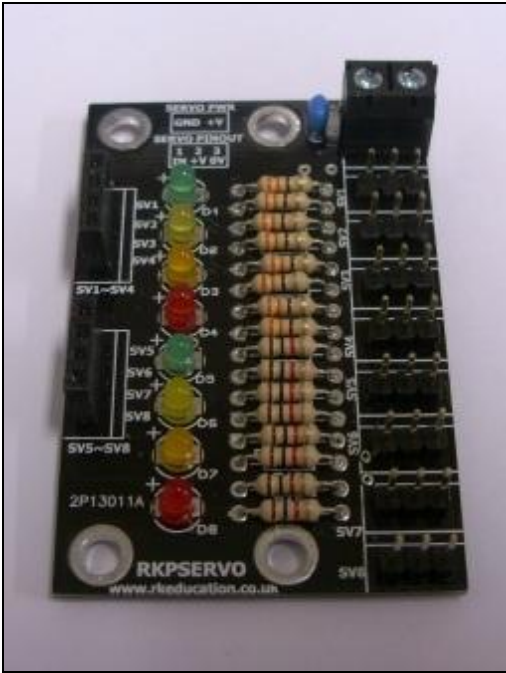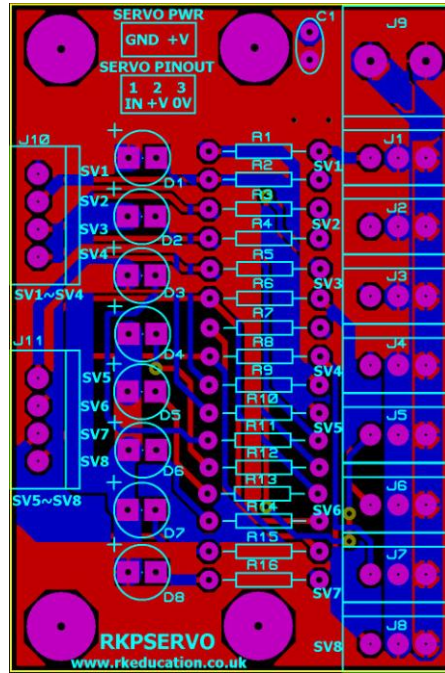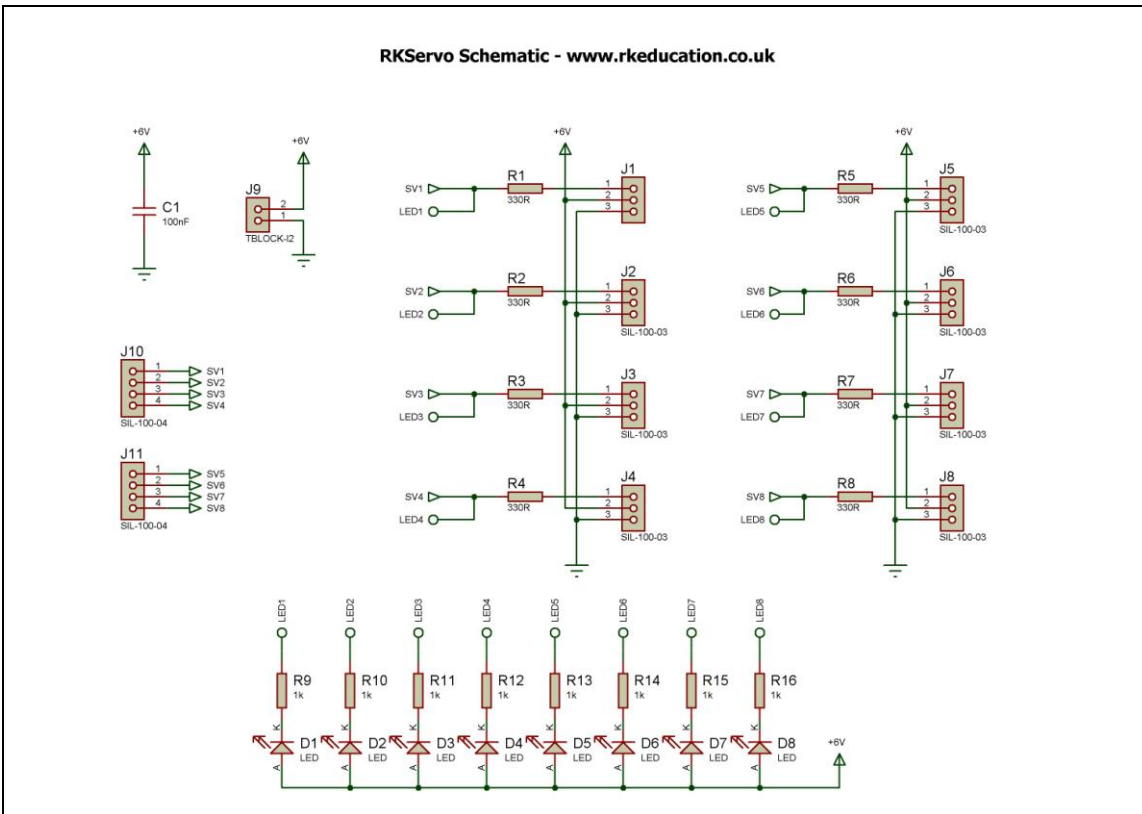# RKPServo Project PCB Component List and Instructions

