

Siemens Continuous Gas Analyzers

The Benchmark in Process Gas Analytics

ULTRAMAT 6

NDIR dual-beam principle
4 IR components



OXYMAT 6

Paramagnetism
 O_2



ULTRAMAT/OXYMAT 6

NDIR dual-beam principle +
Paramagnetism
2 IR components + O_2



OXYMAT 61

Paramagnetism
 O_2

CALOMAT 6

Thermal conductivity (TCD)
 H_2 He



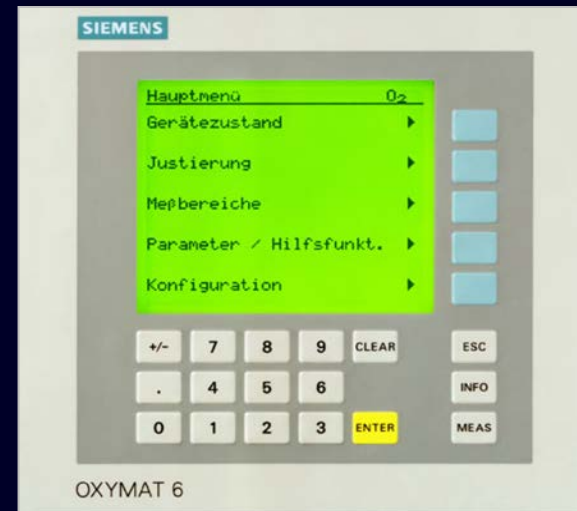
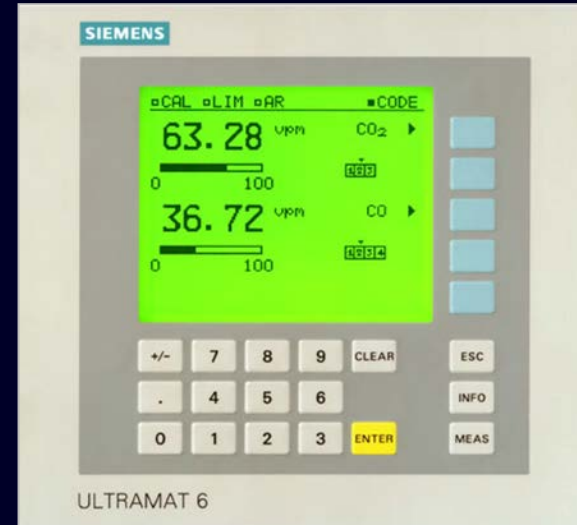
FIDAMAT 6

Flame ionization (FID)
 C_mH_n

Series 6 Display & Operation

All Information at a Glance, Easy Operation

- Large graphic display
- Digital and bar graph display
- Freely selectable units of measurement:
ppm, %, mg/m³
- Programmable status bar
- Self-explanatory menus
- Menu control via softkeys
- Logbook function
- Flexible programming
- Help screens



ULTRAMAT 6

NDIR – Process Gas Analyzers

ULTRAMAT 6

Features

- Highly selective measurement of up to 4 IR-active components
- Field and rack versions
- Gas-tight isolation of electronics and analyzer module in field version (IP65)
- Field versions for use in FM/CSA Class I, Div. 2
- Heated versions (65 °C / 140 °F)



ULTRAMAT 6

Measuring Ranges

Furthermore, various special applications possible on request:

- more gas components
- different measuring ranges
- special materials in gas path

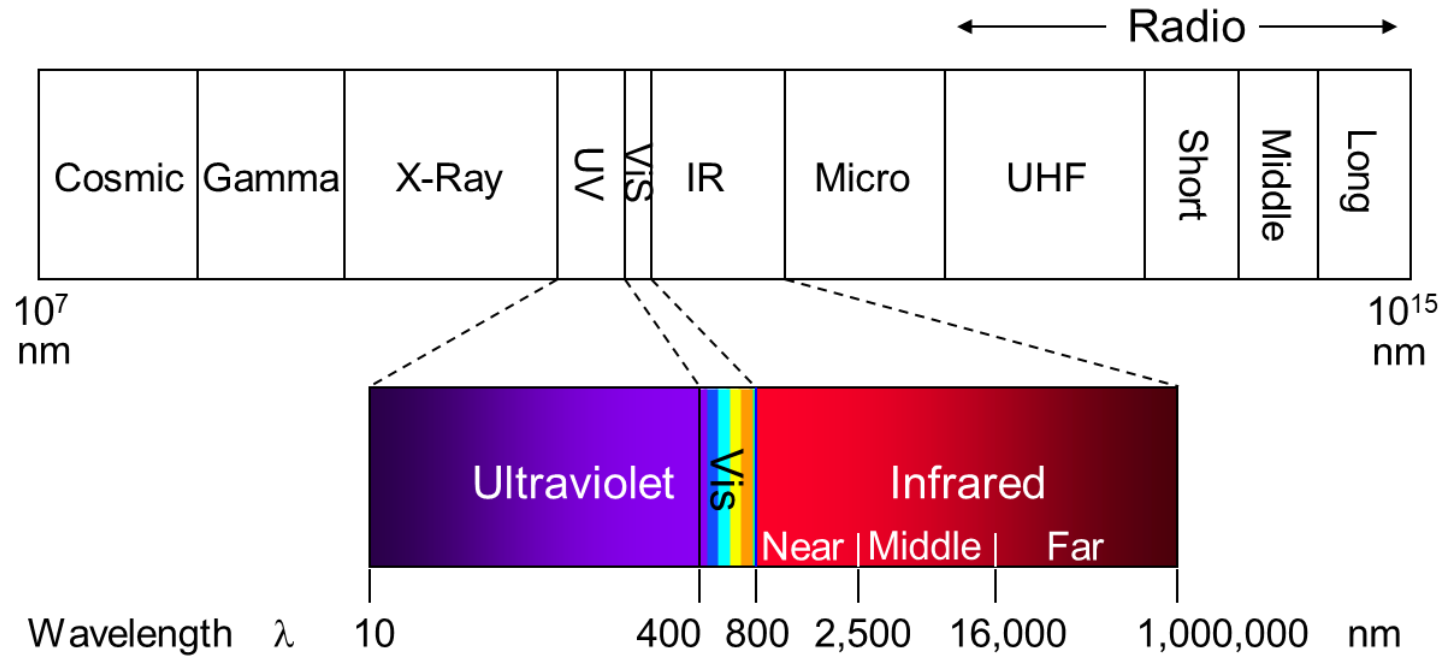
Gas Component	Smallest Measuring Range	
CO	0 - 10 ppm	0 - 50 mg/m³
CO ₂	0 - 5 ppm	
NO	0 - 100 ppm	0 - 100 mg/m³
SO ₂	0 - 50 ppm	0 - 75 mg/m³
NH ₃	0 - 100 ppm	
N ₂ O	0 - 50 ppm	
CH ₄	0 - 50 ppm	



