Hammond Mfg. Co. Ltd., Electronics Division

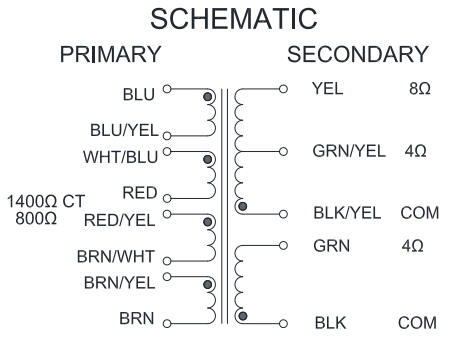
www.hammondmfg.com

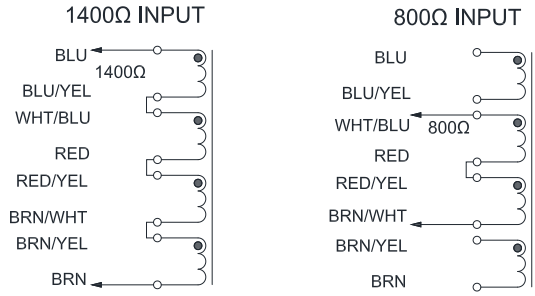
1650M

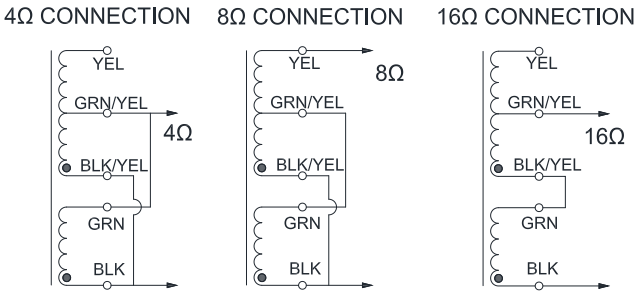
"CLASSIC" PUSH-PULL TUBE TYPE
ULTRA-LINEAR OUTPUT TRANSFORMERS

- 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	







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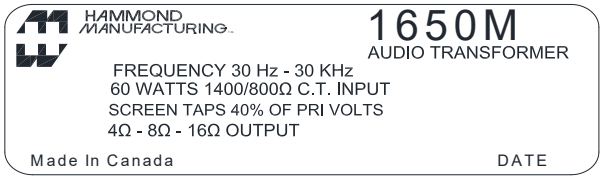
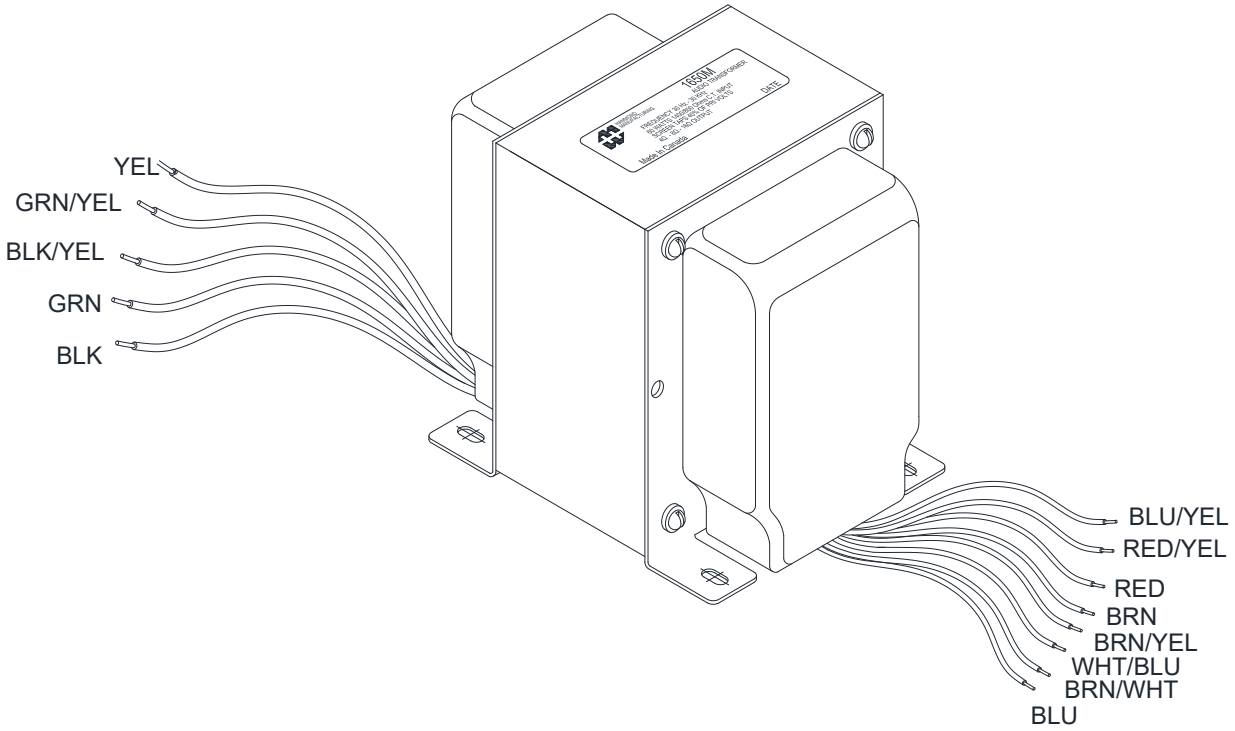
