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S PRO Saffire

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User Guide

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■ Introduction to Saffire PRO

Thankyou for purchasing SaffireControl PRO, Focusrite's professional multi-channel Firewire interface. This Guide provides a detailed explanation of both the hardware and accompanying control software, to help you achieve a thorough understanding of the product's operational features. If the main User Guide sections do not provide the information you need, be sure to consult the Troubleshooting at the end of the Manual or the online information at www.focusrite.com/answerbase, which contains all technical support queries regarding the product to date.

Basics

The Saffire PRO hardware interface provides the means for connecting microphones, line-level signals and/or instrument-level signals to the computer, as well as supplying playback audio directly to an amp, headphones or powered speakers. There are also digital audio options (S/PDIF and ADAT), plus connectors for sending and receiving MIDI and Word clock. Additionally, the hardware can function in standalone mode (powered by external PSU) for tracking or mixing without using a computer.

The accompanying software application, SaffireControl PRO, provides further recording and monitoring options, as well as the ability to control global hardware settings such as sample rate and synchronisation. In terms of audio path, the SaffireControl PRO software sits between the interface and the sequencer, allowing control over what signals are sent from the sequencer to each output (e.g. the sequencer settings route through SaffireControl PRO not directly to the hardware). Input recording levels are not set in SaffireControl PRO, however, as the incoming signals pass directly to the sequencer. The input levels in SaffireControl PRO are for monitoring purposes only.
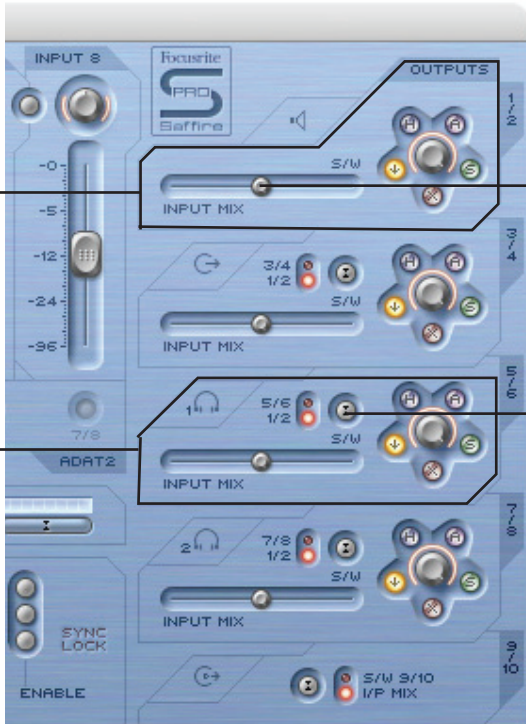
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Getting connected and setting up the hardware/software

Before Saffire PRO can be used, the accompanying SaffireControl PRO software must be installed. This is done by inserting the Resources disk and running the Saffire PRO Installer for either Mac or PC. Once installed, the SaffireControl PRO icon will appear in your Program (PC) or Application (Mac) list, from where it can be launched.

Before launching SaffireControl PRO, connect your hardware to the computer using the supplied Firewire cable. Either of the Saffire PRO's two Firewire ports can be used, leaving one free to connect additional Saffire PROs or other Firewire devices such as hard disks to the computer.

At this stage, you may wish to connect your Monitors to the Saffire PRO's analogue outputs. Outputs 1 and 2 are the Main Monitor outputs (left and right). Alternatively/In addition, you can connect Headphones to either of the headphones outputs on the right side of the front panel. Headphones Outputs 1 and 2 receive the same signal as that sent to Outputs 5/6 and 7/8 respectively (as indicated by the Headphones icons in the output section on the right side of the SaffireControl PRO GUI.) Please make sure that your monitors are turned OFF when connecting to Saffire.

Although SaffireControl PRO's default setting will enable all inputs to be heard, make sure that the crossfader for the relevant output pair is sufficiently over to the left if you wish to listen to the sources being recorded. If you are still not hearing the relevant input, the fader for that input may not be high enough in the Input Mix section (check the 'Creating an Input Mix' section for details). However, if attempting to monitor a main mix playback from the sequencer (any audio routed to outputs 1 and 2), you will need to make sure that Saffire PRO has been set up as the input/output audio device within that sequencer, then ensure that the corresponding output (whatever your speakers or headphones are connected to) has 1/2 selected as its S/W track within the output section of the SaffireControl PRO software (always the case for the Main Monitors.) Also the relevant crossfader must be set to monitor the S/W playback (set middle or right) as shown in the diagram below. Read the relevant monitoring sections of this User Guide for details.

Controls for Outputs 1 and 2

Controls for Outputs 3 and 4 and Headphones 1 (same signal)

Crossfader must be in a central position for Inputs and Playback tracks to be heard. If this is set totally right, only Playback (S/W) tracks 1/2 will be heard

On Outputs 3-8, there is the option of routing Playback (S/W) tracks 1/2 or the corresponding tracks (in this case 5/6) from the sequencer to the output. (5/6 relates to Saffire PRO Outputs 5/6 within the sequencer.)

The colour of the power LED will channge depending on wether or not the external power supply is connected. Whilst using the PSU, the LED will be green. Whilst powering the unit via a firewire buss, the LED will be red.

Front Panel Features

The front panel features level controls for all 8 analogue inputs (inserted at rear or on front panel), as well as a level control for the Monitors (signal sent to Outputs 1 and 2) and both Headphones. Each analogue input has a High Pass Filter for removing low frequencies (proximity effect or rumble from microphone recording). 'Super' channels 1 and 2 also have buttons for lowering the impedance (to account for different microphone specification) and to reverse the phase (to eliminate phase cancellation when recording with a stereo pair).

In addition, on the front panel there are 8 1/4" TRS (balanced) jack inputs for recording line-level signals (Inputs 1-8). These automatically override the XLR inputs on the rear panel if both sets are connected. If you wish to record a guitar, inputs 1 and 2 can be used to route a signal directly from the instrument (DI) to the sequencer. Instrument select buttons are included for these inputs to allow matching of gain and impedance.

1. 8 1/4" jack line/instrument inputs
2. Instrument select button
3. Overload LED
4. Input gain control
5. Monitor level control
6. Headphones level controls
7. Monitor mute button/Standalone button 1
8. Monitor dim button/Standalone button 2
9. High-pass filter button
10. Low Impedance button
11. Phase reverse button
12. Phantom power LEDs

Rear Panel Features

The rear panel has 8 XLR Inputs for recording signals from microphones (mic inputs 1-8), as well as 8 1/4" TRS (balanced) jack analogue outputs 1-8. There are also four ADAT lightpipe ports for receiving and sending ADAT signals (ADAT In 1-8 and 9-16, ADAT Out 1-8 and 9-16), plus two coaxial connectors for S/PDIF In and Out. The digital inputs/outputs relate to Saffire PRO inputs/outputs 9 and 10 (S/PDIF) and 11-26 (ADAT). Two BNC connectors offer Word Clock In and Out for synchronising to external equipment, with two standard 5-pin MIDI sockets allowing MIDI data to be received and transmitted.

