

# SIEMENS

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Analytical Products and Solutions

## SIPROCESS UV600

Continuous gas analysis for UV-active gases

[usa.siemens.com/cga](http://usa.siemens.com/cga)

### Individual or simultaneous measurement of up to three components: NO, NO<sub>2</sub>, SO<sub>2</sub> and H<sub>2</sub>S

Siemens provides a wide range of applications. The 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. NO<sub>2</sub>, SO<sub>2</sub> and H<sub>2</sub>S. Due to spectral range no cross-sensitivities to CO<sub>2</sub> and H<sub>2</sub>O to be expected.

Innovative signal processing as well as highly stable detectors provide excellent long-term stability and compensation of drifts and influencing effects. The 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 NO<sub>x</sub> in denitrification plants by direct measurement of NO and NO<sub>2</sub> as well as a combined NO<sub>x</sub> value
  - Efficient measurement in denitrification plants
  - Registering of lowest SO<sub>2</sub> 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 NO<sub>2</sub> measurement in applications in nitric acid production
  - Optimization of NO<sub>x</sub> emissions in the exhaust gas of the automotive industry
  - H<sub>2</sub>S and SO<sub>2</sub> measurement in residual gas purification of sulfur recovery units (SRU)
  - Measurement of sulfur components in Claus plants
  - High H<sub>2</sub>S concentrations in reactive or sour gases

## Benefits

- Simultaneous measurement of NO and NO<sub>2</sub> with subsequent compilation. NO<sub>2</sub> 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 H<sub>2</sub>O and CO<sub>2</sub>
  - Very low SO<sub>2</sub> 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.

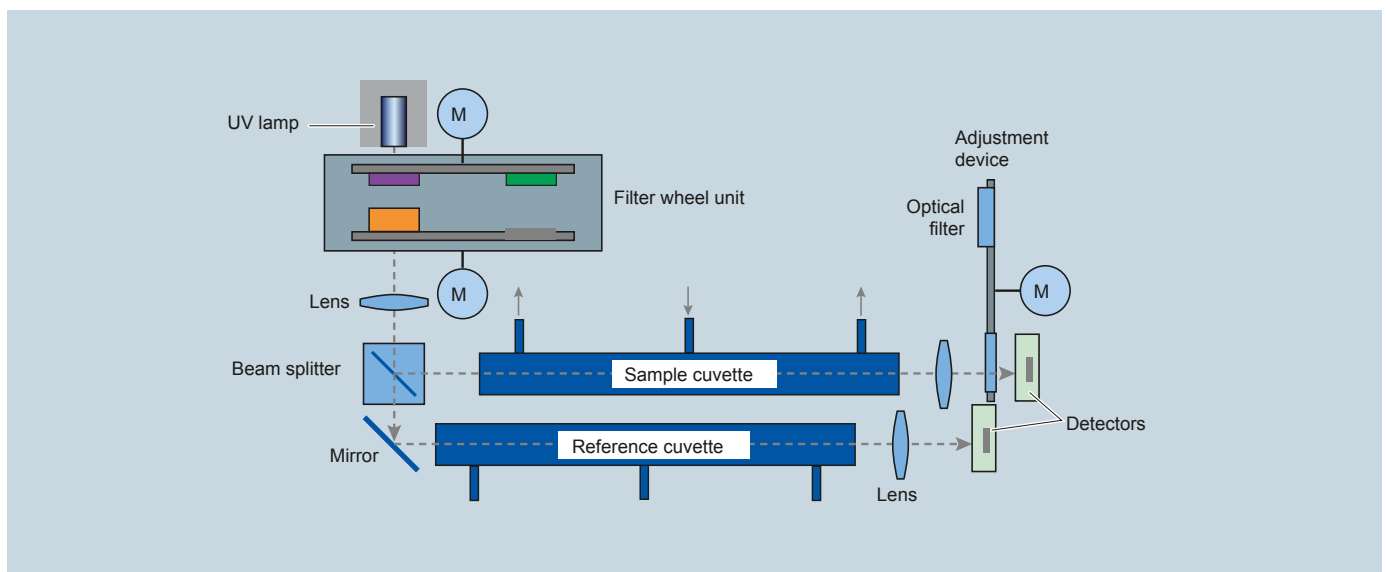
## Device Layout

### 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 <sub>2</sub> )	0 ... 10 ppmv <sup>1)</sup> 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 <sub>2</sub> )	0 ... 10 ppmv <sup>1)</sup> 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 <sub>2</sub> 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"> <li>CE, EMC Directive 2004/108/EC</li> <li>Low Voltage Directive 2006/95/EC</li> </ul>		

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