

# **VORSIS** Application Note

**AN2010-01**

Introduction to Vorsis VP8 *Plus*  
(Version 3.3.0 and GUI Lite)

AN2010-01 Rev. A  
January 2010 - J. Keith

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## Table of Contents

Page	
3	Introducing VP8 Plus
3	Hardware Installation
4	Installation and setup using the front panel
4	Navigating to the "Presets" dialog
5	Navigating to the "Modes" dialog
6	Navigating to the "Input" dialog
7	Navigating to the "Output" dialog
7	The FM Mode Output Menu
8	The AM Mode Output Menu
9	The FM-HD Mode Output Menu
10	The AM-HD Mode Output Menu
11	The AAC/MP3 >48K Mode Output Menu
12	The AAC/MP3 <48K Mode Output Menu
13	Network options
14	Finding the VP8's software versions
15	Introducing GUI Lite
17	GUI Lite Installation on the host Windows® PC
17	Setting/resetting the VP8's TCP/IP address
18	Device configuration-connecting to the VP8 processor
21	Setting the input source and adjusting audio levels
22	Setting the output type and adjusting audio levels
23	Taking Presets
24	Tuning audio processing – an introduction
25	Why not just one knob?
28	How the six "Tweakers" work
28	About the "AGC Depth" Tweaker
28	About the "Compression" Tweaker
29	About the "Density" Tweaker
29	About the "Loudness" Tweaker
29	About the "MF/HF Equalization" Tweaker
31	About the "LF/Warm Equalization" Tweaker
32	Some GUI Lite Caveats
33	Comparing Legacy versus GUI Lite presets
34	The two other pages of GUI Lite
37	Additional Notes on VP-8 GUI Network Connectivity
38	Locking/Unlocking the VP8 Front Panel
39	Contacting Vorsis Technical Support
40	Notes
41	GUI Pro – How to obtain "Full Control" of the VP8

## Introducing VP8 Plus

VP8 Plus is a *collection* of deep enhancements to the Vorsis VP8 product that are included in Version 3.3.0 software. The three essential parts of v3.3.0 software and how it is different from the previous release, v2.4.1 are:

- New front panel setup and configuration capability. No need to have a PC handy for installation and setup;
- Improved processing functions that improve audio consistency, clarity, and overall loudness while lowering distortion;
- A new simplified graphical user interface (GUI) software program, GUI Lite, which morphs the VP8's more than 230 controls into just six.

Any VP8 in the field can be upgraded to Version 3.3.0 by a simple to perform software update. A new front panel acrylic equipped with the "Plus" moniker may be ordered by contacting Vorsis Technical Support.

## Hardware Installation

Please see the VP8 manual located on the product CD shipped with the VP8 for detailed instructions on installing the product in your facility. The manual is supplied in PDF format for ease of viewing and printing.

The VP8 is shipped from the factory with a default IP address of 192.168.1.198. Please follow the steps below noting that if the VP8's default IP address of 192.168.1.198 will work on your network you should skip to step 11.

### IMPORTANT NOTE:

Due to the normal settling time of the BS-412 Multiplex Power Algorithm (currently used in certain countries in Europe) the VP8 may not reach its final loudness for about one minute after power up, regardless of whether or not the BS-412 algorithm is engaged.

A future software update will remedy this issue.

## Installation and Setup using the Front Panel

VP8 *Plus* is equipped with new front panel menu navigation functions to permit installation and configuration without needing a computer.

The menu is navigated by the rotary encoder knob and illuminated "V" button. The items in the list are arranged in tree form in order to make navigation simple and logical. The menu is structured so that the Preset selection item is always at the top of the tree. Logically the navigation list is as follows:

- PRESETS
- MODE
- INPUT
- OUTPUT
- NETWORK
- VERSION
- ACCESS

An item called "<<MENU" or "EXIT" is always present at the end of a list to enable backing out of the currently selected item by one level.

The "Output" menu item radically changes as the VP8 mode is changed due to large differences in the controls present in the various operating modes. In the following pages the front panel navigation will be examined in more detail.

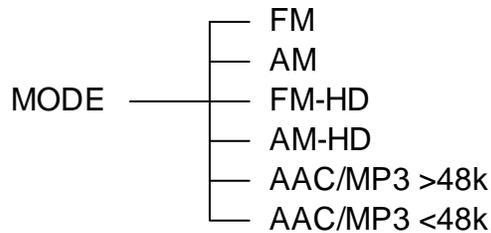
*NOTE: Please use the detail shown in the following sections to determine where the appropriate setup controls will be for your particular VP8 operating mode and installation type.*

### PRESETS

The first menu item in the list is PRESETS which allows scrolling through the list of mode-specific factory (and/or user) presets stored on the VP8 hardware. Once a preset is decided upon, pressing either the knob or the lighted "V" pushbutton will select that preset to be active. The active preset will be display in the front panel alphanumeric display and will scroll if the name is longer then eight characters. The VP8 will respond with "TAKEN" when the preset is loaded and running.

## MODE(s)

The VP8 is equipped with six completely different operating modes:



- FM, complete with stereo generator.
- AM, complete with asymmetrical limiting and selectable lowpass filters and analog transmitter equalization.
- FM-HD, with codec-optimized pre-processing.
- AM-HD, with codec-optimized pre-processing.
- AAC/MP3 > 48k (specialized processing for codecs utilizing greater than 48 kHz bitrates).
- AAC/MP3 < 48k (specialized processing for codecs utilizing less than 48 kHz bitrates).

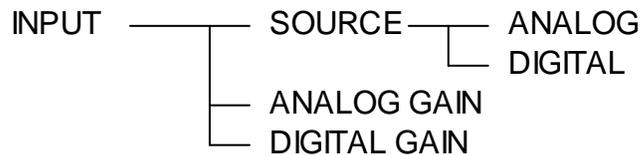
NOTE: THE VP8 OUTPUTS WILL MUTE WHILE CHANGING MODES!

When a new operating mode is being loaded into the VP8's memory the audio outputs will go silent and will remain silent until the new algorithm is loaded.

This is *intentional* behavior that prevents clicks, pops and other disturbing audio discontinuities from appearing at the VP8 outputs while the new mode's processing algorithms being loaded into the DSPs and started up.

## INPUT

The INPUT menu item allows the appropriate audio input type to be selected whether Analog or Digital and also allows independent input gain adjustments to be made for each of the two input types.



We strongly recommend that peak input audio levels are never set so that they peak higher than about -12dBFS as shown on either the GUI or the VP8's front panel meters.