A 3-pin locking power socket allows the provided power supply to be connected, should Firewire-bus power not be preferred (if preserving computer battery or using the hardware in standalone mode without a computer, or if wishing to use the extra headroom feature). Finally, two Firewire ports are provided for interfacing with the computer and daisy-chaining multiple units.


1. Power connector for external PSU
2. S/PDIF (coaxial) In and Out
3. MIDI In and Out
4. Word Clock (BNC) In and Out
5. ADAT (optical/lightpipe) In and Out
6. Analogue Outputs 1-8 (TRS jack)
7. Mic Inputs 1-8 (XLR)
8. Firewire ports

SaffireControl PRO Features

The SaffireControl PRO software allows comprehensive control of the type and level of signal routed to Saffire PRO Outputs 1-10, including the ability to set individual levels of Inputs 1-8*. In addition, software controls allow setting of the sample rate, synchronisation, and the size and function of the GUI window. Preset buttons are also provided to change the overall hardware function. The latest version of SaffireControl PRO's software is always available at www.focusrite.com

*Note: Limitations apply at high sample rates 88.2- 192 kHz, see page 21
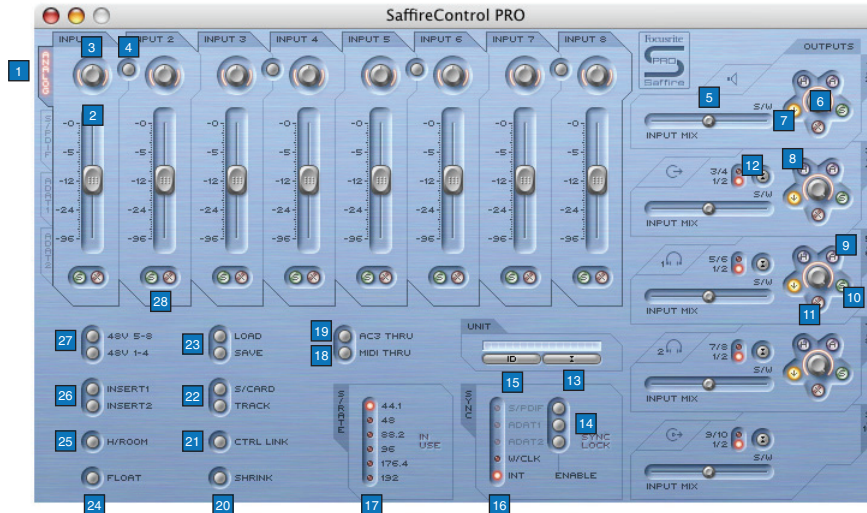
1. Input mix group fader select switches; choose the signals to be controlled by the eight faders alongside (Analogue/SPDIF/ADAT1/ADAT2 Input(s)) for creating an Input Mix
2. Input mix level control ; sets the fader which controls the input level
3. Input mix pan dial; controls the position of the signal in the stereo field
4. Stereo link switch; links levels of Inputs either side of the switch (and auto-pans hard left and right)
5. Input/Playback Balance crossfader; sets the balance of the Input Mix and tracks playing back from the sequencer for one pair of analogue outputs
6. Stereo output gain dial
7. Dim switch; sets a digital cut of 18dB
8. Hardware control switch (makes the dial follow the Monitor dial on the hardware, allowing hardware control over output levels)
9. Active Monitor pad switch; reduces the analogue output level by 18dB
10. Solo output switch; solos the output
11. Mute output switch; mutes the output
12. Playback (S/W) 1/2 or 3/4 to Outputs 3/4 switch; allows a main mix to be sent to outputs 3 and 4
13. Select Unit switch; selects which Saffire PRO will be controlled when multiple interfaces are in use
14. Digital Input Enable switches; activate the corresponding digital inputs
15. Identify Unit switch; identifies the SaffireControl currently being controlled (power LED on active hardware will rapidly flash)
16. Select Sync Source; selects the source to which Saffire PRO is to be synchronised
17. Select sample rate switches; set the sample rate
18. Enable MIDI Thru switch; converts the MIDI Out port to a MIDI Thru
19. Allow AC3 pass through switch; allows the S/PDIF Out to transmit an AC3 or DTS signal directly from DVD playing software to a home surround setup. Note: With AC3 pass through active, software input mixing is disabled
20. Shrink mode switch; shrinks the software window to a smaller size
21. Link Output level controls switch; links the controls for Outputs 1-8
22. Soundcard/Track mode switches; preset buttons allowing instant recording and mixdown modes
23. Load/Save switches; allow recalling and saving of software settings
24. Float window mode switch; floats the software window permanently over other software
25. H/room switch; uses PSU to create extra headroom for analogue Inputs
26. Insert 1 and 2 switches; convert Inputs 5 and 6 into Inserts for Inputs 1 and 2, respectively
27. Phantom Power switches; activate phantom power across XLR Inputs 1-4 and 5-8
28. Solo and Mute switches; solo and mute the correlative input channel signal

Recording analogue signals with Saffire PRO

Saffire PRO can be used to record up to 8 analogue signals and 18 digital signals simultaneously. These analogue signals can be any combination of microphone or line-level sources. Instrument-level sources, can also be directly connected on Input channels 1 and 2.

Microphone recording

To record a microphone signal, connect a microphone to one of the rear panel XLR Inputs, ensuring that nothing is plugged into the corresponding Line Input on the front panel (as this will override the XLR Input). If using a condenser mic or any other mic that requires phantom power then two switches in the software can be used to apply it to that XLR input, as follows:

Switch activates Phantom Power for Inputs 5-8

Switch activates Phantom Power for Inputs 1-4
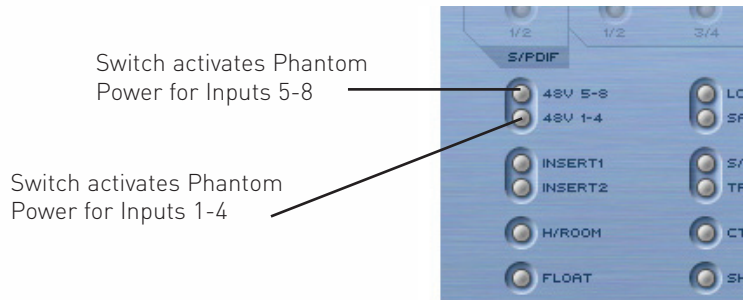
Don't worry if you're using a dynamic mic on an input within that group that doesn't need phantom power, as it will not affect the signal. However, be aware that if using a ribbon mic, phantom power must **not** be used as the 48V will damage the microphone. Check the microphone's manual if unsure about phantom powering. For this reason, phantom power is not saved with Saffire PRO 26 i/o settings. It always defaults to off.

Once connected, the microphone gain can be set by turning the corresponding gain pot on Saffire PRO's front panel. Turn the dial clockwise to increase the input gain, ensuring that the Overload LED does not light. If you are experiencing any low frequency problems such as proximity effect or rumble, engage the high pass filter button on the hardware, which will reduce any signal below 120Hz.

