GX - Monitoring SMA PV Inverters

1. Introduction

By connecting a SMA PV Inverter, ie a Sunny Boy, and Color Control GX to a Victron GX product, allows to:

1. See information from the PV Inverter on the GX device.
2. Monitor it on the VRM Portal.

With regards to power control:

- There is no power control function for SMA PV Inverters in the Victron GX product. This means that with SMA, there is no equivalent to the 'Fronius Zero Feed-in' feature in a Victron ESS system.
- Frequency shift power control, as required in a AC-Coupling system does work.

2. Configuration

SMA PV Inverters (“Sunny Boy”) needs to be configured so a GX device, such as the Color Control GX and the Venus GX, can read data via ModbusTCP.

1. Download Sunny Explorer software for Windows from the SMA website
2. Confirm you have a WebConnect module installed (as far as I know all new SMA Sunny Boys are supplied with these modules).
3. Create a “Speedwire Plant” using the IP address of the SMA Sunny Boy
4. Connect as the “installer” user
5. Select the Sunny Boy in the left panel and click on Settings
6. Open the “External Communication” tab
7. Enable the TCP and UDP server; keep the default port (502)

If you do not see the TCP and UDP Modbus servers in the External Communication tab, check the Software Package version in the “Type Label” tab. The version of the Software Package should be 02.81.01.R or later. If you are running an older version, use Sunny Explorer - Tools - Device Update to update the firmware on the SMA Sunny Boy.

The GX device should now automatically detect the PV inverter. If that does not happen, select Settings from the Device List, scroll down to “PV Inverters” and click on “Press to Scan” to “Find PV Inverters”.

3. Troubleshooting

It is possible that the GX device is not detecting the SMA PV inverter when it is dark so at least wait until it's light before further troubleshooting.

If the GX device is still not detecting the SMA PV inverter during daylight, verify that the Modbus TCP and UDP servers are running with Sunny Explorer. If that is the case, power cycle the SMA Sunny Boy and then check that the Modbus TCP and UDP servers are running after it has powered up again. If that is the case, use a computer running Windows, MacOS or Linux, open a terminal or Command Prompt and type (we're using 192.168.100.100 as the assumed IP address of the Sunny Boy here):

```
$ ping 192.168.100.100
PING 192.168.100.100 (192.168.100.100) 56(84) bytes of data.
64 bytes from 192.168.100.100: icmp_seq=1 ttl=64 time=0.896 ms
64 bytes from 192.168.100.100: icmp_seq=2 ttl=64 time=0.896 ms
64 bytes from 192.168.100.100: icmp_seq=3 ttl=64 time=0.896 ms
```

The above indicates that the Sunny Boy is responding to pings. Now repeat this from the GX device (you'll have to login on the GX device with SSH). If you see ping replies there too, you have confirmed that the GX device is able to communicate with the SMA Sunny Boy over the network. If you see timeouts instead of ping replies, you have to check the local area network connection and IP network configuration as that means that the GX device cannot reach the SMA Sunny Boy via the network.

Once you've confirmed that the GX device can communicate with the SMA Sunny Boy via the network can you proceed with the following test (do this on your computer; not on the GX device as that does not seem to work):

```
$ telnet 192.168.100.100 502
Trying 192.168.100.100...
Connected 192.168.100.100.
Escape character is '^]'.
```

If you see “Connected 192.168.100.100.” you have confirmed that the Modbus TCP server is running on the SMA Sunny Boy and is reachable via the network. If the “telnet” command remains stuck at “Trying 192.168.100.100” but you are able to ping the SMA Sunny Boy from the same machine, you might have a firewall enabled on the local network that is blocking access to the SMA Sunny Boy.

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