ULTRAMAT 6

Electromagnetic Spectrum

- Measurements in the infrared wavelength range: 2-9 μm

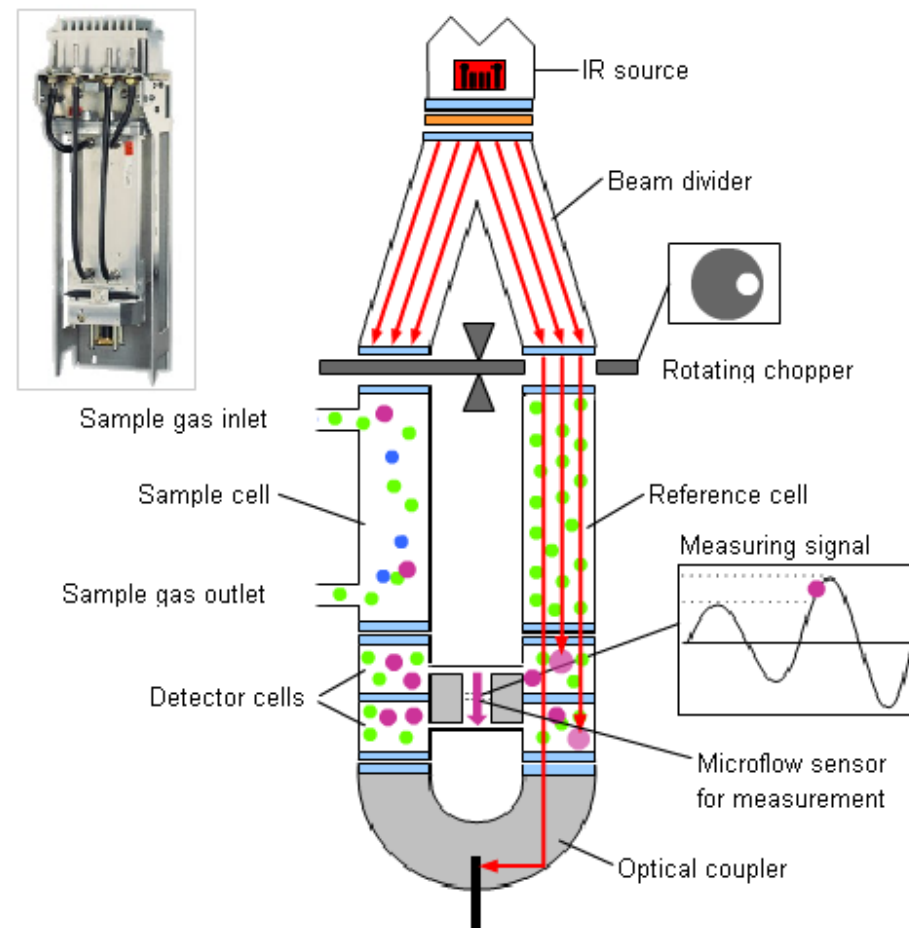


ULTRAMAT 6

Measuring Principle

- Dual-beam NDIR principle
- Gas filled double-layer detectors
- Optical coupler for optimized selectivity

Reference Gas Measurement

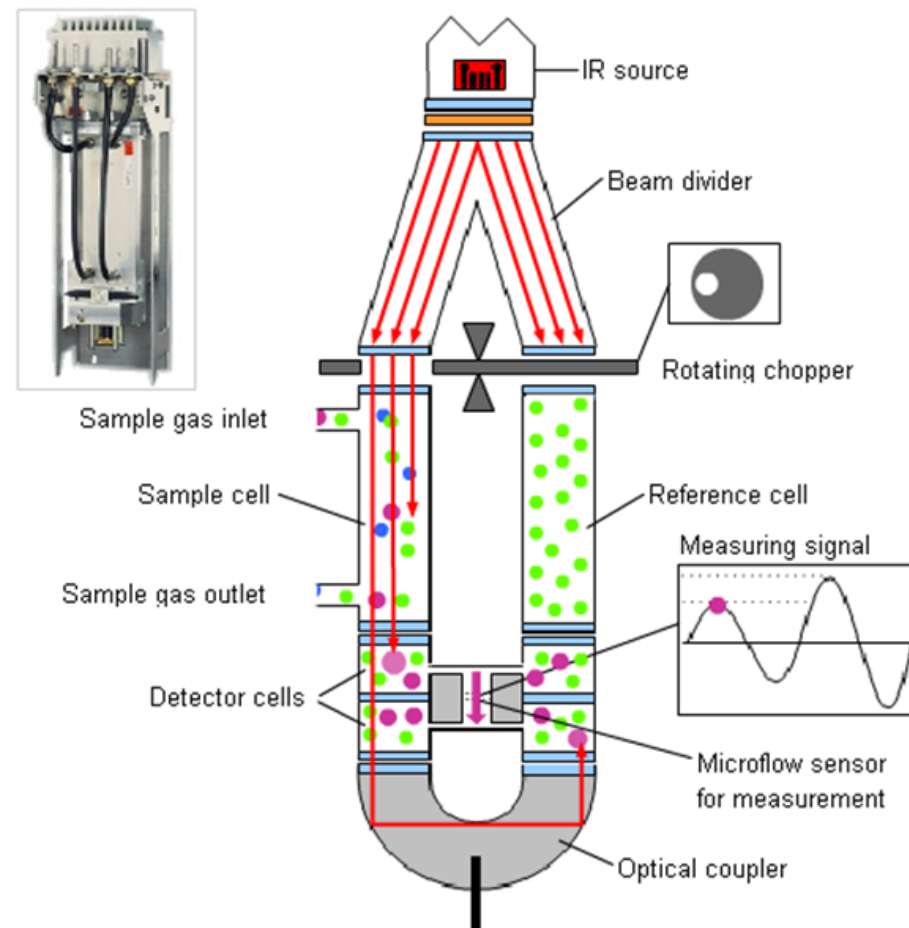


ULTRAMAT 6

Measuring Principle

- Dual-beam NDIR principle
- Gas filled double-layer detectors
- Optical coupler for optimized selectivity

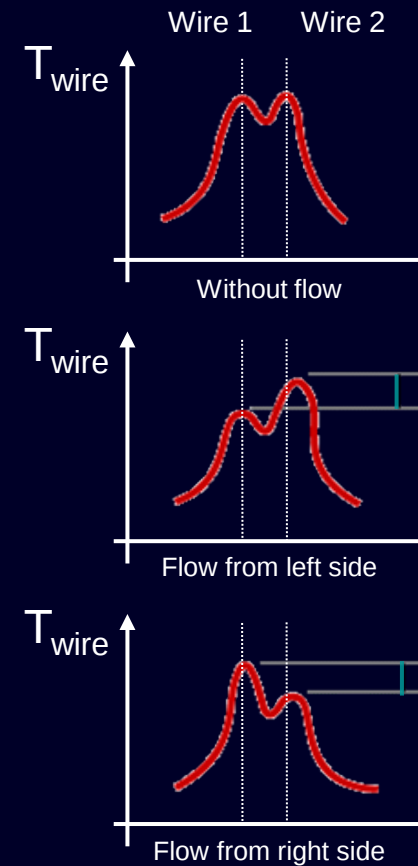
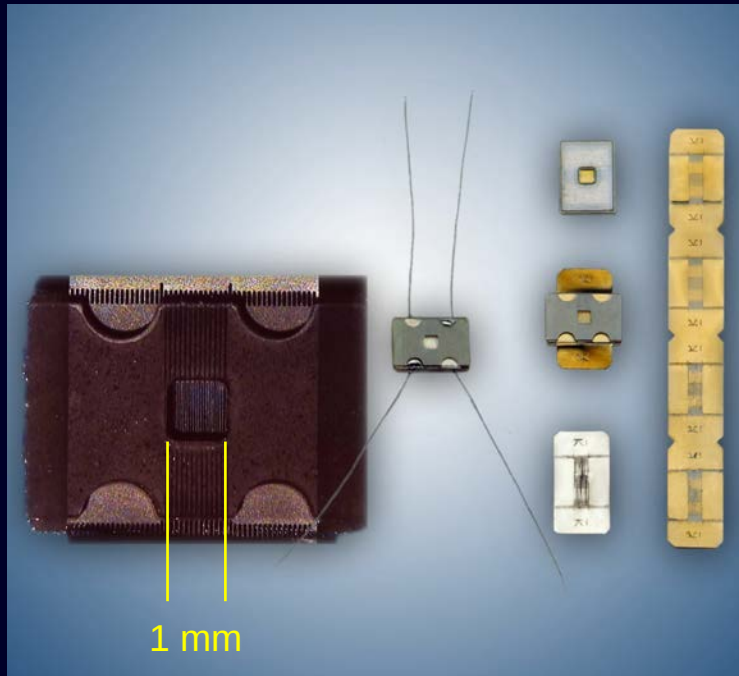
Sample Gas Measurement



