BRYSTON
OWNER'S MANUAL

Instructions For Bryston

SST Series Amplifiers

Models 3B SST and 4B SST

Table of Contents

Introduction

Thank you for choosing an **SST SERIES Stereo Power Amplifier**.
Bryston welcomes any suggestions you may have, or comments regarding the operation of your amplifier. We consider you, our customer, to be Bryston's most important resource, and your opinion is very much appreciated.

Description 3B SST

The **3B SST** is a dual mono design 2 x 150W per channel audio power amplifier. Each channel selects a balanced or single ended input. Each channel selects a gain of 29dB(1v) or 23dB(2v). The 3B SST includes 'soft start' power control circuitry to eliminate high inrush currents when A/C power is applied. The power up or turn-on of the 3B SST may be activated by remote control voltage.

Description 4B SST

The **4B SST** is a dual mono design 2 x 300W per channel audio power amplifier. Each channel selects a balanced or single ended input. Each channel selects a gain of 29dB(1v) or 23dB(2v). The 4B SST includes 'soft start' power control circuitry to eliminate high inrush currents when A/C power is applied. The power up or turn-on of the 4B SST may be activated by remote control voltage.

Warranty (see back page for details)

Shipping Box & Packing Material

Please keep the original shipping box and all packing material. This will ensure the amplifier is protected in future transport. In the unlikely event you have a problem and must return it for service *you must* use the proper packing material. Ship the amplifier only in the original packing material, as the unit is not insurable by carriers otherwise.

Installation (see rack mounting section if applicable)

Ventilation. The most important installation consideration is ventilation. All SST amplifiers are convection cooled. Unrestricted air-flow across its heat sinks is a must. For this reason do not install anything directly above it. Allow 3.5' (2u) to 5" (3u) inches of space above and to the sides of this amplifier. Do not install directly above other heat generating equipment. Should your instillation conditions be constricted, then additional forced air-cooling may be necessary. Bryston can provide an optional fan package if required. Any SST channels thermally shutting down during operation indicates insufficient air flow, and a remedy must be found for cooling the amplifier. Provide a minimum 6" space to the rear of the amplifier for ventilation and dressing cables to and from the amplifier.
Never operate the amplifier in a vertical position.

Wiring the SST amplifier (also see rear panel description)

S*peaker wires* should be as short as practical. Use quality wire, and if runs are more than 3 meters use at least 12 gage wire. The speaker binding posts will accept wire up to 3 gage in size. Bryston will custom build cables for your application.

A/C power

Before plugging in the power cord be sure your SST amplifier is specified for the ***correct a/c voltage*** for your locality. The voltage is listed on the label found at the upper right of the rear panel. The circuit feeding the 4B SST should be sufficient so as not to cause the circuit breaker to trip (15 amp min). Note: the 4B SST when operated with both channels delivering maximum power into 4 ohm loads, will consume all the available power in a normal household circuit, therefore a dedicated electrical circuit may be necessary with this situation. Never lift the safety ground to the amplifier nor remove the ground pin from the plug.

Power line conditioners *will not* improve the SST amplifier performance, in fact most of the time they restrict the flow of current to the amplifier, reducing performance at higher output levels

Rear Panel Input / Output Connections

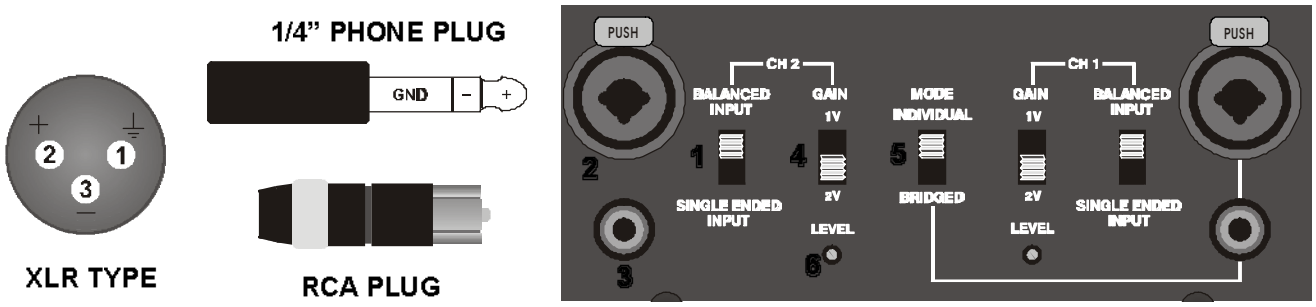


Fig 1

1. Input Select Switch.
Each SST channel gives the user the option of switching between either balanced input or single ended input.

2. Balanced Input connector. (Imp. 20k)
This input connector accepts standard 'XLR' or 1/4" TRS .
Use quality, 100% shielded cables with *gold plated* connectors.

3. Single Ended Input. (Un-balanced input) (Imp. 50k)
This input connector accepts standard 'RCA' or 'Phono' connectors.
Use quality, 100% shielded cables with *gold plated* connectors.

Balanced input Vs Single ended input:
The balanced input requires a balanced pre-amp source. Balanced systems provide noise rejection from external electrical interference, so cable length can be very long (50m or longer).
The single ended or unbalanced input is provided for pre-amps without balanced output. Single-ended cables should be kept to 20' (7m) or less. In general never use longer cables than necessary, never coil excess cable length, and keep signal wires away from AC power or speaker cables.

4. Input Sensitivity (Gain) Switch.
The optimum gain setting will depend upon the source pre-amp operating level, and or personal preference.

The 1v setting is used when the source is *single-ended*, or from a transformer coupled *balanced* source.
This is the *home theatre* setting for *single ended* or un-balanced operation.
The 1v setting provides the most amplifier gain - 29 dB. (1v in = 100w @ 8 ohms.) (noise -110 dB)

The 2v setting is used when the sources output is actively *Balanced*.
This is the *home theatre* setting for balanced operation Or use this setting with any systems where the volume control rotation is limited to the bottom half of the control or less.
The 2v setting provides an amplifier gain - 23 dB. (2v in = 100w @ 8 ohms.) (noise -113 dB)

The noise is referenced in dB below rated output. Different input configurations result in slightly different noise readings. The above noise ratings represent minimum readings, actual readings may be better.

