EUCHNER

Operating Instructions

Non-Contact Safety Switch

CES-I-BR-.-C07-... (Unicode/Multicode)

EN

Contents

EN

1. About this document

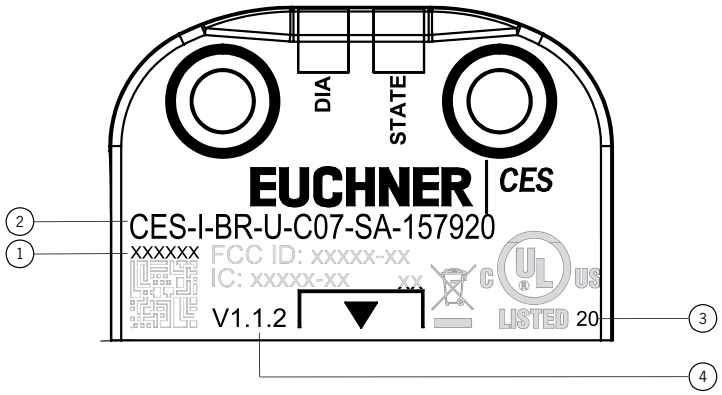
1.1. Scope

These operating instructions are valid for all CES-I-BR-.-C07-... versions from V1.0.X to V1.1.X. These operating instructions, the document *Safety information* and any available data sheet form the complete user information for your device.

Important!	
	‣ Make sure to use the operating instructions valid for your product version. The version number can be found on the type label of your product. ‣ Please contact the EUCHNER support team if you have any questions.

1.2. Type label

(example illustration)



1	Serial number
2	Item designation
3	Year of manufacture
4	Product version

1.3. Target group

Design engineers and installation planners for safety devices on machines, as well as setup and servicing staff possessing special expertise in handling safety components.

1.4. Key to symbols

Symbol/depiction	Meaning
	Printed document
	Document is available for download at www.euchner.com
 DANGER WARNING CAUTION	Warnings **Danger** of death or severe injuries **Warning** about possible injuries **Caution** slight injuries possible
 NOTICE Important! Tip	**Notice** about possible device damage **Important** information Useful information

1.5. Supplementary documents

The overall documentation for this device consists of the following documents:

Document title (document number)	Contents	
Safety information (2525460)	Basic safety information	
Operating instructions (2510145)	(this document)	
Declaration of conformity	Declaration of conformity	
Possibly available data sheet	Item-specific information about deviations or additions	 

Important!	
	Always read all documents to gain a complete overview of safe installation, setup and use of the device. The documents can be downloaded from www.euchner.com. For this purpose, enter the doc. no. or the order number for the device in the search box.

EN

2. Correct use

Safety switches series CES-I-BR-.-C07-... are interlocking devices without guard locking (type 4). The device complies with the requirements according to EN 60947-5-3. Devices with unicode evaluation possess a high coding level, devices with multicode evaluation possess a low coding level.

In combination with a movable guard and the machine control, this safety component prevents dangerous machine functions from occurring while the guard is open. A stop command is triggered if the guard is opened during the dangerous machine function.

This means:

- Starting commands that cause a dangerous machine function must become active only when the guard is closed.
- Opening the guard triggers a stop command.
- Closing a guard must not cause automatic starting of a dangerous machine function. A separate start command must be issued. For exceptions, refer to EN ISO 12100 or relevant C-standards.

Before the device is used, a risk assessment must be performed on the machine, e.g. in accordance with the following standards:

- EN ISO 13849-1
- EN ISO 12100
- IEC 62061

Correct use includes observing the relevant requirements for installation and operation, particularly based on the following standards:

- EN ISO 13849-1
- EN ISO 14119
- EN 60204-1

The safety switch is allowed to be operated only in conjunction with the intended EUCHNER actuators and the related connection components from EUCHNER. On the use of different actuators or other connection components, EUCHNER provides no warranty for safe function.

Connection of several devices in a BR device chain is permitted only using devices intended for series connection in a BR device chain. Check this in the instructions of the device in question.

A maximum of 20 safety switches are allowed to be operated in a switch chain.

Important!	
	- The user is responsible for the proper integration of the device into a safe overall system. For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-1. - It is only allowed to use components that are permissible according to 6.

Table 1: *Possible combinations for CES components*

Safety switch	**Actuator**		
	CES-A-BTN-C07-...	**CES-A-BDN-06-...**	**A-C11-01-...**
CES-...-C07-... Unicode/Multicode	●	●	●

3. Description of the safety function

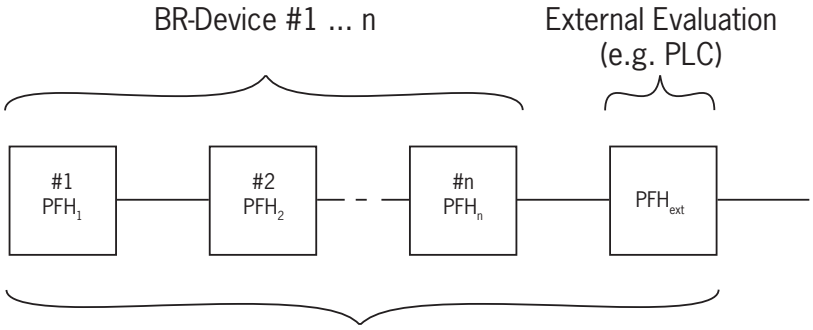
Devices from this series feature the following safety function:

Monitoring of the guard position
(interlocking device according to EN ISO 14119)

- Safety function:
  The safety outputs are switched off when the guard is open, see *6.4. Switching states, page 10*.
- Safety characteristics: category, Performance Level, PFH (see *15.1. Technical data for safety switch CES-I-BR-.-C07-..., page 33*)

The following additionally applies in a BR series connection:

The safety outputs are switched on only when the device receives a corresponding signal from its predecessor in the chain.

Important!	
	You can regard the complete BR device chain as one subsystem during calculation. The following calculation method applies to the PFH value:  $PFH\ ges = \sum_{k=1}^{n} PFH_k + PFH_{ext}$

4. Exclusion of liability and warranty

The following points will result in exclusion of liability and loss of the warranty:

- Incorrect use of the device
- Failure to comply with the operating instructions and the safety regulations and warnings therein
- Failure to perform the required check for correct function
- Failure to perform the required servicing

5. General safety precautions

Safety switches fulfill personnel protection functions. Incorrect installation or tampering can lead to fatal injuries to personnel.

Check the safe function of the safeguard particularly after:

- every setup
- the replacement of a system component
- extended downtime
- any fault

Independent of these checks, the safe function of the guard must be checked at suitable intervals as part of service.

EN

DANGER	
	Danger to life due to improper installation or due to bypassing (tampering). Safety components fulfill a personnel protection function. ‣ Safety components must not be bypassed, turned away, removed or otherwise rendered ineffective. On this topic pay attention in particular to the measures for reducing the possibility of bypassing according to EN ISO 14119:2025, section 8. ‣ Activate the switching operation using only the actuator designated for this purpose. ‣ Ensure that bypassing by means of replacement actuators is not possible on switches with multicode evaluation. For this purpose, restrict access to actuators and keys for releases or similar. ‣ Mounting, electrical connection and setup only by authorized personnel possessing the following knowledge: - specialist knowledge in handling safety components - knowledge about the applicable EMC regulations - knowledge about the applicable regulations on operational safety and accident prevention

Important!	
	Prior to use, read the operating instructions and keep these in a safe place. Ensure the operating instructions are always available during mounting, setup and servicing. You can download the operating instructions from www.euchner.com.

6. Function

The device monitors the position of movable guards. The safety outputs are switched on or off when the actuator is moved into or out of the actuating range.

The system consists of the following components:

- Safety switch
- Transponder-coded actuator

Whether the device learns the complete actuator code (unicode) or not (multicode) depends on the respective switch design.

- **Unicode evaluation:** The actuator must be assigned to the safety switch by a teach-in operation so that it is detected by the system. This unambiguous assignment ensures a particularly high level of protection against tampering. The system thus possesses a high coding level.
- **Multicode evaluation:** Unlike systems with unicode evaluation, on multicode devices a specific code is not requested but instead it is only checked whether the actuator is of a type that can be detected by the system (multicode evaluation). There is no exact comparison of the actuator code with the taught-in code in the safety switch (unicode evaluation). The system possesses a low coding level.

When the guard is closed, the actuator is moved toward the safety switch. When the operating distances are reached, power is supplied to the actuator by the switch and data are transferred.

If a permissible code is detected, the safety outputs are switched on.

The safety outputs are switched off when the guard is opened.

In the event of a fault in the safety switch, the safety outputs are switched off and the DIA LED illuminates red. The occurrence of faults is detected at the latest on the next demand to close the safety outputs (e.g. on starting).

6.1. Limit-range monitoring

The device detects if the actuator drifts out of the actuating range of the switch over time. The STATE LED or the limit-range signal OW indicates that the actuator is in the limit range, see *14. Status and error messages, page 29*. Readjusting the door can prevent the actuator from drifting farther out of the actuating range.

6.2. Door position monitoring output OD

The device features a monitoring output for the door position signal OD. Depending on the application, the signal is available at the monitoring output or as a status bit. The status bits are evaluated via the BR/IO-Link Gateway. If no BR/IO-Link Gateway is connected, this output behaves like a monitoring output.

The door position signal OD is present when a valid actuator is detected in the actuating range and the guard is closed.

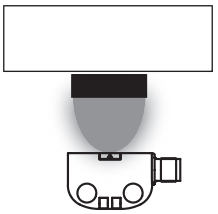
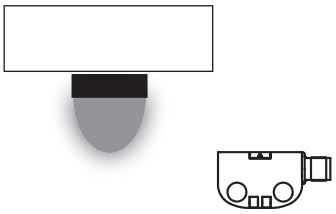
6.3. Communication connection C

When the device is connected to a BR/IO-Link Gateway, the monitoring output functions as a communication connection. The switch delivers cyclical and acyclical data. You will find an overview of the communication data in *11. Using communication data, page 25*.

EN

6.4. Switching states

The detailed switching states are listed in *14. Status and error messages, page 29*. All safety outputs, signals and display LEDs are described there.

	Guard closed **(actuator in the actuating range and permissible code detected)**	**Guard open** **(actuator not in the actuating range)**
		
Safety outputs FO1A and FO1B	on	off
Door position signal OD	on	off

7. Mounting

7.1. General assembly instructions

CAUTION	
⚠	Safety switches must not be bypassed (bridging of contacts), turned away, removed or otherwise rendered ineffective. ‣ Observe EN ISO 14119:2025, section 8, for information about reducing the possibilities for bypassing an interlocking device.

