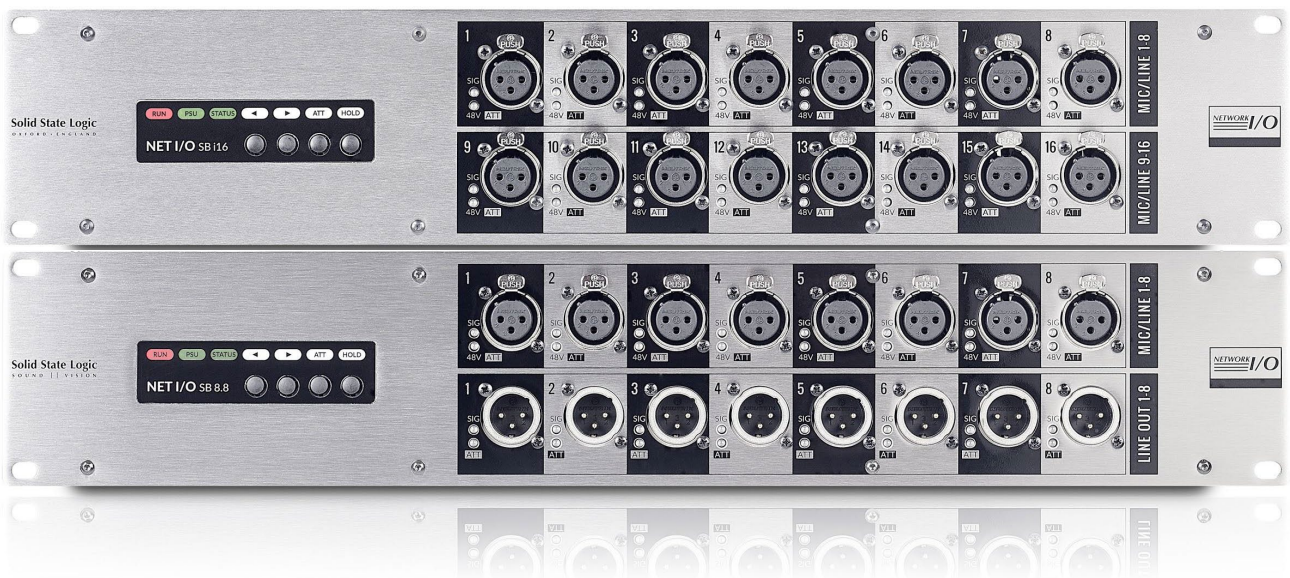


SB i16 and SB 8.8

Network I/O

User Guide

Revision: 1.2



Solid State Logic

O X F O R D • E N G L A N D

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E&OE

May 2021

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Introduction

Overview

SB i16 and SB 8.8 are, respectively, 2U, 16 input and 8 input/8 output SuperAnalogue™ Dante stageboxes, for all high-quality AoIP applications.

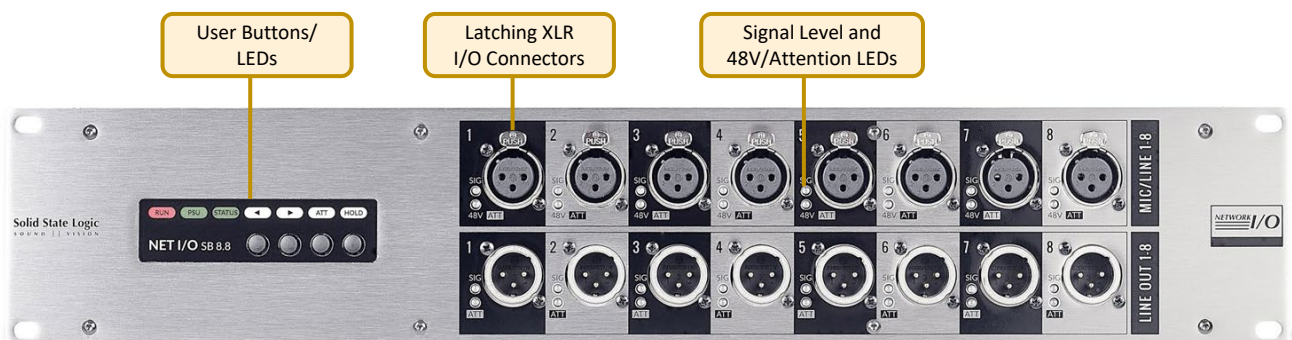
SB i16 and SB 8.8 can be controlled remotely from SSL Live and System T consoles as well as from SSL's Network I/O Controller app for PC.

SB i16 and SB 8.8 are ideally suited to studio and stage, featuring redundant power, redundant ruggedized etherCON Dante connections plus four GPIOs.

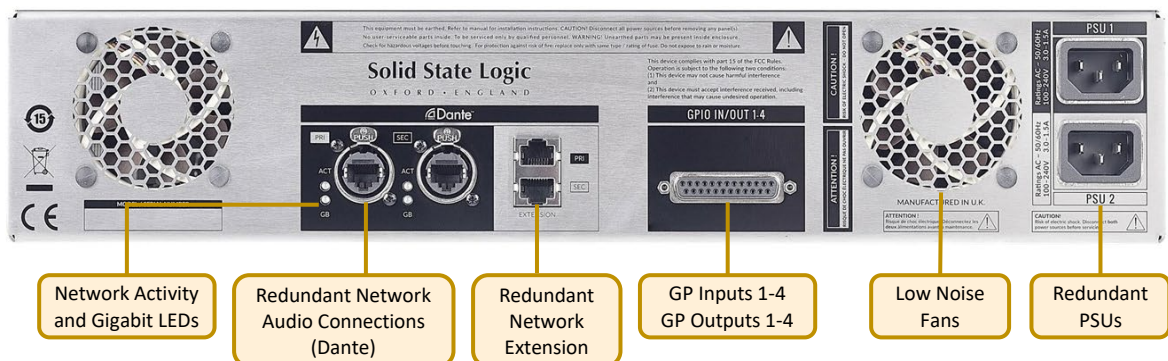
Key Features

- Interface between studio/stage/recording area and IP audio networks using Dante and AES67
- Redundant PSUs and Dante network connections
- 8 or 16 SSL SuperAnalogue studio grade preamps
- GPIO connectivity - embed tallies across the network
- Redundant network extension ports
- Clear front panel indication - signal present, phantom power, channel attention
- Gain-compensated inputs available to Dante network
- Device and parameter ownership assignment to avoid control conflicts
- AutoPad - automatically adjusts gain and pad settings to accommodate widest possible range of input signals
- Two-speed ball-bearing fan cooling - sufficiently quiet to place on a studio floor

SB i16 and SB 8.8 Front Panel



SB i16 and SB 8.8 Rear Panel



Status LEDs and User Buttons

Green (solid) - normal operation: processor running and Dante networks connected

Green (blinking) - booting/reconfiguring

Red (solid) - loss of primary network

Red (flashing) - loss of secondary network

N.B. If both networks are lost the **RUN** LED will be solid red

◀ ▶ **Arrows** are for channel selection - when using the arrow buttons, the attention LED will flash red on the selected channel

ATT (Attention) allows a user to 'push' attention (for the already selected channel) to the software control application for swift identification of inputs or outputs. *Easily and quickly identify channels of interest between the studio floor and the control room.*

Multiple channels can have Attention active.

