

# Safety Products with Integrated Bus Interface



More than safety.

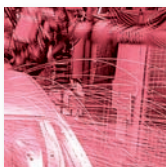


**EUCHNER**

# More than safety.



*Emil Euchner, the company's founder and inventor of the multiple limit switch, circa 1928.*



## **Around the world – the Swabian specialists in motion sequence control for mechanical and systems engineering.**

EUCHNER's history began in 1940 with the establishment of an engineering office by Emil Euchner. Since that time, EUCHNER has been involved in the design and development of switchgear for controlling a wide variety of motion sequences in mechanical and systems engineering. In 1953, Emil Euchner founded EUCHNER + Co., a milestone in the company's history. In 1952, he developed the first multiple limit switch – to this day a symbol of the enterprising spirit of this family-owned company.

## **Automation – Safety – ManMachine**

Today, our products range from electromechanical and electronic components to complex system solutions. With this wide range of products we can provide the necessary technologies to offer the right solution for special requirements – regardless of whether these relate to reliable and precise positioning or to components and systems for safety engineering in the automation sector.

EUCHNER products are sold through a world-wide sales network of competent partners. With our closeness to the customer and the guarantee of reliable solutions throughout the globe, we enjoy the confidence of customers all over the world.

## **Quality, reliability, precision**

Quality, reliability and precision are the hallmarks of our corporate philosophy. They represent concepts and values to which we feel totally committed.

At EUCHNER, quality means that all our employees take personal responsibility for the company as a whole and, in particular, for their own field of work. This individual commitment to perfection results in products which are ideally tailored to the customers' needs and the requirements of the market. After all: our customers and their needs are the focus of all our efforts. Through efficient and effective use of resources, the promotion of personal initiative and courage in finding unusual solutions to the benefit of our customers, we ensure a high level of customer satisfaction. We familiarize ourselves with their needs, requirements and products and we learn from the experiences of our customers' own customers.

## **EUCHNER – More than safety.**



Quality – made by EUCHNER

## Safety Products with Integrated Bus Interface

<b>General</b>	<b>4</b>
<b>Safety Switches with Safety Function, Metal Housing</b>	
Position switch NZ	5
<b>Safety Switches with Separate Actuator, Metal Housing</b>	
Safety switch NZ.VZ without guard locking	6
Safety switch TZ with guard locking and guard lock monitoring	7
Safety switch NX without guard locking	10
Safety switch TX with guard locking and guard lock monitoring	11
Safety switch STA with guard locking and guard lock monitoring	12
<b>Safety Switches with Separate Actuator, Plastic Housing</b>	
Safety switch GP and SGP without guard locking	13
Safety switch TP with guard locking and guard lock monitoring	14
Safety switch STP with guard locking and guard lock monitoring	15
Safety switch STP-TW with guard locking and guard lock monitoring	16
<b>Enabling Switches ZSA and ZSB</b>	<b>17</b>
<b>Non-Contact Safety System CES</b>	<b>18</b>
<b>Safety Monitors</b>	
Monitors SFM	20
Monitor SMO	21
Gateway/monitor GMO	22
Gateway/monitor GMOx	23
<b>Accessories</b>	<b>24</b>
<b>Technical Data</b>	<b>26</b>
<b>Item Index</b>	
Index by item designation	46
Index by order numbers	46
<b>Overview of Range</b>	<b>49</b>

**Bus systems in safety systems**

Bus systems are also used for wiring safety products. The AS-Interface bus is recognized by accredited certification bodies. A consortium comprising various international companies was established to develop the safety-relevant part of the bus protocol.

EUCHNER is actively involved in the development and production process in this organization. With the AS-Interface Safety at Work, a monitor is employed as an additional bus subscriber to monitor the protocol. This protocol is embedded in the AS-Interface protocol, and its purpose is to guarantee safety on the bus. With Safety at Work, the monitor also assumes the link functions, which are realized using safety relays and terminals with parallel wiring in the control cabinet. The monitor is thus ultimately a programmable small safety control system. The bus technology thus considerably reduces the amount of wiring, not only in the field, but especially in the control cabinet as well.

**AS-Interface Safety at Work in safety systems**

AS-Interface is a low-level bus system that is used for the transfer of small data volumes. It is particularly suitable where digital signals are required in the field. However, analog signals can also be processed. Thanks to its simple structure, AS-Interface does not require any programming. For most bus subscribers, it is only necessary to set the address of the bus subscriber. No special knowledge of the bus is required.

Any safety component can be connected to the bus. The monitor is designed so that these components can be connected irrespective of their manufacturer. Device compatibility is guaranteed at all times. When connecting an AS-Interface Safety at Work device, it is important not only to ensure compatibility with the bus, but also to facilitate compliance with the Machinery Directive. AS-Interface certification ensures that the bus subscribers also comply with the standards that apply to the bus. Certification by the stated bodies ensures that all safety components are in compliance with the Machinery Directive.

The ASiMon software is used to implement the links in the monitor. All settings for the safety components are thus made in the monitor. Setup diagnostics can be selected and the logical component links can be implemented. The monitor thus represents the core of the entire safety system. It replaces both the wiring and the safety relays.

The simple construction of a bus system practically eliminates the possibility of errors in the wiring. The bus and monitor diagnostic functions also facilitate rapid error detection. Consequently, setup can be performed directly after the planning phase and the preparation of the monitor configuration. The bus subscribers then simply have to be connected.

The extremely effective bus diagnostic function is also useful during operation. Should an error occur during operation, all situations can be detected and displayed in the control system. Most EUCHNER safety switches have freely programmable LEDs that can be used for an effective diagnostic function. Any system standstills can thus be dealt with quickly.

**Operation of AS-Interface Safety at Work**

Replacing faulty components is very easy with AS-Interface Safety at Work. A bus subscriber that needs to be replaced only has to be substituted with a device with its address set to 0. The bus starts this device automatically when a button is pressed. This exchange thus progresses very rapidly and without the use of a programming device. It is even possible to replace the monitor with a new device without the use of a computer. In this case, a new device and a "push of a button" are all that is needed to get the system up and running again.

Because of the many advantages of AS-Interface Safety at Work and the large selection of different safety components, this system is also ideal as an autarchic safety system within an installation that uses a higher-level fieldbus. If the diagnostic function is required in this case, it can easily be incorporated in the higher-level bus by means of an integrated gateway.

EUCHNER safety switches maximize all of the features that the bus has to offer. Switches with guard locking do more than just signal the position of the movable safety guards to the control system. They also distinguish and signal the position of the guard locking compared with the position of the door. Complete visualization of the safety guard is thus possible. EUCHNER provides full diagnostic functionality for the most common control systems.

With EUCHNER switches, the guard locking is controlled using the bus. Because of the separate supply cable for the auxiliary power, the guard locking can also be activated as a safe channel. Many switches have LEDs integrated on the front; these LEDs can be controlled using the bus. On-site diagnostics can therefore be performed with the control system without the need for additional wiring.

# Safety Switches with Safety Function, Metal Housing

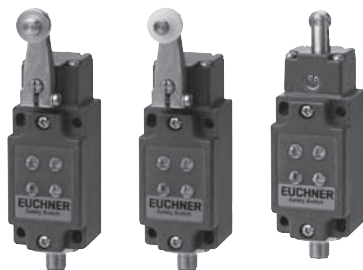


## Position switch NZ with integrated actuator

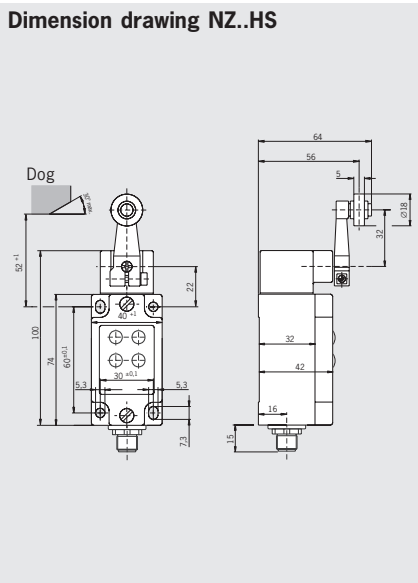


- ▶ **Version A according to EN 50041 NZ.HS**  
(steel roller  $\varnothing$  18)
- ▶ **Version A according to EN 50041 NZ.HB**  
(plastic roller  $\varnothing$  18)
- ▶ **Version C according to EN 50041 NZ.RS**  
(steel roller  $\varnothing$  12 mm)

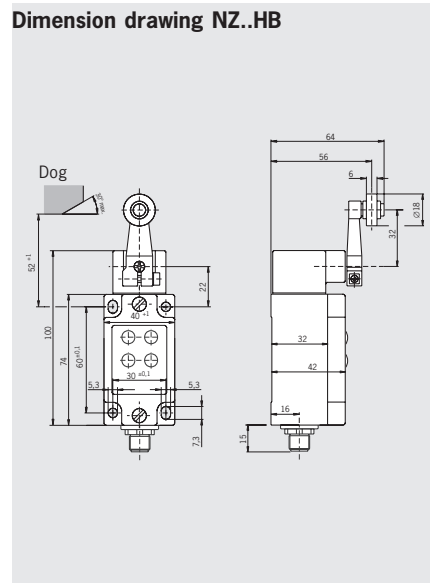
**Plug connector M12**  
4-pin



Dimension drawing NZ..HS



Dimension drawing NZ..HB



### Approach direction

**Version A according to EN 50041 NZ.HS/NZ.HB**



Horizontal

Switch head and lever arm adjustable in 90° steps.

### Switching direction

Right, left or both sides.

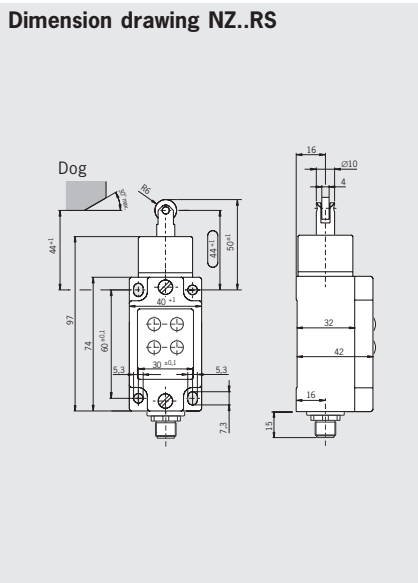
**Version C according to EN 50041 NZ.RS**



Horizontal

Adjustable in 90° steps.

Dimension drawing NZ..RS



### AS-Interface inputs

- ▶ **D0, D1** Positively driven contact 1
  - ▶ **D2, D3** Positively driven contact 2
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

For trip rails and trip dogs, refer to the catalog of multiple limit switches.

### Ordering table

Series	Connection	Actuator	Switching element	Order No./item
NZ	SEM 4 Plug connector M12	<b>HS</b> Lever arm Steel roller $\varnothing$ 18	2 NC $\ominus$	<b>095 201</b> NZ2HS-538SEM4AS1
		<b>HB</b> Lever arm Plastic roller $\varnothing$ 18	2 NC $\ominus$	<b>097 591</b> NZ2HB-538SEM4AS1
		<b>RS</b> Roller plunger Steel roller $\varnothing$ 12	2 NC $\ominus$	<b>095 046</b> NZ2RS-538SEM4AS1



# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch NZ.VZ



- ▶ Housing according to EN 50041



### Approach direction

- ▶ Horizontal
- ▶ Adjustable in 90° steps.

### AS-Interface inputs

- ▶ **D0, D1** Positively driven contact 1
  - ▶ **D2, D3** Positively driven contact 2
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

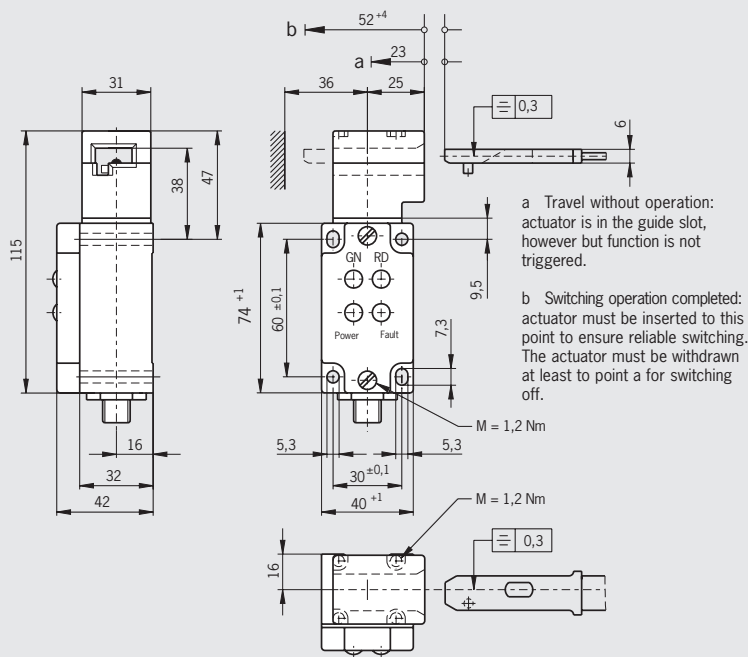
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

### Dimension drawing



Please order actuator separately  
(see catalog of Safety Switches  
with Metal Housings)

### Ordering table

Series	Connection	Actuator	Switching element	Order No./item
NZ	SEM 4 Plug connector M12	VZ Separate actuator	2 NC ⊖	<b>090 742</b> NZ2VZ-538ESEM4-AS1

# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch TZ with guard locking and guard lock monitoring



- ▶ Mechanical release on the front
- ▶ Actuating head fitted left or right



### Mechanical release

Is used for releasing the guard locking with the aid of a tool. A seal and auxiliary tool are fitted to protect against tampering.

### Guard locking types

**TZ1** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output O.

**TZ2** Open-circuit current principle, guard locking by control of AS-i output O. Release by spring force.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit DO. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

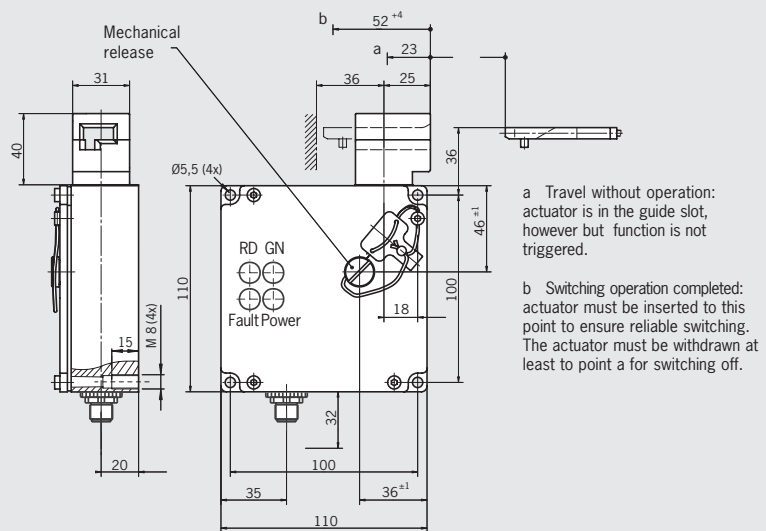
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

Plug connector M12  
4-pin

### Dimension drawings Actuating head on left is a mirror image



a Travel without operation: actuator is in the guide slot, however but function is not triggered.

b Switching operation completed: actuator must be inserted to this point to ensure reliable switching. The actuator must be withdrawn at least to point a for switching off.

