



## Quick start guide

### Installation on Windows Vista, 7, 8, 8.1 and 10

Airspy is a plug-and-play device and does not require any particular driver installation on Windows Vista, 7, 8, 8.1 and 10. You just plug Airspy and Windows will download and install the right driver for you.



There are exceptions where the original configuration of the PC does not allow the automatic installation of this class of devices. In such case, a [driver](#) should be installed manually with the following procedure:

- Download and unzip the [WinUSB Compatibility Driver](#)
- Open the device manager and select Airspy
- Select "Update Driver" then "Browse My Computer" to the inf file

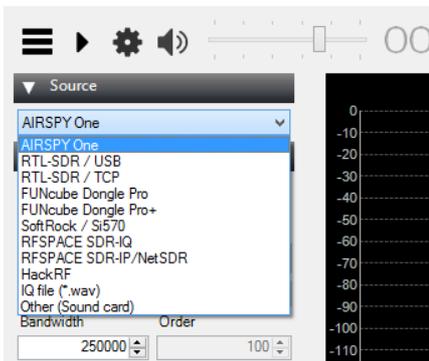
### Installation on Windows Server

Please don't. It's not supported.

### Using SDR#

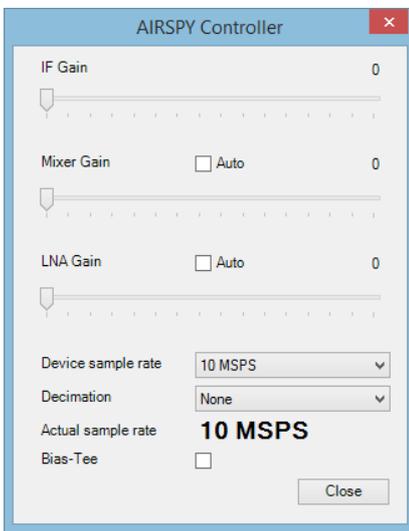
Airspy was designed by the same people who developed the [SDR# software](#) so it's the obvious choice for running Airspy and leverage all its powerful features.

First, go to [sdrsharp.com](#) and download a copy. Then run SDRSharp.exe and select the "Airspy One" front-end:



Then next step is the gain configuration. As depicted in this screen shot, there are three configurable gain stages:

- IF Gain
- Mixer Gain
- LNA Gain



The following fine tuning procedure ensures you have the maximum SNR on the signal of interest while preserving the dynamic range to prevent blockers:

- Set the IF Gain to 5
- Set the Mixer to 10
- Optimize the LNA for the best SNR (the difference between the top of the signal and the noise floor)
- Adjust the IF so the noise floor stays at just over -80dBFS
- Use the Mixer gain for fine tuning the gain

#### The effects of decimation

The decimation option allows you to trade some of the instantaneous bandwidth to get more bit resolution, and hence, lower quantization noise. The basic rule of thumb is 3dB every time you divide the bandwidth by two. So, decimation by two gives you 3dB, decimation by 4 gives you 6dB, by 8 gives 9dB and so on.

To further leverage the effects of the decimation, you can also readjust the gain using the same procedure described above. A slight saturation of the ADC gives you more SNR after decimation. So basically, when you use a higher decimation rate, adjust for higher gain and vice versa.

#### The Bias-Tee option: 4.5v @ 50mA

In some cases, one may need a very low noise figure. For example, some satellite communication systems require a front end with a noise figure as low as 0.2dB. In such case, using an external preamplifier near the antenna system can improve the overall operation. The Bias-Tee option allows powering such a preamplifier directly from Airspy by injecting DC at **4.5v**. Of course, such a preamp should have its own biasing system to extract the DC and inject the amplified RF signals. The current budget is limited to **50mA**, so that's enough to run most of the modern MMICs. Another use case one can imagine is to switch between antennas using that bias signal or even power down-converters for higher bands OR up-converters for LF and HF.

#### Troubleshooting PC performance problems

We created a set of command line utilities to help troubleshooting the performance problems.

- Download the [latest release of the tools package](#)
- Open a console (cmd.exe) and run `airspy_rx -r NUL -t 0`
- Leave it running for 30 seconds, then Ctrl+C
- If the average throughput is below 10.0 MSPS then either your USB controller has problems or your CPU can't process the data. Possible solutions:
  - Use another USB port
  - Update your USB drivers (Prefer OEM drivers to generic ones)
  - Check your anti-virus or any other CPU heavy task
- See also our Wiki: <https://github.com/airspy/host/wiki/Troubleshooting> (users can update it with their configuration/solutions)

#### Known issues

- Slow computers won't be able to run Airspy at 10MSPS without dropping samples. That's a lot of data to process in real time. Make sure you run Airspy in a modern machine as described in the minimum hardware requirements.
- In a fresh Windows 7/8/10 installation, Windows Update will grab the generic Microsoft USB drivers. These may not be optimal for high throughput operation and it is advised to update them with the latest version from your OEM. For example, the latest Intel USB 3.0 drivers turned the streaming on some PCs from choppy to perfectly smooth.
- Some old generation USB 3.0 controllers are not compatible with USB 2.0 devices at high speed. Changing the USB port can be sufficient to solve this problem. And again, make sure you run Airspy in a modern machine as described in the minimum hardware requirements.
- In some PCs, the experimental 2.5MSPS mode is vulnerable to USB noise. This will be improved with further firmware updates. The recommended method to get lower sample rates is to use some decimation with the 10MSPS stream.
- USB Hubs won't work at the full sampling rate. Just don't use them.
- Beware of overheating. Keep your unit in open air environment while running.

That's all folks!

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