VOLTCRAFT®

DL-161S SOUND LEVEL DATA LOGGER

CE
Version 02/12

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1. INTRODUCTION

Dear Customer,

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

Voltcraft® - In the field of measuring, charging and network technology, this name stands for high-quality products which perform superbly and which are created by experts whose concern is continuous innovation.

From the ambitious hobby electronics enthusiast to the professional user, products from the Voltcraft® brand family provide the optimum solution even for the most demanding tasks. And the remarkable feature is: we offer you the mature technology and reliable quality of our Voltcraft® products at an almost unbeatable price-performance ratio. In this way, we aim to establish a long, fruitful and successful co-operation with our customers.

We wish you a great deal of enjoyment with your new Voltcraft® product!

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2. INTENDED USE

The device is suitable for measuring the sound level in decibels (dB) and meets the requirements in accordance with EN 61 672-1. The unit is a Class 2 device for general field investigations such as performance measurements. Measurements range between frequencies of 31.5 Hz to 8 KHz and sound levels of 30 to 130 dB. Two measuring modes, two frequency value filters and two time evaluations can be preselected and used in any situation. The sound level that is measured can be displayed simultaneously on the computer or it can be saved on the data logger for later evaluation. The measurements can be started automatically or manually. The power is supplied with one 3.6 V, type 1/2 AA lithium battery.

This product fulfils European and national requirements related to electromagnetic compatibility (EMC). CE conformity has been verified and the relevant statements and documents have been deposited at the manufacturer.

Unauthorised conversion and/or modification of the device are inadmissible because of safety and approval reasons (CE). Any usage other than described above is not permitted and can damage the product and lead to associated risks such as short-circuit, fire, electric shock, etc. Please read the operating instructions thoroughly and keep them for further reference.

⚠️ **Observe all safety instructions and information within this operating manual.**

3. DELIVERY CONTENT

- Sound level data logger
- Protective cover
- Wind protection
- CD-ROM
- 3.6 V lithium battery, type 1/2 AA
- Stand
- 2 x screws
- 2 x dowels
- Operating instructions

4. SYMBOL EXPLANATION

⚠️ An exclamation mark in a triangle indicates important instructions in this operating manual which absolutely have to be observed.

➜ The symbol can be found when you are to be given tips and information on operation.

5. SAFETY INSTRUCTIONS

⚠️ **We do not assume liability for resulting damages to property or personal injury if the product has been abused in any way or damaged by improper use or failure to observe these operating instructions. The warranty/ guarantee will then expire! The icon with exclamation mark indicates important information in the operating instructions. Carefully read the whole operating instructions before operating the device, otherwise there is risk of danger.**

Dear Customer, the following safety instructions are intended not only for the protection of your health but also for the protection of the device. Please read carefully through the following points:

Persons / Product

• The product is not a toy and should be kept out of reach of children and pets!
• On commercial premises, the accident prevention regulations of the Association of Industrial Professional Associations with respect to electrical systems and operating equipment must be observed.
• In schools, training centres, Hobby and DIY workshops, the handling of measuring appliances must be responsibly supervised by trained personnel.
• Wear suitable hearing protection in loud environments. Excess sound levels may cause hearing damage.
• When used in conjunction with other devices, observe the operating instructions and safety notices of connected devices.
• The product must not be subjected to heavy mechanical stress or intense vibration.
• The product must not be exposed to electromagnetic fields, extreme temperatures, direct sunlight or dampness.
• The device must not be exposed to humidity or liquids.
• The product should not be used immediately after it has been brought from an area of cold temperature to an area of warm temperature. Condensed water might destroy the product. Wait until the product adapts to the new ambient temperature before use.
• If there is reason to believe that safe operation is no longer possible, put the device out of operation and secure it against unintended operation. Safe operation is no longer possible if:
  - the product shows visible damages,
  - the product no longer works and
  - the product was stored under unfavourable conditions for a long period of time,
  - the product was subject to considerable transport stress.
• The manufacturer or supplier accepts no responsibility whatsoever for incorrect displays or the consequences which can arise from such incorrect displays.
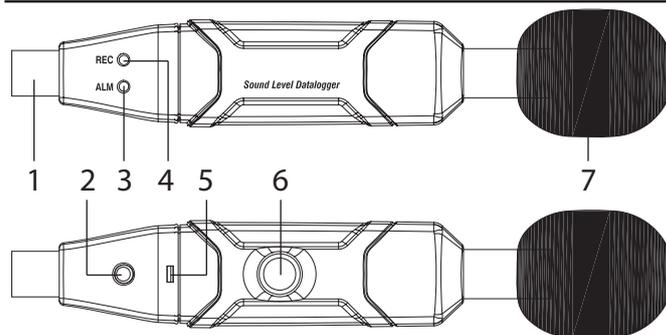
Batteries

• Batteries must be kept out of the reach of children.
• When installing the batteries, make sure to pay attention to the correct polarity.
• Do not let batteries/rechargeable batteries lie around openly. There is a risk of batteries being swallowed by children or pets. If swallowed, consult a doctor immediately.
• Leaking or damaged batteries/rechargeable batteries may cause acid burns when coming into contact with skin, therefore use suitable protective gloves.

