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SMA UK Frequently Asked Questions.

To assist you with your installation SMA UK Ltd have listed the answers to some frequently asked questions that we feel may be of assistance to you.

Please note for all of these solutions you **MUST** be a qualified Electrician and follow all normal safety measures to prevent risk of damage and injury.

N.B. The internal components of an inverter can retain charge for up to 5 mins after disconnection, so please allow time between isolation and opening the inverter.

1. Country Settings.

There are some inverters that are entering the UK market that do not have the correct Grid Settings applied. Upon initial start up a display such as Ger VDE 0126-1-1 may show on the display.

If the inverter is one of our New Generation range with a graphical display i.e. SB4000-TL with rotary dials you should be able to change the inverter to UK settings easily by changing dials A & B from 0 & 1 to 5 & 8. Please note this must be done within the first few hours of operation. After that the inverter locks itself to the original settings. Please also note that if you change these dials on an inverter that has already been factory set to UK settings a message such as Mod.Grid.Not.Poss. will be displayed. You should change the dials back to original settings.

If the inverter is from our classic range with a two-line LCD display (SB3300 for instance), or is "locked", the above method is not possible.

With these inverters, and new generation inverters that are "Locked", you will need to apply for a **Grid Guard Code** (engineer's code) this can be found at <http://files.sma.de/dl/3427/GridGuard-ZEN111214.pdf>

Once you have this code you will need to create a Bluetooth connection, using our Sunny Explorer software, between a PC/Laptop and the inverter. Classic inverters will need the Bluetooth Piggyback to allow connection.

Input your **Grid Guard Code** which will now allow you to **Edit** the **Country Standards** in the **Grid Monitoring** section. Change these to G83/1 or G59/2 depending on your installation requirements. Save settings and allow the inverter time to make changes.

Upon restart the inverter should now display in English and list G83/1 or G59/2

The user manual for Sunny Explorer is available at <http://files.sma.de/dl/8494/ExplorerSW12-BEN104013.pdf>

2. Grid Disturbance

An inverter may be set to UK G83/1 or G59/2 parameters, but at intervals throughout the day the inverter may disconnect itself from the grid and display the following messages:

Classic Generation (2 Line LCD Display)

Vac-Bfr / Vac-Srr

New Generation Messages (Graphical Display)

Grid Fault / Frq. Not Permitted

In the majority of cases this means that the grid voltage/frequency is temporarily not within the permissible range, or that there is high resistance between the inverter and grid connection.

Initially please check the cable size is correct (specs available in Installation manual) and distance between inverter and meter is not too long. If cable resistance becomes too high, especially during peak productivity times the inverter will detect increased resistance as the cable heats up and disconnect.

Once cable dimensions are proved correct the possibility of grid voltage being too high is the next logical conclusion.

SMA inverters can have their A.C feed-in parameters altered using the **Grid Guard Code** and **Sunny Explorer** (see above). The engineer can change the AC parameters to suit the grid at the installation point.

Please note that this must only be done with the written permission of the Energy Supplier (or DNO) in order that they are aware of this issue and that no perceived damage can happen. Once these parameters are changed the inverter is no longer operating to factory standard settings, and SMA do not

accept liability should any damage happen to any external system, or person, thereafter.

3. Inverter Will Not Work At Time Of Installation

An inverter may incorrectly be assumed to be faulty, because it will not operate once it has been connected to both DC and AC. Sometimes the green LED continues to blink indicating that the inverter is waiting for enough power to start up.

Although not impossible, it is very unlikely that an SMA inverter is faulty straight out of the box. This problem may be solved by checking the D.C input voltage to the inverter.

SMA inverters need a minimum start up voltage in order to start generation. This is not the same as the minimum operating voltage and is always higher (e.g. SB3300 has min start voltage of 330V). It is also different for each model. Please check the minimum start up voltage of your inverter in the installation manual or data sheet. Link to datasheets below.

<http://www.sma.de/en/service/downloads.html>

If the string voltage is too low your inverter will not operate, and you should look at your design. An excellent tool from SMA called **Sunny Design** can be used to determine whether your panel setup and inverter choice are correct.

4 Inverter Buzzing (Transformer models)

There are many external influences which could possibly be the cause of this sound, including, type of wall the inverter is mounted on, location of bracket on the wall, and interference on the phase the inverter is connected to.

As a general rule any transformer, due to changing magnetic fields during normal operation, can make a low humming noise which may be exaggerated by any of the above.

Remedies may include, changing the phase the inverter is connected to if possible, mounting the inverter closer to ground level, checking all fixings regarding the bracket and if required maybe some type of non vibrating/damping material i.e.: rubber, between the bracket and the wall.

5 Transformerless Inverter – 30mA RCD Tripping

It is not recommended to use a 30mA RCD for connection of a Transformerless Inverter to grid. Transformerless inverters cannot galvanically isolate between the PV panels and the AC side as an inverter with transformer naturally does via magnetic fields. Some leakage from panels can come through the inverter and cause nuisance tripping of a 30mA RCD. 100mA RCD's (see link) are suggested for this situation. Also please check the earthing system for the panels to reduce any leakage going into the inverter.

<http://files.sma.de/dl/7418/RCD-UEN103120.pdf>

6 Bluetooth Connection Between Inverter and Sunny Beam

The vast majority of questions about planning and commissioning a Bluetooth system are answered in the links below.

<http://files.sma.de/dl/8584/BT-TEN100511.pdf> for system design guide

<http://files.sma.de/dl/8584/BeamBT-BEN094911.pdf> for Sunny Beam installation guide

In a nutshell the inverter must have its Bluetooth module activated (rotary dial C on new generation inverters). Bluetooth is de-activated if this dial is left at 0. Channel's or "NetID's" 2 through to F are optimum.

Distance between inverter and monitoring device (i.e. Sunny Beam), and also obstacles have negative impact on signal strength. See p18 of design guide for indication of signal damping.

Orientation between Sunny Beam and the inverter can also have some impact. If the inverter is facing away from the Sunny Beam the range is reduced.

A new addition to our comms range is the SMA Bluetooth Piggyback Plus. This will improve range as it has an additional omnidirectional antenna that is situated outside the inverter casing.

7 Low Yields From a Dual Oriented System

This may also be linked to point 3 whereby Start Up Voltage is not attained or only at peak times of the day.

In many circumstances an installation may have an East-West orientation, and two strings are attached to the Inverter. Due to the "track" of the sun through the day these arrays will produce different amounts of power at different times.

If an inverter with a single MPP tracker is used in this installation you will most likely see low yields for the size of the system. This is due to the MPP tracker having to adapt to two differing output powers of the strings. It can only feed power through the inverter that is as high as the lowest string (plus the same amount from the more powerful string).

Such string Imbalances can greatly reduce output yields significantly and will increase the payback time of the system.

Solutions to this issue are to use 2 x smaller inverters or to use an inverter with 2 x MPP trackers i.e. SB4000-TL.

The Service Team

SMA Solar UK Ltd