CR:243 Noise Monitors

Data Sheet

- Purpose-designed noise monitors for long-term outdoor operation
- Direct integration with the Noise-Hub noise management software platform
- CR:243/1 for long term installation on buildings, structures & masts
- CR:243/4 "Noise Pole" for installation in urban areas using an industry standard lamp post
- Field-proven technology with high levels of weather protection & physical security
- Noise event detection & simultaneous noise measurement groups
- Automatic calibration, remote download and configuration

CR:243 Noise Monitors

The complete solution for long-term noise monitoring

Introduction

The CR:243 Noise Monitors have been purpose-designed for long-term outdoor noise monitoring applications in all weather conditions.

They provide a range of acoustic and non-acoustic measurement functions and can be integrated into a complete noise monitoring system based around the Noise-Hub software platform.

The instruments have been designed to measure, identify and store environmental noise levels and at the same time, to detect and store discrete, user-definable noise events.

CR:243/1 Noise Monitor

The CR:243/1 is a Noise Monitoring Terminal designed for permanent installation, either on a fixed mast assembly or on to a building.

The outdoor microphone can be located remotely from the main processing enclosure and the system supports additional inputs such as weather sensors.

CR:243/4 "Noise Pole" Noise Monitor

For areas where the noise monitor needs to be housed more discretely, the CR:243/4 "Noise Pole" has all the electronics housed within an industry standard lamp post.

This allows an installed noise monitor to be deployed quickly and effectively in locations where there is a potential for vandalism or damage from the public.

Applications

• Airport & Aircraft Noise Monitoring

• Motorsport Circuits for Drive-by Noise Testing

• Large Industrial Sites

• Transport Noise Monitoring

• Urban Noise Monitoring including Construction and Demolition Sites

• Power Stations

Features

• Intelligent Noise Event Detection

• Simultaneous & Independent Environmental Measurement Groups

• Complies with IEC 60651 and IEC 60804 Type 1

• PTB Type Approval for the CR:243/1 & Complete Installed Noise Monitoring Systems

• EMC & IP Certification

• 117dB Dynamic Range

• Typical Measurement Range of 23dB(A) to 140dB(A)

• Automatic Calibration

• Remote Download & Configuration

• High Physical Security

• Fully Weather Protected

• Weather Measurement Options

• Video and Audio Capture Options

CR:243/4 "Noise Pole" installed as 1 of 7 monitors in an airport noise monitoring system

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Acoustic Measurements

The primary purpose of a noise monitor is to accuracy measure, record and store noise levels over long periods of time.

The CR:243 Noise Monitors can store different forms of acoustic measurements, each of which is stored independently within the noise monitor.

The available measurements include:

• Recognised Noise Events with active detection templates

• Periodic Environmental Measurements

• Time History or Noise Profile Information

Active noise detection templates

The CR:243 instruments use an active template system to detect noise events.

These templates use a number of different parameters to determine if the noise being measured meets the preset criteria. When a noise that matches the template is detected, a measurement is stored which contains a range of noise parameters.

This allows the instrument to detect noise events and store the data automatically.

These noise events can be downloaded to the Noise-Hub software for analysis and reporting.

The template system can automatically adjust the detection thresholds according to the background noise levels. This can help to improve the detection ratio as well as reduce the number of spurious noise events detected.

Environmental noise groups

In addition to the recognised noise events, the CR:243 instrument store periodic Environmental Measurements.

The instrument has three independent stores, or "groups".

The default durations for groups 1, 2 and 3 are 1 hour, 24 hour and an Lden (Level for Day, Evening and Night) measurement, but these values can be individually set to the end user's required durations and periods.

In addition to these, the CR:243 stores groups 4, 5 and 6 which mirror groups 1,2 and 3. The only difference here is that the noise monitor removes any recognised noise events triggered by the templates mentioned above and recalculates the noise parameters with the detected noise events removed.