5. Mode Switch. (individual or bridge mode)
The individual setting is for two channel operation.
Bridge mode is for mono operation.

6. Level Control. (pro models only)
The level control will attenuate the input signal level from 0dB through -14dB.

6. Output binding posts.

The **RED** binding post is connected to the ***amplifier output***. Connect to this post the (+) terminal on the loudspeaker. The **BLACK** binding post is connected to ***signal ground***. Connect to this post the (-) terminal on the loudspeaker.

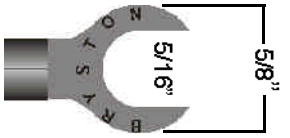
The Output binding posts provide three different interconnect options. Combinations may be used when bi-wiring. See figure 2 below. Cables should be kept as short as practical and should never be terminated with connectors that may become confused for AC power connectors. Cables should be dressed away from input and power cables.

1. *Banana plugs* offer a quick disconnect option. Before inserting a banana plug into the binding post be sure to tighten the post nut to avoid rattling and to provide full insertion of the banana plug. Gold plated locking banana plugs are available from Bryston.

2. *Spade lugs* provide high contact area and secure fastening. Lugs should be gold plated. See diagram for details. Post diameter is 5/16' (8mm), lug width 5/8" (16 mm). Gold plated spade lugs are available from Bryston.

3. *Stripped bare wire* up to 3 gage can be inserted through the hole in the binding post and held in place by tightening the post knob. Additional tightening pressure can be achieved using a **coin** in the slots of the knob. Do not over tighten or the binding post may become damaged. Note that copper wire is malleable and may require further tightening after the initial installation.

Spade lug dimensions



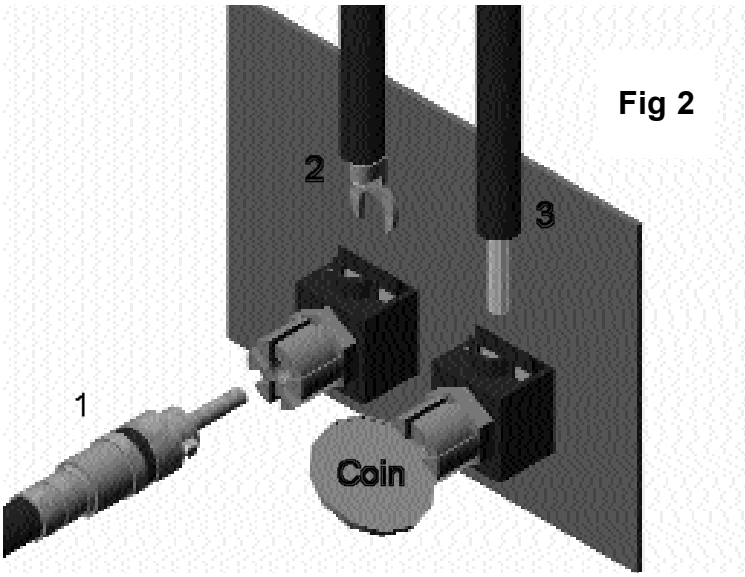
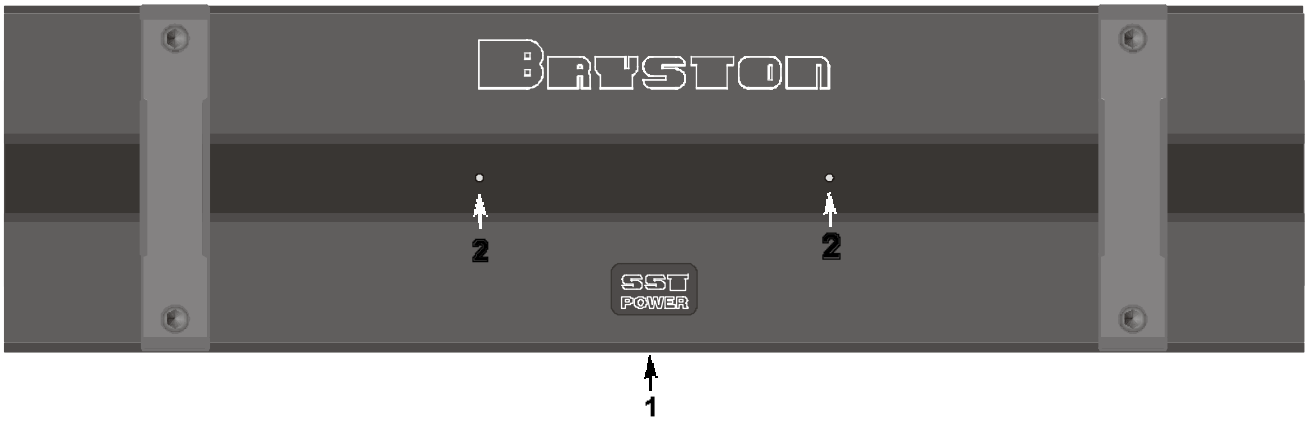


Fig 2



Front Panel

1. 'SST POWER' switch

The front panel label 'SST POWER', is a touch sensitive membrane switch used to apply or remove a/c line power to the soft start circuitry. Push firmly the center of the switch until the power-up sequence begins. Push again and the amplifier will power-down. (Note: the rear circuit breaker must be on for the amplifier to power-up)

2. LED Indicators

Each SST channel has a LED indicator to monitor the following conditions:

UNLIT -	indicates channel has no power.
RED -	indicates channel is muted (power-up)
GREEN -	indicates channel operation is normal.
FLASHING RED -	indicates channel clipping.
ORANGE -	indicates channel thermal shutdown.

Power up sequence

After pushing the 'SST POWER' switch, each channel LED will turn from unlit to red (mute). When the power supplies have stabilized the channel will come out of mute and the LED will change to green (normal operation).

Unlit LED (No power)

The SST channel LED when unlit indicates no A/C mains power is present at the channel. If both channel LED indicators are unlit the amplifier probably needs only to be powered on.

