Focusrite®

REDNET TNX

RedNet TNX User Guide

Table of Contents

About this User Guide

This user guide applies to the RedNet TNX Dante interface.

If this user guide doesn't include the information you need, you can find a collection of common technical support queries at:

focusritepro.zendesk.com

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This is Version 3.0 of the RedNet TNX user guide.

Introduction

Thank you for investing in the Focusrite RedNet system.

RedNet is a powerful, low-latency, digital audio networking system designed specifically for music, recording studio, live, and broadcast applications. RedNet is based on Audinate®'s Dante®, a well-established audio networking technology known for its extreme robustness. Dante – and the RedNet system – is capable of transporting up to 512 channels of bidirectional audio (at 48 kHz sample rate) over a single gigabit Ethernet link.

The Focusrite RedNet TNX provides the hardware interface between the host computer, via Thunderbolt™ connection, and the Ethernet network, interconnecting the various I/O units in a RedNet system.

Key Features

- Thunderbolt 3 interface with two 15W USB-C ports (daisy-chainable).
- Compatible with standard network switches
- 128 × 128 redundant channels at up to 192KHz
    - Optional upgrade to 256x256 audio channels (24bit/96kHz) with Dante Ready™ and Dante Activator
- Seamless operation with other RedNet and Dante devices
- Support for macOS and Windows
- Supports AES67, Dante Domain Manager, and is SMPTE ST 2110 compliant (requires DDM license), which makes it perfect for broadcast deployment.

Box Contents

- RedNet TNX
- 2m Cat 6A Ethernet cable
- Region-specific IEC (power) cable and DC power block.
- 2m Thunderbolt cable
- Safety information cut sheet
- Focusrite Important Information Guide
- Product Registration Card – instructions on the card provide links to:
    - RedNet Control
    - RedNet Thunderbolt drivers *(included with RedNet Control download)*

System Requirements

OS Version

The easiest way to check if your computer's operating system (OS) is compatible with the RedNet TNX is to use our Help Centre's compatibility articles:

focusritepro.zendesk.com/hc/categories/360000105489-Compatibility

As new OS versions become available over time, you can continue to check for further compatibility information by searching our Help Centre at:

focusritepro.zendesk.com

Network

The Audinate Dante protocol, on which RedNet is based, uses standard Ethernet technology for the network. Whilst Dante traffic can be mixed with other network data, we recommend for maximum performance, the RedNet audio network should be self-contained and should not also be used for other IT purposes.

RedNet is compatible with Cat 5e and above cabling; Cat 6 STP is preferred. Standard RJ45 connectors with metal screens should be used, with the cable screen bonded to the connector screen.

> ⚠ **Important**
> This product Satisfies FCC regulations when high-quality shielded cables are used to connect with other equipment. Failure to use high-quality shielded cables or to follow the installation instructions within this manual, may cause magnetic interference with appliances such as radios and televisions and void your FCC authorisation to use this product in the USA.

Network Switches

- Gigabit (1000 Mbps) capable – switches below this rating are not supported
- Quality of Service (QoS) with 4 queues
- Diffserv (DSCP) QoS, with strict priority
- Should be of the 'managed' type to provide detailed information about the operation of each network link: port speed, error counters, bandwidth used, etc.
- 'Non-blocking' to allow full bandwidth of all ports simultaneously
- An internal mains power supply is recommended – the external "plug-top" PSUs supplied with some units can be prone to interference which could generate audible artefacts

