Scarlett Studio

User Guide

Focusrite®

www.focusrite.com
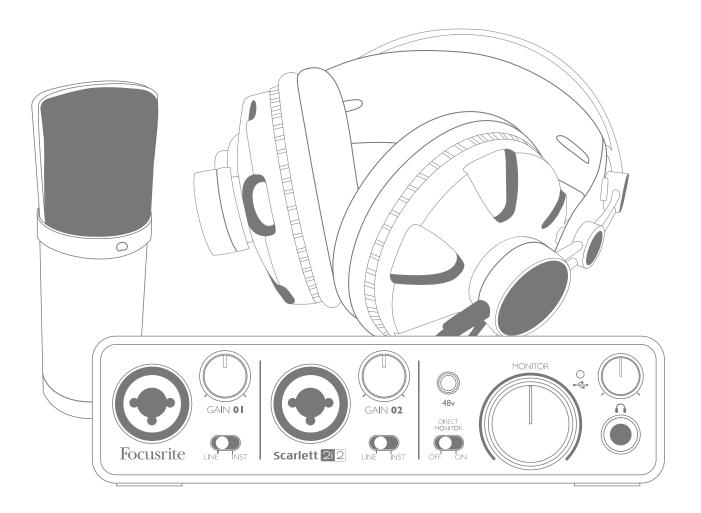
IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus with water.
6. Clean only with dry cloth.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Only use attachments/accessories specified by the manufacturer.
10. 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.

11. Unplug this apparatus during lightning storms or when unused for long periods of time.
12. 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.
13. No naked flames, such as lighted candles, should be placed on the apparatus.

WARNING: Excessive sound pressure levels from earphones and headphones can cause hearing loss.

WARNING: This equipment must only be connected to USB 2.0 type ports.

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.

ENVIRONMENTAL DECLARATION

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Compliance Information Statement: Declaration of Compliance procedure

Product Identification:	Focusrite Scarlett 2i2
Responsible party:	American Music and Sound
Address:	5304 Derry Avenue #C
	Agoura Hills,
	CA 91301
Telephone:	800-994-4984

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.

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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 Novation 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 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 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For Canada

To the User:

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

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

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RoHS Notice

Focusrite Audio Engineering Limited has conformed and this product conforms, 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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OVERVIEW

Introduction

Thank you for purchasing the Scarlett Studio package, part of the range of Focusrite professional computer audio interfaces incorporating high quality, Focusrite analogue pre-amplifiers. You now have a simple, compact and complete solution for recording with a microphone or directly from instruments, by routing high quality audio to and from your computer.

This User Guide provides a detailed explanation of the components to help you achieve a thorough understanding of the Scarlett 2i2's operational features. We recommend that whether you are new to computer recording or a more experienced user, you should take the time to read through the user guide so that you are fully aware of all the possibilities that the Scarlett Studio components and accompanying software has to offer. If the main User Guide sections do not provide the information you need, be sure to consult http://www.focusrite.com/answerbase, which contains a comprehensive collection of answers to common technical support queries.

Features

The Scarlett Studio package comprises a Scarlett 2i2 computer audio interface, a Scarlett Studio CM25 studio quality condenser microphone, a pair of Scarlett Studio HP60 reference quality headphones and all the necessary software – including Steinberg's Cubase LE - to get you started with recording great audio on your computer as quickly as possible.

The Scarlett 2i2 hardware interface is the key component in the Scarlett Studio system; this provides the means of connecting the CM25 (or other) microphone, musical instruments or line level audio signals to a computer running Mac OS or Windows. The signals applied at the 2i2's physical inputs can be routed to Cubase LE or other recording software via a USB connection. Similarly, the recording software's monitor or recorded output will appear at the 2i2's physical outputs. (Note - computer audio recording software is frequently referred to as a "Digital Audio Workstation", or "DAW", and the term "DAW" is used throughout this user guide.)

Audio sources – mics, instruments, etc. - connected to the 2i2's physical inputs can be recorded in the DAW and then routed from your DAW to the physical outputs. The 2i2's various physical outputs can be connected to the HP60 headphones, or if you wish, to an amplifier and speakers, powered monitors, analogue mixer or any other analogue audio equipment that you wish to use. Although all inputs and outputs on the Scarlett 2i2 are routed directly to and from your DAW for recording and playback, you can configure the routing within your DAW in order to meet your needs.