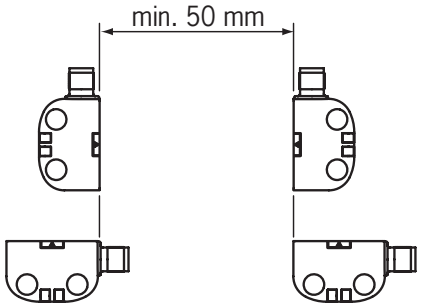
NOTICE	
ⓘ	Risk of damage to equipment and malfunctions as a result of incorrect installation. ‣ Safety switches and actuators must not be used as an end stop. ‣ Observe EN ISO 14119:2025, sections 6.2 and 6.3, for information about mounting the safety switch and the actuator.

7.2. Mounting CES-C07

NOTICE	
	Risk of damage to equipment and malfunctions as a result of incorrect installation. › From the assured release distance S_{ar}, the safety outputs are safely shut down, see *15.2.2. Actuating ranges and installation positions for actuator CES-A-BTN-C07, page 38*. › Actuator and safety switch must be mounted such that, when the guard is open up to the assured release distance S_{ar}, a hazard is excluded. › Recessed installation of the actuator changes the operating distances as a function of the material. › Observe permissible installation positions, see Fig. 1, page 12 and Fig. 2, page 12. › The following applies to devices with connecting cable: In areas where high-pressure cleaners are used, ensure that the high-pressure cleaner jet does not act directly on the connecting cable or the cable entry into the device. Potential damage due to the high-pressure cleaner can result in the degree of protection IP69K no longer being achieved.

Observe the following points during mounting:

- Actuator and safety switch must be easily accessible for inspection and replacement.
- Actuator and safety switch must be mounted such that a minimum distance is maintained with a side approach direction to avoid entering the area of possible side lobes, see *15.2.2. Actuating ranges and installation positions for actuator CES-A-BTN-C07, page 38*.
- The following applies to actuators CES-A-BTN-C07-... and A-C11-01-…: Positively mount the actuator on the guard, e.g. by using the safety screws included.
- Ensure that the safety screws cannot be removed or tampered with using simple means.
- Observe the max. tightening torque of 0.8 Nm for mounting the switch and the actuator.
- To prevent the accumulation of dirt, seal the mounting holes in the switch using the caps provided after mounting.
- The actuator A-C11-01-… can be installed recessed up to a groove depth of max 3 mm.
- When mounting several safety switches, observe the stipulated minimum distance to avoid mutual interference:



EN

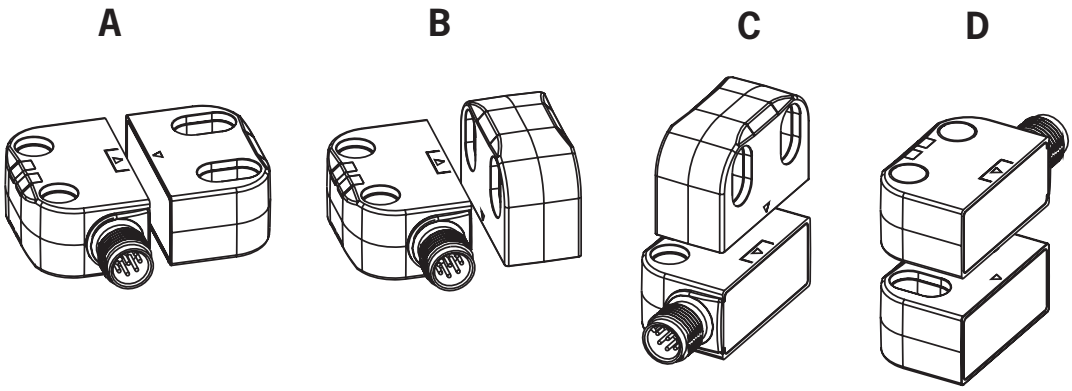


Fig. 1: Permissible installation positions for actuator CES-A-BTN-C07-...: Observe direction of arrow on the device.

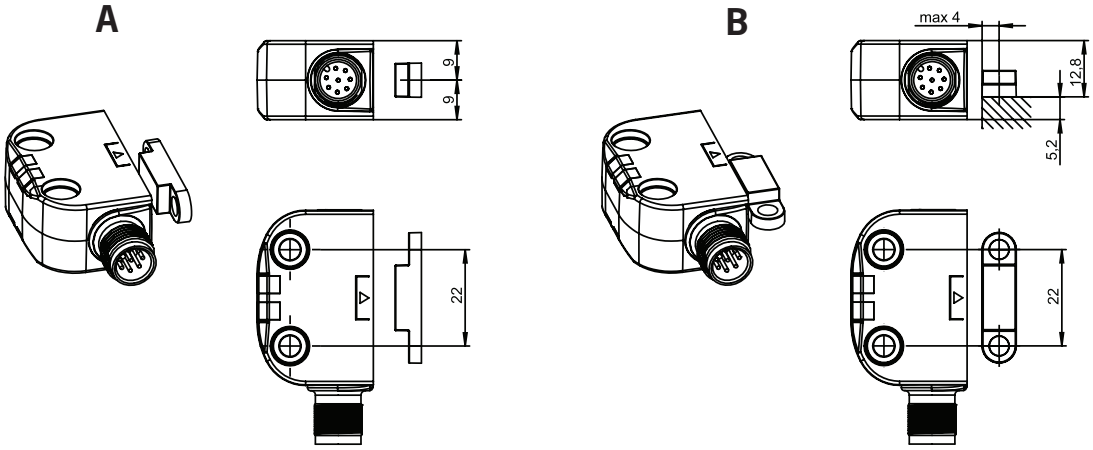


Fig. 2: Permissible installation positions for actuator A-C11-01-...

8. Electrical connection

The following connection options are available:

- Separate operation
- Series connection with wiring in the control cabinet
- Series connection with Y-distributors
- Connection without IO-Link communication
- Connection with IO-Link communication

WARNING	
⚠	In the event of a fault, loss of the safety function due to incorrect connection. › To ensure safety, both safety outputs must always be evaluated. › Monitoring outputs must not be used as a safety output. › Lay the connecting cables with protection to prevent short circuits.

WARNING	
⚠	Risk of damage to equipment or malfunctions as a result of incorrect connection. › Do not use a control system with pulsing or switch off the pulsing function in your control system. The device generates its own test pulses on the safety outputs. A downstream control system must tolerate these test pulses, which may have a length of up to 300 µs. Depending on the inertia of the downstream device (control system, relay, etc.), this can lead to short switching operations. The test pulses are output with the safety outputs switched off only during device start. › The inputs on a connected evaluation unit must be positive switching, as the two outputs on the safety switch deliver a level of +24 V in the switched-on state. › All electrical connections must either be isolated from the mains supply by a safety transformer according to IEC 61558-2-6 with limited output voltage in the event of a fault, or by other equivalent insulation measures (PELV). › All electrical outputs must have an adequate protective circuit for inductive loads. The outputs must be protected with a free-wheeling diode for this purpose. Varistors and RC interference suppression units must not be used. › Power devices which are a powerful source of interference must be installed in a separate location away from the input and output circuits for signal processing. The cable routing for safety circuits should be as far away as possible from the cables of the power circuits. › To avoid EMC interference, the physical environmental and operating conditions at the installation site of the device must comply with the requirements according to the standard EN 60204-1 (EMC). › Pay attention to any interference fields from devices such as frequency converters or induction heating systems. Observe the EMC instructions in the manuals from the respective manufacturer.

EN

Important	
ⓘ	If the device does not appear to function when the operating voltage is applied (e.g. the green STATE LED does not flash), the safety switch must be returned to EUCHNER.

8.1. Notes about UL

Important!	
	▸ This device is intended to be used with a Class 2 power source in accordance with UL1310. As an alternative an LV/C (Limited Voltage/Current) power source with the following properties can be used: This device shall be used with a suitable isolating source in conjunction with a fuse in accordance with UL248. The fuse shall be rated max. 3.3 A and be installed in the max. 30 V DC power supply to the device in order to limit the available current to comply with the UL requirements. Please note possibly lower connection ratings for your device (refer to the technical data). ▸ For use and application as per the requirements of UL[1)], a connecting cable listed under the UL category code CYJV2 or CYJV must be used. *[1) Note on the scope of the UL approval: the devices have been tested as per the requirements of UL508 and CSA/C22.2 no. 14 (protection against electric shock and fire). Only for applications as per NFPA 79 (Industrial Machinery).*]

8.2. Safety in case of faults

- The operating voltage at UB is reverse polarity protected.
- The safety outputs FO1A and FO1B are short circuit-proof.
- A short circuit between the safety outputs is detected on starting or when the safety outputs are activated by the device.
- A short circuit in the cable can be excluded by laying the cable with protection.

8.3. Fuse protection for power supply

The power supply must be provided with fuse protection depending on the number of switches and the current required for the outputs. The following rules apply:

Max. current consumption of an individual switch I_{max}

I_{max} = $I_{UB} + I_{OD} + I_{FO1A+FO1B}$

I_{UB} = Switch operating current (40 mA)

I_{OD} = Monitoring output load current (max. 50 mA)

$I_{FO1A+FO1B}$ = Load current of safety outputs FO1A + FO1B (2 x max. 150 mA)

Max. current consumption of a switch chain ΣI_{max}

ΣI_{max} = $I_{FO1A+FO1B} + n \times (I_{UB} + I_{OD})$

n = Number of connected switches

8.4. Requirements for connecting cables

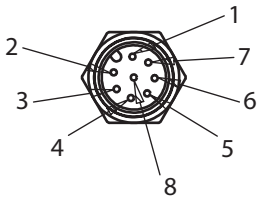
CAUTION	
⚠	Risk of damage to equipment or malfunctions as a result of incorrect connecting cables. ‣ Use connection components and connecting cables from EUCHNER. ‣ If other connection components are used, the requirements in the following table apply. EUCHNER provides no warranty for safe function in case of failure to comply with these requirements.

