

Fermac 368 Gas Analysis

Technical Information

Providing a measured response to your fermentation needs



The FerMac 368 Gas Analyser is designed to analyse the O₂ and CO₂ content of the exit (headspace) gas from a bioreactor.

This data refers to the Gas Analyser only and excludes any sampling system.

CO₂

The infra-red CO₂ sensor was developed specifically for laboratory use to provide accurate and reliable determination of CO₂ gas concentrations. The wave length is selected to avoid cross-sensitivity with other gases.

Range	0-10% CO ₂
Resolution	0.01% CO ₂
Repeatability	@ 0% CO ₂ = 0.05% CO ₂ @ 10% CO ₂ = 0.15% CO ₂
Response time	With a flow rate of 100mls/min = 50 seconds
Temperature drift	0.1% of full scale /C
Typical Warm up time	10 minutes
Operating temperature range	0-45
CO ₂ cell expected operating life	5-10 years
Cross sensitivity	None

O₂

Range	0-50% O ₂
Resolution	0.1% O ₂
Repeatability @ 21% O ₂	0.2% O ₂
Response time	With a flow rate of 100mls/min = 20 seconds
Typical Warm up time	10 minutes
Operating temperature range	0-45
O ₂ cell expected operating life	2 years in 21% O ₂

Cross sensitivity:-

The O₂ cell has been tested for cross-sensitivity to a number of gases. The gas concentrations used and the response of the O₂ cell are summarised below:-

Gas	O ₂ Cell Output (%O ₂ equivalent)	Gas	O ₂ Cell Output (%O ₂ equivalent)
16%CO ₂ / Balance N ₂	←0.01	6%CO/Balance N ₂	←0.00 ₂
5%H ₂ / Balance N ₂	←0.001	3000ppm NO/Balance N ₂	←0.002
2000ppm n-hexane/Balance N ₂	←0.01		

These figures show that, of the gases tested, none show a sufficiently large cross-sensitivity to cause any inaccuracy in readings. In addition the baseline was unaffected by exposure to these gases.

Analogue

O_2	0-5V = 0-50% max output 10V
CO_2	0-5V = 0-5% max output 10V (10%)
Option	4-20 mA

Calibration

For zero	N_2 100%
For Calibration	Typically 20% O_2 , 8% CO_2 , remainder N_2

The exact calibration values are normally supplied with the gas

Sample Inlet

Push connector for 6mm OD tubing

General

Voltage	115 or 230 VAC +/- 10% (switchable)
Instrument Size	190mm wide x 190mm high x 330mm deep
Packed Size	300mm wide x 310mm high x 410mm deep
Instrument Weight	6 kgs
Packed Weight	7 kgs

General

Qty.	Item
1	Suitable power supply cable
5 metres	Polyurethane tubing 6mm OD, 4mm ID
0.5 metres	Santoprene® 6.3mm ID/1.6mm wall tubing
0.5 metres	Norprene® 3.2mm ID/1.6mm wall tubing
1	Adapter, 6mm push-fit to 5mm barb
1	T-piece, 8mm through with 4mm T (to gas analyser)
1	T-piece, 12mm through with 6mm T (to gas analyser via 6mm to 4mm adapter)
1	Adapter, 6mm to 4mm
1	Filter, 50mm PTFE hydrophobic
2	Adapter, Luerlock 4mm to male
2	Fuse, 1 amp
1	Adjustment screwdriver
1	Output cable
1	Drying tube (Supplied as a sample - Ideal size & type will depend on application)
1	Inline flow control valve (used for calibration)
1	Instruction manual

Service / Spa

The FerMac 368 Gas Analyser comes with a 12 month guarantee covering all parts and labour.

A Service Contract giving a lifetime guarantee is available.

All spare parts available for a minimumm of 10 years.

Data Logging

Data Logging Using an Electrolab Bioreactor

The analogue output from the gas analyser plugs into the input/output socket of the FerMac 360 controller and the data is logged along with other data from the fermenter. Adaption cable interface cards are extra.

Data Logging Using Other Bioreactors

The analogue output from the gas analyser plugs into any spare analogue input channel.

Data Logging Using Stand-alone Software

There is no separate Electrolab data logging software supplied as standard.

PicoTech (www.picotech.com) provide a simple data logging system which can be set up to data log information from the gas analyser. This can be purchased locally or from Electrolab. If Electrolab supply the Pico logger, it will be complete with connection cables and configuration disc. Technical support for the Pico logger is only available direct from PicoTech.