If using either Input 1 or 2, a lower input impedance (150 Ω) may be set by pressing the Lo Z button. This provides additional sonic options that can be useful to achieve an improved sound with different microphones (helping to better match the impedances). Furthermore, if you wish to record a stereo pair with these inputs, then a phase reverse switch is provided on Input 1 to eliminate any phase cancellation problems that may occur.

If using Input 1, this will show up as Saffire PRO Input 1 within the sequencer and you can now begin recording.

Line-level recording

To record a line-level signal, simply insert a balanced 1/4" jack into one of the front panel inputs, making sure that you are not already using that input to record a microphone; (these front panel inputs will override the rear panel XLRs.) Once an input source is connected, the gain can be set with the corresponding dial on the front panel.

If using Input 3, this will show up as Saffire PRO Input 3 within the sequencer and you can now begin recording.

Instrument recording

To DI an Instrument, simply connect e.g. a guitar directly to Line Input 1 or 2 on the front panel, making sure that you are not already using that input to record a microphone; (these front panel inputs will override the rear panel XLRs.) The corresponding Instrument button for that input must then be engaged on the front panel, in order for the gain and impedance to be correctly calibrated. Once an input source is connected, the gain can be set with the corresponding dial on the front panel.

If using Input 2, this will show up as Saffire PRO Input 2 within the sequencer and you can now begin recording.

Recording stereo pairs

If you wish to record a stereo pair of microphones, the gain of each must be set identically on the front panel. Be aware that the stereo link buttons within SaffireControl PRO only link the levels and set the panning for the Monitor Input Mix, not for the Input channels record path, because this routes directly to the sequencer.

Recording digitally with Saffire PRO

Saffire PRO's digital inputs (9-26) can be used simultaneously with the analogue inputs to record up to 18 additional channels of audio to the sequencer. All digital inputs must be activated using the enable switches in the SYNC section of the SaffireControl PRO software, otherwise no signal will appear for monitoring or recording.

Recording ADAT signals

To record an ADAT signal at 44.1 kHz to 96 kHz, connect an optical cable to either of the rear panel inputs, 1-8 (ADAT 1) or 9-16 (ADAT 2). These relate to Saffire PRO Inputs 11-18 and 19-26, respectively, and will show up in the sequencer as such. Once connected, the corresponding ADAT ENABLE switch in the SaffireControl PRO software SYNC section must be activated. (See the Synchronising Saffire PRO section for details.)

When connecting to an ADAT device it is advisable to synchronise Saffire PRO to the incoming ADAT signal to maximise audio quality and prevent glitches. This can be done in the SYNC section in the bottom half of the software window. (Check the Synchronising Saffire PRO section for details, page 16.)

Note that the ADAT protocol uses S/MUX at 96kHz which will halve the number of channels, (reduced from max. 16 to max. 8.) The ADAT protocol does not support 192kHz, so ADAT i/o is disabled at 192kHz.

Recording S/PDIF

To record an S/PDIF signal, connect a coaxial cable to the S/PDIF IN on the rear panel. This will show up as Saffire PRO Inputs 9 and 10 in the sequencer. Once connected, the ENABLE switch alongside S/PDIF in the SaffireControl PRO software SYNC section must be activated. (See the Synchronising Saffire PRO section for details, page 16.)

When connecting to an S/PDIF device it is advisable to synchronise Saffire PRO to the incoming S/PDIF signal to maximise audio quality and prevent glitches. This can be done in the SYNC section in the bottom half of the software window. Check the Synchronising Saffire PRO section for details, page 16.

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■ Output settings/Monitoring options

On the right hand side of SaffireControl PRO software are the controls for Outputs 1-10, relating to analogue Outputs 1-8 and S/PDIF Out (9 and 10). These provide common mixer controls such as mute, solo and dim, and allow a unique balance of Inputs and tracks from the sequencer to be monitored. The crossfader and S/W select buttons provide further flexibility for mixing down, allowing the Inputs to be faded out and 8 independent tracks from the sequencer to be sent to the corresponding hardware outputs, making 5.1 or 7.1 surround monitoring possible.

■ Analogue output settings

Each of the four stereo pairs of analogue outputs has comprehensive level controls, as follows:
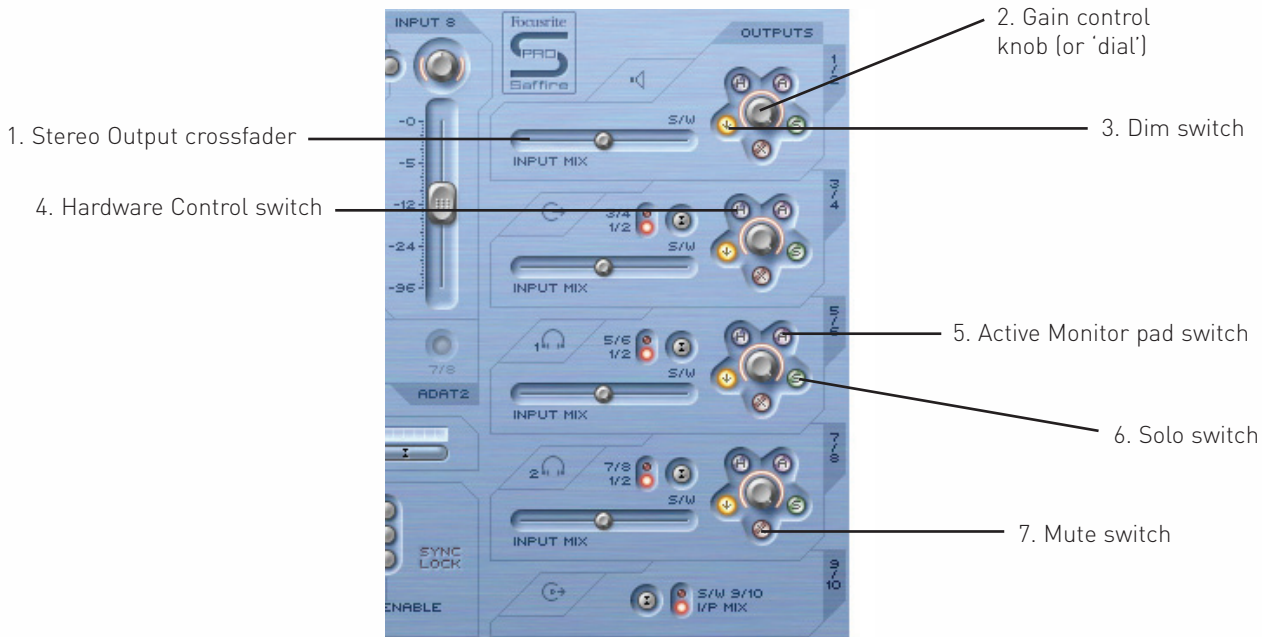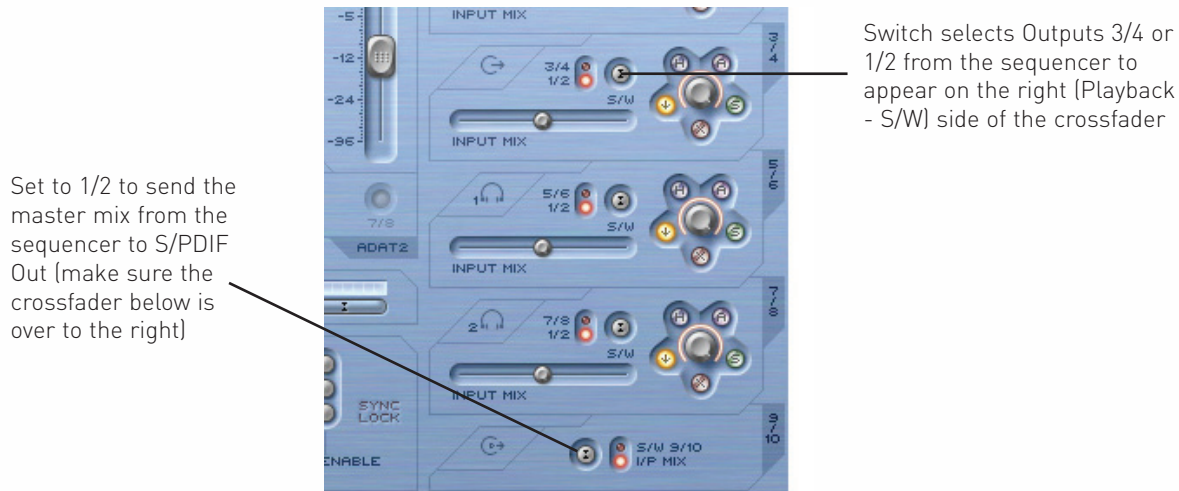