Observe the following requirements with respect to the connecting cables:

Parameter	Value			Unit
	M12/8-pin	M12/5-pin		
Recommended cable type	LIYY 8 x 0.25	LIYY 5 x 0.25	LIYY 5 x 0.34	mm^2
Cable	8 x 0.25	5 x 0.25	5 x 0.34	mm^2
Cable resistance R max.	78	78	58	Ω/km
Inductance L max.	0.51	0.64	0.53	mH/km
Capacitance C max.	107	60	100	nF/km

8.5. Connector assignments

8.5.1. Connector assignment of safety switch CES-I-BR

Plug connector (view of connection side)	Pin	Designation	Function	Conductor coloring of connecting cable [1]
	1	FI1B	Enable input, channel B	WH
	2	UB	Operating voltage 24 V DC	BN
	3	FO1A	Safety output, channel A	GN
	4	FO1B	Safety output, channel B	YE
	5	OD/C	Door position monitoring output/communication	GY
	6	FI1A	Enable input, channel A	PK
	7	0V	Ground 0 V DC	BU
	8	-	n.c.	RD

[1] Only for standard EUCHNER connecting cable

EN

8.6. Notes on operation with safe control systems

Observe the following guidelines for connection to safe control systems:

- Use a common power supply for the control system and the connected safety switches.
- A pulsed power supply must not be used for UB. Tap the supply voltage directly from the power supply unit. If the power supply is connected to a terminal of a safe control system, this output must provide sufficient electrical current.
- Always connect inputs FI1A and FI1B directly to a power supply unit or to outputs FO1A and FO1B of another EUCHNER BR device (series connection). Pulsed signals must not be present at inputs FI1A and FI1B.
- The safety outputs FO1A and FO1B can be connected to the safe inputs of a control system. Prerequisite: the input must be suitable for pulsed safety signals (OSSD signals, e.g. from light grids). The control system must tolerate test pulses on the input signals. This normally can be set up by parameter assignment in the control system. Observe the notes of the control system manufacturer. For the test pulse duration of your device, refer to chapter *15.1. Technical data for safety switch CES-I-BR-.-C07-..., page 33*.

A detailed example of connecting and setting the parameters of the control system is available for many devices at www.euchner.com, in the area *Downloads/Applications/CES*. The features of the respective device are dealt with there in greater detail.

8.7. Connection without and with IO-Link communication

Connection without IO-Link communication

Only the safety and monitoring outputs are switched with this connection method.

With a series connection, the safety signals are looped through from device to device.

Connection with IO-Link communication

If, in addition to the safety function, detailed monitoring and diagnostic data are to be processed, a BR/IO-Link Gateway is required. To poll the communication data from the connected device, communication connection C is routed to the BR/IO-Link Gateway.

You will find further information in the operating instructions for your BR/IO-Link Gateway.

9. Connection of a single CES-I-BR (separate operation)

If a single CES-I-BR is used, connect the switch as shown in Fig. 3, page 17. The monitoring output OD can be connected to a control system.

WARNING	
⚠	In the event of a fault, loss of the safety function due to incorrect connection. ‣ To ensure safety, both safety outputs FO1A and FO1B must always be evaluated.

Important!	
ℹ	The example shows only an excerpt that is relevant for connection of the system. The example illustrated here does not show complete system planning. The user is responsible for safe integration into the overall system. Detailed application examples can be found at www.euchner.com. Enter the order number of your switch in the search box. You will find all available connection examples for the device in *Downloads*.

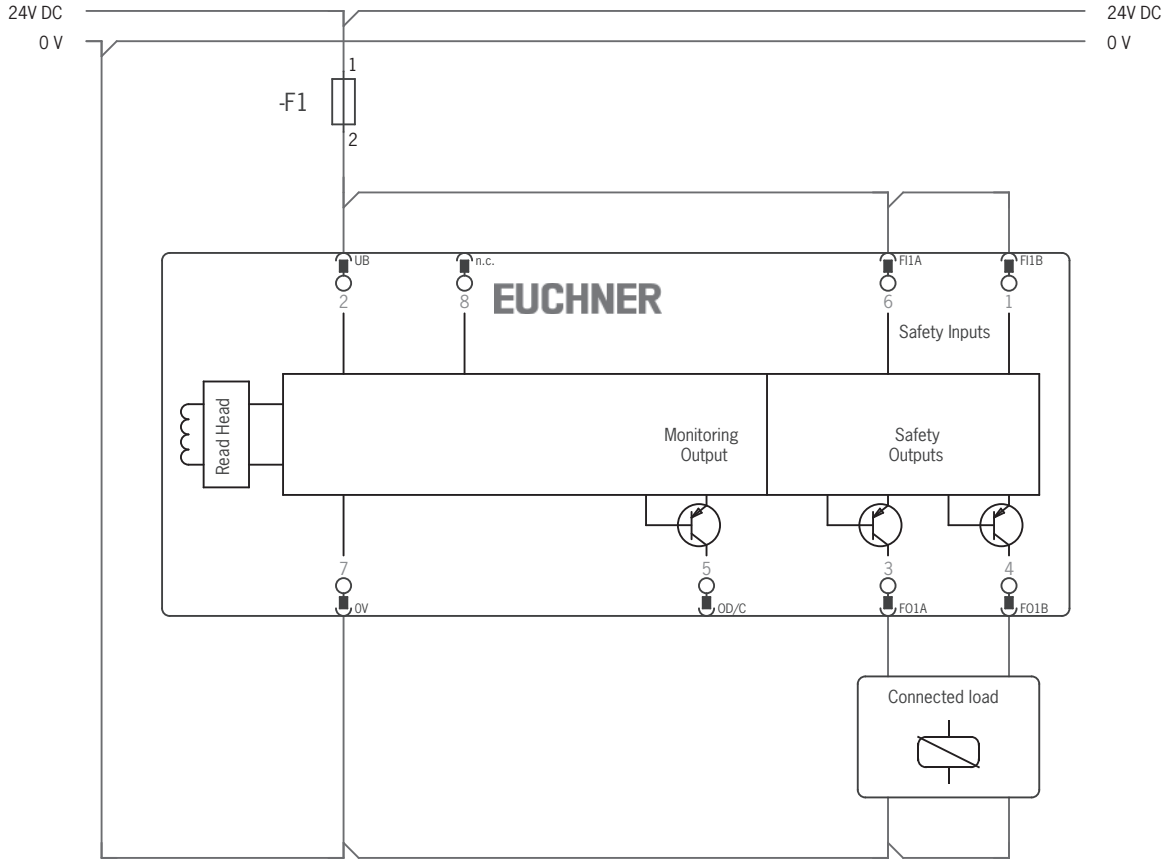


Fig. 3: Connection example for separate operation of a CES-I-BR-... (principle of operation)

EN

10. Connection of several devices in a chain (series connection)

WARNING	
⚠	In the event of a fault, loss of the safety function due to incorrect connection. › To ensure safety, both safety outputs FO1A and FO1B must always be evaluated.

Important!	
ⓘ	› A BR device chain may contain a maximum of 20 devices. › The example shows only an excerpt that is relevant for the connection of the CES system. The example illustrated here does not show complete system planning. The user is responsible for safe integration into the overall system. Detailed application examples can be found at www.euchner.com. Enter the order number of your switch in the search box. You will find all available connection examples for the device in *Downloads*. › When using Y-distributors, make sure to use the correct Y-distributor versions, see *10.2.3. Connector assignment of Y-distributor for series connection without IO-Link communication, page 21* and *10.2.4. Connector assignment of Y-distributor for series connection with IO-Link communication, page 23*.

10.1. Series connection with wiring in the control cabinet

The series connection can be implemented via additional terminals in a control cabinet.

Important!	
ⓘ	In case of series connection with IO-Link communication: › The safety outputs are permanently assigned to the respective safety inputs of the downstream switch. FO1A must be routed to FI1A and FO1B to FI1B. › If the connections are interchanged (e.g. FO1A to FI1B), the downstream device will enter the fault state.

10.2. Series connection with Y-distributors

The series connection is shown here based on the example of the version with plug connector M12. The switches are connected one behind the other with the aid of pre-assembled connecting cables and Y-distributors.

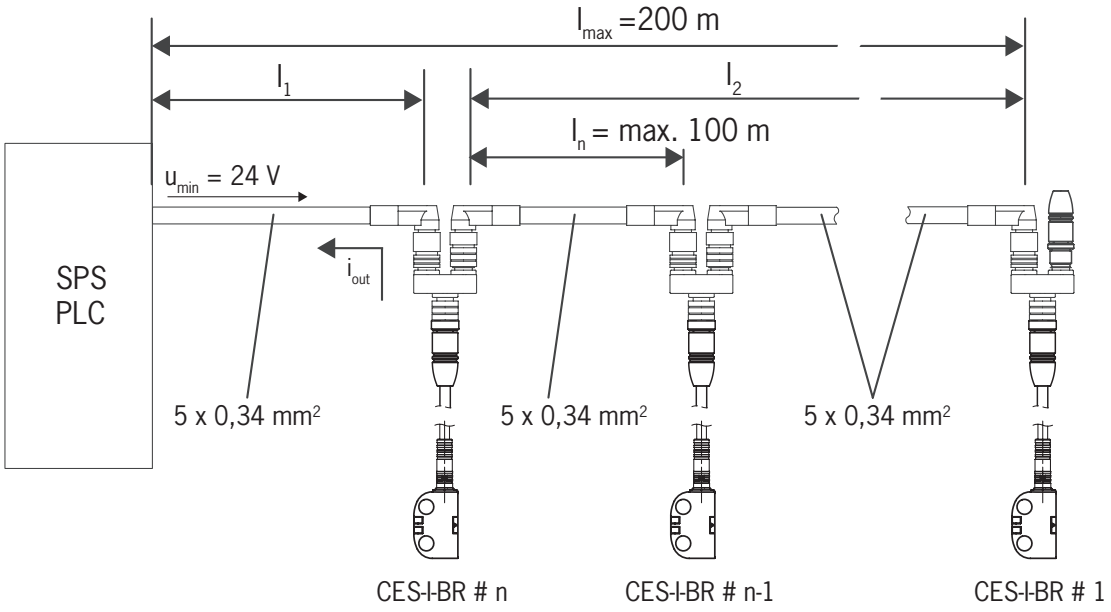
If a safety door is opened or if a fault occurs on one of the switches, the system shuts down the machine.

10.2.1. Maximum cable lengths with BR switch chains

Important!	
	The maximum number of devices in a BR switch chain depends on many factors, including the cable length. This case example shows a standard application. You will find further connection examples at www.euchner.com.

Switch chains up to max. 200 m total cable length are allowed taking into account the voltage drop due to the cable resistance, see *10.2.2. Determining cable lengths using the example table, page 20*.

