

## 8101 30Hz Ringing Generator

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### 1. general description

1.01 The 8101 Ringing Generator, figure 1, provides a 30Hz ringing source in a mounting case suitable for Key Telephone Unit (KTU) applications. The 8101 operates from a conventional 117Vac, 60Hz line and provides a nominal 100V, 30Hz, sine wave output. The output will operate a maximum of 5 standard telephone ringers simultaneously.

1.02 Output of the 8101 is floating, and may be positively or negatively biased, allowing the generator to be connected in series with a dc voltage for superimposed (biased) ringing sources.

1.03 A ferro-resonant circuit used to develop the 30Hz output protects the output from overload and short circuit conditions, as the generator output is quenched when excessive load current begins to flow. Removal of the overload will automatically restart the ring generator output. The input is protected by a 1 ampere fuse.

1.04 The 8101 is designed for either apparatus case or relay rack (via mounting bars) installation. Up to six 8101 Ringing Generators may be mounted in 7" vertical space across a 19" relay rack. A 23" rack will mount 7 Ring Generators across the same 7" vertical space.

1.05 The 8101 Ringing Generator is housed in a cadmium-plated steel case and is supplied with a ten-foot, three-conductor input power cord.

1.06 An unfused, duplex convenience outlet is provided at the rear of the 8101.

### 2. application

2.01 The 8101 Ringing Generator is a general purpose ringing source designed with specific relevance to 30Hz telephone applications. The supply is generally used in customer premise or other applications where larger ringing machines are impractical, but it may also be used as a convenient source of ringing power in the Central Office.

2.02 The output of the 8101 is suitable for many small-load telephone applications. Because of the floating output, the unit may be connected in series with a dc voltage supply for superimposed ringing — as required, for example, in long line applications.

2.03 The 8101 will provide up to 5 watts of ringing energy, which will operate 5 standard telephone



figure 1. 8101 Ringing Generator

ringers simultaneously. When more than 5 watts are drawn, the output voltage is decreased, which provides protection from overload and short circuit conditions.

2.04 The 8101 may be located anywhere convenient to 117Vac power.

2.05 The duplex receptacle at the rear of the 8101 may be used to power associated power supplies or other equipment requiring a 117Vac source.

### 3. installation inspection

3.01 The 8101 Ringing Generator should be visually inspected upon arrival in order to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the unit should be inspected again prior to installation.

### mounting

3.02 The 8101 Ringing Generator is designed to mount in standard apparatus case dimensions. Mounting ears at the top and bottom of the Generator are secured to the mounting framework of the apparatus case by four screws. In relay rack installations, mounting bars must be provided to install the 8101. Up to six 8101 Ringing Generators may be mounted across four mounting spaces of a 19" relay rack. A 23" rack will accept seven Generators in the same four mounting spaces. (Four mounting spaces = 7" vertical.)

## installer connections

3.03 Before connecting any leads to the 8101, make sure that input power is **not** applied to the unit. Leads to the ringing supply should be connected to the two, screw-type output terminals at the rear of the 8101. The output is floating; therefore, the output terminals may be connected to external circuitry without observing polarity.

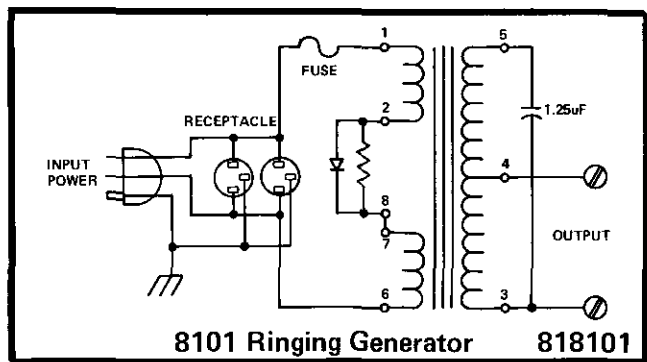
3.04 Plug the 8101's input power cord into a grounded, 117Vac, 60Hz, single phase receptacle.

## 4. circuit description

4.01 The 8101 utilizes a ferro-resonant circuit to develop 30Hz output from a 60Hz input. The 30Hz, tuned, saturable reactor consists of a transfluxor transformer, a diode-resistor starting network, and tuning capacitor.

4.02 The capacitor and the secondary are resonant at 30Hz and provide the magnetic flux source for alternately saturating the core of each of the two primary windings. The two primary windings and a diode are series connected to the 60Hz line voltage. The diode provides unidirectional current (once each cycle of the 60Hz line frequency) for transformer core magnetic flux source in the non-saturated primary winding.

4.03 The primary windings and the secondary winding are arranged to cause the primary flux sources to couple to the secondary winding such that the capacitor on the secondary will charge in the opposite direction with each alternate cycle of input alternating current. Thus, the secondary circuit requires two primary current cycles to complete a full sine wave cycle — or two cycles of primary 60Hz line voltage results in a 30Hz secondary frequency.



5. functional schematic

## 6. specifications

### input

105 to 135Vac, 59-61Hz, 25VA (plus duplex receptacle power)

### 30Hz output

80 to 110Vac (output voltage varies inversely with input voltage), 30Hz nominal ( $\frac{1}{2}$  of input frequency), 5 watts maximum, 200 ohms maximum internal dc resistance.

### ringing capacity

up to 5 high-impedance ringers simultaneously

### duplex receptacle

standard grounded outlet, 1200VA maximum

### fusing

duplex receptacle: non-fused

input to ringing generator: 1 amp slow-blow, cartridge type (Bussman 3AG or equivalent)

### polarity

floating output may be grounded, floating or biased positively or negatively

### line cord

10 feet of 3-conductor 18AWG

### mounting

KTU apparatus case (or relay rack via mounting bars)

### dimensions

6.90 inches (17.58cm) high (including mounting ears)

2.75 inches (6.98cm) wide

7.00 inches (17.78cm) deep

### weight

5 pounds 5 ounces (2.41kg)

### operating environment

10° to 120° F (−12° to +49° C), humidity to 95%, no condensation

## 7. testing guide

7.01 This Testing Guide may be used to install, test or troubleshoot the 8101 Ringing Generator. The Guide is intended as an aid in the localization of trouble. If an 8101 is suspected of being defective, a new unit should be substituted and the test conducted again. If the new unit operates properly, the first unit should be considered defective and returned to Tellabs for repair or replacement.

7.02 It is strongly recommended that no internal testing or repairs be attempted on the 8101, as hazardous voltages may be present. Unauthorized internal testing or repairs may also void the 8101's warranty.

7.03 If a situation arises that is not covered in the Testing Guide, contact Tellabs Customer Service (312)969-8800 for further assistance.

## testing guide checklist

test	test procedure	normal conditions	if normal conditions are not met, verify:
Output Voltage (no load)	Connect VOM, set at 250Vac scale, across output terminals.	80 to 110Vac present <input type="checkbox"/> .	Input power present (plugged in-to active, nominal 117Vac outlet) <input type="checkbox"/> . Line Fuse <input type="checkbox"/> . Connections intact at 8101 terminals <input type="checkbox"/> . Remove external circuit to determine if shorted <input type="checkbox"/> . Input voltage within specifications <input type="checkbox"/> . Substitute new Ringing Generator <input type="checkbox"/> .
Output Voltage (full load)	Connect both VOM and a 2k Ohm, 5 watt resistor across output terminals.	80 to 110Vac Present <input type="checkbox"/> .	Same as above <input type="checkbox"/> .

Note: Tuned ringers other than 30Hz will not operate with 8101 (30Hz) Ringing Generator.