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USER GUIDE



Chameleon SMOOTH Microphone Processor

P/N 991043

Revision 1.03
02/2024

Welcome to the world of Angry Audio, home of Audio Chameleon.

Since the beginning of time, man has sought to control the sounds of his environment. Cave-dwellers needed to eliminate echo, hunter/gatherers wanted low-pass filters for mastodons, and early settlers of Peru's high mountains had a deep desire for effective peak control (get it?).

Seriously though – engineers from the dawn of broadcasting have sought to tame the dynamics of their content with ever-improving technology. The first analog limiting amplifiers gave way to multi-band processing, which in turn was supplanted by DSP. But getting the basics right and sweating the details – those things will never be obsolete.

A good studio is built by including components that make it a convenient and enjoyable place to create the content that dazzles your listeners, drives traffic to your advertisers, and lets you keep the summer place in Jackson Hole.

Accordingly, every Angry Audio product – including this Chameleon mic processor – is designed to solve common yet critical problems, and is meticulously engineered with performance and longevity in mind to deliver pristine audio and reliable performance for many years.

Our promise and guarantee.

Folks who install Angry Audio products generally think they're the bee's knees, and we hope you'll feel the same. That's why we give you 30 days to laugh, cry, and hug it out with your Chameleon mic processor. If you find you lack the emotional attachment you were hoping for, we'll buy it back.

Every Angry Audio product is warrantied to be free from defects in parts and workmanship for two full years after you purchase it. If it fails within this time period, Angry Audio, at its discretion, will repair or replace it so long as you let us know of the failure within the warranty period and can provide proof of purchase in the form of a dated sales receipt. You can call us at +1 615-763-3033, or reach us online at www.angryaudio.com/contact.

Making a good first impression.

When you unbox your Chameleon mic processor, we hope it makes a good first impression and you take a moment to appreciate the lengths we've gone to in order to create a "built for broadcast" product. All of our products are over-engineered to provide long-term reliability and guaranteed RFI immunity. Some of this is apparent – such as the durable powder-coated steel enclosure – but much of this goodness is invisible, like the premium components within. Even if you can't see it, you'll hear it!

A word or two about safety.

The fact that you've purchased an Angry Audio product proves without doubt that you have a high IQ. You would never, ever service your car's differential using only a bumper jack, or attempt to hike Kilimanjaro in flip-flops. Nevertheless, our legal eagles strongly suggest that we give some basic instructions just in case this Gadget falls into the wrong hands.

Audio gadgets aren't industrial meat grinders or skip-loaders, but they are still intended for use by qualified personnel. To avoid electric shock, do not open the unit or attempt to perform any servicing unless you are qualified to do so.



Chameleon audio processors have an internal 120VAC / 240VAC power supply. Hazardous voltages are present whenever the unit is plugged in and may still be present on certain components even when the unit is unplugged.

The power cord is the primary disconnect device and so the outlet providing power to the unit should be easily accessible. In other words, make sure you can pull the plug in case of emergency. Use only a properly grounded outlet for power. Do not cut the ground pin or use a ground-lifting adapter, and do not defeat the polarized plug. Do not overload outlets.

Do not expose your Chameleon to rain or moisture. Do not block any ventilation openings, as lack of airflow could damage the unit or create a fire hazard. Any electronic device can fail without warning; do not use this product in applications where a life threatening condition could result due to failure.

Exercise caution with headphone volume. Permanent hearing damage may result from excessive volume.

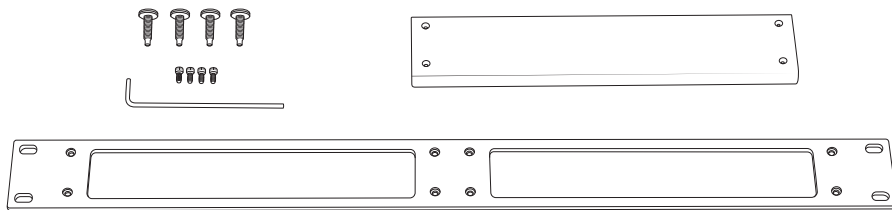
Refrain from operating your Chameleon audio processor while engaging in chain-saw ice-block sculpting. Do not attempt to halve old propane canisters for use as garden planters using a Sawzall. And never, ever pour "just a little bit" of gasoline on a barbecue full of smoldering briquets in order to restart your grill — those burgers (and your eyebrows) will not turn out like you had imagined.

Mounting your Chameleon SMOOTH in a rack.

Your Chameleon mic processor sits on four rubber feet that ensure it won't mar the lovely Lalique crystal surface of your Herman Miller desk.

If you prefer to rack mount your SMOOTH, you'll need the optional Rack Mount Kit which allows one or two units to be installed side by side in a standard 1RU rack space.

Each Rack Mount Kit consists of a custom rack panel with cutouts for all front panel controls and displays. A blank filler panel is also provided if you are mounting only one unit.



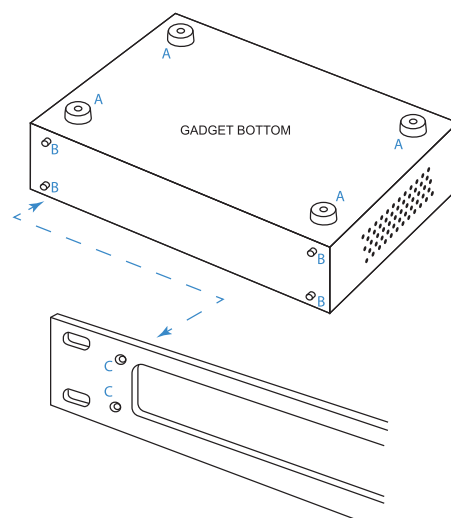
When rack mounting, remove the four rubber feet ("A") from the bottom of the gadget with a #1 Phillips screwdriver.

Remove the four front panel 3/32" hex screws ("B"). You can rummage around your toolbox for your own hex key, or use the one we thoughtfully provide in the mounting kit.

