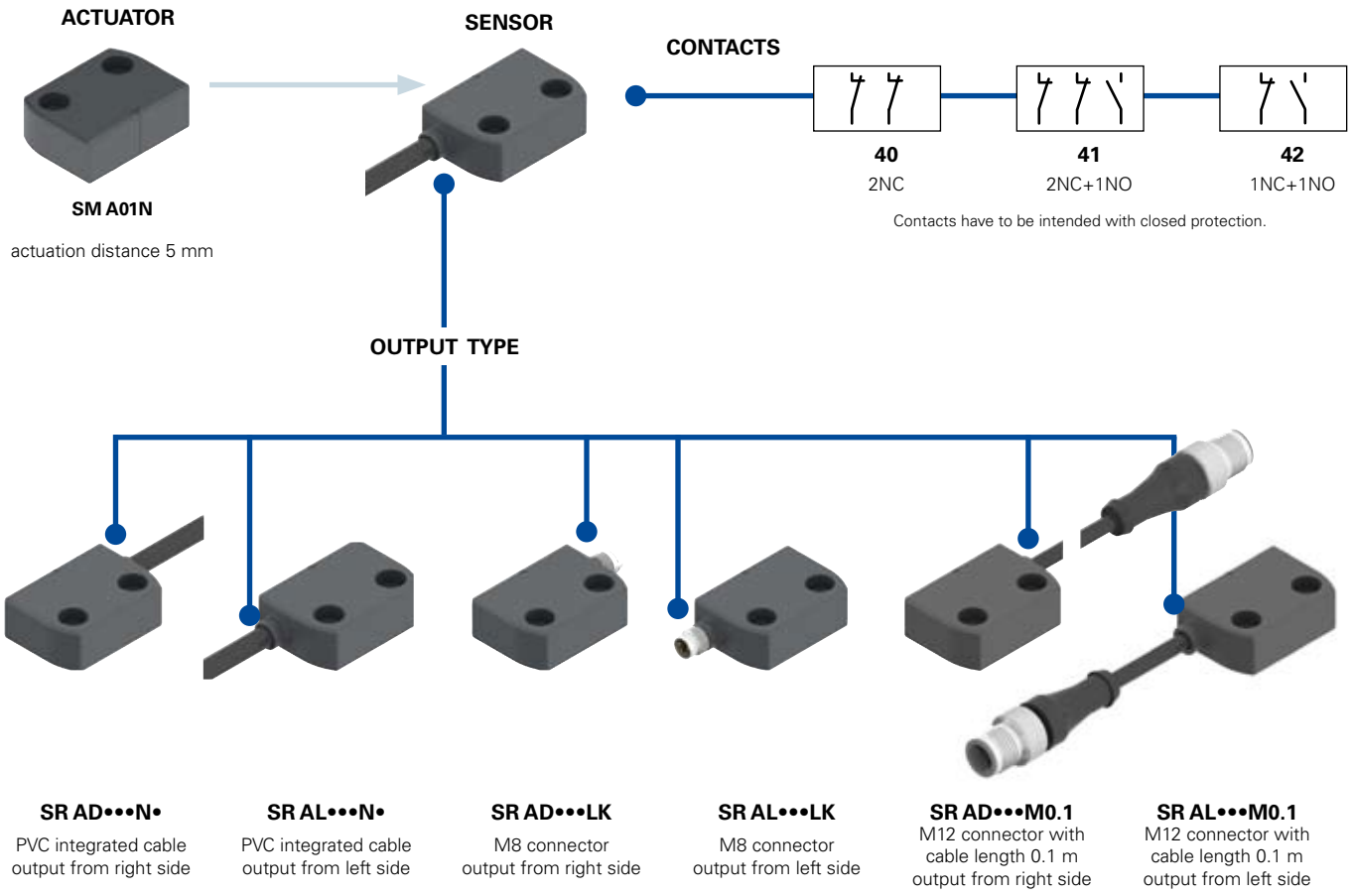
Selection diagram



product option
accessory sold separately

Introduction

Coded magnetic sensors are devices studied to monitor protections and guards that, when linked to a safety module, can create a system with safety category up to SIL 3 according to EN 62061, up to PLe according to EN ISO 13849-1 and up to category 4 according to EN ISO 13849-1. These products are composed by a magnetic field monitoring sensor, which is connected to the machine structure; and by a coded magnetic actuator, which has to be connected to the mobile guards. When sensor and actuator are neared (closed guard), the sensor recognizes the actuator and provides to actuate electric contacts. The sensor is manufactured to be activated only by the correct coded actuator and not through a common magnet.

