Fox Delta

Amateur Radio Projects & Kits

FD- PM2

Technical Details & Assembly Note: 2X20 LCD PIC16F876A RF Power Meter

Completed PIC16F876A LCD 500MHZ RF Power Meter: Dual Channel

Project Details:

After success of PM1 LCD RF Power Meter Kits, which were sold globally, I decided to remove some of the hitches I had in preparing kits.

The First trouble was rotary encoder, which I had to import.

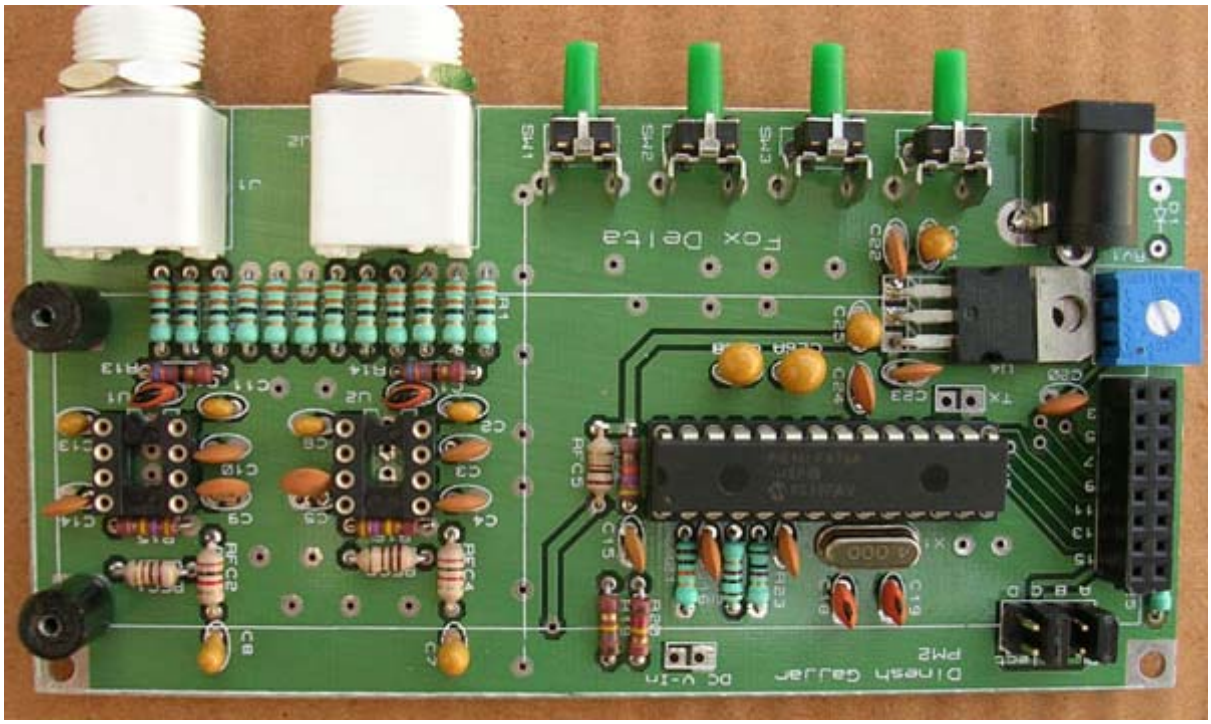
The second, there was a suggestion from some radio amateurs that, instead of separate sensor board, sensors should be integrated and to use DIP8 packages for AD8307s.

2x20 LCDs are available with or without Back Light. There is practically no price difference between two types. I will be supplying only with BL. 2x20 displays also come with reverse BL connections. I have added a selection header for this purpose.

I have replaced rotary encoder and now we have two push buttons to control the functions. Very cost effective & simple to use. 4 Pushbuttons are right angle type and if you decide to house this meter in a case, they have necessary length to come out of the case.

If you wish to use rotary encoder, nothing is lost in this kit. Just buy a rotary encoder from Digikey or Mouser and you have three connections ready to install it.

Picture of the LCD Power Meter with LCD removed:



I do not supply AD8307 with this kit for simple reasons. First, they are bit expensive and second, not everybody may require two channels for RF measurement. Moreover, most hams may register with Analog Devices & obtain AD8307 as Samples.

If you want to build this RF Power Meter using only my PCB, you will require a PIC Programmer to write firmware into PIC16F876A. If you do not have a PIC Programmer, you may find one detailed elsewhere on this site.

Kits are supplied with pre-programmed PIC16F876A

Conclusion:

Unless you have good set of test & measurement instruments, it wont be possible develop almost any project with present class of designs & components.

I hope this project info & PCB resources will be useful to many radio amateurs.

