

Features

- In-situ, continuous, measuring principle
- Long life, solid state light source
- Optimal evaluation of measuring signals due to wide spectrum of Super Wide Band Diode (SWBD) – more stable than conventional LED systems
- High performance microprocessor technology
- LCD display in opacity or optical density, and calibration capable in mg/m^3
- Auto zero and span check with window soiling correction
- Hermetically sealed optics & electronics housing
- Simple alignment without special tools
- Advanced purge air system for reduced maintenance
- Programming via controller or remote bus interface
- Data available as analog output or bus interface
- Two analog output signals with switchable ranges



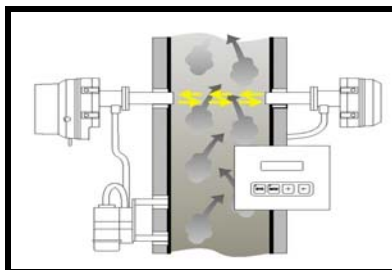
Durag D-R 290 Compliance Opacity Monitor

The D-R 290 opacity unit is designed for continuous opacity or dust monitoring of flue gas in stacks or ductwork. The D-R 290 meets all the requirements of the U.S. EPA Performance Specification 1 (PS-1) and ASTM D6216-98. Applications include:

- Coal and Fuel-oil Fired Plants
- Wood Fired Plants
- Converter Plants
- Pulp & Paper Plants
- Processing Plants
- Asphalt Plants
- Cement Plants
- Any other plant requiring opacity or dust monitoring

Principle of Operation

The D-R 290 mounts on a stack or duct and projects a beam of light from an optical head on one side to a reflector on the other. The light is reflected back through the gas (double pass for greater sensitivity) to the optical head.



A detector in the optical head determines opacity by comparing the ratio of the energy level of the reflected light to the energy level of the projected light.

A Super Wide Band Diode (SWBD) generates the transmitted light. Due to the SWBD's broadband nature, it is not influenced by other light sources (like sunlight), and its measurement results are not influenced by temperature or other factors. The SWBD also has a much longer life span compared to traditional halogen lamps.

The D-R 290 is equipped with two analog measurement value outputs. Each of the outputs has two selectable opacity ranges – from 20% - 100% opacity. Opacity computation at the stack outlet by means of the stack correction factor is standard.

Auto Zero & Span Compensation

The optical head incorporates automatic zero and span compensation by use of an internal reflector (representing zero opacity), and a neutral density filter (representing a known span value), which interrupt the measurement beam periodically. During this period, the dirt accumulation on the window is measured, and the zero and span signals are automatically compensated. If the correction exceeds a preset programmable value, an alarm is generated.

Purge Blower Assembly

The windows of the optical head and reflector are kept clean through the use of a purge blower system. This system blows clean ambient air in front of the window to keep flue dust and heat away from the mounting pipes. Incoming air is filtered using economical automotive filters. In most applications, the filters only need to be changed once every three months.

Condensation and deposits are avoided by using a heated window at the transceiver.

Control Room Display & Stack Control Panel

A standard package includes a microprocessor-based controller for remote display and control of the opacity monitor (i.e. in a control room) along with an additional controller at the measuring location (i.e. up on the stack). These units provide a digital display for up to 10 selected ranges (5 each for opacity and optical density), corrected for stack exit conditions, and uncorrected for path light measurement. The readouts can be integrated over a wide range of time periods.

Complete Opacity Solution

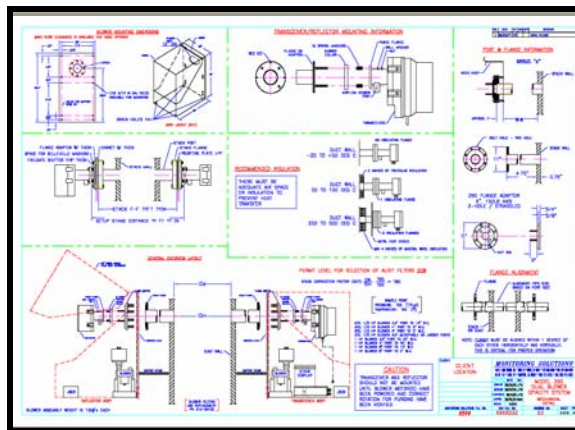
Monitoring Solutions offers a complete package solution to your opacity needs. A Sales Engineer will visit your site to offer an evaluation and review permit and installation requirements. If upgrading an existing opacity unit, a determination will be made for re-use of existing components and the easiest upgrade path specific to the site.

After a sale, Monitoring Solutions Engineers will work with the customer to insure the right components are provided, pre-configured for your stack and installation conditions. Complete drawing documentation and O&M manuals are provided, and where required Monitoring Solutions can supply a site specific QA/QC manual for your new opacity system.

Installation assistance, start-up assistance, and compliance certification complete the system solution offered by Monitoring Solutions.

A standard hardware package for new installations includes:

- Optic Head (Transceiver)
- Reflector
- Stack Controller
- Remote Controller (19" rack mount panel, or flush mount)
- Dual Purge Air Blowers with Pressure Switches
- Weather Enclosures
- Mounting Hardware and Flanges



Specifications

Measure Range	From 20%-100% range switching
Light Source	Super Wide Band Diode (SWBD)
Measuring Path Length	1.6 to 39.4 feet
Output Signal	Two (2) 0-20mA, live zero 4 mA
Maximum Load	500 ohms
Bus Interface for Programming & Results	Modbus, CAN Bus
Relay Outputs	All contacts voltage-free, six (6) status for limit value, failure, control cycle, etc.
Maximum Switching Cap	250V, 100A
Inputs	Six (6) status for input enable, two (2) range selection, failure purge air, control cycle, etc.
Output Signal Integration Time	10 – 1800s programmable
Permissible Ambient Temperature Range	-20°C - +50°C
Flue Gas Temperature	Above dew point
Power Supply	90-264V, 48-62Hz
Power Consumption	~30 Watts
Protection Class	IP65, NEMA 4X
Weight of Measuring Head	~10 kg
Weight of Reflector	~7kg
Purge Air Unit Power Supply	115/230V, 50 or 60Hz (0.37KW or 0.43KW)

Monitoring Solutions is a complete source for all your Continuous Emissions Monitoring (CEMS) Needs.

- Both Dilution and Extraction type systems
- Oxygen Monitoring Systems
- Opacity Monitoring
- Ambient & Meteorological Monitoring
- Data Acquisition Systems (DAS)
- Process Monitoring Systems
- Complete Service and Support of all CEMS including:

- ❖ Quarterly Preventative Maintenance
- ❖ Quarterly Audits
- ❖ Opacity Performance Audits
- ❖ RATA Support
- ❖ Training
- ❖ Spare Parts
- ❖ Repairs
- ❖ Annual Support Contracts

Contact Monitoring Solutions:

Philadelphia Sales Office

Toll Free: 888-380-5226
Fax: 908-847-0411

Indianapolis Office

4440 S. High School Road
Suite D
Indianapolis, IN 46241

Phone: 317-856-9400
Fax: 317-856-9410

New Jersey Office

78 Route 173
Suite 7
Hampton, NJ 08827

Phone: 908-713-0172
Fax: 908-713-0221

Website: <http://www.monsol.com>