GX GSM manual



1. Introduction

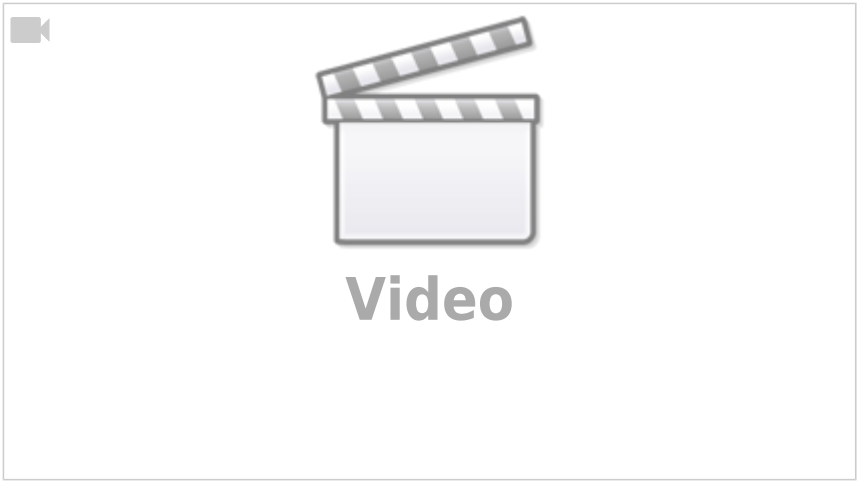
1.1 Product description

The GX GSM is an accessory for GX-devices. It is a cellular 2G and 3G modem; providing a mobile internet for the system and connection to Victron Remote Management (VRM) portal.

It requires a SIM card of the Mini-SIM format; and connects to the GX-device with an included 1m USB cable.

See also the GX GSM Product Page.

Video explaining how to connect using LAN, WiFi, and the GX GSM:



1.2 Warning: maybe use the GX LTE 4G instead

The product described in this manual, is being succeeded with the newer GX LTE 4G modem.

The GX GSM works only with 2G and 3G networks, which are -slowly- being shut down in various countries. Hence, depending on the location of installation, the GX LTE 4G can be a more future proof solution.

1.4 Antennas and accessories

GSM: A small indoor GSM antenna is included. As an option we also sell an outdoor GSM antenna:

- GSM900100100 - Outdoor 2G and 3G GSM Antenna for GX GSM

GPS: The unit has a built-in GPS receiver. An antenna is not included; to use the GPS received; purchase the GPS Antenna.

- GSM900200100 - Active GPS Antenna for GX GSM

See bottom of this manual for photos and specs of both antennas.

1.5 GX Compatibility

The GX GSM can be used with any of the GX Devices.

The GX GSM requires Venus OS v2.22 or newer to be installed on the GX Device.

1.6 When to use a mobile router instead

The GX GSM provides an internet connection for the GX-device only. There is no option to share the internet to laptops, phones, or other devices.

For installations where more devices need internet, such as a yacht or RV, consider installing a mobile router instead. More information here.

2. Installation

Mount the device and connect the antenna. Consider using the outdoor antenna when installing the GX GSM in a closed metal enclosure.

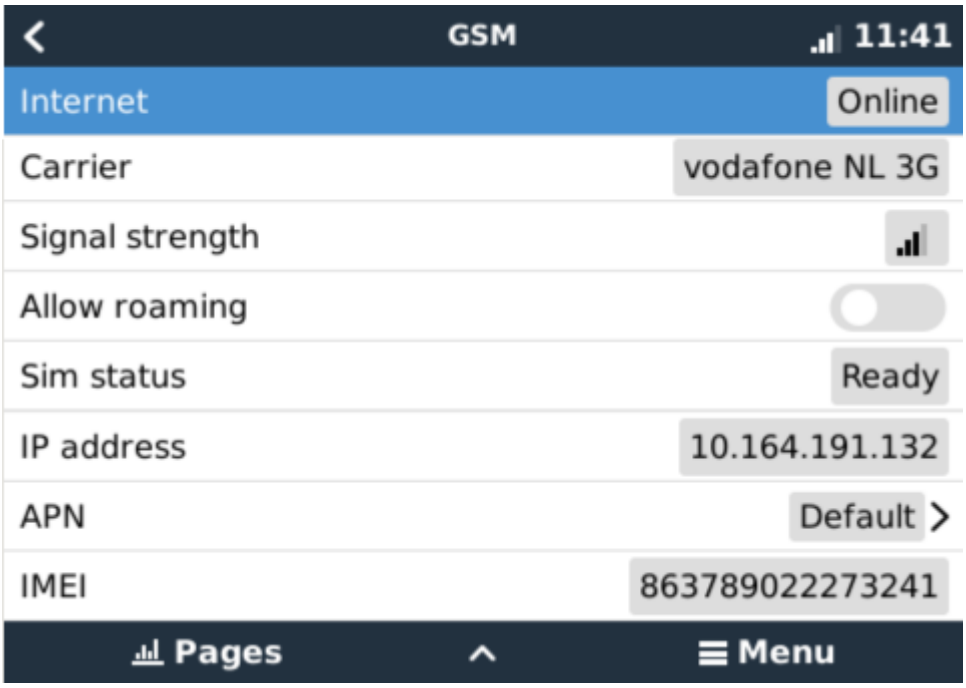
Insert the SIM card. You will need to eject the SIM card tray with a pen or other pointy object. Be aware that the SIM card tray sits slightly recessed inside the unit. Be sure to push it all the way in.