Line up the SMOOTH so that the holes exposed after removing the socket head screws line up with the mounting holes ("C") in the rack panel.

Attach the rack panel to the front of your unit with the same screws you just removed. If you dropped one and it immediately got lost in the shag carpet (as these things always do), don't panic – we've included spares in the kit.

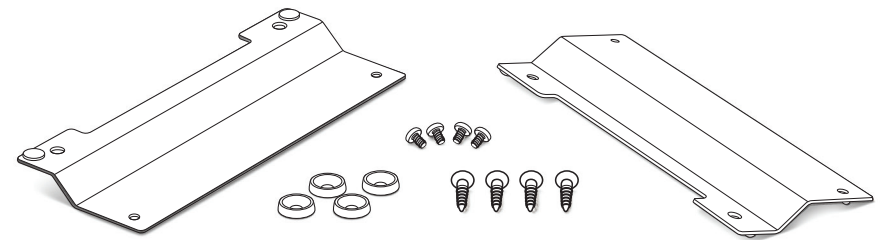
Finally, use the provided rack screws (all four, please) to mount your SMOOTH.



Attaching your Chameleon SMOOTH to a wall.

We can't for the life of us imagine why you'd want to wall-mount a microphone processor, but hey – you might. And if you prefer to secure your unit to the inside of a rack, cabinet, or other flat surface, the optional Wall Mount kit comes in handy.

Each Wall Mount Kit includes two brackets, four No. 6 screws, and four cup washers.

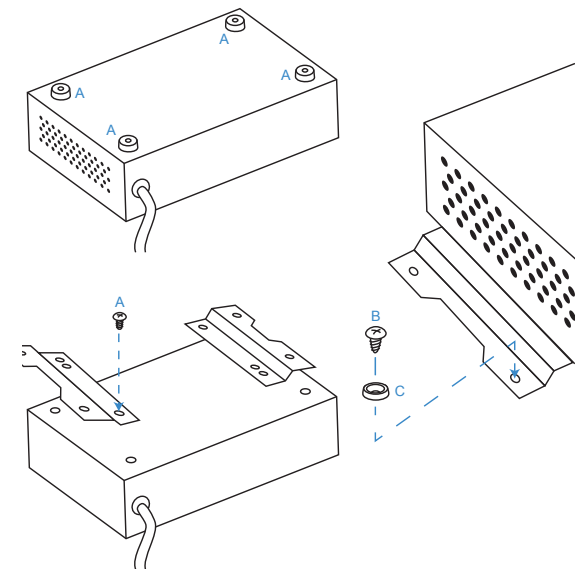


Remove the four rubber feet ("A") from the bottom of the gadget with a #1 Phillips screwdriver, being careful to save the screws.

Align the bracket holes with the holes in the bottom of the gadget, then attach the brackets using the screws removed from the rubber feet.

Use the four No. 6 screws ("B") and the four cup washers ("C") to secure the gadget to a plywood surface. Drilling pilot holes is recommended to reduce the risk of splitting the wood.

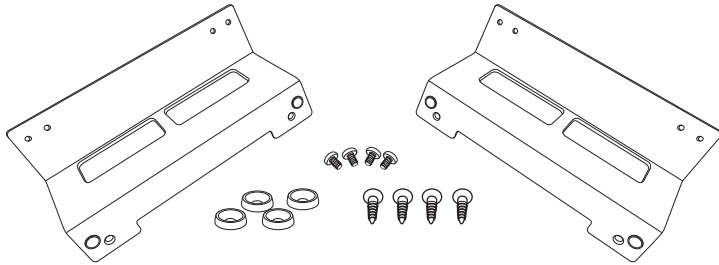
Different hardware (not supplied) will be required if you are mounting the gadget to a drywall (or other) surface.



Mounting your SMOOTH under a counter.

Your SMOOTH can be mounted under a counter, desk, or table using the optional Under Counter Mount Kit.

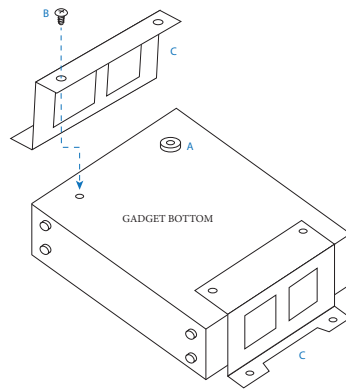
This kit includes two brackets, four No. 6 wood screws, and four cup washers suitable for mounting to a plywood surface. Different hardware (not supplied) may be needed if the mounting surface is a different material.



Remove the four rubber feet ("A") from the bottom of the unit using a #1 Phillips screwdriver, being careful to save the screws.

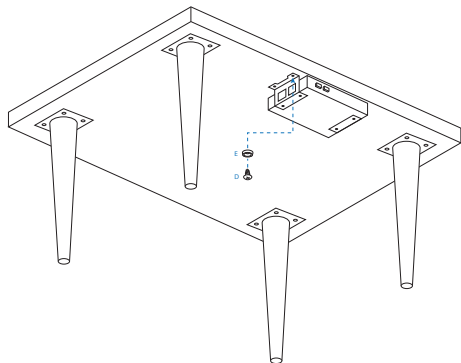
Line up the brackets ("C") so that their mounting holes line up with holes exposed after removing the rubber feet. Orient the brackets as shown in the diagram to the right so that the deeper flat side supports the gadget and the "notched" side faces the under-mount surface.

Use the pan-head screws ("B") removed from the rubber feet to secure the brackets to the gadget.



Use the four provided No. 6 screws ("D") and the four cup washers ("E") as shown in the diagram to the left to secure the gadget to the plywood underside of the counter, desk, or table.

