CA834

- ■ **Sonomètre**
- ■ **Sound level meter**
- ■ **Schallpegelmesser**
- ■ **Analizzatore di rumori**
- ■ **Sonómetro**

E N G L I S H   **User's manual**

1. PRESENTATION

The C.A 834 sonometer-recorder is designed to evaluate sound nuisances according to safety requirements and current legislation.
It conforms to standards IEC 651 type 2 and ANSI S1.4 type 2 for sonometers.
It is capable of a multitude of professional and domestic applications : the measurement of sound levels in factories, schools, offices, airports, studios, auditoriums, etc...
The C.A 834 is a compact portable unit suitable for holding in one hand and for mounting on a tripod such as those used by photographers, for long term measurements.
It is capable of measuring sound levels from 30-130dB and recording them (memory capacity of 32000 values). It has an USB interface for two-way communication with a PC.
It comes with two frequency weighting A and C, allowing for the sensitivity of the human ear as a function of the sound frequency. Frequency weighting A is generally used in the industrial environment and C is better suited to audio frequency sound.

2. PRECAUTIONS FOR USE

2.1 Precaution for use of the sensor

Please read these instructions carefully before using the equipment.
- The sonometer is a measurement instrument whitch must be protected from severe shock and vibration.
- In particular, protect the microphone from exposure to water and dust and do not store it in damp and/or excessively hot places
- It is not advisable to clean the microphone.

2.2 Remark concerning measurement conditions.

1. If the difference in levels between the presence and absence of sound to be measured is 10dB or more, the influence of the background noise on the measurement can be considered as negligible.
If the difference is smaller than this level, compensation corrections (see the table below) will need to be applied to the measurement made to allow for the background noise :

Level difference (dB)	4	5	6	7	8	9	10
Compensation value (dB)	-2.2	-1.7	-1.3	-1	-0.8	-0.7	0

2. Keep the microphone well away from any sound-reflecting surface like walls or floors, to minimise any errors due to possible spurious reflexions.
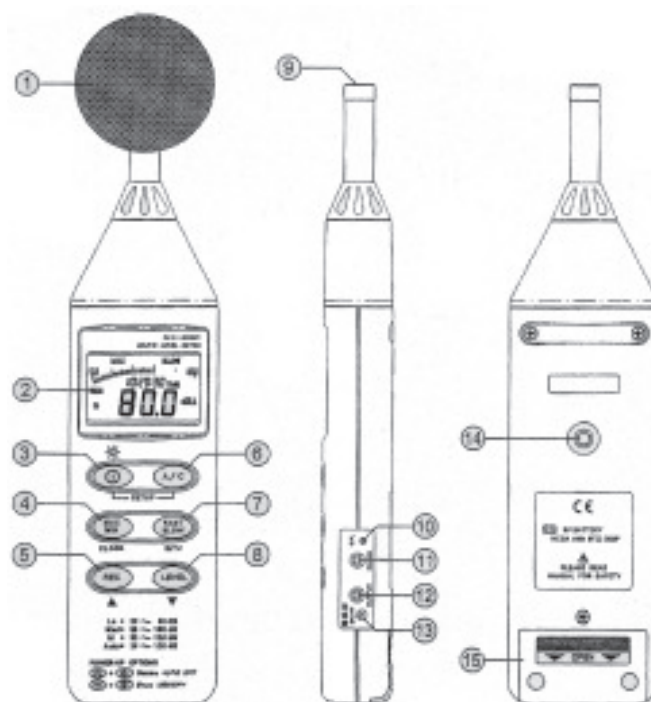When measuring, hold the sonometer at arm's length to avoid reflexion off your own body and to allow the sound to propagate freely in every direction.

3. Take all necessary steps so that there are no obstacles between the point of measurement and the source of the noise.

4. Do not take into consideration excessively low measurement levels (insignificant sound) or, to the contrary, excessively high measurement levels (overload).

