Microsaic ChemPack™

Datasheet

The Microsaic ChemPack™ a hand-portable detector capable of positively identifying the chemicals in an unknown liquid, solid or gas. At the heart of ChemPack™ is a powerful analytical engine called ionchip® - the world's first mass spectrometer on a chip.

Mass spectrometers are used in everything from forensic analysis of explosives residues to drug discovery. Today's mass spectrometers are large, heavy and expensive systems which are normally only found in laboratories. Microsaic's breakthrough ionchip® technology integrates the key components of a mass spectrometer system onto a single chip leading to big reductions in system size, weight and power consumption. Microsaic has used Micro-engineered mechanical systems (MEMS) technology to create the precision microstructures required to miniaturize the mass spectrometer components.

The benefits of ionchip®:

- Reduced system size & weight
- Low power consumption
- Maintenance by chip replacement

ChemPack™ eliminates the time consuming process of taking samples back to the lab for analysis, opening up new applications for mass spectrometers that previously they would not have been considered due to their size, large power consumption and high costs.

Sample is introduced by means of either a capillary 'sniffer' inlet, or a Solid Phase Micro Extraction (SPME) probe and heater assembly. The heater can be used to prevent adsorption of analytes onto the chamber walls. An electron impact ionization source is used to ionize and fragment the analytes. A propriety micro-machined electron lens array focuses the ionized fragments into the quadrupole where they are actively filtered and detected. The ionchip® operates in a moderate vacuum generated by small pumps contained within the ChemPack™.

ChemPack™ is operated using a fully supported, user-friendly software application. The software features automated functions designed for non-expert operators, and permits expert users to fully customize the mass spectrometer. The application features an intuitive graphical user interface including calibration and autotuning routines. Chemicals can be matched automatically against an industry standard library of over 250,000 different mass spectra maintained by NIST. Spectra can be exported in industry-standard formats.

Microsaic ChemPack™ features:

- Portable, waterproof (IP65)
- Shock & vibration proof chassis
- Battery operation > 8 hours
- Power consumption 40 W
- Mass range 1 - 400 m/z
- Dynamic range > 10^4
- Sensitive to pg concentrations without preconcentrator

Microsaic ChemPack™ Specifications

Dimensions and weight

ChemPack (W x D x H)	409 mm x 337 mm x 204 mm
Weight	14 kg (30 lb)

Hardware

Inlet interface	SPME
Vacuum system	2 stage
Ion source	70eV inert EI
Quadrupole	ionchip®
Quadrupole radio frequency	~ 6MHz
Battery type	Lithium ion
battery operation power	8 hours

Software

Operating system	Microsoft® Windows XP®
Autotuning	Included
Custom reporting	Included
Spectral library	NIST library available

System Environmental Requirements

Operating temperature (max. change: <5 °C)	15-30 °C <2 °C/hour
Operating humidity (non-condensing)	20%-80%

Performance Specifications

Resolution	M/ΔM=100, measured at FWHM.
Sensitivity	With 1 x 10^{-5} Torr PFTBA, count rate at m/e=69 with υ/v=0.11 is ≥300/ms scan rate.
Mass range	1-400 m/z
Dynamic range	> 10^4
Scan rate	Up to 10,000 amu/s
Minimum dwell time	100 μs
Data points	Up to 10 points/amu
SIM mode	Up to 5 peaks

Utility Requirements

Electrical power	Single phase 110-240VAC, 50-60Hz at 50W
Battery charging	Single phase supply of 110-240VAC, 50-60Hz at 10W.
Charge time	8 hours

For More Information

For more information about the Microsaic ChemPack™, visit our web-site http://www.microsaic.com/products

Full Customer Support

Microsaic Systems offers a full support and maintenance package including software upgrades, telephone support, on-site installation and training.

All ChemPack™ products come with a full 12 month warranty. Systems are replaced by courier within a few working days.

Upgrade Path to Enhanced Performance

A path to enhanced ChemPack™ system performance is available by straightforward swapping of the ionchip® with next generation devices featuring enhanced sensitivity, resolution and mass range. New ionchip® devices are available by courier directly from Microsaic Systems.

Ionchip® replacement is a simple, user-friendly operation which can be carried out by the user in less than 15 minutes.