CESVA
acoustic instruments

SC310

Integrating sound level meter real time spectrum analyser in third octave and octave band

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 frequency weightings A, C and Z**
- **One single range 23 - 137dBA; up to 140 dB peak (no range setting)**
- **Back Light graphic screen and membrane keyboard for easy use**

Features

- **Integrating sound level meter type 1 according 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)**

The **SC310** is a powerful and easy to use instrument. It can work as integrating sound level meter type 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 band and octave band, with type 1 filters according to IEC 61260 and EN 61260. The **SC310** also fullfils the standard ANSI S1.11 standard.

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 indexes, Peak levels, Sound exposure levels, Short functions, etc.

The **SC310**'s graphic screen provides graphical and numerical representation of the measured functions. 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 stored data 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). Also allows you to use the 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.

CESVA
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SC310
Available functions

Sound level meter mode

L_{AF}	L_{CF}	L_{ZF}
L_{AFmax}	L_{CFmax}	L_{ZFmax}
L_{AFmin}	L_{CFmin}	L_{ZFmin}
L_{AS}	L_{CS}	L_{ZS}
L_{ASmax}	L_{CSmax}	L_{ZSmax}
L_{ASmin}	L_{CSmin}	L_{ZSmin}
L_{AI}	L_{CI}	L_{ZI}
L_{AImax}	L_{CImax}	L_{ZImax}
L_{AImin}	L_{CImin}	L_{ZImin}
L_{AT}	L_{CT}	L_{ZT}
L_{ATmax}	L_{CTmax}	L_{ZTmax}
L_{ATmin}	L_{CTmin}	L_{ZTmin}
L_{At}	L_{Ct}	L_{Zt}
L_{AE}	L_{CE}	L_{ZE}
L_{Apeak}	L_{Cpeak}	L_{Zpeak}
L_{AIT}	L_{CIT}	L_{ZIT}
L_{AIt}	L_{CIt}	L_{ZIt}
$L_{AIT}-L_{AT}$	$L_{CIT}-L_{CT}$	$L_{ZIT}-L_{ZT}$
$L_{AIt}-L_{At}$	$L_{CIt}-L_{Ct}$	$L_{ZIt}-L_{Zt}$

$L_{CT}-L_{AT}$
$L_{Ct}-L_{At}$
t, T

L_1, L_5, L_{10}, L_{50}, L_{90}, L_{95} and L_{99}

Short functions 125 ms

L_{AF}	L_{CF}	L_{ZF}
L_{AS}	L_{CS}	L_{ZS}
L_{AI}	L_{CI}	L_{ZI}
L_{Apeak}	L_{Cpeak}	L_{Zpeak}
L_{AT}	L_{CT}	L_{ZT}

where T=125 ms

Analyser 1/1 mode

L_{AT}	L_{CT}	L_{ZT}
L_{AT_f}	L_{CT_f}	L_{ZT_f}
L_{Apeak}	L_{Cpeak}	L_{Zpeak}

L_1, L_5, L_{10}, L_{50}, L_{90}, L_{95} and L_{99}

Short functions 125 ms

L_{AT}	L_{CT}	L_{ZT}
L_{AT_f}	L_{CT_f}	L_{ZT_f}
L_{Apeak}	L_{Cpeak}	L_{Zpeak}

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

Analyser 1/3 mode

L_{AT_f}	L_{CT_f}	L_{ZT_f}

where f:[20 Hz .. 10 kHz]

Short functions 125 ms

L_{AT_f}	L_{CT_f}	L_{ZT_f}

which T=125 ms
where f: [20 .. 10 kHz]

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

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

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

X: Frequency weighting A, C and Z

31,5			63			125			250			500			1k			2k			4k			8k			16k
20	25	31,5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1k25	1k6	2k	2k5	3k15	4k	5k	6k3	8k	10k
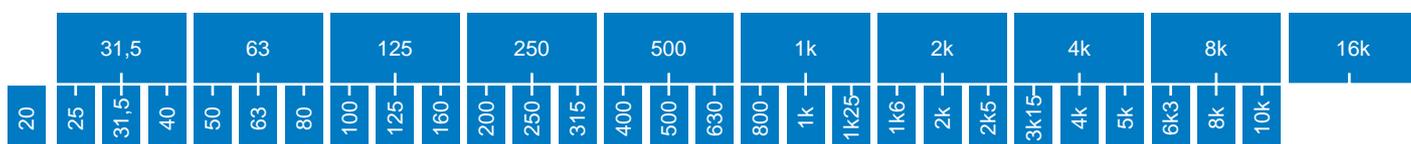
Bluetooth® Device for wireless communications for the sound level meter, BT001

