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MT

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

MT/T 782.1-1998

**Mechanical and electrical equipment temperature transducer
for coal mine specification for analogue output
(English Translation)**

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Foreword

This standard strictly abides by GB in terms of explosion protection and mine safety 3836.1-1983 "General requirements for explosion-proof electrical equipment for explosive environments Seeking, GB 3836.4-1983 "intrinsically safe circuits and electrical equipment" i "for explosion-proof electrical equipment for explosive environments" and GB/T 12173-1990 "Related regulations for general electrical equipment for mining". Technical content with MT 209-1990 "Coal Mine Communication and Inspection General technical requirements for electrical and electronic products for measurement and control ", MT 210-1990 "Basic test of electric and electronic products for communication, detection and control in coal mines Inspection Methods "and other coal industry standards.

According to the performance characteristics and test methods of temperature sensors for electromechanical equipment used in coal mines, the standard is divided into two parts.

Part 1. Analog signal output type;

Part 2. Switching signal output type.

This standard is proposed by the Industry Management Department of the State Coal Industry Bureau.

This standard is under the jurisdiction of the Technical Committee for Standardization of Special Equipment for Coal Mines.

This standard was drafted. Changzhou Institute of Automation, China Coal Research Institute.

1 Scope

This standard specifies the product classification, technical requirements, test methods, and inspections of temperature sensors for coal mine electromechanical equipment with analog signal output.

Rules, signs, packaging, transportation and storage.

This standard is applicable to temperature sensors (hereinafter referred to as the abbreviations) for continuous measurement of the temperature of underground electrical and mechanical equipment and output of analog signals.

"Temperature Sensor").

2 Reference standards

The following standards contain provisions that, through reference in this standard, constitute provisions of this standard. When this standard was published, the editions shown were all effective. All standards will be revised, and all parties using this standard should explore the possibility of using the latest versions of the following standards.

156-1993 standard voltage GB 191-1990 packing storage and transportation pictogram GB/T 2829-1987 Sampling procedures and sampling tables for periodic inspection (suitable for inspection of production process stability) GB 3836.1-1983 General requirements for explosion-proof electrical equipment for explosive environments GB 3836.4-1983 Explosion-proof electrical equipment for explosive environments Intrinsically safe circuits and electrical equipment "i" GB/T 5080.1-1986 General requirements for equipment reliability testing GB/T 5080.7-1986 Equipment reliability test Validation test of failure rate and mean time between failures under the assumption of constant failure rate Test plan GB/T 12173-1990 general electrical equipment for mining GB/T 13384-1992 general technical requirements for packaging of mechanical and electrical products MT 209-1990 General technical requirements for electric and electronic products for communication, detection and control in coal mines MT 210-1990 Basic test methods for electric and electronic products for communication, detection and control in coal mines MT 286-1992 Model and management method of coal mine communication and automation products MT/T 408-1995 DC stabilized power supply for coal mine

3.1 Model

Should conform to MT Relevant provisions of 286.

3.2 Type

3.2.1

According to explosion-proof type. mine intrinsically safe type; general mine type.

3.2.2

According to measurement methods. contact type; non-contact type.

3.2.3

According to the display function. there is display; no display.

3.3 Specifications

3.3.1

According to the accuracy level of measurement. 0.1, 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 5.0.

3.3.2

According to measurement range. 0 ~ 30, 0 ~ 50, 0 ~ 100, 0 ~ 150, 0 ~ 200, 0 ~ 300, 0 ~ 400, 0 ~ 500 °C.

4 Technical requirements

4.1

The product shall meet the requirements of this standard and be manufactured in accordance with the drawings and documents approved by the prescribed procedures.

4.2 Environmental conditions

4.2.1

The temperature sensor should work normally under the following conditions.

- a) Ambient temperature. -5 ~ 40 °C, other temperature grades should meet MT Provision of 4.2 of 209-1990;
- b) Average relative humidity. not more than 95% (25 °C);
- c) Atmospheric pressure. 80 ~ 106 kPa;
- d) Where there is no corrosive gas that destroys insulation in coal mines.

4.2.2

The worst storage and transportation conditions that the temperature sensor can withstand are.

- a) High temperature. 60 °C;

- b) Low temperature. -40 °C;
- c) Average relative humidity. 95% (25 °C);
- d) Vibration. acceleration 50 m/s²;
- e) Shock. Peak acceleration 500 m/s².

4.3.1 Measurement range

The measurement range is generally. 0 ~ 30, 0 ~ 50, 0 ~ 100, 0 ~ 150, 0 ~ 200, 0 ~ 300, 0 ~ 400, 0 ~ 500 °C.

4.3.2 Basic error

The basic error limit should meet the requirements in Table 1.

Table 1

Accuracy	0.1	0.2	0.5	1.0	1.5	2.0	2.5	5.0	Basic error limit, %
	± 0.1	± 0.2	± 0.5	± 1.0	± 1.5	± 2.0	± 2.5	± 5.0	

4.3.3.1 Zero drift

h should generally not be greater than 0.1 °C.

4.3.3.2 Upper limit drift

Within h should not be greater than the basic error limit.

4.3.4 Response time

Should not be greater than 20 s, specified by the product standard.

4.3.5 Detection angle and detection distance

Non-contact temperature sensors are specified by product standards.

4.3.6 Output signal

Should conform to MT Provision of 5.3.3 in 209-1990.

4.3.7 Supply voltage

AC power supply voltage level should conform to GB According to 156, the DC power supply voltage level should conform to MT/T Regulation 408, specific scope Clearly stipulated by product standards.