MCS200HW

PROVEN MEASUREMENT TECHNOLOGY FOR FLUE GAS MONITORING

Multi-component analyzer system

SICK
Sensor Intelligence.

THE MCS200HW:

PROVEN MEASUREMENT TECHNOLOGY IN A NEW DESIGN

Measurement technology designed for industrial applications with clear structure, expandable with FID measurement module for measuring total hydrocarbon concentrations.

The innovative 12" touch display allows intuitive operation of the entire MCS200HW analyzer system. The display offers a task-oriented operator wizard, quick access to important functions and a smart human machine interface – scalable for different access points and devices.

Strict legal limits apply to industrial emissions which must not be exceeded. Precisely and reliably monitoring flue gas values is therefore particularly important in power plants, waste incineration plants or cement plants.

The MCS200HW is the new infrared analyzer system from SICK for continuous emission monitoring. Up to ten infrared-active components (e.g. HCl, SO_2, NO, NO_2, CO, CO_2, NH_3, N_2O, H_2O, CH_4) can be monitored at the same time according to the customer's requirements. In addition, the MCS200HW is standardly equipped with an oxygen sensor. The MCS200HW analyzer system can optionally be extended with a total hydrocarbon analyzer (GMS811 FIDORi).

The gas paths in the entire analyzer system are heated in order to measure water-soluble gas components and prevent condensate formation. In this way, the gas components are not washed out and corrosion is avoided. This reduces the amount of maintenance required, just as well as the convenient optional reference point check.

The MCS200HW is quick to install and easy to use. Whether you want to access device information from your plant locally or remotely: The measured values can be viewed at any time and monitoring tasks can be carried out effortlessly.

The gas sampling unit is used for reliable sampling of the measurement gas at the measuring point. From sampling to the cell, all components in contact with the measurement gas are heated in such a way that their temperature is above the dew point and thus protected against corrosion – MCS200HW stands for innovative hot/wet measuring technology from SICK.

ONE ANALYZER SYSTEM, MANY POSSIBILITIES, HIGH EFFICIENCY

Hot/wet extractive measurement technology

The MCS200HW works according to the measurement principle of an infrared single-beam photometer. Both interference and gas filter correlation methods are used. All parts in contact with the sample gas are heated above the dew point to prevent condensate formation in the analyzer system and to avoid damage due to corrosion. Thus, water-soluble gases such as HCl or NH_3 can be monitored and are not lost through solubility effects or salt formation. This increases the service life and measurement certainty of the analyzer system.

Reference point check without test gas

Thanks to internal adjustment filters, drift checking and adjustment are possible even without a test gas. The reference point position of all infrared-active components can be checked both manually and fully automatically. The reference point check can also be used for quality assurance during operation (QAL3 inspection). Expensive test gases are not necessary and the workload is reduced. This creates security and saves costs – with maximum measuring quality.

Lower costs through the use of dry test gases

With the MCS200HW, reference point checking and adjustment of HCl and NH_3 are possible for the first time exclusively with dry test gases certified according to EN 15267 and EN 14181. Test gas generators or evaporators to create wet test gases are no longer required. This saves time and reduces operating costs. Both for operating entities, e.g. when carrying out the regular QAL3 inspections, and for test institutes, e.g. when carrying out the annual surveillance test (AST).
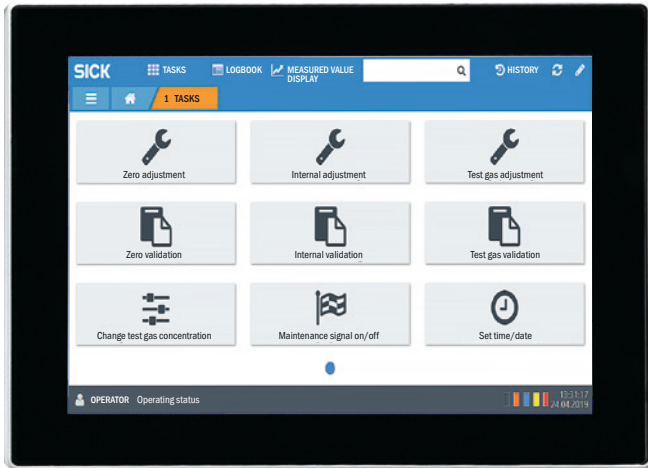
Detailed view of the task wizards

Easy access to the device and secure data access

The web-based operating concept enables access to the MCS200HW irrespective of device and location – conveniently and securely. All that is needed is a web browser, no specific software need to be installed. Task-based operation enables intuitive handling of the analyzer system.

