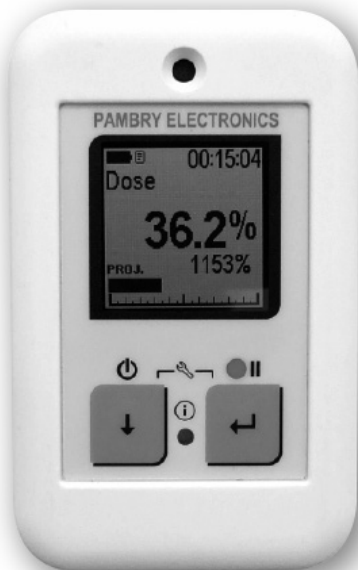




# Listen Ear™ Personal Noise Dose Meter



## User Manual

## SOFTWARE REVISION

The User Manual supplied with the Listen Ear™ reflects the firmware installed at the time of manufacture. Updating the firmware may add or change product features.

## SAFETY INFORMATION

For safe practice only operate in accordance with the instructions in this manual.



### WARNING

To avoid personal injury, follow the guidelines below:

- Do not remove cover.
- Use the Listen Ear™ only as specified in this manual.
- Do not use around explosive gas or vapour.



- It is your responsibility to contribute to a clean and healthy environment by using the appropriate local return and collection systems.
- The symbol shown on the left indicates that separate collection systems must be used for any discarded equipment or batteries marked with the WEEE Symbol.



## PAMBRY DISCLAIMER

Pambry Electronics reserve the right to change specifications or update this user manual at any time without prior notice.

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## 1.0 INTRODUCTION

Welcome to your new purchase of your Listen Ear™ Noise Dose Meter and thank you for choosing Pambry Electronics Ltd, a dedicated UK manufacturer of audio products sold worldwide.

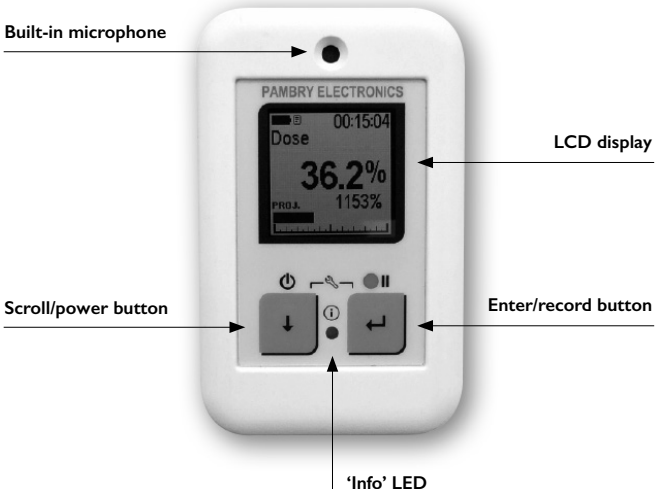
This professionally made and calibrated instrument is by far the best value for money device of its type in the world. It will assist you to monitor your hearing health and Noise Induced Hearing Loss (NIHL). As one of the smallest and lightest units made, its ease of use belies the hidden complexity inside. The theory behind NIHL shall be provided in this manual.

---

## 2.0 FEATURES

- Compact and light design to clip on during the working day
- View current noise level and total exposure of the day on LCD display
- Knock and Vibration Cancelling Technology - patent applied (1611153.6)
- Revolutionary design to simulate the effect of wearing ear defenders
- Use Mobile Phone to control and view data
- Battery life up to 160 hours / 4 working weeks
- Charged using USB
- Comply to the 'Control of Noise at Work Regulations 2005 (UK)'
- Complies to international standards: IEC 61672-1, IEC 61252
- Produce a daily report and statistics of the work environment by downloading data
- Default 8-hour day, adjustable in menu
- Tamper proof facility
- Bright LED for dose alarm warning
- Contains A, C and Z-weighting filters to mimic the frequencies heard by the human ear
- Built in or External Microphone
- Calibrated during manufacture
- Data logging - Sound / temperature / humidity / movement
- No USB Drivers required to download data
- Class 2 sound level meter
- Includes movement and orientation monitor
- Records Temperature and Relative Humidity

