AUDIO/VIDEO POWER CONDITIONERS

# BRYSTON ISOLATION TRANSFORMERS

*fuel for the senses*


BIT SERIES

Bryston

# BRYSTON AUDIO-VIDEO **POWER CONDITIONERS**

## BRYSTON BIT ISOLATION TRANSFORMER MOTIVATION

## Isolate, Protect & Inspire

The concern Bryston had with a lot of power line conditioners available in the market was that many of them could restrict the current available to the amplifier. An amplifier can draw very high peak current, and wants to 'see' a very low impedance high current source from the power line. In fact, we even stated in our owners manuals not to plug our amplifiers into power conditioners. The Transformer based line conditioners we tested were too small to supply the peak current required and many of them were just Filters and did not provide Isolation -(Isolation means there is no mechanical connection between the outside power grid and your inside system power supply).

Also most of the surge protection was done using MOV's, which are sacrificial and eventually will be destroyed with repeated spikes. Other issues with these MOVs is that they allow much more voltage through before they reacted (typically 300 volts and higher) and they shunt the voltage spikes to ground.

So we decided to try and develop a powerline Conditioner, Isolation and Protection unit that would not have the restrictions of the many units currently on the market from an amplifier performance perspective.

## BENEFITS OF BRYSTON BIT POWER ISOLATION UNITS:

**Benefit 1:** Very low source impedance and high current for the power amplifier

BIT power isolation units present low impedance to any electronic device that is connected to them. A Single 20 amp BIT PIU has an output impedance of 0.2 ohms and can deliver 400 amp peaks (instantaneous current). The 100 amp unit only has .04 Ohms of output impedance. A typical 200 watt audio power amplifier demands 10 amps RMS current from a 120 volt line (1200VA) but may demand up to 50 amp instantaneous peaks. The standard residential wall receptacle can't supply the 50 amp peaks because they typically have higher nominal impedance. A BIT 20 amp PIU plugged into the same wall plug can supply these peak current requirements quite easily.

**Benefit 2:** Power surge protection using Series Mode Surge Suppression rather than MOV's

The BIT power products use the finest, most elaborate surge suppression technology available Series Mode Surge Suppression does not shunt the spike to ground like MOV's do, and therefore the ground is infinitely more stable in a BIT power device.

Additionally, most MOV-based surge suppression units allow as much as 300 volts through to the protected components, easily enough to do substantial damage, where as BIT surge suppression has clamping voltage onset of around 2V above peak nominal voltage. BIT units are built to meet 6000 volts, 3000 amps at 1000 repeats standard.

**Benefit 3:** Total isolation from outside power grid

BIT power products provide isolation through its finest designed toroidal transformer between the outside power grid and the devices being protected. Such isolation helps to reject external noise sources such as motors, lights, and dimmers commonly found in the home environment. BIT power products provide noise filtering at a range from approximately 2000Hz to over 1MHz – other regular transformer based products do not start operating until nearly 10,000 Hz.

**Benefit 4:** High Power Capability

There are 6 models of BIT power products available ranging from 5 amps to 100 amps and 120/240 Volts. BIT has recently introduced NEMA wall-mount units, which are typically placed at the hydro panel for whole-house or whole-room power line isolation and protection.

**Benefit 5:** Low Noise

Bryston BIT products utilize 'LONO' (Low Noise) transformer design technology that eliminates audible noise in the power transformer regardless of line conditions, DC offset and over-voltage. BIT products perform at the NC10 level measured on the standard NC (Noise Criteria) – which makes them suitable for use in very quiet environments such as professional recording and broadcast studios.

**Benefit 6:** Cleaner Power

Bryston BIT products utilize "NBT" (Narrow Bandwidth Technology) to attenuate differential and common-mode noise without external circuits or components, and starting at a lower corner frequency (2Khz) than other systems. The BIT result is startling – see press and user comments!

BIT 20

# BRYSTON **TRANSFORMER TECHNOLOGY**

Bryston Power are transformer-based products using toroidal technology developed over 25 years by Plitron Manufacturing. www.plitron.com

***NBT** (Narrow Bandwidth Technology) substantially attenuates noise with similar performance as a low pass filter, while eliminating use of an external filter. The corner frequency is 2kHz with an attenuation rate of 12 db/decade to 500kHz.

***LoNo** (Low Noise) technology eliminates audible noise in the power transformer regardless of line conditions, including DC offset and overvoltage. Noise is quantified and specified to NC (noise criterion) curves. Bryston products are about NC 10.

