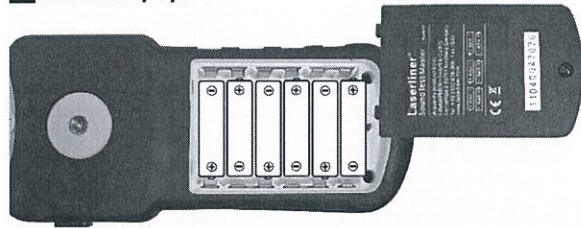


**!** Read the operating instructions and the enclosed brochure „Guarantee and additional notices“ completely. Follow the instructions they contain. Safely keep these documents for future reference.

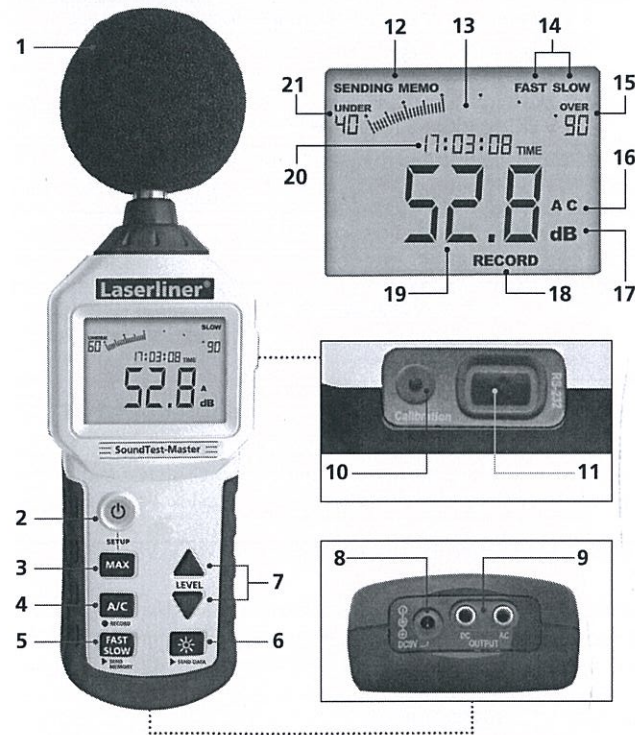
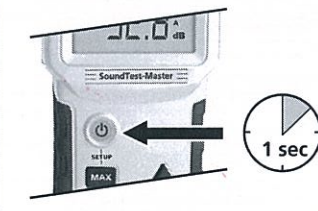
**Function/Application**

The sound level meter is used to measure sound level with the frequency weighting filters based on the standard curves dB A and dB C as well as two time weighting factors (fast/slow). An internal memory stores the data measured during long-term measurements and the internal interface enables real time logging on a PC.

**1 6 x AAA, 1,5 V**



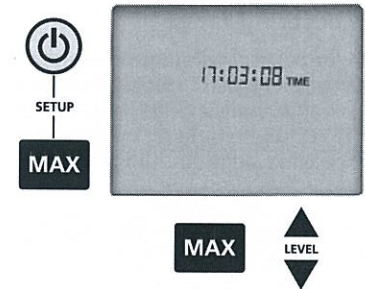
**2 ON / OFF**



- 1 Microphone/Wind guard
- 2 ON/OFF
- 3 Max. function
- 4 dB A, dB C/Record
- 5 Time weighting/Memory readout
- 6 Display lighting/Real time recording
- 7 Adjust measuring range
- 8 9 V DC power supply connection
- 9 DC/AC output
- 10 Calibration screw
- 11 PC interface
- 12 Data transfer
- 13 Analogue scale
- 14 Time weighting
- 15 Max. measuring range
- 16 dB A/dB C
- 17 Unit
- 18 Record measured values
- 19 Current measured value
- 20 Time
- 21 Min. measuring range

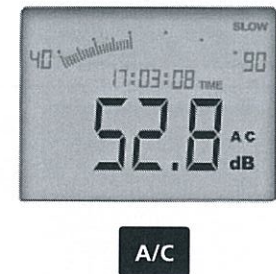
**3 Setting date/time (setup)**

The current data and time should be set before using the device for the first time to ensure stored measured values are assigned for subsequent evaluation. Press and hold the "MAX" button while switching on. You can change the value with the "LEVEL" buttons and move to the next value with the "MAX" button. Date format: Year/month/day. Switch off the device to store the setting.