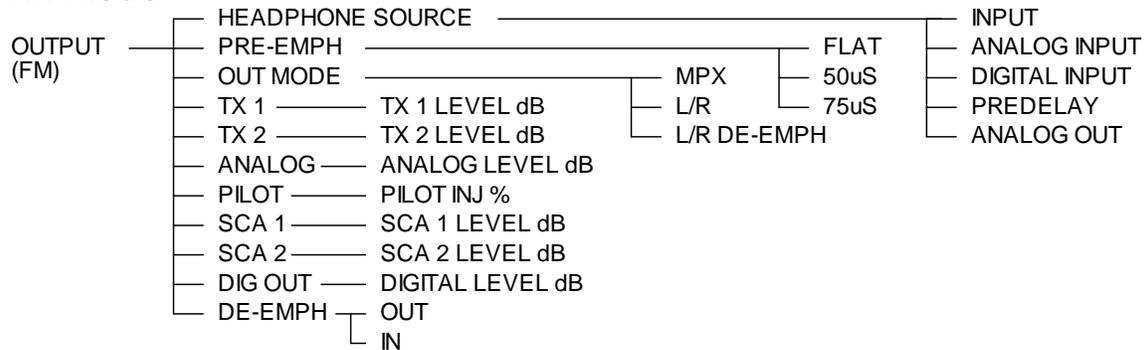
This caution is necessary to allow appropriate headroom for the processing algorithms when they are presented with material that has been highly compressed and possibly also clipped during the mastering process. Such material can achieve far higher peak levels after the first stage of signal processing (in any modern audio processor, not just Vorus!) and those signals may not have enough headroom to avoid clipping within the processor if the input level was already too high.

Said another way, if you hear mysterious distortion or what sounds like clipping on very loudly mastered material it's a good idea to check the input levels to the VP8 to ensure they are not spending any significant time at levels of -12dBFS and above. GUI Lite has a "Ref" indicator on its input level meter at the -12dBFS calibration mark as a convenient reminder.

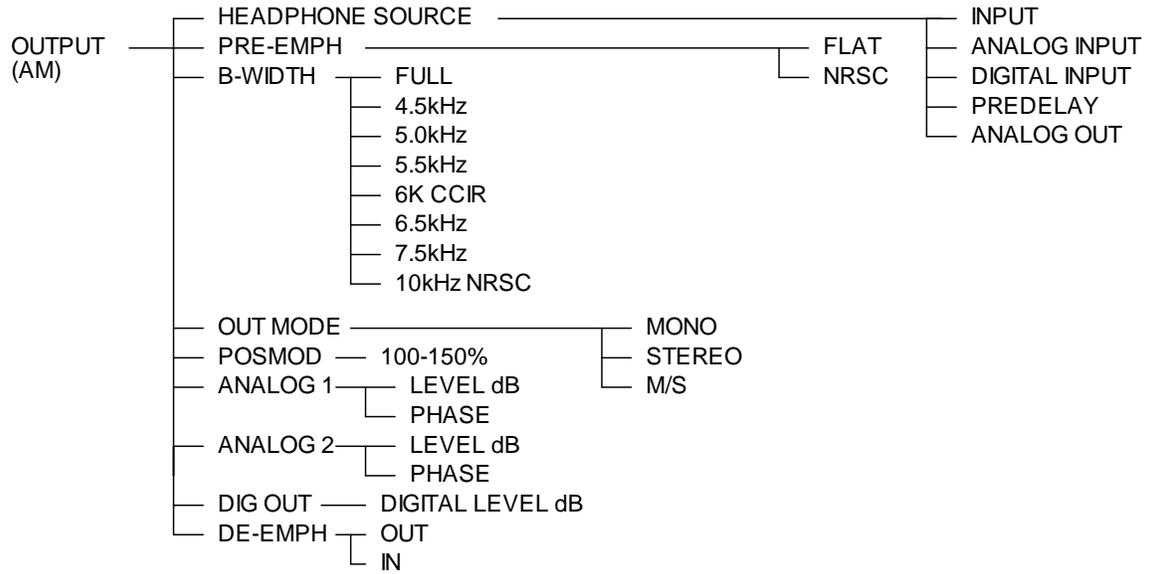
## OUTPUT

The output menu tree is tailored to the current VP8 operating mode, with the most complex being the FM and AM modes due to their specialized processing requirements. The output menu trees for each of the six modes follows along with the corresponding GUI Lite output menu below it for comparison

### FM Mode

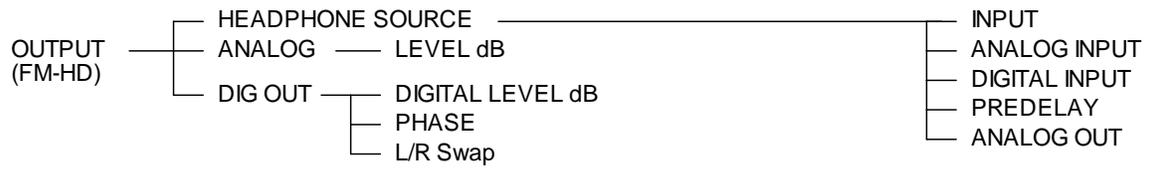


# AM Mode



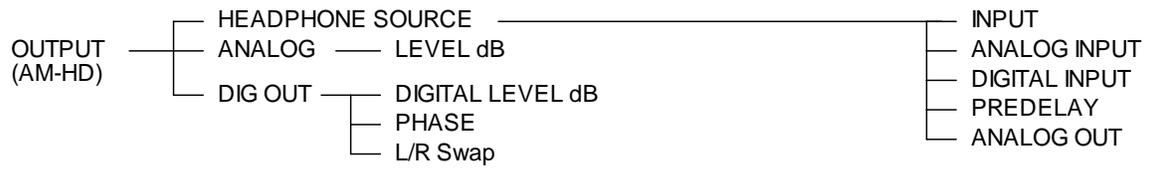
**AM Mode Output Controls**

## FM-HD Mode



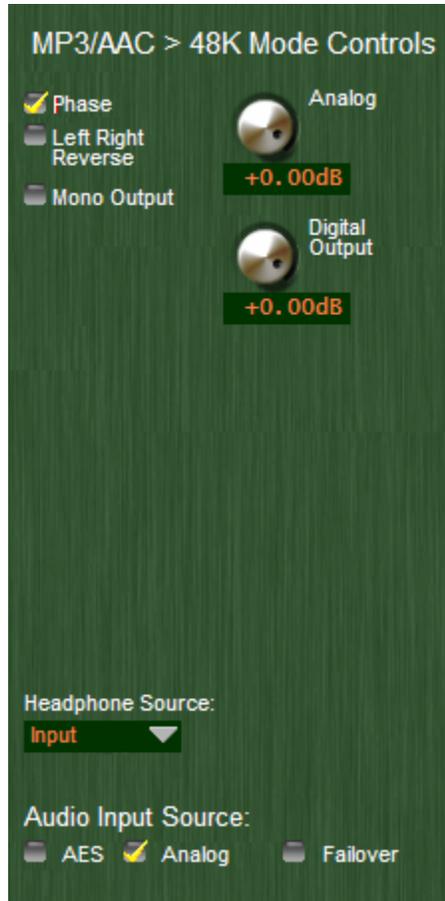
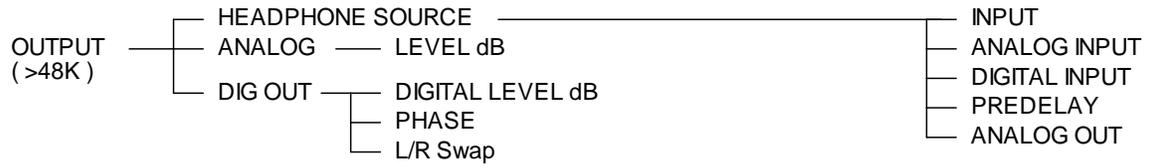
FM-HD Mode Output Controls