Sensor with actuator code structure

SR AD40AN2-A01N

Sensor housing	
SR	polymer housing

Connection output direction	
D	Output from right
L	Output from left

Contacts (with closed protection)	
40	2NC (standard)
41	1NO+2NC (standard)
42	1NO+1NC

Type of cable or connector	
N1	integrated PVC cable, length 1 m
N2	integrated PVC cable, length 2 m (standard)
...	.....
N10	Integrated PVC cable, length 10 m
M0.1	M12 connector with cable length 0.1 m
LK	M8 connector (available with 40 and 42 contacts only)

Actuator	
A01N	complete with SM A01N actuator, actuation distance 5 mm

Single sensor code structure

SR AD40AN2

Sensor housing	
SR	polymer housing

Connection output direction	
D	Output from right
L	Output from left

Contacts (with closed protection)	
40	2NC (standard)
41	1NO+2NC (standard)
42	1NO+1NC

Type of cable or connector	
N1	integrated PVC cable, length 1 m
N2	integrated PVC cable, length 2 m (standard)
...	.....
N10	Integrated PVC cable, length 10 m
M0.1	M12 connector with cable length 0.1 m
LK	M8 connector (available with 40 and 42 contacts only)

Single actuator code structure

SM A01N

Actuator	
A01N	actuation distance 5 mm

Safety coded magnetic sensor **SR A** series

Main data
- Long life, no mechanical wear
- Output contacts: 2NC, 1NO+2NC or 1NO+1NC
- Insensitive to dirt
- Protection degree IP67 and IP69K
- Coded actuator
- Polymer housing
- Versions with M8 or M12 connector

Markings and quality marks:

Approval UL: E131787
Approval TÜV SÜD: Z10 10 09 75157 001
Approval GOST: POCC IT.AB24.B04512

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC
Machinery Directive 2006/42/EC
Electromagnetic Compatibility 2004/108/EC.

Technical data

Housing
Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin.
Version with integrated cable with 4 or 6 x 0.25 mm² wires length 2 m, other lengths on request.
Versions with M8 connector
Versions with M12 connector with cable length 0.1 m

Protection degree:	IP67 according to EN 60529 IP69K according to DIN 40050 (Protect the cables from direct high-pressure and high-temperature jets)

General data

For safety applications up to SIL 3 / PL e	
Safety parameters:	see page 7/34
Ambient temperature:	-20°C ... +80°C
Vibrations holding:	10 gn (10...500 Hz) according to IEC 60068-2-6
Shock holding:	30 gn (11 ms) according to IEC 60068-2-27
Pollution degree	3
Max screw driving torque:	0,8 ... 2 Nm

In conformity with standards:
IEC 60947-1, EN 60947-1, IEC 60947-5-1, EN 60947-5-1, EN 60947-5-2, EN 60947-5-3 (in connection with safety module), EN 1088, EN ISO 14119, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13849-1, EN ISO 13849-2, IEC 60204-1, EN 60204-1, IEC 60529, EN 60529, DIN 40050.
Approvals:
UL 508.

