

CES-AR-CL2-CH-SA-105747 (ORDER NO. 105747)

Non-contact safety switch CES-AR-CL2-... , plug connector M12, PUR

- ▶ Safety switch with integrated evaluation electronics
- ▶ Up to 20 switches in series
- ▶ Short circuit monitoring
- ▶ 2 safety outputs (semiconductor outputs)
- ▶ Door hinge left
- ▶ Category 4/PL e according to EN ISO 13849-1
- ▶ Connecting cable PUR, 1 m, plug connector M12, 8-core
- ▶ 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

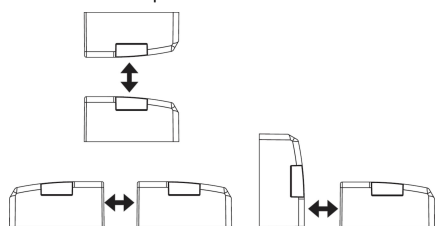
STATE Status LED

DIA Diagnostic LED

Additional connections

OUT Monitoring output (semiconductor)

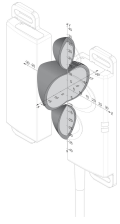
RST Reset input



Approach directions

Typical actuating range

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



Figure

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

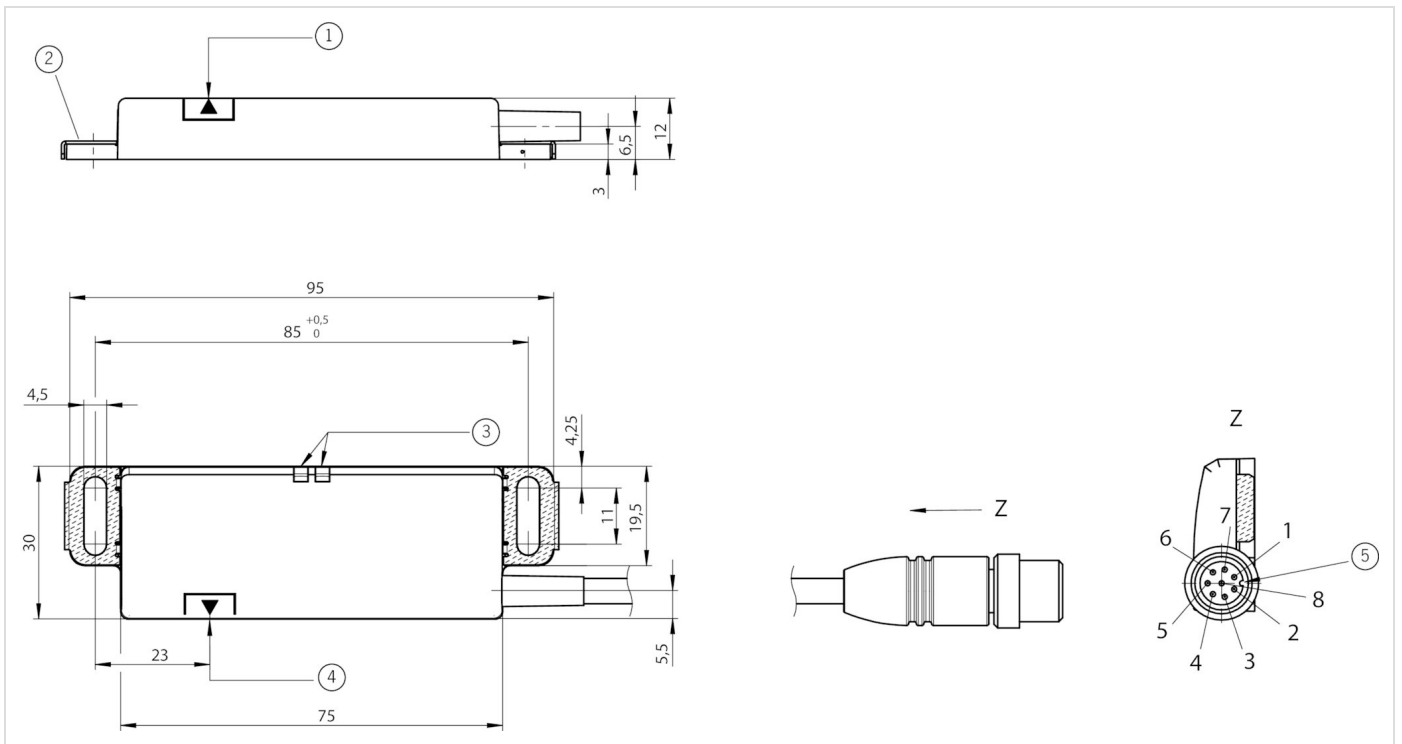
Attention:

