WAGO I/O System 750

Functional Safety with the New WAGO Safety I/O Generation


PROFIsafe
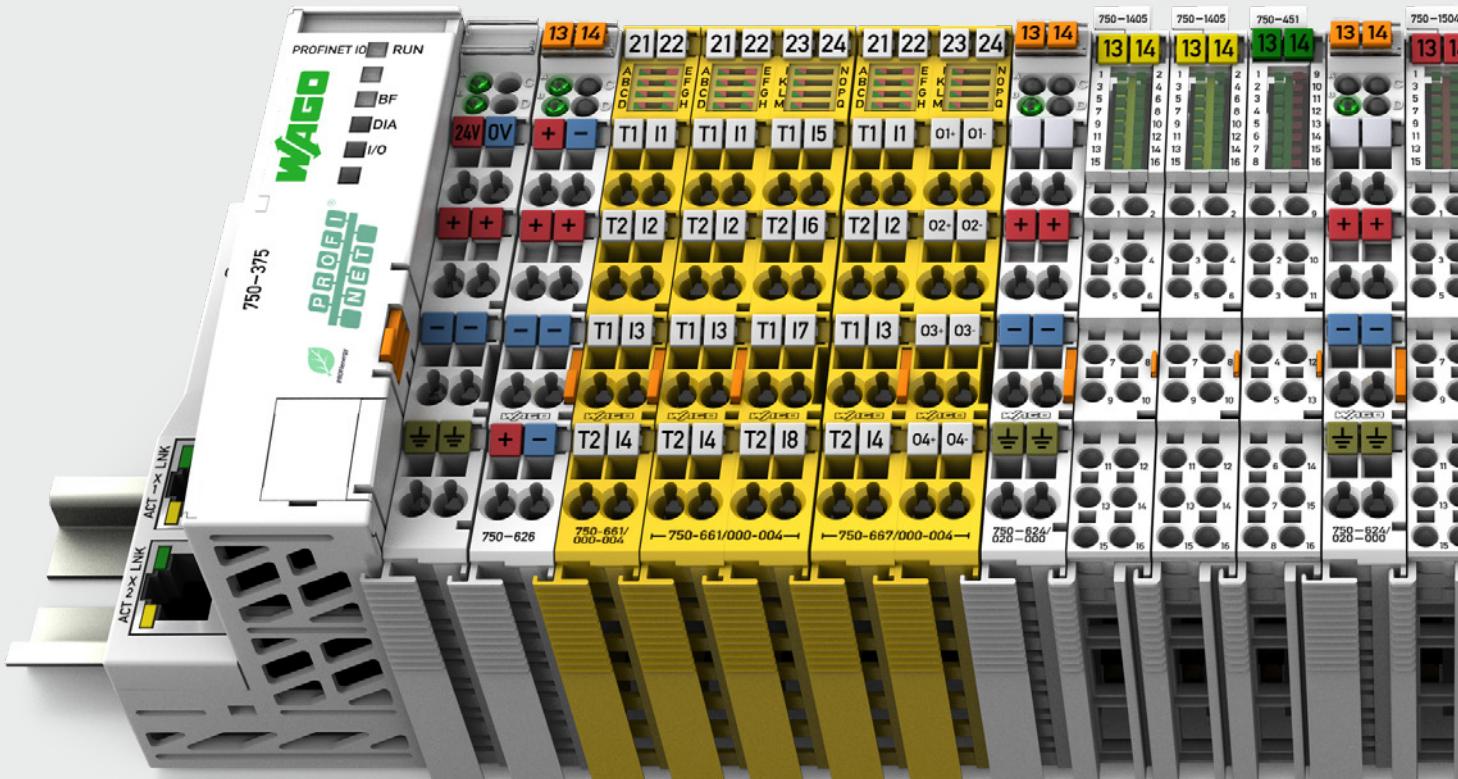
WAGO I/O System 750

Functional Safety for Control Cabinets

The WAGO I/O System 750 is distinguished by its universal use and extensive product portfolio. With more than 500 different modules, the I/O System 750 offers superior versatility and flexibility. WAGO also provides a wide range of products for functionally safe applications with analog and digital signals.

With their compact design, the functionally safe modules of the WAGO I/O System 750 take up little 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 enables clear identification of the different technologies.

The PROFIsafe modules offer simple diagnostic and service options. The system relies on standard diagnostics according to the PROFIBUS® and PROFINET® specifications. Using iPar server technology, device replacement is easy and requires no tooling. In addition, the modules can be parameterized via the WAGO Safety Editor (SEDI). They support safety functions up to SIL3 and PLe/Cat. 4 and meet the EN IEC 13849 and EN ISO 62061 safety standards. Furthermore, the modules can be used in safety applications for the process industry per IEC 61511.
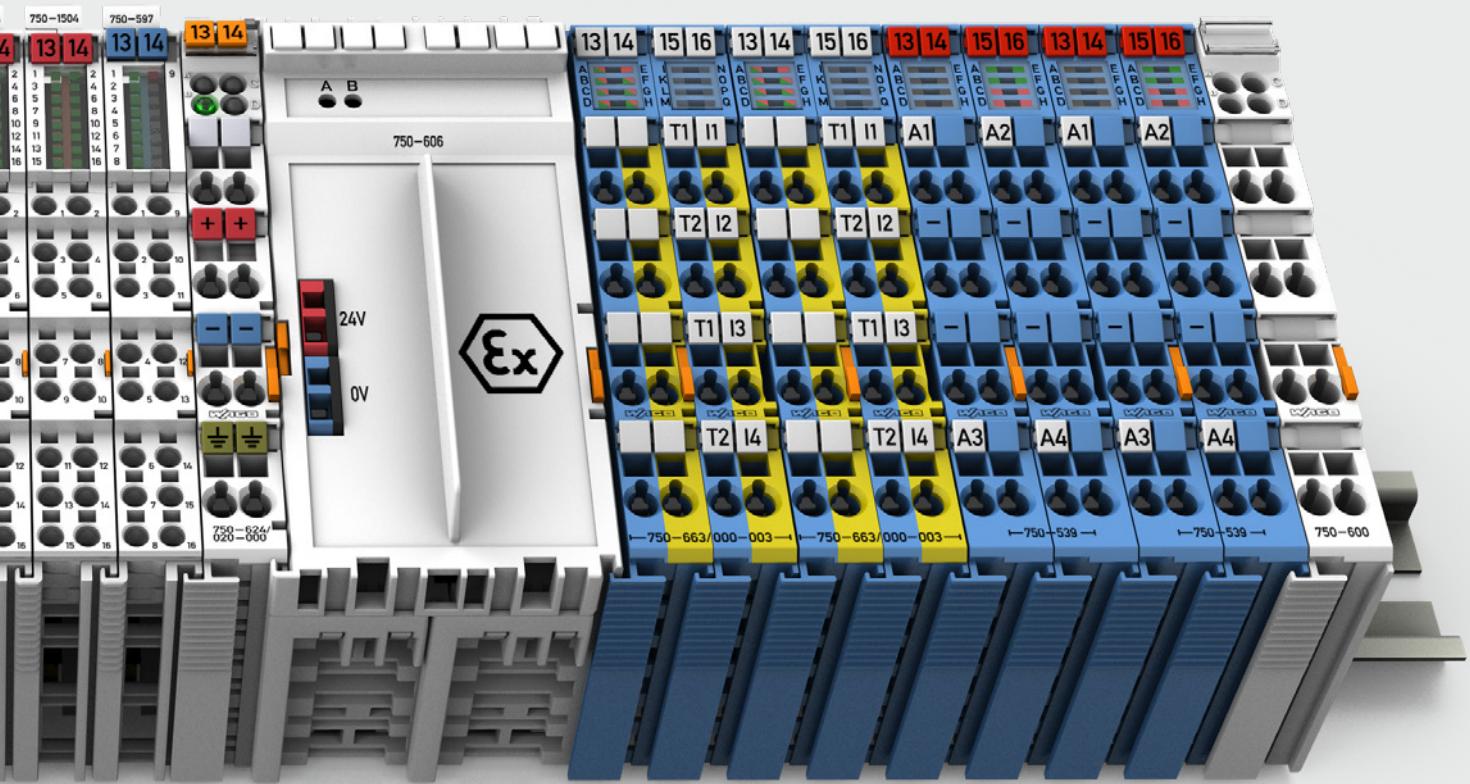
Your Benefits:

