



*Gas Analysers & Integrated Systems
for Process Gas Analysis*

O₂/CO₂ Analyser

FP403



for quality control in Modified
Atmosphere Packaging (MAP)

Features

- Specifically designed for use on flow type packaging machines (horizontal and vertical)
- Oxygen measure from 0.1 ppm to 100%
- CO₂ measure (optional) from 0 to 100%
- Continuous aspiration from the packaging machine by integrated pump
- Only 3 cc of gas to get the Oxygen measure
- 4-20 mA and RS232C outputs
- Extremely fast response time
- Very easy to use

Special Versions

- Version for spot measures in food packages (headspace). Aspirating time and volumes settable by user
- Combined version that allows to perform continuous analysis on the packaging machine, but also to perform spot analysis on single food package (during spot measurement, in line functions are frozen).
- Special version for spot measure of liquid products (cans, bottles, etc...) with integrated liquid sensor and automatic stop of aspiration in case the product is sucked.

Sensors

- Oxygen: zirconia sensor
- Carbon Dioxide (optional): infrared sensor

Analyser

The measure

The model FP 403 is the state of the art for what concerns the quality control in modified atmosphere packaging. The zirconia sensor for Oxygen measurement is extremely accurate, has very fast response time and ensure the measure even with minimum quantity of gas available (3 cc are enough).

Instead, CO₂ measure is performed by an high accuracy infrared sensing unit

Operation

The FP 403 is an extremely all rounded instrument and I can be provided in various configurations:

- In line Oxygen measures on packaging machine
- In line Oxygen and CO₂ measures on packaging machine
- Spot Oxygen measures (headspace)
- Spot Oxygen and CO₂ measures (headspace)
- **Combined version for continuous analysis on the packaging machine, + spot analysis on single food package (during spot measurement, in line functions are frozen).**

Stability

Both sensors are extremely stable and only require periodical calibration that can be made with a calibration gas cylinder (also by the customer).

Several Mounting Solutions

The FP 403 can be provided in bench version (with different type of handles) or built in version with mounting brackets.

Special Version with Liquid sensor

The FP403 can be provided in special configuration for spot measurements of liquid products. The sensor is protected against the erroneous aspiration of liquid from the can or the bottle.

An integrated separator has the function to drain the eventual liquid on a sensor able to detect it, in order to stop the aspiration pump.

A second inner pump prevents that the residual liquid may be sucked, reaching and irreparably damaging the sensors.

If products reaches the liquid sensor, the "CONDENSATE ALARM" led will light on and the pump is stopped. This condition is held until the circuit is dried and cleaned.

The standard operative condition is restored after the liquid sensor cleaning (easy to do disconnecting the lower part of the separator).

If necessary, in case of measures without risks, this protection can be bypassed.



Specifications...

...Performance

Accuracy and stability:

O₂ sensor: ± 1% of span (output signal).
CO₂ sensor: ± 2% of span (output signal).

Repeatability:

± 1% of measurement (short term).

Resolution:

0.01% O₂; 0.01% CO₂

Response Time:

O₂ sensor: 90% of step-change: less than 5 sec.
CO₂ sensor: 90% of step-change: less than 5 sec.

Ambient Temperature Influence:

± 0.06% of measure per °C

Atmospheric Pressure Influence:

1 % of reading for each 1% change of Atmospheric Pressure variation.

Sample Flow Rate Influence:

less than 0.5% of span over flow range of 100 to 1000 cc/min.

Line Voltage Influence:

max. 0.01% of span, for each 1% change of power voltage.

...Operative

Sample flow rate:

In line version: 1000 ÷ 1500 cc/min.
Spot version: 10 cc aspirated (configurable up to min. 3 cc for measures in small packages)

Range:

see suffix C on the ordering information

Ambient Requirements:

Relative Humidity: 90% maximum.
Operation Temperature: 0 to +50 °C
Storage Temperature: -10 to +70 °C

Power Requirements:

220 / 110 Vac; 50/60 Hz; 40 VA

Pneumatic Connections:

In / Out 1/8" NPT-F

Wiring Connections:

Power / customer terminal board / RS232C on back panel

...Physical

Weight: about 9 Kg.