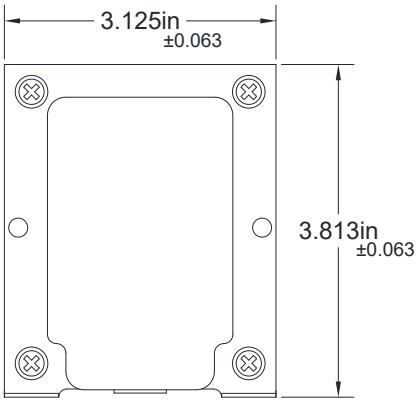
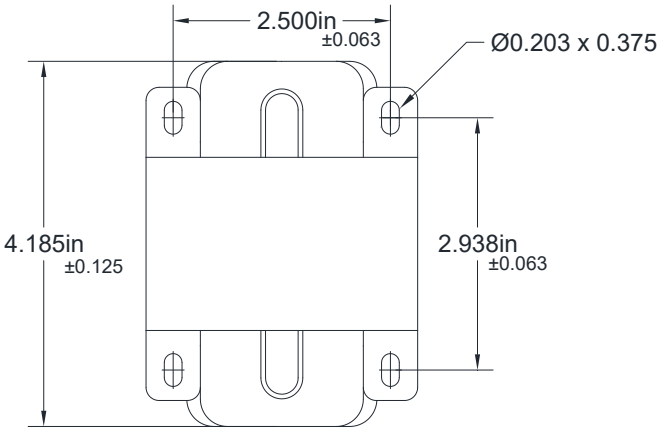


Note: The above examples of possible combinations are to help you narrow down the choices of transformers for your favorite tube types. How you operate the tubes (push-pull, push-pull parallel, ultra-linear, class, B+, bias, operating points, etc.) will change optimum plate to plate load 4040 watts manufacturer's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

DIMENSIONAL DETAILS:





