

Non-contact safety switches CET-AR-... with guard locking and guard lock monitoring

- ▶ 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)
- ▶ Up to category 4 / PL e according to EN ISO 13849-1



For possible combinations see page 179

For ordering table see page 200/201/203.

Approach direction

- ▶ Horizontal
- ▶ Can be adjusted in 90° steps

Safety switch

The safety switch CET is only allowed to be operated in conjunction with the actuator CET-A-BWK-50X.

Important: The actuator must be ordered separately (see page 218).

Available coding options (see page 5)

- ▶ Unicode evaluation
- ▶ Multicode evaluation

Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release must be sealed to prevent tampering (for example with sealing lacquer).

Escape release (optional)

Is used for the manual release of the guard locking from within the danger area without tools.

Wire front release (optional)

The wire front release permits remote release of the guard locking via a pull rope. Flexible routing of the pull wire permits release of the guard locking in inaccessible installation situations.

The handle for the wire front release is not included. Please order separately (see page 174).

Lockout mechanism

The lockout mechanism can be used to prevent maintenance personnel from being unintentionally locked in the danger area, for example. In locked position, the lockout mechanism prevents activation of guard locking. The lockout mechanism can be secured in locking position with up to three locks. The mechanical release can still be used.

Feedback loop

Versions with feedback loop permit monitoring of connected devices (e.g. contactors). Additionally, a start button can be integrated (see wiring diagrams on pages "Wiring diagrams" on page 197 ff.).

Solenoid operating voltage

- ▶ DC 24 V +10%, -15%

Guard locking types

- ▶ **CET1** Guard locking by spring force
Release by applying voltage to the guard locking solenoid.
- ▶ **CET2** Guard locking by solenoid force
Guard locking by applying voltage to the guard locking solenoid.
Release by spring force.
- ▶ **CET3** Function as for CET1-AR, but here the door position is also monitored. The door monitoring output OUT D is set to HIGH as soon as the actuator protrudes beyond the extended lift tappet (state: door closed, guard locking not active). The output OUT D remains set also with guard locking active.
- ▶ **CET4** Function as for CET2-AR, but here the door position is also monitored. The door monitoring output OUT D is set to HIGH as soon as the actuator protrudes beyond the extended lift tappet (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** Diagnostics LED
- ▶ **LED 1 red** see wiring diagram
- ▶ **LED 2 green** see wiring diagram

Additional connections

- OUT** Monitoring output (semiconductor)
- OUT D** Door monitoring output (only CET3/4)
- RST** Reset input


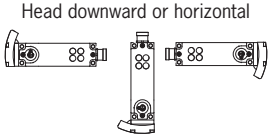
Category according to EN ISO 13849-1

Due to two redundant design semiconductor outputs (safety outputs) with internal monitoring suitable for:

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

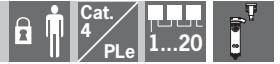
Important: To achieve the stated category in accordance with EN ISO 13849-1, both safety outputs (OA and OB) must be evaluated.

The category is dependent on the installation position of the safety switch:

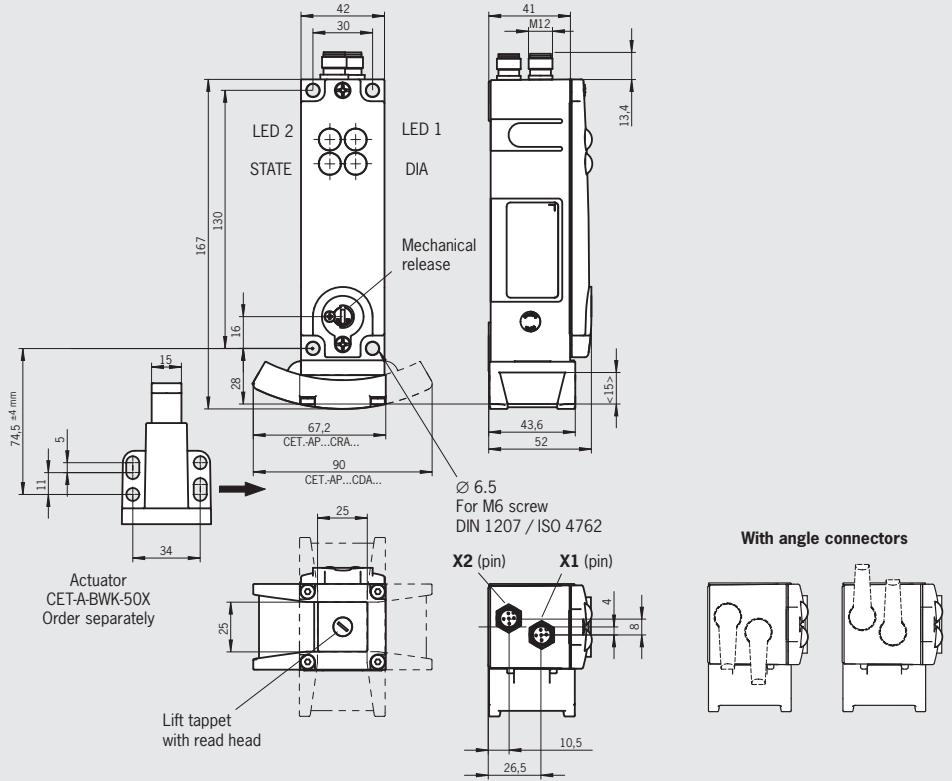
Installation position	Achievable category and PL according to EN ISO 13849-1
Head upward 	3 / PL e
Head downward or horizontal 	4 / PL e



Non-contact safety switches CET-AR...
with 2 plug connectors M12



Dimension drawing



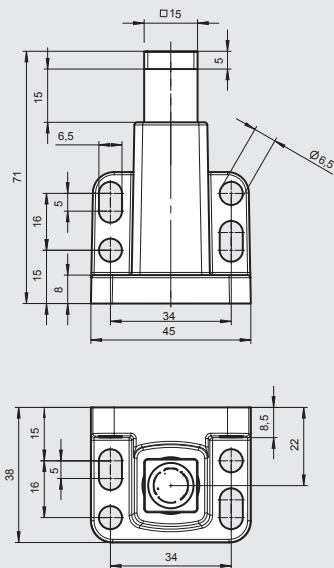
For connection cable see page 155

Actuator CET-A-BWK-50X
for safety switch CET-AR

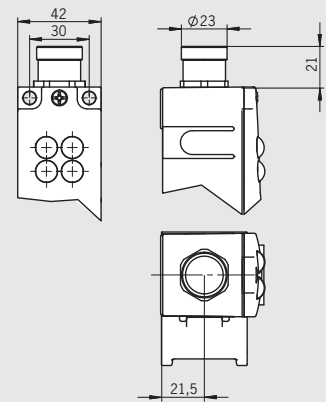
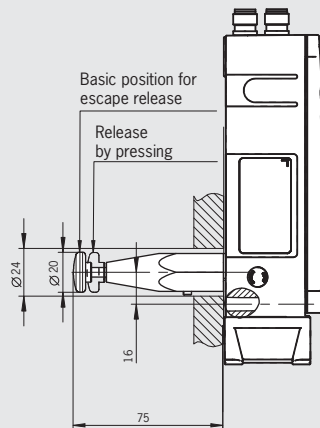
Safety switch CET-AR...
with escape release

Safety switch CET-AR...
with plug connector RC18

Dimension drawing



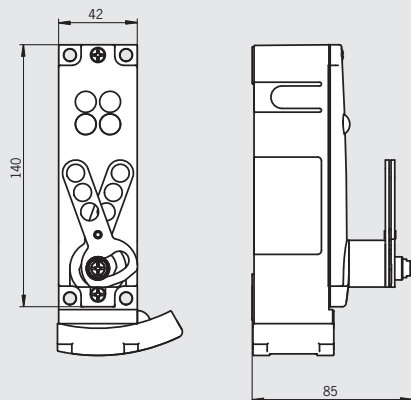
4 safety screws
M5x16 included



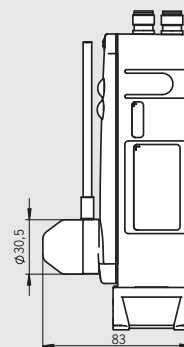
1) German Social Accident Insurance approval pending
2) No UL approval for version with plug connector RC18

Non-contact safety switches CET-AR... with lockout mechanism

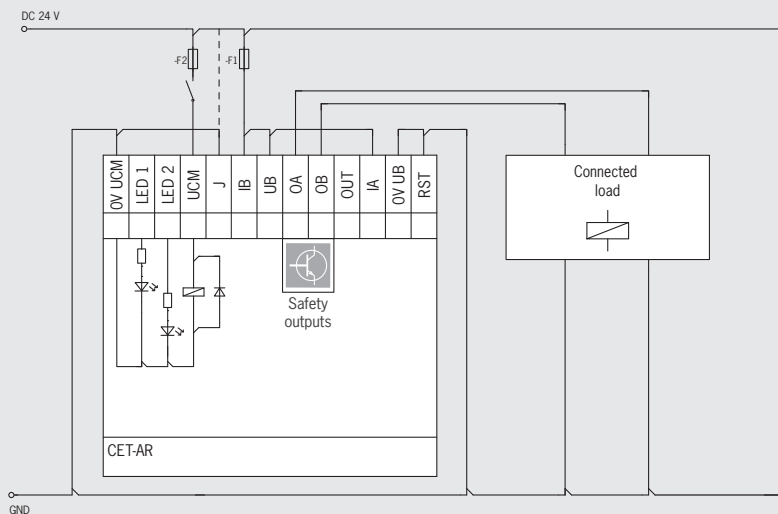
Dimension drawing



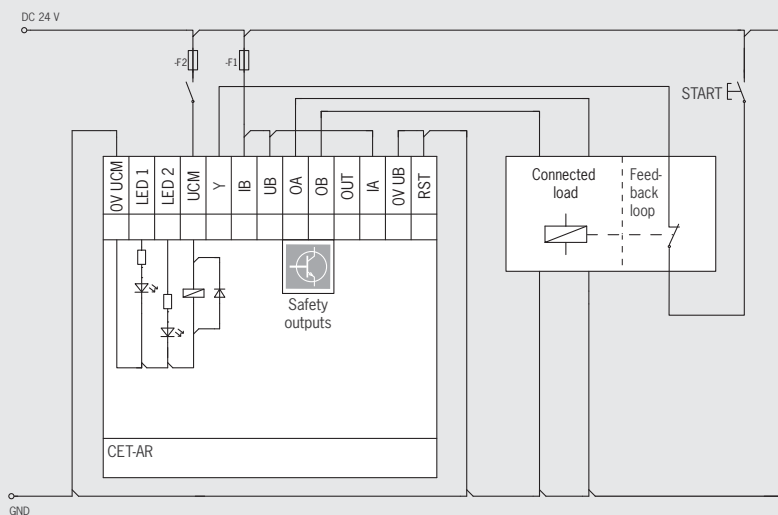
Non-contact safety switches CET-AR... with wire front release



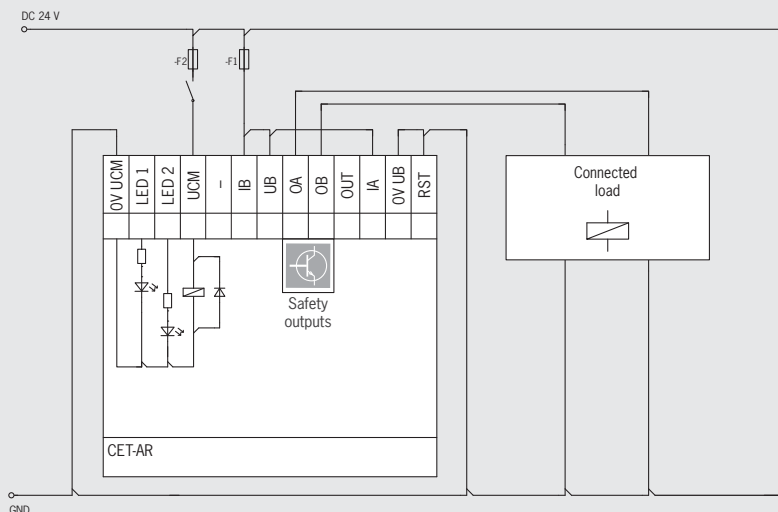
Wiring diagrams



Connection example for separate operation, version with teach-in input



Connection example for separate operation, version with start button and feedback loop



