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

1 Scope

This standard applies to the hazardous impact of all types of AC power lines, AC electric railway contact networks, other strong electric lines on the adjacent telecommunication lines (including telecommunication lines and cables, cable broadcast lines, cables and broadcast audio cables) under the following status and conditions*:

1.1 Fault status of high-voltage lines

1.1.1 The three-phase symmetrical neutral point directly grounded power line has one-phase short-circuit grounded.

1.1.2 The three-phase symmetrical neutral point indirectly grounded power line has two-phase short-circuit grounded simultaneously at different locations.

1.1.3 The three-phase symmetrical neutral point indirectly grounded power line has one-phase short-circuit grounded.

1.1.4 AC electric railway contact network conductor is short-circuit grounded.

1.1.5 Other asymmetric power line conductor is short-circuit grounded.

1.2 Normal operation status of high-voltage line

1.2.1 AC electric railway contact network line operate normally.

1.2.2 Other asymmetric power lines operate normally.

1.3 Grounding current impact caused by ground short-circuit fault current of the high-voltage system

Since the power line and the AC electric railway contact network system generate ground potential in the area where the short-circuit fault current flows into and out of the earth, it causes ground current impact onto the adjacent telecommunication system (the local grounding device, the underground cable).

2 Hazardous current tolerance caused by electrical

induction

When a three-phase symmetrical neutral point indirectly grounded power line has one-phase short-circuit grounding fault, as well as in the normal operation status of AC electric railway contact network line and other asymmetric power lines, if the human body touches the adjacent communication line, the tolerance of current which is caused by the electric induction and flows through human body is 15 mA (effective value).

3 Tolerable limits of dangerous longitudinal electromotive force due to magnetic induction on telecommunication open line

3.1 Fault status of high-voltage line (excluding the situation described in 1.1.2)

3.1.1 When the high-voltage line is a general power line or an AC electric railway contact network, the tolerable limit of the longitudinal electromotive force on the communication line is 430V (effective value, the same below).

3.1.2 When the high-voltage line is a highly reliable power line**, the tolerable limit of the longitudinal electromotive force on the communication line is 650V.

3.1.3 Generally, when building a new high-voltage line or telecommunication line, the main principle is to avoid the dangerous impact of the power line on the telecommunication line. In the design process of the post-built line, the corresponding measures are first adopted to make the dangerous longitudinal electromotive force generated on the communication line not exceed the tolerable limit. In the process of reviewing the design of the approaching segment of two lines, when it is found that the induced longitudinal electromotive force may exceed the tolerable limit, the ground voltage in the accident state may be further calculated to ensure that it does not exceed the tolerable limits as specified in 3.1.1 and 3.1.2 in various cases.

* The tolerable limit of the telecommunication line for the field strength from the electrostatic field by the power line will be established separately.

** Highly reliable power line is a power line designed and constructed in accordance with the provisions of the Technical Specification for Power Line Design. The mechanical strength of the tower and wire is higher than that of the general power line, whilst the failure rate is low. The fault removal time, in most cases, shall be less than 0.2s and never exceed 0.5s.

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