## 3.0 DESCRIPTION



### Status Bar Icons



Battery level Indicator



Report enabled



Wearing Ear Defender



External Microphone Connected

**00:00:00**

Noise dose record duration - HH:MM:SS

**OL**

Acoustic Overload recorded.  
Recorded dose may not be accurate

### Supplied with your Listen Ear™

- Quick Start Guide
- User Manual
- Micro USB 2.0 Cable 1.5m

### Optional Accessories

- Sound Calibration Unit (SCU)
- External Microphone
- Wall bracket

### 3.1 Charging Before Use

Before use ensure the unit is fully charged by connecting it into a suitable charger or computer USB port.

Charging is indicated by an "Info" LED and/or display icon. Red light indicates "charging in progress", Green light means that battery is "fully charged". Charging may take up to 5hours, depending on where the device is connected. Battery life between charges is up to 160hours (4 working weeks), depending on the activated options.

The 'Info LED' blinks RED once every 3 seconds when the battery level is below 10%.

### 3.2 Connecting to a PC

**The method of accessing the stored files in your Listen Ear™ is by using your computer's file explorer application, where the stored files can be downloaded and manipulated as required.**

Connect your Listen Ear™ device to your PC using the USB Cable supplied. Microsoft® Windows® shall install the drivers automatically. Windows® explorer will be activated granting you access to stored files located on your device.

### 3.3 Switch ON

**On initial power up or if the battery has been discharged you will be prompted to the time/date menu.**

To switch ON your Listen Ear™ press the "Scroll/Power" button. The Pambry 'splash' screen will appear followed by the recently used 'page'. There are a number of different 'pages' each one represents a specific measurement or function. Each 'page' is obtained by pressing the "Scroll/Power" button. Each press scrolls to the next 'page' then returns where you started. The unit wakes on power up in the first 'page' DOSE and the default set of measurement 'pages' are Dose and Level.

There are a further 5 screen pages which can be accessed via the MENU screen (see CLOCK settings below) and scrolling to PAGES.

### 3.4 Switch OFF

Depressing the "Scroll/Power" button for 1 second will turn the unit OFF.

**Note that if a Noise Dose recording is in progress this will stop and reset.**

**Unit cannot be switched off in MENU OPTIONS Page as SCROLL MODE is activated.**

If needed, Listen Ear™ can be manually "rebooted" by holding the "Scroll/Power" button for 8 seconds. Current recording will be aborted and settings will be set to factory defaults. Report and History files will not be affected.

---

## 4.0 PAGES

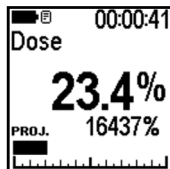
There are 5 'pages' so called because each represents a specific measurement or function.

Each "Scroll/Power" button press turns to the next 'page' and eventually back to the first one. Section 5.1 describes way of enabling/disabling required 'pages'.

---

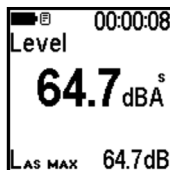
### Dose

- Current Noise Dose percentage
- Projected Noise Dose percentage (at the end of the 8h shift)
- Graphic representation of the Current Noise Dose (0-100%)



### Level

- Current Sound Pressure Level
- Maximum Sound Pressure Level (current session)



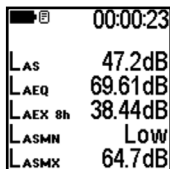
### History

- Last 90 minutes of Sound Pressure Level
- Current Sound Pressure Level



## Details (current session)

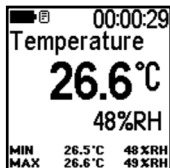
- LAS - Sound Pressure Level
- LEQ - equivalent continuous noise level
- LEX8h - noise exposure level averaged over 8h
- Maximum Sound Pressure Level
- Minimum Sound Pressure Level



	00:00:23
LAS	47.2dB
LAEQ	69.61dB
LAEX 8h	38.44dB
LASMN	Low
LASMX	64.7dB

## Temperature

- Current temperature
- Current humidity
- Minimum temperature and humidity (current session)
- Maximum temperature and humidity (current session)



	00:00:29
Temperature	
	26.6°C
	48%RH
MIN	26.5°C
MAX	26.6°C
	48 XRH
	49 XRH

## 5.0 MENU

To enter or exit from Menu press and release both buttons simultaneously.

