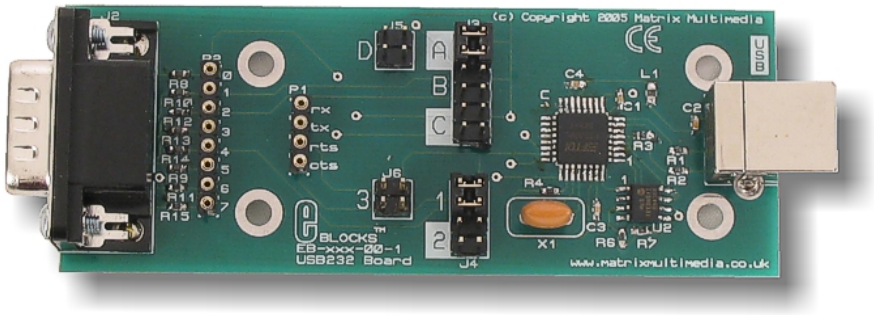
USB232 board
EB029-00-1
Technical datasheet



Contents

1. About this document

This document concerns the E-blocks USB232 board code EB029 version 1.

The order code for this product is EB006.

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

Not provided for this product.

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

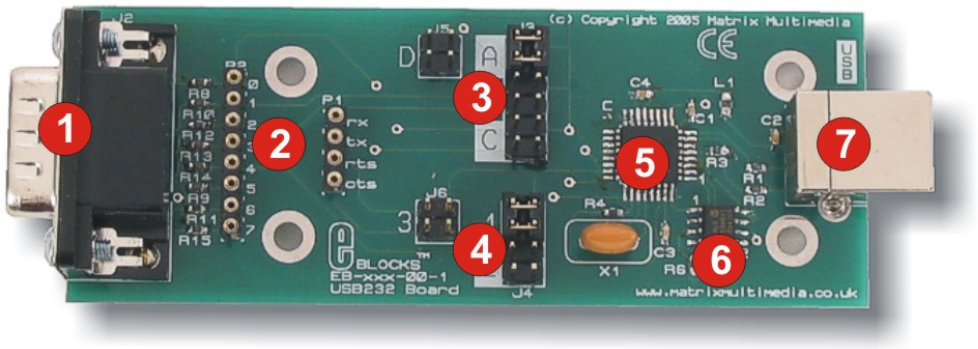
Description

This interface board allows you to easily add a USB interface to your project. The board contains a FTDI FT232BL interface chip which provides an interface between a USB interface and a microcontroller UART. A virtual COM port driver is available which allows you to interface the board to Windows based applications like Visual Basic and Visual C++ etc. The FTDI device is able to communicate at TTL or RS232 levels with data transfer speeds of up to 3M baud.

5. Features

- E-blocks compatible
- Low cost
- Provides a USB interface for all your projects

3. Board layout



EB039-74-1.cdr

1. D-type E-blocks connector
2. Patch system
3. Rx / tx jumper selection
4. RTS/CTS jumper system
5. FT232BL chip
6. EEPROM with USB ID
7. USB socket

4. Testing this product

The following program will test the circuit. The test files can be downloaded from www.matrixmultimedia.com.

The following instructions explain the steps to test your USB232 board. The instructions assume that PPP is installed and functional. It also assumes that you are confident in sending a program to the PIC via the Multiprogrammer.

These programs require a PICmicro Multiprogrammer board (EB-006) with a 40-pin PIC16F877A device. They require a PC with FTDI drivers installed, MProg 2.3 software, a spare USB port and Hyperterminal.

The program will enable you to fully test the functionality of the board.

1. System Setup

Multi-programmer board (EB006) with:

EB006 Options	Setting
Power supply	External, 14V
PICmicro device	16F877A
SW1 (Fast/Slow)	Don't care
SW2 (RC/Xtal)	Xtal
Xtal frequency	19.6608MHz
Port A	Switch board EB007
Port B	LCD display EB005
Port C	USB232 board EB039
Port D	
Port E	
Test program	power.hex

EB039 Options	Setting
J5, J3	External, 14V
J6, J4	16F877A

Connect "+V" from the Screw terminal of the Switch board to "+V" of the Multiprogrammer

2. PC software setup for the test routine

1. Plug the EB039 USB232 E-Block into the PC using a USB cable. If this is the first time the device is being plugged in, the "Add new hardware" wizard may appear. If it does, you will need to install the appropriate drivers - see the separate "Driver Installation" document for guidance.
2. The first step is to determine which virtual COM port has been allocated to the device. Do this by clicking on the "Start" button and selecting "Run…" In the "Open:" box, type "devmgmt.msc" (without the quotes) and press "OK" – this will open the "Device Manager" window.
3. Locate the "Ports (COM & LPT)" section and expand it by clicking the "+" symbol. The allocated COM port number will be shown in brackets after the "USB232 E-Block" entry.
4. Close down the "Device Manager" window.
5. Open "HyperTerminal". Enter a name in "Connection Description" window if this appears – it does not matter what you enter here.
6. In the "Connect to…" window, select the appropriate COM port number from the "Connect using:" drop-down box.
7. Set the properties for this connection to the following:
    - Bits per second = 9600
    - Data bits = 8
    - Parity = None
    - Stop bits = 1
    - Flow control = Hardware

8. The connection should now be active. Press  (disconnect) button.

3. Test Procedure

1. Press “reset” on the Multiprogrammer – the LCD display should read “EB039 test” and “Press A0”.
2. Plug the USB32 board into the PC using the USB cable (if it is not already connected).
3. Click the  (connect) button in HyperTerminal.
4. If you get the “Unable to connect to COMx…” message, click the properties button () and in the “Connect using” drop-down, select the appropriate COM port. This will probably increment after each unit has been tested, so it is likely that you need to select the highest COM port number. Click “OK” and then click the connect button again – this time there should be no error message.
5. Press A0 on the Switches E-Block – HyperTerminal should display the message “EB039 Test” and the LCD display should display “Waiting for PC..”
6. Type a few characters into the HyperTerminal window – whatever you typed should be displayed on the lower part of the LCD display (and not on the PC window).
7. Press <return> on the PC keyboard and the LCD display (and HyperTerminal) should read “**Unit Passed**”. After a couple of seconds, the LCD display will revert to the original message.
8. Press the disconnect button in HyperTerminal and remove the EB039 USB232 E-Block.
9. Repeat the procedure from step (2) above.

5. Circuit description

Appendix 1 – Circuit diagram