Cirrus CR308 Sound Level Meter for Basic Noise Surveys Instruction Manual

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Cirrus CR308 Sound Level Meter for Basic Noise Surveys

About this manual
The instructions in this user manual refer to the operation of Cirrus Research pie CR:308 and CR:310 entry-level sound level meters. The instruments described in this manual are the CR:308 and CR:310. This manual describes the recommended usage of the CR:308 and CR:310. Any warnings will be indicated by the following symbol:

The additional information required for testing in accordance with IEC 61672 is provided as a supplementary document, 'Optimus Sound Level Meters Technical Data Part B', which is available for download at:
www.cirrusresearch.co.uk/library/user-manuals/
It is not possible to change the way that the instrument measures through software or firmware. Any legal metrology aspects of the instrument cannot be affected by any changes made in the instrument.

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Updates
In the interests of continuous product improvement, Cirrus Research pie reserves the right to make changes to product specifications without notice. To understand the latest updates that have been implemented into this product and to download the most current version of this user manual, visit our website at
www.cirrusresearch.com
Revision 2 I August 2021

Introduction

Welcome to your new CR:308/CR:310 entry-level sound level meter. The CR:308 and CR:310 are general-purpose digital sound level meters designed to IEC 61672 Class 2. The instrument has ‘F’ (fast) and ‘S’ (slow) time response and ‘A’ and ‘C’ frequency weightings. Additional features include max and min hold for the measurement duration, LC pk, and limit alarm, which you can configure to indicate if your set threshold has been exceeded. Except for the alarm indication function, the CR:310 includes all the features of the CR:308. In addition, it can display the Leq value and print results directly from the meter to a portable printer.

First use

Before using your meter for the first time, please check the contents of your instrument’s case, which should include the following:

- Sound level meter and Class 2 microphone
- Windshield
- 2 x AA batteries

Optional accessories

- Class 2 acoustic calibrator

You may have other accessories, depending on your package.
Before starting a measurement, remove the black microphone protective cap (if fitted) and where necessary, place the windshield carefully over the end of the microphone capsule.

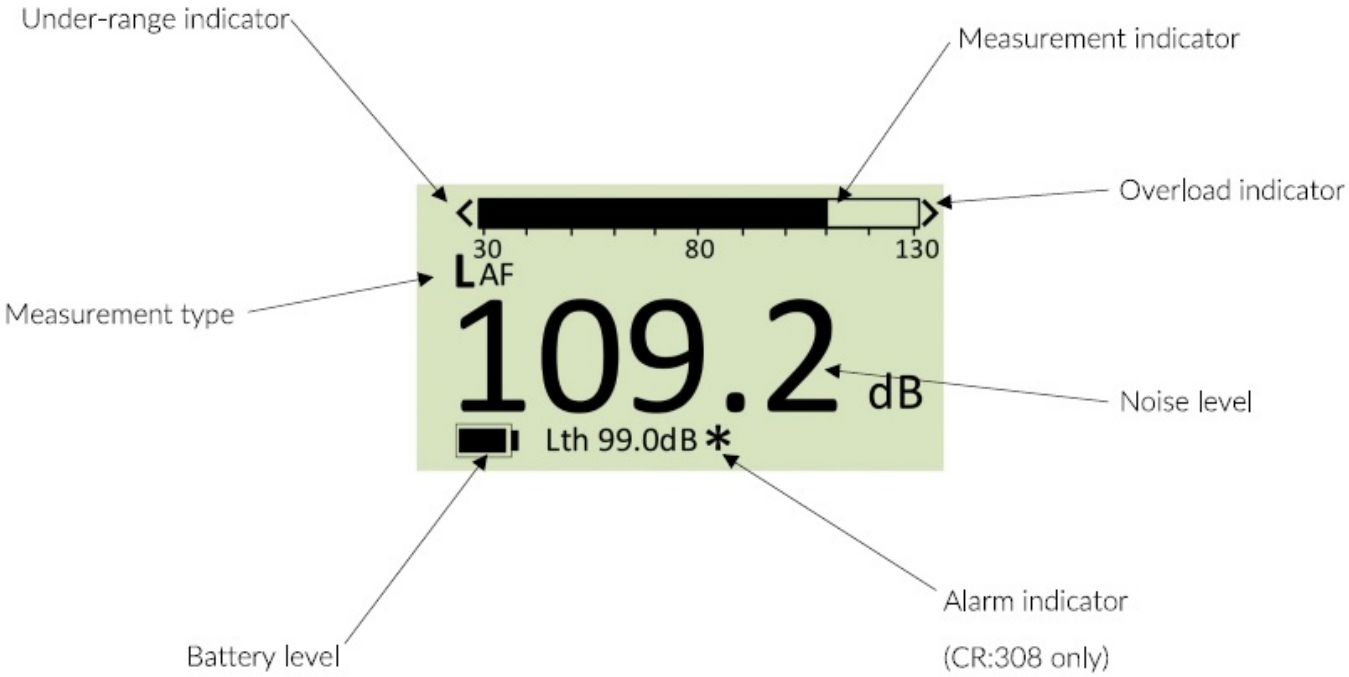
Instrument overview


Microphone windshield
(microphone capsule underneath)
Backlit LCD display
Cirrus
47.1
Power button
Control keypad
Model number


Serial number label
Tripod mount
Battery compartment

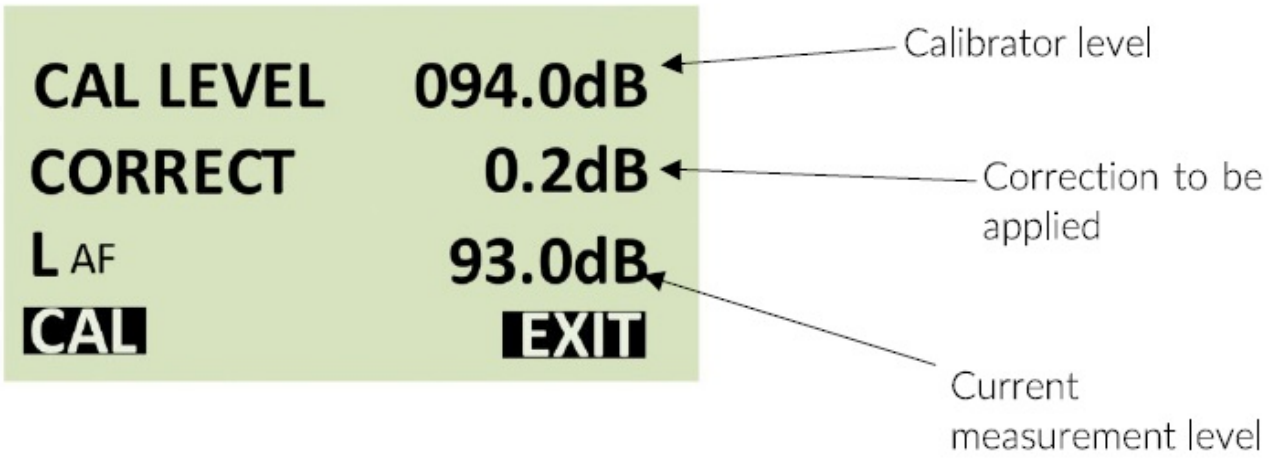
Instrument displays

CR:308 & CR:310 main display



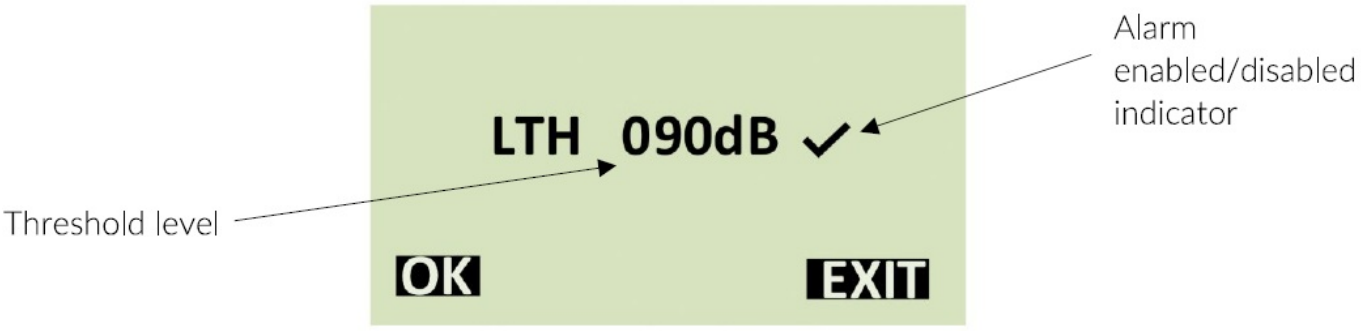
Calibration display

- Press the CAL button.

