

Features

- ❖ Quick connect clamp for easy maintenance access.
- ❖ Internal event memory for simple error tracing.
- ❖ Real time clock, battery back-up for event storing with time stamp.
- ❖ IP65 housing - no weather protection covers required.
- ❖ 2 programmable contact switch outputs – variable design for user selectable functionality.
- ❖ Freely adjustable limit threshold – adaptable to local requirements.
- ❖ Selectable integration time for suitable signal damping.
- ❖ Modbus RTU serial interface offers simple wiring, on twisted pair of wires.
- ❖ Measurement results shown in opacity or extinction –extinction calibratable to mg/m³.

Durag D-R 220 Non-compliance Opacity Monitor

Designed for cost effective measurement of opacity and dust in non-regulated applications such as:

- Smaller Plants or Process Measurement
- Heating Stations, Power Stations
- Boiler plants in Industry, Barracks, Hospitals, Schools
- Dust extraction and Filter Plants
- Filter Monitoring
- Process Monitoring

Principle of Operation

The D-R 220 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. A long life solid-state high performance LED light source generates the transmitted light.

The D-R 220 operates using the double-pass method according to the auto-collimation principle. The light is reflected back through the gas to the optical head. The light beam traverses the measuring distance twice. 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.

Measured results are shown in either opacity or in extinction which can be converted into mg/m³ by gravimetric calibration.

The D-R 220 is equipped with an analog measurement value output. Two digital outputs are standard for status indication.

Auto Compensation

The unavoidable intensity drift of the optical sensor (receiver) and the semiconductor light source caused through aging and temperature influences are automatically compensated for by the D-R-220.

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.

System Components

A standard package includes the D-R 220 measuring head, the reflector and the supply unit (for purging air, voltage and data transfer).

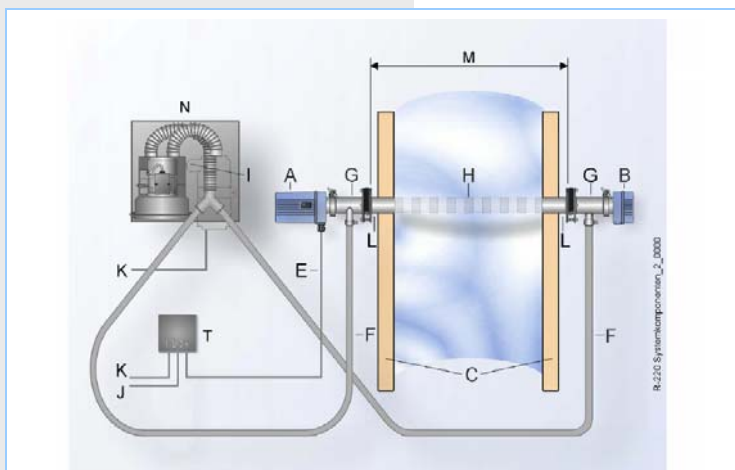


Fig. 5.5 System with T-Box and separate purging air unit

A	Measuring head M)	I	Fresh air intake
B	Reflector (R1 or R2)	J	Data cable (measurement data)
C	Channel wall	K	Mains power connection
E	Connection cable M	L	Adjustment flange with pipe
F	Purging air hosepipe	M	Measurement length 1.0-3.0 m or 2.5-10.0 m
G	Purging air flange	N	external purging air supply
H	Measurement sector	T	T-Box (Power supply and terminal rail)

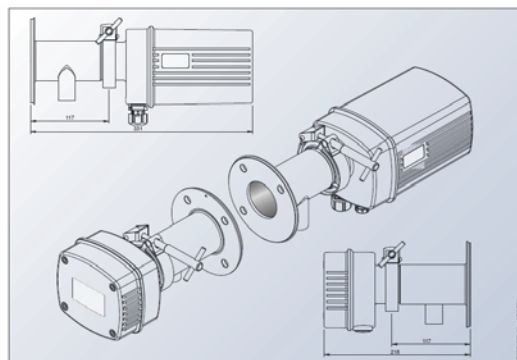


Complete Opacity Solution

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.



Specifications

Measurement Range	From 0-25/50/100% opacity
Light Source	LED
Measuring Path Length	3 to 33 feet
Accuracy	<2% of measuring range
Detection Limit	<3% of measuring range
Output Signal	One (1) 0-20mA, live zero 4 mA
Maximum Load	400 ohms
Bus Interface for Programming & Results	Modbus RTU serial
Relay Outputs	2 relay outputs 30 VA, max. 48 V/1A
Permissible Ambient Temperature Range	-20°C - +50°C
Flue Gas Temperature	Above dew point up to 200°C (optional up to 500°C)
Power Supply	24 VDC provided by supply box
Power Consumption	0.4A
Protection Class	IP65
Weight of Measuring Head	~6 lbs.
Weight of Reflector	~3.5 lbs.
Supply Box	
Power Supply	85-264 VAC, 46-63 Hz, 50 VA
Dimensions	8.3 in. x 11.8 in. x 14.9 in.
Weight	~28 lbs.
Class	IP65

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

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