

DIGITAL TUNER DTR-1

DTR-1

Owner's Manual

TONERWORKS
HYPER-TECHNOLOGY PRODUCTS
KORG

NOTICE

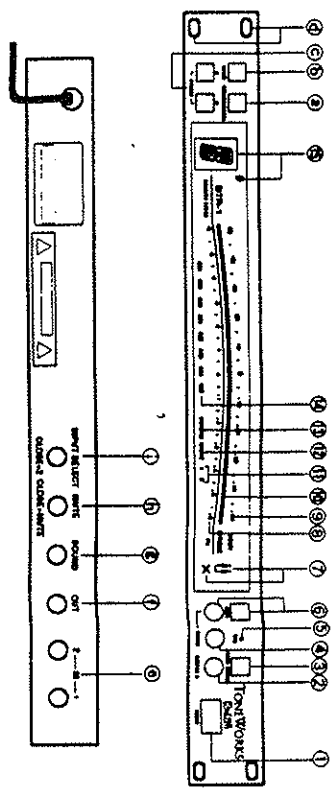
KORG products are manufactured under strict specifications and voltages required by each country. These products are warranted by the KORG distributor only in each country. Any KORG product not sold with a warranty card or carrying a serial number disqualifies the product sold from the manufacturer's/distributor's warranty and liability. This requirement is for your own protection and safety.

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FRONT AND REAR PANEL

DTR-1



1. Front panel

- ① **POWER switch**
- ② **INPUT 1 jack**
Jack for connecting the instrument to be tuned. The front panel INPUT1 jack (②) has priority over the rear panel INPUT jack [1] (⑩).
- ③ **INPUT SELECT key**
Selects the INPUT jack (② or ③). The selected INPUT jack (1 or 2) is lit on the SELECT indicator (⑪).
- ④ **CABLE CHECK jack**
Connect a cable to the CABLE CHECK jack (④) and the MUTE jack (⑩) to check for disconnections or short circuits.
(☞ "⑦ CABLE CHECK Indicator.")
- ⑤ **Microphone**
The front panel microphone is for tuning acoustic instruments. To turn the microphone on, use the INPUT SELECT key (③) or (①) to select an input that does not have a cable connected to it and then turn MUTE on (⑥ or ⑫).
- ⑥ **MUTE key/jack**
Turns mute on/off. When mute is turned on, sound from the OUTPUT jack is muted, enabling silent tuning. MUTE is lit on the MUTE indicator (⑫).
- ⑦ **MUTE key**
Selects mute on/off.
- ⑧ **MUTE jack**
Selects mute on/off by a latching type footswitch connected to this jack. However when a plug is connected to this front panel jack, the rear panel MUTE jack (⑩) cannot be used. The MUTE jack is also used in the CABLE CHECK function.
(☞ "⑦ CABLE CHECK Indicator.")
- ⑨ **CABLE CHECK indicator**
Indicates whether the cable is in a normal or abnormal condition during the cable check. (☞ "④ CABLE CHECK jack.") When the cable is O.K., the Cable mark (H) is lit after the LED meter (⑧) flashes. If the cable is defective, X is lit.
- ⑩ **Hz scale**
Lights when Hz indication is selected by the Indication Mode key (⑨). Indication covers a range of -6Hz - +6Hz. When this range is exceeded, the LED meter dims according to the excess frequency.

⑨ **CENT scale**
Lights when CENT indication is selected by the Indication Mode key (⑨). Indication covers a range of -50CENT - +50CENT.

⑩ **LED meter**
Indicates the difference between the reference pitch and input sound. Adjust the pitch of the musical instrument so that the center LED lights when using either CENT indication or Hz indication, or the LED light remains constant when using the STROBE indication.

⑪ **INPUT SELECT indicator**
Indicates the INPUT jack selected with the INPUT SELECT key (③) or INPUT SELECT footswitch jack (①). When the INPUT1 jack (②) or INPUT jack [1] (⑩) is selected, 1 lights, and when INPUT jack [2] (③) is selected, 2 lights. When the POWER switch is on, 1 is lit.

