



Model AWA6228+ Sound Level Meter

FEATURES

- ❖ A handhold noise measuring instrument
- ❖ **Multifunction and user- friendly** sound level meter(integrating SLM, 1/1 OCT, 1/3 OCT analyzer, Noise dosimeter)
- ❖ 240x320 **color screen**
- ❖ Measurement range **20~142dB**
- ❖ **Synchronously** do statistical, real-time 1/1 OCT, 1/3 OCT, and noise dosimeter measure
- ❖ Comply with **IEC 61672 Class 1** and **IEC61260 Class 1** and **IEC 61252**
- ❖ **CE** Mark
- ❖ **32G SD card** function for precise audio recording, GPS positioning

USES

- ❖ Comprehensive noise measurements
- ❖ Environment noise certification
- ❖ Noise profile measurement of industrial noise
- ❖ Peak C sound level measurements
- ❖ Impulse noise measurements
- ❖ Workplace noise assessments
- ❖ Industry boundary assessments



OPTIONAL FUNCTION LIST

Menu Interface



1. Integrating Function

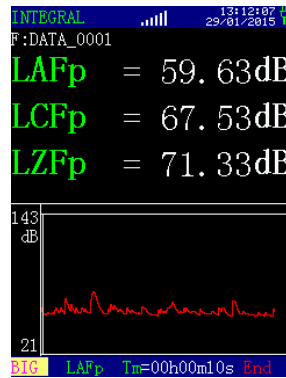
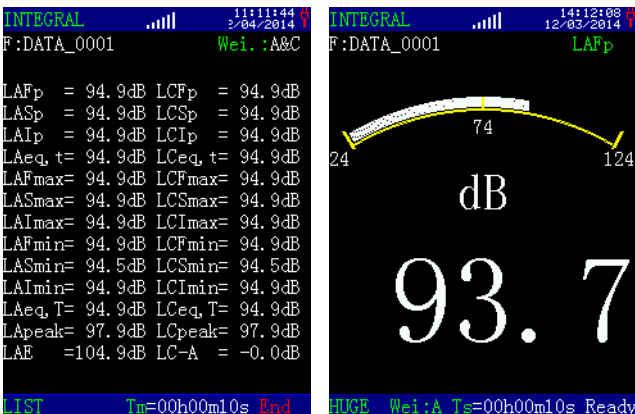
1) Measuring Interface: L_{xyi} , L_{xyp} , $L_{xeq,t}$, $L_{xeq,T}$, L_{xmax} , L_{xmin} , L_{xpeak} . LAE, LC-A, SEL

Note: x is A,C,Z, y is F,S,I

2) Integrating time: 1s~99h59m59s, set in random

3) Measuring Interface: Simple, List, Huge, Big interface

User interface



2. Statistical Analysis Function

1) Main Function: The statistical analysis, 24 hours noise monitor automatically.

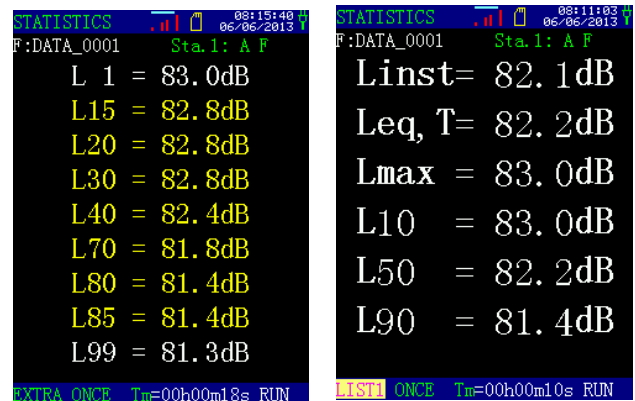
2) Mainly Measure Index: L_{xyp} , $L_{xeq,0.5s}$, $L_{xeq,T}$, L_{xmax} , L_{xmin} , L_{xyeqT} , SEL, Ln as minimum: 1, 5, 10, 50, 90 with 0.1 dB resolution, SD

Note: x is A,C,Z y is F,S,I n is 1~99

24h measures index: L_d , L_n , L_{dn} .

