



**VM016**  
Matrix Signal Processor with Dante  
**User Manual**  
Revision 1.8



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## EU DECLARATION OF CONFORMITY

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This declaration is issued under the sole responsibility of the manufacturer.

**We:**

NST Audio Ltd.  
Unit 4C Seph Way  
York Road Industrial Park  
Malton  
North Yorkshire  
YO17 6YF  
United Kingdom

**Declare that this declaration of conformity is issued under our sole responsibility and belongs to the following product and derivatives:**

**Kind of equipment:** Audio processor  
**Model:** VMO16

**The object of the declaration is in conformity with the relevant Union harmonisation legislation:**

2014/35/EU Low Voltage Directive (LVD)  
2014/30/EU Electromagnetic Compatibility Directive (EMC)

**The following harmonised standard and technical specifications have been applied:**

EN 62368-1:2014 - Audio/video, information and communication technology equipment - Safety requirements  
EN 55032:2015 - Electromagnetic compatibility of multimedia equipment - Emission requirements  
EN 55035:2017 - Electromagnetic compatibility of multimedia equipment - Immunity requirements

**Signed:**



**Name:** Dan Cartman

**Position:** Research and Development Manager

**Date:** September 2022



## IMPORTANT SAFETY INSTRUCTIONS

CAUTION: RISK OF ELECTRIC SHOCK. DO NOT OPEN.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** Apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

**WARNING:** To prevent injury, this apparatus must be securely attached to the rack in accordance with the installation instructions.

- 1 : Read these instructions.
- 2 : Keep these instructions.
- 3 : Heed all warnings.
- 4 : Follow all instructions.
- 5 : Do not use this apparatus near water.
- 6 : Clean only with a dry cloth.
- 7 : Do not block any ventilation openings, install in accordance with the manufacturer's instructions.
- 8 : Do not install near any heat sources, such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
- 9 : Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 : Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- 11 : Only use attachments/accessories specified by the manufacturer.
- 12 : Use only with the cart, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from a tip over.
- 13 : Unplug this apparatus during lightning storms or when unused for a long period of time.
- 14 : Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as if the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 15 : Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- 16 : The mains plug is used to disconnect the device, and it should remain readily operable during the intended use. In order to disconnect the equipment from the mains completely, the mains plug should be disconnected from the mains socket outlet completely.
- 17 : This unit is fitted with a 3-wire power cord. For safety reasons, THE EARTH LEAD SHOULD NOT BE DISCONNECTED IN ANY CIRCUMSTANCE.
- 18 : For continued protection against the risk of fire, replace the IEC inlet fuse with the correct part:  
T 3.15A H, 250V  
"T" denotes time lag per arcing time  
"H" denotes high breaking capacity

ATTENTION: RISQUE DE CHOC ELECTRIQUE. NE PAS OUVRIR.



Le symbole représentant un éclair fléché dans un triangle équilatéral a pour but d'alerter l'utilisateur de la présence d'une tension dangereuse non isolée à l'intérieur du boîtier, pouvant être d'une force suffisante pour constituer un risque d'électrocution.



Le point d'exclamation dans un triangle équilatéral a pour but d'alerter l'utilisateur de la présence d'instructions importantes concernant le fonctionnement et la maintenance, dans la documentation qui accompagne l'appareil.

ATTENTION: Appareils de construction de CLASSE I doit être raccordé au réseau électrique via une prise de courant reliée à la terre.

ATTENTION: Pour éviter toute blessure, cet appareil doit être solidement fixé à la torture, conformément aux instructions d'installation.

1 : Lisez ces consignes.

2 : Conservez ces consignes.

3 : Respectez tous les avertissements.

4 : Respectez toutes les consignes d'utilisation.

5 : N'utilisez jamais l'appareil à proximité d'un liquide.

6 : Nettoyez l'appareil avec un chiffon sec.

7 : Veillez à ne pas empêcher la bonne ventilation de l'appareil via ses ouïes de ventilation. Respectez les consignes du fabricant concernant l'installation de l'appareil.

8 : Ne placez pas l'appareil à proximité d'une source de chaleur telle qu'un chauffage, une cuisinière ou tout appareil dégageant de la chaleur (y compris un ampli de puissance).

9 : Ne supprimez jamais la sécurité des prises bipolaires ou des prises terre. Les prises bipolaires possèdent deux contacts de largeur différente. Le plus large est le contact de sécurité. Les prises terre possèdent deux contacts plus une mise à la terre servant de sécurité. Si la prise du bloc d'alimentation ou du cordon d'alimentation fourni ne correspond pas à celles de votre installation électrique, faites appel à un électricien pour effectuer le changement de prise.

10 : Installez le cordon d'alimentation de telle façon que personne ne puisse marcher dessus et qu'il soit protégé d'arêtes coupantes. Assurez-vous que le cordon d'alimentation est suffisamment protégé, notamment au niveau de sa prise électrique et de l'endroit où il est relié à l'appareil; cela est également valable pour une éventuelle rallonge électrique.

11 : Utilisez exclusivement des accessoires et des appareils supplémentaires recommandés par le fabricant.

12 : Utilisez exclusivement des chariots, des diables, des présentoirs, des pieds et des surfaces de travail recommandés par le fabricant ou livrés avec le produit. Déplacez précautionneusement tout chariot ou diable chargé pour éviter d'éventuelles blessures en cas de chute.

13 : Débranchez l'appareil de la tension secteur en cas d'orage ou si l'appareil reste inutilisé pendant une longue période de temps.

14 : Les travaux d'entretien de l'appareil doivent être effectués uniquement par du personnel qualifié. Aucun entretien n'est nécessaire sauf si l'appareil est endommagé de quelque façon que ce soit (dommages sur le cordon d'alimentation ou la prise par exemple), si un liquide ou un objet a pénétré à l'intérieur du châssis, si l'appareil a été exposé à la pluie ou à l'humidité, s'il ne fonctionne pas correctement ou à la suite d'une chute.

15 : N'exposez pas cet équipement au fait de tomber goutte à goutte ou au fait d'éclabousser et gardez qu'aucun objet rempli de liquides, comme les vases, n'est placé sur l'équipement.

16 : La fiche secteur sert à déconnecter l'appareil et doit rester facilement accessible pendant l'utilisation prévue. Pour déconnecter complètement l'équipement du réseau électrique, la fiche secteur doit être retirée entièrement de la prise de courant.

17 : Cette unité est correspondue avec une corde de pouvoir de 3 fils. Pour les raisons de sécurité, L'AVANCE DE TERRE NE DEVRAIT ÊTRE DÉBRANCHÉE DANS AUCUNE CIRCONSTANCE.

18 : Ne remplacez le fusible d'entrée IEC que par la pièce correcte:  
T 3.15A H, 250V  
"T" rapport délai sur temps d'arc  
"H" désigne un pouvoir de coupure élevé

## WEEE

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Once your NST Audio product has reached the end of its useful life, please ensure that it is recycled in a proper manner.



"The WEEE Regulations 2013 are the UK interpretation of the EU WEEE Directive and aim to reduce the quantity of waste electrical and electronic equipment (WEEE) disposed of in the UK".

EEE producers are required to pay for the reuse, recycling and recovery of the products by registering as an EEE producer which requires them to join a producer compliance scheme.

NST Audio has been registered with producer compliance scheme Comply Direct since 2015 ensuring 100% compliance with the WEEE regulations 2013.

Our WEEE Producer Registration Number is WEE/HG5453ZY.

Old electrical equipment can be recycled along with its metal enclosure. Our products are marked with a crossed-out wheeled bin symbol on the rear of the product.

Please do not throw any electrical equipment (including those marked with the crossed out wheeled bin symbol) in your general waste bin.

NST Audio Ltd. is able to arrange WEEE collections for our customers through a trusted network of WEEE recycling facilities made available by Comply Direct. We are able to arrange collection and transportation of your WEEE to reprocess and recycle ensuring the minimum goes to landfill.

## ROHS

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The Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive (2011/65/EU).

NST Audio Ltd products are RoHS compliant, and are available for export as lead-free and RoHS compliant.

NST Audio Ltd is committed to eliminating the use of hazardous substances in the materials, manufacturing and packaging of our products in strict accordance with the RoHS directive.

With regards to the RoHS Directive 2002 / 95 / EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, we declare that to the best of our knowledge, all products meet and fulfil all the requirements of the aforementioned directive.

## ADDITIONAL WARNINGS

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只有在高海拔地区使用不超过 2000 米。

ONLY TO BE USED AT ALTITUDE BELOW 2000 METRES



只适合于非热带气候地区使用

ONLY TO BE USED IN NON-TROPICAL CLIMATE REGIONS

## THANK YOU

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Thank you for choosing an NST Audio product for your application. Please spend a little time reading through this manual, so that you can obtain the best possible performance from the unit.

All NST products are carefully designed and engineered for cutting-edge performance and world-class reliability. If you would like further information about this, or any other NST product, please do not hesitate to contact us.

## UNPACKING THE UNIT

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After unpacking, please check the unit carefully for any damage. If any is found, immediately notify the carrier concerned - you, the consignee, must instigate any claim.

