CES-A-AEA-04B (Order no. 072000)

Evaluation unit CES-A-AEA-04B/CES-A-UEA-04B (for 4 read heads)

- 4 read heads can be connected
- 2 safety contacts (relay contacts)
- 1 internal normally open contact per safety contact
- Start button and feedback loop can be connected
- Unicode evaluation unit
- Category 4 / PL e according to EN ISO 13849-1

Unicode evaluation unit

Each actuator is highly coded (unicode). The evaluation unit detects only actuators that have 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.

Category according to EN ISO 13849-1

Due to two redundant relay outputs (safety outputs) with internally monitored contacts, suitable for:

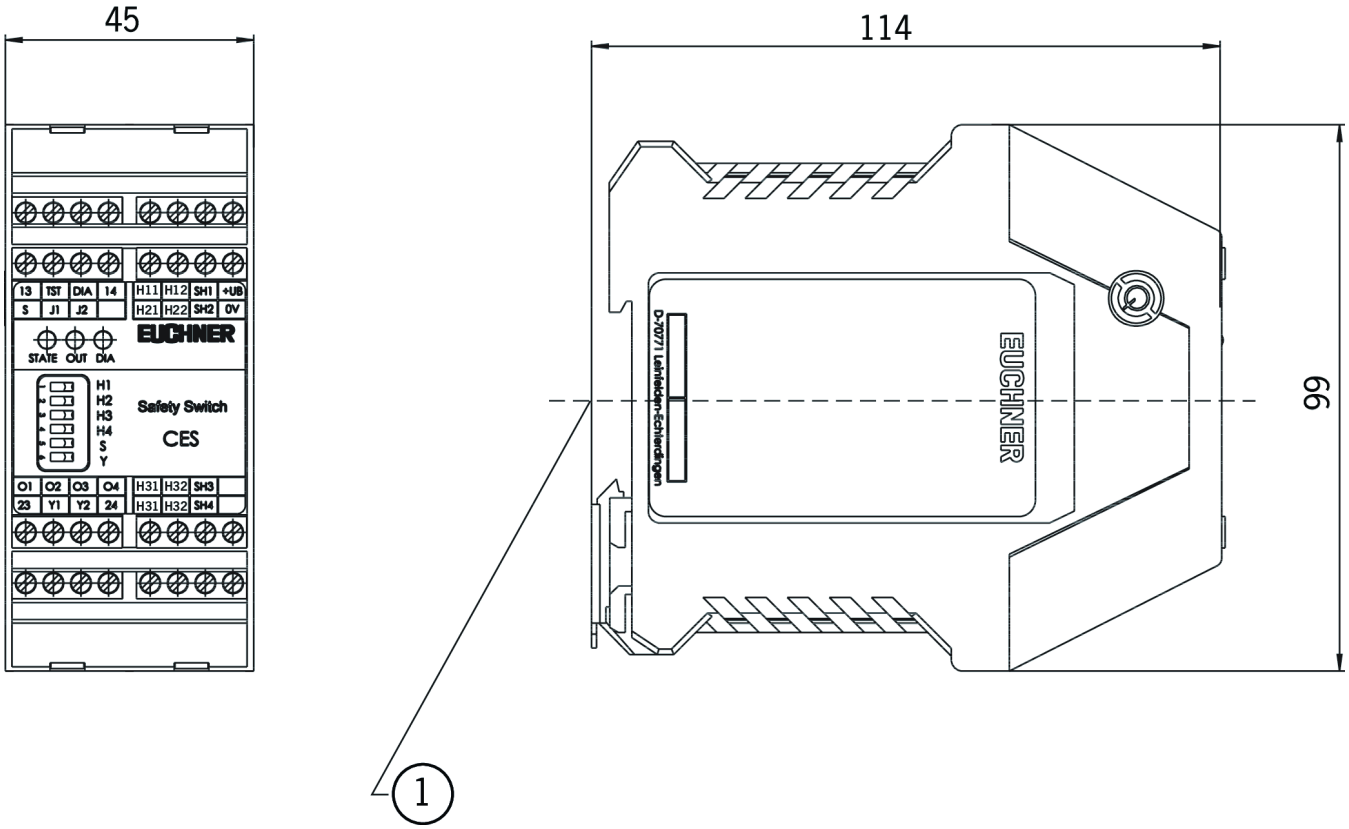
- Category 4 / PL e according to EN ISO 13849-1

Actuating range

The evaluation unit has the standard actuating range that, e.g., permits larger tolerances in the alignment of read head and actuator.

