

■ Sound Level Meter



C.A 832



ENGLISH

User's manual

 CHAUVIN
ARNOUX

Meaning of the symbol

Caution! Please refer to the user's manual before using the instrument. In this manual, the instructions preceded by the above symbol, should they not be carried out as shown, can result in a physical accident or damage the instrument or the installations.

Definition of CAT III

This instrument included in overvoltage category III complies with the stringent reliability and availability requirements corresponding to fixed industrial and domestic installations.

(see CEI 664-1 Ed. 92)

Thank you for purchasing this **CA 832 Sound Level Meter**.

To get the best service from this instrument:

- **Read** the user's manual carefully
- **Respect** the safety precautions detailed

WARRANTY

Our guarantee is applicable for twelve months after the date on which the equipment is made available (extract from our General Conditions of Sale, available on request).

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1. PRESENTATION

The **CA832 digital sound level meter** is designed to assess sound ambiances or nuisances in accordance with imperatives of safety and legislation in force.

It complies with standard CEI 651.

The professional and domestic applications are numerous: measuring the sound levels in factories, schools, offices, airports, studios, auditoriums... The CA 832 is a portable, compact instrument with a 2000 point display operable in one hand and may be fitted on a photographer's type tripod for long duration measurements.

The CA 832 is used to measure sound levels from 35 to 130 dB in 3 ranges: 35-80 dB, 50-100 dB, 80-130 dB.

It features 2 weighting curves A and C for measurement integrating the sensitivity of the human ear according to sound frequency. Curve A is the general-purpose curve in an industrial environment, and C is more suited in presence of low frequency sounds. Also, mode 'F' (fast response time) corresponds to the response time of the ear. Mode 'S' (slow response time) will be used to obtain a uniform reading when the sound signal level shows fluctuations.

2. PRECAUTIONS FOR USE

2.1 Precautions for sensor use

It is recommended to read these instructions before any use of the instrument.

- The sound level meter is a measurement instrument that must be protected from strong impacts and vibrations.
- The microphone in particular must be protected from exposure to water and dust and must not be stored in humid and/or excessively hot areas.
- Do not remove the foam cover of the sound level meter. Also, cleaning the microphone is not recommended.

2.2 Remarks on measurement conditions

1. Background noise

If the difference of level between the absence and the presence of noise to be measured is 10dB or more, the influence of background noise on the measurement may be considered negligible.

If the difference is lower at this level, a compensation correction (see table below) must be applied to the measurement performed to integrate 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. Parasitic reflections

The microphone must be positioned far from any sound reflective surfaces such as walls or the ground, so as to minimise errors due to possible parasitic reflections.

When taking measurements, hold the sound level meter at arm's length, to avoid any reflections due to your own body and also to enable free propagation of sound in all directions.

3. Take the necessary steps so that no obstacle is between the measurement point and the noise source.

4. Disregard the extremely low readings (insignificant sound) or conversely those at the top of the scale (overload).

3. DESCRIPTION OF THE INSTRUMENT


① Measuring head including the microphone, protected by a foam cap.

② Backlit liquid crystal digital display.

- Main display : digital value of sound level expressed in dB over 3 ½ digits or OL error code (overload).

- Display symbols :

MAX maximum value of the measurement

 Battery discharged

F fast time compensation

S slow time compensation

A weighting curve type A


C weighting curve type C



If one of these 2 arrows is displayed continuously, this means that you are not in the appropriate measurement range : use the RANGE push button to move to the adequate range.

35-80dB, 50-100dB, 80-130dB measurement range in use.

OL indicates overload of the measuring instrument.



③  2-function push button :

Short press : Backlight ON/OFF.

Long press (>2 seconds) : choice of frequency weighting A or C.

④  push button for measurement range change.

⑤  push button for activation/deactivation of MAX function.

- ⑥  F S OFF 3-position centre switch :
OFF Unit OFF.
S Long response time measurement (use for fluctuating noise level measurements).
F Fast response time measurement (most common operating mode).
- ⑦  CAL Protective cap for the tester calibration screw.
- ⑧ Screwdriver to be used for calibration of the sound level meter.
- ⑨ 'Jack' connector for recording using an external system.
- ⑩ Assembly screw for photo tripod.
- ⑪ Femal type output for use with 'Jack' connector.

4. UTILISATION



4.1 Procedure

1. Selection of measurement range

The sound level meter features 3 measurement ranges each having a dynamic range of 55 dB:


Low noise range level:	35 to 80 dB
Medium noise range level:	50 to 100 dB
High noise range level:	80 to 130 dB

When noise measurement is active, the measurement is repeated more than 2 times per second.

If the  or  arrows are shown continuously on the display, this means that the measurement range you are in is too high or too low. In this case, press the RANGE button until you return to the adequate measurement range.

2. Choice of frequency weighting

Since the ear does not have the same hearing sensitivity for all frequencies, filters are used which weight or correct the measurement levels according to frequency.

Two correction curves A and C are on the CA832. To switch from one to the other a long press is needed (> 2 seconds) on the push button .

The most common is weighting curve A corresponding to the "average international ear". It is usually used for the measurement of nuisance levels in industrial areas.

Curve C is more suited for verification of the presence of low frequency noise (if the measurement level on position C is higher than on position A, this means that the signal contains significant low frequency components). This curve is well suited for the measurement of musical environments.

3. Choice of response time.

Depending on the nature of the noise under consideration (brief noises such as a horn or an animal cry or prolonged noise such as industrial machinery), we must choose an adequate measurement response time.

