

Axia QOR Programming

Doc # 1971-00044-002 (Version 1.2.2, 2011-03-16)

1 Prerequisites

1.1 PC with at least one COM port (connector DB-9M) and LPT port (connector DB-25F) that should be on MAIN board (any extension cards couldn't be used) and Windows XP installed.

1.2 The “CCFlasher” application and “TFTP32” server should be pre-installed on PC. Please refer to document [1971-00043] “Software Installation” for detail description of the setup process.

1.3 IQ firmware consisting of 2 parts: boot-loader [1621-00078-XXX(umon-iQ-16M-X.XX.X).bin] and application [1621-00079-XXX(iQ-X.X.X.X).iqpk].

Put iQ application file [1621-00079-XXX(iQ-X.X.X.X).iqpk] to root directory of tftp server (c:\fw). Rename it to “iq.bin” to keep following sections independent of original file name.

1.4 Laboratory Power Source with Current Limiting option (48V, >0.8A).

1.5 BDM Programming adapter and 3-wire Serial cable.

2 Programming boot-loader

WARNING! Before apply power to newly assembled board, make sure that all power rails are not shorted to ground!

2.1 Check power rails (only with initial board power up)

2.1.1 Connect power cable to iQ MAIN board.

2.1.2 Turn ON power source

2.1.3 Measure Voltages on all power rails

2.1.4 Turn OFF power source

2.1.5 Disconnect power cable from iQ MAIN board

2.2 Set jumper on **JP5** to BDM position (pins 1-2).

2.3 Connect programming POD to a PC and to **JP2** connector on iQ main board. Make sure that pin 1 of a programming cable is connected to pin 1 of JP2.

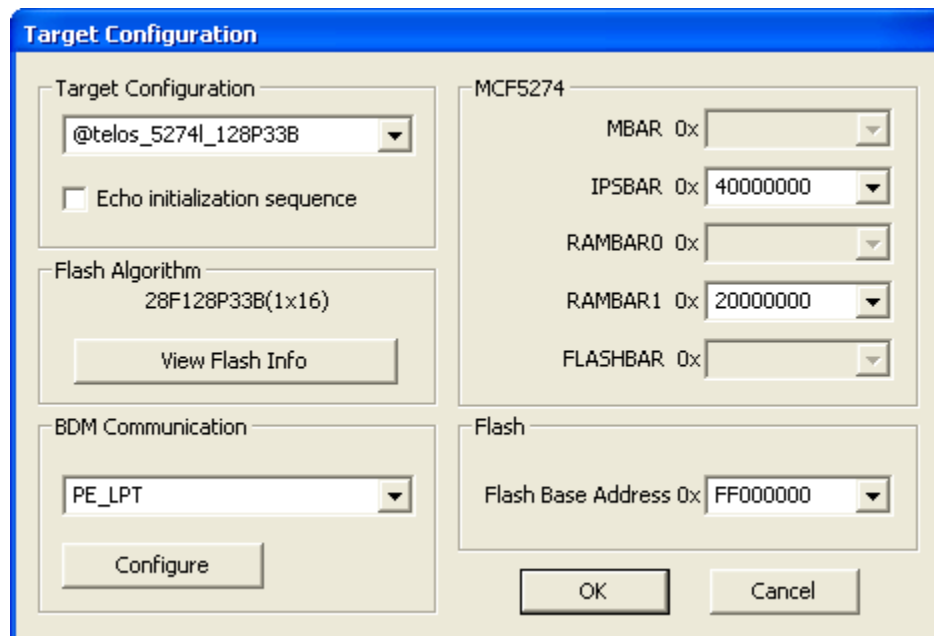
2.4 Connect power cable to iQ MAIN board.

