



MADI-USB Combo Card

User Guide



IMPORTANT

**Please read this manual carefully before using
your card for the first time.**



This equipment complies with the EMC directive 2004/108/EC

This product is approved to
EMC standards
EN55103-1: 2009 (E2)
EN55103-2: 2009 (E2)

Warning: Any modification or changes made to this device, unless explicitly approved by Harman, will invalidate the authorisation of this device. Operation of an unauthorised device is prohibited under Section 302 of the Communications act of 1934, as amended, and Subpart 1 of Part 2 of Chapter 47 of the Code of Federal Regulations.

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 the 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

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IMPORTANT SAFETY INSTRUCTIONS

Read these instructions.

Keep these instructions.

Heed all warnings.

Follow all instructions.

Do not use this apparatus near water.

Clean only with a dry cloth.

Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do not defeat the safety purpose of a polarised or grounding type plug. A polarised plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Only use attachments/accessories specified by the manufacturer.



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.

Unplug this apparatus during lightning storms or when unused for long periods of time.

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 fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



NOTE: It is recommended that all maintenance and service on the product should be carried out by Soundcraft or its authorised agents. Soundcraft cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.



WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not expose the apparatus to dripping or splashing and do not place objects filled with liquids, such as vases, on the apparatus. No naked flame sources, such as lighted candles, should be placed on the apparatus.

Ventilation should not be impeded by covering the ventilation openings with items such as newspapers, table cloths, curtains etc.



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 when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

FOR YOUR OWN SAFETY AND TO AVOID INVALIDATION OF THE WARRANTY PLEASE READ THIS SECTION CAREFULLY.

SAFETY SYMBOL GUIDE

For your own safety and to avoid invalidation of the warranty all text marked with these symbols should be read carefully.

WARNINGS



The lightning flash with arrowhead symbol, is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTIONS



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.

NOTES



Contain important information and useful tips on the operation of your equipment.

HEADPHONES SAFETY WARNING



Contain important information and useful tips on headphone outputs and monitoring levels.

INTRODUCTION



The Soundcraft® MADI-USB Combo card offers digital audio connection between an Si series console*1 and Apple® Mac® or PC with a USB port as well as any of the Soundcraft range of Stageboxes via Soundcraft's proprietary Cat 5 MADI connection.

Audio capability across the USB link is 32 channels in and 32 channels out at 48KHz, whilst the Cat 5 MADI port can be used simultaneously with up to 32 inputs and 32 outputs. More channels can be transported via MADI at the expense of the USB connection for a maximum of 64 MADI input/output paths.

Connection and setup of the card to a PC is made simple with the use of the Soundcraft digital audio driver and associated control panel. USB connection to a Mac requires no extra software or drivers.

The MADI-USB Combo card is an ideal platform from which to record and use a Stagebox at live situations where recording and remote I/O is a must.



NOTE: Only a maximum of 32 channels of the USB can be used. Standard configuration allows for 32x32 channels of USB and 32x32 channels of remote I/O simultaneously.

NOTE: The packaging, in which your card arrived, forms part of the product and must be retained for future use.

INSTALLING THE DRIVERS (PC ONLY)

To use the MADI-USB Combo Card on PCs additional drivers are necessary. Soundcraft's MADI-USB Combo card audio drivers can be found on the Soundcraft website (www.soundcraft.com). The install package includes WDM and ASIO drivers for low-latency operation with a control panel to configure driver settings for best performance.



1394 control panel, similar for USB

Before you install the PC drivers, insert the MADI-USB Combo Card into the console, connect the PC to the MADI-USB Combo card and boot the console.

Once the drivers are installed, shortcuts for the control panel are available on the desktop or under all programs, Harman Pro, Soundcraft, Multichannel USB Audio.

When the card is connected to the computer, taskbar icons will indicate a device has been detected and clicking the icon will open the appropriate control panel.

When the drivers are installed onto your PC, you will need to restart your machine for the install process to be complete.



NOTE: Additional drivers are not needed for Mac as the MADI-USB Combo card uses Apple®'s Core Audio drivers for USB recording.

