



MODEL PRM2103

## OUTDOOR PREAMPLIFIER

- Free-field, random or 90° response using the same microphone and the Model 831
- Remote calibration 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

### TYPICAL APPLICATIONS

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

## FOR COMMUNITY, TRAFFIC, OR AIRCRAFT NOISE MONITORING

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 examines 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.

ELECTRICAL SPECIFICATIONS			
Microphone Bias	0 volts		
Input Impedance	10 GΩ // 0.1 pF typical		
Max Input Level	± 18 V peak		
Max Output Level (typical)	± 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 (12 V)	< 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	v± 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		



**Model PRM2103 with Models 831 and EPS2116 Accessories**

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
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)						
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	½-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	12 V 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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Larson Davis offers a full line of noise and vibration measurement instrumentation such as Class 1 and 2 sound level meters, outdoor noise monitoring systems, personal noise dosimeters, human vibration meters, audiometric calibration systems, microphones and preamplifiers, and data analysis software. Instrumentation is used in community and environmental noise monitoring, measurement of building acoustics, managing worker exposure to noise and vibration, and various automotive, aerospace, and industrial applications. Larson Davis is a division of PCB Piezotronics, Inc., a wholly owned subsidiary of MTS Systems Corporations.

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