

CR:243/4



Features

The CR:243/4 "Noise Pole" is a unique, high performance noise monitor designed for long term installation in locations and environments where the instrument must be unobtrusive and discrete.

The main features of the CR:243/4 "Noise Pole" are:

- High Physical Security
- Fully weather protected for long term noise measurement
- Simple installation and maintenance
- Intelligent noise measurement and monitoring

Overview

The new design of the CR:243/4 "Noise Pole" allows noise monitors to be installed in locations where the physical size and image of a traditional noise monitor would not be acceptable.

Using a standard "Lamp Post", the noise monitor has a very low profile and therefore a lower risk of deliberate damage in urban areas.

The CR:243/4 "Noise Pole" noise monitor has been accepted for installation at major International Airports in locations where a traditional style noise monitor would not have been acceptable to either the local residents or the local council.

Cirrus Research noise monitors have been proven in operation in harsh climates and a wide range of applications around the world with outstanding success, requiring little maintenance or servicing and providing reliable noise measurement and monitoring at a cost effective price.

Example Applications

- Airport & Aircraft Noise Monitoring
- Large Industrial Sites
- Chemical Production Sites
- Urban & City Noise Monitoring
- Power Stations

The CR:243/4 "Noise Pole" is a permanent Noise Monitoring Terminal designed for long-term outdoor measurements. The "Noise Pole" is a complete assembly, using a standard lamp post to mount the microphone system and to enclose the measurement electronics.

This makes the CR:243/4 ideal for installation in sensitive areas where a traditional noise monitor would be either unacceptable, obtrusive, or where there is a risk of damage or vandalism.

The instrument has an integral microphone system, which provides the acoustic signals to the main processor, and allows fully automatic calibration using an electrostatic actuator system.

The CR:243/4 has been designed to be operational for many years, and therefore has significant weather protection as well as physical security. The enclosure is sealed to IP66 standards, and all connections to the unit are made by sealed, armoured conduit to prevent damage or water ingress.

Instrument Details

The CR:243/4 uses a similar processing system and microphone system as the CR:243/1 Noise Monitor but the system is completely integrated into a single enclosure. The design of the CR:243/4 is to allow the instrument to operate unattended for long periods of time, the instrument can store large amounts of data internally.

When required, this data can be downloaded to the host computer. This allows dial up telephone lines to be used for communications, and means that the noise monitor need only be contacted when required, typically once every day.

However, if communication with the instrument cannot be made, the large memory allows measurements to be made without loss of information.

The standard CR:243/4 can provide as standard, most of the parameters required for any Environmental Noise Measurement, but various options and modules can supplement these.

Advanced recognition templates are used to monitor specific noise events, and the multiple Environmental groups allow, in parallel, continuous measurement of the noise climate. The unit will also remove recognised noise events from the measured noise climate information, showing the impact of those noise events.

The instrument will also store and download diagnostic information, as well as any additional measurement functions that have been added to the standard unit

Acoustic Measurements

The CR:243/4 Noise Monitor can store different forms of acoustic measurements. These include:

- Noise Events with active detection templates
- Environmental Measurement Groups
- Time History or Noise Profile Information
- 1 :3 Octave Band Spectra (Optional)

Noise Events

The CR:243/4 uses an active template system to detect noise events. The template can automatically adjust the thresholds according to the background (LA90) noise levels. This can help to improve the detection ratio as well as reducing the number of spurious noise events detected.

Environmental Measurement Groups

In addition to the recognised noise events, the CR:243/4 stores periodic Environmental Measurements. The instrument has three independent stores, or "groups".

The default durations for groups 1,2 and 3 are 1 hour, 24 hours and an Ldn measurement, but these values can be individually set to the required durations and periods. In addition, the CR:243/4 stores groups 4, 5 and 6 which mirror groups 1,2 and 3.

For groups 4,5 and 6 the noise monitor removes any recognised noise events from groups 1, 2 and 3 and recalculates the noise metrics. The metric stored for each group includes the date and time, duration, LAmax, LAeq, and each 5th percentile from L5 to L95 with four additional user selectable percentiles.

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

Noise Profile

This data is stored as a 1 second Short LAeq, LAF or LAS sample, which can be provided by the CR:243/4 for special applications.



1:3 Octave Bands

The CR:243/4 "Noise Pole" can be fitted with an optional module that provides the measurement of 1:3 Octave Band information. This data can provide PNL and EPNL parameters for noise events, and average and maximum spectra for Environmental Groups.

Weather Measurement

In addition to the standard acoustic measurements, the CR:243/4 can be fitted with a range of weather sensors. These include:

- Wind Speed
- Wind Direction
- Barometric Air Pressure
- Relative Humidity
- Air Temperature
- Rainfall

The stored weather measurements can be downloaded along with the acoustic measurements.

Options

The CR:243/4 "Noise Pole" can be fitted with options that allow the measurements or operation of the instrument to be extended and enhanced. These options included:

- 1:3 Octave Band Measurement Module
- Weather Measurement Sensors
- Solar Power System
- Communications Modules

For further details, please contact Cirrus Research plc or your local representative.

Installation and Servicing

The unique design of the CR:243/4 instrument allows the installation and servicing to be carried out in the minimum amount of time.

The standard mounting for the mast allows installation in a wide range of environments and landscapes. The mast can be easily lowered during installation and for servicing when required. The high physical security also ensures that the noise monitor remains operational in the most demanding of environments.

Specifications

Standardisation

- IEC 60651:1979 Type 1
- IEC 60804:1985 Type 1
- Draft IEC 61672 Class 1

Measurement Range

- Typically 20 dB(A) to 140dB(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

Optional

- 1:3 Octave Bands from 25Hz to 16kHz
- 1/2 second Measurement for EPNL, PNL with noise events
- Average and Maximum noise spectra with environmental noise measurement groups

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

Communications

- PSTN Dialup Modem
- RS232 via watherproof connection (Option)
- GSM Cellular Modem (Option)
- ISDN Modem (Option)
- Leased Line Modem (Option)
- RS232 Line Driver (Option)
- Radio Modem (Option)

Calibration

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

Weather Measurement (Optional)

- Wind Speed 0m/s to 70 m/s (± 0.5 m/s)
- Wind Direction 0 to 359° ($\pm 2^\circ$)
- Barometric Pressure 800mB to 1111mB (± 2.5 mB)
- Air Temperature -30°C to +64°C ($\pm 1^\circ$ C)
- Relative Humidity 0% to 100% (± 2.5 %)
- Rainfall Bucket Type 0.2mm rain per tip

Power

- 205 to 251v AC 45Hz to 60Hz
- 105 to 125v AC 45 Hz to 60Hz
- Optional CB:243/1 Solar Power System

Maximum Power

- 10w with Microphone & standard PSTN Modem

Battery Backup

- 8 hours with standard internal battery pack
- Optional 48 hours battery pack

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

- Mast Unit 4.4m before assembly (2.4m option)
- Complete Assembly 6.1m to Microphone Capsule
- Diameter 168mm at base, 76mm at mast



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