

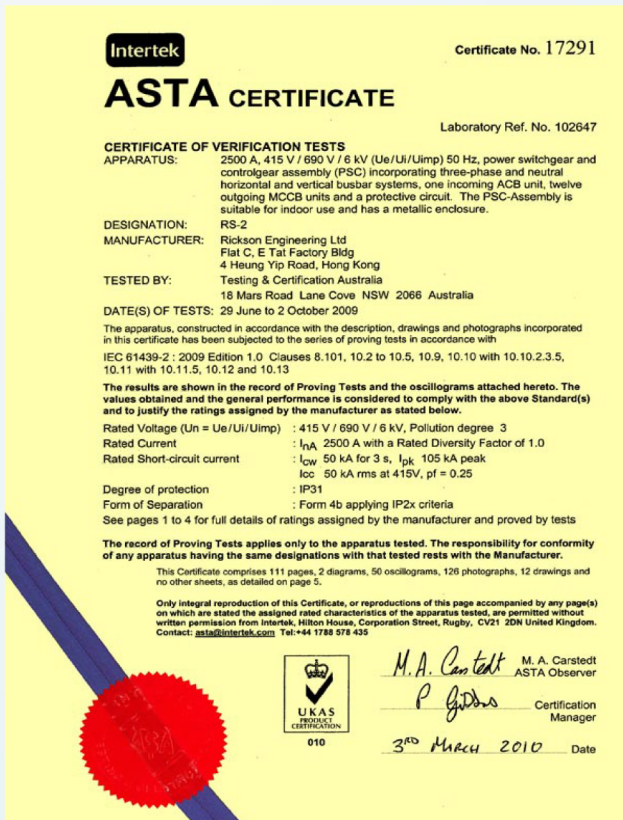
Low Voltage Cubicle Switchboard And Motor Control Centre



Rickson Engineering Limited

Rickson Engineering Ltd, is an electrical switchboard manufacturer in Hong Kong which specializes in low voltage power distribution switchboards, motor control centres, local motor control panels, capacitor banks, busway tap-off units and various kinds of electrical control cubicles and panels.

With our constant commitment to product development and enhancement, type tests and design verifications of our products are being carried out regularly by independent testing laboratories, e.g. ASTA. We are also the first local company to have the electrical switchboards type-tested and accredited by ASTA to the new IEC 61439 standards which are much more demanding and stringent than the former IEC 60439 standards.



We also realize that quality assurance and continual improvement (based on customer satisfaction) are the key factors for success, therefore a well documented quality control system and procedures have been developed and followed by our staffs to ensure all products comply to regulations and specification requirements. Since 1996, Rickson has been accredited with the ISO 9001 certificate and has continuously been reviewing and updating its quality system to provide the best quality products to our customers.

Our engineering and design team are energetic, innovative and supportive. They are fully qualified to provide superior customer service to all our clients. We are one of the few switchboard manufacturers with complete local design, manufacturing and servicing capabilities. We thus have every confidence in providing the best solution and design flexibility to satisfy our customers' needs.

