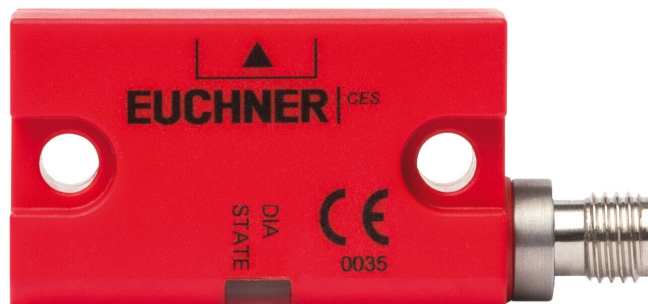


## CES-I-AR-M-C04-SG-119474 (ORDER NO. 119474)

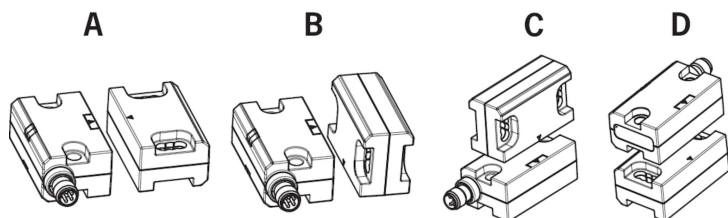
### Non-contact safety switches CES-I-AR-.-C04-..., M8

- ▶ Safety switch with integrated evaluation electronics
- ▶ Up to 20 switches in series
- ▶ Short circuit monitoring
- ▶ 2 safety outputs (semiconductor outputs)
- ▶ Category 4/PL e according to EN ISO 13849-1
- ▶ Three active faces
- ▶ Plug connector M8, 8-pin
- ▶ Multicode



### Description

#### Installation position



Figure

Permissible installation position

#### Multicode evaluation

Every suitable actuator is detected by the switch.

#### Category according to EN 13849-1

Due to two redundantly designed semiconductor outputs (safety outputs) with internal monitoring suitable for:

- ▶ Category 4/PL e according to EN 13849-1

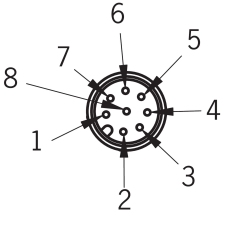
**Important:** To achieve the stated category according to EN ISO 13849-1, both safety outputs (F01A and F01B) must be evaluated.