RedNet TNX Hardware Features

Back Panel
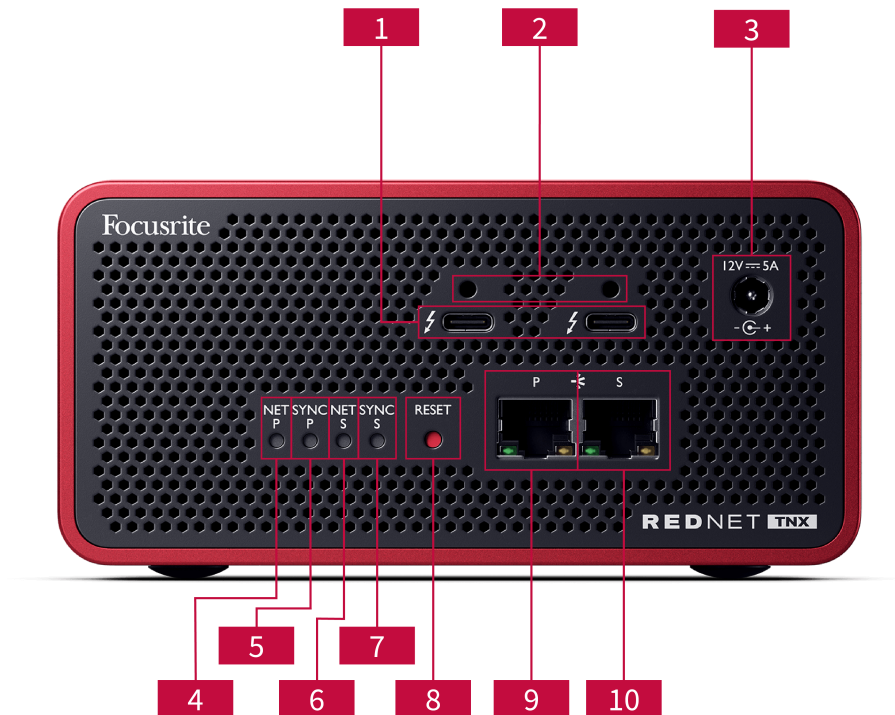
1. **Dual Thunderbolt ports**
   Two type-C Thunderbolt ports allow you to connect your RedNet TNX to your computer and daisy-chain other Thunderbolt equipment with 15W power delivery.
2. **Sonnet ThunderLok™ retainer clip ports**
   Secure your Thunderbolt cable to your RedNet TNX to prevent accidental cable disconnection with the optional Sonnet ThunderLok™ retainer clip.
3. **12V 5A power inlet**
   DC input with locking connector.
4. **Net P Status LED**
   Multicolour LED. Illuminates in Switched mode or Redundant mode:
   - **Green** (Solid) – Primary Link active (DHCP)
   - **Blue** (Solid) – Primary Link active (Static IP)
   - **Off** – No network connection
5. **Sync P Status LED**
   Multicolour LED. Illuminates in Switched mode or Redundant mode:
   - **Blue** (Solid) – Confirms device is a Dante **PTP leader**; it's set (via Dante Controller) to generate the Dante clock which will be used by other units.
   - **Green** (Solid) – Confirms device is a Dante **PTP follower**; it syncs to the clock embedded in the incoming Dante bitstream.
   - **Red** (solid) – No PTP sync.

6. **Net S Status LED**
   Multicolour LED:
   - **Green** (Solid) – Secondary Link active (DHCP)
   - **Blue** (Solid) – Secondary Link active (Static IP)
   - **Off** – No network connection
   - **Purple** (Solid) – Indicates RedNet TNX is in Switched mode

7. **Sync S Status LED**
   Multicolour LED. Illuminates in Redundant mode only:
   - **Blue** (Solid) – Confirms device is a Dante **PTP leader**; it's set (via Dante Controller) to generate the Dante clock which will be used by other units.
   - **Green** (Solid) – Confirms device is a Dante **PTP follower**; it syncs to the clock embedded in the incoming Dante bitstream.
   - **Off** – No network connection
   - **Purple** (Solid) – Indicates RedNet TNX is in Switched mode

8. **Reset Switch**
   Clears current configuration (Name, IP config, etc.). Press and hold for seven seconds to return the RedNet TNX to its default state with the DHCP setting.
   When pressed, the front panel LEDs will illuminate in sequence at one-second intervals. All LEDs will then flash for a further three seconds, after which the RedNet TNX resets.

9. **Primary Network Port**
   RJ45 connector for the Dante network. Use shielded Cat 5e or better network cables to connect the RedNet TNX to the Ethernet network switch.
   Adjacent to both network sockets are LEDs which illuminate to indicate a valid network connection and network activity.

10. **Secondary Network Port**
    Secondary Dante network connection where two independent Ethernet links are being used (Redundant mode), or an additional port on an integral network switch on the primary network (Switched mode). The operating mode is set via Dante Controller.
    The Dante network can be viewed or controlled via either port.