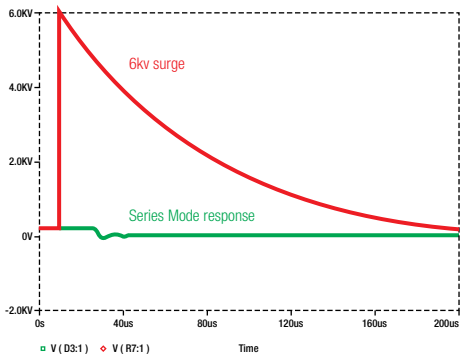
Transformer used in Bryston units, pictured at left, features triple-screens for ultimate noise rejection. Also note metal mounting band that "suspends" the transformer inside the cabinet, further reducing mechanical noise.

Toroidal transformers are typically half the size and weight of conventional transformers. But, Bryston uses transformers which are twice the mass of standard toroids to provide extremely open high power.

## Bryston Series Mode Surge Suppression Technologies

Most surge-suppression circuits are shunt-mode. Excessive voltage surges are "shunted" to ground, which raises ground voltage and may contaminate audio and video signals. Shunt-mode surge protectors usually use MOVs (metal oxide varistors) which are sacrificial components, and usually become ineffective over time.

Bryston use series mode surge suppression which absorbs surges more than two volts above peak line voltages. Bryston surge suppression meets IEEE endurance standards of 6kV, 3kA with 1000 repeats. Bryston Technology allows for the replacement of a series inductor with the Bryston isolation transformer. The transformer has lower stray fields and higher current capabilities than the typical series inductor. Bryston Series Mode Surge Suppression Technologies Most surge-suppression circuits are shunt-mode. Excessive voltage surges are "shunted" to ground, which raises ground voltage and may contaminate audio and video signals. Shunt-mode surge protectors usually use MOVs (metal oxide varistors) which are sacrificial components, and usually become ineffective over time.



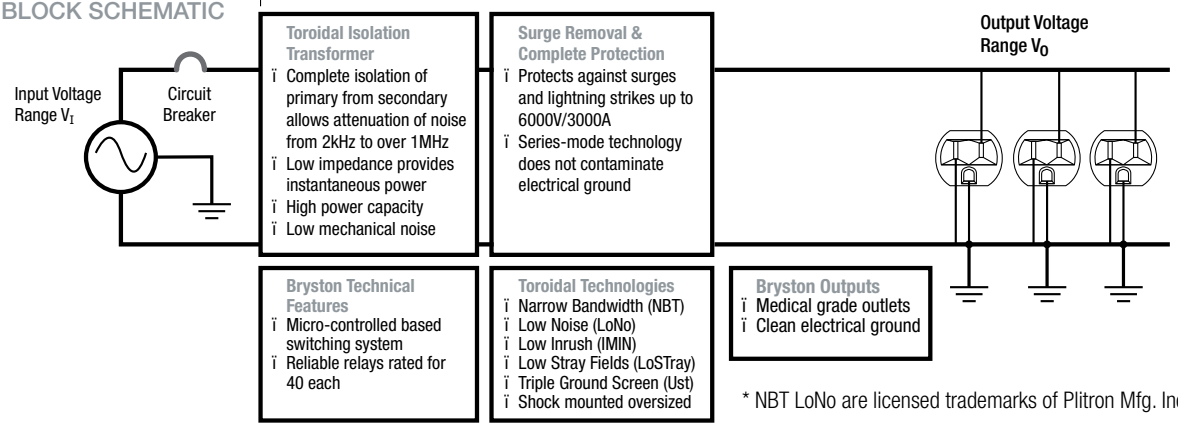

## WHAT'S INSIDE

WALL MOUNT

Internal View of Bryston Power Unit: (BIT WMA 100 BAL)A massive toroidal isolation transformer provides complete isolation and ensures sufficient reserve power capabilities to source high current requirements for high power systems.

## HOW IT WORKS
### BLOCK SCHEMATIC

BIT (SERIES) MODELS




* NBT LoNo are licensed trademarks of Plitron Mfg. Incorporated.

