

3DP-Evolution Simtastik Bass-Shaker Kit Documentation

! Beta!



The "**3DP-Evolution Simtastik Bass-Shaker Kit**" brings the ultimate experience up close in your home racing simulator. With an amplifier of 4 x 100W and 4 solid-state speakers with a total of 200/400 watts, the kit is ideal for any type of racing simulation. Powered by the free „Simhub" software and „two stereo audio outputs", it puts every pilot right in the middle of the action. The kit is complete on the hardware side, with all components including mounting material.

**But be careful, danger of addiction, once the experience has been made, never again without!
Promised!**

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Foreword

Congratulations on purchasing your **„3DP-Evolution Simtastik Bass-Shaker Kit“**

This documentation of the complete kit will help you quickly and safely to enjoy the

"Good **Vibrations**" **that** are coming to you by the 3DP-Evolution Bass-Shaker Kit!

For the immersion in the context of the racing simulations, the experience afterwards is a "quantum leap"!

Every driving situation suddenly becomes perceptible, you are now "feeling vibration's" like in the real racing car:

Road unevenness, ABS, ASR and curbs..... are now palpable to the millimeter. The limit of the vehicle takes on a whole new dimension. You won't want to drive without it anymore. Even in the box, our bass shaker kit creates goose bumps. After starting, their simulator vibrates at engine speed, and when the gear is engaged, a "klock" goes through the entire chassis.

Quote:

As a former racing driver in the real world, I can promise you with the **"3DP-Evolution Simtastik Bass-Shaker Kit"**: **"Will it feel like in the real racing car for you from now on"!**

We thank you for your trust and the purchase of our **"3DP-Evolution Simtastik Bass-Shaker Kit"** and help you with this documentation to be able to connect and put your device into operation in a short time.

We wish you as much fun with the kit as we have here every day in our simulator.

Sincerely, your 3DP-Evolution team

Contact: info@3dp-evolution.de

1 Terms and Conditions

1.1 Warranty, Disclaimer and Security

1. The "3DP-Evolution Simtastik Bass-Shaker Kit" comes fully assembled and ready for use. Opening the housing cover and access to the interior is prohibited. If absolutely necessary, you can loosen the pre-installed speaker cables from above, through the corresponding holes, with a suitable screwdriver and replace them with others.



The wiring of the speakers or disassembly of the pre-installed speaker cables may only be carried out with the device switched off or better still with the power plug pulled! Speaker cable openings (red arrows): **Be careful!** Insert the screwdriver straight and do not touch any electronic components other than the screw terminals

Use wire end sleeves to secure the cable ends!

2. The statutory warranty provisions and warranty periods apply
The warranty on the device is 12 months.
3. By opening the amplifier box, or breaking the device seal, the warranty of the device expires.
4. The housing or the power supply of the amplifier work with AC voltage 110V. Due to the necessary cooling, cooling fins and safety grilles are installed in such a way that no access to the main voltage is possible. Nevertheless, access must be secured from children, animals and other uncontrollable things. Although the visible amplifier board works with "harmless DC voltage", any introduction of (metallic) or other objects is prohibited. If the amplifier board is negligently short-circuited, any warranty, liability and guarantee is void just like when opening the device!
5. The buyer is responsible for the proper handling of the device towards other persons and has the duty of supervision for a secure handling of the device.
6. The device is additionally secured on 110 voltage side by a 10 A fuse.
7. **US Special:** If any unit of the Bass Shaker Kit becomes defective, the buyer will be responsible for the cost of return shipping.



2 Information about the 3DP-Evolution Simtastik Bass-Shaker Kit

Case:

- The amplifier comes in a 3DP-Evolution design package
- Each housing is a one-off production (in the FDM process)
 - Due to production, small unevenness can occur on the surface, this is not a reason for reduction.
- personalized custom-made products are possible (meaning, own logo, lettering name. Price according to request and effort)
- Amplifier 4x 100 W

Bass-Shaker or Transducer:

Small Kit:

- 4x 35 W 8 Ω solid-state sound loudspeaker (especially suitable for racing simulation)

Basis Kit:

- 4x 50 W 8 Ω solid-state sound loudspeaker (especially suitable for racing simulation)

Premium Kit:

- 4x 100 Watt 4 Ω solid-state sound loudspeaker (especially suitable for racing simulation)
 - Each speaker will be used accordingly on your Racing Simulator VR; VL ; HL; HR and thus creates the perfect simulation illusion.
 - the speakers must be "rigidly and firmly screwed on" to the Racing Simulator.

Cable:

- 2 x 1.5m 2 x 2.5m pre-assembled 1.5 mm² speaker cable pre-installed.
- 2 x Stereo jack 3.5 mm to cinch socket 3m

3 Contents of the kit

- "3DP-Evolution Simtastik Bass-Shaker Kit" Box, incl. Power supply and amplifier 4x 100W
- 1x power cord **110V US** 3-5m
- Audio cable red black pre-assembled 2 x 1.5m / 2 x 2.5m
- 4x Bass-Shaker Basis or Premium
- 2x 3m 3.5mm jack on RCA (stereo)

4 Time required for the basic setup

Approx. 1.5 hours.

The assembly of the solid-state loudspeakers is done in just under 30-45 minutes. The screws (if screwed directly to the rig) are contained in the boxes of the bass shakers. (Holes please pre-drill with 3mm-3,3mm). "Kits of 3DP-Evolution Bass-Shaker Adapter" include any mounting material.

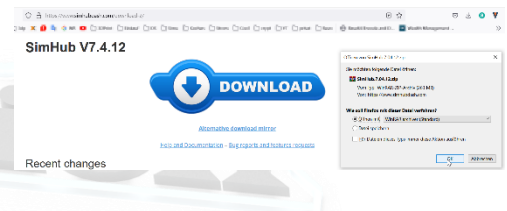
On the software side, you need 20-30 minutes purely for the function setup. The individual adaptation to your preferences is then a process that you determine yourself in time and detail.

5 Required simulation software

For control we need the software "**Simhub**" after connection:

The current software can be downloaded free of charges:

<https://www.simhubdash.com>



6 Request "Do it yourself" or Remote Help

As a rule, the connection of the components and the installation or configuration of the software has not been a problem for the majority of our customers and can be achieved within approx. one hour.


If you expect difficulties again, we at 3DP-Evolution can "at least" help you with the software configuration using remote maintenance.

We give you 30min free remote support,

For further service we charge 45€ / 30 min incl. VAT.

If you want to make use of this, please jump to the chapter "Remote Support".