2.5 Turn ON power source

2.6 Start CF Flasher application. Main window will appear:



2.7 Press “**Target Config**” button. Select “@telos_5274l_128P33B” in “**Target Configuration**” combo-box. Select correct “**BDM Communication**” method. This document assumes PE_LPT. The



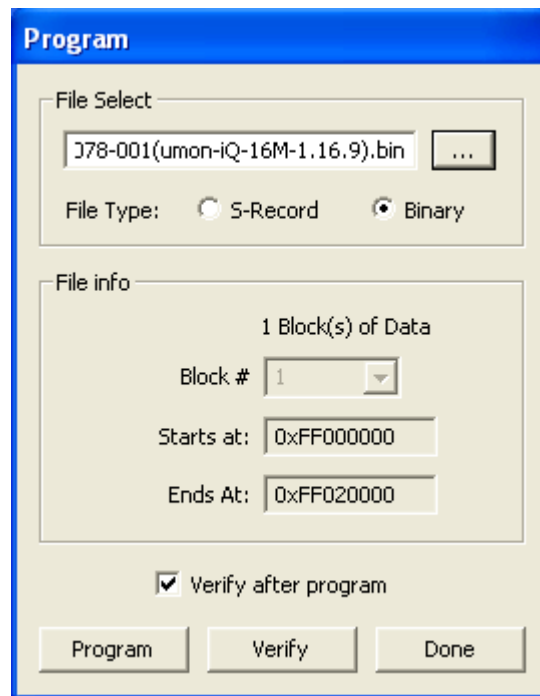
window should look like this:

2.8 Press **OK** to confirm configuration.

2.9 Press **“Erase”** button. In newly opened window select **“Erase entire flash”** (this is the default option) and press **“Erase”**. Wait for erase sequence to complete. Press **“Done”** to close the window.

2.10 Press **“Program”** button in main window. Select file by pressing **“...”** button. Browse for boot-loader file [1621-00078-XXX(umon-iQ-16M-X.XX.X).bin], where XXX and X.XX.X – version number, and select it.

In newly opened window enter start address **“ff000000”**, select **“Verify after program”** and press **“OK”**.



Window should look like that:

2.11 Press **“Program”** and wait for programming to finish.

Check that newly opened window report **“Verify O.K.!”**, then press **“Done”** to close the window.

2.12 Turn OFF power source.

2.13 Disconnect power cable from iQ MAIN board

2.14 Disconnect programming POD from the main board.

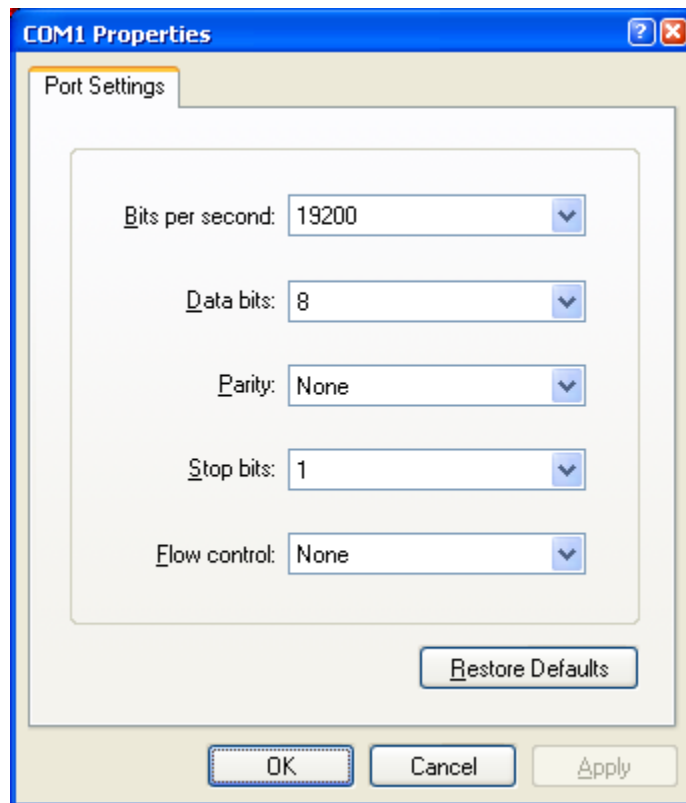
2.15 Set jumper on **JP5** to JTAG position (pins 2-3).

3 Programming application

3.1 Connect 3-wire serial cable to a PC serial port and to **J3** connector on iQ main board.

Make sure pin 1 of a serial cable is connected to pin 1 of J3.

