

CES-AP-CL2-CH-SF-104509 (ORDER NO. 104509)

Non-contact safety switch CES-AP-CL2-... , with latching connection

- ▶ Safety switch with integrated evaluation electronics
- ▶ No series connection
- ▶ Short circuit monitoring
- ▶ 2 safety outputs (semiconductor outputs)
- ▶ Door hinge left
- ▶ Category 4/PL e according to EN ISO 13849-1
- ▶ plug connector with latching connection, 6-pin
- ▶ Multicode
- ▶ Two safety screws M4x14 included



Description

Short circuit monitoring

The switch generates its own clock signal on the output cables OA/OB.

Pay attention to this aspect when connecting to control systems and relays.

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 in accordance with EN ISO 13849-1, both safety outputs (OA and OB) must be evaluated.

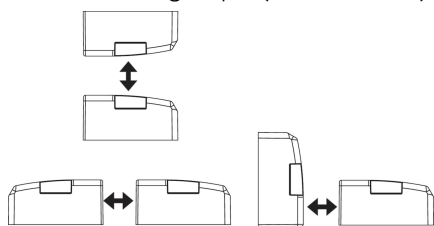
LED indicator

STATE Status LED

DIA Diagnostic LED

Additional connection

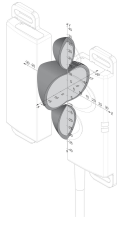
OUT Monitoring output (semiconductor)



Approach directions

Typical actuating range

(Actuator CES-A-BLN... in conjunction with safety switch CES-AP-C.2-... in case of mounting on plastic)



Figure

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.

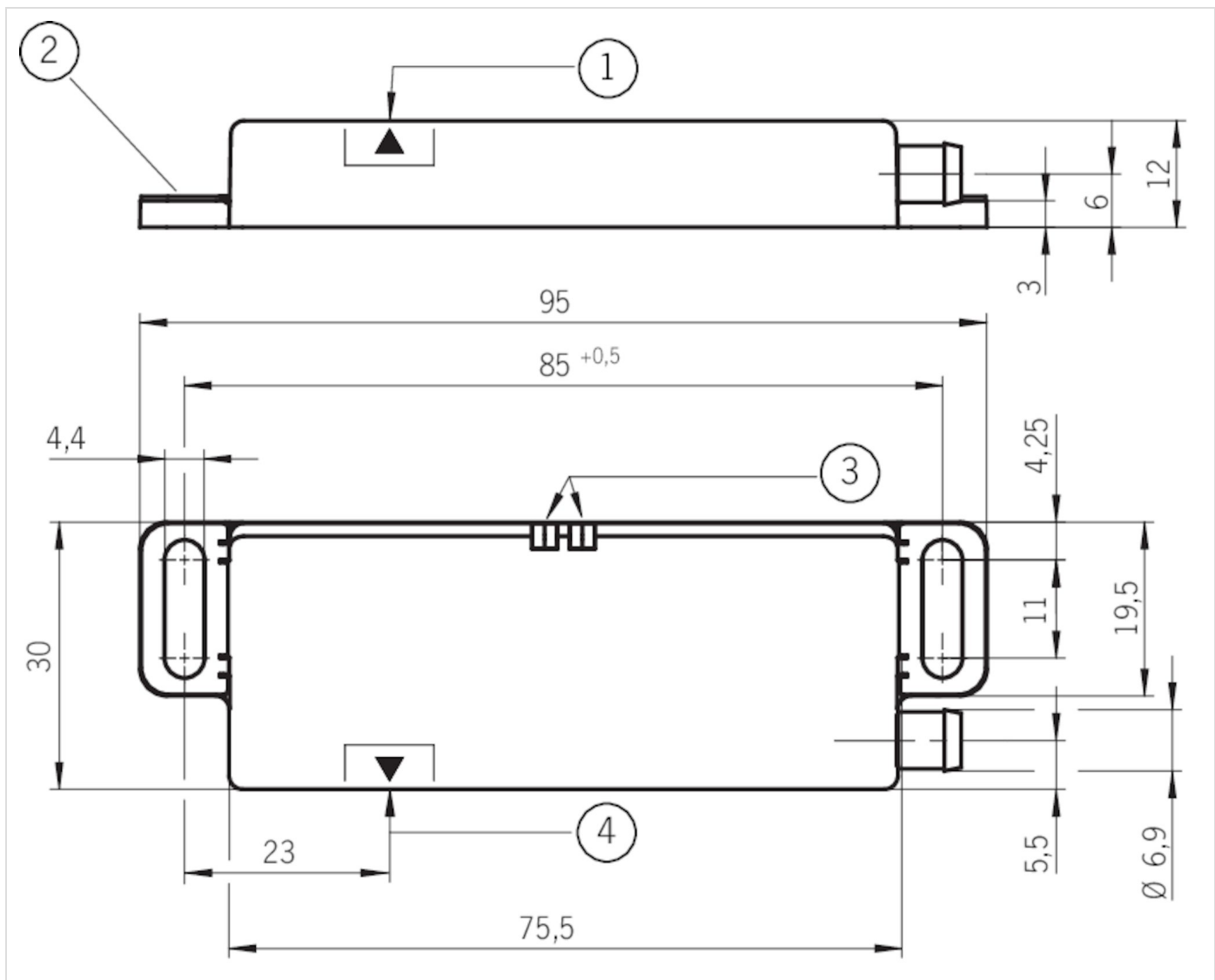
Attention:

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

Connector assignment

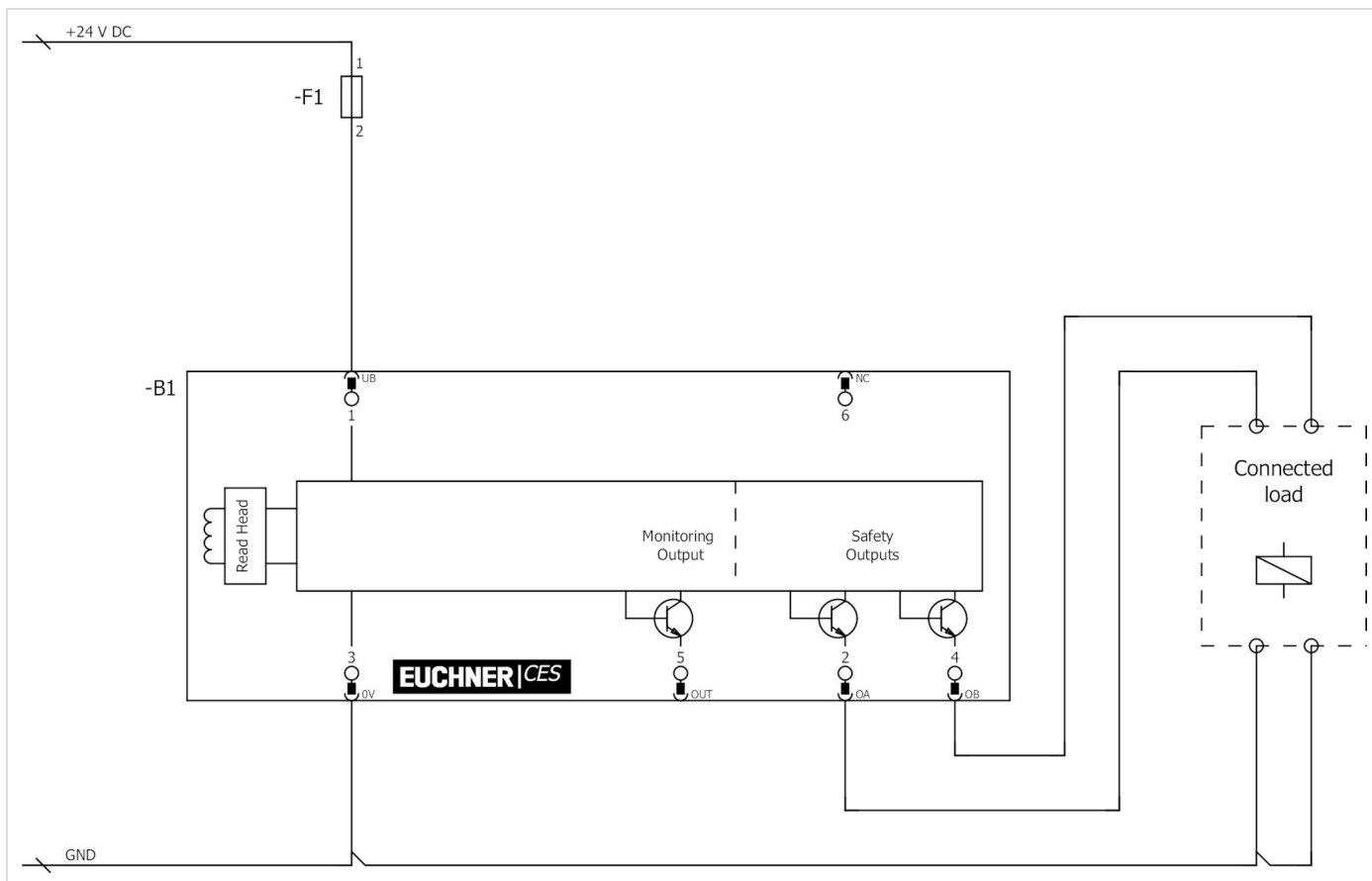
Plug connector (view of connection side)	Pin	Designation	Function	Conductor coloring of connecting cable
	1	UB	Power supply, DC 24 V	BN
	2	FO1A	Safety output, channel 1	WH
	3	0V	Ground, DC 0 V	BU
	4	FO1B	Safety output, channel 2	BK
	5	OUT	Monitoring output	GY
	6	-	n.c.	PK

Dimension drawing



- 1 Active face
- 2 Fastening lug with reinforcement plate
- 3 LED status indication
- 4 Active face

