



MCS100FT FTIR ANALYZER SYSTEM

COMPLETE EMISSIONS MONITORING

CEMS solutions

SICK
Sensor Intelligence.

COMPLETE EMISSIONS MONITORING

With the MCS100FT, SICK offers an FTIR analyzer system that provides complete, continuous emissions monitoring. It detects more than 12 measuring components simultaneously, such as HF, HCl, SO₂, NO, NO₂, CO, NH₃, N₂O, CH₄, and C_{org} (VOC). The MCS100FT enables HF limit values to be monitored in accordance with legal requirements. It is equipped with an oxygen sensor as standard and can be supplemented with an integrated total hydrocarbon analyzer. The MCS100FT is certified for the 2001/80/EC, 2000/76/EC and TA Luft (German Technical Instructions on Air Quality Control) directives and requirements as well as for MCERT, US EPA, and GOST, and has been designed to comply with directive 2010/75/EU. With its very reliable measuring technology, its convenient operation, and low maintenance requirements, the MCS100FT FTIR analyzer system provides a hassle-free solution that offers unequalled opportunities.

EN 15267-3 and EN 14181

- QAL3 inspection and manual adjustment using an internal adjustment filter without expensive test gases – considerable time savings (approx. 1.5 instead of 6 to 7 hours) and increased availability.
- Qualified and experienced support with official inspections
- Meets the minimum requirements of standards EN 15267-3 and EN14181 (QAL1, 2, 3)

