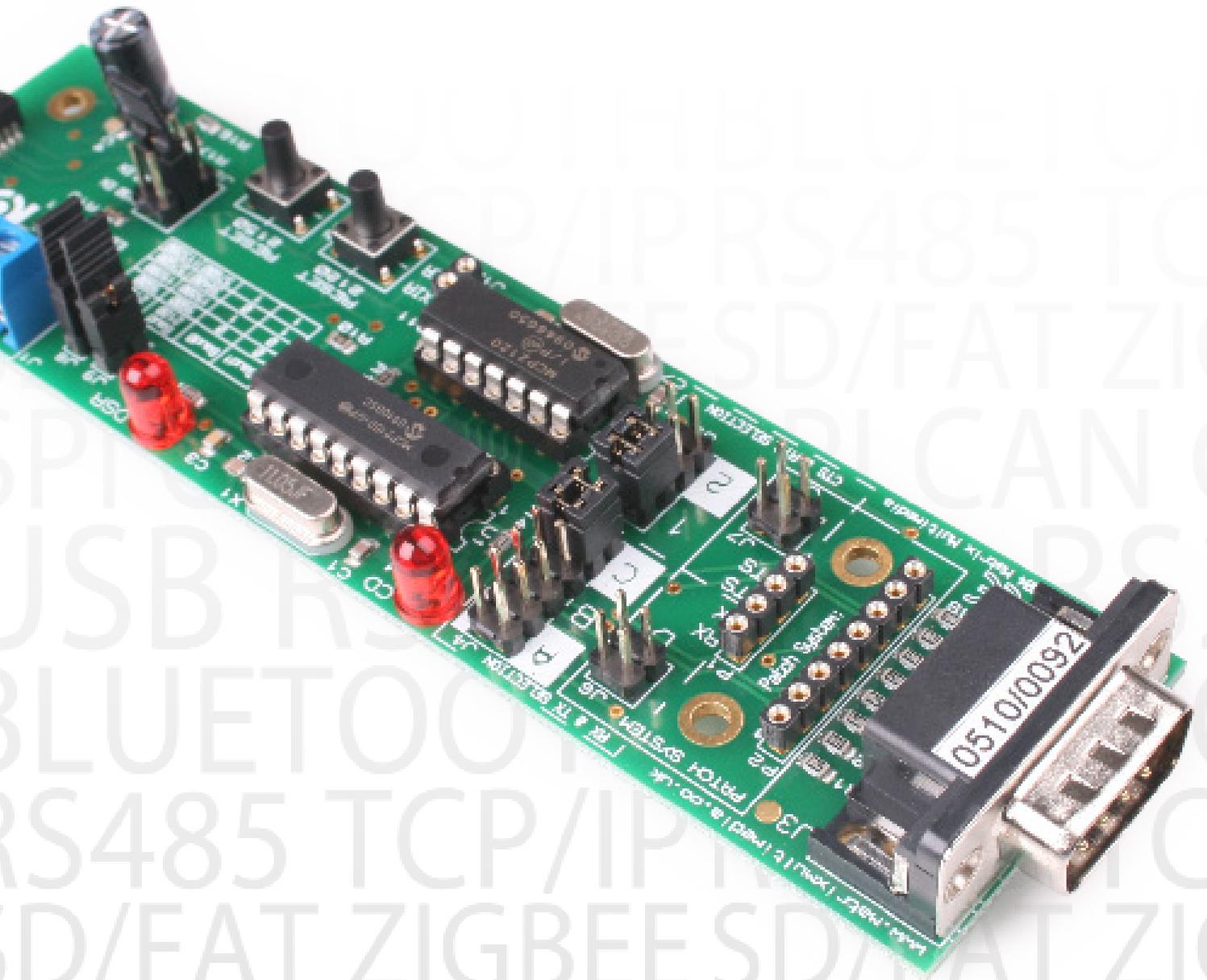


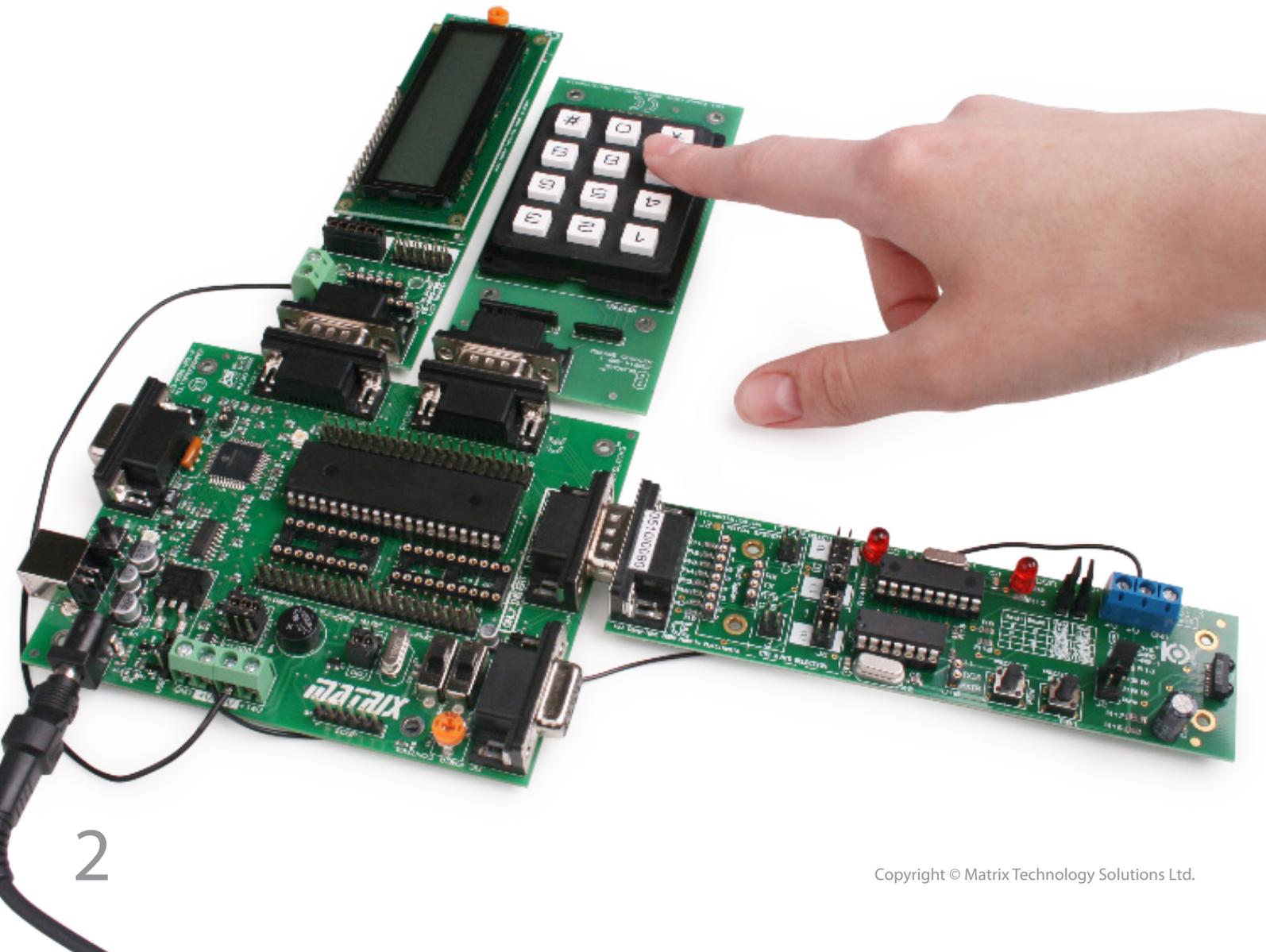
EBLOCKS[®]

IR/IrDA transceiver board



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About this document

This document concerns the EB012 E-blocks IrDA 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

