RAM SYSTEM 5000 USER MANUAL

Qualcomm® aptX™

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INSTALLING THE RAM SYSTEM 5000

Thanks for purchasing the RAM System 5000. Please make sure the following items are in the box when you open it.

- This manual.
- RAM System 5000 main unit.
- RAM System 5000 remote unit.
- Power Supply labelled **HA-PSU02.**
- 3x Bluetooth antenna.
- IEC Cable.
- USB cable.

Depending on your system requirements, you will need several XLR, RCA, DSUB snakes and digital cables to hook up your system. Please check your input sources and output destinations and get yourself the correct cables.

Additionally, please insert the wireless antennas in their threaded connectors in case they come unplugged from the factory.

The power supply is of the auto switching universal 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.

The remote unit is operated by means of an internal rechargeable battery, similar to that found in your mobile phone. A charging dock comes included in the main unit, as is the USB cable. A red LED on the back of the remote unit will light when being charged and the unit can be fully operated while in charge mode. It is recommended to completely charge the battery on its first use.

Please turn on the main unit and the remote unit thereafter. A "**Connecting**" message will display and, if connection is successful, a message will display shortly thereafter.

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 connection problems, the remote will show the message “NO CONSOLE” and will try to reconnect again. It is normal to have this message for a few seconds when turning on, no worries.

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

In order to save your preferred status, press **SHIFT** + **OUT4** (SAVE STATUS)

GENERAL DESCRIPTION

The Heritage Audio RAM SYSTEM 5000 is a professional 5.1 ready monitor controller in a convenient split format. With its matrix of inputs and outputs, covering balanced and unbalanced analog, all common digital formats on a state of the art Wolfson DAC, and the innovative professional quality HA Bluetooth technology, the System 5000 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 premium 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 5000 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 to follow any of the CUE sends or the active input (MIX).

CONFIGURING YOUR RAM SYSTEM 5000

The RAM System 5000 is an extremely flexible unit that covers an array of inputs and outputs rarely seen on products at its price range. Contrary to the usual “optional” 5.1 facilities on products in this category, the System 5000 is 5.1 ready out of the box.

This does not mean that, if your studio does not need 5.1 at present, you are paying for features you don’t need, as it has some smart configuration parameters that take all the juice of your 5000 no matter your application.

So, mainly based on your 5.1 and subwoofer needs, there are 2 main user configuration options that should be set on installation:

- MODE 5.1/ST (5.1 or Full Stereo operation)
- LFE MODE CONFIGURATION

MODE 5.1/ST CONFIGURATION

In case 5.1 mode is going to be used in your facility, please activate it by pressing **SHIFT** + **INPUT 1** and confirm as requested. Repeating the same operation will turn the unit back into Stereo mode. Save status as explained before.

The implications of setting the unit in 5.1 mode are as follows: Inputs 1, 2 and 3 get linked (all 3 lights work at the same time), as do Outputs 1, 2 and 3. These 3 pairs will become your 5.1 system following the protocol below:

- INPUT 1 L-R/OUTPUT 1 L-R: FRONT L-R
- INPUT 2 L/OUTPUT 2 L: CENTER
- INPUT 2 R/OUTPUT 2 R: LFE
- INPUT 3 L-R/OUTPUT 3 L-R: REAR L-R

Additional stereo inputs and outputs should be wired to the additional inputs/outputs.

LFE MODE CONFIGURATION

The RAM System 5000 allows your 5.1 LFE speaker to act as the subwoofer in the additional stereo pair of speakers, a feature missing in most competing products.

In case the same LFE speaker in your 5.1 system is to be used with your additional stereo pairs of monitors, the unit can be configured so a mono signal following the stereo inputs is always present at OUTPUT 2R (LFE).

In order to do so, please press **SHIFT** + **INPUT 2** and confirm. Pressing again and confirming reverts the configuration. Again, save the status so your configuration is stored.

In case Stereo mode is selected (no 5.1) a discrete Sub channel is configured, and OUT 2 is disabled (as it is dedicated for sub purposes!!).

INPUT FEATURES

The RAM System 5000 has the following stereo inputs:

- **INPUT 1 to 4**: Balanced, accessible on a DSUB 25 connector which follows the Tascam protocol. Input 1 is also duplicated on a pair of XLR connectors for ease of use. Nominal level is +4 dBu. Depending on 5.1/ST and LFE mode configurations, Inputs 1 to 3 represent the 5.1 system or are individual stereo inputs.
- **UNBALANCED INPUT**: Accessible on a pair of RCA connectors, its nominal level is -10dBV.
- **DIGITAL INPUT**: Based on the Wolfson WM8741 DAC (still the best to our ears!!), it features AES/EBU, TOS Link and Spdif connectors. Inputs are transformer isolated and read the word clock from the digital incoming signal. A maximum of 24 bit/192 Khz is allowed and

further advanced digital filtering options are available via internal jumpers. The different digital formats are selectable by pressing **SHIFT** + **DIG** in cycle mode.

- **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 5000 features 5 pairs of balanced outputs labelled **OUT1**, **OUT2, OUT3**, **OUT4 and OUT5** available via discrete XLR connectors on the back of the unit. Depending on 5.1/ST and LFE mode configurations, Outputs 1 to 3 represent the 5.1 system or are simply individual stereo outputs.

As has been said previously, **OUT 2 R** can be a permanent subwoofer output depending on configuration. In case OUT 2 seems to not be working properly, please check this configuration first.