7 Requirements PC side

- **A PC is required that has a sound card with two free stereo speaker outputs 3.5mm Jack = 4 channels):**
 - If you have already occupied your sound card, a second card can be operated additionally via an expansion slot or as a USB variant!
 - Example: Logilink 7.1 USB
- Software: Simhub (<https://www.simhubdash.com/>) freely available (must be downloaded and configured by yourself)
-  ○ Please support the creators of Simhub! The purchase of a voluntary license as an appreciation cost from 6€ on!

8 Quick Start

Setting up the bass shaker box:

The device is designed as a standing device but also for mounting on a side panel of a racing simulator. (Hole spacing 114x140x5mm. See appendix figure.) Additionally, if you have an aluminum Simrig 40x80mm or 40x160mm, you can order brackets to directly mount the amplifier to your rig!

Basically, it is planned to set up the "*3DP Evolution Simtastik Bass Shaker*" under the driver's seat of the racing simulator.

But, since with the indirect LED lighting, the device is visually very appealing, you can of course position it as you like in the visible area and enjoy it every day.

So you can put it wherever you want, you just have to respect the length of the delivered audio wires.

Traditionally placed:

The pre-installed speaker cables are shorter for the rear speakers (about 1.5m), as they only have to be moved under the seat to the left or right side of the speakers.

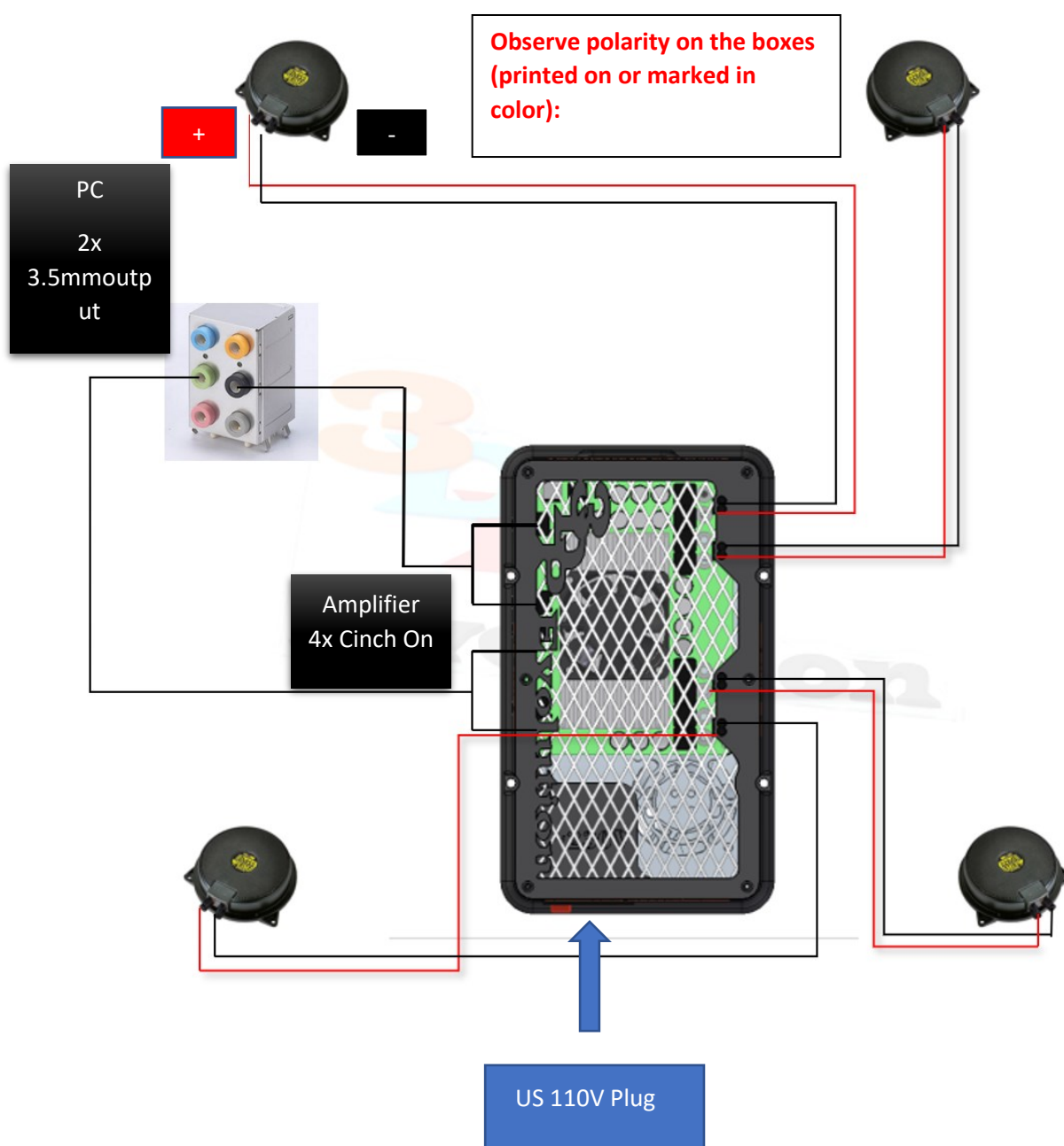
The cables to the front are correspondingly longer (about 2.5m) to guide you on your simulator or in a cable routing to the front left and right.

There is no problem if you place the box other than under the seat, as all channels are free to choose in the software. So, you do not have any restrictions on the channel selection. Just lay it out on the floor before mounting and label the according channel in the software. See later the recommended config section.



Ultimately, it "does not matter" where the device is located and in which order the cinch channels are selected, the assignment of which audio channel serves which channel in the amplifier, or thus which bass shaker, can be assigned arbitrarily in the software Simhub!

8.1 Schematic design and connection of the components



9 Bass shaker mounting and connection:

Fix the bass shaker in the desired position (VL, VR, HL, HR), pre-drill ($\varnothing 3-3,3\text{mm}$) and screw it in, observe wiring (+red;-black),DONE.

The bass shakers are screwed to the simulator "**STIFF**" as adequate for the four suspension points/tires.

We mean "**STIFF**" in capital letters here, because you want to make sure of that the shakers are as solid secured as possible on the rig to avoid undesirable noise.

If the bass shakers are not screwed properly, they can produce strong rattling noises under heavy use "for example, occasional drive through the gravel bed" if the screw connection is too loose.

This could not only harm the speakers themselves, but also cause loud and unpleasant noises.

Recommendation for too hard noises underpin the bass shaker with a thin felt or rubber.

