

Pac Ex 2

Elegant and smart –
Explosive hazards and
lack or surplus of oxygen
under control





Portable instruments protecting people against explosive hazards and lack or surplus of oxygen are used in a large range of different applications such as:

- alerting employees to a sudden emission of gas,
- certification of safe work areas,
- monitoring staff working in areas where low concentrations of gas are constantly present,
- measurement for confined space entry or in difficult-to-reach areas,
- protecting visitors on a tour of the plant,
- evaluation of dangers during emergency situations involving fire services or civil defence organisations.



Two-in-one-instrument



Pac Ex 2, Ex-Version



Pac Ex 2, Ex-O₂-Version



Two-in-one-instrument

The diverse applications necessary for day-to-day work demand high performance requirements from a measuring device. Knowing this, Dräger Safety has developed the new Pac Ex 2. With a compact, handy and pocket-sized design, this robust instrument can be used for personal monitoring. The instrument measures for explosive hazards and a lack or surplus of oxygen.

Pac Ex 2 is available in two instrument versions:

- instrument for ex gas measurement,
- combination instrument for ex gas and oxygen measurement.

In combination with an extensive range of accessories, the Pac Ex 2 is the ideal portable instrument for:

- fire services,
- chemical industry,
- oil and gas industry,
- electrical and water utilities,
- disposal companies,
- telecommunication enterprises,
- mining industry,
- shipping industry.

Continuously, independently, flexible

Continuously, independently, flexible

The concentrations of explosive gas or vapours and oxygen are monitored continuously, simultaneously, and independently.

Combined with a vibrating alarm, an acoustic and optic alarm react when the gas concentration exceeds the set alarm thresholds.

The modular design enables high instrument flexibility:

- The ex gas detection instrument can be easily upgraded to an ex gas and oxygen detection instrument. This flexibility is made possible by the plug and play function of the oxygen sensor and a simple to change sensor cap.
- The rechargeable NiMH battery can be easily changed and is separately chargeable.
- Additional to the rechargeable NiMH battery, an alkaline battery pack can be used.
- The selection of three different oxygen sensors is possible.



The Pac Ex 2 incorporates the needs of the customer with the power of technology. Along with the basic functions warning, measuring, and datalogging, the main characteristics of the instrument are:

- simple operation,
- reliability,
- extra long operation time,
- cost-savings caused by a longer sensor life, short training times, and short charging times.

Functional three-button-operation

Using three clearly arranged pushbuttons the Pac Ex 2 can easily be adapted to fit diverse measuring requirements and applications. A multitude of features are available.

The selection will be made through two menus:

- for fresh-air-calibration and a read-out of the four-hour-Ex-average concentration,
- for password protected configuration and calibration of the instrument.





Safety first – optimum sensor technology

No limits in measurement quality is the standard policy of Dräger Safety. The heart of a detection instrument is the sensor. The sensors are essential for the measuring result and the reliability of the detection instrument.

For the ex measurement the Pac Ex 2 is equipped with a special robust catalytic ex sensor. The sensor reacts to present combustible gases or vapours and works with the principles of heat reaction and thermal conductivity. This sensor has a high performance because:

- it has short response time,
- it has a robust construction,
- it can be calibrated to various gases and vapours in the LEL range,
- it can be calibrated to methane in the % vol range,
- it is designed for low power operation,
- it has a warranty of 2 years,
- it has an expected sensor life longer than 2 years.

Three kinds of oxygen sensors can be used:

- XS-R O₂
warranty 5 years
expected sensor life 5 years
- XS-EC O₂
warranty 3 years
expected sensor life > 3 years
- XS-2 O₂
warranty 2 years
expected sensor life > 2 years

Naturally, the electrochemical Sensors have also a high performance:

- intelligent “Smart-Technology”,
- internal data memory within the sensor,
- calibrated by the manufacturer,
- high selectivity,
- short response time,
- minimal long-term drift with low follow up costs and long calibration frequencies:
 - default 12 months
 - recommended 6 months,
- known and controllable cross sensitivities.

By using the intelligent “Smart-Technology”, the sensor must only be plugged into the instrument. The sensor will be recognized automatically by the Pac Ex 2.





Adjustable instrument features

Menus
The Pac Ex 2 offers two menus, a quick menu and a password protected menu. When there is no activity within one minute (in the calibration menu within 15 minutes), the instrument automatically switches over to the measuring function.
Quick menu
Read-out of the four-hour-Ex-average concentration. Fresh-air-calibration function. With this function, the oxygen sensor can be span calibrated, and the Ex sensor can be zero calibrated.
Password protected menu
Set up of password
The password consists of a four-digit, self-defined number code.
Two measuring units for ex measurement
The measuring unit can be adjusted to either the LEL range or the % vol range.
Ex calibration
By using the LEL range, the instrument can be calibrated to various gases and vapours. In the % vol range, it can be calibrated to methane.
Two adjustable alarm thresholds
The alarm thresholds can be set to any value within the measuring range, providing that the pre-alarm threshold (A 1) is always lower than the main alarm threshold (A 2).
PC-Software Gas Vision
Using a PC with installed software Gas Vision, the stored values in the datalogger are readable. Using Windows, display and analysis of all the measurement values is possible. The values can be shown graphically and in table-form. Naturally, all data can be stored in the PC and can be exported to other software programs such as MS Excel.
PC-Software CC Vision
Using a PC with installed software CC Vision, Pac Ex 2 can be individually configured according to different requirements. Along with the instrument configuration, it is also possible to calibrate the device. Additionally, Pac Ex 2 can be adjusted to English, French, German, and Spanish languages.

