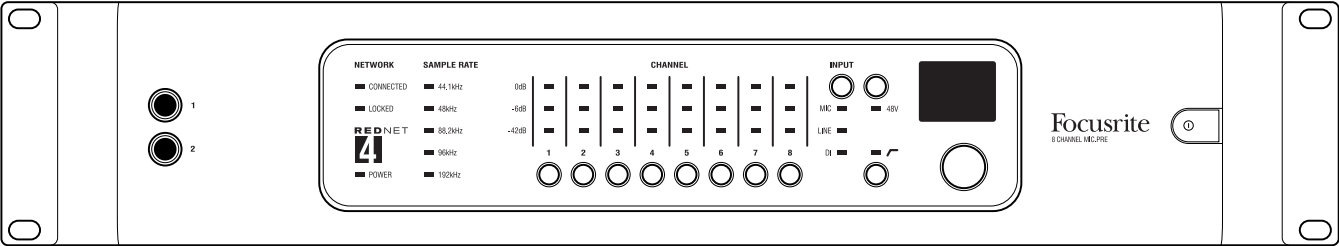



REDNET[®] 4

User Guide



Focusrite[®]
www.focusrite.com

IMPORTANT SAFETY 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 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 polarized or grounding-type plug. A polarized 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, stand, 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 tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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. No naked flames, such as lighted candles, should be placed on the apparatus.

The appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

Do not use a damaged or frayed power cord.

If the mains plug supplying the apparatus incorporates a fuse then it should only be replaced with a fuse of identical or lower rupture value.

GB The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

FIN Laite on liitettävä suojamaadoituskoskettimilla va rustettuumpistorasiaan

NOR Apparatet må tikoples jordet stikkontakt

SWE Apparatens skall anslutas till jordat uttag



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within 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 to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.

ENVIRONMENTAL DECLARATION

Compliance Information Statement: Declaration of Compliance procedure

Product Identification: Focusrite RedNet
Responsible party: American Music and Sound
Address: 4325 Executive Drive
Suite 300
Southaven
MS 38672
Telephone: 800-431-2609

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.

For USA

To the User:

- 1. Do not modify this unit!** This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Focusrite may void your authority, granted by the FCC, to use this product.
- 2. 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 authorization to use this product in the USA.
- 3. Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense

For Canada

To the User:

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

RoHS Notice

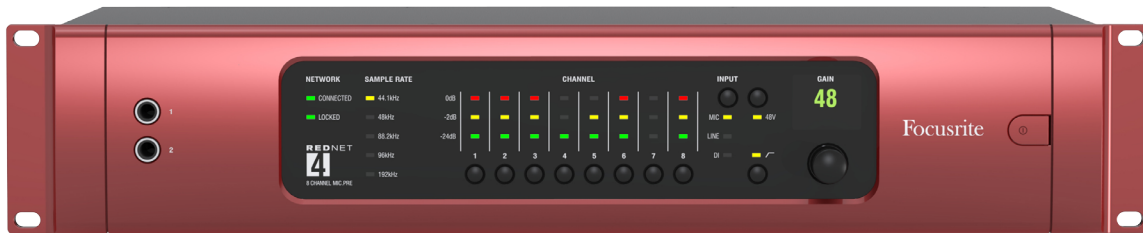
Focusrite Audio Engineering Limited has conformed where applicable, to the European Union's Directive 2002/95/EC on Restrictions of Hazardous Substances (RoHS) as well as the following sections of California law which refer to RoHS, namely sections 25214.10, 25214.10.2, and 58012, Health and Safety Code; Section 42475.2, Public Resources Code.

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INTRODUCTION

Thank you for purchasing this Focusrite RedNet 4.



RedNet 4 is a multichannel analogue mic/line preamplifier for use with a RedNet digital audio networking system.

RedNet is a powerful, low latency, digital audio networking system designed specifically for music, recording studio and broadcast applications. It 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 number of channels available in your DAW will depend on the host method being used.