This gives a clear indication of the background noise level without the specific noise source being monitored.
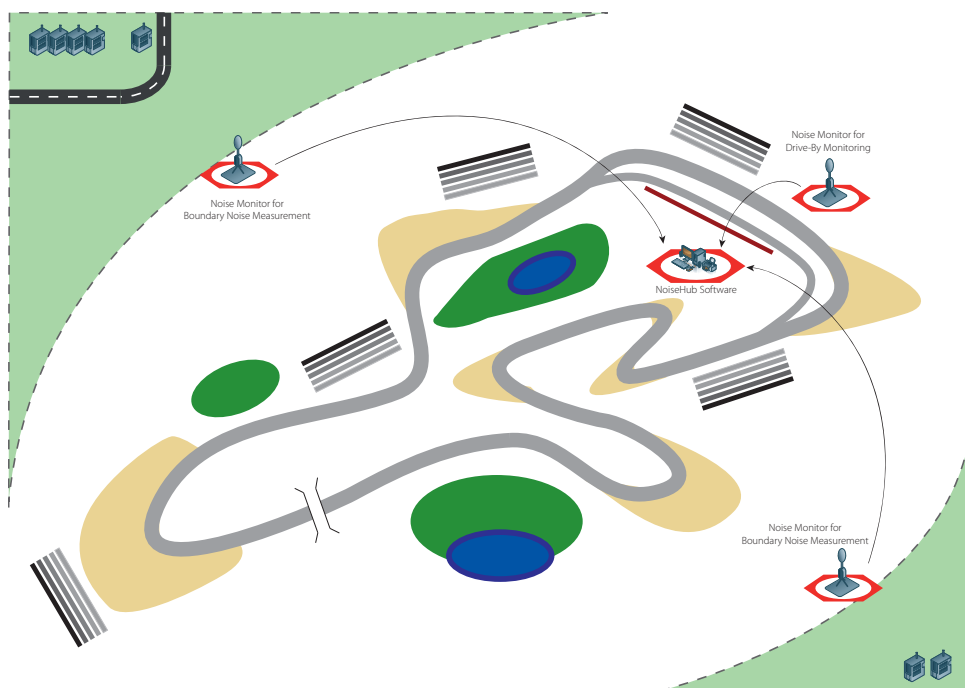
The metrics stored for each group include the date and time, duration, LAmax, LAeq, and Ln values from L5 to L95 in 5% steps. The CR:243 also allows for 4 additional user-defined Ln values to be logged.

Noise Profile or Time History data

Throughout its operation, the noise monitor is constantly storing a noise profile or Time History.

The noise level is stored once a second (LAeq, LAF or LAS) which can be used to look at any period of interest in much more detail.

This data can be used to locate specific times when a noise occured and can also be used to refine the noise detection templates.

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Environmental and Weather Protection

The CR:243 noise monitors have been designed to be operational for many years, and feature advanced weather protection as well as physical security.

The main processor, the backup battery, and the mains power supply are all house in sealed enclosures.

Each of these boxes is individually sealed and screened for maximum RFI protection, as well as environmental performance.

They are then housed in either a large, lockable and weatherproof sealed box (CR:243/1) or are sealed within the lamp post assembly (CR:243/4).

The high thermal inertia of the system, as well as the specific design, allows it to be used in harsh climates without the need for additional heating or cooling.

However, if required, the system can be heated internally where the situation dictates operation to temperatures below those specified in the instrumentation standards.

Options & Accessories Power

The CR:243 noise monitors ideally require a mains power supply to allow continuous operation.

However, in the event of a power failure, the standard backup battery supply can power the instrument for up to 24 hours.

Additional battery power can be connected to the CR:243 to allow the unit to operate for longer periods without mains power.

In addition, an optional Solar Power Pack can be installed to provide continuous operation where mains power is not readily available.

Calibration, Service & Support

At Cirrus Environmental we take great pride in our high standards of Service, Support & Calibration.

Our in-depth knowledge of the Cirrus Noise Monitoring instruments, software and systems enables us to guide users through the operation of the equipment and rapidly solve any technical problems as well as allowing us to offer a wide range of Service, Support & Calibration options.

