

EC DECLARATION OF CONFORMITY

This document is the conformity declaration concerning safety switches and relays, conform to the Machine Directive 2006/42/CE,
EMC Directive 2014/30/UE, RoHS2 Directive 2011/65/EU

SAFETY SWITCHES

We hereby certify that the hereafter described safety components both in its basic design and construction conforms to the applicable European Directives.

Range	Information	Standards
SM1 serie	PDDDB	IEC 60947-5-3
SM2 serie	PELV/SELV	IEC 60204-1
	TYPE 4	ISO 14119
Safety machine : EOP or ROP	Conforms to Cert. to	UL Std. 508 CSA C22.2 n°14

Description :

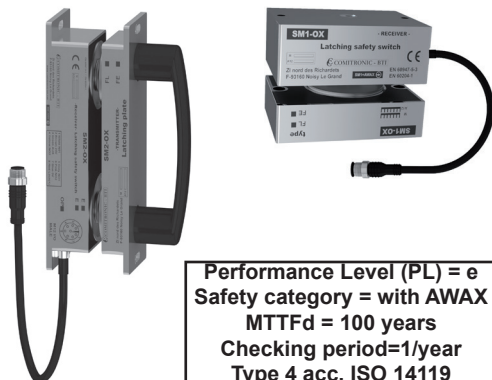
Coded safety-magnet with process Acotom[®] principle in combination with the AWAX serie of safety-monitoring modules from COMITRONIC-BTI or an equivalent safety-oriented control system fulfilling the requirements of the standards EN 60947-5-3 and ISO 13849-1.

Person authorized for the compilation of the technical documentation :

Christophe PAYS

34 Allée du Closeau

93160 Noisy le Grand

Performance Level (PL) = e

Safety category = with AWAX

MTTFd = 100 years

Checking period=1/year

Type 4 acc. ISO 14119

average level on request

Holding force datas : safe

FZh : SM1- OX-E = 300 N


FZh : SM1-OX-R = 440 N

FZh : SM1-AC-E = 230 N

FZh : SM1-AC-R = 380 N

FZh : SM2-OX-E = 630 N

FZh : SM2-OX-R = 720 N

Model	Process	Machine safety	Recomanded for machine safety	ISO 14119
E	X			
R	X			
EOP		X	X	
ROP		X		

UL additional information	
Wiring	60/75°C copper only
Size of wires	24 AWG
Clamping force	0,68 Nm
Power Supply	24 VDC to be provided by class 2 supply

In machine safety, it's recommended that the lock without power should prevail. Lock with power should be use only if the safety analysis required. (necessity to open the door in case of fire, chemical risk...)

Place and date of issue : Noisy, 2 may 2017

Authorised signature
Michel Conte
President

PROCESS ACOTOM[®]

BTI



SM1 and SM2 datasheet

V2.1

You have just purchased a BTI product, thank you for having put your trust in us. To guarantee the high reliability of this new technology product, we have developed and manufactured it with the greatest of care.

1. Description

- Magnetic holders for dangerous machines
- Version E: unlock with pin 8 at 24V, version R: lock with pin 8 at 24V
- Lock detection with tamper-evident safety ACOTOM
- PLC-compatible locking / unlocking command
- Two static safety contacts for high compatibility
- An auxiliary output indicating a fault (alignment or system)
- Protection against overheating by self-resetting device

2. Fixing and wiring

- Fixing: two screws M4 (version SM1) or M6 (version SM2)
- Connection : SM2 and SM1-OX are equipped with 50cm PUR cable with M12 connector
- Connection : SM1-PL equipped with M12 inlet
- Bending radius of the cable: $R > 50\text{mm}$
- These products must be properly aligned and work at the plate contact

3. Precautions / Use Information

- Holding force: falling during an effort that is not in the axis, by a sliding force, the product is offset from the drawing point, the contact surfaces are greasy, scratched, damaged.
- Detection : contacts activated at ~3mm between the plate and the magnet
- Version E: The duration of the unlocking command must not exceed 10 minutes. Ideally, provide a push button on the door in series with the control (pin 8). To avoid triggering the thermal protection in the case of a delay (10 min) of the control, this must be of the non-releasable type. It is possible to start 2 consecutive cycles of 10 min. Once the thermal protection has been triggered, the temperature of the magnet must be lowered to approx. 40°C so that the product becomes operational again.
- A decrease in the supply voltage decreases the holding force.
- The holding forces are given for their nominal value and in the best conditions. Proper operation and maintenance of the system must be checked periodically.

