



CARBON MONOXIDE-ANALYSER

CO 2000





Application

The **carbon monoxide analyser CO 2000** tested for suitability to technical clean-air regulation standards (TA-Luft), is a modular constructed, microcontroller controlled test unit for measuring the concentration of carbon monoxide by extraction.

The electrochemical test heads used for measurements, have the following advantages:

- High degree of sensitivity
- High grade measurement accuracy
- Minimum zero drift

Fields of Application

- Flue gas analysis
- CO measurement in solvent recycling plants with heated post-combustion
- Can be combined with KM 2000 CnHm EM
- Ambient air monitoring
- Warning of the presence of poisonous gases, before the concentration becomes a danger to health.

Measurement Principle and Functioning

The gas for analysis is sucked through a suction pipe (heated), whereby the volume of gas is regulated to approximately 75 ltr./h.

Two heated regenerative filters are incorporated in the gas preparation section. The filters are alternately switched in the gas path from input to output so that each filter element alternately functions as a filter and is then regenerated. The filter at the input removes moisture, dirt particles and aggressive substances.

After a further fine-filtering, the flow of gas is regulated and passes through to the electrochemical CO-test heads. Here, the CO concentration in the gas for analysis is measured. Two identical test heads are used, the signals from which are monitored for synchronism and equality. In this way, a drift is automatically detected and signalled by the relevant warning.

At the outflow of the system, the gas flows through the second, heated, regenerative filter element. Heating the filter has the effect of vaporising the moisture that was absorbed during the filtering phase and thus, releases the dirt particles that are then carried out with the flow of gas, out of the system. The filter is in the regeneration phase.

The switch-over times for loading the filter and the regeneration phase have been set so that in the loading phase the filter does not reach repletion and in the regeneration phase the filter is cleaned completely. For calibrating the system, inputs are provided for zero-gas and reference-gas that can be selected by way of a menu. As an option, automatic calibration at timed intervals, is also available.

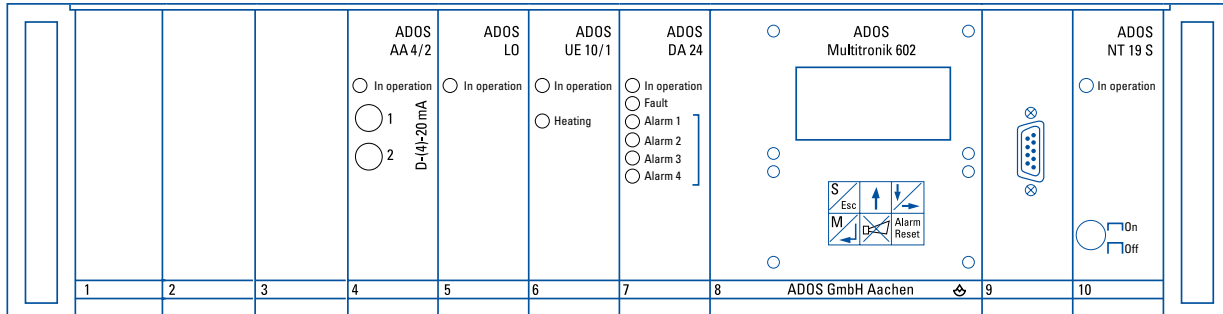
Floating (potential-free) switching contacts are available for signalling the operating state (alarm, fault, maintenance). Also, limit values can be adjusted and configured for monitoring of CO concentration, that can also be signalled by way of floating switch-contacts.

The measured values of CO concentration are available via a galvanically isolated, standard 4–20 mA current loop signal for further processing.