ULTRAMAT 6

The Microflow Sensor

- Measuring very small alternating flows
- No membrane detector (no 'microphony effect')
- No moving parts (not subject to wear)



ULTRAMAT 6

Typical Applications

Industry	Application
Chemicals	- Air separation, e.g., 10 ppm N₂O, 5 ppm CO₂ in H₂ - Vinyl chloride plants: 0 – 3 % C₂H₄, 0 – 10 % CO, 0 – 100 % CO₂
Oil & Gas	Ethylene oxide plants: 0 – 5 % CO₂, 0 – 50 % C₂H₄, 0 – 100 ppm CO
F&B	Detection of smoldering fire in grain mills 0- 10ppm CO
Power	Combustion optimization: CO
Emission monitoring	CO/NO/SO₂ in stack gases of power plants

ULTRAMAT 6

Highlights at a Glance

Features		User Benefits
• High selectivity • optical filter, gas filter double-layer detectors optical coupler	➡	• Reliable and precise measurements in complex gas matrixes
• Heated gas path version available	➡	• No condensation at sample with high water loads
• Low detection limits	➡	• Trace measurements possible
• Corrosion-resistant materials in gas path	➡	• Measurements in highly corrosive sample gas • Low maintenance/ reduced service costs
• Detector without ‘microphone-effect’	➡	• Reduced influence of on-site vibrations
• Cleanable analyzing chamber	➡	• Easy serviceable, reduce OPEX
• Various measurements as “Special Applications” available	➡	• Covering a wide range of gases, not only the standard gases
• SIL2 Certification	➡	• Suitable for Safety applications

OXYMAT 6

Paramagnetic Oxygen Analyzers
for Highlight Applications

OXYMAT 6

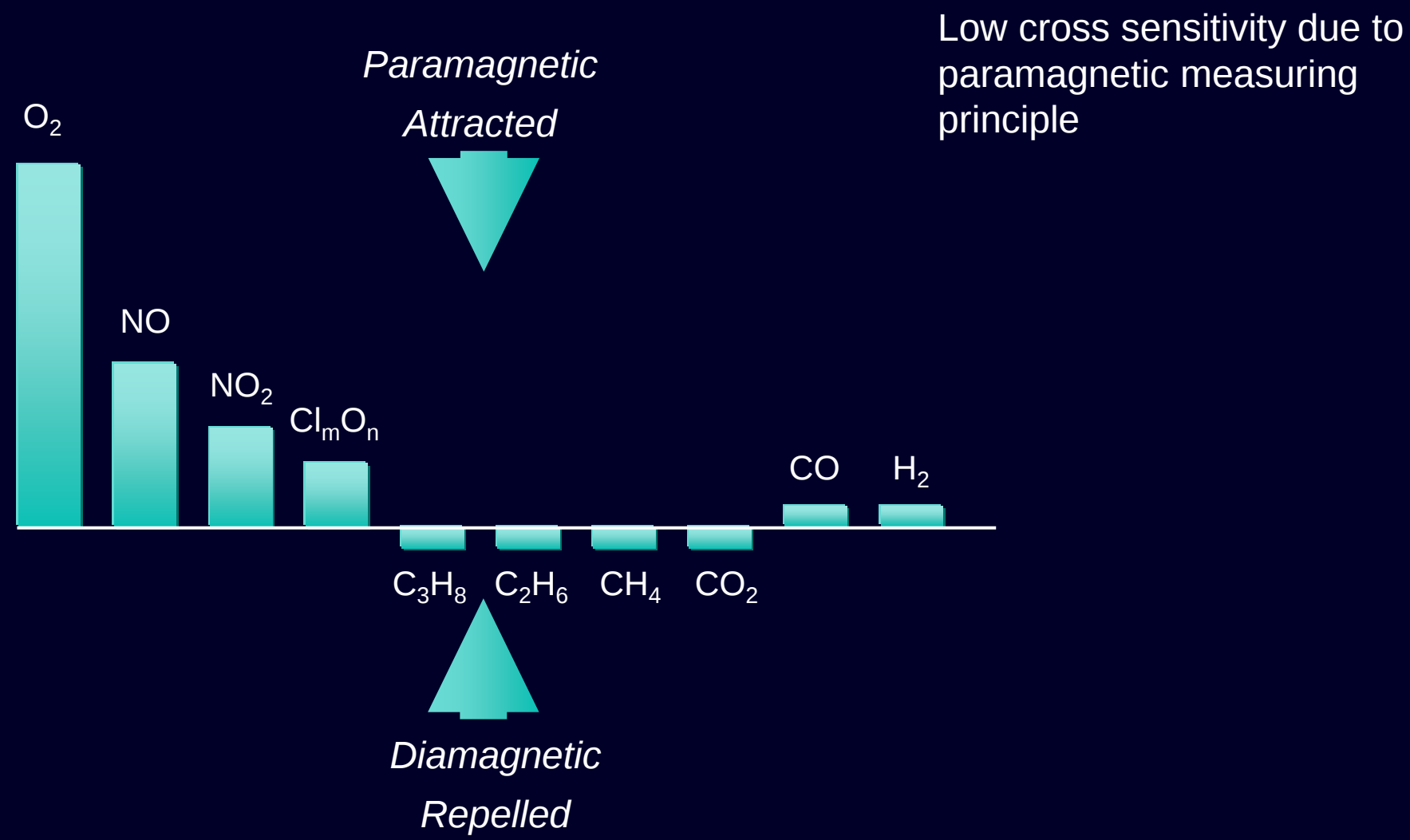
Features



- Paramagnetic alternating pressure principle
- Field and rack versions
- Gas-tight isolation of electronics and analyzer module in field version (IP65)
- Field versions for use in zones 1, 2 and 22 according to ATEX 2G and ATEX 3G/D or FM/CSA Class I, Div. 2
- Heated versions (130 °C)
- Compensation of vibration effects
- Measurement independent from the thermal conductivity of the sample gas
- Sample gas pressure up to 3000 hPa
- SIL2 certified
- “Ready for H2” Declaration