Pressing the **ATT** button again on the selected channel will cancel the Attention signal.

Green - normal operation, both power supplies active

Red - primary or secondary power supply inactive

Green - normal operation

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

If **HOLD** and ◀ are held for 3 seconds then the primary Dante network connection will reset to use DHCP - once released the unit must be rebooted

If **HOLD** and **ATT** are pressed for 3 seconds this will perform a device reset - once released the unit must be rebooted

Channel LEDs

SIG analogue signal LEDs are green above -40 dBFS and red at -0.1 dBFS (clipping)

1

2

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

Device Reset

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

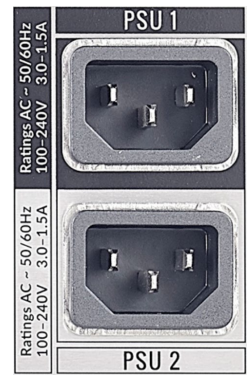
Brooklyn Reset

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.

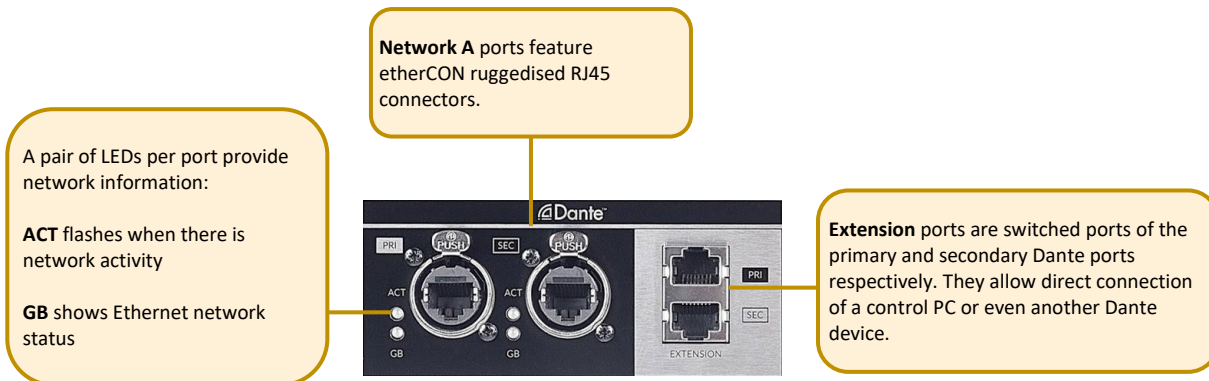
Hardware Connections

Mains Power Connections

SB i16 and SB 8.8 include 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.



Dante Connections



SB i16 and SB 8.8 have two redundant sets of network connections.

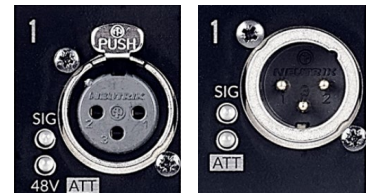
In Dante Controller it is possible to set Dante ports to switched mode rather than redundant mode. While this is possible, there is no need to here as the extension ports provide this functionality without loss of redundancy.

Never connect Primary and Secondary ports to the same single Dante network.

Audio Inputs and Outputs

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

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



GPIO

4 General Purpose opto-coupled inputs and 4 General Purpose relay outputs allow embedding and de-embedding of logic signals across the network.

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



SSL Network I/O Controller

Installing Network I/O Controller

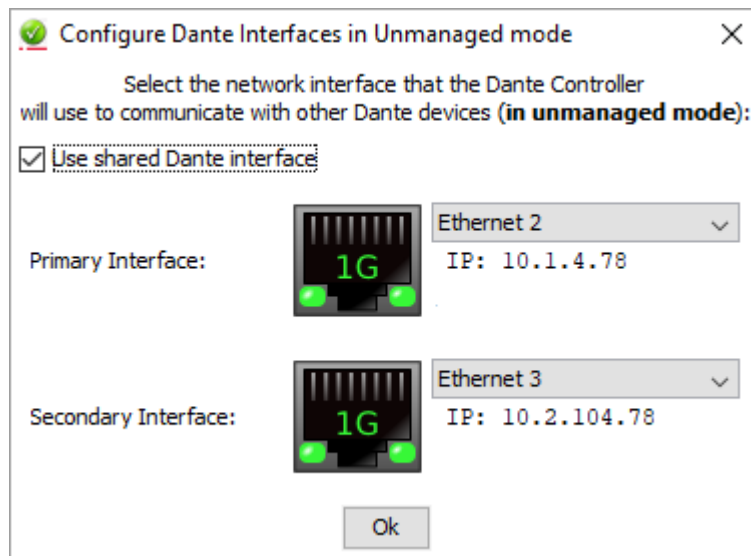
When SSL Network I/O is used without an SSL console, configuration and control is achieved using the SSL Network I/O Controller PC application. This can be downloaded from the [SSL website](#) as part of the Network I/O Stagebox upgrade package or as a standalone installer.

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

Application data is stored per Windows user account, allowing each user's configuration of device filtering, sorting and application window size to be retained.

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 adapters connected to the Dante network. 'Use shared Dante interface' must be selected to ensure all applications using the Dante network use the correct adapters. Subsequent changes to network settings may require Network I/O Controller to be restarted.

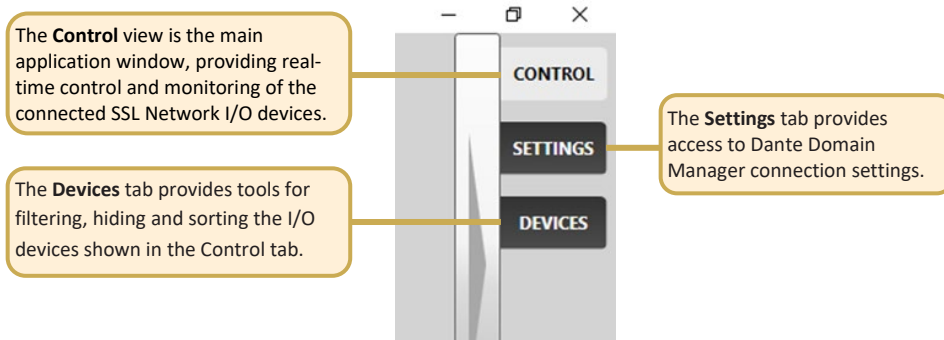


TCP/IP is used to communicate with the unit, so check Windows firewall settings if communications are not working.

