

# BRYSTON

**6BsST<sup>2</sup>**  
OWNER'S MANUAL

## IMPORTANT SAFETY INSTRUCTIONS



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage " within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.**

**DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.**

**TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.**

**THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.**

## BRYSTON LIMITED WARRANTY

Bryston analog audio products are warranted to be free from manufacturing defects for twenty (20) years from the original date of manufacture. The warranty includes parts and labour.

Bryston Digital products and cables are warranted for five years from the original date of manufacture. The warranty includes parts and labour.

Bryston products having motorized moving parts, excluding motorized volume controls, are warranted for three years from the original date of manufacture. The warranty includes parts and labour.

Bryston will remedy the problem by repair or replacement, as we deem necessary, to restore the product to full performance. Bryston will pay return shipping costs for the full length of the specific product's warranty.

In the event of a defect or malfunction, contact Bryston's repair centers for return authorization. Products must be returned using original packaging material only. Packing material may be purchased from Bryston if necessary. 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.

As of 2006-02-22 Bryston will only warranty Bryston products purchased through authorized Bryston dealers. Bryston products with a date code of 0608 or higher (date code format is "yyww", where "yy" is the two least significant digits of the year and "ww" is the week of the year) must be accompanied by a copy of the bill-of-sale from a Bryston authorized dealer to qualify for warranty service. The warranty is transferable from the original owner to a subsequent owner as long as a copy of the bill-of-sale from the original authorized Bryston dealer accompanies the re-sale. The copy of the bill of sale to any subsequent owner need ONLY include the Name of the Bryston Authorized Dealer and the Model and Serial number of the Bryston product. The warranty will only be honored in the country of the original purchase unless otherwise pre-authorized by Bryston.

### *BRYSTON SERVICE in CANADA:*

Postal address: **PO. BOX 2170, Stn. Main  
PETERBOROUGH, ONTARIO  
CANADA K9J 7Y4**

Courier address: **677 NEAL DRIVE  
PETERBOROUGH, ONTARIO  
CANADA K9J 6X7**

PHONE: 705-742-5325  
FAX: 705-742-0882  
E-mail: [cdnser@bryston.com](mailto:cdnser@bryston.com)

### *BRYSTON SERVICE in the USA:*

**79 COVENTRY ST., Suite 5  
NEWPORT, VERMONT  
U.S.A. 05855-2100**

PHONE: 802-334-1201  
FAX: 802-334-6658  
E-mail: [usaser@bryston.com](mailto:usaser@bryston.com)

### *BRYSTON SERVICE outside Canada and the USA:*

contact your local distributor or

CHECK OUR WEB SITE:

E-MAIL BRYSTON DIRECTLY:

FAX BRYSTON DIRECTLY:

PHONE BRYSTON DIRECTLY:

[www.bryston.com](http://www.bryston.com)

[cdnser@bryston.com](mailto:cdnser@bryston.com)

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# TABLE OF CONTENTS

**WARRANTY INFORMATION** opposite

Introduction & Description ..... Page 1  
Shipping Box & Packing Material  
Installation and Ventilation  
Speaker Wires  
A/C power  
Fuses  
A/C Power Conditioners

**FRONT PANEL**

Main Power Switch  
LED Indicators ..... Page 2

**REAR PANEL**

Input Selector Switch  
Balance Input Connector  
Single Ended Input  
Balanced versus Single Ended Input  
  
Polarity Switch ..... Page 3  
Gain Select Switch  
Output Binding Posts  
Channel Module Handles

**POWER INLET PANEL**

Master Circuit Breaker  
A/C Power Input ..... Page 4  
**Remote Power On/Off Control**  
Local/External Switch  
External versus Local control  
Remote Power Turn-On Connector

**TECHNICAL SPECIFICATIONS**

**EXTERNAL DIMENSIONS & FUSE LOCATIONS** ..... Back Page



Front view of 6BSST<sup>2</sup> with 19" Silver Rack Mount Faceplate & Handles

## INTRODUCTION

Thank you for choosing the 6BSST2 Three Channel 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

The **6BSST<sup>2</sup>** is a modular design 3 x 300W per channel audio power amplifier. Each channel selects a balanced or single ended input. Each channel selects a gain of 29dB(1v), 23dB(2v) or 17dB(4v). Each channel input may be operated inverted or non-inverted operation(0 or -180 degrees). The power up of the 6BSST may be controlled by remote control voltage. The **6BSST<sup>2</sup>** includes 'soft start' power control circuitry to eliminate high inrush currents when A/C power is applied.

## 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, ship the amplifier only in the original packing material, as the unit is not insurable by carriers otherwise.

