

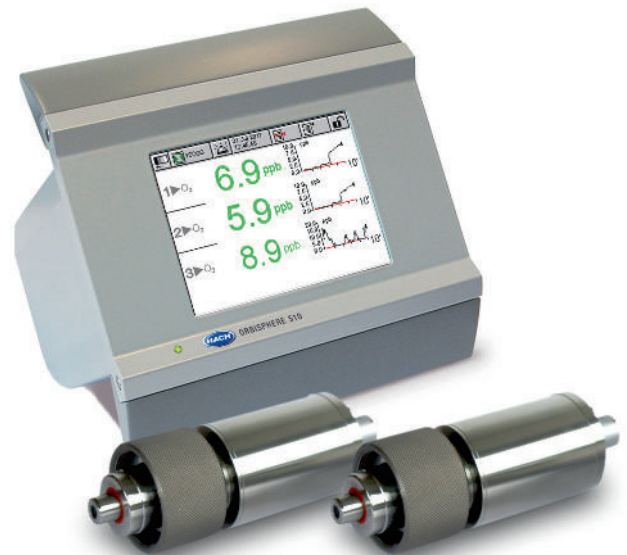
# Orbisphere M1100 Luminescent Dissolved Oxygen Sensor

## Applications

- Beverage



410 Monochannel System (O<sub>2</sub>)



510 Multichannel System (O<sub>2</sub>)

## Monitors oxygen in the beverage production process

The Orbisphere M1100 optical sensor, together with the Orbisphere 410 one channel and the Orbisphere 510 multichannel controller, offers a new way of monitoring oxygen in the beverage production process.

### Minimal Drift and Annual Calibration

The M1100 sensor provides immediate oxygen readings with a measurement frequency of two seconds. The instrument carries consistent readings with no drift for 12 months without calibration (when utilising standard weekly CIP processes), surpassing other optical sensors that display significant drift after only a few months in similar conditions.

### Minimal Maintenance Optical Technology

The M1100 pioneered the use of luminescent technology in brewing applications and as a result, the sensor doesn't require the replacement of membranes or any electrolytes. Additionally, the sensor's accuracy is unaffected by process changes or pressure shocks, further reducing maintenance. Annual maintenance is limited to just a few minutes for a zero-point calibration. Chemicals are not required for this process, making the task easier and safer without reducing measurement precision.

### Low Level Oxygen Measurement with Accurate ppb

The M1100-L sensor has a lower detection level of 0.6 ppb. This highly accurate instrument's readings are essential to control low oxygen levels in beverage production. As an example, it is critical to control low level oxygen in the post fermentation applications of the brewery to ensure high quality of the final product.

### High Level Oxygen Measurement with Accurate ppm

The M1100-H sensor has a range of 0-40 ppm, and is ideal for use in wort applications, for example. Even in this harsh wort environment, the instrument maintains very good accuracy and minimal drift. Only a yearly maintenance and calibration will be required in most cases.



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## Technical Data\*

### M1100 (Low Level Sensor)

<b>Range</b>	0 - 2000 ppb DO (dissolved oxygen)
<b>Temperature Range</b>	Accurate from -5 - 50 °C (23 - 122 °F)  Resistant to temperature from -5 - 100 °C (23 - 212 °F)
<b>Repeatability</b>	± 0.4 ppb or 1 % whichever is greater
<b>Reproducibility</b>	± 0.8 ppb or 2 % whichever is greater
<b>Accuracy</b>	± 0.8 ppb or 2 % whichever is greater
<b>Lower Limit of Detection (LOD)</b>	0.6 ppb
<b>Response Time</b>	(90%)< 10 s (gas phase)
<b>Display Resolution</b>	0.1 ppb
<b>Calibration</b>	Single point zero calibration with standard 99.999% nitrogen (quality 50) or equivalent oxygen free gas
<b>Sample Pressure</b>	1 - 20 bar absolute

### M1100 (High Level Sensor)

<b>Range</b>	0 - 40 ppm DO (dissolved oxygen)
<b>Temperature Range</b>	Accurate from -5 - 50 °C (23 - 122 °F)  Resistant to temperature from -5 - 100 °C (23 - 212 °F)
<b>Repeatability</b>	± 0.015 ppm or 2 % whichever is greater
<b>Reproducibility</b>	± 0.02 ppm or 3 % whichever is greater
<b>Accuracy</b>	± 0.02 ppm or 3 % whichever is greater
<b>Lower Limit of Detection (LOD)</b>	0.015 ppm
<b>Response Time</b>	(90%)< 10 s (gas phase)
<b>Display Resolution</b>	0.1 ppb
<b>Calibration</b>	Two points at cap replacement (zero and air), one during use (air)
<b>Sample Pressure</b>	1 - 20 bar absolute

