

HC Bridge SRC

User Guide

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Solid State Logic[®]

O X F O R D • E N G L A N D

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PLEASE READ ALL INSTRUCTIONS, PAY SPECIAL HEED TO SAFETY WARNINGS.

E&OE

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Introduction

Overview

The HC Bridge SRC provides 256 bi-directional channels of sample rate conversion for use with Dante networks. The 1U unit contains two Dante HC cards which can each independently set sample rate. When used in a standalone configuration this facilitates the routing of audio between devices running at different sample rates or in different clock domains on a Dante, AES67 or ST 2110-30 network. The two network connections can be physically or virtually separate networks, providing control isolation between two sets of equipment where an "AoIP discovery and control firewall" is required.

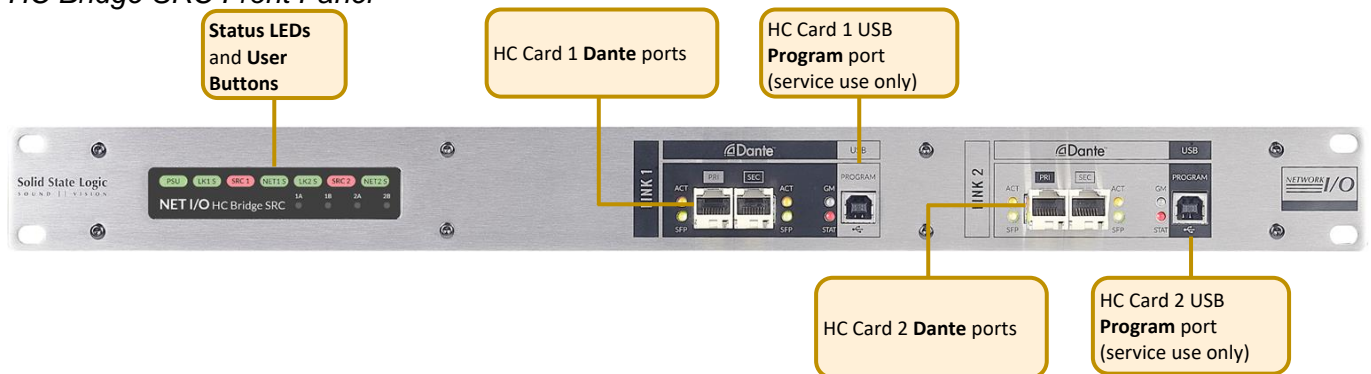
Connections from each Dante HC card to the Dante network are made through front-facing SFPs, which can be fitted with RJ45, single-mode or multi-mode LC fibre connectors. Connections from the SFP cages on the rear are looped between the two Dante HC cards to provide a standalone 256 channel Dante SRC device.

The HC Bridge SRC also contains 12 pairs of GPIO for use with connected System T consoles.

