RC AUDIO BASSWATCH RC1 Sound System

RC AUDIO BASSWATCH RC1 Sound System User Manual

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If you have just purchased a BASSWATCH then thank you very much for doing so, and I do hope you enjoy the benefits of using this new and revolutionary product. Best regards, Jon and the RC Audio Systems team.

Application of the BASSWATCH
The BASSWATCH is intended to be inserted into a full-range signal in applications where accurate control of the

maximum lower bass and sub-levels is required. The BASSWATCH rides the levels of content below about 100hz to prevent this content from exceeding a preset maximum level, and it does this as audibly transparently as it can so that the sound quality is not compromised and its actions are not noticed by the listening audience.

Primary applications include

- use to prevent system overload and/or audibly excessive bass when artists play tracks that have been mastered with too much bass, which is a significant issue these days when a lot of music is not mastered in flat-sounding studio conditions anymore
- use to prevent offsite bass levels from exceeding a prescribed loudness to satisfy neighbours' and legislative requirements
- The BASSWATCH maintains very precise control of frequencies up to about 85hz, above which its control gradually eases such that by about 100hz and upwards the BASSWATCH's effects on the the content become insignificant.
- In situations where complete level and bass control is required, the BASSWATCH can be used in conjunction with our LEVELIZA for the ultimate transparent control.
- In such situations, the BASSWATCH must be used after the LEVELIZA in the signal chain.
- In terms of noise level compliance, this combination of the two devices offers an unparalleled solution for accurate loudness and bass control while remaining audibly transparent and avoiding any audible compression/limiting/pumping/loss of quality, etc.
- The BASSWATCH is not a peak limiter, so we would always recommend that system limiters should still be used as normal to offer final protection against amplifier clipping/speaker overload, etc.
- The BASSWATCH is not a compressor, it will not compress, expand or otherwise affect the dynamic range of the bass, it just rides the bass level when necessary to keep it within the prescribed threshold.
- Because the BASSWATCH is only interested in the frequencies below 100hz it does not affect higher frequencies that just pass through completely unaffected.

Features and Controls

- The BASSWATCH is a stereo device and has just two controls.
- The "threshold" control is used to set the desired maximum bass level.
- The mode switch would usually be set to "operation mode" in normal use, in which case the unit will operate as slowly and transparently as it can to maintain the correct levels.
- However, this slow and transparent operation makes it difficult to quickly ascertain the threshold level when setting it, in which case the unit can temporarily be set to "calibration mode" in which its operation is faster and less transparent making it easier to find and set the correct threshold.
- There is a green signal indicator for each channel making it easy to check the signal presence and strength of the two channels.
- There is a display ladder to show the approximate bass level attenuation being applied. A green indicator lights when the bass reaches or exceeds the threshold and the attenuation circuits become active, then yellow and red indicators progressively light up as attenuation is applied.

TAMPER PROOF
Also, for applications where the engineer does not want the threshold level to be increased, there is an additional hidden tamperproof adjustment that can be set to limit the maximum bass threshold.

Connections

- Mains power is connected via a standard IEC cable into the rear of the unit. Audio inputs – there is an XLR input for each of the unit's two channels.
- The unit is designed to operate at standard "line" levels. Audio outputs – there is an XLR output for each of the unit's two channels.
- The BASSWATCH is designed to process the two channels together as a single stereo signal, therefore
- it cannot be used as a dual mono processor.
- if only a single mono signal needs to be processed then it should be split and applied to both channel inputs and then the output taken from either output.
- As the unit is designed to process the two inputs as a pair it will not give the correct bass output level if only one channel is supplied with a signal.

Guidance for set up and use Of course, there are many situations in which a BASSWATCH may be found useful, and in that regard, the user will need to use their judgement in how to best deploy the device. However, probably the most welcome use of the BASSWATCH is for preventing excessive bass levels at a venue or event. For this reason, I will provide some guidance on how we would suggest deploying and using the unit in this situation, as follows:-

Connection
Probably the best way to connect the BASSWATCH is to insert it as late as possible in the full-range signal chain before any crossovers, etc, although it could be put elsewhere in the chain if necessary.

