

General Specifications

Hamilton Dissolved Oxygen Sensors

The measurement of Dissolved Oxygen is one of the key analysis methods to monitor, but most users complain of unreliable sensor performance, high maintenance requirements and therefore high costs or a short lifetime. The Hamilton Dissolved oxygen sensors are designed to meet the severe requirements of the Biotechnology industry in terms of long term stability and low maintenance.

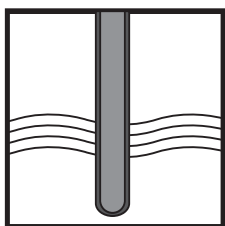
Most low maintenance dissolved oxygen sensors operate on the principle of the reduction of oxygen at the surface of a noble metal electrode, the cathode, but this design can exhibit problems during calibration including interference from other substances. In the Oxygold and Oxyferm electrodes, the sensor is covered with a gas permeable membrane to address these problems. The unique technology of the membrane is the real secret to achieving the desired quality of DO measurement. The Dissolved Oxygen sensor is a membrane covered polarographic sensor. Normally these sensors utilize TEFLON or FEP material, which features high selectivity towards Oxygen. For Biotechnical applications this material is not suitable due to mechanical deformation of the membrane in the vigorously agitated reactors or during steam sterilization. Other models use silicone rubber which has excellent elastic properties but poor oxygen selectivity. The Oxygold and Oxyferm feature a laminated membrane with a thin layer of TEFLON for high selectivity and fast response, silicone rubber for elasticity and steel mesh for mechanical stability



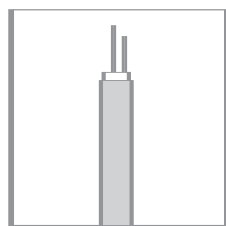
Features

- Optiflow mechanically robust membranes that combine fast response, low flow dependence and an ability to function under harsh application conditions.
- Rapid stabilisation to minimise maintenance time.
- Ruggedised design guarantees stability even after numerous sterilisation cycles.
- Low limit detection down to 2 ppb.
- Sterilisable and autoclavable
- Can be mounted inverted
- ATEX certified sensors and fittings
- Certificate downloadable from www.hamiltoncompany.com

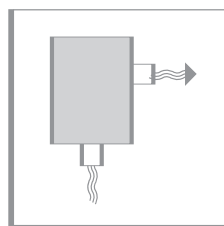
System Configuration



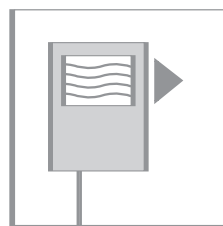
Sensors



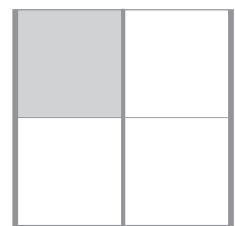
Cables



Fittings



Transmitters



Accessories

Dissolved Oxygen sensors

Maintenance is rarely necessary due to the improved design of the sensor. The construction of the electrode guarantees excellent stability even after numerous sterilization cycles. A selection of membrane materials (standard, CIP and FDA membrane) and a selection of different membrane body shapes, with a protective edge or rounded are all available

General features

- Cable: VP-plug
- EX-label: II 1/2 G EEx IAIC T4/T5/T6
- Delivered with test and 3.1 certificate
- Adapter: PG13,5 tread
- Integrated 22 KOhm NTC temperature sensor
- Protection class: IP68

Oxyferm

Operating conditions Oxyferm

O₂ 10 ppb to saturation
 Temperature 0...130°C
 Pressure Maximum 4barG
 Minimum flow 0.002m/sec

Additional features Oxyferm

- Suitable for steam sterilization, autoclaving and CIP
- Shaft and membrane have their own serial and melt numbers
- Sanitary feature: the silicon membrane seals without a gap to steel membrane body (no additional o-ring)
- Little drift, fast response, short polarization time
- Thanks to a longer service cycle, reduced operating costs
- OXYFERM FDA is shipped with a replacement FDA membrane body
- Material and test certificate by series
- Unique feature: upside-down insertion is possible when using OXYLYTE USD electrolyte. This is very useful for measurements in nearly empty tanks/containers.