Front panel and bottom
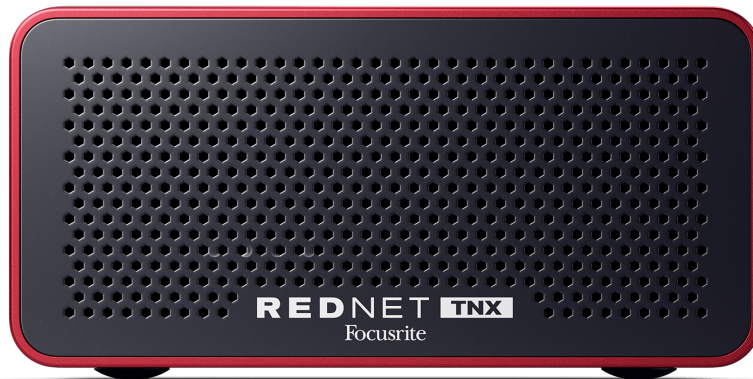
The RedNet TNX's front features a perforated panel for ventilation. Also, visible is a low-speed, low-noise fan.

> 📝 **Note**
>
> The maximum operating environmental temperature is 50°C (122°F).
>
> Ensure the front panel is not obstructed to allow for ventilation.

On the bottom of the RedNet TNX there are four exposed screw threads so you can bolt your device to a surface such as a rack draw or cradle.

To mount your RedNet TNX you need four M5 x 12mm screws. We don't provide or sell these screws but you can buy them from most hardware stores:

RedNet TNX Installation

Software Installation

You can download all the software you need for a RedNet system from downloads.focusrite.com or the Focusrite website after you register your RedNet TNX at: focusrite.com/register.

You can control functions from RedNet Control 2, and define routing in Dante Controller.

Audinate Dante Controller

To download Dante Controller go to: audinate.com. After registering, you can download and install the application.

RedNet Control 2

The Product Registration Card provided with your Focusrite device contains a validation code, which you need to enter in the Registration area.

Follow the instructions on the card to register your product and download RedNet Control 2 and associated software.

After it's downloaded, you can install RedNet Control 2. Follow all on-screen instructions from this point.

RedNet Control is always available for anyone to download from downloads.focusrite.com/focusrite-pro

System Power Up

We recommend you power on the components in a RedNet system as follows:

1. Power up the Gigabit switch(es)
2. Power up all RedNet RedNet units on the network
3. Boot the host computer

Once your computer has finished booting, open RedNet Control 2.

⚠️ **Electrostatic Discharge**
The RedNet TNX is an electrostatically sensitive device. Ensure all cables are securely connected before powering it on.

Failure to do so may result in the device requiring a power cycle (turning it off and on) to function correctly.

To power cycle your RedNet TNX remove the 12V 5A power supply and reinsert it.
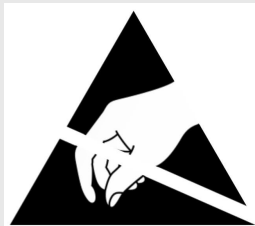
Connecting your RedNet Audio Network

We recommend all Ethernet connections in your Dante system are made using CAT 6 STP cables.

> 📄 **Note**
> The RedNet TNX includes a 'virtual' Ethernet port to enable control data to be passed through to remote RedNet I/O devices. There is therefore no need to connect any other network ports on your computer to your Dante network.

Standard Network

This setup requires only one gigabit network switch:

- Connect the Primary RedNet TNX card port to the gigabit switch
- Connect the Ethernet ports on each RedNet I/O interface in your system to ports on the gigabit switch.
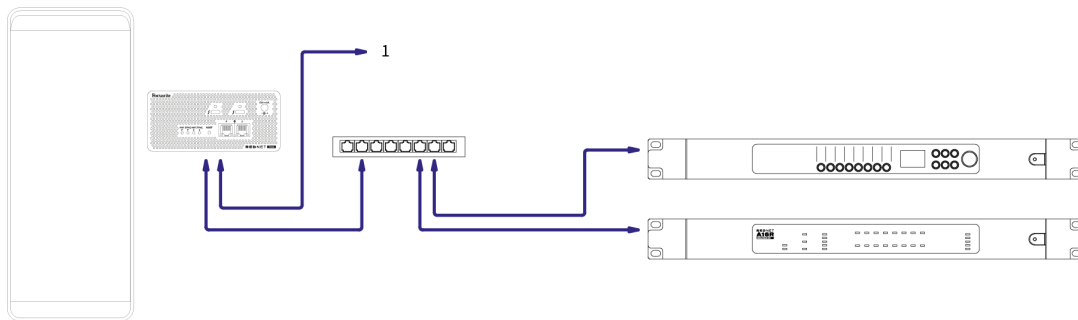
1. Daisy-chained to additional RedNet device in "switched" mode.

Redundant Network

You can use a redundant network for RedNet devices with both Primary and Secondary network ports. If the primary network fails, audio transmission seamlessly switches to use the secondary network. This redundant setup is often found in Live and Broadcast applications.

A redundant network requires a minimum of two network switches:

- Set the RedNet TNX to Redundant mode in Dante Controller.
- Connect the Primary port of the RedNet TNX card to the primary network switch
- Connect the Secondary port of the RedNet TNX card to the secondary network switch
- Connect your other Dante device(s) Primary and Secondary ports to the primary and secondary network switches respectively for each device

> **Note**
> Do not make any connections between the primary and secondary network switches.
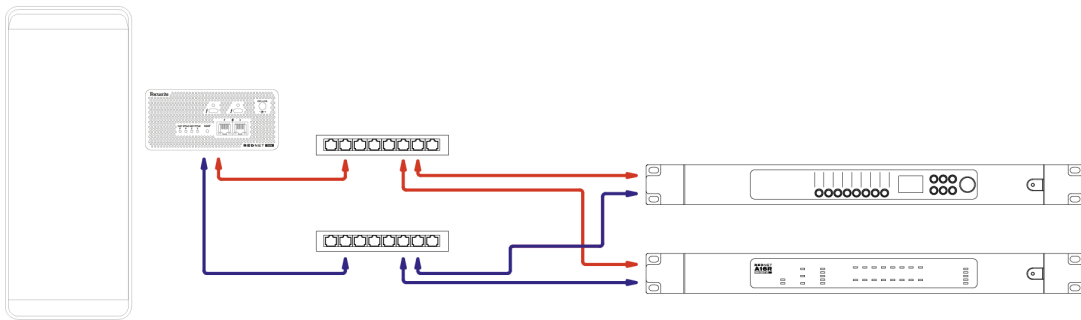
Operation

Audio Routing in your DAW

Your DAW allows you to select which RedNet audio channel feeds each track. Please refer to your DAW's documentation or Help files if you are unsure about this.

The RedNet TNX is detected by your DAW and added to the list of available audio sources. Select RedNet TNX (macOS) or Focusrite Thunderbolt ASIO (Windows).

Using Dante Controller

Audinate Dante Controller is installed on your computer as part of the RedNet Control 2 installation. You can open Dante Controller either by going to its shortcut (in **Applications** on Macs or in **All Programs** in Windows), or in RedNet Control 2 clicking **Dante** → **Dante Controller** in the menu bar.
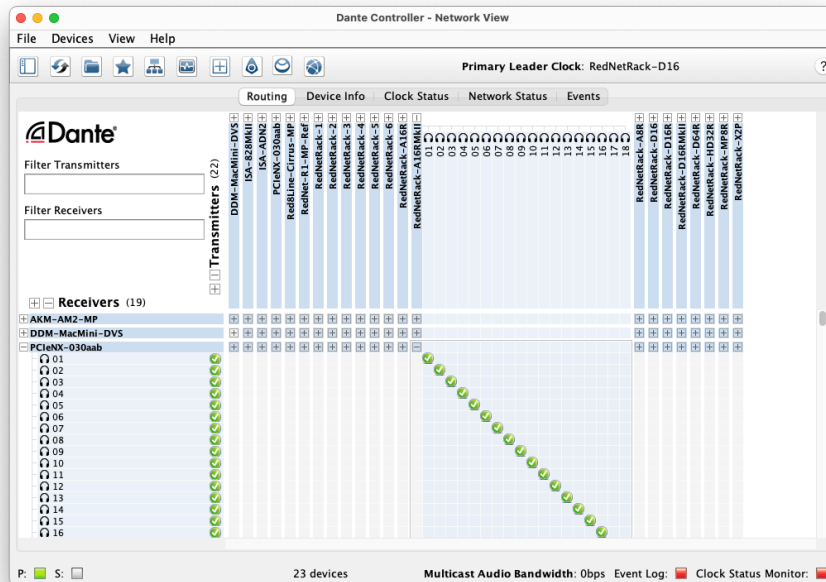
The **Routing** tab is arranged as a cross-point matrix. Audio inputs are listed horizontally (called Dante Transmitters) and audio outputs are listed vertically (called Dante Receivers).