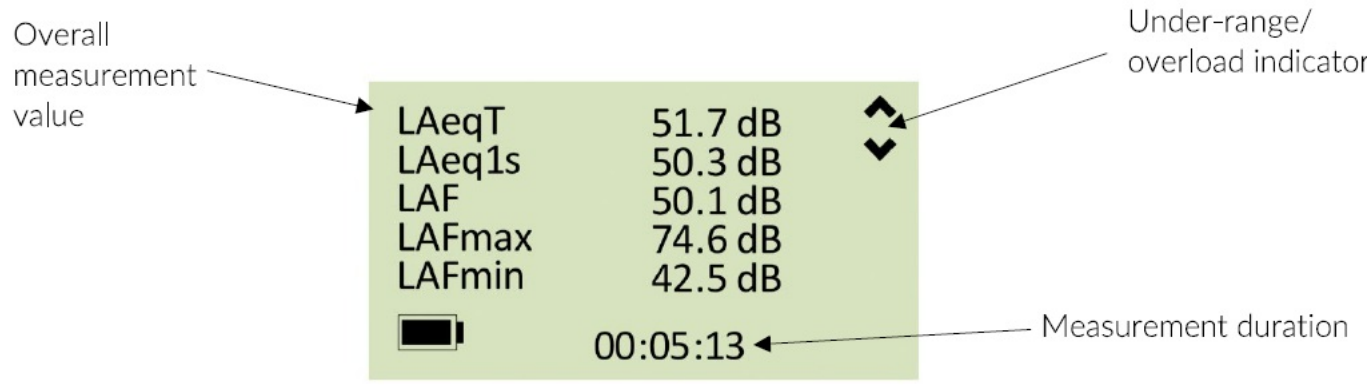


CR:308 alarm set display

- Press  .