Part Number	Description
10/237100	OXYFERM 120
10/237110	OXYFERM 225
10/237400	OXYFERM VP 120
10/237401	OXYFERM VP 225



Oxyferm FDA



Oxyferm VP

Oxygold

Oxygold G and Oxygold B sensors are trace level dissolved oxygen probes. Both have a fast response time with t_{90} smaller than 60 sec.

The Oxygold G electrode is optimized for the measurement of trace quantities of dissolved oxygen. Its lower detection limit is 2 ppb. Designed for use in power generation, water treatment, chemical, pharmaceutical and semiconductor industries

The Oxygold B electrode is designed for measurements in media containing acidic gases CO₂ like in breweries, other beverages and specific chemical processes.

General Features

- Designed for trace level DO measurements
- 12mm Shaft with VP plug
- IP68 VP connectorhead
- Suitable for use high at temperatures and high pressure

Oxygold G

Operating conditions

O ₂	2 ppb to saturation
Temperature	0...130°C
Pressure	Maximum 12barG
Minimum flow	0.1m/sec

Additione features Oxygold G

- Developed for use in power plants or chemical, pharmaceutical and semiconductor industries
- Easy to maintain
- Little flow sensitivity
- Fast response time $t_{90} < 60$ sec
- Supplied with material and test certificate

Oxygold B

Dissolved O₂ sensor for measurements in fluids containing acidic gases, for example CO₂

Operating conditions

O ₂	8 ppb to saturation
Temperature	0...100°C
Pressure	Maximum 12barG
Minimum flow	0.1m/sec

Additione features Oxygold B

- Developed for use in brewing, soft drink, fruit juice, sparkling water and wine processes
- No cross sensitivity to CO₂
- Pressure and CIP stable
- Fast response time $t_{98} < 60$ sec
- Supplied with material and test certificate
- Easy maintenance using the same polarisation voltages for calibration and measurement



Oxygold G



Oxygold B

Part Number	Description
10/237395	OXYGOLD G 120
10/237396	OXYGOLD G 225
10/237395	Oxygold G VP120 120mm long sensor with VP connector
10/237396	Oxygold G VP225 225mm long sensor with VP connector

Part Number	Description
10/237180	OXYGOLD B 120
10/237185	OXYGOLD B 225
10/237180	Oxygold B VP120 120mm long sensor with VP connector
10/237185	Oxygold B VP225 225mm long sensor with VP connector

Consumables

Part Number	Description
10/237126	Membrane Kit CIP
10/237140	Membrane Kit FDA
10/237118	Oxlyte Electrolyte for OXYFERM, 50 ml
10/237139	Oxlyte "G" Electrolyte for OXYGOLD, 50 ml
10/237135	Oxygold Membrane Kit
10/237138	Oxlyte "B" Electrolyte for OXYGOLD, 50 ml
10/237136	Oxlyte USD 50 ml

Fittings and Armatures

Retractofit

This armature allows the user to install maintenance-free electrodes in critical processes. The main advantage of this design is that the sensor can be withdrawn while the process is running (i.e. for cleaning, calibration or even to replace the electrode), without interrupting the process. The armature is very easy to use and maintain. Two tube connectors allow access to the rinsing chamber. A closed insertion tube converts these armatures a sampling system for diverse applications. Both accessories can easily be exchanged for the standard insertion tube using only gentle hand pressure.

Features Retractofit Bio

- This armature is designed for applications where sanitary concerns are critical.
- The armature is steam sterilizable and autoclavable.
- The SS DIN 1.4435 (SS 316) and the FDA approved EPDM O-rings withstand typical CIP cleanings.
- Check with your dealer for the right O-ring position or weld-in socket!

Sanitary Non-Retractable Armatures

Maintenance-free sensors with a standard 12 x 120 mm design and PG 13.5 thread will fit perfectly.