#### LED indicator

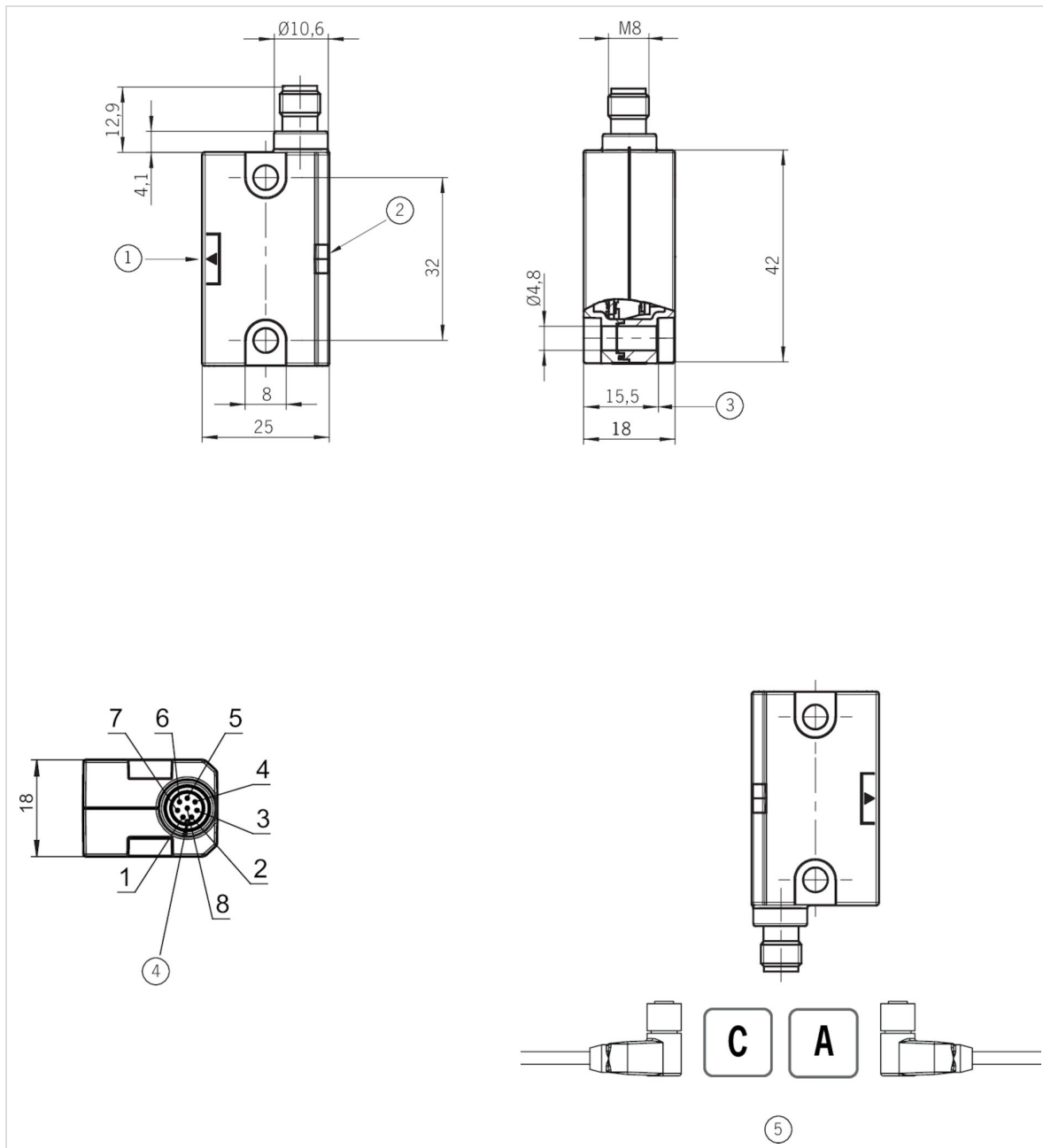
STATE Status LED

DIA Diagnostic LED

## Connector assignment

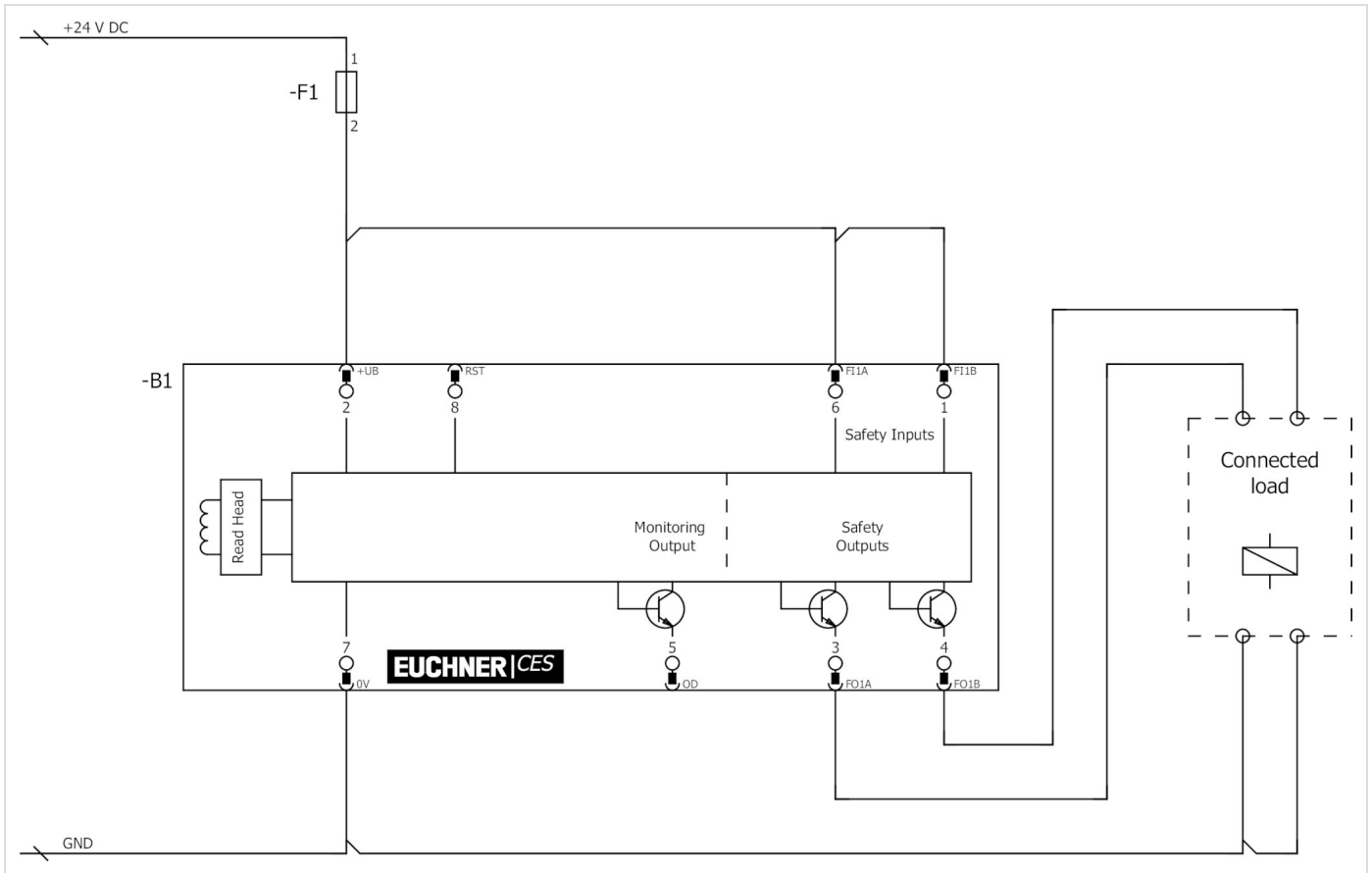
Plug connector (view of connection side)	Pin	Designation	Function	Conductor coloring of connecting cable
	1	FI1B	Enable input for channel 2	WH
	2	UB	Power supply, DC 24 V	BN
	3	FO1A	Safety output, channel 1	GN
	4	FO1B	Safety output, channel 2	YE
	5	OD	Monitoring output	GY
	6	FI1A	Enable input for channel 1	PK
	7	0V	Ground, DC 0 V	BU
	8	RST	Reset input	RD

