

USBRadio Channel Driver

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Contents

1	USBRadio Channel Driver	3
2	usbradio.conf	5
3	Configuration	9
3.1	Parallel Port	9
3.2	Node Number Configuration	9
3.3	Sound Card Audio Buffers	9
4	Miscellaneous	11
4.1	Parallel Port Pin Numbers	11
4.2	Contributors	11
5	Contributors	13
	List of Figures	15
6	Licenses	19
6.1	GNU GENERAL PUBLIC LICENSE	19
6.2	GNU Free Documentation License	20
6.3	GNU Lesser General Public License	21

1 USBRadio Channel Driver

Legacy Version - This page is about a legacy version of AllStarLink. See ¹

chan_usbradio is a feature rich DSP radio interface. It requires more CPU than SimpleUSB Channel Driver² and therefore SimpleUSB Channel Driver³ may be a better choice on smaller computers.

You must enable chan_usbradio.so load in modules.conf.

1 <https://allstarlink.github.io/adv-topics/usbinterfaces/>
2 https://wiki.allstarlink.org/wiki/SimpleUSB_Channel_Driver
3 https://wiki.allstarlink.org/wiki/SimpleUSB_Channel_Driver

2 usbradio.conf

usbradio.conf settings are well documented in the configuration file itself:

```
;
; Usbradio channel driver Configuration File
;

[general]

[usb]
eeprom = 0          ; EEPROM installed: 0,1
                   ; 0 = no (default)
                   ; 1 = yes

hdwtype = 0         ; Leave this set to 0 for USB sound fobs modified using
                   ; the instructions from usbfov.pdf. Use a setting of
                   ; 1 is for Dingotel/Sph interfaces.

rxboost = 1         ; 0 = 20db attenuator inserted, 1= 20db attenuator removed
                   ; Set to 1 for additional gain if using a low-level receiver output

rxctcssrelax=1     ; reduce talkoff from radios w/o CTCSS Tx HPF
                   ; Do not change this, leave this as a 1

txctcssdefault = 100.0 ; Default TX CTCSS frequency, any frequency permitted
rxctcssfreqs = 100.0  ; RX CTCSS frequencies in floating point. This list is
                   ; comma delimited. Frequency must be in table.
txctcssfreqs = 100.0  ; TX CTCSS frequencies in floating point, any frequency
                   ; permitted. This list is comma delimited. Will follow the RX CTCSS Frequency.
;rxctcssoverride = 0  ; Set to 1 or yes to start out in carrier squelch mode

carrierfrom = dsp   ; no,usb,usbinvert,dsp,vox
                   ; no - no carrier detection at all
                   ; usb - from the COR line on the USB sound fob (Active High)
                   ; usbinvert - from the inverted COR line on the USB sound (Active
Low)
                   ; dsp - from RX noise using DSP techniques
                   ; vox - voice activated from RX audio

ctcssfrom = dsp     ; no,usb,dsp
                   ; no - no CTCSS decoding, system will be carrier squelch
                   ; usb - from the CTCSS line on the USB sound fob (Active high)
                   ; usbinvert - from the inverted CTCSS line on the USB
sound fob (Active low)
                   ; dsp - CTCSS decoding using RX audio in DSP.
                   ; rxdemod option must be set to flat for this to work.

rxdemod = flat     ; input type from radio: no,speaker,flat
                   ; no - RX audio input not used
                   ; flat - Use RX audio from discriminator (before de-emphasis)
                   ; speaker - use de-emphasized audio
rxsquelchdelay = 30 ; delayline in ms carrier squelch tail eliminator

rxondelay = 0      ; Number of 20mSec intervals following the release of
PTT.
```

```
"Ping Ponging"          ; Uncomment and/or adjust for simplex nodes to eliminate
                          ; or "Relay Racing". A positive value here will instruct
the usbradio            ; driver to ignore the COR line for a specified number
of 20mSec               ; intervals following the release of PTT. Use this ONLY
on simplex              ; nodes, and leave commented out for repeaters or other
full duplex nodes.

txoffdelay = 0          ; Ignore the reciever for a specified number of 20
millisecond              ; intervals after the transmitter unkeys.
                          ; This is useful when setting up a half-duplex link with
an existing              ; repeater, where you need to ignore the repeater's
hangtime.

txboost = 0             ; Add transmitter audio gain boost: 0,1

txprelim = yes          ; Audio processing on left output channel: no,yes
                          ; no - Audio is not pre-emphasized and limited.
                          ; Suitable for use on a microphone input
                          ; yes - Audio is pre-emphasized and limited.
                          ; Suitable for direct connection to an FM modulator

txlimonly = yes        ; Audio limiting with no pre-emphasis on output channel:
no,yes                  ; no - Audio is not limited.
                          ; yes - Audio is limited.
                          ; Suitable for transmitters with no limiting but with pre-emphasis.

txtoctype = notone     ; Transmit tone control type: no,phase,notone
                          ; no - CTCSS tone encoding with no hang time
                          ; phase - encode CTCSS and reverse phase
                          ; AKA ("reverse burst") before unkeying TX
                          ; notone - encode CTCSS and stop sending tone before unkeying TX
                          ; AKA ("chicken burst")

txmixa = composite     ; Left channel output: no,voice,tone,composite,auxvoice
                          ; no - Do not output anything
                          ; voice - output voice only
                          ; tone - CTCSS tone only
                          ; composite - voice and tone
                          ; auxvoice - auxiliary voice output at headphone level for
monitoring

txmixb = no            ; Right channel output: no,voice,tone,composite,
auxvoice                ; no - Do not output anything
                          ; voice - output voice only
                          ; tone - CTCSS tone only
                          ; composite - voice and tone
                          ; auxvoice - auxiliary voice output at headphone level
for monitoring

; Audio filters - requires version newer than ASL_1.01
rxlpf = 0              ; Receiver Audio Low Pass Filter 0,1 2
                          ; 0 - 3.0 kHz cutoff (Default) value for reduced noise
and increased intelligibility.
                          ; 1 - 3.3 kHz cutoff for increased high end, sibillance
and brightness.
                          ; 2 - 3.5 kHz cutoff for even more high end, sibillance
```

```
and brightness.
rxhpf = 0          ; Receiver Audio High Pass Filter 0,1
                  ; 0 - 300 Hz cutoff. (Default) value to reduce
sub-audible signals for retransmission and in the receiver speaker.
                  ; 1 - 250 Hz cutoff for additional received and
retransmitted bass response.
                  ; recommend using this filter with a CTCSS tone no
higher than 186.2 Hz.
txlpf = 0          ; Transmitter Audio Low Pass Filter 0,1
                  ; 0 - 3.0 kHz cutoff. (Default) value.
                  ; 1 - 3.3 kHz cutoff for increased high end, sibilance
and brightness.
txhpf = 0          ; Transmitter Audio High Pass Filter 0,1,2
                  ; 0 - 300 Hz cutoff. (Default) value to reduce
interference between voice and sub-audible signaling tones and codes.
                  ; 1 - 250 Hz cutoff for increased bass response in
transmitted audio.
                  ; 2 - 120 Hz cutoff for special applications requiring
additional bass response in transmitted audio.
                  ; Not recommended due to the increased possibility of
voice energy interfering with sub-audible signaling

invertptt = 1      ; Invert PTT: 0,1
                  ; 0 - ground to transmit
                  ; 1 - open to transmit

duplex = 0         ; Duplex 0,1
                  ; 0 - half duplex
                  ; 1 - full duplex

duplex3 = 0        ; duplex 3 gain setting (0 to disable)
                  ; when enabled, connects the receive audio from the
sound card directly to the transmit audio.
```


