

# SV1 *Blast / Environmental Vibration & Sound Analyzer*



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**SV CORPORATION**

# Blast / Environment Vibration & Sound Analyzer

# SV1



## Features

- Blast/ Environmental Vibration & Noise Measurement
- Vibration Measurement by JIS C 1510(dBV)
- Vibration Measurement by DIN4150
- Simultaneously 3-Axis Vibration Level & Sound Level Display
- Simultaneously Multi-Processing & Display
- Vibration & Sound measurement by Trigger Level of Vibration Level
- CDMA or WiFi Communication with PC Software
- 7" LCD Touch Screen
- Long term Data storage (4GB SD Memory card)
- Report and Post Processing & Analysis(Trace & FFT) Software on PC
- Check the Saved Result Data and Measurement Setup by SV1 on PC
- Measured data to convert to Trace, Octave, FFT graph on PC

## Applications

- Blast Monitoring
- Pile Driving
- Construction Field
- Bridge Monitoring
- Power Plant Monitoring
- Building Vibration Monitoring

**SV1 is based on Smart phone technology with versatile application software to measure the Blast/Environment Vibration & Sound monitoring and analysis on the portable rugged system.**

## Main Specifications

<b>Operating system</b>	Win CE 5.0	<b>Communication</b>	Serial, Wireless(WiFi), CDMA Communication
<b>CPU</b>	PXA320 (806MHz)	<b>USB Interface</b>	1 Host, 1 Device
<b>LCD</b>	7" TFT-LCD +TSP	<b>Power</b>	5V, 3A
<b>Flash memory</b>	NAND 128MB	<b>International protection</b>	IP64
<b>System memory</b>	DDR SDRAM 128MB	<b>Operating temperature</b>	-20°C ~ 50°C (-4°F ~ 122°F)
<b>External memory slot</b>	SD/MMC Slot	<b>Humidity</b>	5% ~ 95% Non-condensing

## Data Acquisition Unit Specifications

<b>A/D Converter</b>	24bit
<b>Input Channel</b>	4channel(3ch for Vibration and 1ch for Sound)
<b>Sensor Type</b>	IEPE
<b>Sampling Frequency</b>	3 channels with 512Hz for vibration and 1 channels with 32,768Hz for sound
<b>Input Range</b>	±5V(peak) or ±2.5V(peak)
<b>Dynamic Range</b>	17~134dB(50mv/Pa X 10Gain)
	37~160dB(50mv/g X 10Gain)
<b>Frequency Range</b>	0.5 ~ 80Hz(3dB) for 3 ch. vibration and 0.5 ~ 16kHz(3dB) for 1 ch. sound
<b>Signal to Noise Ratio</b>	More than 100dB

### Blast Vibration & Sound Measurement

- Provide the influence evaluation data nearby Structure : 3axis peak and PVS(mm/sec)
- Vibration Measuring Range : 100 mm/sec
- Frequency Range : 0.5 ~ 80Hz for 3 channels
- Vibration Accuracy : Less than 1%
- Vibration Resolution: 0.01 mm/sec
- Vibration Measuring Sample Rate: 512 Sa/sec
- Storage Sample Rate: 514 samples/sec
- Sound Measuring Range: 30 ~ 130 dBA
- Frequency Range : 20 Hz ~ 16 KHz
- Sound Accuracy : IEC 60651:1979 Type2 (Type1 Option)
- Sound Data : Simultaneously Lmax, Lmin, LeqLn, LeqAv
- Trigger Level : Set up from 0.1mm/sec with 0.1mm/sec step
- Measuring Mode : Selectable Manual, Single, Continuous mode
- Selectable Measurement Time : 1sec, 2sec, 3sec, 5sec, 10sec, 1min, 5min, 30min, 1hr, 1day, User definable time
- Data Storage Capacity: SD Memory Card 4G (Continuously 60 days for the measurement data including Graph)
- Measurement cycle time: no dead time

Sound (dB):			
LeqIn	LeqAv	Lmax	Lmin
41.01	39.54	42.20	38.89
Vibro (mm/sec):			
	X	Y	Z
VelPeak (Inst)	0.03	0.04	0.03
VelPeak (Hold)	0.05	0.05	0.10

