RAM SYSTEM 2000 USER MANUAL

Qualcomm®
aptX™

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INSTALLING THE RAM SYSTEM 2000

Thanks for purchasing the RAM System 2000. Please make sure the following items are in the box when you open it.

- This manual.
- RAM System 2000 main unit.
- Power Supply labelled **HA-PSU03.**
- Bluetooth antenna.
- IEC Cable.

Depending on your system requirements, you will need several TRS cables to hook up your system. Please check your input sources and output destinations and buy the correct cables.

Additionally, please insert the Bluetooth antenna in its threaded connector in case it comes unplugged from the factory.

The power supply is of the auto switching type so it works worldwide without adjusting anything. In case your country uses a different mains cable other than the one provided in the box, just get the correct one and you are done.

Plugging the unit will display a welcome message and firmware unit´s version. Please note that after turning on the unit, MUTE will always be engaged regardless of the level shown on the red knob. This is to prevent damage of your speakers due to excessive level on startup.

Any time you plug the unit on, the status of the RAM System will be that of the last time it was turned off, so there is no need to reset preset levels or talkback gain. Last input and output chosen is also stored.

GENERAL DESCRIPTION

The Heritage Audio RAM SYSTEM 2000 is a professional monitor controller in a convenient tabletop format. With its matrix of inputs and outputs, covering balanced and unbalanced analog, Spdif digital and the innovative professional quality HA Bluetooth technology, the System 2000 will cover all the monitoring needs of the most demanding professional facilities at a price never heard before.

The level control is taken care of by means of microprocessor controlled gold plated relays, giving an exceptional resolution of 64dB of attenuation in 1dB steps. Keeping active electronics to a minimum, the attenuator is buffered using state of the art Burr Brown circuitry for negligible coloration and no noise.

Headphone monitoring is as critical as main speaker is. Usually a weak part even in the most expensive units, the RAM System 2000 employs very high current drivers in a diamond buffer configuration which are able to drive any headphones to very high levels without coloration or noise. It has 2 amplifiers individually configurable.

INPUT FEATURES

The RAM System 2000 has the following stereo inputs:

- **INPUT 1**: Balanced, accessible on a pair of TRS Jack connectors.
- **INPUT 2**: Exactly as Input 1.
- **INPUT 3**: Balanced by default, it can be configured as unbalanced -10dBV by pressing SHIFT + IN3. The same key combination would return this input to its balanced +4 configuration.
- **DIGITAL**: Transformer isolated, it is available on the RCA connector on the back of the unit. It is able to read signals up to 24 bit/ 96Khz and gets the word clock from the input source.

- **BLUETOOTH**: This input features the same architecture found in the acclaimed Heritage Audio BT-500. If you are not familiar with it, the BT-500 is an Audio Streaming device in a convenient 500 Series format. It streams audio from your Bluetooth-equipped device and delivers a fully balanced, +22dBu stereo output. Integration of mobile devices intro a professional studio environment has never been easier. More info on the Bluetooth features later.

MONITORING OUTPUT FEATURES

The RAM System 2000 features 3 pairs of balanced outputs labelled **OUT1**, **OUT2** and **OUT3**, available via TRS jacks on the back of the unit.

An additional SUBWOOFER output is available on a balanced TRS as well. It follows the input selected, and outputs a mono, unfiltered combination of both channels.

ADDITIONAL OUTPUTS

In addition to the monitoring outputs, the RAM System 2000 features the following outputs:

- **MIX OUTPUT**: It follows the input signal and is taken PRE FADER, meaning its level is unaffected by the monitoring attenuation. It is therefore ideal for recording the mix at the same time, or as an additional cue send.
- **CUE OUTPUT**: Working in tandem with the CUE INPUT, it works as a traditional CUE send, where the CUE Output follows the CUE input plus the Talkback signal when this is in use.

