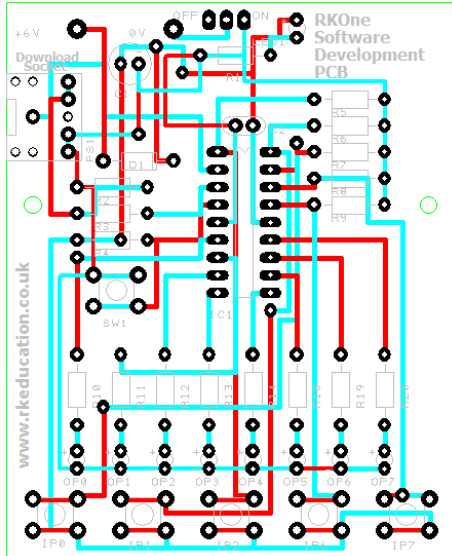
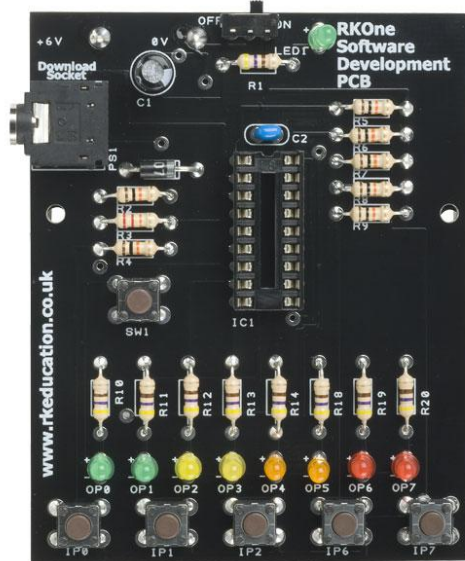


