



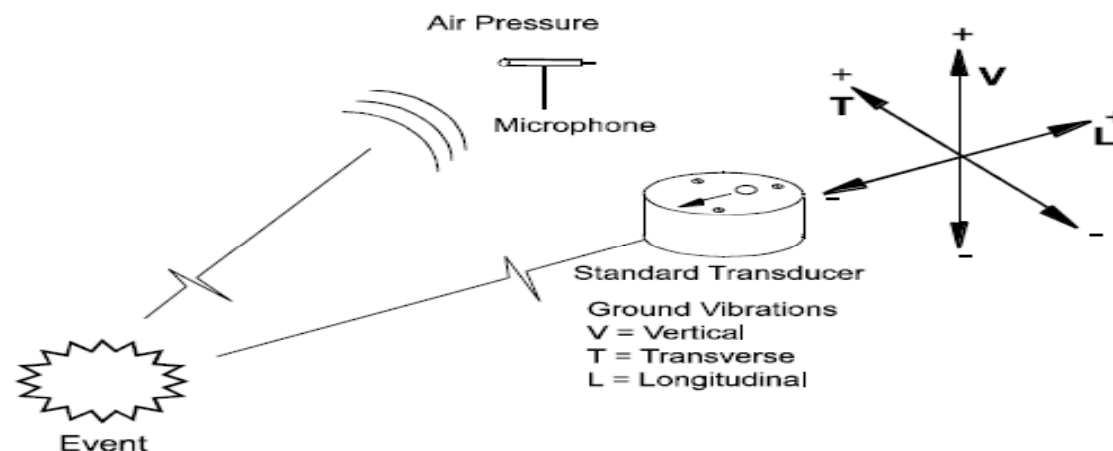
**Honglim Co., Ltd.**



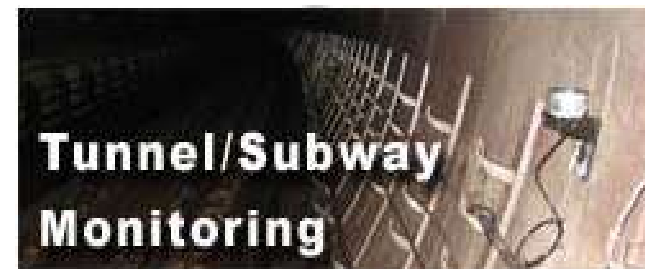
**New Seismograph  
(HLS-01)**

## 1. Function

Event monitoring measures both ground vibrations and air pressure. The monitor measures transverse, vertical, and longitudinal ground vibrations. Transverse ground vibrations agitate particles in a side to side motion. Vertical ground vibrations agitate particles in an up and down motion. Longitudinal ground vibrations agitate particles in a forward and back motion progressing outward from the event site. Events also affect air pressure by creating what is commonly referred to as “air blast”. By measuring air pressures, we can determine the effect of air blast energy on structures, measured on the Linear “L” scale, or as perceived by the human ear, measured on the “A” Weight scale.



## 2. Application



### 3. HLS-01 Design Concept

The HLS-01 system is a data collection system that is designed to overcome the inherent weaknesses associated with traditional sampling seismographs. Honglim has created a new combined analog/digital concept that ensures that peak measurements are captured accurately and are repeatable.

All standard sampling seismographs have the same problem; **repeatability**. Specifically, when two seismographs are placed side by side in a field situation, the **difference in the peak measurements can be as much as 100%**. However, when placed on a shake table, seismographs will generally be within 5% of each other.

**This is a problem!**



## 4. HLS-01 Feature

- ☞ Unique Peak Architecture
- ☞ Analog Solution to Digital Problem
- ☞ Equivalent to 25,000 Samples per Second Per Channel
- ☞ High Resolution A/D Converter
- ☞ Steep Slope Programmable Anti-Aliasing Filters
- ☞ 4.5 Hz Natural Frequency Geophones
- ☞ Multi-Language Windows Software
- ☞ eXAD “Science in the Software”
- ☞ Optional Termal Printer

