

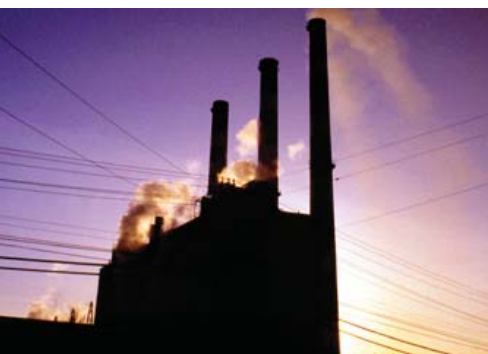
## Thermo Scientific Model 445 Opacity Monitor

The Thermo Scientific Model 445 is an opacity and dust concentration monitor based on the auto-collimation principle to meet the highest standards. The monitor completely fulfills all standards for measuring opacity and dust, including EPA PS1, ASTM 6216-98 requirements.



### Key Features/Benefits

- LC measurement display (opacity, extinction, transmission)
- Optional RCU-MS remote control unit
- Optional remote diagnostics via modem
- Automatic contamination correction
- Automatic check cycle
- Automatic built-in 4 point linearity check



### Applications

- Power plants and cement plants
- Glass, steel and paper industries
- Electrostatic precipitator control/regulation
- Special applications, such as thick channel walls and large duct diameters

### Technology

The Thermo Scientific Model 445 uses optical-electronic technology to determine opacity or measure mass concentration of dust in stack effluent. The 445 Monitor detects and reports any deviations or exceedances from the emission limit value.

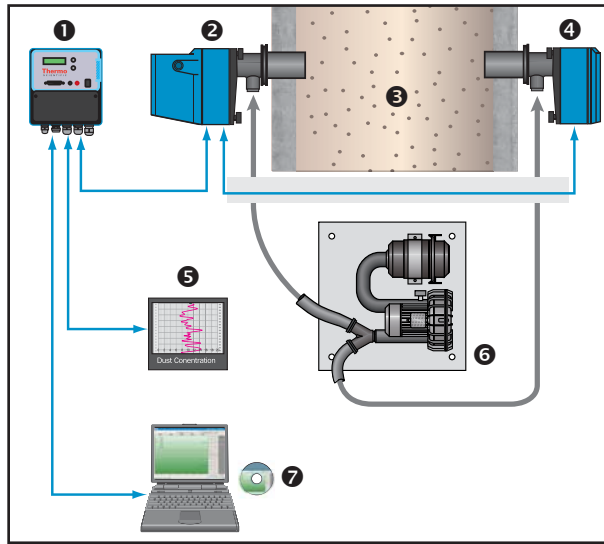
### Components

The optical and electronic elements are contained within the sender/receiver unit. A durable pulsed LED serves as the light source. An integral sighting device eases alignment of the sender/receiver and the reflector units. To protect the optical surfaces from dust and high temperature, the sender/receiver and reflector unit are purged with air. The connection unit contains the display, operating elements and all connections. Options include an RCU-MS remote control unit, as well as remote diagnostics via modem.

### Automated Features

The Model 445 features automatic contamination correction, check cycle and built-in 4 point linearity check.

**Model 445 Opacity Monitor**



- 1) Connection Unit
- 2) Sender/Receiver Unit
- 3) Duct
- 4) Reflector
- 5) Measurement Value Recording
- 6) Purge Air Inlet
- 7) MEPA Software

<b>Measuring principle</b>	Transmission in auto collimation, double pass		
<b>Measuring range</b>	445-02	445-03	445-04
• Opacity (max./min.)	0 - 100%/0 - 50%	0 - 100%/0 - 20%	0 - 100%/0 - 50%
• Transmission (max./min.)	100 - 0%/100 - 50%	100 - 0%/100 - 80%	100 - 0%/100 - 50%
• Extinction (max./min.)	0 - 2/0 - 0.3	0 - 2/0 - 0.1	0 - 2/0 - 0.3
• Dust concentration <sup>1)</sup>	max. 0 - 4,000 mg/m <sup>3</sup> min. 0 - 200 mg/m <sup>3</sup>		
<b>Accuracy</b>	± 2% fullscale		
<b>Response time</b>	1 to 600 s, in stages from 1 s, user-selectable		
<b>Measuring path</b>	0.5 to 15 m		
<b>Meas. gas temperature</b>	above dewpoint up to 600 °C / 1,112 °F		
<b>Ambient temperature</b>	-20 - +55 °C / -4 - +130 °F		
<b>Meas. gas pressure</b>	max. +10 hPa / +4 inwc with standard purge-air unit; max. 40 hPa / +16 inwc with stronger fan <sup>2)</sup>		
<b>Device Data</b>	Sender/receiver Unit	Reflector Unit	Connection Unit
<b>Class of protection</b>	IP 65/NEMA 4X		
<b>Power supply</b>	90 - 260 VAC, 48 - 62 Hz; 200 W power consumption (connection unit); single phase		
<b>Dimensions (W x H x D)</b>	8.1 x 10.6 x 14.8 in. (205 x 270 x 375.5 mm)	8.1 x 10.6 x 9.9 in. (205 x 270 x 250.5 mm)	7.7 x 8.0 x 6.4 in. (196 x 203 162.5 mm)
<b>Weight</b>	27 lb/12 kg	17 lb/8 kg	8 lb/4 kg
<b>Purge air unit</b>	Contact Thermo Fisher Scientific for info		
<b>Compliance</b>	U.S. EPA incl. PS1, CE, TÜV (German Technical Inspection), Clean Air Act (13th Impl. Ord.), GOST		
<b>Electronic Interfaces</b>	RS232 service interface; RS422 for optional RCU-MS remote control unit		
<b>Signal Interfaces</b>	2 analog outputs: 0/2/4 - 20 mA; 750 W max. load, electrically isolated		
	4 relay outputs: 48 VDC, 1 A, 30 W max.; 48 VAC, 1 A; cycle/maintenance, limit value <sup>1, 2</sup> , malfunction		
	3 digital inputs: 10-25 VAC/10-35 VDC: floating contact (electrically isolated)		

<sup>1)</sup> On 1 m measuring path, depending on particle size and gravimetric comparison measurement    <sup>2)</sup> On request

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