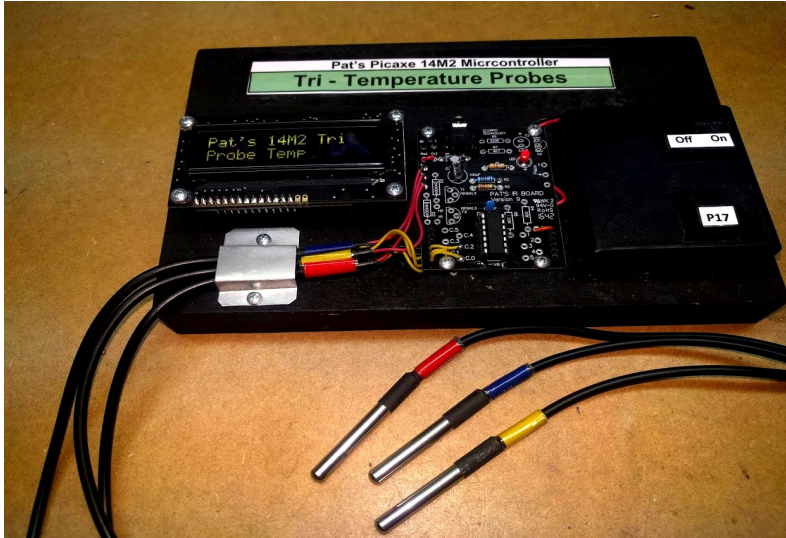


How to Build a Tri Temperature OLED

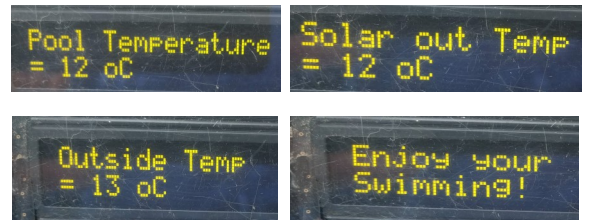
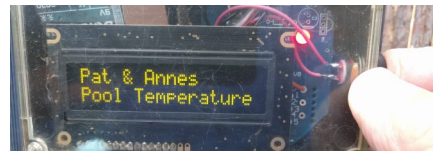
Pat McMahon– V1– 13/5/2021

Design Brief – Build an AXE133Y Serial OLED to display using 3 Temperature Probes, connected to your Picaxe 14M2 Microcontroller.

Note – The photos taken in this “How to Build” are using the Revolution Education AXE133Y Serial OLED Display



Below is a practical example of the Tri Temp. The Probes are displaying the 3 temps, Pool, Solar & Outside temperatures (in Winter) plus other comments of your choice.



Below are some of the Production Steps for the above model, or you can use your own mounting design. Tick off each box as you complete a task and Document it.

Below are the main parts required to construct your AXE133Y Serial OLED Display.

AXE133Y OLED Kit Contents.

2 x 10K Resistor
(Brown,Black,Orange,Gold)

22K Resistor
(Red,Red,Orange,Gold)

100 nf Capacitor

Download Socket
Insert but never use.

AXE133 PCB

18 pin IC Socket

Picaxe -18M2

OLED Display

10 Pin Header

10 Pin Header

VERY IMPORTANT– Don't download to this 18M2 chip, as it is pre-programmed with AXE133 firmware. Only download your code to the 14M2 PCB Microcontroller download socket.

Note– Use in conjunction with the Revolution Education instructions supplied.

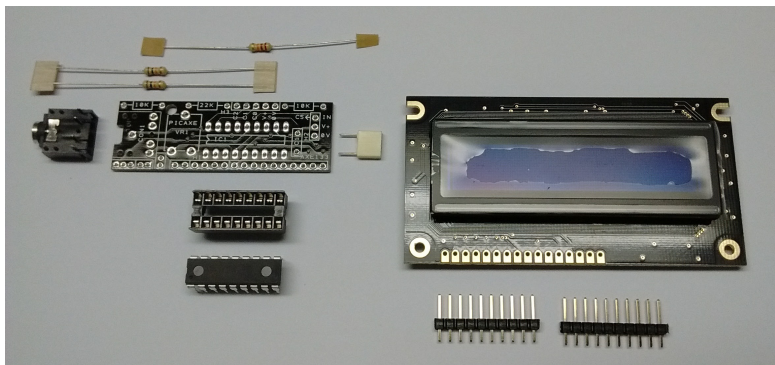
AXE133Y SERIAL OLED

AXE132	Serial Driver Kit	(no display supplied)
AXE133Y	Serial OLED Kit	(16x2 yellow on black OLED display)
AXE133	Serial LCD Kit	(16x2 budget grey LCD display)
AXE134Y	Serial OLED Kit	(20x4 yellow on black OLED display)

