# Vertiv™ PowerBoard Low Voltage Switchgear

The most compact type-tested switchgear assemblies in Europe

## Overview

Vertiv™ PowerBoard Low Voltage Switchgear range offers a fully customisable solution that improves efficiency, saves space, and enhances operator safety.

The Vertiv™ PowerBoard Low Voltage Switchgear is engineered with influence from our proven IEC 61439 technology that has been fully ASTA Tested and certified.

- Full customization and design flexibility
- Type tested arc proof busbar systems
- Enclosure Rated IP31- IP54
- Available from 800A – 6300A
- IEC Forms of Separation available including Form 4 Types 2, 5, 6 & 7 (where necessary)
- Integration of TVSS, PQM's, Protective Relays and Controls based on site specific needs
- Incorporation of life safety protection relays and interlocks
- Components from all leading manufacturers in fixed, withdrawable or plug-in configurations
- Reduced footprint modular design
- We possess the capability to seamlessly integrate Vertiv PowerBoard Low Voltage Switchgear solution with EMS/ BMS offerings and coordinate our Busbar Trunking solution in-house, guaranteeing adherence to customer specifications

*Vertiv manufactures the most compact type tested Powerboard Low Voltage (LV) Switchgear assemblies on the market. All Vertiv™ PowerBoard Low Voltage Switchgear is custom built using a modular design that can be configured to suit site requirements.*

In house metalwork fabrication and paintwork facilities ensure that Vertiv can deliver on time solutions.

### Standards and Certifications

The complete Vertiv PowerBoard Low Voltage Switchgear range is fully ASTA Tested and certified. It is manufactured within a certified management system environment where Quality ISO 9001, Safety OHSAS 18001 and Environmental ISO 14001 standards are applied to all aspects of the manufacturing and installation processes. The equipment is manufactured in accordance with IEC61439.

### ASTA Certificates

Have completed extensive testing at ASTA and KEMA accredited laboratories to ensure the products supplied meet the international requirements.

### Seismic Compliance

Independently tested to meet BS EN 60068-3-3 providing seismic protection in all zones including nuclear facilities.

## Safety

An extensive range of safety protection relays and interlocks can be integrated to meet the requirements of any client specification with features including remote operation of the circuit breaker, protective earth and neutral bars and arc fault containment. For maximum protection, IEC Forms of Separation available including Form 4 Types 2, 5, 6 & 7 (where necessary).

## Reliability

Designed for uninterrupted performance in mission critical environments. Vertiv PowerBoard Low Voltage Switchgear assemblies can be integrated with bespoke energy monitoring and control solutions to detect and eliminate potential faults before they occur. Seismic certification also ensures continuity of service in earthquake prone areas.

## Flexibility

Fully customisable design gives end users flexibility to engineer a low voltage switchgear system to meet every aspect of their project specification. The modular design allows for high density stacking, assisting where available floor space is an issue. The fully extendable solution offers clients an efficient way of upscaling low voltage power for future business needs.

## Protective Devices

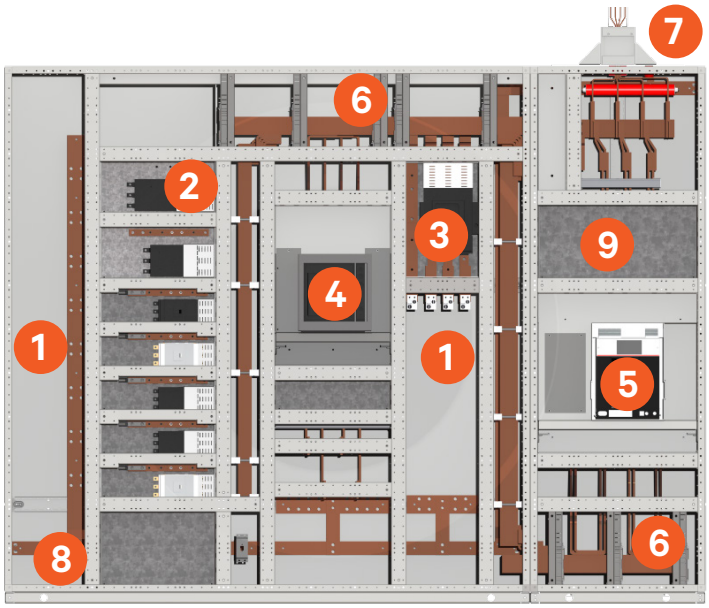
A large selection of protective devices, where the most common protective relays include and are not limited to the following protections.

