

# Information Sheet for Type Approval of Sound Level Meters

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Contact:  
Dr. Ingolf Bork

Phone: +49 531 592 1531  
Fax: +49 531 592 691531  
Email: ingolf.bork@ptb.de

## **1 Regulations and standards**

Verification Ordinance, General prescriptions (EO-AV)

Appendix 21 to Verification Ordinance (EO21 – Sound Level Meters)

DIN EN 61672-1 "Sound level meters, part 1: Requirements"

DIN EN 61672-2 "Sound level meters, part 2: Pattern evaluation tests"

DIN 45657:2005-03 "Sound level meters – additional requirements for special measurement tasks"

***By legal direction approval tests of sound level meters are performed to decide, whether or not a sound level meter is allowed to be used for tasks in accordance with section 3 of the Verification Ordinance.***

***Standards conformity tests are not performed at working group "noise measuring technology".***

***According to appendix 21 to the Verification Ordinance, performance categories class 1 and 2 sound level meters are tested.***

## **2 Application for approval**

The application for national type approval is to be placed in writing. It should state the instrument type of the sound level meter, the microphone, the pre-amplifier, the calibrator(s), the software used with version number, the technical documentation with version number and the complete accessories which shall be part of the approval.

Further statements are necessary:

Letterhead of the applicant body,

Name and signature of the responsible person,

VAT Registration Number.

The application document can be sent by email with pdf-attachment.

The following must be submitted with the application for approval:

- three test samples,
- a technical documentation in the German language (manual), containing all obligatory specifications of the respective standard (with current version number and date),
- a filled-in checklist (see Annex) for examination of the technical documentation,
- three adapters with an equivalent capacitance corresponding to the microphone capacitance, for feed-in of electrical test signals (on BNC),
- an adapter for the analogue
- interface (AC output) to check the directional characteristics (on BNC),
- calibrator(s) which shall be part of the approval (at least one approved calibrator has to be quoted),
- identified accessories which shall be part of the approval.

Handling of the application can start as soon as

- all documents required have been submitted and, as the case may be, an advance payment of the costs probably arising has been made and
- the necessary number of prototypes has been submitted to PTB and, when required, installed, connected or arranged ready for use by the applicant.

The application is rejected and costs will have to be paid by the applicant when handling of the application cannot be started within six months after placing of the application for one of the reasons stated above.

### **3     *Sound calibrators***

In the approval, only approved sound calibrators with the reference sound pressure level (reference frequency) required for the sound level meter can be taken into account. When an unregulated sound calibrator is used, the volume correction value for the microphone used must be known. The instrument class of the sound calibrator must at least correspond to that of the sound level meter.

**Adjusting a sound level meter, the instrument should accept only meaningful values for microphone sensitivity.**

### **4     *Display***

Functions which have been tested for initial verification must be identified in the display. If the identification is not self-explanatory, it must be explained in the manual.

### **5     *Electrical tests***

Is the sound level meter equipped with a reflection free interface, it can be used for electrical tests. Before the test is started it should therefore be clarified how the sound level meter can be connected to the test program.

## **6      *Mechanical tests***

Influenced by mechanical vibrations the lower limit of the working range can change. Specifications are to be made for the sound level meters lower working range limit with mounted and dismounted microphone (if intended) for mechanical vibrations with an acceleration of 1 m/s<sup>2</sup> vertical and parallel to the microphones diaphragm level at frequencies 31,5 Hz, 63 Hz, 125 Hz, 500 Hz and 1000 Hz.

At least one sound level meters instrument design is demanded to keep within error limits at influence of mechanical vibrations (20 Hz – 1 kHz with a sine-shaped acceleration of 1 m/s<sup>2</sup> vertical and parallel to the microphones diaphragm). That is for a performance class 1 sound level meter  $\pm 0,7$  dB and for a performance class 2 sound level meter  $\pm 1,0$  dB.

## **7      *Modifications on the sound level meter***

Each modification on the sound level meter must be communicated to the Notified Body for type approval and approved as a supplement.

## **8      *Requirements to be met by PC-based sound level meters:***

If a PC or notebook is part of the approval, the complete system is tested during type approval. Each change of the hardware and the approved software is to be communicated to the Notified Body for type approval and to be approved as a supplement.

If the measurement value subject to legal control is determined and displayed by the PC, the complete measuring instrument and the complete software is subject to legal control. A measurement subject to legal control may be performed only in the hard- and software configuration in which the approval tests have been performed. Additional software must not be installed.

If measured data processing is completely performed in the measuring transmitter and only the final measurement value is displayed by the PC, a software subject to legal control may be used. The requirements to be met by software subject to legal control can be communicated on request. The measurement value must not be modified in the PC. It must be ensured with information-technological means that the measuring transmitter is functional in the PC only together with the software version specified in the approval. In the case of this solution, other software not subject to legal control may be installed in the computer in addition to the software subject to legal control. The software subject to legal control must guarantee that the measurement value displayed cannot be influenced by the software not subject to legal control.

**An interface can stay unsealed only, (in the sense of the verification ordinance), when it is guaranteed reflection-free.** That is the case when the shown measurement value cannot be influenced via the interface. Possible affects via interface, like data communications, electrical impedances and interface generated hums must be excluded.

In case influences via interface lead to different measurement values, the interface gets sealed in the sense of the verification ordinance.

**Are interfaces reflection free, then a manufacturer declaration about this fact is needed.**

## **9      *Software modification***

In the case of any software modification, the Notified Body performs an electrical test on the sound level meter and issues a supplement.

## **10    *Costs (as of May 2012)***

The fees for an approval or supplement are charged in accordance with the regulations governing charges for approvals granted by PTB and depend on the time and effort spent. In accordance with the regulations governing charges for approvals granted by PTB, average fees of 1450,70 € are charged for examination of the directional characteristics of a sound level meter with a microphone mounted and also average fees of 725,35 € are charged for examination of the directional characteristics of a sound level meter with a separate microphone. 138 € per hour are charged for use of the EMC hall. According to experience, the costs for an approval are between 13.000 € and 17.000 €, depending on time and effort spent. Depending on time and effort spent, the fees for a supplement for a new software are between 2.000 € and 2.200 €. If all tests (acoustic, electric, climatic, EMC and manual) are required to issue a supplement, the fees correspond to those of an approval.

## **10. *Commissioner and authorized agent***

### **Commissioner:**

A commissioner is a person who can furnish proof that the manufacturer has authorized him to apply for type approval on his own name (name of the agent authorized); i.e. type approval is granted to the commissioner, including all rights and obligations resulting from the approval; the commissioner thus becomes the holder of the approval.

### **Authorized agent:**

The authorized agent demonstrably acts on behalf, in the name and for the benefit of the manufacturer. He does not acquire any approval rights.

PTB is not committed to check whether the applicant is also the manufacturer of the type and is entitled to act on behalf of the manufacturer or has been authorized by him.