SIGNAL MONITORING FACILITIES

As previously explained, the heart of the RAM System 2000 is its microprocessor controlled, ladder type attenuator. This can be accessed in 2 ways:

- Using the Red Level Knob: As in any traditional monitoring system. Fully clockwise it performs at unity gain (maximum level) whilst reducing it in 1dB steps up to 64. After this the unit turns Mute on.
- Using the **LEVEL PRESET OPTIONS**: The RAM System 2000 has the ability to store 2 different level presets, which override the Red Level knob position. Pressing **SHIFT** + **OUT3** (Level Preset) will ask for which of the 2 presets wants to be stored (1 or 2). Confirmation is given by pressing the corresponding key, **OUT1 (Level Preset 1)** or **OUT2 (Level Preset2)**.Pressing **SHIFT** + **OUT1** (Level Preset1) will make the monitoring level that of the stored preset, same for preset 2.

ADDITIONAL MONITORING FEATURES

The RAM System has the usual MUTE, DIM and MONO functions often found in this type of units with expanded flexibility as follows:

- MUTE: Global Mute, equivalent to rotary knob all fully counter clockwise.
- MUTE L, MUTE SUB and MUTE R: Individual Mute functions per speaker. Pressing **SHIFT** + any individual MUTE will function as a **SOLO** for that given speaker.
- DIM: Attenuates further 20 dB from the attenuation marked by either the red knob or the level preset.
- MONO: Accessible as **SHIFT** + **MUTE**, it outputs a mono signal to the selected output.

TALKBACK FACILITIES

The RAM System 2000 features talkback facilities in a similar fashion to the large format consoles. Talkback signal can be assigned to the Mix signal (following Input selected), by pressing **TB MIX**. It can also be assigned to the dedicated CUE input by pressing **TB CUE**, or at both at the same time, pressing **TB ALL**. All 3 buttons are momentary (they do not engage), so need to be pressed for the talkback to function. This avoids sending embarrassing comments to the talent by mistake.

The talkback signal is taken from the Electret microphone found in the front panel and further amplified. Controls for talkback mic gain are **SHIFT** + **TBMIX** for lowering the gain and **SHIFT** + **TBCUE** for raising it.

Pressing any of the talkback keys will activate the **DIM** function in order to avoid feedback from the mic to the speakers.

HEADPHONE MONITORING

Your RAM System 2000 provides with 2 different headphone amplifiers, placed at the left and right front panel ends. They are capable of extremely loud levels without distortion, noise or coloration of any kind so, before plugging your headphones in, make sure the headphone level is at its minimum setting, and adjust accordingly.

Each headphone amplifier can have 2 different sources. MIX (following the selected input source), or CUE(following the CUE input on the back panel connectors).

This allows for different monitoring mixes for the talent and the recording engineer.

Selecting is possible by means of the red button located close to each of the headphone jacks. (**Button pressed: CUE, button depressed: MIX**).

UNDERSTANDING THE BLUETOOTH INPUT

There is still a popular misconception that Bluetooth is detrimental to the audio quality. Although this has been true in the past, it is no longer the case. Bluetooth is just a “wireless serial port” and, as so, has no ability to interact with your sound quality. However, in order to fit the heavy data traffic that digital audio needs, digital audio compression is applied. **This is the real source for audio degradation in Bluetooth connections.**

This being said, modern Bluetooth technology allows for very high quality codecs taking care of the audio data and, which is more important, pre coded data (such as that in iTunes) is kept unmolested.

NO MORE MINI JACKS

Employing last generation audio specific Bluetooth technology, the best Codecs your devices can support and a state of the Art, Burr Brown based analog signal path, it solves the already classic, irritating problem of connecting your iOS or Android device to your Studio setup.

To this day this has been solved using mini jack to XLRs adaptor cables, but the limitations of mobile devices’ analog audio paths have become clearly apparent.

Listening to references on the iTunes Store, recordings sent by email, Spotify, You Tube, you name it. You do it every day, all the time. Nevertheless integration has been non convenient to say the least, until now.

SOUND QUALITY OVER BLUETOOTH

The RAM System 2000 Bluetooth device automatically recognizes your device´s best Codec option and uses it for streaming.

Apple´s iTunes Store and You Tube use AAC* as native so streaming from an iPhone or iPad will result in a lossless transmission, much better than an analog wired connection!!

Vast majority of Android devices have already adopted the amazing sounding "Qualcomm® aptX™ audio" Codec **, which is nearly lossless and the standard that wireless high quality headsets and sound bars are adopting.