3.2 Start HyperTerminal application on a PC, port settings are 19200/8/1. Parity and Flow control

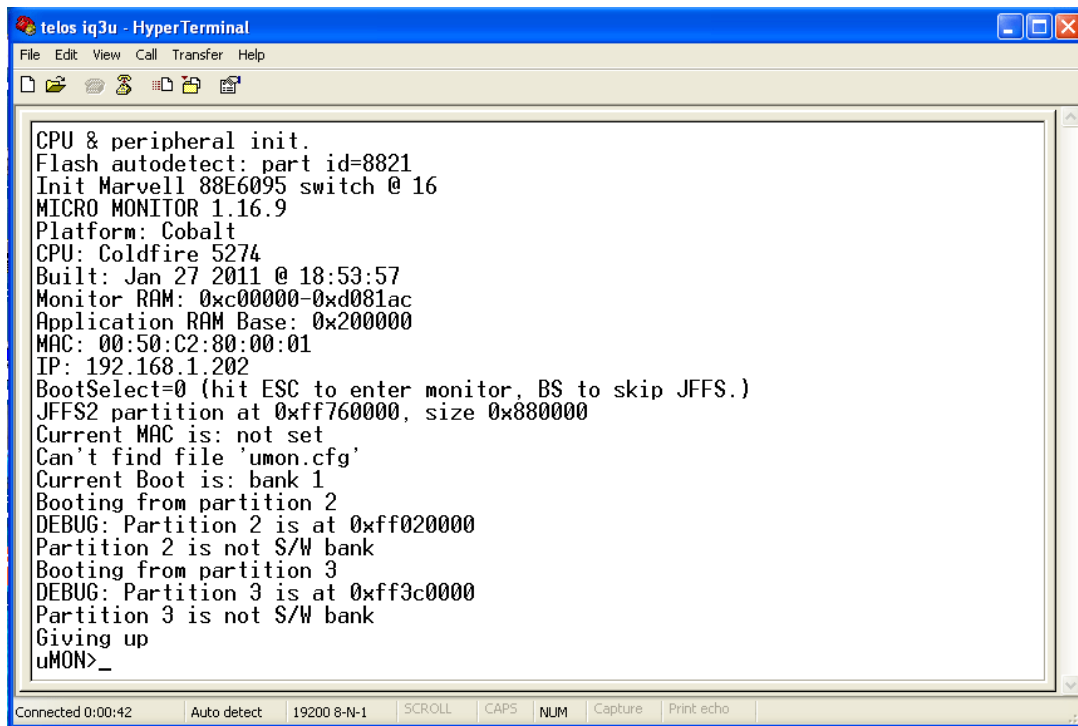


are disabled. Here is an example of correct settings:

3.3 Connect power cable to iQ MAIN board

3.4 Turn ON power source

3.5 Because there is no application software loaded you will get uMON prompt:



```
telos iq3u - HyperTerminal
File Edit View Call Transfer Help

CPU & peripheral init.
Flash autodetect: part id=8821
Init Marvell 88E6095 switch @ 16
MICRO MONITOR 1.16.9
Platform: Cobalt
CPU: Coldfire 5274
Built: Jan 27 2011 @ 18:53:57
Monitor RAM: 0xc00000-0xd081ac
Application RAM Base: 0x200000
MAC: 00:50:C2:80:00:01
IP: 192.168.1.202
BootSelect=0 (hit ESC to enter monitor, BS to skip JFFS.)
JFFS2 partition at 0xff760000, size 0x880000
Current MAC is: not set
Can't find file 'umon.cfg'
Current Boot is: bank 1
Bootting from partition 2
DEBUG: Partition 2 is at 0xff020000
Partition 2 is not S/W bank
Bootting from partition 3
DEBUG: Partition 3 is at 0xff3c0000
Partition 3 is not S/W bank
Giving up
uMON>_

Connected 0:00:42  Auto detect  19200 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

3.6 Connect Ethernet cable from any “1000BT” port to PC.

3.7 Download iQ application from tftp server (assuming tftp is on IP 192.168.2.10):

Select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ1_get_image.txt”

Note: please make sure that the TFTP32 server configured and run on PC. Please refer to document [1971-00043] “Software Installation” for details.

3.8 Write application to software bank:

Select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ2_write_image.txt”

3.9 Boot to the written bank:

Select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ3_boot_image.txt”

Waiting for OS prompt then.

3.10 Set boot priority:

Select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ4_boot_set.txt”

3.11 Reboot the unit and check if it starts up correctly. You may either power cycle or

Select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ5_reboot.txt”

3.12 Programming Done.

Note: IQ Core is programmed. Default IP address of programmed iQ core would be 192.168.2.27. This can be changed either over the web, or from iQ main console connected to Console 1 port – in this case press and hold both options keys for 5 seconds. For Web access login is “user” and by default there is no password.

3.13 Run test application by select in HyperTerminal:

“Transfer” > “Send Text File...”>”iQ7_run_test.txt”

Follow the instructions for apply all tests (see [1971-00039] “iQ Core test” for details).

3.14 Turn OFF Power Source

3.15 Disconnect power cable from iQ MAIN board

3.16 Disconnect 3-wire serial cable

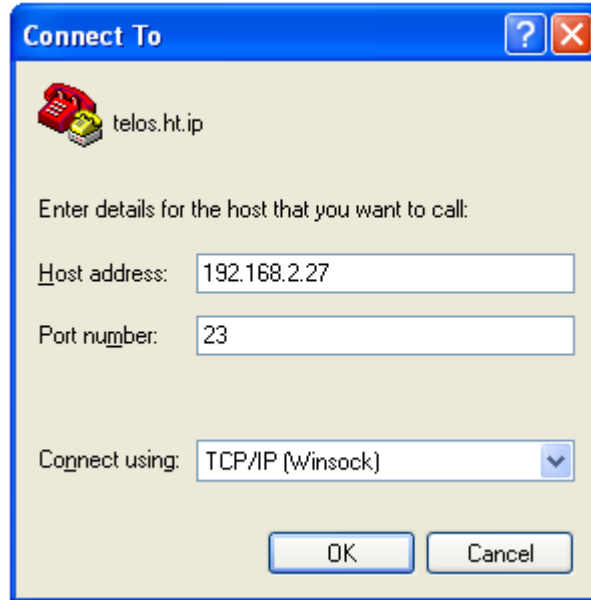
4 MAC address assignment and final testing

After assembly unit Final test should be applied.

4.1 Plug AC to iQ/Radius Core.

4.2 Connect Ethernet cable from any “1000BT” port to PC.

4.3 Run HyperTerminal application on PC.



4.4 Establish TELNET connection to iQ Core with next parameters:

4.5 Waiting for Operation System (Linus) prompt “/ #”

4.6 Set correct MAC address for the unit by select in HyperTerminal:
“Transfer” > “Send Text File...”>”iQ6_set_MAC.txt” then type last two bytes (in hex format, separated by “:”) in accordance with the label on rear panel and press <ENTER>.

4.7 Reboot unit by provide power cycle: unplug AC power, wait 20 seconds and then plug AC power again.

Note: telnet connection to iQ Core should be broken after unit powered down.

4.8 Restore connection to iQ Core by selecting in HyperTerminal:
“Call” > “Call”.

Note: after Telnet connection restored you should see OS prompt in response on pressing <ENTER> on PC. It could take up to 1 Minute.

4.9 Start to capture Testing Protocol by select in HyperTerminal:
“Transfer” > “Capture Text...”> then specify file to save Protocol to (name of the file should content last two bytes of the assigned MAC address).

4.10 Run test application by select in HyperTerminal:
“Transfer” > “Send Text File...”>”iQ7_run_test.txt”.
Follow the instructions for apply all tests (see [1971-00039] “iQ Core test” for details).

4.11 Stop to capture Testing Protocol by select in HyperTerminal:
“Transfer” > “Capture Text...”>”Stop”.

Appendix A: Text files with commands to uMon and uLinux

“iQ1_get_image.txt”:

tftp 192.168.2.10 get iq.bin 0x20000

“iQ2_write_image.txt”:

write 2 0x20000

“iQ3_boot_image.txt”:

boot 2

“iQ4_boot_set.txt”:

clk-tool --boot 1

“iQ5_reboot.txt”:

reboot

“iQ6_set_MAC.txt”:

clk-tool --mac 00:50:C2:90:

“iQ7_run_test.txt”:

cd /iq/test/

./run.sh

/iq/xxtool usleep 1000000

./lwt -c

“iQ8_check_MAC.txt”:

ifconfig