



TELEDYNE ANALYTICAL INSTRUMENTS

MODEL 300L



LASER BACKSCATTER PARTICULATE MONITOR

The Model 300L is the most stable, accurate, and maintenance free backscatter particulate monitor available.



Rugged construction holds up under toughest conditions

The Laser Backscatter Particulate Monitor provides reliable, continuous, non-extractive particulate monitoring ideal for the utility, paper, pulp, chemical and petrochemical industries for use in manufacturing, process and combustion operations.

The Model 300L was designed around Uniteds Sciences' Model 500C Opacity Monitor, which has an installed base of over 1,600 units. The optical head assembly of the Model 300L is housed in a rugged aluminum casting, with O-ring seals and stainless steel hardware to assure stability in even the most demanding applications. The machined parts are alodined and finished with acid-resistant, baked enamel paint.



Diode laser

The Model 300L uses a red diode laser as a light source. The laser emits almost no heat, and is electronically modulated at 4600 Hz. A narrow spectral response and modulated diode laser make the system highly sensitive and impervious to ambient light as well as electrical and mechanical noise.



Labor saving design features

Unlike other backscatter and sidescatter instruments which provide a point measurement, the 300L can be set up to detect particulates over an extended path, for more representative data. The 300L includes a 1/4HP blower with air filter to reduce window dirt buildup. The sealed optical head assembly is designed for simple cover removal, allowing complete access to the electronics.



Electronic modulation greatly reduces maintenance time and expense

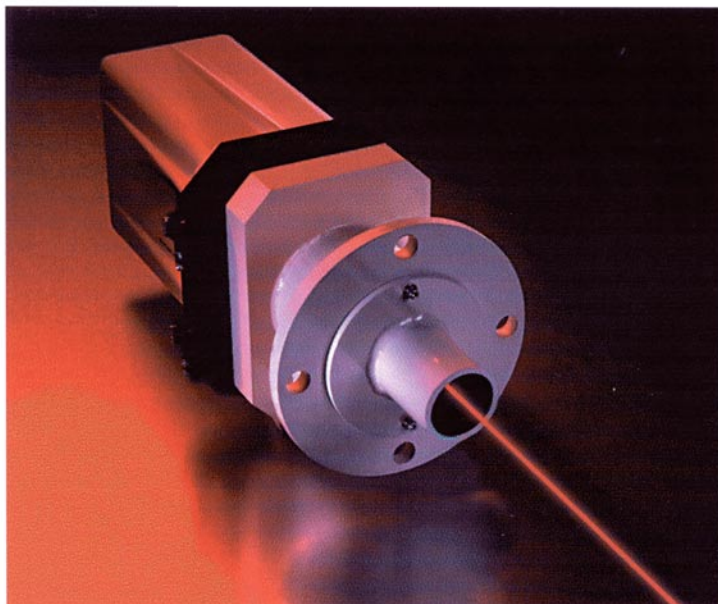
The 300L's electronic modulation eliminates the need for a mechanical chopper, reference wheel, and other electro-mechanical parts within the optical enclosure. This simplifies construction and greatly reduces maintenance time and expense. This unique design, and extremely low heat generation, permits successful operation on stack applications where ambient temperature conditions range from -40 to +130°F.



Virtually eliminates chance of installation error

The 300L does not use a retroreflector and therefore does not require accurate alignment across the stack or duct. A simple to use calibration kit, based on standard photographic reflective materials and calibrated neutral density filters, is used to verify that the calibration of the 300L has not changed.

The 300L typically requires no light trap across the stack for diameters greater than 6.5 feet (2 meters) because the diode laser's beam is directed outside the field of view prior to reaching the opposite wall of the stack.



CE mark models available

Low drift

The superior engineering of the 300L means low drift over the worst combination of specified temperature and line voltage for the highest reliability.

