

ITEM	OWNER'S MANUAL		
FOR	RAGNAROK		
DESCRIPTION	UNIVERSAL MANAGED AMPLIFIER		
MODEL NO	SCH-09	REVISION A	RANDOM NUMBER 100000000
NOTES	<p>IN NORSE MYTHOLOGY, RAGNAROK IS THE END OF THE WORLD.  NOW, DON'T GET TECHNICAL WITH US ABOUT WHO SURVIVES.  OR ABOUT HOW IT'S THE TWILIGHT OF THE GODS.  OR IT NOT REALLY BEING THE END OF THE WORLD.  JUST GO WITH IT.  WE'RE DUMB AMERICANS WHO READ TOO MANY COMIC BOOKS.</p>		
		SCHITT	AUDIO EQUIPMENT

ITEM

# SAFETY INSTRUCTIONS



The following is required by the roughly 9,542 government agencies and regulations we have to comply with. If you have some common sense, they should seem pretty straightforward. In any case, read these instructions before proceeding farther, follow all instructions, and heed all warnings. Or else!

1. If you don't know how to install audio devices, get a qualified professional to help.
2. Never use this device near water, and clean only with a dry cloth.
3. Assure adequate ventilation, do not block any ventilation openings, or place near heat sources.
4. Use only the supplied power cord or suitable replacement. Route cords away from traffic areas and protect them from being pinched. Unplug the cord from the outlet if the apparatus is unused for a long period of time.
5. To prevent electric shock, do not use the plug with an extension cord, receptacle, or outlet unless blades can be fully inserted.
6. Refer all servicing to qualified service personnel. Service is required when the device has been damaged, including cord or plug damage, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.



**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE.**



Application for Council Directives 72/23/EEC  
Conformity declared for EN60065, EN50082-1

## WELCOME

Ragnarok is the ultimate amplifier—for Schiit, anyway.

No, we're not suddenly going to be putting out an even more super-duper amp, not after two years of R&D to stuff in full microprocessor management of all amplifier operational parameters, including bias, offset, and fault protection, a 64-level relay switch stepped attenuator and three gain levels, a whole new gain stage optimized for the Crossfet™ architecture and offering the same feedback level and compensation for all gain levels, and complete, transparent handling of both balanced and single-ended signals. Ragnarok isn't just overbuilt—it's completely and utterly insane.

Ragnarok isn't designed to compete with end-game amps costing several times as much—it's designed to outperform them, and do much more while doing so.

From IEMs to speakers, from balanced inputs to single-ended headphones, this is Schiit's real end game. Welcome to the end of the world: Ragnarok.

## IMPORTANT

**As a managed amplifier, Ragnarok may operate differently than you expect. Keep these things in mind when using Ragnarok:**

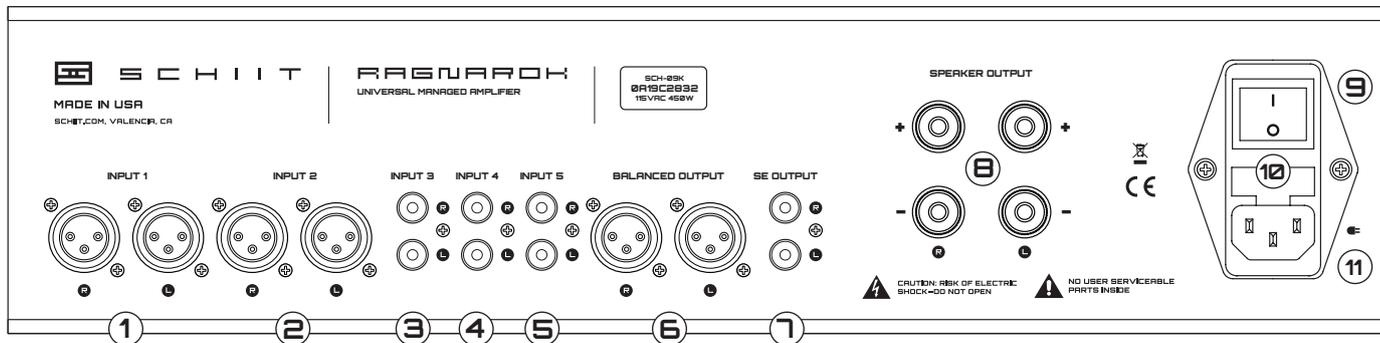
1. On turn-on, input select, and gain select, Ragnarok does a system check to protect your speakers and headphones. While it is doing this, the output will be muted and the LEDs on the front will flash.
2. The volume control works like a volume control, not an endlessly spinning pinwheel. If you turn it all the way up while Ragnarok is doing a system check, it could be bad news for your headphones or speakers when the system unmutes.
3. It is normal for the volume control to sound as if it mutes and unmutes as you turn it up or down—because that's exactly what it's doing, to prevent pops through the speakers or headphones.