For a complete list of devices currently supporting aptX please visit: http://www.aptx.com/products/browse/categories

In case your device can´t support neither AAC nor aptX, the BT-500 will stream audio using the classic SBC codec.

(*) Heritage Audio is an official AAC licensee.

(**) Heritage Audio is an official aptX licensee.

BURR BROWN´S PEDIGREE IN THE ANALOG PATH

The RAM System 2000 Bluetooth device substitutes your mobile device´s analog circuitry with a state of the art, fully differential Burr Brown balanced output stage which delivers a full 0dBfs = +22dBu output able to drive a load of 600 ohms. This allows direct level comparisons while mastering or mixing with Apple´s iTunes Store or mobile stored reference mixes.

SYNCHRONIZING YOUR DEVICE WITH THE RAM SYSTEM 2000

Synchronizing your mobile device with the RAM System 2000 is as simple as pairing any other Bluetooth device. It will appear as "**HERITAGE RAM 2000**" on your Bluetooth devices´ list.

You Tube hosts nice tutorials about how to do so in both Android and iOS if you need help.

The System 2000 automatically selects the best Codec supported by your mobile device, so no configuration is needed.

OPERATION

Whenever a device is paired with the RAM System 2000, the "**SYNC**" LED will light. From then on, your mobile device takes over the transmission, including Transport control (PLAY, STOP, etc.) and Level (Volume).

Active streaming is confirmed by corresponding Codec LED being turned on.

Please note Codec **IS NOT** configurable. It is automatically chosen from the best available option on your mobile device.

Devices can only be paired one at a time. Whenever a different device needs to be paired, Bluetooth needs to be reset, so **SHIFT** + **BT** buttons must be pressed down.

SUMMARY OF SOFT FUNCTIONS

While main functions in the RAM System 2000 are simply accessible by pressing the corresponding key, several others are accessible as a combination, employing the **SHIFT** key for this purpose. These have been described all along this manual, however for easy recall, they are listed below:

- **SHIFT + IN 3**: Turns IN 3 from balanced +4 dBu nominal to unbalanced -10 dBV nominal. Pressing again does the opposite.
- **SHIFT + BT**: Resets the Bluetooth connection.
- **SHIFT + MUTE L**: Solos the speaker L.
- **SHIFT + MUTE SUB**: Solos the SUB.
- **SHIFT + MUTE R**: Solos the speaker R.
- **SHIFT + OUT 1**: Sets the Level Preset 1.
- **SHIFT + OUT 2**: Sets the Level Preset 2.
- **SHIFT + OUT 3**: Saves level preset (confirmation of preset 1 or 2 needs to follow).
- **SHIFT + MUTE**: Activates MONO listening.
- **SHIFT + TB MIX**: Lowers the talkback mic gain.

- **SHIFT + TB CUE**: Raises the talkback mic gain.

TECHNICAL SPECIFICATIONS

- Maximum analog input level: Over +27.5 dBu
- Digital input: Up to 24 bit/96 Khz. 0dBfs = +22 dBu at the output, all fader up.
- Bluetooth input: AAC, aptX or SBC, 0dBfs=+22dBu at the output, all fader up.
- DIM attenuation: -20db.
- Maximum output level: Over +27 dBu into 600 ohms.
- Noise: Better than -99 dBu.
- THD: Better than .001% at 1Khz, balanced input to balanced output, all fader up.

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LIMITED 2 YEAR WARRANTY

Heritage Audio RAM SYSTEM 2000 is warranted by Heritage Audio SL to be free from defects in materials and workmanship for the period of 2 years to the original purchaser. In the event of such defects, the product will be repaired without charge or, at our option, replaced with a new one if delivered to Heritage Audio prepaid, together with a copy of the sales slip or other proof of purchase date. The warranty excludes problems due to normal wear, abuse, shipping damage or failure to use the product in accordance with the specifications.

Heritage Audio shall not be liable for damages based upon inconvenience, loss of use of the product, loss of time, interrupted operation or commercial loss or any other damages, whether incidental, consequential or otherwise.

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