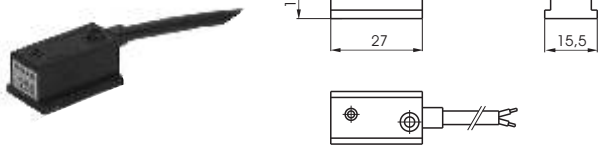
General

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 situaded 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.

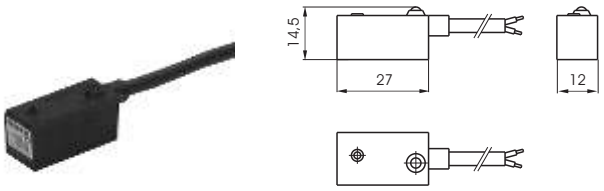
Note: The magnetic sensors are according to the Directive **EMC 89/336/CEE** and following amendments.

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.
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.



for cylinders and microcylinders



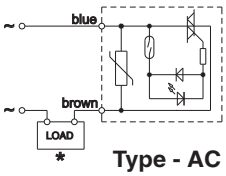
for rodless cylinders

Ordering code

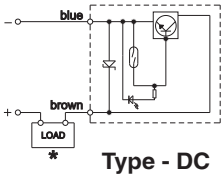
SENSORS WITH 2 WIRES CABLE

Cylinders and microcylinders	**1500.AC**	sensor for alternating current with led
	1500.DC	sensor for continuous current with led
	1500. U	universal sensor with led
	1500.U/1	universal sensor without led (REED ampulla only)
Rodless cylinders	**1600.AC**	sensor for alternating current with led
	1600.DC	sensor for continuous current with led
	1600.U	universal sensor with led
	1600.U/1	universal sensor without led (REED ampulla only)

Diagrams and connections

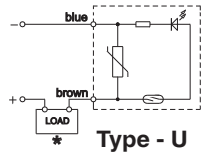


Type - AC

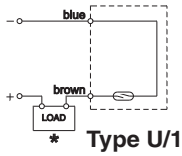


Type - DC

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	-20° C ÷ 70°C				
Maximum voltage drop	< 3V	2V	< 3V		0V	
Cable section	2x0,35 mm²					
Degree of protection	IP 65					
Connecting time	2 ms					
Disconnecting time	1 ms					
Average working period	10^7 cicles					
Repetition of intervention point	± 0,1 mm					
Type of contact	N. A.					



Type - U

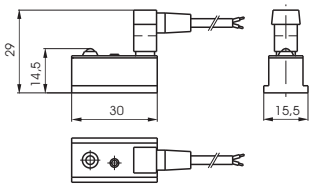


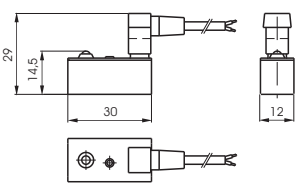
Type U/1

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

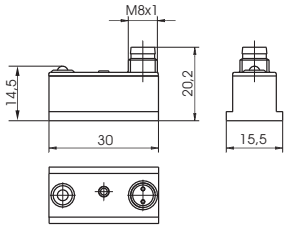
These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
1200	for microcylinders with threaded end covers, with clamps code	1260.Ø.F
	for microcylind. "MIR" with rolled end covers, with clamps code	1280.Ø.F
	for microcylind. "MIR-INOX" with rolled end covers, with clamps code	1280.Ø.FX
1306 - 1307 - 1308	from Ø32 to Ø63	1306.A
	from Ø80 to Ø125	1306.B
	from Ø160 to Ø200	1306.C
1319 - 1320 1383 - 1384	for cylinders Ø32 and Ø40	1320.A
	for cylinders Ø50 and Ø63	1320.B
	for cylinders Ø80 and Ø100	1320.C
	for cylinders Ø125	1320.D
	for cylinders Ø160	1320.E
	for cylinders Ø200	1320.F
1380 - 1381	Clean profile cylinders	directly on groove
1500	Compact cylinders "Europe" (from Ø32)	directly on groove
1605	Rodless cylinders	1600.A