Please retain all packaging, in case of future re-shipment.

## INSTALLATION

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### **Electrical Considerations:**

The NST device has been manufactured to comply with your local power supply requirements, but before connecting the unit to the supply, ensure that the voltage (printed on the rear panel) is correct, and that a mains fuse of the correct type and rating has been fitted.

Make sure power outlets conform to the power requirements listed on the back of the unit.

Damage caused by connecting to incorrect AC voltage is not covered by the warranty.

### **Mechanical Considerations:**

This product is intended to be mounted in a 19-inch rack.

It must be secured using user-supplied mounting fixings compatible with the rack type and chassis mounting points.

Use four screws to mount the product into the mounting rack. Use plastic washers to prevent loosening or front panel damage.

For Threaded Rack Posts: Use machine screws with matching threads (e.g., #10-32 UNC minimum length 0.5 inch or M6 minimum length 12 mm).

For Square or Round Unthreaded Holes: Install cage nuts or clip nuts first, then secure with compatible screws. (e.g., #10-32 UNC minimum length 0.5 inch or M6 minimum length 12 mm).

When mounting the unit in a rack or enclosure, ensure that there is adequate ventilation. The cooling fan sucks cool air in through the right side and blows warm air out of the left side of the unit through the ventilating grills. Take care when mounting other equipment in the same rack.

### **Operation:**

Read all documentation before operating your equipment and retain all documentation for future reference. Do not spill water or other liquids into or on the unit and do not operate the unit while standing in liquid. Do not block the fan intake or operate the unit in an environment that could impede the free flow of air around the unit. If the unit is used in an extremely dusty or smoky environment, it should be cleaned of any collected debris at regular intervals.

## OVERVIEW

Designed using NST second-generation DSP designs, the VMO16 brings no-compromise audio performance and system control to networked audio installations.

The VMO16 brings all the benefits and experience of our live sound filters and dynamics algorithms to an installation product. The 16 inputs from the audio network (Dante or AES67) go to a full 16x16 matrix mixer allowing any of the networked inputs to be routed to any analogue output channel. All of the 16 analogue outputs have 16 bands of parametric EQ, 48dB/Oct high and low pass filters, up to 1.3 seconds of delay as well as our high performance, two-stage PXL limiters for high performance loudspeaker protection.

All analogue audio connections are on Phoenix-type 3-pin 5.08mm pitch connectors. The 4 GPI connections allow configurable actions such as fire alarm mutes and preset recalls. Up to 30 presets can be stored with recall options allowing selective recall combinations of input, matrix and output sections.

Our D-Net control software for PC, Mac and iPad gives you complete control over ethernet and wifi. The VMO16 is also fully compatible with our VR1 PoE remote control panel for simple, flexible user control. Control via third party systems such as Crestron™ is available via our simple ethernet control protocol.

## KEY FEATURES

### Input and Output Connectivity:

- 16 Network Audio Inputs
- 16 Analogue Outputs
- Sample rate fixed at 96kHz

### Routing Matrix Modes:

- Mix Matrix, all Network Audio Inputs to all Analogue Outputs

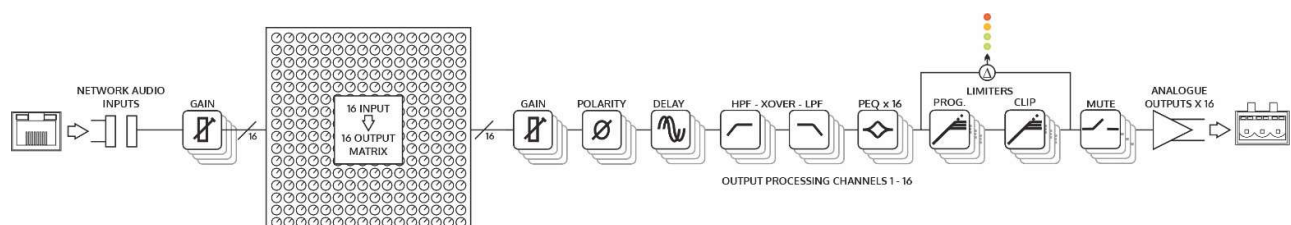
### Output Processing Features:

- 16 Parametric EQs
- Crossover Filters up to 48dB/Oct
- Network Audio Input Gain, Band Gain, Output Gain, Polarity, Delay (up to 1.3s per channel)
- 2-stage PXL Limiter

### Control Features:

- Remote control via 100Mbps Ethernet
- Up to 30 presets may be stored for offline recall
- Compatible with VR1 PoE remote control panel
- GPI muting for emergency evac systems programmable for either closed or open contact
- GPI closed contact programmable memory recall (x4)
- Simple Ethernet Control Protocol enables building control system integration for Crestron™ and other similar systems.

## SIGNAL PROCESSING DIAGRAM





### Front Panel Overview:



#### 1. Output Meters:

Real time LED output meters show level from the limiter threshold.

Signal present, 6dB below limiter threshold, Limiter threshold and 3dB into limiting.

#### 2. Dante:

On Startup both Primary and Secondary LEDs flash alternately until the Dante card has initialised. Once initialised, the LEDs indicate when the primary and secondary network ports are connected successfully.

#### 3. Comms:

Activity: Flashes when communication is taking place between the device and D-Net software.

Link: Illuminates when a suitable Ethernet connection is established.

## Rear Panel Overview:



### 1. Mains Power Inlet, Fuse and Power Switch:

3-pin IEC input, fused, 100-250VAC, 50-60Hz <25W.

A spare fuse is located within the fuse holder – only replace with the correctly rated fuse specified in the Technical Specifications section.

### 2. Dante Ethernet Ports:

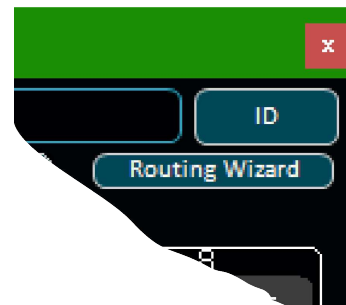
Dante RJ45 network Ethernet ports accept a standard CAT5 cable for connection to a network switch. The Dante ports are configured as redundant by default but can be configured in switched mode in the Dante Controller software.

### 3. Ethernet Computer Control Port:

RJ45 network Ethernet port accepts a standard CAT5 cable for connection to a computer (or suitable network switch to control multiple units simultaneously).

### 4. ID LED:

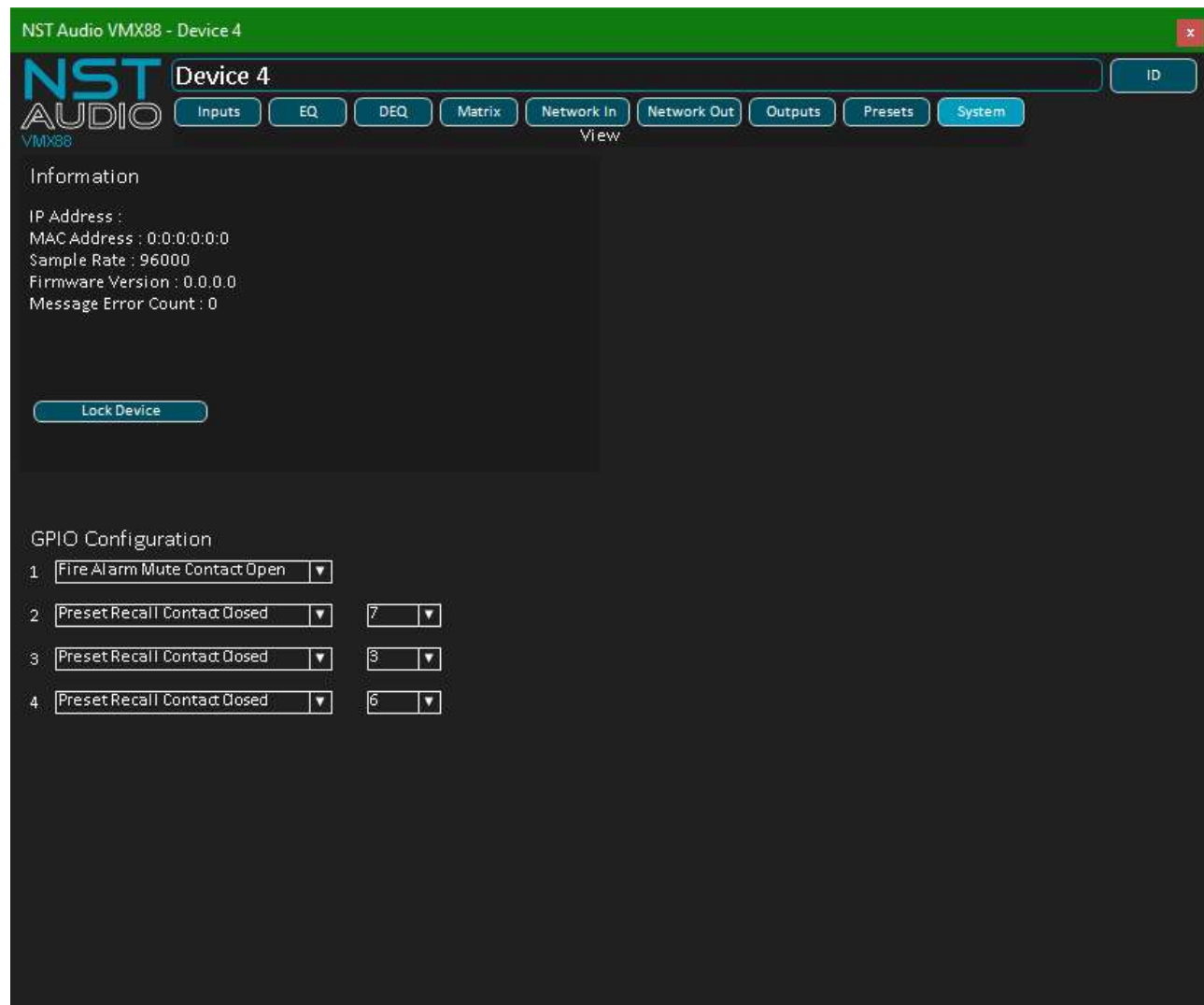
Flashes (in tandem with all front panel meters) to identify the unit in a network when the "ID" button is pressed in D-Net remote software on a unit's control panel:



