



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 FWE200DH extractive dust measuring system measures small to medium dust concentrations ac-

curately and very reliably. The gas is extracted via a sample probe and heated above the 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 compact scattered light measurement cell, thermocyclone for wet gas evaporation, an ejector for test gas transport and various interface modules available



Backwash devices (option)

Instrument-operated back purging to clean the gas sample probe or water back purging to remove residues created by the application from the entire system

Remote control unit (option)

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



Gas sample probe

For sampling and return of the test gas flow – available in various materials

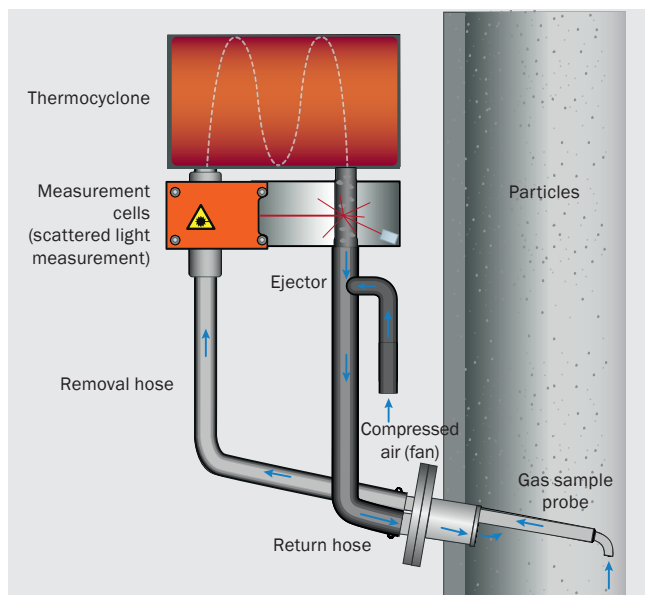


Extraction and return hose

Flexible hoses for gas extraction and return; heated versions also available as an option

Controllable purge air unit

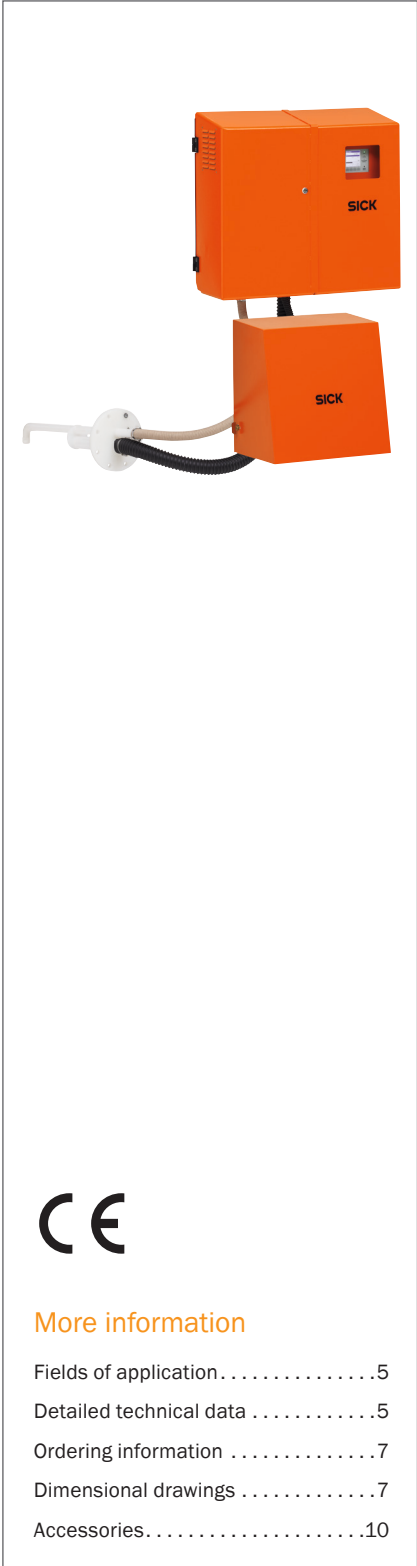
For compressed air supply of the ejector over a flexible hose; can be equipped with optional purge air heater



Principle of operation

The FWE200DH operates as a bypass system. A partial gas flow is suctioned out of the gas duct via a test gas probe and heated in a thermocyclone so that water drops and aerosols vaporize. Afterwards, the test gas is fed into 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 test gas is again fed back into the gas duct via the test gas probe.

