

the sound investment



Model 33

**Real Time Analyser with 1:1 & 1:3
Octave Band Filters
One Instrument - 'A world of solutions'**

- Ideal for Environmental, Industrial, Engineering and Building Acoustics applications
- Real Time 1:3 and 1:1 Octave Band Analysis
- Wide Single Measurement Range of 23dB(A) to 140dB(C)
- Robust, slim and lightweight construction
- Outdoor measurement kits available to convert Model 33 sound level meter into a self contained environmental monitor
- Large memory for environmental noise data storage
- Outstanding 'Acoustic Toolbox' analysis software included as standard
- Simultaneous measurement of all Parameters, Frequency Weightings and Time Weightings
- Compliant to IEC 61672-1:2002 Class 1 and Class 2 respectively
- User friendly – four key strokes - switch on, measure, stop, switch off.
- Large, backlit graphic screen and intuitive user interface
- Live AC output socket for integration with other systems or hard drive devices
- Optional Reverberation Time Measurement Module
- Detachable pre-amplifier for use with an extension cable or outdoor kit
- Multi language instrument menu and Software





Overview

High performance, compliance to the latest worldwide Regulations and Guidelines, user friendly and ideal for Environmental, Engineering and Industrial Noise applications the Model 33 and Model 33-2 deliver 'the' solution for the more discerning user.

Taking measurements is as simple as pressing the 'record' and then 'stop' buttons. The wide dynamic span of over 110dB in the single measurement range ensures that you never make invalid measurements that 'Overload' or 'Under range' which is especially important during 1:1 or 1:3 Octave Band Analysis.

The Model 33 simultaneously measures all parameters with all Frequency and Time Weightings, this gives users the confidence to know they will always have the correct data for subsequent analysis.

Real Time Analysis allows users to measure all Octave Bands at the same time. This is very practical for reliable, accurate and rapid capture of variable noise levels to optimise environmental surveys or provide accurate prescription of hearing protection in industrial environments.

Model 33



For environmental noise, the large memory, programmable auto repeat function and statistical LN values, combined with the optional range of Outdoor Kits, ensure the instrument is ideal for use as either a short-term or longer-term semi-permanent environmental monitor.

Noise Measurements themselves are only the beginning, our outstanding Pulsar 'Acoustic Toolbox' software package allows users to conduct in depth analysis of their results and export these into Excel and Word formats.



Applications

- Environmental noise measurements
- Tonal analysis of Environmental noise using 1:3 Octave Band Analysis
- Industrial Noise Measurements
- Accurate prescription of hearing protection using Real Time Octave Band Analysis
- Building Acoustics Measurements using the optional reverberation time module.
- Ideal for Engineering applications such as noise control / reduction using 3D tonal analysis and the reverberation measurements.
- Real time NC curve calculations



Measurements

The very powerful Model 33 allows the user to configure the instrument to suit their specific application. Once this is done measurements can then be made by just pressing the 'record button'.

Features such as measurements every 125ms allows the user to conduct detailed analysis for engineering or environmental noise.

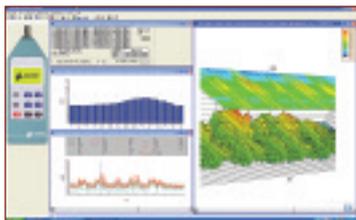
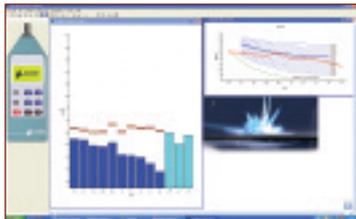
An extension module is available to enhance both the lower and upper limits of the 1:3 Octave Band Filters so that frequencies as low as 6.5Hz up to 20kHz can be measured to IEC 61260:95/A1:01

Data Storage

Users can choose how many parameters are stored in the memory of the instrument, which then determines the maximum time the instrument can measure before the memory is full.

Functions F1, F2 and F3, which are displayed on the instruments screen, can be defined by the user to suit the measurement situation and can be chosen from any of the available measurement parameters.

Please refer to the measurement information on the back of this datasheet for a complete list of all measurements available.



Model 33 Data Storage Sound Level Meter Mode

| Type of Recording | Storage Capacity |
|--------------------------------|--------------------------|
| 1 sec Logging (82 functions) | 4 days 16 hours |
| 125ms Logging | 3 days 5 hours |
| F1 each second | 8 months 14 days |
| LT + LIT and Ln each min | 4 years 9 months |
| LT +LIT and Ln values each sec | 28 days 18 hours of data |
| F1, F2 & F3 each second | 18 days 22 hours |

1:1 Octave Band Mode – Real Time

| Types of Recording Functions over time T | Storage Capacity |
|---|--|
| Functions 125ms logging | 1 Sec Logging = 4 days 6 hours of data |
| Overall functions & 125ms Logging | 1 Min Logging = 4 years 9 months of data |
| LT (L _{eq}) in each band | 3 days 5hours |
| | 1 Sec Logging = 2 days of data |
| | 1 Sec Logging = 28 days 18 hours |

1:3 Octave Band Mode – Real Time

| Types of Recording Functions over time T | Storage Capacity |
|---|--|
| Functions 125ms Logging | 1 sec logging = 13 days 5 hours of data |
| Overall Functions & 125ms Logging | 1 min Logging = 2 years 3 months of data |
| | 1 day 17 hours |
| | 1 Sec Logging = 1 day 12 hours of data |

Software

Pulsar Model 33 instruments are supplied with the powerful Pulsar 'Acoustic Toolbox' software that allows stored measurements to be downloaded to a PC for detailed analysis. You can then create custom designed templates to present your results in the most suitable style and format by exporting to Excel or Word. The 'Acoustic Toolbox' software facilitates the Graphical 'Live Display' of up to three parameters if the Model 33 is connected to your PC. Post-processing allows detailed 3-Dimensional Frequency Analysis Modelling to be performed using downloaded measurement data.

