

HOW TO USE and ENJOY YOUR NEW...

# *gtendel* DRONE COMMANDER

Made by

**Rare Waves** LLC

Austin, Texas, USA

GDC Operator Instructions v2 © 2012

## ANALOG DRONE SYNTH

With a total of 9 knobs, the Drone Commander offers two manually-tuned oscillators and two LFOs, plus an unusually colorful and nasty filter.

Six of the Drone Commander's nine knobs double as push-pull switches to control signal routing and waveform selection.

LF01 is an analog variable-shape oscillator, and LF02 is a pulse waveform that auto-synchronizes to LF01 at a ratio of 2x, 4x, 8x, or 16x.

Both LFOs can be routed to the filter for rhythmic patterns. A line-level output jack is provided for connection to amplifiers or effects.

## GENERAL SUGGESTIONS

Let the DRONE COMMANDER provide a backing chord for your musical improvisations.

Blast the atmosphere with penetrating BASS FREQUENCIES.

Connect EFFECT PEDALS such as Phaser, Delay, and Chorus to deepen the drone effect.

Relax with HARMONIOUS DRONES and BUBBLING SOUNDSCAPES.

## REMOVING THE LID

Unclasp the lid and swing it out to fully open position. Grab the lid with your left hand, and the body of the instrument with your right hand.

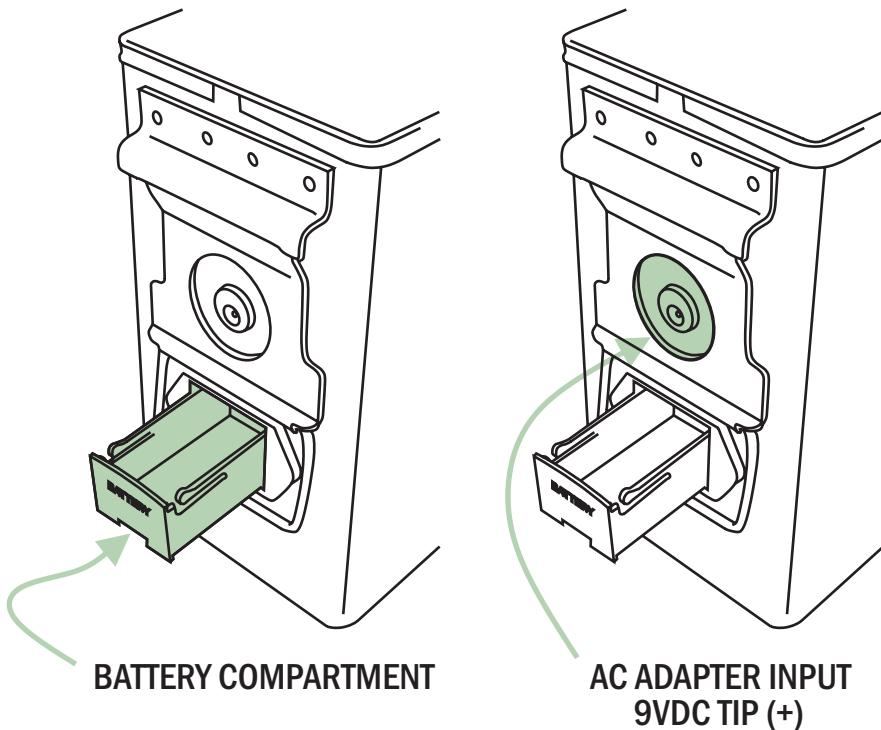
Pull the lid towards you, and push the other half away from you. The hinges in the lid will slide apart.

## APPLYING POWER

The Drone Commander operates on 9VDC from either a standard 9V battery or AC adapter.

The included AC adapter provides 9VDC, center positive 2.1mm connection. Protection against reverse-polarity is built-in.

When battery is installed, unit will automatically change over to AC power when adapter is connected.

