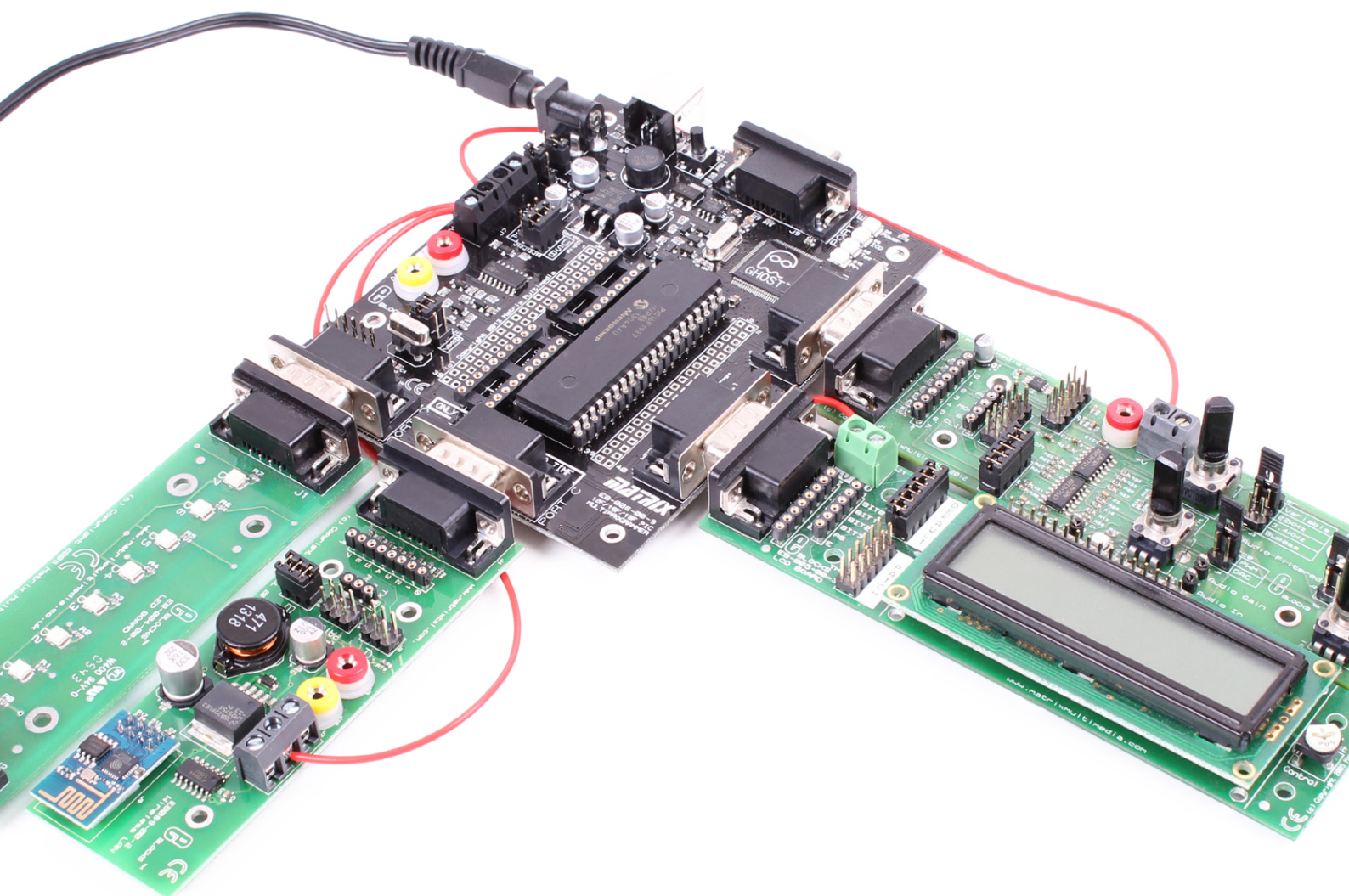




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# About this document

This document concerns the EB069 E-blocks Wireless LAN board.

