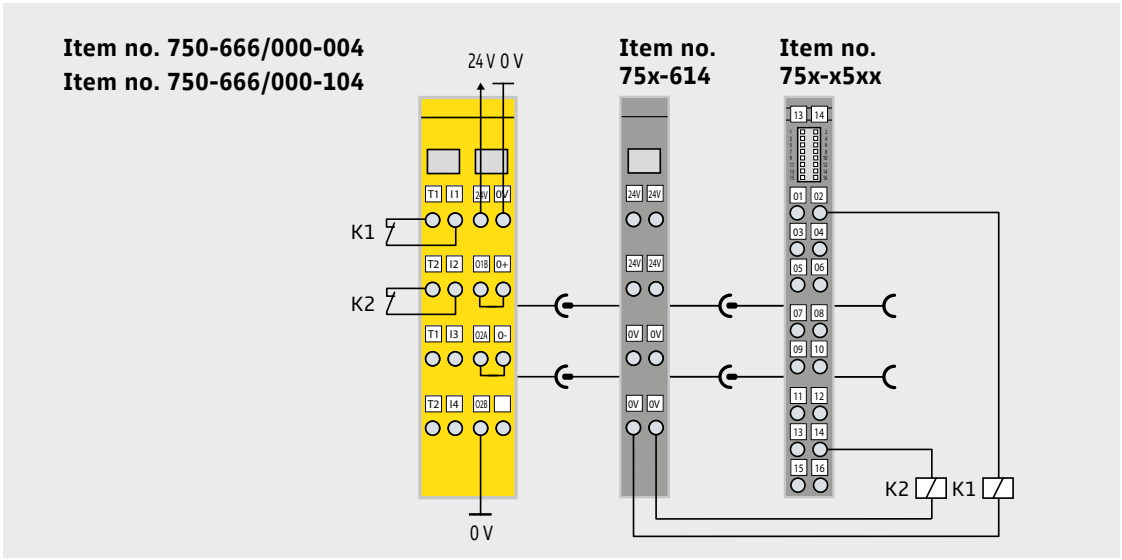


Connection of One Motor, “H-Side/L-Side 2” Output Configuration, 2-Channel

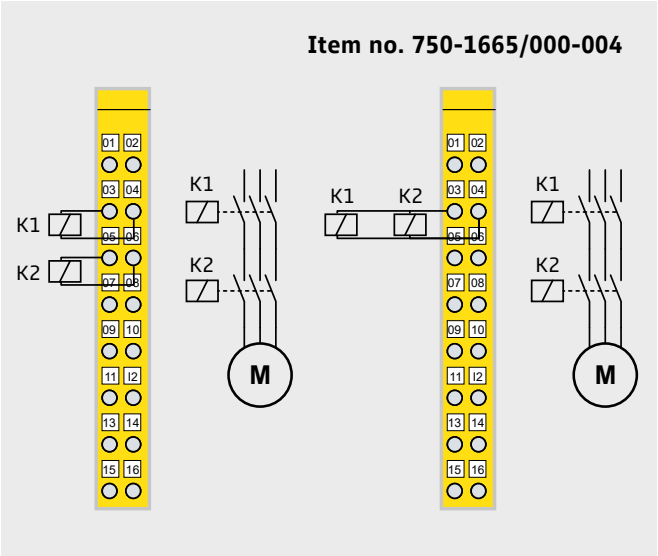
Item no. 750-666/000-004
Item no. 750-666/000-104



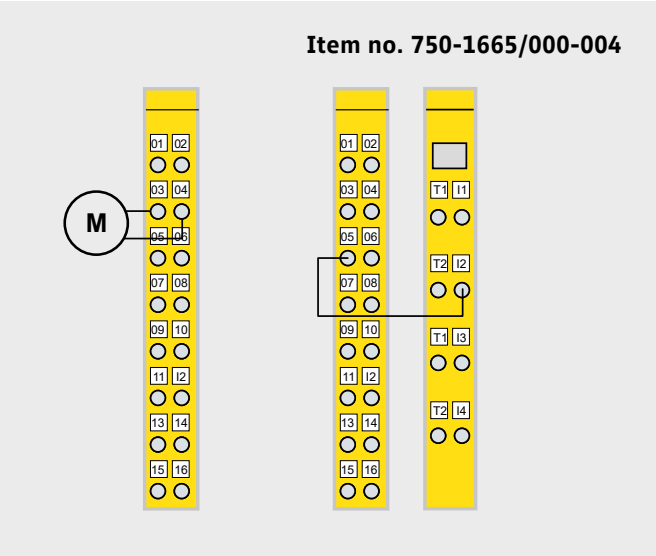
Connection of Interference-Free Digital Output Modules via Potential Distributor, H-Side/L-Side 1 Output Configuration



