JBL SYNTHESIS®

SDA8300

SDA4600

AMPLIFIER

SYSTEM INSTALLATION GUIDE

May, 2014

P/N 070-90018 (rev A.0)

Read Me First!

IF YOU READ NOTHING ELSE IN THIS GUIDE READ THIS INFORMATION:

The SDA amplifiers come pre-configured to work with the SDEC4500P using the BLU-LINK digital audio signal over Cat5e Ethernet cables. The amplifiers should not be connected to the home network. Analog Audio input comes IN on the SDEC4500P (up to 12 channels) and OUT on the SDA8300 and/or SDA4600 without going through any Digital to Analog conversions (up to 20 Channels as standard, expandable to 128 channels).

Two alternate configurations are selected by using the included selection trigger that plugs into the GPIO input on the rear panel. These are labeled "Configuration 2" and "Configuration 3" on the plug.

The SDA8300 amplifier ships configured for a simple 7-channel system. The SDA8300 can access two (2) additional configurations. Using combinations of these configurations allows the system to output from a simple 7 x 300 Watt system to up to 16 x 300 Watts with discrete DSP for each channel with active bi-amp outputs on the Left-Center-Right.

The SDA4600 ships configured for a 4-channel subwoofer (4 x 600 Watts). Up to two (2) additional configurations can be accessed for bridged high power subwoofers outputs (2 x 1200 Watts) with discrete channel DSP for each output. These are used with the Harman Patented "Sound Field Management" in the SDEC4500P.

The **SDEC-4500P** controls all DSP and BI-AMP speaker crossover settings and must be configured with either "JBL Synthesis ARCOS" software or "SDEC Control Panel Software v1.5". Go to www.jblsynthesis.com to download the correct software.

The ONLY inputs into the SDA amplifiers should be from the Cat5e cable connected to the BLU-Link In/Out. Analog inputs are provided *as a backup only* and is not recommended. DO NOT USE BOTH BLU-LINK AND ANALOG AS UNEXPECTED RESULTS CAN OCCUR.

DO NOT CONNECT THE AMPLIFIER TO THE HOME NETWORK. THE NETWORK CONNECTION IS FOR ADVANCED SETUP AND MONITORING. THERE ARE NO USER CONTROLLABLE FUNCTIONS FROM THE NETWORK. ONLY THE BLU-LINK SIGNAL CHAIN MUST BE CONNECTED USING STANDARD CAT5E ETHERNET CABLES.

Step by Step Setup Guide. Detailed instructions are on the next pages.

1. **Connect Preamp/Surround Processor and SDEC4500P**
2. **Connect Blu-Link Digital Audio Link from SDEC4500P to SDA Amplifier(s) using standard Ethernet Cat5e cables**
3. **[Optional] Connect Powered Subwoofers to SDEC4500P**
4. **Setup of SDA8300 for Single (8-channel) or Dual unit (16-channel) configuration and connect speakers**
5. **Setup of SDA4600 for Single (4-channel x 600 W) or Bridged (2-Channel x 1200 W) or Bridged Dual unit configuration and connect subwoofers**

Accessories

Power cords (North America and EU)
Rack screws
Analog input screw down connectors
Speaker Terminal crimp connectors
Rear Rack Rail support
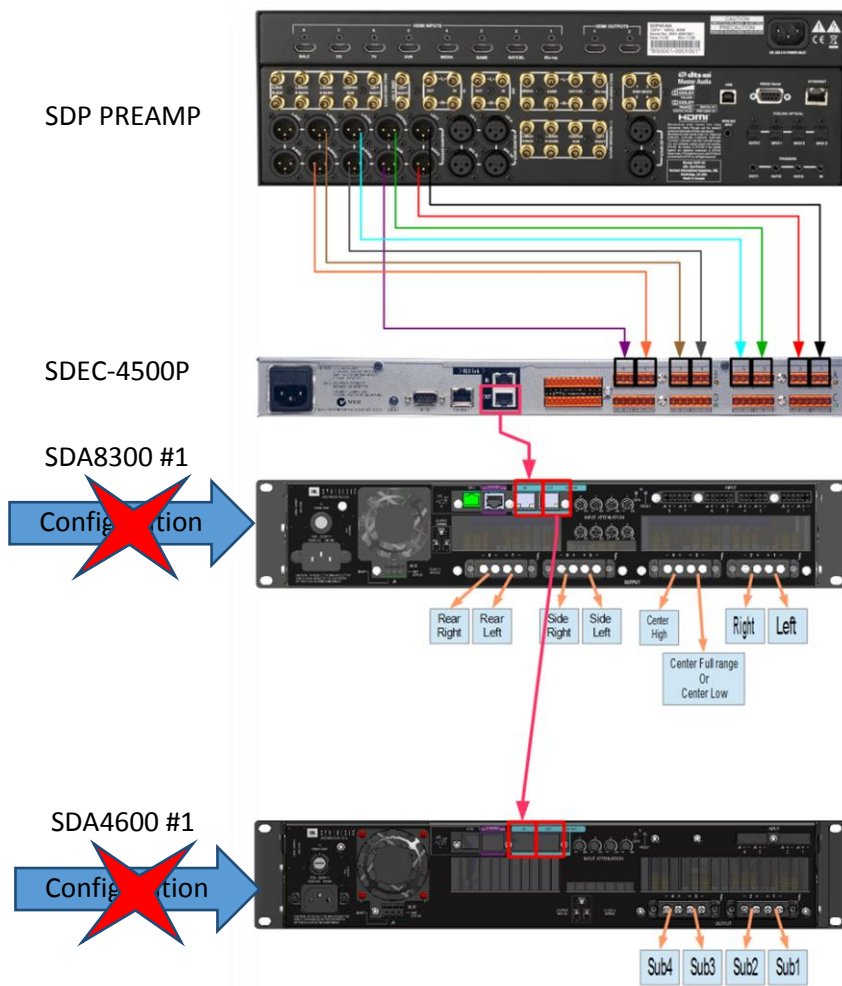Sleep trigger 3-conductor screw down connector
SDA4500XLRIC interconnect kit [**PURCHASED SEPARATELY**]