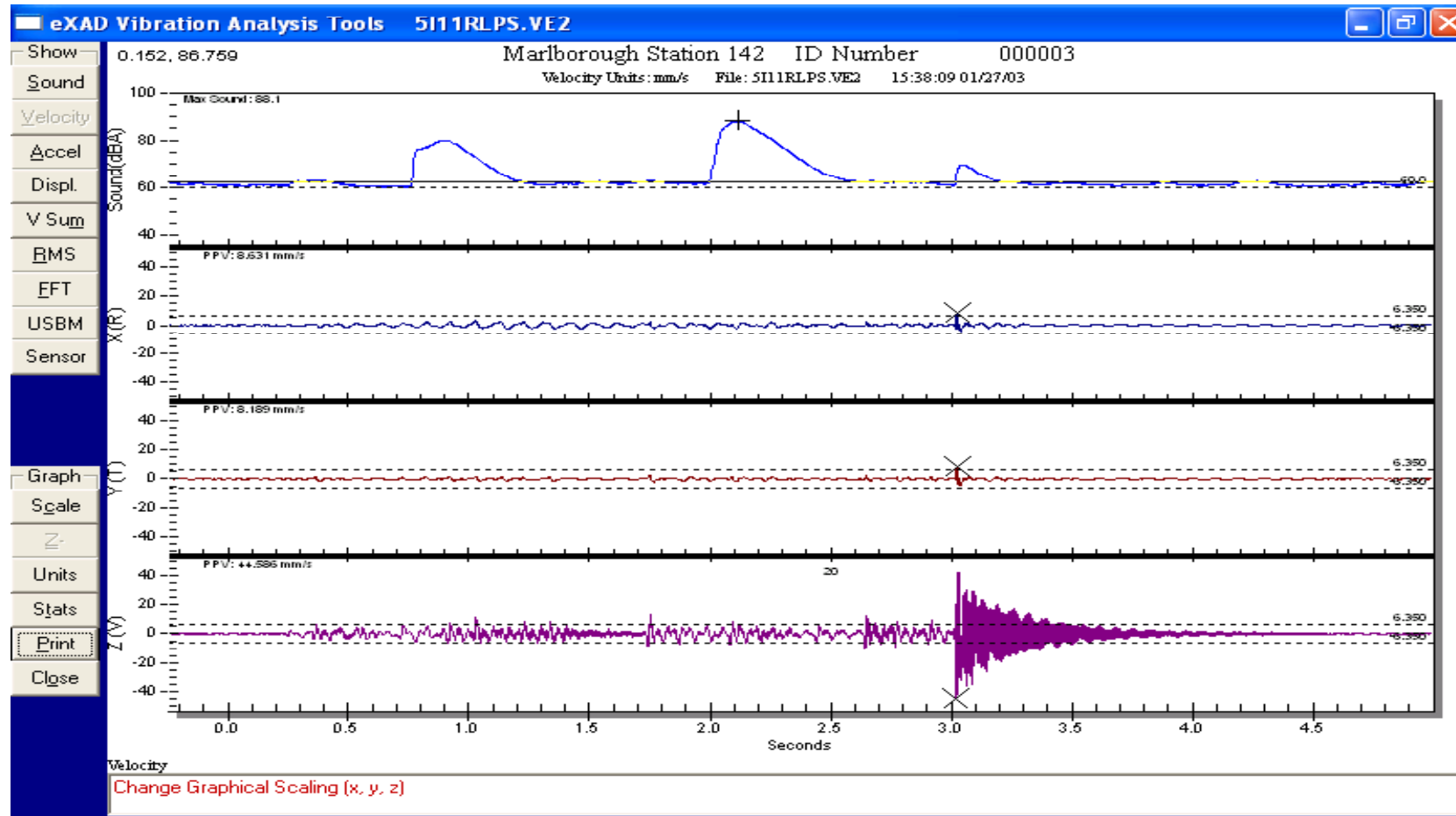
## 5. HLS-01 Specification

* Microprocessor: 8XC52 Family	* Anti-Aliasing Filter: 250-10000 Hz
* Display: 4 Line by 20 Column	* Sample Storage Rate: 1024 SPS
* A/D Converter: 13 Bit Self Calibrating	* Battery: 6V, Rechargeable, 200 Hrs
* Frequency Response: Velocity 3 - 250 Hz	* Geophone Range: 80mm/s
* Resolution: Geophone 0.01mm/s, Mic 1dB	* Data Storage : Over 100 Events
* Microphonw : 1EC 61672 Type2	* Sound Weighting : A-weighting, L-weighting
* Sound Frequency Range : 20Hz - 800Hz	* Sound Range : 50 - 100dB(A), 80 - 140dB(L)