3. DESCRIPTION OF THE INSTRUMENT

1. Wind-guard. Use this accessory when you need to make measurements at wind speeds in excess of 10m/s.

2. LCD 4-digits display :

MAX	Holding of maximum value
MIN	Holding of minimum value
OVER	Indicates that the selected measurement range is inappropriate. Use the LEVEL button to select the suitable measurement range.
UNDER	Indicates that the selected measurement range is inappropriate. Use the LEVEL button to selected the suitable measurement range.
FAST	Fast response time.
SLOW	Slow response time.
dBA	A type frequency weighting.
dBC	C type frequency weighting.
88-180	Indication of selected measuremnt range.
⊞	Battery low
-L.O.-	Measurement below 30dB
AUTO	Auto-range selected
REC	Data recording in progress
FULL	Memory full
⏱	Auto-power OFF activated

3. ON/OFF button and backlighting
   Press the button to turn on the sonometer.
   Press the button again to turn the backlighting ON/OFF.
   Hold the button down for 3 seconds to turn off the sonometer.
Note : When you turn on the sonometer, the screen displays how much memory space is still available (32000 maximum).

4. MAX / MIN mode activation / deactivation push button.

5. Recording mode activation / deactivation push button.

6. Frequency weighting selection push button.

7. Response time selection push button.

8. Measurement range selection push button.

9. Sonometer measurement head including the microphone.

10. Adjusting screw to modify the calibration of the sonometer.

11. USB interface for extracting data and controlling the sonometer via a PC.

12. Analogue output for recording on an external system using a jack connector.

13. 9V DC mains power supply input.

14. Threaded hole for mounting on a tripod.

15. Battery cover.

4. OPERATION OF THE INSTRUMENT

4.1   Choice of measurement range

The sonometer has 3 set measurement ranges (30-80dB, 50-100dB, 80-130dB) and one automatic measurement range (30-130dB).

To choose your measurement range, use the "LEVEL" push button.
If the "UNDER" or "OVER" symbols appear permanently on the sreen, it indicates that you are using a measurement range that is too low or to high. In this case, press the "LEVEL" push button.
Note : The automatic 30-130dB measurement range is a way of avoiding of these microphone under / overload problems.

4.2   Choice of frequency weighting

Because the ear does not have the same aural sensitivity for all frequencies, filters are used to weight or correct the measured levels according to the frequency.
There are two correction curves, A and C, provided on the C.A 834. To change from one to the other, press the "A/C" push button.
The best-known curve is the A frequency weighting corresponding to the "average international ear".
Generally, it is used for measuring nuisance levels in industrial premises.
The C curve is better suited to check for the presence of audio frequency noise (if the level measured in position C is higher than in position A, it means that the signal includes significant audio frequency components). This curve is also suitable for measuring musical environments.

4.3   Choice of response time

Depending on the type of noise concerned (brief noise such as a car horn or an animal's cry, or a drawn out noise like that of an industrial machine), it is necessary to choose a suitable response time.
Two response times are available on C.A 834 :
         - FAST (short response time) if the noise consists of brief impulses or if you are only concerned with peak values. This is the mode most often used.
         - SLOW (long response time) to measure the average sound level.
Changing from one to another is obtained by pressing the "FAST / SLOW" push button.

4.4   Practical measurement conditions

Hold the instrument in your hand and point the microphone toward the noise source to be measured (see Precautions for use), the sound level will be displayed.

4.5 MAX / MIN Mode

Press the MAX/MIN push button to actvate the MAX/MIN mode. This is a way of recording the maximum and minimum levels reached during a measurement campaign.

To display the maximum level, press once (MAX indicated on the screen) and to display the minimum level, press the push button again (MIN indicated on the screen). Pressing the push button a third time will enable you to display the current measurement campaign value (MAX-MIN will flash on the screen).

To exit from the MAX/MIN mode, hold the push button down for 2 seconds.

Note : if you change the measurement range or the weighting curve after entering this mode, it will be deactivated.

