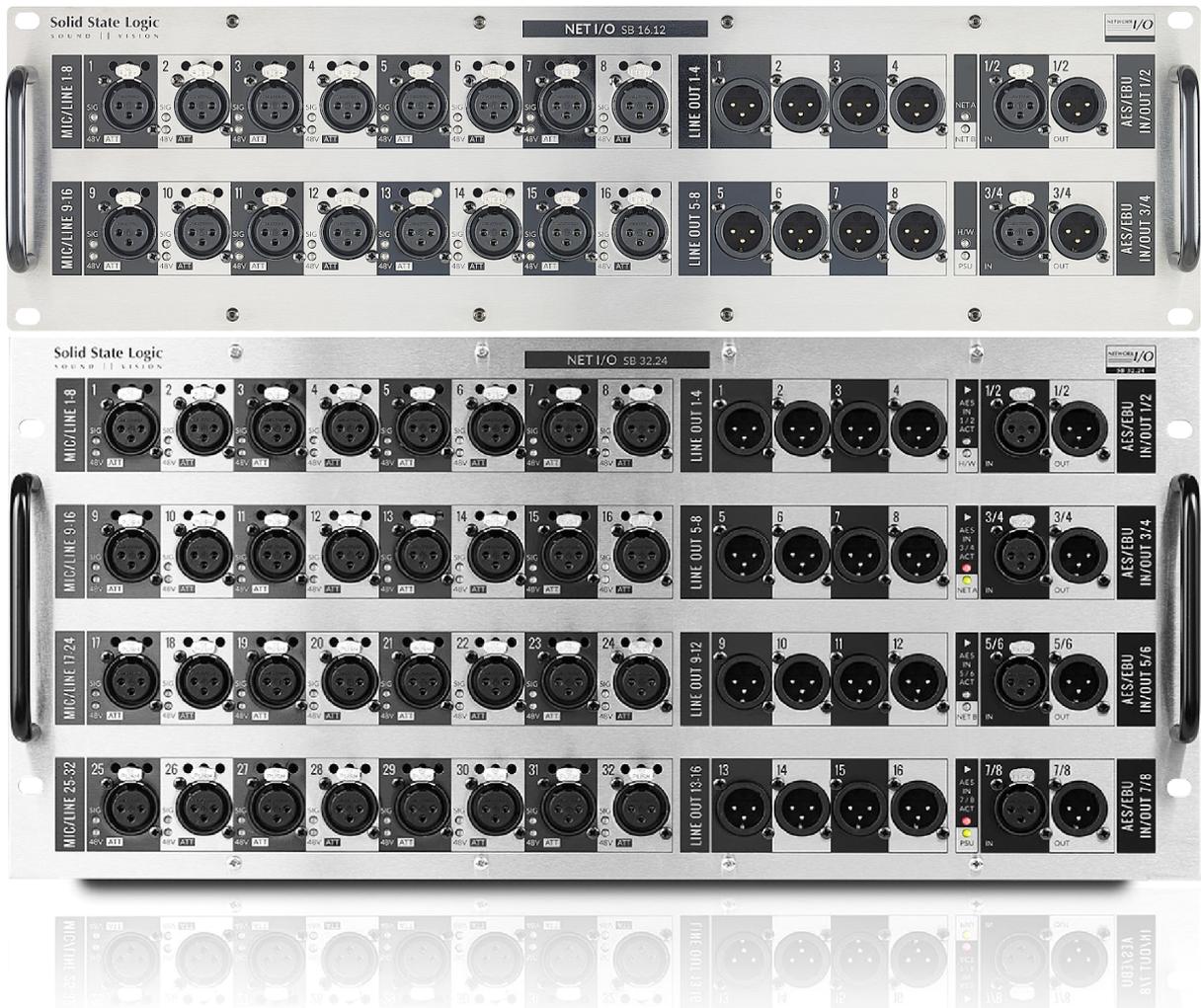**SB 32.24 and SB 16.12**

Network I/O

User Guide

Revision: 1.4

Solid State Logic
OXFORD • ENGLAND

Solid State Logic

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Document Revision History

Revision 1.1		June 2017
Revision 1.2		July 2017
Revision 1.3	Addition of SB 16.12	February 2019
Revision 1.4	Minor additions	February 2019

Table of Contents

Introduction

Overview

SB 32.24 is a 5U, 40-input and 24-output Dante stagebox featuring 32 SuperAnalogue™ mic/line inputs, 4 AES/EBU inputs, 16 analogue line outputs and 4 AES/EBU outputs.
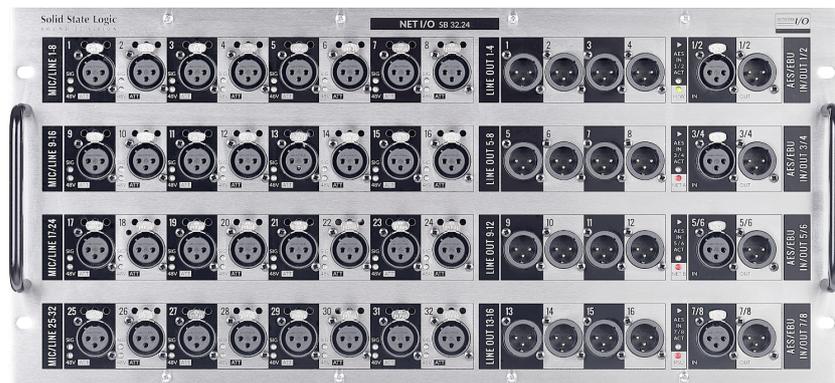
SB 16.12 is a 3U, 20-input and 12-output Dante stagebox featuring 16 SuperAnalogue™ mic/line inputs, 2 AES/EBU inputs, 8 analogue line outputs and 2 AES/EBU outputs.

Both SB 32.24 and SB 16.12 can be controlled remotely from SSL Live and System T consoles as well as from SSL's Network I/O Controller app for PC.

SB 32.24 and SB 16.12 are suitable for all studio and stage applications of any scale. Featuring redundant power, redundant ruggedized etherCON Network connections plus two user-speciﬁable SFP ports which provide network extension or support a second independent Dante network. All analogue and AES audio connectors are XLR-3 type.

