CET3-AR-CRA-AH-50X-SG-109401 (ORDER NO. 109401)
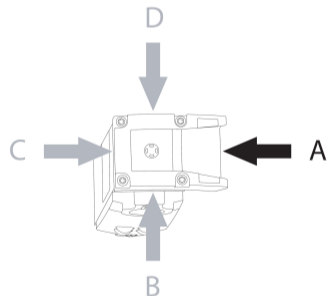
Non-contact safety switch CET-AR-..., M12

- ‣ Safety switch with guard locking and integrated evaluation electronics
- ‣ Locking force up to 6,500 N
- ‣ Up to 20 switches in series
- ‣ Short circuit monitoring
- ‣ 2 safety outputs (semiconductor outputs)
- ‣ Category 4/PL e according to EN ISO 13849-1
- ‣ With 2 plug connectors M12
- ‣ Unicode
- ‣ Door monitoring output
- ‣ Indication of the door position by LED
- ‣ Teach-in input
- ‣ Approach direction A (delivery state)

Description
Approach direction

Figure

Horizontal

Can be adjusted in 90° steps

Safety Switch

The device may be operated only in conjunction with the actuator CET-A-....

Important: The actuator must be ordered separately.

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.

Solenoid operating voltage

- ‣ DC 24 V +10% -15%

Guard locking type

CET3   **Closed-circuit current principle**, guard locking by spring force. Release by applying voltage to the guard locking solenoid. The door position is also monitored. The door monitoring output OUT D is set to HIGH as soon as the actuator is above the extended plunger (state: door closed, guard locking not active). The output OUT D remains set also with guard locking active.

LED function display

LED State   Status LED

LED DIA   Diagnostic LED

LED 1 rd   freely configurable

LED 2 gn   illuminates when door is closed

Additional connections

OUT   Monitoring output (semiconductor)

OUT D   Door monitoring output (semiconductor)
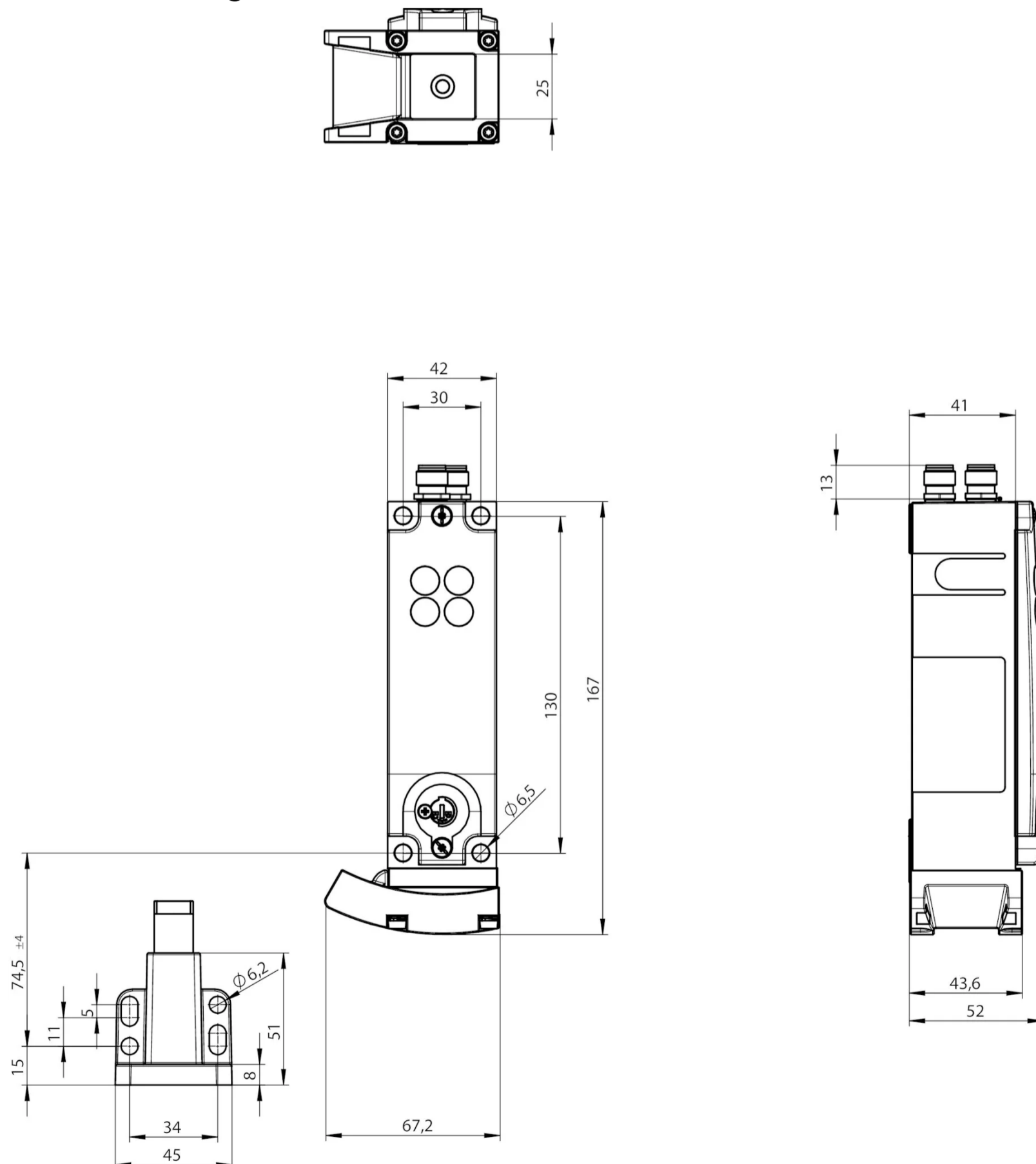
RST   Reset input

