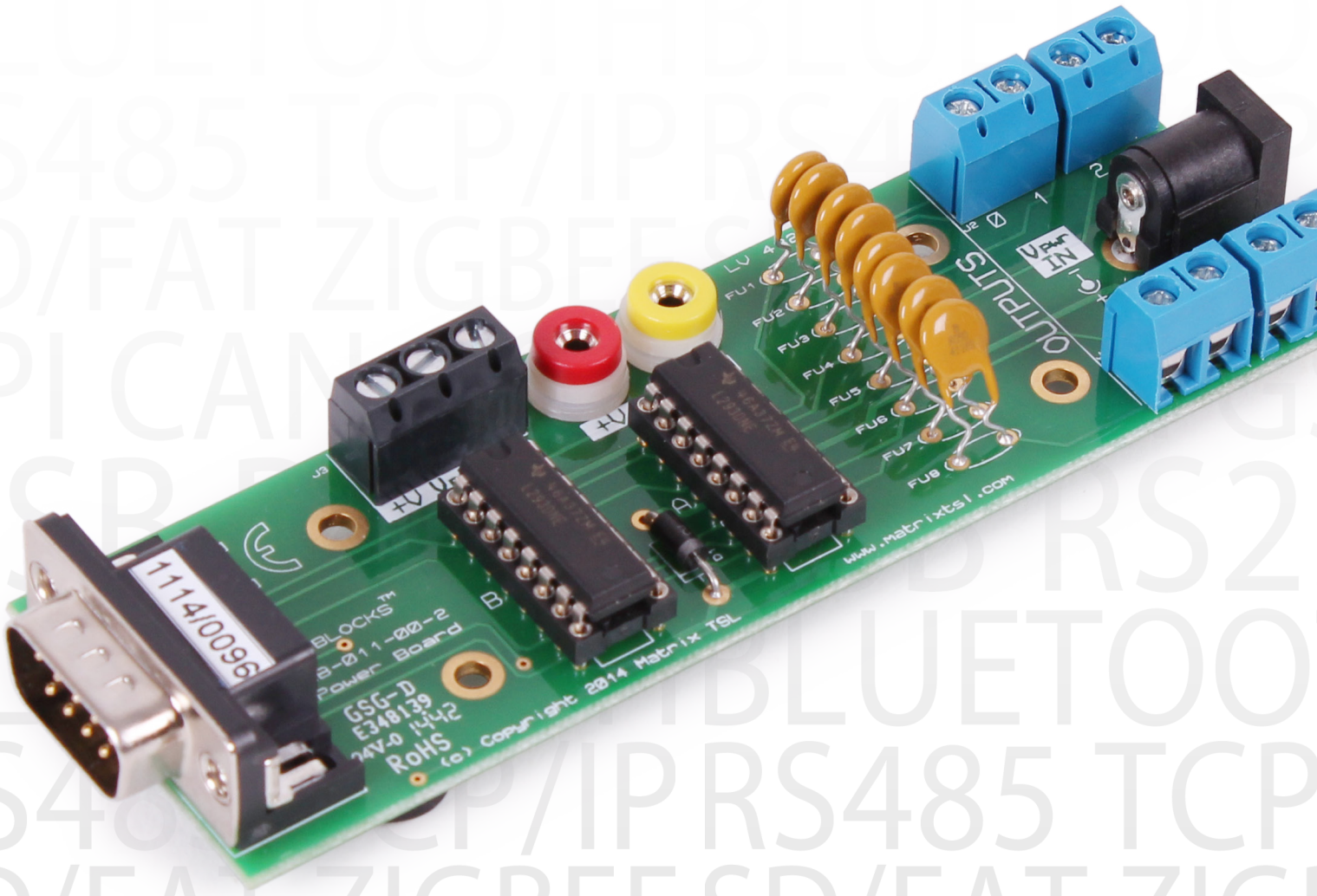
