

Clarett OctoPre

User Guide

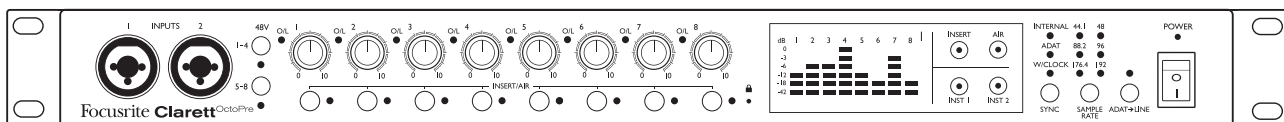


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OVERVIEW

Introduction

Thank you for purchasing a Clarett OctoPre, an eight channel mic-pre expansion unit incorporating high quality Clarett analogue pre-amplifiers with the unique Focusrite AIR function, plus send-and-return insert points on each channel. As well as offering purely analogue operation for stand alone live use, the Clarett OctoPre includes both A-to-D and D-to-A conversion, providing a perfect solution for expanding your input and output capabilities via ADAT for recording.

This User Guide provides a detailed explanation of the hardware to help you achieve a thorough understanding of the product's operational features. We recommend that you take the time to read through the Guide, whether you're new to professional audio or a more experienced user, so that you are fully aware of all the possibilities the Clarett OctoPre has to offer.

If the User Guide sections do not provide the information you need, be sure to consult <https://support.focusrite.com>, which contains a comprehensive collection of answers to common technical support queries.

Features

The Clarett OctoPre is an eight-channel pre-amplifier for use with microphone, line and instrument input signals. It converts the inputs into multi-channel, 24-bit digital audio at sample rates up to 192 kHz. Both analogue and digital outputs are provided: the digital outputs are in ADAT format on optical TOSLINK connectors, which can be easily routed to ADAT inputs on your studio recording system, or any other ADAT-equipped interface using optical cables. The Clarett OctoPre can transmit and receive eight channels of audio at sample rates of 44.1, 48, 88.2, or 96 kHz, or four channels at 176.4 or 192 kHz.

A switchable analogue INSERT function is provided on each input channel to permit the connection of external processors such as compressors or noise gates.

The OctoPre is an ideal "expansion" unit for adding eight more inputs to an existing audio interface such as other members of the Focusrite Clarett range.

The Clarett OctoPre is a bidirectional unit: it is also equipped with ADAT format digital inputs and balanced analogue outputs. It incorporates an ADAT-to-LINE mode, making it the perfect interface for routing tracks from your DAW to an analogue mixing console.

The Clarett OctoPre can be easily synchronised with other items of digital audio equipment in your studio, either as a slave to an external word clock signal, or by acting as the master clock source itself.

An important feature of all models in the Clarett range is the new design of analogue preamplifier. In addition to their class-leading dynamic range and ability to provide all the gain you're ever likely to need, the circuitry now includes the Focusrite AIR function. Individually selectable on each channel, AIR subtly modifies the pre-amp's frequency response to model the impedance and resonance characteristics of Focusrite's classic transformer-based ISA mic preamps. When recording with good quality microphones, you will notice an enhanced clarity and definition in the important mid frequency range, just where it is most needed for vocals and many acoustic instruments.

Box Contents

Along with your Clarett OctoPre you should have:

- AC mains cable with IEC connector
- User Guide (English)

Hardware Features

Front Panel

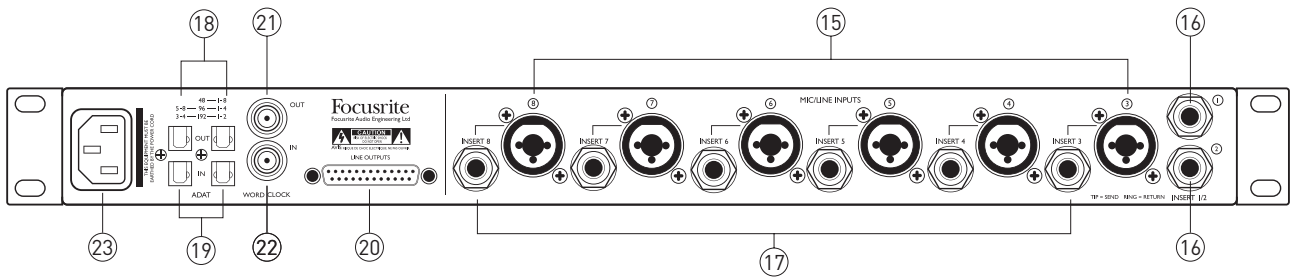


The front panel includes all operational controls, metering for all channels and two input sockets for mic, line or instruments.