- High signal density in a small footprint
- Easy diagnostics and service options
- Simple device replacement
  via iPar server technology
- Suitable for safety functions up to SIL3
  and PLe/Cat. 4

PROFIsafe

Input
Module
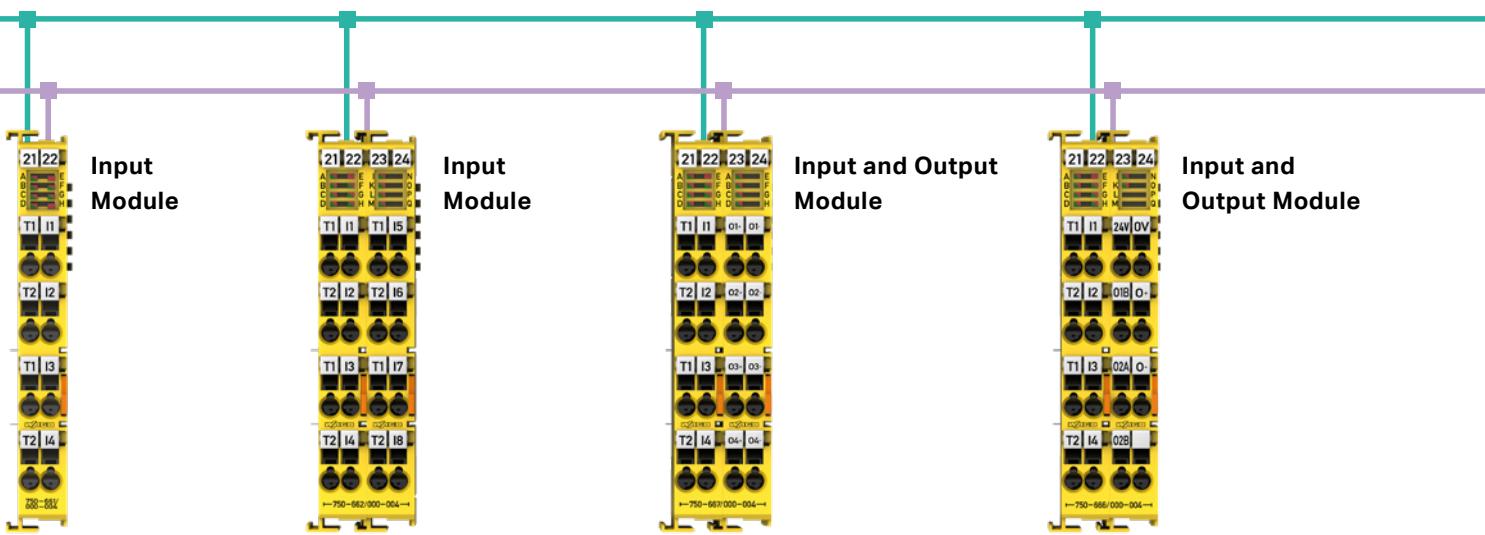
4FDI 24V PROFIsafe
750-661/000-004

Input
Module

8FDI 24V PROFIsafe
750-662/000-004

Input and Output
Module

4FDI/4FDO 24V/2A PROFIsafe
750-667/000-004

Input and
Output Module

4FDI/2FDO 24V/10A PROFIsafe
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 lock
  - Mode selector

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

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

Extensive Diagnostics

LED Display
- Status per channel
- Active diagnostics
- PROFIsafe status
- Parameterization status

Fieldbus
- Standard PROFIBUS® and PROFINET® diagnostics
- Undervoltage
- Overload
- Short circuit – external voltage/GND
- Temperature
- Line 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

