Broadley® James

NEW!!

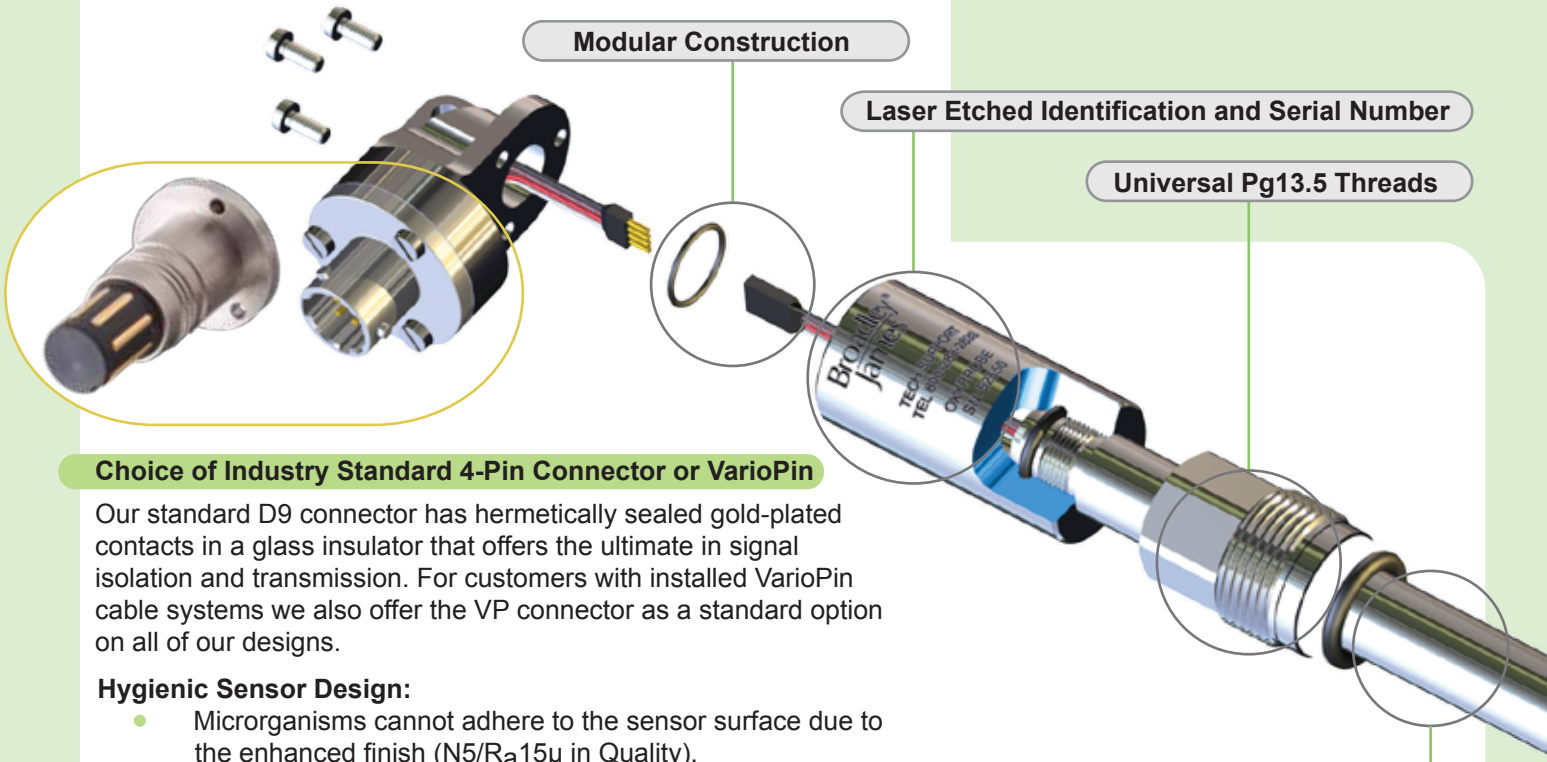
Manufacturers of Sensors, Bioreactors and Process Control Automation

NEW!! OxyProbe® II

D500 and D600 Series

Dissolved Oxygen Sensors
for Biotech Applications

Better Performance!