Auto Standby / Auto Turn On

The amplifiers will go to low power standby if any channel does not receive signal for more than 30 minutes. The individual Channel Ready light will blink green in standby. This is on a PER CHANNEL basis. The amplifier will Auto Turn On when the signal returns above -60db in level and the Channel Ready light will stay solid green.

Sleep Mode

This is a CONTACT CLOSURE. Only use with dry contact closure from control systems. The amplifier can be put to sleep by connecting pins 1 and 2 on the AUX port. When applying this connection, the amplifier will shut down and remain in sleep until the connection between pins 1 and 2 is open. While the amplifier is in sleep, the front panel power button is disabled. When the connection between pins 1 and 2 is open, the amplifier will revert to its last configuration and begin to output audio within 20 seconds.

SDP PREAMP

SDEC-4500P

SDA8300 #1

Configuration

SDA4600 #1

Configuration

| Rear Right | Rear Left | Side Right | Side Left | Center High | Right | Left |

Center Full range
Or
Center Low

| Sub4 | Sub3 | Sub2 | Sub1 |

SDP PREAMP

SDEC-4500P

SDA8300 #1

Configuration 2

| Right Aux | Left Aux | Center High | Center Low | Right High | Right Low | Left High | Left Low |

SDA8300 #2

Configuration 3

| Right Rear | Left Rear | Right Side3 Aux | Left Side3 / Aux | Right Side 2 | Left Side 2 | Right Side 1 | Left Side 1 |

SDA4600 #1

Configuration 2

| Sub2 − | Sub2 + | Sub1 − | Sub1 + |

SDA4600 #2

Configuration 3

| Sub4 − | Sub4 + | Sub3 − | Sub3 + |

Standard System [i.e., Syn-2-Array / Syn-3-Array / Syn-4 / or Similar]