4.6 Recording mode

The recording mode is a way of storing up to 32000 time-dated values at a programmed rate in order to carry out monitoring, then analyse this data on the PC.

a) Formating the Date and Time

Hold down the «A/C» and «ON/OFF» push buttons.
«SET» is displayed.
Then press the «MAX/MIN» push button.
Set of the various time and date parameters using
the «REC/▲» and «LEVEL/▼» keys.
To change to the next parameter, press «MAX/MIN».
The order of adjustment is : year → month → day → hour → minute.
Note : If you want to exit from the adjustment mode during this process, press the «ON/OFF» key.

b) Adjustment of the acquisition rate

Hold down the «A/C» and «ON/OFF» push buttons.
«SET» is displayed.
Press «FAST/SLOW» push button.
Set the acquisition rate using the «REC/▲» and «LEVEL»/▼»
keys then press on «FAST/SLOW» again to exit.

c) Data recording

To begin data recording, press the «REC» key.
To stop recording, press the «REC» key again.

d) Clear the memory

Each time you switch on the sonometer, the available memory space is displayed (03 20 00 when the memory is empty).
If you wish to empty the memory :
    - Switch off your sonometer.
    - Hold the «ON/OFF» and «REC» push buttons pressed for 5 secondes.The following screen will appear and the memory will be erased after 5 secondes.

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4.7 Activation / deactivation of the automatic shut off

By default, the automatic shut off mode is activated when you switch on your unit. The instrument will switch off automatically after 30 minutes if none of the buttons is pressed, no recordings are being made or if none of the USB links is activated.
If you wish to deactivate automatic shut off:
> - Turn off the sonometer.
> - Hold the "ON/OFF" and "FAST/SLOW" push buttons pressed.
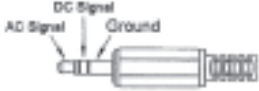
4.8 Calibration of the sonometer

If you have not made any measurements for some time, it is advisable to check the calibration of your sonometer. To do this, use the CA 833 sonometer calibrating instrument.
The procedure is as follows:
> - Turn on the sonometer
> - Set it to the high measurement range: 80 – 130 dB
> - Select the weighting curve A
> - Select the fast response time «FAST»
> - Insert the microphone as deep as possible into the calibrating instrument
> - Place in the assembly on a flat surface that is free of vibration.
> - Switch on CA 833 set to the 94 dB position
> - Set the sonometer display to 94 dB using the screw ⑩ and the screwdriver supplied with the instrument.
> - After adjustment, check your calibration with CA 833 set to 114 dB.

5. GENERAL CHARACTERISTICS

- Compliance with standards :	IEC 651 type 2
	ANSI S1.4
	JIS C 1502
- Type of microphone :	condenser microphone
- Measuring range :	4 measuring ranges from 30 to 130dB
	30-80dB
	50-100dB
	80-130dB
	30-130dB (automatic change of range)
- Display :	LCD screen
Digital :	4 digits
	Resolution : 0.1dB
	Display update : 0.5s
Analogue :	50 segment bargraph
	Resolution : 1dB
	Display update : 50ms

- Accuracy :	± 1.5dB
- Frequency dynamics :	31.5Hz to 8kHz
- Frequency weighting :	A and C (as per IEC 651)
- Time weighting :	FAST : 125ms
	SLOW : 1s
- Analogue output :	AC output : 1VRMS at full-scale
	Impedance : 200Ω
	Sortie DC : 10mV/dB
	Impédance : 1kΩ
- Climatic environment :	
Use :	Temperature : 0 to 40°C
	Humidity : 10 to 90% HR
Storage :	Temperature : -10 to 60°C
	Humidity : 10 to 75% HR
- Power supply :	
Battery :	9V battery (6LR61 or 6LF22 type)
	self-sufficiency : 50hrs
Mains power supply :	Voltage : 9VDC (8-15VDC max.)
	Current : > 30mADC
	Outside diameter : 3.5mm
	Inside diameter : 1.35mm
- Dimension / Weight :	275 x 64 x 30 / 285g (batterie included)
- Electromagnetic compatibility :	Emission and immunity in an industrial setting compliant with EN 61326-1

6. MAINTENANCE

Only use specified spare parts for maintenance purposes. The manufacturer cannot accept any responsibility for accidents occurring following repairs carried out outside its after-sales department or approved maintenance network.

6.1   Servicing

To replace the battery :

     - Turn off the sonometer
     - Remove the cover "15" at the back of the instrument
     - Replace the old battery with a 9V battery (6LR61 or 6LF22 type)

6.2   Cleaning the casing

Clean the casing with a cloth and a little soapy water.

Clean off with a damp cloth.

Do not use any solvents.

