

# MAGNETIC SENSORS FOR CYLINDERS

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Magnetic sensors HALL effect series 1500	8.4-8.5
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## Magnetic sensors for cylinders

### General

The limit switches, or magnetic sensors, have to be mounted on cylinders with magnetic piston. These, when hit by the magnetic field generated by the piston as it approaches, close the circuit sending an electrical signal by relè solenoid valve control, etc. or converse with the controlling electronic system situated on the machine. There are available magnetic sensor with ampulla Reed type and with Hall effect. The sensors are attached to the cylinder by a proper clamp and have a Led insertion indicator.

The magnetic sensors with ampulla are made in 3 versions:

- U (universal) functioning with continuous or alternate current, protected by varistor Led indicator.
- U/1 (universal) functioning with continuous or alternate current, with contact Reed only to avoid 3 volt tension drop caused by led.
- D.C. for functioning with continuous current only, utilized for switching heavy loads since the contact Reed become the pilot of a semi-conductor power circuit.

Note: The magnetic sensors are according to the Directive **EMC 89/336/CEE** and following amendments.

### Instruction on how to use the sensors properly

Particular attention should be paid not to exceed the wide operating limits showed in the specification table.

Besides the sensor has never to be connected to the mains if a load has not been yet connected in series. These are the only cares that, if not followed, may cause damages to the sensor.

Furthermore it has to be considered that, while loading, the current absorbed by the sensor might be 50% higher that the rated one. Therefore, specially while using alternate current (AC) there is the need to observe the appropriate safety margins.

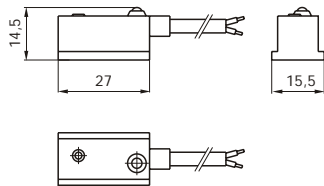
In the case of direct current (DC) sensors (see code numbers 1500.DC and 1600.DC), the polarity of the connection has to be observed: the brown cable must be connected to the plus (+) and the blue one to the minus (-). Attention has also to be paid to the orientation of the connector, cause by inverting the connection the circuit will be not damaged, but the sensors will remain switched, the load connected and the led turned off.

Due to the particular structure of the switching circuit of these sensors, which is made of semiconductors, there are no particular contra-indications related to its use: the supported load may therefore be indifferently of inductive, capacitive or resistive type, and similarly the length of the connecting wire is not of importance.

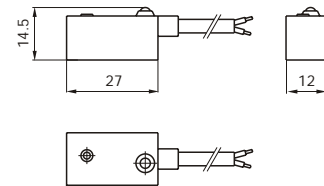
On the contrary, in case of use universal (U) sensors with direct current (DC), attention has to be paid to the length of the cable, which has to be no longer than 10m with 48V voltage.

Besides, there are some other external factors to be taken into consideration, such as proximity of powered cable, magnetic fields produced by electric motors, mass of iron too close to the sensor, and so on: these factors have to be therefore carefully avoided, being able to influence the sensors and accordingly to cause irregularity of operation.

**Sensors with 2 m. cable (REED type)**



for cylinders and microcylinders



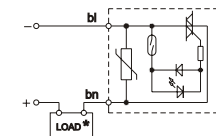
for rodless cylinders

**Ordering code**

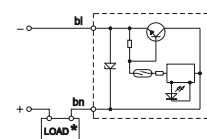
<b>Cylinders and microcylinders</b>	<b>1500.A.C.</b>	sensor for alternating current with led
	<b>1500.D.C.</b>	sensor for continuous current with led
	<b>1500.U</b>	universal sensor with led
	<b>1500.U/1</b>	universal sensor without led (REED ampulla only)
<b>Rodless cylinders</b>	<b>1600.A.C.</b>	sensor for alternating current with led
	<b>1600.D.C.</b>	sensor for continuous current with led
	<b>1600.U</b>	universal sensor with led
	<b>1600.U/1</b>	universal sensor without led (REED ampulla only)

