PEN3
Portable Electronic Nose

Intelligent chemical sensor for identification of gases and vapours

PEN3 is based on a metal-oxide gas sensor array. By using a specific dilution technique the system is protected from overloading with substances. This extends the life time of the sensors and shortens the cycle times. This gas-flow control makes it possible to stabilize the pattern under varying concentrations and analytical conditions.

Individual gases or gas mixtures are classified and recognized by their pattern. In this case, the unit provides a quick and simple quantitative answer as **good** or **bad**, **yes** or **no** … .
Even qualitative answers can be given by training and comparison with the database.

The variety of pattern recognition algorithms allows the system to be used in a broad range of applications - including laboratories and industries.

Process Control
- dosage of spices in food production
- supervision of industrial cleaning processes, fermentation processes
- dosage of artificial odour in natural gas
- production of polymer packaging material for food industry
- frying or roast process control

Quality Control

Rancidity of oils, freshness of food, off odour in packaging materials, residual solvents in polymers, degradation of flavours, off odour in medicine, characterization of resins or aroma in beverages

Environmental & Safety Control

Odour in waste water purification plants or in compost plants (correlation with olfactometry), supervision of filters, solvents at workplace atmosphere, smouldering fires, identification of bacteria, leakage control or combustion emissions

Advantages
- Sensitive intelligent sensors
- Portable instrument with integrated display
- Small, fast, flexible and robust
- On-line sampling technique
- Integrated dilution control
- Works with computer or in standalone mode
- Data logger and off-line analysis

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Technical Data

Product Description

Sensor technology	hot sensors, working temperature 350°C … 500°C
Sensor array	10 different metal oxides single thick film sensors, optional adapted to application
Sensor response time	**typical:** less than 1 second
Inlet Sampler	special fluidic connector
Sample flow	adjustable, 10ml/min to 400ml/min
Flow system	internal pumps, internal sample dilution system
Measurement time	depending on the application from 4 seconds to some minutes
	typical: 1 minute (20s measurements, 40s zero gas)
Sensitivity	LOD 0.1 to 5ppm for gases and organic solvents, e.g. 0.1ppm H2S
Display	graphical display
Dimension	255 x 190 x 92 mm
Weight	2.1 kg

Environment Requirements

Temperature	**typical:** 0°C to 45°C
Humidity (relative)	5 % to 95 %, non-condensing

Power Requirements

Main power	**Power supply:** 110 to 230VAC; max 30W or 12VDC (optional)

Communications

Computer interface	USB port or serial RS-232 (optional)

System Requirements

Operating system	Windows XP, Vista, Windows 7
Software	WinMuster PEN for evaluation and analysis
	Algorithm for analyse: Euclid, Correlation, Mahalanobis, DFA, PCA, LDA and PLS

Options	Safety Class	Warranty
Trap & Desorption Unit EDU Headspace-Autosampler	Compliant to EN292 Part1 & 2, EN294, EN61010-1, EN1050, EN60204-1, EN 55011 G1 CB, EN50270, EN61326 EN50270, EN61326	12 months