⑫ **MUTE indicator**
Lights when mute is set to on. (☞ "⑥ MUTE key/jack" or "⑦ MUTE jack.")

⑬ **SOUND indicator**
Lights when the system enters the SOUND mode
(☞ "⑨ SOUND key").

⑭ **CALIBRATION indicator**
Indicates the reference pitch set by calibration.
(☞ "CALIBRATION PROCEDURE.")
438 or 445 blinks when the standard pitch set by automatic reference calibration exceeds the range of 438 Hz - 445 Hz.

⑮ **NOTE indicator**
Indicates the note name closest to the input sound.

2. Rear Panel

① INPUT jacks [1], [2]

These jacks are for connecting electronic instruments for tuning. However, the front panel INPUT 1 jack (②) has priority over the rear panel INPUT jack [1] (①) cannot be used.

② OUTPUT jack

Connects to the amplifier, mixer, etc. Outputs the signal from the INPUT jack (② or ③).

③ SOUND jack

Connects to the amplifier, mixer, etc. Outputs the reference pitch when set to the Sound mode. (☞ "③ SOUND keys.")

④ MUTE jack

Selects mute on/off with a latching type footswitch connected to this jack. When mute is turned on, sound from the OUTPUT jack is muted, enabling silent tuning. MUTE is lit on the MUTE indicator (④). However the front panel MUTE jack (⑤) has priority over the rear panel MUTE jack (④).

⑤ INPUT SELECT footswitch jack

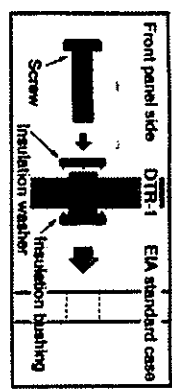
Selects the INPUT jack (② or ③) with a latching type footswitch connected to this jack. The selected INPUT jack 1 or 2 lights on the INPUT SELECT indicator (⑤).

③ SOUND keys

When two keys are pressed simultaneously. The system enters the Sound mode, and a reference pitch is output from the SOUND jack (③). SOUND on the SOUND indicator (③) lights. For the procedure of setting the reference sound, refer to step 2 of "TUNING PROCEDURE".

④ Rack Mount Hole

Mount the rack to an EIA standard case using the supplies screw, insulation washer and bushing as shown in the figure below.



① INDICATION MODE select key

Selects the indication mode for showing the difference between the input sound and the reference pitch. The LED meter indication mode changes as shown below each time this key is pressed and the corresponding scale appears.



If this key is pressed for an extended length of time, the system enters Demonstration mode (disabling the tuning or calibration setting). Pressing this key again returns the system to the original indication mode.

● CENT indicator

Indicates the difference between the input sound and the reference pitch in units of CENT. The CENT scale is then lit.

● Hz indicator

Indicates the difference between the input sound and the reference pitch in units of Hz. The sensitivity of the Hz mode is approximately twice that of the CENT indication. This is suitable for accurate measurement. The Hz scale is then lit.

● STROBE indicator

Indicates the difference between the input sound and the reference pitch in STROBE. If the input sound is higher than the reference pitch, the LED moves to the right. If the input sound is lower than the reference pitch, the LED moves to the left. The greater the difference between the input sound and the reference pitch, the faster the LED moves when the difference is eliminated (the sound and the pitch coincide) then, the LED stops moving.

⑥ CALIB key (Calibration key)

Sets the reference pitch (the center of a piano = A4). There are two ways of setting the reference pitch: manual calibration and automatic reference calibration. (☞ "CALIBRATION PROCEDURE.")

TUNING PROCEDURE

There are two procedures of tuning: 1. LED Meter Tuning* and 2. Reference pitch Tuning*. To tune an instrument by listening to the sound, connect the amplifier to the OUTPUT jack (Ⓜ) of the DTR-1. When an instrument is connected to the INPUT1 jack (Ⓜ) on the front panel and INPUT jacks [1], [2] (Ⓜ) on the rear panel, the INPUT jack has to be selected in advance using the INPUT SELECT key (Ⓜ) or the INPUT SELECT footswitch jack (Ⓜ). However, when the plug is connected to the INPUT1 jack on the front panel, the INPUT jack [1] on the rear panel cannot be used.

