RED SEVEN
AMPLIFICATION

AMP CENTRAL
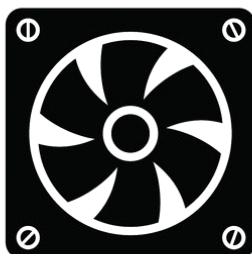## Reactive load – I.R. Loader

How NOT to use AMP CENTRAL

Amp Central is a load device who takes the output of your tube based amplifier and transforms this energy by dissipating it into heat.
Since NO volume is perceived, you might be tempted to turn your amplifier's master volume to a very high, almost ear-killer and dangerous level, which is not recommended for various reasons.

First thing, keeping such a behavior, life of your power tubes will be incredibly reduced, and we all know they aren't 'cheap' nowadays.
Second point, you're sending too much signal into Amp Central for no benefit. A fan, inside the unit is placed to protect load section from overheating and it will automatically turn on as soon it will feel the need to.
Last but not least, most modern amplifiers are fine-tuned to NOT push power amp stage very hard. 99.9% of the time, gain comes from preamp section, there's no practical, sound-wise or "I have the biggest dick ever" reason to fully open master volume on your 100W amplifier. It's simply a wrong habit.

While Amp Central is safely rated up to 100W, we do recommend to use your amplifier at the same volume as you would use with a regular cabinet, or just a bit more perhaps.
Keeping care of your gear will result in a better sonic performance and a way longer life.

WHAT'S NEW AFTER S/N 22056 (mid May 2022)

Amp Central still the same exact product but after May 2022 (starting from serial number 22057) and for all future units, we introduced few different features which are mostly minor updates. Here's the complete list:

- **24volt (negative center) power supply (now included with A.C.).** Every unit, now on, will required a total of 24 volts to be powered (before, 9 to 12 volts). This leads to couple advantages: increased overall headroom and ability to incorporate a real audiophile grade headphone   amplifier.
  While the convenience of having 9 to 12v supply was the ease of sourcing a proper power supply real quick, headroom was not enough to drive low impedance headphones with enough volume. Now you have the best of both worlds, an included 24v power supply AND a superior quality HP integrated amplifier.

- **FLAT/CUT switch.** Some guys love how A.C. sounds, other asked for a more "hi-fi" type tone. We managed to have best of both words also here. First, this switch works ONLY on IR filtered MAIN outputs (both XLR and jack outputs), and it DOES NOT WORK on Line Ouput. In FLAT position, you have the most possible flat sound from DAC to main outs. In CUT position you have a gentle lowpass filter set around 10KHz, which was the standard sound of A.C. on units previous to s/n 22057, what we called the "analog feel" filter.

- **MAIN OUTPUT JACKS are now fully balanced.** On unit's back panel there's couple XLR outs, along another two 6,3mm jacks, wired in parallel to XLR. Starting from s/n 22057, jacks are fully balanced, where until s/n 22056 they were unbalanced.

INTRODUCTION

What is AMP CENTRAL?
Amp Central is our answer for modern guitarist who still love to use any tube based amplifier in live or studio environment, even where silent stage is required.
Amp Central, as the name suggested is a hub to connect your amplifier to the outside world, without the need of a real cabinet or any volume at all.

THE CONCEPT

Since few years, digital systems became very popular in guitar amplifier market, replacing real amps in most of "inconvenient" gig where a proper stage volume was not possible, or for example, during practice sessions at late night.
What we found is missing in the world right now between other various choices is what we call a "total experience" of a real amp-speaker interaction. What me mean, is, simulations/profiles could work in some situation in term of pure sound, but how about the feeling under your fingers?
It's the same as you were playing your amp thru a real cabinet? Of course, no.
What could we do to improve the experience of a "fake" or profiled amplifier, played with headphones, which in most cases yields bad results?
Well, we came up with a solution and we brought a couple of different technologies into the game, one very old and one not so old, respectively called **Dummy Load** (in our case a Reactive Load) and the **Impulse Response** technology.

