# AUXILIARY SIGNALS

## CONNECTIONS

### 1.00 GENERAL

**1.01** Certain auxiliary signals and power relay sets for use on telephone lines are equipped with a 0.5- or 0.45-uf capacitor in series with a relay which operates on telephone ringing current. The relay and capacitor constitute a high-impedance ringing bridge which is subject to provisions of C Section covering ringing-bridge limitations.

**1.02** The total number of auxiliary signals which may be connected to a power relay set is limited by the individual signal-operating currents, the sum of which cannot exceed current-carrying capacity of relay contacts. Individual signal-operating currents are covered in C Section entitled Auxiliary Signals — Identification. Current-carrying capacity of power-relay set contacts are covered in C Section entitled Power Relay Sets — Identification, Installation, and Maintenance.

**1.03** Due to extensive changes marginal arrows have been omitted.

### 2.00 CONNECTIONS

#### KS-16301 SIGNALS

**2.01** Connections for relays and signals are shown in Fig. 1. Also shown are the voltage values and terminal locations on the list 7 relay.

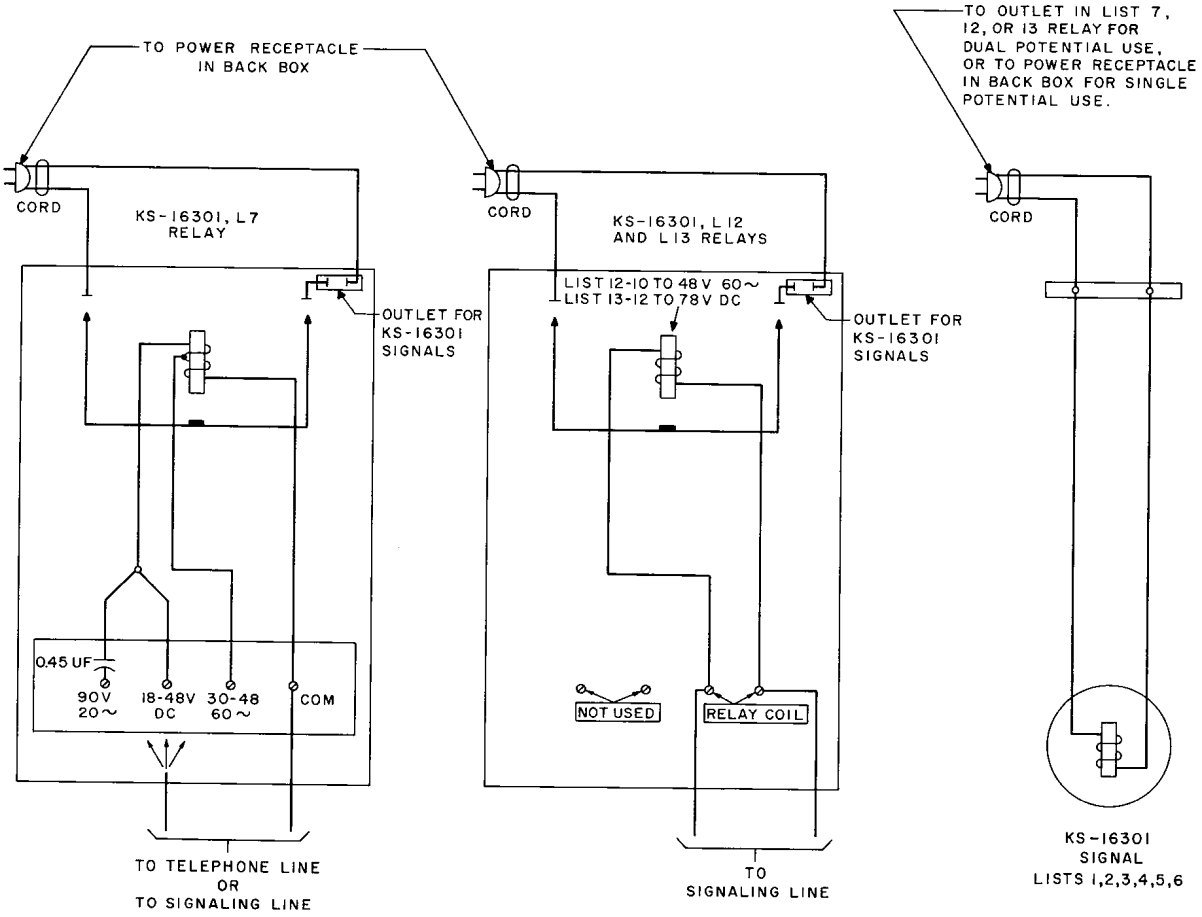



