CERIATONE
AMPLIFICATION

SON OF YETI

20W “Lunchbox”

Amplifier

User's Manual

Thank you for the purchase of your Ceriatone Son of Yeti 20W Mini guitar amplifier!
Here, we hope to explain how best to use your new amp.

Table of Contents

1) About the SON OF YETI 20W "Lunchbox"

Our British series of amplifiers has been overwhelmingly popular, and is still the backbone of our amplifier line. A few years ago, we expanded our British series with the HRP series of versatile, yet classically voiced amplifiers. We are excited to offer a unique take on these essential tones with our lower powered SON OF YETI 20W amplifier. To do this, we started with our Yeti circuit, and then massaged the sweet tone of 6V6s into the power section. The result is a unique design that capitalizes on the expressive, sweet power section centered on classic American-style 6V6 tubes.

While our work could not have been possible without the gracious information shared over the last decade in the public domain, we hope you appreciate our modifications, component selection, and construction techniques. Most of all, we hope the SON OF YETI becomes an integral part of your tone equation to exhilarate your playing and music.

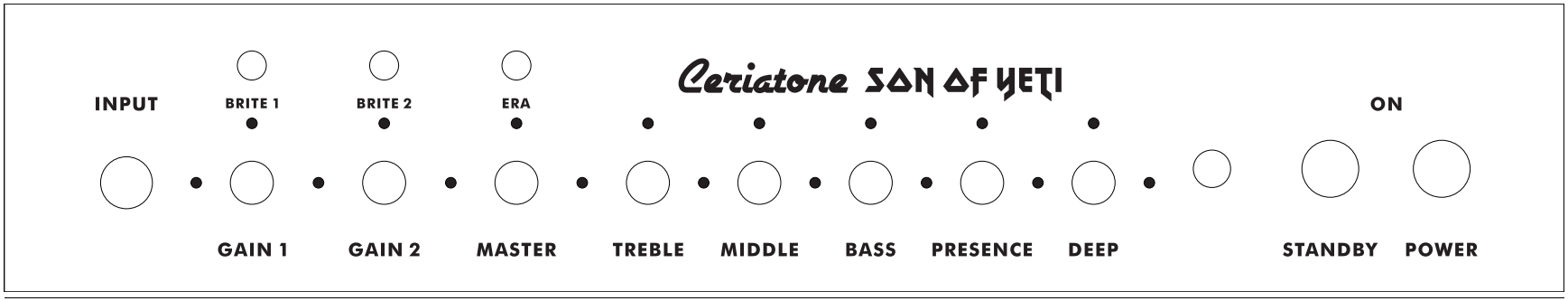
Rock on!

- Nik Azam

2) QUICK SETUP *(for instant gratification)*

1) Plug your guitar using a 1/4" instrument cable into the INPUT on the far left of the front panel
2) Plug a suitable power cable from the SOY's rear panel MAINS cable inlet to your wall power receptacle
3) Plug the SOY into your speaker cabinet using 1/4" speaker cable
4) Set the IMPEDENCE selector to the match the impedance of your speaker cabinet
5) Set the PUSSY TRIMMER control on the rear panel to 2:00 (clock face)
6) Set all rotary controls on the front panel to 12:00 (clock face)
7) Turn MASTER control to about 9:00 (clock face)
8) Set front panel ERA switch in the right position (OFF)
9) Set front panel BRITE switches in the LEFT position
10) Set front panel POWER switch in the upward ON position (with adjacent switch to STANDBY) for 30 seconds to allow tube filaments to warm up
11) Set front panel STANDBY switch upward to the ON position
12) *ROCK!!!!!!*

3) FRONT PANEL CONTROLS



From left to right:

1) **INPUT** ¼" instrument jack
2) **GAIN 1** control with **BRITE 1** 3-way toggle switch
3) **GAIN 2** control with **BRITE 2** 3-way toggle switch
4) **MASTER** control with **ERA** 3-way toggle switch
5) **TREBLE** control
6) **MIDDLE** control
7) **BASS** control
8) **PRESENCE** control
9) **DEEP** control
10) **INDICATOR** LED
11) **STANDBY** two-way toggle switch
12) **POWER** two-way toggle switch

GAIN 1 adjusts the signal strength coming out of the first gain stage, and going into the second tube stage. Think of this as a global "gain" control. Depending on the BRIGHT 1 setting, you can also use this to shape the high and low frequency response of your Chupacabra.