J   Teach-in input

Category according to EN ISO 13849-1

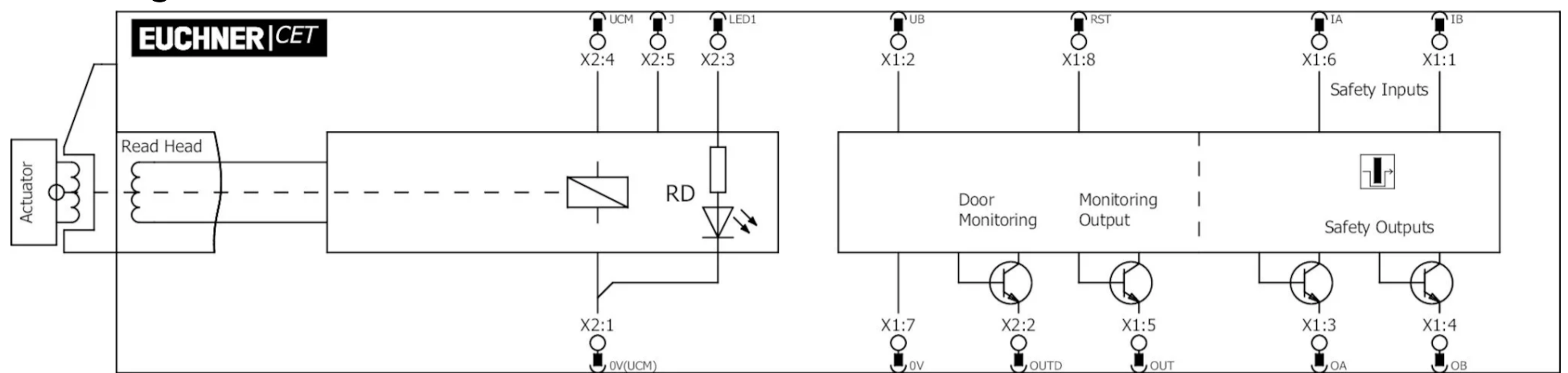Due to two redundantly designed semiconductor outputs (safety outputs) with internal monitoring suitable for:

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

▸ The stated safety characteristics apply to any installation orientations of the safety switch.

Important: To achieve the stated category in accordance with EN ISO 13849-1, both safety outputs (OA and OB) must be evaluated.

Dimension drawing

Block diagram

Technical data

Approvals

Mechanical values and environment

Shock and vibration resistance	In acc. with EN 60947-5-3
Degree of freedom X	±5 mm
Degree of freedom Y	±5 mm
Degree of freedom Z	±4 mm
Housing material	
Slide	Stainless steel
Safety switch housing	Die-cast aluminum
Weight	
Net	1 kg
Ambient temperature	
At U_B = 24V DC	-20 … 55 °C
Degree of protection	IP67 (Screwed tight plug connector/mating component)
Mechanical life	1×10^6
Installation orientation	Any (Preferably head downward)
Ready delay	10 s
Switching frequency	max.0,5 Hz
Connection	2 plug connectors M12, 5 and 8-pin
Approach speed	max.20 m/min
Guard locking principle	Closed-circuit current principle
Locking force F_{max}	6500 N
Locking force F_{Zh}	5000 N (FZH = FMAX/1.3)

Electrical connection ratings

Operating voltage DC	
U_B	24 V DC -15% … 15% Reverse polarity protected, regulated, residual ripple < 5%, PELV
LED	24 V DC -15% … 10%
Current consumption	
I_B	80 mA
I_{CM}	450 mA
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)

