

Article Overview

The rated value of a 35kV busbar depends on its material, cross-section, cooling conditions, and standards, typically allowing continuous currents from several hundred to a few thousand amperes with thermal limits up to 105°C for bare copper.

Continuous Current Rating

For a 35kV medium-voltage busbar, the continuous current rating is determined by the busbar material (usually copper or aluminum), cross-sectional area, and cooling conditions. For copper busbars, IEC 61439-1 recommends a current density of 1.5-2.5 A/mm² for enclosed busbars depending on ventilation and enclosure type. For example, a 2000A copper busbar at 2.0 A/mm² requires a cross-sectional area of 1000 mm², which can be achieved with multiple bars in parallel to allow margin for heating. The ambient temperature is typically assumed to be 35°C, with a maximum busbar temperature rise of 70K, resulting in a maximum busbar temperature of 105°C for bare copper. Thermal limits must also consider the lowest permissible temperature of components in contact with the busbar, such as fuse bases or outgoing cables.

Short-Circuit Withstand

Busbars must withstand short-circuit currents both thermally and mechanically. Thermal withstand ensures the busbar temperature does not exceed the short-time limit (250°C for copper per IEC 61439-1) during a fault. Electrodynamic withstand ensures that the electromagnetic forces between parallel busbars do not exceed mechanical strength, calculated based on peak short-circuit current and busbar spacing.

Medium-Voltage Switchgear Integration

For 35kV busbars integrated into metal-enclosed switchgear, such as Siemens 8DA/B or similar systems, the busbars are factory-assembled, type-tested, and designed for single or double busbar configurations. These systems are rated for long-term operation with service life exceeding 40 years under normal conditions, and the busbars are hermetically sealed and safe-to-touch.

Practical Considerations

- o Material: Copper is preferred for higher conductivity and thermal performance.
- o Cross-section: Must be sized to carry the rated current without exceeding temperature limits.
- o Enclosure: IP-rated enclosures improve cooling and allow slightly higher current ratings.
- o Thermal reserve: Limiting busbar temperature to 85°C is advisable for safety and longevity. In summary, a 35kV busbar's rated value is not a single number but a combination of continuous current rating, thermal limits, and short-circuit withstand, typically designed according to IEC 61439-1 and DIN 43 671 standards,

35kV busbar rated current specifications

with continuous currents ranging from several hundred to several thousand amperes depending on busbar size, material, and cooling conditions .

In the sheets of current - rated current (I_n) - according to busbar sizes are values where tested in 25°C ambient temperature without

Busbar size calculator is an online calculator tool to determine copper (or) aluminum busbar dimensions based on

Learn how to select the right copper busbar size and current rating. Includes a free calculator, standard rating tables,

The permissible busbar temperature is decisive when dimensioning the busbars. The busbar temperature is dependent on the

The formulas presented in this article provide a theoretical framework for assessing busbar current ratings, taking into

The busbar sizing calculator determines the required busbar dimensions based on the

Busbar Sizing Calculation - Free download as PDF File (.pdf), Text File (.txt) or read online for free. This document provides

Learn how to size a busbar based on current-carrying capacity and allowable temperature

The document provides specifications for various busbar sizes, detailing their cross-sectional areas and maximum current ratings at

The busbars must be able to withstand a rated current $I_r = 2500$ A on a permanent basis and a short-time withstand current $I_{th} =$

The permissible rated busbar current of the proven switchgear type ZX2 is increased by parallel connection of the two busbar

Below is a practical busbar size chart commonly used in electrical engineering applications.

View Copper Busbar Rating - Approx D.C rating (1). Approx A.C rating. Moment of Inertia. Modulus of Section Z. By Austral Wright

35kV busbar rated current specifications

In each test, the incoming circuit and the busbars are loaded to their rated current and as many outgoing circuits in a group are

This document provides data and specifications for copper busbars used in indoor installations. It includes tables listing the

Busbar and Cable Gland Size Charts This document provides details on the construction and carrying capacity of copper and

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