



MCS300P Multicomponent Analysis System

Process monitoring in gases or liquids

MCS300P

Effective, photometric process monitoring

Simultaneous measurement for up to 6 components

AREAS OF APPLICATION

- In production plants in the chemical industry e. g.:
 - Isocyanate, polycarbonate
 - Vinyl chloride (PVC)
 - Acrylic acid, adipic acid and hydrocyanic acid
- Raw gas measurement to control exhaust gas cleaning plants
 - Waste incineration plants for scrubber control
 - Multifuel furnace plants in cement plants at the rotary kiln inlet for example

PROCESS MONITORING

- Measurement in gaseous and liquid media
- Detection of all IR and VIS active components
- Process cuvettes with integrated protection devices, for example using purge gases, double seals for measuring areas with media contact, non-corroding materials, high pressure resistance, leak tightness checks using helium
- Variable measuring ranges from ppm to vol % ranges
- Monitoring toxic and combustible mixtures

RAW GAS MONITORING

- Typical measuring components: HCl, SO₂, H₂O, CO, NO, NO₂, NH₃
- Integrated O₂ sensor (option)
- Proven sample cuvettes to monitor corrosive, aggressive flue gases
- Robust system with hot measurement technique for trouble-free detection of very high raw gas concentrations
- Very reliable in use – even for high acid dew points
- Short reaction times (≤ 1 min)

TRENDSETTING ANALYSIS TECHNOLOGY

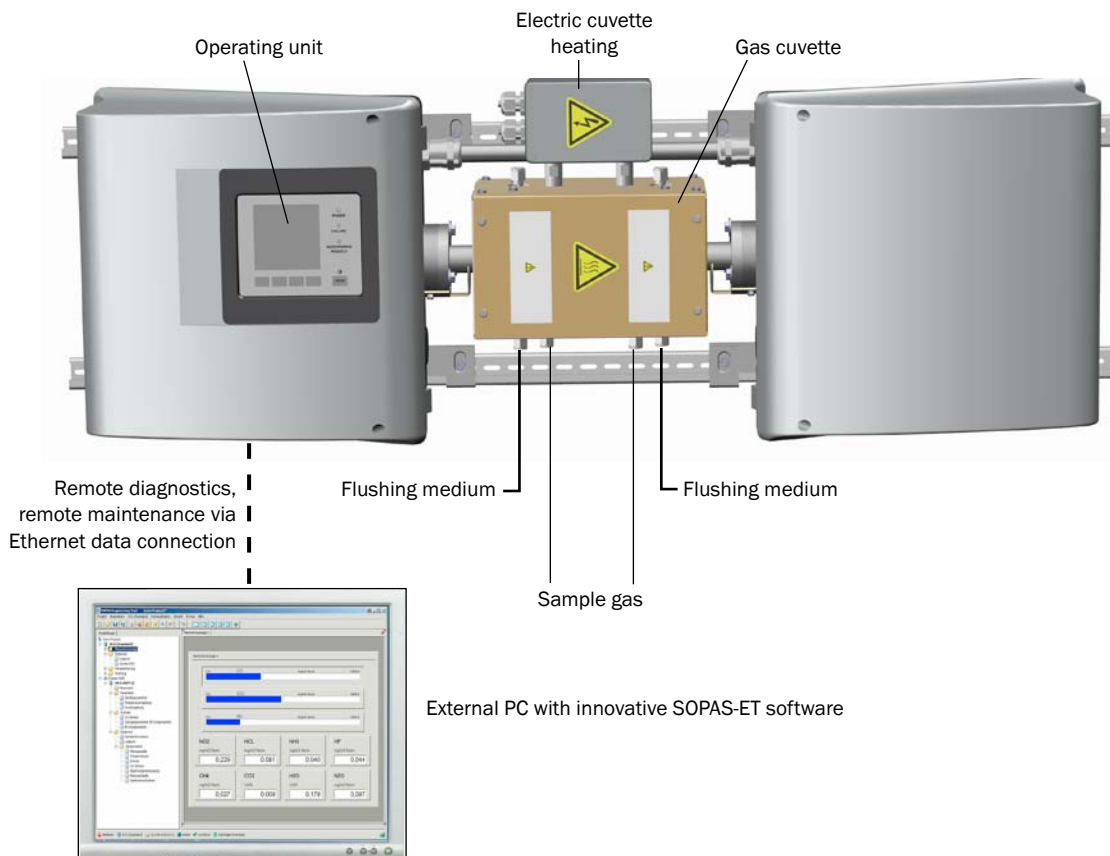
- Adjusting filter wheel (option):
 - Adjustment without expensive test gases
 - Automatic checking
- 2 filter wheels for interference and gas filters (up to 6 components)
- For potentially explosive atmospheres:
 - Measuring combustible mixtures
 - Usage of an electrically heated sample cuvette
- Innovative software SOPAS-ET for
 - Direct access and data storage using a PC
 - Complete system control, remote control and diagnostics
- Modern communication protocols, for example Modbus TCP, OPC