**Diagrams and connections**

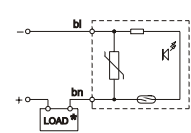
**Type - a.c.**



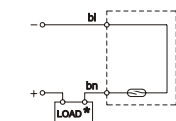
**Type - d.c.**



**Type - U**



**Type U/1**



**Technical characteristics**

	a.c.	d.c.	U		U/1	
			a.c.	d.c.	a.c.	d.c.
Maximum permanent current	1,5A	1,2A	0,5A		0,3A	
Maximum current (pulses of 0,5 sec.)	6A	1,5A	1A		0,8A	
Voltage range	12 ÷ 250V	12 ÷ 30V	3 ÷ 250V	12 ÷ 48V	0 ÷ 250V	0 ÷ 48V
Maximum permanent power	375VA	32W	20VA	15W	10VA	8W
Working temperature	-20°C ÷ 50°C					
Maximum voltage drop	<3V	2V	<3V		0V	
Cable section	2x0,35 mm <sup>2</sup>					
Degree of protection	IP 65					
Connecting time	2 ms					
Disconnecting time	1 ms					
Average working period	10 cycles					
Repetition of intervention point	± 0,1 mm					
Type of contact	N. O.					

★ Connection can be done either to negative or positive pole.

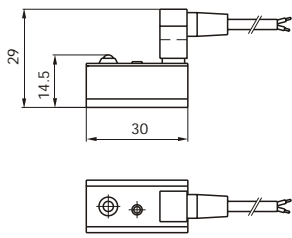
**These sensors can be used on cylinders series:**

- |   |   |
|---|---|
| <p><b>1200</b> for microcylind. with threaded end covers, with clamps code<br/>for microcylind. "MIR" with rolled end covers, with clamps code<br/>for microcylind. "MIR-INOX" with rolled end covers, with clamps code</p> <p><b>1306 - 1307 - 1308</b> brackets code</p> <p><b>1319 - 1320</b> brackets code</p> <p><b>1500</b> directly on groove</p> <p><b>1600</b> brackets code</p> | <p><b>1260.Ø.F</b><br/><b>1280.Ø.F</b> from Ø16 to Ø32<br/><b>1280.Ø.FX</b> from Ø16 to Ø32</p> <p><b>1306.A</b> for cylind. from Ø 32 to Ø 63<br/><b>1306.B</b> for cylind. from Ø 80 to Ø 125<br/><b>1306.C</b> for cylind. from Ø 160 and Ø 200</p> <p><b>1320.A</b> for cylinders Ø 32 and Ø 40<br/><b>1320.B</b> for cylinders Ø 50 and Ø 63<br/><b>1320.C</b> for cylinders Ø 80 and Ø 100<br/><b>1320.D</b> for cylinders Ø 125<br/><b>1320.E</b> for cylinders Ø 160<br/><b>1320.F</b> for cylinders Ø 200</p> <p><b>1600.A</b></p> |
|---|---|

