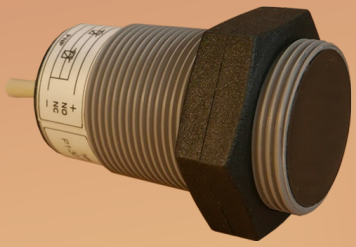
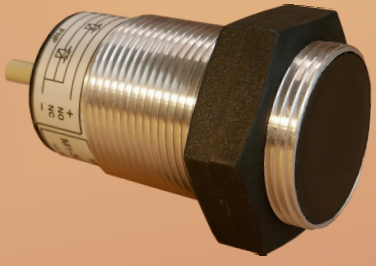
"ESA Control" Ltd



INDUCTIVE

PROXIMITY SENSORS



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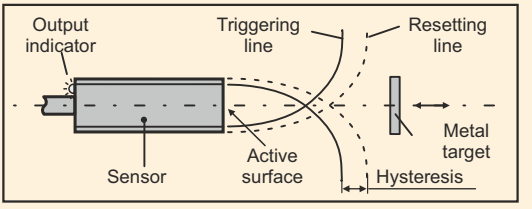
Inductive proximity sensors

Application and operating principle

Inductive proximity sensors are used to switch DC and AC electrical circuits. They act on the basis of induction - if a metal piece is brought to the active surface, the output switches over - the electric circuit opens or shuts. When there is metal in front of the active part of the sensors, the output indicator is on. Lack of physical contact between object and inductive proximity sensors ensures their high reliability and long-lasting exploitation. Inductive sensors are used for automatic transfer lines, metal cutting, textile, wood working, packaging and other machines. They are used in automation in solving problems in conditions of high dust, moisture, lubricants, oils, vibrations and long-term operation.

Hysteresis

Hysteresis denotes the distance between the triggering line with target approaching the sensing surface and the resetting line with target withdrawing from the sensing surface of the sensor. The value is expressed as a percentage of the nominal switching distance (Sn).



Nominal switching distance / Sn /

Sn - nominal switching distance, measured by the help of target, made from steel 37, 1 mm thick, in a form of square with a side equal in length to the diameter of the active surface of the sensor.

Coefficient of correction / k /

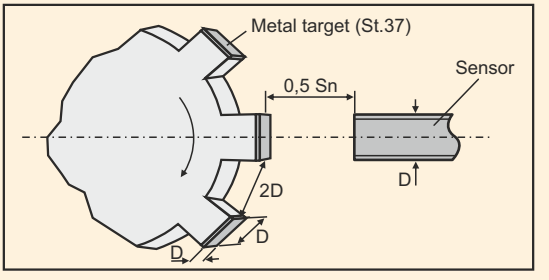
Switching distance S of the inductive proximity sensors varies according to the material of the target.

$$S = k \,.\, Sn$$

Material	k
Steel 37	1.00
Cast iron	1.10
Stainless steel	0.70
Alluminum folio 0.05mm	0.90
Alluminum	0.40
Brass	0.40
Copper	0.30

Maximal switching frequency / f max /

Maximal switching frequency denotes the maximum possible number of switching operations, the sensor can perform per second. The measurement is shown in figure:



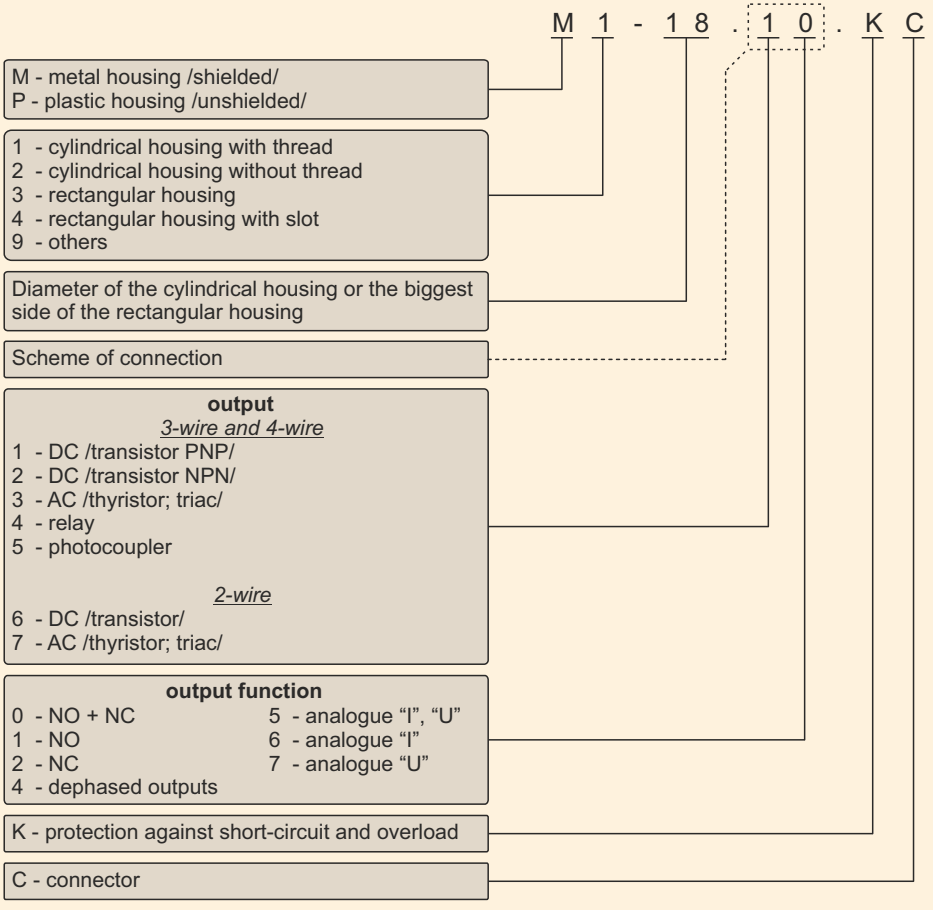
Technical characteristics

Stability to vibrations	10...80Hz / 0,15mm
Stability blow	9,8g
Stability electromagnetic influences	400A/m (50Hz)
Insulation resistance	50MW (1000V)

Technical materials

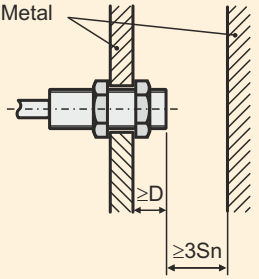
Housing-metallic	CuZn (brass - chromium plated)
Housing-metallic	Al (aluminum)
Housing-plastic	PVC (polyvinyl-chloride)
Sensing surface	PA (polyamide)
Cable shoe	ABS (acrylonitrile butadiene styrene)
Nut-metallic	CuZn (brass - chromium plated)
Nut-plastic	PA (polyamide)
Cable	PVC (polyvinyl-chloride)

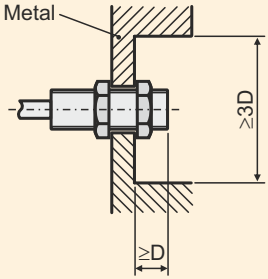
Type designation

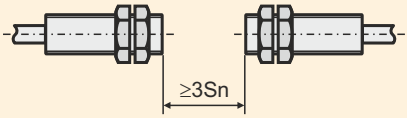


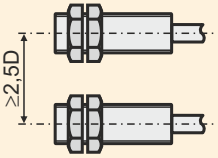
Rules for mounting sensors

A) Unshielded switch (plastic housing)

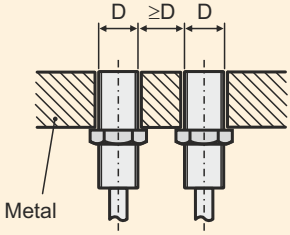


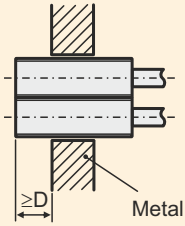


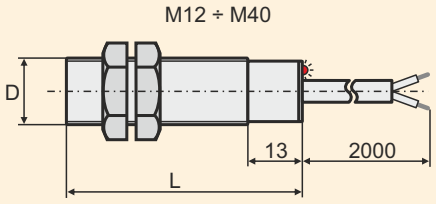




B) Shielded switch (metal housing)





Sn - nominal switching distance
D - diameter of sensor

Overall sizes