SERIES AZ 200

Pulse-Echo Based Non-Contact Safety Interlock Switch

Features & Benefits

- **Tamper resistant …** frequency-matched switch and actuator required for operation.
- **Non-contact sensing …** for long term reliability.
- **Dual purpose handle …** modern, ergonomic design—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.
- **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.

Description

The AZ 200 pulse-echo based non-contact safety interlock is designed for use with movable machine guards/access gates which must be closed for operator safety.

The AZ 200 consists of an interlock switch 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. A sensor stimulates a coil in the actuator, which in turns sends a signal back to the sensor. The pulse-echo technology provides diagnostic information and detects and indicates any misalignment at an early stage. Two different actuator designs accommodate both sliding or hinged guards.

The AZ 200 interlock is a dual channel design with two short-circuit proof, safe PNP outputs, each of which can switch up to 250 mA. It features a choice of one or three electronic diagnostic outputs. These diagnostic outputs signal errors before the safety outputs are switched off, thus enabling a controlled shutdown of the machine.

With continuous internal function tests, the monitoring of the safety outputs and the use of door detection sensors, AZ 200 safety interlocks with one diagnostic output can be wired in series without detriment to the control category. Series wired AZ 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 AZ 200 is intended for use as a safety interlock switch on movable machine guards which, when open, expose the operator/maintenance personnel to machine hazards. Typical applications are the interlocking of protective gratings, access panels and other movable guards. The AZ 200 is suitable for both sliding guards and hinged guards.

AVAILABLE AZ 200 MODELS

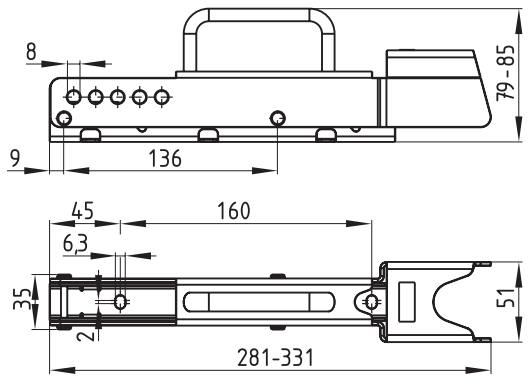
(Actuator ordered separately below)

Model Number	Description
AZ200SK-1P2P	2-PNP safety outputs, without door detection sensors, one diagnostic output
AZ200SK-T1P2P	2-PNP safety outputs, with door detection sensors, one diagnostic output
AZ200SK-3P2P	2-PNP safety outputs, without door detection sensors, three diagnostic outputs
AZ200SK-T3P2P	2-PNP safety outputs, with door detection sensors, three diagnostic outputs

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

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 AZ 200 AVAILABLE KEYS AND DIMENSIONS

AZ 200-B1 ACTUATOR FOR SLIDING DOORS

AZ/AZM 200-B1- ___ ___ ___

- Leave blank (without emergency exit handle)
- P0 (with emergency exit handle)

___

- Leave blank (without door detection sensor)
- T (with door detection sensor)

___

- L (Door hinge on left side)
- R (Door hinge on right side)

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

AZ 200-B30 ACTUATOR FOR HINGED DOORS

AZ/AZM 200-B30- ___ ___ A G1 ___

- Leave blank (without emergency exit handle)
- P1 (with emergency exit handle)

