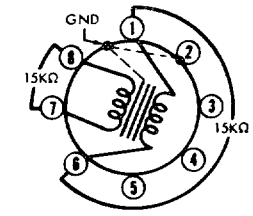
15335A, 15356A and 15095A PLUG-IN LINE TRANSFORMERS



PRIMARY 1-6 SECONDARY 7-8

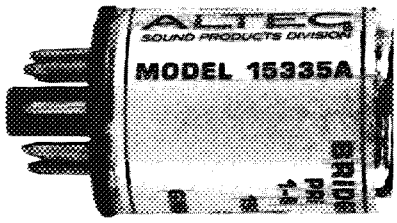
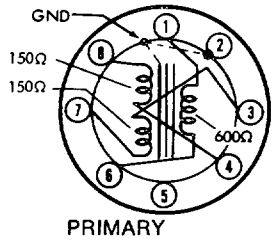


Figure 1a: Model 15335A
"Bridging" Transformer
Use the 15335A: 1) as an input transformer in an ALTEC mixer or amplifier to "bridge" a 600-ohm source or to "match" a 15k-ohm source; 2) at any line-level point in a system to convert a high-impedance unbalanced line to a balanced line or to isolate two balanced, high-impedance lines.



PRIMARY			SECONDARY	
Z	CONN.	STRAP	Z	CONN.
600Ω	7-8	3-4	600Ω	1-6
150Ω	7-8	3-8 4-7		

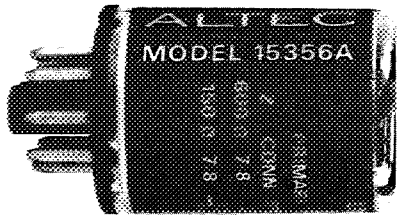
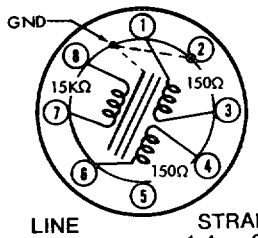


Figure 1b: Model 15356A
"Line Matching" Transformer
Use the 15356A: 1) as an input transformer in an ALTEC mixer or amplifier to "match" a 600-ohm or 150-ohm source; 2) in any ALTEC line-level device requiring a 600-ohm or 150-ohm plug-in output transformer; 3) at any line-level point in a system to convert a 150-ohm balanced or unbalanced line to a 600-ohm line or to isolate two 600-ohm balanced lines.



LINE 150Ω 600Ω STRAP 1-4 3-6 3-4

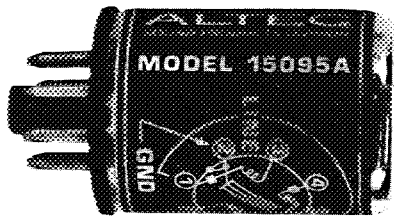


Figure 1c: Model 15095A
"Bridging/Matching" Transformer
Use the 15095A: 1) as an input transformer in an ALTEC mixer to "bridge" a 600-ohm source; 2) as an input transformer in an ALTEC power amplifier to "match" a 600-ohm source; 3) at any line-level point in a system to convert a 600-ohm or 150-ohm balanced or unbalanced line to a 15k-ohm line.

The ALTEC Model 15335A, 15356A and 15095A are line-level transformers which are plug-in compatible with ALTEC mixers, mixer/power-amplifiers, power amplifiers, equalizers and other ALTEC electronic devices. When used in ALTEC products or in custom-built devices, these transformers are ideal for line-level balanced/unbalanced conversions, impedance and level transformation, grounding isolation and any other application that requires a high-quality, line-level transformer.

All three transformers have 30 dB of magnetic shielding and high input/output level capabilities down to 20 Hz. Highly linear devices, these transformers feature excellent performance specifications and will not audibly alter the sound quality of any system. Thus the ALTEC Models 15335A, 15356A and 15095A may be used confidently in recording studios, discotheques or concert sound systems as well as in voice reinforcement or paging systems.

