CES-AZ-AES-01B (ORDER NO. 104770)

Evaluation unit CES-AZ-AES-01B (for 1 read head)

- 1 read head can be connected
- 2 safety outputs (relay contacts with 2 internally connected NO contacts per output)
- Start button and feedback loop can be connected
- Unicode
- Plug-in connection terminals
- Category 4/PL e according to EN ISO 13849-1

Description

Unicode evaluation

Each actuator is highly coded (unicode). The evaluation unit detects only the actuator that has been taught-in. Additional actuators can be taught-in.

Only the last actuator taught-in is detected.

New actuators are taught-in by fitting a jumper.

Guard lock monitoring

Evaluation units in the series CES-AZ make it possible to use read heads with integrated guard locking for the protection of personnel during overtraveling machine movements. You will find suitable read heads in the accessories

Category according to EN ISO 13849-1

Due to two redundant safety paths (relay contacts) with 2 internal, monitored normally open contacts per safety path, suitable for:

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

Each safety path is independently safe.

LED indicator

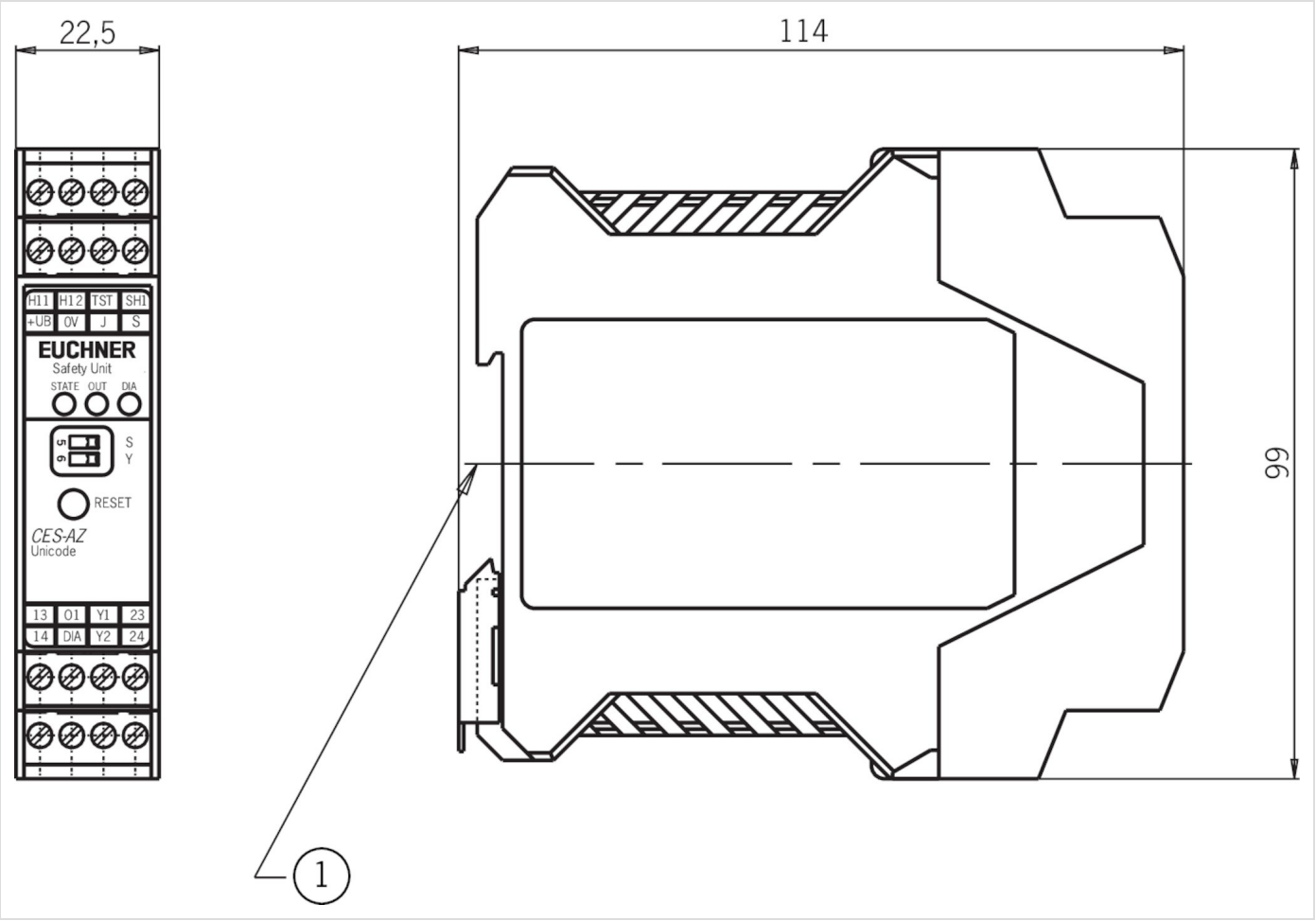
STATE	Status LED
DIA	Diagnostic LED
OUT	Safety output status

