

# AZM300

## More than just a solenoid interlock



**SCHMERSAL**  
Safe solutions for your industry

A black, L-shaped door safety sensor with a silver metal U-shaped bracket at the top. The sensor has two circular mounting holes on the vertical part and one on the horizontal part. It is shown against a blue gradient background.

**AZM300**

# The one for all

- Symmetrical mounting for right- and left-hinged doors
- Only one version for hinged and sliding doors
- Compact design
- Can be used as end stop
- 3 actuating directions
- High tolerance to door misalignment
- Holding force 1,000 N
- Switchable latching force (25 N / 50 N)
- PL e / SIL 3
- Series-wiring without reduction of the safety level
- More than 30,000 different codings
- Serial diagnostic
- Low power consumption

# mounting situations

- Power to lock or power to unlock
- Actuator or solenoid interlock monitoring
- Hygiene-compliant design:  
resistant to many cleaning agents
- Protection class IP69K
- Manual release
- Easily mounted to standard  
extrusion guards
- LED status indication
- 200ms delayed locking to ensure  
door closure and reduce stress  
on locking mechanism





## Protection against hazardous inertial movements

One of the unique features of the AZM300 is the innovative patented operating principle with rotating shaft and star handle. This operating principle offers the advantage that the safety guard is pulled into its end position upon closing the guard door and it is held shut. The solenoid interlock can be used as an end stop, which eliminates the use of a separate door stop. The integrated latching ensures that the closed condition of the door is maintained after the unlocking of the solenoid interlock and that the door cannot autonomously open itself. The latching force can be easily increased by turning the star handle by 180° from 25 N to 50 N.

For safe identification of the actuator an RFID sensor is used, featuring three different coding levels thus providing protection against defeat.

## Fields of application

- Packaging machinery
- Wood-processing machinery
- Printing machines and presses
- Handling and assembly technology
- Special-purpose and customised machine construction
- Food-processing industry
- Pharmaceutical industry



Printing machines and presses

## Identical mounting for left and right hinged doors



## Protecting humans and machines

The safety outputs of the AZM300Z solenoid interlock (solenoid interlock monitoring) are enabled when the safety guard is closed and the solenoid interlock is locked.

For applications where process protection is required, the AZM300B version (actuator monitoring) can be used. The safety outputs of this model are enabled when the safety guard is closed and can be locked. With this device locking is not required for operation, however the ability for a proper locking is still monitored.

## Three actuating directions



Actuation from the rearside

Actuation from the slim side

Actuation from front





Automatic teaching after the operating voltage is switched on



10 minute restart inhibit following the teaching procedure of a replacement actuator

## Protection against defeating through individual coding

If interlocking devices are defeated, the machine is not operated under the conditions foreseen by the manufacturer. The result could be a significantly increased residual risk for the operator, possibly much higher than acceptable.

If the defeating incentive cannot be eliminated completely by modified or additional modes of operation, then the designer has only one element left. This is to make the defeating of interlocking devices more difficult or even impossible. (Excerpt from prEN ISO 14119).

The basic version of the AZM300 accepts any suitable target. A second version only accepts the actuator that has been taught upon the first activation. And finally, a third variant is available; here, the teaching process can be repeated an arbitrary number of times. In this way, the user can choose the most suitable coding variant for the intended application as well as the desired degree of protection against defeating. This is enabled by integration of the RFID technology into the safety sensor technology.

## Teaching actuators without additional tools

The AZM300-I1 and AZM300-I2 versions with individual coding, no tool whatsoever is required for the actuator teaching procedure.

The teaching process starts automatically as soon as the device is switched on. The user must connect the solenoid interlock to the operating voltage and bring the actuator into the detection range. After approx. 10 seconds, a brief cyclic flash of the AZM300 LED indicates to remove the operating voltage. Next the operating voltage is switched back on and the actuator must be placed in the detection range once again to activate the actuator code.

For ordering suffix -I1, once the actuator coding process has been completed it is irreversible. For ordering suffix -I2, the teaching procedure for a new actuator can be repeated an unlimited number of times. A restart inhibit period of 10 minutes prevents the last-minute change of an actuator, thus increasing the protection against tampering.



## Serial diagnostic

Similar to all electronic safety sensors and solenoid interlocks from Schmersal, the AZM300 is also available with serial diagnostic. Solenoid interlocks with serial diagnostic feature have a serial input and output cable instead of the conventional diagnostic output. When solenoid interlocks are wired in series, the serial diagnostic cables are wired in series, in addition to the safety channels. The thus created "common diagnostic line" is wired to a serial Diagnostic Gateway for evaluation. Up to 31 different Schmersal electronic safety devices can be wired in series.

