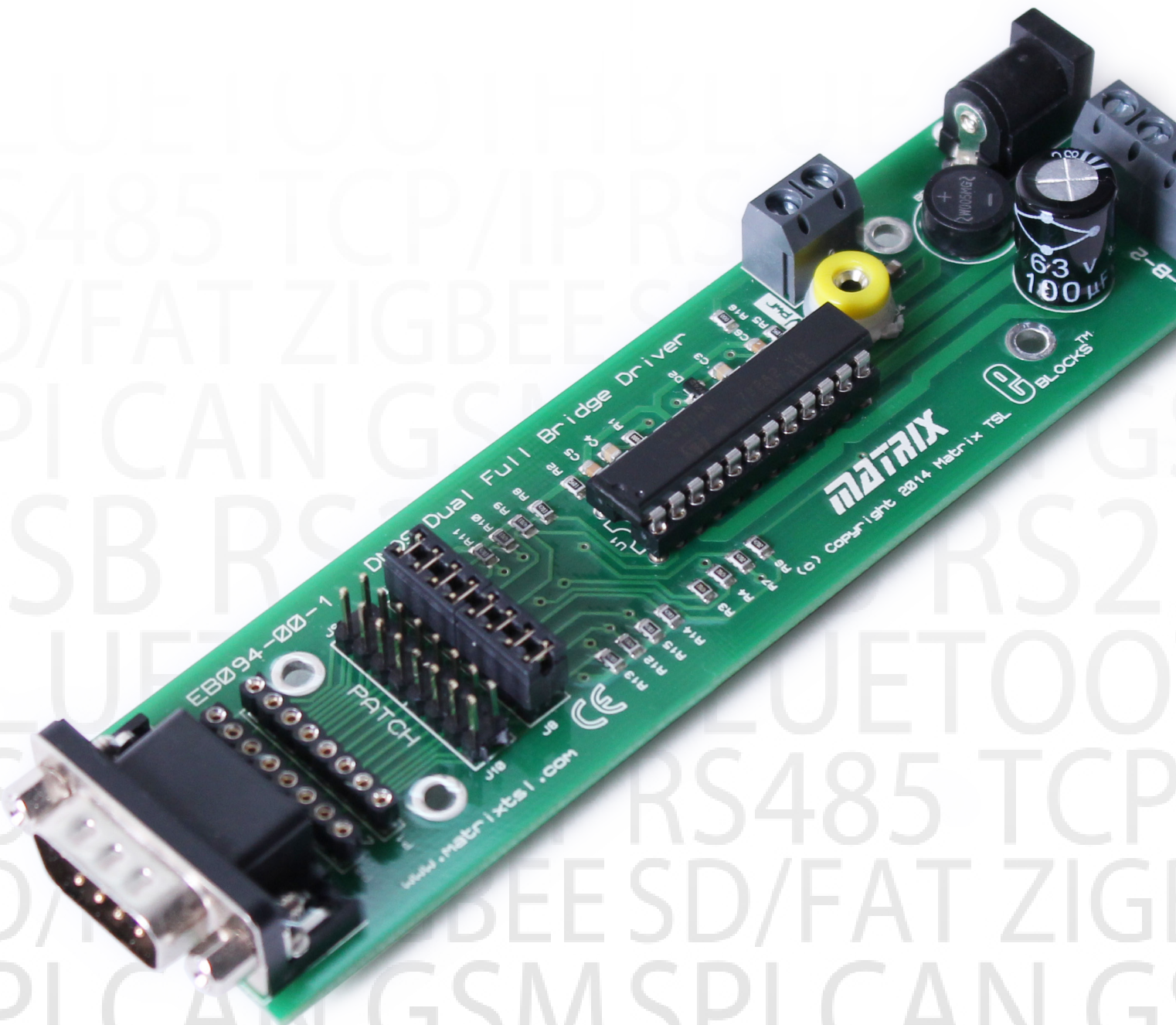


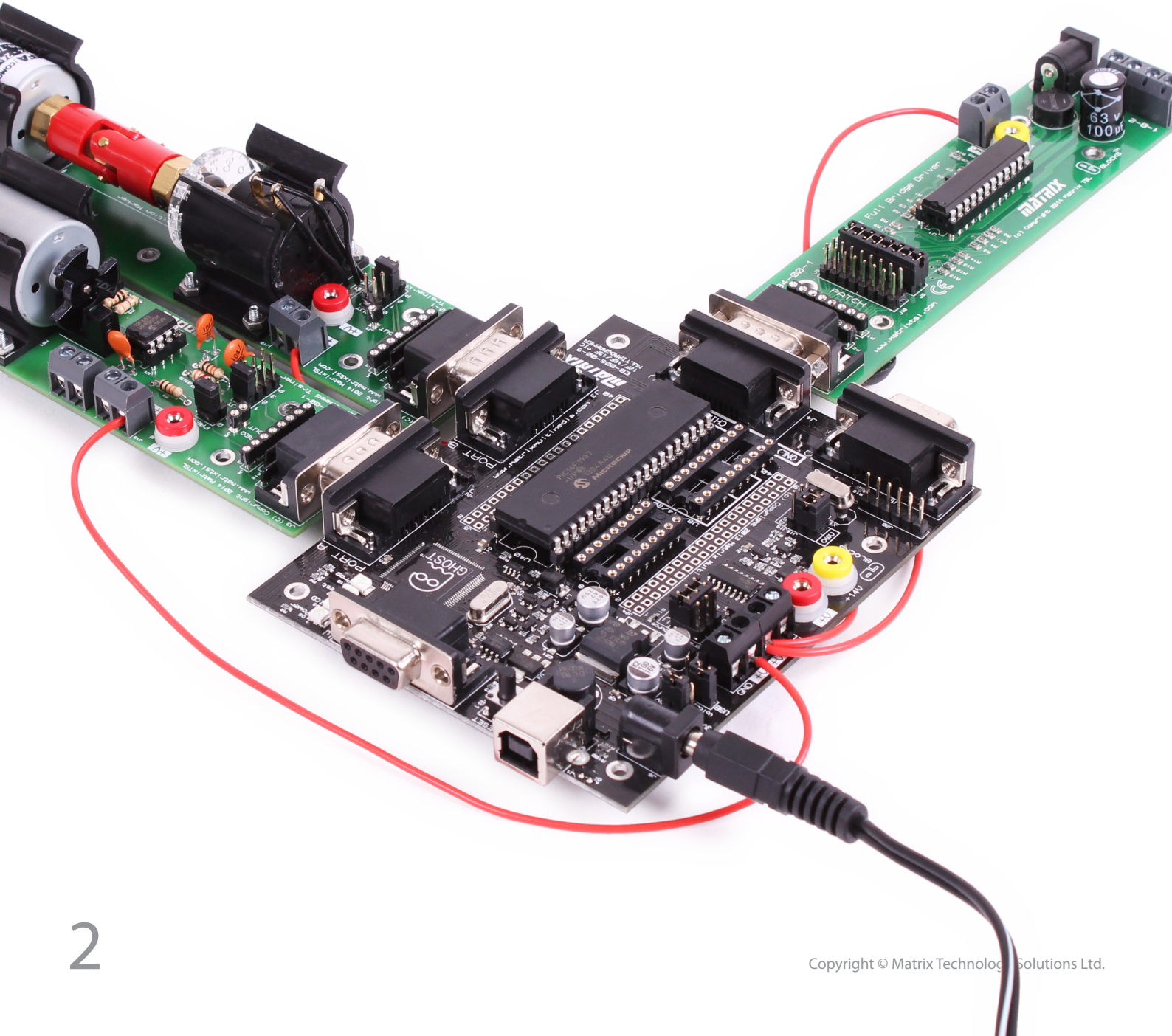
EBLOCKS[®]

DMOS Motor driver board



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About this document

This document concerns the EB094 E-blocks DMOS dual full bridge motor driver board.

1. Trademarks and copyright

PIC and PICmicro are registered trademarks of Arizona Microchip Inc. E-blocks is a trademark of Matrix TSL 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* - Not provided for this product