4. Version R (fire)

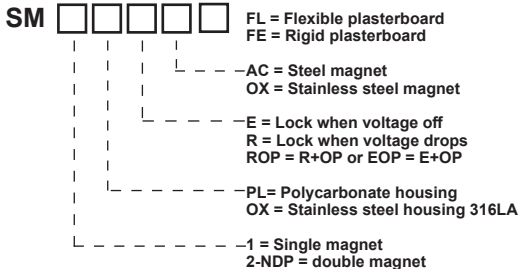
- Locking : pin 8 (red wire) to 24V
- Contacts: transmitter and receiver in contact -> contacts closed and auxiliary output open

5. Version E (machine)

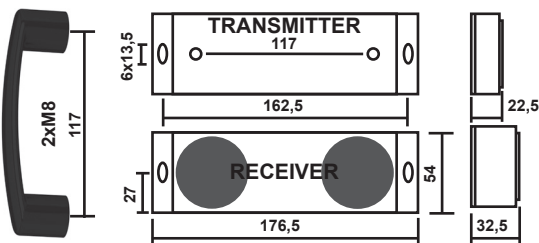
- Unlocking: pin 8 (red wire) to 24V
- Contacts: transmitter and receiver in contact -> contacts closed and auxiliary output open

Version SM1-EOP et SM2-EOP (machine)

- Operation similar to S4 or S5 but
- The safety contacts are forced to open when the MAG control is activated
- The auxiliary output gives the position of the door



10. Size (mm) of SM2

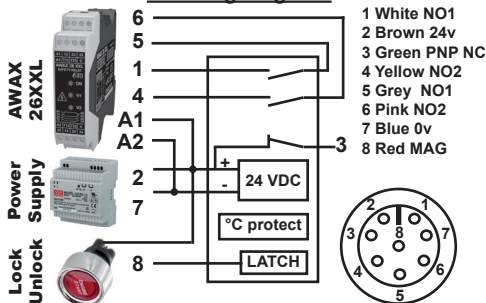


7. Technical characteristics

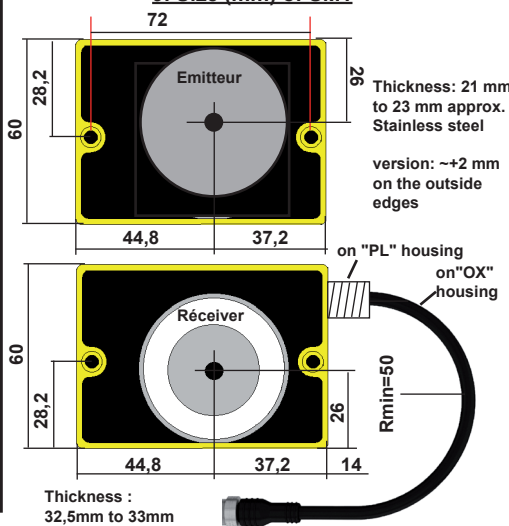
Power supply	24 VDC +/-10% class 2	
Consumption when idle	40mA	
Activation power	Type R	Type E
SM2-OX	7.2 W	32 W
SM1-OX	3.6 W	16 W
SM1-AC	1.8 W	5 W
Auxiliary output	PNP NC (24V) / 250 mA	
Safety output	2x NO 24V/200 mA	
Force (Fmax)	Type R	Type E
SM2-OX-FL	~936 N	~820 N
SM1-OX-FL	450 N~580 N	350 N~400 N
SM1-AC-FL	400 N à 500 N	200 N~300 N
FZh (ISO 14119)	FZh = Fmax/1.3 (safety holding force)	
Temperature	-25 °C ~ +50°C	
Protection	PL-OX=IP68 / PL-AC=IP54 OX-OX=IP69K (all stainless steel)	
Weight SM1-PL	Emitteur :250 g	Receiver :440 g
Weight SM1-OX	Emitteur :414 g	Receiver :690 g
Weight SM2	Emitteur :800 g	Receiver :1200 g

Recommendation: For E version products, the voltage of the unlocking command must be limited to 15 min. maximum. Otherwise a command button must be placed near the door.