Time: 3.375 s;  
File: SV003.WAV

Blast Measurement BLS mode

### Environmental Vibration & Sound

- Measurement Results : Instantaneous Sound Leq, Lmax, Lmin, Statistic Vibration Level L5, L10, L50, L90, L95
- Vibration Frequency Range : 0.5 ~ 80 Hz
- Vibration Measuring Range : 35 ~ 120dB
- Sound Measuring Range : 30 ~ 130 dBA
- Sound Frequency Range : 20 Hz ~ 16 KHz
- Dynamic Range : more than 94dB
- Selectable Measuring Time :1sec, 2sec, 3sec, 5sec, 10sec, 1min, 5min, 30min, 1hr, 8hr, 1day, User definable set up
- Vibration Trigger Level : set up with 1 dB step from 45dB (to measure the wanted Vib. And Sound Level)
- Measuring Mode : Selectable Manual, Single, Continuous mode
- Data Storage Capacity : SD Memory Card 4GB (Continuously 60days for the measurement data including Graph)

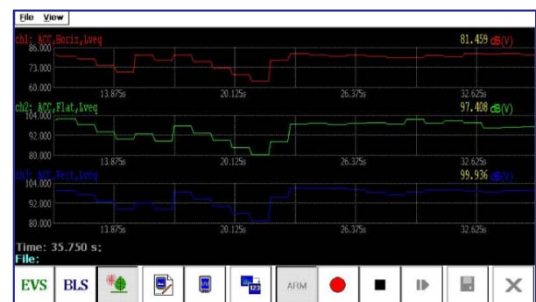
Sound (dB(A)):			
LeqIn	LeqAv	Lmax	Lmin
39.32	39.38	39.90	39.16
Vibro (dB(V)):			
	X	Y	Z
Lmax	39.30	35.55	43.48
Lv(In)/Lv(Av)	39.30/35.24	34.39/33.96	43.48/39.96
L10	37.54	35.55	42.29

Time: 3.625 s;  
File: SV001.WAV

Environmental Measurement EVS mode

### Remote Auto Measurement

- Communication Type : CDMA Modem or Internet
- Remote Data Transmit and Receiving time Control (To Control interval time with Hour, Min, Sec Unit)
- Remote Auto Control up to Max 100 measuring equipments
- Remote Control Trigger Level and Measurement time
- Possible to measure during receiving the measured data
- No need Reset the Equipment by the receiving error (Simultaneously the Measurement and Communication mode)



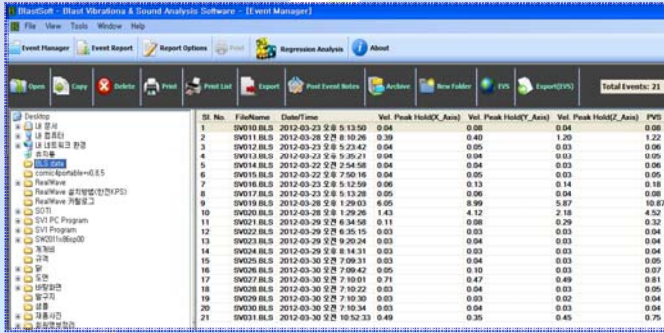
Environmental Vibration mode by JIS C 1510

Lveq :	
ch1, ACC:	54.286 dB(V)
ch2, ACC:	64.329 dB(V)
ch3, ACC:	55.262 dB(V)

Time: 3.875 s;  
File: [unreadable]



