

Compact Stagebox User & Installation Guide





IMPORTANT

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



This equipment complies with the EMC directive 2004/108/EC and LVD 2006/95/EC

This product is approved to safety standards
IEC 60065:2001 (Seventh Edition) +A1:2005
EN60065:2002 +AMD1:2006 + A11:2008
UL60065-07
CAN/CSA C22.2 No60065.03 + AMD01:2006

And EMC standards
EN55103-1:2009
EN55103-2:2009

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

For further details contact

Harman International Industries Ltd, Cranborne House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JN, UK
Telephone +44(0) 1707 665000 Fax +44 (0)1707 660742 email: soundcraft@harman.com

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Harman International Industries Limited
Cranborne House, Cranborne Road, Potters Bar, Hertfordshire, EN6 3JN, UK
Tel: +44 (0)1707 665000
Fax: +44 (0)1707 660742
<http://www.soundcraft.com>

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INTRODUCTION

SAFETY NOTICES

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.



ESD WARNING

The crossed-out hand symbol is intended to alert the user to devices sensitive to electrostatic discharge. Please refer to the instructions on page 5.

IMPORTANT SAFETY WARNINGS

THIS UNIT MUST BE EARTHED!


Under no circumstances should the mains earth be disconnected from the mains lead.



The wires in the mains lead are coloured in accordance with the following code:

Earth:	Green and Yellow (Green/Yellow - US)
Neutral:	Blue (White - US)
Live:	Brown (Black - US)

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol. 
- The wire which is coloured Blue must be connected to the terminal in the plug which is marked with the letter N.
- The wire which is coloured Brown must be connected to the terminal in the plug which is marked with the letter L.

Ensure that these colour codings are followed carefully in the event of the plug being changed.



The internal power supply unit contains no user serviceable parts. Refer all servicing to a qualified service engineer, through the appropriate Soundcraft dealer.



ELECTROSTATIC DISCHARGE (ESD)



Many semiconductor components are sensitive to electrostatic discharge (ESD). The lifespan of assemblies containing such components can be drastically reduced by improper handling during maintenance and repair. Please observe the following rules when handling ESD sensitive components:

- ESD sensitive components should only be stored and transported in the packing material specifically provided for this purpose.
- When performing a repair by replacing complete assemblies, the removed assembly must be sent back to the supplier in the same packing material in which the replacement assembly was shipped. If this should not be the case, any claim for a possible refund will be null and void.
- Unpacked ESD sensitive components should only be handled in ESD protected areas (EPA, e.g. area for field service, repair or service bench) and only be touched by persons wearing a wristlet connected to the ground potential of the repair or service bench by a series resistor. The equipment to be repaired or serviced as well as all tools and electrically semi-conducting work, storage, and floor mats should also be connected to this ground potential.
- The terminals of ESD sensitive components must not come in uncontrolled contact with electrostatically chargeable or metallic surfaces (voltage puncture, discharge shock hazard).
- To prevent the components from undefined transient stress and possible damage due to inadmissible voltages or compensation currents, electrical connections should only be established or separated when the equipment is switched off and after any capacitor charges have decayed.

WARNINGS

- Read these instructions.
 - Keep these instructions.
 - Heed all warnings.
 - Follow all instructions.
 - Clean the apparatus only with a dry cloth.
 - Do not install near any heat sources such as radiators, heat resistors, stoves, or other apparatus (including amplifiers) that produce heat.
 - Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
 - Do not use this apparatus near water.
 - Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When 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.
 - 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 have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.
-  • Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When the cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- No naked flame sources, such as lighted candles or cigarettes etc., should be placed on the apparatus.
 - 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.
 - This unit contains no user serviceable parts. Refer all servicing to a qualified service engineer, through the appropriate Soundcraft dealer.
 - Ventilation should not be impeded by covering the ventilation openings with items such as newspapers, table cloths, curtains etc.
 - The disconnect device is the mains plug; it must remain accessible so as to be readily operable in use.
 - 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.

WORKING SAFELY WITH SOUND

Although your new unit will not make any noise until you feed it signals, it has the capability to produce sounds which when monitored through a PA system or headphones can damage hearing over time. The table below is taken from the Occupational Safety & Health Administration directive on Occupational noise exposure (1926.52):

PERMISSIBLE NOISE EXPOSURE

DURATION PER DAY, HOURS	SOUND LEVEL dBA SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
<0.25	115



Conforming to this directive will minimise the risk of hearing damage caused by long listening periods. A simple rule to follow is the longer you listen the lower the average volume should be.

Please take care when working with your audio - if you are manipulating controls which you don't understand (which we all do when we are learning), make sure your monitors are turned down. Remember that your ears are the most important tool of your trade, look after them, and they will look after you.