**Fig. 1 — KS-16301 Signal Connections**

## KS-8000 SERIES SIGNALS (RELAY EQUIPPED)

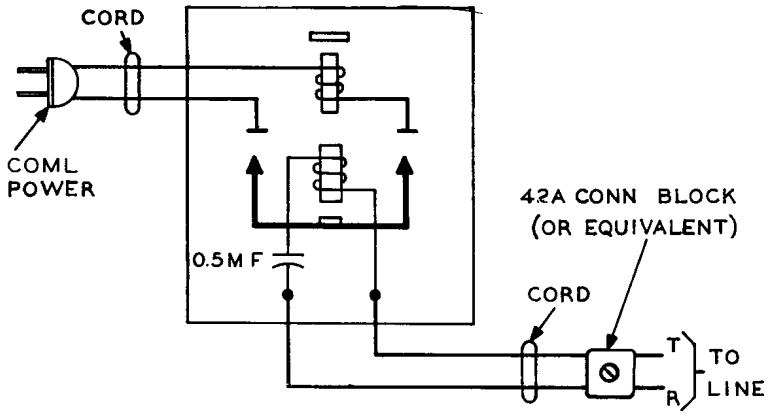



**Fig. 2 — Typical Relay-equipped Signal Connections**

**2.02** Connections for typical relay-equipped signals are shown in Fig. 2.

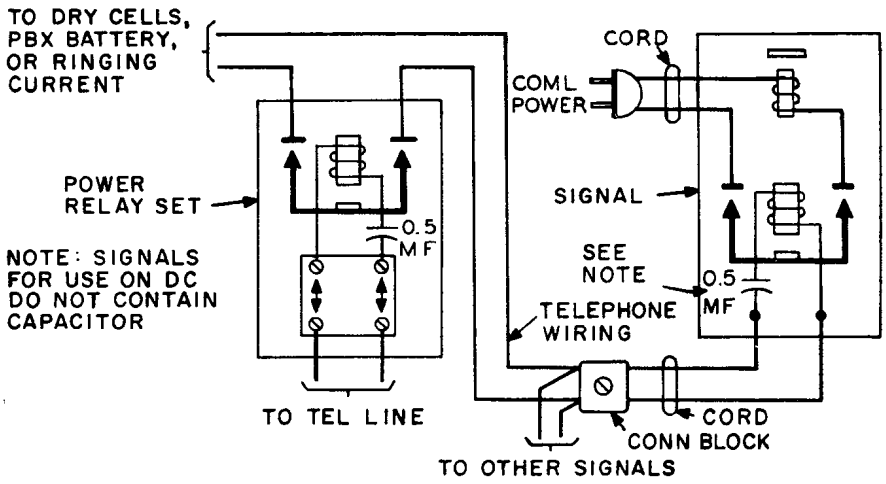



**Fig. 3 — Multiple Signal Connections**

**2.03** Several signals may be connected as shown in Fig. 3. This has the advantage of only one ringing bridge on the telephone line for several auxiliary signals. Special commercial power wiring is not needed between the relay set and the signals.

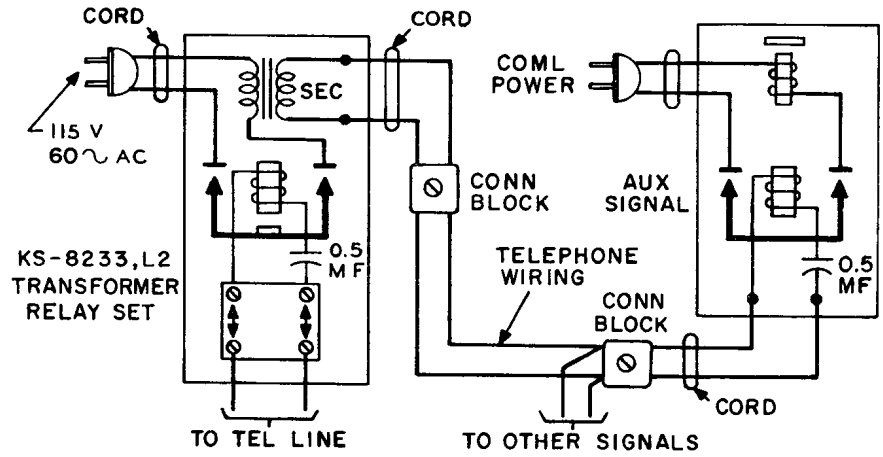



**Fig. 4 — KS-8233, List 2 Transformer Relay Set Connections**

**2.04** The KS-8233, List 2 transformer relay set has been used to connect several signals to one telephone line, as shown in Fig. 4, and may be encountered in some existing installations.

