

AXON AT61

TOOL SUITE FOR SIMULATION OF THE
IEC 61850 STANDARD



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



Characteristics

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)

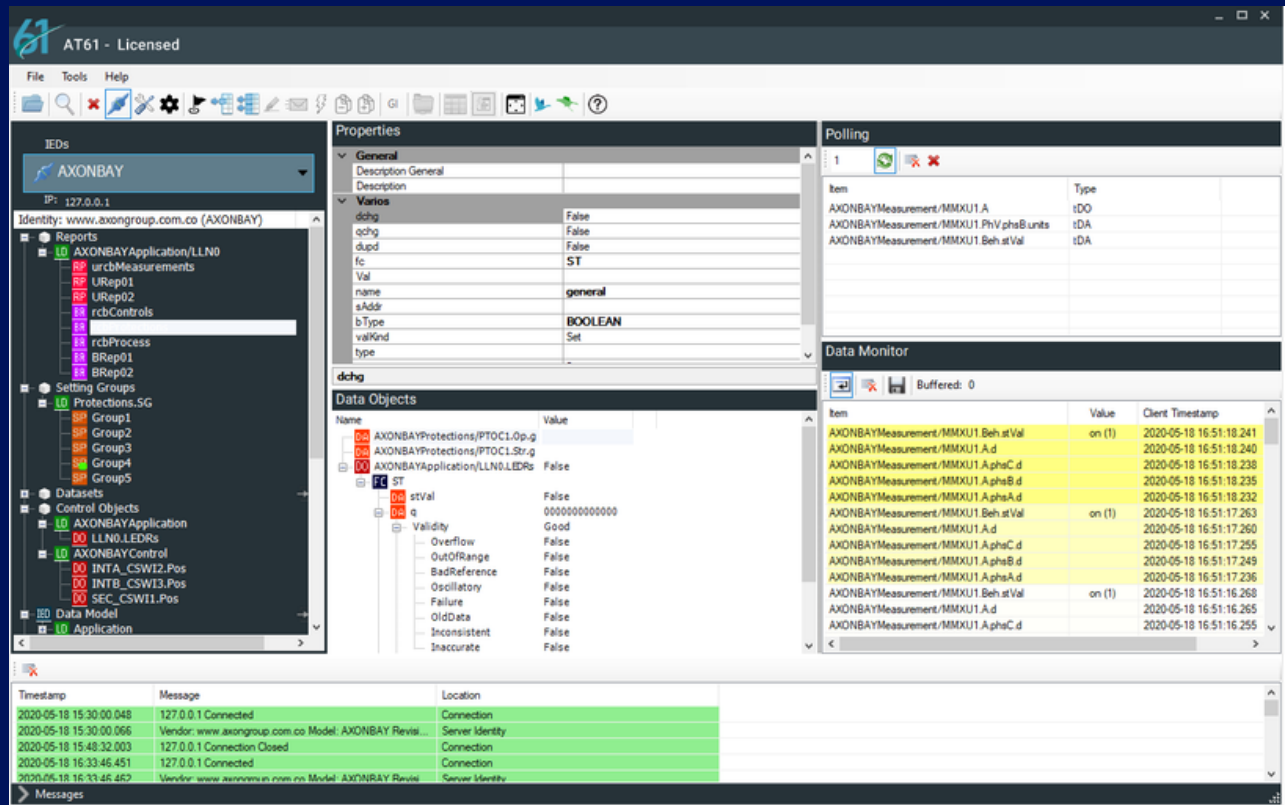
- Allows detection of the GOOSE information flows circulating on the network.
- Creation of a GOOSE information flow from an existing DataSet or created specifically for the publisher.
- GOOSE connection parameter settings.
- GOOSE Publisher / Receiver messaging simulation.

Protocols

- MMS
- GOOSE



IEC 61850 Simulator Client



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.

Cargar, validar y exportar archivos SCL

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.

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.



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.

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.

Dynamic Datasets

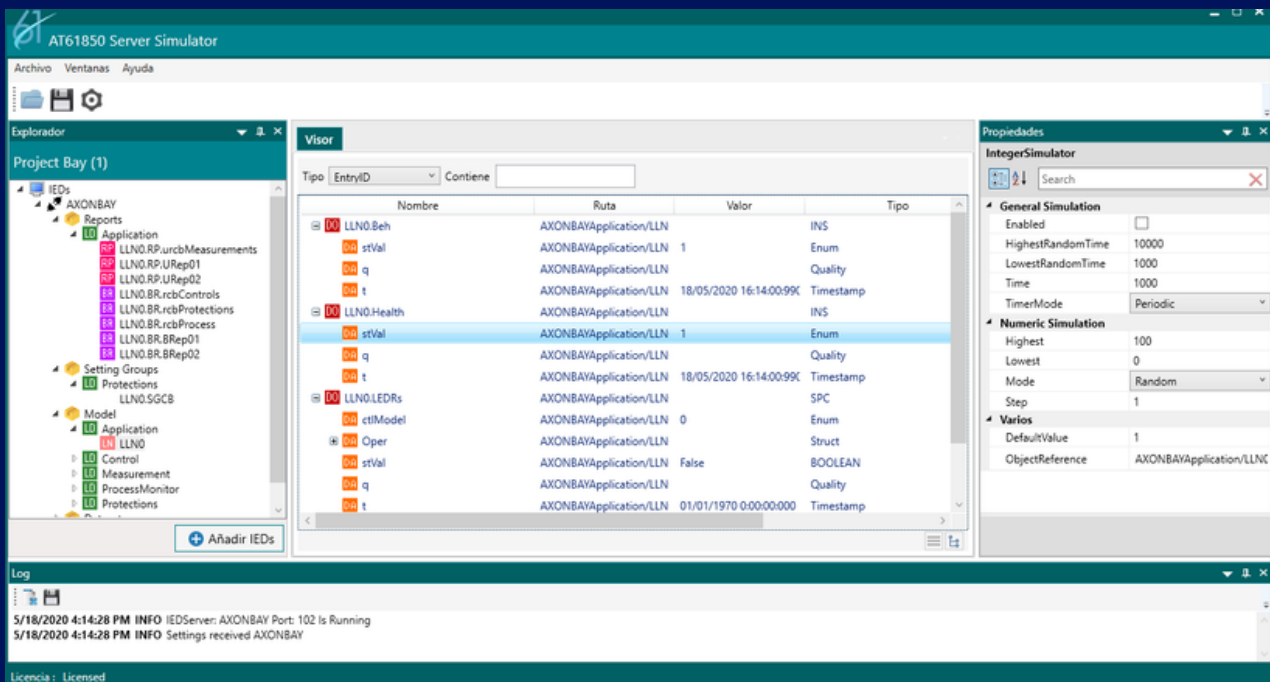
Enables the creation of datasets dynamically by selecting the desired signals through a simple drag and drop operation.