## Dimension drawing



- 1 Active face
- 2 LED status indication
- 3 With rubber support
- 4 Coding lug
- 5 With the installation orientation shown: cable outlet on left or right

## Wiring diagram



## Technical data

### Approvals



## Mechanical values and environment

Shock and vibration resistance	In acc. with EN 60947-5-3
Material	
	Rubber support NBR 80 ±5 Shore
Housing material	
	Housing Plastic, PBT
Weight	
	Net 0,04 kg
Ambient temperature	-25 ... 65 °C
Degree of protection	IP67/IP69K
Mounting method	Surface mounting on metal
Mounting distance	
	Between 2 switches or 2 actuators min.80 mm
Installation orientation	Any
Tightening torque	
	Fixing screws max.0,8 Nm
Ready delay	10 s
Switching frequency	max.1 Hz
Connection	M8 plug connector, 8-pin

## Electrical connection ratings

Extension of risk time according to EN 60947-5-3 per device	max.5 ms
<b>Operating voltage DC</b>	
	$U_B$ 24 V DC 15% ... 15% Regulated, residual ripple < 5%, PELV
Current consumption	max.35 mA (Without taking into account the load currents on the monitoring output and the safety outputs)
<b>Fusing</b>	
External (operating voltage)	0,25 ... 8 A
Rated insulation voltage $U_i$	300 V
Rated impulse withstand voltage $U_{imp}$	1,5 kV
EMC protection requirements	In acc. with EN IEC 60947-5-3
Degree of contamination (external, according to EN 60947-1)	3
<b>Turn-on time</b>	
Safety outputs	max.400 ms
Safety class	III
<b>Risk time according to EN 60947-5-3</b>	
Single device	max.260 ms
<b>Monitoring output OD</b>	
Type of output	Semiconductor output, p-switching, short circuit-proof
Switching current	max.50 mA
Output voltage	0,8 x $U_B$ ... $U_B$ V DC
<b>Safety outputs FO1A / FO1B</b>	
Test pulses	max.1,0 ms (Applies for a load with $C \leq 30\text{nF}$ and $R \leq 20\text{k}\Omega$ )
Test-pulse interval	min.140 ms
Type of output	Semiconductor outputs, p-switching, short circuit-proof
Switching current	per safety output 1 ... 200 mA
<b>Output voltage</b>	
HIGH $U(\text{FO1A}) / U(\text{FO1B})$	$U_B - 1,5\text{V} \dots U_B$ V DC (Values at a switching current of 50 mA without taking into account the cable lengths.)
LOW $U(\text{FO1A}) / U(\text{FO1B})$	0 ... 1 V DC
<b>Utilization category acc. to EN 60947-5-2</b>	
DC-13	24V 200mA (Caution: outputs must be protected with a free-wheeling diode in case of inductive loads.)
Rated conditional short-circuit current	100 A
Off-state current $I_r$	max.0,25 mA
Discrepancy time	max.10 ms
<b>Work area</b>	
<b>Repeat accuracy R</b>	
According to EN 60947-5-2	$\leq 10$

