



Technical Details & Assembly Note: 35MHZ LCD PIC16F84A Frequency Counter

Introduction:

Frequency counter is a very important test instrument for Radio Amateurs, especially those who wish to develop or test circuits. There are lots of frequency counters in the market but building one was never so easy & exciting with Microprocessors doing lots of work for us.

This Frequency counter Project is based on PIC16F84A Microprocessor chip manufactured by [Microchip](#) and software provided by amateurs to help understand PIC programming.

I made this project on a single PCB for the reasons that my idea of a counter was to make it a portable and independent of bench supply. (Because I already have a bench frequency counter) In this counter, we have possibility to supply external 12V or have a 9V internal battery.

Two RF inputs are available, switched by a push switch to select "Direct" or "Pre-Scale" Which gives you selection of either Low VHF (to 35MHZ) or VHF/UHF measurement ranges. (With Presale components installed)

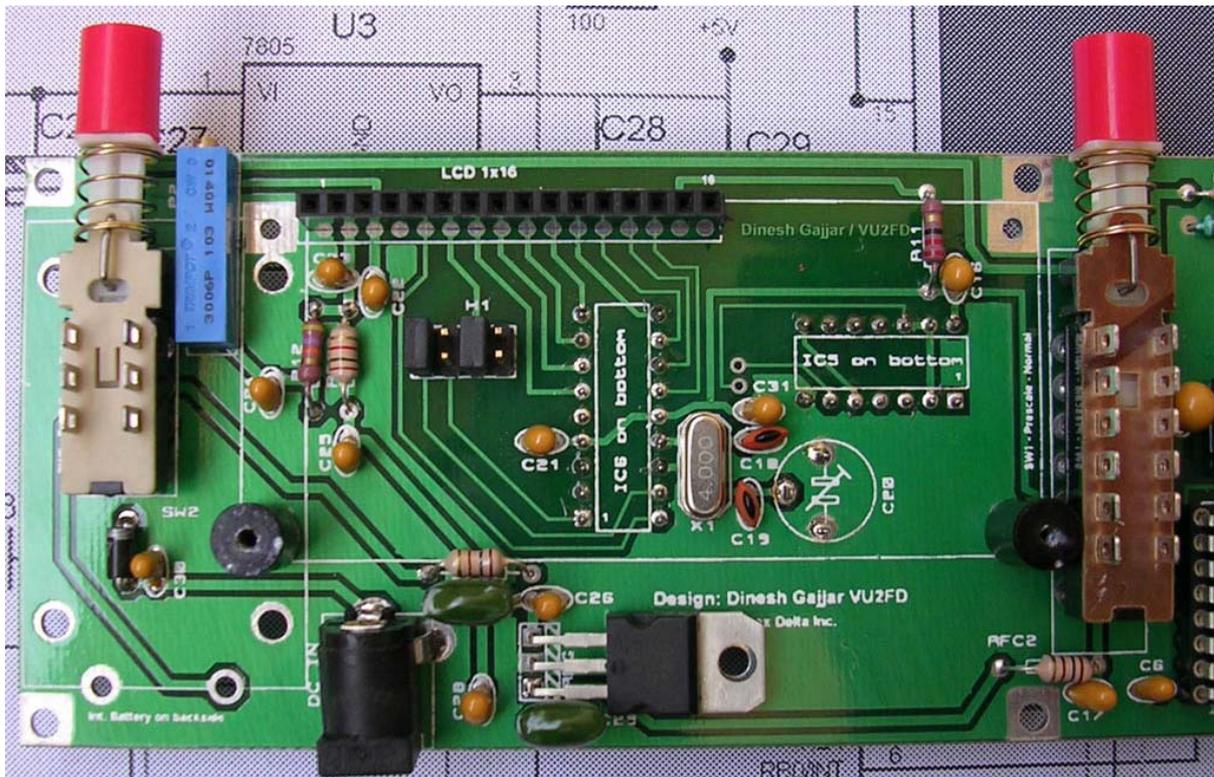
Counter software is auto-ranging and drives a 16x1/2 LCD. Counter is designed on a 6 X 19cm PTH Double Sided PCB. I could make this board much smaller but I preferred this size, keeping in mind first time kit builders.

