

33-2055

OWNER'S MANUAL

Please read before using this equipment.

Digital Sound Level Meter

Radio Shack[®]

FEATURES

Your new Radio Shack Digital Sound Level Meter precisely measures area noise and other sound level. The meter's digital design and special measuring features, such as the bargraph and data hold, ensure pinpoint accuracy for checking any acoustic environment. The meter is lightweight and easy to operate.

Your meter also has these features:

3-Digit Liquid Crystal Display — makes it easy to read sound measurements.

21-Dot Analog Bargraph — gives you a visual representation of the measured sound.

Mode/Condition Indicators — show you the current mode and status of the meter.

Wide Sound-Measuring Abilities — measures from 50 dB to 126 dB SPL with seven ranges.

Average or Maximum Sound Level Display — continuously shows the average or maximum sound level: per second with digits, per 0.2 or 0.5 seconds with the bargraph.

Tripod Ready — lets you attach the meter to a tripod 6.35 mm (1/4-inch) for more accurate sound measurements.

Data Hold — lets you freeze a measurement on the display.

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used by Tandy Corporation.

Integrated Averaging — measures the integrated average, and holds the maximum sound levels for a preset period.

Under range and Over range Indicators — show you when the sound level reading is under or over the selected range.

A and C Weighting — lets you select either type of weighting to suit the purpose of the measurement.

Selectable Bargraph Response — lets you select a slow (0.5 second) or fast (0.2 second) bargraph response.

Peak Level Indication — shows you when the meter registers the maximum level measurement on the bargraph.

Reset Button — lets you clear the current measurements from the meter's memory and begin a new measurement.

9-Volt Battery Operation — lets you power the meter with a 9-volt battery.

Phono Output Jack — lets you connect the meter to your stereo system or test equipment.

Low-Battery Indicator — shows you when the battery needs to be replaced.

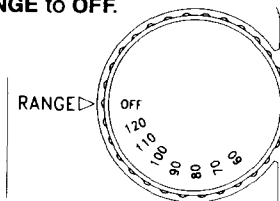
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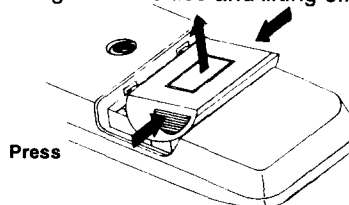
INSTALLING THE BATTERY

The meter requires one 9-volt battery for operation. Follow these steps to install the battery.

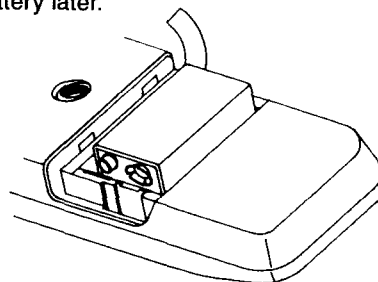
1. Set **RANGE** to **OFF**.



2. Remove the battery compartment cover by pressing in both sides and lifting off the cover.

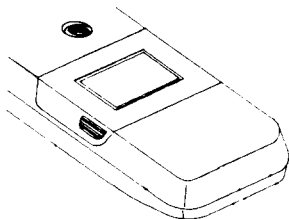


3. Install the battery as indicated by the diagram marked in the compartment. Place the battery over the red ribbon to make it easy to remove the battery later.



MAKING MEASUREMENTS

4. Replace the battery compartment cover.

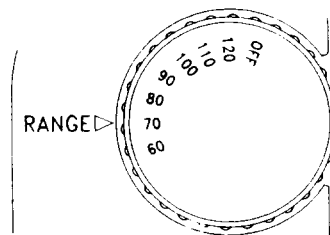


Notes:

- When you are not using the meter, set **RANGE** to **OFF**.
- If you will not use the meter for a week or more, remove the battery.
- When the battery becomes low, **BATT** appears on the display. Replace the battery with a fresh one of the same type.

SETTING THE SOUND RANGE

The meter can measure sound levels within seven different ranges. Each range covers 20 dB. The number of each range represents the center of the range. For example, if you set **RANGE** to 70, the meter measures sound levels from 60 to 80 dB.



Set **RANGE** for the approximate sound level you want to measure. If you do not know the sound level, start with the highest range setting (120) and gradually reduce the setting. When the measured value is lower or higher than the set range, an under range or over range indicator appears. See "Level Indications."

Notes:

- If you set **RANGE** to 120, the meter measures sound levels from 110 dB to 126 dB.
- If you change the **RANGE** setting during a measurement, you clear all the current data and a normal continuous measurement resumes.

