

Selective gas measurement

Portable

CO₂ · N₂ · H₂

3654

Portable system



CO₂, N₂, H₂ Portable 3654

Safe, light, and easy to use for both plant and laboratory personnel.

Its robust and compact construction responds to the harsh plant environment.

No sample preparation needed, and has a response time of 3 minutes.

Measures gases in both dissolved and gaseous phases.

Measurements are not affected by the presence of other gases unlike traditional total pressure/temperature methods.

No moving parts means little maintenance and its design makes it quick and easy to maintain.

Stores up to 500 readings which can be simply downloaded on to a PC for analysis.

Thermal conductivity sensor

Before each measurement the sensor is flushed with a “purge” gas. Then the gas to be measured diffuses from the sample flowing through the flow chamber into the sensor through a membrane.

The concentration of the gas is calculated by measuring the thermal conductivity of the gas in the sensor.

Because each gas has its own specific thermal conductivity the measurement is not affected by the presence of other gases unlike traditional total pressure/temperature methods.

Display

The display gives a continuous concentration reading therefore no conversion tables are needed.

By pressing one of the keyboard buttons the temperature of the sample is displayed.

The display is large and easy to read, and can be lit up by pressing the light button on the key board. Being specially angled together with the key board makes the display easy to read.

Gas concentration and temperature units

Different gas and temperature units can be displayed depending on the application.

Keyboard

Due to the layout of the buttons and being specially angled the key board is easy to use.

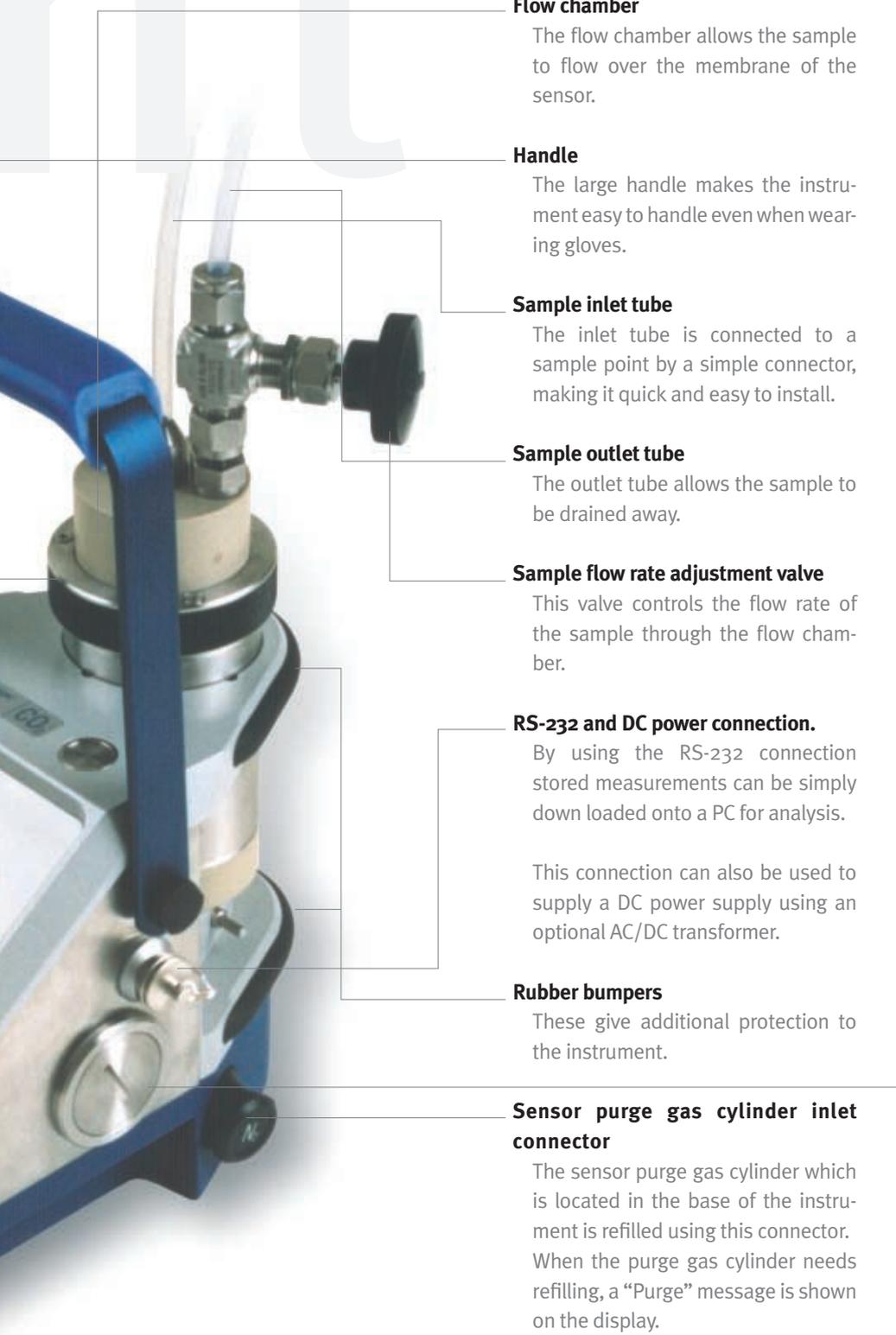
Chassis

The chassis is made from stainless steel making it strong and robust to handle harsh plant environments.

