

CR:110A

doseBadge Personal Noise Dosemeter



doseBadge

Key Features of the doseBadge

- > Small, lightweight (51g/1.8oz) and very robust with a metal case preventing damage and reducing servicing costs
- > Complete self contained 2 channel noise dosimeter with an internal microphone
- > No cables or controls on the doseBadge reduces the risk of damage, misuse or tampering
- > Programmable measurements allow compliance with most Occupational & Industrial Hygiene noise regulations worldwide
- > Dual Channel measurements allow for quick and easy comparison between different measurement standards
- > Visual indication of when 100% noise dose has been exceeded
- > Extremely simple and easy to operate with dual channel data logging as standard
- > High performance rechargeable Nickel Metal Hydride (NiMH) battery with a typical battery life of 30 hours
- > Wireless infra-red download of measurements to the Reader Unit with measurements presented quickly and simply
- > Analysis & Reporting software supplied as standard with licence-free installation and free-of-charge updates
- > Computer connection not required to review measured noise levels
- > CR:110AIS Intrinsically Safe version available with ATEX, IECEx, EEx & MSHA Certification

Introduction

The doseBadge is the original wireless personal noise dosimeter. It is the ideal tool to carry out occupational and industrial hygiene noise measurements and provides a unique solution to these applications.

Combining an innovative design with simple, robust and reliable operation, the doseBadge weighs only 51g (1.8oz). With no cables, controls or displays, the doseBadge can be worn in areas where there is a risk of damaging traditional style units or where there is a risk of tampering.

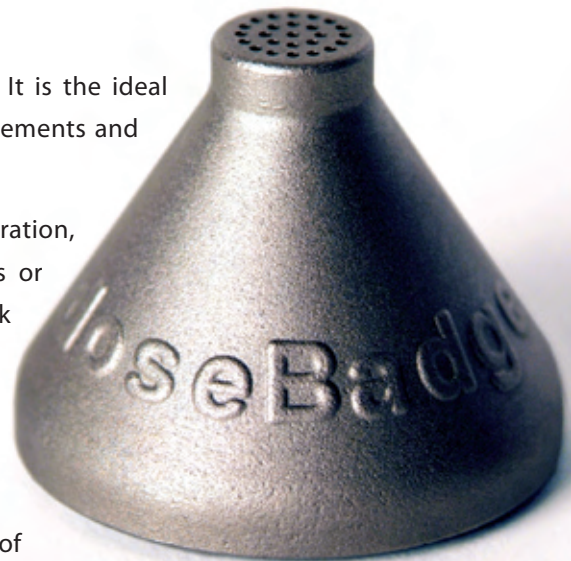
The robust metal case protects the internal systems and microphone of the doseBadge. By locating the microphone inside the case, the doseBadge is completely self contained and will give many years of reliable operation.

The user can configure the doseBadge to meet the requirements of almost any noise measurement standard or regulation. The dual channel operation allows comparisons to be made between different measurement standards quickly and easily, thus ensuring compliance with both local and company noise measurement standards across the world. Data logging is provided as standard.

Inside the CR:110A doseBadge is a high performance rechargeable Nickel Metal Hydride battery, an internal microphone and electronic systems which measure and log the noise data. The doseBadge communicates via an Infra-Red link to the RC:110A Reader Unit which also contains a specially designed acoustic calibrator to ensure accurate noise measurements.

The doseBadge system is usually supplied as a complete measurement kit including doseBadges, Reader Unit, Charger, Power Supply and software, all contained in a robust carrying case. The dBLink3 software program is supplied as standard with the doseBadge and this allows the user to configure the system, download data and produce measurement reports quickly and easily.

Covered by a standard 2 year warranty and an extended 10 year warranty, the doseBadge is the ideal tool for simple and reliable noise measurements.



