

## LIMITED ONE-YEAR WARRANTY

MAXTEC INTERNATIONAL CORPORATION warrants to the original purchaser that its **B & K-Precision** product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

MAXTEC will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized **B & K-Precision** service contractor or the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing and mailing the enclosed warranty registration card to MAXTEC, **B & K-Precision**, 6470 West Cortland Street, Chicago, Illinois 60635 within fifteen (15) days from the date of purchase.

**Exclusions:** This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

MAXTEC shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states or countries do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state or country to country.

For your convenience we suggest you contact your **B & K-Precision** distributor, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, please send the unit to **B & K-Precision** Service Department, 6470 West Cortland Street, Chicago, Illinois 60635, properly packaged to avoid damage in shipment.

**B & K-Precision** Test Instruments warrants products sold only in the U.S.A. and its overseas territories. In other countries, each distributor warrants the **B & K-Precision** products which it sells.

## INSTRUCTION FOLDER

 **BK PRECISION®**

**MODEL 3001**

**AUDIO  
GENERATOR**

CE

 **BK PRECISION®**  
**MAXTEC INTERNATIONAL CORP.**  
6470 W. Cortland St. • Chicago, IL 60635

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## SPECIFICATIONS

The following specifications assume a 1-year calibration cycle and an operating temperature of 10°C to 30°C (50°F to 86°F) at relative humidity up to 80% unless otherwise noted.

### General

Frequency Range:  
 X1 range 20 Hz to 1.5 kHz (23 steps)  
 X100 range 2 kHz to 150 kHz (23 steps)

Accuracy:  
 20 Hz thru 100 kHz ±3% or less  
 120 kHz and 150 kHz ±5% or less

Output Control: 0 dB/-20 dB switch and variable amplitude control

Output Impedance: approx. 600 Ω

### Sine Wave Characteristics

Output Voltage: ≥ 1.2V rms at maximum setting (no load)

Output Flatness: 20 Hz to 150 kHz ± 0.5 dB (Short term) (reference frequency 1 kHz)

Distortion:  
 200 Hz thru 15 kHz 0.05% (THD) or less  
 50 Hz thru 28 kHz 0.1% (THD) or less  
 20 Hz thru 100 kHz 0.3% (THD) or less

## SPECIFICATIONS (cont.)

### Square Wave Characteristics

Output Voltage: ≥ 5 V p-p at maximum setting

Rise & Fall Time: Less than 0.5 μs

Sag: Less than 5% at 20 Hz (DC coupled)

Overshoot: Less than 2% from maximum output, to 50 mV p-p

Duty Ratio: 50% ±5%

### Synchronization Characteristics

Output Voltage: ≥ 1.2V rms (no load)

Output Impedance: 1 kΩ ±5%

Other specifications same as sine wave characteristics

## SPECIFICATIONS (cont.)

### General Information

Operating Temperature: 0°C to +50°C; specifications apply from 10°C to 30°C

Storage Temperature: -20°C to +60°C, battery removed

Power Requirements: 9V battery, NEDA 1604A

Battery Life: 35 hours typical with Alkaline. Zinc carbon not recommended

Battery Indicator: LED indicates when battery should be replaced.

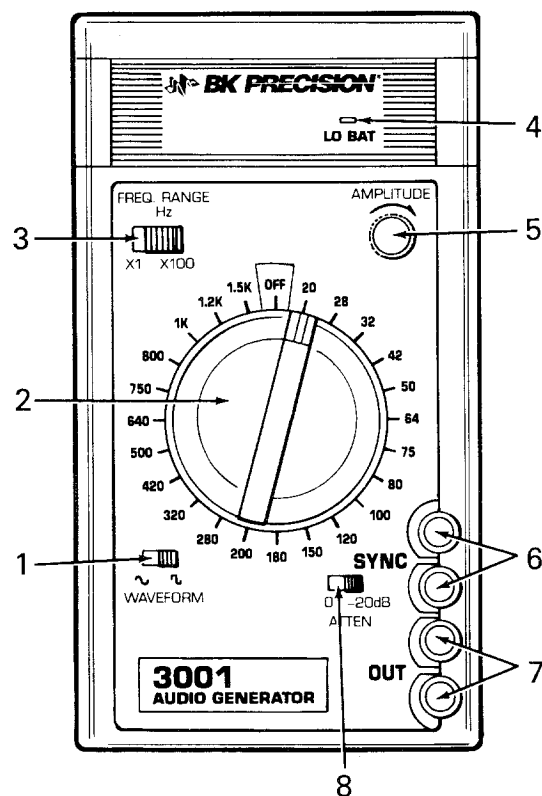
Dimensions (LxWxH) 150 x 82 x 21 mm (6" x 3.3" x 0.9") approx.

Weight: 7 ounces (200 grams) including battery.