1. Stereo Output crossfader – this allows a blend of Inputs (the Input Mix set on the upper left hand side of the software window) and backing tracks from the sequencer to be set. This means that an individual mix of Inputs and Outputs can be set for that pair of Outputs. Note that 'S/W' (software/sequencer tracks) on the right of this crossfader relates to playback signals sent back to Saffire PRO Outputs 1 and 2 from the sequencer to Outputs 1/2 within SaffireControl PRO (the top right section). However, for the next section down (Outputs 3 and 4), 'S/W' relates to the playback signals sent back to SaffireControl Outputs 3 and 4 from the sequencer **unless** set to 1/2 using the switch above. See sections below for details.

2. Gain control knob (or 'dial') – adjusts the level of the stereo pair of outputs.

3. Dim switch – this reduces the digital level by 18dB for a temporary level reduction, e.g. if you wish to quickly cut the level and return to the same volume without having to manually turn any dials.

4. Hardware control switch – this makes the level of the dial follow the Monitor dial on the hardware, providing instant hardware level control on multiple, user selectable sets of outputs.

5. Active Monitor pad - this reduces the analogue output level (after the DAC) by 18dB to dim levels sent to attached monitors. For example, if the level of the outputs is constantly high, regardless of the volume control on the attached amp or speakers, dimming the signal will provide a lower level and therefore more control over the volume.

6. Solo switch – this cuts the other outputs so that only the soloed pair is heard.

7. Mute switch – this cuts the signal sent to the pair of outputs.

▪ Additional options on Outputs 3-10

To provide extra flexibility, Outputs 3-10 have a switch that selects which tracks from the sequencer will appear on the right side of the crossfader (in the 'S/W' position), as follows:

Switch selects Outputs 3/4 or 1/2 from the sequencer to appear on the right (Playback - S/W) side of the crossfader

Set to 1/2 to send the master mix from the sequencer to S/PDIF Out (make sure the crossfader below is over to the right)

This is so that a Monitor mix of backing tracks (normally Master Outputs 1/2 within the sequencer) and Inputs can be created on any pair of analogue outputs, for use during a recording session. For example, if you wish to send a mix of Inputs and playback tracks to analogue outputs 3 and 4, the switch should be set to 1/2 so that the main mix (anything set to outputs 1 and 2 in the sequencer) will appear at the S/W end of the crossfader. The crossfader should be set in a central position.

However, if mixing down or laying back audio with more than two channels and therefore wanting to send different signals to each of the Saffire PRO outputs, the switch should be set to 3/4, whereby anything set to Outputs 3 and 4 within the sequencer will appear on the right side of the crossfader. For an instant way of setting up Saffire PRO for multi-channel mixdown or layback, check out the S/CARD button in the bottom half of the software window. See the S/CARD and TRACK modes section below for details, page 13.

This switch also means that a master backup from the sequencer can be sent digitally to an external device via the S/PDIF Out. If you wish to do this, make sure the switch in the bottom section (for outputs 9/10) is set to 1/2 as shown in the diagram above.

Creating an Input Mix

On the left hand side of the software window are faders and switches that allow an Input Mix to be created for Monitoring purposes. This Mix will appear on the left side of the crossfader for each pair of analogue outputs (on the right hand side of the software window). If you wish to set up this mix using Monitors connected to Outputs 1 and 2, simply set the crossfader for this pair of outputs over to the left so that just the Inputs are heard. Note that at higher sample rates, input mixing may be disabled, see page 21.

Input levels are adjusted as follows:
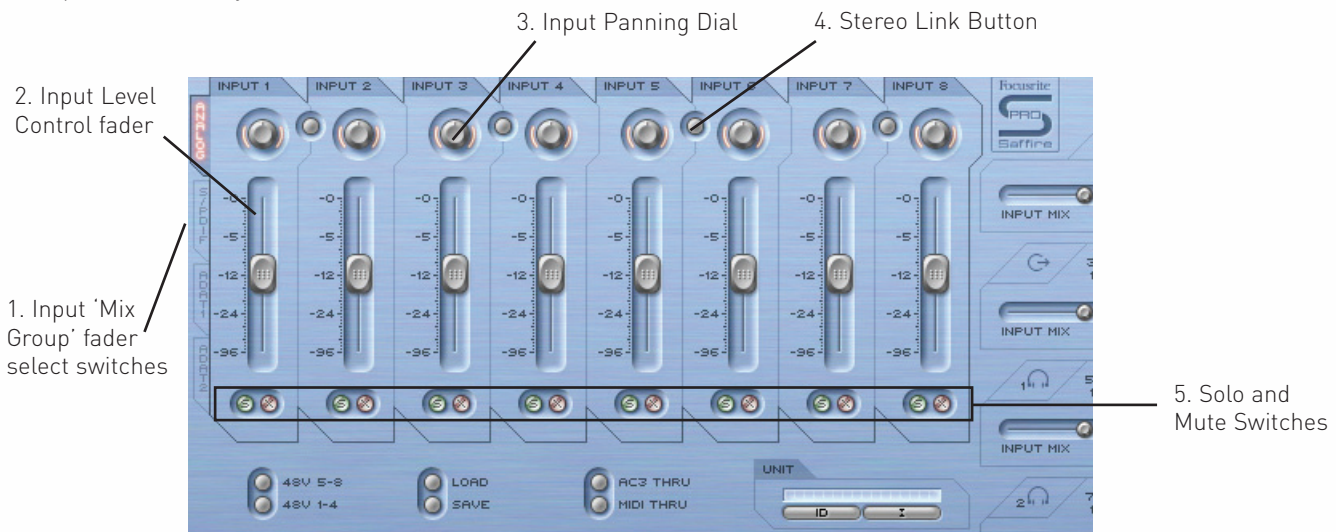
2. Input Level Control fader

3. Input Panning Dial

4. Stereo Link Button

1. Input 'Mix Group' fader select switches

5. Solo and Mute Switches

1. Input mix group fader select switches – choose the signals to be controlled by the eight faders alongside (Analogue + S/PDIF or ADAT1 or ADAT2 Input(s)) for creating an Input Mix

2. Input level control fader – this sets the level of each input.

3. Input panning dial – this pans the input from left to right within the stereo field.

4. Stereo link button – this links the levels of the inputs either side of the switch and auto-pans them hard left and right.

