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USB Radio Audio Interface GDIGI

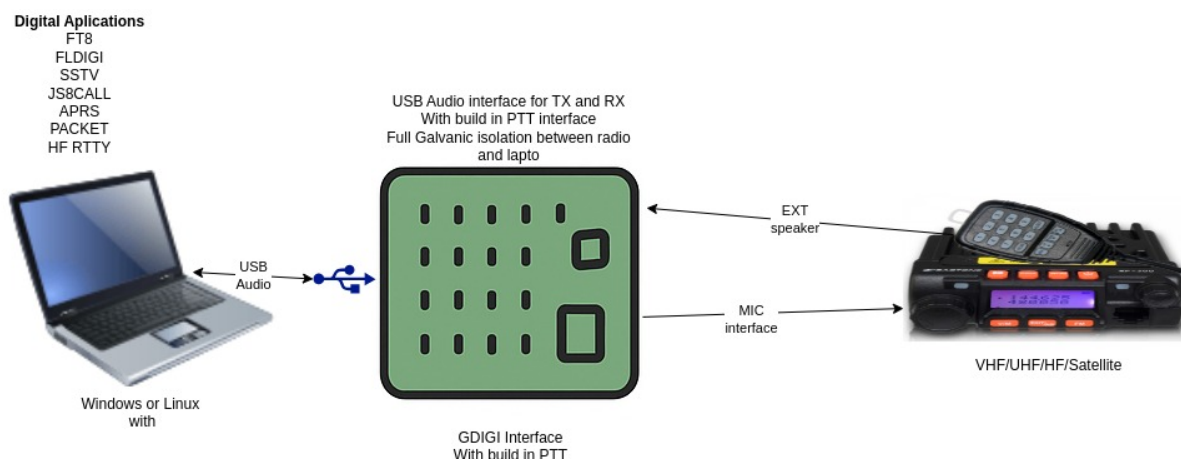
Operation Manual Version 1.0

Sound card and PTT interface for digital-mode operation



Contents

1. About your interface



This interface connects your radio to a computer using a single USB cable. It replaces a separate sound card and PTT cable by carrying receive audio, transmit audio and transmitter keying together over that one connection.

When you plug it in, your computer sees two devices:

- A USB sound card, named GIGA USB Audio, used for transmit and receive audio.
- A USB serial port, used only to key the transmitter.

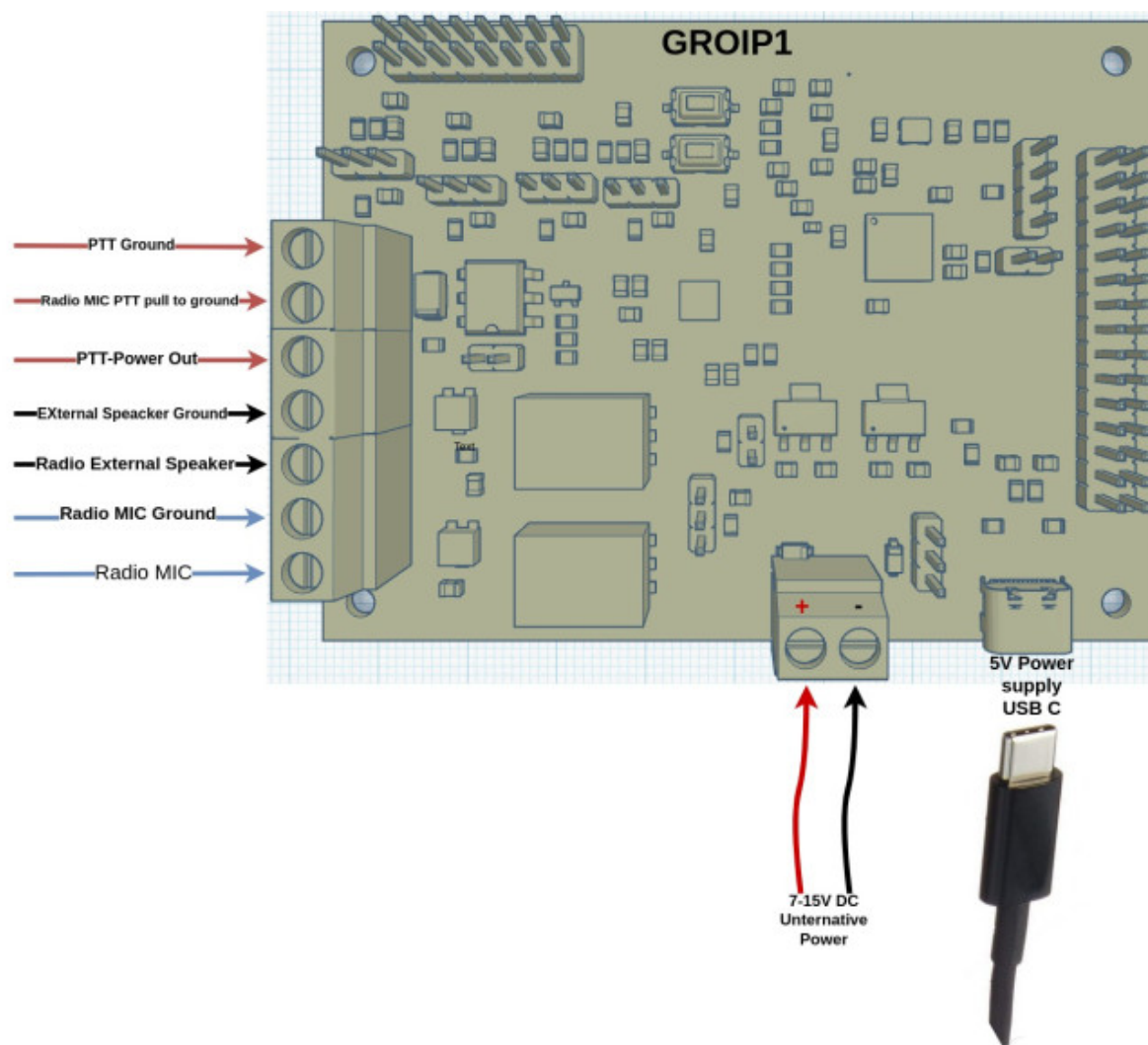
No driver installation is needed. Windows, macOS and Linux all support these device types out of the box.

