

icon
uDAC-2

FCC Compliance Statement



Hereby, Nuforce Inc. declares that this device is in compliance with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment uses and can radiate radio frequency energy. If not installed and operated in accordance with the instructions, it may interfere with radio communications.

There is no guarantee that interference will not occur in a particular installation. If this equipment does interfere with radio or television reception, the user may be able to correct the problem by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between equipment and receiver.
- Use equipment on a circuit to which the receiver is not connected.
- Consult your dealer or an experienced radio/TV technician for help.

WARNING: Only peripherals complying with the FCC class B limits may be attached to this equipment.

Changes or modifications made to this equipment, not expressly approved by us or parties authorized by us could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice for customers: The following information is only applicable to equipment sold in countries applying EU Directives.

EU Declaration of Conformity



Hereby, Nuforce Inc. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC.

The manufacturer of this product is NuForce, 382 South Abbott Ave, Milpitas, CA 95035, USA.

The Authorized Representative for EMC and product safety is NuForce, 382 South Abbott Ave, Milpitas, CA 95035, USA.

For any service or guarantee matters please refer to the addresses given in separate service or guarantee documents.

For customers in Europe

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)



This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

SAFETY INSTRUCTIONS

There are two categories of Safety Instructions included in this manual:

- ❑ Product Warnings, (i.e., what must never be done to assure avoiding those hazards that could cause bodily injury or property damage); and
- ❑ User Directions (i.e., what must always be done to assure the safe use of your device).

The Safety Instructions contained in this manual have been categorized in accordance with the seriousness of the potential hazards through the use of Signal Words. Those Signal Words, and their intended meanings, are as follows:

DANGER: Indicates that a failure to observe the Safety Instructions could result in death or catastrophic bodily injury.

WARNING: Indicates that a failure to observe the Safety Instructions could result in serious bodily injury.

CAUTION: Indicates that a failure to observe the Safety Instructions could result in minor bodily injury or property damage.

NOTE: Designates important information that relates to activities and/or conditions that might result in loss of data and/or damage to your device.

Safe Use and Operation of Your Device

This equipment emits stray RF energy and will interfere with the reception of signals by airborne electronic navigational devices or medical devices. Do not operate this equipment near any sensitive medical devices.

WARNING: Never attempt to disassemble, repair or make any modification to your device. Disassembly, modification or any attempt at repair could cause bodily injury or property damage, as well as damage to the device itself.

WARNING: Your device is not a toy. Never allow children to play with your device. Misuse, rough or improper handling of your device by children could result in serious bodily injury for any of the enumerated safety warnings in this manual. In addition, always keep all accessories and components out of the reach of small children as small parts might present a choking hazard. Seek immediate medical attention if choking occurs or if any small part has been swallowed.

CAUTION: Never raise the sound volume level too high when using your device with earphones. An excessive sound volume level could cause damage to your hearing.

WARNING: To reduce the risk of fire or electric shock, do not expose the unit to moisture or water.

Read all the instructions before connecting or operating the component.

Keep this manual so you can refer to these safety instructions.

Heed all warnings and safety information in these instructions and on the product itself. Follow all operating instructions.

Do not use this unit near water.

