

# PTR-TOF 4000



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

Sensitivity > 200 cps/ppbv    LoD < 5 pptv    Resolution > 4000 m/ $\Delta$ m

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

The PTR-TOF 4000 offers all benefits of an **affordable, PTR-TOFMS** instrument with a **small footprint and low weight**, now complemented by **high mass resolving power**, previously only available from top-of-the-market instruments.

The PTR-TOF 4000 features the new IONICON **ION-GUIDE multipole** technology, accounting for the **outstanding sensitivity** of this analyzer, and a **high-resolution TOF** 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 unique **soft ionization (PTR) technology** together with our extensive experience in gas-phase ion chemistry and engineering of scientific instruments are the basis for the **reliability, ultra-low detection limit, fast response time and robustness** of our PTR-MS systems.

- > ION-GUIDE technology
- > High mass resolution
- > Compact & lightweight PTR-TOFMS
- > Entire mass range in a split-second

Find out more:

[www.ionicon.com/products](http://www.ionicon.com/products)

# PTR-TOF 4000

## IONICON PTR-TOF 4000 SPECIFICATIONS\*

- Mass resolution: > 4000 m/Δm (FWHM) for m/z > 147  
> 3500 m/Δm (FWHM) for m/z > 79
- Response time: < 100 ms
- TOF pulse frequency: up to 150 kHz
- Sensitivity & Limit of Detection:
 

m/z 79	> 200 cps/ppbv;	LoD < 20 pptv (1 min)
m/z 181	> 200 cps/ppbv;	LoD < 5 pptv (1 min)
- 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: 100-230 V, 1500 W
- Dimensions (w x h x d): 60x91x80 cm (23.7x35.9x31.5 in.)
- Weight: < 160 kg (352.8 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.

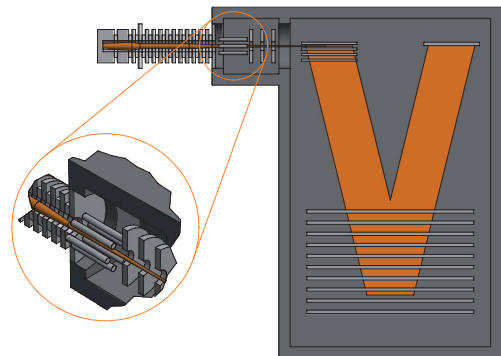
It has the new IONICON ION-GUIDE multipole technology built-in, consisting of a hexapole that focuses the ions from the drift tube into the TOF analyzer, thereby increasing sensitivity and mass resolving power of the instrument.

Moreover, a new IONICON high-resolution time-of-flight mass spectrometer with unique compact dimensions and low weight improves the separation of volatile organic compounds (VOCs) further and fosters their identification.

The combination of resolution and sensitivity in a compact, robust but also affordable instrument, makes the PTR-TOF 4000 an ideal analyzer for complex samples 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 unique IONICON 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 IONICON PTR-TOF 4000 is also available with Selective Reagent Ionization - Mass Spectrometry (SRI/SRI+) featuring  $NO^+$  and  $O_2^+$  (SRI) or  $Kr^+$  (SRI+) alternatively to  $H_3O^+$  as precursor ions created in the ULTRA-PURE ion source (US Pat. 9,188,564).

The benefits are extraordinary as  $O_2^+$ , 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 that can subsequently be quantified in real-time.

## 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.