

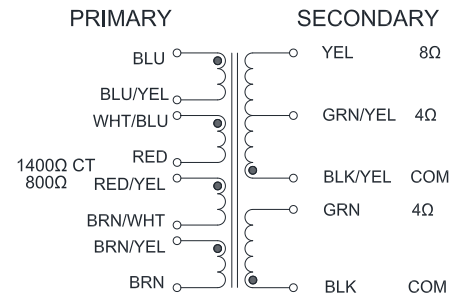
1650M

"CLASSIC" PUSH-PULL TUBE TYPE ULTRA-LINEAR OUTPUT TRANSFORMERS

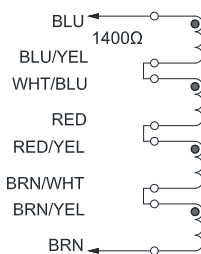
- Designed for push-pull tube output circuits.
- Enclosed (shielded), 4 slot, above chassis Type "X" mounting.
- Frequency response 30 Hz. to 30 KHz. at full rated power (+/- 1 db max. - ref. 1 KHz) minimum.
- Insulated flexible leads 8" min.
- Manufactured with plastic coil forms for coil support and insulation.
- Typical applications - Push-Pull: triode, Ultra-Linear pentode, pentode and tetrode connected audio output.
- Due to the unique interleaving of the windings BOTH secondary windings must be engaged to meet specifications (see hook-up diagrams below).

ELECTRICAL SPECIFICATIONS		
Characteristic	Typical	
Input Impedance	1400/800 Ohms	
Output Impedance	4, 8 & 16 Ohms	
Output Power	60 Watts	
DCR		
Primary Blue-Brown	44.35 Ohms	
Secondary Black-Green	0.165 Ohm	
Secondary Black/Yel-Yel	0.269 Ohm	
Inductance Impedance	@ 60Hz, 10.0V OC	
Primary Blue-Brown (1400Ω)	64H	30.3KOhm
Primary Wht/Blu-Brn/Wht (800Ω)	40.1H	19.15KOhm
Leakage Inductance	@ 60Hz, 10.0V SC	
Primary Blue-Brown (1400Ω)	4.56mH	
Primary Wht/Blu-Brn/Wht (800Ω)	4.32mH	
Dielectric Strength	2000Vrms	
Temperature Range	-40 To 105°C	

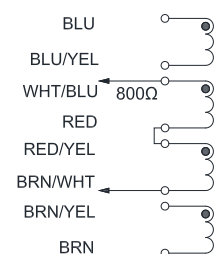
SCHEMATIC



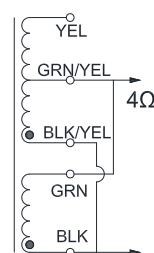
1400Ω INPUT



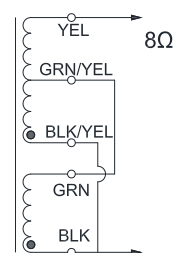
800Ω INPUT



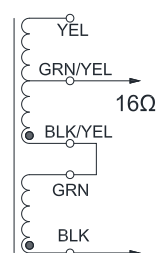
4Ω CONNECTION




8Ω CONNECTION



16Ω CONNECTION



LABEL:



HAMMOND
MANUFACTURING

1650M

AUDIO TRANSFORMER

FREQUENCY 30 Hz - 30 KHz
60 WATTS 1400/800Ω C.T. INPUT
SCREEN TAPS 40% OF PRI VOLTS
4Ω - 8Ω - 16Ω OUTPUT

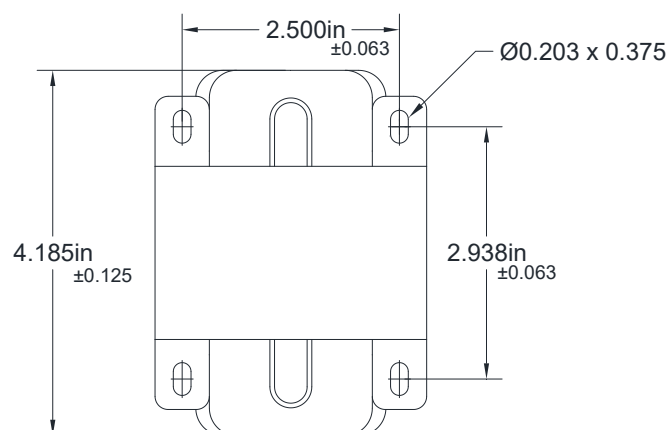
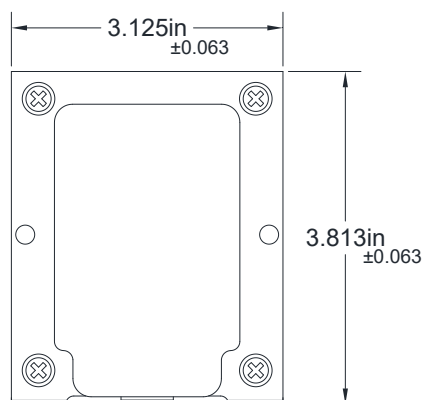
Made In Canada