1. LED Meter Tuning

1. Turn the POWER switch (Ⓜ) on and set the reference pitch according to the "CALIBRATION PROCEDURE".

The left side LED of the LED meter lights and the system is ready for tuning. (When the DTR-1 is turned on, the reference pitch is set to 440 Hz).

2. Press the INDICATION MODE SELECTS key (Ⓜ) to select CENT indication, Hz indication or STROBE indication.

3. Play a single note on the instrument.

The note name nearest to the note is indicated on the NOTE indicator (Ⓜ). If the pitch of the instrument is higher than the note name by a semitone, a # (sharp) is indicated. If the pitch of the instrument is extremely off, the desired note name will not be indicated. In such a case, adjust the pitch of the instrument so that the correct note name will be indicated. Take care not to play two notes or more simultaneously.

4. In CENT Indication and Hz indication, make sure that the desired note name is indicated in the NOTE indicator before adjusting the pitch of the instrument so that the center LED will light on the LED meter (Ⓜ). In STROBE indication, check that the desired note name is indicated in the NOTE indicator before adjusting the pitch of the instrument so that the LED meter stops moving.

5. For stringed instruments, follow steps 3 and 4 for each string.

2. Reference pitch Tuning

1. Turn the POWER switch (Ⓜ) on and set the reference pitch according to the "CALIBRATION PROCEDURE". The left side LED of the LED meter lights and the system is ready for tuning. (When the DTR-1 is turned on, the reference pitch is set to 440 Hz).

2. Press the two SOUND keys (Ⓜ) simultaneously to enter the Sound mode.

The sound of the reference pitch set by step 1 is output. (Adjust the volume of the reference pitch with the amplifier.) When changing the interval of the reference pitch to be output, press the SOUND keys individually (interval changing by semitone). The reference pitch is usually output in "A", but if you enter the Sound mode by inputting a sound, the reference pitch corresponding to the sound will be output.

3. Tune according to the reference pitch.

4. When tuning is completed, again press the two SOUND keys simultaneously to exit the sound mode.

CALIBRATION PROCEDURE

Calibration consists of manual calibration that sets the reference pitch (the center of the piano = A4) using the DTR-1 main unit and automatic reference calibration in which the DTR-1 recognizes the pitch of the instrument and sets it as the reference pitch. The DTR-1 can make the setting irrespective of CENT indication, Hz indication or STROBE indication. Once set, the reference pitch will be retained until the POWER switch is turned off.

1. Manual Calibration

1. Turn the POWER switch (Ⓜ) on. When the DTR-1 is turned on, the reference pitch is set to 440 Hz.

2. Press the CALIB key (Ⓜ) several times and set the reference pitch within the range of 438 Hz to 445 Hz.

Press the CALIB key once to see the reference pitch currently set by the DTR-1. Either 438 or 445 blinks on the CALIBRATION indicator (Ⓜ) if the reference pitch is set beyond the range of 438 Hz to 445 Hz under automatic reference calibration. To change the reference pitch, press the CALIB key continually. Each time the key is pressed, CALIBRATION indication rises 1 Hz. (The reference pitch can be changed during tuning too.)

438 → 439 → 440 → 441 → 442 → 443 → 444 → 445

If the CALIB key is pressed for more than one second, the automatic reference calibration starts functioning.

3. If the CALIB key remains not pressed, the system is ready for tuning. (The NOTE indicator turns off and the left side LED of the LED meter lights.)

Reference Calibration

The POWER switch (11) on the DTR-1 is turned on, the reference pitch is set to 440 Hz.

2. To set the sound of the electronic instrument or electric guitar as the reference pitch, play a single note on the instrument.

To set other instruments (acoustic guitar, piano, etc.) to the reference pitch, play the instrument with a single tone near the Microphone (5).

The note need not necessarily be "A". Since the DTR-1 measures the pitch error within the range of ± 50 cents, it makes automatic reference calibration after automatically determining the pitch name (within the range of ± 50 cents) if the reference pitch is not "A". In this case, the CALIBRATION indicator (9) indicates a calibration value after replacing the input sound with "A4" (the center of the piano).

