PNP vs. NPN Sensor Wiring Basics Part 1

PNP and NPN sensors use the same wire colors and labeling convention. The difference is how they electrically interact with the load. The load is a device like a relay or PLC input.

- **Brown is the positive dc voltage, typically +24VDC**
- **Blue is the negative dc voltage, typically -24VDC**
- **Black** is the output to the external load. This will be either "Normally Open" or "Normally Closed"
- **White**, if applicable, is the complementary output of the black wire. Example: If the black wire is "Normally Open," the white wire would be "Normally Closed."

What's the Difference Between PNP and NPN Sensors?

- **PNP = "Positive Switching" or "Sourcing" A "PNP" sensor switches the positive dc signal voltage (+24VDC).**
- **NPN = "Negative Switching" or "Sinking" A "NPN" sensor switches the negative dc signal voltage (-24VDC).**

The black wire of both PNP and NPN sensors is the output. If the sensor includes a fourth white wire, that is also an output wire that is typically the opposite switch state as the black wire. Visit the Maintenance Blog for the full article.