SOUNDCRAFT
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HARMAN

Soundcraft Studer I/O Rack Systems

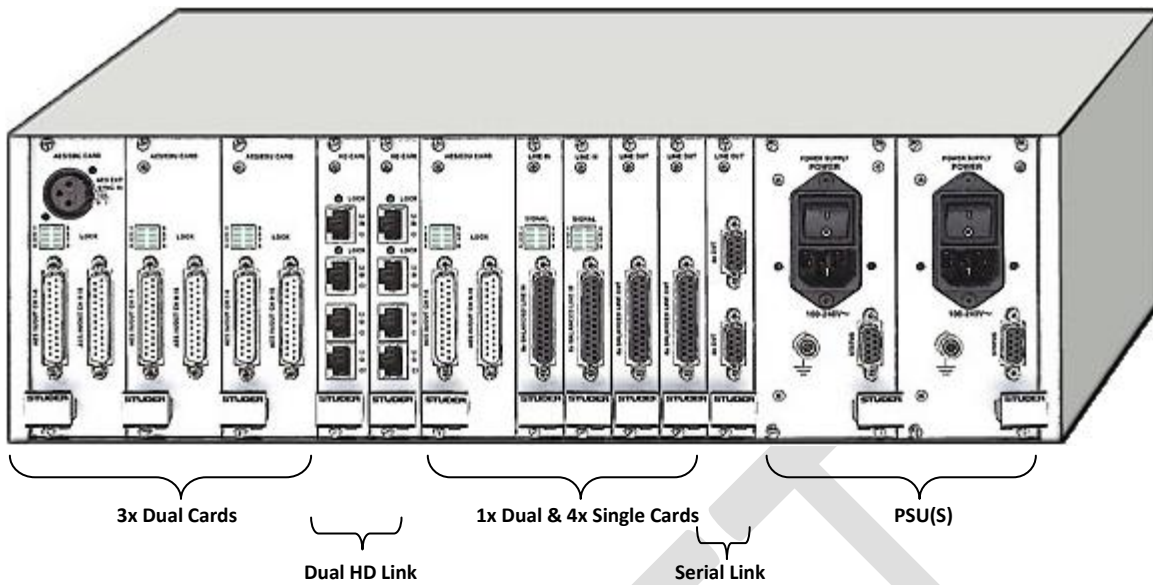## Contents

Version:
V1.0 Released

Introduction:
Soundcraft Studer produce a number of different I/O rack solutions; these offer probably the widest range of physical and electrical options on the market today catering for different budgets requirements and similar.

All of the racks are based on a technology designed for the Vista series of consoles known as D21m and regardless of the physical form factor employed the technology inside is the same as that powering racks and routers in some of the most demanding and mission critical installations and tours anywhere in the world.

This document will describe each of the racks in detail; outline the cards that may be fitted and how to correctly configure the racks.

NOTE: Because all the racks 'appear' as D21m racks it is important to understand which cards are physically compatible with which racks when using the off-line-editors in order to ensure you create a configuration that can be realized in the 'real world' to prevent irreconcilable errors when loading a show *created* on an off line editor.

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Studer D21m Racks:

The 3 U frame provides 12 slots for I/O card insertion. Each card may provide a different number of I/O channels; depending on its capabilities (e.g. a microphone card provides four channels of microphone inputs, while an ADAT card provides 16 channels of inputs and outputs simultaneously). Some cards occupy two slots, and therefore a maximum of 6 double-width cards may be inserted into a frame.

When used as a stagebox the frame hosts one Dual "High Density Link" cards (short: HD Link), providing the main audio connection to the host console; The frame may be equipped with redundant power supplies, Because of the very high density most D21M form factor cards employ SUB-D, CAT5, Coaxial or Optical SC connectors rather than XLR's. There a number of additional positions however these are reserved for 'other applications' or specialist cards not associated with standard audio inputs or outputs:

SLOT POSITION (Number / Designation)														
1 'A'	2 'B'	3 'C'	4 'D'	5 'E'	6 'F'			7 'G'	8 'H'	9 'I'	10 'J'	11 'K'	12 'L'		
Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	RESERVED FOR MADI HD CARD		Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	Studer D21m Card Slot – User Definable	RESERVED	POWER SUPPLY(S)

Card Types:

Please see Appendix A, Card Types, Compatibility & Restrictions: for a list of card types compatible with the Studer D21m Rack.

