



FWE200DH – EXTRACTIVE SCATTERED LIGHT DUST MEASURING DEVICE

RELIABLE DUST MEASUREMENT IN WET GASES

Dust measuring devices

SICK
Sensor Intelligence.

RELIABLE DUST MEASUREMENT IN WET GASES

Particle measurement in a very wide range of application areas – from very small to average dust concentrations

Since drop formation interferes with the measurement of dust concentrations, measuring in wet exhaust gases, for example downstream from a flue gas desulfurization system, can be difficult. The Extractive Dust Measuring System FWE200DH

measures small to medium dust concentrations accurately and very reliably. The gas is extracted via a sampling probe and heated above dew point. Any droplets in the gas are vaporized, making it impossible for them to falsify the measurement results.



Compact measuring and control unit

With a scattered light cell, an optimized thermocyclone for evaporating wet gases, an effective ejector for sample gas feeding and a comfortable control unit.

Remote control unit (option)

For measured value and status display, data retrieval and remote control



measurement probe

For sampling and return of the test gas flow

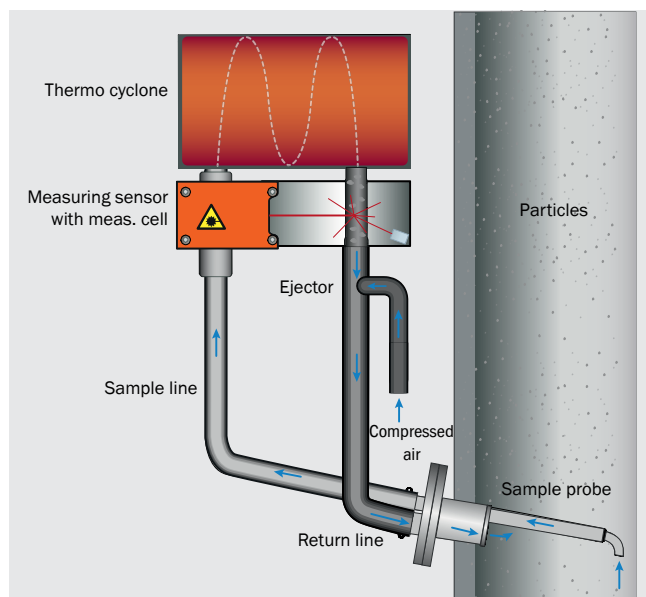


Sample and return hose

Flexible hoses in standard length of 1.2 m for the gas sampling (nominal diameter 32) and for gas return (nominal diameter 50)

Programmable blower unit

For compressed air supply of the ejector via a flexible hose (nominal diameter 25)



Principle of operation

The FWE200DH operates as a bypass system. A partial gas flow is exhausted out of the gas duct via a sample gas probe and heated up in a thermocyclone, so that water drops and aerosols vaporize. Afterwards the sample gas is fed in a measurement cell in which a laser beam illuminates the particles contained in the gas and thus generates scattered light. A sensitive receiver measures this scattered light extremely accurately. The scattered light intensity measured in this way is the basis for determining the dust concentration. Finally the sample gas is again fed back via the sample gas probe into the gas duct.

RELIABLE DUST MEASUREMENT IN WET GASES



Product description

The FWE200DH dust measuring system is designed to measure dust concentrations in wet gases. The gas is extracted via a sampling probe and heated above dew point in a thermocyclone. All of the droplets contained in the gas are condensed and are thus unable to falsify the

measurement result. The scattered light measuring principle enables even minimal dust concentrations to be measured. The FWE200DH meets the requirements of the EN 14181 and the EN15267.