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

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

Supplied accessories

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

CB-5	Sound calibrator
CV111	Calibrator for accelerometers
TR001	Tripod adaptor
TR-40	Tripod (1.1 m height)
TR050	Tripod (1.55 m height)
ML-50	Transport briefcase (49 x 36 x 14 cm)
ML-10	Transport briefcase (30 x 38 x 8 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
BT001	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
DS310	Dosimeter Module for the assessment of noise at workplace

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

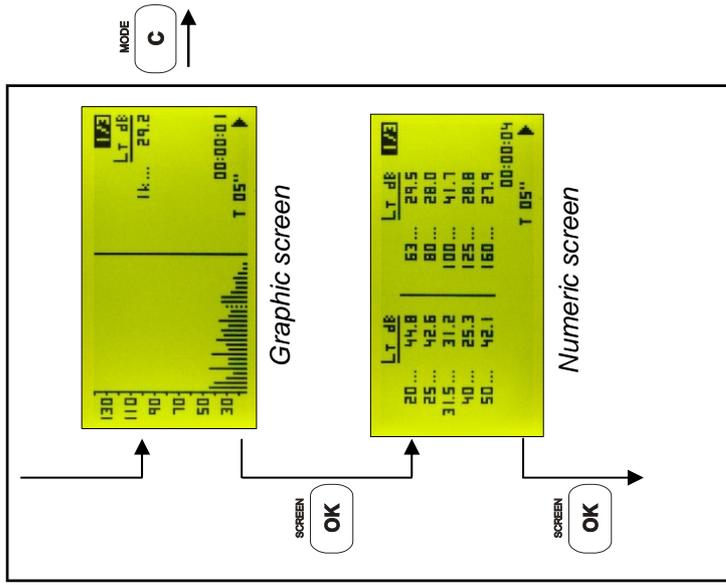|				
Functions T				
T=1 s	13	days	15	hours
T=1min	2	years	3	months
Functions 125 ms	1	day	17	hours
Functions T+125 ms				
T=1 s	1	day	12	hours

F1, F2 and F3 are the acoustical functions selected by the user on the preferences 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 integration time 125 ms (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.*
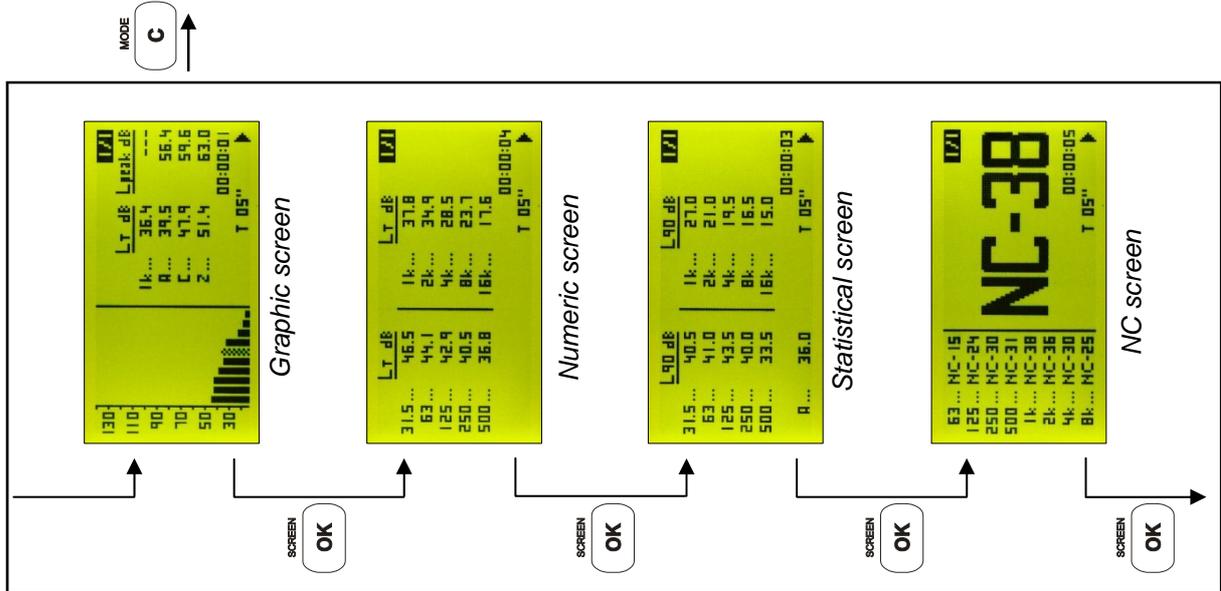
The **SC310** can store in its internal memory the values of the measured functions. When the unit is switched off, data do not get lost and may be retrieved and displayed directly from the **SC310** or transferred to a PC. The memory may be erased directly from the **SC310**.

