

ICS 27.100
CCS K 04



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

GB/T 12325-2008

Replacing GB/T 12325-2003

Power quality - Deviation of supply voltage

电能质量 供电电压偏差

Issued on: June 18, 2008

Implemented on: May 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the PRC**

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Foreword

This standard replaces GB/T 12325-2003 "Power quality - Allowable deviation of supply voltage". As compared with GB/T 12325-2003, the main changes of this standard are as follows: - CHANGE the standard name to "Power quality - Deviation of supply voltage"; - To facilitate understanding and implementation, the first three terms are harmonized with GB 156 (see 3.1 ~ 3.3); MDOFIY the definition of "voltage deviation" (see 3.4); ADD the term "voltage qualification rate" (see 3.5); - ADD the limit of voltage deviation of 20 kV voltage level (see 4.2); - In the text, ADD the "measurement of deviation of supply voltage" to enhance the standard operability; - ADD "Appendix A Statistics of voltage qualification rate", "Appendix B Monitoring of power grid voltage and statistics of voltage qualification rate of local power grid"; Appendix A and Appendix B of this standard are informative appendixes. This standard was proposed by and shall be under the jurisdiction of the National Standardization Technical Committee on Voltage, Current Rating and Frequency. Drafting organizations of this standard. China Electric Power Research Institute, North China Electric Power Research Institute Co., Ltd., China Machine Productivity Promotion Center, China Southern Power Grid Co., Ltd., China Railway Eryuan Engineering Group Corporation, Sinopec Engineering Construction Company, Shanghai Coal Research Institute Branch, Shanghai Volkswagen, The First Survey and Design Institute of Railway. The main drafters of this standard. Zhou Shengjun, Yu Kunshan, Tan Zhiqiang, Liu Xun, Lin Haixue, Wu Qiong, Lin Zongliang, Song Jianzhong, Zhang Jian, Fang Zhenghui, Wei Hongwei. This standard replaces the versions previously issued as follows: - GB 1225-1990, GB/T 12325-2003. Power quality - Deviation of supply voltage

1 Scope

China's national standard for the deviation of supply voltage - one of the family of power quality standards that between them define what a customer is entitled to receive from the

network. This one covers the slow deviation of the voltage from its nominal value: not the transients and not the flicker of its companion GB/T 12326, but the steady state level, which drifts through the day as the load on the network rises and falls and as the tap changers and capacitor banks respond. It specifies the limits of the supply voltage deviation, together with the methods of measurement and evaluation and the responsibilities for maintaining the voltage within them. It applies to the supply of electricity to customers connected to the public network. The limits are set by voltage level: tighter for the higher voltages, where the customers are large and the network is more controllable, and wider for the low voltage supply where the volt drop in the distribution circuit itself is part of the problem. What makes the standard usable is not the limits alone but the evaluation method: voltage varies continuously, so the standard sets how it is measured - the interval over which each value is averaged, the period over which the assessment is made, and the fraction of that period during which the limit may be exceeded - because a limit that had to be met at every instant could not be met by any real network, and one assessed as an average would hide the excursions entirely. The clause on responsibility matters commercially: it is what determines whether a voltage problem at a customer's terminals is the network operator's to fix or the customer's own, which is the substance of most disputes about power quality. Issued on 18 June 2008 and in force since 1 May 2009, it replaces GB/T 12325-2003.

This standard specifies the limits, measurement and qualification rate statistics of supply voltage deviation. This standard applies to the deviation of the nominal system voltage of the power supply voltage of the AC

50 Hz power system under normal operating conditions.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 156-2007 Standard voltage (IEC 60038.2002, MOD)

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 Nominal system voltage A given value which is used to mark or identify the system voltage.

3.4 Voltage deviation The relative deviation of the actual operating voltage from the nominal system voltage, expressed as a percentage.

3.5 Voltage qualification rate The percentage of the cumulative operating time to the corresponding total statistical operating time at the actual operating voltage deviation within the limit range.

4 Limit value of supply voltage deviation

4.1 The sum of the absolute values of the positive and negative deviations of the supply voltage of 35 kV and above shall not exceed 10% of the nominal voltage.

4.2 The deviation of the three-phase power supply voltage at 20 kV and below is $\pm 7\%$ of the nominal voltage.

4.3 The deviation of 220V single-phase power supply voltage is $+7\%$, -10% of the nominal voltage.

5 Measurement of supply voltage deviation

5.1 Classification of performance of measuring instruments There are two levels of measuring instrument's performance, which are defined as follows:

5.2 Measuring method of supply voltage deviation The basic measurement time window for obtaining the effective voltage shall be 10 cycles; each measurement time window shall be close to the immediately adjacent measurement time window without overlapping.

5.3 Instrument accuracy The measurement error of the level A performance voltage monitor shall not exceed $\pm 0.2\%$; the measurement error of the level B performance instrument shall not exceed $\pm 0.5\%$.

Appendix A

(Informative) **Statistics of voltage qualification rate** The monitored power supply point is called the monitoring point; the voltage qualification rate is obtained through the statistical calculation of the supply voltage deviation.