



**Fox Delta**

Amateur Radio Projects & Kits

FC4 - 0614

**FC4 Project Info: PIC18F2550 50 / 500MHZ Frequency Counter & RF Meter**

**For USB/PC or "INFINITY" GCPU**

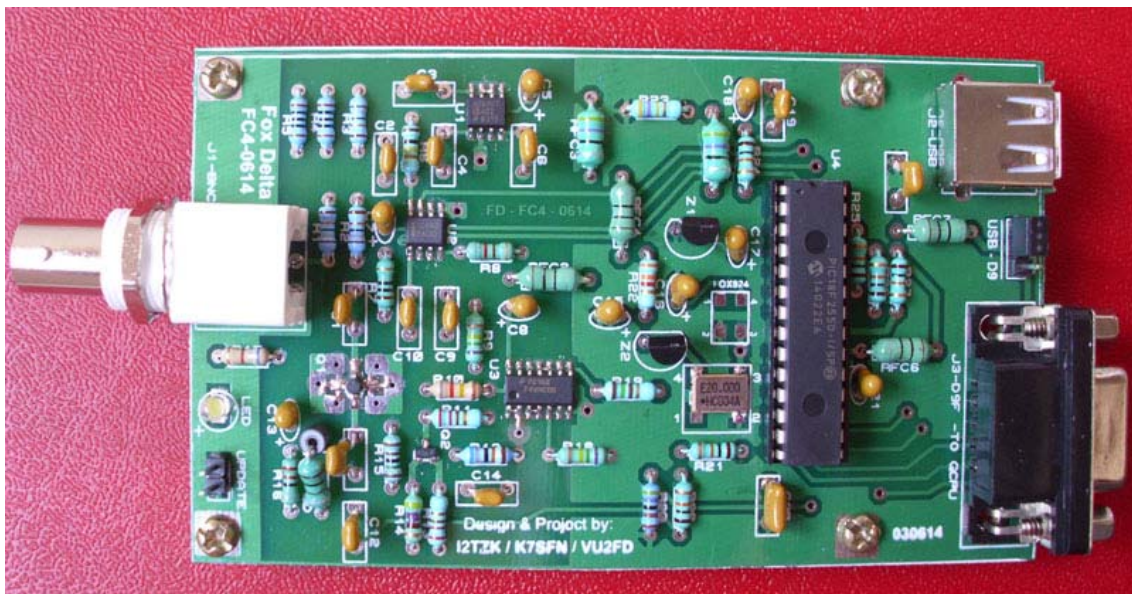
**This project is developed for Amateur Radio Community by:**

[Antonio Alfinito / I2TZK](#)

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[Frank Dzurda / K7SFN](#)

**Completed FC4-0614 50/500MHZ Frequency Counter and RF Meter:**



**FC4-0614 in a metal case:**



**A free powder coated metal case is supplied with FC4 kits**

#### FC4: Interesting features of this project:

1. USB or GCPU Powered
2. Use with PC with Free Win7 Program or as a Stand alone with GCPU
3. Measures RF Level using Analog Device Log amplifier AD8307
3. Count frequency to 50MHZ / 500MHZ (HF or VHF Select)
4. Signal Level measurement in dbm, vpp and rms
5. 50 ohms input impedance
6. Free PIC Firmware & PC WIN Software by [Tony/I2TZK](#)  
[FC4 is an "INFINITY" project add-on.](#)

Designed on a Double Sided PTH Board with same size as AAZ or SWM4, FC4 is an USB powered device. It is powered by GCPU when connected to it for standalone measurement purpose.

FC4 is designed and developed for Radio Amateurs looking for economical frequency counter for their hobby work and wish to measure RF signal Level at the same time.

#### Two suitable interfaces are available:

1. PC (USB)
2. [Graphic CPU](#) (D9F)

If you own a GCPU, you may simply update GCPU PIC firmware thru bootloader and start using FC4 for RF Measurement of power and Frequency.

#### GCPU Measurement View:



FC4 measures Frequency and RF Level at the same time.

