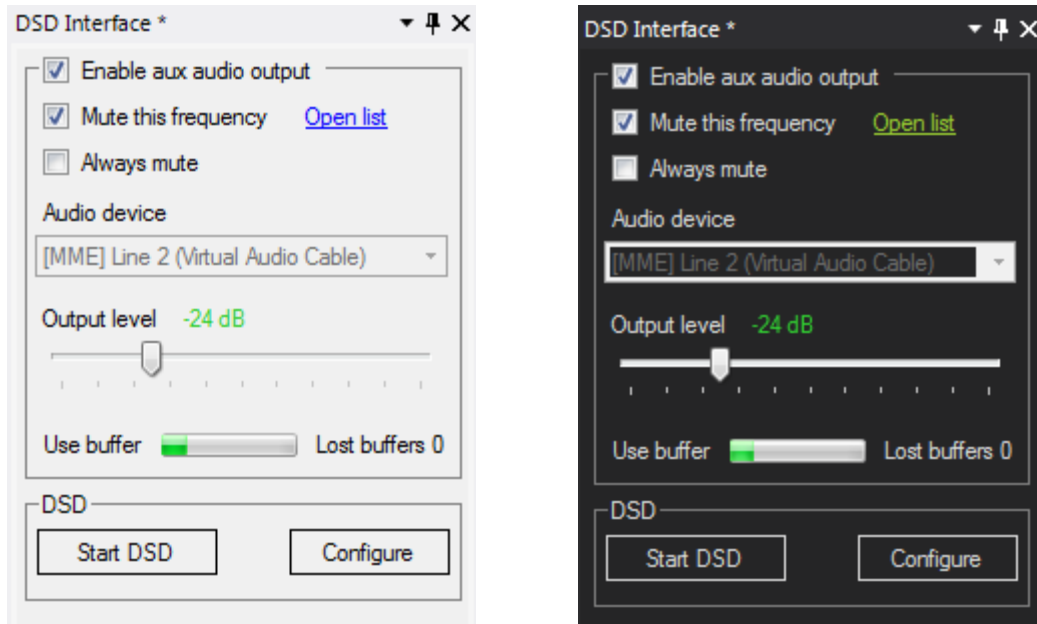


# DSD Interface – A SDR# plug-in

original by Vasili (TSSDR) – Modified/Updated plug-in and documentation by [thewraith2008](#) – July 2022



SDR# side panel for DSD Interface (light and dark theme)

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## **Description**

The *DSD Interface* plug-in allows using SDR# as a radio source for DSDPlus (DSD+) and provides a UI configuration for DSDPlus (DSD+).

The plug-in supports:

- DSD+ v1.101 Public release
- DSD+ Fastlane – with limitations [specifically v2.212] \*

\* v1.0.24 of the plug-in was updated to support DSD+ Fastlane v2.212. (v2.183 to v2.212)

Later versions may work, but the many changes to DSD+ since (v2.390 at time of writing) will probably mean it won't.

**NOTE:** This plug-in is no longer suited to the later versions of DSD+ Fastlane.

I therefore will no longer support future versions of DSD+ Fastlane as many features of DSD+ Fastlane only work when you use it with the tuner front-end (FMP24, FMPPA, FMPP).

**NOTE:** Not all DSD+ Fastlane features are available through this plug-in.

## **Features**

- UI configuration of DSD+ (no messy batch files).
- Easy selection of audio input/output devices.
- 'Best' DSD+ input level indicator. (as guide only)
- Works with dark/light themes.
- Can redirect SDR# audio output to AUX audio output without using DSD+.
- Can open the save file (*digital\_frequencies.xml*) which stores the muted frequencies.

## **Installation for SDR# 1700-1716**

Copy the file '*SDRSharp.DSD.dll*' to your SDR# folder.