PROFIsafe
PROFINET®

PROFIsafe
PROFIBUS®
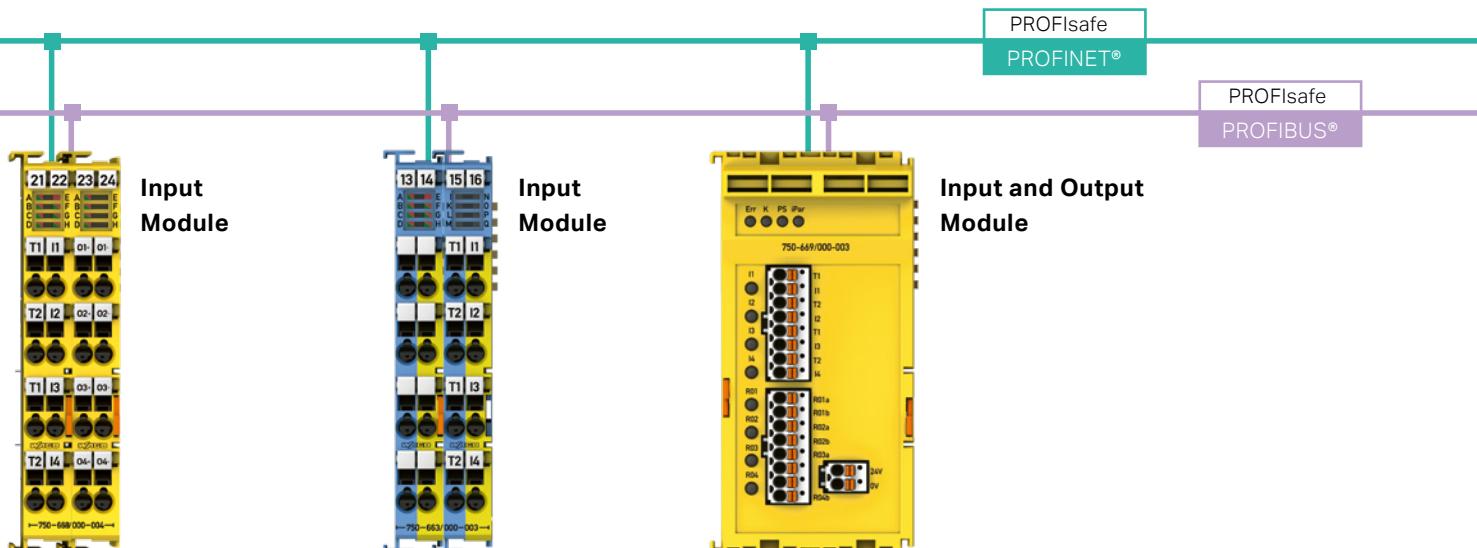
Input Module

4FAI 0/4-20mA Diff PROFIsafe
750-668/000-004

Input Module

4F-Ex i DI 24V V2 iPar
750-663/000-003

Input and Output Module

4FDI/4FRO 48VAC/60VAC/6A V2 iPar
750-669/000-003

Fill level measurement

Temperature measurement

Distance measurement

Gas concentration measurement
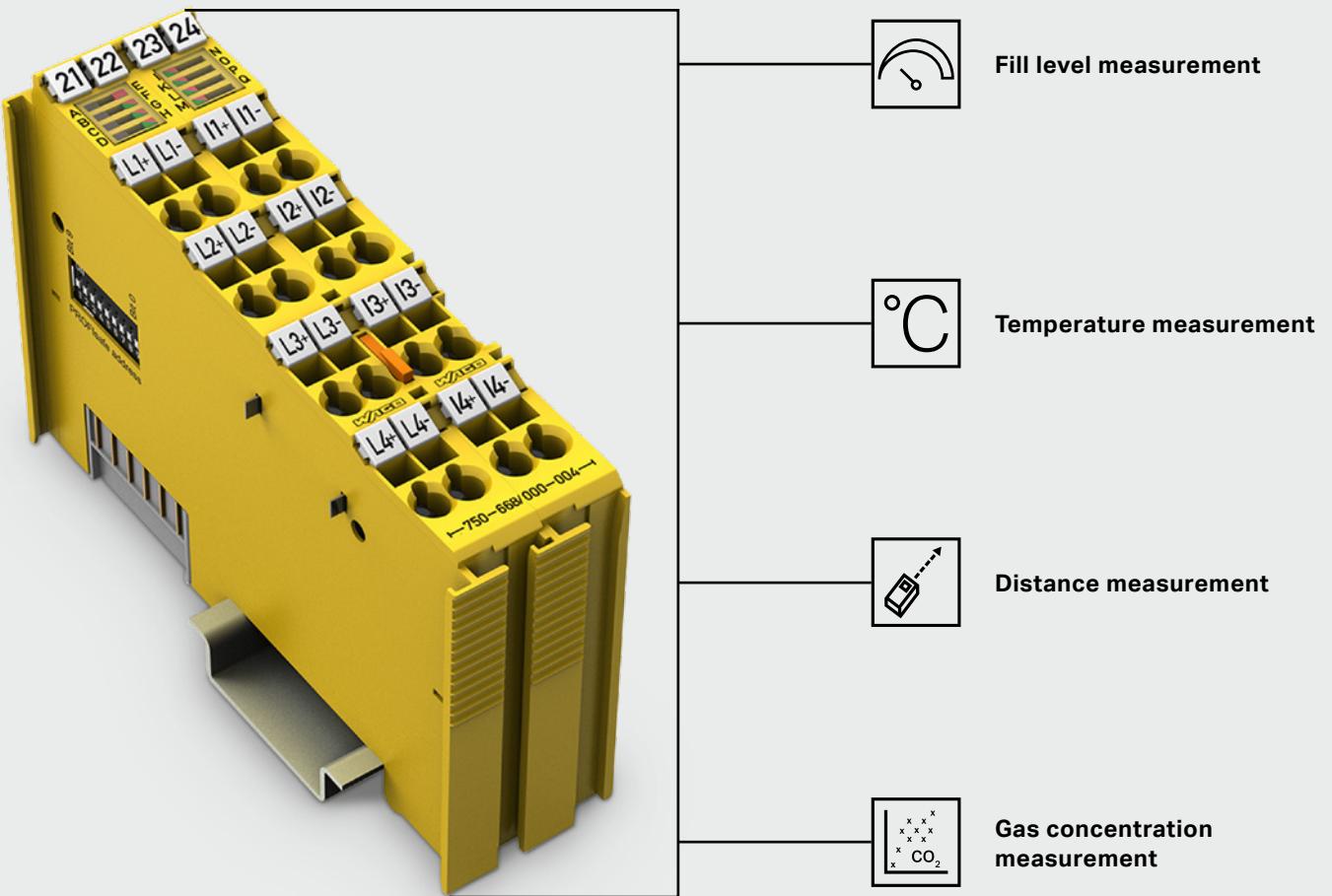
The WAGO I/O System 750

Safe 4-Channel Analog Input Module; 0/4 … 20 mA; Diff; PROFIsafe

With this module, safety-relevant applications can be implemented that require the acquisition of analog values, such as measurement of level, pressure, temperature or gas concentrations in refrigerated warehouses – within the Machinery Directive's scope.

The module is suitable for standard 0 … 20 mA and 4 … 20 mA signals. The "Remote IO for Factory Automation" (RIOforFA) profile enables passivation or acknowledgment of the inputs with channel-level granularity. The "Remote IO for Process Automation" (RIOforPA) profile is also supported. The module works with PROFIsafe V2.6 and enables applications that must meet the requirements of SIL 3 or Cat. 4/PL e.

Your Benefits:

- Integrated solution
- Defined safety functions
- Safety-related data is available in the SISTEMA and VDMA libraries

Engineering System (ES)

TCI activation

Transfer checksum

Calculate checksum
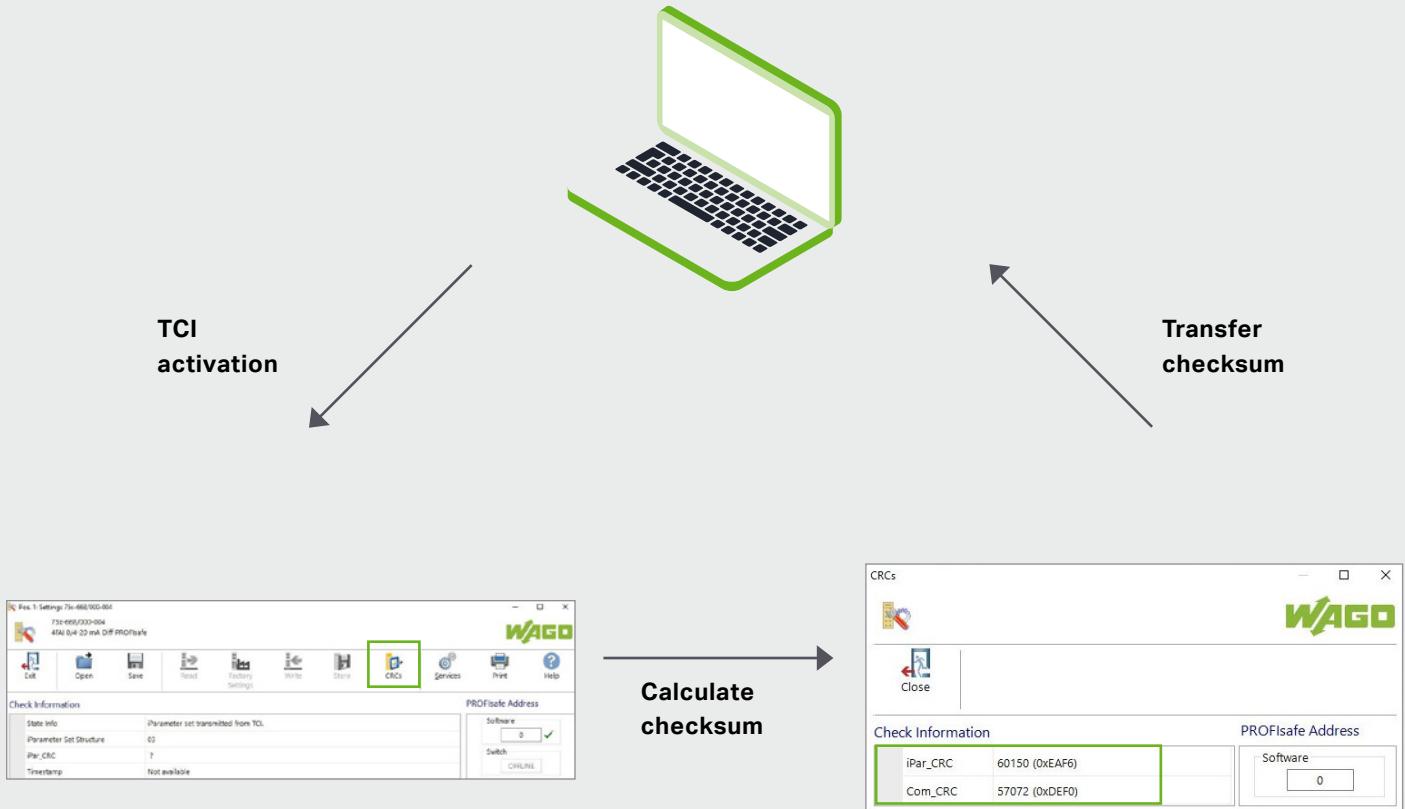
Offline Parameterization via GSD in PROFINET®

