SL 200
INTEGRATING-AVERAGING SOUND LEVEL METER

1. Introduction

SL-200 is a high performance, integrating-averaging sound level meter with an easy-to-use interface for quick and simple measurements. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.
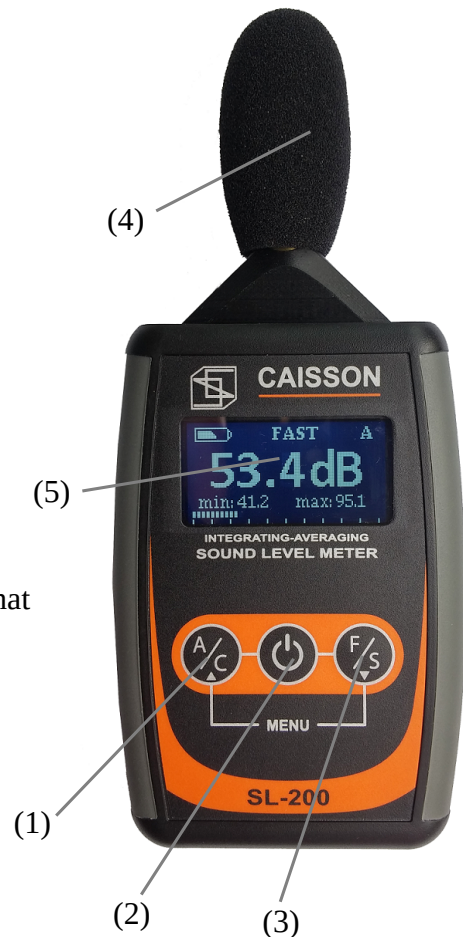
Features include:

- Simple sound level checks
- Complies with IEC61672-1 CLASS 2 Standard
- Single measurement range 30 to 130 dB
- Fast, slow time weighting settings
- A and C frequency weighting settings
- Record max/min values over time
- Storage for last ten measurements
- Adjustable backlight
- Auto power-off
- Adjustable measurement time up to 10 hours
- Quasi-analogue bar graph
- Large LCD display screen for easy reading
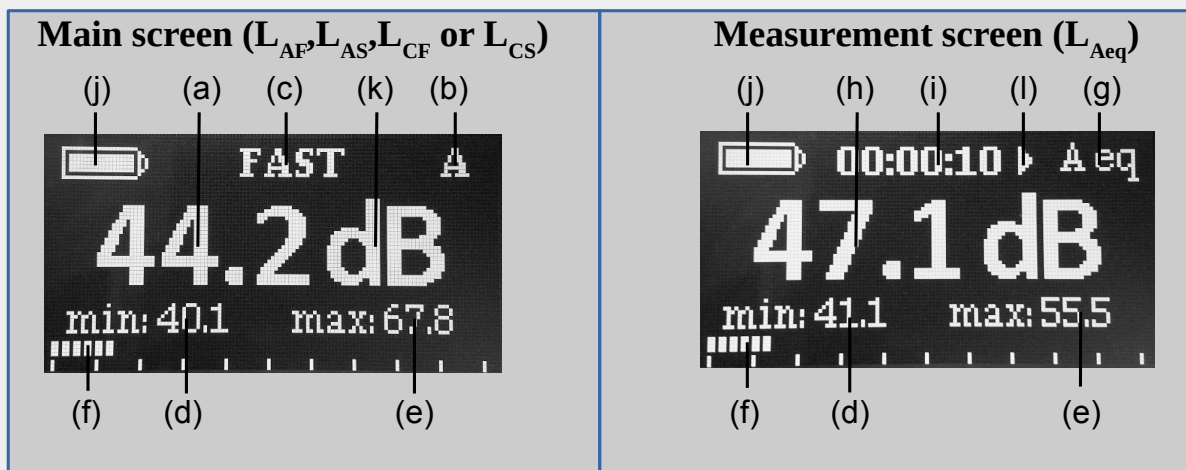- Tripod mountable
- Frequency range 31.5 Hz - 8 kHz

2. Meter description

(1) A/C Frequency weighting button (menu up)
(2) Power button
(3) FAST/SLOW (F/S) time weighting button (menu down)
(4) ½ inch microphone
(5) LCD display:
  (a) Sound pressure level value (L_{AF}, L_{AS}, L_{CF} or L_{CS})
  (b) A/C: frequency weighting indicator
  (c) F/S: (Slow/Fast) time weighting indicator
  (d) min: minimum sound level reading
  (e) max: maximum sound level reading
  (f) Bar graph represents the current sound level (2.5dB resolution)
  (g) LAeq: equivalent continuous sound level indicator
  (h) LAeq: equivalent continuous sound level reading
  (i) Elapsed time indicator: Displays the amount of time that has passed since measurement
  (j) Battery indicator
  (k) dB: sound level unit (decibel)
  (l) Measurements status indicator:
    ▶- calculations are being made
    ❚❚- calculations are stopped