1. **INPUTS 1 & 2** – 2 x “Combo XLR” input sockets for Channels 1 and 2 - connect microphones or line level signals via XLR or ¼” jacks: either TRS (balanced) or TS (unbalanced) jack plugs can be used for instruments or line level signals. Note that the inputs for Channels 3 to 8 are on the rear panel [15].
2. **INST 1 & INST 2** – two latching switches put Inputs 1 and 2 into “Instrument” mode. When INST is selected, the gain range and input impedance are altered (relative to LINE), and the input is made unbalanced. This optimises it for the direct connection of instruments via a 2-pole (TS) jack plug. When INST is off, the inputs are suitable for the connection of line level signals. Line level signals may be connected either in balanced form via a 3-pole (TRS) jack or unbalanced, via a 2-pole (TS) jack. Each switch has an internal red LED to confirm selection.
3. **48V (1-4 & 5-8)** – two latching switches, each enabling 48 V phantom power at the XLR contacts of four inputs: Channels 1 to 4 and 5 to 8 respectively. Each switch has an associated red LED indicating that phantom power is selected.
4. Input gain controls **1 to 8** – eight rotary controls: adjust the input gain for the signals in Channels 1 to 8 respectively.
5. **O/L** – each input channel has a red “overload” LED; this illuminates when the signal level reaches +19.5 dBu. Always adjust signal level so that the LED does not illuminate: this will avoid clipping.
6. **INSERT/AIR** –one “soft” switch per channel, which enables either the rear panel insert point for the channel, or the channel’s AIR function, depending on the setting of the **INSERT** and **AIR** master switches [8]. Each switch has an associated bicolour LED, which illuminates green when INSERT is selected or yellow when AIR is selected.

7. Input signal level meters: eight LED bargraphs, one per channel. Segments indicate -42, -18 & -12 dBFS (green), -6 & -3 dBFS (yellow) and 0 dBFS (red). Input signals are metered post the input gain controls, so you can see the levels being sent to the digital outputs.
8. **INSERT** and **AIR** function master switches: two soft switches with internal LEDs (INSERT = green, AIR = yellow) which determine the function of the per-channel **INSERT/AIR** switches [6].
9. **SAMPLE RATE** – a soft switch which steps through the six available sample rate settings, the current rate being indicated by one of the adjacent green LEDs. The sample rate in use is stored in memory so that it is retained when the unit is switched off.
10. **SYNC** – a soft switch which steps through three available digital sync sources (Internal, ADAT or Word clock), the current source being indicated by one of the adjacent red LEDs. The source in use is stored in memory so that it is retained when the unit is switched off.
11. **🔒** – a green “Locked” LED which illuminates when the unit has locked to the available sync source, indicating that it is ready to use.
12. **ADAT > LINE** – this soft switch modifies the operating mode of the unit. When not selected, Channels 1 to 8 feed both the rear panel **LINE OUTPUT** connector (analogue) and the ADAT ports (digital). When ADAT > LINE mode is selected, the **LINE OUTPUT** connector provides an 8-channel analogue version of the incoming digital audio at the ADAT input ports instead. The adjacent red LED confirms that this mode is active. In this mode, the analogue inputs (Channels 1 to 8) remain routed to the ADAT digital outputs. The mode in use is stored in memory so that it is retained when the unit is switched off.
13. **POWER** – AC power switch and green LED.
14. Rack ears for mounting the Clarett OctoPre in a standard 19” equipment rack.

Rear Panel



The remainder of the Clarett OctoPre's inputs and outputs are on the rear panel.

15. **INPUTS 3 to 8** – 6 x “Combo XLR” connectors; note that the inputs for Channels 3 to 8 do not have INST mode, but are otherwise identical to those for Channels 1 and 2.
16. **INSERTS 1 & 2** – two ¼” TRS jack sockets, providing an access point for connecting external processing equipment into Channels 1 and 2. The inserts are enabled by the front panel **INSERT/AIR** switches [6] and [8], and are unbalanced. The sockets are wired as follows:

Jack contacts	Function
Tip	Return (input)
Ring	Send (output)
Sleeve	Ground

Note that the front panel **O/L** LED [5] monitors signal level pre the insert send so that excessive signal level is not sent to external equipment.

17. **INSERTS 3 to 8** – 6 x ¼” TRS jack sockets providing the insert points for Channels 3 to 8; these are electrically identical to [16].
18. **OPTICAL OUT** – two TOSLINK connectors providing the digital outputs of the unit. Utilisation of the two connectors is sample rate-dependent, as follows:

Sample Rate	OUTPUT 1 (RH port)	OUTPUT 2 (LH port)
44.1/48 kHz	Channels 1 to 8	Channels 1 to 8
88.2/96 kHz	Channels 1 to 4	Channels 5 to 8
176.4/192 kHz	Channels 1 & 2	Channels 3 & 4

19. **OPTICAL IN** – two TOSLINK connectors providing the digital inputs to the unit when used in the ADAT > LINE mode. Note that these are NOT “digital” inputs to Channels 1 to 8, and signals applied at these ports do not pass through the AIR circuitry, nor are available at the inserts. Utilisation of the two connectors is sample rate dependent, as [18].

20. **LINE OUTPUTS 1 to 8** – eight balanced analogue line outputs on a 25-pin female D-sub connector. This connector is always active, and normally carries the outputs of Channels 1 to 8, enabling the Clarett OctoPre to be used as a stand-alone, high quality 8-channel analogue mic pre. In ADAT > LINE mode, the connector carries the signals applied at the **OPTICAL IN** ports [19]. The pinout of the connector follows the common “Tascam” standard for 8-channel analogue interfaces:

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

21. **WORD CLOCK OUT** – a BNC connector carrying the Clarett OctoPre’s word clock; this may be used to synchronise other digital audio equipment forming part of the recording system. The source of sample clock synchronisation is selected by the **SYNC** switch [10].
22. **WORD CLOCK IN** – a BNC connector for the connection of an external word clock signal; select by setting **SYNC** to WORD. Use this input if you have a master reference clock which provides synchronisation for all the digital audio devices in your studio.
23. AC mains – standard IEC receptacle. The Clarett OctoPre is fitted with a “Universal” power supply, and will run from any AC mains voltage from 100 to 240 V, at 50 or 60 Hz.