Continues...

## 5. GPI Port:

The GPI port allows connection to a fire alarm relay to mute the device when the relay is either closed or opened (port pin 1 only), or to recall a preset when a selected GPI port pin is grounded (contact closed). The preset to recall can be chosen from 1-10 and port pin to associate this with is configured in the D-Net control software on the system page of each device.



## 6. Balanced Analogue Audio Outputs:

The analogue outputs are wired as follows:

Pin 1: Shield/Ground

Pin 2: Signal Hot (+)

Pin 3: Signal Cold (-)

### Introduction and Polite Warning

Current firmware gives VMO16 devices support for static IP addressing on their Ethernet control ports. This document section assumes the user is familiar with D-Net, our remote-control application, and with networking terminology and configurations. It is possible to set a device to a static IP address that will no longer be accessible to D-Net making it impossible to reset without complex reconfiguration of the controlling device, which can be a lengthy process.

We strongly recommend using DHCP IP addressing for NST Audio products unless strictly necessary within your network infrastructure to do otherwise, and do not undertake swapping to static IP addressing during a critical performance!

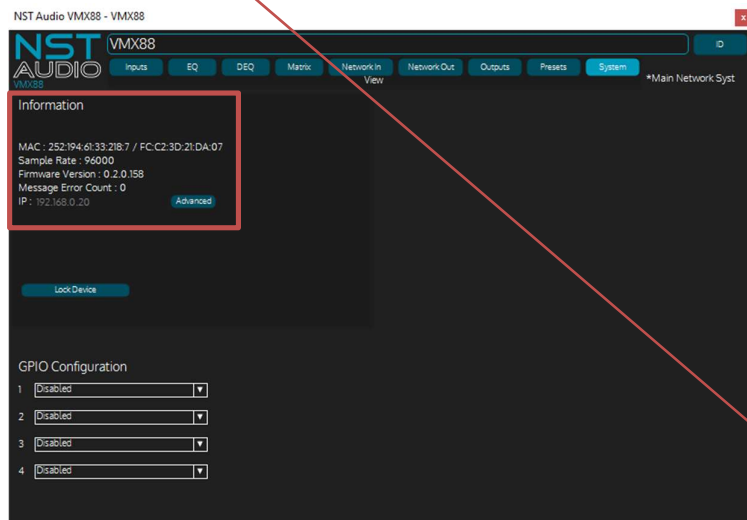
### DHCP and Static IP Addressing Modes

By default, all products leave the factory in DHCP mode. This means the control network interface will be to get an IP address from a DHCP server. Should a DHCP server not be available it will resort to link local autoconfiguration /automatic private IP addressing mode and auto assign one in the 169.254.\*.\* range.

For communications between a computer and a device both must have IP addresses in the same range. For example, if auto assigned, both must be in the 169.254.\*.\* range or if obtaining addresses from a DHCP server both in the 192.168.\*.\* range. Note : 192.168.\*.\* is just common default range used by many DHCP servers.

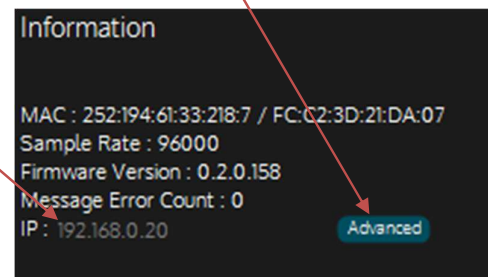
### Checking a device's IP address in D-Net

After the device has been discovered by D-Net, opening it for editing (double click on device in the left hand rack view) and then selecting the "System" tab on VMxxx devices will access device operational information, including the device's IP address:

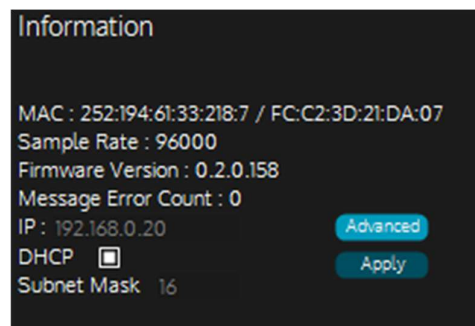


In this instance the device's IP address is set to 192.168.0.20.

The fact that this address is in the 192.169.\*.\* range means it is probably set to DHCP addressing and not a static IP address. This can be verified by pressing the "Advanced" button.



The “Advanced” button then reveals the DHCP status of the device and shows the current subnet mask.



The subnet mask number format is shown in the CIDR format, where the shorthand mask value is appended onto the end of the IP address. This is normally shown in the form 192.168.0.20/16 with the /16 being the subnet mask. It is separated out in D-Net allowing it to be hidden unless required.

In our example, set to /16, this equates to an actual subnet mask of 255.255.0.0. Swapping from one format to the other is straightforward - the value in CIDR format is the number of bits shifted in from the MSB of the top octet in the mask.

So, a value of /3 for the subnet mask equates to 11100000.00000000.00000000.00000000 or 224.0.0.0 in decimal.

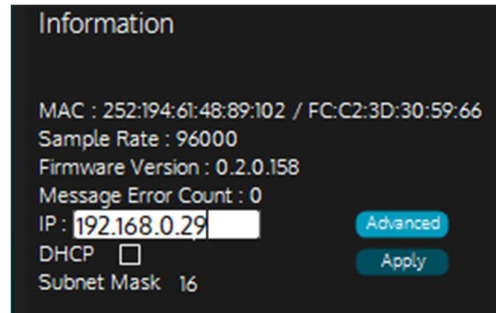
| CIDR | SUBNET MASK   |
|------|---------------|
| /24  | 255.255.255.0 |
| /23  | 255.255.254.0 |
| /22  | 255.255.252.0 |
| /21  | 255.255.248.0 |
| /20  | 255.255.240.0 |
| /19  | 255.255.224.0 |
| /18  | 255.255.192.0 |
| /17  | 255.255.128.0 |
| /16  | 255.255.0.0   |
| /15  | 255.254.0.0   |
| /14  | 255.252.0.0   |
| /13  | 255.248.0.0   |
| /12  | 255.240.0.0   |
| /11  | 255.224.0.0   |
| /10  | 255.192.0.0   |
| /9   | 255.128.0.0   |
| /8   | 255.0.0.0     |
| /7   | 254.0.0.0     |
| /6   | 252.0.0.0     |
| /5   | 248.0.0.0     |
| /4   | 240.0.0.0     |
| /3   | 224.0.0.0     |
| /2   | 192.0.0.0     |
| /1   | 128.0.0.0     |
| /0   | 0.0.0.0       |

## Another Polite Warning!

We strongly recommend using DHCP IP addressing for NST Audio products unless strictly necessary within your network infrastructure to do otherwise, and do not undertake swapping to static IP addressing during a critical performance!

## Changing a device's IP address in D-Net

Having pressed the "Advanced" button, it is now possible to type in a new IP address for the device and to adjust the value of the subnet mask. Be aware that setting the IP address to something outside of the address space that the computer is using will immediately render it unreachable by D-Net and you will not be able to switch it back.

The screenshot shows a dark-themed interface titled "Information". It lists several network-related parameters: MAC address (252:194:61:48:89:102 / FC:C2:3D:30:59:66), Sample Rate (96000), Firmware Version (0.2.0.158), and Message Error Count (0). The IP address is currently set to 192.168.0.29 and is highlighted with a blue selection box. Below the IP field, there is a checkbox for "DHCP" which is currently unchecked, and a "Subnet Mask" field set to 16. To the right of the IP field, there are two buttons: "Advanced" and "Apply".

Set the required IP address and press ENTER. Make sure you then press "Apply" to reconfigure the IP address. The device will go offline for a brief period while the network interface resets to use this new address. This will only be for about 1-2 seconds.