RELIABLE DUST MEASUREMENT IN WET GASES



Product description

The FWE200DH dust measuring device is designed to continuously measure dust concentrations in wet flue gas. The gas is extracted via a sampling probe and heated above dew point. Droplets in the gas are vaporized, making it impossible for them to falsify the measurement

results. The highly sensitive scattered light measurement principle enables accurate measurements even at very low dust concentrations.

The FWE200DH meets the requirements of EN 14181 and EN 15267.

At a glance

- For very low to medium dust concentrations
- Gas sampling and return combined in one probe
- Contamination check
- Automated monitoring of zero and reference point
- Simple parameterization and convenient operation – optionally via an additional remote display
- Integrated system monitoring to detect the need for maintenance at an early stage

Your benefits

- Proven and reliable dust measurement in wet gases
- Economic operation due to very few consumable parts and very low installation effort
- Very low maintenance, since no parts come into contact with the aggressive gas
- Long service life due to the intelligent design



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→ www.sick.com/FWE200DH

For more information, simply enter the link or scan the QR code to get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Fields of application

- Monitoring of wet gas scrubbing facilities
- Measurement in saturated gas downstream of desulfurization plants
- Determination of dust concentrations in wet exhaust air and in technological processes

Detailed technical data

The precise device specifications and product performance data may vary and are dependent on the respective application and customer specifications.

FWE200DH measuring and control unit

Measurands	Scattered light intensity, dust concentration (according to gravimetric comparative measurements)
Suitability-tested measurands	Dust concentration
Measurement principles	Light scattering forward
Spectral range	640 nm ... 660 nm Laser, protection class 2, power < 1 mW
Measuring ranges	Dust concentration 0 ... 5 mg/m ³ / 0 ... 500 mg/m ³ Measuring ranges freely selectable; higher measuring ranges on request
Certified measuring ranges	Dust concentration 0 ... 7.5 mg/m ³ / 0 ... 10 mg/m ³ / 0 ... 15 mg/m ³ / 0 ... 50 mg/m ³ / 0 ... 100 mg/m ³ / 0 ... 500 mg/m ³
Adjustment time (t₉₀)	0,1 s ... 600 s Freely adjustable
Accuracy	± 2% of the measuring range limit value
Process temperature	PVDF gas sample probe: ≤ +120 °C Hastelloy gas sample probe: ≤ +220 °C Designs for higher temperatures available on request
Process pressure	With SLV7 2BH1100 purge air unit: -20 hPa ... 20 hPa Other pressure ranges on request
Process gas speed	5 m/s ... 30 m/s
Process gas humidity	Max. 40 g/m ³ liquid water without water vapor share
Ambient temperature	-20 °C ... +50 °C Intake temperature for purge air: -20 °C ... +45 °C
Conformities	Approved for system requiring permission 2001/80 / EC (13th German Federal Immission Control Act (BImSchV)) 2000/76 / EG (17th German Federal Immission Control Act (BImSchV)) 27.BImSchV German Technical Instructions on Air Quality Control (TA-Luft) EN 15267 EN 14181 U.S. EPA PS-11-compliant If options are used, it may be necessary to get agreement from local authorities
Electrical safety	CE

Enclosure rating		
	Measuring and control unit	IP54
	Control unit	IP65
Analog outputs		3 outputs: 0/2/4 ... 20 mA, +750 Ω Galvanically separated
Analog inputs		6 inputs: 0 ... 20 mA Not galvanically separated
Digital outputs		5 relay outputs (changeover contacts), volt-free: +48 V, 1 A
Digital inputs		8 inputs
Modbus		✓
	Type of fieldbus integration	TCP (via optional interface module; only one module possible per MCU) RTU RS-485 (via optional interface module; only one module possible per MCU)
PROFIBUS DP		✓
	Type of fieldbus integration	Via optional interface module; only one module possible per MCU
Ethernet		✓
	Type of fieldbus integration	Via optional interface module; only one module possible per MCU
	Function	Connection to SOPAS ET software or OPC server
Serial		✓
	Type of fieldbus integration	RS-232
	Function	Proprietary service interface
Display		LC display and status LED on control and remote control unit
Input		Function buttons
Operation		Menu-guided operation via control unit or SOPAS ET software
Dimensions (W x H x D)		
	FWE200DH measuring and control unit	813 mm x 722 mm x 286 mm Details, see dimensional drawings
Weight		
	FWE200DH measuring and control unit:	65 kg
	Sample probe:	≤ 15 kg
Material in contact with media		PVDF, Hastelloy
Power supply		
	Voltage	115 V / 230 V
	Frequency	50 Hz / 60 Hz
	Power consumption	FWE200DH measuring and control unit: 0.8 kW ... 1.7 kW Air heater: ≤ 1 kW Measured gas pipe, heated: ≤ 0.3 kW
Test functions		Automated self-test (zero point, contamination, drift) Contamination limit values: warning at 30%; fault at 40% Manual linearity test with reference filter
Options		FWE200DH mounting frame Air back purge Water back purge Measured gas pipe, heated Air heater