Most importantly - don't be afraid to experiment to find out how each parameter affects the sound - this will extend your creativity and help you to get the best results.

Recommended headphone impedance is 50-600 ohms.

WARRANTY

1. Soundcraft is a trading division of Harman International Industries Ltd.
End User means the person who first puts the equipment into regular operation.
Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.
Equipment means the equipment supplied with this manual.
2. If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.
3. Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.
4. This warranty shall only be available if:
 - a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
 - b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
 - c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and
 - d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.
5. Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.
6. The benefit of this Warranty may not be assigned by the End User.
7. End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

FEATURES

The Compact Stagebox is ideal for existing owners of Vi Series consoles as a cost-effective method of expanding the input capability by expanding to up to 96 mic/line analogue inputs, or as a partner for the Vi1 and Si range of consoles providing cost-effective remote I/O capability in conjunction with the optional MADi interface cards available for those consoles.

The Soundcraft Compact Stagebox offers a high density of I/O connections in only 4U of rack space. The modular unit is fully configurable but is offered with a standard configuration of 32 mic/line inputs, 8 line outputs, 4 x 2 channels of AES/EBU outputs and 2 expansion slots for standard Studer D21m I/O cards. The D21m is the I/O architecture for Studer as well as Soundcraft digital mixing systems and allows connection to most popular digital formats, including CobraNet®, Aviom A-Net®16, EtherSound®, ADAT and RockNet®. A MADi recording interface can also be fitted to the expansion slots.

It is possible to equip the Compact Stagebox with an additional 16 mic/line input XLR module instead of the output module, providing 48 inputs. In this case, analogue or AES outputs could still be obtained on D-Type connectors via D21m cards fitted to the expansion slots.

As well as the flexibility of the D21m option card interface, the Compact Stagebox uses the same I/O modules as found in the Soundcraft Vi1 console. As a result it is possible to move or share modules between console and stagebox, should a different configuration of I/O be required on either the Vi1 or the stagebox. For example, the 8 line out/AES output card from the stagebox could be fitted to the Vi1 console in place of a 16-channel line output card. Alternatively, the mic input modules can be replaced by output modules if large numbers of outputs are required.

When fitting cards to the expansion slots it should be noted that the maximum input and output capacity of the Compact Stagebox is limited by the MADi console link to 64 in/64 out.

The Compact Stagebox is connected to the host console using either Cat-5 or optical-fibre MADi, the same way as the larger 64 mic/line Vi6 Stagebox is hooked up, and shares the same redundant MADi cable capability. The unit comes complete with twin redundant power supplies, thermostatically-controlled fan cooling and full LED status monitoring. An eight-channel GPIO interface is provided as well.

Available Modules

- 16 x mic/line inputs (A947.043000SP)
- 16 x line outputs (A947.043500SP)
- 8 x line outputs + 4 x 2-ch AES/EBU outputs (A947.043700SP)

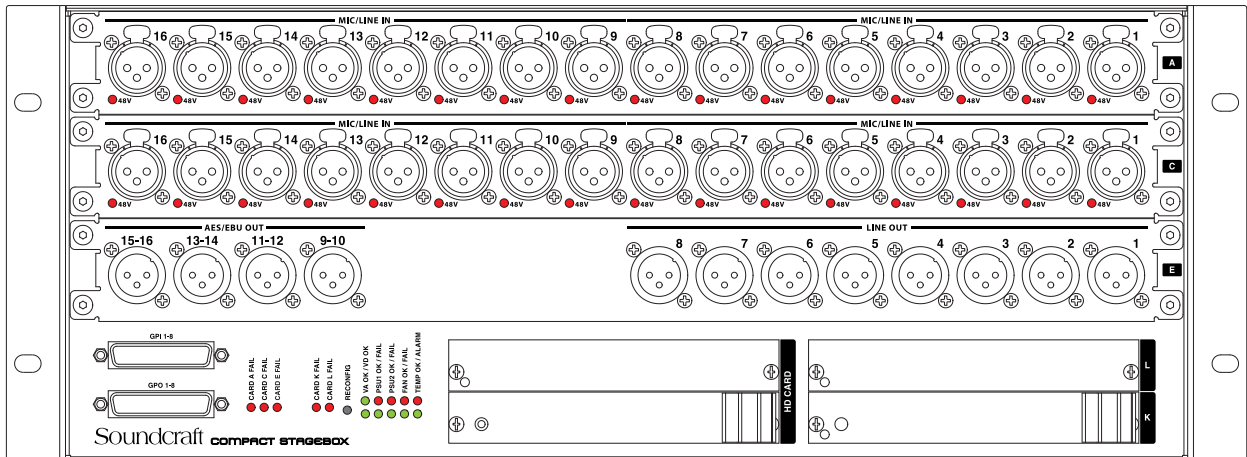
Expansion Slots

These may be used for one* or two of the following standard Studer D21m I/O cards:

