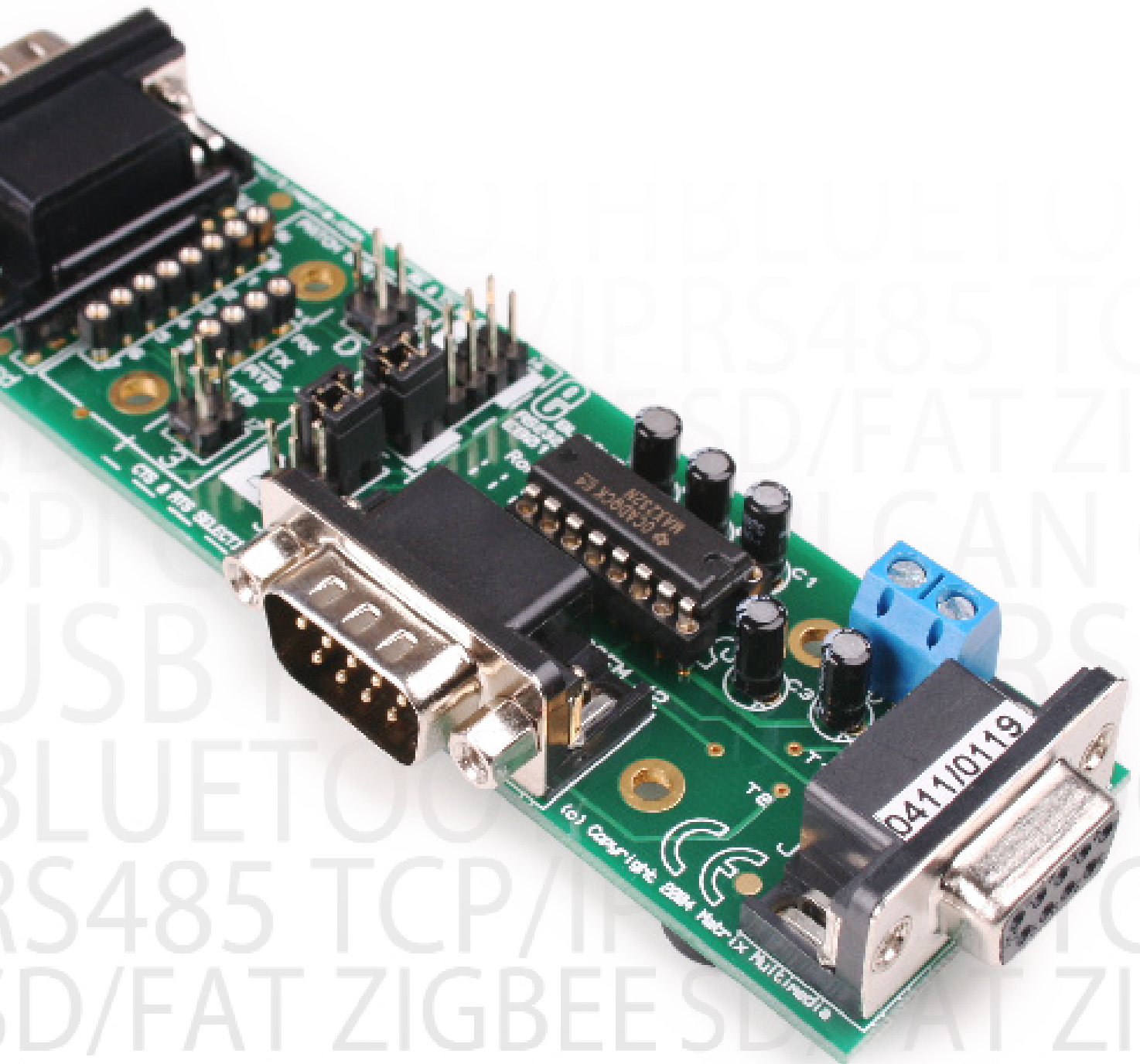


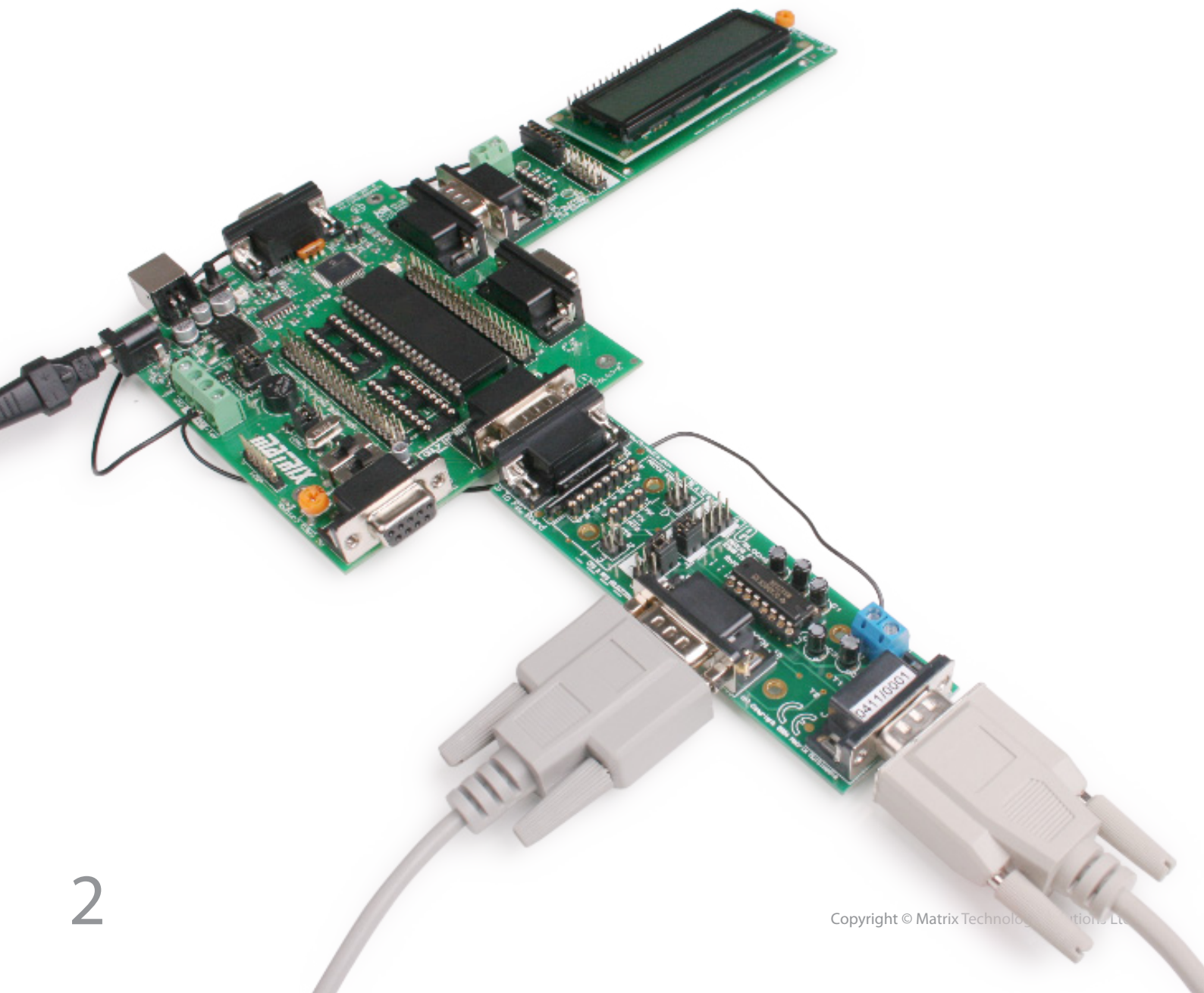
EBLOCKS[®]

RS232 board



Contents

About this document	3
Board layout	3
General information	4
Circuit description	4
Protective cover	5
Circuit diagram	6



About this document

This document concerns the EB015 E-blocks RS232 board.