LCD display description

Main screen (L_{AF}, L_{AS}, L_{CF} or L_{CS})

(j) (a) (c) (k) (b)

FAST   A
44.2dB
min:40.1   max:67.8

(f) (d) (e)

Measurement screen (L_{Aeq})

(j) (h) (i) (l) (g)

00:00:10 ▶ Aeq
47.1dB
min:41.1   max:55.5

(f) (d) (e)

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3. Menu description

Press and hold the (F/S) button for 3 seconds to access the menu. Buttons ▲▼ are used to navigate through the items. Press the (⏻) button to access desired position. You can choose from the following menu items:

<Measurement time>
<View results>
<Backlight>
<Language>
<Calibration>
<System information>
<Default settings>
<Exit>

<Measurement time>
With this function you can set measurement time. Use the ▲▼ buttons to set desired hours. Press the (⏻) button to move to the next parameter (minutes), repeat this procedure until the desired minutes and seconds have been set.

<View results>
This option allows you to see the last ten saved measurement results. Press the ▲▼ buttons to scroll through the list of results. Press the (⏻) button to go back to the menu.

<Backlight>
Press the ▲▼ buttons to increase/decrease the backlight level. Press the (⏻) button to save the setting and back to the menu.

> To extend battery life during measurement, the meter automatically turns off the display backlight if you do not press any button for 6 minutes. To turn the backlight on again, press any button.

<Language>
Use the ▲▼ buttons to switch between languages (English, Deutsch, Nederlands). Press (⏻) to save the setting and go back to the menu.

<Calibration>
Calibrating the Integrating Sound Level Meter (SL-200) requires an acoustical calibrator which provides a stable sound pressure at 1kHz and 94dB.
Using the ▲▼ buttons, you can select one of the two types of calibration:
1. Factory – Select this option if you want to use the meter factory calibration set during manufacture.
2. User – Select this option if you want to use your own calibration.

If you decide to select option "User," you will be able to choose between a new calibration (NEW – press button (F/S)) and the calibration of the user stored in the device's memory (CURRENT – press button (A/C)).

Option "NEW" allows you to perform a new calibration as follows:

1. Stand away from loud sound sources that may interfere with the calibrator's signal.

2. Fit Sound Level Calibrator carefully onto the sound level meter and rest the assembly on the table

or other flat surface as shown in fig.3.1.

3. Switch on the calibrator and wait approximately 5 seconds for all levels to stabilize.

4. Press the (F/S) button to START calibration.

5. Wait until the display shows the value in the range of 93.8 - 94.0 dB.

> If after a five-second wait, the result is not within the range of 93.8 – 94.0dB press the (F/S) button again.

6. To confirm and save the calibration, press the (A/C) button.

fig.3.1 Sound Level Calibrator fitted onto your sound level meter.

\<System information\>

This option is used to display information about the system which includes:
- firmware version
- date of production
- counter starts
- total working time

Press the (⏻) button to go back to the menu.

\<Default settings\>

This option is used to restore default settings. Press the (F/S) button to confirm the reset or the button (A/C) to go back to the menu.

This option sets to the default:
- measurement time   30 minutes
- language   English
- backlight   100%
- calibration   factory
- removes the list of saved 10 results

\<Exit\>

Press the (⏻) button to back to main screen.

4. Making a Measurement

1. Press the ⏻ button to switch the meter on.

2. Press the (A/C) button to select the desired frequency weighting.

3. Press the (F/S) button to select the desired response time.

4. The numeric level indication on the display shows the currently measured sound level. The reading is updated depending on the chosen FAST/SLOW response time.
   FAST – 0.5s
   SLOW – 1.0s

5. The quasi-analogue bar graph shows current sound pressure level. The reading is updated depending on the chosen FAST/SLOW response time.
   FAST – 0.125s
   SLOW – 1.0s

6. The **max** indicator shows the maximum sound level encountered during the measurement period; the **min** indicator shows the minimum sound level. Press the ⏻ button to reset min and max value.

> In order to access the measurement screen (L_{Aeq} - measurement), press and hold the (A/C) button for 2.5 seconds.

By default, the L_{Aeq} (Equivalent continuous sound level) measurement is stopped.
Press the ⏻ button to start measurement.
The current measurement time is displayed at the top of the display.
You can press the button (F/S) to save measurement.
You can press and hold the (F/S) button for 2.5 seconds to check the total measurement time.
You can go back to the main screen any time when measurement is running by pressing the (A/C) button.

When the measurement ends, the measurement status indicator changes form ▶ to ‖.The measurement time and the L_{Aeq} will be automatically stored in the meter's memory. To start measurement again press the ⏻ twice.

