Using an LCD Keypad with the RM1xx DVK

RM1xx Series

Application Note *v1.1*

INTRODUCTION

Using an Arduino shield connector, it is possible to easily connect an LCD display and keypad to the RM1xx development board for various applications. This is accomplished by simply soldering some jumper wires from the module I/O to the shield of your choice and writing a simple *smart*BASIC script.

REQUIREMENTS

- DVK-RM816 or DVK-RM191
- USB-A to USB-Micro cable
- LCD display and keypad shield (in our example, we use the OSEPP 16x2 LCD Display and Keypad Shield)
- *smart*BASIC script lcdkey.rm1xx.sb, available at https://github.com/LairdCP/RM1xx-Applications
- UwTerminalX, available from Laird (v1.03 or later recommended)
- 2x 6-pin through header (for LCD Keypad shield)
- 2x 8-pin through header (for LCD Keypad shield)

HARDWARE SETUP

The LCD display and keypad shield will be controlled by the *smart*BASIC script, which itself makes use of the LiquidCrystal library for Arduino. The *smart*BASIC script makes uses commands from the LiquidCrystal library to control the shield as needed.

The script also references specific pins, so it's important to wire the shield as explained here. Otherwise, you'll need to modify the script to use the pins you've wired.

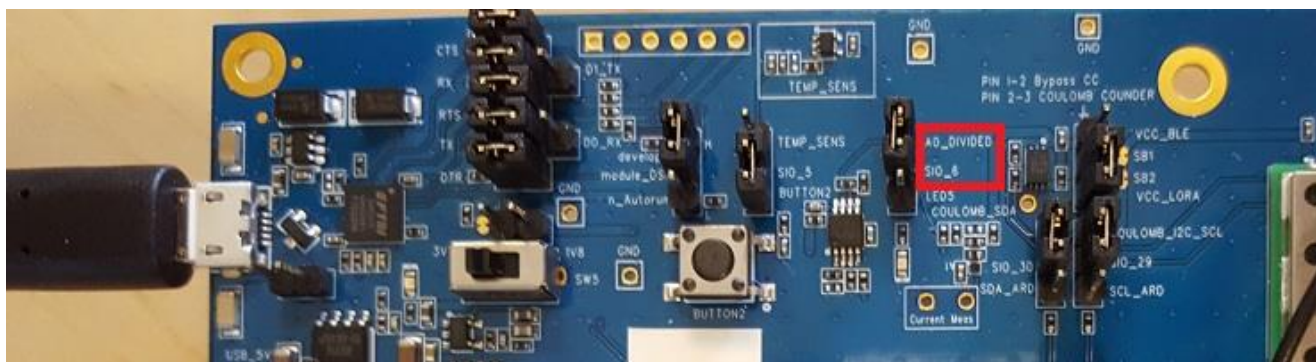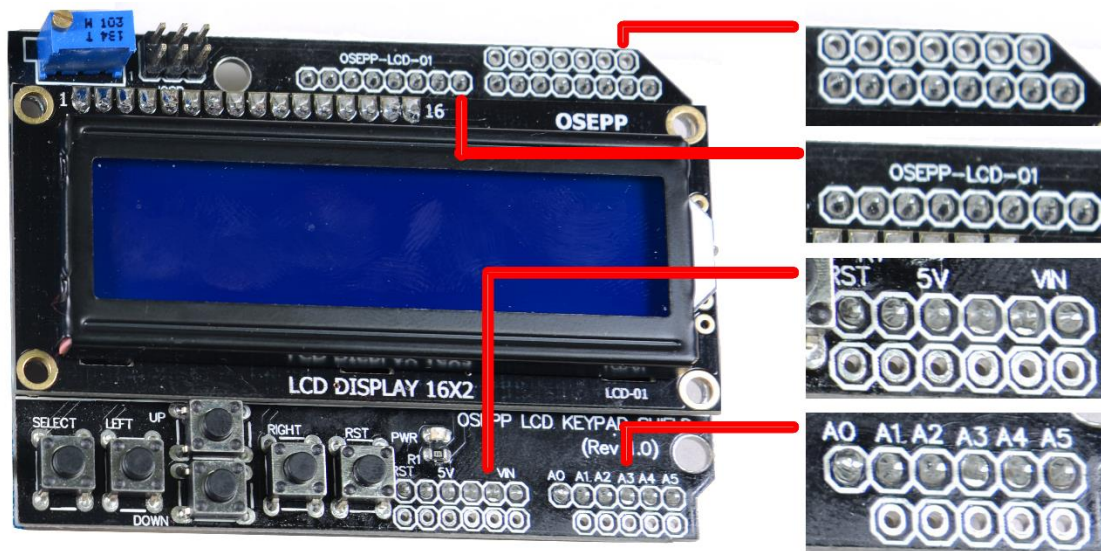First, place a jumper between the SIO_6 and AO_DIVIDED pins on J8, as shown in Figure 1.