3) Up to 28 statistical Ln % values, two statistical analyzers each has 7 preset to L1, L5, L10, L50, L90, L95 & L99 and 7 user defined Ln values. Two statistical analyzers with independent time and frequency weight.

User Interface

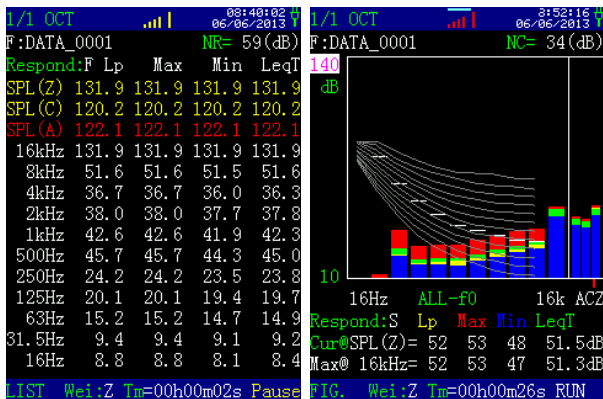


3. Real-time 1/1 Oct Spectrum Function

- Filter type: Parallel octave band filter, $G_{10} = 10^{3/10}$
- Fulfills standards: IEC 61260: 1995 Class 1
- Frequency bands: 11 Octave bands 16Hz-16kHz
- Frequency Weighting: A, C, Z can be chosen
- Center Frequency: 16 Hz, 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz
- Measuring Interface: List i and graph interface
- Measuring Parameters: L_{xyp} , $L_{xeq,0.5s}$, $L_{xeq,T}$, L_{xmax} , L_{xmin} , T_m , NR Note: x is A,C,Z, F_{oi} y is F,S
- Display content: Real-time display NR & NC values and curves in the process of measuring
NR according to ISO 1996:1971
NC according to ANSI S2.12-2008
- Real-time Analysis Speed: 50 times/s

10) Level linear range: above 110dB

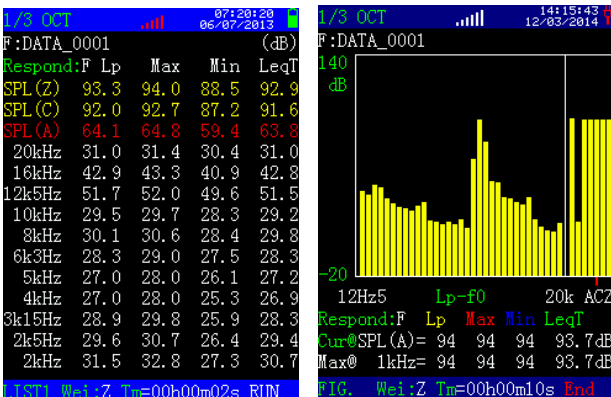
User Interface



4. Real-time 1/3 OCT Spectrum Function

- 1) Filter type: Parallel (simultaneous) 1/3 octave band filter, $G_{10} = 10^{3/10}$
- 2) Fulfills standards: IEC 61260: 1995 Class 1
- 3) Frequency bands: 33 Octave bands 12.5Hz-20kHz
- 4) Real-time Analysis Speed: 50 times/s
- 5) Measuring Interface: List interface and graph interface
- 6) Measuring Parameters: L_{xyp} , $L_{xeq,0.5s}$, $L_{xeq,T}$, L_{xymax} , L_{xymin} , T_m Note: x is A,C,Z,B,D, F_{oi} y is F,S
- 7) Frequency Weighting: A, C, Z can be chosen
- 8) Level linear range: above 110dB

