

Safety Engineering at a Glance

Transponder-coded read heads with external evaluation							
Evaluation units		Read heads					
 Evaluation unit CES-AZ-01B/-02B/-04B		 Field evaluation unit CES-FD		 Read head CES-A-LNN/ CES-A-LNA/CES-A-LMN		 Read head CET-AX	 Read head CKS
Approvals							
Features/specific advantages	<ul style="list-style-type: none"> • connection of read heads 	<ul style="list-style-type: none"> • AP interface • connection of read heads CKS and CES-A-LMN 	<ul style="list-style-type: none"> • small designs (rectangular or cylindrical) • with LED indicators (CES-A-LNN) 	<ul style="list-style-type: none"> • CEM-A: guard locking on solenoid (without guard lock monitoring) • CET-AX: guard locking and guard lock monitoring 	<ul style="list-style-type: none"> • safe entry into installations • function as electronic lockout mechanism 		
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	
AS-Interface Safety at Work 	–	–				ⓘ	
Variants	Unicode: detects only actuator taught-in	●	●				
	Multicode: detects all actuators	●	●				
	Fixcode: actuator allocation fixed	–	–				
Inputs/outputs	Read heads	4	1				
	Relay safety outputs	2	–				
	Semiconductor safety outputs	–	2				
	Monitoring outputs (semiconductor)	5	–				
	Series connection (Quantity)	any	–				
	Direct connection to ET200pro	–	●				
	Monitoring/connection feedback loop	●	–				
	Monitoring/connection start button	●	–				
	Switching current per safety output	6 A	150 mA				
	Mechanical life min.	10 x 10 ⁶	∞	∞	1 x 10 ⁶	∞	
Integrated short circuit monitoring of the safety outputs	–	●					
Term of pulsed signals at the safety outputs	any	0.3 ms					
Environment	Dimensions min. (W x H x D)	CES-AZ-01B: 114x99 x 22.5 mm CES-AZ-02B/-04B: 114 x 99 x 45 mm	95 x 30 x 12 mm	CES-A-LNN: 42 x 25 x 12 mm CES-A-LMN: M12 x 1 mm x 38 mm	CEM-A: 80 x 50 x 28 mm CET-AX: 166 x 42 x 41 mm	83 x 40 x 50 mm	
	Ambient temperature	-20 to +55 °C	-20 to +55 °C	-25 to +70 °C	CEM-A: -25 to +55 °C CET-AX: -20 to +55 °C	-20 to +70 °C	
	Degree of protection max.	IP20	IP67	IP67/IP69/IP69K	IP67	IP67	
	Typ. switch-on distance	depending on the used read head	depending on the used read head	CES-A-LNN: 19 mm CES-A-LMN: 5 mm	CEM-A: 2 mm CET-AX: –	–	
	Locking/adhesive force max.	–	–	–	CEM-A: 650 N/1000 N CET-AX: 6500 N	–	
	Connection	plug-in connection terminals	plug connector M8/M12	cable/plug connector M8	plug connector M8/M12	plug connector M8	
Bolts for safety guards	–	–	ⓘ	ⓘ	–		

Safety Engineering at a Glance

	Without / with guard locking	Without / with guard locking	Control module
			
	Safety system MGB-L0/L1/L2	Safety system MGB Profinet or EtherNet/IP/L0/L1/L2	Control module MGB-C Profinet
Approvals			
Features/specific advantages	<ul style="list-style-type: none"> system consisting of a handle, guard locking and integrated control module 	<ul style="list-style-type: none"> system consisting of a handle, guard locking and integrated control module 	<ul style="list-style-type: none"> maximum design flexibility when equipping
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	–
Guard locking	without / mechanical / electrical	without / mechanical / electrical	–
Switches (optional)	up to 4 (buttons, indicators, emergency stop, ...)	up to 14 buttons, indicators, key-operated switches, emergency stop, ...)	up to 6 buttons, indicators, key-operated switches, emergency stop, ...)
Inputs/outputs			
Semiconductor safety outputs	2 (semiconductor)	10	1
Monitoring outputs	4 (semiconductor)	up to 72	12
Series connection (Quantity)	10	–	–
Monitoring/connection feedback loop	–	–	–
Monitoring/connection start button	–	–	–
Switching current per safety output	200 mA	–	–
Mechanical life min.	1 x 10 ⁶	1 x 10 ⁶	–
Environment			
Dimensions min. (W x H x D)	114 x 289 x 109 mm	345 x 289 x 115 mm	121 x 155 x 45 mm
Ambient temperature	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C
Degree of protection max. acc. to EN 60529	IP65	IP54	IP65
LED displays	●	●	–
Solenoid operating voltage	– / 24 V	– / 24 V	–
Locking force max.	– / 2000 N	– / 2000 N	–
Connection			
Cable entry	4 x M20 x 1.5	–	2 x M20 x 1.5
Plug connector	●	RJ45 / M12	–
Connection cable (pre-assembled)	○	–	–

