

Marine and Defence 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 supports navigation, targeting, communications, command decisions, or mission-critical status.

#	Customer design question	Why this matters	Evidence to request / acceptance criteria	Status / notes
1	What mission or vessel task does the display support, and what is the consequence of misinterpretation?	Critical screens may drive navigation, command, surveillance, or system-status decisions.	Operational scenario; critical information list; hazard analysis; human factors review for each high-risk screen.	OK / Gap / N/A
2	What environmental envelope is required for salt fog, humidity, rain, shock, vibration, and temperature?	Marine and defence applications expose displays to combined stresses that consumer or light-industrial units cannot tolerate.	Environmental profile; IP rating; vibration/shock requirement; corrosion and salt-fog assumptions; test evidence.	OK / Gap / N/A
3	Is sunlight readability, night operation, or NVIS compatibility required?	Displays may need high brightness by day and controlled luminance by night without compromising operator adaptation.	Brightness and dimming range; contrast target; anti-reflective treatment; night-mode/NVIS requirement where applicable.	OK / Gap / N/A
4	What EMC, ESD, grounding, and power-transient conditions must be designed around?	Vehicle and vessel electrical systems can introduce noise, surge, and grounding challenges.	Power input specification; EMC test plan; bonding/grounding design; cable shielding; surge and transient assumptions.	OK / Gap / N/A
5	What touch or control method works with gloves, wet surfaces, vibration, and operator stress?	Mission users may need reliable input in motion, in poor weather, or while wearing PPE.	Glove/wet-touch test; physical key requirement; debounce logic; accidental activation prevention.	OK / Gap / N/A
6	What mechanical constraints apply: mounting, sealing, connectors, weight, and serviceability?	Rugged integration depends on connector selection, sealing geometry, and field maintainability.	Installation drawing; connector/IP strategy; mounting load review; line replaceable unit approach; service access.	OK / Gap / N/A
7	What cybersecurity, data, and interface boundaries affect the display or panel PC?	Connected displays and embedded computers can become system attack surfaces.	Interface map; OS and firmware control; secure update method; port lockdown; customer security requirements.	OK / Gap / N/A
8	How will image quality remain stable under long duty cycles and temperature cycling?	Backlight drift, condensation, optical bonding, and thermal stress can degrade field readability.	Thermal analysis; condensation mitigation; optical stack rationale; backlight life and derating evidence.	OK / Gap / N/A
9	What logistics and lifecycle support are needed for long programmes?	Defence and marine programmes often need controlled revisions, documentation, spares, and repeatable builds.	Configuration control plan; PCN/EOL process; spares and repair plan; serialisation; documentation pack.	OK / Gap / N/A
10	What qualification and acceptance evidence is required before deployment?	Acceptance often requires more than functional display tests.	Qualification matrix; environmental and EMC evidence; inspection plan; FAT/SAT; customer sign-off criteria.	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.