Simple, Reliable Operation

The 300L Laser Backscatter Particulate Monitor offers advanced technology for lower maintenance, better reliability and operation at lower or higher temperatures with ultra-low drift.

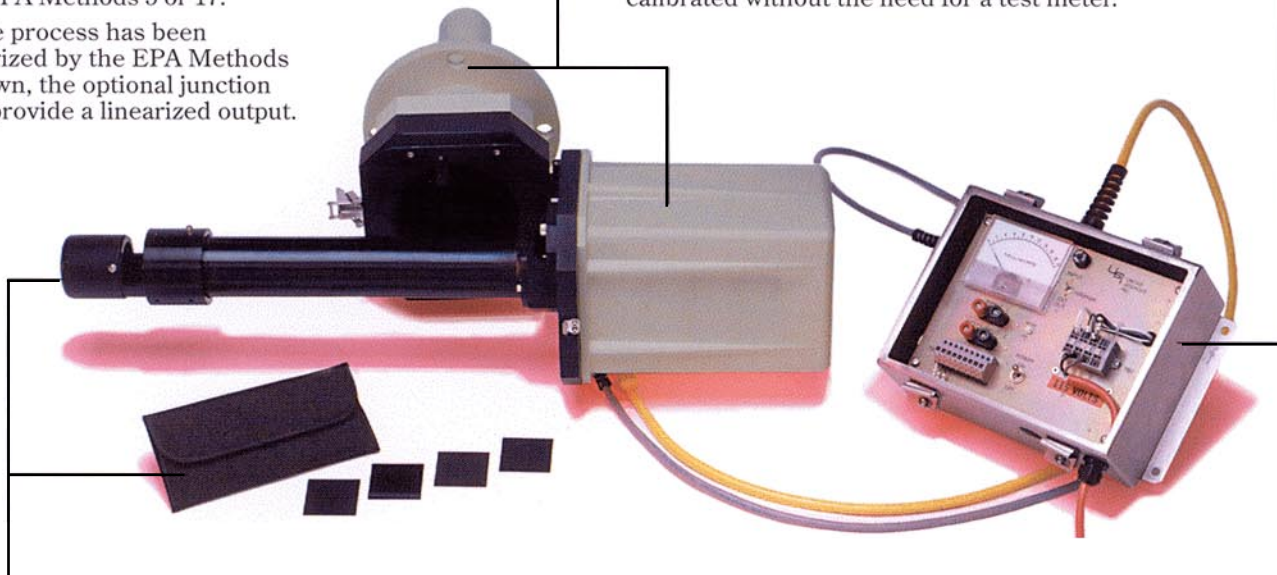
300L Optical Head Assembly

Backscattered laser light is detected in the Optical Head and converted into a 0-20 mA (or 4-20 mA) signal which is proportional to mg/Am³ for the case where the particle size distribution and composition are consistent. Gain and Zero adjustments in the Optical Head permit linear correlation of the 0-20 mA signal versus isokinetic particulate measurements, such as EPA Methods 5 or 17.

When the process has been characterized by the EPA Methods or is known, the optional junction box can provide a linearized output.

Optional Junction Box

An optional stainless steel, NEMA 4X-type junction box, mounted under the Optical Head, accepts the 0-20 mA signal from the Optical Head and provides an isolated 4-20 mA output current loop. The isolator can also provide linearization for a calibrated mg/Am³ output. A rugged meter displays input and output signals so that the system may be checked or calibrated without the need for a test meter.



Calibration Kit

A mechanical assembly is provided with grid and neutral density filters to verify the response of the 300L. The assembly has a glass protective window over the internal target surface. Mounting repeatability is assured by stainless steel guide pins.