Two response times are available on the CA832:

F (short response time filter) if the noise is made up of brief pulses or if only the peak values interest you. It is the most commonly used.

S (long response time filter) to measure a medium sound level.

The 3-position centre switch is used to cut from one to the other.

4. Practical measurement conditions :

Hold the instrument in the hand and direct the microphone towards the source of noise to be measured (see precautions for use); the sound level will be displayed.

5. MAX Mode : press the MAX push button to display the maximum sound level during the measurement period.

6. Switch off the instrument (position OFF) after use.

4.2 Utilisation of the auxiliary output and of the assembly screw for photo stand.

• Utilisation of analogue output.

The CA 832 sound level meter possesses a physical output capable of supplying an AC or DC signal proportional to the sound level in dB, usable via external long running recording equipment for example.

AC output: supplies approximately 1 Vrms at maximum of the scale used.

DC output: supplies 10 mV/dB

Utilisation of the 'Jack' connector: solder the 'common', 'AC signal, DC signal' wires onto the 'Jack' male connector. Insert the latter in to the female connector located at the bottom of the sound level meter casing.

• Mounting the sound level meter onto a photo tripod

For long-duration measurements, the sound level meter can be mounted on a tripod (not included). To do so install the assembly screw (10) for the tripod at the rear of the sound level meter.

Install the tripod.

4.3 Calibration of the sound level meter

Calibrate the instrument before its use, in particular if you have not performed any measurements for a long period. To do so, use the sound level meter CA 833 calibrator.

The procedure is as follows:

1. Switch on the sound level meter. Select the high measurement range 80-130 dB , on curve 'C' and on temporal filter 'F'

2. Remove the foam protection of the microphone, then insert the microphone into the female part of the calibrator until it stops. Set the assembly on a flat surface, not subject to vibrations.


3. Switch on the calibrator that emits a 94-dB sound at a frequency of 1000 Hz.
4. Remove the protective cap 'CAL' of the adjusting screw.
5. Adjust the display of the sound level meter to 94 dB using the screwdriver supplied with the instrument.

5. GENERAL CHARACTERISTICS

- Compliance with standards : IEC 651 *
ANSI S1.4
JIS C 1502
- Type of microphone: capacitor microphone
- Sensor calibration: calibrated at factory using a source at 0.2%
- Measuring and dynamic range:
In 3 ranges (dynamic 55 dB) from 0 to 130 dB:
 - Low Range: 35-80 dB
 - Medium Range: 50-100 dB
 - High Range: 80-130 dB
- Periodicity of measurement: 2.5 times per second, rated
- Measurement before time-based and frequency processing:
rms value not frequency- weighted
- Resolution: 0.1dB
- Precision: + - 2.0 dB
- Frequency dynamic range: from 31.5 Hz to 8000 Hz
- Frequency weighting: curves A and C as per IEC651
- Time weighting: S (slow) and F (fast) as per IEC651
- Auxiliary output:
 - AC: 1.0 Vrms , impedance 600 ohms
 - DC: 10mV/dB , impedance 50 ohms
- Temperature drift: < 0.5 dB (-10°C to 50°C)
- Humidity drift: < 0.5 dB pour 30% < R.H. < 90%
(at 40°C and 1000 Hz)
- Conditions of calibration:
 - Frequency Reference: 1000 Hz
 - Sound level reference: 94 dB
 - Temperature reference: 20°C
 - Humidity reference: 65 %
 - Measurement range reference: 80-130dB
 - Incidence direction reference: frontal
- Environment:
 - Utilisation: 0 to 50°C (32 to 122°F) at <80 % humidity, without condensation
 - Storage: -20 to +60°C (-4 to +140°F) and from 0 to 80 RH, without battery.
- Power: 9V battery (type 6LR61 or 6F22)
- Dimensions/weight: 237 x 60.5 x 38 mm / 230 g with battery.
- Electromagnetic Compatibility: Emission as per EN 50081-1 Ed.1992
Immunity as per EN 50082-1
E d . 1 9 9 2
- Sealing: IP44 as per CEI 60259 (Ed. 89), the instrument must be fitted with its protective sheath.

* For frequencies lower than 100 Hz, the difference between two measuring range can be higher than 0.7 dB.

6. MAINTENANCE

 For maintenance, use only specified spare parts. The manufacturer cannot be held responsible for any accident following a repair performed independently of its customer support department or authorised servicing centres.


6.1 Maintenance

6.1.1 Battery replacement

- Set the switch to OFF
- Remove the cover from the rear of the unit.
- Replace the dead battery by a 9V (type 6LR61 ou 6LF22).

6.2 Cleaning the casing

Clean the casing using a cloth slightly soaked with soapy water. Rinse using a humid cloth.

 **Do not use solvents.**

6.3 Metrological Checks

It is essential that all measuring instruments are regularly calibrated.

For checking and calibration of your instrument, please contact our accredited laboratories (list on request) or the Chauvin Arnoux subsidiary or Agent in your country.

6.4 Repairs

Repairs under or out of guarantee: please return the product to your distributor.

7. TO ORDER

C.A 832.....P01.1855.01Z
Delivered with shockproof sheath, protective foam microphone cap, screwdriver, male Jack connector, assembly screw for photo stand, 9V battery and this operator's manual.

Spares:

9V battery.....P01. 1007.32

Accessory:

Calibrator for sound level meter C.A 833.....P01. 1853. 01

8. APPENDIX

