

DIGITAL SOUND 8922



Owner's manual

Sound level meter

Safety instructions

This device is designed and tested in accordance with the safety regulations for electronic measuring instruments. The proper functioning and operational safety of the device can only be guaranteed if the generally applicable safety measures and the device-specific safety instructions given in this manual are respected during operation.

Intended use

This device is only intended to be used for sound pressure metering. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device is not suitable for safety applications, emergency shut-down devices or applications where malfunction may result in personal injury or material damage. Not following this instruction may result in serious injury and material damage.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!



Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke! Never let children unattended use electrical devices.

Possible hearing damage

When measuring high volume and over a long period may lead to permanent hearing damage. Always wear adequate hearing protection for the specific situation.



Operating conditions

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

Proper functioning and operational safety of the device can only be achieved under the climatic conditions that are specified in the chapter „Technical Specifications“.



If the device is transported from a cold to a warm environment condensation may result in device function failure. In this case you have to wait until the temperature of the device has adapted to the ambient temperature, before switching it on.

If it is assumed that the device can not be operated safely any more, it must be put out of operation and secured against further usage. Operator's safety may be compromised by the device when, for example:

- it has visible damage,
- it is not working as specified,
- it has been stored under unsuitable conditions for a longer time.

In cases of doubt, the device should always be returned to the manufacturer for repair or maintenance.

Connection to other devices

Conceive the wiring most thoroughly when connecting to other devices. Under certain circumstances, internal connections in third party devices (e.g. connection GND to earth) may result in not-permissible voltages that may affect the device itself or a connected device in its function or even destroy it.



External power supply

The unit can be powered by an external power supply. Whenever you connect an external power supply, ensure that the operating voltage indicated on the power supply matches the mains supply voltage available at the place of operation and that the AC outlet is protected by a residual current circuit breaker. Failure to do so can result in damage to the device and injure the user.



Warning: When operating the device with a defective power supply (e.g. short circuit from mains voltage to output voltage), life-endangering voltages may be present on the device (for example, at the output terminals)!

Unplug the external power supply from the mains before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.

Fire hazard due to incorrect polarity

Installing the battery incorrectly may damage the device and the battery. Pay careful attention to inserting the battery with the correct polarity.



Possible damage caused by leaking battery

Battery leakage may damage the device permanently. Remove the battery from the device if it is not going to be used for a long time.

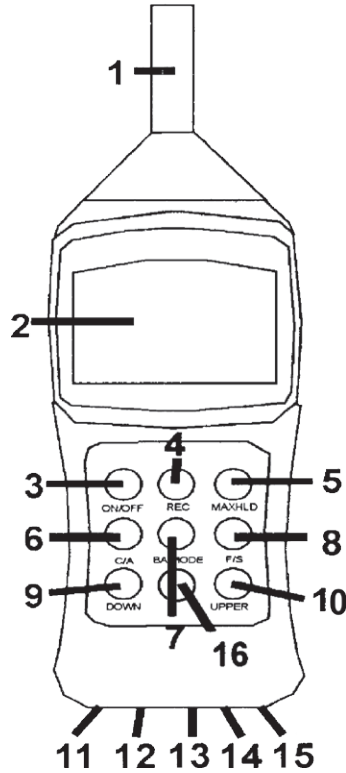
Introduction

Your digital sound level meter allows for automatic or manual range selection out of 6 ranges from 30 dB to 130 dB and offers a resolution of 0.1 dB. The device complies with the ANSI S1.4 and IEC 651 Type 2 standards.

A particular feature is the option to compensate for the background level by pressing a key and to specifically evaluate noise sources in the foreground. Using two weighting filters (A or C), the sound level is weighted according to IEC standard. Furthermore, it is possible to determine the maximum and minimum values over a measuring period.

The sound level meter has sockets for powering external components, an audio output, an envelope output and a digital RS232 interface for data transfer to a PC.

Operating elements



- | | | |
|-----|------------|--|
| 1. | Microphone | |
| 2. | LCD | |
| 3. | ON/OFF | On / off button |
| 4. | REC | Button to record the readings |
| 5. | MAXHLD | Button to store the maximum value |
| 6. | C/A | Button for IEC rating filter |
| 7. | BA MODE | Button for background suppression |
| 8. | F/S | Button to set the measurement interval |
| 9. | DOWN | Button to select the measuring range |
| 10. | UPPER | Button to select the measuring range |
| 11. | DC 9V | Connection for external power supply |
| 12. | CAL | Button to adjust the calibration point |
| 13. | AC OUT | Audio output |
| 14. | DC OUT | Envelope output |
| 15. | RS232 | RS 232 interface |
| 16. | BACKLIT | Button for display lighting |

Operating

Sound level measuring

Press **ON / OFF** to turn the unit on. During the self-test when powering up, initially all segments are lit in the display. Then follows an initialization phase, in which the unit counts down in the display. Only after that, the unit starts measuring of the current level values. Point the microphone towards the sound source to be measured.