Typical STANDARD system configuration. Factory Defaults. **DO NOT INSERT THE CONFIGURATION JUMPERS.** Standard systems support 7.4 with the *option* to active bi-amplify the Center Channel.
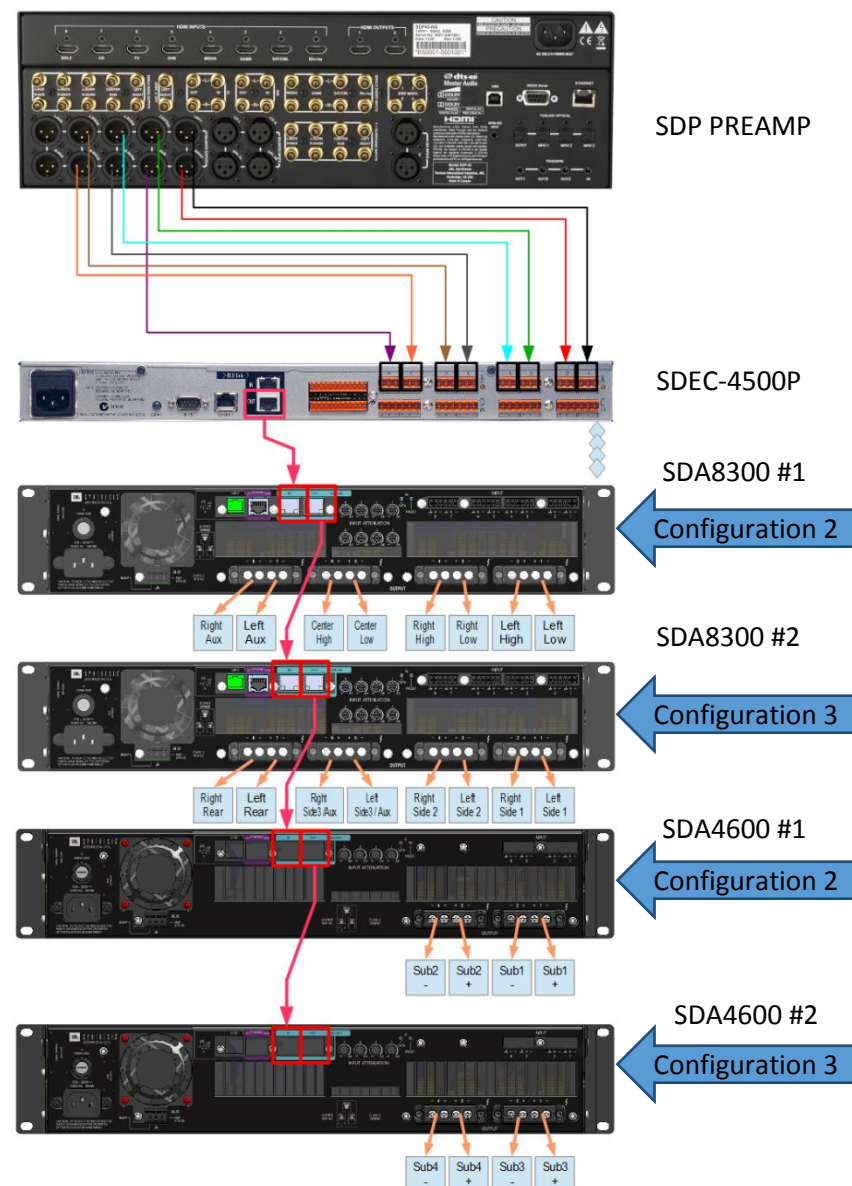
Expanded Systems [i.e., Syn-Everest / Syn-K2 / Syn-Atlas / Syn-1-Array]

Fully expanded system using Configuration 2 and Configuration 3 for 13.4 Channel system. Front Left-Center-Right have the *option* to be bi-wired or actively bi-amplified.
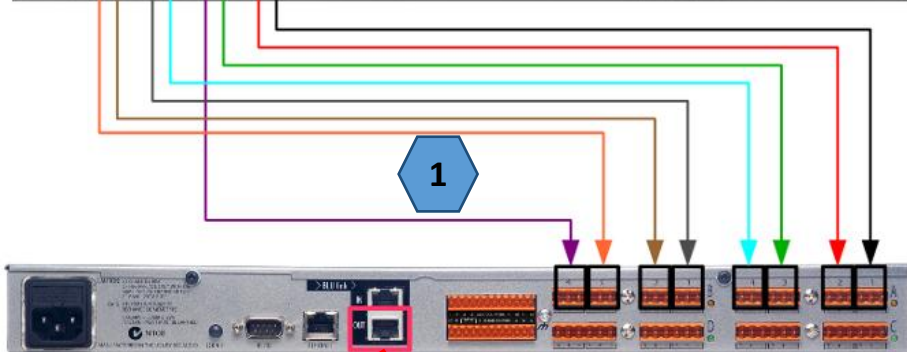
Step One - Audio Input

Connect the analog output of the preamp or surround processor [SDP-45 shown at left] to the input of the SDEC4500P. See the SDEC4500 installation manual for more details.

#	Surround Preamp Output	SDEC4500P Input
1	Left Front	A1
2	Right Front	A2
3	Center Front	A3
4	Left Side	A4
5	Right Side	B1
6	Left Rear	B2
7	Right Rear	B3
8	Subwoofer	B4
9	Aux 1 Left / Front Height L	C1
10	Aux 1 Right / Front Height R	C2
11	Aux 2 Left / Rear Height L	C3
12	Aux 2 Right / Rear Height R	C4

Step Two – Blu-Link Digital Audio

Connect the OUT from the SDEC4500P to the IN of the first amplifier. Continue with each amplifier in the system connecting from OUT to IN. Up to 60 Amplifiers can be connected with up to 128 discrete channels of audio.
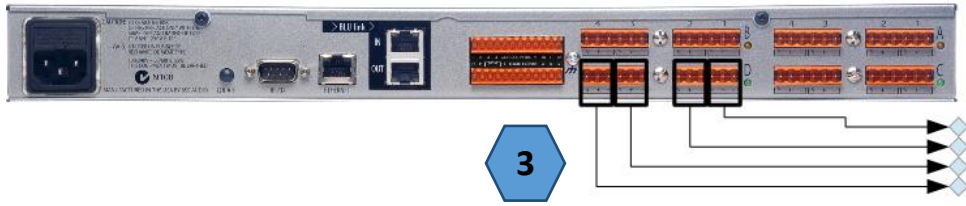
SDEC4500P

Step Three [optional] Connect Powered Subwoofers

Connect the line level output of the SDEC4500P to up to four powered subwoofers using the line level output. These are discrete outputs from the SDEC and are the same signal as the amplifier outputs below.

