

Freeky Wobulator

alpha-doc-2020-May-18-001 2020-05-18c

Freeky Wobulator Buttons

Button	Push	Hold 3 seconds
Mode	Change mode FreqA,FreqB..VcoAB,FreqA	Save Setting to EE for power up
Select	Select one of four lines Move down A,B,+,-,A	Copy other Freq or Time to Active Freq / Line.
Trigger	Change Trigger On,Off,Rising,Falling edges	Swap on off times
Left	Move active digit left	Increase value by 10%
Right	Move active digit right	Decrease value by 10%
Zero	Zero digits to right of active digit	Lower value by 50%

Freeky Wobulator

Description

The Freeky Wobulator is a test equipment kit you can build to do a variety of interesting things. Did you ever try to build a speaker box? If so, how do you measure its performance? With the Freeky you can determine its frequency response. See if it actually does what it was supposed to do. In fact you can test your entire system with the square wave function of Freeky. Are you into ham radio? You can use the Freeky to sweep out the performance of that mass of wires you put up calling it your “Antenna.” Tuned circuits are a snap to measure with the Freeky’s programmable sweep frequency range and sweep rates. Your oscilloscope will show you exactly what the circuit is doing.. The 2-tone mode of Freeky can show you how well your SSB transmitter and amplifier are performing. For the engineering folks, this little device can lead you to understanding the performance of digital signal processing (DSP) , and OP-amp filters. Radio alignment becomes a snap with the ability to sweep out IF bandpass or just use Freeky as an RF signal generator to do a simple alignment. A VCO function allows you to control Freeky from your own voltage source and play with frequency modulation (FM) experiments. Not into all that engineering stuff? Freeky can be a lot of fun too. Ever wonder how good your ears actually are? Freeky will tell you. Have some musical instruments that need tuning? Freeky can do that too. Still too technical? Then Freeky will give you some moderate kit building experience and give you a little box that can make all kinds of weird sounds. Great for Halloween displays, or Sc-Fi sounds for your next U-Tube video. Your homework for tonight: Look up what a Wobulator is

The kit

The Freeky Wobulator kit is a mid level kit that features a preprogrammed ATmega 328P chip driving a direct digital synthesis (DDS) module containing AD9850 chip. A Nokia LCD display provides the user interface. The functions are all menu-driven and frequencies, modes, sweep rates are simply selected using the 6 push button interface You can’t break this device by pushing the wrong buttons! The kit is supplied with sockets for the ATmega and modules All handy components mount on the thru-hole PC board, including the BNC output connector. Standard banana connectors are used for other I/O’s. Modules containing surface mount components are supplied pre-built. All parts included except for the box (optional) and 5 volt power supply (optional).

Specifications:

Freeky Wobulator

Signal sources: 2 independent sine wave signal generators + a square wave output

Frequency range: 1Hz to 42 MHz; Square wave 1 Hz to 1.0 MHz.

Sweep rate: Variable from 1 to 10 Seconds

Output: Sine wave, adjustable from 0 to 2.5 V P-P

Square wave 5.0 VP-P

Sync/Gate output for oscilloscope: 5V positive going logic

VCO input: 0-5 volts

External trigger: 5V 1 millisecond pulse or greater edge triggered

Power source: 5 VDC (USB) power @ 100mA (Typically 80 mA)

User Interface: 84 X 48 LCD display
6 push buttons for user inputs

Inputs/Outputs: Power input jack
BNC sine wave output
Banana jacks:
VCO input
External Trigger input
Scope trigger output
Square wave output

Operation:

Freeky Wobulator comes to life in the “Sweep AB” mode. It defaults to frequencies 1,000 Hz for A, and 2,000 Hz for B. An explanation of the buttons follows.

Mode (M) button will cause stepping through the modes of operation. One press will change to “Sweep BA” mode. Press again and mode “FSK A:B” will be displayed. Another press changes the display to “FSK B:A.”. Next is the “VCO AB” mode, followed by “VCO BA”. One more press puts Freeky into “Freq A” mode, and lastly, “Freq B” mode.

Select (S) button causes the cursor to move down one line on the display. Continued pressing will cause stepping down the display lines.

Left (L) and Right (R) buttons cause the cursor to move left and right one place on the display. Cursor defaults to the least significant digit (Right-most digit).

Zero (Z) button causes the values to the right of the cursor selected digit to zero.

Trigger (T) button shifts Freeky into the trigger modes. One press and the display reports “Output Off”. Another press and the display reports “t=0”, waiting for a positive trigger pulse to trigger one sweep of the selected mode. To exit trigger mode, press Trigger (T) again.

The “Control” knob controls the frequency of the generator selected on the display (A or B), and it also controls the “Duty Cycle” if that line is selected on the display.

The display has a number of functions. They are;

Freeky Wobulator

Freq A is the frequency of generator A

Freq B is the frequency of generator B.

+ is the sweep "on" time (duty cycle)

- is the sweep "off" time (duty cycle)

Duty Cycle is the duty cycle that has been selected

VCO voltage is a display of the VCO input voltage