The cable length between two switches is limited to 100 m (l_n).



n **Max. number of switches depending on the cable length**	**$I_{FO1A/FO1B}$ (mA)** **Possible output current per channel FO1A/FO1B**	**l_1 (m)** **Max. cable length from the last switch to the control system** **0.34 mm²**
5	10	100
	25	100
	50	80
	100	50
	200	25
6	10	100
	25	90
	50	70
	100	50
	200	25
10	10	70
	25	60
	50	50
	100	35
	200	20

EN

10.2.2. Determining cable lengths using the example table

Example:

- 6 switches are to be used in series.
- Cabling with a length of 40 m is routed from a safety relay in the control cabinet to the last switch (#6).
- Cables with a length of 20 m each are connected between the individual safety switches.
- A safety relay that consumes 75 mA of current at each of the two safety inputs is connected downstream.

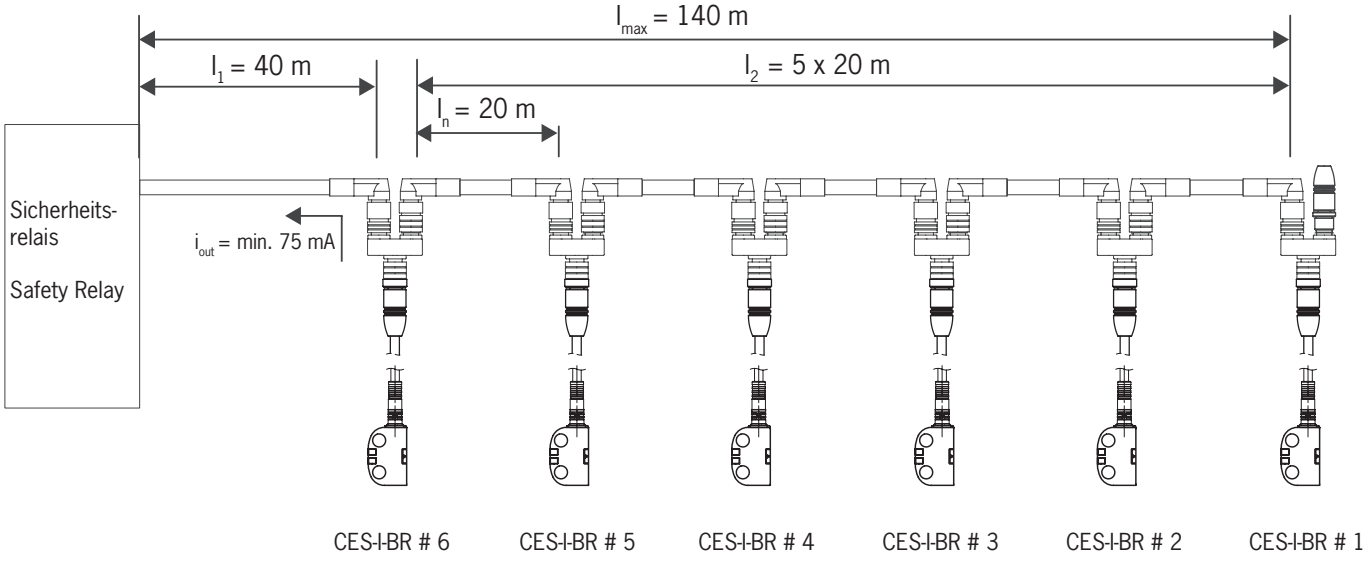


Fig. 4: Circuit example with 6 CES-I-BR

All the relevant values can now be determined using the table in 10.2.1. *Maximum cable lengths with BR switch chains*, page 19:

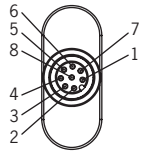
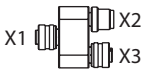
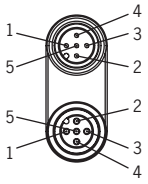
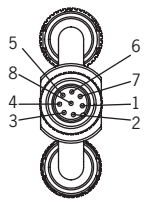
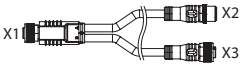
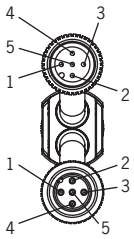
1. Select the corresponding section in the column n (Max. number of switches): 6 switches.
2. In the column $I_{FO1A/FO1B}$ (Possible output current per channel FO1A/FO1B), find a current greater than or equal to 75 mA: 100 mA.
3. It is then possible to read the maximum cable length from the last switch (#6) to the control system from column l_1: 50 m.

The desired cable length l_1 of 40 m is below the permitted value from the table. The overall length of the switch chain l_{max} of 140 m is less than the maximum value of 200 m.

➡ The planned application is functional.

10.2.3. Connector assignment of Y-distributor for series connection without IO-Link communication

Important!	
	‣ The switch chain must always be terminated with strapping plug 097645. ‣ A higher-level control system cannot detect which safety door is open or on which switch a fault has occurred with this connection technology.

Plug connector X1	Y-distributor	Plug connector X2/X3
X1 Socket 	097627 	X2 Plug  X3 Socket
X1 Socket 	111696 112395  With connecting cable	X2 Plug  X3 Socket

X1	
Pin	**Function**
X1.1	FI1B
X1.2	UB
X1.3	FO1A
X1.4	FO1B
X1.5	n.c.
X1.6	FI1A
X1.7	0 V
X1.8	*

X2	
Pin	**Function**
X2.1	UB
X2.2	FO1A
X2.3	0 V
X2.4	FO1B
X2.5	*

X3	
Pin	**Function**
X3.1	UB
X3.2	FI1A
X3.3	0 V
X3.4	FI1B
X3.5	*

* Function and compatibility are dependent on the connector assignment of the connected device.

EN

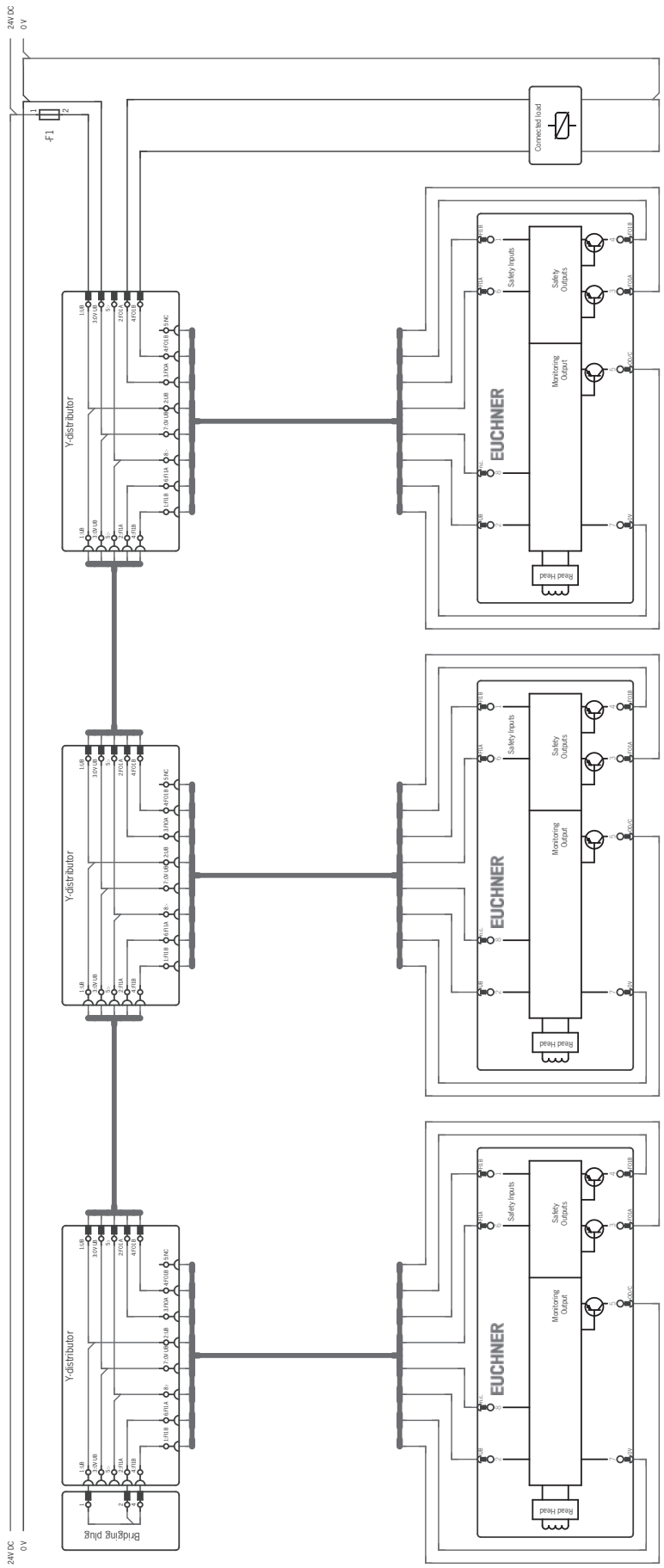
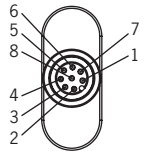
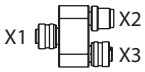
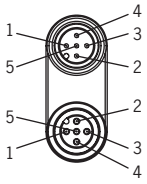
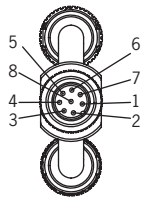
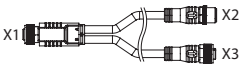
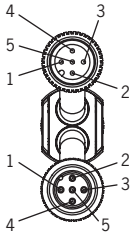


Fig. 5: Connection example for series connection without IO-Link communication (principle of operation)

10.2.4. Connector assignment of Y-distributor for series connection with IO-Link communication

Important!	
	‣ The switch chain must always be terminated with strapping plug 097645.

Plug connector X1	Y-distributor	Plug connector X2/X3
X1 Socket 	157913 	X2 Plug  X3 Socket
X1 Socket 	158192 158193  With connecting cable	X2 Plug  X3 Socket

X1	
Pin	**Function**
X1.1	FI1B
X1.2	UB
X1.3	FO1A
X1.4	FO1B
X1.5	C
X1.6	FI1A
X1.7	0 V
X1.8	n.c.

