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Manual
Sound Level Meter PCE-318

Ⅰ. FOR SAFETY

- ❒ Read the following safety information carefully before attempting to operate or service the meter.
- ❒ Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

Environment conditions

① Operation temperature : –10°C to +50°C

② Operation humidity : 30% to 90%RH (non-condensing)

Maintenance & Clearing

① Repairs or servicing not covered in this manual should only be performed by qualified personnel.

② Periodically wipe the case with a dry cloth.
Do not use abrasives or solvents on this instruments.

Safety symbols

CE Comply with EMC

U.S. Pat. No. Des. 483,680

Ⅱ. PRECAUTIONS

- ❒ Do not try to remove the microphone grid, you can easily damage the microphone in this way.
- ❒ Protect the meter from impact, Do not drop it. Transport it in the supplied carrying case.
- ❒ Protect the meter from shocks and vibration.
- ❒ Protect the meter from water, dust, extreme temperature, humidity and direct sunlight during storage and use.

- ❒ Protect the meter away from air with high salt or sulphur content, gases and stored chemicals.
- ❒ Always turn the unit off after use. Remove the battery from the meter if it is not to be used for a long time.
- ❒ Clean the meter only by wiping it with a soft, dry cloth or, when necessary, with a cloth lightly moistened with water. Do not use any solvents, cleaning alcohol or cleaning agents.

III. FEATURES

The meter contains several features that enable you to take and save sound level measurements under a variety of conditions.

Features include :

- ❒ Easy of use.
- ❒ Easy to read large display.
- ❒ Six measurement ranges.
- ❒ Fast and slow time weightings.
- ❒ A and C frequency weightings.
- ❒ L, Lmax and Lmin three measured parameters are monitored during measurement and can be viewed selectively by pressing the MAX key.
- ❒ Storage of up to 99 data sets for L, Lmax and Lmin with elapsed time.
- ❒ Both AC and DC signal output is available from a single standard 3.5mm coaxial socket suitable for a frequency analyzer, level recorder, FFT analyzer, graphic recorder; etc.

IV. PARAMETERS

The following parameters are used on the meter.

- ❒ L_A : “A” frequency weighting sound pressure level.
- ❒ L_C : “C” frequency weighting sound pressure level.
- ❒ FAST : Fast time weighting.
- ❒ SLOW : Slow time weighting.
- ❒ max : Maximum sound pressure level.
- ❒ min : Minimum sound pressure level.
- ❒ “max” flash : Tests time weighting characteristics.

The default settings of the meter are listed below.

Time weighting : FAST

Frequency weighting : A

Level range : 60 to 120dB

V. SPECIFICATIONS

Applicable standards: IEC61672-1 : 2002 Class 2
IEC60651 : 1979 Type 2
ANSI S1.4 : 1983 Type 2

Measurement functions

Main processing functions

Simultaneous measurement of all items according to selected time weighting and frequency weighting.

Sound level L_A or L_C

Maximum sound level L_A max or L_C max

Minimum sound level L_A min or L_C min

Total range : 30 to 130dB

Max. measurement level : 130dB

Noise floor A weighting : 30dB or less

C weighting : 32dB or less

Linearity range : 60dB

Reference level range : 60 to 120dB

Reference sound pressure level : 94dB

Calibration check frequency : 1KHz

Level range selection :

6 ranges in 10dB steps 20 to 80dB , 30 to 90dB
40 to 100dB , 50 to 110dB
60 to 120dB , 70 to 130dB

Frequency range :

Overall characteristics including microphone : 31.5 to 8000Hz

Frequency weighting : A, C

Time weighting (RMS detection) : Fast, slow

Calibration : Calibration using sound calibrator

Sampling interval

Bar graph indication : 125mS approx.
Numeric indication : 1 sec approx.

Data memory functions

Data can be stored in the internal memory.
Max. 99 data sets for L with elapsed time, Lmax with elapsed time and Lmin with elapsed time con be stored.

Microphone : 1/2-inch electret condenser type

Display LCD

Display screens :

4 digits indication of sound level, 0.1dB resolution.
Bar graph indication of current sound level, 1dB resolution.
Elapsed time display, 100 hours maximum.
Memory and read address display, 99 data sets maximum.