User Interface



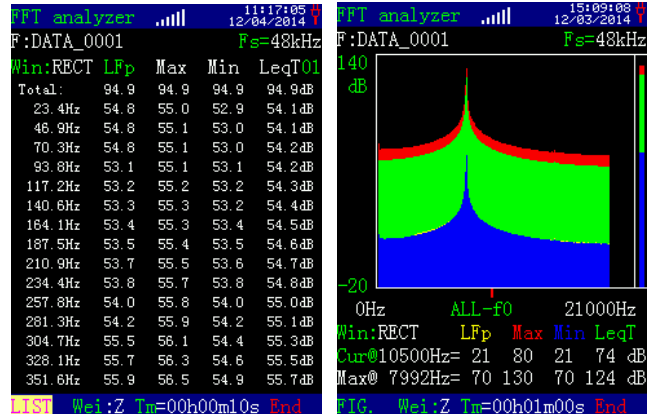
Name: DATA_0001	2013-06-06 10:19:15
1/3 OCT-INT	Tm=00h00m37s
R:22dB-134dB	Ts=00h00m00s Wei:Z
Model:AWA5688	Serial:12345678
Calibrate@2013-06-06 09:57:57	Lz=-30.9dB
LFmax LFmin LSmax LSmin Leq T	
SPL(Z)	132.2 131.5 131.9 131.9 131.9dB
SPL(C)	116.9 116.2 116.6 116.5 116.5dB
SPL(A)	83.0 81.2 82.3 82.1 82.2dB
SPL(B)	100.2 96.7 99.7 99.5 99.6dB
SPL(D)	103.3 102.6 103.0 102.9 103.0dB
SPL(T)	81.4 80.7 81.1 81.1 81.1dB
SPL(O)	124.7 124.0 124.5 124.4 124.5dB
20kHz	28.9 26.7 28.0 27.7 27.9dB
16kHz	29.9 27.7 29.0 28.7 28.8dB
12kHz	31.6 29.5 30.7 30.5 30.6dB
10kHz	33.9 31.8 33.1 32.8 32.9dB
8kHz	36.5 34.3 35.6 35.3 35.4dB

6k3Hz	39.1	36.9	38.2	37.9	38.1dB
5kHz	42.0	39.9	41.1	40.8	41.0dB
4kHz	44.9	42.8	44.0	43.8	43.9dB
3k15Hz	47.7	45.6	46.9	46.6	46.8dB
2k5Hz	50.7	48.7	49.9	49.7	49.8dB
2kHz	53.7	51.7	52.9	52.6	52.8dB
1k6Hz	56.6	54.6	55.8	55.5	55.7dB
1k25Hz	59.5	57.7	58.8	58.6	58.7dB
1kHz	62.6	60.6	61.8	61.6	61.7dB
800Hz	65.5	63.6	64.8	64.5	64.6dB
630Hz	68.4	66.7	67.8	67.6	67.7dB
500Hz	71.4	69.7	70.7	70.5	70.6dB
400Hz	74.4	72.7	73.7	73.5	73.6dB
315Hz	77.2	75.8	76.6	76.5	76.6dB
250Hz	80.3	78.8	79.7	79.5	79.6dB
200Hz	83.2	81.9	82.7	82.5	82.6dB
160Hz	86.3	85.2	85.8	85.7	85.7dB
125Hz	88.8	87.7	88.3	88.2	88.3dB
100Hz	93.0	92.2	92.6	92.5	92.6dB
80Hz	94.5	94.0	94.3	94.2	94.3dB

5. Real-time FFT Analysis Function

- 1) Line Number: 2048lines
- 2) Sampling Freq: 48 kHz, 24 kHz, 12 kHz, 6 kHz, 3 kHz
- 3) Measuring Parameters: MAX, MIN, LeqT
- 4) Window Functions: hanning, brinell, flat, rectangular

User Interface



6. Dosimeter Function

- 1) Exchange rates: Q3, Q 4, Q 5, Q 6
- 2) Fulfills standard: IEC 61252: 2002
- 3) Selectable Thresholds: 40-90dB
- 4) Selectable Criterion: 70-90dB
- 5) Lock and with limited access
- 6) Noise dose: 0.01%-999.99%
- 7) Measuring Parameters: L_{asp} , L_{ASMAX} , L_{ASMIN} , TWA, $L_{EX, 8h}$, L_{Cpeak} , L_{Zpeak} , $L_{Aeq,T}$, L_{AVG} , DOSE
- 8) Logging interval: 1min
- 9) Logging content: L_{AVG1m} , L_{Aeq1m} , L_{Cpeak} , L_{Zpeak} , L_{ASmax} , L_{ASmin}

7. Data Logging Function

- 1) Logged data can be exported to PC
- 2) Logged content dependent on authorized and opening analyzer.
Logging of instantaneous data (L_p) and processed data (L_{eq} and other indexes), frequency analysis.
- 3) Logging interval: 20ms~2000ms can be chosen, a 20ms as adjustable unit.