BRITE 1 is a high-frequency boost that can be used to add sparkle *and gain* to your tone. In the middle position, BRITE 1 is defeated. In the left position, it boosts upper mid and high frequencies, and adds noticeable gain. With the toggle switch in the right position, it boosts extreme high frequencies, and adds less gain boost than the right position. In conjunction with an active Brite 1, lower GAIN 1 settings will also trim the bottom end. This high frequency boost / low frequency cut is more prominent as GAIN 2 is turned down.

GAIN 2 adjusts the signal strength coming out of the second gain stage, and going into the third tube stage. Think of this as a "saturation" control that will impact pick attack, compression, and feel. Depending on the BRITE 2 setting, you can also use this to shape the high and low frequency response of your Son of Yeti.

BRITE 2 is a high-frequency boost that can be used to add sparkle *and gain* to your tone. In the middle position, BRITE 2 is defeated. In the left position, it boosts upper mid and high frequencies, and adds noticeable gain. With the toggle switch in the right position, it boosts extreme high frequencies, and adds less gain boost than the right position. In conjunction with an active BRITE 2, lower GAIN 2 settings will also trim the bottom end. This high frequency boost / low frequency cut is more prominent as GAIN 2 is turned down.

MASTER sets the overall volume of Son of Yeti.

ERA provides 3 tonal options for the SOY. You can think of this covering 3 different decades of tone. In the middle position, the amplifier will be cleaner, less compressed, and very woody. We consider this our late '60s, or Plexi mode. The right position is our '80s voicing. This adds saturation and compression, and is reminiscent of '80s modded Plexis coming out of LA. The left position is our modern voicing and adds even more saturation, and also evens the top end and overtones. We love this mode for all things metal and soloing.

NOTE - Just like the original "Jose mods", these different modes will impact the taper response of the MASTER control. In other words, some settings might seem louder than others. In reality, equal volumes are happening sooner or later on the control. The '60s mod hits stage volume soonest, and the Modern voicing hits stage volumes latest. Don't be afraid to turn up the MASTER control in the '80s and Modern modes!

TREBLE adjusts the high frequency response in Channel 1.

MIDRANGE adjusts the mid frequency response in Channel 1.

BASS adjusts low frequencies in Channel 1.

PRESENCE adjusts the high frequency response of the power amplifier using negative feedback. Use this control to add sparkle and clarity to your tone.

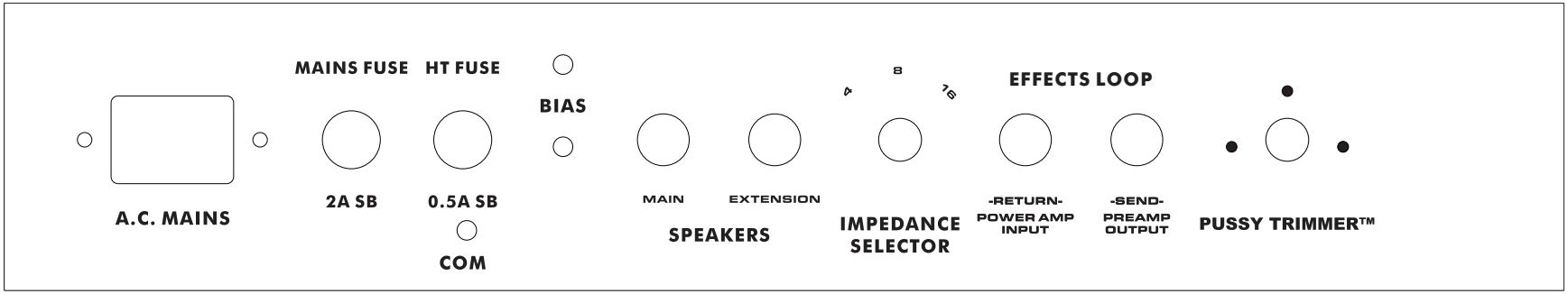
DEEP adjusts the low frequency response of the power amplifier using negative feedback. Use this control to add depth, punch, and "thump" to your tone. Turning this control all the way counter-clockwise defeats this control and removes it from the power amp.

