

NM101:

Standard Assembly instructions

Since this board has a number of possible uses, the assembly instructions have been written for a board that has the following features.

Reset switch (Allows boot loading)

Crystal Oscillator

In circuit programming

RS232 Support (not 18 pin pic)

Three styles of processor

(Required parts are listed at the end of this document.)

If you wish to use this board with different sized PICs then you must use the socket strips as outlined on the parts list. These are easily cut using snips to the required size. Insert into the circuit board for the position U3. Plug an IC into the socket strip of the correct size to hold the sockets at the correct angle for soldering.

Carefully turn the board over and solder into place. You can use scotch tape to hold the parts in place if necessary.

Next insert the socket strips for U2 upper row and U1. Again insert a 16 pin IC into U1 or any IC of the correct width. This will align these strips correctly. Solder the strips in place as before. Now connect an IC in U2 position and solder the lower rail in place.

In this way the sockets should be aligned correctly allowing ICs to be easily inserted.

Note ordinary IC sockets can be used if only one size of PIC will be needed.

JP2 is a custom 44 pin socket. It should be inserted with the socket on the component side

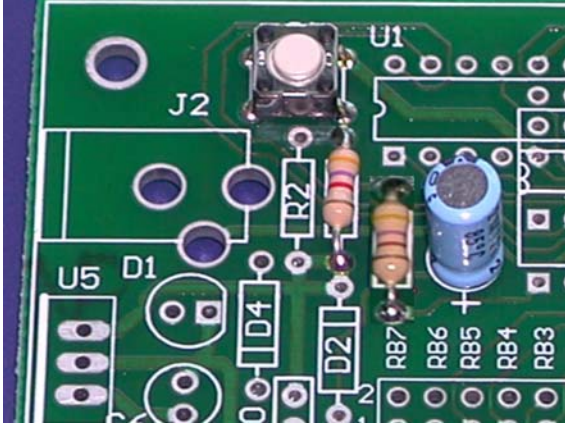


and soldered on the non component side. Take care not to solder the pins together.

The pins allow wire-wrap connections to be made from this socket to circuits on the proto-area. For details on wire-wrapping, please see our wire-wrapping guide.

Reset Switch

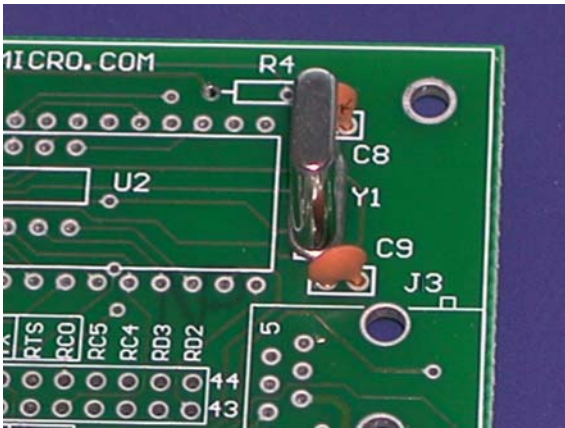
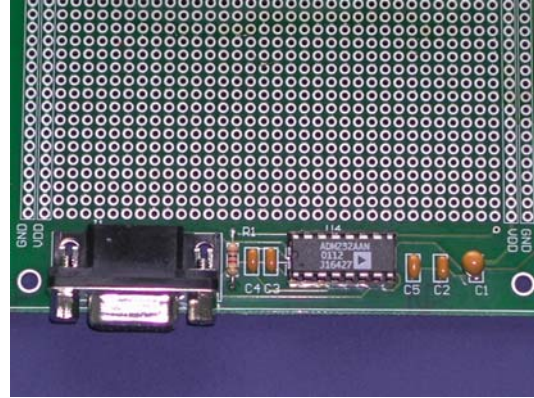
Install the switch S1, R3 a 4.7K Ω resistor and install a 470 Ω resistor in D3. C7 can be a 1uF capacitor or a 0.1uF. Do not install D2.



appropriate pins of the PIC to TX JP2-32, and RX JP2-31.

Populate C2, C3, C4, and C5 with 0.1 uF capacitors, C1 can also be a 0.1 uF or for better noise reduction, a 1uF Tantalum capacitor (note the polarity, positive lead towards proto area). Populate J1 with the 9 pin D connector and R1 with a 1K resistor.