Update the file '*Plugins.xml*' (using notepad) with the following line (if it has not been done):

```
<add key="DSD" value="SDRSharp.DSD.DSDPlugin,SDRSharp.DSD" />
```

## **Installation for SDR# **above** v1800:**

Copy the file '*SDRSharp.DSD.dll*' to your SDR# **Plugins** folder

There is no need to edit the file '*Plugins.xml*'

**NOTE:** The '*digital\_frequencies.xml*' file is saved to the SDR# root folder for both installation types.

- If restoring a previous copy of the file, then this is where you need to place it.

## Usage

Select the DSD options to use in 'Configure'

- Set the *DSDPlus.exe* file location.
- Set if using DSD+ Fastlane.  
Leaving unchecked sets plug-in for use with the public release version DSD+ (v1.101).  
Setting this wrong **will** cause problems.
- Set input and output audio devices to use with DSD+.
- Default options should get DSD+ running.  
Configure other options as needed.

Start SDR# playing.

Tune VFO to your digital signal of choice.

Enable '*Enable aux audio output*'

- The '*Audio device*' selection needs to be the same as what you selected in the DSD options.  
If not, then select correct device before enabling '*Enable aux audio output*'.

Enable '*Mute this frequency*' or '*Always mute*' to silence the digital signal heard from SDR#.

Set the output level so value shows green (-28 to -18).

- Do this when a signal is active.
- This indication should be right in most cases, if not then adjust to what works.

Click 'Start DSD'

- Should pop-up all the windows of DSD+.

Click 'Stop DSD' to terminate DSD+

- **NOTE:** It's recommend to close DSD+ from the DSD+ window.  
This maybe better for DSD+ so it closes itself and the files it uses properly.

## **SDR# side panel controls**

### **Enable aux audio output**

When enabled (and SDR# is playing), it starts the audio output to the selected audio device.

- This output is unfiltered SDR# audio (like a discriminator tap on a scanner).
- See [here](#) for special information.

### **Mute this frequency**

Mutes the SDR# audio

- This does not apply to the audio that is output to the selected device.

When enabled, the VFO value is stored (in '*digital\_frequencies.xml*') so it is muted next time VFO is tuned to same frequency.

To remove the mute for a frequency, tune VFO to the frequency and uncheck.

### **Always mute**

Mutes the SDR# audio for all frequencies

- This does not apply to the audio that is output to the selected device.
- The *Mute this frequency* is greyed out when this is enabled.

This maybe useful for when scanning and frequencies that are not known in advance or if there are just too many to do manually.

### **Audio device**

Selects the audio output device to use

- This is where the unfiltered SDR# audio is sent too.
- This will be the audio input device used by DSD+.  
Must be the same as the selected **Input/Output: Input audio device** in 'Configure'.  
This will be auto selected when exiting 'Configure' but only if '*Enable aux audio output*' is not enabled at the time.

This can also be used to redirect the unfiltered SDR# audio to the AUX audio output device without using DSD+. (maybe to use with another program decoder)

### **Output level**

Sets the audio level of the AUX output audio device

- Should be set while signal is active.

The label shows the approximate audio level output to audio device.

- Only updates when '*Enable aux audio output*' enabled.
- The color of the label indicates a best level for DSD+. (this only guide)

Green is best level.

Red is too high.

Black is too low.

Should be set while signal is active.

This indication should be right in most cases, if not then adjust to what works.

*Continued...*

### **Use buffer and Lost buffers**

Indicates buffer usage and possible issues streaming the output audio.

- Should not get high or buffers maybe be lost.  
High SDR#/computer load may affect this. (check CPU usage)
- Random lost buffers are OK but if value keeps incrementing, then this will affect audio quality and needs to be addressed.

### **Start/Stop DSD**

Start DSD+ using the defined options or Force terminate DSD+.

**NOTE:** You should close DSD+ via the DSD+ UI so it can terminate in an expected manner.

### **Configure**

Open the DSD+ configuration window.

## **Configuration Window – Input/Output options**

### **DSD path (click to edit)**

Sets the *DSDPlus.exe* file path to use

### **Input/Output**

#### **Input audio device and Ch**

Set the index of the input audio device and which channel use to decode from.