In RedNet 4, Focusrite mic preamp technology is combined with 24-bit A-D conversion at sample rates of up to 192 kHz. It provides eight analogue inputs - each of which may be either microphone or line level - plus two front panel DI inputs. Each mic input has switchable 48 V phantom power and a high-pass filter, and pairs of channels may be ganged for stereo operation. As with other RedNet analogue interfaces, JetPLL™ technology and up to 119 dB of dynamic range are standard.

Mic preamp parameters, including analogue gain, can be controlled both from the front panel, or remotely via the Ethernet connection using RedNet Control software.

The inputs are electronically balanced, with the mic inputs on standard 3-pin XLR connectors and the line inputs on a 25-pin Dsub connector. Channels 1 and 2 can additionally be configured as DI inputs, for direct connection of instruments to ¼" jack sockets on the front panel.

The front panel has a rotary gain control with numeric display, eight channel select buttons and switches for mic/line/DI selection, phantom power and high-pass filter. It also has LEDs confirming network status, sample rate and per-channel signal level.

About this User Guide

This User Guide applies only to the RedNet 4 analogue interface. It provides information about installing a RedNet 4 and how to connect it into your studio system.

You will also find a copy of the RedNet System User Guide included with the unit. This Guide provides a detailed explanation of the RedNet system concept, to help you achieve a thorough understanding of its capabilities. We recommend that all users, including those already experienced in digital audio networking, take the time to read through the System User Guide so that you are fully aware of all the possibilities that RedNet and its software has to offer.

If either User Guide does not provide the information you need, be sure to consult www.focusrite.com/rednet, which contains a comprehensive collection of common technical support queries.

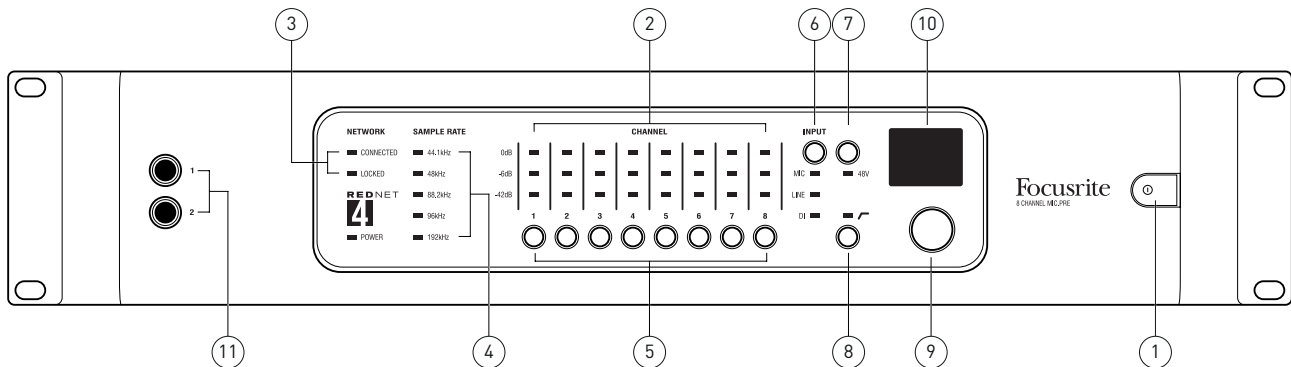
Box Contents

- RedNet 4 unit
- RedNet 4 User Guide (this manual)
- RedNet System User Guide
- 2 m Cat6 Ethernet cable
- IEC AC mains cable
- Product registration card with Bundle Code. Registration gives access to:
 - RedNet Control
 - RedNet drivers (installed with RedNet Control)
 - Audinate Dante Controller (installed with RedNet Control)
 - Dante Virtual Soundcard token and download instructions
 - RedNet 4 User Guide (this document) – PDF format
 - RedNet System User Guide – PDF format


