

Main Switchboards / Motor Control Centres

General

The main switchboard / MCC shall be of a free standing, fully modular type system, IPD Elsteel Techno or equivalent and comply with the requirements of AS/NZS3439.1:2002. The system should also comply with Design Verification Tests as required by IEC61439-1 & 2 standards Ed 2 with tests done to include at least two brands of switchgear devices.

Construction

Switchboards shall be of the Form xx[^] construction (specify Form of segregation Form 3a, Form 3b, Form 4a, Form 4b). A test report from an independent testing authority shall be provided to prove the internal separation in accordance with clause 8.2.7 of AS/NZS 3439.1.2002. The use of insulation or housing of devices as a form of segregation will not be accepted.

The degree of protection shall be IP55 as defined in AS60529-2004. Where louvered covers are used the degree of protection shall be a minimum of IP43.

Structure & Framework

The main framework shall be made of minimum 2mm electro-galvanised sheet steel. The structural members of the framework shall be screwed together to ensure rigidity and earth continuity. The structural parts, doors, covers, mounting plates and other internal parts shall all be of the modular type with dimensions in multiples of a minimum of 200mm. Modular construction shall facilitate the ease of any future extensions and/or modifications. All structural components and cladding shall be of the proprietary type.

Where back to back switchboards are needed, the depth framework shall be constructed using continuous members.

The maximum height of the framework (including plinth) shall be no more than 2300mm above finished floor level. The plinth shall be a minimum of 100mm in height. The plinth profiles shall include pre-punched holes to facilitate lifting of the switchboard.

Cable zones with cable holders shall be provided for every outgoing functional unit tier. Switchboards shall be suitable for bottom or top cable entry as required. Gland plates shall be of the modular type for ease of cabling. Non-ferrous gland plates shall be used where applicable.

Internal Assembly

Internal separation shall be made up of standard metallic plates and shall provide IP2X protection.

Outgoing functional unit compartments up to 600mm high shall be made up of pre-fabricated mild steel plates folded to form the cell. Individual cell heights may be in increments of 100mm in widths of 400mm or 600mm as required. The side plates of the

functional unit compartments shall include holes for ventilation. Ventilation holes shall also be provided on the side panels and barriers housing the main incoming device of the switchboard.

Equipment mounting plates shall be at least 2mm thick.

Arcing Fault Containment

Outgoing functional units up to 630A shall be tested for internal arcing-fault containment in accordance with AS3439.1.2002 Annex ZD standard test at a prospective fault level of 63kA. Explosion vents shall be provided at the top of the switchboard. In addition to this, the busbar chamber shall also be certified to contain an arcing fault at a prospective fault level of at least 63kA for a duration of not less than 110ms.

External Doors & Covers

Doors and covers shall be a minimum of 1.5mm thick. They shall include permanently formed continuous gaskets made of high grade polyurethane to provide firm surface contact and sealing. Clip on or screw on gaskets shall not be accepted. Doors shall include concealed hinges made of aluminium with a choice of locks and handles. Doors may be hinged left or right. Door stays shall be used where necessary. Door stiffeners shall be used on all doors larger than 800mm width x 1600mm height.

Covers shall have a minimum of 4 fixing points with the fixing screws and washers held captive. Covers 1800mm high and above shall be provided with hanging brackets.

Metalwork Pre-Treatment & Colour

All metalwork shall go through a rigorous pre-treatment process before powder coating. The framework, doors and covers shall be epoxy polyester powder coated in a smooth Grey RAL7032 finish (optional Orange RAL2000). All internal separation plates, equipment mounting plates and compartments shall be powder coated white.

Busbars#

Busbars shall be of rectangular cross section HDHC copper and be at least of 2 bars per phase arrangement. The main busbar shall be fully rated with the rating the same throughout the entire length of the switchboard. The neutral bar shall be of the same current rating as that of the main busbar. The busbar system shall be designed to withstand a short circuit current of xxxkA for 1s.

Vertical and main busbars shall be joined by standard manufacturer's connectors to ensure integrity of the rating and connection.

Option – Insulated Busbars

Busbars shall be of rectangular cross section HDHC copper. The main busbar shall be fully rated with the rating the same throughout the entire length of the switchboard. The busbar system shall be designed to withstand a short circuit current of xxxkA for 1s.

Busbars shall be fully insulated. The insulation shall be of high quality heat shrink, flame retardant, self-extinguishing and rated for operating temperatures up to 125°C.

Tests & Checks



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Routine tests shall be conducted on the switchboard in accordance with clause 8.3 of the AS standards. Visual, mechanical and electrical checks shall be completed as specified by the manufacturer of the modular system. A certificate confirming competency in the assembly of the system shall be provided.

CUSTOMER SERVICE, SALES & TECHNICAL SUPPORT

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