If there are no 3 or 4 points for screwing on the bass shaker on the simulator (tubular frame), please get a 4-8mm thick aluminum piece as a holder in the size of the bass shaker, mount the aluminum holder on the tubular frame and the bass shakers then on the holders. This gives the flexibility not to have to screw exactly to the prefabricated holes. Or, purchase one of our special 3DP Bass-Shaker adapters.



Strong vibrations in certain frequency ranges have the unpleasant property of loosening any connection from a certain intensity. Please check the screws again and again, if there are any noises, and if necessary. "good tangible"!

If you prefer extreme vibration, we recommend replacing the bass shaker screws with "through screws with locking nuts" if necessary.

Don't overtighten Screws M4 or M5 are tighten 3 moderate by 3 Fingers on a T-Hexnut tool or:

Thread	max torque in Nm				
	3.6	4.6	4.8	5.8	8.8
M1.6	0.05	0.065	0.086	0.11	0.17
M2	0.10	0.13	0.17	0.22	0.35
M2.2	0.13	0.17	0.23	0.29	0.46
M2.5	0.20	0.26	0.35	0.44	0.70
M3	0.35	0.46	0.61	0.77	1.20
M3.5	0.55	0.73	0.97	1.20	1.90
M4	0.81	1.10	1.40	1.80	2.90
M5	0.60	2.20	2.95	3.60	5.70
M6	2.80	3.70	4.90	6.10	9.80
M8		8.90	10.50	15.0	24.0
M10		17.0	21.0	29.0	47.0
M12		30.0	36.0	51.0	81.0

10 Configuration of your 3DP-Evolution Simtastik Bass Shaker"

Basically, the following knowledge is necessary for the implementation:

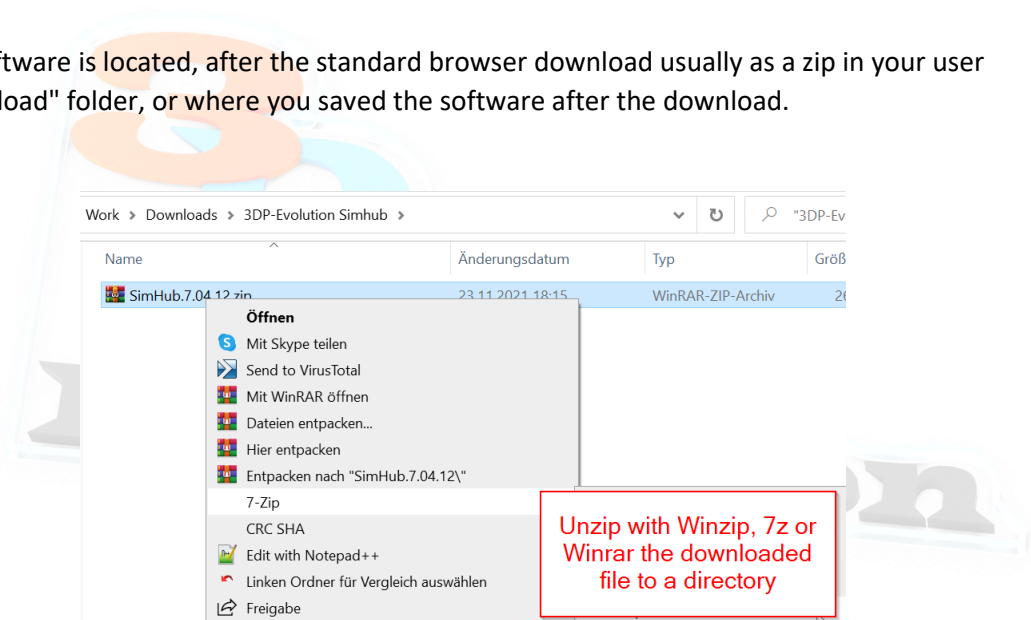


- Knowledge of Windows 10 and handling the installation of programs
- Administrator access (password)
- Knowledge of the PC's internal audio system or expansion card, as well as access to their configurations
- Configuration of the audio channels on the Windows software side
-

10.1 Simhub Software Installation

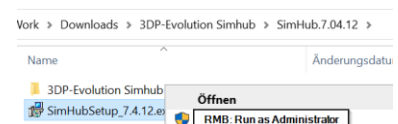
Unzip the downloaded zip with Unzip or 7z

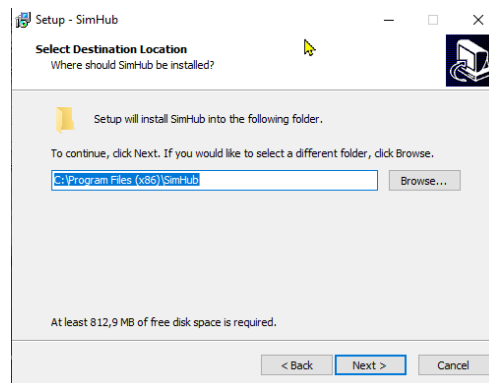
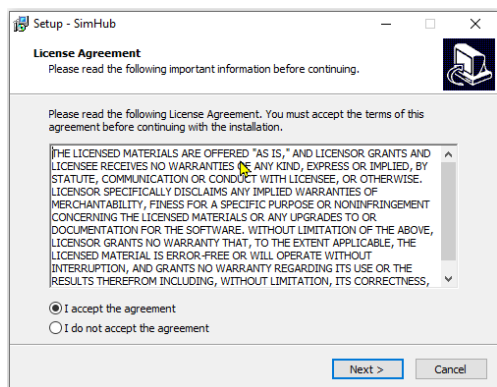
The software is located, after the standard browser download usually as a zip in your user "Download" folder, or where you saved the software after the download.



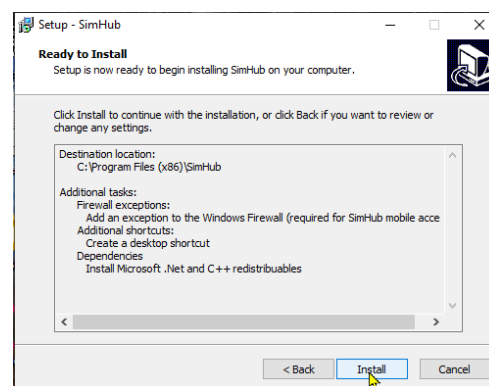
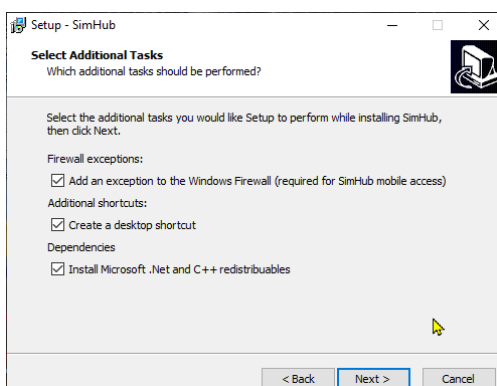
Start the unzipped SimHub.x.xx.xx.exe and then confirm the administrator password after entering the corresponding dialog.

