

### Applications

- Acoustic insulation in one third octave bands\*
- Environmental noise evaluation\* (ISO 1996-2); detection of tonal components, impulsiveness and low frequency analysis.
- Frequency analysis\* of industrial and environmental noise
- Detection and identification of sound sources

### User-friendly

- Measures all parameters simultaneously with A, C and Z frequency weightings
- One single range 23 - 137dBA; up to 140 dB peak (no range setting)
- Back-lit graphic screen and soft touch keyboard for easy use

### Features

- Integrating sound level meter class 1 according to IEC and ANSI
- Real time spectrum analyser\*, octave band 31.5 Hz to 16 kHz and one third octave band 20 Hz to 10 kHz
- Mass storage of data in memory
- Direct printing
- Circular memory available
- Includes software and cable for real time retrieval of all measured and recorded data to a PC, Bluetooth® wireless technology
- Stores in memory the time and date of the last time the sensitivity was modified
- Extension Modules: reverberation time measurement, extended frequency analysis (10 Hz to 20 kHz), dosimeter and vibration measurement (1 Hz to 80 Hz)

**\*ATTENTION:** The Spectrum Analyser mode in one third octave bands and octave bands is optional. Reference number SC310sb does not have this option. If you wish to incorporate it you should acquire module FB310. Reference number SC310 does incorporate the analyser mode in one third octave bands and octave bands.

The **SC310** is a powerful, use-friendly instrument. It can work as an integrating sound level meter class 1 according to IEC 61672, IEC 60651, IEC 60804, ANSI S1.4 and ANSI S1.43. It is also a real time spectrum analyser\* in one-third octave bands and octave bands, with class 1 filters according to IEC 61260 and EN 61260. The **SC310** also fulfils the standard ANSI S1.11.

The **SC310** has a single range, there is no need to make any scale adjustments. It also measures all functions simultaneously. These functions are the ones needed to calculate the basic noise evaluation figures of most of the countries in the world: S, F and I functions, equivalent continuous levels, percentiles, Impulsiveness indices, peak levels, sound exposure levels, short functions, etc.

The **SC310**'s graphic screen provides graphical and numerical representation of the functions measured. The screen can be illuminated, allowing the user to work in low-light conditions.

The **SC310** has an extensive internal memory to record all the measured data. The amount of stored functions is configurable.

The **SC310** has two communications ports: RS-232 and USB. The USB port allows you to download quickly all the data stored and the RS-232 port allows you to configure communication ports through modem (BTN or mobile) or wireless (Bluetooth®). A serial printer can be connected to the RS-232 port to print in real time all functions measured by the **SC310**.

The preamplifier of the **SC310** is removable. It can therefore be uncoupled and moved away from the **SC310** by means of the extension cables (CN-003, CN-010 or CN-030). There is also outdoor kit (TK1000) for outdoor measurements.

The power and versatility of the **SC310** and its user-friendly design defines it as the perfect hand held instrument for precision acoustic measurements.



#### Sound level meter mode

L <sub>AF</sub>	L <sub>CF</sub>	L <sub>ZF</sub>
L <sub>AFmax</sub>	L <sub>CFmax</sub>	L <sub>ZFmax</sub>
L <sub>AFmin</sub>	L <sub>CFmin</sub>	L <sub>ZFmin</sub>
L <sub>AS</sub>	L <sub>CS</sub>	L <sub>ZS</sub>
L <sub>ASmax</sub>	L <sub>CSmax</sub>	L <sub>ZSmax</sub>
L <sub>ASmin</sub>	L <sub>CSmin</sub>	L <sub>ZSmin</sub>
L <sub>AI</sub>	L <sub>CI</sub>	L <sub>ZI</sub>
L <sub>AImax</sub>	L <sub>CImax</sub>	L <sub>ZImax</sub>
L <sub>AImin</sub>	L <sub>CImin</sub>	L <sub>ZImin</sub>
L <sub>AT</sub>	L <sub>CT</sub>	L <sub>ZT</sub>
L <sub>ATmax</sub>	L <sub>CTmax</sub>	L <sub>ZTmax</sub>
L <sub>ATmin</sub>	L <sub>CTmin</sub>	L <sub>ZTmin</sub>
L <sub>At</sub>	L <sub>Ct</sub>	L <sub>Zt</sub>
L <sub>AE</sub>	L <sub>CE</sub>	L <sub>ZE</sub>
L <sub>Apeak</sub>	L <sub>Cpeak</sub>	L <sub>Zpeak</sub>
L <sub>AIT</sub>	L <sub>CIT</sub>	L <sub>ZIT</sub>
L <sub>AIt</sub>	L <sub>CIt</sub>	L <sub>ZIt</sub>
L <sub>AIT-LAT</sub>	L <sub>CIT-LCT</sub>	L <sub>ZIT-LZT</sub>
L <sub>AIt-LAt</sub>	L <sub>CIt-LCt</sub>	L <sub>ZIt-LZt</sub>
	L <sub>CT-LAT</sub>	
	L <sub>Ct-LAt</sub>	
	t, T	

L<sub>1</sub>, L<sub>5</sub>, L<sub>10</sub>, L<sub>50</sub>, L<sub>90</sub>, L<sub>95</sub> and L<sub>99</sub>