1. Trademarks and copyright

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

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-block 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* - For strategy information for creating 'C' and Assembly code for the Quad relay board see members area. This can be found at [www.matrixtsl.com/eblocks](http://www.matrixtsl.com/eblocks)

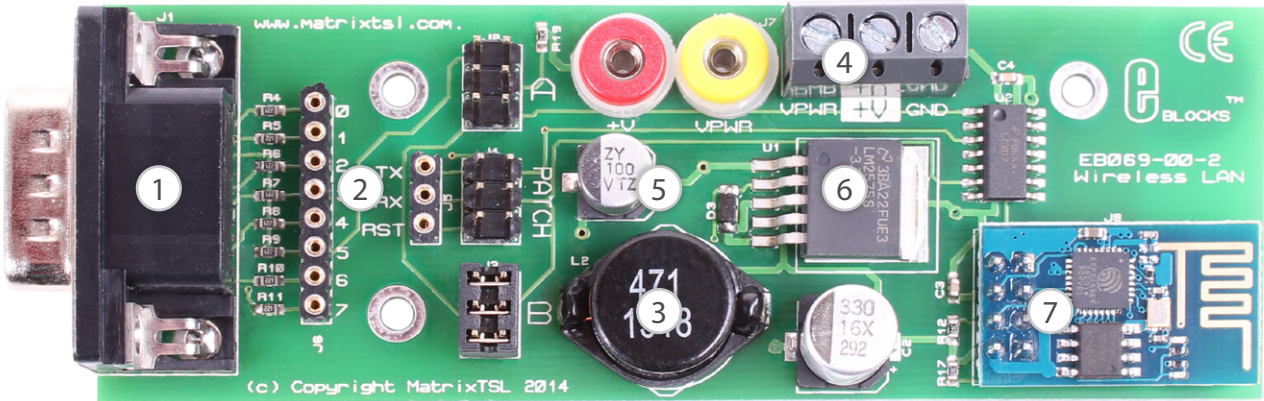
3. Disclaimer

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

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 website: [www.matrixtsl.com](http://www.matrixtsl.com)

## Board layout



1. 9-way downstream D-type connector
2. Patch system
3. Switch mode voltage inductor
4. +V input voltage screw terminal

5. Switch mode voltage controller
6. Logic level voltage shifter
7. Wireless LAN module

Signal connections using the patch system.

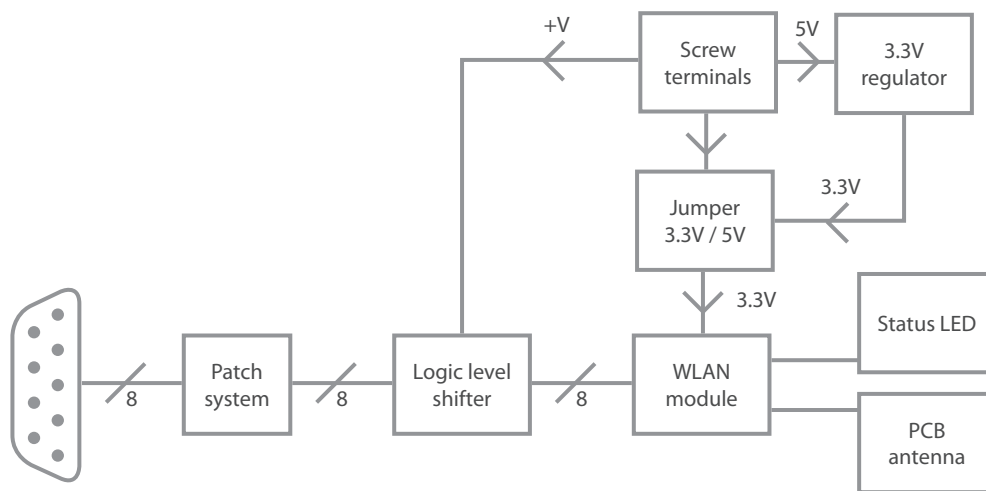
Signal	A (16F88)	B (16F877A)	Patch
Reset	Bit 7	Bit 5	Patch
Microcontroller transmit (TX)	Bit 5	Bit 6	Patch
Microcontroller receive (RX)	Bit 2	Bit 7	Patch

# General information

The Wireless LAN E-block board allows easy access to standard Wireless local area networks. The onboard TCP/IP stack allows for easy communications without the need for a TCP/IP stack on the microcontroller. The board is capable of being a client or a server on a network meaning that the E-block can also be used to host a wireless network. The board is also capable of serving html and javascript compatible webpages in either mode.

## Features:

- Wireless LAN connection
- Client and server modes
- TCP/IP stack included on the module
- Webpage serving
- Compatible with Flowcode's WLAN component
- Communications status LEDs
- PCB mounted antenna
- Highly efficient switch mode voltage regulation
- 5V and 3.3V compatible
- E-blocks compatible