The sound is displayed both numerically in a seven-segment display as well as graphically in a bargraph. The numeric value is updated every 160 ms, the bargraph every 40 ms.

Selecting A or C-weighting

After turning on, the device is in measurement mode 'A-weighting'. In this mode, the signal spectrum is evaluated according to the sensitivity of the human ear.

A-weighting should be used for environmental measurements or measurements in the workplace. In particular, this filter should be used when sound level measurements are carried out in the context of legal noise insulation regulations.

The C-type weighting filter is mainly for the lower ranges of advantage. The signal spectrum is evaluated linearly. For example, C-weighting is suitable for noise analysis of engines or machines.

To switch between the two weighting filters, press the **C/A** button. The currently selected weighting filter is indicated by an 'A' or 'C' on the right side of the display.

Selecting the slew rate

Use the **F / S** button to toggle the inertia of the display between fast and slow. The selected mode is displayed on the right side of the display.

After turning the unit on, it is in fast mode.

Storing the maximum sound level

1. Press the **MAXHLD** button during measurement to store the decimally measured value on the display. The lower part of the display indicates the MAX HOLD mode. The digital display now shows the highest previously measured sound level values on the numeric display. The bar graph goes on showing the current noise level values.
2. Press the **MAXHLD** button again to exit the mode again.

Determining the minimum and maximum sound level

1. Turn on the meter.
2. Then press the **REC** button. The REC message appears in the lower part of the display. The machine now starts with determining the maximum and minimum sound levels.
3. Then press **REC** again. The note 'MIN' appears in the display and the lowest measured value is displayed on the numerical display. Evaluation stops. The bar display continues to show the current measured value.
4. Now press **REC** a second time, then the maximum sound level is displayed on the numeric display and the display shows the note 'MAX'. Now, the device displays the highest measured value on the seven-segment display. However, the current measurement data can still be read on the analog bargraph.
5. If you hold the **REC** button pressed for about 5 seconds, the recording is stopped and the device is in normal measurement mode again. Press **REC** again so you can start a new analysis.

Suppression of the background noise level

Using this special function it is possible to determine the noise level of individual noise sources such as machinery, even while in the background there is a latent noise.

1. Press **ON / OFF** to turn the unit on.
2. Press the button **MAXHLD**. This is confirmed in the display.
3. Then click the **BA MODE** button. The display shows 'F' next to the note 'SPL' and the MAX HOLD display goes out. The display now shows the sound level of the background noise.
4. Now press the button **MAXHLD** again. 'MAX HOLD' appears again in the display for confirmation and the device is ready to evaluate the sound source in the foreground.
5. Now turn on the machine whose sound level you want to measure. The value shown in the display corresponds to the sound level, which the machine alone is generating, i.e. without background noise. If the display should not change, the background noise is louder than the sound source to be evaluated.
6. To exit the measurement mode 'background suppression', press the **MAXHLD** button and then **BA MODE**. The device is then in normal measurement mode.

Display Illumination

Press the **Backlit** button to light the display for about 5 seconds. This facilitates viewing in low light conditions.

Automatic or manual range selection

The meter offers six measurement ranges in steps of 10 dB:

30~80 dB, 40~90 dB, 50~100 dB, 60~110 dB, 70~120 dB, 80~130 dB.

When you turn on the device, it is in automatic range selection mode. The AUTO indicator appears on the left side of the screen.

The currently selected measuring range can be read on the display by means of the two digits to the left above the bar display. In addition, it is also possible to manually set the measurement range. This can be useful to prevent a switch-over of the display during measurement.

UPPER and **DOWN** keys are provided to set the measurement range manually. The note 'MANU' appears on the display in manual mode. The currently selected range is shown by the numbers below the bargraph. If the UPPER or DOWN button is pressed for 2 seconds, the unit returns to the automatic range selection mode.

In manual range selection mode, the note 'UNDER' is displayed if the measured sound levels are too low for the selected range. On range overrun, the note 'UPPER' is displayed. In both cases you have to re-select the measurement range to obtain valid measurements.

Automatic shutdown

After 20 minutes of operation, the meter turns off automatically to conserve battery power.

This can be changed during powering up the device as follows:

1. First, turn off the unit.
2. Keep the **MAXHLD** button pressed while powering the unit up.
3. Release the **MAXHLD** button when an 'n' appears in the display. Thus, the automatic shutdown function is disabled and the device can only be switched off with the **ON / OFF** button.

For prolonged measurements, we recommend to use an external power supply. However, the automatic shutdown function is enabled again at the next powering up.

Data interface

To use the interface for data transfer, you need a special RS-232 / phone jack cable. This can be found in our range. Since modern computers usually don't offer a serial port anymore, one also needs a USB -> COM adapter.

