

Modbus RTU to DNP3 protocol conversion

Setup

The article describes WCC Lite configuration steps to enable Modbus RTU protocol conversion to DNP3 serial.



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 the Ethernet cable to the WCC Lite ETH0 port. Log in with default credentials and set up basic required settings (name, network, users, etc.). You can find configuration tutorials in [How to](#) articles.

To prepare the configuration, fill in the information in both the [Devices](#) and [Signals](#) sheets:

Configuring Devices

Add a connected ABB meter with the Modbus RTU protocol required information:

name	description	device_alias	enable	protocol	id	device	baudrate	databits
From ABB Meter	ABB B21	B21	1	Modbus RTU	1	PORT1	9600	8

stopbits	parity	flowcontrol	scan_rate_ms	serial_delay	retry_count
1	none	none	5000	200	3

Add the SCADA working on the DNP3 protocol required information:

name	device_alias	enable	protocol	mode	bind_address
DNP3	DNP3_SCADA	1	DNP3 TCP slave	TCP	0.0.0.0


host	port	source_address	unsol_classes
192.168.1.1	20000	1	1,2,3

You can find more options and descriptions of the settings in the [Device configuration](#) article.

Configuring Signals

Add connected meter measurements information. Use the meter manual for information and addresses (**tag_job_todo**).

signal_name	device_alias	signal_alias	enable	multiply	log	job_todo	tag_job_todo	number_type
Voltage	B21	U	1	0.1	1	3;23296;2	3;23296;2	UNSIGNED32
Current	B21	I	1	0.01	1	3;23308;2	3;23308;2	UNSIGNED32
Active power	B21	P	1	0.00001	1	3;23316;2	3;23316;2	SIGNED32
Frequency	B21	F	1	0.01	1	3;23340;1	3;23340;1	UNSIGNED16
Power factor	B21	Cos	1	0.001	1	3;23354;1	3;23354;1	SIGNED16
Active import	B21	E	1	0.01	1	3;20480;4	3;20480;4	FLOAT

 **job_todo** -Request to send according to Modbus specification without device address and checksum;

 **tag_job_todo** - a subset of the **job_todo** field, exact address of measurement (tag)

Add **DNP3** master signals information:

signal_name	device_alias	signal_alias	source_device_alias	source_signal_alias
Voltage	dnp3	dnp3_1001	B21	U
Current	dnp3	dnp3_1002	B21	I
Active power	dnp3	dnp3_1003	B21	P
Frequency	dnp3	dnp3_1004	B21	F

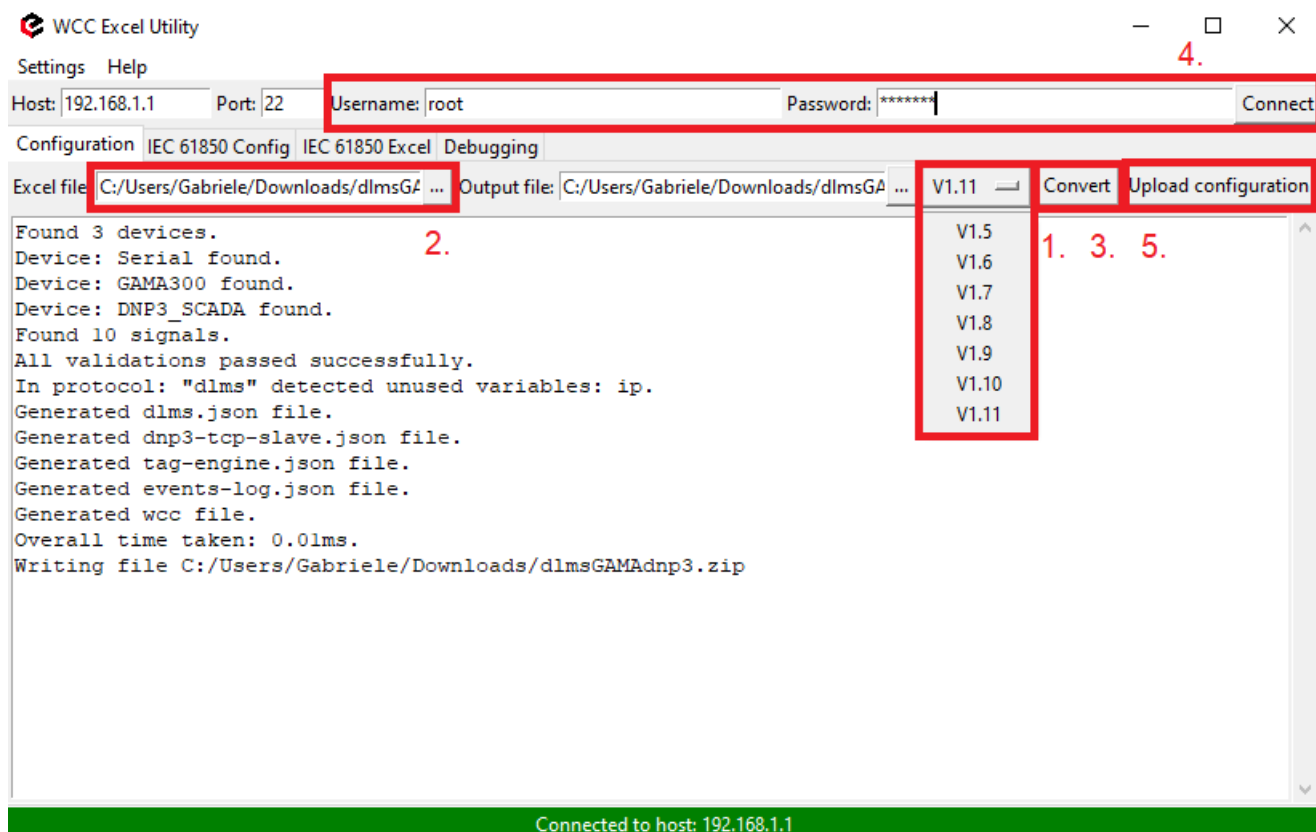
Power factor	dnp3	dnp3_1005	B21	Cos
Active import	dnp3	dnp3_1006	B21	E

enable	log	index	signal_type	static_variation	event_variation	class_num
1	1	1	analog	1	1	13
1	1	2	analog	1	1	13
1	1	3	analog	1	1	13
1	1	4	analog	1	1	13
1	1	5	analog	1	1	13
1	1	6	analog	1	1	13

Uploading the Configuration

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

1. **Download** and run WCC Excel Utility.
2. Select the firmware version from the drop-down menu.
3. Select the Excel file from your computer and click *Convert*.
4. Check if no events in red colour occur. If so, edit the Excel file according to the event text and repeat Step 2.
5. Enter the Host and credentials of WCC Lite, click connect and then *Upload configuration*.



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

1. Access the WCC Lite interface via your browser. The default IP address is 192.168.1.1. Enter credentials:

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 and fix them according to Excel utility guidelines.

Files

1. WCC Excel Utility [Download](#)
2. Example configuration file [Download](#)
3. ABB meter manual [Download](#)

🕒Revision #16
★Created 4 May 2023 09:53:29 by Tomas
✎Updated 27 May 2025 12:06:55 by Gabriele