

Applications

Includes measurement protocols for:



Noise generated by **motor vehicles**



Emission and immission of **leisure and community noise levels**



Workers' exposure to noise and testing of **PPE**



Levels of **machine noise**



Acoustic power level of sound sources



Traditional integrating sound level meter

User-friendly

- Step by step guide through the protocols, while carrying out measurements
- Measures all parameters simultaneously
- Single scale
- Large 3.2" high resolution screen
- Only 3 operating keys (Soft key) and 1 on/off key
- Powered by USB (cable not included)

SC101

Class 1 integrating sound level meter with measurement protocols

"MEASURING NOISE HAS NEVER BEEN SO EASY"

The **SC101** is more than just a noise measuring instrument as it not only carries out the measurements, but also the checks and calculations required by the standards, to get the final result, in situ.

It is the first integrating sound level meter with measurement protocols which simplifies the process of obtaining results to the maximum. It guides the user, step by step through the measurement process.

The **SC101** adapts to the needs of each user as it enables the measurement protocol to be chosen for the following applications: motor vehicles, leisure and community, risks at work, machinery (pressure), machinery (power) or sound level meter (traditional). The user simply follows the procedure indicated by the **SC101**, to obtain the final result.

Measuring noise has never been so easy!

This model of sound level meter has a removable preamplifier to enable noise measurements to be carried out on vehicles as well as machines



SC101

Class 1 integrating Sound Level Meter with measurement protocols

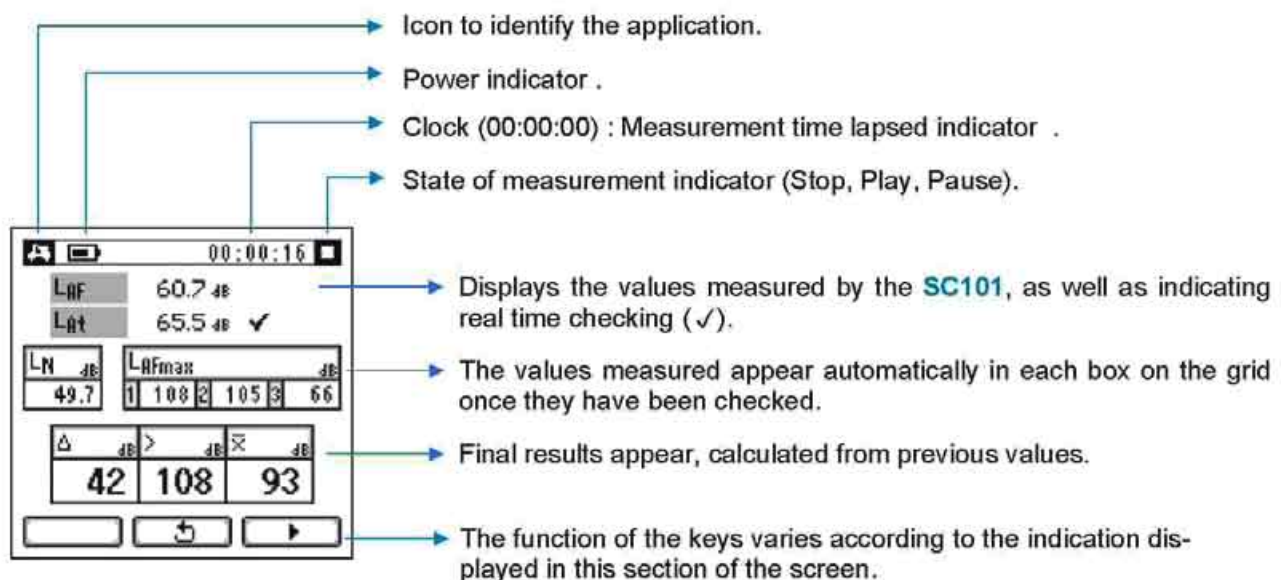
The **SC101** is characterised by its user-friendliness. The structure of its menus and options is both visual and intuitive. There is no need to set the language as it uses icons which are easy to identify and recognise . Any of the applications or adjustments shown below can be accessed from the main menu. To do this simply select the required icon.



- Sound level meter application
- Vehicle application
- Leisure and community application
- Risks at work application
- Machinery application - pressure
- Machinery application - power
- Sensitivity adjust
- Contrast adjust

The **SC101** has a large screen which displays all the relevant information to carry out the measurement.

The data displayed varies, adapting continuously to the application chosen, so that only the necessary parameters are displayed in each application.



SC101

Motor vehicle application

STEP 1

Measurement of background noise



STEP 2

1st measurement of vehicle noise

The **vehicle application** follows the measurement procedure for noise produced by motor vehicles step by step, according to directives 70/157/CEE, 78/1015/CEE and 97/24/CE (automobiles, public transport vehicles, goods vehicles, motorcycles, mopeds, three-wheeled vehicles, and quads).