Applications

- > The measurement and control of occupational noise exposure
- > Monitoring and recording of long term noise exposure
- > Compliance with Noise at Work Regulations, Industrial Hygiene Standards and Occupational Noise Exposure Guidelines
- > Noise exposure measurements in Hazardous environments such as Oil Refineries, Petrochemical Plants and Underground Mines
- > Measurement of noise exposure in the Entertainment and Music Industries



> The measurement and control of occupational noise exposure

There are many situations where there is a need to accurately assess the risk of exposure to high noise levels and to continually monitor any employees who are exposed to potentially damaging noise. Workers who move between different locations, or where their noise exposure pattern changes 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 risk assessments and noise exposure measurements. The doseBadge is the ideal tool to carry out these tasks.

> Monitoring and recording of long term noise exposures

If employees have a noise exposure pattern that is not easily controlled or where the noise levels vary each day, using a noise dosimeter may be the only way to accurately measure and record the long term exposure. Although exposure to high noise levels over a short time can result in temporary effects, it is the long term exposure which causes hearing damage and other physical effects.



> Compliance with Noise at Work Regulations, Industrial Hygiene Standards and Occupational Noise Exposure Guidelines

The regulations used for occupational noise vary around the world with different exposure levels and calculation methods used. The doseBadge can be setup to meet almost every Occupational or Industrial Hygiene noise measurement standard such as ISO85, ISO90, OSHA, MSHA, DOD, ACGIH (USA Standards) as well as the EU Physical Agents Directive and the 2005 Control of Noise at Work Regulations (UK).

> Noise exposure measurements in Hazardous environments such as Oil Refineries, Petrochemical Plants and Underground Mines

There are many environments where noise measurements must be made but where there is a risk of explosion, such as Oil Refineries, Petrochemical & Pharmaceutical Plants and Underground Mines. In these environments, equipment must be certified as being Intrinsically Safe and the CR:110AIS version of the doseBadge carries IS (Intrinsic Safety) Certification to ATEX, EEx, IECEx, SIMTARS and MSHA.



> Measurement of noise exposure in the Entertainment and Music Industries

There are also many other industries and environments where this type of measurement is the ideal way to assess noise exposure. For example, in the entertainment and music industries employees are often exposed to high noise levels over irregular shifts. It is usually not possible to take static noise measurements in these environments and the doseBadge is the ideal solution. The doseBadge has already been used at a number of music festivals, concerts and carnivals as well as by a number of major international orchestras to carry out noise risk assessments.

Simple Operation

Using the doseBadge is quick and easy. Only five steps are needed to complete a measurement:

> **Reset** > **Calibrate** > **Start** > **Stop** > **Read**

The Acoustic Calibrator is part of the Reader Unit and this is used to verify the doseBadge before and after each measurement. The calibration is automatic and the information is stored for later use and reporting.

The Reader unit is used to both start and stop the doseBadge which removes the need for buttons and controls on the doseBadge itself, reducing the risk of tampering and damage as well as on-going servicing costs.

The doseBadge is securely fastened to the person whose noise exposure is to be measured and the unit is started. The mounting kit supplied with each doseBadge has been specially designed to be simple and easy to use. It uses clips rather than pins which can cause problems with clothing that has been treated or coated, such as fire proof jackets. In addition to this, the doseBadge can be mounted onto a helmet using the optional CM helmet mount.

When the doseBadge is started, it starts to measure and store the noise levels. The LED indicator will flash during the measurement period. It can also be set to flash quickly when an exposure action level has been exceeded - a feature which can be switched on and off using the Reader Unit.

At the end of the measurement the doseBadge is stopped using the Reader (or the Keyfob remote control unit) and the unit removed from the wearer. The doseBadge can then be recalibrated if required, and the measurement data downloaded.

The data, having been download to the Reader unit, can then be viewed. The Reader will show the overall noise levels such as the L_{eq} , $L_{EP,d}$ and Peak(C) levels (or L_{AVG} , TWA and % Dose) as well as a simple graph of the noise profile or time history data.

The serial number of the doseBadge, the calibration data along with battery levels and setup information are also stored for each measurement. If more than one doseBadge has been used, each can be downloaded into the Reader and placed on the charger ready for the next use. The measurement data can be downloaded from the Reader unit to a PC at a convenient time. This means that a PC does not need to be available when the data is downloaded.