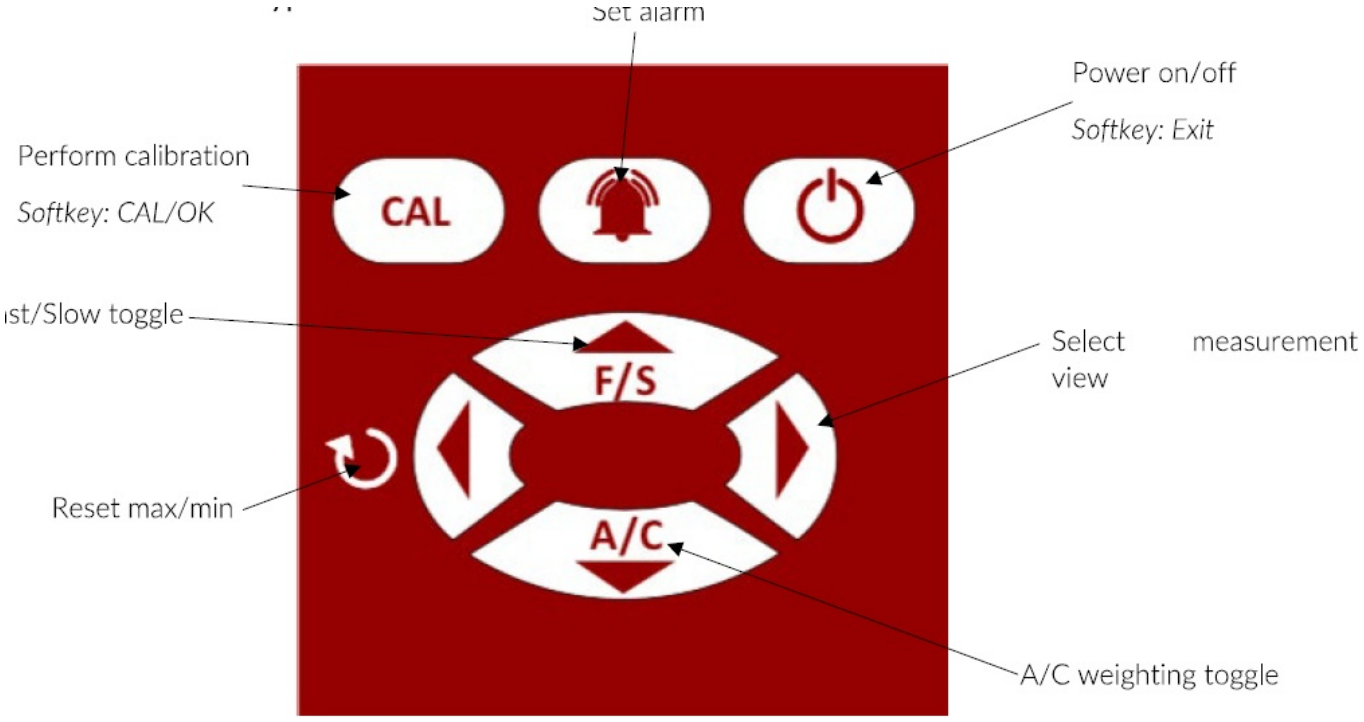


CR:310 measurement display

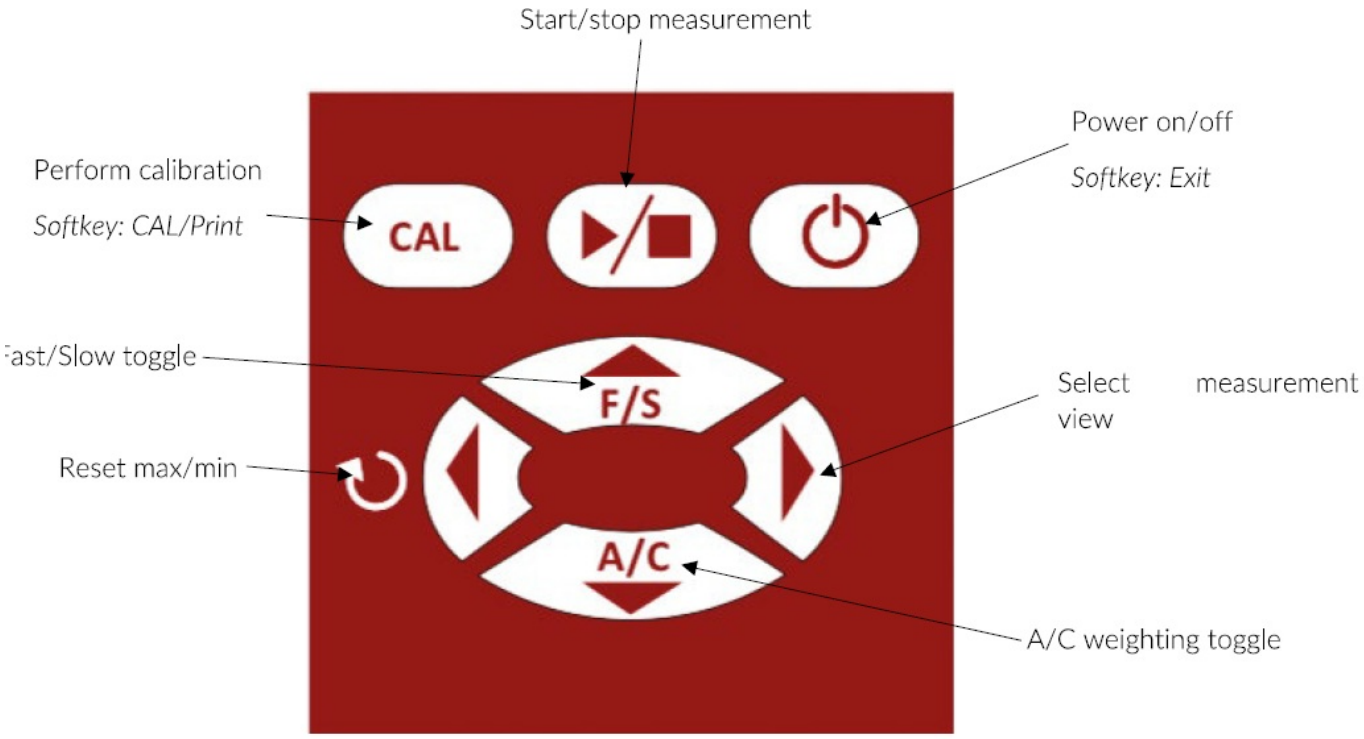


Instrument keypads

CR:308 keypad



CR:310 keypad



Instrument operation

Fit new batteries by sliding the battery cover open and inserting two AA batteries in the correct orientation.
Switch on and allow the instrument to settle for 60 seconds before calibrating.
Before starting a measurement, calibrate the instrument as per the guidance in Section 7 of this user manual.