Click through the installation dialogs:





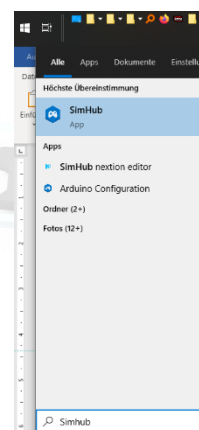
No changes need to be made unless you want to install the software in a different directory than the default directory



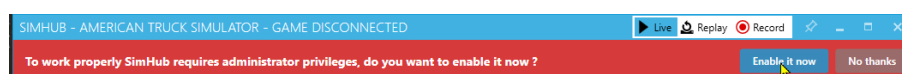
Ready.



The fastest way to start the software is with the Windows key + input from: Simhub + Enter key!



At the first start, it is asked whether the program should be started with "Administrator rights". This should be accepted!



Please support the manufacturers of this incredibly versatile software (from 5€ up) and buy a license for your system! (But it also works perfectly without a license!)



**Get SimHub License
and help SimHub development !**

SimHub Licensed Edition goodies

- Drive all your arduinos and displays to up to **60FPS** instead of 10FPS
- Sharper bass shaker effects
- Automatic game switching
- Start minimized
- No nag screens

TEST LICENSED FULL SPEED

GET LICENSED EDITION



LOAD MY LICENSE FILE

At the moment of creating this document, Simhub supports an incredible more than 50 racing games!

10.2 Additional sound card(s)



If you do not have free slots for all 2 x 3.5mm jack's on your PC, as you already use them for other applications, you can retrofit a plug-in card or external USB soundcard, the costs are between 20-35€ depending on the model you choose.

2 examples:

[LogiLink USB Sound Box 7.1 \(external sound card\)](#)

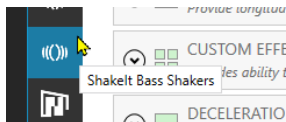
[Creative Sound Blaster Audigy](#)

11 Software setup of the bass shakers - Simhub

To set up the bass shakers, select the sub-item in the left settings menu:

Shakelt Bass Shaker





11.1 Tab: Sound Output:

In general, here you select the mapping of properties to dedicated Bass-Shaker,

So to say you decide which property will be directed to witch Bass-Shaker FL,FR,RL,RR!

Activate your sound card in Simhub, in whose outputs you have plugged your two 3.5" mm jack plugs.

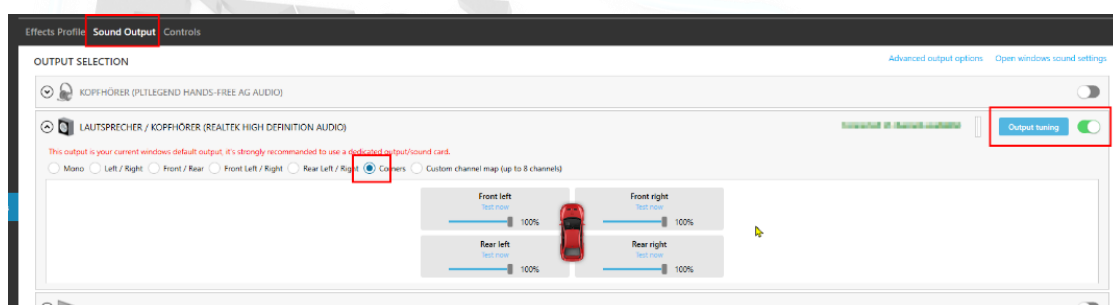
Expand the corresponding properties for the sound card.

To configure the sound card to use the channels, ask one of the two entries:

„Corners“ or „Custom Channel Map“

11.1.1 Corners: (simple layout)

As soon as one of the "Test now" links is clicked, the bass shaker connected to that channel begins to vibrate significantly.



With the setting "Corners" it is not possible to influence the assignment of the channels to the bass shakers.

If the channels at the front or rear are reversed (R-L), you “must” physically switch the cables at the “INPUT’s” to the 3DP-Evolution Amplifier-Box accordingly to the setting (find out by pushing Test now and wire the right Bass-Shaker to it).



11.1.2 Troubleshooting:

- Not all Speakers vibrate, or some vibrate twice to the same Test now button
„YOU ARE 99% in STEREO Mode in the Windows System Soundcard Settings!“
 - o The configuration of the Windows PC is set to "Stereo". Please configure the correct sound setup 5.1 or 7.1
- Some speakers do not vibrate at all
 - o One or both of the 3.5 mm stereo jack plugs are plugged into the wrong 5.1(7.1) connector in the computer
 - o Try all audio outputs "one by one" on your sound card by changing the relevant jack plug on the computer audio connectors.



When working on speaker cables, cinch plugs or jack plugs, please always switch off the bass shaker on the main switch beforehand!

11.1.3 Advanced configuration "Custom Channel Map"

We recommend to use the following selection: "Custom Channel Map!"

Tip to make channel assignment as simple as possible:



It is very easy to select and label each Bass-Shaker correctly, if you layout all Bass-Shaker connect them before mounting and simply push the test link. Then you just label the responding Bass-Shaker as it's (later) position on the rig!

Please never connect or disconnect audio cables when amplifier is on

The practice to not harm any electronic circuit is, to disconnect the plug from mains (110V)!

Advantage:

Here you can configure each channel and all effect mappings according to your personal preference.

While it's more elaborate, it's ultimately the way to a professional all-encompassing attitude.

The following example images show the original setup from our active simulator in the scroll-down:



We recommend plugging in the cinch plugs and then configuring the assignment with the help of the software in the „Sound Output" tab for your individual setup.