#	Subwoofer Output	SDEC4500P Out
1	Subwoofer Front Left	D1
2	Subwoofer Front Right	D2
3	Subwoofer Rear Left	D3
4	Subwoofer Rear Right	D4

NOTES REGARDING BLU-LINK AND ANALOG CHANNEL ASSIGNMENTS

- **The order that each device is connected does not have an effect on the channel assignments. Devices can be connected in any order.**
- ***Multiple devices can use the same BLU-link assignments and have duplicate channels. This is useful if you want to "double-up" on specific channels.**
- **The SDEC4500X can be used at the same time as the SDA Amplifiers. The channel assignments can overlap or be duplicated.**
- **The limit is 60 BLU-Link devices with 128 Channels.**

SDA8300 (SINGLE)

BI-AMP crossover settings are controlled from the SDEC4500P and must be configured with either "JBL Synthesis ARCOS" software or "SDEC Control Panel Software v1.5". Go to www.jblsynthesis.com to download the correct software

SDA8300 (SINGLE)	
CONFIGURATION 1	**AMP CHANNEL**
LEFT	1
RIGHT	2
CENTER FULL RANGE / CENTER LOW	3
CENTER HIGH (Bi-Amp Only)	4
SIDE LEFT	5
SIDE RIGHT	6
REAR LEFT	7
REAR RIGHT	8

4 **Step Four – Configuration and Identification**

SINGLE SDA8300

Configuration 1 is the default factory settings for use with a single SDA8300. This is configuration 1. If you are using these factory default outputs no configuration is needed, and doing so will cause the units to operate incorrectly. If you accidentally select one of the alternate configurations below you will need to contact JBL Synthesis Technical Support to reset the unit.

Use with these systems:

- Any standard system with no more than 7 main speakers
- Any system with an active or passive Bi-amplified Center Only
- Synthesis-Four
- Synthesis-Three-Array
- Synthesis-Two
- Synthesis-Atlas (7.1)
- Synthesis-K2 with SK2-3300 Center Channel (Bi-Amp Center)
- Synthesis-Everest with SK2-3300 Center Channel (Bi-Amp Center)

Factory Default Configuration 1

Nothing should be done to the amplifier. It is factory set to this configuration. DO NOT INSTALL ANYTHING INTO THE GPIO INPUT. If you accidentally insert the Configuration Trigger and need to reset the unit, contact Technical Support for Step by Step Instructions, csupport@harman.com or toll free at +1 (888) 691-4171.

SDA8300 (Dual – Amp #1)

SDA8300 (Dual – Amp #2)

4 **Step Four (Continued) – Configuration and Identification DUAL SDA8300**

Configuration 2 + Configuration 3 is used with these expanded systems or where additional bi-amp or height/aux channels are needed.

Use with these systems:

- Any 9 or 11 channel system
- Any system that requires height channels (4 supported)
- Any system with active or passive Bi-amplified L+R and/or Center
- Synthesis-One-Array
- Synthesis-K2 (Bi-Wire or Bi-Amp)
- Synthesis-Everest (Bi-Wire or Bi-Amp)

SDA8300 (DUAL)	
CONFIGURATION 2	**AMP CHANNEL**
LEFT FULL RANGE / LEFT LOW	1
LEFT HIGH	2
RIGHT FULL RANGE / RIGHT LOW	3
RIGHT HIGH	4
CENTER FULL RANGE / CENTER LOW	5
CENTER HIGH	6
AUX 1 LEFT / HEIGHT LEFT FRONT	7
AUX 1 LEFT / HEIGHT RIGHT FRONT	8

Configuration 2

Configuration 2 is selected by inserting the RJ25 plug with the label "CONFIGURATION 2" into the rear panel "GPIO".

CONFIGURATION 3	**AMP CHANNEL**
SIDE LEFT 1	1
SIDE RIGHT 1	2
SIDE LEFT 2	3
SIDE RIGHT 2	4
SIDE LEFT 3 / HEIGHT LEFT REAR	5
SIDE RIGHT 3 / HEIGHT RIGHT REAR	6
REAR LEFT	7
REAR RIGHT	8

Configuration 3

Configuration 3 is selected by inserting the RJ25 plug with the label "CONFIGURATION 3" into the rear panel "GPIO".