Connection example for separate operation, version without feedback loop and without teach-in input

Safety switch CET.-AR-...-SG-... with 2 plug connectors M12

Terminal assignment for version without door monitoring output (CET1/2)

Wiring diagram A

Plug connector (view of connection side)	Pin	Designation	Function	Wire color of connection cable ¹⁾
<p>2 x M12</p>	X 1.1	IB	Enable input for channel 2	WH
	X 1.2	U_B	Operating voltage of AR electronics, 24 V DC	BN
	X 1.3	OA	Safety output, channel 1	GN
	X 1.4	OB	Safety output, channel 2	YE
	X 1.5	OUT	Monitoring output	GY
	X 1.6	IA	Enable input for channel 1	PK
	X 1.7	$0 V U_B$	Operating voltage of AR electronics 0 V	BU
	X 1.8	RST	Reset input	RD
	X 2.1	$0 V U_{CM}$	Operating voltage of guard locking solenoid 0 V	BN
	X 2.2	LED 1	LED 1 red, freely configurable, 24 V DC	WH
	X 2.3	LED 2	LED 2 green, freely configurable, 24 V DC	BU
	X 2.4	U_{CM}	Operating voltage of guard locking solenoid, 24 V DC	BK
	X 2.5	J	Version with teach-in input: To teach-in a new actuator, connect to 24 V DC; in normal operation connect to 0 V.	GY
		Y	Version with feedback loop: If the feedback loop is not used, connect to 24 V DC	
		-	Version without feedback loop and without teach-in input: This connection must be connected to 0 V.	

1) Only for standard EUCHNER connection cable

Terminal assignment for version with function earth connection (CET1/2)

Wiring diagram B

Plug connector (view of connection side)	Pin	Designation	Function	Wire color of connection cable ¹⁾
<p>2 x M12</p>	X 1.1	IB	Enable input for channel 2	WH
	X 1.2	U_B	Operating voltage of AR electronics, 24 V DC	BN
	X 1.3	OA	Safety output, channel 1	GN
	X 1.4	OB	Safety output, channel 2	YE
	X 1.5	OUT	Monitoring output	GY
	X 1.6	IA	Enable input for channel 1	PK
	X 1.7	$0 V U_B$	Operating voltage of AR electronics 0 V	BU
	X 1.8	RST	Reset input	RD
	X 2.1	$0 V U_{CM}$	Operating voltage of guard locking solenoid 0 V	BN
	X 2.2	LED 1	LED 1 red, solenoid energized	WH
	X 2.3	LED 2	LED 2 green, freely configurable, 24 V DC	BU
	X 2.4	U_{CM}	Operating voltage of guard locking solenoid, 24 V DC	BK
	X 2.5	FE	Function earth	GY

1) Only for standard EUCHNER connection cable



Terminal assignment for version with door monitoring output (CET3/4), continued

Wiring diagram C

Plug connector (view of connection side)	Pin	Designation	Function	Wire color of connection cable ¹⁾
2 x M12	X 1.1	IB	Enable input for channel 2	WH
	X 1.2	U_B	Operating voltage of AR electronics, 24 V DC	BN
	X 1.3	OA	Safety output, channel 1	GN
	X 1.4	OB	Safety output, channel 2	YE
	X 1.5	OUT	Monitoring output	GY
	X 1.6	IA	Enable input for channel 1	PK
	X 1.7	$0 V U_B$	Operating voltage of AR electronics 0 V	BU
	X 1.8	RST	Reset input	RD
	X 2.1	$0 V U_{CM}$	Operating voltage of guard locking solenoid 0 V	BN
	X 2.2	OUT D	Door monitoring output	WH
	X 2.3	LED 1	LED 1 red, freely configurable, 24 V DC	BU
	X 2.4	U_{CM}	Operating voltage of guard locking solenoid, 24 V DC	BK
	X 2.5	J	Version with teach-in input: To teach-in a new actuator, connect to 24 V DC; in normal operation connect to 0 V.	GY
		Y	Version with feedback loop: If the feedback loop is not used, connect to 24 V DC	
		-	Version without feedback loop and without teach-in input: This connection must be connected to 0 V.	

1) Only for standard EUCHNER connection cable

Terminal assignment for version with door monitoring output (CET3/4)

Wiring diagram D

Plug connector (view of connection side)	Pin	Designation	Function	Wire color of connection cable ¹⁾
2 x M12	X 1.1	IB	Enable input for channel 2	WH
	X 1.2	U_B	Operating voltage of AR electronics, 24 V DC	BN
	X 1.3	OA	Safety output, channel 1	GN
	X 1.4	OB	Safety output, channel 2	YE
	X 1.5	OUT	Monitoring output	GY
	X 1.6	IA	Enable input for channel 1	PK
	X 1.7	$0 V U_B$	Operating voltage of AR electronics 0 V	BU
	X 1.8	RST	Reset input	RD
	X 2.1	$0 V U_{CM}$	Operating voltage of guard locking solenoid 0 V	BN
	X 2.2	OUT D	Door monitoring output	WH
	X 2.3	OUT	Monitoring output	BU
	X 2.4	U_{CM}	Operating voltage of guard locking solenoid, 24 V DC	BK
	X 2.5	-	Not used	

1) Only for standard EUCHNER connection cable

Ordering table CET-AR-...-SG-... with 2 plug connectors M12

Order no./item	Closed-circuit current principle	Open-circuit current principle	Door monitoring output	Unicode	Multicode	Single ramp	Double ramp	Teach-in input	Feedback loop	Escape release	Wire front release (L1*)	Lockout mechanism	Wiring diagram
CET1													
106275 CET1-AR-CDA-AH-50X-SG-106275	●			●			●	●					A
106616 CET1-AR-CRA-AH-50A-SG-106616	●			●		●			●	75 mm			A
106159 CET1-AR-CRA-AH-50F-SG-106159	●			●		●		●		75 mm			A
111766 CET1-AR-CRA-AH-50F-SG-C2333-111766	●			●		●		●		75 mm		●	A
105802 CET1-AR-CRA-AH-50S-SG-105802	●			●		●			●				A
103418 CET1-AR-CRA-AH-50X-SG-103418	●			●		●		●					A
112121 CET1-AR-CRA-AH-50X-SG-C2333-112121	●			●		●		●				●	A
113320 CET1-AR-CRA-AH-50S-SG-C2290-113320	●			●		●			●		5 m		A
110241 CET1-AR-CRA-CH-50F-SG-110241	●				●	●				75 mm			A
105764 CET1-AR-CRA-CH-50S-SG-105764	●				●	●			●				A
105763 CET1-AR-CRA-CH-50X-SG-105763	●				●	●							A
109231 CET1-AR-CDA-CH-50X-SG-109231	●				●		●						A
113272 CET1-AR-CRA-CH-50F-SG-C2333-113272	●				●	●				75 mm		●	A
CET2													
109075 CET2-AR-CRA-AH-50S-SG-109075		●		●		●			●				A
110240 CET2-AR-CRA-AH-50X-SG-110240		●		●		●		●					A
109941 CET2-AR-CRA-CH-50F-SG-C2312-109941		●			●	●				105 mm			A
110082 CET2-AR-CRA-CH-50X-SG-110082		●			●	●							A

* L1 = hose length; cable length = L1 + 1 m. Important: Handle must be ordered separately (see page 218).

Ordering table CET-AR-...-SG-... with 2 plug connectors M12 and function earth connection

Order no./item	Closed-circuit current principle	Open-circuit current principle	Door monitoring output	Unicode	Multicode	Single ramp	Double ramp	Teach-in input	Feedback loop	Escape release	Wire front release (L1*)	Lockout mechanism	Wiring diagram
CET1													
109015 CET1-AR-CRA-CH-50X-SG-C2290-109015	●				●	●					3 m		B

* L1 = hose length; cable length = L1 + 1 m. Important: Handle must be ordered separately (see page 218).



Ordering table CET-AR-...-SG-... with 2 plug connectors M12 (continued)

Order no./item	Closed-circuit current principle	Open-circuit current principle	Door monitoring output	Unicode	Multicode	Single ramp	Double ramp	Teach-in input	Feedback loop	Escape release	Wire front release (L1 *)	Lockout mechanism	Wiring diagram
CET3													
109401 CET3-AR-CRA-AH-50X-SG-109401	●		●	●		●		●					C
113139 CET3-AR-CRA-AH-50X-SG-C2290-113139	●		●	●		●		●			3 m		C
114512 CET3-AR-CRA-AH-50X-SG-C2333-114512	●		●	●		●		●				●	C
113965 CET3-AR-CRA-AH-50F-SG-113965	●		●	●		●		●		75 mm			C
114508 CET3-AR-CRA-AH-50F-SG-C2333-114508	●		●	●		●		●		75 mm		●	C
110114 CET3-AR-CRA-CH-50X-SG-C2290-110114	●		●		●	●					3 m		C
110905 CET3-AR-CRA-CH-50F-SG-C2290-110905	●		●		●	●				75 mm	3 m		C
110906 CET3-AR-CRA-CH-50X-SG-110906	●		●		●	●							C
110907 CET3-AR-CRA-CH-50F-SG-110907	●		●		●	●				75 mm			C
112921 CET3-AR-CRA-CH-50F-SG-C2333-112921	●		●		●	●				75 mm		●	C
112992 CET3-AR-CRA-CH-50S-SG-112992	●		●		●	●			●				C
113958 CET3-AR-CRA-CH-50F-SG-C2357-113958	●		●		●	●				105 mm		●	C
114090 CET3-AR-CDA-CH-50F-SG-114090	●		●		●		●						C
CET4													
111683 CET4-AR-CRA-AH-50X-SG-111683		●	●	●		●		●					C
111684 CET4-AR-CRA-CH-50X-SG-111684		●	●		●	●							C
113767 CET4-AR-CRA-CH-50X-SG-C2333-113767		●	●		●	●						●	C
114650 CET4-AR-CRA-CH-50F-SG-114650		●	●		●	●				75 mm			C
113081 CET4-AR-CRA-CH-50S-SG-113081		●	●		●	●			●				C
114712 CET4-AR-CDA-CH-50X-SG-114712		●	●		●		●						C
113609 CET4-AR-CRA-CH-50X-SG-C2355-113609		●	●		●	●							D

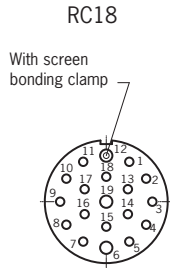
* L1 = hose length; cable length = L1 + 1 m. Important: Handle must be ordered separately (see page 218).