Choice of Industry Standard 4-Pin Connector or VarioPin

Our standard D9 connector has hermetically sealed gold-plated contacts in a glass insulator that offers the ultimate in signal isolation and transmission. For customers with installed VarioPin cable systems we also offer the VP connector as a standard option on all of our designs.

Hygienic Sensor Design:

- Microrganisms cannot adhere to the sensor surface due to the enhanced finish (N5/R_a15µ in Quality).
- The sensor is fully sterilizable and autoclavable.

Time-Saving Maintenance:

- Membrane body and sensor inner body can be changed out very quickly. A simple membrane body replacement takes just two minutes and can be made on site by the user.
- Due to the modular design, the different sensors have basically the same spare parts. This minimizes inventory stocking requirements.

Features Overview:

- Autoclavable and steam sterilizable.
- Accurate measurement and quick response.
- Long lasting and easy to maintain membranes.
- FDA positive listed materials of construction.
- Hygienically polished N5 surface finish (Max. R_a15µ in).
- Wetted O-rings comply with FDA and USP Class VI standards.

Other Highlights:

- Comes with either waterproof VarioPin or D9 connector.
- T-Pull connector versions allow for easy removal from fermenter and reduces strain on cable.
- Variety of sensor lengths available.

Electropolished Stainless Steel Surfaces

This provides better surface cleanability than mechanically polished R_a15µ in alternatives. Copies of 3.1 certificates and mill certificates are available on request. Every sensor is serialized with paperwork on file in our database.

The Second Generation of the OxyProbe® incorporates an improved membrane design, increased signal stability, easier assembly, and enhanced regulatory documentation.

Documented Materials!

Parts/Components	Material Certs.	Compiled into:
Steel	Animal Derived Materials Heat # Certificate R_a Finish Certificate Electropolish Certificate	3.1 and C.O.C. Documents and Quality Certs.
Teflon	Animal Derived Materials USP Class VI Certificate	
O-Ring	Animal Derived Materials USP Class VI Certificate	

Broadley-James Document Summary of Certificates.

USP Class VI Wetted Materials of Construction

Each membrane has a lot number traceable back to the principal components. All wetted materials conform to USP Class VI specifications.

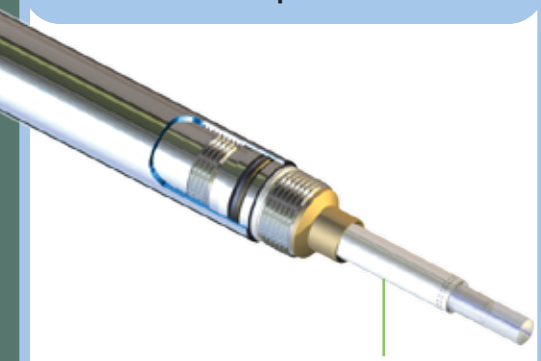
All lot numbers and serial numbers are stored in our database linking them to the primary materials of construction, and in turn, the various MSDS, Heats, Material Certs, Animal Derived Materials statements, etc.

All OxyProbe II sensors and membranes come with complete traceability of all wetted materials, including o-rings, membrane material and steel.

A lot number is laser-engraved on each individual membrane, and each sensor has a unique serial number.

Easier To Use!

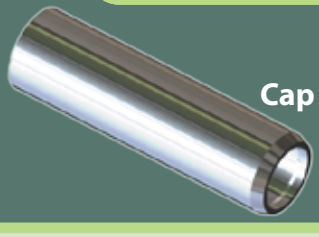
Filling is easy with the self-adjusting reservoir. No need to measure and no risk of overfilling. Just fill the membrane to the top and insert onto the cathode.



Replaceable Anode/Cathode Assembly

A concept pioneered by Broadley-James, this unique assembly permits the sensor to be repaired quickly and reliably. Send your sensors to us for rebuild and save about half the price of purchasing a complete new sensor assembly!

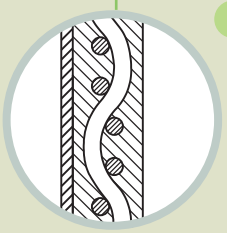
Membrane Cartridge



Cap Sleeve

New OxyProbe® II

This new design is “tip-tolerant” and allows for the sensors to be held horizontal or set on a desk or workbench with no need to worry about the electrolyte shifting away from the cathode tip.



