HELIOS
POWER SOLUTIONS

AXON
Group

Axon
AT61

TOOL SUITE FOR SIMULATION OF THE IEC 61850 STANDARD

>>>

AXON AT61

Communications test simulator of the IEC 61850 standard.

A set of tools with support for connections under MMS and GOOSE protocols, in client and server modes. It facilitates the commissioning of substations allowing an intuitive diagnosis of the communication states and data models configured under the standard.

It supports multiple simultaneous connections with IEDs in editions 1 and 2, in addition, it has the function of validating SCL files based on the schemas of those versions. Allows easy exploration of the data model by discovery or from SCD / SSD / SED / ICD / IID SCL file upload. It enables reports, command sending and management of dynamic reports, as well as auto-simulation of values. It has options for plotting and exporting data from the tests carried out and includes an interactive bay simulation tool that will allow you to graphically view and manipulate the operation of a bay integrated by IEC 61850.

Benefits

- Unlimited support
- Easy-to-use tool
- Allows you to simulate multiple servers at the same time
- Easy self-simulation configuration of one or several signals
- Make dynamic discoveries of the IED capabilities
- Visualize the data model in a hierarchical structure, including reports and DataSets

IEC 61850 simulator Client

- Dynamic discovery of the structure of an IED.
- Visualization of the data model, reports, DataSets and adjustment groups.
- Loading, validation and export of SCL files.
- Exploration of the IEC 61850 data model.
- Visualization of all the data received from the IED by means of the Data Monitor.
- Enables the creation of dynamic DataSets.
- Configure, enable or disable the Buffered and Unbuffered report control blocks.
- Execute different types of Direct-Operated, Select-Before-Operate with enhanced security commands.

Simulator Bay

- Allows you to graphically interact with the components of a bay: switches,
- disconnectors, measurements, terminal blocks and commands.
- Direct-Operate and Select-Before-Operate command simulation.
- Simulation of Buffered and Unbuffered Reports.
- Local / Remote interlocking simulation.
- Self-simulation of measurement values and digital states.

IEC 61850 Server Simulator

- Allows loading files in SCL formats (cid, icd, scd) and automatically configuring the information model for the simulation of one or multiple IEDs..
- Freely allocate the directory for the file transfer service of each IED.
- Adjust the configuration parameters such as the port or define the reference directory for the file transfer server.
- Authentication mechanism support available in MMS.
- Display in flat or tree format of the logical node information.
- Supports dynamic DataSet creation and deletion operations.
- Simultaneously configure and self-simulate attributes of the same type through multiple functions and in fixed or variable periods.
- Establishes event log for state changes in connections and commands.

GOOSE Simulator (Publisher / Receiver)

- Allows detection of the GOOSE information flows circulating on the network.
- Creation of a GOOSE information flow from an existing DataSet or created specifically for the publisher.
- GOOSE connection parameter settings.
- GOOSE Publisher / Receiver messaging simulation.

IEC 61850 Simulator Client

01. Dynamic Capability Discovery

Allows you to dynamically discover the capabilities of the devices and view the data models, reports, Data Sets and available setting groups.

02. Validation of SCL files

Allows loading and validating files in SCL (Substation Configuration Description Language) format, defined in accordance with edition 1 and 2, noting possible compatibility errors.
Additionally, it allows the data model of an IED to be exported in an SCL file compatible with the standard edition.

03. Data Monitor

Displays all the data received from the IED, either by manual reading operations, polling or reports. In addition, it allows the received data to be exported to a CSV file. It offers trace and override modes, with which you can keep a record of all changes or view the last state of the signals. Finally, add a reception timestamp to verify latencies or time lags between systems.

04. Report Control Block

Configure, enable or disable the Buffered and Unbuffered report control blocks. In addition, execute General Interrogation commands, receive the information of each report through the Data Monitor and export this information.

05. Model Display

AT61 displays the IEC 61850 data model in the form of a tree. Through different windows it allows access to the information and services of the device.

06. Dynamic Datasets

Enables the creation of datasets dynamically by selecting the desired signals through a simple drag and drop operation.
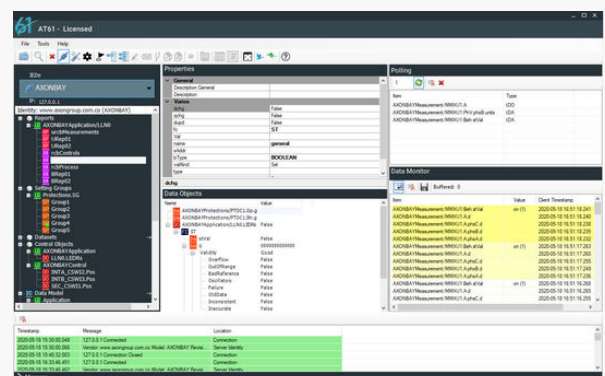
07. Commands

AT61 allows executing the different types of commands defined in the IEC 61850 standard (Direct-Operate, Select-Before-Operate, with or without enhanced security). Allows you to configure the Originator categories (orCat) according to the need of the test. The result of the operation is notified adding a possible cause of failure according to what is reported by the IED when it occurs.

The control window is set to the Mode control showing OPERATE or SELECT-CANCEL-OPERATE operations according to the type of command.