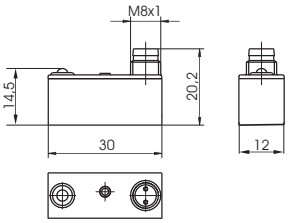




for cylinders and microcylinders



for rodless cylinders



Ordering code

SENSOR FOR SNAP CONNECTOR WITH TWO WIRES

Cylinders and Microcylinders	**RS.DC**	sensor for continuous current with led normally open N.O.
	RS.UA	universal sensor with led normally open N.O.
	RS.UC	universal sensor with led normally closed N.C.
	RS.UA/1	universal sensor without led N.O. (REED ampulla only)
Rodless cylinders	**SRS.DC**	sensor for continuous current with led normally closed N.C.
	SRS.UA	universal sensor with led N.O.
	SRS.UC	universal sensor with led normally closed N.C.
	SRS.UA/1	universal sensor without led N.O.
Cable	**C1**	connector with 2,5 m. cable
	C2	connector with 5 m. Cable
	C3	connector with 10 m. cable

SENSOR FOR SNAP CONNECTOR WITH TWO WIRES INCLUSIVE OF C1 CABLE

Cylinders and Microcylinders	**RS.DCC1**	sensor for DC current N.O. with LED and 2.5mtr cable.
	RS.UAC1	universal sensor with led N.O. with connector and 2,5 m. Cable
	RS.UCC1	universal sensor with led N.C. with connector and 2,5 m. Cable
	RS.UAC1/1	universal sensor without led N.O. with connector and 2,5 m. cable (REED ampulla only)
Rodless cylinders	**SRS.DCC1**	sensor for continuous current with led normally closed N.O. with connector and 2,5 m. Cable
	SRS.UAC1	universal sensor with led N.O. with connector and 2,5 m. Cable
	SRS.UCC1	universal sensor with led N.C. with connector and 2,5 m. cable
	SRS.UAC1/1	universal sensor without led N.O. with connector and 2,5 m. cable (REED ampulla only)

SENSOR FOR M8 CONNECTOR WITH TWO WIRES

Cylinders and Microcylinders	**RS8.DC**	sensor for DC current N.O. with LED and M8 plug
	RS8.UA	universal sensor N.O. with LED and M8 plug
	RS8.UC	universal sensor NC with LED and M8 plug
Rodless cylinders	**SRS8.DC**	sensor for DC current N.O. with LED and M8 plug
	SRS8.UA	universal sensor N.O. with LED and M8 plug
	SRS8.UC	universal sensor NC with LED and M8 plug
Cable	**MCH1**	M8 in line connector with 2.5 m cable (3 wires)
	MCH2	M8 in line connector with 5 m cable (3 wires)

SENSOR FOR SNAP CONNECTOR WITH TWO WIRES ACCORDING TO IEC 947 NORMS

Cylinders and Microcylinders	**RS.DCNO**	sensor for continuous current with led normally open N.O., according to standard IEC 947
	RS.UANO	universal sensor with led normally open N.O, according to standard IEC 947
Cable	**C1NO**	connector with 2,5 m. cable, according to standard IEC 947
	C2NO	connector with 5 m. cable, according to standard IEC 947
	C3NO	connector with 10 m. cable, according to standard IEC 947

SENSORS FOR IN SERIES ASSEMBLING WITH SNAP CONNECTOR WITH 3 WIRES

Cylinders and Microcylinders	**RS.UA/1L**	universal sensor with led normally open N.O., for series assembly (3 wires)
Rodless cylinders	**SRS.UA/1L**	universal sensor with led N.O., for series assembly (3 wires)
Cable	**CH1**	connector with 2,5 m. cable (3 wires)
	CH2	connector with 5 m. cable (3 wires)

SENSORS FOR IN SERIES ASSEMBLING WITH SNAP CONNECTOR WITH 3 WIRES AND CH1 CABLE

Cylinders and Microcylinders	**RS.UACH1/1L**	universal sensor with led N.O. with connector and 2,5 m. cable, for series mounting (3 wires)
Rodless cylinders	**SRS.UACH1/1L**	universal sensor with led N.O. with connector and 2,5 m. cable, for series assembly (3 wires)