ADDITIONAL OUTPUTS

In addition to the monitoring outputs, the RAM System 5000 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. It is unity gain.
- **CUE OUTPUTS 1-4**: Working in tandem with the CUE INPUTS 1-4, they work as traditional CUE sends, 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 5000 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 5000 has the ability to store 2 different level presets, which override the Red Level knob position. Pressing **SHIFT** + **OUT5** (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, MONO and PHASE reverse 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, C, R, RL, SUB and RR: 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.
- PHASE: Accessible as **SHIFT** + **DIM**, left and right outputs are flipped 180 degrees.

TALKBACK FACILITIES

The RAM System 5000 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 inputs 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 kept pressed for the talkback to function. This avoids sending embarrassing comments to the talents 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 5000 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 5 different sources. MIX (following the selected input source), or any of the 4 CUE inputs (following the related CUE input on the back panel DSUB 25 connectors).

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

Selection is possible by means of the double bar rotary switches located in the front panel of the main unit.

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 5000 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 5000

Synchronizing your mobile device with the RAM System 2000 is as simple as pairing any other Bluetooth device. It will appear as "**HA RAM 5000**" 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 5000, 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 **RESET** button must be pressed down.

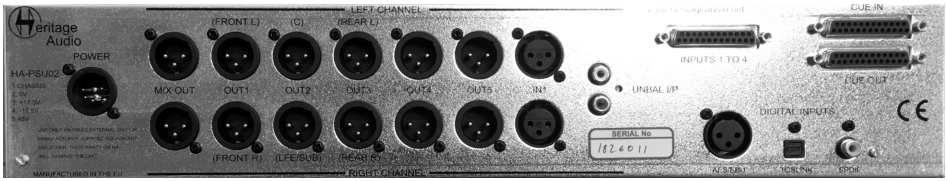
SUMMARY OF SOFT FUNCTIONS

While main functions in the RAM System 5000 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 1**: Configures the 5.1/ST mode of operation.
- **SHIFT + IN 2**: Configures the SUB output behavior.
- **SHIFT + MUTE L, C, R, RL, SUB, RR**: Solos the related speaker.
- **SHIFT + DIG:** Switches the digital input in between AES/EBU, Spdif or Toslink.
- **SHIFT + OUT 1**: Sets the Level Preset 1.

- **SHIFT + OUT 2**: Sets the Level Preset 2.
- **SHIFT + OUT 4**: Saves the status of the RAM 5000, so the unit returns to the last configuration saved when turning off and on.
- **SHIFT + OUT 5**: Saves level preset (confirmation of preset 1 or 2 needs to follow).
- **SHIFT + MUTE**: Activates MONO listening.
- **SHIFT + DIM**: Reverses phase.
- **SHIFT + TB MIX**: Lowers the talkback mic gain.
- **SHIFT + TB CUE**: Raises the talkback mic gain.

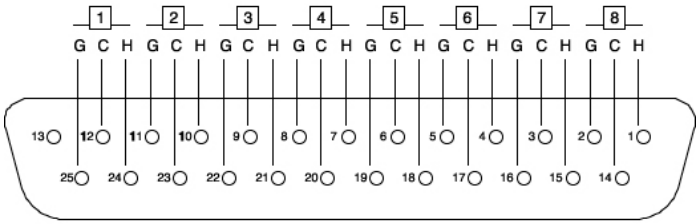
SUMMARY OF CONNECTIONS



The RAM 5000 has all the permanent connections on the back of the main unit as per the picture above.

All 3 DSUB 25 connectors follow the TASCAM protocol, and INPUT 1 is duplicated on a pair of XLR connectors for ease of use.

Pin-out for TASCAM DB25 8 Channel Balanced Connector



H = HOT
C = COLD
G = GROUND

INPUTS 1-4/CUE1-4 IN/OUT:

1- Input / Cue IN/OUT 1L
2- Input / Cue IN/OUT R
3- Input / Cue IN/OUT 2L
4- Input / Cue IN/OUT 2R
5- Input / Cue IN/OUT 3L
6- Input / Cue IN/OUT 3R
7- Input / Cue IN/OUT 4L
8- Input / Cue IN/OUT 4R

All speaker outputs are on individual XLR connectors to avoid the need of DSUB to XLR adaptors as in similar competing products.

The unbalanced input relies on RCA connectors, as it is specially designed to integrate CD players or similar consumer level devices.

Integration of laptops, tablets, iPads and mobile devices are strongly recommended via Bluetooth input. No more mini jacks!

CALLIBRATION OF THE RAM SYSTEM 5000

The Heritage Audio RAM SYSTEM 5000 is calibrated to be unity gain from input to output straight from the factory and therefore it does not require further calibration. However, some 5.1 installers may suggest you to trim some outputs (specially LFE) from the monitor controller. We strongly suggest doing so on the power amps, but individual output trimmers are accessible at the front panel of the unit via a small flat screwdriver. WE STRONGLY SUGGEST LEAVING THEM ALONE AND RECALIBRATION IS NOT COVERED BY WARRANTY.

PAIRING OF THE MAIN AND REMOTE UNITS

Both the main and remote units are programmed with unique ID codes straight from the factory, so the form a unique pair. No other remote units will pair with your main unit (or vice versa).

In case you are getting pairing (connecting) issues, please RESET both units as follows:

- Main Unit Reset: Turn power off on both remote and main units. Please power the main unit again, keeping the red RESET button pressed for at least 3 seconds. Power off and on again.
- Remote Reset: Turn power off and power on again while pressing SHIFT + OUT3. Confirm that you would like to reset by pressing OUT 3 again when asked. Turn off and on.

This simple process should restore the communication between main and remote unit.

DISCLAIMER

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- AAC and Bluetooth® trademarks are the property of their respective owners.
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LIMITED 2 YEAR WARRANTY

Heritage Audio RAM SYSTEM 5000 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.

This warranty is not transferable.

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