5. Solo and Mute switches – these solo and mute Inputs 1-8

The Input 'mix group' fader select switches choose which signal group (of all the inputs) is controlled by the eight Input Mix faders. For example, if you wish to increase the levels of the S/PDIF Input, click the S/PDIF switch. This activates the S/PDIF Input across the faders; as there are only two channels, only the first two faders are active with the rest greyed out. Now use the two active faders to set levels, using the stereo link switch if a left/right pair is in use. Note that the S/PDIF Input must be enabled using the switch in the SYNC section below for Input Mix levels to be set. (See the Synchronising Saffire PRO section for details, page 16.) To then return to the default mode, where the analogue inputs are active across all eight faders, click the Analogue switch to the left of the faders.

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Setting up a Headphones Mix

Headphones 1 and 2 relate to Saffire PRO Outputs 5/6 and 7/8, respectively, as shown by the Headphones icons in the software window:

Controls for Headphones 1

Controls for Headphones 2
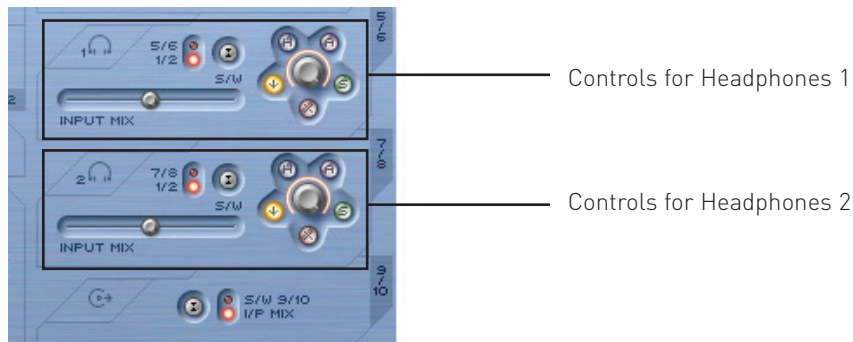
Having two different Headphones outputs allows two artists to be recorded simultaneously, with both having independent monitor mixes. For example, an artist on Headphones 1 could require the main mix from the sequencer whilst the artist on Headphones 2 just needs a click or perhaps one instrument in the mix to play to. In this case, Headphones 1 could have the S/W switch set to 1/2 as above, with Headphones 2 set to 7/8. The sequencer session would then need to have the relevant track for the artist on Headphones 2 routed to Saffire PRO Outputs 7 and 8, perhaps using sends. The balance of these pre-recorded tracks versus the level of the Inputs being recorded can of course be set using the crossfader for each pair of Headphones.

S/CARD and TRACK modes

Saffire PRO's flexible monitoring capability means that you can stream sequencer tracks 1-10 directly to the interface outputs 1-10, or blend a master mix of backing tracks with a mix of inputs. Two preset switches have been included to instantly activate these two modes. This does away with the need to manually configure each output pair if you wish to quickly change from recording to mixing down, or playing back in surround sound.

S/CARD (soundcard) mode is activated by the S/CARD switch. This makes Saffire PRO behave like a standard 10-output soundcard, where Saffire PRO Outputs 1-10 from the sequencer route directly to the Saffire PRO hardware Outputs. (Note that, regardless of the SaffireControl PRO settings, Outputs 11-26 within the sequencer will always route to Outputs 11-26 of the hardware.) As such, each output pair's crossfader is set in the extreme right position (no input signals) and outputs 3-10 are set to the corresponding S/W tracks.

Pressing the TRACK switch activates tracking (or recording) mode, where the Saffire PRO Outputs can be used to monitor a mix of Inputs. This is the default mode when SaffireControl PRO boots up; all crossfaders will be in a central position and outputs set to S/W tracks 1/2.

AC3 Thru mode

The AC3 Thru switch activates a mode where the S/PDIF Output can be used to stream a digitally encoded surround signal (AC3 or DTS) from DVD-playing software directly to a home surround sound setup. Once activated, the GUI window will change to reflect the new mode and the S/PDIF Output can be connected to the speaker setup using a standard RCA (phono) cable.

Linking Output controls – CTRL LINK

If you wish to have a uniform level control for all of the 8 analogue outputs (within the software or on the hardware) then the CTRL LINK switch should be activated, as follows:

Activate switch to link output controls

Once the CTRL LINK switch is active, the gain dials and hardware switches will be linked for each analogue output pair

This will link all gain dials (and the hardware, mute and dim switches round them) within the output section on the right side of the software window. This is ideal for surround sound playback, where the level of each attached speaker needs to be adjusted equally and simultaneously. For hardware control of all outputs, after activating the CTRL LINK switch, click the Hardware control switch on any pair of outputs within SaffireControl PRO (all H switches will light if when the controls are linked). The MONITOR dial on the front panel of the hardware can then be used to adjust the volume for all analogue outputs.

DIM and Active Monitor Pad switches

The DIM and Active Monitor Pad switches provide two means of reducing the level of the Outputs, for two specific purposes:

Active Monitor Pad switch
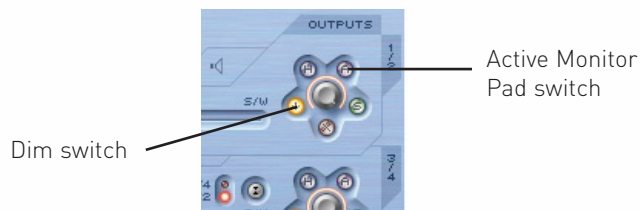
Dim switch

The DIM switch is a way of temporarily reducing the level if the volume needs to be cut quickly, (e.g. if a phone rings.) The switch attenuates the digital level by 18dB when active. Using this switch means that the level can be restored to an identical volume after the interruption, without having to manually adjust any gain dials or remember values.

The Active Monitor Pad switch is the one to use in order to calibrate your speakers' volume control(s). For example, if the level is consistently too high, regardless of the volume knob position, then activating the Active Monitor Pad will cut the analogue level (after the DAC) by 18dB so that the speakers' volume control has a more suitable output level range.

