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Qirrus
RESEARCH LIMITED

SHORT FORM

**ACOUSTIC & VIBRATION MEASUREMENT
FOR INDUSTRY**

Company Profile.

Cirrus Research Ltd was formed in 1970 and joined the Scientific Measurements Group in 1980. The sole area of operation for Cirrus Research Ltd is in acoustic instrumentation and since 1980 Cirrus has grown to be the largest volume UK exporter of acoustic instrumentation and one of the world's major acoustical instrument companies.

Staff of the company have published over 60 papers at national and international conferences on the technology of noise measurement and are on the working groups of the International Electrotechnical Committee, the British Standards Committee, the American National Standards Institute and the United Kingdom Noise Council, ensuring an up to date knowledge of current standards.

Cirrus maintain sales support offices in Lyon, France; Dresden, Germany; Melbourne, Australia and Los Angeles, California; all staffed by qualified engineers. In addition, there are service departments in the People's Republic of China and Milwaukee, Wisconsin; giving world wide technical assistance to users.

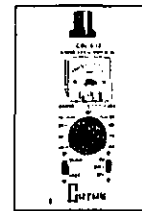
Cirrus instruments are all made to strict international standards and tested to the most rigid interpretation of these standards. Every instrument is put through a 24 hour heat cycle, before final calibration, to stabilise the parameters. Instruments are then calibrated on an automatic computer test system to ensure all parameters are checked and recorded. From 1990, a 'zero defect' program has been put into place with the object of producing the most reliable units available.

The Cirrus product range starts at the very simple indicator CRL 412 and goes up to the most sophisticated computer based instrumentation.

CRL 412 Sound Level Indicator.

- Open University T100 specification.
- Ideal for educational use.
- 30 to 110 dB(A) F & S response.

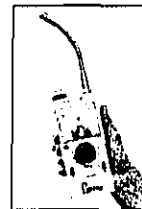
The CRL 412 is designed to meet the Open University T100 specification and is intended only for teaching purposes. It is not suitable for industrial measurement. A variant, the CRL 412X with an external microphone can be calibrated by means of the CRL 511D and meets the original ANSI S.1.1, Type 3 specification.



CRL 221C Sound Level Meter.

- Integral acoustical calibrator via microphone.
- General purpose sound level meter to IEC 651 Grade 2.
- 35 to 140 dB(A) F & S response.

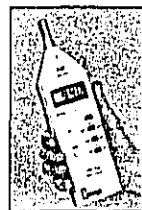
The CRL 221C is unique among current instruments, as it features a built in ACOUSTIC calibrator. Instruments with internal ELECTRONIC calibrators do not calibrate the microphone, the most likely source of error. The instrument is supplied complete with case and gouseneck microphone.



CRL 251 and CRL 252 Digital Sound Level Meters.

- CRL 251 precision grade unit to IEC 651 Grade 1, range 30-140 dB.
- CRL 252 general purpose unit to IEC 651 Grade 2, range 40-144 dB.
- A and C weightings.
- Diecast metal case and common circuitry give professional performance at a competitive price.

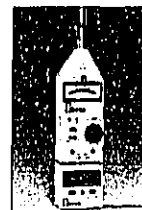
These instruments are intended for users who wish to have a digital sound level meter. They feature maximum hold and are slimline and very accurate. However, for many conventional sound level measurements, an analogue meter may be more suitable.



CRL 235A Precision Modular Sound Level Meter.

- Grade convertible instrument - the microphone determines the grade.
- Cirrus L3M and DP15 interfaces.
- 16 plug-in modules including Filters, Leq, Peak, and Vibration.
- Computer interface.
- The most flexible sound measurement system available.

The CRL 235A is intended as the basis of a portable measuring system to allow the user to choose both the measuring function and the grade from Type 3 to Type 1. The CRL 235 has been well described in the literature and is an exceptionally well specified unit, which can perform most measuring tasks.



CIRRUS CRL 700 SERIES OF CONFIGURABLE DATA LOGGING METERS.

- Accuracy determined by the microphone.
- Configurable keypad allows 15 parameters, from over 100 possible parameters to be read on the Liquid Crystal Display.
- Direct printout of event register via RS 232 interface.

The CRL 700 family is a breakthrough in data storing acoustic measuring devices. They are true twin channel units with 'A' on the rms and Leq channel and 'C' or 'flat' on the Peak channel. The units all meet Type 1 of IEC 651 and IEC 804 and have three functions operating, at the same time, to measure on screen, by 'events' and by storing Short Leq. The series are probably the most powerful available and being dual channel, the only unit fully meeting the total requirements of the IEC directive.

CRL 701 Personal Sound Exposure Meter.

- True Dosimeter measuring dose every second.
- Simultaneous measurement of Dose and Peak on separate channels.
- Event storage for complex tasks or surveying.
- Full data logging for detailed analysis using Cirrus software.
- Supports all legislation including OSIA, DOD, EEC, and COMECON.
- Meets the 1990 proposed IEC specification for Personal Sound Exposure Meters.