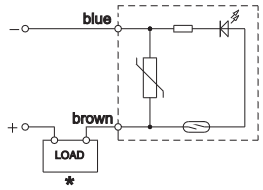
SENSORS FOR IN SERIES ASSEMBLING WITH M8 CONNECTOR WITH 3 WIRES

Cylinders and Microcylinders	**RS8.UA/1L**	universal sensor NO with LED for in series assembling (3wires) and M8 plug
Rodless cylinders	**SRS8.UA/1L**	universal sensor NO with LED for in series assembling (3wires) and M8 plug
Cable	**MCH1**	M8 in line connector with 2.5 m cable (3 wires)
	MCH2	M8 in line connector with 5 m cable (3 wires)

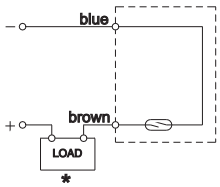
Technical characteristics	DC	U				U/1L		U/1	
		a.c.		d.c.		a.c.	d.c.	a.c.	d.c.
Type of contact	N.A.	N.A.	N.C.	N.A.	N.C.	N.A.		N.A.	
Maximum permanent current	1,2A	0,5A	0,3A	0,5A	0,3A	0,5A		0,5A	
Maximum current (pulses of 0,5 sec.)	1,5A	1A	0,8A	1A	0,8A	1A		1A	
Voltage range	12 ÷ 30V	3 ÷ 250V	3 ÷ 110V	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 mm²					3x0,35 mm²		2x0,35 mm²	
Degree of protection	IP 65								
Connecting time	2 ms								
Disconnecting time	1 ms								
Average working period	10^7 cicles								
Repetition of intervention point	± 0,1 mm								