Please order actuator separately (see catalog of Safety Switches with Metal Housings)

### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Order No./item
TZ	SEM4 Plug connector M12	1 Mechanical	LE Left	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>086 140</b> TZ1LE024SEM4AS1
			RE Right	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>086 141</b> TZ1RE024SEM4AS1
		2 Electrical	LE Left	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>086 990</b> TZ2LE024SEM4AS1
			RE Right	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>086 991</b> TZ2RE024SEM4AS1



# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch TZ with guard locking and guard lock monitoring



- ▶ **Mechanical release on the front**
- ▶ **Escape release on the rear with key button**
- ▶ **Actuating head fitted left or right**



### Mechanical release

Is used for releasing the guard locking with the aid of a tool. A seal and auxiliary tool are fitted to protect against tampering.

### Escape release

Is used for the manual release of the guard locking from within the danger area without tools. The disable can only be removed and the switch returned to its operating state using a key included.

### Guard locking type

**TZ1** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output 0.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit D0. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

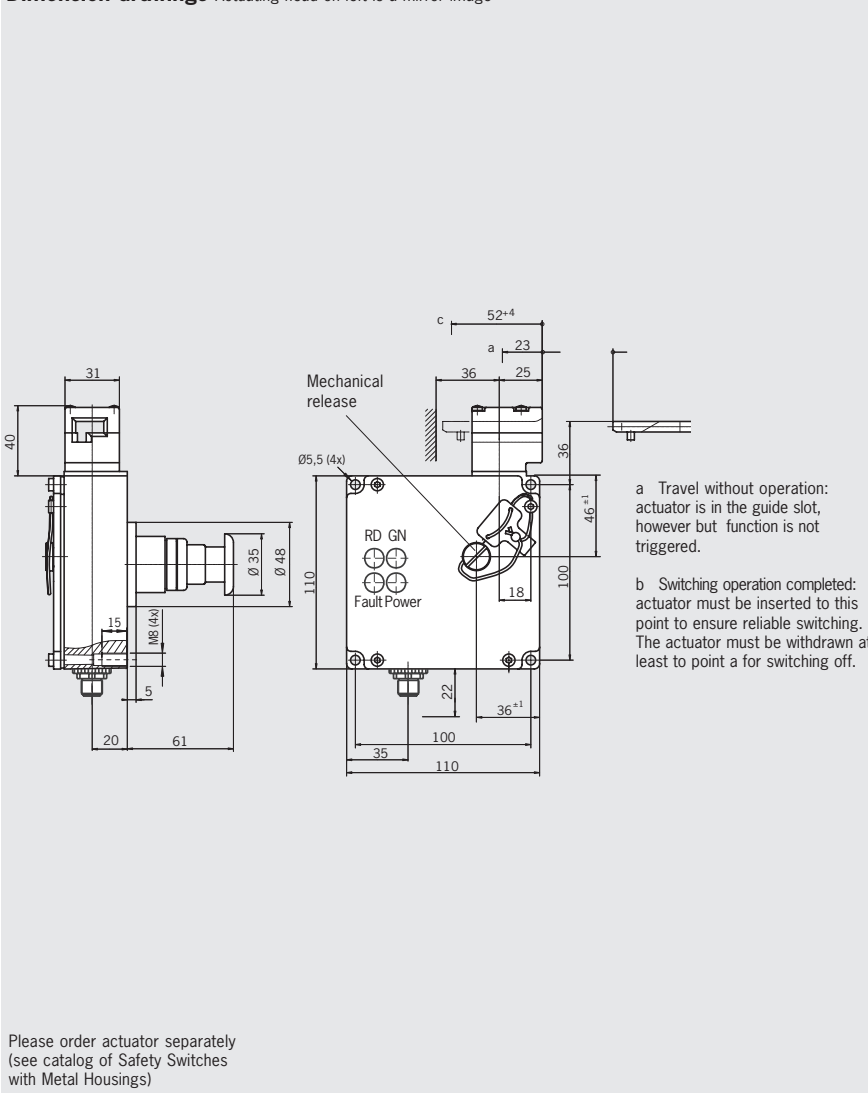
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

**Dimension drawings** Actuating head on left is a mirror image



### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Order No./item
TZ	SEM4 Plug connector M12	1 Mechanical	LE Left	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>C1815</b> Escape release (red key button)	<b>094 422</b> TZ1LE024SEM4AS1-C1815
			RE Right	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>C1815</b> Escape release (red key button)	<b>094 423</b> TZ1RE024SEM4AS1-C1815



# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch TZ with guard locking and guard lock monitoring



- ▶ Emergency unlocking on the front with rotary knob
- ▶ Actuating head fitted left or right



### Emergency unlocking

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. A sealing wire is fitted to protect against tampering.

### Guard locking type

**TZ1** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output O.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit D0. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

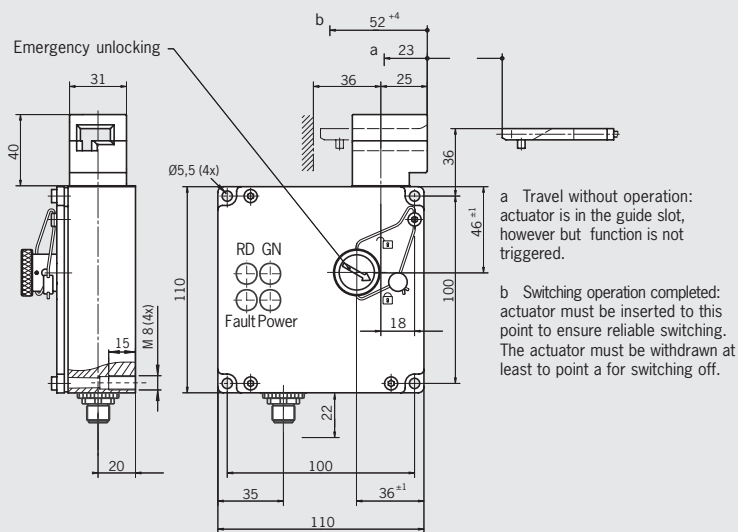
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

### Dimension drawings



Please order actuator separately (see catalog of Safety Switches with Metal Housings)

### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Order No./item
TZ	SEM4 Plug connector M12	1 Mechanical	LE Left	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>C1937</b> Emergency unlocking	<b>090 278</b> TZ1LE024SEM4AS1-C1937
			RE Right	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>C1937</b> Emergency unlocking	<b>090 279</b> TZ1RE024SEM4AS1-C1937

# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch NX



- ▶ LED function display



### Approach direction



Horizontal and vertical  
Adjustable in 90° steps.

### AS-Interface inputs

- ▶ **D0, D1** Positively driven contact 1
  - ▶ **D2, D3** Positively driven contact 2
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

- ▶ **D1** Red LED
- ▶ **D2** Green LED

### Internal LED function display

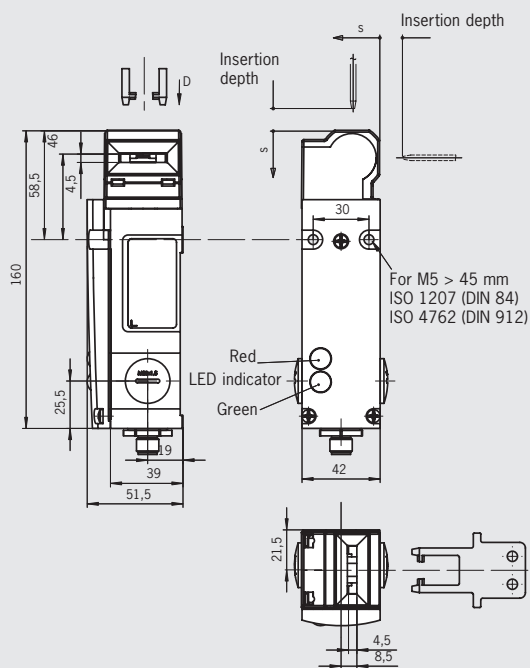
- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.

### External LED function display

- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

### Dimension drawing



Please order actuator separately  
(see catalog of Safety Switches with  
Metal Housings)

### Ordering table

Series	Connection	Switching element	Order No./item
NX	SEM 4 Plug connector M12	2 NC ⊖	094 362 NX1-2131ASEM4-AS1

# Safety Switches with Separate Actuator, Metal Housing EUCHNER

## Safety switch TX with guard locking and guard lock monitoring



- ▶ Mechanical release on the front
- ▶ Escape release on the rear optional

**Without escape release**  
Plug connector M12, 4-pin

**With escape release**  
Plug connector M12, 4-pin



**Approach direction**  
Horizontal  
Adjustable in 90° steps.

### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

### Escape release

Is used for the manual release of the guard locking from within the danger area without tools. With identification of On/Off position.

### Guard locking type

**TX1** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output O.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit DO. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **DO, D1** Positively driven contact 1 (safety door monitor)
- ▶ **D2, D3** Positively driven contact 2 (guard lock monitoring)

Evaluation is performed via a safety monitor.

### AS-Interface outputs

- ▶ **D1** Red LED
- ▶ **D2** Green LED

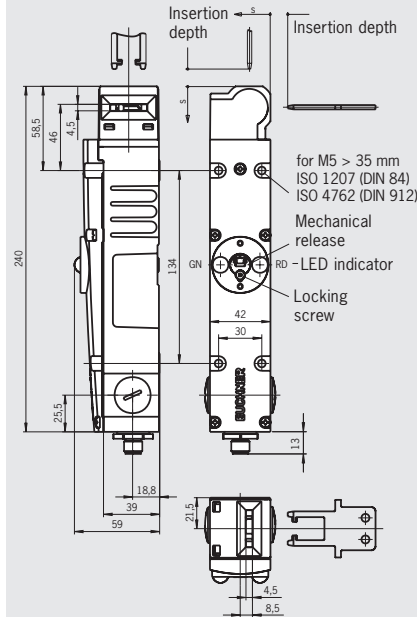
### Internal LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.

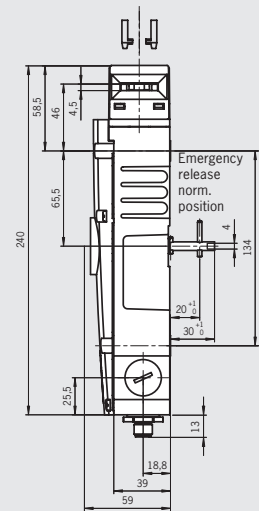
### External LED function display

- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

### Dimension drawing



Please order actuator separately (see catalog of Safety Switches with Metal Housings)



Please order actuator separately (see catalog of Safety Switches with Metal Housings)

### Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage
					AC/DC 24 V
TX	SEM4 Plug connector M12	1 Mechanical	SK: 1 NC ⊖ ÜK: 1 NC ⊖		<b>094 403</b> TX1B-A024SEM4AS1
				<b>C1991</b> With escape release	<b>095 914</b> TX1B-A024SEM4AS1C1991



# Safety Switches with Separate Actuator, Plastic Housing **EUCHNER**

## Safety switch STA with guard locking and guard lock monitoring



- ▶ Mechanical release on the front



### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

### Guard locking type

**STA3** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output 0.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit D0. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

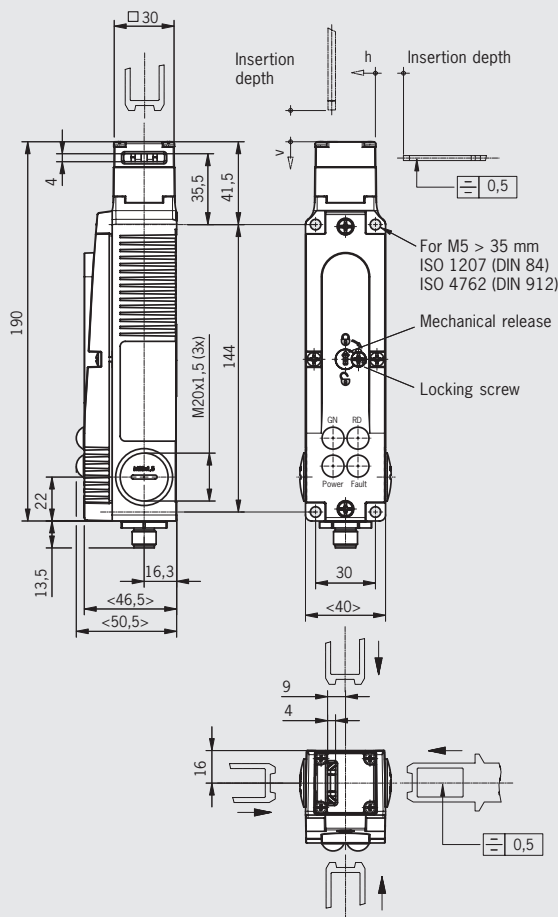
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

Plug connector M12  
4-pin

### Dimension drawing



Please order actuator separately  
(see catalog of Safety Switches with Metal Housings  
or catalog of Safety Switches with Plastic Housings)

### Ordering table

Series	Connection	Guard locking	Switching element	Order No./item
STA	SEM4 Plug connector M12	3 Mechanical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>098 993</b> STA3-4141A024SEM4AS1

# Safety Switches with Separate Actuator, Plastic Housing **EUCHNER**

## Safety switches GP and SGP



- ▶ For metal SGP actuating head



### Approach direction



Horizontal and vertical  
Adjustable in 90° steps.

### AS-Interface inputs

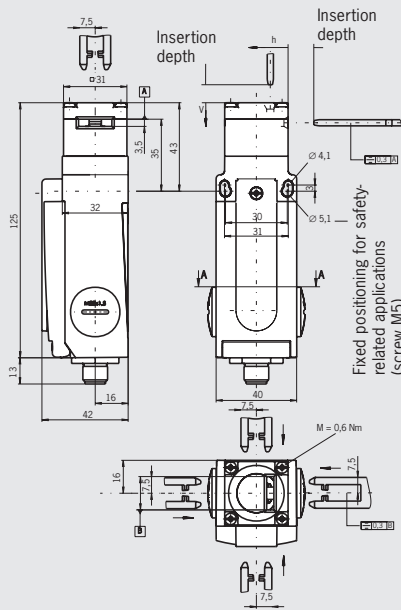
- ▶ **D0, D1** Positively driven contact 1
  - ▶ **D2, D3** Positively driven contact 2
- Evaluation is performed via a safety monitor.

