

# OmniStar™ and ThermoStar™



**The new Gas Analysis Systems!**

**Modular Design. Intelligent Software.  
Wide Range of Applications.**

**PFEIFFER**  **VACUUM**

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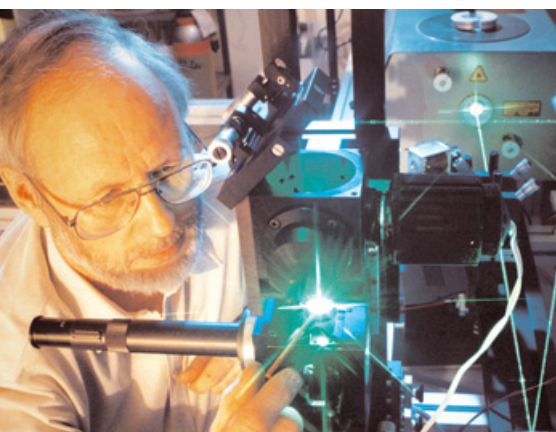
## Innovation OmniStar™ and ThermoStar™

Today mass spectrometry is one of the most widely used analytical methods for identifying chemical elements and compounds. With the OmniStar and ThermoStar benchtop analysis systems, Pfeiffer Vacuum offers you the optimum and complete solutions for gas analysis. Application areas are in the chemical, semiconductor and metallurgical industries, as well as in fermentation, catalysis, laser and environmental analysis. The OmniStar and ThermoStar excel at reliably identifying and quantifying gas levels. In the case of condensable gases, even low concentrations can be determined swiftly and easily.

### What are OmniStar™ and ThermoStar™?

The OmniStar and ThermoStar analysis systems consist of an inlet system, a PrismaPlus mass spectrometer, a dry diaphragm vacuum pump and a HiPace turbopump. They feature a heated, temperature-regulated gas inlet system and, by comparison with such competing methods as FTIR and IR, are suitable for qualitative and quantitative analysis of gases. The units cover the mass ranges of 1 to 100 amu, 1 to 200 amu and 1 to 300 amu.

Its capillary inlet enables a quasi segregation-free gas supply. A pressure-regulated gas inlet is optionally available for analyzing samples at varying pressures.



*Laser technology*



*Catalysis*



*Semiconductor industry*

### Where are the advantages?

Both of these units offer convincingly simple handling. They can be directly connected and are ready for immediate use – “Plug and play” the way you want it! Thanks to their compact dimensions, the OmniStar and the ThermoStar can be set up virtually anywhere and are additionally highly mobile.

The user interface is very user-friendly, and all unit-specific parameters are easy to read on the backlit LCD display.

The units feature a capillary of either stainless steel (OmniStar) or quartz (ThermoStar), affording a capillary inlet of up to 350 °C. This prevents vapors from condensing during the process analysis.

### Last, but not least!

With the OmniStar and the ThermoStar, we offer benchtop units that feature our own integrated components for precise monitoring of your process with up to 128 different masses. With our dependable products, our decades of experience and our know-how, we can supply you with the optimum solution for your gas analysis needs.

At Pfeiffer Vacuum, support goes far beyond good presales advice. Even after implementation, we stand ready to support you in connection with any and all questions relating to your application!

## Advantages at a glance

- ▶ Qualitative and quantitative gas analysis, connection port for calibration gas inlet systems
- ▶ Low detection limit (< 1 ppm), even for condensable gases
- ▶ Compact, easy-to-operate analysis unit
- ▶ Heated capillary inlet, up to 350 °C
- ▶ Bakeable all-metal sealed high vacuum chamber for low backgrounds
- ▶ Utmost sensitivity thanks to enclosed ion source and field axis technology
- ▶ Reliable identification of unknown gases with the aid of spectral libraries
- ▶ Monitoring of up to 128 masses
- ▶ Mass ranges of 1 to 100 amu, 1 to 200 amu and 1 to 300 amu
- ▶ Applications from vacuum up to atmospheric pressure
- ▶ Gas analysis under varying sample pressures – pressure-regulated gas inlet (optional)
- ▶ Fast, reliable and precise measurement of covalent noble gases

## Applications

- ▶ Chemical processes
- ▶ Semiconductor industry
- ▶ Metallurgy
- ▶ Fermentation
- ▶ Catalysis
- ▶ Laser technology
- ▶ Environmental analysis
- ▶ Fuel cell analysis

## ThermoStar™

The ThermoStar gas analysis unit is a version that is specially designed for being coupled with thermo balances. High-temperature gas samples can be admitted by means of a quartz capillary.



