

# SERIES AZM 200

## Pulse-Echo Based Non-Contact Solenoid Interlock



### Description

The AZM 200 Series is designed for machine/work cells where access to a hazardous work area must be controlled until safe conditions exist. Their solenoid-latching feature permits locking a machine guard until dangerous conditions, which may exist immediately after removal of power, have abated. Solenoid-latching may be controlled by a time delay, motion detector, position sensor or other suitable component.

The AZM 200 consists of a solenoid-latching interlock and actuator unit with door handle and optional emergency exit handle. The actuator is always inserted into its housing, protecting the actuator and the operator against damage and injury. Utilizing pulse-echo sensor technology, the actuator and interlock can have an offset of  $\pm 5$  mm and the actuator still engages the interlock.

Due to the one-hand operation of the emergency exit handle, the hazardous area can be left quickly and safely—even during a power failure (when using the “unlock by power” model).

The solenoid interlock is a dual channel design with two short-circuit proof, safe PNP outputs, each of which can switch up to 250 mA.

With continuous internal function tests, the monitoring of the safety outputs and the use of door detection sensors, multiple AZM 200 solenoid interlocks can be wired in series without detriment to the control category. Series wired AZM 200s continue to fulfill the requirements of Control Category 4 according to EN 954-1 with door detection sensors (without the need of a second switch).

### Typical Applications

The AZM 200 is intended for use as a safety interlock switch on movable machine guards which must not be opened until dangerous conditions, which may exist after the removal of power, have abated. Such conditions are flywheel overrun, spindle momentum, unstable rest positions, etc. Typical applications are textile machines, stamping machines, metal working equipment, printing presses and packaging machines.

### Features & Benefits

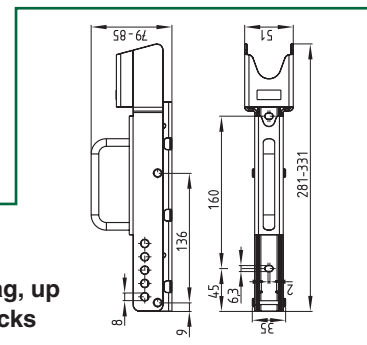
- **Solenoid locking design** ... controls access to hazardous areas until safe conditions exist.
- **Non-contact sensing** ... for long term reliability.
- **Dual purpose handle** ... unlatches and opens guard—no additional door handles are needed.
- **Integral LED diagnostics** ... indicates operating states
- **Integral self-monitoring and door detection sensors** ... satisfy requirements of Safety Control Category 4.  
*\*See Note Below.*
- **One-hand emergency release** ... hazardous area can be left quickly and safely—even during a power failure.
- **Switch and actuator do not protrude into door opening** ... no risk of injury or damage from a protruding actuator.
- **Dual PNP 250 mA safety outputs** ... for application versatility.

### AVAILABLE AZM 200 MODELS (Actuator ordered separately below)

Model Number	Description
<b>Lock by Spring, Power to unlock</b>	
AZM200SK-1P2P	2-PNP safety outputs, without door detection sensors, one signaling output
AZM200SK-T1P2P	2-PNP safety outputs, with door detection sensors, one signaling output
<b>Power to lock</b>	
AZM200SK-1P2Pa	2-PNP safety outputs, without door detection sensors, one signaling output
AZM200SK-T1P2Pa	2-PNP safety outputs, with door detection sensors, one signaling output

Sensors available with M23 quick disconnect—Replace **SK** with **ST** in catalog number.

Note: If switch is ordered with door detection sensor (T) the actuator must also be ordered as the T version.



**Part number: SZ200**

**Description: Lockout tag, up to 5 padlocks**

### Safety Control Module Requirements

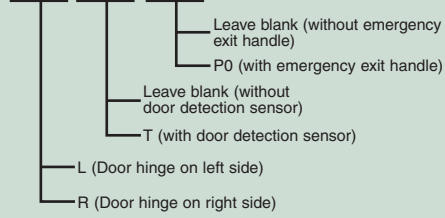
Dual-channel safety inputs, suitable for PNP semiconductor outputs. The internal function tests of the sensor cause the outputs to periodically switch off for a millisecond. This must be tolerated by the control module. The following SCHMERSAL safety control modules are recommended for this application: SRB 301 LCB, SRB 324 ST

\*Note: A safety control module may be required for reset function and/or feedback monitoring functions, as well as increased output current requirements.

