

## PERSEUS -

Answers to Frequently Asked Questions („FAQ-List“)

### **Which computer do I need?**

For taking advantage of all options of the PERSEUS, the manufacturer recommends a computer with at least 2,5 GHz Dual Core Processor and 1 GB RAM. Who can live without the most demanding features (Display/Recording/Replay with big bandwidth), can use a less powerful computer also when choosing smaller sampling rates.

Those less powerful computers will benefit especially by using an external Firewire HD instead of a USB version. Firewire needs less resources than USB, but is not available at every computer.

### **Which Operating Systems are supported?**

The new Perseus software v3.0b supports XP, Vista and Windows 7 and comes with one driver for 32 and 64 bit systems.

Users of Windows 2000 will have to use v3.0b with the old drivers (cyusb.sys + perseususb.dll from v2.1f). Some new functions of the new version will be available (time stamps with the waterfall), others not (like multiple receiver operation and converter offsets). As a rule of thumb: Only the USB drivers will have to be installed. This installation is menu guided.

The real Software directory that contains perseus.exe, has simply to be copied into your program file directory.

Apple users cannot operate Perseus under the Mac OS, but with Bootcamp. Bootcamp requires Mac OS 10.5, an Apple computer with Intel processor, and a Windows installation. VMWare and VPC were reported to work also in some cases.

Linux is not supported.

The latest software version can be found [here for direct download](#).

### **I don't have a PERSEUS, but would like to get one. What to do?**

Nothing easier than that: simply order at SSB Electronic.

### **What happens then?**

If this should be your first order at SSB Electronic, you will receive a pro-forma invoice. As a registered customer, you will get the receiver together with an invoice.

### **How long is the delivery time?**

Usually PERSEUS is in stock. If not, delivery times mostly will not exceed a couple of days.

### **What are reasons for delivery times?**

Because demand exceeds submissions. Every receiver is manufactured with great care and checked in an optical and electrical inspection. That's true for the power supply also. SSB Electronic, Germany, together with SSB-USA is the most successful distributor of Perseus worldwide.

### **What can I expect from the software in the future?**

The Software is delivered as it is („as is“). Its functionality exceeds most of all other receivers and control-software. Several new functions has been added since the first version:

- Virtual comport, so PERSEUS can communicate with Third Party Software (like RadioCom, ERGO4, MixW, HRD, VisualRadio etc.)
- Notchfilter
- Zoom function for signals

- Outstanding Noise reduction (Intensity adjustable), and much more.

### **For the Future**

Another software release is announced that will make possible remote control of the Perseus via Internet.

### **What is necessary for DRM reception?**

DRM is a digital mode for radio stations that had not much success since being introduced about ten years ago. Nearly all stations can be decoded by the Freeware DREAM. For this purpose VAC (Virtual Audio Cable) by Eugene Muzychenko is needed:

<http://software.muzychenko.net/eng/vac.html>

When you select at your PERSEUS the DRM button, so receiver will feed the undecoded audio signal to the inpput of VAC. The output of VAC is connected to the input of DREAM. Its output will feed the input of your regular soundcard, which delivers the decoded audio at the output. Sounds complicated, but after the first configuration everything works automatically.

### **Which settings are recommended for DRM at the Virtual Audio Cable VControl-Panel-Settings?**

You will get good results with the following setting:

SR: 62500 .. 62500

BPS: 8 .. 24

NC: 1 .. 2

Max inst: 3

Ms per int: 5

Stream fmt: Cable format

Connected source: Line

Clock corr: 100%

### **Can the VAC-Software be used by other applications also?**

VAC is needed every time you want to decode a signal losslessly, for any software that decodes digital modes as CW, RTTY, PSK, SSTV etc.), like RadioCom.

### **Install problems?**

Please read the manual carefully and follow the instructions step by step. It fails? Then call our team for further advice.

Tel. 02371/9590-24 or [sdr@ssb.de](mailto:sdr@ssb.de)

### **I don't understand some buttons of the software. What should I do?**

It doesn't help: Every step is explained in detail. You need to read the manual to get most out of your PERSEUS. If you understand German, the Booklet „PERSEUS – eine Kurzwellen-Revolution, die begeistert!“, can be found on the CD. There you will find many practical examples.

### **Does Perseus cover 30 or 40 MHz?**

You can tune your PERSEUS up to 40 MHz. The Technical Specifications are related to the range up to 30 MHz.

