

CES-A-W5H-01 (ORDER NO. 097525)

Non-contact safety switch CES-A-W5...

- ▶ Safety switch with integrated evaluation electronics
- ▶ Possible to switch pulsed signals
- ▶ 2 safety outputs (semiconductor outputs)
- ▶ Category 4/PL e according to EN ISO 13849-1
- ▶ Multicode



Description

Approach direction

Can be adjusted in 90° steps

Multicode evaluation

Every suitable actuator is detected by the evaluation unit.

Category according to EN ISO 13849-1

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

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

LED indicator

STATE Status LED

OUT/ERROR Safety outputs status / diagnostics LED (combined)

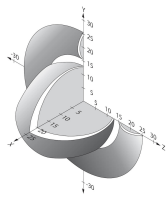
Additional connection

OUT Monitoring output (semiconductor)

Attention:

The actuating range may vary depending on the substrate material and installation situation.

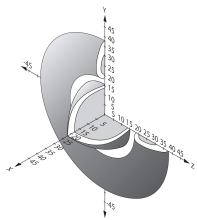
(Only in combination with actuator CES-A-BBA, CES-A-BCA)



Typical actuating range

For a side approach direction for the actuator and safety switch, a minimum distance of $s = 4$ mm must be maintained so that the actuating range of the side lobes is not entered.

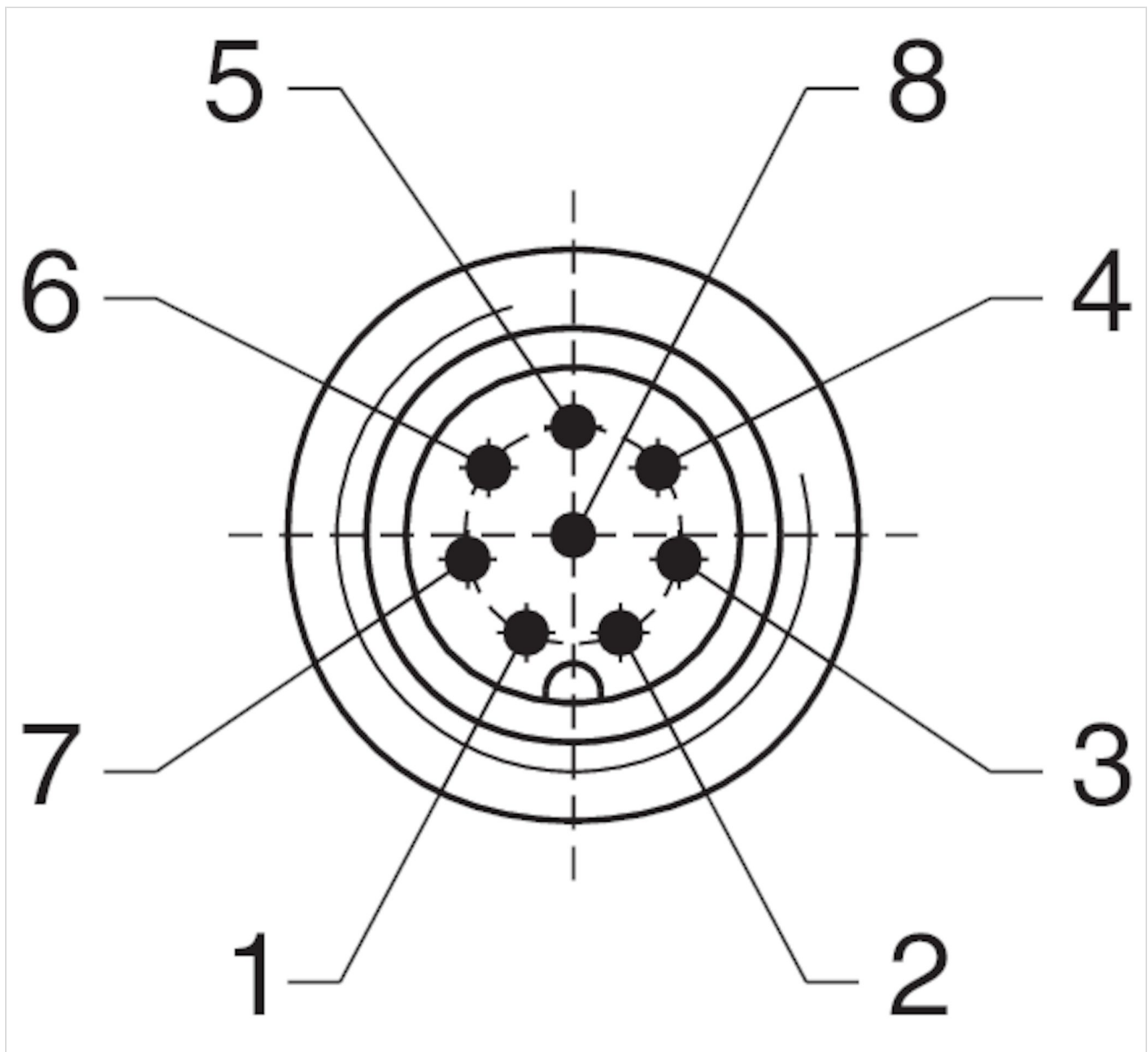
(Only in combination with actuator CES-A-BPA)



