

INDUSTRIAL I/O WIRING CHEAT SHEET

Sinking vs. Sourcing & Sensor Polarities Quick Reference

Valtoris

1. THE GOLDEN RULE: OPPOSITES ATTRACT

If your Sensor is...	It acts as a...	Connect to PLC Input Type:	PLC COM Terminal Must Tie To:
PNP (Pos-Neg-Pos)	Sourcing (+24V Out)	Sinking Module	0V (GND)
NPN (Neg-Pos-Neg)	Sinking (0V Out)	Sourcing Module	+24V DC

2. STANDARD IEC WIRE COLORS

Brown

+24V DC

(Power Supply Positive)

Blue

0V / GND

(Power Supply Negative)

Black

Signal

(To PLC Input Terminal)

*If a White wire is present, it is usually the N.C. (Normally Closed) signal complement to the Black wire (N.O.).

3. QUICK TROUBLESHOOTING

Symptom	Likely Cause & Fix
Sensor LED ON, but PLC reads OFF.	Polarity Mismatch. Check if COM terminal is wired correctly for NPN/PNP.
Sensor will not power on at all.	Reversed Power. Check Brown/Blue wires. Do not reverse (+)/(-).

 **Pro Tip: Handling Mixed Polarities & System Expansions**

Wiring a mix of NPN and PNP sensors to a standard fixed-polarity PLC card usually causes a direct short on the shared COM terminal. Instead of soldering resistor hacks or building complex intermediate relay panels, modern architectures use **Universal Edge I/O nodes (like the Valtoris 8CH-IO Series)**. These allow you to seamlessly mix NPN, PNP, and Dry Contacts on the same module using a Universal COM, and let you invert NO/NC logic directly via software without rewriting any PLC ladder logic.