For the evaluation of the serial diagnostics line either the PROFIBUS-Gateway SD-I-DP-V0-2 or the Universal-Gateway SD-I-U-... are used. This serial diagnostic interface is integrated as a slave in an existing field bus system. In this way, the diagnostic signals can be evaluated by means of a PLC. In addition to the comprehensive diagnostic and status information, the solenoid interlock is locked or unlocked through the diagnostic cable. The device can be wired either directly to the machine through a special Y-adapter or in the control cabinet by means of terminal blocks. Because of the use of serial diagnostics, an input (diagnostic) and an output (locking signal) can be saved for each device in the PLC.



Hygiene-sensitive applications



Packaging machinery



## The AZM300 in detail

### Legend

- ① High degree of protection against tampering because of the coded RFID sensor (also available with individual coding)
- ② Dampener for door stop - saves costs: no additional mounting parts required
- ③ Star handle - adjustable latching force - 25 N or 50 N
- ④ Mounting hole for M6 screws
- ⑤ Connector plug M12, 8-pole
- ⑥ Manual release
- ⑦ LED display

## Features



### Large actuator tolerances

- Actuator tolerance in longitudinal direction  $\pm 3.5$  mm, lateral direction  $\pm 2.0$  mm



### Easy latching force adjustment

- The latching force can be increased from 25 N to 50 N simply by turning the star handle 180°.
- Position I: approx. 25 N, Position II: approx. 50 N






### LED display

- Smart diagnostic by means of 3-color LEDs
- LED green: Power
- LED yellow: Status
- LED red: Fault



## Technical data

Technical data	
Holding force:	1,000 N
Latching force:	25 N / 50 N
Mechanical life:	> 1,000,000 operations
End stop:	5 kg guard door, 0.5 m/s ≥ 50,000 operations
Protection class:	IP66, IP67, IP69K
Dimensions:	100 x 85 x 35 mm
Supply voltage:	24 VDC –15% / +10%
Electrical connection:	Connector plug M12, 8-pole
Outputs:	2 p-type safety outputs, 1 p-type diagnostic output or serial diagnostic
Diagnostic and status display:	3 LEDs
Classification:	PL e / SIL 3
Approvals:	  

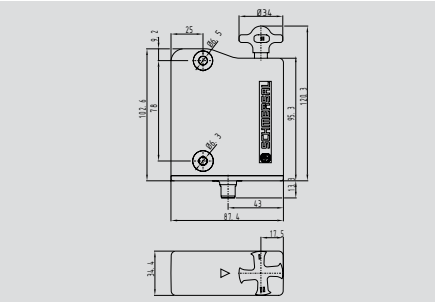
Solenoid monitored	Actuator monitored	Power to unlock	Power to lock	Universal coding	Individual coding	Diagnostic output	Serial diagnostic	Ordering details	Ordering code
■		■		■		■		AZM300Z-ST-1P2P	103001435
■			■	■		■		AZM300Z-ST-1P2P-A	103001450
■		■			■	■		AZM300Z-I2-ST-1P2P	103001439
■			■		■	■		AZM300Z-I2-ST-1P2P-A	103001454
■		■		■			■	AZM300Z-ST-SD2P	103001436
■			■	■			■	AZM300Z-ST-SD2P-A	103001451
■		■			■		■	AZM300Z-I2-ST-SD2P	103001440
■			■		■		■	AZM300Z-I2-ST-SD2P-A	103001455
	■	■		■		■		AZM300B-ST-1P2P	103001411
	■		■	■		■		AZM300B-ST-1P2P-A	103001423
	■	■			■	■		AZM300B-I2-ST-1P2P	103001415
	■		■		■	■		AZM300B-I2-ST-1P2P-A	103001427
	■	■		■			■	AZM300B-ST-SD2P	103001412
	■		■	■			■	AZM300B-ST-SD2P-A	103001424
	■	■			■		■	AZM300B-I2-ST-SD2P	103001416
	■		■		■		■	AZM300B-I2-ST-SD2P-A	103001428

Version I1 with individual coding upon request. Door detection monitoring featured on all versions.

