

SIEMENS

Process Analytics

SIPROCESS UV600

Continuous gas analysis for UV-active gases

Individual or simultaneous measurement of up to three components: NO, NO₂, SO₂ and H₂S

Siemens extends its continuous process gas analytics portfolio with the new SIPROCESS UV600 analyzer providing solutions for an even wider range of applications. SIPROCESS UV600 is an extractive UV gas analyzer that can simultaneously measure up to three components. It is a specialist for extremely selective NO measurement with small measuring ranges and an allrounder for other UV-active gases, e.g. NO₂, SO₂ and H₂S. Due to spectral range no cross-sensitivities to CO₂ and H₂O to be expected.

Innovative signal processing as well as highly stable detectors provide excellent long-term stability and compensation of drifts and influencing effects. SIPROCESS UV600 with state-of-the-art electronics and software has the interfaces required for remote monitoring from a network as well as to the connection to process control systems.



Applications

- Emission measurement
 - Measurement of low NO concentrations in power stations and gas turbines
 - Monitoring of NOx in denitrification plants by direct measurement of NO and NO₂ as well as a combined NOx value
 - Efficient measurement in denitrification plants
 - Registering of lowest SO₂ and NO concentrations
 - Emission measurement in the pulp and paper industry
- Process control
 - Measurement of sulfur compounds in process gas in the paper and petrochemical industry
 - NO and NO₂ measurement in applications in nitric acid production
 - Optimization of NOx emissions in the exhaust gas of the automotive industry
 - H₂S and SO₂ measurement in residual gas purification of sulfur recovery units (SRU)
 - Measurement of sulfur components in Claus plants
 - High H₂S concentrations in reactive or sour gases

Benefits

- Simultaneous measurement of NO and NO₂ with subsequent compilation. NO₂ converters or CLD analyzers are thus not required. Therefore:
 - Lower maintenance effort (no converter function check)
 - Reduced operating costs because no additional equipment required, e.g. ozone generator, etc.
- Measurement in the UV range
 - Measurement not affected by H₂O and CO₂
 - Very low SO₂ and NO measuring ranges possible
- UV Resonance Absorption Spectrometry (UVRAS)
 - Measurement of very low NO concentrations: Measuring range 10 ppm
 - Very low cross-sensitivity to other gases
- Very long service life of UV lamp (typically 2 years)
- Low drifts and high stability by
 - four-channel measuring method and double quotient calculation
- True reference measurement for drift-free, stable measurement
- All modules "temperature controlled"; thereby independent of ambient temperature fluctuations
- Optional adjustment device
 - Filter wheel with test cells which are swiveled into the optical path for calibration; no test gases are required
 - Adjustment: manual or automatic

Measuring principle

The SIPROCESS UV600 process photometer operates according to the principle of absorption in the ultraviolet radiation range. NO-specific as well as other wideband radiation fractions are emitted from an electrode-less discharge lamp in the ultraviolet spectral range. The radiation spectrum, required for measurement and reference of the respective gas component, is generated in the filter wheel unit by one or two revolving filter wheels. For NO measurement, SIPROCESS UV600 uses the gas filter correlation where the radiation spectrum for measurement and reference is separated by a cyclic swiveling in of a NO gas filter. For all other gases, interference filter correlation is used. Here, two interference filters with different transmission characteristics are swiveled into the beam path in succession. The beam splitter directs the filtered radiation to both reference and sample cuvettes. The detectors positioned behind the cuvettes, receive the radiation for the measurement and reference that arrive with a time offset. A quotient is calculated using the signal values received by each detector. Both detectors are then related to each other. This calculation of double quotients compensates not only for proportional signal drifts but also symmetric drifts. The gas concentration is derived from the double quotient.