## WHAT'S IN THE BOX

- |      |  |
|------|--|
| ONE  | Ragnarok Universal Managed Amplifier   |
| ONE  | Power cord (for, like, well duh)   |
| ZERO | Stick-on feet (because the amp already has screw-in feet—you've reached the big leagues now, guys) |
| ZERO | Crystals, cryo-nano-dampers, alien wave absorbers, or any other magical parts                      |

ITEM

# RAGNAROK CONNECTIONS



## 1 Balanced Input.

This is one of two balanced inputs on Ragnarok. Connect any balanced source here with high-quality XLR cables.

## 2 Another Balanced Input.

This is another balanced input, just like the first one, except it's labeled "Input 2."

## 3 Single-Ended Input.

This is one of three single-ended inputs. Connect any single-ended input here.

**4 Another Single-Ended Input.** Just like the first, except for the label.

**5 The Final Single-Ended Input.** You get the picture.

**6 Balanced Preamp Output.** Ragnarok can also be used as a balanced preamp, if you want to connect to power amps with even more power. Use these outputs for amps or powered monitors with balanced inputs.

**7 Single-Ended Preamp Output.** Just like (6), but for connecting to amps or powered monitors with RCA inputs.

### **8 Speaker Outputs.**

Connect these to your speakers. Please note that the “ground” terminals (black terminals) are not really ground—they’re separate power amplifier outputs for balanced drive. That means you should never connect them to a speaker system with a shared ground, nor should you ever try to “bridge” the output—this will put Ragnarok in protection mode, and that’ll be the twilight of your sound for a while.

### **9 Power Switch.**

Up for on, down for off. Very simple. There are no fancy “power down” modes with Ragnarok, just on or off. When you first turn on the amp, expect up to a 15 second delay as it performs a system check and sets operational levels on the amplifier. The LEDs will flash as these checks and adjustments are being performed.

### **10 Fuse Tray.**

Replace only with a 3A Slo-Blo style fuses, 5 x 20mm in size. Fuses usually don’t blow without a reason, so we strongly suggest that you check your system for faults, such as shorted speaker wires, before turning the amp back on again. And—we really shouldn’t have to say this—only replace the fuse with the amp unplugged!

### **11 Power Cord.**

Plug the end of the supplied IEC cord in here. You can also use fancy audiophile types, but they won’t really do anything—what about the thousands of feet of crap copper cables in your walls, huh?