Safety switch CET.-AR-...-SH-... with plug connector RC18 (no UL approval)

Terminal assignment

Wiring diagram E

Plug connector (view of connection side)	Pin	Designation	Function	Wire color of connection cable ¹⁾
	1	U _{CM}	Operating voltage of guard locking solenoid, 24 V DC	VT
	2	IA	Enable input for channel 1	RD
	3	IB	Enable input for channel 2	GY
	4	OA	Safety output, channel 1	RD/BU
	5	OB	Safety output, channel 2	GN
	6	U _B	Operating voltage of AR electronics, 24 V DC	BU
	7	RST	Reset input	GY/PK
	8	OUT D	Door monitoring output (only CET3-AR and CET4-AR)	GN/WH
	9	-	n.c.	YE/WH
	10	OUT	Monitoring output	GY/WH
	11	-	n.c.	BK
	12	FE	Function earth	GN/YE
		J	Version with teach-in input: To teach-in a new actuator, connect to 24 V DC; in normal operation connect to 0 V.	
	13	Y	Version with feedback loop: If the feedback loop is not used, connect to 24 V DC	PK
		-	Version without feedback loop and without teach-in input: This connection must be connected to 0 V.	
	14	-	n.c.	BN/GY
	15	LED 1	LED 1 red, freely configurable, 24 V DC	BN/YE
	16	LED 2	LED 2 green, freely configurable, 24 V DC	BN/GN
	17	-	n.c.	WH
	18	0V U _{CM}	Operating voltage of guard locking solenoid 0 V	YE
	19	0V U _B	Operating voltage of AR electronics 0 V	BN



1) Only for standard EUCHNER connection cable



Ordering table CET-AR-...-SH-... with plug connector RC18 (no UL approval)

Order no./item	Closed-circuit current principle	Open-circuit current principle	Door monitoring output	Unicode	Multicode	Single ramp	Double ramp	Teach-in input	Feedback loop	Escape release	Wire front release (L1 *)	Lockout mechanism	Wiring diagram
CET1													
110203 CET1-AR-CRA-AH-50X-SH-110203	●			●		●		●					E
113022 CET1-AR-CRA-AH-50X-SH-C2290-113022	●			●		●		●			3 m		E
113021 CET1-AR-CRA-AH-50F-SH-C2353-113021	●			●		●		●		105 mm	3 m		E
110943 CET1-AR-CRA-AH-50F-SH-C2312-110943	●			●		●		●		105 mm			E
110204 CET1-AR-CRA-CH-50X-SH-110204	●				●	●							E
113255 CET1-AR-CRA-CH-50X-SH-113255	●				●		●						E
CET2													
110205 CET2-AR-CRA-AH-50X-SH-110205		●		●		●		●					E
112466 CET2-AR-CDA-AH-50X-SH-112466		●		●			●	●					E
110206 CET2-AR-CRA-CH-50X-SH-110206		●			●	●							E
CET3													
110103 CET3-AR-CRA-AH-50X-SH-110103	●		●	●		●		●					E
111725 CET3-AR-CRA-AH-50F-SH-C2312-111725	●		●	●		●		●		105 mm			E
113024 CET3-AR-CRA-AH-50X-SH-C2290-113024	●		●	●		●		●			3 m		E
113023 CET3-AR-CRA-AH-50F-SH-C2353-113023	●		●	●		●		●		105 mm	3 m		E
113151 CET3-AR-CRA-AH-50X-SH-C2333-113151	●		●	●		●		●				●	E
114088 CET3-AR-CRA-AH-50X-SH-C2290-114088	●		●	●		●		●			5 m		E
114505 CET3-AR-CRA-AH-50F-SH-C2333-114505	●		●	●		●		●		75 mm		●	E
113148 CET3-AR-CRA-AH-50F-SH-113148	●		●	●		●		●		75 mm			E
114647 CET3-AR-CDA-AH-50F-SH-114647	●		●	●			●	●		75 mm			E
110104 CET3-AR-CRA-CH-50X-SH-110104	●		●		●	●							E
CET4													
110201 CET4-AR-CRA-AH-50X-SH-110201		●	●	●		●		●					E
110202 CET4-AR-CRA-CH-50X-SH-110202		●	●		●	●							E
116285 CET4-AR-CRA-AH-50F-SH-116285		●	●	●		●		●		75 mm			E

* L1 = hose length; cable length = L1 + 1 m. Important: Handle must be ordered separately (see page 218).

Technical data for non-contact safety switches CET-AR...

Safety switch

Parameter	Value			Unit
	min.	typ.	max.	
General				
Material, ramp	Stainless steel			
Material, safety switch housing	Die-cast aluminum			
Installation position	Any (recommendation: switch head downward)			
Degree of protection	IP 67			
	with plug connector M12			
	with plug connector RC18			
	IP65 with plug connector RC 18 (screwed tight with the related mating connector)			
Safety class	III			
Degree of contamination	3			
Mechanical life	1 x 10 ⁶ operating cycles			
Ambient temperature at U _R	-20	-	+55	°C
Actuator approach speed, max.	20			m/min
Locking force F _{max}	6,500			N
Locking force F _{zh} in acc. with GS-ET-19	F _{zh} = F _{max} /1.3 = 5,000			N
Mass	Approx. 1.0			kg
Degrees of freedom (actuator in recess) X, Y, Z	X, Y ± 5; Z ± 4			mm
Connection type (depending on version)	2 plug connectors M12, 5 and 8-pin 1 plug connector RC 18, 19-pin (as yet no UL approval)			
Operating voltage U _B (reverse-polarity protected, regulated, residual ripple < 5%)	24 ± 15% (PELV)			V DC
Current consumption I _B	80			mA
For the approval according to UL the following applies	Operation only with UL class 2 power supply, or equivalent measures			
Switching load according to UL	DC 24 V, class 2			
External fuse (operating voltage U _B)	0.25	-	2	A
External fuse (solenoid operating voltage U _{CM})	0.5	-	8	A
Rated insulation voltage U _i	-	-	75	V
Resilience to vibration	according to EN 60947-5-2			
EMC protection requirements	acc. to EN IEC 60947-5-3			
Safety outputs OA/OB				
Semiconductor outputs, p-switching, short circuit-proof				
- Output voltage U _{OA} /U _{OB} ¹⁾				
HIGH U _{OA} /U _{OB}	U _B - 1.5	-	U _B	V DC
LOW U _{OA} /U _{OB}	0	-	1	
Switching current per safety output	1	-	200	mA
Utilization category according to EN 60947-5-2	DC-13 24V 200mA			
	Caution: outputs must be protected with a free-wheeling diode in case of inductive loads			
Switching frequency	0.5			Hz
Repeat accuracy R acc. to EN IEC 60947-5-3	≤ 10			%
Monitoring outputs OUT and OUT D (optional)				
(p-switching, short circuit-proof)				
Output voltage	0.8 x U _B	-	U _B	V DC
Max. load	-	-	50	mA
Teach-in input J or input feedback loop Y				
HIGH	15	-	U _{CM}	V
LOW	0	-	1	
Solenoid				
Solenoid operating voltage U _{CM} (reverse polarity protected, regulated, residual ripple < 5%)	DC 24 V +10%/-15%			
Current consumption solenoid I _{CM}	480			mA
Power consumption	10			W
Duty cycle	100			%
Freely configurable LEDs²⁾				
LED1 red, LED2 green				
Operating voltage	20.4	-	26.4	V DC
Reliability values according to EN ISO 13849-1				
	Head downward or horizontal		Head upward	
Category	4		3	
Performance Level (PL)	e		e	
PFH _d	3.1 x 10 ⁻⁹ / h		4,29 x 10 ⁻⁸ / h	
Mission time	20		20	
			years	

1) Values at a switching current of 50 mA without taking into account the cable lengths.

2) Can vary depending on version. See data sheet.

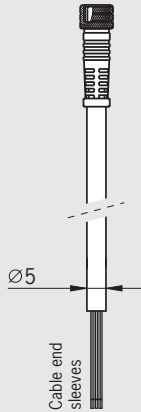
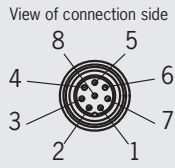
Actuator

Parameter	Value			Unit
	min.	typ.	max.	
Housing material	Stainless steel			
Installation position	Active face opposite read head			
Degree of protection according to IEC/EN 60529	IP67			
Mechanical life	1 x 10 ⁶ operating cycles			
Ambient temperature	-20	-	+55	°C
Locking force, max. (locked)	6,500			N
Mass	Approx. 0.25			kg
Stroke max.	15			mm
Power supply	Inductive, via read head			

Connection cables with plug connectors

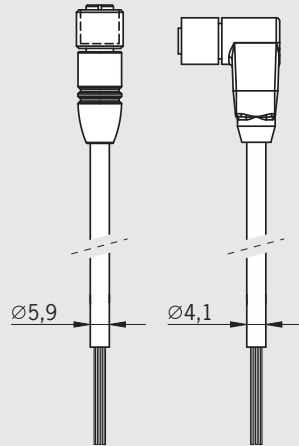
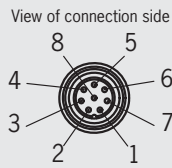
Flying lead
M8 female connector 8-pin

Dimension drawing



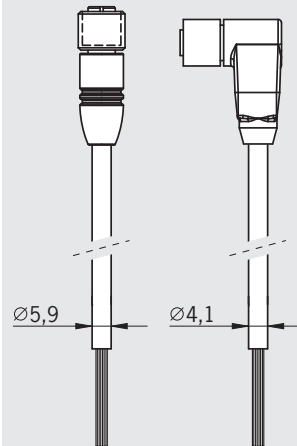
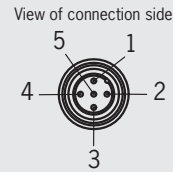
- | | | |
|--------|---|-----|
| 1 = WH | ▶ | IB |
| 2 = BN | ▶ | UB |
| 3 = GN | ▶ | OA |
| 4 = YE | ▶ | OB |
| 5 = GY | ▶ | OUT |
| 6 = PK | ▶ | IA |
| 7 = BU | ▶ | 0 V |
| 8 = RD | ▶ | RST |

Flying lead
M12 female connector 8-pin



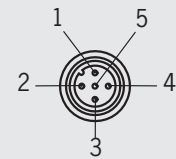
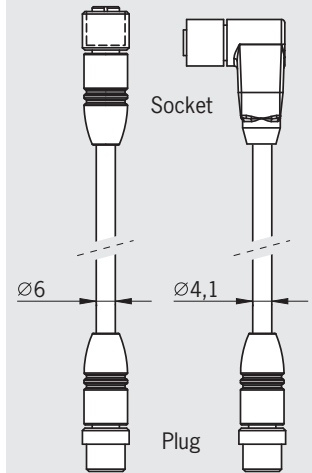
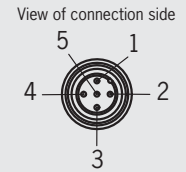
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|--------|---|-----|
| 1 = WH | ▶ | IB |
| 2 = BN | ▶ | UB |
| 3 = GN | ▶ | OA |
| 4 = YE | ▶ | OB |
| 5 = GY | ▶ | OUT |
| 6 = PK | ▶ | IA |
| 7 = BU | ▶ | 0 V |
| 8 = RD | ▶ | RST |

Flying lead
M12 female connector 5-pin



- | | CES-AR | CET-AR |
|--------|--------|----------------|
| 1 = BN | ▶ | U _B |
| 2 = WH | ▶ | OA |
| 3 = BU | ▶ | 0 V |
| 4 = BK | ▶ | OB |
| 5 = GY | ▶ | RST |

Plug on both ends
M12 plug and female connector 5-pin



- | | CES-AR | CET-AR |
|--------|--------|----------------|
| 1 = BN | ▶ | U _B |
| 2 = WH | ▶ | OA |
| 3 = BU | ▶ | 0 V |
| 4 = BK | ▶ | OB |
| 5 = GY | ▶ | RST |

Ordering table see next page.