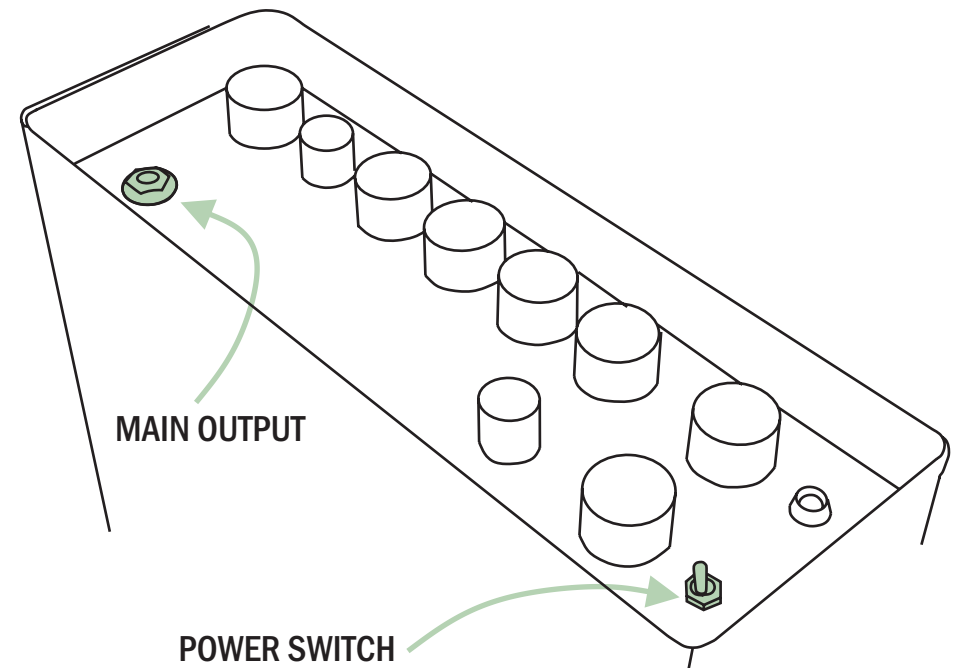


## TO CONNECT

Use a 1/4" audio cable such as a guitar lead to connect the main output of the Drone Commander to an amplifier.

Effect pedals or other audio processing can be connected between the Drone Commander and the amplifier.

Alternatively, connect the Drone Commander's main output to an input channel on a mixer or computer's sound card.



*questions?*

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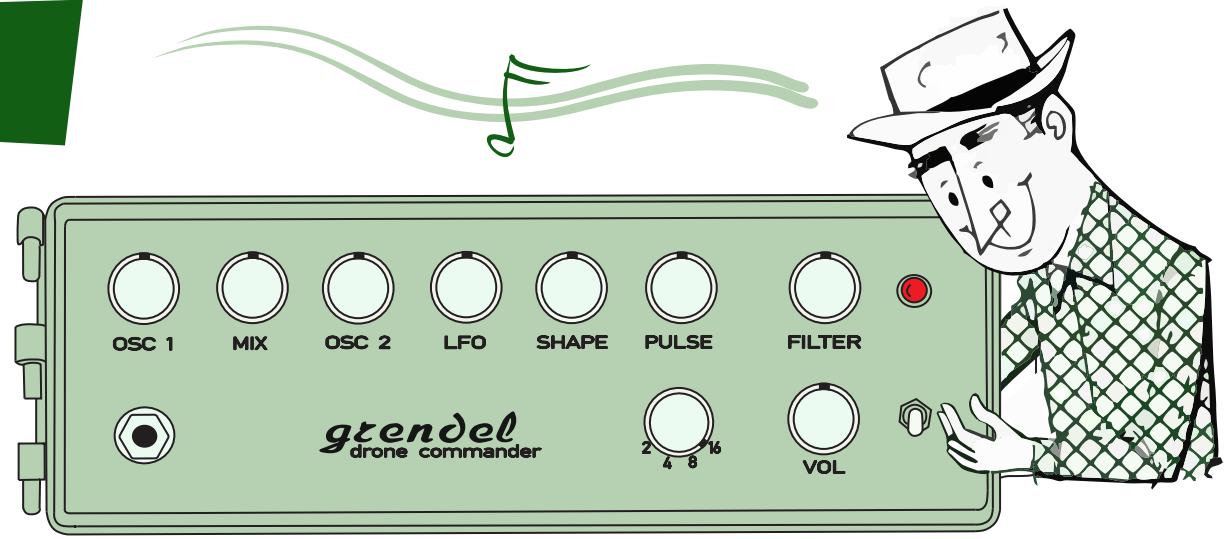
# SOUND PARAMETERS

## OSC 1 and OSC 2

The Drone Commander's oscillators are tuneable up to ~370 Hz, corresponding to F# above middle C.

Turn OSC 1 (or OSC 2) clockwise to increase the pitch.

Each oscillator offers the choice of square or triangle waveform. Pull up the OSC 1 (or OSC 2) knob to select the triangle wave, which has a more mellow tone.



## MIX

The MIX knob blends the output of OSC 1 and OSC 2 like a crossfader. Turn the MIX knob counterclockwise to hear more of OSC 1.

Pull up on the MIX knob to mute the oscillators. Even with the oscillators muted, the LFO, Pulse, and Filter are still audible and can be used for sound effects.

## LFO

The main LFO (low-frequency oscillator) adds movement to the Filter. It creates a sawtooth waveform that affects the Filter's center frequency, sweeping it upward or downward. This motion reveals the harmonic overtones from OSC 1 and OSC 2.

Turn the LFO knob clockwise for slowest motion.