Optional Accessories

In addition to the standard components of the doseBadge measurement kit, the following accessories can be purchased:

• **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.

• **RC:101A Keyfob Remote Control Unit**

The Keyfob Remote Control allows the doseBadge to be started and stopped without using the RC:110A Reader Unit.

• **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 point designed for Hearing Defenders. Various versions of the CM:100 Helmet Mount are available to suit different helmets.



CM:100/E Helmet Mount



RC:101A Keyfob Remote Control Unit



CR:110A doseBadge with Mounting Kit shown with UA:100 Windshield

Software

The doseBadge is supplied with the dBLink3 software program. dBLink3 is a simple, easy to use program that allows the measurement data to be downloaded from the RC:110A Reader Unit via a USB connection. When the measurements have been downloaded, both the numerical information and the time history data can be reviewed.

Comments and notes about the measurement, such as the person under assessment, can be added and this information is saved with the data for use in the reports.

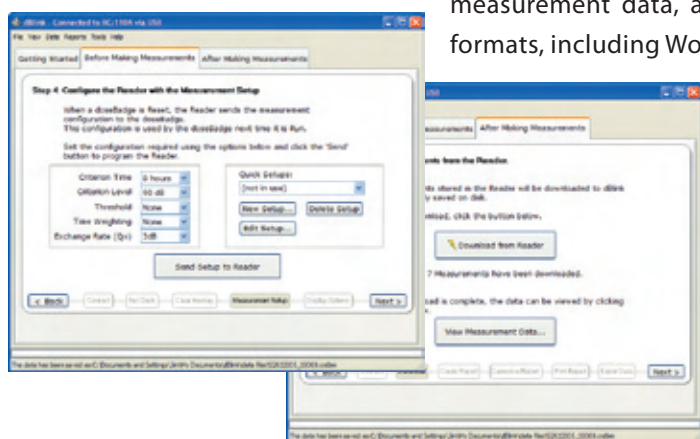
The program uses a Step-by-Step wizard to guide the user through the setup and download procedures and allows the measurement data to be viewed and printed.

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 data can also be exported as an XML file allowing the information to be used in other analysis and reporting software.

The software provided with the doseBadge is free from any license restrictions and can be installed on as many PC's as required.

Updates and the latest versions of the software programs can be downloaded free of charge from the Cirrus Research plc website and dBLink is compatible with Windows Vista.



Intrinsically Safe (I.S.) Version

An Intrinsically Safe version of the doseBadge, the CR:110AIS, is available.

The CR:110AIS can be used in hazardous zones, for example in underground mines, petrochemical plants and other areas that require safe measurement equipment. Explosive atmospheres can be caused by flammable gases, mists or vapours or by combustible dusts and the CR:110AIS doseBadge is ideal for use in these types of environments.

The CR:110AIS has the same measurement functions as the standard CR:110A version and can be used in the same way as the standard version.

The CR:110AIS doseBadge meets the requirements of the ATEX Directive for both Mining and Non-Mining applications. In addition, the CR:110AIS carries IECEx, EEx and MSHA Certifications. Details of the certification are shown in the specifications section of this datasheet.

Other certifications and approvals may also be available for the CR:110AIS doseBadge. Please visit the Cirrus Research plc website at www.cirrusresearch.co.uk for further information.



Intelligent Charging

- > Intelligent charging of the doseBadge for optimum performance
- > Compatible with all versions and variations of the doseBadge
- > Fast-charge & Top-up function reduces charging time with a 2½ hour maximum charge time
- > Full charge gives typically 30 hours operating time
- > Conditions the rechargeable battery for longer operating life
- > Simple indicators to show charging status
- > Supports 5 doseBadges and charger units can be linked together



CU:110A doseBadge Charger

The CR:110A doseBadges use a NiMH (Nickel Metal Hydride) battery technology to give optimum performance over a long operating life. The charger units supplied with the doseBadge Kits provide the optimum platform to charge and maintain the battery pack.