Connection cables with plug connectors

Ordering table connection cables PVC with plug connectors

Series		Comment	Order no./item
M8 8 pin	M8 connection cable PVC, 8-core, flying lead, 8 x 0.14 mm² for the connection of one CES-AR-C.2...-SG	M8 female connector 8-pin, length 5 m	110933 C-M08F08-08X014PV05,0-ES-110933
		M8 female connector 8-pin, length 10 m	110934 C-M08F08-08X014PV10,0-ES-110934
		M8 female connector 8-pin, length 15 m	110935 C-M08F08-08X014PV15,0-ES-110935
		M8 female connector 8-pin, length 20 m	111603 C-M08F08-08X014PV20,0-ES-111603
M12 5 pin	M12 connection cable PVC, 5-core, flying lead, 5 x 0.34 mm² for the connection of one CET-AR	M12 female connector 5-pin, length 5 m	100183 C-M12F05-05X034PV05,0-MA-100183
		M12 female connector 5-pin, length 10 m	100184 C-M12F05-05X034PV10,0-MA-100184
		M12 female connector 5-pin, length 20 m	100185 C-M12F05-05X034PV20,0-MA-100185
M12 5 pin	M12 extension cable PVC, 5-core, plug connectors at both ends for the connection of one CET-AR to decentralized peripheral equipment	M12 female connector 5-pin to M12 plug connector, length 5 m	100180 C-M12F05-05X034PV05,0-M12M05-100180
		M12 female connector 5-pin to M12 plug connector, length 10 m	100181 C-M12F05-05X034PV10,0-M12M05-100181
		M12 female connector 5-pin to M12 plug connector, length 20 m	100182 C-M12F05-05X034PV20,0-M12M05-100182
M12 8 pin	M12 connection cable PVC, 8-core, flying lead, 8 x 0.25 mm² for the connection of one CES-AR-C01...-SA / CES-AR-C.2...-SA / CET-AR	M12 female connector 8-pin, length 5 m	100177 C-M12F08-08X025PV05,0-MA-100177
		M12 female connector 8-pin, length 10 m	100178 C-M12F08-08X025PV10,0-MA-100178
		M12 female connector 8-pin, length 20 m	100179 C-M12F08-08X025PV20,0-MA-100179

Ordering table connection cables PUR with plug connectors

Series		Comment	Order no./item
M8 8 pin	M8 connection cable PUR, 8-core, flying lead, 8 x 0.14 mm² for the connection of one CES-AR-C.2...-SG	M8 female connector 8-pin, length 5 m	106671 C-M08F08-08X014PU05,0-ES-106671
		M8 female connector 8-pin, length 10 m	106672 C-M08F08-08X014PU10,0-ES-106671
		M8 female connector 8-pin, length 20 m	106673 C-M08F08-08X014PU20,0-ES-106673
M12 8 pin	M12 connection cable PUR, 8-core, flying lead, 8 x 0.25 mm² for the connection of one CES-AR-C01...-SA / CES-AR-C.2...-SA / CET-AR	M12 female connector, angled, 8-pin, length 10 m, cable outlet right	113189 C-M12F08-08X025PU10,0-MA-113189
		M12 female connector, angled, 8-pin, length 10 m, cable outlet left	113188 C-M12F08-08X025PU10,0-MA-113188
M12 5 pin	M12 connection cable PUR, 5-core, flying lead, 5 x 0.25 mm² for the connection of one CET-AR	M12 female connector, angled, 5-pin, length 10 m, cable outlet right	113190 C-M12F05-05X025P10,0-MA-113190
		M12 female connector, angled, 5-pin, length 10 m, cable outlet left	113187 C-M12F05-05X025P10,0-MA-113187
M12 5 pin	M12 extension cable PUR, 5-core, plug connectors at both ends for the connection of one CET-AR to decentralized peripheral equipment	M12 female connector, angled, 5-pin to M12 plug connector, length 10 m, cable outlet right	115566 C-M12F05-05X025P10,0-M12M05-115566
		M12 female connector, angled, 5-pin to M12 plug connector, length 10 m, cable outlet left	115565 C-M12F05-05X025P10,0-M12M05-115565



Technical data for M8 connection cable PVC, 8-core

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	8-pin M8 female connector, straight			
Connection	Screw terminal			
Conductor cross-section	8 x 0.14			mm ²
Material, connector housing	TPU, self-extinguishing			
Material, outer sheath	PVC Ø 4.5			mm
Static bending radius	min. 5 x cable diameter			mm

Technical data for M8 connection cable PUR, 8-core

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	8-pin M8 female connector, straight			
Connection	Screw terminal			
Conductor cross-section	8 x 0.14			mm ²
Material, connector housing	TPU			
Material, outer sheath	PUR Ø 5			mm
Static bending radius	min. 5 x cable diameter			mm

Technical data for M12 connection cable PVC, 5-core

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	5-pin M12 female connector, straight			
Connection	Screw terminal			
Conductor cross-section	5 x 0.34			mm ²
Material, connector housing	TPU, self-extinguishing			
Material, outer sheath	PVC Ø 5.9			mm
Static bending radius	min. 5 x cable diameter			mm

Technical data for M12 connection cable PVC, 8-core

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	8-pin M12 female connector, straight			
Connection	Screw terminal			
Conductor cross-section	8 x 0.25			mm ²
Material, connector housing	TPU, self-extinguishing			
Material, outer sheath	PVC Ø 5.9			mm
Static bending radius	min. 5 x cable diameter			mm

Technical data for M12 connection cable PUR, 5-core, with female connector, angled

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	5-pin M12 female connector, angled			
Connection	Screw terminal			
Conductor cross-section	5 x 0.25			mm ²
Material, connector housing	TPU, self-extinguishing			
Material, outer sheath	PUR Ø 4.1			mm
Static bending radius	min. 5 x cable diameter			mm

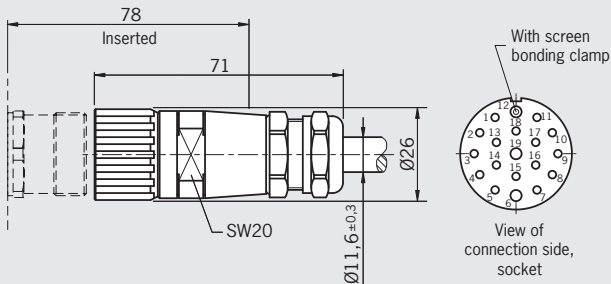
Technical data for M12 connection cable PUR, 8-core, with female connector, angled

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	8-pin M12 female connector, angled			
Connection	Screw terminal			
Conductor cross-section	8 x 0.25			mm ²
Material, connector housing	TPU, self-extinguishing			
Material, outer sheath	PUR Ø 5.2			mm
Static bending radius	min. 5 x cable diameter			mm

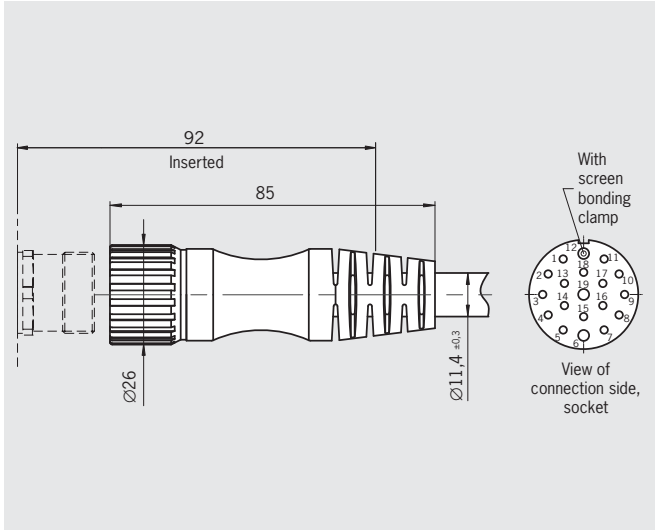
Connection cables with plug connector RC18 for CET-AR

Female connector RC18 with cable
18-pin + PE

Dimension drawing

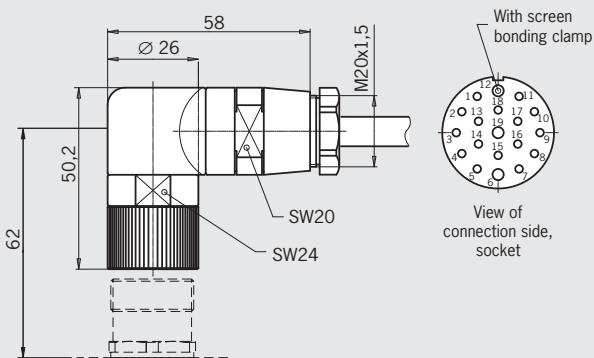


Female connector RC18 with cable halogen-free
18-pin + PE

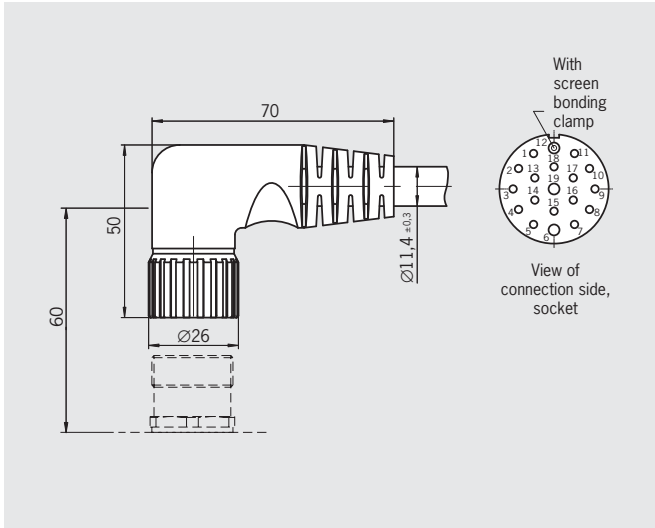


Female connector RC18 angled with cable
18-pin + PE

Dimension drawing



Female connector RC18 angled with cable halogen-free
18-pin + PE



Assignment connection cable RC18 for CET-AR

Pin	Core color	Conductor cross-section [mm]	Pin	Core color	Conductor cross-section [mm]
1	VT	0.5	11	BK	0.5
2	RD	0.5	12	GN/YE	1.0
3	GY	0.5	13	PK	0.5
4	RD/BU	0.5	14	BN/GY	0.5
5	GN	0.5	15	BN/YE	0.5
6	BU	1.0	16	BN/GN	0.5
7	GY/PK	0.5	17	WH	0.5
8	GN/WH	0.5	18	YE	0.5
9	YE/WH	0.5	19	BN	1.0
10	GY/WH	0.5			

Ordering table see next page.

Ordering table

Designation	Cable length [m]	Order no./item	
Female connector RC18 with cable PUR for CET-AR 18-pin + PE	1.5	092761 RC18EF1,5M-C1825	
	3	092816 RC18EF3M-C1825	
	6	077014 RC18EF6M-C1825	
	8	077015 RC18EF8M-C1825	
	10	092898 RC18EF10M-C1825	
	15	077016 RC18EF15M-C1825	
	20	092726 RC18EF20M-C1825	
	25	092727 RC18EF25M-C1825	
	30	095993 RC18EF30M-C1825	
Female connector RC18 with cable PUR halogen-free, suitable for drag chain for CET-AR 18-pin + PE	1.5	092883 RC18EF1,5MF-C1825	
	3	092884 RC18EF3MF-C1825	
	6	092885 RC18EF6MF-C1825	
	8	092886 RC18EF8MF-C1825	
	10	092887 RC18EF10MF-C1825	
	15	092888 RC18EF15MF-C1825	
	20	092889 RC18EF20MF-C1825	
	25	092890 RC18EF25MF-C1825	
	30	109681 RC18EF30MF-C1825	
Designation	Cable length [m]	Order no./item	
Female connector RC18 angled with cable PUR for CET-AR 18-pin + PE	1.5	092906 RC18WF1,5ML-C1825	092907 RC18WF1,5MR-C1825
	3	092908 RC18WF3ML-C1825	092909 RC18WF3MR-C1825
	6	077018 RC18WF6ML-C1825	085194 RC18WF6MR-C1825
	8	077019 RC18WF8ML-C1825	085195 RC18WF8MR-C1825
	10	092901 RC18WF10ML-C1825	092902 RC18WF10MR-C1825
	15	077020 RC18WF15ML-C1825	085196 RC18WF15MR-C1825
	20	092910 RC18WF20ML-C1825	092911 RC18WF20MR-C1825
	25	092912 RC18WF25ML-C1825	092913 RC18WF25MR-C1825
	Female connector RC18 angled with cable PUR halogen-free, suitable for drag chain for CET-AR 18-pin + PE	1.5	092891 RC18WF1,5MLF-C1825
3		092893 RC18WF3MLF-C1825	092894 RC18WF3MRF-C1825
6		092697 RC18WF6MLF-C1825	092698 RC18WF6MRF-C1825
8		092895 RC18WF8MLF-C1825	092896 RC18WF8MRF-C1825
10		092699 RC18WF10MLF-C1825	092700 RC18WF10MRF-C1825
15		092701 RC18WF15MLF-C1825	092702 RC18WF15MRF-C1825
20		092704 RC18WF20MLF-C1825	092708 RC18WF20MRF-C1825
25		092724 RC18WF25MLF-C1825	092725 RC18WF25MRF-C1825