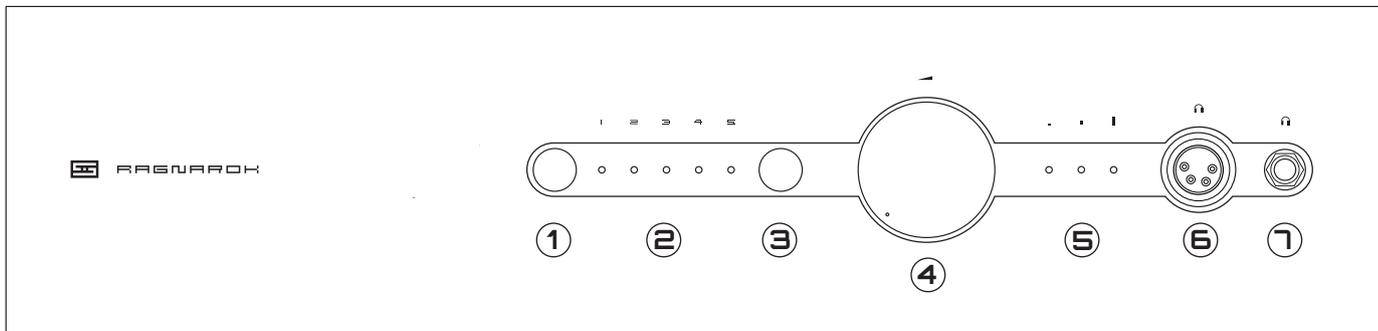
## **IN CASE YOU MISSED IT**

The speaker outputs on Ragnarok are all active. That means there are no grounds. That means if the grounds are shorted together, it will put Ragnarok into fault mode. This can happen with shorted speaker wires.

When Ragnarok is in fault mode, the front LEDs will flash and there will be no output. Check your speaker connections for shorts and try again.

If that doesn’t work, disconnect your speakers entirely, and unplug any headphones. If the amp comes out of fault mode at that point, then there’s something wrong with your speakers, speaker wiring, or headphone wiring.

# RAGNAROK CONTROLS



**1 Input.** Press this button to cycle through the inputs. Ragnarok will perform a self-check and the LEDs will flash every time you do this. That protects your equipment, and is completely normal.

**2 Input Indicators.** These indicate which input is selected. "1" = Input 1, "2" = Input 2, etc. If you're not hearing anything, make sure Ragnarok is set at the right input.

**3 Gain.** Press this button to cycle between three levels of gain: 1, 5, and 20. Lower gain is better for sensitive headphones, and higher gain is better for speakers. Use the one that sounds

the best and gives you the best range of volume adjustment. Ragnarok will perform a self-check when gain is switched, and the LEDs will flash while this is being performed.

**4 Volume.** Turn it up to increase volume, turn it down before smoke comes out of your headphones or speakers. You'll hear rapid clicking inside the Ragnarok when you use the volume control—this is the relay-

switched attenuator. When you're switching gains, it may be a good idea to turn the volume knob down, so you don't blow up your headphones or speakers due to a sudden gain increase.

### **5 Gain Indicators.**

From left to right, 1, 5, and 20. Or, smallest bar = 1, middle bar = 5, tallest bar = 20.

### **6 Balanced Headphone Output.**

Connect headphones terminated with a standard 4-pin balanced XLR here (standard = AKG K1000 style). Please note that Ragnarok can put its full power out into balanced headphones—up to 100W into 4 ohms—so be very careful if using sensitive headphones, and start with the lowest gain.

### **7 Single-Ended Headphone Output.**

Ragnarok also has hardware summing of the balanced output to single-ended. Although it doesn't put out as much power as the balanced headphone output (being limited to only about 3W into 32 ohms), it is still very powerful. For very sensitive headphones and IEMs, stick to a gain of 1—and unplug them before you crank up your speakers!

## **USING ONLY HEADPHONES OR SPEAKERS**

### **Hold down the input switch for 2 seconds.**

This will cycle through three modes:

1. Both speaker and headphone output at the same time (default.)
2. Just speakers.
3. Just headphones.

**Be careful when switching modes**—if you're blasting the speakers and change it over to headphone mode for your IEMs without turning down the volume, it's gonna be a bad day.

## **IN CASE YOU MISSED IT, THE SEQUEL**

### **SCENE 1**

Be very careful when using balanced headphones—Ragnarok can deliver it's full output power into them!

### **SCENE 2**

We suggest turning down the volume when plugging or unplugging single-ended headphones. Sorry, we didn't design the 1/4" jack that shorts when you do this. With Ragnarok's current capability, it's best the music is off.

### **SCENE 3**

Ragnarok's volume control works just like a real volume control—that is, it stops at minimum and maximum volume, rather than spinning endlessly. If you turn it up while Ragnarok is self-checking, expect a big blare of sound when it activates!

# CLEARING FAULTS

**Ragnarok has extensive fault checking built in, for maximum safety. It continuously monitors for DC offset, overcurrent, and bias. When Ragnarok encounters a fault, it will mute the output, put the amp into low-gain mode, bring the volume to zero, and flash the LEDs on the front panel.**

If this happens, don't panic! Faults happen. They can be as simple as a shorted speaker cable or improperly wired headphone cable. Here's how you troubleshoot them.