**4 Sound pressure level (dB)**

This device registers sound in a similar way to the human ear. The integrated microphone receives the incoming sound waves and converts them into electrical signals. Human hearing involves specific auditory curves. The greater the sound pressure, the louder the sound is perceived to be. The higher the frequency, the higher the pitch of the sound is perceived to be. To ensure that measurements are aurally compensated, this measuring device is fitted with filters. The A-weighting (dB A) replicates the frequency response associated with human hearing and is used for the majority of industrial noise and environmental noise measurements. The C-weighting is used in industrial measurements.



After switching on the device, correspondingly switch over the dB A/dB C weighting filter by pressing the "A/C" button.

**!** Powerful wind noises (> 10m/s) can affect the measured value. In such cases, you should use the wind deflector supplied with the product.

Sound source	Sound pressure level in dB (A)
Auditory threshold	0
Quiet residential area	30 to 40
Low-level conversation, quiet office	40 to 50
Normal conversation	50 to 60
Heavy road traffic	70 to 80
Shouting, screaming	80 to 85
Pneumatic hammer (10 m away)	90 to 100
Start-up of a jet aircraft (100 m away)	120 to 130
Pain threshold	140

## 5 Measuring range

Select the corresponding measuring range in the device to achieve the required degree of accuracy of measurement results. In addition to the option of selecting the measuring range manually, the device also features an automatic range detection function. You can set the required measuring range by pressing the "LEVEL" buttons. To set the automatic measuring range, press and hold the "LEVEL ▲" button until the measuring range 30...130 dB appears in the display.



Measuring range: Manual	
30 ... 80 dB	60 ... 110 dB
40 ... 90 dB	70 ... 120 dB
50 ... 100 dB	80 ... 130 dB
Measuring range: Automatic	
30 ... 130 dB	



The following alert is shown on the display when the measured values are outside the preset measuring range:

<b>UNDER</b>	The measured value is below the measuring range. Correct the measuring range downward.
<b>OVER</b>	The measured value is above the measuring range. Correct the measuring range upward.

Use the automatic measuring range to gauge the corresponding range. Then switch over to the determined manual measuring range as greater accuracy is achieved in this range. Ideally, the measured value should be in the middle of the defined measuring range.

## 6 Time weighting (FAST/SLOW)



The device features two different measuring intervals. "FAST" time weighting should be set for signals that change quickly. "SLOW" time weighting should be set for continual signals that change slowly. The "FAST" measuring interval is 125 milliseconds while the "SLOW" measuring interval is 1 second. The time weighting can be changed at any time during the measurement by pressing the "FAST/SLOW" button.

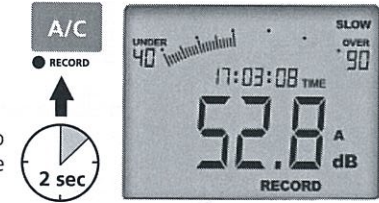
Always make sure the time weighting is set correctly to match the signal to be measured. If "SLOW" weighting is used for signals that change fast the measurement result may be falsified as peak levels may not be recorded.

## 7 MAX function

The MAX function is activated by pressing the "MAX" button. The measured value currently displayed corresponds to the largest measured value. Lower measured values are not displayed. Press the "MAX" button again to deactivate the function.

## 8 Record measured values (RECORD)

An internal memory makes it possible to record measured data during a measurement session. The stored data can be read out for subsequent evaluation. The memory can hold up to 16,000 measurements. Press the "RECORD" button for 2 seconds to start recording. "RECORD" appears at the bottom of the display. Press the button again for 2 seconds to stop recording. "FULL" is shown on the display as soon as the memory in the device is full.



Do not start measurement recording before the device has been securely set up and adjusted. Measurements may be falsified if settings are changed during recording.

## 9 Clear memory

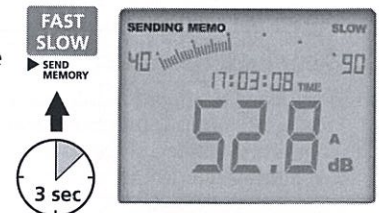
Press and hold the "LEVEL ▲" button for 3 seconds to completely delete the data in the memory. "CLR" appears on the display. Press and hold the "LEVEL ▼" button for 3 seconds to confirm that you wish to delete the data. The "CLR" display then flashes for a short time. The delete operation is concluded as soon as the normal display view appears again.