Connection cables with plug connector RC18 for CET-AR

Technical data for female connector RC18, straight/angled, with cable

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	Female connector 19-pin + PE with spring bonding clamp			
Connection	Screw terminal			
Conductor cross-section	16 x 0.5 / 3 x 1.0			mm ²
Material, connector housing	CuZn			
Material, outer sheath	Polyurethane			
Bending radius	min. 10 x cable diameter			mm

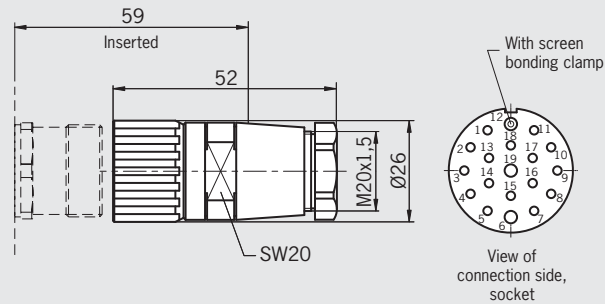
Technical data for female connector RC18, straight/angled, with halogen-free cable

Parameter	Value			Unit
	min.	typ.	max.	
Plug connector	Female connector 19-pin + PE with spring bonding clamp			
Connection	Screw terminal			
Conductor cross-section	16 x 0.5 / 3 x 1.0			mm ²
Material, connector housing	Polyurethane, halogen-free			
Material, outer sheath	Polyurethane, halogen-free			
Material, union nut	CuZn			
Bending radius	min. 10 x cable diameter			mm

Female connector RC18 CET-AR

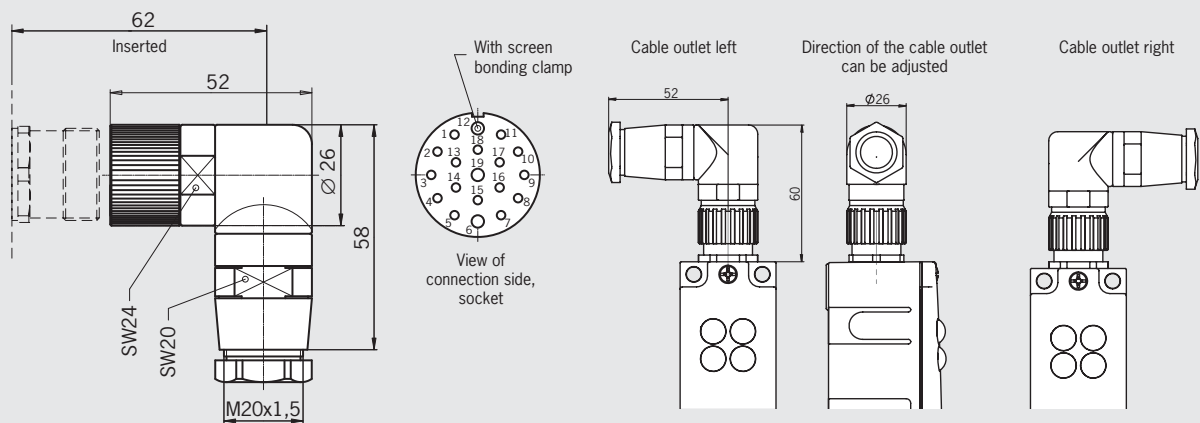
Female connector RC18
18-pin + PE

Dimension drawing



Female connector RC18 angled
18-pin + PE, direction of the cable outlet can be adjusted

Dimension drawing



Ordering table

Series	Comment	Order no.
RC18 ¹⁾ 18-pin + PE	EF Female connector	074616 RC18EF
	WF Female connector angled	074617 RC18WF
	Replacement pin crimp contacts Conductor cross-section 19 x 0.75 - 1 mm ²	094309 Pin crimp contact RCM

1) Crimp contacts included

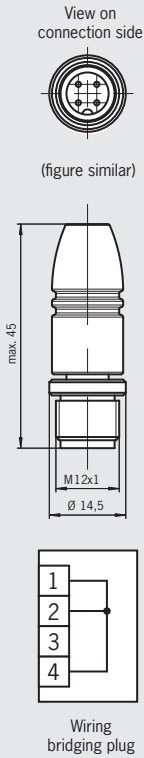
Technical data

Parameter	Value			Unit
	min.	typ.	max.	
Grip material		CuZn nickel-plated		
Degree of protection acc. to EN 60529		IP65 (inserted)		

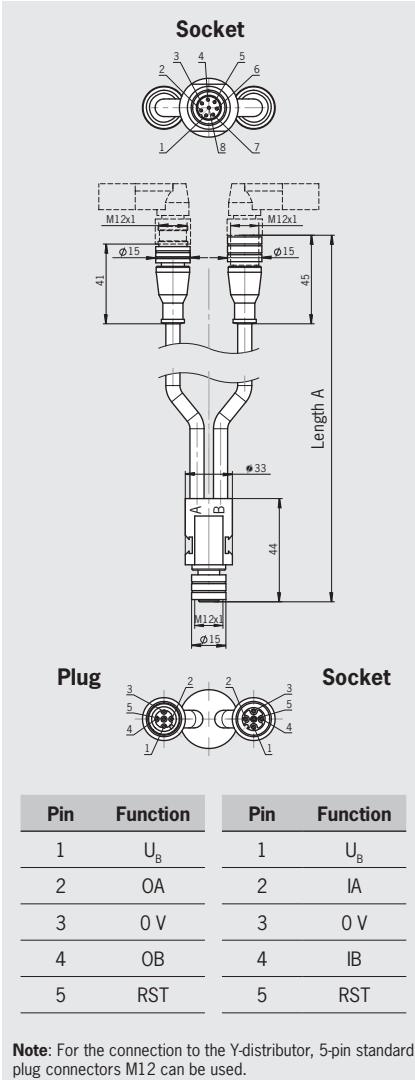
Bridging plug/Y-distributor

Bridging plug
Male plug 4-pin

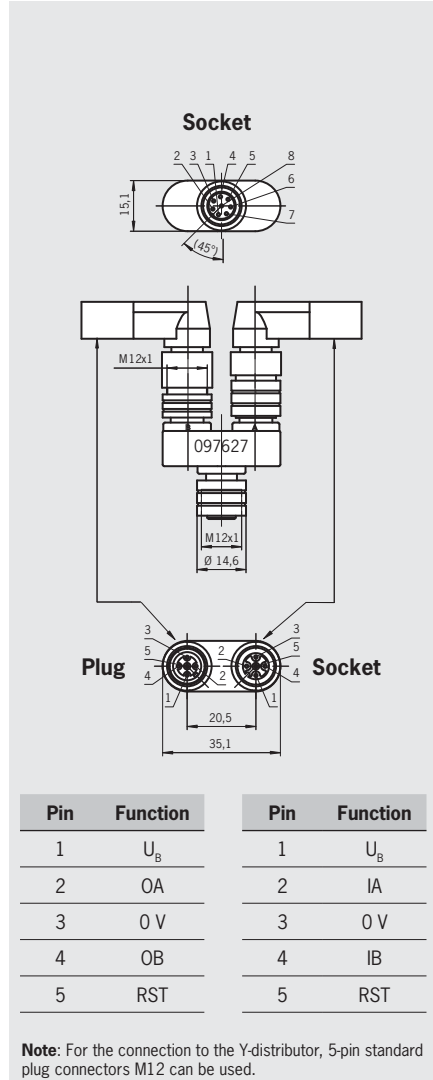
Dimension drawing



Y-distributor M12 with connection cable
1 x 8-pin, 2 x 5-pin



Y-distributor M12
1 x 8-pin, 2 x 5-pin



Important: Switch chains must always be terminated with a bridging plug. Switch chains up to maximum 200 m are allowed taking into account the voltage drop due to the cable resistance (see operating instructions of your AR device).

Ordering table

Series	Comment	Order no.
Bridging plug	M12 plug connector 4-pin	097645 Bridging plug
Y-distributor M12 with connection cable	M12, 1 x 8-pin, 2 x 5-pin	Length A = 200 mm 111696 Y-distributor with connection cable
		Length A = 1,000 mm 112395 Y-distributor with connection cable
Y-distributor M12	M12, 1 x 8-pin, 2 x 5-pin	097627 Y-distributor M12



Technical data for bridging plug

Parameter	Value			Unit
	min.	typ.	max.	
Grip material		TPU, self-extinguishing		
Threaded bushing material		CuZn nickel-plated		
Degree of protection acc. to EN 60529		IP68 (inserted)		

Technical data for Y-distributor M12 with connection cable

Parameter	Value			Unit
	min.	typ.	max.	
Grip material		TPU, self-extinguishing		
Threaded bushing/union nut material		CuZn nickel-plated		
Material, outer sheath		PVC		
Degree of protection acc. to EN 60529		IP67 (inserted)		

Technical data for Y-distributor M12

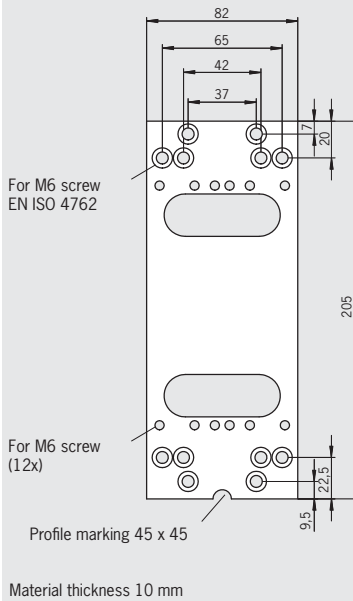
Parameter	Value			Unit
	min.	typ.	max.	
Grip material		TPU, self-extinguishing		
Threaded bushing/union nut material		CuZn nickel-plated		
Degree of protection acc. to EN 60529		IP67 (inserted)		

Mounting plate CET

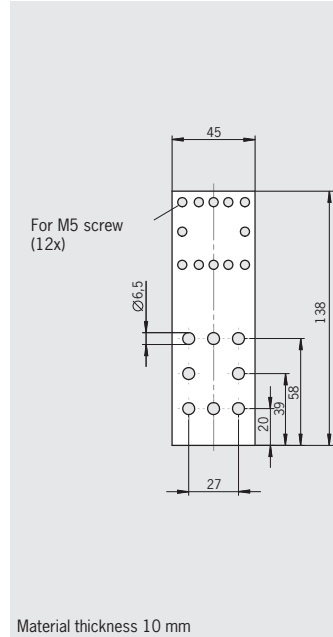
- ▶ Mounting plate for safety switch CET for hinged or sliding doors
- ▶ Suitable for aluminum profiles 40 ... 45 mm
- ▶ Horizontal and vertical mounting
- ▶ Made of aluminum
- ▶ Suitable for CET with escape release