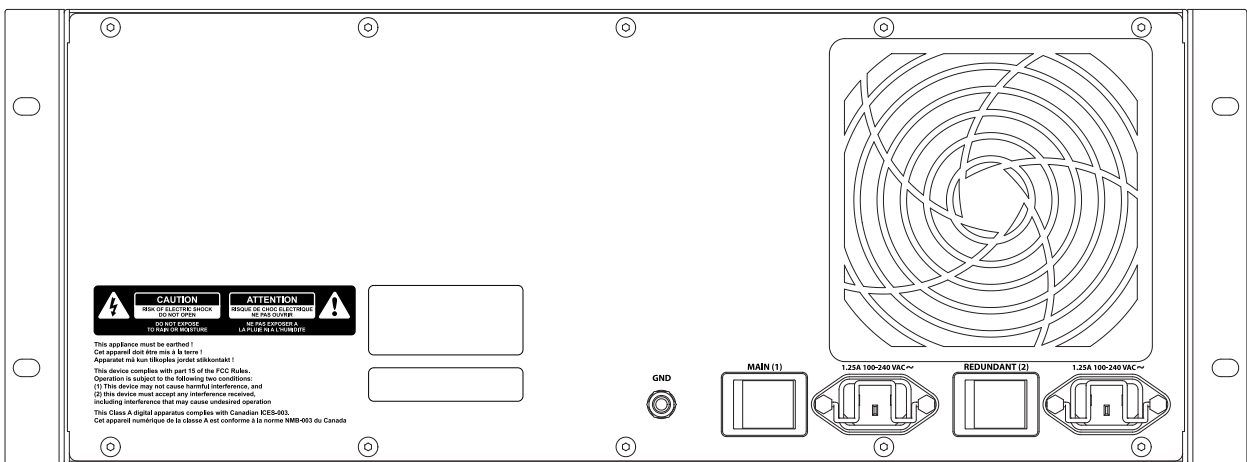
- 8-channel line inputs (RS2425SP)
- 8-channel line outputs (RS2424SP)
- * 8 x 2-channel AES inputs and outputs (RS2422SP)
- 4-channel mic/line inputs with 4 x direct outputs (RS2423SP)
- * 64-channel MADi optical/multimode (RS2426SP) or Cat-5 (RS2409SP)
- 16-channel ADAT inputs and outputs (RS2360SP)
- * 16-channel TDIF inputs and outputs (RS2564SP)
- 16-channel Aviom A-Net® outputs (RS2497SP)
- 32-channel CobraNet® inputs and outputs (RS2485SP)
- *# 64-channel EtherSound® inputs and outputs
- *# 64-channel RockNet® inputs and outputs
- 16-channel SDI deembedder (RS2552SP)
- 16-channel Dolby® E decoder (RS2553SP)

Available from 3rd party manufacturers or distributors only - please contact www.digigram.com for EtherSound® options, www.riedel.net for RockNet® options.

Front View



Rear View



DETAILS

The Compact Stagebox requires the addition of a standard D21m MAD1 card to the Vi or Si option card slot. It contains 3 slots for audio I/O modules, 2 slots for optional D21m I/O modules and the D21m MAD1 HD card providing the Compact Stagebox-to-console connection. Slots are labeled from top to bottom A/C/E for I/O modules and K/L for the optional D21m card slots. These labeling references are used by the patching system when the user wishes to patch the connectors to input channels or output busses.

Primary Power Supply

The primary power supply connectors are located on the rear panel. Both primary power supplies connect to the IEC inlets via their power switches and provide a full range AC inlet, converting 100 to 240 V AC to 24 V DC. The Compact Stagebox is normally fitted with two power supplies, providing redundancy for those requiring it.

Module Function Overview

Normally two mic/line input and one line/AES output modules are fitted, giving 32 inputs and 16 outputs. However, more input or output modules, up to a maximum of 3 modules giving 48 inputs or outputs, can be fitted.

Input Modules

Input modules handle 16 x mic/line amp, phantom power and A-to-D converter. An LED per input indicates whether the phantom power is activated.

Output Modules

There are two different output module types available, both handling 16 outputs in total. In the standard configuration, an output module with 8 x D-to-A converters and electronically balanced line outputs as well as 8 AES/EBU output channels is fitted. An all-analogue line output module with 16 electronically balanced line outputs is optionally available. The modules have a set of relays which will mute the outputs if the power fails.

