

Sunny Boy 2500U

Changing the Operating Parameters

Issue 0.1

Adjusting the Parameters of the Sunny Boy 2500U for an AC Output Voltage of 208 V or 240 V

Alteration Review

| Document-Number SB2500U | Issue and Alteration Review ¹⁾ | | Comments | Author |
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| -21:EE3301 | 0.1 | A | First version | Salisbury |

¹⁾ A: Changes due to faulty documents or improvement of the documentation

B: Changes maintaining full or upward compatibility

C: Changes limiting or excluding compatibility

| | Name | Date | Signature |
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| Approved | S. Bremicker | | |

These instructions are to be used for exchanging the BFR EPROM of the Sunny Boy 2500U. Work inside the Sunny Boy 2500U may only be done by qualified technicians. Please work according to all relevant instructions in the Sunny Boy 2500U "Installation and Operator's Manual" concerning opening and closing of the Sunny Boy 2500U.

A small EPROM has to be installed on the Sunny Boy 2500U for a short time in order to program the Sunny Boy 2500U with new operating parameters. It is therefore necessary to open and close the Sunny Boy 2500U. This paper contains important information you will need for this work.

Basically you have to do the following:

1. Disconnect the Sunny Boy from AC and DC voltage, wait for 5 minutes and remove the lid.
2. Remove the "BFR"-EPROM and replace it with the "BFR SET_208" or the "BFR SET_240" programming EPROM.
3. Close the lid and reconnect the DC and AC voltage.
4. Check the LEDs on the front panel.
5. Disconnect the Sunny Boy from AC and DC voltage, wait for 5 minutes and remove the lid.
6. Remove the programming EPROM and re-install the "BFR" EPROM you removed in "2."
7. Close the lid and reconnect the DC and AC voltage.

The different steps are described in detail in the following. Read these instructions carefully - as any failure in doing so can damage the Sunny Boy 2500U or result in serious injuries from hazardous voltages.

If the Sunny Boy 2500U is not absolutely disconnected from the input and output voltage the person conducting the work inside the case can get into touch with live electronic

components and components carrying lethal voltage. Any work on the Sunny Boy 2500U that is not done exactly according to the instructions can damage the Sunny Boy 2500U and result in substantial danger to people by electric voltage.



The Sunny Boy 2500U operates with high voltages both internally and externally which can cause serious injury or death. All work inside and outside the inverter must be done by qualified technicians!



Work inside the Sunny Boy is only possible when the device is absolutely disconnected from the DC voltage (PV-generator) and the AC voltage (utility). Wait for at least five minutes after disconnecting the Sunny Boy 2500U before opening the case.

Use all applicable ESD countermeasures when modifying the Sunny Boy 2500U. Electronic components are very vulnerable towards electrostatic discharge. Make sure you are electrically connected to ground before you touch the components. Use ESD wrist strap such as: Radio Shack Part number 276-2397 or equal.

Disconnecting the Sunny Boy from AC and DC voltage and removing the lid:

1. Disconnect the Sunny Boy 2500U from the AC voltage of the utility (household fuse box).
2. Disconnect the Sunny Boy 2500U from the DC voltage (PV-generator).
3. **Wait 5 minutes in order to let internal voltages discharge.**
4. Open the inverter with the four screws in the lid.

Replacing the BFR EPROM with the programming EPROM:

1. The EPROM you want to exchange is the chip in the 32-pin socket in the center of the top PCB in the Sunny Boy 2500U.

The EPROM is labeled: 'SMA SWR-**BFR**'