## AM-HD Mode



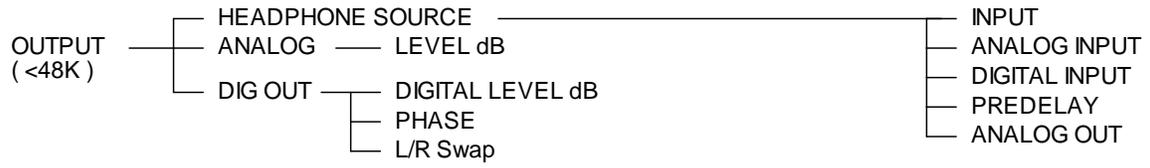
**AM Mode Output Controls**

## AAC/MP3 > 48kHz Mode



## AAC/MP3 > 48kHz Mode Output Controls

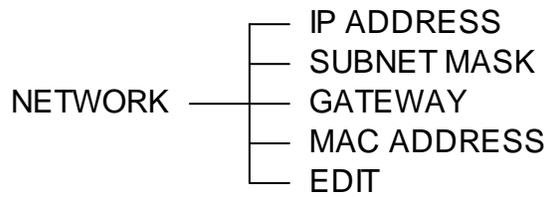
## AAC/MP3 < 48kHz Mode



## AAC/MP3 < 48kHz Mode

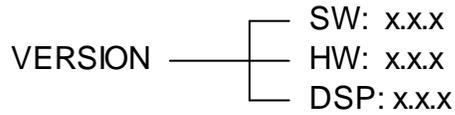
## NETWORK

After the Output options the Network Configuration is next in the list.



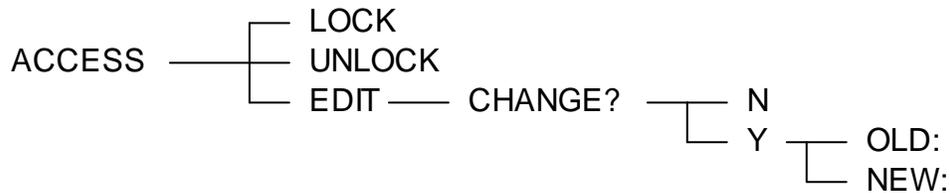
All of the parameters in the Network list can be edited *except* for the MAC address. A MAC address is a *fixed* hardware identification that is intended to be specific *to* and different *for* each networked device. As is the case with most network gear, a Vorsis product's MAC address cannot be changed in the field.

## VERSION



The version dialog displays the currently loaded versions of operating system, FPGA image, and DSP code, noting that these are displayed values only and cannot be changed without actually changing the version(s) that the VP8 is running, i.e., updating it to a new version.

## ACCESS



The Access item allows the front panel security features of the VP8 to be customized. A front panel password may restrict access to the front panel controls and can be set or changed when necessary to keep curious fingers out of the adjustments.

It is not possible to lock the front panel without first setting a password for it. Likewise, if the front panel has been locked it cannot be accessed without first entering the valid password.

## Introducing (*drum roll please*) ... Vorsis GUI Lite!

Version 3.x for VP8 *Plus* adds a brand new adjustment tool to the Vorsis arsenal called simply, GUI Lite. GUI Lite is our new simplified user interface whose under-the-hood intelligence distills the VP8's more than 230 processing adjustments down to just six very easy to use controls. Finding the perfect sound has never been quicker or easier!

The GUI Lite tool is designed for those who would rather change the sound of our Factory presets without hundreds of tweakable parameters staring back at them.

### Adjust Sound Tab



VP8 GUI Lite – 'Adjust Sound'

GUI Lite has only three basic pages hosting controls that an end user might need for installing the processor and adjusting its sound.

- The first page of GUI Lite is called "Adjust Sound" and is solely dedicated to making refinements to our Factory preset's default sound.

- The second page of GUI Lite is the "Calibrate Input/Output" page and hosts the Input and Output Calibrations, Headphone Monitor Source, Input Audio Source and Audio Failover behavior selectors.

- The third and last page of GUI Lite is the "Configuration" page, hosting controls for selecting the processor mode, configuring the GUI to communicate with the host VorsiS audio processor and programming the Scheduler.

Note that for user convenience we've *repeated* the appearance of some of the controls across various pages noting that the Input, Output and processing-related metering are always visible on all three pages.



"Adjust Sound"



"Calibrate In/Out"



"Configuration"

## Installing the GUI Lite Software

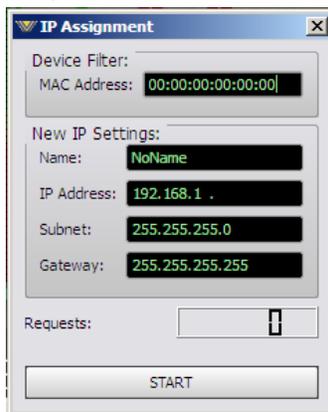
The GUI Lite software is provided to permit access to VP8 sound processing controls not accessible via the front panel. To install the GUI Lite software insert the Vorsis VP-8 software CD into a Windows computer and:

- Click Start
- Then click Run
- Then click Browse
- Browse the "My Computer" device tree to locate the CDROM device and then double click it.
- When the contents of the CDROM drive appear, locate the VP-8 GUI Lite Setup\_x\_x\_x.exe file (where x\_x\_x is the version number) on the CDROM and double click it.
- Follow the on screen instructions to complete the GUI installation.

## Configuring the VP-8 TCP/IP Address\*

The VP8 is shipped from the factory with a default IP address of 192.168.1.198. Please follow the steps below noting that if the VP8's Factory default IP address of 192.168.1.198 will work on your network you should skip to step 1 on Page18.

1. Before starting the configuration procedure, please locate and carefully make a note of the processor's 12-digit MAC Address located on a label either on the top cover or the rear panel. This address will be in the format 00:50:C2:23:xx:xx where xx:xx are the digits unique to your processor.