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■ Setting different sample rates

To change Saffire PRO's sample rate, simply click on the small LED alongside the corresponding value within the S/RATE window in SaffireControl PRO, as follows:

Click on the LED next to a value to select that sample rate - the LED will light to indicate selection

Whilst Saffire PRO is being used to record, 'in use' will light and a sample rate cannot be selected

The Sample Rate LED will illuminate to indicate that this value has been selected. Whilst Saffire PRO is being used for recording, the words IN USE are illuminated in the S/RATE window and a different sample cannot be selected. It is important to make sure that Saffire PRO's sample rate matches that of the sequencer session as well as any attached digital audio equipment, especially if attempting to synchronise to it (see next section).

When sample rates above 44.1 and 48 kHz are set, the functionality of SaffireControl PRO may change, depending on what digital inputs are active. For details of the software operational differences as sample rate changes, consult the 'Changes to SaffireControl PRO at higher sample rates' section, page 21.

■ Synchronising Saffire PRO

The SYNC window within Saffire PRO is the means by which to synchronise the hardware to an external source input on the rear panel:

Switch activates the S/PDIF Input

Click on the LED next to a source to select it as the clock source - the LED will light to indicate selection and SYNC LOCK will light when a lock has been achieved. Note that the top three sources will only be available when the corresponding ENABLE switch is active
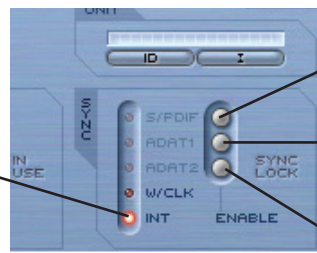
Switch activates the ADAT 1-8 Input

Switch activates the ADAT 9-16 Input

The options are as follows:

S/PDIF – synchronises the hardware to the S/PDIF In
ADAT 1 – synchronises the hardware to ADAT In 1-8
ADAT 2 – synchronises the hardware to ADAT In 9-16
W/CLK – synchronises the hardware to BNC Word Clock Input
INT – synchronises the hardware to Saffire PRO's Internal clock

Simply click the small LED alongside the desired source to attempt to lock to it. If you wish to lock to any of the digital audio inputs, they must first be activated by clicking the ENABLE buttons to the right. Once enabled, they will appear as clickable options in the SYNC list. After selecting a source with which to synchronise, (the small LED will illuminate to indicate selection), the words SYNC LOCK will illuminate to inform you that Saffire PRO is successfully locked to the incoming signal.

It is often a good idea to synchronise to a digital signal when it is being input to ensure the most successful conversion. The clock is embedded within its digital audio data stream and will ensure that no unwanted artefacts (normally clicks or dropouts) occur.
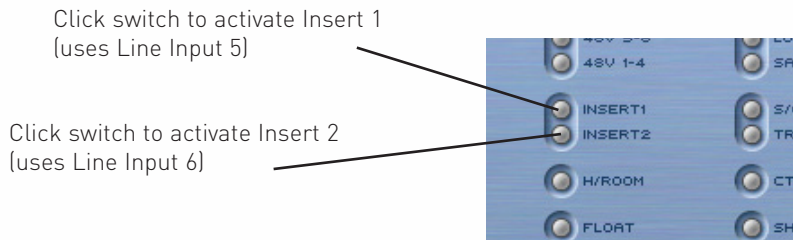
When two or more devices are both transmitting digital audio streams to the inputs of the Saffire PRO, they must be synchronised with each other by 'locking' to an external device's clock. This can come from a separate word clock generator or the word clock output of one of the digital devices (eg, DAT machine or digital mixing console). The master Word Clock must be connected to the Word Clock input of all slaved devices using BNC cable. With the Saffire PRO, in addition to connecting a cable to the EXT WCLK INPUT, the W/CLK SYNC button on SaffireControl PRO must be selected in order to establish Word Clock sync. All devices which share a master clock should be set to identical sample rates and bit depths.

■ Using Inserts

There are two available Inserts on Saffire PRO, for Inputs 1 and 2, activated by the corresponding INSERT switches within SaffireControl PRO:

Click switch to activate Insert 1
(uses Line Input 5)

Click switch to activate Insert 2
(uses Line Input 6)

These inserts are routed using the Line Inputs on the front panel, Input 6 becoming Insert 1 (for Input 1) and Input 5 becoming Insert 2 (for Input 2). When both Inserts are active, the XLR Inputs (for Inputs 5 and 6) can still be used to record and won't be inactive unless the Insert switches are disengaged. In Insert mode, Input 5/6 becomes a send and return for the corresponding Input. As such, a splitter cable is required (one TRS Jack going to two TS Jacks). For anyone wishing to make their own cables, the Tip of the TRS Jack (plugged into the Line Input) is the send signal and the Ring is the return.

■ Saving/Recalling settings

The SAVE switch within SaffireControl PRO allows the software settings to be saved as a file to the computer's hard disk for instant recall at a later date:

Click to recall SaffireControl PRO settings

Click to save SaffireControl PRO settings
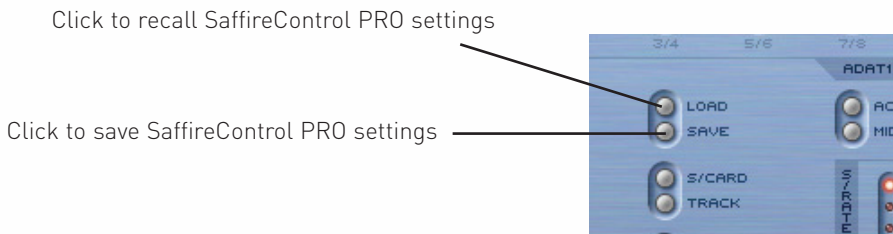
Clicking the switch brings up a standard browser window where the file can be named and placed in any desired location. The file will appear with the extension .sfpro.

To recall the settings, simply click the LOAD button and then navigate to the desired file on your computer.

■ Changing the SaffireControl PRO GUI window – FLOAT and SHRINK

The SaffireControl PRO GUI window can be modified to suit your needs in a number of ways. It can be shrunk down to a smaller size where the Input Mix section will disappear, and it can be made to float permanently over other software so that the GUI is permanently in view even when another application is active. This is done using the SHRINK and FLOAT switches within SaffireControl PRO, as follows:

Click to make SaffireControl PRO float permanently over other software. Click again to deactivate

Click to reduce the software window size. An EXPAND switch will then appear to restore the window to normal size. (Click "expand" to return to the full size GUI window.

Once the window has been reduced, the SHRINK switch becomes an EXPAND switch to allow the window to be returned to its default state.

■ Using MIDI

Saffire PRO can be used to send MIDI data to and from a sequencer, via its Firewire interfacing. To send MIDI data to the sequencer, simply connect a standard MIDI cable from the MIDI Out of your MIDI keyboard or control surface to the MIDI In on the rear panel of Saffire PRO.

Similarly, if wanting to send MIDI data to an external device, connect a MIDI cable from Saffire PRO's MIDI Out to the MIDI input of the device. Make sure that Saffire PRO is first selected as an interface within the sequencer's MIDI preferences before attempting to send and receive data.

