

## Assembly Introduction

This guide provides summarized assembly instructions for the ProtoPro 40. The components should be installed in the following recommended order:

- Diodes and resistors first
- IC Holders (IC holders are an option)
- LEDS, POT
- Capacitors + Crystal
- Voltage regulators
- PCB Connectors
- ICs

## Power Supply

The Diode provides reverse polarity protection for the 7805 voltage regulator. The capacitor voltage rating should not be lower than 16 Volts; however capacitors with a voltage rating of 25V or above may be used.

Input voltage to the ProtoPro 40 can be set between 7 – 9 volts. Once a voltage of the right value is applied to the circuit, the power on LED will illuminate. If the LED does not illuminate the input voltage polarity may have been reversed.

## Crystal

The oscillator option only needs to be exercised if the onboard oscillator of the microcontroller is not going to be used. Otherwise there is no need to populate these components on the PCB.

## Artwork

The ProtoPro 40 Artwork below illustrates component placement on the ProtoPro 40. If the PCB is to be mounted, mounting positions are provided suitable for a 3mm mounting screw.

See component list on the reverse page.

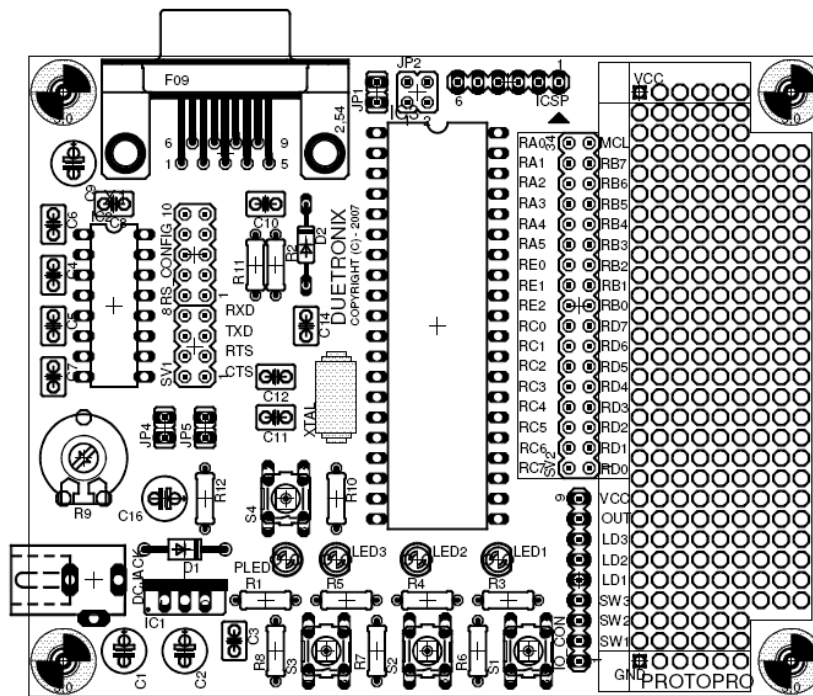
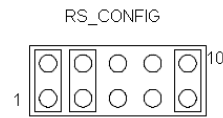


Fig 1 – ProtoPro 40 Artwork

## Serial Communications Configuration



To communicate with a PC comport, short out the jumpers at PINS (1:2; 3:4). To loop the handshake short out pins (9:10). A normal jumper can be used; jumpers used for IDE HDD drives are ideal.

Fig 2 - RS\_CONFIG Jumper settings

## Component List

Resistors	
R1, R3, R4, R5	820 Ω
R2	See <a href="http://www.microchip.com">www.microchip.com</a>
R6, R7, R8, 10, R11	10K Ω
R9	POT - 10K Ω
R12	User defined
Capacitors	
C1	470uf 16V
C2	47uf 16V
C3 –C8, C10,	100nF
C9	47uF 16V
C11, C12, C14	22pF
C16	Depends on oscillation frequency required and is user configured
Diode	
D1	1N4004
D2	1N4148
Crystal	
Xtal	User configured, 4MHZ recommended
ICs	
IC1	7805 (T0220)
IC2	MAX232(DIP16)
PIC	See Supported devices below
LEDS	
PLED, LED (1-3)	3mm LED (Color optional)
Mechanical	
S1-3, RST	PCB Push Button
J1, J2, J4,J5	2.54 MM jumper (Same used in IDE HDD Drive)
Connector	PCB Mount DB9
DC Jack	PCB Mount 2.54 MM DC Jack (Center negative)

## Supported Devices

The following devices are supported

### 40 PIN Devices

PIN compatible with all 40 PIN DIP Package 18Fxxx and 16Fxxx devices from Microchip

PIC16C74B, 765, 774,  
 PIC16F74, 747, 77, 777, 871, 874A, 877A, 917  
 PIC18F4220, 4320, 4331, 4410, 442, 4420, 4431, 4439, 4455, 448, 452, 4510, 4515, 4520, 4525, 4539,  
 458, 4550, 4585, 4610, 4620, 4680 (this list represents some of the more common devices in use only).

**Disclaimer:** This document is considered correct at the time of printing and is subject to change without notice. No liability is accepted whatsoever.

# PROTOPRO 40 – QUICK ASSEMBLY GUIDE



## ProtoPro 40 – Circuit Diagram

