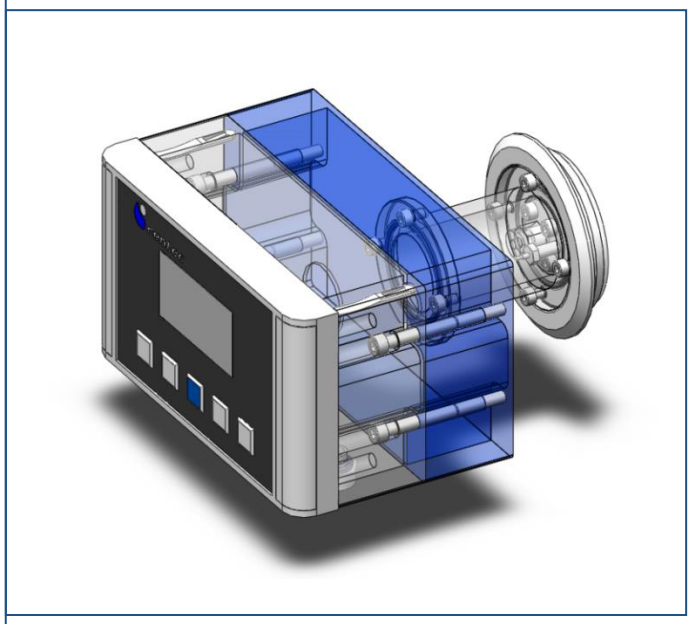
OXYTRANS

# $O_2$ Measurement in Food and Beverage Manufacturing

## Application Report



Automated process skids and high precision sensors from a single source. Centec.

ProDetec
Measure . Prevent . Protect . Control

**ProDetec Pty.Ltd.**
P. +61 (02) 9620 8700
F. +61 (02) 9620 8755
E. info@prodetec.com.au
A. 17/38 Powers Rd,
Seven Hills NSW 2147
**www.prodetec.com.au**

# OXYTRANS

## Application and Measurement Principle

The content of dissolved oxygen (DO) has a strong influence on the quality and taste of beer, beverages and various other food products. Excess $O_2$ can result in a significantly reduced shelf life. Therefore, breweries and other beverage and food companies continuously measure and control $O_2$ concentrations with highest precision throughout the entire manufacturing process. Typical applications in food and beverage industries include the determination of dissolved oxygen in deaerated water used for processing the final product.

An indicator layer on a small glass component ("optical window") installed in the measuring head is illuminated with blue-green-light. When the indicator molecules absorb the incident light they are promoted to a higher energy state. After a certain time they convert back to their ground state during which a detectable red light is emitted. If $O_2$ is present the energy is transferred from the indicator molecules to the oxygen. By detecting the red light, OXYTRANS determines the $O_2$ content with highest precision.

OXYTRANS TR
Transmitter Version

OXYTRANS M
Portable Version

The Centec production is certified according to ISO 9001.

Available as Transmitter and Portable Version with Local Display
Highly Precise and Fast Measurement of $O_2$ in Liquids and Gases
Optical Technology without Membrane and Electrolyte
Short Response Time and Excellent Long-Term Stability
Hygienic Execution and Full CIP Capability
Easy Maintainable within a Few Minutes
Outstanding Price-Performance-Ratio

| Technical Data | OXYTRANS TR | OXYTRANS M |
|---|---|---|
| Liquid Phase Measuring Range | I) 1 ppb - 2 ppm or<br>II) 30 ppb - 50 ppm | I) 1 ppb - 2 ppm or<br>II) 30 ppb - 50 ppm |
| Liquid Phase Accuracy | I) ± 1 ppb or<br>II) ± 30 ppb | I) ± 1 ppb or<br>II) ± 30 ppb |
| Gas Phase Measuring Range | I) 0 - 4,2 % $O_2$ or<br>II) 0 - 50 % $O_2$ | I) 0 - 4,2 % $O_2$ or<br>II) 0 - 50 % $O_2$ |
| Gas Phase Accuracy | I) ± 0,002 % $O_2$<br>II) ± 0,03 % $O_2$ | I) ± 0,002 % $O_2$<br>II) ± 0,03 % $O_2$ |
| Response Time | t90 ≤ 10 s | t90 ≤ 10 s |
| Pressure of Operation | max. 12 bar | max. 12 bar |
| Temperature of Operation | - 5 - + 55 °C (option: + 98 °C)<br>resistance: max. + 130 °C | - 5 - + 55 °C (option: + 98 °C)<br>resistance: max. + 130 °C |
| Temperature Compensation | Pt100 | Pt100 |
| Material | 1.4404/AISI 316L,<br>silicone (FDA), PTFE (FDA) | 1.4404/AISI 316L,<br>silicone (FDA), PTFE (FDA) |
| Connections | compatible to Varivent©<br>Inline-Housings DN40 - DN150;<br>DIN; ANSI; others on request | hoses of 6 mm diameter |
| Interface (OXYTRANS TR)<br><br>Datalogging (OXYTRANS M) | input:<br>3 x digital (24 VDC)<br>output:<br>3 x digital (24 VDC) &<br>2 x analog (4 - 20 mA) | manual and automatic with a logging time of 5 to 600 seconds; approx. 5.000 measurement values; PC software and USB-interface |
| Profibus DP | option | - |
| Enclosure Rating | IP65 | IP65 |
| Power Supply | 24 VDC | battery, rechargeable |
| Weight | - | 1,65 kg |

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