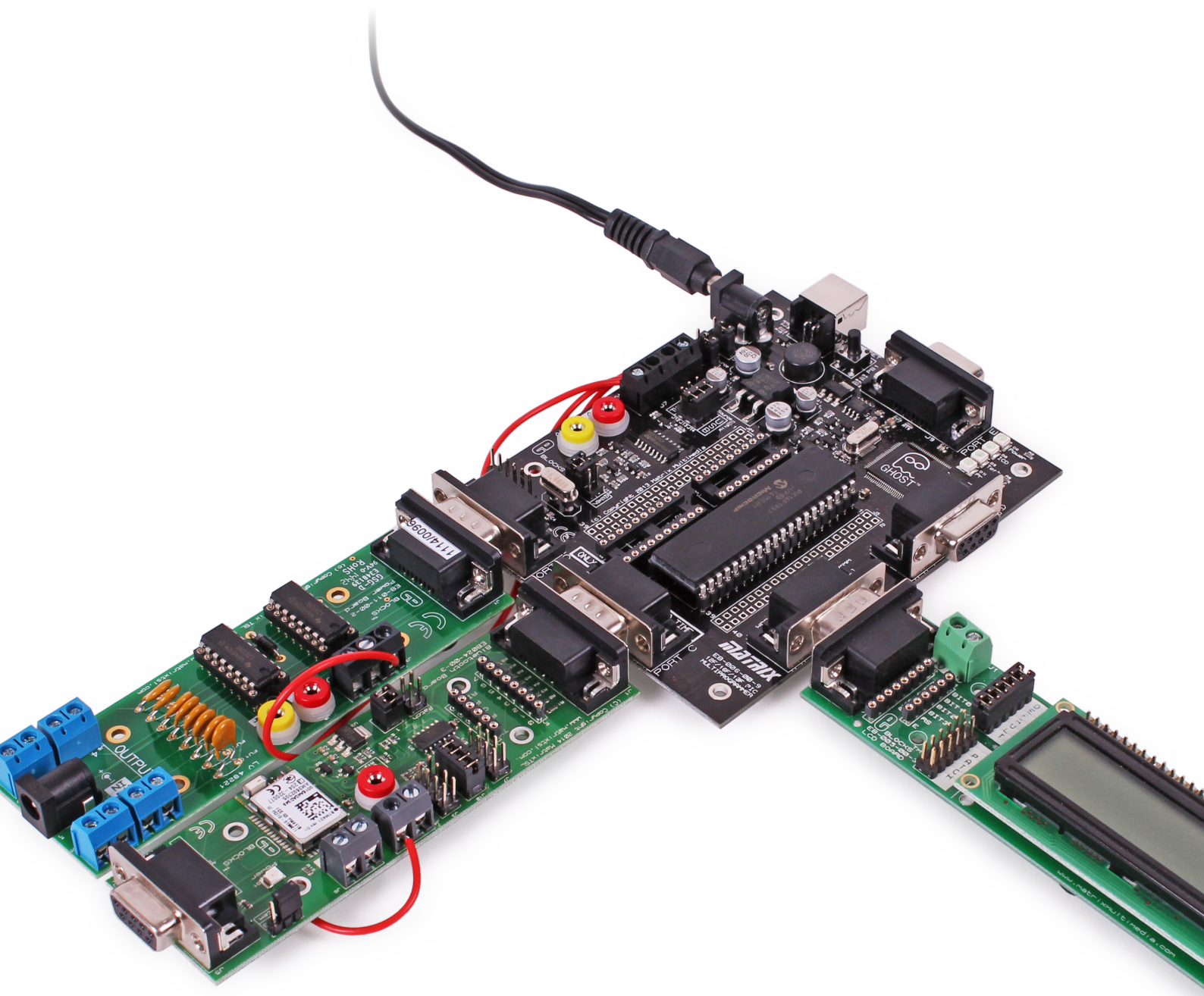
MATRIX