Solenoid operating voltage DC		
	U_{CM}	24 V DC -15% ... +10% Reverse polarity protected, regulated, residual ripple < 5%, PELV
Fusing		
	External (solenoid operating voltage U_{CM})	0,5 ... 8 A
	External (operating voltage U_B)	0,25 ... 8 A
Connection rating		
	Solenoid	11 W
EMC protection requirements		In acc. with EN IEC 60947-5-3
Solenoid duty cycle		100 %
Degree of contamination (external, according to EN 60947-1)		3
Connecting cable		30V DC, 2A (For UL requirement UL category code (CYJV/CYJV7))
Safety class		
	EN IEC 61140	III
Switching load		
	According to UL	24V DC, class 2 (For alternatives see operating instructions)
	Safety outputs OA/OB	
Extension of risk time according to EN 60947-5-3 per device		max.5 ms
Type of output		2 semiconductor outputs, p-switching, short circuit-proof
Switching current		
	Per safety output OA / OB	1 ... 200 mA
Output voltage		
	Low U(OA) / U(OB)	0 ... 1 V DC
	High U(OA) / U(OB)	UB-1,5V ... UB V DC
Off-state current I_r		max.0,25 mA
Risk time according to EN 60947-5-3		
	Single device	max.400 ms
Turn-on time		400 ms
Discrepancy time		
	Both safety outputs	max.10 ms
	Monitoring output OUT	
Type of output		p-switching, short circuit-proof
Switching current		
	OUT	1 ... 50 mA
Output voltage		
	OUT	0,8xUB ... UB V DC
Switching delay from state change		max.400 ms
	Monitoring output OUT D	
Type of output		p-switching, short circuit-proof
Switching current		
	OUT D	1 ... 50 mA
Output voltage		
	OUT D	0,8xUB ... UB V DC
Switching delay from state change		max.700 ms
	Teach-in input	
Input voltage		
	High	15 ... 27,6 V DC

Low	0 ... 1 V DC	

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 see operating instructions

Reliability values according to EN ISO 13849-1

		Monitoring of guard locking and the safety guard position
Category		
	Any installation orientation	4
Performance Level		PL e
PFH$_D$		
	Any installation orientation	3.1 x 10^{-9}
		Control of the guard locking
Category		Depending on external control of guard locking (Teach-in input and LEDs have the same ground potential as the guard locking solenoid)
Performance Level		Depending on external control of guard locking (Teach-in input and LEDs have the same ground potential as the guard locking solenoid)
PFH$_D$		Depending on external control of guard locking (Teach-in input and LEDs have the same ground potential as the guard locking solenoid)
Mission time		20 y

Accessories

Actuator

Actuator CET-A-BWK-50X

096327 CET-A-BWK-50X	▸ Actuator for read head/safety switch CET ▸ Four safety screws M5x16 included

Bolt

Bolt CET-A-C

104309 RIEGEL CET-A-C	▸ Steel bolt ▸ In combination with CET ▸ For doors hinged on the left or right ▸ Can be locked in open position with padlocks

Bolt CET-A-C, for swing doors without stop

109672 RIEGEL CET-A-C-C2308	▸ Steel bolt ▸ In combination with CET ▸ For doors hinged on the left or right ▸ Can be locked in open position with padlocks ▸ Bolt without door stop, suitable for swing doors

Connection material

Bridging plug M12

	097645 AC-SP-SJ-097645	▸ Strapping plug ▸ M12 male plug, 4-pin

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
	159355 C-M12F05-05X034PU01,0-M12M05-159355	▸ 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 gray ▸ 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
	159356 C-M12F05-05X034PU01,5-M12M05-159356	▸ 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 gray ▸ 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
	159357 C-M12F05-05X034PU03,0-M12M05-159357	▸ 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 gray ▸ 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

159358
C-M12F05-05X034PU05,0-M12M05-159358

‣ 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 gray
‣ 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

159359
C-M12F05-05X034PU08,0-M12M05-159359

‣ 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 gray
‣ 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

159360
C-M12F05-05X034PU10,0-M12M05-159360

‣ 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 gray
‣ 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

159361
C-M12F05-05X034PU15,0-M12M05-159361

‣ 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 gray
‣ 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, 5-pin, 10m

113187
C-M12F05-05X025PU10,0-MA-113187

- M12 female plug, 5-pin
- Angled plug connector
- PUR cable
- Cable length 10 m
- Cable exit A (right)
- With flying lead

113190
C-M12F05-05X025PU10,0-MA-113190

- M12 female plug, 5-pin
- Angled plug connector
- PUR cable
- Cable length 10 m
- Cable exit C (left)
- With flying lead

