

Control Panel Design Checklist

A practical pre-release checklist for industrial control panel design

Project:	Panel/Assembly:	Designer:	Date:

How to use this checklist: Complete each section before releasing drawings for build, customer review, or final issue. Add notes for any item intentionally left open.

1. PROJECT KICKOFF AND DESIGN INPUTS

- ☐ Confirm project scope, customer specifications, deliverables, and revision requirements.
- ☐ Identify applicable standards such as NEC, UL 508A, NFPA 79, customer standards, and site-specific rules.
- ☐ Confirm incoming voltage, phase, frequency, available fault current, and control voltage requirements.
- ☐ Review I/O list, network architecture, device list, motor list, and process sequence before schematic work begins.
- ☐ Identify long-lead components and any parts that must be ordered before the full design is complete.

2. POWER DISTRIBUTION AND PROTECTION

- ☐ Verify main disconnect type, handle location, door interlock requirements, and service entrance requirements if applicable.
- ☐ Size branch protection for each load using component data, code requirements, and manufacturer instructions.
- ☐ Confirm transformer, power supply, and control circuit protection sizing.
- ☐ Separate power, control, and communications circuits where required for safety and noise reduction.
- ☐ Document load calculations and confirm the panel full-load current or supply current rating.

3. SCCR AND COMPONENT RATINGS

- ☐ Confirm the required panel SCCR based on the installation location and available fault current.
- ☐ Verify SCCR ratings for feeder components, branch components, terminal blocks, power distribution blocks, and supplementary devices.
- ☐ Apply current-limiting fuse or circuit breaker rules only where component combinations are valid and documented.
- ☐ Confirm component voltage ratings meet or exceed the panel voltage and circuit voltage.
- ☐ Record the final panel SCCR on the nameplate and in the drawing package.

4. ENCLOSURE, LAYOUT, AND THERMAL REVIEW

- ☐ Confirm enclosure type rating, material, size, mounting style, and environmental requirements.
- ☐ Check component spacing, bend radius, wire duct fill, maintenance clearance, and access to adjustable devices.
- ☐ Keep high-heat devices, drives, braking resistors, and power supplies located with adequate ventilation.
- ☐ Verify panel cooling, heating, fans, filters, or air conditioning requirements when heat load is significant.
- ☐ Confirm field wiring entry points, gland plate space, and terminal accessibility.

5. WIRING, LABELING, AND IDENTIFICATION

- ☐ Apply the company wire color standard consistently across power, control, DC, neutral, ground, and foreign-voltage circuits.
- ☐ Verify wire sizes, insulation ratings, terminal ratings, and ferrule or lug requirements.
- ☐ Assign clear wire numbers, device tags, terminal numbers, cable IDs, and network labels.

- [] Confirm field terminals are grouped logically and match the installation workflow.
- [] Check that spare terminals, spare I/O, and future expansion space are included where required.

6. SAFETY AND MAINTAINABILITY

- [] Confirm emergency stop, safety relay, safety PLC, and guard interlock circuits match the required safety design.
- [] Verify grounding and bonding details for enclosure, subpanel, doors, shields, transformers, and power supplies.
- [] Confirm arc flash, shock, warning, and disconnect labels are included where required.
- [] Place frequently accessed components where technicians can service them safely and efficiently.
- [] Review lockout/tagout and stored-energy considerations, including VFDs, capacitors, and pneumatic or hydraulic interfaces.

7. DRAWING PACKAGE REVIEW

- [] Check cover sheet, drawing index, revision history, title blocks, project numbers, and customer information.
- [] Verify schematics, panel layout, bill of materials, nameplate list, wire list, cable list, and terminal plans are consistent.
- [] Cross-check device tags between schematics, layout, BOM, PLC I/O, and field wiring pages.
- [] Review page-to-page references, source/destination arrows, signal references, and terminal cross-references.
- [] Confirm all redlines, customer comments, and internal review comments have been resolved.

8. RELEASE AND SHOP HANDOFF

- [] Perform a final peer review before releasing the drawing package to the panel shop or customer.
- [] Confirm the released BOM matches the current design and purchasing requirements.
- [] Include build notes for special assembly details, custom labels, torque requirements, and unusual wiring methods.
- [] Confirm the release package includes all files required by the shop, customer, and internal project team.
- [] Record release date, revision, reviewer, and any open items or assumptions.

FINAL SIGN-OFF

Designer:	Date:	Reviewer:	Date:
Open items / assumptions:			