

TruFluor DO – Preliminary

Single Use Optical Dissolved Oxygen Probe

The TruFluor™ dissolved oxygen and temperature sensor is a single-use solution consisting of a disposable sheath, an optical reader, and a transmitter. The single-use sheath can be pre-inserted in a disposable bioreactor bag port and irradiated with the bag, in order to both preserve and guarantee the sterile barrier. All wetted materials of the sheath are USP class VI compliant.

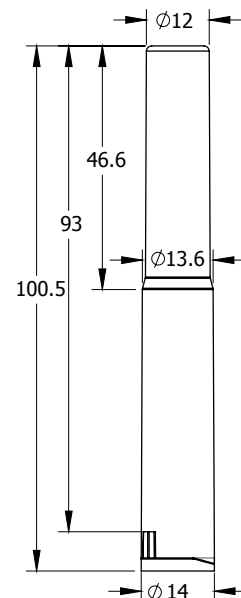
The optical reader utilizes an LED and a large area photodiode with integrated optical filtering, that minimizes photo-degradation of the acting sensing element. The design has been optimized to provide accurate in-situ measurement of dissolved oxygen using phase fluorometric detection in real time. The temperature measurement leverages a 316L stainless steel thermal window embedded in the sheath, and provides a highly accurate temperature measurement that can be used as a process variable.

Environmental Specifications				
Parameter	Units	Min	Typ	Max
Operating Temperature	°C	5		45
Pressure	Bar (psi)	(0 non-freezing)	1(14.7)	2(29.4)
Storage Temperature	°C	-20	22	65
Relative Humidity (non-condensing)	%	0	60	100
Altitude	feet			40,000
Materials	USP Class VI and 316L Electro-polished SS			
Shock tolerance (non-operating)	shipping	JIS Z 0202:1994		
Vibration (50 to 500 Hz sinusoidal 0.25 octave/min)	G	3		

Performance Specifications		
	Min	Max
Sample Rate	Sample rate can be set so that samples are taken in increments from 1 second to 30 minutes	
Measuring Range O ₂	~ 0	52.5% O ₂ (250% air-sat)
Limit of Detection	0.03% O ₂	
Precision	0.55% or < 3% (whichever is greater) of reading at all temperatures and O ₂ levels < 21% *	
Accuracy at 20 °C	< ± 1% at 20.95% O ₂	
Response Time	Agitated	Not Agitated
90% response	< 40 s	< 60s
Calibration	Pre-calibrated (RFID tag) Conventional 2 point cal possible	
Cross Sensitivity	Organic solvents (e.g. toluene, acetone, benzene, methylene chloride) SO ₂ and Cl ₂ gas	
Temperature	Accuracy	Precision
From 5 to 45°C **	± 0.25°C	± 0.1°C
From 15 to 40°C *	± 0.15°C	± 0.1°C



Physical Specifications



All dimensions in millimeters.

*Statistically significant data taken at ~15% O₂ and 37.5°C. All data extrapolated therein. Reader to reader precision for any sheath.

** With ambient temperature ~ 25°C

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Features

- Sheath, optical reader and transmitter
- Excellent precision and accuracy
- RFID tagging for self-calibration and lot traceability
- USP Class VI, gamma radiation resistant wetted materials
- Plug-and-play

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