PRODUCT LINE

innovative machine safety

SSP

Safety System Products

Contents

Safety fence

FLEXIBLE
ALUMINUM SYSTEM

A modular aluminum fence system that can be individually adapted to customer wishes and needs and that is open to future expansion.

- **Flexible** - Fence guide, shapes and cutouts

- **Adjustable** - Easy assembly and sliding components

- **Uncomplicated** - No drilling thanks to the Fast Connect System

- **Cost-effective** - Functional systems and standard fields

- **Expandable** - Large selection of attachment parts

The SSP Safety Fence System

Aluminum profile

Anodized 44 x 44 mm profiles with an 11 mm groove form the basis of the SSP safety fence system. Other matching profile sizes can be easily combined with each other. Due to the special design, the profiles are light but still stable.

Slot nuts

The basis of the SSP Fast Connect technology are the slot nuts. They position themselves in the groove when screwed in and allow fast assembly.
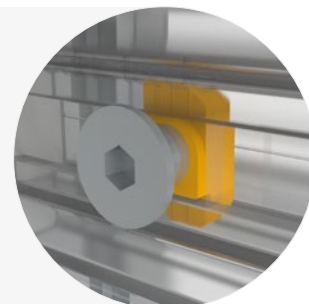
Fitting technology

The combination of fittings and slot nuts enables uncomplicated connection of the individual aluminum profiles. Drilling and thread cutting is not necessary. L, T and I fittings ensure stable and flexible mounting of aluminum profiles.
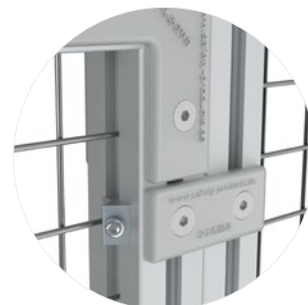
Fillings

Wide range of fillings made of different materials for safety and functionality. From spot welding grid to transparent polycarbonate and opaque sheet metal to special fillings such as fine real glass.

Grid fixation

The SSP grid fixation ensures a solid connection between the profile and the filler. It increases the total stability of the safety fence.

Clamping strips

Polycarbonate, sheet metal or real glass fillings are additionally fixed with clamping strips. This stabilizes the connection and reduces vibrations.
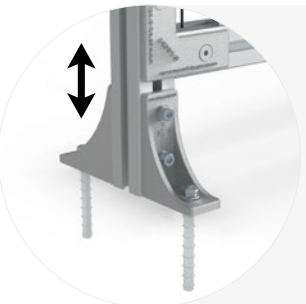
Floor attachment

The combination of floor attachment bracket and aluminum profile compensates for any unevenness. The floor angles can be mounted at different heights. Expansion anchors provide a firm hold in the floor.

High Speed Gates

High-speed gates for personal and machine protection

The space-saving high-speed gates can be optimally combined with SSP safety fence systems and easily integrated into the system.

In addition, access can be equipped with an integrated light beam. Alternatively, electrical safety edges with wireless connection are used for protection.

Integrated light beam

The integrated light beam detects interfering contours in the door area at time and triggers the stop of the door drive with reverse operation. This prevents a collision.

Automated lift gates

For the separation of danger zones

The automated lifting gates from SSP are ideal for separating protected areas, especially in interlinked robot systems. When open, they allow the robots to work together, e.g. to transfer workpieces.

When closed, they allow access to one area without shutting down the other. The movable part of the partition has a Makrolon filling that protects against flying sparks and still allows process monitoring.

A safety switch keeps the door securely closed and allows small safety distances. The door is controlled via I/O-Link or Profinet interface.

Counterweights enable the use of a motor with a lower drive force and prevent the door from falling, which significantly reduces the risk of shearing and crushing.

The lift gates are delivered fully assembled, pre-wired, tested and parameterized, so that only the control unit needs to be installed. They undergo a quality test before delivery.

I/O-Link or PROFInet connection
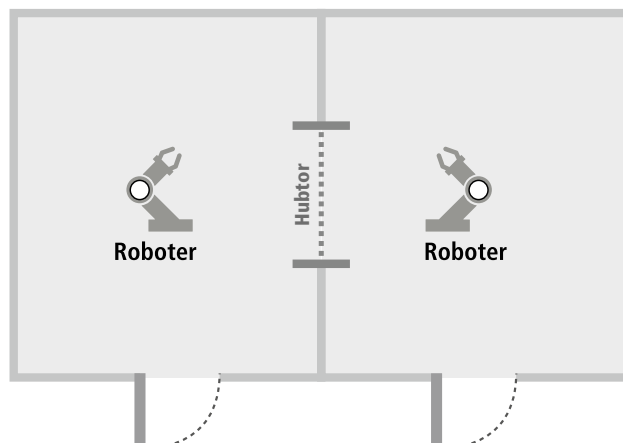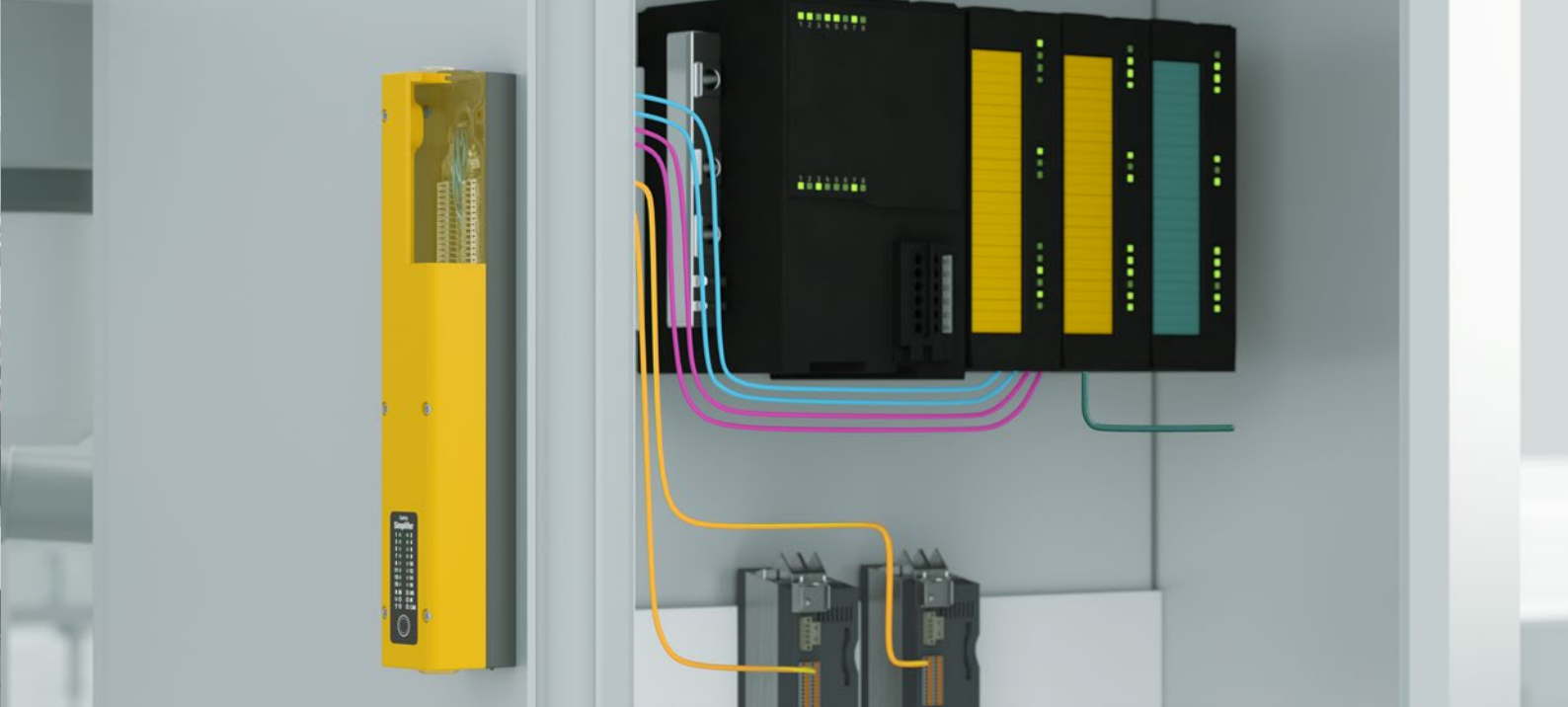
Wireless Safety

DECENTRALIZED SAFETY SYSTEM

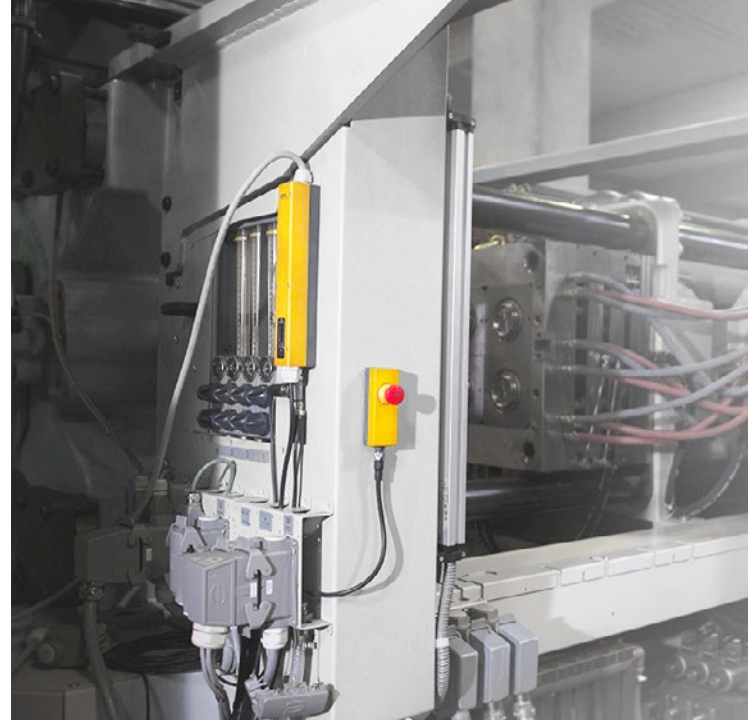The Simplifier system can monitor, evaluate and switch off via the integrated wireless interface. Pushbuttons, emergency stop buttons and connection options for safety sensors enable flexible use.