LED Status Indicators

Status indicator LEDs are available for power rails, IO modules, fan and temperature alarm, and a RECONFIG button that must be pressed after the card configuration has been changed.

MADI HD Link Card

This card provides the audio and control connections to the console through either a Cat-5 or an Optical-fibre MADI link. The corresponding MADI card in the console transmits the clock for the Compact Stagebox down the MADI stream. The second input on the card can either be used to provide a redundant connection to the console, or to connect to a second system if two consoles are used for a monitor/FOH configuration.

The MADI card indicates its clock status with the 'LOCK' LED on the card. An RS422 link output is also fitted, allowing transmission of RS422 data via a 'pipeline' within the MADI stream from a corresponding port on the console's MADI card for remote RS422 control. (This feature is supported by Vi-Series consoles only).



For single cable operation: The front panel toggle switch must be set to either 'MAIN' or 'AUX', depending on which socket is being used.

For dual cable (redundant) operation: The front panel toggle switch must be set to 'RED' mode.

Refer to the illustrations on the following pages.

Expansion Slots K and L (for optional D21m Cards)

In these slots one or two additional input or output cards may be installed (refer to page 8 for available cards, page 16 for installation details). For more information on the D21m cards please refer to the 'Vi IO Option Cards Technical Information' document available from www.soundcraft.com in the 'Downloads' - 'User Guides' - 'Soundcraft Vi1' area.

GPIO

Two D-type connectors are provided handling 8 GP (general purpose) input and output channels, controlled remotely from the control surface. GP inputs are on opto-isolators, GP outputs are on relay contacts.

Connector Pin Assignments:

GPI 1-8 (25-pin D-type, female, UNC 4-40 thread)

Pin	Signal 'GPI 1-8'	Pin	Signal 'GPI 1-8'
1	GPI 1a	14	GPI 1b
2	GPI 2a	15	GPI 2b
3	GPI 3a	16	GPI 3b
4	GPI 4a	17	GPI 4b
5	GPI 5a	18	GPI 5b
6	GPI 6a	19	GPI 6b
7	GPI 7a	20	GPI 7b
8	GPI 8a	21	GPI 8b
9-13	GND (0 V)	22-25	VCC (+5 V/600 mA max.)

GPO 1-8 (25-pin D-type, female, UNC 4-40 thread)

Pin	Signal 'GPO 1-8'	POn	Signal 'GPO 1-8'
1	GPO 1a	14	GPO 1b
2	GPO 2a	15	GPO 2b
3	GPO 3a	16	GPO 3b
4	GPO 4a	17	GPO 4b
5	GPO 5a	18	GPO 5b
6	GPO 6a	19	GPO 6b
7	GPO 7a	20	GPO 7b
8	GPO 8a	21	GPO 8b
9-13	GND (0 V)	22-25	VCC (+5 V/600 mA max.)

Inputs:

Control inputs (GPI Xa/b) are completely independent and electrically isolated. They may be used either with the internal +5 V DC supply voltage, or with external voltages of 5...24 V DC, regardless of the polarity.

Outputs:

Control outputs (GPO Xa/b) are completely independent, electrically isolated relay contacts, closed if active. Maximum switching power 62.5 VA / 30 W; max. switching voltage 50 V AC or DC; max. switching current 1 A. Contact resistance (initial value) is max. 100 mΩ at 6 V DC/1 A.

The +5 V DC supply voltage and/or the ground (GND) terminals, together with the relay contacts, may be used to generate an output signal.