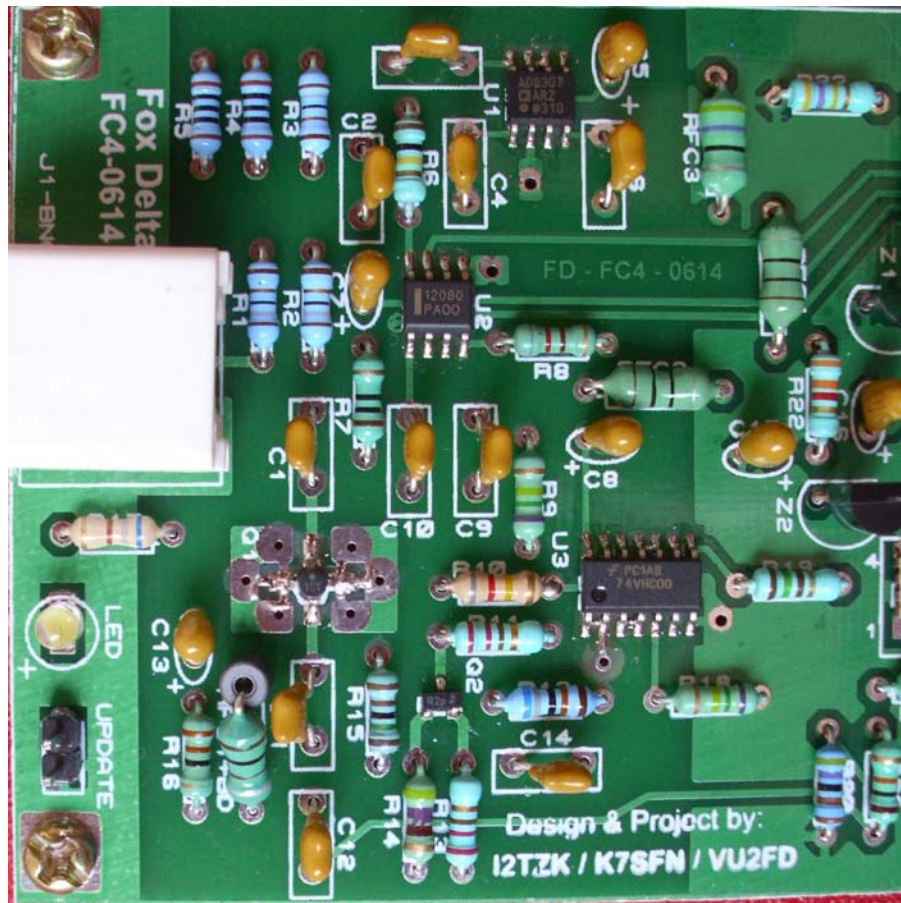
## FC4 PC Screen View:



## Hardware:

FC4 Complete KIT includes AD8307, ERA3SM/SGA3486, 20MHZ OSC, 74VHC00 and MC12080 in SMT package. Kit is available with either pre-soldered SMT parts on PCB or with SMT parts as components.

## FC4 Front-end design:

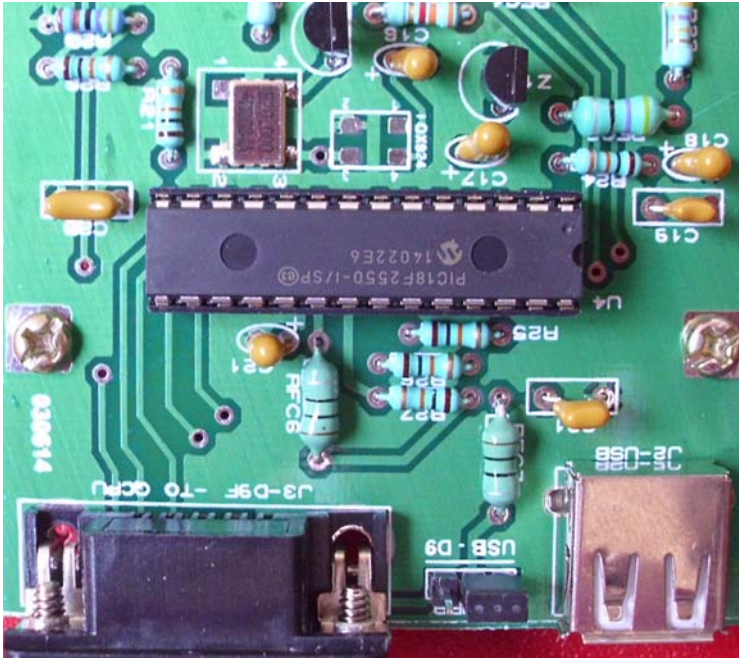


5 SMT parts visible in above picture are usually supplied pre-soldered for kits. If you like to solder them yourself, look for available option at the time of purchase



## TCXO OPTION:

If you are looking for more accurate time base, an option to use Fox924 type SMT 20MHZ TCXO is available on PCB.