A MIDI Thru switch is also provided within SaffireControl PRO:

Click to convert the MIDI Out port into a MIDI Thru for routing of MIDI data without using a sequencer

This converts the MIDI Out port into a MIDI Thru, meaning that MIDI data will route straight from the MIDI In to the MIDI Out, regardless of whether SaffireControl PRO is currently in use with the computer. This saves having to reconnect wires when you wish to use MIDI kit away from the computer, allowing Saffire PRO to act as a standalone MIDI device. Make sure that this switch is not active if wanting to route MIDI data through the sequencer; otherwise the MIDI Out port will transmit two sets of MIDI data (from the MIDI In and from the sequencer) if incorrectly configured.

Controlling multiple interfaces from SaffireControl PRO

If daisy-chaining multiple Saffire PROs together, the section labelled UNIT within SaffireControl PRO software allows the hardware being controlled to be selected, identified and renamed:

The currently active interface is displayed in this window. Click the window to rename the active device

Click ID to identify the Saffire PRO being controlled (the power LED on the active unit will flash)

Click to select a different Saffire PRO to control

Clicking ID will make the power LED of the hardware currently being controlled flash rapidly.

To rename the currently selected unit, simply click the display box that shows the name of the active device. This opens up a separate window where the device can be renamed.

To switch to controlling another device, click the switch on the right, which brings up a drop down list from which another Saffire PRO can be selected.

Note: We do not recommend diasy-chaining more than 3 Saffire PRO hardware units.

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Standalone Mode

Saffire PRO will automatically function in standalone mode when not connected to a computer. Since Firewire bus powering is not available in this mode, the supplied PSU must be connected to the rear panel so that Saffire PRO powers up. There are two separate standalone modes, one for tracking (recording) and one for mixing. The Standalone mode must be set whilst the hardware is still connected to the computer. These modes are set using the Hardware menu in SaffireControl PRO as shown below.
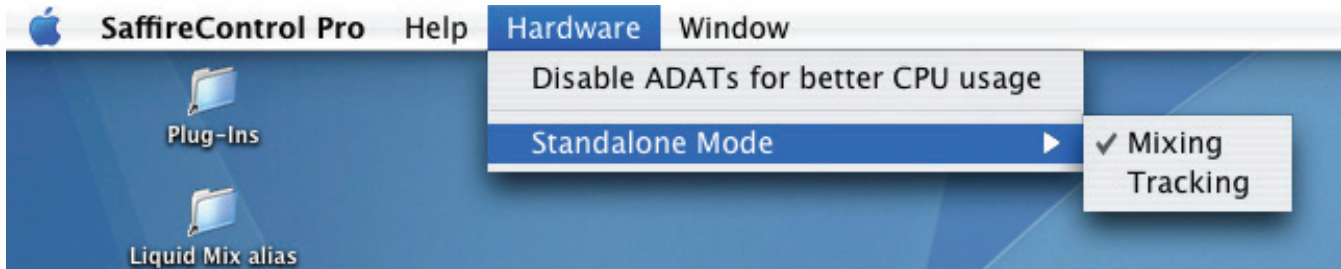
The power LED will blink green to indicate when the unit is operating in Standalone mode.

STANDALONE TRACKING MODE

When in Standalone mode, the dim and mute buttons operate as S1 and S2 as described below:

S1

• Normal press turns on phantom power for Inputs 1-4.

• Pressing and holding for 1 second activates ADAT/SMUX Input 1-8 and routes the signal to analogue outputs 1-8 (when using ADAT) or 1-4 (when using SMUX). This will automatically synchronise Saffire PRO to that lightpipe input. However, the optical input will turn off if there is not a valid input after 5 seconds.

S2

• Normal press turns on phantom power for Inputs 5-8.

• Pressing and holding holding for 1 second activates ADAT/SMUX Input 9-16 and routes the signal to analogue outputs 1-8 (when using ADAT) or 5-8 (when using SMUX). The power LED on the front panel will turn off indicating successful setup. This will automatically synchronise Saffire PRO to that lightpipe input. The optical input will turn off, however, if there is not a valid input after 5 seconds.

STANDALONE MIXING MODE

In Mixing mode, the Standalone switches (S1 and S2) function as mute and dim for the Main Monitors. The digital inputs will only be active if they were in that state when Saffire PRO was last connected to SaffireControl PRO; if the S/PDIF Input is inactive, you will need to reconnect to a computer and click the S/PDIF enable switch in SaffireControl PRO. ADAT Inputs can be turned on and off using the Standalone buttons (S1 and S2) as follows:

• Pressing and holding S1 (Analogue Inputs 1-4) or S2 (Analogue Inputs 5-8) on power up will turn the phantom power on for that group of inputs. The power LED will start to flash to indicate successful activation.

• Pressing and holding S1 (ADAT 1) or S2 (ADAT 2) will turn the relevant ADAT/SMUX Input on or off (as in tracking mode). Unlike in Tracking mode, there is no input timeout, so if a signal is not received the input will not function.

■ Changes to SaffireControl PRO at higher sample rates – Disabling ADATs

At higher sample rates, SaffireControl PRO's functionality and i/o is limited. This can be optimised by disabling the ADAT ports, if they are not in use. ADAT ports are disabled in the Hardware menu of SaffireControl PRO as follows:

ADAT ports enabled/disabled switch

The following outlines the changes to SaffireControl PRO and i/o at different sample rates by detailing 6 modes described below. Note: The Audio MIDI setup cannot be used to switch to higher sample rates. This must be done using SaffireControl PRO.

Mode 1: 44.1/48kHz Default mode
I/O – 8 Analogue, 2 S/PDIF, 16 ADAT (Total 52)

SaffireControl PRO – Full control
Mode 2: 44.1/48kHz ADAT I/O disabled
I/O – 8 Analogue, 2 S/PDIF (Total 20)
SaffireControl PRO – Full control but no ADATs

The control panel will look exactly the same as for mode No. 1 except the fader bank selector tabs will be greyed out for the ADAT inputs as they do not operate in this mode.

Mode 3: 88.2/96kHz Default mode
I/O – 8 Analogue, 2 S/PDIF, 8 ADAT (4 channels per socket in S/MUX mode) (Total 36)
SaffireControl PRO – No Input Mix capabilities

Mode 4: 88.2/96kHz ADAT I/O disabled

I/O – 8 Analogue, 2 S/PDIF (Total 20)
SaffireControl PRO – Full control but no ADATs

The control panel is the same as the panel described in Mode 2.

Mode 5: 176.4/192kHz Default mode

I/O – 8 Analogue, 2 S/PDIF (Total 20)
SaffireControl PRO – No Input Mix capabilities

The control panel is the same as the panel described in Mode 3.

Mode 6: AC3 pass thru
I/O – 8 Analogue, 2 S/PDIF (Total 20)
SaffireControl PRO – No Input Mix capabilities

This looks similar to the control panel in Mode 3. However this control panel retains the output crossfaders.