INSTALLATION GUIDE

Unit connections and features

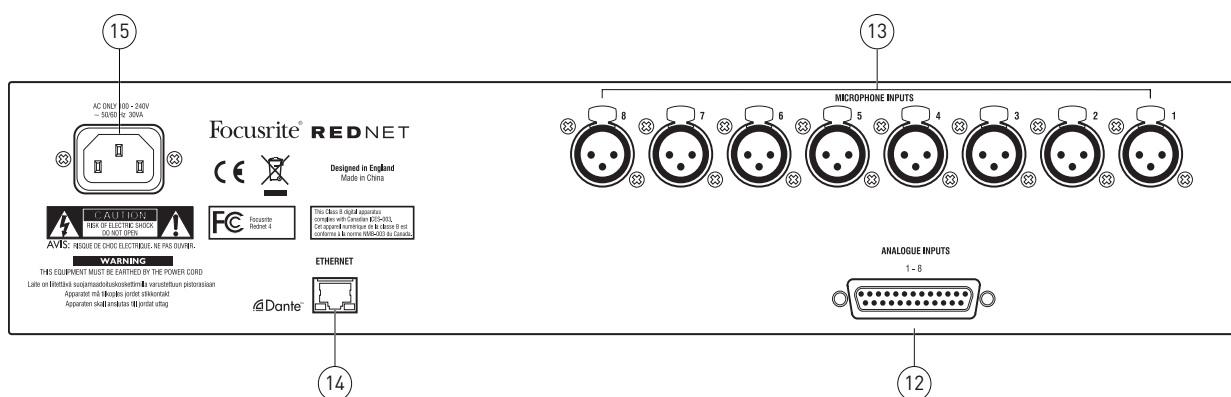
RedNet 4 - Front Panel



1. AC Power switch
2. Individual LEDs indicating signal level at each analogue input:
 - Green – signal level above -42 dBFS
 - Yellow – signal level above -6 dBFS
 - Red – signal level has reached 0 dBFS
3. **NETWORK** status flags – two green LEDs confirming network status:
 - **CONNECTED** – illuminates when the unit is connected to an active Ethernet network
 - **LOCKED** – illuminates when a valid clock sync is received via the network
4. **SAMPLE RATE** indication – five yellow LEDs; only one of these (**44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 192 kHz**) will be lit at a time, to confirm the sample rate that the system is running at.
5. **CHANNEL 1 – 8** select buttons – these push-buttons select the input channel whose settings are to be adjusted with the controls [6], [7], [8] and [9] described below. These settings can also be controlled from RedNet Control. The channel selected is confirmed on the OLED [10]. Note that it is also possible to link pairs of channels (1 & 2, 3 & 4, etc.) from RedNet Control, to facilitate the use of stereo sources. The two channels may have different gains if wished (useful if using MS mics), in which case the OLED displays the gain offset.
6. **INPUT** – this button scrolls through the input options for each channel – **MIC, LINE** or **DI** (Inputs 1 and 2 only). A yellow LED indicates the input selected.
7. **48V** – this button enables 48 V phantom power at the microphone input for the selected channel.

8.  – switches an (analogue) high pass filter into circuit in the selected channel. The filter has a -3 dB point of 75 Hz and a slope of 18 dB/octave.
9. **GAIN** – a rotary encoder which adjusts the gain of the input channel between 0 and +63 dB in MIC mode, -12 and +42 dB in LINE mode and +14 and +68 dB in DI mode. The gain is indicated by the OLED numeric display [10].
10. OLED display – indicates the channel currently selected for adjustment and gain setting.
11. DI Inputs **1** and **2** – two ¼” jack sockets for direct connection of musical instruments.

