

## ITEM 106159 CET1-AR-CRA-AH-50F-SG-106159

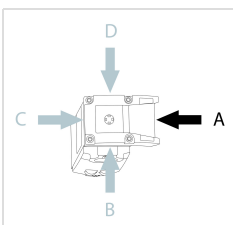
Description	Technical data	Accessories	Downloads
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### Features

- › Safety switch with guard locking and integrated evaluation electronics
- › Locking force up to 6500 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
- › With 2 plug connectors M12
- › Unicode
- › Teach-in input
- › Escape release, 75 mm long
- › Approach direction A (default setting on delivery)

### Approach direction



› Figure

Horizontal  
Can be adjusted in 90° steps

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## Safety switch

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

**Important:** The actuator must be ordered separately.

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## Unicode evaluation

Each actuator is unique. The switch detects only taught-in actuators. Additional actuators can be taught in. Only the last actuator taught in is detected.

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## Solenoid operating voltage

› DC 24 V +10% -15%

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## Guard locking type

**CET1 Closed-circuit current principle**, guard locking by spring force.  
Release by applying voltage to the guard locking solenoid.

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## LED function display

**LED State** Status LED

**LED DIA** Diagnostic LED

**LED 1 rd** freely configurable

**LED 2 gn** freely configurable

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## Additional connections

**OUT** Monitoring output (semiconductor)

**RST** Reset input

**J** Teach-in input

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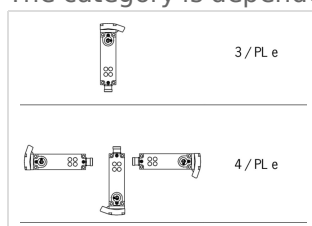
## Category according to EN ISO 13849-1

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

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

**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:



› Figure

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## Escape release

This is used for manual release of guard locking from the danger zone without tools.

## Approvals



## Mechanical values and environment

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 [1]
Mechanical life		$1 \times 10^6$
Installation position		Any [2]
Degree of freedom		
	X	$\pm 5$ mm
	Y	$\pm 5$ mm
	Z	$\pm 4$ mm
Ready delay		10 s
Switching frequency		max.0,5 Hz
Connection		2 plug connectors M12, 5 and 8-pin
Approach speed		20 m/min
Guard locking principle		Closed-circuit current principle
Locking force $F_{max}$		6500 N
Locking force $F_{Zh}$		5000 N

## Electrical connection ratings

Operating voltage DC		
	$U_B$	24 V DC -15% ... 15% Reverse polarity protected, regulated, residual ripple < 5%, PELV
	LED1, LED2	24 V DC -15% ... 10%
Current consumption		
	$I_B$	80 mA
	$I_{CM}$	480 mA
Utilization category according to EN 60947-5-2		
	DC-13	24V 200mA [3]
Solenoid operating voltage DC		

	$U_{CM}$	24 V DC -15% ... +10% Reverse polarity protected, regulated, residual ripple < 5%, PELV
<b>Fusing</b>		
	External (operating voltage $U_B$ )	0,25 ... 2 A
	External (operating voltage $U_{CM}$ )	0,5 ... 8 A
<b>Power consumption</b>		
	Solenoid	max.12 W
<b>EMC protection requirements</b>		
		In acc. with EN IEC 60947-5-3
<b>Solenoid duty cycle</b>		
		100 %
<b>Degree of contamination (external, according to EN 60947-1)</b>		
		3
<b>Safety class</b>		
	EN IEC 61140	III
<b>Switching load</b>		
	According to UL	24V DC, class 2 [4]
<b>Safety outputs OA/OB</b>		
<b>Type of output</b>		
		Semiconductor outputs, p-switching, short circuit-proof
<b>Output voltage</b>		
	High $U(OA,OB)$	$U_B - 1,5V \dots U_B$ V DC [5]
	Low $U(OA,OB)$	0 ... 1 V DC
<b>Output current</b>		
	per safety output	1 ... 200 mA
<b>Off-state current <math>I_r</math></b>		
		max.0,25 mA
<b>Risk time according to EN 60947-5-3</b>		
	Single device	max.400 ms
	Delay per device	5 ms
<b>Switch-on time</b>		
	Safety outputs	400 ms
<b>Discrepancy time</b>		
	Both safety outputs	max.10 ms
<b>Teach-in input J</b>		
<b>Input voltage</b>		
	High	15 ... 27,6 V DC
	Low	0 ... 1 V DC
<b>Monitoring output OUT</b>		
<b>Type of output</b>		
		Semiconductor output, p-switching, short circuit-proof
<b>Output voltage</b>		
	OUT	$0,8xU_B \dots U_B$ V DC
<b>Output current</b>		
	OUT	1 ... 50 mA

