

MCS100E HW/CD/PD Multicomponent Analysis Systems

Emission monitoring of flue gases according to
regulatory guidelines
Raw gas monitoring for process control



Continuous, extractive flue gas monitoring – tailored to your requirements

AREAS OF APPLICATION

- Waste incineration plants
- Multi fuel furnace plants, for example cement works
- Power stations, also with additional fuels
- Plants with chemical combustion
- Aluminum production, steel and iron production
- Smelting
- Industrial exhaust air

MCS100E HW RAW/CLEAN GAS MONITORING

- System with high-temperature measuring technology
- Standard in emission monitoring according to official requirements
- Raw gas monitoring for process control – also with high acid dew point
- HCl, SO₂, CO, NO, H₂O, CO₂, O₂ and also NO₂, NH₃ and N₂O
- THC with FID analyzer
- Other IR active components on request

MCS100E CD/PD VERY SMALL MEASURING RANGES

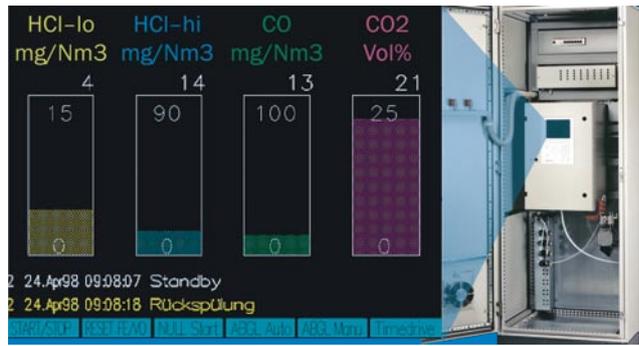
- Monitoring of guaranteed values
- Very small measuring ranges, especially for SO₂, NO, NO₂
- MCS100E CD with gas cooler
- MCS100E PD with permeation dryer
- With MCS100E PD, also for HCl

EN 14181 QAL3 WITHOUT TEST GAS

- QAL3 can also be performed with internal calibration filter – no test gas required
- On MCS100E HW this function is certified by TÜV
- Qualified, experienced support for official acceptance
- Support for QAL3, e.g. with CUSUM tables

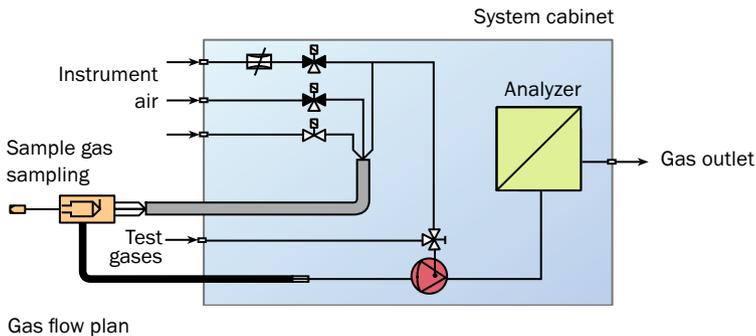
PERFORMANCE FEATURES

- Extractive multicomponent analysis system with up to 8 IR active components plus O₂ analyzer. THC on MCS100E HW with FID analyzer
- Standardized system technology
 - Representative gas sampling
 - Automatic zero and adjustment cycles, back flushing and filter cleaning
 - Suitable for corrosive and aggressive media
- Automatic sample point switching
- Barometric correction
- Comfortable logbook function
- Calibration test:
 - With internal calibration filter
 - By test gas feeding on the analyzer or the sampling probe
- Communication: Modbus, Modem, Ethernet
- Low maintenance effort, long maintenance intervals
- Tailored solutions for the respective customer requirements



SYSTEM COMPONENTS

On MCS100E HW, from sampling to the cell, all components that are in contact with the sample gas are heated to above dew point and thus protected from corrosion. On MCS100E CD/PD, gas drying is performed via a cooler/permeation dryer. The sample gas pump is located in the MCS100E system cabinet. Fast sample gas exchange minimizes adsorption or desorption effects, especially of HCl and NH₃. In case of a malfunction, the system is purged with zero gas and thus protected from corrosion. During span gas feeding on the sampling probe, the complete extraction system is included in the calibration check.