eBLOCKS®

Power board



Contents



About this document

This document concerns the EB011 E-blocks power 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

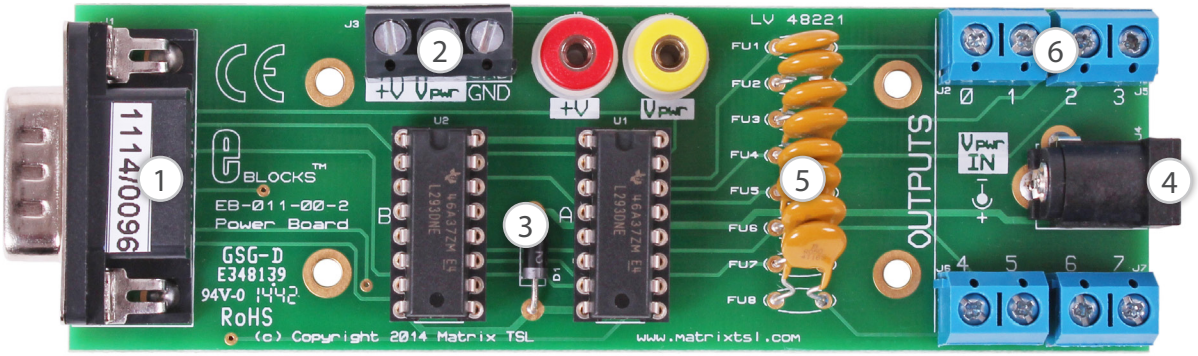
It is advisable to test the product upon receiving it to ensure it works correctly. Matrix provides test procedures for all E-blocks, which can be found in the Support section of the website.

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. Power screw terminals
3. 2 x L293D power chips
4. External PSU socket
5. Resettable protection fuses
6. Output screw terminal

General information

This E-block allows the use of high power demanding applications - such as running medium sized motors, relays and many other applications. The board allows processors in the E-blocks range to provide the power demand that is required for these high power applications.

