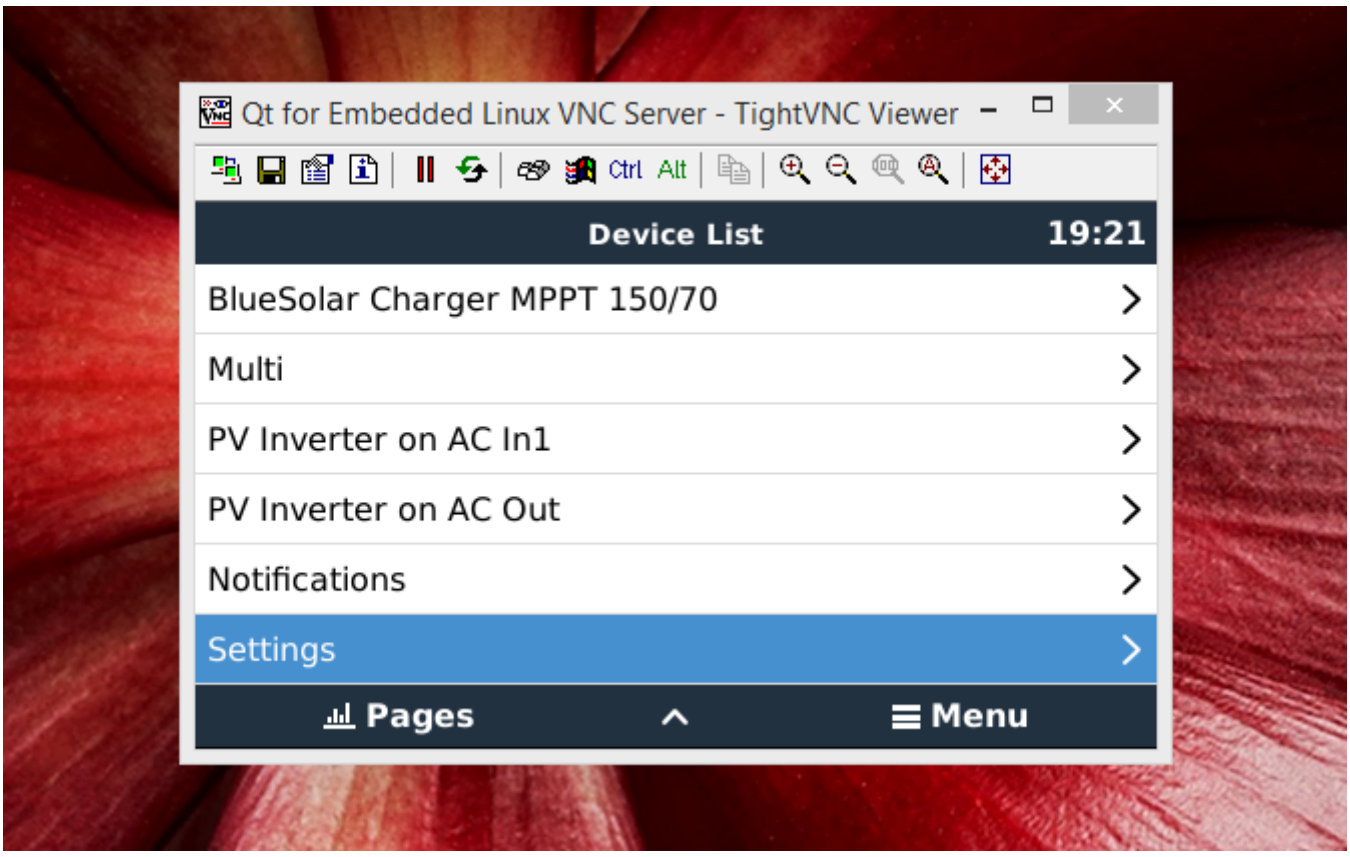
Using VNC to remotely access a CCGX

WARNING: The instructions below are for advanced usage only. Victron Energy cannot give any guarantees nor take responsibility for the possibilities and solutions offered below. Only use this if you know what you are doing and are capable of setting up VNC and other networking protocols. The example below would allow anyone to remotely access a CCGX that is connected to internet without a firewall.

A typical use case where using this would make sense could be the following customer case: 'We will have seven off-grid solar systems to provide energy to remote telemetry equipment. Our client would like to monitor the battery state, as well as other parameters. For this he will make available an Ethernet port, that via a wireless interface, will connect back to base camp. There will be no internet available.' Network security is less of an issue, since there is no internet access. But still do note that all individuals with access to that local network, will be able to access the CCGX via VNC.