Accessories: User's Manual  
 Test Leads  
 Battery

## CONTROLS AND INDICATORS

1. WAVEFORM Switch. Selects sine wave or square wave output at OUT jacks (7).
2. Frequency Selection Dial. Determines output frequency; also turns unit on/off. Multiply setting by that of FREQ. RANGE switch (3).
3. FREQ. RANGE Switch. Multiplies setting of frequency selection dial (2) by X1 or X100.
4. LO BAT (Low Battery) Indicator.
5. AMPLITUDE Control. Varies amplitude of waveform at OUT jacks (7).
6. SYNC Jacks. Provide a sine wave of constant amplitude, same frequency as signal at OUT jacks (7).
7. OUT Jacks. Main output; sine wave or square wave, amplitude/frequency variable.
8. ATTENUATION Switch. Selects 0 dB or -20 dB attenuation (affects signal at OUT jacks only).



## TEST INSTRUMENT SAFETY

### WARNING

The Model 3001 produces no hazardous voltages, but it might be used in equipment where high voltage is present. Actually, voltage as low as 35 V dc or ac rms can be hazardous because it may produce a lethal current. Your work habits must include all accepted practices that prevent contact with high voltage, and that steer current away from your heart in case of accidental contact with high voltage. Observe the following precautions:

1. If possible, familiarize yourself with the equipment being tested and the location of its high voltage points. However, remember that high voltage may appear at unexpected points in defective equipment.
2. Use an insulated floor material or an insulated floor mat. Place equipment on an insulated work surface. Make certain such surfaces are not damp or wet.
3. In ac powered equipment, remember that line voltage may be present on power input circuits such as the on/off switch, fuse, etc. any time the equipment is connected to an ac outlet, even if turned off.
4. Some equipment with a two-wire ac power cord (even with polarized plug) is the "hot chassis" type. A non-conductive cabinet insulates the chassis; if it is removed, a serious shock hazard exists if the chassis is touched. To test such equipment, always use an isolation transformer. For safety, treat all two-wire corded equipment as "hot chassis" unless you are sure it has an isolated or grounded chassis.
5. Never work alone. Someone should always be nearby to render aid. Training in CPR is recommended.

## OPERATING INSTRUCTIONS

### **WARNING**

To prevent personal injury, observe the SAFETY precautions listed in this folder.

1. Turn the unit on and select the desired frequency using the frequency selection dial and the **FREQ. RANGE** switch.

### **NOTE**

Output frequency is determined by multiplying frequency dial setting and **FREQ. RANGE** setting. For example: "75" and "X100" produce an output of 7.5 kHz.

2. Select desired waveform (sine or square wave) using the **WAVEFORM** switch (affects **OUT** jacks only).
3. Select desired attenuation using **ATTEN** switch. 0 dB = no attenuation, -20 dB = attenuation factor of 10 (**OUT** jacks only).
4. Adjust output signal level using the **AMPLITUDE** control (**OUT** jacks only).
5. Connect generator outputs to desired test points.
  - a. The **OUT** jacks provide the main output, which is frequency- and amplitude-variable as described above.

## OPERATING INSTRUCTIONS (cont.)

- b. The **SYNC** jacks provide a constant-amplitude sine wave (at least 1.2 V rms unloaded) with same frequency as the waveform at the **OUT** jacks. Additionally, when a sine wave is selected for the main waveform, the **SYNC** waveform is exactly in phase with it. **SYNC** is useful for triggering other test instruments, or for constant monitoring with a frequency counter. The common (black) terminals of the **SYNC** and **OUT** jacks are internally connected to each other.

### **NOTE**

Remember that the frequency selection dial is also the on/off control. Turn the unit off between uses to conserve battery life.

### **Features**

1. Wide frequency range, 20 Hz to 150 kHz, with flat output response.
2. Low distortion sinewave output.
3. Clean-cut square wave for transient response testing.
4. Synchronization output for scope or frequency counter.
5. 46-step frequency selection.

## OPERATING INSTRUCTIONS (cont.)

### **Applications**

The Model 3001 Audio Generator has a very low-distortion sine wave output, which makes it suitable for evaluation and troubleshooting of audio amplifiers, recorders, equalizers, and sound systems. It can be used as a modulation source for transmitter/receiver evaluation, repair, or alignment. The instrument also has a general purpose square wave with less than 0.5  $\mu$ s rise/fall time. This is a useful tool in many audio applications not requiring the faster rise/fall times of higher cost generators.

The unit's portability makes it especially suitable for field applications, and its low cost puts it in reach of students and hobbyists who don't require the advanced features of higher-priced units.

### **Battery Replacement**

The Model 3001 can be powered by any alkaline or carbon-zinc 9 volt transistor battery (carbon-zinc not recommended). When the **LO BAT** indicator on the front panel lights, the battery should be replaced. To replace it, remove the battery compartment cover, located on the back of the unit. Remove the discharged battery immediately to prevent leakage and corrosion. Remove the battery if the unit is to be stored or not used for a long period.