Figure 1: Jumper between SIO_6 and AO_DIVIDED (J8)

Next, you'll need to solder two 5-pin through headers and two 8-pin through headers to the LCD Display shield as shown in Figure 2.

(Pins emerge through bottom of board)

Figure 2: Soldered pins on LCD Display shield

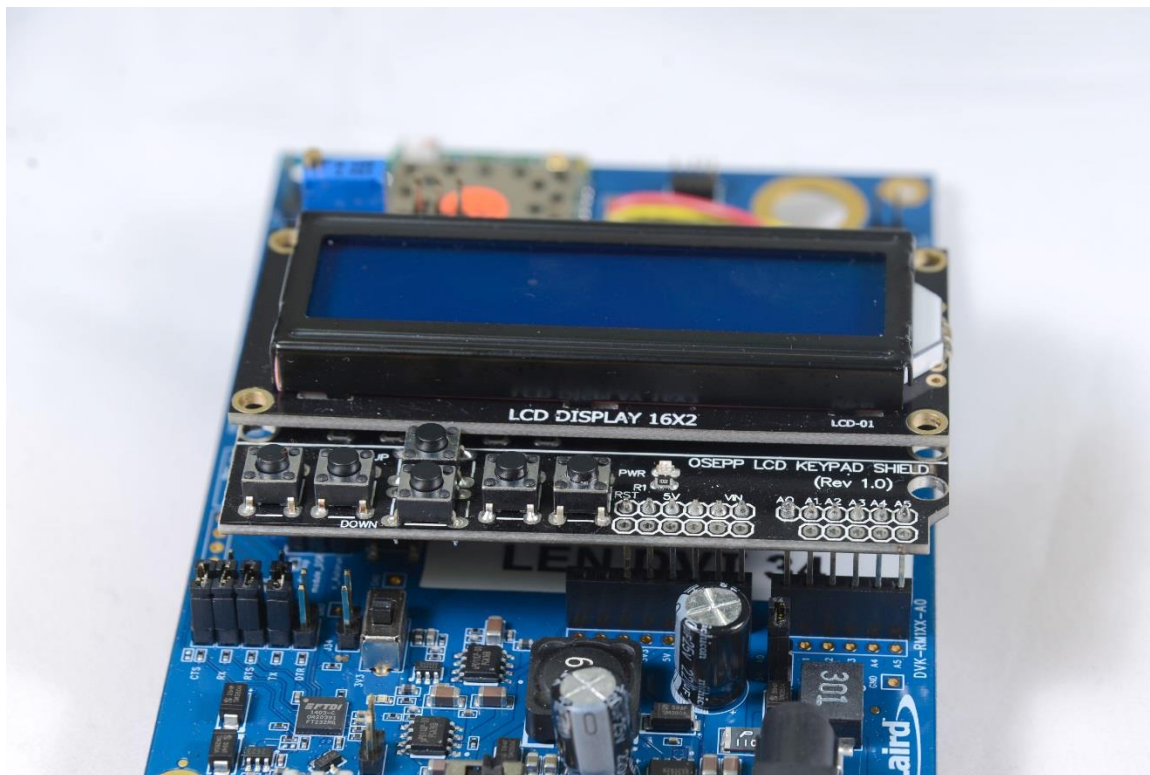These pins mate directly with the RM1xx development board as shown in Figure 3.