## 6. HLS-01 Software

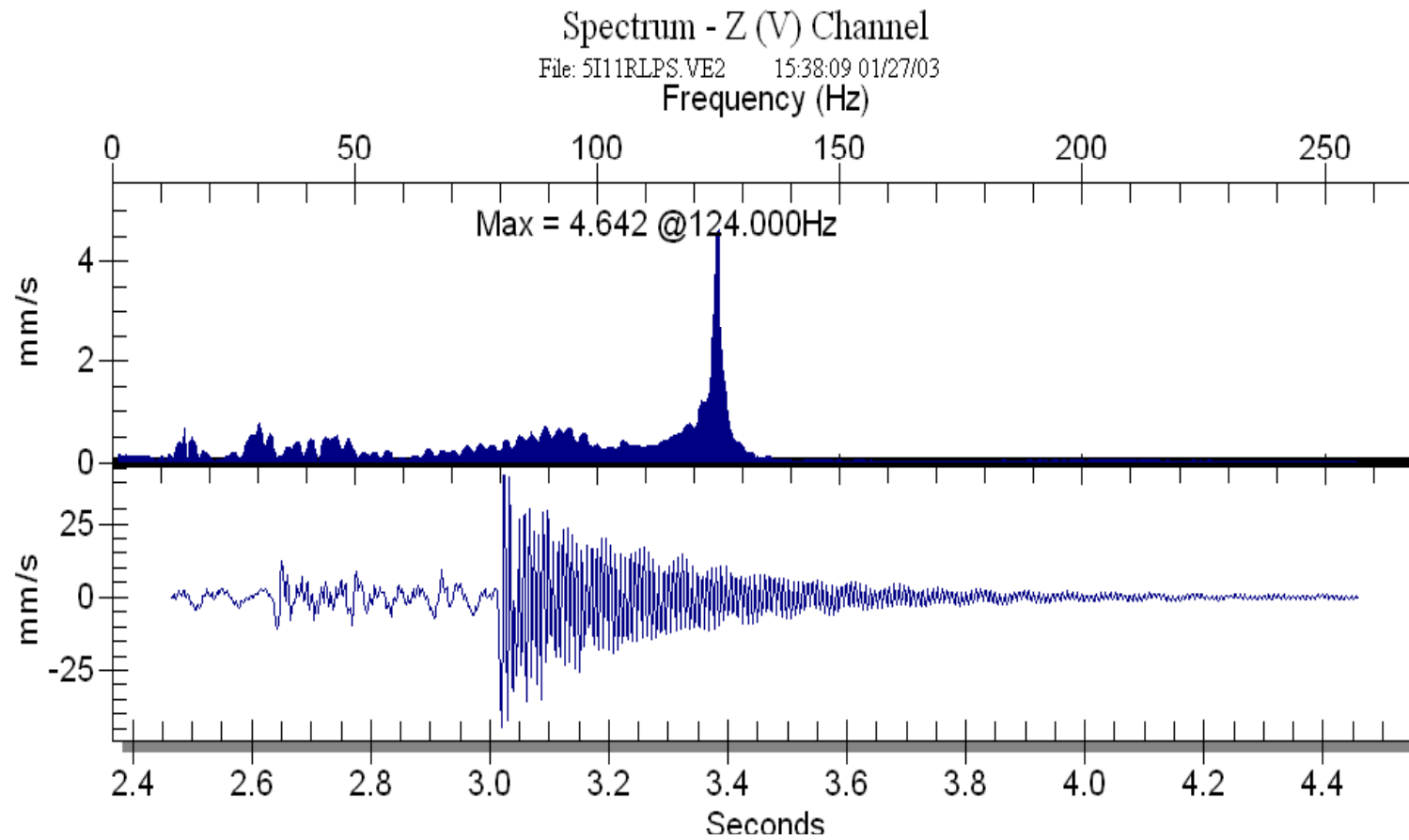
- 👉 Windows Based
- 👉 Multi-Lingual Capabilities
- 👉 Signature Blast Utilities
- 👉 Timing Analysis
- 👉 Fourier Analysis
- 👉 USBM/DIN Analysis
- 👉 Single Page Report