Box Contents

You should find that your Scarlett Studio package comprises:

- Scarlett 2i2 computer audio interface
- Scarlett Studio CM25 condenser microphone
- Scarlett Studio HP60 headphones
- Resources DVD containing:
    - Cubase LE 6 recording software
    - USB Drivers for Mac and Windows
- Red XLR microphone cable (3 m)
- USB cable
- "Getting Started Guide"
- "Download Your Software" online registration card

System requirements

Mac OS

Apple Macintosh with a high-speed USB 2.0-compliant USB port
      OS: Mac OS X 10.7 or later
      DVD drive

Windows

Windows compatible computer with a USB 2.0-compliant USB port
      OS: Windows 7 (all versions) or Windows 8 (excluding Windows 8 RT)
      DVD drive

GETTING STARTED

> **IMPORTANT** - PLEASE ENSURE THAT YOU INSTALL THE SCARLETT 2i2 DRIVERS BEFORE CONNECTING THE INTERFACE TO YOUR COMPUTER.

Software Installation

We aim to ensure that the latest installation software will be on the disk included with your Scarlett 2i2. However we strongly recommend that you check for any later version on our website at www.focusrite.com/downloads before performing the software installation.

The registration card ("Download your Software") included with the Scarlett 2i2 enables you to download the latest installers from the Focusrite website.

Mac OS

1. Insert your installer disk into your computer's DVD-ROM drive.
2. A window should appear displaying the contents of the disk. If this window does not appear automatically, you can manually navigate to the disk using Mac OS Finder.
3. Locate the file `Focusrite USB 2 Driver.pkg`; double-click its icon to begin the installation.
4. Follow the on-screen instructions to perform the installation.
5. When the installation is complete, you will be prompted to restart your computer.
6. After restart, connect the Scarlett 2i2 to your computer.

Your OS should automatically switch the computer's default audio outputs to be the USB port to which the Scarlett 2i2 is connected. To verify this, go to `System Preferences > Sound`, and ensure that the input and output are set to `Scarlett 2i2`. For more detailed setup options on a Mac, open `Applications > Utilities > Audio MIDI Setup`.

Windows Installation

1. Insert your installer disk into your computer's DVD-ROM drive.
2. A window should open displaying the contents of the disk. If this window does not appear automatically, you can manually navigate to the disk using Windows Explorer.
3. Identify the file `Focusrite USB 2 Driver.exe`; double-click its icon to begin the installation.
4. Follow the on-screen instructions to complete the installation.
5. When the installation is complete, restart your computer.
6. After restart, connect the Scarlett 2i2 to your computer.

Your OS should automatically switch the computer's default audio outputs to be the USB port to which the Scarlett 2i2 is connected. To verify this:

- on Windows 7 - go to `Start > Control Panel > Hardware and Sound > Sound > Manage Audio Devices` and ensure that '`Default Playback`' and '`Recording`' are set to '`Scarlett 2i2`'.
- on Windows 8 - navigate to `Control Panel`, and then select `Hardware and Sound > Sound > Manage Audio Devices` and ensure that '`Default Playback`' and '`Recording`' are set to '`Scarlett 2i2`'.

Connecting your Scarlett 2i2

> **IMPORTANT:** Before you connect the Scarlett 2i2 to your computer, please complete the software installation according to the instructions above. This will ensure that the hardware uses the correct drivers, and will prevent unexpected behaviour.

The Scarlett 2i2 has a single USB 2.0 port (on the rear panel). Once the software installation is complete, simply connect the Scarlett 2i2 to your computer using the USB cable provided. (Note that Scarlett 2i2 is a USB 2.0 device and thus the USB connection requires a USB 2.0-compliant port on your computer. It will not operate correctly with USB 1.0/1.1 ports.)