Rugged 3-Ply Membrane Material

The outer silicone layer protects the inner Teflon layer, and an added steel mesh provides the mechanical strength required to withstand repeated autoclaving or steam sterilization. The strongest, most robust membrane in the industry, it is an improvement of the industry standard design.

Sensor Selection: Size

SENSOR SELECTION FOR BIOREACTOR VESSELS

A typical benchtop application is less than 20 L and uses a glass vessel with steel headplate. Usually the entire vessel can be placed or wheeled into an autoclave for sterilization prior to a run. Not only is there a range of different vessel sizes used in benchtop bioprocess applications, but also the volume of the media in the vessel will often change during the process.

Accordingly, the sensors for benchtop vessels are available in a wide variety of lengths. The operator must choose a sensor length that ensures the sensor tip is submerged at all times during operation. Some sensor models have been configured to thread directly into the headplate and various access ports found on small vessels. Detachable cables and other design features allow these products to withstand the demands of autoclaving requirements.

EXAMPLE: 7 L vessel uses 325 mm long sensor

APPROXIMATE GUIDE TO SENSOR LENGTH

VESSEL SIZE (Total Volume)	SENSOR LENGTH
2, 3 and 5 L	pH = 225 mm DO = 220 mm
7 - 10 L	pH = 325 mm DO = 320 mm
15 - 20 L	pH = 420 mm DO = 420 mm

Our new OxyProbe II Dissolved Oxygen Sensors Will Work With Your Existing Electronics.

Our sensors are compatible with the following equipment/manufacturers using the cables below:

- Mettler-Toledo
- Rosemount
- Knick
- Sartorius
- B. Braun
- Applikon
- DasGip
- New Brunswick Scientific
- Infors
- VarioPin type and more ...

(FF)

(L6)

(G3)

Questions?

For More Information
On Our Cables
Call Our Tech Support:
Phone: +44 (0) 1525 862518
Fax: +44 (0) 1525 862811

sales@broadleyjames.co.uk

Ordering Information

Small diameter sensors for use in benchtop bioreactors, or single-use systems, like Hyclone® and Xcellerex®

12 mm Pg13.5

12 mm Sensor Order Number

STYLE	LENGTH	PART NUMBER	PART NUMBER
Straight	120 mm	D540-B120-PT-VP	D540-B120-PT-D9
	220 mm	D540-B220-PT-VP	D540-B220-PT-D9
	320 mm	D540-B320-PT-VP	D540-B320-PT-D9
	420 mm	D540-B420-PT-VP	D540-B420-PT-D9
T-Pull	120 mm	D545-B120-PT-VP	D545-B120-PT-D9
	220 mm	D545-B220-PT-VP	D545-B220-PT-D9
	320 mm	D545-B320-PT-VP	D545-B320-PT-D9
	420 mm	D545-B420-PT-VP	D545-B420-PT-D9

25 mm sensors for use in SIP vessels, from 20 L to 20,000 L

25 mm

25 mm Sensor Order Number

STYLE	LENGTH	PART NUMBER	PART NUMBER
Straight	80 mm	D600-B080-PT-VP	D600-B080-PT-D9
	160 mm	D600-B160-PT-VP	D600-B160-PT-D9
T-Pull	80 mm	D605-B080-PT-VP	D605-B080-PT-D9
	160 mm	D605-B160-PT-VP	D605-B160-PT-D9
B. Braun (Sartorius)	100 mm	D630-B100-PT-VP D635-B100-PT-VP	D630-B100-PT-D9 D635-B100-PT-D9

Accessories

Single Cartridge Kit (MK29-01)

This kit includes everything required to replace the membrane cartridge and internal o-rings on one 12 mm OxyProbe® II.

MK29-01 **1-pack**

Four Cartridge Kit (MK29-04)

This kit contains everything required to replace four membrane cartridges on a 12 mm OxyProbe® II, packaged in one box for easy storage.

MK29-04 **4-pack**

16 Piece Cartridge Kit (MS29-16)

This convenient bulk pack is the most popular among large volume users. It contains 16 membrane cartridges in one easy-to-store box. Internal o-rings, gaskets and electrolyte must be ordered separately.

