DZ9

Teleprotection equipment

Description

Teleprotection systems are the key factor in uninterruptible and secure provision of electrical power supply. The company Iskra is a traditional producer of teleprotection equipment providing a secure and dependable communication channel for the operation of protection systems enabling rapid and selective detection and isolation of faults in the electro-energetic system.

The DZ9 device enables transmission of up to 8 independent protection commands over different digital communication channels and up to 4 independent protection commands over analog communication channel. Channel coding and adaptive command detection algorithms guarantees optimal combinations of transmission time, security and dependability in current transmission conditions.

The DZ9 supports PRP/HSR redundant connection to protective equipment via IEC61850 Ethernet network. GOOSE command interface can handle up to 8 commands. Relay type and GOOSE type command interfaces can operate in parallel in the same DZ9 device. GOOSE messages from one substation can be released via relay type command outputs in a remote substation.

Users can easily adapt the DZ9 device to the control system's requirements and characteristics of the transmission media due to it's complete configurability, modularity and user-friendly design.

Main features

- Two DZ9 systems can be placed in one device carrier rack
- Digital and analog line interfaces
- GOOSE command interface for transmission of up to 8 commands according to IEC 61850 Ed.1
- RED redundant PRP/HSR unit for connection to IEC61850 Ethernet network
- Universal power supply unlit covering input voltage from 42 V DC to 264 V DC and from 82 V AC to 264 V AC
- Hot swappable optional auxiliary power supply module
- Redundant communication channel
- Multi-point command transmission
- Fast command transit function
- Programmable matrix of command inputs and outputs
- Channel identification that prevents network switching errors
- Optional signaling front panel displaying command counters and main device control signals
- Synchronization with an external GPS (PPS, IRIG-B, SNTP)
- Management and supervision via LAN/WAN or RS232 connection
- SNMP traps with alarm and device information for serving a communication NMS

Protection schemes

Each command can be selectively used in one of the different protection schemes, such as blocking, permissive trip or direct trip. Any of the commands can be used for a transmission of a short or long-term status of the signals enabling users to send a status to the remote end for purposes of the tele-control or signalization.

Implementation

- Point-to-point connection scheme with one line unit; basic and low-price solution
- Point-to-point connection scheme with two line units; redundancy of the line unit and communication path
- T point connection scheme; commands transit functionality, optimizes the number of DZ9 devices in teleprotection system
- Δ point connection scheme; three-point connection which leads to optimal transmission times and a high level of redundancy

Management and supervision system

- PEGASUS software for management and supervision of local DZ9 device or remote DZ9 device via internal service channel
- PMS software for management and supervision of GOOSE command interface
- Equipment status indicated by front panel LEDs and command counters

Technical data

Line interfaces	
Analog line interface 4-wire duplex transmission, 300 Hz – 3720 Hz, screw plug connector	
E1 ITU-T G.703 2.048 Mbps, 120 Ohm symmetrical, RJ-45 connector or 2 × 75 Ohm asymmetrical, BNC connectors	
G.703.1 co-directional 64 kbps, 120 Ohm balanced, RJ-45 connector	
Optical interface using SFP module. Possible are two modes of operation: DFO mode for direct fibre optical connection of two DZ9 devices or C37.94 mode for DZ9 device connection to multiplex equipment acc. to IEEE C37.94 standard. The connector is LC optical connector on SFP module.	
Ethernet line interface, RJ-45 connector or SFP cage for optical connection	
Commands	
Digital line interfaces	up to 8 independent and simultaneous commands
Analog line interface	up to 4 independent and simultaneous commands
Transmission modes	command mode / transparent mode
Command type	blocking / permissive / direct
Transmission time	< 10 ms (analog line interface)
	< 4 ms (64 kbps)
	< 3 ms (Ethernet line interface)
	< 1 ms (2.048 Mbps)
Inputs/outputs on relay command interface (CSR unit)	
	2 command inputs
	4 programmable command relay outputs
	2 utility relay outputs (alarm, signalization)
Inputs/outputs on GOOSE command interface (CSG unit)	
	2 Ethernet connections to protective equipment, SFP cage or RJ-45 connector (two unit versions)
	RJ-45 connector (use of the PMS user interface software)
Inputs/outputs on PRP/HSR redundant unit (RED unit)	
	RJ-45 Ethernet connection (connection to CSG unit)
	2 SFP cage for SFP modul (PRP/HSR connection to protective equipment via IEC61850 Ethernet network)
User communication interfaces	
RS-232 serial communication interface on the DZ9 device front panel (use of the PEGASUS user interface software)	
Ethernet interface with a RJ-45 connector on the CSM unit (use of the PEGASUS user interface software, SNMP remote control)	
Ethernet interface with a RJ-45 connector on the CSG unit (use of the PMS user interface software)	
Standards	
	IEC 60834-1, IEC C37.94, IEC 61850 Ed.1, EN 60255-26 (EMC), EN 60950-1 (LVD), IEC 60721, RoHS compliant
Operating conditions	
Storage (temperature/humidity)	-40 °C to + 70 °C / ≤ 100 %
Operation (temperature/humidity)	-5 °C to + 55 °C / ≤ 95 %
Power supply	
	PS 48/60 power supply unit (input voltage from 41 V DC to 72 V DC)
	PS power supply unit (input voltage from 42 V DC to 264 V DC and from 82 V AC to 264 V AC)
Mechanical system	
	19" 3 HE rack plus 1 HE mounting rail for cables fastening and cables shield earthing
Dimensions (W, H, D)	482.6 × 177.8 × 314 mm
Weight	max. 9 kg

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