#### Short functions 125 ms

L <sub>AF</sub>	L <sub>CF</sub>	L <sub>ZF</sub>
L <sub>AS</sub>	L <sub>CS</sub>	L <sub>ZS</sub>
L <sub>AI</sub>	L <sub>CI</sub>	L <sub>ZI</sub>
L <sub>Apeak</sub>	L <sub>Cpeak</sub>	L <sub>Zpeak</sub>
L <sub>AT</sub>	L <sub>CT</sub>	L <sub>ZT</sub>

where T=125 ms

#### Analyser 1/1 mode\*

L <sub>AT</sub>	L <sub>CT</sub>	L <sub>ZT</sub>
L <sub>AT_f</sub>	L <sub>CT_f</sub>	L <sub>ZT_f</sub>
L <sub>Apeak</sub>	L <sub>Cpeak</sub>	L <sub>Zpeak</sub>

L<sub>1</sub>, L<sub>5</sub>, L<sub>10</sub>, L<sub>50</sub>, L<sub>90</sub>, L<sub>95</sub> and L<sub>99</sub>

#### Short functions 125 ms

L <sub>AT</sub>	L <sub>CT</sub>	L <sub>ZT</sub>
L <sub>AT_f</sub>	L <sub>CT_f</sub>	L <sub>ZT_f</sub>
L <sub>Apeak</sub>	L <sub>Cpeak</sub>	L <sub>Zpeak</sub>

which T=125 ms  
where f: [31,5 .. 16 kHz]

#### Analyser 1/3 mode\*

L <sub>AT_f</sub>	L <sub>CT_f</sub>	L <sub>ZT_f</sub>
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where f:[20 Hz .. 10 kHz]

#### Short functions 125 ms

L <sub>AT_f</sub>	L <sub>CT_f</sub>	L <sub>ZT_f</sub>
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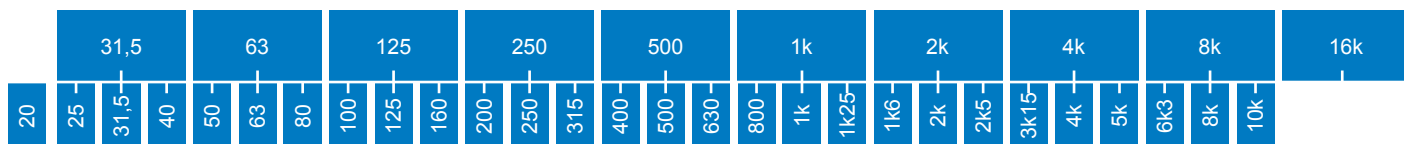
which T=125 ms  
where f: [20 .. 10 kHz]

Nom	Description of sound level meter mode functions
L <sub>XF</sub>	Sound pressure level with fast time weighting (Fast)
L <sub>XS</sub>	Sound pressure level with slow time weighting (Slow)
L <sub>XI</sub>	Sound pressure level with impulse time weighting (Impulse)
L <sub>XT</sub>	Equivalent continuous sound pressure level with T integration time
L <sub>Xt</sub>	Equivalent continuous sound pressure level of the entire measurement
L <sub>XE</sub>	Sound exposure level S.E.L.
L <sub>Xpeak</sub>	Peak sound pressure level
L <sub>XIT</sub>	Equivalent continuous sound pressure level with impulse time weighting and T integration time
L <sub>XIt</sub>	Equivalent continuous sound pressure level of the entire measurement with impulse time weighting
L <sub>XIT-LXT</sub>	Dynamic subtraction of the equivalent continuous sound pressure level with impulse time weighting and the equivalent continuous sound pressure level, both with T integration time according to ISO 1996-2
L <sub>XIt-LXt</sub>	Dynamic subtraction of the equivalent continuous sound pressure level with impulse time weighting and the equivalent continuous sound pressure level, both with the integration time equal to the measurement time: t according to ISO 1996-2
L <sub>CT-LAT</sub>	Dynamic subtraction of the equivalent continuous sound pressure level with A and C frequency weighting and T integration time according to ISO 1996-2
L <sub>Ct-LAt</sub>	Dynamic subtraction of the equivalent continuous sound pressure level with A and C frequency weighting and integration time equal to the measurement time according to ISO 1996-2
t	Measurement time
T	Integration time
L <sub>n</sub> [n=1, 5, 10, 50, 90, 95 and 99]	Percentiles, with A frequency weighting
Short Fun.	Functions with 125 ms integration time

Nom	Description of analyser mode 1/1 functions*
L <sub>XT</sub>	Equivalent continuous sound pressure level with T integration time
L <sub>XT_f</sub>	Equivalent continuous sound pressure level with T integration time for the octave band f. (See graphic below)
L <sub>Xpeak</sub>	Peak sound pressure level
L <sub>n</sub> [n=1, 5, 10, 50, 90, 95 and 99]	Percentiles, with A frequency weighting
Short Fun.	Functions with 125 ms integration time

Nom	Description of Analyser mode 1/3 functions*
L <sub>XT_f</sub>	Equivalent continuous sound pressure level with T integration time for the octave band f (see graphic below).
Short Fun.	Functions with 125 ms integration time

X: A, C and Z Frequency weightings





Bluetooth® Device for wireless communications for the sound level meter, BT003



Bluetooth® Device for wireless communications for the PC, BT002



Audio cable for the sound level meter, CN1DA



Mains feeder AM240 and converter for battery AM140



3, 10 or 30 m extension cable for preamplifier and microphone, CN-003, CN-010 and CN-030

#### Accessories supplied

- FNS-030** Case
- PVM-05** Windscreen
- STF030** Software for PC
- CN1US** Cable USB with connector mini –USB  
2 batteries of 1,5 volts

