

GB Introduction

Dear Customer,

In purchasing this Voltcraft® product, you have made a very good decision for which we should like to thank you.

You have acquired an above-average quality product from a brand family which has distinguished itself in the field of measuring, charging and network technology by particular competence and permanent innovation.

With Voltcraft®, you will be able to cope even with difficult tasks as an ambitious hobbyist just as much as a professional user. Voltcraft® offers you reliable technology at an extraordinarily favourable cost-performance ratio.

We are certain: your investment in a Voltcraft product will at the same time be the start of a long and profitable co-operation.

We wish you much enjoyment with your new Voltcraft® product!

Table of contents

	Page
Introduction	17
Intended use	18
Safety instructions	19
Scope of delivery	21
Controls	21
Initial operation	22
Device functions	22
Making a measurement	24
Maintenance and cleaning	26
Disposal of flat batteries	27
Troubleshooting	28
Disposal	28
Technical data and measurement tolerances	29

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 60 651 (IEC651). 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.

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-200
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
500Hz	-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

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.

Use other than that described above will lead to damaging the product.

No part of the product may be modified or converted.

The safety instructions should be observed without fail!

Safety information



Please read through the operating instructions completely before setting up the system; they include important information necessary for the correct operation.

The guarantee will lapse if damage is incurred as a result of non-compliance with the operating instructions! We shall not be held liable for any consequential damage or loss.

We do not accept any liability for personal injury or damage to property caused by incorrect handling or non-observance of the safety instructions. The warranty will be void in these cases.

This device left the factory in perfect technical condition. To maintain this status and ensure safe operation, the user must comply with the safety instructions and warnings contained in these instructions for use. The following symbols should be observed:



A triangle containing an exclamation mark indicates important information in these operating instructions which is to be strictly followed.



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

For safety and licensing reasons (CE), unauthorized conversion and/or modification of the device is not permitted.

Measuring instruments and accessories are not toys and have no place in the hands of children!

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.

Do not leave the packaging material lying around carelessly. Plastic film and/or bags, polystyrene parts, etc. can be dangerous in the hands of children.

You should also heed the safety instructions in each chapter of these instructions.

Technical Data

Compliance to standards	EN 60 651
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)

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.

If you have queries about handling the measuring device, our technical support is available under the following telephone number:

Voltcraft, 92242 Hirschau, Tel. no. 0180 / 586 582 723 8

Disposal



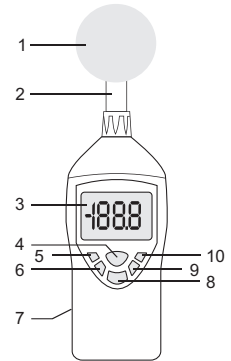
If the device has reached the end of its operational life, please dispose of accordingly.

Scope of delivery

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

Controls and indicators

- 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



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 |

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.

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.



Do not leave flat batteries in the meter. Even batteries protected against leaking can corrode and thus release chemicals which may be detrimental to your health or damage the appliance.

Remove the batteries if the device is not used for longer periods of time to prevent leaking.

Leaking or damaged batteries may cause alkali burns if in contact with skin. It is therefore advisable to use suitable protective gloves.

Make sure that the batteries are not short-circuited. Do not throw batteries into the fire.

Batteries should not be recharged. Danger of explosion.

Disposal of flat batteries.

You, as the end user, are legally obliged (**Regulation on Flat Batteries**) to return all flat batteries and accumulators. **Disposal in the household waste is prohibited!**



Batteries and accumulators containing hazardous substances are marked with the shown symbols indicating that they must not be disposed of in the household waste.



The designations for heavy metals concerned are as follows: **Cd** = cadmium, **Hg** = mercury, **Pb** = lead.

You can return flat batteries/accumulators free of charge to the collection points in your community, our branches or anywhere else where batteries or accumulators are sold.

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.

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

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 „Hi/Lo“ button to switch between ranges.

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 60 651 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.