

ALTEC ENGINEERING NOTES

TECHNICAL LETTER NO. 224

EXAMPLES OF SIMPLEXING FOR THE SOUND CONTRACTOR

By

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This technical letter supplements Technical Letter No. 222, "Applications of Telecommunication Products to Commercial Sound Use", providing more detailed information about simplex circuits. Basically, simplexing superimposes a direct current, limited to 100 milliamperes, on a two-wire audio link circuit without degrading the quality of the signal in the audio circuit.

Simplexing is a useful technique for such functions as remote signaling or supervision, remote powering or remote control, where it is impractical to provide additional wiring within a system to accomplish these functions independently. This method can be used where the audio link is a leased telephone line to which the addition of more conductors may represent a substantial cost increase, or where such remote functions must be provided using existing wiring and additional conductors are not available.

Figure 1 shows a typical audio link circuit diagram, suitable for simplexing, that might be found in a commercial sound application.

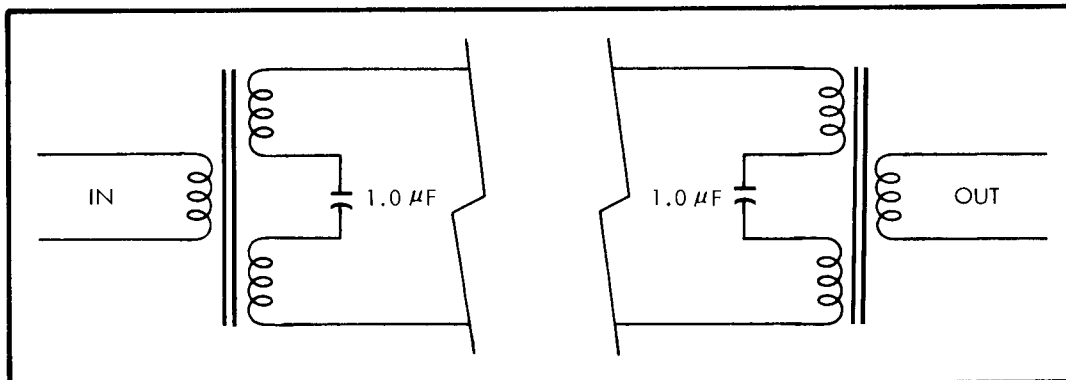


Figure 1. Audio Link Circuit without Grounded Center Tap

Figure 2 shows a similar circuit but with a grounded center tap.

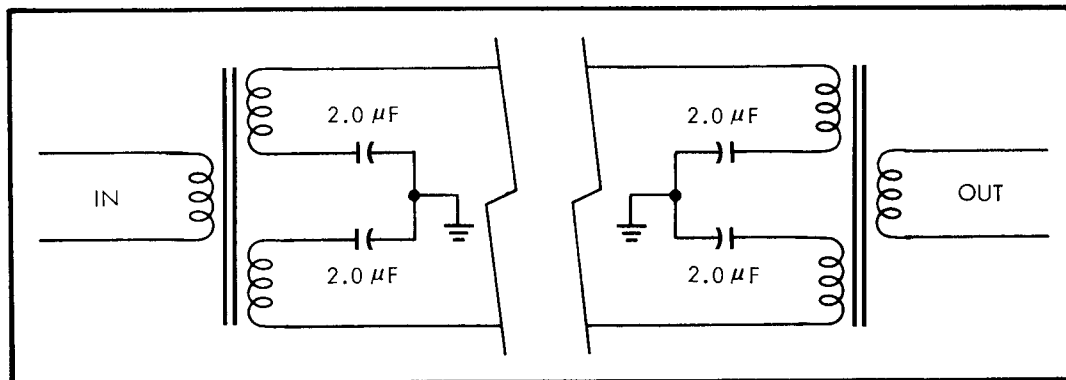


Figure 2. Audio Link Circuit with Grounded Center Tap

Typical circuit diagrams for simplexing applications are shown in Figures 3 through 6.