Mounting plate EMP-L-CET for read head CET

Dimension drawing



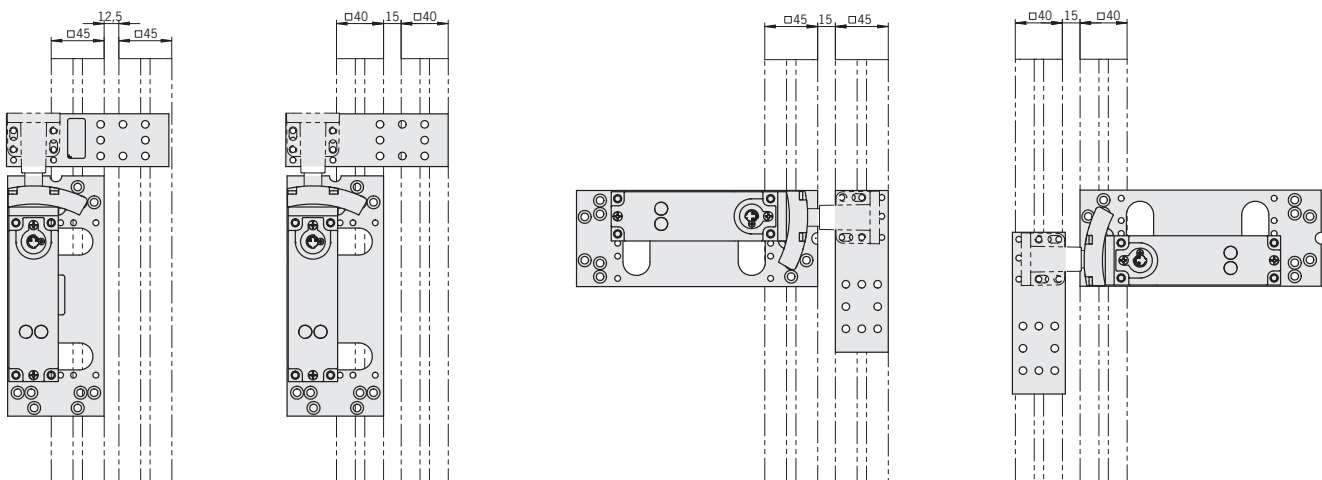
Mounting plate EMP-B-CET for actuator CET



Ordering table

Designation	Use	Order no./item
Mounting plate EMP-L-CET	for safety switch CET	106695 EMP-L-CET
Mounting plate EMP-B-CET	for actuator CET	106694 EMP-B-CET

Installation example mounting plates EMP-.-CET



Safety screws

Ordering table

Fixing material/screw size	Version/usage	Packaging unit [qty.]	Order no.
Safety screws M4 x 14 (small head)	Actuator CES-A-BBA, CES-A-BCA	20	071863
Safety screws M4 x 14 (large head)	Safety switch CES-AR-C.2 and actuator CES-A-BLN.2	100	086232
Safety screws M5 x 16	Actuator CES-A-BRN, CET-A-BWK	100	073456
Safety screws M5 x 10	Safety switch CES-AR-C01-EH-SA and actuator CES-A-BPA	100	073455

Miscellaneous accessories

- ▶ **Mechanical key release for safety switch CET**
- ▶ **Emergency unlocking for safety switch CET**

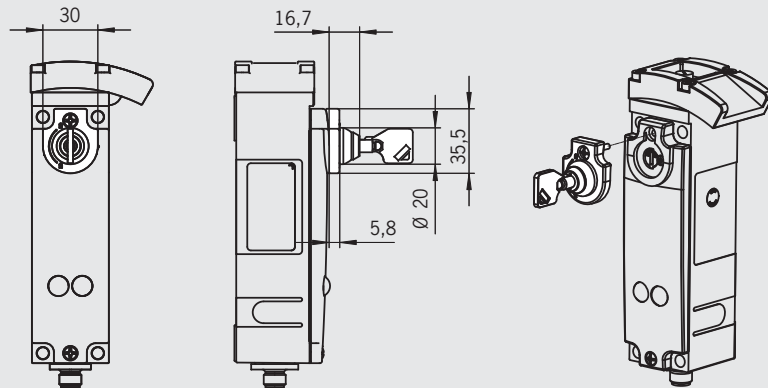
Mechanical key release

The mechanical key release is used in combination with safety switch CET. It enables authorized personnel to actuate the mechanical release using the related key. The unlocking mechanism holds the solenoid in the "unlocked" position. A screw is used to fix the lock to the cover of the safety switch CET (over the mechanical release). The lock is identical locking.

- ▶ Order safety switch CET separately
- ▶ 2 keys included (for spare keys see ordering table below)
- ▶ Every safety switch in the CET series can be upgraded with the mechanical key release.

Mechanical key release for safety switch CET

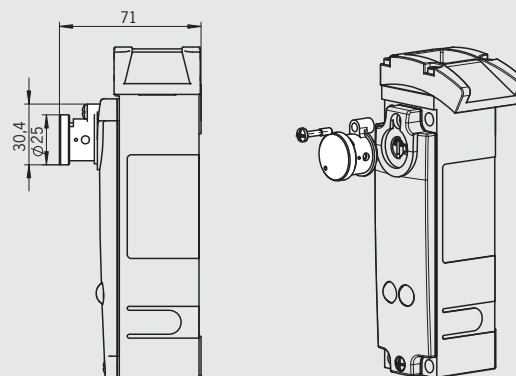
Dimension drawing



Emergency unlocking

Using the emergency unlocking the safety switch can be unlocked manually. In the locked position of the emergency unlocking, a ball detent mechanism prevents unintentional unlocking of the safety switch due to vibration or similar. In the unlocked position of the emergency unlocking, an integrated bolt engages in a bore on the flange. To reset the emergency unlocking, first the bolt must be pressed inwards, out of the detent mechanism, using a tool. The emergency unlocking can be lead-sealed (lead seal kit order no. 087256).

Emergency unlocking for safety switch CET



Ordering table

Designation	Use	Version	Order no./item
Mechanical key release	for safety switch CET	identical locking, incl. 2 keys	098850 Mechanical key release
Replacement key	for mechanical key release, identical locking	2 keys, identical locking	099434 Replacement key
Emergency unlocking	for safety switch CET	latching in both positions	103714 Emergency unlocking CET
Lead seal kit	for emergency unlocking		087256 Lead seal kit for emergency unlocking

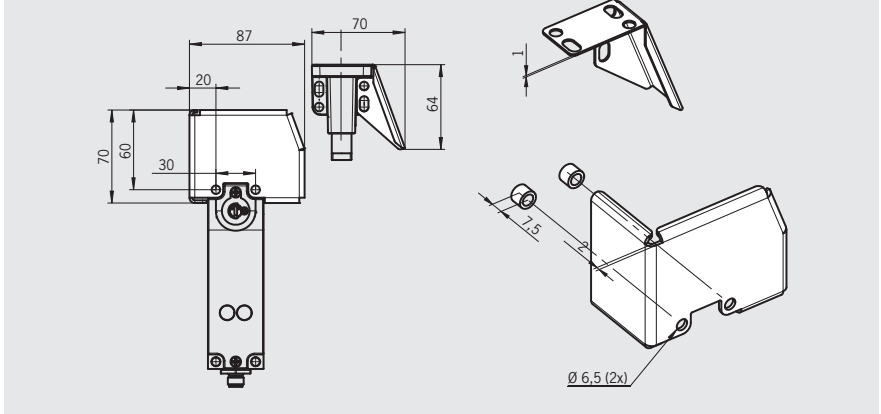
- ▶ Cover for safety switch CET
- ▶ Double ramp for safety switch CET

Cover

With the CET cover, tampering with the safety switch CET is effectively prevented. The cover prevents the use of simple tools to manually press up the actuator.

Cover for safety switch and actuator CET

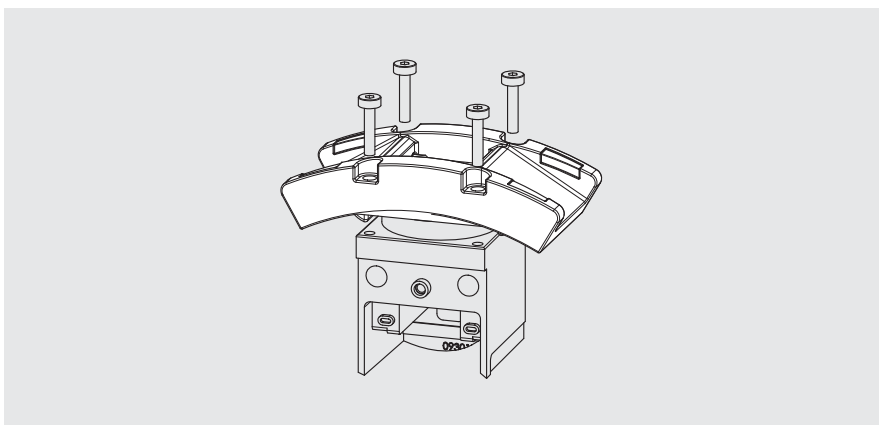
Cover for door hinge on left mirror image



Double ramp

The ramp can be approached from two sides. It can be passed over, e.g. for sliding doors.

Double ramp for safety switch CET



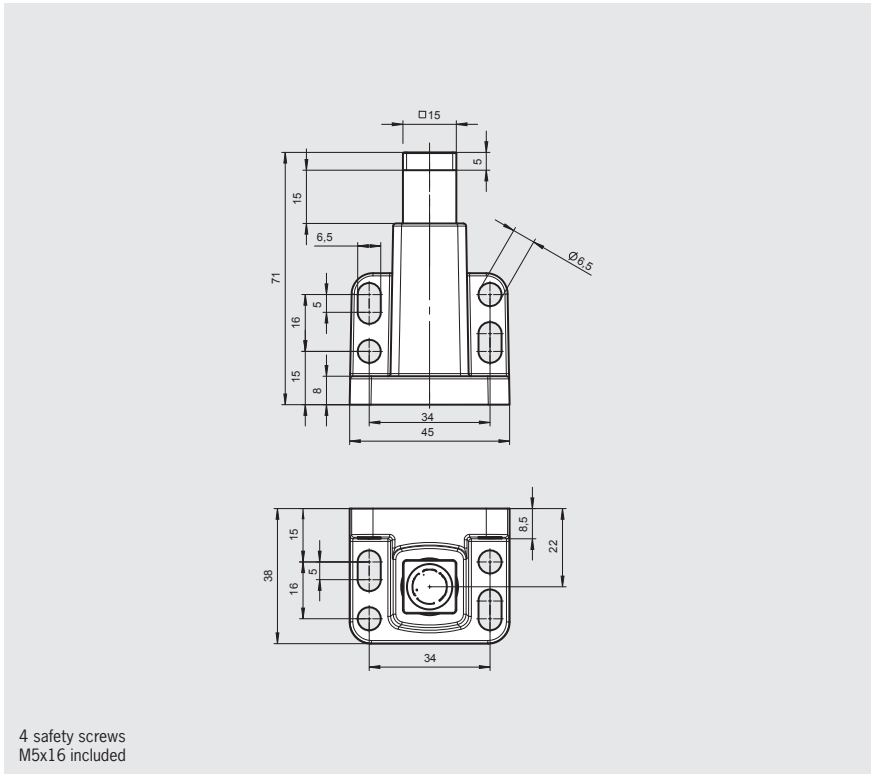
Ordering table

Designation	Use	Version	Order no./item
Cover	for safety switch CET and actuator CET	door hinge right	098808 CET cover right
		door hinge left	098807 CET cover left
Double ramp	for safety switch CET		114091 Double ramp for CET

Miscellaneous accessories

- ▶ Actuator for safety switch CET
- ▶ Handle for wire front release for safety switch CET

Actuator CET-A-BWK-50X
for safety switch CET-AR



Ordering table

Designation	Version/usage	Order no./item
Actuator for CET...	4 safety screws M5x16 included	096327 CET-A-BWK-50X
Handle for wire front release	For safety switch CET-AR with wire front release	099795 Handle for wire front release

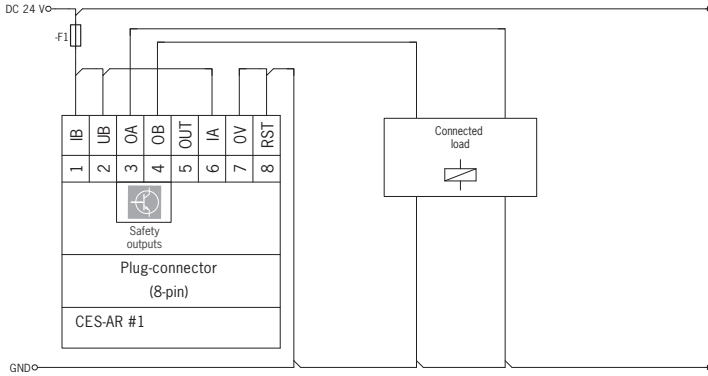
Connection examples CES-AR

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

Connection of a single CES-AR-C

If a single CES-AR-C is used, connect the switch as shown in figure below. The OUT output can also be connected here to a control system as a monitoring output.

