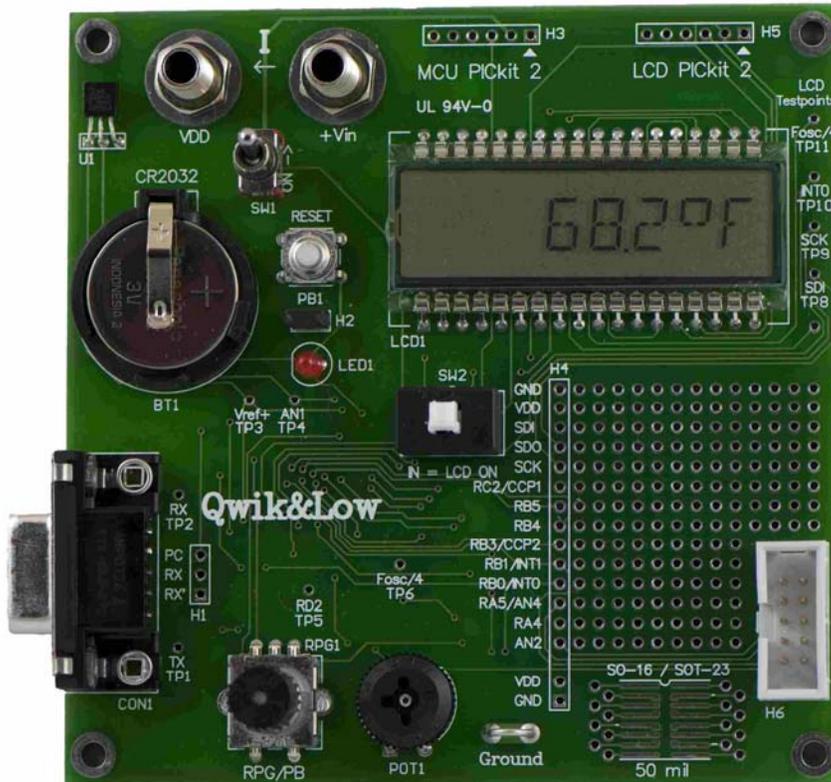# QwikBug Installation on the Qwik&Low Board

1.0 Qwik&Low Board

This document describes the installation of QwikBug on the Qwik&Low board. The PC must have the QwikProgram 2 utility installed, as described below.
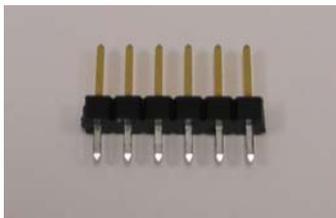
2.0 QwikBug Installation

2.1 PC System Requirements
●   Windows OS (XP preferred)
      QwikProgram 2 installed
      (http://www.qwikandlow.com/Tools/QP2setup.exe)

2.2 Required Installation Tools
●   CR2032 coin cell battery
●   PICkit 2 programmer
●   Six-pin header for connecting female socket of PICkit 2 programmer to H3 female header pattern on Qwik&Low board:

2.3 Installation of QwikBug

Step 1.
With the power toggle switch, SW1, in the "OFF" position (down toward the bottom of the board), insert the CR2032 (the 3V coin-cell battery) into the socket labeled BT1 with the + side up (as shown in the photo on the first page).

Step 2.
Plug longer pins of six-pin header into the PICkit 2 programmer to create a PICkit 2 programmer with a six-pin male output.
Plug the PICkit 2's male output pins into the H3 pattern (labeled MCU PICkit 2 and located at the top center of the board) with its white triangle on the right, as shown below:

Step 3.
Plug the PICkit 2's USB cable into one of the the PC's USB sockets.

Step 4.
Start up the QwikProgram 2 on the PC. Its status line along the bottom of its window should recognize both the PICkit 2 and the PIC18F4321.
(Its recognition cannot identify that it is actually a PIC18**LF**4321 that is soldered into the U3 socket on the underside of the board).
 It should also list
           Source: qbPIC18F4321.hex
This is the composite file that will be programmed into the chip. The file includes QwikBug and also a "user program" that will test to see whether QwikBug has

been installed properly (with the QwikProgram 2 utility and not with the normal PICkit 2 programming utility).

