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GB

1. Introduction

Dear customer,

Thank you for purchasing this product.

This product complies with statutory national and European requirements.

To maintain this condition and to ensure safe operation, the user should always follow the instructions in this manual.

These operating instructions are part of this product. They contain important information on setting up and using the product. Remember this if you pass on the product to any third party. Keep these operating instructions in a safe place for future reference.

For technical queries, please contact:

International: www.conrad.com/contact

United Kingdom: www.conrad-electronic.co.uk/contact

2. Explanation of symbols

The icon with an exclamation mark in a triangle is used to highlight important information in these operating instructions. Always read this information carefully.

This product is CE-tested and meets the necessary directives.

3. Intended use

This sound level detector is a digital meter for measuring the sound level in decibels (dB).

The sound level detectors meet the requirements of EN 61672-1:2014-07 (IEC 61672:2013). Model SL-200 has the accuracy class 2 for general field examinations (e.g. operations tests) and Model SL-100 has the accuracy class 3 for orientation measurements (e.g. to determine whether a particular noise limit has been exceeded).

The values detected and the momentary units/functions are displayed digitally on a large LCD (Liquid Crystal Display).

Two frequency evaluation filters (A/C) and two time evaluations can be preselected and allow the device to be used universally.

The measurement has a range of 31.5 Hz to 8 KHz as well as a sound level of 30 to 130 dB.

The maximum value and the details shown on the display can both be stored.

To suppress troublesome wind noise, the device is delivered with an attachable windscreen. This does not impair correct measurement of the sound level.

For Model SL-200, the lighting of the display can be selected manually.

A 9-V block battery (type 1604A) is required for operation.

Measurements must not be carried out under unfavourable ambient conditions.

Unfavourable ambient conditions are:

- Excessive dampness or humidity
- Dust or combustible gases, vapours or solvents
- Electrical storms or stormy conditions and strong electrostatic fields, etc.

For safety and approval purposes, you must not rebuild and/or modify this product. Using the product for purposes other than those described above may damage the product. In addition, improper use can cause hazards such as a short circuit, fire or electric shock. Read the instructions carefully and store them in a safe place. Only make this product available to third parties together with its operating instructions.

4. Delivery contents

- Sound level detector with windshield
- Compound 9V battery
- Storage box (only order no.: 10 06 79)
- Operating instructions

Up-to-date operating instructions

Download the latest operating instructions at www.conrad.com/downloads or scan the QR code on this page. Follow the instructions on the website.

5. Safety instructions

Read the operating instructions and safety information carefully. If you do not follow the safety instructions and information on proper handling in this manual, we will assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

a) General information

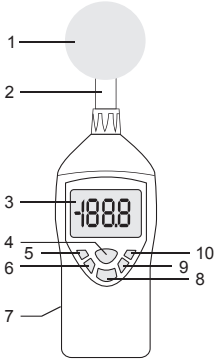
- The device is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. It may become a dangerous toy for children.
- Protect the product from extreme temperatures, direct sunlight, strong jolts, high humidity, moisture, flammable gases, vapours and solvents.
- If it is no longer possible to operate the product safely, stop using it and prevent unauthorized use. Safe operation can no longer be guaranteed if the product:
  - is visibly damaged,
  - is no longer working properly,
  - has been stored for extended periods in poor ambient conditions or
  - has been subjected to any serious transport-related stresses.
- Always handle the product carefully. Jolts, impacts or a fall even from a low height may damage the product.

- In commercial institutions, the accident prevention regulations of the relevant professional insurance association for electrical systems and operating materials are to be observed.
- In schools, training centres, computer and self-help workshops, handling of measuring instruments must be supervised by trained personnel in a responsible manner.
- Do not switch the measuring instrument on immediately after it has been taken from a cold to a warm environment. The condensation water generated could destroy the device. Allow the device to reach room temperature before switching it on.
- Wear suitable ear protection in loud environments. Excessive sound levels may damage your ears.
- Consult an expert when in doubt about the operation, safety or connection of the appliance.
- Maintenance, modifications and repairs are to be performed exclusively by an expert or at a qualified shop.
- If you have questions which remain unanswered by these operating instructions, contact our technical support service or other technical personnel.

b) Batteries

- Correct polarity must be observed while inserting the (rechargeable) battery.
- A (rechargeable) battery should be removed from the device if it is not used for a long period of time to avoid damage through leaking. Leaking or damaged (rechargeable) batteries might cause acid burns when in contact with skin, therefore use suitable protective gloves to handle corrupted (rechargeable) batteries.
- (Rechargeable) batteries must be kept out of reach of children. Do not leave (rechargeable) batteries lying around, as there is risk that children or pets could swallow them.
- (Rechargeable) batteries must not be dismantled, short-circuited or thrown into fire. Never recharge non-rechargeable batteries. There is a risk of explosion!