It's a known fact your tube based amplifier needs to have a cabinet wired to the output jack when used, or at least a proper load, the potential penalty could be the reduction of output transformer's life, or worst, its total fault.
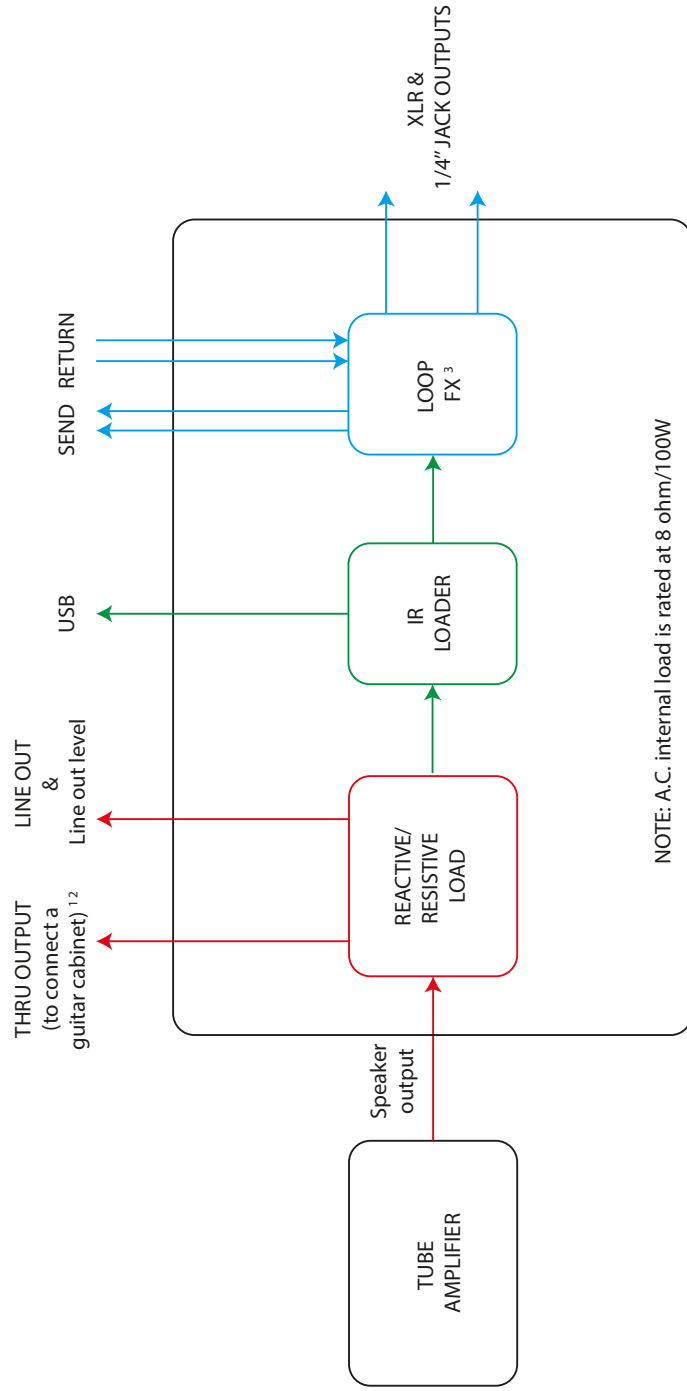
With this in mind, we built the very first stage of Amp Central, by creating a proper dummy load, or better, a Reactive/Resistive Load, to mimic the best approximation of a real cabinet. We've gone fully analog with best available components, something audiophile experts will appreciate. Audophile capacitors, custom made inductors, superior ceramic resistor, just to name a few..no digital processing or equalization is applied up there, we do believe your amplifier needs a proper analog load to sound and feel at its best.

Where do we go from there? Amp is now safe and running, while no sound will come out of it. At this point we decided to embrace digital world, with *Impulse Responses**technology.

With Amp Central we wanted to offer the best of both worlds, by offering the possibility of playing your favorite amplifiers and not a simulation/profile, with some Impulse Response of your favorite cabinets.
This will be YOUR and not someone else's sound. Your own amp(s) and possibly your own cab's I.R.

*An Impulse Response is in layman's terms an equalization, or a "snapshot" of your favorite mic'ed cabinet, to be applied to the raw sound coming out of your loaded amplifier. Return act as the complete sound (amp + cabinet + mic) as you should hear from your studio monitors, or headphones.

