

BRYSTON

28BsST²
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 shipping costs one way (usually the return portion) during the first three years of warranty coverage.

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: **P.O. 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

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

BRYSTON SERVICE outside Canada and the USA:

contact your local distributor or

CHECK OUR WEB SITE: www.bryston.com
E-MAIL BRYSTON DIRECTLY: cdnser@bryston.com
FAX BRYSTON DIRECTLY: 01-705-742-0882
PHONE BRYSTON DIRECTLY: 01-705-742-5325

TABLE OF CONTENTS

SAFETY INSTRUCTION, WARRANTY & CONTACT INFORMATION	Opposite
GENERAL	Page 1
Introduction	
Description	
Installation and Ventilation	
A/C Power	
A/C Power Conditioners	
FRONT PANEL	
Power Switch	
LED Indicator	
REAR PANEL	Page 2
Input Select Switch	
Gain Select Switch	
Balanced Input (XLR)	
Single Ended Input (RCA)	Page 3
Level Control	
Output Binding Posts	
Circuit Breaker / Power Switch	
A/C Power Inlet	Page 4
Remote Power On/Off Control (12V Trigger)	
TECHNICAL SPECIFICATIONS	
EXTERIOR DIMENSIONS	Back Page



Front view of 28Bsst/28Bsst² with 19 inch long "silver" C-series Dress Panel and Handles

INTRODUCTION

Thank you for choosing the **28Bsst² C-SERIES mono-block 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.

GENERAL DESCRIPTION

The **28Bsst²** is a single channel 1000 Watt audio power amplifier. The **28Bsst²** selects a balanced (3 pin XLR or ¼" phone plug) or single ended (RCA/phono plug) input. A gain of 29dB or 23dB may be selected. The **28Bsst²** 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 **28Bsst²** may be activated by a remote control voltage 4v to 12v ac or dc.

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 & VENTILATION

The most important installation consideration is ventilation. The **28Bsst²** amplifier is convection cooled. Unrestricted air-flow across the **28Bsst²** 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. Thermal shut 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.

A/C POWER

Before plugging in the power cord be sure your **28Bsst²** amplifier is specified for the **correct ac voltage** for your locality. The voltage is listed on the label found at the upper right of the rear panel. The circuit feeding the **28Bsst²** should be sufficient so as not to cause the circuit breaker to trip (15 amp min.). Note: the **28Bsst²** when delivering maximum power into a 4 ohm load, 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.

A/C POWER 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

(refer to illustration on previous page)

28Bsst² POWER SWITCH

The front panel label '28Bsst²', is a push on push off switch used to apply or remove AC line power to the soft start circuitry. (Note: the rear circuit breaker must be on for the amplifier to power-up)

LED INDICATOR

The **28Bsst²** has an LED indicator to monitor the following conditions:

- UNLIT - indicates the amplifier is turned off.
- RED - indicates the amplifier is muted (as in a power-up sequence)
- GREEN - indicates the amplifier operation is normal.
- FLASHING RED - indicates the amplifier clipping.
- ORANGE - indicates thermal shutdown.

POWER UP SEQUENCE

After pushing the '28Bsst²' power switch, the LED will turn from unlit to red (mute). When the power supply has stabilized the amplifier will come out of mute and the LED will change to green (normal operation).

UNLIT LED (POWER OFF)

The 28Bsst² LED when unlit indicates no A/C mains power is present and the amplifier probably needs only to be powered on or the rear panel circuit breaker is switched off. Should the amplifier not power on when the power switch is pushed see the installation instructions.

