

61850 AVENUE TOOLSET

61850 Avenue Client tool • 61850 Relay Simulator • GOOSE toolset • Sampled Values toolset • 61850 ICD Editor • 61850 File Transfer Tool

61850 Avenue Client tool - an intuitive software tool for the newest IEC communication standard applicable to protection and control of power systems.

➤ Dedicated window for viewing process data values selected by the tool user.

➤ View of connection parameters of the selected server.

Servers

- Demo [127.0.0.1]
- Demo [127.0.0.1]

Main

- Name: Demo
- Address: 127.0.0.1
- Port: 3782

Remote OSI Parameters

- AE Qualifier: 12
- Application ID: 1.1.1.999.1
- OSI Presentation: 00000001
- OSI Session Sele: 0001
- OSI Transport Sele: 0001

Substation Configuration

- IED name: Demo
- RCB Indexing: Default
- SCL File Name: Default

Transport Layer Security

- Use TLS: Enabled
- TLS authentication: Required
- TLS CA certificate: D:\1.Projekty\5.IN
- TLS own certificat: D:\1.Projekty\5.IN
- TLS private key: D:\1.Projekty\5.IN
- TLS private keyph: D:\1.Projekty\5.IN

Authentication

- Mechanism Name: 1.0.62351.4.3.1 (C)
- Password: Password
- Certificate: D:\1.Projekty\5.IN
- Certificate private: D:\1.Projekty\5.IN

Local OSI Parameters

- AE Qualifier: 12
- Application ID: 1.1.1.999
- Application Timeou: 10
- Max. MMS Frame: 65280
- Max. MMS Service: 1
- Max. MMS Service: 1
- OSI Presentation: 00000001
- OSI Session Sele: 0001
- OSI Transport Sele: 0001

TLS authentication mode

- TLS authentication mode: required or optional

➤ IEC 61850 standard based presentation of server IED data model, not MMS based.

IED DemoMeasurement

- LN LN0
- LN LPH01
- LN LPH011
- LN LPH012
- LN LPH013
- LN LPH014
- LN LPH015
- LN LPH016
- LN LPH017
- LN LPH018
- LN LPH019
- LN LPH020
- LN LPH021
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- LN LPH099
- LN LPH100

Process Data View

Location	Function	Object name	Value	Quality	Timestamp	Receive	FC	err
DemoProtCtrl	ObjIX...	Pos - Switch po...	1...	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoProtCtrl	ObjIC...	Pos - Switch, g...	1...	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoProtCtrl	LN0	Loc - Local cont...	true	0000000000000000 (Good, Process)	2022-09-27 ...	10:15:...	ST	D
DemoMeasurement	LN0	Health - OK	Ok	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	LN0	Mod - Mode	on	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	13pM...	Beh - Behaviour	on	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	13pM...	HA_phsAHar_ [12]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	13pM...	Mod - Mode	on	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	13pM...	HA_phsAHar_ [4]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	13pM...	HA_phsAHar_ [3]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	13pM...	HA_phsAHar_ [2]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	LN0	Beh - Behaviour	on	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	13pM...	Health - Health	Ok	0000000000000000 (Good, Process)	2022-09-27 ...	10:16:...	ST	D
DemoMeasurement	13pM...	HA_phsAHar_ [1]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	13pM...	HA_phsAHar_ [7]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D
DemoMeasurement	13pM...	HA_phsAHar_ [5]	0	0000000000000000 (Good, Process)	1970-01-01 ...	10:16:...	MX	D

Sequence Number: 1 Data Set: DemoProtCtrl(LN0_DS2_Protection)

Entry Identifier: 0000000000000002 ID: DemoProtCtrl(LN0_BSR_Brcb02) Time of Entry: 2022-09-27 08:15:06.843

Data Reference	FC	Reason code
DemoProtCtrl(Obj1CSW11) Pos	ST	Reason code: DataChange
svVal	ST	01 (off)
t	ST	0000000000000000 (Good, Process)
cttModel	CF	status-only
svVal	ST	2022-09-27 08:15:06.836 (Leap Second Known)[Time Accuracy ...
DemoProtCtrl(Obj1XCBR1) Pos	ST	Reason code: DataChange
svVal	ST	01 (off)
t	ST	0000000000000000 (Good, Process)