The interface also provides a built-in web page for adjusting the receive audio level and choosing how the transmitter is keyed. This is described in section 6.

What you need

- A radio with audio input and output connections, and a PTT input. (MIC and external speaker connection)
- A computer running digital-mode software such as fldigi, WSJT-X or JS8Call.
- A USB cable to suit the connector on the interface.
- The audio and PTT cabling appropriate to your radio.

2. Connecting the interface

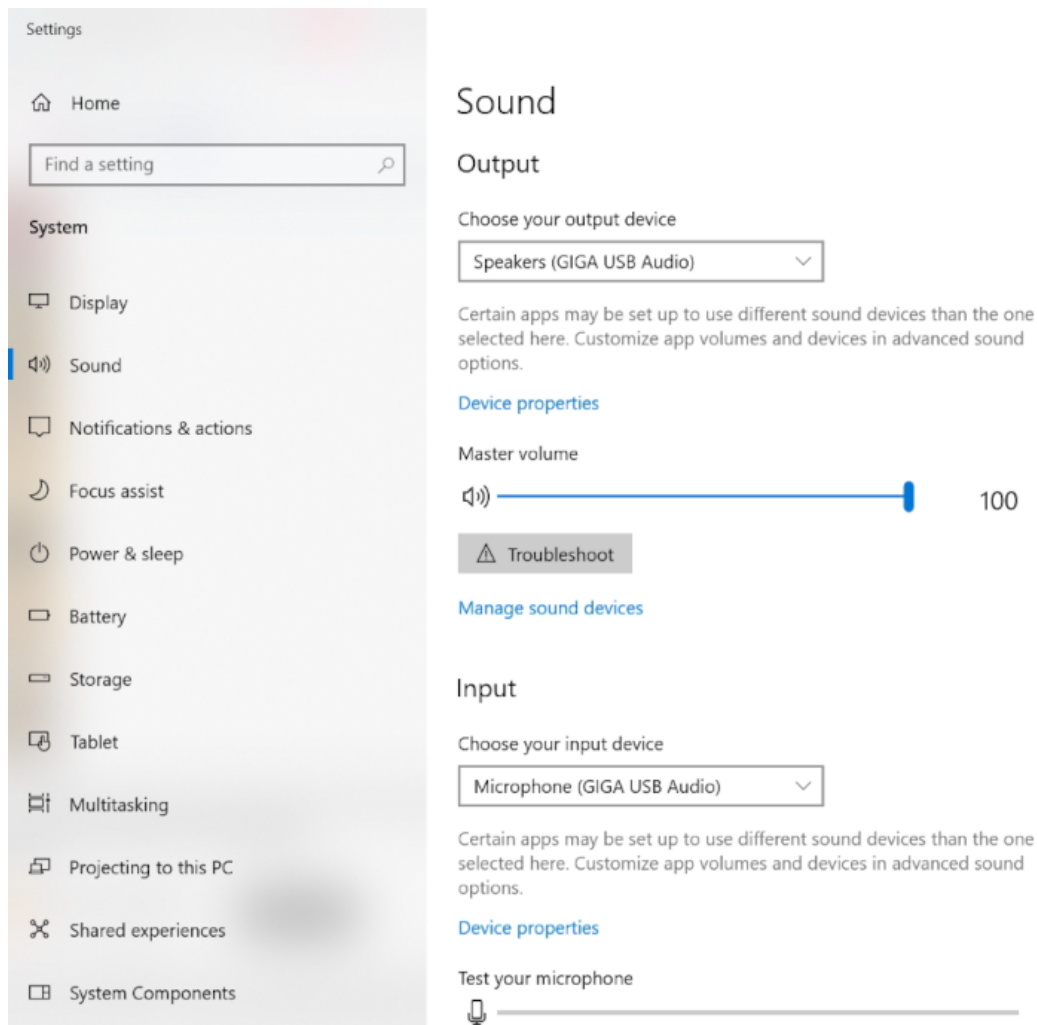


Make all connections with the radio switched off.

1. Connect the interface audio output to your radio's modulation or data input.
2. Connect your radio's receive audio output to the interface audio input.
3. Connect the PTT output to your radio's PTT input. This connection is electrically isolated from the computer.
4. Connect the USB cable between the interface and the computer.
5. Switch the radio on.

Important Use your radio's dedicated data or accessory socket where one is fitted. The audio levels there are fixed and independent of the volume control, which makes setting levels far easier and stops the receive level changing every time you adjust the volume.

Checking that it is recognised



Your computer should detect the interface within a few seconds of connecting the USB cable. To confirm:

- Windows: open Sound settings. GIGA USB Audio appears in both the input and output device lists.
- macOS: open System Settings, then Sound. The device appears under both Input and Output.
- Linux: run `aplay -l` and `arecord -l`. The device is listed by both commands.

If the interface does not appear, see section 8.

3. Setting up your software

The steps below use fldigi as the example. Other digital-mode programs use the same settings under different menu names.

Audio devices

In fldigi, open Configure, then Soundcard, then Devices. Select PortAudio, and choose GIGA USB Audio for both capture and playback.

Tip Choose the device by name rather than selecting the system default. The default device routes audio through the operating system's mixer, which can resample the audio and reduce decoding performance.

Under Soundcard, then Settings, set the sample rate to 48000 for both capture and playback. This is the only rate the interface supports.

Transmitter keying

Open Configure, then Rig Control, then Hardware PTT. Set the options as follows:

- Tick Use separate serial port PTT.