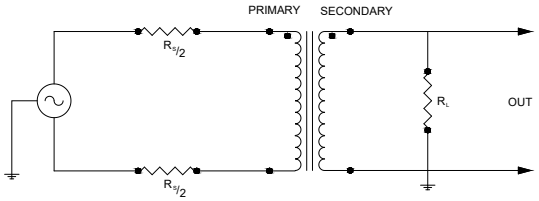


TEST CONDITIONS

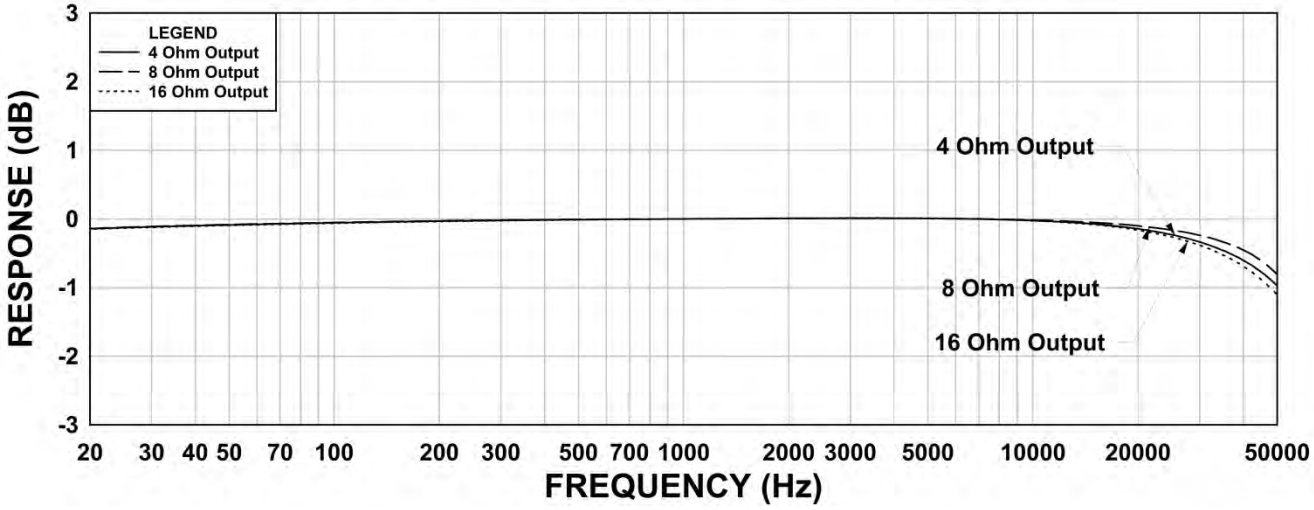
Measurement Instruments:
- dScope Series III Audio Analyzer
- Wayne Kerr 3255B with a 3265B Inductance Analyzer
- HP 4192a LF Impedance Analyzer
- Keithley 2010 DVM