PERFORMANCE FEATURES

- Extractive multicomponent analysis systems with up to 6 measuring components plus O₂ sensor
- Optimized correction for ≤ 6 cross-sensitivity variables
- Process cuvettes for rugged industrial use
 - Working pressure up to 60 bar (870 psi)
 - Cuvette temperatures up to 200 °C (392 °F)
- Integration of external variables, for example pressure, temperature, throughflow for display and as collection variables
- Automatic sample point switching
- Detailed device logbook
- Multilingual user menus
- Very robust measuring system with low maintenance effort and therefore extremely favorable operating costs
- Tailored solutions for your demands
- Modern I/O module system for integration in existing customer networks
- Automatic and manual adjustment
 - With internal adjusting filter
 - Using test gas feeding



PROCESS ANALYZER LAYOUT WITH GAS CUVETTE



NON-DISPERSIVE PHOTOMETER PRINCIPLE

The MCS300P is a non-dispersive process photometer. The radiation source transmits light through the sample cuvette. Interference and gas filters swiveled into the beam path on filter wheels then screen the selected measuring wave lengths. The detector positioned behind receives the sequential measuring and reference beams. When the measuring filter is swiveled in, the signal depends on the concentration of the substance being measured in the cuvette and a signal is created independent of the concen-

tration when the reference filter is swiveled in. The MCS300P uses appropriate calculations with both signals to determine the extinction measured variable which is more or less independent of changes to the optical characteristics of the photometer. This means: High long-term stability and measured value reproducibility. After correction of any possible disturbance variables, the determined extinction is converted to a concentration value using the linearization function.

Technical Data	MCS300P
Measuring Parameters	
Measuring components	All IR/NIR/VIS active gases and liquids, simultaneously up to 6 components, for example: CO, CO ₂ , NO, NO ₂ , N ₂ O, HCl, NH ₃ , H ₂ O, hydrocarbons, Cl ₂ . Reads in and processes up to 4 external sensors such as oxygen, pressure, temperature
Measuring ranges	ppm range up to high % by volume
Reaction time (t ₉₀)	Approx. 30 ... 120 s, specific to plant and components, adjustable
Measuring Conditions (depending on used cuvette)	
Medium temperature	+50 ... +200 °C (122 ... 392 °F)
Medium pressure	0.8 ... 60 bar (11.6 ... 870 psi)
Ambient Conditions	
Ambient temperature	+5 ... +40 °C (41 ... 104 °F)
Ambient pressure	900 ... 1100 hPa (13 ... 16 psi)
Approvals	
Compliances	<ul style="list-style-type: none"> • CE, EMC Directive 2004/108/EC • Low-voltage Directive 2006/95/EC
Degree of protection	<ul style="list-style-type: none"> • Housing: IP 65 • Cuvette: IP 20
Inputs, Outputs, Interfaces	
Analog output module ¹⁾	2 outputs: 0/4 ... 22 mA, electrically isolated; 500 Ω max. load
Analog input module ¹⁾	2 inputs: 0/4 ... 22 mA, electrically isolated; 100 Ω input resistance
Digital input module ¹⁾	4 inputs: Contact open; potential-free
Digital output modules ¹⁾	<ul style="list-style-type: none"> • 2 outputs, power relay, electrically isolated • 3 outputs, potential-free
Interfaces	Ethernet
Bus protocol	<ul style="list-style-type: none"> • Modbus TCP • OPC
General Information	
System components	<ul style="list-style-type: none"> • Sample gas sampling probe • Heated sample gas line, liquid pre-thermostat • Sample point switching • Sample handling • Process analyzer <ul style="list-style-type: none"> – Sample cuvettes with optical path lengths from 0.01 up to 75 cm (0.04 up to 29.5 in) – Cuvette and seal materials adapted to the application – Cuvettes with flush chambers to measure toxic and corrosive sample media
Operation	Integrated operating unit on the analyzer, 2 operating levels for users and technicians (password); application-specific working cycle to control system components
Adjustment	Automatable check cycle for zero and reference point monitoring Internal adjusting filter wheel (option)

¹⁾ Modules depend on the application