

# juicedLink™

## User's Manual

DN101 – Accessory for CX Family of Low-Noise Preamps



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## ***Read This First***

Before operating the unit, please read this manual thoroughly.

Any future revisions will be posted on the website and available for download.

Notes regarding documentation in this manual are as follows:

- References to markings/labels on the unit are denoted in underline/bold. For example: **HPF**.
- Warnings will be preceded with **WARNING**.

### ***Warnings - General***

**WARNING:** Failure to read and observe notes and warnings may result in personal injury, and/or possible damage to this device and your other equipment.

**WARNING - LOSS OF HEARING:** This device, as well as any device with a headphone amplifier, is capable of driving the signal at levels that can be damaging to hearing. Always operate the headphone volume at the lowest practical level. Do not wear the headphones over your ears in any of the following circumstances:

- While plugging the headphones into the headphone driving device.
- While plugging the mixer into the headphone driving device.
- While turning on or off the mixer.
- While turning on or off the phantom power.
- While plugging a device into the input of the mixer.

**WARNING - RISK OF ELECTRICAL SHOCK:** This device, its enclosure, and the connections to cable shields that plug into this device are conductive. Avoid electrocution and observe caution with cable runs near areas where high-voltages and/or currents may exist.

### ***Checking Supplied Items***

Your package should include the following items:

- DN101 Accessory for CX Family of Low-Noise Preamps
- Stereo 3.5mm mini plug cable
- Flat head Phillips machine screw 4-40 thread, 3/16" length, undercut head
- Welcome Card:
  - o Read this User Manual
  - o Save your receipt in the event you require warranty service.

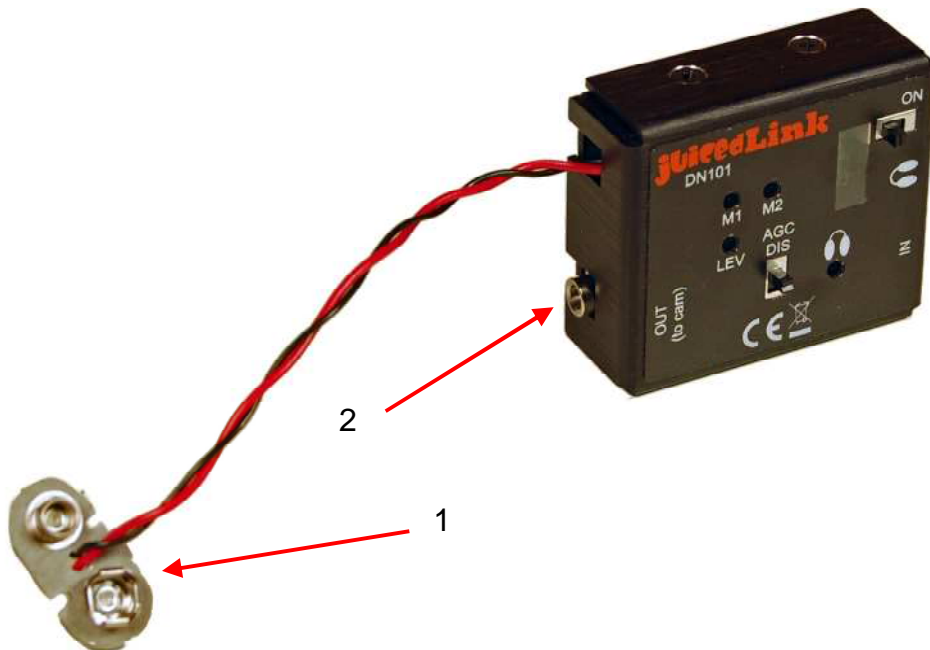
## General

### Features

- Accessory for CX Family of Low-Noise Preamps
  - Mounts directly to CX Preamp (requires minor modification to battery tray)
  - Utilizes the battery of the CX Preamp
  - Small size
  - Aluminum chassis (black anodized) for EMI protection and rugged use
- Adds audio features that are missing from many DSLR cameras
  - Headphone Amplifier
  - Level Meter
  - Camera Automatic Gain Control (AGC) disabling for improved signal-to-noise performance
- “Normal” and “AGC Disable” operation settings
  - Automatic meter recalibration and headphone gain adjustment for the different modes of operation
  - “AGC Disable” uses a safe, stable, robust, and reliable method (not a tone) of forcing the AGC amps in your camera down for improved signal-to-noise performance.
- Inputs
  - 3.5mm stereo minijack
  - Connects to output of the CX Family Preamp
- Output
  - 3.5mm stereo minijack output connects to camera input