It is waterproof and corrosion protected.



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Flow chamber

The flow chamber allows the sample to flow over the membrane of the sensor.

Handle

The large handle makes the instrument easy to handle even when wearing gloves.

Sample inlet tube

The inlet tube is connected to a sample point by a simple connector, making it quick and easy to install.

Sample outlet tube

The outlet tube allows the sample to be drained away.

Sample flow rate adjustment valve

This valve controls the flow rate of the sample through the flow chamber.

RS-232 and DC power connection.

By using the RS-232 connection stored measurements can be simply downloaded onto a PC for analysis.

This connection can also be used to supply a DC power supply using an optional AC/DC transformer.

Rubber bumpers

These give additional protection to the instrument.

Sensor purge gas cylinder inlet connector

The sensor purge gas cylinder which is located in the base of the instrument is refilled using this connector. When the purge gas cylinder needs refilling, a "Purge" message is shown on the display.

Cleaning

The instrument can be simply cleaned by flushing it with warm water.

Maintenance and Calibration

No moving parts means low maintenance, and due to the instrument's design it is quick and easy to carry out maintenance.

In a standard application the instrument is recommended to be calibrated once per year.

Windows software

With the instrument comes a windows software package which enables you to analyze the stored measurements.

Battery compartment

The instrument runs off two standard or rechargeable C type, NiCd or alkaline batteries having a total of 2.4 to 3 volts.

A "Low battery" message is shown on the display when it is time to change the batteries.

It is quick and easy to change the batteries by simply unscrewing the battery compartment lid.

If the batteries go flat or are being changed the stored measurements are not lost.



Performance Specifications

Power requirements	Batteries: two C-type cells, NiCd or alkaline, each 26 x 50 mm, 2.4–3 volts total
Power autonomy	15 hours continuous use, 3 weeks in “standby” mode (power off, purge gas on)
Digital interface	RS-232C: Baud rate=4800; Parity=None; Stop bit=1; Start bit=0; Flow control=None
Temperature measuring range	-5 to 100° C
Temp. compensation range	-5 to +60° C
Purge gas	Nitrogen (CO ₂ and H ₂ sensors) Carbon dioxide (N ₂ and H ₂ sensors)
Purge gas cylinder pressure	200 bar maximum for N ₂ purge gas 57 bar maximum for CO ₂ purge gas at 25° C
Purge gas cylinder autonomy	40 hours when filled to 200 bar of N ₂ (20 hours when filled to 100 bar) 120 hours when completely filled with liquid CO ₂
Purge gas cylinder capacity	65 ml
Sample pressure limit	10 bars (150 psia)
CE certification	Electromagnetic Compatibility Standards: EN50081-1, EN50081-2, and EN50082-1
Enclosure and dimensions	
Enclosure protection	IP 67/NEMA 4X, stainless steel
ISO manufacturing standard	ISO9001 / EN29001
Dimensions (W x H x D)	198 mm x 115 mm x 220 mm
Weight	4.6 kg (including gas cylinder and sensor)



Sensor model	31470	31270 ¹	31570
Measured gas	CO ₂	H ₂	N ₂
Measurement range	0–10 g/kg, 0–4 V/V, 0–6 bar	0–5 ppm, 0–60 cc/kg, 0–3 bar	0–250 ppm, 0–200 ml/l, 0–15 bar
Accuracy² (the greater of)	±1% of reading, or ±16 mbar, or ±0.025 g/kg, or ±0.012 V/V	±1% of reading, or ±16 ppb, or ±0.2 cc/kg, or ±12 mbar	±2% of reading, or ±30 mbar, or ±0.5 ppm, or ±0.5 ml/l
Sample flow rate³	100 ml/minute	100 ml/minute	150 ml/minute

“Stored data allows sample concentration and temperature to be monitored.”

- 1 H₂ sensor models available with measurement range up to 15 ppm (180 cc/kg), or accuracy down to ±2 ppb (±0.03 cc/kg)
- 2 Sample temperature 20–50° C (within ±5° C of calibration temperature)
- 3 Through flow chamber
See also “Sensor Specifications” data sheet for MDTC sensors

In the interest of continued product development, Orbisphere reserves the right to make improvements to this literature and/or the products it describes, without notice or obligation.

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