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

Application Navigation

Network I/O Controller is divided between three tabs: **Control**, **Settings** and **Devices**. These are accessed from the right hand side of the application.

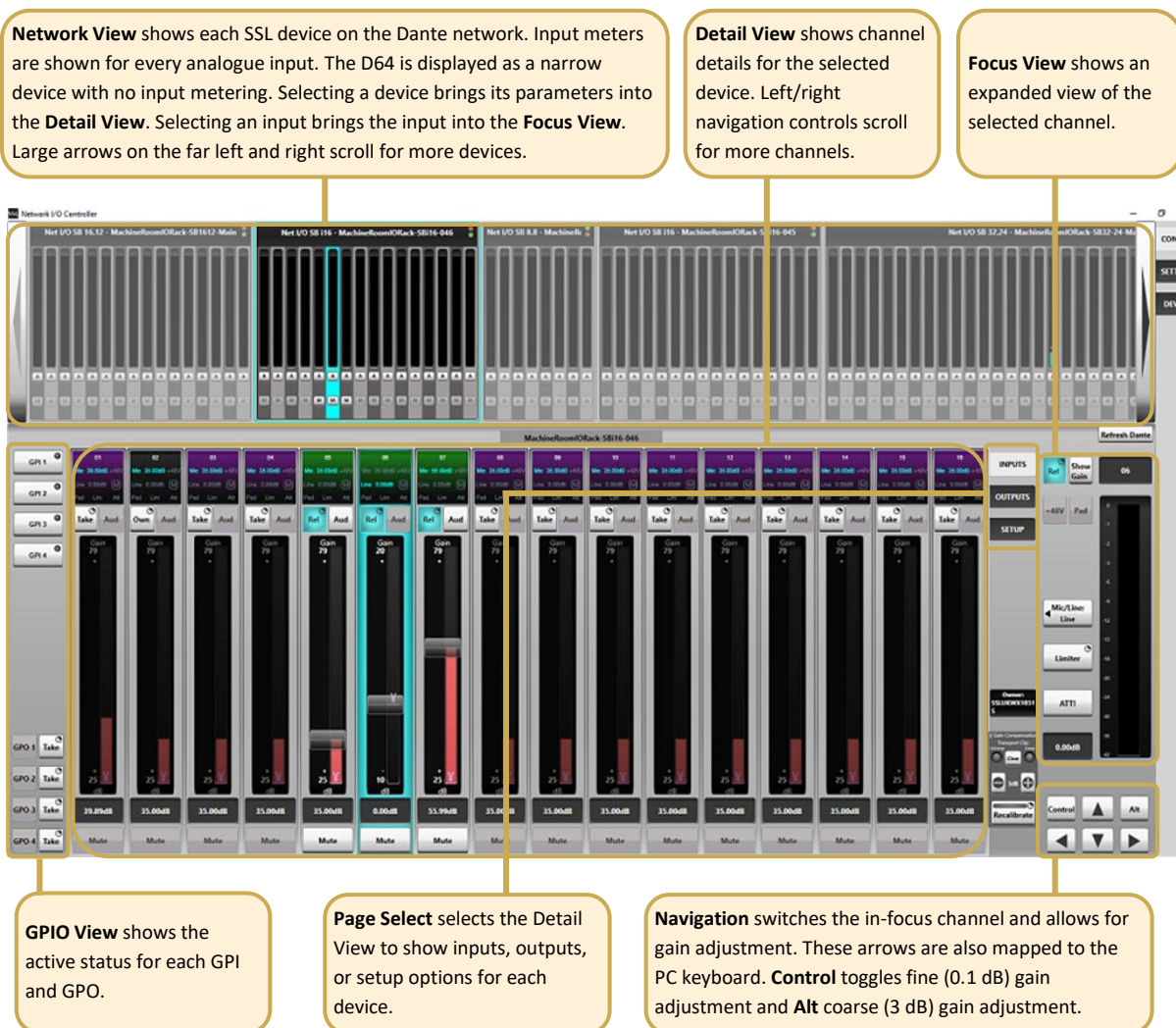


The application can be resized horizontally and vertically to fit the display as desired. Click and drag from the side or corner of the application to resize. With the **Control** tab visible, increasing the window width allows more devices and input metering in the **Network View**, plus displays more channels for control in the **Detail View**. Increasing the window height provides larger metering in **Network View** and a longer fader for each input in the **Detail View**.

When set to full screen on a 1920x1080 display 16 channels are displayed in the **Detail View**.

Control View

The **Control** tab is divided into five sections:



Network View

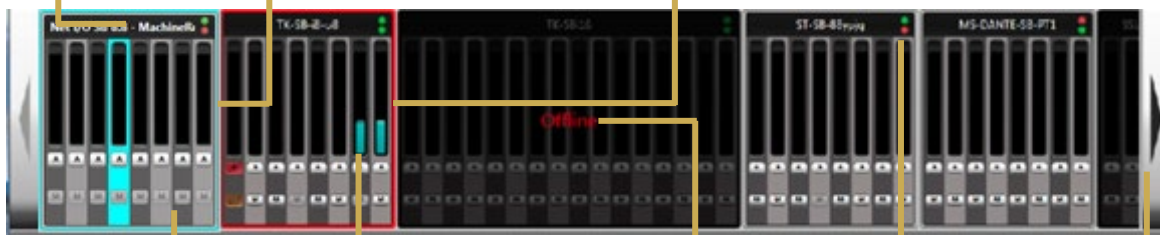
Device Name is set within Dante Controller.

Selected device is highlighted with a cyan outline. Devices and channels 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 unreachable, 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** or **Outputs** 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.

Holding Audition automatically sets the gain based on the source level.

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.

Left and Right arrows switch the selected channel. **Up and Down** arrows adjust the gain for the selected channel in discrete 1dB steps. **Control** toggles fine (0.1 dB) gain adjustment and **Alt** coarse (3 dB) gain adjustment. These controls are mapped to the computer keyboard.

Focus Window

Pad toggles the -20 dB mic preamp pad.

Further information is given in the **Pad** section.

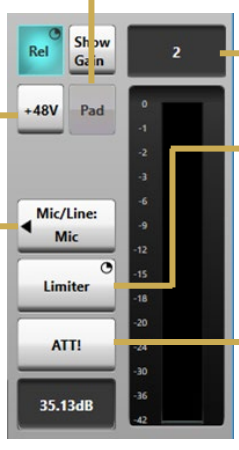
+48V toggles the mic preamp phantom power.

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

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 dependent on the operating level.

Line level inputs have a gain range of +20 to -10 dB.



