

Optical opacity / dust monitor

Standard system for plants with small to medium dust concentrations

Features

- In-situ measuring procedure, continuous measurement
- Semi-conductor source with long service life
- Super-wide band diode (SWBD), which provides more stable measuring results in comparison to devices with conventional LEDs
- Powerful microprocessor technology
- Measured value display on LC display in opacity, extinction or in mg/m³
- Automatic function tests with correction of measured values in relation to soiling
- Optics and electronics in a hermetically sealed unit – no smoke gas can enter device
- Easy adjustment without additional equipment
- Low-maintenance thanks to optimal purge air conduction

Applications

Plants in which the dust concentration quantity needs to be measured, e.g.:

- Furnace plants with semi-anthracite coal, brown coal, fuel oil and combined heating
- Converter plants, asphalt mixing plants
- Plants for cement manufacture.

Approvals

- Suitability-tested by the TÜV Cologne, test report 936/801017
- Approved and certified acc. to EN 15267-3
- MCERTS

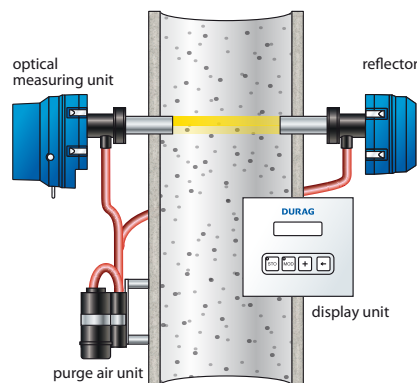


Measuring principle

The device operates using the double-pass method according to the auto-collimation principle. The light beam traverses the measuring distance twice. The attenuation of the light beam by the dust content in the measuring section is measured and evaluated

System components

- Mounting flanges
- Measuring head
- Reflector
- Control and display unit
- Purge air unit



Options

- Bus interface, e.g. Modbus or similar
- Automatic quick-closing shutters to protect the measuring head and the reflector in the event of failure of the purge air
- Weather protection covers, for outdoor installation
- Explosion proof design for EEx p, Zone 1 or Zone 2
- With an additional display unit at the measuring location, the control and display unit can be installed in up to 1000 m distance away
- Temperature compensation through additional analogue input
- Special model for measuring distances up to 18 m with 2 purge air units
- Filter set for sensitivity and linearity control

measurements	opacity, extinction	detection limit	0.75% @ extinction 0–0.1
switchable measuring ranges	opacity: 0–20% ... 0–100% extinction: 0–0.1 ... 0–1.6 dust: 0–80 mg/m ³ ... 0–4000 mg/m ³ ¹⁾	reference point drift	<0.4% of measuring range/month
measuring principle	transmission	zero point drift	<0.4% of measuring range/month
flue gas temperature	above dew point up to 250°C, optional up to 1000°C, depending on application	supply voltage	95–264 VAC, 47–63 Hz, 30 VA
flue gas pressure	-50 up to +20 hPa, optional higher	dimensions (h x w x d)	measuring head 363 x 185 x 398 mm
duct diameter	1 up to 12 m, optional up to 18 m	weight	7 kg
ambient temperature	-20 up to +50°C, optional higher	remarks	¹⁾ with reference to one meter of path length after gravimetric calibration
protection	IP65, Ex optional	purge air supply	
measuring outputs	2x 0/4–20 mA / 500 Ohm, manual or automatic measuring range switching, optional Modbus RTU, Profibus DP	purge air quantity	approx. 80 m ³ /h
digital outputs	6 programmable relay outputs, permissible load 48 V / 0.5 A	supply voltage	115/230 VAC, 50/60 Hz, 0.37 / 0.43 kW
digital inputs	6 programmable potential free inputs	dimensions (h x w x d)	350 x 550 x 500 mm
		weight	12 kg
accuracy	<1% of measuring range	protection	IP55