INDICATOR will illuminate when SOY OTS is powered by turning the rear panel MAINS toggle switch to the ON position. If INDICATOR does not turn on, check your power cable connections, and then the 2A slow-blow fuse on the rear of the unit.

STANDBY applies high voltage to the vacuum tube anodes (and screen grids) during use of the SOY. To ensure long tube life, first power the unit on with the toggle switch in STANDBY position for approximately 30 seconds. Then place switch upward to ON position to use the SOY. With the toggle switch in the UP position, the SOY is in operate mode. In the DOWN position, the SOY is in standby mode.

POWER two-way toggle switch powers the SOY on and off. With the toggle switch in the UP position, the SOY is ON. In the DOWN position, the SOY is OFF.

4) REAR PANEL CONTROLS



From left to right:

1) **A.C. MAINS** IEC cable inlet
2) **MAINS FUSE** 2A slow blow fuse
3) **HT FUSE** 0.5A slow blow fuse
4) **COM** multimeter probe jacks (SEE PAGE 10 FOR EXPLANATION)
5) **BIAS** multimeter probe jacks (SEE PAGE 10 FOR EXPLANATION)
6) **SPEAKERS MAIN** 1/4" speaker jack
7) **SPEAKERS EXTENTION** ¼" speaker jack
8) **IMPEDANCE** three-way rotary selector
9) **EFFECTS LOOP RETURN** ¼" instrument jack
10) **EFFECTS LOOP SEND** ¼" instrument jack
11) **PUSSY TRIMMER** control

A.C. MAINS IEC cable inlet – plug a suitable IEC power cable into this inlet to power your amplifier

MAINS FUSE 2A slow-blow fuse – used to protect your amplifier from voltage spikes or excessive current draw. Replace only when necessary.

HT FUSE 0.5A slow-blow fuse – used to protect your amplifier, particularly during the event of tube failure. Replace only when necessary.

SPEAKERS EXTENSION AND MAIN ¼" speaker cable jacks. Use a ¼" speaker cable to connect your speaker cabinet to the amplifier using these jacks. If you use one speaker cabinet, use the jack labeled MAIN. If you want to run two cabinets in parallel, connect the second cabinet to the amplifier using the jack labeled EXTENSION.

***NOTE** – never turn your amplifier off STANDBY mode without connecting the amplifier to a speaker cabinet or suitable dummy load! Failing to do so may damage your amplifier!*

IMPEDANCE three-way rotary selector. Set this selector to the position that matches the impedance of your speaker cabinet.

***NOTE** – if you are using two speaker cabinets in parallel (ex – two 16 Ohm cabinets), set the impedance selector to half that of a single cabinet (in this case, 8 Ohms).*

EFFECTS LOOP RETURN ¼" instrument jack can be used to directly interface the power amp of the SOY, thereby bypassing the preamp and using the amplifier as a power amplifier. Conversely, this is usually used as the RETURN of the effects loop. Plug the output of your effects unit, or interface device (ex – C-lator, Klein-ulator) into this jack using ¼" instrument cable. The effects loop in the SOY amplifier is passive.

EFFECTS LOOP SEND ¼" instrument jack can be used to directly interface the preamp of the SOY, thereby bypassing the power amplifier and using the SOY as a preamp. Conversely, this is usually used as the SEND of the effects loop. Plug the input of your effects unit, or interface device (ex – C-lator, Klein-ulator) into this jack using ¼" instrument cable. The effects loop in the SOY amplifier is passive.

PUSSY TRIMMER™ allows you to further fine tune the gain and saturation of the Son of Yeti. Turning this control down can reduce the possible saturation and gain. We recommend turning this up to about 2:00 for the standard gain and response. If it's too much and too hard to control, you can reign things in by turning the PUSSY TRIMMER down. If you take steroids, jump out of planes, and wrestle bears you can just go ahead and crank the PUSSY TRIMMER all the way to the max (clockwise).