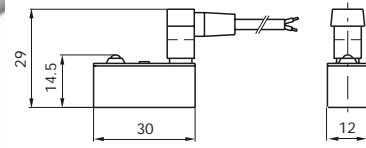


# Magnetic sensors for cylinders

## Sensors with connector (REED type)



for cylinders and microcylinders



for rodless cylinders

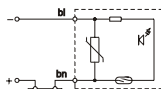
## Ordering code

<p>Cylinders and Microcylinders</p>	<p><b>RS.UA</b>  <b>RS.UANO</b>  <b>RS.UA/1</b>  <b>RS.UA/1L</b>  <b>RS.UC</b>  <b>RS.DC</b>  <b>RS.DCNO</b>  <b>RS.UAC1</b>  <b>RS.UAC1/1</b>  <b>RS.UACH1/1L**</b>  <b>RS.UCC1</b></p>	<p>universal sensor with led normally open N.O.          universal sensor with led normally open N.O, according to standard IEC 947          universal sensor without led N.O. (REED ampulla only)          universal sensor with led normally open N.O., for series assembly (3 wires)          universal sensor with led normally closed N.C.          sensor for continuous current with led normally open N.O.          sensor for continuous current with led normally open N.O., according to standard IEC 947          universal sensor with led N.O. with connector and 2,5 m. Cable          universal sensor without led N.O. with connector and 2,5 m. cable (REED ampulla only)          universal sensor with led N.O. with connector and 2,5 m. cable, for series mounting (3 wires)          universal sensor with led N.C. with connector and 2,5 m. Cable</p>
<p>Rodless cylinders</p>	<p><b>SRS.UA</b>  <b>SRS.UA/1</b>  <b>SRS.UA/1L</b>  <b>SRS.UC</b>  <b>SRS.DC</b>  <b>SRS.UAC1</b>  <b>SRS.UAC1/1</b>  <b>SRS.UACH1/1L**</b>  <b>SRS.UCC1</b>  <b>SRS.DCC1</b></p> <p><b>C1</b>  <b>C2</b>  <b>C3</b>  <b>C1NO</b>  <b>C2NO</b>  <b>C3NO</b></p>	<p>universal sensor with led N.O.          universal sensor without led N.O.          universal sensor with led N.O., for series assembly (3 wires)          universal sensor with led normally closed N.C.          sensor for continuous current with led normally closed N.O.          universal sensor with led N.O. with connector and 2,5 m. Cable          universal sensor without led N.O. with connector and 2,5 m. cable (REED ampulla only)          universal sensor with led N.O. with connector and 2,5 m. cable, for series assembly (3 wires)          universal sensor with led N.C. with connector and 2,5 m. cable          sensor for continuous current with led normally closed N.O., with connector and 2,5 m. Cable</p> <p>connector with 2,5 m. cable          connector with 5 m. cable          connector with 10 m. cable          connector with 2,5 m. cable, according to standard IEC 947          connector with 5 m. cable, according to standard IEC 947          connector with 10 m. cable, according to standard IEC 947</p>

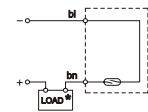
\*\*Utilizzare solo connettori per sensori effetto HALL (vedi pag. 8.5)

## Diagrams and connections

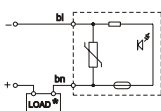
Type - UA



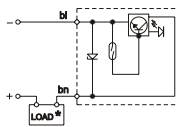
Type UA/1



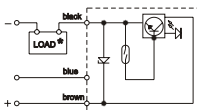
Type - UC



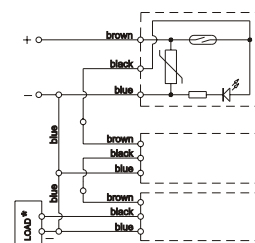
Type - d.c.



Type - DCNO



Type - UA/1L





**Technical characteristics**

	d.c.	U				U/1L		U/1	
		a.c.		d.c.		a.c.	d.c.	a.c.	d.c.
Type of contact	N.O.	N.O.	N.C.	N.O.	N.C.	N.O.		N.O.	
Maximum permanent current	1,2A	0,5A	0,3A	0,5A	0,3A	0,5A		0,5A	
Maximum current (pulses of 0,5 sec.)	1,5A	1A	0,8A	1A	0,8A	1A		1A	
Voltage range	12 ÷ 30V	3 ÷ 250V	3 ÷ 110V	12 ÷ 48V		24V		0 ÷ 250V	0 ÷ 48V
Maximum permanent power	32W	20VA	10VA	15W	8W	20VA	15W	10VA	8W
Working temperature	-20° C ÷ 70°C								
Maximum voltage drop	2V	<3V				0V			
Cable section	2x0,35 mm <sup>2</sup>					3x0,35 mm <sup>2</sup>		2x0,35 mm <sup>2</sup>	
Degree of protection	IP 65								
Connecting time	2 ms								
Disconnecting time	1 ms								
Average working period	10 cycles								
Repetition of intervention point	± 0,1 mm								

★ Connection can be done either to negative or positive pole.

