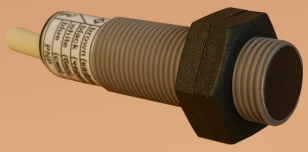
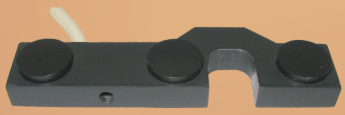
"ESA Control" Ltd



SPECIALIZED

INDUCTIVE

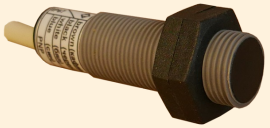
PROXIMITY SENSORS



Bulgaria
5300 Gabrovo
3, Stancionna str.
Tel./fax: +359 66 860543
E-mail: office@esa-control.com
Site: http://www.esa-control.com

Inductive proximity sensor for direct current, scheme “Namur” (2-wire)

M12-NAMUR



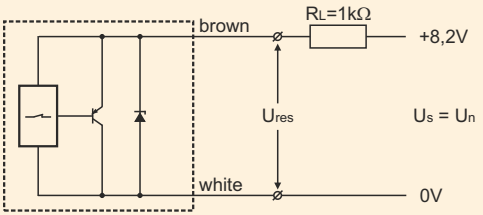
Application and operating principle

The inductive proximity sensors type P1-12.62.N is used in two-wire direct current electric circuits, where it acts as a variable resistor.. Its action is determined on an inductive principle - when approaching a metal object to its active part, its initial resistance increases. The inductive sensor has a normally closed contact "NC", ie. when there is no metal object in front of its active part, its output resistance is the smallest and then the largest current flows through the sensor. Its standard inclusion in the electrical circuit is known as "NAMUR" (Scheme 62), where the load resistance is 1kΩ, and the supply voltage is 8,2V. The sensor is used to measure and monitor the speed of gears and other rotating parts.

Technical parameters

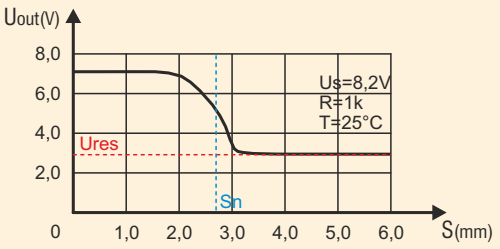
Nominal switching distance, *Sn*	2,6 mm
Nominal supply voltage, *Un*	8,2 V
Range of supply voltage, *Us*	5...30 VDC (Ripple ±10%)
Residual voltage, *Ures (at NC)*	2,9 V (Us=8,2V; R_L=1K)
Current in “normal open”, *INO*	<1,2 mA (Us=8,2V)
Current in “normal closed”, *INC*	>2,1 mA (Us=8,2V)
Switching frequency (max), *fmax*	2 KHz (Sn=1,5 mm)
Operating temperature range, *Tamb*	-25…+70° C
Degree of protection	IP67 (IEC144)
Output light indicator	No
Connection cable	2x0.25 mm², L=2 m, PVC
Overall dimensions	M12x1 / 39 mm
Housing - plastic	PVC

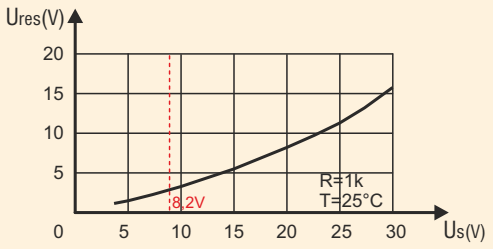
Scheme of connection



Scheme 62 (NC)

Output characteristics /residual voltage/





Inductive proximity sensor for textile industry

P9-86

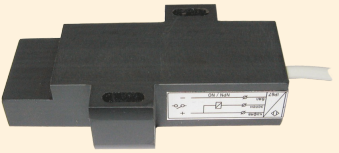


fig.1

Operating principle

The presented proximity inductive sensor P9-86 is used for switching of 3- and 4-wire direct current electrical circuits. Its output is switched when passing metal objects in front of its active part. The inductive proximity sensor is resistant to moisture and dust. It has a long service life thanks to the non-contact switching of the electrical circuit in which it is connected.