### Panel Descriptions

LEFT SIDE



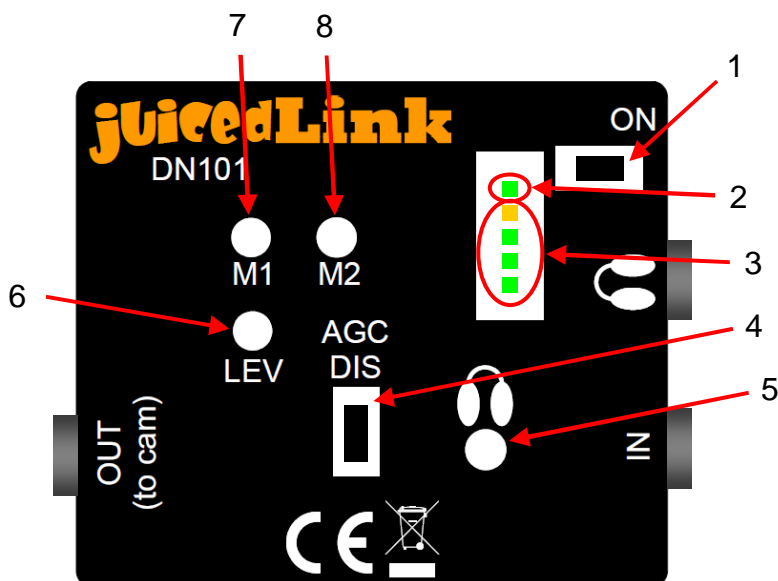
- 1) 9V Battery Terminal
- 2) **OUT** - Output jack (to camera)

RIGHT SIDE



- 1) **IN** - Input jack (from CX Preamp output)
- 2) Headphone output jack

FRONT PANEL



- 1) **ON** - Power Switch
- 2) Power LED
- 3) Level Meter
- 4) **AGC DIS** – “AGC Disable” / “Normal Operation” Switch
- 5) Headphone amplifier gain adjustment
- 6) **LEV** - AGC Disable signal level adjustment
- 7) **M1** - Meter Level Adjustment for “Normal” operation
- 8) **M2** - Meter Level Adjustment for “AGC Disable” operation