5) TUBE COMPLIMENT AND BIAS ADJUSTMENT

From left to right:
V1 – 12AX7/ECC83 (stages 1 and 2)
V2 – 12AX7/ECC83 (stage 3 and tonestack cathode follower)
V3 – 12AX7/ECC83 (phase inverter for power amplifier)
V4 – 6V6
V5 – 6V6

BIAS ADJUSTMENT CONTROL IS INDICATED BY THE RED ARROW

To measure your power tube bias, carefully follow these steps ***with the amplifier in OPERATE, MASTER at minimum, and connected to a speaker load*** **(not doing so may damage your amplifier!)**:

1) Turn on a digital multimeter (DMM), and set it to read millivolts (mV) in the 100mV range (this will vary from DMM to DMM)
2) Plug a black probe into the color-coded jack on your DMM, and do the same for a red probe
3) Plug the black probe tip into the **COM** multimeter jack on the rear of the Son of Yeti.
4) Plug the red probe tip into the *top* **BIAS** multimeter jack on the rear of the Son of Yeti. This measures bias for the 6V6 closest to V3. Right down the value your DMM reads. You might expect a value between 23mV and 25mV.
5) Repeat for the other power tube position by plugging your red probe into the *bottom* **BIAS** multimeter jack.

Okay, now I've measured my bias. Now what?

To calculate bias, there are two pieces of information you need to know: your amplifier's power tube plate voltage, and the published value for maximum plate dissipation for the power tubes used in your amplifier. To save you some time and energy, here are those two values:

- Approximate plate voltage for Son of Yeti amplifiers = 380-390VDC
- Maximum plate dissipation for 6V6s = 14W

…and now some math. The formula for calculating bias is as follows:

$$\frac{maximum\ plate\ dissipation}{amplifier\ plate\ voltage} \times percent\ of\ maximum\ dissipation \times 1000 = bias\ current\ (mA)$$

In most cases, amplifiers are biased between 50% and 75% dissipation. We bias the SOY to approximately 23mV-25mV reading on a DMM.

An example is as follows:

$$\frac{14W}{380VDC} \times 65\% \times 1000 = about\ 24mA$$

You might wonder why your DMM is set to millivolts and not milliamps – simply, we have a 1 Ohm resistor placed between your probe jacks and ground to convert a current reading to a voltage reading. That way, a bias current of 24mA measures as 24mV on your DMM.

NOTE *– Only set your DMM to mV for measuring bias on the Son of Yeti. Not doing so may damage your DMM.*

Now that you know how to calculate bias, all you need to do is:

1) Follow steps 1-5 on page 11
2) Calculate what bias voltage reading you will set your tubes to (in this case, we will use 24mV)
3) Place your red probe in the top **BIAS** jack, and the black probe in the **COM** jack.
4) Turn the bias potentiometer shaft SLOWLY until your DMM reads 24mV
5) Wait 1 minute
6) Recheck all power tube bias measurements
7) Readjust bias potentiometer shaft if necessary

A FEW COMMENTS ON BIASING

Due to the nature of vacuum tube amplification, there are inherent risks when biasing your amplifier. Extremely high-voltages are present, and vacuum tubes reach high temperatures during use.

The risk of electrical shock and/or skin burns should ALWAYS be kept in mind. Therefore, bias at your own risk, and only while paying attention and taking all precautionary measures.

Biasing should only be done on a clean workbench with no distractions. Do not wear loose clothing or any jewelry. Take your time, and think carefully before each step.

Again, bias at your own risk. Ceriatone Amplification is not responsible for any damages or injuries resulting from user biasing.

6) FREQUENTLY ASKED QUESTIONS

How do I hook up this thing?

- See Section 2, beginning on page 3.

Is the FX loop series or parallel? Active or parallel?

- The FX loop is series, and is currently parallel. However, we have plans to release an option for a tonally transparent solid-state FX loop. Stay tuned!

When I plug effects into the effects loop, my tone noticeably changes. Sometimes the effects don't sound quite right. What's the deal?

- Generally, what you're hearing is a significant mismatching of impedances, and/or an overloading of the effect unit itself. Most rack-mount units have different input impedance than pedals, and thus can *sometimes* function fine without a buffer before them. In addition, *some* of these rack-mounted effects can pad the volume they receive, preventing it from overloading. Pedals do not have proper input impedance or padding ability, and therefore do not play nicely.