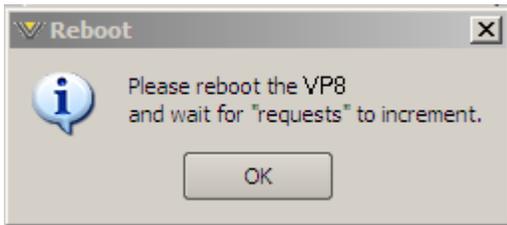
2. Next, start the VP-8 GUI Lite software. Then right click on the control area of the GUI and select the Hardware/Assign IP Address option. The window to the left should appear.

3. Carefully enter your processor's MAC address in the MAC Address field.\*

\* The MAC address must be carefully entered because the GUI will "send" the IP address information to the device that owns the MAC address entered in this step. If the

MAC address is entered incorrectly, the VP8 will never hear it causing it to remain on its factory default IP address!

4. Next, enter a pet name for your VP-8, like "WABC VP8 2", etc.
5. Then, enter the IP address that you wish this VP-8 to have, noting that its address must be unique if the VP-8 will be communicating over a network with other devices attached to it.
6. Next enter the desired Subnet Mask and Gateway addresses.
7. Once this is done, click the "Start" button at the bottom of the IP address configuration box. A message similar to the one below should appear:

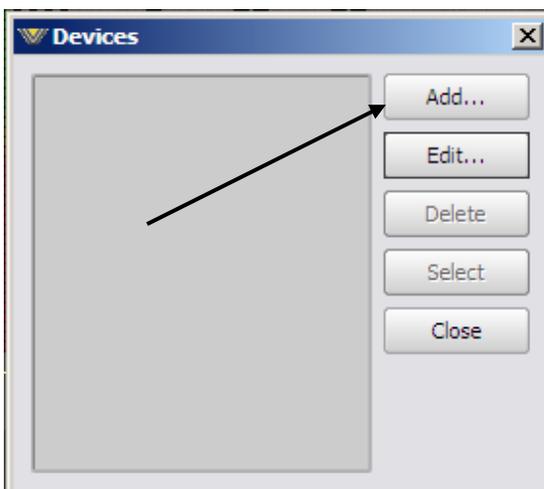


8. Click OK, then remove power to the VP-8 for a few seconds, and then reapply it. As the VP-8 is booting up, the "Requests" number in the IP Address window should increment to something other than zero (please see the bottom of the image in the Requests figure above).

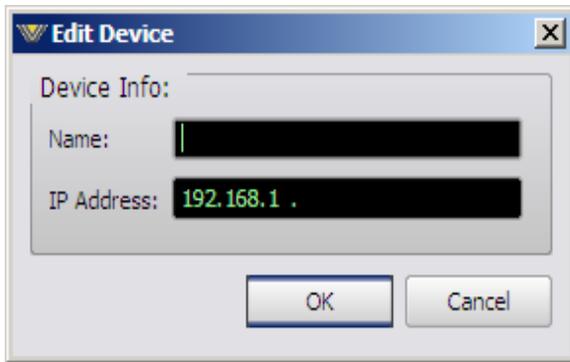
9. When the requests number increments above zero the VP-8 has been programmed with its new IP address and is now ready for use.

## Device Configuration – Connecting to the VP8

1. Now that the VP-8 has its own TCP/IP identity, we must configure the GUI so that it can talk to the VP-8. This is done by adding "devices" to the list of VP-8's that the GUI knows about. To do this:
2. Locate and click on the "Devices" button that is located along the right side of the GUI. When this is done, the following Devices window will pop up:



3. Next, click the "Add" button and the Edit Device dialog box will appear — this box is used for adding new devices or modifying the configuration of existing ones.



**Edit Device Dialog**

4. First, enter the same pet name that you used when you assigned the IP address to the VP-8. This step is not absolutely necessary but it makes for easy identification when there are many VP8s in a facility.

5. Next enter the IP address that you configured the VP-8 for in the previous steps. It is recommended that any existing data in the IP Address box be deleted and new IP address entered from scratch. This ensures that no undesired blanks or spaces creep into the address.

6. After this is done you may click "OK" on the Edit Device box.

7. Then, in the Devices dialog box, highlight (single left click) the VP-8 device that you just added and click the "Select" button. This step tells the GUI specifically which VP-8 you want to connect to next.



8. Next, click on the Online/Offline button just to the left of the Status indicator. In the Status window you may see the message "Trying" as the GUI is handshaking with the VP-8. Once the handshake is complete and communication protocols are locked in the Status message should revert to "Online".

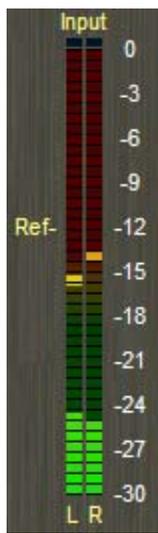
If for some reason the GUI cannot connect with the VP-8, the "Trying" status message will remain and will occasionally blink as the GUI retries the establishment of a connection.

Under these circumstances the configuration of the GUI's networking parameters, those of the VP-8, and sometimes even the interconnecting network, should be carefully examined to ensure that the destination TCP/IP address assigned to the VP and GUI Lite conforms to the expected networking parameters for the host network.

Unless special routing has been configured by the IT department the controlling PC and the VP-8 must be on the same network subnet. As an example, if the VP-8 was assigned the IP address 192.168.1.194, then the PC's IP address must be between the addresses 192.168.1.1 and 192.168.1.254, noting that the VP-8 and GUI PC cannot share the same IP address.

## Setting the Input Audio Levels

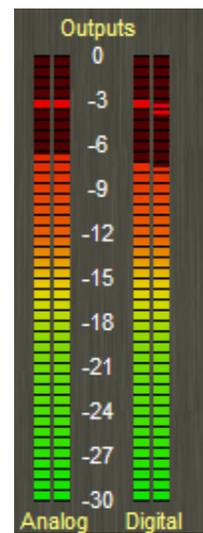
- Connect the Analog or Digital audio inputs as appropriate for your installation.
- Start up the VP-8 GUI Lite application and configure a device if you haven't done so already and then connect to the unit.
- Click on the Calibrate Input/Output Menu tab at the top of the GUI and select the input source to match the Input type you connected to the rear panel. If your audio source is already providing an audio feed, you should see meter activity on the Input and Output meters.



**INPUT METERS**

While still in the Input menu and observing the Input meters within the GUI or on the front panel, adjust the Input Gain control (AES or Analog as required) until the input meters are peaking around the -12dBFS "Ref" marking with normal program levels applied.

NOTE: To ensure proper headroom inside the processor's algorithms frequent peak levels exceeded the -12dBFS "Ref" marking on the Input meters are strongly discouraged.