## Operating distance

<b>Repeat accuracy R</b>		
	According to EN 60947-5-2	10 %

## Miscellaneous

For the approval according to UL the following applies	Operation only with UL class 2 power supply, or equivalent measures see operating instructions
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## Reliability values acc. to EN ISO 13849-1

		Monitoring of guard locking and the safety guard position
Category		
	Head upward	3
	Head downward or horizontal	4
Performance Level		PL e
PFH <sub>D</sub>		
	Head upward	$4.29 \times 10^{-8}$
	Head downward or horizontal	$3.1 \times 10^{-9}$
		Control of the guard locking
Category		Depending on external control of guard locking [6]
Performance Level		Depending on external control of guard locking [7]
PFH <sub>D</sub>		Depending on external control of guard locking [8]
<hr/>		
Mission time		20 y

[1] Screwed tight plug connector/mating component

[2] Preferably head downward

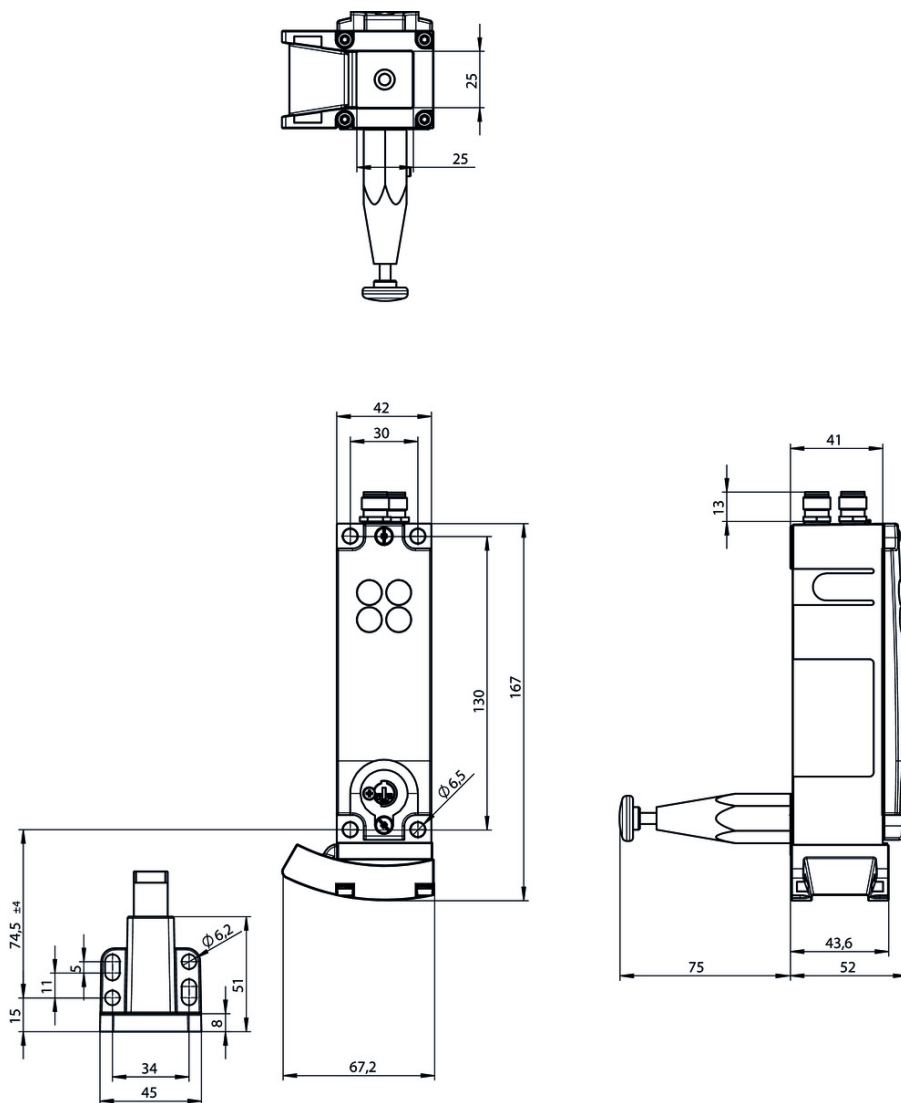
[3] Caution: outputs must be protected with a free-wheeling diode in case of inductive loads

