

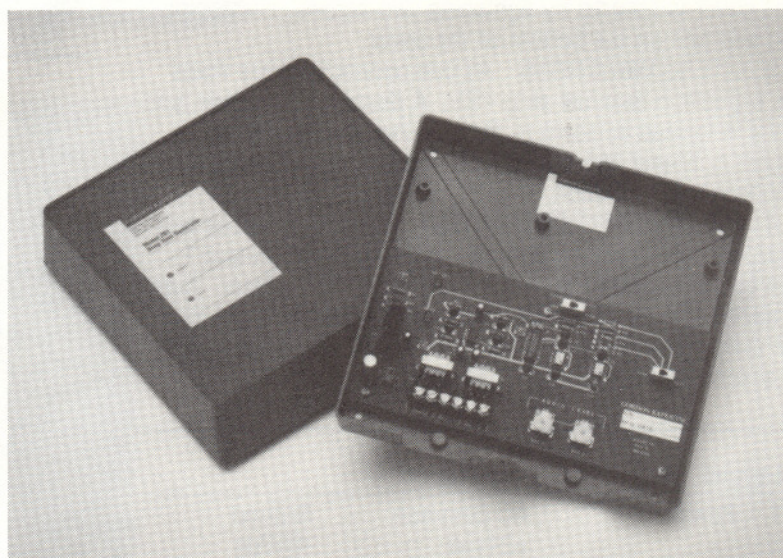
Technical Practice

Issue 2, September, 1990

MODEL 261 BEEP TONE GENERATOR

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1. General Description

1.1 PRACTICE Issue 2 of the Model 261 Technical Practice is released due to changes in several technical specifications.

1.2 PRODUCT OVERVIEW The primary application for the Model 261 Beep Tone Generator is to act as a music-on-hold (MOH) source for a telephone system. The 261 solves an interesting dilemma: not forcing callers to hear music while on hold, yet giving them an audible indication that their call has not been lost. The 261 provides a short "beep" every few seconds. Callers on hold hear mostly silence, with the short beep letting them know that they are still on hold.

1.3 SIGNAL OUTPUTS The 261 provides two audio outputs, each with a level control. The two outputs are designed to directly connect to MOH inputs on PBX, key, ACD, and other specialized telephone systems.

1.4 FREQUENCY SELECT A switch option allows the frequency of the tone generator to be adjusted between 400Hz and 1000Hz.

1.5 TONE RATE A switch option allows adjustment of how often the beep is produced: once every 3.5 seconds or

once every 5 seconds. In either case, the beep is produced for approximately 0.5 seconds during each cycle.

1.6 LED STATUS INDICATORS Two LED status indicators are located on the 261's circuit board and are visible with the cover on or off. These LEDs assist in determining the status of the 261 during installation and operation.

1.7 CONNECTIONS All interconnections are made via a six-position screw terminal strip.

1.8 POWERING The 261 requires an external source of 24Vac or -24Vdc, 40mA maximum for proper operation. A 24Vac transformer, along with a seven-foot power cable is shipped with each 261.

1.9 PHYSICAL DESCRIPTION The 261 consists of a precision fabricated printed circuit board and an injection molded base and cover. The thermoplastic material used for the housing conforms to industry recognized flame retardant standards. The 261 measures 8.75 inches (22.23cm) square, 3.25 inches (8.26cm) deep, and weighs approximately 2.5 pounds (1.13kg) including the 24Vac transformer.

2. Applications

2.1 RANGE OF APPLICATIONS The 261 is appropriate for any of the thousands of beep tone source applications, from a telephone line audio "hold" indicator, to providing an audible indication during the recording of conversations. Please contact Gordon Kapes, Inc. for applications assistance.

3. Installation

3.1 CHECKING FOR DAMAGE The 261 should be inspected for damage immediately upon receipt. A claim should be filed with the shipper if damage is found. A replacement should be ordered if necessary.

3.2 MOUNTING The 261 wall mounts using four #8 pan head screws of the type appropriate for the wall material. The cover is secured by tightening two screws, one on the top and one on the bottom of the cover.

3.3 INTERCONNECTIONS All interconnections are made via 6-position terminal strip TS1. A description of their functions is located adjacent to the terminal strip positions. Figure 1, Model 261 Connection Chart, provides detailed connection information.

3.4 AUDIO OUTPUT CONNECTION The 261 provides two independent beep tone outputs. In most cases, Output 1 will be connected to the MOH input on a PBX system. If appropriate, Output 2 can be connected to another MOH input. An example would be a MOH input on an ACD system that is associated with the PBX system.

| Legend | Description |
|---------|---------------------|
| 1 Power | AC Common Ground |
| 2 | +24Vac -24Vdc |
| + Out 1 | Beep Audio Output 1 |
| - | |
| + Out 2 | Beep Audio Output 2 |
| - | |

Figure 1 Model 261 Connection Chart

3.5 POWER CONNECTION The 261 requires 24Vac or -24Vdc for operation. A 24Vac transformer and a power cable is shipped with each unit. Using the cable, connect the transformer's load terminals to terminals 1 and 2 of TS1. For -24Vdc operation, connect the power supply's ground and -24V leads to terminals 1 and 2 of TS1, respectively. The power LED will light as soon as power has been connected. The beep LED will flash each time a beep is produced.