Using the Clarett OctoPre

Combo Inputs

All eight of the analogue inputs use “Combo XLR” connectors. These can accept male XLR connectors, TS (unbalanced) ¼” jacks or TRS (balanced) ¼” jacks.

When an XLR connector is used, the pre-amp automatically configures gain and impedance to receive microphone level signals. If a ¼” plug is used, the pre-amp is able to accept balanced or unbalanced line level signals. When INST mode is selected (on Channels 1 or 2), the 1/4” input reconfigures again to optimise for an unbalanced, high impedance signal.

Pre-amp Gain

The **GAIN** of each channel should be adjusted to suit the incoming level. Obviously “hotter” sources will need a lower gain setting. Always use the LED meters to check the signal level on each channel.

Start with the **GAIN** control set to minimum. Ask the performer to play at the loudest level required by the song, and gradually increase the gain until the meter shows orange (-3 dB). Then lower the gain by a few dB. This should ensure that the signal level is unlikely to ever reach red (0 dB) and overload the A-to-D converter, which would result in distortion.

Note that the high headroom pre-amplifier design used in the Clarett range means that a switchable Pad is unnecessary. (See “Performance Specifications” on page 16 for input sensitivity specifications.)

The red **O/L** LED should never illuminate; if it does, the gain is set too high.

Phantom Power

The two **48V** switches apply 48 V phantom power to Mic inputs 1 to 4 and 5 to 8 respectively. Phantom power is required by most condenser (capacitor) microphones, and also active ribbon microphones. Phantom power is only applied to the XLR contacts of the Combo connectors: thus if a group of four inputs is being used for both mic and line (or instrument) level signals, phantom power is only applied to the microphones.

Dynamic microphones do not require phantom power, but most will operate normally with phantom power supplied. Passive ribbon microphones do not require phantom power and may be damaged if supplied with phantom power.

If you are unsure about a microphone’s type, DO NOT apply phantom power without checking the manufacturer’s specifications first.

Line Outputs

By connecting the line outputs of the Clarett OctoPre to the analogue line inputs of a mixing console (or any other device), the unit can be used either as a purely analogue, 8-channel microphone pre-amplifier, or as an analogue “break-out box” for ADAT signals when in ADAT > LINE mode.

The outputs are balanced; see [20] on page 7 for the pinout. Ready-made D25-to-XLR or D25-to-jack breakout cables are available from professional audio suppliers. The maximum output signal level is +16 dBu.

Digital Outputs

Use the **OPTICAL OUT** ADAT port(s) [18] to connect the Clarett OctoPre to the ADAT input(s) of an audio device using TOSLINK optical cable(s).

The ports can transmit eight channels of audio at 44.1 kHz or 48 kHz sample rate via a single optical cable. At these sample rates, the two ports carry the same eight channels.

At 88.2 kHz or 96 kHz sample rates, each port can transmit four channels of audio. The right-hand port carries Channels 1 to 4, the left-hand port carries Channels 5 to 8; thus two TOSLINK cables are required to transmit all eight channels.

At 176.4 kHz or 192 kHz sample rates, each port can transmit two channels of audio. The right-hand port carries Channels 1 and 2, the left-hand port carries Channels 3 and 4. The OctoPre is restricted to four channels of digital audio at these sample rates; the outputs of Channels 5 to 8 are not available via the ADAT ports.

Use the **SAMPLE RATE** switch [9] to select the desired sample rate frequency. It is essential that the sample rate selected on the Clarett OctoPre matches the sample rate set on the receiving digital device.

Digital Synchronisation

Two synchronisation options are available:

Clarett OctoPre as Clock Source Master:

Connect the OctoPre to the receiving digital device via the **OPTICAL OUT** port(s) and ensure that the receiving device is set to source its clock from its ADAT input (and also that the sample rates on both devices match).

On the OctoPre, **SYNC** should be set to **INTERNAL** and the  LED will illuminate.

An alternative method is to sync the receiving device to the Clarett OctoPre's **WORD CLOCK OUT** using a BNC cable. In this scenario, the receiving device's sync source will need to be set to its external word clock input.

Clarett OctoPre as Clock Source Slave:

Connect the OctoPre to the receiving digital device via the **OPTICAL OUT** port(s) and connect a BNC cable from the digital system's master word clock to the OctoPre's **WORD CLOCK IN** connector (also ensuring that the sample rates on all devices match).

On the OctoPre, **SYNC** should be set to **WORD** and the  LED will illuminate.

Digital Inputs

Use the **OPTICAL IN** ADAT port(s) [19] if you need to convert digital audio (e.g., the output of a DAW) to analogue, using the Clarett OctoPre's ADAT > LINE mode.

The right-hand port can receive eight channels of audio at 44.1 kHz or 48 kHz sample rate via a single optical cable.