Additional connections

TST	Input for self-test
O1	Monitoring output (semiconductor)
DIA	Diagnostic output
Y1, Y2	Feedback loop
J	Teach-in input
S	Start button connection (monitoring of the falling edge)

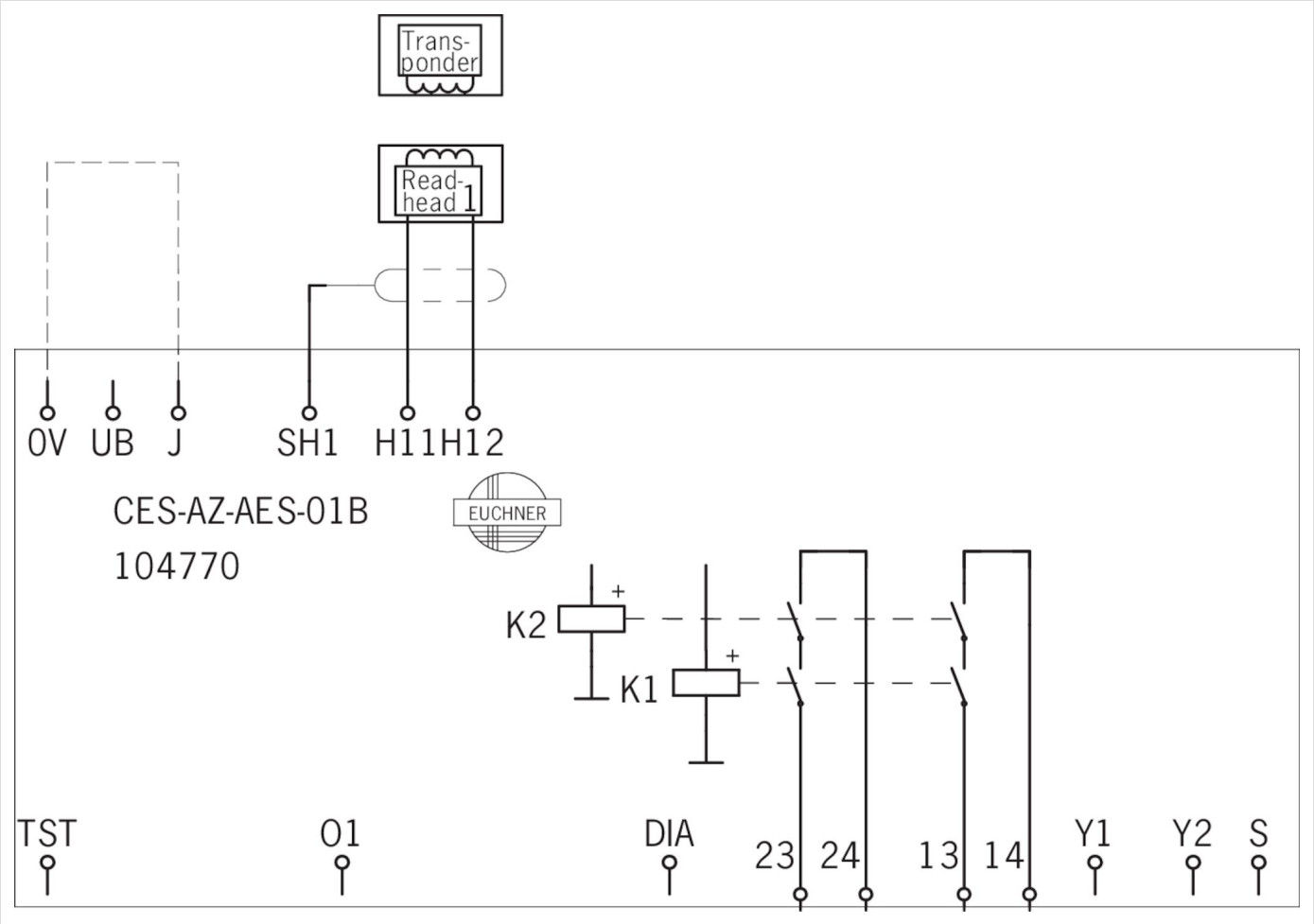
Important: The plug-in connection terminals are not included and must be ordered separately.