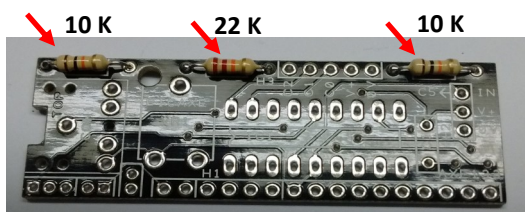
Introduction:

The serial OLED/LCD module allows PICAXE microcontroller projects to visually display user instructions or sensor readings. All commands are transmitted serially via a single microcontroller pin using the serout

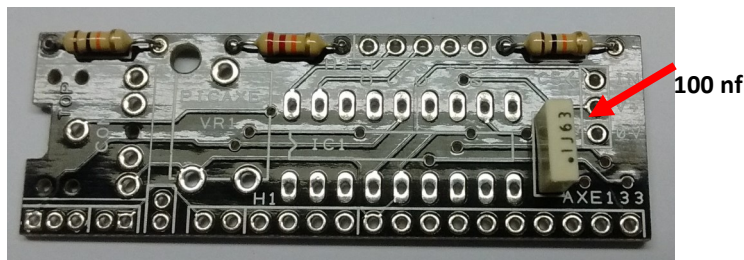
- Open the AXE133Y serial OLED package and lay out the parts for Identification.



- Solder 2 x 10K Resistors (Brown,Black,Orange,Gold) and 1 x 22K Resistors (Red,Red,Orange,Gold) into PCB. Insert from Artwork side & solder underneath. Note – No polarity with Resistors, insert either way.

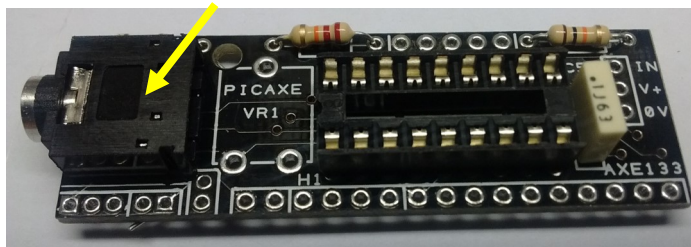
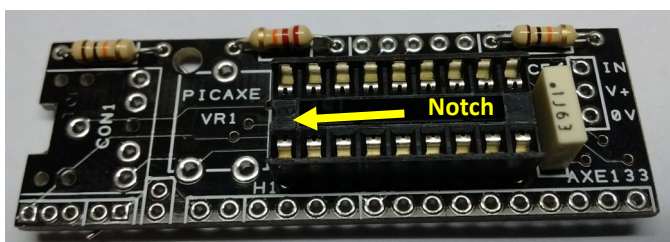


- Solder White 100 nf Capacitor in C1.



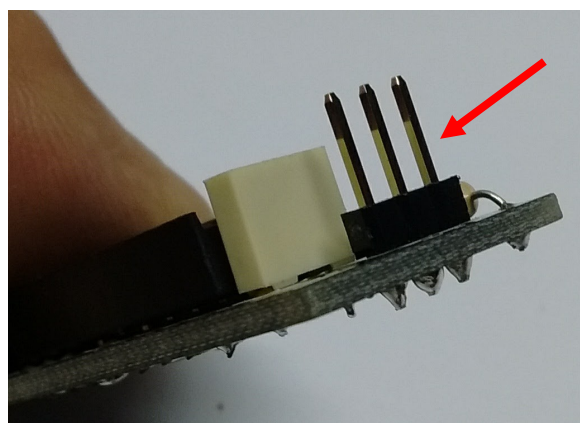
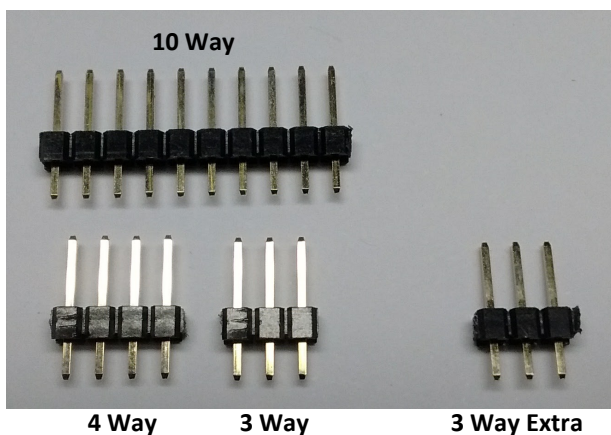
- Solder 18 pin IC Socket in IC1. Ensure the notch is to the left as per Artwork. Hint– Hold in position & bend over the legs to stop it moving, before soldering.

