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

GB 6830-2025

Replacing GB 6830-1986

**The tolerable limits of danger on telecommunication lines from
power lines**

电信线路遭受强电线路危险影响的容许值

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Table of Contents

3 Introduction...	4
1 Scope...	5
2 Normative References...	5
3 Terms and Definitions...	5
4 Tolerable Limit of Dangerous Current Caused by Capacitive Coupling...	7
5 Tolerable Limit of Dangerous Magnetic Induction Voltage Caused by Inductive Coupling...	7
5.1 General Principles...	7
5.2 Fault Conditions of Power Lines...	7
5.3 Normal Operating Conditions of Power Lines...	9
9 Bibliography...	10

Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part

1. Rules for the Structure and Drafting of Standardizing Documents. This document serves as a replacement for GB 6830-1986 The Tolerable Limits of Danger on Telecommunication Lines from Power Lines. In comparison with GB 6830-1986, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

---Several terms and their definitions, including "danger effect", "power line" and "electrical railway overhead contact system" are added (see Chapter 3);

---The requirements for the tolerable limits of hazardous longitudinal electromotive force caused by magnetic induction on open telecommunication lines are deleted (see Chapter 3 of Version 1986);

---The tolerable limits for safe voltage considering the duration of faults in power lines are added (see 5.2.1);

---The tolerable limits for hazardous magnetic induction voltage on telecommunication optical cable lines are added (see 5.2.2);

---The protective measures are deleted (see Chapter 5 of Version 1986). Please be noted that certain content of this document may involve patents. The issuing institution of this document does not undertake the responsibility of identifying these patents. This document was proposed by and shall be under the jurisdiction of Ministry of Industry and Information

Technology of the People's Republic of China. The issuing of the previous versions.

---First issued in 1986 as GB 6830-1986;

---This is the first revision. The Tolerable Limits of Danger on Telecommunication Lines from Power Lines

1 Scope

GB 6830-2025 is the Chinese national standard on the tolerable limits of danger on telecommunication lines from power lines, in the field of construction materials and building. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 31 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and takes effect on 1 November 2026. Classification: ICS 91.120.40, CCS P30. 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 issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the tolerable limits for dangerous voltages on telecommunication lines and dangerous currents flowing through the human body when telecommunication lines are subjected to danger effects from power lines. This document applies to various types of power lines, such as AC power lines and AC electrical railway overhead contact systems, etc., which may have danger effects on adjacent telecommunication lines under the following states or conditions.

a) Power line fault conditions.

---A single phase of a three-phase symmetrical power line with a directly earthed neutral is short-circuited to ground;

---A single phase of a three-phase symmetrical power line with a no directly earthed neutral is short-circuited to ground;

---Two phases of a three-phase symmetrical power line with a no directly earthed neutral are simultaneously short-circuited to ground at different locations;

---A short-circuited earthing of AC electrical railway overhead contact system wires;

---A short-circuited earthing of other asymmetrical power line wires.

b) Normal operation conditions of power lines.

---AC electrical railway overhead contact system lines are normally operating;

---Other asymmetrical power lines are normally operating.

2 Normative References

This document does not have normative references.

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 danger effect The voltage and current generated by electromagnetic induction from power lines on telecommunication lines can endanger personal safety, damage telecommunication lines or equipment, and cause fires in structures. [Source: DL/T 5033-2023, 2.1.7, modified]

3.2 power line A general term for AC power lines and AC electrical railway overhead contact systems. NOTE. it transmits power frequency (

3.3 electrical railway overhead contact system An overhead wire system that supplies electrical energy to locomotives via a pantograph. NOTE. it is mainly composed of support, foundation, supporting structure and contact suspension. [Source: GB/T 50262-2024, 17.3.1, modified]

3.4 directly earthed neutral An earthing mode in which the neutral point of a transformer in a power system is directly earthed or earthed through a low-impedance connection.

3.5 no directly earthed neutral An earthing mode in which the neutral point of a transformer in a power system is not earthed or is earthed through an arc-suppression coil or a high-impedance connection.

3.6 telecommunication lines Communication lines, such as overhead or buried cables, and overhead or buried optical cables, and wired broadcasting (signal, feeder, subscriber) lines.

3.7 capacitive coupling The phenomenon where the electric field generated by a voltage-carrying line (inducing conductor) affects another line (induced conductor). NOTE. it is quantified by the capacitance coefficients between conductors and between each conductor and the ground.

3.8 inductive coupling The phenomenon where the magnetic field generated by a current-carrying line (inducing conductor) affects another line (induced conductor). NOTE. it is quantified by the mutual impedance between two conductors with a common earthed loop.

3.9 resistive coupling The phenomenon where current flowing from one conductor structure (inducing conductor) to the ground affects another conductor structure (induced conductor). NOTE. it is quantified by the conductance between these conductors (structures).

3.10 induced longitudinal electromotive force The potential difference induced between any two points on a telecommunication line by inductive coupling between currents in a power

line and the ground. [Source: DL/T 5033-2023, 2.1.12, modified]

4 Tolerable Limit of Dangerous Current Caused by

Capacitive Coupling In the event of a single-phase short-circuit to ground fault of a three-phase symmetrical power line with a no directly earthed neutral, and under normal operating conditions of AC electrical railway overhead contact system lines and other asymmetrical power lines, when a person touches a nearby telecommunications line wire, the tolerable limit of the current flowing through the human body caused by capacitive coupling is 15 mA (RMS).

5 Tolerable Limit of Dangerous Magnetic Induction Voltage

Caused by Inductive Coupling

5.1 General Principles Induced longitudinal electromotive force and induced voltage to ground are collectively referred to as magnetic induction voltage, and both shall comply with the requirements of this document regarding the tolerable limit of dangerous magnetic induction voltage.

5.2 Fault Conditions of Power Lines

5.2.1 Tolerable limit of dangerous magnetic induction voltage on telecommunication cable lines The tolerable limit of magnetic induction voltage on the telecommunication cable cores shall comply with the following provisions.