Clipping (flashing red)

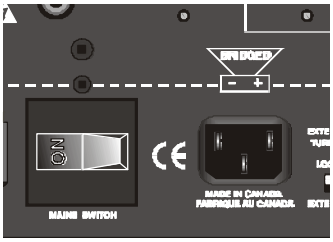
Clipping occurs when the channel output level no longer can follow the level increase at the input (Overdriven input condition). When an SST channel is driven into clipping the channel LED will change from green to red then back to green when the level is reduced (Flashing Red). Momentary clipping can be tolerated, however it indicates that maximum undistorted power has been surpassed and potential speaker damage may result if overload conditions persist. Any amplifier that is constantly operated into clipping indicates a more powerful amplifier is needed for that application.

Thermal Shutdown (orange)

Each channel has thermal shutdown circuitry to prevent damage due to overheating.
Should thermal shutdown occur, the channel will mute, and the channel LED will turn orange indicating this condition.
When the channel has cooled to a safe operating condition the channel will return to normal operation.
Persistent Thermal shutdown indicates steps need to be taken to increase airflow across the channel or channels heat sink. (Also see installation section on ventilation).

Power Control

1. Master circuit - breaker.



1 2

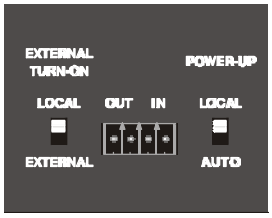
The SST amplifier uses a magnetic-trip circuit breaker (1) to protect the amplifier. This switch should be 'OFF' during installation. When switched 'OFF' all A/C power is removed from the amplifier, including standby power. The circuit breaker is not the power switch and should be switched and left 'ON' after the installation is complete.Use the 'SST POWER" switch or an external control voltage to Power-up or Power-down the amplifier. Should the breaker trip, lower or remove the amplifier input signals. Switch the breaker to the 'ON' position. Then power the unit up normally.

The circuit breaker must be 'ON' at all times for the SST amplifier to operate.

2. AC power input.

On the rear panel is provided a high current plug for the power cord receptacle. Check that the voltage rating on the label conforms with your locality. With the circuit breaker 'OFF' insert the power cord into the SST amplifier, then plug the other end to an approprate A/C power outlet.

3. Power-Up (Local / Auto switch.)



4 3

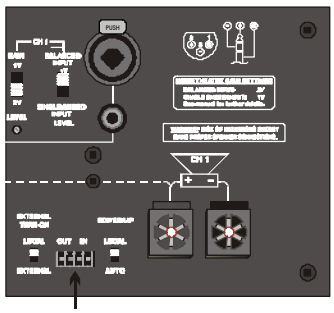
A. In "Local" position either the front panel 'SST POWER" switch or an external voltage controls the power-up of the SST amplifier.

B. "Auto" is used when the SST amplifier is powered from a switched power outlet. The 'SST POWER' switch and / or control voltage will function normally after the initial power up.

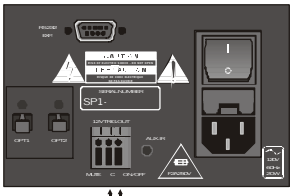
4. External control voltage power up (Local / external switch.)

A. To power-up the SST amplifier using an external control voltage, Supply a 4v to 12v A/C or DC control voltage to the 'IN' terminals of connector (5). Use paired wire of 22 to 18 gage sufficient in length between the source device and the SST amplifier. (see 'W') Select switch (**4**) to "**External**". The amplifier will now power-up only when the control voltage is present (on). Immediately following power up, the control voltage will appear at the 'OUT' terminals of connector (5) for the control of other equipment.The removal of the control voltage (0v) causes the amplifier to turn 'off' and the control voltage at the 'OUT' terminals is interrupted.

B. In the"**Local**" setting of switch (**4**) the SST amplifier will ignore the control voltage, and power up only by using the front panel 'SST POWER' switch, or as in section 3 above. If a control voltage is present at the 'IN' terminals it will still be available at the 'OUT' terminals after the power-up sequence.



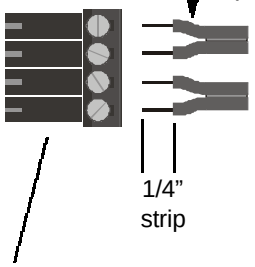
Control Voltage source 4 to 12v ac or dc