- Fully snap in & solder the 3.5 mm Stereo Socket. Note– The two pairs of pins are connected, so don't worry if the two have solder between them when soldering. **DON'T USE THIS or LEAVE OFF SO YOU DON'T override the 18M chips required program.**

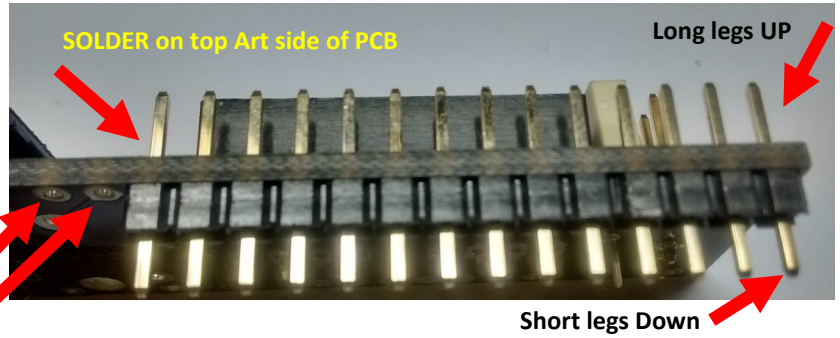


- Snap one only of the 10 way Headers into a 4 way & 3 way section. You will have a 3 way section extra which won't be needed.

- Mount the 3 Way section on the top side into H2. Ensure the long leg side of the header is facing up.



- Fit the 14 way Header (10 + 4 way) into H1. VERY IMPORTANT NOTE- Insert from under neath the PCB to the far right, with the long legs facing up & the small legs facing down. Leave the 2 doughnut pads on the left free. Solder H1 on top Artwork side of PCB.



2 doughnut pads on the left free

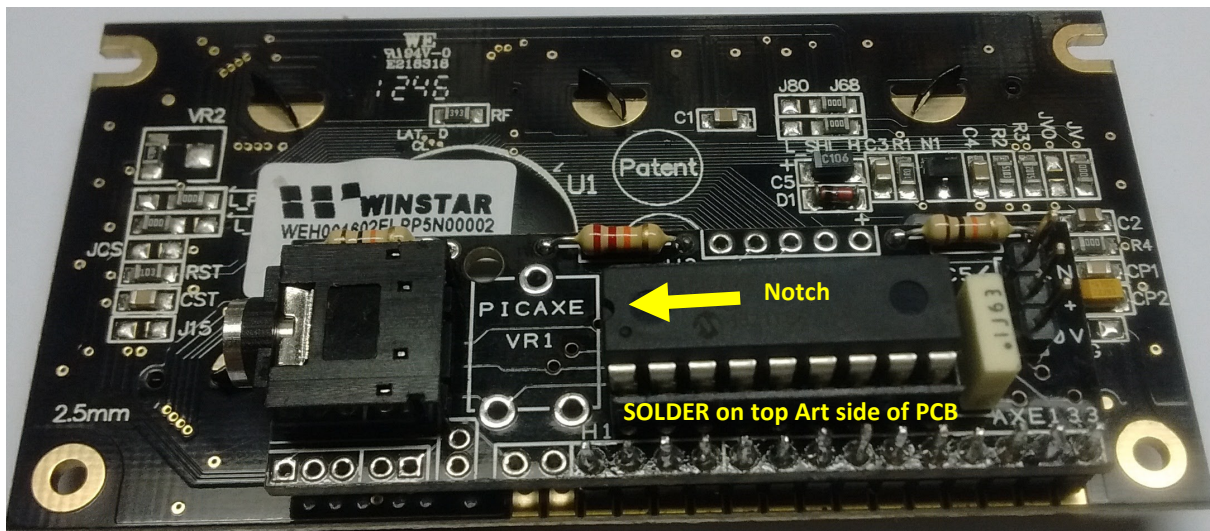
- IMPORTANT-** Double check all the solder joints on the PCB to ensure they are correctly soldered. It is not possible to adjust once the OLED Display has been fitted to the PCB.