Adjustment of the unit

1. Start with the threshold knob turned fully clockwise and mode switch up in "CALIBRATION MODE". In this position, the unit remains inactive and the signal can pass through freely.
2. Once the music signal is present check the two signal indicators are showing both channels live at a similar level.
3. Then once the level is increased so that the desired bass level is reached slowly turn down the threshold knob until the green "ACTIVE" indicator at the bottom of the STATUS ladder illuminates.
4. This means the bass level is now at threshold and so the BASSWATCH is ready to attenuate any bass that exceeds that level.
5. If the threshold knob is left in this position the BASSWATCH will prevent the bass level from increasing regardless of how much the input signal is increased further.
6. The BASSWATCH is still in "CALIBRATION MODE", but should now be switched to "OPERATION MODE" to operate more transparently.
7. In situations when the maximum bass level needs to be tampered proof then the threshold knob should be left fully clockwise and the tamperproof threshold adjustment hidden behind the front security screw should be used instead of the threshold knob when carrying out the above set-up or any other adjustment of the threshold.

Dealing with specific problem frequencies
If there are specific bass or sub-frequencies that are more problematic than others, for example, if there is a specific frequency that resonates out of a building and causes offsite issues, then an EQ can be used on the output of the BASSWATCH to reduce the permitted level of these specific frequencies. For example, if 63hz is a problem then setting a minus 3dB notch at 63hz after the BASSWATCH will mean that the maximum permitted bass level of around 63hz is 3dB less than the maximum permitted bass level of the other frequencies. Are there

any special procedures for adjusting the maximum bass level threshold during an event? The threshold can simply be adjusted a little up or down as necessary if adjustment of the bass level threshold is required.

However, if a new threshold needs to be quickly ascertained or set then the unit can temporarily be switched back to “CALIBRATION MODE” to help with this because in “OPERATION MODE” the response is slower and so it is harder to quickly ascertain the results of a threshold adjustment. What if the bass level falls below the threshold? In that case, the unit will stop attenuating the bass and the BASSWATCH will simply pass the full-range signal straight through. What if the BASSWATCH is attenuating a lot, maybe 12 or more db? The sound quality and performance of the BASSWATCH are not affected by the amount it is attenuating, however, such an extreme bass attenuation is likely to spoil the balance of the sound so in such situations, a reduction of the overall input level should be considered to bring the balance of the sound back towards correct.

Tamper Proof threshold adjustments

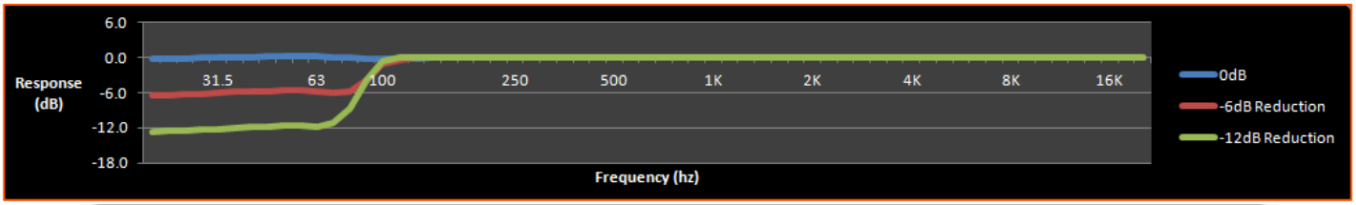
In some situations where a sound system is to be left unattended, or maybe in an installed venue, the engineer that carefully sets the bass threshold levels may not want anyone else to adjust these levels in their absence. For this reason, there is a hidden threshold adjustment that can be set on the BASSWATCH. Just adjacent to the threshold knob there is a hole in the front panel. The holes are tapped with a standard M6 thread, and when we supply the BASSWATCH we cap these holes off with a very short “black M6 dome socket cap screw”. If these screws are removed (with a small Allen key) then a preset adjustment can be found inside. The preset, as supplied, is turned fully clockwise into its off position. To set this tamper-proof threshold:-

