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UNIBASS (v3)

with "Pressure Charged Driver" technology

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Introducing the UNIBASS v3

The UNIBASS is a high performance active bass speaker. It can be used as a single unit or in multiples in order to achieve a powerful and dynamic bass response.

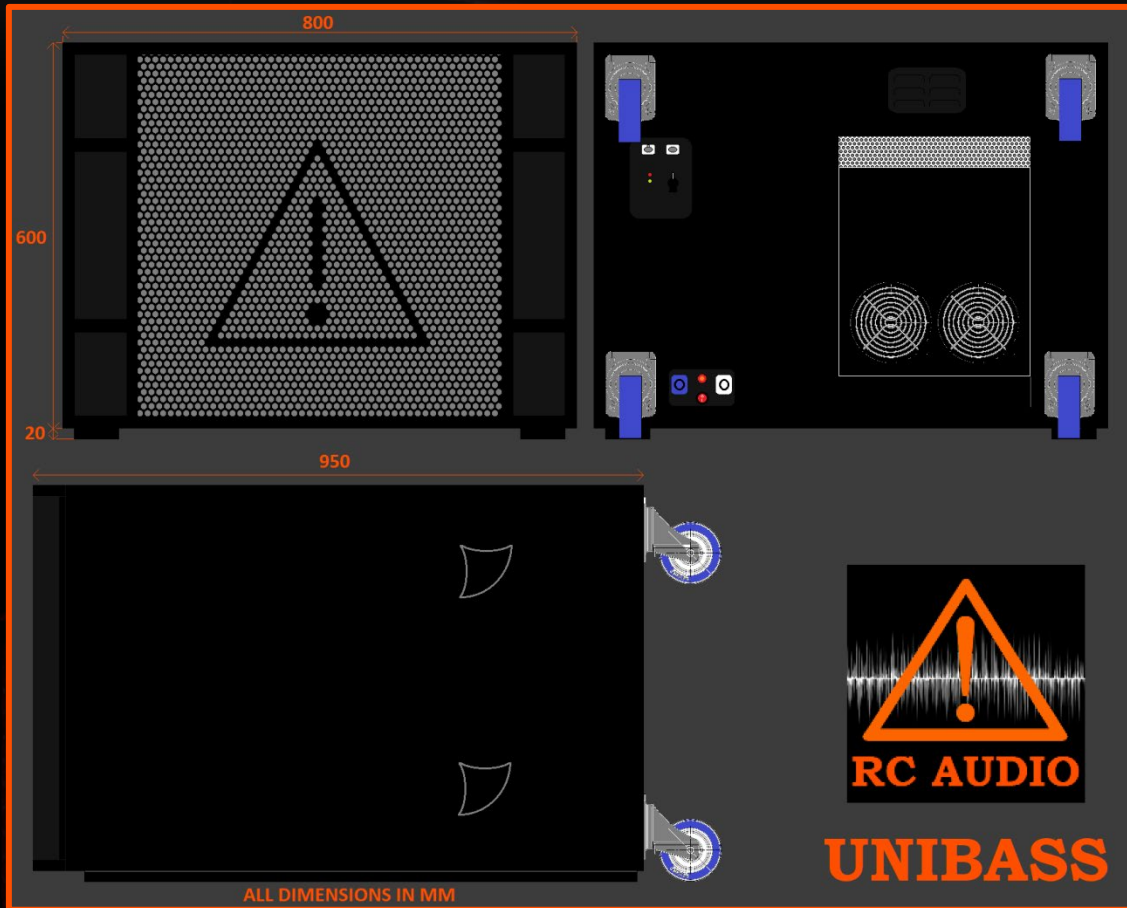
The UNIBASS has many unique features that allow it to achieve an exceptional performance. These features include:-

- Our own unique overbuilt 3.5KW RMS / 7KW peak class H bipolar heavyweight power amplifier - for effortless delivery of the high continuous current demands of many modern music basslines - this is a point of performance failure in many of today's lightweight amplifiers.
- Unique 21 inch "Pressure Charged Driver" delivering the holy grail of very high efficiency, low power compression and high power handling.
- Our own unique "Symitiza" circuit that applies offset correction to asymmetrical waveforms to keep the driver operating as symmetrically as possible within its Xmax zone. This reduces distortion and increases efficiency and reliability at extreme output levels.
- Our own unique analogue computer to manage voice coil heat allowing the speaker to safely run even louder as a result.
- Our own unique analogue signal processing and dynamic management system that helps the unit to make the most of the music, producing a really heavyweight, dynamic and accurate sound that is a pleasure to listen to regardless of how hard it is being driven.
- A user configurable limiter threshold so that the maximum output can be set and limited to suit the application.