**OUTPUT METERS**

## Setting Output Audio Levels

Now it's time to make the audio output connections as appropriate for your installation and adjust audio output levels. We'll use the VP8's FM Mode for this example, although the procedure is similar for all six of the VP8's processing modes.

If using the Analog outputs pre-emphasized, navigate to the Calibrate Input/Output screen and select the checkbox for Analog Out Mode: L/R. Then adjust the Analog Output Gain control to set the correct output level.

If using the Analog outputs de-emphasized navigate to the Calibrate Input/Output screen and select the checkbox for Analog Out Mode: L/R de-emph (de-emphasized). Then adjust the Analog Output Gain control to set the correct output level.

If using the AES Digital Outputs, connect it to the equipment being fed by the VP-8, navigate to the Calibrate Input/Output screen and adjust the Digital Output level as appropriate. The Digital Output may be operated either pre-emphasized or de-emphasized.

If using the Composite outputs associated with the rear panel BNC connectors, connect the VP8 to the exciter's MPX or baseband input connector (it's usually a BNC connector like on the back of VP8). Then navigate to the Calibrate Input/Output screen, select the checkbox for Analog MPX, and adjust the TX 1 and TX 2 controls to set the desired modulation levels.

A note for the techies: When the Analog MPX output mode is selected the balanced Analog Left/Right outputs are also transmitting composite stereo, not balanced Left/Right audio as you might expect. If you have an exciter that provides a balanced composite input (most do, even though the composite input is a BNC connector) the best signal to noise performance will be obtained by using the VP-8's balanced outputs. Give us a call if you'd like to interface to your exciter using this method and we'll walk you through what's involved.

Note that the control for setting the Diversity Delay (normally encountered in HD installations) is not present in GUI Lite.

## Taking Presets

The VP8 arrives from the factory set to operate in its FM Mode and also with that mode's 'A Quick Start' preset selected. This preset provides a well balanced sound and is usually a good starting point for a variety of program formats.

To select another preset (when the front panel is unlocked) simply turn the rotary encoder until the desired preset name is displayed (the display will flash, as well as scrolling the preset name). Then press and release the encoder wheel. The display will briefly show "TAKEN" and then begin showing the new preset name. If the name is longer than 8 characters the display will scroll the name.

It's good to remember that our preset names don't necessarily mean that the preset can ONLY be utilized for a format with a similar name. Please feel free to experiment and try each preset we provide to see how it sounds on your station and in your market!

We frequently add new presets to our Vorsis website for customers to download and play with. Presets can easily be installed into our VP-8 using the Preset management features of either GUI Lite or GUI Pro (more about GUI Pro later on...).

## Tuning Audio Processing – an Introduction

During the many years we've spent designing, building, installing and tuning audio processors in all kinds of broadcast facilities there are a few things that have consistently been proven true. Since this seems like the perfect place to do it we'd like to share some of them with you now:

*No one at a radio station listens more critically to it than after the audio processing is changed.*

*It can take many weeks or more to narrow down the perfect sound for a station - even more for a station in a major market.*

*Radio markets are moving targets – you make a change, 'they' make a change, you make another change, 'they' make another change...*

*Expectations of sound improvement when changing audio processors will almost always surpass reality.*

*No one in the station's audience hears what 'radio people' hear.*

*Changing to a more modern audio processor can make the station sound worse by revealing previously masked problems in the station's audio chain.*

*There is almost never enough loudness, bass, or high end.*

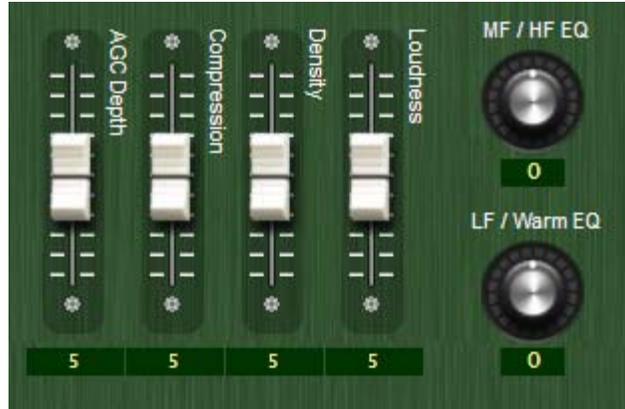
*There is no free lunch –you must always pick something good to give up in order to get something that you want even more.*

The most important advice that we can share about setting up audio processing, particularly new audio processing, is this:

Make *small* adjustments and listen over a long enough period of time that you get to hear what your current settings sound like on *most* program material (you'll never have time to hear *all*).

Resist the temptation to try to fix the processing for the one song that sounds bad. Instead, try to determine why that cut sounds bad. If it's the source material, fix it. If not, *then* you can work on the processing. Too many get these processes reversed and spend a lot of time tuning and tuning and still get nowhere.

The tweaking controls in GUI Lite are located on the 'Adjust Sound' tab of the GUI. On this tab are four vertical sliders for 'processing' and two knobs for 'equalization'. The image below shows how the 'Adjust Sound' tweakers appear....



**GUI Lite's six 'Adjust Sound' Controls**

GUI Lite's six tweakers were specifically designed for manipulating Vorsis Factory presets, and each of the six controls has eleven positions. If someone wanted to know how many different sound settings (preset iterations) that makes, it's easy math. Simply multiply eleven times eleven, and do it six times (once for each control). The resulting number represents how many different sound textures that could be made with one Factory preset – the number is 1,771,561.

If we take into account just the FM Mode presets we have to multiply the above result by eleven once more to arrive at the new total number of possible sound variations. That turns out to be 19,487,171 (almost 20 million) different sound textures created from just those eleven FM Factory presets and six controls.

### **Six controls! Why not just one?**

Over the years there have been audio processors equipped with a 'one-knob' less-more adjustment as a 'simplified' user interface. After selecting a Factory preset the less-more control would be turned up or down to see if a desired sound can be found.

When asked about it, most customers told us that one knob usually didn't allow enough control. They wanted *more*, but didn't want it to be complicated or force them to know technical terms like attack time or gate threshold. They just wanted to take a preset and then crank on

a couple of tweakers (knobs) that could get them the sound they wanted. We took their advice and set about to design a better way... There are only six tweakers associated with adjusting the sound of VP8 Factory presets. Four of them are assigned to tuning the processing "texture" while the two remaining ones tweak "equalization".

As mentioned before, each tweaker has eleven positions numbered 0 through 10. When a Factory preset is recalled all six tweakers reset to their midpoint positions, which is "5" for the texture tweakers and "0" for the EQ controls. Each tweaker then allows adjustments up and down from a Factory preset's starting point.