Connection of Loads to Ox+ against 0 V, 2-Channel



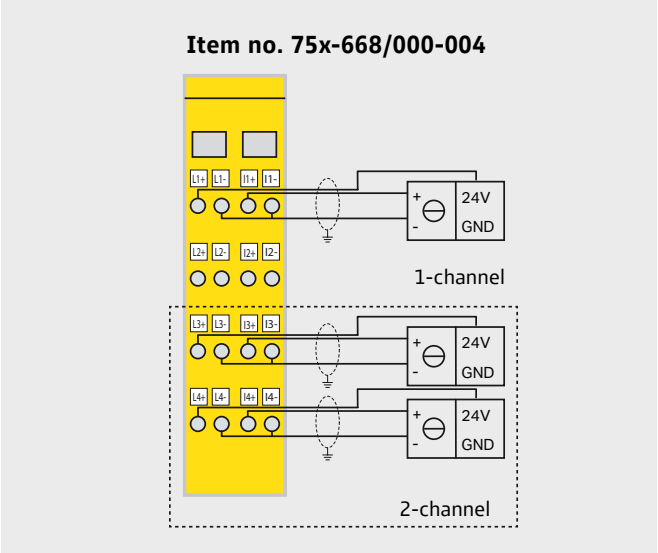
Connection of a SIL3/Cat. 4-Capable Load to a Digital Output