To calibrate the DTR-1 to an acoustic instrument you must first turn the microphone on. Use the INPUT SELECT key (3 or 1) to select an input that does not have a cable connected to it and then press the MUTE key (6).

Automatic reference calibration is disabled if the sound to be input is unstable or too weak.

3. Press the CALIB key (8) for one second or longer when the lighting of the LED meter (9) stabilizes.

Press the CALIB key until you see the lighting of the LED meter is turned off for an instant. The DTR-1 measures the pitch of input sound and calibrates automatically by using the measured sound as the reference pitch. The center LED on the LED meter lights. In the CALIBRATION indicator, the set reference pitch changes from flashing to constant lighting.

Pressing and immediately releasing the CALIB key starts manual calibration.

Pressing the CALIB key before the LED meter indication becomes fully stable may prevent reference pitch from being correctly measured.

In automatic reference calibration, the reference pitch can be set within the range of 428 Hz - 452 Hz. If the setting exceeds this range, 438 or 445 on the CALIBRATION indicator starts blinking.

4. After one second or more elapses when the CALIBRATION indicator is on, the system is ready to start tuning. (If no sound is input, the NOTE indicator turns off and the left side LED of the LED meter lights.)

About CENT:

CENT is the minimum unit for indicating the percentage of pitch. A semitone is 100 cents and 1 octave is 1200 cents. The DTR-1 meter indicates the error between the pitch of an input sound and the correct pitch in units of cents. One cent is a very small unit, however, and an error of about ± 3 cents does not present a serious problem.

About the reference pitch and calibration:

For tuning instruments, A4 (= 440 Hz) at the center of a piano is used as the reference pitch. Setting the pitch by this reference is called calibration.

SPECIFICATIONS / OPTIONS

- Scale: 12-tone temperament
- Meters: CENT indication, Hz indication, STROBE indication
- Measuring range: A0 - C8 (27.5 Hz - 4196.0 Hz)
- Measuring system: ± 1 CENT
- Range of reference pitch: C2 - B4 (65.4 Hz - 493.9 Hz)
- Range of calibration:
 - Manual calibration: 438 Hz - 445 Hz (1 Hz steps)
 - Automatic reference calibration: 428 Hz - 452 Hz
- Connecting jacks:
 - Front panel: INPUT1 jack, CHECK jack,
 - MUTE jack
 - Rear panel: INPUT jack [1], [2], OUTPUT jack, SOUND jack, MUTE jack, INPUT SELECT jack
- Power consumption: 7W
- Dimensions (W x H x D): 482 x 44 x 114 mm (19" x 1 1/2" x 4 3/4")
- Weight: 1.73Kg
- Accessories: Insulation washer (x4), Insulation bushing (x4), screw (x4)

* Appearance and specifications are subject to change for improvement without advance notice.

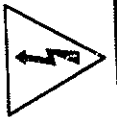
Thank you for your purchasing the TONEWORKS Digital Tamer ET-3-1. To ensure long, trouble-free operation, please read this manual carefully.

IMPORTANT SAFETY INSTRUCTIONS

Warning: when using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
9. Care should be taken so that objects do not fall and liquids are not spilled onto the enclosure through openings.
10. The product should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the product; or
 - C. The product has been exposed to rain; or
 - D. The product does not appear to operate normally or exhibits a marked change in performance; or
 - E. The product has been dropped, or the enclosure damaged.
11. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS



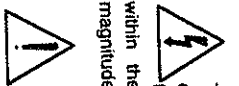
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICE TO QUALIFIED SERVICE PERSONNEL.

GROUNDING INSTRUCTIONS

This product must be grounded (earthed). If it should malfunction or breakdown, grounding a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with the local codes and ordinances.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet fitted.

THE FCC REGULATION WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
 - Relocate the equipment with respect to the receiver.
 - Move the equipment away from the receiver.
 - Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

CANADA

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EXEPT PAS DE BRUIRS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA CLASSE B PRESCRITES DANS LE REGLEMENT SUR LE BRUIILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTRE DES COMMUNICATIONS DU CANADA.