● available

◐ not available in all versions (see catalog)

○ available on request

– not available

Safety System Multifunctional Gate Box MGB

Without / with guard locking	Bus module	Control module	Without / with guard locking	Submodule	Without / with guard locking
					
Safety system MGB2 I/L1/L2 <i>Modular</i>	Bus module MBM	Extension module MCM <i>Modular</i>	Safety system MGB2 I/L1/L2 <i>Classic</i>	Submodule MSM	MGBS-P-I/L1/L2
					
<ul style="list-style-type: none"> system consisting of handle module and locking module modular design 	<ul style="list-style-type: none"> with integrated PROFINET/PROFISAFE several MGB2 <i>Modular</i> or MCM devices can be connected 	<ul style="list-style-type: none"> function expansion for bus module and locking module compatible with all <i>Modular</i> devices 	<ul style="list-style-type: none"> system consisting of handle module and locking module modular design direct connection to control system 	<ul style="list-style-type: none"> function expansion for modules MGB2 and MCM 	<ul style="list-style-type: none"> MGBS-P-I: system consisting of handle module, interlocking module and integrated control module MGBS-P-L1/L2: system consisting of handle module, locking module and integrated control module
Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	–	Cat. 4 / PL e
without/mechanical/ electrical	–	–	without/mechanical/ electrical	–	MGBS-P-I: without MGBS-P-L1/L2: mechanical/electrical
2 x MSM	–	4 x MSM	1 x MSM	up to 3	up to 3 (buttons, indicators, emergency stop, ...)
2	–	–	2 (semiconductor) + 2 external + MSM outputs	up to 6	2 (semiconductor)
10	–	–	4 (semiconductor) + MSM outputs	up to 3	to 3 (semiconductor)
–	–	–	10	–	to 20
–	–	–	–	–	–
–	–	–	1...150 mA	–	150 mA
1 x 10 ⁶	–	–	1 x 10 ⁶	–	1 x 10 ⁶
114x314 x 116 mm	94x155x52.5 mm	148x155x52.5 mm	114x314x 116 mm	114x38x75 mm	286x183x116 mm
-25 to +55 °C	-25 to +55 °C	-25 to +55 °C	-15 to +55 °C	-25 to +55 °C	-20 to +55 °C
IP65	IP65	IP65	IP65	IP65 (on front)	IP65
●	●	●	●	–	●
– / 24 V	–	–	– / 24 V	–	– / 24 V
– / 2000 N	–	–	– / 2000 N	–	– / 3900 N
–	–	–	M20	–	–
M12	RJ45 / M12	M12	●	–	M12 / M23
–	–	–	○	–	–

Safety Engineering at a Glance

Transponder-coded safety switches without guard locking



Safety switch CES-C01/CES-C02/CES-C04



Safety switch CES-C07



Safety switch CES-C014



Safety switch CES-A-C5/CES-A-W5

Approvals			UQS		
Features/specific advantages	<ul style="list-style-type: none"> safety switch with integrated evaluation electronics small design diagnostic function by means of LED 	<ul style="list-style-type: none"> safety switch with integrated evaluation electronics for diagnostic information readout, connection to the IO-Link evaluation unit ESM-CB 	<ul style="list-style-type: none"> safety switch CES-C04 encapsulated in epoxy resin suitable for aggressive ambient media 	<ul style="list-style-type: none"> no internal pulsed signals at the safety outputs external pulsed signals possible (e.g. by a Safety PLC) ATEX version available for zone 2/22 	
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	
AS-Interface Safety at Work		-	-	-	
Variants	Unicode: detects only actuator taught-in				
	Multicode: detects all actuators				
	Fixcode: actuator allocation fixed				
Inputs/outputs	Read heads	integrated	integrated	integrated	integrated
	Relay safety outputs	-	-	-	-
	Semiconductor safety outputs	2	2	2	2
	Monitoring outputs (semiconductor)	1	1	1	1
	Series connection (Quantity)	AP: 1/AR: 20	BP: 1/BR: 20	AP: 1/AR: 20	3
	Direct connection to ET200pro	C01-AP; C02-AP; C04-AP	C07-BP		-
	Monitoring/connection start button	-	-	-	-
	Monitoring/connection feedback loop	-	-	-	-
	Switching current per safety output	C01: 400 mA C02: 150 mA C04: 150 mA	150 mA	150 mA	400 mA
	Mechanical life min.	∞	∞	∞	∞
Integrated short circuit monitoring of the safety outputs				-	
Term of pulsed signals at the safety outputs	C01-AP: 0.40 ms C02-AP: 0.35 ms C04-AP: 0.30 ms C01/C02/C04-AR: 0.80 ms	0.30 ms	AP: 0.30 ms AR: 0.80 ms	external pulsed signals, any	
Environment	Dimensions min. (W x H x D)	C01: 70x40x40 mm C02: 95x30x12 mm C04: 42x25x18 mm	40x26.5x18 mm	116 x 30 x 23 mm	119x40x40 mm
	Ambient temperature	C01: -20 to +55 °C C02: -40 to +65 °C C04: -20 to +65 °C	-25 to +55 °C	0 to +55 °C	-20 to +55 °C
	Degree of protection max. EN IEC 60529	C01: IP67 C02-C04: IP67/ IP69/ IP69K	IP65 / IP67/ IP69/ IP69K	IP65 / IP67/ IP69/ IP69K	IP67
	Typ. switch-on distance	C01: 18 mm C02: 15 mm C04: 15 mm	13 mm	22 mm	20 mm
	Locking/adhesive force max.	-	-	-	-
Connection	cable/plug connector M8/M12	plug connector M12	cable	plug connector M12	
Bolts for safety guards		-	-		