### Orbisphere Controller

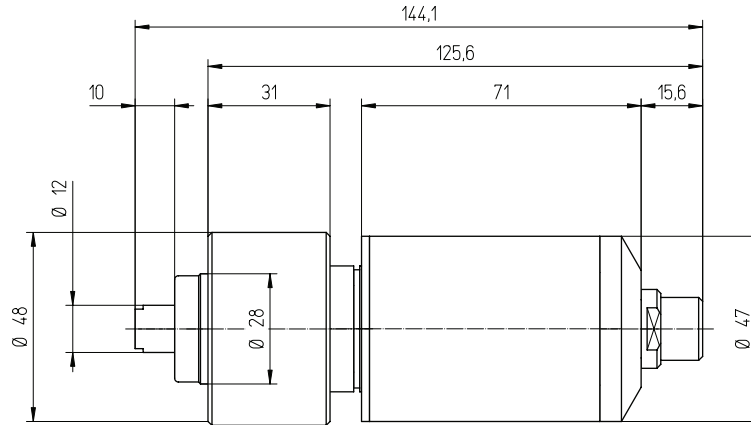
<b>Enclosure Construction</b>	Wall (pipe) mount: stainless steel  Panel mount: aluminum
<b>Enclosure Rating</b>	Wall (pipe) mount: IP65, NEMA 4X  Panel mount: IP65
<b>Compliance Certifications</b>	EMC: EN61326-1:2006  CE: EN61010-1:2010  ETL, conforming to UL 61010-1 and CSA 22.2 No. 61010-1
<b>Display</b>	Colour TFT touch-screen display
<b>Analog Outputs</b>	3 smart 0/4-20 mA (500 ohms), programmable as linear or tri-linear, configurable to send diagnostics information
<b>Relays</b>	3 measurement alarm relays (2A to 30 VAC or 0.5 A to 50 VDC); configurable to send diagnostics information  1 system alarm relay (2 A to 30 VAC or 0.5 A to 50 VDC)
<b>Communication</b>	RS485  Profibus DP (Optional)  Ethernet  USB-client to download data from a computer  USB-host to download data with a USB memory stick
<b>Data Storage</b>	Rolling buffer or store once mode for up to 1000 measurements and 1000 operator actions  Holds calibration records for last 50 calibrations
<b>User Interface</b>	Touch-screen panel displays: concentration, trend graph, diagnostics, alarm status, historical data
<b>Dimensions (H x W x D)</b>	230.5 mm x 250 mm x 160 mm
<b>Power Supply</b>	Universal 100 - 240 VAC @ 50/60 Hz, 25 VA  10 - 36 VDC, 25 W

\*Subject to change without notice.

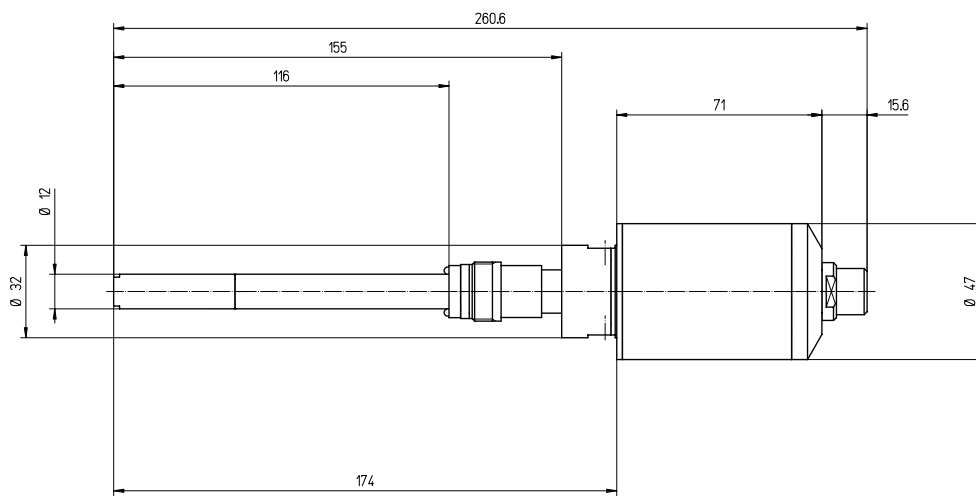
## Dimensions

In millimeters.