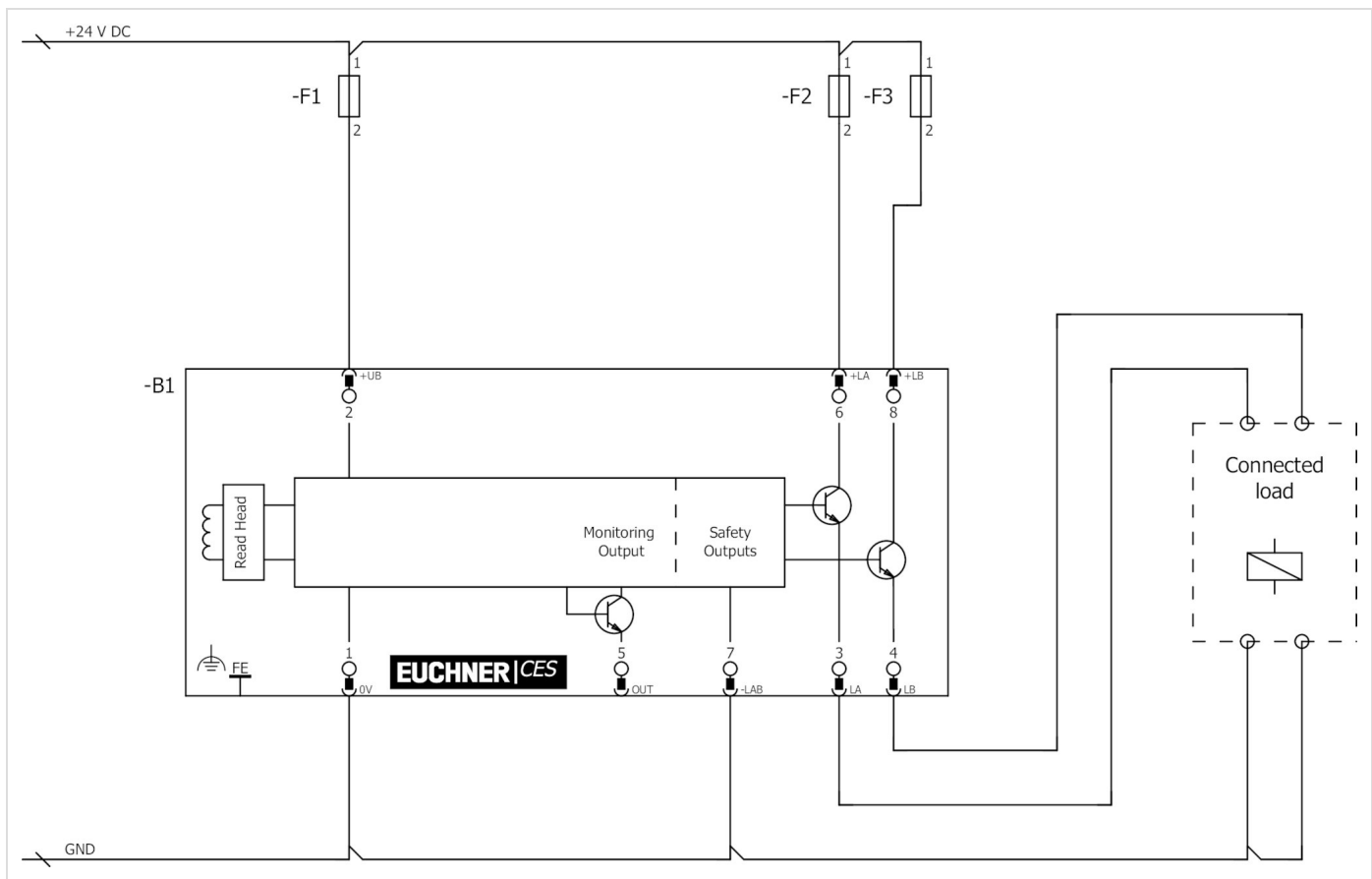
Typical actuating range

For a side approach direction for the actuator and safety switch, a minimum distance of $s = 6$ mm must be maintained so that the actuating range of the side lobes is not entered.

Dimension drawing



Wiring diagram



Technical data

Approvals



Mechanical values and environment

Dimensions	According to EN 60947-5-2: (LxWxH) 131x40x40	
Housing material		
	Housing	Plastic, PBT
Weight		
	Net	0,4 kg
Ambient temperature		
	At $U_B = 24 \text{ V DC}$	-20 ... 55 °C
Degree of protection	IP65/IP67	
Mounting distance		
	Between 2 switches or 2 actuators	min.80 mm
Installation orientation	Any	
Tightening torque		
	Fixing screws housing	max.1 Nm
	Screws fastening bracket read head	max.0,6 Nm
Ready delay	max.3 s (After the operating voltage is switched on, the semiconductor outputs are switched off and the monitoring outputs are set LOW during the ready delay.)	
Reaction time		
	After change in the actuation status	max.180 ms (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.)
Switching frequency	max.1 Hz	
Dwell time	min.0,5 s (The dwell time of an actuator inside and outside the operating distance must be at least 0.5 s to ensure reliable detection of internal faults in the evaluation unit (self-monitoring).)	
Connection	M12 plug connector, 8-pin, screen can be applied	

Electrical connection ratings

Operating voltage DC	18 ... 24 ... 27 V DC Regulated, residual ripple < 5 %
Current consumption	80 mA
Fusing	
(External) operating voltage	0,25 ... 8 A
Rated insulation voltage U_i	300 V (Tested by employers' liability insurance association up to 75 V.)
Rated impulse withstand voltage U_{imp}	1,5 kV
EMC protection requirements	In acc. with EN 60947-5-3
Degree of contamination (external, according to EN 60947-1)	3

LED OUT / ERROR