Cost-efficient solution through individual configuration

The analyzer system can be individually configured depending on the measuring task. The costs are based on the respective measuring components used. The result: an individually tailored analyzer system – highly economical and with high-performance.

Secure data transmission via standardized Modbus® interface

The MCS200HW is certified according to the VDI 4201 standard, which is why the data transmission can run via a digital Modbus® interface. This significantly reduces the installation and integration effort: No special hardware such as analog or digital modules is required for communication with the device.

Low maintenance and effective: wear-free gas pumping

An ejector pump conveys the measurement gas from the gas sampling unit of the analyzer system. The device operates without wear and tear: the gas flows through the system due to negative pressure without mechanical stress on the components. Maintenance is minimized which, at the same time, reduces running costs.

PROVEN MEASUREMENT TECHNOLOGY FOR FLUE GAS MONITORING

Product description

The MCS200HW is a multi-component analyzer system for continuous monitoring of up to 10 IR measurement components in flue gases of industrial combustion plants. The MCS200HW is hot/wet extractive: All parts which touch media, from the gas sampling probe to the cell, are heated above the dew point and therefore protected from corrosion.

An integrated oxygen sensor also measures oxygen. As an option, a TOC measurement can be supplemented via an integrated GMS811 FIDORi. Internal reference point monitoring allows for a quick check of the measured values with test gases. The web display and the task assistant integrated in the software makes operation very easy.

At a glance

- Measurement of up to 10 IR components plus O_2 and TOC
- Hot/wet extractive measurement technology
- Wear-free gas distribution through ejector pumps
- Reference point monitoring with internal calibration cells
- Certified digital Modbus® interface
- Web server for platform-independent device control
- Use of dry test gases for HCl and NH_3

Your benefits

- Reliable measurement results, even for water-soluble gas components
- Only one analyzer necessary for simultaneous monitoring of up to 12 gas components
- Measurement components can be put together flexibly and extended at any time
- Convenient, task-oriented operation
- Remote access without additional software
- High availability due to certified internal third-party monitoring (QAL3) without test gases
- Low service costs thanks to minimal maintenance requirements
- Complete data transmission through only one interface possible

More information

➜ www.sick.com/MCS200HW

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

- Emission monitoring for waste incineration plants as well as power plants and plants with co-incineration, e.g. cement plants

- Measurement of nitrogen oxides (NO, NO_2, N_2O) in nitric acid plants
- SO_3 monitoring in coal-fired power plants

Detailed technical data

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

MCS200HW system

Measured Values		CH_4, CO, CO_2, C_{org}, HCl, H_2O, H_2SO_4, NH_3, NO, NO_2, N_2O, O_2, SO_2, SO_3
Performance-tested measurands		CH_4, CO, CO_2, C_{org}, HCl, H_2O, NH_3, NO, NO_2, N_2O, O_2, SO_2
Measurement principles		interference filter correlation, gas filter correlation,
Length of measuring path		8.48 m
Sample quantity		200 l/h ... 400 l/h
Measuring ranges		
	CH_4	0 ... 70 ppm / 0 ... 700 ppm
	CO	0 ... 60 ppm / 0 ... 8,000 ppm
	CO_2	0 to 25% by vol. / 0 to 50% by vol.
	C_{org}	0 ... 15 mg/m³ / 0 ... 10,000 mg/m³
	HCl	0 ... 9 ppm 0 ... 9 ppm / 0 ... 1,840 ppm
	H_2O	0 ... 40% by vol.
	H_2SO_4	0 ... 50 ppm / 0 ... 200 ppm
	NH_3	0 ... 15 ppm / 0 ... 650 ppm
	NO	0 ... 110 ppm / 0 ... 1,865 ppm
	NO_2	0 ... 25 ppm / 0 ... 240 ppm
	N_2O	0 ... 50 ppm / 0 ... 1,015 ppm
	O_2	0 ... 25% by vol.
	SO_2	0 ... 26 ppm / 0 ... 875 ppm
	SO_3	0 ... 50 ppm / 0 ... 200 ppm
Certified measuring ranges		
	CH_4	0 ... 50 mg/m³ / 0 ... 500 mg/m³
	CO	0 ... 75 mg/m³ / 0 ... 10,000 mg/m³
	CO_2	0 ... 25% by vol.
	C_{org}	0 ... 15 mg/m³ / 0 ... 50 mg/m³ / 0 ... 150 mg/m³ / 0 ... 500 mg/m³
	HCl	0 ... 15 mg/m³ / 0 ... 3,000 mg/m³
	H_2O	0 ... 40% by vol.
	NH_3	0 ... 10 mg/m³ / 0 ... 500 mg/m³
	NO	0 ... 150 mg/m³ / 0 ... 2,500 mg/m³
	NO_2	0 ... 50 mg/m³ / 0 ... 500 mg/m³
	N_2O	0 ... 100 mg/m³ / 0 ... 2,000 mg/m³
	O_2	0 ... 25% by vol.
	SO_2	0 ... 75 mg/m³ / 0 ... 2,500 mg/m³
Response time (t_{90})		≤ 200 s
Accuracy		≤ 2%, relative to the measuring range limit value
Sensitivity drift		≤ 3%: within the maintenance interval, relative to the measuring range limit value
Zero point drift		< 3% of the measuring range limit value per maintenance interval
Reference point drift		< 3% of the measuring range limit value per maintenance interval