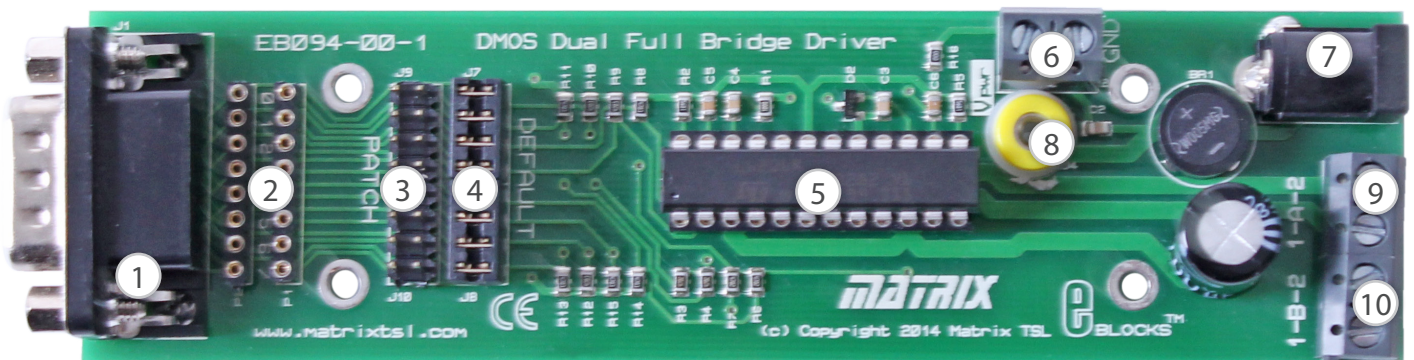
3. Disclaimer

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. 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 website: www.matrixtsl.com

Board layout



1. 9-way downstream D-type connector
2. Connection patch system
3. Patched connections selection links
4. Default connections selection links
5. L6206 DMOS dual full bridge driver

6. Motor output power supply screw terminals
7. Alternative external PSU socket
8. Alternative power socket
9. Motor A output screw terminals
10. Motor B output screw terminals

General information

The motor driver board allows the user to connect and independently drive two motors in full bridge configuration. Alternatively, the four terminals can be used as separate sink or source outputs.

The E-block uses the L6206 DMOS dual full bridge driver IC which is designed for motor control applications, having isolated DMOS Power Transistors combined with CMOS and bipolar circuits on the same chip.

This E-block motor driver board will operate with both 3V and 5V logic systems, and with motor power supplies from 8 to 30 volts. Each full bridge driver can supply up to 5.6A output peak current, 2.8A RMS.

The board provides internal motor-free wheel diodes, over current protection and thermal shutdown. Feedback is provided to indicate when protection or shutdown occurs.

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 EB094 DMOS motor driver board is EB794.

Circuit description

The main component of this E-block motor board is the L6206 DMOS dual full bridge driver IC and has the following features:

- Operating supply voltage from 8 to 30V
- Up to 5.6A output peak current (2.8A DC)
- Typical Drain-Source On resistance of 0.3 ohms
- Operating frequency up to 100KHz
- Over-current detection and protection
- Thermal shutdown
- Integrated free wheeling diodes

The motor driver outputs are provided on screw terminals, marked 1-A-2 for full bridge channel A and marked 1-B-2 for full bridge channel B.

Bridges A and B are independently enabled or disabled and their respective outputs 1 and 2 can either drive high or low, as shown in the following table.

Control Inputs			Power Outputs	
Bridge Enable	IN1	IN2	1	2
L	X	X	High Z	High Z
H	L	L	GND	GND
H	H	L	Vpwr	GND
H	L	H	GND	Vpwr
H	H	H	Vpwr	Vpwr

Circuit description

All eight pins of the downstream connection port are used to interface to the E-blocks DMOS motor board, but can be re-mapped via the patch selection and patch wire sockets.

The following table describes the connection interface.

Default Port Pin	Patch	EB094 Signal	L6202 Name	
0	0	Input	Bridge A Enable: Logic LOW level switches OFF all Bridge A Power MOSFETS	ENA / OCDA
1	1	Output	Bridge A current and thermal protection status: Logic LOW when protection is active (Valid when Bridge A Enable is logic HIGH)	ENA / OCDA
2	2	Input	A-1 Output control: Logic LOW for A-1 sink to GND Logic HIGH for A-1 source from Vpwr	IN1A
3	3	Input	A-2 Output control: Logic LOW for A-2 sink to GND Logic HIGH for A-2 source from Vpwr	IN2A
4	4	Input	Bridge B Enable: LOW logic level switches OFF all Bridge B Power MOSFETS	ENB / OCDB
5	5	Output	Bridge B current and thermal protection status: Logic LOW when protection is active (Valid when Bridge B Enable is logic HIGH)	ENB / OCDB
6	6	Input	B-1 Output control: Logic LOW for B-1 sink to GND Logic HIGH for B-1 source from Vpwr	IN1B
7	7	Input	B-2 Output control: Logic LOW for B-2 sink to GND Logic HIGH for B-2 source from Vpwr	IN2B

Logic LOW is defined as $< 0.8V$

Logic HIGH is defined as $> 2V$ (maximum 7V)

Note that, because the circuitry on Pins 0 and 1 is symmetrical, the action on these pins can be swapped. Similarly, because the circuitry on Pins 4 and 5 is symmetrical, the action on these pins can be swapped.