CLIPPING (FLASHING RED)

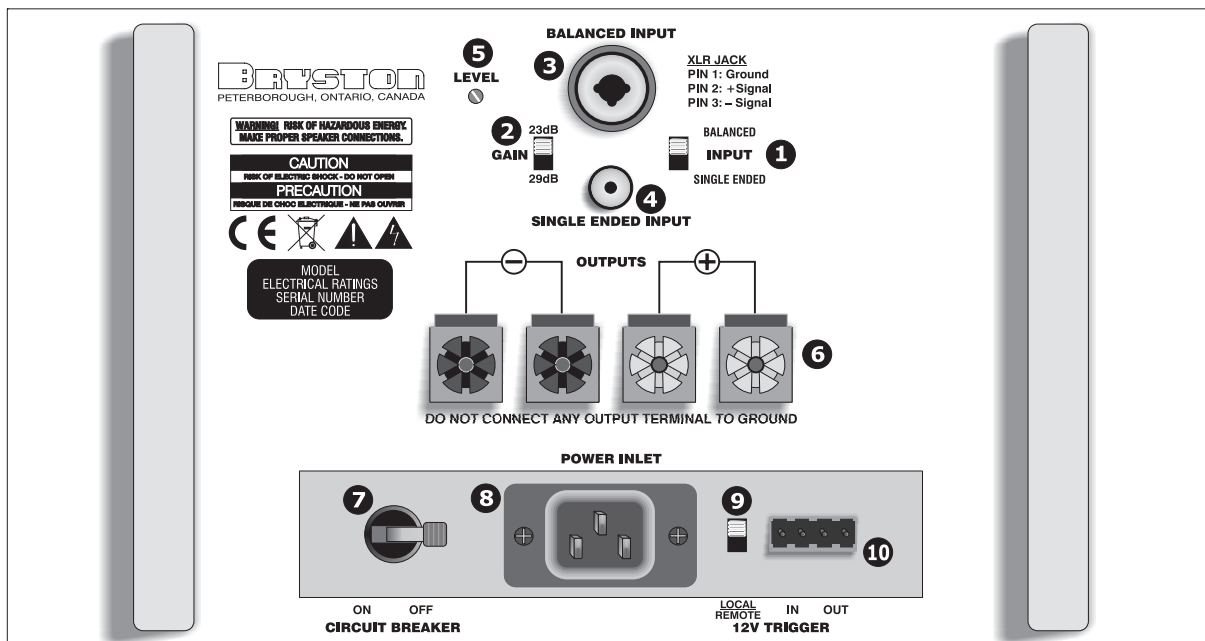
Clipping occurs when the channel output level no longer can follow the level increase at the input (Over driven input condition). When the 28Bsst² is driven into clipping the LED will change from green to red then back to green when the level is reduced (Flashing Red). Momentary clipping can be tolerated, 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)

The 28Bsst² has thermal shutdown circuitry to prevent damage due to overheating. Should thermal shutdown occur, the amplifier will mute, and the LED will turn orange indicating this condition. When the amplifier has cooled to a safe operating condition the 28Bsst² will return to normal operation. Persistent Thermal shutdown indicates steps need to be taken to increase airflow across the heat sink. (Also see installation section on ventilation).

N.B. 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



❶ INPUT SELECT SWITCH

The INPUT SELECT switch gives the user the option of switching between either balanced input or single ended input.

❷ INPUT SENSITIVITY SELECTION

This switch sets the gain of the amplifier to either 23dB or 29dB. The optimum gain setting will depend upon the source pre-amp operating level, and or personal preference. Use the 23dB setting with any systems where the volume control rotation is limited to the bottom half of the control or less.

❸ BALANCED INPUT CONNECTOR ($Z_{in} \approx 15K\Omega$ each leg)

When 3-pin XLR jacks are used, pin 1 is ground, pin 2 is positive and pin 3 is negative. If your 28Bsst² is equipped with combination XLR/1/4" phone jacks (as shown in the illustration above), the XLR jack will have the same pinout

and on the phone jack the TIP will be positive, RING is negative and the SLEEVE is ground. Use quality, 100% shielded cables with *gold plated* connectors.

4 SINGLE ENDED INPUT (Un-balanced input) ($Z_{in} \approx 16K5\Omega$)

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.