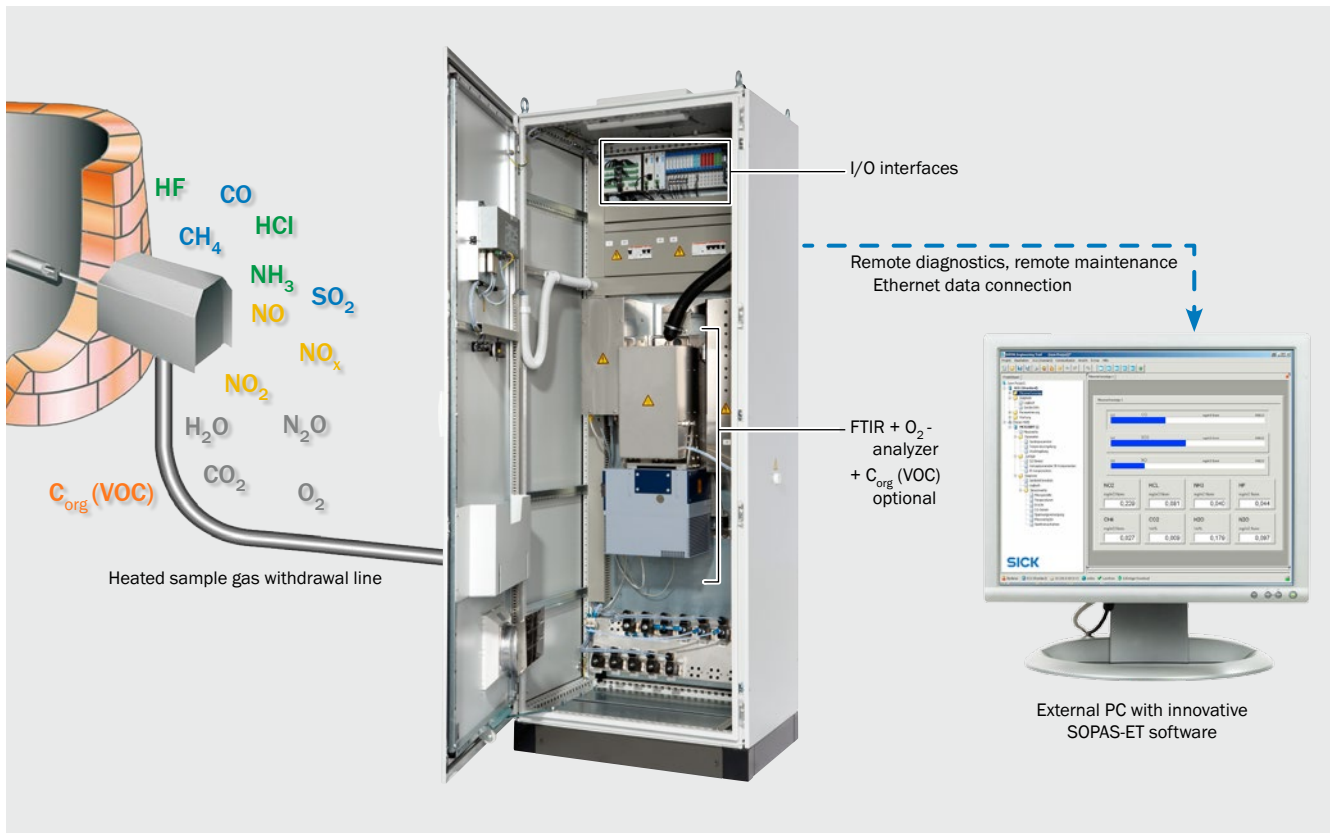
Reliable analysis technology

- More than 30 years of experience in spectroscopic emissions measurement and more than 2,000 installed systems
- Long-term stability of measured values thanks to automatic spectrum adjustment
- Low maintenance requirements, typical intervals of between 3 and 6 months

Control of HF limit values

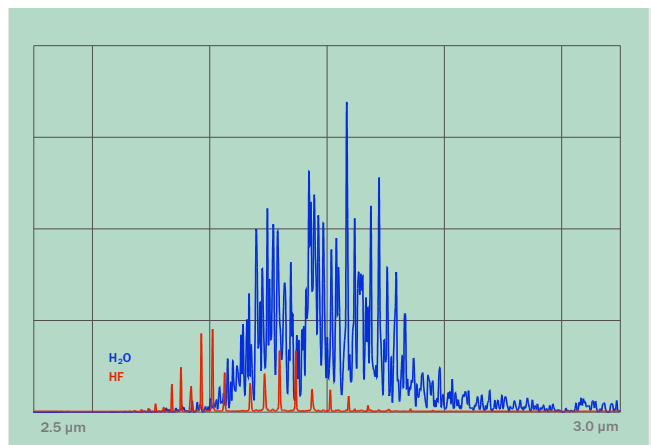
- Actual monitoring of strict HF limit values from 0 to 1 mg/m³ or 0 to 2 mg/m³
- Analysis specially optimized for HF, from sampling to the sample gas cell
- Short response time of approx. 170 s, even with a sample gas line up to 35 m in length
- Smallest HF measuring range tested for suitability for multi-component systems



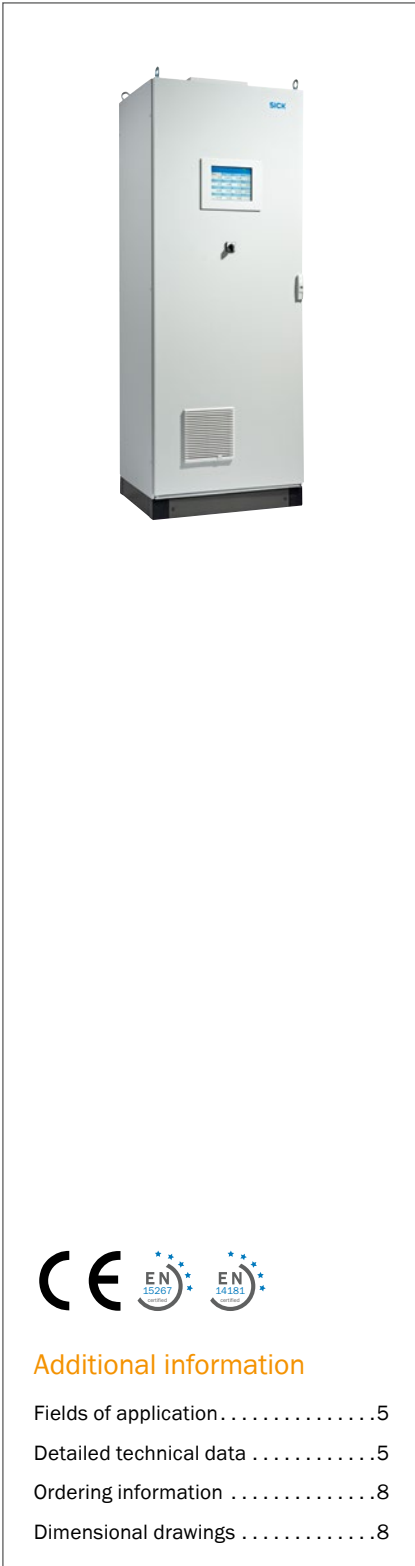


FTIR measurement principle

Infrared spectroscopy according to the Fourier transformation (FTIR) principle ensures high measurement accuracy – especially in combination with the proven sample gas cell. Accurate gas concentrations from the selected gas components are determined from very fast spectrum measurement using chemometric models. The cube corner technique used by the interferometer delivers very reliable and stable measurement results. The principle also involves a RockSolid spectrometer with high spectral resolution and high measuring speed, which is unaffected by vibration and temperature and is permanently adjusted.