At a glance

- For very low to medium dust concentrations
- Gas sampling and return combined in one probe
- Contamination check
- Automatic monitoring of zero and reference point
- Easy parameterization and convenient operation – optionally via supplemental remote unit
- Integrated system diagnostics for early detection of maintenance requirements

Your benefits

- Reliable and approved dust measurement in wet gas
- Efficient operation due to very few expendable items and very low installation requirements
- Low-maintenance thanks to the absence of moving parts coming into contact with aggressive gas
- Compact design for installation directly on the duct
- Simple commissioning directly at the measuring site due to automatic measuring range adjustment
- Very long life cycle due to compact design



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→ www.mysick.com/en/FWE200DH

For more information, simply visit the above link to obtain direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Fields of application

- Monitoring of wet scrubber facilities
- Measurement in saturated gas downstream of desulfurization plants
- Determination of dust concentrations in wet exhaust air

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

FWE200DH system

Measured values	Scattered light intensity, dust concentration (after gravimetric comparison measurement)
Performance-tested measurands	Dust concentration
Measurement principles	Scattered light forward
Spectral range	640 nm ... 660 nm Laser, protection class 2, power < 1 mW
Measuring ranges	Dust concentration 0 ... 5 mg/m ³ / 0 ... 200 mg/m ³ Measuring ranges freely selectable Higher measuring ranges on request
Response time (t₉₀)	0.1 s ... 600 s Freely adjustable
Accuracy	± 2 % Of measuring range full scale
Process temperature	PVDF probe: ≤ +120 °C Hastelloy probe: ≤ +220 °C Versions for higher temperatures on request
Process pressure	With SLV7 2BH1100 purge air unit: -20 hPa ... 20 hPa
Process gas velocity	7 m/s ... 30 m/s
Process gas humidity	Max. 10 g/m ³ liquid water without water vapour
Ambient temperature	-20 °C ... +50 °C Intake temperatures for purge air: -20 °C ... +45 °C
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 U.S. EPA PS-11 compliant
Electrical safety	CE
Enclosure rating	System: IP 54 Control unit: IP 65
Analog outputs	3 outputs: 0/2/4 ... 20 mA, 750 Ω Electrically isolated
Analog inputs	6 inputs: 0 ... 20 mA Not electrically isolated
Digital outputs	5 relay outputs (change-over contacts), potential-free: 48 V, 1 A
Digital inputs	8 inputs: Potential-free

Interfaces and bus protocols		
	Ethernet	Modbus TCP
	Ethernet	OPC (via optional interface module)
	Ethernet	SOPAS ET (via optional interface module)
	RS-485	Modbus RTU (via optional interface module)
	RS-485	PROFIBUS DP (via optional interface module)
	RS-485	SOPAS ET (via optional interface module)
	USB	SOPAS ET
	RS-232	Proprietary service interface
Indication		LC display and status LEDs on control and remote unit
Input		Functional keys
Operation		Menu-driven operation via control unit or software SOPAS ET
Dimensions (W x H x D)		813 mm x 722 mm x 286 mm (FWE200DH measuring and control unit, for details see dimensional drawings)
Weight		FWE200DH measuring and control unit: 65 kg Sampling probe: ≤ 15 kg
Power supply		
	Voltage	115 V / 230 V
	Frequency	50 Hz / 60 Hz
	Power consumption	≤ 1.7 kW Without heated sample gas line
Test functions		Automatic self-test (linearity, contamination, drift, aging) Contamination limits: at 30% warning, at 40% failure Manual linearity test with reference filter
Options		FWE200DH mounting rack

