Outdoor Preamplifier with Calibration Check

For community, traffic or aircraft noise monitoring

Highlights

- Use with Model 831 sound level meter
- Free-field, random or 90° response using the same microphone and the Model 831
- Remote system check simultaneously at five different frequencies
- Rugged stainless steel construction
- Internal temperature and humidity sensor
- Built-in heater with intelligent control to minimize power usage and prevent condensation.
- Broad temperature range (-40 °C to 70 °C)
- No desiccants needed
- Use with EPS2116

Applications

- Unattended Outdoor Installations
- Environmental Noise Studies
- City Noise Monitoring
- Industrial Noise Monitoring
- Airport & Traffic Noise
- Compliant Investigation
- IEC 61672 Class 1 Compliant Measurements

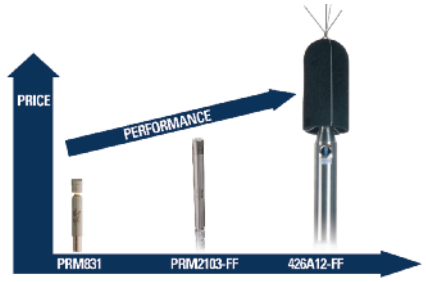
Model EPS2116 Environmental Shroud
Model 831 Sound Level Meter

The Larson Davis PRM2103 has been designed to be used with an environmental shroud for portable or permanent outdoor use in a wide range of weather conditions. The PRM2103 combines the cost savings of a standard preamplifier with features for unattended monitoring and an inexpensive shroud to create a product that is ideal for remote sound level measurement.

New in the PRM2103 is an automatic calibration check that checks five different frequencies all at the same time which enables better detection of any failure. **When used with the Model 831 sound level meter, the acoustic response can be selected as free-field, random or 90 degree using a simple setting on the sound level meter.** Because of this flexibility, only one preamplifier is necessary and there is no need to use different microphones for different fields.

Because field visits to a remote monitor can be expensive and time consuming, the PRM2103 has been designed to require no routine maintenance. It includes a built-in humidity and temperature sensor and can automatically turn on an internal heater when there is a risk of condensation. All this has been accomplished while keeping power usage low (< 2 mA with heater off) so that the PRM2103 is an excellent solution for battery powered applications.

Model PRM2103
Preamplifier with Calibration Check



Electrical Specifications

Microphone Bias	0 Volts
Input Impedance	10 GΩ // 0.1 pF typical
Max Input Level	± 18 V peak
Max Output Level (typ)	± 14 V peak (143 dB peak using 50 mV/Pa mic)
Max Output Current	10 mA
Output Impedance	50 Ω
Total Harmonic Distortion +N	< -60 dBc at 8 V rms and 1kHz
Dynamic Range	124 dB (16 dB to 140 dB typical A-weighted)
Power Supply	10 V to 15.5 V (12 V nominal)
Power (12V)	< 2 mA typ, 50 mA max with heater
Calibration Check Level	94 dB ±2 dB (each tone)
Calibration Frequencies	31.25, 250, 1000, 4000 & 8000 Hz
Calibration Check Sensitivity	± 0.005 dB/°C typical
Max Cable Length	100 ft (30 m)
Internal Sensor Accuracy	
Relative Humidity	± 5% RH
Temperature	± 2 °C
Phase Linearity	
10 Hz to 32 Hz	- 3° to 10 °
32 Hz to 100 kHz	< ± 3°
Output in phase with input	

Frequency Range	Electrical Response
10 Hz to 20 kHz	± 0.3 dB
With respect to level at 250 Hz	

Self Generated Noise (Typical)	Z-weighted	A-weighted	C-weighted
Electronic	27 dB (22 µV)	8 dB (2.5 µV)	14 dB (5.0 µV)
With Microphone	—	16 dB	—

Environmental Specifications

Operating Temperature	- 40 °F to 158 °F (- 40 °C to 70 °C)
Operating Humidity	0 to 100% RH Non-condensing
Temperature Sensitivity	± 0.005 dB/°C
Temperature Sensitivity with 377B02 microphone at 1 kHz	
-40 °C to -10 °C	< ± 1.0 dB
-10 °C to 50 °C	< ± 0.5 dB
50 °C to 70 °C	< ± 0.9 dB
Humidity Sensitivity with 377B02 microphone at 1 kHz and 40 °C	
0 to 100% RH	< ± 0.5 dB

Acoustical Frequency Response Limits

Frequency (Hz)	0 degree Free-field		90 degree Free-field		Random	
10.0	3.0	-4.0	3.0	-4.0	3.0	-4.0
12.5	2.5	-3.5	2.5	-3.5	2.5	-3.5
16.0	2.0	-3.0	2.0	-3.0	2.0	-3.0
20.0	2.0	-2.0	2.0	-2.0	2.0	-2.0
25.0	2.0	-1.5	2.0	-1.5	2.0	-1.5
31.5	1.5	-1.5	1.5	-1.5	1.5	-1.5
40 to 4000	1.0	-1.0	1.0	-1.0	1.0	-1.0
5000	1.5	-1.5	1.5	-1.5	1.5	-1.5
6300	1.5	-2.0	1.5	-2.0	1.5	-2.0
8000	1.5	-2.5	1.5	-2.5	1.5	-2.5
10000	2.0	-3.0	2.0	-3.0	2.0	-3.0
12500	2.0	-5.0	2.0	-5.0	2.0	-5.0
16000	2.5	-16.0	2.5	-16.0	2.5	-16.0
20000	3.0	-∞	3.0	-∞	3.0	-∞
	with respect to level at 250 Hz (dB)					

Physical

Microphone Thread	11.7 mm – 60 UNS (.4606 – UNS)
Diameter	0.5 in (12.7 mm)
Height	5.25 (133 mm)
Venting	Bottom of preamplifier by connector
Output Connector	10-pin male Lemo 1B

Compliance

IEC 61672-1 (2002) Class 1 and ANSI S1.40-1984 with Model 831
IEC 61326-1 (2005) EMC requirements for electrical equipment
IEC 61010-1 (2001) Safety

Included Accessory

377B02	1/2 inch Prepolarized Microphone

Accessories

EPS2116	Environmental protection
CBL203-20	PRM2103 to Model 831 cable, 20 ft (6 m)
CBL208-20	PRM2103 to 831-INT-ET cable, 20 ft, (6 m)
CAL200	Acoustic Calibrator
PSA027	12V power supply
Model 831	Class 1 Sound Level Meter

Ordering Information

PRM2103-FF	PRM2103 Outdoor Preamplifier with 377B02 microphone and calibration check
CER-PRM2103	Factory calibration and certification for PRM2103
CER-PRM2103-E	Environmental testing

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ISO 9001 CERTIFIED

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For environmental noise monitoring and building acoustics, **Larson Davis** offers a full line of instruments, accessories and software. For personal noise and vibration exposure monitoring, Larson Davis complements this with sound level meters, personal noise dosimeters, human vibration meters, audiometric calibration systems and hearing conservation programs.

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