Diagrams and connections

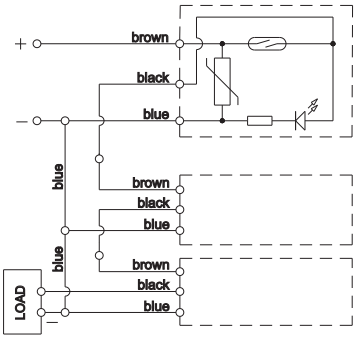
Type - UA



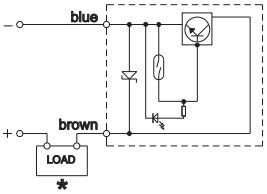
Type UA/1



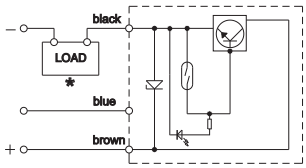
Type - UA/1L



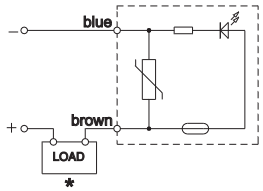
Type - DC



Type - DCNO

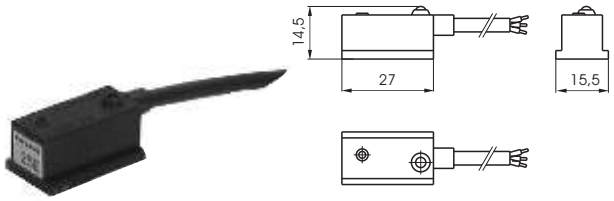


Type - UC

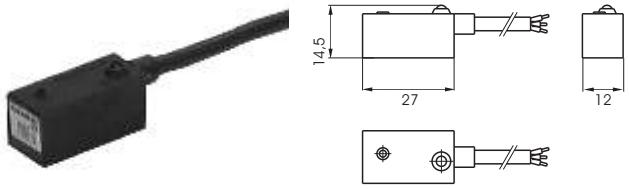


These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
1200	for microcylinders with threaded end covers, with clamps code	1260.Ø.F
	for microcylind. "MIR" with rolled end covers, with clamps code	1280.Ø.F
	for microcylind. "MIR-INOX" with rolled end covers, with clamps code	1280.Ø.FX
1306 - 1307 - 1308	from Ø32 to Ø63	1306.A
	from Ø80 to Ø125	1306.B
	from Ø160 to Ø200	1306.C
1319 - 1320 **1383 - 1384**	for cylinders Ø32 and Ø40	1320.A
	for cylinders Ø50 and Ø63	1320.B
	for cylinders Ø80 and Ø100	1320.C
	for cylinders Ø125	1320.D
	for cylinders Ø160	1320.E
	for cylinders Ø200	1320.F
1380 - 1381	Clean profile cylinders	directly on groove
1500	Compact cylinders "Europe" (from Ø32)	directly on groove
1605	Rodless cylinders	1600.A



for cylinders and microcylinders



for rodless cylinders

Ordering code

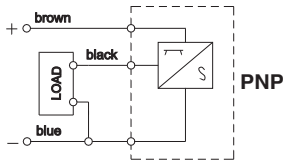
SENSORS WITH 3 WIRES CABLE

Cylinders and Microcylinders	**1500.HAP**	PNP sensor Hall effect with led, normally open N.O.
	1500.HAN	NPN sensor Hall effect with led, normally open N.O.
Rodless cylinders	**1600.HAP**	PNP sensor Hall effect with led, normally open N.O.
	1600.HAN	NPN sensor Hall effect with led, normally open N.O.

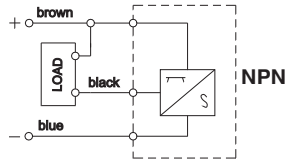
Technical characteristics

Maximum permanent current	0,5A
Voltage range	10 ÷ 30V DC
Power (inductive load)	10W
Maximum voltage drop	2V
Working temperature	-20° C ÷ 70°C
Cable section	3x0,25 mm²
Degree of protection	IP 65
Connecting time	0,8 μs
Disconnecting time	0,3 μs
Average working period	10^9 cicles
Repetition of intervention point	± 0,1 mm
Type of contact	N. A. o N.C.

Diagrams and connections



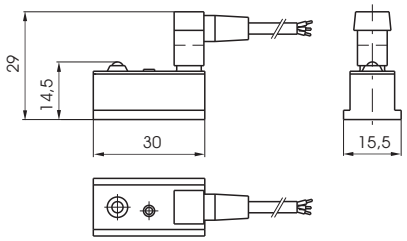
PNP



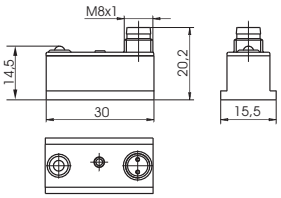
NPN

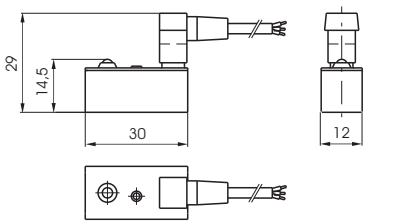
These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
1200	for microcylinders with threaded end covers, with clamps code	1260.Ø.F
	for microcylind. "MIR" with rolled end covers, with clamps code	1280.Ø.F
	for microcylind. "MIR-INOX" with rolled end covers, with clamps code	1280.Ø.FX
1306 - 1307 - 1308	from Ø32 to Ø63	1306.A
	from Ø80 to Ø125	1306.B
	from Ø160 to Ø200	1306.C
1319 - 1320 1383 - 1384	for cylinders Ø32 and Ø40	1320.A
	for cylinders Ø50 and Ø63	1320.B
	for cylinders Ø80 and Ø100	1320.C
	for cylinders Ø125	1320.D
	for cylinders Ø160	1320.E
	for cylinders Ø200	1320.F
1380 - 1381	Clean profile cylinders	directly on groove
1500	Compact cylinders "Europe"(from Ø32)	directly on groove
1605	Rodless cylinders	1600.A

