



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

GB/T 50063-2017

Replacing GB/T 50063-2008

Code for design of electrical measuring device of power system

电力装置电测量仪表装置设计规范

(English Translation)

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1 General

1.0.1

In order to standardize the design of electrical measuring instruments for power installations, to achieve accuracy and reliability, advanced technology, convenient monitoring, convenient operation and management, economical and reasonable, and unify design principles, this specification is formulated.

1.0.2

This code is applicable to newly built or expanded steam turbine generators and gas turbine power plants with a unit capacity of 1000MW and below, hydropower plants with a unit capacity of 200kW and above, including pumped storage power plants, conventional islands of nuclear power plants, Design of transformer (distribution) substations with AC rated voltage of 10kV and above, including series compensation stations, DC converter stations with DC rated voltage of $\pm 800\text{kV}$ and below, and grid-connected wind power and photovoltaic power stations..

1.0.3

The design of electrical measuring instruments for power installations shall not only comply with this specification, but also comply with the current relevant national standards.

2.1.1 Electrical measuring

The measurement of electrical real-time parameters by means of electricity.

2.1.2 Energy metering

Measurement of electrical energy parameters.

2.1.3 General electrical measuring meter

Refers to the instrument used for frequent measurement, selective measurement and recording of the electrical operating parameters of the power device circuit.

2.1.4 Pointer-type meter

An instrument that indicates the measured value according to the relationship between the pointer and the scale.

2.1.5 Digital instrument digital-type meter

An instrument that directly displays the measured value with numbers on the display.

2.1.6 Multifunction power meter

An intelligent instrument with multiple functions such as programmable measurement, display, digital communication and power pulse transmission output.

2.1.7 Energy meter

An instrument for measuring active (reactive) energy data.

2.1.8 Induction energy meter

An electric energy meter that operates by inductively sensing the rotation of a disc of the measuring element.

2.1.9 Electronic energy meter

Through the real-time sampling of voltage and current, the dedicated energy meter integrated circuit is used to process the sampled voltage and current signals, and the energy meter displayed by the counter or digital display.

2.1.10 Multifunction energy meter

It is composed of a measuring unit and a data processing unit. In addition to measuring one-way or two-way active (reactive) energy, it also has two or more functions such as time-sharing and direction-sharing demand, and can display, store and output data..

2.1.11 Voltage loss timer voltage loss time counter

It is a special instrument for accumulating and displaying the voltage loss time of the voltage circuit of the electric energy meter.

2.1.12 Energy tariff point

Refers to the metering point for electric energy settlement between power generation enterprises and power grid operating enterprises.

2.1.13 Electrical measuring transducers

A device that converts a measurand into a DC current, DC voltage, or digital signal.

2.1.14 Transmitter calibration value calibration value for transducers

According to the user's needs, the value of a certain amount is obtained by changing the nominal value of the transmitter through adjustment.

2.1.15 Measuring instrument accuracy class measuring instrument accuracy class

Class of measuring instruments and/or accessories that meet certain metrological requirements designed to keep permissible errors and variations within specified limits.

2.1.16 Measuring instrument intrinsic error

Refers to the error of the instrument and (or) accessories under the reference conditions.

2.1.17 Total measuring error

Refers to the combined error caused by measuring instruments, transformers and their secondary circuits.

2.1.18 Energy tariff equipment

A device for measuring electric energy parameters at electric energy gateway metering points. Including various types of electric energy meters, measuring voltage and current transformers and their secondary circuits, electric energy metering cabinets (boxes), etc.

2.1.19 Energy tariff meter

Refers to the electric energy meter equipped with the electric energy metering device at the gateway.

2.2 Symbols

R - resistance;

X - reactance;

Z-impedance;

I - current;

U - voltage;

P - active power;

Q - reactive power;

S - apparent power;

W--Active electric energy;

WQ--reactive energy;

PF - power factor;

f - frequency.

3.1 General provisions

3 The high voltage side of the generator excitation transformer;

4 Factory (station) transformer. one side of double-winding transformer and each branch circuit, three sides of three-winding transformer;

5 High-voltage plant (station) power supply. high-voltage bus working and standby power supply incoming lines, high-voltage bus contact circuit breaker, high-voltage plant feeder;

6 Low-voltage factory (station) power supply. PC power supply incoming line, PC contact circuit breaker, PC to MCC feeder circuit, diesel generator to security section incoming line and AC uninterruptible power supply distribution panel incoming line circuit;

7 Lines of 1200V and above and trunk lines of power supply, distribution and consumption networks below 1200V;

8 The electrical main wiring is each circuit breaker circuit of 3/2 wiring, 4/3 wiring and corner wiring;

9 Bus tie circuit breaker, bus section circuit breaker, bypass circuit breaker and bridge circuit breaker circuits;

10 330kV and above voltage level shunt reactor and its neutral point grounding small reactance circuit; 10kV ~ 110kV shunt capacitor and shunt reactor general circuit and group circuit;