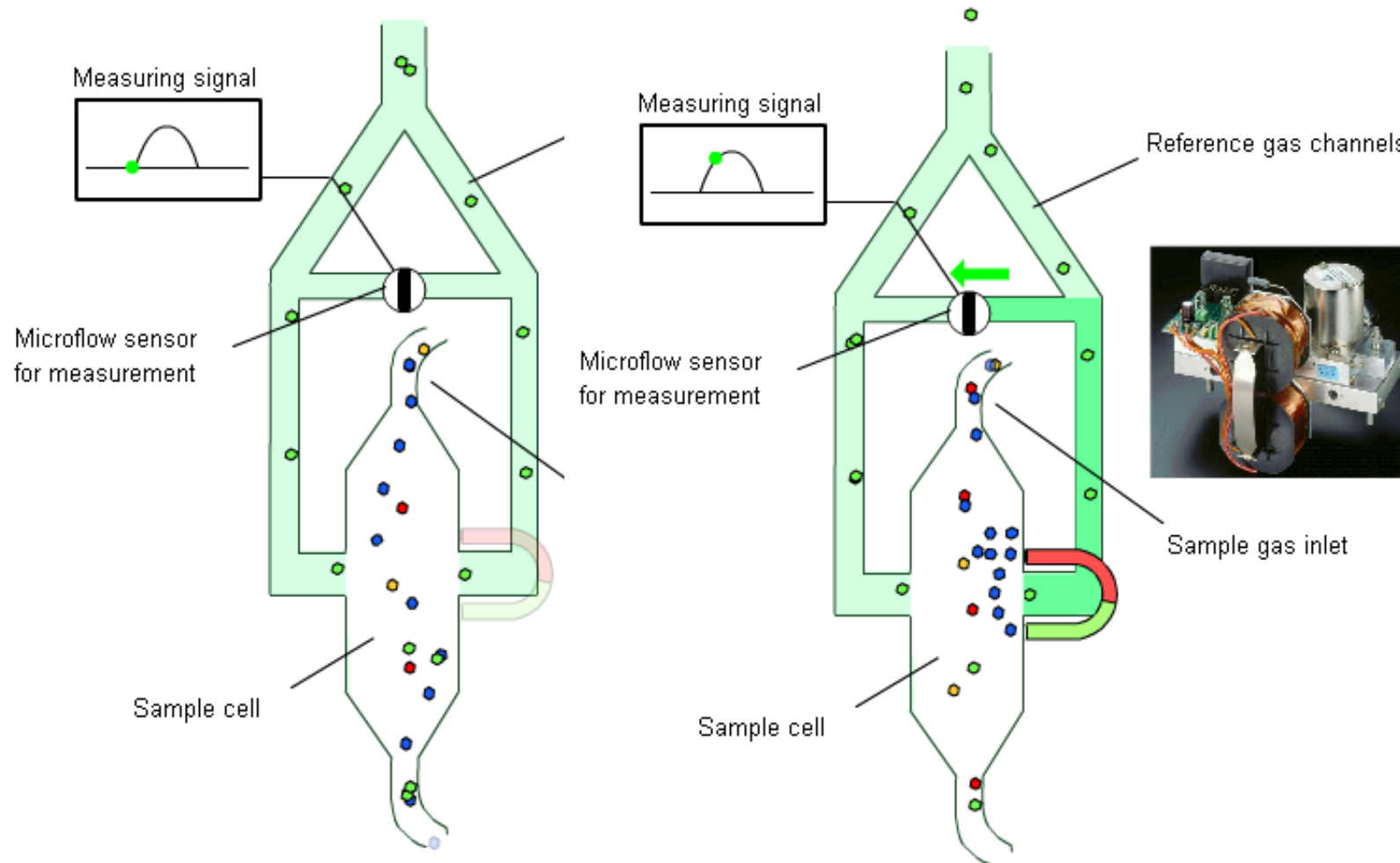
Gas Component	Smallest Measuring Range	
O2	0 - 0.5 vol%	
O2	99,5 - 100 vol%	Physically suppressed measuring range

OXYMAT 6
Magnetic Induction



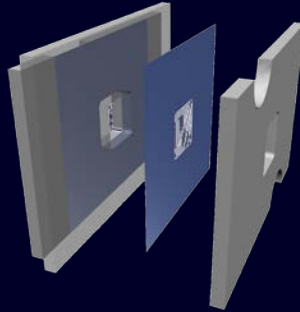
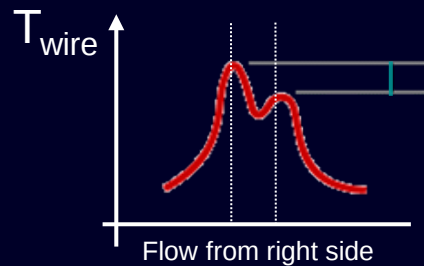
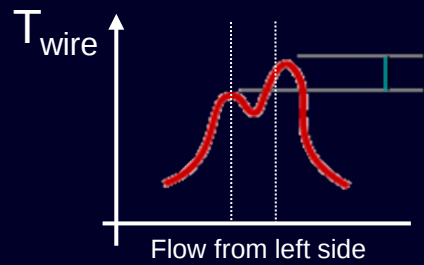
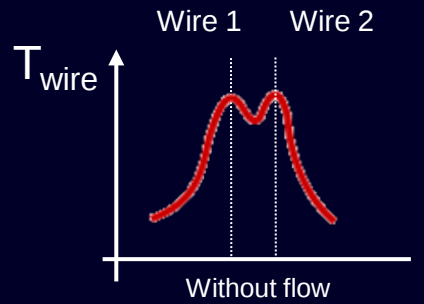
OXYMAT 6

Measuring Principle

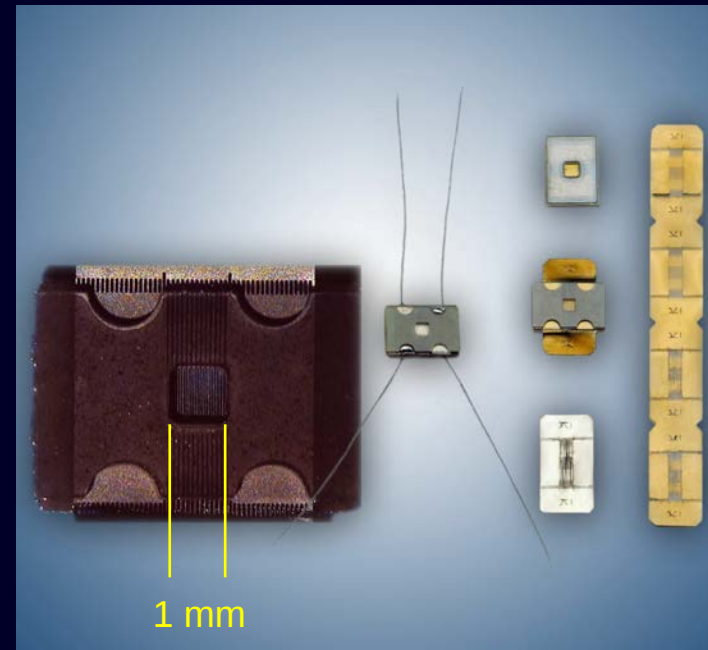


OXYMAT 6

The Microflow Sensor



- Measuring very small alternating flows
- No membrane detector
→ no 'microphony effect'
- No moving parts → not subject to wear



OXYMAT 6

The measuring Bench



- Available in different corrosion resistant materials (StSt, Tantalum,...)
- In case of contamination can be easily cleaned

OXYMAT 6

Typical Applications

Industry	Application
Chemicals	0 – 0.5% O₂ in N₂ with halogens 0 - 5% O₂ in chlorinated HC's and bromine 0 - 5% O₂ in chlorine 0 - 2% O₂ in H₂ e.g. Hydrogen Elektrolyzer  99 – 100% O₂ in air separation
Oil & Gas	Ethylene oxide plants: 0 – 10% O₂ * (production optimization & safety relevant measurements) * To be checked with Technical Support: Under normal conditions EO ethylene oxide ignites when it comes in contact with ambient air., therefore EO may only be used when the oxygen content is below 3% O₂
Cement	- Combustion control at kiln inlet, calciner and cyclone preheater: 0 – 5 % O₂ - Coal mill: 3 – 10% O₂ (false air) 0 – 10% O₂ in stack gas
Power	Combustion optimization: 0 – 10% O₂
Emission monitoring	Power plants, waste incinerators, cement plants: 0 – 10% O₂ in stack (O₂-reference)

OXYMAT 6

Highlights at a Glance

Features		User Benefits
Low detection limits	➡	Trace analysis (pure gas application)
Nearly no cross interferences	➡	Reliable and correct measurement in gas mixtures
Low reference gas consumption	➡	Cost saving
Heated gas path	➡	Applications with high water vapor concentrations
Corrosion resistant wetted parts	➡	High corrosive sample applications possible
Vibration compensation	➡	Unsentitive to ambient vibrations
T90 response time is less than 2.4 s	➡	The fastest extractive oxygen analyzer on the market
SIL2 Certification	➡	Suitable for Safety applications
“Ready for H2” Declaration	➡	Can be used with H ₂