Key Features

- Interface between studio/stage/recording-area and IP audio networks using Dante and AES67
- SSL SuperAnalogue studio grade preamps
- Gain-compensated Dante Split available on the same or separate (B) network
- Device and parameter ownership assignment to avoid control conflicts
- Redundant PSUs and Dante network connections
- Redundant network extension/network B SFP ports
- Clear front panel indication – signal present, phantom power, channel attention on analogue inputs
- Front facing XLR connections

SB 32.24 Front Panel
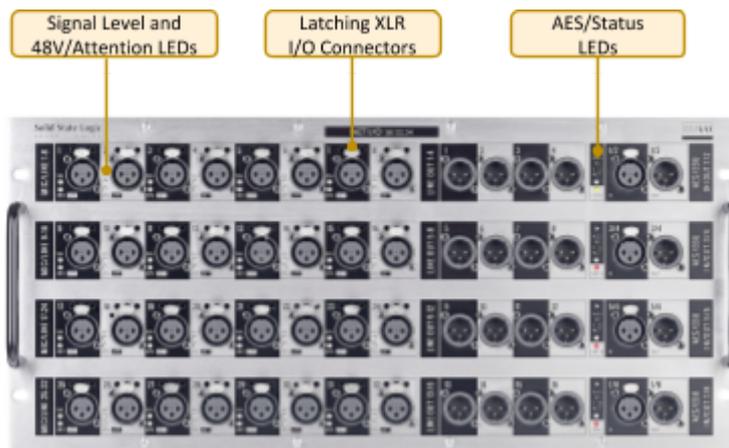
SB 32.24 Rear Panel
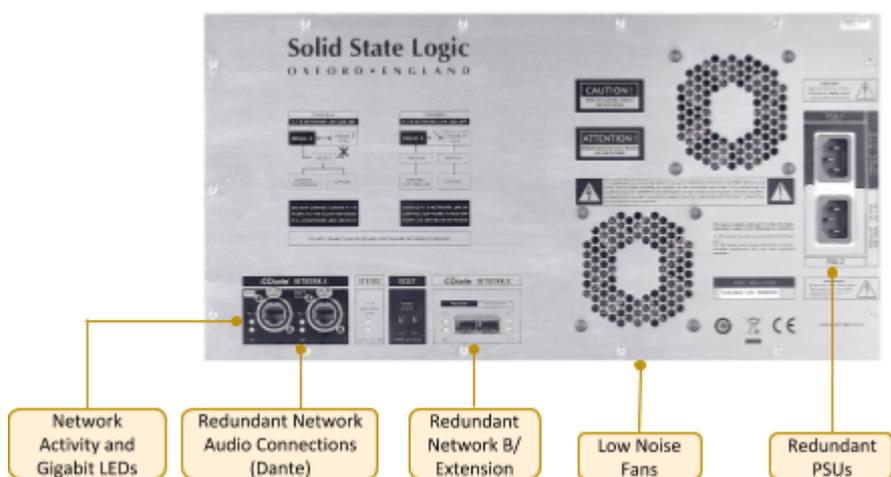
SB 16.12 Front Panel
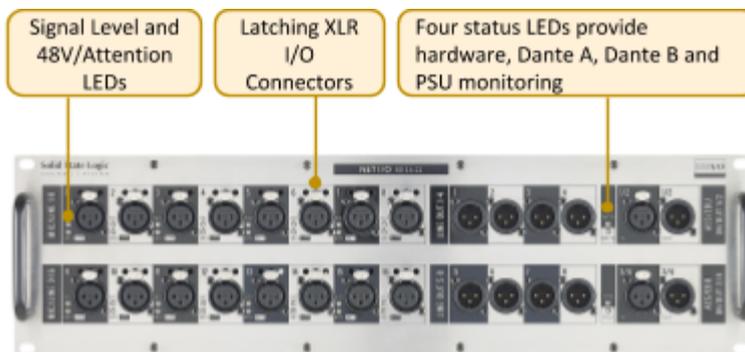
SB 16.12 Rear Panel
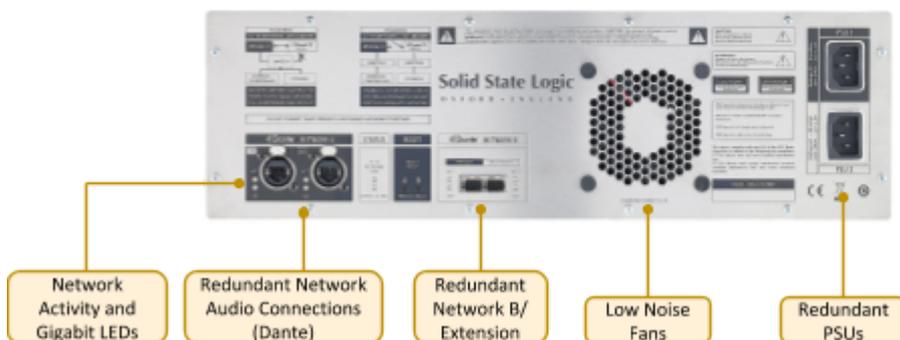
Status LEDs

A series of LEDs towards the right hand side of the front panel indicate statuses as follows.

The **AES IN ACT** LEDs only apply to the SB 32.24, they are not required for the SB 16.12.

When running at **96 kHz** the SB 32.24 AES inputs must be manually enabled in place of analogue inputs 25 - 32. This is per pair of inputs.

The **AES IN ACT** LEDs will be green if the particular AES ports have been activated from the controller. Further information is available in the **Operation at Different Sample Rates** section of this guide.

At **48 kHz** all SB 32.24 analogue and AES inputs are simultaneously available.

PSU LED

Green - normal operation, both power supplies active

Red (solid) - primary PSU inactive

Red (flashing) - secondary PSU inactive

H/W LED

Green - normal operation

Red - indicates a fault has occurred, refer to the setup information window

NET A LED

Green - Dante network A connected

Red (solid) - loss of network A primary

Red (flashing) - loss of network A secondary

NET B LED

Green - Dante network B connected

Red (solid) - loss of network B primary

Red (flashing) - loss of network B secondary

Channel LEDs

The three holes above each of the XLR sockets are part of the unit's ventilation. ***Do not block (e.g. with tape!)***

SIG analogue signal LEDs are green above -42 dBFS and red at -0.1 dBFS (clipping)

48V/ATT indicates phantom power and/or attention depending on red, green, or flashing combinations as follows:

Red (solid) – phantom power on

Green (flashing) – channel attention active

Green and red (flashing) – phantom power on and channel attention active

Status and Reset

The **A+B Network Link** LED indicates the link status of the internal A and B networks:

Off - Networks not linked

Green - Networks A and B linked

Configuration of the network link is detailed in the Dante Controller section of this guide.

If either **RESET A** or **RESET B** are held for 6 seconds then the primary Dante network connection of the chosen network will reset to use DHCP - once pressed the unit must be rebooted.

If **RESET A** and **RESET B** are held for 6 seconds this will perform a device reset - once pressed the unit must be rebooted.

Dante B SRC LED reserved for future possibilities.

Device Reset

Performing a device reset will clear the SSL device settings. This includes ownership states and input settings. This does not clear Dante Brooklyn card settings.

Brooklyn Reset

Resetting the Dante Brooklyn card 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. This does not clear SSL Ownership settings.

