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**ADVANCED 40 Pin™**

**User's Guide**

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# Introduction

## 1.1 Welcome

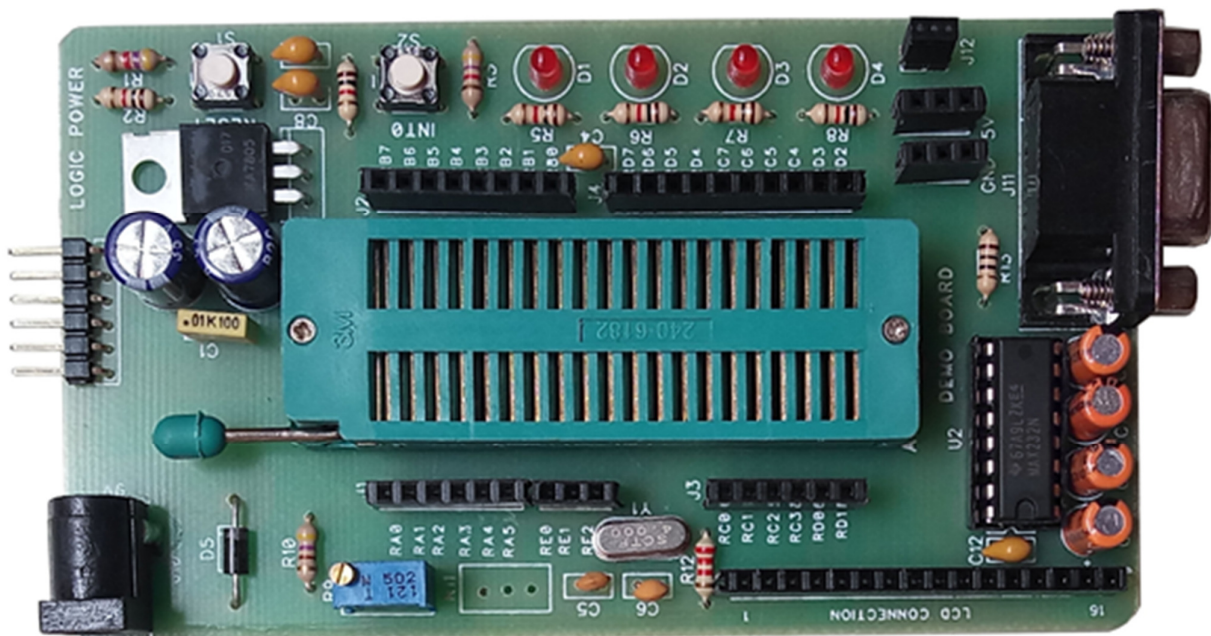
Thank you for purchasing the ADVANCE 40-Pin™ Demo Board from Logic Power!!

The ADVANCE 40-Pin™ Demo Board is a simple board which demonstrates the capabilities of the **40-Pin PIC16/18** and Enhanced PIC devices. Sample programs are provided to demonstrate the unique features of the supported devices.

The ADVANCE 40-Pin™ Demo Board comes with the following:

- ADVANCE 40-Pin™ Demo Board
- Sample devices (PIC16F877A/PIC18F4520)
- CD-ROM, which contains:
  - Sample programs
  - ADVANCE 40-Pin™ Demo Board User's Guide

If you are missing any part of the kit, please contact your nearest Logic Power office listed in the back of this user guide for help.



## 1.2 ADVANCE 40 Pin™ Demo Board

The ADVANCE 40-Pin Demo board is specially designed for Microchip's 8-bit PIC16F877A and PIC18F4520 microcontrollers. Board also support 40-Pin DIP PIC microcontroller pin compatibles with PIC16F877/PIC18F4550.

### Key Features:

- 40-Pin Zip socket for easy inserting and removing the MCU
- Board dimensions 66mm x 115mm
- ICSP connection for connecting demo board with the PICKit2/ PICKit 3/ MPLAB ICD3/ MPLAB PICKit 4/ MPLAB ICD4 etc
- 9V-12V, 500mA DC external power supply for providing the external power to the demo board
- Four Red LEDs connected to PORTB, i.e. RB0, RB1, RB2 & RB3 through the jumper
- 5K $\Omega$  POT connected to the RA0 pin of PORTA for analog inputs
- On board female 16 Pin burg strip for LCD interface
- On board RS232 serial port (DB9)
- Extra On-board power pins of 5V and GND for providing power to the external device
- MCLR reset switch for hardware reset
- INT0 external interrupt switch
- 4 MHz external crystal
- LM7805 for 5V power to the MCU and another external device attached to it
- Extra female burg stipes for PORT extensions

## 1.3 Sample Devices

One FLASH device is included. The device type may change but will generally include PIC16F877A and PIC18F4520, 40-pin DIP device.

#### **1.4 Why ADVANCE 40 PIN™ Demo Board?**

- ADVANCE 40-Pin Demo Board is comes with 40-Pin Zip socket which provides easy insertion and remove of MCU.
- Board comes with PIC16F877A/PIC18F4520 and Board also support 40-Pin DIP PIC microcontroller pin compatibles with PIC16F877/PIC18F4550.
- Board has 16x2 LCD 4-bit connection.
- 5k $\Omega$  pot for analog input from VDD to GND.
- Connection of an RS-232 host through the DB9 connector.