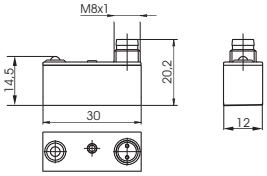


for cylinders and microcylinders





for rodless cylinders



Ordering code

SENSORS FOR SNAP CONNECTOR WITH 3 WIRES

Cylinders and Microcylinders	**HS.PA**	PNP sensor Hall effect with led, normally open N.O.
Rodless cylinders	**SHS.PA**	PNP sensor Hall effect with led, normally open N.O.
Cable	**CH1**	connector with 2,5 m. cable (3 wires)
	CH2	connector with 5 m. cable (3 wires)

SENSORS FOR SNAP CONNECTOR WITH 3 WIRES AND CH1 CABLE

Cylinders and Microcylinders	**HS.PAC1**	PNP sensor Hall effect N.O. with led, with connector and 2,5 m. Cable
Rodless cylinders	**SHS.PAC1**	PNP sensor Hall effect N.O. with led, with connector and 2,5 m. cable

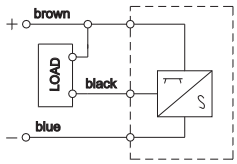
SENSORS FOR M8 CONNECTOR WITH 3 WIRES

Cylinders and Microcylinders	**HS8.NA**	NPN Hall effect sensor N.A. with LED and M8 plug
	HS8.PA	PNP Hall effect sensor N.A. with LED and M8 plug
Rodless cylinders	**SHS8.NA**	NPN Hall effect sensor N.A. with LED and M8 plug
	SHS8.PA	PNP Hall effect sensor N.A. with LED and M8 plug
Cable	**MCH1**	M8 straight connector with 2.5mtr. cable (3 wires)
	MCH2	M8 straight connector with 5 mtr. Cable (3 wires)

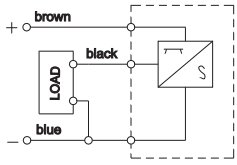
Technical characteristic

Maximum permanent current	0,25A
Voltage range	6 ÷ 30V DC
Power (inductive load)	6W
Maximum Voltage drop	2V
Working temperature	-20° C ÷ 70°C
Cable section	3x0,25 mm²
Degree of protection	IP 65
Connecting time	0,8 μs
Disconnecting time	0,3 μs
Average working period	10^9 cicles
Repetition of intervention point	± 0,1 mm
Contact normally open	N. A.

Diagrams and connections



NPN



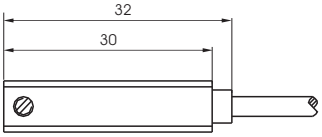
PNP

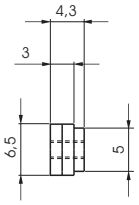
These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
1200	for microcylinders with threaded end covers, with clamps code	1260.Ø.F
	for microcylind. "MIR" with rolled end covers, with clamps code	1280.Ø.F
	for microcylind. "MIR-INOX" with rolled end covers, with clamps code	1280.Ø.FX
1306 - 1307 - 1308	from Ø32 to Ø63	1306.A
	from Ø80 to Ø125	1306.B
	from Ø160 to Ø200	1306.C
1319 - 1320 1383 - 1384	for cylinders Ø32 and Ø40	1320.A
	for cylinders Ø50 and Ø63	1320.B
	for cylinders Ø80 and Ø100	1320.C
	for cylinders Ø125	1320.D
	for cylinders Ø160	1320.E
	for cylinders Ø200	1320.F
1380 - 1381	Clean profile cylinders	directly on groove
1500	Compact cylinders "Europe" (from Ø32)	directly on groove
1605	Rodless cylinders	1600.A

Sensor c/w 2.5 m. cable

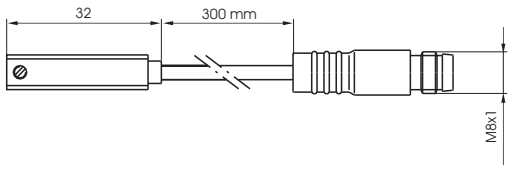
Weight gr. 27

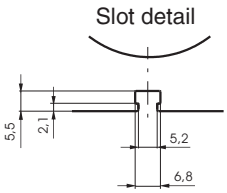




Sensor c/w M8 connector (300 mm cable)