You also find two additional analog outputs:

- ▶ The AC output delivers the microphone signal.
- ▶ The DC output delivers the envelope, the volume response as a curve.

To capture the respective data, connect the device to the input of a sound interface using two '3.5 mm mono jack to RCA cable'. Open a wave editor and create a new file (stereo). By recording your audio signal you get two waveforms (Left / Right). On the left channel, the microphone signal is mapped. If the signal is driven to 100%, the value of 130 dB is reached (maximum level).

Replacing the Battery

When the display flashes and the message 'BAT' appears, the 9 V battery is exhausted and should be replaced as soon as possible. Unscrew the lid of the battery compartment on the rear panel of the unit using a screwdriver. Insert a new battery and close the cover.

External power supply

This device may only be operated with the stabilized power supply unit GNG8922. Insert the AC adapter plug into socket 11 on the GSH8922.

Serial Interface

The output of the measured values is made as a continuous ASCII string in the unit selected on the device. Line termination is made with CR and LF.

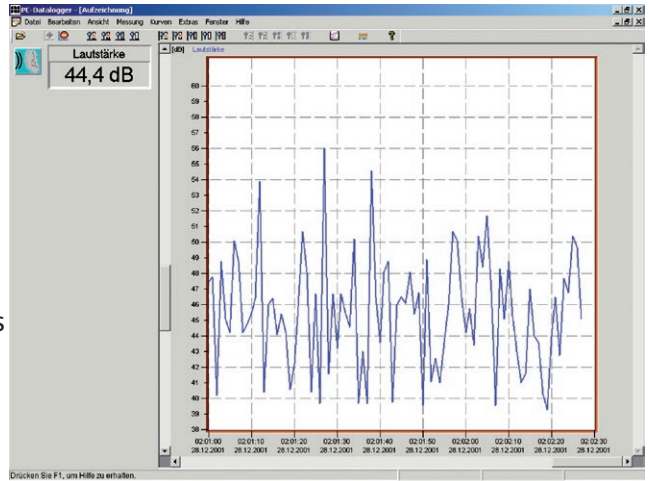
Interface parameter: 2400BD8N1
Output: N:044.5dB <0D, 0A>

Software GSOFT 8922

As a comfortable recording program with online documentation, GSOFT 8922 is available (optional accessory). In addition to data recording on hard disk, the programme's most important feature is the graphical representation of all measured and recorded channels in a reading-time diagram (recorder function).

By 'Drag and Clic', a window section can be enlarged and the time or volume axis can be scaled as required. Besides the graphical view, the representation in the form of a table is possible. The clipboard is used to transfer the measurements to a spreadsheet or word processing. All tables and graphs can be printed in colour.

An all-rounder for data recording and documentation!



Technical specifications

Standards	IEC 651 type 2, ANSI S1.4 type 2
Evaluated frequency spectrum	31,5 Hz ~ 8 kHz
Accuracy	± 1,5 dB
Weighting filter A measuring range	30 dB ~ 130 dB
Weighting filter C measuring range	35 dB ~ 130 dB
Measuring ranges	6 ranges in steps of 10 dB: 30 ~ 80 dB, 40 ~ 90 dB, 50 ~ 100 dB, 60 ~ 110 dB, 70 ~ 120 dB, 80 ~ 130 dB
Automatic range selection	30 ~ 130 dB
Temporal weighting	Fast or slow
Measuring span	50 dB per measuring range
Digital display	3 ½ digit LCD, 0.1 dB resolution, updated every 160 ms
Quasi-analogue bargraph	Display step 1 dB, 50 dB display range updated every 40 ms
Microphone	6 mm electret condenser microphone
Analogue output	AC: 0.707 Vrms ; DC: 10 mV DC/dB
Serial interface	2400BD8N1, N:044.5dB <0D, 0A>
Dimensions	80 mm x 256 mm x 38 mm
Weight	240 g
Operating conditions	4 ~ 50° C, 10 ~ 90 % rF
Storage temperature	-20° ~ 60° C
Power supply	9 V alkaline battery
Operating time with 9 V alk. battery	approx. 20 hours
Scope of delivery	User manual, battery and carrying case
Optional accessory	Software with connection cable, Power supply unit 9 V, stabilized
EMC	Complies with EN 50081-1 and EN 50082-1

Our products are subject to a process of continuous development. Therefore, changes to the technical characteristics are reserved without further notice.

Disposal



- This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE). Do not dispose with your normal household waste. Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.
- For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling. Ensure that plastic bags, packaging, etc. are properly disposed of. Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.
- Batteries must not be disposed of as domestic waste or thrown into fire. Dispose of the batteries according to national or local regulations regarding hazardous waste. To protect the environment, dispose of empty batteries at your retail store or at appropriate collection sites.