At 88.2 kHz or 96 kHz sample rates, each port can receive four channels of audio. The right-hand port carries Channels 1 to 4, the left-hand port carries Channels 5 to 8; thus two TOSLINK cables are required to receive all eight channels.

At 176.4 kHz or 192 kHz sample rates, each port can receive two channels of audio. The right-hand port carries Channels 1 and 2, the left-hand port carries Channels 3 and 4. The OctoPre is restricted to four channels of digital audio at these sample rates.

Use the **SAMPLE RATE** switch [9] to select the desired frequency. It is essential that the sample rate selected on the Clarett OctoPre matches the sample rate set on the transmitting digital device.

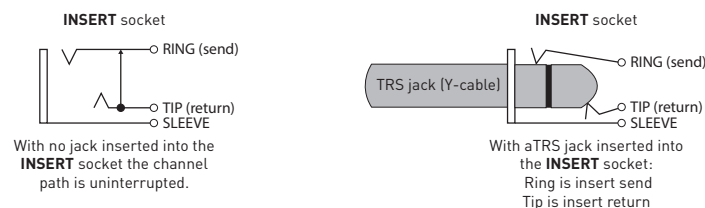
AIR mode

An important feature of all models in the Clarett range is the new design of analogue preamplifier. The circuitry now includes a new AIR function, individually selectable on each channel. AIR subtly modifies the pre-amp's frequency response to model the impedance and resonance characteristics of Focusrite's classic transformer-based ISA mic preamps. When recording with good quality microphones, you will notice an enhanced clarity and definition in the important mid frequency range, just where it is most needed for vocals and many acoustic instruments.

Inserts

Each pre-amplifier channel includes a switchable insert point for the connection of external processing equipment such as compressors or noise gates. The insert comprises a send (the output of the channel's input stage) and a return (an input to the channel's output stage): with no plug in the **INSERT** socket, the channel signal path is uninterrupted. The insert send and return are both unbalanced. Use a TRS jack wired with the tip (return) and ring (send) of the jack wired to two separate cables; such cables (often referred to as 'Y-cables') are available from professional audio suppliers.

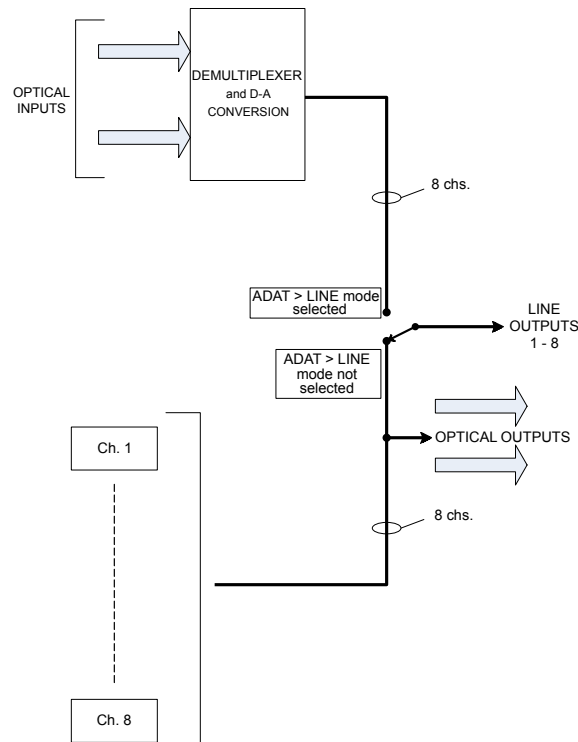
The insert point is post the AIR circuitry (thus external equipment will receive a signal modified by AIR), and also post the front panel **GAIN** controls [4]. When using an insert point, try to adjust the input and output levels of the external processor so that the return signal is about the same level as the send. If the external processor has too much gain, you run the risk of overload within the OctoPre, so use the channel meters [7] to check the return signal level.



Use the front panel **INSERT/AIR** buttons [6] to enable the insert point. (First select **INSERT** using the master switch [8].) The channel LED will illuminate green to confirm selection.

ADAT-to-Line mode

Selecting ADAT > LINE mode ([12] on the front panel) reassigns the eight sources for the analogue **LINE OUTPUTS** D-sub connector [20]. In normal operation, the outputs of the mic pre-amplifier channels are available at this D-sub connector; in ADAT > LINE mode, the D-sub connector is fed with the ADAT digital signals at the **OPTICAL IN** port(s), following D-to-A conversion.