Button functions depend on the current Menu location and are displayed at the bottom of the screen.



Menu		
Pages		
Settings		
Info		
NEXT	BACK	OK

## 5.1 Menu / Pages

The 'Pages' menu allows to enable/disable required pages. At least one page must be enabled. Only parameters from enabled pages are recorded in the report and history files (if enabled).



Pages		
Dose	<input checked="" type="checkbox"/>	
Level	<input checked="" type="checkbox"/>	
History	<input checked="" type="checkbox"/>	
Details	<input checked="" type="checkbox"/>	
NEXT	BACK	OK

## 5.2 Menu / Settings

Your Listen Ear™ has a number of adjustable settings which can be modified, enabled & disabled if desired.



Settings		
Ear defnd.	<input type="checkbox"/>	
Bluetooth	<input type="checkbox"/>	
Reports	<input type="checkbox"/>	
Alerts	<input checked="" type="checkbox"/>	
NEXT	BACK	OK



## Menu / Settings / Ear defender

Under the EU/UK Control of Noise at Work Regulations 2005, noise levels above 85dBA require the use of hearing protection. If you wish to use your Listen Ear™ whilst wearing hearing protection then this is possible by inputting the SNR (see page 18) attenuation figure from the specification of your hearing defender or ear plug into the SETUP page screen. The Listen Ear™ will take note of the new setting and give display readings as if measuring at your ear inside the Hearing Defender earmuff and not outside in the external environment.

---

The 'Ear defender' menu displays 3 lines of information regarding the current settings.

Line 1 - Enable or disable Ear Defender correction

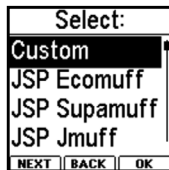
Line 2 - Current Ear defender model from the pre-set list.

Line 3 - Current SNR value



---

A range of preprogrammed Ear Defenders with SNR ratings can be selected by entering the 'Line 2'. If you are wearing an ear defender contained in the list, scroll to the ear defender being used and press OK. The SNR value will be used for the Noise Dose and Sound Level calculation.



---

Alternatively, if wearing an Ear defender not displayed in the list, Scroll to the SNR, press OK and enter SNR value for the Ear defender worn.



---

**See section 11.2 for information regarding ear protection.**

## Menu / Settings / Bluetooth

Enable / disable Bluetooth functionality.

For more details please refer to Listen Ear™ APP user guide.

## Menu / Settings / Reports

In addition to the 'easy to understand' Noise Dose presented as a single number, Listen Ear™ can produce and save Daily Report Files.

First menu line **enables / disables** report and history saving.

The method for accessing the stored files in your Listen Ear™ is by using your computer's file explorer application, where the stored files can be downloaded and manipulated as required.

Two types of files are stored (depending on settings):

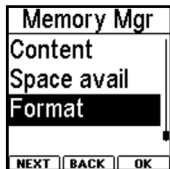
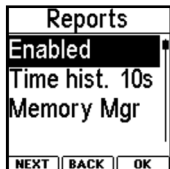
- Report files, named *rep\_0001.txt* (in folder */REPORTS*), containing recording session details. These can be opened by any text editor, i.e. Notepad in Windows based PC's
- Time history files, named *hst\_0001.csv* (in folder */HISTORY*), containing periodically saved levels measured. Data is stored in the csv (comma separated values) format and can be opened by any text editor, i.e. Notepad or Microsoft Excel in Windows based PC's and used to post process recorded data, i.e. to plot a Time History graph.

The **Time history** sets how often data is recorded in the history file.

**Longer data recording periods decrease the history file size, allowing to store more files.**

The **Memory Manager** allows you to check available storage space, content and format memory if necessary.

**CAUTION - memory formatting will delete all your existing report and history files!**



## Menu / Settings / Alerts

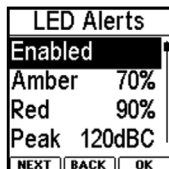
This page refers to the settings for the **Info LED** warning indicator.