## INSTALLATION & VENTILATION

The most important installation consideration is ventilation. The **6BSST<sup>2</sup>** is a convection-cooled amplifier. 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 installation conditions be constricted, then additional forced air-cooling may be necessary. Bryston can provide an optional fan package if required. Any **6BSST<sup>2</sup>** channels thermally shutting down during operation indicates insufficient cooling, and a remedy must be found for cooling the amplifier. Provide a minimum 6" space to the rear of the **6BSST<sup>2</sup>** for ventilation and dressing cables to and from the amplifier.

***Never operate the 6BSST<sup>2</sup> in a vertical position.***

## SPEAKER WIRES

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

## A/C POWER

Before plugging in the power cord be sure your **6BSST<sup>2</sup>** is specified for the **correct a/c voltage** for your locality. The voltage is listed on the data plate located on the Power Inlet Panel (see page 4). The **6BSST<sup>2</sup>** when operated with all channels at maximum power can 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 or remove the ground pin from the plug.

## FUSES

When replacing fuses, first power down the amplifier and then disconnect the power cord from the amplifier. Use a 3/16" blade screw driver to rotate the fuse caps (see Back Page for fuse locations) approximately 30 degrees counter-clockwise to release locking mechanism and then pull the fuse holder out of its socket. It is recommended that if you have to replace a fuse, that you replace the pair of fuses for the affected channel. Use fast acting 4A/250V fuses such as Littelfuse 217004.

## A/C POWER LINE CONDITIONERS

Bryston urges caution in choosing a power conditioner for your audio/video system. Large power amplifiers can draw very substantial current from the wall plug, and many so-called power conditioners can in fact hinder the supply of current by inserting resistances in series with the line cord. However, there are now power conditioners that can reduce or eliminate RF and 'hash' from the AC supply and may actually improve current delivery to your system. This type of power conditioner (exemplified by 'TORUS' Power Conditioners) uses the energy storage in a large toroidal transformer to provide high instantaneous power and reduce the substantial AC output resistance of the wall socket and house wiring. This resistance can be in the range of 0.5 to 1 Ohm and is typically reduced to only a few milliOhms by the Power Conditioner. That in turn considerably reduces Voltage drop in the power line on high current surges and quite substantially increases the stability of the power line improving audio (and video) focus, precision and clarity.

## FRONT PANEL

### MAIN POWER SWITCH

The front panel label '6BSST<sup>2</sup>' is the push-button actuator to the main power switch. This is a mechanical push-ON/push-OFF switch which activates the SoftStart circuitry to ramp up power gradually to the amplifier. Push to initiate the power-up sequence and 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).

Push again and the 6BSST<sup>2</sup> will power-down. ( Note: the rear circuit breaker must be on for the 6BSST<sup>2</sup> to power-up)

### LED INDICATORS

Each 6BSST<sup>2</sup> channel has a LED indicator to monitor the following channel conditions:

- UNLIT** ..... Indicates channel has no power. The 6BSST channel LED when unlit indicates no A/C mains power is present at the channel. If all channel LED indicators are unlit the 6BSST probably needs only to be powered on. A single LED not lighting possibly indicates blown channel fuses. When checking fuses switch off the circuit breaker on the rear panel, or unplug the power cord. Use only the specified quick-acting 4 amp 250V 5mm x 20mm fuses
- RED (STEADY)**..... Indicates channel is muted (power-up or power-down sequence)
- RED (FLASHING)** .. Indicates channel clipping. Clipping occurs when the channel output level no longer can follow the level increase at the input (Over driven outeeput condition). When a 6BSST2 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 un-distorted 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.
- GREEN** ..... Indicates channel operation is normal.
- ORANGE** ..... Indicates channel is in thermal shutdown. The 6BSST<sup>2</sup> 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 ).

**NOTE:** In some markets the LED indicators, which are normally red/green, may be red/blue instead. When red/blue LEDs are supplied green is replaced with blue and orange is replaced with magenta in the above descriptions.

## REAR PANEL ~ INPUT/OUTPUT CONNECTIONS

### ① INPUT SELECT SWITCH.

Each 6BSST channel gives the user the option of switching between either balanced input or single ended input.

### ② BALANCED INPUT CONNECTOR

This input connector accepts standard 'XLR' or 1/4" TRS . Use quality, 100% shielded cables with *gold plated* connectors. Input impedance  $\approx$  20K Ohms

### ③ SINGLE ENDED INPUT

This input connector accepts standard 'RCA' or 'Phono' connectors. Use quality, 100% shielded cables with *gold plated* connectors. Input impedance  $\approx$  50K Ohms

#### ***Balanced input Vs Single ended input:***

The balanced input requires a balanced pre-amp source. Balanced systems provide noise protection 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 run signal wires away from AC power or speaker cables.