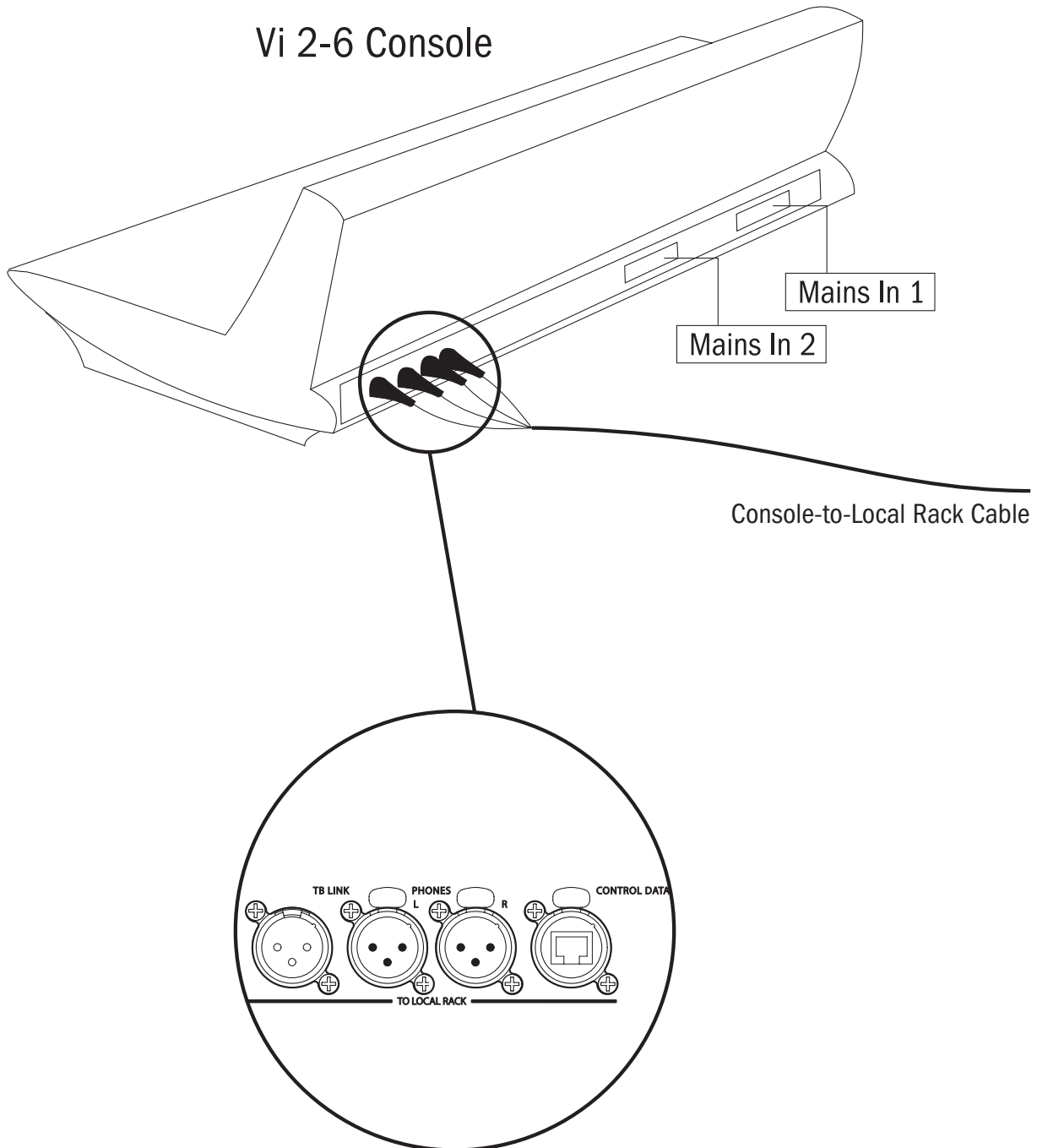


The total current supplied by all VCC (+5 V DC) pins of the GPI/GPO 1-8 connectors *must not* exceed 600 mA.