A Smart Combination

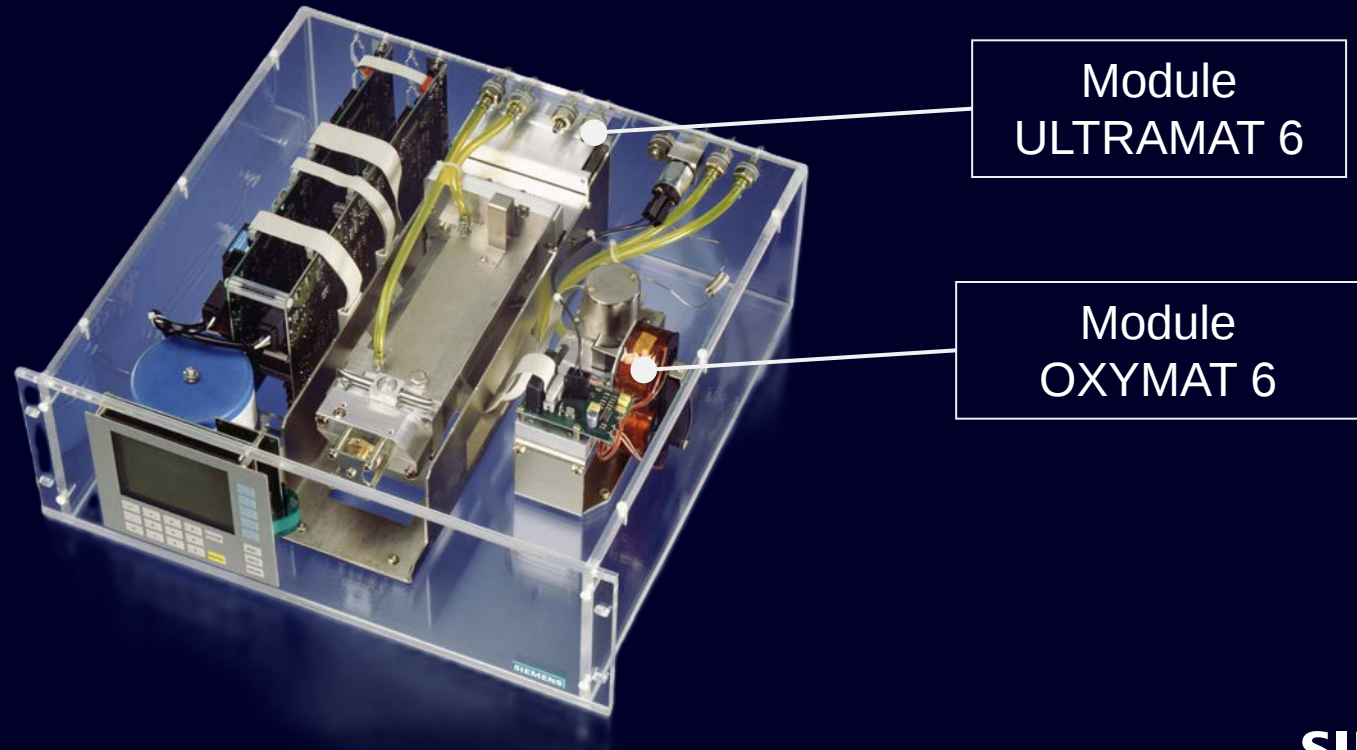
ULTRAMAT/ OXYMAT 6

ULTRAMAT/OXYMAT 6E

The “Dual Analyzer”



- NDIR and paramagnetic oxygen module:
2 IR-active components plus O₂ (paramagnetic)
- Designed for easy access



OXYMAT 64

Zirconia Oxygen Analyzer

OXYMAT 64

Features

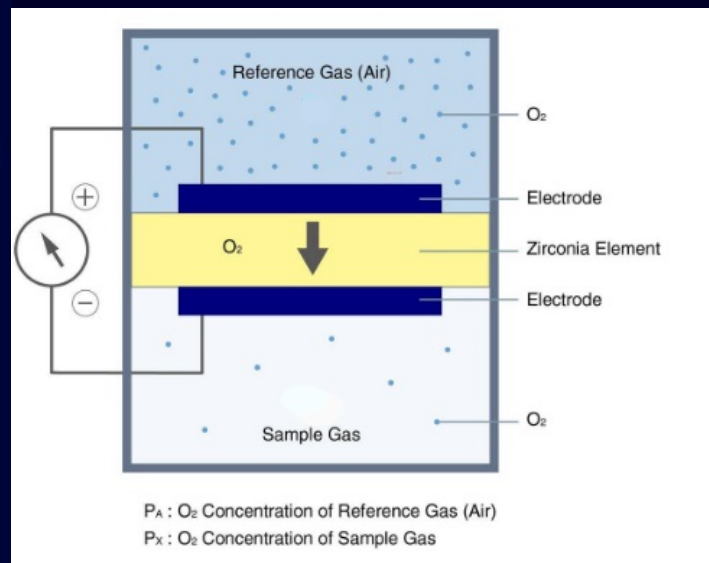
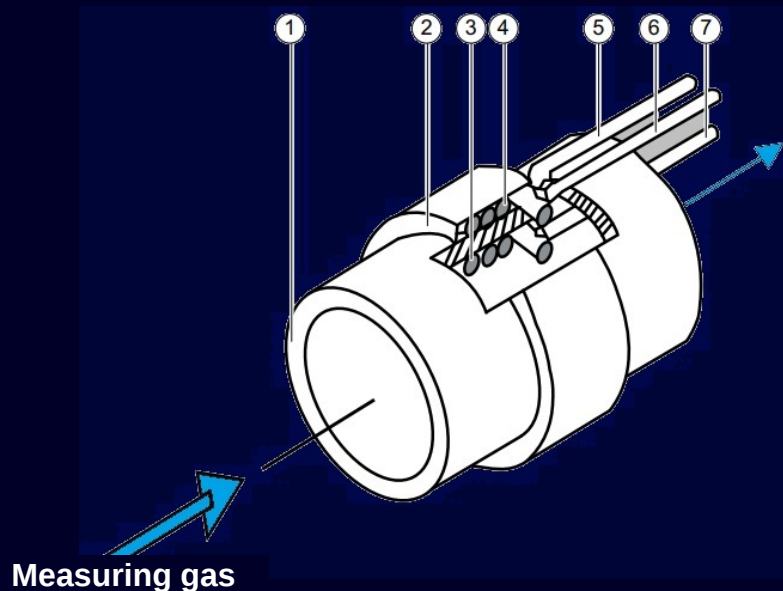


Gas Component	Smallest Measuring Range
O ₂	0 – 10 ppm

- The OXYMAT 64 gas analyzer is used for the trace measurement of oxygen.
- ZrO₂-sensor technology
- ppm range measurement of oxygen in pure gas applications
- Catalytic active (for inert gases measurement) and catalytic inactive sensors (only slight cross interference to combustible gases) available
- Low long-term drift (< 2% of span / moth)
- High linearity (< 2% of measuring span)
- Drift: < 2 % of span/month
- high pressure version (0,2 to 0,6 MPa(abs.))
- low pressure version (with pump)

OXYMAT 64

Measuring Principle



1. Pipe made of ZrO_2
2. Ceramic protective coating
3. Sample electrode (Pt)
4. Reference electrode (Pt)
5. Thermocouple
6. Contact to reference electrode
7. Contact to sample electrode

- The measuring cell consists of a cylindrical (pipe-shaped) ZrO_2 membrane. The sample gas (low O_2 content) flows at a constant rate through the inside of the membrane, which is regulated at $650^\circ C$. The exterior of the sensor is exposed to the ambient air (approx. 21 % O_2).
- For temperatures $> 350^\circ C$ ZrO_2 becomes a conductor for Oxygen ions (O_2^-)
- Sensor is working at $650^\circ C$
- The O_2 molecules are ionized at the metallic electrodes
- Since ZrO_2 conducts ions at $650^\circ C$, ionic migration takes place in the direction of the lower partial pressure.
- The partial pressure difference between the oxygen in the air and the oxygen content of the measuring gas leads to oxygen ion diffusion, which is evaluated as a measuring signal.