STEP 3

2nd measurement of vehicle noise

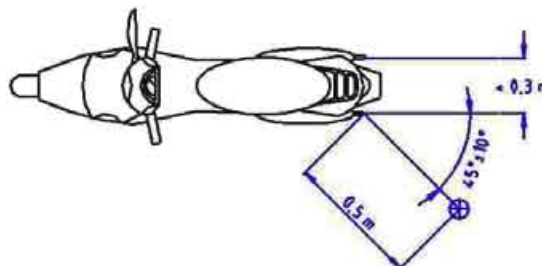
The **SC101** guides the user through the measurement protocol. As the measurements are carried out each value measured is checked (✓) and filled in automatically in its corresponding box on the grid. This characteristic enables decisions to be made in situ.

Once the three measurements of motor vehicle noise have been made the final results appear:

- difference between maximum and minimum values (Δ)
- maximum value of the three measurements ($>$)
- average of the three values measured (\bar{x})

STEP 4

3rd measurement of vehicle noise and obtaining final results



STEP 1

Key in the duration of the measurement and indicate if background noise is to be set

STEP 2

Measurement of background noise

STEP 3

1st measurement of leisure/ community/ traffic noise and obtaining results

STEP 4

2nd measurement of leisure/ community/ traffic noise and obtaining results

STEP 5

Last measurement of leisure/ community/ traffic noise and obtaining results



The Leisure and Community Noise Application is designed to enable the user to assess the level of noise pollution produced by:

- Traffic (road, rail and air)
- Businesses (pubs, bars, shops, workshops, companies, etc.)
- Neighbours (electrical appliances, TV, musical instruments, voices, singing, shouting, pets, etc.)

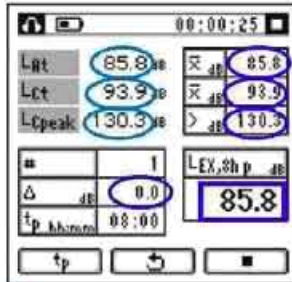
The application tests, averages and corrects (background noise) the values measured in real time, and places the results in the boxes on the grid.

The application enables as many measurements of the leisure/ community/ traffic noise as required to be carried out.

After carrying out the measurements, the final result obtained is simply compared to the emission/immission limits established by the relevant regulations.

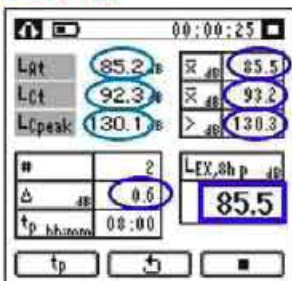
STEP 1

1st measurement of worker's exposure to noise and obtaining the result



STEP 2

2nd measurement of worker's exposure to noise and obtaining the result



The Risks at Work Application is designed to assess the noise level to which a worker is exposed during the day.

It enables the assessment to be based on working days, jobs or tasks, as recommended by the Technical Guide for the assessment and prevention of risks related to the exposure of workers to noise (ISO 9612).

In addition, it will assess the PPI used by the workers in accordance with the HML and SNR methods.

STEP 3

Last measurement of worker's exposure to noise and obtaining the result



As the measurements are being carried out, the application calculates: the energy average of the LAeq and LCeq measured, the maximum Lpeak value and the final result of LEX,8h p. In addition to the difference between the LAeq values measured, and it places them in their boxes on the grid. These values are updated each time a measurement is taken. As many as required can be made.

The application permits the projection time (pt) to be set. Once it has been modified the new final LEX,8h p result will automatically be displayed corresponding to the new projection time.

The final result obtained is simply compared to the exposure limits and the values which require action to be taken.

STEP 4

Setting the pt and obtaining the final result



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Machinery: sound pressure level application

STEP 1

Measurement of background noise

LP 00:00:18		
L _{At}	49.3 dB	
L _{Cpeak}	75.5 dB	
L _{pA}	N	L _{pA}
49.3	0	
k _{1A}	L _{pA}	L _{Cpeak}
k _{3A}		



STEP 2

1st measurement of machine noise and obtaining results

LP 00:00:15		
L _{At}	88.7 dB	
L _{Cpeak}	133.0 dB	
L _{pA}	N	L _{pA}
49.3	1	88.7
k _{1A}	L _{pA}	L _{Cpeak}
0.0		
k _{3A}		

The **Machinery: Sound Pressure Level** application gives a step by step guide through the measurement procedure described in Directives 2005/88/CE and 2006/42/CE and the standard ISO 11202.

It is ideal for pre-certifying and certifying the machines by the manufacturer or a separate laboratory and incorporating the information into the machine's instruction manual. In addition, the installer can check that the machinery has been installed correctly, and the owner can then periodically check the sound pressure level.

