



# NOVION®

The comprehensive solution for vacuum monitoring



Picture similar

- Wide range pressure measurement from ATM to UHV
- Gas analysis available at high pressures up to  $5 \cdot 10^{-3}$  mbar
- Helium leak detection without additional instrumentation
- Detection of air components  
(i. e. partial pressures of  $H_2$ ,  $H_2O$ ,  $N_2$ ,  $O_2$ ,  $CO_2$  etc.)
- High sampling rates up to 200 ms for  
a complete mass spectrum to 300 amu
- Interference-free hydrogen detection (no zero blast effect)
- Detection of heavy hydrocarbons (vacuum quality monitoring)

## Technical Data

■ Principle of measurement	<ul style="list-style-type: none"> <li>■ Ion Trapping and electron impact ionization</li> <li>■ Time of flight mass spectrometry</li> <li>■ Heat conduction (Pirani)</li> </ul>
■ Vacuum connection	KF 25/CF40
■ Scope of delivery	<ul style="list-style-type: none"> <li>■ Sensor</li> <li>■ Removable control unit</li> <li>■ RJ45 data cable with USB-to-RS232 adapter</li> <li>■ 24 V power supply</li> </ul>
■ Filaments	2x Iridium, yttria coated
■ Materials in vacuum	SS, Au, Y <sub>2</sub> O <sub>3</sub> on Ir, glass, Cu, Pt, Al <sub>2</sub> O <sub>3</sub>
■ Mounting position	<ul style="list-style-type: none"> <li>■ Any for &lt; 10 mbar</li> <li>■ Position-dependent for &gt; 10 mbar</li> </ul>
■ Operating temperature	10°C to 55°C
■ Max. Bakeout temperature	80°C at flange (control unit attached) 200°C at sensor (control unit detached)
■ Weight	<ul style="list-style-type: none"> <li>■ Sensor head: about 1 kg (flange dependent)</li> <li>■ Control unit: about 0.76 kg</li> </ul>
■ Dimensions (HxWxD)	<ul style="list-style-type: none"> <li>■ 260 × 73 × 66 mm (control unit attached)</li> <li>■ 100 × 73 × 66 mm (control unit detached)</li> </ul>

## Pressure Measurement

■ Short description	<p>Convenient pressure measurement range reaches from 1000 mbar down to UHV.</p> <p>Switching between Pirani and ionization mode is performed automatically at 1 · 10<sup>-3</sup> mbar and vice versa at 5 · 10<sup>-3</sup> mbar.</p> <p>Pressure monitoring is carried out simultaneously to the optional residual gas analysis or helium leakage detection.</p>
■ Measurement range (pressure)	1 · 10 <sup>-9</sup> to 1 · 10 <sup>5</sup> Pa 1 · 10 <sup>-11</sup> to 1,000 mbar 7.5 · 10 <sup>-12</sup> to 750 Torr
■ Accuracy (pressure)	± 25 % (1 · 10 <sup>-3</sup> to 1 · 10 <sup>+1</sup> mbar) ± 15 % (1 · 10 <sup>-7</sup> to 1 · 10 <sup>-5</sup> mbar)
■ Reproducibility (pressure)	± 10 % of reading (1 · 10 <sup>-8</sup> to 1 · 10 <sup>-2</sup> mbar)
■ Sampling rate	Adjustable

## Helium Leak Detection

<ul style="list-style-type: none"> <li>■ Short description</li> </ul>	<p>Easy and sensitive Helium leakage detection is available without additional instrumentation.</p> <p>A high dynamic range is provided, even at high pressures up to <math>5 \cdot 10^{-3}</math> mbar.</p>
<ul style="list-style-type: none"> <li>■ Minimum detectable partial pressure of Helium (percentage of the total pressure p)</li> </ul>	<ul style="list-style-type: none"> <li>■ <math>&lt; 0,05\%</math> (<math>p = 1 \cdot 10^{-3}</math> to <math>1 \cdot 10^{-6}</math> mbar)</li> <li>■ <math>&lt; 0,5\%</math> (<math>p = 1 \cdot 10^{-7}</math> mbar)</li> <li>■ <math>&lt; 1\%</math> (<math>p = 1 \cdot 10^{-8}</math> mbar)</li> <li>■ <math>&lt; 10\%</math> (<math>p = 1 \cdot 10^{-10}</math> mbar)</li> </ul>
<ul style="list-style-type: none"> <li>■ Minimum detectable Helium leakage rate for <math>S_{He}=10\text{l/s}</math></li> </ul>	<ul style="list-style-type: none"> <li>■ <math>&lt; 5 \cdot 10^{-6}</math> to <math>5 \cdot 10^{-9}</math> mbar/l*s (<math>p = 1 \cdot 10^{-3}</math> to <math>1 \cdot 10^{-6}</math> mbar)</li> <li>■ <math>&lt; 5 \cdot 10^{-9}</math> mbar/l*s (<math>p = 1 \cdot 10^{-7}</math> mbar)</li> <li>■ <math>&lt; 1 \cdot 10^{-9}</math> mbar/l*s (<math>p = 1 \cdot 10^{-8}</math> mbar)</li> <li>■ <math>&lt; 1 \cdot 10^{-10}</math> mbar/l*s (<math>p = 1 \cdot 10^{-10}</math> mbar)</li> </ul>

