



# Fox Delta

Amateur Radio Projects & Kits

FD – FoxView

## FoxView: An APRS Stand-Alone LCD Viewer using PIC16F628A & MX614

Completed FoxView:



APRS activities have changed the very basic concept of amateur radio. Radio Amateurs, who hated digital mode, have at least started paying attention to APRS.

After successful results of my APRS Tracker: FoxTrak: built by hundreds of Radio Amateurs Globally, I decided to make this Stand-Alone APRS Viewer to monitor APRS packets.

### Some interesting features of this Project:

- 1) Do not require PC to monitor APRS Packets.
- 2) Large 2 x 40 Char. LCD Display.
- 3) Ideal for portable and automotive use.
- 4) Nothing to adjust once basic configuration is made.
- 5) Backlight may be switched off to save power.
- 6) May be use for Emergency Community Network for messaging.
- 7) Includes a Modem. Only requires DC 12V & Audio from Radio.
- 8) Double Sided quality PCB. Measures only 12x7 cm

Picture of the FoxView: LCD Removed:



Picture of FoxView with some packets received:



Special Note of thanks:

FoxView is based on a firmware by IK3SVW/Max. Please visit his website for more details at: <http://www.ir3ip.net/ik3svw/aprsvw.htm>

## Configuration of FoxView:

Following default setup is already on firmware:

### Set Nomi & Rng:

A) – Originating Call : NOCALL - nessun SSID (0)  
B) – Destination Call : APEWX - nessun SSID (0)  
C) – Destination message : BLN?MAREA  
D) - Nome aprs symble : SISMA  
E) - Mic-E Message : Emergency  
F) - Range Distance : 255Km (0-255Km)  
G) – Permitted Distance : 10Km

### Set Abilitazioni:

1) - "DX" : ON  
2) - "RA2" : OFF  
3) - "Beep" : ON  
4) - "SrcCall" : ON  
5) - "DstCall" : OFF  
6) - "Object" : ON  
7) - "Msg" : ON  
8) - "Mic-E" : ON  
9) - "Displ" : OFF  
10) - "->POS<-" : OFF  
11) - "Rng/Al" : ON  
12) - "FixAlm" : OFF  
13) - "Timer" (sospensione rx) : 15 secondi

Two Push Buttons and Mode DIP Slide Switch is provided for entering basic info for writing in to PIC's EEPROM:

### Functions of the DIP Slide switches:

#### SW1: Timer

Normal Condition: Sets timer on or off for the period entered in configuration

#### SW1: Mode

Normal Condition: "Off" for Display of APRS Packets  
"On" for suspend

Config: "Off" to enter setup  
"ON" to enter setup

## Functions of the Push Buttons:

**S0:** Not used

**S1:** Normal: NA  
Config. Next

**S2:** Normal: NA  
Config: Select menu item

## Procedure to enter user data into PIC16F628A by running configuration:

This is done by switching off the FoxView and then switching on (by removing & applying external power):

There are two user setup menus:

1. "Set Nomi & Rng" and
2. "Set abilitazioni"

### To enter "set Nomi & Rng" menu, do as follows:

Power off Foxview

Set Mode DIP switch to "off"

Keep S2 pressed and apply power, leave S2 upon display turning on.

Now you will see the first item of this menu "DX"

Use S2 to select item coordinates (on or off)

And use S1 to go to next item.

Upon completion of all menu items, FoxView will revert to main screen

### To enter "Set abilitazioni" menu, do as follows:

Power off the FoxView

Set Mode switch (right hand side of SW1) to "ON" position

Keep S2 pressed & apply power

Release S2 when display turn on

Now you are in this menu with first item displayed as "Src Call:"

Select item coordinated by S2 and proceed to next item by S1.

When all items edited, FoxView will revert to main screen.

### **Normal Operating Conditions:**

Keep both Timer & Mode switches (SW1) to “Off” for normal operation of FoxView.

Timer switch may be put “on” or “off” as required to get response of timer as entered in setup.

Putting mode switch to “ON” position will suspend the display of packets.

### **External Placement of S1 & S2 Buttons & Mode/Timer Switches:**

This switches & buttons may be placed on front panel of the case that this FoxView is housed. I have provided these controls on PCB only for the simplicity and ease of operation. In fact, once setup is entered, these controls have no more roles to play.

### **Option to Configure FoxView for DxCluster:**

This may be achieved by following simple modification to FoxView:

1. Replace PIC16F628A with DX\_6 firmware
2. Connect your PC's COM port to J3
3. Run DX\_6 Config program and write user parameters to PIC.

**Note:**

J3, Cable, D9F connector etc are not supplied with FoxView Kit or Assembled units.

