



INSTALLATION AND OPERATING MANUAL

STAINLESS STEEL ELECTRICAL ENCLOSURES (SS1 & SS2 RANGE)

v1.0



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GENERAL INFORMATION

1. Introduction

This manual provides detailed instructions for the safe installation, operation, and maintenance of IP Enclosures' stainless steel electrical enclosures. These enclosures are designed for high durability and superior resistance in harsh, corrosive, and coastal environments, while protecting electrical, control, and instrumentation equipment from water, dust, mechanical impact, and corrosive agents.

2. Safety Information

- Only qualified personnel should install, service, or maintain the enclosures.
- Follow all relevant local and national electrical and safety codes.
- Before performing any work, disconnect all power and ensure lock-out/tag-out procedures are applied.
- Use PPE: gloves, eye protection, protective clothing as needed.
- Avoid contact with sharp edges; stainless edges may be sharp.
- Secure all doors, seals, and locks before energisation.

3. Product Description

- Grades: 304L and 316L stainless steel. Grade 316/316L is preferred in marine or chloride-rich environments.
- Protection Ratings: Up to IP66 for SS1 range; IK10 impact resistance. SS2 range is IP55.
- Construction:
 - Body & door: 1.5 mm stainless steel (304L or 316L) with flat face sealing surfaces.
 - Brushed finish (~0.4 micron Ra) surface.
 - Device mounting plate: 1.5 mm galvanised steel sheet, pressed for strength.
 - Seals: Full-perimeter machine-applied polyurethane foam-in-place (FIP), temperature-rated -40°C to +80°C (short-term up to ~160°C).
 - Door hinges: Concealed removable hinges with captive pins; ~110° opening angle.
 - Earth stud: M6 stainless steel. Cable management rails; blind nuts for accessory mounting.
- Standards & Certification: IEC/EN 62208, IEC/EN 61439, IEC/EN/AS 60529; CE, UKCA, RoHS; independent laboratory testing.

4. Handling, Storage & Transport

- Store in a dry, clean environment; protect from moisture, dust, salts or pollutants.
- Handle separately from carbon steel items to avoid cross-contamination.
- Use soft slings, foam padding, or coated hooks when lifting. Avoid dragging enclosures across abrasive surfaces.
- Protect surfaces from damage via forklift tines, strapping, etc. Use protective wrapping if possible.
- Avoid contact with tools, particles, or filings from carbon steel.

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5. Pre-Installation Checks

- Inspect for any damage: dents, scratches, or abrasions that might compromise corrosion resistance.
- Verify correct grade (304L vs 316L) depending on environment. If marine/coastal or exposed to chlorides, 316/316L is advisable.
- Confirm enclosure rating (IP66, IP55 etc.), door type (single/double), lock type, and accessory fit.
- Clean sealing surfaces and gaskets of any shipping residue.
- Ensure mounting locations are structurally capable and allow full door opening (~110°), correct clearance, and protection from direct exposure where possible.

6. Installation Instructions

- Use appropriate fixings (anchors, bolts) rated to support the enclosure plus equipment load.
- Mount enclosure so that water does not pool: avoid flat tops if possible, or use sloping roofs / rain hoods.
- Fit earth connections (body, door, device plate) with M6 earth studs as supplied.
- Use appropriate fasteners that are stainless steel to avoid galvanic corrosion. Lubrication or anti-seize may be needed to avoid galling.

7. Wiring & Grounding

- Wiring must be done by qualified personnel, following local/national grounding and wiring regulations.
- Use cable glands appropriate for size, sealing, and material compatibility.
- Provide strain relief.
- Bond door, body, and mounting plates to earth for electrical and safety continuity.
- Check earth continuity before energizing.