Selecting the frequency and time weighting
Select the measurement frequency and time weighting required:

To toggle between A and C weighting, press 

To toggle between fast and slow weighting, press 

The measurement type is displayed in the main window:

- LAF – A frequency weighting I fast time weighting
- LCF – C frequency weighting I fast time weighting
- LAS – A frequency weighting I slow time weighting
- LCS – C frequency weighting I slow time weighting

To toggle the measurement values, press Q). This will toggle through the following measurement values if the meter is set to LAF:

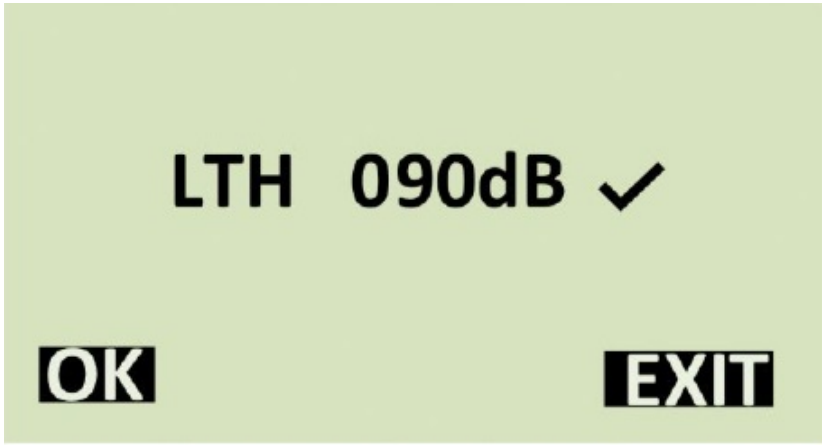
LAF > LAFMax > LAFMin > LCpk > LAF

Integrating averaging measurements Lxeq1s and Lxeq8h are available on the CR:310 instrument.

Maximum, minimum and LCpk values
Maximum, minimum and LCpk values are shown for the duration of time since the meter was switched on or since the reset button was last pressed.
These values can be reset by pressing©

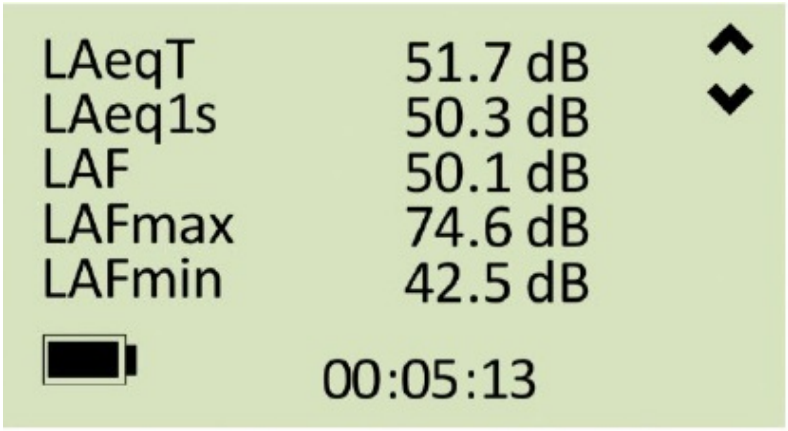
Setting the level alarm (CR:308 only)
The level alarm function can be used to trigger an alert if the noise level exceeds a predetermined value, which is set by you.

To set the alarm level, press  to enter the alarm setup display.