All kits are supplied with all components pre-soldered & perhaps all you will require to do (Kit Building!!) will be to install LCD module on header, if it is not supplied fitted already!!.

At moment, due to difficulties in obtaining pre-scale chip, I am not in a position to supply 3.5GHZ kits. This option will be available soon. However, you may complete pre-scale section yourself by just buying & soldering parts involved. A schematic of Pre-scale section is given for this purpose.

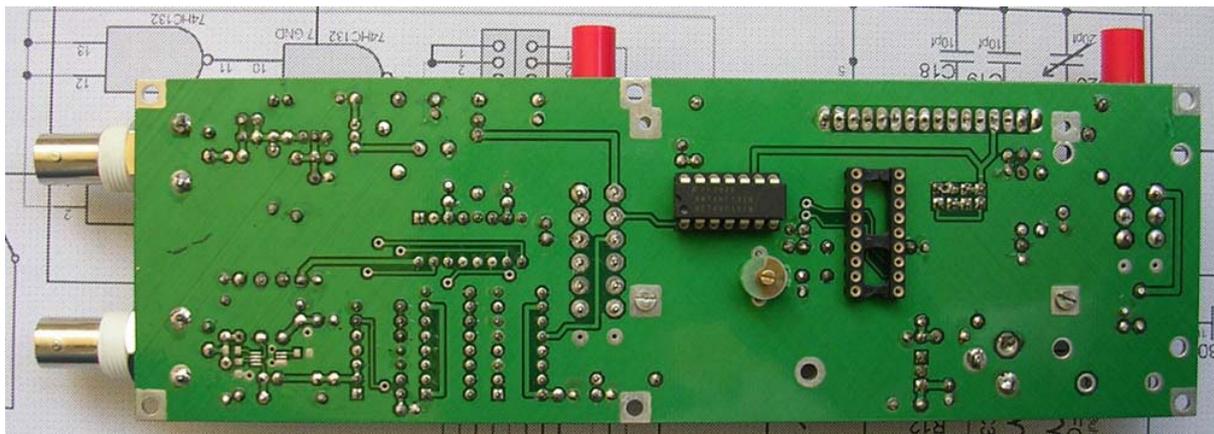
This documents provides schematics & completed pictures of the Frequency Counter.

Frequency counter Top View with LCD module removed:



Two main chips of counter circuit, PIC16F84A & 74HC132 are fitted on the other side of the board. H1 header is visible below LCD header, which is used to select two types of HEX files. Please note that for FC1 components are as detailed in related schematic & may differ from above picture. (Some excessive/un—necessary parts removed)