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

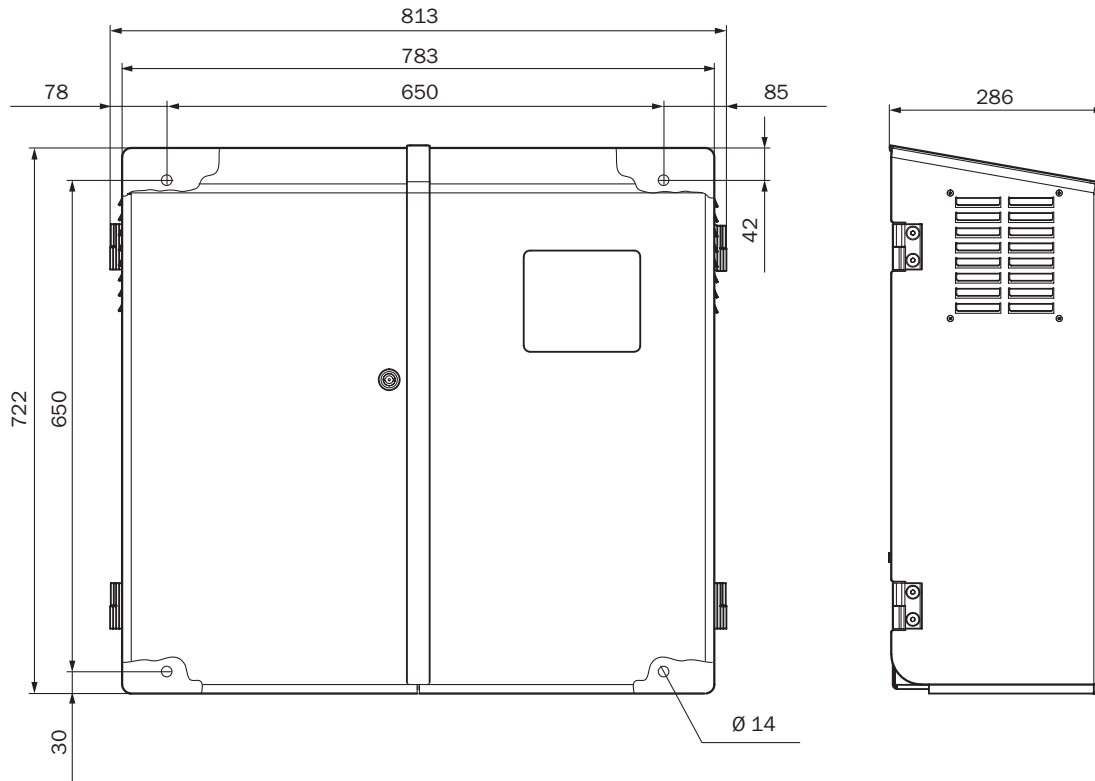
Gas flow	30 m ³ /h ... 40 m ³ /h	
Ambient temperature	-20 °C ... +45 °C Intake temperature for purge air	
Enclosure rating	IP54	
Dimensions (W x H x D)	550 mm x 550 mm x 258 mm Details, see dimensional drawings	
Weight	16 kg	
Power supply	Voltage	230 V / 115 V
	Frequency	50 Hz / 60 Hz
Auxiliary gas connections	Purge air	40 mm
Test functions	Low-pressure monitor (switching point -35 hPa)	
Integrated components	Two-stage air filter, type Europiclon, dust capacity 200 g	

Ordering information

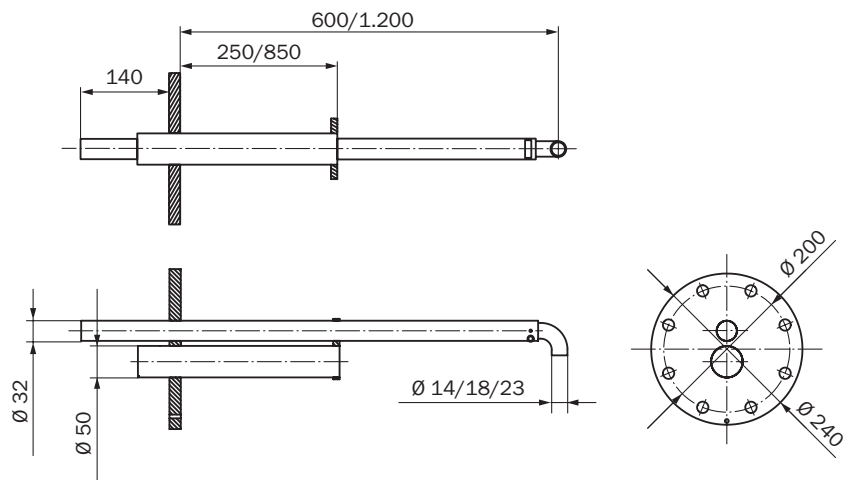
Our regional sales organization will be glad to advise you on which device configuration is best for you.