# SERIES AZM 200 AVAILABLE KEYS AND DIMENSIONS

## AZM 200-B1 ACTUATOR FOR SLIDING DOORS

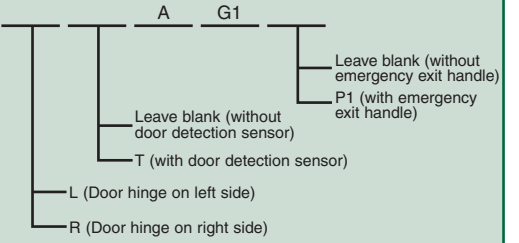
AZ/AZM 200-B1-



Ordering example: To order an AZM 200 actuator handle assembly for a left hand door, with door detection sensor and emergency exit handle, order p/n AZ/AZM200-B1-LTP0

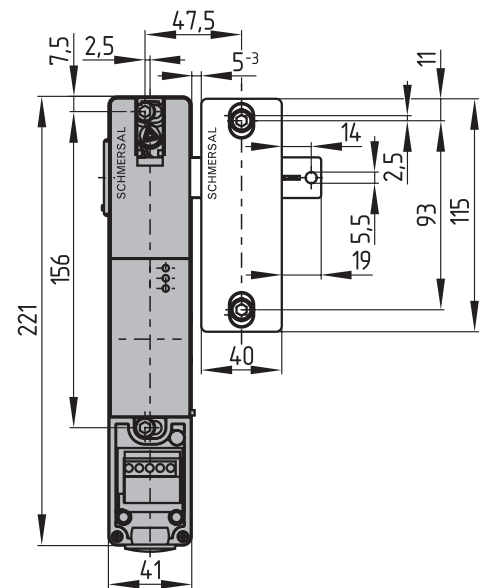
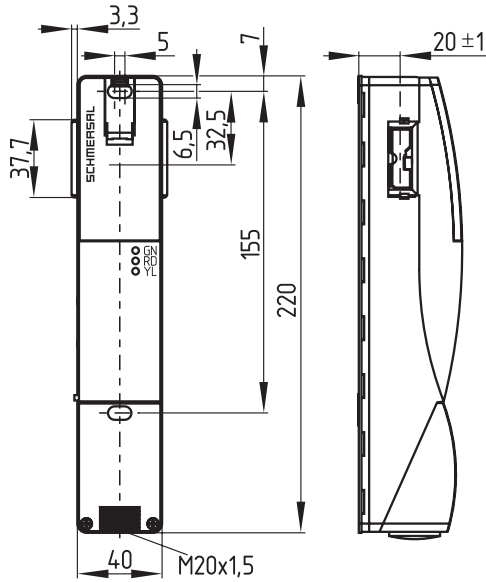
## AZM 200-B30 ACTUATOR FOR HINGED DOORS

AZ/AZM 200-B30-

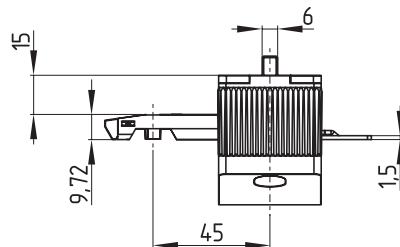
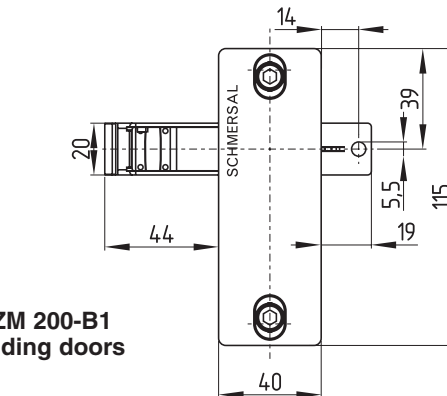


Ordering example: To order an AZM 200 actuator handle assembly for a left hand door, with door detection sensor and emergency exit handle, order p/n AZ/AZM200-B30-LTAG1P1

