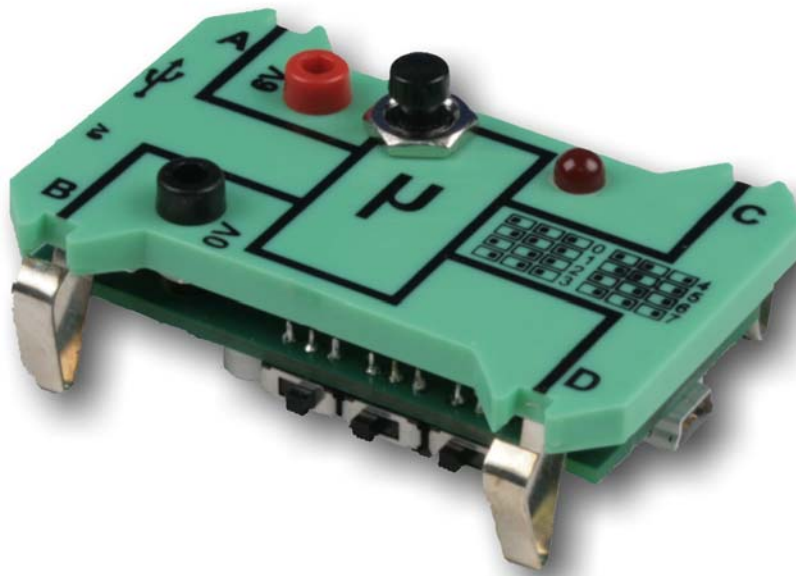


Locktronics PICmicro Datasheet

LKLPC100-00-1



Contents

1.	About this document.....	2
2.	General information.....	3
3.	Board layout	4
4.	Testing this product	5
5.	Circuit description	6

Appendix 1 Circuit diagram

1. About this document

This document concerns the Locktronics PICmicro board code LKLPC100 version 1.

The order code for this product is LKLPC100.

1. Trademarks and copyright

PIC and PICmicro are registered trademarks of Arizona Microchip Inc.
Locktronics is a trademark of Matrix Multimedia Limited.

2. Other sources of information

There are various other documents and sources that you may find useful:

Getting started with E-Blocks.pdf

This describes the E-blocks system and how it can be used to develop complete systems for learning electronics and for PICmicro programming.

PPP Help file

This describes the PPP software and its functionality. PPP software is used for transferring hex code to a PICmicro microcontroller.

C and assembly strategies

This is available as a free download from our web site.

3. Disclaimer

The information in this document is correct at the time of going to press. Matrix Multimedia reserves the right to change specifications from time to time. This product is for development purposes only and should not be used for any life-critical application.

4. Technical support

If you have any problems operating this product then please refer to the troubleshooting section of this document first. You will find the latest software updates, FAQs and other information on our web site: www.matrixmultimedia.com . If you still have problems please email us at: support@matrixmultimedia.co.uk.

2. General information

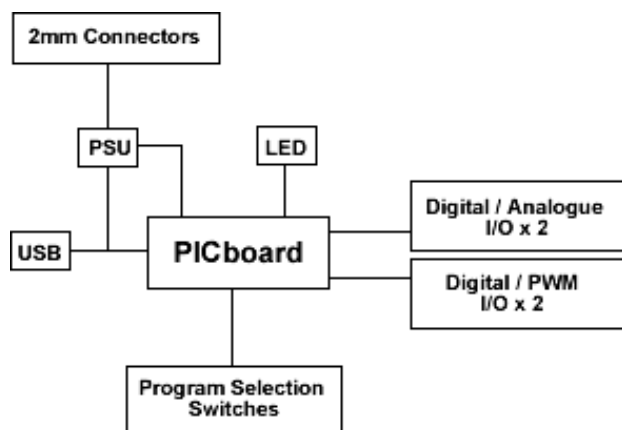
1. Description

This is a USB enabled PICmicro device similar to our ECIO devices but tailored to our Locktronics series of products. The device can be programmed directly from within Flowcode or can be loaded with a range of our educational course firmware material. There are three switches on the bottom of the device that allows the PICmicro Locktronics carrier to run in any one of eight modes. The device can be ran from the USB power supply or by supplying power via the onboard 2mm connector sockets.