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



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.

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.

Commands

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



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

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.

The screenshot displays the 'GOOSE Receiver' application window. On the left, a 'Goose Reports' sidebar shows a tree view with 'gcb1' selected. The main panel is divided into two sections. The top section, 'Message Received', displays a table of message details. The bottom section shows a table of signal values.

Message Received							
Time:	2020-05-18 15:51:37.169	StNum:	108	Test	False	CfgRev	1
Origin:	9c:b6:d0:da:3c:3d	SqNum:	3	NComm	False	App Id	1
Destine:	01:0c:cd:01:00:01	TTL:	800	Valid	True		

Type	Value
MMS_BOOLEAN	True
MMS_BOOLEAN	True
MMS_BOOLEAN	True
MMS_BOOLEAN	True

Goose Reports

gcb1

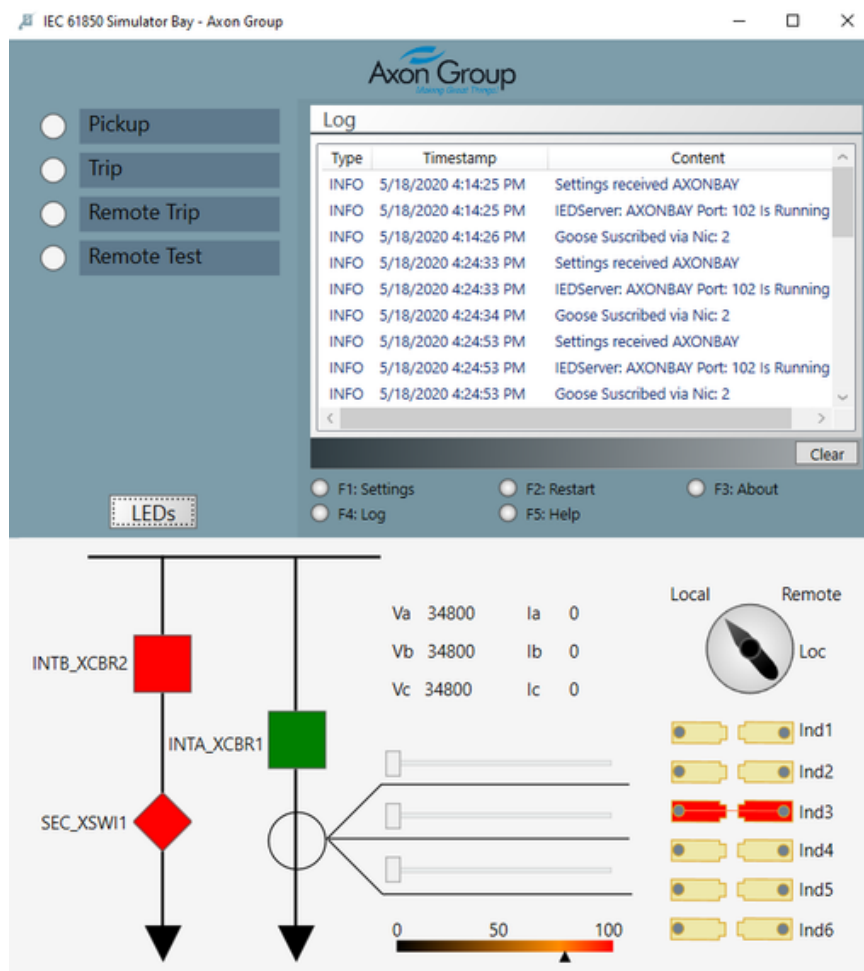
- Control
 - ConfRev: 0
 - Dataset: LLN0\$DS4
 - Name: gcb1
- General
 - Description:
 - Description General:
- GSE Control
 - App Id: G1
 - Type: GOOSE
- Varios
 - Object Reference: LLN0\$gcb1
- VLAN
 - GSE Properties: Axon.Scl.iec61850.Models.C

App Id
A system wide unique identification of the application to which the GOOSE message belongs



Simulator Bay

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



Operating system

Windows 8, Windows 10

Hardware

Intel - AMD Processor or Better

RAM 2 GB

Hard disk 400 MB Free.

Software

Framework . NET 4.5.2 SP2

Visual C++ 2013

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.





Bonus Advantage

Unlimited and Immediate Support

Free Version Upgrade

Customized Service

Easy and Quickly Configuration

Significantly Reduced Cost for Implementation and Commissioning

Delivery Time: A week



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