Step 5.
Click on the "Write" button. After a couple of seconds of writing the file into the PIC18LF4321 chip and verifying the result, its status line should note: "Programming Successful."
Remove the PICkit 2 programmer from the "MCU PICkit 2" socket on the Qwik&Low board.

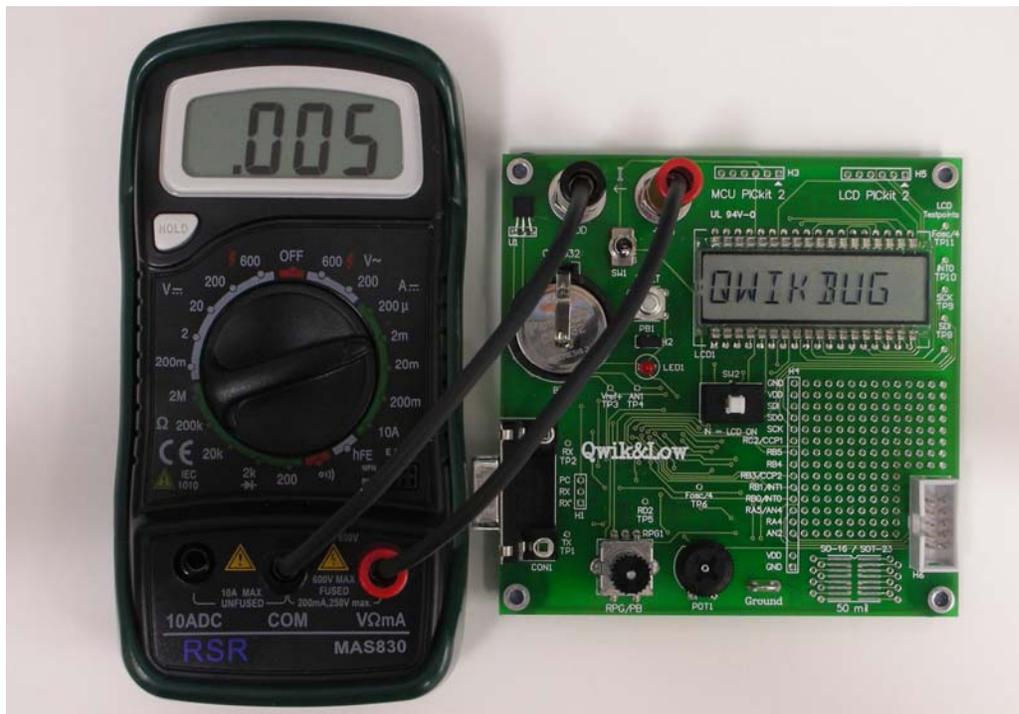## 3.0 Functional Testing Procedure

Step 1.
Ensure that switch SW2 (located in the center of the board just below the left end of the LCD) is in the "IN" position. If not certain, press and release the white button to alternate between "IN" and "OUT".

Step 2.
Push the power toggle switch, SW1, to the "ON" position (toward the top of the board). After two seconds, the LCD should show the   **QWIKBUG**   message.

If instead, the LCD shows   **QB FAULT**   then programming failed. This probably indicates that instead of using the QwikProgram 2 utility to do the programming, the PICkit 2 utility was used. Unfortunately the PICkit 2 utility does not allow the Background Debug Mode vector to be programmed by a user, and this vector is needed by QwikBug.

4.0 Current Measurement

4.1 Required Testing Tool
●   Digital multimeter having a 2 milliampere scale and banana plug leads

4.2 Procedure

Step 1.
Turn DMM's function selection knob to the OFF position. With **QWIKBUG** still being displayed on the LCD, connect the DMM (digital multimeter) to the two banana jacks on the Qwik&Low board, as shown in the photo.

Step 2.
Turn DMM from its OFF position to its 2 milliampere scale (as shown in the photo).

Step 3.
Turn the Qwik&Low board's power toggle switch (SW1) off. The DMM should indicate a current of about .005 mA (5 microamperes), as shown in the photo.

If this current measurement test is carried out when the LCD shows **QB FAULT**, the resulting current measurement will be around 1.000 milliamperes, again indicating a faulty installation of QwikBug.

Step 4.
Turn off DMM and remove the banana cables from the Qwik&Low board. With the Qwik&Low power toggle switch (SW1) turned off (and no longer shunted by the DMM's current measuring circuitry), the LCD will show a blank display.