Any longer than this, and the IP address chosen is out of the range of the computer. *This is a not immediately recoverable state and restarting D-Net, your computer or the device will NOT fix this!*

## If The Worst Has Happened...

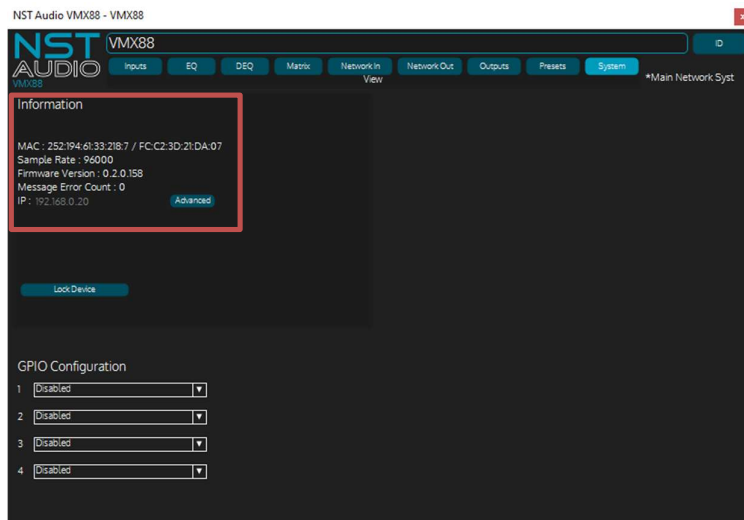
A device with an out of range IP address may still be discoverable by your computer and D-Net as the type of messages used for discovery use a different method not tied to the device's IP address. This allows D-Net to find all devices without having to know their individual IP addresses beforehand, and some limited information is returned following a broadcast exchange, including its name, its model and type and its IP address/subnet mask.

D-Net may show a device that is flashing green (connected normally) but primarily red (on a 1-2second cycle). This most likely a device that is out of range. If the device has appeared in D-Net but it will not respond to a Global Mute command while all other devices will, this confirms an out of range IP configuration.

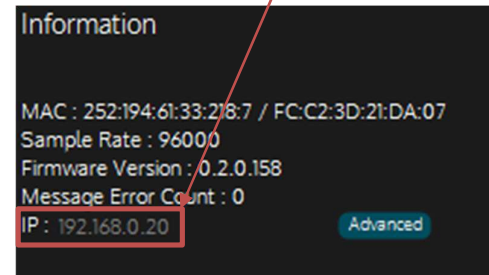
The quickest method to recover the device and reset to a working address space is a direct connection to a PC. The following sections deal with recovering a device to an IP address that is in range, and shows how on both Windows and Mac OS.

## IP Address Settings Recovery via Direct Connection

We need to know the IP address and subnet mask on the device that is not responding correctly. If you have been able to discover it in D-Net, double click on device in the left hand rack view and select the "System" tab.

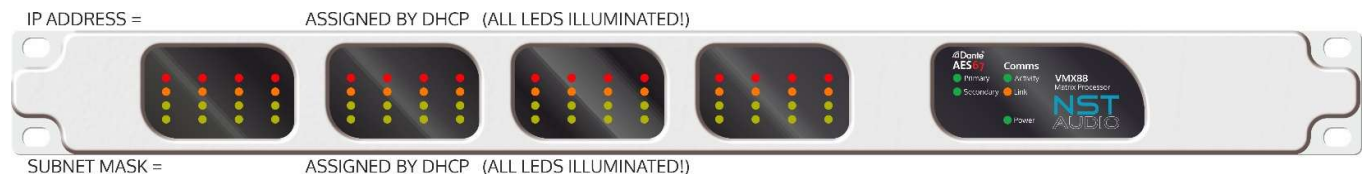


In this instance the device's IP address is set to 192.168.0.20.

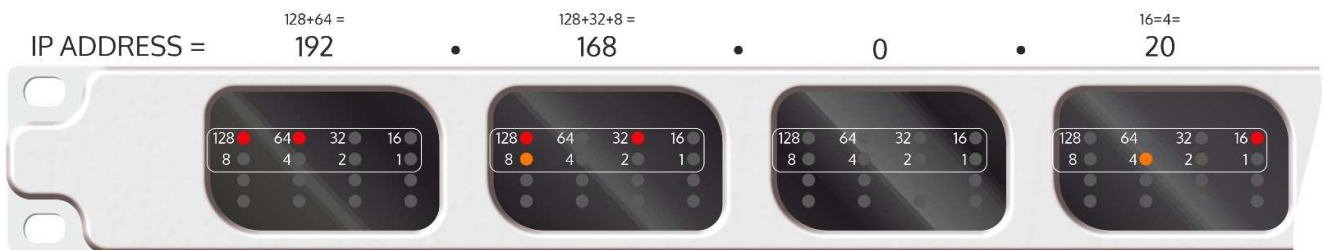


If the device cannot be discovered using D-Net, it can be decoded via the front panel LEDs during the power-up sequence. The level meters are used to display the IP address and subnet mask. Note this ins only displayed for about 2 seconds so we recommend taking a photo with a phone when they illuminate and decoding the patterns afterwards!

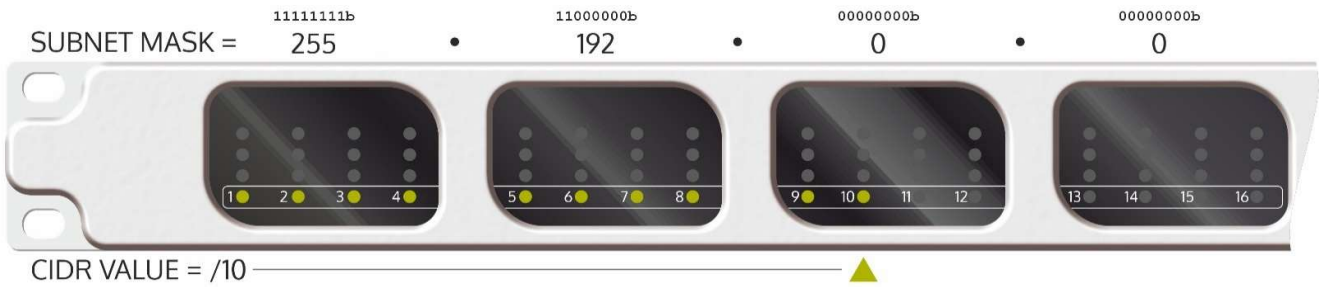
By default a device will be set to DHCP and on power-up , all the meter LEDs will briefly illuminate.



If a static IP has been set, the meter LEDs will show the IP address using the top two rows of LEDs (red/yellow).



Each window displays that octet's value in binary using the LEDs encoded as outlined above. For example, in the left-most window, the "128" and "64" LEDs are illuminated, so we add these together and that gives 192. In this way, the entire IP address can be decoded.



The subnet mask display uses a different technique in keeping with the CIDR notation used to show it in D-Net. The bottom row of meter LEDs (green) show an increasing number from left to right, directly representing the subnet CIDR format value. In this example, 1-10 are illuminated so the subnet mask is set to 10 which equates to 255.192.0.0 if we refer back to the table on page 13.

Whichever method is used to obtain the IP address and subnet mask information, the next step is the same. Configuration for a Windows PC starts overleaf and for Mac OS starts on page 24.