CONFIGURING THE AUDIO SETTINGS

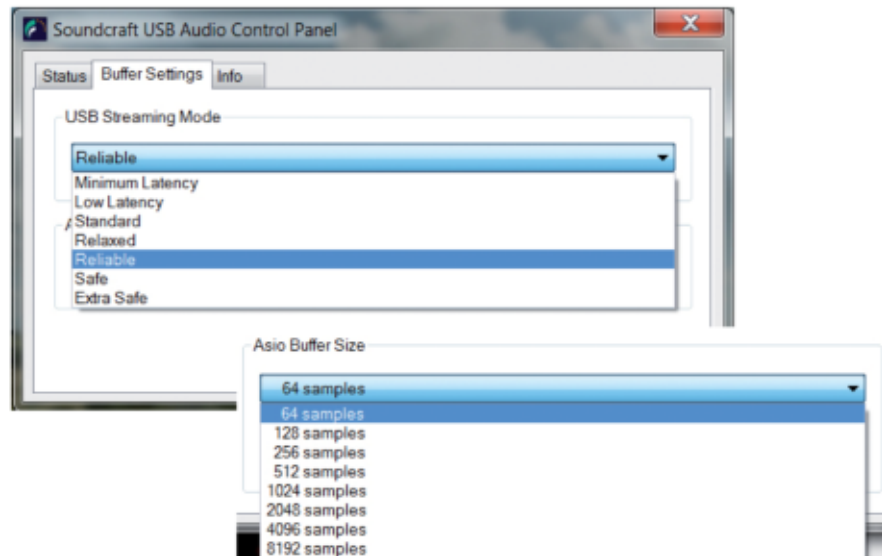
The Soundcraft Audio Driver settings can be found in the Soundcraft USB Control Panel. Within this menu, there are options to adjust the streaming mode of the MADI-USB Combo Card and the buffer size from 64 samples up to 8192 samples.



Recommended buffer size will vary depending on application, however higher buffer sizes should be used when monitoring from the DAW is not necessary. For most live recording applications, a standard buffer size of 1024 samples is enough to ensure reliable operation and clean audio.

The streaming mode settings modify the behaviour of the USB driver for maximum optimisation when set in conjunction with the buffer size setting. The buffer size modifies the amount of audio data that is stored before being released into the application. A large buffer size results in higher latency to your DAW. A small buffer size reduces the latency to your DAW but can cause audio glitches and errors.

To adjust the buffer size of the MADI-USB Combo card, both the streaming mode and the buffer size settings need to be set correctly corresponding to one another.



For example, by setting the streaming mode to 'Reliable' and then the buffer size to 1024 samples, the system will then be running at 1024 samples and the audio will be clean. For lower buffer sizes, the streaming mode should be set to 'Low Latency' and the buffer size to 128 samples.

A mismatch between Streaming mode and buffer size could cause artefacts in the audio and could corrupt the audio recording. A mismatched buffer setting such as setting the streaming mode to 'Reliable' and the buffer size to 64 samples would result in distorted audio in your recording.

To avoid artefacts and to produce a reliable recording you should select the appropriate buffer size for the streaming mode. When a mismatch occurs, a dialogue will appear at the bottom of the control panel menu with instructions of where to go from the current setting to make a compatible setup.

WARNING: The selected ASIO buffer size is too small for the current USB streaming mode and the current sampling rate. To avoid audio distortions, you should select a larger ASIO buffer size.

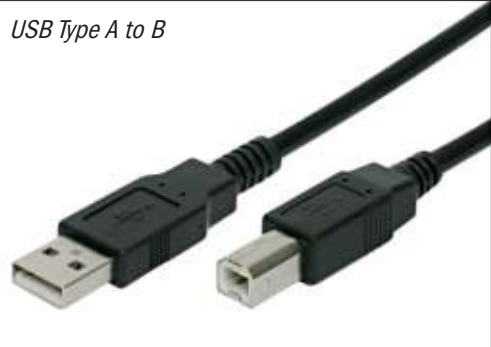


NOTE: The ability to set low buffer sizes depends mostly on CPU Performance. A high-performance computer with a dedicated USB bus will be able to achieve small buffer sizes.

FINDING THE CORRECT CABLE

The USB port on the MADI-USB combo card is the 'B type' connector (the standard type for peripheral devices). USB host devices use the rectangular 'A type' connector. As such, a 'Type A to type B' USB cable is required.