You can expand the I/O matrix for each RedNet and Dante device – to reveal its full set of inputs or outputs – or collapse by clicking the appropriate '**+**' or '**-**' symbol against each device's name. Some devices may have only inputs or outputs.

The RedNet TNX card appears as a device with Dante Transmitters and Dante Receivers, as it has both inputs and outputs.

- To create an audio connection (called a subscription), click on the appropriate crosspoint between the RedNet TNX card and your other Dante I/O device. When the connection is made (a successful subscription), a green tick icon will appear.

- For incremental 1:1 routing within a single RedNet device, Ctrl-click on the first subscription cross-point

> **Note**
> For further details on how to configure a RedNet/Dante audio network, including 'How to' animations, please see the Audinate website at: audinate.com

Upgrading your RedNet TNX to 256×256 channels

You can pay to upgrade the channel count of your RedNet TNX from 128×128 channels to 256×256 channels (up to 96kHz, the channel count remains 128×128 at 176.4/192kHz). You can do this paid upgrade using Audinate's Dante Activator software.

To upgrade the channel count of your RedNet TNX:

1. Log in or create an account with Audinate: my.audinate.com/user/login.
2. Install the latest version of Dante Controller: my.audinate.com/support/downloads/dante-controller.
3. Ensure you have the latest firmware for your RedNet TNX. Install and run the latest version of RedNet Control 2 (you will be automatically prompted to apply an update by RedNet Control 2 if your current firmware is out of date - follow all steps to upgrade before continuing): downloads.focusrite.com/focusrite/rednet.
4. Open Dante Controller and click the "Dante Activator" icon ⊝ in the top bar:
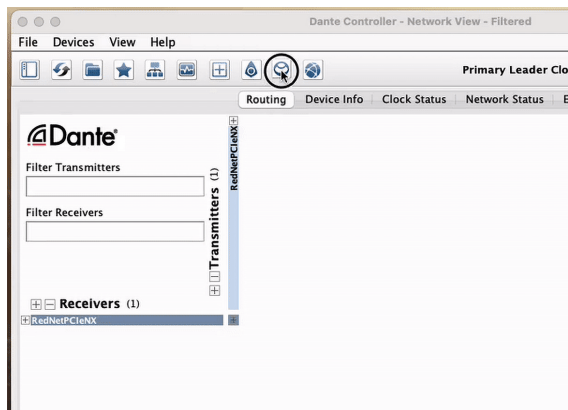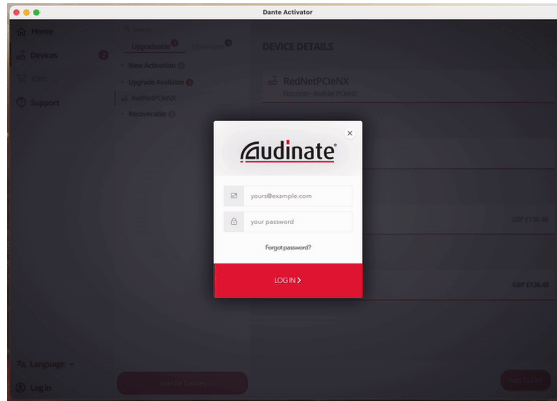

