

JJG

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Verification Regulation of Pressure Type SF6 Gas Density Monitors (English Translation)

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Table of Contents

1 Scope...	4
2 Normative References...	4
3 Terms and Definitions...	4
4 General...	5
5 Requirements for Metrological Performance...	6
5.1 Accuracy Grade and Indication Error...	6
5.2 Hysteresis Error...	6
5.3 Zero Error...	6
5.4 Rated Pressure Value Error...	6
5.5 Tapping Displacement...	6
5.6 Tightness...	6
5.7 Smoothness of pointer deflection...	6
5.8 Set-point Deviation and Switching Deviation...	7
5.9 Temperature Compensation Error...	7
6 General Technical Requirements...	8
6.1 Exterior Structure...	8
6.2 Insulation Resistance...	9
6.3 Dielectric Strength...	9
7 Measuring Devices Control...	9
7.1 Verification Condition...	9
7.2 Verification Items...	10
7.3 Verification Methods...	10
7.4 Verification Results Processing...	13
7.5 Verification Period...	13
Appendix A Record Format of SF6 Gas Density Controller...	14
Appendix B Format of Content Page of Verification Certificate...	16
Appendix C Format of Content Page of Verification Result Notice...	17
References and Original Chinese Documents...	18

1 Scope

This Regulation is applicable to the initial verification, subsequent verification and examination in service of pressure type SF₆ gas density monitors or gas density relay (hereinafter referred to as instrument) with measuring range of (-0.1~0.9) Mpa, the bourdon tube as measuring element, with temperature compensating device and contact output function.

2 Normative References

This Regulation quotes the following documents.

JJG 52-1999 Verification Regulation of Bourdon Tube Pressure Gauge Pressure -

Vacuum Gauge and Vacuum Gauge for General Use

GB/T 22065-2008 Pressure Type SF₆ Gas Density Monitors

For dated references, only the edition cited applies; for undated references, the latest edition of the reference document (including any amendments) applies.

3.1 Rating pressure

Under standard atmosphere pressure conditions, SF₆ gas pressure shall be filled to the air chamber of the equipment as required before the equipment is put into operation or air supply.

3.2 Alarm pressure

Where the SF₆ gas pressure in the air chamber of the equipment drops to a set value, the instrument will give alarm signal and the set value is referred to as alarm pressure.

3.3 Atresia pressure

Where the SF₆ gas pressure in the air chamber of the equipment drops to a set value, the instrument will give atresia signal and the set value is referred to as atresia pressure.

3.4 Upper-limit alarm pressure

Where the SF₆ gas pressure in the air chamber of the equipment exceeds a set value, the instrument will sent out alarm or control signal through the connecting and disconnecting at the connecting points and the set value is referred to as upper-limit alarm pressure.

3.5 Set-point deviation

The difference between the set value and the actual pressure at the signal switching of the instrument

3.6 Switching deviation

At the same set-point, the difference between the actual pressures of the signal switching on or switching off of the instrument

3.7 Static pressure test

The verification of indication error with the load removed after the instrument is pressurized to upper limit of the measurement and the pressure is kept for 4h.

4 General

The instrument monitors SF6 gas density through the measurement of the SF6 gas pressure in the airtight equipment.

The working principle and basic structure of the instrument is to add temperature compensation function based on electric contact pressure gauge. The working principle is as follows. that elastic deformation occurs to the internal spring under the pressure, so terminal movement is caused, amplified through driving mechanism and transferred to indication device after temperature compensation, and finally the measured pressure value is indicated on the index plate through the pointer. Where the pressure drop to the alarm pressure or atresia pressure, the instrument gives alarm or atresia signal through connecting and

$\Delta t = |t_2 - t_1|, ^\circ\text{C};$

t_2 - the ambient temperature with the arbitrary value within $-20^\circ\text{C} \sim 60^\circ\text{C}$, $^\circ\text{C}$;

$t_1 = 20^\circ\text{C}$;

K_1 - the temperature compensation coefficient ($0.02\% / ^\circ\text{C}$).

5.9.2 Where the ambient temperature is less than -20°C ,

$\Delta_2 = \pm(\Delta - 20 + K_2 \Delta t)$ (2)

Where,

Δ_2 - the permissible value of temperature compensation error with ambient temperature less than -20°C (calculated according to the percentage of measuring range);

$\Delta - 20$ - the permissible value of temperature compensation error with ambient temperature being -20°C (calculated according to the percentage of measuring range);

$\Delta t = |t_2 - t_1|, ^\circ\text{C};$

t_2 - the ambient temperature with the arbitrary value less than -20°C , $^\circ\text{C};$

$t_1 = -20^\circ\text{C};$

K_2 - the temperature compensation coefficient ($0.05\% / ^\circ\text{C}$).

6.1 Exterior Structure

6.1.1

The instrument shall be assembled firmly and free from looseness; the thread joint shall be free from burr and damage; where the instrument filled with silicone oil is placed vertically, the liquid level shall be at 70%~75% of the height of the instrument index plate and the instrument shall be free from oil leakage.

6.1.2

The instrument shall be provided with the following marks.

Measurement unit, model, delivery No. measuring range, accuracy grade, manufacturer, rated pressure value, alarm value, close down value and over-limit pressure alarm value.

Alarm value and close down value shall be in obvious different colors on the index plate of the instrument so as to make a distinction between them.

6.1.3

Instrument glass shall be colorless and transparent, free from the defects or damage hindering reading; the instrument in...

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