#### Optional accessories

- CB006** Class 1 acoustic calibrator
- CV211** Multifrecuencial and multilevel Calibrator for accelerometers
- CV110** Multifrecuencial and multilevel Calibrator for accelerometers
- TR001** Tripod adaptor
- TR-40** Tripod (1.1 m height)
- TR050** Tripod (1.55 m height)
- ML040** Transport briefcase (48 x 37 x 16 cm)
- ML-10** Transport briefcase (39 x 32 x 12 cm)
- ML060** Special outdoors briefcase (51 x 38 x 15 cm)
- AM240** Mains feeder 230 V 50 Hz to 5 V
- AM140** Converter for battery 12 V to 5 V
- TK1000** Outdoor kit
- CN-003** Extension cable 3 m
- CN-010** Extension cable 10 m
- CN-030** Extension cable 30 m
- CN1DA** AC output audio cable
- MA101** Modem adaptor
- BT003** Bluetooth® device for the sound level meter
- BT002** Bluetooth® device for the PC
- IM003** Serial printer of 40 columns
- RT310** Reverberation time module
- EF310** Extended frequency range module
- VM310** Module for the measurement of vibration (Does not include accelerometer)
- DS310** Dosimeter Module for the assessment of noise in the workplace
- DI016** Magnetized support disc to fix accelerometers in place
- CA023** Cube for triaxial measurements with accelerometers
- PB015** Rechargeable 1,5 V 2600 mA battery

**Sound level meter mode**

**Kind of recording**

Functions 1 s (82 functions each second)	4 days	16 hours
Functions 125 ms (15 functions each 125 ms)	3 days	5 hours
$L_T + L_{IT}$ and partial percentiles each T T=1 s	28 days	18 hours
T=1 min	4 years	9 months
F1 each second	8 months	14 days
F1, F2 and F3 *	3 months	9 days
F1, F2 and F3 (+) **	18 days	22 hours

**Spectrum analyser mode 1/1 octave\***

**Kind of recording**

Functions T T=1 s	4 days	3 hours
T=1 min	8 months	9 days
Functions 125 ms	3 days	
Functions T + 125 ms T=1 s	1 days	18 hours
$L_T(+)$ each T T=1 s	23 days	12 hours

**Spectrum analyser mode 1/3 octave\***

**Kind of recording**

Functions T T=1 s	13 days	15 hours
T=1min	2 years	3 months
Functions 125 ms	1 day	17 hours
Functions T+125 ms T=1 s	1 day	12 hours

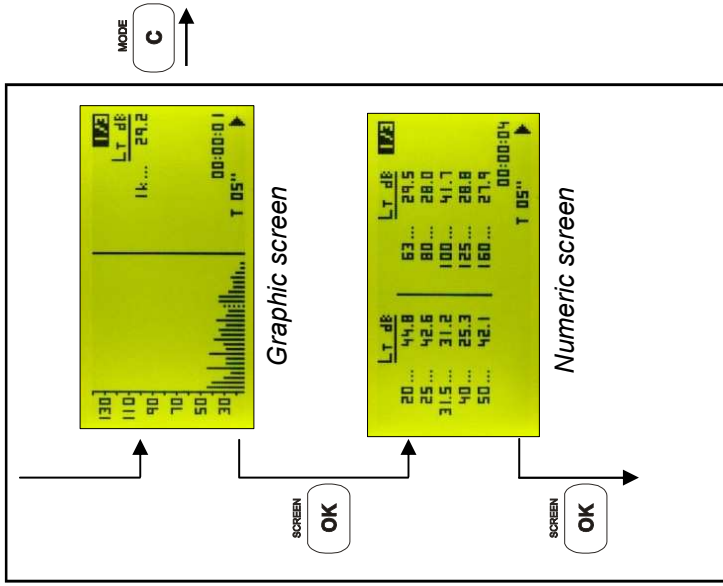
\* F1, F2 and F3 are the acoustical functions selected by the user on the preference screen. They may be any of the different functions the SC310 measures in sound level meter mode.

\*\* F1, F2 and F3 (+) kind of recording stores each second:  $L_{Cpeak}$  each second,  $L_{AF}$  sampled each 125 ms (8 values per second),  $L_{AT}$  with 125 ms integration time (Short  $L_{eq}$ ) (8 values per second) and F1, F2 and F3 each second. This kind of recording is very interesting because it stores the basic function: Short  $L_{eq}$ , Fast each 125 ms (to calculate statistical information), Peak level and three programmable functions.