6. Product overview



1 Windshield
2 Standard microphone, unscrewable
3 3.5-digit display
4 ON/OFF button
5 Button for lighting (SL-200)
Button for Max-Hold (SL-100)
6 A/C Button
7 Battery compartment on the back side
8 Max-Hold/Hold button (SL-200)
Hold button (SL-100)
9 Hi/Lo button
10 F/S button

7. Display symbols

MAX	The highest value is held continuously
HOLD	The momentary reading is held
FAST	Fast time evaluation (125 ms/measurement)
SLOW	Slow time evaluation (1 ms/measurement)
Hi	The upper measurement range is selected
Lo	The lower measurement range is selected
BAT	Battery replacement display
dBA	Evaluation filter for A-curve (= hearing)
dBC	Evaluation filter for C-curve (= linear)
OVER	Measured value exceeds the measurement range

8. Initial operation

Inserting the batteries

Before the initial operation of this meter, you must first install a new 9V block battery. Battery installation is described in the „Maintenance and Cleaning“ section.

9. Device Functions

The sound level detector has various extra functions that ease operation and handling and which extend its range of application.

These extra functions are:

Auto power OFF function

In order to avoid that the operating life of the battery is shortened unnecessarily, an automatic switch-off function has been implemented. The device will be automatically switched off if no button is pressed within a period of about 8 minutes. You can switch the device back on with the „Power“ button.

HOLD function

The measured value currently being displayed is held in the display. The active function is shown in the display by „HOLD“.

SL-100:

Press the „HOLD“ button to activate this function. Press again to switch back to the continuous measuring mode

SL-200:

Press and hold the „MAX/HOLD“ button for about 2 seconds. To switch off, also press this switch for about 2 seconds.

MAX function

Only the maximum value is shown in the display during continuous measurements. This measurement function makes it easier for you to determine the peak level. The active function is shown in the display by „MAX“.

Press the „MAX“ button to activate this function. Press again to switch back to the continuous measuring mode

Frequency evaluation of A/C-curve

The frequency evaluation for the measured signal is done using two evaluation curves.

Curve A represents the characteristic hearing curve of the human ear. Lower sounds seem quieter than middle or high frequency sounds to the human ear.

Curve C evaluates this frequency range linearly and without a filter (actual sound level).

Press the „A/C“ button to switch over to this filter. The active filter is shown in the display by „dBA“ or dBC“.

Switching-over the measurement range between Hi/Lo

The sound level detector has two overlapping measurement ranges. The lower, Lo-range is from 30 to 100 dB and the higher, Hi-range is from 60 to 130 dB.

„OVER“ is shown in the display if the level falls below or exceeds one of these ranges. In this case, switch-over to the lower/higher range.

Press the „Hi/Lo“ button to switch between ranges.

FAST/SLOW time evaluation

The signal can be measured using two different measurement intervals.

The time evaluation must be set to „FAST“ for sound levels that change rapidly (horns, shots, etc.).

The time evaluation must be set to „SLOW“ for constant sound levels and sound levels that change slowly (white noise, hums, etc.).

Press the „F/S“ button to switch between ranges.

10. Making measurements

Make sure you have suitable ear protection for loud sound sources. There is risk of an damage to the ears!

Observe the permissible ambient temperatures (Techn. Data) to avoid faulty measurements.

Calibration

This sound level detector complies with the European Standard EN 61672-1:2014-07 (IEC 61672:2013) for sound level meters. To be able to use it in compliance to the standards, the meter must be calibrated before every measurement using evaluation curve A (dBA) i.e. it must be checked using an optional sound calibrator and adjusted as required.

Accuracy must once more be checked after each measurement.

To calibrate, proceed as follows:

- Switch the sound level detector on.
- Select the appropriate settings (dBA, Hi or Lo measurement range and FAST time evaluation)
- If required, deactivate the „MAX“ and „HOLD“ functions.
- Plug the microphone of the sound level detector into the opening of the sound calibrator. Make sure that it sits tightly to ensure that the calibration chamber in the sound calibrator is sealed.
- Set the following parameters at the sound calibrator: 94 dB at 1 kHz
- The meter should now display a sound level of 94 dBA. If this is not the case then the meter must be adjusted.
- Open the battery compartment at the rear of the device and remove the battery. Do not disconnect the battery!
- You can now see two alignment points in the battery compartment.
- Using a suitable screwdriver, carefully turn the adjustor for your measurement range until the display is set to exactly 94.0 dBA.

  A(Lo) = Calibration controller for the Lo measurement range

  A(Hi) = Calibration controller for the Hi measurement range
- Carefully re-close the battery compartment.

Making measurements

Sound sources must always be measured directly.

Make sure that there are no objects or persons located between the microphone and the sound source.

Point the sound level detector and the microphone directly at the sound source.