## Advantages at a glance

- ▶ Even small concentrations of reactive and condensable gases can be detected
- ▶ Inert inlet, no change in gas composition
- ▶ Gas inlet heatable up to 350 °C
- ▶ Multi-gas analysis

## Quadera® analysis software



The Quadera analysis software enables you to easily monitor your processes on a PC in realtime. The unit's short response time enables the process analysis to be swiftly conducted.

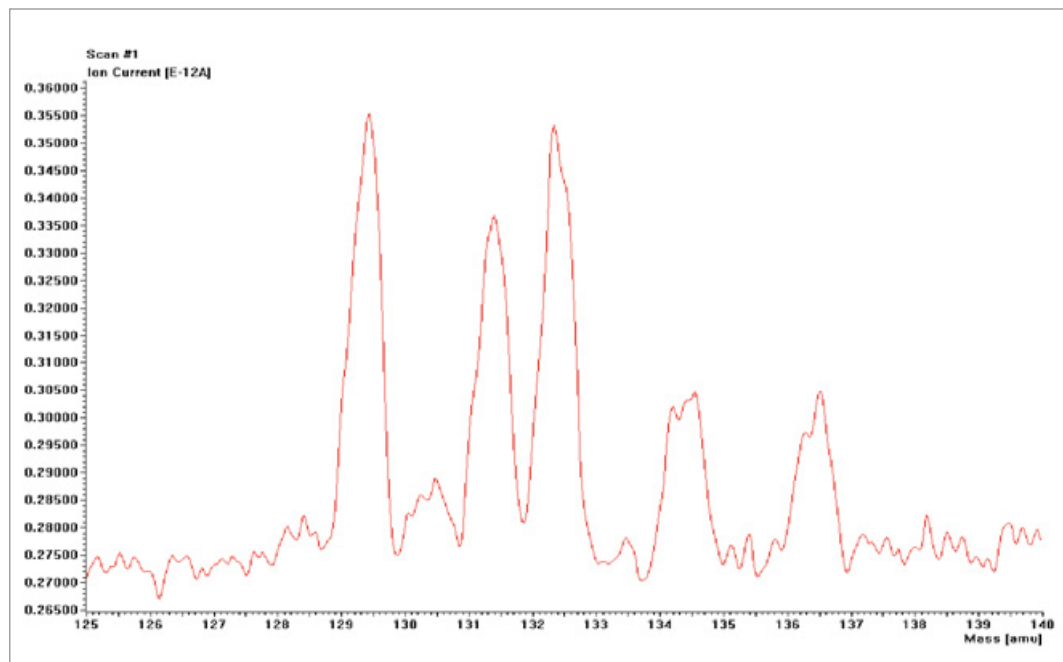
With its modular design, the Quadera software offers a clearly organized, user-friendly platform for the capture and presentation of measurement data and parameter records. Complete measurement procedures can be programmed.

## Advantages at a glance

- ▶ User-friendly, intuitive operation
- ▶ Customer-specific user interface
- ▶ Automated measurement procedures, programmable by means of the integral Microsoft® VSTA® script editor
- ▶ I/O module for exchanging measurement data
- ▶ Integral library of mass spectral data
- ▶ Simple definition of measurement recipes
- ▶ Mass spectrometer data can be linked with external signals