Schematic of the LCD PIC16F876A RF Power Meter:

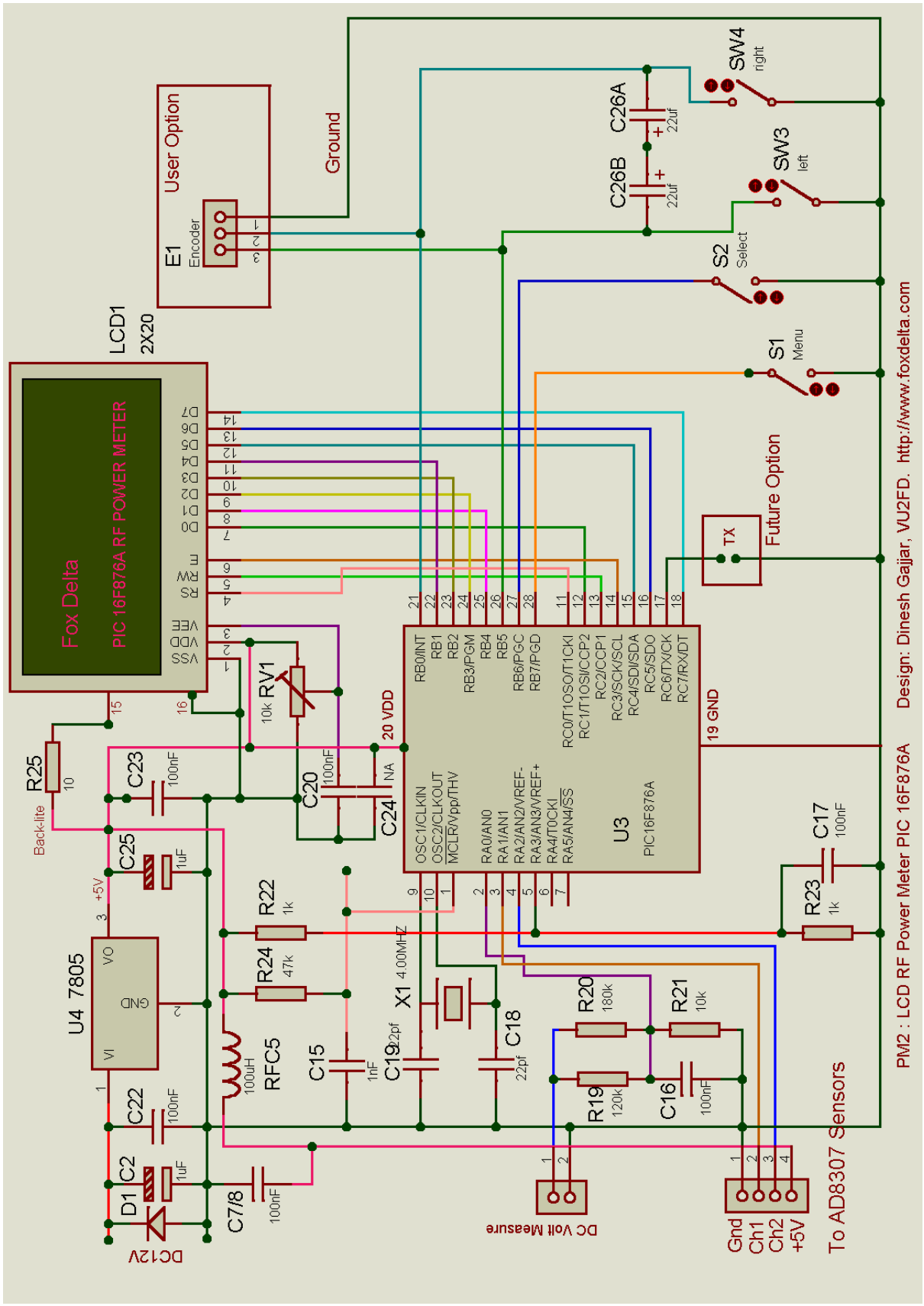


Table showing current consumption of the Kit with 12VDC applied:

Sr.	Check Point	ma
1	No LCD, No PIC, No AD8307s. (Only 7805)	6.5 to 7ma
2	With PIC16F876A installed (No LCD, No AD8307s)	8 to 9ma
3	With PIC + One AD8307 & No LCD	15.5 to 16ma
4	With PIC + One AD8307 + LCD (Without B/L)	17 to 17.5ma
5	With PIC +Two AD8307 + LCD (Without B/L)	23.5 to 25ma
6	With PIC + Two AD8307 + LCD with B/L (B/L Resistor 22 ohms)	97 to 102ma

Note:

1. **If prolonged measurement usage is required with both AD8307 & having B/L, it would be wise to include a small heat sink on 7805**
2. **To disable LCD B/L for portable or battery operated use; remove one of the Shorting Pin from "BL Select" header.**
3. **If consumption is observed to be over the given range, check possible shorts, tantalum capacitors and carry out measurement with above steps to verify location of over consumption**

73s

Dinesh Gajjar/VU2FD Updated: 14th Feb. 07

For more details, please visit Project Page: http://www.foxdelta.com