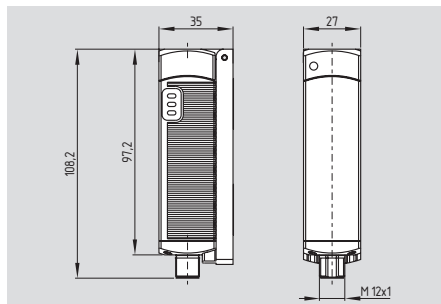


Electronic safety sensors

Sensor CSP 34



- Tampering protection by paired coding of safety sensor and actuator
- On-site acknowledgment (ordering suffix F2)
- 2 short-circuit proof, p-type safety outputs (24 VDC per 250 mA)
- Self-monitored series-wiring of up to 31 sensors
- Max. length of the sensor chain 200 m
- Integral cross-wire, wire breakage and external voltage monitoring of the safety cables up to the control cabinet
- With integrated connector:
- Thermoplastic enclosure

Approvals



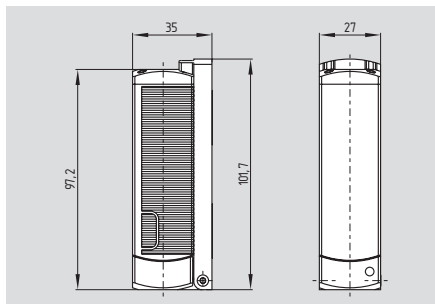
Ordering details

CSP 11-34①-D-M-ST

No.	Option	Description
①		without on-site acknowledgment
	F2	with on-site acknowledgment

Sensor and actuator must be ordered separately!

Actuator CSP 34-S-1



- CSP 34 safety sensor and CSP 34-S-1 actuator are isometric
- Sensor and actuator must be ordered separately
- 20 different actuator codes available
- Sideways actuation only

Approvals



Certification in combination with safety sensor

Ordering details

CSP 34-S-1①

No.	Option	Description
①	1 ... 20	Coding 1-20

Technical data

Standards: IEC 60947-5-3, EN ISO 13849-1, IEC 61508

Enclosure: glass fiber reinforced thermoplastic

Mode of operation: inductive

Actuator: coded CSP 34-S-1

Series-wiring: max. 31 components

Cable length: max. 200 m

Switching distances to IEC 60947-5-3:

Rates switching distance S_{nr} : 11 mm

Assured switch-on distance S_{ao} : 8 mm

Assured switch-off distance S_{ar} : 15 mm

Hysteresis: max. 1.5 mm

Repeat accuracy: < 0.5 mm

Switching frequency f: 3 Hz

Integrated connector: M12, 8-pole in the enclosure

Ambient conditions:

Ambient temperature T_u :

For output current

≤ 0.1 A/output -25 °C ... +70 °C

≤ 0.25 A/output -25 °C ... +65 °C

Storage and transport temperature: -25 °C ... +85 °C

Resistance to vibration: 10...55 Hz, amplitude 1 mm

Resistance to shock: 30 g / 11 ms

Protection class: IP65, IP67 to EN 60529

Electrical data:

Rated operating voltage U_o : 24 VDC

-15% / +10%

(stabilised PELV)

Rated operating current I_o : 0.6 A

Required rated

short-circuit current: 100 A

Fuse: 2.0 A

Rated insulation voltage U_i : 32 V

Rated impulse withstand

voltage U_{imp} : 800 V

No-load current I_0 : 0.1 A

Response time: < 30 ms

Duration of risk: < 60 ms

Protection class: II

Overvoltage category: III

Degree of pollution: 3

Note

Requirements for the safety controller

Dual-channel safety input, suitable for p-type sensors with normally-open (NO) function. The internal function tests of the sensors cause the outputs to cyclically switch off for max. 0.5 ms, this must be tolerated by the safety controller. The safety controller must not be equipped with cross-wire detection.

