The DFR downloader for feeder management protection and control modules

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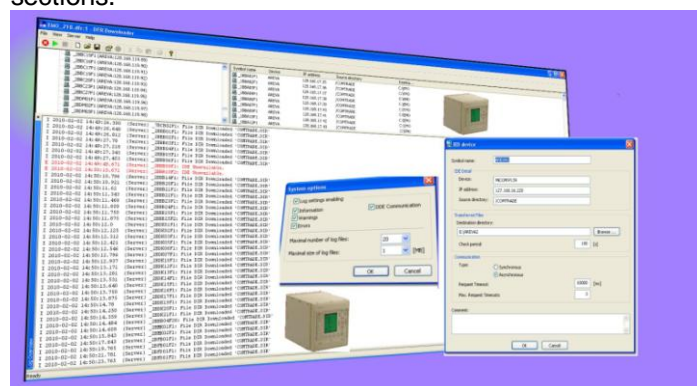
SAEAUT DFR downloader

A part of integrated communication solutions according to the standard IEC 61850 is also download of the digital fault records from feeder management protection and control modules (IED).The download according to this standard can be done also using file services of the MMS protocol (ISO/IEC 9506).

Suppliers of the products for communications according to the IEC 61850 commonly try to cover the whole spectrum of the possibilities offered by this standard. The software product SAEAUT DFR Downloader was developed with the goal to cover only the functionality of the digital fault record downloads with the perspective to enhance it later also with automatic evaluation of records, sorting and eventually also a reduction of records according to the defined criteria. The product can use MMS communication drivers from other suppliers.

It is expected that feeder management protection and control modules are connected by Ethernet to the computer running OS Windows® (XP, Vista, 7, Server 2003, 2008) for which the downloader is implemented. There is none principal restriction for number of connected digital protections. An acceptable number is given by throughput of the network connection, by the records length and by the highest acceptable protections pooling period. If the number of connected IED's is very high, it can be also important to define exact pooling sequence and also a strategy of finding new records and download of files adherent to the fault record. It is possible to download in practice any file using MMS file services.

Fault records in IED's are saved in files of the type COMTRADE (IEEE C37.111-1999). It was developed as a file format for storage on a physical medium and is not optimized for transmission over communication networks, and because of this, the planned optimization of the records reduction in our product can be very useful. Each COMTRADE record can consists of maximally 4 types of files: header, configuration, data, and information. All four files must have the same name associated with the record and only differ in their extensions. The header file is an optional free form text file created by the generator of the data and can contain any information needed to define, scope, describe, (etc.) the data. The ASCII text configuration file, as with the phasor streaming protocols, defines the format of the

data file. The data file contains the captured analog and digital values. The data file can be either ASCII text or binary, which is determined by a field in the configuration file. The information file contains auxiliary information that may allow for additional manipulation and analysis of the data file. It is an optional file to allow for backwards compatibility and is formatted in Windows.ini file format. The file format allows for public and private sections.

Obr.1 Download of fault records from 218 IED's AREVA P139 a P439 in nuclear power station Mochovce.

The current version of the SAEAUT DFR Downloader, Basic Version 1.00.00 has next features:

1. The configuration of the IED's can be saved to the file of the type DFR.
2. More configurations can be created in the configurator. The actually required configuration must be activated.
3. Dialog for the communication parameters configuring. (Timeouts, IP address, etc.).
4. Configured IED's can be viewed in tree view and list view..
5. START/STOP/SHUTDOWN from the configurator GUI
6. Server – download of the file COMTRADE.DIR (info about "COMTRADE" directory contents).
7. Server – download of the fault records (CFG and DAT files) from "COMTRADE" directory.
8. TRAY ICON functionality – Show Configurator, START/STOP/SHUTDOWN for server.
9. Logging level dialog for setting up of the maximal nr. of log-files and the max. log-file size with next possibilities:
    - Logging swit on/off
    - Logging of:
        o Basic information (I)
        o Warnings (W)
        o Errors (E)
        o DDE communication (C)
10. Above described logging features can be changed when server is running.
11. Logging is shown in the view which can be switched on/off. Records have time stamp and marking (I, W, E, C). Also text wrapping can be set up.
12. Automatic server start in the computer start time.
13. Configuration description dialog - Author, Customer, Project etc..