The offline parameterization allows you to parameterize your safety modules using the device description in PROFINET®. This enables you to easily create your safety application offline and duplicate it on similar machines.

When restarting the application, the offline parameters are automatically transferred to the modules.
This makes device replacement possible at any time even without tooling!
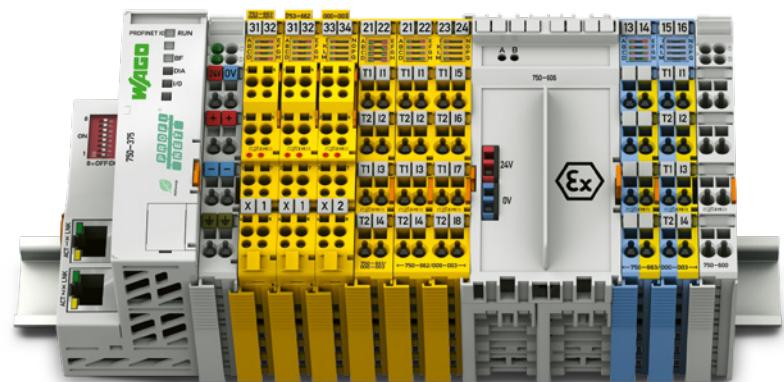
Functional Safety

Easy Integration

iPar Server Technology Support – Module Replacement without Tooling

1. iParameter download – restore module parameters after module replacement or initial commissioning
2. iParameter upload – store and back up parameters in the application program

iPar CRC in the module protects the parameters.

Controller

PROFINET®

1

2

WAGO Safety Node

Engineering System (ES)

Device Tool

TCI

TCI Conformance Class 3

TCI Conformance Class 2

PROFIBUS DP

PROFINET®

PROFINET®

PLC

...
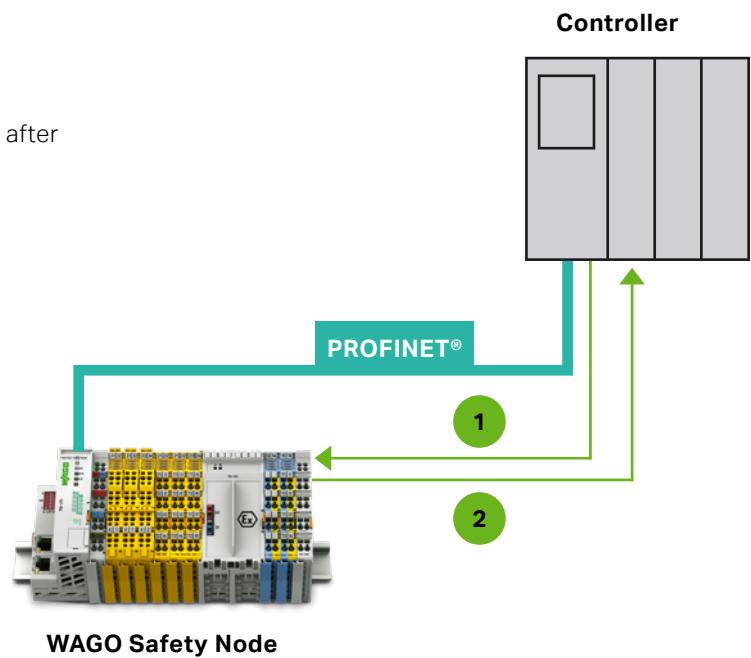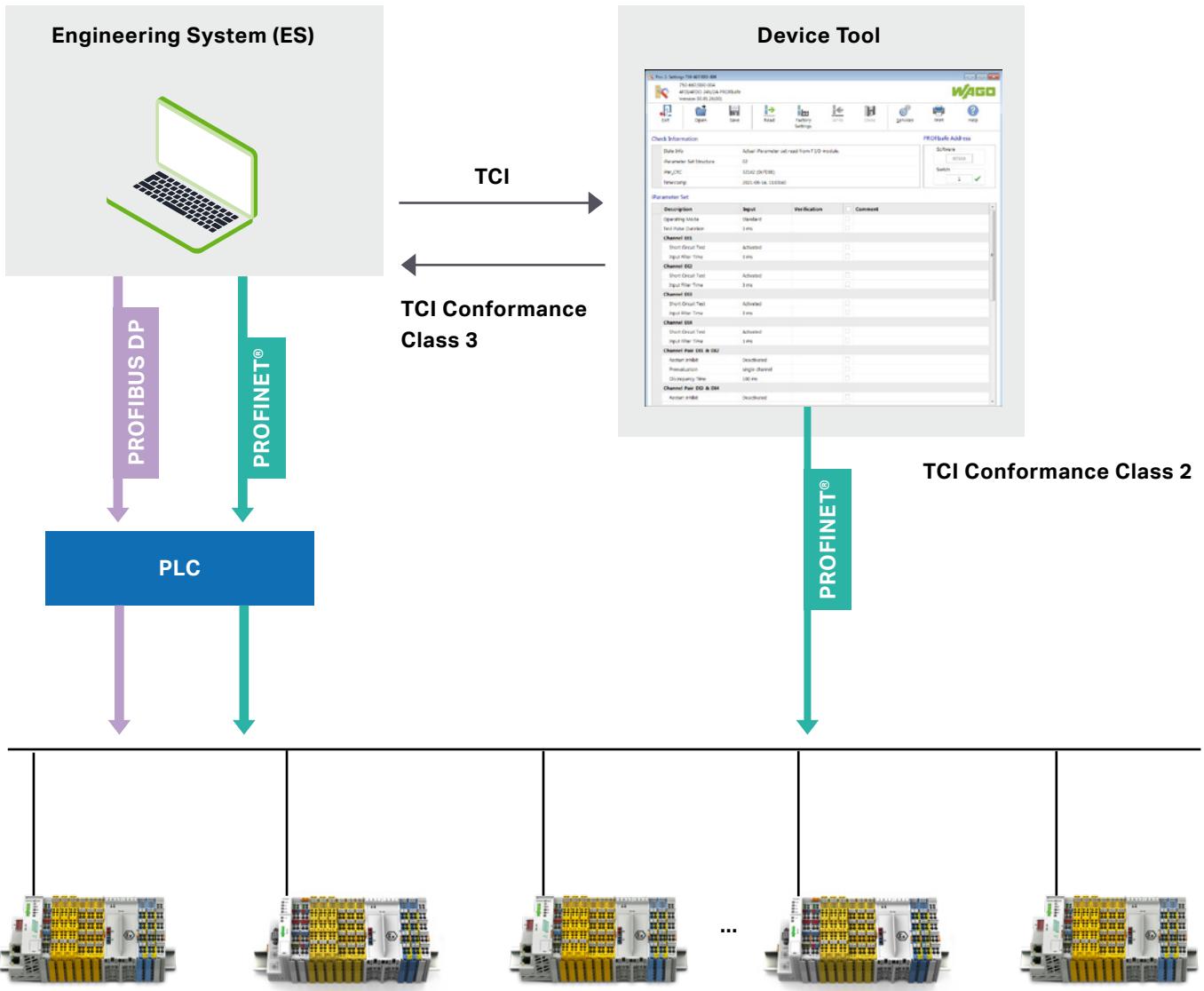
Easy Configuration via "Tool Calling Interface" (TCI)

