

Substation Automation System Solution

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The DF1800 Substation Automation System can perform various functions such as protection, monitoring, communication and control, etc. based on the computer technology. It is a dispersed, hierarchical and distributed object-oriented system, in which the IEDs and computers are substituted for lots of devices with single relays, meters, indicators, automation devices and panels. Local Area Network (LAN) is also substituted for plentiful cables. The protection relays in the system are independent to improve the operation reliability of the substation and reduce the maintenance work.

DF1800 system can meet the requirement for substation automation put forward in CIGRE, that is, telecontrol function (telesignal, telemeter, telecontrol, etc.), voltage regulation function (Voltage and Reactive Power Control, Load-shedding, Static Reactive Power Compensator Control, etc.), metering function, protection relay function, protection relay (fault record, fault location, fault line selection), interface function (with microprocessor anti-maloperation, power supply, meters, GPS, etc.), system management function (communication with station and local SCADA, etc.).

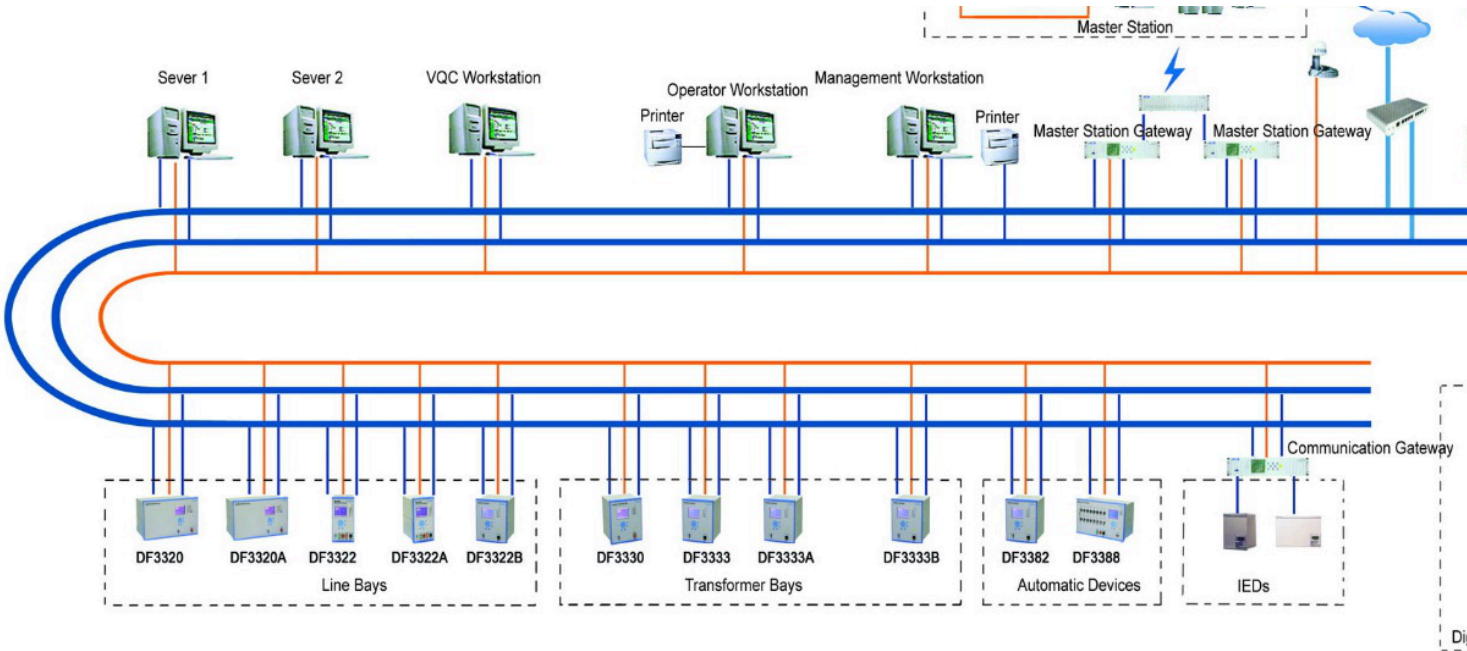
Adopt the dual-configuration: two communication interfaces are used as the hot standby each other. The operation mode of Dual-processor Dynamically Configurable is adopted, in which two processors can operate either as a host and a standby, or as two hosts. This Dual-network adopts the mechanism of message distributed processing, each other for communication for the best performance of the whole network to ensure the communication stability and data real time.

Adopt the two-level distributed network: it consists of a station level network and bay level network. The network meets the demands of IEC61850 communication protocol of the substation automation system.

Station-level communication network is Ethernet. Its communication rate is 100Mbps. The communication media can be optical fiber cable, twisted-pair cable. CSMA/CD (Carrier Sense Multiple Access with Collision Detection) is adopted, and the communication protocol is TCP/IP.

Bay-level communication network has two communication modes: One is Ethernet, whose communication rate is 10Mbps, using optical fiber cable or shielded twisted-pair cable; the other is FDKBUS field bus, using optical fiber cable or shielded cable. If using optical fiber cable, the network can be a dual-loop and self-recovery network and it has increasing reliability and flexibility. The protocol is FNP protocol of electric power industry.

Typical SAS Architecture



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