### **My Perseus is not recognized any more! What to do?**

You disconnected the USB cable of the Perseus, and after reconnecting you are getting an error message indicating missing files? Then you choosed a different USB connection as

during installation. You will have to install the USB driver again from CD for this new USB hub. This is a requirement of Windows and effects other PC-based receivers and SDRs as well.

### **The Perseus Software is not displayed correctly. What can I do?**

First of all: The window is not resizable with the mouse. With the fixed window size much less resources are needed, hence the computer requirements could be limited.

So the window size only depends on the screen resolution, the available resolutions again depend on the size and the specifications of your monitor as well as on your graphic card.

To change this settings, Open the Window Screen Properties Dialog, then click the "Settings" tab and then. Mark the appropriate monitor (if several are connected) and change the setting of "Screen resolution". Confirm and check the window size.

If parts of windows are not displayed although the total window can be seen, it's most probably a matter of DPI settings. This does not change the size of the screen but the true screen resolution. Settings exceeding 96 DPI (i.e 120 DPI) are not supported by the Perseus software.

Open the Window Screen Properties Dialog, then click the "Settings" tab and then "Advanced". In the advanced properties dialog select the "General" tab and then select 96 DPI (normal dimensions) in the DPI settings.

### **Ich want a real tuning knob!**

We wanted the same. Hence we connected the ShuttlePro 2 to the USB-socket of the PC. SSB Electronic offers the ShuttlePro 2, information is available here:

[http://www.ssb.de/product\\_info.php?info=p1662\\_Shuttle-Pro-V2.html](http://www.ssb.de/product_info.php?info=p1662_Shuttle-Pro-V2.html)

### **I have a lot of noise.**

Who has not? To eliminate noise you will have to find the source. The booklet supplied on CD „PERSEUS – eine Kurzwellen-Revolution, die begeistert!“ will give some hints. The antenna should be placed far away from the receiver. Check power supplies, dimmers, neon bulbs and anything operated in stand-by mode. A portable radio is a good help to locate noise, especially when the noise is detected in the mediumwave band, where a directional antenna helps to find the right direction.

In Germany you may call the Bundesnetzagentur for further assistance:

[www.bundesnetzagentur.de](http://www.bundesnetzagentur.de) or via the hotline: 0180 3 23 23 23 (Price for landline: 9 Cent/Minute).

### **The recorder works different to my cassette recorder. Why?**

It is related to the huge amount of data. Recordings cover a range of up to 1600 kHz kHz that is tunable with the PERSEUS-Software „as live“. Therefore Perseus records in minute intervalls, that are combined jointless automatically during playback.

The preselected minute-values (Default) in relation to the choosen sampling rates are:

SampleRate	Span(kHz)	Variable to set	Default (min)	MaxLen (min)
125 KS/s	100	RecTime0125K	15	80
250 KS/s	200	RecTime0250K	15	40
500 KS/s	400	RecTime0500K	15	20
1 MS/s	800	RecTime1000K	10	10
2 MS/s	1600	RecTime2000K	5	8

These defaults cab be easily changed in the Windows-Registry.

A recorded file with 1.600 kHz (at 2MS/s) has a length of 5 minutes and a file size of 2,344 GB. „Quick Forward“ during playback of PERSEUS-wav files

Within the audio blocks you can „fast-forward“ as follows:

- select the desired file
- click with the left mouse button on the point where replay should start (the clock display „PLAYBACK/REC“ jumps to this time)
- Hold mouse button pressed and until the end of the desired range

This range is marked in transparent yellow now. The replay starts at this point and will loop the range permanently. The part being played is shown in a strong yellow while the rest remains in transparent yellow.

So you can choose a certain time frame for repeated listening, vary the frequency and get a „loop“ for a whole spectrum. This way you can easily check all station identifications usually transmitted on top of the hour. It is a big help in identifying hard to copy signals.

### **The attenuator does not change the S-Meter value. Why?**

This would be not professional. As a real spectrum analyzer, PERSEUS keeps the *display* of the original signal. Of course there is a attenuation of 10, 20 or 30 dB. As the display of the signal would have to be *amplified* by this amount, you will notice an increase of noise on clear frequencies or weak signals. This may seem uncommon. But it shows how aber nur, wie nonprofessional this matter was handled by manufacturers up to now.