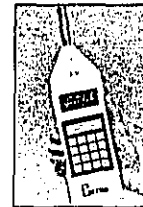
In a Dosimeter shaped case, the CRL 701 is intended to be worn by the worker to give the daily personal noise exposure LEP,d and the time history of his exposure, second by second. No other unit does this.



CRL 702 Configurable Peak Integrating Sound Level Meter.

- Stores 256 events and up to 18,000 Short Leq values in memory.
- Direct read-out of statistical indices via keypad.
- Dynamic ranges: 70 to 140 dB or 40 to 110 dB.
- A and C weighting available.
- Ideal for environmental measurements.

A Sound Level Meter version of the series. The CRL 702 has over 100 measuring functions; no longer are you obliged to keep to the instrument configuration purchased, it can be changed, at will, by the user. The CRL 702 has provision for a memory extension giving 2,500 events.



CRL 703 Precision Peak Integrating Sound Level Meter.

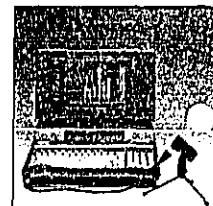
- Measuring Range 30 to 143dB.
- Stores up to 2,500 events and 100,000 Short Leq values.
- Meets latest modifications to IEC 804 as a Type 1 instrument.
- The ideal precision hand-held general purpose meter.

Probably the most versatile computing sound level meter available at its price.



Aria.

The Aria system from 01dB SA, an associate company, is a new generation measuring system which operates using a card in an MS-DOS computer. With a fast sampling rate, ARIA can be software configured to measure FFT, in octave or third octave bands, Short Leq, Sound Intensity and many other acoustical parameters. When used in a laptop computer, ARIA can replace many of the functions of a fully equipped mobile laboratory at a fraction of the price. ARIA is the first computer based system to gain international approval for operation as a Type 1 instrument.

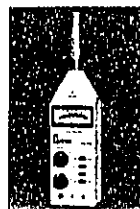


FREQUENCY ANALYSERS.

CRL 237B Precision Octave Band Sound Level Meter.

- 10 octaves - 31.5 Hz to 16 kHz.
- A, C and Linear weightings, with Vibration measurement.
- Measurement range 20 to 144 dB.
- Maximum Hold and Impulse response as standard.
- Sound level to IEC 651 Type 1.

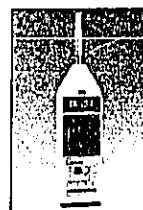
A classic manual analyser, the CRL 237B meets the full Type 1 recommendations as well as the IEC 225 filter specification. Both weighted and unweighted octaves can be measured and a Type 2 version is available at lower cost. Max Hold is fitted to ease the measurement task.



CRL 239B Real Time Octave Analyser.

- Simultaneous measurement and storage of all 10 octaves.
- Stores 16,000 spectra giving capability to record for 4 hours at 1 second sampling rate.
- Playback of spectra on meter's LED display.
- Full analytical software developed to give Leq and statistical indices in octave bands in report format.
- Interface to Acoustic Editor.

The combination of the CRL 239B and a computer gives data previously impossible to generate without the services of a major laboratory. With 16,000 stored octaves the unit can give time histories in all the octaves for 4 hours before the memory is full. After transfer to a computer, the data can be analysed in many ways, with the software supplied.



CRL 301 Factory Warning Sign.

- Fully automatic monitoring of workplace noise levels.
- Illumination of sign once preset levels are exceeded.
- Remote read-out.
- Multiple inputs accepted.
- Ideal for factories with varying noise levels and engine test cells.

Normally fitted into factories to warn of excessive noise levels under the Health and Safety regulations, it also finds uses in test cells where levels can be very high indeed. The warning level can be adjusted.



CALIBRATORS.

In any acoustic measurement calibration is vital. The instrument should have its calibration verified before and after any measurement, to enable readings to be reliable. Cirrus provide a range of calibration equipment for specialised tasks as well as the units listed here.

CRL 511D Acoustic Calibrator.

- Meets Type 2 of IEC specification 942.
- Dual level calibrator: 94 and 104 dB.

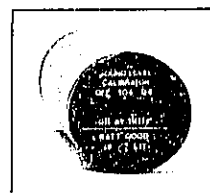
CRL 512 Precision Acoustic Calibrator.

- IEC 942 Type 1.
- Ideal for field use where legal measurements are made or where national standards require a Grade 1 unit.

PF 101C Pistonphone.

- Accuracy 0.25 dB over working temperature range of -10 to 50°C.
- Barometer supplied for static pressure corrections.
- The ultimate in calibration where accuracy beyond reproach is needed.

The pistonphone has an operating frequency of 240 Hz and thus should NEVER be used on 'A' weighting. It is intended as a laboratory reference unit.

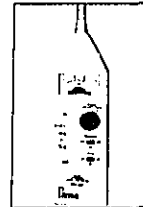


INTEGRATING SOUND LEVEL METERS.

CRL 222 Type 1/2 Integrating Sound Level Meter.