Hardware Connections:

Mains Power Connections

Each stagebox includes redundant PSUs with IEC C14 inlets. Either supply can individually power the unit. Ideally these should be connected to separate power circuits to provide redundancy of incoming AC power.

Audio Inputs and Outputs

Electronically balanced mic/line inputs, line outputs, AES/EBU inputs and outputs on latching XLR-3 connectors.

See *Appendix B* for pinout information.

Dante Connections

The SB 32.24 and SB 16.12 have two sets of redundant network connections. These can be configured in two different modes:

In the first mode, the A and B networks are linked internally (**A+B Network Link** LED is on). In this mode both Network A and Network B are identical and output both the gain-dependant and gain-compensated audio. Dante devices can subscribe to either one.

In the second mode, the A and B networks are discrete (**A+B Network Link** LED is off) and isolated from each other. In this mode Network A transmits uncompensated audio (and receives audio for the analogue outputs, AES outputs and also control data) and Network B transmits the compensated audio only. Both Dante networks (Network A and Network B) must be synchronised to the same clock source.

Configuration of the network link is detailed within the Dante Controller section of this guide.

Dante Connection Examples

Gain-Dependant Source and Gain-Compensated Splits Available to Master Console

In this mode, both the gain-dependant and the gain-compensated splits are available to the master console. Stagebox outputs are available to the master console.
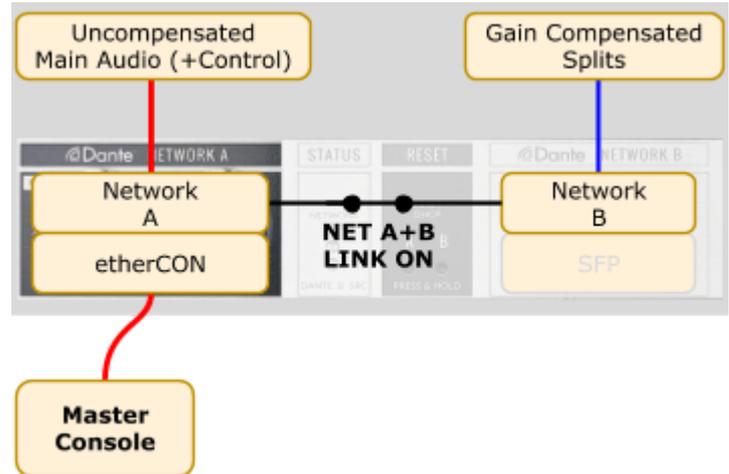
Gain-Dependant Source and Gain-Compensated Splits Available to Both Consoles (No SFPs Fitted - External Switch Connected)

In this mode both the gain-dependant and the gain-compensated splits are available to both consoles (no SFPs are fitted - an external switch is connected). Input ownership and stagebox outputs are available to either console.
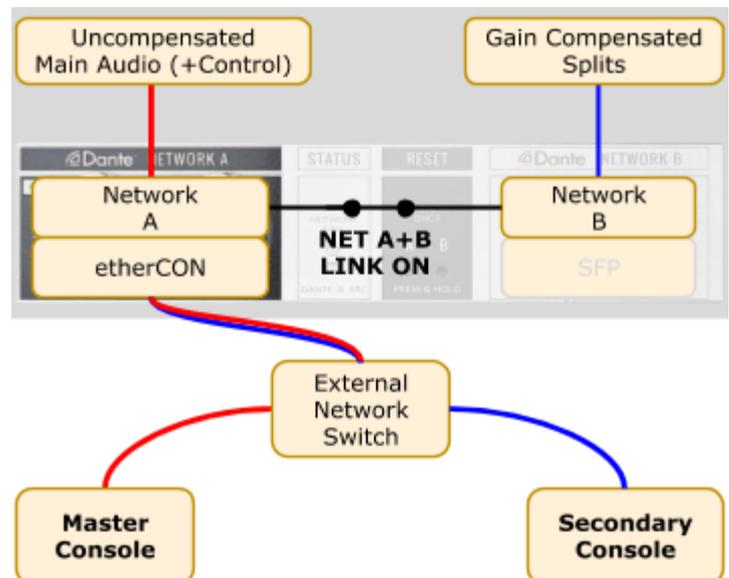
Gain-Dependant Source and Gain-Compensated Splits Available to Both Consoles (SFPs Fitted)

In this mode both the gain-dependant and the gain-compensated splits are available to both consoles (SFPs are fitted). Input ownership and stagebox outputs are available to either console.
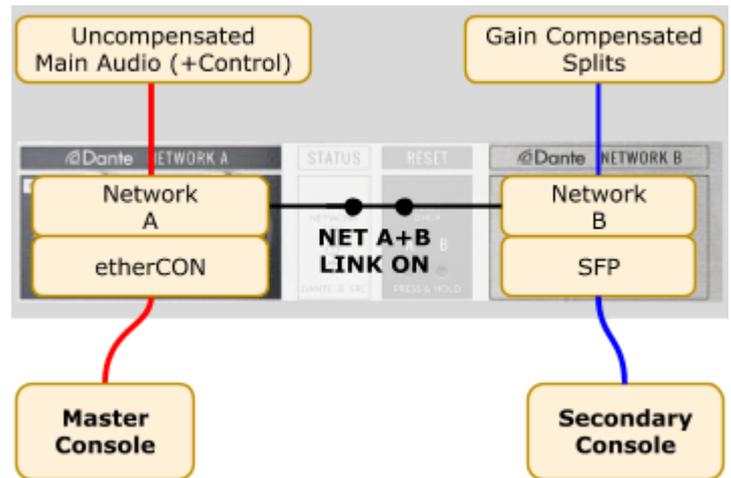
Gain-Dependant Source Available to Master Console, Gain-Compensated Split Available to Secondary Console

In this mode only the gain-dependant split is available to the master console. Only the gain-compensated split is available to the secondary console. Input ownership and stagebox outputs are only available to the master console.

N.B. Both Dante networks (Network A and Network B) must be synchronised to the same clock source.
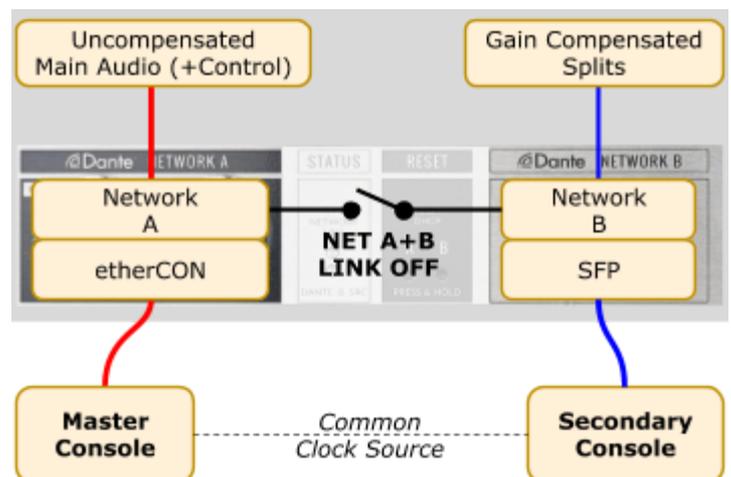
SSL Network I/O Controller

Installing Network I/O Controller

When an SB 32.24 or SB 16.12 is used without an SSL console, configuration and control is achieved using the SSL Network I/O Controller PC application. This can be downloaded from the SSL website as part of the Network I/O Stagebox upgrade package or as a standalone installer.