Tip: If the signal level at your antenna should overdrive the receiver, ("ADC" light in the upper right corner in the S-Meter), you should switch the attenuator to 10 dB. 20 dB or 30 dB will only be needed, if a strong transmitter is in the neighbourhood.

### **Preamplifier: Does it have an effect at all?**

It has, but the effect is small (2 - 3 dB). Below of about 20 MHz the atmospheric noise is higher than the sensitivity of the receiver. Increasing sensitivity would only mean more noise. Above all, the dynamic range would be reduced by the same amount. Therefore a preamplifier is useless here. It should be used on frequencies above 20 MHz, as it probably could improve a signal here.

### **Dither – what is that?**

Dithering is a technique of digital, statistic signal processing. Dithering reduces spurious signals. This effect is mainly of importance when the PERSEUS is used as a analyzing tool.

### **AGC – can it be switched off?**

Not yet. Even if you select *AGC OFF*. Only the NF-level will be reduced so the following decoder will not be overloaded. But this function can be recommended to receive weak signals close to a much stronger signal.

### **The S-Meter shows something although there is no signal – why?**

Usual S-Meters may show  $S9 = 50\mu V$  (quite) correctly an, but they will hardly show weak signals at all. Signals up to about  $S5$  are usually shown not according to their real strength. So what you see on the Perseus S-Meter, is atmospheric noise. If you separate your antenna from the receiver and use a Dummyload with an impedance of 50 Ohm instead, the S-Meter won't show any signal. PERSEUS has an optimal sensitivity. The S-Meter of the PERSEUS has an accuracy of  $\pm 1$  dB over the total(!) range. The receiver is suitable to be used as a measurement tool.

### **How can I calibrate the frequency display?**

PERSEUS offers tuning and display with an accuracy of 1 Hz. The oscillator is very precise, but depends on external factors like temperatur. Switch *TUNING* to *Center*. Choose a time signal station (like DCF 77 on 77,5 kHz, or RWM Moscow on 9996 kHz) in CW with a bandwidth of 0.8 kHz – the display shows 77,500 or 9996,000 kHz respectively. Select the

button "Zoom". Is the top of the transmitter signal exactly on the line in the middle? If not, doubleclick the top of the signal and press the button *Cal*. The receiver will switch to the next *xx.000*-value, and the button *CalClr* is enabled. A further click on the button will delete this calibration again.

Tip: Frequency variations less than 1 Hz (like different carrier frequencies of several stations on the same nominal frequency) can also be analyzed on the audio level with an external Audio-Software.

### **Is the Synchronous Detector (SAM) usually the best choice?**

Nearly. In most cases it offers the best intelligibility of broadcast stations and the best signal-to-noise ratio. It synchronises on carriers already that are barely audible. The Synchronous Detector is of special use to reduce selective fading. If you notice a bad intelligibility although a sufficient signal level, or if you see a signal with several changing peaks, you are probably receiving a signal that was divided into several paths during its way to the receiver. These signals can partly or totally wipe out each other. The Synchronous Detector can stabilize these signals. However, there are situations where the detector will not help. If several stations are operating on the same frequency, the Synchronous Detector can synchronize to one station at a time only, while other signals with a slight offset may cause a disturbing tone. Offsets of more than 30 Hz will cause a deep, gurgling tone.

Simple help: Switch off SAM, choose SSB (USB oder LSB) instead and tune the PERSEUS in a way that no difference tone is audible any more („zero beat“). It's the best solution for Extreme-DX.

### **Bandwidths – which are available, how to select?**

The according maximum Filter-bandwidth is selected with the buttons under BW, between 50 kHz and 0,8 kHz. The small Spectrum-Display will be set to this bandwidth also. Here you can reduce the bandwidth down to 50 Hz. This can be done symmetrically (Mouse wheel) or a-symmetrically (keep left mouse key pressed and drag the line to the desired place. The bright ranke shows the bandwidth to both sides. Choose it in a way that gives the best signal-to-noise ratio: As much as possible from the wanted signal while most of the unwanted signals has to be kept out. In many cases the bandwidth is choosen too small. The excellent 130 dB far-off selectivity of the filters together with their high slope steepness offers the option to tailor the bandwidth for the wanted signal. The intelligibility is improved by audible treble and bass so much that it is almost spectacular! That may sound unfamiliar for experienced listeners, but it offers new worlds regarding intelligibility.