X2	
Pin	**Function**
X2.1	UB
X2.2	FO1A
X2.3	0 V
X2.4	FO1B
X2.5	C

X3	
Pin	**Function**
X3.1	UB
X3.2	FI1A
X3.3	0 V
X3.4	FI1B
X3.5	C

EN

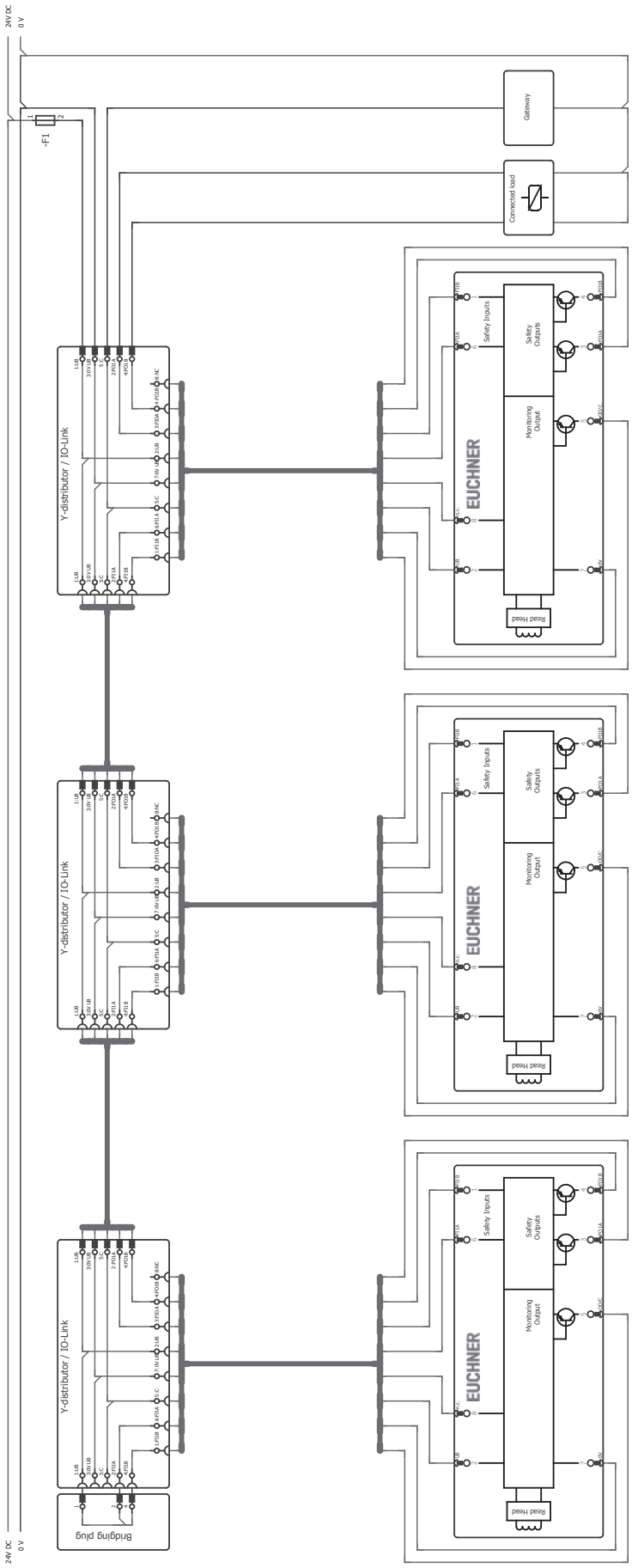


Fig. 6: Connection example for series connection with IO-Link communication (principle of operation)

11. Using communication data

The device transmits both process data, which are continuously transmitted to the evaluation unit (cyclical data), and data that can be polled specifically as needed (acyclical data).

A BR/IO-Link Gateway is required to use the device's communication data and forward them to a higher-level bus system. The following devices are suitable:

- GWY-CB-1-BR-IO (BR/IO-Link Gateway)
- ESM-CB (safety relay with integrated BR/IO-Link Gateway)

Connection to a BR/IO-Link Gateway GWY-CB

The Gateway is an IO-Link device. Communication via IO-Link offers cyclical (process data) and acyclical (device data and events) data exchange.

The communication connection C on the device allows the diagnostic line to be connected to the Gateway. The OD/C connection represents a non-safety-related communication channel between the Gateway and the connected devices.

IO-Link communication can be used for the following functions as well:

- Reset for acknowledging error messages

You will find further information in the operating instructions for your BR/IO-Link Gateway.

Connection to a safety relay ESM-CB

The safety relay ESM-CB features an integrated BR/IO-Link Gateway. In addition to functioning as an IO-Link device, the device can be used for connecting two monitored single- or dual-channel sensor circuits. The sensor circuits evaluate various signaling devices:

- Sensor circuit S1 with short circuit detection; suitable for single- or dual-channel safety sensors
- Sensor circuit S2, suitable for OSSD signals; short circuit detection by signaling device

When at least one sensor circuit is interrupted, the safety relay initiates the safe state. Different relay starting behaviors and various monitoring functions are possible.

The device's safety outputs FO1A and FO1B are routed to the OSSD inputs of the safety relay. The OD/C connection of the device allows the diagnostic line to be connected to the Gateway.

You will find further information in the operating instructions for your safety relay with integrated BR/IO-Link Gateway.

11.1. Cyclical data (process data)

Table 2: *Cyclical data (process data)*

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	OI	-	-	-	OM	-	OW	OD

Bit	Signal	Message
OI	Diagnostics	There is a fault, see *14. Status and error messages, page 29*.
OM	Status	The safety outputs of the device are switched.
OW	Limit range	The actuator is in the limit range of the switch's operating distances.
OD	Door position	A valid actuator is detected in the actuating range, and the guard is closed.

EN

11.2. Acyclical data (device data and events)

After one of the commands listed below is sent, the requested data are provided via the IO-Link Gateway. The reply message always consists of 8 bytes.

Example 1: reply message in response to the command *Send device ID number/serial number*: 06 **E0 68 02 17 01 00** 00

In this example, the device's ID number is **157920** and its serial number is **279**.

Byte number	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Reply in hex	06	**E0**	**68**	**02**	**17**	**01**	**00**	00
Description	User data length in bytes	Device ID number			Serial number			Padding data
Reply in dec	6 bytes	**157920**			**279**			-

Example 2: reply message in response to the command Send current actuator code 05 xx xx **00 5F** xx 00 00

In this example, the device's actuator code is **1**.

Byte number	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Reply in hex	05			**00**	**5F**		00	00
Description	User data length in bytes			Current actuator code (10 bits)			Padding data	
Reply in bits				0 0 0 0 0 0 0 0 0 1	0 1 1 1 1 1			
Reply in dec	5 bytes			**1**			-	-

Command		Reply			
HEX	**Meaning**	**Number of bytes**	**Bit sequences**		**Format**
2	Send device ID number/serial number	6	Bytes 1 - 3	Device ID number	Little endian
			Bytes 4 - 6	Serial number	
3	Send version number of the device	5	Byte 1	(V)	Big endian
			Bytes 2 - 4	Version number	
5	Send number of devices in series connection	1			
12	Send current error code	1			
13	Send most recently saved error code	1			
14	Send size of log file	1			
15	Send entry from log file with index	1			
16	Send current actuator code [1]	5	Bytes 3 - 4: see example 2 above		
17	Send taught-in actuator code [1]	5			
18	Send disabled actuator code [1]	5			
19	Send applied voltage in mV	2			Little endian
1 A	Send current temperature in °C [2]	1			Big endian
1B	Send number of switching cycles	3			Little endian
1D	Reset for acknowledging error messages[3]	-			Big endian
1E	Factory reset	1	0x1E – factory reset performed		

[1] On devices with multicode evaluation, the reply message is 05 **FF FF FF FF FF** 00 00.

[2] The read value is the internal operating temperature in the device. This value can exceed the ambient temperature. The device enters the fault state when the internal operating temperature exceeds 80 °C.

[3] Each BR device must be addressed individually in a chain.

For more information on these and other acyclical data, refer to the operating instructions for your BR/IO-Link Gateway.

12. Setup

12.1. Teaching-in actuator (only for unicode evaluation)

The actuator must be allocated to the safety switch using a teach-in function before the system forms a functional unit.

During a teach-in operation, the safety outputs and the door position signal OD are switched off, i.e. the system is in the safe state.

Tip	
	‣ It is recommended to perform the teach-in operation prior to mounting. Mark switches and actuators that belong together in order to prevent confusion. ‣ For devices to be connected in series, we recommend performing the teach-in operation separately for each device prior to series connection.

Important	
	‣ The teach-in operation may be performed only if the device functions flawlessly. The red DIA LED must not be illuminated. ‣ The safety switch disables the code of the preceding device if teach-in is carried out for a new actuator. Teach-in is not possible again immediately for this device if a new teach-in operation is carried out. The disabled code is enabled again in the safety switch only after a third code has been taught-in. ‣ The safety switch can be operated only with the last actuator taught-in. ‣ The number of teach-in operations is unlimited. ‣ If the switch detects the actuator that was most recently taught-in when in teach-in standby, this state is ended immediately and the switch changes to normal operation. ‣ If the actuator to be taught-in is in the actuating range for less than 30 s, it will not be activated and the most recently taught-in actuator will remain saved.

1. Apply operating voltage to the safety switch.
   ➡ The green STATE LED flashes quickly (5 Hz). A self-test is performed (duration approx. 5 s).
   ➡ The green STATE LED flashes 3x repeatedly. Teach-in standby is established.

   Teach-in standby duration:
   - Devices in the condition as supplied: unlimited teach-in standby after switching on.
   - Switch already taught-in: teach-in standby is available for approx. 3 min. after switching on.
2. Move actuator toward the read head during teach-in standby. Observe operating distances S_{ao}.
   ➡ The automatic teach-in operation starts (duration approx. 30 s).
   ➡ The green STATE LED flashes slowly during the teach-in operation.
   ➡ Alternate flashing of the green STATE LED and the red DIA LED acknowledges the successful teach-in operation.
   ➡ Teach-in errors are indicated by the illumination of the red DIA LED and a flashing code on the green STATE LED, see *14. Status and error messages, page 29*
3. Switch off operating voltage (min. 3 s).
   ➡ The code of the actuator that was just taught-in is activated in the safety switch.
4. Switch on operating voltage.
   ➡ The device operates in normal operation after the self-test.

12.2. Functional check

DANGER	
⚠	Danger of fatal injury as a result of faults in installation and the functional check. ‣ Before carrying out the functional check, make sure that there are no persons in the danger area. ‣ Observe the valid accident prevention regulations.