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

Connector assignment

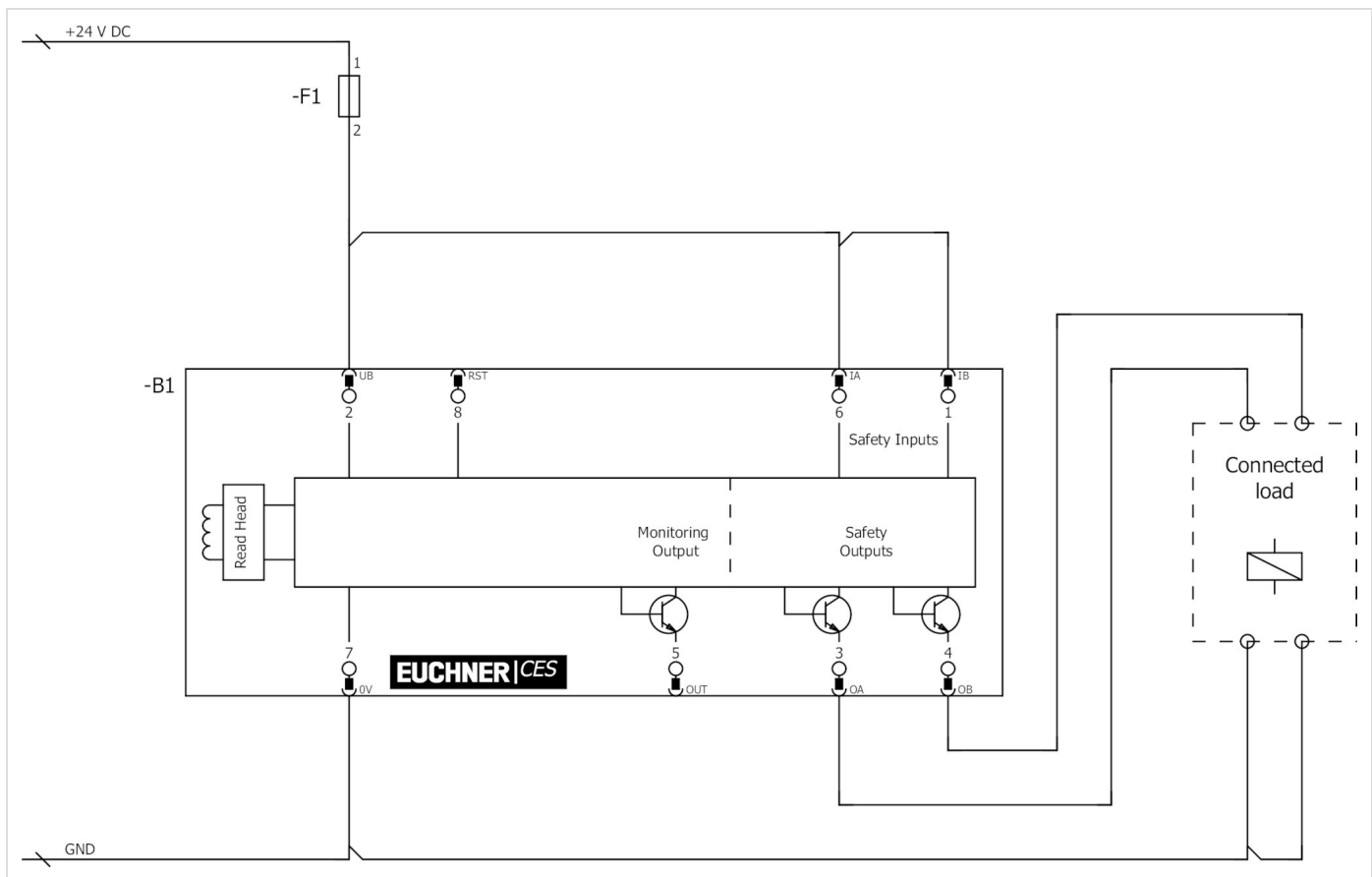
Plug connector (view of connection side)	Pin	Designation	Function	Conductor coloring of connecting cable
	1	IB	Enable input for channel 2	WH
	2	UB	Power supply, DC 24 V	BN
	3	OA	Safety output, channel 1	GN
	4	OB	Safety output, channel 2	YE
	5	OUT	Monitoring output	GY
	6	IA	Enable input for channel 1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