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

SPECIFICATIONS

GENERAL SPECIFICATIONS

	15335A	15356A	15095A
Turns Ratio	1:1	1:1 or 1:2*	1:5 or 1:10*
Impedance Ratio	15k:15k	600:600 or 150:600*	600:15k or 150:15k*
Input Impedance (See Graph)	15.4k ohms @ 100 Hz; 16.2k ohms @ 10 kHz (secondary terminated with 15k ohms)	620 ohms @ 100 Hz; 630 ohms @ 10 kHz (secondary terminated with 600 ohms)	700 ohms @ 100 Hz; 720 ohms @ 10 kHz (secondary terminated with 15k ohms)
Recommended Primary Source Impedance	600 ohms to 15k ohms	150 ohms or 600 ohms	150 ohms or 600 ohms
Output Impedance	15.3k ohms @ 100 Hz; 16k ohms @ 10 kHz (primary terminated with 15k ohms)	700 ohms @ 100 Hz; 740 ohms @ 10 kHz (primary terminated with 600 ohms)	17.2k ohms @ 100 Hz; 18.7k ohms @ 10 kHz (primary terminated with 600 ohms)
Recommended Secondary Load Impedance	15k ohms	600 ohms	15k ohms
Voltage Amplification (Voltage Gain)	−0.3 dB (X 1)	−0.7 dB (X 1); 600-ohm 5.3 dB (X 2); 150-ohm	13.4 dB (X 5); 600-ohm 19.5 dB (X 10); 150-ohm
Shielding	30 dB of (case) magnetic shielding	30 dB of (case) magnetic shielding	30 dB of (case) magnetic shielding
Resonant Frequency (Secondary Shorted)	110 kHz	196 kHz	216 kHz

*Split primary winding may be connected in series (for 600-ohm primary) or in parallel (for 150-ohm primary). All performance specifications assume primary connected in series (600-ohm primary), and secondary terminated unless otherwise indicated.

PERFORMANCE SPECIFICATIONS

	15335A	15356A	15095A
Maximum Input Level	+18 dB* (6.16V) @ 20 Hz; +24 dB (12.3V) @ 40 Hz or higher frequencies (secondary terminated with 15k ohms, primary fed from a 600-ohm source)	+15 dBm (4.36V) @ 30 Hz; +20 dBm (7.75V) @ 40 Hz or higher frequencies (secondary terminated with 600 ohms, primary fed from a 600-ohm source)	+15 dBm (4.36V) @ 20 Hz; +18 dBm (6.16V) @ 40 Hz or higher frequencies (secondary terminated with 15k ohms, primary fed from a 600-ohm source)
Frequency Response (See Graph)	±0.5 dB 20 Hz to 20 kHz	±0.5 dB 20 Hz to 20 kHz	±1 dB 20 Hz to 20 kHz
Phase Response (See Graph)	< +4° @ 30 Hz; < −28° @ 20 kHz (re: 1000 Hz)	< +3° @ 30 Hz; < −19° @ 20 kHz (re: 1000 Hz)	< +3° @ 30 Hz; < − 47° @ 20 kHz (re: 1000 Hz)
Rise Time	< 8 μsec (10% to 90%)	< 4 μsec (10% to 90%)	< 15 μsec (10% to 90%)
Total Harmonic Distortion	< 0.03% @ 20 Hz; < 0.005% @ 50 Hz; < 0.003% @ 1000 Hz (at +18 dB [6.16V] input level; output terminated with 15k ohms)	< 0.15% @ 20 Hz; < 0.03% @ 50 Hz; < 0.003% @ 1000 Hz (at +15 dBm [4.36V] input level; output terminated with 600 ohms)	< 0.15% @ 20 Hz; < 0.06% @ 50 Hz; < 0.002% @ 1000 Hz (at +15 dBm [4.36V] input level; output terminated with 15k ohms)
Insertion Loss	Typically 0.3 dB @ 1000 Hz	Typically 0.7 dB @ 1000 Hz	Typically 0.5 dB @ 1000 Hz
Common Mode Rejection Ratio	−92 dB @ 60 Hz	−92 dB @ 60 Hz	−92 dB @ 60 Hz

*In these specification, when dB represents a specific voltage, 0 dB is referenced to 0.775 volts rms. "dB" is a voltage level, whereas "dBm" 'is a power level. 0 dBm is referenced to 1 mW (0.775 volts driving a 600-ohm termination). For example, when 6.16 volts drives a high impedance, the level is designated "+18 dB". When 6.16 volts drive a 600-ohm termination, the level is designated "+18 dBm". The level in "dB" is specified, whenever applicable, to avoid confusion when the level refers to various low and high impedance sources and loads.