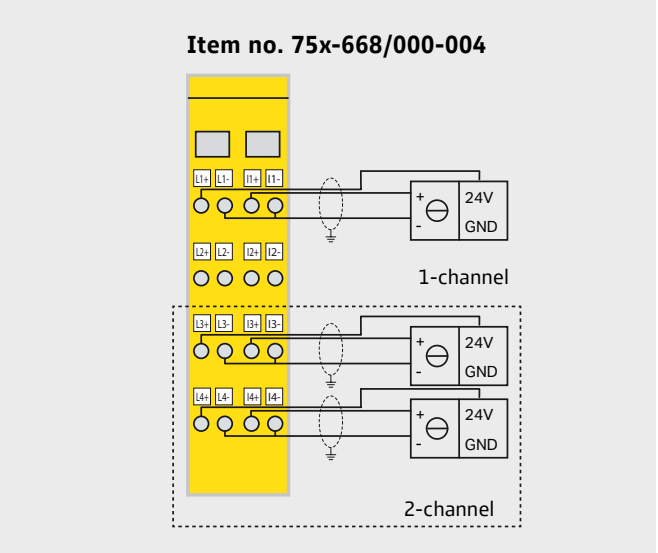
Functional Safety

Application Examples

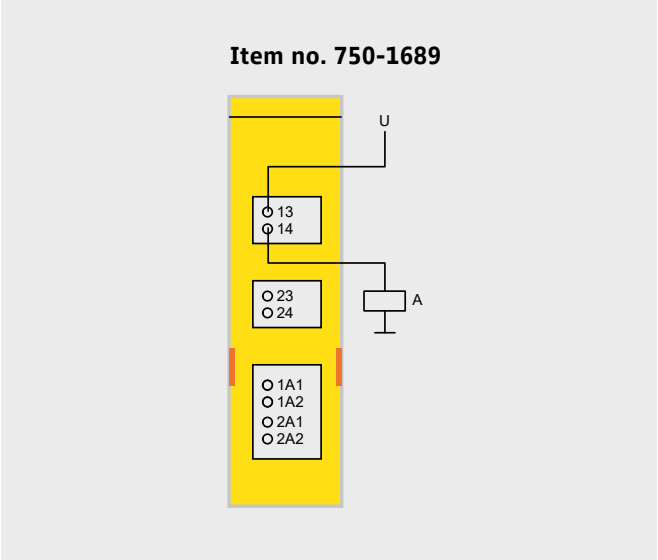
3-Wire Connection, 1-Channel/2-Channel



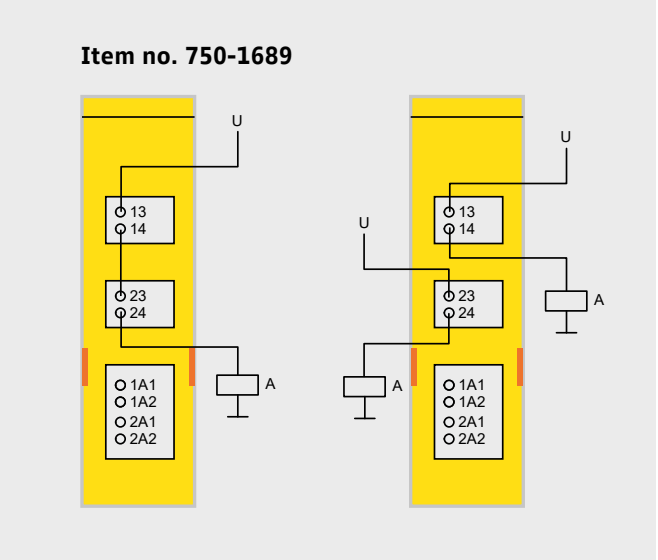
4-Wire Connection, 1-Channel/2-Channel



Actuator Connection, 1-Channel



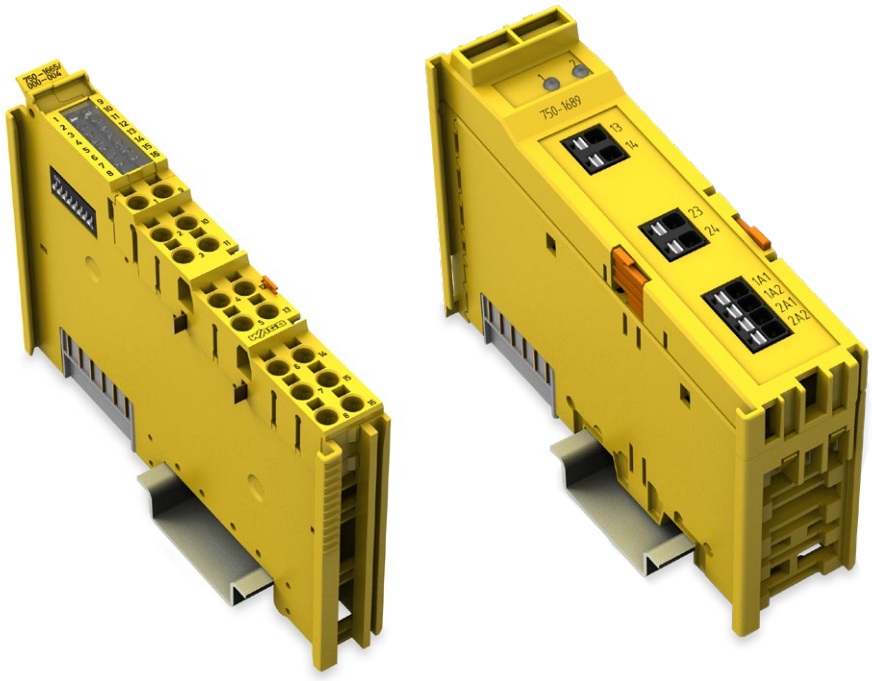
Actuator Connection, 2-Channel



Functional Safety

Overview

Item Name	Rated up to	Item Number	Supported			
Input Module			**PROFIBUS®**	**PROFINET®**	**PROFIsafe V2.4**	**PROFIsafe V2.6**
4FDI 24 V PROFIsafe	SIL 3, PL e Cat. 4	750-661/000-004				
	SIL 3, PL e Cat. 4	753-661/000-004				
8FDI 24 V PROFIsafe	SIL 3, PL e Cat. 4	750-662/000-004				
	SIL 3, PL e Cat. 4	753-662/000-004				
4FAI 0/4-20 mA Diff PROFIsafe	SIL 3, PL e Cat. 4	750-668/000-004				
	SIL 3, PL e Cat. 4	753-668/000-004				
4F-Ex i DI 24 V PROFIsafe V2 iPar	SIL 3, PL e Cat. 4	750-663/000-003				
Output Module						
8FDO 24 V/0.5 A PROFIsafe	SIL 3, PL e Cat. 4	750-1665/000-004				
2FRO 250 V/6 A	SIL 3, PL e Cat. 4	750-1689				
Input and Output Module			**PROFIBUS®**	**PROFINET®**	**PROFIsafe V2.4**	**PROFIsafe V2.6**
4FDI/4FDO 24 V/2 A PROFIsafe	SIL 3, PL e Cat. 4	750-667/000-004				
	SIL 3, PL e Cat. 4	753-667/000-004				
4FDI/2FDO 24 V/10 A PROFIsafe	SIL 3, PL e Cat. 4	750-666/000-004				
NEW: Input and Output Module with Logic			**PROFIBUS®**	**PROFINET®**	**PROFIsafe V2.4**	**PROFIsafe V2.6**
4FDI/4FDO 24 V 2 A Logic PROFIsafe	SIL 3, PL e Cat. 4	750-667/000-104				
4FDI/4FDO 24 V 2 A Logic PROFIsafe	SIL 3, PL e Cat. 4	753-667/000-104				
4FDI/2FDO 24 V 10 A Logic PROFIsafe	SIL 3, PL e Cat. 4	750-666/000-104				



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