## KS-8000 SERIES SIGNALS (WITHOUT RELAYS)

**2.05** Connections for signals which do not have a self-contained power relay are shown in Fig. 5 and 6. These signals require commercial power wiring between the relay set and the signal.

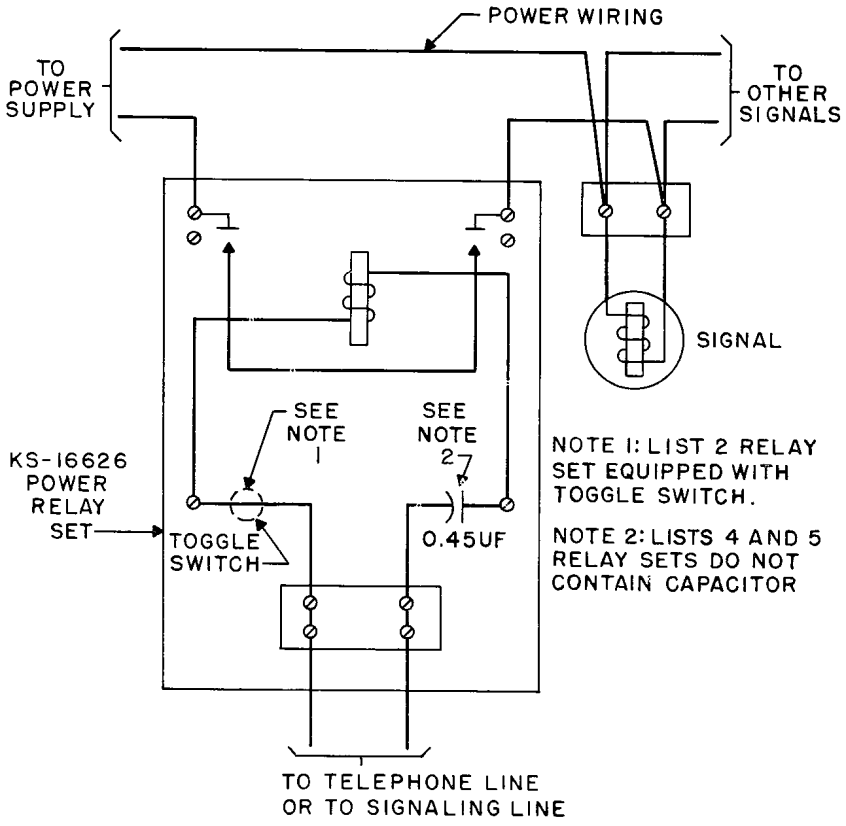



**Fig. 5 — KS-16626 Power Relay Set Connections**

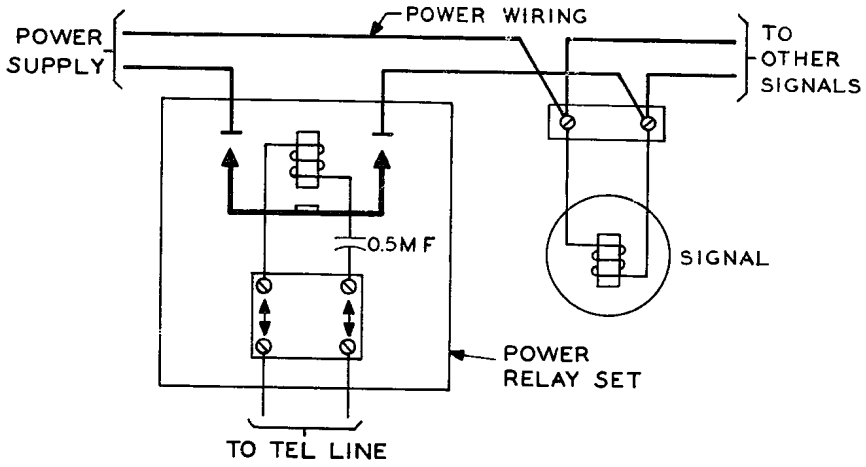



**Fig. 6 — KS-7340, or Equivalent, Power Relay Set Connections**

## AUXILIARY SIGNALS ON PARTY LINES

**2.06** Auxiliary signals may be installed on 4-party full selective or 8-party semiselective lines by the use of a 531C or 687B subscriber set connected as shown in Fig. 7.

## LOW-VOLTAGE SIGNALS

**2.07** Connections for noncontinuous low-voltage signals such as bells, buzzers, and lamp indicators are shown in Fig. 8.

