COMEPI
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SAFETY MAGNETIC SENSORS
SMP2 series

1. TECHNICAL CHARACTERISTICS

a. Mechanical characteristics

Operating temperature	-25 ... +80 °C
IP Rating	IP67
Pollution degree	3
Shock resistance	30 gn; 11 ms according to EN 60068-2-27
Vibrations resistance	10 gn; (10...150 Hz) EN 60068-2-6
Type of connection	PVC cable 4 x 0,25 mm² or 6 x 0,25mm² M8 or M12 connector.
Housing material	PBT+FV

b. Electrical characteristics

Rated operational voltage **Ue**	24 Vac/dc
Rated operational current **Ie**	0,25 A (resistive load)
Max switching load	6 W (resistive load)
Thermal current **Ith**	0,25 A
Rated insulation voltage **Ui**	120 Vac (with cable) 60 Vac / 75 Vdc (with M8 connector) 120 Vac (with 4 poles M12 connector) 30 Vac / 36 Vdc (with 8 poles M12 conn.)
Rated impulse withstand voltage **Uimp**	6 KV / 1,5 KV (with connector)
Electrical endurance	1 million operation cycles
Protection fuse	0,25 A tipo F

c. Actuating characteristics

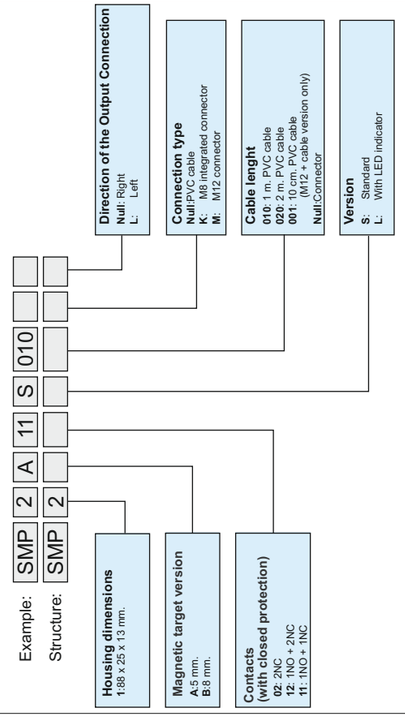
Assured operating distance Sao	5 mm with SMP2AMG / 8mm with SMP2BMG
Assured release distance Sar	15 mm with SMP2AMG / 20mm with SMP2BMG
Repeat accuracy	≤ 10%
Frequency of operating cycles	200 Hz
Response time	< 10 ms
Distance between two sensors	Min. 50 mm

d. Safety characteristics and approvals

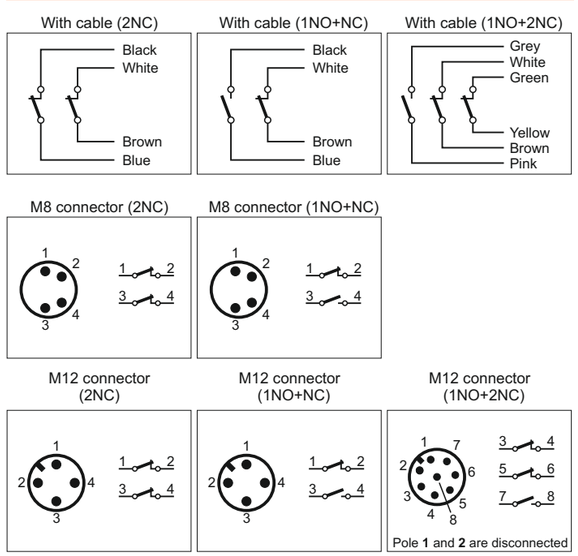
SIL level (SIL CL)	Up toaccoding to EN 62061 (1)
Performance Level (PL)	**Pl e** according to EN ISO 13849-1 (1)
Safety category	Up to **4** according to EN ISO 13849-1 (1)
B10d for each channel	400.000 operations (full load) Mechanical endurance 20millions operations
Conforms to the standards	EN 60947-1, EN 60947-5-1, EN 60947-5-2, EN60947-5-3 (1), EN 60529, EN ISO 14119, EN ISO12100-1, EN ISO 12100-2, EN ISO 13849-1, EN ISO 13849-2, EN 60204-1
Conforms to the directives	2006 / 42 / CE Machinery directive 2004 / 108 / CE Electromagnetic compatibility directive

(1) Connecting a single sensor to the safety module COMEPI MS1A31- * series.