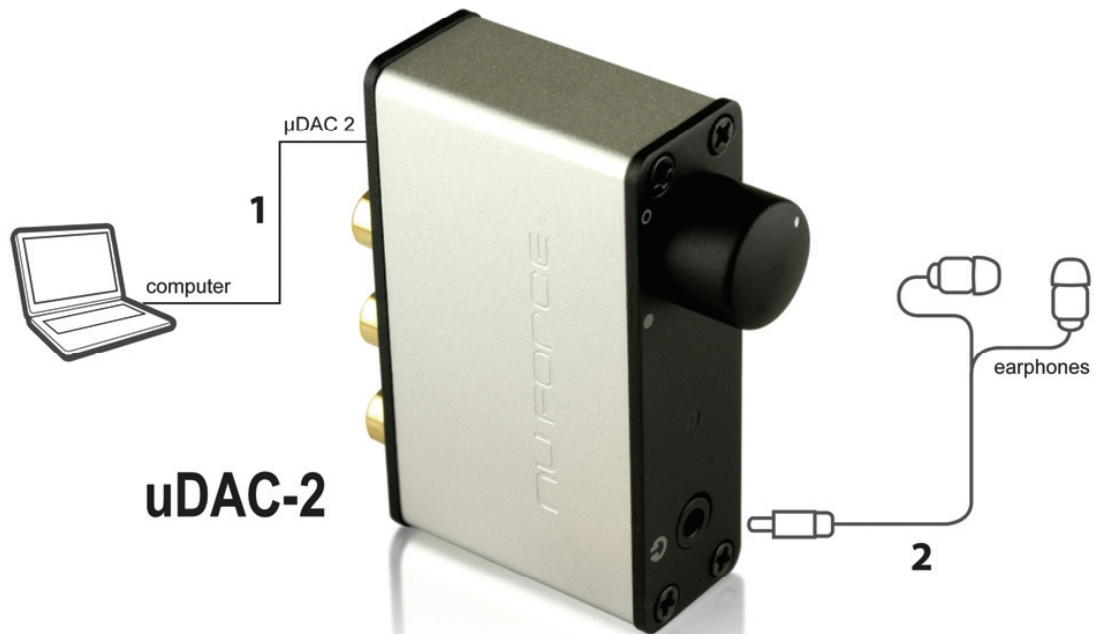
Keep the component away from radiators, heat registers, stoves, or any other appliance that produces heat.

Immediately stop using the component and have it inspected and/or serviced by a qualified service agency if:

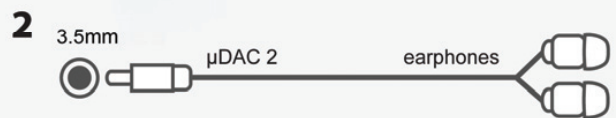
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit shows signs of improper operation.
- The unit has been dropped or damaged in any way.