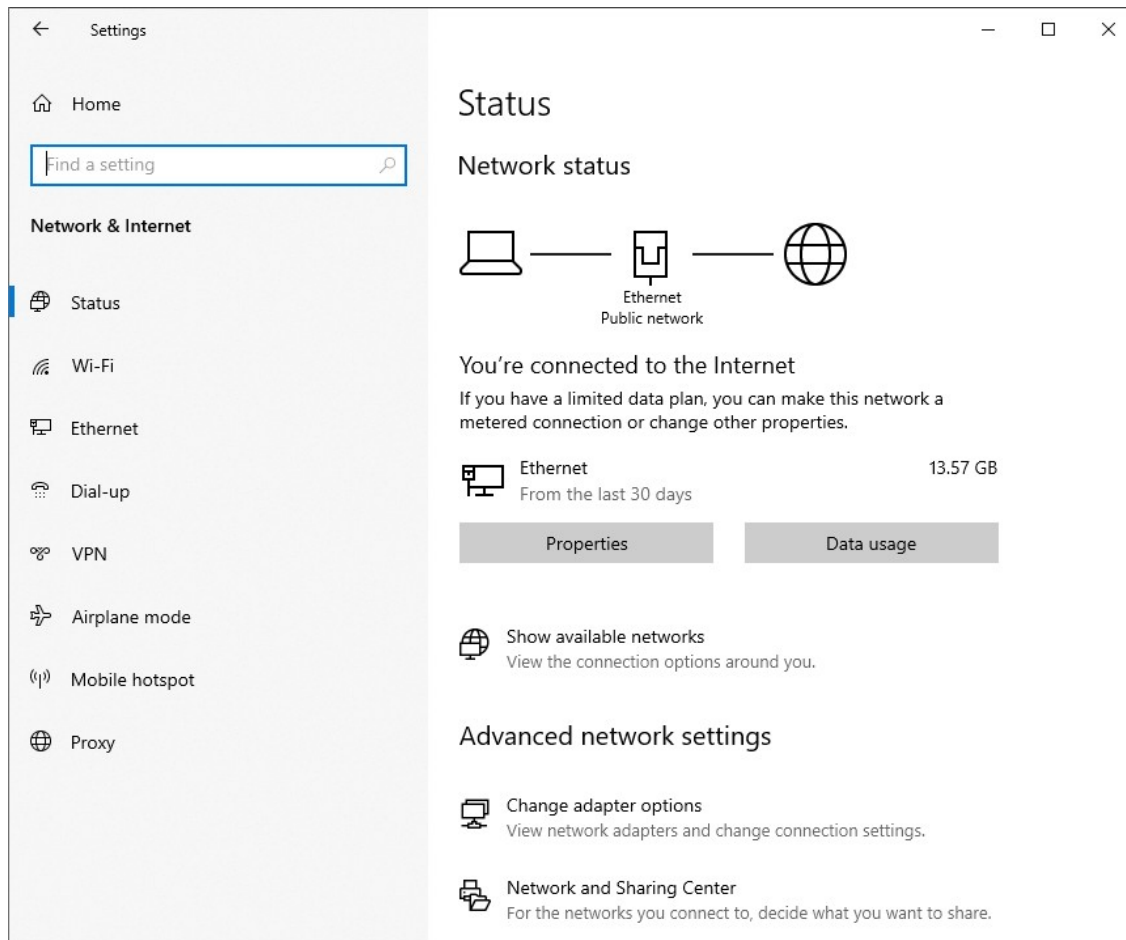


## Direct Connection to a Computer (Windows)

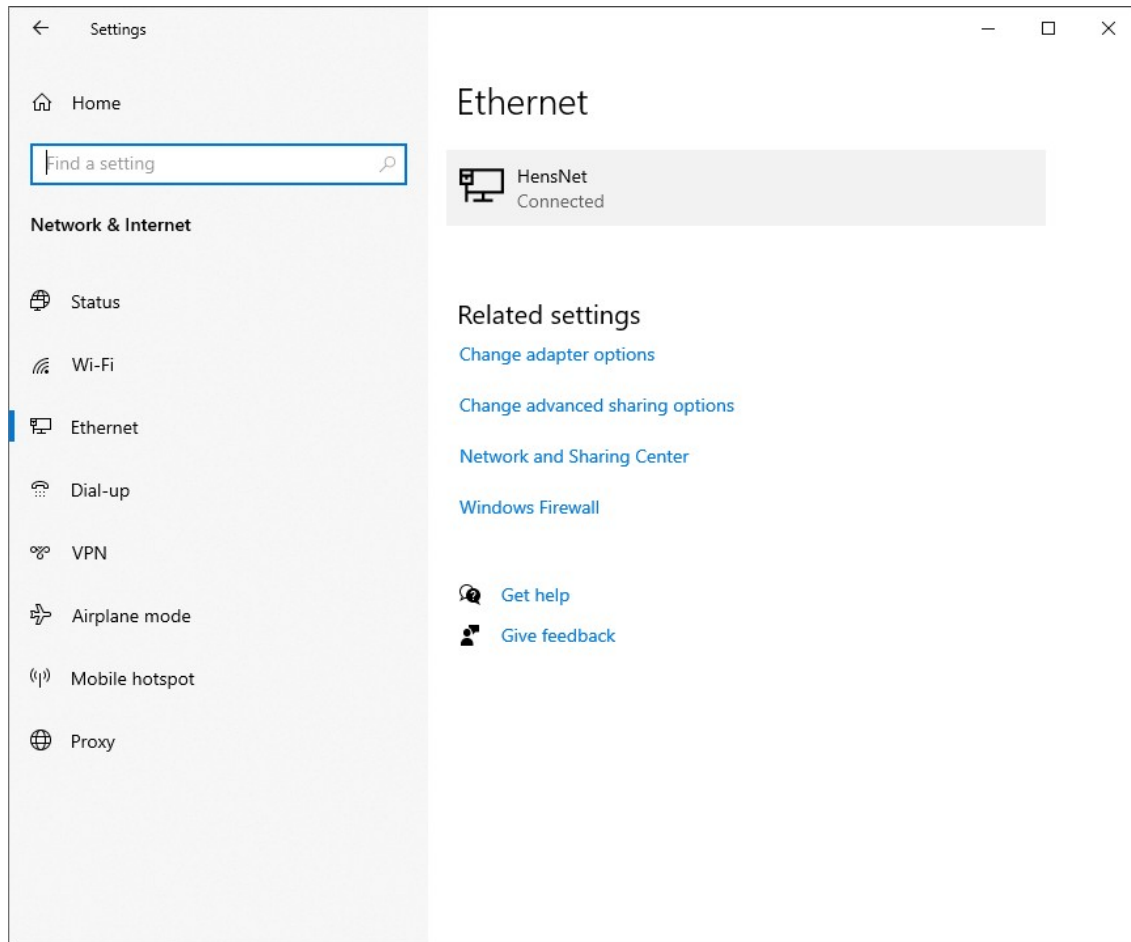
The next step is to set the computer's wired network IP address to be in a suitable range to allow visibility of the static IP erroneously assigned to the device. This method is largely the same on Windows 10 & 11, and our example shows Windows 10.

*Plug an ethernet cable directly into the Comms socket on the rear of the device and into the Ethernet port on the computer. We also recommend temporarily turning off WiFi if in use on the computer.*

- 1) Go into Settings > Network & Internet

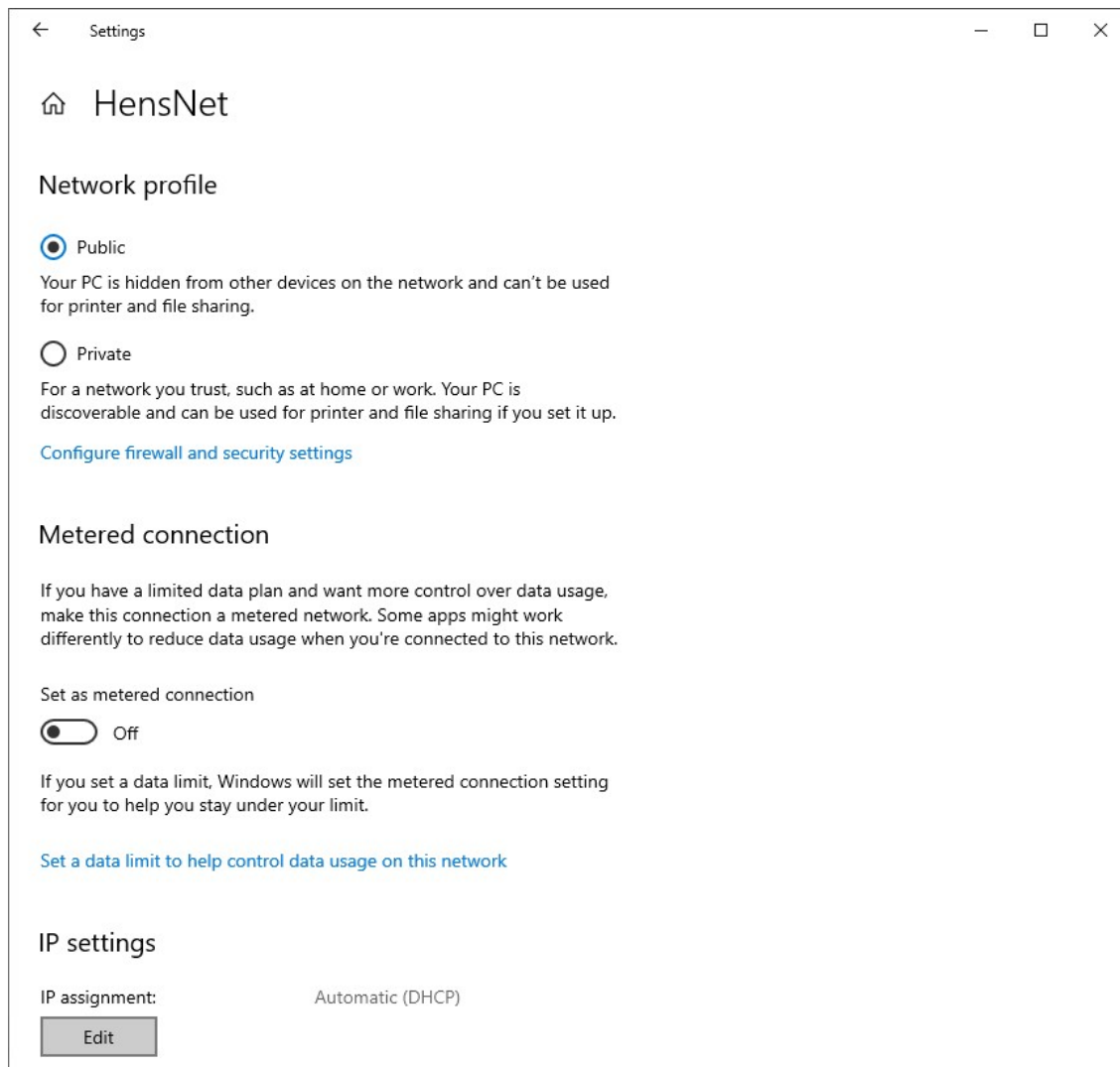


2) Select the Ethernet connection form the left hand list.