Channel Label as entered in Dante Controller.

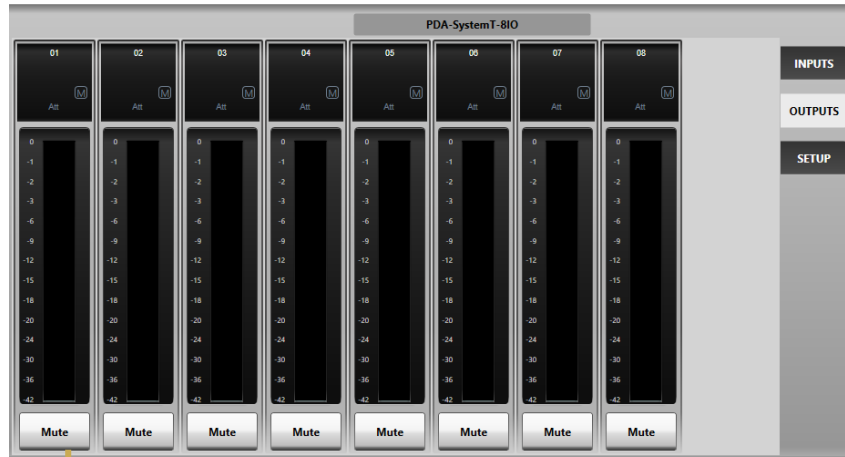
Limiter toggles the mic preamp limiter, an oversampled DSP-based feed forward limiter which reduces the mic pre gain as soon as the output level exceeds a peak average level of -3dBFS.

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 or from the device front panel.

Outputs



Mute allows individual outputs to be muted.

GPIO

The SB i16 and SB 8.8 are equipped with 4 GP input and 4 GP output circuits. Inputs are opto-isolated voltage triggered and output closures are via DIL relay.

See [Appendix B](#) for connector pinout and contact ratings.

GPI button LEDs show the state of each GPI.

GPOs can be individually triggered using the associated button.

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

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

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

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

Setup

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

Stagebox Ownership and **Inputs Ownership** settings are detailed under Ownership.

The screenshot shows the 'SETUP' screen for a device named 'PDA-SystemT-810'. The interface includes several sections: 'Name' (PDA-SystemT-810), 'Info' (PSU 1 ON, FAN 1 ON, 1600 RPM; PSU 2 ON, FAN 2 ON, 1600 RPM; Primary Network Status: 10.40.0.31; Secondary Network Status: 10.102.0.13; Sample Rate: 48 kHz), 'Temperature' (TEMP 1: 49, TEMP 2: 57, TEMP 3: 53), 'Ownership' (Owner: PDA-SYST, Stagebox Ownership, Inputs Ownership), and 'Attention' (Clear Attention). On the right, there are sections for 'OPERATING LEVEL' (20 dBu), 'PAD MODE' (AutoPad), 'GAIN COMPENSATION' (Recalibrate All Owned Inputs), and 'RESET SETTINGS' (Reset IO Settings). A 'Refresh Dante' button is in the top right. A 'Control' section with navigation arrows is at the bottom right.

Name shows the device name as set in Dante Controller.

Info shows the status of the device's redundant power supplies, fans, and temperature. Red indicates a fault.

Operating Level allows selection of the maximum analogue I/O level in dBu (at 0dBFS) for the device.

Clear Attention clears all active attention LEDs on the currently selected device.

Recalibrate All Owned Inputs resets the trim applied to the gain compensated inputs.

Reset IO Settings performs a device reset of SSL parameters, clearing gain ownership states and input settings.

AutoPad changes pad mode from traditional pad to AutoPad.

Settings View

For installations using Dante Domain Manager (DDM), the **Settings** tab provides access to DDM connection settings. Network I/O Controller can connect as a control client in the same way that Dante Controller, SSL Live and System T consoles can. Consult the Dante Domain Manager User Guide for further information regarding DDM.

The screenshot shows the 'DANTE DOMAIN MANAGER' settings screen. It includes fields for 'DDM Server Name/IP Address' (10.40.0.30), 'DDM Server Port' (8443), 'User Name' (admin), and 'Password' (masked with dots). Below these is a 'DDM Server Connection Status' indicator (a green dot) and the text 'Connected'. There are also 'Selected Domain' (PDA-SystemT) and 'Current Domain' (PDA-SystemT) fields, and an 'Attempt Reconnection' button.

DDM Server Connection Status displays whether there is an active connection to DDM.

DDM Server allows entry of the server name or IP address.

User Name and **Password** credentials for DDM are stored within Network I/O Controller. Once entered, Network I/O Controller will automatically attempt connection.

Selected Domain shows the active domain and provides a list of all Dante domains the selected user has access to.

Devices View

The **Devices** tab provides management of the I/O devices displayed in the **Control View**.

Device Filtering allows Network I/O device types to be hidden, both from the **Control View** and the **Control View Filtering and Sorting** section. An example use case may be to hide all compensated devices so that the **Control View** only shows the gain tracked signals, not the compensated split feeds.

Control View Filtering and Sorting provides control of the order in which devices are displayed in the **Network View** of the **Control View**, in addition to individual device filtering.

SHOW ALL clears the currently selected device filters.

HIDE OFFLINE ensures only currently connected devices are displayed, irrespective of device type.

Device Filtering

CONTROL

SETTINGS

DEVICES

Control View Filtering and Sorting

Name	Device Type	Description	Index	IP Address	Is Online	Hidden
MachineRoomIORack-SB1612-Comp	SB 16.12 (Comp)	SB 16.12 B	3	10.30.0.159	●	<input type="checkbox"/>
MachineRoomIORack-SB1612-Main	SB 16.12	SB 16.12	2	10.30.0.158	●	<input type="checkbox"/>
MachineRoomIORack-SB32-24-Comp	SB 32.24 (Comp)	SB 32.24 B	11	10.30.3.197	●	<input type="checkbox"/>
MachineRoomIORack-SB32-24-Main	SB 32.24	SB 32.24	6	10.30.3.199	●	<input type="checkbox"/>
MachineRoomIORack-SBi8o8-088	SB 8.8	8 I/O Dante Stage Box	12	10.30.3.213	●	<input checked="" type="checkbox"/>
MachineRoomIORack-SBi8o8-088	SB 8.8 (Comp)	8 I/O Dante Stage Box (Compensated)	13	10.30.3.213	●	<input checked="" type="checkbox"/>
MachineRoomIORack-SBi8o8-090	SB 8.8	8 I/O Dante Stage Box	7	10.30.3.195	●	<input type="checkbox"/>
MachineRoomIORack-SBi8o8-090	SB 8.8 (Comp)	8 I/O Dante Stage Box (Compensated)	8	10.30.3.195	●	<input checked="" type="checkbox"/>

