



This application note describes how to recover an eRIC module using the LPRS BSL (BootStrap Loader).

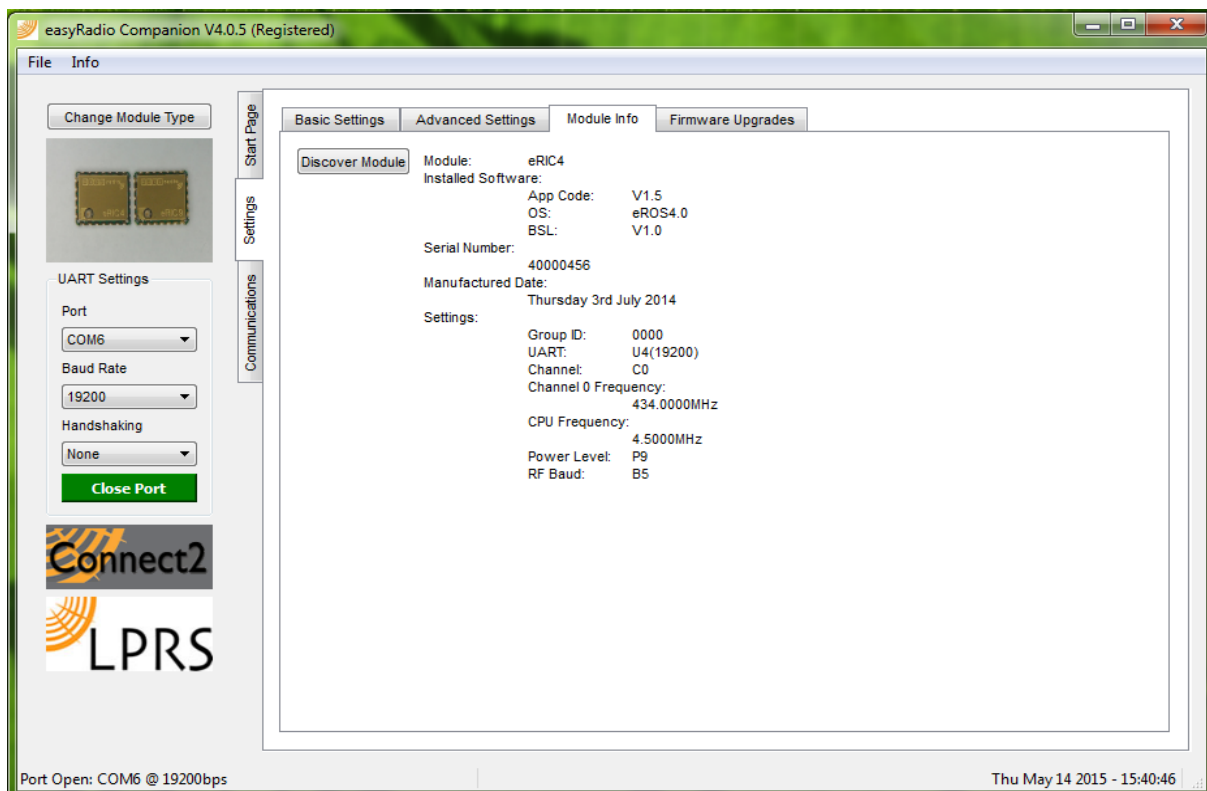
N.B: This process should only be used when a module is completely 'bricked' and has become unresponsive to any commands or fails a firmware upgrade.

Boot-loader recovery is the software that replaces the Texas Instruments BSL with the custom LPRS BSL. This BSL is executed on start-up when a specific entry sequence is applied on Pin8 (Test/Jtag enable) and Pin9 (Reset) whilst Pin11 is connected to Pin12.

All eRIC modules manufactured since 2015 will have BSL programmed in to them. To check manufacturing date or presence of the BSL of a module, download the latest easyRadio Companion Vx.x.x from here www.lprs.co.uk/resource-centre/downloads . After downloading, install and register the software for free. Choose the eRIC module and click OK. Then choose Port, Baud rate (19200 default) and click 'Open Port'. Then select 'Settings' on the side tab and 'Module Info' on the top of the tab. The software will then list all the current module settings and information after clicking 'Discover Module'.

Check if BSL version is listed under Installed software. If BSL is not installed then module manufacture must pre-date 2015.

If the module doesn't have BSL, the software will install BSL on first firmware upgrade. So update the firmware by clicking 'Firmware Upgrades' tab even if the module has latest firmware.



