

## Mardix LV Switchgear Technical Specification

### Enclosure

Mardix LV switchboards comprise one or more vertically mounted sections. The sections are generally slab mounted, however, options for mounting on underfloor/raised plinths can be accommodated.

Our enclosures are formed from individually folded panels of Zintec sheet steel, which are fully welded and ground to provide clean lines and maximum rigidity. The Mardix high integrity earth bond is standard.

An integral 150mm plinth is then welded to the base of the cubicle to provide a solid support channel which enables the switchboard to be mounted on a separate underfloor plinth.

Enclosure finish: Cabinets and doors are powder coated with RAL colours or BS4800 colours with a smooth finish whilst internal compartments feature RAL 9003 (white) with a ripple finish.

Ingress Protection ratings (IP rating) is IP31 as standard. Higher ratings are available.

### Access & Cableways

Switchboards can be front access only, when mounted against a wall, or front and rear access where space allows.

Cable access is usually via the top or bottom and transition glanding boxes can be used should cables be routed perpendicular to the vertical face of the switchboard. Front and rear cableways are used to secure and route all customer cables.

### Forms of Separation

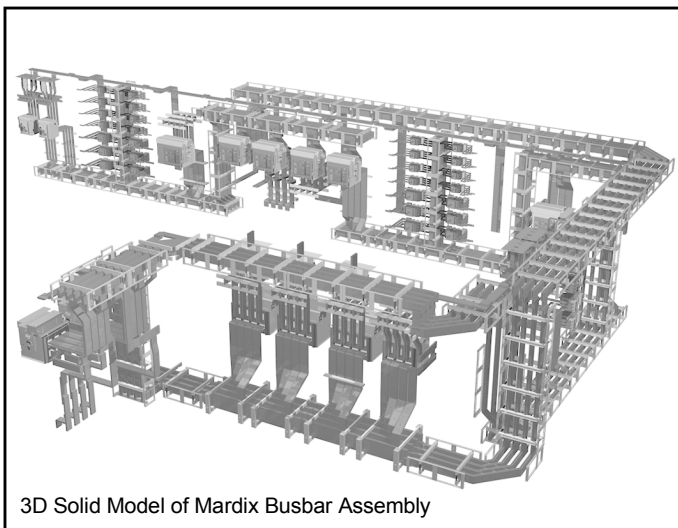
Each functional unit is, in general, separated from each other. By opening the door of the respective functional unit e.g. an ACB compartment, it isn't possible to inadvertently touch live parts. All exposed live parts are shrouded using proprietary or custom-made shrouds. Separation will be achieved in accordance with IEC 61439. The exact Form of Separation e.g. Form 4 Type 2, Form 4 Type 6 will be as specified.

Separation will generally meet the following conditions:

- Protection against contact with live parts belonging to adjacent functional units
- Limitation of the probability of initiating arc faults
- Protection against the passing of solid foreign objects from one function unit to another
- Mardix internal separation will generally be achieved using rigid metallic barriers. Unless otherwise specified, busbars will be separated from functional units

### Busbars, Fault Ratings & Connections

Using our unique ventilation duct system, Mardix busbar assemblies are naturally cooled and ASTA certified up to 6300 Amperes. Forced cooling is not required in any of our mains incoming sections.



A wide range of current and fault ratings are available including 1250A (50kA for 1sec), 4000A (80kA for 1sec) and 6300A (100kA for 1sec).

Busbars are air insulated. The neutral busbars have the same rating and cross sectional area as respective phase busbars.

Individual riser busbars are suitably sized for the devices they serve, but are not necessary of the same rating as the main busbars.

Busbars can be extendable at the ends of the switchboard in order to facilitate easy installation of future cubicle extension sections.

Busbars are clad along their entire length. It is not possible to come into contact with the busbars by opening any compartment doors, including busbar sections.

Tap-off connections from the main busbars to individual circuit breakers (up to 630A rating) are manufactured using insulated flexible copper links. This reduces the risk of short circuit at points on the busbar system that may be prone to high short circuit currents.

All power connection points, including busbar joints are tightened to the correct torque in accordance with Mardix double marking standards.

### Thermal Imaging

Thermal imaging ports are punched directly into the steel doors using CNC cluster punching. The ports are fitted with sliding captive covers, fixed and sealed to the door by security screws. A special tool is required to open the port.

Polycarbonate custom-made shrouds are fitted over all connection points to prevent inadvertent touching of any live parts and to facilitate safe thermal imaging.

### Devices

All major brands of Air Circuit Breakers (ACBs), Moulded Case Circuit Breakers (MCCBs) and Fuse Switches can be incorporated into our LV switchboards, including Schneider, Terasaki, ABB and Socomec. ASTA testing has been successfully conducted on various arrangements of devices including stacking of 3200A ACBs and high density mounting of MCCBs.

### Power Quality

Integration of tuned and detuned power factor correction (PFC) and active harmonic filters (AHFs) can be incorporated into our LV switchboards. PFC is suitably sized for the application and then mounted into the switchboard suite along with the associated Current Transformers (CTs) and control relays.

AHFs are used to mitigate harmonics in the electrical system and are sized according to the harmonic content generated. Care must be taken when selecting both PFC and AHFs in the same LV switchboard. Detuned PFC with reactors must be used in this case. Although most PFC and AHF are integrally mounted, standalone units are available to mount remotely from the LV switchboard.

### Metering, Control & BMS

Usually housed in its own section within the LV switchboard the following can be incorporated:

- High end power quality metering systems such as Schneider Powerlogic ION7650 & ION7550
- Multi function metering such as Socomec, Schneider & Autometers
- Specialist Protection Relays e.g. Restricted Earth Fault Relays & G59 protection
- LED indicators
- Pushbuttons & Keyswitches
- Transformer Temperature Relays
- Electronic Surge Protection
- Relays & Protection Fuses as applicable
- BMS & Control Terminals

### Discrimination Studies

On large projects Mardix often play a key role in the coordination of the complete electrical system including the HV elements right through to the final LV distribution boards. Our technical support team have extensive experience dealing with selection and discrimination of devices. Please call us for more information Tel 01539 720161.