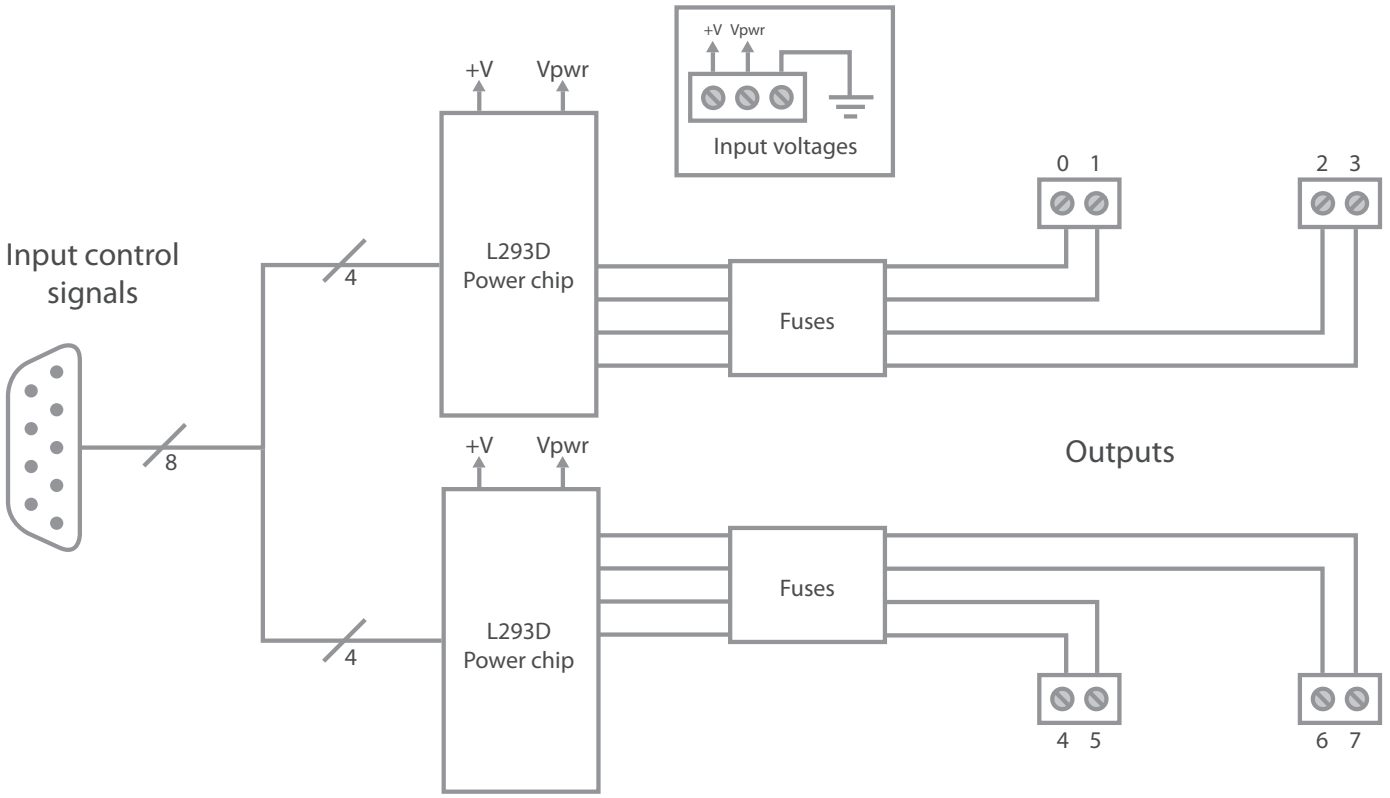
The board uses two 4-channel industry standard power chips - L293D. Each channel can be used individually forming up-to eight 600mA power output stages. Two channels can be grouped together to form a full H-Bridge configuration that allows bidirectional motor control - thus enabling a total power output per H-Bridge of 1200mA.

On-board resettable fuses automatically trip when too much current is consumed to protect these power chips. These are rated to trip at 500mA in order to protect the L293 chips.

The board is E-blocks compatible and can be used with upstream devices to boost the available output power of the processor.

1. Features

- E-blocks compatible
- Low cost
- 8 channels produces up to 600mA (at36V) each OR
- Up to 4 full H-Bridge configuration outputs enabling up to 1200mA
- IC protection via resettable fuses



Circuit description

The EB011 power board circuit can be observed on page 6.

The full circuit is made up of two main components: the 2 x power chips (L293D) and the output screw terminals.

1. Power chips - L293D

The L293D are industry standard push-pull channel drivers that can deliver up to 600mA per channel. The device accepts standard TTL and DTL logic levels and the output can drive inductive loads. The board has two L293D chips that are fitted in DIL sockets to enable quick and easy replacement of these chips. The two chips are powered from an external supply (up to +36 volts). The load power supply is connected via DC power Jack (J4) labelled "Vpwr IN" or the screw terminals labelled "Vpwr". When Vpwr is routed to the outputs by the L293 you will find that this output voltage is around 1.5V less than Vpwr due to the voltage drop across internal diodes. The L293D chips also require a 5V supply for the logic side of the device. This is provided directly from the upstream E-blocks board via the screw terminal labelled "V+" - usually 5V.

The two L293D provide 8 individual channels. The channels can also be grouped in pairs to provide a full H-Bridge configuration that is suitable for bidirectional motor control. Each channel is internally clamped with diodes (this makes them suitable for driving inductive loads) and also externally protected via thermal resettable fuses. These fuses will 'trip' when the current demand is too great for the chip. They will automatically reset themselves when the fuse cools down.