- **Decentralized design**
- **Simplification of diagnosis**
- **Combined functions in one housing**
- **Flexible and expandable inputs and outputs**
- **Reduced wiring effort**
- **Plug & Play standard units**
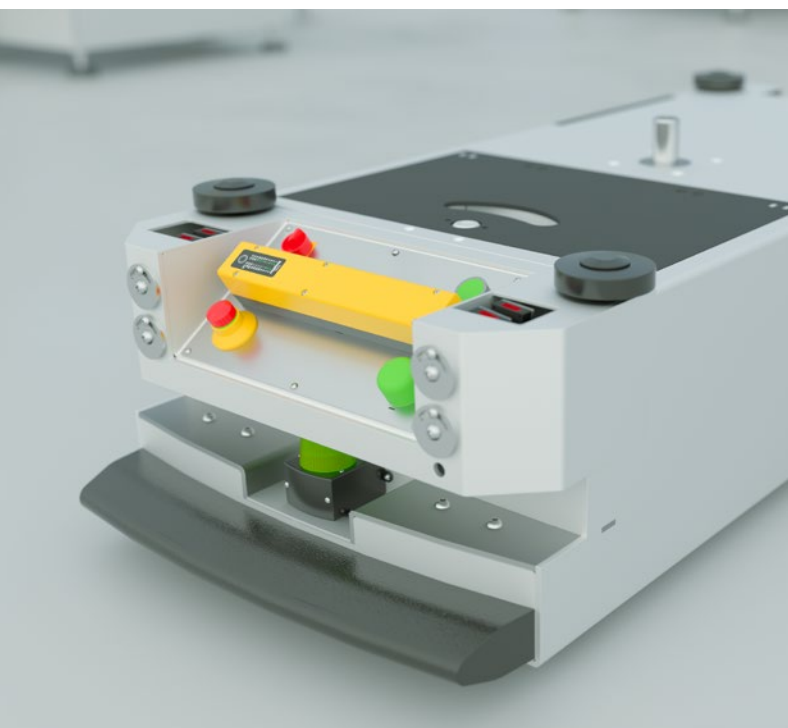
The best of two worlds

Wireless safety meets safe bus systems

The Simplifier system is a versatile solution for various safety applications. With wireless communication and the integration of the PROFIsafe bus, it enables the protection of doors, drawers, lift gates and more. Easy installation, seamless integration and flexible customization make it the ideal choice. A Simplifier Gateway can network up to 32 Simplifier devices with the Siemens control system via PROFIsafe.

- ✓ A wide variety of safety functions can be integrated independently of the system
- ✓ Less planning and design work thanks to plug & play and slimline design
- ✓ Programming of all safety functions directly and centrally in the Siemens control system
- ✓ Low cabling effort thanks to secure wireless communication or CAN communication
- ✓ Modular and expandable - for safety switches, safety light curtains, I/O modules, push-button boxes, etc.

SIMPLIFIER FIELDBOX

SIMPLIFIER GATEBOX

SIMPLIFIER
GATEWAY

SSP
Simplifier/Profisafe
Firmware: 1.1.1

SSP
Safety System Products

PROFI®
NET

PROFIsafe
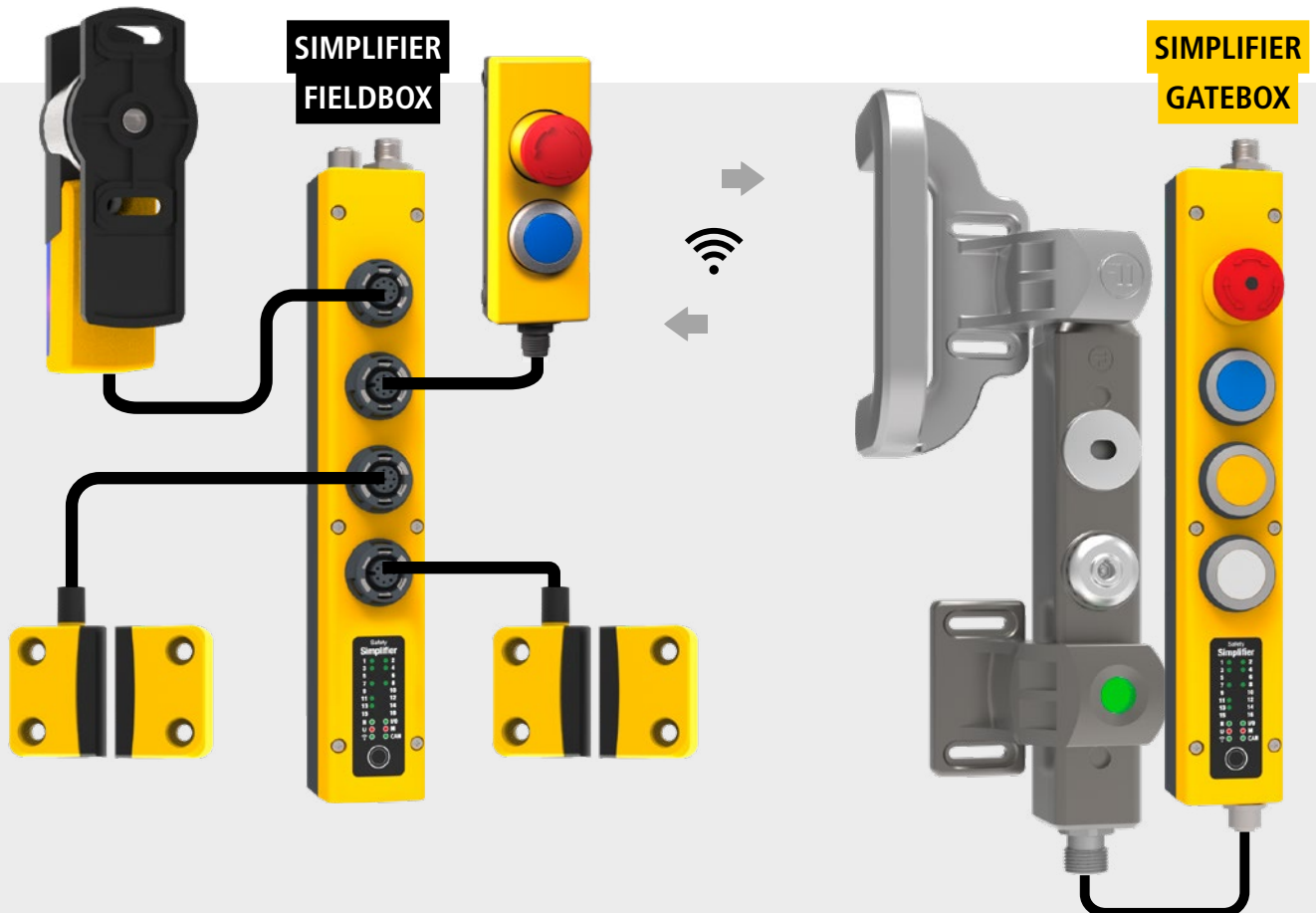
Simple
CAN

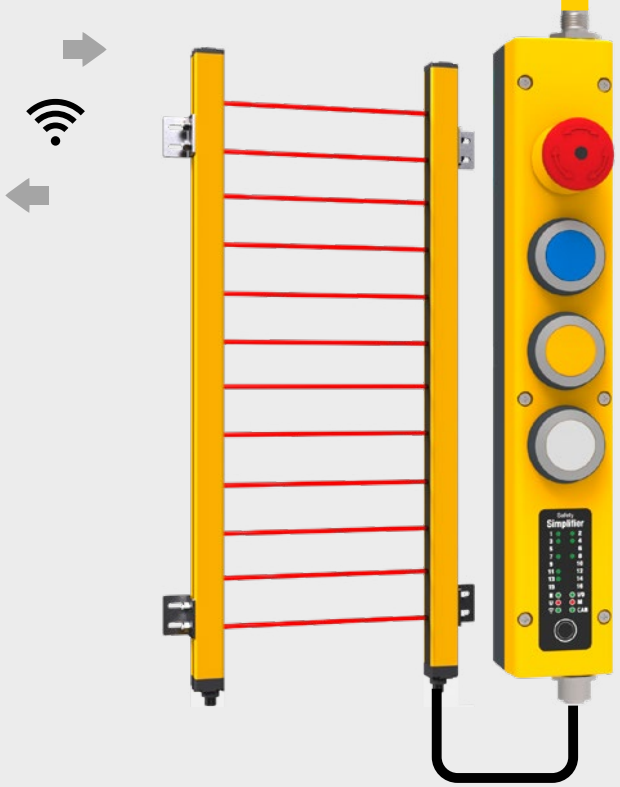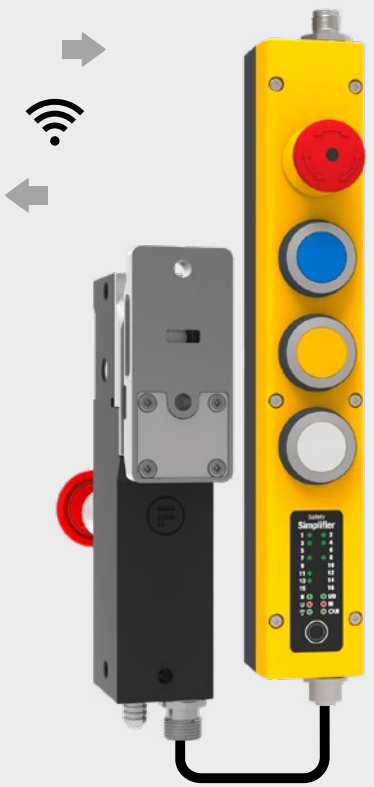SIMPLIFIER
GATEBOX

SIMPLIFIER
GATEBOX

Safety Simplifier

Central & Decentralized Safety System

The Safety Simplifier is a highly flexible safety controller that can be used either centrally or decentrally.