EVERYTHING UNDER CONTROL WITH ADVANCED, PROVEN TECHNOLOGY



Product description

The FTIR measuring principle allows the simultaneous determination of more than 12 measuring components – tailor-made for the particular requirements of the customer. The MCS100FT FTIR analyzer system with its heated measuring cell enables the monitoring of hydrogen fluoride limits as requested by legislation. The MCS100FT is equipped

with an oxygen sensor as standard and can be supplemented with a total hydrocarbon analyzer. With its reliable measuring technology, its easy operation and low maintenance requirements, the MCS100FT provides a solution that offers unequalled opportunities.

At a glance

- Lowest approved HF measuring range of 0 ... 3 mg/m³
- Automatic spectrum adjustment via AutoVAL for reliable measuring values
- Operation via touchscreen
- Sample gas transport by an ejector without moving parts
- Approved according to EN 15267-3
- Remote control and diagnosis via software SOPAS ET
- Automatic adjustment of analyzer
- Automatic backflushing and filter cleaning of sampling unit

Your benefits

- Proper HF limit value monitoring
- Only one analyzer for more than 12 measuring components
- Easy integration into the customer network environment
- Long maintenance interval of 6 months for many measuring components
- Type approved measurement of greenhouse gases such as N₂O, CH₄ and CO₂
- Low maintenance requirements



Additional information

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→ www.mysick.com/en/MCS100FT

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

Fields of application

- Emission monitoring in waste incineration plants
- Effective HF limit value monitoring, e.g in aluminum production
- Monitoring of gaseous emission of cement plants or power stations

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.

Measured values	CH ₄ , CO, CO ₂ , C _{org} , HCl, HF, H ₂ O, NH ₃ , NO, NO ₂ , N ₂ O, O ₂ , SO ₂ , NO _x , C ₃ H ₈ , C ₂ H ₆
Performance tested measurands	CH ₄ , CO, CO ₂ , C _{org} , HCl, HF, H ₂ O, NH ₃ , NO, NO ₂ , N ₂ O, O ₂ , SO ₂
Measurement principles	FTIR spectroscopy, flame ionisation detection, Zirconium dioxide sensor
Sample quantity	≤ 300 l/h
Measuring ranges	
	CH ₄ 0 ... 70 ppm / 0 ... 210 ppm
	CO 0 ... 60 ppm / 0 ... 1,200 ppm
	CO ₂ 0 ... 25 Vol.-%
	C _{org} 0 ... 7.5 ppm / 0 ... 75 ppm
	HCl 0 ... 10 ppm / 0 ... 100 ppm
	HF 0 ... 3 ppm / 0 ... 10 ppm
	H ₂ O 0 ... 40 Vol.-%
	NH ₃ 0 ... 13 ppm / 0 ... 65 ppm
	NO 0 ... 150 ppm / 0 ... 1,500 ppm
	NO ₂ 0 ... 25 ppm / 0 ... 250 ppm
	N ₂ O 0 ... 25 ppm / 0 ... 250 ppm
	O ₂ 0 ... 21 Vol.-%
	SO ₂ 0 ... 25 ppm / 0 ... 525 ppm
	NO _x 0 ... 100 ppm / 0 ... 1,000 ppm
	C ₃ H ₈ 0 ... 25 ppm
	C ₂ H ₆ 0 ... 40 ppm
	Other measuring ranges and components on request Measuring ranges depend on application and device version
Certified measuring ranges	
	CH ₄ 0 ... 50 mg/m ³ / 0 ... 150 mg/m ³
	CO 0 ... 75 mg/m ³ / 0 ... 300 mg/m ³ / 0 ... 1,500 mg/m ³
	CO ₂ 0 ... 25 Vol.-%
	C _{org} 0 ... 15 mg/m ³ / 0 ... 50 mg/m ³ / 0 ... 150 mg/m ³ / 0 ... 500 mg/m ³
	HCl 0 ... 15 mg/m ³ / 0 ... 90 mg/m ³ / 0 ... 150 mg/m ³
	HF 0 ... 3 mg/m ³ / 0 ... 10 mg/m ³
	H ₂ O 0 ... 40 Vol.-%
	NH ₃ 0 ... 10 mg/m ³ / 0 ... 50 mg/m ³
	NO 0 ... 200 mg/m ³ / 0 ... 400 mg/m ³ / 0 ... 2,000 mg/m ³
	NO ₂ 0 ... 100 mg/m ³ / 0 ... 500 mg/m ³
	N ₂ O 0 ... 50 mg/m ³ / 0 ... 500 mg/m ³
	O ₂ 0 ... 21 Vol.-%
	SO ₂ 0 ... 75 mg/m ³ / 0 ... 300 mg/m ³ / 0 ... 1,500 mg/m ³
Response time	≤ 200 s FID: ≤ 45 s
Sensitivity drift	< 3 % of measuring range full scale per maintenance interval FID: < 2 % of measuring range full scale per week