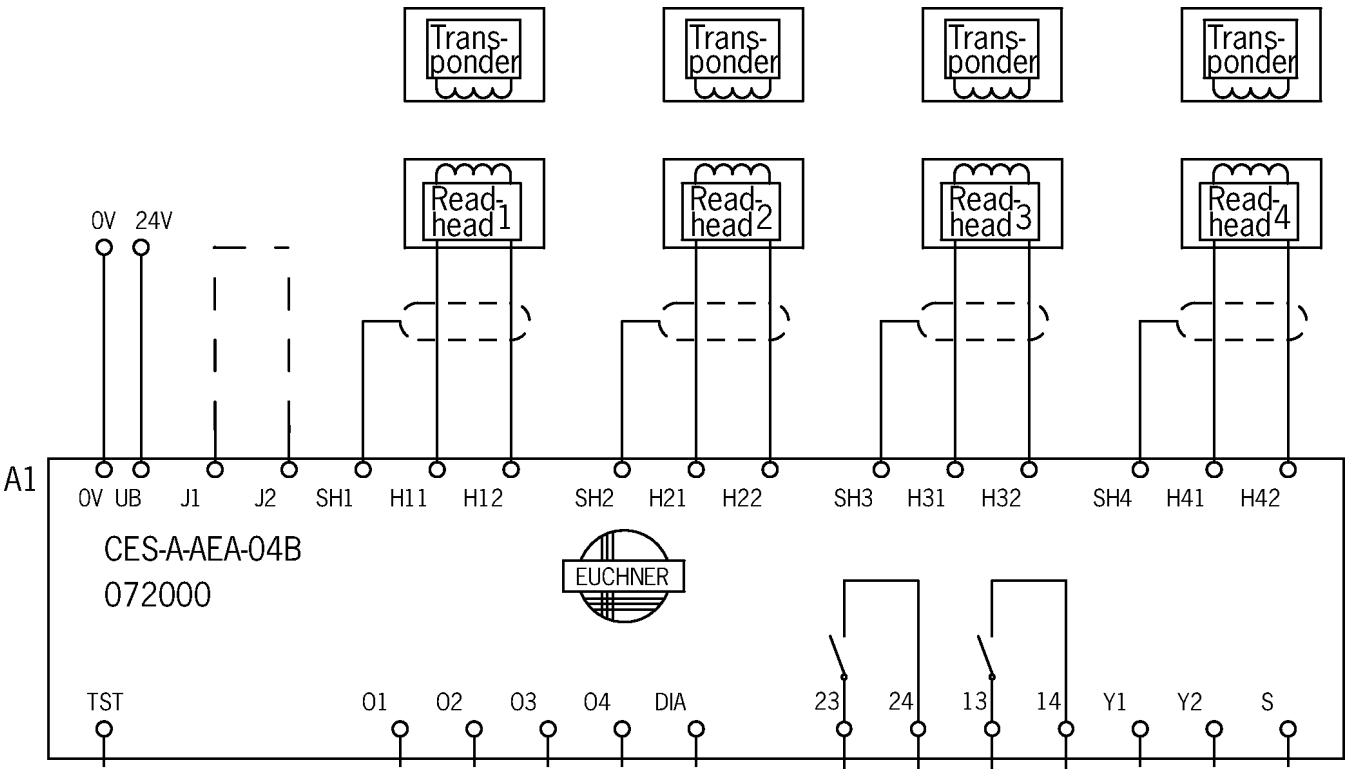
TST	Input for self-test
DIA	Diagnostic output
O1...O4	Monitoring outputs (semiconductor)
Y1,Y2	Feedback loop
S	Start button connection