This software is compatible with Windows 9x/Me/2000/NT/XP and Vista.

Pulsar Analyser Software is also supplied to enable the effortless creation of a variety of industrial noise reports.

Measurement Kits

Instruments can be supplied as a complete measurement kit to ensure you have all of the accessories necessary to perform your noise survey. The Noise Measurement kits include Sound Level Meter, Acoustic Calibrator, Windshield, Hard Attache Case, Wrist Strap, Carry Pouch, Software, Operating Manuals, Certificates of Calibration, Download Cable and Batteries. Ordering codes are shown on the back of this datasheet.

Outdoor Measurement Kits

To allow the Model 33 Sound Level Meters to be used outdoors, two weatherproof measurement kits are available. The standard WK1 kit uses the microphone and preamplifier and cable from the Sound Level Meter to make a simple, lightweight system suitable for overnight and occasional use.

For longer term measurements, the WK2 kit uses a complete integral outdoor microphone assembly, which has a superior degree of weather protection for the microphone capsule.

Please contact Pulsar Instruments Plc or your local distributor for further details.

Specifications

Class1 Model 33
Class 2 Model 33-2

Applicable Standards

Type 1 EN 60651:1994, EN 60804:2000, EN 61260:1995, IEC 61672-1:2002 Class 1
ANSI S1.4:1983, ANSI S1.43:1997, ANSI S1.11:1986
Type 2 EN 60651:1994 EN 60804:2000, EN 61260:1995, IEC 61672-1:2002 Class 2
ANSI S1.4:1983, ANSI S1.43:1997, ANSI S1.11:1986

Microphone

Class 1 MK:224 Class+ Electret Prepolarised Condenser
Class 2 MK:216 Class+ Electret Prepolarised Condenser

Measurement Range

22dB(A) to 137dB(A), 23dB(C) to 137dB(C), 27dB(Z) to 137dB(Z), Peak to 140dB(C) or 168dB(C) as indication

Noise Floor (Typical)

17dB(A), 17dB(C), 22dB(Z)

Frequency Weightings

dB(A), dB(C) and dB(Z) to IEC 60651 Type 1

Time Weightings

F, S & I to Class 1 Tolerances

Measurements

Models 33 and 33-2

- Broadband Mode - all functions are measured simultaneously
- Sound Level LXY, Maximum Sound Level LXY max, Minimum Sound Level LXY min
- Equivalent Continuous Sound Pressure Level with Integration Time T LXT
- Equivalent Continuous Sound Pressure Level of the entire measurement LXT
- Sound Exposure Level LXE
- Peak Sound Pressure Level LXpeak
- Equivalent continuous sound pressure level with Impulse Time Weighting & Integration Time T LXIT
- Equivalent continuous sound pressure level with Impulse Time Weighting of the entire measurement T LXIt
- LXIT - LXT, LXIt - LXt, LXT - LAT, LCt - LAT
- Measurement & Integration Time t & T
- Percentiles L1, L5, L10, L50, L90, L95, L99 where X=dB(A), dB(C) & dB(Z) and Y=F, S & I
- 1:1 Octave Band Mode - all functions are measured simultaneously
- Equivalent continuous sound pressure level with integration time T LT in each 1:1 Octave Band
- Percentile Levels & Overall Percentile Level in each 1:1 Octave Band Ln (where n = 1, 5, 10, 50, 90, 95, 99)
- Peak Sound Pressure Level Lpeak in each 1:1 Octave Band

- Overall Equivalent continuous sound pressure level with integration time T LXT where X=dB(A), dB(C) & dB(Z)
- Real Time Assessment of NC Curves
- 1:3 Octave Band Mode All functions are measured simultaneously
- Equivalent continuous sound pressure level with integration time T LT in each 1:3 Octave Band

Memory

64Mb

Display

Backlit Graphical LCD

Dimensions

341mm x 82mm x 19mm

Weight

550g with batteries, 500g without batteries

Batteries

2 x 1.5V size AA

Battery Life

| | |
|------------------------|------------|
| Sound Level Meter Mode | 15 Hours |
| 1:1 Octave Band Mode | 13 Hours |
| 1:3 Octave Band Mode | 11.5 Hours |

Environmental

Operating Temperature -10°C to +50°C
Storage without Batteries Temperature -20°C to +60°C
Humidity 30 to 90% RH

External Connections

Model 33 & 33-2 RS232 Output and USB, External Power, AC Output

Software

Pulsar 'Acoustic Toolbox' Download & Analysis software supplied as standard with all instruments

Ordering Codes

| | |
|-----------------------------------|-------------|
| Sound Level Meter Measurement Kit | |
| Model 33 | Model 33K |
| Model 33-2 | Model 33-2K |

Measurement kits include the Sound Level Meter, Model 105 or Model 106 Acoustic Calibrator, WS91 Windshield, K2 Attache Case, CP2 Carrying Pouch, Wrist Strap, Software, Download Cable, Batteries, Operating Manuals and Certificates of Calibration.

Optional Accessories

EFM33 Extended Frequency Module
RT33 Reverberation Time Module
WK1 Short Term Outdoor Kit
WK2 Long Term Outdoor Kit



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