RedSeven Amplification - July 2022

AMP CENTRAL LOGIC SCHEME

TUBE AMPLIFIER

Speaker output

REACTIVE/ RESISTIVE LOAD

THRU OUTPUT (to connect a guitar cabinet) [1] [2]

LINE OUT & Line out level

IR LOADER

USB

LOOP FX [3]

SEND   RETURN

XLR & 1/4" JACK OUTPUTS

NOTE: A.C. internal load is rated at 8 ohm/100W

[1] When a guitar cabinet is connected to THRU output, internal load is automatically bypassed.
[2] When a guitar cabinet is used, you need to match amp's output impedance with cabinet's impedance.
[3] Loop FX is placed after IR loader, you will not hear any fx patched here into your guitar cabinet.

FIRST USAGE

We think it's better to start slow and to understand the workings of the Amp Central before diving in and trying the unit.
What you need to know to proceed in the safest way, is to consider the Amp Central as a normal guitar cabinet.

AMP CENTRAL HAS AN INTERNAL LOAD RATED UP TO 100W @ 8 OHM.

USE 8 OHM OUTPUT OF YOUR AMPLIFIER TO CONNECT IT TO AMP CENTRAL.

Hit standby switch of your amplifier ONLY AFTER PLUGGING A CABLE FROM THE OUTPUT OF YOUR AMPLIFIER TO "FROM AMP OUT" of Amp Central.

!!!! Do not attempt to connect your amplifier to Amp Central in other "fancy" ways, your amp's life is important! We are not responsible for any improper usage that could potentially lead to damage !!!!

FRONT PANEL
(left to right)

- VIRTUAL CABINET SELECTOR: chose one of the sixteen preloaded I.R.'s.
- BANK/CAB: for the convenience of memory, the sixteen cabinets are divided in four files with four I.R.'s in each file. Toggle between them by turning the VIRTUAL CABINET ENCODER left or right.
- INPUT LEVEL: attenuation level of the output of your amplifier. This should be used in conjunction with the analog LED METERS and DAC CLIP meter. The goal is to reach a proper signal without any clipping. Turn it up until CLIP led starts to blink at the higher dynamics of your clean channel and then kick it back just a little.
- HEADPHONE LEVEL: this pot controls the output volume of your headphones. Everything coming into the Amp Central both from your amplifier or LINE IN will be affected by this control, using the headphones output.
- RESISTEVE/REACTIVE SWITCH: chose between a pure resistive load or a completely reactive one.

- FLAT/CUT SWITCH: control over XLR/JACK of high frequencies. Flat, is unprocessed sound, cut, is a gentle slope around 10KHz. This filter do not apply to line output, but only at I.R. output
- HEADPHONES OUTPUT: connect your headphones here.
- AUX INPUT: connect to your PC, soundcard or whatever line level signal you want to hear through every output of the Amp Central.

BACK PANEL
(from left to right)

- LOOP FX: Stereo fx loop placed between the I.R. and the final outputs. Connect your favorite outboard effevts like delays, reverbs, etc. here.
- TO SPEAKER: this is the "through" jack for if you want to use a real cabinet. When the TO SPEAKER output is used, the internal load is bypassed, the amplifier will see only the real connected cabinet as the load. Be sure to match the impedance of the amplifier with your cabinet
- LINE OUT: the line level signal coming from the reactive load, without the I.R. processing applied.
- LINE OUT LEVEL: the volume control of the line out.
- FROM AMP OUT: this is where you must connect the output of your amplifier.
- MIDI INPUT/THRU: Midi input and thru ports for midi connection. Switch between the I.R. by sending Midi CC's to the Amp Central.
- MAIN OUTPUT (XLR and jacks output): main output from Amp Central. Both set of outputs are fully balanced and the only difference between the two are format. A balanced signal is a stronger and less prone to noise signal, but if you want to use a standard mono instrument cable, you just need to plug into jack outs, A.C. will work in unbalanced mode too.
- USB: connect to your PC/MAC for uploading your own favorite I.R.'s.

- DC IN: (prior to s/n 22057 9 to 12V @250mA), from s/n 22057, 24V negative center and at least with a current output of 300mA.

INPUT SECTION and CALIBRATION (!!! VERY IMPORTANT – READ THIS AT LEAST COUPLE TIMES!!!)