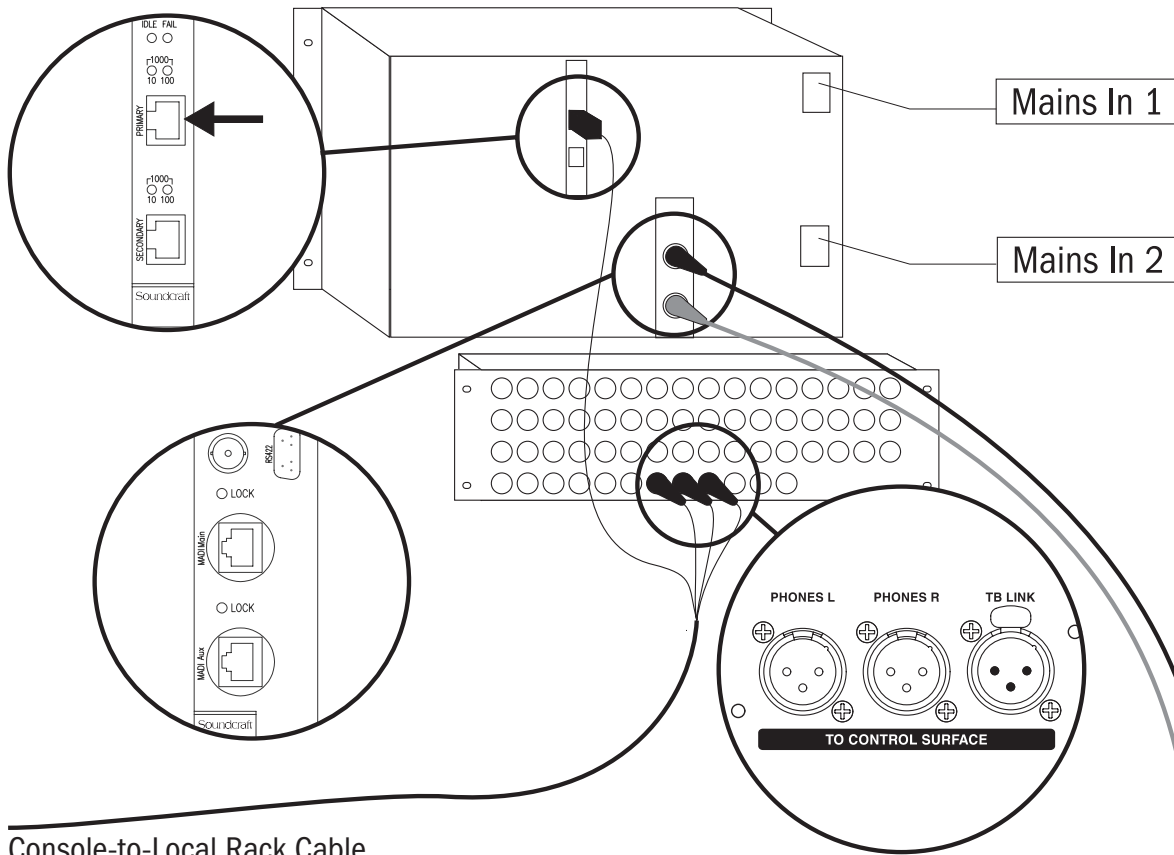
CONNECTING IT UP

Compact Stagebox Connecting to Vi2-Vi6 Range Consoles

Note: Connections from the local rack to the Compact Stagebox may vary depending on actual flightcase and breakout panel options.