5. Find your RedNet TNX in the Devices → Upgrade Available section and click it:
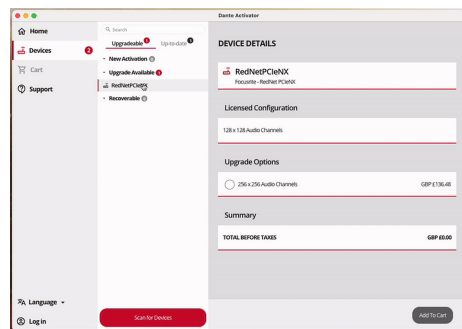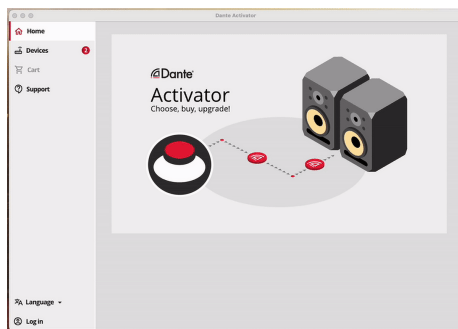
6. Select the 256×256 upgrade option (pricing may differ in your territory and non-USD pricing is based on live exchange rates) and click Add To Cart:
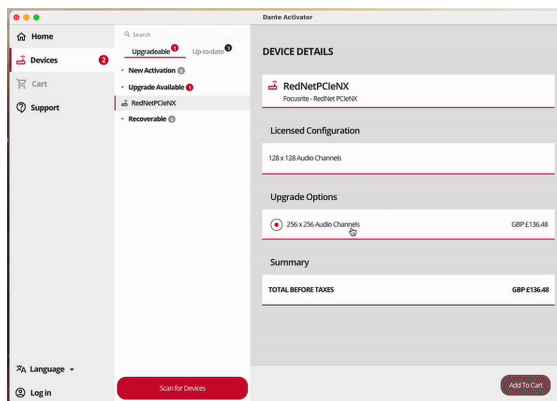
7. Log in to your Audinate account and proceed to the checkout.

8. Complete the transaction, your RedNet TNX briefly disappears from your Dante network. When it comes back, it should have 256×256 channels (44.1-96kHz sample rates).

9. To make the new channels appear in your DAW software, you need to restart the computer the RedNet TNX is connected to.

Appendix A. Connector Pinouts

Network

Applies to:

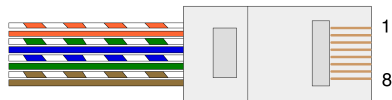- Primary, Secondary

Connector type:

- RJ-45 receptacle

Pin	Cat 5/6 Core
1	White + Orange
2	Orange
3	White + Green
4	Blue
5	White + Blue
6	Green
7	White +Brown
8	Brown

Appendix B. A note about Latency

No digital audio system is "instantaneous"; the term "latency" is used to express the time by which the audio is delayed in travelling through the system. In practice, latency only becomes a problem when mixing signals from systems having significantly different delays. The Dante protocol RedNet Control 2 uses exhibits very low latency, and you should not experience any problems in normal recording practice when using it for multichannel audio transport between a DAW and sources or monitoring.

The precise latency of any given system will be determined by multiple factors, including the processing speed of the computer, the number of switches in the network, or make/model of switch used and the network topology.

If you are using Dante Virtual Soundcard instead of the RedNet TNX , the computer requires additional processing time.

Performance and Specifications

RedNet TNX	
Network connection	2 x RJ45, Primary and Secondary
Network interface	Gigabit (1,000Mbps) Ethernet
Back panel	Two Activity LED (Primary / Secondary)
	Two Lock LED (Primary / Secondary)
	Factory Reset button
	DC power inlet
	Two Thunderbolt Type-C ports

