

# Instrument Handbook

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ZE:908  
Acoustic Interface



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Produced by Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH, United Kingdom.

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## Overview

The ZE:908 is a small and lightweight power supply and acoustic conditioning unit for microphone preamplifiers.

It is ideal for use as a front-end for data logging and analysis systems where a simple and accurate acoustic input is required.

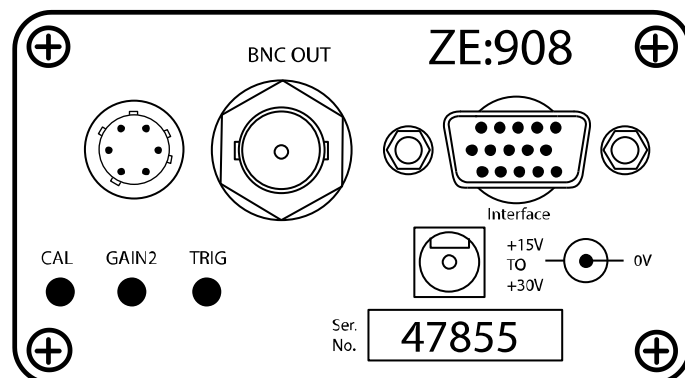
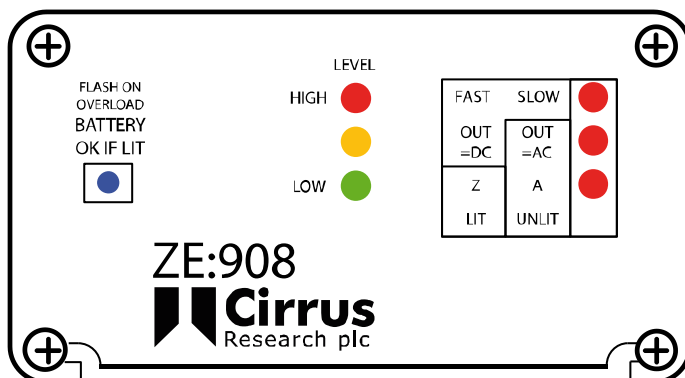
The output levels can user set to be either AC or DC (25mV/dB) with 'A' or 'Z' frequency weighting.

A 4-20mA current loop output is also provided with the level factory set to 10dB = 1mA.

This current loop is ideal for interfacing noise level measurements to external process control units, data loggers and signal recorders.

## Key Features

- Power supply for microphone preamplifiers
- Ideal for interfacing noise level measurements into external data logging systems, signal analysers and data recorders
- Up to 50m of microphone input cable and up to 50m of AC/DC output cables supported with opto-isolated outputs
- Front panel indicators of unit configuration and output status
- 60dB(A) measurement range
- Compatible with Cirrus Research plc MV:200 Microphone Preamplifiers and MK:400 Series Outdoor Microphones
- User selectable output options of AC, DC & 4-20mA Current Loop
- Low Power Consumption with external power from 18-30v DC



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## Operation.

### Configuration

To configure the ZE:908, remove the front panel and adjust the settings of the DIP switches as required.

The default settings for the DIP switches are:

1	Off	
2	Not used	
3	Off	
4	Off	
5	On	Fast Time Weighting
6	Off	'A' Weighted Output
7	On	SPL Output
8	Off	

This will provide a dB(A) Fast Time Weighted Sound Level (LAF) output on the current loop.

### Microphone

Connect the microphone capsule to the preamplifier and then connect any required microphone extension cable to the preamplifier.

Connect the microphone extension cable to the microphone input on the rear panel.

### External Power

The ZE:908 is powered from an external power supply via the rear power 2.1mm input socket.

This power can be supplied by either a standard Cirrus Research plc CU:195A Power Supply or by an external power source in the Range 18VDC to 30VDC at 200mA.

The ZE:908 is protected from reverse polarity power connection. The power connection is centre pin negative.

Connect external power to the ZE:908 via the power socket on the rear of the unit.

Switch on the unit using the front panel power button. The Blue LED will illuminate to show when power is connected and the instrument is switched on.