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

Functional Safety

Application Examples

4 x Emergency Stop, 2-Channel, SIL CL 3, PL e, Cat. 4

75x-662/000-004
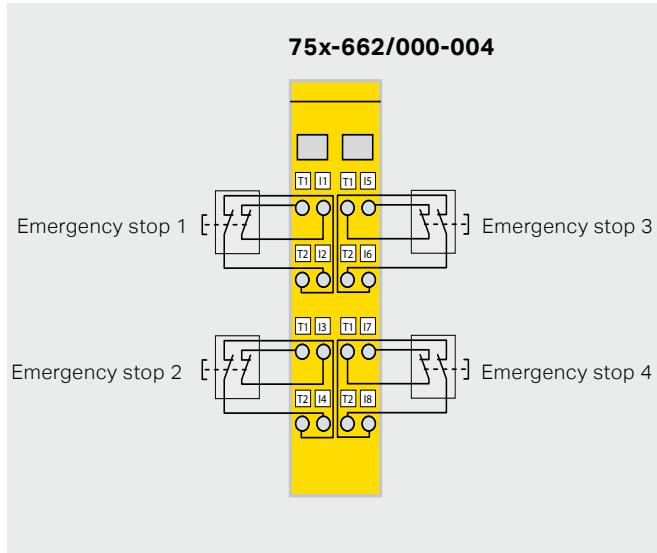
8 x Emergency Stop, 1-Channel, SIL CL 2, PL d, Cat. 2

75x-662/000-004
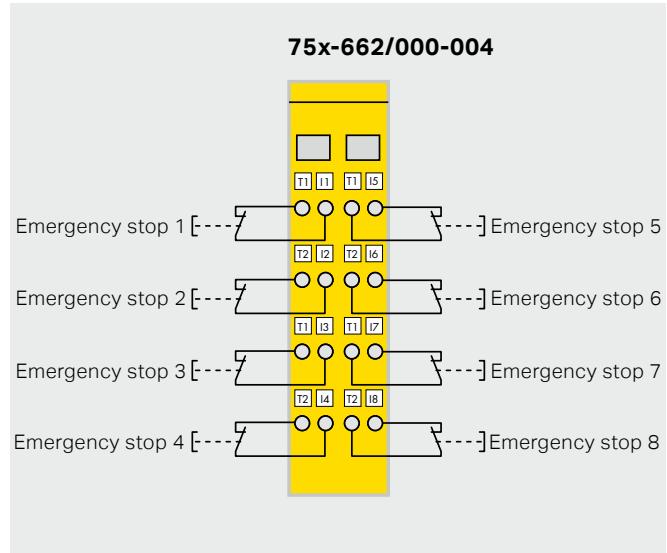
Out1+/Out2+ Loads Connected to 0 V (Ground), SIL CL 3, PL e Cat. 4

75x-667/000-004
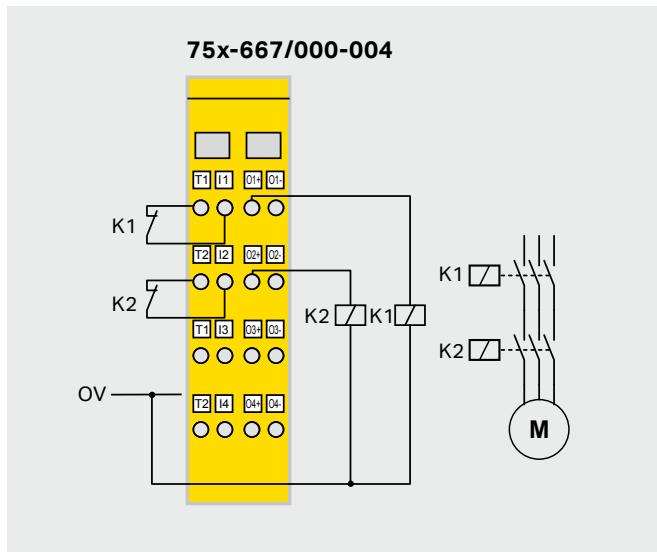
### Two Parallel Loads Connected to One Digital Power Output, SIL CL 3, PL e, Cat. 4

75x-667/000-004
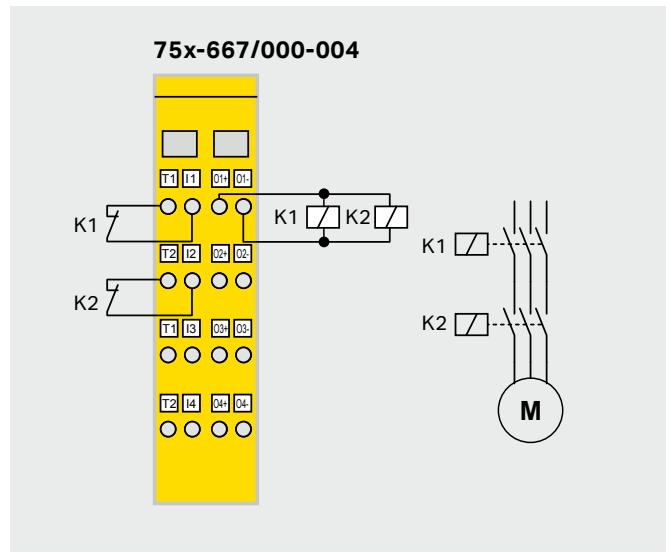
**4 x Motor, 1-Channel, with Feedback,**
SIL CL 2, PL d, Cat. 2