1. Trademarks and copyright

PIC and PICmicro are registered trademarks of Arizona Microchip Inc. E-blocks is a trademark of Matrix Technology Solutions Ltd.

2. Disclaimer

The information provided within this document is correct at the time of going to press. Matrix TSL reserves the right to change specifications from time to time.

3. Testing this product

It is advisable to test the product upon receiving it to ensure it works correctly. Matrix provides test procedures

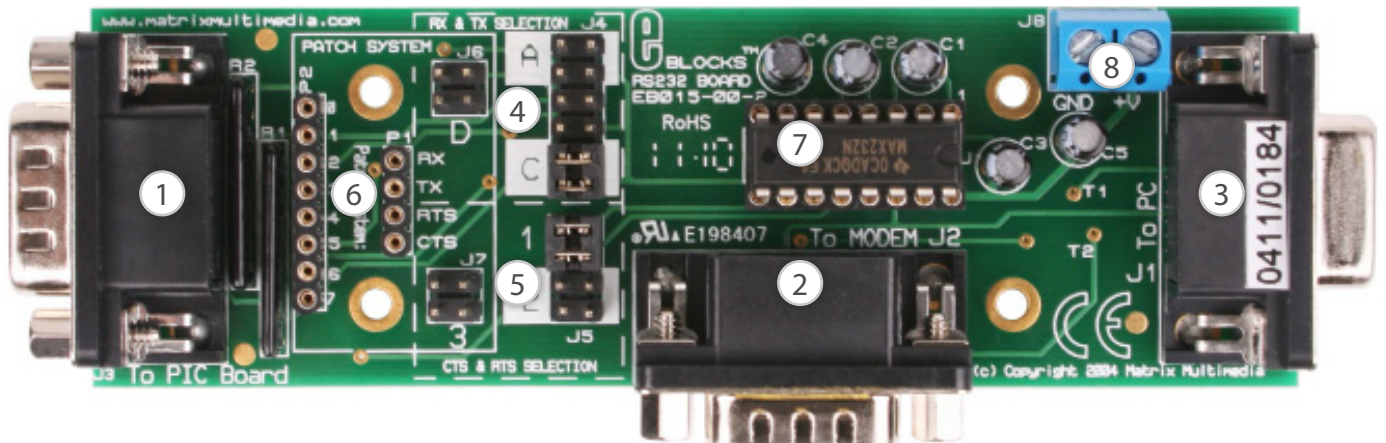
for all E-blocks, which can be found in the Support section of the website.

4. Product support

If you require support for this product then please visit the Matrix website, which contains many learning resources for the E-blocks series. On our website you will find:

- How to get started with E-blocks - if you are new to E-blocks and wish to learn how to use them from the beginning there are resources available to help.
- Relevant software and hardware that allow you to use your E-blocks product better.
- Example files and programs.
- Ways to get technical support for your product, either via the forums or by contacting us directly.

Board layout



1. 9-way downstream D-type connector
2. RS232 interface for third party devices
3. PC interface
4. RX and TX mode selection jumper pins
5. CTS and RTS mode selection jumper pins
6. Patch system
7. MAX232 device
8. Screw terminal

Guide for J7 & 5

Jumper settings	Description
1	Hardware flow control (RX = bit 4, TX = bit 0)
2	No flow control
3	Hardware flow control (patch)

General guide for TX and RX settings (J4 & 6)

Jumper at A	Jumper at B	Jumper at C		Jumper at D
PIC16F88	PIC16F627(A)	PIC16F7x	PIC16C6x	Patch system
PIC16F87	PIC16F628 (A)	PIC16F7x7	PIC16C7x	
	PIC16F648A	PIC16F87x		
		PIC16F87xA		

General information

This E-block provides an RS232 interface which can be used to facilitate communication between PICmicro microcontroller and third party device like PC serial ports, mobile communications systems etc. Flowcode macros for driving this E-block are available.