SLV7-1 purge air unit, 2BH1100, 1-ph

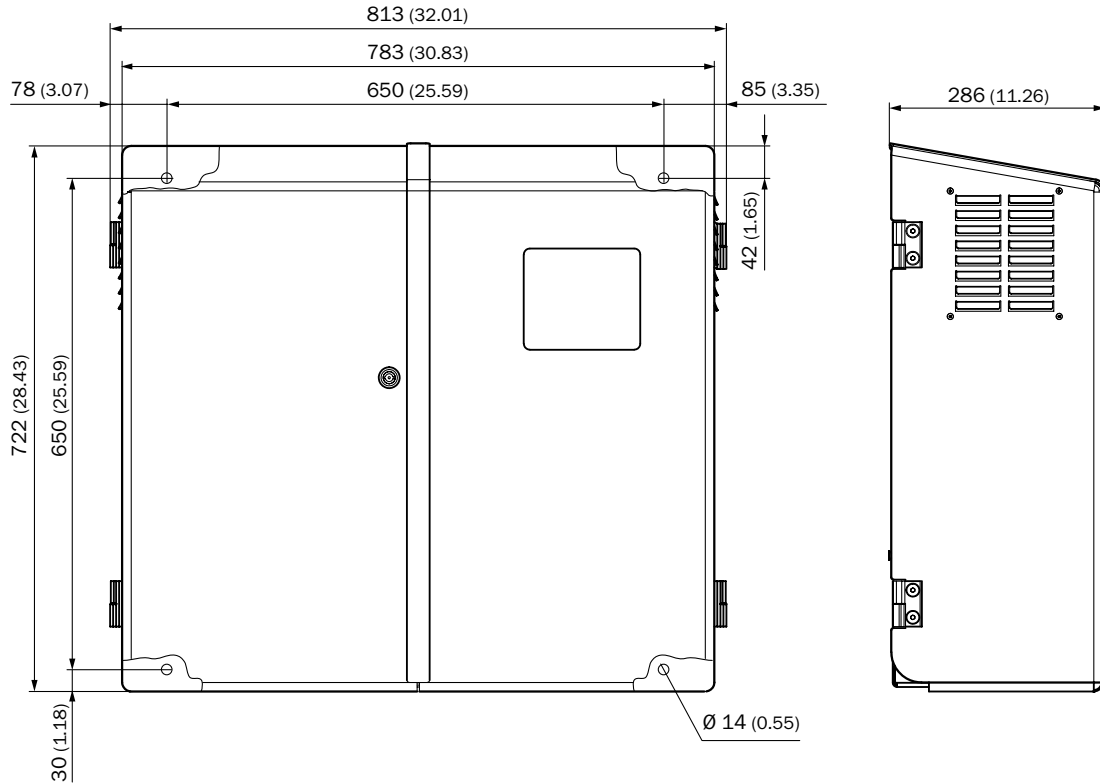
Description		Unit to provide dust-free air for flushing of optical surfaces
Gas flow rate		30 m³/h ... 40 m³/h
Ambient temperature		–20 °C ... +45 °C Intake temperatures for purge air
Enclosure rating		IP 54
Dimensions (W x H x D)		550 mm x 550 mm x 258 mm (for details see dimensional drawings)
Weight		16 kg
Power supply		
	Voltage	230 V / 115 V
	Frequency	50 Hz / 60 Hz
Auxiliary gas connections		Purge air: 40 mm
Test functions		Pressure switch (switching point –35 hPa)
Integrated components		2-step air filter, type Europiclon, dust capacity 200 g

Ordering information

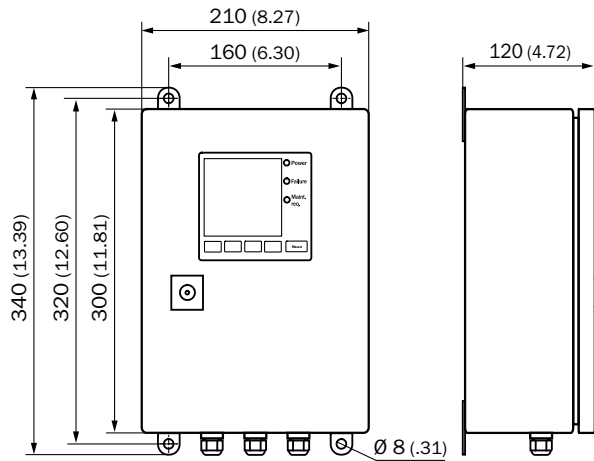
Our regional sales organization will help you to select the optimum device configuration.