# Hardware Details

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The ADVANCE 40 PIN™ Demo Board hardware is extremely simple and is intended to illustrate the ease of use of 8bit PIC16F877A and PIC18F4520, 40-Pin PIC MCUs. Board also support 40-Pin DIP PIC microcontroller pin compatible with PIC16F877A / PIC18F4520.

The features of the board hardware elements are as follows:

## 1.1 MCU ZIP Socket

It's very hard to remove one microcontroller and solder another one on PCB, when first one gets damaged or need to work with different microcontroller. ADVANCE 40 pin demo board provides 40-Pin Zip socket to easily add or remove MCU, it provides Zero Insertion Force for adding and removing the MCU.

## 1.2 Power Supply

Three ways to supply power to the ADVANCE 40 -Pin demo board

- A 9V-12V, 500 mA DC supply can be plugged. Power supply can be purchased through LOGIC POWER
  - **Note:** ADVANCE 40-pin™ Demo Board kit does not include a Power Supply.
- A +5V, 500 mA regulated DC power supply can be connected to the pins provided at the bottom left of board.
- An internal power supply can also be provided by using PICKit2/ PICKit 3/ MPLAB ICD 3/ MPLAB ICD4/ MPLAB PICKit 4 (Please check particular Programmers User Guide to set an internal power supply, also we recommend you to use an EXTERNAL Power Supply for your demo board).

(To Purchase any programmer/debugger from Logic Power, please email your requirement to the below email Id.: [sales@logicpower.co.in](mailto:sales@logicpower.co.in) or Buy it from our website directly: [www.logicpower.co.in](http://www.logicpower.co.in))

### **1.3 Display LEDs**

Four LEDs are provided on board, connected to the PORTB, i.e. RB0, RB1, RB2 & RB3 [Enabled through Jumper (J12)]. LED connected on RB0 is also used for an indication of Power ON, it turns ON, when powered through an external source and while programming the device.

### **1.4 Analog Input**

ADVANCE 40-Pin demo board is provided with 5k $\Omega$ , is connected to AN0 channel of A/D module. POT can generate different analog voltage levels from VDD to GND to provide analog input to A/D module.

### **1.5 RS232 Serial Port**

RS-232, level-shifting IC has been provided with all the necessary hardware to support connection of an RS-232 host through the DB9 connector. The port is configured as DCE and can be connected to a PC using a straight-through cable.

The PIC16/PIC18 RX and TX pins are tied to the RX and TX lines of the MAX232A

### **1.6 LCD**

ADVANCE 40-Pin Demo Board has LCD display connection with two lines, 16 characters each, is connected to 40-Pin Zip sockets. There are three control lines (RD2:RD0) and four data lines (RD7:RD4). A 2.2k $\Omega$  resistor is installed into R12 for fixed contrast of LCD. Also, provision for 5k $\Omega$  (R11) Potentiometer for adjusting LCD contrast.

## 1.7 SWITCH

Demo board has 2 switches.

- $\overline{\text{MCLR}}$  switch: - to hard reset the processor.
- INT0 switch:- for external interrupt switch.

## 1.8 POWER OUTPUT

ADVANCE 40-Pin Demo Board contain power pins i.e. 5v and GND regulated through LM7805 voltage regulator.

## 1.9 PORT EXTENSIONS

ADVANCE 40-Pin Demo Board is provided with port extensions.

## 1.10 PICKIT™ CONNECTOR

By way of the header connector, the MPLAB PICKit can be connected for low-cost debugging.



# Board Layout

The following figures show the parts layout (silkscreen) for ADVANCE 40-Pin Demo Board.

