

CR:243/4

Portable Environmental Noise Monitor

Features

- Type 1 to IEC 60651 & IEC 60804 with Type Approval
- Operation for 7 days with standard internal battery
- 20dB(A) to 130dB(A) Measurement Range
- 3 Independent Environmental Measurement Groups
- Recognised Noise Events with active detection templates
- Noise Profile (Time History) Data for up to 7 days
- 10m Microphone Cable as standard
- Fully weather protected to IP 66
- Robust design provides protection during operation and transport
- Optional automatic calibration via electrostatic actuator
- Optional PSTN or GSM Cellular Modem for remote data download

The CR:245/3 is a self contained Portable Environmental Noise Monitor, designed for short and medium term measurements. Both periodic environmental groups and recognised noise events are stored, along with a 7 Day Noise Profile (Time History).

The instrument is fully weather protected, and can run for up to 7 days on the internal battery. External power can be connected to the instrument to extend the operation.

The standard instrument meets the requirements of IEC 60651:1979 and IEC 60804:1985 for a Type 1 instrument, and has PTB Type Approval. A wide range of options and accessories are available, including a GSM Cellular Modem for remote download and an Electrostatic Actuator for automatic calibration.





Applications

The CR:245/3 is a versatile instrument, and can be used in a wide range of measurement situations. For example, the CR:245/3 is currently used in the following applications:

- Construction Sites
- Power Stations
- Airport & Aircraft Noise Monitoring
- Factories and Large Industrial Sites
- Motor Racing Circuits
- Product Development & Testing

In these applications, the CR:245/3 is used as both a semi-permanent noise monitor to provide medium term measurements, and as a fully mobile instrument that can be used to respond to specific noise complaints and problems.

As well as monitoring levels generated by specific noise sources, the CR:245/3 is used for the measurement of continuous noise levels such as Urban Road Traffic and city noise.

Where the requirement is for permanent noise monitoring, a system incorporating the CR:243/1 or CR:243/4 "Noise

Pole" noise monitoring can be installed. The CR:245/3 can be simply integrated as a portable version of the fixed monitors, providing the same measurement functions as the larger instruments.

The wide dynamic range of 110dB(A) in a single span when combined with the comprehensive Environment and Event measurement functions allow the units to be programmed to handle demanding applications.

Data Measurement & Download

The CR:245/3 stores a range of different acoustic measurements, including preprocessed Environmental Noise Groups, Recognised Noise Events and Noise Profile data. In addition to these measurements, the instrument also stores diagnostic and calibration data.

Environmental Noise Groups

The CR:245/3 provides the facility to measure and store environmental noise data over long periods

of time. The instrument has three independent Environmental Measurement Groups that can be configured to be either periodic, for example every 15 minutes or hourly, or to be between absolute times, such as 07:00 to 19:00, and 19:00 to 07:00. Where the measurement period is set to be absolute, the overall measurement can be split into 8 sections.

Each Environmental Group contains the start time and date of the measurement, the duration, L_{Amax} , L_{Aeq} , and every 5th Ln from L5 to L95. In addition, the user can select four supplementary Ln values to 0.1dB resolution.

The CR:245/3 will also calculate Environmental Measurement groups (4,5 and 6) based in the same times and groups 1,2 and 3. The instrument removes from groups 4,5 and 6 any recognised noise events that occurred during the measurement, which allows the impact of the noise events to be assessed.

Recognised Noise Events

The CR:245/3 stores recognised noise events that meet the criteria of the active detection templates. The templates have 11 parameters that can be tuned to ensure that the maximum number of noise events are recognised.

The templates can be set to either a specific threshold, such as 65dB(A), or to be, for example, 10dB(A) above the background noise (L_{90}) provided by Environmental Group 1. This allows for changes in the background noise to be taken into account when detecting noise events.

Each noise event is identified by its time and date, and contains various acoustic parameters such as L_{Aeq} , L_{Amax} and SEL. Where required, the noise profile data corresponding to the noise event can be downloaded along with the standard parameters.

Noise Profile (Time History) Data

In addition to the Environmental Measurement Groups and the Recognised Noise Events, the CR:245/3 stores Noise Profile, or Time History, data. This data can be downloaded and analysed to provide further measurement such as cumulative histograms and distributions.

The Noise Profile data can be configured to be either Short L_{Aeq} or Sound Level (L_{AF} or L_{AS}), and up to 7



days of 1 second data can be stored. The instrument also uses this data to provide a section of noise profile corresponding to the recognised noise events.

Diagnostic & Calibration Data

In addition to the acoustic measurements, the instrument will also store diagnostic information, which includes a record of all commands sent to the instruments, all alarms recorded by the unit and details of the system calibration.

All of this information can be downloaded along with the measured noise parameters.

Options & Accessories

Whilst the standard CR:245/3 instrument provides a wide range of acoustic measurements, the operation of the units can be enhanced and extended by the use of various options.

The most commonly used options are covered below.

Automatic Calibration

An Electrostatic Actuator (MK:404) can be fitted to the instrument to allow the system to calibrate itself regularly without the need for the user to intervene. The instrument can be programmed to calibrate up to 8 times per day.