Actuating data

Assured operating distance Sao	5 mm with actuator A01N
Assured release distance Sar	15 mm with actuator A01N
Repeat accuracy	≤ 10%
Frequency of operating cycles	up to 150 Hz
Distance between two sensors	Min. 50 mm

Electrical data

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 connector)
Rated impulse withstand voltage (U_{imp}):	6 kV 1,5 kV (with connector)
Thermal current Ith:	0.25 A
Max switching load:	6 W (resistive load)
Rated operational voltage (Ue):	24 Vac/DC
Rated operational current (Ie):	0.25 A (resistive load)
Protection fuse:	0.25 A type F
Electrical endurance:	1 million operations cycles

Connection with safety modules with personnel protection function:
Connection with safety modules CS AR-01•E02; CS AR-02•E02; CS AR-04•024; CS AR-05••••; CS AR-06••••; CS AR-08••••; CS AR-46•024; CS AR-94••••; CS AR-95••••; CS AT-0•••••; CS AT-1•••••; CS AT-3•••••; CS FS-5•••••; CS MF•••••-••; CS MP•••••-••.
The sensor connected with the safety module can be classified as device for control circuit up to PDF-M (EN 60947-5-3).
The system can be used in safety circuits up to PLe / SIL 3 / category 4 according to EN ISO 13849-1.

Data type approved by UL

Utilization categories: 24 Vdc, 0,25 A (resistive load))

Data of the housing type 1, 4X "indoor use only", 12

Accessory for series CS.

In conformity with standard: UL 508

Please contact our technical service for the list of approved products.

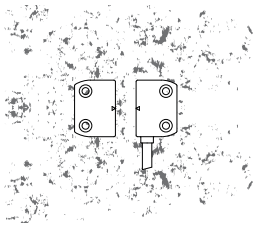
Data type approved by TÜV SÜD

Supply voltage: 24 V AC/DC
Output switching current (max): 0,25 A
Working temperature: -25 °C ... + 80°C
IP code: IP67
PL, Category: PL e, Cat. 4 with CS AR-08

Tested according to: 2006/42/EEC Machine Directive, EN ISO 13849-1:2008, EN 60947-5-3/A1:2005, EN 50178:1997, EN 61508-1:1998 (SIL 1-3), EN 61508-2:2000 (SIL 1-3), EN 61508-4:1998 (SIL 1-3), IEC 62061:2005 (SIL CL 3), EN 60947-1

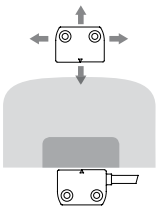
Please contact our technical service for the list of approved products.

Insensitivity to dirt



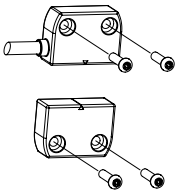
Magnetic sensors are totally sealed and maintain unchanged their safety characteristics also where dirt and dust are present (not ferromagnetic material).
This characteristic, joined with the shape without recesses, make them especially proper to the use in the agro-industrial sector.

Wide actuation zone



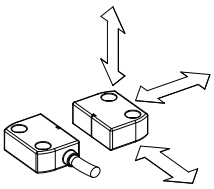
Because of their intrinsic characteristics, magnetic sensors have a wide actuation zone, which make them appreciated in the use of inaccurate protections or for protection that can change their mechanic characteristics through the time.
In this type of sensors actuation distances may change according to the actuator displacement direction from the sensor.

Safety screws for actuators



These new screws have tamper-resistant Torx buttonheads.
Devices fixed with this kind of screws cannot be removed or tampered by common tools.
See accessories page 6/5.

Actuation from many directions



Pizzato Elettrica magnetic sensors have been designed in order to be activated by the related actuator from many directions. In this way, the customer has the max flexibility about the placing of the devices along the protections perimeters.

Coded magnetic sensors used for safety applications

A coded magnetic sensor alone can not be used for safety functions because its working principles are not considered safe by the standards (as are, for example, the positive opening on mechanical switches). For this reason a coded magnetic sensor, in order to be used in safety applications, has to be compulsory connected to a proper safety module which controls correct operation, through a circuit with at least two channels.

Laser marking

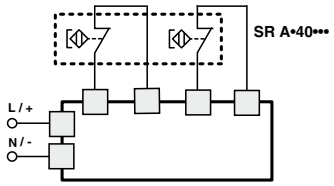
Pizzato Elettrica has introduced a new laser marking for magnetic sensors SR series. Thanks to this new system which excludes the use of labels, markings on the products are indelible.
Furthermore, in case of machineries subjected to intense high pressure water jets, there is no risk of labels detaching from the product.