Locate and run the Network I/O Controller installer and follow the on-screen prompts to install the application.

Network Configuration - PC

Once Network I/O Controller is installed, connect the Windows PC to the same subnet as the Network I/O. The SSL Network I/O Controller application uses the network adapters configured in Dante Controller for communication. Before starting Network I/O Controller first open Dante Controller and select the network adaptors connected to the Dante network. 'Use shared Dante interface' must be selected to ensure all applications using the Dante network use the correct adaptors. Subsequent changes to network settings may require Network I/O Controller to be restarted.
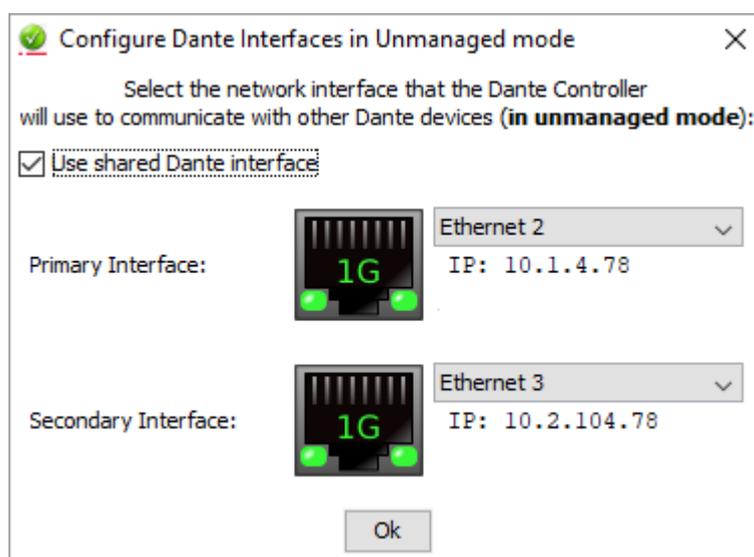
TCP/IP is used to communicate with the unit, so check Windows firewall settings if communications are not working.

Set the computer to 'Never Sleep' to maintain communication.

Network Configuration - Device

Unless shipped as part of a preconfigured system, Network I/O units are set to obtain an IP address automatically.

If the IP settings need to be changed to a fixed address – to match the network environment in which the unit is to be installed – this can be achieved using the Dante Controller application.

Remember that the computer's network adapter configuration will also need to be updated to match the Network I/O.

For additional information see the Dante Controller section.

The GUI

The application window is divided into five sections:

Network View shows each SSL device on the Dante network. Input meters are shown for every analogue input. Clicking a device brings its parameters into the **Detail View**. Large arrows on the far left and right scroll for more devices.

Detail View shows channel details for the selected device. Large arrows on the far left and right scroll for more channels.

Focus View shows an expanded view of the selected channel.

Page Select selects the detail view to show inputs, outputs, or setup options for each device.

Navigation switches the in-focus channel and allows for gain adjustment. These arrows are also mapped to the PC keyboard. **Control** toggles fine (0.1 dB) gain adjustment and **Alt** coarse (3 dB) gain adjustment.

Network View

Device Name is set within Dante Controller.

Selected device is highlighted with a cyan background. Devices can be selected from here or with the scroll arrows.

A **Red Highlight** indicates a device that requires operator action:
- A flashing red background indicates a device with a clipping audio channel
- A solid red border highlights a device with an active Attention flag

If the device requiring attention is not already visible in the Network View window, then the appropriate large scroll arrow will show red to direct you to the appropriate device.

Att and **Mute** tallies show the status of these functions for every stagebox channel.

The **Level Meter** shows the real-time signal level for all analogue input channels. A red clipping indicator is also provided.

Greyed out devices marked **Offline** are 'known' to the network but uncontactable, typically switched off.

PSU Tallies show the status of PSUs 1 and 2 for each stagebox.

Scroll arrows are used to navigate between devices. A black arrow indicates further devices are available.

Inputs/Outputs

Select the **Inputs**, **Outputs** or **AES I/O** tab in the Page Select area to view I/O available on the network.

Inputs

Control Status shows whether the viewer has control of the input's parameters. Each individual channel has independent ownership.

Rel in cyan indicates that this input is under the control of the viewer. Press and hold to relinquish control.

Take indicates that this input is NOT under the control of the viewer. Press and hold to take control from the owner.

Own indicates that this input is not owned by any controller. Press and hold to take ownership of this input.

Show Gain toggles the fader into the Focus Window. Gain can be controlled via mouse, keyboard, or numeric entry.

Channel Info shows all parameters of the channel at a glance. The background colour indicates ownership status: green for owned inputs, purple for inputs owned by another controller and black for unowned inputs.

Focus Window displays the available parameters for the selected channel.

Level Meter shows the signal level for the selected channel. A red clipping indicator is also provided.

Selected Channel is highlighted in cyan.

Ownership window displays the owner of the selected channel

Fader allows for manual level control via the slider, keyboard arrow keys, or numeric entry by clicking the text Gain Value box.

Fader Level Bar is coloured red on microphone input channels and cyan on line level inputs.

Mute mutes the input or output channel. The mute state is stored in volatile memory on the unit and all channels will reset to unmuted if the unit is repowered.

Scroll Arrows switch the selected channel. A black arrowhead indicates that further channels are available on the device.

Focus Window

Pad toggles the -30 dB mic preamp pad.

+48V toggles the mic preamp phantom power.

Selecting **Line** input will turn off phantom power.

Channel Label as entered in Dante Controller

Mic/Line toggles the appropriate input gain range and impedance for mic or line level sources.

Mic inputs have a gain range of 74dB including the pad. The available range values are dependant on the operating level.

Line level inputs have a gain range of 34dB. The available range values are dependant on the operating level.

ATT! (Attention) toggles the hardware front panel LED for swift identification of inputs or outputs.

Multiple channels can have Attention active.

Attention can be cancelled by pressing the **ATT!** button again on the selected channel.

Outputs

Mute allows individual outputs to be muted

AES I/O

Control Status shows whether the viewer has control of the input's parameters. Each individual channel has independent ownership.