Dimension drawing



1 Suitable for 35 mm mounting rail according to EN 60715

Wiring diagram



Technical data

Approvals

Mechanical values and environment

Housing material	
Housing	Plastic PA6.6
Weight	
Net	0,2 kg
Ambient temperature	
At U_B = 24V DC	-20 ... 55 °C
Atmospheric humidity	
Not condensing	max.80 % rH
Degree of protection	IP20
Mounting method	Mounting rail 35mm according to DIN EN 60715 TH35
Mounting distance	
Sideways toward the neighboring device	min.10 mm (If several evaluation units are mounted side by side in a control cabinet without air circulation (e.g. fan), a minimum distance of 10 mm must be maintained between the evaluation units. The distance enables heat from the evaluation unit to dissipate.)
Number of read heads	1 read head can be connected
Ready delay	10 ... 12 s (After the operating voltage is switched on, the relay outputs are switched off and the door monitoring output is set LOW during the ready delay. For the visual indication of the delay, the green STATE LED flashes at a frequency of approx. 15 Hz.)
Reaction time	
After change in the actuation status	max.210 ms (Corresponds to the risk time according to EN 60947-5-3. This is the maximum switch-off delay for the safety outputs following removal of the actuator. In case of EMC interference in excess of the requirements in accordance with EN 60947-5-3, the switch-off delay can increase to max. 250 ms. After a brief actuation < 0.25 s, the switch-on delay can increase to max. 3 s if this is followed immediately by further actuation.)
Duration of operation start button (for Manual start operating mode)	min.250 ms
Response delay start button (for Manual start operating mode)	200 ... 300 ms
Switching frequency	max.0,25 Hz
Dwell time	min.3 s (The dwell time is the time that the actuator must be inside or outside the operating distance.)
Connection	Plug-in connection terminals, coded (Terminals not included)
	Safety contacts 13/14, 23/24
Number of safety contacts	2 Relays with internally monitored contacts
Mechanical life	
Operating cycles (relay)	10 x 10^6

Electrical connection ratings

Operating voltage DC	
U_B	21 ... 24 ... 27 V DC Regulated, residual ripple < 5 %
Current consumption	
(with relay energized)	150 mA (Without taking into account the load currents on the monitoring outputs)
Fusing	
External (operating voltage UB)	0,25 ... 8 A

EMC protection requirements	In acc. with EN 60947-5-3
Degree of contamination (external, according to EN 60947-1)	2
Connection cross-section	
(plug-in screw- / springterminals)	0,25 … 2,5 mm²
Current via feedback loop	5 … 8 … 10 mA
permissible resistance in feedback loop	max.600 Ω
	Safety contacts 13/14, 23/24
Type of output	Relay contacts, floating
Switching current	
At switching voltage AC/DC 21 … 60 V	1 … 300 mA
At switching voltage AC/DC 5 … 30 V	10 … 6000 mA
At switching voltage AC 5 … 230 V	10 … 2000 mA
Fusing	
External (safety circuit) according to EN 60269-1	6 AgG or 6 A circuit breaker (characteristic B or C)
Utilization category acc. to EN 60947-5-1	
AC-15	230 V 2 A
DC-13	24 V 3 A
AC-12	60 V 0.3 A
	30 V 6 A
DC-12	60 V 0.3 A
	30 V 6 A
Switching load	
According to c UL us	Class 2 max. 30 V AC / Class 2 max. 60 V DC; 120 V AC 3 A / 240 V AC 1.5 A
Rated insulation voltage U_i	250 V
Rated impulse withstand voltage U_{imp}	4 kV
Rated conditional short-circuit current	100 A
Discrepancy time	
(Between the operating points of both relays)	max.25 ms
	Monitoring outputs: Diagnostic DIA, door monitoring output O1
Type of output	Semiconductor output, p-switching, short circuit-proof
Output voltage	0,8 x UB … UB V DC
Output current	max.20 mA
	Inputs: Start button S, test input TST
Input current	
HIGH	5 … 8 … 10 mA
Input voltage	
HIGH	15 … UB V DC
LOW	0 … 2 V DC
	STATE LED
LED indicator	Status LED
	LED OUT
LED indicator	Safety contacts status
	DIA LED
LED indicator	Diagnostics LED