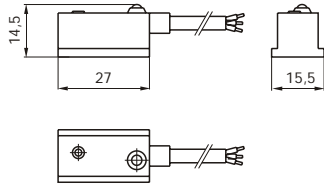
**These sensors can be used on cylinders series:**

- |   |  |
|---|--|
| <p><b>1200</b> for microcylind. with threaded end covers, with clamps code<br/>for microcylind. "MIR" with rolled end covers, with clamps code<br/>for microcylind. "MIR-INOX" with rolled end covers, with clamps code</p> <p><b>1306 - 1307 - 1308</b> brackets code</p> <p><b>1319 - 1320</b> brackets code</p> <p><b>1500</b> directly on groove</p> <p><b>1600</b> brackets code</p> | <p><b>1260.Ø.F</b><br/><b>1280.Ø.F</b> from Ø16 to Ø32<br/><b>1280.Ø.FX</b> from Ø16 to Ø32</p> <p><b>1306.A</b> for cylind. from Ø 32 to Ø 63<br/><b>1306.B</b> for cylind. from Ø 80 to Ø 125<br/><b>1306.C</b> for cylind. from Ø160 and Ø200<br/><b>1320.A</b> for cylinders Ø 32 and Ø 40<br/><b>1320.B</b> for cylinders Ø 50 and Ø 63<br/><b>1320.C</b> for cylinders Ø 80 and Ø 100<br/><b>1320.D</b> for cylinders Ø 125<br/><b>1320.E</b> for cylinders Ø 160<br/><b>1320.F</b> for cylinders Ø 200</p> <p><b>1600.A</b></p> |
|---|--|

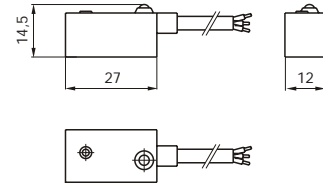


# Magnetic sensors for cylinders

## Sensors with 3 m. cable (HALL effect)



for cylinders and microcylinders



for rodless cylinders

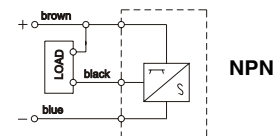
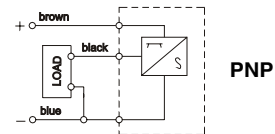
### Ordering code

Cylinders and microcylinders	<b>1500.HAP</b> <b>1500.HAN</b> <b>1500.HCP</b> <b>1500.HCN</b>	PNP sensor Hall effect with led, normally open N.O. NPN sensor Hall effect with led, normally open N.O. PNP sensor Hall effect with led, normally closed N.C. NPN sensor Hall effect with led, normally closed N.C.
Rodless cylinders	<b>1600.HAP</b> <b>1600.HAN</b> <b>1600.HCP</b> <b>1600.HCN</b>	PNP sensor Hall effect with led, normally open N.O. NPN sensor Hall effect with led, normally open N.O. PNP sensor Hall effect with led, normally closed N.C. NPN sensor Hall effect with led, normally closed N.C.

### Technical characteristics

Maximum permanent current	0,5A
Voltage range	10 ÷ 30V DC
Power (inductive load)	10W
Working temperature	-20° C ÷ 70°C
Cable section	3x0,25 mm <sup>2</sup>
Degree of protection	IP 65
Connecting time	0,8 µs
Disconnecting time	0,3 µs
Average working period	10 <sup>9</sup> cicles
Repetition of intervention point	± 0,1 mm
Type of contact	N. O. o N.C.