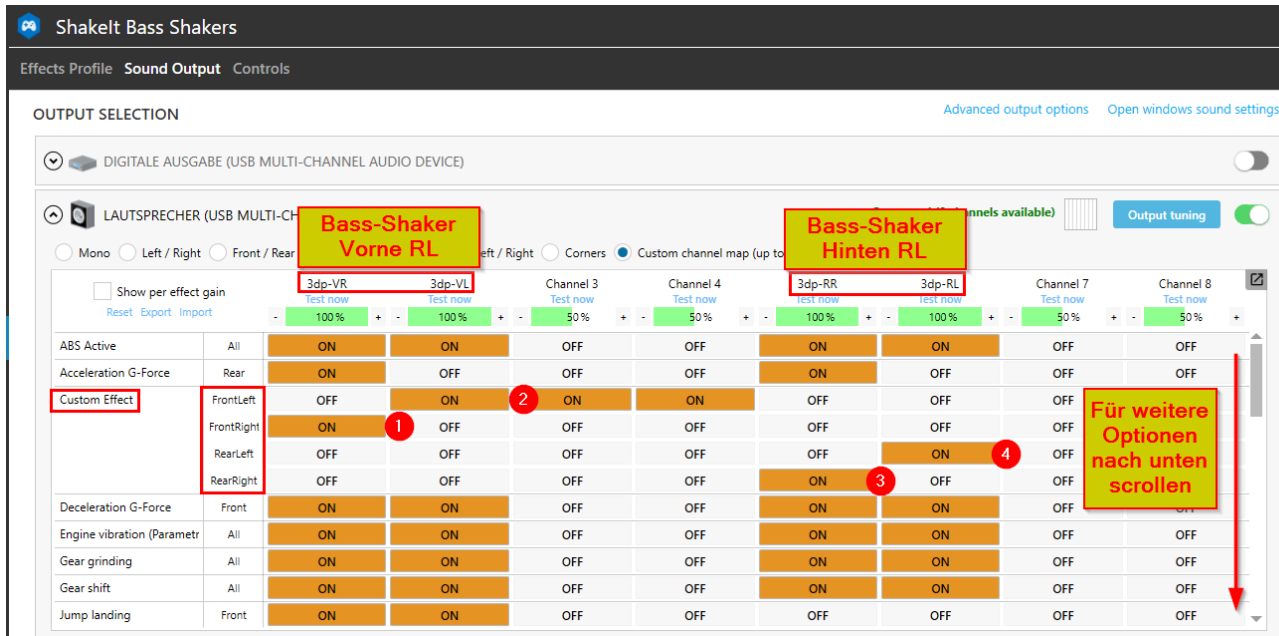
Here you can rename the Channel1-x yourself, so that each channel is named accordingly:

Front right: "Front right", Front left: "Front left", Rear right: "Rear Right" and Rear left: "Rear Left"

Example:

In our system, the channels 1,2,5 and 6 are occupied after any insertion of the 3.5mm jack plugs!

These channel assignments may of course differ on your system.



Shaker Bass Shakers

Effects Profile Sound Output Controls

OUTPUT SELECTION

DIGITALE AUSGABE (USB MULTI-CHANNEL AUDIO DEVICE)

LAUTSPRECHER (USB MULTI-CHANNEL AUDIO DEVICE)

Output tuning

Channels available

Custom channel map (up to 8 channels)

3dp-VR 3dp-VL 3dp-RR 3dp-RL

Channel 3 Channel 4 Channel 7 Channel 8

Test now Test now Test now Test now

100% 100% 50% 50% 100% 100% 50% 50%

ABS Active All ON ON OFF OFF ON ON OFF OFF

Acceleration G-Force Rear ON OFF OFF OFF ON OFF OFF OFF

Custom Effect FrontLeft OFF ON ON ON OFF OFF OFF OFF

FrontRight ON OFF OFF OFF OFF OFF OFF OFF

RearLeft OFF OFF OFF OFF ON ON OFF OFF

RearRight OFF OFF OFF OFF ON ON OFF OFF

Deceleration G-Force Front ON ON OFF OFF ON ON OFF OFF

Engine vibration (Parametr All ON ON OFF OFF ON ON OFF OFF

Gear grinding All ON ON OFF OFF ON ON OFF OFF

Gear shift All ON ON OFF OFF ON ON OFF OFF

Jump landing Front ON ON OFF OFF ON ON OFF OFF

Für weitere Optionen nach unten scrollen

Also, in this setting you can use the switches „Test now“ to check whether the cinch plugs on the amplifier input have been wired correctly. If a wrong bass shaker vibrates when actuated, the correct assignment can be controlled here via software switches in columns of the tables.

The assignment e.B. in channel 1 (3dp-VR) in the "Custom Effects" to "Front Right" (FrontRight) is done by setting the button "On"(point1) in the column matrix of the channel on which your corresponding bass shaker vibrates:



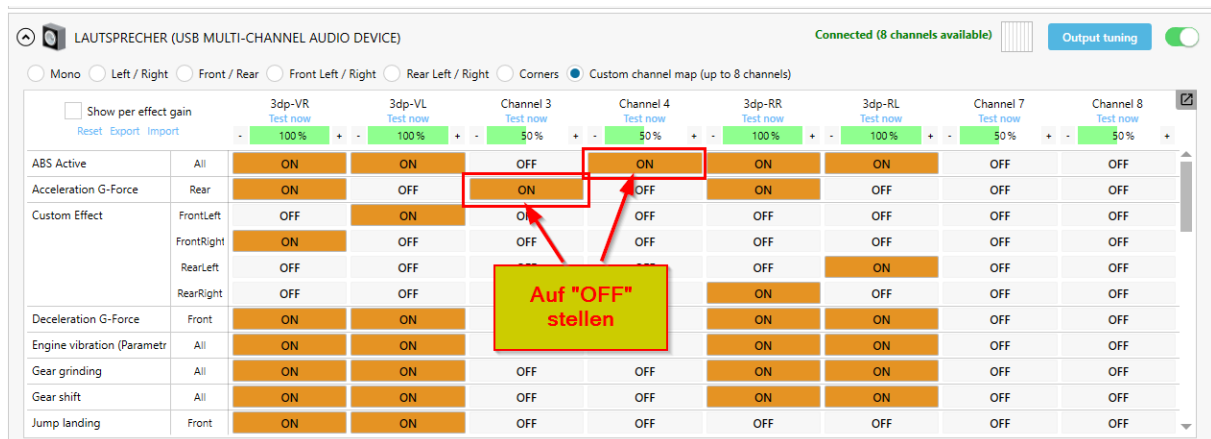
It is important that you configure a column for each corresponding „bass shaker(wheel)“!

It should be noted that the wheel assignment properties can be assigned several times in different effects. That is, for a "column" logically "everywhere" the correct wheel assignment must be identical.

Unused channels can be set to "on", but will not have any influence later on.