Note.

When measurement is running you cannot change frequency weighting filter and access to the menu. In this case you will see on the display warning **„Option locked when measurement is active!".** To unlock this option, go back to the measurement screen and stop measuremet (press the ⏻ button).

Switching off the instrument

- In order to switch the equipment off, press and hold the ⏻ button for approx. 3 seconds. Note that switching off the equipment is only possible from the main screen.
- The measuring instrument can switch off automatically after 6 min.
- If the battery conditions are so low that in fact it could lead to errors during the measurement the equipment will automatically switch off, which is signaled earlier by the battery empty indicator.

5. Maintenance and Service

SL200 is designed and constructed to provide many years of reliable operation. However, if a fault occurs that impairs the meter's correct function, then remove the batteries to prevent rish of futher damage.
For more information about preventing faults or damage to your sound level meter, please read the Instrument Care section below.

Warranty

Notwithstanding the statutory warranty claims, CAISSON provides a warranty in accordance with the laws of the Customer's country for a period of at least two years from the date of sale of the device to the end user. The warranty covers only those faults which are caused by defects in material or workmanship. A warranty claim must be accompanied by a proof of purchase with the date of sale specified. Warranty repairs shall only be performed by an authorized distributor of CAISSON. The following are excluded from the warranty:

- Use of force, damage caused by external factors or foreign bodies such as sand or water
- Damage caused by failure to comply with the instructions for use
- Normal wear and tear

The warranty does not cover devices that are partially or entirely disassembled.

Instrument Care

- Protect the instrument from impact. Do not drop it or subject it to rough handling. Transport it in the supplied carrying case.
- Never mix fresh and partially-used batteries.
- Do not attempt to remove the mesh cover from the microphone as this will cause damage and affect the accuracy of the instrument.
- Protect the instrument from water, dust, extreme temperatures, high humidity and direct sunlight during storage and use.
- For long-term storage, remove the batteries. Do not leave exhausted batteries in the instrument, as they may leak and cause damage.
- If the instrument casing becomes dirty, then wipe it with a lightly dampened cloth. Do not use abrasive cleansers and solvents. Do not allow moisture to enter the microphone, connectors or casing.

Power supply

The SL200 is powered by two AA batteries. You may use either disposable or rechargeable batteries. The Battery status indicates the battery charge level. If an empty battery icon is displayed, replace the batteries. Batteries should be replaced with a new set of batteries of the same kind. Do not use a rechargeable battery in combination with a disposable battery or a partially discharged battery with a full battery.

The figure below shows the location of the batteries in the battery compartment.

6. Specifications

STANDARDS
Conforms with the following:
- IEC61672-1 **CLASS 2 Standard**

ACCURACY
± 1.0 dB (ref. 94dB@1kHz, 125Hz, 4kHz)
± 2.0 dB (< 100Hz)

FREQUENCY RANGE
31.5 Hz to 8 kHz

DYNAMIC RANGE
100 dB

MEASURING RANGES
RMS: Total range 30 – 130 dB
Peak: 30 – 133 dB

NOISE FLOOR
Below measurement range < 29 dB

FREQUENCY WEIGHTINGS
A-weighting (RMS)
C-weighting (Peak)

TIME WEIGHTING
'F' (Fast)
'S' (Slow)

MICROPHONE
Micro-Electro-Mechanical Systems (MEMS)
Sensitivity: -46dBFS
SNR: 65dbA
Maximum SPL level: 160dB

DISPLAY
LCD showing:
- Input signal level – indicated with a quasi-analogue bar
- Warnings for: low battery
- Frequency and time weighting
- Minimum and maximum peak sound pressure level

Update Cycle:
- 0.5 s (numeric), 0.125 s (bar graph) – Fast
- 1 s (numeric), 1 s (bar graph) – Slow

Elapsed Time Display:
from 00h 00m 00s up to 10h 00m 00s

SETTLING TIME
Less than 4 s

REFERENCE CONDITIONS
Reference Sound Pressure Level: 94dB
Reference Temperature: 22°C
Reference Frequency: 1000Hz
Reference RH: 55%

ENVIRONMENTAL EFFECTS
Storage Temperature: -30 to 55°C
Operating Temperature: -5 to 50°C

BATTERIES
Two 1.5V LR6/AA-size alkaline batteries
Power Consumption During Normal Operation:
Less than 300mW
Lifetime (at room temperature):
Approximately: 20h

PHYSICAL CHARACTERISTICS
Dimensions: 162 x 79 x 25 including microphone
Weight: 190 g (143 g) including batteries

ORDERING INFORMATION
Type SL100 Sound Level Meter
Type SL200 Integrating-averaging Sound Level Meter
Included Accessories:
- Two alkaline batteries