Dimensions:

177 x 320 x 237 mm (without accessories)

Protection: IP 20

Control Unit M701

Specifiche

Description

The M701 model is a smart instrument which elaborates the signals coming from the Zirconia probes, providing for the computing and displaying of the Oxygen value in % or parts per million following the Nernst's law.

The instrument has been designed to re-transmit the 4-20 mA signal according to the set range and may be connected to a PC or an external printer in order to have a chronological tabulation of both measures and alarms. In case of malfunction, the instrument will automatically provide for the supervision of the probe.

Isolated current output is standard. Optional RS232C output can directly drive a printer with selectable timing and baud rate.

Single or dual alarm

A single alarm (high or low) or dual alarms (1 high and 1 low, 2 high or 2 low) can be provided as option.

Each alarm consists of: 1) a keyboard configurable alarm threshold; 2) a LED, which is lit when an alarm is detected; 3) a relay contact that can be used to actuate an external signal or to start a shutdown process device.



Display

It provides a continuous readout indication of the requested variable in engineering units (e.g. %), of alarms set point and alarms condition.

Alarms

Contact rating: N.O./N.C. 1 A @ 250 Vac (define the alarm contact condition -soldering type- at order)

Set: programmable on 100% of range

Relay status: normally triggered / not triggered

N° of alarms: 2 on concentration, 1 on temp. t1, 1 on temperature t2

Hysteresis: 5 / 1 / .5 / .1% of range

Delay: 10 / 5 / 1 / .1 seconds

Alarm scanning: ON/OFF programmable

Threshold: high or low to be selected at order; field adjustable by soldering jumpers.

Serial interface

Standard: RS 232 C; Check lines: CTS

Speed: 9600, 4800, 2400, 1200, 600, 300 baud/sec.

Parity: even, odd, none. Isolation: 1500 V

Analogical output

Output: 4-20 mA isolated proportional to 100% of range on maximum load of 500 Ω

Total Range (over range): 3.6 - 24 mA

Resolution: 1/3800. Isolation: 1500 V

Uploading time: 1 second

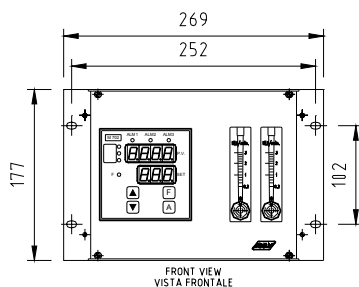
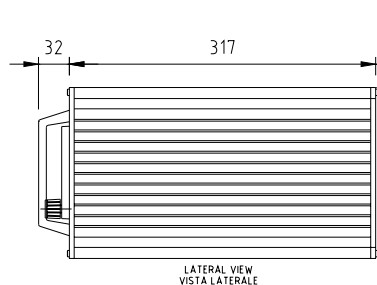
Printing messages

Periodical printing: programmable in hours, min.

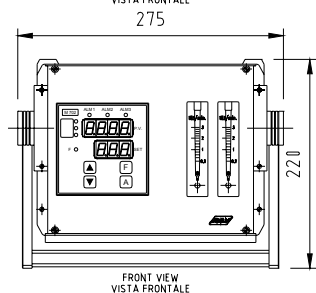
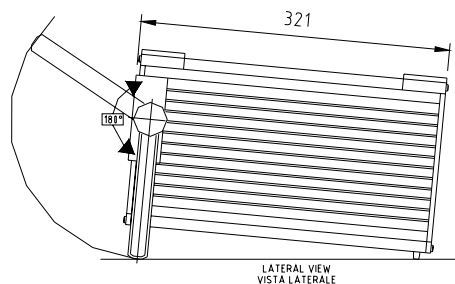
Alarm printing: automatic printing

Printing message: year, month, day, hours, minutes, % O₂, temperature, alarm 1 status, alarm 2 status