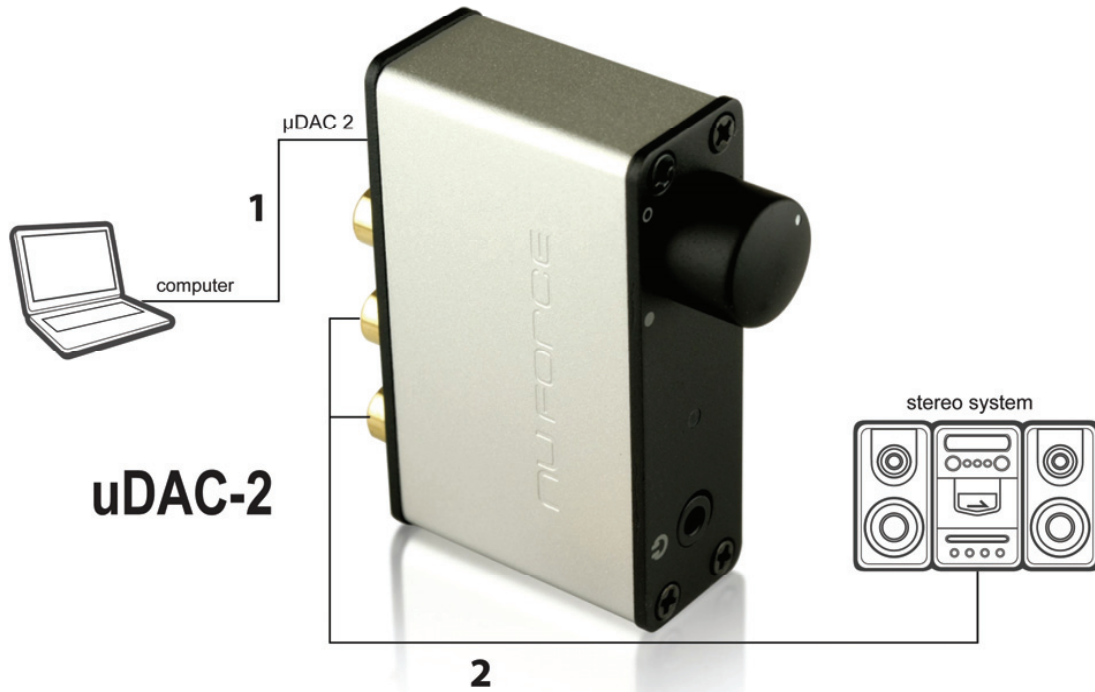
NuForce uDAC-2

The NuForce uDAC-2 is a high-performance USB Digital Audio Converter (DAC) that connects your personal computer's audio with your home stereo, desktop sound system, or headphones. The quality and versatility of the uDAC's performance belies its diminutive size. With its extensive power supply, filtering capabilities and charge-pump circuit as a foundation, the uDAC processes incoming data via a USB audio receiver. A D/A converter chip then translates the data to a two-volt analog signal. The NuForce uDAC's performance equals or exceeds that of a great many audiophile CD players. The unit's exemplary flexibility — analog RCA, digital coaxial, and high-performance headphone outputs — is bound to satisfy the needs of the most critical music lover.



Cables and Jacks



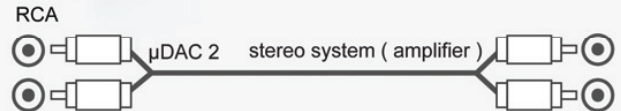


Cables and Jacks

1 USB type A ~ type B



2 RCA



Features:

- Discrete USB audio receiver and D/A converter
- Coaxial S/PDIF output (appears as a separate USB audio device from USB DAC)
- Double jitter-reduction mechanism at data level and at oversampling filter stage
- High voltage 2V analog output
- High-quality analog volume control
- No capacitors in any of the audio signal paths
- Low power consumption; USB self-powered
- USB powered, no external power supply required

Specifications:

- Input:
 - USB (USB 1.1, 2.0 compatible)
 - USB DAC: USB 1.1, 2.0 compatible. USB native bit rate: 32, 44.1, 48, and 96 kHz, 24-bit
 - Maximum sampling rate: 96kHz
 - Resolution: 24-bits

- ❑ Output:
 - Analog RCA Output = 2Vrms
 - Dynamic Range: 90dB
 - S/N Ratio: 98dB
 - THD+N 0.05%
 - Digital Output: coaxial RCA 75-ohm
 - Headphone output jack, power output: 80mW x 2 @16-Ohm
- ❑ Power:
 - USB Bus Powered
- ❑ Dimensions:
 - 68 x 38x 21mm

A Beginner's Guide to Good Audio

What qualities distinguish a good audio system?

Let's start with a misconception. "Wow! I'll bet that can play loud!" This, or something like it, is typical of the newcomer's reaction to an audiophile's setup, particularly if the speakers are large.

Why a system's loudness capability should be the measure of excellence isn't difficult to understand. People install often quite costly sound systems in their cars. Some of the larger specimens seem capable of shaking their host vehicle apart. The pavement trembles when one passes by. A club's sound system is in the same league: ear-splitting, gut-wrenching, floor-buckling output. With the exception of classical music, which is rarely ever amplified, the same is true for most live concerts. Domestically, the average boom box can break a lease. TV ads featuring hard-pumping woofer cones say it all.

On actually sitting down and listening to our hypothetical audiophile's sound system, the newcomer will likely say "Wow!" again, followed this time by "It's so clear!"

Clarity. The term takes in a host of qualities. As strange as this may seem, one of clarity's principal components is silence. A silent audio system — an audio system that contributes little to no noise of its own — reveals the music all the more clearly at listening levels from soft to loud.

Resolution likewise contributes to clarity. Imagine two mounds of sand in bright sunlight. One mound is mixed with mud. It's difficult to see its individual grains. The other mound is free of mud. You have no trouble seeing its tiny, glittering bits. And so it is with high-quality audio. The music shines through. Nothing muddies the sonic image. You hear the texture of a singer's voice almost as if she's in the room. Instrumental timbres allow you to distinguish the purposeful grunge of the rockers' guitars. Violas differ from violins, likewise oboes from English horns. A good sound system allows you to make these listening distinctions.

Soundstage. Another critically important measure of an audio system's quality is its ability to project a convincing soundstage. Can you perceive its width and depth? Is it realistically proportioned? Can you hear the venue as large or small? Is it clear to you where the musicians perform within the soundstage? Depending on the style of recording, our audiophile's sound system provides the answers. And of course the pleasures.