Connect the GX GSM to the GX-device with the supplied USB cable. Use a USB hub if all USB sockets are already in use.

Connect DC power supply (8 to 70 VDC). A 1.4M wire is included, with M10 lugs and an inline fuse.

After power-up, the blue LED will be solid blue. Next, once it has registered on a network, it will start blinking slowly. Finally, when it has established the internet connection, it will be blinking fast.

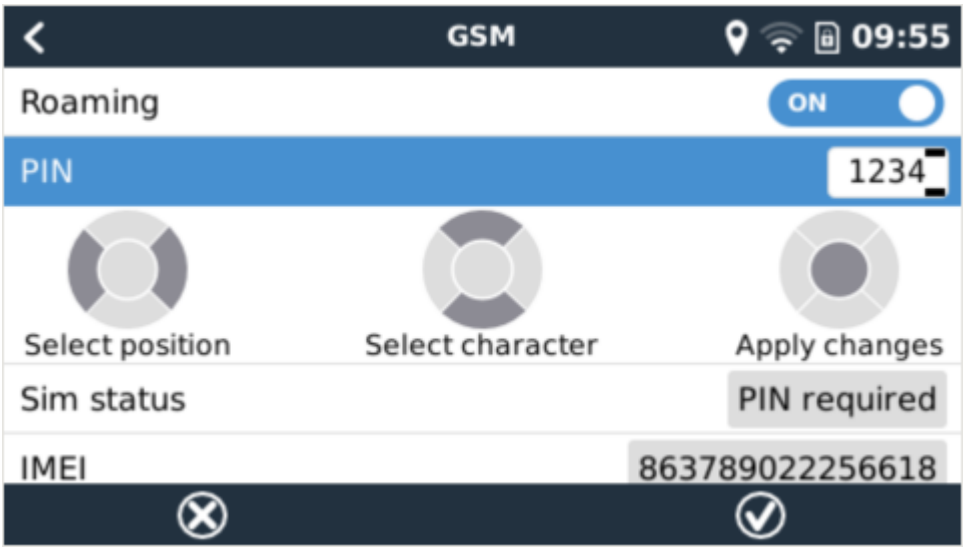
3. Configuration



When using a SIM card with its SIM-pin security disabled, the system will work without further configuration.

Setting a SIM pin helps reducing the risk of the SIM card being stolen and used. Use a mobile phone to set the SIM pin, and there after configure it on the GX-device.

Settings → GSM modem → PIN code



Some mobile networks require manual configuration of an APN specially when roaming. Contact your operator.

APN name can be configured in Settings → GSM Modem → APN.



Automatic recovery when disconnected

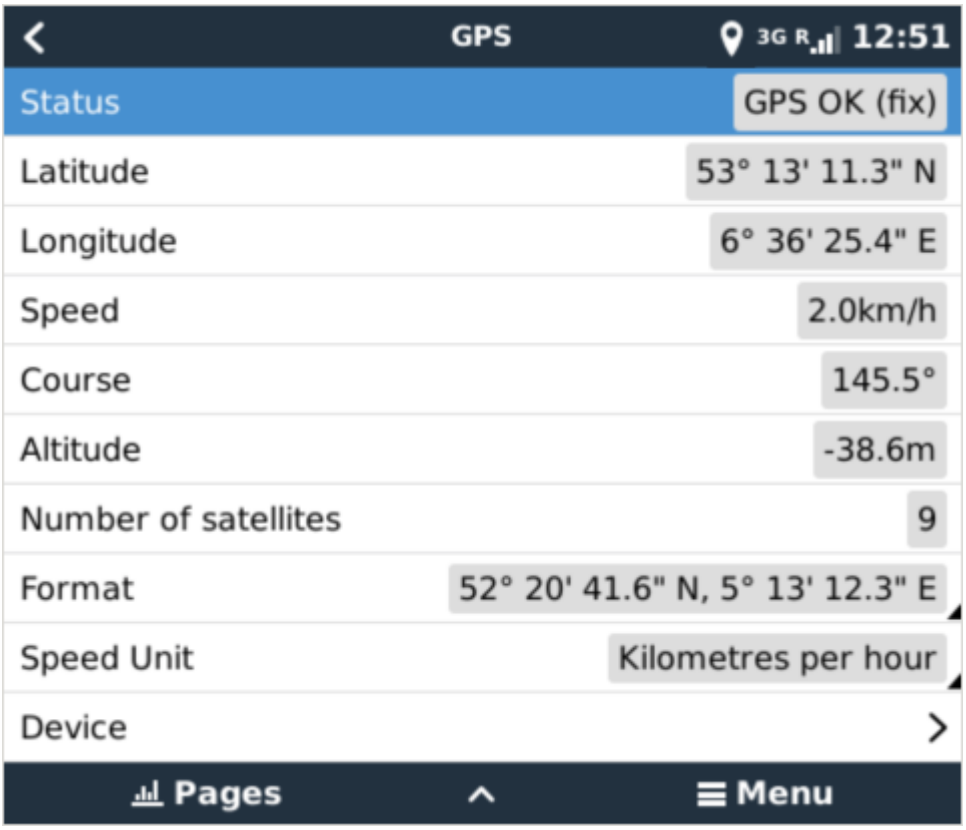
When installing the GX GSM, or GX 4G LTE in an area that you expect continuous internet coverage, you should enable the “Reboot device when no contact” option in the VRM menu of the GX device. This will automatically reboot the GX device, as well as power cycle the GX GSM, when the transmission of data to VRM has failed for the configured time.



