BROADSONIC

Optical Ultrasonic Sensor



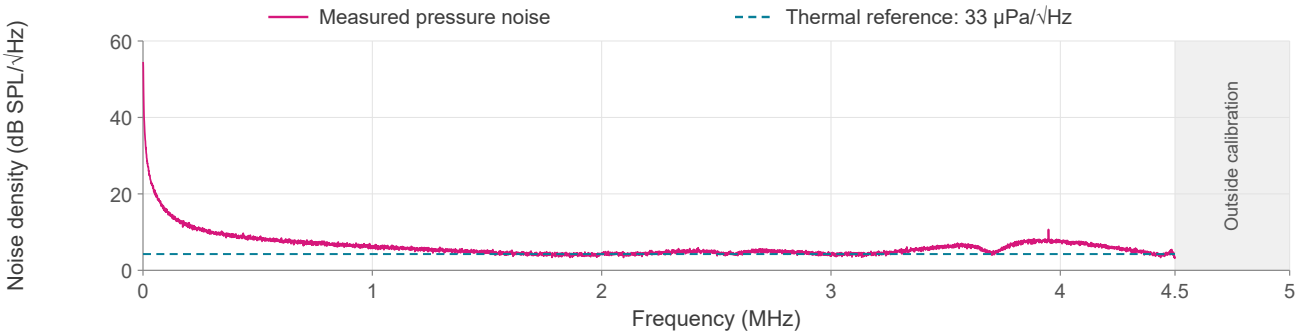
The BROADSONIC is a fiber-coupled optical ultrasonic sensor system featuring a calibrated acoustic bandwidth of 4.5 MHz. The sensor operates without physical contact with the acoustic source, enabling non-invasive measurement in free-field air acoustics environments. The system utilizes Fabry-Perot interferometry to achieve exceptional sensitivity and omnidirectional response for industrial process monitoring, non-destructive testing, and acoustic emission detection. The sensor head contains no electrical elements as the sensing is entirely optical, providing inherent immunity to electromagnetic interference. Acoustic data is read out directly over USB, and dedicated quick-start software is included for immediate use upon setup.

SENSOR PERFORMANCE	
Calibrated Acoustic Bandwidth	4.5 MHz*
Self-Noise	<100 µPa/√Hz at 1 MHz
Active Sensor Area	100 µm diameter
Omnidirectionality	> ±60 degrees
Dynamic Range	>80 dB

*Sensitivity below 50 kHz is reduced due to 1/f noise; contact us for details

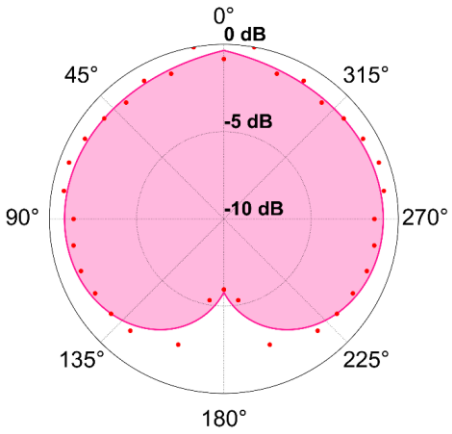
OPTICAL	
Wavelengths	1550 nm, 638 nm
Optical Power (fiber end)	<1 mW
Fiber Connector	SC/APC
Fiber Types	SMF-28 and S630-HP
Standard Fiber Length	3 m
Minimum Fiber Bend Radius	30 mm
CONTROL UNIT	
Data Interface	USB 2.0 High-Speed
Transfer Type	Bulk
Packet Rate	~1,220 packets/sec
Data Throughput	~20 MB/s (160 Mbps)
Sampling Rate	10 MS/s
System Compatibility	Windows 11, Mac OS on request
ADC Resolution	14 bit
Power Input	9 VDC, center positive (5.5 × 2.1 mm barrel)
Power Consumption	900 mA typical at 9 V (8.1 W)
Turn-on Time	~5 seconds
Recommended Stabilization Time	~30 seconds
ENVIRONMENTAL	
Operating Temperature	15°C to 40°C
Storage Temperature	0°C to 50°C
PHYSICAL	
Control Unit Dimensions	17 x 12 x 9 cm (L × W × H)
Control Unit Material	CFRP composite
Sensor Head Dimensions	28 mm x 8 mm (L x D)
Sensor Head Material	ABS-like plastic
Sensor Head Weight	3 g

Calibrated Noise Floor



Representative measured spectrum, including ambient and readout noise.
Noise density is referenced to 20 µPa/√Hz; total RMS noise depends on bandwidth.

Directivity Characteristic*



*Measured at 12 kHz

Included Accessories

- 9 VDC power supply
- Probe with 3 m SMF-28 fiber patch cable (SC/APC)
- Drivers and example software

Safety Information

⚠ **WARNING:** This product emits laser radiation at 1550 nm and 638 nm wavelengths with <1 mW total optical power at the fiber output (Class 1 per IEC 60825-1). While classified as safe under normal operating conditions, avoid direct eye exposure to the fiber end as a precaution. The 638 nm wavelength produces visible red light.

The unit's internal visible laser power exceeds 50 mW. Do not open the unit.