MECHANICAL SPECIFICATIONS

	15335A	15356A	15095A
Termination	Octal tube base plug.	Octal tube base plug.	Octal tube base plug.
Dimensions	1¼" (3.18 cm) diameter by 1 11/16" (4.29 cm) seated height	1 5/16" (3.33 cm) diameter by 1 13/16" (4.60 cm) seated height	1 5/16" (3.33 cm) diameter by 1 13/16" (4.60 cm) seated height
Weight	4 oz (113.5 gm)	4 oz (113.5 gm)	4 oz (113.5 gm)

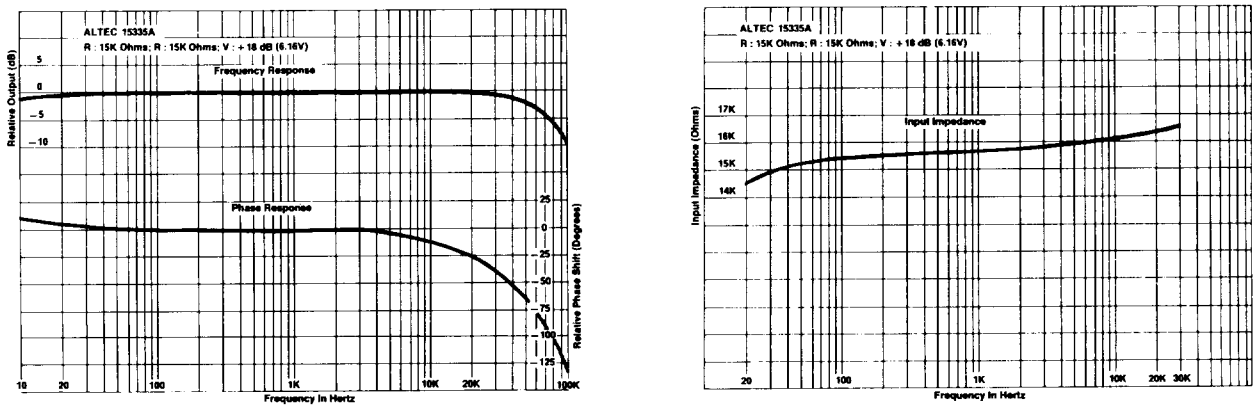


Figure 2a. Typical Frequency Response, Phase Response and Input Impedance for Model 15335A.

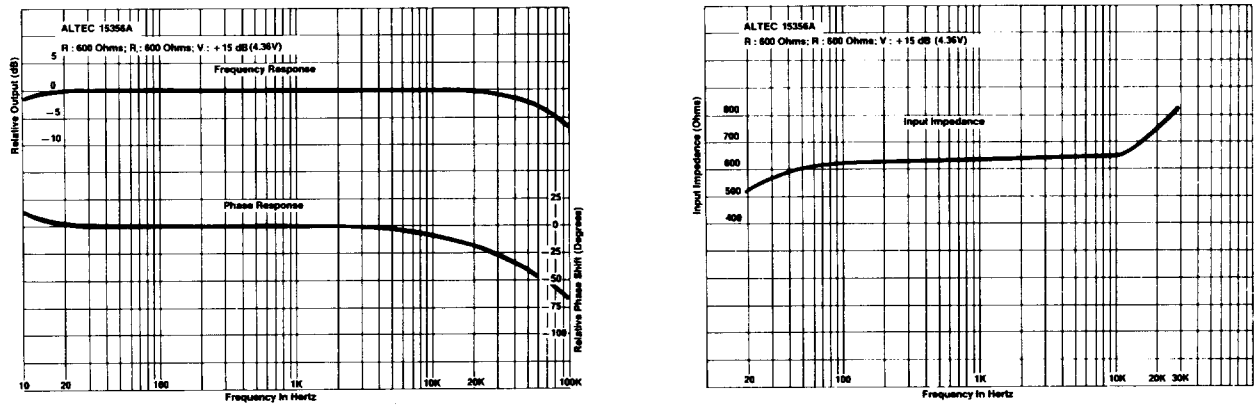


Figure 2b. Typical Frequency Response, Phase Response and Input Impedance for Model 15356A.

