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Frequently Asked Questions

How do inductive proximity switches work?

Inductive proximity switches are used to detect the presence of metallic objects without actually contacting the object. Their high-speed switching and small size make them indispensable in automation applications.

Inductive proximity switches consist of a coil driven by an oscillator. The oscillator creates an electromagnetic field which appears at the active face of the switch. If a metal target enters this area, the electromagnetic field is reduced and the switch turns on or off.

Some typical inductive sensor applications are: counting metallic objects, monitoring the position of elements in a machine, sensing the presence of metallic parts like screws, etc., and measuring the rotational speed of axial detecting cams.

What is the difference between inductive and capacitive sensors?
The primary difference is sensing material. Inductive sensors only detect metallic objects while capacitive sensors will detect materials such as wood, paper, liquids, cardboard, etc.

How do I know what size proximity sensor I need?
It depends on two factors: mounting space and sensing distance. Each application has a specific space available for the sensor and each application has a requirement for how close the sensor can be mounted to the sensed object.

What is the difference between Flush and Non-flush?
With a shielded proximity sensor, the face of the sensor may be mounted flush with metal, whereas an unshielded sensor may NOT be mounted flush with metal (otherwise the sensor will always be ON). In many applications, flush mounting is a requirement. Also, unshielded proximity sensors allow for greater sensing distances.

Semi-flush options, which are similar to shielded sensors in construction, are also available. Semi-flush sensors must have the sensor slightly protruding from the mounting surface.

What output do I need? NPN or PNP?
This is determined by the device you are connecting the sensor to. Most DirectLOGIC PLC modules (except 305 series) allow NPN or PNP sensors to be connected. This is determined by how the sensor is wired to the PLC.

How do I choose between normally open (NO) and normally closed (NC)?
N.O. sensors do not pass power to the PLC until an object is detected. N.C. sensors always pass power to the PLC until an object is detected. The majority of Centsable sensors are N.O.; however, some sensors offer the option of N.C., such as PKW, PMW and CT1 series.

When do I want quick disconnects (Q/D) versus embedded cable output?
There is a slight cost increase to purchase a sensor and a Q/D cable compared to only purchasing a sensor with a pre-attached cable. However, the Q/D output allows easy replacement of a failed sensor. This is important in minimizing machine or operation downtime.

What is the difference between 2-wire, 3-wire, and 4-wire sensors?
2-wire sensors: allows either NPN or PNP outputs (don't have to select).

3-wire sensors: standard sensors. When ordering, you must choose between NPN and PNP output.

4-wire sensors: Allow either N.O. or N.C. outputs (don't have to select). Must still select NPN or PNP output.

Do AutomationDirect supplied sensors operate on AC or DC voltage?
The majority of AutomationDirect supplied sensors operate on 10-30 VDC. However, we do offer the VT1, VK1, VM1, VFT and VFK series that operate on 20-253VAC.

Can my sensor be installed in a washdown area?
Yes. Although most AutomationDirect sensors carry an IP67 protective rating which is suitable for submersion, we do offer units designed for harsh high-pressure cleaning environments. These units include the PFM, PFK, PFT, VFK and VFT series.

What does switching frequency mean to my application?
This is how fast your sensor can sense an object, reset, and sense another object. For example, if a sensor has a switching frequency of 100 Hz or 100 cycles per second, the sensor can sense a maximum of 100 objects per second. This is very critical in many applications such as gear rotation measurement.

Can the sensor be put into a vibrating environment?
Yes. Frequency range of 10-55 Hz, maximum amplitude of 1mm. Duration in any axis a maximum of 30 minutes.

What is the temperature range of the sensors?
Most sensors operate between -25°F and 70°F. However, check the specifications for exact ranges.

If I wire my proximity sensor wrong, will it damage it?
Possibly. All sensors contain polarity reversal, short-circuit and transient noise protection. However, the transient protection is only effective under 30 VDC.