Figure 3: LDC Keypad shield resting in the mount position on the RM1xx DVK board

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Next, it is necessary to wire some interface lines on the DVK board. These are shown in Figure 4.
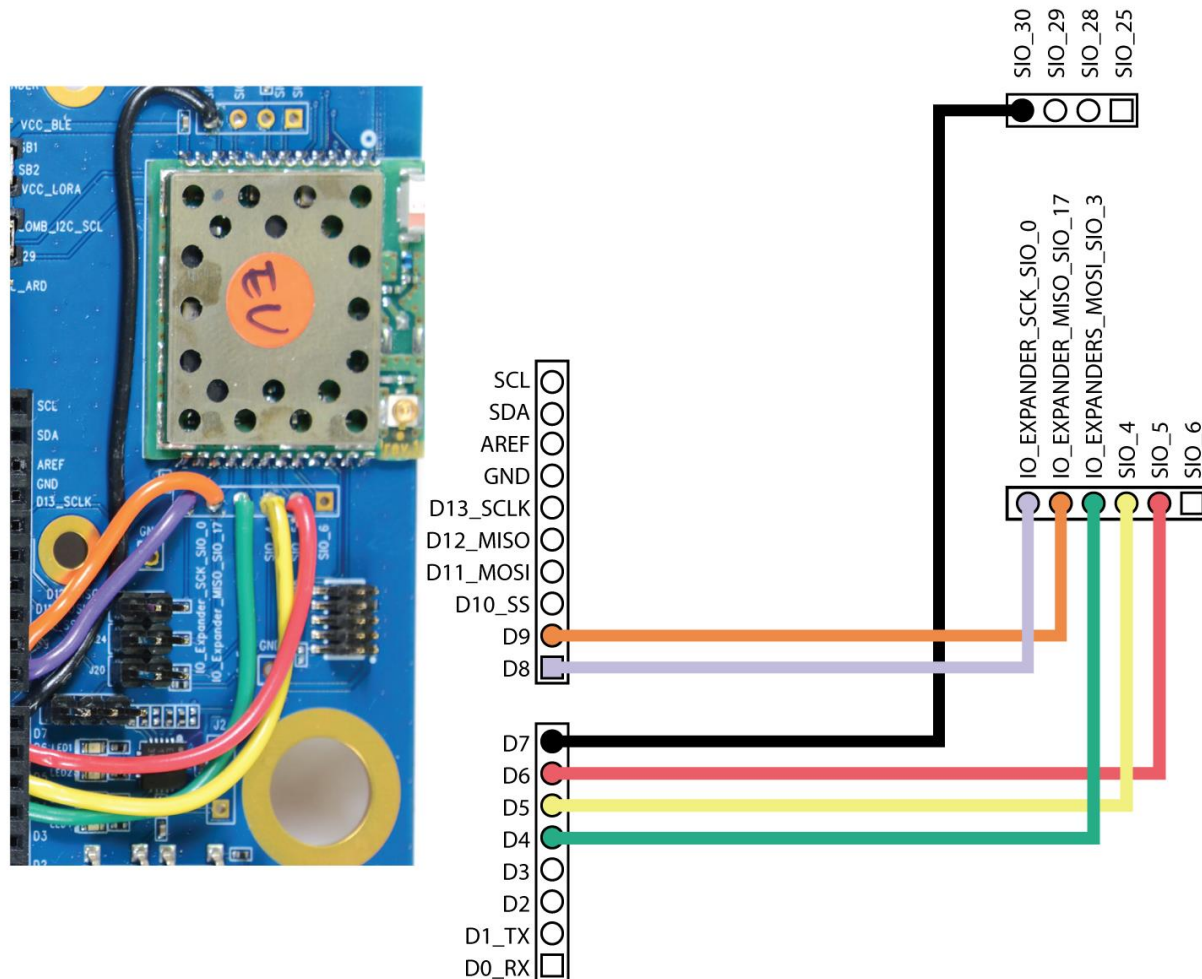

Figure 4: Wiring on DVK to enable LCD Keypad Shield

COMPILE AND LOAD *SMART*BASIC SCRIPT

Next, you'll need to compile, load, and execute the sample script for the LCD Keypad shield.

