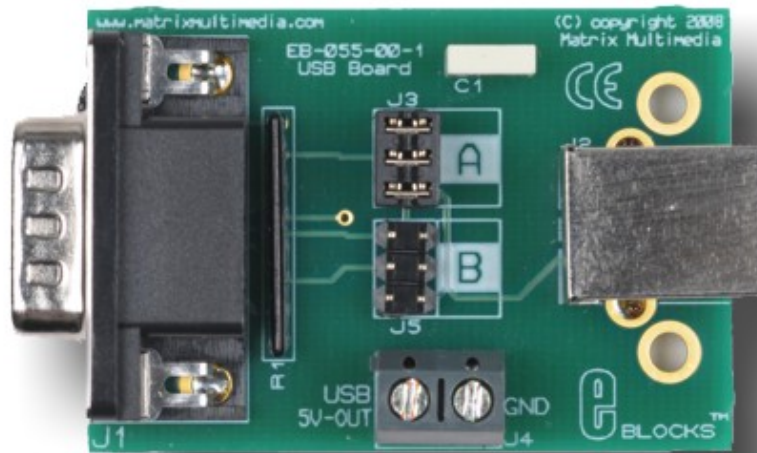


USB board datasheet EB055-00-1



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Appendix 1 Circuit diagram

1. About this document

This document concerns the E-blocks USB board code EB055 version 1.

The order code for this product is EB055.

1. **Trademarks and copyright**

PIC and PICmicro are registered trademarks of Arizona Microchip Inc.
E-blocks 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 E-block allows investigation of USB connectivity. This board can be used to provide connectivity between a USB enabled PIC microcontroller and a computer. The board is also capable of forwarding the 5V supply provided by the USB host to allow you to power your applications via USB.

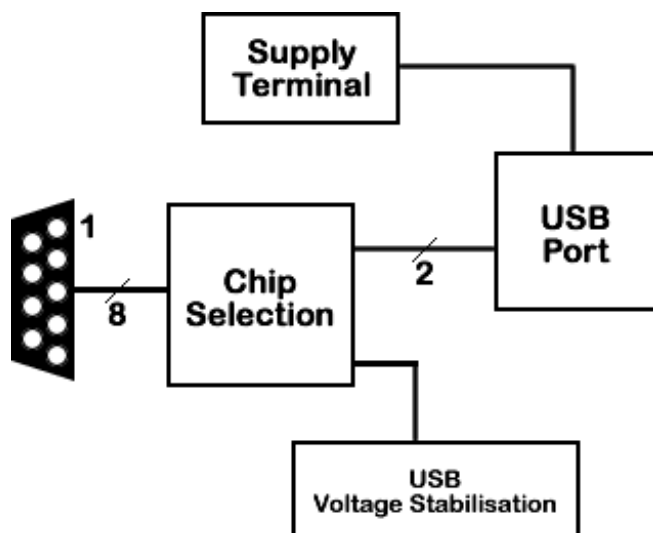
A set of jumper links are available which allow the USB E-block to easily be set for all USB enabled PICmicro® microcontroller compatible devices.

Flowcode components and example files that make this device easier to use are available as part of the USBpack download.

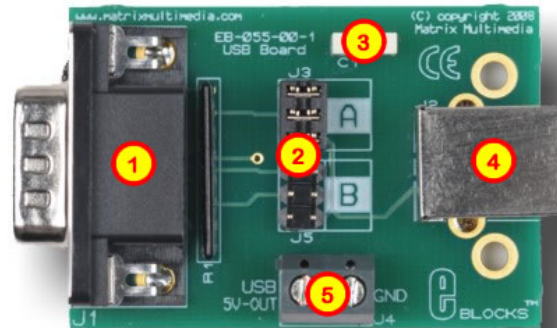
2. Features

- E-blocks compatible.
- Adds USB connectivity to your projects.
- Compatible with all USB enabled PICmicro devices.
- Capable of supplying power to your E-Blocks system.
- Flowcode components and examples available

3. Block schematic



3. Board layout



EB055-74-1

- 1) 9-way downstream D-type connector
- 2) Chip selection system
- 3) USB Voltage stabilisation
- 4) USB Type B port
- 5) Supply Terminals (5V and Ground)

General Guide for chip selection system

Jumper Settings	Example Device	USB Pins		
		D+	D-	VUSB
A	18F2455	5	4	3
B	18F14K50	7	6	2

For more information on see Section 4 – Circuit Description

4. Testing this product

1. System Setup for EB055 USB board test

The following test requires:

- PC with a spare USB port
- Standard type A to type B USB cable
- EB006 Multiprogrammer or HP488 V3 Dev Board
- 18F2455 / 18F2550 / 18F4455 / 18F4550 USB microcontroller
- 4 MHz Crystal

System Configuration

EB006 / HP488 Options	Setting
Power supply	External, 14V
PICmicro device	See list above
SW1 (Fast/Slow)	Don't care
SW2 (RC/Xtal)	Xtal
Xtal frequency	4 MHz
Port A	
Port B	EB007 Switch E-Block / HP488 onboard switches
Port C	EB055 Under Test
Port D	
Port E	
Test program	EB055Test.hex

EB055 Options	Setting
Chip selection settings	Position A

2. Test Procedure for EB055

- 1) Wire power from +V on programmer board to +V on EB007 board.
- 2) Configure system and board options as above.
- 3) Download the test program to the Multiprogrammer
- 4) Insert USB cable between EB055 and PC
- 5) Pressing switches connected to RB0 – RB3 should move the mouse cursor around on the PC.
- 6) Pressing switch connected to RB6 should left click the mouse on the PC.
- 7) Pressing switch connected to RB7 should right click the mouse on the PC.