___

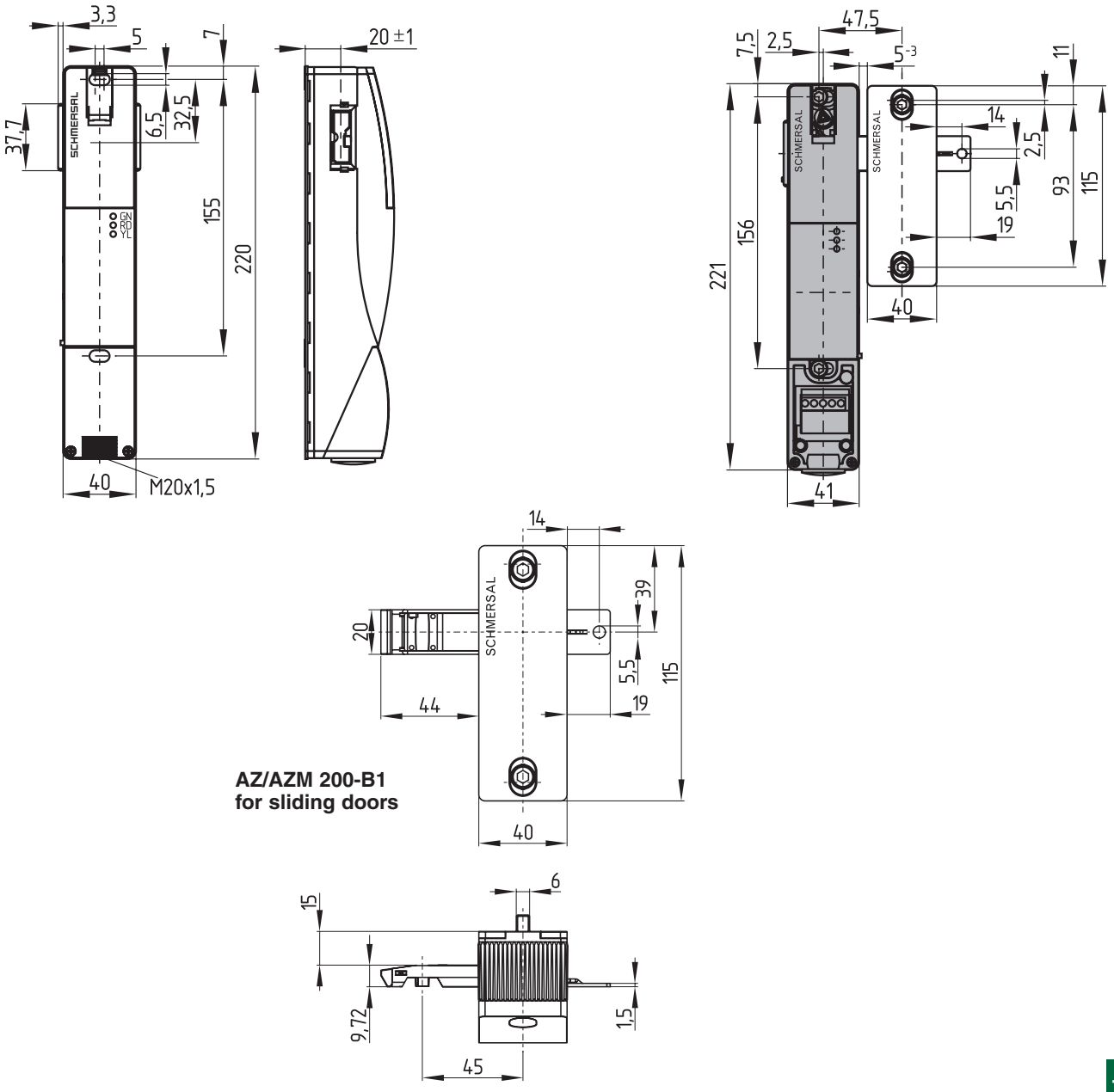
- Leave blank (without door detection sensor)
- T (with door detection sensor)

___

- L (Door hinge on left side)
- R (Door hinge on right side)

Ordering example: To order an AZ 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 AZ 200 & AZ/AZM 200-B1 HANDLE



AZ/AZM 200-B1 for sliding doors

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SERIES AZ 200 TECHNICAL DATA