### Diagrams and connections

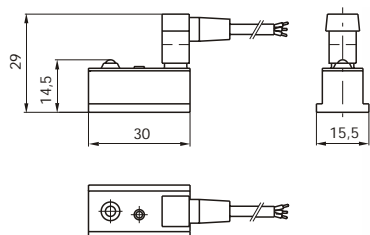


### These sensors can be used on cylinders series:

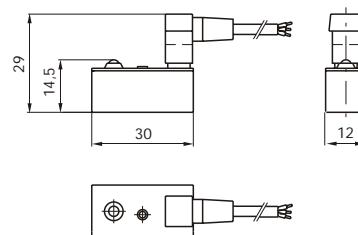
<b>1200</b>	for microcylind. with threaded end covers, with clamps code for microcylind. "MIR" with rolled end covers, with clamps code for microcylind. "MIR-INOX" with rolled end covers, with clamps code	<b>1260.Ø.F</b> <b>1280.Ø.F</b> from Ø16 to Ø32 <b>1280.Ø.FX</b> from Ø16 to Ø32
<b>1306 - 1307 - 1308</b>	brackets code	<b>1306.A</b> for cylind. from Ø 32 to Ø 63 <b>1306.B</b> for cylind. from Ø 80 to Ø 125 <b>1306.C</b> for cylind. from Ø160 and Ø200
<b>1319 - 1320</b>	brackets code	<b>1320.A</b> for cylinders Ø 32 and Ø 40 <b>1320.B</b> for cylinders Ø 50 and Ø 63 <b>1320.C</b> for cylinders Ø 80 and Ø 100 <b>1320.D</b> for cylinders Ø 125 <b>1320.E</b> for cylinders Ø 160 <b>1320.F</b> for cylinders Ø 200
<b>1500</b>	directly on groove	
<b>1600</b>	brackets code	<b>1600.A</b>



**Sensor with connector (Hall effect)**



for cylinders and microcylinders



for rodless cylinders

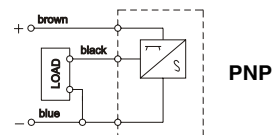
**Ordering code**

Cylinders and microcylinders	<b>HS.PA</b> <b>HS.NA</b> <b>HS.PAC1</b> <b>HS.NAC1</b>	PNP sensor Hall effect with led, normally open N.O. NPN sensor Hall effect with led, normally open N.O. PNP sensor Hall effect N.O. with led, with connector and 2,5 m. cable NPN sensor Hall effect N.O. with led, with connector and 2,5 m. cable
Rodless cylinders	<b>SHS.PA</b> <b>SHS.NA</b> <b>SHS.PAC1</b> <b>SHS.NAC1</b>	PNP sensor Hall effect with led, normally open N.O. NPN sensor Hall effect with led, normally open N.O. PNP sensor Hall effect N.O. with led, with connector and 2,5 m. cable NPN sensor Hall effect N.O. with led, with connector and 2,5 m. cable
	<b>CH1</b> <b>CH2</b>	connector with 2,5 m. cable (3 wires) connector with 5 m. cable (3 wires)

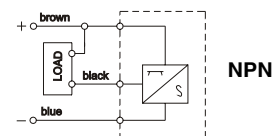
**Technical characteristic**

Maximum permanent current	0,25A
Voltage range	6 ÷ 30V DC
Power (inductive load)	6W
Working temperature	-20° C ÷ 70°C
Cable section	3x0,25 mm <sup>2</sup>
Degree of protection	IP 65
Connecting time	0,8 μs
Disconnecting time	0,3 μs
Average working period	10 <sup>8</sup> cycles
Repetition of intervention point	± 0,1 mm
Contact normally open	N. O.

**Diagrams and connections**



PNP



NPN

**These sensors can be used on cylinders series:**

**1200** for microcylind. with threaded end covers, with clamps code  
for microcylind. "MIR" with rolled end covers, with clamps code  
for microcylind. "MIR-INOX" with rolled end covers, with clamps code

**1306 - 1307 - 1308** brackets code

**1319 - 1320** brackets code

**1500** directly on groove

**1600** brackets code

**1260.Ø.F**  
**1280.Ø.F** from Ø16 to Ø32  
**1280.Ø.FX** from Ø16 to Ø32

**1306.A** for cylind. from Ø 32 to Ø 63  
**1306.B** for cylind. from Ø 80 to Ø 125  
**1306.C** for cylind. from Ø 160 and Ø 200

**1320.A** for cylinders Ø 32 and Ø 40  
**1320.B** for cylinders Ø 50 and Ø 63  
**1320.C** for cylinders Ø 80 and Ø 100  
**1320.D** for cylinders Ø 125  
**1320.E** for cylinders Ø 160  
**1320.F** for cylinders Ø 200

