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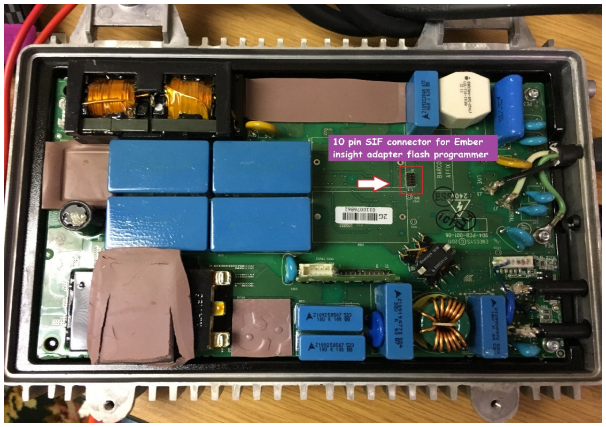
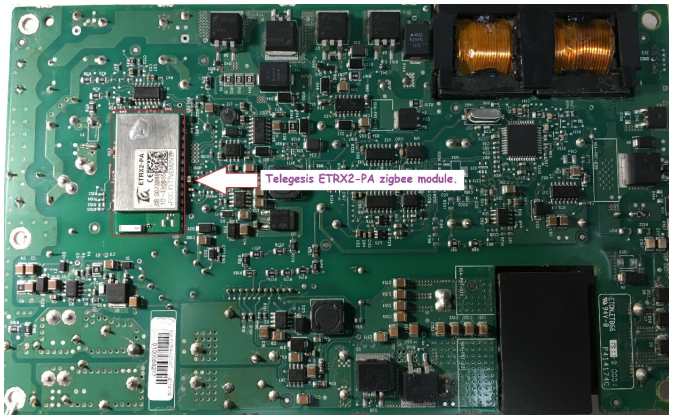
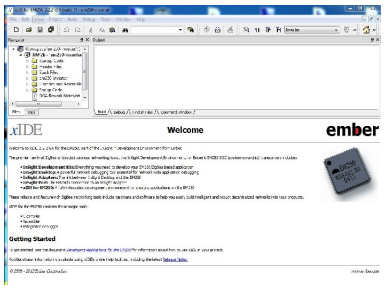
OCTOBER 11, 2018 - EBL OVER THE AIR EM250 FIRMWARE UPDATE INSTRUCTIONS

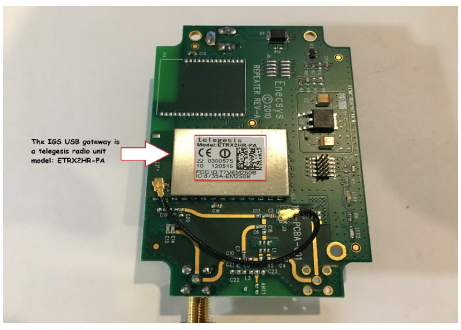
Introduction - Enecsys generation 1 one inverter(s) were manufactured with Telegesis ETRX2 zigbee modules. A low power 2.4GHz ISM band transceiver based on the Ember EM250 single chip ZigBee/IEEE802.15.4 solution. By 2012 Enecsys had abanonded this hardware without mature software. By Jan 2016 Enecsys went out of business. Enecsys made 240, 360 and 480 watt variants that look like this.





Technical Background - The *Telegeses* ETRX2HR-PA is Zigbee WIFI radio unit has a 128k of program flash space and runs with the Ember ZNet5.0.1 stack. Software is developed in the C language using the xIDE compiler which creates "EBL" firmware files. There is an EBL (Ember Bootloader) in this chip that can be flash updated OTA (over the air). Each radio unit has a unique 64 bit MAC address. (The inverter serial no is the lower 32 bits.) The EBL is a 802.15.4 based, single-hop MAC layer RF protocol (ember AN760). The IGS windows app has an EM250 engineering console that creates a virtual an OTA bridge (via the USB gateway) which reliably flash updates the targets OTA. This is the USB gateway.

