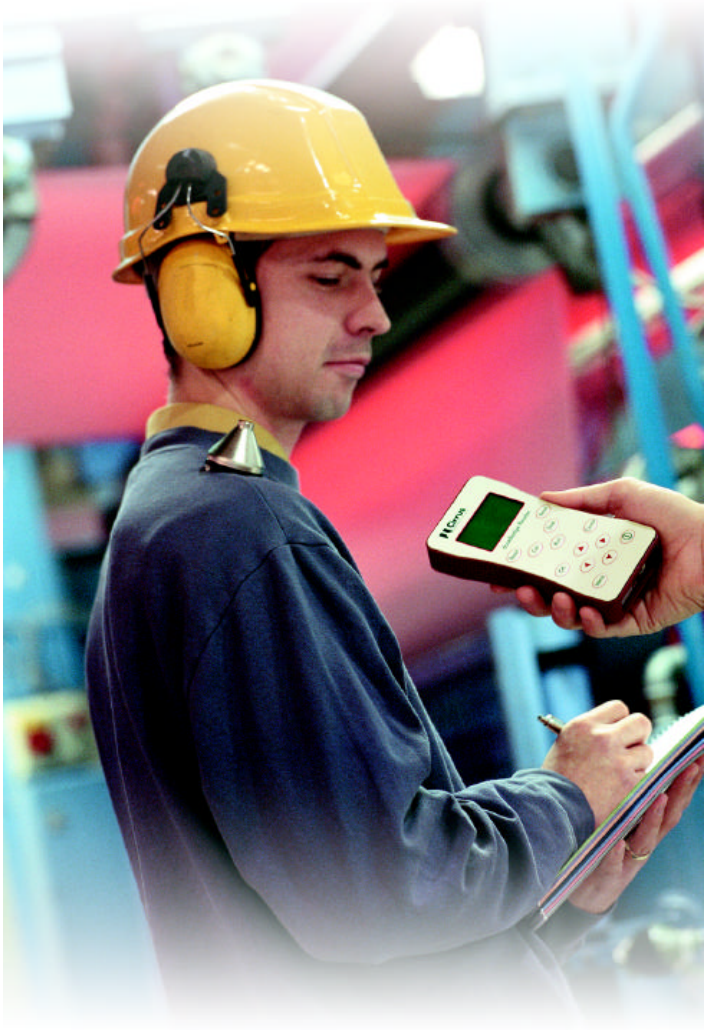
doseBadge

NoiseMeters
www.noisemeters.com

Monitoring Personal Noise Exposure

Introduction



- Small size and weight with simple operation
- No cables or controls on the doseBadge
  - Reduces damage and tampering
- Very strong construction
- Meets IEC 61252 and ANSI S1.25
- Suitable for noise at work applications:
  - European Noise at Work Regulations
  - OSHA, MSHA, AICHE and ACGIH
- Powered by rechargeable battery
- Infra-Red download of data to the Reader Unit
- Download and Reporting Software included
- Time History gives graph of noise levels
  - Measures down to 70 dB(A)
  - True Peak reading with Peak Time History
  - 115 dB(A) sound level exceeded flag
  - Extra user-programmable settings
  - Dual Channel (e.g. ISO + OSHA)

The doseBadge is a unique solution to the problems associated with the measurement of personal noise exposure.

The small size and light weight of the unit allow it to be used in situations where a traditional style noise dosemeter, with the microphone attached to a cable, will cause problems.

The doseBadge unit does not have any cables or controls, so the units can be worn by operators and employees who are using machinery where there is a risk of any cables becoming caught or trapped.

Inside the doseBadge is a rechargeable battery, a microphone and electronic systems which measure and log the noise data.

All of this is housed in a robust metal case which protects the microphone and electronics.

The doseBadge is controlled via Infra-Red by the Reader Unit, which also contains a specially designed Sound Level Calibrator.

The setup of the doseBadge is controlled by the Reader unit which allows the user to program the doseBadge to meet different measurement criteria and regulations.

The doseBadge can be configured to meet the requirements of the EU Physical Agents (Noise) Directive as well as the many different noise measurement Standards and Regulations such as OSHA, MSHA, AICHE and ACGIH. As it is a **dual channel** instrument, one channel can be set, for example, to OSHA (5dB) with the other always set to ISO (3 dB).

The doseBadge system is usually supplied as a complete measurement kit which includes the doseBadges, Reader Unit, Charger ,Power Supply and software, all contained in a carrying case.