Card Installation:

Any of the supported D21m audio cards may be installed in any of the slots with the following basic restrictions:

- Any 'Double Width' cards such as AES or MADI must be installed in an 'odd' slot number
- If fitting an odd number of Mic/Line cards they should be inserted as pairs with the last card in an odd number slot (no. 1, 3, 5…)

For further information please refer to the Studer D21m System Guide document # D21Mm_PI_0708

Mapping of I/O to MADI Channels:

General rule: The HD card fills in channels starting from the left side of the frame (slot 1) to the right. Input and output cards may therefore be mixed, but their order dictates the "filling up" of MADI outputs from the frame. In the same way the order of outputs from left to right defines which MADI inputs are being redirected to that card.

The following example illustrates the rules within a complex I/O system:

	AES I/O	ADAT I/O	Line In	Line Out	Mic/Line In	MADI H/D						PSU	PSU
Input Ch	16	16	8	-	4								
Output Ch	16	16	-	8	-								

MADI Channel	From I/O Cards
1-16	AES/EBU
17-32	ADAT
33-40	Line In
41-48	Mic/Line In

| MADI Channel	To I/O Cards
1-16	AES/EBU
17-32	ADAT
33-40	Line Out

In the event there are more than 64 channels of I/O card installed in the rack then these will be unavailable to the user.
NOTE: This configuration of the D21m rack with MADI HD card is seen as a stagebox by a Vi or Si system

Restrictions:

Si consoles do not support Serial MADI link function or GPIO

Soundcraft Vi Racks:
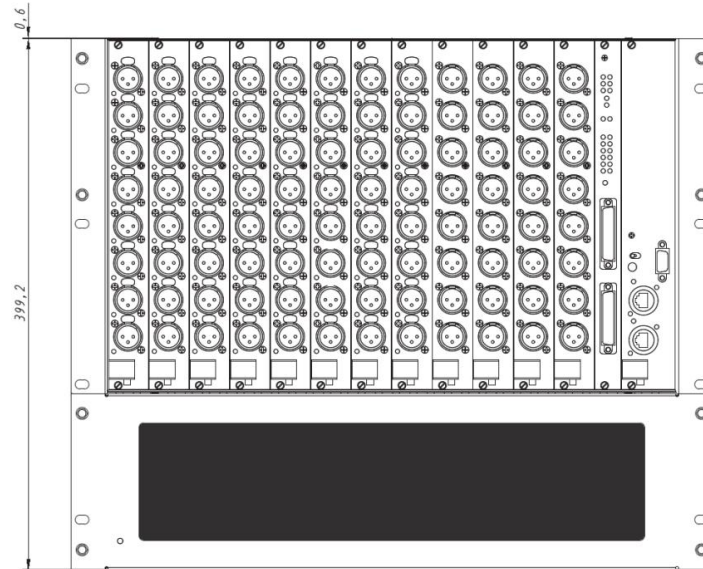
The Soundcraft Vi Racks are full-size racks designed primarily for tour applications where the rack will sit beside the stage. Being a full-size rack the input and output connectors of most cards are on 3-pin XLR connectors for easy integration with typical touring & installation hardware infrastructure. There are 12 user configurable positions for insertion of various option cards. There a number of additional positions however these are reserved for 'other applications' or specialist cards not associated with standard audio inputs or outputs:

SLOT POSITION (Number / Designation)													
1 'A'	2 'B'	3 'C'	4 'D'	5 'E'	6 'F'	7 'G'	8 'H'	9 'I'	10 'J'	11 'K'	12 'L'		
USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Mic In)	USER DEFINABLE (nominally 8x Line Out)	USER DEFINABLE (nominally 8x Line Out)	USER DEFINABLE (nominally 8x Line Out)	USER DEFINABLE (nominally 8x Line Out)	RESERVED – GPIO & STATUS	RESERVED – MADI LINK CARD

Card Types:
Please see Appendix A, Card Types, Compatibility & Restrictions: for a list of card types compatible with the Vi Stagebox.

Card Installation:
Any of the supported Vi Stage box audio cards may be installed in any of the slots with the following restrictions:
- None.

Mapping of I/O to MADI Channels:

General rule, the stagebox fills in all channels starting from the left side of the frame slot 1(A) to the right. Input and output cards may be mixed but their order dictates the "filling up" of MADI outputs from the frame. In the same way the order of outputs from left to right is defining which MADI inputs are being redirected to that card.

The following example illustrates the rules within a complex I/O system:

	Mic In	Mic In	AES In	CobraNet I/O		Mic In	Line Out	Line Out	Line Out	AES Out			RESERVED - GPIO	RESERVED – MADI LINK CARD
Input Ch	8	8	8	32		8								
Output Ch				32			8	8	8	8				

MADI Channel	From I/O Cards
1-8	Mic In
9-16	Mic In
17-24	AES IN
25-56	CobraNet In
57-64	Mic In

MADI Channel	To I/O Cards
1-32	CobraNet In
33-40	Line Out
41-48	Line Out
49-56	Line Out
57-64	AES Out

In the event there are more than 64 channels of I/O card installed in the rack then these will be unavailable to the user.