Local Rack

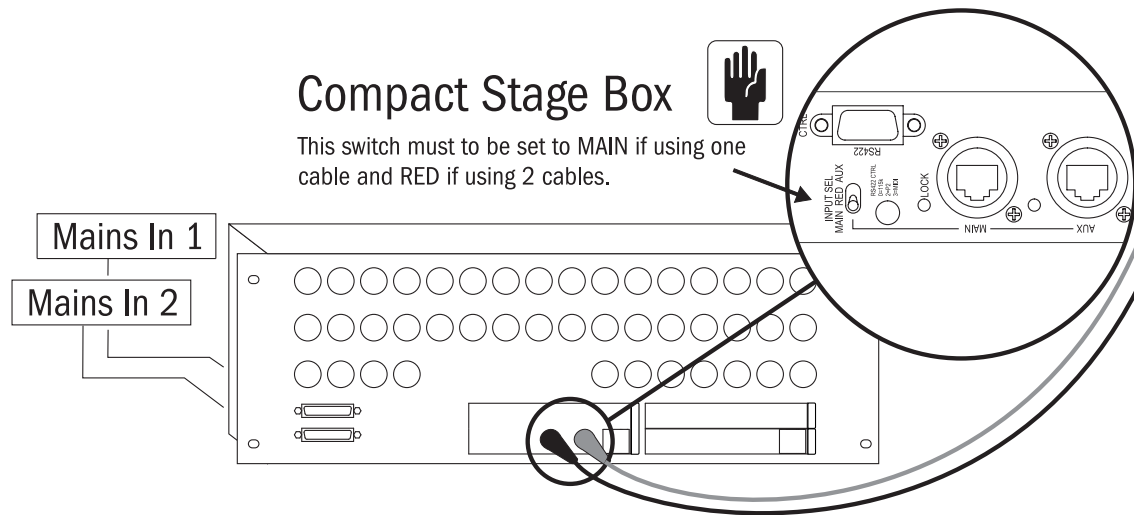


Console-to-Local Rack Cable

Optical or RJ45 Cables depending on MADI card type

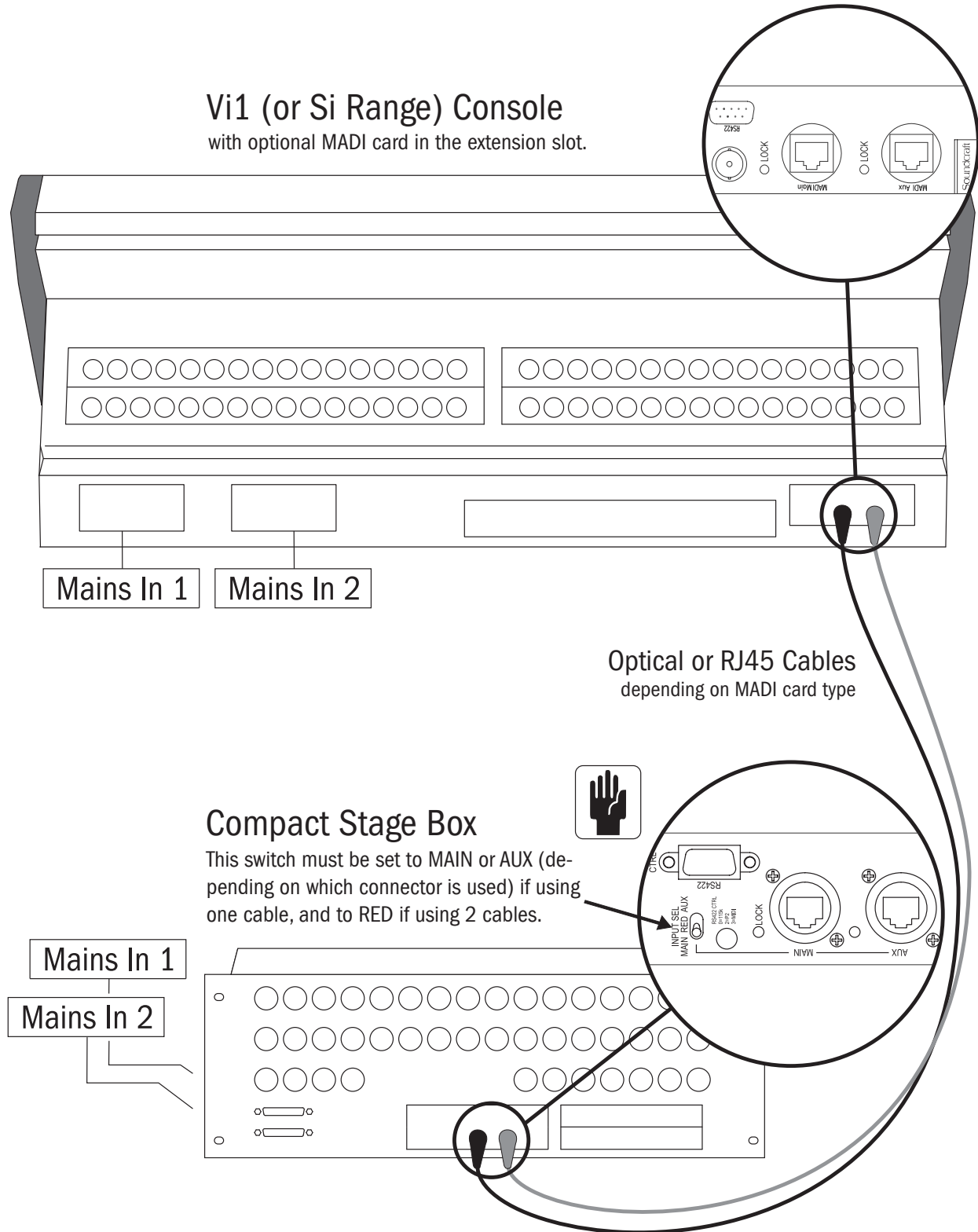
Compact Stage Box

This switch must be set to MAIN if using one cable and RED if using 2 cables.



Compact Stagebox Connecting to Vi1 and Si Range Consoles

- Connections from the console to the Compact Stagebox may vary depending on actual flightcase and breakout panel options.
- For SI range consoles, currently only an optical multi-mode fibre version MADI Card is available; however, the application is similar to the example given below.