### Internal LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.

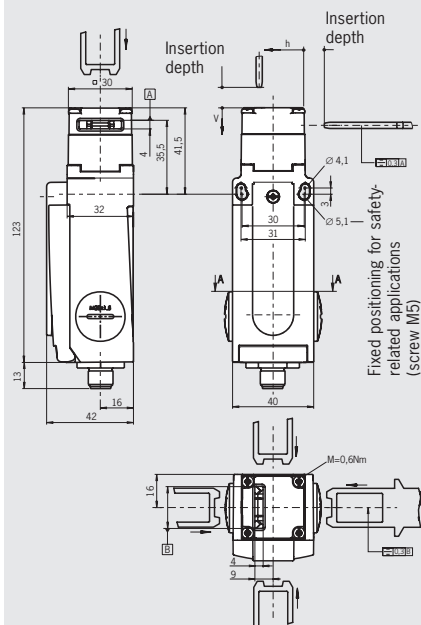
### GP, plug connector M12 4-pin

#### Dimension drawing



Please order actuator separately  
(see catalog of Safety Switches with Plastic Housings)

### SGP, plug connector M12 4-pin



Please order actuator separately  
(see catalog Safety Switches with Plastic Housings)

### Ordering table

Series	Connection	Switching element	Order No./item
GP	<b>SEM 4</b>	2 NC ⊖	<b>091 193</b> GP3-538ASEM4AS1
	Plug connector M12		
SGP	<b>SEM 4</b> Plug connector M12	2 NC ⊖	<b>099 126</b> SGP3E-538ASEM4AS1

# Safety Switches with Separate Actuator, Plastic Housing **EUCHNER**

## Safety switch TP with guard locking



- ▶ Mechanical release on the front
- ▶ Increased horizontal overtravel
- ▶ Optional without guard lock monitoring



### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

### Guard locking types

**TP3** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output 0.

**TP4** Open-circuit current principle, guard locking by control of AS-i output 0. Release by spring force.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit D0. Simple connection to the bus is sufficient for process protection. For personal protection, further measures must be taken to ensure safe power switching. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs version AS1

- ▶ **D0, D1** Door monitoring contact SK
- ▶ **D2, D3** Solenoid monitoring contact ÜK

### AS-Interface inputs version AS2

- ▶ **D0, D1** Door monitoring contact SK 1
- ▶ **D2, D3** Door monitoring contact SK 2

Evaluation is performed via a safety monitor.

### AS-Interface outputs

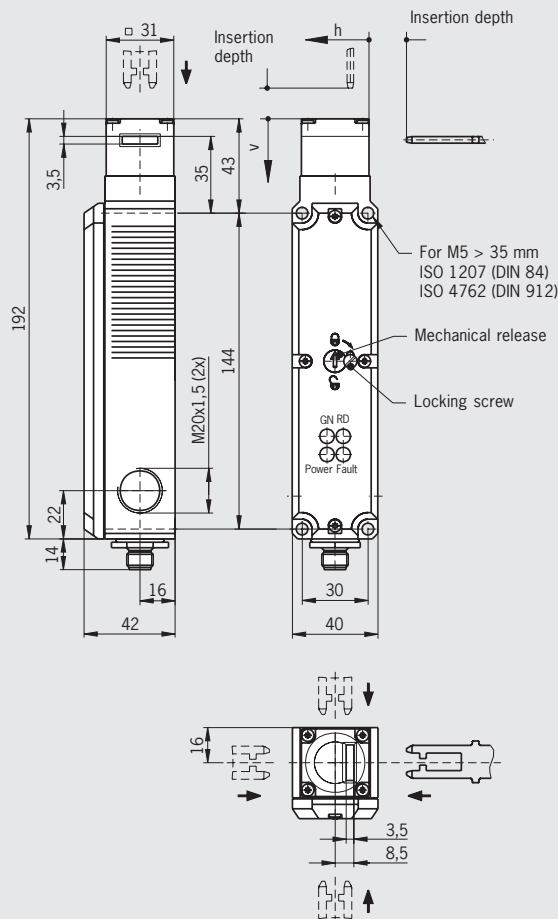
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

### Dimension drawing



Please order actuator separately (see catalog of Safety Switches with Plastic Housings)

### Ordering table

Series	Connection	Guard locking	Switching element	Version	Order No./item
TP	SEM4 Plug connector M12	3 Mechanical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>AS1</b> With guard lock monitoring	<b>088 256</b> TP3-4141A024SEM4AS1
		4 Electrical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>AS1</b> With guard lock monitoring	<b>088 257</b> TP4-4141A024SEM4AS1
			SK: 2 NC ⊖	<b>AS2</b> Without guard lock monitoring	<b>091 676</b> TP4-4141A024SEM4AS2

# Safety Switches with Separate Actuator, Metal Housing **EUCHNER**

## Safety switch STP with guard locking and guard lock monitoring



- ▶ Actuating head made of metal
- ▶ Mechanical release on the front



### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

### Guard locking types

**STP3** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output O.

**STP4** Open-circuit current principle, guard locking by control of AS-i output O. Release by spring force.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit DO. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

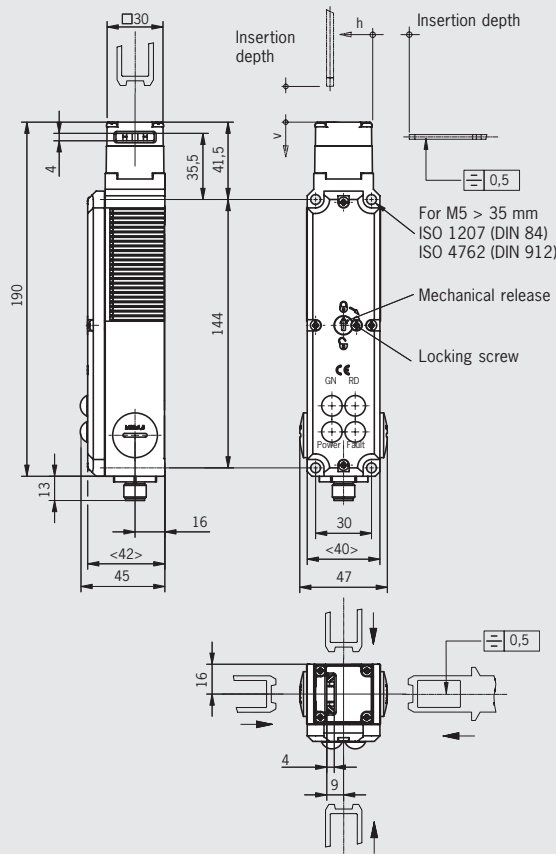
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

Plug connector M12  
4-pin

### Dimension drawing



Please order actuator separately  
(see catalog of Safety Switches with Plastic Housings)

### Ordering table

Series	Connection	Guard locking	Switching element	Order No./item
STP	SEM4 Plug connector M12	3 Mechanical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>097 790</b> STP3-4141A024SEM4AS1
		4 Electrical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	<b>097 789</b> STP4-4141A024SEM4AS1

# Safety Switches with Separate Actuator, Plastic Housing **EUCHNER**

## Safety switch STP-TW with guard locking and guard lock monitoring



- ▶ Actuating heads made of metal
- ▶ Mechanical release on the front
- ▶ Mechanical key release optional



### Function

In the safe state, both actuators must be inserted into the switch head.

### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

### Guard locking types

**STP-TW3** Closed-circuit current principle, guard locking by spring force. Release by control of AS-i output 0.

### Control of the interlocking solenoid

The interlocking solenoid is controlled by the control system via AS-Interface bus bit D0. Simple connection to the bus is sufficient for process protection. The 24V connection can be switched safely for personal protection.

### AS-Interface inputs

- ▶ **D0, D1** Door monitoring contact SK
  - ▶ **D2, D3** Solenoid monitoring contact ÜK
- Evaluation is performed via a safety monitor.

### AS-Interface outputs

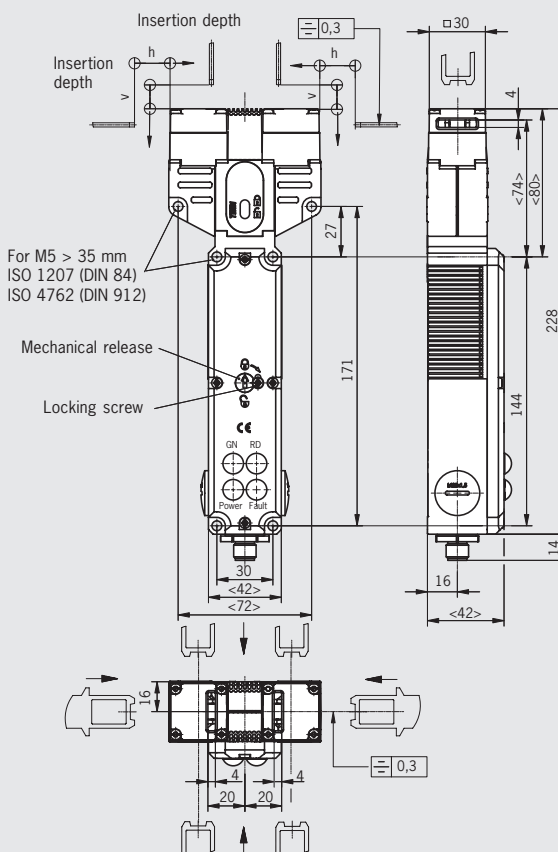
- ▶ **D0** Interlocking solenoid
- ▶ **D1** Red LED
- ▶ **D2** Green LED

### LED function display

- ▶ The *Power* LED indicates the operating voltage at the bus.
- ▶ The *Fault* LED shows if a fault has been detected on the AS-Interface bus.
- ▶ The green and the red LEDs can be optionally controlled with bits D1 and D2 by the control via the bus.

**Plug connector M12**  
4-pin

### Dimension drawing



Please order actuator separately (see catalog Safety Switches with Plastic Housings)

### Ordering table

Series	Connection	Guard locking	Switching element	Order No./item
STP-TW	SEM4 Plug connector M12	3 Mechanical	SK: 1 NC ⊖ ÜK: 1 NC ⊖	102 354 STP-TW-3A-4141A024SEM4AS1



# Enabling Switches

**EUCHNER**

## Enabling switches ZSA and ZSB



- ▶ **Housing G1**
- ▶ **3-stage function**
- ▶ **Positively driven contacts**
- ▶ **Dual-channel version**
- ▶ **Optional with 2 buttons (+ and -)**



### 3-stage function

Enabling function is only active in the second stage (middle position, actuating point). Enabling is cancelled when the button is released or pushed all the way down (panic function).

### + and - buttons

These buttons can be configured individually. For example, for moving axes in positive or negative direction.

### AS-Interface inputs

- ▶ **D0, D1** NO contact E1
- ▶ **D2, D3** NO contact E2

Evaluation is performed via a safety monitor.

### AS-Interface parameters

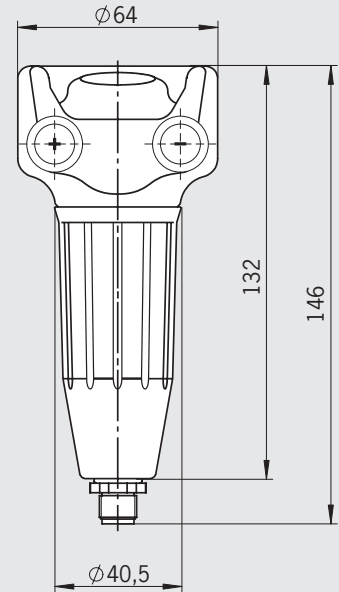
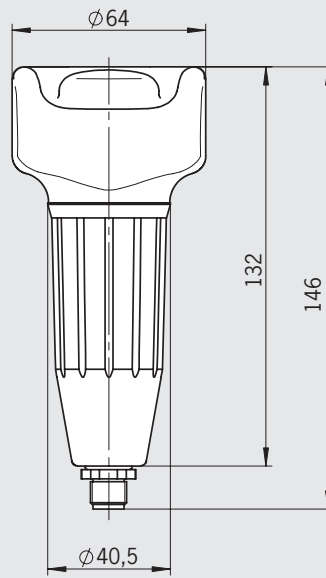
The buttons (+ and -) are transferred when the AS-i parameters are read out.

- ▶ **P0** Parameter bit, Plus button
- ▶ **P1** Parameter bit, Minus button

**ZSA, 3-stage function**  
Plug connector M12, 4-pin

**ZSB, 3-stage function**  
Plug connector M12, 4-pin

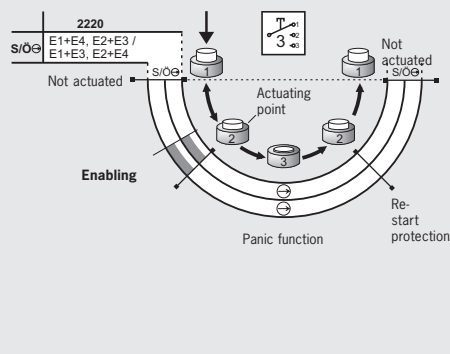
### Dimension drawings



Refer to the catalog of Enabling Switches for accessories

Refer to the catalog of Enabling Switches for accessories

### Function sequence



### Ordering table

Design	Connection	Switching element	Version	Order No./item
G1 3-stage	SEM4 Plug connector M12	2 NO 3-stage		<b>091 580</b> ZSA2B2CAS1
			2 buttons (+ and -)	<b>096 703</b> ZSB2B7CAS1



# Non-Contact Safety System CES



## Evaluation unit for non-contact read head CES, CEM or CET



- ▶ Evaluation unit for direct connection of a CES read head
- ▶ Connection of a CEM solenoid
- ▶ LED diagnostic displays
- ▶ Connection of CET guard locking



### Connection of a read head CES

The CES series read head can be connected to the evaluation unit using an M12 plug connector. The read head is not included with the evaluation unit.

### Connection of a read head CEM or CET

The read heads are connected using two M12 plug connectors. Connection cables with M12 plug connectors are required for the evaluation unit, and connection cables with M8 plug connectors are needed for the read head. Connection cables and read head are not included with the evaluation unit.

### Versions

**Unicode:** Only the actuator that undergoes a teach-in operation in the device is recognized.

**Multicode:** All EUCHNER actuators are recognized without a teach-in operation.

### Actuator

An actuator with programmed code to suit the read head selected is needed.