Dimension drawing



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

Wiring diagram



Technical data

Approvals



Mechanical values and environment

Cable ambient temperature (dynamic)	-25 ... 65 °C
Cable ambient temperature (static)	-25 ... 65 °C
Shock and vibration resistance	In acc. with EN 60947-5-3
Dynamic bending radius	10 x cable diameter
Static bending radius	5 x cable diameter
Housing material	
	Housing Plastic, PBT
Weight	
	Net 0,09 kg
Degree of protection	IP67
Mounting method	Surface mounting on metal
Mounting distance	
	Between 2 switches or 2 actuators min.120 mm
Installation orientation	Any
Tightening torque	
	Fixing screws max.1 Nm
Ready delay	10 s
Switching frequency	max.1 Hz
Connection	Connection cable PUR, length 1m with plug connector M12 8-pin

Electrical connection ratings

Extension of risk time according to EN 60947-5-3 per device	max.5 ms
Operating voltage DC	
	U_B 24 V DC 15% ... 15% Regulated, residual ripple < 5 %
Current consumption	max.50 mA (Without taking into account the load currents on the monitoring output and the safety outputs)
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.400 ms
Safety class	III
Risk time according to EN 60947-5-3	
	Single device max.260 ms
	Monitoring output OUT
Type of output	p-switching, short circuit-proof
Switching current	max.50 mA
Output voltage	$0,8 \times U_B$... U_B V DC
	Safety outputs OA/OB
Test pulses	max.1 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
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
Utilization category acc. to EN 60947-5-2	
	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
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	1.9 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

Bridging plug M12



097645
AC-SP-SJ-097645

- ▶ Strapping plug
- ▶ M12 male plug, 4-pin

Connecting cable with straight plug connector M12, 5-pin, 50 m



156064
C-M12F05-05X034PV50,0-MA-156064

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 50 m
- ▶ With flying lead

Connecting cable with two plug connectors M12, 5-pin, 1 m, AIDA standard



159362
C-M12F05-05X034PU01,0-M12M05-159362

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 1 m

Connecting cable with two plug connectors M12, 5-pin, 1.5m, AIDA standard



159363
C-M12F05-05X034PU01,5-M12M05-159363

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 1.5 m

Connecting cable with two plug connectors M12, 5-pin, 3m, AIDA standard



159364
C-M12F05-05X034PU03,0-M12M05-
159364

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 3 m

Connecting cable with two plug connectors M12, 5-pin, 5m, AIDA standard



159365
C-M12F05-05X034PU05,0-M12M05-
159365

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 5 m

Connecting cable with two plug connectors M12, 5-pin, 8m, AIDA standard



159919
C-M12F05-05X034PU08,0-M12M05-
159919

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 8 m

Connecting cable with two plug connectors M12, 5-pin, 10m, AIDA standard



159920
C-M12F05-05X034PU10,0-M12M05-
159920

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 10 m

Connecting cable with two plug connectors M12, 5-pin, 15m, AIDA standard



159921
C-M12F05-05X034PU15,0-M12M05-
159921

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ Connecting cable according to AIDA standard
- ▶ PUR cable, sheath color yellow
- ▶ Cable length 15 m

Connecting cable with two plug connectors M12, 8-pin, 1 m



123430
C-M12M08-08X025PV01,0-M12F08-
123430

- ▶ 8-pin M12 male plug, straight
- ▶ 8-pin M12 female connector, straight
- ▶ PVC cable
- ▶ Cable length 1 m

Connecting cable with two plug connectors M12, 8-pin, 2 m



123431
C-M12M08-08X025PV02,0-M12F08-
123431

- ▶ 8-pin M12 male plug, straight
- ▶ 8-pin M12 female connector, straight
- ▶ PVC cable
- ▶ Cable length 2m

Connecting cable with two plug connectors M12, 8-pin, 5 m



123432
C-M12M08-08X025PV05,0-M12F08-123432

- ▶ 8-pin M12 male plug, straight
- ▶ 8-pin M12 female connector, straight
- ▶ PVC cable
- ▶ Cable length 5m

Connecting cable with two plug connectors M12, 8-pin, 10 m



123433
C-M12M08-08X025PV10,0-M12F08-123433

- ▶ 8-pin M12 male plug, straight
- ▶ 8-pin M12 female connector, straight
- ▶ PVC cable
- ▶ Cable length 10m

Connection cable with 2 plug connectors M12, 5-pin, 5m



100180
C-M12F05-05X034PV05,0-M12M05-100180

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PVC cable
- ▶ Cable length 5 m