Protection degree IP67 and IP69K

IP69K
IP67

The SR series sensor by Pizzato Elettrica, besides having an IP67 protection degree, have passed the test proving their IP69K protection degree according to the prescriptions established by the DIN 40050 standard.Therefore they are suitable for use in machineries subjected to intense washing with high pressure and high temperature water jets and for any condition or environment where a particular attention for cleanness and hygiene is required, such as in food or pharmaceutical industry.

Complete safety system



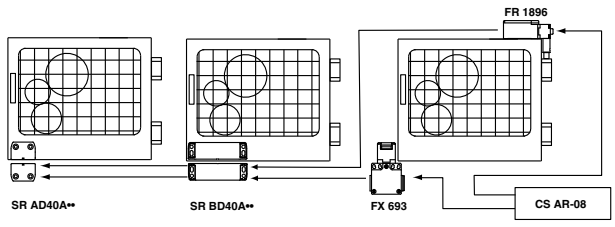
These magnetic sensors have been checked and tested for working with proper Pizzato Elettrica safety modules. Using completed and tested solutions, the customer has the certainty to have no electric incompatibility between sensor and safety module, and has a higher reliability guarantee.

Sensors	Compatible safety modules	Safety module output contacts	
		Instantaneous	Delayed
SR AD40A•• SR AD41A•• SR AD42A••*	CS AR-01•E02	2NO+1NC	/
	CS AR-02•E02	3NO	/
	CS AR-04•024	3NO+1NC	/
	CS AR-05••••	3NO+1NC	/
	CS AR-06••••	3NO+1NC	/
	CS AR-08••••	2NO	/
	CS AR-46•024	1NO	/
	CS AR-94••••	2NO	/
	CS AR-95••••	2NO	/
	CS AT-0•••••	2NO+1NO	2NO
	CS AT-1•••••	3NO	2NO
	CS AT-3•••••	2NO	1NO
	CS FS-5•••••	1NO+1NC+1CO	/
	CS MP•••••-••	see page 5/63	see page 5/63

* Compatible with CS MF•••••-P4 (page 5/74) and CS MP•••••-•• only.
For safety modules technical data see page 5/1.

Connection of sensors and switches in series

Pizzato Elettrica magnetic sensors could be connected in series with the only limitation that the overall resistance, gave by sensors and the related wiring, has to be not higher than the admitted max value of the module, which typically is equal to 50 ohm (see module features). It is a very high value that, with normal wiring, it allows the use of dozens of sensors without problems. It is also possible to realize mixed circuit solutions connecting in series magnetic sensor to safety switches, with the only limitation of the above mentioned max electric resistance.
We remind you that connection in series of two or more coded sensors reduce the system self-monitoring capacity which passes to category 3 in conformity with EN ISO 13849-1.
It is advisable to use safety modules by Pizzato Elettrica.

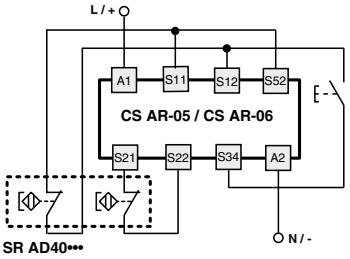


Wiring with safety modules

Wiring with safety modules CS AR-05 or CS AR-06

Input configuration with manual start (CS AR-05) and monitored start (CS AR-06)

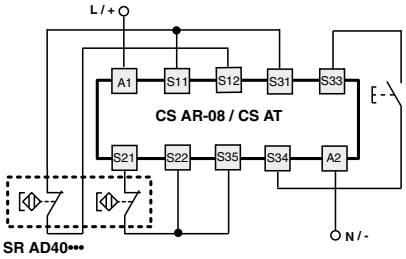
2 channels



Wiring with safety module CS AR-08 or CS AT

Input configuration with manual start

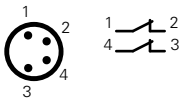
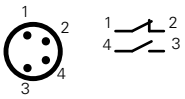
2 channels

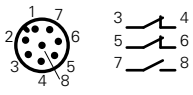
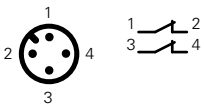
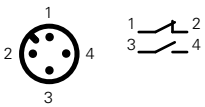


For safety modules technical data see page 5/1.

