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

**GB/T 33981-2017**

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**Standard practice for the measurement of sound pressure  
levels on high-voltage alternating current circuit-breakers**

高压交流断路器声压级测量的标准规程

**(English Translation)**

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## Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses redrafted law to amend the use of IEC/IEEE62271-37-082.2012 "high-voltage switchgear and control equipment "Part 37-082. Standard Practice for Measurement of Sound Pressure Level of AC Circuit Breakers".

The main differences between this standard and IEC/IEEE62271-37-082.2012 are as follows.

--- Increasing the normative references;

--- In accordance with the provisions of GB/T 2900.86-2009 the order of the terms of the appropriate adjustments, the deletion of 2.8 "dB (A)";

--- According to the actual situation of China's power grid, the IEC/IEEE62271-37-082.2012 COSCO measuring circuit breaker rated voltage level "52kV and below, 362kV above 52kV and below, 362kV above" were revised to "40.5kV and below, 63kV and above 363kV and below, 363kV above";

--- Removed Chapter 8, "Measures to be taken" and placed the contents of 8.1 "Limitation of measurements" in 6.1.1 "Overview".

This standard proposed by the China Electrical Equipment Industry Association.

This standard by the National High Voltage Switchgear Standardization Technical Committee (SAC/TC65) centralized.

This standard was drafted unit. Ping Gao Group Co., Ltd., Xi'an Institute of high voltage electrical appliances limited liability company, Schneider Electric (China) Limited Company, ABB (China) Co., Ltd., Zhejiang Switch Factory Co., Ltd., Zhejiang Shintong Electric Manufacturing Co., Ltd., Jiangsu Arima Electric Group Co., Ltd.

Limited, Guangdong Zhengchao Electric Co., Ltd., Zhejiang Goldman Sachs Transmission and Transformation Equipment Co., Ltd.

## 1 Scope

This standard specifies the method of measurement of sound pressure level of high voltage AC circuit breakers.

This standard applies to the design and installation in a free-field environment outdoors and the system voltage is 3000V and above to produce acoustical-level AC off Roads. If protective measures were used during the measurement and the effects of these protective measures were taken into consideration in the effect analysis, these methods it can also be used in indoor or limited field AC circuit breakers.

## 2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3785.1 Electroacoustic sound level meter Part 1. Specification (GB/T 3785.1-2010,

IEC 61672-1:2002, IDT)

### 3 Terms and definitions

The following terms and definitions apply to this document.

**Decibel**

Sound pressure measurement unit (dB), refers to the compression of a wide range of values into a more meaningful scale.

Notes 1. Hearing tests show that the minimum audible sound pressure is approximately  $2 \times 10^{-5}$  Pa (0 dB), whereas the sound pressure causing the ear pain is approximately  $2 \times 10^2$  Pa (140 dB).

In general, a 10% increase in sound pressure level gives a perceived double increase in sound.

**Note 2:** Decibels are a linear weighting and can also be used to refer to the differences between various weights.

Sound level the weighted sound pressure level obtained by using the metrology characteristics and prescribed A, B, C weights (or other). The unit is decibel [dB, dB (A), dB (B), or dB (C)].

**Note:** The weights used are indicated. According to this standard, C-weighted sound level and sound pressure level (SPL) the same.

Sound pressure level; SPL the base 10 logarithm of the ratio of the sound pressure to the reference sound pressure is multiplied by 20, see Eq. (1). The unit is decibel (dB).

Sound pressure level (dB) =  $20 \lg \frac{p}{p_0}$  in the formula.

$p$  --- root mean square value of sound pressure, in units of Pa (Pa);

$p_0$  --- sound pressure root mean square reference value, usually  $2 \times 10^{-5}$  Pa.

Ambient noise all sounds in the area that have nothing to do with the facility or equipment.

**Note:** Ambient noise includes sounds from other industrial noises, vehicles, animals and people.