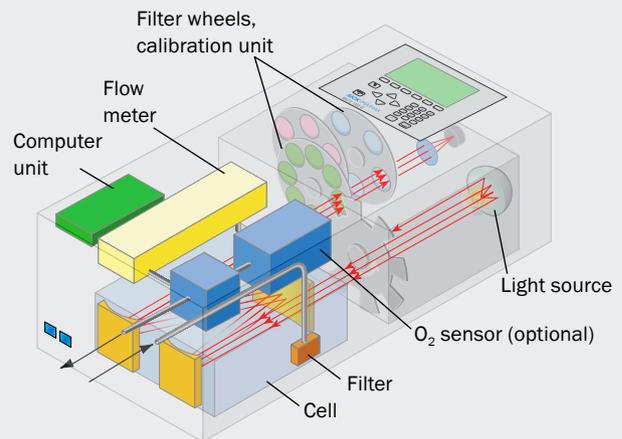


Gas flow plan

MCS100E system cabinet

BIFREQUENCY AND GAS FILTER CORRELATION MEASURING PRINCIPLE

The single beam infrared filter photometer of the analyzer allows the simultaneous use of bifrequency and gas filter correlation methods. The cell is optimized for fast gas exchange and thermostatically controlled to high temperatures. A sintered metal protective filter is fitted in the sample gas inlet. An integrated flow meter triggers an alarm when the value is below the set limit value. Optionally, the analyzer can contain an oxygen measurement. The optional use of an internal calibration check allows fast checking of the measured values without test gas.



MCS100E analyzer

Technical Data			
Measuring parameters			
Measuring ranges	MCS100E HW	MCS100E PD	MCS100E CD
Hydrogen chloride HCl	0 ... 15 mg/m ^{3 1)}	0 ... 10 mg/m ^{3 1)}	-
Ammoniac NH ₃	0 ... 20 mg/m ^{3 1)}	-	-
Carbon monoxide CO	0 ... 75 mg/m ^{3 1)}	0 ... 50 mg/m ^{3 1)}	0 ... 50 mg/m ³
Sulphur dioxide SO ₂	0 ... 75 mg/m ^{3 1)}	0 ... 10 mg/m ^{3 1)}	0 ... 10 mg/m ³
Nitrogen monoxide NO	0 ... 200 mg/m ^{3 1)}	0 ... 50 mg/m ^{3 1)}	0 ... 50 mg/m ³
Nitrogen dioxide NO ₂	0 ... 100 mg/m ³	0 ... 80 mg/m ^{3 1)}	0 ... 80 mg/m ³
Nitrous oxide N ₂ O	0 ... 100 mg/m ³	0 ... 100 mg/m ³	0 ... 100 mg/m ³
Methane CH ₄	0 ... 100 mg/m ³	0 ... 100 mg/m ³	0 ... 100 mg/m ³
Carbon dioxide CO ₂	0 ... 25 percent by volume ¹⁾	0 ... 25 percent by volume ¹⁾	0 ... 25 percent by volume
Water H ₂ O	0 ... 40 percent by volume ¹⁾	0 ... 5 percent by volume ¹⁾	0 ... 5 percent by volume
Oxygen O ₂	0 ... 21 percent by volume ¹⁾	0 ... 21 percent by volume ¹⁾	0 ... 21 percent by volume
Reaction time (t ₉₀)	Typical < 200 s; plant- and component-specific		
Measuring conditions			
Sample gas temperature	220 °C maximum In the process, 1300 °C maximum		
Sample gas pressure	900 ... 1100 hPa (atmospheric)		
Ambient conditions			
Ambient temperature	+5 ... +35 °C Up to +40 °C with cooling unit		
Ambient pressure	900 ... 1100 hPa		
Approvals			
	MCS100E HW	MCS100E PD	MCS100E CD
Compliances	<ul style="list-style-type: none"> TÜV-tested for equipment subject to authorization: 13th FICA/2001/80/EC, 17th FICA/2000/76/EC GOST, MCERTS U.S. EPA 	<ul style="list-style-type: none"> TÜV-tested for equipment subject to authorization: 13th FICA/2001/80/EC, 17th FICA/2000/76/EC GOST, MCERTS U.S. EPA 	<ul style="list-style-type: none"> GOST, MCERTS,
Degree of protection	<ul style="list-style-type: none"> IP 43, higher degrees of protection on request 		
Inputs, outputs, interfaces			
Outputs	<ul style="list-style-type: none"> 0/4 ... 20 mA, resolution 12 bits, precision 0.5%, load 500 Ω Digital: 50 V AC/4 A; 24 V DC/4 A; 50 V DC/0.8 A for maintenance and malfunction 		
Inputs	Analog and digital		
Interfaces	<ul style="list-style-type: none"> RS232 (9 poles) RS485 Modem Others on request 		
Bus protocol	<ul style="list-style-type: none"> Modbus Others on request 		
General			
System components	System cabinet with analyzer, interfaces, inputs and outputs <ul style="list-style-type: none"> Sample gas sampling probe Heated sample gas line 		
Operation	Via integrated operating unit on the analyzer, 2 operating levels for user and specialist (password); sequence programs can be programmed as required		
Control function	Integrated control cycle for zero and control point monitoring Internal calibration filter for QAL3 drift check without test gas		

¹⁾ Tested for suitability