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Detection limit	≤ 2%: relative to measuring range limit value
TOC measurement	0.05 mg/m³
Reproducibility	≤ 3.3%: relative to measuring range limit value
O₂ measurement	≤ 0.2% by vol.
Measurement uncertainty	≤ 2% of the measuring range limit value
Process temperature	≤ +1,300 °C
Sample gas temperature	
Input analyzer system:	≤ +200 °C
Process pressure	850 hPa ... 1,100 hPa
Process gas humidity	≤ 40% by vol.
Ambient temperature	+5 °C ... +40 °C
Storage temperature	–20 °C ... +70 °C
Ambient pressure	850 hPa ... 1,100 hPa
Ambient humidity	≤ 90% relative humidity; non-condensing
Conformities	Approved for system requiring permission 2010/75 / EU 13. German Federal Immission Control Act (BImSchV) 17. German Federal Immission Control Act (BImSchV) 27. German Federal Immission Control Act (BImSchV) 30th German Federal Immission Control Act (BImSchV) TA Luft EN 15267 EN 14181
Electrical safety	CE
Enclosure rating	IP54
Analog outputs	0/4 ... 22 mA, 500 Ω number depends on system configuration
Analog inputs	0/4 ... 22 mA, 100 Ω number depends on system configuration; electrically isolated
Digital outputs	48 V AC, 0.5 A, 35 W / 48 V DC, 0.5 A, 24 W number depends on system configuration; electrically isolated
Digital inputs	3.9 V, 4.5 mA, 0.55 W number depends on system configuration
Modbus	✔
Type of fieldbus integration	TCP RTU RS-485
PROFIBUS DP	✔
Note	Option
Ethernet	✔
Function	Connection to SOPAS ET software or OPC server
Indication	12" LC display
	Integrated status display according to NAMUR
Input	Touchscreen
Operation	Via LC display or SOPAS ET software, multiple operating levels, password-protected
Menu language	German, English
Dimensions (W x H x D)	806 mm x 2,212.5 mm x 622 m
	Details, see dimensional drawings
Weight	approx. 250 kg
Material in contact with media	Stainless steel 1.4571, PTFE, aluminum, coated

Power supply	
Voltage	115 V / 230 V
Frequency	50 Hz / 60 Hz
Power consumption	Analyzer: ± 1,000 W Measured gas pipe, heated: ± 95 W/m Gas sampling probe: ± 450 W Heated probe tube: ± 450 W
Auxiliaries	
Instrument air (zero gas quality):	≤ 350 l/h 6 ... 7 bar; particle size max. 1 μm; oil content max. 0.1 mg/m³; pressure condensation point max. -40 °C, purity class 2 (ISO 8573)
Instrument air (propellant air for ejector):	≤ 1,300 l/h 5 ... 7 bar; particle size max. 5 μm; oil content max. 1 mg/m³; pressure condensation point max. +3 °C, purity class 3 (ISO 8573)
Reference gas:	≤ 350 l/h max. 4 bar; the reference gas must comply with the requirements of the applicable standards and guidelines
Sample gas connections	
Measuring gas input	Clamp connection for 6 mm pipes
Auxiliary gas connections	
Propellant air for ejector	DN 6/8
Reference gas	Clamp connection for 6 mm pipes
Exhaust gas outlet	DN 8/10
Corrective functions	Drift correction and optical monitoring function via adjustment cell
Test functions	Automated check cycle for zero and reference point
System components	Gas removal probe Measuring gas line Analyzer cabinet
Options	GMS811 FIDORi

