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
**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 Ex IA IIC 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**

- **O2**: 10 ppb to saturation
- **Temperature**: 0...130ºC
- **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.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/237100</td>
<td>OXYFERM 120</td>
</tr>
<tr>
<td>10/237110</td>
<td>OXYFERM 225</td>
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<tr>
<td>10/237400</td>
<td>OXYFERM VP 120</td>
</tr>
<tr>
<td>10/237401</td>
<td>OXYFERM VP 225</td>
</tr>
</tbody>
</table>
Oxygold

Oxygold G and Oxygold B sensors are trace level dissolved oxygen probes. Both have a fast response time with t90 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
- O2: 2 ppb to saturation
- Temperature: 0...130°C
- Pressure: Maximum 12 bar G
- Minimum flow: 0.1 m/sec

Additional features Oxygold G
- Developed for use in power plants or chemical, pharmaceutical and semiconductor industries
- Easy to maintain
- Little flow sensitivity
- Fast response time t90 < 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
- O2: 8 ppb to saturation
- Temperature: 0...100°C
- Pressure: Maximum 12 bar G
- Minimum flow: 0.1 m/sec

Additional 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 t98 < 60 sec
- Supplied with material and test certificate
- Easy maintenance using the same polarisation voltages for calibration and measurement

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
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

Part Number | Description
-------------|------------------
10/237126    | Membrane Kit CIP
10/237140    | Membrane Kit FDA
10/237118    | Oxylyte Electrolyte for OXYFERM, 50 ml
10/237139    | Oxylyte “G” Electrolyte for OXYGOLD, 50 ml
10/237135    | Oxygold Membrane Kit
10/237138    | Oxylyte “B” Electrolyte for OXYGOLD, 50 ml
10/237136    | Oxylyte USD 50 ml

Consumables
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 into 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
- G1/4" 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).

<table>
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<tr>
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<tr>
<td>10/237202</td>
<td>Weld-In Socket 15°, for armatures with o-ring at 25 mm</td>
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<tr>
<td>10/237230</td>
<td>Blind Plug for Weld-In socket</td>
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<tr>
<td>10/237338</td>
<td>Service Kit for Flexifit Bio &amp; Retractofit Bio</td>
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<tr>
<td>10/237339</td>
<td>Service Kit for Retractofit &amp; Retractomaster</td>
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<td>Kalrez Kit for Retractofit, Retractomatic &amp; Retractomaster</td>
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<td>10/237252</td>
<td>Pressure Adapter</td>
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<td>10/237255</td>
<td>Insertion tube short for Retractofit/-matic</td>
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<td>10/237278</td>
<td>Insertion tube closed for Retractofit/-matic</td>
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<td>Service Kit for Retractomatic</td>
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<td>10/237440</td>
<td>Retractofit Bio</td>
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<td>Weld-In Socket 15°, for armatures with o-ring at 25 mm</td>
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<td>10/237230</td>
<td>Blind Plug for Weld-In socket</td>
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<tr>
<td>10/237331-OP</td>
<td>Flexifit Bio</td>
</tr>
<tr>
<td>10/237338</td>
<td>Service Kit for Flexifit Bio &amp; Retractofit Bio</td>
</tr>
</tbody>
</table>

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

Model and Suffix codes

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Description</th>
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<td>Connector type</td>
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<td>Variopin</td>
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<tr>
<td></td>
<td>-20</td>
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</table>
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, Oxylyte, pipette, spare o-ring, polishing strip

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

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