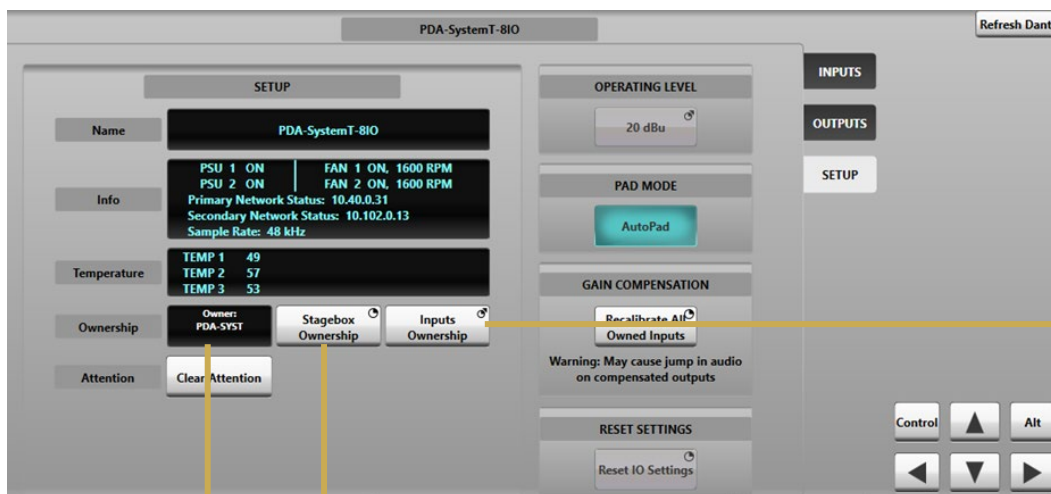
Column headings can be selected to affect the **Sort Order** of this table and importantly the order in which devices are displayed in the **Network View** of the **Control** tab.

Selecting the heading for a column will set it as the ordering field and toggle between ascending or descending. Sorting can be alpha-numeric by **Name** or **Device Type**, or numerically by **IP address** or **Index** (discovered order).

Individual devices can be **Hidden** from the **Control View**.

Ownership

Net I/O stageboxes can be controlled by SSL Live or System T consoles and the Network I/O Controller PC application. Separate **Stagebox** and **Input** ownership options are available to prevent control conflicts between networked consoles and control computers sharing resources.



The current owner is listed in white

Press and hold **Stagebox Ownership** to assign or relinquish stagebox ownership

Press and hold **Inputs Ownership** to open the Ownership menu:

- Own All** will assign all unowned inputs
- Take All** will assign all inputs including those owned by another controller
- Release All** will release ownership of inputs owned by the controller

Stagebox Ownership

Stagebox ownership provides general ownership of the stagebox configuration, covering the following parameters:

- Operating level
- Pad mode

A stagebox does not require an owner at all times, so can remain unowned if the above settings do not need to be adjusted.

Input Ownership

Input ownership offers a level of protection to inputs: when an input is owned the input parameters can only be modified by the device that owns it. Parameters covered by input ownership are:

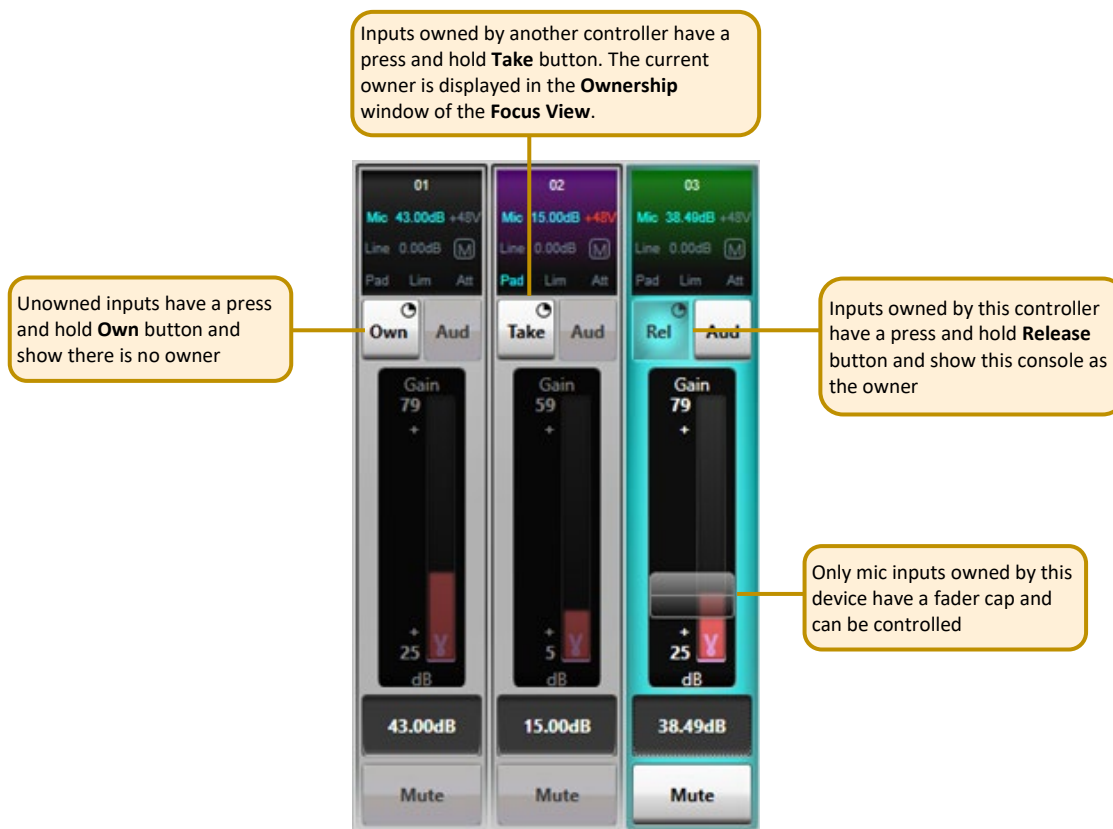
- Mic gain
- Phantom power
- Mic/line switching
- Pad
- Input mute
- Compensated output recalibration
- Audition
- Limiter

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.

N.B. Ownership settings are stored on the SB i16 and SB 8.8. The mute state is stored in volatile memory on the unit and all channels will reset to unmuted if the unit is repowered.

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**:



Console Routing and Input Ownership

When an SSL console makes routes from a stagebox mic input to a console channel, 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. Note that the audio route will still be made regardless of whether ownership is assigned.

