



EEPROM Error Message Remedy

Tech Alert # 3174

Revision 1.2

September 28, 2004
Bill Reaugh

Revision History			
1.0	June 23, 2003	Bill Reaugh	Original Release
1.1	August 18, 2003	Bill Reaugh	Document Cleanup
1.2	September 28, 2004	Bill Reaugh	Document Updates

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Overview:

This Technical alert details how to reset an EEPROM_dBh error, displayed on the Sunny Boy Inverter as "EEPROM_d", when it occurs. This error codes will be displayed on the LCD of all Sunny Boy Inverter, or if using a Sunny Boy Control, in the Spot Values menu. This error code is generated because the data being read from the non-volatile memory of the Sunny Boy Inverter has been corrupted. In previous revisions of this document it was stated that the was caused toward the end of the day when the DC power from the PV modules was getting too low, but new information from the field, and further investigation by SMA has shown that this information is incorrect.

Instead, we have discovered that if the Sunny Boy Inverter is writing to its non-volatile memory, which it does several times throughout the day, and then has to simultaneously deal with an outage, surge, or spike from the AC grid that causes it to subsequently disconnect from the grid, the data write can become corrupted. Then when the inverter goes to read data from the non-volatile memory, it recognizes that it has corrupted data, and registers this error. The error itself does not constitute a failure of the inverter. Further, an inverter that shows this error does not have to be returned to SMA for service. The data write cycle does not take more than a few milliseconds to perform, and emergencies from the AC grid happen on a random basis, so the likelihood of an inverter registering this error are low. In systems with many inverters, only one or at most a few of the inverters register the error, even if they all respond to the same grid emergency. Also the likelihood of a single inverter registering this error more than once in a period of months or years is low, especially if the AC grid feeding the inverter is stable and clean.

Firmware Update:

SMA Germany and SMA America have developed a new version of firmware that deals with this issue. The new version of firmware is BFR 8.922/SRR 8.90. This new version of firmware does not prevent the error from happening, but it does detect that this error has occurred and will automatically reset the inverter so that this manual reset procedure no longer needs to be performed. Please note that this new version of firmware is only available for inverters that currently have version BFR 8.65 / SRR 8.65 or later. Earlier versions of firmware cannot be updated to this new version because there were some small hardware changes that occurred during the update to version 8.65.

If you would like to receive copies of this new firmware for Sunny Boy 1800 and Sunny Boy 2500 Inverters, please contact SMA Technical Support at (530) 273-4895.

Safety Warning:

The Sunny Boy Inverters operate with potentially lethal voltage and current from multiple power sources. Only qualified personnel should attempt to work on the inverter.

The Sunny Boy Inverter must be isolated and locked-out from all AC and DC power sources prior to attempting this procedure. Allow a minimum of 5 minutes for internal capacitors to discharge before removing the cover to service the Sunny Boy Inverter.

Application:

This procedure is applicable to Sunny Boy Inverters with firmware versions 8.30 and up that display the error code "EEPROM_d", or to inverters with firmware versions 8.30 and up whose LED failure code is "Failure" with the yellow LED permanently on. This procedure will not work to clear the error state for any other commonly known error message. Please note that the yellow LED "Failure" light can indicate a number of different error of which EEPROM_dBh is just one. If you have an inverter that is displaying the yellow LED and this procedure does not clear the error, please call SMA Technical Support at (530) 273-4895 for additional assistance.



Necessary Accessory Equipment:

The following accessory equipment is required to perform this procedure:

- Two (2) Alligator clips, computer jumper pin jumpers, or other equivalent equipment for shoring out two sets of jumper pins.

Procedure for Clearing the Error:

The Following procedure should only be performed by qualified field technicians.