Audio Setup in Cubase LE (or your other DAW)

The Scarlett 2i2 is compatible with any Windows-based DAW that supports ASIO or WDM and any Mac-based DAW that uses Core Audio. After installing the drivers and connecting the hardware, you can start using the Scarlett 2i2 with the DAW of your choice. Steinberg Cubase LE is included on the Scarlett 2i2 Resources DVD to allow you to get started if you do not already have a DAW application installed on your computer. To install Cubase LE, locate the file `Start Center` on the DVD, double-click it and follow the on-screen instructions. Operating instructions for Cubase LE are beyond the scope of this User Guide, but the application includes a full set of Help files.

Please note – Cubase LE may not automatically select the Scarlett 2i2 as its default I/O device. In this case, you must manually select the driver on Cubase's `Device Setup*` page (`Devices menu > Device Setup > VST Audio System`). Select `Scarlett 2i2 USB` driver for Mac or `Focusrite USB 2.0` driver for Windows. Please refer to your DAW's documentation (or Help files) if you are unsure where to select the ASIO/Core Audio driver. The following example shows the correct configuration in the Cubase LE `Device Setup` pane (Mac version shown).

*Typical name. Terminology may differ slightly between DAWs.

Once the Scarlett 2i2 driver is selected, Inputs 1 & 2 and Outputs 1 & 2 will appear in your DAW's Audio I/O preferences. Depending on your DAW, you may need to enable certain inputs or outputs before use. The example below shows Inputs 1 & 2 and Outputs 1 & 2 enabled in Cubase LE Device Setup.
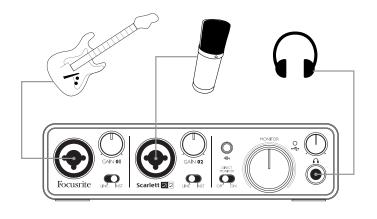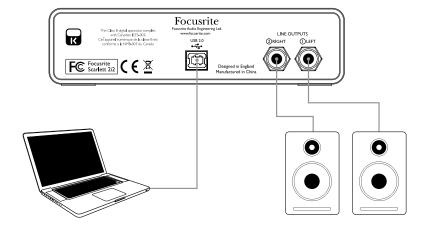

*Typical name. Terminology may differ slightly between DAWs.

Example of Usage

The Scarlett 2i2 is an excellent choice for several different recording and monitoring applications. Some typical configurations are shown below.

Connecting a microphone or instrument

This setup illustrates the most typical configuration for recording with the DAW on your Mac or PC. In this case, you might record guitar through Input 1 and vocals through Input 2 into Cubase LE, while monitoring the DAW playback via headphones or loudspeakers.

The front panel input sockets are Neutrik Combo® type, which accept either an XLR male connector (you will find one on the end of the microphone cable supplied) or a ¼" (6.35 mm) jack plug. Note the Scarlett 2i2 has no "Mic/line" switch – the Focusrite preamplifier stage is automatically configured for a microphone when you plug an XLR into the input, and for a line or instrument when you connect a jack plug. Set the LINE/INST switch next to the socket to INST if you are connecting a musical instrument (a guitar in the example) via an ordinary 2-pole (TS) guitar jack, or to LINE if you are connecting a line level source such as the balanced output of a stage piano via a 3-pole (TRS) jack. Note the Combo connector accepts both TRS and TS types of jack plug.

Recording with a microphone

The Scarlett Studio CM25 microphone supplied with Scarlett Studio is a studio quality condenser mic which is ideal for recording vocals and most acoustic instruments. Connect the CM25 to one of the Scarlett 2i2's two front panel inputs with the cable supplied. Note that the cable has a male and a female connector; the female end connects to the microphone and the male end into the Scarlett 2i2.

Condenser microphones (also sometimes referred to as "capacitor" microphones) require a source of DC power to operate. This is almost always supplied by "phantom" powering from the mic pre-amp to which the mic is connected (early and special-purpose condenser mics might have a separate power supply). For the CM25 (or any other condenser mic) to work with the Scarlett 2i2, press the **48V** button on the front panel (see front panel diagram on page 14, item [3]). We recommend that you follow the following sequence:

- Turn the input gain [2] to minimum
- Connect the microphone
- Press the **48V** button
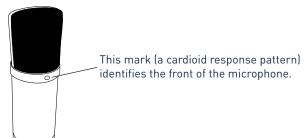- Increase the input gain to the required level

Enabling the Scarlett 2i2's phantom power applies 48 V DC to the XLR portion of BOTH inputs. If you are only using a single microphone, do not plug anything else (like the balanced output of another item of equipment) into the other input with an XLR connector. Applying 48 V to the output circuitry of other equipment may permanently damage it. The other input is perfectly safe to use with a TRS jack plug.

