

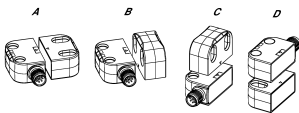
CES-I-BR-U-C07-SA-157920 (Order no. 157920)

Non-contact safety switches CES-I-BR-.-C07, M12

- ▶ Safety switch with integrated evaluation electronics
- ▶ Several devices can be connected in series, max. 20
- ▶ Unicode
- ▶ 2 safety outputs (semiconductor outputs)
- ▶ Short circuit monitoring
- ▶ Category 4 / PL e according to EN ISO 13849-1
- ▶ Monitoring output OD
- ▶ Diagnostic information via BR/IO-Link Gateway GWY-CB or ESM-CB
- ▶ Three active faces
- ▶ Plug connector M12, 8-pin (aligned)
- ▶ Switch chains up to 200 m long



Installation position



Permissible installation position

Industry 4.0 ready

The switch can communicate in combination with an EUCHNER BR IO-Link Gateway, and sends process and device data to higher-level control systems. Comprehensive diagnostic messages enable rapid and targeted troubleshooting.

Unicode evaluation

Each actuator is highly coded (unicode). The switch detects only taught-in actuators. Additional actuators can be taught-in. Only the last actuator taught-in is detected.

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 (FO1A and FO1B) must be evaluated.