OXYMAT 64

Typical Applications

Industry	Application	Measurement tasks
Chemicals	- Air separation plants: O₂ in N₂ and inert gases (e.g. N₂, Ar) - Production of technical gases	purity measurement to monitor product quality
Metal	Heat treatment: O₂ in NH₃	purity measurement to monitor product quality
F&B	Measurements of O₂ in CO₂. In batch processes that are occasionally flushed with air, the OXYMAT 64 offers advantages due to the automatic switching from the low ppm to the % range.	To avoid contact with ambient oxygen during production and storage of fresh food. This allows for extended storage time and increases product quality

CALOMAT 6

Thermal Conductivity Process Analyzer (TCD)

CALOMAT 6

Features

Measurement of Hydrogen and noble gases in (quasi-) binary gas blends

Thermal conductivity detection

Semiconductor detector

Field and rack versions



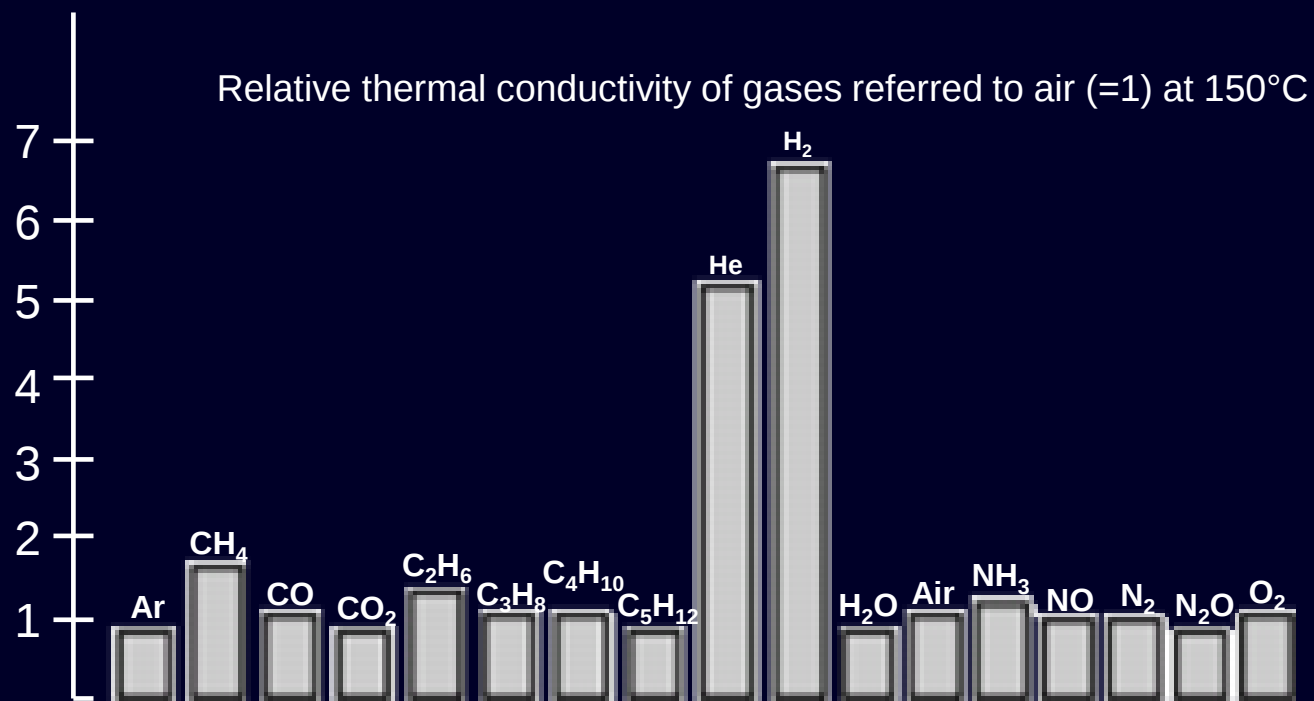
Field versions for use in zones 1 and 2 according to ATEX 2G and ATEX 3G or FM/CSA Class I, Div. 2

Application change by software, no bench change required

Gas-tight isolation of electronics and analyzer module in field version (IP65)

CALOMAT 6

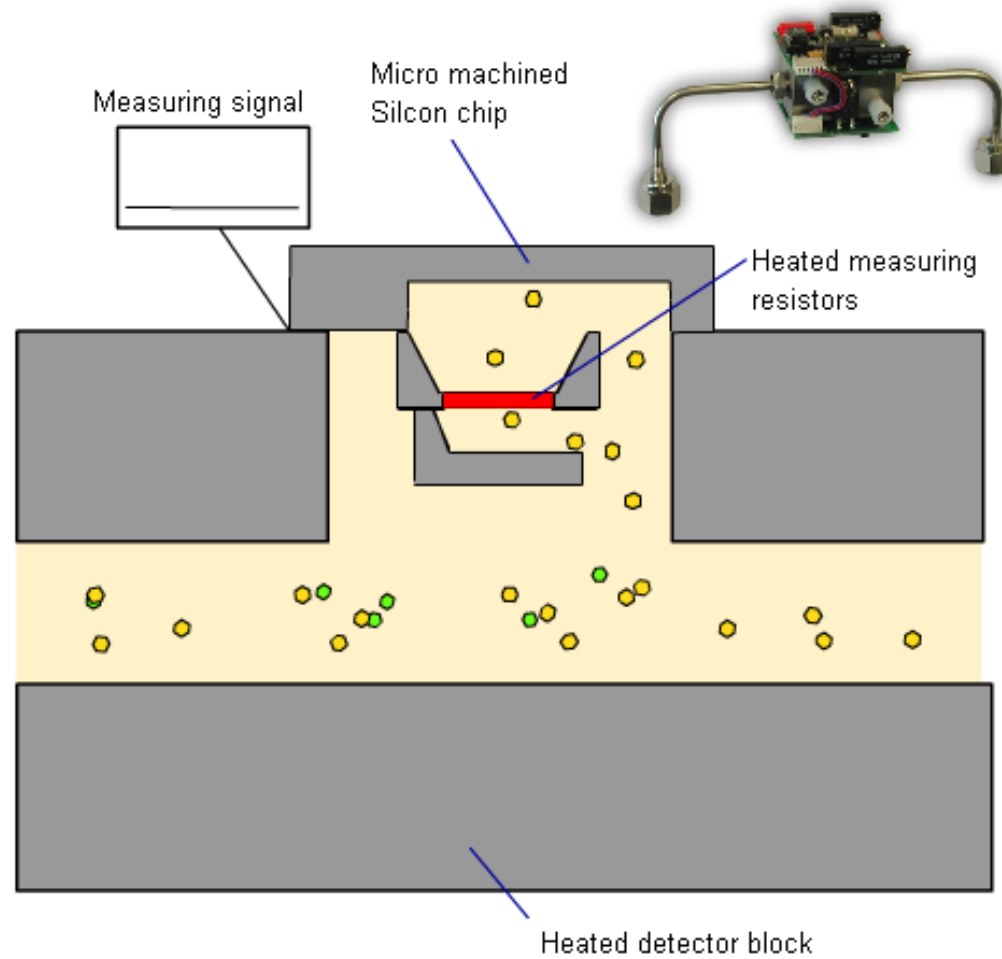
Thermal Conductivity of Gases



The thermal conductivity of a gas is a **specific material constant** like density or the electrical conductivity.