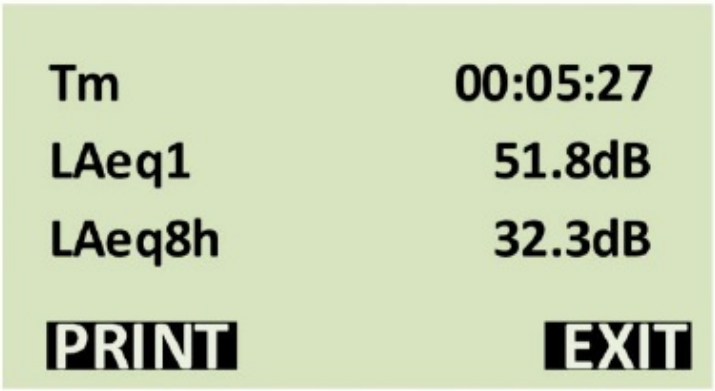


Set the desired level and enabled the alarm by using the arrow buttons. A tick denotes that the alarm is active; a cross denotes that the alarm is disabled. When set, press 0 to confirm.
NB: the alarm level should not be set to less than 129dB.
With the alarm enabled, the main display will indicate that the level has been exceeded by showing an asterisk (*) next to the sound level reading. The triggered threshold value can be reset by pressing©
NV: this will also reset the maximum, minimum and LCpk measurement values.

Performing and printing a measurement (CR:310 only)
Press G7!) to start or stop a measurement. While a measurement is running, the latest values will be displayed on the screen, with the measurement duration shown at the bottom. Alternative measurement parameters can be viewed by pressing the up/down arrow buttons.



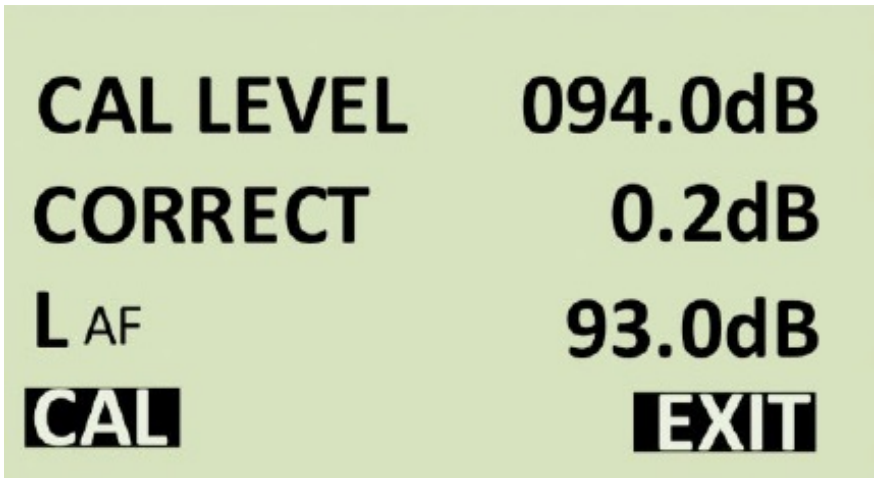
Overload and under-range are denoted by the /\ and v indicators in the top right corner of the screen. After stopping a measurement, the overall measurement values are displayed. Press the up/down arrows to scroll through the overall measurement values.



If a printer is attached, the results can be printed by pressing§(Print). The measurement view can be cancelled by pressing@ (Exit).

Instrument calibration

Before each measurement, it is important to calibrate your instrument with an acoustic calibrator, such as the Cirrus Research CR:514 1kHz 94dB calibrator. To start the process of calibration, ensure the microphone is fitted correctly and place the acoustic calibrator over the microphone. Press 0 to enter the calibration menu.



Use the arrow keys to set the CAL LEVEL to the acoustic calibration level (94.0dB for the CR:514 calibrator). Use the arrow keys to set the CORRECT value to 0.2dB, which will make the adjustment for the gap between the calibrator and the microphone (pressure field of the acoustic calibration and the free field of the instrument and microphone (HY:205 microphone).
This will result in the meter reading 93.SdB when a 94dB calibrator is used. Switch on the acoustic calibrator and

insert the microphone capsule into the cavity on the calibrator. Take care to not force the microphone, as this could cause damage to either the instrument or the calibrator.
Press 0 to automatically calibrate the meter.
Press@ to exit from the calibration display and return to the main display.