- Measures Leq, Sound Level, and SEL on both A and C weightings.
- Electrically to Grade 1 of both IEC 651 and IEC 804.
- Computer output for Short Leq acquisition.
- As supplied to the Health and Safety Executive and Open University.
- For industrial and environmental measurements.
- 30 to 120 dB range.

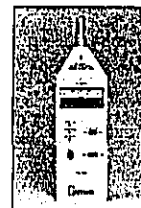
The CRL 222 was originally designed for the Open University for the course T234. Since then it has been purchased extensively by the United Kingdom Health and Safety Executive for use by Factory Inspectors. The CRL 222 has proved to be a very reliable and accurate design suitable for all industrial measurements.



CRL 254 Fixed Range Integrating Sound Level Meter.

- Developed for the British Armed Forces.
- Sound level and Leq to Grade 2 of IEC 651 and IEC 804.
- Rugged construction, extreme reliability, and high accuracy unit.
- Range 80 to 120 dB in A or C weightings.
- Type 1 option available.
- Ideal for factory noise measurements.

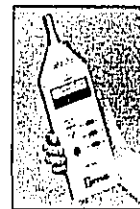
CRL 254 was developed from the CRL 222 but with the addition of a metal case. Some functions have been removed to make it much easier to operate for newer users. It meets the EC directive, except for Peak, and several hundred are in use with NATO forces.



CRL 255 and CRL 256 Peak Integrating Sound Level Meters.

- Measures Sound Level, Leq, and Peak on A and C weightings.
- Three ranges measuring 50 to 130 dB on Leq or sound level and 70 to 150 dB Peak.
- True analogue display.
- Instrument accuracy: Type 1 (CRL 255) or Type 2 (CRL 256) is solely determined by the microphone.
- Makes all measurements needed to satisfy EC directive 86/188/EEC.

An extension to the philosophy of the CRL 254, the 255 and 256 are fitted with 3 ranges and true PEAK, as required by the EC directive. All the performance of the CRL 254 has been retained but with extra facilities added. The two units are intended for industrial use where the ease of use of an analogue instrument is often preferred.



CRL 236A Grade Convertible Data Logging Short Leq Meter.

- Can store up to 500,000 Short Leq values.
- Data analysis via Cirrus Acoustic Editor software to generate any acoustic index for all or part of the logging period.
- On-line operation with real time clock.
- The most powerful hand-held data storing meter in the world.
- Ideal for all long term monitoring applications such as community noise analysis, and blast monitoring.
- Full remote control possible via modem or RS232

The first of a new generation of Short Leq Data Loggers, the CRL 236 can store up to 500,000 data elements giving a 1 second time history for over 5 days. The data so acquired can be sent to a computer for analysis using the 'outbox' technique. Any conventional acoustic index can be calculated from the stored data over any time within the measuring period.



Microphones.

Cirrus Research are one of the foremost producers of measuring microphones and provide pre-polarised, 200 volt polarised and ceramic capsules, together with a range of preamplifiers. Additionally, a range of outdoor microphones is supplied both for temporary overnight use and for permanent installation for extended periods in the world's worst weather. Many of the Cirrus microphones are in use with competitors who do not wish to produce their own.

Measuring Kits.

Both conventional and waterproof measuring kits are available. The conventional kit is housed in an attache case and includes a calibrator plus all the accessories to make field measurements. The AVP waterproof versions are submersible and have all the accessories and connections to operate the data logging meters CRL 236, 239B and 700 series for long periods out of doors. The kit can contain added batteries, a modem and automatic calibration for extended use.



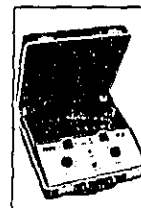
Community and Airport Noise Monitors.

A full range of installed noise measuring systems is made by Cirrus for use around airports, mineral extraction sites and other highly complex noise sources and as no two systems are identical, these must naturally be discussed with the factory. A typical system such as the CRL 243 can consist of up to 40 remote terminals connected by telephone lines to a central HOST computer. Such a system can operate for up to 7 days without external power or communications, storing data every second. The data can be transferred to the HOST by telephone lines, radio links or directly connected, while power can come from a public supply, solar cells, wind generators etc. Cirrus provide suites of programs running under DOS or UNIX to process the data in many forms and both installed and portable systems are available.



Audiometers and Deaf Education Equipment.

Alfred Peters Ltd, in the same group as Cirrus Research Ltd, are the United Kingdom's oldest and largest audiometer manufacturer. A wide range of units is available from the simple manual screeners such as AP27 and AP28 through the fully computer controlled automatic AP250 right up to clinical units for hospital use. Alfred Peters also manufacture a range of equipment for deaf education and systems have been installed all over the world. Again, no two systems are exactly alike so the factory should be contacted for details.



Service and Calibration.

All instruments made by the Scientific Measurements Group have a full 1 year warranty with all parts and labour included. Most instruments are now tested and calibrated on a fully automatic computer test system for accuracy and efficiency. Service and calibration after the warranty has expired, is to a fixed price tariff and all instrument spares are guaranteed to remain available for 7 years after a particular instrument ceases production. Calibration of instruments is traceable to the United Kingdom National Physical Laboratory.

Represented by:

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