Class1 Sound Level Meter with 1/3 OCT Band Analyzer

ST-15D

SCARLET | TECH

- IEC-61672-2002 Class 1

- 1/3 octave band filter

- 10 Hz...20 kHz frequency range

- 20 dB...142 dB measurement range

- Modularize design provides 4 sub models

Meter vs. Analyzer

A sound level meter is a device that allows you to determine the acoustic intensity and to measure the sound pressure level, but does not necessarily determine levels of sound in relation to tolerance of the human ear. Scarlet Tech ScarletSound™ sound level meters are suitable for professional application, including measurement of sound at work and environmental sound measurement.

Sounds analyzers provide octave bands analysis to help Safety Manger identify exactly noise sources easily by looking into the most relevant frequency components. The frequency domain information is based on DSP technology. ScarletSound™ ST-15D is the one you need.

Octave analysis

- Real time & 1/3 octave spectral analysis of noise
- Parallel A/C/Z weighting
- Analysis is realized by digital filter (G = 2)
- Noise exposure measurement range 0...65.535 Pa2h

Modularization

ST-15D series is designed by dividing major functions into modules. By installing different modules, ScarletSound™ provides experts the most flexibility to choose the functions they really need.

- 1/3 octave band module
- Statistic analysis module
- Data logger module

Main Function List

Menu Interface
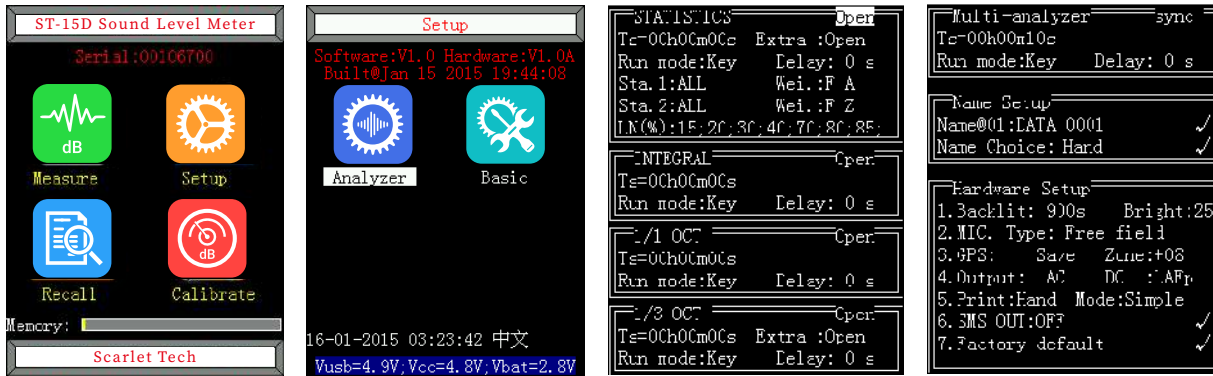
2. Statistical Analysis Function

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_{xymax}, L_{xymin}, 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.

3. Real-time 1/3 OCT Spectrum Function

1) Filter type: Parallel (simultaneous) 1/3 octave band filter, $G_{10}=10^{3/10}$

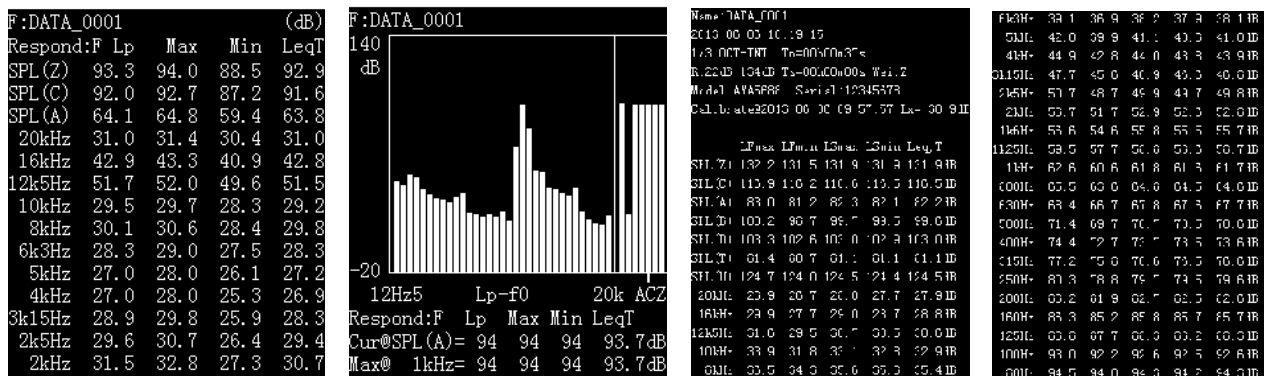2) Fulfills standards: IEC 61260: 1995 Class 1

