

# Preliminary Information

## GOOSEMeter ONE IEC 61850 Sniffer

### APPLICATION SCOPE

The actual increasing application of new technologies to the Electrical Power Systems, like the IEC 61850 standard, demand new technical tools which should make easier the work to the engineers and technicians involved in the commissioning and testing process of such new installations.

One of the most important tasks to be performed is the checking of the correct broadcasting of the GOOSE messages to the whole IED's installed in the substation, to make sure that there is none problem either in the IED or Switches hardware or even in the interconnection cables between them, assuring the correct communication into the whole bus.

These tasks may involve a large number of Datasets and GOOSE messages, which, by definition are (to say the less) cryptic and difficult to read and to identify the exact origin, issued time, information contained, status, etc.

For this reason, it is very important that the test tool would be able to assign "electrical names" to the different GOOSE messages to be checked, by means of a correspondence name template and light indicators in different colors to indicate different status, avoiding the need to interpret them from the raw information inside the GOOSE message, and making the task easier to the user and free of interpretation errors.

There are ways to create a tool like this just using software running in a computer. However, and after many experiences, it is not a practical solution, being the most important reason the need to physically connect to the cables ends which connects to the IED's and switches located inside the panels with a difficult and limited access in most occasions, making necessary a Hand Held device with an easy and dedicated control, and the ability to easily fit in very reduced spaces, exactly as a classic multi meter does. There is also another very important reason to use a dedicated test set instead of a computer: The GOOSEMeter ONE is totally risk free to write or change any configuration in the network, risk that is very evident using a non dedicated system.



### DESCRIPTION

The GOOSEMeter ONE is the response to the above mentioned applications and tasks, making them easier to perform and in a more efficient way.

The GOOSEMeter ONE is basically design to be a bridge between the code world and the electrical world, converting code data to familiar light indicators status changes.

It is a Hand Held unit which uses a high definition color touch panel display (54 x 71 mm) and a wheel and click to easily control the equipment.

It is powered by Windows CE, with all the advantages that it represents in terms of connectivity and compatibility with other devices and also for easy updates.

The GOOSEMeter ONE has one RJ-45 connector, and a USB port to connect with an external computer.

The supply voltage is from 100 to 260 V AC and it is done through an external adapter, supplied with the unit.

The dimensions of the GOOSEMeter ONE are 110 x 184 x 26 mm with a weight of 0.4 Kg.

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### FUNCTIONAL DESCRIPTION

The following describe the main functions of the GOOSEMeter ONE for better understanding of the unit performance:



- Initial window:** Detects and show the reference code of all the Datasets that are being published in the IEC-61850 network.

Each dataset have associated a network identifier and a LED type color indicator.

The different colors mean:

- White:** Just in this instant a GOOSE message pertaining to this dataset is published
- Green:** A GOOSE message pertaining to this dataset has been published short time ago.
- Grey:** No GOOSE messages pertaining to this dataset have been published long time ago.
- Red:** There is an error in the GOOSE message sequence in this dataset. In case the sequence is restored externally, the indicator will go to Green.

Just by selecting the desired dataset, the window will show the GOOSE messages inside it.

The "Remove Inactive" button serves to remove from the screen the datasets that had no activity.

The "Update" button serves to update the unit software from EuroSMC servers.



- GOOSE messages window:** Here it is shown the information of the last GOOSE message into the selected dataset.

There is the following information available:

- Event Time:** Time of day, with microsecond resolution, of the event that generated the GOOSE message.
- Seq:** Number of GOOSE messages in the dataset at the moment.
- State:** It resets to zero if the last GOOSE message has different information than the previous one. It increments by each GOOSE message with information equal the previous one.
- Data:** All the data that contain the GOOSE message. The binary data are indicated apart and also have a LED type indicator that when is in BLUE color, indicate activity.

The button "History" open a window on which the list of changes in the GOOSE message is shown. They are listed from bottom to top, being the one at the bottom the first message and the one at the top the last.

The button "Filter" allows leaving visible only the desired data.

The button "Edit" allows giving to each data a desired name by the operator, for easy identification of the data.

The button "Template" grant access to the possibility of create a names template for each data contained in a defined dataset. Also allows editing the dataset name.



- LED indicators:** In the upper side of the GOSSEMeter ONE there are three LED indicators, which function is described below:

**Yellow:** When lit it mean that the internal memory of the unit is full. When a dataset is selected all its GOOSE messages are stored in the internal memory. It may be full if the analysis time is very long. In this situation there are GOOSE messages that could be lost. It is necessary to clear the memory.

**Red:** when lit indicates that there is traffic in the IEC-61850 network.

**Blue:** When lit indicates that the Ethernet connection is properly established. It may take some time to lit.