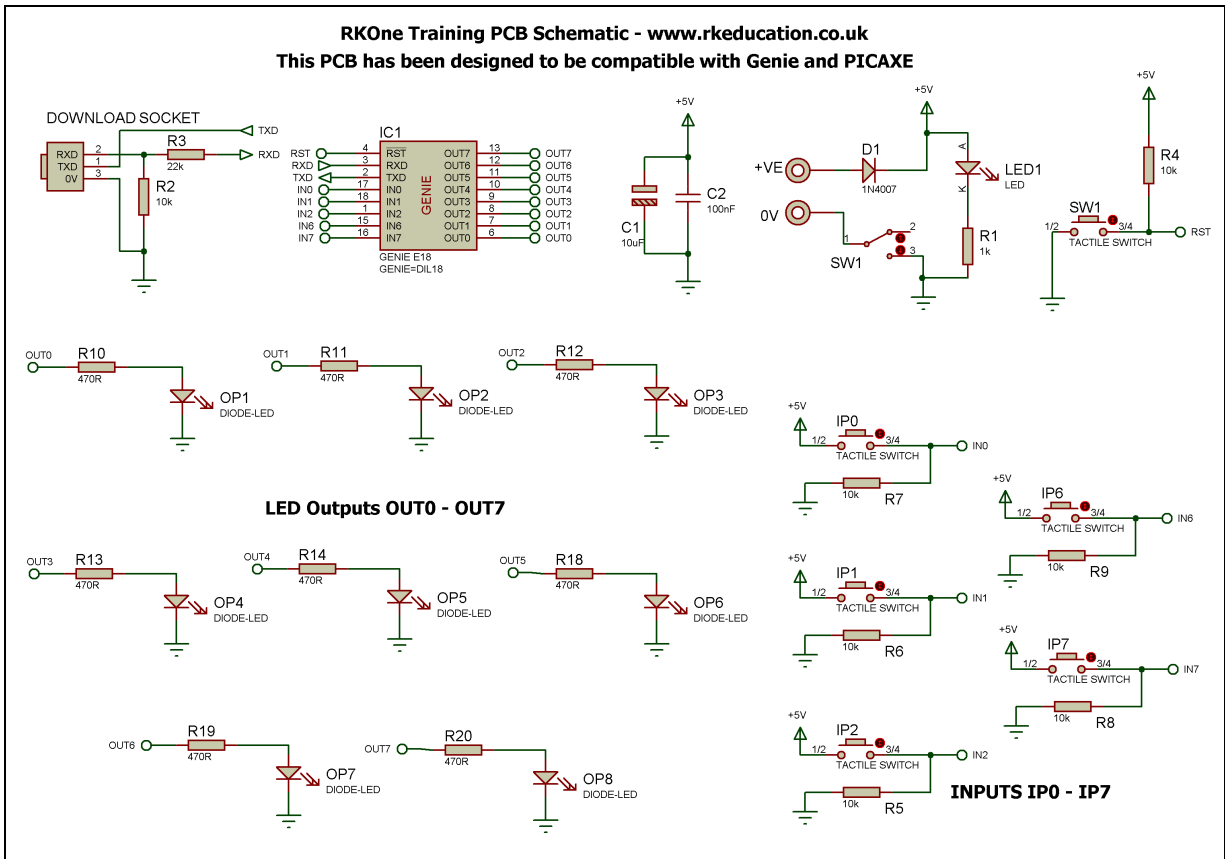
RKOne Component List and Instructions



PCB layout



Constructed PCB



Schematic Diagram

Description

The RKOne software development PCB has been designed to use 18 pin PIC microcontrollers such as Genie and PICAXE

- Simple, low cost and hand held
- Designed to teach students PICs in a very simple way
- Perfect for testing PIC software
- Ideal for use in schools when designing PIC based products
- Great for simple PIC projects such as dice, timers, games etc
- Software is downloaded from a PC into the microcontroller via a 3.5mm stereo socket
- Designed to be fully compatible with PIC microcontrollers such as Genie and PICAXE
- Compatible with your existing flowchart software
- Each of the out outputs use an LED
- Each of the 5 inputs use a tactile switch
- The clock reference is from an internal resonator
- Powered from 4AA batteries
- High quality, professional double sided PCB
- Power switch and LED power indicator

Component List

Battery box – 4 x AA with PCB leads - **SOLDER LAST!**

C1 – Smoothing cap, 10uF electrolytic or suitable alternative

C2 – IC smoothing cap, 100nF radial ceramic capacitor

Power Switch – Ultra miniature slide switch

Download Socket – 3.5mm stereo socket

D1 – 1N400x

R1 – 1k

R2 – 10k

R3 – 22k

R4 to R9 – 10k

R10 to R20 – 470R

SW1, IP0 to IP7 – 6mm tactile switch

LED1, OP0 to OP7 – 3 or 5mm LED (Not blue or white)

IC1 – 18 pin DIP socket with PIC, e.g. Genie

When constructing it is advisable to start with the components that have the lowest profile and work high, for example start with the resistors and end on the electrolytic capacitor. For this kit please solder the battery box last, this is very important. The battery box can be secured to the PCB using a hot glue gun or sticky pads.

Instructions

The PCB has been designed to use microcontrollers based on the PIC e.g. Genie, please see the appropriate website

There are 5 areas to familiarize yourself with.

1. Power
2. Software download socket
3. Tactile switch inputs
4. LED outputs
5. IC socket for the PIC/Genie chip

Connecting Power

The first step is to power the PCB, there is a battery box attached to the rear of the PCB and it will take 4AA 1.5V DC batteries, the battery case can be changed for a 4AAA version and it can be powered using a suitable DC power supply but the voltage must not exceed 6V DC. The maximum voltage for a PIC is 5.5VDC, there is a diode that reduces the voltage from 6V by approximately 0.7VDC.

The system can now be turned on using the ultra-miniature slide switch at the top of the PCB, it is marked **ON** and **OFF**. The green power LED should light up, it is below the power switch. If it does not light up it may indicate faulty batteries or power supply, check them carefully or a short circuit.

Downloading software into the RKOne

Once the software has been written using the Genie Programming Editor (or equivalent) it can be downloaded into the Genie (or equivalent). This is done using a download cable that connects either to your PC's serial port or USB port. Insert the download plug into the download socket and activate the program function in your Programming Editor, if all goes well it will tell you the program download was successful.

If the software has been written correctly and the inputs and outputs (i/o) have been set correctly in your software the PCB will work in the way you planned, if you are a beginner it is always best to start simple and work up, this makes it easier to find out any bugs in your software. For example a good first piece of software would be to toggle an LED, this can be extended to toggling the LED in response to a switch press.

Tactile switch inputs

When pressed the tactile switches connect the +VE supply to the appropriate pin of the PIC. The standard state is 0V, 0V represents a logic 0 and +VE represents logic 1. The inputs are clearly labelled on the PCB.

LED outputs

When a logic 0 is sent to an output LED the LED will not turn on, when a logic 1 is sent to an LED the LED will turn on. An LED is used for each output and these are clearly labelled on the PCB.

Please visit our website

www.rkeducation.co.uk

If you have any comments or queries please email us at

technical@rkeducation.co.uk