Log

Time	Server	Message
10:16:27.354	Demo [127.0.0.1]	Report (Reference="DemoProtCtrl(LN0_Brcb02)"; RptID="DemoProtCtrl(LN0_BSR_Brcb02)"; OpFlds="(SequenceNumber, ReportTimeStamp, ReasonForInclusion, DataSetName, DataReference, CorrF...)
10:16:27.367	Demo [127.0.0.1]	Report (Reference="DemoProtCtrl(LN0_Brcb02)"; RptID="DemoProtCtrl(LN0_BSR_Brcb02)"; OpFlds="(SequenceNumber, ReportTimeStamp, ReasonForInclusion, DataSetName, DataReference, Buffer...)

➤ Intuitive and easy GUI for all interactions between the client and the server (exploration, data access, reporting, control, setting groups).

Client

➤ Supports IEC 61850 Edition 1, Edition 2 and the newest Edition 2.1.

➤ Supports secure client-server communication based on TLS and ACSE.

Server

INFO TECH

Simulation of protection relay with IEC61850 server
Now with GOOSE, file transfer and cybersecurity!

IED Name: Demo
Server IP: 0.0.0.0
Server Port: 3782
MAC: 00:50:56:C0:00:08
Edition: 2.1
ResvTms attribute: yes
Owner attribute: no
Use TLS: yes
ACSE authentication: yes

Overcurrent protection

BLOCK (Green) START (Red) TRIP (Red) RTRIP (Red) RMOTE (Red)

SG.1 IL1 = 0 IL2 = 0 IL3 = 0

D11 (Green) D12 (Green) D13 (Green) D14 (Green) D15 (Green)

UL1 = 15000 UL2 = 15000 UL3 = 15000

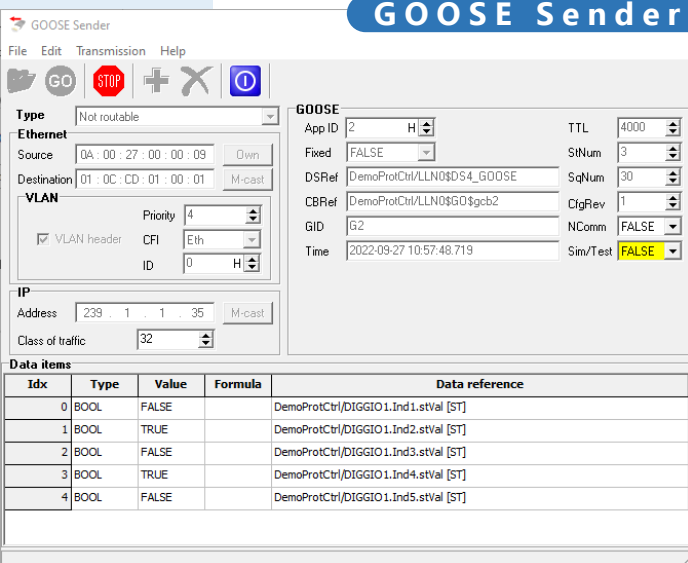
Connections: 1

61850 Relay Simulator - simple overcurrent protection relay with IEC 61850 server interface.

- Representative set of IEC 61850 models and services.
- Intuitive and easy GUI for simulation of single bay operation.
- Freeware.

GOOSE toolset:

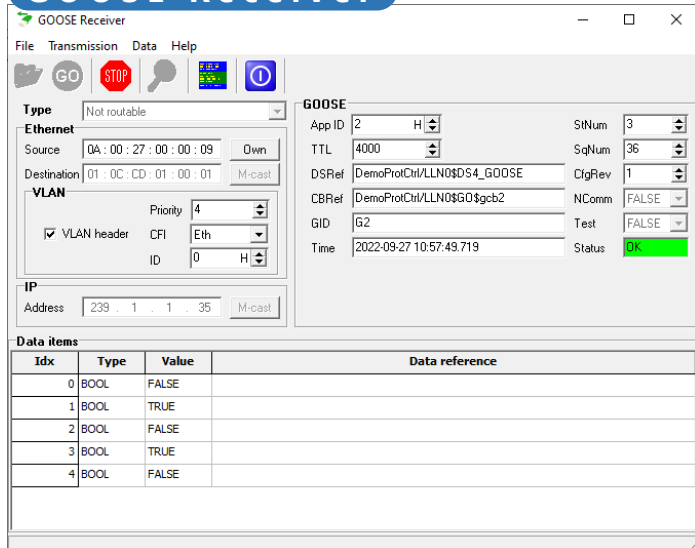
- **GOOSE Sender** - GOOSE Publisher with configurable transmission parameters of GOOSE messages.
- GOOSE Receiver** - configurable GOOSE Subscriber.