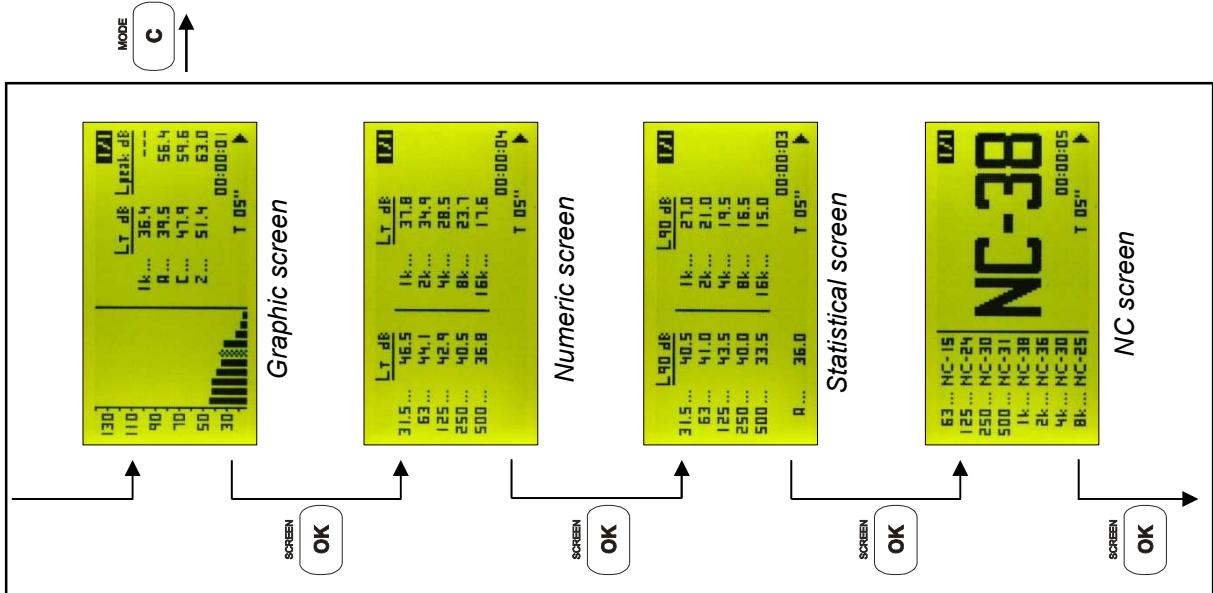
The **SC310** can store in its internal memory the values of the measured functions. When the unit is switched off, data do not get lost and may be retrieved and displayed directly from the **SC310** or transferred to a PC. The memory may be erased directly from the **SC310**.

The **SC310** allows you to download the stored data simultaneously with the process of measurement and recording. This characteristic together with the possibility of configuring the free memory space as a circular memory, converts the **SC310** in the perfect platform for permanent acoustic monitoring.

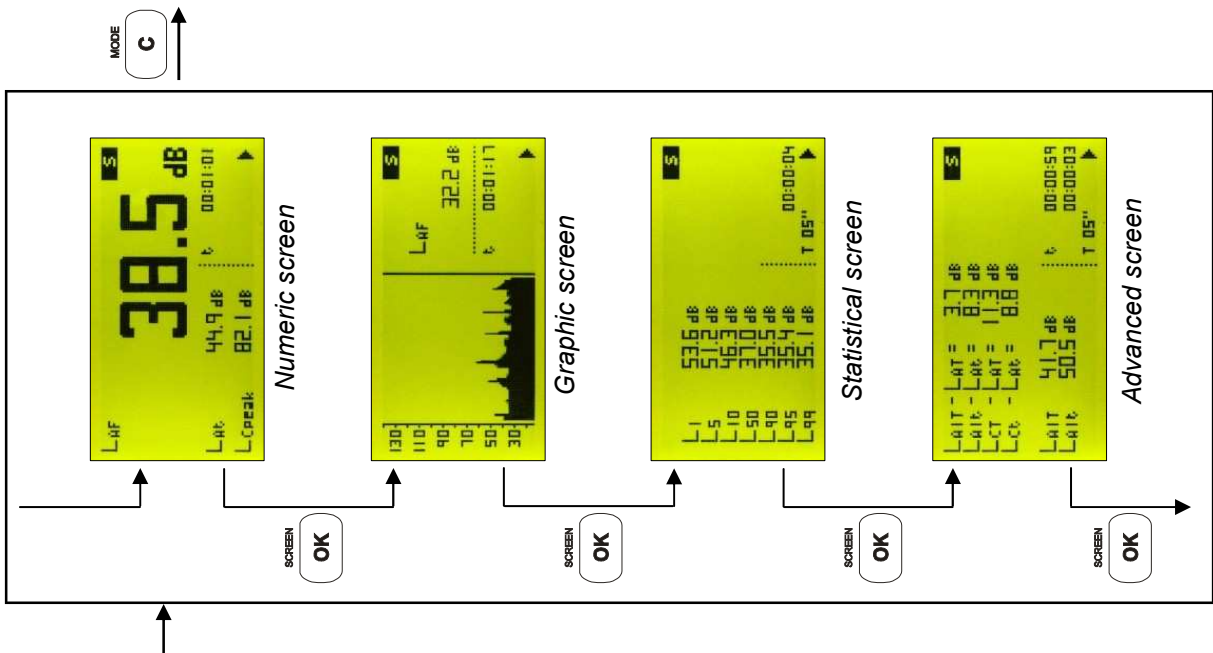
#### 1/3 spectrum analyser mode\*



#### 1/1 spectrum analyser mode\*



#### Sound level meter mode



#### Standards and specifications

Complies with the following standard:

- EN 61672 class 1, EN 60651:94 (A1:94) (A2 :01) class 1, EN 60804:00 type 1, EN 61260:95 (A1:01) class 1
- IEC 61672 class 1, IEC 60651:01 class 1, IEC 60804:00 type 1, IEC 61260:95 (A1:01) class 1
- ANSI S1.4:83 (A1:01) type 1, ANSI S1.43:97(A2:02) type 1, ANSI S1.11:04
- **CE** mark. Complies with 73/23/CEE and CEM 89/336/CEE low-tension regulations, the latter amended by 93/68/CEE.