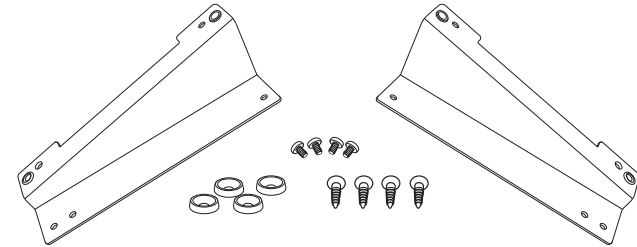
Drilling pilot holes is recommended to reduce the risk of splitting the wood.



Using your SMOOTH on a desktop.

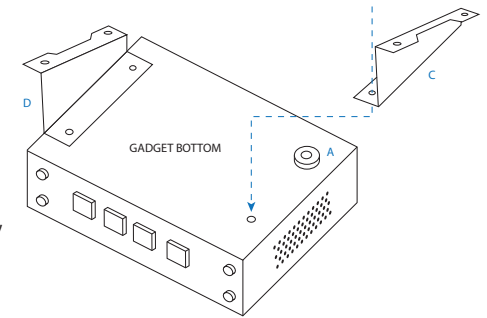
If you like the idea of using the SMOOTH on a desktop but prefer a more permanent installation along with the convenience of having it angled up toward the user, we've got you covered with the optional Desktop Bracket Kit.

This kit includes two brackets, four No. 6 wood screws, and four cup washers suitable for mounting to a plywood surface. Different hardware (not supplied) may be needed if the mounting surface is a different material.



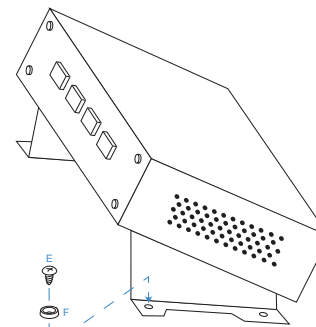
Remove the four rubber feet ("A") from the bottom of the unit using a #1 Phillips screwdriver, being careful to save the screws.

With the bottom of the SMOOTH facing up and the front panel facing toward you, line up bracket "C" with the holes exposed after removing the feet on the right side of the gadget. Orient the bracket as shown in the diagram to the right so that the flat side is attached to the unit, and the "notched" side sticks up with the notch facing outwards. Use the pan-head screws ("B") removed from the rubber feet to secure the brackets to the unit.



Use the four provided No. 6 screws ("E") and cup washers ("F") as shown in the diagram above to secure the gadget to a plywood surface.

Drilling pilot holes is recommended to reduce the risk of splitting the wood.



The ideal companion for your beloved Shure SM7 (or other SM-series) microphone.

Congratulations on purchasing Chameleon SMooth, the world's first mic processor designed exclusively for the iconic Shure SM7. Those who make our living with SM7 mics love the way they make our voices sound. But we also know these mics have some special needs: the right EQ curve, a high-power preamp, and the occasional bouquet of flowers or bottle of chardonnay.

Corny Gould (our resident processing genius) spent months measuring, analyzing and listening until he knew this microphone inside and out. Then he crafted DSP algorithms that perfectly enhance the SM7's unique characteristics.

SMooth's microphone preamp stage is amazing. It provides ultra-high gain with low noise. Being a very insensitive mic (when it's had a bad day it can be downright rude), SM7 (and SM5) mics require more clean gain than run-of-the-mill preamps can provide, and many folks employ a booster to lift the signal out of the muck. SMooth eliminates the need for these with mic preamp circuitry capable of 70dB of gain, with a noise figure only 1.5dB higher than theoretical minimum. If that doesn't light up your Christmas tree, nothing will.



Let's talk about noise gates. Turn them up too far and they clip your words; dial them back and here comes the hiss. So Corny invented the Room control. It's more like a mixer than a gate; turn it clockwise for more room tone, counterclockwise for room suppression. It's almost magic.

The compressor is amazing, if we say so ourselves. We created frequency-shaping contours optimized to your Shure mic: just plug in your SM7 and it sounds amazing out of the box. And wait until you hear (or should we say *don't* hear) the de-esser. It reduces sibilance without giving you a lithp.

Finally, there's a little bit of magic we call Sparkle. If you love the darker sound of your SM7A or SM7B, plug it in and leave Sparkle disabled. But if you'd like to emulate the sound of the original SM7 or even the legendary SM5, turn Sparkle on. Voila! Transmutation complete.

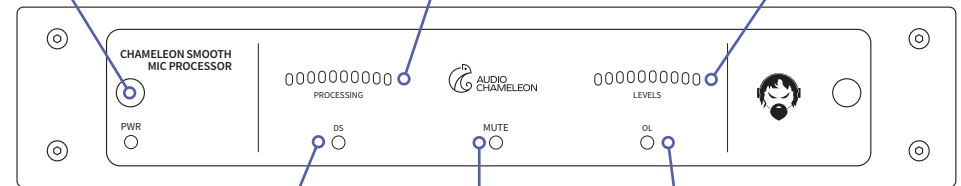
SMooth is the perfect companion for your beloved SM7 (or SM5) mic. Everything you love about the SM7 is right there — but warmer, punchier, more articulate and consistent. And yes — **bigger**.

Alright, enough jibber-jabber: here's what you need to know to make yourself sound like the next Ernie Anderson or Allison Janney.

Removable front panel hides processing adjustments. Gently pull both knobs to remove.

PROCESSING meter is switchable to show gain reduction or "Room" function activity.

LEVELS meter lets you select input or output level display.



"DS" tally illuminates when de-esser is operating.

"MUTE" tally illuminates when output is muted via optional remote control.

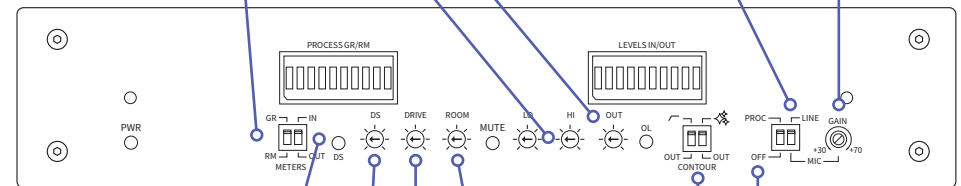
"OL" tally illuminates to let you know you're too darn loud..

