

# PTR-TOF 4000



## Compact high-resolution PTR-TOFMS - Trace VOC Analyzer

Sensitivity > 600 cps/ppbv    LoD < 5 pptv    Resolution > 4500 m/ $\Delta$ m

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

It offers all benefits of an **affordable** instrument with a **small footprint** and **low weight**, now complemented by **high mass resolving power**, previously only available from top-of-the-market PTR-TOF systems.

The PTR-TOF 4000 features the new IONICON **hexapole ION-GUIDE** technology, accounting for the **outstanding sensitivity** of this analyzer, and a **high-resolution ioniTOF** for improved **VOC separation and identification** capabilities.

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
- > High-resolution ioniTOF
- > Compact & lightweight PTR-TOF
- > Genuine PTR-MS with TRU-E/N®



# PTR-TOF 4000

## IONICON PTR-TOF 4000 SPECIFICATIONS\*

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

m/z 79	> 300 cps/ppbv	Limit of Detection:	< 10 pptv (10 sec)
m/z 181	> 600 cps/ppbv		< 5 pptv (60 sec)
- Mass range: 1-10,000 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 the smallest, lightest and most affordable IONICON high-resolution PTR-TOFMS available, including our exclusive PTR-MS technology with TRU-E/N.

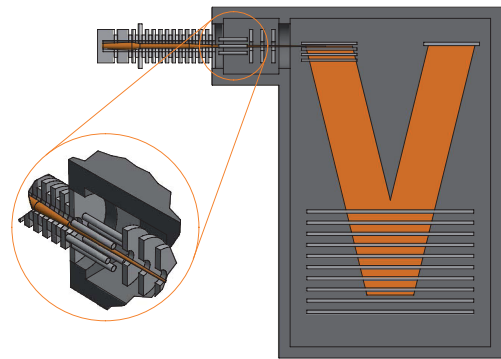
It features the advanced IONICON hexapole ION-GUIDE, focusing the ions from the drift tube into the TOF analyzer, thereby increasing sensitivity and mass resolving power of the instrument.

The patented IONICON ion-chemistry quality ensures precise E/N conditions, well-reproducible measurement results and the highest possible level of quantification accuracy.

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.



ION-GUIDE



## PTR-MS

We proudly rely on the IONICON-exclusive genuine PTR-MS soft ionization technology where by proton transfer from  $H_3O^+$ , all compounds with a higher proton affinity (PA) than water are ionized. Common constituents of air, such as  $N_2$ ,  $O_2$ , Ar,  $CO_2$  etc. have lower PAs than  $H_2O$  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<sup>+</sup>), featuring  $NO^+$ ,  $O_2^+$  and  $NH_4^+$  (patent pending) or  $Kr^+$  (SRI<sup>+</sup>, US Pat. 9,188,564, EP 2606505 A1) alternatively to  $H_3O^+$  as precursor ions created in the IONICON ULTRA-PURE ion source.

$O_2^+$ , but especially  $Kr^+$ , have a higher ionization potential than  $H_3O^+$  and therefore many important (inorganic) substances such as  $CH_4$ , CO,  $CO_2$ ,  $NO_2$ ,  $SO_2$ , 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.  $NH_4^+$  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.