**1. Turn off the amp, turn down the volume, and disconnect everything.**

This means everything—all inputs, speakers, and headphones.

**2. Turn on the amp with no inputs or outputs connected.** If the LEDs on the front never stop flashing, there's a bigger problem. Contact us for an RA. But, most likely, they'll stop flashing after a few seconds and you'll hear a click. This means everything is fine with the amp, and there's a fault to be found somewhere else in your system.

**3. Plug in your first input and select that input.** If the LEDs don't stop flashing, that input has a problem. Have it checked for DC offset.

**4. Repeat this process for all inputs until they are all connected and there are no LEDs flashing.** If any input causes the LEDs to keep flashing, it has a problem—have it checked for DC offset and do not use it until it has been repaired.

**5. Connect your preamp outputs.** Even the preamp outputs are monitored for faults. Turn up the volume. If the LEDs flash and the amp cuts out again, you have a shorted preamp cable, or there is something wrong with the device you're connecting to. Have it checked for shorts or improper wiring.

**6. Connect your headphones and turn up the volume.** If the LEDs flash and the amp cuts out again, you have a bad headphone cable, or an improperly wired headphone. Have it checked out and corrected.

**7. Disconnect your headphones, connect your speakers, and turn up the volume.** If the LEDs flash and the amp cuts out again, you have a short in your speaker cables, or an internal short in the speakers. Check the cables and try another pair. If that doesn't fix it, have the speakers checked out for faults.

Special note: if your speakers have any cables connecting both left and right speakers together, or if they are speakers intended to reproduce stereo from a single box, they may have a common ground. This will cause Ragnarok to go into protection mode continuously.

**8. Connect everything as you had it, and enjoy your music again.**

**Can I run both headphones and speakers at the same time?**

Yes, you can, and you can cycle between outputting to both headphones and speakers, speakers only, and headphones only by holding down the Input button.

**The amp chatters when I turn the volume knob. What gives?**

That's the relay-switched attenuator, doing its job. That's normal. It may also make small clicks through the speakers or headphones near the top of the volume control. Again, normal.

**The LEDs flash when I first turn the amp on, and there's no sound.**

Right, that's Ragnarok performing its self-check and setting bias and offset. Again, this is totally normal.

**The LEDs flash when I change input or gain, and there's no sound.**

Again, right. That's Ragnarok performing an input check and re-adjusting bias and offset as necessary. If the input has too much offset, Ragnarok will not ever come out of fault mode, and the lights will keep flashing. Have that input checked for faults.

**I was playing something when I heard a click and now the LEDs are flashing. What happened?**

Ragnarok went into protection mode, most likely due to a fault in your speaker or headphone cable. If there are any shorts, or grounds are common, it will go into protection. Check the cables for shorts and try again. Alternately, speakers that are a heavy load (dipping to 4 ohms or less) may trigger the protection when overdriven at high volumes.

**I hear hum from my headphones or speakers, what can I do?**

Loud hum is likely caused by a ground loop, which can be mitigated with a GFCI or ground loop isolator. A little hum might be present if you are using high gain with very efficient headphones or IEMs—change to low gain mode.

**Can I leave Ragnarok on on all the time?**

We really recommend you power down the amp if you aren't going to use it for an hour or more. Ragnarok uses quite a bit of power even at idle—about 80 watts.

**Hey, you know this amp runs pretty warm?**

Yep, it does.

**The preamp outs don't work!**

If you're in headphone-only mode, yes, the preamp outputs are disabled, so you can more conveniently use powered desktop monitors. Switch to headphone-and-speakers mode, or speakers-only mode.

**Hey, can I replace the fuse?**

Sure, you can, but it won't make it sound any better. Don't use anything other than 3A slo-blow 5 x 20mm fuses.

**It doesn't turn on, what do I do?**

Plug it in to a different AC socket. Ensure you are not currently in a blackout. Then contact us if it still doesn't turn on.