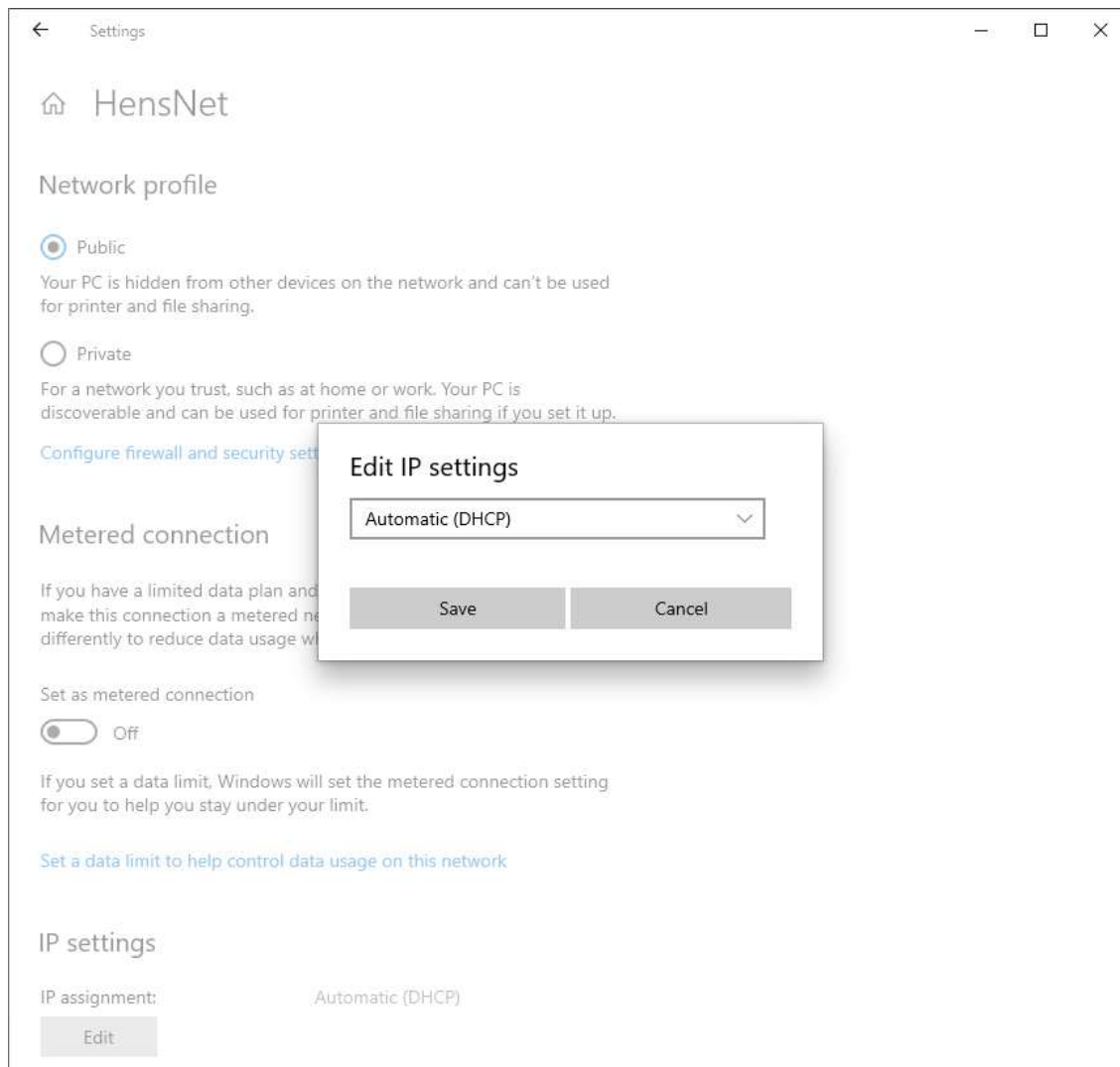
3) Click on the Ethernet network listed (in this example "HensNet").

IP settings are shown towards the bottom of the page. In most instances this will be set to DHCP, as in our case.

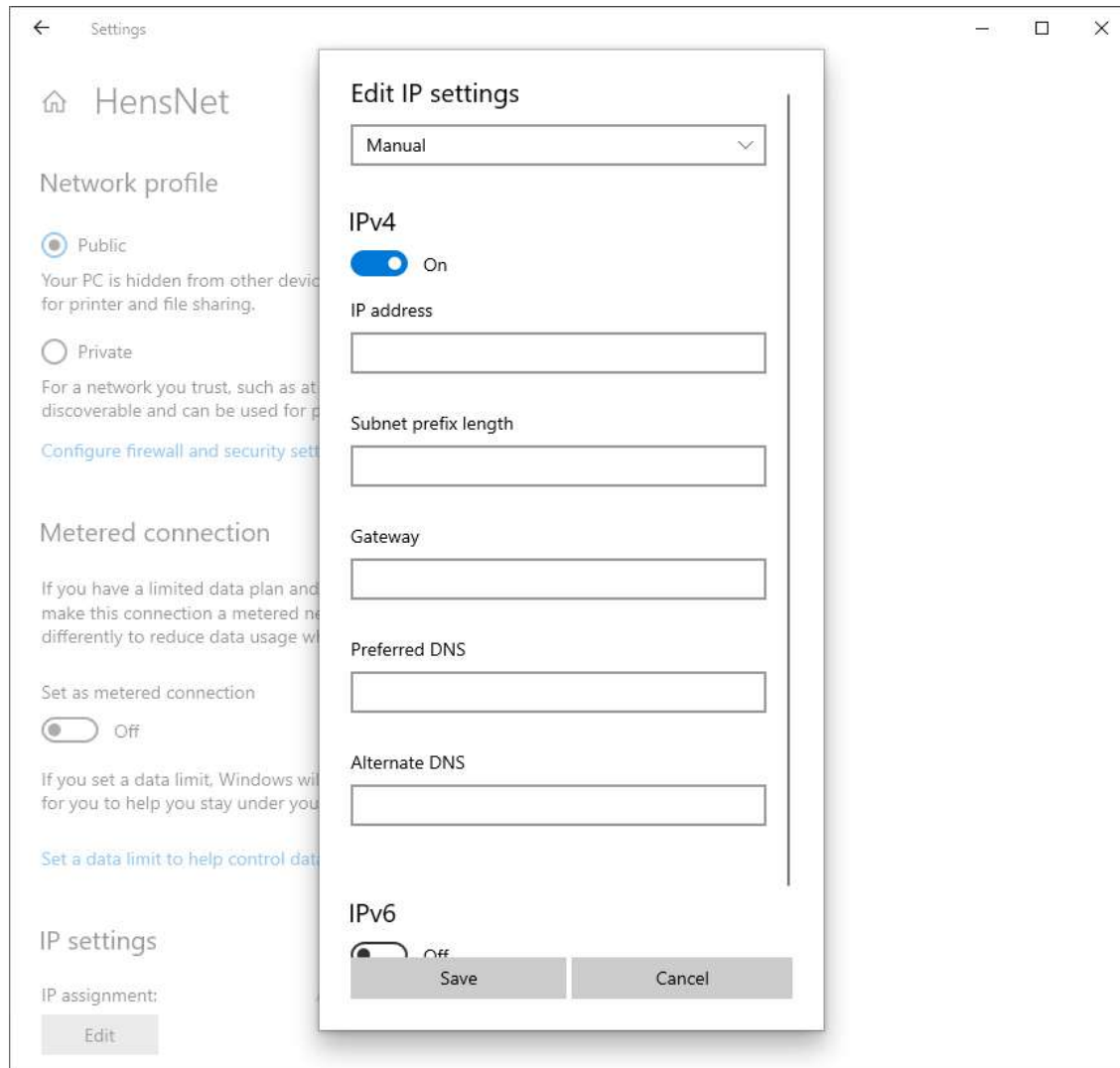


4) Press the Edit button to access the settings.

If set to DHCP, a small window will appear with a drop down list to allow swapping to manual configuration from DHCP.