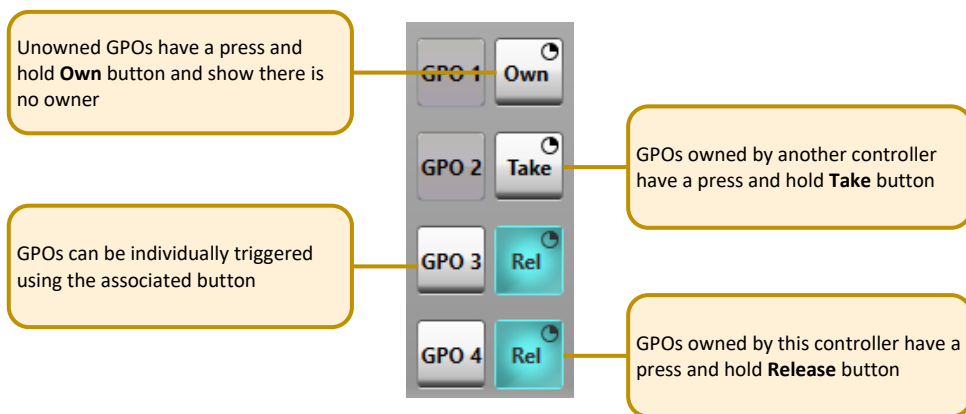
When an SSL console unloads a showfile (as happens when a new showfile is loaded or the console is powered down), routes are unmade. Unmaking routes for mic inputs automatically releases ownership, leaving them unowned for the next use. Ownership status is stored on the device, for all controllers on the distributed network to take account of.

If a stagebox is unreachable (e.g. it has been powered off) when the console showfile is unloaded then the stagebox storage of ownership will persist. If the stagebox is to be used on the same console (or set of consoles with the same showfiles) on next use, this persistence of ownership will not matter. If the stagebox is to be used on a different console, ownership will need to be cleared using **Reset I/O Settings** from console software or Net I/O Controller, or the hardware reset option detailed in Status and Reset.

Ownership from Network I/O Controller is manually controlled. Network I/O Controller does not manage Dante routing, this is done with Dante Controller.

GPO Ownership

The four GPO connections also have ownership status. The available ownership states are identical to those for stagebox inputs.



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 opposite 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

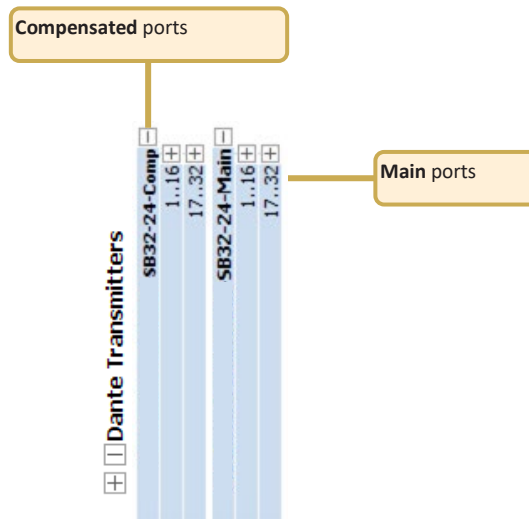
When connected to an SSL console or the Network I/O Controller app the main and compensated channels show as two separate devices.



The 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.

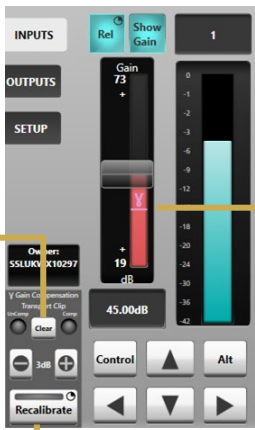
If networks A and B are linked then the compensated channels can be found as separate devices in Dante Controller, under the Transmit tab of the Routing Matrix or Device View.

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.



The screenshot shows a control interface with several sections: 'INPUTS', 'OUTPUTS', and 'SETUP'. In the center, there is a 'Gain' control with a value of 73 and a '+' sign. Below it is a 'dB' control with a value of 19 and a '+' sign. At the bottom, there is a 'Recalibrate' button. To the right, a fader level bar is shown with a scale from 0 to -42 dB. A red vertical bar is positioned at the 19 dB mark on the fader, indicating the calibration point. A yellow callout box points to this red bar with the text: 'The Calibration point is indicated on the fader level bar as γ.' Another yellow callout box points to the 'Clear' button with the text: 'Clear removes the clip indicator.' A third yellow callout box points to the '±3 dB' buttons with the text: 'Pressing the ±3 dB buttons adjusts the Calibration point by ±3 dB.'

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



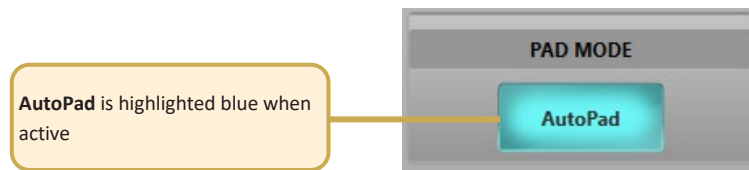
The image shows two 'Recalibrate' buttons. The top button has a green bar above it, and the bottom button has a red bar above it. Both buttons have a circular arrow icon to their right.

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.

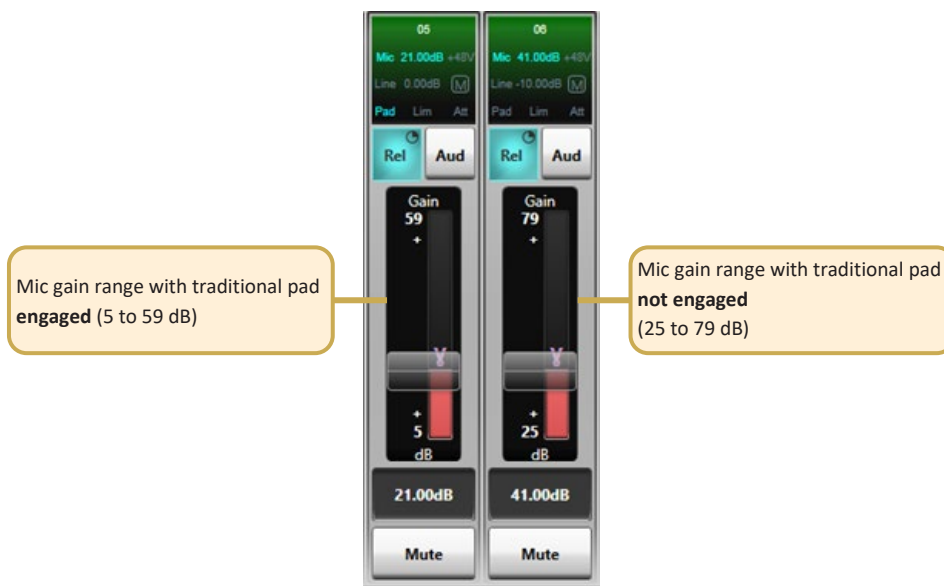
Pad

The SB i16 and SB 8.8 have two pad modes, **Traditional** and **AutoPad**. The pad mode is selected per stagebox (applied to all inputs) from the **SETUP** tab of the stagebox within Network I/O Controller.