IEC 61850 Server Simulator

01. IEDs simulation

Allows loading files in SCL formats (cid, icd, scd) and automatically configuring the information model for the simulation of one or multiple IEDs. Also, adjust the communication configuration parameters such as IP address and port; IEC 61850 authentication and file transfer service.
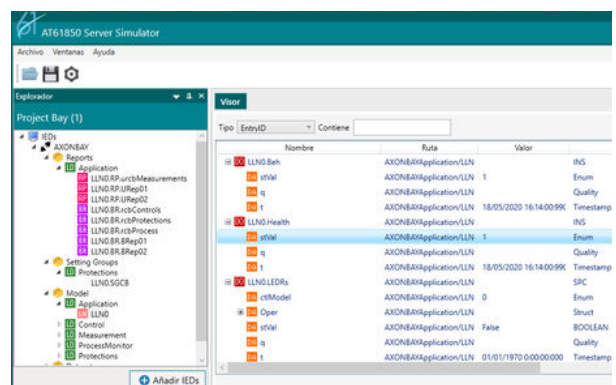
02. IEC 61850 model display

IEC 61850 data model information including reports, setting groups and DataSets can be displayed in flat or tree format. In addition, it has the ability to apply filters that will help you quickly find the attributes you want to simulate.

03. Commands

Automatically responds to commands with changes in back notice and time stamp.

04. Automatic Simulation

AT61 Server automatically configures and simulates the values of the selected attributes through multiple functions (Increments, decrements and random) in fixed or dynamic periods. Also, it allows applying filters and searches on the attributes that you want to simulate.

GOOSE Publisher & Receiver
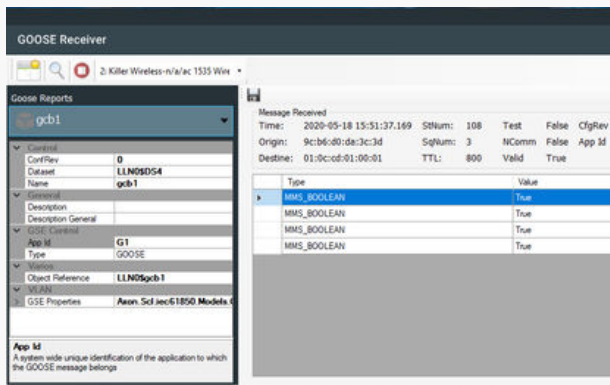

01. IEC 61850 model display

It is an IEC 61850 / GOOSE Publisher / Receiver communications simulation tool that detects the information flows that circulate through the network to establish GOOSE communication. In addition, it allows the generation of manual or automatic changes in the states of the signals.

Simulator Bay

01. IEC 61850 model display

Interactive simulation tool for a typical bay with support for IEC 61850 / MMS communications. It allows you to quickly and easily interact with the essential elements of a bay such as switches, disconnectors, measurements, terminal blocks and commands. In addition, it simulates commands, devices positions and command operations with their respective visual feedback.

- Support read and write operations on attributes.
- Simulate measurements from an expression box.
- Simulate protection function with alarm signal generation.
- Event log before connection and command changes.
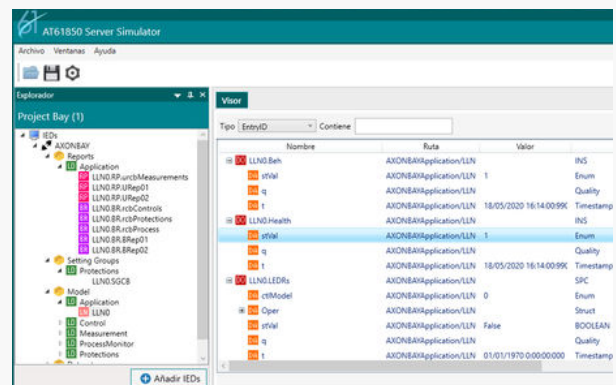
TECHNICAL SPECIFICATIONS

Sotfware Axon AT61

❯ Licensing

The AT61 license allows full access to all the design features of the AT61.

The installation process is done through a suite, which make up the four (4) softwares; AT61 Client, AT61 Server, Simulator Bay and Goose, the licensing process can be done through software or hardware, which are performed through modules, that is:

- Client: Both the AT61 Client and the Goose Client are licensed.
- Server: AT61 Server, Simulator Bay and Goose Server are licensed.

❯ Specific Features

- Load from SCL files (cid, icd, scd) and automatically configure multiple IEDs.

- View the data model, including reports, groups of settings, and DataSets.

- Configure communication parameters such as IPv4 address, network mask, port and authentication mechanism. Launch simultaneous simulation of multiple IEDs.

- Event log before connection and command changes.

Installation requirements

- **Operating System:** Windows 7 SP1 or higher
- **Hard disk:** 200 MB of free storage
- **Processor:** 1.5GHz
- **RAM:** 1GB
- **Framework:** Microsoft .NET 4.5 SP2
- **Framework:** Microsoft Visual C++ 2015 Redistributable Update 3 RC

Bonus Advantage
Axon Group

1 Unlimited and Immediate Support

2 Free Version Upgrade

3 Customized Service

4 Easy and Quickly Configuration

5 Significantly Reduced Cost for Implementation and Commissioning

6 Delivery Time: A week

Get in Touch

AU: power.system.automation@heliosps.com.au
NZ: power.system.automation@heliosps.co.nz

Helios Power Solutions is Axon Group's partner of
power system automation solutions