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

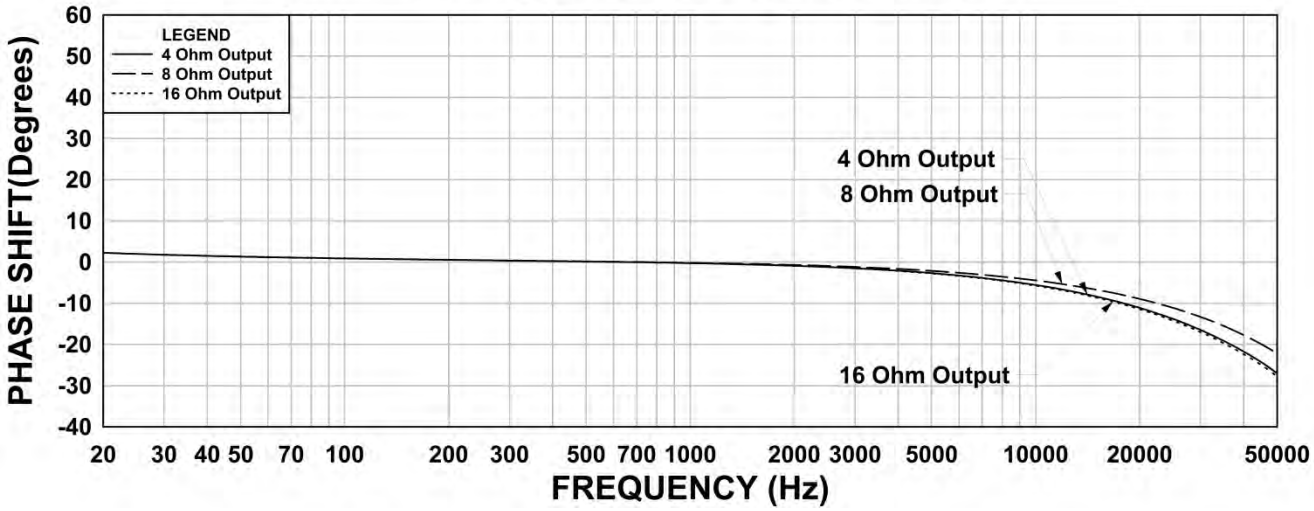
TYPICAL TEST CIRCUIT



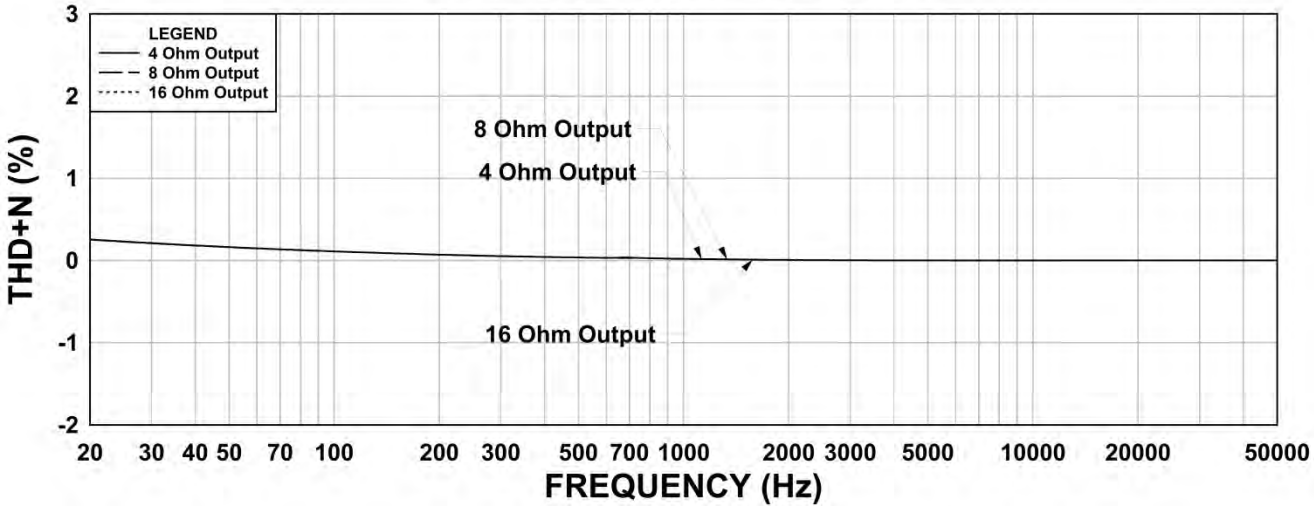
1650M Frequency Response RS = 1400 Ohms



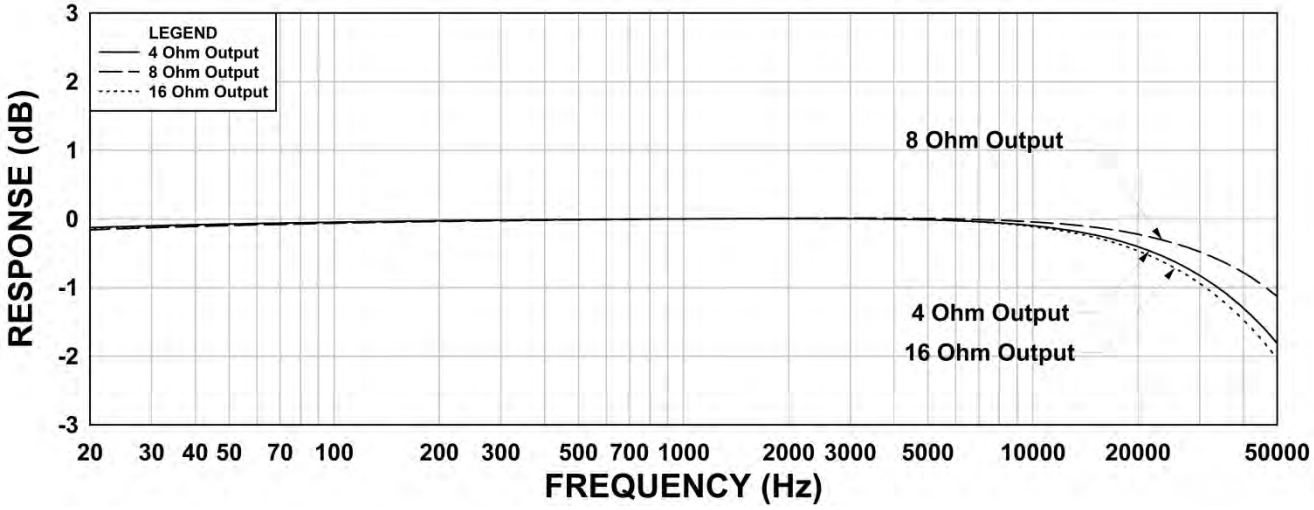