MS29-16 **16-pcs**

REPLACEMENT CAP SLEEVE (Steel Casing)

AM-9657-S (Standard)

AM-9657-G (Guarded)

DISSOLVED OXYGEN ELECTROLYTE SOLUTION

AS-3140-C30-0250 (250 ml)

AS-3140-C30-0025 (25 ml)

In critical biotech applications the electrolyte should be changed after every run to yield best results. The shelf life of this solution is approximately 2 years. Lot numbers and expiration dates are clearly marked on each bottle for tracking purposes.

BATTERY POWERED POLARIZERS:

DO sensors may need to be polarized for several hours prior to calibration and use. Polarization modules allow this to be done without the need for a transmitter.

STANDARD POLARIZER (Part Number AM-9221)

This battery operated module attaches directly to any OxyProbe®. It uses a lithium battery, with a five year life span, which should be checked annually. This polarization module allows maximum portability of a polarized sensor.

SMART POLARIZER (Part Number AM-9660)

When the dissolved oxygen sensor is connected to the Smart Polariser a polarising voltage is automatically applied to the sensor. The unit displays the raw nA output from the sensor, the temperature from the sensor's internal temperature compensator and the unit's battery voltage. This allows the user to test the dissolved oxygen sensor raw output (nA) in air (100%) and in zero oxygen conditions (0%).

Specifications
OxyProbe® II

PERFORMANCE SPECIFICATIONS	
Operating Range:	0 - 300% Saturation
Accuracy:	≤ ± [1%]
Response Time at 25°C:	98% of final value in <60 seconds
Sensor Signal in Air 25°C:	40 to 80 nA
Residual Signal in Oxygen-Free Medium:	< 0.1% of the signal in ambient air
Maximum Flow Error:	≤ 3% of Total Reading
CONSTRUCTION	
Measuring Principle:	Electrochemical - Polarographic
Cable Connection:	VarioPin or D9 (T82)
Connector Design:	Straight or Angled (T-Pull)
Sensor Body:	316L Stainless Steel
Membrane Material:	Silicone/Teflon (Reinforced with Steel Mesh)
Surface Roughness of Wetted Parts:	Max. R_a15µ in (N5)
O-Ring Wetted Material:	Silicone, EPDM (FDA and USP Class VI positive listed)
Sensor Diameter:	12 mm and 25 mm
WORKING CONDITIONS	
Temperature Compensation:	Automatic
Measuring Temperature Range:	0 to 80°C
Environmental Temperature Range:	-5 to 135°C (sterilizable and autoclavable)
Measuring Pressure Resistance:	0.2 to 6 bar (2.9 to 87 psi absolute)
Mechanical Pressure Resistance:	Maximum 12 bar (174 psi absolute)

CERTIFICATES:

- ✔ FDA approved materials
- ✔ USP Class VI
- ✔ Material Certificate 3.1
- ✔ Surface Finish Certificate
- ✔ Electropolish
- ✔ C.O.C. (Certificate of Compliance)
- ✔ Quality (Final Inspection Cert.)

If you use 12 mm Dissolved Oxygen sensors in your cell culture or fermentation process you are going to want to try the new OxyProbe II design soon. It greatly improves on the existing 12 mm style, offering increased stability, fast response, durability, and ease-of-use.

Overview: The New OxyProbe® II

At Broadley-James we all know how important your cell culture or fermentation process is to the success and profitability of your company. We strive to make the best quality products available, while incorporating the best technology and, where possible, greatest cost savings. It's not that often that we have a distinctive new design, as the existing ones meet most the above criteria. However, after several years of refinement we are introducing our latest set of improvements all bundled up in one new sensor, the OxyProbe® II.

As always, Broadley-James Corporation strives to keep our products backwards compatible. In this case, any of our existing 12 mm OxyProbe sensors can be updated to the OxyProbe II design during the rebuilding process. We can install a new OxyProbe II cathode assembly and will laser-etch the Roman numeral "II" on the sensor body so you will know which type of membrane to use. Over time, you will have all of your existing sensors updated without having to purchase any new ones!

The new membrane design is modeled after our successful 25 mm membrane cartridge. It has an expandable inner Silicone bladder that holds the electrolyte within a 316L stainless steel cage. During SIP processes or during autoclaving the electrolyte turns to steam, but does not distend the measurement membrane because the internal bladder expands first, taking the pressure off the sensitive measurement area. This allows us to have a maximum of electrolyte present, with minimum risk of damage to the sensor. The new membrane cartridge design is easy to use and durable enough to be used many times over if necessary.

Broadley® James

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