#### Measurement range

- $L_F$ ,  $L_S$ ,  $L_I$ ,  $L_T$  and  $L_t$

Indicator limits: 0 – 157 dB

	C-130 + PA-13			C-250 + PA-14		
	A	C	Z	A	C	Z
Primary range						
Upper limit	120	120	120	120	120	120
Lower limit	30	32	38	28	29	34
Measurement range:						
Upper limit:	137	137	137	137	137	137
Crest factor 3:	130	130	130	130	130	130
Crest factor 5:	126	126	126	126	126	126
Crest factor 10:	120	120	120	120	120	120
Lower limit:	24	26	31	22	22	27

- $L_{peak}$

Indicator limits: 0 – 160 dB

#### Peak detector $L_{peak}$

Onset time constant < 75  $\mu$ s

#### Electrical noise

	C-130 + PA-13			C-250 + PA 14		
	A	C	Z	A	C	Z
• Electrical Noise:						
Maximum	14,4	16,8	21,9	9,4	10,5	18,5
Typical	13,4	15,8	20,0	8,6	8,8	16,3
• Total noise (electrical + thermal of microphone)						
Maximum	19,6	21,1	25,9	16,6	16,8	22,0
Typical	17,6	19,0	22,0	15,7	15,1	18,8

#### Frequency weighting

Complies with the EN 61672, EN 60651 and EN 60804 type 1 standard A, C and Z Weightings

#### Memory

64 Mbytes

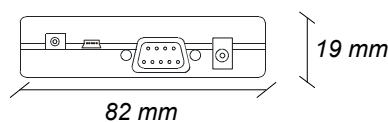
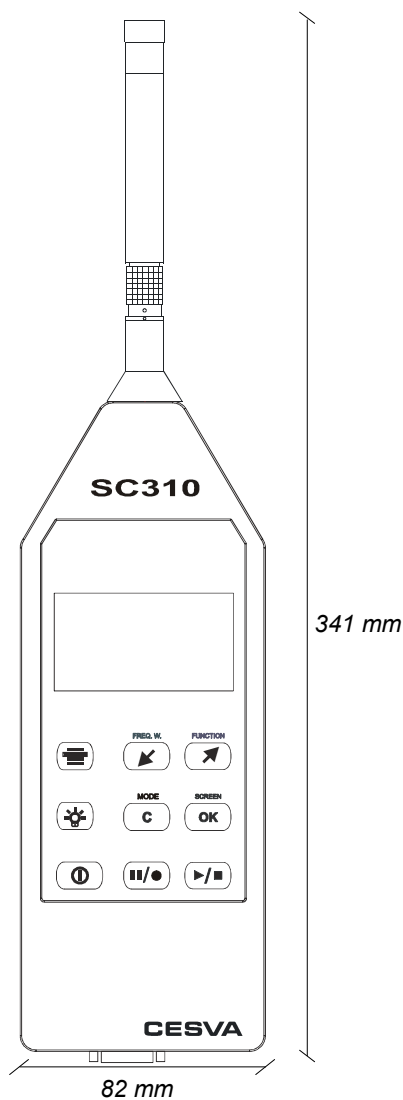
#### AC output

Frequency weighting: lineal

Sensitivity to 137 dB and 1 kHz (Gain = 0dB): 6,5 Vrms (typical)

Upper limit: 8,1 Vrms (typical) ; Output impedance: 100  $\Omega$

Gain: 0 and 40  $\pm$  0,2 dB



#### Microphone

- Model **CESVA C-130**: Condenser microphone ½". Polarized: 200 V. Nominal capacity: 22,5 pF. Nominal sensitivity : 17,5 mV/Pa in reference conditions. Preamplifier: PA-13
- Model **CESVA C-250**: Condenser microphone ½". Polarized: 0 V. Nominal capacity: 17,0 pF. Nominal sensitivity: 46,4 mV/Pa in reference conditions. Preamplifier: PA-14

#### Time weighting

$L_F$ ,  $L_S$ ,  $L_I$  according to class 1 tolerances

#### Parameters

See table | Resolution: 0,1dB

#### Octave filters

Class 1 according IEC 61260:95/ A1:01 Nominal octave bands central frequency: 31,5, 63, 125, 250, 500, 1000, 2000, 4000, 8000, 16000 Hz

#### Third octave filters

Class 1 according to EN 61260:95/ A1:01 Nominal third octave bands central frequency: 20, 25, 31,5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10000 Hz

#### Influence of humidity

Operation range: 25 to 90 %  
 Maximum error at 30%<R.H.<90%, 40 °C and 1 kHz: 0,5 dB  
 Storage without batteries: < 93 %

#### Effects of magnetic fields

In an 80 A/m magnetic field (1 oersted) at 50 Hz a reading of less than 25 dB(A) is given

#### Influence of temperature

Operation range: -10 to +50 °C  
 Maximum error (-10 to +50°C): 0,5 dB  
 Storage without batteries: -20 to +60 °C

#### Effects of vibrations

For frequencies between 20 and 1000 Hz and 1 m/s<sup>2</sup>:  
 < 75 dB(A)

#### Battery

2 batteries of 1,5 V type LR6 size AA.

Battery life with continuous use:

- Sound level meter mode: 15 hours
- Spectrum analyser mode 1/1: 13 hours
- Spectrum analyser mode 1/3: 11,5 hours

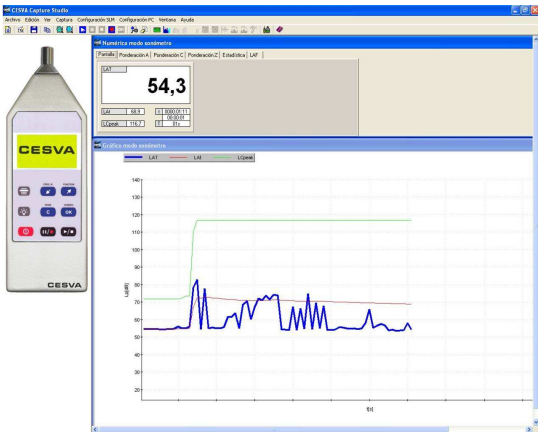
Mains feeder: AM240 (EU) or AM241 (USA)