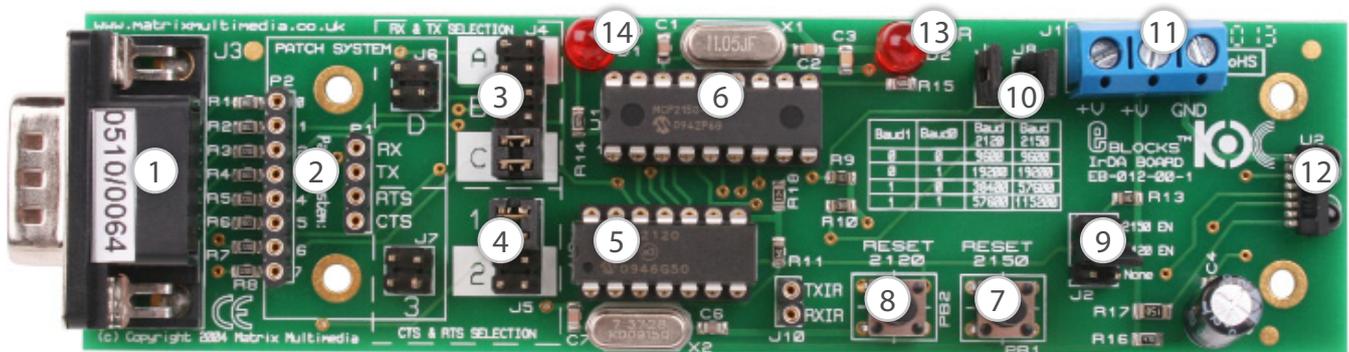
for all E-blocks, which can be found in the Support section of the website.

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. Patch system
3. RX & TX mode selection jumper pins
4. CTS & RTS mode selection jumper pins
5. MCP2120
6. MCP2150
7. Reset for MCP2150
8. Reset for MCP2120
9. MCP device enable jumper
10. Baud rate selection jumpers
11. Screw terminals
12. TFDU4100 serial infrared transceiver
13. DSR LED
14. CD LED

General guide for CTS and RTS setting

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

Jumper at A	Jumper at B	Jumper at C	Jumper at D	
PIC16F88	PIC16F62(A)	PIC16F7x	PIC16C6x	Patch
PIC16F87	PIC16F628(A)	PIC16F7x7	PIC16CC7x	System
	PIC16F648A	PIC16F87x		
		PIC16F87xA		

If using a PIC16F88, insert board to Port B and jumper settings = A & 1

General information

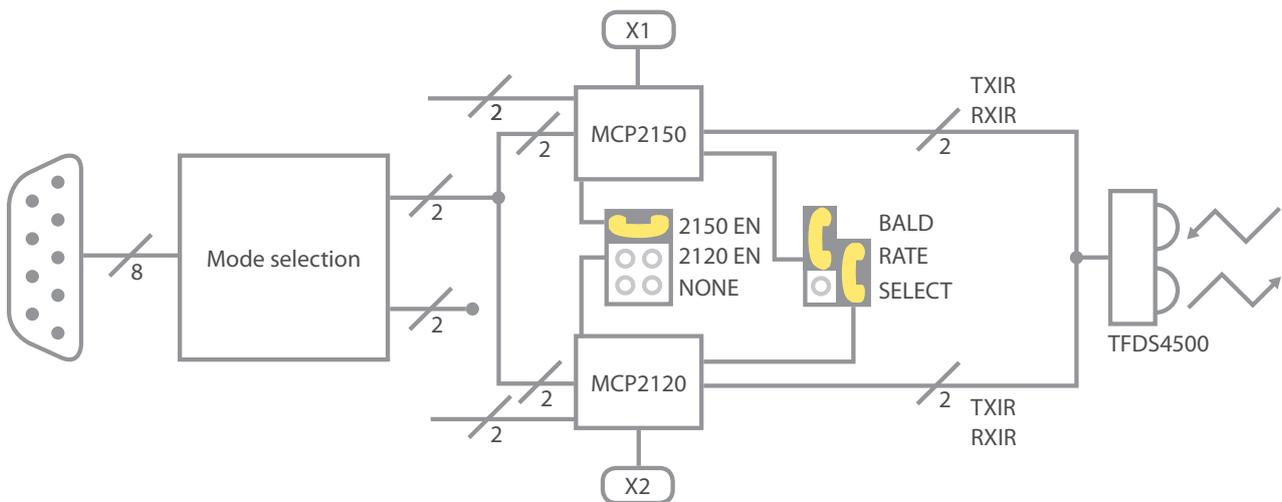
This E-block allows investigation of IrDA standard wireless connectivity. This board can be used as a secondary device for "point to point" applications. It can also be used as a stand alone IrDA encoder / decoder. The board offers a range of user selectable baud rates. There is also a facility to directly access the infrared transceiver so that other infrared protocols can be investigated (e.g. television remote controls).