## 7. HLS-01 Software

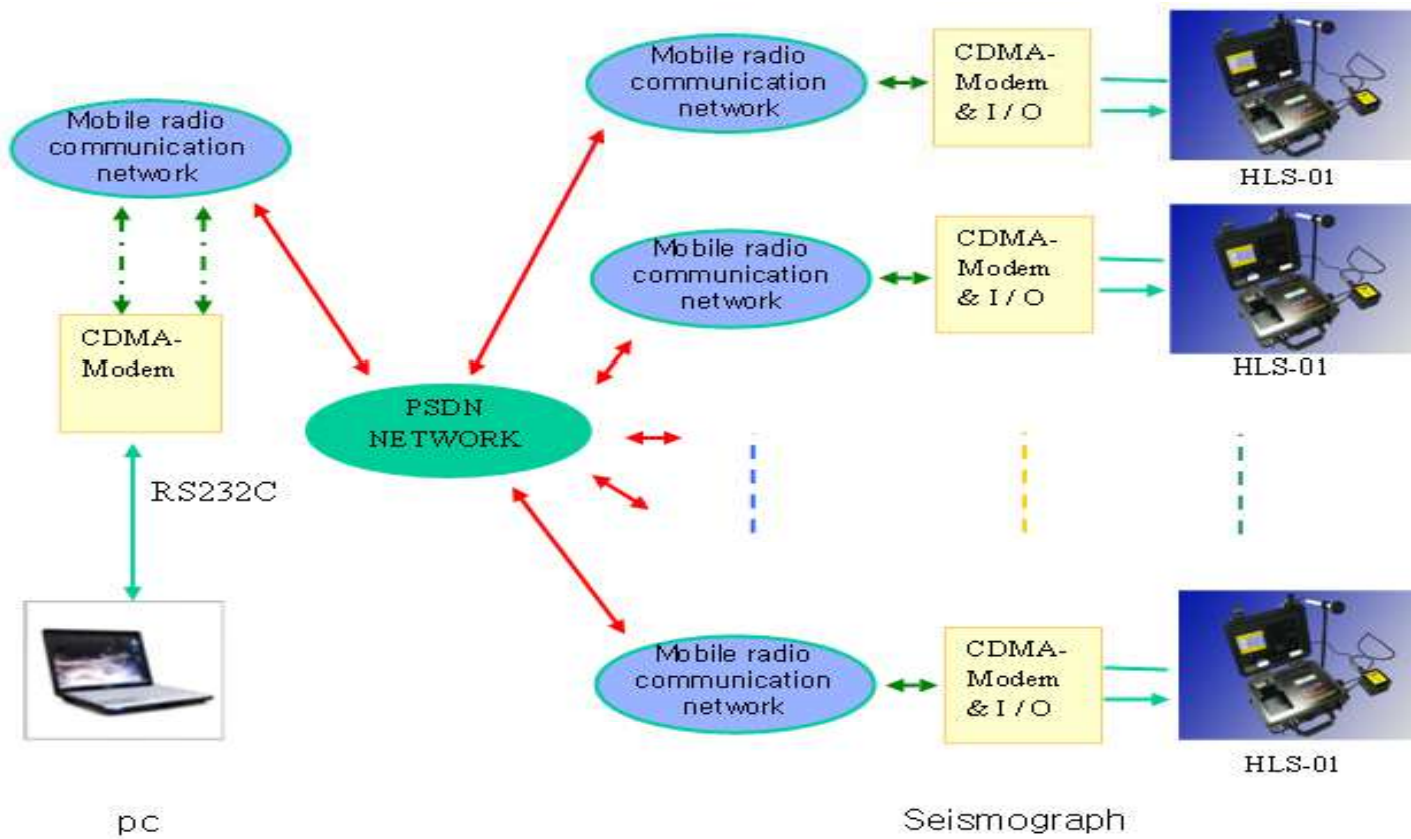




## 8. HLS-01 Software



## 9. HLS-01 Remote Monitoring



# Outdoor Large Scaled Sound Level FND System

## • Features

- Monitors environmental and traffic noise in a relevant area with 1-min or 5-min LEQ.
- It is waterproof, making it installable in any location.
- It is a highly bright electric bulletin board, so it enables the public to clearly see data from far away.