Thanks to wireless communication, the wiring effort is radically reduced. Up to 16 Safety Simplifiers can be linked via the secure wireless network.

This reduction in cabling saves resources and time in planning, documentation, setup and commissioning. There is no need for a control cabinet for the safety technology.

The flexibly configurable inputs and outputs of each Safety Simplifier facilitate the creation of safety systems.

Due to the multi-master principle, each communicating Simplifier is also a repeater. This principle creates a secure mesh network in which each Safety Simplifier shares its global information with all participants within its range.

Spring-loaded terminals secure the connections also in case of strong vibrations

4 relays for 2 × double-safety outputs (optional)

Memory card with application software for easy exchange

USB interface for programming and diagnosis

Feed-through to the control cabinet

14 I/O's as safety inputs or redundant OSSD outputs

Safe wireless interface (optional)

Safe CAN interface (optional)
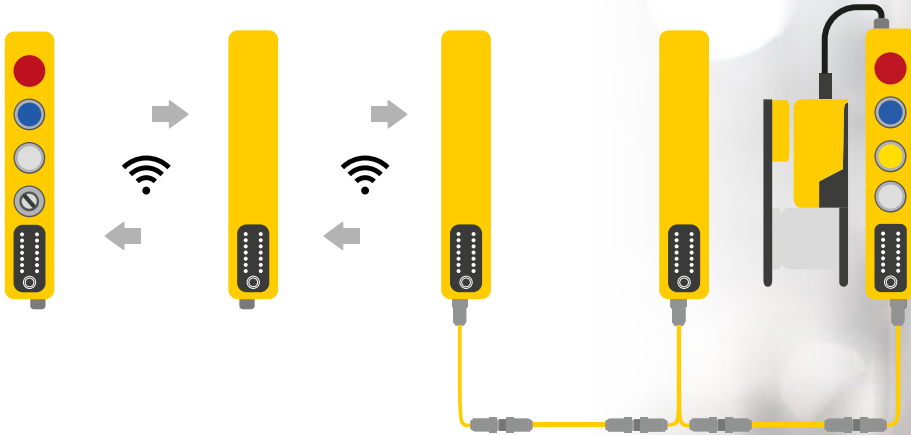
✓ The flexible and safe solution for decentralized applications

✓ high safety up to SIL3 - PLe - Category 4

✓ 16 safe inputs and outputs can be configured flexibly and individually

✓ Predefined functional modules for easy and fast programming

Reduced wiring effort thanks to wireless communication
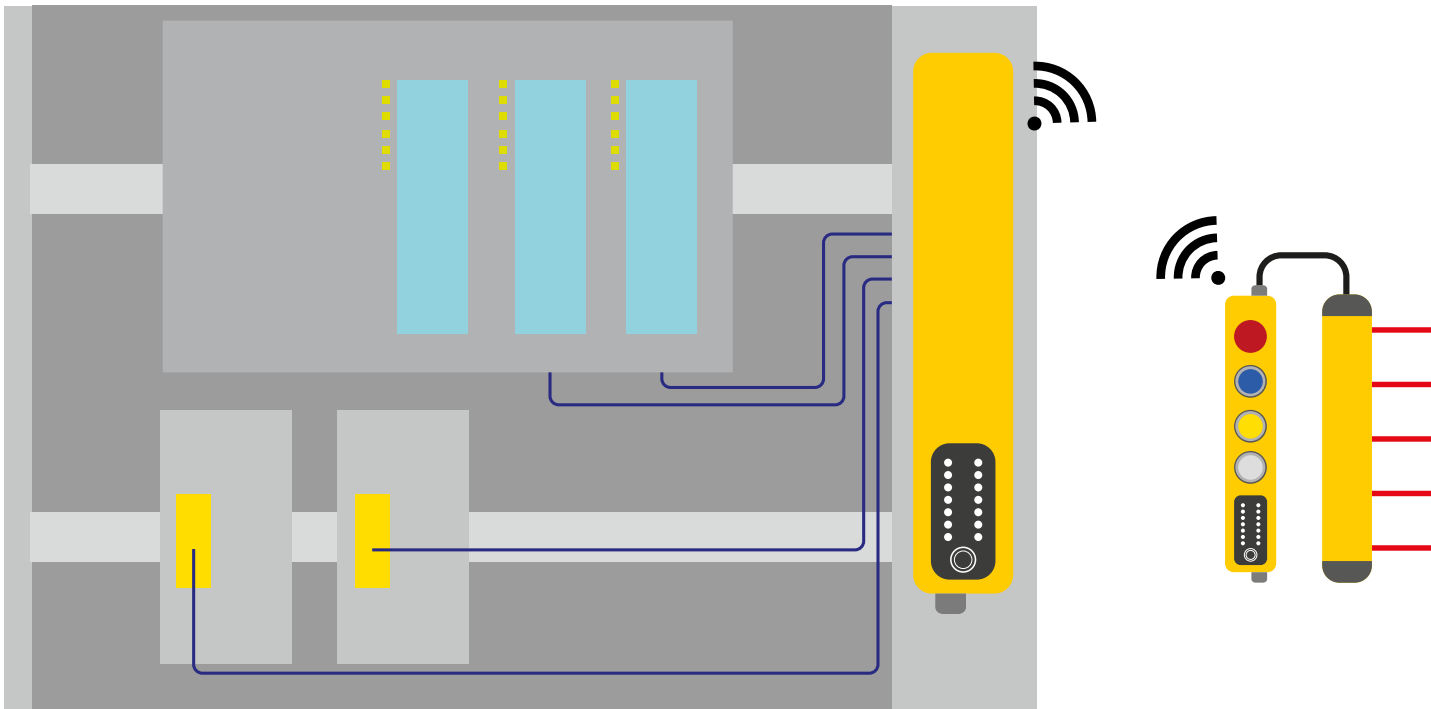
Not every decentralized structure of a safety system redu

Safety BUS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
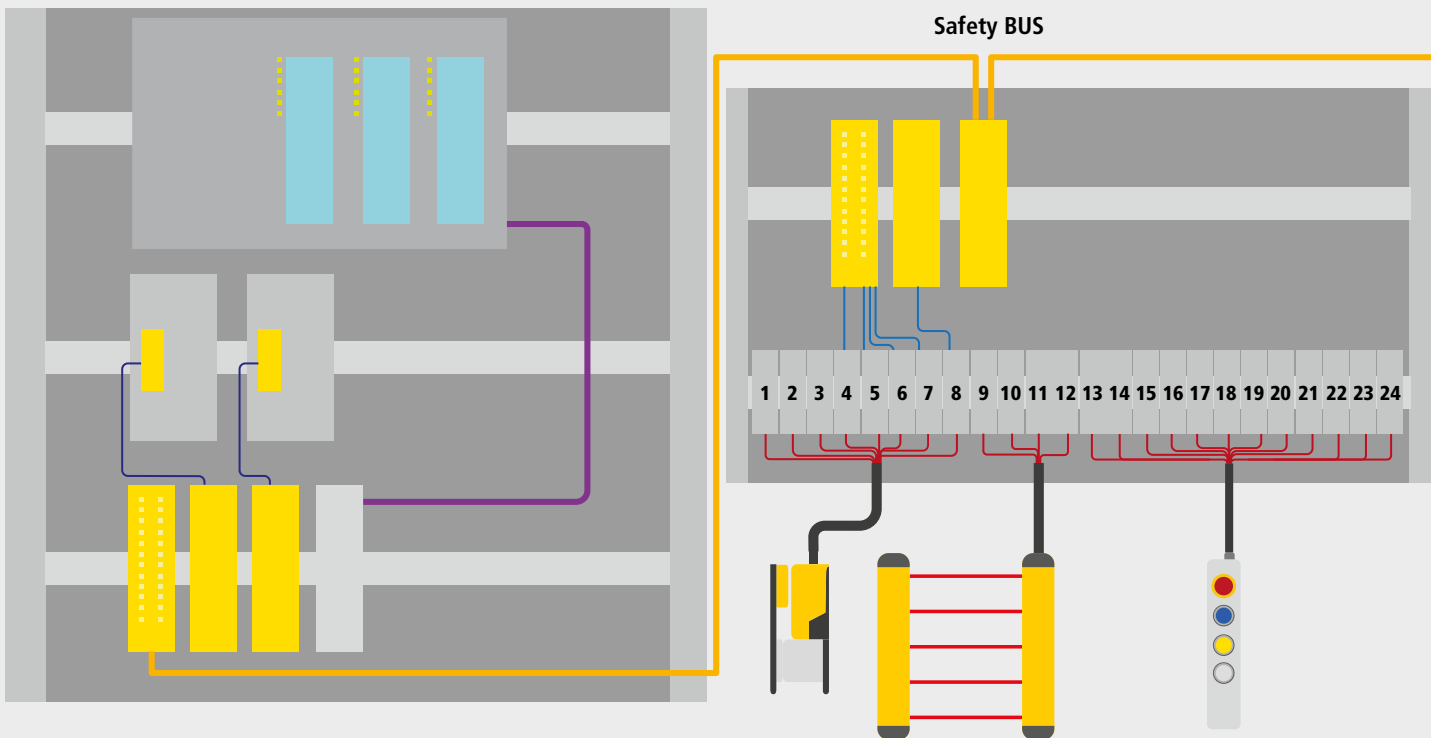
in a decentralized safety system
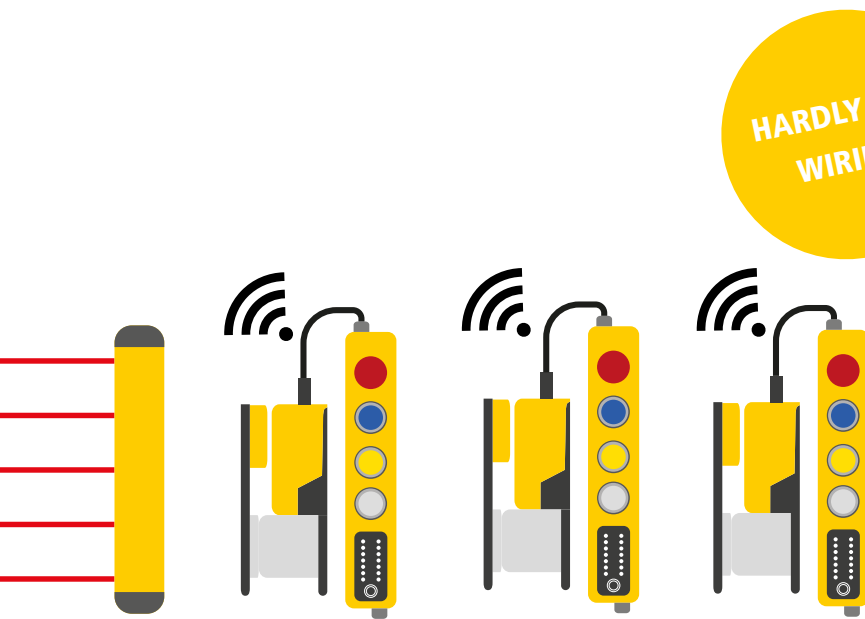
✓ Significant reduction of the wiring effort