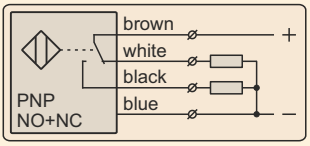
Technical parameters

Switching distance, S_n	5,0 mm
Hysteresis, h	4-15%
Supply voltage, U_s	10...30 VDC (Ripple ±10 %)
Output voltage (max), U_{out}	35 VDC
Residual voltage (max), U_{res}	0,8 V (I = 250 mA)
Load current (max), I_{out}	250 mA
Protection of output (scanning), I_{prot}	350 mA (25°C)
Current consumption, I_s	9 mA
Switching frequency (max), f_o	400 Hz (Sn=2,5 mm)
Fall time and Rise time, t_f / t_r	0,6µs/0,2µs(PNP); 0,2µs/0,6µs(NPN)
Operating temperature range, T_{amb}	-25…+70°C
Degree of protection	IP67 (IEC144)
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m, PVC
Overall dimensions	86x49x18 mm
Housing - plastic	PVC

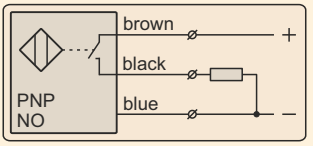
Type parameters

Type	Output function	Output - transistor (open collector)	Scheme of connection
P9-86.10.K	HO + H3	PNP	10
P9-86.11.K	HO	PNP	11
P9-86.12.K	H3	PNP	12
P9-86.20.K	HO + H3	NPN	20
P9-86.21.K	HO	NPN	21
P9-86.22.K	H3	NPN	22

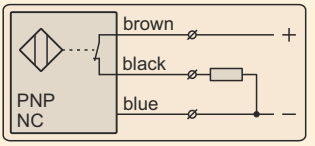
Schemes of connection



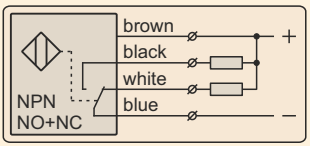
Scheme 10



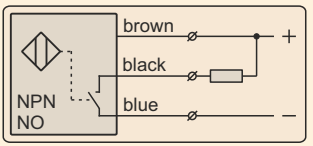
Scheme 11



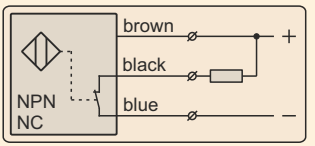
Scheme 12



Scheme 20



Scheme 21



Scheme 22

Inductive proximity sensor for textile industry

P9-95

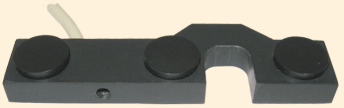


fig.1

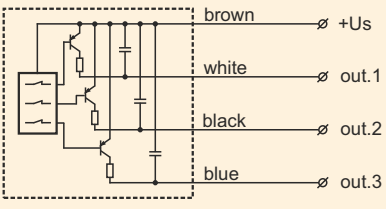
Application and operating principle

This is a direct current inductive sensor type P9-95.62.C, which is used in the textile industry. It has three PNP normally closed outputs that act as a variable resistor in the electrical circuit in which they are connected. The three outputs are independent of each other and are included to a common plus. Each of the outputs increases its resistance when a metal object approaches the corresponding active part of the sensor.

Technical parameters

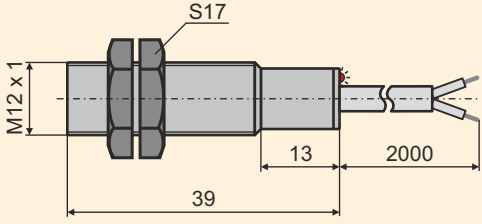
Switching distance, S_n	5,5 mm
Hysteresis, h	20%
Output	3 x PNP/NC
Supply voltage, U_s	8...30VDC (Ripple ±10 %)
Residual voltage (max), U_{res}	3,6V (I = 7mA)
Load current (max), I_{out}	20mA
Current consumption, I_s	0,85mA
Switching frequency (max), f_o	2 KHz (Sn=2,5 mm)
Fall time and Rise time, t_f / t_r	200µs / 200µs
Operating temperature range, T_{amb}	-25…+70°C
Degree of protection	IP67 (IEC144)
Output light indicator	No
Connection cable	4x0,25 mm^2; L=0,6 m
Overall dimensions	95x26x14 mm
Housing - plastic	PVC

Scheme of connection

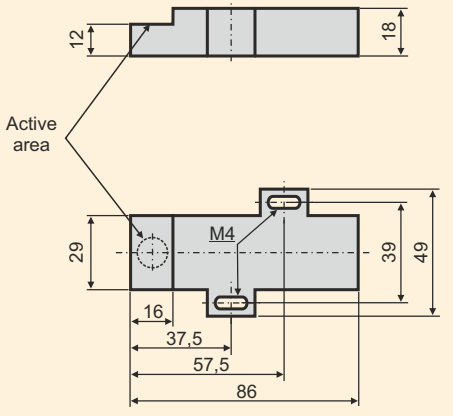


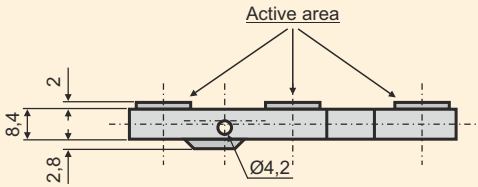
Scheme 62S

M12S



P9-86





P9-95