SETTING THE WEIGHTING

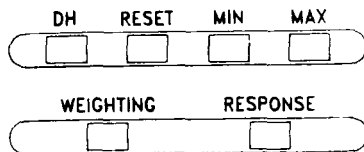
The **WEIGHTING** button lets you set the meter's weighting characteristics, which determine the meter's frequency response curve. You can select *A-weighting* or *C-weighting*.

A-weighting has A-curve frequency characteristics. This setting causes the meter to respond mainly to frequencies in the 500-to-10,000 Hz range, which is the human ear's most sensitive range. Select A-weighting to determine an area's noise-level. Take measurements at several different points in the area.

C-weighting has C-curve (flat) frequency characteristics. This setting causes the meter to respond mainly to frequencies in the 32-to-10,000 Hz range. Select C-weighting to measure sound levels of musical material.

When you set **RANGE** to **OFF**, the meter automatically selects C-weighting.

Press **WEIGHTING** to change the weighting between A and C.



The display shows the current setting (**WEIGHTING A** or **WEIGHTING C**).

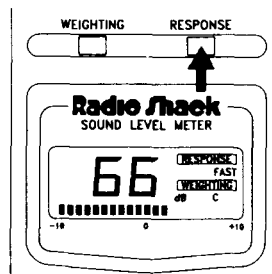
Note: You can change the weighting setting only during a continuous average or maximum measurement.

SETTING THE RESPONSE

The **RESPONSE** button lets you set the interval at which the meter revises the bargraph sound level reading. There are two settings — *fast* and *slow*. When you set **RANGE** to **OFF**, the meter automatically sets the response for *fast*.

At the fast setting, the meter revises the bargraph reading after about 0.2 second. At the slow setting, the meter revises the reading after about every 0.5 second.

Press **RESPONSE** to change the bargraph's response between fast and slow.



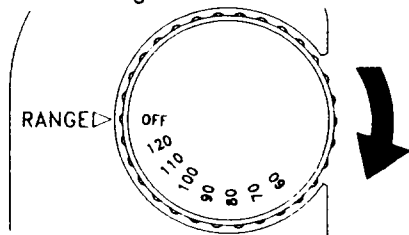
The display shows the selected setting (**RESPONSE SLOW** or **RESPONSE FAST**).

Note: You can change the response setting only during a continuous average or maximum measurement.

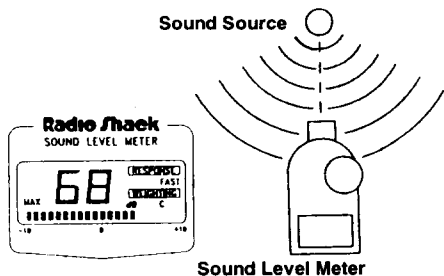
MAKING NORMAL MEASUREMENTS

Follow these steps to measure the average sound level.

1. Set **RANGE** for the desired sound range. If you do not know the sound level, start at the highest range setting (120) and reduce the setting until you get a reading. (See "Setting the Sound Range" and "Level Indications.")



2. Set the weighting and response. (See "Setting the Weighting" and "Setting the Response.")
3. Face the sound source. Then hold the meter to one side and point its microphone at the sound source.

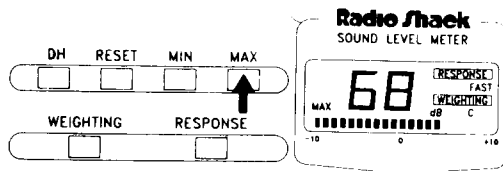


The meter begins to display the *continuous average* sound level. This is the average sound level during a 1-second sampling period, which the meter updates once per second. The bargraph shows the continuous average for either a 0.2-second or 0.5-second period, depending on the response setting.

4. When you complete a measurement, set **RANGE** to **OFF**.

MAKING MAXIMUM MEASUREMENTS

To measure the continuous maximum sound level, follow the steps in "Making Normal Measurements" and press **MAX** so **MAX** appears on the display.



The meter displays only the loudest measured sound level during the 1-second sampling period. The bargraph shows the maximum level of every 0.2 or 0.5 seconds. The bargraph segment that corresponds to the peak reading stays on the display for 2 seconds or until the meter measures a higher maximum level.

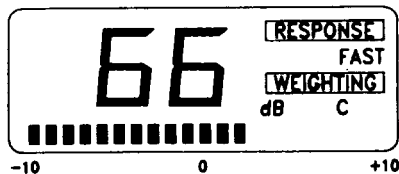
Press **MAX** again to cancel the continuous maximum measurement and resume a normal continuous average measurement.