Microphone Dos and Don'ts

A guide to microphone technique is beyond the scope of this User Guide (though many excellent books on the subject are available), but if you are new to recording with a studio quality microphone, you need to observe a few golden rules.

DO use a mic stand. The CM25 has an industry-standard 5/8" threaded insert which allows it to be mounted on most mic stands. An 3/8" adaptor is included to allow it to be fitted to mic stands that have this thread size. Inexpensive short, long and boom stands are readily available from music stores.

DO observe the microphone's orientation. The CM25 has a cardioid response pattern; this basically means that it has a "front" and a "back", and if you point it the wrong way round, it will sound odd. The front of the CM25 is identified by presence of the Scarlet CM25 logo.

This mark (a cardioid response pattern) identifies the front of the microphone.

DON'T ignore the room acoustics. You probably won't have the luxury of a recording studio's perfect acoustics. Be aware of how reverberant the room is. Reverberation is neither good nor bad, but frequently inappropriate! Some instruments will benefit from being recorded in a reverberant space, others won't. A "dead" acoustic is generally better than a "live" one, because reverberation can be added electronically in the recording process, but room reverberation on the recording can't be removed.

DON'T blow into a microphone to test it! Lightly rub or scratch the grille instead.

DO experiment with microphone placement. Remember you will not only be recording the vocal or instrument, but the effect of the microphone position relative to the voice or instrument as well, and this will be affected by the room acoustics. Moving the mic around, and trying recordings at different distances and angles to the source will produce different sounding results, some of which will be better than others.

DO use the CM25 to mic up a guitar amplifier if you want to include the contribution to the sound that the amplifier makes. But be aware that very high sound levels can be produced very close to the loudspeaker, and if you need high volume, you may get a better result by moving the mic away from the amplifier. Also, be aware that you will get a subtly different sound if you point the mic at the centre of the loudspeaker cone compared to the edge.

DON'T forget that a microphone is utterly unforgiving – it will not only pick up what you are trying to record, but any other sound source in the room, like a clock, the aircon, heating, or a chair creaking. You know how you take those holiday photos of a great bit of scenery and it's only when you look at the pictures later that you see the power cables right across the view? It's the same with recording. You might not notice extraneous sounds at the time, but the mic will and you'll hear them on the recording. To remove any unwanted low frequency rumble, it is advisable that the High Pass Filter (HPF) on your DAW channel is enabled.

Using Direct Monitoring

You will frequently hear the term "latency" used in connection with digital audio systems. In the case of the simple DAW recording application described above, latency is the time it takes for your input signals to pass through your computer and audio software. Latency can be a problem for a performer who wishes to record while monitoring their input signals.

The Scarlett 2i2 is fitted with a "Direct Monitoring" option, which overcomes this problem.
Setting the front panel "Direct Monitor" switch to ON will route your input signals directly to the Scarlett 2i2's headphone and main monitor outputs. This enables you to hear yourself with zero latency – i.e., in "real time" – along with the computer playback. The input signals to your computer are not affected in any way by this setting.

When "Direct Monitoring" is set to ON, ensure that Cubase LE (or other DAW) is not set to route its input (what you are currently recording) to its output. If it is, you will hear yourself twice, with one signal audibly delayed as an echo.

