

ICS 17.020
CCS A 61

JJG

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

JJG 1138-2017

**Non-dispersive Infrared Methane Transmitters for Coal Mine
(English Translation)**

Issued on: February 28, 2017

Implemented on: May 28, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Introduction (II)	
1 Scope (1)	
2 Overview (1)	
3 Measurement performance requirements (1)	
3.1 Indication error (1)	
3.2 Repetitive (1)	
3.3 Response time (1)	
3.4 Drift (1)	
3.5 Signal transmission error (2)	
4 General technical requirements (2)	
4.1 Appearance and structure (2)	
4.2 Logo and logo (2)	
4.3 Power check (2)	
4.4 Alarm function and alarm action value check (2)	
4.5 Insulation resistance (2)	
5 Measuring instruments (2)	
5.1 Test conditions (2)	
5.2 Verification Project (3)	
5.3 Verification method (4)	
5.4 Processing of test results (7)	
5.5 Verification cycle (7)	
Appendix A Simulation circuit technical requirements (8)	
Appendix B Non-dispersive infrared methane sensor for coal mines Metrological verification of original records (9)	
APPENDIX C INSPECTION CERTIFICATE/QUALIFICATION RESULTS Notice Page Format (11)	

5.5 Verification cycle (7)

Appendix A Simulation circuit technical requirements (8)

Appendix B Non-dispersive infrared methane sensor for coal mines Metrological verification of original records (9)

APPENDIX C INSPECTION CERTIFICATE/QUALIFICATION RESULTS Notice Page

Format (11)

Introduction

This procedure is based on JJF1001-2011 "General Metrology Terms and Definitions", JJF1002-2010 "National and the JJF1059.1-2012 "Measurement Uncertainty Assessment and Representation" of. The main technical indicators of this procedure refer to AQ6211-2008 "non-dispersive infrared methane sensor for coal mine".

This order is the first release.

Test procedure for non - dispersive infrared methane sensor for coal mine

1 Scope

This procedure applies to the non-dispersive infrared spectrum absorption principle of the coal mine methane sensor (hereinafter referred to as the sensor) the first test, follow-up test and the use of inspection.

2 Overview

The sensor is used to continuously detect the concentration of methane gas in a coal mine operating environment or a gas drainage pipeline.

The sensor is mainly composed of a detection unit (air chamber, infrared light source, infrared sensitive element, etc.), signal processing unit and display Display unit and other components, through the principle of infrared absorption of methane gas concentration into electrical signals, and then by the signal processing unit Processing, display methane concentration and long-distance transmission.

The sensor sampling method is mainly diffusion type.

Sensors according to the use and measurement range is generally divided into A, B, C three categories.

Class A. for environmental monitoring, measuring range. mole fraction 0 ~ 10%;

Class B. for environmental monitoring, measuring range. mole fraction 0 ~ 100%;

Class C. for gas drainage pipe monitoring, measuring range. mole fraction 0 ~ 100%.

3 Measurement performance requirements 3.1 indication error the indication error of the sensor shall be in accordance with Table 1.

Table 1 shows the indication error limits for the sensor

Measuring range

Maximum allowable error Class A Class B Class C 0 $x \leq 1\%$ $\pm 0.06\%$ $\pm 0.06\%$ $\pm 0.07\%$ 1% $x \leq 10\%$ $\pm 6\%$ $\pm 6\%$ $\pm 7\%$ 10% $x \leq 100\%$ --- $\pm 6\%$

???? $\pm 7\%$ Note. x is the mole fraction of methane.

3.2 Repeatability

Repeatability is not greater than 1%.

3.3 Response time

A, B type of sensor response time is not greater than 25s;

Class C sensor response time is not greater than 50s.

3.4 drift

The drift of the sensor includes zero drift and range drift, which should be in accordance with Table 2.