Warning indications

Over-range indication

OV displayed at upper limit of the range

Un displayed at lower limit of the range

Outputs

AC output (using selected frequency weighting)

Output voltage : 1Vrms (at full-scale of the range)
Output impedance : 5KΩ
Load impedance : ≧1MΩ

DC output

Output voltage : 10mV/1dB
Output impedance : 5KΩ
Load impedance : ≧1MΩ

Power requirements

One 9V battery (006P or IEC6F22)

Battery life : Approx. 25 hours

AC adaptor (option)

Current rating (when 9V DC is input) : Approx. 10mA

Ambient conditions

Operating ambient conditions : -10°C to +50°C, 30% to 90%RH non-condensing

Storage ambient conditions : -10°C to +60°C, <70%RH non-condensing

Dimensions : Approx. 264(L)×68(W)×27(H) mm

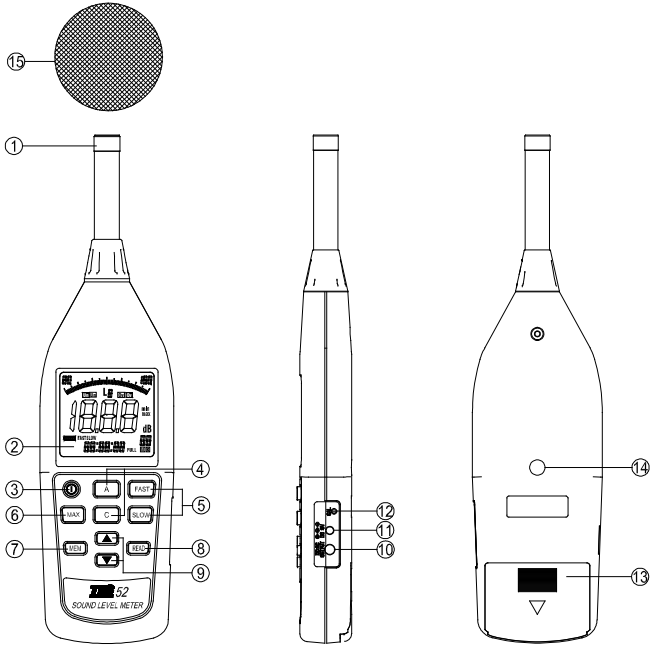
Weight (including battery) : Approx. 260g

Supplied accessories : Battery 9V, Wind shield, Screwdrive (adjustment), 3.5ϕ plug (3pin AC/DC output), Carrying case, Instruction manual

Optional equipment

AC adaptor, Sound calibrator TES-1356

VI. CONTROLS AND FUNCTIONS



1. Microphone : Electret condenser microphone

2. Display

3. ⏻ **Key** : Turns the meter on and off.

4. A, C keys : Sets the frequency weighting to A or C.

5. FAST, SLOW keys : Sets the time weighting to FAST or SLOW.

6. MAX key :

① This key is used for reading the measurement results. Press MAX key to select maximum, minimum or current readings with elapsed time.

② Use to tests of time weighting characteristics Fast and Slow. Press MAX key 5 seconds, the “max” symbol flash enter to maximum hold, press again to exit the mode.

7. MEM key : Press to store measurement data sets in memory.

8. READ key : Press to read the stored data sets in memory, press again to exit read mode.

9. ▲ ▼ keys :

① Level range keys : select the level range for the measurement. The following six settings are available : 20 to 80, 30 to 90, 40 to 100, 50 to 110, 60 to 120, 70 to 130.

② When read mode, the keys select the memory address to be displayed.

10. DC/AC output : AC signal with frequency weighting.
DC signal corresponding to sound level.

11. External DC 9V power supply jack : AC adaptor connected here for powering the unit from on AC outlet.

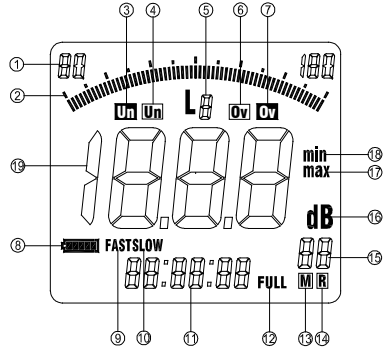
12. CAL potentiometer : Calibration control, For level calibration adjustment.

13. Battery Cover.

14. Tripod mounting thread.

15. Windscreen : When making outdoor measurement in windy weather or when measuring air conditioning equipment or similar, wind noise at the microphone can cause measurement errors.

VII. LCD DISPLAY DESCRIPTION



1. Sound level range indicator (6 ranges).
2. Bar graph.
3. Under-range indicator.
4. Under-range indicator for processed value.
5. Frequency weighting indicator.
6. Over-range indicator for processed value.
7. Over-range indicator.
8. Battery capacity indicator.
9. Fast time weighting indicator.
10. Slow time weighting indicator.
11. Elapsed time indicator (max. 100hours).
12. Full data memory indicator.
13. Data memory indicator.
14. Data read indicator.
15. Memory address display (max. 99 sets).
16. Sound level reading.
17. Maximum sound level reading.
18. Minimum sound level reading.
19. Sound pressure level reading.

VIII. PREPARATION

Power Supply

The meter can be powered by one 9V battery or by the specified optional AC adaptor (DC 9V).
Before inserting or replacing the battery and before connecting the AC adaptor, be sure to turn off the meter.