Remote Access & Download

The CR:245/3 can store a large amount of data. If this information is downloaded directly to a PC, either the instrument or the PC must be moved. To overcome this, and to allow data to be downloaded regularly, communication options can be added to the instrument.

The most commonly used option is a GSM Cellular Modem. This small module is fitted inside the CR:245/3, and allows data to be downloaded wherever a signal is available.

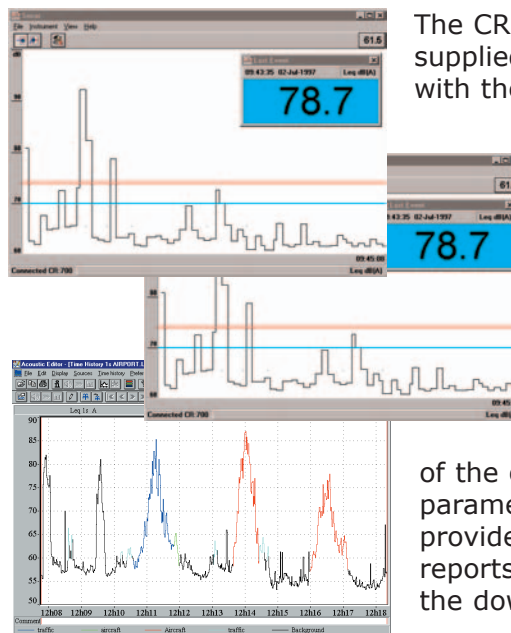
Because of the additional power requirements of the GSM Cellular Modem, supplementary power may be required if the instrument has to operate over a long period.

Supplementary Power

The standard CR:245/3 has an internal battery which can power the instrument for up to 7 days. However, if the operation of the instrument needs to be longer than 7 days, or if options such as the GSM Cellular Modem are fitted, external power can be connected to the unit. The CR:245/3 can be powered by:

- An external mains power pack (supplied as standard with the instrument)
- A 12v battery pack connected via the ZL:245/4 cable
- The CU:402 Solar Power System

Software Support



The CR:245/3 is supplied, as standard, with the Corvus software program. This program allows access to the noise monitor for the download of measurement data and for configuration of the operating parameters. Also provided are basic reports created from the downloaded data.

Acoustic Editor for Windows can be used to provide further analysis of the Noise Profile data if required. This program provides post processing capability which can be used to support the data from the Environmental Noise Groups and the Recognised Noise Events.

The CR:245/3 is also supported by additional software, such as SoCAR, which provides real time display of noise levels from the monitor, and which can be used to record and report exceedences of preset noise levels. SoCAR currently is used at Motor Sport venues as well as for noise control at Power Stations.



Specifications

Standardisation

- IEC 60651:1979 Type 1
- IEC 60804:1985 Type 1

Measurement Range

- Typically 20 dB(A) to 130dB(A)

Total Dynamic Range

- 117 dB
- 122dB RMS noise floor to peak signal

Frequency Weighting

- 'A' to IEC 60651:1979 Type 1

Time Weighting

- Short LAeq, LAF, LAS

Event Detection

- Active templates with user selectable parameters
- 4 templates stored
- Floating templates with Environmental Group 1 L90

Measurement Storage

- Up to 10,140 Noise Events
- 3 Independent Environmental Groups
- 3 Mirrored Groups with recognised noise events removed
- Up to 16,128 Weather Measurements (Optional)
- Up to 604,800 Time History (Noise Profile) Elements (1 seconds short LAeq)
- 448 Calibration Records

Calibration

- Automatic Electrostatic Calibration
- Up to 4 automatic calibrations per day
- Acoustic Calibration using QC:426A Calibration Adaptor

Power

- Internal 12v Battery for 7 day operation
- External 8v to 16v DC

Output

- RS232 via supplied cable to 9 pin connector

Communications

- RS232 via waterproof connection (Option)
- GSM Cellular Modem (Option)
- Leased Line Modem (Option)

Environmental

- **Operating Temperature**
-10°C to +50°C
- **Storage Temperature**
-40°C to +70°C
- **Relative Humidity**
Up to 95% RH at 40°C

Environmental Protection

- IP66 Class 2 of EN 60529:1992

EMC/EMI

- Meets requirements for Group B/C Instrumentation

Dimensions

- Processor Box - 400mm x 330mm x 150mm
- Microphone System - 1.5m to 2m

Weight

- Processor Box - 9kg with 10m microphone cable
- Microphone System - 5kg with shipping tube

Supplied Accessories

- ZL:245/3 10m Microphone Extension Cable
- Corvus Download & Configuration Software
- Mains Power Supply
- RS232 Cable
- Battery Charger

Optional Accessories

- CR:512 Class 1 Acoustic Calibrator
- MK:404 Electrostatic Actuator System
- MM:245/2 GSM Cellular Modem
- ZL:245/4 External 12v Power Cable

Please contact Cirrus Research plc or your local Distributor for details of the available options and accessories for the CR:245/3.



Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH
United Kingdom
Tel: +44 (0) 1723 891655
Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk

Your Cirrus Agent: