

ITEM 105141 CES-AZ-UES-04B



Features

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

Multicode evaluation

Every suitable actuator is detected by the evaluation unit.

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

STATEStatus LEDDIADiagnostics LEDOUTSafety output status

Additional connections

TSTInput for self-testO1...O4Monitoring outputs (semiconductor)DIADiagnostics outputY1, Y2Feedback loopSStart button connection (monitoring of the falling edge)Important:The plug-in connection terminals are not included and must be ordered separately.

Approvals



Mechanical values and environment

the second se	
Housing material	Plastic PA6.6
Weight	
Ne	t 0,25 kg
Ambient temperature	
At $U_B = 24V D_0$	C -20 55 °C
Atmospheric humidity	
Not condensing	g 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	
Number of read heads	Max. 4 read heads can be connected
Ready delay	10 12 s ^[2]
Reaction time	
After change in the actuation status, active actuato	
After change in the actuation status, a active actuator	

After change in the actuation status, 3 active actuators	max.370 ms ^[5]
After change in the actuation status, 4 active actuators	max.450 ms ^[6]
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 ^[7]
Dwell time	min.3 s ^[8]
Connection	Plug-in connection terminals, coded ^[9]
	Safety contacts 13/14, 23/24
Number of safety contacts	2 Relays with internally monitored contacts
Mechanical life	
Operating cycles (relay)	10 × 10 ⁶

Electrical connection ratings

21 24 27 V DC
150 mA ^[10]
0,4 8 A
In acc. with EN 60947-5-3
2
0,25 2,5 mm²
5 8 10 mA
max.600 Ω
Safety contacts 13/14, 23/24
Relay contacts, floating
1 300 mA
10 6000 mA
10 2000 mA
6 AgG or 6 A circuit breaker (characteristic B or C)
230 V 2 A
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	Max. AC 30 V, class 2 / max. DC 60 V, class 2
Rated insulation voltage Ui	250 V
Rated impulse withstand voltage U _{imp}	max.4 kV
Rated conditional short-circuit current	100 A
Discrepancy time	
(Between the operating points of both relays)	
	Monitoring outputs: Diagnostic DIA, door monitoring outputs 0104
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 outputs status
	DIA LED
LED indicator	Diagnostics LED

Operating distance

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

Miscellaneous

For the approval according to UL the	Operation only with UL class 2 power supply, or equivalent
following applies	measures

Reliability values acc. to EN ISO 13849-1

	Monitoring of the safety guard position
Category	4 [11]
Performance Level	PL e [12]
PFHD	1.9 × 10 ⁻⁸ [13]

Diagnostic Coverage (DC)	99 %
Number of switching cycles	
\leq 0.1 A at 24 V DC	max.760000 1/Jahr
\leq 1 A at 24 V DC	max.153000 1/Jahr
≤ 3 A at 24 V DC	max.34600 1/Jahr
Mission time	20 y [14]

in combination withRead 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-10VandActuator CES-A-BBA, CES-A-BCA

Mechanical values and environment

min.50 mm
min.3 mm
15 mm [15]
max.26 mm
min.10 mm [16]
0,5 2 mm ^[17]

in combination withRead 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-10VandActuator CES-A-BDA-20

Mechanical values and environment

Mounting distance

hboring read heads min.50 mm
ce
r
ce for side approach min.4 mm ^[18] direction
h center offset m=0 16 mm ^[19]
distance S _{ar} max.33 mm
distance S _{ao}
h center offset m=0 min.11 mm ^[20]
is 0,5 2 mm ^[21]
h center offset m=0 16 mm [19] distance S _{ar} max.33 mm distance S _{ao} h center offset m=0 min.11 mm [20]

in combination withRead head CES-A-LMN-SCandActuator CES-A-BMB

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.20 mm
Operating distance	
Distance s, actuator	
Minimum distance	min.1,2 mm
Switch-on distance	
With center offset m=0	5 mm [22]
Assured switch-off distance Sar	max.10 mm
Assured operating distance S _{ao}	
With center offset m=0	min.3,5 mm ^[23]
Switching hysteresis	0,1 0,3 mm ^[24]

in combination withRead 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-10VandActuator CES-A-BDA-18-156935