The combination of these unique technologies working in harmony results in a truly exceptional performance.

We believe that RC Audio Systems is setting a whole new benchmark in compact high performance active bass speakers with these!

Specifications



Dimensions:	800w x 600h x 950d + skids and castors
Weight:	110kg approx
Mounting hardware:	Skid recesses on top / 35mm pole socket in top
Frequency Response:	30hz to 200hz. Can run from full range signal (inbuilt low pass filter)
Typical peak SPL @1m:	Ground stacked single UNIBASS up to approx 145db, a block of four UNIBASS up to approx 155db
Power requirement:	230v ac, typically between 2 to 10 amps depending on music & level
Audio connections:	Signal via XLR in & link out
Power connections:	20A Powercon connectors in & link out
Controls on rear:	Input gain, power switch, limit threshold & low pass filter frequency
Amplifier:	Unique 3.5KW RMS / 7KW peak heavyweight bipolar class H amp
Speaker Driver:	21 inch driver with pressure charger
Electronics:	Analogue signal processing, including low pass filter & limiters Analogue computer to monitor voice coil heat Symitiza circuit to offset against asymmetrical waveforms Driver pressure charger controller to optimize with music signal
Display on rear:	Green signal present indicator Red high level signal indicator Red power on indicator

Unique technologies - part 1

A pressure charged (supercharged) driver. Yes, the driver is actually equipped with a supercharger.

The biggest enemy of high power loudspeakers is heat, it seriously compromises the sound due to power compression and usually ultimately dictates the maximum power handling of a speaker. Without power compression and thermal failure speakers could be so much louder, but the problem is that not enough cool air passes the voice coil fast enough to take the heat away.

In an engine if not enough air is going in to be able to burn cleanly and produce sufficient horsepower then a turbocharger or supercharger is often used to pressure charge more air into the engine.

So, in a similar parallel where we would like more cooling air to pass the voice coil we have fitted a supercharger to the driver which massively increases the cooling of the voice coil. This in turn hugely reduces power compression, in turn increasing the acoustic output of the speaker by up to 2dB - which represents a 60% increase in actual acoustic power output from the speaker as well as improving reliability as the voice coil is running much cooler. In some of our tests the supercharger was proven to reduce the voice coil temperature by 100 degrees C.

The "Symitiza" circuit to offset against asymmetrical waveforms

When driven hard on bass/sub loudspeakers will exceed their X_{max} . They can operate at higher excursions as long as they remain within their X_{damage} limits, but their response outside X_{max} becomes less linear. This results in increased distortion and often driver offset due to asymmetrical waveforms combining with a less linear cone response.

In order to minimise these effects we designed a unique "Symitiza" circuit for the UNIBASS that analyses the waveform in consideration of the driver response and applies offset corrections as necessary to keep the driver operating as symmetrically as possible within its X_{max} zone even when its peak excursion is well outside the X_{max} .

The result is minimised distortion and increased efficiency and reliability at extreme output levels.

Unique technologies - part 2

The Analogue Computer to monitor voice coil heat

Most power/RMS limiters are pretty crude and tend to limit the speaker quite heavily to ensure reliability when driven hard with any style of music. This does ensure reliability, but means that most music tracks are limited much more than they really needed to be as a consequence.

Of course the UNIBASS has clip and excursion limiters, but we have now removed the very restrictive power/RMS limiters completely and designed a unique analogue computer to replace them.

So, there is nothing preventing the UNIBASS running right up to maximum excursion and clip threshold, it is not compromised by power/RMS limiters. However, the analogue computer continuously calculates the average power/heat going into the voice coil and whenever this approaches safe limits the computer rides the level back just enough to prevent the safe limit being exceeded. The result is that the UNIBASS can perform at 100% consistently without having to be de-rated back by power/RMS limiters.

Our own unique 3.5KW RMS / 7KW peak class H heavyweight bipolar power amplifier.

Many modern lightweight amplifiers struggle to deliver sustained high currents, and as a result the sub can sound lacking in warmth and weight.

For uncompromised performance we designed a unique beast of an amp, combining the headroom and loudness of modern ultra high power amps with the current delivery and sound of a traditional heavyweight amp. We couldn't find anyone else that makes an amp like this, so we just had to make it ourselves and it is one of the reasons the UNIBASS sounds so phenomenal compared to other products.

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