Rel in cyan indicates that this input is under the control of the viewer. Press and hold to relinquish control.

Take indicates that this input is NOT under the control of the viewer. Press and hold to take control from the owner.

Own indicates that this input is not owned by any controller. Press and hold to take ownership of this input.

Focus Window displays the **AES Input Enabled** and **SRC In** parameters for the selected channel.

AES Input Enabled is only applicable to the SB 32.24 and is detailed in the **Operation at Different Sample Rates** section of this guide.

Channel Info shows at a glance whether AES inputs (SB 32.24 only) and SRCs are enabled.

Selected Channel is highlighted in cyan.

Level Meter shows the signal level for the selected channels. A red clipping indicator is also provided.

Ownership window displays the owner of the selected channel

Mute mutes the individual input or output. The mute state is stored in volatile memory on the unit and all channels will reset to unmuted if the unit is repowered.

Setup

Press **Setup** in the **Page Select** area to display the system configuration information.

Stagebox Ownership and **Inputs Ownership** settings are detailed under Ownership.
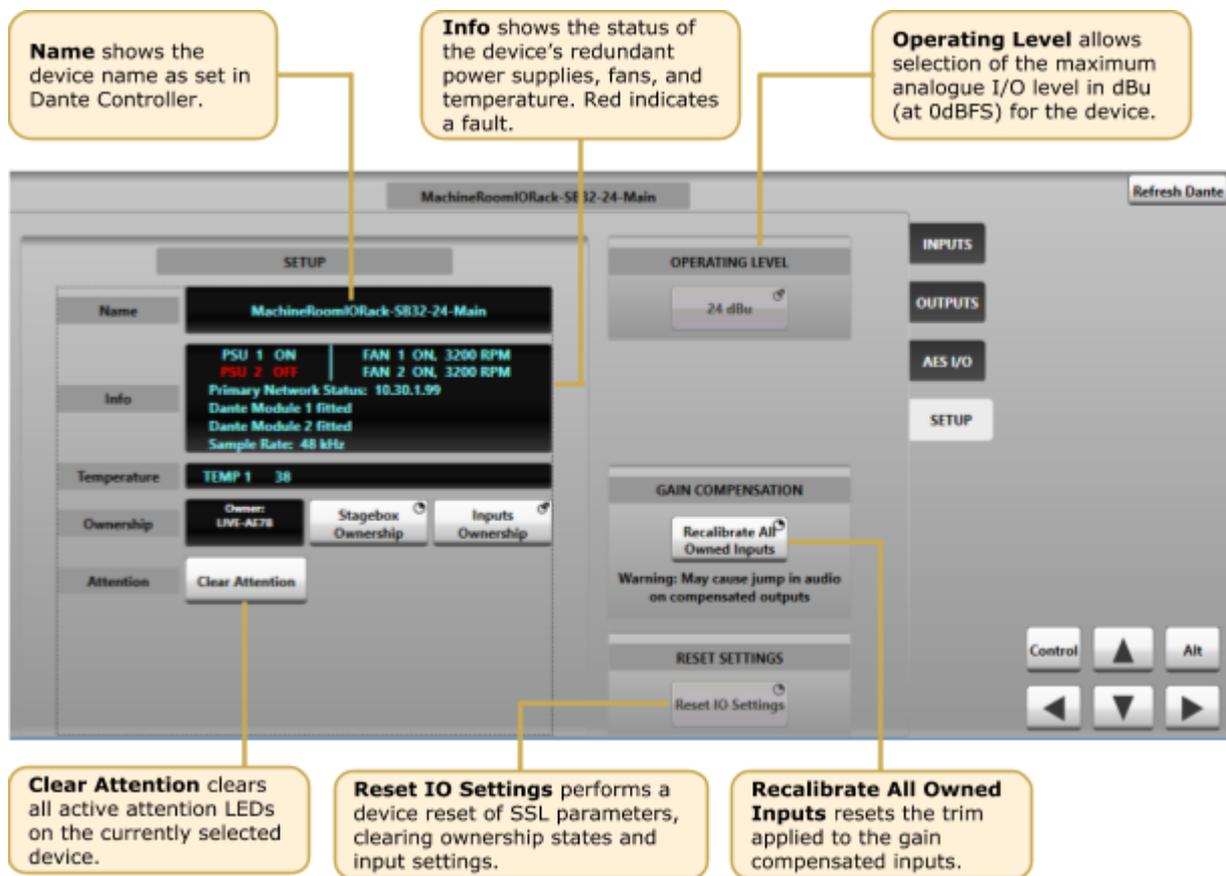
Operation at Different Sample Rates

All analogue and AES inputs are available simultaneously for an SB 16.12 running at any available sample rate, or an SB 32.24 running at 44.1 or 48 kHz.

An SB 32.24 running at 88.2 or 96 kHz has a maximum of 32 inputs available. The last 8 inputs can either be analogue or AES. This is user-definable on a pair by pair basis directly from System T or Live console software, or using Network I/O Controller as shown in the AES I/O section of this guide.

	Dante Tx Channel Number 44.1/48 kHz	Dante Tx Channel Number 88.2/96 kHz
Analogue in 1-24	1-24	
Analogue in 25-32	25-32	25-32 (analogue/AES depending on switch in software)
AES in 1-8	33-40	

Ownership

Ownership offers a level of protection to inputs: when an input is owned by a console the input parameters can only be modified by the device that owns it. This prevents control conflicts between networked consoles and control computers sharing resources. Parameters covered by ownership are:

- Mic gain
- Phantom power
- Mic/line switching
- Pad
- Input mute
- Compensated output recalibration

Note that multiple consoles can share the same input signal but only one device can control the input parameters. Altering the input settings will affect all consoles using the input.

Any System T console, SSL Live console or instance of the SSL Network I/O Controller PC application can control ownership. There are three levels of ownership:

- Stagebox ownership: control SB 32.24 or SB 16.12 setup information only
- Input ownership: control input parameters only
- Input *x* ownership: control of input parameters on a per input basis

N.B. Ownership settings are stored on the SB 32.24 and SB 16.12. The mute state is stored in volatile memory on the unit and all channels will reset to unmuted if the unit is repowered.