Zero point drift	< 3 % of measuring range full scale per maintenance interval FID: < 2 % of measuring range full scale per week
Detection limit	< 2 % of measuring range full scale
Process temperature	≤ +1,300 °C
Sample temperature	≤ +220 °C
Process pressure	900 hPa ... 1,100 hPa
Ambient temperature	+5 °C ... +35 °C With cooling device: +5 °C ... +50 °C
Storage temperature	-20 °C ... +60 °C
Ambient pressure	900 hPa ... 1,100 hPa
Ambient humidity	≤ 80 % Non-condensing
Conformities	2000/76/EC 2001/80/EC 27. BImSchV EN 15267 EN 14181
Electrical safety	CE
Enclosure rating	IP 43 Optional: IP 54
Analog outputs	0/4 ... 22 mA, 500 Ω Number depends on system configuration; electrically isolated; max. 32 outputs
Analog inputs	0/4 ... 22 mA, 100 Ω Number depends on system configuration; electrically isolated; max. 32 inputs
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; max. 64 outputs
Digital inputs	3.9 V, 4.5 mA, 0.55 W Number depends on system configuration; max. 64 inputs
Interfaces	RS-422/-485 Ethernet
Bus protocol	Ethernet TCP/IP MODBUS OPC
Indication	LC display Status LEDs: "Power", "Maintenance" and "Fault"
Input	Touchscreen
Operation	Via LC-display or software SOPAS ET Several operating levels, password-protected
Dimensions (W x H x D)	806 mm x 2,165 mm x 605 mm 1,096 mm x 2,165 mm x 605 mm (with cooling device)
Weight	≤ ± 260 kg
Electrical connection	
Power consumption	Analyzer cabinet < 1,000 W: Sample gas line, heated 95 W/m Gas sampling probe 450 W Heated probe tube 450 W