Please note that the upstream processor output supply can also be used to drive the L293D outputs. This is done by connecting the upstream processor voltage (i.e. +5V from screw terminal "+V OUT") to both the "+V" and "+Vpwr" on the power board screw terminals. if doing this be sure NOT to connect a separate power supply via the DC Powerjack (J4) and bear in mind the voltage drop mentioned above.

2. 3.3.V operation

This board does not operate off a 3.3V supply. V+ must be a minimum of 5V.

3. Output screw terminals

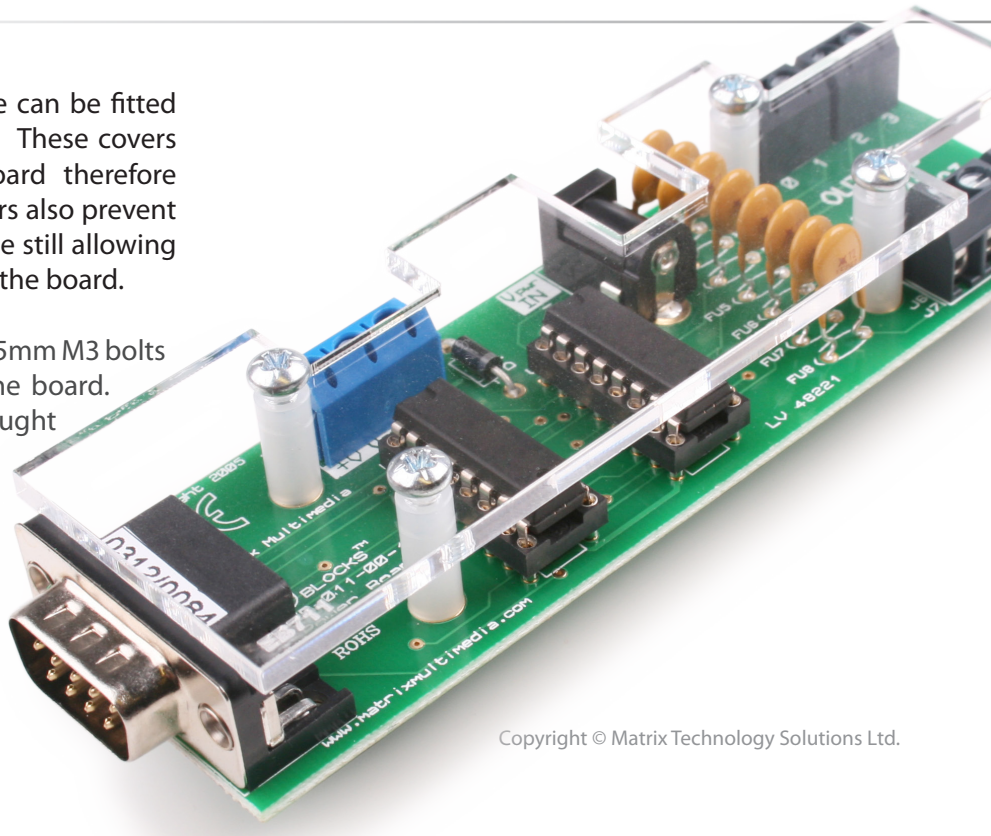
The outputs from the L293D chips are taken directly to the output screw terminals. The screw terminals are labelled OUTPUT 0-7. This represents the data lines that control these outputs. For example bit 2 on the input D-type connector will control the output of the L293 at the screw terminal labelled '2'.

