



# Permanent Outdoor Microphone with Remote Humidity Sensing

For community, traffic and aircraft noise monitoring



## Highlights

- Use with any electronic sound measurement system
- Free-field or random incidence response
- Rugged stainless steel construction
- Single channel power and signal conditioning
- Selectable A-, C- or Z-weighting
- 0 and 200 V microphone polarization voltage
- Selectable gain: 0 or 20 dB
- Electrostatic actuator for calibration check
- Internal temperature and **humidity sensors\*** for desiccant status
- Bird spikes, rain hat and wind screen
- Instantaneous overload detection
- Ability to drive long cables
- Replaceable desiccant with indicator visible through window
- Easy access for desiccant change
- TEDS-IEEE 1451.4 compliant
- Rugged carrying case
- Fully supported by the Larson Davis Model 831 sound level meter



Typical Model 426A12-FF airport noise monitoring installation.



Model 426A12

## Applications

- Unattended outdoor installations
- Environmental noise studies
- Airport and traffic noise monitoring
- Industrial and community noise monitoring
- Complaint investigations
- IEC 61672 Class 1 compliant outdoor sound measurement

The Larson Davis Model 426A12 Outdoor Microphone has been designed for permanent outdoor use in any weather condition. It is constructed of stainless steel to resist corrosion, and its profile minimizes both wind resistance and acoustic reflections. It includes a rain hat, wind screen and bird spikes and an electrostatic actuator which can be controlled remotely for on-site calibration checks. With the proper choice of microphone, it can provide frequency response characteristics consistent with precision sound level meter requirements for free-field or random incidence measurements. Equipped with A, C and Z-weighting filters and a 20 dB gain, the 426A12 is ideal for use with any electronic sound measurement system.

A hydrophobic membrane vent and replaceable desiccant cartridges prevent moisture from reaching the microphone through the vent. The saturation status of the desiccant cartridges can be determined remotely using signals from internal temperature and humidity sensors, as well as visually through an observation window.

The Larson Davis Model 831 sound level meter is the ideal complement to the Model 426A12 Permanent Outdoor Microphone for Noise Monitoring Systems.



# Permanent Outdoor Microphone

Electrical Frequency Response			
Sensitivity		50 mV/Pa for 426A12-FF and 426A12-RI	
<b>Frequency Response</b>			
Z-Weight		10 Hz to 63 kHz ( $\pm 0.2$ dB) -3 dB at 1 Hz typical and > 126 kHz	
A-Weight		40 Hz to 20 kHz ( $\pm 0.3$ dB) 10 Hz to 32 Hz ( $\pm 0.7$ dB)	
C-Weight		25 Hz to 20 kHz ( $\pm 0.3$ dB) 10 Hz to 20 Hz ( $\pm 0.6$ dB)	
A and C-Weight Compared to Z-Weight @ 1 kHz		< 0.12 dB	
Acoustical Frequency Response			
Frequency Range	Free-field Response with 377B02 Microphone	Random Response with 377B20 Microphone	
4 Hz to 20 Hz	+ 1 dB, -3 dB	+ 1 dB, -3 dB	
20 Hz to 5 kHz	$\pm 1$ dB	$\pm 1$ dB	
5 kHz to 12.5 kHz	+ 1 dB, -2 dB	+ 2 dB, -1 dB	
12.5 kHz to 16 kHz	+ 0 dB, -5 dB	+ 1 dB, -4 dB	
Acoustical Frequency Response Limits with the 250 Hz Level as the Reference			
Electronic			
Microphone Bias	0 and 200 V ( $\pm 2$ V), selected using an internal jumper		
Gain Setting	0 and 20 dB, selected using an internal jumper		
Input Impedance	10 $\Omega$ // 0.16 pF		
Max Input Level	18 Vpeak		
Overload Level at Input or Output	16 Vpeak typical		
Max Output Current	25 mA		
Output Slew Rate	4 V/ $\mu$ S		
Distortion (THD)	- 67 dB typical at 9 Volts rms out, 1 kHz, 0 dB gain -75 dB typical at 10 Volts rms out, 1 kHz, 20 dB gain		
Internal Sensor Accuracy	Relative Humidity Sensor	$\pm 5\%$ RH	
	Temperature Sensor	$\pm 2$ °C	
Dynamic Range			
<b>Typical dynamic range with input electrically tested through an ADP005 adaptor (18 pF)</b>			
0 dB Gain, A-Weight	130 dB; 10 dB noise floor to 140 dB re.20 $\mu$ Pa with an equivalent 50 mV/Pa microphone		
20 dB Gain, A-Weight	114 dB; 6 dB noise floor to 120 dB re.20 $\mu$ Pa with an equivalent 50 mV/Pa microphone. <i>Note that a typical 50 mV/Pa microphone has a 15 dB A-weighted noise in addition to the electrical noise of the preamplifier.</i>		
Output Noise			
<b>20 Hz to 20 kHz, with input through an ADP005 (18 pF)</b>			
Gain, dB	Z-Weight	A-Weight	C-Weight
0	3.6 $\mu$ V	3.0 $\mu$ V	3.6 $\mu$ V
20	33 $\mu$ V	16 $\mu$ V	27 $\mu$ V
Output Noise, Input Through ADP005 to Ground			
Preamplifier Output Cable Driving Capacity			
Length, ft	14 Vpeak	4.2 Vpeak	1.4 Vpeak
250	38 kHz	120 kHz	300 kHz
500	19 kHz	62 kHz	180 kHz
1,000	9.5 kHz	31 kHz	92 kHz
2,000	4.7 kHz	15.6 kHz	47 kHz
Cable Driving Capacity Control Cable	The control cable length is limited to 120 feet total of CBL154 and EXAXXX extension cable unless the 10.5 V minimum power supply voltage is increased.		