AP: Version for use as single device

AR: Version for series connection

Transponder-coded safety switches with detent mechanism/guard locking for process protection



Safety system
ESL



Modular magnetic guard locking
CEM-C60



Safety switch
CEM-C40



Safety switch
CTP-I/11/12



- handle module with integrated safety switch
- suitable for mounting on profile

- function expansion for safety switches of series CES-C04/CES-C07

- integrated solenoid (without guard lock monitoring)
- adjustable adhesive force

- with adhesive force
- with integrated control elements (optional)
- CTP-I: without guard locking
- CTP-11/12: mechanical/electrical guard locking (without guard lock monitoring)

Cat. 4 / PL e

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●

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●

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●

●

●

●

●

-

●

-

-

integrated

integrated

integrated

integrated

-

-

-

-

2

2

2

2

1

1

3

to 3

ESL-AR: 20

AR: 20/ BR: 20

CEM-AY: 1/ CEM-AR: 20

AP: 1/ AR: 20

-

C04-AP/ C07-BR

-

AP

-

-

-

-

-

-

-

-

200 mA

C04: 150 mA
C07: 150 mA

150 mA

150 mA

1 x 10⁶

∞

1 x 10⁶

1 x 10⁶

●

●

●

●

0,8 ms

C04-AP: 0.3 ms
C04-AR: 0.8 ms
C07-BP/BR: 0.3 ms

CEM-AY: 0.8 ms
CEM-AR: 0.8 ms

CTP-AP: 0.3 ms
CTP-AR: 0.8 ms

107x100x46 mm

90x50 x39 mm

140x40x40 mm

190x42x40 mm
190x56x40 mm
(CTP with controls)

-20 to +55 °C

-20 to +55 °C

-20 to +55 °C

-20 to +55 °C

IP67

IP65/ IP67

IP65/ IP67

IP67 / IP69 / IP69K / IP65
(CTP with controls)

-

10 mm

-

-

detent mechanism

650 N

600 N

- / 3900 N

plug connector M12

plug connector M12

plug connector M12/M23

plug connector M12/M23

-

-

-

●

Safety Engineering at a Glance

		Transponder-coded read heads with external evaluation		Magnetically coded safety switches
				
		Safety switch CET	Safety switch CTP-L1/L2	Safety system CMS (Reed/Hall)
Approvals				
Features/specific advantages		<ul style="list-style-type: none"> • high locking force • very robust design • actuator with large freedom of movement 	<ul style="list-style-type: none"> • small and narrow design • compatible mounting with existing safety switches TP/STP • with integrated controls (optional) • with bistable locking function (optional) • ATEX version available for zone 2/22 	<ul style="list-style-type: none"> • read heads/actuators available in different designs
Safety category/PL acc. to EN ISO 13849-1		Cat. 4 / PL e	Cat. 4 / PL e	Cat. 3 / Cat. 4
AS-Interface Safety at Work 		●	●	●
Variants	Unicode: detects only actuator taught-in	●	●	-
	Multicode: detects all actuators	●	●	●
	Fixcode: actuator allocation fixed	-	-	-
Inputs/outputs	Read heads	integrated	integrated	1 to 30
	Relay safety outputs	-	-	2
	Semiconductor safety outputs	2	2	-
	Monitoring outputs (semiconductor)	2	up zu 3	1 (relay)
	Series connection (Quantity)	CET-AP: 1 / CET-AR: 20	CTP-AP: 1 / CTP-AR: 20	any
	Direct connection to ET200pro	CET-AP	CTP-AP	-
	Monitoring/connection start button	●	-	●
	Monitoring/connection feedback loop	●	-	●
	Switching current per safety output	200 mA	150 mA	4 A
	Mechanical life min.	1 x 10 ⁶	1 x 10 ⁶	10 x 10 ⁶
	Integrated short circuit monitoring of the safety outputs	●	●	-
Term of pulsed signals at the safety outputs	CET-AP: 0.3 ms CET-AR: 0.8 ms	CTP-AP: 0.3 ms CTP-AR: 0.8 ms	-	
Environment	Dimensions min. (W x H x D)	166 x 42 x 41 mm	190 x 42 x 40 mm 190 x 56 x 40 mm (CTP with controls)	114 x 99 x 22.5 mm 114 x 99 x 45 mm
	Ambient temperature	-20 to +55 °C	-20 to +55 °C	0 to +50 °C
	Degree of protection max. EN IEC 60529	IP65 / IP67	IP67 / IP69 / IP69K / IP65 (CTP with controls)	IP20
	Typ. switch-on distance	-	-	depending on the used read head
	Locking/adhesive force max.	6500 N	3900 N	-
Connection	plug connector M12/M23	plug connector M12/M23	screw terminals	
Bolts for safety guards	●	●	-	