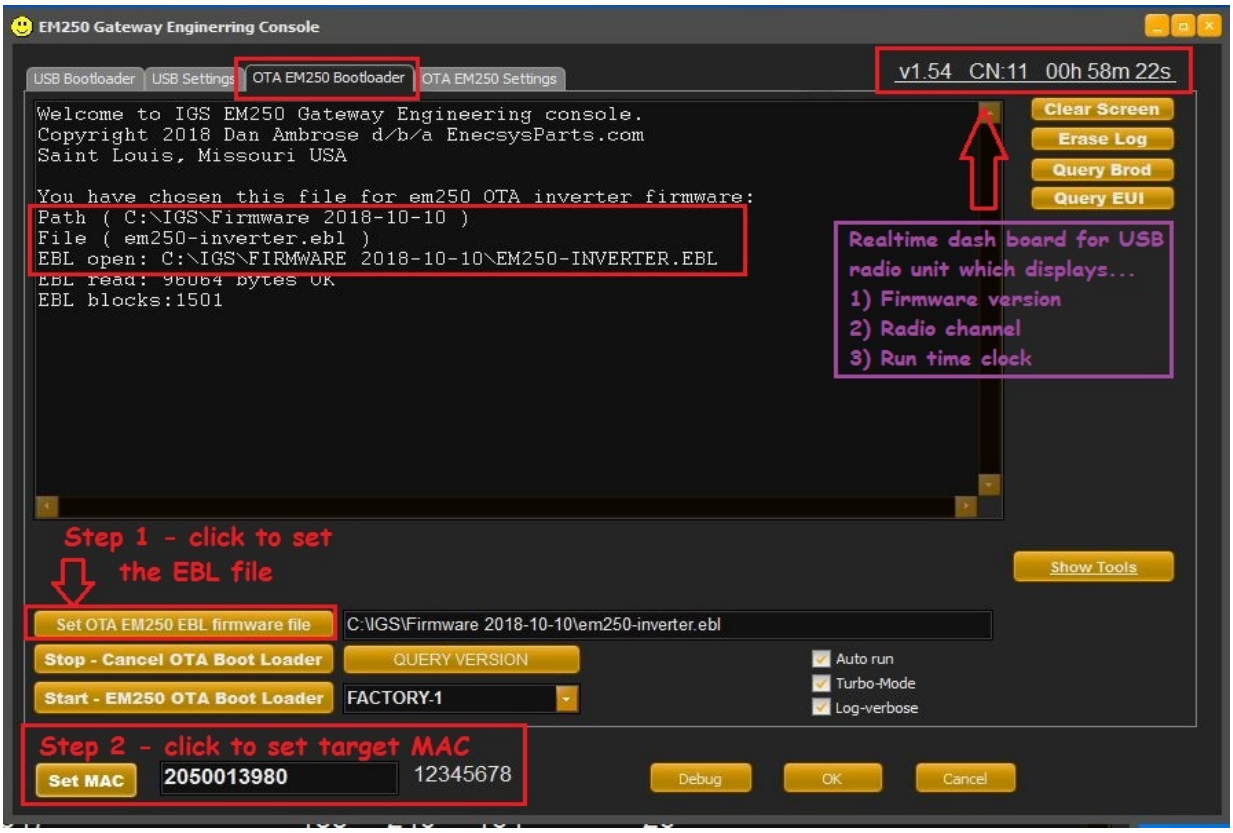




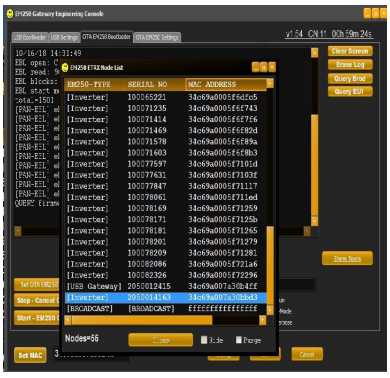
IGS EM250 OTA EBL FIRMWARE UPDATE STEPS

Open the EM250 engineering console. From main menu go to TOOLS | EM250 Engineering Console. Click **OTA EM250 Bootloader** tab.

1) Click "**Set the OTA EM250 EBL firmware file**" Type **C:\IGS** and press enter. Look for Firmware folder and double click it. Look for the firmware file **em250-inverter.ebl** and double click it. You should be back at the OTA bootloader tab screen. Screen must say *"You have chosen this file for em250 OTA inverter firmware:" ... File (* **em250-inverter.ebl**)



2) Click the **Set MAC** button to choose/set the OTA target inverter. EM250 ETRX Node List dialog box appears. The list is sorted by serial number which is the lower 32 bits of the 64 bit MAC address. Choose the EM250 target by double clicking. You should be back at the OTA bootloader screen and the desired MAC address and serial number should appear in bottom left corner. (*In the alternative you can manually type the 16 digit MAC address in the field on right side of Set MAC button*).