Meter selection switch chooses between gain reduction and Room function activity.

Bass and high-frequency adjustments.

Output level trim.

Mic / Line input selector. Mic Preamp gain adjustment.



Switches metering between input and output levels.

Room adjustment.

Processing Drive adjustment.

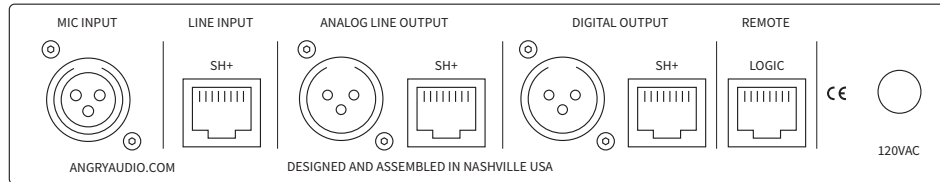
De-esser adjustment.

Enables / disables Chameleon voice processing.

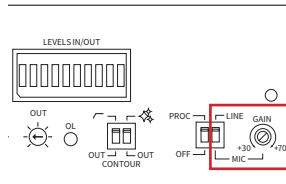
High-pass filter and Sparkle selectors.

Select your input source.

SMooth is equipped with both a Mic input on XLR-F, and a Line-Level analog input StudioHub+ RJ-45 connection. Both analog and AES3 digital outputs are provided on XLR-M and StudioHub+ connections.

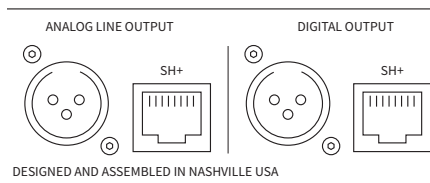


The DIP switch at the far right of the front panel marked "LINE / MIC" selects which input to use.



- In the LINE position, the switch takes input from the StudioHub+ RJ-45 connector labeled "Line Input".
- In the "MIC" position, the XLR-F "Mic Input" connector is used to feed the high-performance internal preamplifier. This preamp provides between 30 and 70 dB of gain, with a noise figure only 1.5dB higher than theoretical minimum! Preamplifier gain is adjustable between using the multi-turn setscrew to the right of the switch.

Connect your output.



Both the ANALOG LINE OUTPUT and the DIGITAL OUTPUT (AES3) sections of the rear panel host an XLR-M and a StudioHub RJ-45 connector. The Analog and AES3 outputs are both active, enabling you to feed an analog and a digital signal path simultaneously. However, you must choose only one connection at a time in either section (i.e., all four ports may not be used at once).

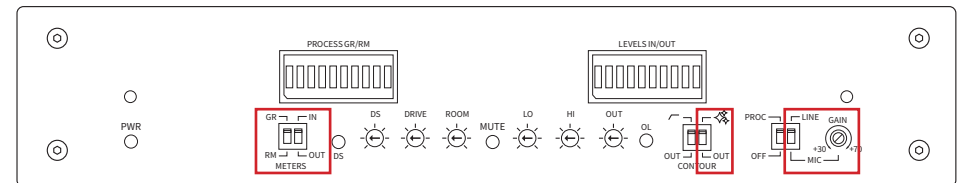
Processing controls.

Here's where the fun begins - setting up your SMooth Mic Processor! To begin, remove the lens plate on the front of the unit. Just grip the knobs at each end of the panel and pull forward; the SMooth's control array will be revealed. We've included an adjustment tool to maximize your setup pleasure.

You should perform the following steps in the order described for best effect.

Preamplifier gain calibration (when using the "MIC INPUT" XLR):

- Locate the switches labeled "METERS", below the "PROCESSING/RM" LED bar graph display on the left.
- Set the right switch to "IN". Plug in your microphone and speak into it at a typical level. ("Hello? Is this thing on?")
- Locate the preamplifier gain adjustment on the far right of the front panel labeled "GAIN" (duhhh). Adjust it while speaking, until two to three segments of the "LEVELS IN/OUT" meters illuminate. This provides about



-18 dB to -15 dB output level from the mic preamplifier to feed the digital audio processing system.

- If the red "OL" LED below the LEVELS meter illuminates, the preamplifier audio level is too high and possibly distorting. Easy, cowboy - isn't there enough distortion in this world? Back that gain control off a bit until the "OL" indicator is angry no more.

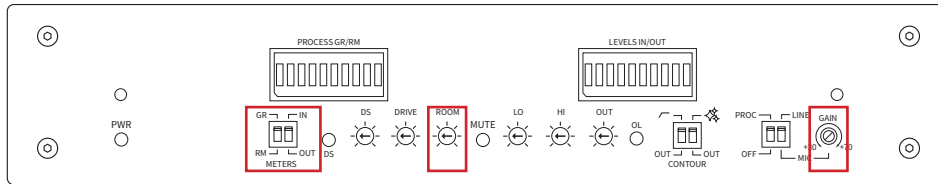
Your initial preamplifier gain calibration is complete. Time for a cookie!

"SPARKLE" setting:

SM5B and SM7 (no suffix) mics used a single-coil mic element. SM7A, SM7B, and SM7dB use double-coil elements. Some prefer the sound of the older SM5B and SM7 microphones because the the newer mics sound a bit darker.

We invented the SPARKLE function to make those darker mics sound more like the classic single coil mic elements. If you have an SM7A, SM7B or SM7dB and you'd like the mic to sound more like the classic SM5B and SM7, flip the "Sparkle" DIP switch (right side of the CONTOUR pair) up. If you use an SM5B or SM7, or if you love the darker sound of the newer mics, leave Sparkle off.