STEP 3

Last measurement of machine noise and obtaining results

LP 00:00:15		
L _{At}	80.0 dB	
L _{Cpeak}	123.8 dB	
L _{pA}	N	L _{pA}
49.3	2	86.2
k _{1A}	L _{pA}	L _{Cpeak}
0.0		
k _{3A}		

As the measurements are being made the **SC101** carries out the relevant calculations and checks and places the results in the corresponding box on the grid. From the first measurement of machine noise levels onwards the application also shows the final results of L_{pA} and L_{Cpeak} applying the background noise correction (K_{1A}) and the local environmental correction (K_{3A}) when necessary.

As many machine noise level measurements as required may be made.

STEP 4

Setting K₃ and obtaining final result

LP 00:00:15		
L _{At}	80.0 dB	
L _{Cpeak}	123.8 dB	
L _{pA}	N	L _{pA}
49.3	2	86.2
k _{1A}	L _{pA}	L _{Cpeak}
0.0		
k _{3A}		



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Machinery: sound power level application

STEP 1

Sound pressure measurement
of 1st point of machine

00:00:04			
L _{at} 79.2 dB			
N	L _{pa} dB	Δ	N
1	79.2	0.0	
ΔL	k _{1A}	k _{2A}	L _{pa}
S _{m²}	L _{WA}		
✓	↶	↷	



STEP 2

Sound pressure measurement
of last point of machine

00:00:22			
L _{at} 79.9 dB			
N	L _{pa} dB	Δ	N
2	79.6	0.7	
ΔL	k _{1A}	k _{2A}	L _{pa}
S _{m²}	L _{WA}		
✓	↶	↷	

STEP 3

Background noise measure-
ment of 1st point of machine

00:00:36			
L _{at} 49.2 dB			
N	L _{pa} dB	Δ	N
2	79.6	0.7	1
ΔL	k _{1A}	k _{2A}	L _{pa}
S _{m²}	L _{WA}		
✓	↶	↷	

STEP 4

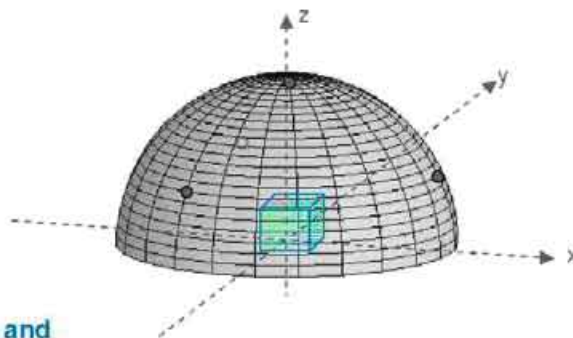
Background noise measure-
ment of last point of machine
and obtaining results

00:01:30			
L _{at} 49.7 dB			
N	L _{pa} dB	Δ	N
2	79.6	0.7	2
ΔL	k _{1A}	k _{2A}	L _{pa}
30.1	0.0	0.0	79.6
S _{m²} 30.0	L _{WA} 94		
k _{2A} S	↶	↷	

The Machinery application: sound power level is designed to simplify the measurement of sound power levels of noise sources (machines) in accordance with standard ISO 3746.

It is the easiest and most efficient way available to the manufacturer to obtain the sound power level of the machine and thus be able to include it in the instruction manual (2006/42/CE) and to affix an indication of the guaranteed sound power level (2005/88/CE) on to the machine.

During the sound pressure level and background noise measurements at the various points selected around the machine, the application carries out the relevant calculations and checks and places the results in the corresponding boxes on the grid. Next the final results (L_{pa} y L_{WA}) appear in the boxes, applying the background noise correction (K_{1A}) and the local environmental correction (K_{2A}) as well as the surface factor (S) when necessary.



STEP 5

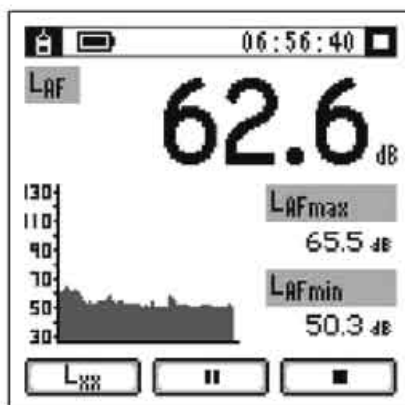
Setting K2A and S, and
obtaining final results

00:01:33			
L _{at} 49.7 dB			
N	L _{pa} dB	Δ	N
2	79.6	0.7	2
ΔL	k _{1A}	k _{2A}	L _{pa}
30.1	0.0	0.0	79.6
S _{m²} 30.0	L _{WA} 94		
-	✓	+	



SC101

Sound Level Meter Application



Functions available

LAF (max, min)
LAS (max, min)
LA1"
LC1"
LA_t
LC_t
LC_{peak}

The **Sound Level Meter application** is designed for all kinds of users. It can distinguish between the most appropriate parameters for the assessment to be carried out.