75x-667/000-004
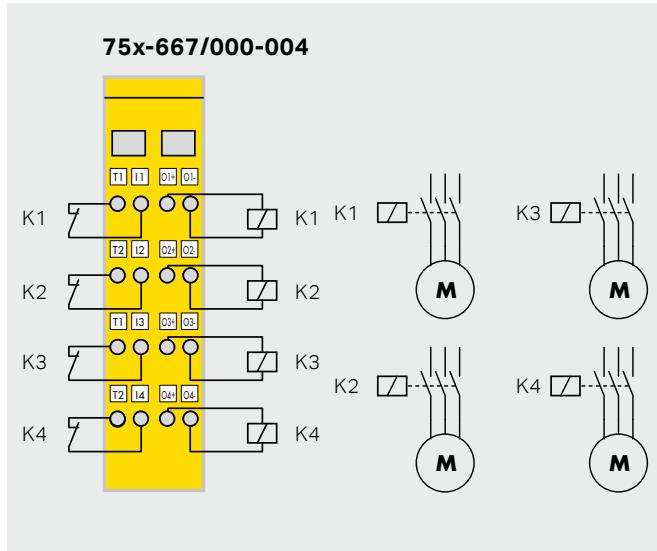
2 x Motor, 2-Channel, with Feedback,
SIL CL 3, PL e Cat. 4

75x-667/000-004
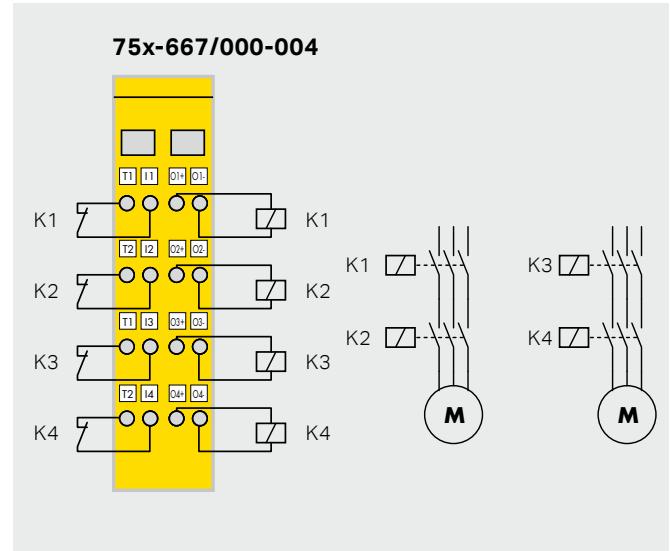
2 x 4-Way Selector Switch, SIL CL 3, PL e, Cat. 4

75x-662/000-004
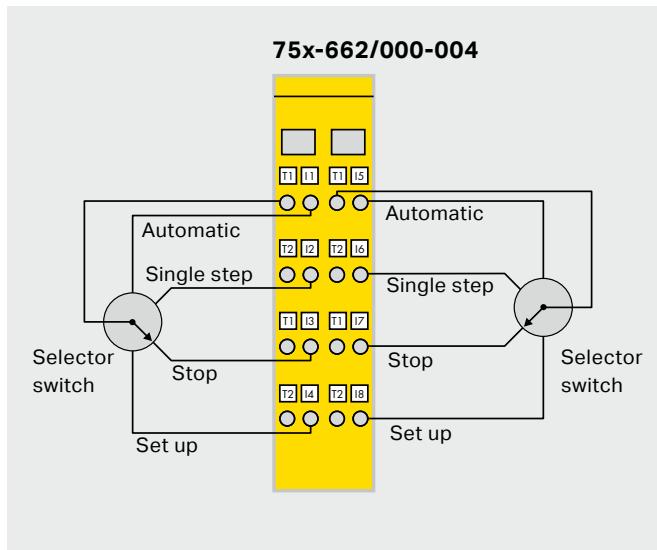
Protective Door Monitoring, SIL CL 3, PL e, Cat. 4

75x-667/000-004
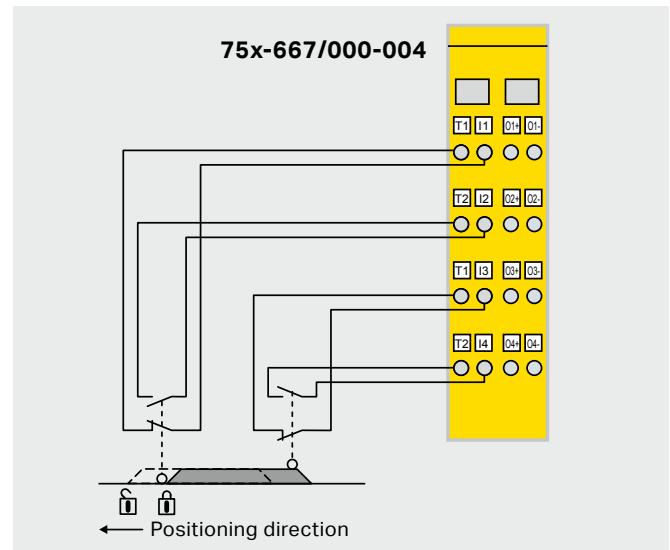
Functional Safety

Application Examples

1 x Motor Connection, Output Configuration H-Side/L-Side 1


750-666/000-004
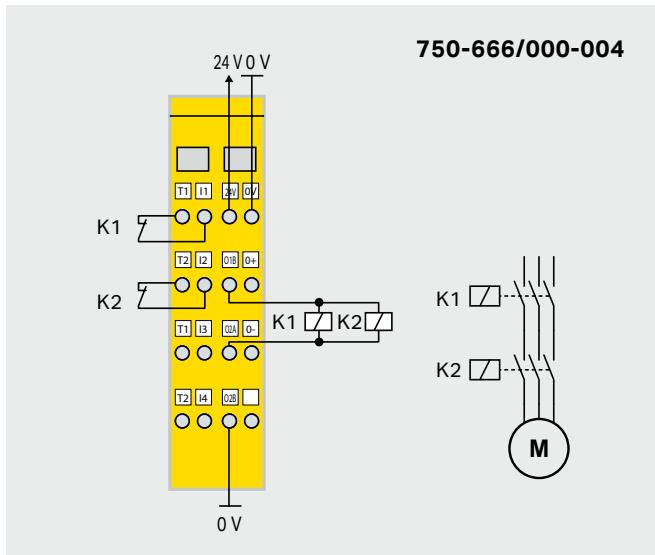
1 x Motor Connection, Output Configuration H-Side/H-Side 1, 2-Channel


750-666/000-004
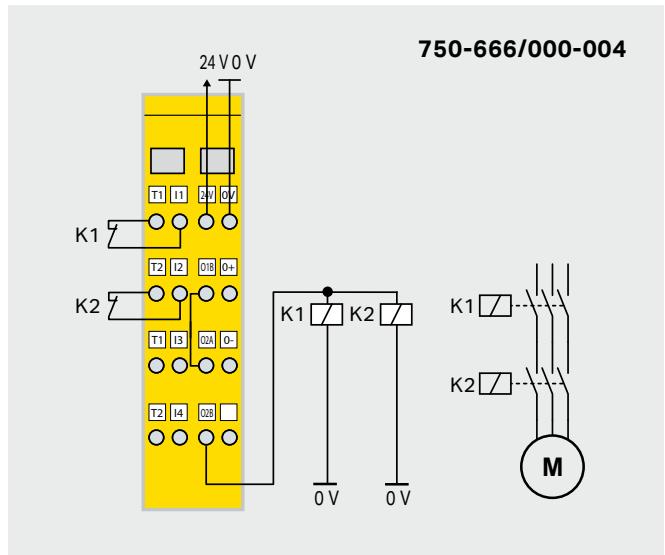
2 x Motor Connection, Output Configuration H-Side/H-Side 2, 1-Channel