- For best results, an effects loop interface like the C-lator or Klein-ulator should be used with the Son of Yeti amplifiers. These units prevent impedance mismatching, as well as provide the ability to pad down the volume sent to the effects units hence preventing any overloading.

Sometimes when I play with both BRIGHT switches engaged, the amp wants to feedback/squeal. Is this normal?

- For an amp with this much gain and lack of treble roll off, yes. We've carefully tuned the resonant frequency of the amp to exemplify the sound of the hot-rodded Plexis of yore. A byproduct of this voicing is the tendency to feedback if both BRIGHT controls are engaged, which dramatically boosts the upper-mid and high frequency content.

- If this is an issue, you can simply turn off BRIGHT 2, or decrease gain settings, or turn down your guitar volume during breaks. If you need all of that gain, and then some, we recommend a noise gate (standard procedure on any modern high-gain amplifier).

- However, if you are a straight-to-amp player, we have installed a rear panel control aptly named "PUSSY TRIMMER". If this background gain wash and tendency to feedback bothers you, you can turn down this control to reign in the amplifier's "gainiac" nature.

Can I substitute different tube types for the 12AX7/ECC83s or 6V6s?

- Although you can try 12AT7s, 12AU7s, 5751s without any harm, the design is optimized for 12AX7s, and are therefore the only recommended tube in the preamp positions. Usage of other power tubes is not recommended for the Son of Yeti 20W.

What settings do you recommend?

- See Section 2, Page 3.

Yeah, I read that already. I love '80s hair metal. Can this amp do that?

- Hell yeah! Put the GAIN controls at 12:00, both BRIGHT switches to the left. Select ERA in the right ('80s) position. Turn the MASTER up to about 1:00. Turn MIDRANGE all the way up, start with BASS around 11:00, TREBLE around 2:00. PRESENCE and RESONANCE around 10:00. Make sure you have your spandex handy.

Wait, I actually love metal. Can this amp do that?

- Hell yeah! Put Gain 1 at 1:30, Gain 2 at 11:00. Both BRIGHT switches to the left. Select ERA in the left (modern) position. Turn the MASTER up to about 3:00. Start with BASS around 9:30, MIDRANGE around 11:00, TREBLE around 2:00. PRESENCE around 11:00 and RESONANCE around 1:00. Make sure your neck is properly stretched beforehand.

Sorry, I just want to rock. Classic-like. Can this amp do that?

- Hell yeah! To get the sound of a classic Plexi, try the following: Set GAIN 2 around 9:30. Set BRIGHT 2 to middle position. Turn RESONANCE all the way counter clockwise. Set TREBLE, MIDDLE, BASS, and PRESENCE to taste. Turn BRIGHT 1 to far right position. Turn up the MASTER all the way, and use GAIN 1 as a traditional channel volume on a non-master volume Plexi. Make sure your school boy uniform is clean.

Do I need to use a matched and balanced phase inverter?

- It is not necessary. Feel free to experiment with different tubes (of the same type) in your Chupacabra, though!

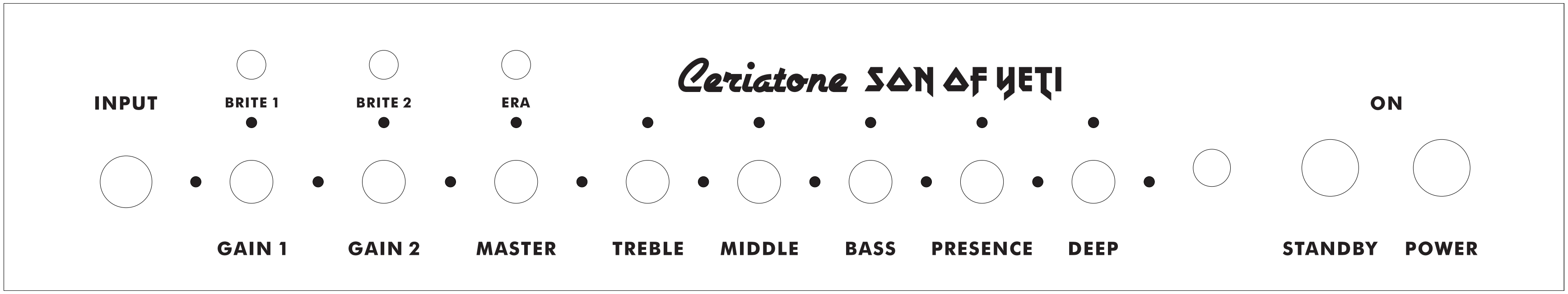
I've read that the components used in this type of amplifier are really important. What is inside my Son of Yeti?