5 LEVEL CONTROL ("*PRO*" models only)

The level control will attenuate the input signal level from 0dB (fully clockwise) through -14dB (fully counter-clockwise).

6 OUTPUT BINDING POSTS

The RED binding posts are the in-phase amplifier output. Both red binding posts are the same. Connect either red binding post to the (+) terminal on the loudspeaker. The second red binding post is provided for bi-wiring or second loudspeaker.

The BLUE binding posts are the inverted-phase amplifier output Connect either blue binding post to the (-) terminal on the loudspeaker. The second blue binding post is provided for bi-wiring or second loudspeaker.

N.B. At no time should either output be connected to a ground, or chassis. Failure of the amplifier may result. Never connect either output in parallel with another amplifier.

N.B. The minimum recommended loudspeaker load is 4 ohms.

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.

- **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. See diagram for details. 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 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.



SPEAKER 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 offers speaker cables and amp interconnects for your application. Check our website under products/cables (www.bryston.ca) for more information.

7 MASTER CIRCUIT BREAKER

The 28BSST² amplifier uses a magnetic-trip circuit breaker 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 should not be used as the power switch except during installation or removal; it should be switched to and left 'ON' during normal operation. Use the 28BSST² front panel 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 signal (also see section 9 below). Switch the breaker to the 'ON' position. Then power the unit up normally.

The circuit breaker must be 'ON' at all times for the 28BSST² amplifier to operate.

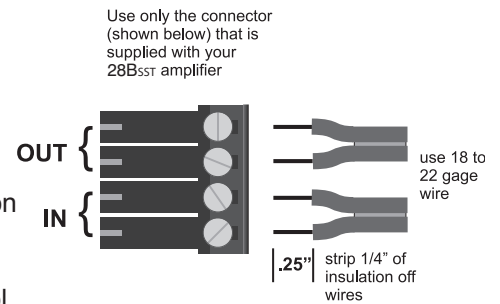
8 AC POWER INLET

On the rear panel is provided a high current IEC-320 C14 inlet for mating with a C13 the power plug. Check that the

voltage rating on the *data plate* label on the rear panel conforms with your locality. With the circuit breaker 'OFF' insert the power cord into the 28Bsst² amplifier, then plug the other end to an appropriate A/C power outlet. Switch the circuit breaker to on and observe the LED labeled "Line Voltage Status Indicator".

9 10 EXTERNAL CONTROL VOLTAGE POWER UP (LOCAL/EXTERNAL SWITCH & INTERFACE CONNECTOR)

- To power-up the 28Bsst² amplifier using an external control voltage:
 - 1) The circuit breaker 7 and front panel power switch must both be ON
 - 2) Supply a 4v to 12v A/C or DC control voltage to the 'IN' terminals of connector 10.
 - 3) Use paired wire of 22 to 18 gage sufficient in length between the source device and the SST amplifier.
 - 4) Set slide switch 9 to "External". The amplifier will now power-up only when the control voltage is present (on) and the front panel push-button power switch is ON (depressed). Immediately following power up, the control voltage will appear at the 'OUT' terminals of the interface connector 10 for the control of other equipment. The removal of the control voltage (0v), or releasing the front panel power switch, causes the amplifier to turn 'off' and the control voltage at the 'OUT' terminals is interrupted.

