Orbisphere M1100 Luminescent Dissolved Oxygen Sensor

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 (bypass).

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 (bypass) 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)

Range	0 - 2000 ppb DO (dissolved oxygen)
Temperature Range	Accurate from -5 - 50 °C (23 - 122 °F) Resistant to temperature from -5 - 100 °C (23 - 212 °F)
Repeatability	± 0.4 ppb or 1 % whichever is greater
Reproducibility	± 0.8 ppb or 2 % whichever is greater
Accuracy	± 0.8 ppb or 2 % whichever is greater
Lower Limit of Detection (LOD)	0.6 ppb
Response Time	(90%)< 10 s (gas phase) (90%)< 30 s (beer process)
Display Resolution	0.1 ppb
Calibration	Single point zero calibration with standard 99.999% nitrogen (quality 50) or equivalent oxygen free gas
Sample Pressure	1 - 20 bar absolute

M1100 (High Level Sensor)

Range	0 - 40 ppm DO (dissolved oxygen)
Temperature Range	Accurate from -5 - 50 °C (23 - 122 °F) Resistant to temperature from -5 - 100 °C (23 - 212 °F)
Repeatability	± 0.015 ppm or 2 % whichever is greater
Reproducibility	± 0.02 ppm or 3 % whichever is greater
Accuracy	± 0.02 ppm or 3 % whichever is greater
Lower Limit of Detection (LOD)	0.015 ppm
Response Time	(90%)< 10 s (gas phase) (90%)< 30 s (beer process)
Display Resolution	0.1 ppb
Calibration	Two points at cap replacement (zero and air), one during use (air)
Sample Pressure	1 - 20 bar absolute

Orbisphere Controller

Enclosure Construction	Wall (pipe) mount: stainless steel Panel mount: aluminum
Enclosure Rating	Wall (pipe) mount: IP65, NEMA 4X Panel mount: IP65
Compliance Certifications	EMC: EN61326-1:2006 CE: EN61010-1:2010 ETL, conforming to UL 61010-1 and CSA 22.2 No. 61010-1
Display	Color TFT touchscreen display
Analog Outputs	3 smart 0/4-20 mA (500 ohms), programmable as linear or tri-liniear, configurable to send diagnostics information
Relays	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)
Communication	RS485
Data Storage	Rolling buffer or store once mode for up to 1000 measurements and 1000 operator actions Holds calibration records for last 50 calibrations
User Interface	Touch-screen panel displays: concentration, trend graph, diagnostics, alarm status, historical data
Dimensions (H x W x D)	236.5 mm x 250 mm x 160 mm
Power Supply	Universal 100 - 240 VAC @ 50/60 Hz, 25 VA 10 - 36 VDC, 25 W

Subject to change without notice.

Order Information

Pre-Configured Systems

DGKM110H-W1123	Kit containing M1100-S00H sensor, 410M/W1C10000 controller, 3 m cable (32510.03)
DGKM110H-W1215	Kit containing M1100-S00H sensor, 410M/W1C10000 controller, 15 m cable (32510.15)
DGKM1100-W1123	Kit containing M1100-S00 sensor, 410M/W1C1000 controller, 3 m cable (32510.03)
DGKM1100-W1121	Kit containing M1100-S00 sensor, 410M/W1C1000 controller, 10 m cable (32510.10)
DGK510MM-W1015	Kit containing 2x M1100-S10 sensors, 1x 510MM0/W1C0000 dual-channel controller, 2x 5 m cable (32510.05)
DGK510MM-W1025	Kit containing 2x M1100-S00 sensors, 1x 510MM0/W1C0000 dual-channel controller, 2x 5 m cable (32510.05)
DGK510MM-W2025	Kit containing 2x M1100-S00 sensors, 1x 510MM0/W2C0000 dual-channel controller, 2x 5 m cable (32510.05)

Controllers and Sensors

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

Accessories

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