Key Features

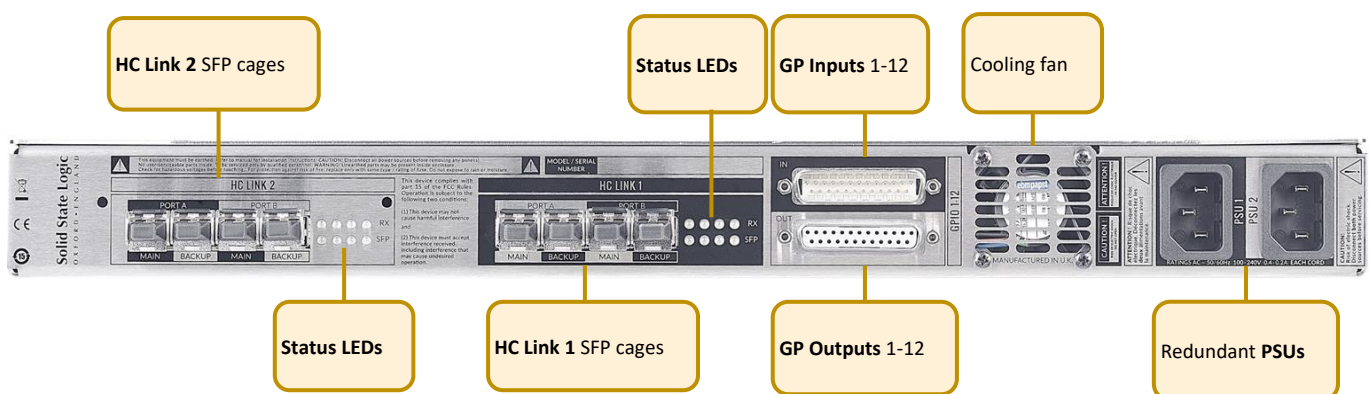
- Standalone sample rate conversion of Dante and AoIP sources between two sample rates
- AoIP discovery and control "firewall" between physically or virtually separate networks
- 12 pairs of GPIO for use with a System T
- Redundant PSUs and Dante network connections
- Front facing Dante network connections
- Rear facing HC Link and GPIO connections