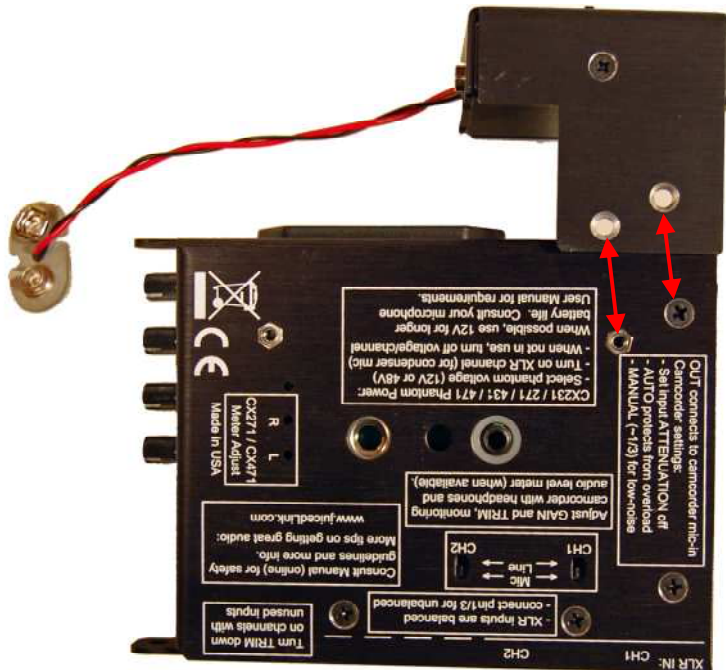
## Setting up DN101 with the CX Preamp

### Bolting the DN101 to the CX Preamp

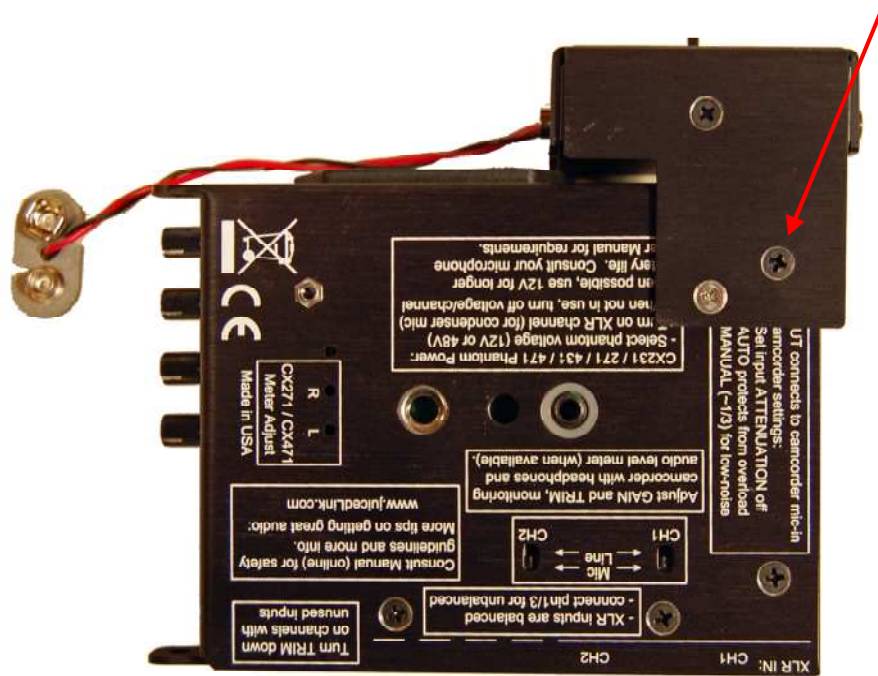
Turn over the CX preamp, and remove this screw:



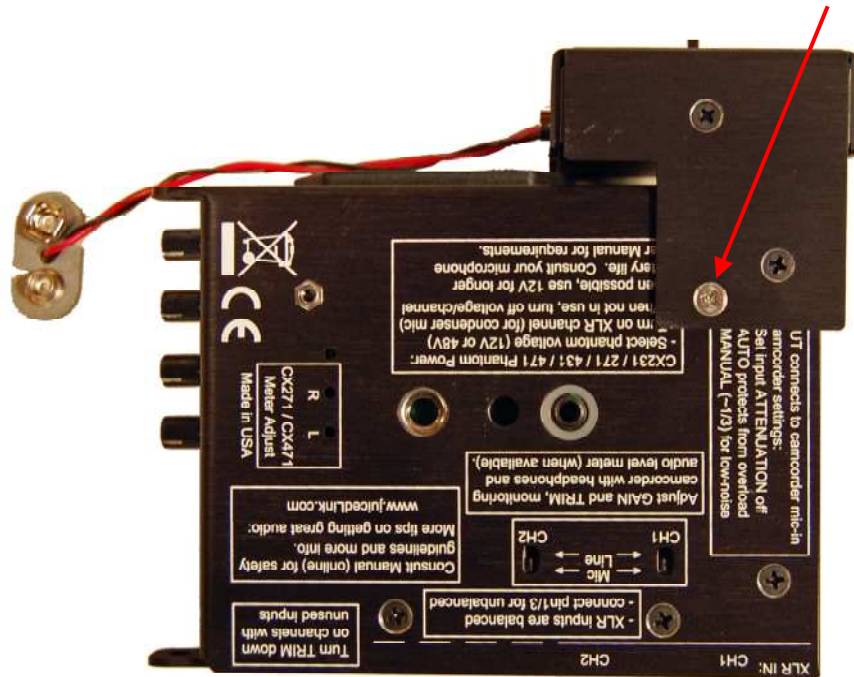
Align the holes of the DN101 with the threaded hole left by the removed screw, and the threaded hole of the bottom of the circuit board post:



Replace the screw that was just removed back into the same position:



Use the additional screw provided with the DN101 to secure this position:

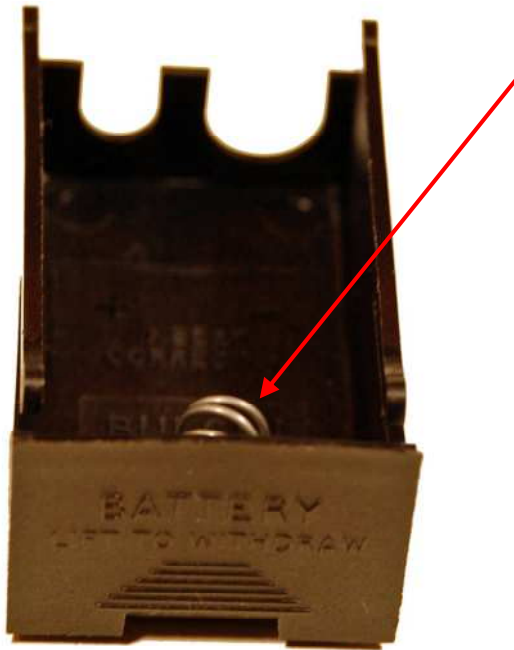


## **Battery Tray Modification**

Remove the battery tray from the CX Pramp:

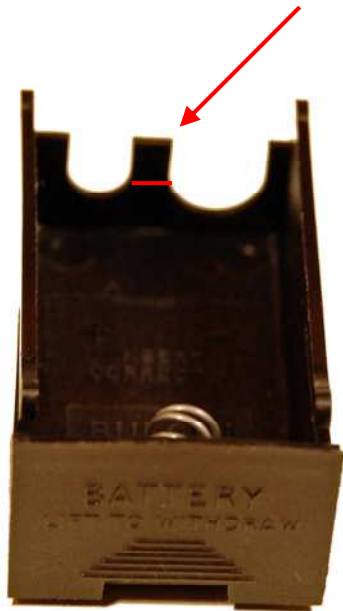


Remove the spring in the back of the battery try:

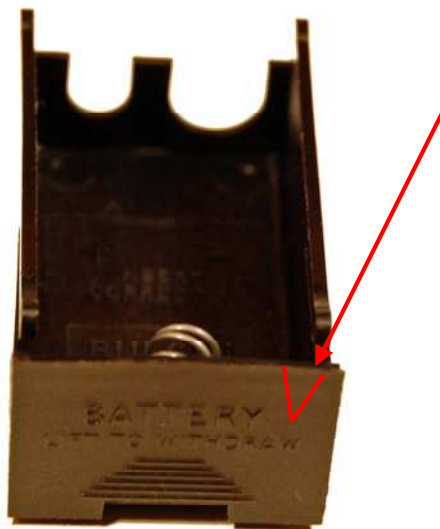


Make sure that you save the spring, in case you want to replace it later.

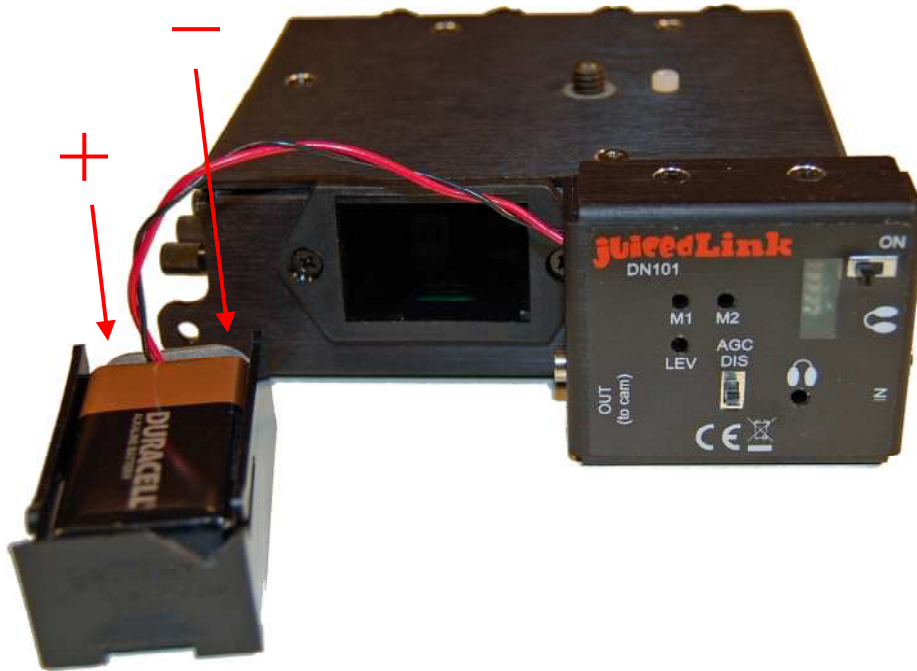
Take a pair of cutters, and cut off this tongue:



Use the cutters to cut a notch in the front of the battery tray for a place for the DN101 wires to escape:



Attach the battery leads to the 9V alkaline battery. Place the battery and leads into the battery tray with the correct orientation (+ to +, - to -):



Insert the battery tray into the CX preamp. It will take some more force to insert it all of the way to get the latch to engage. It will also take some more force to de-latch. This is normal.