12.2.1. Electrical function test

After installation and after any fault, the safety function must be fully checked. Proceed as follows:

1. Switch on operating voltage.
   - ➡ The machine must not start automatically.
   - ➡ The safety switch carries out a self-test. The green STATE LED flashes for 5 s at 5 Hz.
   - ➡ The green STATE LED then flashes at regular intervals.
2. Close all guards.
   - ➡ The machine must not start automatically.
   - ➡ The green STATE LED illuminates continuously.
3. Enable operation in the control system.
4. Open the guard.
   - ➡ The machine must switch off and it must not be possible to start it as long as the guard is open.
   - ➡ The green STATE LED flashes at regular intervals.

Repeat steps 2 - 4 for each guard.

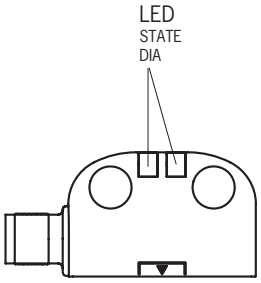
13. Factory reset

A factory reset deletes the configuration and restores the device's factory settings.

To perform a factory reset, connect the two outputs FO1A and FO1B to 0 V before connecting the operating voltage or send the command 0x1E via IO-Link communication (see 11.2. *Acyclical data (device data and events)*, page 26).

14. Status and error messages

14.1. LED displays



LED	Color
STATE	green
DIA	red

Important	
	If you do not find the displayed device status in the following tables, this indicates an internal device fault. Contact EUCHNER.

Key to symbols			LED not illuminated
			LED illuminated
	 1 x inverse		LED illuminated, briefly goes off 1x
	 quickly		LED flashes quickly (5 Hz)
	 slowly		LED flashes slowly (1 Hz)
	 3 x		LED repeatedly flashes three times
			LEDs flash alternately

EN

14.2. Status messages

Operating mode	LED indicator		Safety outputs	Signal	Status
	STATE green	DIA red	FO1A/FO1B	Door position OD	
Self-test	quickly (5 s)	○	off	off	Self-test after operating voltage is switched on
	quickly	1 x			No communication with the BR/IO-Link Gateway
Normal operation		○	on	on	Door is closed. The safety outputs of the preceding device in a series connection are switched on.
	1 x inverse		off	on	Door is closed. The safety outputs of the preceding device in a series connection are switched off.
	1 x		off	off	Door is open.
	6 x inverse		on	on	Door is closed. The actuator is in the limit range. The door must be readjusted.
Teach-in operation	3 x	○	off	off	Device is in teach-in standby, see 12.1. *Teaching-in actuator (only for unicode evaluation)*, page 27.
	slowly			off	Teach-in operation. Door is closed.
	⇔			off	Positive acknowledgment after completion of teach-in operation.
Error		or 1x inverse	off	depending on the error	Error message, see *14.3. Error messages, page 31*

14.3. Error messages

Error code via IO-Link	LED indicator		Error	Troubleshooting	Acknowledging errors	
	STATE green	DIA red			Opening/closing door	Reset
Teach-in errors						
0x1F	1 x		Actuator removed from the actuating range prior to the end of the teach-in operation.	Check whether the actuator is outside the actuating range or in the limit range.		●
0x25			Disabled actuator detected during the teach-in operation: The actuator was taught-in during the penultimate teach-in operation and is disabled for the current teach-in operation.	Repeat teach-in operation with new actuator, see 12.1. *Teaching-in actuator (only for unicode evaluation)*, page 27.		●
0x42			Invalid or faulty actuator detected during teach-in operation.	Repeat teach-in operation with valid actuator.		●
Input errors						
0x2E	2 x	1 x inverse	Different signal states at the safety inputs FI1A and FI1B during operation.	‣ Check wiring. ‣ Check preceding device in the switch chain.	●	
0x30			Different signal states at the safety inputs FI1A and FI1B during the self-test.			●
0x31 0x32			‣ Test pulses not detected at safety input FI1A or FI1B during operation. ‣ With a single device or the first switch in the switch chain: different signal states detected at safety inputs FI1A and FI1B during operation.		●	
Transponder/read errors						
-	3 x		Invalid actuator detected.	Replace actuator.	●	
Output errors						
0x4C 0x4D	4 x		A HIGH signal or short circuit is detected at safety output FO1A or FO1B during the self-test.	Check wiring.		●
0x54		1x inverse	The voltage level at safety outputs FO1A and FO1B during operation does not meet the requirements. External voltage or a short-circuit may exist.		●	
Environment errors						
0x60	5 x	1x inverse	Supply voltage too high.	Decrease supply voltage.	●	
0x61			Supply voltage too low.	‣ Increase supply voltage. ‣ Check system configuration: cable length, number of devices in the switch chain.	●	
0x62			Device temperature too high.	Observe the specified temperature range, see *15.1. Technical data for safety switch CES-I-BR-.-C07-..., page 33*.		●
0x63			Device temperature too low.			●
Internal fault						
0x01 or -	○		In case of series connection with IO-Link communication: Safety input FI1A is routed to safety output FO1B of the previous device.	Check wiring.		●
			‣ Supply voltage extremely high or extremely low. ‣ Device temperature extremely high or extremely low. ‣ Internal device fault	‣ Check supply voltage. ‣ Check device temperature. ‣ Restart the device. On repeated occurrence, contact EUCHNER.		●

EN

14.4. Acknowledging error messages

If the DIA LED flashes inversely once, the error message can be acknowledged by opening and closing the guard. If the error is still displayed afterward, a reset must be performed.

If the DIA LED is permanently illuminated, the error message can be acknowledged only by a reset.

The reset can be performed as follows:

Reset	Centrally for all devices in a chain	Each device must be addressed individually.	Further information
By briefly disconnecting the power supply	●	-	-
Via the cyclical data of IO-Link communication	●	-	See operating instructions for the IO-Link Gateway
Via the acyclical data of IO-Link communication	-	●	See 11. *Using communication data*, page 25

Reset for acknowledging error messages does not delete the configuration.

Important	
ⓘ	Contact EUCHNER if the fault display is not reset after briefly disconnecting the power supply.

15. Technical data

NOTICE	
	If a data sheet is available for the product, the information on the data sheet applies.

15.1. Technical data for safety switch CES-I-BR-.-C07-...

General	
Housing material	Plastic PBT-PC-GF30
Ambient temperature at U_B = 24 V DC	-25 … +55 °C (+65 °C = max. 10 mA per safety output)
Storage temperature	-40 … +70 °C
Operating altitude	Max. 4,000 m
Degree of protection	IP65/IP67/IP69/IP69K
Safety class	III
Degree of contamination	3
Installation position	Any
Mounting method	Surface mounting on metal
Connection	Plug connector M12, 8-pin
Operating voltage U_B - Product version V1.0.X - Product version V1.1.X	 24 V DC -15 … +15% regulated, residual ripple < 5%, PELV 24 V DC -15 … +20% regulated, residual ripple < 5%, PELV
Current consumption	40 mA
External fuse (operating voltage U_B)	0.25 … 8 A
Rated insulation voltage U_i	75 V
Rated impulse withstand voltage U_{imp}	1.5 kV
Rated conditional short-circuit current	100 A
Shock and vibration resistance	Acc. to EN 60947-5-3
Repeat accuracy R	Max. 10%
EMC protection requirements	Acc. to EN 60947-5-3
Ready delay	5 s
Risk time according to EN 60947-5-3	Max. 125 ms
Risk time acc. to EN 60947-5-3, extension for each additional device	Max. 10 ms
Reaction time [1)]	27.4 ms
Reaction time, extension for each additional device	6.7 ms
Turn-on time	Max. 100 ms
Discrepancy time	Max. 10 ms
Test pulse duration	0.3 ms
Test pulse interval	Approx. 100 ms
Safety outputs FO1A/FO1B	Semiconductor outputs, p-switching, short circuit-proof
Output voltage U_{FO1A}/U_{FO1B} [2)] HIGH U_{FO1A}/U_{FO1B} LOW U_{FO1A}/U_{FO1B}	 UB - 1.5 … UB V DC 0 … 1 V DC
Switching current per safety output	1 … 150 mA
Utilization category	DC-13 24V 150 mA Caution: outputs must be protected with a free-wheeling diode in case of inductive loads.
Switching frequency	Max. 1 Hz
Off-state current L_r	Max. 0.25 mA

EN

Door position monitoring output OD/C [2]	p-switching, short circuit-proof
Output voltage	
HIGH	UB -1.5 ... UB V DC
LOW	0 ... 1 V DC
Switching current	1 ... 50 mA
Characteristics acc. to EN ISO 13849-1 and EN IEC 62061	
Mission time	20 years
Category	4
Performance Level	PL e
PFH	6×10^{-10} / h
Maximum SIL	3

[1] The reaction time is the time until the moment when at least one of the safety outputs FO1A or FO1B switches off when the actuator is removed from the actuating range, given compliance with the manufacturer's specifications.

[2] Values at a switching current of 50 mA without taking into account the cable lengths.

15.1.1. Radio frequency approvals

FCC ID: 2AJ58-01

IC: 22052-01

FCC/IC-Requirements

This device complies with part 15 of the FCC Rules and with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1) This device may not cause harmful interference, and

2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Supplier‘s Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Unique Identifier:

CES-I-BR series

Responsible Party - U.S. Contact Information

EUCHNER USA Inc.
1665 N. Penny Lane
Schaumburg, Illinois 60173

+1 315 701-0315
info(at)euchner-usa.com
http://www.euchner-usa.com

EN

15.1.2. Typical system times

Refer to the technical data for the exact values.

Ready delay: After switch-on, the device carries out a self test. The system is ready for operation only after this time.

Turn-on time of safety outputs: The max. reaction time t_{on} is the time from the moment when the actuator is in the actuating range to the moment when the safety outputs switch on.

Simultaneity monitoring of safety inputs FI1A/FI1B: If the safety inputs have different switching states over a certain time, the safety outputs FO1A and FO1B will be switched off. The device enters the fault state.

Risk time according to EN 60947-5-3: The risk time is the maximum time until at least one of the safety outputs FO1A or FO1B switches off safely when the actuator is removed from the actuating range. This also applies if an internal or external fault occurs at this moment.

