

CR:243/1



Noise Monitoring Terminal

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

Applications

- Airport & Aircraft Noise Monitoring
- Motor Racing Circuits for Drive-by Noise Testing
- Large Industrial Sites
- Chemical Production Sites
- Urban & City Noise Monitoring
- Power Stations



Introduction

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

The instrument has been designed to measure, identify and store environmental noise levels and at the same time, to detect and store discrete noise events.

Normally, the CR:243/1 is used with an MK:426A Outdoor Microphone unit, which provides the acoustic signals to the main instrument, and which allows fully automatic calibration using an electrostatic actuator system.



When required, the measured data can be downloaded to a remote PC.

The system allows dial up telephone lines to be used for communications, and means that the noise monitor need only be contacted when data is required, typically once a day.

The noise monitor can also support weather sensors and a range of further options which allow the CR:243/1 to be used in wide range of measurement applications.

Acoustic Measurements

The CR:243/1 Noise Monitor can store different forms of acoustic measurements. These include:

- Recognised Noise Events with active detection templates
- Periodic Environmental Measurements
- Time History or Noise Profile Information

The CR:243/1 uses an active template system to detect noise events. The template can automatically adjust the thresholds according to the background noise levels. This can help to improve the detection ratio as well as reducing the number of spurious noise events detected.

In addition to the recognised noise events, the CR:243/1 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 hour and an Ldn measurement, but these values can be individually set to the required durations and periods. In addition to these, the CR:243/1 stores groups 4, 5 and 6 which mirror groups 1,2 and 3.

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

Please contact Cirrus Research plc for further details.



Environmental Protection

The CR:243/1 has been designed to be operational for many years, and therefore has advanced weather protection as well as physical security.

Inside the CR:243/1 outer box are three further sealed boxes, which contain the main processor, the backup battery, and the mains power supply.

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

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 and 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:243/1 requires a mains power supply to allow continuous operation.

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

Additional battery power can be connected to the CR:243/1 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. Please contact Cirrus Research plc for further details.



Communications

The CR:243/1 can be fitted with a range of different communications options that can be tailored to suit the application and the location of the instrument.

These include:

- PSTN Modem
- GSM Cellular Modem
- Line Driver
- Direct RS232
- Leased Line Drivers.

Weather Measurement

In addition to the standard acoustic measurements, the CR:243/1 can be fitted with a range of weather sensors. These include:

- Windspeed & Direction
- Rainfall
- Barometric Air Pressure
- Relative Humidity
- Air Temperature

The weather information is downloaded along with the acoustic measurements.



Frequency Analysis Module

The CR:243/1 can be fitted with the optional CF:120 1:3 Octave Analysis unit. This data can be used by the appropriate software to calculate additional metrics such as EPNL and PNdB.

Specifications

Standardisation

- IEC 60651:1979 Type 1
- IEC 60804:1985 Type 1
- PTB Type Approval 1.41-98037596

Measurement Range

- Typically 23 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 weatherproof 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

Maximum Power

- 25w with Microphone & standard PSTN Modem

Battery Backup

- 24 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

- EN50081-1:1992
- EN55022:1995
- EN50081-2:1994 & EN50082-2:1995

Dimensions

- 600mm x 600mm x 200mm



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