119932
C-M12F05-05X034PU05,0-M12M05-119932

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PUR cable
- ▶ Cable length 5 m

Connection cable with 2 plug connectors M12, 5-pin, 10m



100181
C-M12F05-05X034PV10,0-M12M05-100181

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PVC cable
- ▶ Cable length 10 m



119947
C-M12F05-05X034PU10,0-M12M05-119947

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PUR cable
- ▶ Cable length 10 m

Connection cable with 2 plug connectors M12, 5-pin, 20m



100182
C-M12F05-05X034PV20,0-M12M05-100182

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PVC cable
- ▶ Cable length 20 m



119971
C-M12F05-05X034PU20,0-M12M05-119971

- ▶ M12 female plug to M12 plug connector, 5-pin
- ▶ Straight female plug and plug connector
- ▶ PUR cable
- ▶ Cable length 20 m

Connection cable with angled plug connector M12. 8-pin. 10m



113188
C-M12F08-08X025PU10,0-MA-113188

- ▶ M12 female plug, 8-pin
- ▶ Angled plug connector
- ▶ Cable outlet A (right)
- ▶ PUR cable
- ▶ Cable length 10 m
- ▶ With flying lead



113189
C-M12F08-08X025PU10,0-MA-113189

- ▶ M12 female plug, 8-pin
- ▶ Angled plug connector
- ▶ Cable outlet C (left)
- ▶ PUR cable
- ▶ Cable length 10 m
- ▶ With flying lead

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



100177
C-M12F08-08X025PV05,0-MA-100177

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



115112
C-M12F08-08X025PU05,0-MA-115112

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

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



100178
C-M12F08-08X025PV10,0-MA-100178

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



115113
C-M12F08-08X025PU10,0-MA-115113

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

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



100179
C-M12F08-08X025PV20,0-MA-100179

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



115114
C-M12F08-08X025PU20,0-MA-115114

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

Connection cable with plug connector M12, 8-pin, 30m



115257
C-M12F08-08X025PU30,0-MA-115257

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector



C-M12F08-08X025PU30,0-MA-115257

- ▶ Straight plug connector
- ▶ PUR cable
- ▶ Cable length 30 m
- ▶ With flying lead



115116
C-M12F08-08X025PV30,0-MA-115116

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 30 m
- ▶ With flying lead

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



100183
C-M12F05-05X034PV05,0-MA-100183

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



113620
C-M12F05-05X034PU05,0-MA-113620

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

Connection cable with straight plug connector M12, 5-pin, 10m



100184
C-M12F05-05X034PV10,0-MA-100184

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 10 m
- ▶ With flying lead



113640
C-M12F05-05X034PU10,0-MA-113640

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PUR cable
- ▶ Cable length 10 m
- ▶ With flying lead

Connection cable with straight plug connector M12, 5-pin, 20 m



100185
C-M12F05-05X034PV20,0-MA-100185

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 20 m
- ▶ With flying lead



113682
C-M12F05-05X034PU20,0-MA-113682

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PUR cable
- ▶ Cable length 20 m
- ▶ With flying lead

Connection cable with straight plug connector M12, 5-pin, 30 m



122784
C-M12F05-05X034PU30,0-MA-122784

- ▶ M12 female plug, 5-pin
- ▶ Straight plug connector
- ▶ PUR cable
- ▶ Cable length 30 m

- ▶ With flying lead

Passive distribution module



120861
AC-DP-04-SA-120861

- ▶ Connection of up to 4 CES-AR, CET-AR, CTP-AR and ESL-AR
- ▶ LEDs for the indication of the door position on each port
- ▶ Can be connected in series

Y-distributor M12 with connecting cable, without IO-Link evaluation



111696
AC-YD-V0,2-SBB-111696

- ▶ For series connection of AR/BR safety switches in switch chains without IO-Link evaluation
- ▶ Y-distributor M12 with connecting cable, 2 x 5-pin, 1 x 8-pin
- ▶ Straight plug connector
- ▶ PVC cable



112395
AC-YD-V1,0-SBB-112395

- ▶ For series connection of AR/BR safety switches in switch chains without IO-Link evaluation
- ▶ Y-distributor M12 with connecting cable, 2 x 5-pin, 1 x 8-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 1 m

Y-distributor M12 without IO-Link evaluation



097627
AC-YD-SBB-097627

- ▶ For series connection of AR/BR safety switches in switch chains without IO-Link evaluation
- ▶ Y-distributor M12, 2 x 5-pin, 1 x 8-pin
- ▶ Straight plug connector

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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