The dBLink and dBase Database programs that are supplied as standard with the system allow the user to configure the system, download data and produce measurement reports quickly and easily.

Applications

- Occupational noise exposure measurement
- Assessment of the risk of hearing damage
- Recording of long term noise exposure
- Compliance with Noise Regulations

There are many situations where there is the need to accurately assess the risk of exposure to high noise levels and to monitor any employees who are exposed to potentially damaging noise.

Workers who move between different locations or where the noise exposure pattern varies throughout the day are very difficult to assess using traditional methods.

Machinery or moving equipment can also present problems to those responsible for carrying out noise exposure measurements. Cables can become trapped or caught damaging the measurement equipment and reducing the effectiveness of any measurement schedule. In extreme circumstances cables trapped in rotating machinery can pose a risk of injury.

In these situations, the best way of measuring workers' noise exposure is to use a personal noise dosemeter, where the "meter" is attached to the person being assessed, rather than using a Sound Level Meter to measure static noise sources.

The doseBadge provides a unique way to carry out these measurements in a simple and cost effective way.

The small size and light weight of the doseBadge also means that the person under assessment is less aware of wearing the unit and is less likely to tamper with the instrument.

The doseBadge and Reader Unit allow measurements to be made that meet most Regulations and Standards whilst maintaining the advantages that the small size and weight of the unit provide.

Using the doseBadge

The doseBadge provides a simple and effective method of measuring personal noise exposure and removes all of the common problems associated with using traditional style noise dosemeters.

The number of user keys on the Reader and therefore the number of steps required to make a measurement have been reduced to a minimum.

The Reader unit controls the doseBadge using an Infra-Red link, which removes the need for keys or controls on the doseBadge itself.

The Reader unit can prepare any number of doseBadges for use and provides the facility to change the setup of the doseBadge to suit the Regulations and Standards that the measurements are to comply with.

Charging

Each doseBadge is a self contained unit with an internal microphone and rechargeable battery, which is charged using the supplied charger units. A full charge from flat takes only 2½ hours, less if the battery is not flat.

Resetting and Calibrating

The doseBadge is reset and configured using the Reader Unit. The doseBadge is inserted into the Acoustic Calibrator of the Reader Unit.

Pressing the **Reset** button on the Reader now clears the memory of the doseBadges (removing previous measurements) and prepares it for use.

The **Cal** key will now start the calibration process. The correct operation of the doseBadge is checked and any adjustments made automatically.

Starting the Measurement

The doseBadge is now secured onto the worker using the supplied mounting kit and the measurement started using the Reader unit or the Keyfob Remote Control.

You now leave the doseBadge measuring the worker's noise exposure for the full working day.

Stopping the Measurement

At the end of the measurement period, the doseBadge is stopped using the Reader unit. The doseBadge is then removed from the worker and a final calibration check can be carried out if required.

Viewing the Results

Pressing the **Read** key on the Reader will then transfer the measurement from the doseBadge to the Reader and the results can be viewed on the Reader's graphical display.

The Reader can be used to download a large number of measurements from different doseBadges.

You can also plug the Reader unit into a computer and download the measurements for safe storage, analysis and reporting (see Software section later in this data-sheet).

Shake to Wake

When the doseBadge is not in use, it automatically shuts down to preserve battery power. The CR:110A doseBadge has a "Shake-to-Wake" function which minimizes the standby power consumption.

To prepare the it for use, you shake the doseBadge to wake it up - a blue flashing light indicates that it is awake and ready for use.

Configuration of the doseBadge

The doseBadge can be configured to meet almost any current and planned occupational noise regulation and standard.

In the **European Union**, the EU Physical Agents (Noise) Directive requires the measurement of the noise exposure using a 3dB Exchange Rate and recording of LEX,8h and Peak (C), whereas the **American OSHA** Regulations require the use of a 5dB Exchange Rate, a Slow Time Weighting and an 80dB Threshold. The doseBadge can also be set to measure to the MSHA and ACGIH guidelines.

The configuration of the doseBadge can be changed quickly and easily by using the menu on the Reader Unit or by programming the Reader from the dBLink software.

As the doseBadge as two channels, it can have one channel set to monitor OSHA (for example) and the other channel is always set to make the common ISO measurements.

