

# TANDEM Gas Analyser

The Tandem is now the affordable industry standard for dedicated exhaust gas analysis, for all lab, pilot and production applications.

The Tandem Gas Analyser offers you sophisticated CO<sub>2</sub> and O<sub>2</sub> gas measurement at a similar price to your other standard probes and sensors. Formerly the reserve of expensive equipment, you can now afford dedicated, individual, on-line monitoring and control of your processes. You gain the reliability and the flexibility required in your facility. At a time of squeezed capital budgets, the Tandem fits your needs.

CO<sub>2</sub>

Lifetime Guarantee



"The Tandem is both reliable and consistent. The information gained from CO<sub>2</sub> measurements directly correlates with product formation, and so we now use it to monitor the physiological state of our cultures."

Paul Milner, Fermentation Leader,  
Agrol Ltd, UK

"We use Tandems for analysis of laboratory fermentations. Using the instrument is a very easy and cost effective solution. Also, customer service has been outstanding."

Dr David M. Anderson, Research  
Director, ChemGen Corp., USA

"We needed increased process monitoring capability in order to improve development times for our contract clients. By just attaching the Tandem to our existing system, we now have increased flexibility in our GMP plant, plus have a reliable system with which to base new control strategies on."

Paul Ives, Senior Scientist, DSM  
Biologics, The Netherlands

"Dedicated on-line gas analysis is now being viewed as essential by companies, in contrast to traditional expensive multiplexed systems, such as mass spectrometers."

Helix Magazine, February 2001

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Magellan Instruments

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The Tandem is incredible value and offers you all these benefits:

## Greater understanding of your cells and processes

- Physiological state measurement on-line
- Scale-up and scale-down predictions
- Batch variation studies: feature analysis
- Metabolic flux analysis and mass-balance calculations

## Increase the reliability and repeatability of your processes

- Accurate fed-batch control
- Repeatable event decisions: induction, infection, harvesting etc.
- Batch variation studies: anomaly analysis

## Automate your processes

- Metabolic activity based feeding
- Repeatable event decisions: induction, infection, harvesting etc.

## Dedicated, continuous, standard signals for all your reactors

- On-line information, allows real-time calculation of RQ, CER, OUR, growth rate, KLa etc.
- 0-10V and 4-20mA for both signals
- Integrates to any reactor size (250ml – 100m<sup>3</sup>)

## Tandem Specifications

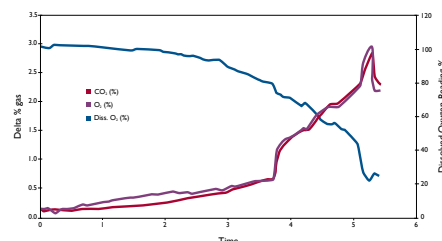
Feature	CO <sub>2</sub>	O <sub>2</sub>
Measurement Principle	Infra Red Absorption	Electrochemical
Range (partial pressure)	0 - 5% (Others available)	0 - 30% (Others available)
Resolution	0.01%	0.01%
Accuracy (partial pressure)	0.02%	0.02%
Drift	<0.05%/month full scale	0
Operating Temperature	0 - 45°C	0 - 45°C
Temp. Compensation	Included	0.02%/°C
Gas Flow Rate	0.1-1.0L/min	0.1-1.0L/min
Max Oper. Pressure	3 bar	3 bar
Guarantee	1 year, extendable to life	1 year, extendable to life
Calibration	Standard 2 point calibration on existing instrumentation	

## Your Magellan Instruments Guarantee

Your Tandem is guaranteed, absolutely and completely, for 1 year after delivery for any problem (except user damage). If you service the Tandem annually, we will continue this guarantee forever (yes, you're right, forever). That's why the Tandem is your best choice with a guarantee you can't refuse.

## Growth of Escherichia coli on a succession of substrates

Look at the detail gained by the Tandem vs a dissolved oxygen probe!



By kind permission of Andrew Collis, GSK Operations, Ulverston.