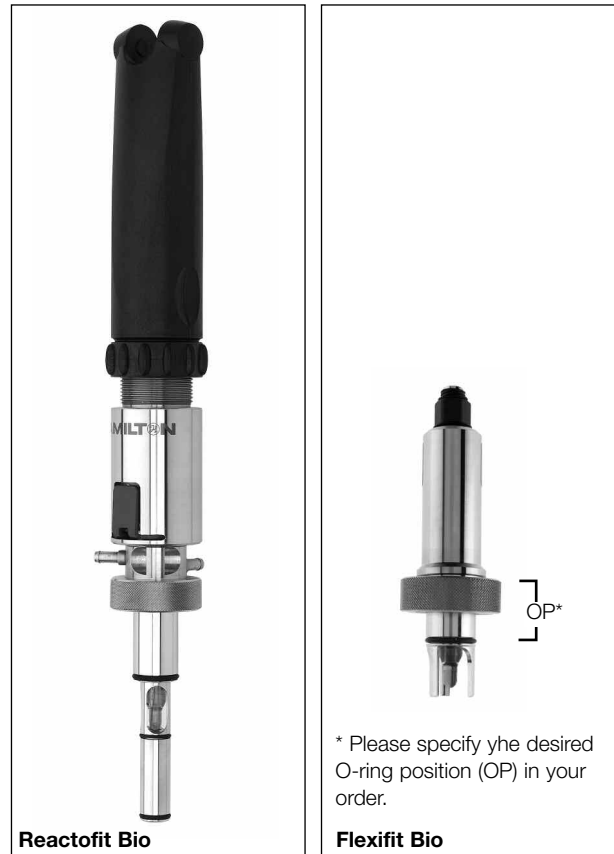
Steam sterilizable, autoclavable and CIP compatible cleaning are possible with the sanitary design. The materials used are SS DIN 1.4435 (SS 316) and the EPDM O-rings are FDA approved.

Features Flexifit Bio

- G1 1/4" process connection
- The surface quality is N5 (Ra =0.4 µm) electropolished.
- The armature comes with a material certificate.
- Good sensor protection with 3 protection rods
- Good sanitary design (easy cleaning and no sensor clogging).

Part Number	Description
10/237202	Weld-In Socket 15°, for armatures with o-ring at 25 mm
10/237230	Blind Plug for Weld-In socket
10/237338	Service Kit for Flexifit Bio & Retractofit Bio
10/237239	Service Kit for Retractofit & Retractablemaster
10/237339	Kalrez Kit for Retractofit, Retractomatic & Retractablemaster
10/237252	Pressure Adapter
10/237255	Insertion tube short for Retractofit/-matic
10/237278	Insertion tube closed for Retractofit/-matic
10/237290	Service Kit for Retractablemaster
10/237440	Retractofit Bio
10/237202	Weld-In Socket 15°, for armatures with o-ring at 25 mm
10/237219	Service Kit for Flexifit
10/237230	Blind Plug for Weld-In socket
10/237331-OP	Flexifit Bio
10/237338	Service Kit for Flexifit Bio & Retractofit Bio

* Please specify the desired O-ring position (OP) in your order.