Technical data

Adjustment of measuring units	
Ex-measurement:	<ul style="list-style-type: none"> • 0 to 100 % LEL, resolution 1 %-LEL • 0 to 99 vol.-% CH₄ resolution 0.1 vol.-% (0 to 5 vol.-%) resolution 1 vol.-% (0 to 99 vol.-%)
Oxygen measurement:	• 0 to 25 Vol.-%, resolution 0.1 vol.-%
Principle of measurement	
Ex-measurement:	heat reaction and thermal conductivity
Oxygen:	electrochemical
Ambient conditions	
Temperature:	- 25 to 55 °C, intermittently to 60 °C
Humidity:	10 to 90 % r. h. intermittently to 95 % r. h. non condensing
Pressure:	700 to 1300 hPa
Ingress protection:	IP 65
Power packs and operation time	
rechargeable NiMHy battery, changeable and separately chargeable	
Operation time:	> 12 hours
Charging time:	< 4 hours
Alkaline battery pack, 4 AAA cells	
Operation time	> 12 hours
Dimensions including power pack	
Size (h x w x d):	approx. 125 x 64 x 35 mm top: approx. 82 mm
Weight:	approx. 320 g
Alarming	
Optic, acoustic and vibrating alarm, two adjustable alarm thresholds for LEL range and oxygen measurement.	
Ex-measurement:	default A 1: 10 %-LEL default A 2: 20 %-LEL
Oxygen measurement:	default A 1: 19 Vol.-% default A 2: 23 Vol.-%
Sound volume:	> 90 dB (A) in a distance of 30 cm
Datalogger	
Datalogger adjustable with Gas Vision	
Approvals ¹⁾	
Europe	CE mark IM 2 EEx iad IIC T4 Ta < 55 °C II2G EEx ibd IIC Ta < 55 °C Demko 02 ATEX Ta (-40 to 55 °C)
USA	UL Class 1 Groups A, B, C, D Div. 1 Temp code T4
Canada	CSA Class 1 Groups A, B, C, D Div. 1 Temp code T4
Shipping	Steering Wheel Certification

1) pending

Ordering information and accessories

Description	Order code
Basic units	
Pac Ex 2 Ex – O ₂ Version	83 16 107
Pac Ex 2 Ex Version	83 16 108
Charging accessories	
Charging module 1, 110 - 240 VAC for charging of 1 instrument	83 16 360
Charging module 2, 110 - 240 VAC for charging of 1 instrument, additional separate battery charging and connection to CC / Gas Vision	83 16 345
Car charging adapter, 12/24 V	83 16 115
Pump	
Adaptable automatic pump	83 16 350
Hand pump (in conjunction with calibration adapter)	68 01 933
Power supply units	
Rechargeable NiMHy Battery	83 16 112
Alkaline Battery Pack (w/o Batteries)	83 16 111
Datalogging and Configuration accessories	
Gas Vision	83 14 034
CC Vision	64 08 515
Data transmission cable RS 232 cable 9-9 including adapter from 9 to 25 pins	64 08 257
Extension hoses and probes (use in conjunction with adaptable automatic pump or hand pump)	
Extension hose, 10 m incl. float probe	68 07 097
Float probe, w/o hose	68 02 337
Telescopic probe, installable	68 01 954
Telescopic probe, extendable	83 13 025
Calibration accessories	
Calibration adapter	83 16 300
Sensors	
Cat Ex sensor 0 to 100 %-LEL, 0 to 100 Vol.-% CH ₄	83 16 109
XS R O ₂ sensor, 0 to 25 Vol.-%	68 10 262
XS EC O ₂ sensor, 0 to 25 Vol.-%	68 09 130
XS 2 O ₂ sensor, 0 to 25 Vol.-%	68 10 375
Other accessories	
Rubber boot	83 16 116
Carrying case	83 16 117

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DrägerService

Dräger equipment must always be fully operational and safe. DrägerService offers a regular inspection service and is quickly available in the event of malfunction. Your equipment will be repaired and back in operation as quickly as possible. Dräger-Service facilitates the vital flow of information between client and manufacturer.

Dräger Expertise

Since 1889, Dräger has had an outstanding reputation for solving problems in the field of human breathing. Dräger has been deeply involved in the handling of gases, in particular hazard protection and the saving of life in medical and industrial emergencies. Many of the company's 9500 employees are active in research and innovation to ensure that the latest techniques and scientific advances are fully tested before their inclusion in new equipment.



Dräger Worldwide

The Dräger sales and service organisation is spread throughout the world. It comprises more than 25 subsidiaries and associated companies to ensure that Dräger is always within easy reach of its clients and in close contact with all important markets. Dräger's ever increasing market share demonstrates the company's international competitiveness and strength.

Dräger has subsidiaries in the following countries: Australia, Austria, Belgium, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, France, Great Britain, Hungary, Indonesia, Italy, Japan, the Netherlands, Norway, Romania, Singapore, Slovenia, Slovakia, South Africa, Spain, Sweden, Switzerland, Thailand, Yugoslavia, USA. Additionally, Dräger is widely represented in Central and South America, Africa, the Middle East, the Far East and Eastern Europe.

Quality and Environmental Management

Our mission includes the continuous improvement of our Quality and Environmental Management Systems in accordance with ISO 9001 and ISO 14001.