A set of jumper links are available which allow the RS232 E-blocks to easily be set for all PICmicro® microcontroller USART ports.

Flowcode macros that make this device easier to use are available.

1. Features
 - E-blocks compatible
 - RS232 communications between processors and a PC
 - RS232 communications between processors and a modem
 - Flowcode macros available
 - Hardware flow control can be enabled as an option
2. Block schematic
Not supplied.

Circuit description

The EB015 RS232 board circuit can be observed on page 6. The main device on the board is the MAX3232 - a low voltage level changer. It will convert the TTI output of the PICmicro device to a recognised RS232 voltage.

The design of this product enables you to use this device with many standard PICmicro devices. This is achieved by identifying the USART pins on the PICmicro device. Jumper setting A, B and C are used for selecting the appropriate pins for RX and TX. Jumper settings 1, 2 and 3 are used to set the correct pins for CTS and RTS. The following tables illustrate the correct jumper settings.

The following table (table 2) shows the settings that can be used for RTS and CTS. These signals are not essential for RS232 communication, and therefore you have an option (jumper setting 2) to disable CTS and RTS.

Jumper setting 1		Jumper setting 2		Jumper setting 3	
CTS	RTS	CTS	RTS	CTS	RTS
Bit 4	Bit 0	CTS not used	RTS not used	Patch	Patch

Table 2. Jumper settings for RTS and CTS selection

The patch system allows the user to route RX, TX, CTS and RTS to any 8 of the bits that they require.

Jumper setting A	Jumper setting B	Jumper setting C		Jumper setting D
		PIC16F devices	PIC16C devices	
PIC16F87	PIC16F627/A	PIC16F73	PIC16C63	PATCH SYSTEM
PIC16F88	PIC16F628/B	PIC16F737	PIC16CR63	
	PIC16F648A	PIC16F74	PIC16C65/A/B	
		PIC16F746	PIC16RC65	
		PIC16F76	PIC16C66	
		PIC16F767	PIC16C73/A/B	
		PIC16F77	PIC16C74/A/B	
		PIC16F777	PIC16C745	
		PIC16870/1	PIC16C765	
		PIC16F873/A	PIC16C77	
		PIC16F874/A	PIC16C773	
		PIC16F876/A	PIC16C774	
		PIC16F877/A		

Table 1. Jumper settings for TX and RX selection

1. DTE / DCE

RS232 communication historically existed between Data Terminal Equipment (DTE) and Data Communications Equipment (DCE), where DTE referred to the computer and DCE referred to the modem. Both types of device use 9-way D-type connectors, a DTE device has a male connector and a DCE device has a female connector.

This RS232 E-block can be used as either a DTE or a DCE device. If it is to behave as a DCE device, connect the "To

PC" connector to a DTE device (a PC, for example). If the PICmicro is to be a DTE device (for example, when you are using it in conjunction with the GSM mobile phone unit), then you will need to attach a DCE device to the RS232 E-block via the "To Modem" connector.