## CONTINUOUS AUXILIARY SIGNALS

**2.08** Continuous operating signals, either low-voltage or power operated, should be connected as shown in Fig. 9. Low-voltage signals connect directly to 15C key telephone unit.

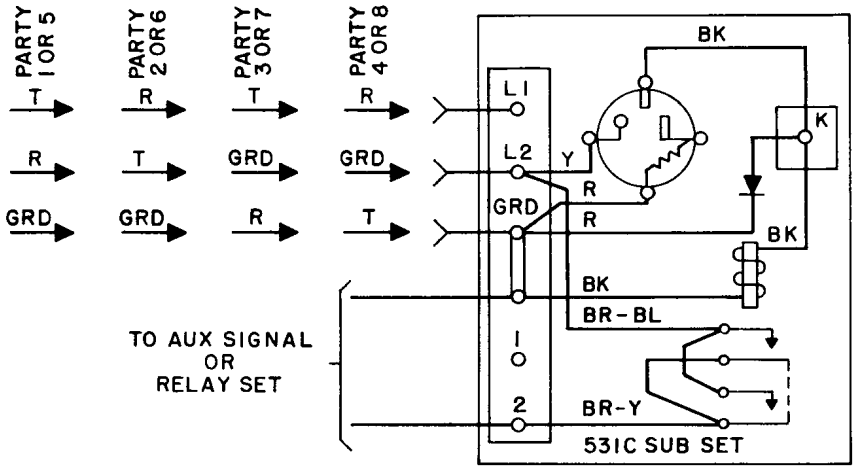



**Fig. 7 — Connections for Auxiliary Signals on Party Lines**

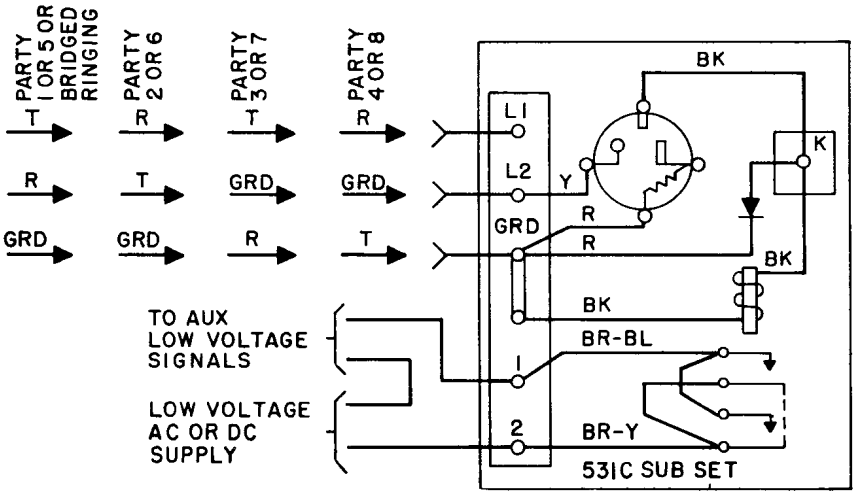
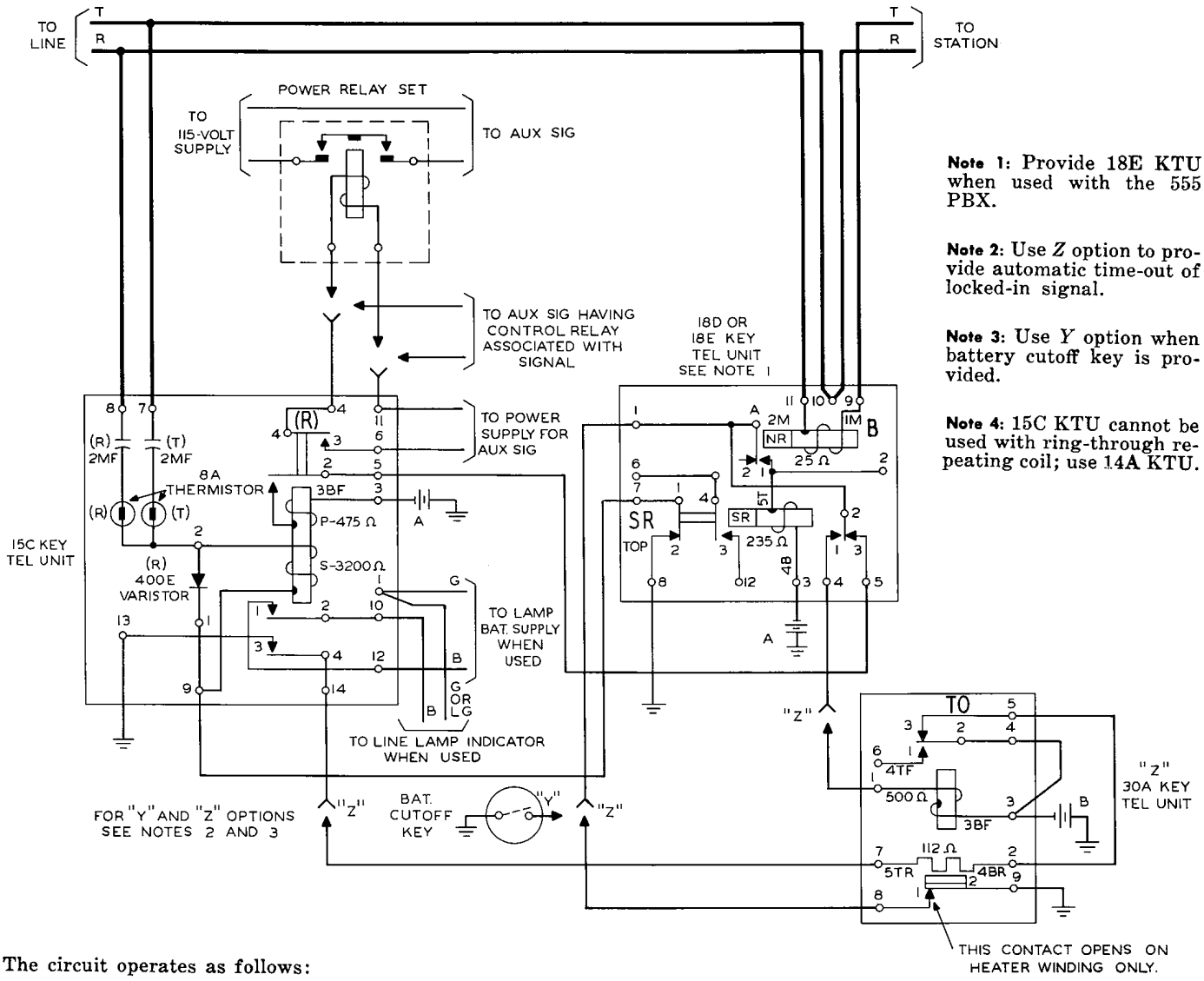