## Operation

This DN101 User Manual does not go into the detailed operation of the CX Family XLR Adapter / Preamp. For details regarding the operation of the preamp, please refer to the preamp User Manual.

The DN101 will **NOT** operate without the use, and being connected to, one of the CX Family of XLR Adapter / Preamps.

### Powering

Switch the DN101 power switch to the **ON** position. The power indicator LED should light up.

You must also power the CX Family Preamp, by selecting the **ON** position for its power switch. The preamp **PWR** LED should light up. If not, then check that the battery has been placed into the battery tray with the correct orientation, and that you are using a fresh 9V alkaline battery.

### Input / Output Connection

Use the stereo minijack cable to connect the CX Preamp **OUT** to the DN101 **IN**.

Use the CX Preamp stereo minijack cable to connect the DN101 **OUT** to the camera's microphone input.

### Normal Operation

Select the down position for the **AGC DIS** switch. This places the DN101 in the normal operating mode.

In the normal operating mode, the DN101 is simply providing headphone monitoring and metering.

The meter has been calibrated for levels assuming that the camera's AGC is free running. The peaks of your audio should hit the 3<sup>rd</sup> LED (green), but remain below the 4<sup>th</sup> LED (yellow).

Adjustment to the level meter in the normal mode can be made with a small screwdriver with the **M1** potentiometer.

Adjustment to the headphone amplifier gain can be made with a small screwdriver with the trim potentiometer next to the "headphone" symbol. The headphone monitoring in mono, meaning that both the right and left inputs are present in each of the headphone ear cups.

In this operating mode, the headphone amp requires significantly more gain. Therefore, the signal is fairly noisy. Of course, this noise is not present in the recorded audio.

**WARNING:** Since this mode requires more gain from the headphone amp, you must be careful if you are wearing your headphones and switching back and forth between the two operating modes. The signal in the headphone in the normal mode will be very *LOUD*.

### AGC Disable Operation

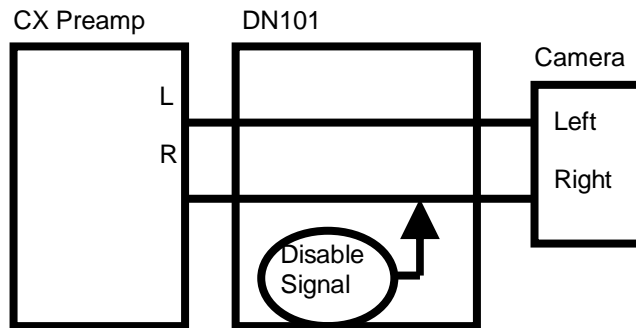
Select the up position for the **AGC DIS** switch. This places the DN101 in the AGC disable operating mode.

The meter has been calibrated for levels assuming that the camera's AGC amplifiers are being forced to turn down their gain. The peaks of your audio should hit the 3<sup>rd</sup> LED (green), but remain below the 4<sup>th</sup> LED (yellow).

Adjustment to the level meter in the AGC disable mode can be made with a small screwdriver with the **M2** potentiometer.

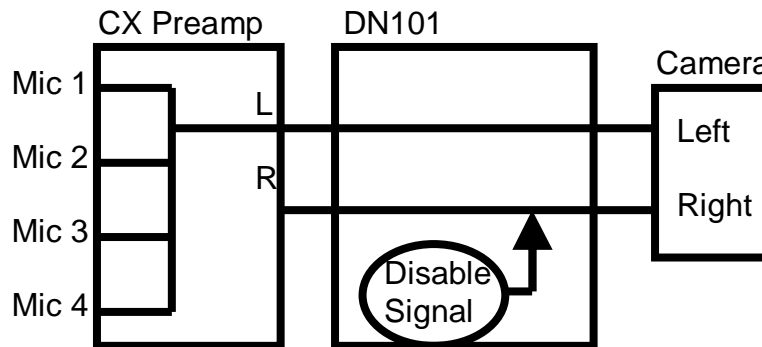
Adjustment to the headphone amplifier gain can be made with a small screwdriver with the trim potentiometer next to the "headphone" symbol.

In the AGC disable mode, the DN101 is injecting an uncorrelated broadband noise signal into the camera's right channel. The right channel is not available for recording audio.