Optical dust and opacity meter

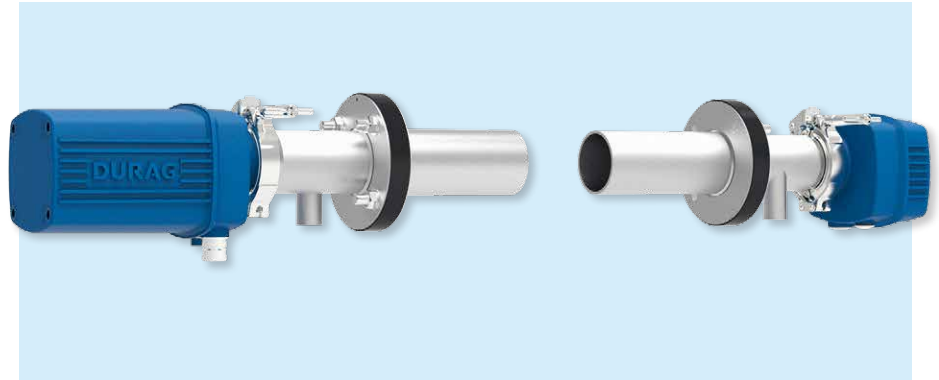
Monitoring dust emissions on smaller plants and in process applications

Features

- In-situ measurement directly in the flue gas flow
- Digital operation with microprocessor
- Adjustable limit value
- 2 contact switch outputs
- Measuring value integral 4/15/64 seconds
- Internal event memory
- PC-interface for easy maintenance
- Modbus RTU interface
- Measurement results shown as opacity or extinction
- No weather protection covers needed

Applications

- Non-compliant device for smaller plants
- Heating stations, power stations
- Boiler plants in industry, barracks, hospitals, schools
- Dust extraction and filter plants
- Process monitoring
- Filter monitoring



Measuring principle

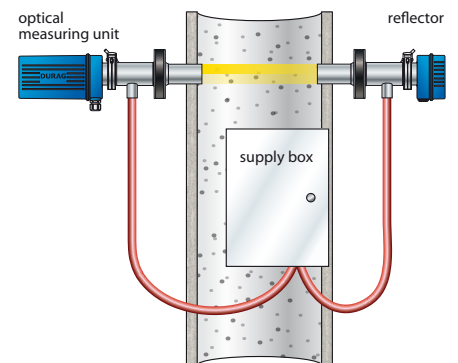
The device operates using the double-pass method according to the auto-collimation principle. The light beam traverses the measuring distance twice. The attenuation of the light beam by the dust content in the measuring section is measured and evaluated.

System components

- D-R 220 measuring head
- 2 reflectors for measuring distances 0.4 to 3.5 m and 3 to 10 m
- Mounting flanges
- Supply box with purge air unit
- Zero point reflector

Models

- System 1: for measuring sections up to 3.25 m
- System 2: for measuring sections from 2.75 m up to 10 m



Options

- Neutral density filters for linearity check
- Sighting scope
- Display and operating unit D-ISC 100
- Service software D-ESI 100 incl. USB-stick and cable

measurements	opacity, extinction	accuracy	<2% of measuring range
measuring ranges	0-25/50/100% OP 0-0.2 / 0.4-1.6 Ext 0-160 mg/m ³ 0-4000 mg/m ³ ¹⁾ dust	detection limit	<2% of measuring range
measuring principle	transmission	supply voltage	24 VDC, 0.4 A
flue gas temperature	above dew point up to 200°C, optional up to 500°C, depending on application	dimensions (h x w x d)	measuring head 160 x 150 x 314 mm
flue gas pressure	-50 up to +10 hPa, optional higher	weight	measuring unit 2.7 kg, reflector 1.6 kg
duct diameter	400-10,000 mm	supply box	
ambient temperature	-20 up to +50°C	purge air supply	integrated
protection	IP65	supply voltage	85-264 VAC, 46-63 Hz, 50 VA
measuring output	0/4-20 mA / 400 Ohm	dimensions (h x w x d)	210 x 300 x 380 mm
digital outputs	2 relay outputs 30 VA, max. 48 V / 0.5A	weight	13 kg
		protection	IP54
remarks	¹⁾ with reference to one meter of path length after gravimetric calibration		