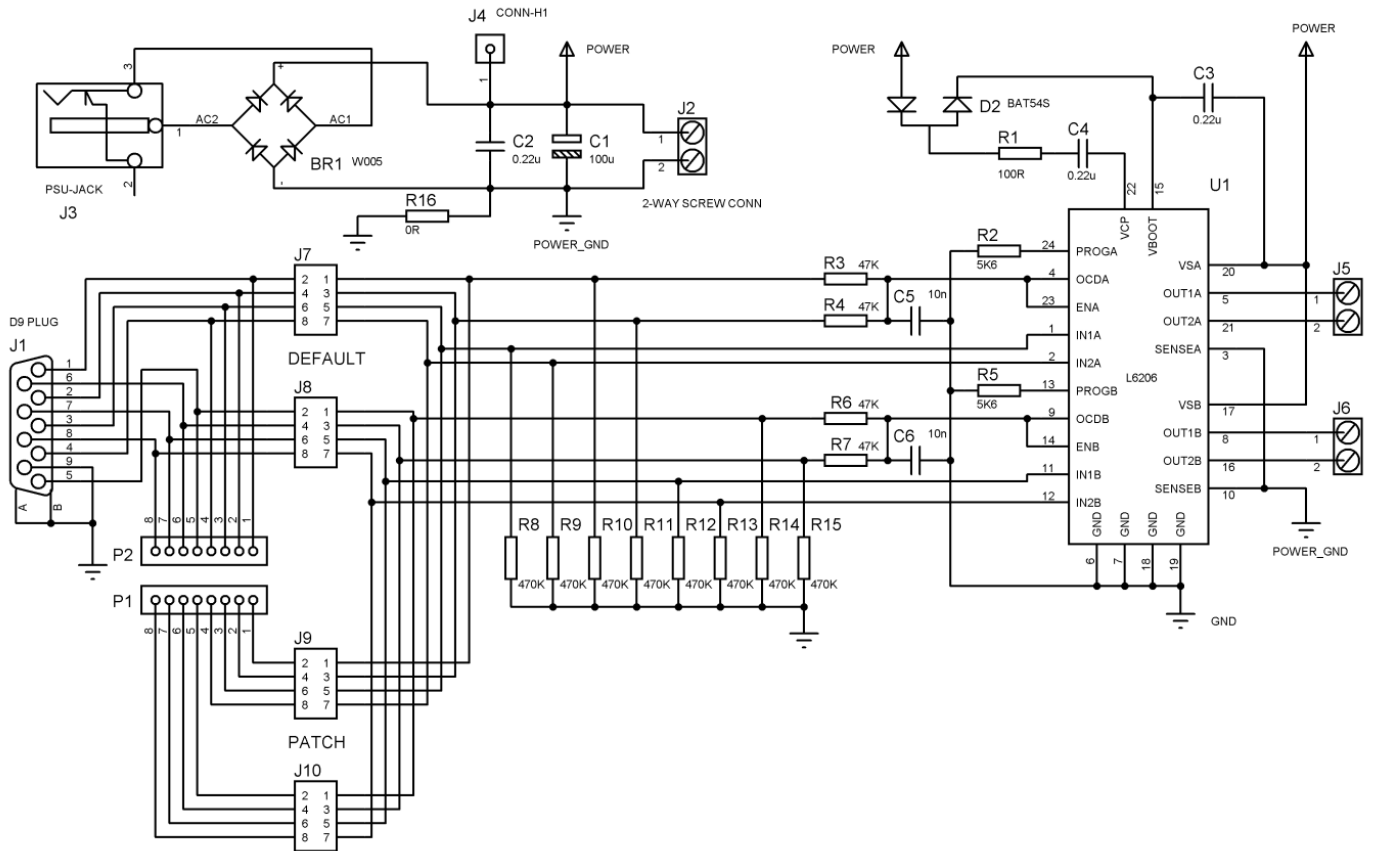
The power supply for the motor outputs can be connected in a variety of ways:

- (J2) External PSU wired to Vpwr and GND screw terminals (most recommended)
- (J3) PSU (AC or DC) to 2.1mm power socket (for supply currents less than 1A)
- (J4) Yellow (Vpwr) power socket (for low current applications only)

The maximum supply voltage is 30V.

Careful choice of power supply must be made when using high current loads.

Circuit diagram





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