The very first thing we recommend to do when you start using Amp Central is to set the proper input level in order to achieve the best signal to noise ratio possible without any clipping.
To make this happen, we highly suggest to use the most dynamic sound at your disposal, which usually happens to be your clean channel, or at least the most clean sound you have at your disposal.

The very first big suggestion is to keep your amp's volume **_COMPARABLE_** as you were using a real cabinet. Do not try to push both preamp and master volume higher, just because you don't hear any sound or just too little volume from yours monitors. That's a step we will cover later.
If you don't remember how much loud you're in the real world (with real cabinets), please, wire a cab very quick and make a test. Then don't move preamp/master volumes.

Once you reached your desired clean-ish sound, you can follow these few steps:
- Connect your amp's output to Amp Central and hit standby switch;
- Start with INPUT LEVEL of Amp Central at 0;
- Increase Amp Central's INPUT LEVEL, while heavily strumming your guitar on your clean channel, until LED METER starts to blink. There's three LEDs, indicating 0dB, +6dB and CLIP. The goal is to have your maximum dynamic level by having +6dB led blinking. You don't want to hear more volume incoming at this point, since you will likely experience some very unpleasant clipping.

What to do with crunch or distorted sounds? By nature, a distorted sound is WAY more compressed, so audio peaks are already smaller than a much cleaner sound, at the same SPL.
If you follow this procedure step by step using the cleanest sound at your disposal, without experiencing any clipping, you will have absolutely no problem with your dirty sounds. You still hear clipping when you hit strings very hard? Turn INPUT volume on A.C. a little back again.

What to do if I have all my sounds set without any clipping but I don't have enough volume out of my speakers?

Amp Central is a substitute for your _guitar cabinet and microphone_. You still need a microphone preamplifier, or that knob with "GAIN" written on your audio interface. Raise it up. You also still have your "MONITOR VOLUME", always on your audio interface or "VOLUME" knob on your amplifier/active speakers. Raise it up. Those are all the places where you need to look for more output volumes if you feel you need more. Even from your DAW's channel/master volumes.
Do not look for output volume on A.C., while you have only control on input volume.

REACTIVE LOAD SECTION

Amp Central is supported by a **100W RMS / 8 ohm** reactive/resistive load. This means you can plug amps rated up to 100W RMS of total output. We choose the best inductors/capacitors/resistors in the market (audiophile quality), to ensure unsurpassed audio quality.

You need to connect your amp's output into "FROM AMP OUTPUT" jack in order to use Load section of Amp Central.
"TO SPEAKER" is where you want to connect your cabinet, in case you wanted to use one, but of course it's not mandatory. When a cabinet is used, internal Reactive Load will be fully bypassed, the amplifier will only see cabinet as its load. Be sure to use a speaker cable and not an instrumental cable to connect your speaker cabinet with amp central.

WHAT IMPEDANCE DO I NEED TO SET MY AMPLIFIER IF I USE A CABINET ALONG WITH A.C.?
In case you wanted to use a cabinet WITH Amp Central, A.C.'s internal load will be automatically bypassed and you need to match cabinet load to amp load. Amp Central impedance, in this case, is out of the picture.

LINE OUTPUT

Line output is a reduced in amplitude signal from amp's speaker output. Line out level on back panel allow you to set line out volume, and it's total independent from INPUT knob. Line out is also fully isolated thru an isolation transformer, in order to avoid ground loops of any kind, by using main outs (filtered by I.R.) and line out at same time.
You can use LINE OUTPUT even without 24v power supply plugged in, A.C.'s reactive load section is fully analog and passive.

IMPULSE RESPONSE SECTION

Amp Central will only read ".**WAV", MONO, 24bit, 48kHz** type I.R.'s.
Please, before writing or ask, be sure to check your IR 100% respect these requests.

Any other attempt to load I.R.'s with different features than this, will simply not be recognized and sound will not processed. You can place only one I.R. in each of the sixteen available files when you connect the Amp Central to your PC/MAC, and you have to delete previous one. Please read USB chapter (pg.14) for more information on this process.
Amp Central will cut the length of any I.R. to the total length of 20ms, which is the maximum ability of the internal DSP's calculations.
If you do some basic math, those 20ms will guarantee you a full frequency spectrum response, including the super low frequencies, even at 40-50hz.