8. SD Card & Sound Recording Function

- 1) The SD card can be used as a memory card after installing the program. Saved files can be opened in the EXCEL directly
- 2) When connected to the computer via USB interface, it changes SD card into U disk
- 3) Record Format: 8000 samples/s@8bit,

48000 samples/s@32bit

- 4) File Format: 'WAV' including calibration information
- 5) Record Time: fs=48k, record time less than 1h per file
fs=8k, record time less than 12h per file
- 6) Replay: by the meter or computer

Data is captured to the SD memory card inserted in the sound level meter

9. GPS Positioning Function

Measure longitude, latitude, altitude, movement speed which can be recorded together with the noise measurement result.

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GPS 16:00:04
26/01/2015
F:DATA_0001 Zone:+08
GPS RTC: 2015-01-26 080002.00

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	Start	End
Lat.	30.217349N	30.217348N
Lon.	119.958456E	119.958458E
Alt.	6.3 m	7.1 m

```

Distance= 0m Star Num=07
Dir.: Vel.: 0.393 km/h
Cali.@: 2015-01-26 15:52:01
[Set]:Calibrate RTC by GPS.
[Enter]:Measure distance.

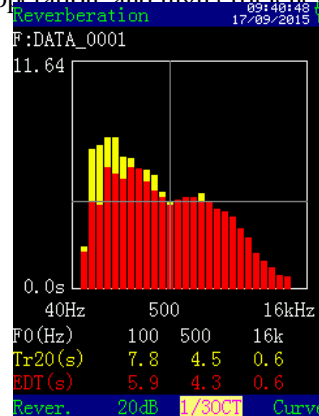
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10. Reverberation time measurement

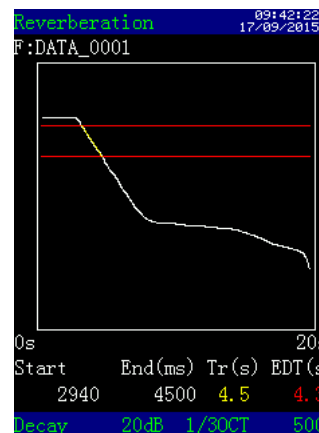
If AWA6228+ sound level meter can measure the indoor reverberation time in the integrated impulse response method specified by ISO3382 after installed with reverberation time measurement software.

The integrated impulse response method means the method in which the decay curve of the indoor sound pressure level is obtained by backward integration of the squared value of the impulse response. The integrated impulse response method utilizes the modern digital processing technology that features easy and convenient operation. More important, the integrated impulse response method has higher reliability and repeatability than the interrupted noise method in principle. Particularly in the low frequency band (<250Hz) measurement, it has more advantages. Therefore, it is preferred that the integrated impulse response method is selected for the measurement. ISO 3382:1997 standard thinks that the precision of one value measured in integrated impulse response method is equivalent to the averaged value of ten values measured in interrupted noise method. It only needs to

be furnished with impulse sound source, such as balloon, firecracker and starting gun etc. The sound source features compact size, light weight, easy operation, and high efficiency.



F0	Tr20	EDT	F0	Tr20	EDT
16k	0.6	0.6	12k5	0.7	0.7
10k	1.0	1.1	8k	1.4	1.4
6k3	1.8	1.8	5k	2.4	2.6
4k	2.9	3.1	3k15	3.5	3.7
2k5	3.8	4.0	2k	4.0	4.1
1k6	4.4	4.4	1k25	4.9	4.4
1k	4.6	4.7	800	4.6	4.7
630	4.1	4.6	500	4.5	4.3
400	4.9	4.7	315	5.8	5.0
250	6.1	5.5	200	5.9	6.1
160	6.7	6.2	125	6.7	5.6
100	7.8	5.9	80	7.7	6.2
63	7.4	4.3	50	7.2	4.4
40	2.2	1.9			



ACCESSORIES BASIC SUPPLIED



Φ80mm windshield AWA8734



Power adaptor AWA8522 (5V, 2A)



USB cable with connector mini-USB
AWA 8730



U-disk (Transfer Software inside)