Actuator	AZ/AZM300-B1	101218025
Mounting plate AZM300	MP-AZ/AZM300-1	103003172
Mounting set actuator	MS-AZ/AZM300-B1	103002891
Connector M12, 8-pole, IP67, 2,5 m	A-K8P-M12-S-G-2,5M-BK-1-X-A-2	101209963
Connector M12, 8-pole, IP67, 5 m	A-K8P-M12-S-G-5M-BK-1-X-A-2	101209964
Connector M12, 8-pole, IP69K, 5 m	A-K8P-M12-S-G-5M-BK-1-X-A-4-69	101210560
Connector M12, 8-pole, IP69K, 10 m	A-K8P-M12-S-G-10M-BK-1-X-A-4-69	103001389

# Electronic safety sensors

## Sensor AZM300

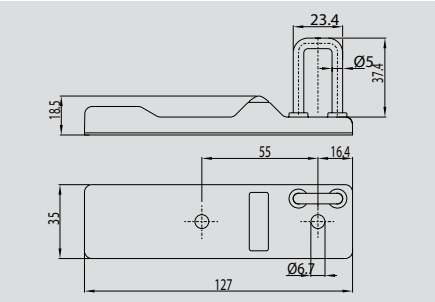


- Thermoplastic enclosure
- 2 short-circuit proof, p-type safety outputs (24 VDC per 250 mA)
- Increased protection against tampering by optional individual coding of safety sensor and actuator
- Adjustable latching from 25N to 50N
- Safety and diagnostic signals can be wired in series
- Integral cross-wire, wire breakage and external voltage monitoring of the safety cables up to the control cabinet
- LED status indication
- Robust design using cleaning agent-resistant materials achieving protection class IP69K

### Approvals



## Actuator AZM300



- Thermoplastic
- Solenoid actuator key
- Dampener for end stop
- RFID tag

### Approvals



Certification in combination with safety sensor

## Technical data

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

Enclosure: glass-fibre reinforced thermoplastic

Mode of operation: RFID

Actuator: AZ/AZM300-B1

**Series-wiring:** unlimited number of components, up to 200 M; max. 31 components for serial diagnosis

Connection: Integrated connector M12

- Integrated connector: M12, 8-pole, A-coded

### Switching distances to IEC 60947-5-3:

Rates switching distance  $S_n$ : 2 mm

Assured switch-on point  $S_{ao}$ : 1 mm

Assured switch-off point  $S_{ar}$ : 20 mm

Minimum distance between two sensors: 100 mm

### Ambient conditions:

Ambient temperature  $T_u$ : 0 °C ... +60 °C

Storage and transport temperature: -10 °C ... +90 °C

Protection class: IP66 / IP67 to EN 60529; IP69K to DIN 40050-9

### Mechanical Data:

Resistance to vibration: 10...150 Hz, amplitude 0.35 mm

Resistance to shock: 30 g / 11 ms

### Electrical data:

Switching frequency  $f$ : 0.5 Hz

Response time: 120 ms

Duration of risk: < 200 ms

Standby delay: ≤ 5 s

Rated Supply voltage  $U_s$ : 24 VDC -15% / +10% (PELV)

Power consumption with solenoid enabled: 0.25 A

Power consumption without load: 0.1 A

Required rated short-circuit current: 100 A

## Ordering details

AZM300 ① - ② -ST- ③ - ④		
No.	Option	Description
①	Z	Guard locking monitored
	B	Actuator (RFID) monitored
②		Standard version
	I1	Individual coding (Irreversible)
	I2	Individual coding (re-teachable)
③	1P2P	Diagnostic output
	SD2P	Serial Diagnostic
④		Power to unlock (spring lock)
	A	Power to lock

## Ordering details

Actuator **AZ/AZM300-B1**

## Ordering details

**Connector Cables**  
**A-K8P-M12-S-G-5M-BK-1-X-A-4**  
IP69K cable, 5 meter length  
**A-K8P-M12-S-G-10M-BK-1-X-A-4**  
IP69K cable, 10 meter length  
**A-K8P-M12-S-G-5M-BK-1-X-A-2**  
IP67 cable, 5 meter length  
**A-K8P-M12-S-G-10M-BK-1-X-A-2**  
IP67 cable, 10 meter length

**Mounting**  
**MP-AZ/AZM300-1** Spacer plate  
**MS-AZ/AZM300-B1** Mounting kit for actuator

## NOTES

# Electronic Safety Sensor & Solenoid Interlock Product Family

Schmersal offers a wide selection of Electronic safety devices which are designed to help solve application challenges for industry while enhancing operator safety.

- Non-contact sensor principle
- 3 color LEDs indicate status, error codes
- Integrated dual monitoring microprocessor provides continuous internal function tests
- Highest level of safety: PLe per ISO 13849-1, SIL3 per IEC 62061
- Wired in series without detriment to safety level
- Serial Diagnostic option for connection to PLCs
- RFID allows for individual coding of actuators

The available features from the Schmersal electronic family provide our customers multiple options when selecting the appropriate product for any application.

CSS180



CSS34



CSS30S



AZ200/AZM200



MZM100



CSS16



RSS36



AZM300



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