Hint: All values are stored for a certain bandwidth. When you change the bandwidth, you will get the setting you choosed last time.

### **How can I update frequency lists of the PERSEUS MEM window (HFCC, Eibi, Userlist)?**

Please visit our [Perseus-Software Page](#)

### **How can I record demodulated audio / the NF signal?**

For storing, ptp and archiving the MP3-Format is well-trying. It saves disk space and is easy to send via the internet. Different to the "big" WAV-files of PERSEUS broadband recordings, they can be edited by audio software.

### **The Audio-Clips on the SSB-Audio page were created as follows:**

- Recorded as PERSEUS file
- Replay and optimising regarding frequency, bandwidth and AGC
- Recording with an audio software

- Level correction and removal of ticks
- save as MP3.

All "connections" in the PC are internal, neither cables nor a software as VAC are needed. The Freeware "Audacity" did stand the test as a flexible Audio-Recorder. Available from: <http://www.mpex.net/software/details/audacity.html> Operation is easy, recording or replay happens the same way as you know it from a tape recorder. But you can cut, copy or correct the level ("normalize" as a first solution). Ticks can be cut manually or automatically. When editing is finished the (part of the) recording is saved as mp3.

Due to license restrictions the MP3-Encoder (necessary to convert WAV-files to MP3-files) has to be downloaded separately and integrated once (!) into Audacity. The Encoder is available here: <http://www.mpex.net/software/details/lamedll.html>  
Have fun with your recordings!

### **Is it possible to operate PERSEUS together with a transmitter?**

PERSEUS is a receiver that was NOT manufactured for this purpose. If you want to use PERSEUS as a receiver and spektrum-analyzer (not only at the IF-output of your transceiver!), so you have to make sure that no HF from the transmitter will get to the antenna input of PERSEUS! You will not only have to disconnect the antenna from the input, the input has also to be protected by a 50 Ohm Dummyload. However, even then it may happen that HF comes into the receiver via earth loops or an error occurs when switching between Perseus and transceiver. Any damage will not be covered by the warranty. Get a Switch Box from SSB-Electronic to be safe.

### **How can I tune TX and PERSEUS simultaneously?**

First you have to enable the PERSEUS Vcom-Interface „On“, see our installation advice <http://www.ssb.de/pdfs/VSPE-Settings.pdf>

Then you need a software that can synchronize two units. HRD (HamRadioDeluxe) [www.ham-radio-deluxe.com/](http://www.ham-radio-deluxe.com/) can do that. Download the latest Beta-Version. PERSEUS is selectable as receiver.

Start a second instance of HRD. If your transceiver has a CAT interface, it should be supported by HRD as well. After selecting your model, use the Synch button to define master and slave function. Usually you will use Perseus as master.

Warning: Please avoid damage by wrong configuration!

SSB-Electronic is currently developing a new switchbox for safe operation.

### **Can the Perseus window be adjusted in size to fit my screen?**

No, but it is possible to change the size of the Perseus window by changing the resolution of the monitor. So for example you can achieve a nearly full screen sized window on a 17 inch monitor with 1024x768 pixels.

### **Can PERSEUS wav files be replayed on computers without a Perseus connected (e.g. during travels) for listening and analysis?**

It is possible:

Every owner of a PERSEUS can have been having this option since Software-Version 1.1c!

You may also try Winrad as an alternative software for this task. Load your PERSEUS-Recording-file at

Winrad> Show Options> Select Input> Wav-file and listen.

### **Is there a comprehensive Manual?**

Yes, it is available for download on our PERSEUS page.

**Is there a forum for international users of the PERSEUS to share information?**

It's here [http://groups.yahoo.com/group/perseus\\_SDR/](http://groups.yahoo.com/group/perseus_SDR/)

A worldmap with PERSEUS users can be found here:

[http://realmonitor.com/5below\\_test/index\\_table\\_list\\_test.html](http://realmonitor.com/5below_test/index_table_list_test.html)

**What further software is available for special applications?**

More than 50 single software packages around the Perseus can be found, mostly Free- and Shareware. A pdf document lists them by categories, describes their main functions and informs about necessary pre-installs that may be needed. The „Perseus Third Party Software Guide“ can be downloaded here:

<http://www.4shared.com/dir/5567845/166a39bd/sharing.html>

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**Will be updated permanently.**