

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



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**
(x= AC supply voltage –consult OSI)

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 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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