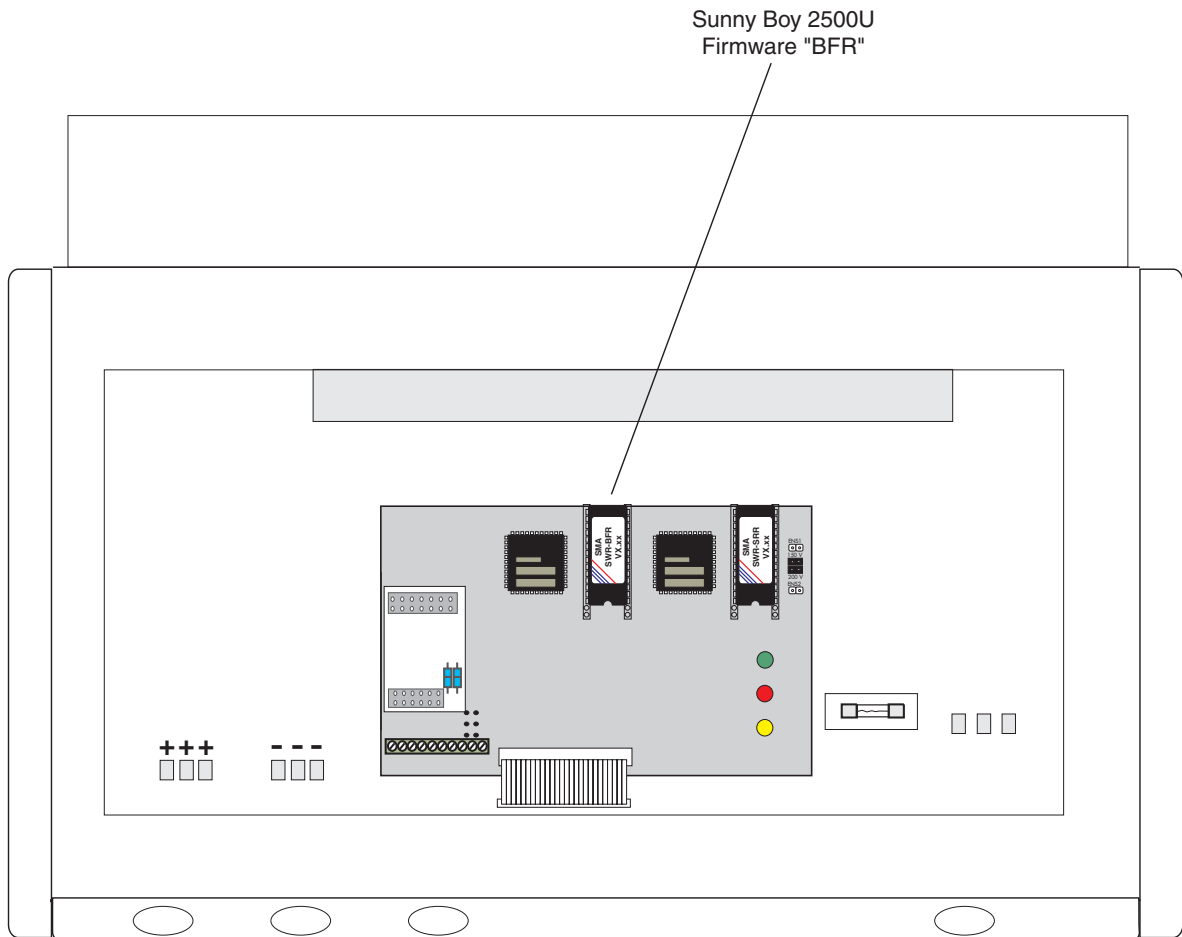


Fig. 1: Position of the EPROM in the Sunny Boy 2500U

2. Remove the old EPROM by grasping it with an IC inserter / extractor, Radio Shack Part Number 276-1581 or equal. Carefully pull the chip from the socket taking care not to bend the pins. Once you remove the IC place it immediately on the ESD foam to prevent damage due to static discharge.
3. Place the "BFR SET_208V" or the "BFR SET_240V" EPROM into the socket.