Dimensional drawings (Dimensions in mm (inch))

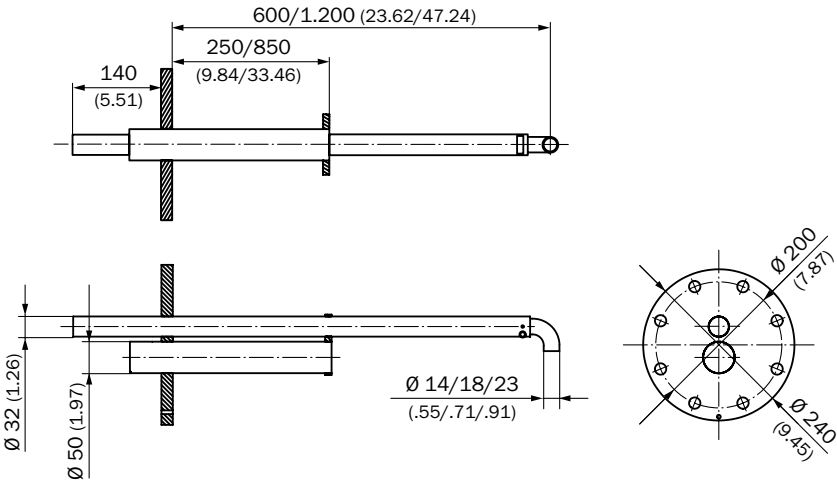
FWE200DH control unit



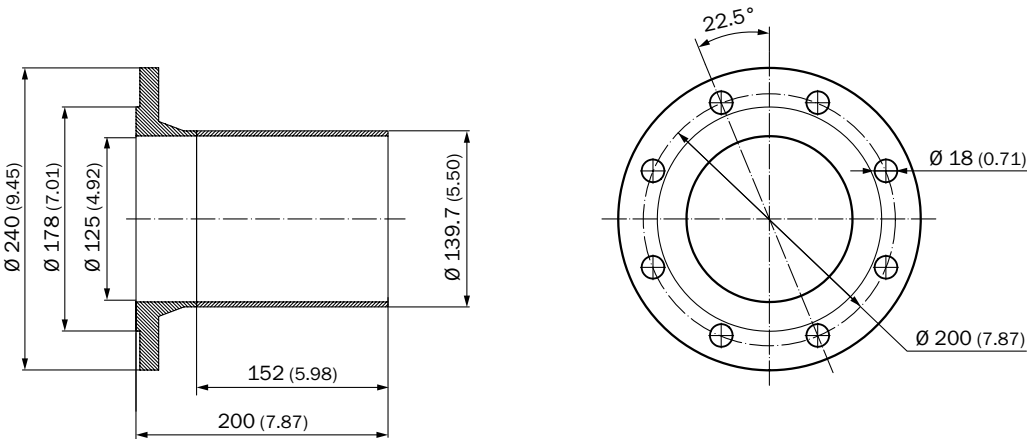
FWE200DH remote unit



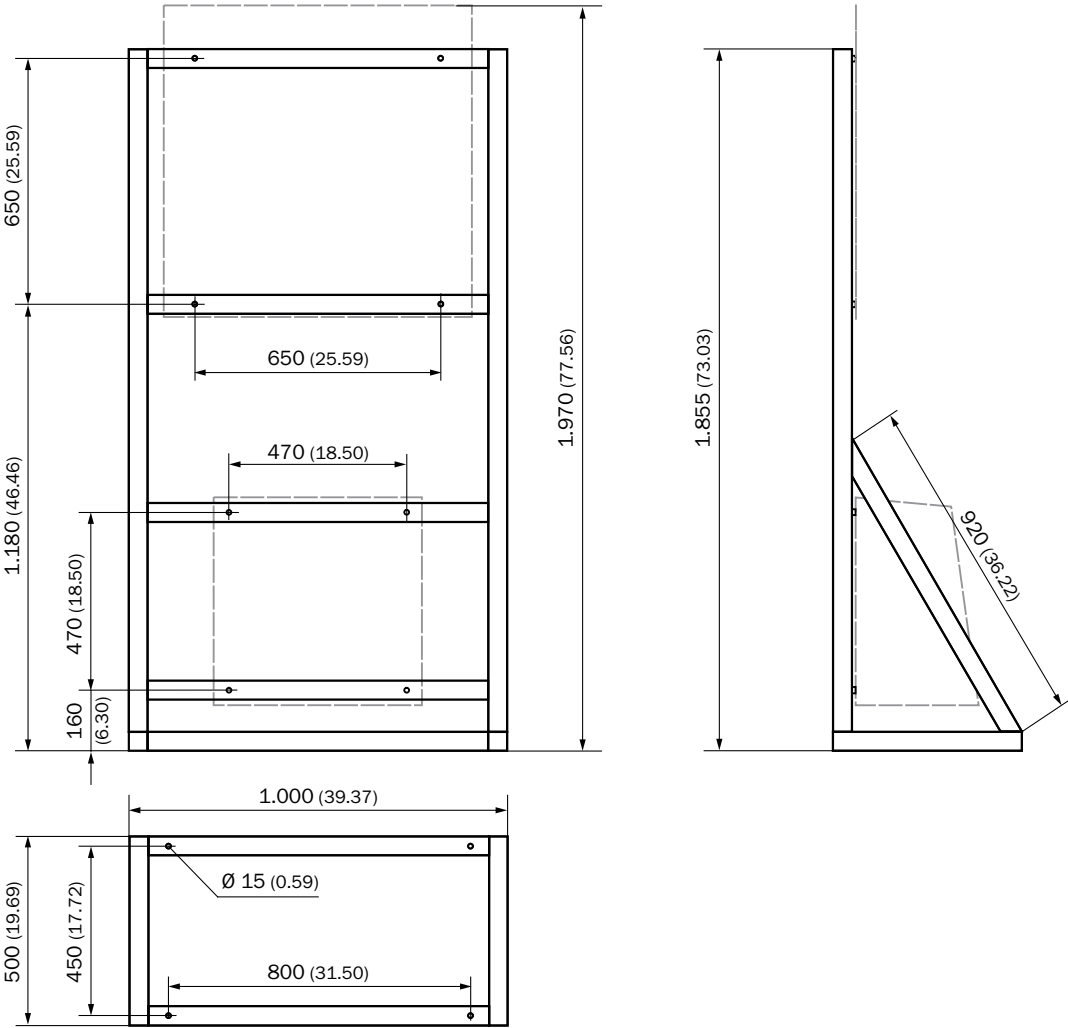
FWE200DH sampling probe