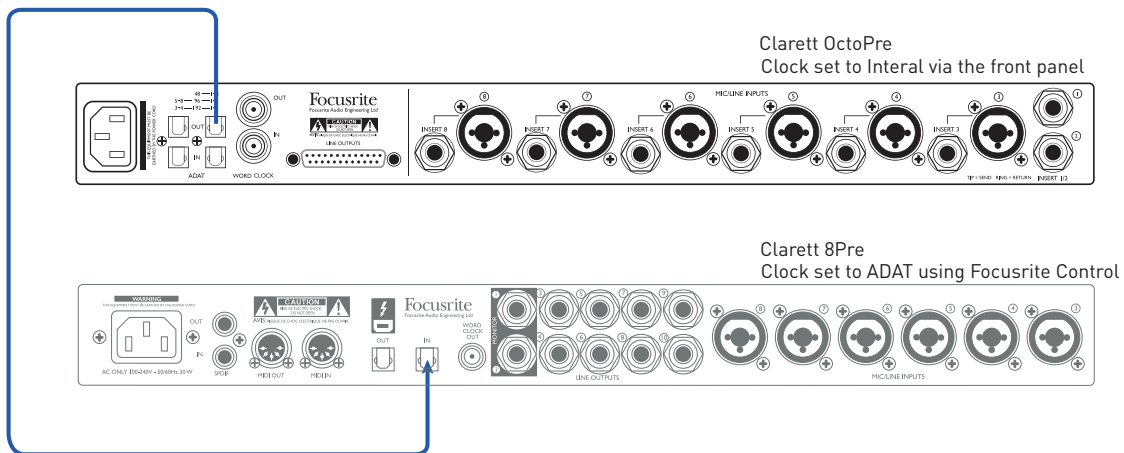


This mode enables the Clarett OctoPre be used to connect an 8-channel ADAT format output (from a DAW, for example) to a set of analogue inputs, typically the channels of an analogue mixing console, to permit such a mixer to be used to mix down DAW tracks.

When ADAT > LINE mode is enabled, the eight Clarett microphone pre-amplifiers are still operational, and their outputs remain available at the **OPTICAL OUT** ports.

Example Setups

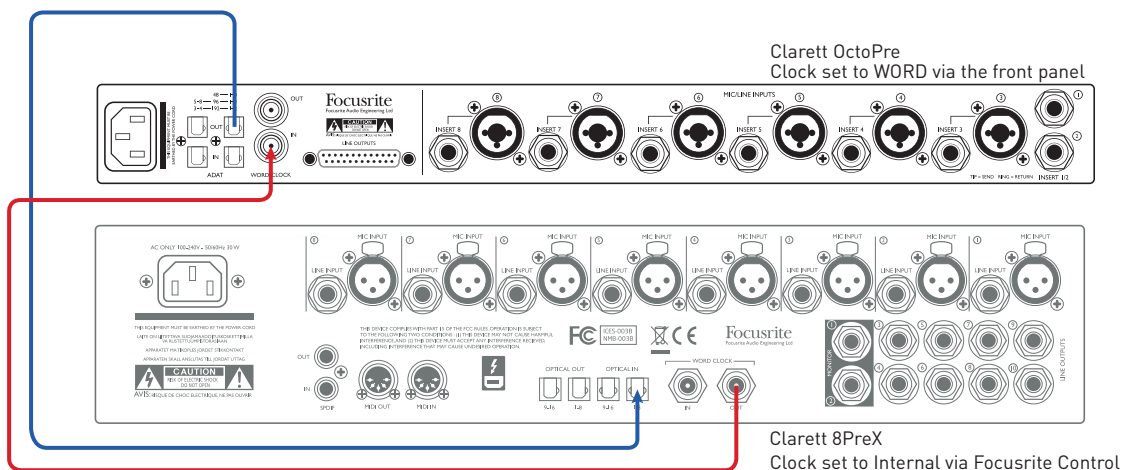
1. Clarett OctoPre with audio interface: OctoPre as clock source Master



Here the **OPTICAL OUT** on the Clarett OctoPre is connected to **OPTICAL IN** on a Focusrite Clarett 8Pre audio interface with a single optical cable. Both units are running at 44.1 kHz sample rate. The OctoPre's clock source is set to INTERNAL, and the 8Pre is synchronised to it because its clock source is set to ADAT (via Focusrite Control).

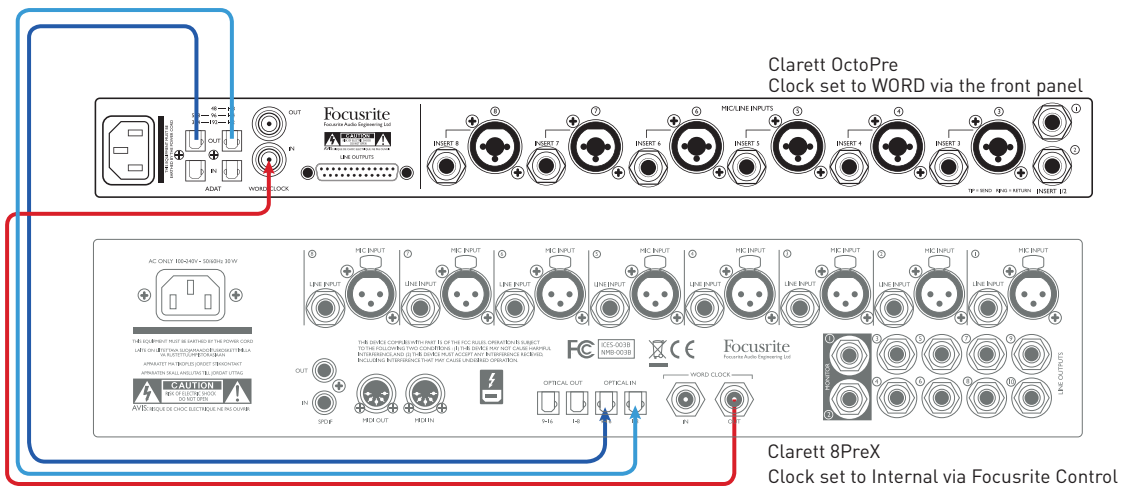
This setup would, for example, enable up to 16 mic or line sources to be recorded in a DAW simultaneously, and would thus be ideal for recording a live band. It would also be appropriate for any other audio interface which has an ADAT input.

