

Instrumentation Display Design Checklist

10 customer questions to de-risk displays for measurement, monitoring, diagnostics, and control instruments

How to use the checklist

For each question, capture the application context, the display requirement, the acceptance evidence, and any residual risk. Escalate any unknown response where the display affects safety, uptime, operator decision-making, regulatory evidence, or customer experience. Escalate any unknown response where the display affects measurement interpretation, calibration decisions, alarms, limits, or operator intervention.

#	Customer design question	Why this matters	Evidence to request / acceptance criteria	Status / notes
1	What measured values, units, limits, and trends must the display communicate?	Instrumentation screens must prevent misreading of values, units, scale, and state.	Data hierarchy; unit and decimal rules; trend/graph requirements; critical threshold review.	OK / Gap / N/A
2	What accuracy perception risks exist: resolution, contrast, flicker, colour, or scaling?	The display should not imply false precision or obscure measurement changes.	Typography rules; graph scaling rules; contrast target; flicker and update-rate validation.	OK / Gap / N/A
3	What operating environment affects readability and touch performance?	Instruments may be used in labs, plants, vehicles, field cases, or dim control rooms.	Environment statement; brightness/dimming target; viewing-angle test; glove/wet/contamination assumptions.	OK / Gap / N/A
4	What display interface and embedded control architecture is required?	Module, interface board, panel PC, or smart UART selection affects complexity and lifecycle.	Architecture diagram; interface specification; firmware/driver support; boot and update behaviour.	OK / Gap / N/A
5	How will alarms, warnings, and out-of-range conditions be prioritised?	Measurement HMIs must make abnormal states obvious without hiding the data context.	Alarm philosophy; colour-independent status coding; acknowledgement logic; event log requirement.	OK / Gap / N/A
6	What calibration, service, and diagnostic functions need display support?	Technicians need controlled access without exposing normal users to risky settings.	Service-mode design; password/access rules; calibration workflow; diagnostic screen specification.	OK / Gap / N/A
7	What enclosure, mounting, and front-panel constraints apply?	Instrument bezels, apertures, membranes, and controls must be designed as a system.	Front-panel drawing; aperture tolerance; sealing strategy; connector and cable-clearance review.	OK / Gap / N/A
8	What lifecycle and supply-continuity expectations apply?	Instrumentation products often remain in production and service for many years.	Panel lifecycle plan; PCN/EOL process; equivalent display strategy; documentation for replacements.	OK / Gap / N/A
9	How will faults, stale readings, or communication loss be shown?	A frozen value can be more dangerous than a blank display.	Stale-data indication; communication-loss state; watchdog behaviour; fail-safe message review.	OK / Gap / N/A
10	What verification confirms the display supports valid measurement use?	Validation must include representative values, limits, and abnormal states.	Requirements traceability; readability tests; alarm tests; calibration/service workflow validation; production inspection plan.	OK / Gap / N/A

Recommended review outputs

- Display subsystem requirements specification: optical, mechanical, electrical, environmental, touch, software-interface, mounting, and lifecycle requirements.
- Risk and application traceability: each display-related risk or customer-experience issue linked to a design control and verification method.
- Evidence pack: drawings, interface specifications, environmental assumptions, test reports, supplier declarations, support/lifecycle plan, and controlled change documentation.

Reference prompts for the project team

- Confirm all customer, site, and regulatory requirements before final specification or quotation.
- Define testable acceptance criteria for every requirement that affects readability, touch operation, reliability, safety, or maintainability.
- Record any assumptions on duty cycle, lighting, environmental exposure, mounting, electrical interfaces, content, and long-term availability.
- Review the final display selection jointly with mechanical, electrical, software, operations, service, and commercial stakeholders.

Use this checklist for control-room, field, kiosk, monitoring, inspection, and process-interface displays in oil, gas, and energy applications. This is a practical customer-discovery guide. Its is not a substitute for project-specific engineering, safety, legal, or compliance assessment, in conjunction with discussion with CDS engineers and/or technical sales team.

For more information or to discuss your project and requirements please contact our technical sales team.