InfiniSolar 10kW – 3 Phase Inverter

Grid Limiting Modbus Installation

February 2016

Version 1.0

Introduction

This guide is designed to help you install the Modbus card, Eastron Meter and upgrade the firmware of the inverter. This will allow the 10kW 3xphase inverter to limit the power feedback into the grid. It is recommended that you use this guide in conjunction with the Voltronic guides that come with the Inverter and Modbus card. These guides are available on-line and from the CreoVision website. You must follow the steps below in order, otherwise you could crash your inverter and have no power.
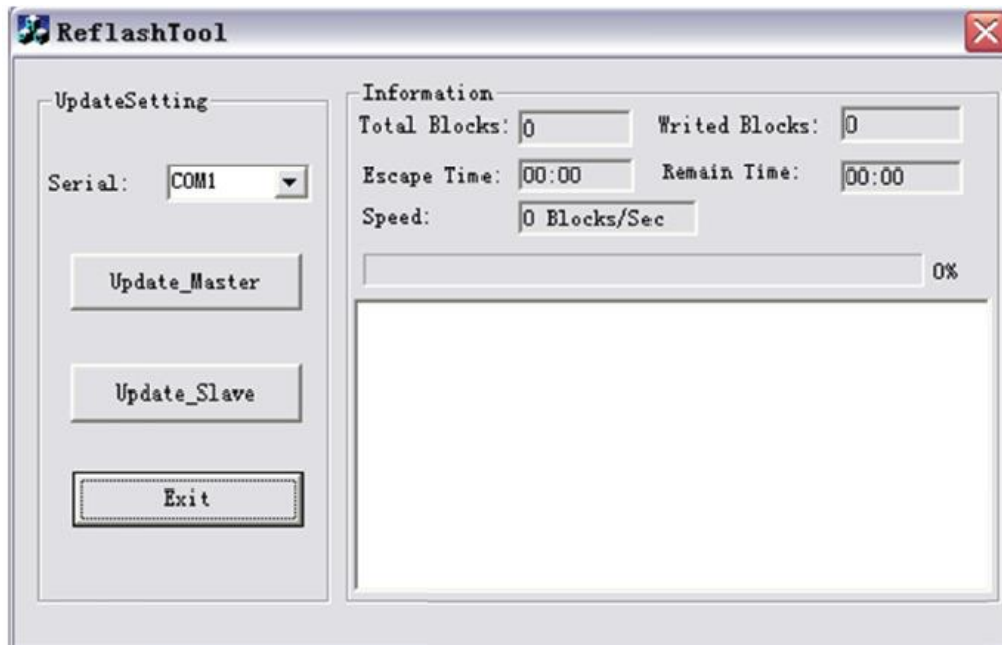
Installation

1. Firmware Upgrade

Before you begin with the installation you need to upgrade the firmware of the inverter:

- Ensure that you have the latest firm software from the CreoVision website
- Ensure that you have not plugged in a Modbus or SNMP into the intelligent slot. If you have installed it, please remove it
- Remove the USB cable that you plug into your PC from the inverter
- You need to use the RS232 serial port on the inverter to upgrade the firmware
  - If you do not have an RS232 port on your PC, you can purchase a low cost USB to RS232 converter from Mustek
- The inverter must be switched on before you begin the upgrade
- Unzip the Re-Flash Tool to a desired folder and run the "ReflashTool_Infini10KW.exe" program