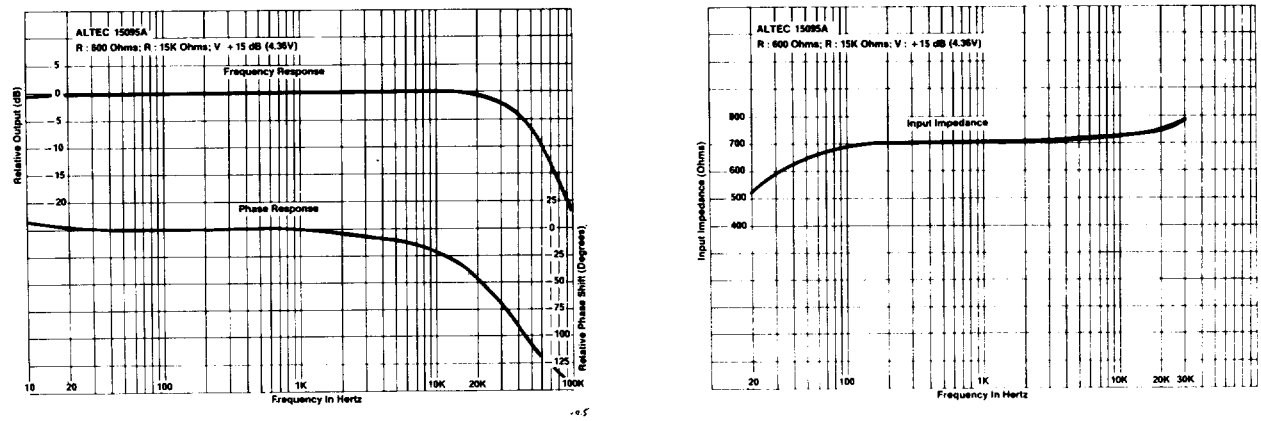
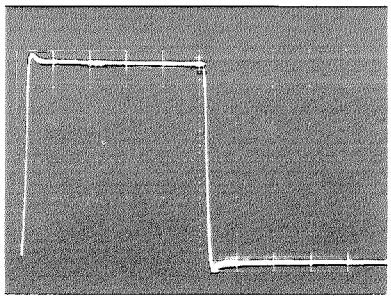
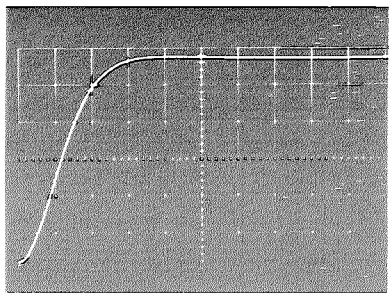


Figure 2c. Typical Frequency Response, Phase Response and Input Impedance for Model 15095A.

R_S = 600 Ω
R_L = 15k Ω



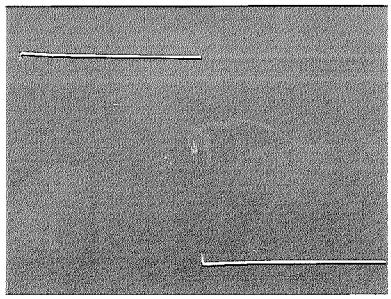
50 μs/Div Horizontal



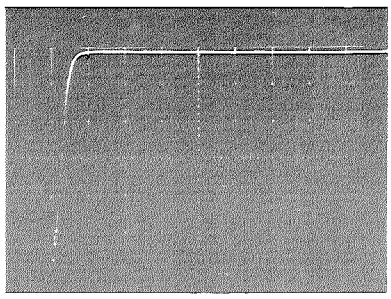
5 μs/Div Horizontal

Figure 3a. Actual Oscilloscope Photo (Using Tektronix Model 549) of Typical Square-Wave Response for Model 15335A.