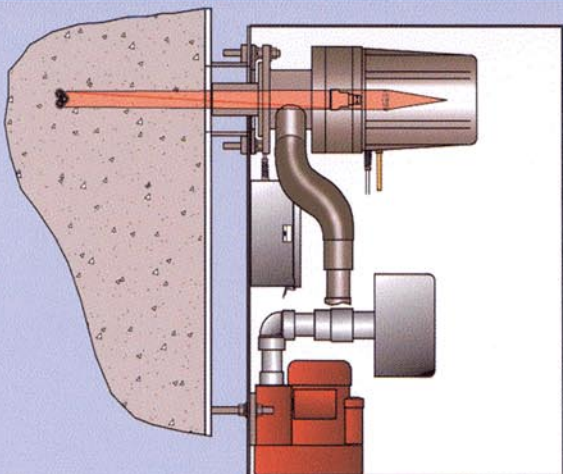
Optional Light Trap

A light trap that mounts directly across from the analyzer is available as an option to prevent reflections from the opposite stack wall from entering the field of view in small stack diameter installations. It is not normally required unless the stack diameter is 6.5 feet (2 meters) or less.

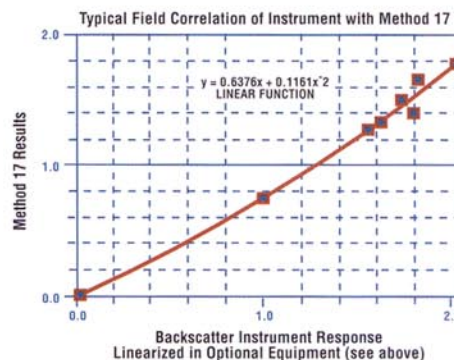
Consult the factory for details.



How the backscatter monitor works



The solid-state laser's beam is projected into the process gas. Particulate matter in the beam path scatters the laser beam in all directions. The reverse-scattered light is detected and converted into an electrical output related to the amount of particulate.





Training

An Operation and Maintenance Manual is provided with the 300L. In addition, periodic training classes are conducted at both the Colorado and Pennsylvania facilities, consisting of classroom and hands-on training. Classes may also be scheduled at the customer's facility.



Maintenance and Support Services

Consult the factory for details on Monitor Labs' complete line of Service and Maintenance Programs, in addition to a user support line available on a 24-hour basis.



Commitment

Monitor Labs has over 30 years experience in providing state-of-the-art Continuous Emission Monitoring products to a wide variety of industrial markets. Monitor Labs is dedicated to working in partnership with its customers to solve any application needs.

Specifications

DIMENSIONS, WEIGHT	
Optical Head Assembly	15.4L x 8.3H x 8.3W inches, 18 lbs. 39L x 21H x 21W cm, 8.166 kg.
Purge System	17W x 26D x 37H inches, 60 lbs. 43.2W x 66D x 94H cm, 27.217 kg.
PROCESS CONNECTION	
	4.5 or 6 inch schedule 40 pipe by user, hardware and special flange provided
POWER REQUIREMENTS	
Purge Blower	115/230VAC \pm 10%, 50/60Hz, single phase
Optical Head	270W, 1/4HP, TEFC, Class B, Service Factor 1.15 18VA
AMBIENT ENVIRONMENT	
Temperature	-40° to 130°F (-40° to +54°C) operating
Relative Humidity	0 - 100% R.H., condensing
MEDIA CONDITIONS	
Temperature	Up to 1500°F (815°C). Higher than 1500°F, consult factory for special options
Pressure	20 inches of water, maximum (<i>higher, consult factory</i>)
SYSTEM PERFORMANCE	
Resolution	1 mg per actual m ³
MEASUREMENT RANGE	
Minimum	0 - 20 mg per actual m ³
Maximum	0 - 10 grams per actual m ³

TELEDYNE ANALYTICAL INSTRUMENTS

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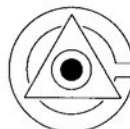
Visit Our Web Site at:

www.teledyne-ai.com

Warranty: Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

**CERTIFIED
ISO 9001 : 2000**



Accredited by the Council
for Accreditation (RVA)



National Accreditation
Program