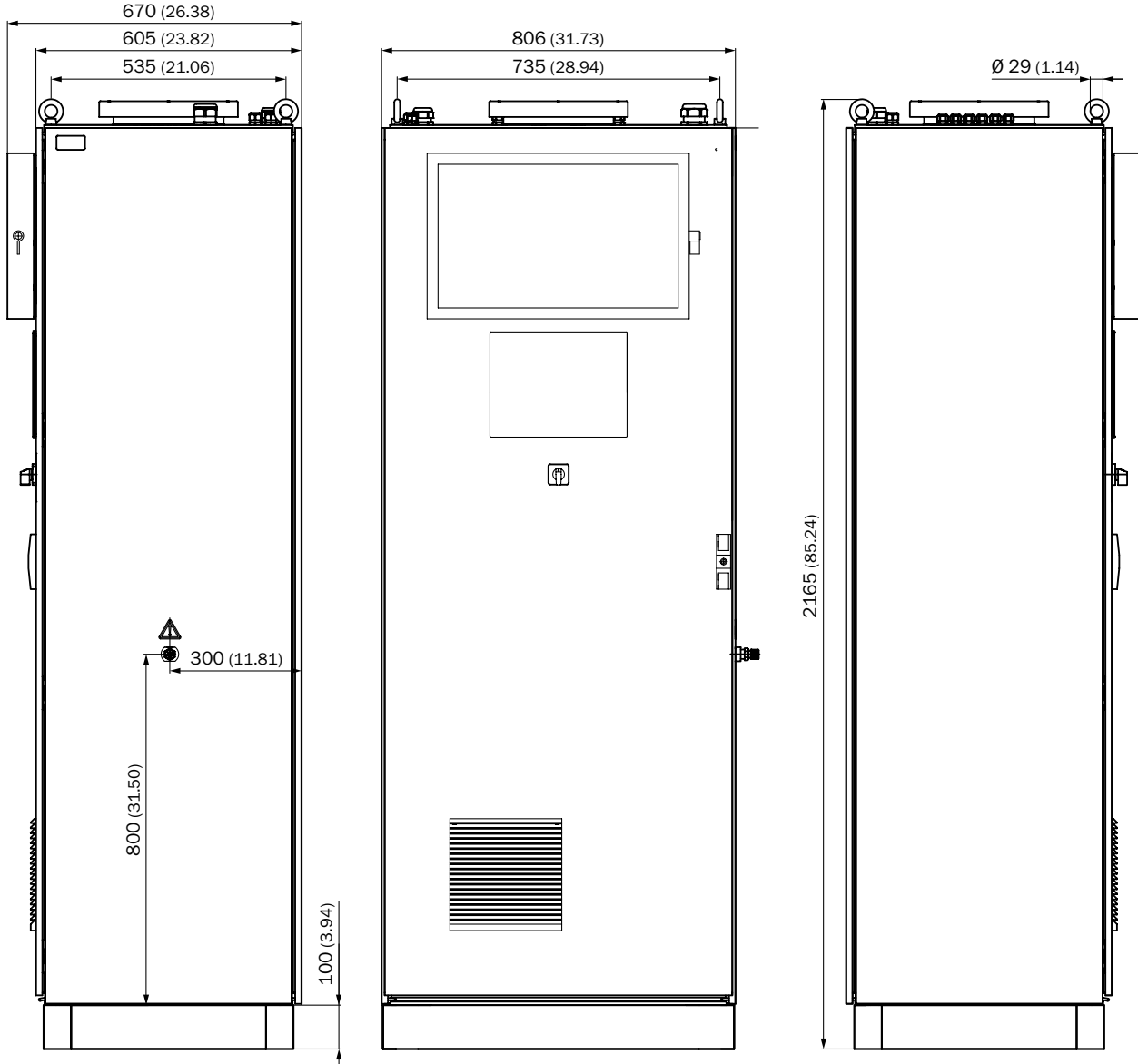
Auxiliaries	
Zero gas (FTIR/FID):	≤ 300 l/h ... ≤ 350 l/h Instrument air; 3±0.2 bar; particle size max. 1 µm; oil content max. 0.1 mg/m ³ ; pressure dew point max. -30 °C
Zero gas (O ₂):	≤ 350 l/h O ₂ in N ₂ : 1 ... 4 Vol.-%; accuracy ±2%; 3 ±0.2 bar
Reference gas (FTIR):	≤ 350 l/h Measuring component in N ₂ ; 70% of measuring range full scale; 3 ±0.2 bar
Reference gas (O ₂):	≤ 350 l/h Ambient air
Reference gas (FID):	≤ 450 l/h Propane in synthetic air: 75% of measuring range full scale; 3 ±0.2 bar
Instrument air:	≤ 2,000 l/h Instrument air: 5 ... 7 bar; particle size max. 1 µm; oil content max. 0.1 mg/m ³ ; pressure dew point max. -30 °C
Fuel gas:	≤ 4.8 l/h Hydrogen: 5.0 or higher; 3 ±0.2 bar
Combustion air:	≤ 30 l/h Instrument air; 3±0.2 bar; particle size max. 1 µm; oil content max. 0.1 mg/m ³ ; pressure dew point max. -30 °C
Sample connections	Sample gas inlet: DN 4/6 Exhaust gas outlet: DN 8/10
Auxiliary connections	Test gas: DN 4/6 Fuel gas: DN 4/6 Instrument air: DN 6/8
Corrective functions	Internal adjustment unit (option)
Test functions	Internal zero point check
Options	Integrated total hydrocarbon analyzer

Ordering information

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

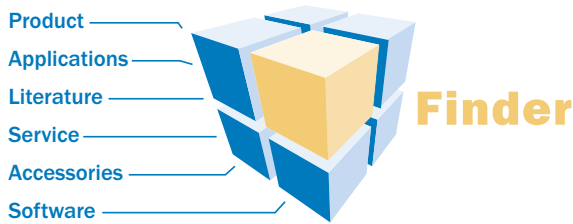
Dimensional drawings (Dimensions in mm (inch))

MCS100FT system



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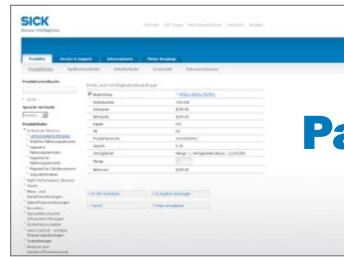


Product Finder: We can help you to quickly target the product that best matches your application.

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Product & System Support

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Verification & Optimization

Checks and recommendations for increased availability



Upgrade & Retrofits

Uncovers new potential for machines and systems



Training & Education

Employee qualification for increased competitiveness

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our 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.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our 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 us a reliable supplier and development partner.

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

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium/Luxembourg, Brazil, Czech Republic, Canada, China, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Mexico, Netherlands, Norway, Poland, Romania, Russia, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey, United Arab Emirates, USA

Detailed addresses and additional representatives → www.sick.com