8. Material Selection & Environmental Considerations

- Grade Selection:
 - 304/304L: good for general industrial, indoor, mild outdoor.
 - 316/316L: for marine/coastal, offshore, or harsh chemical exposure.
- Galvanic Corrosion & Cross-Contamination:
 - Avoid mixing dissimilar metals in contact or in presence of moisture. Use insulating washers or coatings if needed.
 - Prevent contamination by carbon steel particles or tools. Clean or isolate clean stainless steel area.
- Tea Staining: Superficial rust discoloration caused by salt deposits; does not affect structural integrity but detracts visually. Prevented via correct grade, finish, cleaning, drainage, and sheltering.

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9. Routine Maintenance

Items	Action	Frequency
Exterior surfaces	Inspect for signs of discolouration, stains, pitting or corrosion	Coastal / Marine: every 1-3 months; Industrial: every 3 months; Mild / Indoor: annually
Seals & gasket areas	Clean, inspect for damage, replace if cracked or deteriorated	Semi-annual
Doors, hinges, locks	Clean, check operation; lubricate stainless fasteners as needed to prevent galling	Semi-annual
Earth / bond connections	Inspect, ensure continuity and clean contact surfaces	Annual
Cable entries / glands	Check sealing, cleanliness, tighten if necessary	Semi-annual
Surface finish	Remove bird droppings, salt deposits, chemical splashes promptly	As needed, but particularly after storms or high exposure
Fasteners	Check for corrosion or seizure; use anti-seize; avoid overtightening	Annual
Internal cleanliness	Remove dust, debris to avoid trap-pockets for moisture or chemicals	Semi-annual

10. Care of Stainless Steel Finish

10.1 Cleaning Method:

- Use warm water with mild, non-abrasive detergent.
- Wipe along the grain using soft cloth or sponge.
- Rinse thoroughly with clean or deionised water.
- Dry with soft microfiber cloth to avoid water spots.

10.2 Avoid:

- Steel wool, wire brushes, harsh or chloride-based acids (e.g. hydrochloric acid).
- Abrasive pads or cleaning agents with insoluble particles.
- Reused cloths contaminated with carbon steel particles.

10.3 Passivation:

- If tea-staining or discolouration appears, clean and passivate using a citric acid-based solution to restore the chromium oxide surface layer.

10.4 Fasteners & Galling:

- Use stainless fasteners; apply anti-seize on threads; avoid overtightening.

10.5 Drainage & Exposure Control:

- Use roofs or shields to prevent standing water.
- Ensure enclosure design allows for water to run off and not collect around seals.
- Minimise exposure to salt spray or airborne chemicals.

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11. Troubleshooting

Issue	Possible Cause	Remedy
Surface rust or pitting (especially near edges)	Exposure to chlorides; damaged finish; cross-contamination from steel particles	Clean area, passivate, repair; ensure correct grade; eliminate contamination source
Tea-staining / Brown discoloration	Salt deposits + moisture + inadequate cleaning	Clean, passivate; increase cleaning frequency; use shelters or rain hoods
Lock or hinge seizure (galling)	Stainless fasteners rubbing, overtightening, no lubrication	Use anti-seize; choose correct fastener grade; avoid overtightening; lubricate
Water ingress	Seal damage, misalignment, flat top pooling water	Realign door, replace seals; ensure drainage and sloping roof where applicable
Discoloration after chemicals exposure	Use of harsh or incompatible cleaning agents	Use compatible cleaners; rinse thoroughly; damage may require professional restoration

12. Disposal & End of Life

- Stainless steel is highly recyclable; separate metals by type for recycling.
- Gaskets, seals, plastics should be disposed of per local environmental regulation.
- Packaging materials (cardboard, foam, plastics) should be recycled responsibly.

13. Warranty & Support

- Warranty: 5 years from delivery for defects in materials or workmanship.
- Does not cover damage from misuse, improper installation, lack of maintenance, chemical abuse, or cross-contamination.
- Support: Provide enclosure grade, model number, serial (if applicable), purchase date, and photos of the issue.
- Contact IP Enclosures through their official channels or local sales agents as listed.