USB Type A to B



NOTE: USB cables come in many forms. Please ensure you use the correct cables for your system for optimal performance.

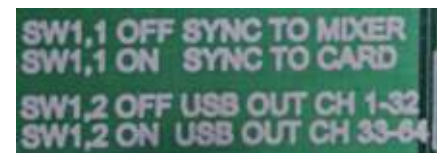
DIP SWITCH CONFIGURATIONS

Dip switches on the card provide extra flexibility depending on the application. The card is sent out of the factory in a standard configuration that allows for 32 channels of Stagebox connectivity and 32 channels of USB recording located on channels 1-32 and 33-64 respectively.

If an application requires a different setup than standard then there are a few more options. There is a ledger on the PCB that displays the options that are achievable. This can be seen below:

SW1,4	SW1,3	USB IN	MADI IN
OFF	OFF	NONE	CH 1-64
OFF	ON	CH 1-32	CH 33-64
ON	OFF	CH 33-64	CH 1-32
ON	ON	NONE	CH 1-64

SW1,4 and SW1,3 is short for switches 3 and 4 respectively on the first dipswitch on the option card.



The standard configuration

Switch 1 alters the syncing interaction between the MADI-USB Combo card and the mixer. **As standard**, the card should be set to sync to the mixer and so, switch 1 should be set **OFF**.

To connect two consoles together using two MADI-USB Combo cards, for a master/slave type operation, the card within the master console should be set to sync to the Mixer (switch 1 OFF), and the slave console/card set to sync to the Card (Switch 1 ON). The consoles will then need to be set to INTERNAL and OPTION clocking respectively.

Switch 2 determines what channel the USB is sent out from on the USB portion of the option card. USB OUT corresponds to output paths on the console that are patched to USB. This switch should be set to correspond with the input range of the USB. **As standard**, this switch should be set to **ON** (33-64).



This is the standard configuration which allows for 32 channels of Stagebox connectivity and 32 channels of simultaneous USB recording.

Switch 3 and 4 together determine the input range and positions of the MADI and USB streams on the 64 channel total. Using these switches and the graph provided on the card itself, the MADI and USB streams can be moved to either ranges 1-32 or 33-64. **As standard**, switch 3 should be set **OFF** and switch 4 should be set to **ON**.

Alternative setups: (MADI 64x32, USB 0x32)

By using the graph, it is also possible to achieve 64 channels of Stagebox input connectivity via MADI at the expense of the USB Input channels. It is possible to receive 64 channels of MADI while also sending 32 channels of USB outputs, allowing for 32 channel USB recording while simultaneously using a Soundcraft Stagebox up to a 64x32 configuration.

To achieve this, switches 3 and 4 should be set to OFF and switch 2 should be set to ON or OFF depending on where the USB channels should be occupied (1-32 or 33-64).

As standard USB outputs should be set to inputs 33-64 (Switch 2 set to ON)

The standard configuration is a setup that allows for the most common of use cases and, for the most part, the card is a plug-and-play type operation.

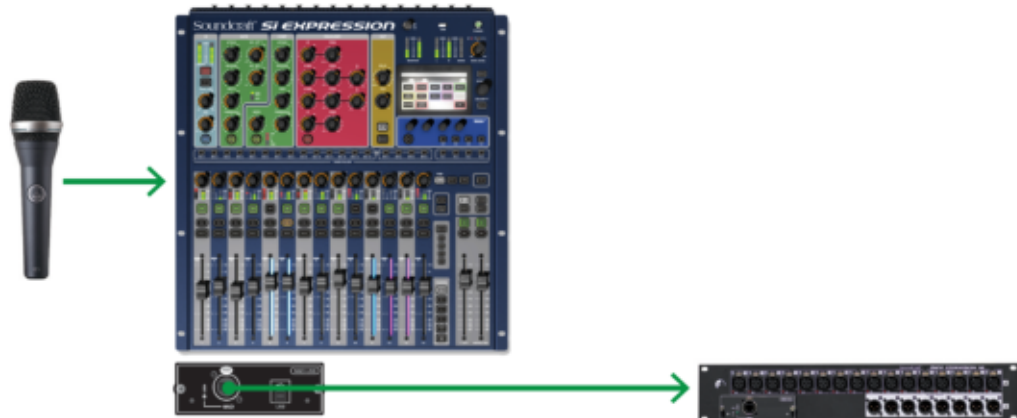
If more than 32 channels are required for Stagebox connectivity, then all 64 channels can be connected to a Stagebox at the expense of the USB channels. For this setup switches 3 and 4 must be turned OFF.