If enabled, the 'Info LED' will indicate two different alerts:

- Amber or Red for Noise Dose
- Blue for Sound Level Noise peak

The 'Info LED' will start blinking Amber or Red when the Noise Dose will exceed set levels. If an alert has been triggered, press any button to stop the LED from blinking.

Should you be in very high noise environments the 'Info LED' will flash blue to indicate a peak level exceeded.



---

## Menu / Settings / Meter

**It is not recommended to alter the Meter Settings if you are unfamiliar with the use and understanding of noise measurements.**

**See chapter 11.0 Theory behind the Listen Ear™**

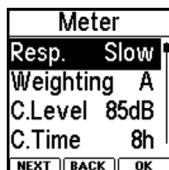
Choose between **Fast & Slow** Time weighting.

Choose between **A, C & Z** Frequency Weightings

Choose Criterion Level from 75 - 90dB

Criterion Time is set to 8 hours in accordance with Noise at Work Regulations

Choose recording Auto Stop time from 8 hours to 16 hours or OFF



---

## Menu / Settings / Time-Date

Set current Time and Date.

Press NEXT to select item to be adjusted, press +/-OK to adjust selected item.

Select SAVE and press +/-OK to save new settings. Otherwise select Cancel or EXIT from menu.



## Menu / Settings / Defaults

To restore back to default factory settings,  
SCROLL down to Defaults and press ENTER.  
Confirm in the next step.  
Report and history files will not be affected.



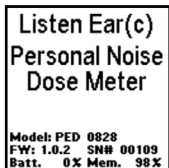
## 5.3 Menu / Info

Information about your Listen Ear™ can be found in the Info Page.

- Listen Ear Model & Serial Number
- Firmware Version
- Battery Remaining (%)
- Memory Storage Remaining (%)

Info Page is a **READ ONLY** Page.

To exit the Info Page press both buttons simultaneously.



## 6.0 CALIBRATION

**In accordance with Noise at Work Regulations - Each time a device is used it should be calibrated using an acoustic calibrator. This will ensure the instrument is measuring correctly and that you are complying with the requirements of any standards.**

The Calibration menu can be accessed via the Menu/Settings/Meter. Press and hold both buttons at the same time for 3 seconds to access the calibration menu.

### 6.1 Calibration procedure

**Int.** refers to the built-in microphone

**Ext.** refers to the optional external microphone that can be used via the micro USB port.

Pressing NEXT (both buttons) will step through the calibration menu from **Int.** to **Ext.** Microphones and returning back to the Meter page.



Ensure Listen Ear™ is situated on a stable flat surface throughout the calibration process.

Place Sound Calibration Unit (SCU) provided over the internal or external microphone.

1. Switch ON SCU. A continuous SPL of 94dB @ 1KHz shall be applied to the Internal/External microphone.
  2. **Ls** should read 94dBA +/- 0.2dBA. If required adjust SPL Value using +/- buttons.
  3. To store the new calibration value, press and hold both buttons simultaneously until confirmation is shown.
  4. Remove and switch OFF SCU.
  5. The Listen Ear™ is now calibrated.
- 

## 7.0 ATTACHING YOUR Listen Ear™

Mount the Listen Ear™ as close to your ear as possible.


Attach the Listen Ear™ to your clothing using the integrated clip.

### 7.1 Mounting Listen Ear™ with external microphone attached

Your Listen Ear device can be supplied with an external microphone which provides added flexibility for positioning.

Plug the **External** microphone provided into the Micro USB Socket.

The microphone LED shall illuminate momentarily.

The  icon shall appear on the status bar indicating that the **External** microphone has been correctly paired and activated ready for use.

Relevant calibration data has been applied automatically.

The **Internal** microphone will be disabled while the **External** microphone is connected.

The Anti-Knock & Vibration System is not active when **External** microphone is connected

**Only microphones supplied by Pambry Electronics will be recognised (paired) by the Listen Ear™**

Attach **Ext.** microphone to your shoulder or helmet as close to the ear as possible using the mounting clip provided.

