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

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Replacing GB 14050-1993

Types and safety technical requirements of system earthing

系统接地的型式及安全技术要求

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1 Scope

GB 14050 defines the types of system earthing used in low voltage installations in China - the TN-S, TN-C, TN-C-S, TT and IT arrangements - and sets the safety technical requirements attached to each. It fixes how the earthing conductor and the neutral are arranged and separated, what protective measures each type demands, and the conditions under which each may be used, which makes it the reference an electrical designer starts from and an inspector checks an installation against. Short but foundational: the choice it governs determines how every downstream protective device behaves during an earth fault. Issued on 24 September 2008, in force since 1 August 2009, replacing GB 14050-1993. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the edition it replaces are taken from there. The clause text, the tables and the numeric limits are not reproduced on this page - they are in the document itself, which is delivered in full in English translation.

This Standard specifies types and safety technical requirements of system earthing. Its purpose is to protect human and equipment safety. This Standard is applicable to the power grid of which the system nominal voltage is AC 220/380V.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding

corrigendum) 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 477-2008, Method for size analysis of coal

GB 13955, Installation and operation of residual current operated protective devices

GB 16895.3-2004, Electrical installations of buildings - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements, protective conductors and protective bonding conductors (

IEC 60364-5-54:2002, IDT)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 electrical installation A combination of related electrical equipment for one or several specific purposes.

3.2 exposed conductive part The conductive part that is easy to touch and the part that is not conductive but The conductor that is used for the electrical connection BETWEEN the given point of device, installation or system AND earthing electrode, and that has low impedance. [GB/T 4776-2008, definition 3.3.3.9]

3.8 touch voltage Unexpected voltage between two points that are touched by the human body at the same time. [GB/T 4776-2008, definition 3.2.4] NOTE 1: By convention, this term is used only in relation to indirect contact protection. NOTE 2: In some cases, the contact voltage value may be significantly affected by the impedance of the person who touches these parts.

3.9 prospect live touch voltage The possible maximum contact voltage when the impedance in the electrical installation is negligible.

3.10 system earthing The earthing at a point on a side of system power supply (usually the neutral point).

3.11 protective earthing One or more earthing-s that are placed on equipment, installation or system for safety purpose [GB/T 4776-2008, definition 3.3.2.3]

3.12 main equipotential bonding; MEB Electrical connection that makes electric potential of the exposed conductive part of each conductor and the extraneous conductive part of electrical installation basically equal.

3.13 supplementary equipotential bonding; SEB The conductive part that uses conductor to directly connect two objects to make electric potential roughly equal. monitoring device.

b) The exposed conductive part in electrical installation shall be connected to earthing electrode by protecting the conductor or the neutral conductor, so as to ensure the formation of failure circuits. Any exposed conductive part that can be touched by human body at the same time shall be connected to the same earthing system.

5.1.2 The main equipotential bonding in system shall be implemented as much as possible. The main equipotential bonding in buildings shall be interconnected to the following conductive parts:

- a) main protective conductor (protective line trunk);
- b) main earthing conductor (earthing line trunk) or main earthing terminal;
- c) common metal pipes and similar metal components in buildings (such as water pipes, gas pipes, etc.);