- Place the OLED Display onto header H1 and ensure it is parallel to the PCB & solder.

Hint- Solder each end of the 10 & 4 way header first to get parallel then solder the rest.

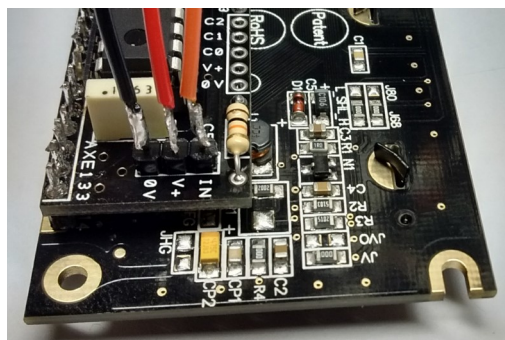


- Carefully insert the 18M2 chip into the IC socket. Ensure that the 1/2 notch is facing to the left, as per the Artwork.



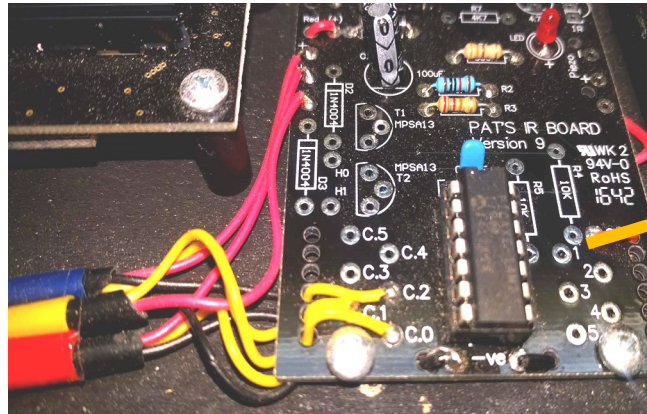
- Solder 3 x 200 mm long coloured wires, as connections to the 3 pin header (H2) on the OLED PCB.

Black to 0V, Red to V+ and Orange to IN.



- **Build Pat's 14M2 Microcontroller as below and connect the 3 coloured wires & battery Pack wires as below. Then attach it, the Battery Pack and the OLED Display with 2.5 mm Metal Threads to your Mounting Plate. Attach any operational Artwork instructions to your Model.**