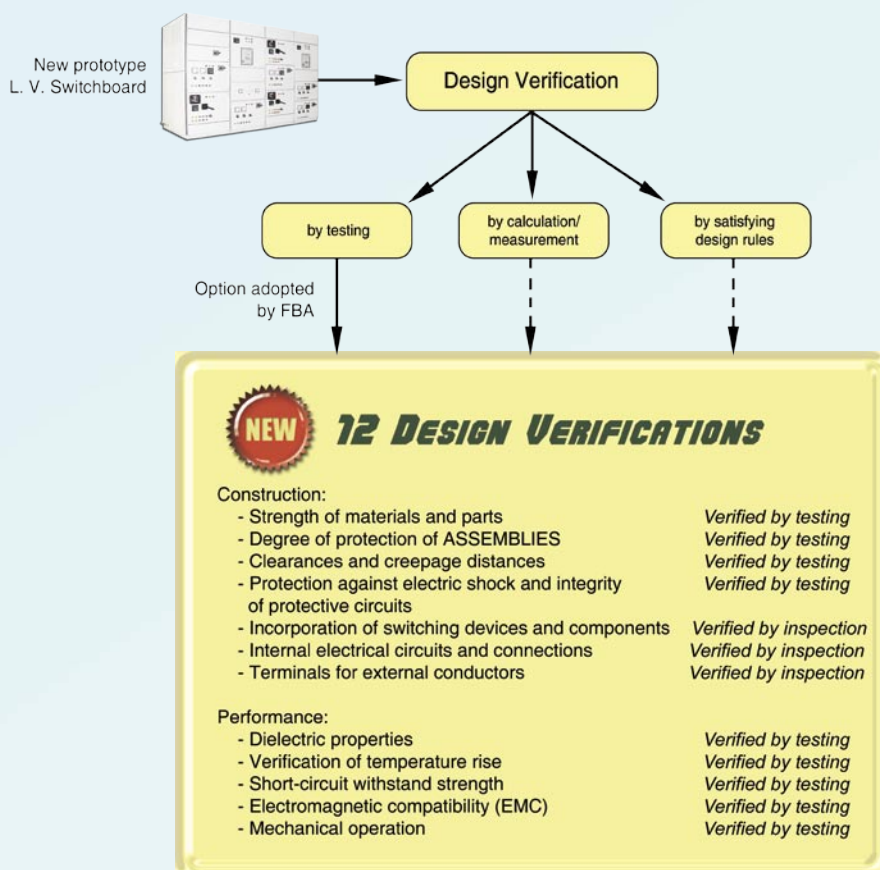


What are the changes in IEC 61439?

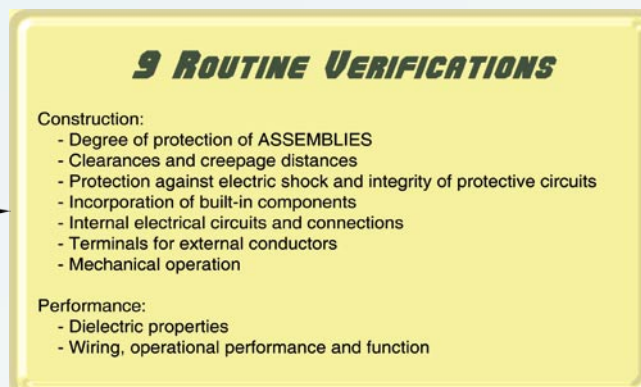
The newly launched IEC 61439-1 has the following significant technical changes with respect to the last edition of IEC 60439-1:

- the dual role of IEC 60439-1 as a product standard in its own right, as well as a general rules standard for assemblies covered by a subsidiary product part of the IEC 60439 series, has been abandoned;
- consequently, IEC 61439-1 is a pure “general rules” standard to be referred to by subsidiary product parts of the IEC 61439 series;
- the product standard replacing IEC 60439-1 is IEC 61439-2;
- the discrimination between type-tested assemblies (TTA) and partially type-tested assemblies (PTTA) is eliminated by the verification approach;
- three different but equivalent types of verification of requirements are introduced: verification by testing, verification by calculation/measurement, or verification by satisfying design rules;
- the requirements regarding temperature rise have been clarified;
- the rated diversity factor (RDF) is covered in more detail;
- requirements from the standard for empty enclosures for assemblies (IEC 62208) have been incorporated;
- the whole structure of the standard is aligned with its new function as “general rules” standard.

Design Verification - New Approach



Factory assembling of L. V. Switchboard(s)



Our Products

are fully type-tested to the latest
IEC 61439-1 & 2



LOW VOLTAGE SWITCHBOARD

International Standards -
Comply with IEC 61439-2, IEC 60439-1, BSEN 60439-1
Rated Short-time Withstand Currents -
Main phase busbars - 50kA for 3 sec.
Protective circuit - 30kA for 1 sec.
Busbar Rated Currents - 600A to 3200A
Rated Voltage - 415V AC
Rated Insulation Voltage - 690V AC
Form of Segregation - Form 3, 4
Degree of Protection - IP31 to IP54
Dielectric Test - 2500V
Surface Finish - Epoxy powder coated, color to Europe grey RAL 7035; other colors upon request



Vertical Busbars



Horizontal Busbars



Current Transformers



Supply Co's
C.T. Chamber



Rear Panel Doors
(with handles)



Air Circuit Breaker



Fuseswitch (with front
neutral link)



Automatic
Changeover

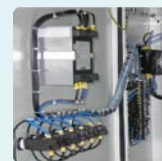


MCCB (with front
neutral link)