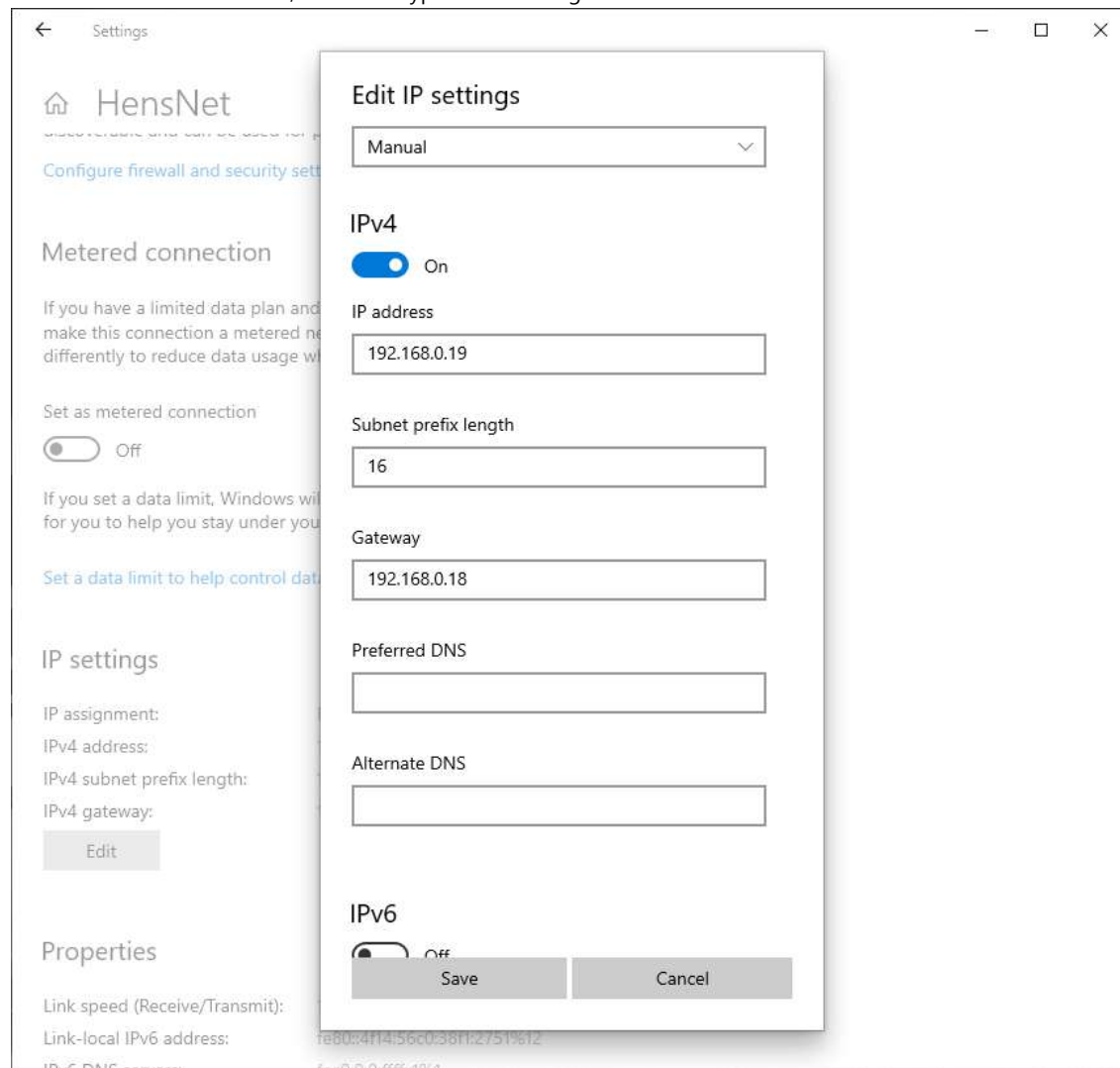


5) Select "Manual" and set the IPV4 switch to "On" to immediately display the manual addressing options.



6) Configure the IP address manually.

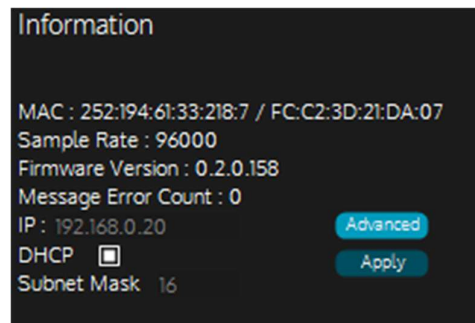
Based on the IP address and subnet mask of the device, we now populate these settings. Our advice would be to set the IP address to be one less than the device's and the Gateway to one less again. So, if the IP address of the device was 192.168.0.20 and the subnet mask was 16, we would type the following values in:



Leave the DNS fields blank. Press "Save" and you're done.

7) Open D-Net and go online.

The device should be discovered and be fully controllable. Test with the Global Mute button and confirm that this is working.

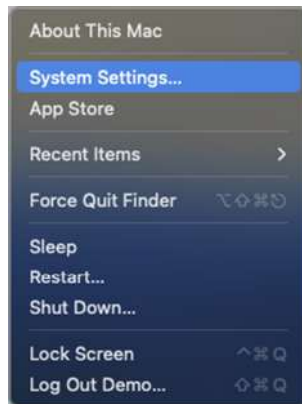


## Direct Connection to a Computer (Mac OS)

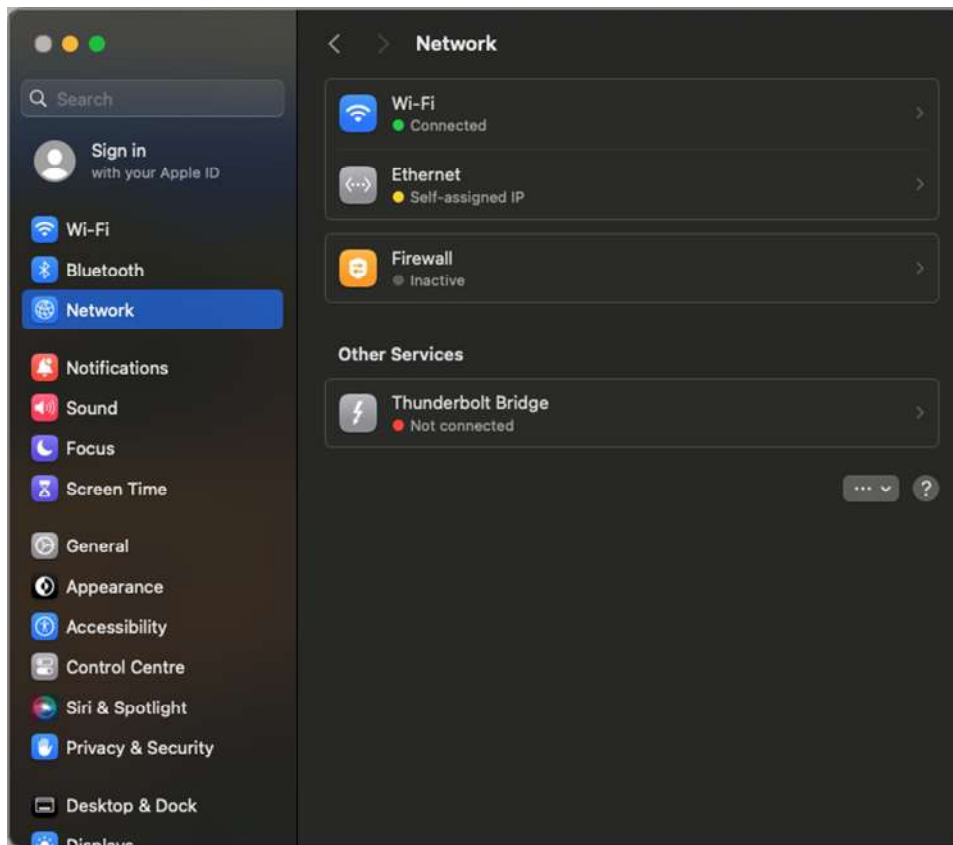
The next step is to set the computer's wired network IP address to be in a suitable range to allow visibility of the static IP erroneously assigned to the device.