Restrictions:

Si consoles do not support Serial MADI link function or GPIO

Soundcraft Compact Stagebox:
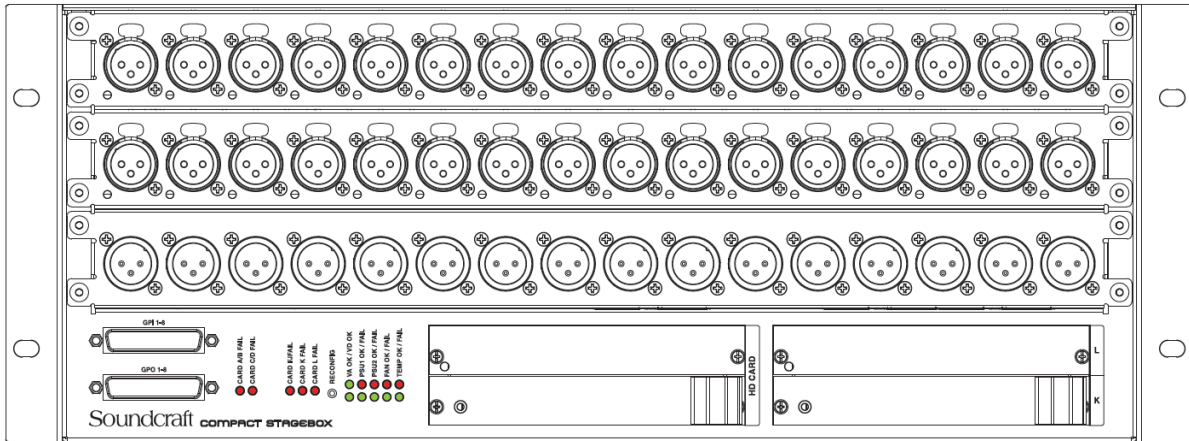
The Soundcraft Compact Stage Racks are mid-size (4U) racks based on the larger Soundcraft Vi Stagebox hardware designed primarily for tour or installation applications where the rack will sit beside the stage. Being a designed for live audio work the input and output connectors of most standard cards are on 3-pin XLR connectors for easy integration with typical touring & installation hardware infrastructure.

There are five user configurable slots 'A', 'C' and 'E' these accept 16 channel Soundcraft Compact Stagebox analogue & digital audio I/O cards whilst slots 'K'& 'L' accept D21m cards.

NOTE: Positions E, F, G & H are not accessible.
NOTE: The MADI HD link position is reserved link for back to the host console.

SLOT POSITION (Number / Designation)		
1 - A (16 channels, nominally 16x Mic In)		
2 - C (16 channels, nominally 16x Mic In)		
3 - E (16 channels, nominally 8x AES (4 pairs) and 8x analogue Line Out)		
RESERVED GPIO & STATUS LED's	RESERVED FOR MADI HD CARD	5 – L: Soundcraft D21m Card Slot
		4 – K: Soundcraft D21m Card Slot

Card Types:
Please see Appendix A, Card Types, Compatibility & Restrictions: for a list of card types compatible with the Compact Stagebox.

Card Installation:
Any of the supported Compact Stagebox cards may be installed in any of the slots with the following restrictions:
- Cards with high channel count such as MADI and Ethersound may need to have the number of channels restricted by means of their internal DIP switches, in order not to use up channels needed by the cards in slots A, C & E.

Mapping of I/O to MADI Channels:

General rule, the stagebox fills in all channels starting from the slot 1 (A&B) and continuing in numerical order. Input and output cards may be mixed but their order dictates the "filling up" of MADI outputs from the frame; in the same way the order of outputs starts from slot 1.

The following example illustrates the rules within a complex I/O system:

Slot Number / Designation	Card name	Input Ch	Output Ch
1 (A))	16ch Mic In	16	-
2 (C)	16ch Mic In	16	-
3 (E)	Line & AES Out	-	16
4 (K)	CobraNet In/Out	32	32
5 (L)	Line Out	-	8

MADI Channel	From I/O Cards
1-16	Mic In
17-32	Mic In
33-64	CobraNet In

MADI Channel	To I/O Cards
1-16	Line Out
17-48	CobraNet Out
49-56	Line Out

In the event there are more than 64 channels of I/O card installed in the rack then these will be unavailable to the user.

