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

GB/T 13870.4-2017

**Effects of current on human beings and livestock -- Part 4:
Effects of lightning strokes**

电流对人和家畜的效应 第4部分：雷击效应

(English Translation)

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Foreword

GB/T 13870 "current effects on humans and livestock" is divided into the following five sections.

- Part 1. General part;
- Part 2. Special circumstances;
- Part 3. Electric current through the effect of livestock body;
- Part 4. Lightning effect;
- Part 5. Physiological effects of contact voltage threshold.

This section GB/T 13870 Part 4.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method is equivalent to using IEC/T R60479-4.2011 "current effects on humans and livestock Part 4. Thunder and lightning effect should".

This part of the National Building Electrical Installation Standardization Technical Committee (SAC/TC205) and focal point.

This part of the drafting unit. CIC Design Institute Co., Ltd., China Power Engineering Co., Ltd., Siemens (China) Co., Ltd., Schneider Electric (China) Co., Ltd., Huizhou Hagrid Electric Co., Ltd., Legrand Low Voltage (Wuxi) Co., Ltd.

Introduction

GB/T 13870 Part 1, Part 2, Part 3 deals with the effects of electric shock currents from electrical systems on humans and domestic animals should. This section GB/T 13870 describes the impact and effect of natural electricity generated in the form of lightning strikes during thunderstorms. Lightning current may be it consists of several unipolar and/or bipolar pulsed currents with different current peaks and periods. While in GB/T 13870.2-2016 [24] Chapter 6 does not include this effect.

The interaction between a lightning strike and the victim's body is completely different from the conventional test results from the shock current of the electrical system. Lightning strike in an accident, the current path often includes the header. The importance of the lightning current entering through the cranial orifices is pointed out and by this path approaches the brain dry. The brainstem contains the respiratory center, and the lightning current flows in the opposite direction from the electric shock current generated by the electrical system. In particular, it should be noted that by the cross There is a difference between the step-voltage induced interaction and the accident caused by the direct lightning. Even lightning a very short single pulse, can cause heart-lungs to stop working [5], [6], [12], [13].

It is very dangerous to apply strong electricity to living organisms, however, it is surprising that, in most cases, it is not always fatal. people the accepted fact is that more than 90% of people involved in a lightning strike are not fatal (see references [1] and [12]). Corresponding to livestock the reliable data is unknown. For accidents that occur, due to different environments, people's initiative and first aid knowledge and medical care quality the difference, the result is also very different [1], [5].

Therefore, in the light of the special effects of lightning, a separate document needs to be developed. The physical process of lightning strikes is taken as the basis. The phase of the organism Interactions and the dangers to the life of living organisms are explained in the following clauses.

Effect of current on humans and livestock Part 4. Lightning effect

1 Scope and purpose

This section GB/T 13870 is a technical report that outlines the basic parameters and their variability of lightning and human effects on livestock.

This section points out the direct and indirect interactions that lightning can have on living organisms. Also describes the lightning current through the creature Body caused by the effect.

The purpose of this section is to show the difference between the effects of lightning strikes on humans and domestic animals and the effects of electric shocks from electrical systems.

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 13870.1-2008 current effects on humans and livestock - Part 1. General part (IEC/T S60479-1.2005, IDT)

3 Terms and definitions

GB/T 13870.1-2008 defined and the following terms and definitions apply to this document.

3.1 Definition of technical terms

3.1.1

Lightning flash Atmospheric discharge formed by one or more lightning strikes.

3.1.2

Lightning lightningstroke Single lightning discharge in a single electrical discharge.

3.1.3

Lightningchannel

Conduction path of lightning current.

3.1.4

Ladder and connected led lightning steppedandconnectingleader Stepped pilot lightning step-down from an electron cloud, connect the pilot lightning from the electron cloud under the charge concentration area gradually boost, note when they are in the process of low current does not light, two pilot lightning contact will lead to the main lightning.

3.1.5

Main lightning strikes mainstroke; returnstroke Lightning strikes with heavy current discharges are instantaneous occurrences of the ladder and the connection of the leading lightning to the ground.