## DIMENSIONS OF AZM 200 & AZ/AZM 200-B1 HANDLE



AZ/AZM 200-B1  
for sliding doors



# SERIES AZM 200 TECHNICAL DATA

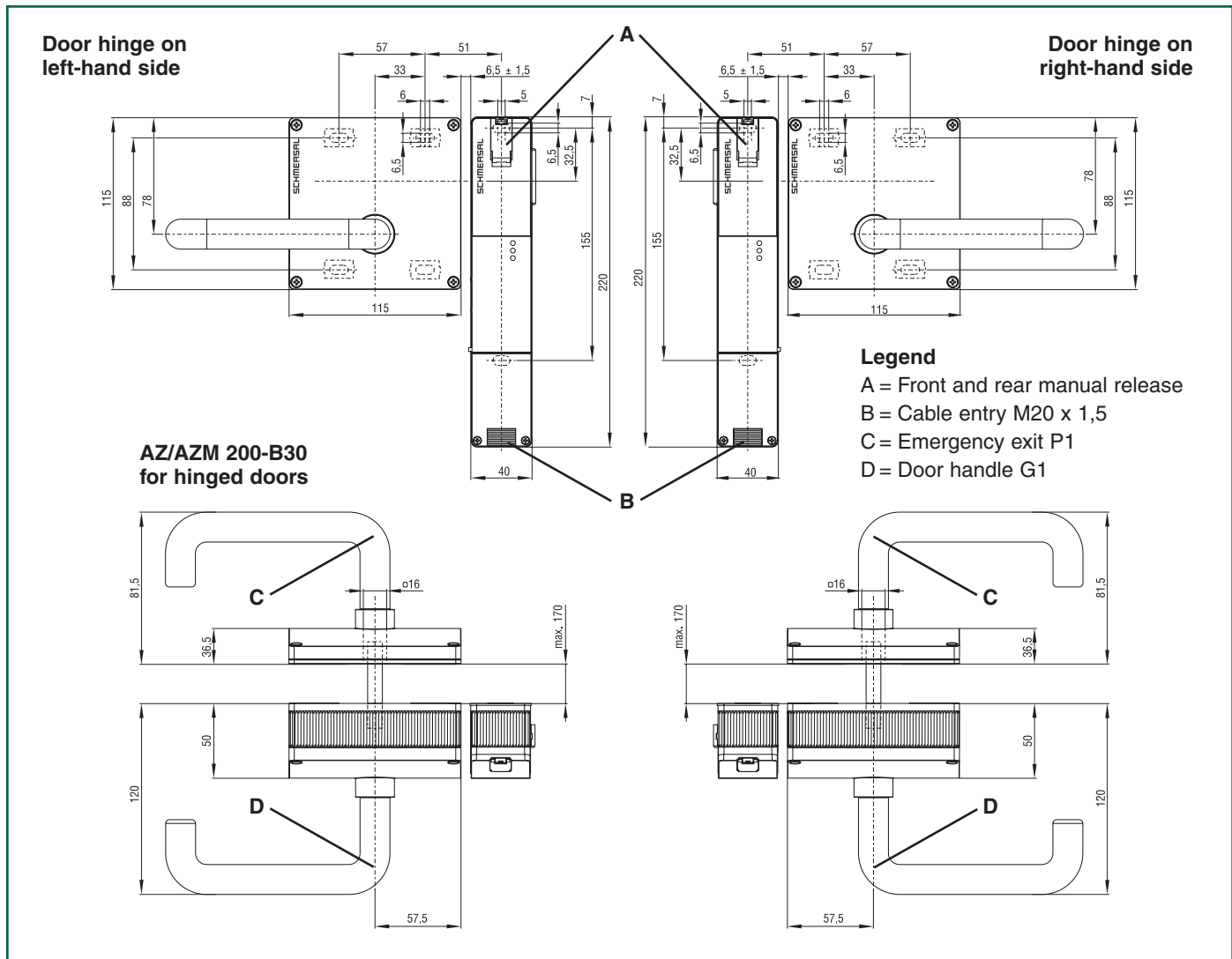
## MECHANICAL SPECIFICATIONS

<b>Housing</b>	Fiberglass reinforced thermoplastic
<b>Degree of Protection</b>	IP67
<b>Unlocked Holding Force</b>	30N (7 pounds)
<b>Solenoid Holding Force</b>	2300N (506 pounds)
<b>Operating Temperature</b>	-25°C to +60°C
<b>Storage Temperature</b>	-25°C to +85°C
<b>Response Time</b>	≤ 30ms
<b>Vibration Resistance</b>	10-55Hz, amplitude 1mm
<b>Shock Resistance</b>	30g/11ms
<b>Mechanical Life</b>	1 million operations
<b>Mounting</b>	40-45mm profiles
<b>Conformity to Standards</b>	CE BG EN 60947-5-1 UL/CSA EN 954-1 IEC 61508

## ELECTRICAL SPECIFICATIONS

<b>Mode of Operation</b>	Inductive
<b>Rated Operating Voltage</b>	24 VDC -15%/+10%
<b>Rated Operating Current</b>	1.0A
<b>No Load Current</b>	0.5A
<b>Residual Current</b>	≤ 0.5mA
<b>Rated Impulse Withstand Voltage</b>	0.8kV
<b>Rated Insulation Voltage</b>	32 VDC
<b>Safety Outputs</b>	(2) PNP, short-circuit proof
<b>Safety Output Operating Current</b>	0.25A per output
<b>Safety Output Operating Voltage</b>	Max. 4V below rated operating voltage
<b>Signaling Output</b>	PNP, short-circuit proof
<b>Signaling Output Operating Current</b>	Max. 0.05A
<b>Signaling Output Operating Voltage</b>	Max. 4V below rated operating voltage
<b>Type Terminals</b>	Screw Terminals for up to 15 AWG flexible stranded wire (1.5 mm <sup>2</sup> )

