



# Larson•Davis Model CAL291 Residual Intensity Calibrator



Photo of CAL291 with 2260 Intensity Probe

Under IEC and ANSI standards, a sound intensity measuring system consists of a two microphone sound intensity probe and a dual channel processor. The accuracy of the intensity measurement is strongly dependent upon the phase accuracy between the two measurement channels, including the microphones. Sound intensity measurement systems are classified into Class 1 or 2 based upon the pressure-residual-intensity index which is measured using a residual intensity testing device.

The Larson•Davis Model CAL291 Residual Intensity Calibrator satisfies the residual intensity test device specifications of both IEC 1043:1993 and ANSI S1.9-1996.

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## Features

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- Applies the same signal with zero phase difference to a pair of 1/2" or 1/4" microphones
- Driven by external signal generators such as the following versions available with the Larson•Davis Models 2800/2900 and 3200 Real-time Analyzers:
  - OPT 10 Noise Generator; pink or white broadband noise
  - OPT 11 Digital Signal Generator; Sinusoidal, pink or white broadband noise, 1/3 octave bandlimited pink pseudo random noise and white pseudo random noise
- Amplifier provides signal levels to 127 dB

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## Applications

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Testing of sound intensity measurement systems

- Generation of signals for verification of the amplitude/phase accuracy of multi-channel acoustic measurement systems
- Amplitude/Phase Normalization. The digital filters of the Larson Davis analyzers provide both amplitude and phase, permitting the measurement of the complex transfer function between two measurement channels, including microphones, in 1/3 octave bands by using the CAL291 to excite both microphones with broadband noise. From this a correction function can be generated within the analyzer to correct for any amplitude and phase errors which may have existed between channels previous to the normalization procedure.

## Specifications

### Standards

Meets the residual intensity test device specifications as presented in IEC 1043:1993 "Instruments for the measurement of sound intensity" and ANSI S1.9-1996 "Instruments for the measurement of sound intensity".

### Input

Connector: BNC  
Impedance: 1 MΩ

### Output

- Sound Pressure Level, 1% harmonic distortion):  
25 - 127 dB @ 1 kHz
- SPL difference between channels: < 0.1 dB @ 1 kHz
- Maximum pressure-intensity index: > 27 dB
- Intensity Output when used with adaptor (nominal):  
 $L_I = L_P$  @ 1 kHz
- Output Level and Maximum Input Voltage);  
<1% distortion)

Frequency, Hz	Output SPL, dB re. 20 (Pa)	Max. Input Voltage, dBμV
250	127	124.0
1 k	124	126.9
2.5 k	112	125.5
6.3 k	107	113.5

### Mechanical Characteristics

Length	25.6 cm (10.3 in)
Width	10.0 cm (4.0 in)
Height	5.3 cm (2.1 in)
Weight	1.0 kg (2.2 lb.)

## Power

DC Power: 9 - 16 Vdc, 400 mA provided by  
PSA004 DC Power Supply (included)  
90-264 Vac @ 50 - 60 Hz



CE-mark indicates compliance with EMC Directive and Low Voltage Directive.

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