[4] For alternatives see operating instructions

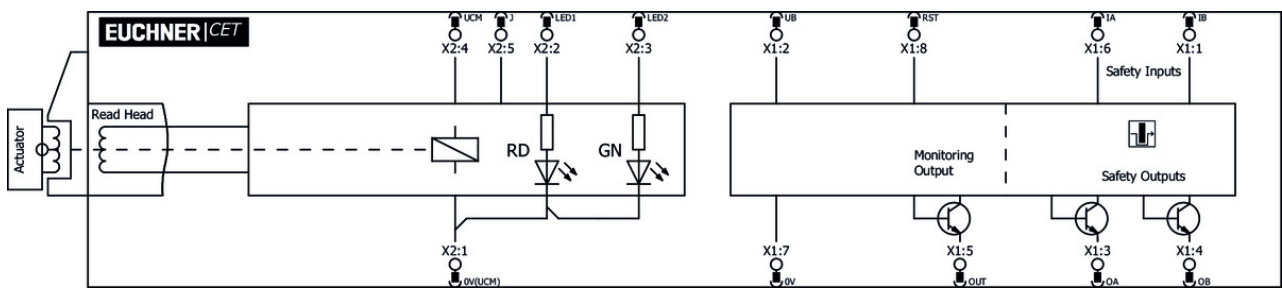
[5] Values at a switching current of 50mA without taking into account the cable lengths

[6, 7, 8] Teach-in input and LEDs have the same ground potential as the guard locking solenoid

## Dimension drawing



## Block diagram



## Actuator

✓ Actuator CET-A-BWK-50X



096327 CET-A-BWK-50X

✓ Features

- › Actuator for read head/safety switch CET
- › Four safety screws M5x16 included

## Connection material

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



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

#### ☑ Features

- › 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

#### ☑ Features

- › 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

#### ☑ Features

- › 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

#### ☑ Features

- › 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

#### ☑ Features

- › 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

#### ☑ Features

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

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



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

▼ Features

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



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

▼ Features

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

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



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

▼ Features

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

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



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

▼ Features

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

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



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

▼ Features

- › 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

▼ Features

- › 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

▼ Features

- › 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

▼ Features

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

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



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

▼ Features

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



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

▼ Features

- › 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

▼ Features

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



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

✓ Features

- › 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

✓ Features

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



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

✓ Features

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

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



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

✓ Features

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



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

✓ Features

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

✓ Bridging plug M12



**097645** BRUECKEN-STECKER

✓ Features

- › Bridging plug
- › M12 male plug, 4-pin

▼ Y-distributor M12 with connection cable



**111696** Y-VERTEILER M12 MIT ANSCHLUSSKABEL

▼ Features

- › Y-distributor M12 with connection cable, 2 x 5-pin, 1 x 8-pin
- › Straight plug connector
- › PVC cable
- › Cable length 0.2 m



**112395** Y-VERTEILER M12 MIT 1M KABEL

▼ Features

- › Y-distributor M12 with connection cable, 2 x 5-pin, 1 x 8-pin
- › Straight plug connector
- › PVC cable
- › Cable length 1 m

▼ Y-distributor M12



**097627** Y-VERTEILER M12

▼ Features

- › Y-distributor M12, 2 x 5-pin, 1 x 8-pin
- › Straight plug connector

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



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

▼ Features

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



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

▼ Features

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

▼ Passive distribution module



**120861** AC-DP-04-SA-120861

▼ Features

- › 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

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



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

▣ Features

- › 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

▣ Features

- › M12 female plug, 8-pin
  - › Angled plug connector
  - › Cable outlet C (left)
  - › 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