✓ Fast commissioning

✓ Error reduction

✓ Flexibly expandable

✓ No terminals

✓ No terminal boxes

...ces the wiring effort

ENORMOUS WIRING EFFORT

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
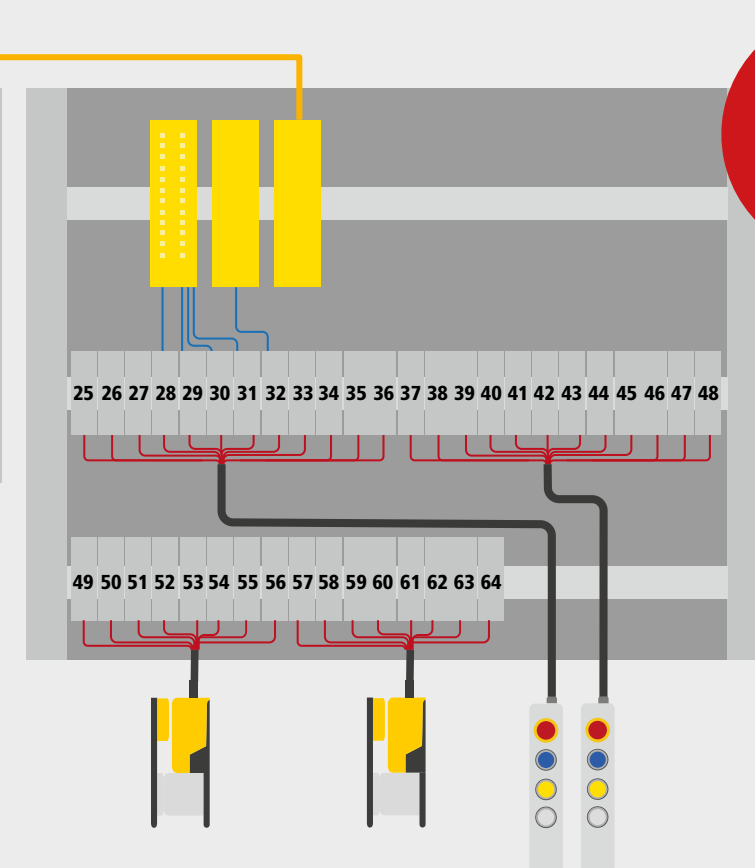
✗ High wiring effort

✗ Many modules

✗ Increased error rate

✗ Inflexible

✗ Extra control cabinets

✗ High cost expenditure

✗ Small applications already require up to 64 terminals

Free Software

Clear program structures
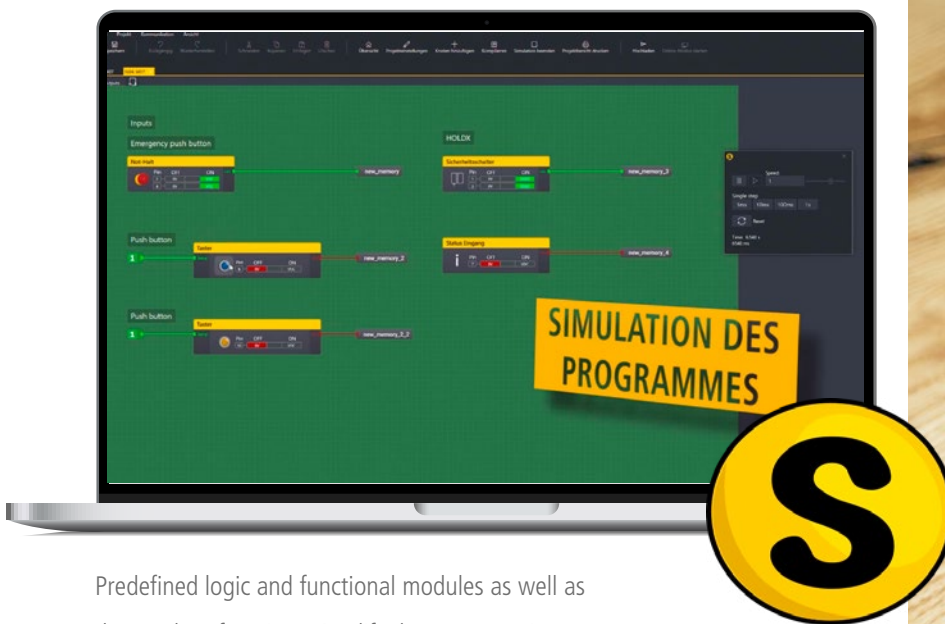
Predefined logic and functional modules as well as drag & drop functions simplify the programming.

Free software gateways
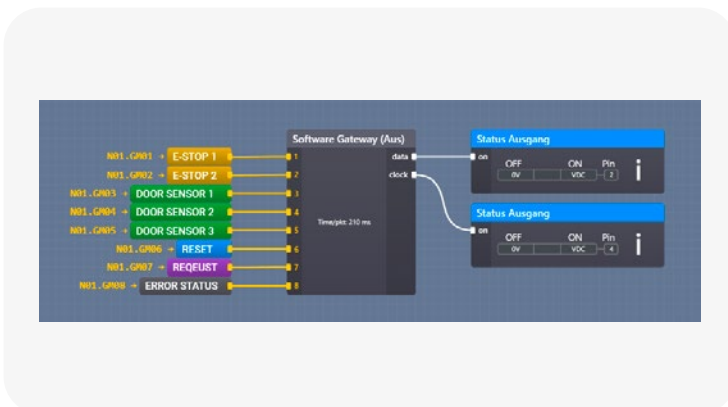
Functional modules for communication with the standard PLC via free software gateways.
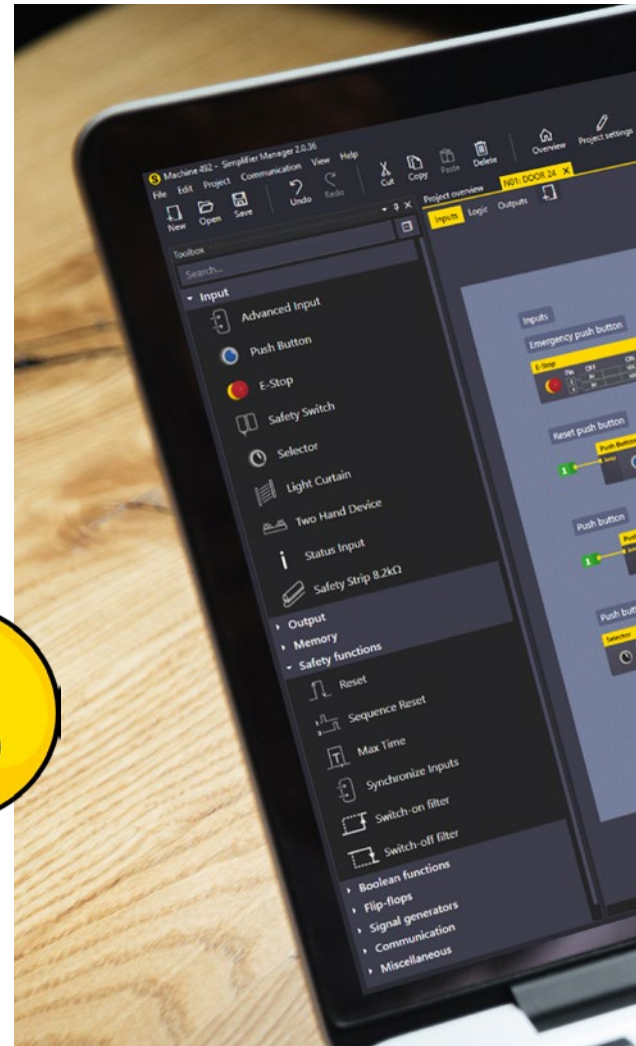
Wireless program transfer and diagnosis

Thanks to the wireless function, programming can be transferred to the Simplifier without cable restrictions and diagnosis can be performed in online mode.

Simplifier Manager

Import and export function of program parts

Standardization of programs with the import and export function. Simplifier standard units with prepared programs and E-Plan macros.

Optimized software validation

Individual checksums for each sub-page of the application software facilitate the validation process.

Online diagnosis

Online diagnosis via the wireless safety interface. Furthermore, the program can be simulated and tested offline.