Restrictions:

Si consoles do not support Serial MADI link function or GPIO

Appendix A, Card Types, Compatibility & Restrictions:

Card Name	Part No.	Physical Format	Card ID Number	Width (I/O chans)	Width (slots)	Compatible With:			Notes:
						D21M I/O Rack	Vi Stagebox	Compact Stagebox	
Soundcraft Vi Stagebox Cards									
Vi Analogue Mic/Line Input Card	RS2399SP	Vi Rack	1A	8/0	1	-	Y	-	
Vi Analogue Line Output Card	RS2400SP	Vi Rack	1B	0/8	1	-	Y	-	
Vi AES/EBU Digital Input Card	RS2446SP	Vi Rack	1D	8/0	1	-	Y	-	
Vi AES/EBU Digital Output Card	RS2496SP	Vi Rack	1C	0/8	1	-	Y	-	
Vi CobraNet I/O Card	RS2498SP	Vi Rack	1E	32/32	1	-	Y	-	
Vi Aviom A-Net Output Card	RS2498SP	Vi Rack	21	0/16	1	-	Y	-	
Vi Ethersound I/O Card	N/A	Vi Rack	24	64/64	2	-	Y	-	Manufactured by Digigram
Soundcraft Compact Stagebox Cards									
Compact Analogue Mic/Line Input Card	A947.043000 & 043100	Compact Rack	29	16/0	2	-	-	Y	Compact Stagebox slots A&B, C&D I&J only
Compact Analogue Line Output Card	A947.043500 & 043600	Compact Rack	2A	0/16	2	-	-	Y	Compact Stagebox slots A&B, C&D I&J only
Compact Analogue Line & AES Out Card	A947.043700	Compact Rack	2E	0/16	2	-	-	Y	Compact Stagebox slots A&B, C&D I&J only
Soundcraft D21M Format Cards									
D21m AES/EBU Digital I/O Card with SFC	RS2422SP	D21m Rack	05	16/16	2	-	-	Y	Compact Stage Rack slot K only
D21m Analogue Line Output Card	RS2424SP	D21m Rack	01	0/8	1	-	-	Y	Compact Stage Rack slots K&L only
D21m Analogue Line Input Card	RS2425SP	D21m Rack	02	8/0	1	-	-	Y	Compact Stage Rack slots K&L only
D21m MADI I/O Card – all types	Contact Sales/Tech Support	D21m Rack	18	64/64	2	-	-	Y	Compact Stage Rack slot K only
D21m CobraNet I/O Card	RS2485SP	D21m Rack	19	32/32	1	-	-	Y	Compact Stage Rack slots K&L only
D21m Aviom A-Net Output Card	RS2497SP	D21m Rack	1F	0/16	1	-	-	Y	Compact Stage Rack slots K&L only
D21m ADAT I/O Card	RS2360SP	D21m Rack	0A	16/16	1	-	-	Y	Compact Stage Rack slots K&L only
D21m TDIF I/O Card	RS2564SP	D21m Rack	0C	16/16	2	-	-	Y	Compact Stage Rack slot K only
D21m Sdi De-Embedder Card	RS2552SP	D21m Rack	23	16/0	1	-	-	Y	Compact Stage Rack slots K&L only
D21m Dolby E dual decoder card	RS2553SP	D21m Rack	13	16/8	1	-	-	Y	Compact Stage Rack slots K&L only
Studer D21M Format Cards									
D21m Mic/Line card in left slot w_insert	1.949.427	D21m Rack	10	4/0	1	Y	-	-	
D21m Analogue Line Input Card	1.949.421	D21m Rack	02	8/0	1	Y	-	-	
D21m Analogue Line Output Card	1.949.420	D21m Rack	01	0/8	1	Y	-	-	
D21m Analogue Insert	1.949.428	D21m Rack	??	??	1	Y	-	-	
D21m AES/EBU Digital I/O Card with SFC	1.949.423	D21m Rack	05	16/16	2	Y	-	-	Odd number slots only
D21m MADI I/O Card – all types	Contact Sales/Tech Support	D21m Rack	18	64/64	2	Y	-	-	Odd number slots only
D21m Sdi De-Embedder Card	1.949.441	D21m Rack	23	16/0	1	Y	-	-	
D21m SDI Embedder/DeEmbedder Card	1.949.442	D21m Rack	0D	8/0	1	Y	-	-	
D21m Dolby E decoder card	1.949.443	D21m Rack	12	8/8	1	Y	-	-	
D21m Dolby E dual decoder card	1.949.444	D21m Rack	13	16/8	1	Y	-	-	
D21m ADAT I/O Card	1.949.425	D21m Rack	0A	16/16	1	Y	-	-	
D21m TDIF I/O Card	1.949.426	D21m Rack	0C	16/16	2	Y	-	-	Odd number slots only
D21m CobraNet I/O Card	1.949.445	D21m Rack	19	32/32	1	Y	-	-	
D21m Aviom A-Net Output Card	1.949.446	D21m Rack	1F	0/16	1	Y	-	-	