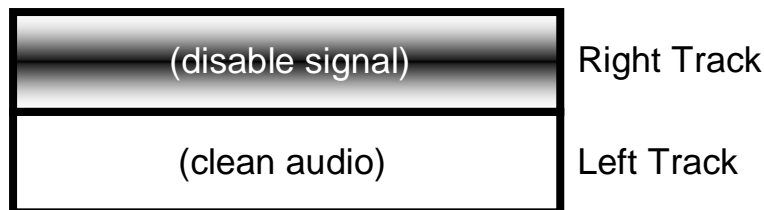


A broadband noise signal is the most reliable and repeatable, and safest, method of spoofing the camera AGC. Tones are coherent signals, and can be picked up by the human ear and brain, even at very low levels. Using a tone means that you are depending on unspecified aspects of the camera to prevent the tone from corrupting your audio (Nyquist anti-aliasing filter effectiveness, frequency stability, crosstalk, etc). The most evil part of using a tone is that these problems could be happening in your camera, and you would have no way of knowing, because you can't monitor with headphones inside the camera. Using an uncorrelated broadband noise source, if your camera does have any of these issues, then the signal simply tucks itself away with the rest of the electronic noise in your system. There is no coherent tone artifacts for your ear and brain to pick out.

Each of your XLR inputs on the CX preamp that you wish to record need to be panned left in the preamp. For example, if you were using the CX431 with 4 mics, you would pan all 4 mics to the left channel.



When you pull your clip into your editor, your right track will be a noise signal, and your clean audio will remain on the left track:



In your editor, you will select the left track to be used for your final mix (deleting the right track). This is easily done in your editor. For example, in Sony Vegas, right click on the audio track, and select the left track for the final mix.

You will notice that the audio level of the clean track will be a little lower than a separate clip where you did not use the AGC disable technique and let the AGC amps run free. This is normal. The meter for the AGC disable mode has been calibrated intentionally for this level to provide adequate headroom inside the camera (since the signal no longer has the AGC operation at its disposal to further throttle back its gain for high signal levels).

## **Notes on Specific Cameras**

### **Canon 5D MarkII, 7D, 1D Mark IV**

The microphone input on the camera does not get activated until the camera begins to RECORD for the first time. Until you hit RECORD and activate the microphone input, you will hear noise in the DN101 headphones. Once you hit RECORD, the noise in the headphones goes away, and doesn't return until the camera power gets cycled. After the camera power gets cycled, you will need to hit RECORD again to eliminate the noise in the headphones.

### **Panasonic Lumix GH1**

The microphone input is a 2.5mm stereo minijack. The cables provided in the CX preamps and DN101 are 3.5mm stereo minijack. There are inexpensive adapters that can be purchased. A 8" 3.5mm to 2.5mm cable can be purchased (part number CMC-T1772022) from Bay Electronics, 731 Airport Road, Panama City, FL 32405.

### **Nikon D300s, D3s**

These cameras have different level settings for the AGC (Low, Med, High). Using the Low setting with one of the CX preamps will yield great audio. However, the DN101 is still useful for headphone monitoring and metering.

You will want to use the DN101 in the Normal operating mode, but you will need to re-calibrate the meter **M1** for the camera's Low setting. Matching the Normal operating mode meter level to the AGC Disable mode can work well. Here is a simple procedure for doing this: 1) in the AGC Disable mode, set the CX gain/trim such that speaking at a constant level yields peaking at the 3<sup>rd</sup> meter LED, 2) switch over to the Normal mode and turn back **M1** so it yields peaking at the 3<sup>rd</sup> meter LED (matching the AGC Disable mode)

## **Appendix**

### ***Subscribe to the juicedLink Blog***

Get notified on new revisions of this User Manual, product updates, new product releases, and tutorial videos. Subscribe to the blog: [www.juicedlink.com/blog/index.html](http://www.juicedlink.com/blog/index.html)

### ***Care and Maintenance***

There is no specific maintenance regimen recommended.

### ***Warranty, Service, and Returns***

The design of the juicedLink family of ultra portable mixers is uncompromising in quality and performance, and utilizes top grade professional components. We are proud of our product, and are committed to servicing you to make your customer experience positive.

The *Policies* page on the [juicedLink.com](http://juicedlink.com) website describes the details of the conditions for returns, limited one year warranty, and instructions for obtaining service for your product.

### ***Compliance***

This device falls under the classification of FCC part 15, subpart B, section 15.103. Please refer to the FCC part 15 manual for details on conditions of operation.

This device has also been tested to meet CE certification standards.