Buy a FOX 924 type SMT Oscillator and install at location marked "FOX924"

If that is done, remove standard 20MHZ Oscillator marked as "5X7"

You may buy TCXO from [Mouser](#), [Digikey](#) or Farnell for about \$5 - 8. Specific type suitable for FC4 is: Fox912 Oscillators with Freq: 20MHZ

## FC4-0614 Parts List:

Quantity	Part ID	Details
1	U4	PIC18F2550 DIP28
1	PCB	FD-FC4-0314
1	IC Socket	28 PIN DIP
1	U1	AD8307 SO8
1	Z1	LM385-2.5V
1	U2	MC12080 SO8
1	U3	74VHC00 SO14
1	Q1	ERA-3SM / SGA3486
1	Q2	BFR93A
1	OSC	Oscillator 20MHZ
1	LED	3mm
1	RFC1+BD	82-100uH+Ferrite Bead
3	RFC4, 7, 6,	10uH
3	RFC2, 3, 5,	33-47uH
1	Z2	LP2950/3.3V
1	J1	BNC R/A Connector
1	J2	USB Connector
1	J3	D9F
1	Case	Free powder coated metal case.
1	Set	Headers 3PIN X1, 2PINX1

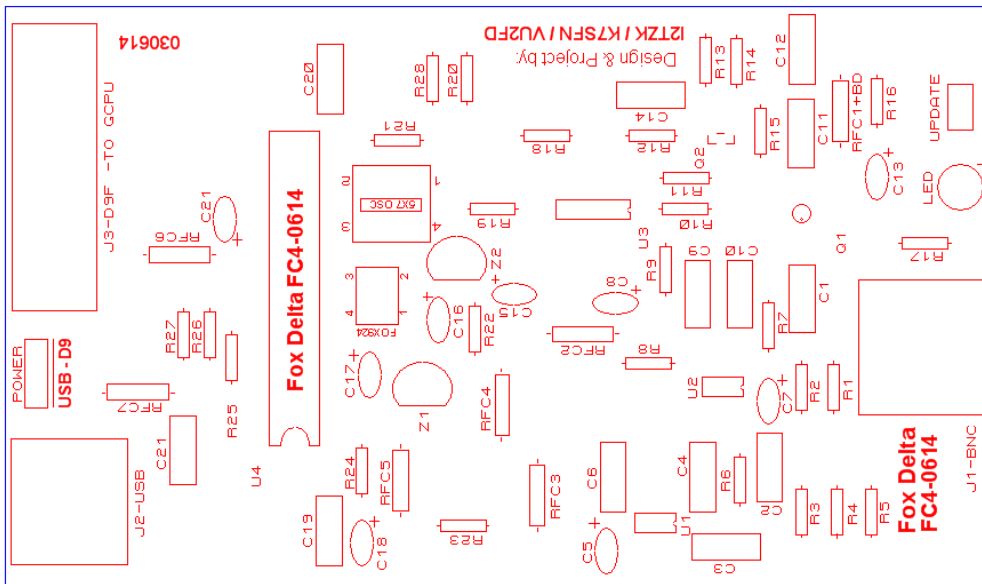
**Capacitors:**

Quantity	Part ID	Details
9	C1, 3, 4, 11, 14, 10, 2, 9, 19	0.01uF Ploy
3	C12, 8, 21	0.1uF Ploy
8	C13, 7, 5, 8, 15, 16, 18, 21	1uF Tantalum
1	C17	10uF Tantalum
1	C20	0.47uf