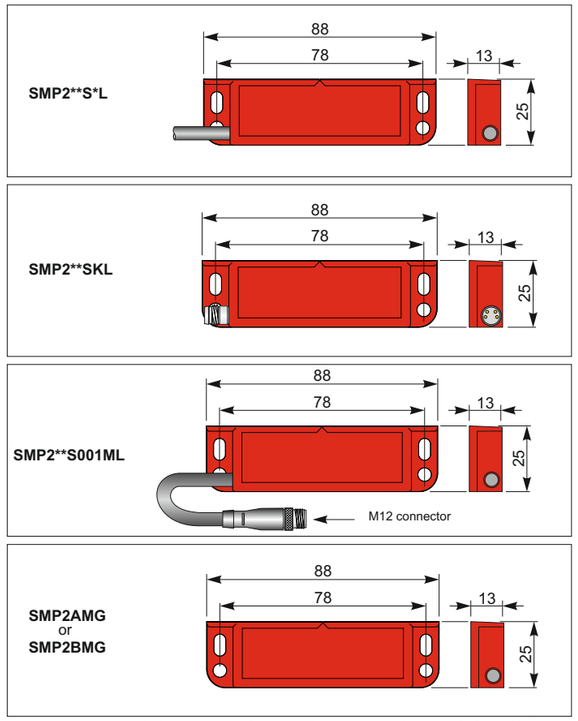
2. DESCRIPTION DIAGRAM



3. WIRING DIAGRAMS



4. MECHANICAL DIMENSIONS



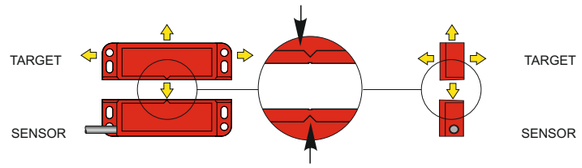
*These drawings refer to the sensors with connector or cable exit placed to the **left.** The models with connection exit placed to the right are mirrored and have the same dimensions..*

5. INSTALLATION INSTRUCTIONS

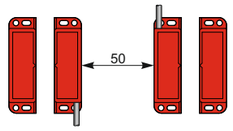
a. Sensor and actuator fixing

- Use non-magnetic screw only.
- Fasten the screws with a max tightening tourque between 0,8 ... 2 Nm.
- Fasten steadfastly the sensor and the actuator to the safety device(by means of rivets, tamper-proof screws, etc.).
- Fasten the sensor on plane surfaces only, in order to avoid possible distorsions that could damage the sensor or alter switching distances.
- To activate the safety sensors it is necessary to use the proper coded actuator. Conventional magnets cannot be used.
- The sensor and actuator central reference marks must be opposed(see 5.b).

b. Sensor and actuator fixing



c. Multiple sensor-actuator systems assembly



The minimum mounting gap between sensor-actuator systems must be at least 50 mm.

d. Warning during and after the installation

- The installation must be performed by qualified staff only.
- Before installation and at regular intervals, check the right contacts switching and system operation of the sensor and associated safety module.
- Do not use a hammer for adjustment.
- Do not use the sensor as a mechanical stop.
- Verify the assured operating(Sao) and release distances(Sar).
- It is advisable to make adjustments observing the diagram reported in the swithing distances section(see 6.b).
- Do not install the sensor and actuator on strong magnetic field.
- Keep away from iron filing.

e. Shock, vibrations and wear

- Do avoid impact with sensor. Excessive shock and vibrations cannot guarantee the proper sensor functioning.
- The actuator must not strike the sensor.
- In case of damages or wear it is necessary to change the whole device, includeding the actuator.
- The sensor and the actuator must be replaced after 1 million operations.

f. Warning during wiring

- Keep the load under the value given in the utilization category(vedi 1.b).
- When sensor contacts are used without the related safety module, connect in series a protection fuse(see 1.b).
- Turn off the power supply before checking the switch connection contacts, also during wiring.
- If the sensor is the only safety device installed on the protection, then always use at least 2 channels connected to a safety module.
- If you are using a sensor with cable mod. **SMP2*12S****, the two channels used must include the yellow-green cables. If you are using a sensor with connector mod. **SMP2*12S001M***, the two channels used must include pins n° 3-4.
  If these requirements are not fullfield, the sensor will not have anti-tamper coding.

