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

DL/T 364-2019

**General specification of transmitting protection information on
optical channel**

光纤通道传输保护信息通用技术条件

(English Translation)

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Foreword

This standard is compiled in accordance with the rules given in GB/T 1.1-2009.

This standard replaces DL/T 364-2010 "General Technical Conditions for Fibre Channel Transmission and Protection Information". Compared with DL/T 364-2010, except in addition to editorial changes, the main technical changes are as follows.

- Updated standard normative reference documents;
- Deleted the relevant definition and description of the 64kbit/s communication rate;
- Clarified that the line longitudinal differential protection channel must not use the self-healing function of SDH channel switching loop mode;
- Increase the requirements of dual-channel line protection for channels;

--Added the definition and application of 2M optical interface;

--Added the definition and application scenarios of ASON based on demolished first.

This standard was proposed by the China Electricity Council.

This standard is under the jurisdiction of the Power Industry Relay Protection Standardization Technical Committee.

The main drafting units of this standard. China Southern Power Grid Power Dispatching Control Center, Nanjing Nanrui Relay Electric Co., Ltd., National Power Dispatching Information Center, East China Electric Power Dispatching Communication Center, Jiangsu Electric Power Dispatching Communication Center, Guangdong Power Grid Electric Power Dispatching Control Center, Jiangsu Electric Power the company's Electric Power Research Institute, Jiangxi Electric Power Company Electric Power Research Institute, Jiangsu Electric Power Maintenance Company Operation and Inspection Department, Beijing Sifang Relay Donghua Co., Ltd., Xu Ji Electric Co., Ltd., Guodian Nanjing Automation Co., Ltd., Changyuan Shenrui Relay Automation Co., Ltd.

the company.

1 Scope

This standard specifies the interface between relay protection devices and communication equipment, interface connection, protection channel composition, relay protection specialty and electrical Relevant technical principles of power communication, the reliability index of fiber channel transmission of relay protection information, and the configuration and maintain.

This standard is applicable to the optical fiber channel of 110kV and above power grid to transmit relay protection information.

2 Normative references

The references in the following documents are essential. For dated reference documents, only the dated version applies to this document. Anything not for dated reference documents, the latest version (including all amendments) applies to this document.

GB/T 7611 Digital Network Series Bit Rate Electrical Interface Characteristics GB/T 14285 Technical Regulations for Relay Protection and Safety Automatic Equipment GB/T 16712 Synchronous Digital Hierarchy (SDH) Equipment Function Block Features GB/T 21645.2 Automatically Switched Optical Network (ASON) Technical Requirements Part 2: Terms and Definitions GB/T 24367.1 Automatic Switched Optical Network (ASON) Node Equipment Technical Requirements Part 1: SDH-based ASON Node Equipment skills requirement DL/T 547 Power system optical fiber communication operation management regulations DL/T 788 All dielectric self-supporting optical cable DL/T 832 Optical fiber composite

overhead ground wire ITU-T G.703.Physical/electrical characteristics of a series of digital interfaces ITU-T G.805.General functional structure of transport network

3 Definition of terms

The following terms and definitions apply to this standard.

3.1 Professional terminology for relay protection

3.1.1

Reliability

The configured relay protection device can only operate when it is required to act in advance (that is, reliability).

It does not act when it needs to act (that is, safety).

3.1.2

Pilot protection

Fast-action protection that uses communication channels such as power line carrier, microwave, optical fiber or special guide wire to transmit each side protection information to each other.

3.1.3

Line differential protection the communication channels are used to mutually transmit the electrical quantities of each side of the protected line, and the protection of each side is calculated according to the current data of the current side and the other side.

Protect the current difference on the line, and determine the protection of the internal and external faults based on the current difference, referred to as the line longitudinal differential protection.

3.1.4

Pilot distance protection the protection of each side of the line measures the fault range by the distance element, and uses the communication channel to transmit command signals to each other. The protection of each side is based on this the result of the side and the command signal of the other side comprehensively distinguish the protection of the internal and external faults.

3.1.5

Digital interface equipment when the relay protection is connected to the optical fiber communication terminal equipment, the protection signal realizes the specified code conversion and connects to the optical fiber communication terminal equipment 3.1.6

Command signal Protect contact information such as permission, blocking, and remote tripping transmitted by the communication channel.

3.1.7

Protection command interface equipment in order to exchange command signals from each side, it is a device that realizes command signal modulation and demodulation function.

3.1.8

Communication abnormal time Refers to the communication abnormality (such as CRC check error, frame structure abnormality, communication interruption, etc.) experienced by the longitudinal protection device or the protection command interface device the accumulated time.

3.1.9

Frame error number

Refers to the accumulation of abnormal communication frames (such as CRC check error, abnormal frame structure, etc.) received by the longitudinal protection device or the protection command interface device.

3.1.10

Frame loss number

Refers to the cumulative value of frames that should be received by the pilot protection device or the protection command interface device but not received.

3.2 Communication terminology

3.2.1

Self-healing network Without manual intervention, the network can automatically recover the carried services from failures in a very short time, and the communication can operate normally.

Row. However, the repair of the fault still requires manual intervention to complete.

3.2.2

Synchronous Digital Hierarchy (SDH) A type of digital multiplexing technology. Different from the plesiochronous (PDH) system, it has and adopts in the aspects of speed, frame structure, optical interface, etc.

Use international uniform standards.

3.2.3

All dielectric self-supporting optical fiber cable (ADSS) the all-dielectric self-supporting