## Residual Gas Analysis

<ul style="list-style-type: none"> <li>■ Short description</li> </ul>	<p>A rough residual gas analysis from 1 to 300 amu can be carried out.</p> <p>Spectral information is available up to a total pressure of <math>5 \cdot 10^{-3}</math> mbar.</p> <p>The resolution is optimized for three typical use cases:</p> <ul style="list-style-type: none"> <li>■ Measurement of Hydrogen and Helium with a very high resolution (1 to 5 amu).</li> <li>■ Typical atmospheric gas component and water can be separated (10 to 50 amu).</li> <li>■ Measurement of the overall contamination by heavy carbon hydrogens (50 to 300 amu).</li> </ul>
<ul style="list-style-type: none"> <li>■ Mass range</li> </ul>	1 to 300 amu
<ul style="list-style-type: none"> <li>■ Mass-resolution R (note that a small r is better)</li> </ul>	<ul style="list-style-type: none"> <li>■ <math>&lt; 1</math> (for 1 to 5 amu)</li> <li>■ <math>&lt; 10</math> (for 10 to 50 amu)</li> <li>■ <math>&lt; 20</math> (for 51 to 100 amu)</li> <li>■ <math>&lt; 50</math> (for 101 to 300 amu)</li> </ul>
<ul style="list-style-type: none"> <li>■ Minimum detectable partial pressure up to 40 amu (percentage of the total pressure p)</li> </ul>	About 0,1% (depending on total pressure)
<ul style="list-style-type: none"> <li>■ Minimum detectable partial pressure of heavy hydrocarbons (percentage of the total pressure p)</li> </ul>	About 0,1% (depending on total pressure)



## Electronic Control Unit

■ Interfaces	<ul style="list-style-type: none"> <li>▪ RJ45 jack: digital I/O: RS232/RS485 (VACOM® Protocol) analog out: 0 to 10V, max. 20mA</li> <li>▪ Bluetooth 2.0 (VACOM® Protocol) <b>日本未対応</b></li> <li>▪ 3 LED Indicators</li> </ul>
■ Power supply	24 V +/-10 %, 30 W
■ Display	None
■ Protection category	IP50
■ Sollwerte	None
■ Upgrade via firmware	Yes
■ Sensor head connector	Detachable plug with screw connection

## Software

■ Compatible software	NOVION® Viewer (download <a href="https://www.vacom.de/downloads/software">https://www.vacom.de/downloads/software</a> )
■ Analysis capabilities	<ul style="list-style-type: none"> <li>▪ Trend view of separate gas components and/or gas compositions</li> <li>▪ Inspect each recorded mass spectrum</li> <li>▪ Compare recorded spectra</li> <li>▪ Rich export capabilities</li> </ul>
■ Helium leak detection	<ul style="list-style-type: none"> <li>▪ Convenient helium leakage monitoring</li> <li>▪ Threshold can be defined</li> </ul>
■ Save/load records	<ul style="list-style-type: none"> <li>▪ Autosave available</li> <li>▪ Save/Load data with complete pressure and gas composition information</li> </ul>
■ Minimal system requirements	<ul style="list-style-type: none"> <li>▪ 2 GHz processor</li> <li>▪ 2 GB of RAM</li> <li>▪ 2 GB available hard disk space</li> <li>▪ OS: Windows 7/10</li> </ul>

Technical changes and errors excepted.  
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