

USER MANUAL

SOUND LEVEL METER

PCE-322A



ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on: www.pce-instruments.com

SAFETY NOTES

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- » The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- » The instrument may only be used if the environmental conditions (temperature, relative humidity, ...) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- » Do not expose the device to shocks or strong vibrations.
- » The case should only be opened by qualified PCE Instruments personnel.
- » Never use the instrument when your hands are wet.
- » You must not make any technical changes to the device.
- » The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- » The device must only be used with accessories from PCE Instruments or equivalent.
- » Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- » Do not use the instrument in explosive atmospheres.
- » The measurement range as stated in the specifications must not be exceeded under any circumstances.
- » Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

SPECIFICATIONS

Standards	IEC61672-1 Type2
Frequency range	31,5 Hz ... 8 KHz
Measuring range	30 ... 130 dB
Frequency response	A / C
Storage capacity	32700 values
Microphone	1/2 inch electret condenser microphone
Display	LCD, 4 digits
Resolution	0,1 dB
Display update	Every 0.5 seconds
Time response	FAST (125mS), SLOW (1 s)
Measuring ranges	Lo: 30 ... 80 dB Med: 50 ... 100 dB Hi: 80 ... 130 dB Auto: 30 ... 130 dB
Accuracy	±1.4 dB (under reference conditions @ 94 dB, 1KHz) Over is displayed when the current measured value is higher than the selected measurement range Under is displayed when the current measured value is lower than the selected measurement range
Min/Max value	Hold function for minimum and maximum values
AC output	1 Vrms (based on the maximum value of the selected measuring range)
Output impedance	Ca. 100 Ohm
DC output	10 mV / dB
Output impedance	1KΩ
Power supply	9 V battery (typically for 30 hours of operation)
AC adapter	9 VDC (8-15 VDC max, power adapter)
Operating temperature	0 °C ... +40 °C
Operating humidity	10 ... 90 % r. F.
Storage temperature	-10 °C ... 60 °C
Storage humidity	10 ... 75 % r. F.
Dimensions / Weight	280 x 95 x 45 mm / 329 g

DELIVERY SCOPE

- 1 x PCE-322A sound level meter
- 1 x windshield
- 1 x screwdriver
- 1 x power supply
- 1 x 9 V block battery
- 1 x USB cable
- 1 x mini tripod
- 1 x carrying case
- 1 x operating instructions

FUNCTIONS

- 1 - Rec
- 2 - Setup
- 3 - Backlight
- 4 - Fast/Slow
- 5 - A / C
- 6 - Max / Min
- 7 - Hold
- 8 - Level
- 9 - Power
- 10 - 9 VDC power supply /
Mini USB interface / Analog output /
Calibration screw

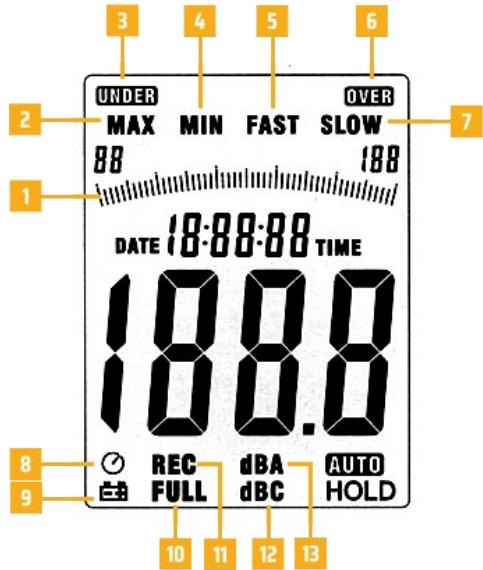


Windshield

When measuring at wind speeds > 10 m/s, use the windshield on the microphone.

Display

- 1 - Range selection
- 2 - Maximum display
- 3 - Subrange display
- 4 - Minimum display
- 5 - Fast response
- 6 - Overrange display
- 7 - Slow response
- 8 - Automatic shutdown / SETUP button activated / deactivated
- 9 - Low battery
- 10 - Memory full
- 11 - Data being recorded
- 12 - C rating
- 13 - A rating



REC button:

Data recording function

- » Press the REC button after switching on the device to start recording data; REC will be displayed.
- » Press the button again to stop recording.
- » **Note:** To avoid data loss, do not turn off the device during data recording. First stop recording by pressing the REC button.