Traditional

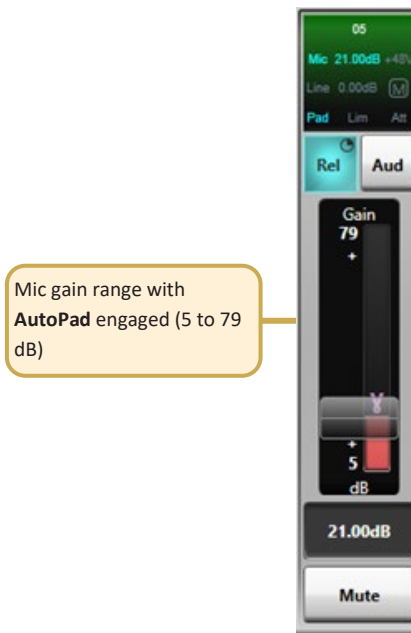
Traditional pad mode is active when AutoPad is deselected. This allows the 20 dB pad to be inserted/removed manually. Inserting the pad will reduce the input gain by 20 dB. The reduced value will be shown in the input channel strip and the range of available gain values will be updated to reflect the pad state. Note that maximum and minimum gain values are dependent on the Operating Level setting.



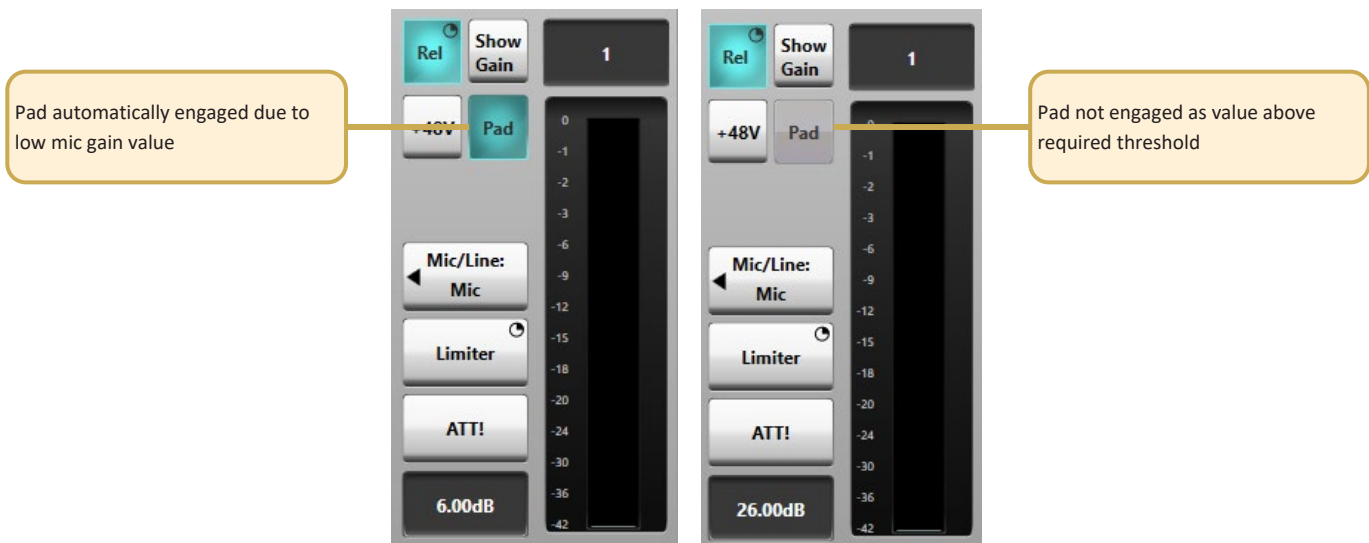
Compensated channels will change signal level in accordance with the pad setting on the associated main channel when in **traditional** pad mode. If the pad is inserted on a main channel the signal level of both the main and compensated channel will drop by 20 dB.

AutoPad

AutoPad provides the entire possible gain range to the operator and silently applies the pad when the gain range is set to a low value that requires the pad to achieve.



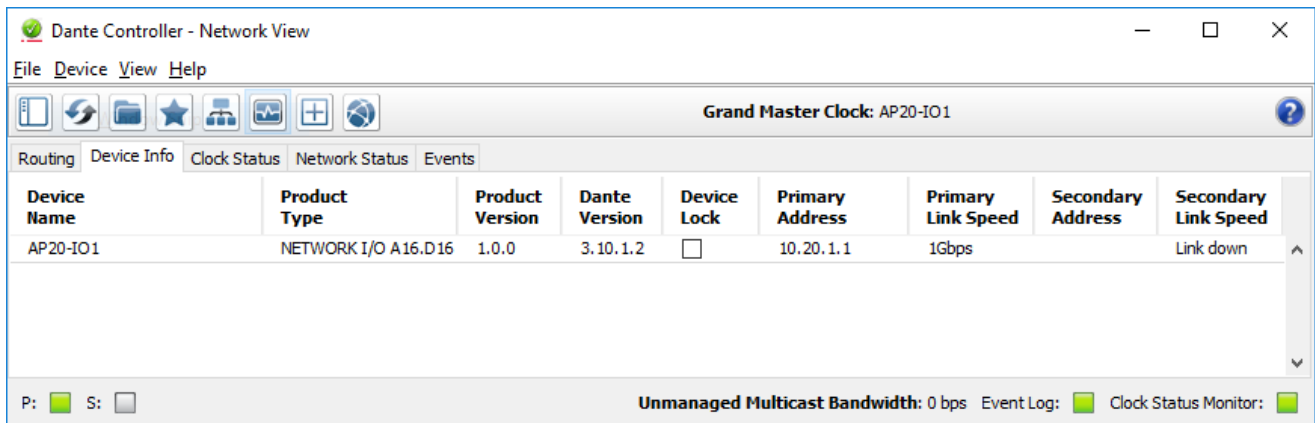
When **AutoPad** is active the **Pad** control on the channel is dimmed to show it is no longer available for user control. If the input gain is set to a low value which requires the pad to achieve then the **Pad** icon will be highlighted blue (whilst dimmed) to show that it is active.



It is advisable to check channel gain values after changing the **AutoPad** setting. Overall gain levels will be retained but pad states may change.

Compensated channels will retain a constant output signal level when in **AutoPad** mode, irrespective of whether the pad has been automatically applied.

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. 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.

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.

Appendices

Appendix A – General Specifications

The following specifications are the same for both the SB i16 and SB 8.8.

