1. ABB B21, B23 and B24 Energy Meter

In this section

1.1. Features and requirements

Venus OS supports ABB's B-series Energy Meters B21, B23 and B24 as an alternative for Carlo Gavazzi Energy Meters. These meters can be used as a generic AC meter or to measure power and energy for a non-supported PV-inverter or genset. The following ABB product IDs are supported:

- B21: Single-phase meter, up to 65A, 35mm wide. Product ID 2CMA100155R1000 Silver[https://new.abb.com/products/2CMA100155R1000/b21-312-100] Use the B21 Silver as a replacement for the ET112.
- B23: Three-phase meter, internal shunt, up to 65A per phase, 70mm wide. Product ID 2CMA100169R1000 Silver[https://new.abb.com/products/2CMA100169R1000/b23-312-100] Use the B23 Silver as a grid meter replacement for the EM24 in ESS systems or to measure a 3-phase PV inverter.
- B24: Three-phase meter, uses Current Transformers. 70mm wide. Ratio configurable, up to 1000A per phase. CTs must be purchased separately. A selection guide for CTs can be found on page 10 of the linked ABB document[https://library.e.abb.com/public/d76adde8f1b45f8cc1257c9a004ee362/2CSC446012B0201.pdf]. Product ID 2CMA100183R1000 Silver[https://new.abb.com/products/2CMA100183R1000/b24-352-100] Use the B24 Silver as a replacement for the EM24 in ESS systems with more than 65A per phase.

A rough overview of the functionalities can be found here (click on Functionalities): ABB Energy Efficiency devices[https://new.abb.com/low-voltage/products/system-pro-m/energy-efficiency-devices/energy-meters]. Detailed information on the respective meter can be obtained via the Product IDs linked above.

Note that the 'Steel' versions are not supported as they do not allow measurement of reverse energy, making it impossible to see sold energy. Charts and counters on VRM will not display correctly with a Steel meter. Make sure the meter you're purchasing is of the Silver (or better) designation and has Modbus RS485.

Minimum Venus OS firmware version: 2.92 or later.

Piggy-backing (grid on L1 and PV-inverter on L2) is not supported.

Each of these models have an LCD screen and connect to the GX device via an RS485 to USB interface[https://www.victronenergy.com/accessories/rs485-to-usb-interface]. Zigbee connection is not supported.

The three-phase meters use the vector method for the total energy calculation. This is the preferred method in many countries, such as Germany and Austria. The total power is separately integrated into import- and export energy values rather than just summing the individual phase values.

In contrast to the CG meter, the ABB meter is configured via the Device list and not via Settings > Energy meters of the GX device. See the GX device configuration chapter[abb-b21,-b23-and-b24-energy-meter.html#UUID-d32ac257-b778-f390-8556-4b10b1e85ec7].

1.2. Installation and configuration

1.2.1. Wiring the RS485 to USB interface

A very small flat screwdriver is required to access the screws of the RS485 connection on the B-series terminals.

RS485 to USB	RS485 signal	ABB B-series terminal
Black	GND	terminal C (35)
Orange	Data +	terminal B (36)
Yellow	Data -	terminal A (37)
Note that the red, green and brown wire coming out of the RS485 to USB cable are not used.		

1.2.2. Configuration of the ABB meter for Venus OS

A few settings such as baud rate and the correct parity must be made. The following steps are necessary to configure the ABB meter for Venus:

1. Open the front plastic cover. With the cover closed you cannot push the SET button.
2. Push the SET button. The LCD will display "RS-485".
3. Push OK. The LCD will show "Prot" (protocol).
4. Push the down button. LCD will show "baud". Then press OK.
5. The current baud rate will be shown on the screen. Press SET. The screen will start to blink.
6. Press the down-arrow until "38400" is shown. Then press OK.
7. Press and hold OK for a second to return to the previous menu. It will show "baud" again.
8. Press the down arrow until "Parity" is displayed. Press OK. The current setting will be displayed (factory default "even").
9. Press SET. The display will blink.
10. Press the down button until "None" is displayed. Press OK.
11. Press and hold OK for a second a number of times to back out of the menu completely back to the main screen.
12. Close the cover.

For detailed installation and configuration information, see the ABB documentation linked under Features and requirements[abb-b21,-b23-and-b24-energy-meter.html#UUID-9f6c7723-6fa3-d505-60c9-b82edc10f60f].

1.2.3. GX device configuration

After proper connection and powering up, the meter(s) will be visible on the GX device in the Device list.

Note that unlike other energy meters, the current values of the ABB meter are always displayed as positive numbers. This is normal.
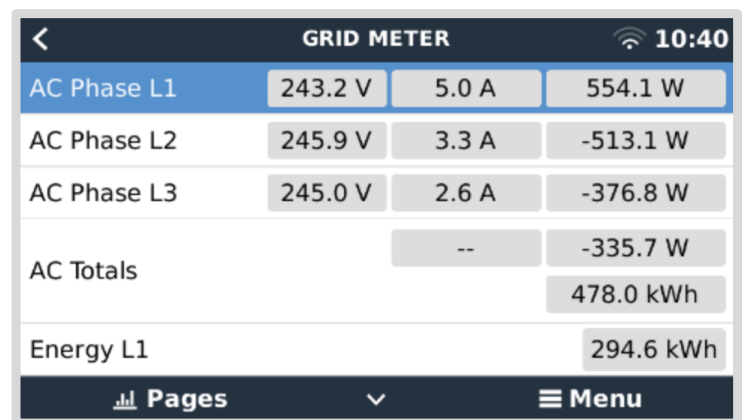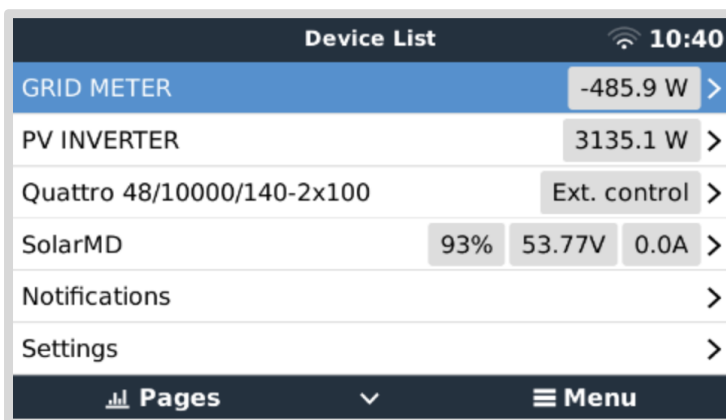
Scroll down to the Setup tab and set the Role of the Energy Meter:

| Role | Grid meter |

Grid meter	⦿
PV inverter	○
Generator	○
AC load	○

Once the Role has been properly set, the configuration is done.

Prev[index-en.html]