**Figure 3.1 Advance 40 Pin Demo Board Layout**

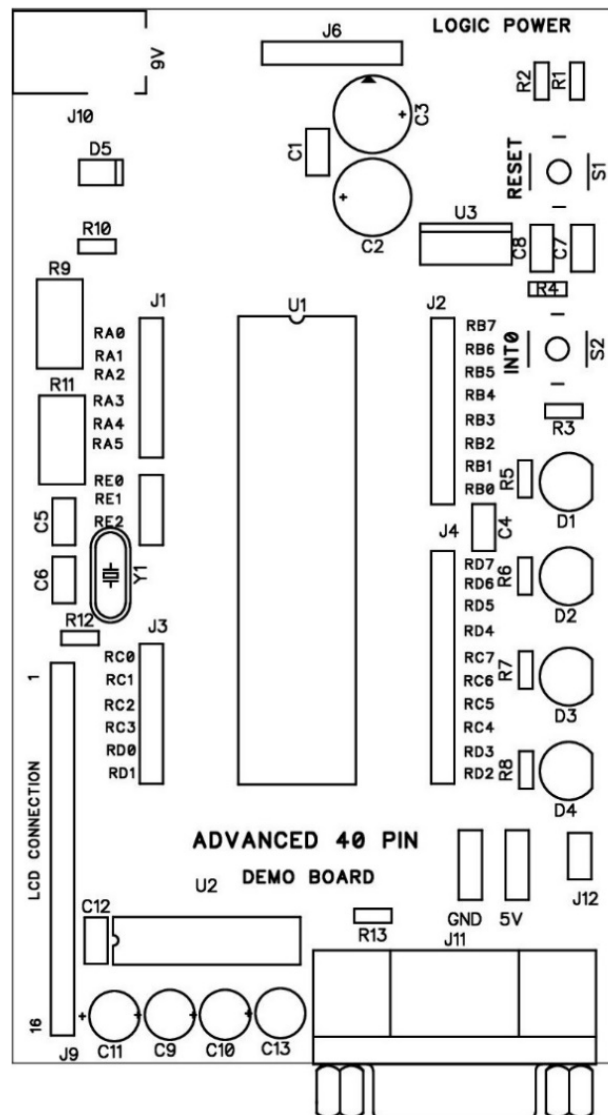


Fig.: 3.1

**Figure 3.2. Advance 40 Pin Demo Board Schematic**

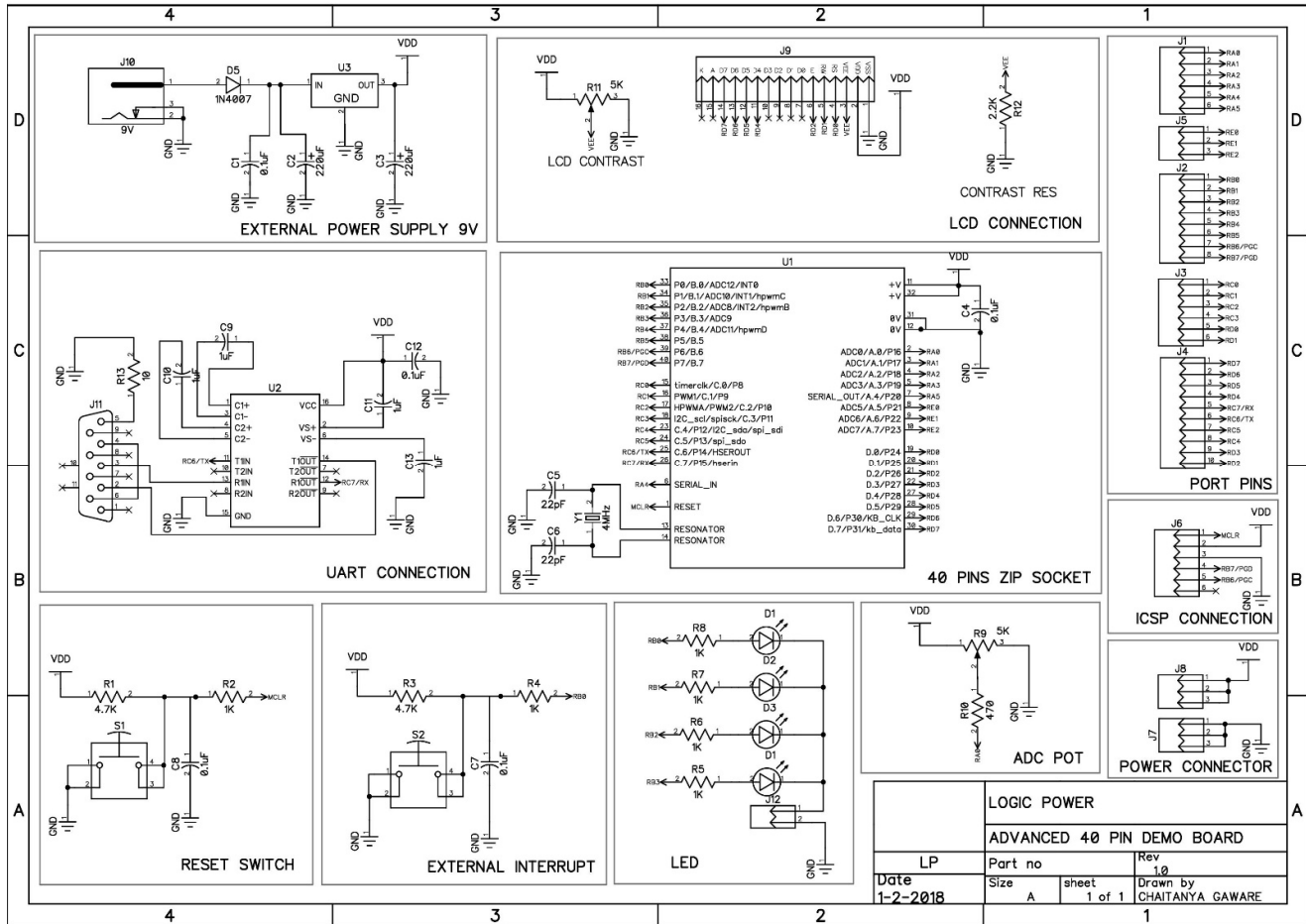


Fig.: 3.2



Please contact us for any query related to our Product.

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