SDA4600 (SINGLE)

Step Five – Configuration and Identification

SDA4600 4 x 600 Watts per channel

Configuration 1 is the default factory settings are for use with a single SDA8300. This *is* configuration 1. If you are using these factory default outputs no configuration is needed, and doing so will cause the units to operate incorrectly. If you accidentally select one of the alternate configurations below you will need to contact JBL Synthesis Technical Support to reset the unit.

Use with these subwoofers:

- Any passive subwoofer with a power handling of 200 – 600 Watts
- S4S
- S2S
- S2S-EX (WITH SYN-THREE-ARRAY OR SMALLER LCR SPEAKERS)

SDA8300 (SINGLE)	
CONFIGURATION 1	AMP CHANNEL
SUB 1	1
SUB 2	2
SUB 3	3
SUB 4	4

Factory Default Configuration 1

Nothing should be done to the amplifier. It is factory set to this configuration. DO NOT INSTALL ANYTHING INTO THE GPIO INPUT. If you accidentally insert the Configuration Trigger and need to reset the unit, contact Technical Support for Step by Step Instructions, csupport@harman.com or toll free at +1 (888) 691-4171.

SDA4600 (BRIDGED #1)

Configuration 2

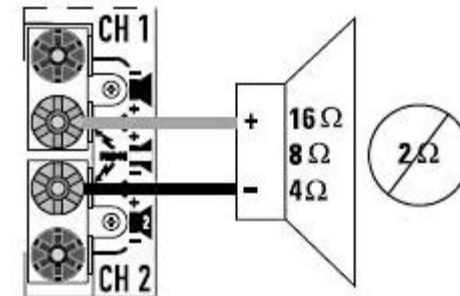**SDA4600 (BRIDGED #2)**

Configuration 3

⬡5 Step Five (Continued) – Configuration and Identification

SDA4600 BRIDGED 2 x 1200 Watts per channel

Configuration 2 and/or Configuration 3 is used with high power subwoofers. Connect the Channel 1 + as speaker positive and Channel 2 + as speaker negative.

Use with these subwoofers:

- Any passive subwoofer with a power handling of 600 – 1200 Watts
- S2S-EX
- S1S-EX

SDA4600 (BRIDGED)	
CONFIGURATION 2	**AMP CHANNEL**
SUB 1	1 + [POSITIVE]
	2 + [NEGATIVE]
SUB 2	3 + [POSITIVE]
	4 + [NEGATIVE]

Configuration 2

Configuration 2 is selected by inserting the RJ25 plug with the label "CONFIGURATION 2" into the rear panel "GPIO".

SDA4600 (BRIDGED)	
CONFIGURATION 3	**AMP CHANNEL**
SUB 3	1 + [POSITIVE]
	2 + [NEGATIVE]
SUB 4	3 + [POSITIVE]
	4 + [NEGATIVE]

Configuration 3

Configuration 3 is selected by inserting the RJ25 plug with the label "CONFIGURATION 3" into the rear panel "GPIO".

Front panel description

Indicators:
Fault Indicator (red): Flashes when the amplifier output channel has stopped operating.
Thermal Indicator (red): Illuminates when the channel reaches 80 degrees Celsius, indicating the onset of protection compression. If the temperature continues to rise, the amplifier output will shut off at 98 degrees Celsius and remain off until a safe operating temperature is present.
Clip Indicator (red): Illuminates when any of the following conditions are present: Onset of audible clipping, clipped signal detected at input, clipped signal detected at output, engagement of protection circuits.
Level and Signal Indicators (green): Three LEDs indicate signal presence and level as follows: -10 = 10 dB below rated output -20 = 20 dB below rated output Signal = -40dBU input level
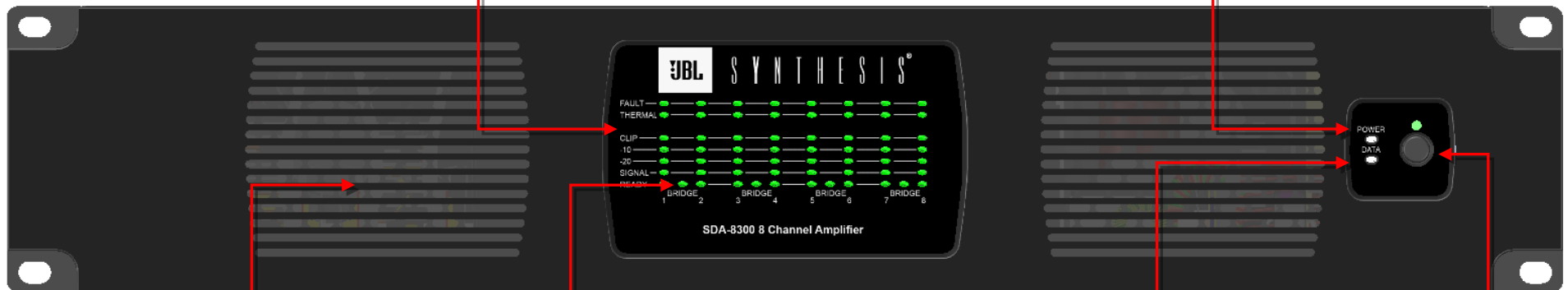**Ready Indicator (green):** When this indicator is activated, the amplifier is ready to pass audio.