The CU:110A charger unit uses intelligent monitoring technology, providing optimum performance during the charge cycle. If the battery of the doseBadge is not completely empty, the charger will top-up the battery in the shortest time.

A CU:110A charger supports up to 5 individual doseBadge units of any type, and additional charger units can be connected via a ZL:103 link cable when the measurement kit contains 2 CU:110A chargers.

Measurement Kits

- > Standard Measurement Kits with between 1 and 10 doseBadges
- > Kits can be expanded by adding additional doseBadges
- > Robust Aluminium Case to hold up to 10 doseBadges and accessories
- > Available with the standard CR:110A or the Intrinsically Safe CR:110AIS doseBadges

The doseBadge measurement kits are available with various quantities of doseBadges as well as all of the items needed for occupational and industrial hygiene noise measurements.

Each kit contains the doseBadges along with a Reader Unit, Chargers, Power Supply, Mounting Kits, Software, User Manuals, USB Cable, Certificates of Calibration and Batteries for the Reader Unit.

The measurement kits can be expanded with additional doseBadges and charger units as required. These can be either standard CR:110A doseBadges or the Intrinsically Safe CR:110AIS.

Optional items can be added to enhance the operation and use of the doseBadge Measurement Kit.



A CK:110A/5 doseBadge Measurement Kit

Specifications

Applicable Standards

CR:110A doseBadge

IEC 61252:1993 Personal Sound Exposure Meters
ANSI S1.25:1991 Personal Noise Dosimeters Class Designation 2AS-90/80-5

RC:110A

Internal Acoustic Calibrator to IEC 60942:2003 Class 2

Measurement Range (Typical)

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

Measurement Functions

The CR:110A doseBadge and RC:110A Reader Unit support Dual Channel measurements.

The information provided by the doseBadge consists of the Overall Measurement Data, Channel 1 measurement data and Channel 2 measurement data.

If the doseBadge is configured with Channel 1 and Channel 2 having identical parameters, the dBLink3 software will only display Channel 1.

Overall Measurement Data

- doseBadge Configuration (Badge Serial Number, Date & Time)
- Calibration Record
- Measurement Duration
- Highest Peak(C) Sound Level during the measurement
- Overload Exceedence
- 115dB(A) Maximum Sound Level Exceedence
- Battery Status

Channel 1 Measurement Data

For 3dB Exchange Rate:

L_{Aeq} , $L_{EX,8hr}$, $L_{AE'}$, % Dose, Exposure (Pa²h)
Estimated % Dose, Estimated Exposure (Pa²h)

For 4dB & 5dB Exchange Rates (and configurations with Time Weighting or Threshold):

$L_{AVG'}$, TWA, % Dose, Estimated % Dose

1 Minute Time History of:

L_{Aeq} (3dB) or L_{AVG} (4dB or 5dB)
Peak(C) Level
Battery Level

Channel 2 Measurement Data

L_{Aeq} , $L_{EX,8hr}$, $L_{AE'}$, % Dose, Exposure (Pa²h)
Estimated % Dose, Estimated Exposure (Pa²h)
1 Minute Time History of L_{Aeq} (3dB) & Peak(C)

Weightings

Frequency

- 'A' for all RMS measurements
- 'C' for Peak Sound Pressure

Configuration Options

Channel 1: Independent User Configuration of:

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

Channel 2: Preset to

- Exchange Rate: 3dB
- Criterion Level: 85dB
- Criterion Time: 8hrs
- Threshold: None
- Time Weighting: None

Memory

CR:110A doseBadge

The CR:110A doseBadge can store up to 24 hours of data in a single measurement

RC:110A Reader

Up to 999 Individual doseBadge Measurements

Power

RC:110A doseBadge

Internal NiMH Battery. Typical Battery Life 30 hours @ 80dB

RC:110A Reader

2 x AA/LR6 with Auto Power Switch Off

CU Series Chargers

CU:195A Mains Power Supply. Fast Charge Option

Output

CR:110A doseBadge

Wireless Infrared to RC:110A Reader Unit

RC:110A Reader

USB 2.0 (which also provides power to the RC:110A Reader)