Setting the memory interval

- » Press and hold the backlight button while turning on the device with the POWER button.
- » Press the LEVEL button to set the memory time and the HOLD button to apply the settings.

Resetting the data memory

- » Press and hold the REC button while turning on the device with the POWER button. Release the REC button when CLR appears on the display. The data memory has been reset.

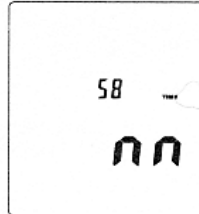
Setup button:

Setting the date and time

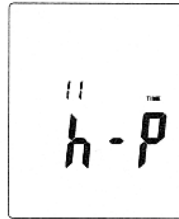
- » If the device is switched on, switch it off.
- » Press and hold the SETUP button while switching on the device. The device will now perform a display test and then briefly show **TIME**. You can now release the SETUP button.
- » **Note:** Press the HOLD button to accept the value and exit the setup at any time.
- » The display will then show:



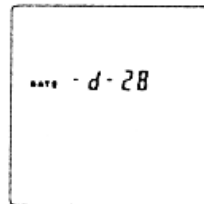
- » Press the Setup button again and the display will show the minute setting:



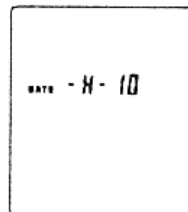
- » Use the Level button to set the value. Then press the SETUP button to save the setting.
- » After pressing the Setup button, the display shows the hour setting:



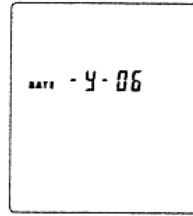
- » Press the LEVEL button to set the value. (h-P = P.M , h-A = A.M)
- » Press the SETUP button to save the set value and the display will show the day setting:



- » Use the LEVEL button to set the value.
- » Press the SETUP button to save the set value and the display will show the month setting:



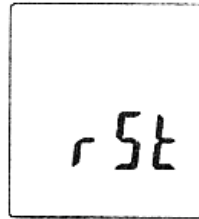
- » Use the Level button to set the value.
- » Press the SETUP button to save the value and the display will show the year setting:



- » Use the LEVEL button to set the value.
- » Once all the date and time settings have been made correctly, you can exit the setup by pressing the HOLD button. The device is now set correctly and is in measurement mode.

Resetting the date and time to factory settings

- » If the device is switched on, switch it off.
- » Then hold down the SETUP button while turning the device on. The device will now perform a display test and then briefly show **TIME**. You can now release the SETUP button.
- » Press the SETUP button until the display shows the reset function:



- » Now press the HOLD button to reset the time and date to the factory settings.
- » **Note:** Reset the time if the time and date cannot be set after changing the battery.

USB connection settings

- » Press the SETUP button if you want to connect the device to your PC. The automatic shutdown function is deactivated and data transfer begins.

FAST / SLOW button

- » Fast measurement recording: 1 x per 125 ms (for normal measurements and for recording sound peaks)
- » Slow measurement recording: 1 x per second (for long-term measurements with highly fluctuating sound levels)

MAX/MIN button

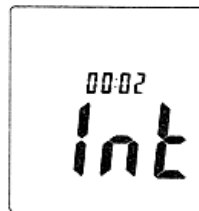
- » Display of maximum/minimum values.
- » Press the MAX/MIN button once and **MAX** appears on the display.
- » The highest measured value is recorded and displayed until a higher value is measured.
- » When the button is pressed again, **MIN** appears and the lowest measured value is recorded and displayed.
- » Pressing the MAX/MIN button again ends the minimum/maximum measurement.

LEVEL button

- » Pressing the LEVEL button repeatedly switches between the device's different measurement ranges.
- » Measurement ranges:
 - Lo: 30 ... 80 dB
 - Med: 50 ... 100 dB
 - Hi: 80 ... 130 dB
 - Auto: 30 ... 130 dB

Backlight button

- » Turns the backlight on or off
- » Sets the sampling rate:
- » Press and hold the backlight button while turning on the device until the **INT** symbol appears on the display. You can now use the LEVEL button to set the interval (in seconds) at which a value is written to the memory.