We've made the adjustment range of each tweaker provide plenty of range around our Factory preset values and as we've previously seen, with just six tweakers millions of possible sound textures can be created. As always, you can safely get right back to where you started out simply by recalling the original Factory preset!

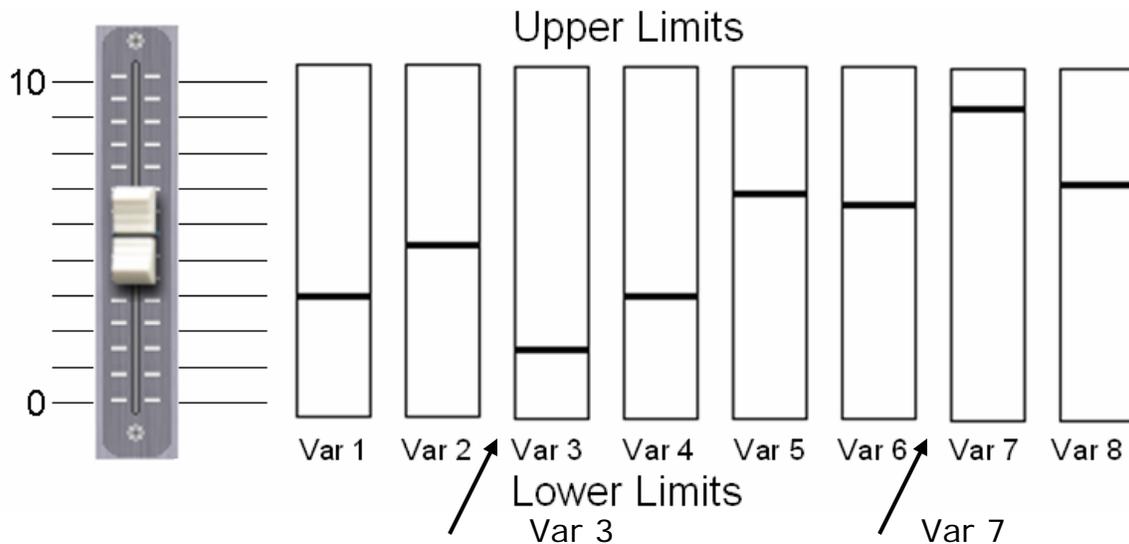
### **How do the tweakers work?**

Each GUI Lite tweaker moves a group of controls that would normally be associated with GUI Pro. Note that the GUI Lite controls are not *new* controls or even ones that are hidden behind a secret back door. Rather, they are the same controls that already exist in the "GUI Pro" version of the graphical user interface. The difference is that GUI Lite can move more than one control at once while GUI Pro can't.

### **What causes a GUI Lite control to stop before reaching 0 or 10?**

Because GUI Lite is adjusting parameters that would normally be associated with GUI Pro, it's possible for one of the parameters being adjusted to encounter its normal end stop while being adjusted by a GUI Lite tweaker.

Since we're not allowed to go past a control's natural end stop GUI Lite must do something to let the user know that an end stop he can't see has been reached. We manage this by preventing the GUI Lite tweaker from going any further in whatever direction is causing a parameter to reach one of its own natural limits – the same limit that GUI Pro would bump into if *it* were being used. The following graphic illustrates this.



See the vertical bars representing 'Var 3' and 'Var 7'? Now imagine that a single GUI Lite tweaker is simultaneously adjusting eight of GUI Pro's controls, 'Var 1' through 'Var 8'. Remember that these controls are *not* seen by a GUI Lite user but they *do* exist in GUI Pro. Remember also that each 'Var' has its own pre-determined min/max limits.

Imagine now that the GUI Lite tweaker is being moved towards '10'. Notice also that the parameter assigned to "Var 7" is going to reach its upper limit before the others. It might also be obvious that Var 7 might reach its limit before the GUI Lite tweaker reaches "10"... in fact the GUI Lite tweaker might only reach '8' before "Var 7" maxes out. Whenever an internal value reaches its limit the GUI Lite control is *prevented* from going any further in *that* direction.

Now let's look at the opposite scenario where the GUI Lite tweaker is being pulled down and "Var 3", which is already nearer its lower limit, will reach that limit before any others. GUI Lite's tweaker might only be able to get down to a setting of '3' before being prevented from going any lower.

It is important to remember this concept - if a GUI Lite control won't go any further in one direction it's because one of the values it is modifying has reached a normal predefined limit. Each GUI Lite tweaker can do the work of many controls, and each has enough range to provide a lot of variability from Factory presets, even when the adjustment range seems to be inexplicably restricted by control limits that are not seen by a GUI Lite user.

## The Six “Tweakers”

### “AGC Depth”



Some users prefer deeper AGC action than our Factory presets provide while others prefer less. The “AGC Depth” tweaker allows this parameter to be adjusted up or down from our Factory settings.

Higher settings will tend to hold fading program levels up for longer periods of time. Likewise, lower settings leave less gain available to pull up the softer passages in programming.

**Note:** the VP8 GUI indicates up to 30dB of AGC/Compressor gain reduction while the front panel is limited to 22dB. Because there is over 48dB of distortionless gain reduction available in the algorithms users need not be overly concerned about deep amounts of AGC activity shown on the Ceters.



Tech Tip: Our feed forward algorithms sound exactly the same at 10dB of gain reduction as they do at 30dB. Therefore driving the AGC harder won't make the resulting sound 'denser'. That task is best left to the Compression and Density controls...

### “Compression”



While the “AGC Depth” tweaker adjusts how deep the compression is, the “Compression” tweaker adjusts how audible it is. Pushing the tweaker up to higher numbers causes an increase in the *audibility* of compression. This effect may be desirable in some formats in order to create a certain level of 'excitement' on the air. Likewise reducing the setting of the “Compression” tweaker reduces the audibility of compression.

Those seeking that old '60's' retro sound will find the Compression tweaker quite useful.



Tech Tip: The Compression tweaker primarily alters the difference between slower AGC and faster Compressor activity. For very dynamic material higher settings of the Compression tweaker can become quite obvious. The reverse is also true – very compressed source material will be affected less by the Compression tweaker.

## “Density”



The “Density” tweaker operates like a power control. Higher settings increase short-term density and the average audio level which makes the audio not only louder, but also fuller. Some formats desire a denser sound in order to create a certain emotional feel for their on-air presentation.

Lowering the setting of the “Density” tweaker reduces the short-term density and makes the audio sound more relaxed. A lower Density setting will also be less loud to the ear even though the peak levels have not changed. Loudness can be made up by using the Loudness tweaker described next.

## “Loudness”



Operation of the Loudness tweaker will be very obvious... higher settings will be louder while lower settings will be less loud. At the upper extremes of this tweaker’s settings and with some combinations of other GUI Lite settings the loudness versus distortion ‘ouch’ factor might be reached before the tweaker reaches its “10” setting. If it’s loud enough (or too loud) on the air and is also riding the hairy edge of distortion – or is already over it - simply reduce the setting of this tweaker by a number or two.