HC Bridge SRC Front Panel



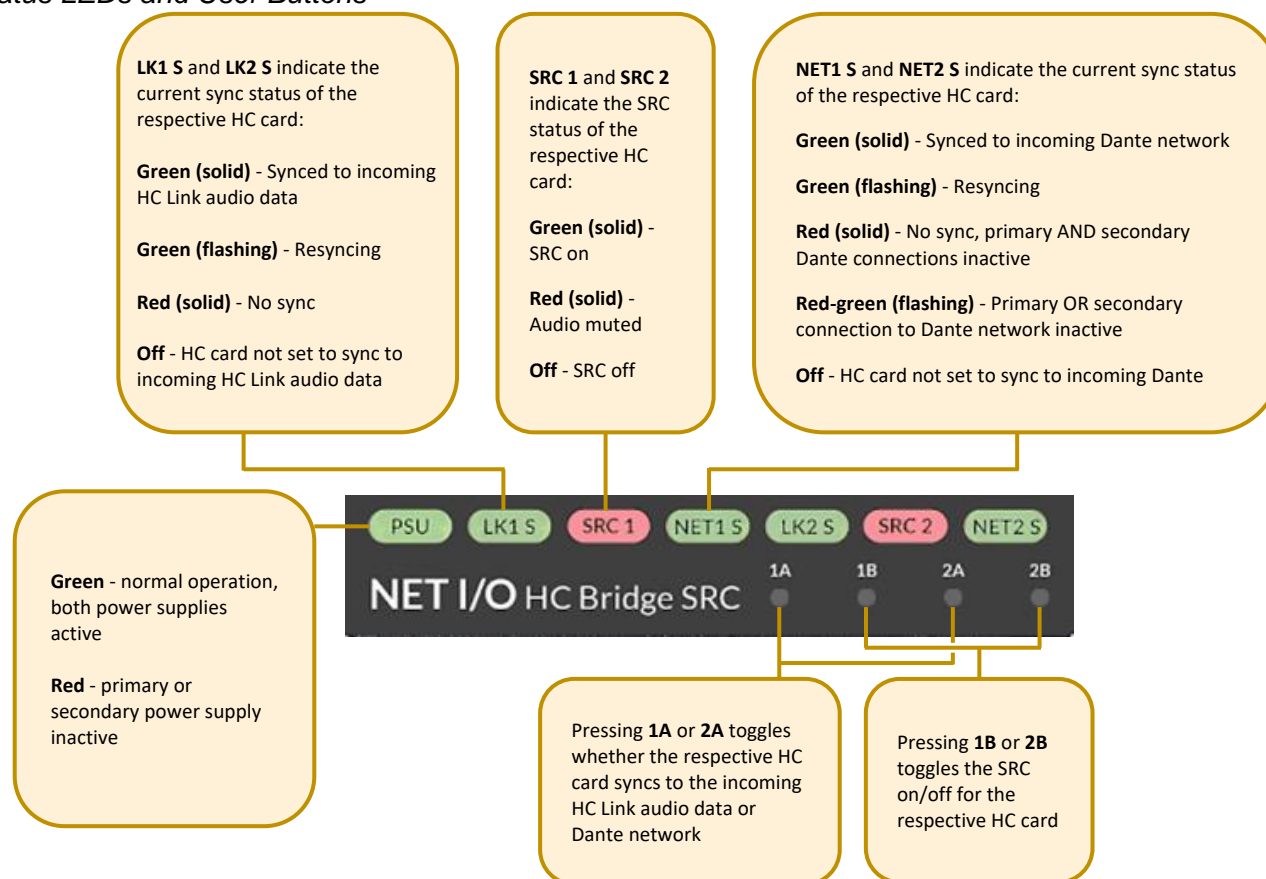
HC Bridge SRC Front Connections

HC Bridge SRC Rear Panel



HC Bridge SRC Rear Connections

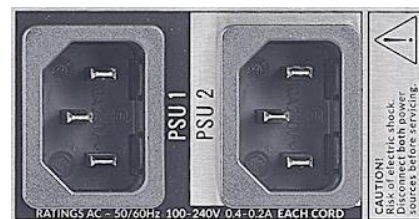
Status LEDs and User Buttons



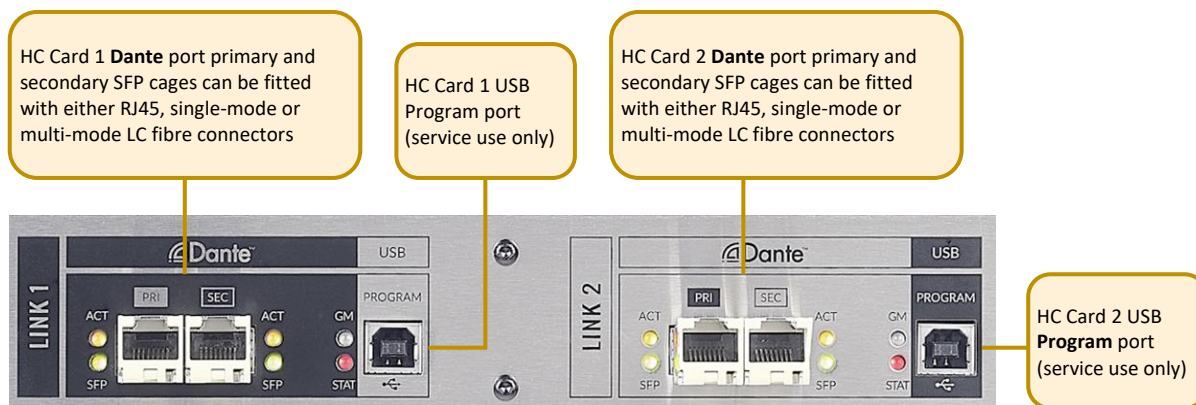
Hardware Connections

Mains Power Connections

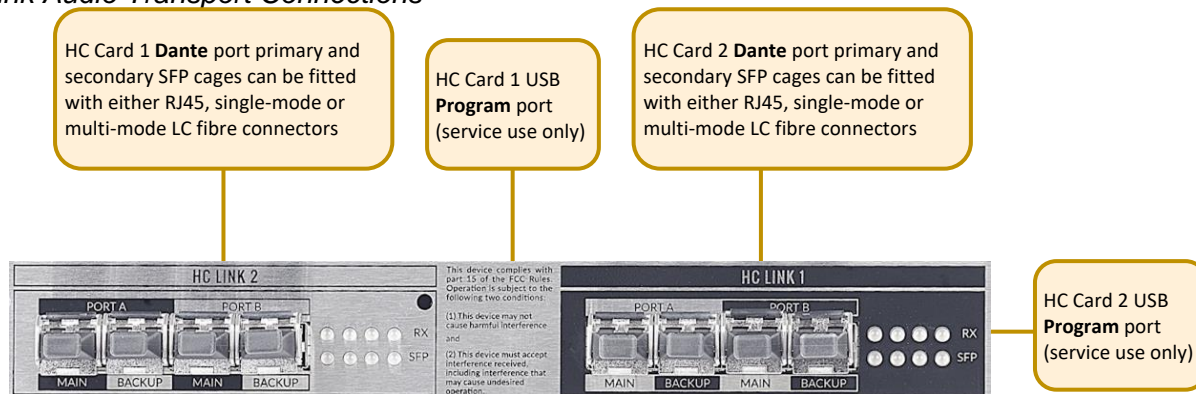
The HC Bridge SRC includes redundant PSUs with IEC connectors, either supply can individually power the unit. Ideally these should be connected to separate power circuits to provide redundancy of incoming AC power.



Dante Connections



HC Link Audio Transport Connections



GPIO

12 General Purpose opto-coupled inputs and 12 General Purpose relay outputs are available for use with a connected System T console.

N.B. These GPIO are only available to a System T console connected to link 1.

See [Appendix B](#) for pinout information.



Usage Cases

N.B. *The following diagrams omit secondary network connections for clarity.*

Standalone Sample Rate Conversion of Dante Sources

The HC Bridge SRC contains two independent Dante HC cards. These each offer 256 channels of conversion between Dante network audio and serial audio data with SRC functionality. With one HC card set to a sample rate of 48 kHz and the second set to 96 kHz, when the serial audio data connections are looped between the two Dante HC cards this provides 256 channels of sample rate conversion in each direction.

A Dante network can contain devices operating at different sample rates, but only devices operating at the same sample rate can have routes made between them. Using the HC Bridge SRC as a standalone sample rate converter provides a go-between for routing a large number of channels across devices running at different sample rates.

Both Dante HC cards will appear on the Dante network. Audio routed to one Dante HC card will be available for routing from the corresponding output of the second Dante HC card at the new sample rate.

Connection of Dante Devices Operating at a Different Sample Rate

With SRC functionality enabled each Dante HC card can convert incoming Dante network audio to the sample rate of a connected HC Link card in a Tempest Engine.

For example, a Dante network may have some I/O devices running at 48 kHz and others at 96 kHz. A System T console running at 48 kHz would only be able to route audio to and from the devices at 48 kHz. With an HC Bridge SRC containing an HC card set to 96 kHz it would become possible to route 256 channels to and from the Dante devices running at 96 kHz. Setting both Dante HC cards within the HC Bridge SRC to 96 kHz would double the channel count to 512 channels.

Tie Lines to a Second Dante Domain

With no clocking dependence. For operational or security reasons a facility may have multiple Dante Networks. These may not be clocked from the same systems.

N.B. *This is not to be confused with [Dante Domain Manager](#) and shared audio between domains. However Network I/O HC bridge SRC can easily be used to provide tie lines between DDM managed Dante domains with different clocking.*

Dante Controller

HC Card Reset

Resetting the Dante HC cards to default settings is performed from Dante Controller. Under the 'Device Config' tab for a device select 'Clear Config'. This clears the device name, channel labels, IP address settings, sample rate, latency, and existing audio routes.

