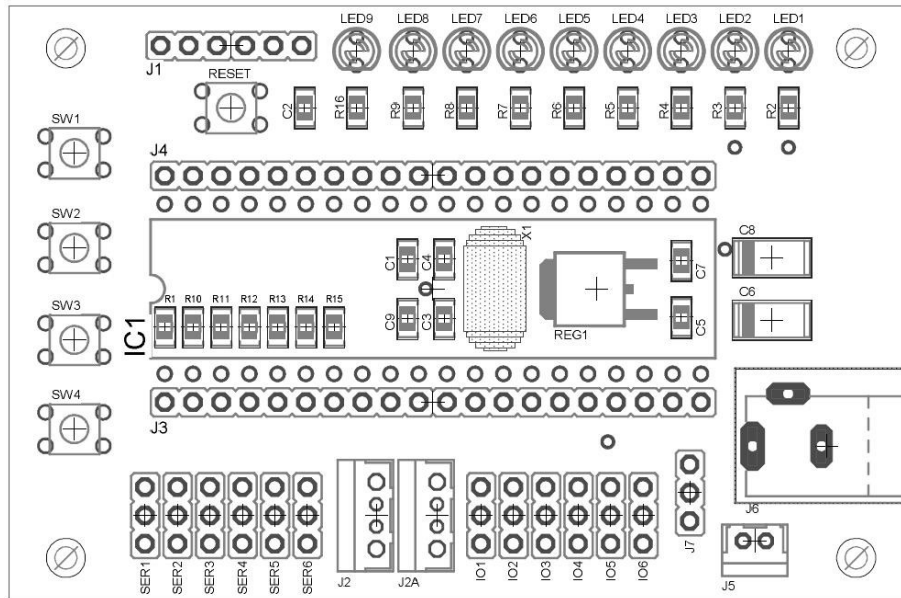


# MegaPIC Operation Manual



## Features

The MegaPIC is a Micro-Controller Board designed for beginners to learn the basics of programming. All 40-pin DIP package ICs from MicroChip are compatible with the MegaPIC. In-Circuit Programming can be achieved using the PICKIT2 programmer from MicroChip. Users can use J1 for programming the Micro-Controller.

A 9V 2 Amps switch-mode power supply is included in this package. This can be used to power the MegaPIC and the AI-Motors but users should not connect more than 2 AI-Motors when using the power supply. Current drawn by 2 or more motors will cost damages to both the MegaPIC and the power supply.

J7 is a power source selector for the inputs to the Micro-Controller. Shorting Pins 1 and 2 will route power from J5 to the Micro-Controller. When Pins 2 and 3 are shorted, power from the DC Jack will be used to power the Micro-Controller.

J2 & J2A are connected to the UART port of the Micro-Controller to control AI-Motors. Both connectors are connected in parallel.

6 RC Servos can be controlled via the SER1 to SER6 ports. The pins nearer to the Microprocessor IC is the signal followed by power and with GND on the outside. Power to the RC servos are connected to the battery connection as RC servos can draw high current which the supplied power supply cannot provide.

6 Universal I/Os are provided on MegaPIC for interfacing to sensors or other outputs. Signals pins are the ones nearer to the Microprocessor IC followed by a +5V supply and GND. The +5V can supply a max current output of 1 Amp.

For more information on the MegaPIC, please refer to the schematics attached at the end of the document.

## **Hardware Specifications**

- Micro-controller: Microchip PIC18F4520 (40 Pin DIP Package)
- Input Voltage: 5.0V to 35V DC
- On Board Oscillator: 16Mhz
- Max. Output Current for Logic Level: 1 Amp
- Universal I/Os: 6
- RC Servo Connectors: 6
- AI-Motor Connectors: 2
- User Programmable Push Buttons: 4
- Display LEDs: 8
- Power On LED: Yes
- Reset Circuitry: Yes
- DC Jack (2.1mm): Yes
- Battery Connector: Yes
- In-Circuit Programming: PICKIT2 Programmer
- Mounting Holes: 4 x 3mm
- Board Dimension: 81mm x 53mm

## **Pin Assignment**

### **1. Push Buttons**

The push buttons used are of Normally Off spring return nature. They can be used to trigger interrupt routines as they are tied to the interrupt-on-change pins on PortB. Internal weak pull-ups are available on all PortB inputs. The push buttons will be connected to GND once it is depressed.

- Push Button 1 (SW1) – RB7 (Pin 40)
- Push Button 2 (SW2) – RB6 (Pin 39)
- Push Button 3 (SW3) – RB5 (Pin 38)
- Push Button 4 (SW4) – RB4 (Pin 37)

### **2. Servo Connectors**

The servo connectors found on MegaPIC conforms to the standard RC-Servos pin-out.

- Servo Connector 1 (SER1) – RA0 (Pin 02)
- Servo Connector 2 (SER2) – RA1 (Pin 03)
- Servo Connector 3 (SER3) – RA2 (Pin 04)
- Servo Connector 4 (SER4) – RA3 (Pin 05)
- Servo Connector 5 (SER5) – RA4 (Pin 06)
- Servo Connector 6 (SER6) – RA5 (Pin 07)

### 3. Universal I/Os

6 Universal I/Os are available on the MegaPIC. They can be used as inputs or outputs depending on the requirements of the user. The universal I/Os are configured using PortC of the PIC18F4520. They can be used for PWM capture or outputs depending on the requirements of the end users.

- Universal I/O 1 (IO1) – RC0 (Pin 15)
- Universal I/O 2 (IO2) – RC1 (Pin 16)
- Universal I/O 3 (IO3) – RC2 (Pin 17)
- Universal I/O 4 (IO4) – RC3 (Pin 18)
- Universal I/O 5 (IO5) – RC4 (Pin 23)
- Universal I/O 6 (IO6) – RC5 (Pin 24)

### 4. AI-Motors Connector

The AI-Motor connection is linked to the UART Port of the PIC18F4520. AI-Motors can be controlled directly through this connection. Please refer to the AI-Motor's Operation Manual for the protocols on controlling the AI-Motors.

- AI-Motor RX – RC6 (Pin 25)
- AI-Motor TX – RC7 (Pin 26)

### 5. Display LEDs

The display LEDs are linked to PortD of the PIC18F4520. They can be activated by pulling the line “Low”.

- LED 1 – RD0 (Pin 19)
- LED 2 – RD1 (Pin 20)
- LED 3 – RD2 (Pin 21)
- LED 4 – RD3 (Pin 22)
- LED 5 – RD4 (Pin 27)
- LED 6 – RD5 (Pin 28)
- LED 7 – RD6 (Pin 29)
- LED 8 – RD7 (Pin 30)