Our noise monitoring systems are typically supplied with some form of maintenance and support package and we can offer three standard packages, each of which can be tailored to meet the needs of each client or installation.

Outside of the UK, we work with carefully selected local strategic partners to provide the highest level of backup and support.

CR:243/1 Noise Monitor installed to measure noise from aircraft engine testing

Silver
Basic Maintenance Package

Gold
System Assurance & Basic Maintenance Package

Platinum
Data Management, System Assurance & Basic Maintenance Package

CR:243/1 Noise Monitor during annual calibration and servicing

nois**e**·hub
Noise Monitoring System Software

The Noise-Hub software platform

Noise-Hub Software is at the centre of our noise monitoring systems and working with the CR:243 range allows schedules to be set for automatic calibration and automatic data download from multiple noise monitors.

Noise-Hub communicates with the CR:243 in a wide range of ways including Ethernet, 3G/GPRS modem, Wi-Fi, Radio Modem etc.
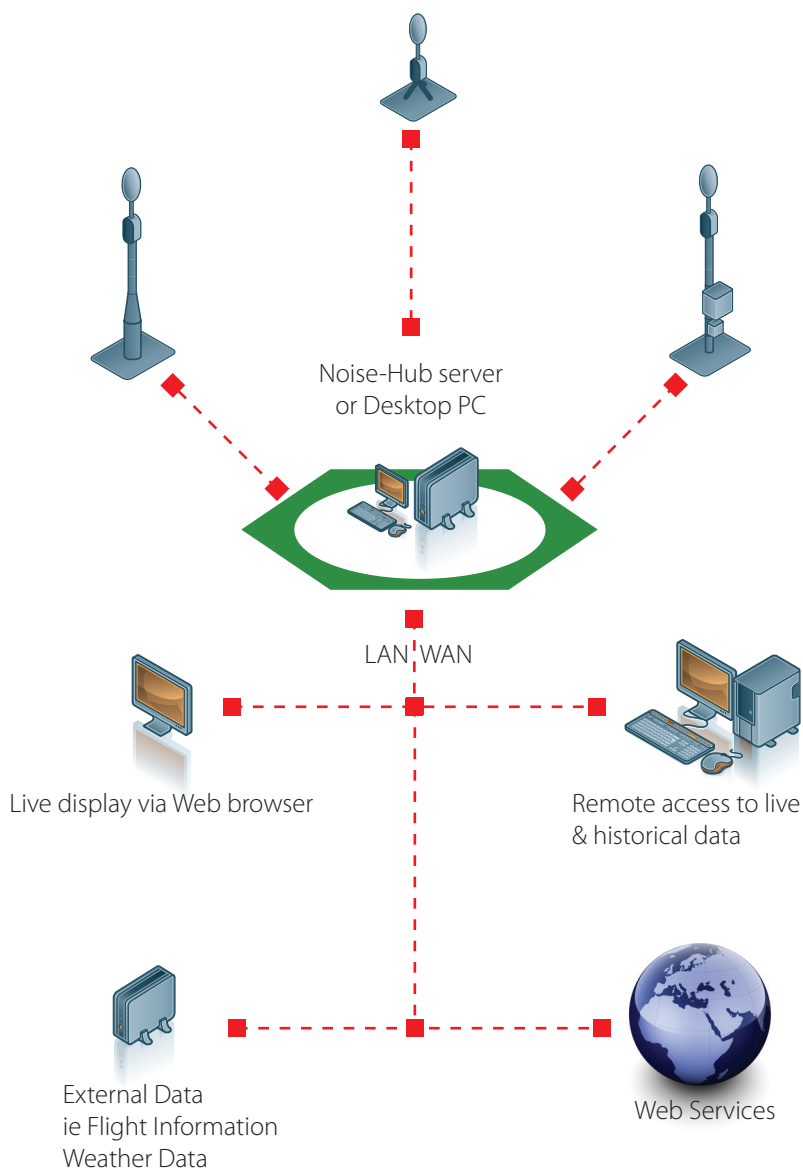
The noise monitor can also support weather sensors – temperature, humidity, barometric pressure, rainfall and wind speed and direction. This assists in determining which receptors are likely to be influenced by a specific noise source.