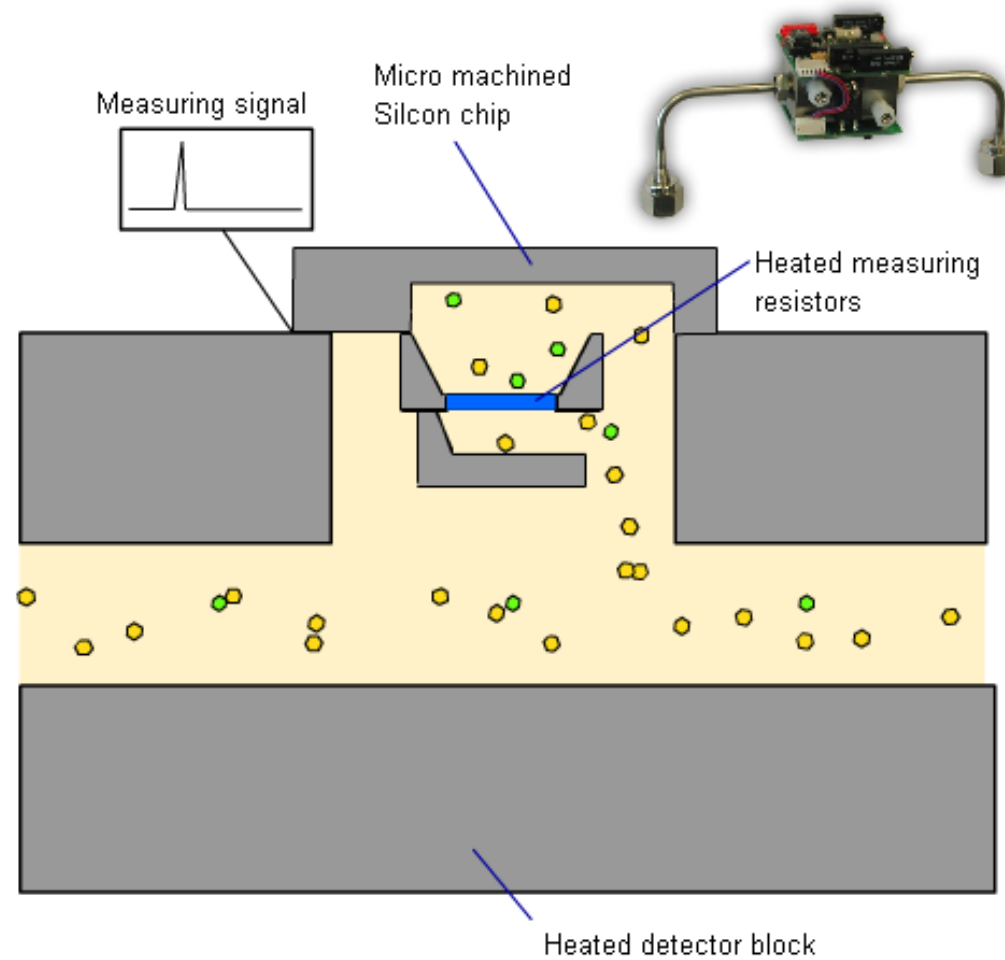
CALOMAT 6

Measuring Principle



CALOMAT 6

Measuring Principle



CALOMAT 6

Measuring Ranges



- Various measurements as “Special Applications” available

Gas Component	Smallest Measuring Range
H ₂ in N ₂ / NH ₃ / Ar	0-1 %
H ₂ in O ₂	0-1%
H ₂ in CO / CO ₂	0-1 %
H ₂ in CH ₄	0-5 %
He in N ₂ / Ar	0-2 %
He in H ₂	0-10 %
Ar in N ₂ / O ₂	0-10 %
CO ₂ in N ₂	0-20 %vol.
CH ₄ in Ar	0-15 %vol.
NH ₃ in N ₂	0-10 %vol.
H ₂ monitoring in Power Generators	0-100 %vol. / 80-100 %vol.
H ₂ Electrolyzer	H ₂ : 0-2% in O ₂ N ₂ : 0-5% in H ₂

CALOMAT 62

Corrosion resistant

Calomat 62 is specially designed for corrosive gas mixtures



Gas Component	Smallest Measuring Range
H ₂ in N ₂ (with residual corrosive gases)	0-1 %
H ₂ in Cl ₂	0-1%
H ₂ in HCl	0-1 %
HCl in Air	0-5 %
Cl ₂ in HCl	0-2 %
Cl ₂ in Air	0-5 %

CALOMAT 6

Typical Applications

Industry	Application
Chemicals	• Pure gas monitoring: 0 - 1 % H₂ in Ar • Inert gas monitoring: 0 – 2 % He in N₂ • 0...2 % He in N₂ • 0...10 % Ar in O₂ • Hydroargon gas monitoring: 0 – 25% H₂ in Ar • Hydrogen Production
Electrolyzer	• 0 – 5% H₂ in O₂ • 0 – 100 % N₂ in H₂ (for the start-up and shut down phase)
Metals	• Blast furnace gas: 0 - 5% H₂ in CO/CO₂/CH₄/N₂ • Bessemer converter gas: 0...20 % H₂ in CO/CO₂
Hydrogen Cooled Turbo-Generators	• 0 – 100% CO₂/ Ar in air • 0 – 100% H₂ in CO₂/ Ar • 80 – 100% H₂ in air



CALOMAT 6

Highlights at a Glance

Features		User Benefits
Low detection limits	➡	Trace analysis (pure gas application)
Low long-term drift	➡	Long calibration interval, less calibration gas used
Ex certification for use in zones 1, 2 and 22 according to ATEX 2G and ATEX 3G/D or FM/CSA Class I, Div. 2	➡	Reliable and correct measurement in gas mixtures
T90 response time less than 5s	➡	Fast response time
Calomat 62 specially designed for the use in corrosive gas mixtures	➡	Sensor embedded in glass makes this analyzer resistant to corrosive samples
SIL2 Certification	➡	Suitable for safety Applications
“Ready for H ₂ ” Declaration	➡	Can be used with H ₂

FIDAMAT 6

Total Hydrocarbon Analyzer (FID)