6.3   Metrological verification

Like all measuring or testing devices, the instrument must be checked regularly.
This instrument should be checked at least once a year. For checking and calibration, contact one of our accredited metrology laboratories (information and contact details available on request), at our Chauvin Arnoux subsidary or the branch in your country.

6.4   Repair

For all repairs before or after expiry of warranty, please return the device to your distributor.

7. TO ORDER

C.A 834..**P01185502**
Supplied with a transport case, a "wind-guard" bonnet, an USB cord and the software S-834, a screwdriver, a 3.5mm diameter male jack, a 9V battery and these operating instructions.

Replacement :
Pile 9V..**P01100620**
Accessoire :
C.A 833 sonometer calibrating instrument...**P01185301**
JACK / USB cord..**P01295478**

8. SOFTWARE S-834

8.1   Recommended configuration

- 90 MHz processor or higher
- 32 MB of RAM
- At least 5 MB on the hard disk for the installation of the software
- Operating system: Windows 95 / 98 / NT 4.0 or higher
- Recommended screen resolution: 800 x 600

8.2   Installating the software

1.   Close all the applications before installation
2.   Insert the CD in the drive
3.   If installation does not launch automatically, select the «Execute» command from the «**Start-up**» menu.
4.   Choose the CD drive and open the «**setup.exe**» file.

8.3   USB-120 / USB-300 Driver installation

Package contains :
       - Install CD
       - JACK to USB adaptor
   - Install manual

System required :
   - Windows 2000/XP/2003 Server/Vista/7

Hardware required :
       - PC or Laptop with USB port

Install :

1. We recommend close all other application before installing driver.

2. We recommend not plug connector to USB port before installation.

3. Insert setup CD disk to CD disk drive, installation will execute automatically, If not, execute "**Start**" ➔ "**Run**", and edit X:\SETUP(X is your disk drive), then click OK button, installation will start.

4. While installing, it will show this window below, just click "**Next**" to continue.(see Fig.1).

5. Select "**Launch the CP210x VCP Driver Installer**" option, then click Finish (see Fig.2).
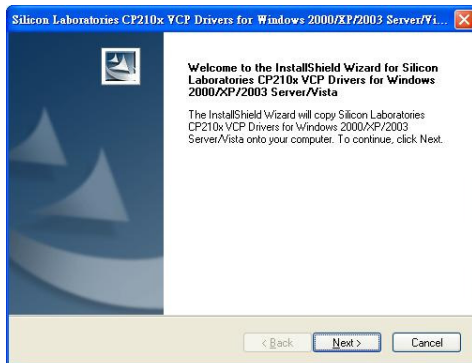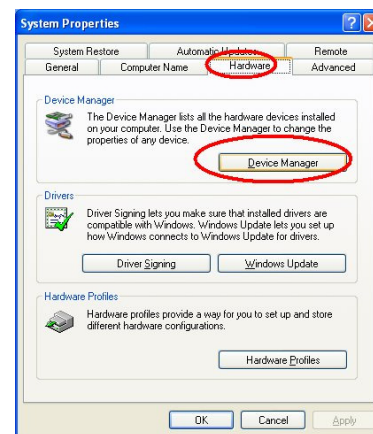
(Fig.1)
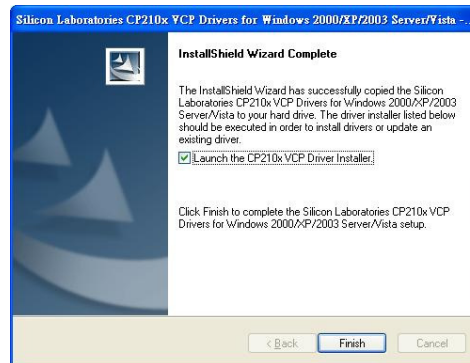
(Fig.2)

6. Click Install.

7. After finish installation, execute "**Start**" → "**My Computer**", then choose "**View System Information**" on the left top of the window, the window below will show up.

8. Choose "**Hardware**" option and click "**Device Manager**" button, click "**+**" symbol on the left side of "**Ports (COM & LPT)**". If the device "**CP2101 USB to UART Bridge Controller (COMx)**" is in the list, the connector is ready to work.

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