Specifications and technical information

Instrument specifications

- Applicable standards IEC 61672-1: 2013 Class 2
- Measurement range 30dB(A) – 130dB(A)
- 40dB(C) – 130dB(C)
- Frequency weighting A and C
- Time weighting Fast (F) and Slow (S)
- Display functions Normal, Maximum, Minimum, CPeak
- Measurement functions LAF, LAS, LCF, LCS, LCPeak
- Noise floor <25dB(A) and 35dB(C)
- Display flags Alarm limit, overload and under-range
- Auto calibration range ±4.SdB
- Reference point 94dB (1kHz), 92.9dB (8kHz)
- Settling time 60s
- Display Backlit 128×64 LCD
- Resolution 0.1dB
- Electrical input SV power-in via mini-USB
- CR:308 & CR:310 – User Manual
- Power 2 x AA/LR6 1.SV batteries or SV DC via mini-USB input
- Battery life 24 hours with alkaline batteries
- Microphone ½” pre-polarised electret condenser type HY:205
- Operating temperature 0° c to +40°C
- Operating humidity 25% – 90%
- Atmospheric pressure 65kPa – 108kPa
- Storage temperature -20° c to +60°C
- Dimensions 215mm x 68mm x 32mm
- Weight (including batteries) 220g
- Electrical outputs AC (tip 3.5mm jack) and DC (middle 3.5mm jack)
- DC output Voltage 15mV/dB, range 450mV – 1950mV
- AC output RMS 2V

Reference information for periodic testing

- Reference level (1kHz) 94dB
- Reference level (BkHz) 92.9dB(A)
- Linear range BkHz 30 – 130dB
- Linear range 4kHz 30 – 130dB
- Linear range 1kHz 30 – 130dB

- LCPeak maximum (S00Hz, 133dB 1kHz, BkHz)
- Self-generated noise floor A-weighting= 25dB C-weighting = 35dB
- Self-generated noise floor A-weighting= 25dB (with mic fitted) C-weighting = 35dB
- Dummy microphone: 18pf
- capacitance Recommended dummy
- KP:66 : microphone

Multifrequency acoustic calibrator correction data (set to pressure and test on Aweighting)

Frequency	Correction
125Hz	0.0
1kHz	0.2
8kHz	2.6

Free field correction for HY205 microphone

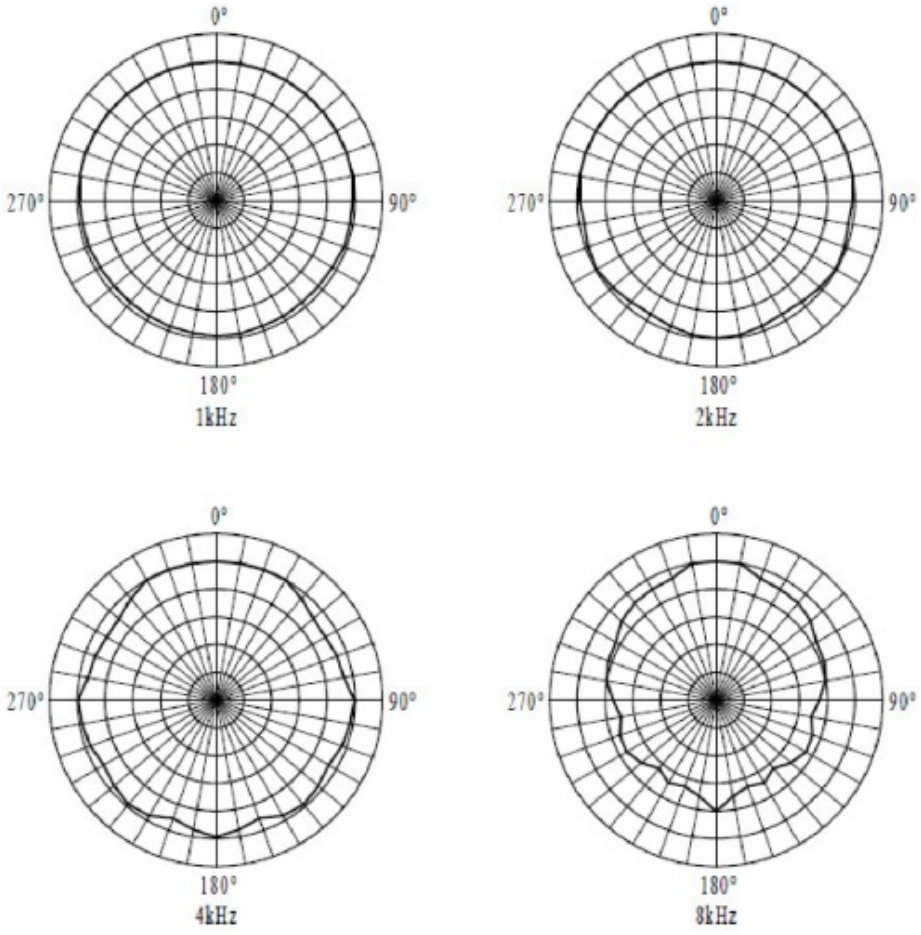
Frequency (kHz)	Free field correction (dB)
1	0.1
1.25	0.1
1.6	0.2
2	0.3
2.5	0.5
3.15	0.7
4	1.0
5	1.4