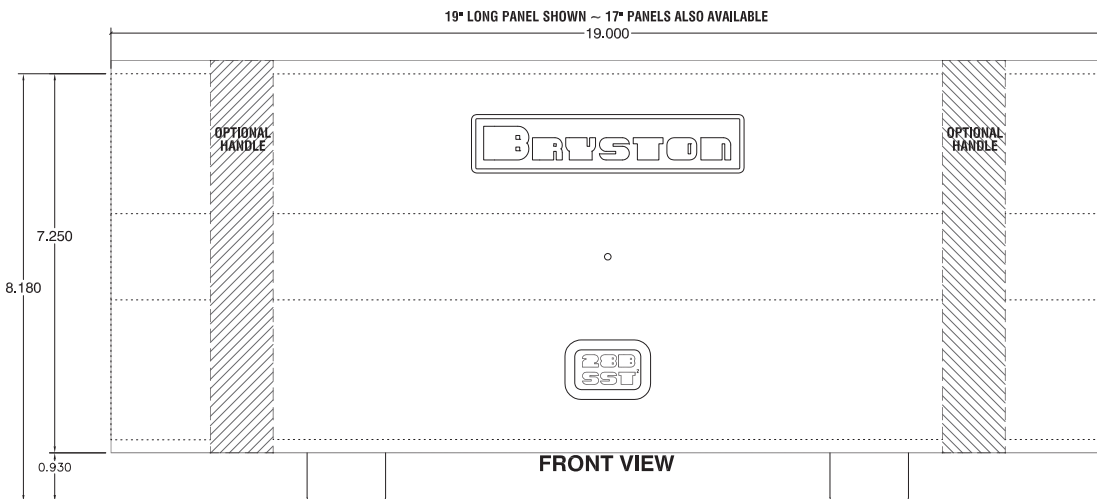
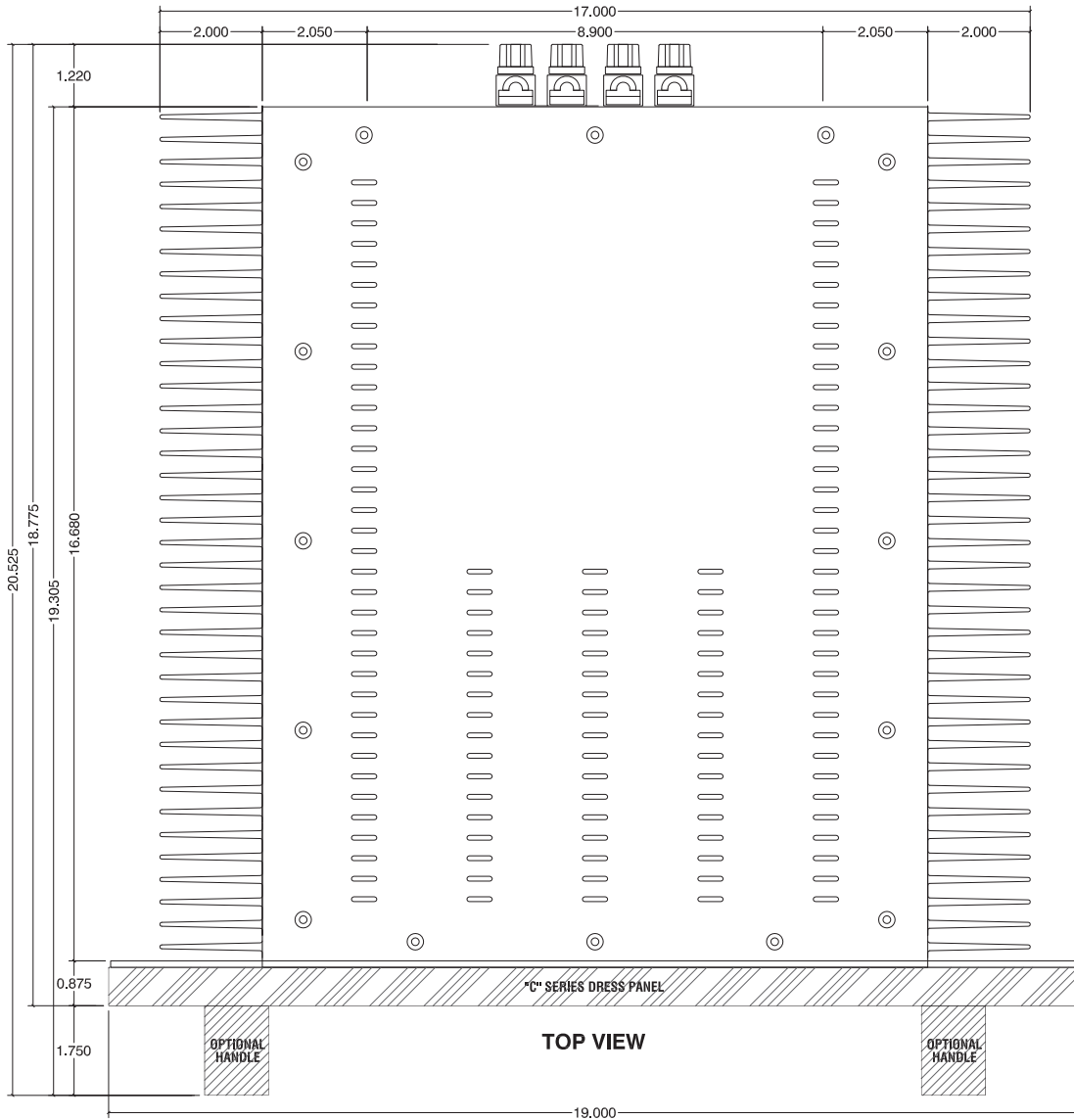