# 10. HLS-01 Report

International Blasting Services  
Marlborough, NH USA

## Record Analysis

File Name: SL15CALF VE2  
Trigger Time: 07:37:43  
Trigger Date: 04/12/05  
Monitor Start Time: 07:37:40  
Monitor Start Date: 04/12/05  
Software Version: .04.0.1

sXAD-8 Serial Number: A04042629  
Firmware Version: 1.0  
Record Length: 0s  
Cutoff Frequency: 256 Hz

### Measurements

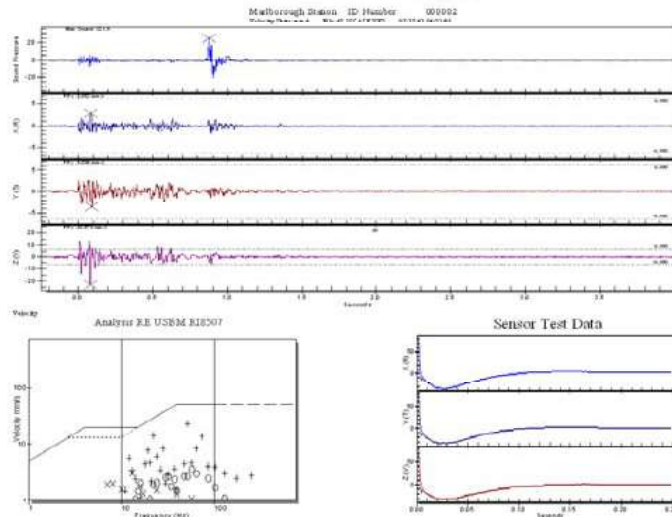
Vibration Analysis	X (R)	Y (T)	Z (V)
PPV - Max 5 to Peak (mm/s)	2.562	3.538	22.570
Time of Peak (s)	0.085	0.092	0.081
ZC Frequency at Peak (Hz)	39.4	46.6	64.0
Peak Vector Sum (mm/s)	22.708 @80ms		
Max Acceleration (milli(g)s)	64.766	88.779	537.407
Max Displacement (mm)	0.013	0.019	0.093

### Sound Pressure Analysis

Max dB (PA) 121.9 (24.9200)

### Description

Project: Marlborough Quarry  
Client: New Hampshire D & B  
Operator: G.P. Lorasbach  
Company: PMT, Inc.  
Location: Marlborough Station  
ID Number: 000002  
Conditions: T=0F, Wind From NW @20  
Comments: Sample Data  
Distance: 500 Feet  
Comments:



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사설 외곽 순환 도로 건설 공사 진동 소음 측정 데이터