LED indicator	Safety outputs status / diagnostics (combined)
	Safety outputs LA / LB
Type of output	Semiconductor outputs, p-switching, short circuit-proof, electrically decoupled (To ensure safety, both safety outputs (LA and LB) must be evaluated.)

Output voltage	
HIGH U(LA)	$U(+LA) - 1,5 \dots U(+LA) \text{ V DC}$
HIGH U(LB)	$U(+LB) - 1,5 \dots U(+LB) \text{ V DC}$
LOW U(LA) / U(LB)	$0 \dots 1 \text{ V DC}$

Output current	
per safety output	$1 \dots 400 \text{ mA}$

Fusing	
External, safety circuit U(+LA) / U(+LB)	0.4 A medium slow-blow

Utilization category acc. to EN 60947-5-2	
DC-13	24V 400mA

Switching load	
According to UL	max. DC 24 V, class 2

Rated conditional short-circuit current	max.100 A
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Discrepancy time	
(Between the operating points of both safety outputs)	max.120 ms

Power supply output load	
U(+LA) / U(+LB)	24 V DC 18 ... 27 V DC

Monitoring output OUT

Type of output	Semiconductor output, p-switching, short circuit-proof
Output voltage	$0,8 \times U_B \dots U_B \text{ V DC}$
Output current	max.20 mA

STATE LED

LED indicator	Status - LED
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Work area

Repeat accuracy R	
According to EN 60947-5-2	max.10 %

Other

For the approval acc. to UL the following applies	Operation only with UL class 2 power supply, or equivalent measures
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Reliability values according to EN ISO 13849-1

Monitoring of the safety guard position

Category	4 (Category 4 according to EN 13849-1 for monitoring short circuits of safety outputs. A short circuit on LA and LB must be detected by external pulsing or must be excluded by laying the cable with protection.)
Performance Level	PL e
PFH _D	3.7 x 10 ⁻⁹
Diagnostic Coverage (DC)	99 %
Mission time	20 y