Connecting Scarlett 2i2 to headphones

The Scarlett Studio package includes a pair of high quality headphones, the Scarlett Studio HP60. They are lightweight and durable, and should prove comfortable to wear for extended periods. The headband is adjustable.
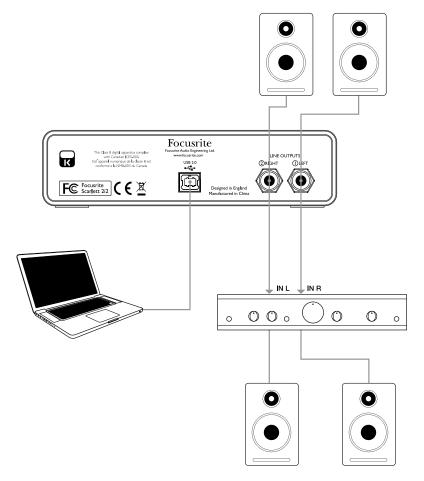
The HP60 headphones have a low noise, oxygen-free copper cable, fitted with a ¼" (6.35 mm) 3-pole (TRS) jack plug. This should be connected to the socket at the right hand side of the Scarlett 2i2 front panel (indicated by a ⌒ symbol). The Scarlett 2i2's headphone output is, of course, suitable for use with other models of headphones.

The volume in the headphones can be adjusted by the rotary control immediately above the socket.

⚠ Please be aware that headphones are capable of generating very high sound pressure levels at the ear; prolonged exposure to high sound levels may impair your hearing. Never turn headphones volume up any further than necessary.

Connecting Scarlett 2i2 to loudspeakers

The 1/4" jack outputs on the rear panel can be used to connect monitoring speakers. Self-powered monitors (i.e., typical computer speakers) incorporate internal amplifiers, and may be connected directly. Larger, passive loudspeakers will require a separate stereo amplifier; in this case, the rear panel outputs should be connected to the amplifier's inputs.
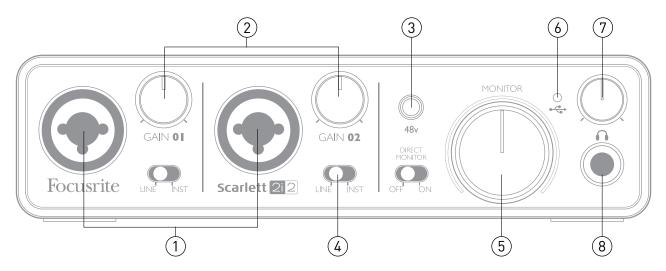
The line output connectors are 3-pole (TRS) ¼" (6.35 mm) jack sockets, and are electronically balanced. Typical consumer (hi-fi) amplifiers and small powered monitors will have unbalanced inputs, either on phono (RCA) sockets, or via a 3.5 mm 3-pole jack plug intended for direct connection to a computer. In either case, use a suitable connecting cable with jack plugs at one end.

Professional power amplifiers will generally have balanced inputs.
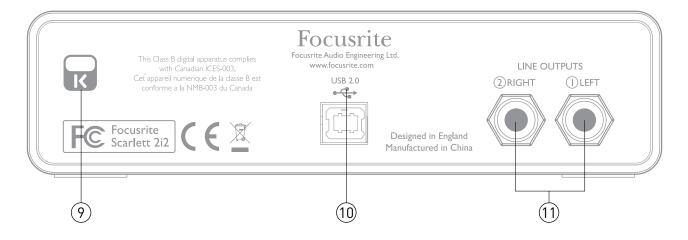
HARDWARE FEATURES

Front Panel

The Front Panel includes the input connectors for Mic, Line and Instrument signals, as well as the input gain and monitoring controls.

1. **Inputs 1 & 2** – Neutrik Combo® input sockets - connect microphones, instruments (e.g., guitar) or line level signals via XLR or ¼" (6.35 mm) jacks as appropriate.

2. **Gain 01** and **Gain 02** - adjust the input gain for input signals on inputs 1 and 2 respectively. The gain controls have concentric bi-colour LED rings to confirm signal level: green indicates an input level of at least -24 dBFS (i.e., 'signal present'), the ring then turns red when signal level reaches 0 dBFS (i.e., input clipping).

3. **48V** - phantom power switch for mic inputs - enables +48 V phantom power at the XLR contacts of both Combo connectors. The CM25 microphone supplied with the Scarlett Studio package requires phantom power.

4. **LINE/INST** - Line / Instrument level switches for each input – switches gain to suit instrument or line level signals.

5. **MONITOR** - main monitor output level control - sets the output level at the main (rear panel) outputs 1 & 2.

6. **USB LED** - illuminates when the unit receives USB bus power and is recognised by the host computer.