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 angled plug connector M12, 8-pin, 20m

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

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
- ▸ 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

M12 extension PUR 5-pin, plug connectors at both ends, 10m

115565
C-M12F05-05X025PU10,0-M12M05-115565

▸ M12 female plug, 5-pin (angled) to M12 plug connector (straight)
▸ plug connectors at both ends
▸ PUR cable
▸ Cable length 10 m
▸ With cable exit A (right)

115566
C-M12F05-05X025PU10,0-M12M05-115566

▸ M12 female plug, 5-pin (angled) to M12 plug connector (straight)
▸ plug connectors at both ends
▸ PUR cable
▸ Cable length 10 m
▸ With cable exit C (left)

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
- ▸ 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

Function expansion

Cover for actuator CET

124979
AM-C-124979

- ▸ Cover for actuator CET
- ▸ Horizontal and vertical fastening option on the actuator
- ▸ Mounting using 4 screws M5x16 (included with the actuator)
- ▸ Suitable for combination with the lockout bar for CET actuator AE-L-CET-156429

Cover for read head and actuator CET

098808
CET ABDECKUNG RECHTS

- ▸ Cover for read heads / safety switches CET and actuators CET
- ▸ For approach direction A

098807
CET ABDECKUNG LINKS

- ▸ Cover for read heads / safety switches CET and actuators CET
- ▸ For approach direction C

Double ramp for safety switch/read head CET

114091

CET-DR

Emergency unlocking for CET

103714
AE-M-CET-103714

159080
AE-M-CET-159080

Holder for lockout mechanism CET actuator

156338
Y-CHN-A1-156338

▸ Holder (incl. wire rope) for lockout bar CET

Lockout bar and holder for CET actuators

155865
AE-SET-LCHN-A1-155865

▸ Prevents unintentional closing of the door
▸ Can be secured with padlocks

Lockout mechanism for CET actuator

122609
AE-L-CET-122609

▸ Prevents unintentional closing of the door
▸ Can be secured with padlocks
▸ Not suitable in combination with cover AM-C for actuator CET

156429
AE-L-CET-156429

▸ Prevents unintentional closing of the door
▸ Can be secured with padlocks

Mechanical key release for CET read head/switch

098850
SCHLUESSEL-HILFSENTRIEGELUNG

▸ Identical locking
▸ Key removable in "unlocked" and "locked" positions

Teach-in adapter for CET 1/3

	125496	▸ Teach-in adapter
	AC-TA-A1-SG-125496	▸ Optional accessory for teaching-in a new actuator for safety switch with M12 plug connector.

Mounting accessories

Efficient protection against tampering for safety switch mounting

	161344	▸ Plastic inserts for hexagon socket screws a/f 4
	AM-C-SW4-V3-161344	▸ Efficient protection against tampering for safety switch mounting
		▸ The packaging includes inserts for 18 screws

	161348	▸ Plastic inserts for hexagon socket screws a/f 5
	AM-C-SW5-V3-161348	▸ Efficient protection against tampering for safety switch mounting
		▸ The packaging includes inserts for 18 screws

Mounting plate EM-P actuator for safety switch CET

	126400	▸ Mounting plate for CET actuator
	AM-P-126400	▸ Suitable for mounting on aluminum profiles of width 30/40/50 mm
		▸ Suitable for the mounting plates AM-P-126399 and AM-P-126398

Mounting plate EM-P handle for safety switch CET

	126398	▸ Mounting plate with handle (handle included)
	AM-P-126398	▸ For hinged or sliding doors
		▸ Horizontal and vertical assembly circuits possible
		▸ Suitable for aluminum profiles of width 30/40/50 mm
		▸ Suitable for the CET mounting plates AM-P-126399 and AM-P-126400

Mounting plate EM-P switch for safety switch CET

	126399	▸ Mounting plate for CET read heads/switches
	AM-P-126399	▸ Direct mounting on aluminum profiles of width 30/40/50 mm
		▸ Suitable for the mounting plates AM-P-126400 and AM-P-126398

Mounting plate EMP-B-... for actuator CET

	106694	▸ Mounting plate for actuator CET for hinged or sliding doors
	EMP-B-CET	▸ Suitable for aluminum profiles 40 ... 45 mm
		▸ Horizontal and vertical mounting
		▸ Made of aluminum

Mounting plate EMP-L-... for CET read head/switches

	106695	▸ Mounting plate for CET read heads/switches
	EMP-L-CET	▸ For hinged or sliding doors

- Suitable for aluminum profiles 40 ... 45 mm
- Horizontal and vertical mounting
- Suitable for CET with escape release

Contacts

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