Room Attenuator Calibration:



We've all experienced the frustration of fighting gate algorithms that are over-aggressive, cutting off your words so that your

"Entences sound like thi."

SMooth doesn't have a gate function. Instead, it has something brand new: a ROOM control. Instead of a threshold setting that, more often than not, makes you sound like your tongue is sticking to the roof of your mouth, SMooth's ROOM control acts like a mixer, letting you add or subtract the sound of your studio environment to the output signal.

- Set the lefthand "METERS" switch to the "RM" position. This will display the composite activity of the Room attenuation system.
- Locate the "ROOM" control. Turn this control fully counter-clockwise.
- The PROCESS GR/RM bargraph LED meters should be fully illuminated during silence. If they are "dancing around" when no one is speaking, it means the Room attenuator system is keying on-and-off on room noise.
- Adjust the preamplifier "GAIN" control slowly counter-clockwise until the meters *just* stop dancing, and no more than one or two LED segments are flickering off and on to background noises. This means the "gate" function of the Room attenuator is calibrated to your studio's noise floor.
- Listen to the output of the microphone processor while speaking into the microphone.
- Without making any settings changes, you should hear your voice isolated from the room sounds without any chopping of words, "esses" or "H" sounds. To sound less "sanitized" or "removed from the room", turn the "ROOM" control clockwise until the room sound is continuously heard in the background a little (if desired).
- You can make the room sound as loud or quiet as you wish using this "magic" control. You can also fine-tune the hard gating function by making small adjustments to the preamplifier "GAIN" control to taste.

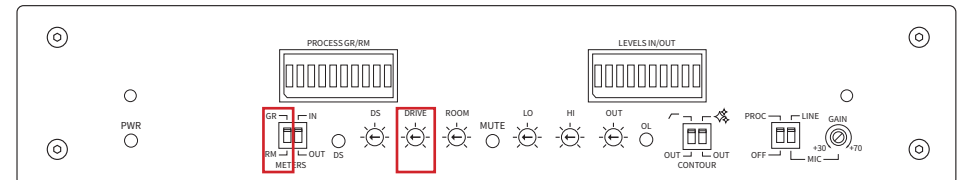
Audio Processing Adjustments:

Now it's time for everyone's favorite: adjusting SMooth's Audio Processing! Don't feel anxious - unlike the airchain audio processors you might be used to, SMooth won't make you lose hair and reach for the bicarb. In fact, there's only *one* control to adjust! "Is it magic??" you ask. Well, we won't make that claim, but we did stump Penn & Teller, so draw your own conclusions.

The audio processing section of the SMooth Microphone Processor is very simple thanks to the fact that all dynamics processing parameters self-tune to the speaker's voice. This is possible by our intelligence-driven Audio Chameleon audio processing engines.

The type used in SMooth is specifically designed & trained around vocal characteristics, a *very* powerful advantage that yields smooth-sounding dynamics control that delivers strong, clean vocals that can easily cut through, or sit beside, pre-recorded programming bits.

The Compressor / Limiter function is not like typical microphone processors: with Chameleon, a little bit of processing goes a *long* way. With this in mind, we recommend starting with very light levels of compression, and progressing from there.



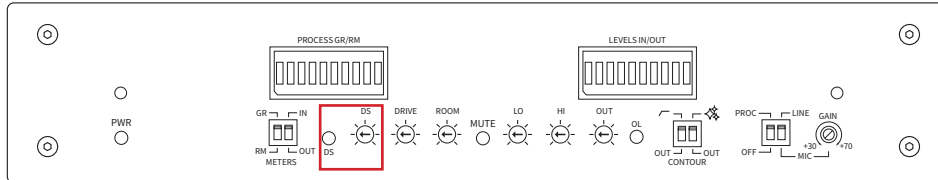
Drive Control:

The DRIVE control sets the overall amount of dynamic processing applied to the microphone audio. Here's how to set it up.

- Find the METERS switches. Set the left switch to the up position called "GR" (Gain Reduction). Next, locate the "DRIVE" control.
- Speak into the mic at an energy level typical for you. Adjust the "DRIVE" control until you see the PROCESS GR/RM meter bounce to the left left by two or three segments. This is the recommended starting point for DRIVE.
- As other parameters are "dialed in" to your liking, and you are running the processor through its paces, you may try adjusting the "DRIVE" control more or less, to match the sound you're seeking.
- High DRIVE settings might "undo" ROOM attenuation a bit. If this is the case but you need lots of DRIVE, try reducing the "room" control (assuming it isn't already fully clockwise) or reduce the preamp GAIN control a tiny bit.

De-Esser Control:

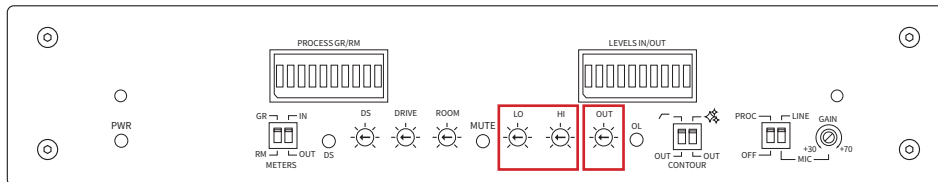
To tame those “esses” The Chameleon features a unique and very transparent sounding De-Esser. You adjust it using the “DS” control. Our De-Esser receives intelligence from our smart vocal processing engine, which allows it to change its behavior according to the decisions made by the vocal dynamics processor; thanks to this, our De-Esser algorithm is able to reduce sibilance transparently without creating “sonic oddities” in the announcer’s perceived speaking style.



- There is an amber LED next to the “DS” adjustment. It illuminates whenever SMOoth is reducing sibilance.
- Turn the “DS” control clockwise to increase the amount of sibilance management; counter-clockwise reduces the amount of de-essing applied.