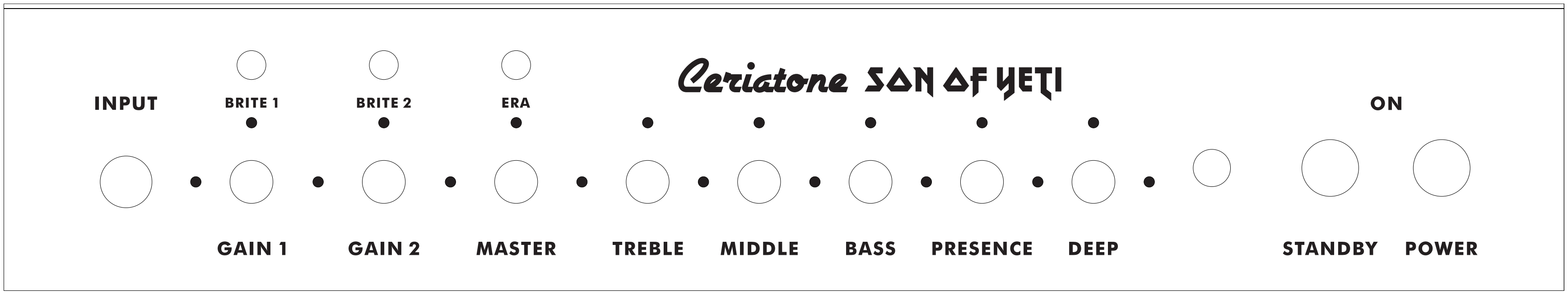
- We use a combination of parts custom-made for us to our specifications (power transformer, output transformer, choke, high-temperature / low-ESR electrolytic capacitors) and those used in our British series (1/2W carbon composition resistors, 1W carbon film resistors, TAD Mustard capacitors, high-voltage silver mica capacitors, Belton tube sockets, and Alpha potentiometers, Cliff jacks). Finally, we occasionally use NOS components from our vast surplus parts collection in locations they work well and complement the voicing or enhance the performance of the amplifier.

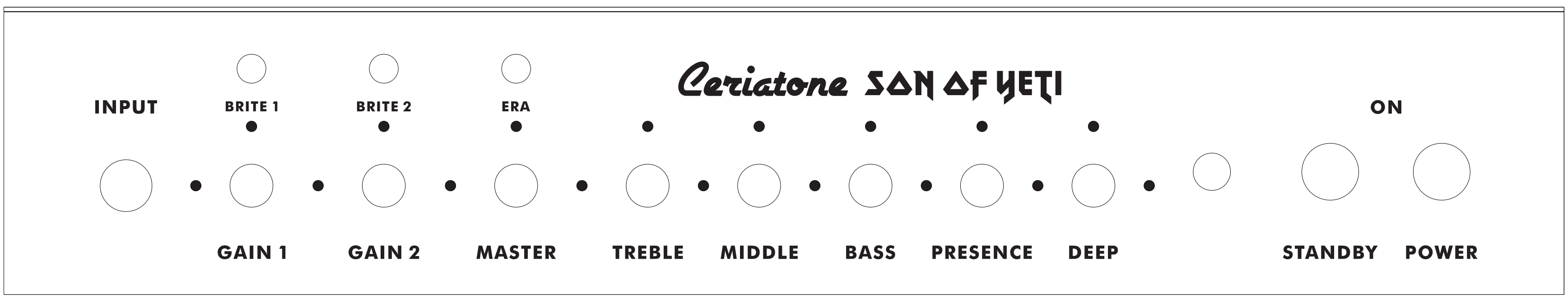
I like to use rack-mounted multieffects units. What is the output level straight from the EFFECTS LOOP SEND jack, -10dB or +4dB?