Speed. An audio system's superior speed produces crisp, clean attacks: a violin or trumpet's edge, a drummer's rim shot, a marimba's wooden loveliness — all those little delights that mimic live music.

Bass. To return to trembling pavements and hard-pumping woofer cones, the audiophile's guest will be pleasantly surprised to discover that a high-quality sound system's low end is as tuneful and clean as the rest of the audio spectrum. Again, no mud. Just lovely, well-defined sounds. A good audio system aims at naturalness.

Size. Good audio is not necessarily big audio. If you shop wisely, you need not spend a fortune to achieve a high level of audio performance. With these pointers as a guide, the newcomer has a good idea of what to listen for. The least expensive NuForce components will more than satisfy modest applications. With our reference-grade components serving as the culmination of all our efforts, our entire line answers to the same ideal: accurate, vibrant, lifelike sound.

DAC and Headphone Amp User Guide

Introduction

CD-ripping software is capable of reproducing “bit perfect” digital music data (16 bit/44.1kHz) from audio CD files stored on the computer’s hard drive. In addition to CD-quality music, some online sites are now offering 24 bit/96kHz music files. Thanks to larger and increasingly economical hard-disk capacity, consumers can store the highest quality music files on their computers. However, extracting good sound from the computer poses problems.

Poor Sound Quality

As a rule, your computer’s audio doesn’t sound quite right because computer manufacturers often treat their products’ audio output stage as little more than a necessary evil. So long as the music signal remains in a digital format, all is well. The pitfalls appear when the computer converts signals to analog, which is how we listen to music. Typically, the onboard converter (a.k.a. sound card) is a low-cost item. Digital circuitry generates noise that often bleeds into the audio stage. Further, these compromised stages are seldom designed for the low-impedance power high-quality headphones require. Finally, should you use the computer’s software to reduce volume, you may actually be listening to eight-bit resolution — in real-world terms, not at all good.

In sum, these deficits conspire to produce inferior sound. Far better to send the digital signal to an external digital-to-analog converter (DAC). NuForce Desktop products employ quality DACs.

Digital Connections

There are two methods for extracting digital signals from your computer. The universal serial bus (USB) connection is the de-facto standard for just about all peripherals: printers, digital cameras, etc. The USB allows the computer to speedily recognize a connected device. Some computers also incorporate the Sony/Philips Digital Interconnect Format (S/PDIF), a coaxial connection with excellent transfer properties.

USB Audio and Performance Optimization

USB specifications define a standard interface: the USB audio-device class, which allows a software driver to work with the currently available USB sound devices. Microsoft Windows and Apple Mac provide support for USB audio devices. NuForce Desktop USB DACs convert USB digital data to the analog signal headphones and amplifiers require. Equally as important, how the USB DAC performs affects sound quality.

For more information on this subject, see http://en.wikipedia.org/wiki/Universal_Serial_Bus.

Some Optimization Tips

To minimize noise and dropouts, connect your audio interface to a port at the back of your computer. Generally speaking, ports on the computer's face, monitor or keyboard don't perform as well.

If you use a USB hub, choose one with its own AC power adapter. In areas that produce high levels of radio or electrical interference, upgrading to a quality USB cable, i.e., one with extra shielding and a ferrite bead (the cylindrical collar on one end of the cable) to help eliminate noise. Once you're properly connected, your computer's operating system should automatically detect your NuForce product. From that moment on, all you need to do is enjoy the music.

Windows PC Driver Optimization

ASIO4ALL is a hardware-independent, low-latency ASIO driver for WDM audio devices that employs WDM Kernel-Streaming and other sophisticated methods.

What You Should NOT Do

Do not tamper with or replace your existing sound-card drivers.

Do not install any kernel-mode components that might affect your system's stability.

Do not "over-clock" or operate your audio hardware in ways that have the potential to do harm. This will void your warranty. (In certain cases, your hardware's manufacturer states that the use of ASIO4ALL will void your warranty.)

No software-driver optimization is required for the Apple Mac OS.

S/PDIF Connection

The Icon HDP permits an S/PDIF connection from your computer, if that's your preference. For best results, use a high-quality S/PDIF cable. Once the connection is made, select S/PDIF in your System Preferences Audio Device settings.

Analog Connections

You need only connect headphones to your NuForce device's headphone jack and adjust for volume with the unit's volume control. If connecting to an external amplifier or stereo receiver, you will require a quality stereo interconnect with a standard male RCA connector for plugging into the NuForce device and an appropriate connector at the other end (usually, an RCA).

Note on Headphone Use

Headphones present a challenge to amplifier designers. There are two basic types: the over-ear (OE) in general use in the recording industry and the smaller in-ear (IE), a.k.a. ear-bud, commonly used with portable devices such as MP3 players. Given the range of available OE and IE headphones, in attempting to deal with all of them, your computer's headphone output is optimized for none. Your NuForce Icon product will make a world of difference.

The reason is simple enough. Various OE and IE phones cover an expanse of electrical impedances from 16 to 600 Ohms and differ in other significant ways. Sensitivity is a term that expresses how loud the headphones will play at a given amount of electrical power, e.g., x number of decibels per milliwatt (0.001 watt) of power, expressed as xxxdB/mW.

Typically, OE types exhibit sensitivities of about 100dB/mW, whereas IE devices can be 10dB higher or more, e.g., 110dB/mW. Assuming a 10dB difference, the lower sensitivity OE headphones require ten times more power to achieve the same volume as the IE type. If you're using OE headphones, you'll appreciate the NuForce Icon Series' power capability. Your headphones will sound clearer and more natural. If you use IE headphones, owing to their higher sensitivity, you

may notice a small amount of background noise. Conversely, you will hear weak signals more readily than would be the case with lower-sensitivity OE types.

We are not discussing a product defect. Electrical noise arises from many factors, one of which is the amount of amplification the Icon product provides. Irrespective of type or design, electrical circuits introduce noise. If the device amplifies the signal, the noise coming into it will likewise be amplified. Further, the amount the device itself creates will also be greater. These are facts of electrical life that good design can mitigate. In the case of IE headphones, noise can be minimized or all but eliminated by reducing the amplifier's gain. But to do that, the advantage the amp offers to OE headphone users would be sacrificed. Performance benefits for one type of product diminishes those of the other. As always, effective engineering requires compromise. In this regard, the NuForce Icon Series of products offer good, real-world solutions. Noise will be low in some cases, and in others, quite imperceptible. Most importantly, OE headphone users will benefit from the power they require.

For further reading:

<http://www.nuforce.com/hp/support/icon-hdp-noisefloor.php>.

NuForce One (1) Year Limited Warranty

NuForce's Limited Warranty and Limitation of Liabilities

ADDITIONAL RIGHTS

FOR CONSUMERS, WHO ARE COVERED BY CONSUMER PROTECTION LAWS OR REGULATIONS IN THEIR COUNTRY OF PURCHASE OR, IF DIFFERENT, THEIR COUNTRY OF RESIDENCE, THE BENEFITS CONFERRED BY THIS WARRANTY ARE IN ADDITION TO ALL RIGHTS AND REMEDIES CONVEYED BY SUCH CONSUMER PROTECTION LAWS AND REGULATIONS. THIS WARRANTY DOES NOT EXCLUDE, LIMIT OR SUSPEND ANY RIGHTS OF CONSUMERS ARISING OUT OF NONCONFORMITY WITH A SALES CONTRACT. SOME COUNTRIES, STATES AND PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY OR CONDITION MAY LAST, SO THE LIMITATIONS OR EXCLUSIONS DESCRIBED BELOW MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY BY COUNTRY, STATE OR PROVINCE. THIS LIMITED WARRANTY IS GOVERNED BY AND CONSTRUED UNDER THE LAWS OF THE COUNTRY IN WHICH THE PRODUCT PURCHASE TOOK PLACE.

LIMITED WARRANTY

For a period of ONE(1) YEAR from the date of retail purchase by the original end-user purchaser (“Warranty Period”), NuForce warrants (i) this product against defects in materials and workmanship, and (ii) that each Product, unmodified and under normal use and conditions, will substantially comply with NuForce’ applicable written technical documentation for the Product. NuForce reserves the right to make substitutions and modifications from time to time in the specifications of Products sold by NuForce, provided that such substitutions or modifications do not materially affect overall Product performance.