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.
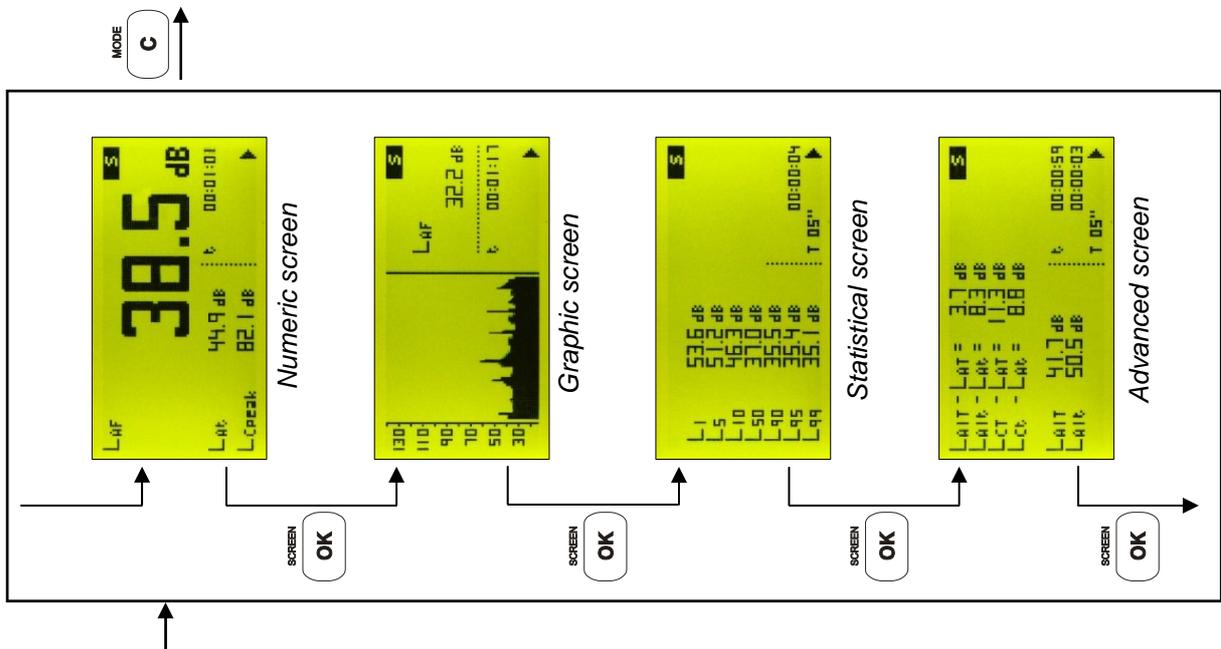
4

1/3 spectrum analyser mode

Graphic screen

Numeric screen

1/1 spectrum analyser mode

Graphic screen

Numeric screen

Statistical screen

NC-38

NC screen

Sound level meter mode

Numeric screen

Graphic screen

Statistical screen

Advanced screen

Standards and specifications

Complies with the following standard:
- EN 61672 type 1, EN 60651:94 (A1:94) (A2 :01) type 1, EN 60804:00 type 1, EN 61260:95 (A1:01) type 1
- IEC 61672 type 1, IEC 60651:01 type 1, IEC 60804:00 type 1, IEC 61260:95 (A1:01) type 1
- ANSI S1.4:83 (A1:01) type 1, ANSI S1.43:97(A2:02) type 1, ANSI S1.11:04
- $C\mskip-4mu\epsilon$ 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		
Primary range	A	C	Z	A	C	Z
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