LED indicator

STATE Status LED

DIA Diagnostics LED

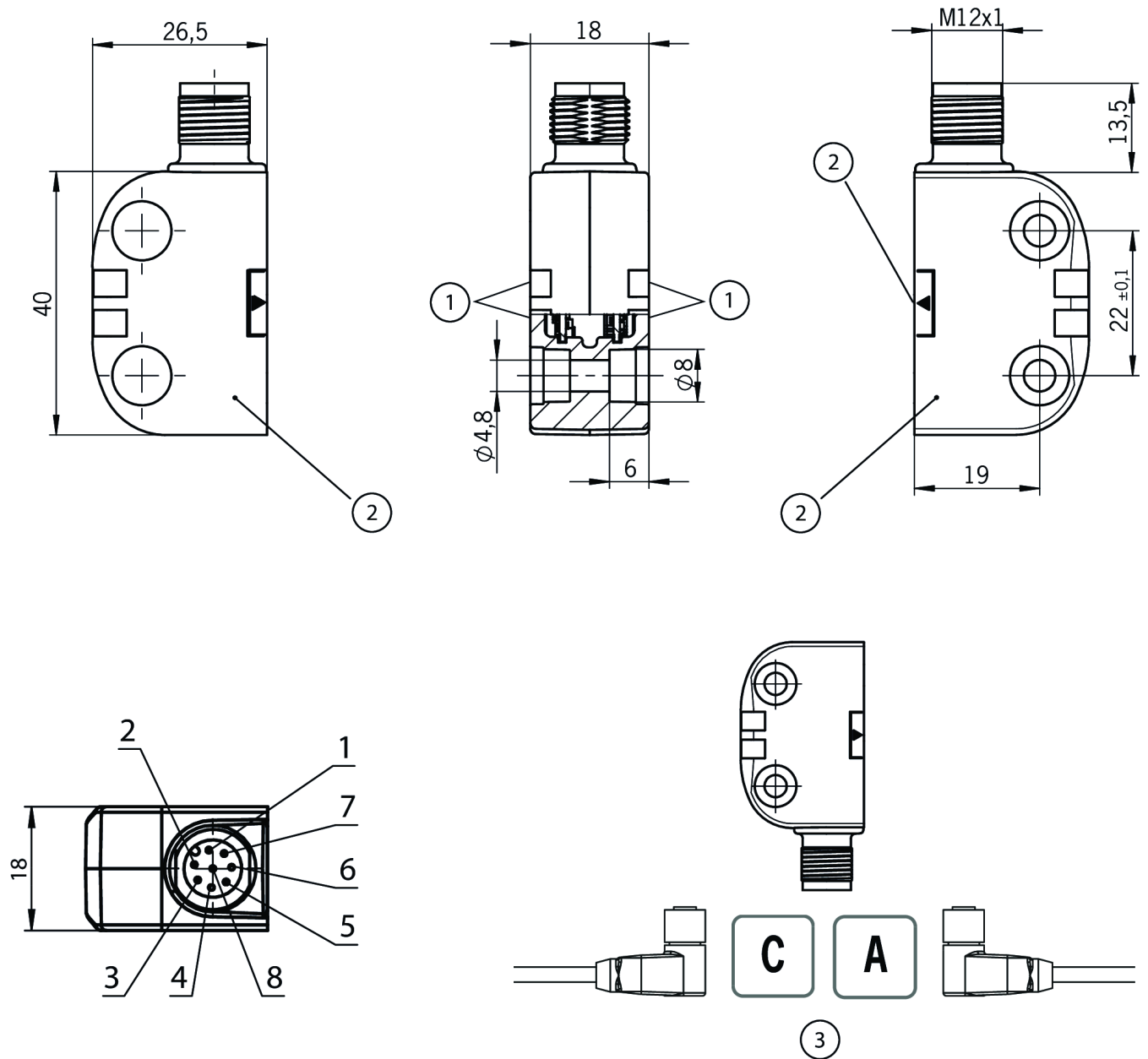
Terminal assignment

Pin	Designation	Function
1	FI1B	Enable input for channel B
2	UB	Power supply, DC 24 V
3	FO1A	Safety output, channel A
4	FO1B	Safety output, channel B
5	OD/C	Monitoring output/communication
6	FI1A	Enable input for channel A
7	0 V	Ground, DC 0 V
8	nc	n.c.

Notice

The caps for the mounting holes are included.

Dimensional drawings

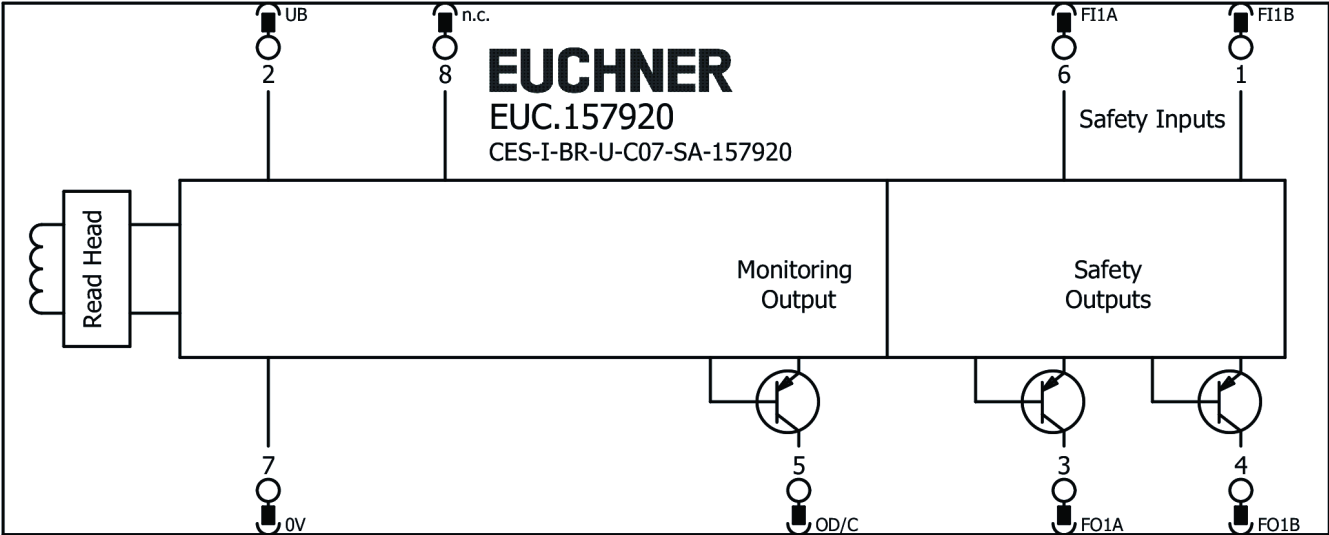


1 LEDs

2 Active face

3 With the installation orientation shown: cable outlet on left or right

Connection examples



Technical data

Approvals



Workspace

Repeat accuracy R

according to EN 60947-5-2 ≤ 10

Electrical connection values

Fuse

external (operating voltage) 0.25 ... 8 A

rated conditional short-circuit current 100 A

Rated insulation voltage U_i 300 V

Rated impulse withstand voltage U_{imp} 1.5 kV

Operating voltage DC

U_B 24 V DC -15% ... +15% regulated, residual ripple <5%, PELV

Turn-on time

Safety outputs max. 100 ms

EMC protection requirements Acc. to EN IEC 60947-5-3

Risk time according to EN 60947-5-3 max. 125 ms

Risk time according to EN 60947-5-3, extension for each additional device max. 10 ms

Safety class III

Current consumption 40 mA

Degree of contamination (external, according to EN 60947-1) 3

Monitoring output OD/C

Output type p-switching, short circuit-proof

Output voltage $U_B - 1.5 \dots U_B$ V DC

Switching current	1 ... 50 mA
Safety outputs F01A / F01B	
Output type	Semiconductor outputs, p-switching, short circuit-proof
Output voltage	
LOW U(F01A) / U(F01B)	0 ... 1 V DC
HIGH U(F01A) / U(F01B)	UB-1.5V ... UB V DC (Values at a switching current of 50 mA without taking into account the cable lengths.)
Discrepancy time	max. 10 ms
Utilization category	
DC-13	24 V 150 mA (Caution: outputs must be protected with a free-wheeling diode in case of inductive loads.)
Off-state current I_r	max. 0.25 mA
Switching current	1 ... 150 mA
Test pulse duration	0.3 ms (Applies to a load with $C \leq 30$ nF and $R \leq 20$ kohm)
Test pulse interval	ca 100 ms