## 8.0 SPECIAL FEATURES

### 8.1 Anti-Knock & Vibration System

A major problem encountered with personal noise dosimeters is distinguishing between true audio impulse noise and extraneous mechanical 'tapping' on the personal noise dosimeter casing. The introduction of a Patented Anti-Knock & Vibration System to the Listen Ear™ provides an additional level of accuracy to the final result. The Listen Ear™ can detect and eliminate the mechanical tapping noise, therefore the noise exposure measured and recorded is an actual representation of that environment. Number of detected 'knocks' is recorded and stored in the report file. The Anti-Knock & Vibration System is not active when the **External** microphone is connected.

### 8.2 Motion Detection System

This feature monitors the Listen Ear™ motion status. It will detect if the unit is not worn during the recording session. The 'non motion' event will be detected if the unit is stationary for at least 10 seconds. Number of events and summary of 'no motion' time is recorded in the report file.

### 8.3 Auto Power OFF

To save the battery life, the Listen Ear™ will switch itself OFF after 1 hour if no motion is detected and no record is taking place.

---

## 9.0 MEASUREMENTS

Your Listen Ear™ is a sound level meter with the capacity to record and calculate the complex requirements for safe levels of noise dose. The traditional working day of 8 hours is used and set as a default in your Listen Ear™. **This can be altered as can the various audio thresholds but it is NOT recommended you do or need to until you are entirely familiar with the subject of NIHL.**

---

### 9.1 Use as a Sound Level Meter

Scroll your Listen Ear™ to the page labelled 'Level'. This function provides you with a live sound level (the large digits in the screen centre) and the reading will change with the level of sounds heard in your environment.

*These can be modified under the settings menu.*



The smaller digits and icons at the top and bottom of the screen relate to the unit's use as a Noise Dosimeter.

---

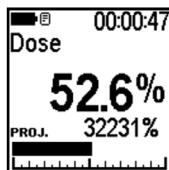
## 9.2 Use as a Noise Dosimeter

Scroll your Listen Ear™ to the screen labelled 'Dose'. The percentage value gives you the amount of Noise Dosage you have used up over your working 8hr day. The Projected Noise Dose represent calculated dose at the end of the 8h shift, assuming that the noise level will stay at the current level.

---

### Start Measurement


Press and hold the Record button. The 'Info' LED shall illuminate GREEN momentarily and "Record started" message shall also appear momentarily. The real-time counter is now activated which indicates that your Noise Dosimeter is calculating and recording data.

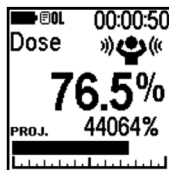


### Stop Measurement

Press and hold the Record button. The 'Info' LED shall illuminate RED momentarily.

At the end of the 8 hour work shift if you are working safely, the dose value will display less than 100%.

Should you exceed the Alert dose threshold levels (see page 11) the  icon will be displayed.



It is advised that you should remove yourself to a quiet environment to allow your hearing to recover if the dose recorded is greater than 100%. You may also consider using the Ear Defenders.

**Menu and Settings cannot be accessed while recording is in progress.**

## 10.0 FIRMWARE UPDATE

Firmware is the software that is inside the Listen Ear™. Occasionally, Pamby Electronics may release new versions of the firmware that add enhanced functions or fix software bugs.

To update the firmware, you need a USB connection from your computer to your Listen Ear™. You must also have a copy of the firmware file, obtained from Pamby Electronics website or Customer Service.

1. Turn on and connect your Listen Ear™ to your PC.
2. Copy the Firmware update file to your Listen Ear™ memory.
3. Disconnect Listen Ear™ from your PC.
4. Press and hold Power button until 'Info LED' starts blinking blue. Release buttons.
5. Your Listen Ear™ will start in the 'Bootloader' mode and will ask you to confirm firmware update. Press 'Yes', the 'Info LED' will start blinking green, and finally your Listen Ear™ will restart with new Firmware.

**Firmware update process may take up to 1 minute. Do not press any buttons whilst update is in progress.**

---

## 11.0 THEORY BEHIND THE Listen Ear™

### 11.1 Reference Information - NIHL

**Noise-induced hearing loss (NIHL)** is hearing impairment or loss resulting from exposure to loud sound. As a consequence, you may have a loss of perception of a narrow range of frequencies, impaired cognitive perception of sound, or other impairment, including sensitivity to sound or even ringing in the ears.