2. 3.3V operation

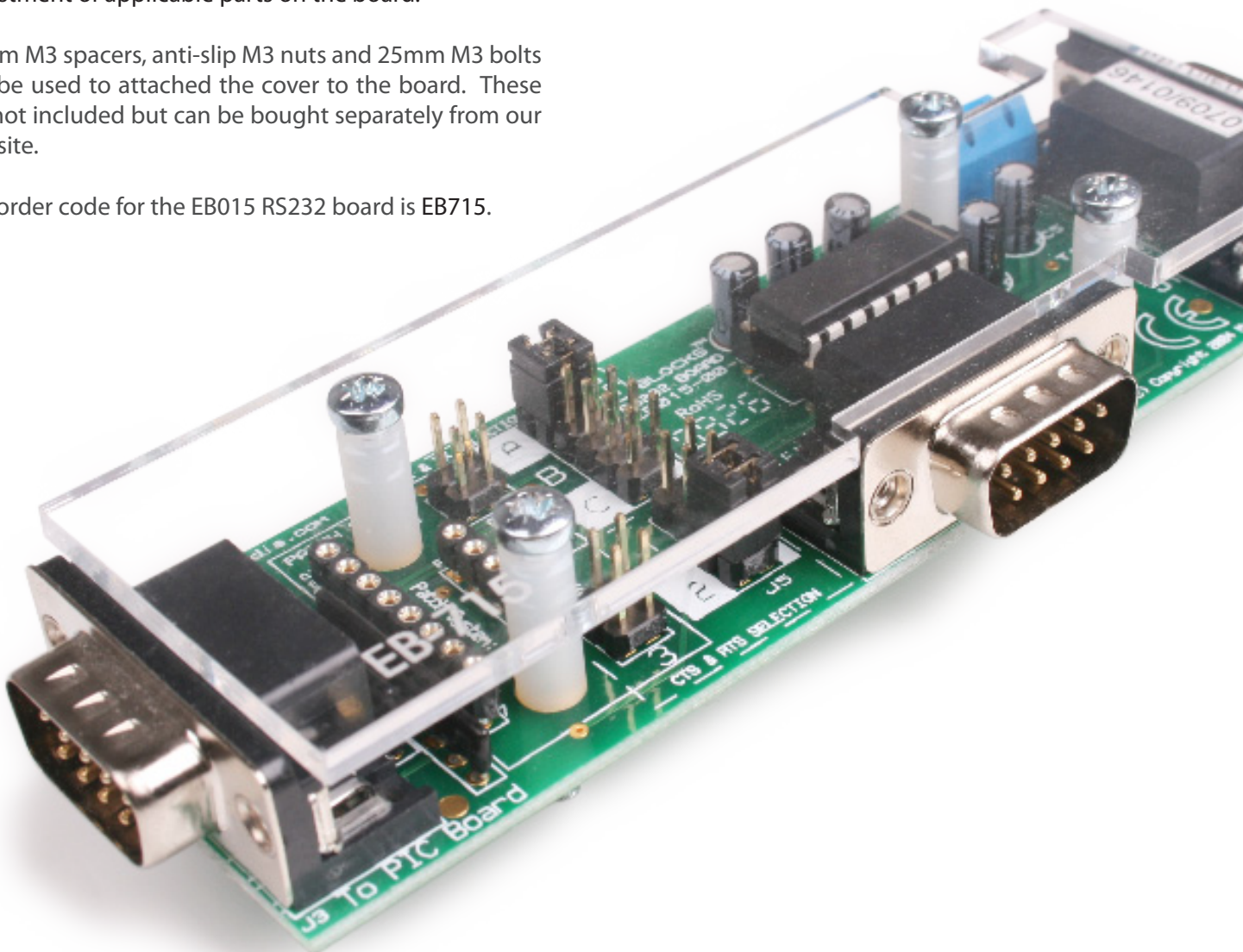
This board is compatible with upstream boards operating off 3.3V.

Circuit description

Most of the boards in the E-blocks range can be fitted with a plastic cover as an optional extra. These covers are there to protect your E-blocks board therefore extending the life of the board. The covers also prevent the removal of external components while still allowing for the adjustment of applicable parts on the board.






12mm M3 spacers, anti-slip M3 nuts and 25mm M3 bolts can be used to attached the cover to the board. These are not included but can be bought separately from our website.

