

# NHRC

**REPEATER CONTROLLERS**  
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**NHRC-VOX ADVANCE INFORMATION**

## 1. Introduction

### 1.1 Purpose

Many modern radios have no CAS signaling readily available. Traditional voice-activated switching can't be used because the radio circuit setup time is not fast enough, and the first syllable is garbled or completely missing.

The NHRC-VOX combines a de-bounced, re-timed VOX with an audio delay long enough to allow the radio circuit to come up without the loss of the first few syllables.

## 2. Installation

### 2.1 J1 Connections

J1 is a 6-pin .100 center connector. (Mate supplied)

Pin	Usage	Notes
1	+12	+12 nominal, no less than 10 volts, no more than 15 volts
2	Audio In	1V P-P from your audio source (3Vp-p absolute max)
3	Audio Out	1V P-P toward transmitter
4	Active High output	DO NOT SHORT TO GROUND. 50 mA max
5	Active Low output	DO NOT SHORT TO +V. 50 mA max.
6	Ground	Power supply negative

**CAUTION:** Mis wiring / reverse polarity may damage the NHRC-VOX . Damage due to accidental mis wiring is not covered by the NHRC limited warrantee.

## 2.2 Indicators

The NHRC-Squelch has three diagnostic indicator LEDs:

ID	Color	Label	Purpose
D2	Red	PWR	Power On
D3	Green	CAL	Squelch Noise Threshold Calibration
D5	Green	VOX	VOX operation

## 2.3 Adjustments

### 2.3.1 VR1 “AUD LVL” Audio Input Level calibration

Potentiometer VR1 adjusts the audio level INTO the NHRC-VOX.

After you have made all of your electrical connections and the VOX board is powered on. Transmit a 1Khz tone 3KC deviation to the receiver connected to the NHRC-VOX.

With an oscilloscope, Probe TP-1 (signal) and TP-2 ( gnd) and adjust VR-1 for 2.5V p-p . If no scope available use a TRUE RMS DVM and set TP-2 to ~ 1.75V RMS. Be careful not to over drive the audio input of the NHRC-VOX as distorted output may occur. The speaker output of many radios are capable of delivering several volts of audio. The NHRC-Vox is rated for a MAXIMUM input voltage of 3Vp-p.

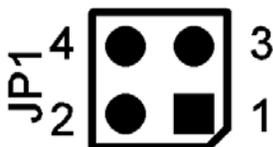
With this adjustment performed, you will now set the Vox threshold.

### VR2 “CAL ADJ” Squelch Noise Threshold Calibration

Potentiometer VR2 adjusts the sensitivity of the noise detector that forms the heart of the VOX timing. After the VR1 volume level is adjusted, adjust VR2 while providing a minimally weak audio signal is present. Adjust VR2 for some visible flickering of the D3 CAL Led indicator.

Use a transceiver and transmit a variety of voice signals to your receiver. The cal light illuminates while the VOX is detecting that voice audio is present. Adjust as necessary to obtain proper VOX detection.

### JP1 Jumpers – Audio Delay Time



Jumpers JP1 set the *audio* input to output delay time. With both jumpers removed, the audio delay is in the area of 250 ms. With both jumpers installed, the audio delay is in the area of 100 ms. With one jumper installed, the value is closer to 150 ms. Select the shortest amount of time that leaves first transmitted syllables intact. Jumpers are installed from JP1 1-2 and 3-4.

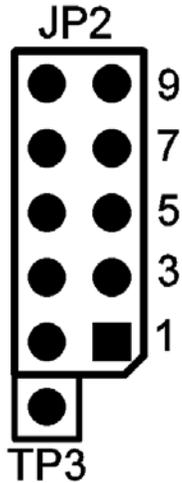
### 2.3.2 JP2 Jumpers – VOX re-timing delay and output polarity.

Jumpers on header JP2 select the amount of VOX delay time, and one can invert the polarity of the output signaling. JP2 is a 5x2 .100” header block. It has 5 pairs of pins that can have jumpers installed

The first pair of headers are right next to TP3 is JP2-1, the next pair JP2-2 and the last pair is JP2-5

JP2-1 to JP2-3 are used to adjust the delay time.

JP2-5	JP2-3	JP2-1	Delay Time
Missing	Missing	Missing	250
Missing	Missing	Installed	500
Missing	Installed	Missing	750
Missing	Installed	Installed	1000
Installed	Missing	Missing	1250
Installed	Missing	Installed	1500
Installed	Installed	Missing	1750
Installed	Installed	Installed	2000



JP2-7 is used to invert the output signaling of the NHRC-VOX. Removing the jumper inverts the output. (Jumper normally installed)

### **3. Service / Support**

#### **3.1 Warranty**

See standard warrantee terms at [www.nhrc.net](http://www.nhrc.net)

#### **3.2 Contact NHRC**

We want your project to be successful. Please contact us if you have questions or comments about the operations of our products

**4. You can telephone us at 603-485-2248 or email us at [hardware-support@nhrc.net](mailto:hardware-support@nhrc.net) or [software-support@nhrc.net](mailto:software-support@nhrc.net)**