Noise-Hub also allows data to be imported from 3rd party software, such as flight information, and integrated into the noise measurement records for more complete event analysis and reporting

Additional options allow for audio and video to be captured to help with noise source identification.

Features of the Noise-Hub software platform

• Real time online noise monitoring

• Live noise data over the web

• Integrates with fixed portable & semi-permanent noise monitors

• Comprehensive suite of reporting & configuration tools

• Automatic download of measurements from noise monitors

• Configure a system to meet your exact needs – reduces cost & complexity

• Automatic reporting by email direct to your inbox

• Noise event & measurement alerts by email, SMS & direct to your smartphone

• Full servicing , maintenance & calibration options
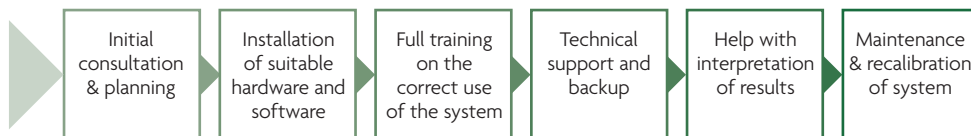
• Leasing & purchase options available

Noise-Hub server
or Desktop PC

LAN WAN

Live display via Web browser

Remote access to live
& historical data

External Data
ie Flight Information
Weather Data

Web Services

CR:243 Noise Monitors
Specification and Options

Specifications	
Standards	IEC 60651:1979 Type 1 IEC 60804:1985 Type 1 IEC 61672-1:2002 Class 1
Approvals & Certifications	
CR:243/1	PTB Type Approval to IEC 60651 & IEC 60804
CR:243/1	IP66 Class 2 of EN 60529:1992
Measurement Range	Typically 23 dB(A) to 140dB(A)
Frequency Weighting	dB(A) to IEC 60651:1979 Type 1
Time Weighting	Short LAeq, LAF, LAS
Noise Event Detection	Active templates with user selectable paramaters 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 second short LAeq) 448 Calibration Records
Weather measurement (optional)	Wind Speed Wind Direction Barometric Pressure Air Temperature Relative Humidity Rainfall Bucket Type
Communication options	GPRS/3G Cellular Modem GSM Cellular Modem PSTN Dialup Modem RS232 Direct connection Leased Line Modem RS232 Line Driver Radio Modem

Specifications	
Calibration	Automatic Electrostatic Calibration Up to 4 automatic calibrations per day Acoustic Calibration using QC:426A Calibration Adaptor
Power	205 to 251v AC 45Hz to 60Hz 105 to 125v AC 45 Hz to 60Hz Optional Solar Power System
Backup Battery	
CR:243/1	24 hours with standard internal battery pack Optional 48 hours battery pack
CR:243/4	8 hours with standard internal battery pack Optional 48 hours battery pack
Electromagnetic performance	EN50081-1:1992 EN55022:1995 EN50081-2:1994 & EN50082-2:1995
Environmental	
Operating Temperature	-10°C to +50°C
Storage Temperature	-40°C to +70°C
Relative Humidity	Up to 95% RH at 40°C
Dimensions	
CR:243/1	600mm x 600mm x 200m (Main enclosure)
CR:243/4 "Noise Pole"	Mast Unit 4.4m before assembly (2.4m option) Complete Assembly 6.1m to Microphone Capsule Diameter 168mm at base, 76mm at mast

Cirrus have 40 years experience in the design, manufacture and support of noise measurement equipment and have been responsible for many innovations during this period.

Initial consultation & planning → Installation of suitable hardware and software → Full training on the correct use of the system → Technical support and backup → Help with interpretation of results → Maintenance & recalibration of system

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