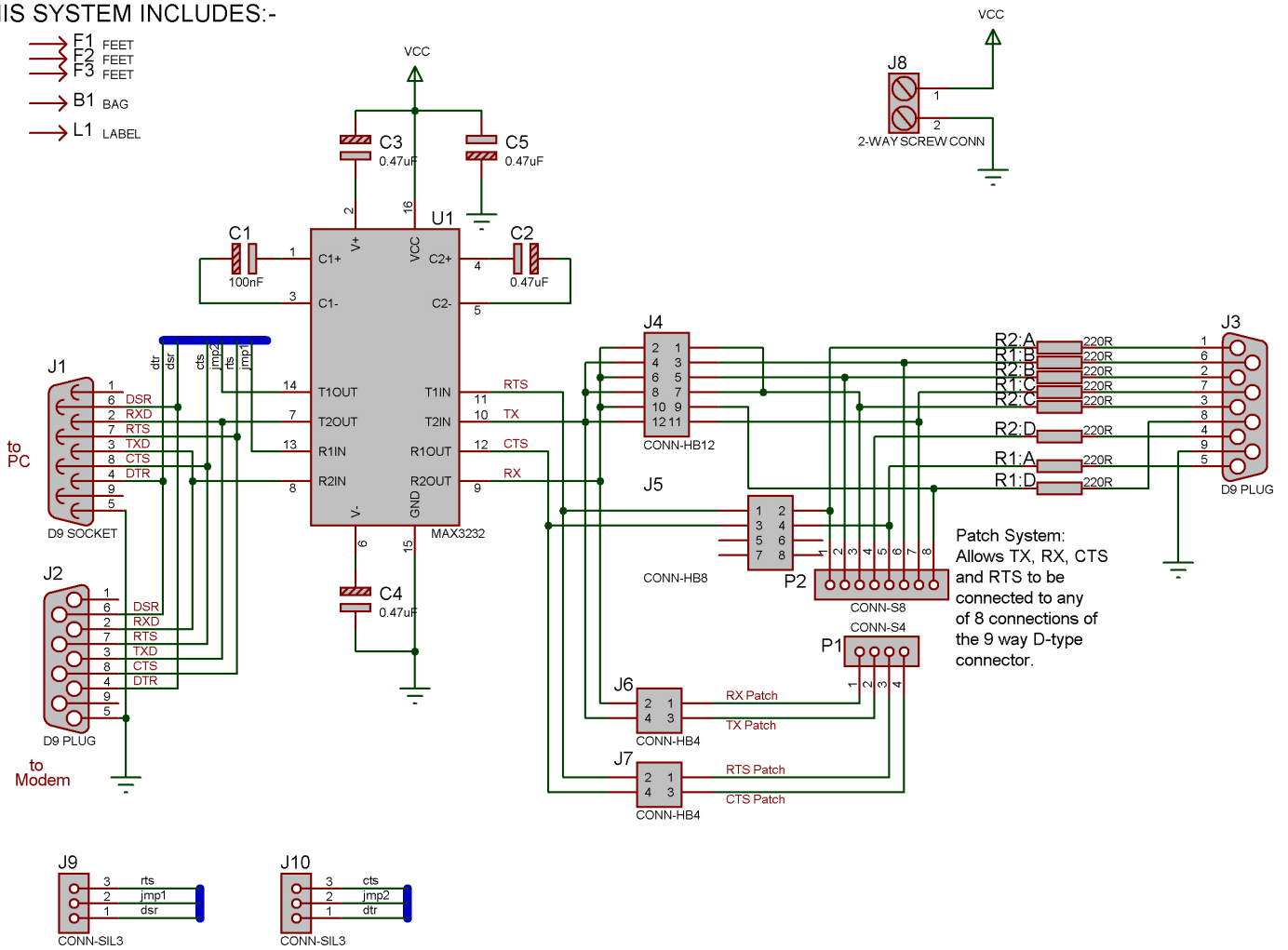
The order code for the EB015 RS232 board is EB715.



Circuit diagram

THIS SYSTEM INCLUDES:-

-  F1 FEET
-  F2 FEET
-  F3 FEET
-  B1 BAG
-  L1 LABEL





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