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.50 mm
Operating distance	
Distance a schuster	
Distance s, actuator	
Minimum distance for side approach direction	min.5 mm
Switch-on distance	
With center offset m=0	16 mm ^[25]
Assured switch-off distance Sar	max.32 mm
Assured operating distance S _{ao}	
With center offset m=0	min.10 mm ^[26]
Switching hysteresis	
With center offset m=0	0,5 1,4 mm ^[27]

in combination withRead head CES-A-LNN-SC-106601, CES-A-LNN-05V-106602, CES-A-LNN-10V-113294, CES-A-LNN-25V-115107andActuator CES-A-BBN-106600

Mechanical values and environment

Mounting distance Neighboring read heads min.160 mm Operating distance

Switch-on distance

In z direction (with center offset 15 mm ^[28] x,y=0), in x direction (with center offset y,z=0)

Assured switch-off distance Sar

In y direction in x or z direction	max.100 mm max.50 mm
Assured operating distance S _{ao} In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)	
Switching hysteresis	1 4 mm ^[30]

in combination withRead head CES-A-LNN-SC-106601, CES-A-LNN-05V-106602, CES-A-LNN-10V-113294, CES-A-LNN-25V-115107andActuator CES-A-BDN-06-104730

Mechanical values and environment

Neighboring read headsmin.160 mmOperating distancein.160 mmSwitch-on distanceIP mm [31]In z direction (with center offset y,z=0)IP mm [31]Assured switch-off distance Sarmax.100 mmIn y directionmax.100 mmAssured operating distance Saomax.50 mmIn z direction (with center offset y,z=0)max.100 mmAssured operating distance Saomax.100 mmIn z direction (with center offset y,z=0)max.100 mmSwitching hysteresis4 mm [33]	Mounting distance	
Switch-on distance In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)19 mm [31]Assured switch-off distance Sar In y direction in x or z directionmax.100 mm max.50 mmAssured operating distance Sao In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)min.14 mm [32]	Neighboring read heads	min.160 mm
In z direction (with center offset x,y=0), in x direction (with center offset y,z=0) Assured switch-off distance S _{ar} In y direction in x or z direction Assured operating distance S _{ao} In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)	Operating distance	
x,y=0), in x direction (with center offset y,z=0)Assured switch-off distance Sar In y direction in x or z directionmax.100 mm max.50 mmAssured operating distance Sao In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)min.14 mm [32]	Switch-on distance	
In y directionmax.100 mmin x or z directionmax.50 mmAssured operating distance Saomin.14 mm [32]In z direction (with center offset y,z=0)min.14 mm [32]	x,y=0), in x direction (with center	
in x or z direction max.50 mm Assured operating distance S _{a0} In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)	Assured switch-off distance S _{ar}	
Assured operating distance S _{a0} In z direction (with center offset x,y=0), in x direction (with center offset y,z=0)	In y direction	max.100 mm
In z direction (with center offset min.14 mm ^[32] x,y=0), in x direction (with center offset y,z=0)	in x or z direction	max.50 mm
Switching hysteresis 4 mm ^[33]	In z direction (with center offset x,y=0), in x direction (with center	
	Switching hysteresis	4 mm [33]

in combination withRead head CES-A-LSP-05V-104966, CES-A-LSP-10V-104967, CES-A-LSP-25V-104968, CES-A-LSP-SB-104969, CES-A-LSP-15V-106271, CES-A-LSP-20V-106272andActuator CES-A-BSP-104970

Operating distance

Switch-on distance	
With center offset m=0	20 mm ^[34]
Assured switch-off distance Sar	max.45 mm
Assured operating distance Sao	
With center offset $m=0$	min.10 mm ^[35]
Switching hysteresis	1 4 mm [36]

in combination withRead head CES-A-LQA-SCandActuator CES-A-BQA

Mechanical values and environment

Mounting distance

Neighboring read heads min.80 mm

Switch-on distance	
For vertical approach direction (center offset m=0)	23 mm ^[37]
For side approach direction (distance in x direction 10 mm)	
Assured switch-off distance S _{ar}	max.60 mm
Assured operating distance Sao	
For vertical approach direction (center offset m=0)	min.16 mm ^[39]
For side approach direction (distance in x direction 10 mm)	
Switching hysteresis	
For vertical approach direction (center offset m=0)	2 3 mm ^[41]
For side approach direction (distance in x direction 10 mm)	1 1,3 mm ^[42]