Mechanical values and environment

Dimensions	40 x 26.5 x 18
Connection type	M12 plug connector, 8-pin
Tightening torque	max. 0.8 Nm
Ready delay	5 s
Operating altitude	max. 4 000 m
Installation orientation	any
Switching frequency	max. 1 Hz
Mounting distance	
between 2 switches or 2 actuators	min. 50 mm
Mounting type	Surface mounting on metal
Shock and vibration resistance	Acc. to EN IEC 60947-5-3
Degree of protection	IP65/IP67/IP69/IP69K

Ambient temperature

at $U_B = 24 \text{ V DC}$ $-25 \dots +55 \text{ }^\circ\text{C}$
 (+65 °C at $I_L = \text{max. } 10 \text{ mA}$ per safety output)

Material

Housing Plastic, PBT-PC-GF30

Characteristic values according to EN ISO 13849-1 and EN IEC 62061

Mission time

according to EN ISO 13849-1

SIL CL

according to EN 62061:2005/A2:2015

Characteristic values according to EN ISO 13849-1 and EN IEC 62061

	PL	Maximum SIL	PFH _D	Category	Mission time
Monitoring of the guard position	PL e	3	6×10^{-10}	4	20 y

Miscellaneous

The following applies to the approval according to UL

Operation only with UL Class 2 power supply or equivalent measures

Additional feature

Caps included

In combination with actuator CES-A-BTN-C07-156230

Switch-on distance

Installation position C + D 7 mm

Installation position A + B 13 mm

Secured switch-off distance s_{ar}

in x direction/installation position C + D max. 17 mm

in x direction/installation position A + B max. 20 mm

Secured switching distance s_{ao}

in x direction/installation position C min. 3 mm

in x direction/installation position A min. 10 mm

in x direction/installation position D min. 2 mm

in x direction/installation position B min. 9 mm

In combination with actuator CES-A-BDN-06-158210, CES-A-BTN-C07-156230

Switching hysteresis	1 ... 2 mm
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In combination with actuator CES-A-BDN-06-158210

Switch-on distance

Installation position B	11 mm
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Installation position D	7 mm
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Installation position C	8 mm
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Installation position A	16 mm
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Secured switch-off distance s_{ar}

in x direction/installation position A	max. 24 mm
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in x direction/installation position C	max. 21 mm
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Secured switching distance s_{ao}

in x direction/installation position C	min. 6 mm
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in x direction/installation position A	min. 13 mm
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Downloads

All documentation for this material can be found on our website:

<https://www.euchner.de/en-us/a/157920/?#downloads-tab>

Ordering data

Ordernumber	157920
Item designation	CES-I-BR-U-C07-SA-157920
Gross weight	0,055kg
Customs tariff number	85365019000
ECLASS	27-27-24-03 Safety-related transponder switch

Accessories

Actuator

Actuator CES-A-BDN-06



158210
CES-A-BDN-06-158210

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

Actuator CES-A-BTN-C07



156230
CES-A-BTN-C07-156230

- ▶ Cube-shaped design, 40 x 26.5 x 18 mm
- ▶ 2x safety screws M4x20 included

CEM-C60

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 in combination with CES-C04 / CES-C07
- ▶ Transponder coding enables 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

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 in combination with CES-C04 / CES-C07
- ▶ Transponder coding enables 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

Connection material

Connecting cable with 2 plug connectors M12, 5-pin, 1.5 m, 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 2 plug connectors M12, 5-pin, 10 m



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

Connecting cable with 2 plug connectors M12, 5-pin, 10 m, 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 2 plug connectors M12, 5-pin, 15 m, 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 2 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 2 plug connectors M12, 5-pin, 20 m



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

Connecting cable with 2 plug connectors M12, 5-pin, 3 m, 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 2 plug connectors M12, 5-pin, 5 m



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

Connecting cable with 2 plug connectors M12, 5-pin, 5 m, 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 2 plug connectors M12, 5-pin, 8 m, 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 2 plug connectors M12, 8-pin, 1 m



123430

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

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

Connecting cable with 2 plug connectors M12, 8-pin, 10 m



123433

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

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

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



123431

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

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

Connecting cable with 2 plug connectors M12, 8-pin, 5 m



123432

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

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

Connecting cable with angled plug connector M12, 8-pin, 10 m



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



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

Connecting cable with angled plug connector M12, 8-pin, 20 m



120998
C-M12F08-08X025PU20,0-MA-120998

- ▶ M12 female plug, 8-pin
- ▶ Angled plug connector
- ▶ Cable outlet A (right)
- ▶ PUR cable
- ▶ Cable length 20 m
- ▶ With flying lead