# BRYSTON **POWER SPECIFICATIONS**

**ALL MODELS:**

- Noise reduction
- Surge suppression
- High current capability
- Isolation

| SERIES | MODEL | AVAILABILITY | AMPS | V-IN (VAC) | Freg. (Hz) | Input Current Limit (A) | No Outlets | Weight Kg. Lbs | Dimensions w x D x H, mm (inches) |
|---|---|---|---|---|---|---|---|---|---|
| **120V Single Phase** | **BIT 5** | Black or Silver 17" Faceplates | 5 | 120 ± 10 | 60 ±3 | 5A Breaker | 6 | 13.4 Kg 29.5 lbs | 483 x 286 x 102 (19" x 11.3" x 4") |
| | **BIT 15** | Black or Silver 17" Faceplates | 15 | 120 ± 10 | 60 ±3 | 15A Breaker | 10 | 34.5 kg 76 lbs | 483 x 279 x 102 (19" x 11.3" x 4") |
| | **BIT 20** | Black or Silver 17" Faceplates | 20 | 120 ± 10 | 60 ±3 | 20A Breaker | 10 | 43.2kg 95 lbs | 483 x 426 x 159 (19"x6.8"x 6.3") |
| **BIT IS SERIES** | **BIT IS 5** | Black or Silver 17" Faceplates | 5 | 120 ± 10 | 60 ±3 | 5A Breaker | 6 | 12.7 Kg 28 lbs | 483 x 286 x 102 (19" x 11.3" x 4") |
| | **BIT IS 15** | Black or Silver 17" Faceplates | 15 | 120 ± 10 | 60 ±3 | 15A Breaker | 10 | 20 kg 44.5 lbs | 483 x 286 x 102 (19" x 11.3" x 4") |
| | **BIT IS 20** | Black or Silver 17" Faceplates | 20 | 120 ± 10 | 60 ±3 | 20A Breaker | 10 | 42 kg 93 lbs | 483 x 432 x 159 (19" x 17" x 6") |

*The IS Series does not include series mode surge suppression, which remains available in the BIT Single Phase Series*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Custom Install** | **BIT 20 BAL** | Black or Silver 17" Faceplates | 20 | 2x 120 | 60 ±3 | 2 x 10A Breaker | 10 | 40.5 kg 89 lbs | 483 x 565 x 159 (19"x 22.3" x 6.3") |
| **Custom Wall Mount** | **BIT WM60 BAL** | N/A | 60 | 2x 120 | 60 ±3 | 2x 30A Fuse | N/A | 74.9 kg 165 lbs | 686 x 521 x 267 (27" x 20.5" x 10.5") |
| | **BIT WM100 BAL** | N/A | 100 | 2x 120 | 60 ±3 | 2x 50A Fuse | N/A | 103.6 kg 228 lbs | 686 x 521 x 267 (27" x 20.5" x 10.5") |
| **Inter** | **BIT 4 INT'L IEC/ USA240/ UK/ GER/ AUS** | Black or Silver 17" Faceplates | 4 | 240 ± 10 230 ±10 | 50 ±3 | 4A Breaker | 3 (UK, AUS) 4-(GERM) | 16.4 kg 36 lbs | 483 x 286 x 102 (19" x 11.3" x 4") |
| | **BIT 8 INT'L IEC/ USA240/ UK/ GER/ AUS** | Black or Silver 17" Faceplates | 8 | 240 ± 10 230 ±10 | 50 ±3 | 8A Breaker | 5 (UK, AUS) 4 (GER) | 34 kg 75 lbs | 483 x 426 x 159 (19" x 16.8" x 6.3") |
| | **BIT 16 INT'L IEC/ USA240/ UK/ GER/ AUS** | Black or Silver 17" Faceplates | 16 | 240 ± 10 230 ±10 | 50 ±3 | 16A Breaker | 6 (UK) 8 (AUS) 5 (GER) | 45kg 99 lbs | 483 x 519 x 203 (19" x 20.4" x 8") |
| **International IS SERIES** | **BIT 4 INT'L IEC/ USA240/ UK/ GER/ AUS** | Black or Silver 17" Faceplates | 4 | 240 ± 10 230 ±10 | 50 ±3 | 4A Breaker | 3 (UK, AUS) 4-(GERM) | 16.4 kg 36 lbs | 483 x 286 x 102 (19" x 11.3" x 4") |
| | **BIT 8 INT'L IEC/ USA240/ UK/ GER/ AUS** | Black or Silver 17" Faceplates | 8 | 240 ± 10 230 ±10 | 50 ±3 | 8A Breaker | 5 (UK, AUS) 4 (GER) | 34 kg 75 lbs | 483 x 426 x 159 (19" x 16.8" x 6.3") |

*The IS Series does not include series mode surge suppression, which remains available in the BIT Single Phase Series and is not available in the 16A at this time*

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