Dimensional drawings



1 Suitable for 35 mm mounting rail according to EN 60715

Connection examples



Technical data

Approvals

Workspace

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

Operating and display elements

LED display

Diagnostics LED

Status LED

Safety outputs status

Item	Color	Extras	Slide-in label	Note slide-in label	Version	Switching element	Number	Designation1	LED
		Configuration setting for teach-in operation			DIP switches (H1, H2, H3, H4, S, Y)				

Electrical connection values

Fuse	
external (operating voltage UB)	0.25 ... 8 A
Connection cross section	
Screw terminals	0.25 ... 2.5 mm²
Operating voltage DC	
U_B	21 ... 24 ... 27 V DC regulated, residual ripple<5%
EMC protection requirements	Acc. to EN 60947-5-3
Current consumption	
(with relay energized)	150 mA (without taking into account the load currents at the monitoring outputs)
Current via feedback loop	5 ... 8 ... 10 mA

Degree of contamination (external, according to EN 60947-1)	2
permissible resistance in feedback loop	max. 600 Ω
	Inputs: start button S, test input TST
Input voltage	
LOW	0 ... 2 V DC
HIGH	15 ... UB V DC
Input current	
HIGH	5 ... 8 ... 10 mA
	Monitoring outputs: diagnostics DIA, door monitoring outputs O1,O2,O3,O4
Output type	Semiconductor output, p-switching, short circuit-proof
Output voltage	0.8 x UB ... UB V DC
Switching current	max. 20 mA
	Safety contacts 13/14, 23/24
Fuse	
external (safety circuit) according to EN 60269-1	6 AgG or 6 A circuit breaker (characteristic B or C)
Output type	Relay contacts, floating
rated conditional short-circuit current	100 A
Rated insulation voltage U_i	250 V
Rated impulse withstand voltage U_{imp}	4 kV
Discrepancy time	
(between the operating points of both relays, with 4 active actuators)	max. 400 ms
Utilization category	
AC-12	30 V 6 A
DC-12	60 V 0.3 A
DC-12	30 V 6 A
AC-15	230 V 1.5 A
DC-13	24 V 1.2 A
AC-12	60 V 0.3 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
Switching current	
at switching voltage AC/DC 17 … 30 V	15 … 6000 mA
at switching voltage AC 17 … 230 V	15 … 1500 mA
at switching voltage AC/DC 1 … 60 V	1 … 300 mA (If a switching current>300 mA in conjunction with a switching voltage>15 V or an inductive or capacitive load is switched once using the relay outputs, it is no longer possible to reliably switch small currents (<15 mA) due to the contact erosion on the gold contacts.)

Mechanical values and environment

Connection type	Screw terminals
Number of read heads	Max. 4 read heads 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 outputs are set to LOW level during the ready delay. For visual indication of the delay, the green STATE LED flashes at a frequency of approx. 15 Hz.)
Switching frequency	max. 0.25 Hz (In case of monitoring with feedback loop, the actuators must remain outside the actuating range, e.g. with a door open, until the feedback loop is closed.)
Atmospheric humidity	
not condensing	max. 80 % rH
Mounting distance	
between evaluation units	min. 10 mm
Mounting type	TH 35 mounting rail (EN IEC 60715)
Response time	
Start button response delay (for Manual start operating mode)	200 … 300 ms
Start button actuating duration (for Manual Start operating mode)	min. 250 ms
after change in the actuation status, 4 active actuators	max. 450 ms (Corresponds to the risk time according to EN 60947-5-3. This is the