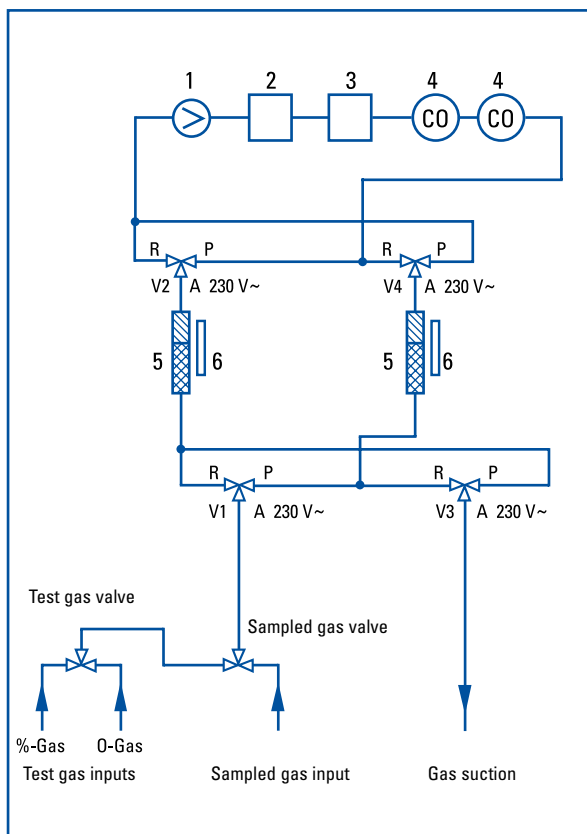
Status information can be output via a serial RS 232 (optional RS 485) data interface.



19" / 3 HU Control Slide-in Unit



19" / 6 HU Gas Suction / Preparation



- 1 = Sampled gas pump
- 2 = Flow through regulation
- 3 = Fine filter
- 4 = CO sensor
- 5 = Regenerative filter element
- 6 = Heating element

Short Description

The gas suction includes the sampled gas feed pump with flow-through regulation, test gas, zero-gas, sampled gas switch-over, two heated regenerative filter elements and the electrochemical gas sensorics.

The electronic control unit assumes all tasks of regulation, control and evaluation. All parameter adjustments are made with menu assistance via a 6-button keyboard and a 4-line LC-Display. The measured value of CO concentration is available for further processing via a 4-20 mA current interface. A serial RS 232 or RS 485 interface is available for data communication.

Analyser Construction

The carbon monoxide analyser CO 2000 comprises the following 19"-sub-assemblies:

- Gas suction, 19"/6 HU with sampled gas pump, flow regulator, gas sensorics, regenerative filter elements
- Microcontroller controlled evaluation unit, 19"-rack system (3 HU) with user-specific plug-in cards in Euro-format
- Installation housing

**Technical Data**

Measuring principle:	Electrochemical test head
Measurement ranges:	0-100 ppm CO or 0-1000 ppm CO (switchable) Other ranges on request
Detection limit:	1,5 ppm CO
Cross sensitivity:	H ₂ : 100 ppm < 60 ppm CO C ₂ H ₄ : 100 ppm < 75 ppm CO NO: 35 ppm < 3,5 ppm CO
Measurement accuracy:	< ± 4 % of f.s.d. in smallest range
Zero drift:	< ± 2 % of f.s.d. in smallest range
Ambient temperature:	+5° C to +45 °C
Sampled gas flow-through:	75 ltr./h
Output signals:	0-(4)-20mA current interface max. load 400 ohm RS 232 or RS 485
Settling time (t ₉₀):	100 s (sample line approx. 11m long, dead time 20 sec.)
Effect on barometric air pressure variations:	None
Temperature dependence of zero point and sensitivity:	Variations of 1,25% > 1% error
Warm-up time:	approx. 60 min.
Maintenance interval:	4-8 weeks
Mains connection:	230 V 50 Hz, 600 VA, other voltages by request
Dimensions: (W x H x D)	600 x 478 x 500 mm
Weight:	45 kg
Test certificate:	To German standards, according to the clean-air regulations („TA-Luft“)

Accessories

- Extraction probe, heated or un-heated
- Installation flange for extraction
- Heated extraction pipes
- Test gas bottle with pressure regulator
- Pollution control computer EUR 196 according to the clean-air regulations („TA-Luft“)
- Plotter
- Purge air device
- Automatic calibration unit