- The software should AutoDetect the COM port that your USB converter is plugged into
  - If there are multiple COM ports use the Windows device manager to determine the correct COM port to use
  - If there are no COM ports showing, check your USB settings in the Windows Device Manager
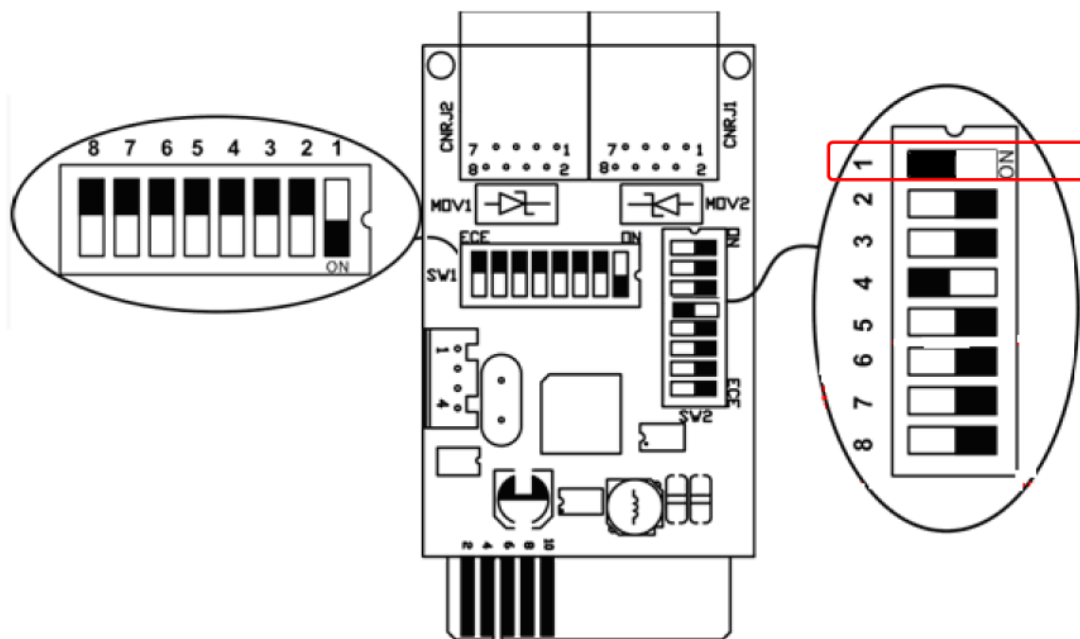- The software will show the following window:

- Click on the Update_Master Button
  - The software will connect to the COM port and begin upgrading the flash memory
  - The upgrade takes about 15 minutes
  - Once the upgrade is complete the software will open a window saying "Update Success"
  - If the update fails, try again
  - If you get repeated failures, make sure you are using the correct version of the Re-Flash tool
- Once the master firmware has been updated, wait about 1 minute for the inverter to reset and you get an error 18 on the inverter display; this is normal. The inverter is telling you that it is now ready to upgrade the Slave firmware
- In the Re-Flash tool click on Update_Slave
  - The software will connect to the COM port and begin upgrading the flash memory
  - The upgrade takes about 15 minutes
  - Once the upgrade is complete the software will open a window saying "Update Success"
  - If the update fails, try again
  - If you get repeated failures, make sure you are using the correct version of the Re-Flash tool
- Once the slave has updated the inverter should reset to its default mode

2. Modbus card

- The Modbus card must be set to slave address 1, 19200 baud, Parity – none, 1 stop bit. This is exactly the same address as the Eastron meter
- The philosophy behind this is contrary to most Modbus installations as each device should have its own address. What Voltronic have done is to use the Modbus card to emulate the on-board inverter meter externally by copying the Modbus messages set by the meter
- The setting on the Modbus card must be exactly what is shown below. If you are trying to do this for a single phase inverter you need to set up the Modbus card differently

② Reset feed-in power to zero in each phase. (Only apply for 3-phase inverter)

- When you have set the DIP switches, plug the card into the intelligent slot in the inverter
  - Make sure you don't push too hard when plugging in the inverter as you can push the internal female receptor into the inverter which is difficult to fix.
  - You must be sure that you align the grooves to the card when inserting

