How to use the Audio Sounder Driver – N6EV Instructions

Driver power input is a 2.1mm standard connector with positive center pin. Don't exceed 12V input. No internal regulator is used.

On the Sounder, adjust the lever so that it is free moving with very little travel. The adjustment on the lever arm should be adjusted first to allow a small gap between the coils and the armature. The top adjustment adjusts the throw of the arm and generally equates to the loudness of the sounder. The larger the throw, the louder the sounder will be. The spring tension should be adjusted to just past the point which allows the lever armature to rise off the coils. These are good starting points... and are not critical. Refinement of the adjustments will be necessary once you have a signal to play with. These sounders require a very much hands on approach and that's part of the fun. I've found I will readjust slightly from signal to signal to get the best response. Spring tension seems to be sensitive to the speed of the received code.

Connect the sounder to the binding posts. Although the sounder won't care about polarity, for reference, the red terminal is the high side connected to the power jack through the variable resistor. The black terminal is the low side switched to ground via the transistor. Connect power to the driver and switch it on. The Green LED should light. Push the switch on the top of the driver. This should activate the Red LED. Alternate on/off of the switch on the top of the driver while you adjust the variable resistor clockwise. At some point, the sounder should start activating with each push of the switch. Adjust the variable resistor a bit past this point. Be carefull not to go too far as this will apply more voltage two the sounder and risk burning out the coils. For the 4 ohm sounder, this variable resistor will probably need to be near full clockwise position as it requires a lot of current to activate. You can use the switch on the top of the driver without an audio signal to test out the sounder's adjustments, and to send some CW of your own to train your ear to the sounder click/clack audio in relation to that code.

Once you've setup the sounder, find a good strong CW signal to test with. Start with a strong steady CW signal. As you become more familiar with how to tune a signal in and adjust the sounder, you will be able to use signals of less quality. If you have a strong 10 or 6 meter beacon in your area, they provide a good constant CW source to play with.

Tuning in a CW signal so it's optimum for the sounder driver will take some practice. There are generally three things you'll need to play with to get it right: audio gain, RF gain and your bandwidth. Once you've found and zero-beated a signal, select a narrower CW filter. In practice, a 500Hz filter will work fine. You can use a more narrow filter once you've zero'd in on a signal. But this will make it more difficult to find new signals while tuning with the driver in circuit. The narrow filter will reduce unwanted

signals nearby which would interfere with the desired sounder signal, and also improves signal to noise ratio. (more on this later)

Another adjustment that is important is the RF gain. You'll want to reduce RF gain to increase the signal to noise ratio of the audio output. This reduces the AGC applied to the signal. Adjust RF gain so the S-meter rises to about the level of the incoming signal. The desired effect is to have the audio level of the desired signal unaffected, but the background noise be reduced. If the audio level of the desired signal goes down, you've adjusted too far. If you're just tuning around looking for a signal, adjust RF gain just past the point the S-meter starts to rise above the background noise.

Finally the audio level will need to be adjusted to the right level to drive the circuit. I have found the driver requires audio at a level higher than I would normally listen with. I have my Kenwood audio gain at half scale once the driver is connected. So at this point connect receiver's audio output to the driver via the RCA jack on the rear.

If you haven't already done so, power the driver on. Green LED should light. Adjust the audio gain on the receiver up to the point you start seeing the Red LED flash in time with the received CW. If the sounder is connected at this point, it may start activating. Then it's just a matter of adjusting the receiver audio & RF gain, along with the sounder's three main adjustments and the variable resistor on the driver to get the best sound.

Another trick to get the receiver right is to start with RF gain all the way up and CW Filter out without a signal present. Adjust the receiver's audio output up to the point where the Red LED starts to flicker steadily and the sounder starts to chatter. This is the point where there is enough audio into the driver. Then narrow the cw filter and reduce RF gain until the Red LED goes out and the sounder stops. Then tune around and find a signal to decode. Once you become familiar with how all these adjustments interact with the driver, it will become second nature.