5. Circuit description

The circuit as can be seen in the circuit diagram below (See Appendix 1 – Circuit diagram), contains all the hardware required to connect the USB enabled PIC microcontroller to your computer via USB.

1. *Jumper selection*

The product has been designed to enable you to use this device with all of the USB enabled PICmicro devices. This is achieved by identifying the PICmicro® microcontroller. Then by selecting the corresponding jumper setting on the USB board. This will configure the board with the correct pin-out for that particular device. The following table illustrates the correct jumper settings.

Jumper Settings	Compatible Devices
A	18F2450, 18F2455, 18F2458, 18F2550, 18F2553, 18F4450, 18F4455, 18F4458, 18F4550, 18F4553
B	18F13K50, 18F14K50

Table 1. Jumper settings for chip selection.

2. *Supply Terminals*

The voltage supply terminals on the EB055 USB E-Block are designed for outputting voltage only. You should never connect the +V from a powered system to the screw terminal on the USB E-Block. If you wish to power devices from the USB E-Block then you can do so by first ensuring that the EB006 / HP488 board is not powered and then connecting a wire from the USB 5V out screw terminal on the EB055 to the +V on the EB006 / HP488 board. Alternatively you can power your own 5V circuitry directly from the screw terminal. Be careful not to draw more than 250mA from the USB supply as the test hex file limits the USB supply current to 250mA. The EB006 / HP488 boards should run fine at approximately 60mA

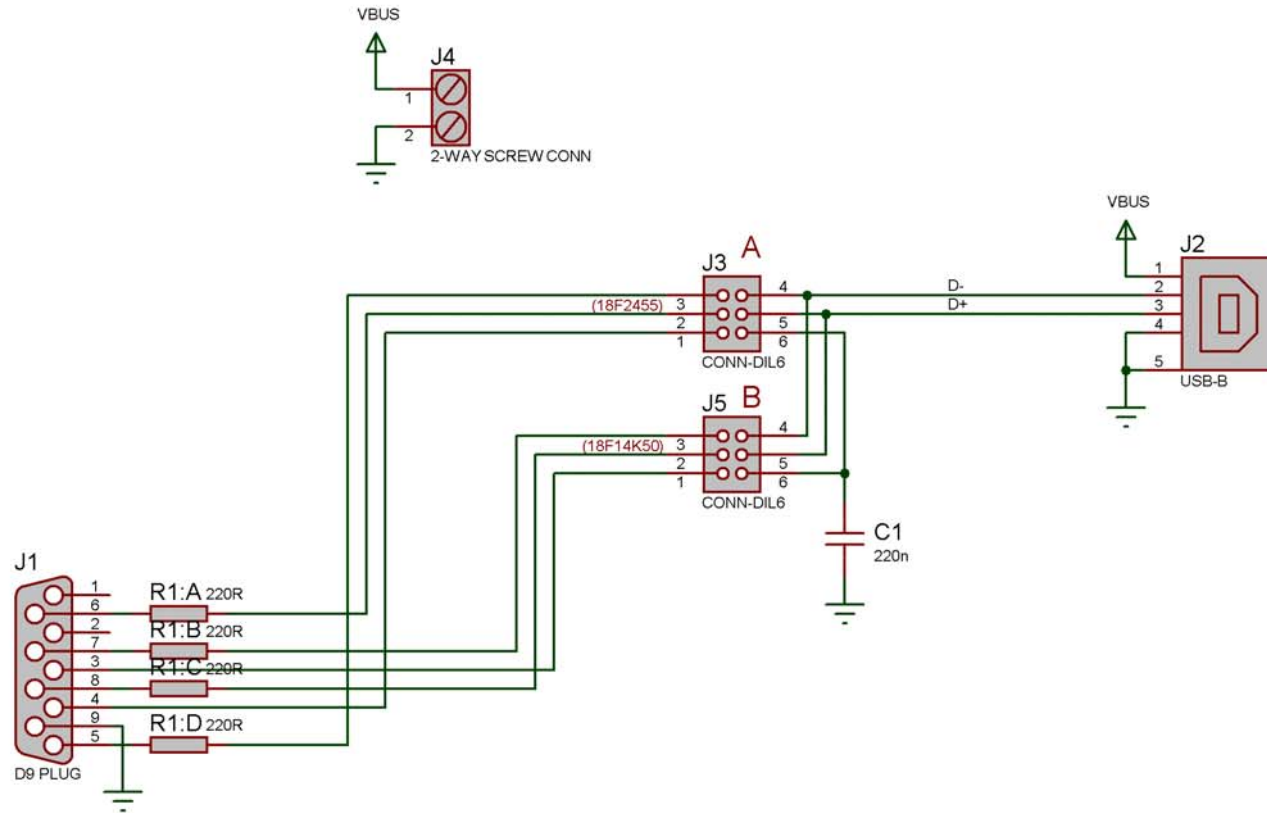
3. *3.3V operation*

This board is fully compatible with 3.3V systems. The USB V+ and V- signals are 3.3V as standard. However be aware that the USB supply voltage available on the EB055 screw terminal is always 5V.

Appendix 1 – Circuit diagram

THIS SYSTEM INCLUDES:-

- F1 FEET
- F2 FEET
- F3 FEET
- BAG
- L1 LABEL



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