For the sake of order and for a better overview, we recommend that you set all switches in une used channels to "off":

After that, in channel 3/4, the switches for "ABS Active" and "Acceleration G-Force" would have to be set to "OFF" in the next image, as they are not used.

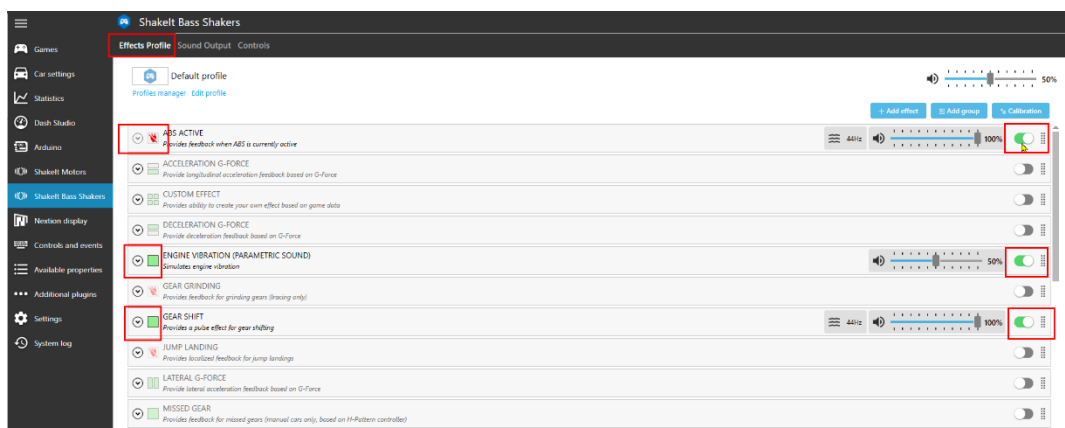


12 Choice of effects

Now all that remains, is to decide which effects you want to give to your racing simulator with your bass shakers, by activating the corresponding options on the right side with the slider switch (on=green). Subordinately, there are also incredibly many fine-tunings, which you can adapt to your personal preferences by trying out or testing them in trial runs.



The most important and top rule for setting: For the first configuration, set only "one" effect active and "try" your desired setting with your race car. Only at the end, all effects are switched on simultaneously!



12.1 Configuring the Property vibration signal

Primarily you only need to know 3 settings that influence the Property occurrence

1. Frequency
2. Impulse duration
3. High Priority

Just configure it to your liking and being comfortable to identify the signal at all time between all other signals.

Assign each property to a unique pulse!

So it may differ a bit from the reality, but it gives you insane possibility to feel every property in every situation, even in high pressure infights during race!

13 Final In-Game Settings

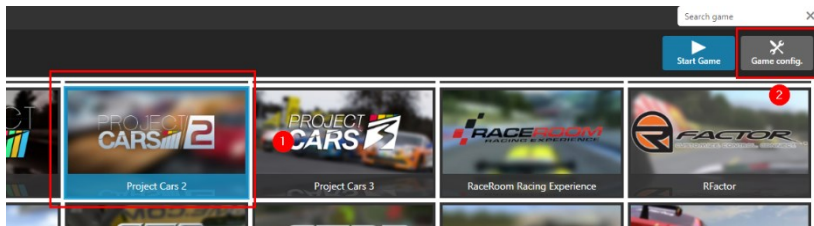
Before you can feel and enjoy the realistic simulation experience from the game of your choice for the first time, the connection between Simhub and the corresponding racing game must be set.

Please use the [Simhub forum](#) (or Google Search) to find out which settings must be set "where" in "your game" so that the connection between Spiel->Simhub >bass shaker works properly.

The link to the [Simhub troubleshoot](#) if necessary.



14 Exemplary presentation with Project Cars 2



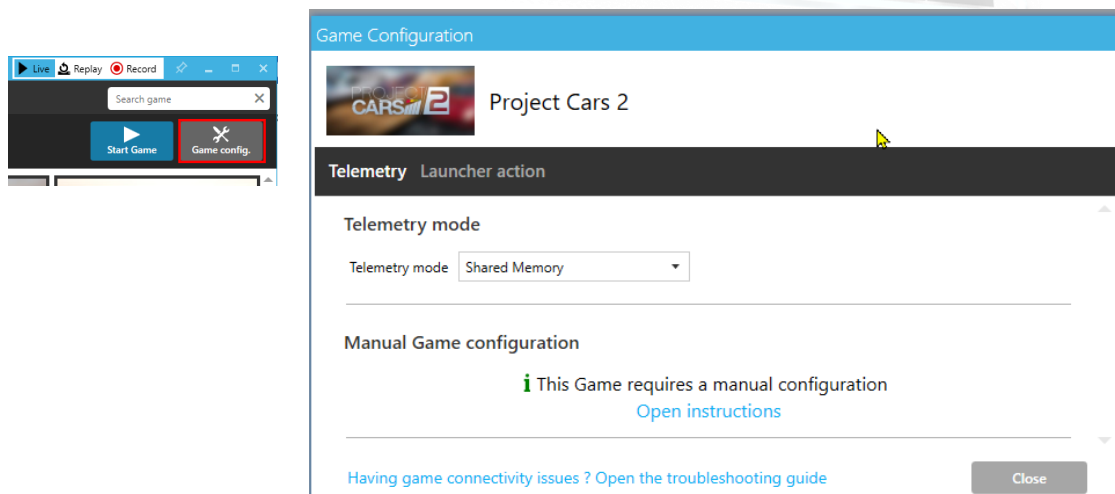
14.1 In the game itself, the corresponding interface must now be configured:



This is the default configuration of Project Cars 2 for Simhub

14.2 Settings in Simhub

The following must then be checked in the settings of the Simhub "Game Configuration" according to the specification per corresponding **game** and, if necessary, set:



15 Configuration videos for popular racers on the net

Since there are detailed and epic configurations on this topic in Simhub on YouTube, we need not to do it here an in-depth configuration of the individual effects.

Here is a link to the topic Simhub Bass-Shaker "Epic Setup" in English for those who want to go all out:

Example:

[2Old4Forza](#)

15.1 Final important remark:

From now on, your simulator generates light to powerful vibrations, depending on your preferences.