The switch can be reset via the RST input. To do this, a voltage of 24 V is applied to the RST input for at least 3 seconds. The supply voltage to the switches is interrupted during this time. If input RST is not used in your application, it should be connected to 0 V.

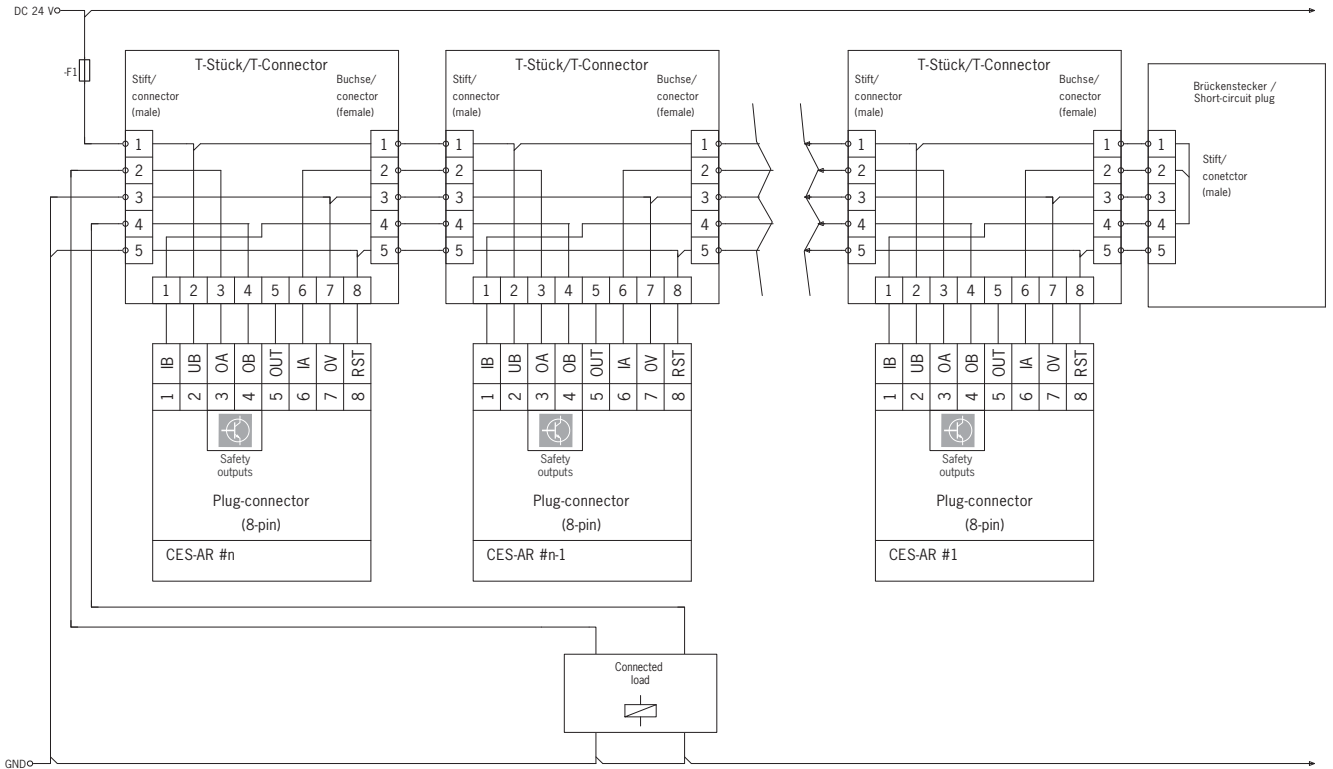


Connection of several CES-AR-C in series

The switches are connected in series using plug connectors and Y-distributors. If, in this connection example, a safety door is opened or if a fault occurs on one of the switches, the system shuts down the machine. A higher level control system can, however, not detect which safety door is open or on which switch a fault has occurred. So that a control system can detect the status of each switch in a switch chain, the monitoring output OUT must be connected separately for each switch. A special AR evaluation unit is required for this purpose (see page 170).

The switches can be reset via the RST input. To do this, a voltage of 24 V is applied to the RST input for at least 3 seconds. The supply voltage to the switches is interrupted during this time. If input RST is not used in your application, it should be connected to 0 V.

Important: Switch chains must always be terminated with a bridging plug.



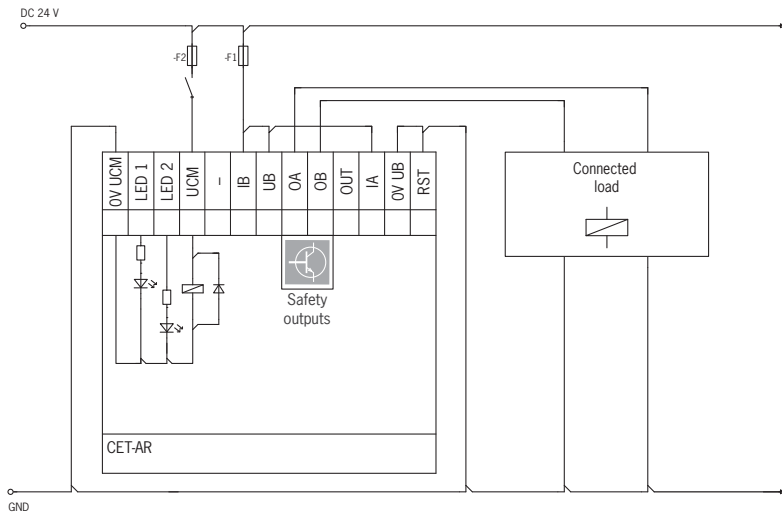
Connection examples CET-AR

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

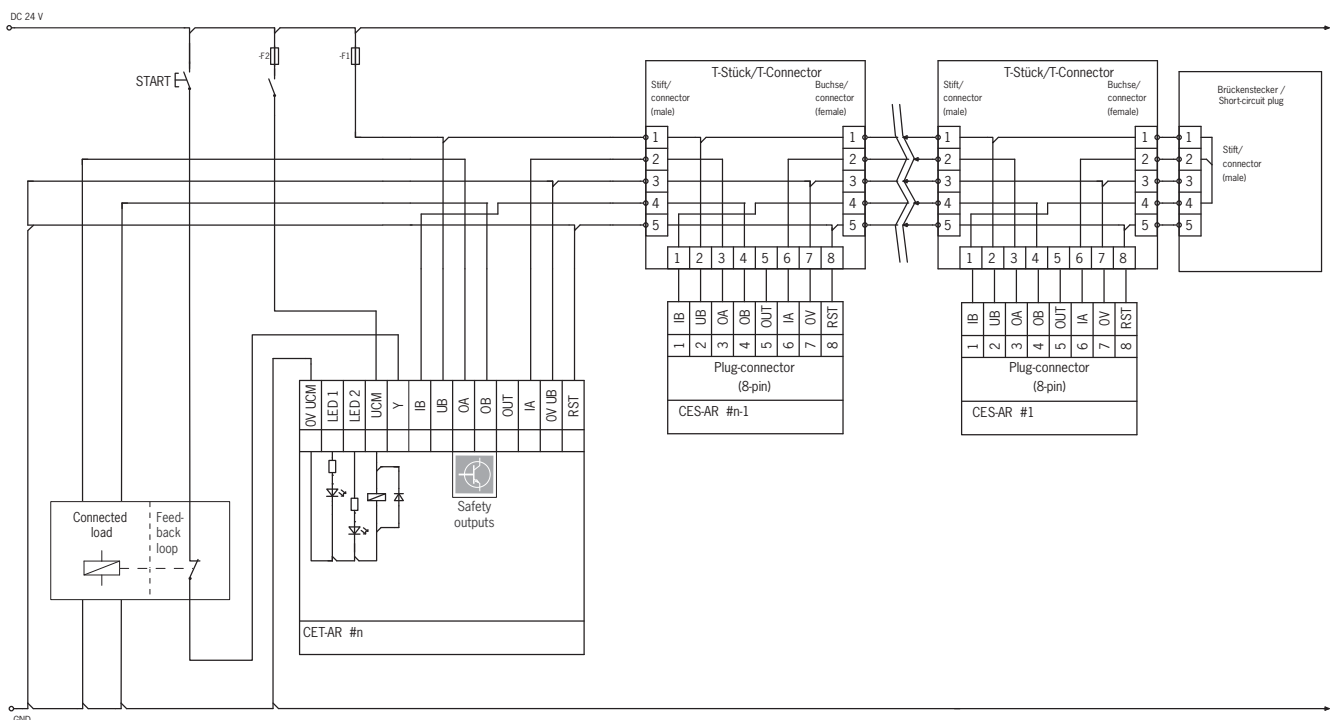
Connection of a single CET-AR, version without feedback loop

If a single CET-AR is used, connect the switch as shown in figure below. The OUT output can also be connected here to a control system as a monitoring output.

The switch can be reset via the RST input. To do this, a voltage of 24 V is applied to the RST input for at least 3 seconds. The supply voltage to the switches is interrupted during this time. If input RST is not used in your application, it should be connected to 0 V.



Connection of a CET-AR in a CES-AR switch chain



Important: The subsystem CET-AR complies with PL e in accordance with EN 13849-1. To integrate the subsystem in a category 3 or 4 structure, it is necessary to monitor the downstream load (the feedback loop must be monitored).

These examples show only an excerpt that is relevant for connection of the CET system. The example illustrated here does not show complete system planning. The user is responsible for safe integration in the overall system.

Bolts for safety guards

According to EN 12100-2 movable safety guards must be equipped with an interlocking device, with or without guard locking.