- Set Device to the interface's serial port. On Windows this is a COM port; on Linux it is usually `/dev/ttyACM0`; on macOS it appears under `/dev/cu.usbmodem*`.
- Tick Use RTS.
- Leave both PTT delay values at 0 to begin with.
- Click Initialize.

In WSJT-X and JS8Call, the equivalent setting is under Settings, then Radio: set PTT Method to RTS and select the same port.

If the radio keys as soon as you click Initialize Your radio expects the opposite signal polarity. Tick the RTS = +V option in the same dialog to invert it.

4. Setting the audio levels

Correct levels matter more than any other adjustment. Too little audio and weak signals will not decode; too much and your transmitted signal becomes distorted and splatters across the band.

Receive level

The receive level is set on the interface's own web page, described in section 6, using the ADC gain control.

6. Tune the radio to a busy band with signals present.
7. Watch the signal level indicator at the bottom of the fldigi window.
8. Adjust the ADC gain until the indicator sits within the green region, roughly in the middle of its range.

Set the analogue level first If your radio has an adjustable audio output level, set that to give a good level before raising the ADC gain. The gain control amplifies background noise along with the signal, so a strong signal arriving at the interface always gives better results than a weak one amplified afterwards.

The waterfall display gives a useful visual check. You should see a textured background with signals standing out clearly against it. A completely black waterfall means the level is too low; a uniformly bright one means it is too high.

Transmit level

Transmit level is set on the computer, using the output volume for the interface.

9. Connect the radio to a dummy load, or select a clear frequency.

10. Set the radio's power output to a low level to begin with.
11. In your software, start a transmission using the Tune function.
12. Raise the computer's output volume until the radio reaches the power you want, then reduce it slightly.

Watch the ALC If your radio displays an ALC meter, adjust the level so that ALC action is barely visible. Any significant ALC indicates the audio drive is too high, which distorts the transmitted signal even though the power reading may look correct.

5. Operating

Checking transmit

Into a dummy load or on a clear frequency, use your software's Tune function. The radio should key and produce a steady tone. Release Tune and the radio should return to receive immediately.