2. Clarett OctoPre with audio interface: audio interface as a clock source Master



Here **OPTICAL OUT** on the Clarett OctoPre is connected to **OPTICAL IN** on a Focusrite Clarett 8PreX audio interface with a single optical cable. Both units are running at 44.1kHz sample rate. The OctoPre's clock source is set to WORD, and its **WORD CLOCK IN** input is connected to **WORD CLOCK OUT** on the Clarett 8PreX with a BNC cable. The Clarett 8PreX's clock source is set to INTERNAL (via Focusrite Control), thus making it the sync master. It would also be appropriate for any other audio interface which has an ADAT input and a word clock output.

3. Clarett OctoPre with Clarett 8PreX – SMUX-II and SMUX-IV modes

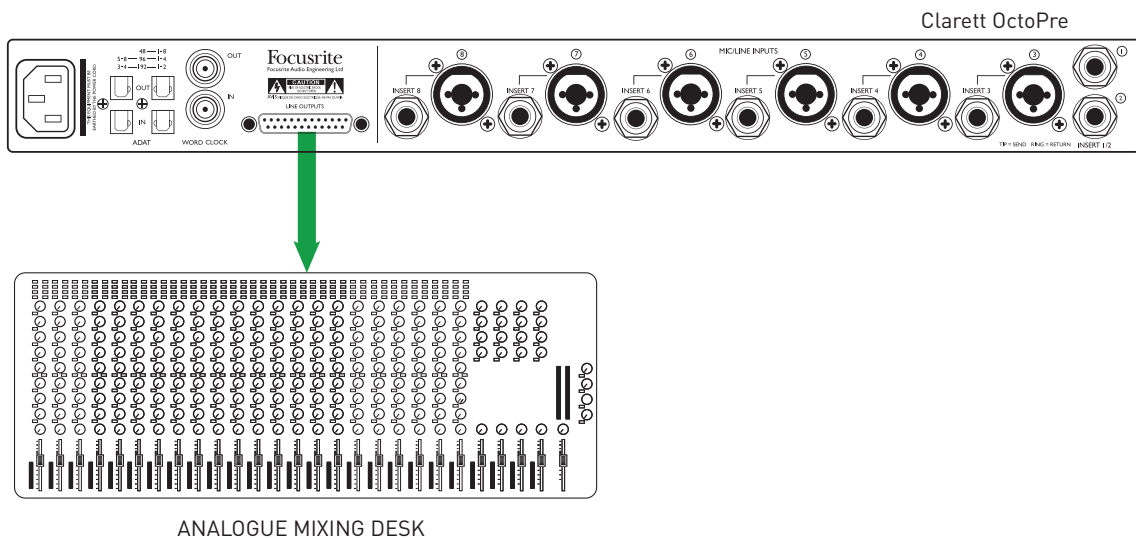


This example shows the same setup as Example 2, but running at a sample rate of 96 kHz (“SMUX-II” mode). Both units must be set to 96kHz; two optical cables are used, carrying four channels of audio each. The Clarett 8PreX is the sync master as before.

This setup is also applicable with 192 kHz sample rate (“SMUX-IV” mode); each optical cable will then carry two channels of audio.

The setup in this example would also be appropriate for any other 96/192 kHz-capable audio interface with two ADAT inputs and a word clock output.