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)
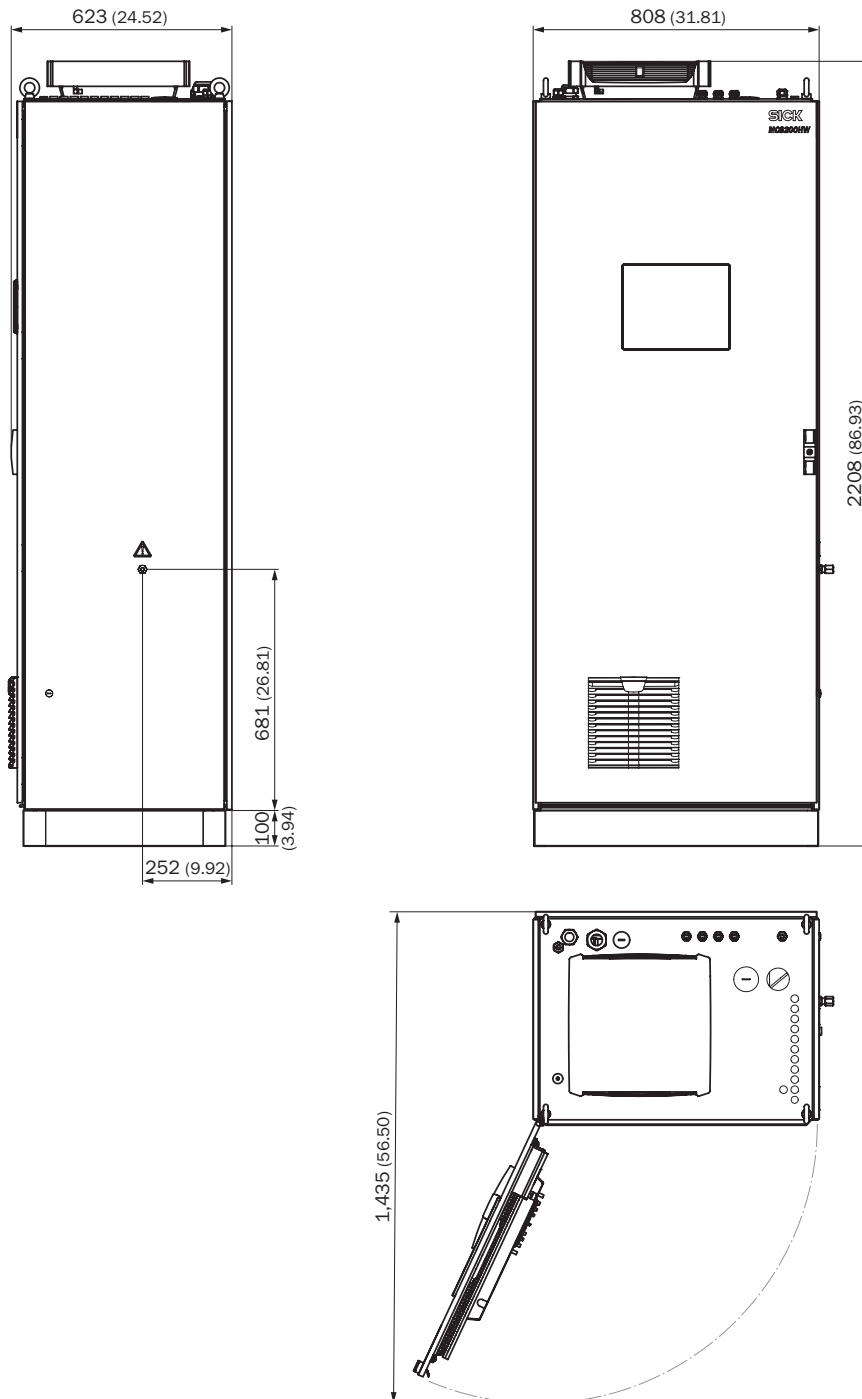
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The sophisticated and versatile LifeTime Services perfectly complement SICK's comprehensive product range. Services range from product-independent consulting to traditional product services.

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Secure and professional

Product and system support
Reliable, fast, and on-site

Verification and optimization
Safe and regularly tested

Upgrade and retrofits
Simple, safe, and economical

Training and education
Practical, focused, and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

Comprehensive services round out the offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

That is "Sensor Intelligence."

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Detailed addresses and further locations ➜ **www.sick.com**

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