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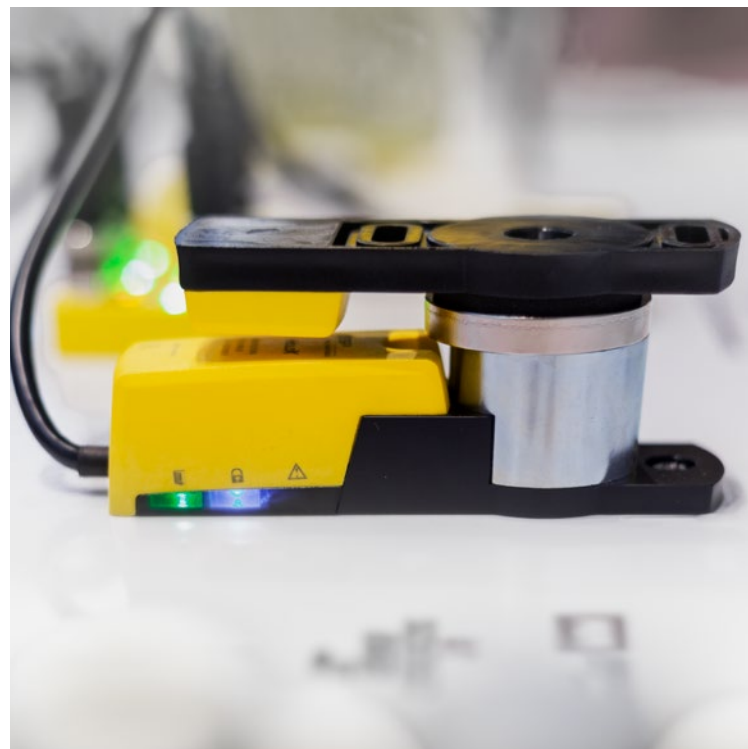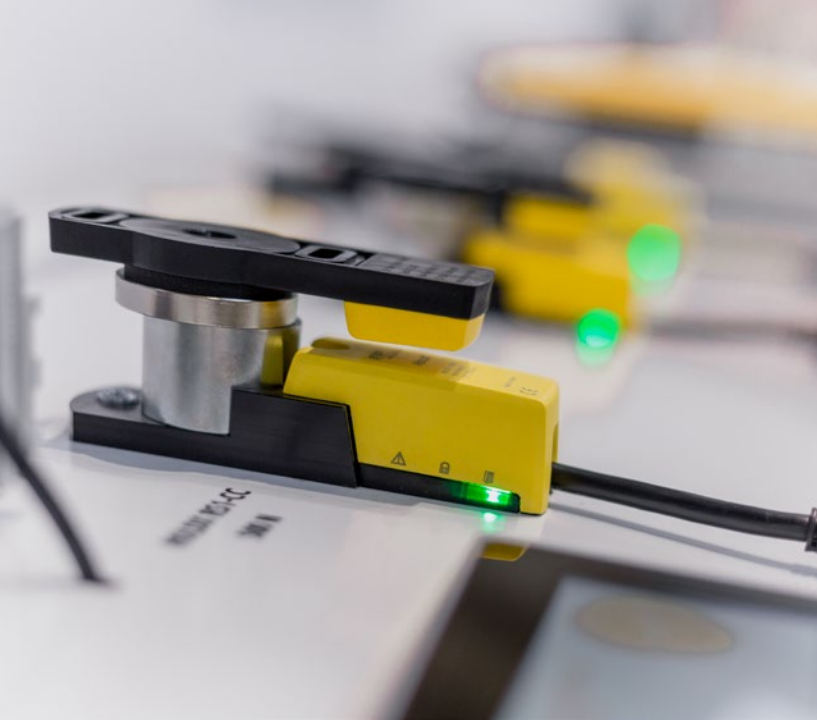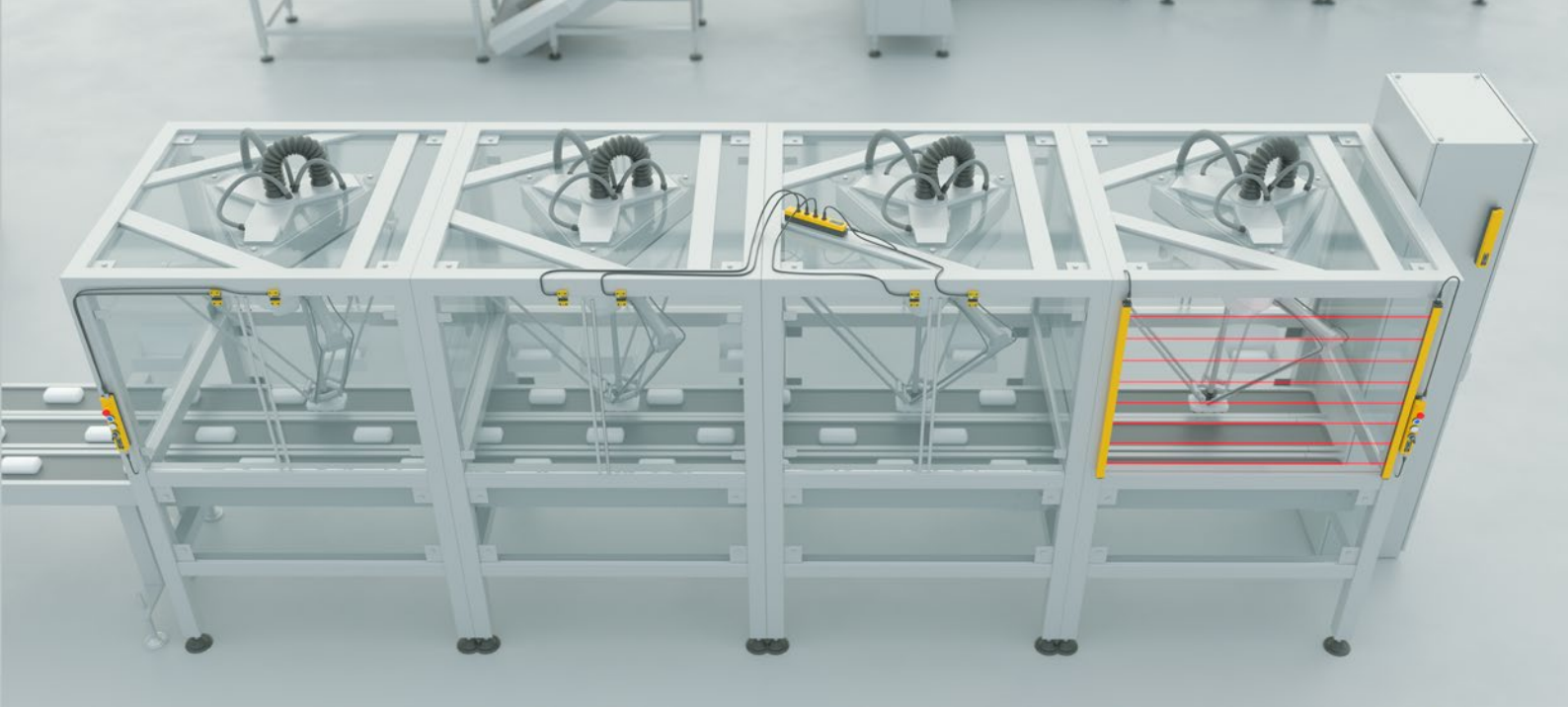
Safety switch

ATTACHMENTS
ACCESS PROTECTION

State-of-the-art technology in products for monitoring of safety doors on machines, plants and robots. They are suitable for a wide range of applications and protect people and machines.

- **RFID safety sensors**
- **Process locks**
- **Safety switch**
- **Key transfer system**
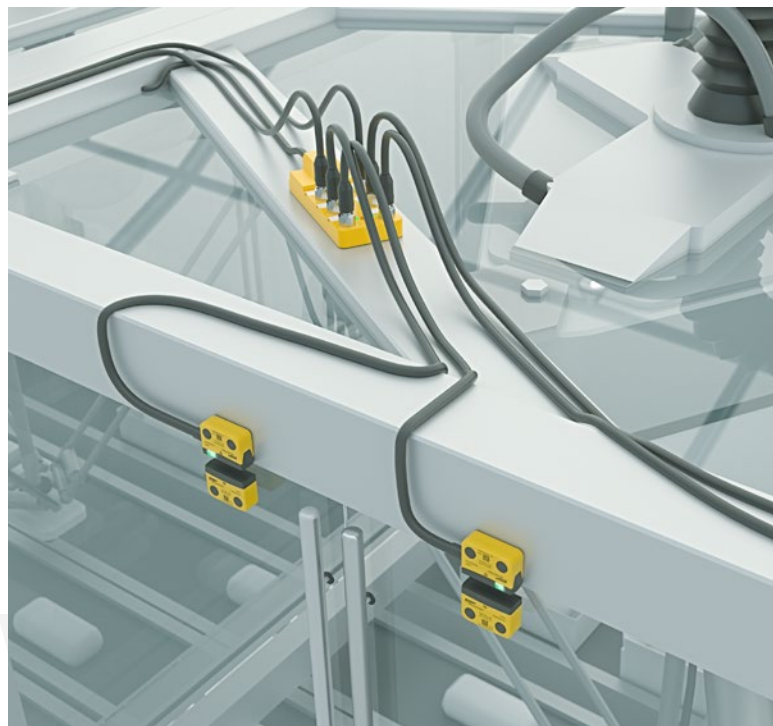
SAFIX

Non-contact RFID safety sensor

Connections

5 m cable / 10 m cable
or pigtail cable M12 8-pin

High protection class

IP 67 - IP 69K

Compact design

22 mm hole spacing
36 mm width

Technology

Most modern RFID sensors

Switching distance

12 mm, also sideways

Extended LED diagnosis

both sides

IP69K

Wide range of safety applications

✓ PLe acc. to EN ISO 13849-1

✓ High coded acc. to EN ISO 14119 (version SAFIX I and W)

✓ Series connection of up to 30 sensors without safety loss

✓ Reaction time of only 75 ms

✓ EDM input to monitor contactor and start buttons

Flexible in assembly and wiring

✓ High protection class IP67 and IP69K for use in rough environments, according to ECOLAB

✓ Flexible connection concept with passive junction box XCONN or wireless distributor Safety Simplifier

✓ Connections via 5 m and 10 m cable or M12 pigtail connection

✓ Extended LED diagnosis

EXCERPT FROM EN ISO 14119

5.2 Arrangement and installation of position switches

Position switches must be arranged in such a way that they are adequately protected against any change in their position. To achieve this, the following requirements must be met:

a) the fastening elements of the position switches must be reliable and a tool must be required to loosen them.