Listening on a second receiver is a quick way to confirm the tone is clean and steady.

Checking receive

Tune to a band that is busy with digital activity. The waterfall should show signals as distinct vertical traces. Click on one and decoded text should appear in the receive window.

Decoding a genuine off-air signal is the best confirmation that the whole receive path is working correctly.

During normal operation

- The interface keys the transmitter automatically under the control of your software.
- Do not adjust the computer volume during a transmission, as this alters your transmitted signal level.
- If the transmitter is keyed unexpectedly, close the software or unplug the USB cable. The interface releases PTT whenever the serial port is closed or the cable is removed.

6. The web configuration page

The interface hosts a small web page for adjusting settings without reconnecting it to a computer or reinstalling software. All settings are stored in the interface and are retained when power is removed.

Connecting to the page

If the interface has been given your wireless network details, open a browser and go to:

<http://giga-audio.local>

If that address does not work, or the interface has not yet been given network details, it creates its own wireless network instead:

Setting	Value
Network name	GIGA-Audio

Setting	Value
Password	gigaaudio
Web address	http://192.168.4.1

Join that network from a phone or computer, then open the address shown. From the page you can enter your own network details so that the interface joins your network in future.

What the page shows

The Status section reports the current state of the interface and updates continuously:

Item	Meaning
PTT	Shows TRANSMIT while the radio is keyed, otherwise idle.
Playback stream	Active when the computer is sending transmit audio.
Capture stream	Active when the computer is receiving audio from the radio.
Capture buffer	Internal audio buffer level. A low, steady figure is normal.
Host RTS	Shows whether your software is currently asking to transmit.
Network	The address at which the page can be reached.

Settings

ADC gain sets the receive audio level, as described in section 4. Changes take effect immediately, so you can adjust it while watching your software's signal meter.

PTT source determines how the transmitter is keyed:

Option	Behaviour
CDC RTS	The radio is keyed only when your software asks for it. Recommended for normal use.
Audio detect	The radio is keyed whenever transmit audio is present, with no separate keying signal. Useful with software that cannot control a serial port.
Both	Either condition keys the radio.

Audio-detect release delay sets how long the transmitter stays keyed after the audio stops. It applies only when audio detect is in use. Increase it if the end of your transmission is being cut off.

WiFi can be switched off if you do not need the web page. See the note in section 8 about audio interference.

7. Care and safety

- Keep the interface away from the radio's antenna and feedline where practical, to reduce the chance of radio frequency interference.
- Make and break audio and PTT connections with the radio switched off.
- Do not exceed your radio's specified audio input level.
- The interface is intended for indoor use in a dry environment.
- There are no user-serviceable parts inside.

8. Troubleshooting

Symptom	What to check
The interface is not detected by the computer	Try a different USB cable; some are charge-only and carry no data. Try a different USB port, preferably one directly on the computer rather than on a hub.
No signals on the waterfall	Confirm the correct device is selected for capture in your software. Check the receive audio cabling to the radio. Raise the ADC gain on the web page.
The waterfall is very faint	The receive level is too low. Raise your radio's audio output level first, then the ADC gain.
The waterfall is a solid bright block	The receive level is too high. Reduce the ADC gain, and reduce the radio's audio output if it is adjustable.
Signals appear but nothing decodes	Check that the sample rate is set to 48000 in your software. Confirm the mode matches the signal, and that the radio is in the correct sideband.
The radio will not key	Confirm the correct serial port is selected and that Initialize has been clicked. Check the PTT cabling. On the web page, confirm PTT source is set to CDC RTS or Both.
The radio keys and stays keyed	Close your software; the interface releases PTT when the port is closed. Your radio may need the opposite polarity, so try the RTS = +V option in your software.
The radio keys as soon as the software starts	This is a polarity issue. Use the RTS = +V option to invert the keying signal.
Transmit audio is distorted, or the signal is wide	The transmit level is too high. Reduce the computer's output volume until ALC action is barely visible on the radio.
Clicks or gaps in the audio	Switch WiFi off on the web page. The wireless radio can occasionally disturb audio timing. All audio functions continue to work normally with WiFi off; only the web page becomes unavailable.
The web page cannot be reached	If the interface cannot join your network it creates its own, named GIGA-Audio. Join that network and go to http://192.168.4.1 .
Settings are not remembered	Settings are saved when changed. If they revert, the storage area may need clearing; contact your supplier.

Before contacting support Note which of the checks above you have tried, whether the device appears in your computer's sound settings, and what the Status section of the web page shows while the problem is occurring.