Dimensional drawings (dimensions in mm)

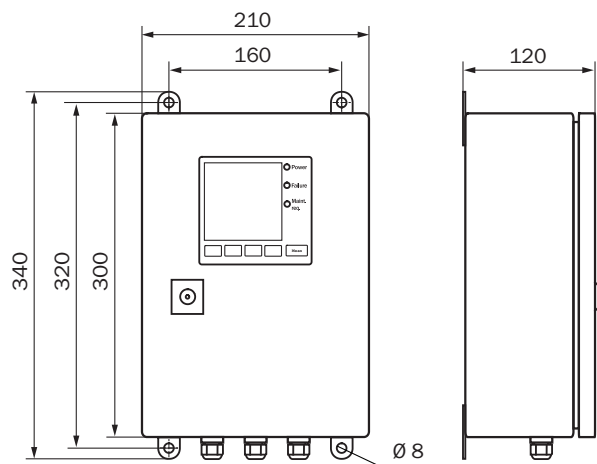
FWE200DH measuring and control unit



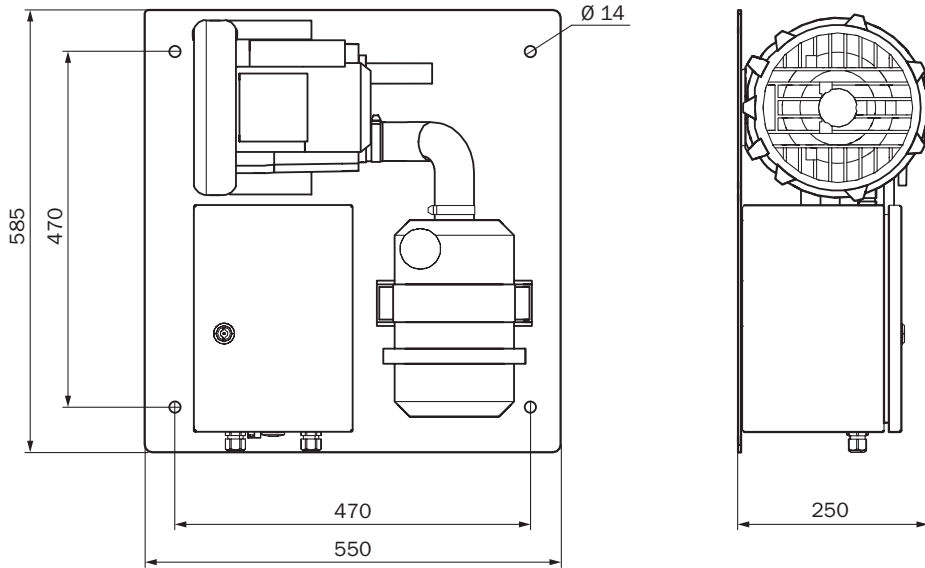
Sample probe



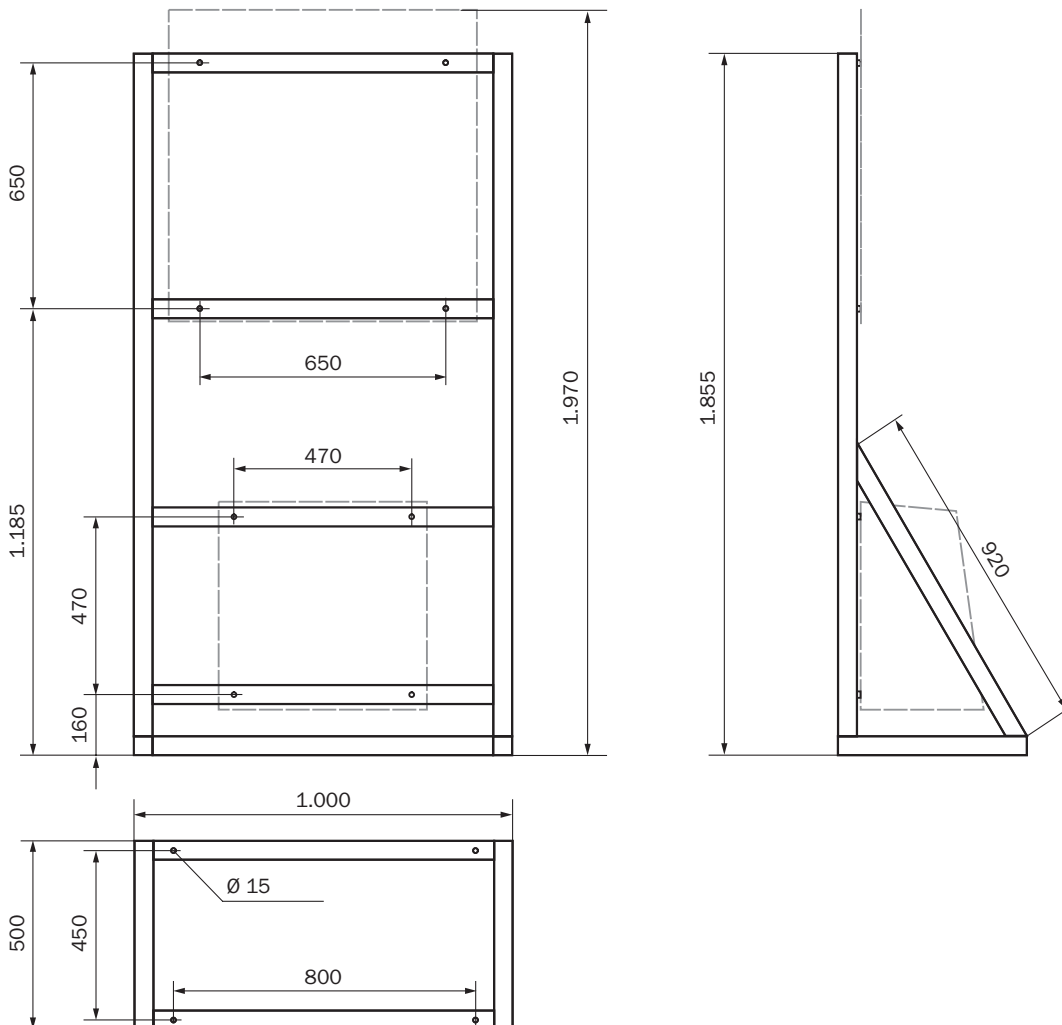
FWE200DH remote control unit



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



FWE200DH mounting frame



Accessories

Lens cloths

Brief description	Part no.
Cloth for cleaning the front screen	4003353

Test and monitoring tools

Brief description	Part no.
Control filter set FWE200DH consists of: scattered light filters with approx. 0%, 20%, 40%, 60%, 80%, filter holder, lens cloth, case with insert	2077639