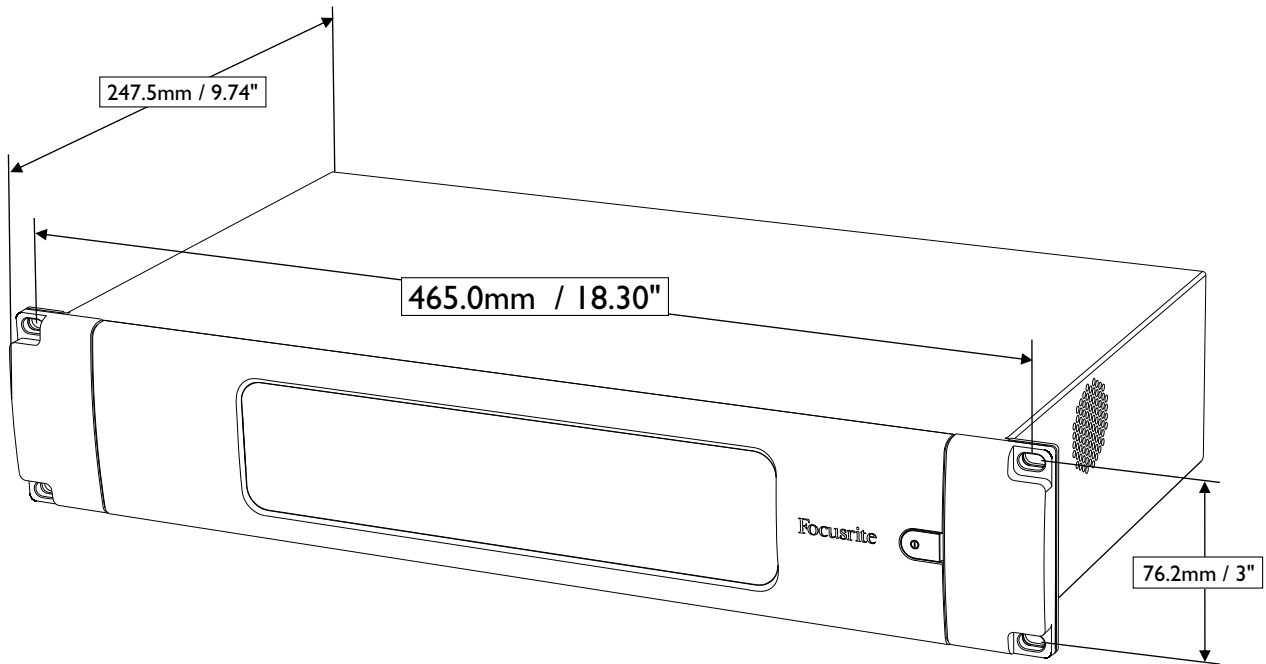
RedNet 4 - Rear Panel



12. **ANALOGUE INPUTS 1-8** – 25-pin female Dsub connector for connecting up to 8 line level sources to the RedNet system. All inputs are electronically balanced. See page 11 for connector details.
13. **MICROPHONE INPUTS 1-8** – eight 3-pin female XLR sockets for connecting microphones to the RedNet system via the built-in Focusrite mic preamps. All inputs are electronically balanced and each may have 48 V phantom power enabled. See page 12 for connector details.
14. **ETHERNET** – RJ45 network socket. Use a standard computer network cable to connect this socket to a local Ethernet switch to connect the RedNet 4 to the RedNet network. The socket has integral LEDs which illuminate to indicate connection to an active network port, and network activity. See page 12 for connector details.
15. AC mains – standard IEC receptacle for connection of AC mains. RedNet 4 has a 'Universal' PSU, enabling it to operate from any supply voltage between 100 V and 240 V.

Physical Characteristics

RedNet 4's dimensions are shown in the diagram below:



RedNet 4 requires 2U of vertical rackspace and at least 350 mm of rack depth, to allow for cables. RedNet 4 weighs 4.04 kg, and for installations in a fixed environment (e.g., a studio), the front panel mounting screws will provide adequate support. If the units are to be used in a mobile situation (e.g., flight-cased for touring, etc.), consideration should be given to using side support rails within the rack.

RedNet 4 generates no significant heat, and is normally cooled by natural convection, though an internal cooling fan is fitted. We recommend that the unit should not be used in locations where the ambient temperature is greater than 30°C. However, if this is unavoidable, the fan can be turned on and off from RedNet Control.

Ventilation is via slots in the enclosure at both sides. Do not mount RedNet 4 immediately above any other equipment which generates significant heat, for example, a power amplifier. Also, ensure that when mounted in a rack, the side vents are not obstructed.