Safety Engineering at a Glance

	Safety control systems and safety relays			
	Small safe control system MSC (Basic modul)	Safety relays ESM	Evaluation unit ESM-CB	Safety monitors GMOx
Approvals				
Applications	<ul style="list-style-type: none"> Cat. 4 / PL e stop category 0 and 1 	<ul style="list-style-type: none"> Cat. 4 / PL e stop category 0 and 1 requirement level III C according to EN 574 for two-hand device 	<ul style="list-style-type: none"> Cat. 4 / PL e Stop-Kategorie 0 	<ul style="list-style-type: none"> Cat. 4 / PL e stop category 0 and 1 requirement level III C according to EN 574 for two-hand device
Base module	<ul style="list-style-type: none"> 8 inputs 1 or 2-channel control feedback loop start button 2 OSSD outputs 2 monitoring outputs programmable up to 14 expansion modules 	<ul style="list-style-type: none"> 1 or 2-channel control up to 7 outputs (time-delay or non-time-delay) version for two-hand circuits LED status indicators feedback loop start button (monitoring possible) short circuit monitoring earth fault and ground fault monitoring 	<ul style="list-style-type: none"> 1- or 2-channel monitoring of the sensor circuit connection of BP/BR devices 2 relay outputs start button (monitored) and feedback loop can be connected 	<ul style="list-style-type: none"> programmable up to 62 subscribers 4 outputs, expandable up to 16 comprehensive LED status indications and diagnostic functions feedback loop start button (monitoring possible) short circuit monitoring earth fault and ground fault monitoring formation of safety groups
Contact expansions/ output modules	<ul style="list-style-type: none"> up to 16 safe outputs (time-delay or non-time-delay) LED status indicators up to 28 monitoring outputs OSSD or Relays outputs 	<ul style="list-style-type: none"> up to 4 outputs (time-delay or non-time-delay) LED status indicators 	<ul style="list-style-type: none"> from the ESM product range 	<ul style="list-style-type: none"> via AS-Interface
Input modules	<ul style="list-style-type: none"> up to 128 inputs (time-delay or non-time-delay) LED status indicators 	-	-	<ul style="list-style-type: none"> via AS-Interface
Switching current AC, max.	400 mA DC / 6 A	6 A / 8 A	6 A	3 A
Switching voltage AC, max.	250 V AC	250 V	250 V	30 V
Operating voltage	24 V DC	24 V AC/DC, 114/230 V AC	24 V DC	AS-Interface (30 V DC) or 24 V DC
Mechanical life, max.	2 x 10 ⁷ operating cycles	1 x 10 ⁷ operating cycles	1 x 10 ⁷ operating cycles	1 x 10 ⁷ operating cycles
Connection type	plug-in screw terminals	plug-in screw terminals	plug-in screw terminals	plug-in screw terminals
Housing material	plastic	plastic	plastic	stainless steel
Installation	DIN rail	DIN rail	DIN rail	DIN rail
Dimensions (HxWxD)	108x22.5x114.5 mm	114x99x22.5 mm	116.6 x 17.5 x 114.5 mm	120x96x100 mm
Ambient temperature (at U _B = 24 V)	-10 to +55 °C	-15 to +60 °C	-25 to +60 °C	0 to +55 °C
Degree of protection (acc. to IEC/EN 60529)	IP20	IP20	IP20	IP20
LED indicators	●	●	●	●

EUCHNER GmbH + Co. KG
 Kohlhammerstraße 16
 70771 Leinfelden-Echterdingen
 Germany

Tel. +49 711 7597-0
 Fax +49 711 753316
 info@euchner.de
 www.euchner.com

EUCHNER
 More than safety.