**21** - Distance Relay
**25** - Synchronizing or Synchronism-Check Device
**27** - Undervoltage Relay
**32** - Directional Power Relay
**50** - Instantaneous Overcurrent
**51** - AC Inverse Time Overcurrent Relay
**59** - Overvoltage Relay
**67** - AC Directional Overcurrent Relay
**86** - Lockout Relay
**87** - Differential Protective Relay

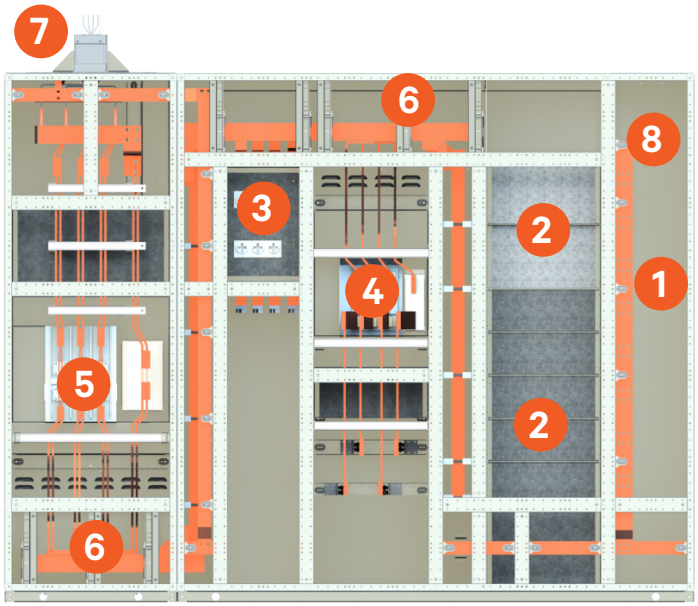
Instrument compartments are available to mount additional devices such as but not limited to: voltage transformers, control power transformers, metering, and supervisory devices. Indicating lights and control switches can be mounted in the breaker compartment or instrument compartments.

## Features

1. **Cableway Compartments:** Designated for customer cable glanding (Top or Bottom), cable spread area and ultimately, access to the device terminals
2. **Protective Device Compartment:** Individual cubicle which contains MCCB. Fixed or Plug-in. Stacked arrangement
3. **MCCB Compartment:** Housing unit for the MCCB. Fixed or Plug-in. Single vertical arrangement
4. **MCCB:** Housing unit for the draw-out MCCB 800A+
5. **ACB:** draw-out Air Circuit Breaker
6. **Main Busbar:** 100% current rated
7. **Panel Flange Connection:** This facilitates the interface between our Switchboard and our busway trunking systems which route power throughout the building
8. **Ground Busbar:** The grounding or earthing busbar network with connections for individual pieces of equipment
9. **Instrument Compartment:** designated as the metering and control section. Other similar sections for terminals, etc can be added as required




*Front internal view*




*Rear internal view*

## Electrical Specification

| | |
|---|---|
| Voltage | Up to 690V |
| Ampacity | Up to 6300A |
| Short Circuit Rating | Up to 100Ka |
| Breakers | All leading manufacturers in fixed, withdrawable or plug-in configurations |
| Transformer | Close coupled |
| Busway | 250A – 6300A. 100% and 200% neutral options. Peak withstand of 220kA |

### Enclosure Specification

| | |
|---|---|
| Access | All access switchboard – access can be granted from front/rear depending on the project specification |
| Paint Shade | RAL 7035 as standard, available in all colours |
| Enclosures | Rated IP31- IP54 (additional IP rating with external enclosures) |

## Dimensional Guide

The following dimensions are for ACB cubicles and transformer enclosures that have been subject to the rigorous type testing of 61439 with particular respect to heat rise, short circuit withstand, creepage and clearances, protective conductor continuity. Please note that the high density double stacking option cannot be used in an application where the combined simultaneous current flow exceeds 3750A. These dimensions form the basis of any switchboard layout. Please feel free to use the standard sizing sheet provided and contact us for any assistance required in completing final layouts.