Electrical noise

	C-130 + PA-13			C-250 + PA 14		
• Electrical Noise:	A	C	Z	A	C	Z
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 60651 type 1 standard
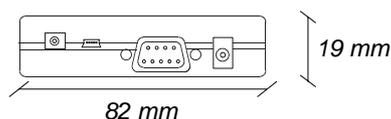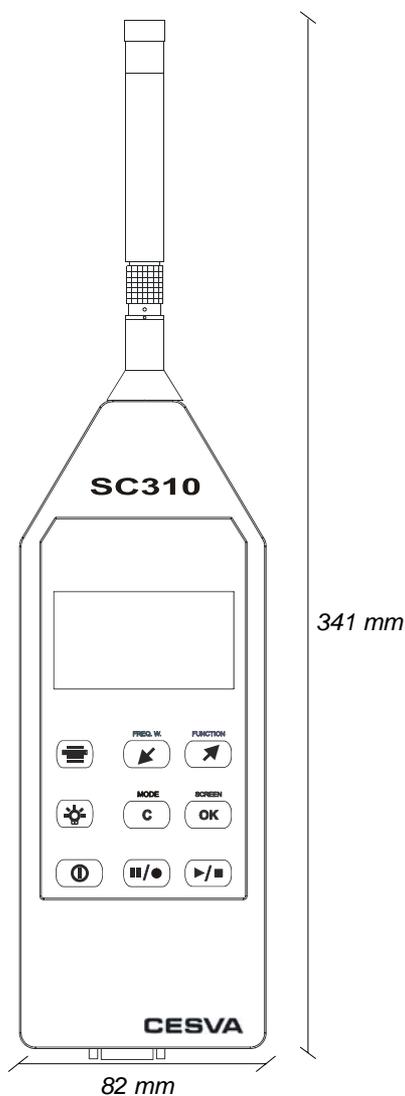Weightings A, C and Z

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 Ω
Gain: 0 and 40 ± 0,2 dB

SC310

Technical specifications

SC310

341 mm

82 mm

19 mm

82 mm

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

Type 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

Type 1 according 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:	30 to 90	%
Maximum error at 30%<R.H.<90%, 40 ºC 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	ºC
Maximum error (-10 to +50ºC):	0,5	dB
Storage without batteries:	-20 to +60	ºC

Effects of vibrations

For frequencies between 20 and 1000 Hz and 1 m/s^2:

$\qquad$ < 75 dB(A)

Battery

2 batteries of 1,5 V type LR6 size AA.
Battery life with continuous use:

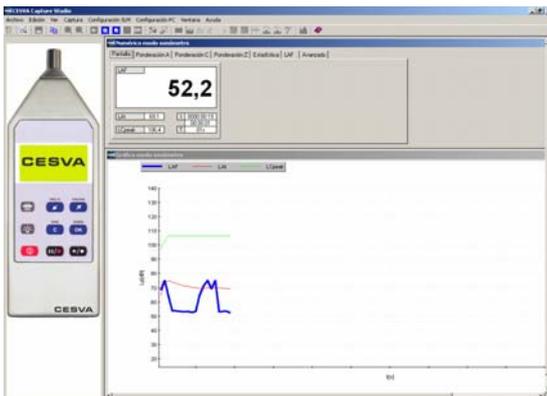|		
• Sound level meter mode:	15	hours
• Spectrum analyser mode 1/1:	13	hours
• Spectrum analyser mode 1/3:	11,5	hours

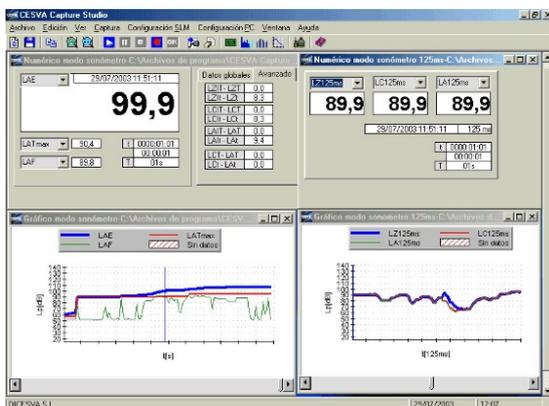Mains feeder: AM240 (EU) or AM241 (USA)