## FoxView Component Parts List:

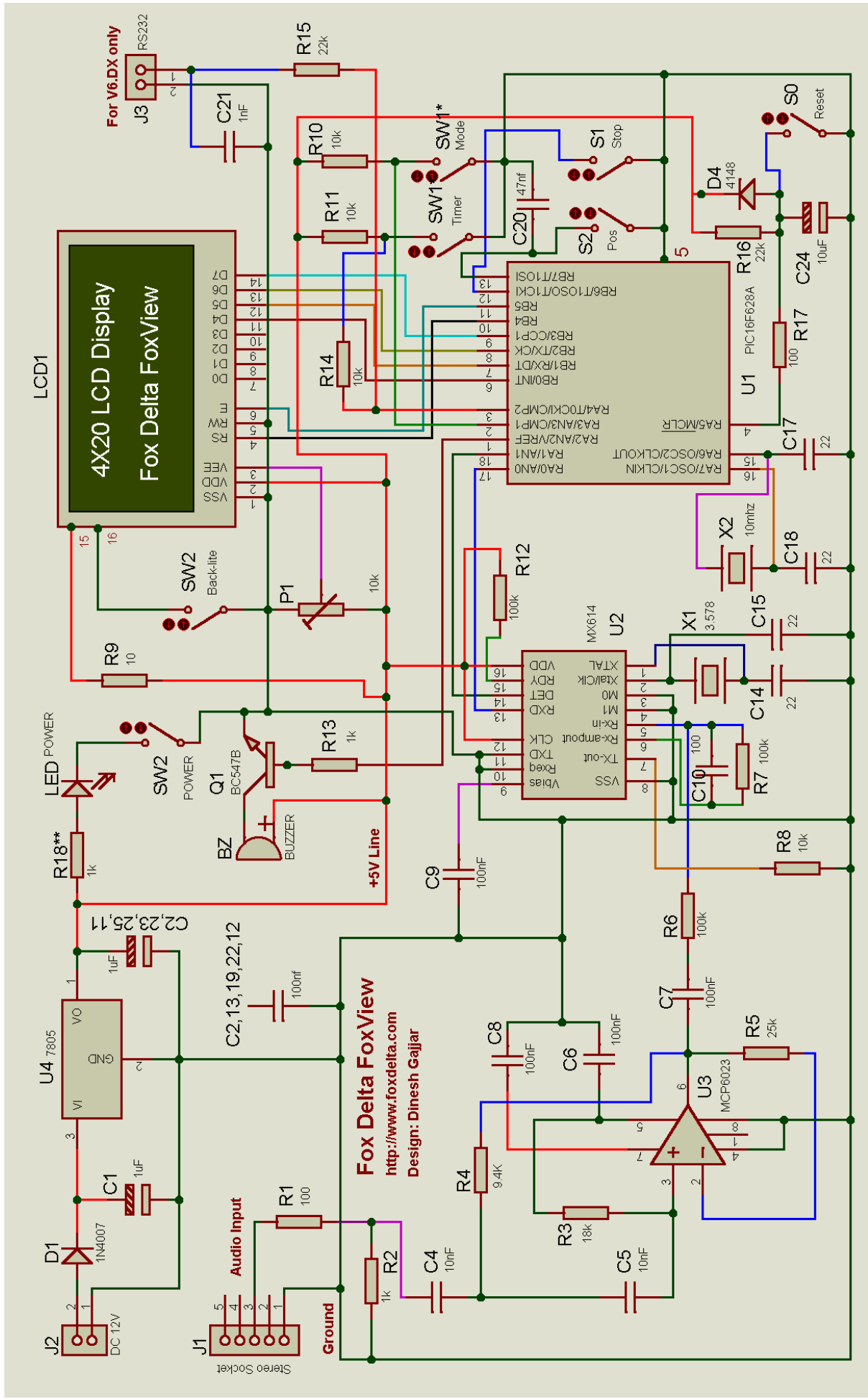
Quantity	Check	Part ID / Details
1		FoxView Double Sided PTH PCB
1		Stereo Connector 3.5MM (J1)
1		DC Connector (J2)
1		1N4148 (D4)
1		1N4007 (D1)
1		PIC16F628A with firmware FoxView.hex
1		MX614DW (Pre-soldered on PCB)
1		MCP6023 (Pre-Soldered on PCB)
1		18PIN IC Socket (For PIC16F628A)
1		7805
6		1uf/35V Tantalum (C1, 2, 11, 23, 25, 24)
8		0.1uf ceramic capacitors (C2,13,19,22,12,8,6,7)
2		0.01uf Ceramic (C4, C5)
1		10uf Tantalum 35V (C24)
1		1000pf Ceramic (C21)
4		22pf ceramic (C14, 15, 17, 18)
1		100pf Ceramic (C10)
1		0,047uf Ceramic (C20)
1		Crystal 10.000MHZ (X2)
1		Crystal 3.578MHZ (X1)
1		Transistor BC547B (Q1)
1		10k Presets (P1)
1		LEDs 3mm
2		2 position DIP Switches (SW1 & SW2)
3		4mm Push Buttons (S0, S1, S2)
1		Buzzer
1		Set of header: 16pin Male/Female for LCD
4		Sets: Nut, Bolt & Plastic Spacers for LCD
1		LCD 4x20 with Back-Light
		<b>Resistors ( 0.5W 5%)</b>
2		4.7k (R4+R4A)
2		15K+10K (R5+R5A)
2		12K+6.8K (R3+R3A)
3		100k (R12, 7, 6)
4		10K (R8, 14, 11, 10)
1		10 ohms (R9)
1		100 ohms (R1)
2		1K (R2, 13, 18)
2		22k (R15, 16)