A set of jumper links are available which allow the IrDA E-block to easily be set for all PICmicro® microcontroller IrDA compatible devices. A patch system on board makes it compatible with numerous other devices.

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

1. Features

- E-blocks compatible
- Operates as a "Point to Point" secondary IrDA application or a stand alone IrDA encoder / decoder
- Direct infrared transmission and reception also available
- User selectable baud rate
- Flowcode macros available



Circuit description

The circuit as can be seen in the circuit diagram on page 8, made up sections: connectors, MCP2150 circuitry, MCP2120 circuitry and an infrared transceiver circuitry.

The product has been designed to enable you to use this device with many standard PICmicro devices. This is achieved by identifying the PICmicro® microcontroller. Then by selecting the corresponding jumper setting on the IrDA board. This will configure the board with the correct pin-out for that particular device. Jumper setting A, B, C and D 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 RTS and CTS. The following tables illustrate the correct jumper settings.

The following table (table 2) shows the settings that can be used for FCTS and RTS.

The Patch System allows the user to route TX, RX, CTS

block, both devices can be disabled - this is required if direct connection to the infrared transceiver is required.

Both the MCP2120 and the MCP2150 have individual clocks. The board also enables the user to select the baud rate that is used. This is achieved using jumpers on J8 and J9. By having the jumper connected you select a 1 as input. The two jumpers create a binary input that sets the baud rate. The following table illustrates the settings and baud rates that are available.

Baud1 (J9)	Baud0 (J8)	Baud for MCP2120	Baud for MCP2150
0	0	9600	9600
0	1	19200	19200
1	0	38400	57600
1	1	57600	115200

Jumper setting A	Jumper setting B	Jumper setting C		Jumper setting D
		PIC16F device	PIC16C device	
PIC16F87	PIC16F627/A	PIC16F73	PIC16C63	PATCH SYSTEM
PIC16F88	PIC16F628/B	PIC16F737	PIC16CR63	
	PIC16F648/A	PIC16F74	PIC16C65/A/B	
		PIC16F746	PIC16RC65	
		PIC16F76	PIC16C66	
		PIC16F767	PIC16C73/A/B	
		PIC16F77	PIC16C74/A/B	
		PIC16F777	PIC16C745	
		PIC16F870/1	PIC16C765	
		PIC16F873/A	PIC16C77	
		PIC16F874/A	PIC16C773	
		PIC16F876/A	PIC16C774	
		PIC16F877/A	PIC16C774	
CONNECT BOARD TO PORT B		CONNECT BOARD TO PORT C		

Table 1. Jumper settings for TX and RX selection

and RTS to any 8 of the bits required. This allows great flexibility, as the user can then use a different device other than specified in table 1.