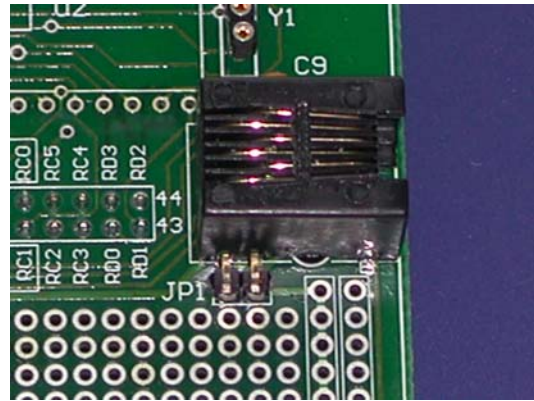
To use a crystal oscillator insert C8 and C9 both 22 pF capacitors. It is suggested that the crystal be mounted into a socket strip to allow changing of the crystal frequency.



Install JP1 and J3 to allow for in circuit programming using a NM100. A jumper must be installed in JP1 in order to provide power for the NM100 in circuit programmer.

RS232

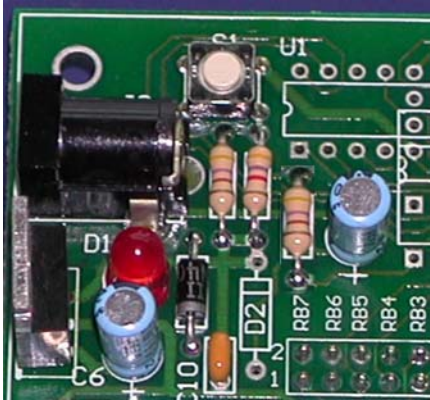
If the RS232 port is needed, then populate U4 with a standard 18 pin DIL IC socket. Up to four jumpers will be needed for JP2 to connect the UARTs in both the 28 and 40 pin versions of the PICS that support serial coms, to the MAX 232A and associated circuitry. It is important that you use the 232A part. If you use a standard Max232 or equivalent, you will have to change C2-C5 to be 1uF capacitors.



If you want to use an 18 pin PIC for RS 232 then you will need to connect the

POWER SUPPLY

Populate in order R2, D4, C10, D1, C6, U5, and finally J2. Depending on the current consumption of your final prototype circuit, U5 may need to have a heatsink installed.



TESTING

Before connecting power or any of the socketed ICs, visually check that you have orientated the diodes and capacitors correctly.

If you have made a mistake then use a solder sucker or solder wick to remove the solder and correct the error.

Now check the solder side of the board for good solder connections. They should look shiny and smooth and the solder should appear to flow around the component lead. There should be no solder bridges between pins.

Before installing the micro controller, connect a suitable supply 9V@500mA center positive is suggested. The circuit is protected against reverse polarity. Check that the LED lights and that 5 V is available between the power (VDD) and ground rails.

Disconnect the power supply and insert your micro controller. If you are using an

NM100 to program the part, then follow the instructions given in the user manual.

PARTS LIST

The parts needed for this build are listed below along with Digikey part numbers for convenience. Note all parts are readily available from any electronic supplies store.

R1	1K ¼ W	1.0KQBK-ND
R2,D3	470 ¼ W	2 of 470QBK-ND
R3, R4	4.7K ¼ W	2 of 4.7KQBK-ND
C1,2,3,4	0.1 µF ceramic	1210PHCT-ND
C5,7,10		
C6	22µF 25V electrolytic	P5149-ND
C8,9	22pF ceramic	P4841-ND
D1	Red Led	160-1124-ND
D4	1N4005	1N4005DICT-ND
Y1	Crystal of choice	
U4	MAX232A	MAX232ACPE-ND
U4	16 pin DIP	A9416-ND
U5	LM7805	LM 340T-5.0-ND
U1,U2,U3	SIL Socket strip	3 of ED7064-ND
J1	DB9 F	A2100-ND
J2	DC Power jack 2.5mm	CP-002BH-ND
JP1	HEADER 2	WM6502-ND
JP2	Supplied 44 pin stackable connector.	
JP3	RJ11_6PIN	A9049-ND
S1	Push button	P8009S-ND