to other voltage controlled devices

Control voltage wire preparation for screw terminals

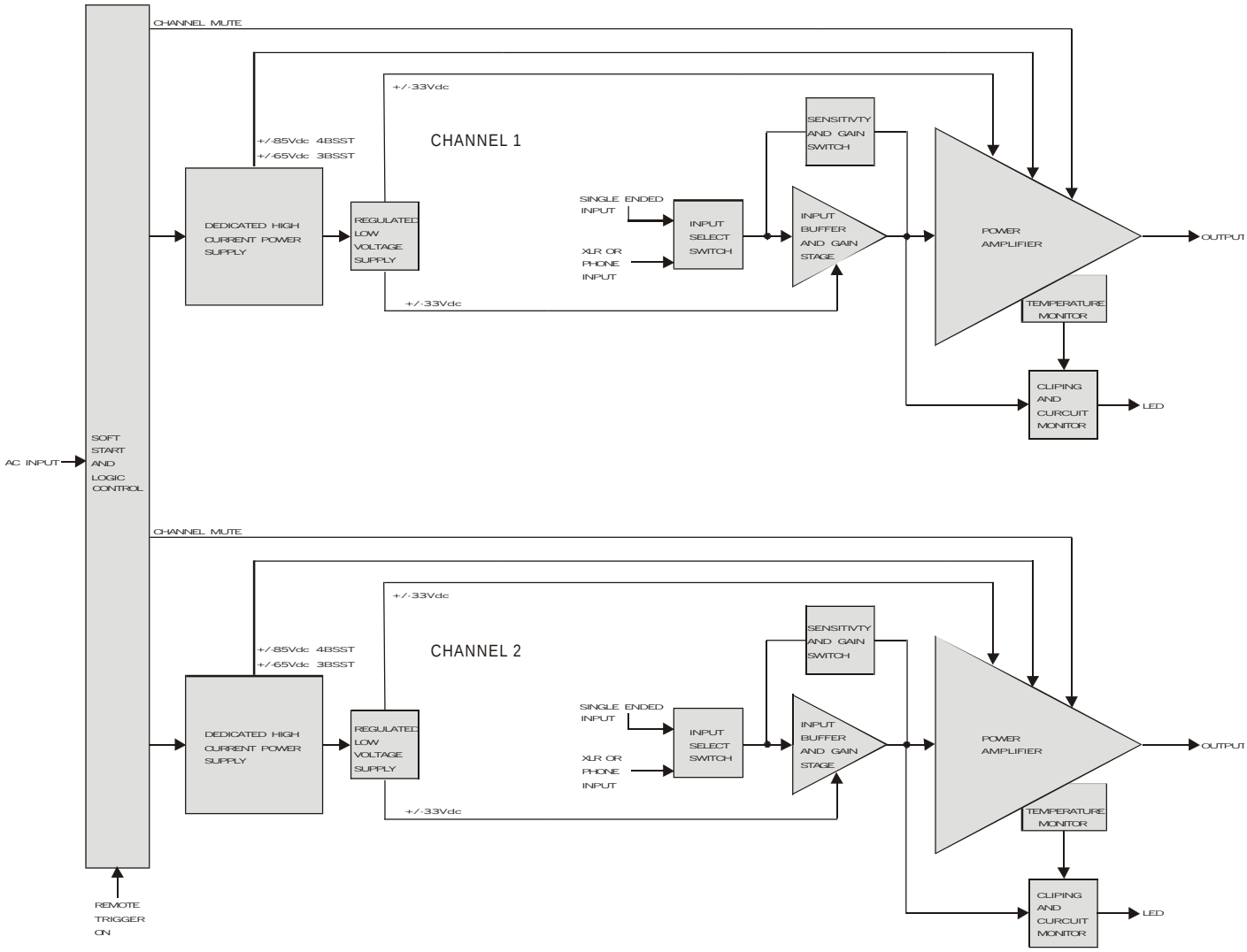
fig W



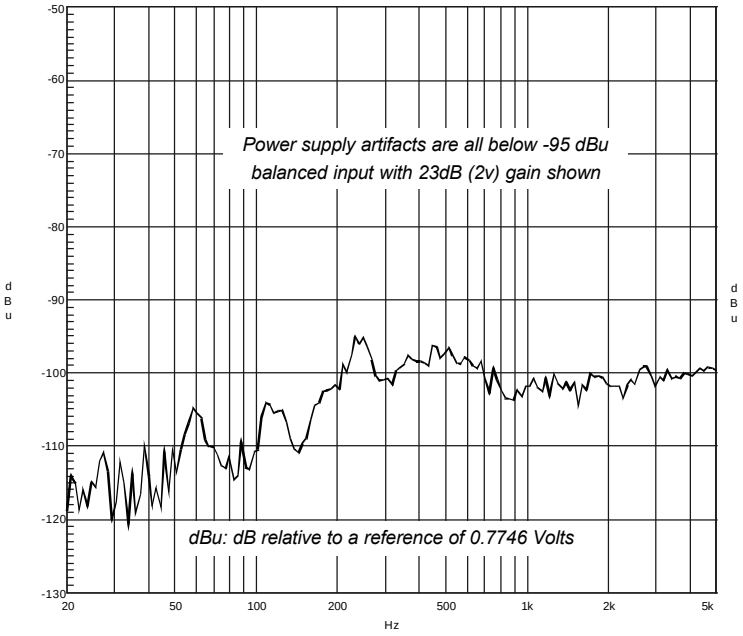
Bryston part number CO-110A-11104

Note:

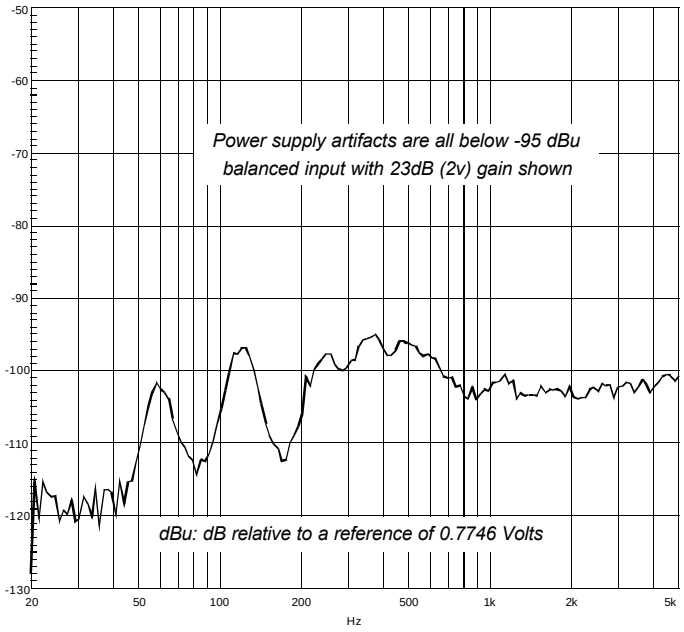
The 'OUT' terminals are connected to the 'IN' terminals once the SST amplifier has powered-up. The control current is determined by the **source** equipment. The carrying current of the 'OUT' relay is 2 amps. The SST control circuitry itself draws less than 2 mA from the control current when operating.


CHANNEL MUTE
+/-33Vdc
+/-85Vdc 4BSST
+/-65Vdc 3BSST
CHANNEL 1
SENSITIVTY AND GAIN SWITCH
DEDICATED HIGH CURRENT POWER SUPPLY
REGULATED LOW VOLTAGE SUPPLY
SINGLE ENDED INPUT
XLR OR PHONE INPUT
INPUT SELECT SWITCH
INPUT BUFFER AND GAIN STAGE
POWER AMPLIFIER
OUTPUT
TEMPERATURE MONITOR
CLIPING AND CURCUIT MONITOR
LED
AC INPUT
SOFT START AND LOGIC CONTROL
CHANNEL MUTE
+/-33Vdc
+/-85Vdc 4BSST
+/-65Vdc 3BSST
CHANNEL 2
SENSITIVTY AND GAIN SWITCH
DEDICATED HIGH CURRENT POWER SUPPLY
REGULATED LOW VOLTAGE SUPPLY
SINGLE ENDED INPUT
XLR OR PHONE INPUT
INPUT SELECT SWITCH
INPUT BUFFER AND GAIN STAGE
POWER AMPLIFIER
OUTPUT
TEMPERATURE MONITOR
CLIPING AND CURCUIT MONITOR
LED
REMOTE TRIGGER ON

