TECHNICAL BRIEF

AC-coupling with Victron battery inverters using Modbus TCP/IP

Applicable regions: EMEA

Contents

1. Introduction

Enphase IQ7 and IQ8 Series Microinverters are readily available to AC-couple with the Victron battery inverters, namely the MultiPlus-II and the Quattro because they offer the frequency shift function once set up in VE-configuration. This allows the microinverters to keep supplying power to the Victron inverter in an off-grid event and reduces the battery cycles, allowing a longer life for the battery, relying on the microinverter to supply power to the loads, and keeping the battery charged during the sunlight hours.

Enphase has now activated the Modbus TCP/IP read-only function over the 700 range allowing Modbus integration with Victron Energy. This new feature enables the installers and homeowners to view the PV production on the Victron Remote Monitoring (VRM) portal without installing separate energy meters.

Only the read-only functions are available using Modbus TCP/IP. Therefore, the frequency shift function must still be enabled.

This technical brief describes Enphase integration with Victron and the ability to communicate to Victron devices over Modbus TCP/IP with read function only.

2. Configuration

A typical Enphase Energy System consists of the following components.

- IQ Gateway Metered (ENV-S-WM-230, ENV-S-EM-230 SKU) with CTs installed and software version 8.2.4264 or higher
- IQ Series Microinverters (IQ7A-72-2-INT, IQ8HC-72-M-INT, IQ8P-72-2-INT)
- IQ Relays (Q-RELAY-1P-INT)
- IQ Cabling and accessories

NOTE: Only specific product codes mentioned have been tested and proven to work in the field.

To update the firmware version and for the Modbus to be enabled and set up, the installer must contact Enphase Support at support_emea@enphaseenergy.com, providing a site ID and the IQ Gateway serial number.

The following figures show Enphase system with Victron as an AC-coupled system in single and three-phase configurations.