Pull up the LFO knob to cancel the connection from LFO to Filter. This produces a more consistent sound level with less rhythmic information.

## SHAPE

The SHAPE knob controls the influence of the LFO on the Filter.

With SHAPE turned counterclockwise, the LFO sends a minimal 'blip' to the Filter with each cycle. As SHAPE is turned clockwise, the sawtooth shape of the LFO waveform becomes more prominent.

Pull up on the SHAPE knob to reverse the direction of the LFO.

## 2-4-8-16

This rotary switch controls the Drone Commander's second low frequency oscillator. It tracks the main LFO and generates square wave modulations. Its output is routed to the Filter via the PULSE knob.

2-4-8-16 selects the frequency of the PULSE. A phase-locked loop is employed to multiply the main LFO's frequency by a constant. Selecting "2" for example will cause the PULSE to seek a frequency twice that of the main LFO.

## PULSE

The PULSE knob controls the depth of square wave modulation to the Filter.

The LED blinks in time with the Drone Commander's pulse.

The PULSE knob is the only knob in the top row that does not have a push-pull switch.

## FILTER

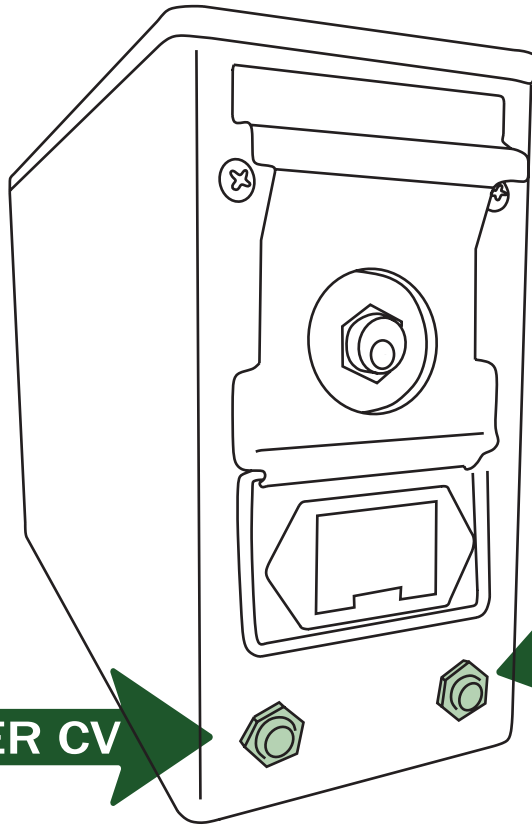
The Drone Commander's Filter is a bandpass (BPF) type filter. It modifies the tone of OSC 1 and OSC 2 after they have been blended with the MIX control.

Pull up on the FILTER knob to access a higher frequency range.

With the knob in the down-position, the FILTER begins to self-oscillate as it is turned counterclockwise past 12-o'clock. This can create unexpected volume jumps and strong bass tones.

## Note:

These features are provided for experimentation and are not necessary to enjoy the full possibilities of the Drone Commander.



## FILTER CV INPUT

What can I connect to the Filter CV input?

If you have a modular synthesizer, try connecting an LFO or envelope generator to the Filter CV input. This will affect the center frequency of the filter. It is not calibrated to 1 volt/octave (or volt/Hz) so precise pitch control is not possible. The LFO knob must be pulled up to hear the effect.

## CLOCK OUTPUT

What can I connect to the Clock output?

The Clock Output sends out a square wave signal with the same pattern as the blinking LED on the control panel. The waveform swings from 0V to +9V, exact value depends on the battery condition. Try connecting it to any instrument that has a Clock Input (an uncommon feature). We've heard it works with the DSI Evolver and Roland CR-78, to name a few.

## FREQUENTLY ASKED QUESTIONS

**Q. Is it OK to bring the Drone Commander aboard an airplane?**

A. Since it is nothing more than a music instrument, there should be no problem. However we recommend packing the Drone Commander in your checked baggage with the lid detached. We've never heard any reports of hassles from airport security due to the Drone Commander. If you need to demonstrate that it is a music instrument, carry a set of headphones with 1/4" connection. The headphones can be plugged in to the line output jack.

The manufacturer is not liable for any issues relating to misunderstanding of this item's nature

**Q. Can I control the Drone Commander with MIDI?**

A. No, there is no MIDI input or output.

**Q. Can I synchronize the Drone Commander with a computer?**

A. No, not in real time. There is no MIDI input, Sync input, or Clock input.

As an option, you could record samples of the Drone Commander and use your audio software's editing functions to fit it to your song's tempo.

**Q. Is it possible to control the oscillators with CV?**

A. No. The only way to set the pitch of the oscillators is by turning the knobs on the panel.

**Q. Can I send external audio into the filter?**

A. No, no connection is provided internally or externally for direct input to the filter.