Power Supply	
Voltage	External 12 Vdc Voltage Range: 10.5 to 18 Vdc Isolated from preamp circuitry for ground loop protection
Power Consumption	85 mA at 12 Volt (110 mA with electrostatic actuator on)
0 V Microphone Bias	120 mA at 12 Volt (160 mA with electrostatic actuator on)
200 V Microphone Bias	
Environmental	
Operating Temperature Range	- 40 °C to 70 °C (- 40 °F to 158 °F)
Operating Humidity Range	0 to 100% relative humidity, excluding internal condensing
Temperature Sensitivity	< $\pm 0.05$ dB @ 1 kHz from - 40 °C to 70 °C
Electrostatic Actuator Temperature Sensitivity	- 0.0015 dB/°C typical
Humidity Sensitivity	< $\pm 0.05$ dB @ 1 kHz from 0 to 100% relative humidity, at 50 °C (122 °F)
Physical	
Microphone Thread	11.7 mm - 60 UNS (.4606 - 60 UNS)
Mounting Thread	G 1 1/2" (ISO 288-1) Cables pass through mounting pipe
Maximum Housing Diameter	54 mm (2.125 in)
Windscreen Diameter	101.6 mm (4 in)
Height	587 mm (23.1 in)
Weight	1.361 kg (3 lb.)
Venting	Bottom of preamplifier through a membrane for protection of the microphone pressure equalization vent
Output Connector	BNC female: center is the output signal and the BNC female shell is connected to the internal ground
Control Connector	LEMO EXG.1B.307 7-pin Female
Compliance	
IEC61632-1 EMC requirements for electrical equipment for measurement, control and laboratory use	
IEC61672 (2002) Class 1 and ANSI S1.40-1984 for A, C and Z Weight	
IEC60651 (R2001) and ANSI S1.4 (R2001) "Sound Level Meter" Type 1 for A and C weight	
IEC60529 Protection provided by enclosure: IP54	
Accessories	
DSC004	Desiccant Pack (10 sets)
EPS2110	Rainhat with built-in electrostatic actuator head 94 dB (re. 20 $\mu$ Pa) @ 1 kHz typical Internal electrostatic actuator verifies complete system accuracy (including microphone) at 1 kHz
Rugged case	Rugged case with space for 426A12, WS009, DSC004, Model 831 Sound level meter, CAL200 Calibrator, Microphone and certificates.
Windscreen/Birdspikes (WS009)	Rugged construction for repelling birds; includes foam windscreen
426A12-NPT	Connecting pipe for TPR019/20. (1½ in. x 27 in. ISO 228-1 to NPT thread)
ADP091	ADP091Adapter for using 426A12 with TRP003 tripod
CBL152	426A12 to Model 831 signal cable, 20 ft (9 m)
CBL152-XXX	426A12 to Model 831 signal cable, custom length up to 500 ft
CBL153	426A12 to Model 831-INT-ET control cable, 20 ft (9 m)
CBL153-XXX	426A12 to Model 831-INT-ET control cable, custom length up to 120 ft (36 m)
CBL154	426A12 to Model 831 control cable, 20 ft (9 m)
CBL154-XXX	426A12 to Model 831 control cable, custom length up to 120 ft (36 m)
Ordering Information	
The 426A12 is a preamplifier without a microphone. Packages including microphones are available as follows. The 426A12 with its selected microphone is subjected to an environmental test	
426A12-FF	426A12 Permanent Outdoor preamplifier 377B02 Free field 50 mV/Pa prepolarized microphone
426A12-RI	426A12 Permanent Outdoor preamplifier 2565 Random incidence 50 mV/Pa 200V polarized microphone
426A12	426A12 permanent outdoor preamplifier without microphone
CER-426A12	Calibration and certification for 426A12 including testing for temperature and humidity stability. Replaces windscreen, o-ring, and desiccant cartridges.
Model 831	Sound level meter for noise monitoring systems



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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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