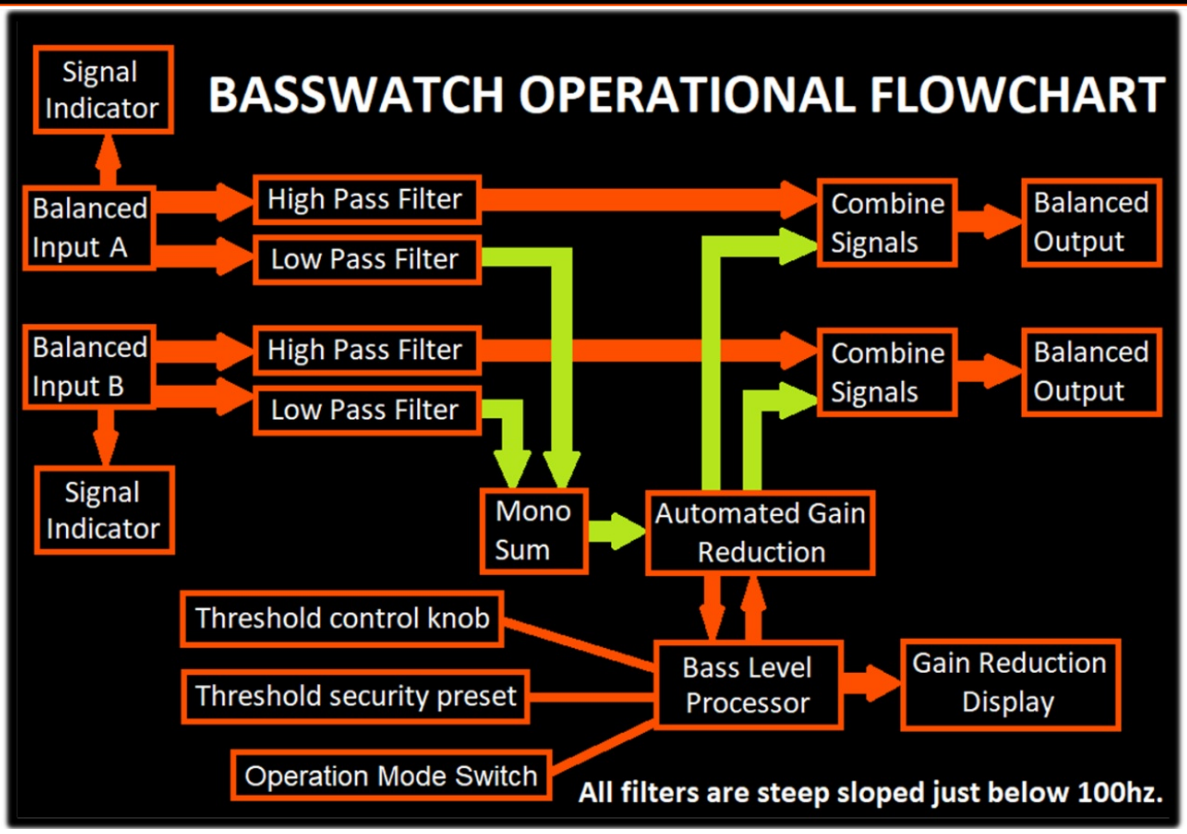
1. Turn the threshold knob up – this is important,
2. then (with music playing at the desired bass threshold) using a tiny flathead screwdriver turn the preset threshold adjustment slowly anticlockwise until the BASSWATCH ACTIVE STATUS the green indicator illuminates. SEE BELOW THE PHOTO OF THE PRESET LOOKING IN FROM THE FRONT. BE CAREFUL NOT TO PUSH OR FORCE THE PRESET AS IT IS FRAGILE.
3. Put the security screw back in so that nobody can access the presets. Once this is done the front panel controls are still fully operational as normal, however, the maximum bass level that the BASSWATCH will allow to pass to the sound system is restricted to the level set on the preset.
4. There are many different security screws and other screws that require special screwdrivers/tools available on the market with an M6 thread, so to increase security further the owner can buy their own unique screws to use instead of the supplied ones that cover the presets. However, the threaded length must not be more than 6mm or there is a risk of damage to the preset and/or circuit board behind the front panel. Of course, longer screws can be bought and carefully cut down to under 6mm.

Specifications

- Dimensions: Standard 19-inch 1U rack case 250mm deep
- Weight: Approx 3.3kg
- Power requirement: 90 – 264 V AC, 47 – 63 Hz, up to 60mA current draw
- Audio Connections on rear: “Line Level” XLR input and output for each channel
- Power Connections on rear: Standard IEC power inlet
- Maximum bass reduction: More than 30dB @ 63hz
- Display: Signal Indicators per channel + Bass Attenuation in 2dB increments

Bass attenuation typical response curve





Warranty

The BASSWATCH comes with a five-year full parts and labour warranty, during which time we will repair any faults if they should develop affecting the performance of the product. This warranty does not cover damage caused by misuse abuse or tampering with the products.

After the warranty has expired we will continue to support the products into the future, including offering a repair facility, spare parts and technical support should any customers need any assistance. Copyright 2023 – RC Audio Systems Limited Unit 25F Sunrise Business Park, Higher Shaftesbury Road, Blandford Forum, Dorset DT11 8ST email:- **jon@rc1.audio**

Documents / Resources

	RC AUDIO BASSWATCH RC1 Sound System [pdf] User Manual BASSWATCH RC1 Sound System, BASSWATCH, RC1 Sound System, Sound System, System

References

- User Manual