

630A ... 6300A COMPACT BUSBAR

TECHNICAL SPECIFICATIONS

1 - Standards & Certification:

-Busbar system shall be designed and manufactured as per IEC 60439-2/1 standard, which requires below listed tests. Each busbar rating shall pass below tests and have a separate type test certificate from an independent internationally accredited laboratory;

Test no: 8.2.1- Temperature Rise Limits,

Test no: 8.2.2- Dielectric Features,

Test no: 8.2.3- Short-circuit Duration,

Test no: 8.2.4- Effectiveness of Protection Circuit,

Test no: 8.2.5- Clearances and Creepage Distances,

Test no: 8.2.6- Mechanical Operation,

Test no: 8.2.7- Protection Degree,

Test no: 8.2.9- Resistance of Insulation Material to Abnormal Heat ,

Test no: 8.2.10- Structural Duration,

Test no: 8.2.12- Crushing Resistance,

Test no: 8.2.13- Electrical Characteristics,

Test no: 8.2.14- Flame Propagation,

Test no: 8.2.15- Fire Resistance (Fire Barrier).

- Busbar system shall have CE marking.

-The manufacturer of busbar system shall have ISO 9001 and ISO 14001 certification.

-Each product shall have a "Type Label" including coding system, which identifies the brand, type of the unit, number of conductors and electrical details. The same coding shall be on the related certificate and catalogue. Codes on the busbar, catalogue and certificates shall match. If the codes of supplied busbars don't match with the certificates and catalogues, all supplied materials shall be rejected.

2 - Electrical Characteristics:

- Busbar systems nominal insulation voltage shall be 1000V AC.

- As per ampere rates, minimum short circuit values shall be as given below;

For Aluminium Conductors;

630A	:1 sec/rms 25kA, Peak 55kA
800A	:1 sec/rms 35kA, Peak 73,5kA
1000A	:1 sec/rms 50kA, Peak 105kA
1250-1350-1600-2000A	:1 sec/rms 60kA, Peak 132kA
2500A	:1 sec/rms 100kA, Peak 220kA
3200A and above	:1 sec/rms 120kA, Peak 264kA

For Copper Conductors;

800A	:1 sec/rms 40kA, Peak 84kA
1000A	:1 sec/rms 50kA, Peak 105kA
1250-1350-1600-2000A	:1 sec/rms 60kA, Peak 132kA
2500A	:1 sec/rms 100kA, Peak 220kA
3200A and above	:1 sec/rms 120kA, Peak 264kA

3 – Structure:

3.1 - Housing:

-Busbar system shall have “Sandwich-Compact” structure. Conductors shall be packed and placed into the housing without leaving air gap in order to provide low reactance.

-Housing shall be made of thermal processed, extruded aluminium, RAL7038-Electrostatic painted.

-Compact structure of the housing shall be provided by M6 screws applied at every 19cm along the entire length.

-The sandwich-compact structure shall continue at the plug-in points too. There shall not be air gap between conductors at the plug-in points.

3.2 - Conductors:

Aluminium or Copper conductors shall be epoxy coated and tin plated at the joints upon the wire configuration and required numbers, which are described below.

-Compact busbar system shall have aluminium conductors between 630A – 5000A.

- Compact busbar system shall have copper conductors between 800A – 6300A.

- Compact busbar system shall have the following number of conductors and wire configuration;

- a) 4 Conductors: (4 full size conductors(3P+N) + PE (housing)).
- b) 4 ½ Conductors: (4 full size conductors(3P+N) + PE (50% PE conductor + housing)),
- c) 5 Conductors: (4 full size conductors(3P+N)+ PE (100% PE conductor + housing)),
- d) 6 Conductors: (6 full size conductors(3+200%N) + PE (100% PE conductor + housing)),

-Phase conductors and neutral conductor shall have the same cross-section and they shall be insulated.

- Aluminium conductors shall be of EC grade aluminium. Minimum conductivity shall be 34siemens.

-Copper conductors shall be minimum 99,95% electrolytic copper. Minimum conductivity shall be 56siemens.

3.3 - Insulation:

- Insulation system shall be suitable for 1.000V continuous operation. Conductors shall be thermo-set epoxy coated. Conductor size shall be designed so that temperature rise on the conductors shall not exceed 100C degree at nominal current, which reduce global heating to help natural environment. With this reason, insulation class shall be "B class".

3.4 - Joint Structure:

- Electrical and mechanical connection shall be made by placing busbar conductors into the joint block and followed by tightening and fastening of the joint bolts.

3.5 - Protection:

- Protection degree of the housing and joints shall be IP55/IP65/IP67/IP68.

3.6 – Fire Rating:

-Busbar shall have capability to operate(without short-circuiting) minimum 5 hours in 750C degree or 2 hours 1.000C degree fire conditions without derating.

4 - Accessories:

- Busbar system shall have all necessary accessories (elbows, offsets, panel-transformer connections, reductions, etc.) Manufacturer shall supply special dimensioned units in short time, if the project conditions requires.

-For horizontal runs, a horizontal expansion unit shall be used at every 40m and expansion points of the building.

-For vertical applications, a vertical expansion unit shall be used at every floor. Busbar system shall be rigidly fixed by supports at every floor.

5 - Tap Off Boxes:

-Both, Feeder and Plug-In busbar systems shall be suitable for bolt-on type tap off box connections at the joints up to 1.000A.

-Bolt-on tap off boxes shall be installed to the joints without changing or adding any piece. Bolt-on tap off boxes shall be able to be moved between different rated busbars.

-Plug-In busbars shall have minimum 2 plug-in points on each 300cm length. Plug-in tap off box sizes shall be up to 630A. Unused plug-in points shall have covers, which can provide IP55 protection degree.

-Plug-in tap off boxes shall be suitable to install or removed from busbars without switching off the power on the busbar.

-Contacts of plug-in tap off box shall be plated by silver.

-Tap off boxes shall be manufactured of sheet steel and epoxy painted RAL3020 colour.

-Plug-in tap off boxes shall have electromechanical safety interlock system. Which means;

a-) Electromechanical interlock mechanism shall ensure that the tap off box cannot be removed mechanically from the busbar, when the switch is at "ON" position.

b-) Electromechanical interlock mechanism shall ensure that, cover of the box can be opened only, when the switch is at "OFF" position.

c-)When the cover is opened, inside protection degree shall be minimum IP2X against accessing to live conductors.

d-) While inserting the contacts of plug-in tap off box, earth contact shall make the first touch. While removing, it shall be disconnected last.

-Tap off boxes shall be suitable for any brand of MCCBs. Electromechanical interlock mechanism shall be suitable for all these MCCBs too.

6 - Installation and Commissioning:

-Busbar systems shall be installed as per Single-Line drawings respect to required ampere rates and manufacturer installation guide (torque values, lockers, etc.). Electrical installer shall run an insulation test after installation according to manufacturers test procedures. The results of the test shall be reported to the manufacturer. Minimum insulation value shall be 1 Mohm.