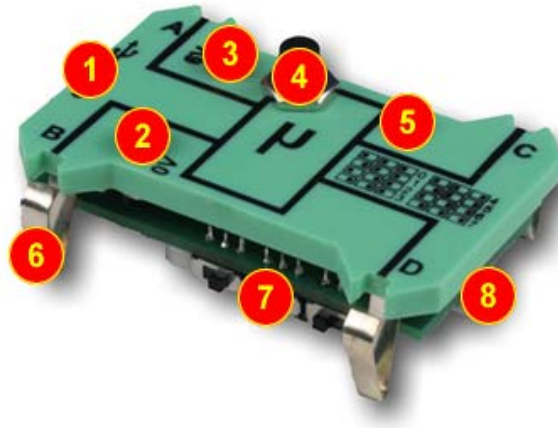
2. Features

- USB Programmable from Flowcode
- Up to eight selectable programs can run on one carrier
- 2x PWM output for driving motors or LEDs
- 2x Analogue inputs for taking measurements
- Powered by USB or 2mm connectors
- Locktronics compatible

3. Block schematic



3. Board layout



EB043-74-2.jpg

- 1) USB / 2mm PSU source selector switch
- 2) 2mm Socket for external ground supply
- 3) 2mm Socket for external 5V supply
- 4) Reset switch
- 5) LED
- 6) Locktronics Carrier Legs
- 7) Program selection switches
- 8) USB miniB socket

4. Testing this product

Required for the test

- PC with Flowcode V3.6 (or later) installed
- Demo Program “PICbrd.hex”
- USB A to USB miniB Cable
- 4 x Locktronics 5V LED Carriers
- 2 x 4mm to 2mm leads
- 1 x 5-6V PSU
- 6 x Connecting Links
- Locktronics PSU Carrier

Switch the power supply switch to the USB position.

Run the ECIOprog tool from the following location.

“C:\Program Files\Matrix Multimedia\Flowcode V3\ECIOprog.exe”

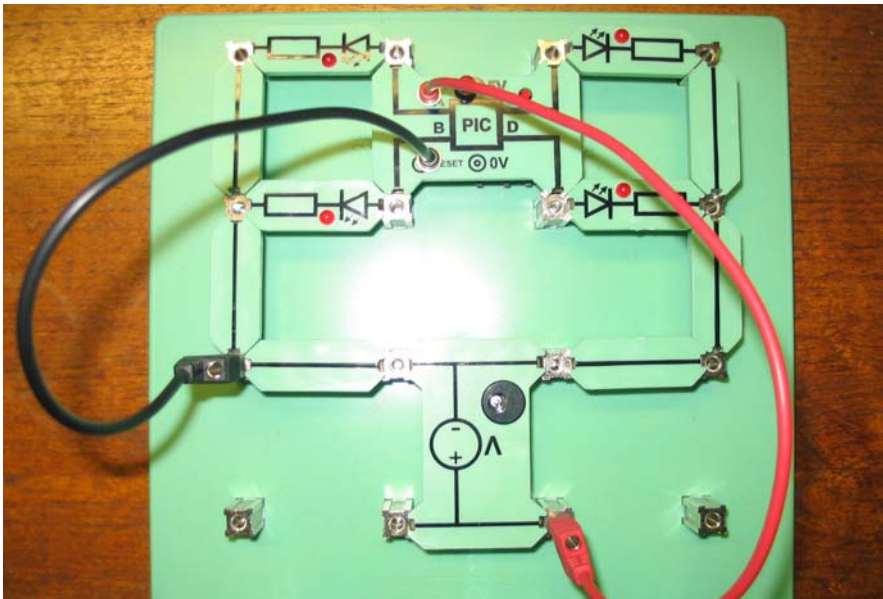
Click File and Open and load the “PICboard_Test.hex” file

Connect the PICboard to the USB via the USB cable and press the reset button.

In the ECIOprog tool click on Program -> Send Program.

Unplug the PICboard from the USB and switch the power supply switch to the PSU position.

Wire up the test system as shown below.



Connect a 6V PSU to the DC PSU carrier and switch on the PSU.

The LEDs should come on one at a time.

Test that changing the program selection switches changes the speed of the LED transitions.

0 – LEDs All On

1 – LEDs On One at a time with 1 second period

...

7 – LEDs On One at a time with 7 second period

5. Circuit description

The circuit as can be seen in the circuit diagram below (See Appendix 1 – Circuit diagram), made up of four sections: PICmicro, Voltage supply, USB and Program selection switches.

1. *PICmicro*

The PICmicro device used onboard the PICmicro board is a PIC18F2455 USB enabled microcontroller. The PIC uses a 4MHz crystal to drive the onboard phase locked loop oscillator, which supplies the PICmicro device with a fixed clock speed of 48MHz.

2. *Voltage Supply*

The voltage supply is either taken directly from the USB or can also be provided via the onboard 2mm sockets. The switch SW5 is used to switch between power sources.