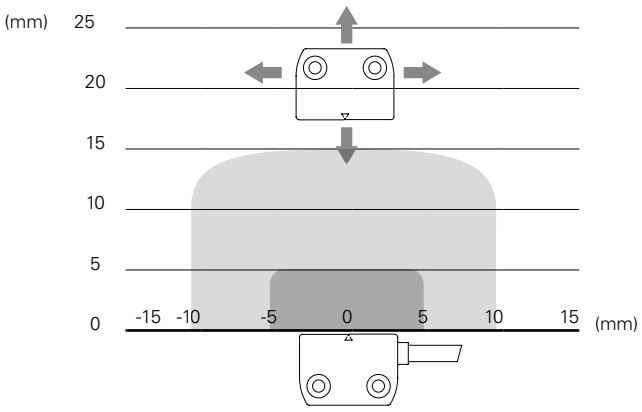
Internal connections

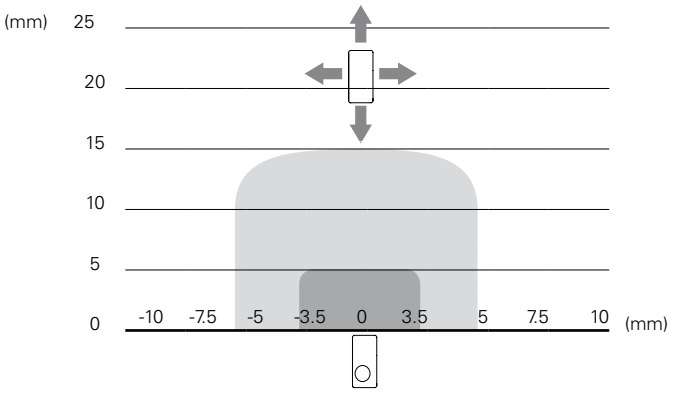
Contacts imply closed protection

With cable (2NC)	With cable (1NC+1NO)	With cable (2NC+1NO)	With M8 connector (2NC)	With M8 connector (1NC+1NO)
Black White Brown Blue	Black White Brown Blue	Green Brown Grey Pink White Yellow		

With M12 connector (2NC+1NO)	With M12 connector (2NC)	With M12 connector (1NC+1NO)
		

Intervention distance SR AD•••••-A01N





Legend:

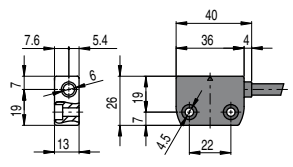
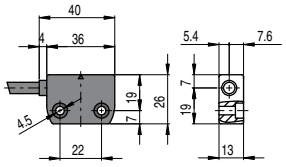
Assured operating distance Sao

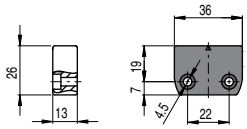
Assured release distance Sar

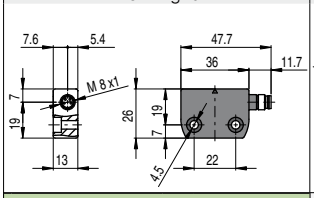
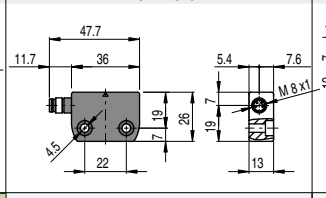
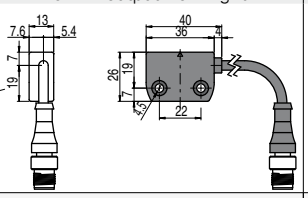
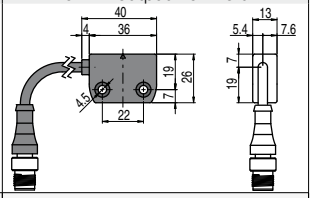
Note: The drawing of the activation areas is indicative.