DATE

Note: The above examples of possible combinations are to help you narrow down the choices of transformers for your favorite tube types. How you operate the tubes (push-pull, push-pull parallel, ultra-linear, class, B+, bias, operating points, etc.) will change optimum plate to plate load 4040 watts manufacturer's technical data sheets should be consulted first, before making a decision on a proper output transformer.

Diagram of a 1650W power supply unit showing input and output cable color codes:

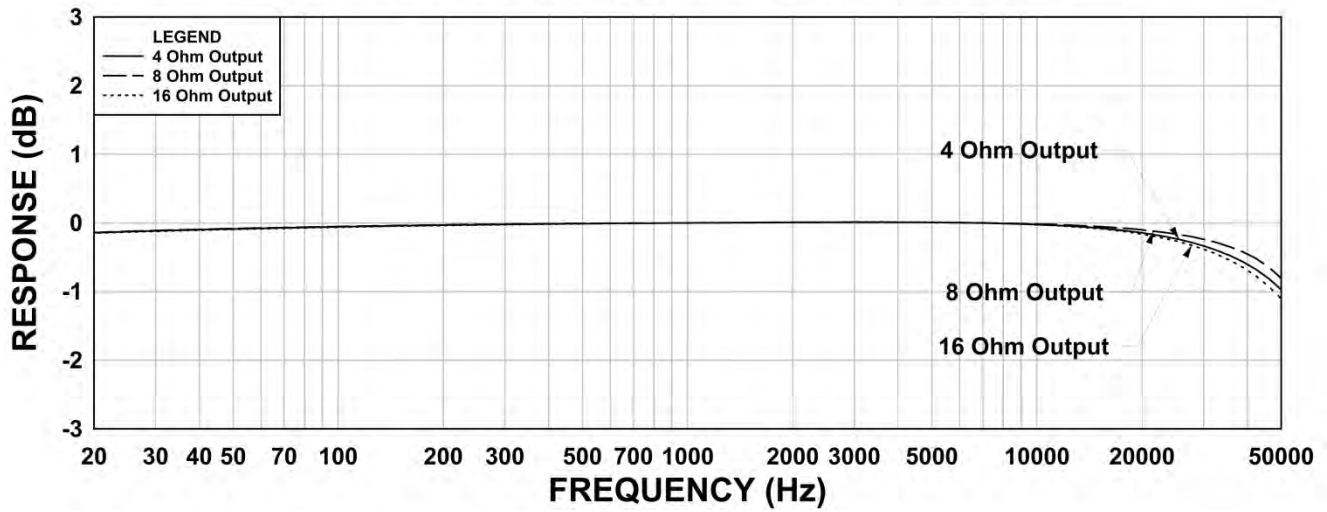
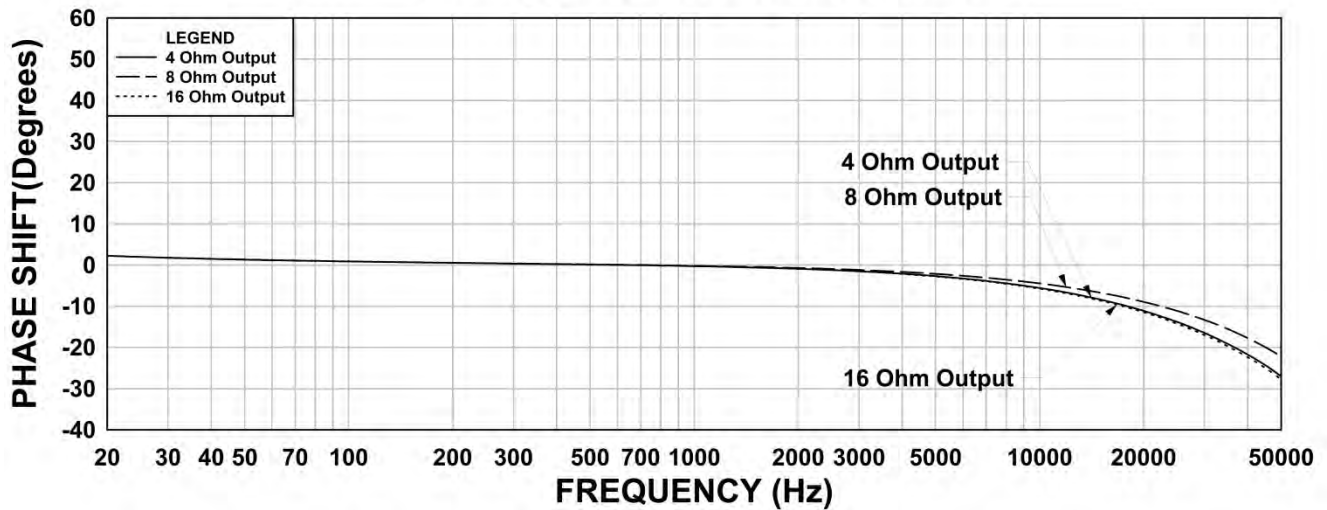
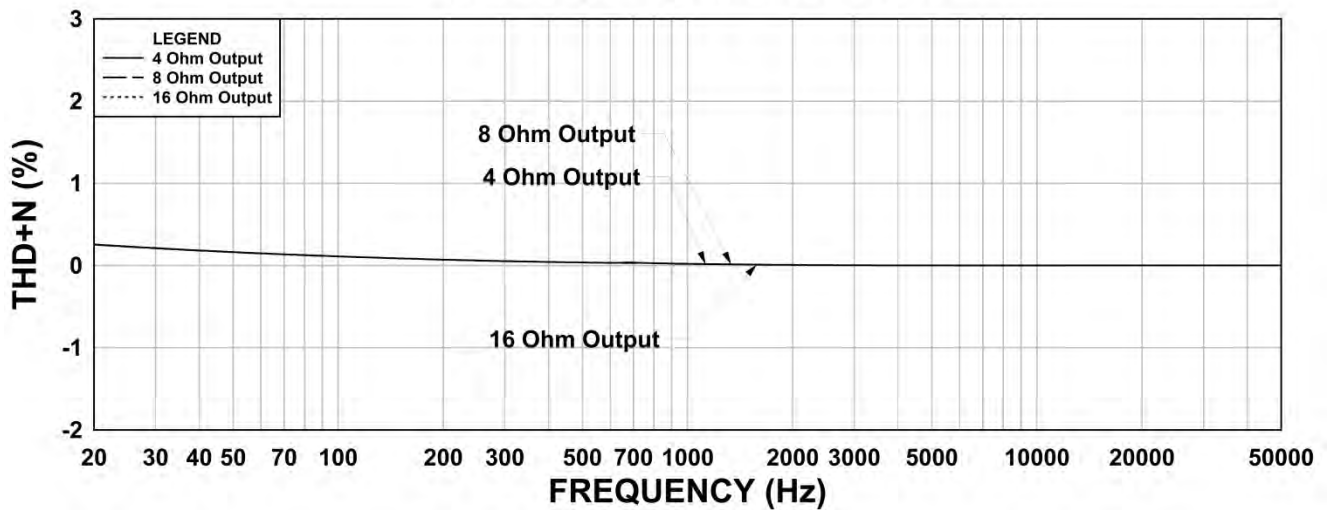
- Input Cables (Left):**
 - YEL
 - GRN/YEL
 - BLK/YEL
 - GRN
 - BLK
- Output Cables (Right):**
 - BLU/YEL
 - RED/YEL
 - RED
 - BRN
 - BRN/YEL
 - WHT/BLU
 - BRN/WHT
 - BLU