in combination withRead head CES-A-LQA-SCandActuator CES-A-BBA, CES-A-BCA

Mechanical values and environment

Mounting distance	
Neighboring read heads	min.80 mm
Operating distance	
Switch-on distance	
For vertical approach direction (center offset m=0)	15 mm ^[43]
For side approach direction (distance in x direction 8 mm)	± 22 mm ^[44]
Assured switch-off distance Sar	max.47 mm
Assured operating distance Sao	
For vertical approach direction (center offset m=0)	min.10 mm ^[45]
For side approach direction (distance in x direction 8 mm)	min.± 18 mm ^[46]
Switching hysteresis	
For vertical approach direction (center offset m=0)	2 3 mm ^[47]
For side approach direction (distance in x direction 8 mm)	1 1,8 mm ^[48]

in combination withRead head CES-A-LMN-SCandActuator CES-A-BDA-20

Mechanical values and environment

Mounting distance

Neighboring read heads min.20 mm

Operating distance

Switch-on distance

	With center offset m=0	A distance of $s = 4 \text{ mm}$ must be maintained for a side approach direction. 9 mm ^[49]
Assured switch	n-off distance S _{ar}	
	With center offset $m=0$	max.26 mm ^[50]
Assured operat	ting distance S _{ao}	
	With center offset $m=0$	min.6 mm [51]
Switching hysteresis		
	With center offset $m=0$	1 1,8 mm ^[52]

in combination withRead head CES-A-LMN-SCandActuator CES-A-BBA

Mechanical values and environment

^[1] 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.

^[2] After the operating voltage is switched on, the relay outputs are switched off and the door monitoring outputs are 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.

[3, 4, 5, 6] 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. 750 ms. After a brief actuation < 0.8 s, the switch-on delay can increase to max. 3 s if this is followed immediately by further actuation.

^[7] In case of monitoring with feedback loop, the actuators must remain outside the operating distance, e.g. with a door open, until the feedback circuit is closed.

^[8] The dwell time is the time that the actuator must be inside or outside the operating distance.

[9] Terminals not included

^[10] Without taking into account the load currents on the monitoring outputs

[11, 12, 13, 14] This value is dependent on the number of switching cycles and the switching current.

[15, 16, 17, 28, 29, 30, 31, 32, 33] These values apply for the surface installation of the read head and the actuator.

[18, 19, 20, 21] On mounting in non-metallic environment

[22, 23, 24] These values apply for surface installation of the read head in steel.

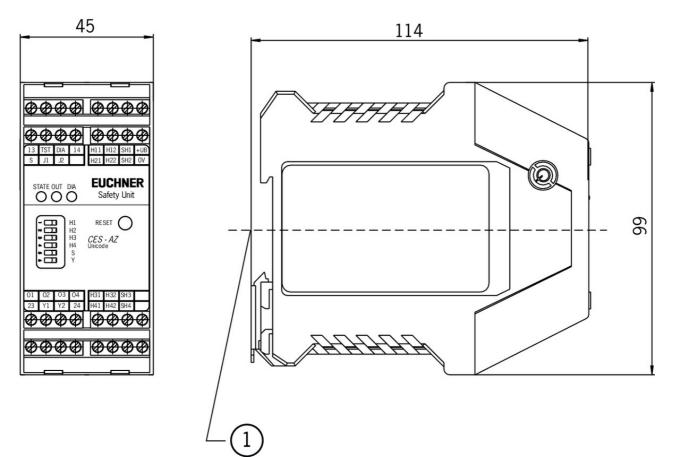
[25, 26, 27, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48] These values apply for surface installation of the read head and the actuator.

[34, 35, 36] These values apply for the installation of the read head and the actuator in an aluminum profile 45 x 45 mm.

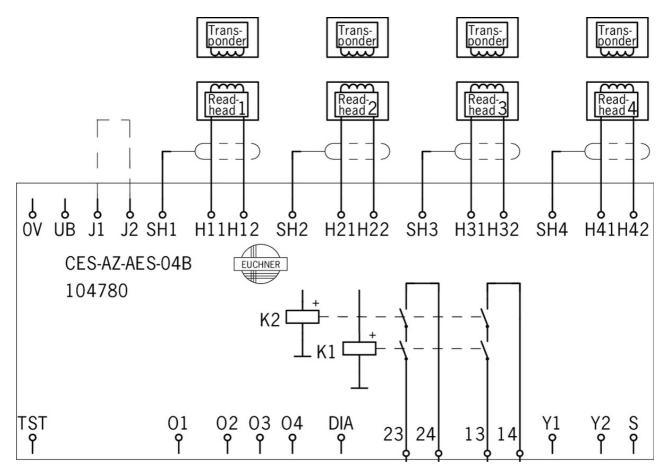
[49, 50, 51, 53, 54, 55] This value applies for the surface installation of the read head in metal and the non-metallic installation of the actuator.