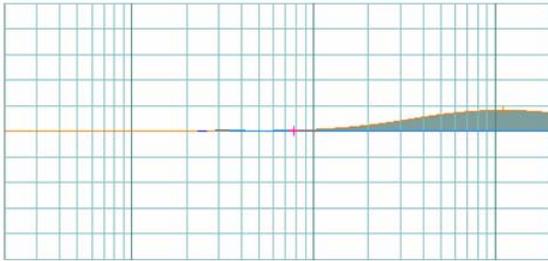
## “MF/HF EQ”



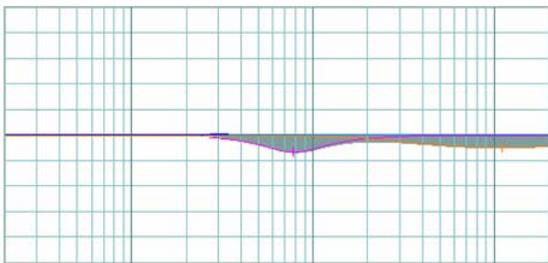
This tweaker modifies the *mid* and *high* frequency equalization contours from what is stored in our Factory presets. The equalization tweakers in GUI Lite have been designed to operate *differently* than the texture tweakers.

While the texture tweakers apply *offsets* to the settings recalled by factory presets, the EQ controls apply *fixed* values of frequency, Q (bandwidth) and equalization boost or cut. This allows a user to apply a completely different style of equalization than that stored in the Factory preset. To reset the equalization back to the starting point simply recall the last preset that was taken.

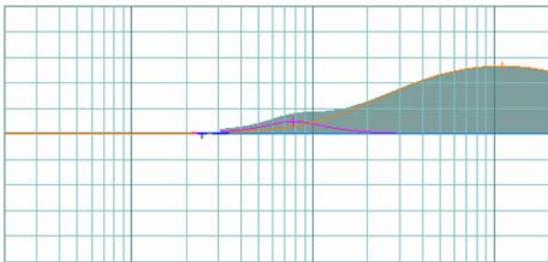
The series of graphics below show the default EQ of a sample preset compared to the resulting EQ at the maximum and minimum settings of the GUI Lite MF/HF (Mid Frequency/High Frequency) EQ knob.



Default MF/HF equalization as set in one of the Factory presets.



Response at the minimum setting of the MF/HF equalization control.



Response at the maximum setting of the MF/HF equalization control.

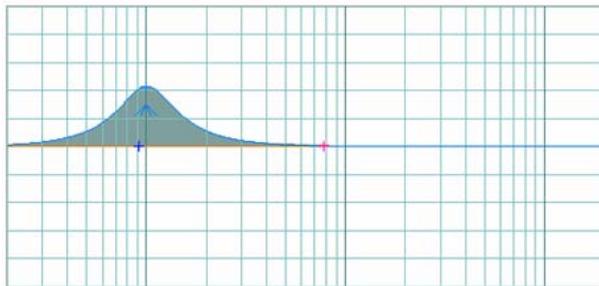
## “LF/Warm EQ”



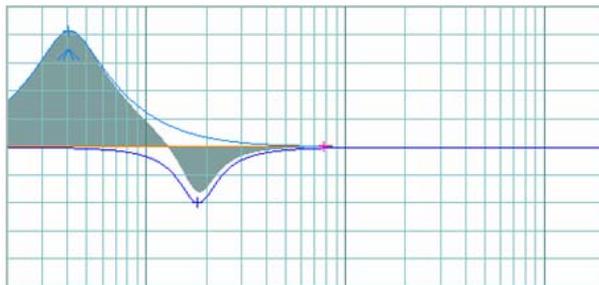
Rather than applying a boost and cut as the MF/HF controls do, we designed this tweaker to behave in a way that would allow users to choose between *two different types* of bass equalization.

In the counterclockwise direction the tweaker provides deep bass with a small reduction of energy near 180-200Hz. This is one method to enhance bass in an automobile listening environment without exaggerating resonances that can occur near 200Hz. In the clockwise direction of the LF/Warm EQ control a *broad* bass equalization is applied creating a warm, fat sound on the lower frequencies.

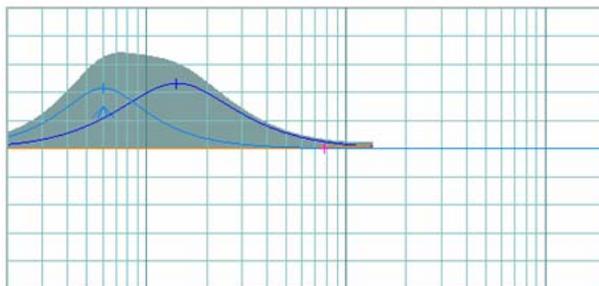
In the series of graphics below the default EQ of a preset is compared to the EQ at the maximum and minimum settings of the GUI Lite LF/Warm EQ knob.



Default LF/Warm equalization as set in one of the Factory presets.



Response at the minimum setting of the LF/Warm equalization control.



Response at the maximum setting of the LF/Warm equalization control.

As before, to reset the custom-generated equalizations back to their starting points simply recall the last preset taken.

## **GUI Lite Caveats**

While 'GUI Lite' can't compete with 'GUI Pro' in terms of the ability to perform deep customization of our Factory presets, it *can* help customers with limited audio processing experience quickly achieve their desired sound without needing to learn the interactions of literally *hundreds* of controls.

What follows is an overview of what to keep in mind about how GUI Lite interacts with both the audio processor and the Pro version of the GUI.

### **1. GUI Lite can only modify virgin *Factory* presets.**

*Why? GUI Lite relies on known starting points within the Factory presets before it can make modifications. The only presets that can be modified by GUI Lite are Factory presets.*

### **2. Once a Factory preset has been modified by GUI Pro it *cannot* be modified using GUI Lite.**

*Why? If a Factory preset has been modified by GUI Pro it is no longer a 'Factory' preset and therefore it is not allowed to be modified using GUI Lite.*

### **3. User-created presets, whether created by GUI Lite or GUI Pro *cannot* be touched again by GUI Lite.**

*Why? User-created presets do not have reference starting points known to GUI Lite and therefore GUI Lite cannot modify such presets.*

### **4. GUI Pro can customize presets created by GUI Lite although the reverse is not true.**

*Why? GUI Pro has full control of all parameters regardless of how, where, and by whom they were created. GUI Lite does not have this capability.*

**5. GUI Lite is not permitted to recall a factory preset, modify it, store it, recall it, and then modify it again.**

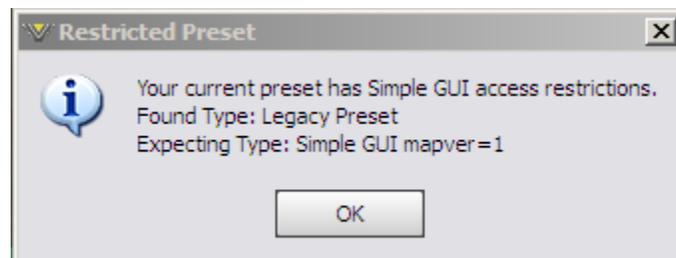
*Why. Such an exercise would likely not prove useful. If more control than GUI Lite is required, then GUI Pro is the tool to use.*

**Understanding the differences between Factory, Legacy, and GUI Lite presets.**

- Factory presets are those created by the Factory using specialized tools.
- Legacy Presets are presets that are created by a customer using the full control program, GUI Pro, or created and saved by GUI Lite.

