

Proximity Sensor Environmental Considerations



Proximity Sensor Application Notes

Proximity Sensor Environmental Considerations

Several environmental factors should be taken into consideration when choosing or working with a proximity sensor. These various environments can have an impact on how the proximity sensor performs.

Shock and Vibration

Risk factors to consider in high shock and vibration applications include:

- epoxy type
- strain on the wires
- wire size and type
- housing material
- mounting surface
- mounting methods

For assistance in choosing the appropriate materials for optimal performance in your application, please contact HSI Sensing.

Severe shock or vibration can change the magnetic sensitivity of a proximity sensor or render it non-functional. In severe cases, a crack in the glass capsule of the internal reed switch may occur. Dropping a proximity sensor may cause shock damage to the internal reed switch.

See Reed Switch Handling Instructions for additional information.

Thermal

Proximity sensors are manufactured using various housing, wire/cable, potting, and insulating materials. All of these materials have their own performance capabilities in relation to thermal requirements.

Caution must be taken for each application to avoid thermal shock when transitioning from extreme heat to extreme cold. If operating near or above the recommended maximum temperature, power and current ratings should be evaluated. Review proximity sensor specification sheets for recommended storage and operating temperatures.

Magnetic Interference

Proximity sensors are designed to react to a specific magnetic signal, typically from a corresponding actuator. When the presence of another magnetic field enters within the operational range, the response of the proximity sensor can change, causing false operation, false release, or no function. Consideration should be given to the proximity sensor application and surrounding environment to avoid interference by other magnetic sources. Examples of these sources include but not limited to other magnets, coils, motors, weld joints, capacitors, resistors, batteries, and relays.

Ferrous Components

Components containing ferrous materials in the immediate area of the proximity sensor can increase or decrease the magnetic flux required to operate the proximity sensor. These components can interfere with proximity sensor function. Careful consideration should be given to the location of the proximity sensor to avoid interference by other ferrous sources. Examples of these sources include but not limited to resistors, capacitors, inductors, screws, bolts, nuts, brackets, mounting surfaces and housings.

Chemical

Proximity sensors are manufactured using various housing, wire/cable, potting, and insulating materials. All of these materials have their own performance strengths and weaknesses for chemical resistance.

Consideration should be given when choosing appropriate materials for a chemical environment.