R_S = 150 Ω
R_L = 600 Ω



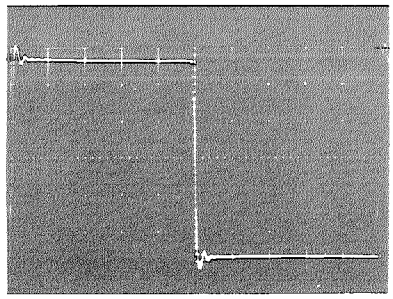
50 μs/Div Horizontal



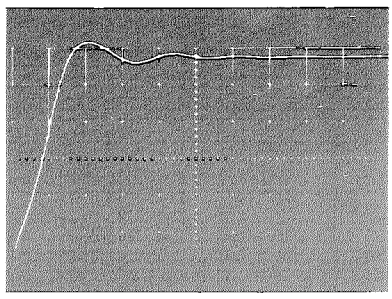
5 μs/Div Horizontal

Figure 3b. Actual Oscilloscope Photo (Using Tektronix Model 549) of Typical Square-Wave Response for Model 15356A.

R_S = 150 Ω
R_L = 15k Ω



50 μs/Div Horizontal



5 μs/Div Horizontal

Figure 3c. Actual Oscilloscope Photo (Using Tektronix Model 549) of Typical Square-Wave Response for Model 15095A.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

Model 15335A:
The transformer shall meet the following general specifications: **Turns Ratio:** 1:1; **Impedance Ratio:** 15k:15k; **Nominal Voltage Amplification:** X 1; **Shielding**: 30 dB of magnetic (case) shielding; **Resonant Frequency:** 110 kHz. The transformer shall meet the following performance specifications: **Maximum Input Level:** +18 dB (6.16V) @ 20 Hz; **Frequency Response:** ±0.5 dB, 20 Hz to 20 kHz; **Phase Response**: < +4° @ 30 Hz, < −28° @ 20 kHz; **Rise Time:** < 8 μsec (10% to 90%); **Total Harmonic Distortion:** < 0.03% @ 20 Hz; **Common Mode Rejection Ratio:** 92 dB @ 60 Hz. The transformer shall meet the following mechanical specifications: **Termination:** octal tube base plug; **Dimensions:** 1¼" diameter by 1 11/16" seated height; **Weight:** 4 oz. The transformer shall be the ALTEC Model 15335A.

Model 15356A:
The transformer shall meet the following general specifications: **Turns Ratio:** 1:1 or 1:2; **Impedance Ratio:** 600:600 or 150:600; **Nominal Voltage Amplification:** X 1 or X 2; **Shielding**: 30 dB of magnetic (case) shielding; **Resonant Frequency:** 196 kHz. The transformer shall meet the following performance specifications: **Maximum Input Level:** +15 dBm (4.36V) @ 30 Hz; **Frequency Response:** ±0.5 dB, 20 Hz to 20 kHz; **Phase Response:** < +3° @ 30 Hz, < −19° @ 20 kHz; **Rise Time:** < 4 μsec (10% to 90%); **Total Harmonic Distortion:** < 0.15% @ 20 Hz; **Common Mode Rejection Ratio:** 92 dB @ 60 Hz. The transformer shall meet the following mechanical specifications: **Termination:** octal tube base plug; **Dimensions:** 1 5/16" diameter by 1 13/16" seated height; **Weight:** 4 oz. The transformer shall be the ALTEC Model 15356A.

Model 15095A:
The transformer shall meet the following general specifications: **Turns Ratio:** 1:5 or 1:10; **Impedance Ratio:** 600:15k or 150:15k; **Nominal Voltage Amplification:** X 5 or X 10; **Shielding:** 30 dB of magnetic (case) shielding; **Resonant Frequency:** 216 kHz. The transformer shall meet the following performance specifications: **Maximum Input Level:** +15 dBm (4.36V) @ 20 Hz; **Frequency Response:** ± 1 dB, 20 Hz to 20 kHz; **Phase Response:** < +3° @ 30 Hz, < −47° @ 20 kHz; **Rise Time:** < 15 μsec (10% to 90%); **Total Harmonic Distortion:** < 0.15% @ 20 Hz; **Common Mode Rejection Ratio:** 92 dB @ 60 Hz. The transformer shall meet the following mechanical specifications: **Termination:** octal tube base plug; **Dimensions:** 1 5/16" diameter by 1 13/16" seated height; **Weight**: 4 oz. The transformer shall be the ALTEC Model 15095A.

ALTEC LANSING®

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