A/C button

- » A: A rating for general evaluations
- » C: C rating for measurements in the low-frequency range

HOLD button

- » Pressing the HOLD button freezes the value currently shown on the display.

POWER button

- » Turns the device on/off.
- » **Note:** Hold the button down for about 3 seconds to turn off the device.

USB connection

- » Connecting the device to the PC via USB emulates a serial interface with a transfer rate of 9600 bits per second in Device Manager (COM3, COM4, ...).

Calibration

- » Set the device as follows:
 - Frequency weighting to dBA and FAST
 - Measuring range to 50 ... 100 dB
- » Carefully insert the device with the microphone tip into the opening of the calibrator (94dB @ 1kHz).
- » Activate the calibration function and adjust the device to exactly 94 dB (display value) using the calibration screw.
- » **General:** The device is factory calibrated; recalibration may be necessary depending on the application.

DEVICE PREPARATION

Battery

Remove the battery cover and insert the 9 V battery.

Battery replacement

If the voltage required for measurement drops, you will receive a warning signal. In this case, please replace the battery.

AC adapter

If you are using the power supply unit, please connect it to the DC9V port on the side of the device.

Note: Do not connect the power supply to the device during a measurement in battery mode, as this will cause the device to shut down.

MEASUREMENT

- » Turn on the device and select the desired parameters and settings. The A-weighting is used by default to approximate human hearing.
- » Hold the measuring device in the direction of the sound source.
- » If you have activated the min-max hold function, the device will record these values. Press and hold the MAX-MIN button for 2 seconds to clear the old values from the display.
- » Hold the device in your hand or secure it with the tripod at a distance of 1 to 1.5 meters.

SOFTWARE

Driver

Download the latest version from the following website:
https://www.pce-instruments.com/deutsch/download-win_4.htm








First install the device drivers and then connect the measuring device to the computer via USB.
Be sure to observe point 8 for the USB connection!

- » Start Windows.
- » Double-click the **CP210xVCPInstaller.exe** file in the ..\driver\Windows[your operating system version]\ directory.
- » Then click **Install** to install the driver.
- » Restart the PC after the driver installation is complete!
- » Once the PC has restarted, you can switch on the measuring device and connect it to a free USB port on the computer.
- » The driver will now be installed automatically and the device will appear in the computer's Device Manager. Open Device Manager via Start -> Control Panel -> System -> Device Manager.

- » If the driver has been installed correctly, the entry **CP2101 USB to UART Bridge Controller (COMX)** will appear under the item **Ports (COM and LPT)**. Make a note of the COM port number, in this case COM3. This must be set in the software. (In the rare case that the assigned port number is greater than 9, change it manually to a number between 1 and 9. To do this, go to the properties of the CP2101... controller, then to Port Settings and Advanced Port Settings.
- » Now start the software installation by running **Setup.exe** in the root directory of the CD and following the information on the screen.
- » Once the software installation is complete, start the **Sound Level Meter** application. In the menu under **Com Port(C)**, select the port number that was previously displayed in the device manager.
- » Now press the SETUP button to deactivate the automatic shutdown and activate USB transmission. (The small clock symbol on the display must not be active).