측정 회사 : (주)홍림교역

측정 일시 : 2004년 04월 05일

측정 목적 : 발파 시행으로 주변 구조물에 미치는 영향 조사

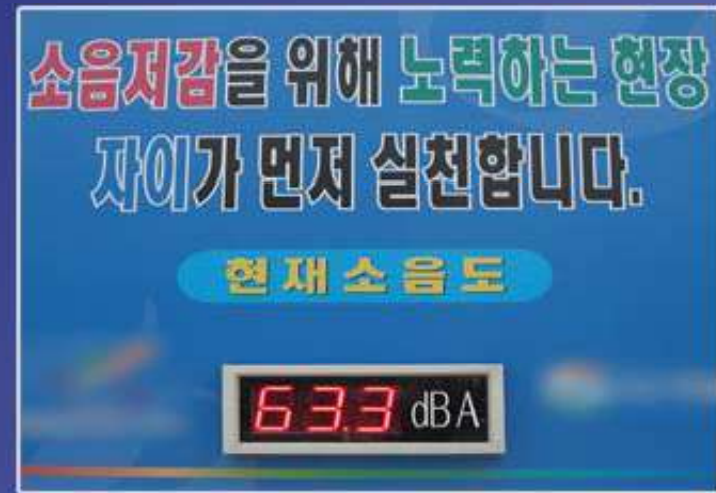
Trigger Time	Trigger Date	PPV X(R)	X ZC Freq	PPV Y(T)	Y ZC Freq	PPV Z(V)	Z ZC Freq	PVS	Peak Sound	Type	Sound
13:37:31	04/21/04	0.146	170.7	0.195	128	0.586	42.7	0.588	61.84	dB(A)	
13:37:37	04/21/04	0.146	170.7	0.195	128	0.756	73.1	0.758	67.49	dB(A)	
13:37:44	04/21/04	0.146	170.7	0.22	73.1	0.756	102.4	0.758	62.86	dB(A)	
13:37:51	04/21/04	0.171	128	0.195	128	0.537	85.3	0.537	62.19	dB(A)	
13:37:57	04/21/04	0.146	128	0.22	56.9	0.708	128	0.708	62.86	dB(A)	
13:38:03	04/21/04	0.146	170.7	0.195	128	0.708	102.4	0.712	61.47	dB(A)	
13:38:08	04/21/04	0.146	170.7	0.195	128	0.512	170.7	0.513	61.08	dB(A)	
13:38:14	04/21/04	0.146	128	0.171	128	0.512	128	0.518	61.84	dB(A)	
13:38:19	04/21/04	0.171	128	0.195	102.4	0.512	170.7	0.513	60.68	dB(A)	
13:38:25	04/21/04	0.195	85.3	0.195	73.1	0.586	64	0.586	61.84	dB(A)	
14:09:02	04/21/04	0.244	51.2	0.366	102.4	0.268	102.4	0.467	57.16	dB(A)	
14:09:26	04/21/04	4.075	56.9	5.417	64	2.391	102.4	6.285	57.76	dB(A)	
14:09:35	04/21/04	0.61	56.9	0.61	56.9	1.293	170.7	1.296	76.24	dB(A)	
14:09:43	04/21/04	0.464	56.9	0.537	64	1	85.3	1.018	71.85	dB(A)	
14:09:50	04/21/04	0.366	64	0.39	102.4	0.708	64	0.785	67.49	dB(A)	
11:04:25	05/24/04	3.318	85.3	3.44	73.1	4.002	256	5.539	66.7	dB(A)	
11:04:31	05/24/04	1.879	56.9	2.342	102.4	1.562	170.7	3.385	66.28	dB(A)	
11:04:38	05/24/04	0.39	64	0.464	56.9	0.878	73.1	0.887	66.7	dB(A)	
11:04:49	05/24/04	0.683	64	0.781	73.1	1.757	128	1.792	74.9	dB(A)	

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# Outdoor Large Scaled Sound Level FND System

## · Specifications

- Sensor Standard : IEC 61672 Type2
- Frequency Range : 20Hz – 12,500Hz
- Measuring Range : 35dB – 130dB (A) Leq
- Time Weighting : Fast, Slow
- Resolving Power : 0.1dBA
- Data Saving : Based on 10 hours of operation  
per day, it has a 3-month saving capacity.



# Large Display Sound Meter

## Features

- Large display.
- Portable type & Stand.
- Large memory.
- Measurement :  $L_{eq}$  ,  $L_{max}$



# Large Display Sound Meter

## Specifications

- Sensor Standard : IEC 61672 Type2
- Frequency Range : 20Hz – 12,500Hz
- Measuring Range : 35dB – 130dB (A) Leq
- Time Weighting : Fast, Slow
- Resolving Power : 0.1dBA



# Sound Level Meter

Model	HS6298	HS6298A
Microphone Standard	GB/T2785 2형, IEC61672 type 2	
Frequency Range	20Hz – 10 KHz	
Sound Range	35Db-130dB(A) 40dB-135dB(C)	
Microphone	12.7 mm Dia	
Sound Weighting	A, C	
Time weighting	Fast, Slow	
Resolution	128 x 64 대응량 LCD, 0.1 dB	
Measurement	Lp, Leq, LAE, LN, SD, Lmax, Lmin, Ld, Ln, Ldn	
Recording Time	10s, 1min,5min,10min,15min,20min,1h,4h,8h,24h,Man	
Memory Capa.	Single 600, 정시 8	Single 800, 정시 6
Size/Weighting	230 x 72 x 30 mm / 400 g	
Power	4 x LR6 Battery or 9 V Charger	
Accessories	Carrying Case, Software, Manual,	



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