Hearing may deteriorate gradually from chronic and repeated noise exposure, such as loud music or background noise, OR suddenly, from a short high intensity impulse noise such as a gunshot or air horn.

In both types of noise, the loud sound over stimulates delicate hearing cells, leading to the permanent injury or death of these cells. Once lost, your hearing cannot be restored. When exposure to hazards such as noise occur at work and is associated with hearing loss, it is referred to as occupational hearing loss.

Listen Ear™ has the capability of monitoring both types of noise. There are various standards to which noise measurements adhere to, but the main ones are the US and EU/UK references.



The more stringent of these standards is the EU/UK and this is the default setting for your Listen Ear™. Units for the US market can be ordered with the US standard as the default settings, although all Listen Ear™ units can be modified via the Settings pages.

It is important to realise that once you have been subjected to a significant amount of excessive noise and your hearing loss is confirmed, it is too late! So, what will your Listen Ear™ do. The device is primarily designed to measure the noise levels in your environment. Wherever you are, if you are wearing it, the LEVEL display screen will indicate the actual noise level in dB in real time. The DOSE display screen takes these level measurements and integrates them over an 8-hour time slot to give you a percentage noise dose figure. As you work or play in a noisy environment, the dose meter will register and record the amount of noise and present it as a percentage of the safe allowable level. Once you reach 100% you should remove yourself from the noisy environment and recover for 24 hours. This is what Listen Ear™ does - it tells you when you have received enough noise on a daily (8hr) basis and will help to save your hearing.

**Below is a table of typical noise levels for your information.**

dB Levels		
Possible physical damage	<b>160</b>	Pistol shot
	<b>150</b>	Fireworks display, Rock concert peak
Acoustic trauma	<b>140</b>	Shotgun blast
Painful	<b>130</b>	Jet engine (50m distance), motor racing
	<b>120</b>	Rock concert, thunder
Extremely loud	<b>110</b>	Car horn, snow blower, pneumatic hammer
	<b>100</b>	Blow dryer, helicopter cabin, chainsaw
	<b>90</b>	Motorcycle, lawnmower,
Ear protection required	<b>85</b>	
Factory Noise Action Level. Very loud	<b>80</b>	Factory, noisy restaurant, vacuum cleaner
Loud	<b>70</b>	Car cabin, alarm clock, city traffic
	<b>60</b>	Conversation, dishwasher
Moderate	<b>50</b>	
Faint	<b>40</b>	Refrigerator
Quiet	<b>30</b>	Whisper
	<b>20</b>	Ticking watch

## 11.2 Ear Protection

Ear defenders or ear muffs are PPE (personal protective equipment) designed to protect the wearer from extreme noises. The head-band and outer covering is usually made from a hard thermoplastic or metal. The protection usually comes from acoustic foam - this absorbs sound waves by increasing air resistance, thus reducing the amplitude of the waves.

### What is SNR?

**SNR** is a **S**ingle **N**umber **R**ating system. The SNR value can be used to compare the level of noise attenuation offered by different hearing protectors. To determine acoustic pressure on your ears, you subtract the SNR value from the average noise level measured. For example: The noise level measures an average of 99dB. You are wearing ear protection with an SNR of 19. Thus, the acoustic pressure on your ears is on average  $99 - 19 = 80\text{dB}$ . The higher the SNR, the higher the level of noise attenuation provided by the hearing protection.

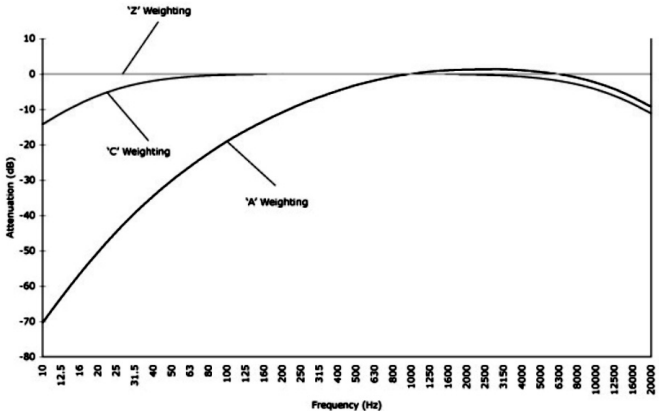
## 11.3 A, C & Z Filter Weighting

Our Human hearing has a specific performance over a certain frequency. Weighting Filters represent our hearing performance at specific sound levels with respect to frequency.