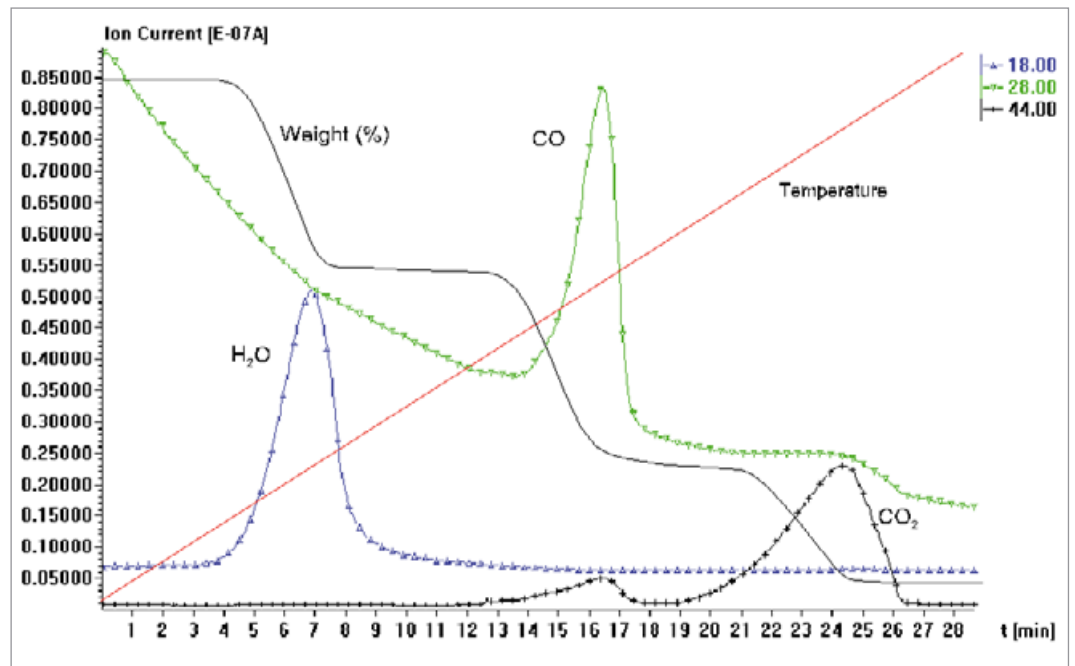
## Application examples

### Xe in air/OmniStar™



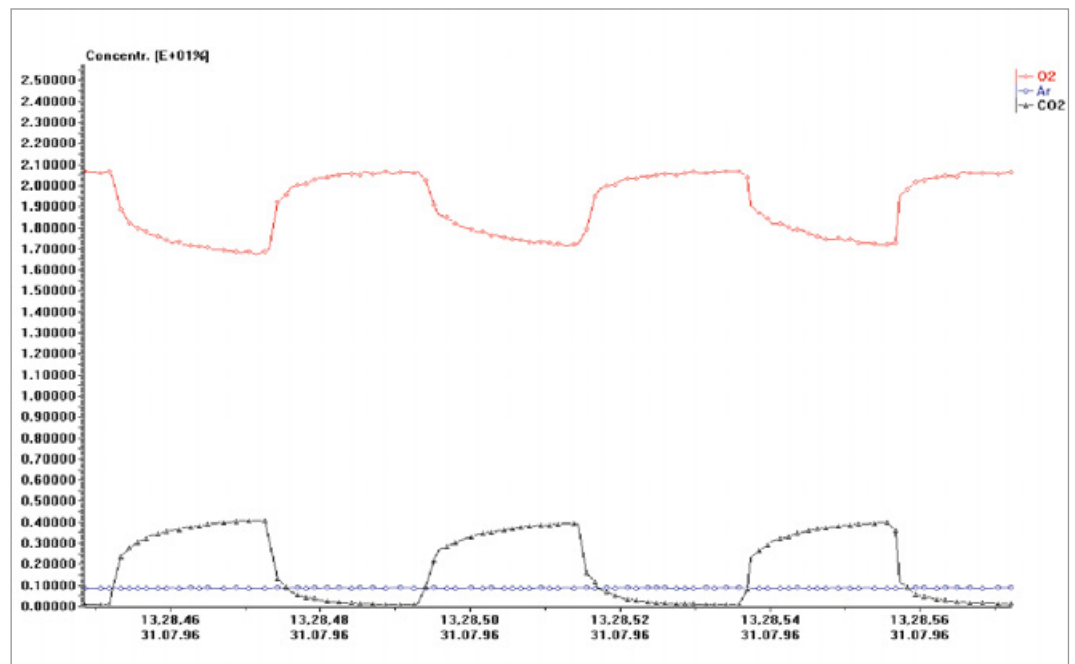
The graph (mass range 125–140 amu) shows the xenon isotopes and the excellent detection limit of the OmniStar. Xenon has stable isotopes at 129, 131, 132, 134 and 136 amu. The concentration of <sup>136</sup>Xe in air is 7.8 ppb.