• Make sure that batteries/storage batteries are not short-circuited or thrown into fire. There is a risk of explosion!
• Never disassemble batteries/storage batteries!
• Do not recharge normal batteries. There is a risk of explosion!
• In case of longer periods of non-use (e.g. during storage) remove the inserted battery/accumulator to avoid damage through leaking batteries.

Miscellaneous

• The product must not be used for medical or public purposes.
• Repair works must only be carried out by a specialist/ specialist workshop.
• If you have queries about handling the device, that are not answered in this operating instruction, our technical support is available under the following address and telephone number: Voltcraft®, 92242 Hirschau, Lindenweg 15, Germany, phone 0180 / 586 582 7.

6. OPERATING ELEMENTS

1	USB plug	5	Battery compartment cover
2	Data logger button	6	Thread
3	Red/yellow LED	7	Microphone
4	Green LED		

7. SOFTWARE INSTALLATION

1. Insert the CD into the CD-ROM of your computer.
2. The installation will start automatically. If not, please go to your CD-ROM directory, and open the installation file "autorun.exe".
3. Select your desired language from German, English and French.
4. Follow the instructions on the dialog box, select the destination for the installation and complete the installation.
5. For further information, please refer to the operating instructions on the CD provided.
6. Voltsoft software updates to the latest version of the Voltsoft program are available when the program is running and the Internet is connected; or check for the latest Voltsoft update via "http://www.conrad.com".
7. The enclosed software is the Voltsoft standard edition. The professional version (Voltsoft Data Logger, No. 10 13 33) is an optional item which you can purchase separately. If you purchase the professional version, you will get the license key. Follow the steps in the Voltsoft user manual, to register and upgrade your software to the professional version.

Summary of features:

	Standard	Professional
User Management		√
Email Management		√
General Settings	√	√
Language Preference	√	√
Email Template		√
Device Management (Add / Remove)	√	√
Custom Graph		√
Email Alert		√
Web Interface		√

➡ The software manual explains how to operate the software. The manual is included in the Voltsoft software as a PDF document. In the Voltsoft user interface, select the top menu item "Help" and click on "Manual". Then open the PDF document to browse the software manual.

8. DATA LOGGER SETUP

1. Connect the data logger to a PC and start the Voltsoft software.
2. Follow the instructions in the software manual (section 5.3) to get the data logger recognised by the software.
3. After the data logger has been recognised and added, you can set it up following the instructions in the software manual (section 5.6.5).

9. STARTING THE MEASUREMENT

➡ • You should always measure a sound source directly and at a distance of 1 m. Make sure that there are no objects or persons between the microphone and the sound source.
   • Point the sound level meter with the microphone directly on the sound source.
   • In order to not influence the soundwaves, keep the measuring as far away from your body as possible at your outstretched arm or attach it to the enclosed stand. If possible, move approx. 2 m away from the measuring spot. Avoid vibrations or movements.
   • In case of wind (>10 m/s), use the enclosed wind protector to not falsify the measuring value with the wind noise. The wind protector does not falsify the measuring value.

1. Install the software and set the data logger up.
2. Click on the menu item "Device", then on "Setting" (Software manual section 5.6.5) and then via the item "Logger Mode" define how you want the measurement to start. Select "Following setup" to have the measurement start automatically after you have completed the setup. Or select "By button". Press and hold the data logger button for two seconds to start the measurement.
3. After the preset recording rate has been reached, the recording is stopped automatically.
4. To stop the measurement manually, hold down the data logger button for two seconds.
5. Once the memory of the data logger is full, the measurement is terminated automatically.
6. The recording can also be terminated at any time by read-out on the computer before the recording is complete.

Meaning of LED signals	
Red (ALM)	Flashes 2 x if the upper limit value of the preset alarm range has been exceeded.
	Flashes 1 x if the lower limit value of the preset alarm range is undershot.
	Flashes 6 x in 2 seconds if the measurement is stopped manually
Yellow (ALM)	Flashes in ten second intervals after the measurement has been stopped manually.
Green (REC)	Flashes during the measurement at the frequency set under "LED Flash Cycle Setup".
	Flashes 6 x in 2 seconds if the measurement is started manually
	Flashes 5 x if a new battery is inserted
Red - Green - Yellow	Displayed when measurement is started automatically
Red - Yellow	Measuring data are imported to the PC
Red - Green	Shines when the battery needs to be replaced

10. DISPLAYING DATA LOGGER READOUT

1. Start the Voltsoft software and connect the data logger to the computer. Follow the instructions in the software manual (section 3).
2. When you have finished reading data from the data logger, disconnect it from the USB port.

