OZONE-IN-WATER SENSOR BMT 965 AQ & BMT 965 AQ/HF

High Concentration Ozone-in-Water Sensor

Illustration shows the optional Remote Display BMT 965 RD

FEATURES

- Dual beam UV photometer
- Long-life mercury lamp
- Warranty 3 years, 5 years on the UV lamp
- High accuracy, error less than 0.5%
- Ranges from 10 to 150 g/m^3 (ppm_w)
- HF resistant version available
- Continuous measurement up to 0.3 l/min
- Relay contact for control of external zeroing valve
- Error handling includes: summary error, lamp low, cuvette dirty, overrange
- Early warnings: lamp low, cuvette dirty
- Key functions programmable via optional Remote Display, or a Windows PC
- High and low limit alarms
- 4-20 mA and 0-10 V isolated outputs
- 8 GB non-volatile log memory (binary and Excel CSV)
- USB On-The-Go, Firmware upgrades in the field
- Option: RS-232 interface (bidirectional, isolated)
- Option: Modbus/TCP
- Option: Remote Display for readout and control
- Backward compatible to BMT 964 AQ(/HF)

APPLICATIONS

- Monitoring of ozone in ultra-pure water, or water with constant turbidity (or hydrofluoric acid solution up to 20% HF)
- Semiconductor ozone processes

The OZONE-IN-WATER SENSOR BMT 965 AQ is a UV photometer for direct measurement of the ozone content of ultra-pure water, or water with constant turbidity. A special version BMT 965 AQ/HF for up to 20% hydrofluoric acid is available.

Materials in contact with the ozonated water are: PTFE, FFPM, PFA and quartz or sapphire.

The BMT 965 AQ is a SENSOR because it does not have a display. It is designed to directly be connected to a workstation via a 4 - 20 mA, or 0 - 10 V signal line.

An optional Remote Display BMT 965 RD is available. To operate with the Remote Display, the BMT 965 AQ has to be ordered with the option: interface for Remote Display.

Superior stability of the photometer is achieved by use of a true dual beam optical system with an extremely long-life mercury lamp. MTBF of the instrument, including the lamp, is in excess of 65,000 hours. Excluding the lamp, it is 120,000 hours.

An eight gigabyte non-volatile log memory is included, providing virtually unlimited storage capacity for concentration and error logs. If connected to a PC, the instrument acts as an external USB drive, from which concentration and error logs can be downloaded. Logs can also be copied and firmware can be upgraded without an external computer just by connecting a USB flash drive.

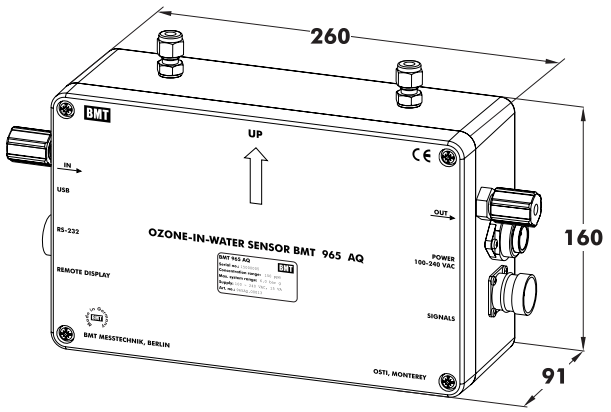
Complete control of all operating parameters is provided with the Windows software BMT 965 Link.

SPECIFICATIONS

measurement principle	dual-beam UV photometer (254 nm), no moving parts
MTBF	instrument incl. UV lamp 65,000 h, excl. UV lamp 120,000 h
UV lamp	low pressure mercury lamp, long life design, burnt-in for 300 h
concentration ranges	10, 50, 100, 150 g/m³, selectable units g/m³ and ppm_W
	HF version: 10, 20, 50, 100, 150 g/m³
accuracy	after zeroing the max. error is the sum: 0.4% of measurement + 0.1% of scale
repeatability error	0.2 % of measurement
response time	0.1 s (analog output), 0.3 s (remote display)
zero drift	typ. 0.2 % of range per day, after warm-up, non-cumulative

max. inlet pressure	AQ:	AQ/HF:
10 g/m³:	1.0 barg	2.5 barg
20 g/m³:	-	2.5 barg
50 g/m³:	4.0 barg	2.5 barg
100 g/m³:	4.0 barg	4.0 barg
150 g/m³:	6.0 barg	4.0 barg

ambient temperature	0 - 50 °C (non-condensing)
materials in contact with ozone	quartz, PTFE, PFA, FFPM (HF vers.: sapphire, PTFE,PFA,FFPM)
fluid ports	1/4“ Flaretek
recommended flow rate	0.1 l/min
max. flow rate	0.3 l/min
pressure drop	approx. 45 mbar at 0.3 l/min
signal outputs	concentration 4 - 20 mA (isolated, active) concentration 0 - 10 V (isolated)
concentration alarms	High Alarm, Low Alarm, latching, not latching
control input	set to zero (24 V, 8 mA, isolated)
control outputs	relay contacts, 28 V, 0.5 A, isolated: Lamp Low Warning Cuvette Dirty Warning High Alarm Low Alarm Purge Control
error handling	Error Relay: 30 V, 0.5 A, summarizing instrument failures.
	Lamp Low Error, Lamp Off Error, Cuvette Dirty Error, Overrange, Overpressure
early warnings	Lamp Low Warning, Cuvette Dirty Warning
serial interface (option)	RS-232, bidirectional, isolated, 2400 - 38400 Baud
other interfaces (option)	Modbus/TCP
Memory	8 GB for error and concentration logs
USB	On-The-Go, Device/Host mode, Full speed
automatic zeroing	possible via control input
software	BMT 965 Link, instrument configuration and readout of Concentration, Event and Error Logs on a Windows PC
power	wide range input: 100 - 240 VAC, 15 VA optional: 12 - 36 VDC, 15 W
dimensions (W x H x D)	260 x 160 x 91 mm
weight	3 kg



dimensional outline

The OZONE - IN - WATER SENSOR BMT 965 AQ comes in a splash proof aluminum enclosure (IP 65, NEMA 4X) 260 x 160 x 91 mm (W x H x D) with sea water resistant coating (RAL 5009, azure), and weighs about 3 kg. Four mounting brackets are provided for installing the SENSOR where it is needed, e.g. underneath a work bench. All electric connectors are water proof.

When the fluid to be measured is at lower temperature than the ambient, flushing of the instrument with clean dry air (or nitrogen) is necessary to prevent condensation of water. Flow rate of the dry gas should be about 0.2 l/min.

If a throttle (flow resistance) is installed to control the flow rate through the OZONE-IN-WATER SENSOR, this throttle must be positioned behind the sensor (never in front of it!), because gas could bubble out after a pressure drop disturbing measurement.

The flow rate must not exceed the maximum of 0.3 l/min.

As long as the cuvette of the SENSOR remains clean, zeroing of the instrument is not necessary for weeks, or even for months. But for safety, zero reading should be checked on a regular basis.

Additional BMT Products (for details, refer to the appropriate data sheets):

- BMT 965 AQ-LC for low concentration measurement in ultra-pure DI (de-ionized) water
- BMT 965 (standard version) for ozone measurement in the gas phase
- BMT 932 Ozone Monitor for TLV monitoring in ambient air (1, 3 & 6 channels)
- BMT 802N (4 g/h) & BMT 803N (8 g/h) Ozone Generators

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