Constructed PCB

PCB layout

Schematic Diagram

Description

The RKPServo project PCB has been specifically designed to operate up to 8 servos and is great for interfacing with PIC and Atmel microcontrollers such as the Arduino, PICAXE and Genie

- A low cost method of producing servo projects
- Includes 8x servo headers
- Can be interfaced to various microcontrollers and ICs such as PIC, ATMEL etc
- The control/interface lines are accessible via 2x 4 way header sockets
- Great for control projects including vehicles and robots
- Can drive up to 8 servos
- Manufactured using a double sided professional PCB
- Compact design

Component List

1x 2 way 5mm terminal blocks
8x 3 way header plugs
2x 4 way header sockets
1x 10 way header socket
C1, – 100nF multilayer ceramic capacitor
8x 3mm LEDs
R1 ~ R8 – 330R ¼ watt resistor (orange orange brown)
R9 ~ R16– 1K ¼ watt resistor (brown black red)

Instructions

This PCB has been designed to be interfaced with MCUs such as Atmel/Arduino and PIC/PICAXE and also with shields. For information on how to use servos with Atmel and PIC and shields please visit an appropriate website such a forum.

The PCB will need to be interfaced to an appropriate MCU such as an Atmel/Arduino or PIC/PICAXE. For guidance on using your chosen MCU please visit an appropriate forum.

For detailed and specific information on the servos please see the appropriate datasheet.

When constructing PCBs it is advisable to start with the components with the lowest profile, for example resistors.

Connecting Power

The terminal block marked J9 has been provided to allow the user to supply the power for the servo outputs, a common GND will need to be used. The GND pin is connected to PCB GND and pin 3 of all of the servo headers and is also connected to a power plane,. The +VE pin is connected to pin 2 of all of the servo output headers. For the power requirements of your chosen servo please refer to the technical information of the particular servo.

Using the servos

To use the servos connections will need to be made from the shield interface headers to the servo control inputs labelled SV1~4 and SV5~8.

The servos will also need to be powered, there is a terminal block for this purpose J9. Follow the technical guidance for your servo when selecting the power supply and the voltage.

A servo has 3 wires and usually a header socket, this socket interfaces to the header plugs on the PCB. The 3 wires are 0V, +VE and control signal and the PCB is labelled as such, take care with polarity when attaching a servo to the header plugs. The control signal wire is used to communicate the angle. The angle is determined by the duration of a pulse that is applied to the control wire. This is called Pulse Coded Modulation. The servo expects to see a pulse every 20 milliseconds (.02 seconds). The length of the pulse will determine how far the motor turns. A 1.5 millisecond pulse, for example, will make the motor turn to the 90 degree position (often called the neutral position). If the pulse is shorter than 1.5 ms, then the motor will turn the shaft to closer to 0 degress. If the pulse is longer than 1.5ms, the shaft turns closer to 180 degress.