Digital Performance	
Supported sample rates	44.1 / 48 / 88.2 / 96 / 176.4 / 192 kHz
Pull-up / down	+4.1667, +0.1, -0.1, -4%
Bit depth	24 bit PCM

| Dimensions	
Height	71.6mm (2.82")
Width	144mm (5.67")
Depth	212.4mm (8.36")
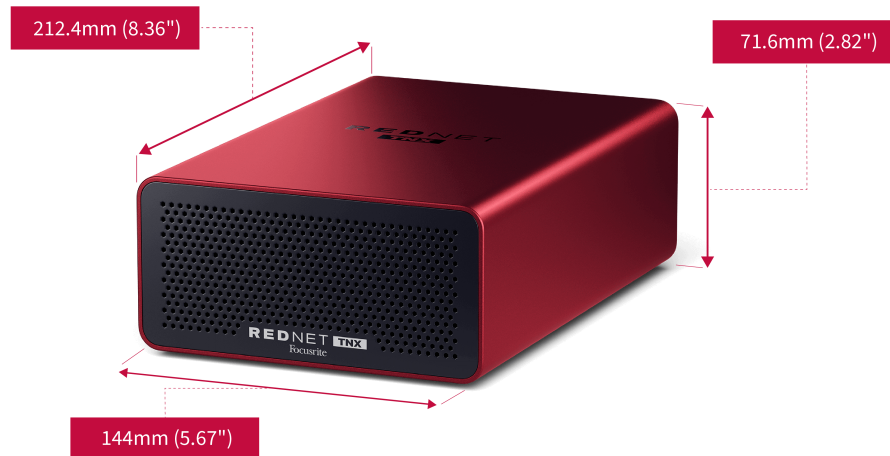
Weight	
Weight	

Notices

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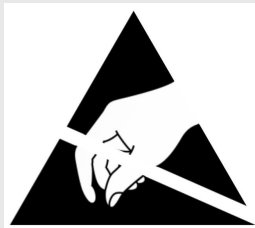
Focusrite Warranty and Service

All Focusrite products are built to the highest standards and should provide reliable performance for many years, subject to reasonable care, use, transportation and storage.

Many of the products returned under warranty are found not to exhibit any fault. To avoid unnecessary inconvenience to you in terms of returning the product please contact Focusrite support.

If a Manufacturing Defect becomes evident in a product within 36 months from the date of the original purchase, Focusrite will ensure that the product is repaired or replaced free of charge.

A Manufacturing Defect is defined as a defect in the performance of the product as described and published by Focusrite. A Manufacturing Defect does not include damage caused by post-purchase transportation, storage or careless handling, nor damage caused by misuse.

Whilst this warranty is provided by Focusrite the warranty obligations are fulfilled by the distributor responsible for the country in which you purchased the product.

In the event that you need to contact the distributor regarding a warranty issue, or an out-of-warranty chargeable repair, please visit: focusrite.com/distributors

The distributor will then advise you of the appropriate procedure for resolving the warranty issue. In every case, it will be necessary to provide a copy of the original invoice or store receipt to the distributor. If you cannot provide proof of purchase directly, then you should contact the reseller from whom you purchased the product and attempt to obtain proof of purchase from them.

Please do note that if you purchase a Focusrite product outside your country of residence or business you will not be entitled to ask your local Focusrite distributor to honour this limited warranty, although you may request an out-of-warranty chargeable repair.

This limited warranty is offered solely to products purchased from an Authorised Focusrite Reseller (defined as a reseller who has purchased the product directly from Focusrite Audio Engineering Limited in the UK, or one of its Authorised Distributors outside the UK). This Warranty is in addition to your statutory rights in the country of purchase.

Registering Your Product

To access optional bundled software, please register your product at: focusrite.com/register

Customer Support and Unit Servicing

You can contact our Customer Support team:

Email: focusriteprosupport@focusrite.com

Phone (UK): +44 (0)1494 836 384

Phone (USA): +1 (310) 450 8494

Troubleshooting

If you are experiencing problems with your RedNet TNX, we recommend you visit our Support Help Centre at:
focusritepro.zendesk.com

Credits

Focusrite would like to thank the following RedNet TNX team members for their hard work in bringing you this product:

Agata Schweizer, Ben Allim, Ben Bates, Ben Kildonan, Daniel Johnson, Dan Stephens, Dave Curtis, Ed Fry, Ed Reason, Gagan Mudhar, Hannah Budworth, Ioannis Moschopoulos, Jack Cole, James Surgenor, Jason Cheung, Keith Burton, Krischa Tobias, Marianna Melo, Mark Rapson, Nima Kalantar, Pete Carss, Richard Walters, Ryan Gray, Si Halstead, Wade Dawson, Will Hoult.

Authored by Graham Caddy and Ed Fry.