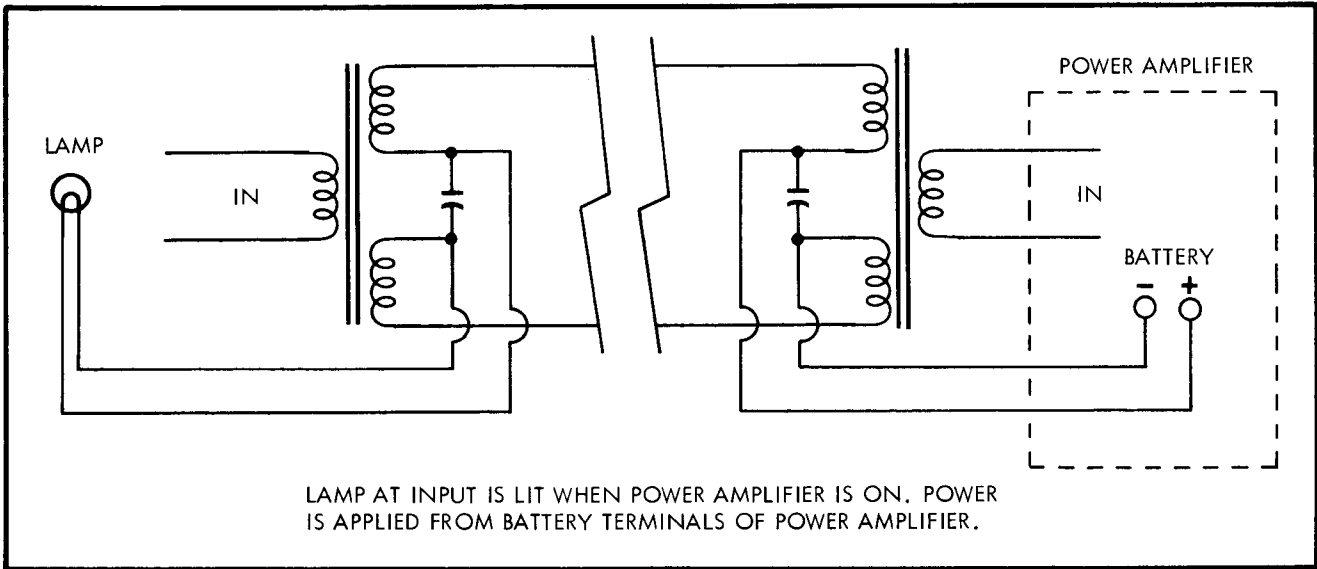


Figure 3. Remote Signaling (Power Status Supervision)

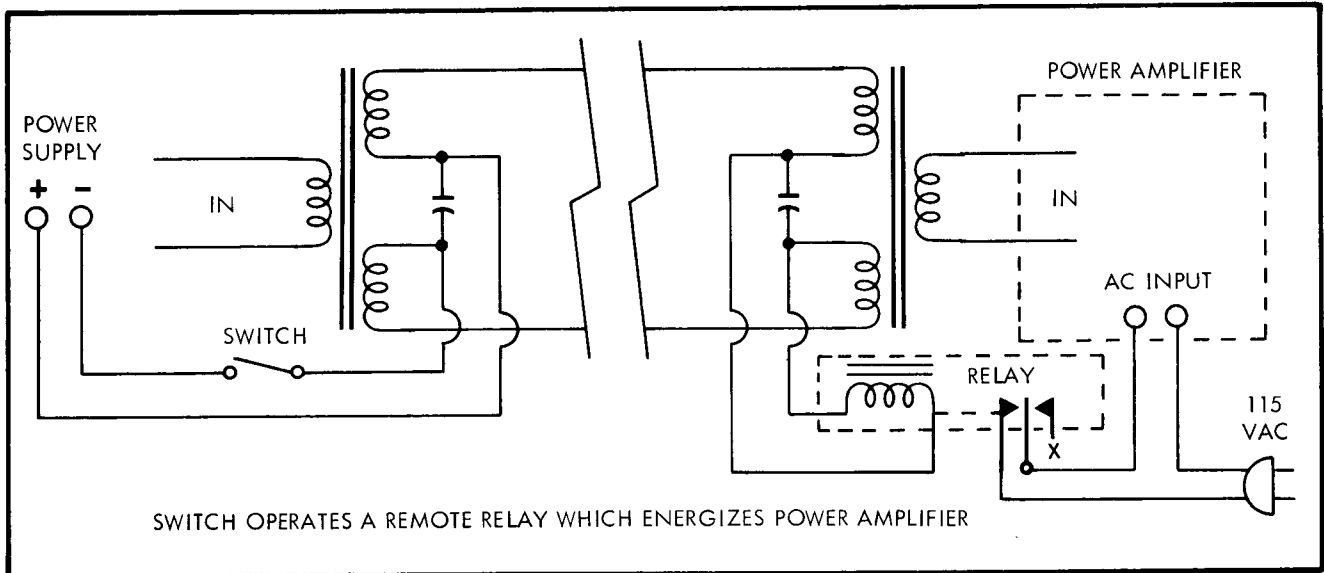


Figure 4. Remote Control (Turn ON/OFF)