Dimensions and Weight

Dimensions: 341 x 82 x 19 mm
Weight: with battery 550 g ; without battery 500 g
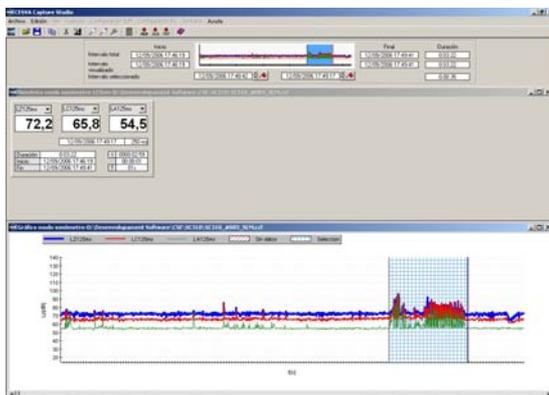
SC310

Cesva Capture Studio software

Cesva Capture Studio

Real time data acquisition

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

- Configure the SC310 with only one key stroke
- Retrieve data from the SC310 in real time.
- Download registers from the SC310 memory to a PC.
- Configure the SC310 memory .
- Display graphically and numerically the data files and convert them into different formats (.txt, .xls, .mdb)
- System of encrypted file. 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

Graphical display of data 1 s and 125 ms
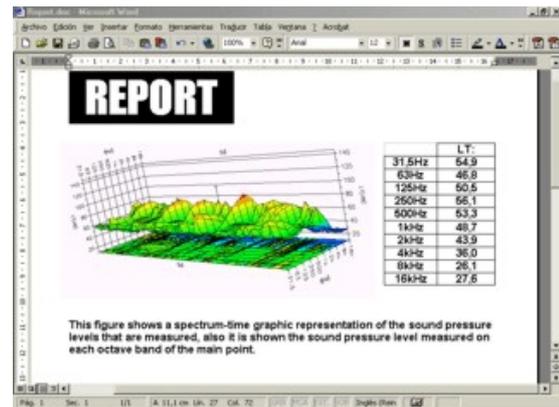
Data exportation to other applications

Capture Studio Editor screens

Elimination of measurement stretches

CAPTURE Studio and **Capture Studio Editor** provide you with a convenient, easy-to-use environment for obtaining, in digital format, data acquired by the SC310, it runs in PC under Windows 9x/Me/2000/NT/XP/VISTA

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

SC310

Reverberation time module for 1/1 and 1/3 octave band analysis

1/1 Reverberation time mode by octave band analysis

	LN dB	△ dB	T30 s	T20 s	R 1/1
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

	LN dB	△ dB	T30 s	T20 s	R 1/3
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	

	LN dB	△ dB	T30 s	T20 s	R 1/3
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	

	LN dB	△ dB	T30 s	T20 s	R 1/3
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 simultaneously measurement of the reverberation time T_{20} and T_{30} for the corresponding bands by the interrupted noise method.

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

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

- Measurement range (depends on the frequency range):

  Minimum RT: 0,1 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 memory: T_{20}, T_{30}, and decay curves, for all octave and 1/3rd octave bands.

  Calculation and measurement standards:

  - ISO 3382:1997 Measurement of the reverberation time of 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.

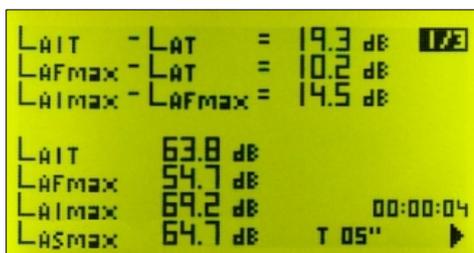| Storage capacity	
MODE 1/1: Reverberation time (T_{20} and T_{30}) + background noise (L_N) + maximum level ($L_N + \Delta$) + decay time history	7900 Final results
MODE 1/3: Reverberation time (T_{20} and T_{30}) + background noise (L_N) + maximum level ($L_N + \Delta$) + decay time history	2600 Final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