- In the "Local" setting:
The 28Bsst² amplifier will ignore the control voltage, and power up only by using the front panel '28Bsst²' power switch or as in paragraph 3 above. If a control voltage is present at the 'IN' terminals it will still be available at the 'OUT' terminals after the power-up sequence.

Note:
The 'OUT' terminals are connected to the 'IN' terminals once the 28Bsst² amplifier has powered-up. The control current is determined by the **source** equipment. The carrying current of the 'OUT' relay is 2 amps. The 28Bsst² control circuitry itself draws less than 2 mA from the control current when operating.

TECHNICAL SPECIFICATIONS

PARAMETER	MIN	TYPICAL	MAX	UNITS	CONDITIONS
POWER OUTPUT		1000		Watts	20-20K Hz into 8 Ohms
		900		Watts	20-20K Hz into 4 Ohms
SENSITIVITY		1.0		Vrms _{in}	for 100 Watts _{out} into 8Ω, 29dB gain selected
		2.0		Vrms _{in}	for 100 Watts _{out} into 8Ω, 23dB gain selected
		2.46		Vrms _{in}	for 600 Watts _{out} into 8Ω, 29dB gain selected
		4.92		Vrms _{in}	for 600 Watts _{out} into 8Ω, 23dB gain selected
		3.0		Vrms _{in}	for 900 Watts _{out} into 8Ω, 29dB gain selected
INPUT IMPEDANCE		6.0		Vrms _{in}	for 900 Watts _{out} into 8Ω, 23dB gain selected
		15K		Ohms	balanced input (XLR)
THD+N		16K5		Ohms	single ended input (RCA)
			.005	%	20Hz to 20KHz at 600 Watts into 8Ω
NOISE			.007	%	20Hz to 20KHz at 900 Watts into 4Ω
		110		dB	Input shorted, 20Hz to 20KHz, gain set to 29dB
SLEW RATE		113		dB	Input shorted, 20Hz to 20KHz, gain set to 23dB
		60		V/μsec	
POWER BANDWIDTH	<1		>100K	Hz	
DAMPING FACTOR	300				at 20Hz, ref 8Ω
WEIGHT		36.4 (80)		Kg (lbs)	including box and packing (i.e. shipping weight)
		215		Watts	at idle
		1486			at 1000 Watts _{out} into 8Ω
HEAT DISSIPATION		2640			at 1300 Watts _{out} (at onset of clipping) into 8Ω
		733		BTU/hr	at idle
		1658			at 1000 Watts _{out} output into 8Ω
	4572				at 1300 Watts _{out} (at onset of clipping) output into 8Ω



ALL DIMENSIONS IN INCHES

**28Bsst² POWER AMPLIFIER with "C" Faceplate
EXTERIOR DIMENSIONS for NON-RACK-MOUNT MODELS**