Female connectors See page 6/2 - 6/3

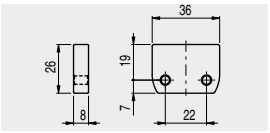
Dimensional drawings

cable, length 2 m from left		cable, length 2 m from left	
			
SR AD40AN2	2NC	SR AL40AN2	2NC
SR AD41AN2	1NO+2NC	SR AL41AN2	1NO+2NC
SR AD42AN2	1NO+1NC	SR AL42AN2	1NO+1NC

coded actuator	
	
SM A01N	Actuation distance 5 mm

M8 connector from right		M8 connector from left		M12 connector with cable length 0.1 m output from right		M12 connector with cable length 0.1 m output from left	
							
SR AD40ALK	2NC	SR AL40ALK	2NC	SR AD40AM0.1	2NC	SR AL40AM0.1	2NC
				SR AD41AM0.1	1NO+2NC	SR AL41AM0.1	1NO+2NC
SR AD42ALK	1NO+1NC	SR AL42ALK	1NO+1NC	SR AD42AM0.1	1NO+1NC	SR AL42AM0.1	1NO+1NC

Spacer



This spacer is placed between the SR magnetic sensors and metal surfaces that can deviate the magnetic field created by the sensor: with this specific spacer between them the sensor activation and deactivation distances remain the same.
Made of a single block material it suits any application where high cleanness is required since it prevents any material in the installation area from getting and settling inside the drain.

Article	Description
VS SP1AA1	Spacers for SR A series

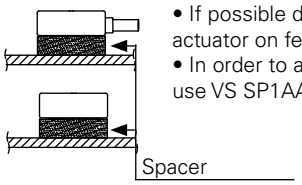
Utilization limits

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

Shock, vibrations and wear:
- Do avoid impact with the sensor. Excessive shock and vibrations could not guarantee the right working of the sensor.
- The actuator must not strike sensor.
- In case of damages or wear is necessary to change the whole device, included the actuator.

Warning during the wiring:
- Keep load under the value indicated in the electrical data.
- When the sensor contacts are used without the respective safety module, connect in series to each contact the protection fuse indicated in the electrical data.
- Turn off the power supply before check the switch connection contacts, also during the wiring.

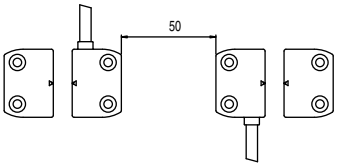
Installation on ferromagnetic material



- If possible do not mount the sensor and the actuator on ferromagnetic materials.
- In order to avoid switching distances reductions, use VS SP1AA1 spacers.

Multiple systems sensor-actuator assembly

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



Accessories See page 6/1

Items with code on the **green** background are available in stock

All measures in the drawings are in mm

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Emergency Stop Switches / E-Stop Switches ***category:***

Click to view products by Pizzato ***manufacturer:***

Other Similar products are found below :

84-5021.2B40 84-6830.0020 A01ESSP8 A22EL-M-24A-11B AVN302N-R A165E-S-01(STOP) AYLD2212602SN-R-TK962 AVLD39911N-R-24V A22Z-EG22 A165E-SY 3100.0110Y 3050.1302Y 3SE2243-0XX40 3SK1111-2AB30 3SK1211-1BB40 44-710 84-6841.2B20 84-6830.0040 H3141AAKAA A165E-R-24D-01 E3102AAAAB A22E-M-03 ZA2BV05 A22EL-M-T2-01 951FY000-WO ER6022-022N 952+2000-00 ES3S51653 601+0000-OP E3101AAAAB 84-5130.0040 CS AR-05V024 CS AR-22V024 DS AE1VA DS KB2A DS KB3A HE2G-21SHE-L-K HE6B-M211Y 774191 774316 777760 R1.100.0129.0 SMA0129- NO/NO R1.188.0640.0 SNV 4063KL-A R1.188.1810.0 SNA 4043K-A R1.188.1840.0 SNA 4043K-A SR BD40ALK-B02F AVLW39911D-R-120V AYD311NUG AVLD32211DNUR 84-5040.0020.0049