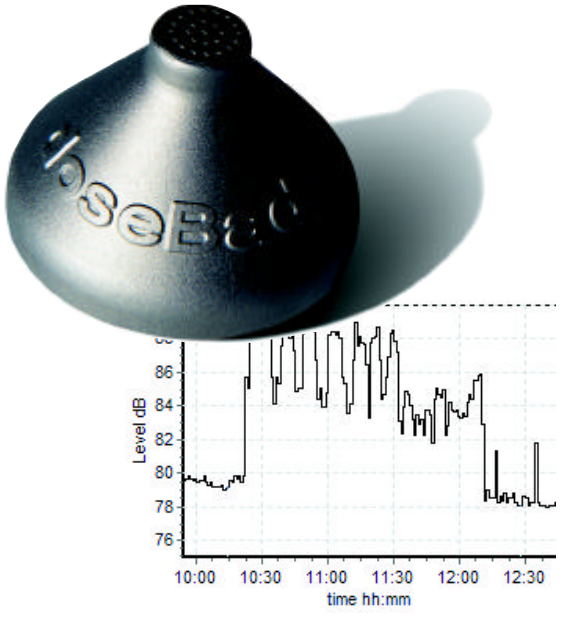
doseBadge Reader Settings

ISO Standard (Q=3, No time response, No threshold)
OSHA Standard (Q=5, Slow, 80 dB threshold)

Other advanced settings:

Exchange Rate	Q = 3dB, 4dB or 5dB
Criterion Level	80dB, 85dB, 87dB or 90dB
Criterion Time	8, 12, 16 or 18 hours
Threshold	None, 80dB, 85dB or 90dB
Time Weighting	None or Slow

Using combinations of these parameters, the doseBadge can be set to meet the requirements of ISO (for European regulations), OSHA, MSHA, AICHE and ACGIH.



Measurements

The doseBadge has been designed to meet the needs of as many occupational and industrial noise measurement Standards, Regulations and Guidelines as possible.

The user can select from preset configurations which will present the commonly used noise parameters, or a user defined setup can be programmed into the doseBadge by the Reader Unit. The independent control over the Exchange Rate (Q), Criterion Level, Criterion Time, Threshold and Time Weighting allows the doseBadge to be used in a wide range of situations.

The doseBadge provides two different forms of noise data, Overall Measurement Information and Time History Data.

Overall Measurement Information

The doseBadge provides different information depending on how it is configured. For example, when configured to ISO standards for European measurements, it provides the LEX,8h. However, when configured to OSHA, MSHA, AICHE or ACGIH it correctly provides the TWA instead.

The following table shows the parameters that are always available along with those that are available for the different configuration settings.

Always Available	**ISO Settings (Q=3, None)**	**Other Settings (OSHA, etc.)**
Time and Date	L_{Aeq}	L_{AVG}
Total Run Time	LEX,8h (Lep,d)	TWA
Calibration	L_{AE} (SEL)	% Noise Dose
Peak Exceeded	Exp in Pa^2h	Est. % Dose
Highest Peak*	% Noise Dose	
Overload Flag		
Battery Status		

Time History Data

The doseBadge will measure and log the average noise levels every minute for each of the two channels. When downloaded to the Reader and to a computer, this gives a graph of the noise level over time.

The doseBadge also stores the 1 minute Time History for the Peak (C) level and for the battery level.

Dose Exceeded Indicator

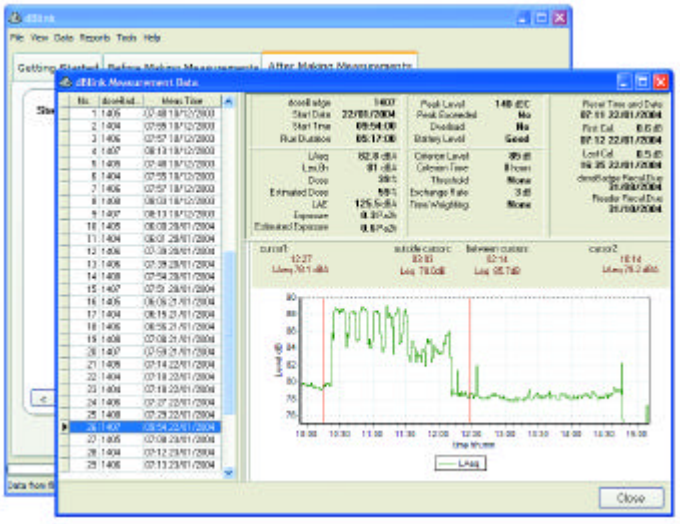
The doseBadge can be set to indicate as soon as the 100% Dose level is exceeded. The blue LED indicator on the doseBadge usually flashes once every second to show that the doseBadge is running. When 100% Dose is exceeded, the LED starts to flash twice every second.