*Plug an ethernet cable directly into the Comms socket on the rear of the device and into the Ethernet port on the computer. We also recommend temporarily turning off WiFi if in use on the computer.*

1) Click on the Apple icon and then System Settings:

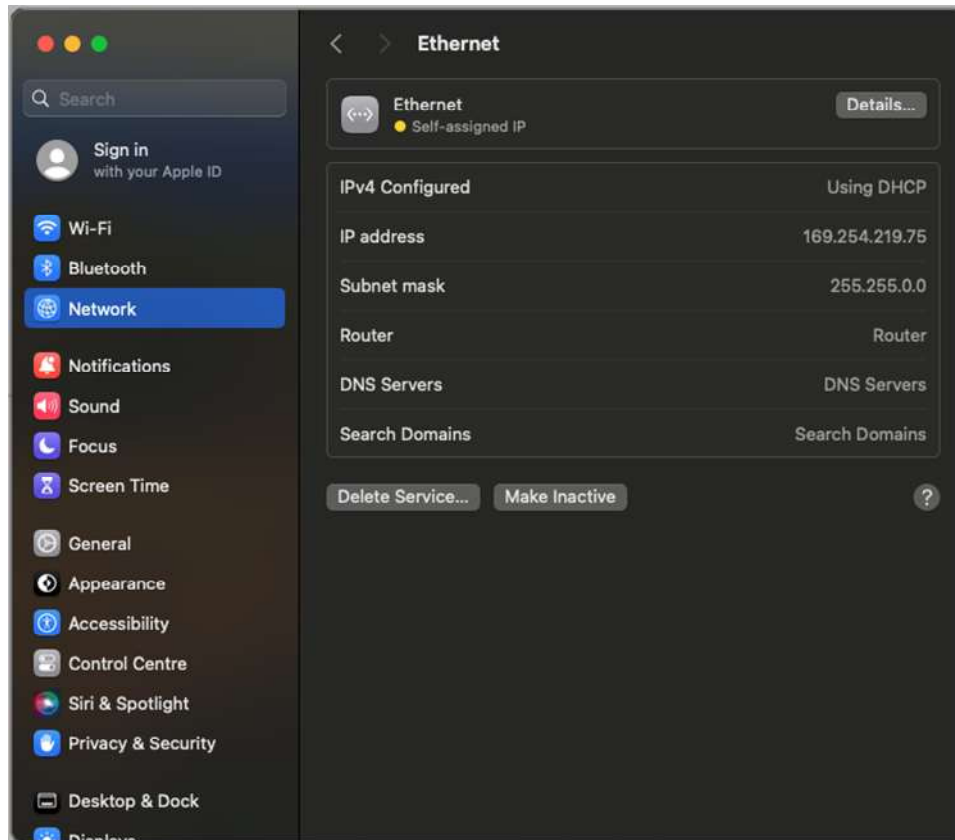


2) Open "Network":



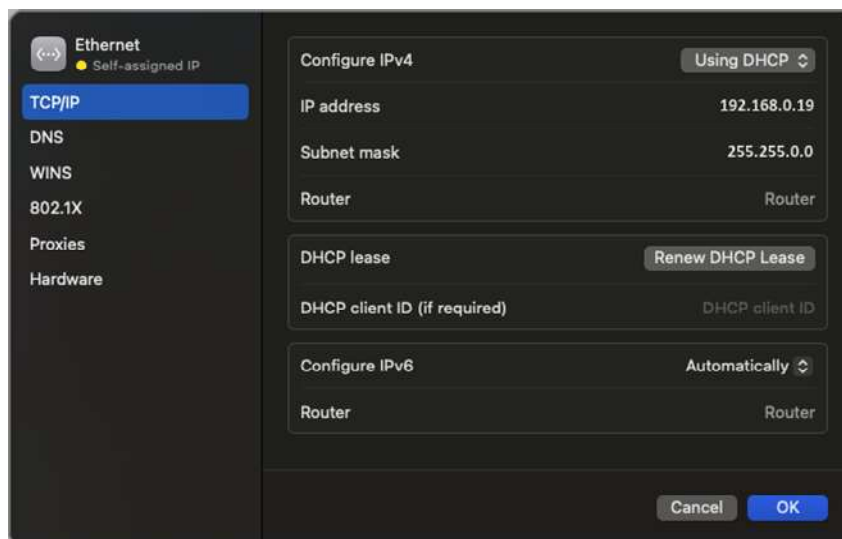


3) Select "Ethernet" and then the "Details" button.



4) In the network settings, select TCP/IP, and select "Manually" from the "Configure IPV4" option.

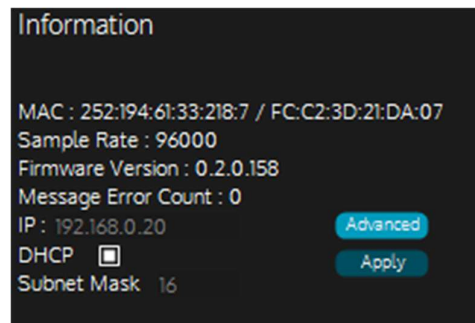
Our advice would be to set the IP address to be one less than the device's and make sure the subnet mask matches that of the device. So, if the IP address of the device was 192.168.0.20 and the subnet mask was 16, we would type the following values in:



Click OK and you're done.

5) Open D-Net and go online.

The device should be discovered and be fully controllable. Test with the Global Mute button and confirm that this is working.



Access the device's IP address settings on the System tab, and press the "Advanced" button. Either set a static IP address in the correct range, or reselect DHCP.

*Remember to press "Apply".*

The device will most likely go offline now, and you will have to reset your PC's network interface to DHCP (and reconnect it physically to the network, as well as plugging your device back into the network).

5) Reestablish a connection with the device normally on the network.

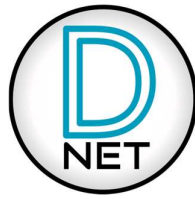
Once the IP configuration of the computer has been returned to normal, open D-Net once again and go online to confirm that all previous devices are visible as well as the one that has just been reset to DHCP (or the preferred static IP address).

### **Final notes on the use of static IP addressing**

The use of static IP addressing for VM and VR products is only recommended when network infrastructure does not allow DHCP addressing, or where the possibility of the IP address changing could affect operation, such as controlling the devices with third party hardware such as a Q-Sys or Crestron controller.

Note that VR1 and VR2 devices do NOT require the devices they are to control to have static IP addresses. Their addressing of other devices is through a combination of MAC address and device type.

Not having a DHCP server on a network will mean that devices use "link local" addressing and will still operate normally and be controllable with D-Net connected to a simple switch.



D-Net is an Ethernet based computer control platform that gives you the ability to not only control all the devices on a network, but also to store presets and configure systems offline.

Compatibility with Microsoft Windows, Apple Mac and Apple iPad too, you can control your system the way that suits you. USB connection (Microsoft Windows only) is also available on some devices, allowing quick connection to a single device.

D-Net is available to download, free of charge, from the NST Audio website:



[nstaudio.com/software-downloads](http://nstaudio.com/software-downloads)



The iPad version is available from the Apple app store. (There is also a link to this from the software page shown above).



## TECHNICAL SPECIFICATIONS

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### Analogue Outputs – 16

Electronically balanced, Phoenix Connectors

Maximum Level: >20dBu

Dynamic Range: >122dB (20Hz – 20kHz A-weighted)

Source Impedance: <60Ω

### Performance:

Frequency Response 12Hz – 32kHz  $\pm 0.2$ dB

Dynamic Range: >122dB unweighted (in to out analogue)

THD + N (+10dB @ 1kHz): <0.001%

Latency: 0.427ms (in to out, analogue, 96kHz)

### Processing:

Routing Dante Inputs to Analogue Outputs in Network Matrix Mixer

Output Parametric EQ (per channel): 16 bands – parametric, low shelf, high shelf, notch, band-pass

Output High-Pass and Low-Pass Filter (per channel): Up to 48dB/octave (Bessel/Butterworth/Bessel/Linkwitz-Riley)

Output Gain (per channel): -30 to +15dB in 0.1dB steps, mute, phase

Output Delay (per channel): 0 to 1.3s in 10.4μs steps (at 96kHz)

Output Limiter (per channel): Threshold (-50 to +22dBu), attack, release, auto attack/release option

Presets: Up to 30

### Power Requirements:

100-240 V AC, 50-60Hz via switched, fused C14 inlet, <25W.

Inlet Fuse: T3.15A H 250V

T = Slow Acting (Time)

3.15A = Ampere Rating of 3.15A

H = High Breaking Capacity

250V = Voltage Rating of 250 Volts or less

### Environmental:

Storage Temperature: -5 °C / 23 °F to 70 °C / 158 °F

Operating Temperature: 0 °C / 32 °F to 50 °C / 122 °F

Maximum Altitude: 2000m

### Dimensions:

Height: 44mm (1.75inch) 1U, Depth: 170mm (6.7 inches), Width: 482mm (19 inches)

### Weight:

Net: 2.2kg

Shipping: 3.4kg

## MAINTENANCE

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The unit will require very little routine maintenance, apart from occasional routine checking of the fan inlet outlets on the side panels. Cleaning the casework should only be done with a cloth lightly dampened with water only! The use of chemical or abrasive cleaners may damage the paint finish.

## SERVICING

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There are no user serviceable parts within the unit!

Please contact us to arrange returning any units to us that require servicing or repairing.

## WARRANTY

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This product comes with a warranty against defects in components and workmanship only, for a period of five years from the date of shipment to the customer. During the warranty period, NST Audio will, at its discretion, either repair or replace products that prove to be defective, provided that the product is returned, shipping prepaid, to an authorised NST Audio service facility.

Defects caused by unauthorised modifications, misuse, negligence, act of God or accident, or any use of this product that is not in accordance with the instructions provided by NST Audio, are not covered by this warranty.

This warranty is exclusive and no other warranty is expressed or implied.  
NST Audio is not liable for consequential damages.

## CONTACT

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If you have any questions or comments about the information contained within this manual, or require further assistance, then please do not hesitate to contact us:



**[www.nstaudio.com](http://www.nstaudio.com)**



**[support@nstaudio.com](mailto:support@nstaudio.com)**



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*Thank you!*

**NST**  
AUDIO

The NST Audio team