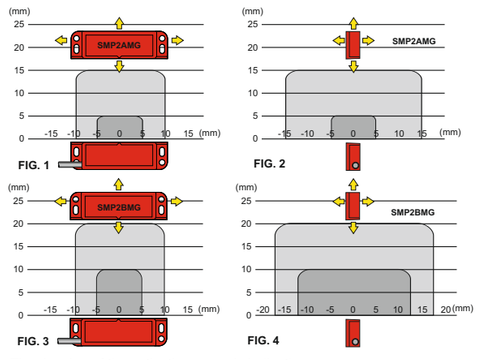
6. INSTRUCTIONS FOR PROPER USE

a. Utilization

The safety magnetic sensor **SMP2** with coded magnetic target **SMP2*MG** is used in the safety circuits(EN60204) as electrical interlock device(EN1088) associated with a mobile guard and the related automatic control safety module for the signal processing(EN60947-5-3). These sensors, if correctly installed and connected to the safety modules, allow to obtain control circuits up to the safety category 4 in accordance with EN ISO 13849-1.

b. Switching distances

When the actuator is in the internal space definied by the dark gray area(see fig.1,2,3 e 4), the NC contacts are closed, while the possible NO contact is now open. When the actuator is out of the space defined by the ligth gray area(see fig.1,2,3 e 4) the NC contacts is open, while the possible NO contact is now closed.
The installation of the sensor and the actuator on ferromagnetic materials, will reduce the switching distances.



Note: : The drawing of the activation areas is indicative.

c. Connecting with COMEPI safety modules

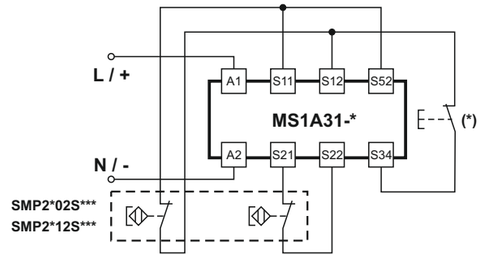
Use safety sensor with 2 NC contacts and coded magnet combined with COMEPI safety modules MS1A31-* series. The sensor connected to the safety module could be classified as control circuit device up to PDF-M (EN60947-5-3).

d. Utilization limits

- Use the device SMP2 series following its instructions, observing its operation limits and using it according to the safety standard in force.
- The utilization conforming to the final use, implies the respect of standard in force regarding the installation and the operation, in detail: EN ISO 13849-1, EN60204-1, EN1088, EN ISO12100-1, EN ISO 12100-2.
- The COMEPI responsibility is excluded in case of:
  - Utilization not according to its final destination.
  - Non observing its the safety instructions.
  - Installation and reparations not performed by qualified and authorized staff.
  - Omission of functional tests.
- For additional information please contact COMEPI srl technical dept :
  Tel. 039 9906408 fax 039 9906203, e-mail: comepi@comepi.com.

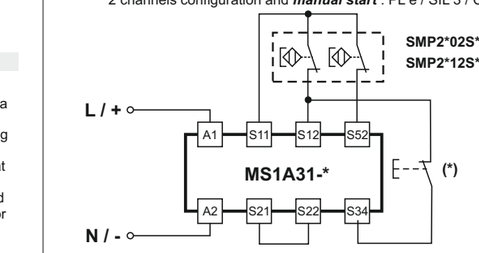
7. CONNECTION WITH SAFETY MODULES MS1A31- *

2 channels configuration and ***manual start*** : PL e / SIL 3 / Categoria 4



(*) If between S12 and S34 a jumper is connected instead of the button, you will get the 2-channels configuration with automatic start.

2 channels configuration and ***manual start*** : PL e / SIL 3 / Categoria 4



(*) If between S12 and S34 a jumper is connected instead of the button, you will get the 2-channels configuration with automatic start.

8. EC DECLARATION OF CONFORMITY

COMEPI CE

DECLARATION OF CONFORMITY

We, **COMEPI s.r.l.**

Via novarino 9/L - 23899 Robbiate (LC) - Italia

declare under our sole responsibility that the products:

SAFETY MAGNETIC SENSORS (Product's name) **SMP2**S*** (Model)

to which this declaration relates are in conformity with the following standards:

EN 60947-1, EN 60947-5-1, EN 60947-5-2, EN 60947-5-3, EN 60529, EN ISO 14119, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13849-1, EN ISO 13849-2 e EN 60204-1

according to the provisions of the European Directives:

2004/108/EC - Electromagnetic directive
2006/42/EC - Machinary directive

Inzago: 2015/11/16

Mr. Ambrogio Comi