Introduction to VNC

VNC is a desktop sharing protocol, commonly used to remotely log into a computer. Similar to for example Microsoft Remote Desktop and Teamviewer. It can also be used to remotely view and use a CCGX, from a desktop computer, but also from a phone or tablet! See for example the screenshot below.



Use the following keys:

- ESC is the top left soft button, called 'pages'
- Space is the center button
- Enter is the top right soft button, called 'menu'

Prerequisites

First, carefully read above warning, and only continue if you know what you are doing.

Then, you need to have root access to the CCGX ssh shell. Ask for us the login details at mvader@victronenergy.com.

Enable the SSH server by enabling Remote Support. The Remote support setting is in Settings → General.

Connect to the CCGX with a ssh client, for Windows we recommend putty.exe, available at http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Setting up the VNC server

1. Update the package repository

```
opkg update
```

2. Install the vnc server

```
opkg install qt4-embedded-plugin-gfxdriver-gfxvnc
```

3. Go to the directory containing the gui run script

```
cd /opt/color-control/gui/service
```

4. Start an editor to edit the run file:

```
nano -r 1000 ./run
```

A basic text editor will open. Make the changes, and use ctrl-x to save and exit the file. The -r 1000 option is added to prevent nano to 'hard wrap' while changing long lines.

5. Add this text to the last line:

```
 -display "Multi:: VNC::size=480x272:depth=24:0"
```

6. Close the editor (ctrl-x), and then check of you did it correctly:

```
cat ./run
```

The contents should be three lines only:

```
#!/bin/sh
exec 2>&1
exec envdir ./env softlimit -d 2000000 -s 1000000 -a 100000000 /opt/color-
control/gui/gui -qws -nomouse -display "Multi::
VNC::size=480x272:depth=24:0"
```

4. Restart the gui

```
svc -t .
```

All done! If the gui does not start up any more, double check that you successfully made the changes to the run script. The output of the gui log is in /log/gui/current. To see it, run

```
cat /log/gui/current | tai64nlocal
```

Notes

- The above changes will disappear every time that the CCGX is updated
- A typical viewer to use on your laptop is available at https://www.realvnc.com/. On my laptop (64bit, windows 8.1) the RealVNC® viewer does not work. The VNC viewer available here did work: http://www.tightvnc.com/. For a mobile phone, there is an app from RealVNC®, and probably many other brands as well.
- With the changes above, you have opened port 5900 for anyone. There is ZERO security. Never do this on a CCGX that is publicly connected to internet.
- To go back to the original situation (no VNC) restore the gui script (as well as the rest of the gui) run

  ```
  opkg install gui --force-reinstall
  ```

- The VNC functionality came 'for free' with the library we use, QT 4.7. The newest version, QT 5, no longer has the VNC option. There is no need to worry immediately: at this moment we haven't started yet to migrate to QT 5, and don't expect to in the immediate future. And even when that time comes, a solution could be to keep running the latest version that still had VNC.
- To make this solution secure, it is probably possible to tunnel it via ssh. Anyone is welcome to figure out how that works exactly and add the information to this page.

Example use of VNC Viewer for iPhone

Download and install VNC Viewer from https://www.realvnc.com/products/ios/

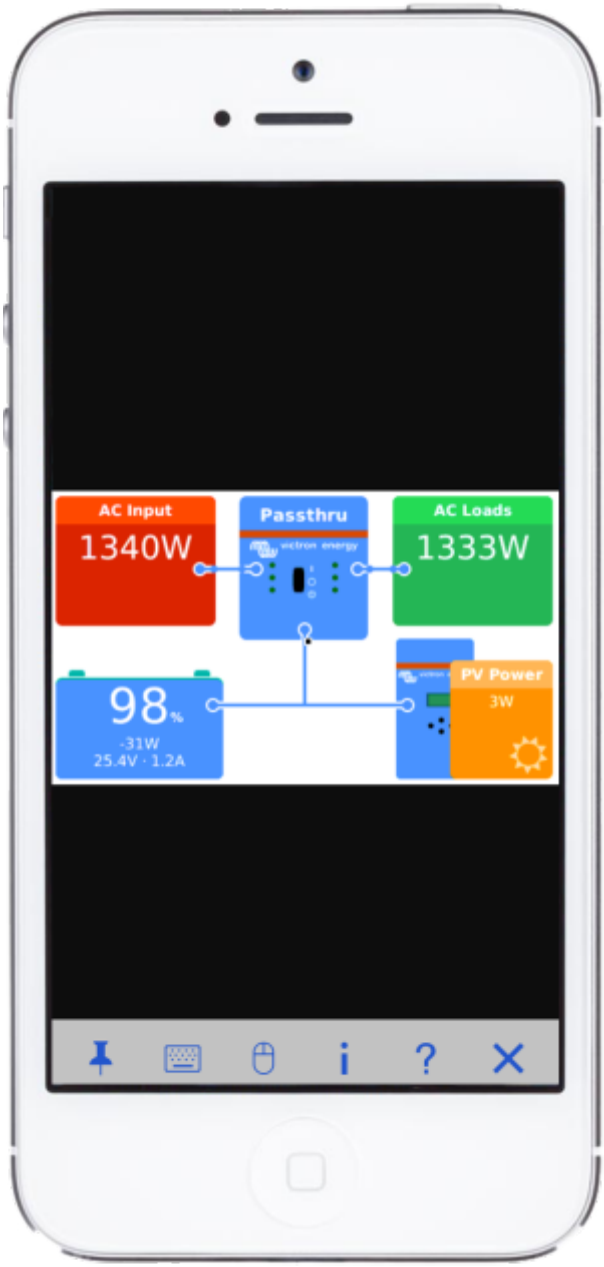
Setup and save a connection to your Ethernet connected CCGX Broadband/Mobile Broadband router, using secured Wi-Fi. Connect using the local IP shown in the CCGX Ethernet page, such as 192.168.100.002