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}, Tm   *Note: x is A,C,Z,B,D, F0i y is F,S*

7) Frequency Weighting: A, C, Z can

4. GPS Positioning Function

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

```
F:DATA_0001            Zone:!08
GPS RTC: 2015-01-26 080002.00
          Start      End
Lat.  30.217349N  30.217343N
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
```

▌Optional Upgrade Function List

Integrating Function

1) Measuring Interface: Lxyi, Lxyp, Lxeq,t, Lxeq,T, Lxmax, Lxmin, Lxpeak 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

Real-time 1/1 Oct Spectrum Function

1) Filter type: Parallel octave band filter, G10=103/10

2) Fulfills standards: IEC 61260: 1995 Class 1

3) Frequency bands: 11 Octave bands 16Hz-16kHz

4) Frequency Weighting: A, C, Z can be chosen

5) 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

6) Measuring Interface: List i and graph interface

7) Measuring Parameters: Lxyp, Lxeq,0.5s, Lxeq,T, , Lxymax, Lxymin, Tm, NR Note: x is A,C, Z,F0i y is F,S

8) 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

9) Real-time Analysis Speed: 50 times/s

10) Level linear range: above 110dB
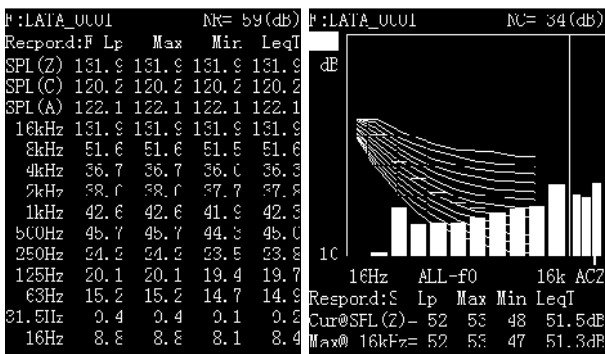
Real-time FFT Analysis Function

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
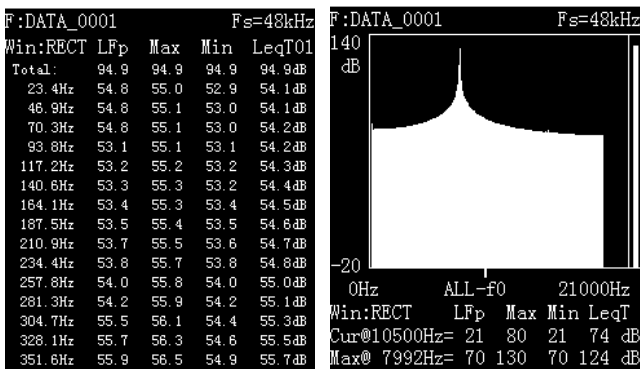
SD Card & Sound Recording Function

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

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: LAsp, LASMAX, LASMIN, TWA, LEX 8h, LCpeak, LZpeak, LAeq,T, LAVG, DOSE

8) Logging interval: 1min

9) Logging content: LAVG1m LAeq1m LCpeak LZpeak LASmax LASmin

Technical Specification

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" pre-polarized condenser microphone 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 ± 1 dB (not including microphone)
Total Measurement Range	20dB-142dB (145dB Peak)
Accuracy	±0.7 dB
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
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	240×320 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.)
Internal Clock	Error less than 1 min/month
Output Interface	AC Output (full scale): 1.0V AC RMS; Output Impedance: 1k ; Connector: 3.5 mm stereo plug
	DC Output: 20mV/dB; Output Impedance: 1k ; 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	4×LR6 alkaline battery or rechargeable batteries
	5 V external power supply
Battery Life	Longest time of 30 hours continuously with 4×LR6 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 %
Bluetooth Module	Wireless printing and can communicate with smart phone and realize wireless control sound level meter
GPS	Included
Printer	Optional
Class 1 calibrator	Optional