

Article Overview

The primary standards for 10kV busbar bridges are IEC 61439-2 for low- and medium-voltage assemblies and IEEE C37.23 for metal-enclosed busbar systems, specifying electrical, mechanical, and thermal performance requirements.

Applicable Standards

IEC 61439-2 is widely adopted internationally for medium-voltage switchgear and busbar assemblies, including 10kV systems. It defines requirements for:

- o Design verification: Ensures busbar bridges meet rated voltage and current specifications, including short-circuit withstand capacity and dielectric strength .
- o Thermal performance: Limits temperature rise under rated current, typically using a reference ambient of 40°C, ensuring safe operation without insulation degradation .
- o Mechanical strength: Busbars and supports must withstand short-circuit forces and mechanical stresses during operation .
- o Creepage and clearance distances: Minimum distances between conductive parts are specified to prevent arcing, with adjustments for pollution degree and environmental conditions .
- o Testing and verification: Type tests, including impulse voltage, short-circuit, and temperature-rise tests, are required to validate compliance . IEEE Std C37.23 is a key standard in North America for metal-enclosed busbar systems, covering:
 - o Rated voltages up to 38kV, which includes 10kV systems, and currents up to 34,000A .
 - o Short-circuit withstand: Specifies both rated short-time and peak currents, ensuring busbars do not deform or lose electrical integrity under fault conditions .
 - o Dielectric tests: AC withstand voltage and lightning impulse tests are required to verify insulation performance .
 - o Mechanical tests: Includes silver swell tests for plated contacts to ensure plating integrity under fault heating .

Design and Material Considerations

- o Busbars are typically made of copper or aluminum, with connections designed to prevent corrosion and maintain low contact resistance .
- o Arrangements such as face-to-face or edge-to-edge are considered in standards, with spacing and insulation requirements defined to maintain safety and SCCR (short-circuit current rating), .
- o Maximum permissible temperature rise for bare conductors is generally 45°C above ambient, verified through calculation or testing .

Compliance and Verification

- o Compliance with these standards is mandatory for regulatory approval, insurance, and operational safety .
- o Type test reports from accredited laboratories are required to demonstrate that busbar bridges meet the specified electrical, thermal, and mechanical criteria .
- o Documentation should include rated current, short-circuit withstand, and verification of creepage and clearance distances . In summary, for a 10kV busbar bridge, adherence to IEC 61439-2 internationally or IEEE C37.23 in North America ensures that the busbar system meets national and international safety, performance, and reliability requirements, covering all critical aspects from material selection to short-circuit withstand and thermal performance.

Busbars are not only easy to install (certainly compared to cabling), they also play a major role in the design and safe

These set out the acceptable standards and regulations for transmission developments. We engage with stakeholders when

The scope of this document covers open terminal busbar systems and associated connectors for use within outdoor primary

We have the capability to verify Busbar Trunking specifications according to IEC standard and other International standards upon

During 2022, National Grid undertook a thorough review of its application policy for the busbar protection applied to its

Optimizing safety distances and structural design in low-voltage busbar applications enhances system safety and long-term reliability

Electrical busbar systems can be differentiated by the distance between center of each busbar and vary according to maximum

To connect various high voltage (HV) components to the HV system, we also deliver a wide variety of busbars. In cooperation with

To ensure a continuous, potential-free bus bar system, an insulated connection sleeve is fitted between the sections, covering the

Standard : IEC 60947 - 1, 3 Degree of Protection : IP41 (IP54 on request) Offer ample wiring space and easy



National Standard 10kV Busbar Bridge

installation High quality

The IEC 61439 series of standards sets out the regulations for power distribution boards as well as assemblies for power distribution

This catalog includes information on features, construction, application, installation, electrical data, busbar configuration, wiring

Busbar systems and installation accessories When connecting aluminum conductors, ensure that the contact surfaces of the

The body of the busbar system, made from hardened aluminum profiles or galvanized sheets in accordance with TS 822 standards,

Learn how to design efficient substation busbar systems with calculations, examples, and best practices.

ABB busbar systems enable safe and easy cross-wiring of miniature circuit breakers, residual current devices and other Modular DIN

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