Wiring diagram



Technical data

Approvals



Mechanical values and environment

Shock and vibration resistance In acc. with EN 60947-5-3

Housing material

Housing Plastic, PBT

Weight

Net 0,04 kg

Ambient temperature

-30 ... 65 °C

Degree of protection

IP67, IP69K

Mounting method

Surface mounting on metal

Mounting distance

Between 2 switches or 2 actuators min.400 mm

Installation orientation

Any

Tightening torque

Fixing screws max.1 Nm

Ready delay

0,5 s

Switching frequency

max.1 Hz

Connection

Plug connector with latching connection, Ø8, 6-pin

Electrical connection ratings

Operating voltage DC

	U_B	24 V DC 15% ... 15% Regulated, residual ripple < 5 %
Current consumption		max.30 mA (Without taking into account the load currents on the monitoring output and the safety outputs)
Utilization category acc. to EN 60947-5-2	DC-13	24V 150mA (Caution: outputs must be protected with a free-wheeling diode in case of inductive loads.)
Fusing		
	External (operating voltage)	0,25 ... 8 A
Rated insulation voltage U_i		75 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
Turn-on time		
	Safety outputs	max.300 ms
Safety class		III
Risk time according to EN 60947-5-3		max.260 ms
		Monitoring output OUT
Type of output		p-switching, short circuit-proof
Switching current		max.50 mA
Output voltage		0,8 x U_B ... U_B V DC
		Safety outputs OA/OB
Test pulses		max.0,3 ms (Applies for a load with $C \leq 30\text{nF}$ and $R \leq 20\text{k}\Omega$)
Test-pulse interval		min.100 ms
Type of output		Semiconductor outputs, p-switching, short circuit-proof
Switching current		
	per safety output	1 ... 150 mA
Output voltage		
	HIGH $U(OA) / U(OB)$	$U_B - 1,5\text{V}$... U_B V DC (Values at a switching current of 50 mA without taking into account the cable lengths.)
	LOW $U(OA) / U(OB)$	0 ... 1 V DC
Rated conditional short-circuit current		100 A
Off-state current I_r		max.0,25 mA
Discrepancy time		max.10 ms

Work area

Repeat accuracy R

According to EN 60947-5-2 ≤ 10

Other

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 _D	1.8 x 10 ⁻⁹
Mission time	20

In combination with Actuator CES-A-BLN-R2-100776, CES-A-BLN-U2-103450, CES-A-BLN-L2-104510, CES-A-BLN-U2-112710

Actuating range

Operating distance	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}	min.10 mm
Switching hysteresis	min.1 mm

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

Actuating range

Operating distance	19 mm
Assured release distance S _{ar}	
	In y direction max.60 mm
	In x/z direction max.40 mm
Assured operating distance S _{ao}	min.14 mm
Switching hysteresis	min.1 mm

Accessories

Actuator

Actuator CES-A-BDN-06



104730
CES-A-BDN-06-104730

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

Actuator CES-A-BLN-L...



104510
CES-A-BLN-L2-104510

- ▶ Cube-shaped design 95 x 30 mm
- ▶ Door hinge left
- ▶ Reinforcement plates
- ▶ Two safety screws M4x14 included

Actuator CES-A-BLN-U...



103450
CES-A-BLN-U2-103450

- ▶ Cube-shaped design 55 x 30 mm
- ▶ Usage independent of position of door hinge
- ▶ Reinforcement plates
- ▶ Two safety screws M4x14 included

Connection material

Connection cables with plug connectors M8 for CES-AP-C.2...



103556
C-R08F06-06X014PV05,0-ES-103556

- ▶ Connecting cable for CES-AP-C.2-...
- ▶ Female plug, 6-pin
- ▶ snap-on
- ▶ PVC cable, straight
- ▶ Cable length 5 m
- ▶ With flying lead



103557
C-R08F06-06X014PV10,0-ES-103557

- ▶ Connecting cable for CES-AP-C.2-...
- ▶ Female plug, 6-pin
- ▶ snap-on
- ▶ PVC cable, straight
- ▶ Cable length 10 m
- ▶ With flying lead



103558
C-R08F06-06X014PV15,0-ES-103558

- ▶ Connecting cable for CES-AP-C.2-...
- ▶ Female plug, 6-pin
- ▶ snap-on
- ▶ PVC cable, straight
- ▶ Cable length 15 m
- ▶ With flying lead



103559
C-R08F06-06X014PV20,0-ES-103559

- ▶ Connecting cable for CES-AP-C.2-...
- ▶ Female plug, 6-pin
- ▶ snap-on
- ▶ PVC cable, straight
- ▶ Cable length 20 m
- ▶ With flying lead



103560
C-R08F06-06X014PV25,0-ES-103560

- ▶ Connecting cable for CES-AP-C.2-...
- ▶ Female plug, 6-pin
- ▶ snap-on
- ▶ PVC cable, straight
- ▶ Cable length 25 m
- ▶ With flying lead

Mounting accessories

Safety screws M4 x 14

074063
M4X14/V100

- ▶ Safety screws M4 x 14
- ▶ Packaging unit 100 pieces

Safety screws M4 x 14, large head

086232
M4X14-NIRO/V100

- ▶ Safety screws M4 x 14 (large head)
- ▶ Packaging unit 100 pieces

Contacts

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