Flanges

Weld-in flange

Brief description	Hole circle diameter	Part no.
Flange with tube, internal diameter 139 mm, nominal length 200 mm, structural steel 1.0037	200 mm	7047616
Flange with tube, internal diameter 139 mm, nominal length 200 mm, stainless steel 1.4571	200 mm	7047641

Device protection (mechanical)

Protective housing and tubes

Brief description	Part no.
Weather hood for external fan unit, aluminum, painted	2084180

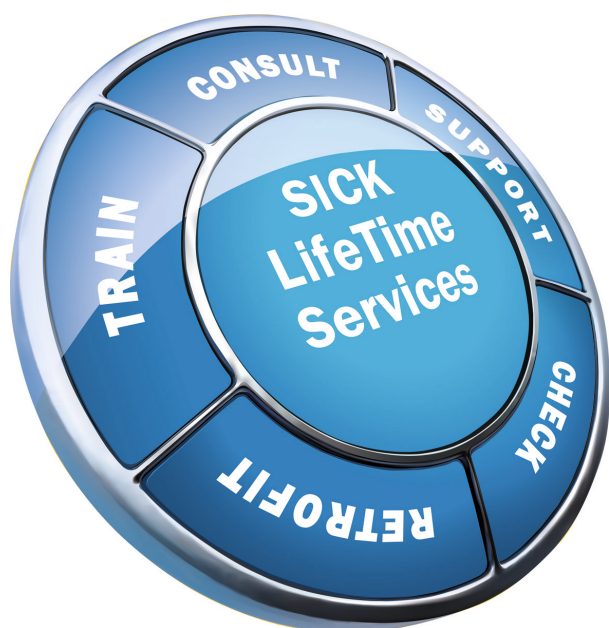
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