### Calibration

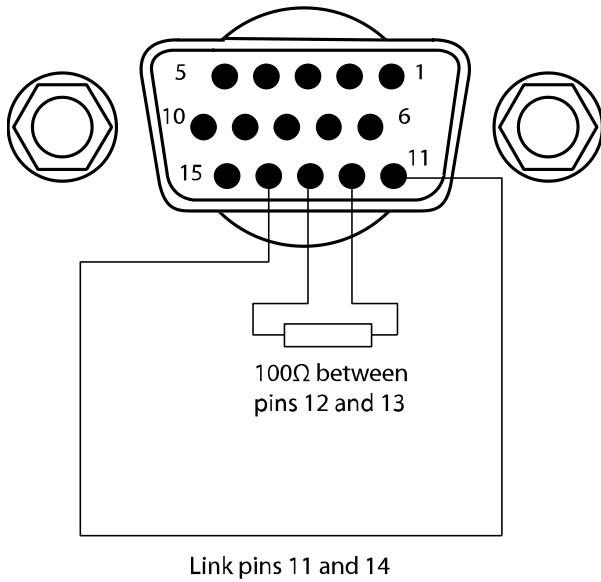
The unit is factory set to 54dBA to 114dBA but gain can be adjusted outside this range up to a maximum of 134dBA by adjusting the CAL and GAIN settings on the rear panel.

The output level can be calibrated by using an Acoustic Calibrator to provide a reference signal of 94dB.

To calibrate the system, connect an Acoustic Calibrator and set the level to 94dB.

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Connect a 100 Ohm resistor between pins 12 and 13 on the Interface and link pins 11 and 14 to provide power to the loop.



Measure the voltage across the 100 Ohm resistor which will read 10mV/dB.

A 94dB noise level from an acoustic calibrator will generate a voltage of 940mV across the 100 Ohm resistor.

The CAL and GAIN 2 levels can be adjusted if required to provide this level.

### **Output**

Connect the output cable as required.

For AC or DC voltage output, connect to the BNC output

For Current Loop output, connect to the 15 Pin Interface Socket

## Signal Outputs

The output signal from the ZE:908 is available as either an AC or DC voltage or as a current loop (4-20mA) signal.

### AC & DC Voltage Outputs

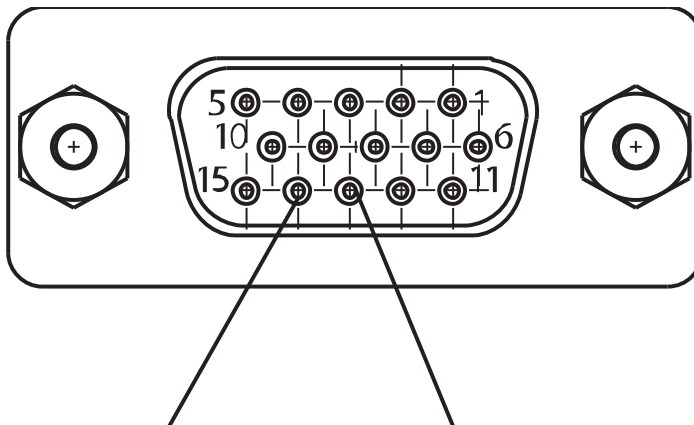
The AC & DC voltage outputs are presented on the BNC connector. The configuration of this output is selectable from the following options using the DIP switched (see below).

1. Amplified A-weighted AC output
2. Amplified Z-weighted AC output
3. DC Voltage proportional to SPL A weighted FAST response
4. DC Voltage proportional to SPL A weighted SLOW response
5. DC Voltage proportional to SPL Z weighted FAST response
6. DC Voltage proportional to SPL Z weighted SLOW response

The DC Voltage output is nominally 25mV/dB and the output condition is indicated by the front panel LED's

### Current Loop (4-20mA) Output

The current loop (4-20mA) output is accessed via the 15 Pin High Density D Connector.