CALOMAT 6

Features



OXYMAT 61

Features

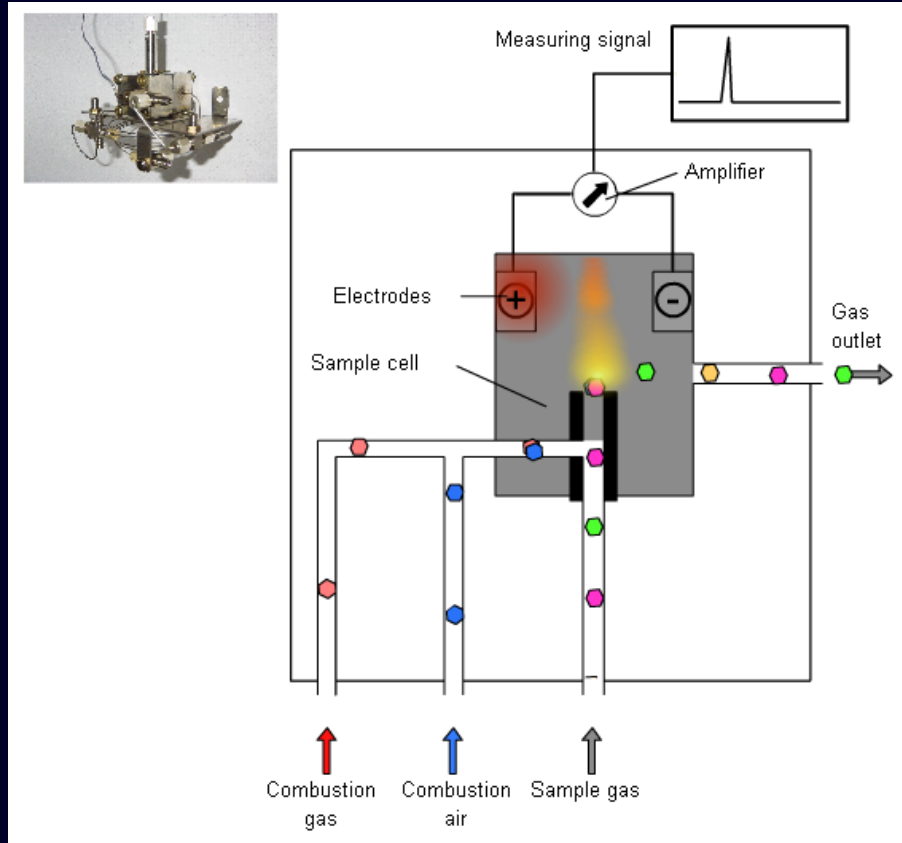


Gas Component	Smallest Measuring Range
C _n H _m	0-10 ppm / 15 mg/m ³

- Total Hydrocarbon measurement according to the flame ionization principle
- 19“ rack version
- With sample gas pump, for measuring at atmospheric pressure
- Without sample gas pump for measuring at higher pressures
- Wide range of applications (emissions, ambient air, process gases)
- Non-plugging sample capillary
- Auto-start
- Safety shut down

FIDAMAT 6

Measuring Principle

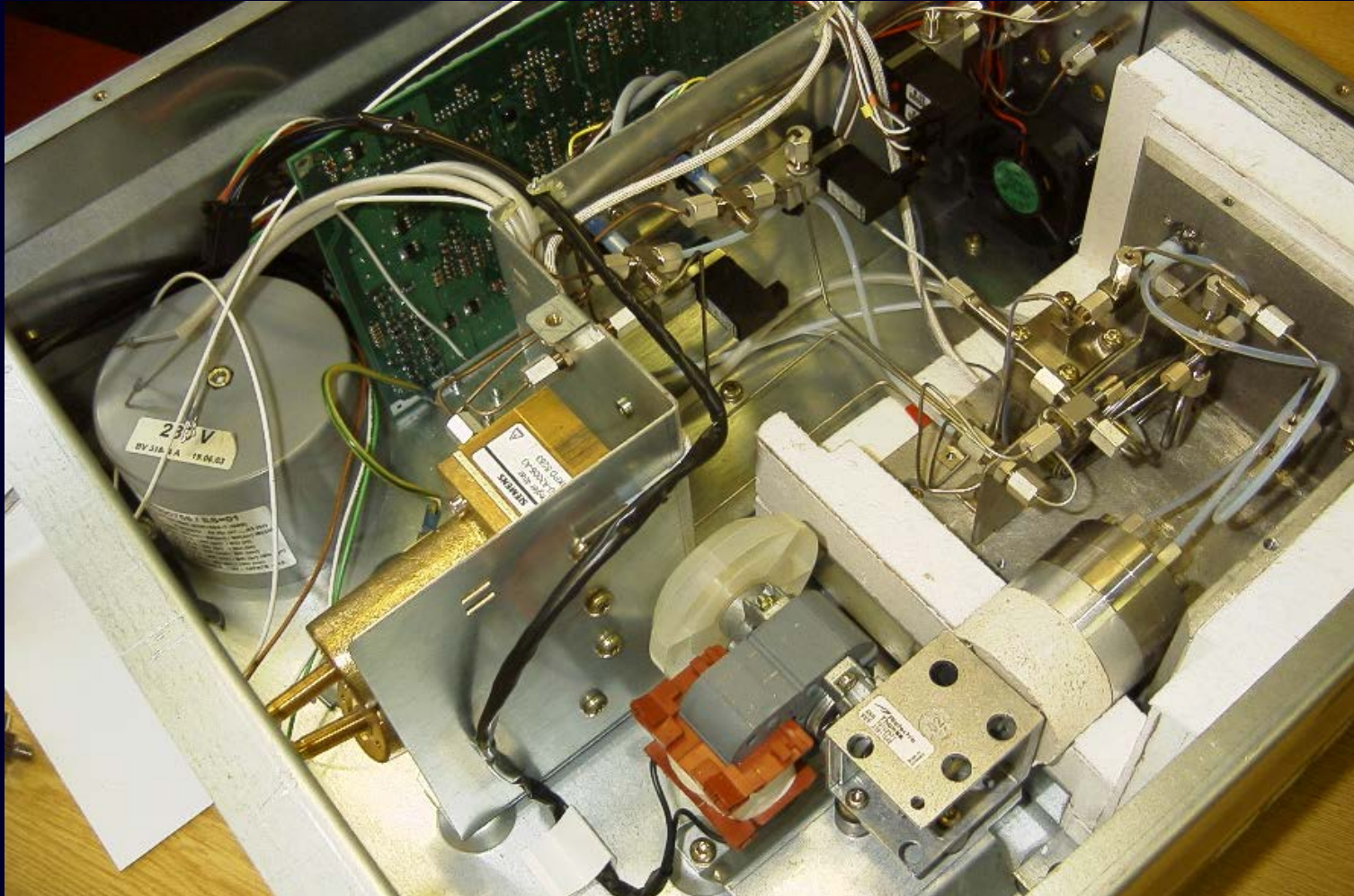


Measuring principle

- The FIDAMAT 6 is determining the total hydrocarbon content in the air and high-boiling gas mixtures.
- The sample gas is supplied under positive pressure or sucked in by the built-in diaphragm pump and fed to the flame ionization detector.
- In the detector, the hydrocarbons contained in the sample gas are burned in an oxyhydrogen flame. During combustion, the organically bound hydrocarbons are partially ionized during combustion. The released ions are ionized into a current and measured with a highly sensitive amplifier.
- The measured current is proportional to the number of organically bound C atoms of the atoms of the hydrocarbons in the sample gas.

FIDAMAT 6

Service Aspects



- Designed for easy access
- Front panel can be swung down for servicing

FIDAMAT 6 with Sample Gas Pump

Typical Applications

Industry	Application
Ambient Air Monitoring	Environmental protection
Emission Monitoring	Stack gas monitoring (17. BImSchV)
	Threshold limit value (TLV) monitoring in working areas
	Quality monitoring
Automotive	Exhaust gas monitoring
	Shed measurement
Process Measurement	Solvent recovery plants
Quality control	Purity measurement in gases such as N ₂ , O ₂ , CO ₂ , inert gases e.g. Air Separation
	Refineries

FIDAMAT 6

Highlights at a Glance

Features		User Benefits
• Low detection limits	➡	• Trace analysis (pure gas application)
• Certificate acc. EN15267 for Emission Monitoring	➡	• Suitable e.g. Waste Incineration plants
• Nearly no cross interferences	➡	• Reliable and correct measurement in gas mixtures
• Little burning gas consumption	➡	• Cost saving
• Heated gas path	➡	• Applications with high water vapor concentrations
• Corrosion-proof filter	➡	• Reduced maintenance costs
• Corrosion-proof capillary	➡	• Reduce maintenance costs
• Corrosion safety by pump shut-down below set temperature	➡	• Increased safety, reduce maintenance costs

Pro Series Currently in Development

- New look
- Added capabilities
- Open and modern communication protocols
- Expected 2028



Thank you!

Any questions?



Thank you!

Contact:

Cale Whitney

Outside Sales Engineer

+1 (720) 417-0506

calew@process-tech.com

Thank you!

Contact:

Trevor West (RC-US DI S SAC PSS)

CGA Portfolio Manager

+1 (346) 498-3893

trevor.west@siemens.com



Disclaimer

© Siemens 2026

Subject to changes and errors. The information provided in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or other rights of Siemens AG, its affiliated companies or other companies whose use by third parties for their own purposes could violate the rights of the respective owner.