ITEM

# SPECS

**Frequency Response:** 20Hz-20KHz, -0.1db, 2Hz-180KHz, -3dB

**Maximum Power, 4 ohms:** 100W RMS

**Maximum Power, 8 ohms:** 60W RMS

**Maximum Power, 32 ohms:** 15W RMS

**Maximum Power, 50 ohms:** 10W RMS

**Maximum Power, 300 ohms:** 1.7W RMS

**Maximum Power, 600 ohms:** 850mW RMS

**Maximum Power, single-ended headphone output:** 3W into 32 ohms

**THD:** Less than 0.006%, 20Hz-20KHz, at 1V RMS, all gain modes

**IMD:** Less than 0.008%, CCIR at 1V RMS, all gain modes

**SNR:** More than 103db, unweighted, referenced to 1V RMS,  
in gain = 1 mode

**Crosstalk:** Less than -80dB, 20Hz-20KHz

**Damping Factor:** 266 into 8 ohms

**Output Impedance, balanced headphone output:** less than 0.1 ohms

**Output Impedance, single-ended headphone out:** 3.3 ohms

**Gain:** 20 (26dB), 5 (14dB), 1 (0db) via front panel switch

**Topology:** Fully discrete Crossfet™ circlotron-style output stage with direct-coupled solid state gain stage, no DC servo.

**Protection:** microprocessor monitoring of fault conditions including DC, overcurrent, and transient phenomena, with relay muting on any fault

**Power Supply:** 400VA transformer with 4 separate circlotron output rails, plus 56VA transformer for five separate regulated supplies for front end and control section; over 100,000uF filter capacitance total

**Power Consumption:** 75W quiescent, 400W max

**Size:** 16 x 12 x 3.875"

**Weight:** 32 lbs

ITEM

# WARRANTY

Schiit Audio warrants to the original purchaser that the product shall be free from defects in material and workmanship for five (5) years from the date of purchase. Exceptions: Tubes. Tubes are covered by a 90-day limited warranty with the same terms. If a defect covered by this warranty occurs during this warranty period, Schiit Audio will repair the defective product, free of charge. Date of purchase will be based on customer-submitted receipts, otherwise date of manufacturing will be used to determine warranty period.

## **OBTAINING WARRANTY SERVICE**

**If you believe you need warranty service, contact us first.** There may be a simple solution to your problem. Schiit Audio products sent back to us without a Return Authorization (RA) will be returned to the sender without repair. To contact us and obtain an RA, email [info@schiiit.com](mailto:info@schiiit.com). We will respond quickly to email inquiries.

## **WARRANTY LIMITATIONS**

THIS WARRANTY SHALL NOT APPLY IF THIS PRODUCT: (a) IS MODIFIED OR TAMPERED WITH; (b) IS DAMAGED BY NEGLIGENCE, ACCIDENT, UNREASONABLE USE, COFFEE, OR BY OTHER CAUSES UNRELATED TO DEFECTIVE MATERIALS OR WORKMANSHIP; OR (c) HAS HAD THE SERIAL NUMBER ALTERED, DEFACED OR REMOVED.

ANY APPLICABLE IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY LIMITED IN DURATION TO THE WARRANTY PERIOD (5 YEARS). IN NO EVENT SHALL SCHIIT AUDIO BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM THE BREACH OF ANY IMPLIED OR EXPRESS WARRANTIES. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR EXCLUSION OF CONSEQUENTIAL OR INCIDENTAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state or province to province.

**Schiit Audio's address is: Schiit Audio, 24900 Anza Drive, Suite A, Valencia, CA 91355**

ITEM	<b>OWNER'S MANUAL BACK COVER</b>	
DESCRIPTION	GRAPHIC FOR THE BACK COVER OF THE MANUAL	
NOTES	<p>YES, ALL SCHIIT PRODUCTS ARE MADE IN THE USA.          YES, PRIMARILY OF US-SOURCED COMPONENTS.          YES, IT'S PRONOUNCED EXACTLY LIKE YOU THINK.          NO, WE ARE NOT ON FACEBOOK.          NO, WE'RE NOT ON TWITTER.          AND NO, WE'RE NOT ON YOUTUBE.</p> <p>SCHIIT AUDIO          24900 ANZA DRIVE, SUITE A          VALENCIA, CA 91355 USA          INFO@SCHIIT.COM          SCHIIT.COM</p>	
 <b>SCHIIT</b>		EVERYTHING ELSE AIN'T