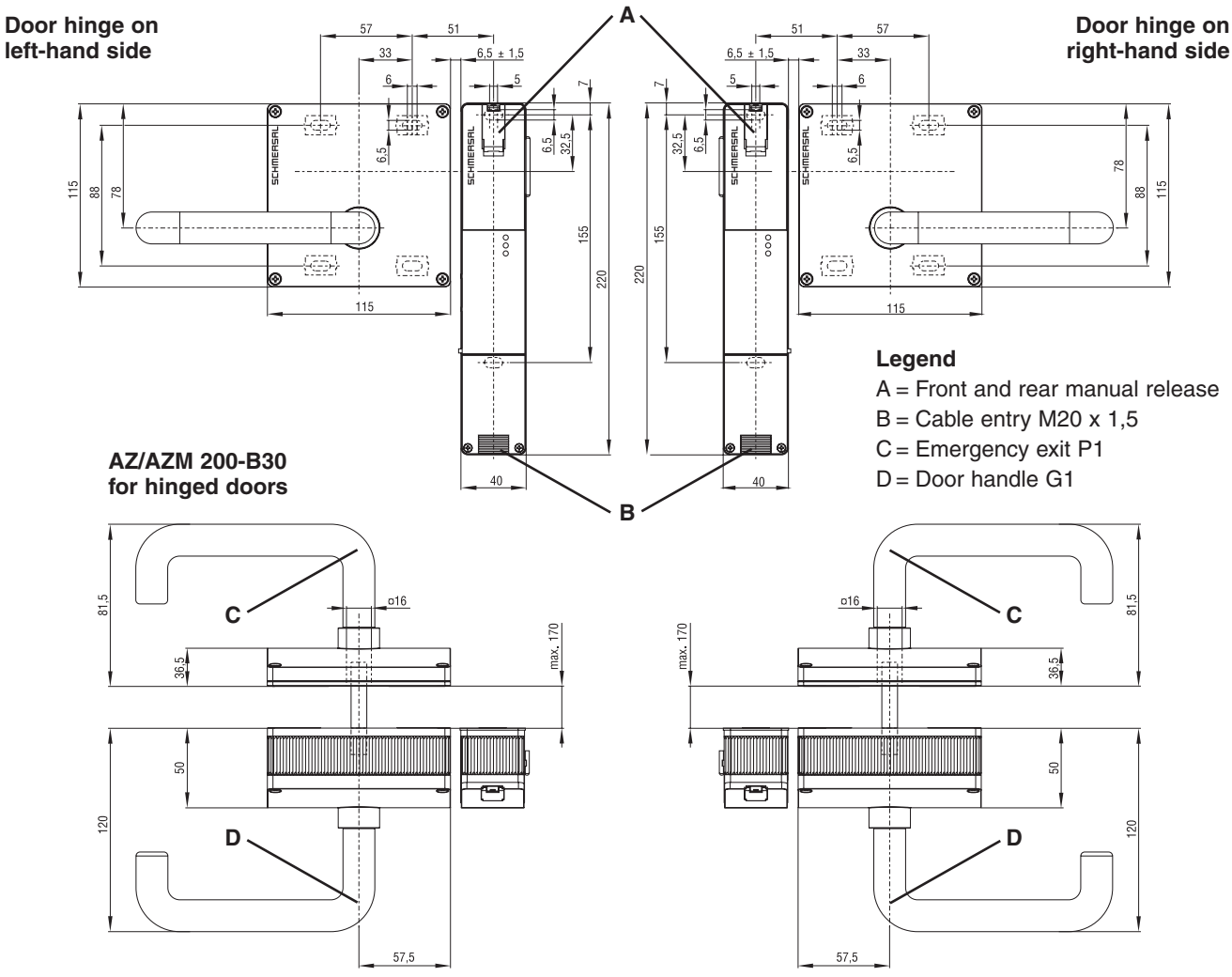
MECHANICAL SPECIFICATIONS

Housing	Fiberglass reinforced thermoplastic
Degree of Protection	IP67
Unlocked Holding Force	30N (7 pounds)
Operating Temperature	–25°C to +60°C
Storage Temperature	–25°C to +85°C
Response Time	≤ 60ms
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 Pending EN 954-1 IEC 61508

ELECTRICAL SPECIFICATIONS

Mode of Operation	Inductive
Rated Operating Voltage	24 VDC -15%/+10%
Rated Operating Current	0.6A
No Load Current	0.1A
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 mm²)

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



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

LED	State AZ 200	Safety Outputs	Diagnostic Outputs			
			AZ200...-3P2P			AZ200...-1P2P
			OUT	OUT2	OUT3	OUT
Green	Door open	0 V	0 V	0 V	0 V	0 V
Green	Door closed	0 V	0 V	0 V	0 V[2]	0 V
Yellow & Green	Door closed and actuator inserted	24 V	24 V	0 V	0 V[2]	24 V
Blinking red (1–6 impulses)	Error: see blinking codes	24 V[1]	24 V	24 V	0 V[2]	0 V

[1] After 30 min → 0 V
[2] With door detection sensor (-T) always high

Diagnostic LED error codes

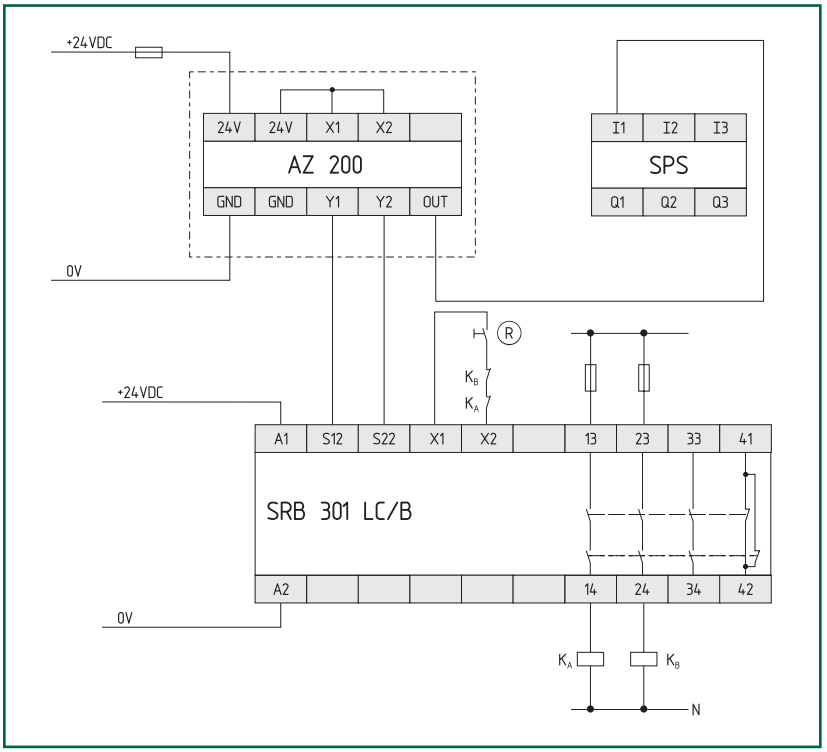
The blinking sequence of the red LED of the AZ 200 identifies the active error. The following errors are indicated:

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 AZ200 T. (Current setting: latching bolt detected & door target not detected => latch breakage or tampering attempt)
Continuous Red	Internal error	0 min.	

SERIES AZ 200 WIRING EXAMPLES

WIRING EXAMPLE: SINGLE DEVICE WIRING



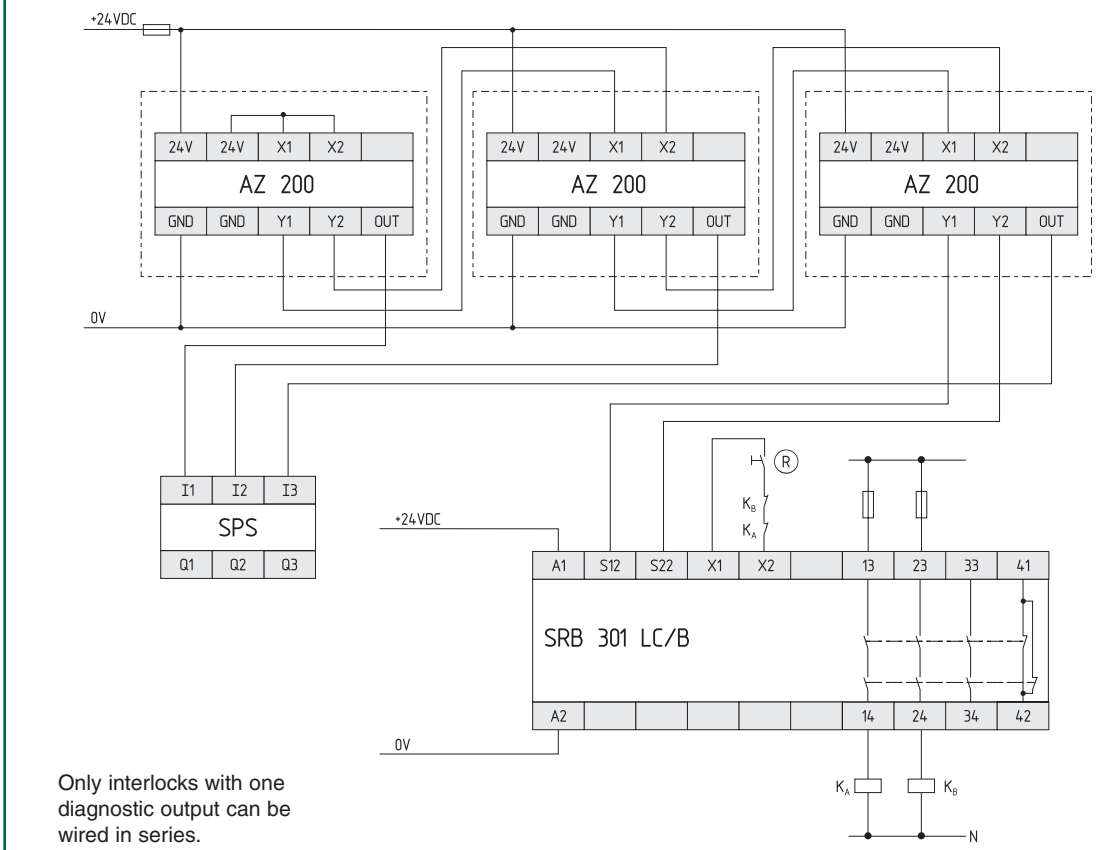
WIRING COMPARTMENT

24V	24V	X1	X2	
AZ 200				
GND	GND	Y1	Y2	OUT

Meaning	Terminal
Supply Voltage	24 V
Supply Voltage	24 V
Safety Input 1	X1
Safety Input 2	X2
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 AZ 200



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