Equalization Controls:

There are two equalization adjustments with characteristics based on the family of microphones the Audio Chameleon microphone processor is designed around. The Chameleon SMOoth is designed around the Shure SM series microphones (SM7, SM5, etc.), while the Chameleon REbel is designed for the Electro-Voice RE20, 320, and 27-ND microphones. This avoids the need for complicated equalization arrangements since we KNOW what the target microphones are!



- Simply adjust the “LO” and “HI” controls to match your announcer mic audio to the tonality of the pre-recorded content that makes up your program format. For a “flat” setting, adjust the LO trim pot to 12:00 position, and the HI trim pot fully counter-clockwise.

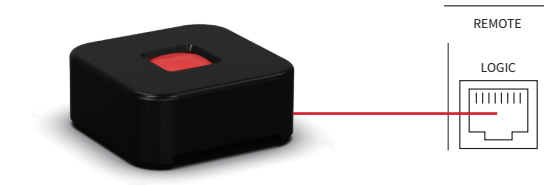
Output Level Control:

- Use the “OL” control to calibrate the output of the Chameleon Microphone Processor to your console (or recording device’s) input. This control sets the level of BOTH analog and AES-EBU outputs.

“What’s the ‘Remote’ connector for?”

Your SMOoth mic processor incorporates a remote control function that allows you to remotely turn your mic circuit ON, OFF, or momentarily MUTE it. This is useful when using your SMOoth with a mixer that has no “cough” function, or if you have several SMOoth units in a talk studio and want to give each of your guests individual mic control.

We make a device called the REMOTE GIZMO; a nice illuminated button in a handsome machined enclosure (so handsome it was voted ‘Gizmo Of The Year’ by GQ).

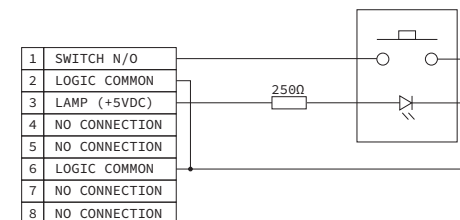


The Gizmo connects to the REMOTE Logic port on the rear panel of your SMOoth with the CABLE-MINIM StudioHub cable) included with the Gizmo, an RJ45M-to-3.5mm connector that plugs into a 3.5mm jack on Gizmo. The 6-foot cable can be extended using any standard mini headphone cable (3.5mm TRS male to 3.5mm TRS female).

The button on the Remote Gizmo illuminates when audio is ON. Tap it to toggle OFF. Tap again to toggle back ON. If the channel is ON (button is illuminated) and you press and hold it, it will mute for the duration of the press, and will return to ON when you release it. So one button is able to do: ON, OFF and COUGH. The red “MUTE” LED on the front of the SMOoth illuminates when audio is muted.

If you like, a jumper inside your SMOoth can be removed to give you a MUTE-only function (no ON/OFF). In this mode, the Gizmo’s button is illuminated except when pressed, and the button works as a remote COUGH switch only.

For all you schematic freaks (you know who you are), here’s a diagram of the Remote Gizmo circuit and pinout to the RJ45 connector.



Specifications.

Part Numbers

North America: p/n# 991043
Australia: p/n# 991043A
Europe: p/n# 991043E
United Kingdom: p/n# 991043U

Included in the box: Chameleon SMOoth Mic Processing Gadget
Pocket trimpot adjustment tool

Connections

Analog Input: Balanced +4dBu Mono XLR connectors
Balanced +4dBu Mono RJ45F connector
(StudioHub+ pinout)

Analog Output: Balanced +4dBu Mono XLRM connectors
Balanced +4dBu Mono RJ45F connector
(StudioHub+ includes $\pm 15\text{VDC}$)

Digital Output: Transformer isolated, AES/EBU, 48kHz S/R,
RJ45F connector (StudioHub+)

Remote Connection: RJ45F connector

Power and Environmental

Power Input: 115VAC 50/60Hz (North America Version)
230VAC 50/60Hz (Australia, Europe, U.K Versions)

Power Consumption: 15VA

Operating Temp.: 0° to 40° C (32° to 104° F)

Storage Temp.: -20° to 45° C (-4° to 113° F)

Relative Humidity: 0% to 90% non-condensing

Cooling: Venting chassis (fanless)

Product Dimensions

Product Dimensions: 8.5 x 6.25 x 1.7 inches (21.6 x 16 x 4.32 cm)
Product Weight: 3.5 pounds (1.59 kg)

Shipping Weight & Dimensions

Shipping Dimensions: 12 x 9 x 6 inches (30.5 x 22.9 x 15.3 cm)
Shipping Weight: 5 pounds (2.27 kg)

Compliance in the U.S.

In the U.S., this Gadget complies with the limits for a Class A computer device as specified by FCC Rules, Part 15, Subpart J, which are designed to provide reasonable protection against such interference when this type of equipment is operated in a commercial environment.

...and in Canada.

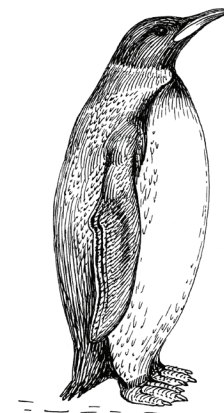
In Canada, this Gadget does not exceed the Class A limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