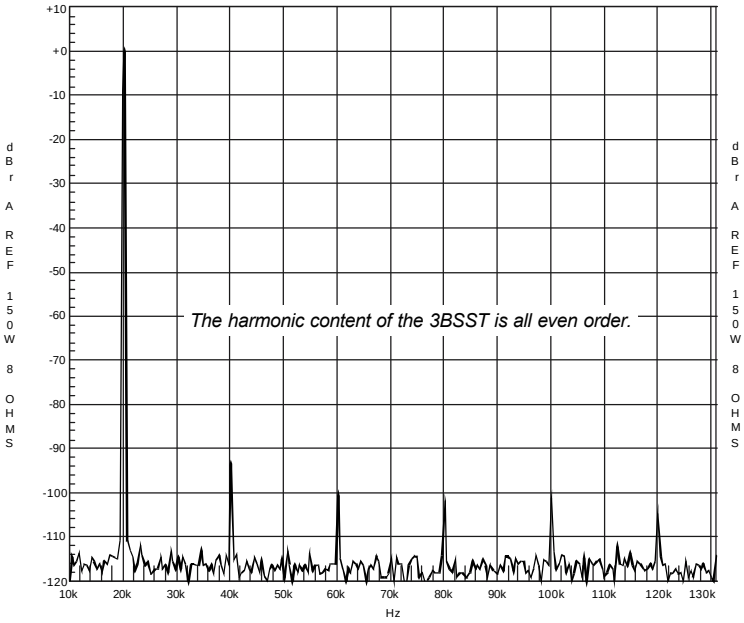
Typical Band-pass Noise 3BSST



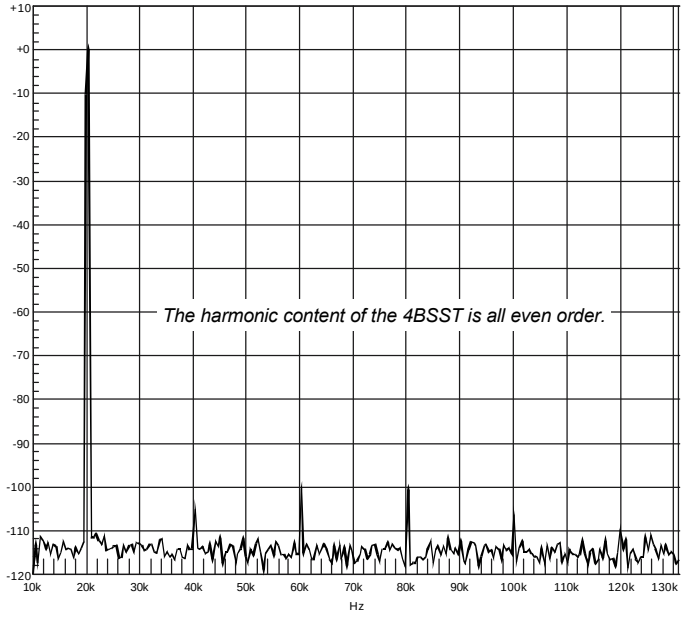
Typical Band-pass Noise 4BSST



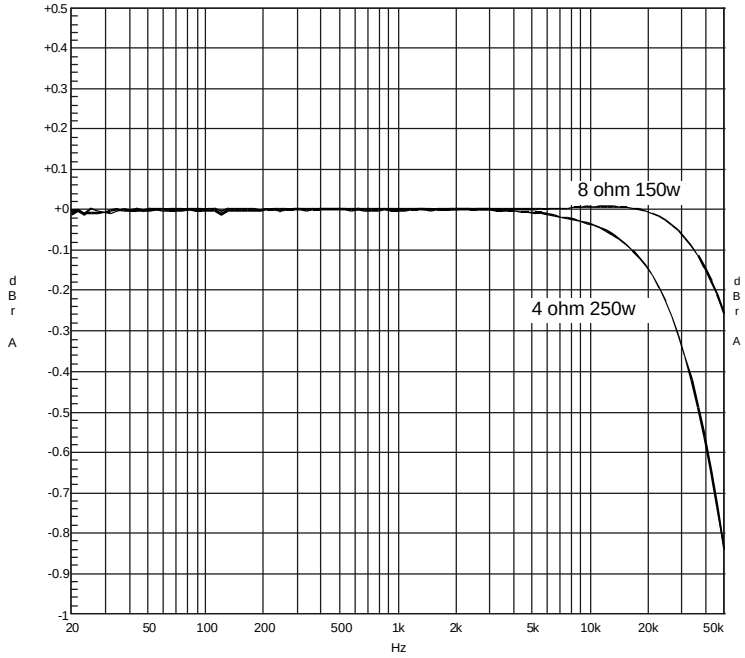
Typical THD+N Harmonic Content 3BSST



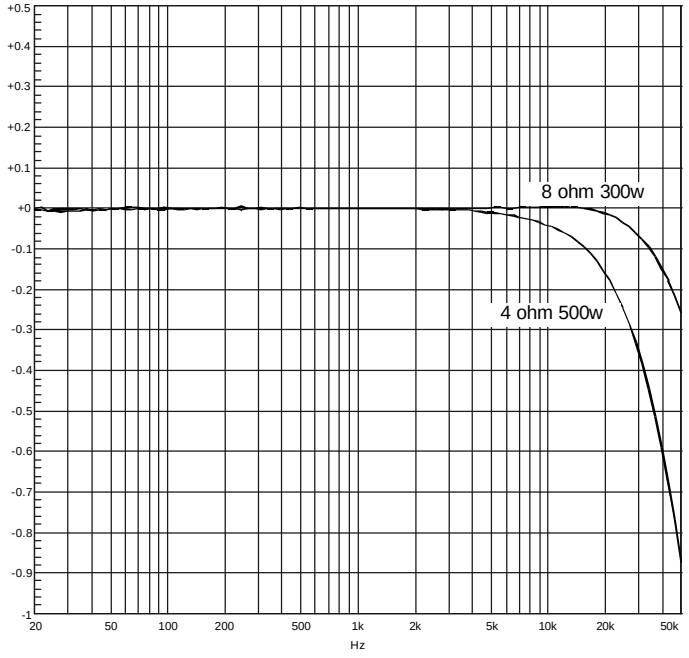
Typical THD+N Harmonic Content 4BSST



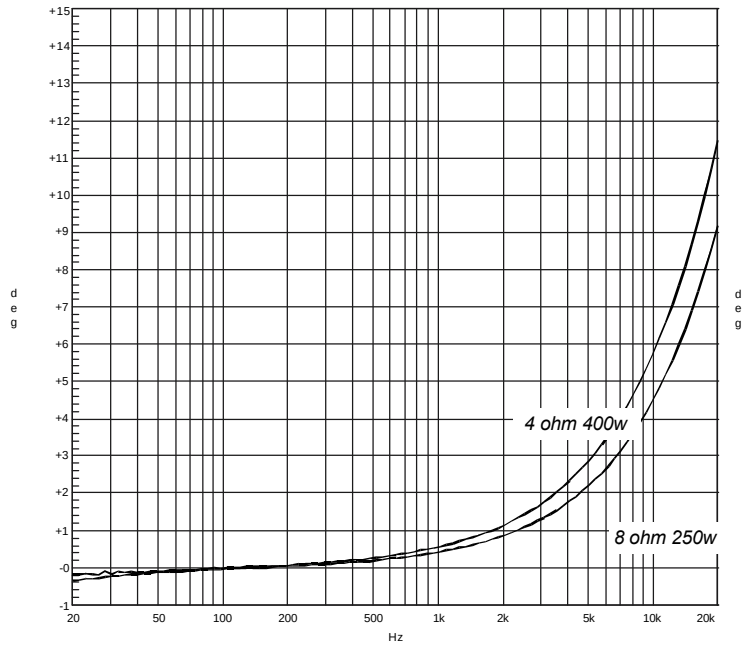
Typical Frequency Response 3BSST



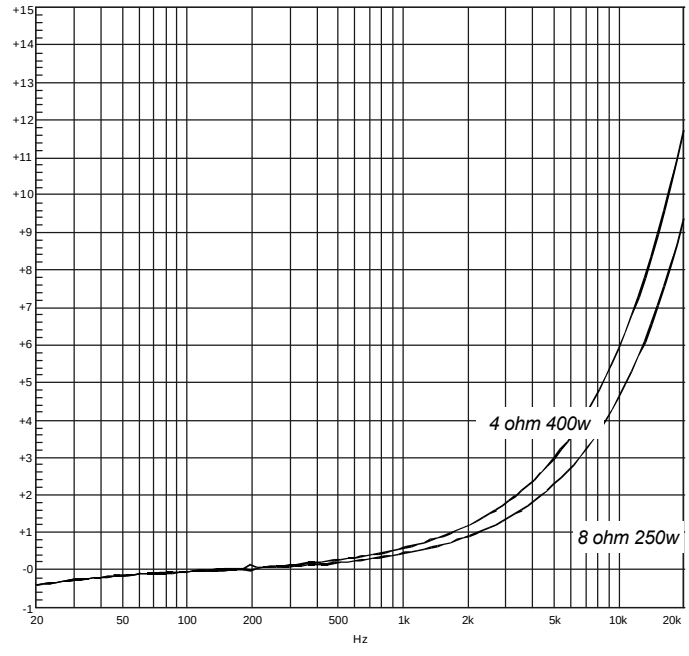
Typical Frequency Response 4BSST



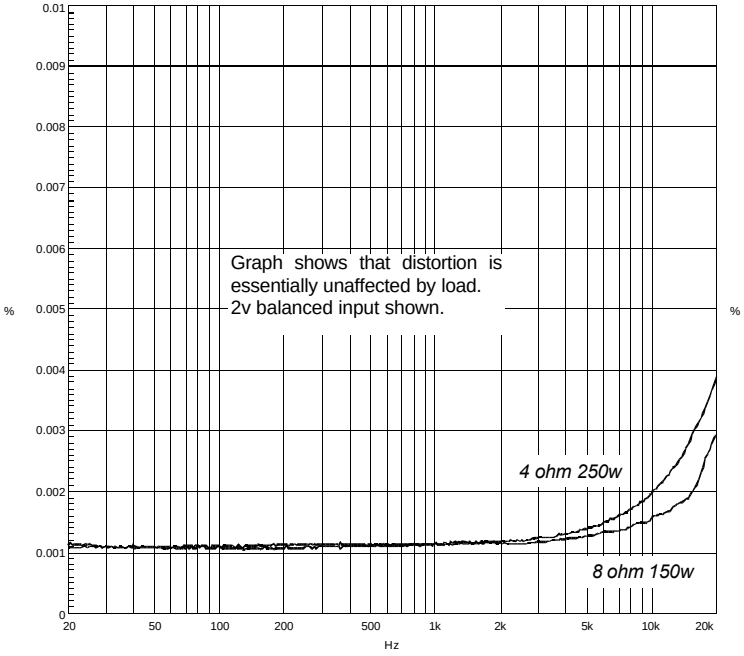
Typical Phase Response 3BSST



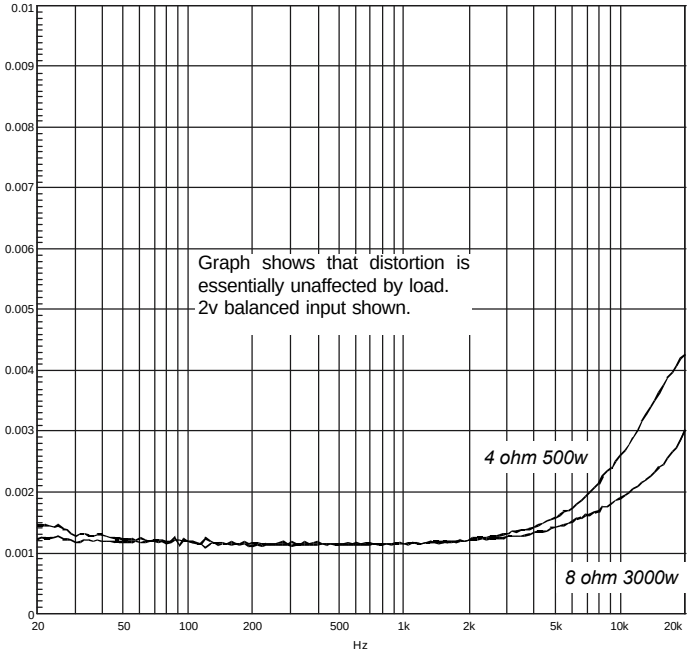
Typical Phase Response 4BSST



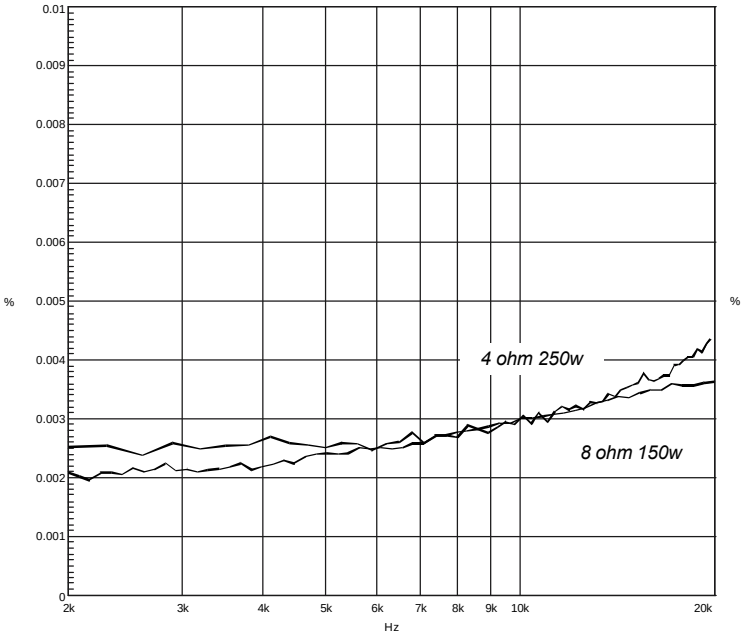
Typical THD+N Sweep 3BSST



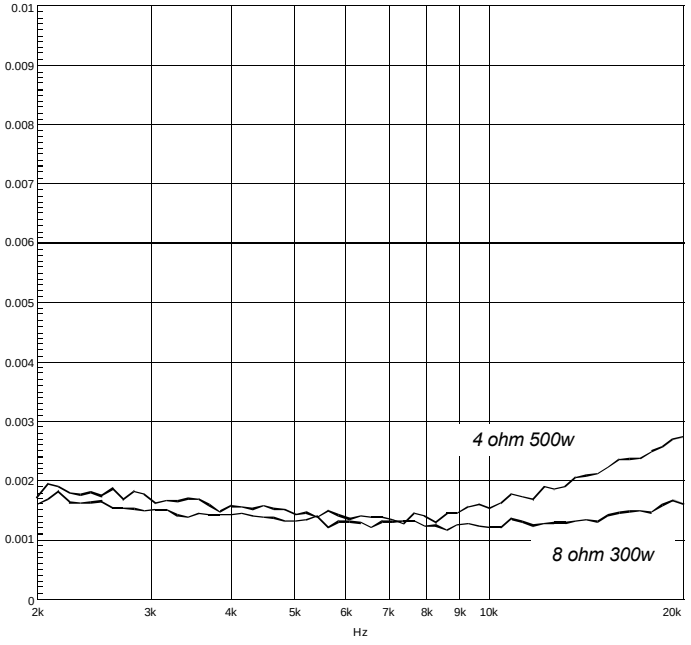
Typical THD+N Sweep 4BSST



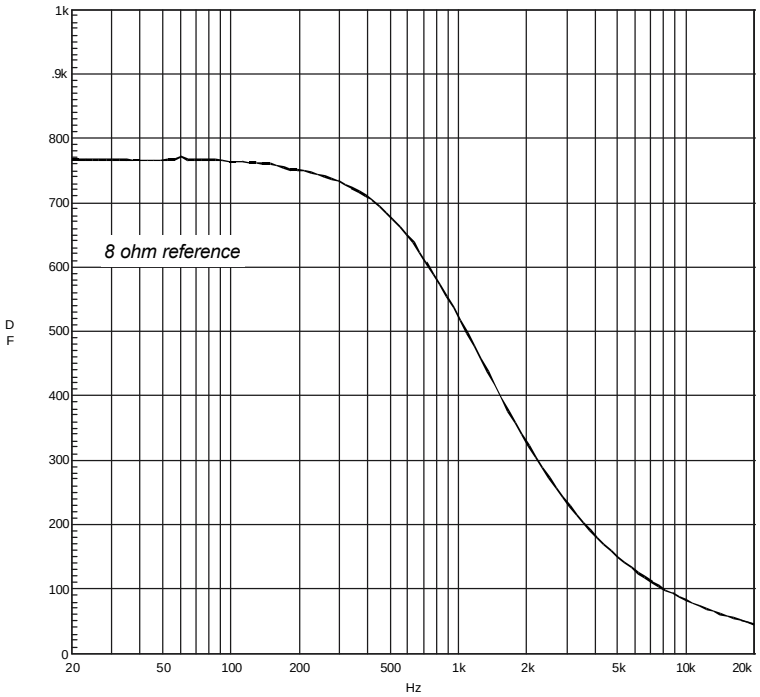
Typical IMD Sweep 3BSST



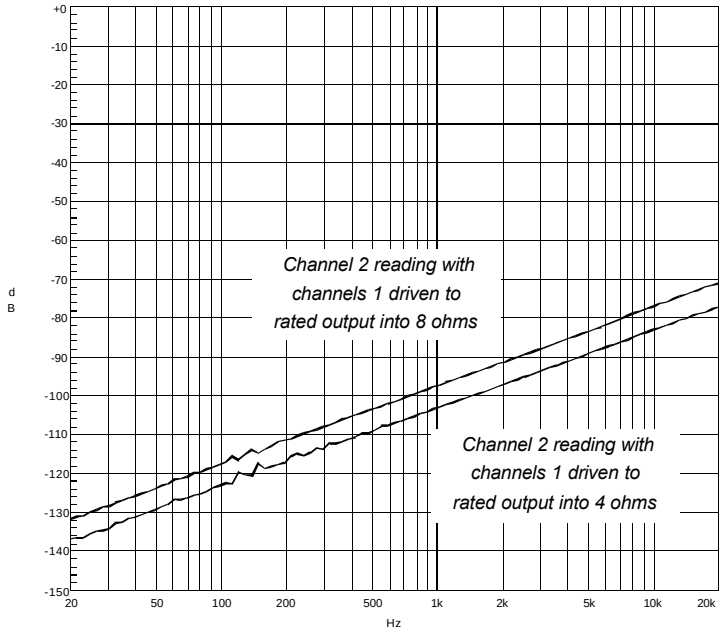
Typical IMD Sweep 4BSST



Damping Factor 3BSST AND 4BSST



Typical Crosstalk 3BSST AND 4BSST



3BSST *Technical Specifications* *4BSST*

Power Output
150 watts per channel into 8 ohms
250 watts per channel into 4 ohms

Gain Select and Sensitivity
29dB - 1.3Vin = 150W @ 8 Ohms - (1V Position)
23dB - 2.6Vin = 150W @ 8 Ohms - (2V Position)

Input Impedance
50 Kohms single ended