Electronic safety sensors

Technical data

Safety inputs X1/X2:

Rated operating voltage U_e : 24 VDC
 -15% / +10%
 PELV gem. IEC 60204-1

Rated operating current I_e : 1 A

Safety outputs Y1/Y2: NO function, 2-channel,
 p-type, short-circuit proof

Utilization category: DC-12, DC-13

Rated operating voltage U_{e1} : min. ($U_e - 1$ V)

Voltage drop: < 1 V

Rated operating current I_{e1} : max. 0.25 A,
 ambient temperature-dependent

Leakage current I_l : < 0.5 mA

Minimum operating current I_m : 0.5 mA

Diagnostic output: p-type, short-circuit proof

Utilization category: DC-12, DC-13

Rated operating voltage U_{e2} : min. ($U_e - 5$ V)

Voltage drop: < 5 V

Rated operating current I_{e2} : max. 0.05 A

Classification:

Standards: EN ISO 13849-1, IEC 61508

PL: e

Category: 4

PFH value: $1,3 \times 10^{-10}$ /h

SIL: suitable for SIL 3 applications

Mission time: 20 years

Note

Coding of safety sensor and actuator

In order to activate the safety function (coding) of the CSP 34 for the first time, the actuator to be assigned first must be brought into the detection area of the activated safety sensor. The automatic teaching cycle of the actuator code will be signalled by the red LED on the safety sensor being activated and the yellow LED simultaneously flashing. After 10 seconds, brief cyclic flashing signals signal that the operating voltage of the safety sensor must be shut off for a few seconds, in order to save the code.

When the operating voltage is switched back on, the actuator must be redetected in order to definitively assign safety sensor and actuator. Now, the safety sensor no longer can be activated by another coding. In order to protect the coding, the ordering details of the actuator are hidden by the mounting bracket.

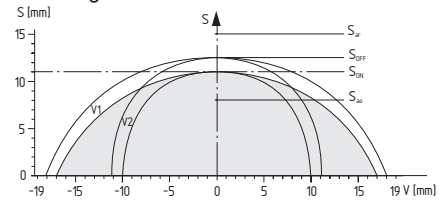
On-site acknowledgment (ordering suffix F2)

For the guard door monitoring using a CSP 34F2 safety sensor, a reset/acknowledgment button for instance must be positioned at the safety guard in such manner that the operator has an overview of the hazardous area. When the button is pushed, a 24 VDC signal is generated at the reset input of the CSP 34F2. When the safety guard is closed, the safety outputs are enabled with the trailing edge of the reset signal. After opening of the safety guard, a new acknowledgment is required prior to the next enabling.

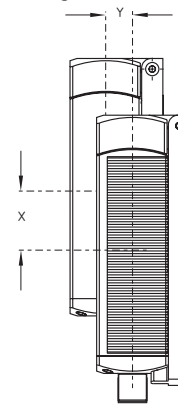
Misalignment

Actuation through the revolving side of sensor and actuator

Actuating curve



Possible misalignment



The actuating curves show the switch-on and switch-off distances of the CSP 34 sensor by the approach of the actuator.

Legend

- S Switching distance
- X Possible misalignment through the long side with identification plate
- Y Possible misalignment through the small side with identification plate
- S_{on} Switch-on distance
- S_{off} Switch-off distance
- S_h Hysteresis area $s_h = s_{on} - s_{off}$
- S_{ao} Assured switch-on distance
- S_{ar} Assured switch-off distance

Note

Additional Accessories:

SD Gateway Page 1-90
 Series-wiring accessories Page 1-92
 Connector Page 1-89
 Diagnostic tables Online
 Suitable safety monitoring modules Page 5-2

Note

More detailed product information can be found in the Electronic Safety Sensors and Solenoid Interlocks catalog.

Misalignment

The long side allows for a max. displacement of sensor and actuator of 30 mm (e.g. mounting tolerance or due to guard door sagging). The long side allows for a maximum transverse misalignment of approx. 8 mm.