GOOSE Sender

- Supports GOOSE and R-GOOSE.
- GOOSE message transmission can be configured manually or using SCL files.
- Easy simulation of publishing IED.

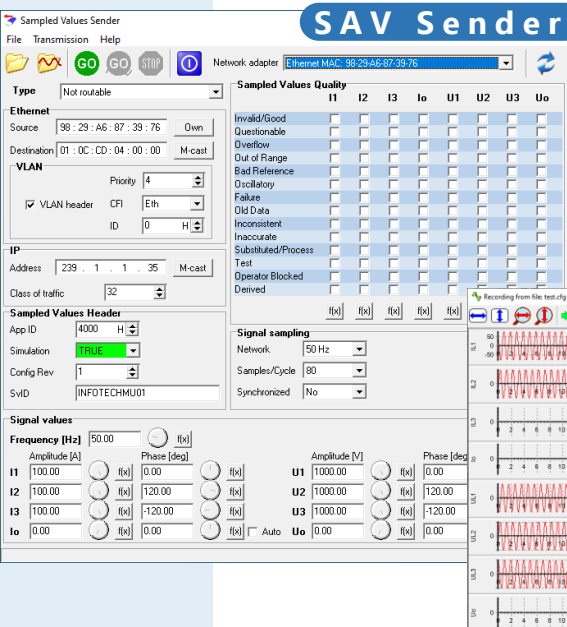
GOOSE Receiver



- GOOSE message reception can be configured manually or using SCL files or by detecting message streams in the network.
- Detection and indication of inconsistent configurations of transmitting GOOSE publishers.

Sampled Values toolset:

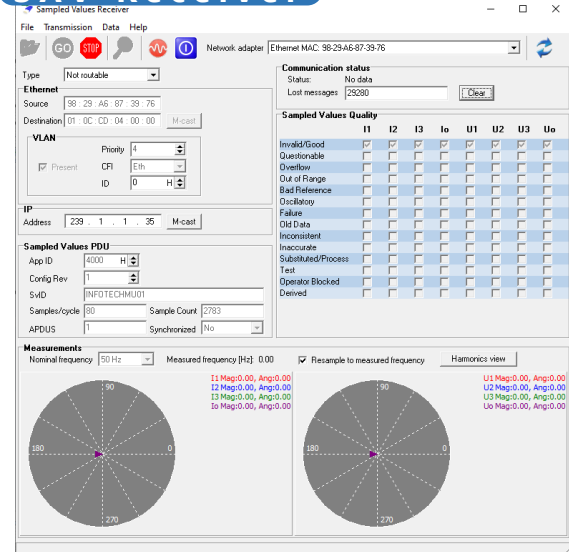
- **SAV Sender** - configurable publisher of message stream with sampled values.
- **SAV Receiver** - configurable sampled values subscriber.



SAV Sender

- Based on 9-2 LE.
- Supports SV and R-SV.
- SV message reception can be configured manually or using SCL files or by detecting message streams in the network.
- Detection and indication of inconsistent configurations of transmitting SV publishers.