1. Battery Loading

① Before replace the batteries, must press ⏻ key turn off the meter.
② Remove the cover of the battery compartment.
③ Insert the new 9V battery.
④ Replace the battery cover.
⑤ Press ⏻ key turn on the meter then press ⏻ key turn off the meter.

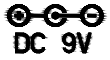
2. Battery capacity indicator

When use battery operating the meter, periodically check this indicator to determine the remaining battery capacity. The number of segments decreases as the battery are used up. When the display starts to flash, correct measurement is no longer possible. Replace the battery with a new one. The indicator is also displayed while the meter is powered from the AC adaptor.

Battery good → Battery partly depleted → Flashing replace battery

3. Use AC adaptor

Insert the 3.5mmϕ plug of the AC adaptor into the DC 9V jack on the side panel. When the AC adaptor is connected, the unit will be powered from the adaptor, also when battery is inserted, the AC adaptor has priority.



IX. CALIBRATION PROCEDURES

Acoustic Calibration with sound calibrator TES-1356

1. Turn off the sound calibrator.
2. Press ⏻ key turn on the meter.
3. Insert the microphone very carefully and slowly all the way into the sound calibrator coupler.
4. Set the power switch of the sound calibrator to 94dB.
5. Adjust the CAL potentiometer of the meter, until display reading is 94.0dB.
6. Set the power switch of the sound calibrator to OFF.
7. Remove the microphone very carefully and slowly from the coupler.

X. MEASUREMENT

10-1 When using this meter, all processing functions provided by the meter are carried out simultaneously. For example, when sound level measurement is selected, the maximum sound level are also determined.

Sound level measurement :

1. Press ⏻ key turn on the meter, the default settings is A frequency weighting, fast time weighting and 60 to 120dB sound level range.
2. Press “A” or “C” keys to select desired frequency weighting. For normal sound level measurements, select “A” setting.
3. Press “FAST” or “SLOW” keys to select desired time weighting (dynamic characteristics). Normally the “FAST” setting should be used.
4. When performing measurements according to IEC or other standards, the frequency and time weighting setting required by the standard should be selected.
5. Press “▲” or “▼” keys to select the desired level range. Choose a setting in which the bar graph indication to about the middle of the range. If the “ OV ” (Over) or “ UN and — — —” (Under) indicates light up frequently, change the level range setting.
6. The numeric level indication shows the currently measured sound level and the elapsed measurement time. The reading is update once every second.
7. Press “MAX” key to cycle switch the currently sound level with elapsed measurement time → the maximum sound level (“max” is shown) with measured elapsed time → the minimum sound level (“min” is shown) with measured elapsed time.

If an over-range or under-range condition has occurred at least once during measurement the " OV " or " UN " indication is shown on the display, to indicate that over-range or under-range data were included in the sound level measurement values for processing.

During measurement, if change the frequency or time weighting and sound level ranges, the stored maximum and minimum sound level will be clear. The maximum recorded elapsed time is 100 hours.

10-2 Store operations

1. To memorize the reading

① Press "MEM" key each time to store one set measurement data (L, Lmax, Lmin and each elapsed time) in memory, and LCD will show " M " and memory location numbers (1 to 99).

② When the data number 99 is reached, the "FULL" indication is shown on the display, does not change further and does not return to 1.

2. To recall and read the reading

① Press "**READ**" key to recall the reading memory data mode. LCD will show " READ " and memory location numbers.

② Press "▲" or "▼" key to scroll through the logged readings.

③ Press "MAX" key to cycle switch the stored currently sound level with elapsed measurement time → the maximum sound level ("max" is shown) with measured elapsed time → the minimum sound level ("min" is shown) with measured elapsed time.

④ Press "**READ**" key again to exit READ mode.

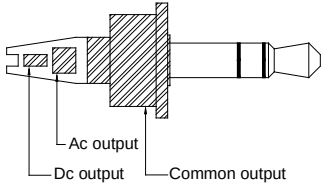
3. To clean the memory

① Press " ⏻ " key to turn-off the meter.

② Press and hold down "MEM" key then press " ⏻ " key to turn on the meter, LCD will show "CLr" and all stored data are clear.

OUTPUT CONNECTORS

3.5ϕ Plug Wiring Connection



AC Output :

An AC signal corresponding to the frequency-weighted signal is output.

Output voltage : 1Vrms±100mVrms (scal upper limit)
Output impedance : approx. 5KΩ
Load impedance :≧1MΩ

The output voltage when the meter is in calibration mode (-6dB from scale upper limit, 1000Hz sine wave) is 0.5Vrms.

DC Output :

A level-converted DC signal generated by rms detection and logarithmic compression is output. The signal reflects the frequency and time weighting settings of the meter.

Output voltage : 10mV±0.1mV/dB
Output impedance : approx. 5KΩ
Load impedance :≧1MΩ

The output voltage when the meter is in 94dB reading is 0.94VDC.