- A - Filter: emulating the human hearing @ lower levels
- C - Filter: emulating the human hearing @ higher levels
- Z - No weighting, i.e what the system is actually producing.

Figure 1 opposite illustrates frequency response curves for A, C & Z Filter Weighting.

Figure I - Frequency Weighting Curves



### 11.4 Fast & Slow Time Weighting

Time weightings are used to represent the behaviour of sound pressure levels.

When sound level meters were first developed, analogue meters were used. The needle would move corresponding to the sound pressure level. The needle size would vary depending on manufacture leading to ambiguous results.

Standards were introduced to ensure sound level meters from different manufacturers would display the same readings.

**These are known as time weightings**

**F - Fast Weighting time constant** = 125ms - decay 34,7 dB/sec. it is only a glimpse of the very last Sound pressure that has happened during our recording.

**S - Slow Weighting time constant** = 1 sec - decay 4,3 dB/sec

This smoother level history can give you a better indication of the noise level in an environment which is constantly changing.

**Keep in mind that Leq is the most relevant long-term measurement that would correspond to our human perception.**

## 12.0 REPORT AND HISTORY FILES

The report and history files are stored in the memory only 'report' function is enabled in Menu/Setting/Reports (see page 11). Both file names are numbered i.e. `rep_0004.txt` and `hst_0004.csv` for the report number 4. Files are stored in folder /Reports and /History respectively.

---

### 12.1 Report file example

Daily Noise Dose Report #0004 \_\_\_\_\_

Dose recorded	141.55%
Record duration	06:21:23
Record started	09:34:56 14/07/17
Record completed	15:56:19 14/07/17

Details \_\_\_\_\_

Lex8h	86.51dB	
Las min	---	15:04:06 14/07/17
Las max	117.9dB	13:51:07 14/07/17
Lpk max	129dB	
E	1.432577Pa2h	
Peak events	105	
Overloads	0	
Criterion level	85dB	
Model	PED 0828	
Serial number	00005	
Calibration time	Internal Mic.	10:08:00 03/07/17
Report file	rep_0004.txt	
Time history file	hst_0004.csv	

Environment data \_\_\_\_\_

Temperature min	19.6°C	09:34:56 14/07/17
Temperature max	28.0°C	12:01:42 14/07/17
Humidity min	32.0%RH	13:07:22 14/07/17
Humidity max	54.3%RH	09:35:22 14/07/17
No motion events (>10s)	141	Duration 00:43:10
Knock events	83	

End of Report \_\_\_\_\_

## 12.2 History file example (2 minutes part only)

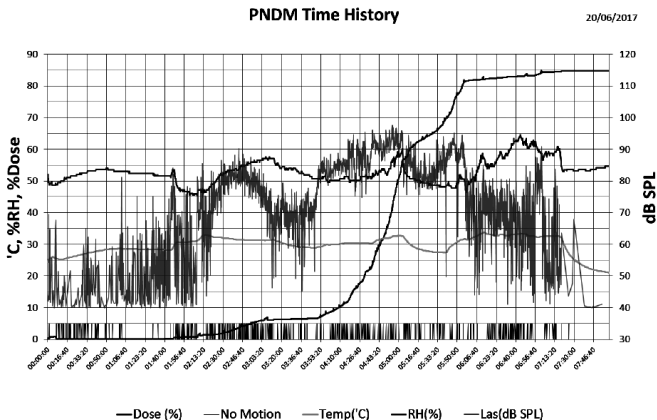
Start date, Duration, Interv. (s), Records