If it is stated in the risk assessment that the safety switch must be prevented from loosening (EN ISO 14119), the screw covers supplied are a possibility to omit the safety screws. For subsequent opening of the screws, the cover must be opened with a special tool.

With screw cover

Connected in series

Flat actuator SAFIX T6

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SAFIX Diagnosis

Extended LED diagnosis

Green	Red	Yellow	Remark
off	off	on	Sensor not actuated, voltage applied
on	off	off	Sensor actuated, all inputs set correctly
flashes	off	off	Sensor actuated, safety inputs not set (low level)
flashes	off	off	Safety inputs set (high level), waiting for start pulse
off	off	flashes	Actuator at the reception limit
off	off	flashes	Teach-in process

Green	Red	Yellow	Remark
off	flashes 1x	off	error safety outputs
off	flashes 2x	off	error safety inputs
off	flashes 3x	off	Error safety inputs. EDM automatic: Safety relay fault. EDM manual: Faulty start impulse
off	flashes 4x	off	Overvoltage or undervoltage fault
off	flashes 5x	off	Temperature outside the permitted range
off	flashes 6x	off	Wrong actuator
off	on	off	Permanent light Internal device error

Advantages of the extended diagnosis

✓ Reduced machine downtime thanks to LED diagnostic function

- · Door open / closed
- · Error in input / output circuit
- · Series connection diagnosis, whether a door in the series has been opened

✓ Diagnostic output for visualization on the standard PLC

- · Door open / closed
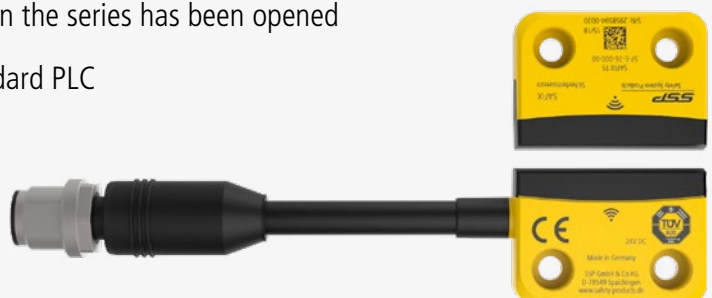
SAFIX 3 connection example with the SSP safety relay S2 series

SAFIX S3-A-P
SAFIX W3-A-P

LED-Diagnosis

⚠ Error ⏻ Power Input ▯ Gate

power supply	Safety inputs		INFO Output	Safety outputs		EDM Input
+24 V DC / GND	OSSD1 IN	OSSD2 IN		OSSD1 OUT	OSSD2 OUT	

1 3   2 6   5   4 7   8

SPS

mode
4

e) 1

d)   c)   K1 K2

b)   a)

Serie S2

A1   S11 S21   S22 S12   X2   X3   13 23 33 41

Reset   K1   K2   F3

K1   K2

A2   14 24 34 42

K1 K2

0V
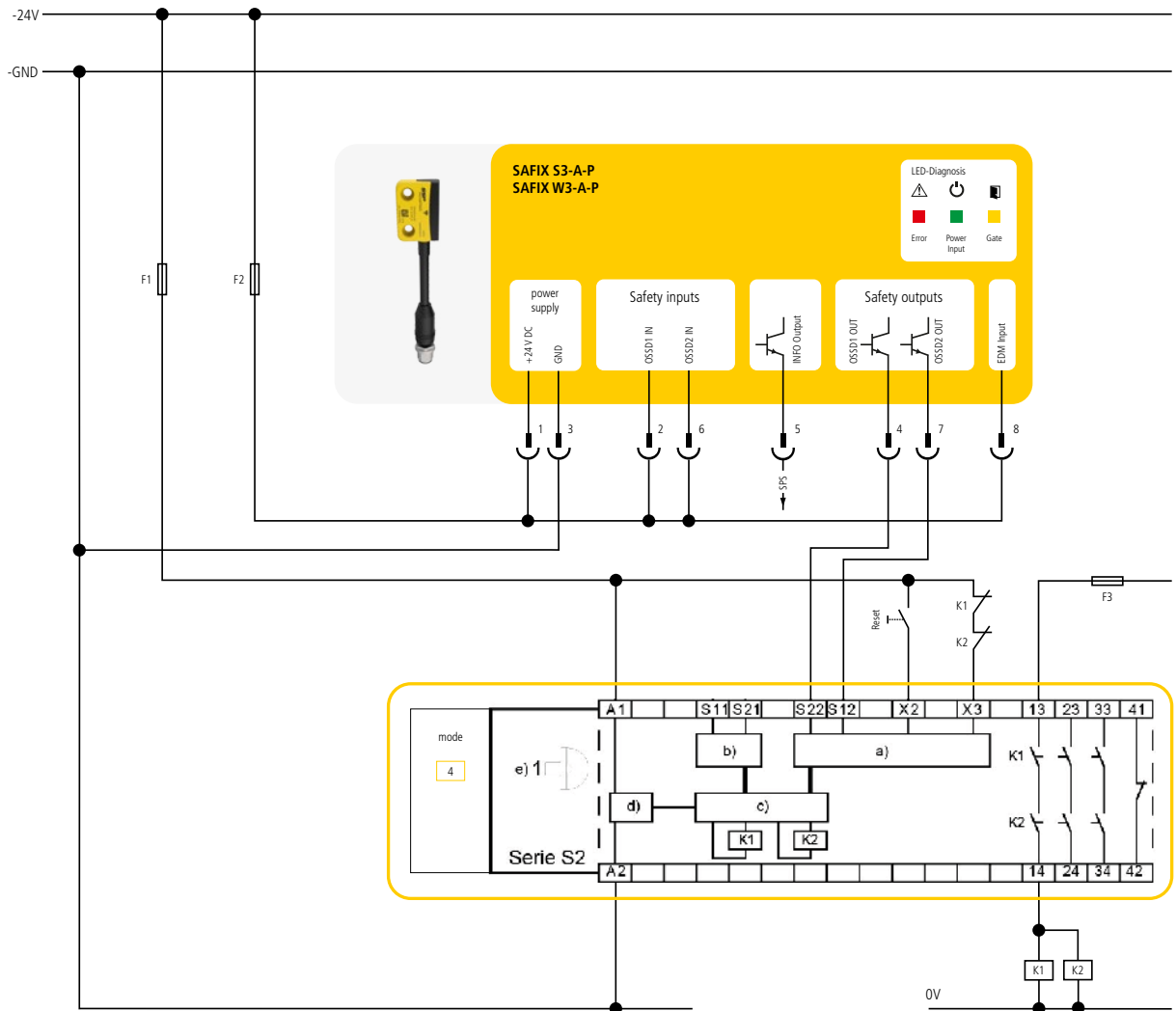
Dimensioning

Sensor   **Standard actuator T5**   **Flat actuator T6**

Kabel 8x0,25mm²
1000±35

Pigtail 150 $^{+25}_{-5}$

Sensor: 36 / 22 / 19 / 26 / Ø7,6 / Ø4,5 / 5,1 / 13

Standard actuator T5: 36 / 22 / 19 / 26 / Ø7,6 / Ø4,5 / 5,1 / 13

Flat actuator T6: 6,72 / 40 / 31,3 / 13,42 / 6,71 / 53,43
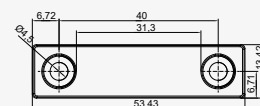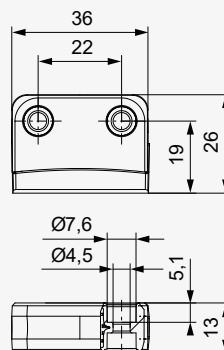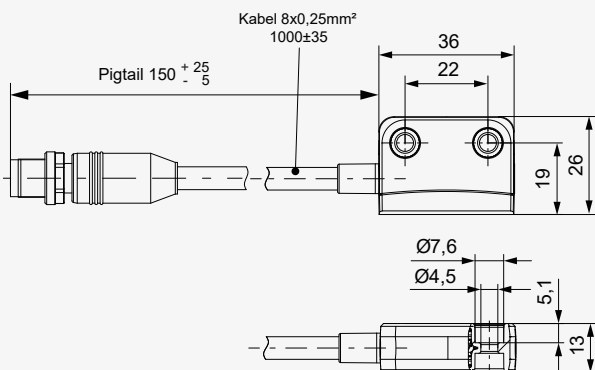
HOLDX R

The smart process interlock

The new generation of magnetic process guard lockings - Award winners, innovative and intelligent.

The HOLDX R series cleverly combines a secure non-contact RFID safety sensor with an intelligent electromagnet in a single device. With this combination of safe position monitoring and process guard locking, the HOLDX R is universally applicable and ensures increasing quality as well as less downtime and set-up times.

Two designs for your application

HOLDX RS

In its small and compact design, the HOLDX RS enables a locking force of 600 N. In addition to the locking force of the electromagnet, the movably supported anchor plate has a 50 N permanent magnet which prevents a door from instant opening.

HOLDX RL

Ideal for large doors. Thanks to the locking force of 1200 N, the HOLDX RL prevents doors from tearing open. With a slim width of only 35 mm, the guard locking is ideal for space-saving installation on aluminum profile systems. Like the HOLDX RS, the guard locking has also has a permanent magnet of 50 N, which prevents a door from opening.

HOLDX R1 Standard

Intelligent - innovative - safe

Flexible

Movable anchor plate

Smart downtime monitoring

by magnetic flux measurement

LED diagnosis

extended status display

High coded

2 coding levels acc. to EN 14119
standard/individual coding

Magnetic force

500 N locking force version S

1200 N locking force version L

50 N permanent magnet

Compact design

mounting on aluminum profiles
from 35 mm construction width

Non-contact safety RFID switch

acc. to PLe EN ISO 13849-1

Connection

flexible pigtail cable
M12 8-pin or
M12 12-pin

Network HOLDX R2

Reduction of commissioning time

Thanks to the two existing pigtail connections, Y-distributors and terminal boxes are no longer necessary. The HOLDX R cables are simply looped through from process lock to process lock. Thanks to an intelligent and simple wiring concept, up to 30 HOLDX R2 can be easily connected in series without giving up the diagnosis options. With the free software gateways from SSP, all participants can be individually evaluated and controlled.