Software operation

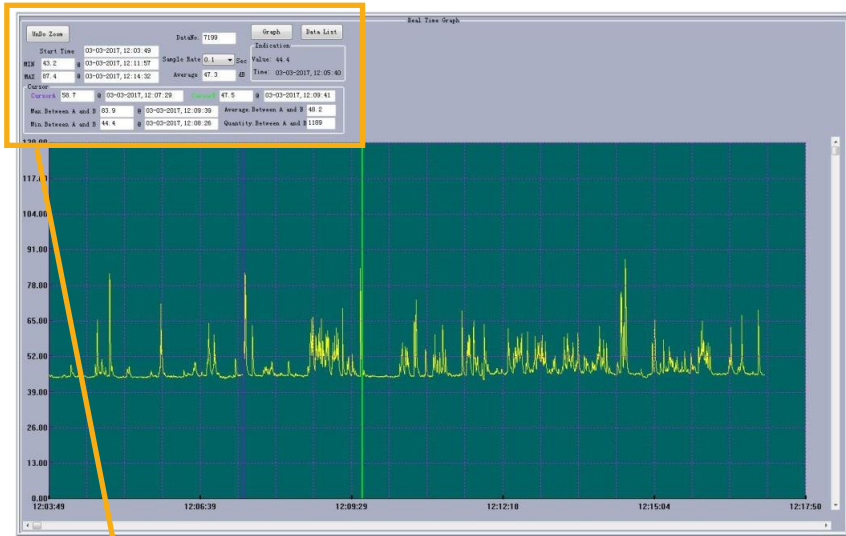
Toolbar

	Open file
	Save measurement record in .txt format
	Save measurement record in .xls format
	Start real-time measurement
	Stop real-time measurement
	Print measurement results
	Information about the software version

Real-time measurement

UnDo Zoom		DataNo. 7199		Graph	Data List
Start Time 03-03-2017, 12:03:49		Sample Rate 0.1 Sec		Indication	
MIN 43.2	@ 03-03-2017, 12:11:57			Value: 45.6	
MAX 87.4	@ 03-03-2017, 12:14:32	Average 47.3 dB		Time: 03-03-2017, 12:08:04	
Cursor					
CursorA 58.7	@ 03-03-2017, 12:07:29	CursorB 47.5	@ 03-03-2017, 12:09:41		
Max. Between A and B 83.9 @ 03-03-2017, 12:09:39		Average. Between A and B 48.2			
Min. Between A and B 44.4 @ 03-03-2017, 12:06:26		Quantity. Between A and B 1189			

Start Time	Time of measurement start
MIN	Lowest volume in the measurement series with time
MAX	Highest volume in the measurement series with time
DataNo.	Number of points measured
Sample Rate	Sampling rate
Average	Average sound level of the measurement series
Graph	Display as graph
Data List	Display as data list
UnDo Zoom	Zoom out



CursorA	53.8	@	03-03-2017, 12:04:43	CursorB	51.0	@	03-03-2017, 12:09:11
Max. Between A and B	82.3	@	03-03-2017, 12:07:30	Average. Between A and B	46.7		
Min. Between A and B	43.8	@	03-03-2017, 12:07:06	Quantity. Between A and B	2388		

To compare two measurement points or the intervals between the measurement points, two different cursors can be set. The data is evaluated as shown in the figure above:

Cursor A	Value cursor A
Max. Between A and B	Maximum value determined between A and B
Min. Between A and B	Minimum value determined between A and B
Cursor B	Value cursor B
Average. Between A and B	Measured average value between A and B
Quantity. Between A and B	Measured measurement points between A and B

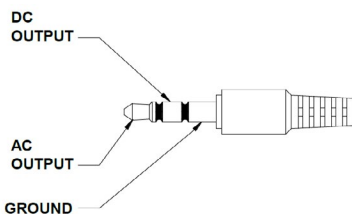
You can zoom in on individual areas within the graph by clicking on the desired area with the left mouse button and holding it down. Now drag the desired observation field with the mouse until the desired area is reached. Then release the mouse button and the area will be enlarged accordingly.

Function tabs

Additional actions can be performed in the function tabs. In addition to the toolbar described above, these tabs help you evaluate the measurement data. Below is a brief description of the functions you can select in the tabs:

File(F)	Open: Open file Save as: Save measurement record in .txt format Export To Excel: Save measurement record in .xls format Print Graph: Print graph Print Data: Print measurement data table Exit: Close software
Real Time(R)	Run: Start real-time measurement Stop: Stop real-time measurement Clear Data: Delete data Setup: Set sampling rate and maximum measured values
DataLogger(D)	Read out the device's internal data logger
Com Port(C)	Manual: Select communication interface manually Auto: Let communication interface be selected automatically
View(V)	ToolBar: Activate/deactivate toolbar StatusBar: Activate/deactivate status bar Color Setting: Change color of graph, background, or grid
Help(H)	Contents: Call up help About: Display information about the software version

ANALOG OUTPUT



AC: Output voltage: 1 V RMS (relative to the maximum value of the selected measuring range)

Resistance: 100 Ω

DC: Output voltage: 10 mV/dB

Resistance: 1 k Ω

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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