## Other

Additional feature	Rubber support included
For the approval acc. to UL the following applies	Operation only with UL class 2 power supply, or equivalent measures

## Reliability values according to EN ISO 13849-1

	Monitoring of the safety guard position
Category	4
Performance Level	PL e
PFH <sub>D</sub>	4.1 x 10 <sup>-9</sup>
Mission time	20

## In combination with Actuator CES-A-BBN-161502

### Actuating range

Operating distance	
Installation position A + B	30 mm
Installation position C + D	25 mm
Assured release distance S <sub>ar</sub>	
in y direction / installation position C + D	max.72 mm
in y direction / installation position A + B	max.77 mm
in x/z direction / installation position A + B	max.69 mm
in x/z direction / installation position C + D	max.63 mm
Assured operating distance S <sub>ao</sub>	
in z direction / installation position A + B	min.15 mm
in x direction/installation position C + D	min.10 mm
Switching hysteresis	
in z direction / installation position A + B	min.1 mm
in x direction/installation position C + D	min.1 mm

## In combination with Actuator CES-A-BDN-06-161742

### Actuating range

Operating distance	
Installation position C	23 mm
Installation position A	26 mm
Assured release distance S <sub>ar</sub>	
Installation position A	max.77 mm
Installation position C	max.72 mm
Assured operating distance S <sub>ao</sub>	
Installation position A	min.16 mm
Installation position C	min.10 mm
Switching hysteresis	min.1 mm

## In combination with Actuator CES-A-BDN-06-104730

### Actuating range

## Operating distance

Installation position C or D (broad side)	15 mm
Installation position A or B (front side)	19 mm
Assured release distance $S_{ar}$	
In x/z direction	max.40 mm
In y direction	max.60 mm
Assured operating distance $S_{ao}$	
Installation position A or B (front side)	min.14 mm
Installation position C or D (broad side)	min.10 mm
Switching hysteresis	min.1 mm

## In combination with Actuator CES-A-BBN-C04-115271, CES-A-BBN-C04-EX-137527

### Actuating range

#### Operating distance

Installation position C or D (broad side)	11 mm
Installation position A or B (front side)	15 mm
Assured release distance $S_{ar}$	
In y direction	max.60 mm
In x/z direction	max.40 mm
Assured operating distance $S_{ao}$	
Installation position A or B (front side)	10
Installation position C or D (broad side)	6
Switching hysteresis	min.1 mm

### Accessories

#### Actuator

## Actuator CES-A-BBN-C04

---



**115271**  
CES-A-BBN-C04-115271

- ▶ Cube-shaped design 42 x 25 mm
- ▶ Two safety screws M4x20 and rubber support included



**161502**  
CES-A-BBN-161502

- ▶ Cube-shaped design 42 x 25 mm, height 12 mm
- ▶ Transponder with large actuating range
- ▶ Mounting compatible with actuators: CES-A-BBA-071840, CES-BBN-106600, CES-A-BBN-C04-115271
- ▶ Two safety screws M4x14 included

## Actuator CES-A-BDN-06

---



**104730**  
CES-A-BDN-06-104730

- ▶ Cylindrical design Ø 6x26 mm
- ▶ Transponder coded, high coding level



**161742**  
CES-A-BDN-06-161742

- ▶ Cylindrical design, Ø 6x38 mm
- ▶ Transponder coded, high coding level
- ▶ Large actuating range

## Bolt

### Bolt BTC-CES04-S-TH-20-X-121646 for safety switch CES04

---



**121646**  
BTC-CES04-S-TH-20-X-121646

- ▶ Aluminum bolt
- ▶ For doors hinged on the left or right
- ▶ Spring catch in closed position
- ▶ Can be locked in open position with padlocks

### Bolt BTC-CES04-S-TH-21-F-123583 for safety switch CES04

---



**123583**  
BTC-CES04-S-TH-21-F-123583

- ▶ Aluminum bolt
- ▶ For doors hinged on the left or right
- ▶ Escape release
- ▶ Detent knob in open position
- ▶ Spring catch in closed position
- ▶ Can be locked in open position with padlocks