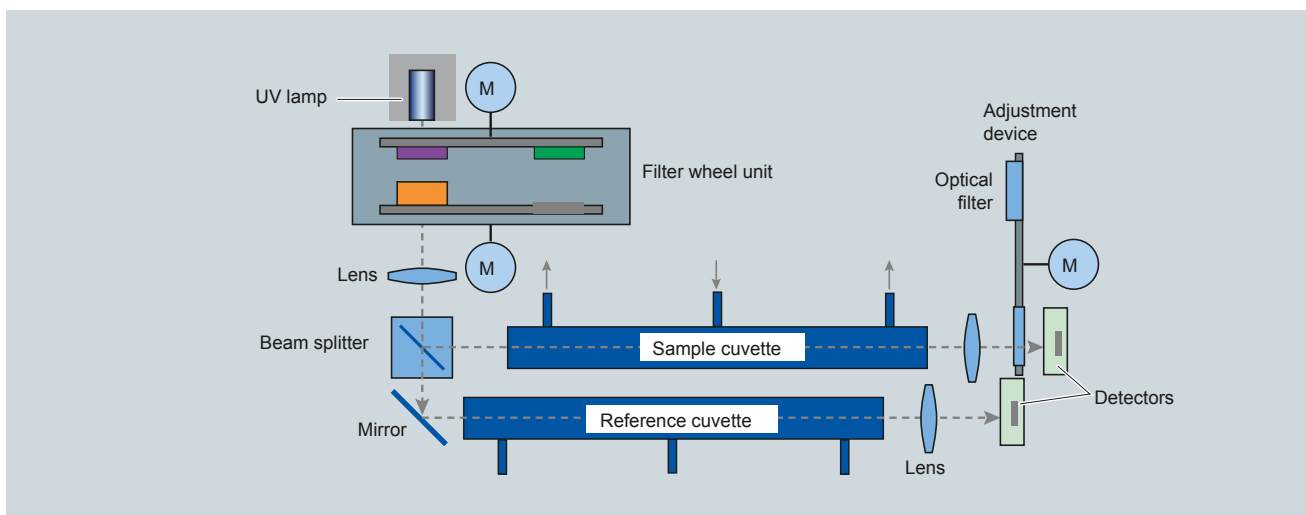
Device Layout

Basic equipment

- 19" rack housing with power supply unit
- I/O module
- Display
- Gas connections:
Pipe diameter 6 mm PVDF

Options

- Automatic adjustment for 1, 2 or 3 UV measuring components
- Connection to external PC via dedicated software tool
- Optional gas connections:
6 mm Swagelok, 1/4" Swagelok
- Gas paths with stainless steel tubes



Technical specifications

Measuring Parameters			
Available measuring ranges	Measuring components	Minimum measuring range	Maximum measuring range
	Nitrogen monoxide (NO)	0 ... 10 ppmv 0 ... 20 ppmv 0 ... 25 ppmv 0 ... 50 ppmv	0 ... 300 ppmv 0 ... 400 ppmv 0 ... 500 ppmv 0 ... 1 000 ppmv
	Nitrogen dioxide (NO ₂)	0 ... 10 ppmv ¹⁾ 0 ... 20 ppmv 0 ... 25 ppmv 0 ... 50 ppmv	0 ... 300 ppmv 0 ... 400 ppmv 0 ... 500 ppmv 0 ... 1 000 ppmv
	Sulfur dioxide (SO ₂)	0 ... 10 ppmv ¹⁾ 0 ... 20 ppmv 0 ... 25 ppmv 0 ... 50 ppmv	0 ... 300 ppmv 0 ... 400 ppmv 0 ... 500 ppmv 0 ... 1 000 ppmv
	Hydrogen sulfide (H ₂ S)	0 ... 25 ppmv 0 ... 50 ppmv	0 ... 500 ppmv 0 ... 1 000 ppmv
Measuring Conditions			
Sample gas temperature	0 ... 45 °C		
Process pressure	813 ... 1 313 hPa absolute		
Ambient Conditions			
Ambient temperature	5 ... 45 °C		
Approvals			
Protection class	IP 40		
Electrical safety	<ul style="list-style-type: none"> • CE, EMC Directive 2004/108/EC • Low Voltage Directive 2006/95/EC 		

Inputs/Outputs, Interfaces	Modules freely selectable and upgradeable according to customer requirement
Analog outputs	4 outputs, electrically isolated: 4 ... 20 mA, max. load 500 Ω
Analog inputs	2 inputs, not electrically isolated, 4 ... 20 mA
Digital outputs	8 outputs, contact load: max. 0.5 A, max 48 V DC /34 V AC
Digital inputs	8 inputs: 14 ... 42 V, all inputs with shared reference potential
Interfaces	Ethernet
Bus protocol	OPC (option) via dedicated software tool
General Information	
Design	19" rack (4 HU)
Operation	Via display and/or PC dedicated software tool
Power supply	90 ... 264 V AC / 47 ... 63 Hz

¹⁾ When calibrated daily and in temperature controlled environment ± 2 °C

Further information

For additional information, please contact us by e-mail:
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