## Thermal Analysis/ThermoStar™



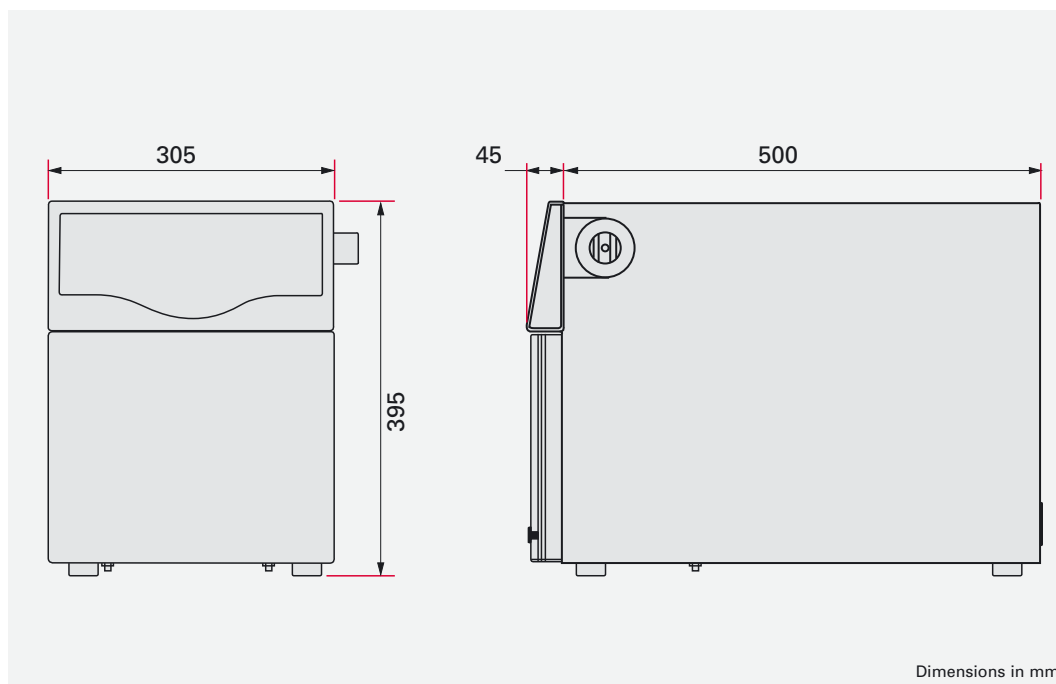
The gases water vapor (18), carbon monoxide (28) and carbon dioxide (44) that evolve when conducting a thermal analysis of calcium oxalate are shown as a function of time together with weight and temperature.

## Respiratory Gas Analysis/OmniStar™



Three breathing cycles of an endurance test. The breath is characterized by the gases  $O_2$  and  $CO_2$ . The argon in the air serves as a reference gas for demonstrating the stability of the system. Very quickly measured by the OmniStar at atmospheric pressure in the Multiple Concentration Determination (MCD) mode.

## Dimensions



## Technical data

Gas analysis system	OmniStar™	ThermoStar™
Mass ranges, amu	1 – 100 / 1 – 200 / 1 – 300	
Gas connection	Stainless steel capillary	Quartz capillary
Gas inlet	Via software-controlled inlet valve, or user interface	Continuously open
Pressure reduction	2-stage, segregation-free	
Gas flow rate, sccm	1 – 2	
Sample gas pressure, mbar	Up to 1,000	
Capillary operating temperature, °C	Up to 350	
Analyzer	QMA 200 M	
Rod system, material / diameter / length, mm	Stainless steel/6/100	
Detector	C-SEM/Faraday	
Mass spectrometer electronics	QME 220 M	
Software	Quadera™	
Contribution to neighboring mass: 40 to 41	< 10 ppm/< 20 ppm/< 50 ppm	
Min. detection limit, C-SEM	< 1 ppm/< 1 ppm/< 1 ppm	
Min. detection limit, Faraday	< 20 ppm/< 40 ppm/< 100 ppm	
Resolution, settable at 10 % peak height, amu	0.5 – 2.5	
Dimensions (L x W x H), mm	545 x 305 x 395	
Weight, kg	35	
Mains requirement: voltage (range), VAC	100 – 230	
Interface	Ethernet Analog input: 2x ± 10 V / 14 bit Analog output: 2x 0...10 V / 12 bit Digital input: 1x Digital output: 2x sink, optical insulated, 24 V	