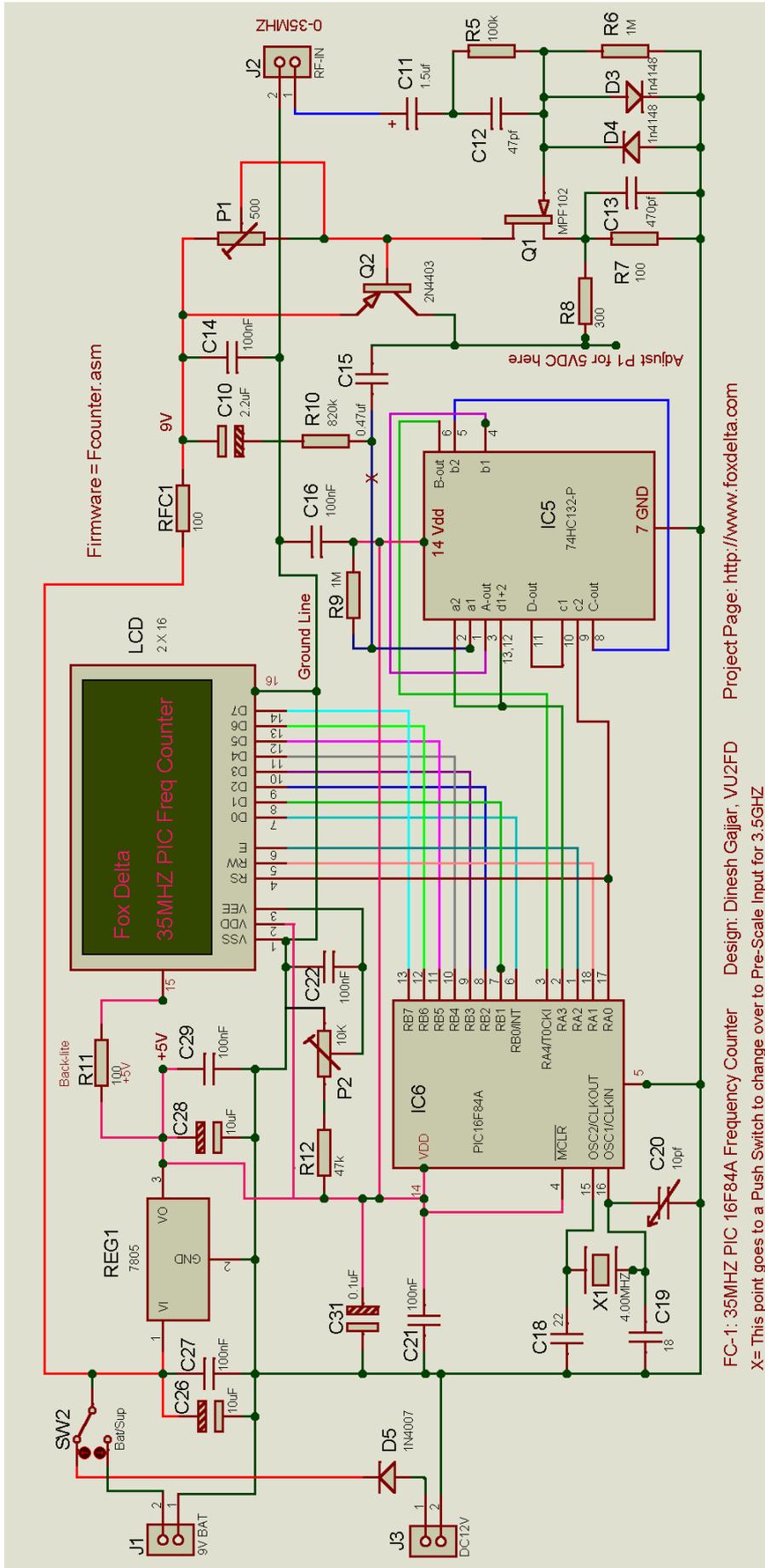
Picture of Frequency Counter – Back Side, where PIC16F84A is installed:



In above picture, PIC16F84A and Pre-scale IC, which is a SMT device, are not fitted.

Four holes on the right hand side, below red push button switch are for 9V battery holder, when internal supply is used.

Schematic of the 35MHz PIC 16F84A LCD Frequency Counter:



Some Design Notes:

Frequency counter is designed on a single PCB of size 6cm X 19cm Double Sided PTH.

If you do not like low frequency input circuit but want a TTL level input, you may place a jumper between J3 and C15, and do not install all the components of 50MHZ input amplifier.

Software:

HEX file is available for download in case you will require re-programming PIC later. If you are an amateur & want your call sign to display on LCD, please send me your call sign & I will program PIC with new hex & also will send you this new hex with kit.

Picture of Personalize message at start-up:



Skill Level:

Like all other kits listed on this website, this kit is for radio amateurs and especially those who fully understand the supplied schematic for counter, pre-scale circuit and who is fully competent to program PIC micro controllers.

At present I will supply this 35MHZ, {Pre-scaler less} PIC Frequency Counter in fully assembled & tested condition.

I hope, now radio amateurs should not have any excuse of not having a frequency counter, which always cost a lot.

Regards/Dinesh Gajjar

For more details on this project, Updates and details on other kits available for Radio Amateurs, please visit <http://www.foxdelta.com>