Stagebox and Input Ownership
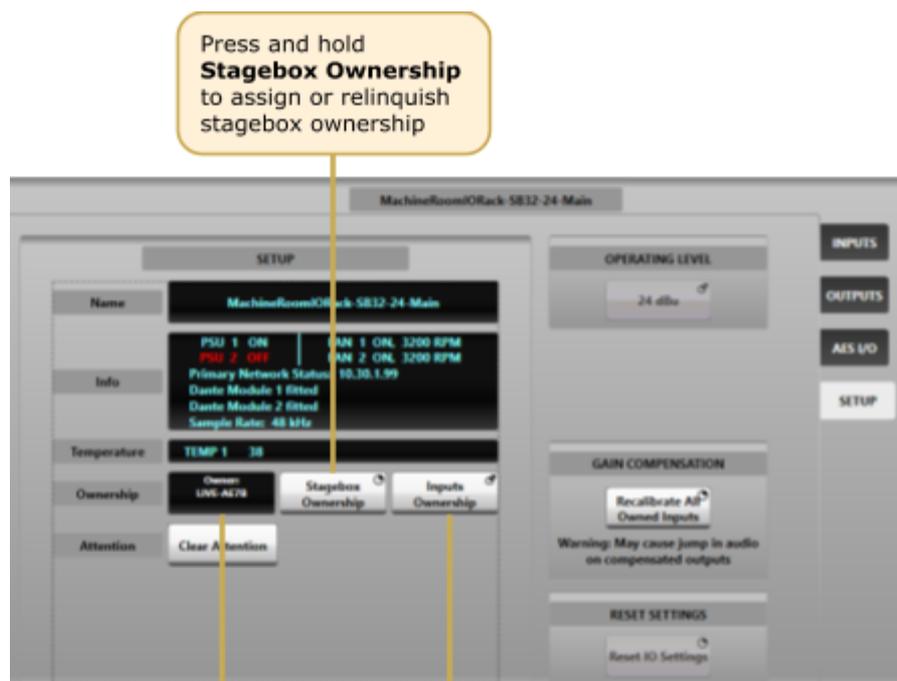
Individual Input Ownership

One of three options will be displayed when an input is selected on a device, depending on the current ownership state. These options are **Own**, **Take** and **Release**:
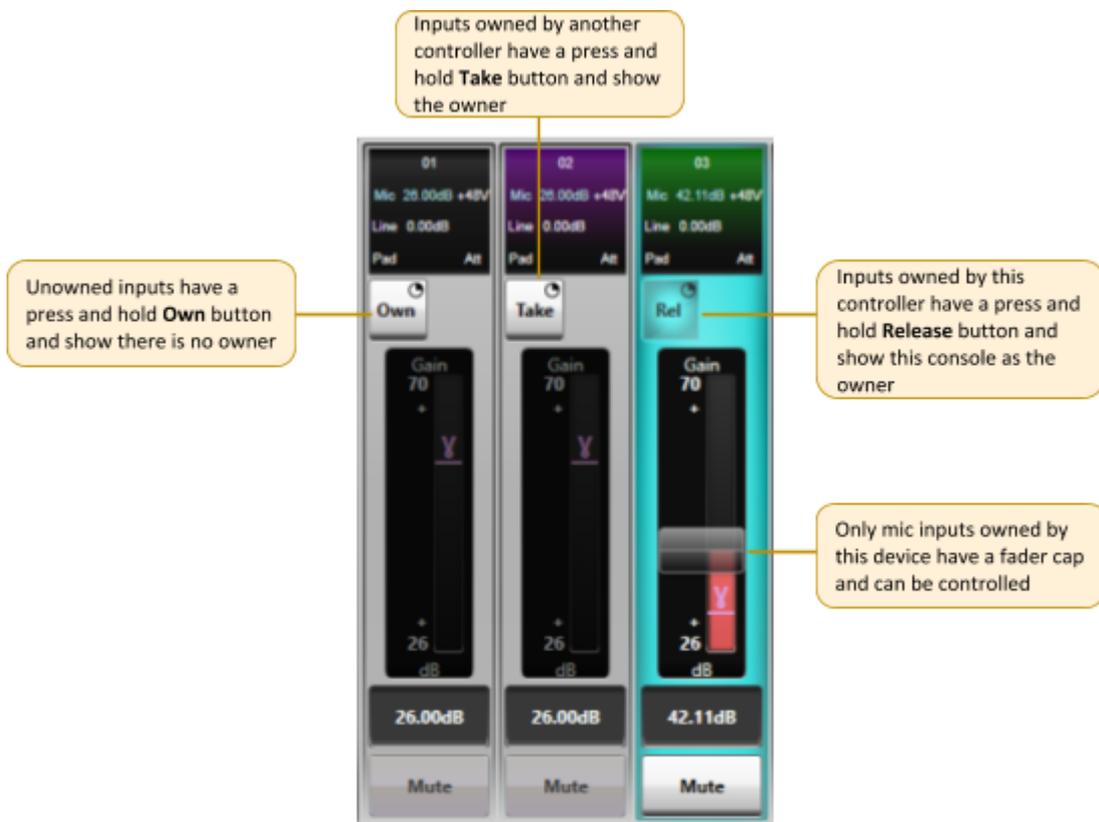
When an SSL console makes routes from Stagebox inputs, the console will automatically become the owner of any unowned inputs. If an input is owned by a different controller then routing will not automatically take ownership, **Take** ownership will need to be performed if input control is required on this device. Ownership from Network I/O Controller is manually controlled.

Note that the audio route will still be made regardless of whether ownership is assigned.

Gain Compensation

Each stagebox mic/line input has two transmit channels that can be subscribed to from the Dante network. **Main** channels follow the mic gain as set by the controller. **Compensated** channels nullify mic gain changes by applying a digital trim offset which is the negative equivalent of any analogue gain changes. Using **Compensated** channels ensures that devices receiving signals from the same stagebox avoid undesired changes to input source levels.

Compensated Ports

When connected to an SSL console or the Network I/O Controller app the main and compensated channels show as two separate devices. The visibility of main and compensated channels for an SB 32.24 or SB 16.12 will depend on the network A and B link state, as detailed in Dante Connection Examples.

The compensated output's level is controlled in the stagebox itself, so any Dante device can receive the compensated signal, it does not have to be an SSL console.

If networks A and B are linked then the compensated channels can be found as separate devices in Dante Controller, under the Transmit tab of the Routing Matrix or Device View.

If networks A and B are unlinked then either the main **or** compensated ports will be shown, dependant on which is connected.
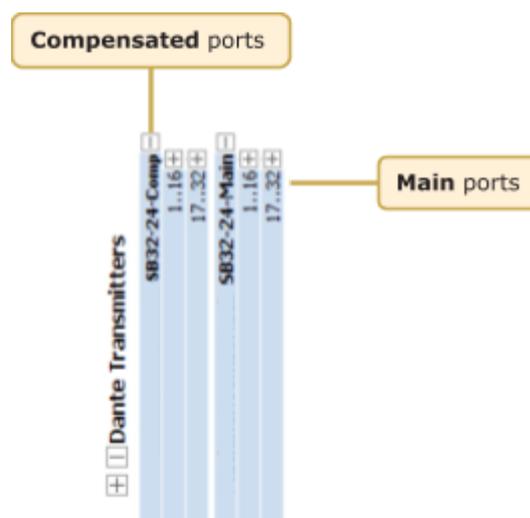
Calibration Point

The **Calibration** point is the value at which the analogue gain equals a digital trim value of 0 dB, i.e. there is no digital trim applied. Digital trim will be applied when the analogue gain level is above or below the **Calibration** point.