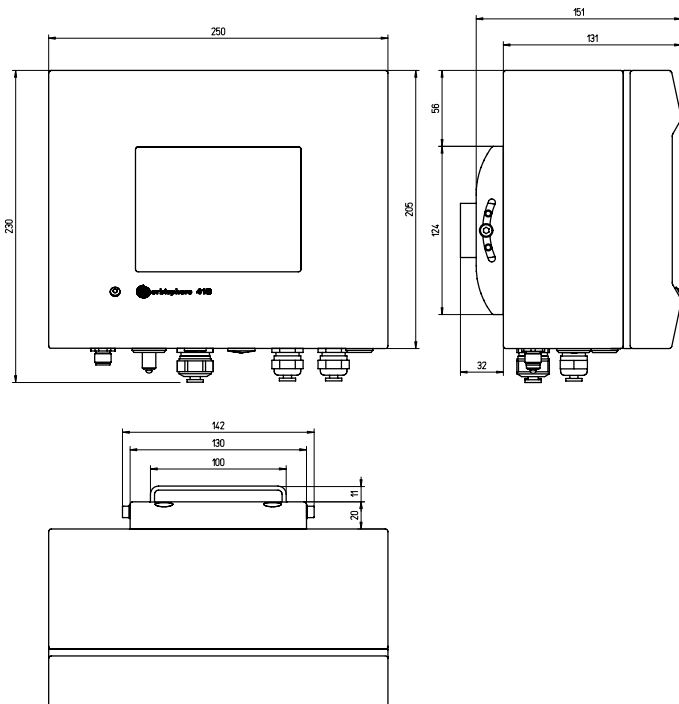
28 mm Sensor



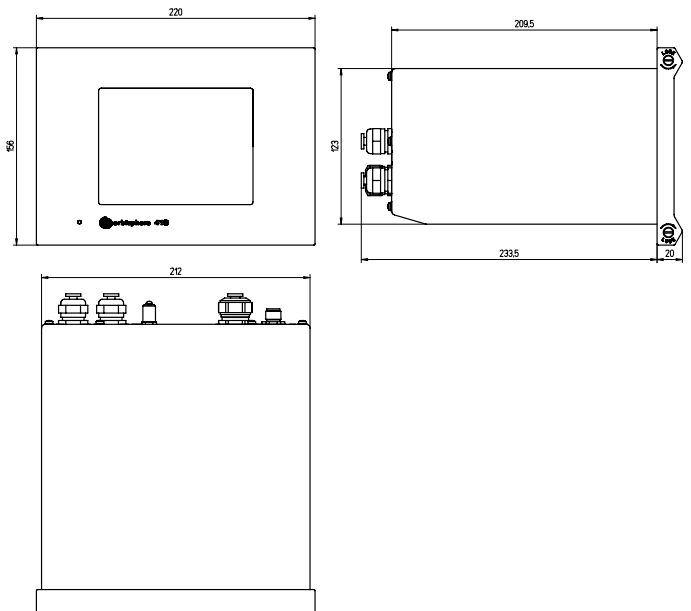
12 mm Sensor



Controller (Wall / Pipe Mount)



Controller (Panel Mount)



## Order Information\*

### Pre-Configured Systems

<b>DGKM110H-W1123</b>	Kit containing M1100-S00H sensor, 410M/W1C10000 controller, 3 m cable (32510.03)
<b>DGKM110H-W11215</b>	Kit containing M1100-S00H sensor, 410M/W1C10000 controller, 15 m cable (32510.15)
<b>DGKM1100-W1123</b>	Kit containing M1100-S00 sensor, 410M/W1C1000 controller, 3 m cable (32510.03)
<b>DGKM1100-W1121</b>	Kit containing M1100-S00 sensor, 410M/W1C1000 controller, 10 m cable (32510.10)
<b>DGK510MM-W1015</b>	Kit containing 2x M1100-S10 sensors, 1x 510MM0/W1C0000 dual-channel controller, 2x 5 m cable (32510.05)
<b>DGK510MM-W1025</b>	Kit containing 2x M1100-S00 sensors, 1x 510MM0/W1C0000 dual-channel controller, 2x 5 m cable (32510.05)
<b>DGK510MM-W2025</b>	Kit containing 2x M1100-S00 sensors, 1x 510MM0/W2C0000 dual-channel controller, 2x 5 m cable (32510.05)

### Controllers and Sensors

<b>410M/W1C00000</b>	Hach Orbisphere 410 controller (wall mount)
<b>410M/P1C00000</b>	Hach Orbisphere 410 controller (panel mount)
<b>510MM0/W1C0000</b>	Hach Orbisphere 510 dual-channel controller (wall mount)
<b>510MM0/P1C0000</b>	Hach Orbisphere 510 dual-channel controller (panel mount)
<b>510MMM/W1C0000</b>	Hach Orbisphere 510 multichannel controller (wall mount)
<b>M1100-S00</b>	Luminescent dissolved oxygen sensor for in-line applications, 0-2 ppm, with 28 mm Orbisphere fitting
<b>M1100-S10</b>	Luminescent dissolved oxygen sensor for in-line applications, 0-2 ppm, with 12 mm fitting
<b>M1100-S00H</b>	Luminescent dissolved oxygen sensor for in-line applications, 0-40 ppm, with 28 mm Orbisphere fitting
<b>M1100-S10H</b>	Luminescent dissolved oxygen sensor for in-line applications, 0-40 ppm, with 12 mm fitting

### Accessories

<b>32003</b>	ProAcc sensor insertion device; for use with Tuchenhagen adapter
<b>33095</b>	28 mm Stationary housing, for mounting on Varinline® access unit
<b>33096</b>	PG 13.5 stationary housing or 12 mm sensors; for mounting on Varinline® access units
<b>M1100-L</b>	Replacement luminescent spot for low range sensors (0-2 ppm)
<b>M1100-H</b>	Replacement luminescent spot for high range sensors (0-40 ppm)
<b>32510.05</b>	Sensor cable to connect M/K-type sensors, 5 m (16.4 ft.)
<b>32001.011</b>	Flow chamber in stainless steel (316) with ¼" fittings. Supplied with EPDM O-rings.
<b>32001.010</b>	Flow chamber in stainless steel (316) with 6 mm fittings. Supplied with EPDM O-rings.

These are common kits. There are additional options available.

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