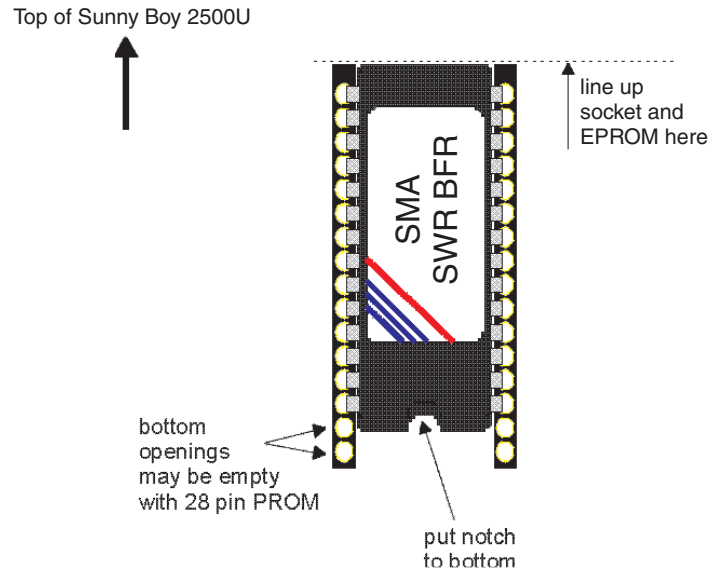


Fig. 2: Position of EPROM in socket

The notch on the top of the EPROM must show downwards, and the top pins of the EPROM are put in the top openings of the socket. If there are more openings in the socket than there are pins on the EPROM the openings in the bottom of the socket are left empty, see Fig. 2 on the top of this page. Carefully press the EPROM into the socket. Do not use brute force. The EPROM should easily slide into the socket.

Always check that you did not forget any tools, wires or similar in the Sunny Boy 2500U before you close the lid. Just make sure.

4. Close the lid of the Sunny Boy 2500U and reconnect DC and AC voltage.

Checking the LEDs on the front panel of the Sunny Boy 2500U

After the Sunny Boy is reconnected to the AC and DC voltage, it indicates the programming procedure with a blink-code.

First all LEDs are on for a short time (approx. 1 second). Then the actual programming sequence starts:

LED behavior during programming:

Yellow - red - green (repeats for a few seconds)

Parameters for 240 V are programmed

The parameters

$V_{acmin} = 213.0 \text{ V}$

$V_{acmax} = 262.0 \text{ V}$

$P_{max} = 2500.0 \text{ W}$

Green - red - yellow (repeats for a few seconds)

Parameters for 208 V are programmed

$V_{acmin} = 185.0 \text{ V}$

$V_{acmax} = 227.0 \text{ V}$

$P_{max} = 2200.0 \text{ W}$

After the successful programming the green and yellow LEDs are on.

Reinstall the original BFR-EPROM you removed in the beginning. The Sunny Boy is now configured with the new parameters.

LED behavior after unsuccessful programming:**Yellow and red LED ON:****Wrong inverter type**

If an inverter other than the Sunny Boy 2500U is detected the red and yellow LEDs are on. The programming EPROMs are only suitable for the Sunny Boy 2500U.

Red LED ON:**Failure parameters of data record 1 and / or 2 defective**

Programming has failed. Re-install the original "BFR" EPROM (the one you temporarily removed in the beginning) and connect the Sunny Boy 2500U to the DC and AC voltage. Let the Sunny Boy restart. Then repeat the programming with the programming EPROM. Contact SMA if this does not help.

Re-installing the BFR-EPROM:

If the green and yellow LED are on the programming was successful and the original BFR EPROM must be installed.

1. Disconnect AC and DC voltage.
2. Wait for 5 minutes.
3. Open the Sunny Boy 2500U, carefully remove the programming EPROM and re-install the original "BFR" EPROM that you had removed in the beginning.
4. Close the lid.
5. Connect AC and DC voltage.
6. The Sunny Boy should start normal operation.