

PTR-TOF 4000



Compact high-resolution PTR-TOFMS - Trace VOC Analyzer

Sensitivity > 8000 cps/ppbv LoD < 5 pptv Resolution > 4500 m/ Δ m

The PTR-TOF 4000 is our **smallest and lightest, high-resolution** PTR-TOFMS real-time trace VOC analyzer.

It offers all benefits of a **small footprint and low weight**, now complemented by **high mass resolving power and extreme sensitivity**.

The PTR-TOF 4000 features the IONICON **hexapole ION-GUIDE** technology and a **high-resolution ioniTOF** for improved **VOC separation and identification** capabilities. Now the **X2 option** additionally includes the **ION-BOOSTER funnel** for **utmost sensitivity and sub-pptv** detection limits.

Quantitative analysis of the **entire mass range in a split-second** and high mass resolution are features of all IONICON time-of-flight mass spectrometers. **Direct injection** of sample gas **without preparation** contributes to the speed and simplicity our instruments are known for.

The IONICON-exclusive **genuine PTR-MS technology** includes our **patented ion chemistry quality** and TRU-E/N, allowing for precise E/N conditions, well-reproducible measurement results and the highest possible level of quantification accuracy.

- > Hexapole ION-GUIDE
- > NEW: X2 Performance Option
- > High-resolution TOF-MS
- > Compact & lightweight PTR-TOF

Find out more:

www.ionicon.com/products

PTR-TOF 4000

ION-
GUIDE
X2
BOOSTER

IONICON PTR-TOF 4000 SPECIFICATIONS*

- Mass resolution: > 4000 m/Δm (FWHM) for m/z > 79
> 4500 m/Δm (FWHM) for m/z > 147
- Response time: < 100 ms
- TOF pulse frequency: up to 150 kHz

- Sensitivity:

m/z 79	> 300 cps/ppbv	< 10 pptv (10 sec)
m/z 181	> 600 cps/ppbv	< 5 pptv (60 sec)
- Limit of Detection:

m/z 79	> 4000 cps/ppbv	< 10 pptv (1 sec)
m/z 181	> 8000 cps/ppbv	< 1 pptv (60 sec)

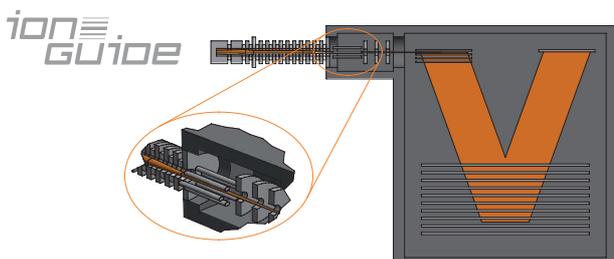
- Mass range: 1-10000 amu
- Adjustable inlet flow: 50 - 800 sccm
- Inlet system (Different/Multiplexing inlet systems available on request):
 - 1.2 m long inlet hose - with inert (PEEK) capillary
 - Inlet system heating: 40-180°C (104-356°F)
- Reaction chamber heating range: 40 - 120°C (104 - 248°F)
- Power supply and max. consumption: 115/230 V, 1500 W
- Dimensions (w x h x d): 60x91x80 cm (23.7x35.9x31.5 in.)
- Weight: < 135 kg (297.6 lbs)

- Interfaces: 8x DI/O, 2x AI, 2x AO
(digital/analog I/O package on request)

*Specifications are subject to change without prior notice.
Product pictures and illustrations may differ from actual configuration.
Detection limit, linearity range and resolution are dependent on the substances measured, integration time and system set-up.

PTR-TOF 4000 BENEFITS

The PTR-TOF 4000 is a class of its own. Enter into the world of high-resolution TOF-MS but on a small footprint and benefit from the advanced IONICON hexapole ION-GUIDE, focusing the ions from the drift tube into the TOF analyzer, thereby increasing sensitivity and mass resolving power.



NEW: X2 Ultimate Performance Option

We now offer the possibility to push the PTR-TOF 4000's sensitivity even further with the new X2 option. X2 combines the hexapole ION-GUIDE with the unique ION-BOOSTER funnel for extreme PTR-MS sensitivity of up to 10000 cps/ppbv, delivering low detection limits in incredible short integration times and even entering the sub-pptv range.

The combination of resolution and sensitivity in a compact, robust and fast instrument, makes the PTR-TOF 4000 an ideal analyzer for complex samples, fostering substances identification in time critical dynamic processes where e.g. quadrupole or low-resolution analyzers fail to perform.

PTR-MS

We proudly rely on the IONICON-exclusive genuine PTR-MS soft ionization technology where by proton transfer from H₃O⁺, all compounds with a higher proton affinity (PA) than water are ionized. Common constituents of air, such as N₂, O₂, Ar, CO₂ etc. have lower PAs than H₂O and are therefore not detected. This is one of the main reasons for our market-leading low, real-time detection limit for trace compounds. Due to precisely controlled ion source and drift tube parameters, absolute quantification of VOC concentrations is possible.

SRI-MS

The PTR-TOF 4000 is also available with Selective Reagent Ionization - Mass Spectrometry (SRI/SRI⁺), featuring NO⁺, O₂⁺ and NH₄⁺ (patent pending) or Kr⁺ (SRI⁺, US Pat. 9,188,564, EP 2606505 A1) alternatively to H₃O⁺ as precursor ions created in the IONICON ULTRA-PURE ion source.

O₂⁺, but especially Kr⁺, have a higher ionization potential than H₃O⁺ and therefore many important (inorganic) substances such as CH₄, CO, CO₂, NO₂, SO₂, etc. can be detected and quantified using a single IONICON instrument. NO⁺ as reagent ions help separating several isomeric VOCs for subsequent real-time analysis. NH₄⁺ offers improved selectivity, simplified mass spectra and suppressed fragmentation.

ROBUST, RELIABLE & EASY TO USE

The PTR-TOF 4000 is completely software controlled. Installed in a space-saving rack and mounted on wheels, it allows for easy transportability and variable location measurements. We deliver the PTR-TOF 4000 in a re-usable eco-friendly flightcase container.