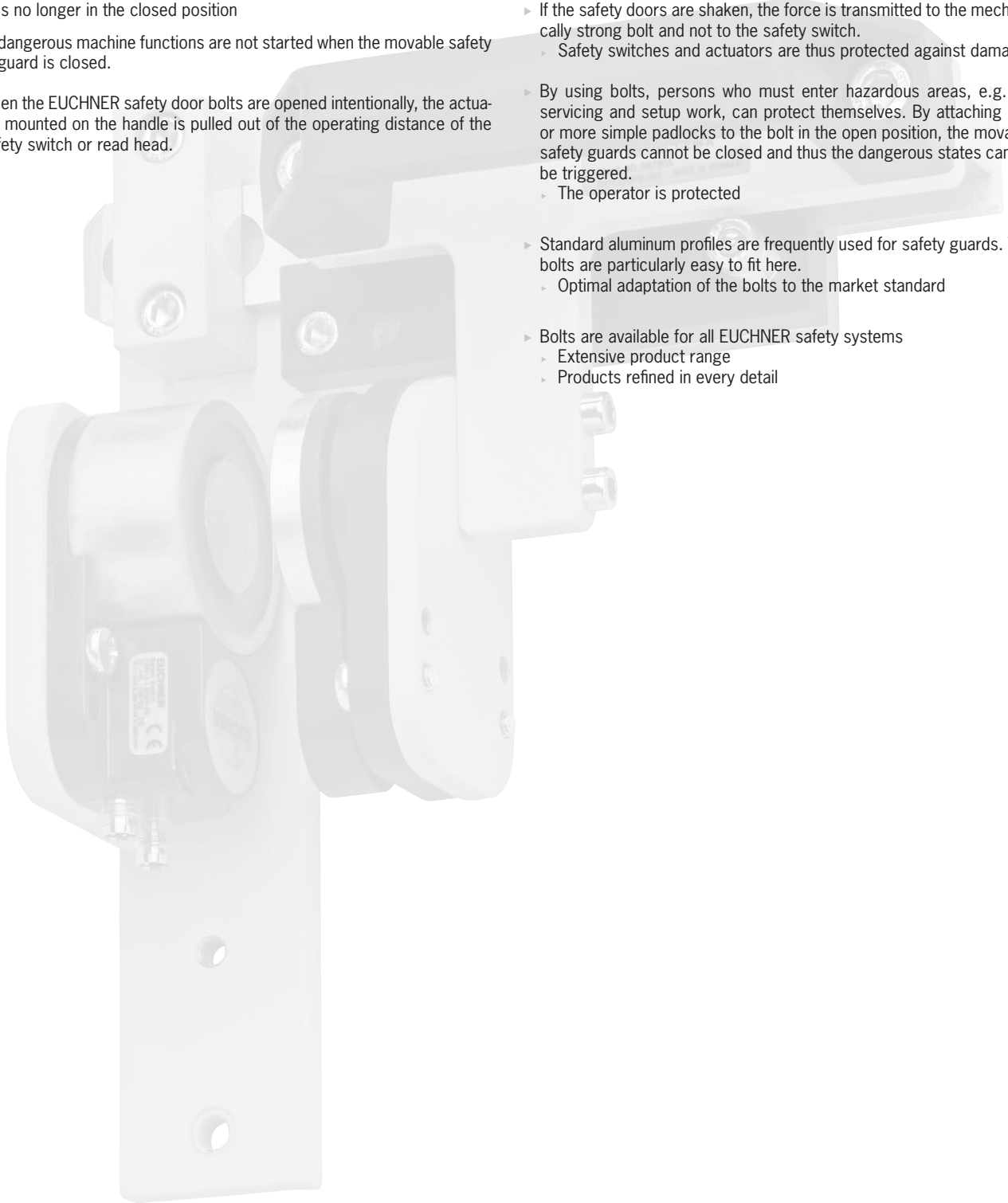
Here it must be ensured that

- ▶ dangerous machine functions are stopped as soon as the safety guard is no longer in the closed position
- ▶ dangerous machine functions are not started when the movable safety guard is closed.

When the EUCHNER safety door bolts are opened intentionally, the actuator mounted on the handle is pulled out of the operating distance of the safety switch or read head.

Bolts for safety guards offer important advantages:

- ▶ Bolts provide mechanical guard locking, i.e. the monitoring circuit cannot be opened unintentionally by moving the hinged door.
 - Accidental stoppage of the machine is prevented
- ▶ If the safety doors are shaken, the force is transmitted to the mechanically strong bolt and not to the safety switch.
 - Safety switches and actuators are thus protected against damage
- ▶ By using bolts, persons who must enter hazardous areas, e.g. for servicing and setup work, can protect themselves. By attaching one or more simple padlocks to the bolt in the open position, the movable safety guards cannot be closed and thus the dangerous states cannot be triggered.
 - The operator is protected
- ▶ Standard aluminum profiles are frequently used for safety guards. The bolts are particularly easy to fit here.
 - Optimal adaptation of the bolts to the market standard
- ▶ Bolts are available for all EUCHNER safety systems
 - Extensive product range
 - Products refined in every detail



Bolt CET-A-C

- ▶ In combination with CET
- ▶ For doors hinged on the right or left



Special features

- ▶ Easy assembly
- ▶ Uniquely coded actuator (one-off)
 - maximum protection against tampering

Features

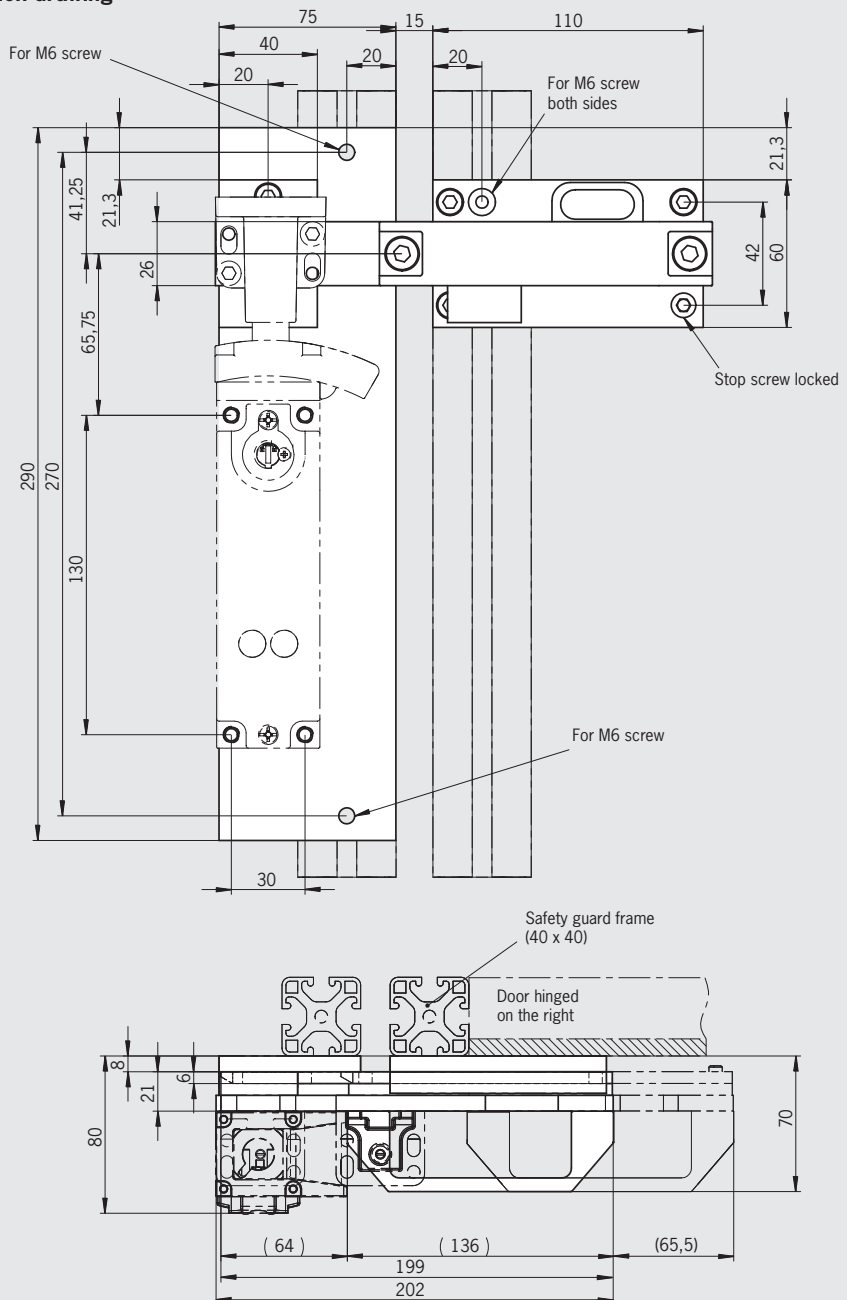
- ▶ Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- ▶ Symmetrical design for doors hinged on the right or left
- ▶ No additional door handle necessary

Notes

- ▶ Order read head, actuator and evaluation unit separately
- ▶ Other bolt types (e.g. with mechanical detent mechanism in closed bolt position) on request
- ▶ The installation position of the safety switch/read head affects the safety category (see pages 63, 148 and 194)

Bolt CET-A-C

Dimension drawing



Ordering table

Designation	Detent mechanism	Version	Order no.
Bolt CET-A-C	Without	For doors hinged on the right or left	104309
Bolt CET-A-C/F	Closed position: none Open position: detent knob	For doors hinged on the right or left, for CET with escape release	106172
Actuator CET	-	Locking force 5,000 N	096327 CET-A-BWK-50X

Bolt CET-A-C-C2308

- ▶ In combination with CET
- ▶ Specially suited for swing doors
- ▶ For doors hinged on the right or left



Special features

- ▶ Allows door to be opened outward and inward, making it particularly suitable for swing doors
- ▶ Easy assembly
- ▶ Uniquely coded actuator (one-off)
 - maximum protection against tampering

Features

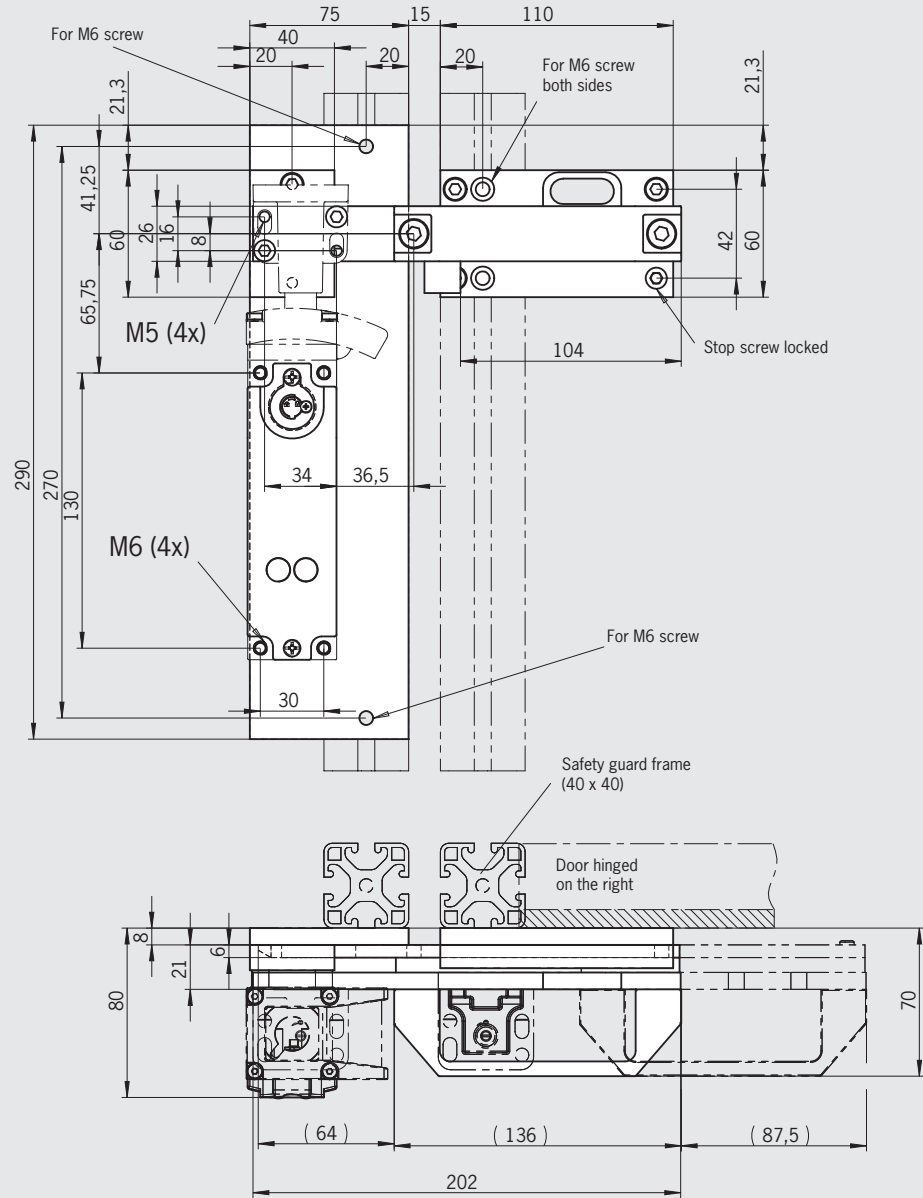
- ▶ Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- ▶ Symmetrical design for doors hinged on the right or left
- ▶ No additional door handle necessary

Notes

- ▶ Order read head, actuator and evaluation unit separately
- ▶ Other bolt types (e.g. with mechanical detent mechanism in closed bolt position) on request
- ▶ The installation position of the safety switch/read head affects the safety category (see pages 63, 148 and 194)

Bolt CET-A-C-C2308

Dimension drawing



Ordering table

Designation	Detent mechanism	Version	Order no.
Bolt CET-A-C-C2308	Without	For doors hinged on the right or left. Bolt can be opened outward and inward (no stop).	109672
Actuator CET	-	Locking force 5,000 N	096327 CET-A-BWK-50X