4. Clarett OctoPre with analogue mixing desk



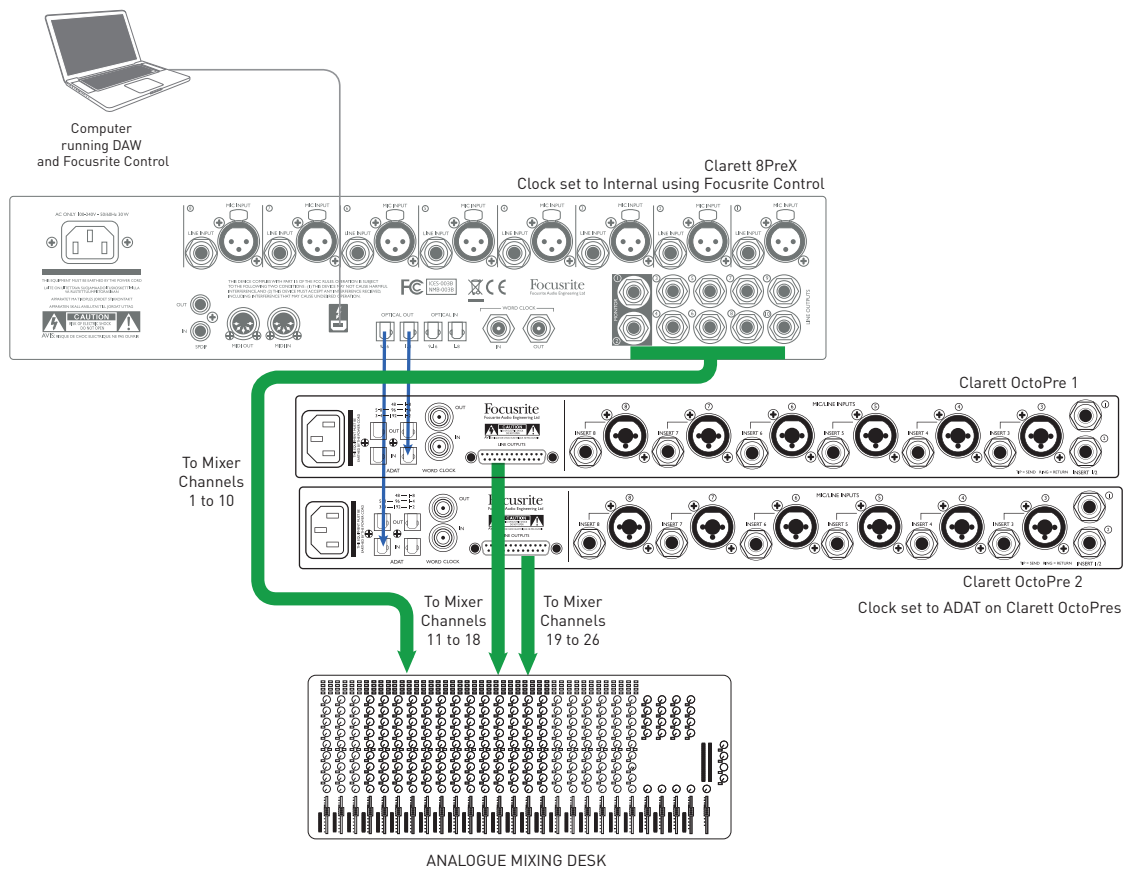
This setup uses the Clarett OctoPre’s mic pre-amplifiers and AIR mode to provide a high quality “front end” for an analogue mixing desk. Use an 8-way loom to connect the OctoPre’s **LINE OUT**

socket to eight line inputs on the mixing desk; this will need a 25-way D-sub on one end and eight connectors appropriate to the desk's line inputs on the other. (Pre-made looms are available from professional audio suppliers.)

This setup would also be appropriate to use the OctoPre as an input stage with any type of 8-channel analogue device.

Because the Clarett OctoPre's **ADAT OUT** ports are always active, you can also simultaneously record the performance on a DAW (or other recording device) with an ADAT interface.

5. Clarett OctoPre in ADAT > Line mode



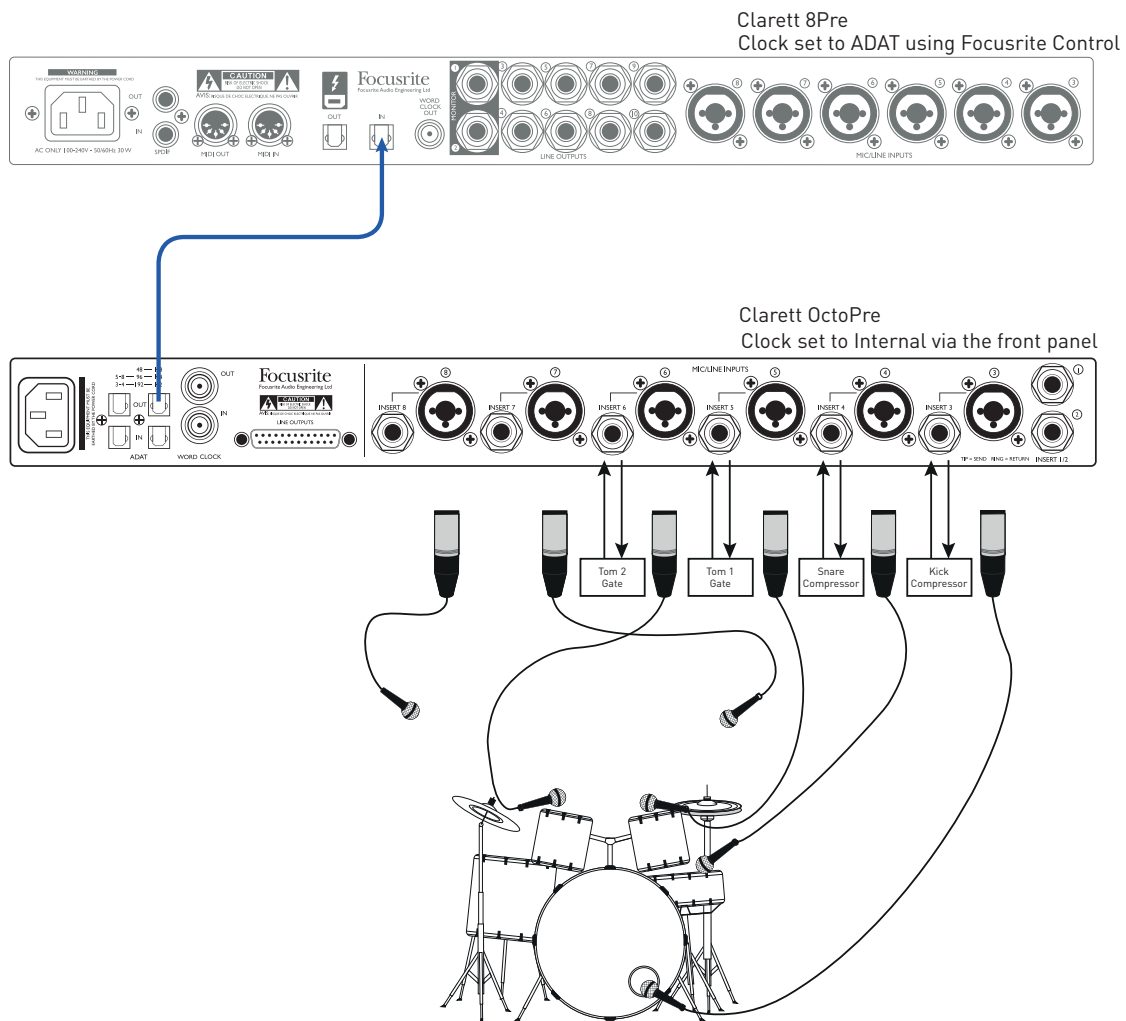
This example shows how to connect a greater number of DAW tracks to an analogue mixing desk for mixdown. The 10 analogue outputs of a Clarett 8PreX interface are connected to desk Channels 1 to 10. Its **OPTICAL OUT** ports are connected to the **OPTICAL IN** ports of two Clarett OctoPres with ADAT > LINE mode selected on both. A loom similar to that used in Example 4 is then used to connect the two OctoPres to Channels 11 to 26 of the desk.

