iControlPad-BT Firmware Flashing Guide

v1.00

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Section 1: Software

    a. Custom file set included (runs in DOS mode on Windows operating system)

    b. Visual C++ 2008 Redistributable
http://www.microsoft.com/downloads/en/details.aspx?FamilyID=9b2da534-3e03-4391-8a4d-074b9f2bc1bf&displaylang=en
or
http://www.microsoft.com/downloads/en/details.aspx?familyid=A5C84275-3B97-4AB7-A40D-3802B2AF5FC2&displaylang=en

Section 2: Software testing and firmware flashing

- A collection of files will be provided to the assembler for testing. These will include the encrypted firmware image, the testing software application, the firmware flashing application and batch files used to make operating the application files easier. The directory folder will look like this after copying to a PC:
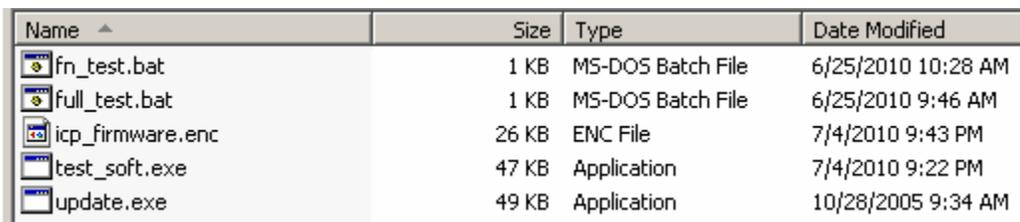
Name ▲	Size	Type	Date Modified
fn_test.bat	1 KB	MS-DOS Batch File	6/25/2010 10:28 AM
full_test.bat	1 KB	MS-DOS Batch File	6/25/2010 9:46 AM
icp_firmware.enc	26 KB	ENC File	7/4/2010 9:43 PM
test_soft.exe	47 KB	Application	7/4/2010 9:22 PM
update.exe	49 KB	Application	10/28/2005 9:34 AM

- The microcontroller on each iControlpad board is preprogrammed with a bootloader before being soldered onto the PCB. This initial code will allow flashing of the main firmware to the board by way of a Bluetooth link using the Serial Port Profile (SPP).
- To enable the bootloader after the board is fully populated (battery included), the START and SELECT buttons must be pressed simultaneously. Be sure that the START button is pressed last as that is the actual power button. LED will be lit and these buttons must be held down until LED flashes off momentarily. The board will now wait for a BT link to be established and firmware to be sent. If a BT link is not established and no data sent within 60 seconds, the board will power off. The START button can be held down to extend this time indefinitely.

- During the firmware update, the green LED will flash as data is passed over the BT link. Once all of the data has been loaded, the board will automatically power down (as long as the START button is not being held down).

- Setting up the BT link itself is dependent on the PC used and its own software. The main thing to do is create the pairing and establish what COM port the PC expects the BT link to use. The current configuration expects the BT serial port to be COM1 but it can be changed by altering the text in the batch file. **This is the hardest part as PC's try to establish a new COM port with every board you connect to it!**
- This software doesn't seem to like COM port numbers higher than nine and you may have to force your PC to use a lower number even if it tells you that port is in use.
- To do a firmware flash, double click on the file called **full_test.bat**. Firmware updating will occur as soon as the BT link is made after the PC program starts.

Example screenshot:

```
C:\WINDOWS\system32\cmd.exe
update v1.0 - Copyright (C) 2003 Atmel Corporation

COM1 opened.
Transferring.. \ 53% done.
```

- Wait for the progress to get to 100%. The iControlpad
  board will automatically power off when the firmware
  update has completed. The PC program will be waiting
  for a key press to exit.

Example screenshot:

```
C:\WINDOWS\system32\cmd.exe
update v1.0 - Copyright (C) 2003 Atmel Corporation

COM1 opened.
Transferring.. 100% done.
Target updated successfully.
Firmware update software has closed.
Check for error status if software has finished early.
Press any key to continue . . . _
```

To re-power the board, only hold down the START button continuously. The green LED will flicker quickly as a CRC check is done on the newly loaded firmware. If the check is successful, the LED will stay lit. If not, the LED will turn off. The START button needs to be held down for two seconds before the system will remain powered on its own.