### AS-Interface inputs

- ▶ **DO - D3** Input IN for read head

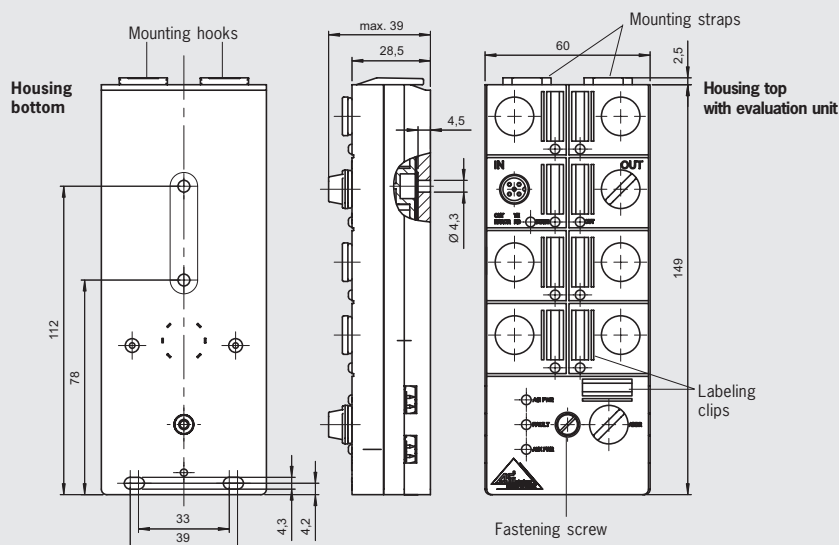
Evaluation is performed via a safety monitor.

### AS-Interface outputs

- ▶ **DO** OUT output to control CEM or CET

## Evaluation unit CES-A-1B-01B-AS1

### Dimension drawings



For accessories, refer to page 24/25 and the catalog of Non-Contact Safety Switches

### Ordering table

Series	Version	Type	Housing	Order No./item
CES	F Unicode	<b>01B</b> 1 read head Switch-on distance 15 mm	IP 65 Field unit	<b>094 230</b> CES-A-F1B-01B-AS1
	V Multicode	<b>01B</b> 1 read head Switch-on distance 15 mm	IP 65 Field unit	<b>096 631</b> CES-A-V1B-01B-AS1



# Non-Contact Safety System CES

# EUCHNER

## Evaluation unit for non-contact read head CES, CEM or CET



- ▶ Evaluation unit for connection of up to four CES read heads
- ▶ LED diagnostic displays

### Evaluation unit CES-A-F1B-04B-AS1



#### Read head connection

The CES series read head can be connected to the evaluation unit using an M12 plug connector. The read heads are not included with the evaluation unit.

#### Connection of a read heads CEM or CET

An additional standard AS-Interface module with outputs (DO) is required for connection of these read heads.

#### Version

**Unicode:** Only the actuator that undergoes a teach-in operation in the device is recognized.

#### Actuator

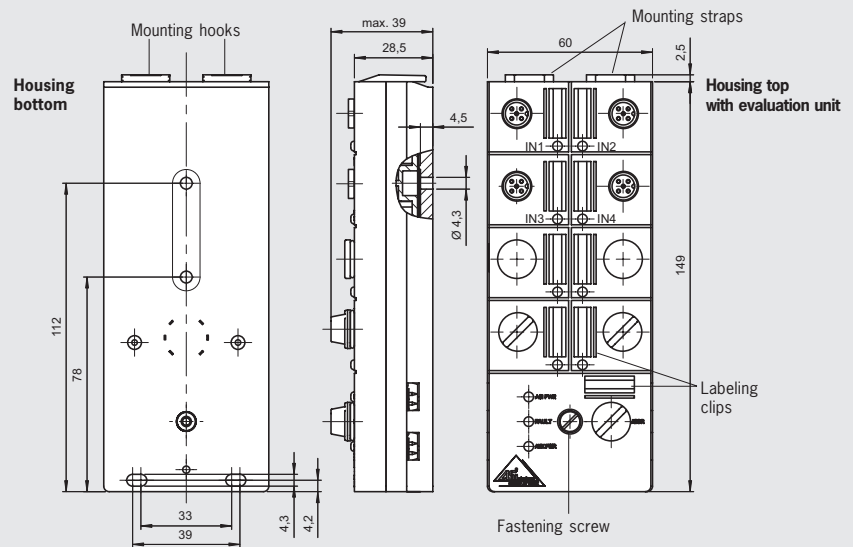
An actuator with programmed code to suit the read head selected is needed.

#### AS-Interface inputs

- ▶ **DO - D3** Input IN for CED read head

Evaluation is performed via a safety monitor.

### Dimension drawings



For accessories, refer to page 24/25 and the catalog of Non-Contact Safety Switches

### Ordering table

Version	Version	Type	Housing	Order No./item
CES	F Unicode	04B 4 read heads Switch-on distance 15 mm	IP 65 Field unit	097 660 CESA-F1B-04B-AS1



# Safety Monitors



## AS-Interface Safety at Work safety monitors SFM



- ▶ Single-channel or dual-channel
- ▶ Start inputs
- ▶ Door monitoring outputs
- ▶ Adjustable time-delay
- ▶ Optional with AS-Interface output



### OSSDs (Output Signal Switching Devices)

**SFM-...1:** one OSSD (Output Signal Switching Device) with 2 normally closed contacts

**SFM-...2:** two OSSD (Output Signal Switching Devices) with 4 normally closed contacts

### Auxiliary contacts

One auxiliary contact per channel.

### Inputs

One start input per channel and one feedback loop per channel. Freely usable on SFM-B...

### Logic functions

Programmable with AsiMon software. All safety components can be programmed with different functions as inputs. The inputs can be linked with AND or OR gates.

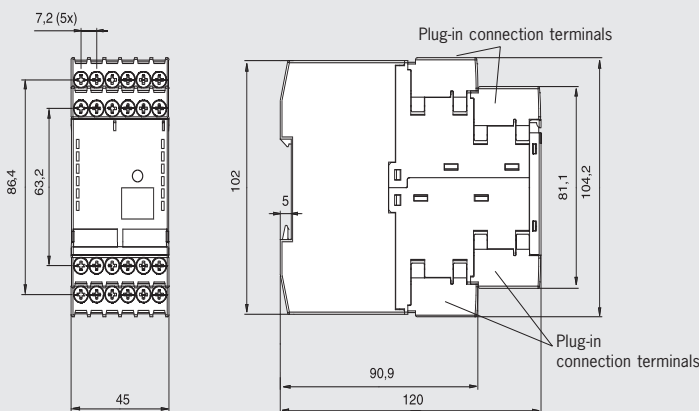
With the monitors SFM-B... and SFM-C..., additional logic functions such as FlipFlop, switch-on delay, turn-off delay or pulses are available. The number of links and the memory depth are larger than on the SFM-A... devices.

### Additional AS slave interface (only SFM-C... monitors)

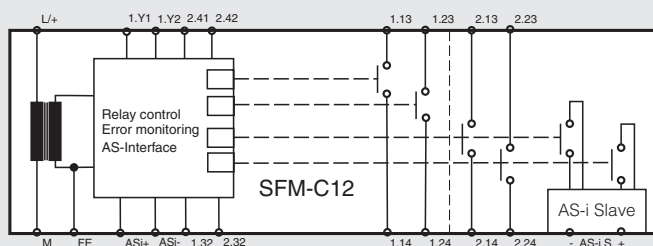
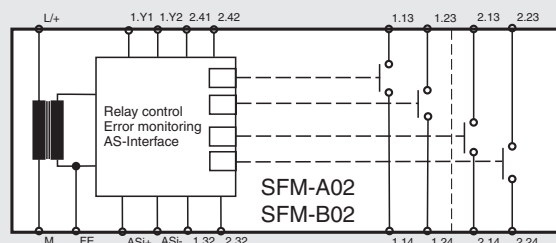
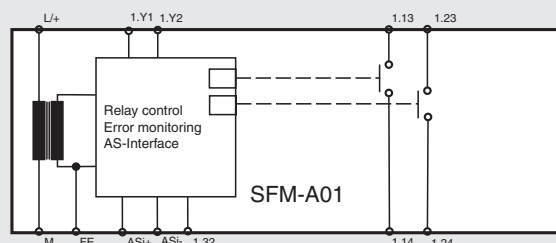
The installed AS slave interface can be used to control distributed safe AS-Interface outputs on the bus. Alternatively, the output can also be used for safe coupling of a second independent AS-Interface bus in order to transmit safe signals to the second bus. The output switches together with the second channel.

### Safety monitors SFM

#### Dimension drawings



#### Block diagrams



For pin assignment, see technical data on Page 40

### Ordering table

Series	Version	Number of AS-i outputs	Channels	Order No./item
SFM	A Standard	0	1	<b>085 638</b> <sup>1)</sup> SFM-A01
		0	2	<b>085 639</b> <sup>1)</sup> SFM-A02
	B Expanded	0	2	<b>087 891</b> SFM-B02
		C Expanded with safe AS-i output	1	2

1) TÜV Nord



# Safety Monitors



## AS-Interface Safety at Work safety monitor SMO



- ▶ Dual-channel
- ▶ Display and buttons for diagnostics and adjustment
- ▶ Memory card with various operating modes
- ▶ Adjustable time-delay
- ▶ Two AS-Interface outputs



**OSSDs (Output Signal Switching Devices)**  
Two OSSDs (Output Signal Switching Devices) with two redundant normally closed contacts each

**Inputs**  
One start input per channel and one feedback loop per channel, also freely selectable.

**Logic functions**  
Programmable with AsiMon software. All safety components can be programmed with different functions as inputs. The inputs can be linked with AND or OR gates or via logic functions such as FlipFlop, switch-on delay, turn-off delay or pulses. Programs can be stored in different operating modes on one memory card.

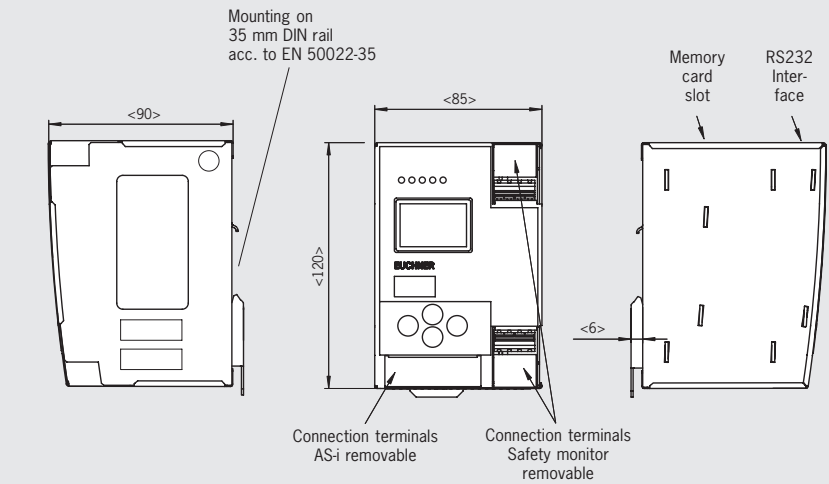
**AS-Interface outputs**  
The two installed AS-interface outputs can be used to control distributed safe AS-Interface outputs on the bus. Alternatively, the outputs can also be used for safe coupling of a second independent AS-Interface bus in order to transmit safe signals to the second bus. The outputs switch together with the assigned channel.

**Display and buttons**  
The device features considerably expanded diagnostic and maintenance functions compared to the SFM monitors. They can be recalled on the display even without a PC. Incorporated security functions allow the programmed functionality to be protected and monitored.

**Important:** one connection set must be ordered for each safety monitor (see page 25).

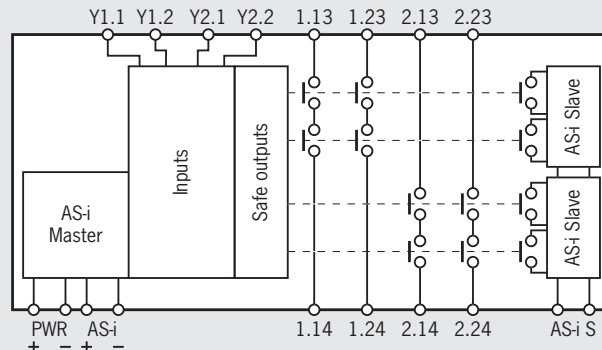
### Safety monitor SMO

#### Dimension drawings



Please order connection set separately; see page 25

#### Block diagram



For pin assignment, see technical data on Page 42

### Ordering table

Series	Version	Number of AS-i outputs	Channels	Order No./item
<b>SMO</b>	<b>C</b> Expanded with safe AS-i outputs	2	2	<b>100 158</b> SMO-MO-0D-C02

1) UL approval pending



# Safety Monitors



## AS-Interface Safety at Work safety monitor with integrated gateway GMO



- ▶ With integrated Profibus gateway
- ▶ Dual-channel
- ▶ Display and buttons for diagnostics and adjustment
- ▶ Memory card with various operating modes
- ▶ Adjustable time-delay
- ▶ Two AS-Interface outputs



### Gateway connection to Profibus

For the connection to the Profibus DP as a slave and as a master for one AS-I bus acc. to specification 3.0. Earth fault detection, detection of double addressing and EMC problems. Quick set-up by means of the display without the PC. Immediate indication of faults by clear-text messages. Extensive AS-Interface diagnosis integrated. AS-Interface configuration software available.

### OSSDs (Output Signal Switching Devices)

Two OSSDs (Output Signal Switching Devices) with two redundant normally closed contacts each

### Inputs

One start input per channel and one feedback loop per channel, also freely selectable.

### Logic functions

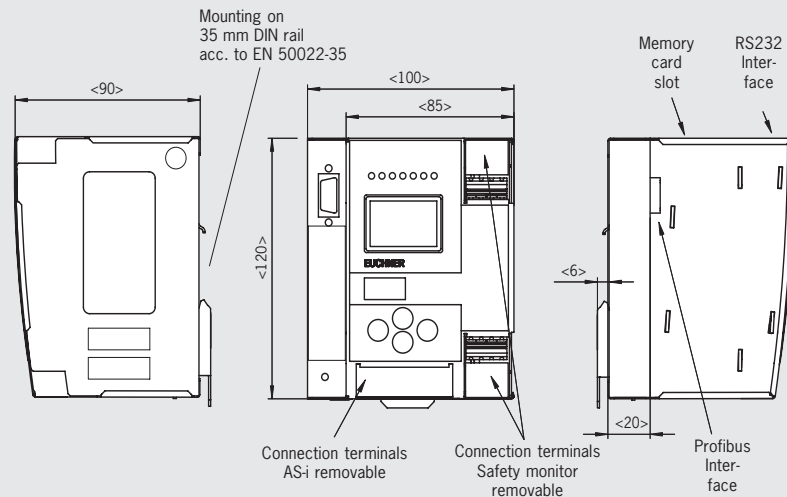
Programmable with AsiMon software. All safety components can be programmed with different functions as inputs. The inputs can be linked with AND or OR gates or via logic functions such as FlipFlop, switch-on delay, turn-off delay or pulses. Programs can be stored in different operating modes on one memory card.

### AS-Interface outputs

The two installed AS-Interface outputs can be used to control distributed safe AS-Interface outputs on the bus. Alternatively, the outputs can also be used for safe coupling of a second independent AS-Interface bus in order to transmit safe signals to the second bus. The outputs switch together with the assigned channel.