Work area

Repeat accuracy R	
According to EN 60947-5-2	max.10 %

Other

For the approval acc. to UL the following applies	(Operation only with UL class 2 power supply, or equivalent measure.)

Reliability values according to EN ISO 13849-1

	Monitoring of the safety guard position
Category	4 (This value is dependent on the number of switching cycles and the switching current.)
Performance Level	PL e (This value is dependent on the number of switching cycles and the switching current.)
PFH_D	1.9×10^{-8} (This value is dependent on the number of switching cycles and the switching current.)
Diagnostic Coverage (DC)	99 %
Number of switching cycles	
≤ 0.1 A at 24 V DC	max.760000 1/Jahr
≤ 1 A at 24 V DC	max.153000 1/Jahr
≤ 3 A at 24 V DC	max.34600 1/Jahr
Mission time	20 y (This value is dependent on the number of switching cycles and the switching current.)

In combination with Read head CES-A-LMN-SC and Actuator CES-A-BMB

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.20 mm

Actuating range

Distance s, actuator	
Minimum distance	min.1,2 mm
Operating distance	
With center offset m=0	5 mm (These values apply for surface installation of the read head in steel.)
Assured release distance S_{ar}	max.10 mm
Assured operating distance S_{ao}	
With center offset m=0	min.3,5 mm (These values apply for surface installation of the read head in steel.)
Switching hysteresis	min.0,1 mm (These values apply for surface installation of the read head in steel.)

In combination with Read head CES-A-LNA-05V, CES-A-LNA-10V, CES-A-LNA-15V, CES-A-LNA-25V, CES-A-LNA-SC, CES-A-LNA-05P, CES-A-LNA-10P, CES-A-LNA-15P, CES-A-LCA-10V and Actuator CES-A-BDA-18-156935

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.50 mm

Actuating range

Distance s, actuator	
Minimum distance for side approach direction	min.5 mm
Operating distance	
With center offset m=0	16 mm (These values apply for the surface installation of the read head and the actuator.)
Assured release distance S_{ar}	max.32 mm
Assured operating distance S_{ao}	
With center offset m=0	min.10 mm (These values apply for the surface installation of the read head and the actuator.)
Switching hysteresis	
With center offset m=0	min.0,5 mm (These values apply for the surface installation of the read head and the actuator.)

In combination with Read head CES-A-LMN-SC and Actuator CES-A-BDA-18-156935

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.20 mm

Actuating range

Distance s, actuator	
Minimum distance for side approach direction	min.3 mm
Operating distance	
With center offset m=0	9 mm (These values apply for the surface installation of the read head and the actuator.)
Assured release distance S_{ar}	max.21 mm
Assured operating distance S_{ao}	
With center offset m=0	min.6 mm (These values apply for the surface installation of the read head and the actuator.)
Switching hysteresis	
With center offset m=0	min.0,5 mm (These values apply for the surface installation of the read head and the actuator.)

In combination with Read head CES-A-LNN-SC-106601, CES-A-LNN-05V-106602, CES-A-LNN-10V-113294 and Actuator CES-A-BBN-106600

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.160 mm

Actuating range

Operating distance	
In z direction (with center offset x,y=0), in y direction (with center offset x,z=0)	15 mm (These values apply for the surface installation of the read head and the actuator.)
Assured release distance S_{ar}	
In y direction	max.100 mm
in x or z direction	max.50 mm
Assured operating distance S_{ao}	
In z direction (with center offset x,y=0), in y direction (with center offset x,z=0)	min.10 mm (These values apply for the surface installation of the read head and the actuator.)
Switching hysteresis	min.1 mm (These values apply for the surface installation of the read head and the actuator.)

In combination with Read head CES-A-LNA-05V, CES-A-LNA-10V, CES-A-LNA-15V, CES-A-LNA-25V, CES-A-LNA-SC, CES-A-LNA-05P, CES-A-LNA-10P, CES-A-LNA-15P, CES-A-LCA-10V and Actuator CES-A-BBA, CES-A-BCA

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.50 mm

Actuating range

Distance s, actuator	
Minimum distance for side approach direction	min.3 mm
Operating distance	
With center offset m=0	15 mm (These values apply for the surface installation of the read head and the actuator.)
Assured release distance S_{ar}	max.26 mm
Assured operating distance S_{ao}	
With center offset m=0	min.10 mm (These values apply for the surface installation of the read head and the actuator.)
Switching hysteresis	min.0,5 mm (These values apply for the surface installation of the read head and the actuator.)

In combination with Read head CES-A-LNA-05V, CES-A-LNA-10V, CES-A-LNA-15V, CES-A-LNA-25V, CES-A-LNA-SC, CES-A-LNA-05P, CES-A-LNA-10P, CES-A-LNA-15P, CES-A-LCA-10V and Actuator CES-A-BDA-20

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.50 mm

Actuating range

Distance s, actuator	
Minimum distance for side approach direction	min.4 mm (On mounting in non-metallic environment)
Operating distance	
With center offset m=0	16 mm (On mounting in non-metallic environment)
Assured release distance S_{ar}	max.33 mm
Assured operating distance S_{ao}	
With center offset m=0	min.11 mm (On mounting in non-metallic environment)
Switching hysteresis	min.0,5 mm (On mounting in non-metallic environment)

In combination with Read head CES-A-LNN-SC-106601, CES-A-LNN-05V-106602, CES-A-LNN-10V-113294 and Actuator CES-A-BDN-06-104730

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.160 mm

Actuating range

Operating distance	
In z direction (with center offset x,y=0), in y direction (with center offset x,z=0)	19 mm (These values apply for the surface installation of the read head and the actuator.)
Assured release distance S_{ar}	
In y direction	max.100 mm
in x or z direction	max.50 mm
Assured operating distance S_{ao}	
In z direction (with center offset x,y=0), in y direction (with center offset x,z=0)	min.14 mm (These values apply for the surface installation of the read head and the actuator.)
Switching hysteresis	4 mm (These values apply for the surface installation of the read head and the actuator.)

In combination with Read head CES-A-LSP-05V-104966, CES-A-LSP-10V-104967, CES-A-LSP-SB-104969, CES-A-LSP-15V-106271 and Actuator CES-A-BSP-104970

Actuating range

Operating distance	
With center offset m=0	20 mm (These values apply for the installation of the read head and the actuator in an aluminum profile 45 x 45 mm.)
Assured release distance S_{ar}	max.45 mm
Assured operating distance S_{ao}	
With center offset m=0	min.10 mm (These values apply for the installation of the read head and the actuator in an aluminum profile 45 x 45 mm.)
Switching hysteresis	min.1 mm (These values apply for the installation of the read head and the actuator in an aluminum profile 45 x 45 mm.)

In combination with Read head CES-A-LQA-SC and Actuator CES-A-BQA

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.80 mm

Actuating range

Operating distance	
For side approach direction (distance in x direction 10 mm)	± 28 mm (These values apply for surface installation of the read head and the actuator.)
For vertical approach direction (center offset m=0)	23 mm (These values apply for surface installation of the read head and the actuator.)
Assured release distance S_{ar}	max.60 mm
Assured operating distance S_{ao}	
For vertical approach direction (center offset m=0)	min.16 mm (These values apply for surface installation of the read head and the actuator.)
For side approach direction (distance in x direction 10 mm)	min.± 24 mm (These values apply for surface installation of the read head and the actuator.)
Switching hysteresis	
For vertical approach direction (center offset m=0)	min.2 mm (These values apply for surface installation of the read head and the actuator.)
For side approach direction (distance in x direction 10 mm)	min.1 mm (These values apply for surface installation of the read head and the actuator.)

In combination with Read head CES-A-LQA-SC and Actuator CES-A-BBA, CES-A-BCA

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.80 mm

Actuating range

Operating distance	
For vertical approach direction (center offset m=0)	15 mm (These values apply for surface installation of the read head and the actuator.)
For side approach direction (distance in x direction 8 mm)	± 22 mm (These values apply for surface installation of the read head and the actuator.)
Assured release distance S_{ar}	max.47 mm
Assured operating distance S_{ao}	
For vertical approach direction (center offset m=0)	min.10 mm (These values apply for surface installation of the read head and the actuator.)
For side approach direction (distance in x direction 8 mm)	min.± 18 mm (These values apply for surface installation of the read head and the actuator.)
Switching hysteresis	
For vertical approach direction (center offset m=0)	2 ... 3 mm (These values apply for surface installation of the read head and the actuator.)
For side approach direction (distance in x direction 8 mm)	min.1 mm (These values apply for surface installation of the read head and the actuator.)

In combination with Read head CES-A-LMN-SC and Actuator CES-A-BDA-20

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.20 mm

Actuating range

Operating distance	
With center offset m=0	9 mm A distance of s = 4 mm must be maintained for a side approach direction. (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Assured release distance S_{ar}	
With center offset m=0	max.26 mm (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Assured operating distance S_{ao}	
With center offset m=0	min.6 mm (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Switching hysteresis	
With center offset m=0	min.1 mm (These values apply for the surface installation of the read head in metal and the non-metallic installation of the actuator.)

In combination with Read head CES-A-LMN-SC and Actuator CES-A-BBA

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.20 mm

Actuating range

Operating distance		
	With center offset m=0	8 mm A distance of s = 3 mm must be maintained for a side approach direction. (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Assured release distance S_{ar}		
	With center offset m=0	max.25 mm (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Assured operating distance S_{ao}		
	With center offset m=0	min.5 mm (This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.)
Switching hysteresis		
	With center offset m=0	min.1 mm (These values apply for the surface installation of the read head in metal and the non-metallic installation of the actuator.)

Accessories

Connection material

Connection kit for evaluation units CES-AZ-.ES-01B, screw terminals

104756
CES-EA-TC-AK04-104756

- Plug-in screw terminals for evaluation units CES-AZ-.ES-01B
- Coded

Connection kit for evaluation units CES-AZ-.ES-01B, spring terminals

112631
CES-EA-TC-KK04-112631

- Plug-in spring terminals for evaluation units CCES-AZ-.ES-01B
- Coded

Miscellaneous accessories

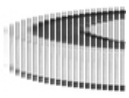
Inrush current limiting module PM-SCL

096945
PM-SCL-096945

- Very high currents are produced on power up if capacitive loads are switched; these currents cause increased wear on electromagnetic switching contacts. The PM-SCL module limits the inrush current for approx. 120 ms and protects the switching contacts.

Read head

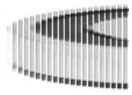
Read head CEM-A-LE05... with guard locking without guard lock monitoring without remanence



095792
CEM-A-LE05R-S2

- Read head with guard locking without guard lock monitoring
- Locking force 650 N
- Without remanence
- Up to category 4 according to EN ISO 13849-1
- Two safety screws M5x16 included

Read head CEM-A-LE05... with guard locking without guard lock monitoring with remanence



094800
CEM-A-LE05K-S2

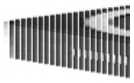
- Read head with guard locking without guard lock monitoring
- Locking force 650 N
- With remanence
- Up to category 4 according to EN ISO 13849-1
- Two safety screws M5x16 included

Read head CEM-A-LH10K-S3 with guard locking without guard lock monitoring with remanence

095170
CEM-A-LH10K-S3

- Read head with guard locking without guard lock monitoring
- Locking force 1000 N
- With remanence
- Up to category 4 according to EN ISO 13849-1

Read head CEM-A-LH10R-S3 with guard locking without guard lock monitoring without remanence



095793
CEM-A-LH10R-S3

- Read head with guard locking without guard lock monitoring
- Locking force 1000 N
- Without remanence
- Up to category 4 according to EN ISO 13849-1

Read head CES-A-LCA..., hard-wired encapsulated cable 10 m, PVC

088785
CES-A-LCA-10V

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PVC
- Cable length 10 m
- Two safety screws M4x14 included