LEVEL INDICATIONS

The meter displays the sound level using numbers and a bargraph. The numbers show the sound level in dB within ± 10 dB of the selected range and the meter updates the reading once per second.

The bargraph's center point represents the center level of the selected range (60 dB, 70 dB, 80 dB, and so on).

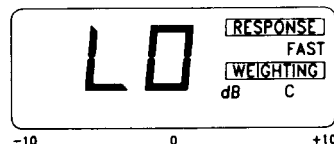
The points to the left of the center indicate measurements less than the center level (down to -10 dB below the selected range). The points to the right of the center indicate measurements greater than the center level (up to +10 dB above the selected range).



The bargraph updates every 0.2 or 0.5 second, depending on the response setting. (See "Setting the Response.")

Underrange Indication

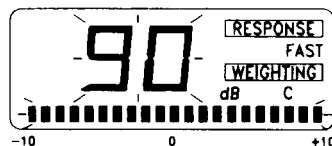
When the measured sound level is lower than the lowest level of the selected range, **LO** appears and the bargraph disappears. If this happens, select a lower range.



Overrange Indication

When the measured sound level is higher than the highest sound level of the selected range (except for the 120 dB range), the bargraph and digits that represent the next higher range flash on the display.

For example, if the meter measures 91 dB in the 80 dB range, 90 and the bargraph flash.



If the meter measures more than 126 dB in the 120 dB range, **126** and the bargraph flash.

If you get an over range indication, change the **RANGE** setting until you get a reading in the upper half of the range (0 to +10 dB).

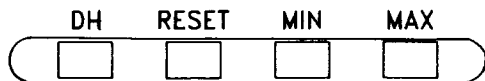
Notes:

- The under range or over range indication can also appear when you recall a measurement using data hold and the measurement is under or over the selected range. See "Using Data Hold."
- The meter cannot measure sound levels lower than 50 dB or higher than 126 dB.

USING DATA HOLD

The data-hold function lets you store the current measurements in memory and *freeze* a measurement on the display. The meter stores the continuous average, the maximum, and the minimum sound levels for the last 1 second.

To store the current measurements, press **DH** during a continuous average or maximum measurement. The last average measurement or last maximum measurement (with **MAX**) appears on the display.



Press **MAX** to freeze the current maximum measurement if the last average measurement (without **MAX**) is on the display. Press **MAX** again to return to the average measurement.

Press **MIN** to freeze the current minimum measurement. **MIN** also appears on the display. Press **MIN** again to return to the average measurement.

Press **RESET** to return to a continuous average or maximum measurement.

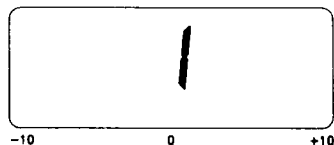
Notes:

- You cannot change the **RESPONSE** and **WEIGHTING** settings during data hold.
- When you set **RANGE** to a different range during data hold, you cancel the function and return to a continuous measurement.

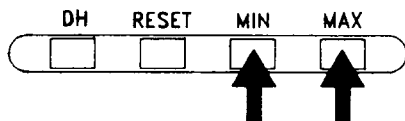
MAKING AN INTEGRATED AVERAGE MEASUREMENT

Follow these steps to monitor the sound level and average the measurement over a preset time period of 1 to 199 seconds. The meter stores the average, the maximum, and the minimum sound levels during the set time period.

1. Press and hold down **DH** for about 2 seconds during a continuous average or maximum measurement. **1** appears on the display.



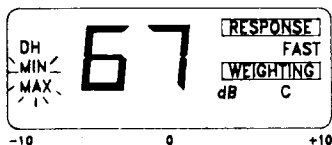
- Repeatedly press, or press and hold down, **MAX** or **MIN** to set the desired measuring period from 1 to 199 seconds.



- Position the meter for the measurement.
- Press **RESET** to start the monitoring.

The meter measures the integrated average, maximum, and minimum sound levels for the set time. The meter updates the current integrated average display every second and **MIN** and **MAX** flash until the set time ends.

When the set time ends, **DH** appears, and **MIN** and **MAX** continue to flash. The meter displays the total integrated average sound level.



Press **MAX** to display the maximum sound level for the set time. Press **MAX** again to return to the total integrated average sound level.