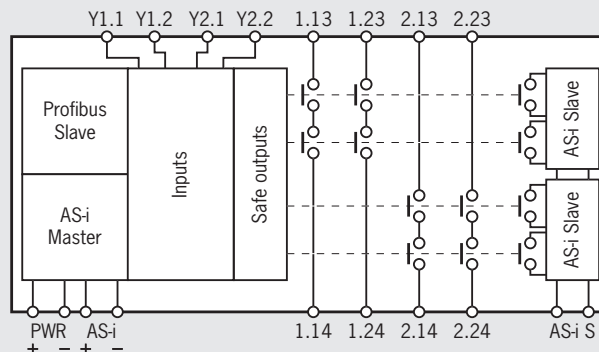
### Safety monitor GMO

#### Dimension drawings



Please order connection set separately; see page 25

#### Block diagram



For pin assignment, see technical data on Page 43

### Display and buttons

The display serves for the gateway functionality and at the same time, for the monitor. The diagnosis and the maintenance functions are considerably enhanced compared to the SFM monitors. They can be accessed by means of the display, even without using the PC. Security functions that permit protection and monitoring of the programmed functionality are integrated.

**Important:** one connection set must be ordered for each safety monitor (see page 25).

### Ordering table

Series	Bus connection	Version	Number of AS-i outputs	Channels	Order No./item
GMO	PR Profibus	C Expanded with safe AS-i outputs	2	2	<b>099 585</b> GMO-PR-1D-C02

1) UL approval pending



# Safety Monitors



## AS-Interface Safety at Work safety monitor with integrated gateway GMOx



- ▶ With integrated Profibus gateway
- ▶ One or two AS-i masters
- ▶ Display and buttons for diagnosis and settings
- ▶ Memory card with different operation modes
- ▶ Adjustable time delay
- ▶ 16 outputs



### Gateway connection to Profibus

For the connection to the Profibus DP as a slave and as a master for one AS-I bus acc. to specification 3.0. Earth fault detection, detection of double addressing and EMC problems. Quick set-up by means of the display without the PC. Immediate indication of faults by clear-text messages. Extensive AS-Interface diagnosis integrated. AS-Interface configuration software available.

### Output signal switching devices (OSSD)

- ▶ Two OSSDs with two redundant NC contacts each
- ▶ Two OSSDs with semi-conductor outputs
- ▶ 12 additional, safe AS-i outputs, programmable

### Inputs

- ▶ 4 inputs, freely usable

### Logic functions

Programmable by the AS-i Mon software. All safety components with their different functions are programmable as inputs. The inputs can be linked to AND gates OR gates and other logic functions as FlipFlop, time-delayed switch-on and switch-off or pulses.

It is possible to store the programs in different operation modes on a memory card.

### AS-Interface Monitor

The monitor controls two AS-Interface circuits with up to 62 safe slaves and up to 16 outputs.

### Display and buttons

The display serves for the gateway functionality and at the same time, for the monitor. The diagnosis and the maintenance functions are considerably enhanced compared to the SFM monitors. They can be accessed by means of the display, even without using the PC.

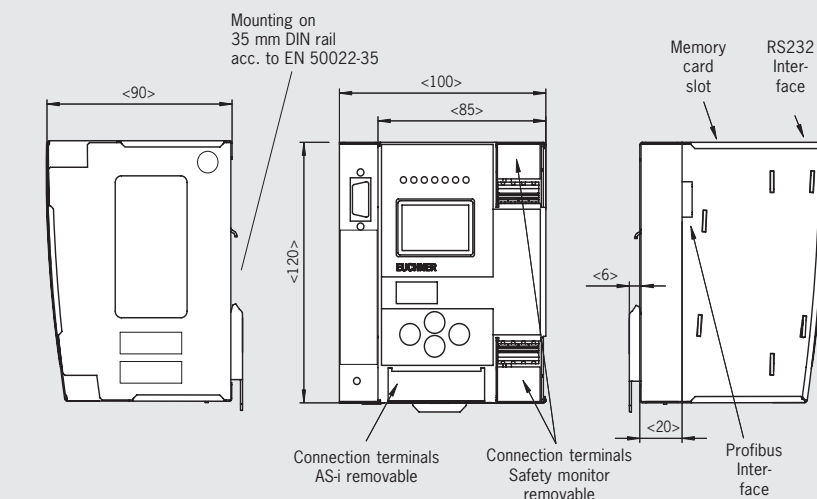
### Ordering table

Series	Bus connection	AS-i Master	Number of AS-i outputs	Power supply	Order number / item
GMOx	PR Profibus	1	16	N	103 267 GMOX-PR-12DN-C16
		2	16	N	103 302 GMOX-PR-22DN-C16
		1	16	S	103 373 GMOX-PR-12DS-C16
		2	16	S	103 374 GMOX-PR-22DS-C16

1) UL approval pending

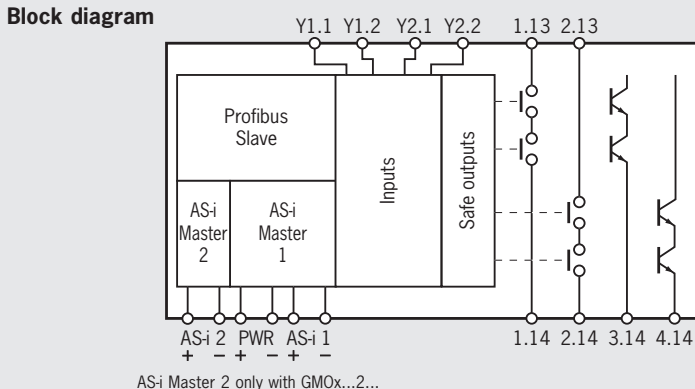
### Safety monitor GMOx

#### Dimension drawing



Please order connection set separately; see page 25

#### Block diagram



For pin assignment, see technical data on Page 44

Security functions that permit protection and monitoring of the programmed functionality are integrated.

**Important:** one connection set must be ordered for each safety monitor (see page 25).

### Power supply

Version S is suitable for connection to a conventional AS-i power supply unit. Version N permits connection of several GMOx devices to the same power supply unit.



# Accessories for Safety Switches



## Accessories

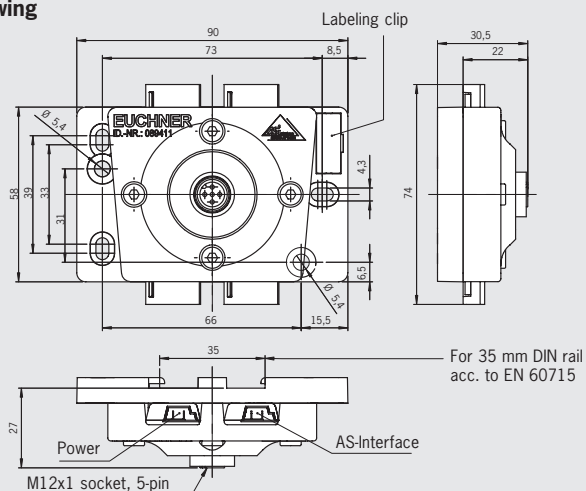
### ▶ Passive bus coupling module BCM-A-P1...



For connection of components with integrated AS-interface and M12 plug connector to the AS-Interface ribbon cables. Both the bus and auxiliary power are converted from the ribbon cable to an M12 socket. The coupling module is suitable for safety components and for standard components. It is particularly suitable for EUCHNER safety switches with guard locking.

### Passive bus coupling module BCM-A-P1...

#### Dimension drawing



### Ordering table

Version	Connections	Order No./item
BCM-A-P1	AS ribbon cable, auxiliary power ribbon cable	<b>089 411</b>
	M12-socket	BCM-A-P1-SEM4-1
Connection cable M12 with straight plug connectors, length 1 m PUR		<b>089 420</b> Connection cable M12

## Accessories for CES...AS1 evaluation units

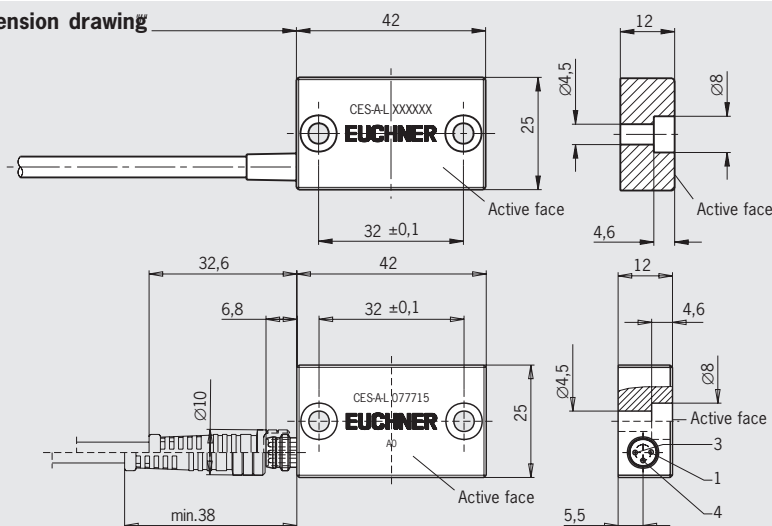
### ▶ Read head CES-A-LNA...



The read heads CES are suitable for connection directly to the evaluation units CES-A-F1B... or CES-A-V1B....

### Read head CES-A-LNA...

#### Dimension drawing



### Ordering table

Version	Connection	Length	Order No./item
Read head CES-A-LNA	Connection cable PVC	1 m	<b>094 031</b> CES-A-LNA-01V-AS1
		2 m	<b>094 032</b> CES-A-LNA-02V-AS1
	Plug connector M8	-	<b>077 715</b> CES-A-LNA-SC



# Accessories for Safety Switches

# EUCHNER

## Accessories for CES...AS1 evaluation units

Connecting cables with M8 and M12 plug connectors are available for connection of the CES-LNA... read head and the CEM and CET read heads.

### Ordering table

Version	Cable	Length	Order No./item
Cable for read heads CES, CEM, CET with M8 plug connector	PUR	2 m	<b>095 005</b> LIYC11Y2X0.25X2000M12M-M8F
		5 m	<b>095 357</b> LIYC11Y2Xo.25X5000M12M-M8F
		10 m	<b>099 167</b> LIYC11Y2Xo.25X10000M12M-M8F
		30 m	<b>099 168</b> LIYC11Y2Xo.25X30000M12M-M8F
Cable for controlling CEM or CET guard locking	PUR	2 m	<b>100 817</b> C-M08F04-04X025PV02.0-M12M05
		5 m	<b>100 818</b> C-M08F04-04X025PV05.0-M12M05

## Accessories and software for monitors SFM, SMO, GMO and GMOx

The software is required for programming the EUCHNER safety monitors. All safety monitors can be programmed with the same software. A Windows ®-equipped PC is required. All Safety at Work manuals in various languages are included on the CD.

A cable set SFM or the cable SMO-GMO is required to connect the PC. The cable set SFM includes a transfer cable for direct read-out from monitor to monitor.

Additional memory cards can be ordered for the monitors SMO and the gateway monitors GMO.

Plug-in connections with screw terminals and cage pull spring are available.

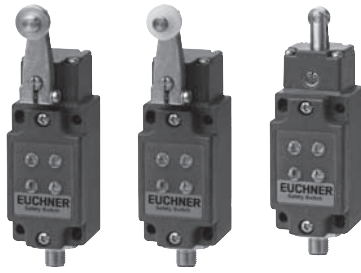
### Ordering table

Version	Suitability	Order No./item
AsiMon Configuration software	Foll all AS interfaces Safety at Work safety monitors	<b>088 053</b> AsiMon SW
Cable set SFM	For all monitors SFM...	<b>087 299</b> Cable set SFM
Connection set Cage-pull clamps SMO, GMO and GMOx	For monitors SMO and Gateway monitors GMO	<b>100 256</b> ZMO-ZB-KK8-M
Cable SMO and GMO	For monitors SMO and Gateway monitors GMO	<b>100 437</b> ZMO-ZB-PGK
1 memory card	For monitors SMO and Gateway monitors GMO	<b>100 875</b> ZMO-ZB-M1
10 memory cards	For monitors SMO and Gateway monitors GMO	<b>100 438</b> ZMO-ZB-M10
1 memory card	For monitors SMOx and Gateway monitors GMOx	<b>103 580</b> ZMO-ZB-MB1

# Technical Data

# EUCHNER

## Position switches NZ...



### Switch



Parameter	Value			Unit
Housing material	Anodized die-cast alloy			
Mechanical life	30 x 10 <sup>6</sup> operating cycles			
Ambient temperature	-25 ... + 70			°C
Weight	approx. 0.3			kg
Approach speed, min.	0.1			m/min
Approach speed max. <sup>1)</sup> depending on actuator	<b>HB</b>	<b>HS</b>	<b>RS</b>	
	300	60	20	m/min
Actuating force, min.	30			N

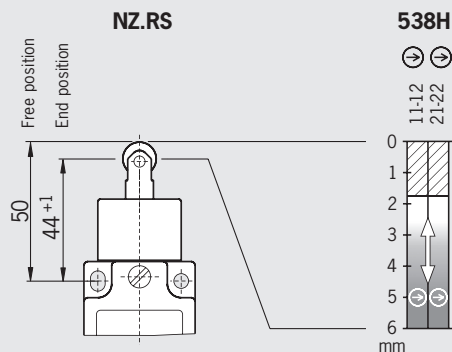
### AS-Interface connection



Parameter	Value		Unit
Connection	Plug connector		
Version	M12 (4-pin)		
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup>		
Rated insulation voltage U <sub>i</sub>	50		V AC/DC
Switching principle	Slow-action switching element 2 NC ↔		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.	45		mA
Valid AS-Interface addresses	1 - 31		
<b>AS-Interface inputs</b>			
In accordance with AS-Interface Safety at Work			
Positively driven NC contact 1	D0, D1		
Positively driven NC contact 2	D2, D3		
<b>AS-Interface outputs</b>			
D0 and D3	Not used		
D1	Red LED, 1 = LED on		
D2	Green LED, 1 = LED on		
AS-Interface LED Power	Green, AS-Interface Power on		
AS-Interface LED Fault	Red, offline phase or address 0		

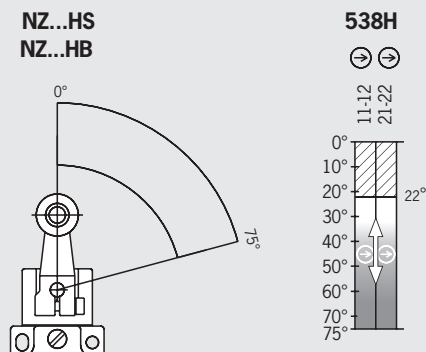
2) Screwed tight with the related plug connector

### Travel diagram NZ.RS



Contacts closed  
 Contacts Open  
 Contacts positively opened

### Travel diagram NZ.HS/NZ.HB





Contacts closed  
 Contacts Open  
 Contacts positively opened

# Technical Data

## Safety switch NZ.VZ



<b>Switch</b>				
Parameter			Value	Unit
Housing material			Anodized die-cast alloy	
Mechanical life			2 x 10 <sup>6</sup> operating cycles	
Ambient temperature			-25 ... + 70	°C
Weight			approx. 0.3	kg
Approach speed, max.			20	m/min
Approach speed, min.			0.1	m/min
Actuating force			35	N
Extraction force			35	N
Retention force			8	N