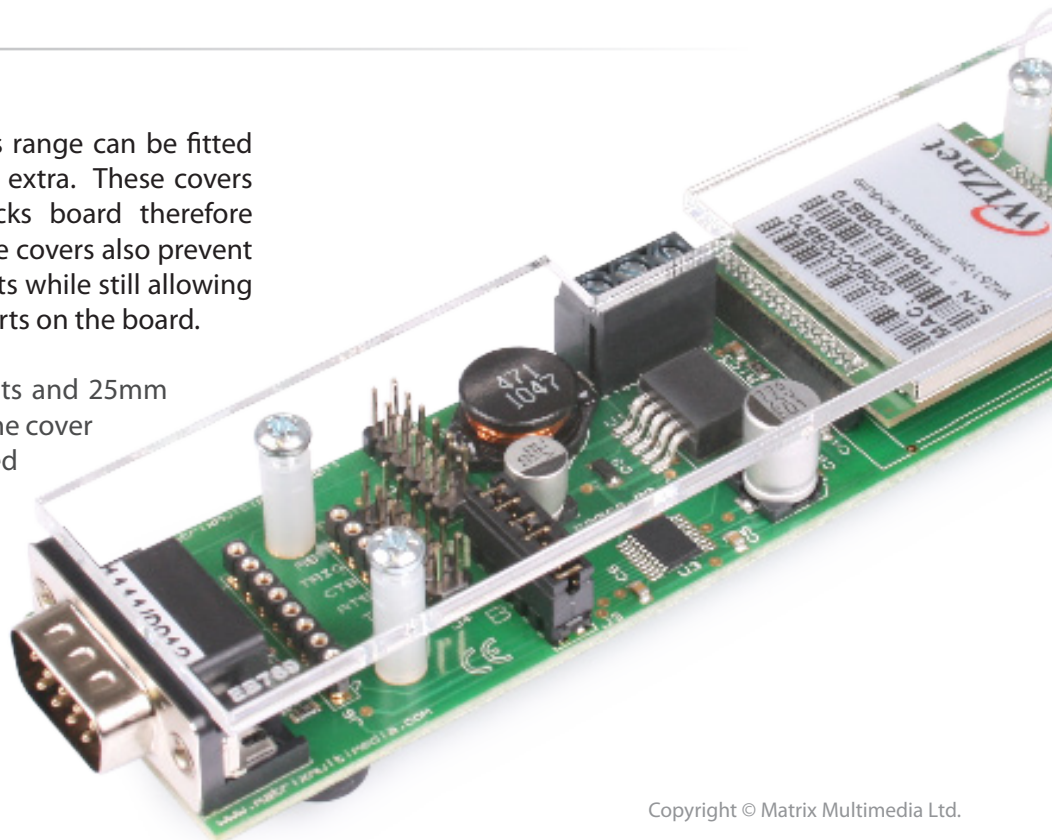


## Protective cover

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 attach the cover to the board. These are not included but can be bought separately from our website.

The order code for the EB069 Wireless LAN board is EB769.



# Testing the product

The following instructions describe the test procedure for the EB069 Wireless LAN board.

## 1. System setup

Multiprogrammer board (EB006) with:

EB006 Options	Setting
Power supply	External, 14V
PICmicro device	16F1937
SW1 (Fast/Slow)	Don't care
SW2 (RC/Xtal)	XTAL
Xtal frequency	19.6608MHz
Port A	
Port B	LCD EB005
Port C	WLAN EB069
Port D	
Port E	
Test program	EB069-00-2 Factory Test.hex

## 2. Test procedure

- Connect EB005 (LCD board) to PORTB of the multiprogrammer
- Connect EB069 (WLAN board) to PORTC of the multiprogrammer
- Ensure that the WLAN EB069 has the following jumper configuration: 3 way jumper fitted - B position
- Connect a wire from the +V screw terminal of the multiprogrammer to +V terminal of LCD board
- Connect a wire from the +V screw terminal of the multiprogrammer to +V terminal of WLAN board
- Connect a wire from the +14V screw terminal of the multiprogrammer to +14V terminal of WLAN board
- Connect USB cable to computer
- Ensure 9V power supply is working correctly
- Open PPP / mLoader
- Open file EB069-00-2 Factory Test.hexd
- Click on "Send To PICmicro" icon. A pop up window will inform you of status. If status is ok a "Program Sent And Verified" window will be observed on the screen
- Wait for the LCD to display Init, FW
- A 8 character string should appear on the bottom line of the LCD giving the current firmware version in the module, e.g. 00150900

# Circuit description

The EB069 Wireless LAN circuit can be found on page 7.

## 1. Commands

The WLAN module uses a serial connection to transfer commands and data to and from the microcontroller. To do this the microcontroller outputs commands in the form of ASCII strings starting with "AT" and ending with "\r\n".