^[52, 56] These values apply for the surface installation of the read head in metal and the nonmetallic installation of the actuator.

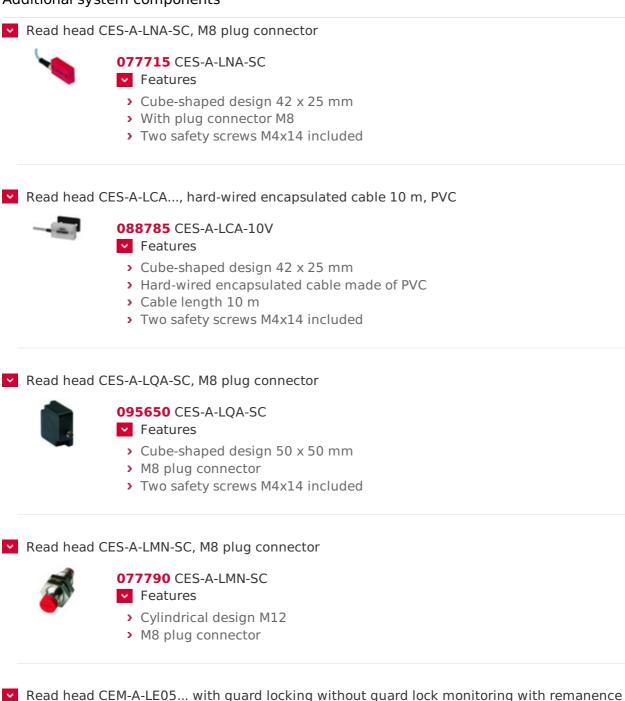
Dimension drawing



Block diagram



Additional system components





094800 CEM-A-LE05K-S2

Features

Features

- > 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-LE05... with guard locking without guard lock monitoring without remanence

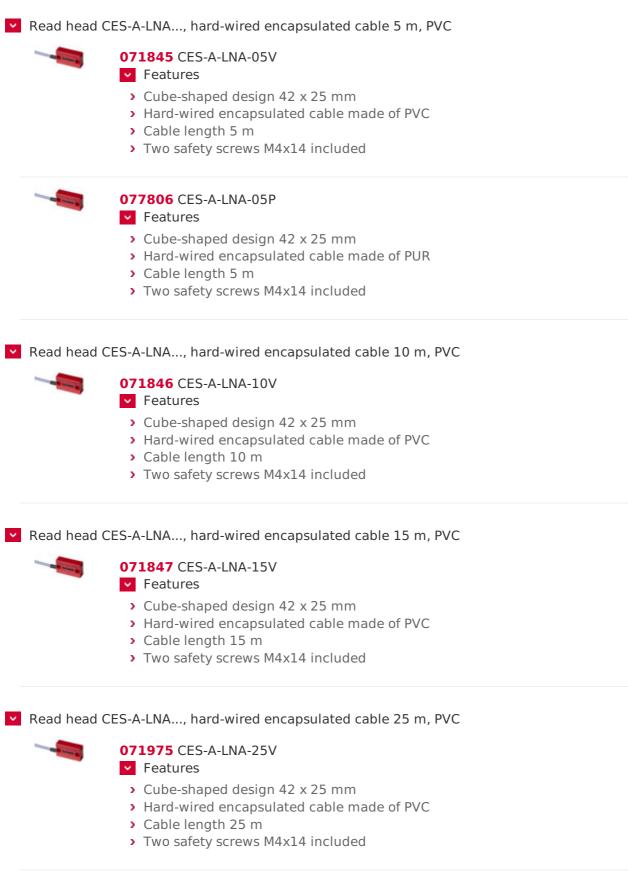


095792 CEM-A-LE05R-S2

- > Read head with guard locking without guard lock monitoring
- > Locking force 650 N



- > Up to category 4 according to EN ISO 13849-1
- > Two safety screws M5x16 included



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



077807 CES-A-LNA-10P ✓ Features

- > 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 15 m, PUR



084682 CES-A-LNA-15P

- Features
 - > 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 CEM-A-LH10K-S3 with guard locking without guard lock monitoring with remanence



095170 CEM-A-LH10K-S3

Features

- > 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

Features

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



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

Features

- > 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 (default setting on delivery)

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



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

- Features
 - > 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 (default setting on delivery)