Power Indicator (blue)
Illuminates when the amplifier is ON and acceptable AC line voltage is present.
Blinks when AC line voltage is outside ±10% range.
Flashes for 4 seconds if Power button pressed when amplifier is in sleep mode

Cooling Vent Grille
Provides cooling air flow. Do not block or cover these vents.

Bridge Mode Indicator (yellow)
Illuminates when Bridge Mode is activated for the channel pair, only odd number channel will be active.

Data Indicator (yellow)
Illuminates when data present on the data network only. BLU Link connectivity is not a part of this indicator.

Power Button
Power Ring Indicator (Green) - Illuminates when the amplifier is plugged into a wall outlet with acceptable power. NOTE: Power Button is disabled when AUX port Sleep circuit is used. Pressing the power button will turn on the unit if OFF or will place the unit into STANDBY (Low Power) mode if ON.

Rear panel description

Power Fuse
F20AH 250V, replace with same type fuse. LittelFuse 314 Series.

Ethernet
For monitoring and control of the amplifier over Category 5e wiring. For advanced setup and Factory Service Only. Do not use this unless directed by technical support.

BLU Link
Input/Output Ring
Up to 256 channels of digital audio over Category 5e wiring. Only 60 nodes should be used in the BLU-Link Ring.

Input Attenuators
One 21-position detented potentiometer per channel. Logarithmic audio taper. Attenuation range mute to 0 dB.

Preset Indicators
Visual LED light indicator of the currently selected preset. The LED will blink rapidly and then pause to indicate what number Preset is selected. **NOTE**: The factory Preset is #2. Configuration 2 is Preset 3 and Configuration 3 is Preset 4.

Backup Analog Input Connectors One 6-pin plug-in connector per input pair. High impedance balanced

BALANCED LINE

UNBALANCED LINE

AC Power Inlet
Standard IEC type 320 inlet for detachable connector 100 - 240 V~.

Cooling Fan Outlet
Outlets for cooling air flow. Do not block or cover these outlets.

Auxiliary Connector
3-pin plug-in type connector, Enables SLEEP mode and monitoring of AMP STATUS unless the amplifier is in any of these conditions: OFF, SLEEP, or FAULT.

GPIO
Use this input with the supplied configuration plugs to change the routing of the internal digital audio and amplifier setup.
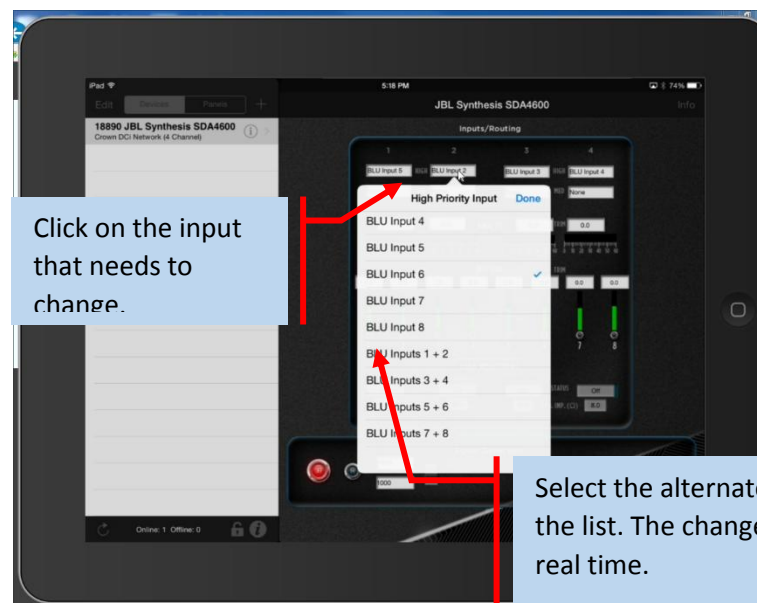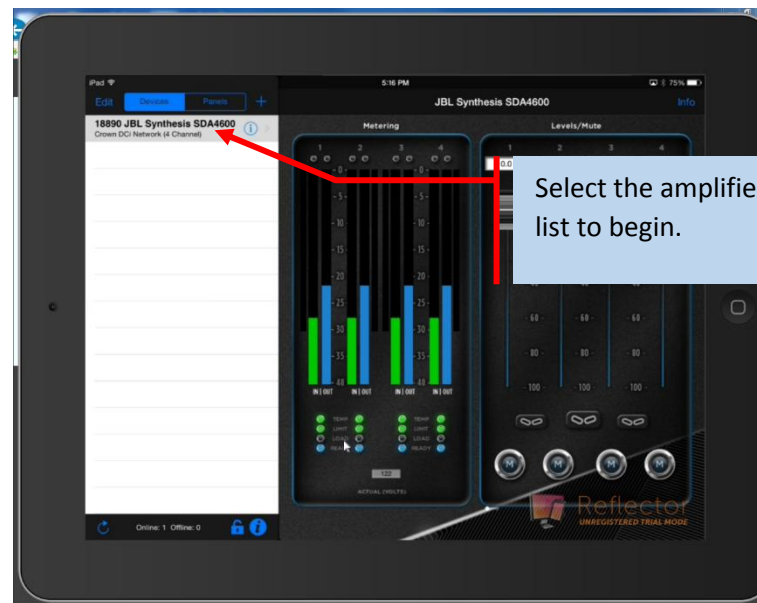
Output Connectors
One four-pole touch-proof terminal strip per channel pair. Accepts up to 10 AWG wire or terminal forks.