<b>AS-Interface connection</b>				
Parameter			Value	Unit
Connection			Plug connector	
Version			M12 (4-pin)	
Degree of protection according to IEC 60529			IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>			50	V AC/DC
Switching principle			Slow-action switching element 2 NC (↔)	
EMC protection requirements			Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>				
Acc. to AS-Interface Specification 2.1			EA code: 7	ID code: B
Total current consumption, max.			45	mA
Valid AS-Interface addresses			1 - 31	
<b>AS-Interface inputs</b>				
In accordance with AS-Interface Safety at Work				
Positively driven NC contact 1			D0, D1	
Positively driven NC contact 2			D2, D3	
<b>AS-Interface outputs</b>				
D0 and D3			Not used	
D1			Red LED, 1 = LED on	
D2			Green LED, 1 = LED on	
AS-Interface LED Power			Green, AS-Interface Power on	
AS-Interface LED Fault			Red, offline phase or address 0	


2) Screwed tight with the related plug connector


# Technical Data



## Safety switch TZ with guard locking and guard lock monitoring



Switch			
Parameter		Value	Unit
Housing material		Anodized die-cast alloy	
Mechanical life		2 x 10 <sup>6</sup> operating cycles	
Ambient temperature		- 25 ... + 55	°C
Weight		approx. 1.2	kg
Approach speed, max.		20	m/min
Actuating force		35	N
Extraction force		30	N
Retention force		10	N
Locking force, max.		2000	N
Locking force F <sub>Zh</sub> in accordance with test principles GSET-19		1500	N
<b>Interlocking solenoid</b>			
Solenoid operating voltage (auxiliary power on black AS-Interface cable)		24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)	V DC
Solenoid operating current		350	mA
Duty cycle		100	%

AS-Interface connection			
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin)	
Degree of protection according to IEC 60529		IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>		50	V AC/DC
Switching principle SK, UK		Slow-action switching element 1 NC $\ominus$ contact each	
EMC protection requirements		Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1		EA code: 7	ID code: B
Total current consumption, max.		45	mA
Valid AS-Interface addresses		1 - 31	
<b>AS-Interface inputs</b>			
In accordance with AS-Interface Safety at Work			
Door monitoring contact SK		D0, D1	
Solenoid monitoring contact UK		D2, D3	
<b>AS-Interface outputs</b>			
D0		Interlocking solenoid, 1 = solenoid energized	
D1		Red LED, 1 = LED on	
D2		Green LED, 1 = LED on	
AS-Interface LED Power		Green, AS-Interface Power on	
AS-Interface LED Fault		Red, offline phase or address 0	


2) Screwed tight with the related plug connector


# Technical Data

# EUCHNER

## Safety switch NX



Switch			
Parameter	Value		Unit
Housing material	Die-cast alloy, cathodically dipped		
Mechanical life	2 x 10 <sup>6</sup> operating cycles		
Ambient temperature	- 20 ... + 70		°C
Weight	approx. 0.4		kg
Approach speed, max.	20		m/min
Actuating force	40		N
Extraction force	50		N
Retention force	10		N
Insertion depth	Standard actuators	Overtravel actuator	
Required insertion depth s <sub>min</sub>	32	32	mm
Maximum insertion depth s <sub>max</sub>	33	40	mm
Actuator travel (in the locked state)	6	13	mm

AS-Interface connection			
Parameter	Value		Unit
Connection	Plug connector		
Version	M12 (4-pin)		
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup>		
Rated insulation voltage U <sub>i</sub>	50		V AC/DC
Switching principle	Slow-action switching element 2 NC $\ominus$		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.	45		mA
Valid AS-Interface addresses	1 - 31		
<b>AS-Interface inputs</b>			
In accordance with AS-Interface Safety at Work			
Positively driven NC contact 1	D0, D1		
Positively driven NC contact 2	D2, D3		
<b>AS-Interface outputs</b>			
D0 and D3	Not used		
D1	Red LED, 1 = LED on		
D2	Green LED, 1 = LED on		
AS-Interface LED Power	Green, AS-Interface Power on		
AS-Interface LED Fault	Red, offline phase or address 0		


2) Screwed tight with the related plug connector


# Technical Data



## Safety switch TX... with guard locking and guard lock monitoring



Switch			
Parameter	Value		Unit
Housing material	Die-cast alloy, cathodically dipped		
Mechanical life	> 1 x 10 <sup>6</sup> operating cycles		
Ambient temperature	AS-Interface - 20 ... +50		°C
Weight	approx. 0.8		kg
Approach speed, max.	20		m/min
Actuating force	35		N
Extraction force	35		N
Retention force	20		N
Locking force, max.	1700		N
Locking force F <sub>Zh</sub> in accordance with test principles GSET-19	1300		N
Insertion depth	Standard actuators	Overtravel actuator	
Required insertion depth s <sub>min</sub>	32	32	mm
Maximum insertion depth s <sub>max</sub>	33	40	mm
Actuator travel (in the locked state)	6	13	mm
<b>Interlocking solenoid</b>			
Solenoid operating voltage (auxiliary power on black AS-Interface cable)	24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)		V DC
Solenoid operating current	330		mA
Duty cycle	100		%

AS-Interface connection			
Parameter	Value		Unit
Connection	Plug connector		
Version	M12 (4-pin)		
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup>		
Rated insulation voltage U <sub>i</sub>	50		V AC/DC
Switching principle	Slow-action switching element 2 NC ⊖		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.	45		mA
Valid AS-Interface addresses	1 - 31		
<b>AS-Interface inputs</b>			
Door monitoring contact SK	D0, D1		
Solenoid monitoring contact UK	D2, D3		
<b>AS-Interface outputs</b>			
D0	Interlocking solenoid, 1 = solenoid energized		
D1	Red LED, 1 = LED on		
D2	Green LED, 1 = LED on		


2) Screwed tight with the related plug connector


# Technical Data



## Safety switch STA... with guard locking and guard lock monitoring



Switch			
Parameter		Value	Unit
Material	Housing	Anodized die-cast	
Mechanical life		1 x 10 <sup>6</sup> operating cycles	
Ambient temperature		- 20 ... + 55	°C
Weight		approx. 0.6	kg
Approach speed, max.		20	m/min
Actuating force		35	N
Extraction force (not locked)		30	N
Retention force		20	N
Locking force, max.		3000	N
Locking force F <sub>21</sub> in accordance with test principles GS-ET-19		2300	N
Insertion depth (necessary minimum travel + permissible overtravel)	Standard actuator S	Actuator L for insertion funnel	
Approach direction side (h)	24.5 + 5	28.5 + 5	mm
Approach direction from top (v)	24.5 + 5	28.5 + 5	mm
<b>Interlocking solenoid</b>			
Solenoid operating voltage (auxiliary power on black AS-Interface cable)		24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)	V DC
Solenoid operating current		300	mA
Duty cycle		100	%

AS-Interface connection			
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin)	
Degree of protection according to IEC 60529		IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>		50	V AC/DC
Switching principle SK, UK		Slow-action switching element 1 NC ⊖ contact each	
EMC protection requirements		Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.		45	mA
Valid AS-Interface addresses		1 - 31	
<b>AS-Interface inputs</b>			
Door monitoring contact SK		D0, D1	
Solenoid monitoring contact UK		D2, D3	
<b>AS-Interface outputs</b>			
D0		Interlocking solenoid, 1 = solenoid energized	
D1		Red LED, 1 = LED on	
D2		Green LED, 1 = LED on	
AS-Interface LED Power		Green, AS-Interface Power on	
AS-Interface LED Fault		Red, offline phase or address 0	

2) Screwed tight with the related plug connector



# Technical Data

# EUCHNER

## Safety switch GP



### Switch



Parameter	Value		Unit
Housing material	Reinforced thermoplastic		
Mechanical life	2 x 10 <sup>6</sup> operating cycles		
Ambient temperature	- 20 ... + 55		°C
Weight	approx. 0.16		kg
Approach speed, max.	20		m/min
Actuating force	10		N
Extraction force	20		N
Retention force	2		N
Insertion depth (necessary minimum travel + permissible overtravel)	Standard actuator S	Actuator L overtravel	
Approach direction side (h)	28 + 2	28 + 7	mm
Approach direction from top (v)	29.5 + 1.5	29.5 + 7	mm

### AS-Interface connection




Parameter	Value		Unit
Connection	Plug connector		
Version	M12 (4-pin)		
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup>		
Rated insulation voltage U <sub>i</sub>	50		V AC/DC
Switching principle	Slow-action switching element 2 NC ⊖		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.	45		mA
Valid AS-Interface addresses	1 - 31		
<b>AS-Interface inputs</b>	In accordance with AS-Interface Safety at Work		
Positively driven NC contact 1	D0, D1		
Positively driven NC contact 2	D2, D3		




# Technical Data

## Safety switch SGP





Switch			
Parameter		Value	Unit
Material	Housing	Reinforced thermoplastic	
	Actuating head	Die-cast aluminum	
	Cam in actuating head	Stainless steel	
Mechanical life		2 x 10 <sup>6</sup> operating cycles	
Ambient temperature		- 20 ... + 55	°C
Weight		approx. 0.16	kg
Approach speed, max.		20	m/min
Actuating force		25	N
Extraction force		25	N
Retention force		10	N
Insertion depth (necessary minimum travel + permissible overtravel)	Standard actuator S	Actuator L overtravel	
Approach direction side (h)	24.5 + 5	28.5 + 5	mm
Approach direction from top (v)	24.5 + 5	28.5 + 5	mm

AS-Interface connection			
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin)	
Degree of protection according to IEC 60529		IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>		50	V AC/DC
Switching principle		Slow-action switching element 2 NC $\ominus$	
EMC protection requirements		Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.		45	mA
Valid AS-Interface addresses		1 - 31	
<b>AS-Interface inputs</b>			
In accordance with AS-Interface Safety at Work			
Positively driven NC contact 1		D0, D1	
Positively driven NC contact 2		D2, D3	

## Safety switch TP... with guard locking and guard lock monitoring



Switch			
Parameter	Value		Unit
Housing material	Reinforced thermoplastic		
Mechanical life	1 x 10 <sup>6</sup> operating cycles		
Ambient temperature	- 20 ... + 55		°C
Weight	approx. 0.5		kg
Approach speed, max.	20		m/min
Actuating force	10		N
Extraction force (not locked)	20		N
Retention force	10		N
Locking force, max.	1300		N
Locking force F <sub>Zh</sub> in accordance with test principles GSET-19	1000		N
Insertion depth (necessary minimum travel + permissible overtravel)	Standard actuator	Overtravel actuator	
Approach direction side (h)	28 + 2	28 + 7	mm
Approach direction from top (v)	29.5 + 1.5	-	mm
<b>Interlocking solenoid</b>			
Solenoid operating voltage (auxiliary power on black AS-Interface cable)	24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)		V DC
Solenoid operating current	300		mA
Duty cycle	100		%

AS-Interface connection			
Parameter	Value		Unit
Connection	Plug connector		
Version	M12 (4-pin)		
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup>		
Rated insulation voltage U <sub>i</sub>	50		V AC/DC
Switching principle SK, UK	Slow-action switching element 1 NC ⇄ contact each		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B	
Total current consumption, max.	45		mA
Valid AS-Interface addresses	1 - 31		
<b>AS-Interface inputs</b>			
Version AS1	In accordance with AS-Interface Safety at Work D0, D1 ► Door monitoring contact SK D2, D3 ► Solenoid monitoring contact		
Version AS2	D0, D1 ► Positively driven contact SK 1 D2, D3 ► Positively driven contact SK 2		
<b>AS-Interface outputs</b>			
D0	Interlocking solenoid, 1 = solenoid energized		
D1	Red LED, 1 = LED on		
D2	Green LED, 1 = LED on		
AS-Interface LED Power	Green, AS-Interface Power on		
AS-Interface LED Fault	Red, offline phase or address 0		


2) Screwed tight with the related plug connector


# Technical Data



## Safety switch STP... with guard locking and guard lock monitoring



Switch			Value	Unit
Material	Housing		Reinforced thermoplastic	
	Actuating head		Die-cast aluminum	
	Cam in actuating head		Stainless steel	
Mechanical life			1 x 10 <sup>6</sup> operating cycles	
Ambient temperature			- 20 ... + 55	°C
Weight			approx. 0.5	kg
Approach speed, max.			20	m/min
Actuating force			35	N
Extraction force (not locked)			30	N
Retention force			20	N
Locking force, max.			2500	N
Locking force F <sub>Z1</sub> in accordance with test principles GS-ET-19			2000	N
Insertion depth (necessary minimum travel + permissible overtravel)		Standard actuator S	Actuator L for insertion funnel	
Approach direction side (h)		24.5 + 5	28.5 + 5	mm
Approach direction from top (v)		24.5 + 5	28.5 + 5	mm
<b>Interlocking solenoid</b>				
Solenoid operating voltage (auxiliary power on black AS-Interface cable)			24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)	V DC
Solenoid operating current			300	mA
Duty cycle			100	%

AS-Interface connection			Value	Unit
Connection			Plug connector	
Version			M12 (4-pin)	
Degree of protection according to IEC 60529			IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>			50	V AC/DC
Switching principle SK, UK			Slow-action switching element 1 NC ⊖ contact each	
EMC protection requirements			Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>				
Acc. to AS-Interface Specification 2.1			EA code: 7 ID code: B	
Total current consumption, max.			45	mA
Valid AS-Interface addresses			1 - 31	
<b>AS-Interface inputs</b>				
In accordance with AS-Interface Safety at Work				
Door monitoring contact SK			D0, D1	
Solenoid monitoring contact UK			D2, D3	
<b>AS-Interface outputs</b>				
D0			Interlocking solenoid, 1 = solenoid energized	
D1			Red LED, 1 = LED on	
D2			Green LED, 1 = LED on	
AS-Interface LED Power			Green, AS-Interface Power on	
AS-Interface LED Fault			Red, offline phase or address 0	

2) Screwed tight with the related plug connector

# Technical Data



## Safety switch STP-TW... with guard locking and guard lock monitoring



Switch			Value	Unit
Material	Housing		Reinforced thermoplastic	
	Actuating head		Die-cast aluminum	
	Cam in actuating head		Stainless steel	
Mechanical life			1 x 10 <sup>6</sup> operating cycles	
Ambient temperature			- 20 ... + 55	°C
Weight			approx. 0.6	kg
Approach speed, max.			20	m/min
Actuating force			35	N
Extraction force (not locked)			30	N
Retention force			20	N
Locking force, max.			2500	N
Locking force F <sub>Zh</sub> in accordance with test principles GSET-19			2000	N
Insertion depth (necessary minimum travel + permissible overtravel)			Actuator S Standard	
Approach direction side (h)			24.5 + 5	mm
Approach direction from top (v)			24.5 + 5	mm
<b>Interlocking solenoid</b>				
Solenoid operating voltage (auxiliary power on black AS-Interface cable)			24 +10%/-15% Power supply unit with electrical isolation (IEC 60742, PELV)	V DC
Solenoid operating current			300	mA
Duty cycle			100	%