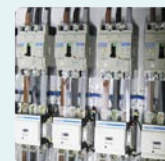


CAPACITOR BANK

International Standards -
Comply with IEC 61921, IEC 61439-2, IEC 60439-1
Rated Conditional Short-circuit Currents -
Main phase busbars - 50kA at 415V
Protective circuit - 30kA at 415V
Busbar Rated Currents - 200A to 800A
Capacitor Rating per Step - 10kVar to 50kVar
No. of Steps - 2 to 12
Rated Voltage - 380V or 415V AC
Rated Insulation Voltage - 690V AC
Form of Segregation - Form 3, 4
Degree of Protection - IP31 to IP54
Dielectric Test - 2500V
Surface Finish - Epoxy powder coated, color to Europe grey RAL 7035; other colors upon request



Panel Door Wirings



MCCBs & Contactors



Capacitor Units

MOTOR CONTROL PANEL

International Standards -

Comply with IEC 61439-2, IEC 60439-1, BSEN 60439-1

Rated Conditional Short-circuit Currents -

Main phase busbars - 50kA at 415V

Protective circuit - 30kA at 415V

Busbar Rated Currents - 200A to 800A

Rated Voltage - 415V AC

Rated Insulation Voltage - 690V AC

Form of Segregation - Form 3, 4

Degree of Protection - IP31 to IP54

Dielectric Test - 2500V

Surface Finish - Epoxy powder coated, color to Europe grey RAL 7035; other colors upon request



Logic Controller



Close Transition Star-delta Starter



Frequency Inverter



Two Speed Starters



MOTOR CONTROL CENTRE

International Standards -

Comply with IEC 61439-2, IEC 60439-1, BSEN 60439-1

Rated Short-time Withstand Currents -

Main phase busbars - 50kA for 3 sec.

Protective circuit - 30kA for 1 sec.

Busbar Rated Currents - 400A to 3200A

Rated Voltage - 415V AC

Rated Insulation Voltage - 690V AC

Form of Segregation - Form 3, 4

Degree of Protection - IP31 to IP54

Dielectric Test - 2500V

Surface Finish - Epoxy powder coated, color to Europe grey RAL 7035; other colors upon request

TAP OFF UNIT (for Busway)