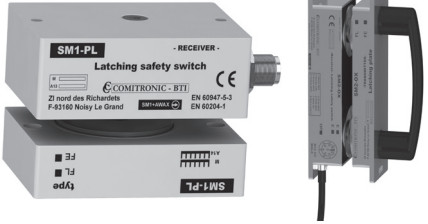
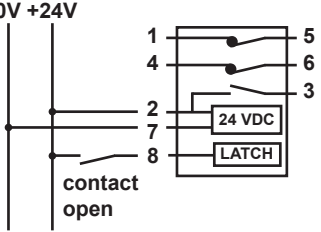
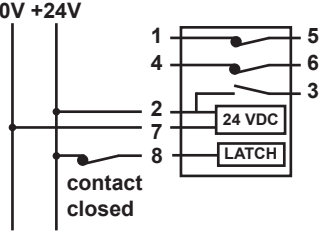
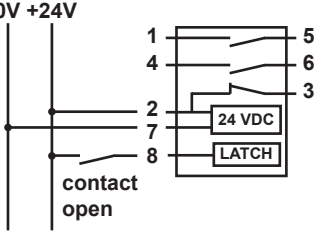

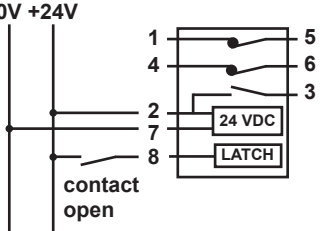
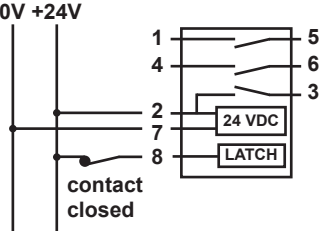
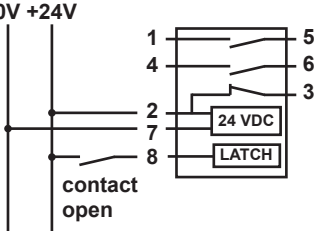
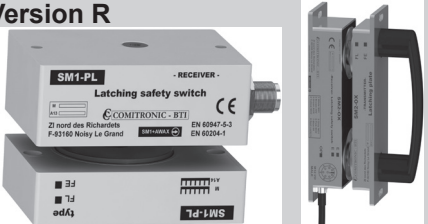
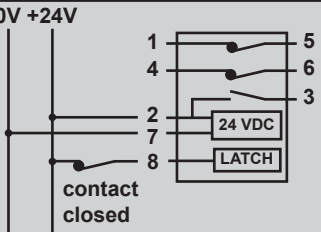
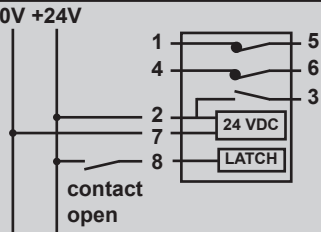
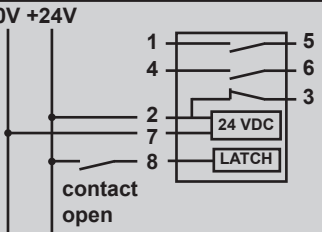

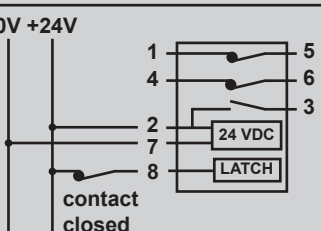
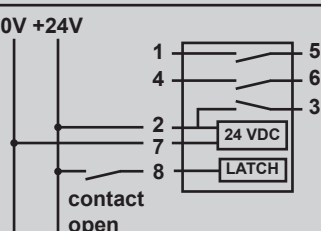
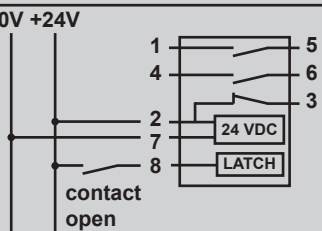
8. Wiring diagram



9. Size (mm) of SM1



11. Operating modes

SM1 or SM2 product version	Door closed and locked	Request to open, door closed	Door open	Additional remarks
Version E 				Version E is used for the machine safety because the door is held closed if the power is cut (pin 8 or pin 2-7).
Version EOP 				In the EOP version, the command pin (pin 8) acts directly on the position of the safety contacts (pins 1-5 and 4-6).
Version R 				Version R is mainly used for fire safety because the door is held open if the power is on (pin 8 and pin 2-7).
Version ROP 				In version ROP, the command (pin 8) acts directly on the position of the safety contacts (pins 1-5 and 4-6).