

# PTR-TOF 1000 ULTRA



## Compact ultra-sensitive PTR-TOFMS - Trace VOC Analyzer

Sensitivity > 500 cps/ppbv    LoD < 5 pptv    Resolution > 1500 m/ $\Delta$ m

The PTR-TOF 1000 *ultra* is the new benchmark for robust, compact & affordable real-time organic trace gas analyzers.

Based on the successful PTR-TOF 1000 series platform, the PTR-TOF 1000 *ultra* offers all benefits of an affordable, small and light PTR-TOFMS instrument, complemented by an outstanding sensitivity, previously only available from top-of-the-market instruments.

The PTR-TOF 1000 *ultra* features up to 10x more sensitivity thanks to the revolutionary new ION-BOOSTER funnel technology.

Quantitative analysis of the entire mass range in split-seconds 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-BOOSTER funnel technology
- > 10x increased sensitivity
- > Compact & affordable PTR-TOFMS
- > Entire mass range in split-seconds

# PTR-TOF 1000 ULTRA

## IONICON PTR-TOF 1000 *ultra* SPECIFICATIONS\*

- Mass resolution: > 1500 m/Δm (FWHM) for m/z > 60
- Response time: < 100 ms
- TOF pulse frequency: up to 150 kHz
- Sensitivity & Limit of Detection:
 

m/z 79	> 500 cps/ppbv	LoD < 10 pptv (1 min)
m/z 181		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: 115/230 V, 1500 W
- Dimensions (w x h x d): 60x91x80 cm (23.7x35.9x31.5 in.)
- Weight: < 125 kg (275.6 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 1000 *ultra* BENEFITS

The PTR-TOF 1000 *ultra* combines the latest IONICON PTR-TOFMS evolution with the new ION-BOOSTER funnel technology to perfection. In an ion funnel a RF-voltage focuses the ions through an array of ring electrodes, which improves ion transmission leading to a much higher sensitivity.

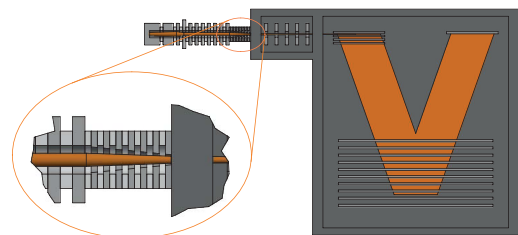
The PTR-TOF 1000 *ultra* offers up to 10x more sensitivity for volatile organic compound (VOC) analysis in real-time compared to a PTR-TOF 1000 without ION-BOOSTER.

This makes the advantageous time-of-flight based instrument even more suited for high-speed applications, challenged by very low VOC concentrations, complex samples or a large number of sample compounds, where e.g. quadrupole based or lower sensitivity VOC analyzers fail to perform.

Built on the PTR-TOF 1000 series platform it is IONICON's smallest, lightest and most affordable *ultra*-sensitive PTR-TOFMS trace gas analyzer.



## ION-BOOSTER



## 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 1000 *ultra* 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 1000 *ultra* 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 1000 *ultra* in a re-usable eco-friendly flightcase container.