

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 ± 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

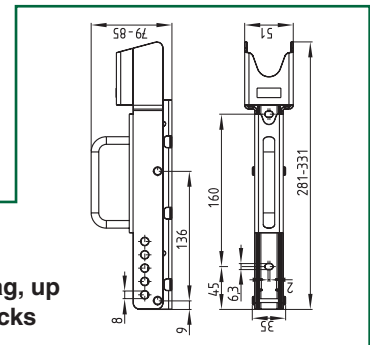
- **Solenoid locking design** ... controls access to hazardous areas until safe conditions exist.
- **Non-contact sensing** ... for long term reliability.
- **Dual purpose handle** ... unlatches and opens guard—no additional door handles are needed.
- **Integral LED diagnostics** ... indicates operating 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
Lock by Spring, Power to unlock	
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
Power to lock	
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 TECHNICAL DATA

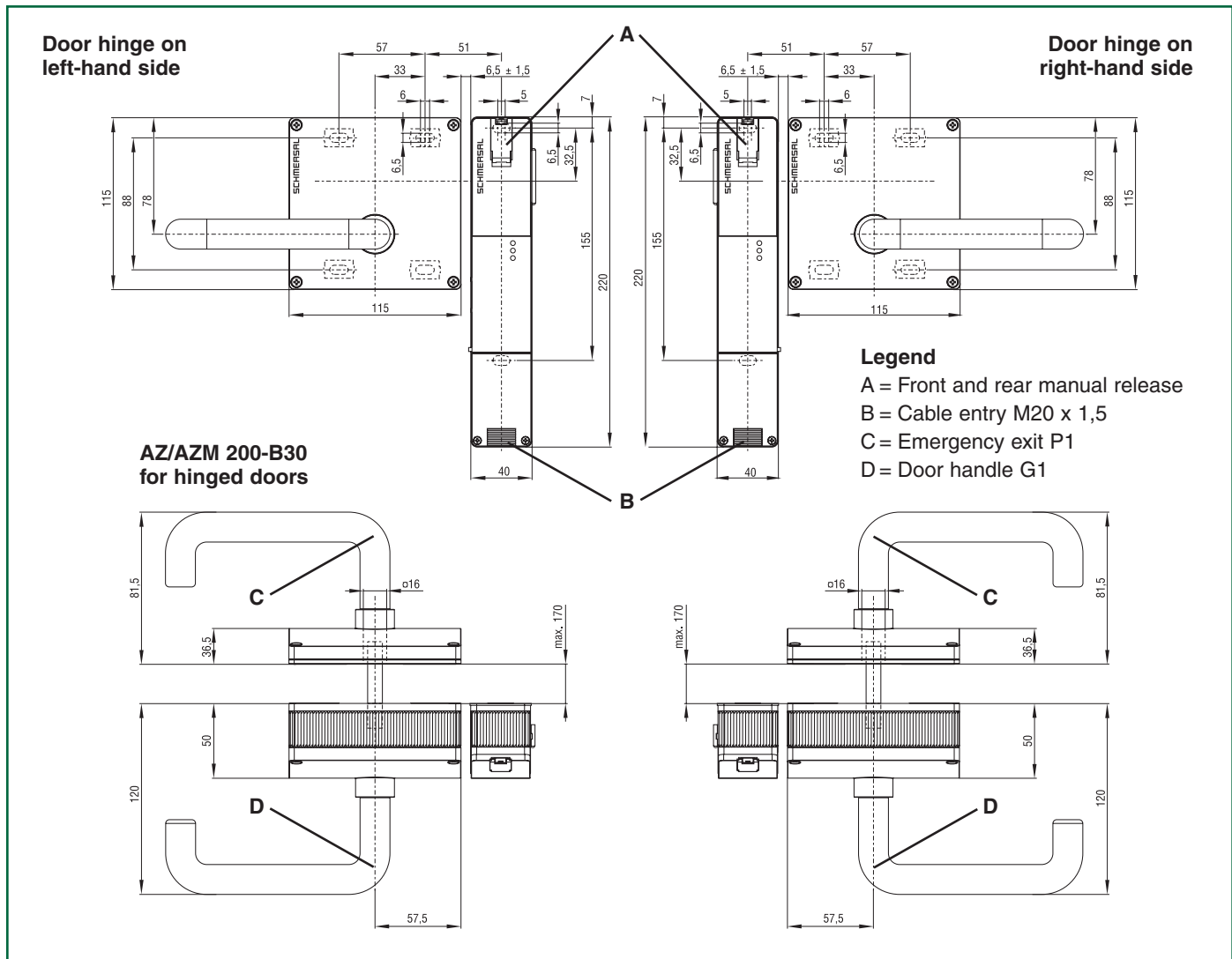
MECHANICAL SPECIFICATIONS

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

ELECTRICAL SPECIFICATIONS

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

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



SERIES AZM 200 DIAGNOSTICS







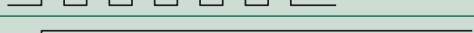
Function table of visual diagnostic LED, electronic diagnostic output and safety outputs