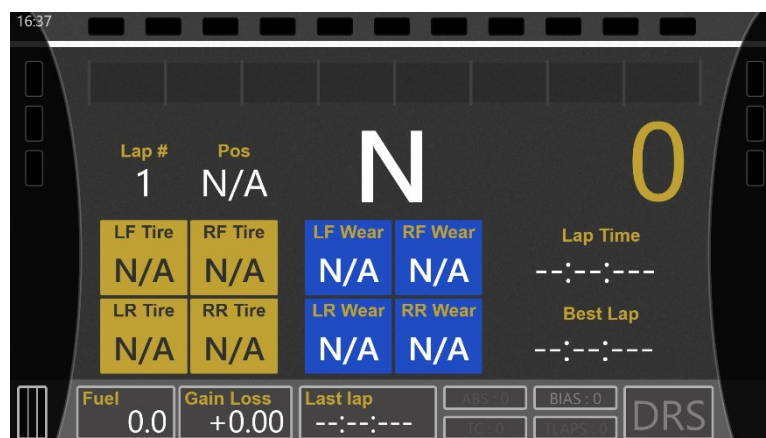
From experience we point out that this can be heard in the house. So, if you have sensitive neighbors, the topic of decoupling the simulator from the ground may be necessary.

We at 3DP-Evolution with our expertise especially in 3D printing, have printed special vibration dampers made of TPU on the simulator ourselves. If necessary, please report 😊

16 Why the software is worth supporting and is awesome!

16.1 Free Addendum-Note: Dashboard Function: (only "one" more aspect)

Explicit recommendation that we also use this function:



Anyone who has a mobile phone/tablet can use it to the real live dashboard,
in other words, the live display of the engine, tire, oil temperature, shift display... repurpose.

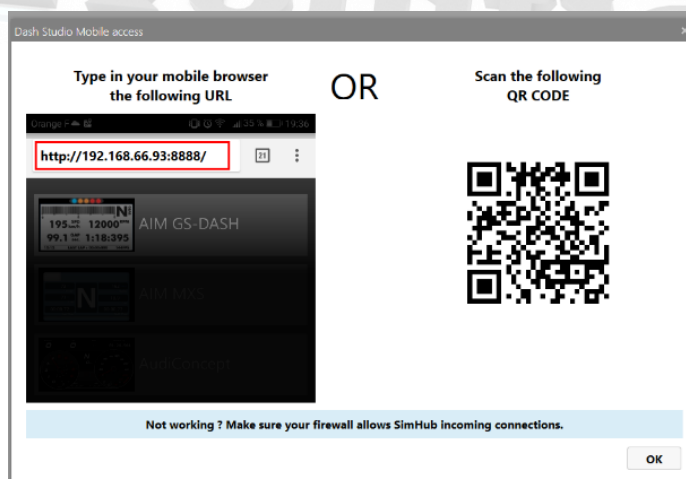
To do this, just go to the Dashboards tab, activate and then use the link at the top right:

"Open in Browser" or "Open in phone or tablet" einfach enter the IP address in the browser of the mobile phones/tablet.

Example: 192.168.178.79:8888 where you need to replace the IP xxx.xxx.xxx.xxx: with that of your computerrunningthe Simhub. :8888 is the port through which the tablet or smartphone accesses the simulation computer.



2 Way to set up: Scan QR code with app:



On the phone, different views can then be selected by swiping up and down, left and right!

17 Online help with software configuration:

If you do not want to configure the audio connections or the Simhub software alone, or do you need help with the "software-technical setup", simply contact us by e-mail:

info@3dp-evolution.de

Either:

We will then send you by e-mail a service document with the remote maintenance procedure and the privacy policy, through which you can then easily request help for software configuration directly on your computer (via remote session)

or:

17.1 Online help about 3DP evolution, remote maintenance software

On our [website FAQ](#) you can download the corresponding documentation under Support, or directly via the following links:

- [Support Documentation](#)
- [3dp-evolution-RemoteSupport.zip](#)

Please unpack the zip file to use the support software with Winzip or 7z.

The exact procedure, the use of the software and the procedure of our remote support are described in detail in the support document.

18 Epilogue:

Congratulations, you have successfully implemented this documentation.

We wish you enthusiasm, daily long-lasting and recurring joy

and

"Goosebumps every time you start your race car!"

We thank you for your trust and the purchase of our

„3DP-Evolution Simtastik Bass-Shakers Kit“

and hope we have been able to give you a good start with your device with this documentation.

Creative improvements and feedback are welcome. Get in touch with us if you have any suggestions and ideas.

Bye then

Sincerely

Your 3DP-Evolution Simtastic Bass-Shaker Team

19 Appendix:

19.1 Power supply

Compliance and Specifications

<https://www.meanwell.com/Upload/PDF/LRS-350/LRS-350-SPEC.PDF>

https://www.meanwellusa.com/Upload/PDF/RoHS_PFOS.pdf



350W Single Output Switching Power Supply

LRS-350 series



■ Features

- AC input range selectable by switch
- Withstand 300VAC surge input for 5 second
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Forced air cooling by built-in DC fan
- Built-in cooling Fan ON-OFF control
- 1U low profile
- Withstand 5G vibration test
- LED indicator for power on
- No load power consumption<0.75W
- 100% full load burn-in test
- High operating temperature up to 70°C
- Operating altitude up to 5000 meters (Note.8)
- High efficiency, long life and high reliability
- 3 years warranty

■ Applications

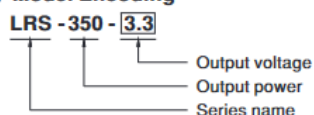
- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus

■ Description

LRS-350 series is a 350W single-output enclosed type power supply with 30mm of low profile design. Adopting the input of 115VAC or 230VAC (select by switch), the entire series provides an output voltage line of 3.3V, 4.2V, 5V, 12V, 15V, 24V, 36V and 48V.

In addition to the high efficiency up to 89%, with the built-in long life fan LRS-350 can work under -25~+70°C with full load. Delivering an extremely low no load power consumption (less than 0.75W), it allows the end system to easily meet the worldwide energy requirement. LRS-350 has the complete protection functions and 5G anti-vibration capability; it is complied with the international safety regulations such as IEC/UL 62368-1. LRS-350 series serves as a high price-to-performance power supply solution for various industrial applications.