AS-Interface connection			Value	Unit
Connection			Plug connector	
Version			M12 (4-pin)	
Degree of protection according to IEC 60529			IP 67 <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>			50	V AC/DC
Switching principle SK, UK			Slow-action switching element 1 NC ⊖ contact each	
EMC protection requirements			Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>				
Acc. to AS-Interface Specification 2.1			EA code: 7	ID code: B
Total current consumption, max.			45	mA
Valid AS-Interface addresses			1 - 31	
<b>AS-Interface inputs</b>				
In accordance with AS-Interface Safety at Work				
Door monitoring contact SK			D0, D1	
Solenoid monitoring contact UK			D2, D3	
<b>AS-Interface outputs</b>				
D0			Interlocking solenoid, 1 = solenoid energized	
D1			Red LED, 1 = LED on	
D2			Green LED, 1 = LED on	
AS-Interface LED Power			Green, AS-Interface Power on	
AS-Interface LED Fault			Red, offline phase or address 0	

2) Screwed tight with the related plug connector

# Technical Data

# EUCHNER

## Enabling switch ZSA and ZSB



### Hand-held version G1

Parameter	Value	Unit
Housing material	Polyamide, black	
Protective cap material	CR (neoprene), black	
Ambient temperature	- 5 to + 50	°C
Weight	Approx. 0.4 (no cable)	kg

### AS-Interface connection

Parameter	Value	Unit
Connection	Plug connector	
Version	M12 (4-pin)	
Degree of protection according to IEC 60529	IP 67 <sup>2)</sup> / IP 65 with buttons <sup>2)</sup>	
Rated insulation voltage U <sub>i</sub>	50	V AC/DC
Switching principle	Three-stage, two-channel 2 NO	
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard) and IEC 62026	
<b>AS-Interface data</b>		
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B
Total current consumption, max.	45	mA
Valid AS-Interface addresses	1 - 31	
<b>AS-Interface inputs</b>		
In accordance with AS-Interface Safety at Work		
NO contact E1	D0, D1	
NO contact E2	D2, D3	
Plus button (only ZSB)	Parameter bit P0	
Minus button (only ZSB)	Parameter bit P1	

2) Screwed tight with the related plug connector

# Technical Data

# EUCHNER

## CES...non-contact safety switches



Evaluation unit		
Parameter	Value	Unit
Housing material	Plastic	
Category according to EN 954-1:1997	4	
Classification according to EN 60947-5-3:2000	PDF-M	
Ambient temperature	0 ... +50 °C	
Weight	approx. 0.4	kg
Operating voltage	DC 24 V +10% -15%	
	Power supply unit with electrical isolation (IEC 61558-2-6:1998)	
Current consumption, max. (through auxiliary power)	600	mA

CES-A-.1B-01B-AS1				
Parameter	Value			Unit
Times				
Max. time delay from state change	180			ms
Risk time <sup>1)</sup>	180			ms
Difference time (of the two dependent AS-Interface inputs)	120			ms
Ready delay	3			s
<b>Distances <sup>2)</sup></b>	<b>min.</b>	<b>typ.</b>	<b>max.</b>	
Safe switch-off distance S <sub>ar</sub>	-	-	32	mm
Cable length l	-	-	25	m
Switch-on distance S <sub>ao</sub>	10	17	-	mm
Switching hysteresis	0.5	2	-	mm

CES-A-.1B-01B-AS1				
Parameter	Value			Unit
Connection				
AS-Interface and auxiliary power	Ribbon cable AS-i			
Read heads	M12 plug connector			
Degree of protection according to IEC 60529	IP 67 <sup>3)</sup>			
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard)			
<b>AS-Interface data</b>				
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: B		
Operating voltage AS-Interface	22.5 ... 31.5			V DC
Total current consumption, max.	100			mA
Valid AS-Interface addresses	1 - 31			
<b>AS-Interface inputs</b>	In accordance with AS-Interface Safety at Work			
CES input IN	D0 ... D3			
Dwell time min.	0.5			s
<b>AS-Interface outputs</b>				
Current consumption, max.	600			mA
OUT output	D0			

- 1) According to EN 60947-5-3:2000
- 2) With evaluation unit CES-AF1B-01B-AS1 in conjunction with read head CES-A-LNA...AS1 or CES-A-LNA-SC and actuator CES-A-BBA on surface mounting of the read head and the actuator. If installed flush, the switching distance changes as a function of the installation depth and the safety guard material.
- 3) Screwed tight with the related plug connector

# Technical Data



## CES-A-F1B-04B-AS1

Parameter	Value			Unit
Times				
Time-delay from state change <sup>1)</sup>				
- 4 activated actuators	450			ms
- 3 activated actuators	370			ms
- 2 activated actuators	290			ms
- 1 activated actuator	210			ms
Difference time (of the two dependent AS-Interface inputs)	400 (with 4 monitored read heads)			ms
Ready delay	12			s
<b>Distances<sup>2)</sup></b>	<b>min.</b>	<b>typ.</b>	<b>max.</b>	
Safe switch-off distance $S_{ar}$	-	-	32	mm
Cable length $l$	-	-	25	m
Switch-on distance $S_{ap}$	10	15	-	mm
Switching hysteresis	0.5	2	-	mm

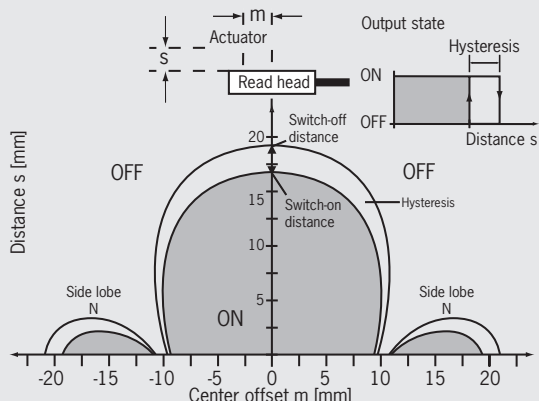
## CES-A-F1B-04B-AS1



Parameter	Value			Unit
Connection				
AS-Interface and auxiliary power	Ribbon cable AS-i			
Read heads	M12 plug connector			
Degree of protection according to IEC 60529	IP 67 <sup>3)</sup>			
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard)			
<b>AS-Interface data</b>				
Acc. to AS-Interface Specification 3.0	EA code: 0		ID code: B	
Operating voltage AS-Interface	22.5 ... 31.5			V DC
Total current consumption, max.	130			mA
Valid AS-Interface addresses	1 - 31			
<b>AS-Interface inputs</b>	In accordance with AS-Interface Safety at Work			
CES inputs IN1 ... IN4 (all inputs safe)	D0 ... D3			
Status signals of CES inputs IN1 ... IN4	P0 ... P3			
Dwell time min.	0.5			s

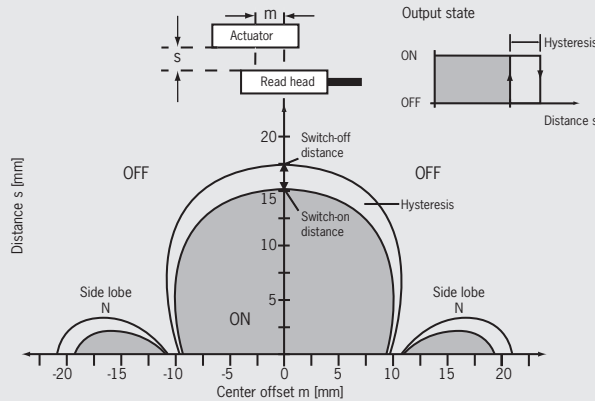
- 1) Corresponds to the risk time according to EN 60947-5-3. This is the maximum switch-off delay for the safety outputs following removal of the actuator.
- 2) With evaluation unit CES-A-F1B-04B-AS1 in conjunction with read head CES-A-LNA...AS1 or CES-A-LNA-SC and actuator CES-A-BBA on surface mounting of the read head and the actuator. If installed flush, the switching distance changes as a function of the installation depth and the safety guard material.
- 3) Screwed tight with the related plug connector

### Typical operating distance CES-A-1B-01B-AS1



With evaluation unit CES-A-F1B-01B-AS1 in conjunction with read head CES-A-LNA...AS1 or CES-A-LNA-SC and actuator CES-A-BBA on surface mounting of the read head and the actuator. If installed flush, the switching distance changes as a function of the installation depth and the safety guard material.  
For a side approach direction for the actuator and read head, a minimum distance of  $s = 3$  mm must be maintained so that the operating distance of the side lobes is not entered.

### Typical operating distance CES-A-F1B-04B-AS1



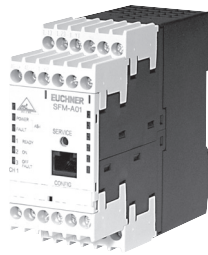
With evaluation unit CES-A-F1B-04B-AS1 in conjunction with read head CES-A-LNA...AS1 or CES-A-LNA-SC and actuator CES-A-BBA on surface mounting of the read head and the actuator. If installed flush, the switching distance changes as a function of the installation depth and the safety guard material.  
For a side approach direction for the actuator and read head, a minimum distance of  $s = 3$  mm must be maintained so that the operating distance of the side lobes is not entered.




# Technical Data



## Safety monitors SFM



SFM-A01, SFM-A02, SFM-B02, SFM-C12			
Parameter			Unit
Housing material	Plastic PA6.6		
Dimensions	45 x 105 x 120		mm
Weight	approx. 0.35		kg
Operating temperature	- 20 ... + 60		°C
Storage temperature	- 30 ... + 70		
Mounting	35 mm DIN rail acc. to DIN EN 50022-35		
Operating voltage U <sub>g</sub>	24+15%/-15%		V DC
	Power supply unit with electrical isolation (IEC 60742, PELV)		
Residual ripple	< 15 %		
Rated operating current	SFM...1: 150	SFM...2: 200	mA
Response time	< 40		ms
Switch-on delay	< 10		s
<b>Connection</b>			
Connection	Plug-in screw terminals		
Connection terminals	0.14 ... 2.5		mm <sup>2</sup>
Degree of protection according to EN 60529	IP 20		
EMC protection requirements	Acc. to EN 50295 (AS-Interface standard)		
<b>Inputs</b>			
Start	Optocoupler input, active high		
	Input current approx. 10 mA at 24 V DC		
Feedback loop	Optocoupler input, active high		
	Input current approx. 10 mA at 24 V DC		
<b>Outputs</b>			
Monitoring outputs	4 door monitoring outputs		
	PNP transistor output, 200 mA, short-circuit and reverse polarity protection		
Safety outputs	NO relay contacts		
Max. contact load	1 A DC-13 at 24 V DC / 3 A AC-15 at 230 V AC		
Continuous thermal current	3 A per output circuit		
External fusing, max.	4 A medium slow-blow		
Overvoltage category	3 for rated operating voltage, 300 V AC according to VDE 0110 Part 1		
<b>AS-Interface data</b>			
Acc. to AS-Interface Specification 2.1	EA code: 7	ID code: F	
Total current consumption, max.	45		mA
AS-Interface voltage range	18.5 ... 31.6		V



# Technical Data



## Pin assignment

### SFM-A01

1.13	1.23	1.Y1		
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
+	-			
AS <sub>i</sub>	1.Y2			
L+	M	1.32		
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
1.14	1.24	FE		

- AS-Interface + ▶ Connection to AS-Interface bus
- AS-Interface - ▶ Connection to AS-Interface bus
- L + ▶ 24 V DC
- M ▶ GND/reference ground
- FE ▶ Function earth
- 1.Y1 ▶ EDM/feedback loop
- 1.Y2 ▶ Start input
- 1.13 ▶ Safety output 1.13
- 1.14 ▶ Safety output 1.14
- 1.23 ▶ Safety output 1.23
- 1.24 ▶ Safety output 1.24
- 1.32 ▶ Door monitoring output

### SFM-A02 SFM-B02

1.13	1.23	1.Y1	2.13	2.Y1
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
+	-			
AS <sub>i</sub>	1.Y2			2.Y2
L+	M	1.32		2.32
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
1.14	1.24	FE	2.14	2.24

- AS-Interface + ▶ Connection to AS-Interface bus
- AS-Interface - ▶ Connection to AS-Interface bus
- L + ▶ 24 V DC
- M ▶ GND/reference ground
- FE ▶ Function earth
- 1.Y1 ▶ EDM/feedback loop 1
- 1.Y2 ▶ Start input 1
- 1.13 ▶ Safety output 1.13
- 1.14 ▶ Safety output 1.14
- 1.23 ▶ Safety output 1.23
- 1.24 ▶ Safety output 1.24
- 1.32 ▶ Door monitoring output 1
- 2.Y1 ▶ EDM/feedback loop 2
- 2.Y2 ▶ Start input 2
- 2.13 ▶ Safety output 2.13
- 2.14 ▶ Safety output 2.14
- 2.23 ▶ Safety output 2.23
- 2.24 ▶ Safety output 2.24
- 2.32 ▶ Door monitoring output 2

### SFM-C12

1.13	1.23	1.Y1	2.13	2.Y1
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
+	-			
AS <sub>i</sub>	1.Y2	AS <sub>i</sub> S		2.Y2
L+	M	1.32		2.32
⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗
1.14	1.24	FE	2.14	2.24

- AS-Interface + ▶ Connection to AS-Interface bus
- AS-Interface - ▶ Connection to AS-Interface bus
- AS-i S + ▶ Output AS-i slave
- AS-i S - ▶ Output AS-i slave
- L + ▶ 24 V DC
- M ▶ GND/reference ground
- FE ▶ Function earth
- 1.Y1 ▶ EDM/feedback loop 1
- 1.Y2 ▶ Start input 1
- 1.13 ▶ Safety output 1.13
- 1.14 ▶ Safety output 1.14
- 1.23 ▶ Safety output 1.23
- 1.24 ▶ Safety output 1.24
- 1.32 ▶ Door monitoring output 1
- 2.Y1 ▶ EDM/feedback loop 2
- 2.Y2 ▶ Start input 2
- 2.13 ▶ Safety output 2.13
- 2.14 ▶ Safety output 2.14
- 2.23 ▶ Safety output 2.23
- 2.24 ▶ Safety output 2.24
- 2.32 ▶ Door monitoring output 2