3. Eastron Meter

- This is a direct connect meter and cannot be used with Current Transformers (C/Ts)
- When installing make sure the municipal supply is wired into the bottom of the meter and the load is wired into the top of the meter. There are markings to indicate this on the meter.
- Make sure the phase rotation is correct otherwise the inverter will feed the incorrect current into each phase.
- Enter the setup of the meter and change the communication setting
  - To enter the setup, hold the bottom "E" key for three seconds until "PASS" appears on the screen
  - Change the password to "1000" and hold the "E" key for three seconds
  - If you successfully log into the meter, the screen will show "SET Addr 001"
  - Change the settings using the arrows to change and press the "E" key to save the setting and move to the next setting. The required settings are as follows:
    - Addr = 001
    - Baud = 19.2
    - PArI = NONE
    - SToP = 1
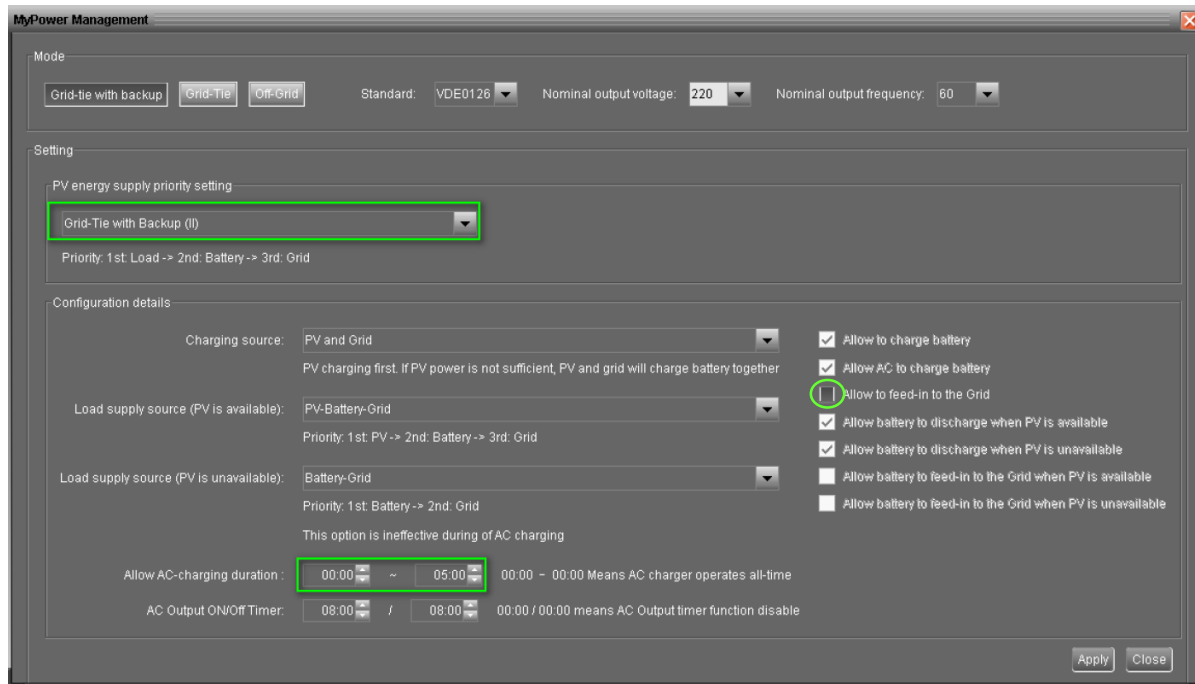 - Hold the "E" for three seconds to exit the setup

4. Wiring

The meter and the Modbus card must be physically connected so they can communicate:

- Using CAT5 or CAT6 cable is recommended because it is readily available and is well suited for transmission over longer distances (twisted pair has low noise)
- The Modbus card requires an RJ45 connector. The recommended wiring sequence is RJ45-T-568-B as it allows for easy connection to the meter. The wiring standard can be found online
- If you follow the RJ45-T-568-B wiring standard plug the blue pair of wires into the meter slots 9 and 10
- You may need to swap the wires around in the meter to get the correct polarity
- When the communication starts working you will see a telephone symbol (☏) appear in the top row of the meter, on the right of the two pulse symbols
- When the telephone symbol appears, the inverter will start to flash "EC – ON2" where the total kWh generated normally shows. This means that the communication is working correctly
  - If it shows "EC – ON1" your Modbus card is set incorrectly

Software

- Make sure you have the latest SolarPower software from CreoVision Website (version 1.09)
- Set up the inverter for Grid-Tie with backup (II) with the following settings
  - Change the "Allow AC-Charging duration" to 00:00 – 05:00. You don't have to use these exact numbers. The only option that you cannot use is 00:00 – 00:00
  - De-select the "Allow to feed-in to the grid" option

- When you click "Apply" the inverter will start to limit
- The meter should start showing only positive readings

You can tweak the amount of grid feedback by adjusting the per phase feedback limits in the "Parameter Settings" section of the SolarPower Software (this is only available in version 1.09)

If you require assistance in the process, please contact Peter Frolich at CreoVision:

Cell: 083 399 5245

Email: Peter@CreoVision.co.za

www.creovision.co.za

Unit 242, 2nd Floor, Office Block,

Blairgowrie Plaza, 64 Conrad Drive,

Blairgowrie 2194, Randburg, South Africa