Advantages of intelligent series connection

✓ Series connection of up to 30 process locks up to PLe according to EN ISO 13849-1

✓ Up to 170 diagnostic information are available in the system with series connection

✓ Each process lock can be controlled individually

✓ Evaluation of diagnostics on the standard - PLC without gateway

✓ Functional modules for Siemens / Beckhoff / Rockwell/ B&R available on the homepage for evaluation of diagnostics

✓ Wireless transmission of safe and non-safe diagnostic information even with series connection via the wireless Safety Simplifier safety controller

Advantages in the application

✓ PLe acc. to EN ISO 13849-1:2016

✓ High coded acc. to EN ISO 14119:2013

✓ Wear-free process guard locking

✓ Response time only 75 ms

✓ High protection class , IP67 for use in
harsh environments

✓ Extended diagnostic options thanks
to Bluetooth interface and HOLDX M a n a g e r
software

✓ One diagnostic output provides up to 17 messages

✓ Functional modules for evaluation of the diagnosis
are available for Siemens, Beckhoff and Rockwell
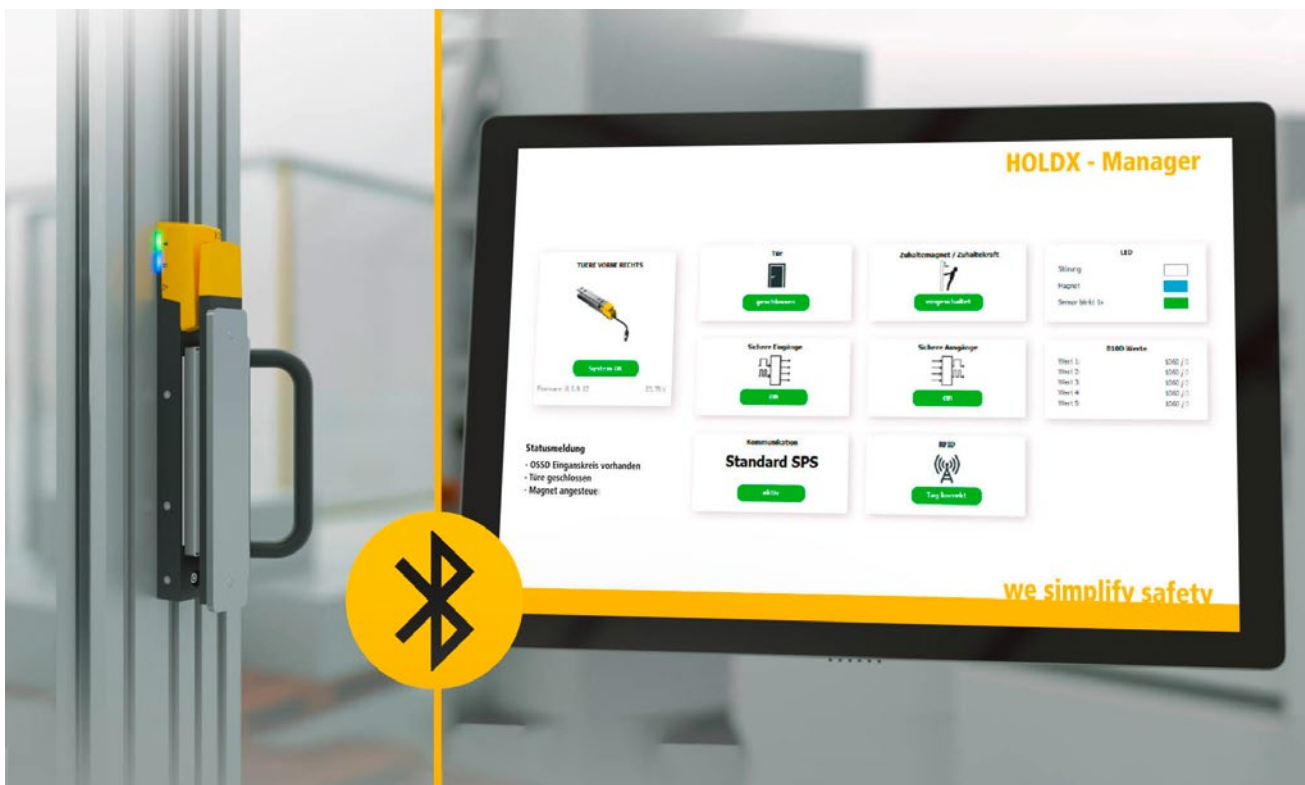
Advantages of Bluetooth diagnosis

✓ Has a guard locking been manipulated (wrong
actuator)?

✓ How often a new actuator has been trained?

✓ How often was a door torn open even though
it was locked?

✓ Storage of valuable information such as:

- Short circuit

- Loose contact in the cable

- Wrong actuator

- Voltage fluctuation

- B10D-value of downstream actuators

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HOLDX R

Extended LED Diagnosis

Green	Safe sensor function
on	OSSD input circuit available, door closed
flashes 1x	door opened
flashes 2x	OSSD input circuit not available, door closed
flashes 4x	OSSD input circuit not available, door opened
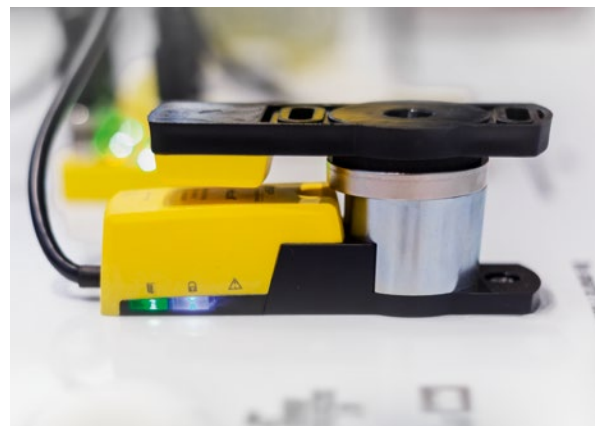
The smart HOLDX R process lock enables simple and fast diagnostics thanks to LEDs on both sides. It immediately detects if another process lock in the system does not achieve the desired locking force or if there is a fault in the input or output circuit of the guard locking. In this way, the system or guard locking can be cleaned or realigned completely in line with the preventive maintenance of the system.

Connection diagram

HOLDX RS1-P8-S-B
HOLDX RS1-P8-W-B

LED diagnostics

| Error | Lock | Gate |

Voltage supply

Safety outputs

Safety inputs

+24 V DC | GND | OSSD1 OUT | OSSD2 OUT | Diagnose OUT | Magnet IN | OSSD1 IN | OSSD2 IN

1 | 3 | 4 | 7 | 5 | 8 | 2 | 6
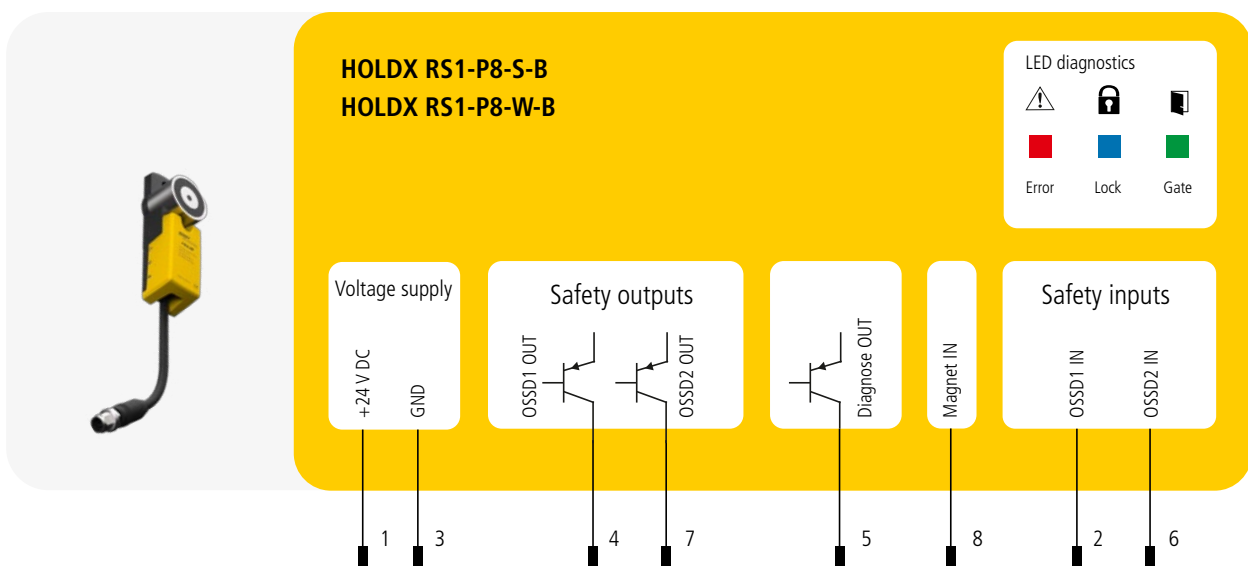
Extended LED diagnosis

Green	Red	Blue	System states
on	on	on	device start
flashes 2x	flashes 2x	flashes 2x	teach-in process RFID
flashes 3x	flashes 3x	flashes 3x	Device pinged
flashes 5x	-	flashes 5x	Calibration of the magnets required