## DIMENSIONS OF AZM 200 & AZ/AZM 200-B30 HANDLE



# SERIES AZM 200 DIAGNOSTICS







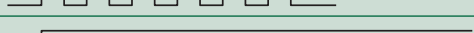
## Function table of visual diagnostic LED, electronic diagnostic output and safety outputs

LED	State AZM 200	Safety Outputs	Diagnostic Outputs
			AZM200...-1P2P
			OUT
Green	Door open	0 V	0 V
Yellow & green	Actuator inserted and locked	24 V	24 V
Blinking yellow	Actuator inserted and not locked	0 V	24 V
Blinking red (1–6 impulses)	Error: see blinking codes	24 V <sup>1</sup>	0 V

<sup>1</sup> After 30 min → 0 V

### Diagnostic LED error codes

The blinking sequence of the red LED of the AZM 200 identifies the active error. The following errors are indicated:

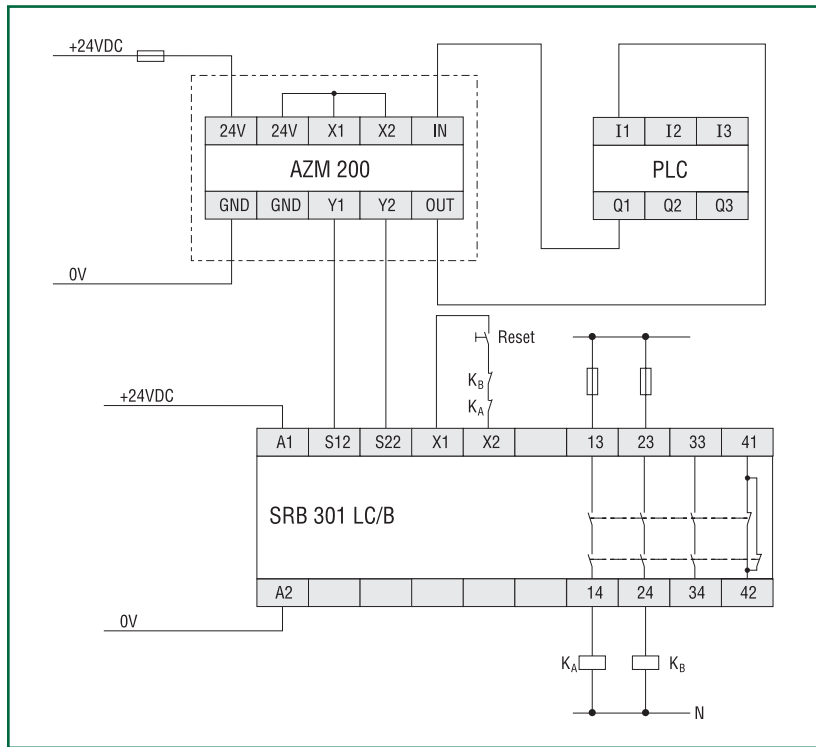
Indication (red)	Meaning
1 blinking impulse 	Error output Y1
2 blinking impulses 	Error output Y2
3 blinking impulses 	Cross-wire
4 blinking impulses 	Temperature too high
5 blinking impulses 	Target error
6 blinking impulses 	Error target combination
Continuous red 	Error

Blinking Codes (red)	Meaning	Autonomous switch-off after	Cause
1 blinking impulse	Error output Y1	30 min.	Error in output test or voltage at output "Y1", although the output is switched off
2 blinking impulses	Error output Y2	30 min.	Error in output test or voltage at output "Y2", although the output is switched off
3 blinking impulses	Cross-wire	30 min.	Cross-wire between the output cables or error at both outputs
4 blinking impulses	Temperature too high	30 min.	Temperature measurement indicates too high an inner temperature
5 blinking impulses	Target error	0 min.	The difference between the code (frequency) of the detected target and the set value is too large, false target
6 blinking impulses	Error target combination	0 min.	An invalid combination of targets was detected at the 4 coils of the AZM. (Current setting: latching bolt detected & door target not detected => latch breakage or tampering attempt)
Continuous Red	Internal Error	0 min.	

