

LOA-105™ Long-baseline Optical Anemometer For Aluminum Smelters



OSI's **LOA-105 Optical Anemometer** for Aluminum Plants is specially designed for superior performance in tough pot room environments. The sensor uses proven optical technology to measure the airflow velocity through the roof vents. The eye-safe LED transmitter and twin photodiode receiver are placed at either end of the pot room and simply need to "look" through the HF flow to measure the airflow. Its maximum path length of 3 km allows the LOA to handle the biggest of pot rooms easily. The instrument is ready with features such as HF resistant windows and air knives to keep the windows clear. LOA has automatic gain control and continuous self-checking.

The optical technology of the LOA has multiple advantages:

1. Complete Path-Averaged Measurement – The LOA takes the average velocity rate over the entire optical path. This results in a more representative measurement of the flow - much better than point-source sensors,

2. Predictable Performance Designed for long-term use in a pot room, all critical components of the LOA are enclosed in air-purged housings and HF resistant windows are used to transmit the IR light into the pot room environment.

3. Low Maintenance As simple as periodic cleaning and checking alignment.

The LOA-105 has received the seal of approval from the US government with EPA Method 14 Equivalency Approval (the rule for measuring airflow velocity in aluminum roof vents). LOA-105 has captured nearly 70% of the US market. Major players in the industry such as ALCOA, Reynolds and Kaiser use LOA as well as ALCAN in Canada, Comalco in Australia, and ALCOA Europe

LOA-105™ Advantages

- **Complete path-averaged flow measurement**
- **Ultra low response threshold — 0.01 m/s**
- **Proven scintillation technology**
- **DSP based – no field calibration needed**
- **Continuous self diagnostics & test**
- **Unaffected by dust buildup on lenses**
- **Rugged, HF-resistant design**
- **High reliability / Low maintenance**
- **Easy installation**



LOA-105™ Ordering Information:

- Part number: **LOA-105-xR**

AR	110 VAC
BR	230/240 VAC
CR	100
DR	200 VAC

LOA-105™ Accessories:

- 1506-107 Heavy duty mount base (each)
- QCS-105 QwikCollect Software for Windows
- MZ-0649-00 Limited Distance Modem

LOA design, based on decades of experience in harsh environments, results in a rugged, extremely reliable sensor, immune from typical error modes. LOA uses AGC circuitry to eliminate the effects of output power drop, contaminated optics, or dusty air. Internal diagnostics alert the user if signal strength gets too low for normal operation. Preventative maintenance, suggested every 6 months, is as simple as cleaning the windows and verifying optical aim. With DSP based design, no field calibration is ever needed.

LOA-105™ Specifications

Performance Specification	
C _n ² Turbulence Range	10 ⁻¹⁶ to 10 ⁻¹² m ^{-2/3}
C _n ² Turbulence Path Length	0.1 to 3 km
Velocity Range	0.01 to 40 m/s
Accuracy	0.1 m/s or +/- 5%, whichever is greater
Resolution	0.1 m/s
Long Term Drift	<5% per six months
Path Length	0.3 to 3 Km*
Time Constant	10-second analog
Update Rate	1-minute block average
Diagnostics	Self-test, updated once per minute, to monitor upper and lower channels signal strength (40 dB), turbulence, power, and uP status.

Electronic Specification	
Power Requirements Transmitter	110 VAC 50/60 Hz 12 VA (other voltages available)
Electronic Enclosure	110 VAC 50/60 Hz 25 VA (other voltages available)
Signal Output	RS-232 ASCII, simple polled protocol
Transient Protection	All power & signal cables protected

Environmental Specification	
Temperature	-40° to 140° F (-40° to 60° C)
Humidity	0 to 100%, noncondensing
Precipitation / Dust	NEMA 4 type protection

Physical Specification	
Transmitter Size	8.25 x 7.75 x 22 inch (210 x 195 x 560 mm) - H x W x D
Transmitter Weight	18 lbs (8 kg)
Receiver Size	14 x 8.25 x 22 inch (355 x 210 x 560 mm) - H x W x D
Receiver Weight	30 lbs (14 kg)
Enclosure Size	16 x 12 x 10 inch (400 x 300 x 250 mm) - H x W x D
Enclosure Weight	20 lbs (9 kg)

[Specifications are subject to change without notice.]



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