Software

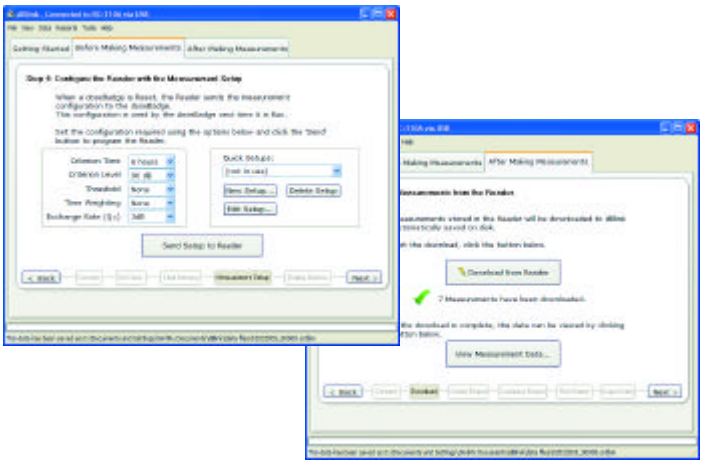
The doseBadge and Reader are supplied with the dBLink3 and dBase Database software programs.

dBLink

dBLink is an easy to use program that downloads the measurement data from the doseBadge Reader. dBLink can be used as a stand alone program or in conjunction with the dBase Database program.



The program uses a Step-by-Step wizard to guide you through the setup and download procedures and produces simple reports of the measurement data.



Three preformatted report types are provided to present the measurement data, and these reports can be either printed or exported into a range of formats, including Word, Excel and PDF.

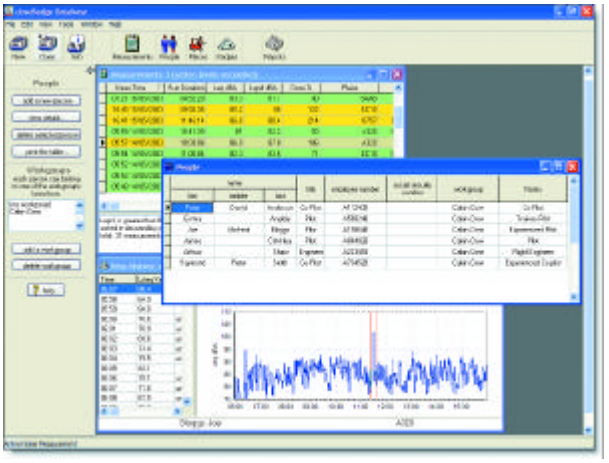
The measurement data can be saved and the data transferred automatically into the dBase Database program for further analysis and reporting.

dBLink3 also supports previous versions of the doseBadge and Reader units allowing existing users to upgrade to this new program.

dBase Database

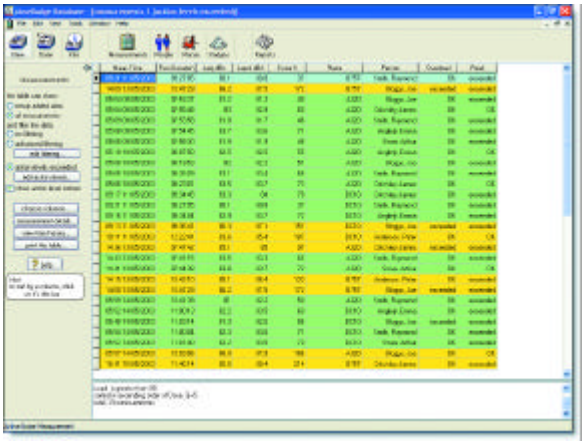
The dBase Database program takes measurement data from the dBLink program and stores the information in a database.

For many applications the dBLink program is adequate, downloading the measurements, storing them and printing simple reports. However, for more demanding applications the dBase program provides many additional features.



The user can enter additional information into the program which allows measurements to be tagged. The database holds details of employees, measurement locations and workgroups.

Any measurement can be tagged with these items, allowing the user to quickly produce reports of noise exposures for different employees, workgroups or locations.



Measurement data can be sorted and filtered using any of the parameters and a range of informative reports created from a wide range of measurement data. Employee data can be imported from an external file for companies with a large work force.

The latest versions of the dBLink and the dBase Database program can be downloaded from the Internet free of charge.

doseBadge Measurement Kits

doseBadges are usually provided as part of a Measurement Kit that includes all the items that you need to start making noise dose measurements.