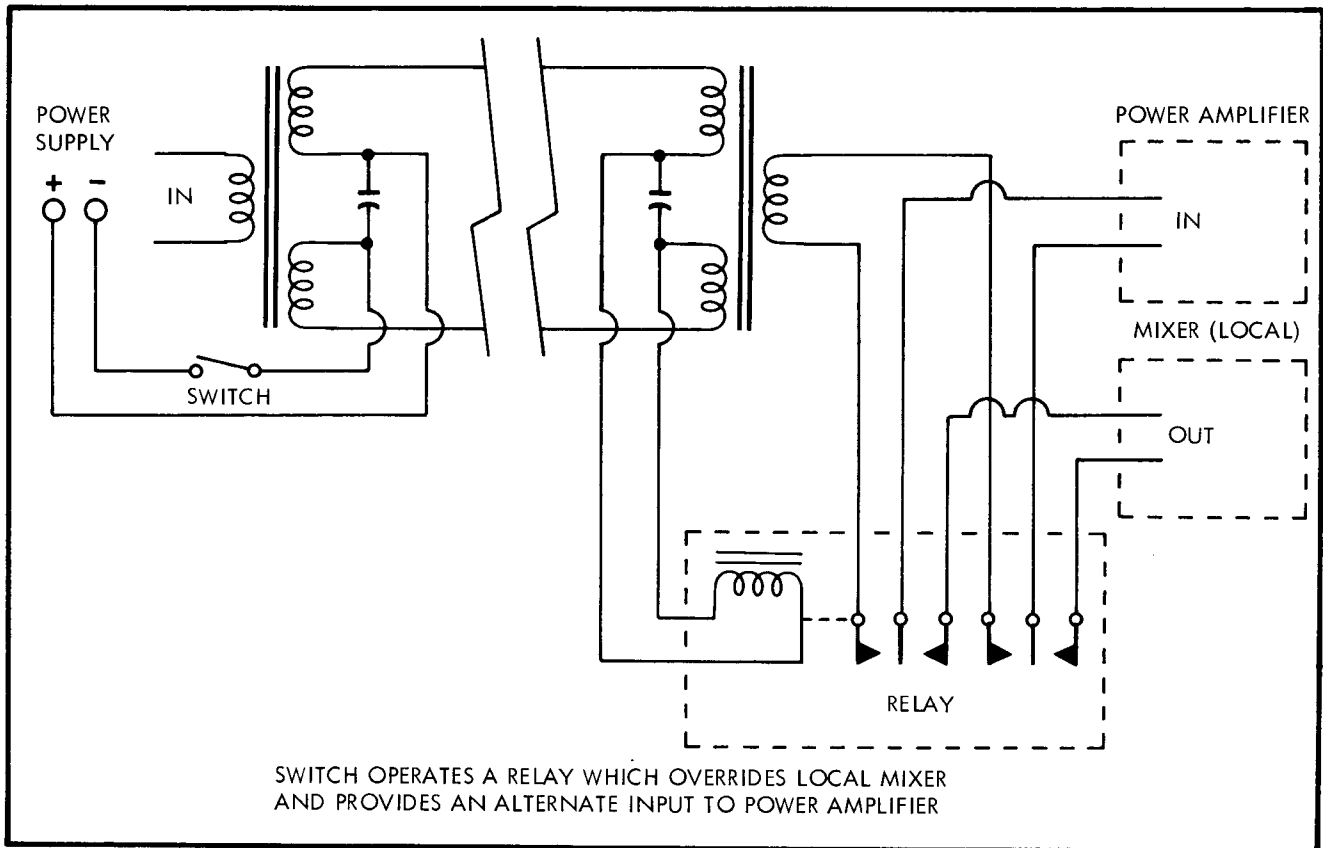


Figure 5. Remote Control (Precedence Circuit)