# Order number structure

## PT M a bc def g h

### a – System

- 8 – OmniStar
- 9 – ThermoStar

### bc – Analyzer/Corrosive

- 01 – Yttriated iridium, calibration system
- 02 – Yttriated iridium
- 05 – Tungsten, calibration system
- 06 – Tungsten
- 11 – Yttriated iridium, calibration system, corrosive gas version
- 12 – Yttriated iridium, corrosive gas version
- 15 – Tungsten, calibration system, corrosive gas version
- 16 – Tungsten, corrosive gas version

### h – Front panel

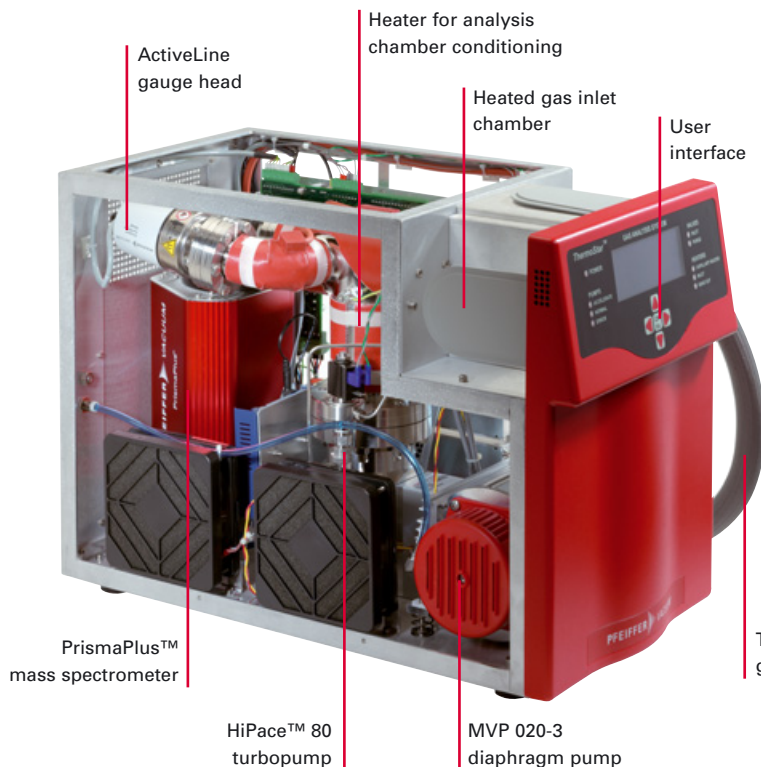
- 1 – OmniStar
- 2 – ThermoStar

### g – Mass ranges

- 1 – 100 amu
- 2 – 200 amu
- 3 – 300 amu

### def – Gas inlet system

- 111 – ThermoStar, quartz, 1 m temperature-regulated gas sampling line, 200 °C
- 112 – ThermoStar, quartz, 2 m temperature-regulated gas sampling line, 200 °C
- 113 – ThermoStar, quartz, 1 m temperature-regulated gas sampling line, 350 °C
- 161 – OmniStar, stainless steel, gas sampling line
- 171 – OmniStar, stainless steel, 1 m temperature-regulated gas sampling line, 200 °C
- 172 – OmniStar, stainless steel, 2 m temperature-regulated gas sampling line, 200 °C
- 173 – OmniStar, stainless steel, 1 m temperature-regulated gas sampling line, 350 °C
- 333 – Pressure-regulated gas inlet, 3 decades, 1 mbar up to atmospheric pressure
- 555 – Pressure-regulated gas inlet, 5 decades,  $5 \cdot 10^{-3}$  mbar up to atmospheric pressure



Temperature-regulated gas sampling line (capillary)

OmniStar™ and ThermoStar™ are trademarks of INFICON  
 Quadera® – An INFICON product  
 VSTA® – An Microsoft® product

## Leading innovations. Too fast to be copied.

Pfeiffer Vacuum – A name that stands for reliable high-tech products and innovative solutions that support our customers in their applications and pave the way to their success.

**Our vacuum technology developments always keep us a step ahead!**



All data subject to change without prior notice. PK0097PE (May 2009/10)

## Sales, service and consulting

- ▶ Worldwide on-site service
- ▶ Comprehensive in-factory and on-site training programs
- ▶ Modular service concept ranging from spare parts to maintenance contracts