In combination with Actuator CES-A-BDA-20

Actuating range

Distance s, actuator

Minimum distance for side approach direction	min.4 mm
Operating distance	
With center offset m=0	21 mm (In non-metallic environment)
Assured release distance S _{ar}	max.41 mm
Assured operating distance S _{ao}	
With center offset m=0	min.19 mm (In non-metallic environment)
Switching hysteresis	min.2 mm (In non-metallic environment)

In combination with Actuator CES-A-BPA

Actuating range

Distance s, actuator

Minimum distance for side approach direction	min.6 mm
Operating distance	
With center offset m=0	22 mm (Applies on surface mounting on aluminum; in a non-metallic environment the typical operating distance increases to 30 mm.)
Assured release distance S _{ar}	max.58 mm
Assured operating distance S _{ao}	
With center offset m=0	min.15 mm (Applies for surface mounting on aluminum)
Switching hysteresis	min.1 mm (Applies for surface mounting on aluminum)

In combination with Actuator CES-A-BBA, CES-A-BCA

Actuating range

Distance s, actuator

Minimum distance for side approach direction min.3 mm

Operating distance

With center offset $m=0$ 20 mm
(The values apply for surface installation of the actuator.)

Assured release distance S_{ar} max.40 mm

Assured operating distance S_{ao}

With center offset $m=0$ min.18 mm
(The values apply for surface installation of the actuator.)

Switching hysteresis min.2 mm
(The values apply for surface installation of the actuator.)

Accessories

Actuator

Actuator CES-A-BBA



071840
CES-A-BBA

- ▶ Cube-shaped design 42 x 25 mm
- ▶ Two safety screws M4x14 included

Actuator CES-A-BCA



088786
CES-A-BCA

- ▶ Cube-shaped design 42 x 25 mm
- ▶ Two safety screws M4x14 included
- ▶ PE-HD housing material, suitable for use in aggressive media (e.g. acids, alkalis)

Actuator CES-A-BPA



098775
CES-A-BPA

- ▶ Cube-shaped design 40 x 40 mm

Bolt

Bolt CES-A-C



082220
RIEGEL CES-A-C

- ▶ Steel bolt
- ▶ For non-contact safety switch CES-A-C.../CES-A-W.../CES-AR...
- ▶ For doors hinged on the left or right
- ▶ Ball detent mechanism in closed position
- ▶ Can be locked in open position with padlocks
- ▶ Actuator included

Bolt CES-A-C/F with escape release



098357
RIEGEL CES-A-C/F

- ▶ Steel bolt
- ▶ For doors hinged on the left or right
- ▶ Lever for escape release from the danger zone
- ▶ For non-contact safety switches CES-A-C5E...
- ▶ Connection via M12 plug connector
- ▶ Detent knob in open position
- ▶ Can be locked in open position with padlocks
- ▶ CES actuator integrated in the bolt tongue

Connection material

Connection cable with plug connector M12, 8-pin, 5m



077751
C-M12F08-08X025PV05,0-GA-077751

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 5 m
- ▶ With flying lead

Connection cable with plug connector M12, 8-pin, 10m



077752
C-M12F08-08X025PV10,0-GA-077752

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 10 m
- ▶ With flying lead

Connection cable with plug connector M12, 8-pin, 15m



077753
C-M12F08-08X025PV15,0-GA-077753

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 15 m
- ▶ With flying lead

Connection cable with plug connector M12, 8-pin, 20m



077871
C-M12F08-08X025PV20,0-GA-077871

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 20 m
- ▶ With flying lead

Connection cable with plug connector M12, 8-pin, 25m



077872
C-M12F08-08X025PV25,0-GA-077872

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 25 m
- ▶ With flying lead

Connection cable with plug connector M12, 8-pin, 50m



077873
C-M12F08-08X025PV50,0-GA-077873

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable, screened
- ▶ Cable length 50 m
- ▶ With flying lead

Mounting accessories

Safety screws M4 x 14

071863
M4X14-CES/V20

- ▶ Safety screws M4 x 14
- ▶ Packaging unit 20 pieces

Safety screws M5 x 10

073455
M5X10-NIRO/V100 NZ/TZ

- ▶ Safety screws M5 x 10
- ▶ Packaging unit 100 pieces

Contacts

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