Note that if you are leaving internet service coverage areas (such as an RV on the move, or a boat leaving dock to go to sea) then it is recommend to disable this setting, so that your GX is not rebooting itself for no reason. Or set it, for example, to a two hour time-out. And accept a reboot every two hours when underway.

4. GPS

When the optional antenna is added; the position will be visible like this:



Also the position is sent to the VRM Portal.

5. Status

Status Bar

GSM modem status can be checked at a glance by looking at the status bar.

Icon	Details
	GSM modem is connected to network, but not to the internet (no data connection). Either on purpose, because an ethernet or WiFi connection is available.
	GSM modem is properly configured, the 3G/E/etc icon reflects that the GSM modem internet connection is in use.
	WiFi is available and its internet connection is in use. WiFi has priority over GSM.
	SIM PIN code is required.
	Roaming, only informative. To use internet connection while roaming it needs to be enabled in Settings → GSM modem → Allow roaming.

SIM Status

Status	Description
Ready	SIM card is installed properly and registered to the network
SIM not inserted	SIM card is missing or not inserted properly. SIM tray might hang out a little.
PIN required	SIM card requires 4 digit PIN for unlock.

Status	Description
PUK required	SIM is locked due to wrong PIN inputs. 8 digit PUK is required to release the lock state.
SIM failure	SIM does not respond - might be broken
SIM busy	SIM is in busy state
SIM wrong	Type of SIM is not supported

External Link

6. Trouble shooting

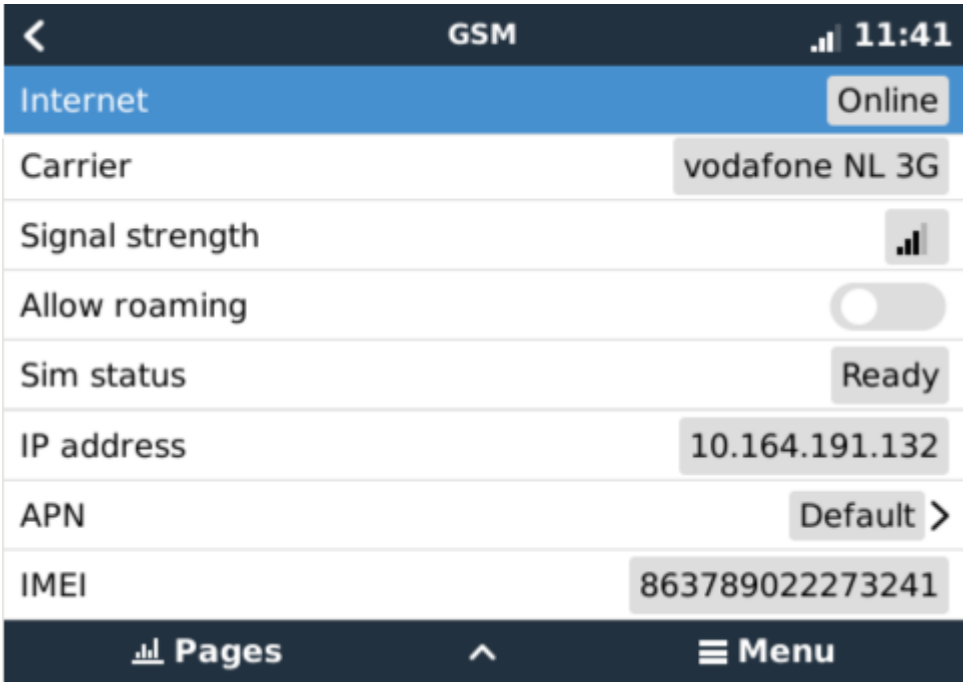
There are many reasons for modem internet connection to not work. Carefully go through each step of this trouble shooting guide. Make sure to start at the first step. When asking for help, make sure to mention each step taken and the result.