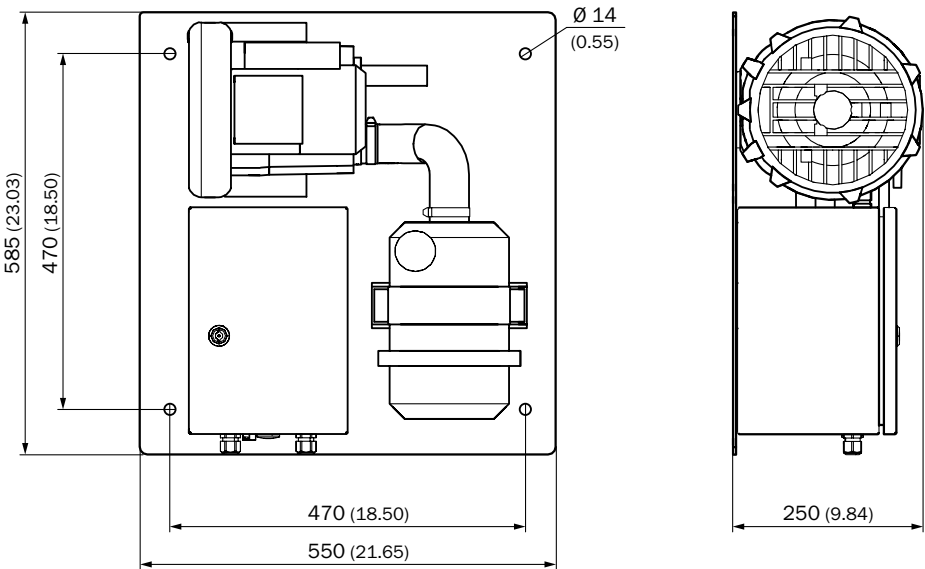
Mounting flange, D_i=125 mm



FWE200DH mounting rack



SLV7-1 purge air unit, 2BH1100, 1-ph



Weather hood for SLV4/SLV5/SLV7 purge air unit



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