Dimensional Specifications

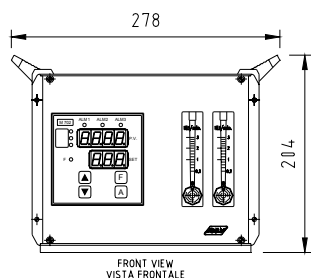
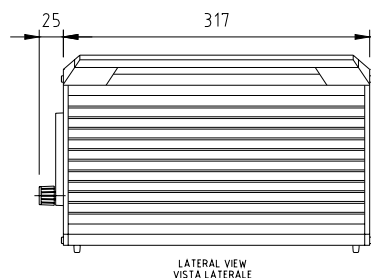


Built in version with mounting brackets



Bench version with floating handle

Also available without accessories



Bench version with upper handles

Also available without accessories

Accessories and Consumables (for spot versions)

Can Piercer

Suitable to perform measures in metallic cans and bottles.

The device allows the perforation and sampling the gas without leakages thanks to the proper stick.

- Rugged metallic needle point
- Adjustable in height
- Base fixable to the worktop
- Equipped with return spring
- Integrated filtering element
- Very compact and handy
- Suitable for cans of every dimensions and type



Spare Kit and Consumables



Syringe + hose Kit

Filter

Needles Kit

Stick

Conformity to European Normative

In accordance to Low Voltage directive 2006/95/EC

In accordance to EMC directive 2004/108/EC:

- EN 61000-6-2
- EN 61000-6-3
- EN 50270

Ordering FP 403



Suffix A - Line voltage

- | | |
|---|----------------|
| 1 | 230 V 50/60 Hz |
| 2 | 115 V 50/60 Hz |

Suffix B - Configuration

- | | |
|---|--------------------------------------|
| 1 | In line measure on packaging machine |
| 2 | Spot measure of headspace |
| 3 | In line + spot measure |

Suffix C1 - O₂ Range

- | | |
|----|--------------------------|
| 01 | 0-25 % |
| 02 | 0-10 % |
| 03 | 0-5 % |
| 04 | 0-2 % |
| 05 | 0-1 % |
| 06 | 0-1000 ppm ^{a)} |
| 07 | 0-100 ppm ^{a)} |
| 99 | On specification |

Suffix C2 - CO₂ Range

- | | |
|----|---------------------------------|
| 00 | Without CO ₂ measure |
| 01 | 0-1% |
| 02 | 0-2% |
| 03 | 0-5% |
| 04 | 0-10% |
| 05 | 0-25% |
| 06 | 0-50% |
| 07 | 0-100% |

Suffix D - Alarms on concentration ^{b)}

- | | |
|---|------------------------|
| 0 | Nessun allarme |
| 1 | 1 allarme di bassa |
| 2 | 1 allarme di alta |
| 3 | 1 di alta + 1 di bassa |
| 4 | 2 allarmi di bassa |
| 5 | 2 allarmi di alta |
| 9 | Su specifica |

Suffix E - Alarm contacts

- | | |
|---|---------------------------|
| 0 | None |
| 1 | Closed in alarm condition |
| 2 | Open in alarm condition |

Suffix F - Serial output

- | | |
|---|---------------------------|
| 0 | NO |
| 1 | RS 232 C + internal clock |

Suffix G - Mounting

- | | |
|----|--|
| 00 | Bench version without accessories |
| 01 | Transportable version with floating handle |
| 02 | Half-rack 19" version with brackets |
| 03 | Transportable version with upper handles |
| 04 | Rack 19" 4U version with brackets |
| 99 | On specification |

Suffix H - Control Unit

- | | |
|----|-------------------|
| 01 | M701 control unit |
| 02 | On specification |

Suffix O - Options

- | | |
|----|---|
| 0 | None |
| 01 | External printer + battery charger ^{c)} |
| 02 | Integrated printer ^{c)} |
| 03 | IP65 clear door to be mounted on control unit front panel |
| 05 | Flow meter on front panel |
| 06 | Can piercer |
| 07 | Liquid sensor and aspiration stop system |
| 99 | On specification |

Notes:

^{a)} High tight AISI 316 inner piping included

^{b)} Max. 2 alarms on concentration available, assignable as follows:
- both to O₂
- both to CO₂

- one to O₂ and one to CO₂

^{c)} Option selectable only combined with RS232 C (Suff. F = 1)



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All specifications are subjected to variations for products improvement without notice.