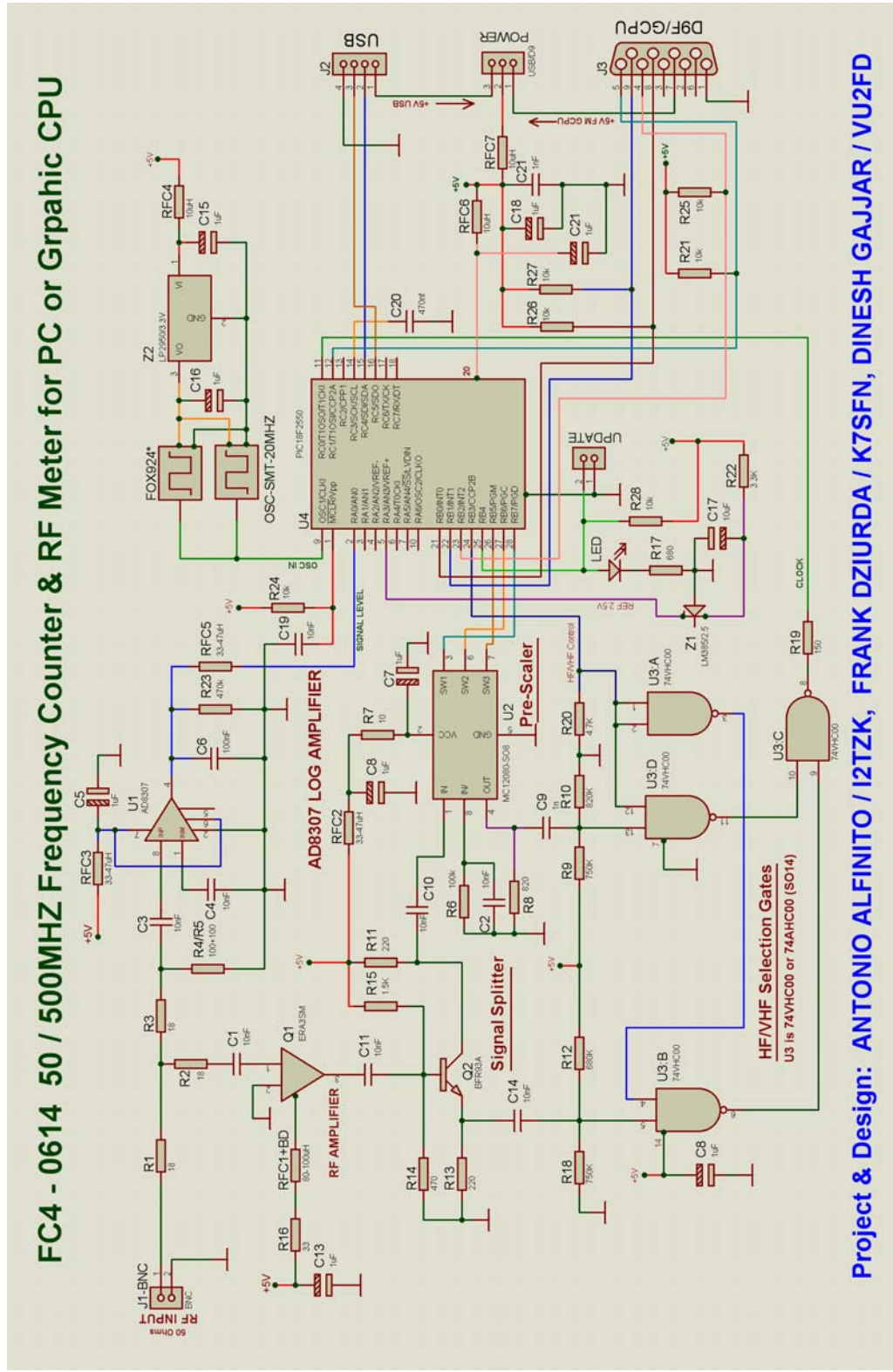
**Resistors: All 1/4W**

Quantity	Part ID	Details
3	R1, 2, 3	18 ohms
2	R4, 5	100 ohms
1	R7	10 ohms
1	R8	820 ohms
2	R9, 18	750K
1	R10	820K
1	R12	680K
2	R13, 11	220 ohms
1	R14	470 ohms
1	R15	1.5K
1	R16	33 ohms
1	R19	150 ohms
1	R17	680 ohms
1	R20	4.7K
5	R21, 24, 25, 26, 27	10K
1	R23	470K
1	R22	3.3K

**FC4-0614 PCB TOP SIDE SILK:**



FC4- 0614 Schematic:



Project & Design: ANTONIO ALFINITO / I2TZK, FRANK DZIURDA / K7SFN, FRANK DZIURDA / K7SFN, DINESH GAJJAR / VU2FD

73s  
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For more details on this project please visit <http://www.foxdelta.com>