### ACB Specification

#### Standard Single Stack Arrangement

| | | Switchboard Dimensions | | |
|---|---|---|---|---|
| Amperage (A) | Poles | Width (mm) | Depth (mm) | Height (mm) |
| 800 - 1600 | 3 | 576 | 768 | 1920 |
| 800 - 1600 | 4 | 768 | 768 | 1920 |
| 2000 - 3200 | 3,4 | 768 | 768 | 2304 |
| 4000 | 3, 4 | 768 | 768 | 2304 |
| 5000 - 6300 | 3,4 | 1152 | 768 | 2304 |

#### Double Stacking option

| | Switchboard Dimensions | | |
|---|---|---|---|
| Amperage (A) | Width (mm) | Depth (mm) | Height (mm) |
| 800 - 1600 | 576 | 768 | 1920 |
| 800 - 1600 | 768 | 768 | 1920 |
| 2000 - 3200 | 768 | 768 | 2304 |

**Total rating option not to exceed 3750A*

#### Transformer Enclosure

| | Switchboard Dimensions | | |
|---|---|---|---|
| TX Ratings (kVA) An(Af) | Width (mm) | Depth (mm) | Height (mm) |
| 1000 | 1920 | 1536 | 2304 |
| 1250 (1750) | 2304 | 1536 | 2304 |
| 1600 (2250) | 2304 | 1536 | 2304 |
| 2000 (2500) | 2496 | 1536 | 2688 |
| 2500 (3500) | 2496 | 1728 | 2688 |
| 3000 (4200) -4000 | 2688 | 1728 | 2688 |

## Switchboard Segregation

The flexible and modular system provides the highest level of operator safety as well as equipment protection and customization.

### Forms of separation

The high level of protection and safety is achieved by separation of the components into clear modular compartments within the switchboard.

**There are four key objectives of separation within the switchboard:**

1. To protect persons against direct contact with live parts
2. To facilitate access to one part of the assembly whilst other parts remain energized, therefore facilitating maintenance work and upgrades
3. To protect the switchboards against the penetration of solid foreign bodies
4. To limit the risk of arc flash inside the switchboard by separating the busbars, connections, and equipment

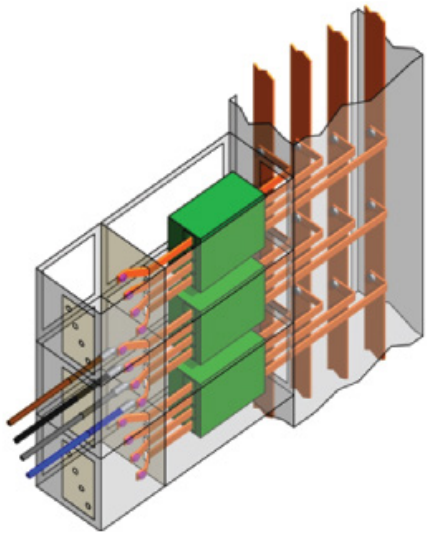
The level of internal separation is agreed upon by the manufacturer and the user. It is dictated by a number of factors including rating of the panel, access required and function of the panel.

IEC Forms of Separation available including Form 4 Types 2, 5, 6 & 7 (where necessary).

| Form | Main Criteria | Sub-Criteria | Type of Construction |
|---|---|---|---|
| 4a | Separation of busbars from the functional units and separation of all functional units from one another, including the terminal for external conductors which are an integral part of the functional unit | Terminals for external conductors in the same compartment as the associated functional unit | Type 1: Busbar separation is by an insulated covering. Cables may be glanded elsewhere<br>Type 2: Busbar separation is by metallic or non-metallic rigid barriers or partitions. Cables may be glanded elsewhere<br>Type 3: Busbar separation is by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility |
| 4b | Separation of busbars from the functional units and separation of all functional units from one another, including the terminal for external conductors which are an integral part of the functional unit | Terminals for external conductors not in the same compartment as the associated functional unit, but in individual, separate, enclosed protected spaces or compartments | Type 4: Busbar separation is by an insulated covering. Cables may be glanded elsewhere<br>Type 5: Busbar separation is by metallic or non-metallic rigid barriers or partitions. Terminals may be separated by insulated coverings and glanded in common cabling chambers<br>Type 6: All separation requirements are by metallic or nonmetallic rigid barriers or partitions. Cables are glanded in common cabling chamber(s).<br>Type 7: All separation requirements are by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility. |

### Form 4 type 6 – internal separation

All separation requirements are by metallic or nonmetallic rigid barriers or partitions. Cables are glanded in common cabling chamber(s)".

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