Extended frequency mode for 1/3 octave band

Graphic screen
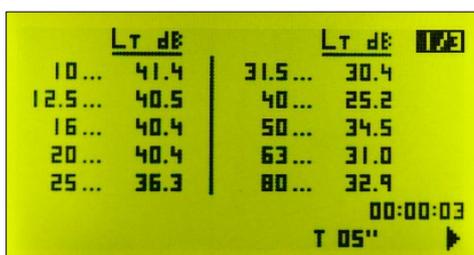
Numeric screen

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 the consecutive integrating time T with the frequency weighting A, C and Z. 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_T (+) 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

SC310

Dosimeter module for the assessment of noise at workplace

Dosimeter module for the assessment of noise at workplace

Numeric screen
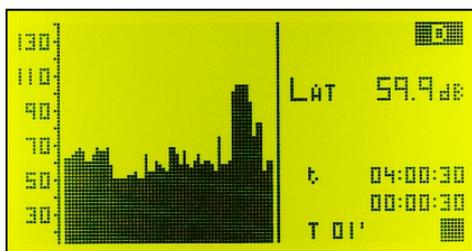
Graphic screen

1/1 Spectrum analyser screen

Numeric screen (projected parameters)

The dosimeter module for the assessment of noise at workplace of the **SC310** adds a new measurement mode that is perfect for the application of the Directive 2003/10/CE which adapts to the technical progress the regulation on protection of the health and safety of workers against the risks regarding the exposure to noise. In The Member States, the corresponding transposition to national law.

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 frequency weighting A and C [L_{At}, L_{Ct}], daily noise exposure level [$L_{EX,8h}$] (ISO 1999), Noise exposure in Pa^2h [E] and noise dose [DOSE] referred to a programmable Criterion Level [L_C], and, of course, also the Peak Level with frequency weighting C [L_{Cpeak}] (ISO 1999).

Moreover, the **SC310** allow 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**, beside measuring the equivalent level with frequency weighting A and C [L_{At}, L_{Ct}] (SNR and HML method), simultaneously carries out a real time frequency analysis with frequency weighting A and by octave bands from 63 Hz to 8 kHz (Octave method).

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

The **SC310** helps you to asses and measure the exposure to noise and also brings you all data needed to inform and train 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 suitable hearing protectors.

The **SC310** is a type 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 being present or not. And because of being a Type 1 instrument, the metrological inaccuracies due to the instrument are negligible (ISO 9612).

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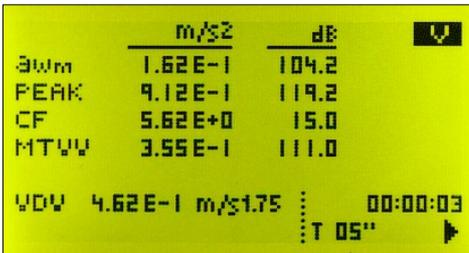
SC310

Module for vibration measurements

Module for vibration measurements
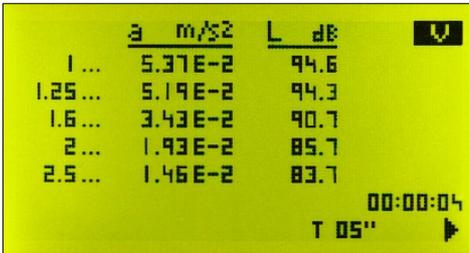
Numeric screen acceleration values in m/s² and dB (1 Hz—80 Hz)
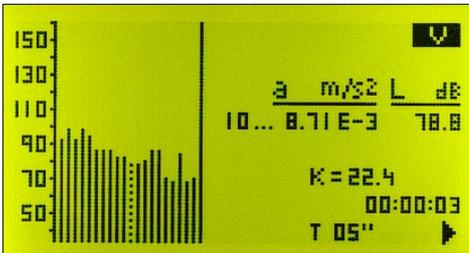
Graphic screen in 1/3 octave bands (1 Hz - 80 Hz) + k evaluation

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; the human exposure to whole-body vibration in buildings mode and the 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 in order to measure structural vibration to which human beings are exposed in buildings. This new mode VIBRATION is designed according ISO 2631-2:2003 and together with the preamplifier PA001 and the accelerometer converts the **SC310** into a human vibration-measuring instrument according to ISO 8041.

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/s²] and logarithmic numerical values [dB referred to 10^{-6} m/s²]. 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 frequency weighting W_m (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 used ones, please consult.

PA001

AC006

SC310