# Technical Data

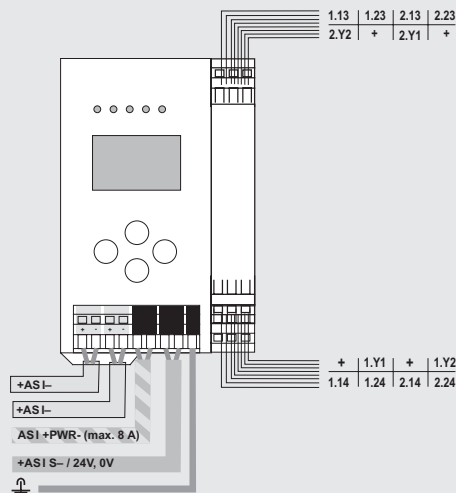
# EUCHNER

## Safety monitor SMO



Parameter	Value	Unit
Housing material	Stainless steel	
Dimensions	120 x 96 x 85	mm
Weight	0.8	kg
Ambient temperature	0 ... + 55	°C
Permissible shock and vibration load	acc. to EN 61131-2	
Operating voltage (AS-i voltage)	30	V DC
Operating current (from AS-i circuit)	45	mA
Insulation voltage	≥ 500	V
Standards	EN 61000-6-2, EN 61000-6-4, EN 954-1 (up to Cat. 4), EN 62 061 (SIL 3), EN ISO 13 849-1 (PL e)	
<b>Connection</b>		
Connection	Plug-in connection terminals	
Degree of protection according to EN 60529	IP 20	
<b>Display elements and switches</b>		
LC display	AS-i slave, error messages	
LEDs	4 (power, U AS-i/fault, ready, channel1/channel2)	
Button	4	
<b>Safety monitor interface</b>		
OSSD (Output Signal Switching Device)	Dual-channel	
Switch-on delay	< 10	s
Response delay	< 40	ms
Transfer rate	19.2	kbaud
Inputs	2 x EDM, 2 x start	
Outputs	4 x output switching elements, output circuits 1 and 2	
Interfaces	Memory card to store the configuration data, RS232	


## Pin assignment



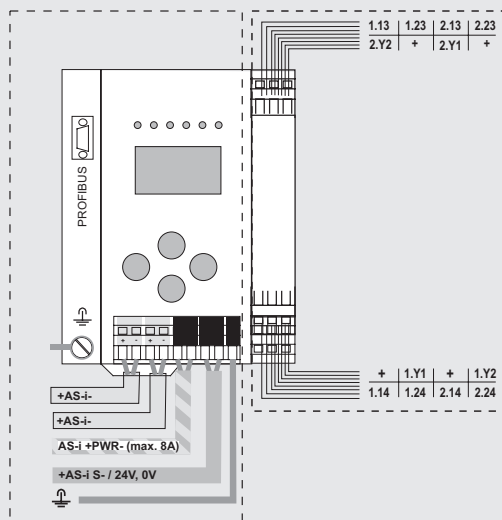
# Technical Data

## Safety monitor GMO



<b>GMO</b>			
Parameter		Value	Unit
Housing material		Stainless steel	
Dimensions		120 x 96 x 100	mm
Weight		0.8	kg
Ambient temperature		0 ... + 55	°C
Permissible shock and vibration load		acc. to EN 61131-2	
Operating voltage (AS-i voltage)		30	V DC
Operating current (from AS-i circuit)		300	mA
Insulation voltage		≥ 500	V
Standards		EN 61000-6-2, EN 61000-6-4, EN 954-1 (up to Cat. 4), EN 62 061 (SIL 3), EN ISO 13 849-1 (PL e)	
<b>Connection</b>			
Connection		Plug-in connection terminals	
Degree of protection according to EN 60529		IP 20	
<b>Display elements and switches</b>			
LC display		AS-i slave, error messages	
LEDs		7 (power, PROFIBUS, config error, U AS-i, AS-i active, pgr enable, prj mode)	
Button		4	
<b>Profibus interface</b>			
Transfer rates		9.6 ... 12.000	kbaud
DP functions		Mapping of the AS-i slaves as I/O process data in the Profibus; complete diagnostics and configuration via PROFIBUS DP master	
<b>Safety monitor interface</b>			
OSSD (Output Signal Switching Device)		Dual-channel	
Switch-on delay		< 10	s
Response delay		< 40	ms
Inputs		2 x EDM, 2 x start	
Outputs		4 x output switching elements, output circuits 1 and 2	
Card slot		Memory card to store the configuration data	
Serial interface		RS232	
AS-Interface cycle time		150 x (number of slaves + 2)	

### Pin assignment



# Technical Data

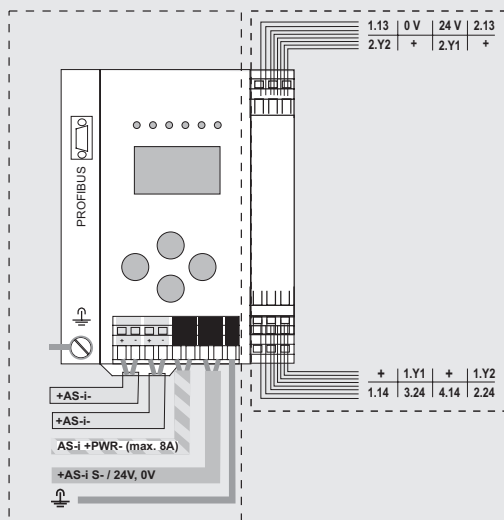


## Safety monitor GMOx



Parameter	Value	Unit
<b>GMOx</b>		
Housing material	Stainless steel	
Dimensions	120 x 96 x 100	mm
Weight	0.8	kg
Ambient temperature	0 ... + 55	°C
Permissible shock and vibration load	acc. to EN 61131-2	
Operating voltage (AS-i voltage)	30	V DC
Operating current (from AS-i circuit)	300	mA
Insulation voltage	≥ 500	V
Standards	EN 61000-6-2, EN 61000-6-4, EN 954-1 (up to Cat. 4), EN 62 061 (SIL 3), EN ISO 13 849-1 (PL e)	
<b>Connection</b>		
Connection	Plug-in connection terminals	
Degree of protection according to EN 60529	IP 20	
<b>Display elements and switches</b>		
LC display	AS-i slave, error messages	
LEDs	8 (4 inputs, 4 outputs, Aux) 7 (power, PROFIBUS, config error, U AS-i, AS-i active, pgr enable, prj mode)	
Button	4	
<b>Profibus interface</b>		
Transfer rates	according to EN 50170-3 9.6 ... 12000	kbaud
DP functions	Mapping of the AS-i slaves as I/O process data in the Profibus; complete diagnostics and configuration via PROFIBUS DP master	
<b>Safety monitor interface</b>		
OSSD (Output Signal Switching Device)	Dual-channel	
Switch-on delay	< 10	s
Response delay	< 40	ms
Inputs	2 x EDM, 2 x start	
Outputs	8 x output switching elements, output circuits 1 to 4	
Card slot	Memory card to store the configuration data	
Serial interface	RS232	

### Pin assignment



# Technical Data

# EUCHNER

## Bus coupling module BCM



### BCM-A-P1-SEM4-1

Parameter	Value	Unit
Housing material	Reinforced thermoplastic	
Degree of protection according to IEC 529 (mating connector inserted)	IP 67 on single insertion of the cable	
Ambient temperature	-20...+ 70	°C
Installation position	Any	
Weight	approx. 60	g
Voltage max.	36	V DC
Current max.	4	A
AS-Interface to power insulation voltage	200	V
Installation	Screw mounting (2 x M6)	
<b>Connection</b>		
AS-Interface and auxiliary power	Ribbon cable AS-i	
Line 1	AS-Interface bus ribbon cable (AS-Interface +, AS-Interface -)	
Line 2	Power ribbon cable (+24 V, 0 V)	
safety switch	M12 socket	
Degree of protection according to IEC 529 (mating connector inserted)	IP 67 on single insertion of the cable	

## Item Index

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## Index by item designation

Item	Order No.	Page
AsiMon SW	088 053	25
BCMA-P1-SEM4-1	089 411	24
Cabel set SFM	087 299	25
CES-AF1B-01B-AS1	094 230	18
CES-AF1B-04B-AS1	097 660	19
CES-ALNA-01V-AS1	094 031	24
CES-ALNA-02V-AS1	094 032	24
CES-ALNA-SC	077 715	24
CES-AV1B-01B-AS1	096 631	18
C-M08F04-04X025PV02,0-M12M05	100 817	25
C-M08F04-04X025PV05,0-M12M05	100 818	25
Connection cabel M12	089 420	24
GMO-PR-1D-C02	099 585	22
GMOX-PR-12DN-C16	103 267	23
GMOX-PR-12DS-C16	103 373	23
GMOX-PR-22DN-C16	103 302	23
GMOX-PR-22DS-C16	103 374	23
GP3-538ASEM4AS1	091 193	13
LIYC11Y2X0,25X2000M12M-M8F	095 005	25
LIYC11Y2Xo,25X10000M12M-M8F	099 167	25
LIYC11Y2Xo,25X30000M12M-M8F	099 168	25
LIYC11Y2Xo,25X5000M12M-M8F	095 357	25
NX1-2131ASEM4-AS1	094 362	10
NZ2HB-538SEM4AS1	097 591	5
NZ2HS-538SEM4AS1	095 201	5
NZ2RS-538SEM4AS1	095 046	5
NZ2VZ-538ESEM4-AS1	090 742	6
SFM-A01	085 638	20
SFM-A02	085 639	20
SFM-B02	087 891	20
SFM-C12	099 776	20
SGP3E-538ASEM4AS1	099 126	13
SMO-MO-OD-C02	100 158	21
STA3-4141A024SEM4AS1	098 993	12
STP3-4141A024SEM4AS1	097 790	15
STP4-4141A024SEM4AS1	097 789	15
STP-TW-3A-4141A024SEM4AS1	102 354	16
TP3-4141A024SEM4AS1	088 256	14
TP4-4141A024SEM4AS1	088 257	14
TP4-4141A024SEM4AS2	091 676	14
TX1B-A024SEM4AS1	094 403	11
TX1B-A024SEM4AS1C1991	095 914	11
TZ1LE024SEM4AS1	086 140	7
TZ1LE024SEM4AS1-C1815	094 422	8
TZ1LE024SEM4AS1-C1937	090 278	9
TZ1RE024SEM4AS1	086 141	7
TZ1RE024SEM4AS1-C1815	094 423	8
TZ1RE024SEM4AS1-C1937	090 279	9
TZ2LE024SEM4AS1	086 990	7
TZ2RE024SEM4AS1	086 991	7
ZMO-ZB-KK8-M	100 256	25
ZMO-ZB-M1	100 875	25
ZMO-ZB-M10	100 438	25
ZMO-ZB-MB1	103 580	25
ZMO-ZB-PGK	100 437	25
ZSA2B2CAS1	091 580	17
ZSB2B7CAS1	096 703	17

## Index by order number

Order	No. Item	Page
077 715	CES-ALNA-SC	24
085 638	SFM-A01	20
085 639	SFM-A02	20
086 140	TZ1LE024SEM4AS1	7
086 141	TZ1RE024SEM4AS1	7
086 990	TZ2LE024SEM4AS1	7
086 991	TZ2RE024SEM4AS1	7
087 299	Cabel set SFM	25
087 891	SFM-B02	20
088 053	AsiMon SW	25
088 256	TP3-4141A024SEM4AS1	14
088 257	TP4-4141A024SEM4AS1	14
089 411	BCMA-P1-SEM4-1	24
089 420	Connection cabel M12	24
090 278	TZ1LE024SEM4AS1-C1937	9
090 279	TZ1RE024SEM4AS1-C1937	9
090 742	NZ2VZ-538ESEM4-AS1	6
091 193	GP3-538ASEM4AS1	13
091 580	ZSA2B2CAS1	17
091 676	TP4-4141A024SEM4AS2	14
094 031	CES-ALNA-01V-AS1	24
094 032	CES-ALNA-02V-AS1	24
094 230	CES-AF1B-01B-AS1	18
094 362	NX1-2131ASEM4-AS1	10
094 403	TX1B-A024SEM4AS1	11
094 422	TZ1LE024SEM4AS1-C1815	8
094 423	TZ1RE024SEM4AS1-C1815	8
095 005	LIYC11Y2X0,25X2000M12M-M8F	25
095 046	NZ2RS-538SEM4AS1	5
095 201	NZ2HS-538SEM4AS1	5
095 357	LIYC11Y2Xo,25X5000M12M-M8F	25
095 914	TX1B-A024SEM4AS1C1991	11
096 631	CES-AV1B-01B-AS1	18
096 703	ZSB2B7CAS1	17
097 591	NZ2HB-538SEM4AS1	5
097 660	CES-AF1B-04B-AS1	19
097 789	STP4-4141A024SEM4AS1	15
097 790	STP3-4141A024SEM4AS1	15
098 993	STA3-4141A024SEM4AS1	12
099 126	SGP3E-538ASEM4AS1	13
099 167	LIYC11Y2Xo,25X10000M12M-M8F	25
099 168	LIYC11Y2Xo,25X30000M12M-M8F	25
099 585	GMO-PR-1D-C02	22
099 776	SFM-C12	20
100 158	SMO-MO-OD-C02	21
100 256	ZMO-ZB-KK8-M	25
100 437	ZMO-ZB-PGK	25
100 438	ZMO-ZB-M10	25
100 817	C-M08F04-04X025PV02,0-M12M05	25
100 818	C-M08F04-04X025PV05,0-M12M05	25
100 875	ZMO-ZB-M1	25
102 354	STP-TW-3A-4141A024SEM4AS1	16
103 267	GMOX-PR-12DN-C16	23
103 302	GMOX-PR-22DN-C16	23
103 373	GMOX-PR-12DS-C16	23
103 374	GMOX-PR-22DS-C16	23
103 580	ZMO-ZB-MB1	25

## For Your Notes

**EUCHNER**

A series of horizontal grey bars providing a template for handwritten notes.

## For Your Notes

**EUCHNER**

---

A series of horizontal lines provided for taking notes, consisting of 31 light gray bars stacked vertically.



# Overview of Range

## Automation



### **Position Switches**

- ▶ Position Switches
- ▶ Position Switches according to EN 50 041

### **Precision Multiple Limit Switches**

### **Inductive Limit Switches**

### **Plug Connectors**

### **Trip Rails/Trip Dogs**

### **Inductive Ident Systems**

## Safety



### **Safety Switches, Metal Housing**

- ▶ Safety Switches NZ/TZ
- ▶ Safety Switches NX/TX

### **Safety Switches, Plastic Housing**

- ▶ Safety Switches NM
- ▶ Safety Switches NP/GP/TP
- ▶ Safety Switches STM
- ▶ Safety Switches STP

### **Non-Contact Safety Switches**

- ▶ Non-Contact Safety Switches CES/CEM,  
Transponder Coding
- ▶ Non-Contact Safety Switches CMS,  
Magnetic Coding

### **Safety Products with integrated Bus Interface**

### **Bolts for Safety Guards**

### **Enabling Switches**

### **Safety Relays**

- ▶ Safety Relays ESM
- ▶ Modular Safety System ESM-F

### **Rope Pull Switches**

## ManMachine



### **Joystick Switches**

### **Electronic Handwheels**

### **Pendant Stations**

- ▶ Pendant Stations HBA
- ▶ Pendant Stations HBE/HBL

### **Electronic-Key-System**

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