Parameter	Value	Notes
Depth	300 mm (12")	
Height	88.5 mm (3.5")	2 RU
Width	438 mm (17.25") 482 mm (19")	Excluding rack ears Including rack ears
Weight	7.0 kg (15.4 lb)	
Boxed Size	575 x 510 x 280 mm (22.5 x 20 x 11")	
Boxed Weight	8.5 kg (18.7 lb)	
Power	< 100 W	
Acoustic Noise	NR20	Measured 1 m 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	
Storage Temperature	-20 °C to 50 °C	

Ventilation

Ventilation is from the rear of the unit.

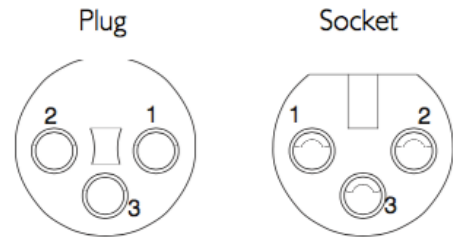
Appendix B - Connector Pin Outs

XLR Wiring

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

Pinout for balanced audio:

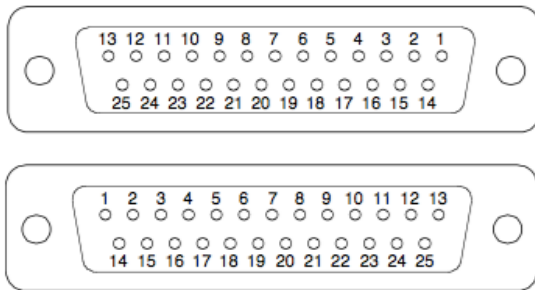
- Pin 1 Screen/Ground
- Pin 2 Hot (+ve)
- Pin 3 Cold (-ve)



Connectors Viewed From Wiring Side

D-Type Multipin Wiring

Connectors Viewed From Wiring Side



Plug

Socket

25-way

Dimensions: 55 x 15 mm (approx.)
Cable Diameter: 8 mm (typical)
Screwlock thread: 440-UNC

GPIO

GP Outputs

All output switch closures are via DIL relay.

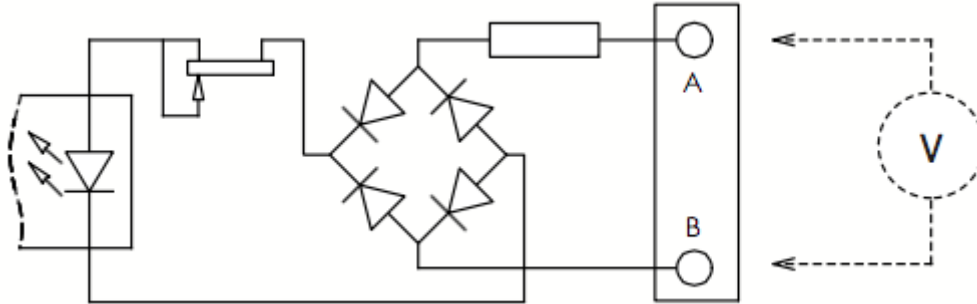
DO NOT use these outputs to directly switch capacitive or reactive loads; always use a separate external relay with suitable contact rating.

DIL Relay Ratings:

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

GP Inputs

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



GP Inputs / Outputs			
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			
18			
6			
19			
7	+12 V Output		0.5 A max (both pins), Linked to pin 13 Reference for 12 V output
20	Chassis		
8	Output 1A		See contact ratings above
21	Output 1B		
9	Output 2A		
22	Output 2B		
10	Output 3A		
23	Output 3B		
11	Output 4A		
24	Output 4B		
12			
25			
13	+12 V Output	As pin 7	

Appendix C – Performance Specifications

<i>Mic/Line Inputs</i>		
Parameter	Value	Notes
Gain Range	+5 to 79 dB	0 dBFS, MDAC continuous gain
Maximum Input Level	+28 dBu	Pad inserted
Frequency Response	± 0.25 dB	Mic mode, 20 Hz – 20 kHz (@48 kHz) -0.5 dBu signal level
Equivalent Input Noise	< -123 dB	Mic mode, 70 dB gain, A-weighted filter, 22 kHz bandwidth.
Usable Dynamic Range	> 114 dB	Mic mode, 0 dBFS, A-weighted filter, 22 kHz bandwidth.
Input Impedance	1.5 kΩ / 14 kΩ	Mic / Line. Selectable per channel
CMRR	> 55 dB (typically > 65 dB) > 80 dB (typically > 90 dB)	Mic mode, 50 Hz – 20 kHz, 0 dBu Mic mode, 1 kHz, 0 dBu
Crosstalk	< -85 dB (typically < -95 dB)	20 Hz – 20 kHz
THD+N	< 0.005 % < 0.0015 %	Mic mode, 20 Hz – 20 kHz, -6 dBu, 22 kHz bandwidth Mic mode, 1 kHz, -6 dBu, 22 kHz bandwidth
Phantom Power (Mic Input)	+48 V ±4 V 10 mA	Selectable per channel
Pad (Mic Input)	20 dB	Selectable per channel
Operating Levels	+24, +22, +20, +18, +15 dBu	
Sample Rates	48 or 96 kHz	
Resolution	24 bit	
Group Delay	39 samples	Analogue to Dante module

Measurement Parameters

Sample Rate:	48 kHz
Operating Level:	+24 dBu = 0 dBFS
Mic input termination:	150 Ω
Mic Mode Gain:	24 dB (unless stated otherwise)
Reference frequency:	1 kHz (unless stated otherwise)

<i>Line Outputs</i>		
Parameter	Value	Notes
Maximum Output Level	+24 dBu	600 Ω / 10 kΩ load
Output Impedance	< 50 Ω	
Frequency Response	± 0.2 dB - 0.5 dB	-0.5 dBFS, 20 Hz – 15 kHz At 20 kHz
Usable Dynamic Range	> 113 dB	0 dBFS, A-weighted filter, 22 kHz bandwidth Typically >117 dB.
Crosstalk	< -90 dB typically < -100 dB	20 Hz – 20 kHz, 0 dBFS
THD+N	< 0.004 % < 0.004 %	20 Hz – 20 kHz, -10 dBFS, 22 kHz bandwidth 1 kHz, 0 dBFS to -20 dBFS, 22 kHz bandwidth
Output Symmetry	> 40 dB	20 Hz – 20 kHz Typically > 50 dB
Operating Levels	+24, +22, +20, +18, +15 dBu	
Sample Rates	48 or 96 kHz	
Resolution	24 bit	
Group Delay	31 samples	Dante module to analogue

Measurement Parameters

Sample Rate: 48 kHz
 Operating Level: +24 dBu = 0 dBFS
 Reference frequency: 1 kHz (unless stated otherwise)

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 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 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 4.5 m (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 400 V 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: 1.2 A, 5 sec in-rush current: 0.8 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 °C	Storage: -20 to 50 °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.)