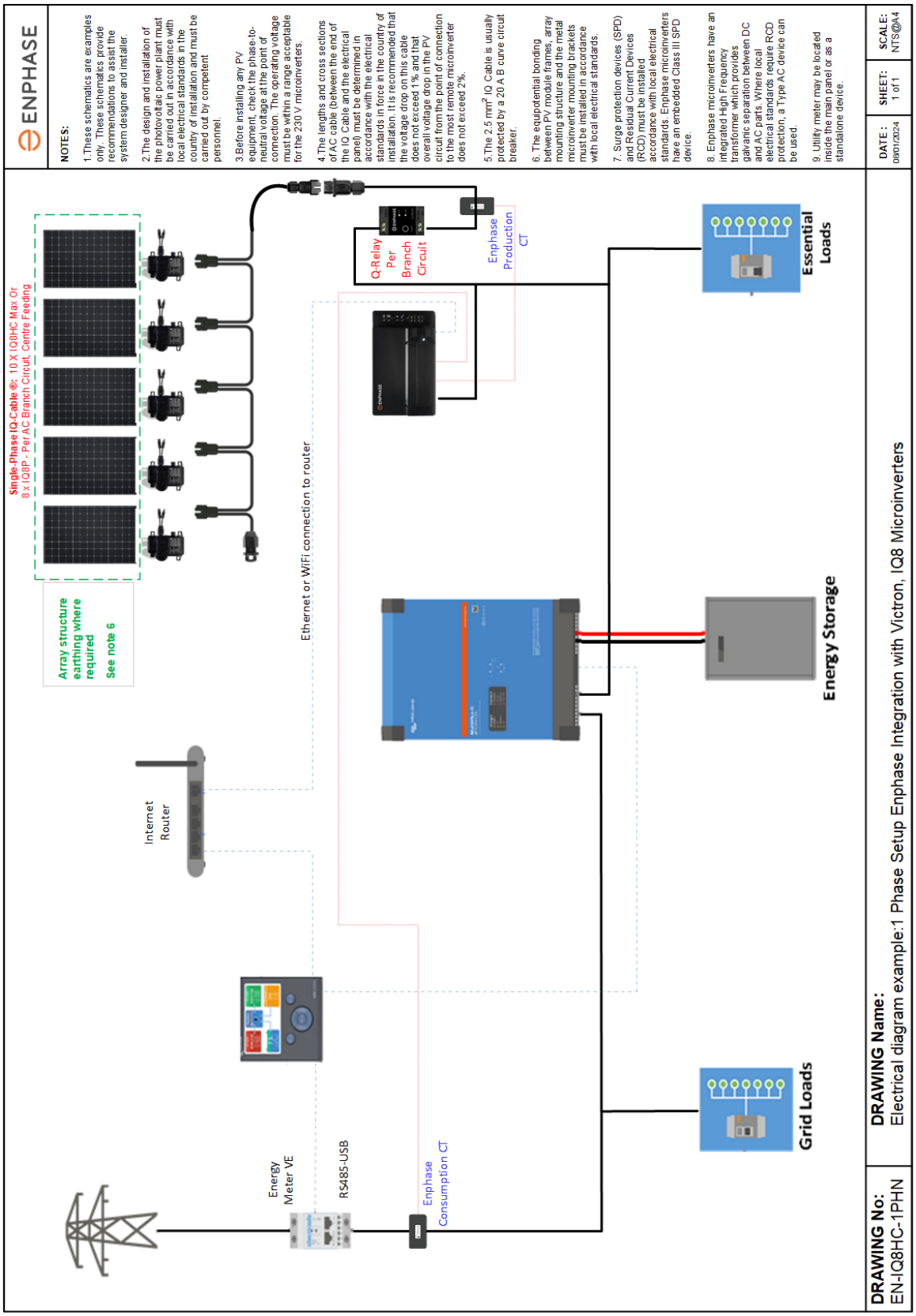

Figure 1: Single-phase Enphase system integration with Victron

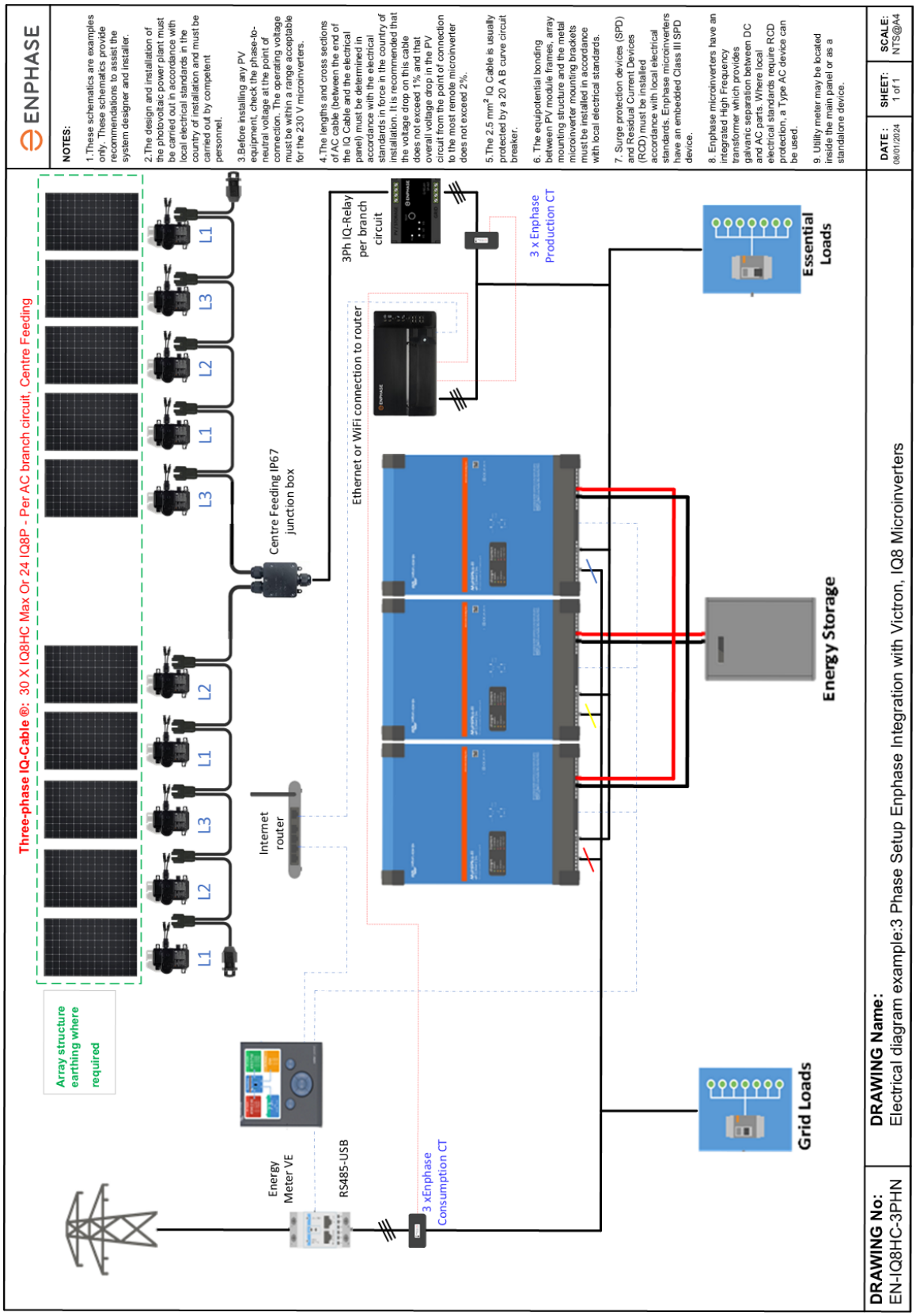

Figure 2: Multi-phase Enphase system integration with Victron

3. Set Enphase Storage System (ESS) assistance

The ESS must be set up on the Victron inverters using the VE.Bus configuration.

Start ESS assistance and set:

- The solar converter will start reducing its output power at 50.2 Hz
- Output power will be reduced to a minimum when the frequency reaches 51.2 Hz
- The converter will disconnect when the frequency is higher than 52 Hz

Table 1: Grid profile

Region	Preferable grid profile	Start	Minimum	Disconnect
France	EN 50549-1:2019 VFR2019 France	50.2	51.2	51.5
Germany	VDE AR-N-4105:2018 Germany, PEL 70 %W, UE	50.2	51.5	51.5
Poland	EN 50549-1:2019 RfG Poland	50.2	51.7	52.0
South Africa	NERSA 3.0:2019/NRS 097-2-1:2017 ED2.1 South Africa	50.5	51.7	52.0
Spain	EN 50549-1:2019 Spain	50.2	51.7	52.0
United Kingdom	G98-1-4:2019 UK/G99	50.4	51.7	52.0

Enphase microinverters operate **as-is** with frequency shift. No special configuration is required. When commissioning the system, you must ensure the correct grid profile is applied via the Enphase Installer App.

Depending on the country where the system is being installed, it may not be permitted to export into the grid. In this case, a zero-export grid profile must be applied. A standard grid profile may be selected when export to the grid is permitted.

If you have any doubts about the required grid profile, contact Enphase Support at support_emea@enphaseenergy.com for guidance.

4. Setup process

Once Enphase Support has received your request with a site ID and an IQ Gateway serial number, they will be able to update your IQ Gateway software to the required version and assist you with getting the Modbus TCP/IP function enabled.

Once enabled, you can scan for the PV inverter on the Color Controller Gx, Cerbo Gx, Venus Gx, and the MultiPlus-II GX devices via the VRM portal using the **Remote Console** under the **Settings** option. The Victron devices must be on firmware version 3.xxx or higher for the Modbus function

to communicate with the Enphase system. The *Enable Modbus SunSpec via TCP/IP* user manual is available for internal viewing.