Note the connection will be unencrypted.

The examples below are from an iPhone 5S. Landscape mode gives a larger image, but portrait mode seems more manageable. Other phones of course may have a different resolution.



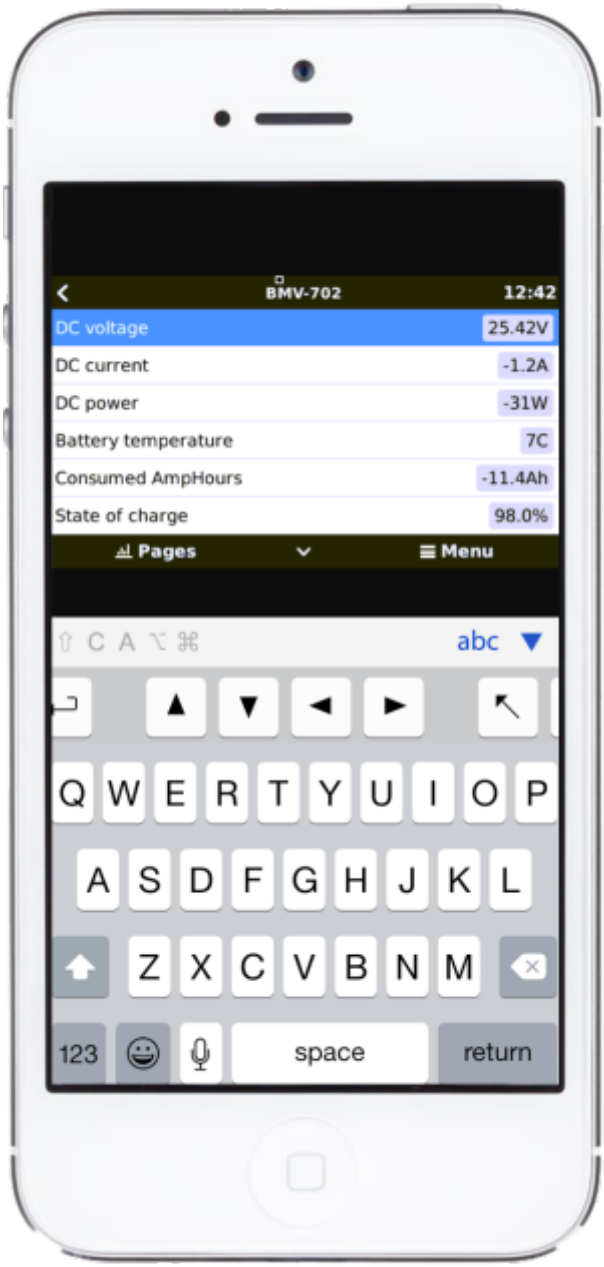
- Pinch and zoom the CCGX image to fit to screen in portrait mode
- Tap the keyboard icon



Navigate using the following keys as shown in the images below:

- ESC is the top left soft button, called 'pages'
- Space is the center button
- Enter is the top right soft button, called 'menu'
- Up, Down, Left, Right arrows


AC Input
785W
Passthru
AC Loads
778W
98%
-31W
25.4V · 1.2A
PV Power
0W
abc
alt
del
esc
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123
space
return



To give us an idea of the value of using VNC, please do let us know in the comments below.

DISQUS

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