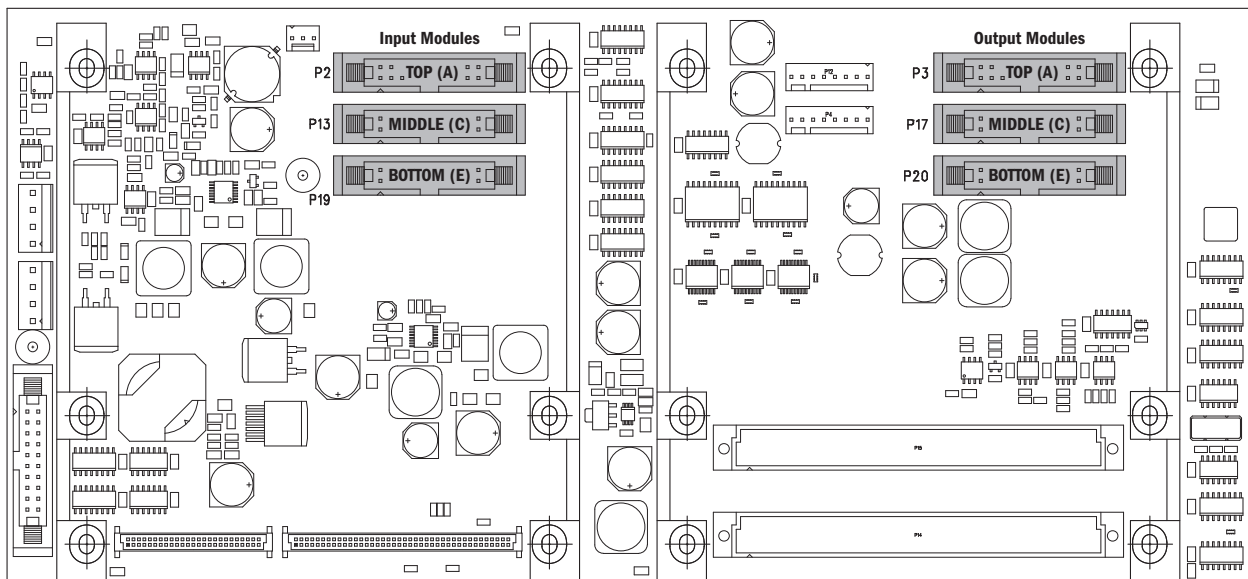


REPLACING I/O MODULES



In order to replace an input or output module - e.g. if more inputs or outputs are required - first switch the Compact Stagebox OFF and unplug the mains cable(s).

- Observe the precautions for handling devices sensitive to electrostatic discharge – refer to p. 5.
- For all screws in question a no. 2.5 Allen screwdriver is used.
- Remove the top cover of the Compact Stagebox (2 countersunk screws M4x8 on top, 13 screws M4x6 around the upper edge).
- Then remove the module concerned. Unplug the flat cable from the backplane PCB and the supply loom from the module.
- Remove the 4 screws M4x6 at the module's edges.
- Insert the new module and fix it with the 4 screws. Connect the flat cable to the corresponding socket on the backplane PCB (for correct connection refer to the illustration below).
- Connect the supply loom to the module. Supply looms are identical for input and output modules, no particular order has to be followed when reconnecting them. Like the power connections in a PC, there is one connector more than modules to feed; the fourth connector is not used.
- For fixing the top cover it is recommended to tighten all screws only after all of them have been inserted a few turns into their threads.
- Connect the Compact Stagebox to the mains again, switch it on and press the RECONFIG button with a small tool (e.g. the Allen screwdriver used before).
- Remember that the new input/output count needs to be configured in your console's I/O mapping. Please refer to its user guide.



The 3 module slots are labeled A, C and E; they correspond to the connectors of the backplane PCB according to the illustration above. There are 3 connectors on the left for input modules, and 3 on the right for output modules. Modules must be connected to the correct connector in order to have a correct assignment of input and/or output channels.

In the standard configuration (2 input modules in slots A and C, and 1 output module in slot E) the modules are connected as follows:

Input module A → top connector on the left side of the backplane (P2)

Input module C → middle connector on the left side of the backplane (P13)

Output module E → bottom connector on the right side of the backplane (P20).

If someone wanted now that all 3 modules are inputs to give a 48 input/0 output stagebox, they are connected as follows:

Input module A → top connector on the left side of the backplane (P2)

Input module C → middle connector on the left side of the backplane (P13)

Added input module E → bottom connector on the left side of the backplane (P19).

Supply looms are identical for input and output modules. No particular order has to be followed when re-connecting them. Like the power connections in a PC, there is one connector more than modules to feed; this connector is not used.

INSTALLING D21m I/O CARDS

- In the K and L slots, one or two additional D21m input or output cards may be installed.
- In order to do so, *first switch the Compact Stagebox OFF and unplug the mains cable(s).*
- Remove the blank panel(s) with a size 2 screwdriver and insert the D21m card(s). Re-tighten their screws.
- Connect the Compact Stagebox to the mains again, switch it on and press the RECONFIG button with a small tool (e.g. a size 2.5 Allen screwdriver).
- Remember that the new input/output count needs to be configured in your console's I/O mapping. Please refer to its user guide.

For more information on the D21m cards please refer to the 'Vi IO Option Cards Technical Information' document available from www.soundcraft.com in the 'Downloads' - 'User Guides' - 'Soundcraft Vi1' area.

REPLACING/CLEANING THE FAN AIR FILTER MAT

- For cleaning or replacing the air filter mat, just pull the black frame away from the fan air inlet and remove the filter mat.
- In order to clean the filter mat, thoroughly rinse it with warm water and let it dry completely before reinstalling it.