Clear removes the clip indicator

Pressing the **±3 dB** buttons adjusts the **Calibration** point by ±3 dB

The **Calibration** point is indicated on the fader level bar as **γ**

Press and hold **Recalibrate** to:

Recalibrate the compensated gain value to match the current analogue gain value when in **Line** mode (removing any digital trim).

Recalibrate the compensated gain value to 10 dB under the current analogue gain value when in **Mic** mode. This feature has been designed to protect the compensated signal against digital clipping in the event that the analogue gain control is drastically reduced.

Recalibrate Indication

The **Recalibrate** colour bar will light **green** if recalibration would decrease the level of the compensated signal

The **Recalibrate** colour bar will light **red** as a warning that recalibration would increase the level of the compensated signal

Dante Controller
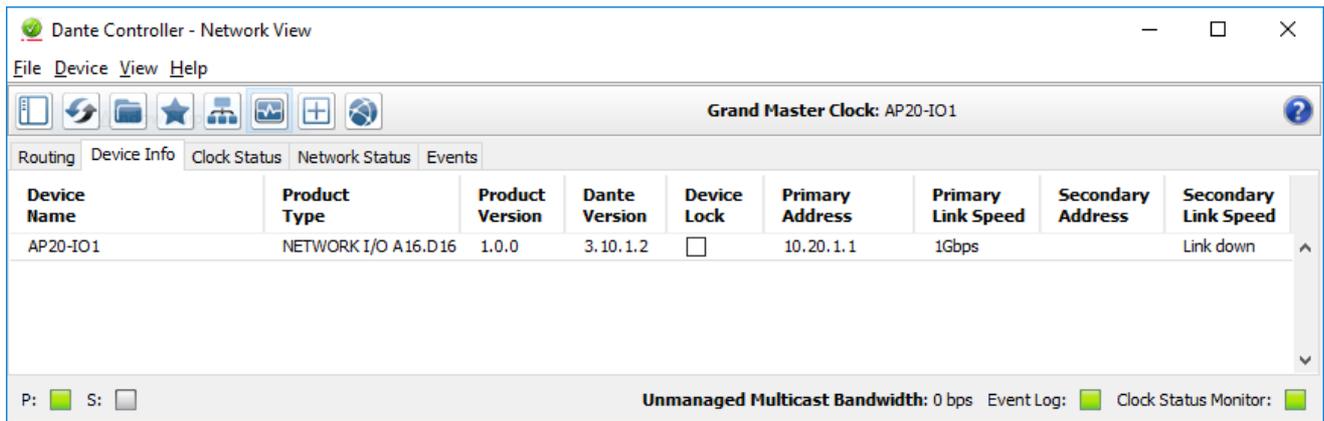
Refer to Audinate's Dante Controller user guide for complete information on Dante Controller software. The information below details the basics required to get started.

Clock sync, device naming, AES67 configuration and network management are all done within Dante Controller.

Dante utilises the device name for routing. Each device must have a unique name – if a name is duplicated it will be appended with a number.

Network Config

Each device requires its own unique IP address. This may be automatically configured, provided by a DHCP server or assigned manually. The primary and secondary ports must not be connected to the same logical network. Ideally, separate switching hardware should be provided for primary and secondary networks. Creating VLANs on shared hardware is acceptable but does not provide the most robust redundancy.

Device Info

The **Device Info** tab shows an overview of all devices on the Dante network including name, product type, software version, IP address, link speed and status.

Device > **Device View** provides configuration and diagnostics for each device including Tx and Rx subscription and signal status, software and firmware version information, network utilisation and real-time latency measurement, as well as configuration of device name, sample rate, bit depth, latency, IP address and AES67 parameters. The **Network Config** tab provides IP address configuration options.

The device will resolve to a link-local address if it is set to obtain an IP address automatically and no DHCP server is present. To access via link-local, set your computer to obtain an IP address automatically, directly connect to the device's primary port and wait for the link-local addresses to resolve. Link-local addresses for the Primary Dante interfaces obtain IP addresses in the 169.254.xxx.xxx range, secondary Dante interfaces obtain addresses in the 172.31.xxx.xxx range.

Linking/Unlinking Networks A and B

The SB 32.24 and SB 16.12 can be configured to have both the gain-dependant and gain-compensated audio available on the same network, or to have them assigned to two separate (A/B) networks. Dante Controller is used to link/unlink the A/B networks.

Open the **Device View** window from the **Device** menu, or double-click the device name within any of the tabs in the main Dante Controller window. Click on the main (**not** compensated) device's name and select the **Network Config** tab. From the Switch Configuration drop-down select **Network A+B Linked** or **Network A+B Unlinked**. If the networks are unlinked only the gain-compensated splits will be available from network B and only the gain-dependant audio from network A. If the networks are linked, both gain-compensated and gain dependant splits are available from both network A and B connectors.
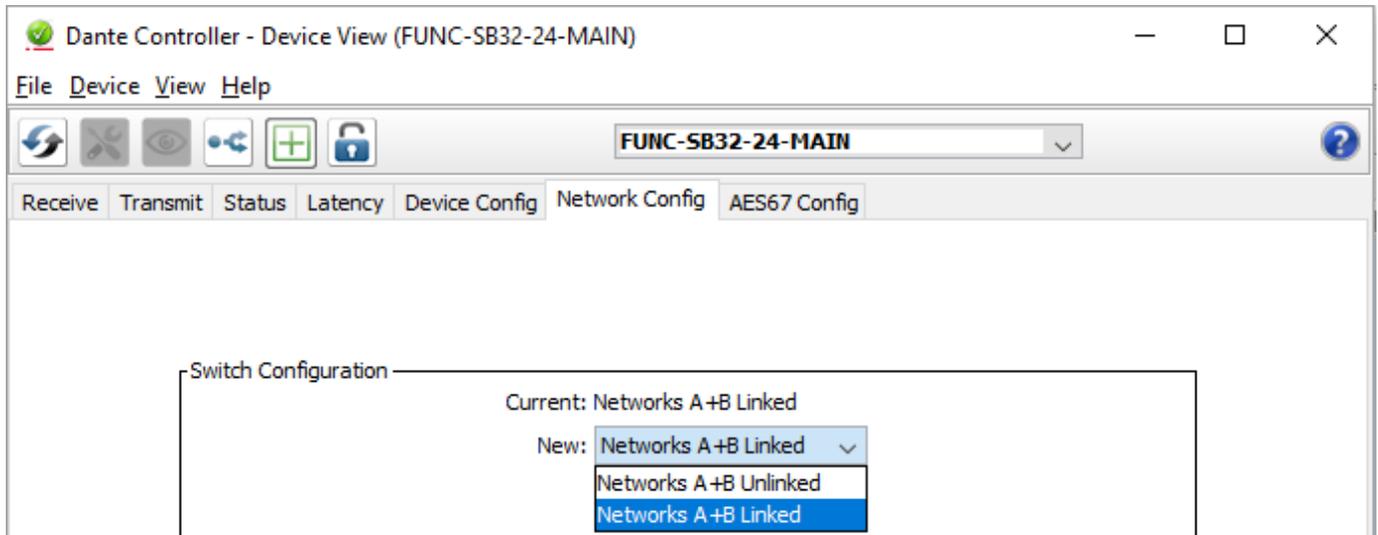
N.B. If the unit is being used in **Network A+B Linked** mode both devices (main and compensated) must have their IP addresses in the same subnets as each other. Note that both primaries must be in the same subnet, which is a different subnet to that used for both secondaries. If this is not correctly configured a warning will be shown in Dante Controller.