1. Switch off the AC and DC disconnects.
2. **WARNING!** There are lethal voltages inside the inverter. Wait 5 minutes for all capacitors to discharge.
3. Remove the inverter's cover.
4. Using a DMM or other voltage meter rated for 600 V_{DC} check to ensure that there is no voltage present at the Inverter's PV input terminals before beginning work on the inverter.
5. Locate the two pins labeled **ENS1** shown in Figure 1 below.
6. Short these two pins together with a computer jumper pin jumper or alligator clip.
7. Locate the two pins labeled **ENS2** shown in Figure 1 below, they are approximately one (1) inch below the pins labeled **ENS1**.
8. Short these two pins together with a computer jumper pin jumper or alligator clip.
9. Switch on the DC disconnect.
10. **WARNING!** This will provide as much as 600 VDC to the inverter, therefore all high voltage safety procedures should be followed.
11. All three LED lights should then become illuminated and remain illuminated.
12. If after a few seconds, some or all do turn out, then we need to turn off the DC disconnect, wait for 5 minutes for all of the capacitors to discharge, and readjust the jumper pin jumpers or alligator clips, until the three lights do come on and stay on.
13. At this time carefully remove the short from the pins labeled **ENS2**, the bottom set, first.
14. Carefully remove the short from the pins labeled **ENS1**. Note that the shorts are removed in the reverse order from which they were applied.
15. Wait for a few seconds, and the green and/or yellow light should begin flashing.
16. If the yellow light begins to flash this indicates that the AC disconnect is open, so we will need to close the AC disconnect and provide AC power to the inverter.
17. When the green light begins to flash, the inverter should begin to operate normally.
18. **NOTE** you will not have to re-commission the inverter, nor remove the GFDI fuse during or after this procedure.

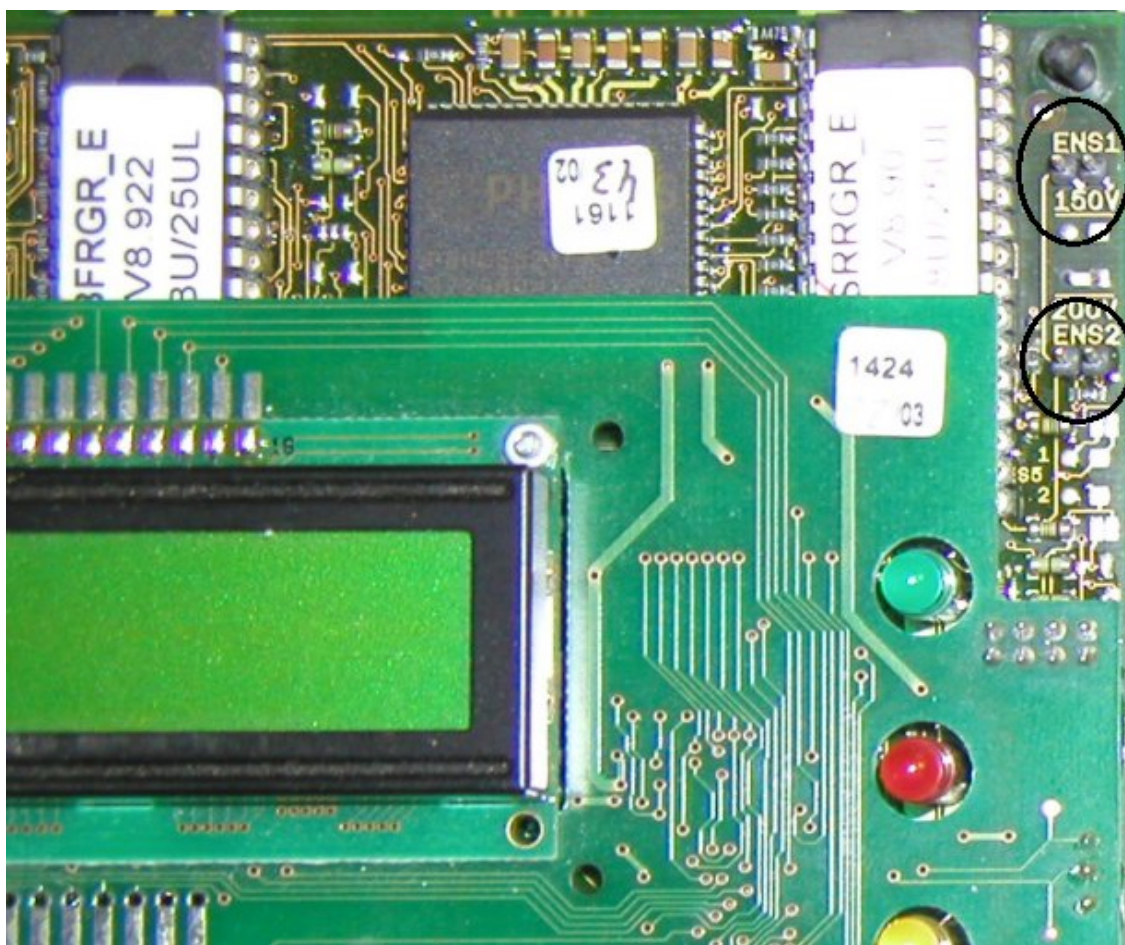


Figure 1