▣ Features

- › M12 female plug, 5-pin
  - › Straight plug connector
  - › PUR cable
  - › Cable length 30 m
  - › With flying lead
- 

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



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

▣ Features

- › 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, 10m



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

▣ Features

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

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▼ Bolt CET-A-C/F with escape release



**106172** RIEGEL CET-A-C/F

▼ Features

- › Steel bolt
- › For doors hinged on the left or right
- › In combination with CET with escape release
- › Detent knob in open position
- › Can be locked in open position with padlocks



**106350** RIEGEL CET-A-C/F-C2282

▼ Features

- › Steel bolt
- › Stainless steel guide strip
- › For left or right hinged doors
- › In combination with CET with escape release
- › Detent knob in open position
- › Can be locked in open position with padlocks

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## Function expansion

▼ Cover for read head and actuator CET



**098807** CET ABDECKUNG LINKS

▼ Features

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



**098808** CET ABDECKUNG RECHTS

▼ Features

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

▼ Mechanical key release for CET read head/switch



**098850** SCHLUESSEL-HILFSENTRIEGELUNG

▼ Features

- › Identical locking
- › Key removable in “unlocked” and “locked” positions

▼ Emergency unlocking for CET



**103714** NOTENTSPERRUNG CET

▼ Cover for actuator CET



**124979** AM-C-124979

▼ Features

- › Cover for actuator CET

- › Horizontal and vertical fastening option on the actuator
  - › Mounting using 4 screws M5x16 (included with the actuator)
  - › Not suitable in combination with lockout bar for actuator CET
- 

▼ Lockout mechanism for CET actuator



**122609** AE-L-CET-122609

▼ Features

- › 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

▼ Features

- › Prevents unintentional closing of the door
  - › Can be secured with padlocks
- 

▼ Teach-in adapter for CET 1/3



**125496** AC-TA-A1-SG-125496

▼ Features

- › Teach-in adapters
  - › Optional accessory for teaching-in a new actuator for safety switch with M12 plug connector.
- 

▼ Extension of the escape release CET



**127377** AF-E-80-127377

▼ Features

- › Extension of the CET escape release by 30, 50 or 80 mm
- 

▼ Holder for lockout mechanism CET actuator



**156338** Y-CHN-A1-156338

▼ Features

- › Holder (incl. wire rope) for lockout bar CET
- 

▼ Lockout bar and holder for CET actuators



**155865** AE-SET-LCHN-A1-155865

▼ Features

- › Prevents unintentional closing of the door
  - › Can be secured with padlocks
- 

## Mounting accessories

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



### **106695** EMP-L-CET

#### ✓ Features

- › Mounting plate for CET read heads/switches
  - › For hinged or sliding doors
  - › Suitable for aluminum profiles 40 ... 45 mm
  - › Horizontal and vertical mounting
  - › Suitable for CET with escape release
- 

#### ✓ Mounting plate EM-P actuator for safety switch CET



### **126400** AM-P-126400

#### ✓ Features

- › Mounting plate for CET actuator
  - › 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** AM-P-126398

#### ✓ Features

- › Mounting plate with handle (handle included)
  - › 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** AM-P-126399

#### ✓ Features

- › Mounting plate for CET read heads/switches
  - › 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** EMP-B-CET

#### ✓ Features

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

## Instructions

#### ✓ Bezpečnostní informace CET (-AR/-AP)

	Doc. no.	Version	Language	Download
Sicherheitsinformation CET (-AR/-AP)	105517	14-01/17		0.7 MB
Información de seguridad CET (-AR/-AP)				
Information de sécurité CET (-AR/-AP)				
Informazioni sulla sicurezza CET (-AR/-AP)				
Safety Information CET (-AR/-AP)				
Bezpečnostní informace CET (-AR/-AP)	105517	14-01/17		0.2 MB
Informação de segurança CET (-AR/-AP)	105517	14-01/17		0.2 MB
Güvenlik bilgisi CET (-AR/-AP)	105517	14-01/17		0.3 MB
安全情報 CET (-AR/-AP)	105517	14-01/17		0.6 MB
Информация о безопасности CET (-AR/-AP)	105517	14-01/17		0.3 MB
安全信息 CET (-AR/-AP)	105517	14-01/17		0.3 MB