If a hardware defect exists and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, Nuforce will (1) repair the hardware defect at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. Nuforce may request that you replace defective parts with user-installable new or refurbished parts that Nuforce provides in fulfillment of its warranty obligation. A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Nuforce's property. When a refund is given, your product becomes Nuforce's property.

OBTAINING WARRANTY SERVICE

If you purchased the product in the U.S., deliver the product, at your expense, to any Nuforce Service Center located in the U.S. If you purchased the product outside of the U.S., deliver the product to any Nuforce Authorized Importer in the country where you purchased the product. Be aware, however, that not all countries have Nuforce Authorized Service Providers ('NASP') and not all Authorized Service Providers outside the country of purchase have all parts or replacement units for the product. If the product cannot be repaired or replaced in the country it is in, it may need to be sent to a different country or returned to the country of purchase at your expense for repair or replacement. If you seek service in a country that is not the country of original purchase, you will comply with all applicable import and export laws and regulations and be responsible for all custom duties, V.A.T. and other associated taxes and charges. Where international service is available, Nuforce may repair or exchange defective products and parts with comparable products and parts that comply with local standards.

You can always deliver the product to NuForce's U.S. main service center for obtaining warranty service, however, you may have to pay for return shipping cost.

Nuforce may send you user-installable new or refurbished replacement product or parts to enable you to service or exchange your own product ("DIY Service"). Upon receipt of the replacement product or part, the original product or part becomes the property of Nuforce and you agree to follow instructions, including, if required, arranging the return of original product or part to Nuforce in a timely manner.

When providing DIY Service requiring the return of the original product or part, Nuforce may require a credit card authorization as security for the retail price of the replacement product or part and applicable shipping costs. If you follow instructions, Nuforce will cancel the credit card authorization, so you will not be charged for the product or part and shipping costs. If you fail to return the replaced product or part as instructed or the replaced product or part is not eligible for warranty service, Nuforce will charge the credit card for the authorized amount.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Nuforce that can be identified by the "Nuforce" trademark, trade name, or logo affixed to them. The Limited Warranty does not apply to any non-Nuforce hardware products or any accessories, even if packaged or sold with Nuforce hardware. Non-Nuforce manufacturers, suppliers, may provide their own warranties. Other accessories distributed by Nuforce under the Nuforce brand name are not covered under this Limited Warranty. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, liquid contact, fire, earthquake, non-Nuforce products, or other external causes; (b) to damage caused by service performed by anyone who is not a NASP; (c) to a product or a part that has been modified without the written permission of Nuforce; (d) to consumable parts, such as batteries, or protective coatings designed to diminish over time unless failure has occurred due to a defect in materials or workmanship; (e) to cosmetic damage, including but not limited to scratches, dents, and broken plastic on ports; (f) to defects caused by normal wear and tear or otherwise due to the normal aging of the product; or (g) if any Nuforce serial number has been removed or defaced.

Important: Do not open the hardware product. Opening the hardware product may cause damage that is not covered by this warranty. Only Nuforce or a NASP should perform service on this hardware product.

THIS WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. NUFORCE SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF NUFORCE CANNOT LAWFULLY DISCLAIM IMPLIED WARRANTIES UNDER THIS LIMITED WARRANTY, ALL SUCH WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. No Nuforce reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

NUFORCE IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY, ANY COSTS OF RECOVERING, REPROGRAMMING, OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH NUFORCE PRODUCTS, AND ANY FAILURE TO MAINTAIN THE CONFIDENTIALITY OF DATA STORED ON THE PRODUCT. NUFORCE SPECIFICALLY DOES NOT REPRESENT THAT IT WILL BE ABLE TO REPAIR ANY PRODUCT UNDER THIS WARRANTY OR MAKE A PRODUCT EXCHANGE WITHOUT RISK TO OR LOSS OF PROGRAMS OR DATA.

Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages or exclusions or limitations on the duration of implied warranties or conditions, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary by state or province.

Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER.

NUFORCE SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.