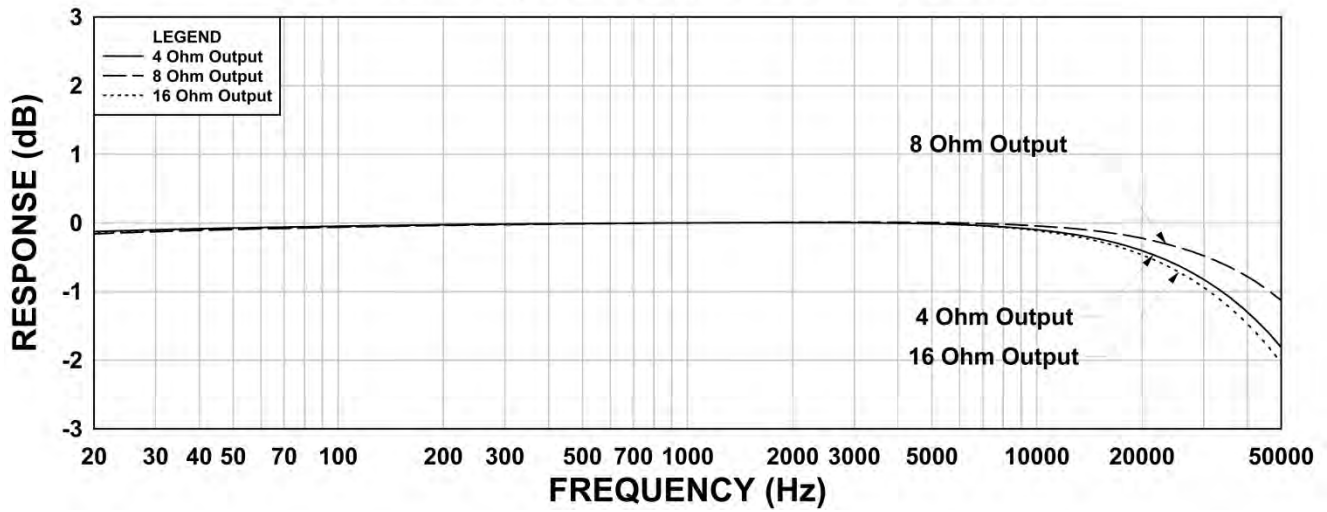
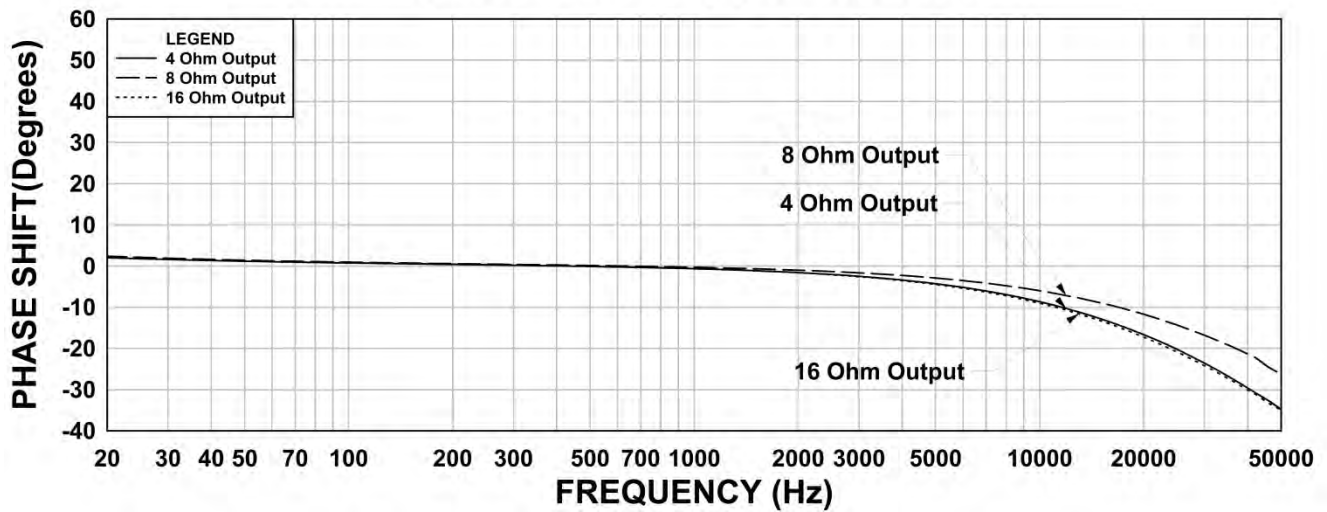


Measurement Instruments:
dScope Series III Audio Analyzer
Wayne Kerr 3255B with a 3265B Inductance Analyzer
HP 4192a LF Impedance Analyzer
Keithley 2010 DVM

* All graphs input level 27dBu @1.0KHz reference.
 **The results are typical and are subject to normal manufacturing and electrical tolerances.

The diagram shows a transformer with a primary winding and a secondary winding. The primary winding is connected to an AC voltage source (represented by a circle with a sine wave) through a series resistor labeled $R_{s1/2}$. The secondary winding is connected to a load resistor labeled R_L in a shunt configuration. The output terminals are labeled "OUT". The primary and secondary windings are represented by two vertical coils with dots at the top terminals, indicating a dot convention.

1650M Frequency Response RS = 1400 Ohms**1650M Phase Shift RS = 1400 Ohms****1650M THD+N RS = 1400 Ohms**

1650M Frequency Response RS = 800 Ohms**1650M Phase Shift RS = 800 Ohms****1650M THD+N RL = 800 Ohms**