International Standards -

Comply with IEC 60439-3, BSEN 60439-3

Type - Plug-in or Bolt-on

Rated Conditional Short-time Currents - 50kA at 415V

Busbar Rated Currents - 100A to 1000A

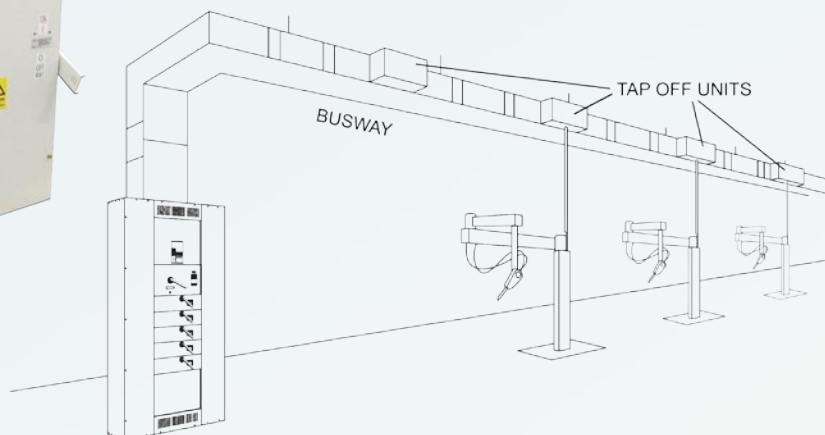
Rated Voltage - 415V AC

Rated Insulation Voltage - 690V AC

Degree of Protection - IP31 to IP54

Dielectric Test - 2500V

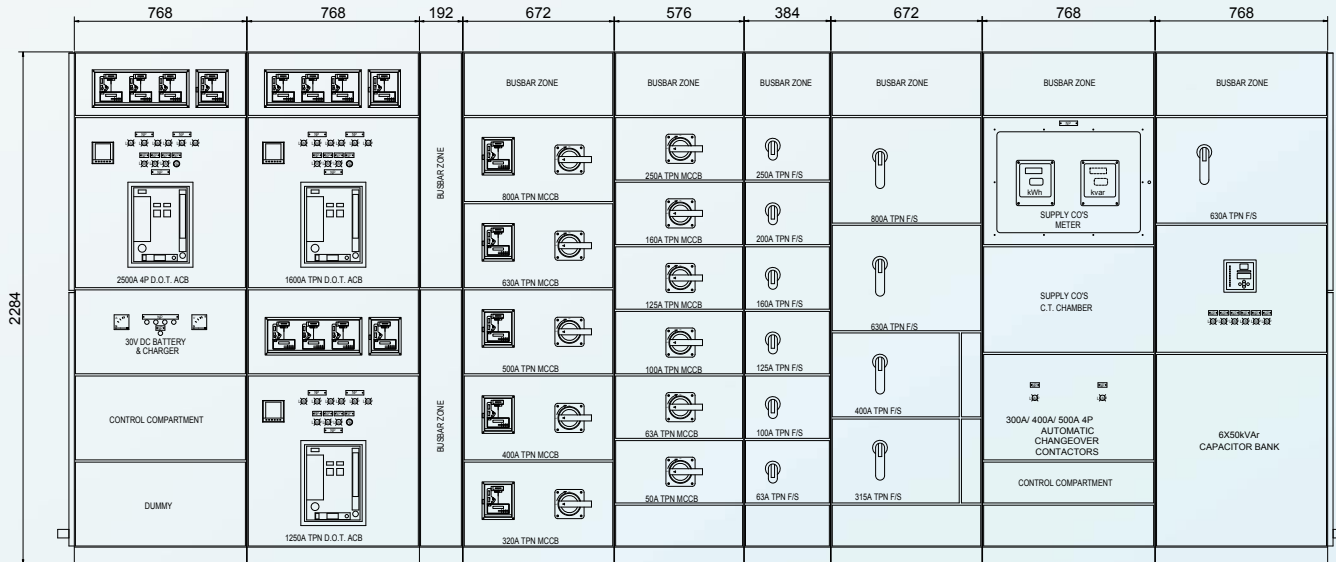
Surface Finish - Epoxy powder coated, color to Europe grey RAL 7035; other colors upon request



Typical Dimension and Arrangement Guide for Rickson RS2 Switchboard



TOP VIEW



FRONT VIEW

Standard Compartment Size (suitable for Form 3 Separation Only)

| Standard Dimension (mm) | | | Compartment Size (with Protection C. T. mounted) | | Compartment Size (without Protection C. T. mounted) | |
|--|-------------------------------------|----------|---|-------------|--|-------------|
| EQUIPMENT | RATING | POLES | WIDTH (mm) | HEIGHT (mm) | WIDTH (mm) | HEIGHT (mm) |
| AIR CIRCUIT BREAKER (ACB) | 3200A | TPN / 4P | 864 | 768 | 864 | 672 |
| | 2500A | TPN / 4P | 768 | 768 | 768 | 672 |
| | 2000A | TPN / 4P | 768 | 768 | 768 | 672 |
| | 1600A | TPN / 4P | 768 | 768 | 672 | 672 |
| | 1250A | TPN / 4P | 768 | 768 | 672 | 672 |
| MOULDED CASE CIRCUIT BREAKER (MCCB) | 800A | TPN / 4P | 672 | 384 | 672 | 384 |
| | 630A/ 500A | TPN / 4P | 672 | 384 | 672 | 384 |
| | 400A/ 320A | TPN / 4P | 672 | 384 | 672 | 384 |
| | 250A/ 160A | TPN / 4P | 576 | 288 | 576 | 288 |
| | 125A/ 100A/ 63A/ 50A/ 32A/ 20A | TPN / 4P | 576 | 288 | 576 | 288 |
| FUSE SWITCH (F/SW) | 800A | TPN / 4P | | | 672 | 480 |
| | 630A | TPN / 4P | | | 672 | 480 |
| | 400A | TPN / 4P | | | 576 | 384 |
| | 315A | TPN / 4P | | | 576 | 384 |
| | 250A | TPN / 4P | | | 384 | 288 |
| | 200A/ 160A/ 125A/ 100A/ 63A/ 32A | TPN / 4P | | | 384 | 288 |
| AUTO CHANGEOVER CONTACTOR (AUTO-C/O) | 500A | 4P | | | 768 | 480 |
| | 400A | 4P | | | 768 | 480 |
| | 300A | 4P | | | 768 | 480 |
| | 200A | 4P | | | 672 | 384 |

Note: 1. Please consult Rickson for FORM 4 compartment sizes. 2. All sizes are subject to change without prior notice.