#### Dimensions and Weight

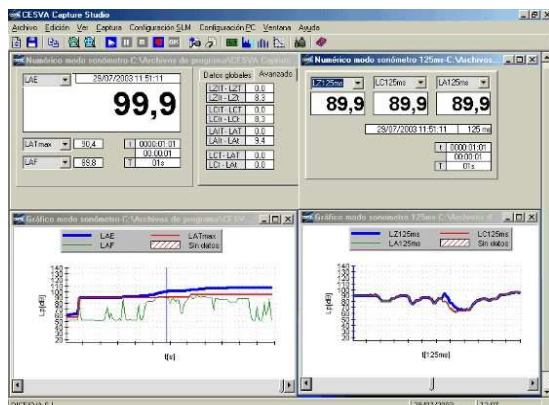
Dimensions: 341 x 82 x 19 mm

Weight: with battery 550 g ; without battery 500 g

#### Cesva Capture Studio

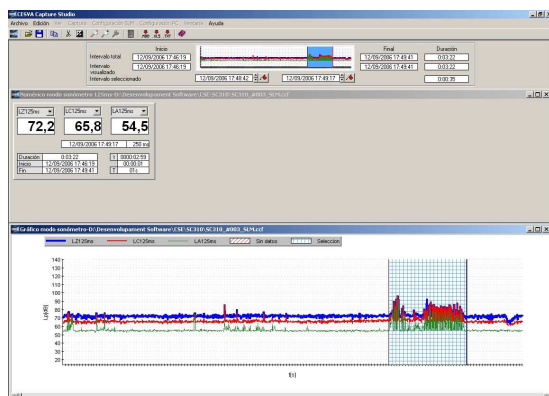


Real time data acquisition



Graphical display of data 1 s and 125 ms

#### Capture Studio Editor screens



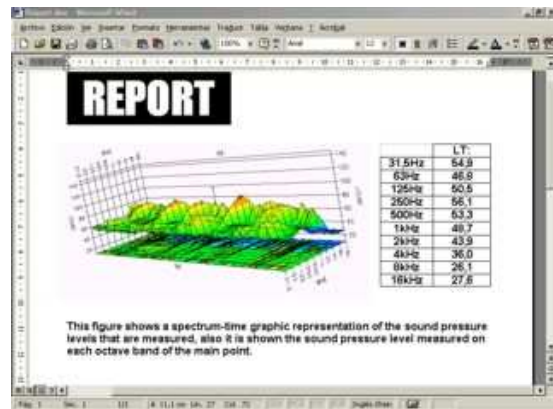
Elimination of measurement stretches

The SC310 is supplied with the software application **CAPTURE Studio** included in the price that allows you to:

- Configure the SC310 at the touch of a key.
- Retrieve data from the SC310 in real time.
- Download registers from the SC310 memory to a PC.
- Configure the SC310 memory.
- Display the data files graphically and numerically, and convert them into different formats (.txt, .xls, .mdb).
- Encrypted file system. The files are saved in a \*.ccf own format and cannot be changed. This guarantees the total integrity of the data.

**Capture Studio Editor** is a software application which enables you to edit the data acquired by CESVA spectrum analyzers.

- Elimination of undesired noise; eg. barking dogs, cars, doors, (Back Erase)
- Dynamic selection of recorded stretches for editing
- Calculation of global and spectral values, and statistics for time measured



Data exportation to other applications

**CAPTURE Studio** and **Capture Studio Editor** provide you with a convenient, user-friendly environment for obtaining, in digital format, data acquired by the SC310. It runs on PC with Windows 9x/Me/2000/NT/XP/VISTA/7.

*The characteristics, technical specifications and accessories may vary without prior notice*



#### 1/1 Reverberation time mode by octave band analysis

	$L_N$ dB	$\Delta$ dB	$T_{30}$ s	$T_{20}$ s	RT/1
63	42.0	59.0	0.69	0.56	
125	35.3	73.0	0.65	0.55	
250	38.1	78.2	0.64	0.58	
500	36.1	77.4	0.79	0.76	
1k	31.2	77.6	0.90	0.94	
2k	25.7	80.2	0.87	0.84	
4k	20.1	78.9	0.78	0.77	

#### 1/3 Reverberation time mode by one third octave band analysis

	$L_N$ dB	$\Delta$ dB	$T_{30}$ s	$T_{20}$ s	RT/3
50	39.9	46.6	1.01	1.15	
63	44.1	51.8	0.43	0.52	
80	32.3	62.9	0.30	0.35	
100	33.9	63.8	0.42	0.30	
125	38.0	64.2	0.60	0.67	
160	35.5	68.7	0.81	0.86	
200	36.8	74.6	0.82	0.96	

	$L_N$ dB	$\Delta$ dB	$T_{30}$ s	$T_{20}$ s	RT/3
250	37.4	72.0	0.60	0.55	
315	32.9	72.8	0.51	0.46	
400	36.5	71.3	0.76	0.69	
500	33.9	72.6	0.72	0.52	
630	35.4	67.8	0.89	0.70	
800	31.7	72.3	0.85	0.76	
1k	28.1	72.0	0.85	0.76	

	$L_N$ dB	$\Delta$ dB	$T_{30}$ s	$T_{20}$ s	RT/3
1.25k	28.0	72.1	0.90	0.92	
1.6k	26.3	76.7	0.94	0.92	
2k	27.4	69.8	0.86	0.83	
2.5k	25.9	70.9	0.85	0.71	
3.15k	22.9	71.3	0.82	0.94	
4k	20.7	69.8	0.76	0.81	
5k	20.3	69.9	0.70	0.66	

The reverberation time (RT) module of the SC310, adds two new measurement modes: Octave band reverberation time measurement mode (1/1) (63 Hz to 4 kHz) and one-third octave band reverberation time measurement mode (1/3) (50 Hz to 5 kHz). Each of these modes allows:

- The simultaneous measurement of the  $T_{20}$  and  $T_{30}$  reverberation times for the corresponding bands by the interrupted noise method.