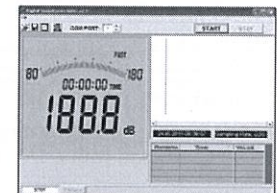
## 10 Transfer stored data (SEND MEMORY)

The software on the supplied CD must be installed on your PC before the stored data can be read out and evaluated. Place the CD in the drive of your PC, start the installation program and follow the installation routine.

After successful installation, start the application. Then connect the supplied transfer cable to the PC interface on the device. Connect the other end of the cable to a free port on your PC. Press and hold the "SEND MEMORY" button for 3 seconds to transfer the data. "SENDING MEMO" appears on the display and goes out again as soon as data transfer has been completed.



Refer to the PDF file on the CD for information on installation and operation of the supplied software.



### 11 Real time recording (SEND DATA)

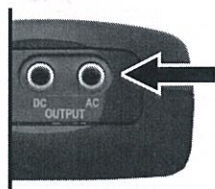
It is possible to transfer the data to the PC in real time when conducting extensive measurements where there is not sufficient space in the internal memory for the recorded data. Data storage takes place directly at the PC. The measured data can also be displayed and observed directly on the PC monitor.



Connect the device to the PC as described under Point 10 and start the program. Press and hold the "SEND DATA" button for 3 seconds to start data transfer. "SENDING" appears on the display. All recorded data are now shown in real time on the PC. Press the "SEND DATA" button again for 3 seconds to stop data transfer.

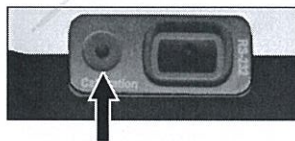
### 12 DC/AC output

The device is equipped with analogue signal outputs. The dB A or dB C signal is output via the CD output for connection to a chart recorder for instance. The unfiltered signal that is recorded directly from the microphone is made available at the AC output for a possible connection to an oscilloscope.



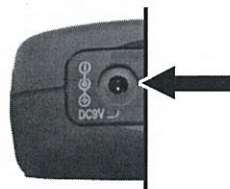
### 13 Calibration and adjustment

The calibration can be checked by means of a sound pressure level calibrator in accordance with IEC/EN 60942:2003ff. The calibrator defines a target volume of 94 dB. The device should be checked in the 80...130 dB setting and show 94 dB plus the tolerance range on the display. If the displayed value deviates from the target volume, you can adjust the sound level meter to the required 94 dB by means of the calibration screw.



### 14 Power pack operation

It is recommended to operate the device with a controlled power pack (9 V, > = 500 mA DC, DC power plug 3.5 x 1.3 mm). High quality control and filtering of the power pack is required in order to rule out possible interference on the measurement signal (ripple <= 100 mV).



### 15 Mounting on tripod

For certain measuring tasks it may be of advantage to secure the device on a tripod. To do so, screw the device on to a tripod with a 1/4" connection. Undo the device by turning in anticlockwise direction.

### Technical data

Manual measuring range	30 dB ... 80 dB 40 dB ... 90 dB 50 dB ... 100 dB 60 dB ... 110 dB 70 dB ... 120 dB 80 dB ... 130 dB
Automatic measuring range	30 dB ... 130 dB
Accuracy	±1.5 dB
Dynamic range	50 dB
Test condition	94 dB, 1 kHz sinusoidal signal
Frequency range	31.5 Hz ... 8 kHz
Measuring interval	Fast: 125 ms, Slow: 1 s
Resolution of digital display	0.1 dB, Measuring rate: 2 measurements/second
Resolution of analogue display	1 dB, Measuring rate: 20 measurements/second
Microphone	Electret microphone
Data memory	16,000 measurements
AC voltage output	0.70 V <sub>rms</sub> at full deflection, approx. 600 ohm output impedance
DC voltage output	10 mV/dB, approx. 100 ohm output impedance
Interface	Optoinsulated RS 232
Power supply	6 x 1.5 V AAA
Power pack connection	9 V DC, < 100 mV ripple, <= 150 mA current consumption
Operating temperature	0 °C ... 40 °C (10 % ... 80 % relative humidity)
Storage temperature	-10 °C ... 60 °C (10 % ... 70 % relative humidity)
Dimensions (W x H x D)	80 x 245 x 35 mm
Weight (including batteries)	350 g

Subject to technical modifications. 05.11

### EU directives and disposal

This device complies with all necessary standards for the free movement of goods within the EU.

This product is an electric device and must be collected separately for disposal according to the European Directive on waste electrical and electronic equipment.

Further safety and supplementary notices at: [www.laserliner.com/info](http://www.laserliner.com/info)

