



Sound level meter

For calibrating home cinema audio systems

Teufel

Please note

Empty boxes are not available!

We therefore recommend that you keep the packaging if you want to use the eight-week right of return because we can only accept Teufel products IN THEIR ORIGINAL PACKAGING.

For your information

The information in this document may be changed without advance notification and does not represent any obligation on the part of Lautsprecher Teufel GmbH.

Lautsprecher Teufel GmbH accepts no responsibility for any errors in this manual.

No part of these operating instructions may be copied in any way, whether electronically, mechanically, using photocopies or recordings, or transferred without the prior written agreement of Lautsprecher Teufel GmbH.

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Trademark

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Please contact our service department if you have any questions, suggestions or if there is anything you think we could do better.

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Warranty terms

There is a two-year warranty on equipment and labour, starting from the date of purchase, with the exception of damage caused by incorrect use or electrical or mechanical overload. An original copy of our invoice is required as the warranty document. This warranty is exclusively valid for analogue sound level meters that have been purchased directly from Teufel by end users for their own private use. The warranty is not valid for Teufel products that the end user has purchased from a different distributor.

If the Teufel product is sold on privately, the warranty may be transferred to the purchaser, providing that the original proof of purchase is also transferred.

Returns

Teufel provides an eight-week right of exchange or return with reimbursement of the full purchase price paid.

You can find more information on the subject of returns on the returns form that accompanies the delivery or online in the support area of our website www.teufel.de.

If you need to return an item, do not act without the prior agreement of Lautsprecher Teufel.

We can only process and accept returns if you have informed us first by phone and discussed the procedure with us!

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Introduction to the analogue sound level meter

Dear Lautsprecher Teufel customer,

Thank you for buying a sound level meter from our accessories shop.

You have purchased a high-quality device for optimising your home cinema system.

In order to avoid complications, please read the instructions fully before using the device and keep them in a safe place for future reference. If you have any further questions, please contact our engineers on 00800- 200 300 400 –or use the e-mail contact form on our homepage www.teufelaudio.com. Please have your

invoice number ready so that we can deal with your query as well and as quickly as possible.

Please note the safety information on page 4 of these operating instructions and only use this Teufel product once you have read this.



Safety information

Please read the following safety information carefully.

Risk of suffocation – keep packaging materials (e.g. the plastic film) out of the reach and sight of children.

Risk of electrocution – do not leave children unsupervised with electrical devices!!

In case of emergency:

If any of the following occur, switch off the sound level meter immediately and consult our technicians:

- ▶ If the device heats up more than usual or if you see smoke
- ▶ If foreign bodies or liquid have entered the appliance
- ▶ If the device has been in direct contact with rain or other water
- ▶ If the device does not work, even though you have followed the operating instructions
- ▶ If the device has been dropped or damaged in some other way.

We cannot accept any responsibility for incidents that occur because safety information has not been adhered to.

Important: Please read through these operating instructions very carefully. It is essential that you take note of all of the safety information and operating instructions before switching on the appliance. Please keep these operating instructions in a safe place for future reference.

Essential: Please read the operating instructions. You should also follow all instructions for start-up and ongoing use. Before starting up the device, check for any signs of damage!

Information on cleaning: Please do not attempt to clean the device using household chemicals, as these could damage the surface. Simply use a dry cloth.

Caution – moisture and sunlight: Ensure that the sound level meter does not come into contact with moisture! You should also protect it against excessively high air humidity by not using it in damp areas, e.g. in damp cellars; also avoid any use near wet areas such as bathtubs, showers, washbasins, drains or swimming pools etc. Direct sunlight should also be avoided! Unfavourable lighting conditions, such as sunlight, can make it difficult to read the display. Do not expose device to dripping or splashing water. Do not place objects filled with liquids, such as vases on the device.

Electrical supply: The device should only be powered using a commercially available 9V battery. This must be inserted with correct polarity (as shown in the battery compartment). Incorrect polarity of the battery can irreparably damage the measuring device. Never try to operate the device with another power source or with different batteries.

Do not leave batteries lying about! There is a risk that they could be swallowed by children or pets. In case of accidental ingestion, consult a doctor immediately! Avoid short-circuiting the batteries. There is a danger of explosion.

When not in use: In cases of long periods of non-use, remove the battery from the sound level meter to prevent the possibility of damage caused by leakage. Do not leave batteries (even fresh ones) in the measuring device for long periods if the device is not going to be used, as even leak-proof batteries can corrode. Leaking or damaged batteries can cause burns if skin contact occurs. Use appropriate protective gloves to remove leaking batteries from the measuring device.