$T_{30}$  Is the time, expressed in seconds, that is required for the sound pressure level to decrease by 60 dB based on a 30 dB decay.

$T_{20}$  Is the time, expressed in seconds, that is required for the sound pressure level to decrease by 60 dB based on a 20 dB decay.

- Measurement range (depends on the frequency range):

Minimum RT: 0,2 s

Maximum RT: 10,0 s

- The automatic determination of the decay curve and its slope, based on a least square approximation.
- Decay curves calculated from the averaging time between 10 ms and 40 ms depending on the frequency band.
- The ability to store the results in the memory:  $T_{20}$ ,  $T_{30}$ , and decay curves, for all octave and 1/3<sup>rd</sup> octave bands.

Calculation and measurement standards:

- ISO 3382-1:2009 Measurements of the reverberation time in performance spaces.
- ISO 3382-2:2009 Measurements of the reverberation time in ordinary rooms.
- ISO 354:1985 Measurement of sound absorption in a reverberation room.
- ISO 140:1998 Measurement of sound insulation in buildings and of building elements.

The Reverberation Time Module for the SC310 is optional and can be added to a new or used SC310.

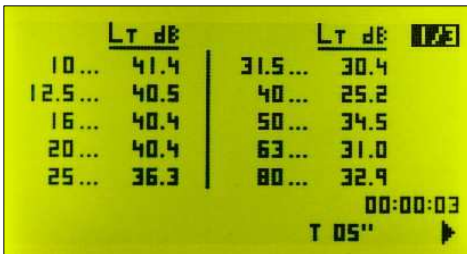
The following table shows the memory storage capacity of the different types of recordings.

Storage capacity	
MODE 1/1: Reverberation time ( $T_{20}$ and $T_{30}$ ) + background noise ( $L_N$ ) + maximum level ( $L_N + \Delta$ ) + decay time history	7900 Final results
MODE 1/3: Reverberation time ( $T_{20}$ and $T_{30}$ ) + background noise ( $L_N$ ) + maximum level ( $L_N + \Delta$ ) + decay time history	2600 Final results

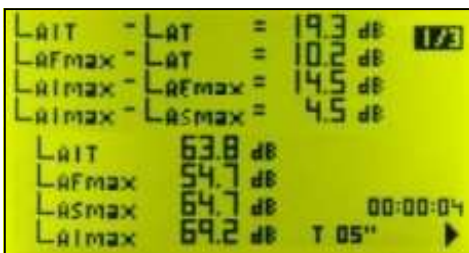
#### Extended frequency mode for 1/3 octave band



Graphic screen



Numeric screen



Advanced acoustic parameters screen

#### FFT Narrow band frequency analysis Mode (0 Hz—20 kHz)



The extended frequency module of the **SC310** sound level meter adds 2 modes of measurement: Extended frequency module for 1/3 octave band analysis and FFT (Fast Fourier Transform) narrow band frequency analysis mode.

The extended frequency mode for 1/3 octave band analysis of the **SC310** sound level meter analyses in real time the spectrum in 1/3 octave bands from 10 Hz to 20 kHz in all dynamic measurement range (no range change is needed). The **SC310** measures the equivalent continuous sound pressure level with a programmable integrating time from 1 second until 99 hours without frequency weighting and the global equivalent continuous sound pressure level for T consecutive integrating time with A, C and Z frequency weighting. Simultaneously, the **SC310** measures, in real time, "short" levels (125 ms integration time) for the corresponding bands and global values and global levels. Also, the **SC310** measures a special acoustical functions with the purpose to provide complementary information to the graphical and numerical screen of the spectrum analyser in 1/3 octave bands.

Major applications:

- Evaluation of tonal components, impulsiveness and low frequency
- Frequency analysis of noise produced by machinery (low frequency)
- Detection and identification of noise sources

The FFT narrow band frequency analysis mode of the **SC310** sound level meter carries out a frequency analysis with constant bandwidth filters covering the frequency range from 0 Hz to 20 kHz in real time and in all dynamic measurement range (no scale settings). The FFT analysis has 430 effective lines with a resolution of 47 Hz.

- Frequency analysis from continuous and transient signals
- Detection and evaluation of tonal components when these are between neighbouring one third octave bands or high frequency

The extended frequency mode for 1/3 octave band analysis of the **SC310** is an optional module and it can be added to a new or used instrument.

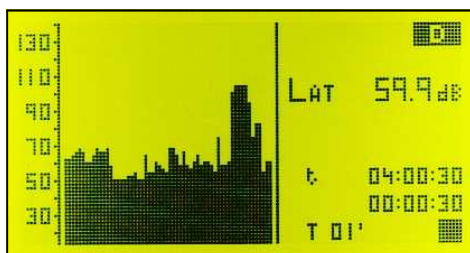
The storage capacity of the different types of recording can be found in the following table:

Type of recording	Storage capacity
Functions T and L <sub>T</sub> (+) Each T	T= 1 s → 9 days 8 hours
	T= 1 min → 1 year 6 months
Functions 125ms	1 day 4 hours
Functions T + 125ms	T=1 s → 1 day 1 hours
	T=1 min → 1 day 4 hours

#### Dosimeter module for the assessment of noise at workplace



Numeric screen



Graphic screen



1/1 Spectrum analyser screen



Numeric screen (projected parameters)

The dosimeter module of the **SC310** for the assessment of noise in the workplace adds a new measurement mode that is ideal for the application of Directive 2003/10/CE, which adapts the regulation on protection of the health and safety of workers from the risks of exposure to noise, to technical progress. In member states, the corresponding transposition to national law applies.