Appendices

Appendix A – General Specifications

Parameter	SB 32.24	SB 16.12	Notes
Depth	456 mm (18") 494 mm (19.5")	456 mm (18") 494 mm (19.5")	(excluding handles) (incl. handles)
Height	220 mm (8.7")	133 mm (5.2")	5 RU / 3 RU
Width	431 mm (17") 483 mm (19")	431 mm (17") 483 mm (19")	Unit width ex. rack ears Including rack ears N.B. Rack ears not removable
Weight	14 kg	10.8 kg	
Boxed Size	620 x 620 x 400 mm (24.4 x 24.4 x 15.7")	620 x 620 x 290 mm (24.4 x 24.4 x 11.4")	
Boxed Weight	16 kg	13 kg	
Power	100-240 V 3.0 – 1.5 A 170 W max.	100-240 V 3.0 – 1.5 A <170 W	
Acoustic Noise	NR 25	NR 23	Measured 1m from the front of the unit at the lowest fan speed. This speed will be active when the unit is within operating temperature limits.
Operating Temperature	+5°C to 40°C	+5°C to 40°C	
Storage Temperature	-20°C to 50°C	-20°C to 50°C	

Ventilation
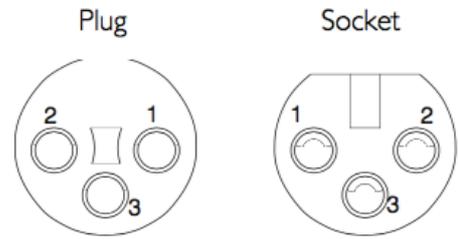Ventilation is from the rear of the unit.

Appendix B - Connector Pin Outs

XLR Wiring

Dimensions: 19 x 60mm (approx.)
Cable Diameter: 8-12mm (typical)

Pinout for balanced audio:

Pin 1   Screen/Ground
Pin 2   Hot (+ve)
Pin 3   Cold (-ve)

Connectors Viewed From Wiring Side

Appendix C – Performance Specifications

Mic/Line Inputs		
Parameter	**Value**	**Notes**
Gain Range	+26 to +70 dB -4 to +30 dB -4 to +40 dB	Mic mode, 0 dBFS, 0.1 dB gain step size Line mode, 0 dBFS, 0.1 dB gain step size Mic mode with pad engaged
Maximum Input Level	+27.5 dBu	30 dB Pad inserted
Frequency Response	± 0.2 dB	Mic mode, 20 Hz – 20 kHz (@48kHz) Typically ± 0.1 dB
Equivalent Input Noise	< -123 dB	Mic mode, 70 dB gain, A-weighted filter, 22 kHz bandwidth. Typically -124 dB
Usable Dynamic Range	> 115 dB	Mic mode, 0 dBFS, A-weighted filter, 22 kHz bandwidth. Typically 116 dB.
Input Impedance	2.3 kΩ / 10 kΩ	Mic / Line. Selectable per channel
CMRR	> 70 dB > 90 dB	Mic mode, 20 Hz – 20 kHz, 0 dBu Mic mode, 1 kHz, 0 dBu
Crosstalk	< -75 dB < -90 dB	20 Hz – 20 kHz 1 kHz
THD+N	< 0.01 %	Mic mode, 20 Hz – 20 kHz, -1 dBFS, 22 kHz bandwidth.
Phantom Power (Mic Input)	+48 V ±4 V 10 mA	Selectable per channel
Pad (Mic Input)	30 dB	Selectable per channel
Operating Levels	+24, +22, +20, +18, +15 dBu	
Sample Rates	44.1, 48, 88.2 or 96 kHz	
Resolution	24 bit	
Group Delay	19 samples	Analogue to Dante module

Measurement Parameters

Sample Rate:	96 kHz
Operating Level:	+24 dBu = 0 dBFS
Mic input termination:	150Ω
Mic Mode Gain:	26 dB (unless stated otherwise)
Reference frequency:	1 kHz (unless stated otherwise)

Line Outputs		
Parameter	**Value**	**Notes**
Maximum Output Level	+24 dBu	600 Ω / 10 kΩ load
Output Impedance	< 50 Ω	
Frequency Response	± 0.3 dB	-1 dBFS, 20 Hz – 20 kHz
Usable Dynamic Range	> 116 dB	0 dBFS, A-weighted filter, 22 kHz bandwidth Typically >117 dB.
Crosstalk	< -90 dB < -105 dB	20 Hz – 20 kHz, 0 dBFS 1 kHz, 0 dBFS
THD+N	< 0.01 %	20 Hz – 20 kHz, -1 dBFS. 22 kHz bandwidth Typically < 0.004%
Output Symmetry	> 40 dB	20 Hz – 20 kHz Typically > 50 dB
Sample Rates	44.1, 48, 88.2 or 96 kHz	
Resolution	24 bit	
Group Delay	11 samples	Dante module to analogue

Measurement Parameters

Sample Rate: 96 kHz

Operating Level: +24 dBu = 0 dBFS

Reference frequency: 1 kHz (unless stated otherwise)

Digital Inputs		
Parameter	**Value**	**Notes**
Input Impedance	110 Ω	Transformer coupled
Sample Rates	44.1, 48, 88.2 or 96 kHz	176 kHz or 192 kHz with sample rate converters enabled
Sample Rate converters	Yes	Selectable per AES channel pair
Resolution	24 bit	

Digital Outputs		
Parameter	**Value**	**Notes**
Output Impedance	110 Ω	Transformer coupled
Sample Rates	44.1, 48, 88.2 or 96 kHz	
Resolution	24 bit	

Appendix D – 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 nonuse.

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 fulfill 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 SOCKET. 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 Apparaten 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: 1.2 A. Typical peak in-rush current: 5.2 A.

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.)