

Direct Digital Synthesis (DDS) Function Generator User Manual



Note: The author of this user manual is neither manufacturer nor distributor of these devices, and is not in any way affiliated with nor in contact with the manufacturers of these devices. This guide is made to benefit the author's loved ones. It is intended for educational use only, not as medical treatment.

1. Power supply

DC4-9V, DC5V is recommended when using the adapter, a 3.7V lithium battery is recommended when using battery power.

Suggested use for **portability** / **travelability** is to get a 9V rechargeable battery (pictured below)



And plug the battery directly into the DDS Frequency Generator. Make sure you get the right size plug / pin for the power supply. Examples are shown in the picture below:

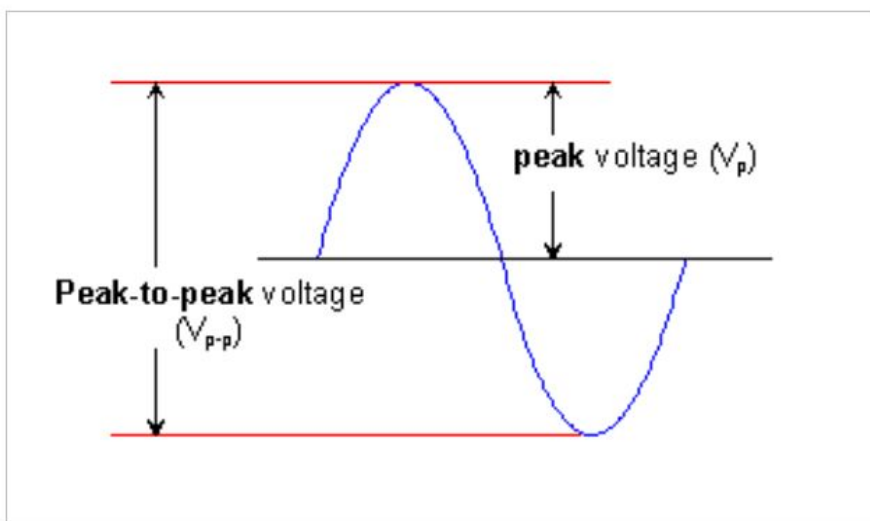


If you're using at home, for example putting on your desk while you work or letting it run by the foot of your bed overnight, then you can plug it into a phone charger that plugs into the "mains", the electrical wall socket.

When using a phone charger to power the DDS Generator from the main wall socket, Make sure that it's 5V 2A or 9V 2A.

Do not exceed a 9 volt power supply.

Current is 180mA at 5V voltage. Output amplitude: Maximum 10V (P-P or Peak-to-Peak, see diagram below).



2. Output waveforms

sine wave, square wave, triangle wave, forward sawtooth wave, reverse sawtooth wave, ECG wave, exponential rise, exponential fall, Lorentz pulse, Gaussian pulse, Sinc pulse, half wave, full wave, Schumann wave, noise wave, and more.

15 types of waveforms in total.

3. Frequency range

Sine wave 0.01Hz - 500.00kHz (with further increase in frequency, the output amplitude will decrease), other waveforms 0.01Hz - 100.00kHz (but does not limit the upper limit of the adjustable frequency, if the “distortion and jitter requirements”* are not high, the frequency use can be further increased).

Sinusoidal distortion: Less than 1% below 1kHz, Less than 0.5% above 1kHz.

*This was translated from an online listing. I don't know what exactly this means, whether it's the noise or distortion.

Resolution is 0.01Hz, the increments which you can adjust to the nearest second decimal place.

Output impedance: 50 ohms.

DC offset: maximum 10V, with shutdown function.

There are filters that can be enabled and disabled, can be adapted to sinusoidal and pulse outputs.

What is the “FILTER”?

It is likely a basic **low-pass (or smoothing) filter** applied after the DDS output, to clean up or smooth the waveform, especially for sine outputs or to suppress harmonics. In other words:

- When **FILTER = ON**, the generator may route the raw DDS output through a smoothing filter (analog low-pass) to reduce high-frequency spurious components, noise, and spectral “jitter” or switching artifacts of the DDS.

- When **FILTER = OFF**, the output is likely more “raw” — with sharper edges, more high-frequency content, possibly more aliasing or spurs.

So the “FILTER” button is probably toggling **filtering of the output signal** (turning a smoothing or anti-alias / reconstruction filter stage in or out).

This is useful because:

- For **sine waves**, turning the filter on may produce a cleaner, more “pure” sine by suppressing DDS-generated harmonics.
- For **square or pulse waves**, you might want to turn the filter off so that the edges remain sharp (less distortion of the waveform’s harmonics).
- It gives flexibility depending on whether you want spectral purity vs. waveform fidelity.

So, in short: the FILTER switch probably inserts/removes an analog filter in the signal path to smooth the waveform (reducing unwanted high-frequency harmonics or “noise” from the DDS).

4. Buttons



- **Power:** When depressed (pushed in), it's on.
- **Mode:** Press this once to switch wave form. Keep pressing to switch through the 15 wave forms it can generate.
- **Cursor:** Press this once to shift the cursor one spot to the left. If you press the Cursor button and nothing happens, that means the device is running (you cannot adjust the frequency while it is running). Press the Run/Stop button then press the Cursor button and you'll see the cursor move.
- **+ / -:** These move the number up or down. Does not round the corner, i.e. from 8 to 9 to 0 to 1.
- **Run / Stop:** This starts generating the frequency you have entered.
- **Filter:** When depressed (pushed in), it's on. This smooths out the wave form.
- **DC Offset:** When depressed (pushed in), it's on. Use only in square wave mode with minimum 50% duty cycle, 90% is best, to kill parasites and pathogens.

- **Amp:** Turn the knob counter-clockwise (East - North - West) to turn down amperage.
Turn clockwise to increase amperage