## 4 POLARITY SWITCH ( 0 OR -180 DEGREES)

Each **6BSST<sup>2</sup>** channel gives the user the option of inverting the polarity of the input signal -180 degrees. Polarity inversion is application specific. *The normal operating position is 0 degrees.*

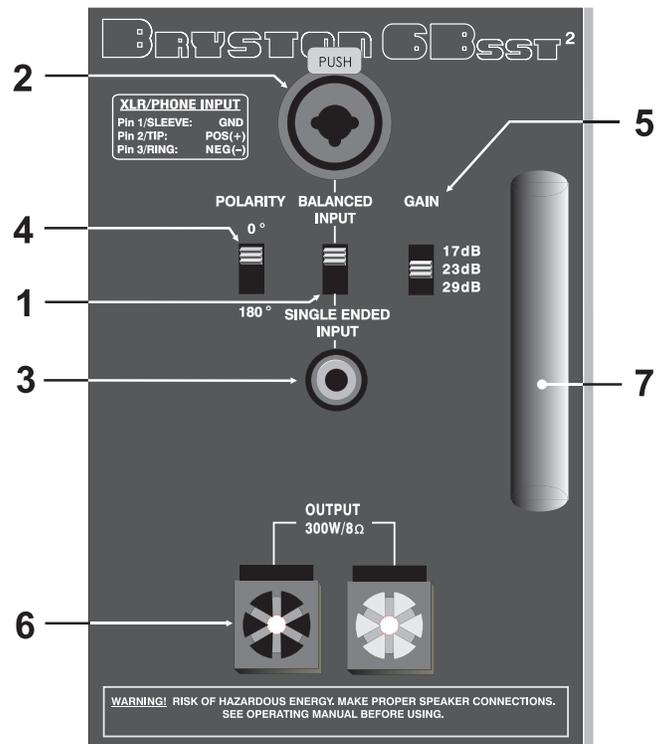
## 5 INPUT GAIN SWITCH

The optimum gain setting will depend upon the source pre-amp operating level, and or personal preference.

The **29dB** setting is the *home theatre* setting for *single ended* or un-balanced operation. It provides the most amplifier gain and greatest sensitivity (1V in = 100w @ 8 ohms, 1.7V in = 300W output into 8 ohms).

The **23dB** is the *home theatre* setting for balanced operation or wherever less gain is required. It provides a sensitivity of  $2V_{in} = 100$  Watts out into 8 Ohms, or  $3.4 V_{in} = 300$  Watts out.

The **17dB** provides the lowest gain and sensitivity but also the best noise performance. Sensitivity in this mode is  $4V_{in} = 100$  Watts out into 8 Ohms or  $6.8V_{in} = 300$  Watts out into 8 Ohms.



## 6 OUTPUT BINDING POSTS & POLARITY

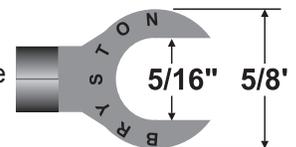
The **RED** binding post is connected to the **amplifier output**. Connect to this post to the (+) terminal on the loud-speaker. The **BLACK** binding post is connected to **signal ground**. Connect to this post the (-) terminal on the loud-speaker. When the **polarity** switch is set for **0** degrees (normal operation ) these connections are swapped with the in phase amplifier output signal being connected to the (+) RED binding post and ground being connected to the (-) Black binding post connector. Cables should be dressed away from input and power cables.

The output binding post connectors can accept several connector types as well as bare wire as outlined below:

**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.

**SPADE LUGS** provide high contact area and secure fastening. Lugs should be gold plated. Post diameter is 5/16" ( 8mm ),lug width 5/8" (16 mm). Gold plated spade lugs are available from Bryston.

**STRIPPED BARE WIRE** up to 3 gauge 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.



## 7 CHANNEL HANDLES

The handle on the rear of each channel module is to assist in removing the channel (when necessary for service) and to protect the connectors and the cables connected to them. **DO NOT** use these handles to lift or carry the amplifier as this could damage the channel module.

## POWER INLET PANEL

### 1 MASTER CIRCUIT BREAKER

The **6BSST<sup>2</sup>** uses a magnetic-trip circuit breaker (1) to protect the amplifier. This switch should be 'OFF' when installing the **6BSST<sup>2</sup>**. When switched 'OFF' all A/C power is removed from the amplifier, including standby power. The circuit breaker is not the day to day power switch and should be switched and left 'ON' after the installation is complete. Use the '**6BSST<sup>2</sup>**' 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 6BSST<sup>2</sup> to operate.**

② AC POWER INPUT

This is a high current plug for the power cord receptacle. Check that the voltage rating at the right of the connector conforms with your locality. With the circuit breaker 'OFF' insert the power cord into the 6BSST<sup>2</sup>, then plug the other end to an appropriate A/C power outlet.

