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PEOPLE'S REPUBLIC OF CHINA**

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**Technical condition for online monitoring and alarming device
for sulfur hexafluoride gas leakage
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Compilation".

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard was proposed by the China Electricity Council.

This standard is under the jurisdiction of the National Electrochemical Standardization Technical Committee.

1 Scope

This standard specifies the technical requirements, test methods, and inspections for online monitoring and alarm devices for sulfur hexafluoride gas leakage (hereinafter referred to as devices) Rules and requirements for marking, packaging, transportation, and storage.

This standard applies to the production and inspection of online monitoring and alarm devices for sulfur hexafluoride gas leakage in the workplace of indoor sulfur hexafluoride electrical equipment.

For the production and inspection of on-line monitoring alarm devices for sulfur hexafluoride gas leakage in other places, please refer to it.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article. For undated references, the latest version (including all amendments) applies to this document.

GB/T 191 Packaging, storage and transportation pictorial signs GB/T 6587-2012 General Specification for Electronic Measuring Instruments GB/T 9969 General Rules for the Use of Industrial Products GB/T 13384 General technical conditions for packaging of mechanical and electrical products GB/T 17626.2-2006 Electromagnetic compatibility test and measurement technology Electrostatic discharge immunity test GB/T 17626.3-2016 Electromagnetic compatibility test and measurement technology Radio frequency electromagnetic field radiation immunity test GB/T 17626.4-2008 Electromagnetic compatibility test and measurement technology Electrical fast transient pulse group immunity test GB/T 17626.5-2008 Electromagnetic compatibility test and measurement technology surge (impact) immunity test GB/T 17626.8-2006 Electromagnetic compatibility test and measurement technology Power frequency magnetic field immunity test GB/T 17626.11-2008 Electromagnetic compatibility test and measurement technology Voltage sag, short-term interruption and voltage change immunity test GB/T 18268.1-2010 Electromagnetic compatibility requirements for electrical equipment for measurement, control and laboratory use-Part 1: General requirements GB 20936.1-2007 Electrical equipment for combustible gas detection Part 1: General requirements and test methods GB/T 25480 Basic environmental conditions and test methods for transportation and storage of instruments and meters JJG 205-2005 Mechanical Thermometer JJG 365-2008 Electrochemical Oxygen Analyzer JJF 1263-2010 Calibration Specification for Sulfur Hexafluoride Detection Alarm DL/T 1555-2016 Guidelines for operation and maintenance of on-line monitoring and alarm devices for sulfur hexafluoride gas leakage

3 Terms and definitions

The following terms and definitions defined in GB 20936.1-2007 and DL/T 1555-2016 apply to this document.

On-line monitoring and alarm device for leakage of sulfur hexafluoride gas Installed in indoor workplaces to continuously or periodically automatically monitor the sulfur hexafluoride gas content and oxygen content in the ambient air, A device that sends out an alarm signal and can trigger the fan when the alarm setting value is reached or exceeded. It is generally composed of a monitoring host, a detection unit and an alarm unit and other parts.

Pump aspirating device Through the gas sampling pump, the gas in the detection area is sucked and sent to the sensor for detection and alarm.

[Modify GB 20936.1-2007, terms and definitions 3.2.2] 3.3 Diffusion device Compared with the pump suction device, through the irregular movement of molecules, the gas in the detection area is freely diffused and transported to the sensor for detection.

Police device.

[Modify GB 20936.1-2007, terms and definitions 3.2.4] 3.4 Alarm error Under test conditions, the maximum allowable deviation between the standard gas concentration value when the device alarms and the alarm set value.

[Modify DL/T 1555-2016, terms and definitions 3.2] 3.5 Alarm setting value the gas alarm concentration value preset by the device.

[DL/T 1555-2016, Terminology and Definition 3.3]

4.1 Monitoring the host

It should be able to complete detection data processing, display and upload, send control instructions, alarm data storage, alarm control, alarm query, etc. when when an alarm signal is issued, the host should automatically start the fan exhaust, and the exhaust time can be flexibly set.

4.2 Detection unit

Complete gas collection and signal processing. It should include gas collector, sulfur hexafluoride gas sensor, oxygen sensor, temperature and humidity sensor and the human body induction infrared sensor and so on.

4.3 Alarm unit

The sulfur hexafluoride gas content, temperature and humidity values in the indoor working environment reach or exceed the set alarm value, or the oxygen content is lower than the set when the alarm value is reached, the device should be able to send out an alarm signal, as well as sound and light warnings. It should include sound and light alarms, fan controllers, etc.

4.4 Device structure diagram

According to different sampling methods, the device can be divided into two types. diffusion type and pump suction type. Figure 1 and Figure 2 are typical diffusion and pump suction respectively Schematic diagram of type device structure.

5.1.2 Power supply

The power supply of the device shall meet the following requirements.

a) Power supply voltage. $(220\pm 22)V$;

- b) Power frequency. (50±2.5) Hz.

5.2 Appearance

The appearance of the device should meet the following requirements.

- a) The housing of the device and various accessory equipment has no obvious scratches, dents, or deformation, and the surface is clean and stain-free;
- b) The nameplate marks, words and symbols are correct, easy to distinguish and clear.

5.3 Basic functions

The basic functions of the device should meet the following requirements.

- a) It has the functions of real-time quantitative monitoring of sulfur hexafluoride gas content, oxygen content, ambient temperature, and ambient humidity;
- b) With functions such as automatic start and stop of the fan, timing start and stop of the fan, forced start and stop of the fan, automatic voice alarm, sound and light alarm, etc., the alarm limit the value can be modified;
- c) With infrared monitoring function, it can support human body induction, and the induction range should not be less than 3m. When someone approaches the indoor workplace, the system automatically prompts the safety status of the working environment;
- d) It has the functions of data storage and query, as well as automatic recording, automatic storage and automatic update of alarm events;
- e) With data upload function, the interface should adopt RS485, support alarm switch output;
- f) It has self-check and automatic correction functions, and should have an online calibration mode and interface;
- g) The measuring sensor should have dust protection function;
- h) The device may contain two or more gas sampling and detection points, which shall meet the requirements of on-site expansion;
- i) When the device works abnormally, it has a fault alarm prompt function.

5.4.1 Insulation resistance

Under normal environmental conditions, the insulation resistance of the power input terminal to the chassis and ground should not be less than 20Mohm.