3-axis Environmental Vibration mode by JIS C 1510



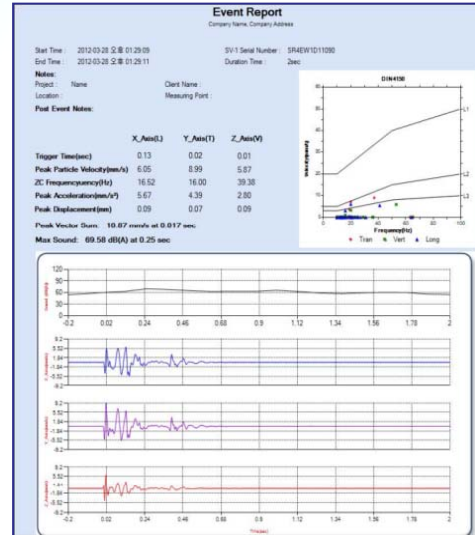
Event Lists on PC

Sl. No.	File Name	PPV(Cm/s)	PVS(Cm/s)	Time Of PVS	Velocity(Vv)	VL(VdB db)	Weight(Kg)	Distance(m)
1	SV010.BLS	0.007999999	0.007999999	27.375	0.007999999	50.7653		
2	SV011.BLS	0.12	0.122	35.75	0.12	59.76074		
3	SV012.BLS	0.005	0.006	7	0.005	51.00517		
4	SV013.BLS	0.004	0.005	1.875	0.004	50.9682		
5	SV014.BLS	0.004	0.006	1.5	0.004	54.40897		
6	SV015.BLS	0.005	0.005	4.25	0.005	50.64648		
7	SV016.BLS	0.014	0.018	7.375	0.014	52.96615		
8	SV017.BLS	0.006	0.007999999	1.625	0.006	50.01755		
9	SV018.BLS	0.899	1.087	19.25	0.899	49.94554		
10	SV020.BLS	0.412	0.452	34.75	0.412	52.41451		
11	SV021.BLS	0.029	0.032	2.75	0.029	49.13256		
12	SV022.BLS	0.003	0.004	4.125	0.003	50.60405		
13	SV023.BLS	0.004	0.004	4.125	0.004	48.4602		
14	SV024.BLS	0.003	0.004	0.125	0.003	49.22277		
15	SV025.BLS	0.004	0.005	1	0.004	51.25832		
16	SV026.BLS	0.01	0.007	15	0.01	55.94108		
17	SV027.BLS	0.079999999	0.081	7.25	0.079999999	52.94398		
18	SV028.BLS	0.004	0.005	5.125	0.004	52.54681		
19	SV029.BLS	0.003	0.004	0.125	0.003	51.71664		
20	SV030.BLS	0.004	0.004	1.75	0.004	49.62627		

Regression Analysis

## Analysis & Report Software

The user can store the measured data in SD card to do the post processing, analysis and report on PC. The user can get the report by JIS C1510 and DIN 4150 with this post processing software.



Time Data, Result data and DIN 4150

## System Configurations



**Blast / Environmental Vibration & Sound Analyzer**  
 -Case : Rugged Pelican Case  
 -Dimension : 350 X 290 X 150 mm

### Sensors



MEMS type Accelerometer (3-axis)



Microphone(MI17)

### Accessories



Pole for Microphone



SD Memory



Power Supply Adapter



USB Sync Cable

### 3 Axis MEMS Type Accelerometer(MA301)



Small

Large

- X, Y, Z 3-Axis Output
- Offset adjustment
- Required +5V DC power
- Output : ±4V differential or 0.5V - 4.5V single ended outputs
- Galvanized isolation
- Responds to DC & AC Acceleration
- ±2g, ±5g, ±10g, ±25g, ±50g, ±100g customized model

### 1/4" Microphone(MI17)

- Transducer type : Pressure transducer
- Frequency range : 20Hz ~ 15kHz(±3dB)  
100Hz ~ 10kHz (±1dB)
- Sensitivity : 50mV/Pa ±5%
- Max. SPL : 124dB
- Temperature range : -10 ~ +50 °C
- Noise : Lin(20Hz ~ 20kHz) < 100μV  
"A"-weight < 30μV

Input Range(g)	Frequency Response (Hz) (Nominal, 3dB)	Sensitivity (mV/g) (Diff.)	Output Noise(μg/(root Hz)), Diff. (RMS, typical)	Max. Mechanical Shock (0.1ms)(g)
±2	0 ~ 400	2000	5	2000
±5	0 ~ 600	800	7	
±10	0 ~ 1000	400	10	5000
±25	0 ~ 1500	160	25	
±50	0 ~ 2000	80	50	
±100	0 ~ 2500	40	100	