The MCP2150 is compatible with the physical layer of the IrDA standard. Therefore, this device uses six main I/Os, which are: RX, TX, CTS, RTS, TXIR and RXIR. RXIR

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

This board allows the user to select either the MCP2120 or the MCP2150 by placing enabling the device using J2 jumper block. This effectively enables one device and disables the other. By selecting "none" on the J2 jumper

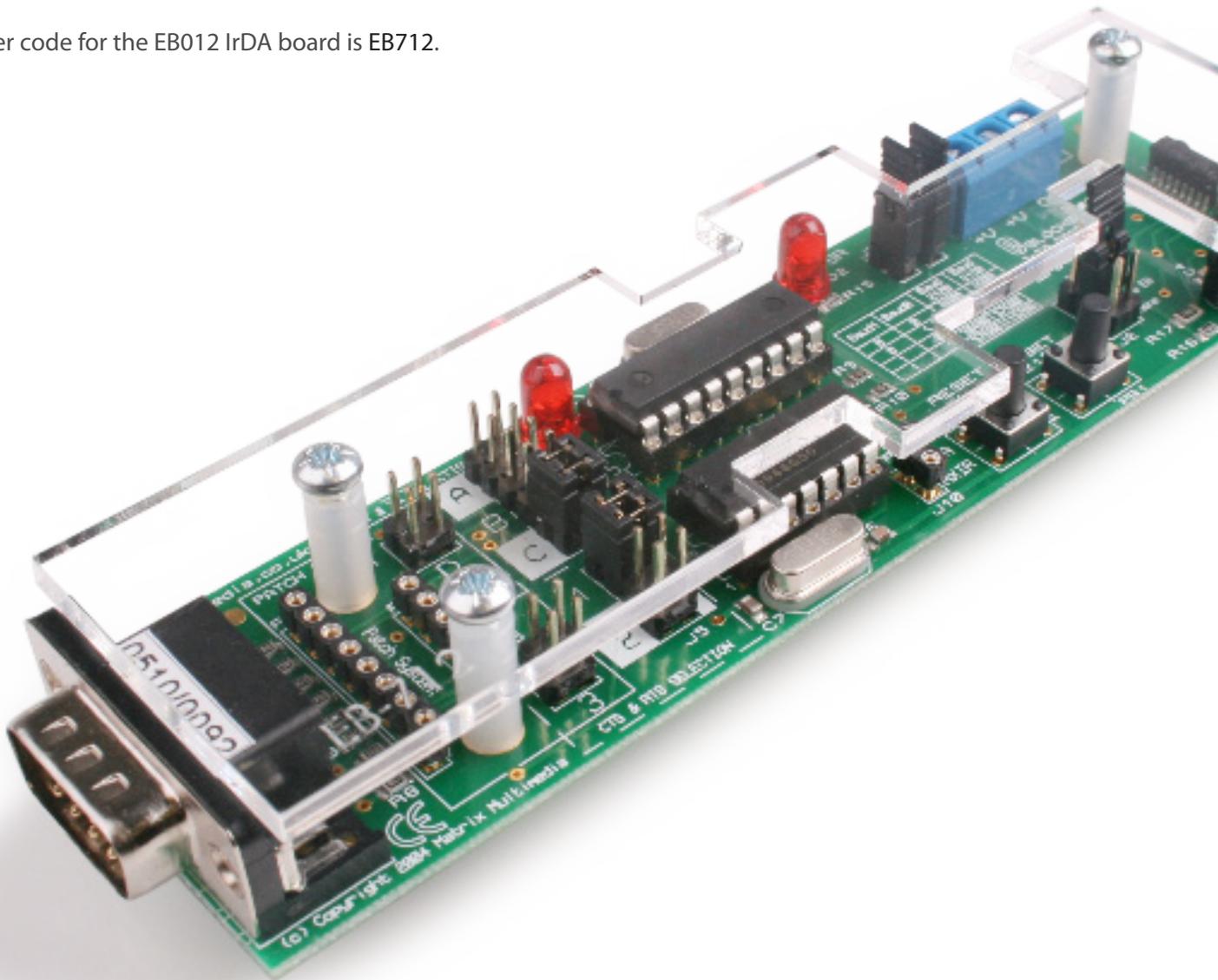
and TXIR are the input or output from the serial infrared sensor. RX and TX are the communication to and from the controlling device, which could be a PICmicro® microcontroller. CTS and RTS are used as hardware flow

