How to Select a Proximity Sensor

No. 5B282

No. 5B271

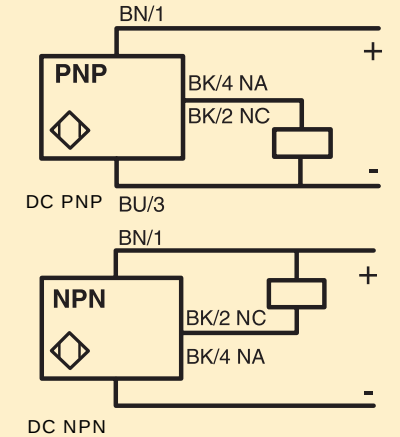
No. 5B292

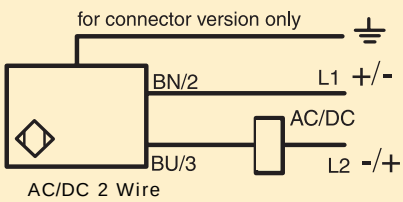
No. 5B291

1. Determine the material that is to be detected:
   A. Inductive sensors are used for ferrous metals (metals that a magnet will stick to).
   B. Capacitive or ultrasonic sensors are used for everything else, including sensing water through glass.
2. Voltage:
   A. AC or DC.
   B. If DC voltage is being used, is the circuit type NPN (sinking) or PNP (sourcing)?
3. Type of sensor—tubular or limit switch body sensor?
   A. If tubular, diameter of sensor in mm (8, 12, 18 or 30).
   B. If limit switch style, head positioning?
4. Shielded or unshielded?
5. Circuit configuration—NO (normally open) or NC (normally closed).
6. Detecting distance in mm.
7. Connection: hardwire or micro connector?
8. Max. load in mA (milliamps).
9. Frequency: the speed at which the switch will operate (counts per second).
10. Ambient temperature.

TIPS AND TOOLS

1. Sensors with SCP (short circuit protection) can withstand a short circuit.
2. LED (light emitting diodes) are used to indicate the function of the sensor.
3. All sensors are solid state devices and need to be tested under load; an ohmmeter will not provide a true reading.
4. Sensors can be wired in series as long as the voltage, divided by the number of sensors, is higher than the minimum voltage rating. 120V/3 sensors = 40V; voltage range for AC sensor is 20-264V.





TERMINOLOGY

Type	AC or DC—the voltage the sensor works in; either on AC (alternating current) or DC (direct current).
Voltage Range	The voltage range within which the sensor will work properly.
Circuit Type	2-wire series connection or 3-wire load output connection (wiring diagram), NPN or PNP.
Shielded vs. Unshielded	Shielded type sensors—detecting object must pass directly in front of sensor (short detecting distances). Unshielded type sensors—detecting object may pass in front of, or on top or bottom side of, sensor (greater detecting distances).
Detecting Distance	The distance in millimeters that the sensor will pick up an object.
Output Mode	NO (normally open) or NC (normally closed).
Temperature Range	The Fahrenheit temperature in which the sensor will operate properly.
Max. Current	The maximum current in milliamps that the sensor can handle.
Operating Frequency	The maximum number of reads a sensor can make per second.
Circuit Protection	Shuts sensor down when current limits are exceeded.
Connection Type	Cable or connector.
Inductive	Detects all types of ferrous metals.
Capacitive	Ideal for sensing nonmetal objects such as glass, plastic, liquids, or bulk solids; or sensing the level control of fluids or granule material.