20 Kohms balanced

Distortion IM or THD+noise
< 0.005% 20Hz to 20kHz at 150 watts into 8 W
< 0.007% 20Hz to 20kHz at 250 watts into 4 W

Noise Measured with input shorted - 20Hz to 20kHz.
>110dB below rated output 29dB gain (- 75dBu)
>113dB below rated output 23dB gain (- 78dBu)

Slew Rate > 60 volts per microsecond

Power Bandwidth < 1 Hz to over 100 kHz

Damping Factor Over 500 at 20 Hz, ref. 8 ohms

Dimensions
19" version with handles - L x H x D
48.3 x 13.3 x 32cm - 19" x 5.25" x 12.5"
mounted rack depth - 28cm - 11.0"
17" version
43.2 x 13.3 x 28cm - 17" x 5.25" x 11"

Weight: approx. 18kg - 40 lbs

Power Consumption & Heat Load

At Idle -	127 Watts
Max. Heat Dissipation -	433 Btu/Hr.
2 channels @ 150W @ 8 ohms -	668 Watts
Max. Heat Dissipation 8 ohms -	1255 Btu/Hr.
2 channels @ 250W @ 4 ohms -	1096 Watts
Max. Heat Dissipation 4 ohms -	2033 Btu/Hr.
Bridged @ 450W @ 8 ohms -	1053 Watts
Max. Heat Dissipation 8 ohms -	2057 Btu/Hr.

Power Output
300 watts per channel into 8 ohms
500 watts per channel into 4 ohms

Gain Select and Sensitivity
29dB - 1.8Vin = 300W @ 8 Ohms - (1V Position)
23dB - 3.6Vin = 300W @ 8 Ohms - (2V Position)

Input Impedance
50 Kohms single ended
20 Kohms balanced

Distortion IM or THD+noise