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



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

- Features
 - > 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

- Features
 - > 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 (default setting on delivery)

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



103750 CET1-AX-LDA-00-50F-SA

Features

- > 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
- > With double ramp
- > Approach direction A and C (default setting on delivery)

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



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

Features

- > 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 (default setting on delivery)

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

103444 CET1-AX-LDA-00-50X-SC Features > 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) > With double ramp > Approach direction A and C (default setting on delivery) Read head CES-A-LSP-..., hard-wired encapsulated cable 5 m, PVC 104966 CES-A-LSP-05V-104966 Features > 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 CES-A-LSP-..., hard-wired encapsulated cable 10 m, PVC 104967 CES-A-LSP-10V-104967 Features > Optimized for aluminum profile mounting > LED for the indication of the door position > Hard-wired encapsulated cable made of PVC > Cable length 10 m Read head CES-A-LSP-..., hard-wired encapsulated cable 15 m, PVC 106271 CES-A-LSP-15V-106271 Features > Optimized for aluminum profile mounting > LED for the indication of the door position Hard-wired encapsulated cable made of PVC > Cable length 15 m Read head CES-A-LSP-SB..., plug connector M5 · 10751 104969 CES-A-LSP-SB-104969 Features Optimized for aluminum profile mounting > LED for the indication of the door position M5 plug connector

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



Features

- > Cube-shaped design 42 x 25 mm
- > Attachment 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

Features

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

Connection material

Connection kit for evaluation units CES-AZ-.ES-04B and CES-AR-AES-12, screw terminals

104776 CES-EA-TC-AK08-104776

Features

- Plug-in screw terminals for evaluation units CES-AZ-.ES-04B and CES-AR-AES-12
- > Coded

Connection kit for evaluation units CES-AZ-.ES-04B and CES-AR-AES-12, spring terminals

112629 CES-EA-TC-KK08-112629

Features

- Plug-in spring terminals for evaluation units CES-AZ-.ES-04B and CES-AR-AES-12
- > Coded

Miscellaneous accessories

Inrush current limiting module PM-SCL



096945 PM-SCL-096945 ✓ Features

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. 100 ms and protects the switching contacts.

Instructions

Návod k použití Bezkontaktní bezpečnostní systém CES-AZ-UES-... (Multicode)

	Doc. no.	Version	Language	Download
Betriebsanleitung Berührungsloses Sicherheitssystem CES-AZ-UES (Multicode)	2105274	09-09/17		🔁 1.8 MB
Mode d'emploi Système de sécurité sans contact CES-AZ-UES (Multicode)	2105274	09-09/17		🔁 1.8 MB
Manual de instrucciones Sistema de seguridad sin contacto CES-AZ-UES (Multicode)	2105274	09-09/17	2	🔁 1.8 MB
Návod k použití Bezkontaktní bezpečnostní systém CES-AZ-UES (Multicode)	2105274	09-09/17		🔁 1.9 MB
Operating instructions Non-contact safety system CES-AZ-UES (Multicode)	2105274	09-09/17		🔁 1.8 MB
Istruzioni di impiego Sistema di sicurezza senza contatto CES-AZ-UES (Multicode)	2105274	09-09/17		🔁 1.8 MB
使用说明书非接触式安全系统 CES-AZ-UES (通用 编码)	2105274	09-09/17		🔁 2.0 MB

Sicherheitsinformation und Wartung CES-A.../CES-AZ/CES-FD

	Doc. no.	Version	Language	Download
Sicherheitsinformation und Wartung CES- A/CES-AZ/CES-FD Información de seguridad y mantenimiento CES- A/CES-AZ/CES-FD Information de sécurité et entretien CES-A/CES- AZ/CES-FD Informazioni sulla sicurezza e manutenzione CES-A/CES-AZ/CES-FD Safety Information and Maintenance CES- A/CES-AZ/CES-FD	109083	07-04/16		<mark>™</mark> 0.5 MB
Bezpečnostní informace a pokyny k údržbě CES- A/CES-AZ/CES-FD	109083	07-04/16		🔁 0.2 MB
Informacje o bezpieczeństwie i konserwacji CES- A/CES-AZ/CES-FD	109083	07-04/16		🔁 0.2 MB
安全信息和维护 CES-A/CES-AZ/CES-FD	109083	07-04/16		🔀 0.3 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	2077154	34-01/17		🔁 0.5 MB

CAD data

CAD data for this item on TraceParts