**Fig. 8 — Connections for Noncontinuous Low-voltage Auxiliary Signals**




**Note 1:** Provide 18E KTU when used with the 555 PBX.

**Note 2:** Use *Z* option to provide automatic time-out of locked-in signal.

**Note 3:** Use *Y* option when battery cutoff key is provided.

**Note 4:** 15C KTU cannot be used with ring-through repeating coil; use 14A KTU.

The circuit operates as follows:

- Ringing current applied to line operates *R* relay through its secondary winding, through top contacts 1 and 2 of *SR* relay to ground.
- *R* relay locks operated by battery through its primary winding, through its own top contacts 1 and 2, through bottom contacts 3 and 2 of *SR* relay, through bottom contacts 1 and 2 of *TO* relay (*Z* wiring) to ground, or to switch to ground (*Y* wiring).
- *R* relay operated completes circuit through its own top contacts 3 and 4 to operate auxiliary relay or signal.
- Bottom contacts 1 and 2 of *R* relay may be used to operate a line lamp indicator.
- When call is answered, *B* relay operates by central office or PBX battery through station.
- *SR* relay operates by battery through its winding, through contacts of *B* relay (operated), and through bottom contacts 1 and 2 of *TO* relay to ground (*Z* wiring).
- Operation of *SR* relay opens locking circuit of *R* relay which releases.
- Circuits to auxiliary signal and line lamps open when *R* relay releases.
- Unanswered calls are handled by a time-out feature. When *R* relay operates, ground is connected through bottom contacts 3 and 4, through 112-ohm heater winding of *TO* relay (Z wiring), and through top contacts 3 and 2 of *TO* relay to battery. After approximately 30 seconds, thermally operated bottom contacts 1 and 2 of *TO* relay will open. This opens locking circuit of *R* relay, and circuit restores to normal.
- If call is answered, *SR* relay operates as previously described. Circuit is completed from battery through *TO* relay, through bottom contacts 1 and 2 of *SR* relay (operated), and through bottom contacts 1 and 2 of *TO* relay to ground. This opens heater winding circuit of *TO* relay.

**Fig. 9 — Connections and Circuit Operation for Continuous Auxiliary Signals**