Read head CES-A-LMN-SC, M8 plug connector

077790
CES-A-LMN-SC

- Cylindrical design M12
- M8 plug connector

Read head CES-A-LNA-SC, M8 plug connector

077715
CES-A-LNA-SC

- Cube-shaped design 42 x 25 mm
- With plug connector M8
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 5 m, PVC

071845
CES-A-LNA-05V

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PVC
- Cable length 5 m
- Two safety screws M4x14 included

077806
CES-A-LNA-05P

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of

PUR
- Cable length 5 m
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 10 m, PUR

077807
CES-A-LNA-10P

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PUR
- Cable length 10 m
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 10 m, PVC

071846
CES-A-LNA-10V

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PVC
- Cable length 10 m
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 15 m, PUR

084682
CES-A-LNA-15P

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PUR
- Cable length 15 m
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 15 m, PVC

071847
CES-A-LNA-15V

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PVC
- Cable length 15 m
- Two safety screws M4x14 included

Read head CES-A-LNA..., hard-wired encapsulated cable 25 m, PVC

071975
CES-A-LNA-25V

- Cube-shaped design 42 x 25 mm
- Hard-wired encapsulated cable made of PVC
- Cable length 25 m
- Two safety screws M4x14 included

Read head CES-A-LNN-...hard-wired encapsulated cable 5 m, PVC

106602
CES-A-LNN-05V-106602

- Cube-shaped design 42 x 25 mm
- Mounting compatible with series CES-A-LNA/LCA
- LED for the indication of the door position
- Hard-wired encapsulated cable, PVC
- Cable length 5 m

Read head CES-A-LNN-SC... M8 plug connector

106601
CES-A-LNN-SC-106601

- Cube-shaped design 42 x 25 mm
- Mounting compatible with series CES-A-LNA/LCA
- LED for the indication of the door position
- With plug connector M8

Read head CES-A-LQA-SC, M8 plug connector

095650
CES-A-LQA-SC

- Cube-shaped design 50 x 50 mm
- M8 plug connector
- Two safety screws M4x14 included

Read head CES-A-LSP-..., hard-wired encapsulated cable 5 m, PVC

104966
CES-A-LSP-05V-104966

- Optimized for aluminum profile mounting
- LED for the indication of the door position
- Hard-wired encapsulated cable made of PVC
- Cable length 5 m

Read head CET1-AX-..., 2 plug connectors M8, with guard locking and guard lock monitoring

102988
CET1-AX-LRA-00-50X-SC

- Read head with guard locking
- Locking force up to 6500 N
- Up to category 4/PL e according to EN ISO 13849-1
- With 2 plug connectors M8
- 2 LEDs (1 freely configurable)
- Approach direction A (delivery state)

Read head CET1-AX-..., M12, with guard locking and guard lock monitoring

095735
CET1-AX-LRA-00-50X-SA

- Read head with guard locking
- Locking force up to 6500 N
- Up to category 4/PL e according to EN ISO 13849-1
- With plug connector M12
- 2 LEDs (1 freely configurable)
- Approach direction A (delivery state)

Read head CET1-AX-... M12, with guard locking and guard lock monitoring, 2 freely configurable LEDs

104062
CET1-AX-LRA-00-50L-SA

- Read head with guard locking
- Locking force up to 6500 N
- Up to category 4/PL e according to EN ISO 13849-1
- With plug connector M12
- 2 LEDs (2 freely configurable)
- Approach direction A (delivery state)

Read head CET1-AX-... M12, with guard locking and guard lock monitoring, double insertion slide

100399
CET1-AX-LDA-00-50X-SE

- Read head with guard locking
- Locking force up to 6500 N
- Up to category 4/PL e according to EN ISO 13849-1
- With plug connector M12
- 2 LEDs (1 freely configurable)
- With double ramp
- Approach direction A and C (default setting on delivery)

Read head CET1-AX-... M12, with guard locking and guard lock monitoring, escape release

102161
CET1-AX-LRA-00-50F-SA

- Read head with guard locking
- Locking force up to 6500 N
- Up to category 4/PL e according to EN ISO 13849-1

- With plug connector M12
- 2 LEDs (1 freely configurable)
- With escape release, 75 mm long
- Approach direction A (delivery state)

Contacts

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