To compile and run lcdkey.rm1xx.sb, complete the following steps:

1. Download lcdkey.rm1xx.sb to your PC.
2. Connect the RM1xx development board to your PC via the included USB Mini cable.
3. Power your development board.
4. Open UwTerminalX.
5. On the Update tab within the UwTerminalX pane, click **Check for Updates** to ensure you're using the latest version of UwTerminalX with support for the RM1xx Series.
6. In the Config tab, in the Device drop down, select either **RM186** or **RM191** based on your setup.
7. Select the correct port to which your development board is connected.
8. Click **OK**. You will be taken to the Terminal tab.
9. Hit **Enter** on your keyboard. If you see the return *00*, you are connected successfully.
10. Right-click in the terminal window, and in the context menu click **XCompile + Load.**

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11. In the file selector window, select lcdkey.rm1xx.sb and click **Open.**
12. When the terminal displays 00, the compiler has finished successfully.
13. Type **at+dir** and press **Enter**. You should see *lcdkey* in the file list.
14. To run the GPS script, type **lcdkey** and press **Enter.**

When running correctly, the LCD display will light and read "Press some buttons!" The display will read out the input pressed, and will reset when "reset" is pushed, as shown in Figure 5.
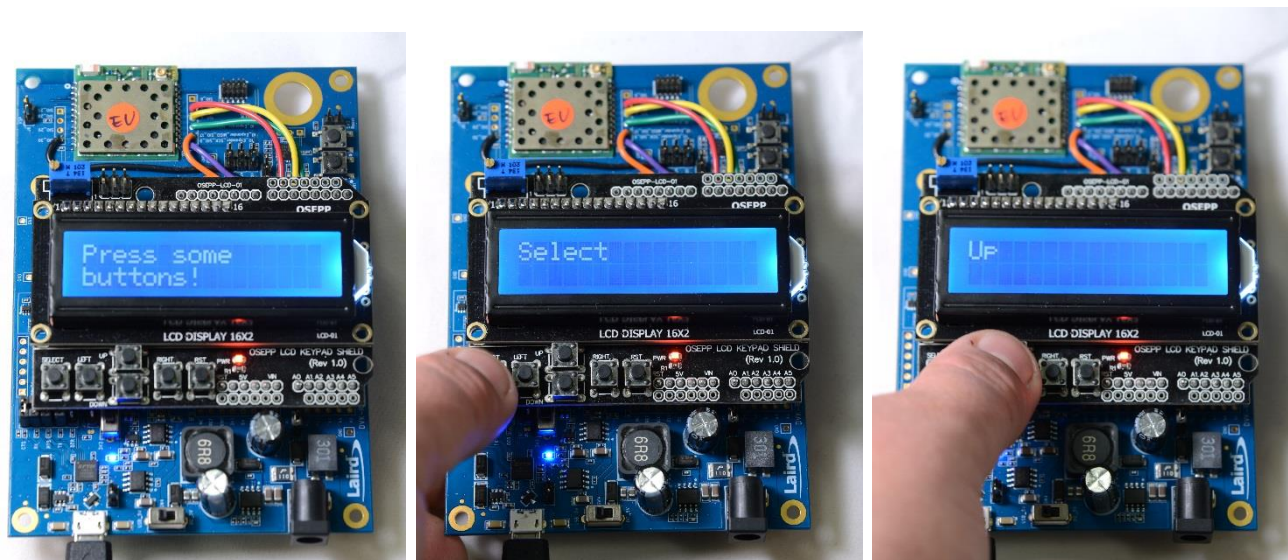

Figure 5: LCD Keypad states

REVISION HISTORY

Version	Date	Notes	Approver
1.0	23 May 2016	Initial Release	Jonathan Kaye
1.1	20 June 2016	Added J8 Settings	Seokwoo Yoon

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