

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

MT/T 166-1987

**Mine intrinsically safe cable crimp connection, distribution box.
General technical requirements
(English Translation)**

Issued on: November 18, 1987

Implemented on: December 25, 1987

Issued by: State Administration of Work Safety

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Mine-used intrinsically safe crimped cable junction box General technical conditions this standard applies to intrinsically safe junction boxes and junction boxes (hereinafter referred to as junction boxes) connected by crimping methods in coal mines.

1 Technical requirements

1.1 The junction box must comply with this standard and GB 3836.4-83 "intrinsically safe circuits and electrical equipment for explosion-proof electrical equipment used in explosive environments" Prepare the relevant provisions of "i", and manufacture and inspect the drawings and technical documents approved according to the prescribed procedures, and obtain the explosion-proof certificate issued by the inspection unit.

1.2 Environmental conditions the junction box should be able to operate at an ambient temperature of -20 to 40 ° C and a monthly average maximum relative humidity of 95% (at 25 ° C).

Work in environments exposed to water and explosive gas mixtures such as coal dust and gas.

1.3 Main electrical properties

1.3.1 The rated voltage and rated current shall comply with the regulations of GB 156-80 "Rated Voltage" and GB 762-80 "Rated Current of Electrical Equipment" and can refer to Appendix B of this standard.

1.3.2 Contact resistance. not more than 0.01ohm in the normal state; not more than 0.05ohm in the vibration and shock test; it should not be more than after the life test 0.02ohm.

1.3.3 The insulation resistance between adjacent contact pairs and between any contact pair and ground should not be less than 3000Mohm, and the insulation resistance after the humidity test is not low.

At 100Mohm.

1.3.4 Adjacent contact pairs and the insulation between any contact pair and the shell should be able to withstand 2U 1000V (U is the sum of the two circuit voltages), but not Withstand voltage test below 1500V.

1.4 Appearance requirements

1.4.1 The surface of the junction box shell is blue, and the shell must be free from mechanical damage such as rust, burrs, cracks, bubbles, pinholes, and plastic parts.

Deformation that affects product performance.

1.4.2 The number of signs, nameplates and contact numbers on the junction box should be clear, straight, and set securely.

1.4.3 The parts shall be fastened without looseness, the surface shall be smooth without burrs, and there shall be no signs of corrosion.

1.4.4 The plating of the plug-in should be fine-grained, uniform and bright, and should not have defects such as burnt, blistering, peeling, dark spots, pits, and dark stripes.

There is a lack of plating.

1.5 Structural requirements

1.5.1 Bolts (nails) for fastening and nuts should have anti-loosening devices.

1.5.2 Internal and external ground bolts should be provided, and the grounding symbol "" should be marked. The ground bolts should be rust-proofed by electroplating, etc.

The diameter should be the same as the diameter of the wiring bolt; the size of the external ground bolt should not be less than M6.

1.5.3 The design of the size of the money box must be convenient for wiring, and there must be space suitable for the bending radius of the wire. Between the plug-in and the shell

the electrical clearance and creepage distance between them shall not be less than those specified in Table 1.

Table 1

No.	Name	Specification
1	Peak rated voltage *	V 60 90 190 375 550
2	Creepage distance,	mm 3 4 8 10 15
3	Clearance,	mm 3 4 6 6 6 Note. * The rated voltage peak refers to the sum of the highest peak voltages of the two circuits.

1.5.4 The socket body should have the core wire serial number.

1.5.5 Adopt loose-leaf cover or similar structure.

1.5.6 The parts of the same type, specification and variety of junction boxes shall be interchangeable.

1.6 Parts requirements

1.6.1 Fasteners

Fasteners shall be anti-rust treated by electroplating or made of stainless materials.

1.6.2 Shell

1.6.2.1 Plastic enclosures shall be made of non-combustible or non-combustible materials, and their surface insulation resistance shall not be greater than $1 \times 10^9 \Omega$, and their thermal stability shall be Pass the test specified in 2.14.3 of this standard.

1.6.2.2 The light alloy casing shall be made of light alloy with a tensile strength of not less than 120 N/mm² and a magnesium content of not more than 0.5% (weight ratio).

1.6.2.3 Shells made of cast iron, light alloy, plastic or other metal materials with a thickness of less than 3mm shall be subject to paragraph 2.14.1 of this standard the prescribed impact test shall not cause deformation or damage that affects the protective performance.

1.6.2.4 It shall have the protection capability of GB 4942.2-85 "protection level of low-voltage electrical enclosures" IP54.

1.6.3 Plugin

1.6.3.1 The plug-in is made of copper alloy and the surface should be nickel-plated.

1.6.3.2 The plug-in must have sufficient separation force. In normal conditions, the separation force of one foot should be 5 ~ 30N. After the life test, it should not be less than 3N.

1.6.3.3 The connection between the insert and the wire shall be crimped. After the insert is

crimped to the wire, it shall withstand the tension value specified in Table 2, and shall not slide or break.

crack. The contact between the insert and the wire should be reliable, and there must be no mechanical damage such as cracks or breaks in the outer sheath of the wire.

Table 2

Contact diameter

Wire diameter

Crimp end tension, N Silver-plated tin-copper wire, nickel-plated copper wire, high-strength copper alloy wire 1.5 1.5 204.1 167.8 1.0 81.6 86.2 1.5 or 1.0 1.0 81.6 59.0 204.1 0.6 31.8 27.2 81.6 1.5 or 0.8 0.8 45.4 36.3 77.1 0.5 18.1 13.6 45.4 0.6 0.5 20.4 12.7 45.3 0.3 6.8 6.8 0.8 or 0.6 0.4 10.9 7.7 24.9

1.6.4 Introduction device

1.6.4.1 The junction box shall adopt a compression nut (fig. 1) or a pressure disc (fig. 2) introduction device, and it shall have a protection against loosening and preventing the cable from being pulled out.

Measures.

1- compression nut; 2-metal washer; 3-steel plug plate; 4-seal ring; 5-cable clamp;

Figure 1 Compression nut type introduction device

1-cable clamp; 2-pressure plate; 3-metal washer; 4-steel plug plate; 5-seal ring;

Figure 2 Platen introduction device

1.6.4.2 The cable entrance of the lead-in device shall be made into a bell mouth, its inner edge shall be smooth, there shall be no cracks (mouths), and it shall be provided with a nominal thickness not less than 1mm steel block plate.

1.6.4.3 For a nut-type introduction device, a metal washer must be installed between the nut and the sealing ring; the porous sealing ring or the contact area is small Single-hole seals should be fitted with metal washers on both sides (see Figure 1).

1.6.4.4 The seal ring should be made of rubber with a Shore hardness of 45 to 55 degrees. The rubber material must be able to withstand the aging requirements specified in Article 2.15 of this standard.

For the chemical test, the sealing ring shall be subjected to the clamping test specified in 2.10.1 of this standard. To fit cables with different outside diameters, cuts on the seals are allowed Cut concentric grooves.

1.6.4.5 The diameter of the hole diameter D0 of the seal ring and the outer diameter D of