Appendices

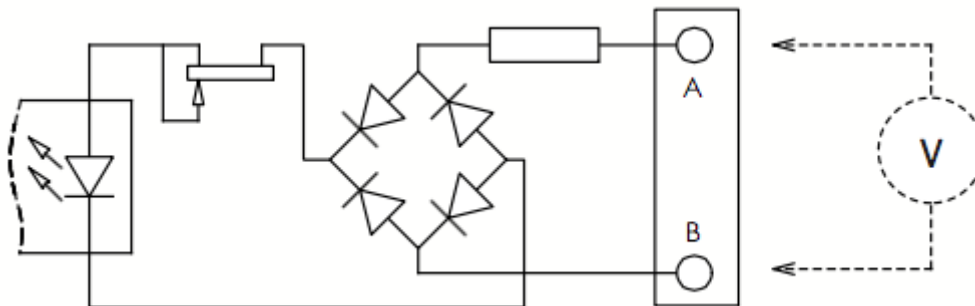
Appendix A – Physical Specifications

	HC Bridge SRC
Height	1RU, 44.5mm (1.75")
Width	483mm (19")
Depth	340mm (13.4")
Weight	4.5kg
Power	<100W

Appendix B - GPIO Connector Pin Outs

GP Inputs

Inputs are triggered by applying an AC or DC voltage of between 4V and 24V. The current drawn is approximately 10mA. Minimum input pulse duration 50mS.



GP Inputs		
Connector Type:		25-way D-type male
Pin	Description	Notes:
1	Input 1A	See input requirements above
14	Input 1B	
2	Input 2A	
15	Input 2B	
3	Input 3A	
16	Input 3B	
4	Input 4A	
17	Input 4B	
5	Input 5A	
18	Input 5B	
6	Input 6A	
19	Input 6B	
7	Input 7A	
20	Input 7B	
8	Input 8A	
21	Input 8B	
9	Input 9A	
22	Input 9B	
10	Input 10A	
23	Input 10B	
11	Input 11A	
24	Input 11B	
12	Input 12A	
25	Input 12B	
13	0V Common	

GP Outputs

All output switch closures are via DIL relay.

DO NOT use these outputs to directly switch capacitive or reactive loads; **ALWAYS** use a separate external relay with suitable contact rating.

DIL Relay Ratings:

- 100V DC, 125V AC
- 100mA max.

GP Outputs		
Connector Type:		25-way D-type Female
Pin	Description	Notes:
1	Output 1A	
14	Output 1B	
2	Output 2A	
15	Output 2B	
3	Output 3A	
16	Output 3B	
4	Output 4A	
17	Output 4B	
5	Output 5A	
18	Output 5B	
6	Output 6A	
19	Output 6B	
7	Output 7A	
20	Output 7B	
8	Output 8A	
21	Output 8B	
9	Output 9A	
22	Output 9B	
10	Output 10A	
23	Output 10B	
11	Output 11A	
24	Output 11B	
12	Output 12A	
25	Output 12B	
13	+12V Output	

Appendix C – Safety Notices

General Safety

1. Please read and keep this document.
2. Adhere to all warnings and follow instructions.
3. This electrical equipment should not be used near water.
4. Cleaning should only be with dry cloths or products compatible with electrical devices – never when the unit is powered.
5. Keep the unit free of dust and use in a clean environment.
6. Do not use near any heat source or in direct sunlight.
7. Do not use near naked flames.
8. Do not place heavy objects on the unit.
9. Only use attachments/accessories recommended by the manufacturer.
10. Unplug the device during lightning storms or long periods of non-use.
11. The unit can only be serviced by qualified personnel – Seek immediate service if:
 - I. The unit has been exposed to moisture
 - II. The unit has been dropped
 - III. The unit does not operate normally
12. Do NOT modify this unit – alterations may affect performance, safety, and/or international compliance standards.
13. SSL does not accept liability for damage caused by maintenance, repair, or modification by unauthorised personnel.

Installation Notes

1. When installing this apparatus either fix it into a standard 19" rack or place the apparatus on a secure level surface.
2. When this apparatus is rack mounted, fit all rack screws. Rack shelves are recommended for this apparatus.
3. Allow a 1U gap above and below this apparatus for cooling.
4. Do not obstruct any ventilation cut-outs or exhaust fans.
5. Ensure that no strain is placed on any cables connected to this apparatus. Ensure that all such cables are not placed where they can be stepped on, pulled, or tripped over.