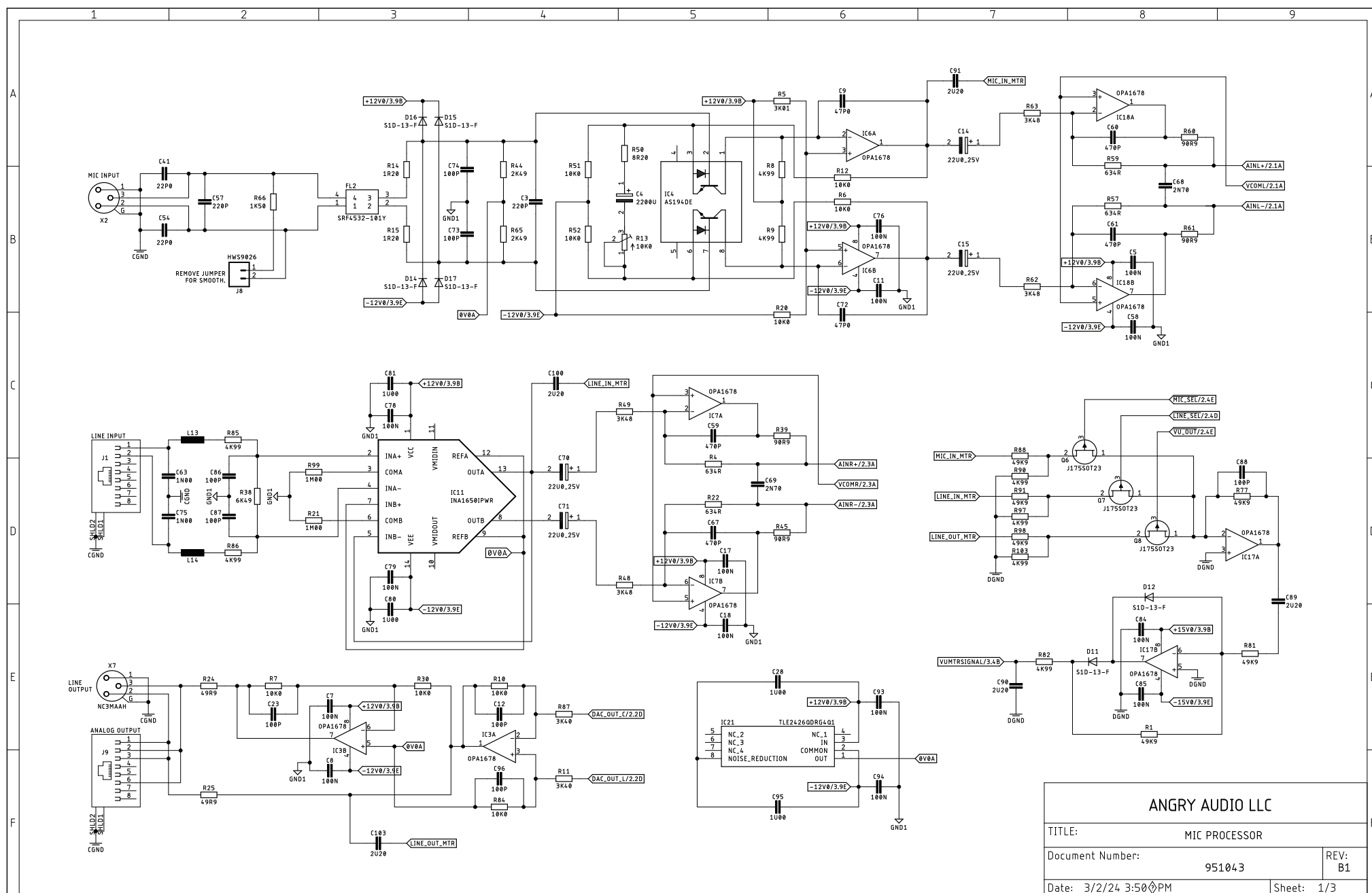
...and in Europe.

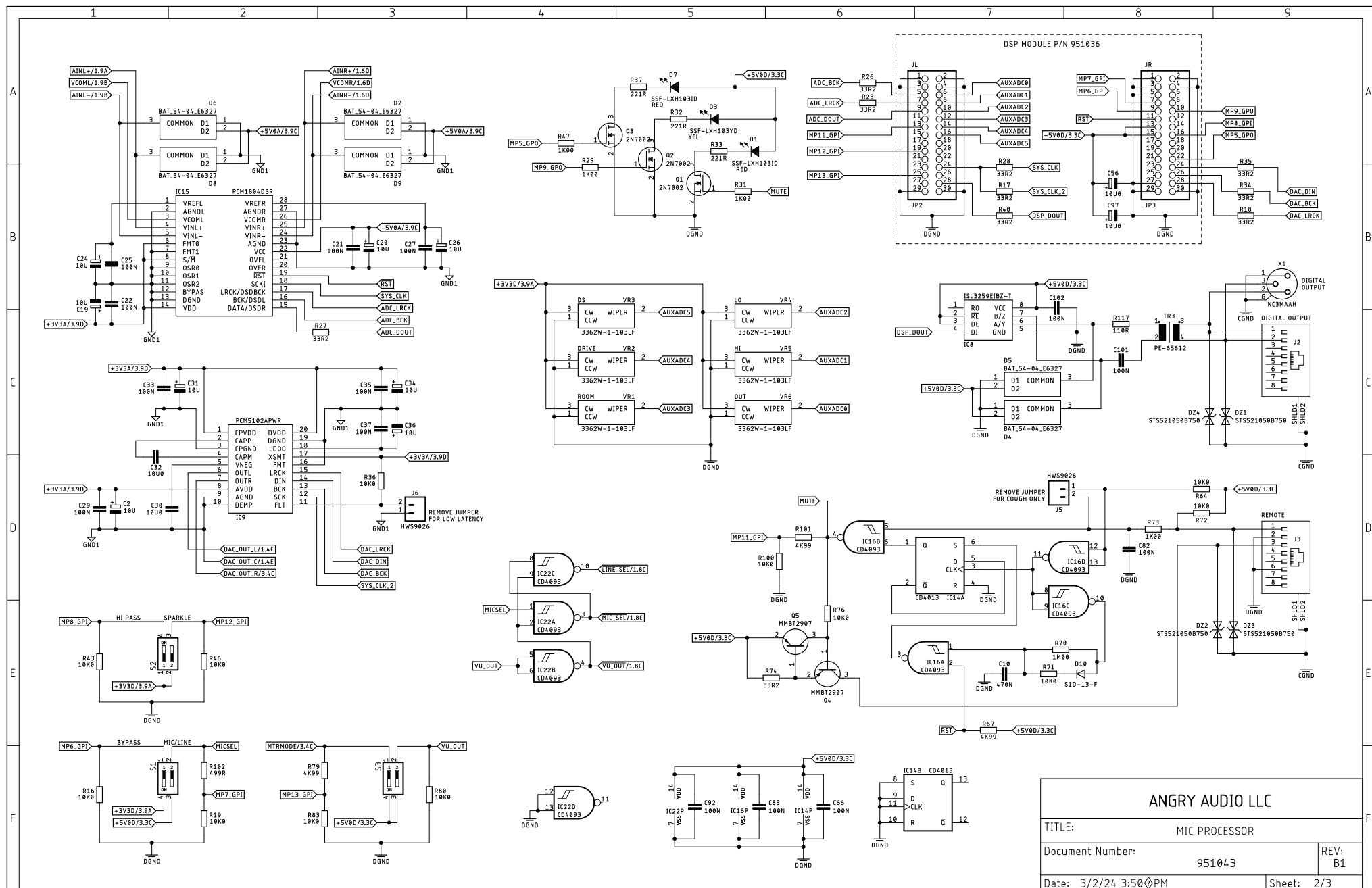
This Gadget complies with the requirements of the EEC Council Directives 93/68/EEC (CE Marking), 73/23/EEC (safety – low voltage directive), and 89/336/EEC (electromagnetic compatibility). Conformity is declared to standards EN50081-1 and EN50082-1.