If several devices are operated in a series connection, the risk time of the overall device chain will increase with each device added. Use the following calculation formula:

$$t_r = t_{r,\,e} + (n \times t_l)$$

t_r = Total risk time

$t_{r,\,e}$ = Risk time for single device (see technical data)

t_l = Risk time extension per device

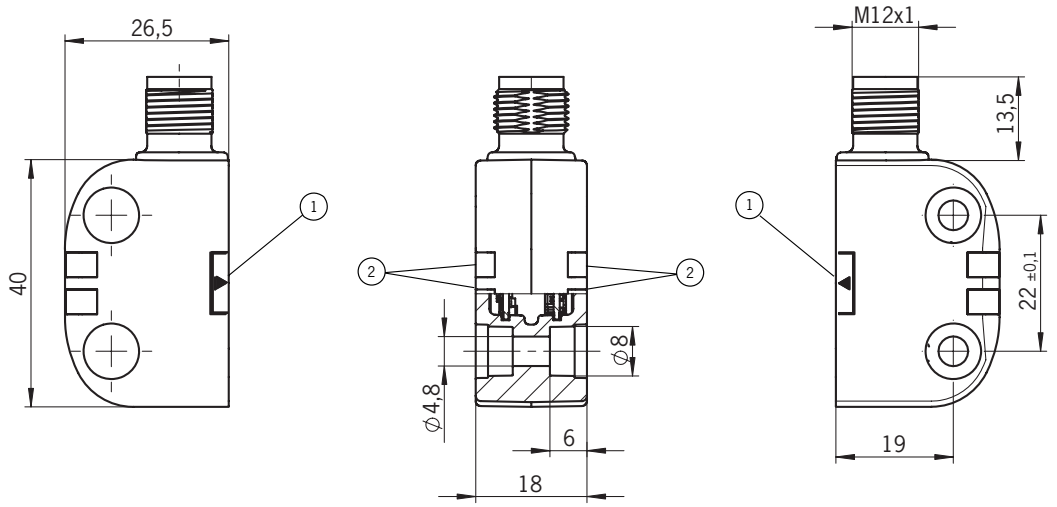
n = Number of additional devices (total number -1)

Discrepancy time: The safety outputs FO1A and FO1B switch with a slight time offset. They have the same signal state no later than after the discrepancy time.

Test pulses at the safety outputs: The device generates its own test pulses on the safety outputs FO1A and FO1B. A downstream control system must tolerate these test pulses.

This can usually be set up in the control systems by parameter assignment. If parameter assignment is not possible for your control system or if shorter test pulses are required, contact the EUCHNER support team.

15.1.3. Dimension drawing for safety switch CES-C07



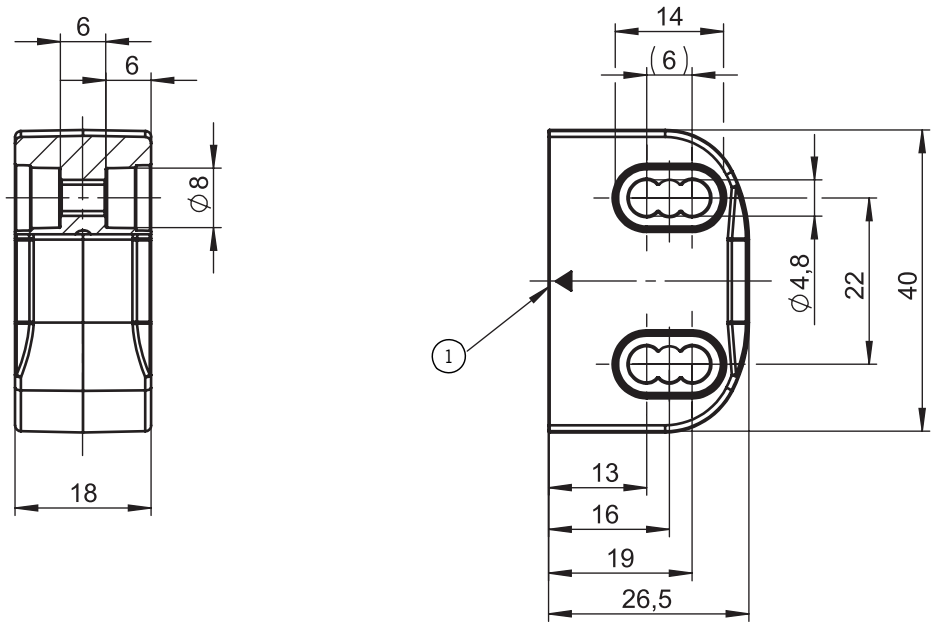
1	Active face
2	LEDs

Tip	
	Covers are included.

15.2. Technical data for actuator CES-A-BTN-.-C07-...

General	
Housing material	Plastic PBT-PC-GF30
Ambient temperature at U_B = 24 V DC	-40 … +65 °C
Degree of protection	IP65/IP67/IP69/IP69K
Installation position	Active face opposite switch
Power supply	Inductive via switch

15.2.1. Dimension drawing



1	Active face

Tip	
	2 safety screws M4x20 included.

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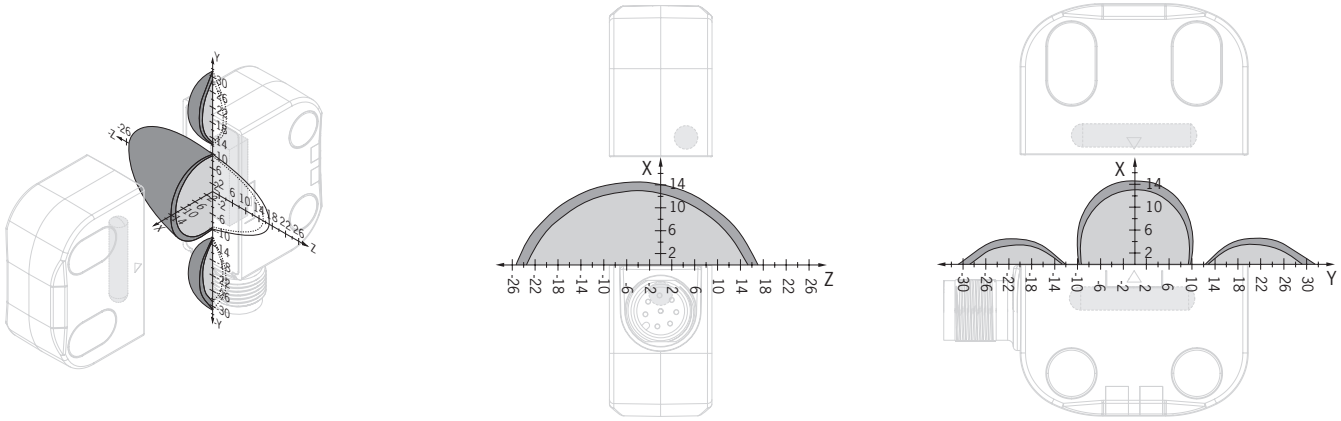
15.2.2. Actuating ranges and installation positions for actuator CES-A-BTN-C07

Typical operating distance in installation position A

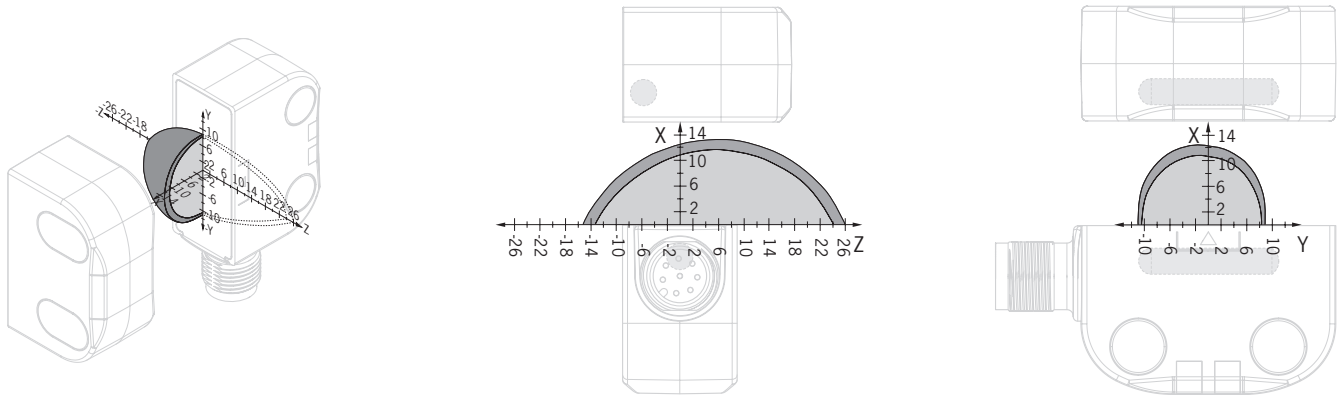


Operating distances for approach from x direction without center offset (z, y = 0)*

Parameter	Value			Unit
	min.	typ.	max.	
Operating distances	-	13	-	mm
Assured operating distance s_{ao}	10	-	-	
Switching hysteresis	1	2	-	
Assured release distance s_{ar}	-	-	20	

* The data apply to mounting the actuator on a non-metallic substrate. Depending on the substrate material, the actuating range may change.

Typical operating distance in installation position B

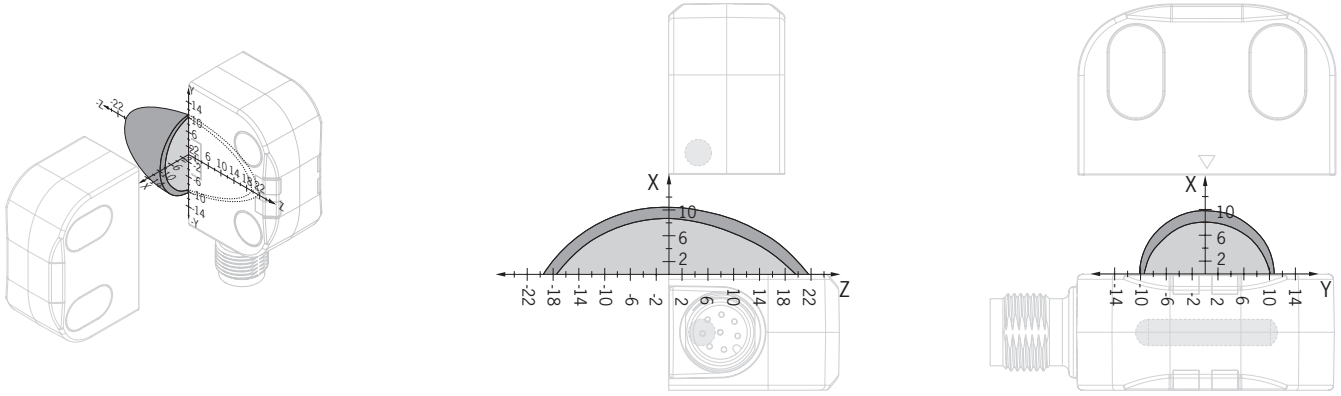


Operating distances for approach from x direction without center offset (z, y = 0)*

Parameter	Value			Unit
	min.	typ.	max.	
Operating distances	-	13	-	mm
Assured operating distance s_{ao}	9	-	-	
Switching hysteresis	1	2	-	
Assured release distance s_{ar}	-	-	20	

* The data apply to mounting the actuator on a non-metallic substrate. Depending on the substrate material, the actuating range may change.