### Note:

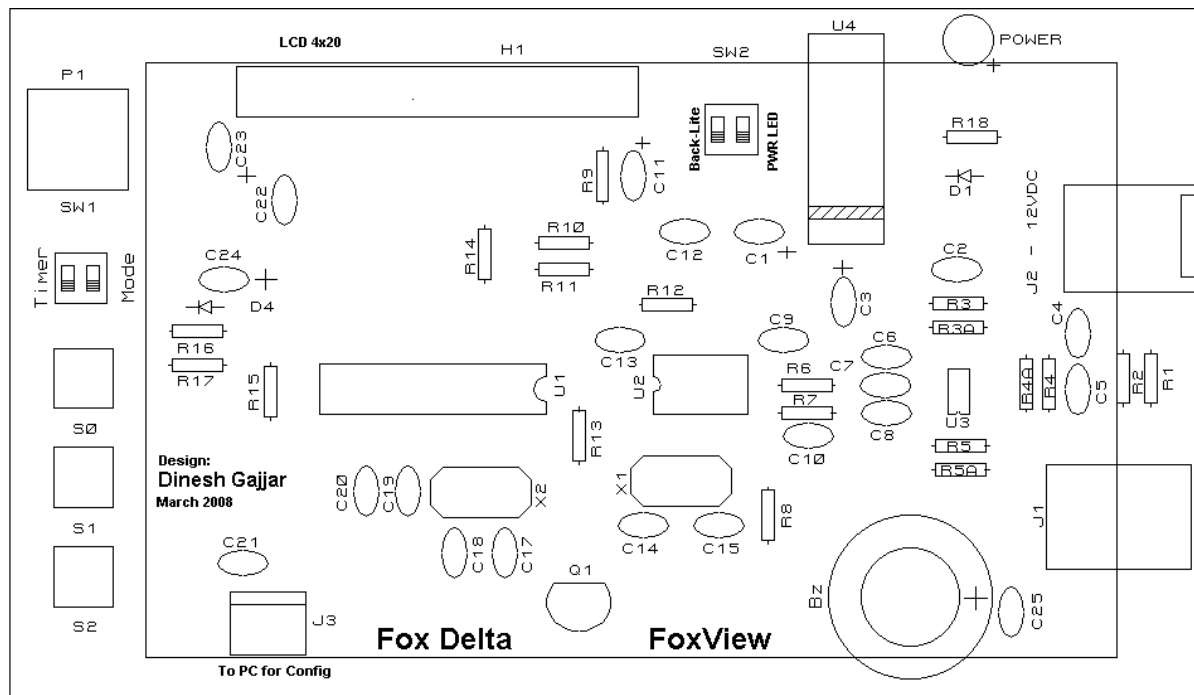
R1 & R2 are audio input resistors. Kit includes above-mentioned values, which were found to be ideal during test.

You may have to increase or decrease these values in a situation where you are giving audio from rig in parallel to a speaker. At any given volume, if you get corrupted packets or no packets at all, change this resistors.

A Preset could be used here to adjust in-coming audio level but in practice, it was found Un-necessary.



## Component Placement:



### Note:

- 1) Observe polarity for buzzer & C25. + Marking is for both of them.
- 2) If you are going to make a box for this project, you may mount SW1/2 and S0-S2 under the PCB to get access from the backside of the box with appropriate openings.
- 3) If you wish to use backlight all the time, you may need (recommended) a heat sink for U4.
- 4) If you have purchased (or wish to add yourself) **PIC16F628A with DX Cluster Firmware V6\_DX**, you will require making a FoxView to PC cable. Please buy a D9F connector and Prepare a cable using supplied 2pin Female connector with wires. Connect this cable between J3 and COM port of your PC and run Configuration Program provided.

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5<sup>th</sup> April 2008

Please visit project page at: <http://www.foxdelta.com>