**Návod k použití Bezpečnostní spínač s kódovaným transpondérem a jištěním ochranného krytu CET.-AR-... (Unicode/Multicode)**









	Doc. no.	Version	Language	Download
Betriebsanleitung Transpondercodierter Sicherheitsschalter mit Zuhaltung CET.-AR-... (Uni-/Multicode)	2110788	12-07/18		3.3 MB
Mode d'emploi Interrupteur de sécurité à codage par transpondeur avec interverrouillage CET.-AR-... (uni-/multicode)	2110788	12-07/18		3.3 MB
Manual de instrucciones Interruptor de seguridad con codificación por transponder con bloqueo CET.-AR-... (Unicode/Multicode)	2110788	12-07/18		3.3 MB
Návod k použití Bezpečnostní spínač s kódovaným transpondérem a jištěním ochranného krytu CET.-AR-... (Unicode/Multicode)	2110788	12-07/18		3.6 MB
Operating Instructions Transponder-Coded Safety Switch With Guard Locking CET.-AR-... (Unicode/Multicode)	2110788	12-07/18		3.3 MB
Istruzioni di impiego Finecorsa di sicurezza con codifica a transponder con meccanismo di ritenuta CET.-AR-... (Unicode/Multicode)	2110788	12-07/18		3.3 MB
操作指示書トランスポンダー型コード化安全スイッチ CET.-AR-... (ユニコード/マルチコード)	2110788	12-07/18		3.7 MB
Návod na prevádzku Bezpečnostný spínač kódovaný transpondérom s istením CET.-AR-... (Uni-/Multicode)	2110788	12-07/18		3.5 MB
İşletim kılavuzu Kapalı tutmalı CET.-AR-... (Uni-/Multicode)	2110788	12-07/18		3.7 MB
使用说明书应答机编码安全开关 CET.-AR-... (特殊/通用编码)	2110788	12-07/18		3.7 MB
Инструкция по эксплуатации Транспондерный предохранительный выключатель с защитной блокировкой CET.-AR-... (Uni-/Multicode)	2110788	12-07/18		3.8 MB

## Catalogs

**Transpondercodierte Sicherheitsschalter - Verriegelungseinrichtungen und Zuhaltungen**







Transponder-coded safety switches - Interlocking devices and guard locking devices  
 Interruptores de seguridad con codificación por transponder - Dispositivos de enclavamiento y bloqueos  
 Interrupteurs de sécurité à codage par transpondeur - Dispositifs de verrouillage et interverrouillages





	Doc. no.	Version	Language	Download
Transpondercodierte Sicherheitsschalter - Verriegelungseinrichtungen und Zuhaltungen	127594	02-01/18		 5.2 MB
Interrupteurs de sécurité à codage par transpondeur - Dispositifs de verrouillage et interverrouillages	137558	02-01/18		 5.2 MB
Interruptores de seguridad con codificación por transponder - Dispositivos de enclavamiento y bloqueos	137560	02-01/18		 5.2 MB
Transponder-coded safety switches - Interlocking devices and guard locking devices	127595	02-01/18		 5.1 MB

### Application example

#### Anschluss CET1-AR an Sicherheitsrelais MSR127TP







	Doc. no.	Version	Language	Download
Anschluss CET1-AR an Sicherheitsrelais MSR127TP	AP000137	06-03/16		 0.2 MB
Connection of CET1-AR to a Safety Relay MSR127TP	AP000137	06-03/16		 0.2 MB

#### Anschluss CET1-AR in Reihe an Sicherheitsrelais MSR127TP

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Anschluss CET1-AR in Reihe an Sicherheitsrelais MSR127TP	AP000142	05-03/16		 0.3 MB
Connection of serial wired CET1-AR to Safety Relay MSR127TP	AP000142	05-03/16		 0.4 MB

### Declaration of conformity

#### EU-Konformitätserklärung

	Doc. no.	Version	Language	Download
EU-Konformitätserklärung Declaración UE de conformidad Déclaration UE de conformité Dichiarazione di conformità EU declaration of conformity	2110802	10-01/17	    	 0.3 MB

### CAD data

CAD data for this item on TraceParts