

Sensor Glossary of Technical Definitions and Terminology

Active Surface:

Portion of the sensor from which the electromagnetic field radiates.

Analog Output:

The output voltage is proportionately to the distance of the target to the sensor's active surface.

Complementary Outputs (N.O. & N.C.):

A proximity sensor that features both normally open and a normally closed output, which can be used simultaneously.

Correction Factors:

Multiplication factors taking into account variations in the target material composition. When calculating actual sensing distance, this figure should be multiplied by the normal sensing distance, S_n .

Current Sinking: See NPN

Current Sourcing: See PNP

Damping Material:

Material which causes a decrease in the strength of the electromagnetic or electrical field produced by the sensing coil.

Differential Travel: See Hysteresis.

Dynamic Output:

A sensor output that outputs a short pulse of a defined period when a target is detected.

Effective Operating Distance - 'Sr':

The operating distance of an individual proximity switch measured at stated temperature and voltage. It takes into account variations in manufacturing tolerances.

Ferrous Metal: Any metal containing iron.

Flush Mounting:

A shielded or embedded proximity sensor can be flush mounted in metal. It can be surrounded by metal up to the active sensing face.

Hysteresis:

The difference, in percentage (%), of the nominal sensing distance between the operate (switch on) and release point (switch off) when the target is moving away from the sensor's active face. Without sufficient hysteresis a proximity sensor will "chatter" (continuously switch on and off) when there is a significant vibration applied to the target or sensor.

Leakage Current:

Current which flows through the output when the output is in an "off" condition or de-energized.

LED:

Light Emitting Diode used to indicate sensor status.

Load:

A device that consumes power to perform a function.

Maximum Load Current:

The maximum current at which the proximity sensor can be continuously operated.

Minimum Inrush Current:

The maximum current level at which the proximity sensor can be operated for a short period of time.

Minimum Load Current:

The minimum amount of current required by the sensor to maintain reliable operation.

Namur Sensor:

A 2-wire, variable resistance sensor which requires a remote amplifier for operation. Typically used in intrinsically safe applications.

Nominal Sensing Distance:

The distance, S_n , at which an approaching target activates (changes state of) the proximity output. This is also called the rated operating distance.

Non-Ferrous Metal:

Any metal which does not contain iron.

Non-Flush Mounting:

Unshielded, or non-embeddable sensors must have a so called "free zone" around the sensor head, with no non-target metal present to operate satisfactorily.

Normally Closed:

Output opens when an object is detected in the active switching area.

Normally Open:

Output closes when an object is detected in the active switching area.

NPN:

The sensor switches the load to the positive terminal. The load should be connected between the sensor output and positive terminal.

Operating Distance, Assured:

Between 0 and 81% of the rated operating distance for inductive proximity switches. It is specified as S_a .

Operating Distance, Rated:

The operating distance specified by the manufacturer and used as a reference value. Also known as nominal sensing distance, Sn.

Overload Protected:

The ability of a sensor to withstand load currents between continuous load rating and a short circuit condition without any damage.

PNP:

The sensor switches the load to the negative terminal. The load should be connected between the sensor output and negative terminal.

Programmable Output, (N.O. or N.C.):

Output which can be changed from N.O. to N.C. or N.C. to N.O. by way of a switch or jumper wire. Also known as selectable output.

Rated Operating Distance - 'Sn':

Sometimes called nominal operating distance, it does not take into account manufacturing tolerances or variations in temperature or voltage.

Repeatability:

The repeat accuracy of a sensor to detect an object at the same distance away from the active sensing face. It is expressed as a percentage of the sensing distance, or can be calculated as a specific measurement value.

Residual Voltage:

The voltage across the sensor output while energized and switching the maximum load. It is the voltage drop across the sensor.

Response Time: See Switching Frequency

Reverse Polarity Protection:

Proximity sensors which are protected against a reversal in voltage polarity.

Ripple:

The variance between peak-to-peak values in DC voltage. It is expressed as a percentage of rated voltage.

Sensing Face:

A surface of the proximity sensor parallel to the target, from which the operating distance is measured

Shielded:

Sometimes called Flush or Embedded.

Short Circuit Protection:

Sensor protected from damage when a shorted condition exists for an indefinite period of time without change.

Static Output:

A sensor output that stays energized as long as the target is present.

Supply Current:

The current consumed by the proximity switch when the output transistor is in the off condition.

Switching Frequency:

The maximum number of times per second the sensor can change state, (ON and OFF), usually expressed in Hertz (Hz), as measured by DIN EN 50010.

Target:

Object which activates the sensor.

Temperature Drift:

Specification used to indicate the change in switching point caused by temperature variations within a specified ambient temperature range. Expressed as a percentage of the sensing distance.

Useable Operating Distance - 'Su':

The operating distance measured over a voltage range of 85% to 110% of its rated voltage. It allows for manufacturing tolerances.

Voltage Drop:

The maximum voltage drop across a conducting sensor.

Weld Field Immunity (WFI):

The ability of a sensor not to false trigger in the presence of strong electromagnetic fields.

Wire Break Protection:

The output is off if either power supply wire is broken.

SENSOR HOUSING MATERIALS

Plastics:

Trogamid T – Polyamide, used in cylindrical, block and limit style sensors. Hard, rigid, good resistance to chemicals, resists caustic cleaners, approved for food contact.

PBTP:

Polybutelyne terephthalate, used in block sensors and front caps of cylindrical nickel plated brass units. Excellent mechanical strength and temperature resistance. Self-extinguishing and flame retardant. Weld splash proof.

PA6.6:

Polyamid (Nylon), used in limit style sensors. Excellent mechanical strength, temperature resistant, accepted in food industry.

ABS:

Acrylonitrile-Butadiene-Stypol. Used in ring sensors. Impact resistant. Rigid.

PUR:

Polyurethane, used in cables and cable assemblies. Elastic, abrasion proof, impact resistant, unaffected by oil, grease and solvents.

PVC:

Polyvinylchloride, used on cables and cable assemblies. Good mechanical strength, resistant to chemicals.

PTFE – TEFLON:

Used on weld immune cylindrical sensors. Highest resistance to high temperature and chemicals.

METALS:

Brass, Nickel Plated, used on cylindrical sensors. Rugged, resists thread damage. Aluminum, used on block and ring sensors. Lightweight, excellent strength to weight ratio. Resistant to corrosion.