< 0.005% 20Hz to 20kHz at 300 watts into 8 W
< 0.007% 20Hz to 20kHz at 500 watts into 4 W

Noise Measured with input shorted - 20Hz to 20kHz.
>110dB below rated output 29dB gain (- 75dBu)
>113dB below rated output 23dB gain (- 78dBu)

Slew Rate > 60 volts per microsecond

Power Bandwidth < 1 Hz to over 100 kHz

Damping Factor Over 500 at 20 Hz, ref. 8 ohms

Dimensions L x H x D
19" version with handles -
48.3 x 13.3 x 43.8cm - 19" x 5.25" x 17.25"
mounted rack depth - 40.1cm - 15.75"
17" version
43.2 x 13.3 x 40.1cm - 17" x 5.25" x 15.75"

Weight: approx. 22kg - 50 lbs

Power Consumption & Heat Load

At Idle -	170 Watts
Max. Heat Dissipation -	580 Btu/Hr.
2 channels @ 300W @ 8 ohms -	1280 Watts
Max. Heat Dissipation 8 ohms -	2320 Btu/Hr.
2 channels @ 500W @ 4 ohms -	2100 Watts
Max. Heat Dissipation 4 ohms -	3750 Btu/Hr.
Bridged @ 900W @ 8 ohms -	2040 Watts
Max. Heat Dissipation 8 ohms -	3890 Btu/Hr.

BRYSTON 20 -YEAR WARRANTY

Bryston products are warranted to be free from manufacturing defects for a minimum of twenty years from the original date of manufacture. This includes parts, labour and return shipping to the first owner and all subsequent owners. Warranty coverage is automatic and commences with the original date of manufacture which is kept on file at Bryston.

In the event of a defect or malfunction, Bryston will remedy the problem by repair or replacement, as we deem necessary, to restore the product to full performance.

This warranty is considered void if the defect, malfunction or failure of the product or any component part was caused by damage (not resulting from a defect or malfunction) or abuse while in the possession of the customer. Tampering by persons other than factory authorized service personnel, or failure to fully comply with Bryston operating instructions, voids the warranty.

This warranty gives you specific legal rights and you may also have other rights which may vary from province to province and country to country.

BRYSTON SERVICE CANADA:
24 STEINWAY BLVD., UNIT 48
ETOBICOKE, ONTARIO
CANADA M9W 6T8
PHONE: 416-675-2585
FAX: 416-675-3103

BRYSTON SERVICE U.S.A.:
70 COVENTRY ST.
SUITE #5
NEWPORT VERMONT.
U.S.A. 05855
PHONE: 802- 334-1201
FAX: 802-334-6658

FOR BRYSTON SERVICE OUTSIDE CANADA:
CONTACT YOUR LOCAL DISTRIBUTOR
OR
CHECK OUR WEB SITE AT: www@bryston.ca
OR
CALL BRYSTON DIRECTLY AT:
PHONE: 705-742-5325
FAX: 705-742-0882

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