120999
C-M12F08-08X025PU20,0-MA-120999

- ▶ M12 female plug, 8-pin
- ▶ Angled plug connector
- ▶ Cable outlet C (left)
- ▶ PUR cable
- ▶ Cable length 20 m
- ▶ With flying lead

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



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

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



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

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



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

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



115257

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

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

Connecting cable with plug connector M12, 8-pin, 40 m



156065

C-M12F08-08X025PV40,0-MA-156065

- ▶ M12 female plug, 8-pin
- ▶ Straight plug connector
- ▶ PVC cable
- ▶ Cable length 40 m
- ▶ With flying lead

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



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

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



100184

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

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

Connecting 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

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



100183

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

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

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

Passive distribution module



120861
AC-DP-04-SA-120861

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

Strapping plug M12



097645
AC-SP-A0-SJ-097645

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

Y-distributor M12 for IO-Link evaluation



157913
AC-YD-SBB-157913

- ▶ For series connection of AR/BR safety switches in switch chains with ESM-CB for IO-Link evaluation
- ▶ Y-distributor with M12 female plug, 8-pin
- ▶ Male plug straight, 5-pin
- ▶ Female plug straight, 5-pin
- ▶ TPU housing, black

Y-distributor M12 with connecting cable, for IO-Link evaluation



158193
AC-YD-V1,0-SBB-158193

- ▶ For series connection of AR/BR safety switches in switch chains with ESM-CB for IO-Link evaluation
- ▶ Y-distributor with M12 female plug, 8-pin
- ▶ Male plug straight, 5-pin
- ▶ Female plug straight, 5-pin
- ▶ TPU housing, black
- ▶ Cable length 1.0 m



158192
AC-YD-V0,2-SBB-158192

- ▶ For series connection of BR safety switches in switch chains with IO-Link evaluation
- ▶ Y-distributor with M12 female plug, 8-pin
- ▶ Male plug straight, 5-pin
- ▶ Female plug straight, 5-pin
- ▶ TPU housing, black
- ▶ Cable length 0.2 m / PVC

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
- ▶ Cable length 0.2 m



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

ESM

IO-Link Gateway with relay outputs for BP/BR switches



158875

ESM-CB-AZ-FI2-BR-IO-158875

- ▶ IO-Link device for reading process and device data of BP/BR safety switches and transferring them to a higher-level control system
- ▶ Control of guard locking of BP/BR switches, depending on the switch used
- ▶ Compact version measuring only 18 mm in width
- ▶ Rail mounting
- ▶ LED status indicators
- ▶ Sensor circuit 1: connection of single- or dual-channel safety switches with floating contacts; short circuit, earth fault and ground fault detection
- ▶ Sensor circuit 2: connection of 2 safety outputs for BP/BR switches
- ▶ Use as safety relay with two safe outputs
- ▶ Start button and feedback loop can be connected
- ▶ Safety relay: use up to category 4 according to EN ISO 13849-1

GWY

IO-Link Gateway for BP/BR switches



165049

GWY-CB-1-BR-IO-165049

- ▶ IO-Link device for reading process and device data of BP/BR safety switches and transferring them to a higher-level control system
- ▶ Control of guard locking of BP/BR switches, depending on the switch used
- ▶ Compact version measuring only 12.5 mm in width
- ▶ Rail mounting
- ▶ LED status indicators

Metal bolt

Bolt for safety switch CES-C07



168155

BTM-CES07-S-TH-20-X-168155

- ▶ Bolt for switch CES-C07
- ▶ Steel bolt
- ▶ For doors hinged on the left or right
- ▶ Ball detent mechanism in closed position
- ▶ Suitable for door gap of approx. 7 mm
- ▶ Protective plate for safety switch

Bolt with escape release, for safety switch CES-C07



168189

BTM-CES07-S-TH-21-F-168189

- ▶ Bolt for switch CES-C07
- ▶ Steel bolt
- ▶ For doors hinged on the left or right
- ▶ Bolt with escape lever
- ▶ With detent knob in open position
- ▶ Ball detent mechanism in closed position
- ▶ Suitable for a door gap of approx. 7 mm
- ▶ Protective plate for safety switch

Mounting accessories

Caps for switch CES-C07 and for actuator CES-C07 / A-FLX-C07



161164

AM-C-161164

- ▶ Cap for switch CES-C07 and actuator CES-C07 / A-FLX-C07
- ▶ Seals the mounting holes of switches and actuators.
- ▶ Protection of the switch and actuator against possible contamination.

Safety screws M4 x 20

116978

M4X20-NIRO/V20

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