Here are some examples of the commands available on the WLAN:

AT\r\n	General command test
AT+GMR\r\n	Read firmware version
AT+CWLAP\r\n	List nearby access points

For a list of all the supported commands please refer to the documentation available from here:

<http://www.electrodragon.com/w/Wi07c>

## 2. 5V / 3.3V operation

The Wireless LAN module requires a supply voltage of 3.3V and I/O signal voltage of 3.3V. To allow the module to work with 5V systems a voltage shifting circuit has been

fitted onto the board. The module uses a substantial amount of current when operating (approx 300mA) so to reduce load on the main programmer regulator we have added a switch mode power supply on the board. This requires an input voltage of between 7 and 15V to drive the module. An additional voltage input marked +V is required to specify the voltage of the microcontroller interface.

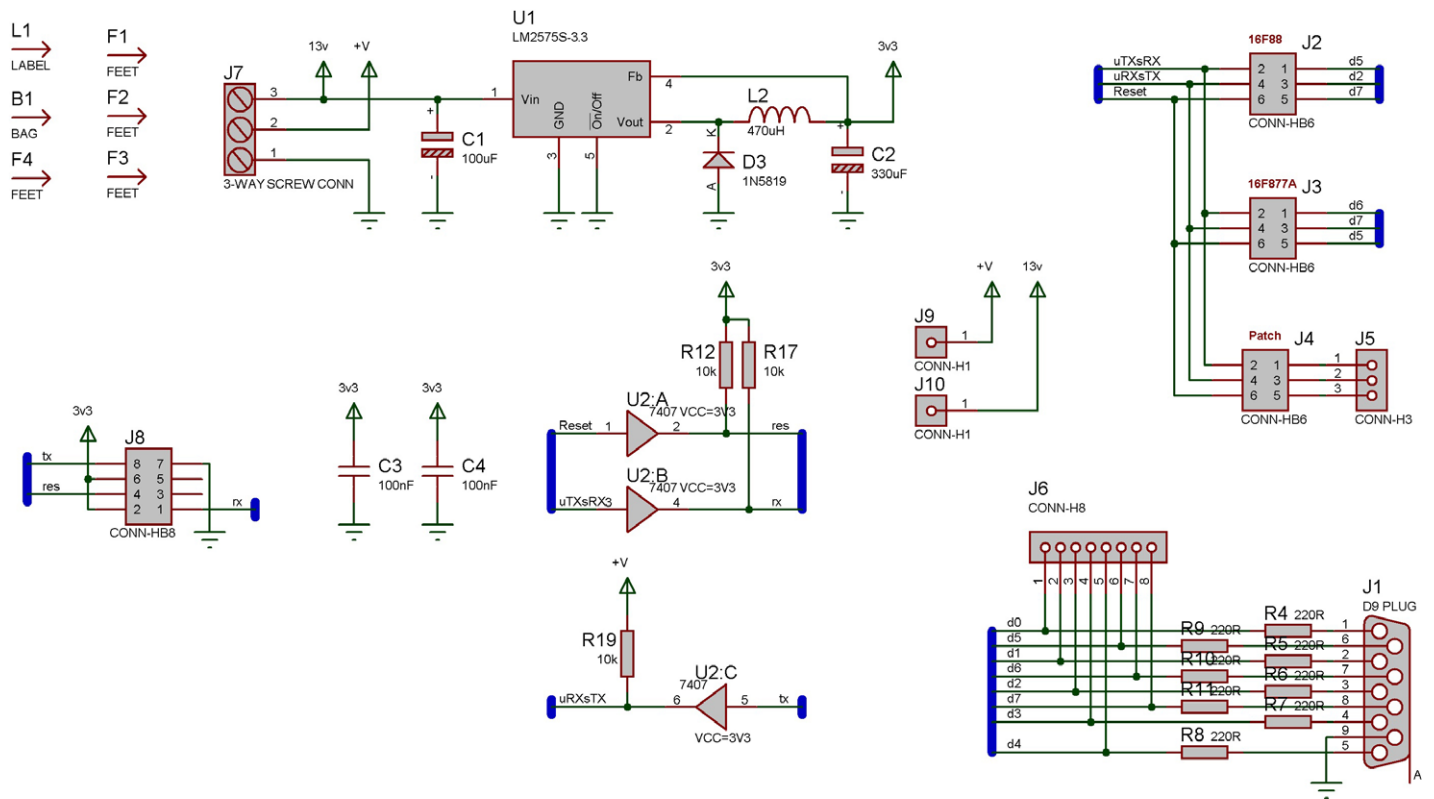
## 3. Reset signal

To allow the Wireless LAN module to start up the reset signal must be driven low for more then 2us before being driven high by the microcontroller. This procedure must be followed every time the power to the module is switched off to allow it to come back online and allow communications. This reset process is built into the initialise macro of the Flowcode component.

## 4. Communications status LED

The LED on the board will briefly flash when you first power on the module. The LED will also light when there is data travelling between the module and the microcontroller.

# Circuit diagram





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