3 Configuration

3.1 Parallel Port

When setting `chan_usbradio` to use a parallel port for I/O you must set a definition for the port address in `rpt.conf`:

```
iobase=0x378      ; Parallel port address (using for cor/ptt & switches +dh-rbi  
- 378,278,3bc common Lpt 1,2,3
```

You must then define the parallel port pins used for I/O in `usbradio.conf`:

```
[usb]  
pp6=ptt  
pp11=cor
```

3.2 Node Number Configuration

When configuring your `usbradio` node you **MUST** ensure that the name of the radio is the same in both `rpt.conf` and `usbradio.conf`.

Node names are in format of `usb_<nodenumber>`. Where `<nodenumber>` = the AllStar Link node of your system. *Note that `usb` and the node number are separated by an underscore (`_`) character.*

Example:

Your `usbradio.conf` file defines your `usb` radio as `[usb_1000]`.

Your `rpt.conf` file would then have:

```
rxchannel = radio/usb_1000
```

If you are reusing the `usbradio.conf` file from an older installation (i.e., ACID), take special note of the change in naming. `chan_usbradio` may not work without first making this change to your `usbradio.conf` file.

3.3 Sound Card Audio Buffers

On some systems, the sound card driver buffers may need to be adjusted. If you see messages like `soundcard_writeframe: Channel usb_1999: Sound device write buffer overflow - used 6`

blocks, the number of allocated buffers is not sufficient. Increasing the **queuesize** may be needed.

The following entries can be added to `usbradio.conf`.

```
queuesize = 20           ; number of buffers
frags = 1966092         ; request 30 buffers (fragments) of size 4096
```

queuesize specifies the maximum number of driver buffers that can be used before reporting a buffer overflow. This value should be 1 less than the number of buffers requested with **frags**. The default value is 20.

frags specifies the number of buffers and buffer size to allocate. This is a 4-byte value. The first 2-bytes specify the number of buffers. The second 2-bytes specify the size of the buffer. The buffer size is 2 raised to the value specified.

The default frags value is **001E000C** hex (1966092 decimal). **001E** is 30 decimal. This asks for 30 buffers. **000C** is 12 decimal. This requests 2 raised to the power of 12, which is 4096 bytes. The value 1966092 decimal (001E000C hex) requests that the sound card driver give `chan_usbradio` 30 buffers that are 4096 bytes in length.

The **queuesize** should always be greater than 1.

4 Miscellaneous

4.1 Parallel Port Pin Numbers

More information regarding numbering of parallel port hardware pins to their software equivalents can be found at [Parallel Port Pin Numbers](#)¹

4.2 Contributors

- [KB4MDD](#)²
- [WA3WCO](#)³
- This page was last edited on 29 June 2024, at 23:36.

¹ https://wiki.allstarlink.org/wiki/SimpleUSB_Channel_Driver#Parallel_Port_Pin_Numbers
² <https://wiki.allstarlink.org/index.php?title=User:KB4MDD&action=edit&redlink=1>
³ <https://wiki.allstarlink.org/index.php?title=User:WA3WCO&action=edit&redlink=1>

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¹ Chapter 6 on page 19

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Version 3, 29 June 2007

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