

PLC Commissioning Checklist (Quick Start)

Use this checklist to commission sensors and signals reliably during new installs, upgrades, or troubleshooting. Designed for industrial automation environments.

Project Details

Site / Plant: _____

Line / Machine: _____

PLC Make / Model: _____

Date: _____ Technician: _____

1) Pre-Commissioning (Before Power-On)

- ☐ Confirm I/O list and tag naming matches the drawings and PLC program.
- ☐ Verify device selection matches application (sensor type, range, IP rating).
- ☐ Check mounting: alignment, clearance, bracket rigidity, target stability.
- ☐ Verify cable routing: sensor cables separated from VFD/motor/power runs.
- ☐ Confirm connectors/pinouts (M8/M12) and strain relief at all terminations.
- ☐ Confirm earthing/bonding and cabinet 0V reference integrity.

2) Power & Wiring Verification

- ☐ Measure sensor supply voltage at the device (e.g., 24VDC present under load).
- ☐ Confirm polarity (+24V/0V) and correct wire colors to terminals (do not assume).
- ☐ Validate PNP vs NPN output type and PLC input type (sourcing/sinking).
- ☐ Check input commons (COM/0V) are correctly wired for the input group.
- ☐ For mechanical devices (limit switches), confirm NO/NC wiring matches logic.

3) PLC Input Checks (Digital)

- ☐ Confirm PLC input state changes when the sensor is actuated (watch online).
- ☐ If sensor LED changes but PLC doesn't: test continuity, pinout, COM reference, PNP/NPN mismatch.
- ☐ Set appropriate input filter/debounce (avoid over-filtering fast signals).
- ☐ Check for flicker/ghosting inputs (noise): re-route, shield, ground, add filtering as needed.

4) Analogue Commissioning (4–20mA / 0–10V)

- ☐ Confirm sensor output type (4–20mA vs 0–10V) and PLC channel configuration matches.
- ☐ Set correct engineering scaling in PLC/HMI (range, units, decimals).
- ☐ Validate reading with a known reference (simulator, calibration source, or process benchmark).
- ☐ Check for stable readings; investigate noise/ground loops if values drift or jump.
- ☐ Document final scaling parameters and alarm thresholds.

5) Pulse / Speed / Encoder Commissioning

- ☐ Confirm pulse frequency and choose correct input type (HSC vs standard DI).
- ☐ Verify encoder/speed sensor output type (e.g., TTL/HTL) is compatible with input module.
- ☐ Validate counting direction, reset conditions, and rollover behaviour.
- ☐ Check for missed pulses at max speed; adjust wiring/shielding/filtering as needed.
- ☐ Log test results: RPM/rate/counter totals at known speeds.

6) Functional Tests (End-to-End)

- ☐ Run dry-cycle tests at low speed first; confirm safe state behaviour.
- ☐ Test all interlocks, E-stops, guards, and limit switch confirmations.
- ☐ Verify sequence logic: sensor events occur in expected order (time stamps if possible).
- ☐ Confirm all operator messages/alarms are correct and actionable.
- ☐ Validate data logging/SCADA tags (if used).

7) Handover & Documentation

- ☐ Capture photos of installations and cabinet terminations for reference.
- ☐ Record final sensor models, output types (PNP/NPN/4–20mA/0–10V/pulse), and IP ratings.
- ☐ Save PLC backup and version notes; store wiring diagrams and I/O list updates.
- ☐ Create a quick troubleshooting guide: common faults + who to contact.
- ☐ Confirm spare parts list (common sensors, connectors, cables) for downtime reduction.

Quick Escalation Data (If Issues Persist)

Sensor model + output type: _____

PLC make/model + input module type: _____

Wiring photo(s) taken? ☐ Yes ☐ No

Environment: ☐ Dust ☐ Washdown ☐ Vibration ☐ Heat ☐ Chemicals

Symptom: ☐ Never triggers ☐ Intermittent ☐ Flickers ☐ Wrong value

Need a compatibility check? Share the details above with your technical supplier for a fast recommendation.