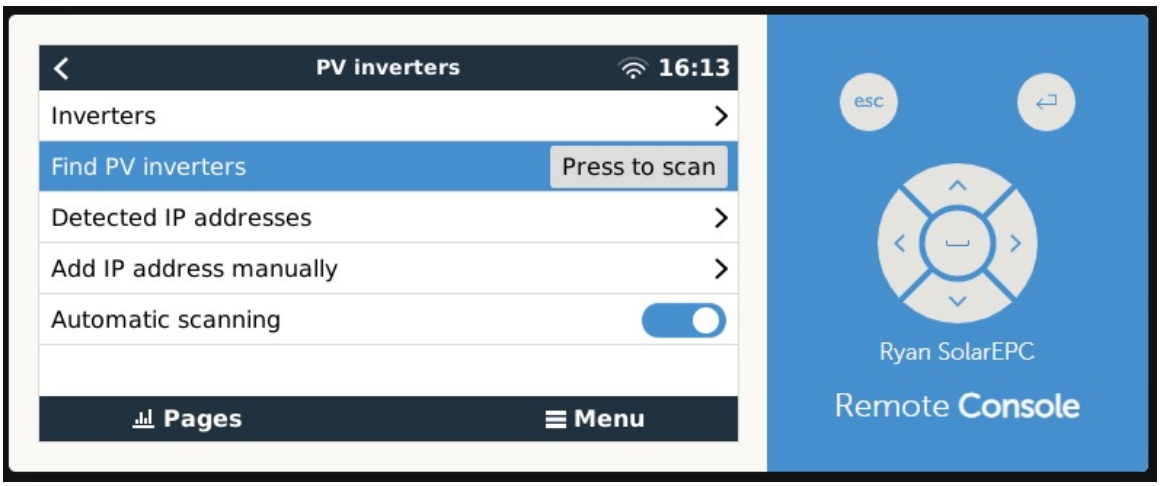

Figure 3: PV inverter scan option

Figure 4: PV inverter, Enphase Gateway

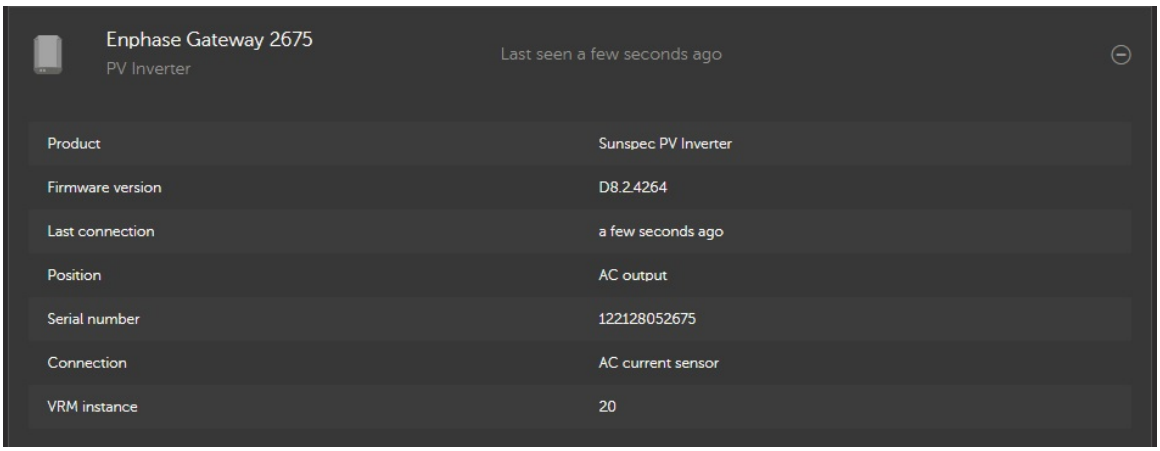

Figure 5: Device list shows Enphase Gateway

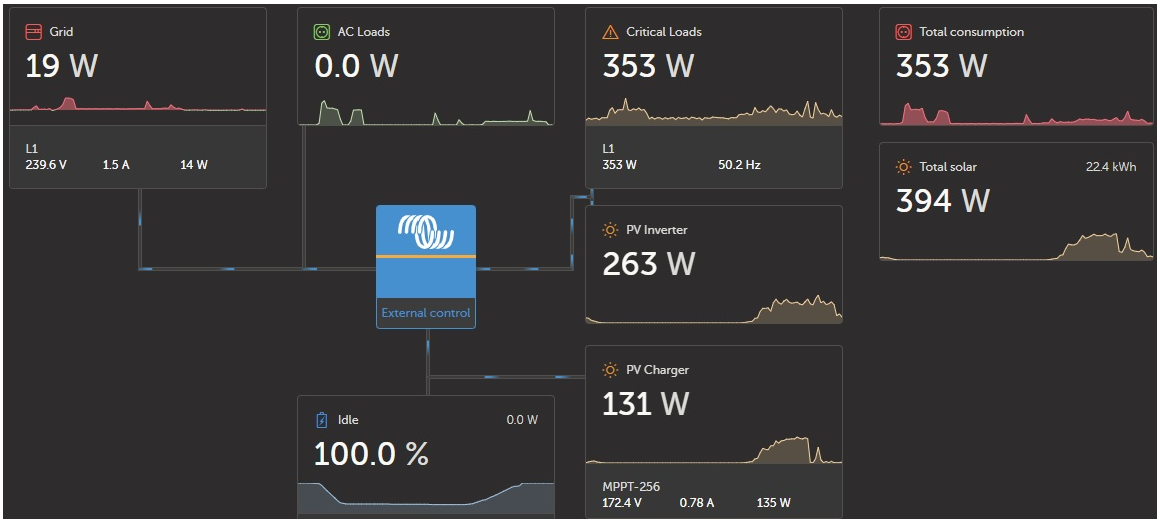

Figure 6: Victron VRM portal dashboard view

5. Troubleshooting

It is possible that the PV inverter icon does not show up on the VRM portal due to an IP address conflict or due to the IP address being in an incorrect range. This can be resolved by rebooting the IQ Gateway or setting the IQ Gateway to a static IP address.

6. Revision history

Revision	Date	Description
TEB-00199-1.0	January 2025	Initial release.