Step		Details
1	Power	Check that the blue LED is either lit continuous or blinking
2	USB connection	The modem must be connected to USB, and visible in the Settings → GSM modem menu
3	Simcard status	Check the SIM Status in the menu, it must show “Ready”. It will show “SIM not inserted”, or “PIN required”, or “PUK required” and more related errors when there is a problem. Please refer to the SIM Status list for details.
4	Signal strength	1 bar minimum for VRM logging, 2 or 3 bars are necessary for a working remote console
5	Carrier registration	Check that a name of a Cellular provider is visible in the “Carrier” field. If it is not, check signal strength and otherwise contact your simcard provider and/or insert the simcard in a phone to double check its operation and subscription status.
6	Internet connection	Verify that the Internet shows “Online”. Reasons for the system to not go “Online” whilst properly registered on the Network are: 1) APN not configured, contact the network operator for details. 2) The network is a different one than the home network (ie. roaming), and the setting to permit Roaming is disabled. 3) Signal strength is strong enough to register on the network, but not to open the data connection to the internet.
7	Connection to VRM Portal	Verify that the VRM Portal menu shows a recent last connection time. See Settings → VRM Portal. For more details, see the VRM Connection troubleshooting chapter of the GX Manual.

An outdoor antenna typically increases received signal by 15 dB to 25 dB.

Note that Ethernet and WiFi connections have priority over the cellular connection. Even when the available Ethernet or WiFi connection does **not** have a good connection to the internet. There is **no** automatic detection in place which in such case switches over to the GX GSM. In more technical language: when the cellular data connection is active, it is configured with a high routing metric. This way, the Linux kernel prioritises Ethernet or Wifi when these are available.

This screenshot shows how all details look when everything is OK:



What to do if the GX GSM is not staying connected?

Enable the “Reboot device when no contact” configuration setting in the VRM menu of the GX device. That will reboot the GX (and with it the GX GSM) automatically if the internet connection is not available.

7. Supported Frequencies (2G/3G)

7.1 Available models & their supported frequency bands

GSM100100100 - GX GSM 900/2100:

- 2G (GSM/GPRS/EDGE): 850/900/1800/1900 MHz (Quad-Band)
- 3G (UMTS/HSPA+): 900/2100 MHz (Dual-Band)
- The used GSM module is a Simcom SIM5360E.

GSM100200100 - GX GSM 850/1900:

- 2G (GSM/GPRS/EDGE): 850/900/1800/1900 MHz (Quad-Band) - same between both models.
- 3G (UMTS/HSPA+): 850/1900 MHz (Dual-Band)
- The used GSM module is the Simcom SIM5360A.
- Expected in first stock in 2020 Q3. And only short lived; since its successor, the GX LTE 4G, having 2G/3G and also 4G support is also coming soon.

7.2 Notes regarding regional coverage

USA, Mexico, Canada and most of South America: 1900 MHz is the most common frequency for 3G, which is unsupported for the current version of GX GSM. But a second model is coming in 2020, see

above.

Australia: The 900MHz 3G frequency in remote areas is typically provided by Optus. Telstra's rural 3G network operates at 850MHz which is not supported with the current version of GX GSM. Both Telstra and Optus operate 2100Mhz networks in urban areas, and are supported.

In case of uncertainty please double-check: GSM World Coverage Map

8. Technical Data

Outer dimensions (LxWxH)	106×42.5×22 mm (Drawing)
Voltage range	8..70 VDC
Power draw	2.5 W while 2G/3G data transfer <1.0 W in idle mode +0.4 W if GPS is enabled
Recommended fuse size	500 mA @ 12 V 250 mA @ 24 V 100 mA @ 48 V
Wire gauge (power cable)	0.5..1.5mm² / AWG 28..16
Antenna connector	Type SMA Female
SIM card	Regular Mini SIM

9. Accessory / Antennas

Outdoor 2G and 3G GSM Antenna



Part number	GSM900100100
Mounting option	Screw Mount
Cable Type	Rg-316
Cable Length	3.0 m
Connector	SMA Male Straight
Frequencies	800/900/1800/1900/2100 MHz
Signal Gain	3 dbi

Active GPS Antenna



Part number	GSM900200100
Mounting option	Magnet
Cable Type	Rg-174
Cable Length	3.0 m
Connector	SMA Male Straight
Frequency	1575.42 MHz
Impedance	50 Ω

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