This dosimeter module allows you to simultaneously measure all parameters needed to assess the levels of noise to which workers are exposed when wearing, or not, hearing protectors (SNR, HML, Octaves).

The **SC310** measures, simultaneously, the equivalent level with A and C frequency weightings [  $L_{At}$ ,  $L_{Ct}$  ], daily noise exposure level [  $L_{EX,8h}$  ] (ISO 1999), noise exposure in  $Pa^2h$  [  $E$  ] and noise dose [  $DOSE$  ] with reference to a programmable criterion level [  $L_C$  ], and, of course, also the peak level with C frequency weighting [  $L_{Cpeak}$  ] (ISO 1999).

Moreover, the **SC310** allows you to carry out the measurement during a time shorter than the exposition time, because it shows on the screen all parameters projected to the expected exposition time (programmable projection time [  $t_p$  ]).

To evaluate the exposure to noise taking into account the attenuation of the individual hearing protectors worn by the worker, the **SC310**, besides measuring the equivalent level with A and C frequency weightings [  $L_{At}$ ,  $L_{Ct}$  ] (SNR and HML method), simultaneously carries out a real time frequency analysis with A frequency weighting and by octave bands from 63 Hz to 8 kHz (Octave method).

The large memory of the **SC310** allows you to store the time history of the measured parameters, and afterwards recalculate them for any desired time interval.

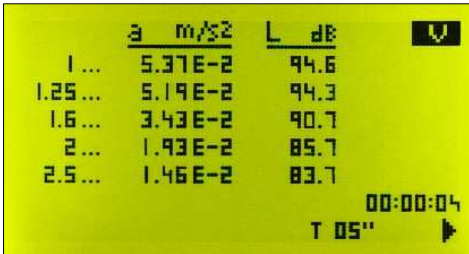
The **SC310** helps you to assess and measure exposure to noise and also brings you all the data needed to inform and train staff about the significance and potential risks of the results of the assessment and measurement.

Moreover, It helps you to design and run a reduction programme and to choose the most appropriate hearing protectors.

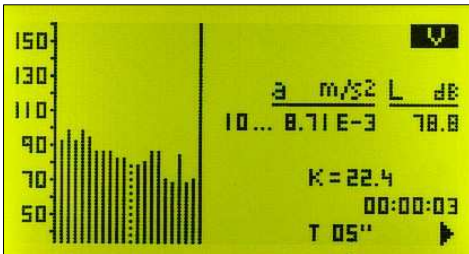
The **SC310** is a class 1 integrating sound level meter conforming to EN 60804 and EN 61672, so it is the perfect instrument to carry out measurements with the worker present or not. And because it is a Class 1 instrument, the metrological uncertainty of measurements due to the instrument are negligible (ISO 9612).

The dosimeter module for the assessment of noise in the workplace is not included with the **SC310**. It is an optional module and it can be acquired when buying the **SC310** or later.

#### Module for vibration measurements



Numeric screen acceleration values in  $m/s^2$  and dB (1 Hz—80 Hz)



Graphic screen in 1/3 octave bands (1 Hz - 80 Hz) + k evaluation



Overall values of acceleration evaluation parameters ISO 2631-2:2003

#### FFT Narrow Band Frequency Analysis (0 Hz—1 kHz)



The module for vibration measurements of the **SC310** sound level meter adds 2 measurement modes; human exposure to whole-body vibration in buildings mode and FFT (Fast Fourier Transform) narrow band frequency analysis for vibration.

The “Human exposure to whole-body vibration in buildings” mode of the **SC310** includes a new mode for measuring structural vibration to which human beings are exposed in buildings. This new mode VIBRATION has been designed according to ISO 2631-2:2003 and along with the preamplifier PA001 and the accelerometer converts the **SC310** into a human vibration-measuring instrument according to ISO 8041. (The module for vibration measurements does not include accelerometer).

This new mode consists of 3 screens. The first one shows a 1/3 octave band real time spectrum analysis from 1 Hz to 80 Hz, showing the acceleration information in linear [ $m/s^2$ ] and logarithmic numerical values [dB referred to  $10^{-6} m/s^2$ ]. The Second one shows this spectral information in graphic format and also gives the evaluation of the multiplying factor K according to the old ISO 2631-2:1989. The third screen shows linear and logarithmic overall values of acceleration evaluation parameters such as  $a_{Wm}$ , peak, crest factor, MTVV (Maximum Transient Vibration Value) and VDV (Vibration Dose Value). All these parameters with  $W_m$  frequency weighting (ISO 2631-2:2003).

The FFT Narrow Band Frequency Analysis for Vibration mode of the **SC310** sound level meter carries out a frequency analysis with constant bandwidth filters covering the frequency range from 0 Hz to 1 kHz in real time and in all dynamic measurement range (no scale settings). The FFT analysis has 430 effective lines with a resolution of 2.5 Hz.

The vibration module of the **SC310** is an optional module and it can be added to new instruments. For old ones, please consult.