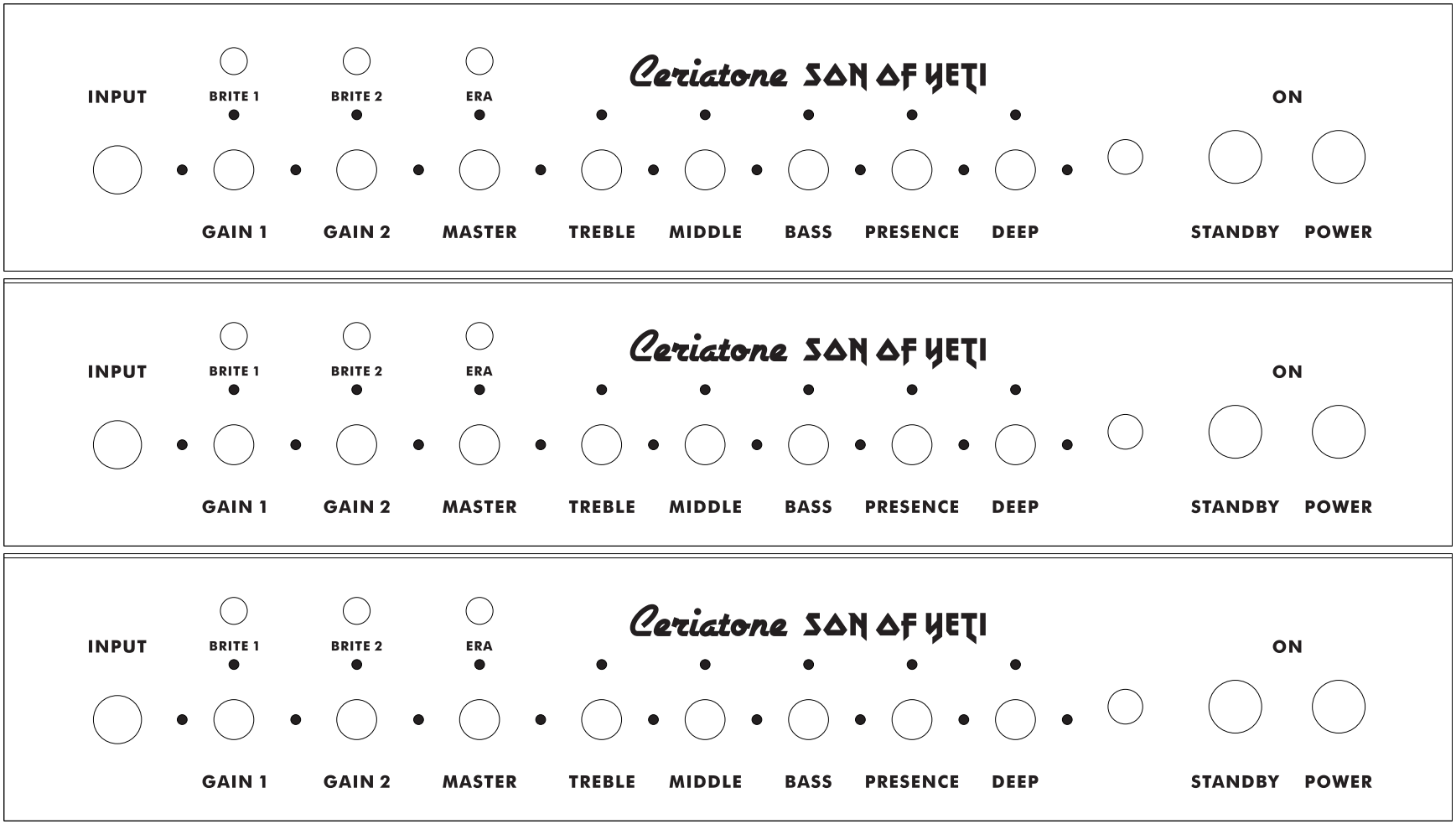
- While not exact, -10dB is a better approximation than +4dB. The actual output level will depend on your settings, particularly the volume controls. +4dB is usually reserved for recording/P.A. equipment with balanced connections.

