



„Rag-man“ in substations with IEC 61850 protocol

Ethernet over optical fibre connection

In addition to field and protective devices that have IEC 61850 devices, additional messages incur in switchgear stations that need to be transmitted to process control. For this transmission, the already available infrastructure for communication over IEC 61850 should be used.

As international standard IEC 61850 defines the communication architecture for substation automation devices. The standard describes a general transmission protocol for the protection and control technique of electrical switchgears in medium and high-voltage technology.

Conceptual formulation

In addition to the information provided by the field and protection devices on the IEC 61850-ring, different single alarms incur in switchgear stations, e.g. from the station supply switchboard section or general alarms like temperature monitoring or door contacts.

These alarms need to be transmitted to the existing front-end computer on the protocol IEC 61850 and then forwarded to the SCADA system.

Due to noise immunity requirements, overall cabinet communication has to be carried out on fibre optic connections.

Besides the forwarding of these alarms, classical annunciator functionalities like signal processing acc. to predefined alarm sequences, forming of collective reports or triggering of acoustic alarms are required.

Additionally, single as well as double commands from the SCADA – e.g. connection and disconnection of battery equipment – need to be carried out on-site in the substation.



REQUIREMENTS

- Acquisition of single-point information
- Issue of single and double commands
- Integration in IEC 61850-structured over optical fibre
- Immune device design
- Easy handling



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Solution

The annunciators of the series USM enable the integration of single-point information into the stations control system over the IEC 61850 standard.

The device acquires signals from the galvanic inputs, processes them, with individual parameterisable alarm sequences and provides single alarms and collective reports on the IEC 61850 bus.

Moreover, signals received from the IEC 61850 interface can also be processed and displayed on the annunciator. Optionally integrated relay outputs allow for the issue of single and double commands received from the IEC 61850 communication.

The communication interface can be carried out as RJ45 connection or fibre optic interface of the type SC.

The parameterisation of the annunciator and the configuration of the IEC 61850 interface can be done easily and comfortably through the integrated web-server of the USM.

ADVANTAGES

- Simple integration of fault annunciators into IEC 61850 structures – through copper or optical fibre connection
- Integrated relay outputs for issue of commands
- Easy parameterisation through integrated web-server
- Reliable operation through immune design and adapted signal processing
- High functionality and scalability from 8 up to 192 alarms

