

Technical Specification for Compact Copper Busway

1 Basic Requirements for Busway

1)Conductor Material: High-purity electrical copper drawn from national standard T2 electrolytic copper, with a purity greater than 99.9%, and the copper conductor is tinned throughout its length.

2)Shell: Made of high-quality aluminum-magnesium alloy profiles with sufficient strength, equipped with heat dissipation ribs, and the surface is treated to prevent oxidation. The thickness of the profiles is required to be not less than 3mm, which has the advantages of strong heat dissipation capacity, strong corrosion resistance, and no magnetism.

3)Insulation Material: The copper busbars are integrally wrapped with DuPont polyester film. The insulation material is required to be halogen-free, with a flame retardant grade above B and a heat resistance temperature above 130° C.

2 Adopted Standards

The product has passed the China Compulsory Certification (CQC), and its manufacture, inspection, installation, and acceptance meet the following standards:

IEC 60439.2-2005 International Electrotechnical Commission Standard (National Electrotechnical Standard)

JB/T 9662-2011 Dense Insulation Busbar Trunking System (Industry Standard for Dense Busbars)

GBJ 149-90 Code for Construction and Acceptance of Busbar Installation in Electrical Equipment Installation Engineering

GB 4208-2008 Degrees of Protection Provided by Enclosures (IP Code)

GB 5585.1~3-2005 Copper, Aluminum and Their Alloy Busbars for Electrical Engineering

GB 6892 Hot Extruded Aluminum Alloy Profiles for Industrial Use

ENMABU 1.1 Busway Installation and Maintenance Standard

GB 7251.1-2005 Low-voltage Switchgear and Controlgear Part 1: Type-tested and Partially Type-tested Assemblies

GB 7251.2-2006 Low-voltage Switchgear and Controlgear Part 2: Particular Requirements for Busbar Trunking Systems (Busways)

Code for Construction Quality Acceptance of Building Electrical Engineering GB 50303-2012

3 Main Technical Parameters of Busway

1. Rated Voltage: $\leq 1000\text{V AC}$
2. Rated Frequency: $50\sim 60\text{HZ}$
3. Current Range: $250\text{A}-6300\text{A}$
4. Protection Level: IP54
5. Heat Resistance Grade: $\geq \text{B}$
6. Insulation Grade: $\geq \text{B}$
7. Power Distribution System Mode: TN-S
8. Standard Length of Busway Straight Section: 3m
9. Temperature Rise of Busway: Conductor and connection $\leq 70\text{K}$, shell $\leq 55\text{K}$.
10. Copper Busbar Conductor Material: T2 Electrolytic Copper

High-purity TMY electrical hard copper busbars rolled from high-quality T2 electrolytic copper are used as the conductive material. The purity of the copper busbars reaches more than 99.9%, and the distribution state of internal elements and the content of other impurities both meet the standards of high-purity high-quality copper. The copper busbars of the busway have no punching holes, which further improves the current carrying capacity of the copper busbars.

11. Insulation Material: Polyester Film

The insulation of the busway adopts high-quality and high-performance polyester film, which wraps around the conductive busbars in a double layer to ensure that there is a space between the conductors. This material reaches B-level insulation (temperature resistance $130\text{ }^{\circ}\text{C}$), and the withstand voltage of a single layer can reach more than $10,000\text{V}$. It is a professional electrical insulation material recommended by the International IEC Association, which is non-toxic and will not volatilize harmful substances that are detrimental to biological health at high temperatures.

12. Profile: Aluminum-Magnesium Alloy Shell

The busway uses high-quality aluminum-magnesium alloy profiles as the shell, which has the characteristics of light weight, low magnetic loss, no pollution, and beauty. The surface is sprayed with epoxy resin electrostatic powder, with uniform color, good salt spray resistance, and no defects such as blistering, cracking, flow marks, or oxidation. The minimum thickness of the aluminum-magnesium alloy shell is 3.0mm, which has better mechanical strength and dynamic and thermal stability resistance.

13. Conductor Surface Treatment: Tinning Treatment.

4 Structure and Heat Dissipation

1) Temperature rise $\leq 55K$

2) The busbar has a compact structure, reasonable design, beautiful appearance. The shell is in close contact with the conductor for overall heat dissipation. There is no obvious air gap between the busbars, and there is no air flow inside the busbar, which can avoid the chimney effect and the oxidation of the conductor caused by contact with air.

3) The protection level of the busway is not lower than IP54 (including with tap units, such as plug-in interfaces, T-connection boxes, etc.)

4) The cross-section of the compact busway copper busbars (including materials and their process structures, etc.) fully complies with the requirements of the 3C certification type test report.

5 Connection Joints

The busway connection joints adopt the existing advanced domestic technology to ensure reliable conductor connection, accurate, fast, and convenient installation. The busway connection joints are independently detachable, and the connection joints of the same specification can be interchanged, which is convenient for installation and maintenance. The connection joints take into account the impact of the thermal expansion and contraction of the busway on the equipment during operation, and the design of the joints will not reduce the performance of the busway.

6 Tolerance Capacity

The busway can withstand the thermal stress and electric stress generated by the rated short-time withstand current and rated peak withstand current, without permanent detectable deformation. The short-circuit withstand current strength value corresponding to each current specification of the busway complies with national standards.

7 Transition Connection/Cross Connection and Installation Brackets

1)The connection between the busway and the transformer adopts a flexible connection with the surface silver-plated or tinned.

2)The connection between the busway and the distribution cabinet is made of T2 electrolytic copper rolled into TMY copper busbars with the surface silver-plated or tinned.

3)Spring brackets are used for vertical installation, with an adjustment distance of not less than 5 centimeters, and the bottom of the bracket uses channel steel with sufficient strength.

4)The hanging brackets are made of hot-dip galvanized angle steel and have an adjustment function.

8 Nameplate

- 1)Model and Name
- 2)Manufacturer's Name or Trademark
- 3)Factory Serial Number
- 4)Main Technical Data
- 5)Executive Standard
- 6)Manufacturing Year and Month

9 Quality Guarantee

Quality Guarantee Period: The product quality guarantee period is two years. The quality guarantee period is 24 months (inclusive) from the date when the contract goods pass the acceptance of the buyer and are put into operation, or 26

months (inclusive) from the date when the last batch of goods delivered by the seller arrives at the place of delivery, whichever comes first.