There're extreme cases where extra long I.R. (i.e. 4-500ms) are not recognized, even if 48/24 and MONO, or some I.R. simply can't be read, no matter what.
We found out multiple apps can export WAV files with some extra and not needed information pieces (bit) who can make I.R. not recognizable to Amp Central.
If you're experiencing similar issue, we highly suggest to download two free apps, they can solve your problem.

- AUDACITY: https://www.audacityteam.org/download/
- AMT IR CONVERTER: https://media.amt-sales.com/ir-converter/

You just need to upload your IR, and export at 48Khz / 24bit / mono.

VIRTUAL CABINETS (I.R.)

You have sixteen different Impulse Responses at your disposal to choose from. Impulse Response section comes pre-loaded with original RedSeven Pro Cab series 4x12 I.R.'s, but of course you can upload your personal favorites, by connecting Amp Central to your PC/MAC through the back panel's USB port. Please read the USB chapter on next page for more information on how to do.

HEADPHONES AND AUX INPUT

To maximize the experience with Amp Central, we decide to add a comprehensive input/output section for monitoring. AUX IN is intended for your backing track/click track or whatever line level source you want to hear through headphones output, along with the sound of your amplifier. Volume control for your source, it on the source itself.
This is a great feature to improve your skills at late night for example, without connecting Amp Central and your amplifier to any audio interface. Just put your phone output into Amp Central, and open YouTube to play along with your favorite tunes!
Everything coming out from H.P. output will be affect by H.P. LEVEL pot. This is a "master volume" for your headphones.

LOOP FX

An effects loop is usually placed between your amp's preamp and power amp, and it's the place where you usually want to insert your time-based effects. Older amps (like vintage Fender or Marshall for example) don't have one. We also took care of this.

We decided to place a stereo FX loop inside AMP CENTRAL to let you insert your favorite external effects in the audio chain. FX loop is placed between IR LOADER section and A.C.'s main outputs, this means you're sending the already I.R. processed signal to your external effects.
To the most experts out there but also according to us, this is the best place to insert your effects, especially time based one. Why?
If you think at a traditional setup, with a standard loop fx between pre and power amp, and a standard guitar cabinet, your time based effect placed into amp's loop fx are heavily band passed and equalized by guitar speakers themselves, who are notorious to be way far from flat, in terms of frequencies spectrum.
By placing those time based effects AFTER speakers (in this case after I.R.), they will processed a full 48Khz audio signal, which is way superior from a normal guitar speaker frequencies response. The result is a superior natual sound, an overall 3D sounding environment, especially if listened in stereo. This is the next step in listening your effects. Stereo is the way to go.

NOTE: While SEND section is stereo, only one I.R. can be loaded at a time, for both left and right outs. SENDS will simply make a buffered copy for your right and left effect inputs, to be returned to stereo RETURNS.

So, what is the advantage of sending the signal in stereo instead of using only one mono send and then a stereo return?
Well, there are no advantages at all for a mono input device, besides the facts that some effects want to see a stereo input signal to help make their algorithms work in the best way.
If you have a MONO input external device, use LEFT send to send a MONO signal.

If you want to use a MONO external device and only one jack/XLR out, use LEFT side first.

USB and HOW TO CONNECT THE AMP CENTRAL TO PC/MAC

You must connect Amp Central to your PC/MAC with a USB cable, to upload new I.R.'s by following the next steps:
- Power off Amp Central by unplugging power connector on rear panel
- Connect a USB cable into AMP CENTRAL first and then your PC/MAC after.
- Amp Central will automatically be recognized as an external device (like your memory stick or hard drive for example) with "AMPCENTRAL" name;
- Double click on it, and you'll see folders with names from 0 to 3. By clicking on each folder, you'll find four more folders, each one with an I.R. inside. This means a total of 16 files/folders are available, divided into four banks with four cabinets in each bank.
- *UPDATE: From unit with s/n 23037 and higher, bank are numbered from 1 to 4 and not 0 to 3. It does not change anything in practical life, but if can be confusing.*

Let's take a look this chart to visualize it in a very simple way:

	BANK 1
CABINET 1	
CABINET 2	
CABINET 3	
CABINET 4	

	BANK 2
CABINET 1	
CABINET 2	
CABINET 3	
CABINET 4	

	BANK 3
CABINET 1	
CABINET 2	
CABINET 3	
CABINET 4	

	BANK 4
CABINET 1	
CABINET 2	
CABINET 3	
CABINET 4	

To substitute an I.R., you simply can delete the existing one, and drag and drop or copy/paste new one in the folder.
Remember: only one I.R. can be place into a cabinet folder. You cannot place two or more in a folder, in that case Amp Central will not process the incoming signal.