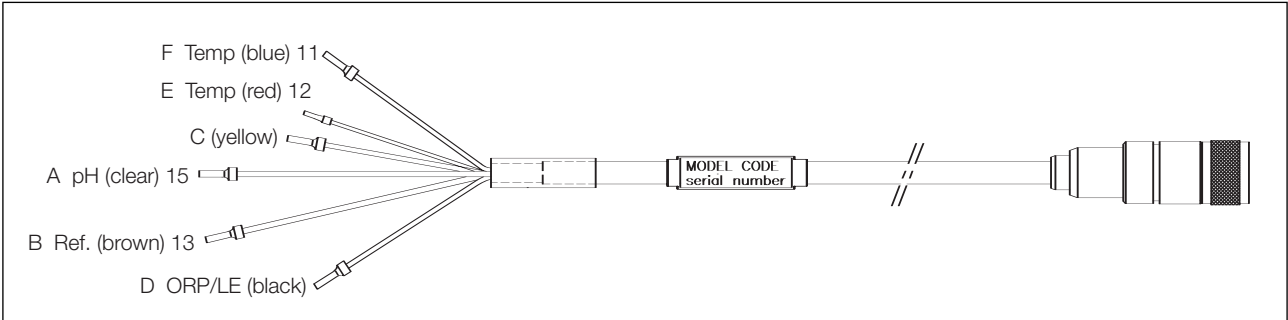
Retractofit Bio

Flexifit Bio

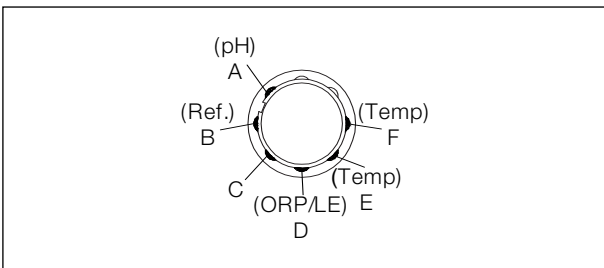
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Cables for Industrial Applications

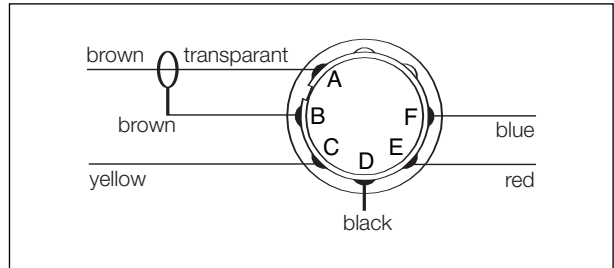
- Internal anti-noise sheath for accurate measurement.
- Gold plated spring O-connectors parts, for good electrical contact under the most severe conditions.
- Coaxial plug and socket with watertight sealing that meets the requirements of IP 65.
- Cables for industrial appl. and for laboratory use are available.



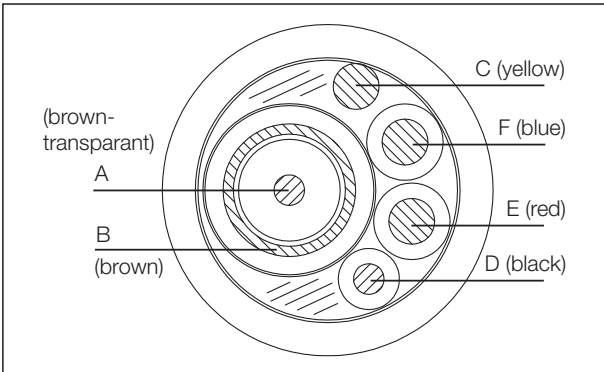
Dimensions FU20



Connector lay out



Connector wiring



Cable lay out

Model and Suffix codes

Model	Suffix Code	Description
WU10		Universal sensor cable
Connector type	-V	Variopin
Cable type	-S	Single Coax
Cable length	-03	3 meters
	-05	5 meters
	-10	10 meters
	-15	15 meters
	-20	20 meters