Dimensions

CR:110A doseBadge

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

Weight

CR:110A doseBadge	51g (1.8oz)
RC:110A Reader	400g (14oz)

Environmental

Temperature

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

Humidity

Up to 95% RH Non-Condensing

Software

dBLink3 supplied as standard with license free installation and free of charge upgrades available from the Cirrus website

Intrinsic Safety Certification for the CR:110AIS version

The CR:110AIS doseBadge is available with Intrinsic Safety Certification for both Mining and Non-Mining Applications. The CR:110AIS doseBadge carries ATEX, IECEx and EEx approvals as described below.

	Group I Non-Mining Applications	Group II Mining Applications
ATEX	CE II 1 G	CE I M1
IECEx	IECEx BAS 06.0084 Ex ia IIC T4 (-20°C ≤ T _a ≤ +60°C)	IECEx BAS 06.0083X Ex ia I (-20°C ≤ T _a ≤ +60°C)
EEx	EEx ia IIC T4 (-20°C ≤ T _a ≤ +60°C)	EEx ia I (-20°C ≤ T _a ≤ +60°C)
SIMTARS		IECEx SIM 07.0004X Ex ia I -20°C ≤ T _a ≤ +60°C
MSHA		No. 18-A060027-0

Please see the CR:110AIS Intrinsically Safe doseBadge Datasheet, contact Cirrus Research plc or visit www.cirrusresearch.co.uk for full details of the Intrinsic Safety Certification available.

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Ordering Information

doseBadge Measurement Kits

The doseBadge is available as a complete measurement kit with either standard or Intrinsically Safe doseBadge units.

Standard Kit	Intrinsically Safe Kit	Contents
CK:110A/1	CK:110AIS/1	doseBadge Measurement Kit with 1 doseBadge & 5 way charger
CK:110A/2	CK:110AIS/2	doseBadge Measurement Kit with 2 doseBadges & 5 way charger
CK:110A/3	CK:110AIS/3	doseBadge Measurement Kit with 3 doseBadges & 5 way charger
CK:110A/5	CK:110AIS/5	doseBadge Measurement Kit with 5 doseBadges & 5 way charger
CK:110A/10	CK:110AIS/10	doseBadge Measurement Kit with 10 doseBadges & 2 x 5 way chargers

The measurement kits include the CR:110A or CR:110AIS doseBadges, an RC:110A Reader Unit, a CK:100 Carrying Case, Mounting Kits for each doseBadge, a CU:195A Mains Power Supply (with UK, EU or US style plug), dBLINK3 Software CD, a User Manual, a Quick Start Guide, a ZL:102 USB Data Cable and Certificates of Calibration.

Ordering Information for Accessories & Options

doseBadge units can be ordered as individual items along with the optional accessories as follows:

CR:110A	doseBadge Noise Dosimeter	SP:125	Mounting Kit for CR:110A doseBadge
CR:110AIS	Intrinsically Safe doseBadge Noise Dosimeter	SP:131	Mounting Kit for CR:110AIS doseBadge
RC:110A	doseBadge Reader Unit	RC:101A	Keyfob Remote Control
UA:110	doseBadge Windshield	SW:dBLINK	dBLINK3 Software CD
CU:110A	5 Way doseBadge Charger	CM:100/A	Type A Helmet Mount
CU:195A	Mains Power Supply	CM:100/E	Type E Helmet Mount
CK:100	Kit Case for up to 10 doseBadges	CM:100/H	Type H Helmet Mount

Language Options

The dBLINK3 software is supplied with user selectable options of English, French, German, Spanish and Portuguese.

The user manuals are available in English, French, German, Spanish and Portuguese. The Quick Start Guides are available in these languages as well as Italian and Chinese. This documentation is included in PDF format on the dBLINK3 software CD.



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CR:110A/11/07/02r1