REMOTE I/O USING A MADi-USB COMBO CARD AND A STAGEBOX

The primary purpose of the MADi portion of the card is to provide a connection to a Soundcraft Stagebox to provide more I/O in a remote location such as on-stage or a live room in a studio.

A maximum distance of 100metres, or 300ft, can be obtained using Cat 5 MADi with the appropriate quality cable. As MADi is a point-to-point system, all that is required is a direct connection from the console to the Stagebox through Cat 5.

This system would look as follows:



MADi is a standard protocol on all Soundcraft Stageboxes including the Compact Stagebox and Vi Stagebox. The connection to a Stagebox works exactly the same for all Soundcraft consoles and Stageboxes.

To patch the incoming MADi channels on an Si console, follow these steps:

1. SElect the channel you wish to patch to the Stagebox.
2. Tap 'inputs' on the touch screen.
3. Scroll down to 'input patch' and push the encoder to bring up the patching menu.
4. Scroll to the right and the inputs of the Stagebox will show in batches of 8.
5. Make the patch to the Stagebox by tapping a Stagebox input on the touchscreen.
6. The next 7 patches can be made consecutively by using the 'auto complete' function. This will spill out across the next 7 channels.
7. Repeat across the surface to patch the desired channels to the Stagebox.



RECORDING WITH THE MADI-USB COMBO CARD



The MADI-USB Combo card also enables multi-track recording and playback. Standard mic/line input sources can be recorded through the Si series console via the card to a DAW or similar. This simple yet powerful solution is suitable for recording live gigs but is equally at home in the studio.

To record audio into the Mac or PC, a Digital Audio Workstation (DAW) is required. Any DAW that allows use of third-party audio drivers, like Pro Tools, Logic, Cubase, Nuendo, can be used.



NOTE: The PC or Mac hosting the DAW requires adequate hard disk space, RAM and processing power to ensure reliable operation; see the specification requirements for your chosen DAW package for more information.

The audio to be recorded is typically sent via the 'direct outputs' on the source channels, for example:

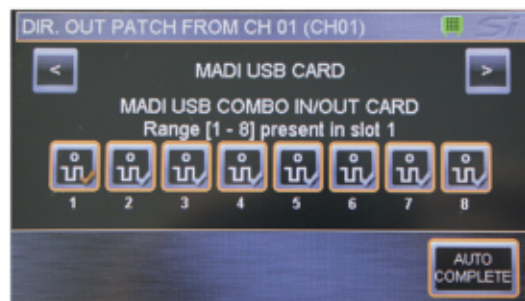
Channel 1-32 on the console would be sent to Direct out 'MADI-USB Combo Card 1-32' and then to DAW channels 1-32 as illustrated in the table below.

Example of Patching Console to DAW

Console	Console Direct Output	DAW Channel Inputs
Input 1: Kick	MADI-USB Out 1	Channel 1: Input 1
Input 2: Snare	MADI-USB Out 2	Channel 2: Input 2
Input 3: Hi Hat	MADI-USB Out 3	Channel 3: Input 3
Input 4: Tom	MADI-USB Out 4	Channel 4: Input 4

To patch Direct outputs on the console follow these steps:

1. SElect the channel you wish to send to the DAW.
2. Tap 'inputs' on the touch screen.
3. Scroll down to 'Direct output patch' and push the encoder to bring up the patching menu.
4. Scroll to the right and the outputs for the MADI-USB Combo card will show.
5. Make the patch to the MADI-USB Combo card by tapping an icon on



the touchscreen.

6. The next 7 patches can be made consecutively by using the 'auto complete' function. This will spill out across the next 7 channels.
7. Now rinse and repeat across the surface to patch the desired channels to the DAW. Each Direct output can be configured to PRE or POST HPF depending on user preference using the Direct out Pre/Post menu item.