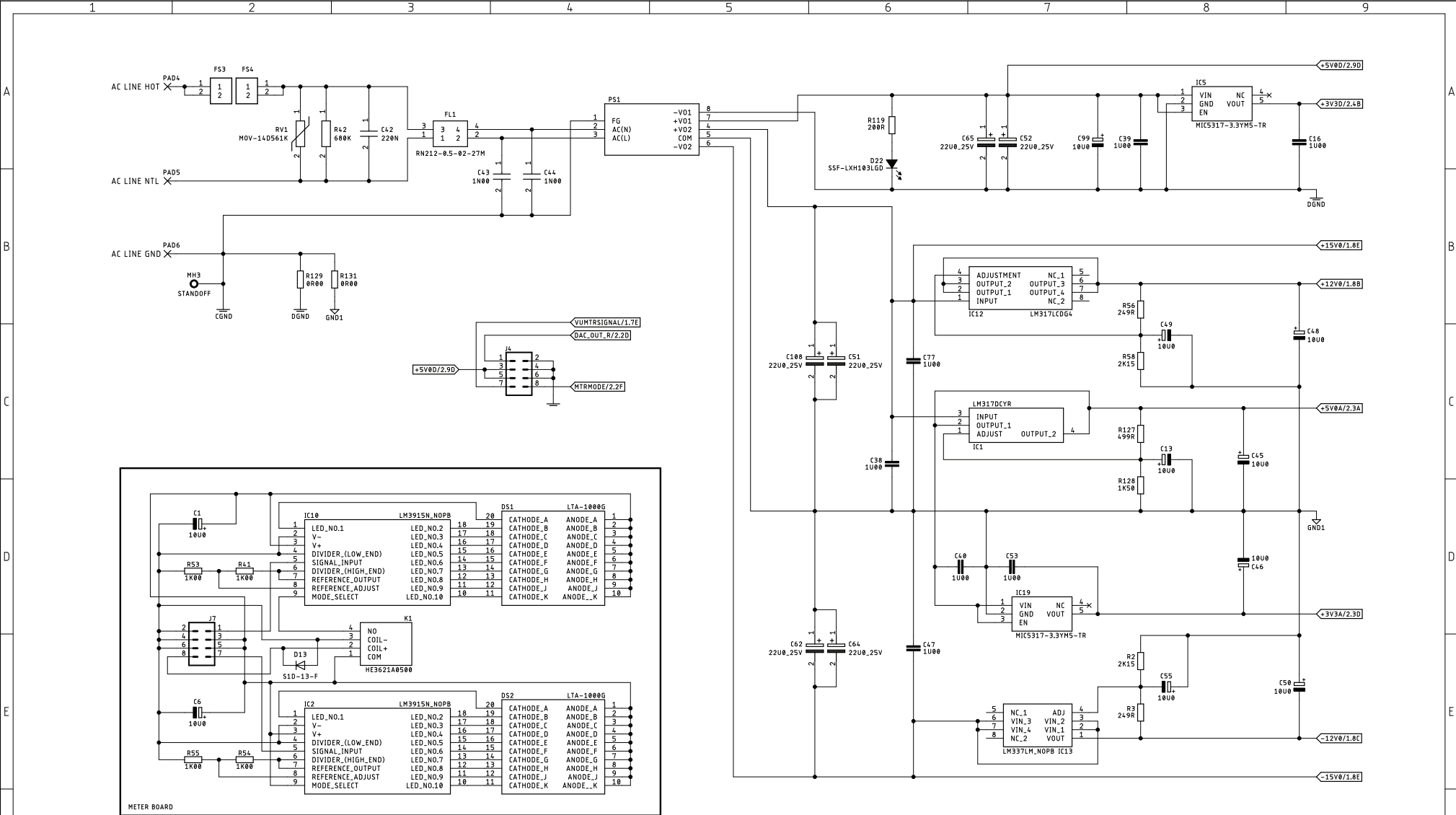
...and in the Arctic Circle.

This Gadget, like your voice talent, will freeze solid when used in the sub-zero temperatures found on the barren tundra or ice floes of the North Pole region. Angry Audio cannot be held responsible for any losses occurring from exposure to icebergs, ice caves, ice melt, or even your Frigidaire's icemaker. So if you're planning a podcasting expedition to Grytviken, Dobrowolski Station, or Shackleton's Hut, don't blame us when your SMOoth Microphone Processor spontaneously becomes a giant ice cube.









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Date: 3/2/24 3:50 PM		REV: B1
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