



## PEN3

### Portable Electronic Nose

Intelligent chemical sensor for identification of gases and vapours

**PEN3** is based on a metal-oxide gas sensor array in a small measurement chamber.

Using a specific dilution technique protects the system from overloading with substances, which extended the life time of the sensors and the cycle times are shortened. By this gas-flow control to stabilize the pattern under varying concentrations and analytical conditions is possible.

Individual gases or gas mixtures are classified by their pattern and after a workout recognized. 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. With its variety of pattern recognition algorithms allows the system to a broad range of applications - both in the laboratory, and industrial - are applied.

#### 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
Sensors response time	<b>typical:</b> 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
	<b>typical:</b> 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	<b>typical:</b> 0°C to 45°C
Humidity (relative)	5 % to 95 %, non-condensing

##### Power Requirements

Main power	<b>Power supply:</b> 110 to 230VAC; max 30W or 12VDC (optional)
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##### Communications

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

Operating system	Windows XP, Vista, Windows 7
Software	WinMuster for data collection, evaluation and analysis, <b>Algorithm for analyse:</b> 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