This application is based on the typical operation of the traditional integrating sound level meter. When a measurement is begun three functions are displayed simultaneously. In addition, if desired the functions to be displayed can be changed during the measurement process, as they are all measured at the same time.

This application offers all the information, both graphic and numerical, on a single screen.

The **Sound Level Meter application** is ideal to comply with any sort of regulation which requires the assessment of overall sound pressure levels, as it measures instantaneous values, averages based on integration (equivalent level) and maximum and minimum values over the measurement period.

SC101

Accessories



Outdoor Kit TK1000



Outdoor Kit carrying case



Outdoor Kit TK200



Carrying case ML060



Carrying case ML50



Carrying case ML10



Tripod TR050



Extension cable for preamplifier and microphone, CN003, CN010 and CN030

Accessories supplied

- FNS020** Case
- PVM05** Wind screen

Accesorios opcionales

- CB006** Class 1 acoustic calibrator
- CN1US** USB Cable – miniUSB for connection to a PC
- TK1000** Outdoor kit
- TK200** Outdoor kit
- CN003** Microphone extension cable
- CN010** Microphone extension cable
- CN030** Microphone extension cable
- TR001** Tripod adapter
- TR40** Tripod (height 1,1 m)
- TR050** Tripod (height 1,55 m)
- ML50** Carrying case (49 x 36 x 14 cm)
- ML10** Carrying case (39 x 32 x 12 cm)
- ML060** Special outdoor kit carrying case (51x38x15 cm)

Certificates and standards

- EN 61672-1:03 class 1, EN 60651:94 (A1:94) (A2:01) class 1, EN 60804:00 type 1
- IEC 61672-1:02 class 1, IEC 60651:01 class 1, IEC 60804:00 type 1
- ANSI S1.4:83 (R2001) type 1, ANSI S1.43:97 (R2002) type 1, ANSI S1.11:04
- **CE** . Mark. Complies with low voltage directive 73/23/CEE and directive CEM 89/336/CEE modified by 93/68/CEE.

Measurement range

C-130 + PA-13

• L_F, L_S, L_T y L_t		
Margin of measurement:	A	C
Upper limit:	137	137
Lower limit:	24.8	25.8

C-250 + PA-14

• L_F, L_S, L_T y L_t		
Margin of measurement:	A	C
Upper limit:	137	137
Lower limit:	23.7	26.9

C-130 y C-250

• L_{peak}	
Linear margin of measurement:	55 – 140 dB

Noise

C-130 + PA-13

• Electrical noise:	A	C
Maximum	15.7	17.1
Typical	15.0	16.3
• Total noise (electrical + thermal microphone):		
Maximum	21.2	22.0
Typical	20.6	21.8

C-250 + PA-14

• Electrical noise:	A	C
Maximum	15.7	16.7
Typical	15.1	16.4
• Total noise (electrical + thermal microphone):		
Maximum	18.9	20.8
Typical	18.4	20.2



Peak detector Lpeak

Onset time constant < 75 ms

Microphone

• Model **CESVA C-130**: ½" Condenser microphone. Nominal capacity 22.5 pF. Nominal sensitivity: 17.5 mV/Pa in reference conditions.
or

• Model **CESVA C-250**: ½" Prepolarised condenser microphone. Nominal capacity 17.0 pF. Nominal sensitivity: 46.4 mV/Pa in reference conditions.

Frequency weighting

Complies with standard IEC 61672 class 1
A and C weightings

Time weighting

L_F, L_S, conforms to class 1 tolerances

Parameters

Resolution: 0,1dB

Influence of humidity

Operating margin in absence of condensation:	25 to 90	%
Maximum error for 30% < H.R. < 90% at 40 °C and 1 kHz:	0,5	dB
Storage without batteries:	< 93	%

Influence of magnetic camps

The sound level meter complies with the basic specifications of standard 61672-1 for the required immunity to a.c. power and radio frequency fields.

Influence of temperature

Operating margin:	-10 to +50	°C
Maximum error (-10 a +50°C):	0.5	dB
Storage without batteries:	-20 a +60	°C

Influence of vibrations

For frequencies from 20 to 1000 Hz and 1 m/s²: < 75 dB(A)

Power source

Two 1,5 V AA (LR6) batteries.
Typical duration with continuous use: 14 hours

Dimensions and weight

Dimensions: 336 x 82 x 20 mm

Weight:

- With batteries: 487 g
- Without batteries: 438 g