Loop Transmitter Input  
Pin14

Loop Transmitter Output  
Pin13

This output is powered from the receiving circuitry and requires a voltage across its terminals of at least 7 volts. The output level is nominally set to 10dB = 1mA

The connections on this 15 Pin socket are as follows:

PIN	LABEL	DESCRIPTION
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Opto-isolated remote 'traffic lights'

1	ISORED	Current limited open collector for trig 'Red'
2	ISOYEL	Current limited open collector for trig 'Yellow'
7	ISOGRN	Current limited open collector for trig 'Green'
6	ISOGND	Common ground for above transistors.

Relay contacts when trig 'Red'

5	NO1	Closes if no Red trigger
3	NC1	Opens if no Red trigger
4	W1	Common wiper contact for above

## Duplicated BNC output

10	BNCOUT	BNC output
9	AGND	Ground for above (not fitted on some extensions)
8	AGND	Ground

## Isolated 4/20mA Loop

<b>14</b>	<b>LOOPIN</b>	<b>+ve Input to Loop transmitter</b>
<b>13</b>	<b>LOOPOUT</b>	<b>Loop transmitter output</b>

## Isolated Power input

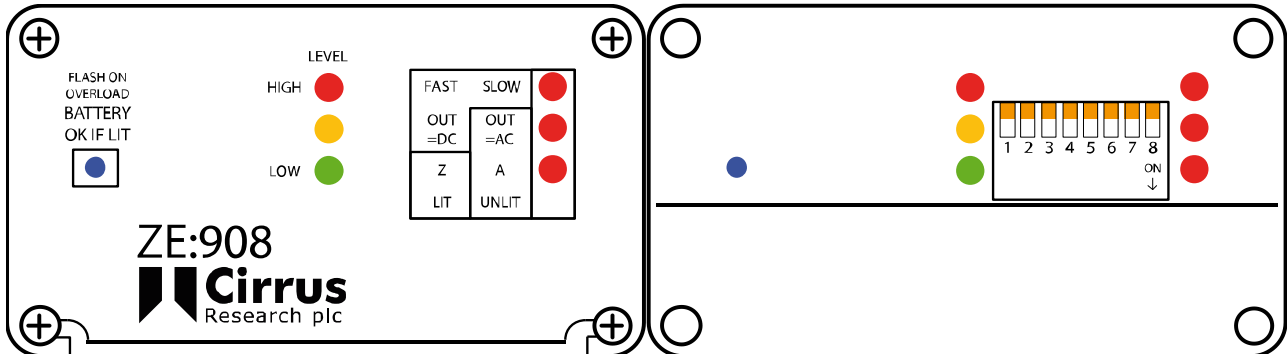
15	EXTIN	+15 to +30V power input
12	0V	0V power input
11	SWOUT	Power output from pin 15 after ZE908 switch and Diode

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## DIP Switch Configuration

The operation of the ZE:908 is adjusted by altering the configuration of the internal DIP switches. To access the DIP switches, remove the front panel by unscrewing the four retaining screws.



When the front panel has been removed, the DIP switches are visible.

These switches allow the operation of the ZE:908 to be changed to suit the application where the unit will be used.

### DIP Switch settings

- 1 On Extended delay for Red light and relay cut off on top trigger  
Off Remove extended delay on trigger
- 2 Not used
- 3 On Overload does not send DC output to high voltage  
Off On overload the DC output and loop output are taken to high voltage.
- 4 On Trigger circuit enabled  
Off Trigger circuit disabled (power save or to stop relay 'click')
- 5 On DC output/ loop to Fast response (Led on front panel lit)  
Off DC output/Loop to Slow response
- 6 On 'Z' weighted response for AC output and DC/Loop out (Led on front panel lit)  
Off 'A' weighted response for AC output and DC/Loop out
- 7 On AC/DC output/Loop = Trig Voltage out  
Off AC/DC output/Loop = SPL output
- 8 On BNC output = DC (Led on front panel lit)  
Off BNC output = AC

## Appendix 1 Specifications

### Dimensions

140mm x 78mm x 45mm (excludes any external cables or connectors)

### Performance

The ZE:908 has been designed to meet the electrical requirements of IEC61672:2002-1 where appropriate.