Typical operating distance in installation position C

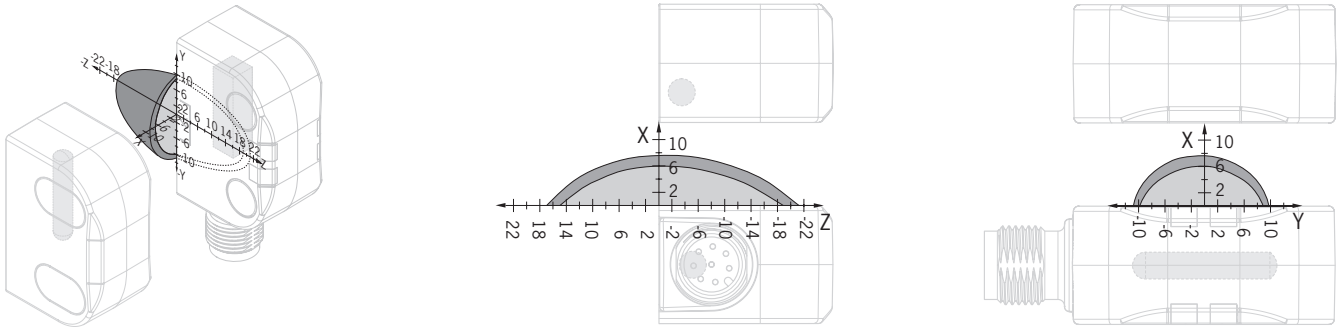


Operating distances for approach from x direction without center offset (z, y = 0)*

Parameter	Value			Unit
	min.	typ.	max.	
Operating distances	-	7	-	mm
Assured operating distance s_{ao}	3	-	-	
Switching hysteresis	1	2	-	
Assured release distance s_{ar}	-	-	17	

* The data apply to mounting the actuator on a non-metallic substrate. Depending on the substrate material, the actuating range may change.

Typical operating distance in installation position D



Operating distances for approach from x direction without center offset (z, y = 0)*

Parameter	Value			Unit
	min.	typ.	max.	
Operating distances	-	7	-	mm
Assured operating distance s_{ao}	2	-	-	
Switching hysteresis	1	2	-	
Assured release distance s_{ar}	-	-	17	

* The data apply to mounting the actuator on a non-metallic substrate. Depending on the substrate material, the actuating range may change.

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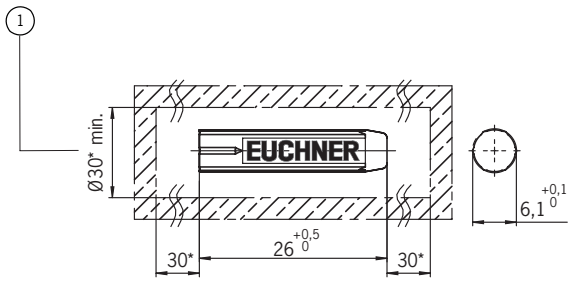
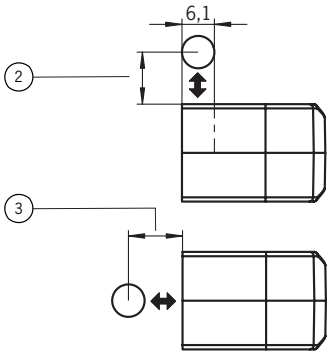
15.3. Technical data for actuator CES-A-BDN-06-158210

General	
Housing material	Macromelt PA-based plastic
Ambient temperature at U_B = 24 V DC	-40 … +65 °C
Degree of protection	IP65/IP67/IP69K [1]
Installation position	Active face opposite switch
Power supply	Inductive via switch

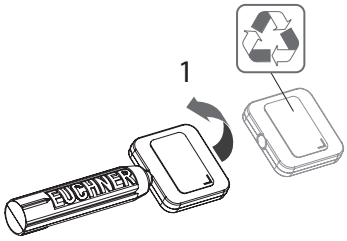
[1] With flush installation

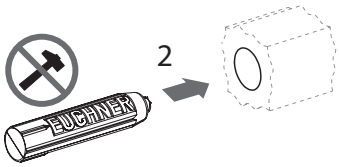
15.3.1. Dimension drawing

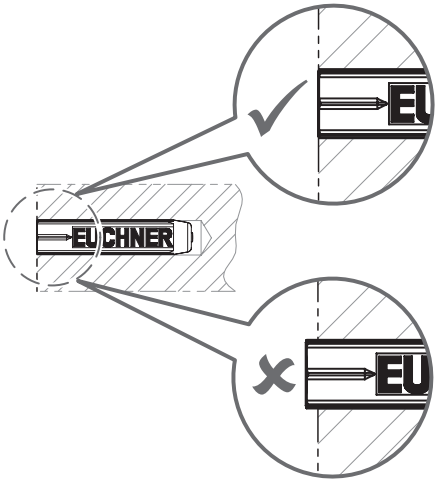




1	Metal-free zone
2	Operating distances Installation position C
3	Operating distances Installation position A



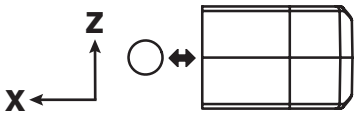




Notice	
ⓘ	‣ Do not mount at temperatures below 0 °C. ‣ The actuator can be damaged during mounting.

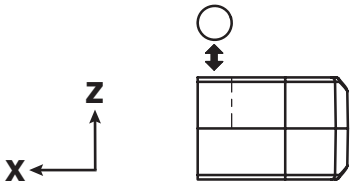
15.3.2. Operating distances for actuator CES-A-BDN-06-158210

Operating distances for approach from x direction without center offset*

Installation position A	Parameter	Value			Unit
		min.	typ.	max.	
	Operating distances	-	16	-	mm
	Assured operating distance s_{ao}	13	-	-	
	Switching hysteresis	1	2	-	
	Assured release distance s_{ar}	-	-	24	

* The data apply to mounting the actuator in non-metallic surroundings.

Operating distances for approach from z direction without center offset*

Installation position C	Parameter	Value			Unit
		min.	typ.	max.	
	Operating distances	-	11	-	mm
	Assured operating distance s_{ao}	6	-	-	
	Switching hysteresis	1	2	-	
	Assured release distance s_{ar}	-	-	21	

* The data apply to mounting the actuator in non-metallic surroundings.

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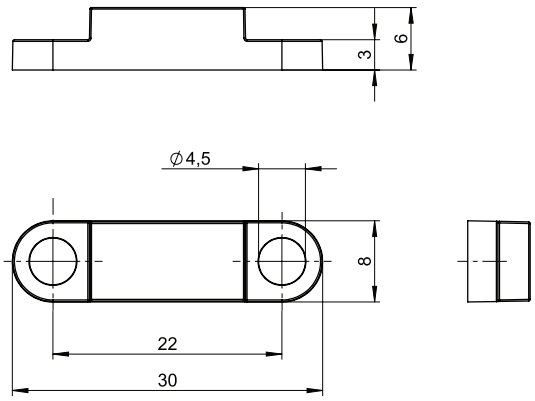
15.4. Technical data for actuator A-C11-01-175934

General	
Housing material	Plastic PA6-GF30
Ambient temperature at U_B = 24 V DC	-25 … +70 °C
Degree of protection	IP65/IP67/IP69/IP69K
Installation position	Active face opposite switch
Power supply	Inductive via switch

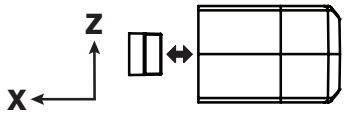
15.4.1. Dimension drawing



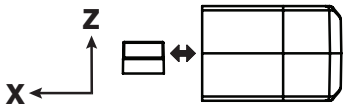
Tip	
	2 safety screws M4x8 included.

15.4.2. Operating distances for actuator A-C11-01-175934

Operating distances for approach from x direction without center offset

Installation position A	Parameter	Value			Unit
		min.	typ.	max.	
	Operating distances	-	6.5	-	mm
	Assured operating distance s_{ao}	3	-	-	
	Switching hysteresis	1	2	-	
	Assured release distance s_{ar}	-	-	13	

Operating distances for approach from z direction without center offset

Installation position B	Parameter	Value			Unit
		min.	typ.	max.	
	Operating distances	-	5	-	mm
	Assured operating distance s_{ao} *	2	-	-	
	Switching hysteresis	1	2	-	
	Assured release distance s_{ar}	-	-	13	

* Only at an ambient temperature of 0 … +70 °C

16. Ordering information and accessories

Tip	
	Suitable accessories, e.g. cables or assembly material, can be found at www.euchner.com. To order, enter the order number of your item in the search box and open the item view. Accessories that can be combined with the item are listed in *Accessories*.

17. Inspection and service

WARNING	
	Loss of the safety function because of damage to the device. › In case of damage, the entire device must be replaced. › Only accessories or spare parts that can be ordered from EUCHNER may be replaced.

Regular inspection of the following is necessary to ensure trouble-free long-term operation:

- Check the switching function, see 12.2.1. *Electrical function test*, page 28
- Check the secure mounting of the components and the connections
- Check for contamination

No servicing is required. Repairs are only allowed to be made by EUCHNER.

18. Disposal

Observe the country-specific regulations when disposing of the device.

For further information, please refer to the *Company/Sustainability* area at www.euchner.com.

19. Service

If servicing is required, please contact:

EUCHNER GmbH + Co. KG
Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Germany

Service telephone:
+49 711 7597-500

E-mail:
support@euchner.de

Internet:
www.euchner.com

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20. Declaration of conformity

The product complies with the following requirements:

- Machinery Directive 2006/42/EC (until January 19, 2027)
- Machinery Regulation (EU) 2023/1230 (from January 20, 2027)

The EU declaration of conformity can be found at www.euchner.com. Enter the order number of your device in the search box. The document is available under *Downloads*.

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