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 ¹	0 V

¹ After 30 min → 0 V

Diagnostic LED error codes

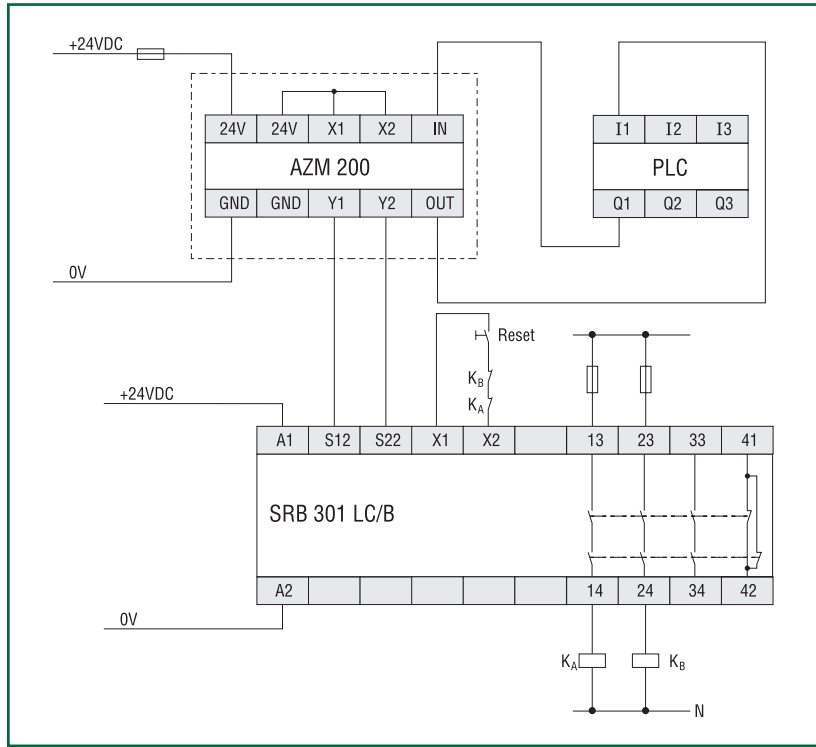
The blinking sequence of the red LED of the AZM 200 identifies the active error. The following errors are indicated:

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.	

SERIES AZM 200 WIRING EXAMPLES

WIRING EXAMPLE: SINGLE DEVICE WIRING



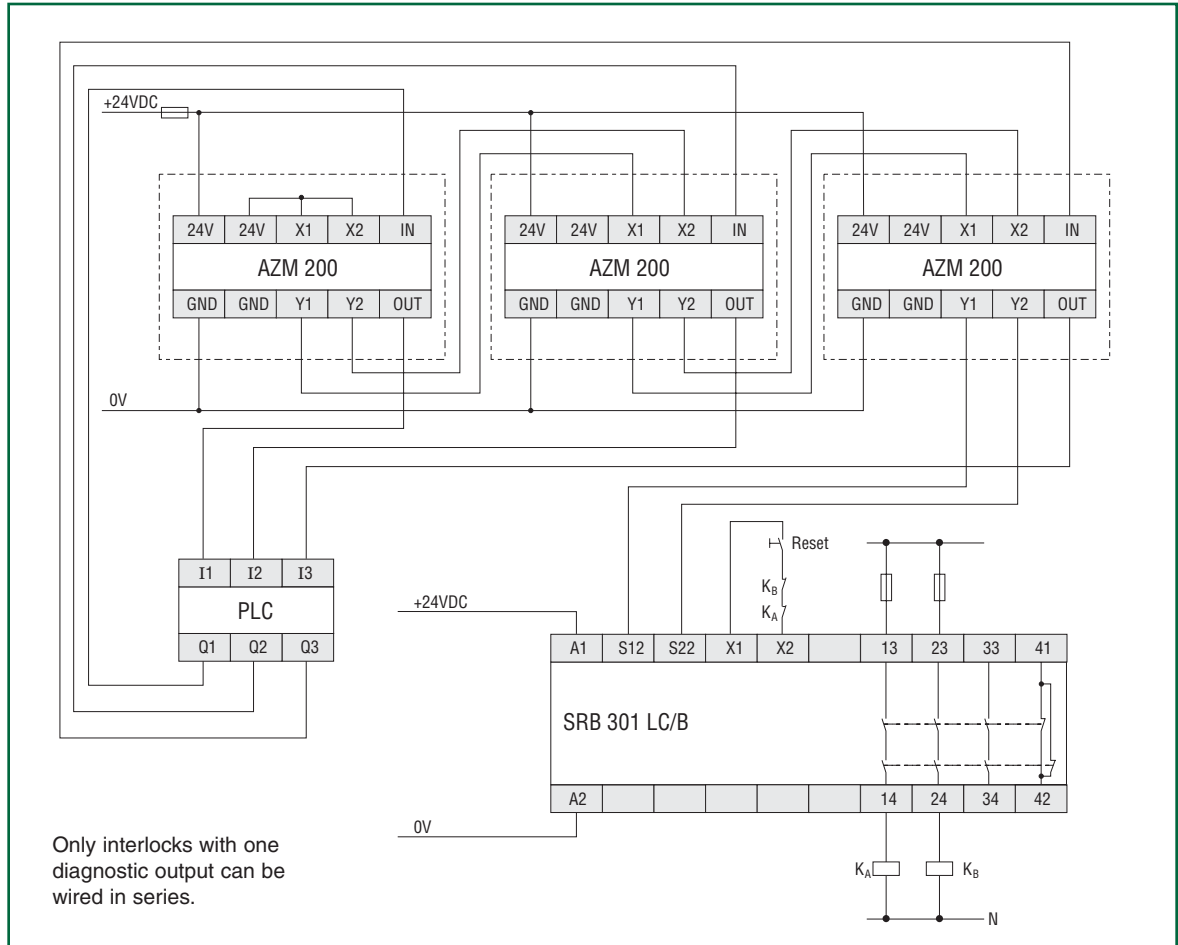
WIRING COMPARTMENT

24V	24V	X1	X2	IN
AZM 200				
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.