4. Configuration and Operation

4.1 LED STATUS INDICATORS Two LED status indicators are located on the 261 circuit board and are visible with the cover on or off. The power LED is lit when power is applied to the 261. The beep LED flashes for the duration of each beep that is produced.

4.2 SWITCH SETTINGS Two switch options should be set at this time. The tone rate option selects the repetition rate.

In the fast position, a beep will be produced every 3.5 seconds. In the slow position, a beep will be produced every 5 seconds. The frequency select option selects the frequency (pitch) of the beep. In the low position, the frequency of the beep is 400Hz. In the high position, the frequency of the beep is 1000Hz. Figure 2, Switch Options provides detailed optioning information.

| Switch | Setting | Operation |
|------------------|---------|-------------------------|
| Tone Rate | Slow | 0.5 Sec On, 5 Sec Off |
| | Fast | 0.5 Sec On, 3.5 Sec Off |
| Frequency Select | Low | 400Hz Beep Tone |
| | High | 1000Hz Beep Tone |

Figure 2 Model 261 Switch Options

4.3 AUDIO LEVEL Controls are used to set the output level of the two beep tone channels. Set the controls to provide the desired level to the caller on hold. Go easy on the level -- don't make callers crazy with a loud beep!

5. Circuit Description

5.1 GENERAL DESCRIPTION The circuit description is intended to familiarize you with the 261 for engineering, applications, and curiosity purposes. Please refer to Figure 3 Block Diagram, as an aid in following the circuit description.

5.2 POWER SUPPLY The incoming 24Vac or -24Vdc source is rectified, filtered and then fed to a three-terminal voltage regulator. The regulator produces 15Vdc which powers all the circuitry and the power LED. A resistor divider circuit produces a 7.5Vdc bias signal for use by the driver operational amplifiers.

5.3 TONE CIRCUITRY CMOS 555-type timers are used to implement the 261's tone generation, repetition rate and drive the beep LED. These devices are extremely low in power consumption and highly reliable.

5.4 AUDIO LEVEL Potentiometers are provided for the installer to independently adjust the beep tone level for each channel.

5.5 AUDIO OUTPUT Two high performance line driver circuits are used to couple 261 audio (beep tone) to the output transformers. The line drivers incorporate low pass filters to reduce the attack time of the beep signal. This provides a more pleasant tone for the listener.

6. Specifications

POWER REQUIREMENT

24Vac or -24Vdc, +10%/-5%, 40mA maximum

FCC REGISTRATION

The 261 does not require FCC registration as it is not intended for connection to the public switched telephone network.

RELIABILITY

MTBF 64 years, per Method I of Bellcore TS-TSY-000332, Issue 2, July 1988

INTERCONNECTIONS

One 6-position screw terminal strip

ENVIRONMENT

0 to 50 degrees C, humidity to 95% (no condensation)

AUDIO OUTPUT

Tone Level: 0dBu maximum, adjustable

Tone Sequence: 0.5 seconds on, selectable off period of 3.5 or 5 seconds, 400 or 1000Hz square wave.

DIMENSIONS

8.75 inches high (22.23cm)

8.75 inches wide (22.23cm)

3.25 inches deep (8.26cm)

WEIGHT

2.5 pounds (1.13kG) (includes power transformer)

Shipping Weight: 3.5 pounds (1.58kG)

MOUNTING

Four #8 pan head screws of the type appropriate for the wall material.

7. Incorrect Operation

7.1 REVIEW PRACTICE Should problems arise in the operation of the 261, please review Section 3 - Installation of this practice. Ensure that all connections have been made properly. If another 261 is available, substitute and retest.

7.2 LED INDICATORS The two LED indicators located on the 261's circuit board assist in determining the 261 operating status. The power LED should be lit steadily. The beep LED should momentarily flash each 3.5 or 5 seconds, according to the setting of the rate switch.

7.3 SWITCH SETTINGS Switches are provided to select the beep rate and tone frequency.

7.4 ADJUSTMENTS Ensure that the two level controls have been set to the desired setting.

7.5 261 TESTING A simple means of checking the 261 is to connect a lineperson's handset across the audio output terminals. Set the handset to the monitor mode. Each time the beep LED lights, a beep should be heard over the handset. The appropriate level control may have to be turned clockwise for the tone to be heard clearly. After testing, return the level control to the position that matches the input requirements of the associated telephone system.

8. Repair and Replacement

8.1 NOT SO FAST Statistically, most equipment returned to Gordon Kapes, Inc. for repair actually has nothing wrong with it. A telephone call to Gordon Kapes, Inc. technical support can often help to get the equipment operating correctly. We don't mind spending time with our customers getting a site up and running.

8.2 SEND IT BACK If you determine that the 261 is defective, return for repair or replacement according to the Gordon Kapes, Inc. Warranty/Repair and Return policy.

8.3 ONLY WE FIX IT In the event repairs are ever needed on your 261, they should be performed by Gordon Kapes, Inc. or our authorized representative. For further information, contact Gordon Kapes, Inc.

Specifications and information contained in this technical practice subject to change without notice.

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Figure 3 Model 261 Beep Tone Generator Block Diagram