Alternate Digital Inputs SDA4600 (BLU-Link Input)

The SDA4600 and SDA8300 can use the iOS app "Powered By Crown" available for iPad or iPhone to select alternate digital inputs or to cross patch digital inputs. This is available from the Apple App Store. Use the below chart to determine which configuration you need and which input you should select for the proper output. The SDA8300 has eight (8) digital inputs and eight (8) outputs so there are no additional inputs available but you can use the iOS app to switch or cross patch if needed, as an alternative to re-wiring the outputs if done incorrect. The SDA4600 has eight (8) digital inputs but only uses 2 or 4 outputs depending on configuration. The extra inputs are always available. **The digital inputs are listed as "BLU Input".**

Any combination of SDA amplifiers and SDEC digital processors can be used, and multiple SDA amplifiers can be configured to the same outputs (mirroring). There is only a limitation of the number of Blu-Link devices (60) and total number of discrete channels (128) that must be maintained.

Select the amplifier from the list to begin.

- Always set the generic configuration using the included trigger input first as outlined earlier in this manual.
- Once the amplifier is properly configured using the Configuration Trigger Plugs, remove the plugs completely *before* changing inputs.
- Check the amplifier for proper operation at low volume first, and also check to make sure that the configuration is maintained during a power outage.
- Contact JBL Synthesis Technical Support to download the demonstration video for this application. Csupport@harman.com, or toll free at +1 (888) 691-4171.
- Only place *one* amplifier on the network at a time, as all amplifiers appear with the same name.
- The inputs available depend on the current configuration. These changes *are not* maintained in any saved file and are only local to the amplifier.
- If you make a change to the amplifier using this method you should write this down for future reference if the amplifier ever needs to be reset or replaced.

Click on the input that needs to change.

Select the alternate input from the list. The change occurs in real time.

As you will see below the SDA amplifiers are highly flexible and can be used in many different system configurations. Only your creativity in finding ways to use them is the limit. As always we recommend having as much available power for the greatest system headroom and lowest dynamic distortion possible.

SDA4600 Configuration 1 with Alternate Digital Inputs (600W x 4)

These alternate inputs could be used when a pair of Left and Right speakers are being used with a dedicated 4-channel amplifier to power them. This could also be used to "double up" on subwoofer channels, for example, if there is one amplifier being used as a bridged high power amplifier for two (2) subwoofers and a second amplifier being used with four (4) smaller amplifiers mounted in pairs. This is common in large rooms where a pair of high power 18" passive subwoofers are in the front and 2 pairs of smaller in-wall passive subwoofers are used in the rear, but mounted in groups of two where you would want to treat the groups as a single subwoofer. This configuration could be used with an SDA8300 in either Factory configuration 1 (for Center and Surround channels) or in combination with SDA 8300 Configuration 3 and SDA4600 Configuration 2 or 3 for Center Channel as shown in the next section . Common speakers to be used with this configuration would include Project Array, any speaker that can be bi-wired (passive bi-amplification), K2, M2, Everest, SAM1HF/SAM2LF and other similar speakers.

A good use of this would be to have the Left and Right speakers on an amplifier using Configuration 1; while the Center channel uses a separate amplifier in Configuration 2 or 3 as shown at right.

CONFIGURATION 1 (4x600Watt)	AMP CHANNEL	"BLU" Digital In CH
SUB 1	1	1
SUB 2	2	2
SUB 3	3	3
SUB 4	4	4
Alternate Channels		
LEFT LOW		5
LEFT HIGH		6
RIGHT LOW		7
RIGHT HIGH		8

SDA4600 Configuration 2 with Alternate Digital Inputs (1200W x 2)

This configuration could be used with either a **LEFT** channel or **CENTER** channel where a dedicated 2-Channel amplifier is being used. For example, if you have installed a large front speaker that can be bi-amplified and the installation requires the best possible dynamic headroom. Common speakers to be used with this configuration would include K2, M2, Everest SAM1HF/SAM2LF and other similar speakers.

CONFIGURATION 2 [2x1200Watt]	AMP CHANNEL	"BLU" Digital In CH
SUB 1	1 + (BRIDGED)	1
	2 + (BRIDGED)	
SUB 2	3 + (BRIDGED)	2
	4 + (BRIDGED)	
Alternate Channels		
SUB 3		3
SUB 4		4
LEFT LOW		5
LEFT HIGH		6
CENTER LOW		7
CENTER HIGH		8

SDA4600 Configuration 3 with Alternate Digital Inputs (1200W x 2)

This configuration could be used with either a **RIGHT** channel or **CENTER** channel where a dedicated 2-Channel amplifier is being used. For example, if you have installed a large front speaker that can be bi-amplified and the installation requires the best possible dynamic headroom. Common speakers to be used with this configuration would include K2, M2, Everest and other similar speakers.

CONFIGURATION 3 [2x1200Watt]	AMP CHANNEL	"BLU" Digital In CH
SUB 3	1 + (BRIDGED)	1
	2 + (BRIDGED)	
SUB 4	3 + (BRIDGED)	2
	4 + (BRIDGED)	
Alternate Channels		
SUB 1		3
SUB 2		4
RIGHT LOW		5
RIGHT HIGH		6
CENTER LOW		7
CENTER HIGH		8

Amplifier power output, ALL Channels Driven; Minimum Guaranteed Power (20 Hz - 20 kHz)

Model	Channels	2 Ohms	4 Ohms	8 Ohms	16 Ohms
SDA4600	4	300W	600W	600W	300W
SDA4600 Bridged	2	n/a	600W	1200W	1200W
SDA8300	8	150W	300W	300W	150W
SDA8300 Bridged	4	n/a	300W	600W	600W

AC Power Draw and Thermal Dissipation; Data based on all channels driven @ 8 ohms

Model	IDLE (on, no audio)		Normal Program		At Clipping	
SDA4600 @ 120V / 60hz	1.0A	386 BTU	3.9A	514 BTU	8.6A	726 BTU
SDA4600 Bridged @120V / 60hz	1.0A	386 BTU	4.1A	599 BTU	9.5A	1018 BTU
SDA4600 @ 230V / 50hz	0.6A	391 BTU	2.0A	470 BTU	4.5A	704 BTU
SDA4600 Bridged @230V / 50hz	0.6A	404 BTU	2.1A	608 BTU	4.8A	916 BTU
SDA8300 @120V / 60hz	1.8A	693 BTU	4.9A	859 BTU	9.5A	1066 BTU
SDA8300 @ 230V / 50hz	0.9A	685 BTU	2.5A	807 BTU	4.8A	1000 BTU

Dimensions

Model	Width	Height	Depth	Weight
SDA4600	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)	20.1 lbs (9.12kg)
SDA8300	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)	23.5 lbs (10.66kg)

Audio Performance Specifications

Voltage Gain (at maximum level setting) 4/8 Ohm	34dB
Frequency Response (8 Ohms, 20 Hz - 20 kHz)	±0.25dB
BLU Link Signal-to-Noise Ratio (ref. rated power, (8 Ohms, 20 Hz - 20 kHz)	>108 dB
Total Harmonic Distortion (at full rated power, from 20 Hz - 20 kHz)	0.35%
Analog Input Signal to Noise Ratio (ref. rated power, 8 Ohms, 20 Hz - 20 kHz)	>104dB
Intermodulation Distortion (60Hz and 7 kHz at 4:1, from - 30dB to full rated power)	≤0.35%
Damping Factor (20 Hz to 100 Hz)	>1000
Crosstalk (below rated power, 20 Hz to 1 kHz)	>80 dB
Common Mode Rejection (20 Hz to 1 kHz, typical)	>70 dB
DC Output Offset (with inputs shorted)	±10mV
Analog Input Impedance (Nominally balanced, nominally unbalanced)	10 kOhms, 5 kOhms
Maximum Input Level (Low Gain Mode)	+20dBU
Required AC Mains (±10%)	100V - 240V~ 50/60Hz
Cooling	Continuously variable speed forced air, front-to-back airflow
Power Supply Connector	15A IEC Connector;
Load Impedance Stereo/Dual Mode	2 - 16 Ohms
Load Impedance Bridge Mono	4 - 16 Ohms

SDA8300

SDA4600

AMPLIFIER

SYSTEM INSTALLATION GUIDE

WWW.JBLSYNTHESIS.COM

TECHNICAL SUPPORT:

CSUPPORT@HARMAN.COM

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