Useful Information

FORMS OF INTERNAL SEPARATION (extracted from IEC 61439-2)

| Main criteria | Subcriteria | Form | Diagram |
|--|---|---------|---------|
| No internal separation | | Form 1 | |
| Separation of busbars from the functional units | Terminals for external conductors not separated from busbars | Form 2a | |
| | Terminals for external conductors separated from busbars | Form 2b | |
| Separation of busbars from the functional units and separation of all functional units from one another. Separation of terminals for external conductors from the functional units, but not from those of other functional units | Terminals for external conductors not separated from busbars | Form 3a | |
| | Terminals for external conductors separated from busbars | Form 3b | |
| Separation of busbars from the functional units and separation of all functional units from one another. Separation of terminals for external conductors associated with a functional unit from those of any other functional unit and the busbars | Terminals for external conductors in the same compartment as the associated functional unit | Form 4a | |
| | Terminals for external conductors not in the same compartment as the associated functional unit, but in individual, separate, enclosed protected spaces or compartments | Form 4b | |

The main objective of internal separation is for SAFETY purpose. It is used to provide principally for:

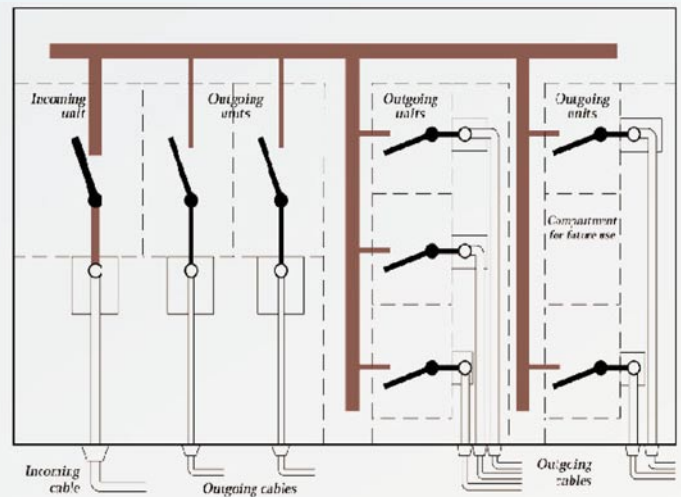
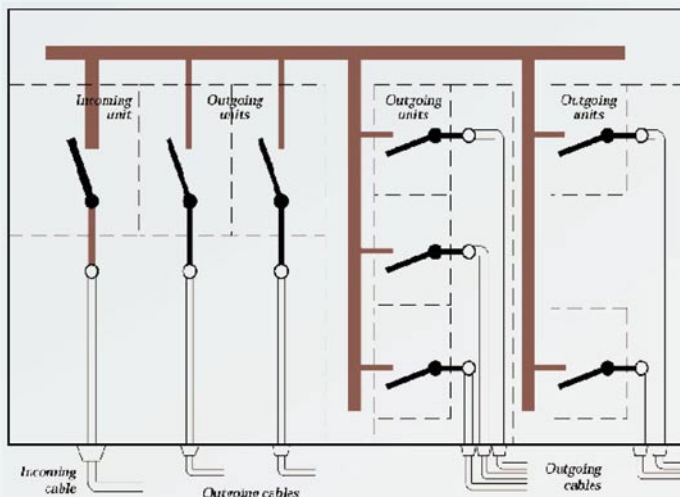
- protection against contact with live parts belonging to the adjacent functional units.
- limitation of the probability of initiating arc faults.
- protection against the passage of solid foreign bodies from one unit of an Assembly to an adjacent unit.

To achieve separation, the fundamental requirements in the Standard are performance criteria and not constructional details on how separation should be achieved. Separation can be achieved in several ways. Depending on a particular application and the requirements for maintenance, this may include:

1. PVC sleeving, wrapping or plastic coating of conductors.
2. Insulated terminal shields or PVC 'boots'.
3. Rigid insulated barriers or partitions.
4. Compartments formed from earthed metal.
5. A device's integral housing.



In general, Rickson will use both metallic compartmentation and insulated barriers/ partition (i.e. methods 3 and 4 above) to achieve Form 3 & Form 4 separations as shown below:



Form 3B Standard

Form 4B Standard

RICKSON Engineering Limited

Address: 21/F, Sun Hing Industrial Building, 46 Wong Chuk Hang Road, Hong Kong.
Tel: 3120 7500 Fax: 3120 7511 Email: General@rickson.com.hk