All the kits include:

- doseBadge(s)
- Reader Unit
- Sound Level Calibrator (built in to the Reader)
- Multi-doseBadge Charger and Power Supply
- doseBadge Mounting Kits
- Software (dBLink and dBase)
- Download Cable
- Manuals and Calibration Certificates
- Carrying Case

These kits do not include the Keyfob, Helmet Mount or Wind Shields.

Order Codes

CK:110/1	Measurement Kit with 1 doseBadge
CK:110/2	Measurement Kit with 2 doseBadges
CK:110/5	Measurement Kit with 5 doseBadges
CK:110/10	Measurement Kit with 10 doseBadges

CK110/5 Measurement Kit, showing the five doseBadges mounted on the 5-way charger.

Accessories

In addition to the standard components of the doseBadge measurement kits, the following accessories can be added at extra cost:

• RC:101A Keyfob Remote Control Unit

The Keyfob Remote Control allows the doseBadge to be started and stopped without using the Reader. The Keyfob has been designed to be used in situations or locations where there is a risk of damage to the Reader Unit, or where additional control units are required.

Please note that the RC:101A Keyfob does not replace the Reader Unit and does not have the facility to Reset, Calibrate or download data from the doseBadge.

• CM:100 Helmet Mount

The CM:100 Helmet Mount allows the doseBadge to be secured to a standard Helmet or Hard Hat using the mounting points designed to located Hearing Defenders. Please note that if the CM:100 Helmet Mount is used, Hearing Defenders cannot be attached.

Different versions of the CM:100 Helmet Mount are available to suit different helmets.

Please contact NoiseMeters for more details.

• UA:100 Windshield

The UA:100 Windshield protects the doseBadge from dust and other contaminants as well as reducing the effects of the movement of air over the microphone capsule of the doseBadge. The UA:100 Windshield also helps to reduce noise generated by handling of the doseBadge.

doseBadge with Mounting and optional wind shield

Specifications

Applicable Standards

doseBadge
IEC 61252:1993 Personal Sound Exposure Meters
ANSI S1.25:1991 Personal Noise Dosemeters

Reader
Internal Acoustic Calibrator to IEC 60942:2001 Class 2

Measurement Range (Typical)

70 dB(A) to 130 dB(A) RMS
120 dB(C) to 140 dB(C) Peak

Measurement Functions

All configurations:

doseBadge Settings
Measurement Duration
Overload Exceedence
Calibration Record
Highest Peak (C) Sound Level*
Battery Status
115 dB(A) Maximum Sound Level Exceedence*
1 Minute Time History of:
- LAeq (3dB)
- LAVG (4dB or 5dB)*
- Peak (C) Level*
- Battery Level*

For 3dB Exchange Rate:
LAeq, LEX,8h, LAE, % Dose, Exposure (Pa²h), Estimated % Dose, Estimated Exposure (Pa²h)

For 4dB & 5dB Exchange Rates:
LAVG, TWA, % Dose, Estimated % Dose

Weightings

Frequency
'A ' for all RMS measurements.
'C ' for Peak Sound Pressure

doseBadge Configuration

ISO (Q=3, Time=None)
OSHA (Q=5, Time=Slow)

Exchange Rate (3dB, 4dB or 5dB)
Criterion Level (80dB, 85dB, 87dB, 90dB)
Criterion Time (8hrs, 12hrs, 16hrs, 18hrs)
Threshold (None, 80dB, 85dB, 90dB)
Time Weighting (None, 'S ' (Slow))

Memory

The Reader Unit can store the following measurement data:

With 8 hours of 1 minute Time History
Up to 93 measurements
With 12 hours of 1 minute Time History
Up to 64 measurements
With 24 hours of 1 minute Time History
Up to 33 measurements

Power

doseBadge
NiMH Rechargeable Battery

Reader
2 x AA/LR6 with Auto Power Switch Off

CU Series Chargers
CU:195A Mains Power Supply with UK, EU or US plug.

Output

doseBadge
Infrared to RC:110A Reader Unit

Reader
USB 2.0 to computer

Dimensions

Microphone Apex Ø13.0mm,Base Ø47mm,Height 38mm

Environmental

Temperature
-10 °C to +50 °C Operating
-20 °C to +60 °C Storage

Humidity
Up to 95%RH Non-Condensing

Weight

doseBadge 45gms (1.6oz)
Reader 400gms (14oz)

Software

dBLink and dBase Database supplied as standard.
Compatible with Microsoft Windows versions 98 or later.

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