	maximum OFF time 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 OFF time can increase to max. 750 ms. After brief actuation
after change in the actuation status, 2 active actuators	max. 290 ms (Corresponds to the risk time according to EN 60947-5-3. This is the maximum OFF time 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 OFF time can increase to max. 750 ms. After brief actuation
after change in the actuation status, 3 active actuators	max. 370 ms (Corresponds to the risk time according to EN 60947-5-3. This is the maximum OFF time 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 OFF time can increase to max. 750 ms. After brief actuation
after change in the actuation status, 1 active actuator	max. 210 ms (Corresponds to the risk time according to EN 60947-5-3. This is the maximum OFF time 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 OFF time can increase to max. 750 ms. After brief actuation
Degree of protection	IP20
Ambient temperature	
with U_B = 24 V DC	-20 ... +55 °C
Dwell time	min. 3 s (The dwell time is the time that the actuator must be outside the actuating range.)
Material	
Housing	Plastic PA6.6
	Safety contacts 13/14, 23/24
Number of safety contacts	2 Relay with internally monitored contacts (To ensure safety, both safety outputs (13/14 and 23/24) must always be evaluated.)
Mechanical life	
Operating cycles (relay)	10 x 10^6

Characteristic values according to EN ISO 13849-1 and EN IEC 62061

Number of switching cycles	
≤ 0.1 A at 24 V DC	max. 506000 1/y
≤ 3 A at 24 V DC	max. 23000 1/y
≤ 1 A at 24 V DC	max. 100000 1/y
Diagnostic Coverage (DC)	99 %
Mission time	20 y (This value is dependent on the number of switching cycles and the switching current.)
	Monitoring of the 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 at max. 0.1 A	1.3×10^{-8}
PFH_D at max. 3 A	1.5×10^{-8}
	Safety contacts 13/14, 23/24
Number of switching cycles	
≤ 0.1 A at 24 V DC	max. 506000 1/y
≤ 1 A at 24 V DC	max. 100000 1/y
≤ 3 A at 24 V DC	max. 22000 1/y

Miscellaneous

The following applies to the approval according to UL	Operation only with UL Class 2 power supply or equivalent measures.

In combination with read head CES-A-LQA-SC

Mounting distance	
between read heads	min. 80 mm

In combination with read head CES-A-LQA-SC and actuator CES-A-BQA

Switch-on distance	
for side approach direction (distance in x direction 10 mm)	+/- 28 mm (These values apply to surface installation of the read head and the actuator.)
for vertical approach direction (center offset m=0)	23 mm (These values apply to surface installation of the read head and the actuator.)
Secured switch-off distance s_{ar}	max. 60 mm
Secured switching distance s_{ao}	
for side approach direction (distance in x direction 10 mm)	min. +/- 24 mm (These values apply to surface installation of the read head and the actuator.)
for vertical approach direction (center offset m=0)	min. 16 mm (These values apply to surface installation of the read head and the actuator.)
Switching hysteresis	
for side approach direction (distance in x direction 10 mm)	1 ... 1.3 mm (These values apply to surface installation of the read head and the actuator.)
for vertical approach direction (center offset m=0)	2 ... 3 mm (These values apply to surface installation of the read head and the actuator.)

In combination with read head CES-A-LNA-SC-077715, CES-A-LNA-05P-077806, CES-A-LNA-10P-077807, CES-A-LNA-05V-071845, CES-A-LNA-10V-071846, CES-A-LNA-15V-071847, CES-A-LNA-25V-071975, CES-A-LNA-15P-084682, CES-A-LCA-10V

Mounting distance	
between read heads	min. 50 mm

In combination with read head CES-A-LQA-SC and actuator CES-A-BBA-071840, CES-A-BCA

Switch-on distance	
for vertical approach direction (center offset m=0)	15 mm (These values apply to surface installation of the read head and the actuator.)
for side approach direction (distance in x direction 8 mm)	

	+/- 22 mm (These values apply to surface installation of the read head and the actuator.)
Secured switch-off distance s_{ar}	max. 47 mm
Secured switching distance s_{ao}	
for side approach direction (distance in x direction 8 mm)	min. +/- 18 mm (These values apply to surface installation of the read head and the actuator.)
for vertical approach direction (center offset m=0)	min. 10 mm (These values apply to 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 to surface installation of the read head and the actuator.)
for side approach direction (distance in x direction 8 mm)	1 ... 1.8 mm (These values apply to surface installation of the read head and the actuator.)