Protective cover

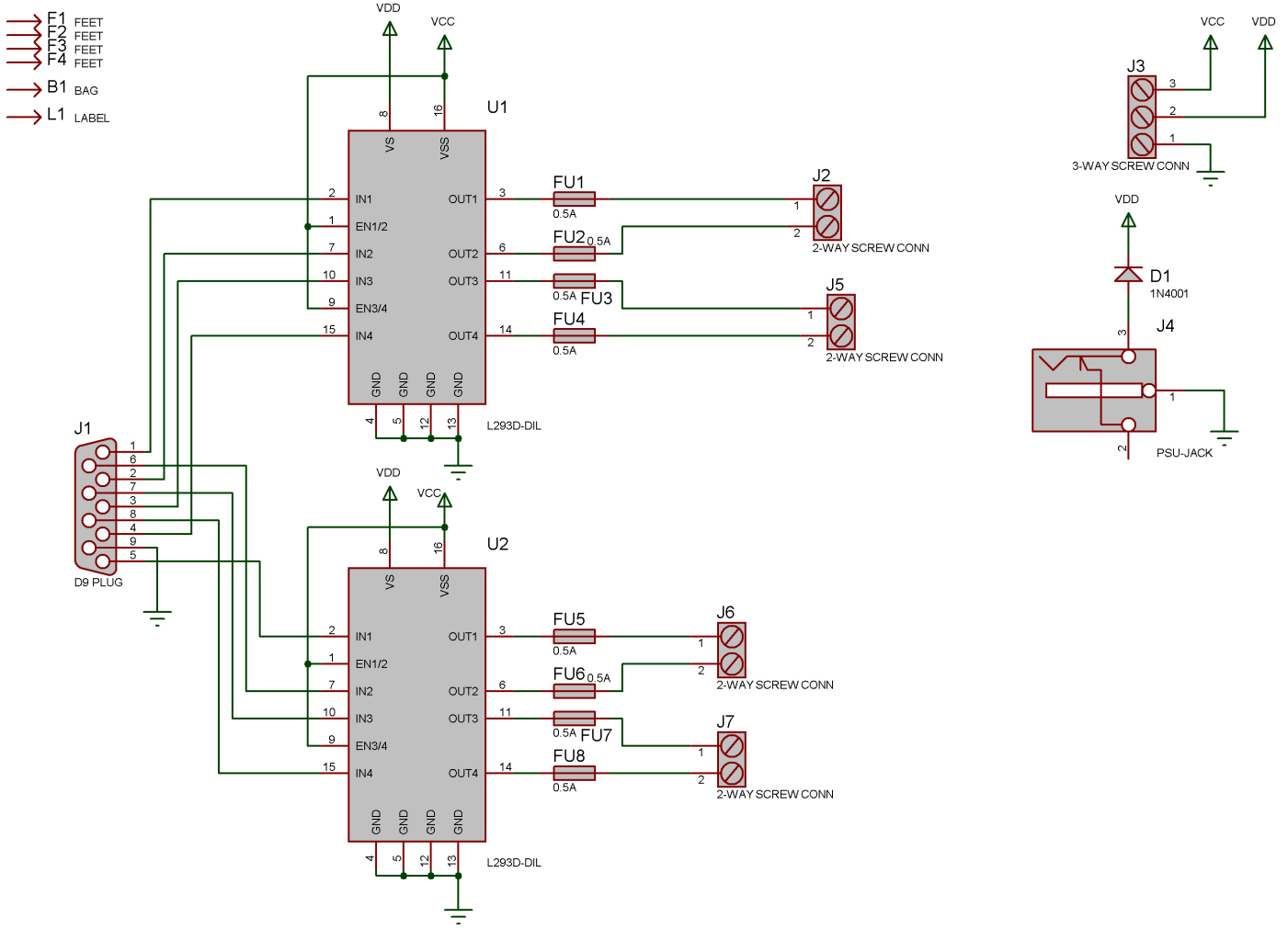
Most of the boards in the E-blocks range can be fitted with a plastic cover as an optional extra. These covers are there to protect your E-blocks board therefore extending the life of the board. The covers also prevent the removal of external components while still allowing for the adjustment of applicable 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 EB011 power board is EB711.



Circuit diagram



Matrix Technology Solutions Ltd.
The Factory
33 Gibbet Street
Halifax, HX1 5BA, UK

t: +44 (0)1422 252380
e: sales@matrixtsl.com

www.matrixtsl.com

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