Power Safety

1. The unit is not supplied with a mains lead allowing you to use IEC distribution of mains cables of your choice. Any mains cable used must fulfil the following:
 - I. Refer to the ratings label on the rear of the unit and always use suitable mains cords.
 - II. The unit should ALWAYS be earthed with the earth on both the IEC sockets (when both are used).
 - III. Please use - compliant 60320 C13 TYPE SOCKETS. When connecting to supply outlets ensure that appropriate sized conductors and plugs are used to suit local electrical requirements.
 - IV. Maximum cord length should be 4.5m (15').
 - V. The cord should bear the approval mark of the country in which it is to be used.
2. The appliance coupler is used as the disconnect device, ensure that it is connected to an unobstructed wall outlet.
3. The mains inlets are designed for connection to a single phase AC supply however each inlet can safely be connected to a separate phase of a three phase mains supply. Warning: if connected to separate phases up to 400V potential phase to phase may be present.
4. The clear markings regarding redundant power supplies detailed on the unit must be transferred into the installation to ensure both power sources are removed before qualified personnel service the unit.

GB The apparatus shall be connected to mains socket outlets with a protective earthing connection

DEN Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord

FIN Laite on liitettävä suojamaadoituskoskettimilla va rustettuumpistorasiaan

NOR Apparatet må tikoples jordet stikkontakt

SWE Apparatens skall anslutas till jordat uttag



ATTENTION! This equipment must be Earthed. Refer to manual for installation instructions.

CAUTION! Disconnect all power sources before removing any panel (s). No user-serviceable parts inside – to be serviced only by qualified personnel.



WARNING! Un-Earthed metal parts may be present inside enclosure. Check for hazardous voltages before touching.

For protection against risk of fire – replace only with same type / rating of fuse. Do not expose to rain or moisture.

For EU



The stagebox is CE compliant and fully conforms with the current protection requirements of the European community council directives on EMC and LVD. Note that any cables supplied with SSL equipment may be fitted with ferrite rings at each end. This is to comply with the current regulations and these ferrites should not be removed. Any modifications to this equipment may adversely affect the CE compliance of this product.

Environmental Declaration



The symbol shown here, which is on the product or its packaging, indicates that this product must not be disposed of with other waste. Instead, it is the user’s responsibility to dispose of their waste using a designated collection point for recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can dispose of your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

RoHS Notice

Solid State Logic has conformed and this product has conformed to European Union’s Directive 2011/65/EU on Restrictions of Hazardous Substances (RoHS) as well as the following sections of California law which refer to RoHS, namely sections 25214.10, 25214.10.2, and 58012, Health and Safety Code; Section 42475.2, Public Resources Code.

For USA

To the User:

1. Do not modify this unit! This product, when installed as indicated in the instructions contained in the installation manual, meets FCC requirements.
2. Important: This product satisfies FCC regulations when high quality shielded cables are used to connect with other equipment. Failure to use high quality shielded cables or to follow the installation instructions may cause magnetic interference with appliances such as radios and televisions and will void your FCC authorisation to use this product in the USA.
3. Note: This equipment has been tested and found to comply with the limits for a Class A 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.

Electromagnetic Compatibility

EN55103-1:2009, EN55103-2:2009 Environments E1, E2, E3 and E4

Typical average initial in-rush current: ____ Typical peak in-rush current: ____.

The audio input/output and network ports are screened-cable ports and any connections to them should be made using braid-screened cable and metal connector shells in order to provide a low impedance connection between the cable screen and the stagebox. All network connections should be of Cat5e standard or above.

Environmental

Temperature	Operating: +5 to 40 deg. C	Storage: -20 to 50 deg. C
Vibration	Operating: < 0.2 G (5–200 Hz)	Non-operating: < 0.4 G (5–200 Hz)
Shock	Operating: < 3 G (11 ms max.)	Non-operating: < 10 G (11 ms max.)