## Connection material

## Connection cable with plug connector M8, 8-pin, 5m

---



**106671**  
C-M08F08-08X014PU05,0-ES-106671

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PUR cable
  - ▶ Cable length 5 m
  - ▶ With flying lead
- 



**110933**  
C-M08F08-08X014PV05,0-ES-110933

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PVC cable
  - ▶ Cable length 5 m
  - ▶ With flying lead
- 

## Connection cable with plug connector M8, 8-pin, 10m

---



**110934**  
C-M08F08-08X014PV10,0-ES-110934

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PVC cable
  - ▶ Cable length 10 m
  - ▶ With flying lead
- 



**106672**  
C-M08F08-08X014PU10,0-ES-106672

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PUR cable
  - ▶ Cable length 10 m
  - ▶ With flying lead
- 

## Connection cable with plug connector M8, 8-pin, 15m

---



**110935**  
C-M08F08-08X014PV15,0-ES-110935

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PVC cable
  - ▶ Cable length 15 m
  - ▶ With flying lead
- 

## Connection cable with plug connector M8, 8-pin, 20m

---



**111603**  
C-M08F08-08X014PV20,0-ES-111603

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PVC cable
  - ▶ Cable length 20 m
  - ▶ With flying lead
- 



**106673**  
C-M08F08-08X014PU20,0-ES-106673

- ▶ M8 female plug, 8-pin
  - ▶ Straight plug connector
  - ▶ PUR cable
  - ▶ Cable length 20 m
  - ▶ With flying lead
- 

## Function expansion

## Housing protection ATEX

---



**137528**  
AM-C-C04-EX-137528

- ▶ ATEX protective cover
- ▶ The housing guard is suitable for all CES-C04-AP/AR switches.
- ▶ The housing guard makes it possible to use safety switches CES-C04 in potentially explosive atmospheres.
- ▶ Protection of the switch and plug connector against possible impacts
- ▶ The safety switch is not included and must be ordered separately.
- ▶ When the PBT/PC plastic housing guard is used, the CES-C04 switches (with connecting cable or plug connector) comply with the relevant explosion-protection standards according to ATEX (zone 2/22).

## Variable magnetic guard locking device CEM-C60 without permanent magnet, plug connector on left

---



**163252**  
CEM-M2-C60-KZ-SE-163252

- ▶ Magnetic guard locking for process protection
- ▶ Locking force 650 N (without permanent magnet)
- ▶ With remanence
- ▶ Function expansion for safety switch CES-C04 / CES-C07
- ▶ Flexibility through a large selection of safety switches
- ▶ Maximum safety level PL e / category 4 for detection of the door position
- ▶ Transponder coding prevents high level of protection against tampering
- ▶ Simple connection of the solenoid using M12 plug connector, 5-pin
- ▶ Yellow LED to indicate voltage at the solenoid
- ▶ Nickel-plated solenoid surface with high corrosion resistance

## Variable magnetic guard locking device CEM-C60 with permanent magnet, plug connector on left

---



**161320**  
CEM-M2-C60-PZ-SE-161320

- ▶ Magnetic guard locking for process protection
- ▶ Guard locking solenoid with locking force of 650 N
- ▶ Function expansion for safety switch CES-C04 / CES-C07
- ▶ Flexibility through a large selection of safety switches
- ▶ Maximum safety level PL e / category 4 for detection of the door position
- ▶ Transponder coding prevents high level of protection against tampering
- ▶ Simple connection of the solenoid using M12 plug connector, 5-pin
- ▶ Yellow LED to indicate voltage at the solenoid
- ▶ Nickel-plated solenoid surface with high corrosion resistance
- ▶ Integrated permanent magnet, 30 N adhesive force

## Mounting accessories

## Mounting plate AM-SET-PP

---



**119690**  
AM-SET-PP-119690

- ▶ Set consists of two mounting plates

## Mounting set AM-SET-PPB

---



**119694**  
AM-SET-PPB-119694

- ▶ Mounting plate
- ▶ angle mounting plate
- ▶ Spacer

## Safety screws M4 x 20

---

**116978**  
SICHERHEITSSCHRAUBE M4X20-  
A2/V20

- ▶ Safety screws M4 x 20
- ▶ Packaging unit 20 pieces

## Contacts

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

☎ +49 711 7597-0

📠 +49 711 753316

✉ info(at)euchner.de