The biggest difference between the two types of presets is that GUI Lite is permitted to modify *only* Factory presets.

If while using GUI Lite you receive the “Restricted Preset” dialog shown below *and* you know for sure that the preset being adjusted is a virgin Factory preset, simply recall the preset again using GUI Lite and the error should disappear.



## The other two pages of GUI Lite...

The ability to make simplified adjustments to Factory presets in order to put the VP8 in service is nice, but a way to configure settings such as the Input Source and Output Levels are also needed. That's where the other two pages of GUI Lite come in. To find all the controls in GUI Lite simply press one of the three navigation buttons at the top of the GUI's navigation bar.



Up to now we've been discussing the "Adjust Sound" page, as that's the one that most customers will want to play with first. But there are two *other* pages of GUI Lite that need some explanation too, the ones that are reached using the "Calibrate Input/Output" and "Configuration" buttons. Below is the Calibrate Input Output page for the FM Mode.



VP8 GUI Lite 'Calibrate Input/Output' Page

In the FM Mode certain there are specialized controls available for setting up the Stereo Generator, SCA (for subcarriers like RDS) and the output configuration required for the particular application.



**VP8 GUI Lite 'Calibrate Input/Output' Page**

Along with Stereo Generator controls there are others for selecting the Analog or Digital input, adjusting the gains for the Analog and Digital inputs, setting the High Pass Filter cutoff frequency, and selecting the audio source for the headphone output.

Note that for convenience the headphone volume control appears on *all* pages of GUI Lite and the headphone source selector is present on *both* the Calibrate and Configuration pages.

Finally we come to the third and final page of GUI Lite, the Configuration page. This is the one that among other things, allows the VP8 to be switched to one of its six specialized operating modes. This page also hosts the links to the Preset Scheduler and Device configuration dialogs.



VP8 GUI Lite 'Configuration' Page

## **Additional Notes on VP-8 Network to GUI Connectivity**

The VP-8 uses both TCP port 55890 and the first available UDP port in the range of 60001 to 60010 during normal communications sessions with the remote GUI software.

The TCP protocol is used for controlling the VP-8 and reporting its control settings back to the GUI because that protocol works to repair *all* transmission errors that might occur on the network. This ensures that the VP-8's controls will *always* do exactly what you tell them to do and that the control settings you see on the GUI are in 100% agreement with what the VP8 thinks they are.

Metering from the VP8 back to the GUI is a different story however. For this we chose the UDP protocol, a simple data transmission model without any hand-shaking to guarantee data reliability. UDP is used for metering because of its low overhead at both ends of the link and because we don't mind if an occasional meter data packet (or a bunch of meter packets) gets lost. Metering data is updated frequently so a few missed metering packets have an inconsequential effect on the visual appearance and no impact whatsoever on the sound.

What this means to an end user is that the VP8 expects to be able to use TCP port 55890 and UDP ports in the range of 60001 to 60010 on the portion of the network connecting the VP8 and the host PC running GUI Lite.

The most common problem we see is UDP packets being blocked on the host network. When this happens GUI Lite won't be able to receive metering data from the VP8. In this case you'll notice that you're connected (GUI status is "Online") and will even be able to control the VP8. But you won't see any meters working.

If this happens navigate to GUI Lite's Configuration tab and check the box labeled "Metering Data over TCP/IP". Using TCP for metering will increase network traffic because of the handshaking required and metering might, depending on network congestion, appear a bit jerkier than if UDP were being used.

Don't forget to check the Windows Firewall settings if the VP8 GUI and hardware can't connect!!

## Unlocking the Front Panel

There is no factory default passcode for the VP8 – it leaves our factory in an unlocked condition.

To unlock the front panel after you have locked it with a passcode do the following:

Press in and hold the front panel knob until the “Pass 0000” prompt appears - the first two digits will be flashing. Here you will use the knob, turning it to select the first two numbers of your passcode. Once those numbers are visible and flashing press the knob in until it clicks which locks those digits in place. This will move the flashing cursor to the second pair of digits.

When the second pair of digits begins to flash turn the knob clockwise until the second two digits of your passcode is showing in the display and then press the encoder wheel in. The message “OK” should appear. The front panel should now be unlocked.

You can purposely lock the front panel by pressing in and holding the encoder wheel until the display reads “LOCKED”. This locking procedure utilizes the password that you have previously stored in the hardware. If you have *not* stored a passcode the front panel *cannot* be locked.

## Contacting Vorsis Technical Support

Our technical support department is available weekdays during the hours of 8am to 5:30pm, U.S. East coast time. Our telephone number is 1-252-638-7000.

Our website can be found at [www.vorsis.com](http://www.vorsis.com) and provides a wealth of information about our products. User manuals, specialized presets, the very latest software, and a plethora of application notes in PDF format are available for download.

It is our goal to design and build the best sounding and most reliable audio processors available. Input and product suggestions received from our customers are taken seriously, so please feel free to email us [techsupport@vorsis.com](mailto:techsupport@vorsis.com) with your suggestions. We value your input!



## **GUI Pro – What it is and how to obtain it**

The original Vorsis GUI remote control software (GUI Pro) is widely acclaimed for its unrestricted access to processing controls and the quantity and quality of visual feedback provided to the end user. Unfortunately it can also be a bit overwhelming for some users (our top of the line processor has about 470 individual controls!).

Because of its complexity requesting GUI Pro is in effect, proclaiming your abilities as an audio processing expert. Audio processing experts understand the relevant technical terms and are able to perform deep processing adjustments on any brand of audio processor without needing advice from the experts at the factory who designed it.

Visit [www.VorsisProGUI.com](http://www.VorsisProGUI.com) and sign up to receive GUI Pro at no charge. We'll provide you with login credentials, tell you how to download it, and turn you loose on the Vorsis processor of your choice.

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