7) Settings templates








Ceriatone SON OF YETI
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GAIN 2
MASTER
TREBLE
MIDDLE
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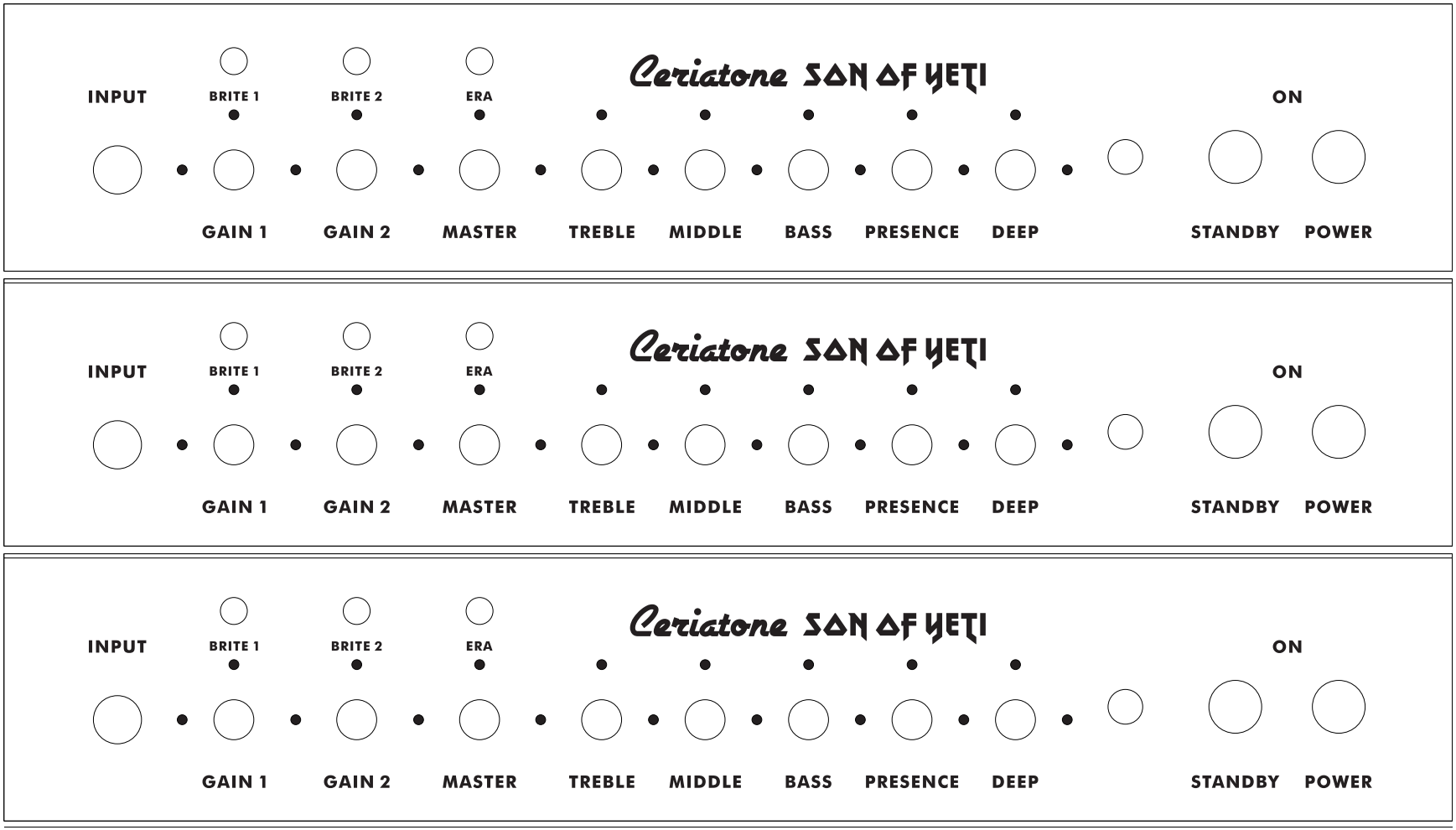
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