In combination with read head CES-A-LNA-SC-077715, CES-A-LNA-05P-077806, CES-A-LNA-10P-077807, CES-A-LNA-05V-071845, CES-A-LNA-10V-071846, CES-A-LNA-15V-071847, CES-A-LNA-25V-071975, CES-A-LNA-15P-084682, CES-A-LCA-10V and actuator CES-A-BDA-20

Actuator distance s	
Minimum distance for side approach direction	min. 4 mm (on mounting in non-metallic environment)
Switch-on distance	
with center offset m=0	16 mm (on mounting in non-metallic environment)
Secured switch-off distance s_{ar}	max. 33 mm
Secured switching distance s_{ao}	
with center offset m=0	min. 11 mm (on mounting in non-metallic environment)
Switching hysteresis	0.5 ... 2 mm (on mounting in non-metallic environment)

In combination with read head CES-A-LMN-SC and actuator CES-A-BMB

Actuator distance s	
Minimum distance	min. 1.2 mm
Switch-on distance	
with center offset m=0	5 mm (These values apply to surface installation of the read head in steel.)
Secured switch-off distance s_{ar}	max. 10 mm
Secured switching distance s_{ao}	
with center offset m=0	min. 3.5 mm (These values apply to surface installation of the read head in steel.)
Switching hysteresis	0.1 … 0.3 mm (These values apply to surface installation of the read head in steel.)

In combination with read head CES-A-LMN-SC

Mounting distance	
between read heads	min. 20 mm

In combination with read head CES-A-LNA-SC-077715, CES-A-LNA-05P-077806, CES-A-LNA-10P-077807, CES-A-LNA-05V-071845, CES-A-LNA-10V-071846, CES-A-LNA-15V-071847, CES-A-LNA-25V-071975, CES-A-LNA-15P-084682, CES-A-LCA-10V and actuator CES-A-BBA-071840, CES-A-BCA

Actuator distance s	
Minimum distance for side approach direction	min. 3 mm
Switch-on distance	
with center offset m=0	15 mm (These values apply to surface installation of the read head and the actuator.)
Secured switch-off distance s_{ar}	max. 32 mm
Secured switching distance s_{ao}	
with center offset m=0	min. 10 mm (These values apply to surface installation of the read head and the actuator.)
Switching hysteresis	0.5 … 2 mm (These values apply to surface installation of the read head and the actuator.)

Downloads

All documentation for this material can be found on our website:
https://www.euchner.de/en-us/a/072000/?#downloads-tab

Ordering data

Ordernumber	072000
Item designation	CES-A-AEA-04B
Gross weight	0,34kg
European Article Number (EAN)	4047048000216
Customs tariff number	85364110
ECLASS	27-27-24-03 Safety-related transponder switch

Accessories

CEM read heads

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

102821
CEM-A-LE05K-S1-10P

- Read head with guard locking without guard lock monitoring
- Locking force 650 N
- With remanence
- CES evaluation unit connection: 10 m cable, PUR
- Connection for solenoid operating voltage: M8 male plug
- Up to category 4 according to EN ISO 13849-1

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-LH10K-S2... with guard locking without guard lock monitoring with retentivity

102822
CEM-A-LH10K-S2-10V

- Read head with guard locking without guard lock monitoring
- Locking force 1000 N
- With remanence
- CES evaluation unit connection: 10 m cable, PVC
- Connection for solenoid operating voltage: M8 male plug
- LED indicator connection: M8 female plug
- Up to category 4 according to EN ISO 13849-1

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

CES read heads

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-077715

- 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 10 m, PUR

077807
CES-A-LNA-10P-077807

- 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-071846

- 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-084682

- 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-071847

- 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-071975

- 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-LNA..., hard-wired encapsulated cable 5 m, PUR

077806
CES-A-LNA-05P-077806

- 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 5 m, PVC

071845
CES-A-LNA-05V-071845

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

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

Miscellaneous

Inrush current limiting module PM-SCL

096945
PM-SCL-096945

- Limitation of switch-on current
- Suitable for mounting on mounting rail