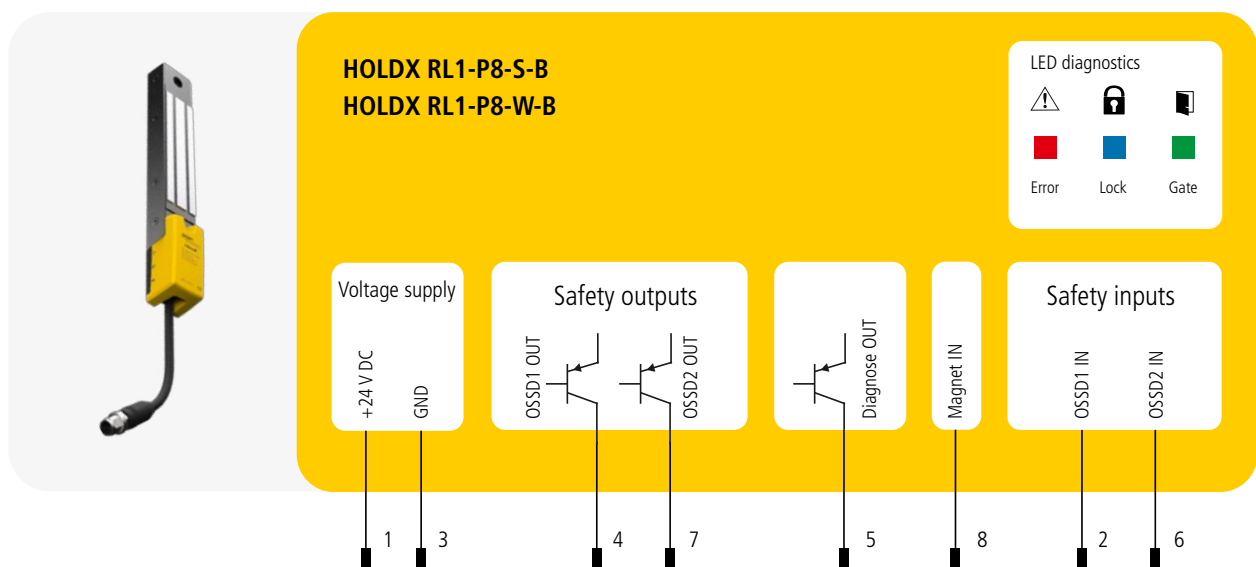| Blue	Guard locking function
off	magnet not actuated
on	door closed, Locking force available
flashes 1x	door closed, locking force not reached
flashes 2x	Door opened, Magnet actuated
flashes	Magnet is being calibrated (fast flashing)

Red	Fault diagnosis
off	No error present
on	Internal device error
flashes 1x	error safety outputs
flashes 2x	error safety inputs
flashes 3x	overvoltage or undervoltage
flashes 4x	error door torn opened
flashes 5x	Temperature outside the permitted range
flashes 6x	Wrong RFID actuator
flashes 7x	Error magnetic flux measurement
flashes 8x	Set $B10_D$ values in limit range
flashes 9x	RFID sync error

Connection diagram

HOLDX RL1-P8-S-B
HOLDX RL1-P8-W-B

LED diagnostics

Error   Lock   Gate

Voltage supply
+24 V DC   GND

Safety outputs
OSSD1 OUT   OSSD2 OUT

Diagnose OUT

Magnet IN

Safety inputs
OSSD1 IN   OSSD2 IN

1   3   4   7   5   8   2   6

XCONN

Passive distributor for easy wiring

- ✓ Connection of up to six SAFIX safety sensor with RFID technology
- ✓ Connection of up to six HOLDX process guard locking devices
- ✓ Release of all process guard locking devices can be set individually
- ✓ Connection of up to six EDI emergency stop buttons

XCONN Y-M12 Y-distributor

Connection
Male connector M23 19-pin
Fixed cable 5 m and 10 m length

LED diagnosis
Extended status display

Design
Robust and compact

Plug-in connection
Six connections via M12 8-pin
female connector
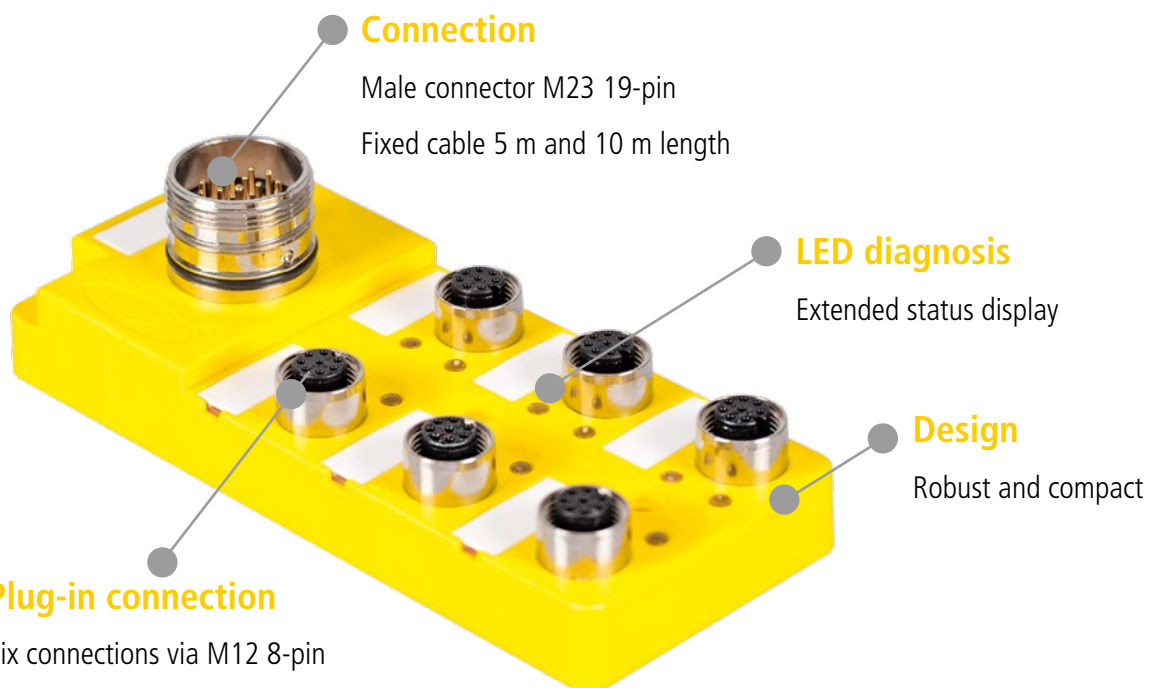
SSP safety relays

User-friendly and flexible

UNDER 10 ms RESPONSE TIME

TWO SAFETY FUNCTIONS

Series S2   Series T2   Series X2

Pluggable connection technology with coding

Rotary switch for function setting

User-friendly

✓ Selectable up to 16 different applications

✓ Monitoring of all common safety sensors

✓ Achievable safety level up to PL e / SIL 3

✓ elected application can be secured with a seal

✓ Short response times (< 10 ms) on request

✓ High switching capacities and short cycle times

Flexible in application

✓ One of the two-channel monitoring of sensors

✓ Manual or automatic reset

✓ Monitoring of potential-free signals

✓ Stop Category 0 and 1

✓ Monitoring of OSSD signals

✓ Use as a contact extension or as a fully-fledged safety relay

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ZEUS

Enabling and operational unit

Important legal regulations must be observed for work such as commissioning, maintenance, servicing or setting up processes in special operating mode.

The enabling mode has proven effective. In this operating mode, the machine operator has the option to bypass certain safety devices, such as safety doors, by selecting the operating mode and actuating the enabling unit. The important point here is the 3-level function.

Only in the middle position, the 3-step enabling switch allows certain hazardous movements. If the operator releases the enabling switch or pushes it into the Level 3, the system switches off for safety.

Reliable protection against manipulation

The operator terminal can be used to control up to 120 binary-coded functions, such as axes, valves or grippers. The 7-segment display shows the selected function and in this way facilitates the operation of the controlled function type. The extended LED diagnosis also provides extended status information.

The in-hand sensor offers a clear advantage in terms of protection against manipulation. Thanks to its ability to detect the user's hand, it reliably protects against bypassing. Therefore, manipulations by clamping the enabling switch are impossible. ZEUS detects via activity sensor when it is removed from the support bracket. Only then it is switched into the special operating mode. This makes sure that no unwanted operation errors occur.

✓ Ergonomic design

✓ Robust housing in IP67

✓ Modular design

✓ Combination of enabling switch and operational unit

✓ Operation of up to 61 axes/functions

✓ Increased protection against manipulation thanks to SSP hand detection

✓ Universal connection via plug, cable or terminal

Product configurator

Emergency stop button
integrated in the control unit

Control of up to
120 machine functions

3-level
enabling switch

Hand detection sensor for
protection against manipulation

Home sensor

Flexible cable length allows clear view during
enabling operation

33

EDI

Emergency stop button

Self-monitoring contact blocks

In order to maintain safety, the switch elements of the emergency stop/emergency off buttons are equipped with a safety contact. The contact supervises continuously the correct connection between the emergency stop/emergency off button and the contact element. Even redundant, safe emergency-off chains are ineffective unless the contact block is accurately connected with the emergency off button.

If the emergency stop/emergency off button is disconnected from the contact element as a result of an imperfect assembly or mechanical damage, the safety contact disconnects immediately and the machine shuts down. The machine can be restarted only after successful trouble shooting.

EDI A3B illuminated emergency stop button

IP69K

IP69K for extreme operating conditions

Operating elements

Operating elements for all applications

The SSP control elements can be used in a wide range of applications, from the simplest to the most demanding environments requiring ECOLAB and IP69K certifications. With compact housing dimensions of less than 40 mm, the operating elements of the EDI series, such as the tGard series, can be easily mounted on standard aluminum profile systems. Numerous individual designs and button configurations can be realized with Fortress switches and thus adapt to different application conditions.

EDI

EDI emergency stop button and operational units

Narrow housing shapes with holding brackets for quick assembly.

SSP
Safety System Products

SSP Safety System Products GmbH & Co. KG

Zeppelinweg 4 · 78549 Spaichingen · Germany

Tel. +49 7424 98049-0 · Fax +49 7424 98049-99

www.safety-products.de · info@ssp.de.com

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Find them on our website

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