Use *Display device* to help select input/output audio devices.

#### **Output audio device and Ch**

Set the index of the output audio device.

Set the index of the output audio device and which channel use to decode from.

Use *Display device* to help select input/output audio devices

### **Display devices**

Opens a window populated with input and output audio device available to use.

You can set the '**Input audio device**' and '**Output audio device**' indexes from here by double clicking a Input and Output device.

After clicking a output device, the window will close.

If you only wish to change the input device, then double click it, then close the window "X".

**NOTE:** Some devices names look cut off, this is how the OS reports them and is not a plug-in bug.

### **DSD output volume (0=auto)**

Set the volume of the decoded audio.

### **Audio recorder**

#### **Record audio output to file**

Sets file format to record too: (this is the one file with all activity recorded in it)

- .mp3
- .wav
- nul

This will not record to file.

#### **Create new file every minutes (0 – not create)**

Sets the interval in which a new file is created. 0 will create one file.

#### **MP3 average bitrate kbps (8 – 32)**

Sets the bitrate of the MP3 to use.

*continued...*

**Create per call [WAV | MP3]**

Format to record per call file too

**NOTE:** When using DSDPlus v1.101 public release, the *MP3* option is not supported and therefore is not selectable.

**Use aliases T, R, B, None**

see DSD+ documentation

**Raw source audio monitoring (0 – 4)**

see DSD+ documentation

**Configuration Window – Global****DSDPlus Fastlane (2.212)**

Set DSD+ Public or Fastlane version.

- Only DSD+ Fastlane versions v2.183 to v2.212 are supported  
Newer version may still work but will no longer be supported

When enabled, uses the DSD+ Fastlane only options.

When disabled, uses the options for DSD+ v1.101 (Public release)

Don't set this wrong as DSD+ may not start.

**Final DSD+ command line label**

Shows the command line arguments that will be used with DSD+ when started.

This command line is based on the selected DSD+ options.

**NOTE:** The manually added switches used in the *Auxiliary options* field are not included here.

**Default**

Reset all DSD options back to plug-in default.

## **Configuration Window – Decoder options**

### **Decoder options**

#### **Role is control channel decoder**

Puts DSD+ in control channel mode.

#### **Role is passive digital monitor** (only for DSD+ Fastlane 2.176 and above)

Puts DSD+ in *Passive Digital Monitor* mode.

When DSD+ Fastlane is used externally to plug-in, it stores the last mode that was used.

For some modes, this will be a problem when trying to start DSD+ from this plug-in and may show the following message:

- “DSD+ single receiver mode requires a FMPA/FMPP/FMP24 link”
- Other similar errors may exist.

Using this option will force DSD+ to use the *Passive Digital Monitor* mode and allow DSD+ to start.

#### **Force Decoder selection**

Sets the decoder to use.

#### **Optimize for PSK modulation**

see DSD+ documentation.

#### **Invert signal polarity (X2-TDMA or dPMR)**

see DSD+ documentation.

#### **Disable auto polarity detection**

see DSD+ documentation.

#### **AMBE/IMBE unvoiced speech level**

see DSD+ documentation.

#### **AMBE/IMBE unvoiced quality**

see DSD+ documentation.

#### **Auto-mute encrypted voice**

see DSD+ documentation.



## **Configuration Window – Additional options**

### **Advance decoder options**

#### **Rolloff filter (0=auto)**

see DSD+ documentation.

#### **Hotspot size (0=auto)**

see DSD+ documentation.

#### **Scaling factor**

see DSD+ documentation.

#### **Damping level**

see DSD+ documentation.

#### **Viewport size**

see DSD+ documentation.

### **Additional options**

#### **Frame information verbosity (0-4)**

Set what information is shown in the DSD+ console window.

#### **Auxiliary options**

Other command line options/switches that the plug-in does not have can be added here.

**NOTE:** Make sure you do not add command line options/switches here that are not supported by the DSD+ version you have selected.

These options/switches added here are not validated/checked by the plug-in.

Incorrect options/switches or syntax will prevent DSD+ from starting.