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# SERIES AZM 200 WIRING EXAMPLES

## WIRING EXAMPLE: SINGLE DEVICE WIRING



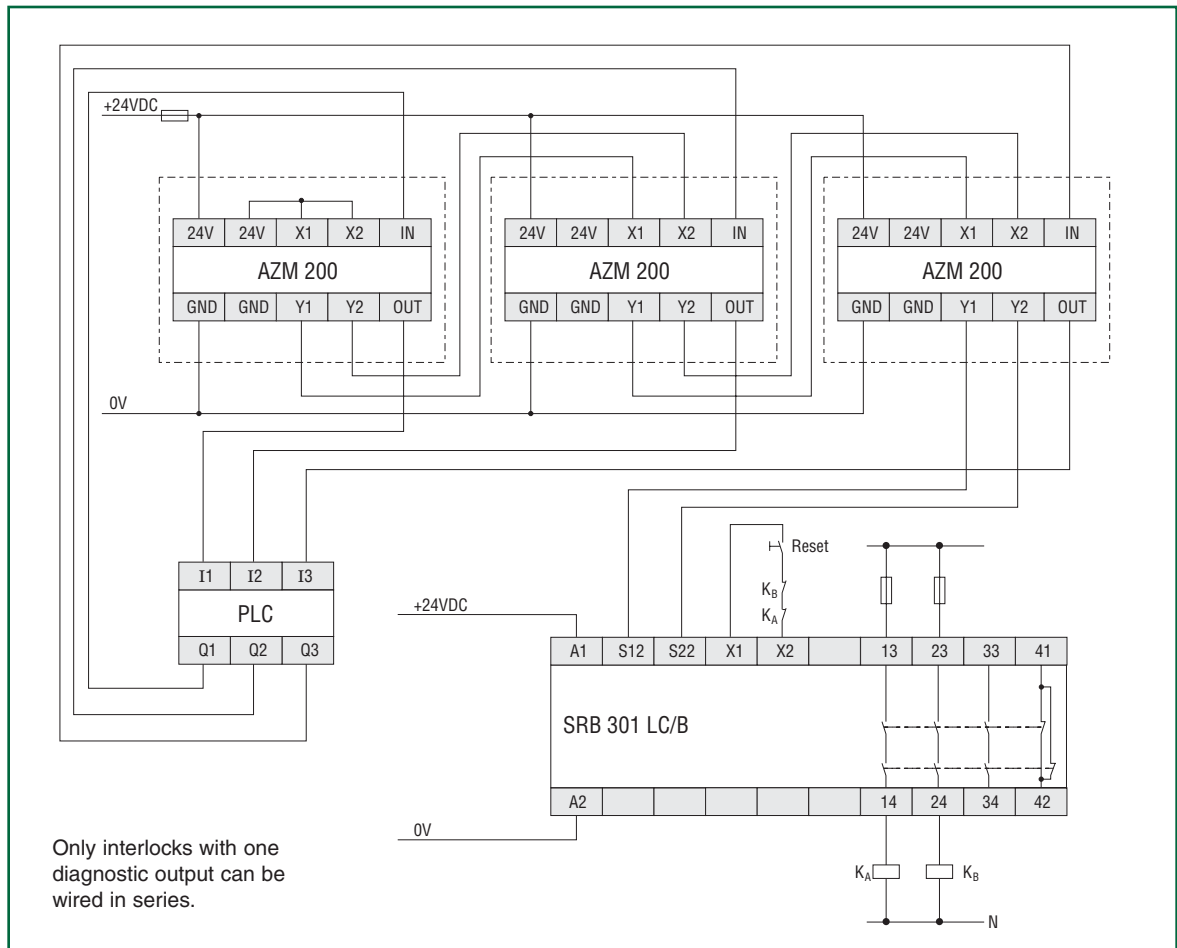
## WIRING COMPARTMENT

24V	24V	X1	X2	IN
<b>AZM 200</b>				
GND	GND	Y1	Y2	OUT

Meaning	Terminal
Supply Voltage	24 V
Supply Voltage	24 V
Safety Input 1	X1
Safety Input 2	X2
Solenoid Input	IN
Ground	GND
Ground	GND
Safety Output 1	Y1
Safety Output 2	Y2
Diagnostic Output	OUT

Note: In case of single device wiring, the bridge between the "24 V" terminal and the "X1" and "X2" terminals must be established; for series wiring, this bridge must only be established in the first device of the series.

## WIRING EXAMPLE: SERIES WIRING OF 3 AZM 200



Only interlocks with one diagnostic output can be wired in series.