Once you've uploaded your selection of I.R.'s, you need to eject mounted AMPCENTRAL device from your PC/MAC as you normally would do with any another external devices, by simply clicking the EJECT button.

FILE TYPES
AMP CENTRAL can only read 48Khz, 24bit, MONO I.R.'s

Any other attempts to upload other I.R.'s will result in no sound. We highly suggest to make a copy of the AMPCENTRAL folders before you copy/past or substitute I.R.'s.

TIP: we experienced some know issues with very long I.R. (4-500ms).
If you do some basic math, those 20ms will guarantee you a full frequency spectrum response, including the super low frequencies, even at 40-50hz.
There's extreme cases where extra long I.R. (i.e. 4-500ms) are not recognized, ore better, supported by A.C., even if 48/24 and MONO. Try to cut them around 100ms, A.C. will do the rest of the job for you.

OUTPUTS

On the back of Amp Central there are two sets of outputs: XLR and 6.3mm jacks.
- *Until s/n 22056* 6.3mm jacks were unbalanced, while XLR were fully balanced;
- *From unit 22057* and on, both set of outputs are fully balanced, with the only difference in form factor, out of ease of connection. You can still connect an unbalanced instrument jack to one or both jack outputs and run the unit with an unbalanced signal.

There's no global output volume since the INPUT knob will act as the one and only volume for the entire system.

Both jack and XLR outputs are separated from the line out thru an isolation transformer. You can for example use XLR for live monitoring and record line out (to have any IR applied in a second time), everything thru your audio interface at same time, without any ground loop or wired noise.

MIDI

Amp Central has a MIDI IN and MIDI THRU port, to remotely select any of 16 available I.R..
The first operation, is to select desired midi channel on Amp Central.
A.C. is shipped with default midi channel #1 as the default.
To change it you need to:
- press "Virtual Cabinet" knob for three seconds until BANK/CABINET leds blinks and immediately release it;
- select your desired midi channel, by following next page's instructions and by moving "Virtual Cabinet" knob to left or right;
- press "Virtual Cabinet" knob again to store desired midi channel.

MIDI CHANNEL LIST:

MIDI CHANNEL	BANK	CABINET
1	0	0
2	0	1
3	0	2
4	0	3
5	1	0
6	1	1
7	1	2
8	1	3
9	2	0
10	2	1
11	2	2
12	2	3
13	3	0
14	3	1
15	3	2
16	3	3

Following is Control Change list, you have one CC for each I.R.
Please remember, to select an I.R. on desired CC, you need to send a value equal or greater than value 64 for that desired Control Change:

Control Change	BANK	CABINET
100	0	0
101	0	1
102	0	2
103	0	3
104	1	0
105	1	1
106	1	2
107	1	3
108	2	0
109	2	1
110	2	2
111	2	3
112	3	0
113	3	1
114	3	2
115	3	3

TROUBLESHOOTING

- Amp Central IS NOT TURNING ON

  Check the voltage AND polarity first. You need a 24volts / negative center power supply. Check the power cord; sometimes it could be loose and incapable of making good contact with power socket. Try to replace it.

- The Amp Central IS TURNING ON BUT WITH NO SOUND

  Check if your amp's standby is off. Make sure your guitar's volume is on 10. Be sure to have correctly plugged in every single cable. Turn off mute from your mixer/soundcard/recording device. Check incoming signal from A.C. led meter first, then check output signal with a led meter from your daw/mixer.

For any problems you can contact a qualified tech at:info@redseven-amplification.com
We will reply to you as soon as possibile.

WARRANTY DESCLAMER

Please, do not try to open this device, in any case. For any problem contact your seller or write to us. Any inexpert person should not even think of doing anything inside of this unit. RedSeven Amplification offer a standard two year not transferable warranty for any component (except to wear subjects).
By removing top piece or by making any modification to original state, you will violate the standard warranty and RedSeven Amplification will not be responsible for any damage to people, things or animals.

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