Update & RS232 cable AWA8760



Carrying case AWA8780

ACCESSORIES OPTIONAL



AH40 mini-printer



Tripod (1.46m height)



32G memory SD card

Note: The SD card can be used as a memory card after installing the program.



GPS module



Class 1 Sound calibrator AWA6221A




Extension cable AWA8732 (5m, 10m, 20m)

Extension Rod Application Illustration



Extension Rod

SPECIFICATIONS

Fulfills Standards	IEC 61672 Class 1
	IEC 61260 Class 1
	IEC61252:2002
	IEC 60651:2001 Type 1
	IEC 60804: 2000 Type 1
	ANSI S1.4: 1983 Type 1
	ANSI S1.4A:1985 Type 1
	ANSI S1.43:1997 Type 1
ANSI S1.25:1991	
Microphone+ Preamplifier	1/2" prepolarized condenser microphone + AWA14601 removable preamplifier (Sensitivity Level: -28dB)
Correction Function	Diffusion field correction in order to comply with standards ANSI S1.4
Frequency Range	10 Hz ~ 20 kHz \pm 1 dB (not including microphone)
Total Measurement Range	20dB-142dB (145dB Peak)
Self-generated Noise	<12 dB(A), 17 dB(C), 22 dB(Z)
Frequency Weighting	Parallel (simultaneous) A, C, Z, B, D and user1&2-defined weighting
Time Weighting	Parallel (simultaneous) F, S, I, Peak
A/D Bits:	24 bits
Sampling Frequency	48 kHz
Calibration	Using Sound Calibrator Class 1 model AWA6021A
Correction Function	Diffusion field correction in order to comply with standards ANSI S1.4
Delay Time	The meter can delay 0~99s after pressing start measuring button
Back Erase Function	Elimination of undesired noise; example barking dogs, cars, doors
Display	240x320 color screen, adjustable brightness, backlight can be closed
Display Resolution	0.1 dB
Low battery indication	Symbol  indicate low battery
Data Storage (32 Mb FLASH RAM. SD memory card is optional)	➤ 3328 groups of integrating measuring results only.
	➤ 3328 groups of statistical results only ('statistical 1' and 'statistical 2' analysis index are same.)
	➤ 2663 groups of statistical results only ('statistical 1' and 'statistical 2' analysis index are different.)
Print	Mini-printer AH58F or AH40
Internal Clock	Error less than 1 min/month
Output Interface	AC Output (full scale): 1.0V AC RMS; Output Impedance: 1k Ω ; Connector: ϕ 3.5 mm stereo plug
	DC Output: 20mV/dB; Output Impedance: 1k Ω ; Connector: DB-9 plug
	RS232 Interface: To computer for output some measurement results instantaneous values , also to mini-printer for printing Transmission speed: 4800, 9600,115200 bps
	USB Interface: available and no need device drive. Allow USB to be controlled via communication commands
Power Supply	4xLR6 alkaline battery or rechargeable batteries
	5 V external power supply
Battery Life	Longest time of 30 hours continuously with 4xLR6 alkaline battery

Dimensions	260 (H) x 80 (W) x 30 (D), mm.
Weight	0.35 kg. (include batteries)
EMC	Type X
Environment:	Working Temperature: -10 ~ 50 °C Storing Temperature: -20 ~ 70 °C Relative Humidity: 25 ~ 90 %
Accessories	Power adaptor, USB cable, Update&RS232 cable, windscreen, hand strap, windscreen fall prevention rubber, carrying case, USB-disk, user's manual
Bluetooth Module	Wireless printing and Can communicate with smart phone and realize wireless control sound level meter