### **Window options**

#### **Event log window font height**

Sets the font size for event window.

#### **Channel window font height**

Sets the font size for channel window.

#### **Add frequency/NAC/RAN/DCC/RAS data to event log file entries**

see DSD+ documentation.

#### **Time stamp console log file entries [and console screen data]**

see DSD+ documentation.

## Notes, bugs, limits or other things of possible interest

### NOTE:

**Not all aspects of this plug-in, whether it be it's usage, features, options, bugs, issues, problems or any other unforeseeable things maybe covered by this documentation.**

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### **DSD+ limits with plug-in** (not a complete list I'm sure)

Not all DSD+ features are available via this plug-in.

Some features of DSDPlus only work when used with FMP/24/A/P

- Optional pseudo network ID support for conventional channels
- Optional network ID prefix for iDAS and TIII systems  
When these are used, the identification of a network does not occur.
- Capacity MAX systems.
- P25 Phase 2 only works via FMP/DSDPlus TCP link (see DSDPlus NOTES.TXT for v2.145)
- Single receiver mode (-r1) (see DSDPlus NOTES.TXT for v2.176)

### Options not added (only to v2.212) (but can be used in "Auxiliary options")

- >file            Create log file
- >>file          Append to log file
- \_<num>        Minimize selected windows at startup (bitmapped, 0-15) [-\_0]
- Show command line options in console window title
- F<num>        Filename modifier; use to avoid filename collisions [F0]
- H<num>        High contrast mode (bitmapped, 0-63) [-H0]
  
- wsl<v>.<h>    Source audio waveform window location [-wsl10.10]
- wss<h>.<w>    Source audio waveform window size (0.0 blocks) [-wss200.300]
- wsp<num>      Source audio waveform window update period (10-1000) [-wsp100]
  
- wel<v>.<h>    Event log window location [-wel50.50]
- wes<h>.<w>    Event log window size [-wes500.800]
  
- wcl<v>.<h>    Channel window location [-wcl90.90]
  
- \* -rv            role is voice channel decoder
  
- 0               Synthesize no audio
- 1               Synthesize audio for first DMR timeslot
- 2               Synthesize audio for second DMR timeslot

\* This serves no purpose here as DSDPlus cannot control SDR#

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Plug-in compatibility with newer versions of SDR# is not assured.

- The new SDR# audio buffer may cause issues and a larger buffer may need to be implemented.
- Increasing the Audio Latency may improve things.

This plug-in alters the SDR# *DemodulatorOutput* audio stream when muting is in affect, down chain plug-ins that use this audio stream will be affected. This plug-in should be placed after these plug-ins. This as well as other plug-ins that modify *DemodulatorOutput* audio stream will not work well together.

Theme color matching is not 100%

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BUG:

None known yet.

This modified version and documentation by thewraith2008 started in 2018 see ***Changelog.txt*** for more details about changes and fixes.

**Support forum here:**

<https://forums.radioreference.com/forums/software-defined-radio.193/>

NOTE: Support is not guaranteed. Especially if the answers are contained in the documentation or on forum.

Special thanks to the creators of the following software:

**SDRSharp (SDR#)** by Youssef Touil

- <https://airspy.com/>
- The *DSD Interface* plug-in utilises code from the SDR# plug-in API.  
As such, that code used by the plug-in is the property of Youssef Touil (Airspy).

**DSD Interface** (this original SDR# Plug-in) by Vasili (TSSDR)

- <http://rtl-sdr.ru>
- Thanks Vasili for allowing me to update this plug-in.

### **Necessary Disclaimer:**

- This program is "as is"
- This program most probably contains errors, bugs or whatever and that it may crash itself, SDR#, the plug-ins, windows or your car. You accept that you use it at your own risk.
- I make no promises to update it or support it.
- I'm under no obligation to implement anything.
- The creator of SDR# has the right to change their code as they see fit. Because of this, this program/plugin can and probably will break.
- Not reading the read-me/set-up and usage documentation files may cause you issues.