Power requirements

RedNet 4 is mains-powered. It incorporates a 'Universal' power supply, which can operate on any AC mains voltage from 100 V to 240 V. The AC connection is made via a standard 3-pin IEC connector on the rear panel. A mating IEC cable is supplied with the unit, which should be terminated with a mains plug of the correct type for your country.

The AC power consumption of RedNet 4 is 30 VA.



Please note that there are no fuses in RedNet 4, or other user-replaceable components of any type. Please refer all servicing issues to the Customer Support Team (see "Customer Support and Unit Servicing" on page 15).

OTHER REDNET SYSTEM COMPONENTS

The RedNet hardware range includes various types of I/O interface and a PCIe digital audio interface card which is installed in the system's host computer. All the I/O units can be considered as "Break-Out" (and/or "Break-In") boxes to/from the network, and all are built in mains-powered, 2U 19" rackmounting housings. There are also three software items, RedNet Control (see below), Dante Controller and Dante Virtual Soundcard.

USING REDNET CONTROL

A virtual depiction of RedNet 4 will appear on-screen in RedNet Control when a unit is included in the active system.



Metering: per-channel bargraph meters are provided, scaled from -42 dBFS to 0 dBFS (scale is at left).

Gain: clicking on a rotary control and moving the mouse in the vertical plane adjusts the channel gain. The gain setting is displayed in dBs below the control, and can also be set by clicking in the text field and entering a value from the keyboard.

↗ – operates the channel's high-pass filter.

48V: selects phantom power at the channel mic input.

Input select: clicking this button opens a pop-up menu offering **Mic** or **Line** selection (Channels 3 to 8), or **Mic**, **Line** or **Instr** (Channels 1 & 2).

Channel linking: odd/even pairs of channels may be linked for stereo or dual channel operation. The OLED on the front panel confirms that linking is active. The channel gain may then be adjusted for both channels by either gain control. If the two channels have a different gain value to each other the word "Offset" will be displayed on the OLED, accompanied by the gain value of the channel which is selected.

Tools menu : allows the cooling fan to be turned on and off.

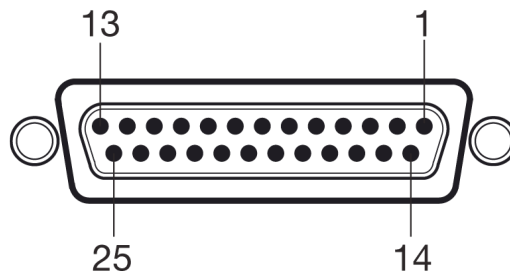
Channel naming: the default channel names are 01 to 08 (shown above the gain controls); clicking on the text field allows an alternative name to be entered with the keyboard.

APPENDIX

Connector pinouts

8-channel analogue line input connector

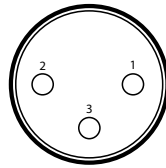
Connector type: 25-pin female Dsub
Applies to: ANALOGUE INPUTS 1-8



Pin	Signal		Pin	Signal
1	Ch 8 'hot' (+)		14	Ch 8 'cold' (-)
2	Ch 8 screen		15	Ch 7 'hot' (+)
3	Ch 7 cold (-)		16	Ch 7 screen
4	Ch 6 'hot' (+)		17	Ch 6 'cold' (-)
5	Ch 6 screen		18	Ch 5 'hot' (+)
6	Ch 5 cold (-)		19	Ch 5 screen
7	Ch 4 'hot' (+)		20	Ch 4 'cold' (-)
8	Ch 4 screen		21	Ch 3 'hot' (+)
9	Ch 3 cold (-)		22	Ch 3 screen
10	Ch 2 'hot' (+)		23	Ch 2 'cold' (-)
11	Ch 2 screen		24	Ch 1 'hot' (+)
12	Ch 1 cold (-)		25	Ch 1 screen
13	n/c			

Microphone inputs

Connector type: 3-pin female XLR
Applies to: MICROPHONE INPUTS

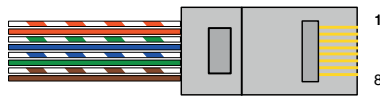


Rear (solder side) of mating male connector

Pin	Signal
1	Screen
2	Signal 'hot' (+)
3	Signal 'cold' (-)