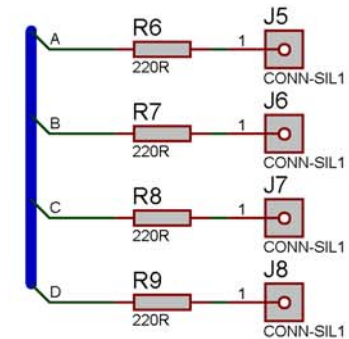
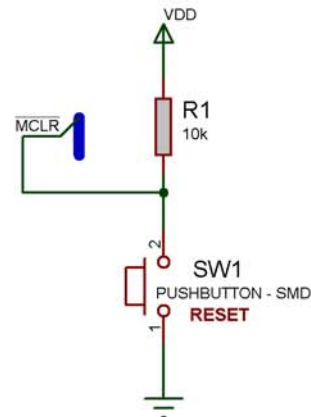
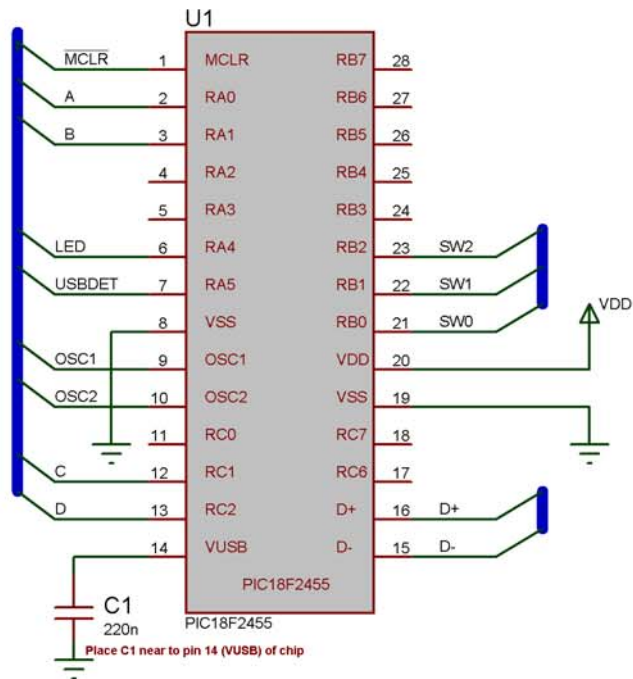
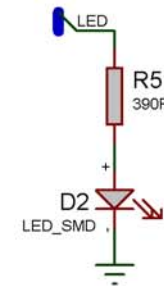
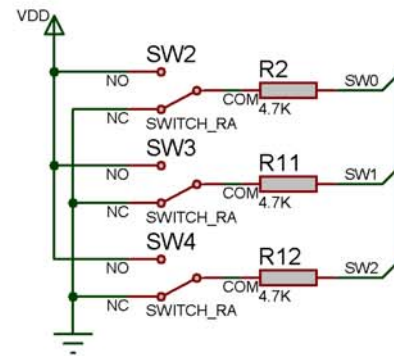
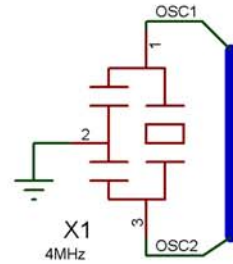
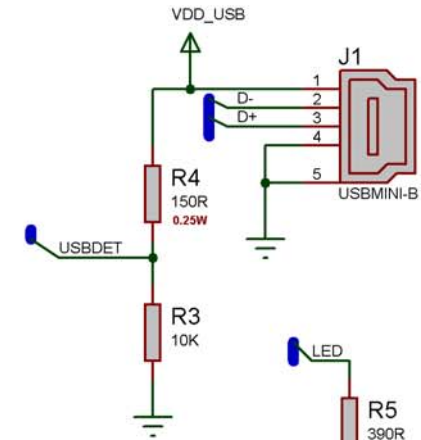
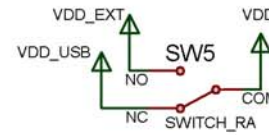
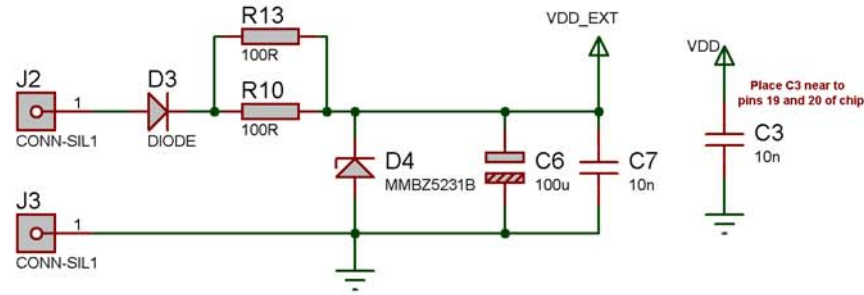
3. *USB*


The USB circuitry is used to reprogram the device but can also be accessed via the users source code. To reprogram the device load the ECIOprog software, ensure the PICmicro board is powered up and press the reset button on the carrier.

4. *Program selection switches*

The program selection switches act as a simple way to switch between programs or behaviors of the board. Shown on the print on the top of the board is the program number associated with the switch positions.

Appendix 1 – Circuit diagram



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Locktronics LKLPC100	23/01/09
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