03/07/17, 08:00:00, 10, 2880

T(h:m:s),	Las(dB),	Dose(%)	No motion,	Temp('C),	Hum(%RH)
09:26:12,	,	0.0,	,	21.2,	63.4
09:26:22,	,	0.0,	,	21.2,	63.4
09:26:32,	42.7,	0.0,	,	21.2,	63.9
09:26:42,	,	0.0,	,	21.2,	63.9
09:26:52,	59.9,	0.0,	,	21.2,	63.4
09:27:02,	,	0.0,	,	21.3,	63.4
09:27:12,	44.5,	0.0,	,	21.3,	63.4
09:27:22,	51.6,	0.0,	,	21.3,	63.4
09:27:32,	62.3,	0.21,	1,	21.3,	63.4
09:27:42,	70.6,	0.21,	1,	21.3,	63.4

**NOTE:** Spaces are inserted in above sample for clarity.

## 12.3 Example plot generated from the history file, using Microsoft Excel software



## 13.0 SPECIFICATION

### Certificates and standards

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IEC 61672: 1993	Class 2 Sound Level Meter
IEC 61252: 1993	Personal Sound Exposure Meter
CE Mark	Complies with the Directive on low voltage 73/23/CEE and Directive CEM 89/336/CEE modified by 93/68/CEE.

### Sound measurement

---

LA	40dB to 140dB
LCPK	140dB
Over Load detector flag	140.1dB
Resolution	0.1dB
Frequency weighting	A, C
Time weighting	Slow (1s), Fast (1/8s)
Dose range	0% to 9999%
8-Hr Criterion Level for 100% Dose	75 to 90dBA (in 5 dB Increments)
Exchange Rate	3dB
Results	SPL, LEQ, LEX8h, LMAX, LMIN, LMAX, Dose(%), Projected Dose(%8h)

### Environmental measurement

---

Temperature range	-40°C to +80°C
Temperature resolution	0.1°C
Humidity	0% - 100% RH
Humidity resolution	1% RH
Motion	3 axis, 10s detection time

### Memory

---

8Mbytes. Accessible by micro USB cable using PC - no drivers required.

### Microphones

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Internal	Pre-polarised condenser microphone
External	as above + proprietary USB interface

## Data logging

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Summary results for the measurement time

File type reports: \*.txt, history: \*.csv

Time history at intervals 10s, 30s, 1m, 5m, 10m

Temperature and humidity

Motion status number of events, summary time

## User interface

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Display LCD, 128x128, backlit

Keypad two multifunction buttons

Other multicolour 'info LED'

## Battery

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Non removable Lithium-Polymer 3.7V / 550mAh

Power consumption 2mA (avg), 20mA (max)

Auto power-off 1h (no motion, not recording)

Charging micro USB, up to 200mA

Operating time up to 160 hours / 4 working weeks  
(depending on features enabled)

## Dimensions, weight, appearance

---

Size (H x W x D) including clip 83mm x 52mm x 19mm

Weight 52g

Available colours white, grey, black

## Environmental

---

Operating temperature 0°C to +50°C

Operating Humidity up to 90% RH, non-condensing

Storage temperature -10°C to +60°C

Storage Humidity up to 90% RH, non-condensing

**NOTE:** All values are typical unless otherwise stated. Continuous product development and innovation are the policy of our company. Therefore, we reserve the right to change the specifications without prior notice.

# APPENDIX A – EC DECLARATION OF CONFORMITY



## EC Declaration of Conformity

Pambrly Electronics Ltd  
Pambrly House  
Units 7 & 8  
Ventura Centre  
Ventura Place  
Upton Industrial Estate  
Poole, Dorset  
BH16 5SW

Telephone: (01202) 624910  
Fax: (01202) 632452  
Sales: [sales@pambrly.co.uk](mailto:sales@pambrly.co.uk)  
Web: [www.pambrly.co.uk](http://www.pambrly.co.uk)

Pambrly Electronics Ltd. declare under our sole responsibility that the product:

PED 0828 Pambrly Personal Noise Dose Meter.

Complies with the applicable EU CE Directives.

**Applicable EU Directives:**

2014/53/EU	Radio Equipment Directive
2011/65/EU	RoHS Directive
2012/19/EU	WEEE Directive

**Quality Assurance:** Pambrly Electronics Ltd. Operates a Quality Management System in accordance with ISO9001:2008.

**Date:** May 2017

**Signed:**

**John Webb**  
**Manager of Quality Assurance**

PR093 - A



## Pambrly Electronics Ltd

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