Ethernet connector

Connector type: RJ-45 receptacle
Applies to: ETHERNET



Pin	Cat6 Core
1	White + Orange
2	Orange
3	White + Green
4	Blue
5	White + Blue
6	Green
7	White + Brown
8	Brown

Performance Specifications

Microphone Inputs	
Gain range	0 dB; 8 to 63 dB in 1 dB steps
Type	Classic ISA-based, electronically balanced, $Z_{in} = 2.4$ kohms
Max. input level	+16 \pm 0.5 dBu; min. gain for 0 dBFS, $R_s = 150$ ohms, pad out
Min. input level	-47 \pm 0.5 dBu; max. gain for 0 dBFS, $R_s = 150$ ohms, pad out
Frequency response	20 Hz – 55 kHz \pm 0.1 dB [-3 dB @ 80 kHz, $f_s = 192$ kHz]; $R_s = 150$ ohms
THD+N	< 0.0007% @ -1 dBFS; +15 dBu input, $R_s = 150$ ohms, 20 Hz – 22 kHz
Noise	EIN -128 dB; 60 dB gain, $R_s = 150$ ohms, 20 Hz – 22 kHz
Phantom power	48 V, independently switchable per-channel
Signal-to-noise ratio	119 dB 'A'-weighted; $R_s = 150$ ohms
Line Inputs	
Gain range	-12 to 42 dB in 1 dB steps
Max. input level	+24 \pm 0.5 dBu; min. gain for 0 dBFS
Min. input level	-30 \pm 0.5 dBu; max. gain for 0 dBFS
Frequency response	20 Hz – 20 kHz \pm 0.1 dB
THD+N	< 0.003% @ -1 dBFS; +23 dBu input, min.gain, 20 Hz – 22 kHz
Signal-to-noise ratio	117 dB 'A'-weighted
Instrument Inputs (Inputs 1 & 2 only)	
Gain range	+14 to 68 dB in 1 dB steps
Max. input level	+17 \pm 0.5 dBu; min. gain for 0 dBFS
Min. input level	-37 \pm 0.5 dBu; max. gain for 0 dBFS, pad out
Frequency response	20 Hz – 20 kHz \pm 0.1 dB
THD+N	< 0.001% @ -1 dBFS; +9 dBu input, min.gain, 20 Hz – 22 kHz
Signal-to-noise ratio	112 dB 'A'-weighted
Analogue High-Pass Filters	
Selection	Independently switchable per-channel
Frequency/slope	-6 dB @ 65 \pm 3 Hz, 12 dB/octave
Crosstalk	
Input to input	<-80 dB (all other channels at 0 dBFS)
Digital Performance	
Supported sample rates	44.1 / 48 / 88.2 / 96 / 192 kHz
Clock sources	Internal or from network master device

Power	
PSU	Internal, Universal type, consumption 30 VA
Front Panel Indicators	
Power	Green
Network connected	Green
Sync lock	Green
Sample rate	Yellow x 5
Channel 1/2 source	Yellow x 3 (mic/line/inst)
Signal level	Green x 8 (-42 dBFS); Yellow x 8 (-6 dBFS); Red x 8 (overload)
Channel select buttons	8
Channel function controls	Input source, HPF, phantom power, Gain encoder
Channel display	Colour OLED; channel number, input source, gain

Focusrite RedNet 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.

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

In the event of a Manufacturing Defect becoming evident in a product within 12 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: www.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. In the event that you are unable to 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 which 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

For technical support, please register your product at: www.focusrite.com/register

Customer Support and Unit Servicing

You can contact Focusrite Customer Support at:

Email: supportteam@focusrite.com

Phone (UK): +44 (0)1494 462246

Phone (USA): +1 (310) 322-5500

Troubleshooting

If you are experiencing problems with your RedNet 4, we recommend that in the first instance, you visit our Support Answerbase at: www.focusrite.com/answerbase