Accessoires



OXYGOLD Membrane Kit

3 OXYGOLD membranes, spare o-ring, pipette. Electrolyte must be ordered separately.



Membrane Kit FDA

FDA membrane material and rounded design to prevent accumulation of gas bubbles



OXYFERM Membrane Kit

3 membrane bodies, Oxlyte, pipette, spare o-ring, polishing strip



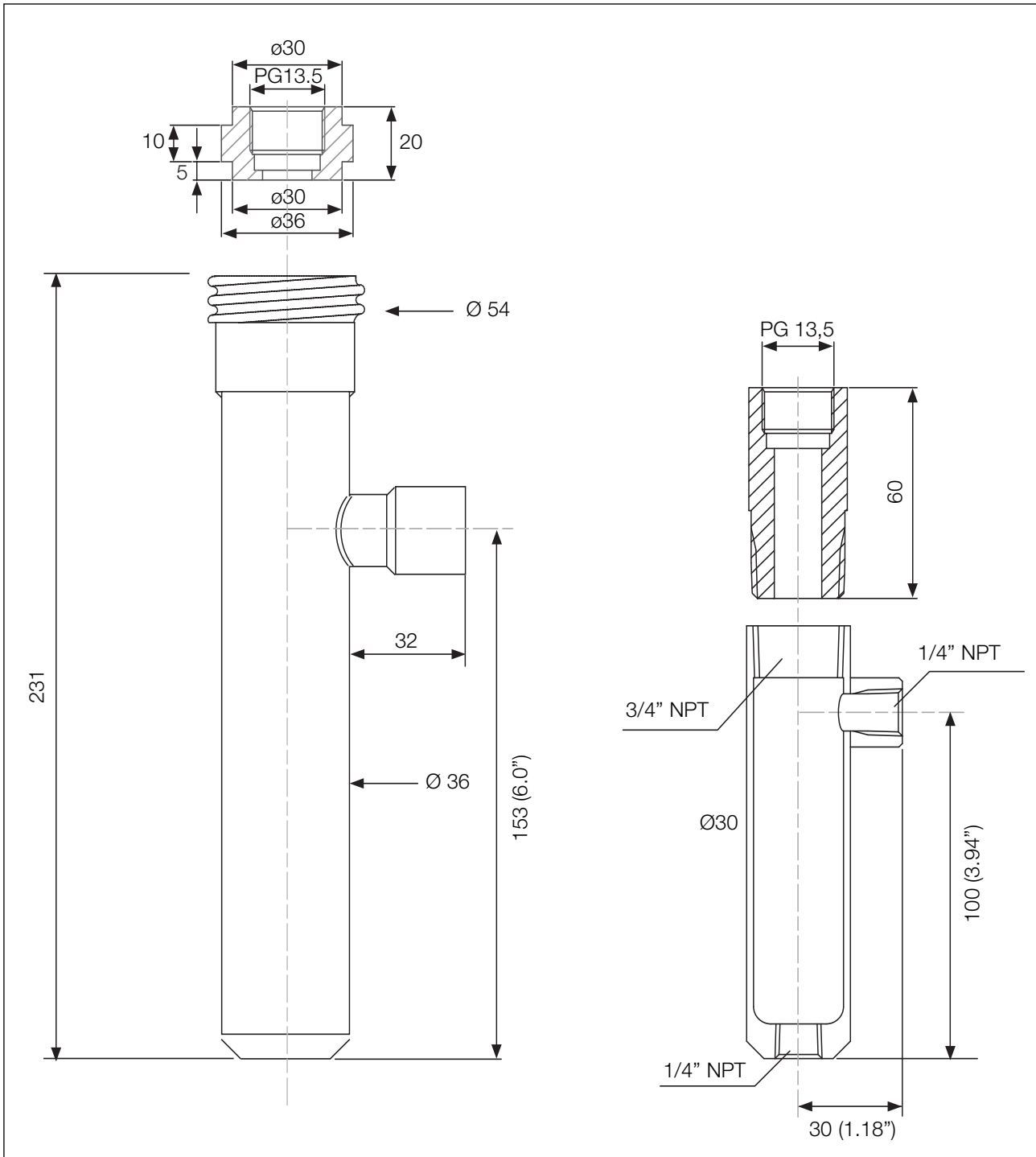
Polarization Modules

These prepare replacement sensors not connected to an amplifier for immediate use



Membrane Kit CIP

As above, but with a special membrane for intensive CIP cleaning



Flow fitting FF40
 with K1523JA: Adapter to fit sensors
 with a PG13,5 process connection in
 FF40/FS40 and FD40 fittings.
 Material: Polypropylene

Flow fitting option /FF K1598AC
 (incl. 3.1 B certificate)
 with Adapter K1598AB to fit sensors with
 PG13,5 process connection

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