7. **Headphone level** - adjusts the output level at the front panel stereo headphone output.

8. **Headphone socket** - ¼" TRS output jack - connect your stereo headphones here.

Back Panel

9. **Kensington security lock** – secure your Scarlett 2i2 to a suitable structure if desired.

10. **USB 2.0 port** – Type B connector; connect to your computer with cable supplied.

11. **Line outputs** - 2 x ¼" (6.35 mm) TRS jack sockets; +4 dBu output level.

Either ¼" TRS (balanced) or TS (unbalanced) jack plugs can be used.

SPECIFICATIONS

Performance Specifications

A-D dynamic range	105 dB 'A-weighted' (all inputs). Converter chipset A-D dynamic range 114 dB
D-A dynamic range	Range 104 dB 'A-weighted' (all outputs). Converter chipset D-A dynamic range 114 dB
Supported sample rates	44.1 kHz, 48 kHz, 88.2 kHz and 96 kHz
Microphone Inputs 1 & 2	
Frequency response	20 Hz - 20 kHz +/-0.1 dB
Gain range	+ 10 dB to + 55 dB
THD+N	0.002% (minimum gain, -1 dBFS input with 20 Hz - 22 kHz filter)
Noise EIN	120 dB: measured at 55 dB of gain with 150 ohm termination (20 Hz - 22 kHz filter)
Input impedance	2 kohm
Line Inputs 1 & 2	
Frequency response	20 Hz - 20 kHz +/-0.1 dB
Gain range	-10 dB to +35 dB
THD+N	0.002% (measured with -1 dBFS input and 22 Hz - 22 kHz filter)
Noise	-90 dBu (22 Hz - 22 kHz filter)
Input impedance	10 kohm
Instrument Inputs 1 & 2	
Frequency response	20 Hz - 20 kHz +/-0.1 dB
Gain range	+10 dB to +55 dB
THD+N	0.005% (measured with -8 dBu input and 20 Hz - 22 kHz filter)
Noise	-87 dBu (20 Hz -22 kHz filter)
Line Outputs 1 & 2	
Maximum output level (0 dBFS)	10 dBu, balanced
THD+N	0.001% (measured with 0 dBFS input and 22 Hz - 22 kHz filter, unweighted)

Physical and Electrical Characteristics

Analogue Inputs 1 & 2	
Connectors	Neutrik XLR Combo: Mic/Line/Inst (Inputs 1-2) on front panel
Mic/Line switching	Automatic
Line/Instrument switching	2 x front panel switches
Phantom power	Shared +48 V phantom power switch for inputs 1 & 2
Analogue Outputs	
Main outputs	2 x balanced ¼" TRS jacks on rear panel (Main outputs)
Stereo headphone output	¼" TRS jack on front panel
Main output level control	On front panel
Headphones level control	
Other I/O	
USB	1 x USB 2.0 Type B connector
Front Panel Indicators	
USB power & connected	LED
Gain controls	Colour-coded LED rings
Weight and Dimensions	
W x H x D	175 mm x 45 mm x 100 mm
Weight	0.5 kg

Scarlett Studio CM25 Microphone Specifications

Capsule	
Type	20 mm dia. condenser element
Response type	Cardioid
Mounting	Standard 5/8" female; 3/8" adaptor supplied
Performance	
Frequency response	30 Hz - 20 kHz
Sensitivity	-36 dB ±2 dB (0 dB = 1 V/Pa)
Self noise	18 dBA
Maximum SPL	130 dB (1 kHz)
S/N ratio	76 dB (A-weighted)
Impedance	150 ohms
Power	Via 48 V phantom supply

Scarlett HP60 Headphones Specifications

Type	Closed
Driver diameter	53 mm
Impedance	60 ohms
Sensitivity SPL	94 dB ±3 dB
Frequency response	10 Hz - 30 kHz
Max. power rating	1.2 W
Cable length	3 m (approx.)
Connectors	3.5 mm / 6.35 mm dia. (via adaptor)
Weight	280 g (inc. cable)

TROUBLESHOOTING

For all troubleshooting queries, please visit the Focusrite Answerbase at www.focusrite.com/answerbase where you will find articles covering numerous troubleshooting examples.

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