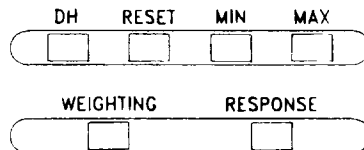
Press **MIN** to display the minimum sound level for the set time. Press **MIN** again to return to the total integrated average sound level.

Press **RESET** after you check the integrated average sound level and the maximum or minimum sound level. The meter resumes a continuous average measurement.

Note: If you change the **RANGE** setting during an integrated measurement, you clear any stored data and a normal continuous average measurement resumes. You must repeat the procedure for making an integrated average measurement.

MAKING MAXIMUM AND MINIMUM MEASUREMENT DURING AN UNDETERMINED TIME PERIOD

You can check the maximum and minimum sound level over any length of time. To do so, press **RESET** during a continuous average or maximum average measurement.



At the end of the desired time period, press **DH**. **DH** appears.

To display the maximum sound level during the time period, press **MAX** if both **MIN** and **MAX** flash on the display and the last average sound level appears. Press **MAX** again to return to the average sound level.

Note: If only **MIN** flashes on the display, the meter is already showing the maximum sound level during the time period.

Press **MIN** to display the minimum sound level during the time period. Press **MIN** again to return to the last average sound level.

Press **RESET** after you check the maximum or minimum sound level. The meter resumes a normal continuous average or maximum measurement.

CHECKING STEREO SYSTEM ACOUSTICS

To check the sound of a stereo system, use a test recording that produces pure tones, one at a time, at intervals that span the entire audio spectrum.

Use C-weighting with either slow or fast response.

Make a graph or table that shows the sound level each tone generates. This gives you a clear idea of the frequency response of the *total* audio system — including the room. To smooth out the response, adjust the tone control, vary the speaker placement, and use a frequency equalizer.

CALIBRATING THE METER

The recessed calibration control (labelled **CAL** on the meter's left side) is intended **for service technicians only**.

Attempting to calibrate the meter yourself might result in inaccurate measurement.

CARE AND MAINTENANCE

Your Radio Shack Digital Sound Level Meter is an example of superior design and craftsmanship. The following suggestions will help you care for the meter so you can enjoy it for years.

- Keep the meter dry. If it gets wet, wipe it off immediately. Liquids might contain minerals that can corrode the electronic circuits.
- Use and store the meter only in normal temperature environments. Temperature extremes can shorten the life of electronic devices and distort or melt plastic parts.
- Handle the meter gently and carefully. Dropping it can damage circuit boards and can cause the meter to work improperly.
- Keep the meter away from dust and dirt, which can cause premature wear of parts.
- Wipe the meter with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents.
- Use a fresh battery of the recommended size and type. Always remove an old or weak battery. It can leak chemicals that destroy electronic circuits.

Modifying or tampering with the meter's internal components can cause a malfunction and might invalidate its warranty. If the meter is not performing as it should, take it to your local Radio Shack/Tandy store for assistance.

SPECIFICATIONS

Battery	9-Volt Alkaline
Microphone	Electret Condenser
Range	50 dB to 126 dB
Accuracy	± 2 dB at 114 dB SPL
Reference	0dB = 0.0002 Micro Bar
Weighting	A and C
Display Response	Fast and Slow
Signal Output:	
Voltage	1 Volt Peak-Peak Min. (Open Circuit, Full Scale at 1 kHz)
Impedance	10 Kohms Min. Load
Distortion	Less than 2% at 1 kHz, 0.5 V p-p Output (Input: Mic Out, Output: 10 Kohms)
Operating Temperature	0°C to 50°C (32°F to 122°F)
Store Temperature	-40°C to 65°C (40°F to 149°F)
Dimensions (HWD)	159 x 63 x 44 mm (6 1/4 x 2 1/2 x 1 3/4 in.)
Weight.....	165 gm (5.8 oz.)

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

InterTAN WARRANTY

InterTAN warrants that this product will be free from defects in materials and workmanship for a period of ninety (90) days from the date of purchase. Within this period, simply take the product and your proof of purchase to any InterTAN store or dealer and the product will be repaired without charge for parts and labour. InterTAN reserves the right to charge for transportation. Any product which has been subject to misuse or accidental damage is excluded from this warranty.

This warranty is only applicable to a product purchased through InterTAN's company owned stores and dealers and to a product that is presented for repair in a country where InterTAN offers the product for sale. While this warranty does not confer any legal rights other than those set out above, you may have additional statutory rights which will vary under the laws of the various countries, states, provinces and other governmental entities in which InterTAN operates. This warranty is subject to all statutory rights you may have in the country of purchase.

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