Disposing of used batteries: Used batteries should never be thrown out with normal household waste. They are regarded as hazardous waste and must therefore be disposed of in an environmentally appropriate manner. Many wholesale and retail stores have collection points where old batteries can be returned free of charge.

Do not throw batteries into a fire – there is a danger of explosion! Keep the measuring device and batteries out of the reach of children! Never try charging non-rechargeable batteries.

Foreign bodies and liquids: Foreign bodies and liquids must not get into the appliance via its openings under any circumstances, as they could come into contact with parts carrying voltages, which could then cause short circuits and fires. Therefore, do not spill any liquids of any kind on the device.

Troubleshooting: Do not attempt to repair the device yourself. Contact our service department first for authorisation, if you think that you can repair the fault yourself. Otherwise, the device must be sent to our service department.

Information on spare parts: Lautsprecher Teufel will provide you with spare parts during the warranty period. Your warranty will not be invalidated if you replace the parts yourself on-site using Lautsprecher Teufel spare parts.

Unusual sounds: If unusual sounds occur during operation, or if the product heats up more than usual or starts smoking, switch off the sound level meter immediately.

On volume while measuring: Loud noises can damage hearing. Sudden high sound pressure may be created, particularly if a "subwoofer" in "Standby/Auto On" mode is switched on by a bass impulse at full volume. In addition to physical damage, please be aware of possible psychological consequences. Children and pets require particular care. If necessary, set the volume control of your signal source device to the lowest level. At high volumes, always keep a certain distance from the device which you are measuring and never place your ears right next to a connected speaker. Always wear officially approved hearing protection while measuring at high levels of noise to prevent hearing damage!

Surroundings: Never work with the sound level meter in rooms with combustible gases, vapours or dusts, or under adverse environmental conditions in which combustible gases, vapours or dusts can be or are present. Also avoid operating the measuring device in the direct proximity of:

- ▶ Strong magnetic fields (speakers, magnets)
- ▶ Electromagnetic fields (transformers, motors, coils, relays)
- ▶ Electrostatic fields (charges/discharges) or
- ▶ transmitter aerials

as these factors could invalidate the measuring results.

Caution: Never operate the measuring device if it is opened up!

Supervisory & legal regulations: Commercial facilities must comply with accident prevention regulations for electrical systems and equipment, as drawn up by the association of industrial trade associations!

Trained personnel must responsibly supervise the handling of the measuring devices in schools, training facilities, and hobby and self-help workshops!

Ambient temperature: Never start up your sound level meter immediately if it has been brought from a cold room to a warm room. In unfavourable circumstances, the condensation that may develop can destroy the measuring device. The measuring device must be allowed to warm up slowly to room temperature in order to work properly.

Area of use: The sound level meter is only used as an aid. It is not suitable for use in laboratories, or for scientific purposes! Any use other than that described in these instructions can cause the product to be damaged. Furthermore, improper use can lead to dangers, such as short-circuiting, fire, electric shock, etc. The product may not be opened, modified or converted in any way!

Unpacking · Contents

Contents

- ▶ 1 x analogue sound level meter
- ▶ 1 x 9 V battery (inside the device)

The analogue sound level meter does not require any further accessories for operation.



First, please check that the system is complete.

Completely remove the items from the packaging materials and place all of the parts in front of you to check them.

Do not use any sharp or pointed objects to remove the packaging materials. These objects could damage the surface of the measuring device.

Start-up · Changing the batteries

To start up, remove the fastening screw of the battery compartment and pull the battery compartment lid towards the back. Remove the protective foil (only for initial start-up) and reinsert the battery (noting the correct polarity). The polarity is shown on the inside of the battery compartment.

Only use 9 V batteries! After inserting the battery correctly, close the battery compartment lid and refasten with the screw you removed at the beginning.

Warning:

Explosion hazard with inappropriate replacement of the battery. Replacement only by the same or an equivalent type. Not expose batteries to excessively warm as sunshine, fire or like. If you plan to not use the device for a longer period of time: remove the batteries from remote control and store them appropriately to prevent possible damage from leaking.



Caution!

Before starting up, please read the information regarding intended use as well as the safety information and the technical data.

A 9 V battery is supplied with the sound level meter. You only need to remove the protective foil from the battery and insert it as previously described before beginning with your measurements.

Observe correct polarity when inserting the battery to avoid damaging the measuring device!

Operating elements

Front



1 Microphone capsule

This is where the measuring device receives the incoming sound. Point the sound capsule directly towards the source to be measured to obtain accurate results.

2 Damping switch ("Range")

Use this switch to turn the sound level meter on or to switch it back off.