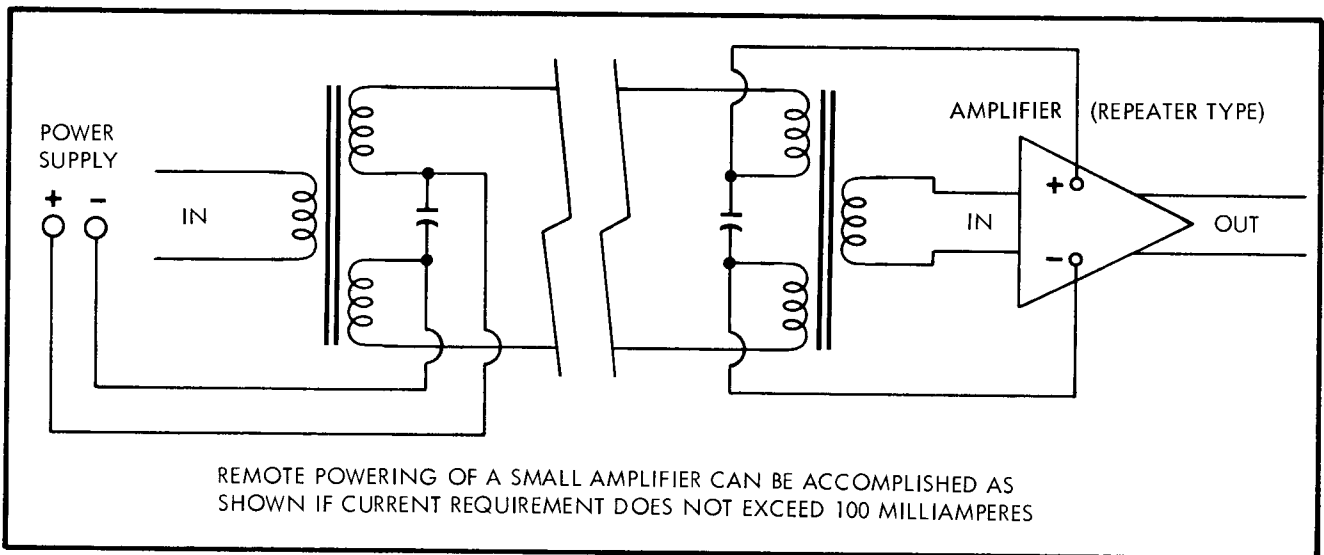


Figure 6. Remote Powering of a Line Amplifier

Three ALTEC transformers are available for simplexing applications: Models 15338, 15339 and 15401. Each has a square can configuration and terminates in an Amphenol 78-S11 plug which mates with an Amphenol 86-CP-11 plug which mates with an Amphenol 78-S11 mounting socket (see Figure 7). The 15338 and 15339 have similar characteristics, except for their primary impedance. The 15401 is similar to the 15339, but has a much wider bandwidth and a lower operating level. Transformer specifications are listed in Table I.

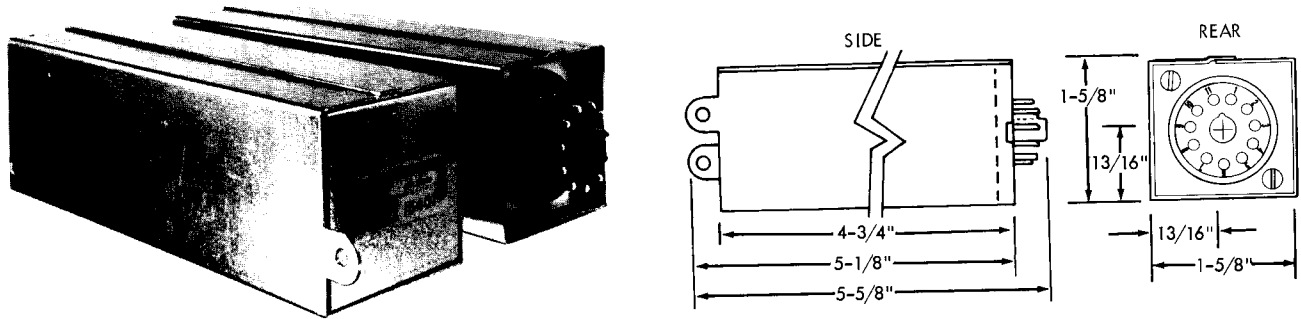


Figure 7. Typical Simplexing Line Transformer

Table I. Transformer Specifications

Transformer Model Number:	15338	15339	15401
Type:	Line Transformer	Line Transformer	Line Transformer
Primary Impedances:	900Ω, 600Ω, 250Ω or 150Ω	150Ω	150Ω, balanced (center tap)
Secondary Impedance:	600Ω	600Ω	600Ω, balanced
Insertion Loss:	0.6 dB at 1000 Hz	0.6 dB at 1000 Hz	0.85 dB at 1000 Hz
Frequency Response:	+1 dB from 100 Hz to 10 kHz	+1 dB from 100 Hz to 10 kHz	+1 dB from 10 Hz to 100 kHz
Maximum Operating Level:	+20 dBm	+20 dBm	+12 dBm
Maximum Current in Line Winding:	100 mA	100 mA	100 mA
Maximum Out-of-Balance Current in Line Winding:	100 mA	100 mA	3.0 mA
Dimensions — Height: Width: Depth:	1-5/8" 1-5/8" 5-5/8"	1-5/8" 1-5/8" 5-5/8"	1-5/8" 1-5/8" 5-5/8"
Mounting Socket:	Amphenol 78-S11	Amphenol 78-S11	Amphenol 78-S11
Weight:	1 pound	1 pound	18 ounces