Weight gr. 15

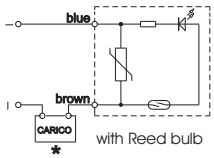




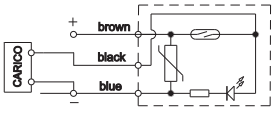
Ordering codes

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

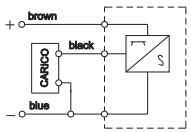
Diagrams and connections



with Reed bulb



with Reed bulb (3 wires)



Hall effect

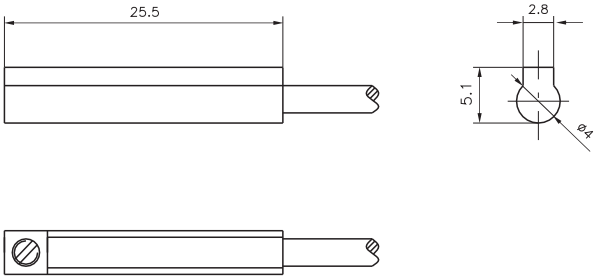
Technical characteristics	1580.U	1580.UAP	MRS.U	MRS.UAP	1580.HAP	MHS.P
Type of contact	N.A.					
Maximum current (pulses of 0,5 sec.)	0,2A			0,2A		
Maximum permanent current	0,2A			0,2A		
Maximum permanent power	6VA			4W		
Voltage range A. C.	3 ÷ 30V	24V	3 ÷ 30V	/		
Voltage range D. C.	3 ÷ 30V	24V	3 ÷ 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	10^7			10^9		
Repetition of intervention point	± 0,1					

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

These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
1200	Microcylinders "MIR" with rolled end covers, with clamps code	1260.Ø.FS
	Microcylinders "MIR-INOX" with rolled end covers, with clamps code	1280.Ø.FS
	Microcylinders "MIR" Rolled end covers	1280.Ø.FSX
1380 - 1381	Clean profile cylinders	1380.01F
1500	Short stroke compact cylinders	1580.01F
	Compact cylinders "Europe"	from Ø12 to Ø25: directly on groove from Ø32 to Ø50: directly on groove. 1580.01F dal Ø63 al Ø100: with adapter cod. 1580.01F
6100	Guided compact cylinder	directly on groove
6311	Parallel style pneumatic grippers Wide opening	
6200	Twin rod slides units	
6210	Twin rod slides units	
6301	Pneumatic grippers, angular (no Ø10 and Ø16)	
6303	180° angular gripper rack & pinion style	
6410	Single rack Rotary actuators	
6310	Parallel style pneumatic grippers (no Ø10 and Ø16)	

With 1 m. cable

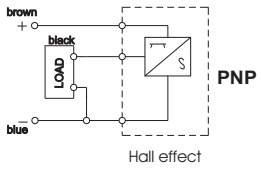


Ordering codes

Cylinders and Microcylinders **1581.HAP** sensors PNP HALL effect with led and cable 1 mt.

Technical characteristics	1581.HAP	
Type of contact	N.A.	
Maximum current	100mA	200mA
Maximum permanent power	10W	6W
Voltage range A. C.	5÷120V DC/AC	5÷30V DC
Working temperature	-10°C ÷ +70°C	
Maximum voltage drop	/	0,5V
Cable section	2 wires: ø2,8	3wires: ø2,8
Degree of protection	IP 67	

Diagrams and connections



These sensors can be used on cylinders series:

SERIES	DESCRIPTION	MOUNTED
6302	Pneumatic grippers, 180 °angular	directly on groove
6310	Parallel style pneumatic grippers	
6312 (dal Ø16 al Ø25)	3 Finger parallel style pneumatic grippers (no Ø10 and Ø16)	
6400	Double rack Rotary actuators with turn table	