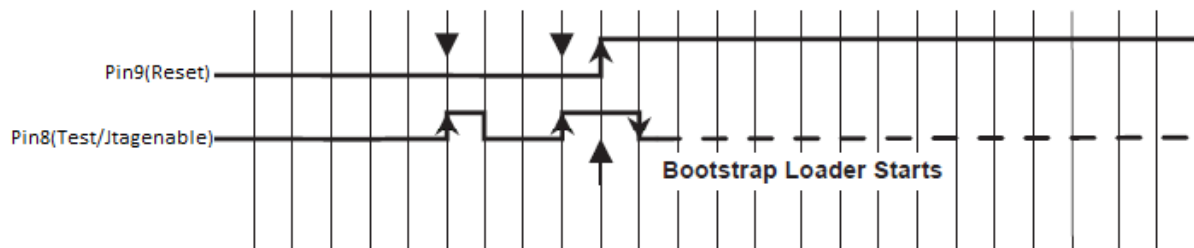


Steps to enter the BSL Boot-Loader recovery mode:

The following pins are used to enter recovery boot-loader:

eRIC Pins	BSL Function
Pin12	Boot-loader pin
Pin11	Boot-loader pin
Pin9 (Reset)	Entry sequence signal
Pin8 (Test/Jtag enable)	Entry sequence signal
Pin7	Ground 0V supply
Pin6	Power supply (Vcc)
Pin4	Data transmit (UART Tx)
Pin3	Data receive (UART Rx)

The BSL boot-loader recovery is invoked when Pin11 and Pin12 are connected together and Pin8 (test pin) has received a minimum of two (recommended four) positive transitions and if Pin8 is high while Pin9 (reset) rises from low to high. The recommended minimum time for pin states is 250ns. Pin17 will go high when entry sequence is successful. Using easy Radio Companion Vx.x.x set on 19200 baud rate, eRIC can be recovered by flashing eROSVx.x and application hex.





Using eRIC Development Board:

The quickest and easiest way to update the eRIC module is using the eRIC Development Board. Plug the module in to the board, and power it using the USB cable provided. Put the jumper on JP1 connecting Pin11 and Pin12. Using a piece of single strand wire, connect Pin8 to Pin19 (it can be any digital pin, Pin19 is preferred as it has Switch4 connected to it).

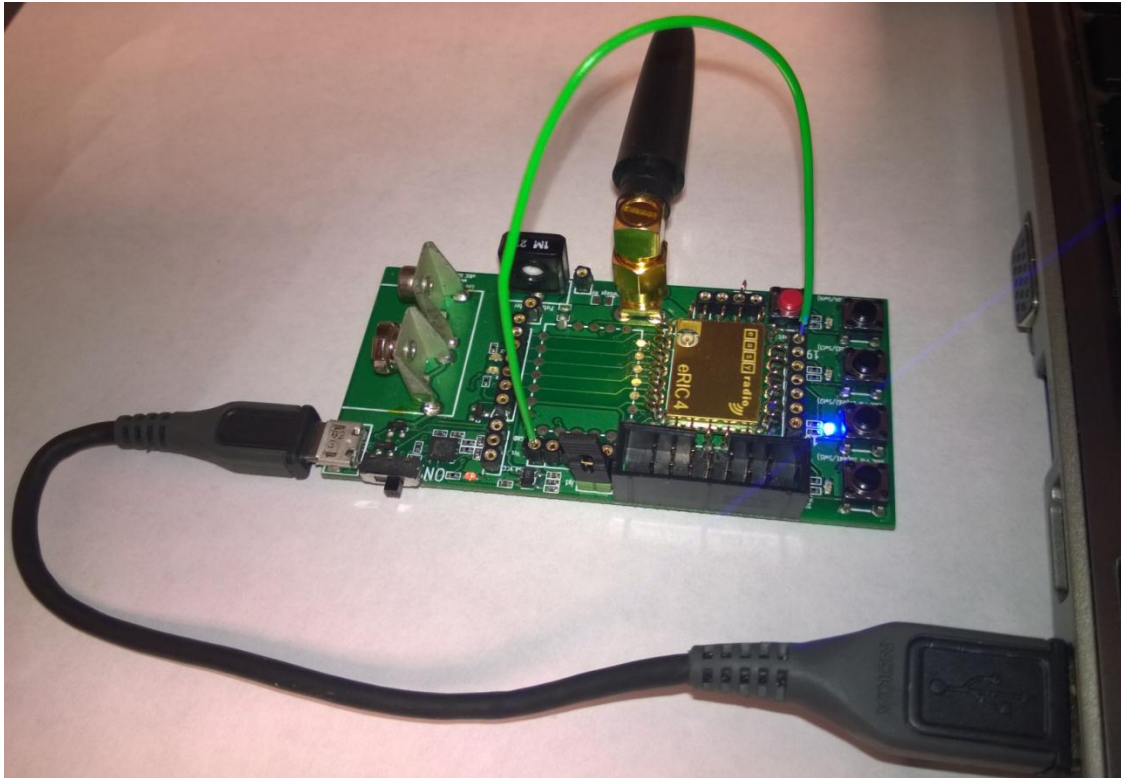


Figure 1: eRIC4 in BSL boot-loader recovery mode with Pin17 high, Pin8-Pin19 connected and JP1 connected with jumper

Now turn the power switch on and press and hold down the reset button. Whilst holding the reset button, press and release Switch4 which is connected to Pin19 four times.

Now, still holding the reset button, press and hold Switch4 and then release reset button.

After carrying out this sequence and with jumper on JP1, eRIC should enter into recovery mode which can be identified by Led2 (Pin17) going high.

Open the easyRadio Companion Vx.x.x software and open Port by choosing 19200 Baud rate. Select 'Firmware Upgrades' tab and open latest eROS Vx.x file and update the module.

This should completely recover the module to its original state.



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