750-666/000-004
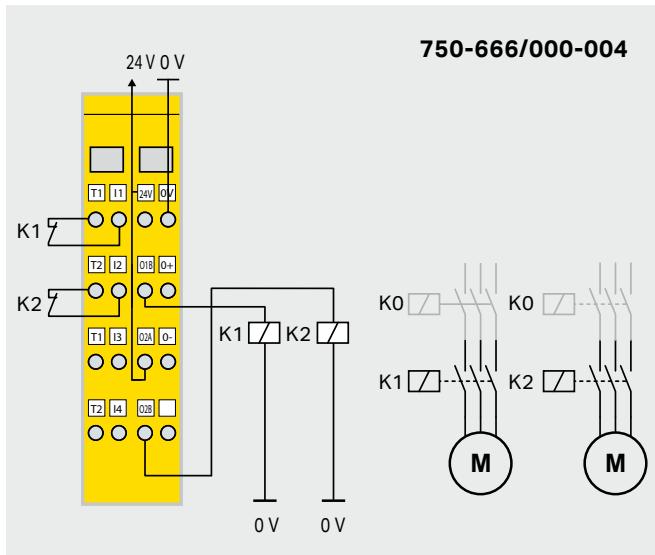
1 x Motor Connection, Output Configuration H-Side/H-Side 2, 2-Channel


750-666/000-004
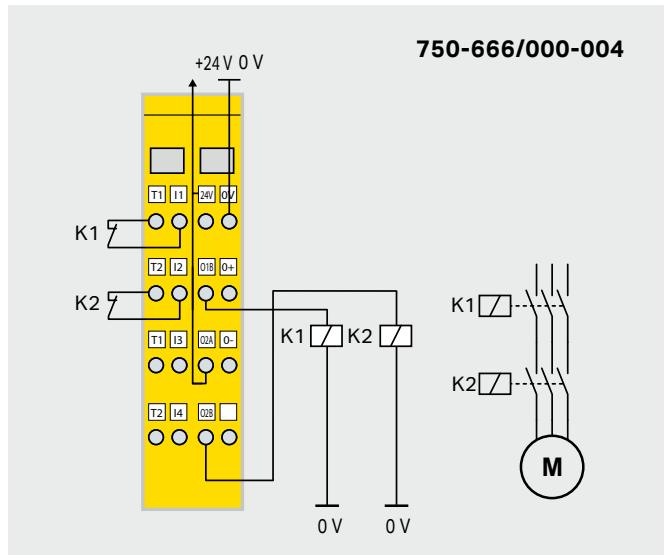
Connection of Interference-Free Digital Output Modules via Potential Distributor, H-Side/L-Side 1 Output Configuration
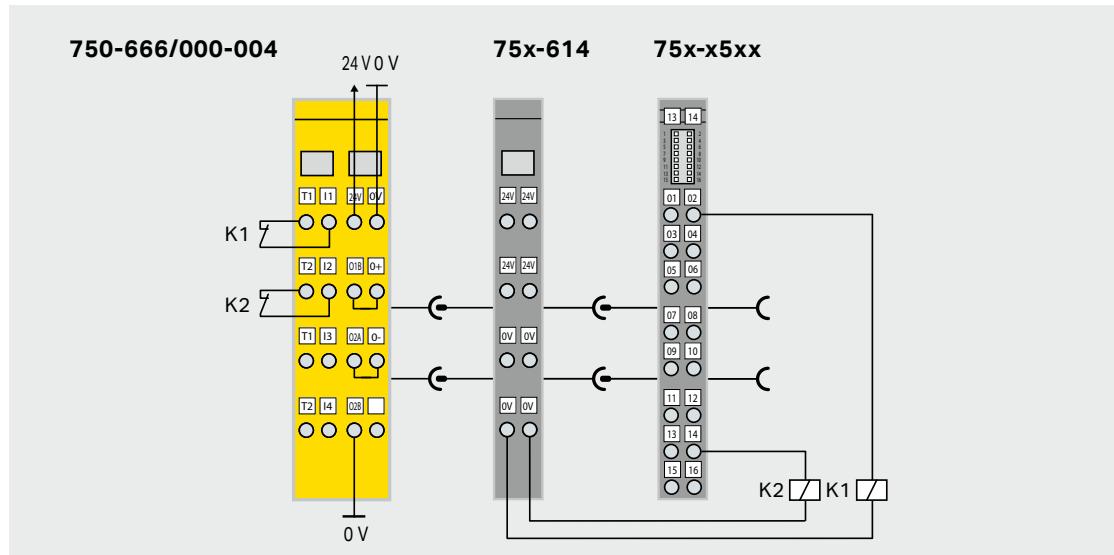
Functional Safety

## Application Examples

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

75x-668/000-004

1-channel

2-channel

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

75x-668/000-004
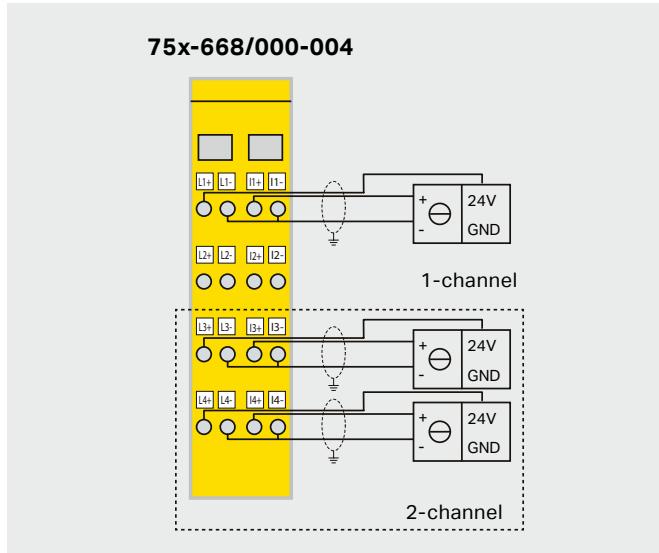
1-channel

2-channel
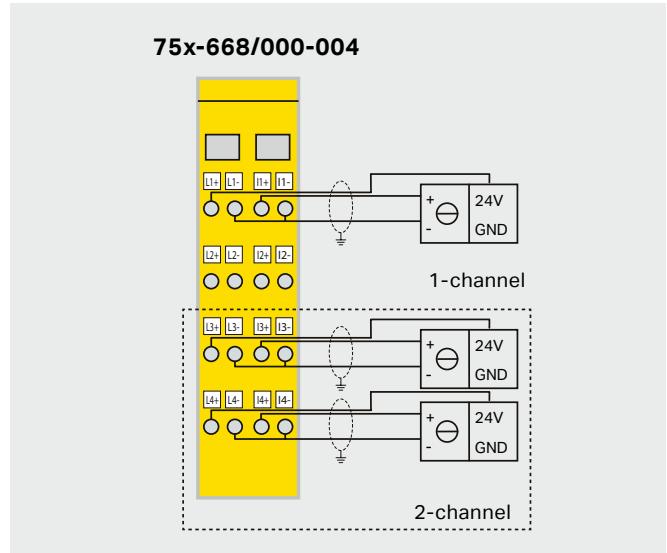
Switching Large Contactors, SIL CL 3, PL e Cat. 4