1650M Phase Shift RS = 1400 Ohms



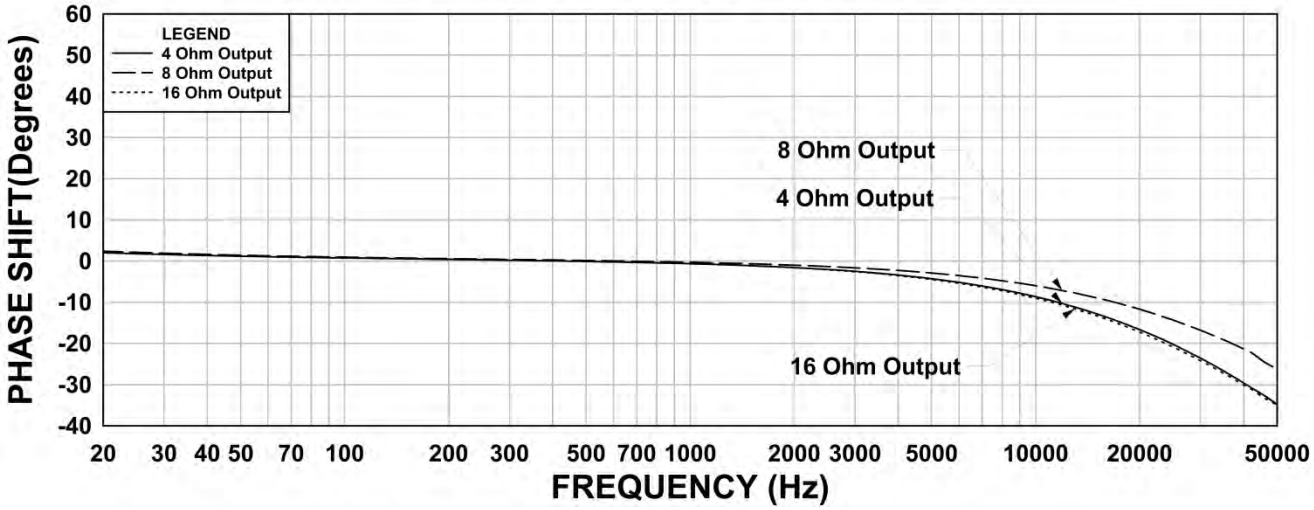
1650M THD+N RS = 1400 Ohms



1650M Frequency Response RS = 800 Ohms



1650M Phase Shift RS = 800 Ohms



1650M THD+N RL = 800 Ohms