

# DLMS Serial to IEC104 protocol conversion

## Description

The article describes WCC Lite configuration steps to enable DLMS Serial protocol conversion to IEC 60870-5-104.



Fig 1.

## First steps

Before you begin, make sure you have completed all physical installation work according to the manufacturer's installation instructions.

Set up your computer and connect Ethernet cable to WCC Lite ETH0 port. Login with default credentials and setup basic required settings (name, network, users, etc.). You can find configuration tutorials in **How to** articles.

To prepare configuration fill information in both -Devices and Signals sheets:

# Configure devices

Add connected Gama meter with **DLMS Serial** protocol required information:

name	description	device_alias	enable	protocol	serial_number	device	databits	stopbits
From Gama Meter	Elgama Gama 300	GAMA300	1	DLMS	2250259	PORT1	8	1

baudrate	parity	flowcontrol	logical_address	address_size	client_address	type
4800	none	none	1	2	32	SN

mode	auth
DLMS-HDLC	LOW

More information concerning DLMS protocol configuration is provided in [DLMS/COSEM](#) article.

Add SCADA working on **IEC104** protocol required information:

name	device_alias	enable	protocol	bind_address	host	port
To SCADA	IEC104_SCADA	1	IEC 60870-5-104 slave	0.0.0.0	192.168.1.10 192.168.71.1	2404

asdu_size	cot_size	ioa_size	rwt	swt	t1	t2	t3
2	2	3	8	12	45	30	200


time_sync	message_size	cache_size
1	249	100

More information concerning IEC104 protocol configuration is provided in [IEC 60870-5-104 Slave](#) article.

# Configure signals

Add connected meter measurements information.

signal_name	device_alias	signal_alias	obis_job
Voltage	GAMA300	L3_U	1.0.72.7.0.255
Frequency	GAMA300	F	1.0.14.7.0.255

 **obis\_job** - Objects are identified with the help of OBIS (Object Identification System) codes.

1. The first number of OBIS code defines the media (energy type) to which the metering is related. Nonmedia related information is handled as abstract data. For example both obis\_jobs in the table above starts with numbers 1 which stands for "Electricity related objects".
2. The second number defines the channel number, i.e. the number of the input of a metering equipment having

several inputs for the measurement of energy of the same or different types (e.g. in data concentrators, registration units). Data from different sources can thus be identified. The definitions for this value group are independent from the value of the first number. In both obis\_jobs from the table above second number is set to zero which means that no channel is specified.

3. The third number defines the abstract or physical data items related to the information source concerned, for example current, voltage, power, volume, temperature. The definitions depend on the value of the first number. For example in obis\_jobs from the table above number 72 means voltage L3 and number 14 means frequency.
4. The forth number defines types, or the result of the processing of physical quantities identified with the numbers 1 and 3, according to various specific algorithms. The algorithms can deliver energy and demand quantities as well as other physical quantities. In both obis\_jobs from the table above forth number is set to 7 which stands for "Instantaneous value".
5. The value of the fifth number defines further processing or classification of quantities identified by numbers 1 to 4. In case of the first obis\_job number 0 means that all harmonics of the signal along with its fundamental frequency are going to be taken into consideration.
6. The value of the sixth number defines the storage of data, identified by numbers 1 to 5, according to different billing periods. Where this is not relevant, this value group can be used for further classification. In both obis\_jobs from the table above last number is set to 255 which means that data is not used.

Add **IEC104 Slave** signals information:

signal_name	device_alias	signal_alias	source_device_alias	source_signal_alias	enable
IEC104 SCADA V	IEC104_SCADA	IEC104_SCADA_V_L3_N	GAMA300	L3_U	1
IEC104 SCADA F	IEC104_SCADA	IEC104_SCADA_Freq	GAMA300	F	1

log	gi	common_address	info_address	data_type
1	1	1	101	36
1	1	1	104	36

For more detailed DLMS protocol communication analysis Gurux DLMS Director application can be used.

## Upload configuration

After configuring all devices and signals, follow these steps to check and upload configuration using WCC Excel Utility:

1. Download and run WCC Excel Utility;
2. Select Excel file from your computer and click *Convert*;
3. Check if no events in red color occur. If so, edit Excel file according to event text and repeat Step 2;
4. Enter Host and credentials of WCC Lite and click *Upload configuration*.

Another method to upload the configuration is via the web interface:

1. Access the WCC Lite interface via your browser:

### Authorization Required

Please enter your username and password.

Username

Password

Login

Reset

2. Upload the Excel configuration:

PROTOCOL HUB

STATUS

SYSTEM

SERVICES

NETWORK

USERS

LOGOUT (ROOT)

CONFIGURATION

IMPORTED SIGNALS

EVENT LOG

PROTOCOL CONNECTIONS

PROTOCOL LOGGER

SCRIPT-RUNNER

### Protocol configuration

#### IMPORT PROTOCOL CONFIGURATION

Here you can import Excel configuration file. Up to 1000 signals are allowed. All previous signals will be replaced.

Configuration file: 

Choose File

 No file chosen 

Import configuration

PLC (IEC-61499) Boot file: 

Choose File

 No file chosen 

Import FBOOT file

IEC61850 Client model file: 

Choose File

 No file chosen 

Import client model file

IEC61850 Server model file: 

Choose File

 No file chosen 

Import server model file

3. After a successful upload, the configuration will appear under the **DOWNLOAD CONFIGURATION** tab:

#### DOWNLOAD CONFIGURATION

Current configuration (config-elseta-wcc-Comlynx.xlsx):  
Last changed: 2024-11-10 01:44:14

Download

Template configurations:

Download

4. If any errors occur during the upload, follow the error messages, fix them along Excel utility guidelines.

# Files

- 1. WCC Excel Utility Download
- 2. Example of configuration file Download