→ Keeping the data logger connected to the USB port of the computer for extended periods can result in a premature discharge of the battery.
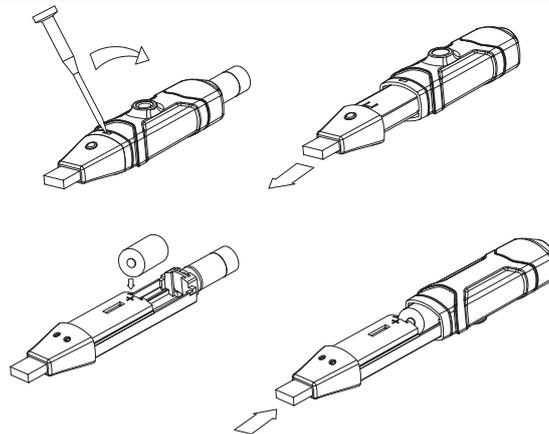
11. CALIBRATION

The sound level meter corresponds to the European standard EN 61 672-1 for sound level meters. To apply the device in line with the standard, it must be calibrated with the benchmark curve A (dBA) prior to each measuring operation, meaning tested and if necessary matched with a sound calibrator Class 2 acc. to IEC 60942. The accuracy must be checked again after each measuring operation. Proceed as follows for calibration:

1. Switch the sound level meter on and plug the microphone of the sound level meter into the opening of the sound calibrator. Ensure a tight fit so that the calibration chamber in the sound calibrator is sealed.
2. Set the following parameters on the sound calibrator: 94dB at 1 kHz.
3. Connect the data logger to your computer and display the readout of the measurements. The measuring curve should now display a constant sound level of 94 dBA. If this is not the case, the measuring device has to be calibrated.

→ Follow the software manual's instructions to calibrate the data logger.

12. INSERTING/REPLACING THE BATTERY

1. With a pointed object (e.g. a small screwdriver or similar), open the casing. Lever the casing off in the direction of the arrow.
2. Pull the data logger from the casing.
3. Turn the data logger around and insert the battery into the battery compartment observing the right polarity. Observe of the polarity markings in the battery compartment.
4. Slide the data logger back into the casing until it snaps into place. Now the data logger is ready for programming.

→
- The battery has to be changed when the red and green LED are flashing in ten second intervals.
- Data that is stored will not be lost for max. 30 minutes when changing the battery or when a device failure occurs during the recording.
- The life of the battery is approx. 200 hours.

13. ASSEMBLING THE STAND

1. Place the stand on a level surface. You also have the option of attaching the support base of the stand to a suitable surface using two screws and two dowels.
2. There is a thread located on the bottom side of the device. Screw the data logger tightly onto the stand.
3. Turn the threaded ring of the stand clockwise to provide additional support for the data logger from below.
4. The arm of the stand is adjustable to allow the data logger to be aligned properly. Turn the ring above the foot of the stand to the left and align the data logger to the required position. Then, turn the ring back to the right to maintain the position.

14. MAINTENANCE AND CLEANING

The device is 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.

15. DISPOSAL

General

In order to preserve, protect and improve the quality of environment, protect human health and utilise natural resources prudently and rationally, the user should return unserviceable product to relevant facilities in accordance with statutory regulations.
The crossed-out wheeled bin indicates the product needs to be disposed separately and not as municipal waste.

Batteries / rechargeable batteries

The user is legally obliged **(battery regulation)** to return used batteries and rechargeable batteries. **Disposing used batteries in the household waste is prohibited!** Batteries/ rechargeable batteries containing hazardous substances are marked with the crossed-out wheeled bin. The symbol indicates that the product is forbidden to be disposed via the domestic refuse. The chemical symbols for the respective hazardous substances are **Cd** = Cadmium, **Hg** = Mercury, **Pb** = Lead.
You can return used batteries/ rechargeable batteries free of charge to any collecting point of your local authority, our stores or where batteries/ rechargeable batteries are sold.
Consequently you comply with your legal obligations and contribute to environmental protection!

16. TECHNICAL DATA

Observed standards:	IEC 61672-1 Class 2
Operating voltage:	3.6 V lithium battery, type 1/2 AA
Max. current consumption:	5.5 mA
Measuring range:	30 dB to 130 dB
Accuracy:	± 1.4 dB
Frequency range:	31,5 Hz to 8 kHz
Volume range:	50 dB
Frequency weighting:	A and C
Time rating:	FAST (125 ms), SLOW (1 s)
Microphone:	1,27 cm (1/2") electret condenser microphone
Operating altitude:	≤ 2000 m
Operating temperature:	0 ºC to 40 ºC
Storage temperature:	-10 ºC to 60 ºC
Rel. air humidity:	≤ 90 % (Operation)
	10 % bis 75 % (Storage)
System requirements:	Microsoft Windows® 2000, XP or Vista™
Dimensions (W x H x D):	140 x 25 x 30 mm
Weight:	77 g