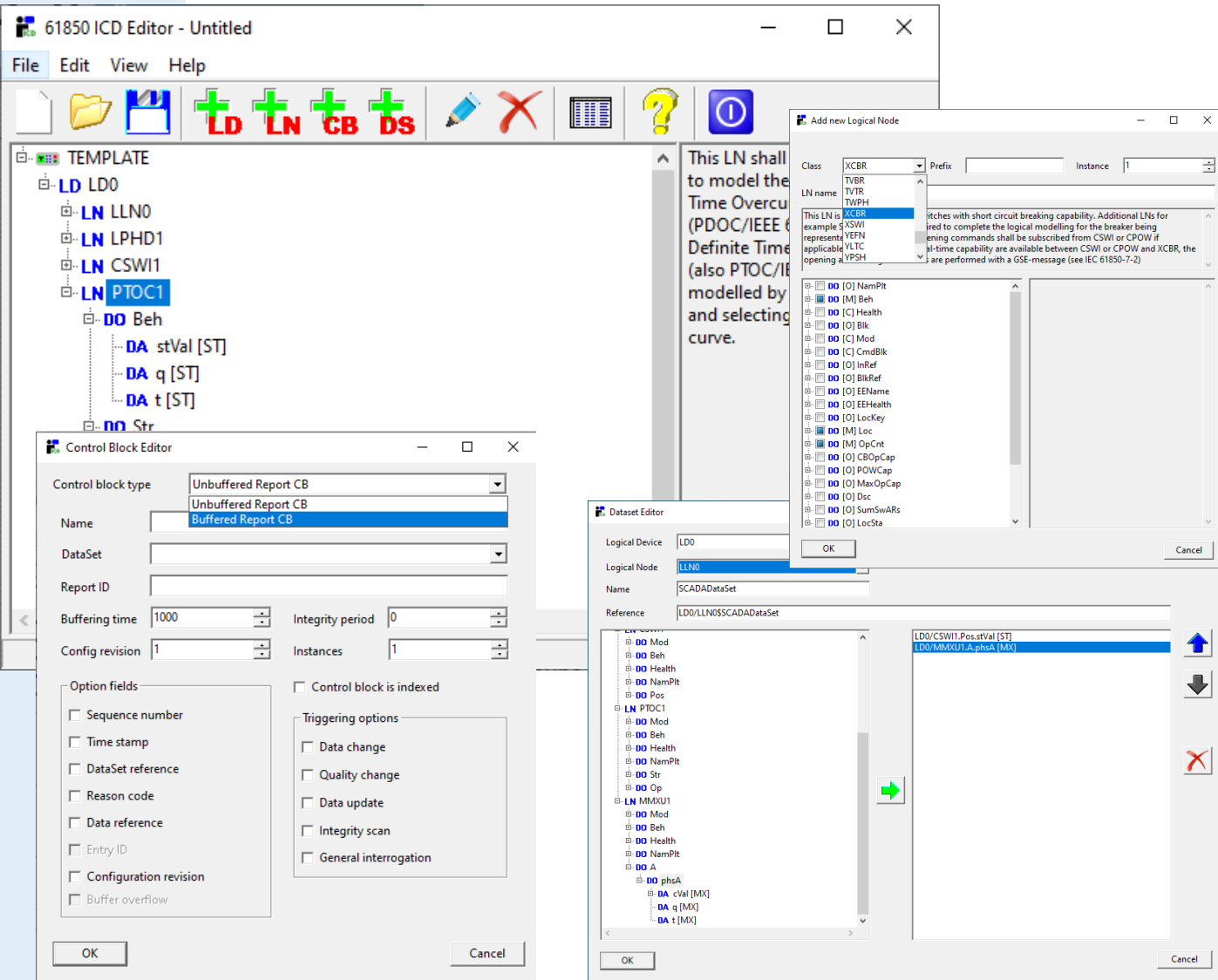
SAV Receiver



- SV message transmission can be configured manually or using SCL files or using COMTRADE file as waveform definition.
- Received SV message stream can be stored into a COMTRADE file.

61850 ICD Editor - a tool to create and modify SCL files.

- Supports IEC 61850 Edition 1, Edition 2 and the newest Edition 2.1.
- Supports also the related standards for Wind Power, DER, Hydro.
- Supports definition of ICD file with the use of standard defined and private LNs, DOs, DAs.
- Includes ICD file content verification.
- Allows to create prototypes of IEDs to be simulated prior to development.



61850 File Transfer Tool - to test access to files in server devices.

- Easy GUI based on file exchange between two file folders.