You can also use it to adjust the measuring range between 50 and 126 dB. Turn the damping selector switch to the highest damping value ("120") at the beginning of every measurement and then decrease the damping value until the pointer deflects.

In the "BATT" position you can test the inserted battery. If the battery is sound, the pointer deflection should reach the red "BATT TEST" range of the analogue display (5). If this is not the case, then replace the battery as described on page five, otherwise the correct function of the measuring device cannot be guaranteed.

3 Filter selector switch ("Weighting")

The evaluation filter is selected with the filter selector switch. In switch position "A", the frequency response curve of the sound level meter is adjusted to match the characteristics of the human ear. As a rule, this means environmental sounds (vehicles, machines, etc) are measured using the dB(A) unit of measure. The bass is not measured. The switch position "C" is used to measure acoustic signals, speakers and structure-borne noise.

Refer to the illustration on page eight to see the frequency response curve of the filters.

4 Inertia switch (Response)

This switch can set the inertia of the pointer deflection in two stages. If the sound source only emits short sound waves, or if measuring the maximum volume, set the inertia switch to "FAST". If measuring the average volume of a sound source, set the switch to "SLOW".

5 Analogue display

The measuring results here are displayed by an analogue pointer. To interpret the values, see page seven.

6 Calibration potentiometer ("CAL")

This makes it possible to set the sound level meter in such a way that it provides correct measuring results. It is usually already precisely calibrated ex works (see technical data, page eight) so that intervention by the user is not necessary.

7 Cinch output socket ("OUTPUT")

A recorder or analyser for further measuring evaluations can be connected to this cinch output.

Page



Carrying out measurements

The sound level meter, with its analogue dB display, is used to measure noise levels of all occurring sound sources up to an intensity of 126 dB. It is a tool for the measurement and construction of loudspeaker systems, for adjusting stereo and surround speaker systems, for checking sound insulation or for simple measurements of environmental noises.

A sensitive microphone at the top end of the measuring device converts the sound into an electrical impulse which is transmitted to the electronic measuring equipment and then shown on the analogue meter display (3), depending on whether the filter selector switch is set to (5) dB(A) or dB(C).

The measuring range can be adjusted with the damping switch (2). Set this switch to the highest damping value (120) at the beginning of every measurement and then decrease the damping value until the pointer deflects.

The actual dB value of the measured source is comprised of the values as shown in the following example:

The damping selector switch (2) reads the value of "80", the pointer deflection (5) specifies the value "+2". This means the volume of the sound source $80 + 2 = 82$ dB.

For a meaningful measurement, the sound source concerned should be at least 10 dB louder than the ambient noise.

If you would like to measure the maximum volume of a sound source, then use the "FAST" position on the inertia switch (4). If you would like to measure the average volume, then use the "SLOW" setting.

To prevent faulty measurements due to reflections off one's own body, hold the sound level meter at arm's length pointed towards the sound source. The level meter can also point upwards.



Switch off the device after every use to spare the battery!

Tip:

To achieve as accurate a measurement as possible, always use the lowest possible damping value.

For example, if the damping selector switch reads a value of "80" and the analogue display shows approx. "-6", you should change the damping range to "70". Now the more accurate value of "+3" is shown in the analogue display, which yields a value of $70 + 3 = 73$ dB.

The previous measurement would therefore have been inaccurate and would have yielded $80 - 6 = 74$ dB.

Technical data · Service & maintenance

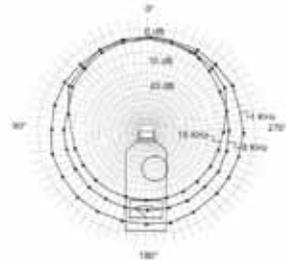
Technical data

Battery type	9 V battery
Measuring tolerance	2 dB at 114 db sound
Frequency	32 Hz–10 kHz
Display	Analogue dB display
Evaluation filter	A and C (IEC standard)
Output socket	Cinch
Current consumption (display)	approx. 6 mA
Dimensions (W x H x L)	62 x 44 x 160 mm
Weight	approx. 185 g including battery

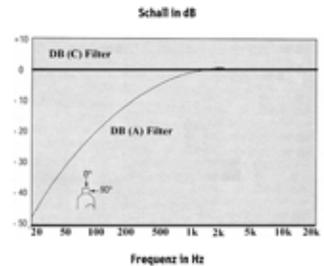
Service and maintenance

Except for replacing the battery, the sound level meter is absolutely maintenance free. Use a soft, moist cloth to clean the outside of the device. Do not use abrasive cleaners or solvents!

Directional characteristic of the microphone:



Frequency response curve:



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