Case reflection and windshield attenuation data

Frequency (kHz)	Free field correction (dB)
6.3	1.7
8	2.6
10	4.4
12.5	5.3
16	6.5
18	7.1
20	7.8

Add the above data to your measurement to correct.

Directionality plots and case reflection points



Options and accessories

The following table contains information about the model options and accessories available with this sound level meter.

Cirrus Research part number	Descriptions
CR:308	Basic sound level meter with threshold
CR:310	Basic sound level meter with measurement
PR:310	Thermal printer (for use with CR:310 only)
CR:514	Acoustic calibrator
CK:380	Kit case (empty)
CK:381	CR:308 kit including case, meter and calibrator
CK:382	CR:310 kit including case, meter and calibrator
UA:30X	Spare windshield
CP:65	Carrying pouch for sound level meter and calibrator

Serial connection

0B9, RS232 communications rate at 9600 Baud. 1 bit start, 8 bits data, 1 bit stop, no parity.

Declaration of Conformity

- Manufacturer: Cirrus Research pie
- Acoustic House
- Bridlington Road
- North Yorkshire
- YO14 0PH
- United Kingdom
- Telephone: +44 (0)1723 891655

Equipment manufactured after June 2018.

Equipment description
CR:308 sound level meter
CR:310 sound level meter
According to:

EMC Directive 2014/30/EU
Low Voltage Directive 2014/35/EU
RoHS Directive 2011/65/EU
Meet the following standards:
EN 61000-6-3: 2007+A1: 2011
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Cirrus
‘111111111 Research pie
UK
CA
CE
Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential. commercial and lightindustrial
environments.
EN 61000-6-1: 2007
Electromagnetic compatibility (EMC). Generic standards. Immunity for residential. commercial and light-industrial environments.

Product guarantee and extended warranty

1. Every new product is provided with a 12-month warranty. This covers everything we provide against failure, poor workmanship and accidental damage.
   NB – European Union law states a product must be fit for purpose for 24 months after purchase. This two-year period covers failure and poor workmanship only.
2. 2. If the product is calibrated by Cirrus Research or an authorised calibration and service centre, then the initial 12-month warranty is extended by a further 12 months, with the same conditions, for up to 15 years in total.
3. If a product has not been calibrated annually by Cirrus Research or an authorized calibration and service centre, then you may buy back into the warranty scheme for £100 plus the cost of calibration. This can only be done once during the life of the product.
4. If a microphone capsule fails under warranty and is physically damaged, we will replace it with a refurbished capsule.
5. If you don’t wish to have a refurbished capsule, then you can trade in your damaged capsule for a new one, which will incur a fee of£ 150.

Cirrus Research contact details

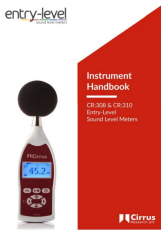
In addition to independent sales channels in the UK, Germany and France, Cirrus Research also operates through approved distributors and agents in many countries worldwide. For details of your local representative, please contact Cirrus Research using the information below. Contact details for Cirrus Research Authorised distributors and agents are also available from the website at the address shown below.

United Kingdom

- Cirrus Research plc
- Acoustic House
- Bridlington Road
- Hunmanby
- North Yorkshire

- United Kingdom
- Y014 0PH
- T: +44 (0)1723 891655
- E: sales@cirrusresearch.com
- W: www.cirrusresearch.com

Documents / Resources

	Cirrus CR308 Sound Level Meter for Basic Noise Surveys [pdf] Instruction Manual CR308 Sound Level Meter for Basic Noise Surveys, CR308, Sound Level Meter for Basic Noise Surveys, Meter for Basic Noise Surveys, Basic Noise Surveys