③ LOCAL / EXTERNAL SWITCH

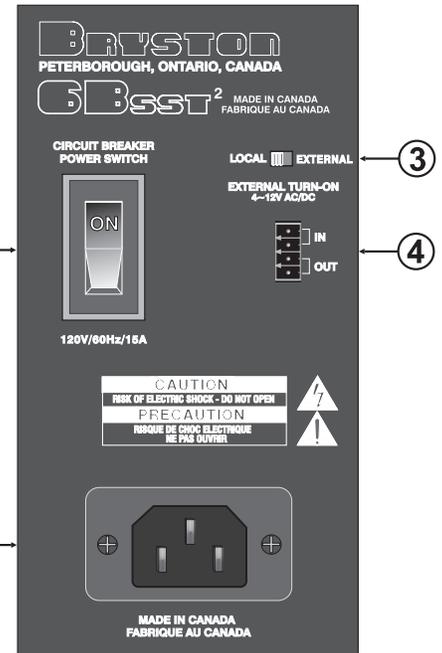
To power-up the 6BSST<sup>2</sup> using an EXTERNAL control voltage, place the LOCAL/EXTERNAL switch in the EXTERNAL position and supply a 4v to 12v A/C or DC control voltage to the 'IN' terminals of *External Turn-On Connector* (item #4).

When the control voltage is removed or drops below 3 Volts the amplifier will turn off. Immediately following power up the control voltage will appear at the 'OUT' terminals of the *External Turn-On Connector* for the control of other equipment. It is removed whenever the amplifier is turned off.



**REMOTE POWER TURN-ON PLUG-IN CONNECTOR**

Insert stripped ends of insulated wires revealing approx. 1/4" of bare, stranded copper wire between 24 and 12 AWG (.5mm to 2mm dia.) into open elevator style wire clamps & tighten with a slot screw driver. Do not over tighten or wires may eventually come lose. Maximum tightening torque is 4.5 lb-in (0.5Nm)



In the **LOCAL** mode (with the LOCAL/EXTERNAL switch set to LOCAL) the 6BSST<sup>2</sup> will ignore the control voltage,

and power up only by using the front panel '6BSST<sup>2</sup>' 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.

**Note:**

The 'OUT' terminals are connected to the 'IN' terminals once the 6BSST<sup>2</sup> has powered-up. The control current is determined by the **source** equipment. The carrying current of the 'OUT' relay is 2 amps. The 6BSST<sup>2</sup> itself draws less than 2 ma from the control current when operating.

④ REMOTE POWER TURN-ON CONNECTOR

See above for details on implementing wired remote turn-On. Wire the supplied connector as shown above. Additional or replacement connectors are available from Bryston. Part number CO110A11104

**TECHNICAL SPECIFICATIONS**

PARAMETER	VALUE	UNITS	CONDITIONS
POWER OUTPUT	300	Watts	20-20K Hz into 8 Ohms
	500	Watts	20-20K Hz into 4 Ohms
SENSITIVITY	1.7	V <sub>rms</sub>	for 300 Watts out into 8Ω, 29dB gain selected (1V <sub>in</sub> =100W <sub>out</sub> into 8Ω)
	3.4	V <sub>rms</sub>	for 300 Watts out into 8Ω, 23dB gain selected (2V <sub>in</sub> =100W <sub>out</sub> into 8Ω)
	6.8	V <sub>rms</sub>	for 300 Watts out into 8Ω, 17dB gain selected (4V <sub>in</sub> =100W <sub>out</sub> into 8Ω)
INPUT IMPEDANCE	50K	Ohms	balanced input (XLR jack)
	10K	Ohms	single ended input (RCA jack)
THD+N or IMD	.005	%	20Hz to 20KHz at 300 Watts into 8Ω
	.007	%	20Hz to 20KHz at 500 Watts into 4Ω
NOISE	112	dB	Input shorted, 20Hz to 20KHz, 29dB gain, referenced to 300W/8Ω output
	115	dB	Input shorted, 20Hz to 20KHz, 23dB gain, referenced to 300W/8Ω output
	118	dB	Input shorted, 20Hz to 20KHz, 23dB gain, referenced to 300W/8Ω output
SLEW RATE	60	V/μsec	
POWER BANDWIDTH	<1 to >100K	Hz	
DAMPING FACTOR	500		at 20Hz, ref 8Ω
WEIGHT	46.7 (103)	Kg (lbs)	including box and packing (i.e. shipping weight)
POWER CONSUMPTION	225	Watts	at idle
	625	Watts	1 channel at 300 Watts output into 8Ω
	2100	Watts	3 channels at 300 Watts output into 8Ω
HEAT DISSIPATION	768	BTU/hr	at idle
	1109	BTU/hr	1 channel driven to 300 Watts output into 8Ω
	4097	BTU/hr	3 channels driven to 300 Watts output into 8Ω

# EXTERNAL DIMENSIONS & FUSE LOCATIONS