The Clarett 8PreX would normally be the sync master in this situation, so its clock source is set to INTERNAL (via Focusrite Control). The clock source on both Clarett OctoPres is set to ADAT, so both are synchronised to the Clarett 8PreX via the ADAT optical connections.

The setup in this example would allow 18 DAW tracks to be connected to the desk if only a single Clarett OctoPre was in use.

The above channel counts are applicable at 44.1/48 kHz sample rate, providing that a Clarett 8PreX is used as the primary interface.

6. Using Clarett OctoPre's inserts to record drums



When recording acoustic drums, dynamics control may be applied in various ways to get the sound you're after. Compression is frequently added to kick and snare drums to thicken up the sound, while noise gates are effective on tom-toms to minimise spillage between the various drum mics.

Use looms with a TRS jack on one end wired to two XLRs, TRS jacks or TR jacks as appropriate to the outboard processors. The "ring" of the TRS jack at the OctoPre end should go to the input of the processor, the "tip" to the output.

CLARETT OCTOPRE TECHNICAL SPECIFICATIONS

Performance Specifications

(All performance figures are measured to the AES17 standard).

Sample Rates	
Supported sample rates	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz & 192 kHz
Microphone Inputs	
Frequency Response	20 Hz to 35 kHz, +/-0.1 dB
Dynamic Range (Insert off)	118 dB (A-weighted)
Dynamic Range (Insert active)	115 dB (A-weighted)
THD+N	0.001%
Noise EIN	-128 dBu (A-weighted)
Maximum input level	+18 dBu +/-0.5 dB
Gain Range	57 dB
Line Inputs	
Frequency Response	20 Hz to 35 kHz, +/-0.1 dB
Dynamic Range (Insert off)	117 dB (A-weighted)
Dynamic Range (Insert active)	115 dB (A-weighted)
THD+N	0.001%
Maximum input level	+26 dBu +/-0.5 dB
Gain Range	57 dB
Instrument Inputs	
Frequency Response	20 Hz to 35 kHz, +/-0.1 dB
Dynamic Range (Insert off)	116 dB (A-weighted)
Dynamic Range (Insert active)	114 dB (A-weighted)
THD+N	0.001%
Maximum input level	+14 dBu +/-0.5 dB
Gain Range	57 dB
Line Outputs	
Dynamic Range	118 dB (A-weighted)
THD+N	0.0007%
Maximum Output Level (0 dBFS)	+16 dBu, balanced

Physical and Electrical Characteristics

Analogue Inputs 1 & 2	
Connectors	“Combo XLR” sockets on front panel; for Line use ¼” TRS jack, for Inst use ¼” TS jack.
Mic/Line switching	Automatic
Line/Instrument switching	via front 2 x front panel switches
Phantom power	+48 V, switchable Chs. 1-4, 5-8 in groups
Analogue Inputs 3 to 8	
Connectors	“Combo XLR” sockets on rear panel; for Line use ¼” TRS jack.
Mic/Line switching	Automatic
Phantom power	+48 V, switchable Chs. 1-4, 5-8 in groups
Outputs	
Analogue outputs	8 x balanced, on rear panel 25-way female D-sub
Other I/O	
ADAT I/O	4 x TOSLINK optical connectors: 8 channels at 44.1/48 kHz (both ports) 8 channels at 88.2/96 kHz (Chs 1-4, 5-8) 4 channels at 176.2/192 kHz (Chs 1 & 2, 3 & 4)
Word clock output	2.5 V (correctly terminated); BNC connector
Word clock input	BNC connector
Weight and Dimensions	
W x D x H	482 mm (1U) x 44.5 mm x 286 mm 19.0” (1U) x 1.75” x 11.3”
Weight	4.15 kg 9.15 lbs

TROUBLESHOOTING

For all troubleshooting queries, please visit the Focusrite Answerbase at <https://support.focusrite.com> where you will find articles covering numerous troubleshooting examples.

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