GDJB-6000M Smart Substation Relay Protection Test System

Product Description

GDJB-6000M Smart Substation Relay Protection Test System is a new generation of intelligent relay protection tester designed according to "Smart Substation Relay Protection Technical Specifications" and "Smart Substation Technical Guidelines". It can not only realize the full function test of the optical digital protection device (IEC61850, smart digital station), but also carry out full function test on the traditional protection device (conventional station).

GDJB-6000M is a portable new product independently developed through the use of technologies such as embedded real-time operating systems, high-performance embedded processors, and large-scale logic devices, combined with power field

conditions and numerous power user experiences. It is widely applicable to power plants, substations, equipment manufacturers, enterprises and institutions, as well as other research institutes that need to carry out relay protection testing or inspection.

GDJB-6000M adopts an engineering management scheme to manage the test; project management adopts a three-layer model of protection equipment, protection type, and test point to manage the test. The structure is very clear; It supports analog output, and can simultaneously carry out the output of the analog quantity and send & receive GOOSE messages; Provides multiple ways to configure SV and GOOSE messages, including manual settings, network detection, and importing SCL files; The optical digital message has a very flexible configuration of the transceiver, which can send multiple SV and GOOSE messages with 1 optical port, and the same SV and GOOSE messages can be sent through multiple optical ports.

Applicable Standards

DL/T 860 Series Standard "Substation Communication Network and System"

DL/T 624-2010 "Technical Conditions for Relay Protection Microcomputer Based Test Equipment"

GBT 7261-2008 "Basic Test Method for Relay Protection and Safety Automatic Devices"

IEC 60255-24:2001 "Electrical relays - Part 24: Common format for transient data exchange (COMTRADE) for power systems"

Features

- Smart Test Module

Intelligent test template editing is supported. Test items can be randomly added during the test process and saved as reusable test project files to improve the test efficiency in the final stage of inspection and elimination.Strong software functions. Real time display waveform, max. Peak and location. The software can check and analyze certain phase

waveform. Windows can be zoomed in and out. One section data can be spectral analyzed and spectrum content of discharge waveform can be analyzed.

- Automatic testing

With on-site protection and digital protection automatic test function, all test items of a single protection device can be completed with one-key.The test data and transient discharge waveform can be saved automatically or manually.

- Digital/analog output

It can test the merging unit, protection, measurement and control devices, and intelligent terminals of digital substations, and can also test devices such as analog protection and transformer unit.

- Simultaneous output of analog and digital quantities

It supports simultaneous analog output and GOOSE message sending and receiving.

- Multiple scanning modes

Supports amplitude, phase, frequency, impedance, vector, sequence, and power are carried out by manual or automatic test, also supports automatic change test according to the method of gradation, slip and synthesis.

- Safety and alarm

With over-heating and over-current protection, the current source has an open-circuit protection and alarm function, and the voltage source has an overload and short-circuit protection function.

- Virtual terminal graphical display

Support virtual terminal graphical display function, the data flow is clear.

- Send and receive messages at the same time

Support IEC61850-9-1, IEC61850-9-2 and GOOSE optical digital message output. The GOOSE signal can be sent and received independently, and it can also send and receive by an optical Ethernet interface with IEC 61850-9-2.

- FT3/Extended FT3

Support FT3, extended FT3 and DL/T 282 message output, and support 2M/4M/6M/8M/10M baud rate UART encoding and 5M/10M/20M Manchester encoding.

- Abnormal test

With analog message abnormality function, it can simulate abnormality in quality, sending frequency jitter, delay anomaly, packet loss, out of step, serial number jump, maintenance mode, state virtual change and other tests.

- Fault playback

Supports fault simulation and COMTRADE format data playback function.

- MMS service

With MMS reading and writing function, can read and write intelligent IED equipment settings and other configuration information.

- Time synchronization and time giving

With synchronous trigger function, support for direct access to GPS/BD antenna for the time synchronization, also supports IRIG-B, PPS and PTP 1588 timing mode and can support external output IRIG-B, PPS and PTP 1588 time giving signal.

- Hard contact binary input and binary output

The input quantities is active and passive adaptive contacts, and the input type and input voltage are automatically recognized. The channels are isolated from each other, and the polarity reverse connection with alarm prompt.

- Message receiving and analysis

With the message receiving and analysis function, the received message can be opened with ZHNPA for analysis or export.

- Single fiber mode

The optical port supports single-fiber transmission and single-fiber reception and supports optical power testing.

- Analog small signal

It is equipped with analog small signal interface, support 12 way analog small signal input, can measure -7V~ 7V AC voltage, support 12 way analog small signal output, and can output -7V~ 7V AC voltage.

- Touch operation

Equipped with a 10.4 inch high-resolution display that supports touch operation.

- Wireless connection

Provide remote test function, with WiFi module, user-friendly.

Specifications

- AC voltage source output

Range: 6×120 V, 120V/60VA per way

Accuracy: ±10mV at 0.2~2V; ±0.2% at 2V~120V

Resolution: 1mV

- AC current source output

Range: 6×30A, 30A/150VA per way

Accuracy: ±10mA for 0~500mA; ±0.2% for 500mA~30A

Resolution: 1mA

- Output phase

Range: 0~360°

Accuracy: ±0.1°

Resolution: 0.1°

- Output frequency

Range: 0~1000Hz

Accuracy: <±0.001Hz (0~65Hz)

       <±0.01Hz(65~450Hz)

       <±0.02Hz (450~1000Hz)

Resolution: 0.001 Hz

- DC voltage source output

Range: 6 way, each way 0~130V/60VA

Accuracy: 0.2%

- DC current source output

Range: 6 way, each way 0~20A/100VA

Accuracy: 0.2%

- IEC 61850 communication interface

Number of ports: 6 pairs are 100M adaptive; 2 pairs are 100/1000M adaptive

Interface Type: LC

Wavelength: 1310nm

- IEC 60044 communication interface

Number of ports: 6 transmit ports, 2 receive ports

Interface type: ST

Wavelength: 850nm

- Synchronization interface

Quantity: 1 GPS/BD ANT; 2 IRIG-B/PPS optical signals: 1 for timing, 1 for time giving; IRIG-B/PPS 2 pairs of electrical signals: 1 pair of timing, 1 pair of time giving; IEEE 1588 1 pair

Interface type: GPS/BD ANT, IRIG-B/PPS optical signal; IRIG-B/PPS electrical signal; IEEE 1588

- Time measurement

Range: 10ms~9999.999s

Accuracy: 1ms

- Switch input

Quantity: 8 pairs

Interrupting Capacity: DC250V/0.5A

- Switch output

Quantity: 6 pairs, of which 2 pairs are for fast opening

- Wireless connection

- Interface Type: WIFI

Wired connection (Ethernet communication interface)

Number of ports: 2

Interface type: 100 megabytes LAN port, RJ45

- Power supply

Supply voltage: AC/DC 220V, allowable deviation: -20%~15%

Supply frequency: 47~65 Hz

- Analog small signal input

Number of channels: 12 way;

Interface Type: Aviation Plug, AC Voltage

- Analog small signal output

Number of channels: 12 way;

Interface Type: Aviation Plug, AC Voltage

- USB interface

Quantity: 2

- Working environment conditions

Working temperature: -20°C~70°C

Humidity: ≤95%, no condensation

- Others

Weight: 15 kg

Size: 360×480×190(mm)

Online interface: RJ45

Display: 10.4 inch 1024*768 true color LCD display with touch function