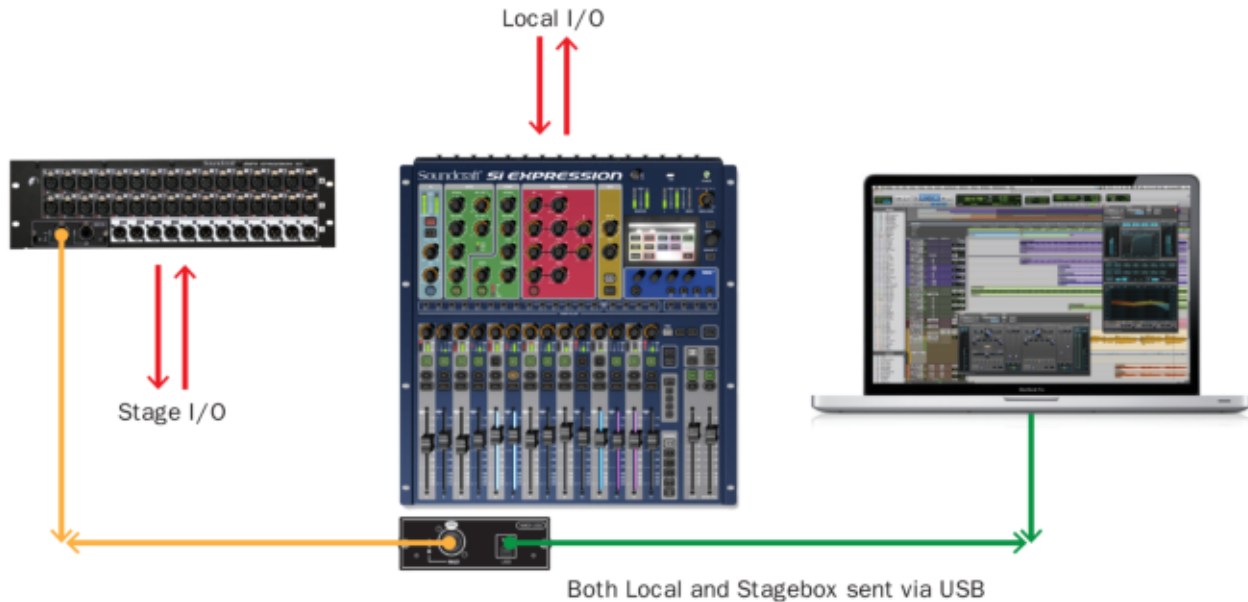
For playback from the DAW, a '1:1 reversal' of the above will return the DAW signals to the console such that the mic recorded from channel 1 is played back on channel 1. This configuration allows a 'virtual sound check' to be conducted by just changing the console input patches from Mic to MADI-USB Combo card input.

Example of Patching DAW to Console		
DAW Channel Outputs	Console Digital In	Console Channel Inputs
Channel 1: Output 1	MADI-USB In 1	Channel 1: Kick
Channel 2: Output 2	MADI-USB In 2	Channel 2: Snare
Channel 3: Output 3	MADI-USB In 3	Channel 3: Hi Hat 3
Channel 4: Output 4	MADI-USB In 4	Channel 4: Tom 4
Etc.	Etc.	Etc.

RECORDING AND USING A STAGEBOX SIMULTANEOUSLY

The MADI-USB Combo Card is designed to combine the two steps above, simultaneous recording and remote I/O. Once a Stagebox patch is made and inputs are being received by the console remotely, the direct output patches from these incoming inputs can be sent to a DAW for recording.

The setup would look as follows:



Providing the Dipswitches are set as above and the Stagebox is connected, clocked and receiving audio, channels will be sent from the Stagebox through the console and straight out to the DAW for recording. Due to the freely assignable architecture of Si Consoles, Direct out patches and input patches can be made from anywhere, to anywhere on the console for maximum flexibility.

A suggested setup is as follows:

Stagebox and Recording		
Stagebox Input	Console Channel	Direct Output Patch
Stagebox Input 1	1	MADI-USB Combo Card 1
Stagebox Input 2	2	MADI-USB Combo Card 2
Stagebox Input 3	3	MADI-USB Combo Card 3
Stagebox Input 4	4	MADI-USB Combo Card 4
Etc.	Etc.	Etc.



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