For more specific information including on how to interface servos to specific MCUs please visit the following links,

Click here for a servo tutorial
Another tutorial
And another
Wikipedia link
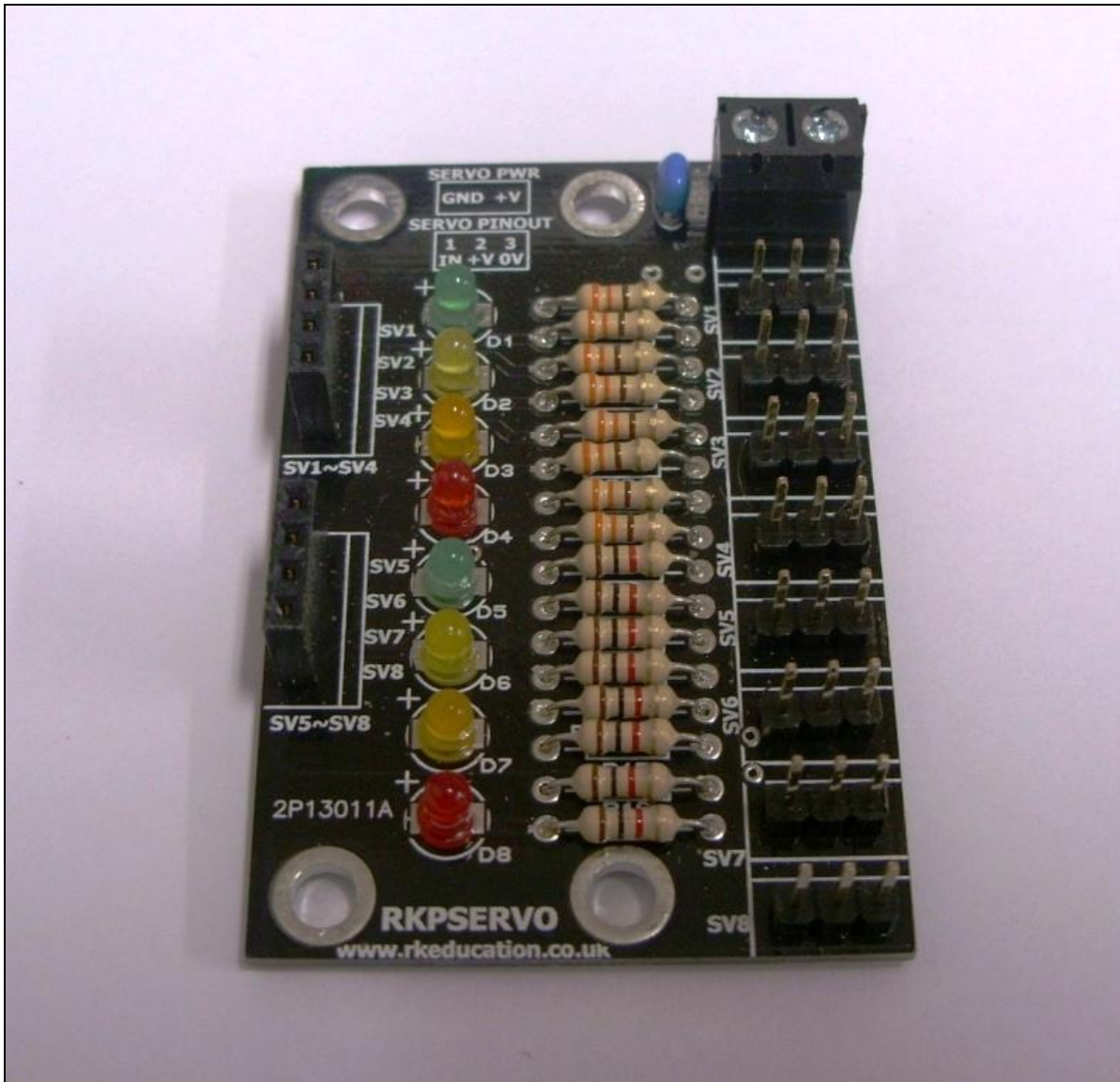
Please visit our website

www.rkeducation.co.uk

If you have any comments or queries please email us at

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RKServo Schematic – www.rkeducation.co.uk