3) Click the **QUERY VERSION** button. This will query and unlock the target.
QUERY firmware version

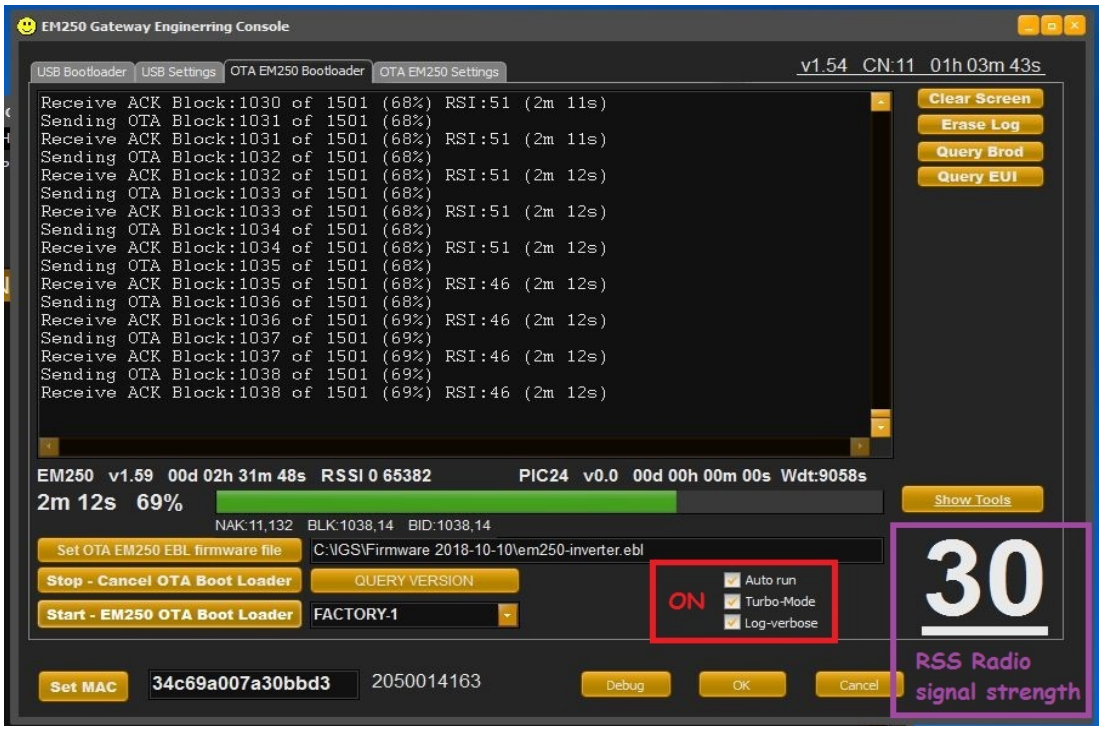
********** EM250 FIRMWARE VERSION 1.59 **********

Serial no. 2050014163 has em250 firmware Ver 1.59

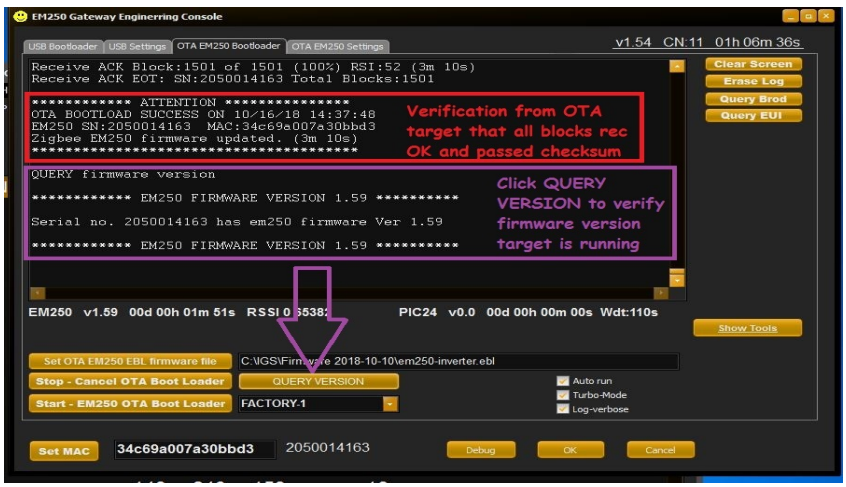
********** EM250 FIRMWARE VERSION 1.59 **********

When you see the above banner continue to next step.

4) Click Start - EM250 OTA Bootloader button. The bootload start process will run for 10 seconds. Its like a starter on a 1970s car in very cold weather. It turns over slow. Sometimes it starts up right away. If everything works you should see obvious activity with a bar graph appearing and progressing to 100% within 4 minutes.



The closer you are the faster it runs. If it doesn't start or quits click Stop. Wait a few seconds then click start again. It should continue to 100% and look like this.



When it finishes you will get a verification banner which says:

********** ATTENTION **********
OTA BOOTLOAD SUCCESS ON 10/16/18 14:37:48
EM250 SN:2050014163 MAC:34c69a007a30bbd3
Zigbee EM250 firmware updated. (3m 10s)
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5) Click the **QUERY VERSION** button. This will query the target to confirm the new firmware version.

> ********** EM250 FIRMWARE VERSION 1.59 **********
>
> Serial no. 2050014163 has em250 firmware Ver 1.59
>
> ********** EM250 FIRMWARE VERSION 1.59 **********

When you see the above banner you are finished and well done !!!!

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