To ensure that you do not influence the sound waves yourself, stretch the meter out with your arm as far away from your body as possible or mount the meter onto a stand. There is a fixture for a stand on the rear of the housing.

Avoid vibration and movement.

If there is a wind (>10 m/s) then use the windshield to ensure that the measurement is not invalidated by wind noise. The windshield does not interfere with measurements.

To facilitate reading of the display during twilight or in darkness, the display of Model SL-200 can be lit up. To do this, press the button with the light symbol (5). Press this button again to switch off the meter.

When not in use, switch the display lighting and/or the meter off.

11. Maintenance and cleaning

The power units are maintenance-free apart from the need to replace the batteries and cleaning it once in a while. Use a clean, lint-free, antistatic and slightly damp cloth to clean the device. Do not use any abrasive or chemical agents or detergents containing solvents.

Replacing the battery

If the battery symbol „BAT“ appears in the display, the batteries have to be replaced as soon as possible to prevent inaccurate measurements.

Proceed as follows to replace the batteries:

- Switch off the meter.
- Loosen the battery compartment screw on the back of the device, and slide the lid off in the direction of the arrow.
- Replace the flat battery with a new one of the same type (e.g. 1604A).
- Carefully close the meter in reverse order to its opening

12. Troubleshooting

In purchasing this device you have acquired a product which has been designed with state-of-the-art technology and is operationally reliable. Problems and malfunctions may, however, still arise.

For this reason, the following is a description of how you can eliminate possible malfunctions yourself.

Always adhere to the safety instructions!

Fault	Possible cause
The measuring unit does not work.	Is the battery dead? Check the charge condition of the battery.
None Change in measured value.	Is the HOLD function active?

Repairs other than those just described should only be performed by an authorised electrician.

13. Disposal

a) Product

Electronic devices are recyclable waste and must not be placed in household waste. Always dispose of the product according to the relevant statutory regulations. Remove any inserted batteries and dispose of them separately from the product.

b) Batteries

You are required by law (Battery Directive) to return all used batteries. Batteries must not be placed in household waste.

Batteries containing hazardous substances are labelled with this symbol to indicate that disposal in household waste is forbidden. The abbreviations for heavy metals in batteries are: Cd = Cadmium, Hg = Mercury, Pb = Lead (name on (rechargeable) batteries, e.g. below the trash icon on the left).

Used batteries can be returned free of charge to local collection points, our stores or any retailers selling batteries.

You thus fulfil your statutory obligations and contribute to the protection of the environment.

14. Technical data

Compliancy to standards	EN 61672-1:2014-07 (IEC 61672:2013)
Battery	1x 9V Block battery (006P, MN1604)
Current consumption	approx. 8mA
Battery service life	approx. 50h (alkaline battery)
Auto-Power OFF	after approx. 8 minutes if no button is pressed
Display	3.5-digit LCD
Resolution	0.1dB (refresh 0.5s)
Accuracy	SL-100 +/- 2% (Class 3)
	SL-200 +/- 1,5% (Class 2)
Microphone	1/2“ electret capacitor microphone
Frequency range	31.5 Hz to 8 KHz
Sound level range	30 to 130 dB
	Lo 30 to 100 dB / Hi: 60 to 130 dB
Frequency evaluation	A and C
Time evaluation	FAST (125 ms) / SLOW (1s)
Working conditions	Temperature 0°C to +40°C
	Rel. air humidity
	10% to 90% (non-condensing)
Storage conditions	Temperature -10°C to +60°C
	Rel. air humidity
	10% to 75% (non-condensing)
Weight (incl. battery)	approx. 230 g
Dimensions (LxWxH)	210 x 55 x 32 (mm)

The following list shows the frequency response for the sound incidence from the datum direction („Characteristic“ column) as well as the error limits of both devices („Accuracy“ column)

Rated frequency	A-Characteristic	C-Characteristic	Accuracy SL-100	Accuracy SL-100
31.5 Hz	-39.4 dB	-3.0 dB	+/- 4 dB	+/- 3 dB
63 Hz	-26.2 dB	-0.8 dB	+/- 3 dB	+/- 2 dB
125 Hz	-16.1 dB	-0.2 dB	+/- 2 dB	+/- 1.5 dB
250 Hz	-8.6 dB	0 dB	+/- 2 dB	+/- 1.5 dB
500 Hz	-3.2 dB	0 dB	+/- 2 dB	+/- 1.5 dB
1 KHz	0 dB	0 dB	+/- 2 dB	+/- 1.5 dB
2 KHz	+1.2 dB	-0.2 dB	+/- 3 dB	+/- 2 dB
4 KHz	+1 dB	-0.8 dB	+/- 5 dB	+/- 3 dB
8 KHz	-1.1 dB	-3.0 dB	+/- 6 dB	+/- 5 dB