■ Model Encoding



File Name:LRS-350 SPEC 2021-04-12



350W Single Output Switching Power Supply

LRS-350 series

SPECIFICATION

MODEL		LRS-350-3.3	LRS-350-4.2	LRS-350-5	LRS-350-12	LRS-350-15	LRS-350-24	LRS-350-36	LRS-350-48
OUTPUT	DC VOLTAGE	3.3V	4.2V	5V	12V	15V	24V	36V	48V
	RATED CURRENT	60A	60A	60A	29A	23.2A	14.6A	9.7A	7.3A
	CURRENT RANGE	0 ~ 60A	0 ~ 60A	0 ~ 60A	0 ~ 29A	0 ~ 23.2A	0 ~ 14.6A	0 ~ 9.7A	0 ~ 7.3A
	RATED POWER	198W	252W	300W	348W	348W	350.4W	349.2W	350.4W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	2.97 ~ 3.6V	3.6 ~ 4.4V	4.5 ~ 5.5V	10.2 ~ 13.8V	13.5 ~ 18V	21.6 ~ 28.8V	32.4 ~ 39.6V	43.2 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±4.0%	±4.0%	±3.0%	±1.5%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION Note.4	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION Note.5	±2.5%	±2.5%	±2.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1300ms, 50ms/230VAC 1300ms, 50ms/115VAC at full load							
HOLD UP TIME (Typ.)	16ms/230VAC 12ms/115VAC at full load								
INPUT	VOLTAGE RANGE	90 ~ 132VAC / 180 ~ 264VAC by switch 240 ~ 370VDC (switch on 230VAC)							
	FREQUENCY RANGE	47 ~ 63Hz							
	EFFICIENCY (Typ.)	79.5%	81.5%	83.5%	85%	86%	88%	88.5%	89%
	AC CURRENT (Typ.)	6.8A/115VAC 3.4A/230VAC							
	INRUSH CURRENT (Typ.)	60A/115VAC 60A/230VAC							
LEAKAGE CURRENT	<2mA / 240VAC								
PROTECTION	OVER LOAD	110 ~ 140% rated output power 3.3~36V Hiccup mode, recovers automatically after fault condition is removed. 48V Shut down and latch off o/p voltage, re-power on to recover.							
	OVER VOLTAGE	3.8 ~ 4.45V 4.6 ~ 5.4V 5.75 ~ 6.75V 13.8 ~ 16.2V 18 ~ 21V 28.8 ~ 33.6V 41.4 ~ 46.8V 55.2 ~ 64.8V 3.3~36V Hiccup mode, recovers automatically after fault condition is removed. 48V Shut down and latch off o/p voltage, re-power on to recover.							
	OVER TEMPERATURE	3.3~36V Hiccup mode, recovers automatically after fault condition is removed. 48V Shut down and latch off o/p voltage, re-power on to recover.							
FUNCTION	FAN ON/OFF CONTROL (Typ.)	RTH3≥50℃ FAN ON, ≤40℃ FAN OFF							
ENVIRONMENT	WORKING TEMP.	-25 ~ +70℃ (Refer to "Derating Curve")							
	WORKING HUMIDITY	20 ~ 90% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)							
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes							
SAFETY	SAFETY STANDARDS	IEC/UL 62368-1, BSMI CNS14336-1, EAC TP TC 004, KC K60950-1(for LRS-350-12/24 only), BIS IS13252(Part1): 2010/IEC 60950-1: 2005, AS/NZS62368.1 approved							
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC							
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC / 25℃ / 70% RH							
	EMC EMISSION	Compliance to BSMI CNS13438, EAC TP TC 020, KC KN32, KN35(for LRS-350-12/24 only)							
	EMC IMMUNITY	Compliance to EAC TP TC 020, KC KN32, KN35(for LRS-350-12/24 only)							
OTHERS	MTBF	327.9K hrs min. MIL-HDBK-217F (25℃)							
	DIMENSION	215*115*30mm (L*W*H)							
	PACKING	0.76Kg; 15pcs/12.4Kg/0.78CUFT							
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. Line regulation is measured from low line to high line at rated load. 5. Load regulation is measured from 0% to 100% rated load. 6. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time. 7. The 150% peak load capability is built in for up to 1 second for 12~48V.LRS-350 will enter hiccup mode if the peak load is delivered for over 1 second and will recover once it resumes to the rated current level(115VAC/230VAC). 8. The ambient temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m(6500ft). 9. This power supply does not meet the harmonic current requirements outlined by EN61000-3-2. Please do not use this power supply under the following conditions: a) the end devices is used within the European Union, and b) the end-devices is connected to public mains supply with 220Vac or greater rated nominal voltage, and c) the power supply is: - installed in end-devices with average or continuous input power greater than 75W, or - belong to part of a lighting system Exception: Power supplies used within the following end-devices do not need to fulfill EN61000-3-2 a) professional equipment with a total rated input power greater than 1000W; b) symmetrically controlled heating elements with a rated power less than or equal to 200W ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx								

File Name:LRS-350-SPEC 2021-04-12

19.2 Amplifier Board 4x 100W

Specifications typical @ +25°C, powered by 27V DC, unless otherwise noted. Specifications subject to change without notice.

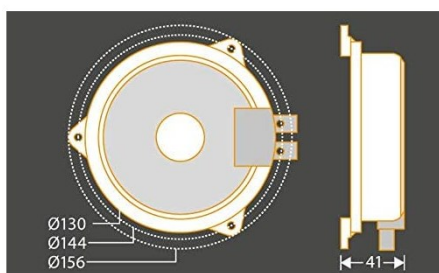
Parameter	Conditions	Min.	Typ.	Max.	Units
Power Supply	-	15	27	-	VDC
Idle Power	SD Floating, FAN ON	-	10.6	20	W
	SD Floating, FAN OFF	-	8.4	15	W
Standby Power	SD Connected to GND, FAN ON	-	2.7	6	W
Maximum Current	400W @ 4Ohm	-	16.1	-	A
Efficiency	100W @ 4Ohm	90	92	95	%
Minimum Load Impedance	-	-	4	-	Ω
Switching Frequency	SD Floating	-	760	-	KHz

Specifications typical @ +25°C, powered by 27V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Units
Gain	-	30	32	34	dB
Input Sensitivity(RMS)	@4 Ω , 100W, 1KHz	-	520	-	mV
Input Impedance	-	-	10	-	K Ω
Output Power	@4 Ω THD+N 1%	-	69	-	W
	@4 Ω THD+N 10%	-	100	-	W
Bandwidth @ ± 3 dB	@4 Ω	20	-	20K	Hz
THD	@4 Ω , 1W, 1KHz	-	0.03	-	%
	@4 Ω , 10W, 1KHz	-	0.09	-	%
Output Noise Level	A-weighting, Input Connected to GND	-	211	-	μ V
SNR	69W @4 Ω THD+N 1%	-	90	-	dB

19.3 Bass Shaker Dimensions

Basic Bass-Shaker



Alle Maßangaben in mm. | All measurements in mm.

Premium Bass-Shaker



19.4 Simtastik Bass-Shaker housing dimensions, material, weight and borehole spacing