Protective cover

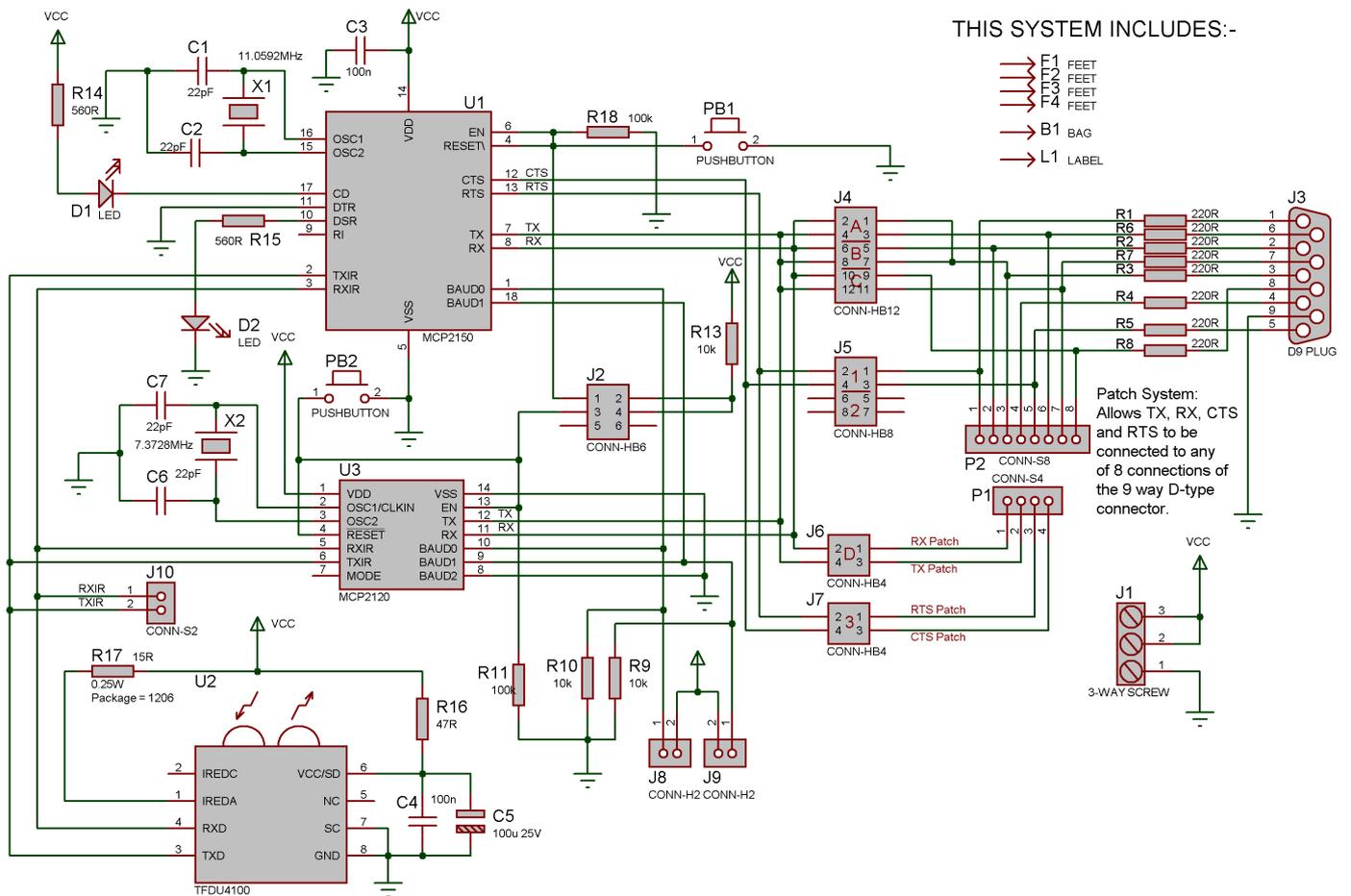
Most of the boards in the E-blocks range can be fitted with a plastic cover as an optional extra. These covers are there to protect your E-blocks board therefore extending the life of the board. The covers also prevent the removal of external components while still allowing for the adjustment of applicable 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 EB012 IrDA board is EB712.



Circuit diagram





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