**1600.A**

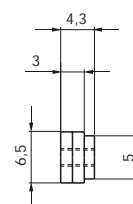
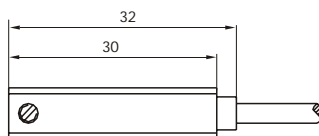


# Magnetic sensors for cylinders

## Sensor c/w 2.5 m. cable



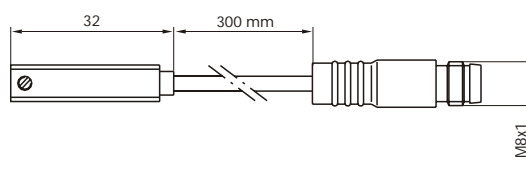
Weight gr. 27



## Sensor c/w M8 connector (300 mm cable)



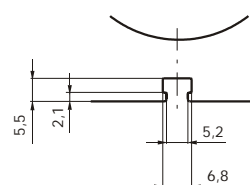
Weight gr. 15



### Ordering codes

<b>1580.U</b>	Reed bulb sensor with led and 2.5 m cable
<b>1580.UAP</b>	Reed bulb sensor with led and 2.5 m cable (3 wires)
<b>1580.HAP</b>	PNP sensor Hall effect with led and 2.5 m cable
<b>MRS.U</b>	Reed bulb sensor with led and connector
<b>MRS.UAP</b>	Reed bulb sensor with led and connector (3 wires)
<b>MHS.P</b>	PNP sensor Hall effect with led and connector
<b>MC1</b>	M8 in line connector with 2.5 m cable (2 wires)
<b>MC2</b>	M8 in line connector with 5 m cable (2 wires)
<b>MCH1</b>	M8 in line connector with 2.5 m cable (3 wires)
<b>MCH2</b>	M8 in line connector with 5 m cable (3 wires)

### Slot detail

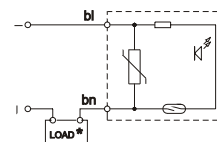


Normal standard "PNEUMAX" sensors suitable for large slot are available for cylinders from Ø 32 to Ø 100 (see catalogue 4 section 8).

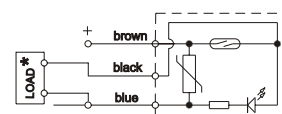
### Technical characteristics

	1580.U	1580.UAP	MRS.U	MRS.UAP	1580.HAP	MHS.P
Type of contact	N.O.					
Maximum current (pulses of 0,5 sec.)	0,1A				0,2A	
Maximum permanent current	0,1A				0,2A	
Maximum permanent power	6VA				4W	
Voltage range A. C.	3 ÷ 30V	24V	3 ÷ 30V		/	
Voltage range D. C.	3 ÷ 30V	24V	3 ÷ 30V		12÷30V	
Working temperature	-20° C ÷ 70°C					
Maximum voltage drop	<3V	0V	<3V	0V	<3V	
Cable section	2x0,14	3x0,14	2x0,14	3x0,14		
Degree of protection	IP 65					
Connecting time	0,5 ms				0,8 µs	
Disconnecting time	0,1 ms				0,3 µs	
Average working period	10 <sup>7</sup>				10 <sup>9</sup>	
Repetition of intervention point	± 0,1					

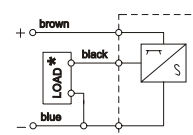
### Diagrams and connections



with Reed bulb



with Reed bulb (3 wires)



Hall effect

**NOTE : pay attention to the connected loads which should not exceed the recommendation**

**These sensors can be used on cylinders series:**

- 1200** microcylinders "MIR" with rolled end covers, with clamps code **1280.Ø.FS**  
microcylinders "MIR-INOX" with rolled end covers, with clamps code **1280.Ø.FSX**
- 1500**
  - Short stroke compact cylinders with sensor adapter code **1580.01F**
  - Europe compact cylinders - directly on groove from Ø 12 to Ø 25
    - directly on groove or with sensor adapter( code **1580.01F**) from Ø 32 to Ø 50
    - with sensor adapter (code **1580.01F**) from Ø 63 to Ø 100.