3 Temp Probes



Orange OLED Signal Wire to Pin 1, Red to +, Black to —

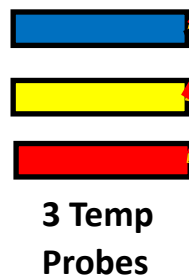
How to Connect to your 14 M2 Mi-

Battery Pack Black Negative

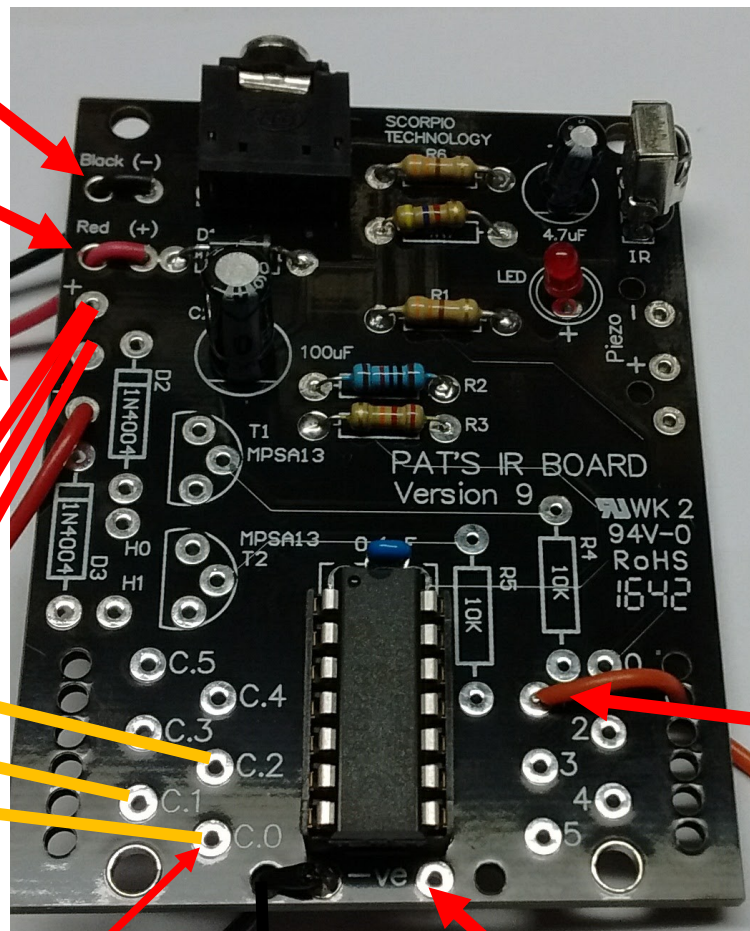
Battery Pack Red Positive

Red OLED wire Positive to (+)

3 Red Probe wires to Positive (+)



3 Temp Probes



Orange OLED Signal Wire to Pin 1

3 Black Probe wires to Negative (—)

Black OLED wire Negative to (—)

Important Note– To get your OLED to display correctly you must put underneath Pat's 14M2 PCB, 3 x 4.7 K pull down resistors. Connect the 4.7 K Resistors between the underneath solder joints of C.0, C.1, C.2 and (+) otherwise the temp values will float (change about)

Note - Insert the download cable from your computer into the 14M2 Microcontroller to Program or Code your model to the desired text, NOT into the pre programmed 18M2 chip on the OLED.

Congratulations on Building & Coding your own Infrared Interactive OLED Display, Well Done!

Below is Pat's code to copy and paste in to the Picaxe Programming Editor, then download to show the Tri Temps on your OLED. Try modifying it for your own application.

```

`14M2-OLED -Pat's Tri-Pool Temperature V3-Pat McMahon modified 6/5/2021
`Uses 3 x DS18B20 Waterproof Digital Temp sensors (EBay)
`Note- OLED connected to pin 1, Temp reading to pin C.0,C.1 & C.2.
`Also you must have 3x 4k7(10K?) Pull Down Resistors
`on the back of Pat's PCB,between + and each of the c.0,c.1,c.2
`Note- You must have 16 characters between "" or fill with spaces if less than 16 letters, 16 is the max.

symbol delay=200
init:pause 500
main:
  readtemp C.1,b1          `Reads the Pool temperature from input C.1
  `debug b1
  pause delay

  readtemp C.0,b2          `Reads the Outside temperature from input C.0
  `debug b2
  pause delay

  readtemp C.2,b3          `Reads the Solar out temperature from input C.2
  `debug b3
  pause delay

  serout 1,N2400,(254,1)   ; Clears OLED display
  pause delay
  serout 1,N2400,(254,128)
  serout 1,N2400,("Pat & Annes ") `Writes Pat & Annes on the 1st line of OLED
  serout 1,N2400,(254,192)
  serout 1,N2400,("Pool Temperature"); Displays Pool Temp on the 2nd line of OLED
  pause 1000

  serout 1,N2400,(254,1)   ; Clears OLED display
  pause delay
  serout 1,N2400,(254,128)
  serout 1,N2400,("Pool Temperature") `Writes Pool Temperature on the 1st line of
OLED
  serout 1,N2400,(254,192)
  serout 1,N2400,("= ",#b1," oC "); Displays Pool Temp on the 2nd line of OLED
  pause 1000

  serout 1,N2400,(254,1)   ; Clears OLED display
  pause delay
  serout 1,N2400,(254,128)
  serout 1,N2400,("Outside Temp ") `Writes Outside Temp on the 1st line of OLED
  serout 1,N2400,(254,192)
  serout 1,N2400,("= ",#b2," oC "); Displays Outside Temp on the 2nd line of
OLED
  pause 1000

  serout 1,N2400,(254,1)   ; Clears OLED display
  pause delay
  serout 1,N2400,(254,128)
  serout 1,N2400,("Solar out Temp ") `Writes Solar out Temp on the 1st line of
OLED
  serout 1,N2400,(254,192)
  serout 1,N2400,("= ",#b3," oC "); Displays Solar out Temp on the 2nd line of
OLED
  pause 1000

  serout 1,N2400,(254,1)   ; Clears OLED display
  pause delay
  serout 1,N2400,(254,128)
  serout 1,N2400,("Enjoy your ") `Writes Enjoy Your on the 1st line of OLED
  serout 1,N2400,(254,192)
  serout 1,N2400,("Swimming! "); Displays Swimming on the 2nd line of OLED
  pause 1000
goto main

```