Please note that the ZE:908 does not have many of the functions of a Sound Level Meter and therefore cannot claim compliance to the full requirements of the IEC 61672:2002-1 Standard.

### Measurement Range & Gain Settings

Dynamic range of 60dB(A)

Measurement range factory set to 54dB(A) to 114dB(A)

This upper limit can be adjusted up to a maximum of 134dBA using the CAL and GAIN2 adjustments on the rear panel

### Input

6 Pin Hirose Socket to match Cirrus Research plc MV:200 Series Preamplifiers

The input socket supports up to 50m of microphone extension cable.

### Outputs

#### AC & DC Voltage Outputs

Female Chassis Mount BNC providing a user selectable output from the following options.

1. Amplified A-weighted AC output
2. Amplified Z-weighted AC output
3. DC Voltage proportional to SPL A weighted FAST response
4. DC Voltage proportional to SPL A weighted SLOW response
5. DC Voltage proportional to SPL Z weighted FAST response
6. DC Voltage proportional to SPL Z weighted SLOW response

The DC Voltage output is nominally 25mV/dB

The output condition is indicated by the front panel LED's

#### 4-20mA Current Loop

4-20mA Loop output via 15 Pin High Density D Connector

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Output level Nominally set to 10dB = 1mA

This output is powered from the receiving circuitry and requires a voltage across its terminals of between 15 and 30 volts.

### **Power**

External power via the rear power 2.1mm input socket via

1. Cirrus Research plc CU:195A Power Supply
2. External power source in the Range 18VDC to 30VDC at 200mA

The ZE:908 is protected from reverse polarity power connection

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## Appendix 2 CE Declaration of Conformity

### Cirrus Research plc Hunmanby UK CE Certificate of Conformity



Manufacturer: Cirrus Research plc  
Acoustic House, Bridlington Road  
Hunmanby, North Yorkshire, YO14 0PH  
United Kingdom  
Telephone +44 1723 891655

### Equipment Description

The following equipment manufactured after 1<sup>st</sup> January 2009

ZE:908 Acoustic Conditioning Unit

Along with standard accessories

According to EMC Directives 89/336/EEC and 93/98/EEC

meet the following standards

#### **EN 61000-6-3 (2001)**

EMC : Generic emission standard for residential, commercial and light industrial environments.

#### **EN 61000-6-1 (2001)**

EMC : Generic immunity standard for residential, commercial and light industrial environments.

Signed

Dated 1<sup>st</sup> April 2022

Martin Williams  
Chief Engineer

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## Warranty Information.

1. Every new product is provided with a 12-month no-quibble warranty. This covers everything we provide against failure, poor workmanship and accidental damage.  
*NB - European Union law states a product has to be fit for purpose for 24 months after purchase. This two-year period covers failure and poor workmanship only.*
  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 authorised calibration and service centre, then you may buy back into the warranty scheme for a small fee, 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.
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### **United Kingdom**

Cirrus Research plc  
Acoustic House  
Bridlington Road  
Hunmanby  
North Yorkshire  
United Kingdom  
YO14 0PH

Tel: +44 (0) 1723 891655  
Email: [sales@cirrusresearch.com](mailto:sales@cirrusresearch.com)  
Website: [www.cirrusresearch.com](http://www.cirrusresearch.com)

### **Germany**

Cirrus Research GmbH  
Arabella Center  
Lyoner Straße 44 - 48  
60528 Frankfurt am Main  
Deutschland

Tel: +49 (0) 69 95932047  
Email: [vertrieb@cirrusresearch.com](mailto:vertrieb@cirrusresearch.com)  
Website: [www.cirrusresearch.de](http://www.cirrusresearch.de)

### **France**

Cirrus Research France S.A.S.  
679 avenue de la République  
59800 Lille  
France

Tel: +33 (0) 633 976 626  
Email: [infos@cirrusresearch.fr](mailto:infos@cirrusresearch.fr)  
Website: [www.cirrusresearch.fr](http://www.cirrusresearch.fr)

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[www.cirrusresearch.com](http://www.cirrusresearch.com)  
[sales@cirrusresearch.com](mailto:sales@cirrusresearch.com)