750-669/000-003

24 V

IN

OUT

Power supply
Load

K1

K2

Load
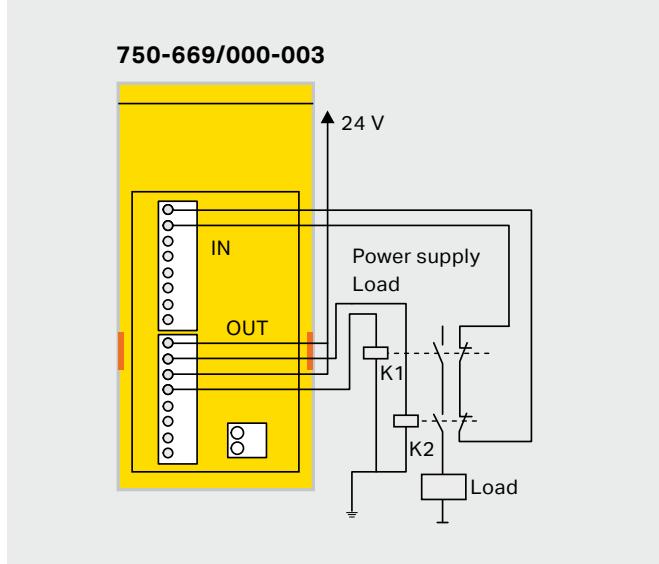
Sequencing of Safety Areas with Galvanic Isolation; One Direction A ➡ B, SIL CL 3, PL e Cat. 4

750-669/000-003

750-669/000-003

Safe transfer
Machine A

A ➡ B

Safe transfer
Machine B

IN

OUT

IN

OUT
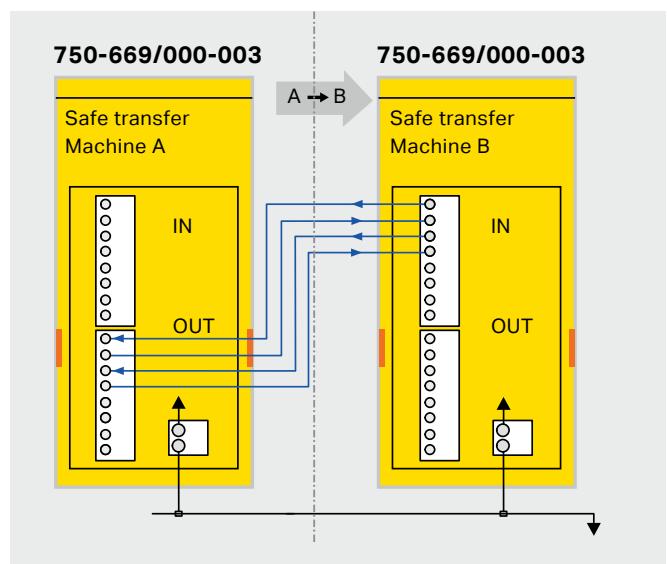
Functional Safety

Overview

Item Description	Rated up to	Item No.	Supported			
Input Module			**PROFIBUS®**	**PROFINET®**	**PROFIsafe V2.4**	**PROFIsafe V2.6**
4FDI 24V PROFIsafe	SIL 3, PL e Cat. 4	750-661/000-004	■*	■	■*	■
	SIL 3, PL e Cat. 4	753-661/000-004	■*	■	■*	■
8FDI 24V PROFIsafe	SIL 3, PL e Cat. 4	750-662/000-004	■*	■	■*	■
	SIL 3, PL e Cat. 4	753-662/000-004	■*	■	■*	■
4FAI 0/4-20mA 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 24V PROFIsafe V2 iPar	SIL 3, PL e Cat. 4	750-663/000-003	■	■	■	
Input and Output Module			**PROFIBUS®**	**PROFINET®**	**PROFIsafe V2.4**	**PROFIsafe V2.6**
4FDI/4FDO 24V/2A PROFIsafe	SIL 3, PL e Cat. 4	750-667/000-004	■*	■	■*	■
	SIL 3, PL e Cat. 4	753-667/000-004	■*	■	■*	■
4FDI/2FDO 24V/10A PROFIsafe	SIL 3, PL e Cat. 4	750-666/000-004	■*	■	■*	■
4FDI/4FRO 48VAC/60VDC/6A PROFIsafe V2 iPar	SIL 3, PL e Cat. 4	750-669/000-003	■	■	■	

* Supported from the end of 2022
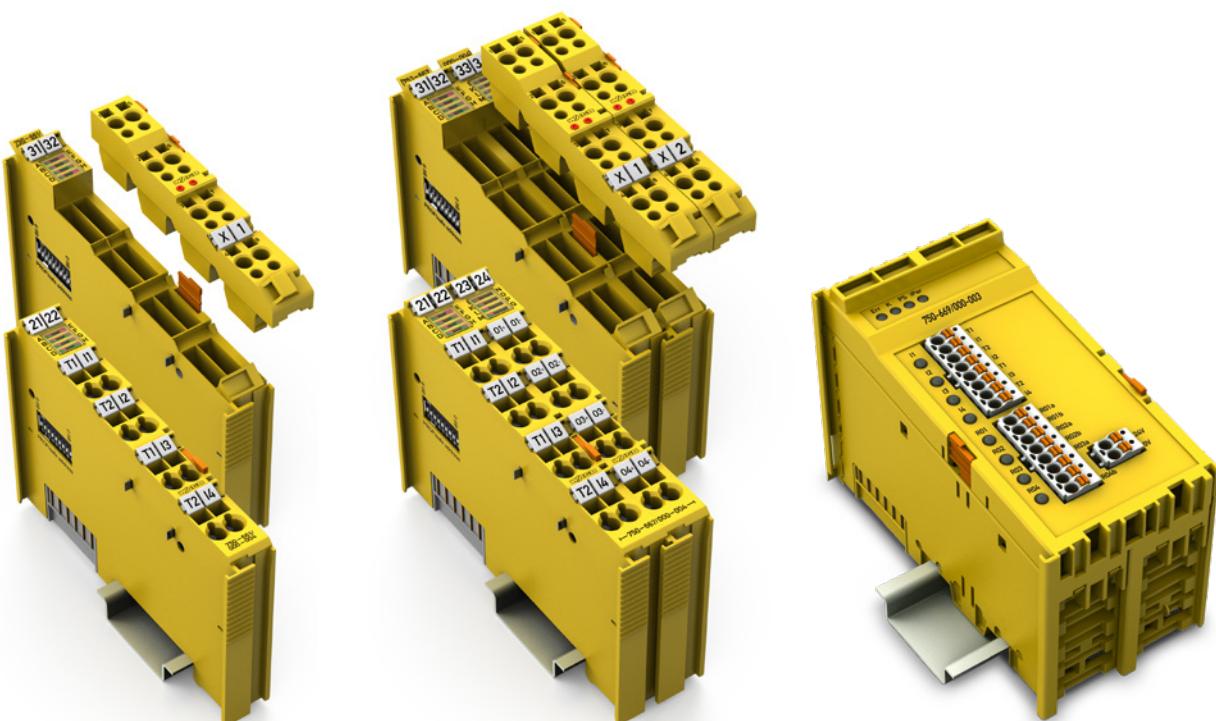
WAGO GmbH & Co. KG
Postfach 2880 · D-32385 Minden
Hansastraße 27 · D-32423 Minden
info@wago.com
www.wago.com

Headquarters	+49 (0)571/ 887 - 0
Sales	+49 (0)571/ 887 - 44 222
Orders	+49 (0)571/ 887 - 44 333
Fax	+49 (0)571/ 887 - 844 169