Troubleshooting

LEDs on the Saffire PRO hardware aren't working
• Does the unit have power? This is supplied by the Firewire cable, is one connected? If connecting to a 4-pin Firewire port, is the external PSU connected?

Saffire PRO is not recognised as a valid audio interface by the recording software in use
• Is the hardware connected to the computer over Firewire?
• Have the drivers been correctly installed from the accompanying CD-ROM?

No signal when using mic inputs
• Is the unit powered correctly? See above
• Is the gain dial of the corresponding input on the hardware set sufficiently high? Rotate clockwise to increase the level
• Is something connected to the corresponding line input on the hardware? This will deactivate the mic input
• For microphones that require phantom power (e.g. condenser mics), is the relevant 48V switch in the SaffireControl PRO software engaged? (If you are unsure about whether your microphone requires phantom power, check your microphone's user guide.)
• Is the slider for the monitoring pair of outputs far enough to the left (towards the INPUT MIX position)? If over to the right (in the 'S/W' position), only the tracks from the sequencer will be heard

No signal when using line inputs
• Is the unit powered correctly? See above
• Is the gain dial of the corresponding input on the hardware set sufficiently high? Rotate clockwise to increase the level
• Is the Line/Inst switch on the hardware set correctly? The LINE LED must be active
• Is the slider for the monitoring pair of outputs far enough to the left (towards the INPUT MIX position)? If over to the right (in the 'S/W' position), only the tracks playing back from the sequencer will be heard

No signal when plugging an instrument into the line inputs
• Is the unit powered correctly? See above
• Is the instrument plugged into Input 1 or 2? Only these inputs will accept an instrument-level signal
• Is the gain dial of the corresponding input on the hardware set sufficiently high? Rotate clockwise to increase the level
• Is the Line/Inst switch on the hardware set correctly? The INST LED must be active
• Is the slider for the monitoring pair of outputs far enough to the left (towards the INPUT MIX position)? If over to the right (in the 'S/W' position), only the tracks from the sequencer will be heard

No signal heard at one of the outputs
• Is the level of the corresponding pair of outputs set high enough (either within SaffireControl PRO or on the hardware)?
• Is the Mute button for the corresponding pair of outputs activated (either within SaffireControl PRO or on the hardware)?
• Is the Dim switch activated within SaffireControl PRO?
• Are the 'mix' controls for that pair of outputs correctly configured for the signal being monitored? Each pair of outputs has its own set of controls used to determine what audio is heard (a mix of inputs and/or sequencer tracks), located on the right side of the SaffireControl PRO software panel

No tracks heard from the sequencer
• Is the slider for the monitoring pair of outputs far enough to the right (towards the 'S/W' MIX position)? If over to the left (in the INPUT MIX position), only the tracks being recorded will be heard
• Are the tracks in the sequencer being sent to the relevant S/W (playback) tracks routed to the monitoring pair of outputs? Switches on outputs 3-8 allow the playback tracks for that pair of outputs to be outputs 1/2 from the sequencer or the corresponding output values (3/4, 5/6 or 7/8).

Cannot set a sample rate
• Is the Saffire being used to record audio? Whilst audio is being recorded, IN USE will show and the sample rate cannot be selected. Stop the recording to change the sample rate.

Cannot lock to an external device using S/PDIF or ADAT
• Is a valid digital (S/PDIF or ADAT) source connected to the relevant digital input on the rear panel?
• Is the relevant digital input enabled and selected as the sync source? There are enable switches (1 for S/PDIF and 2 for ADAT) allowing the inputs to be activated, and sync switches alongside to select them as the clock source
• Is the Saffire hardware set to the same sample rate as the digital audio received at the S/PDIF or ADAT In? If not, a Lock cannot be achieved

Specifications

MIC

- Frequency Response: 20Hz - 20kHz +/- 0.1 dB
- THD+N: 0.001% (measured at 1kHz with a 20Hz/22kHz bandpass filter)
- Noise: EIN > 120dB (measured at 60dB of gain with 150 Ohm termination (20Hz/22kHz bandpass filter)
- High Pass Filter   - Roll off 12dB per octave 2 pole filter
  Cut off frequency - 3dB at 120Hz
                      - 6dB at 85Hz
                      - 12 B at 56Hz
- Input Impedance   - 2.5kΩ / 150Ω (lo $\overline{Z}$ switch in)

LINE

- Frequency Response: 20Hz - 20kHz +/- 0.1dB
- THD+N: <0.001% (measured with 0dBFS input and 22Hz/22kHz bandpass filter)
- Noise: -90dBu (22Hz/22kHz bandpass filter)

INSTRUMENT

- Frequency Response: 20Hz - 20kHz +/- 0.1dB
- THD+N: 0.004% (measured with 0dBu input and 20Hz/22kHz bandpass filter)
- Noise: -87dBu (20Hz/22kHz bandpass filter)

DIGITAL PERFORMANCE

- Clock Sources:
                      - Internal clock
                      - Sync to word clock on S/PDIF
                      - Sync to word clock on BNC word clock input
                      - Sync to word clock on ADAT1 or ADAT2 inputs
- A/D Dynamic Range 110dB 'A-weighted' (all inputs)
- D/A Dynamic Range 110dB 'A-weighted' (all outputs)
- Clock Jitter < 250 pico seconds
- Sample rate 44.1 to 192kHz

WEIGHT and DIMS

- 3kg - 35cm x 4.5cm x 23.5cm

ANALOGUE INPUTS

- Mic: 8 x XLR on front panel
- Mic Gain: +13dB to + 60dB
- Line 1-8: 2 x 1/4" TRS Jack (front panel)
- Line 1-8 Gain: -10dB to +36dB
- Instrument: As above, switched to Instrument (inputs 1 & 2 only)
- Instrument Gain: +13dB to +60dB

ANALOGUE OUTPUTS

- Line level 8 x 1/4" TRS Jack
- Nominal output level 0dBFS = 16dBu, balanced, +22dBu globally switched with external PSU connected across all outputs
- Frequency Response: 20Hz – 20kHz +/- 0.2dB
- THD+N <0.0010% (-100dB) (measured with 0dBFS input 22Hz/22kHz bandpass filter, un-weighted)
- Software switched hardware DIM –12dB in output pairs 1-2, 3-4, 5-6, 7-8
- Software Digital Volume control for all outputs

All outputs are useable as monitoring outputs

DIGITAL I/O

- 2 x S/PDIF (RCA phono) on rear panel (24-bit, 192kHz) Output transformer isolated
- 2 x ADAT In / Out (44.1 / 48kHz), 16 channels
- 1 x ADAT In / Out (88.2 / 96kHz), 8 channels S-MUX
- Word clock input on BNC
- Word clock output on BNC

MIDI I/O

- 1 in / 1 out thru on rear panel

FIREWIRE S400

- 2 ports

POWER

- Either via FIREWIRE or external PSU (included)

HEADPHONE MONITORING

- 2 x 1/4″ TRS Jack on front panel (mirrors outputs 5-6 and 7-8)
- High power headphone drivers

E & OE

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