Technical Datasheet

QSense Omni

Specifications

Measurement range and capacity

Measurement channels	1 - 4
Working temperature	4 to 70 °C
Sensors (frequency range)	5 MHz (1-72)
Number of measured harmonics	7, allows for full viscoelastic modeling

Sample and fluidics

Volume above sensor	~ 20 µl
Minimum sample volume	~ 90 µl
Flow rates	Typical flow rate 20 µl/min. Flow speed range 1-200 µl/min

Performance characteristics

Maximum time resolution	300 data points per second (each data point represents an f and D value)
LOD (3 x noise)	~ 90 µl0.24 See the graph below
Minimum noise	Frequency: 0.0045 Hz Mass: 0.08 ng/cm2 Dissipation: 1·10-9
Long-term stability*	Frequency: < 0.25 Hz/h Dissipation: < 0.04.10-6 /h Temperature: < 0.003˚C

All specifications are subject to change without prior notice.

* The temperature stability depends on variations in how the ambient affects the warming or cooling of the chamber. The specified temperature stability may not be reached if the room temperature changes more than ± 1° C, due to draft or heat source for example.

Values taken after 1 h measurement with a QSX 303 SiO sensor in DI water at 25° C, Flow 20 µl/min and a data rate of 1 datapoint/s. Data interval used for analysis: 2 min. Even better stability can be achieved by waiting longer than 1 hour. Weight excluding external power supply.

Optimal real-life performance

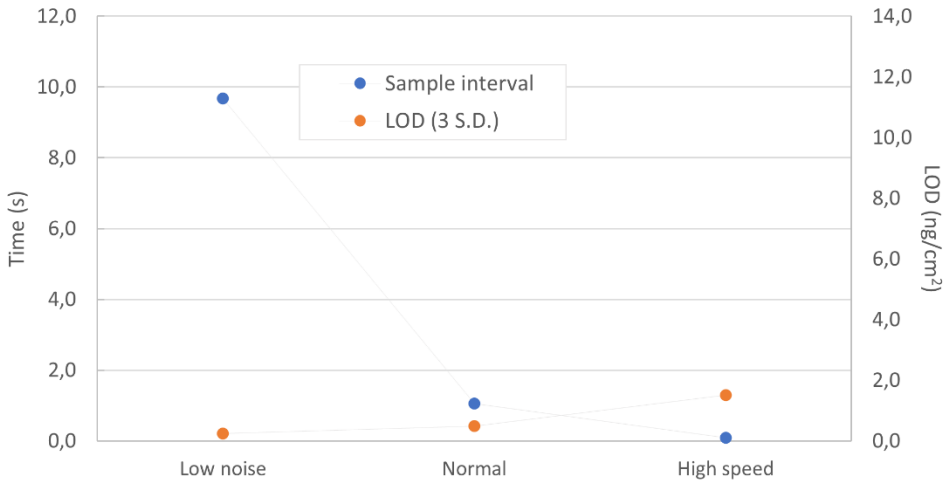
Applying a higher sample rate inevitably leads to higher noise and compromised limit of detection (LOD).

With significantly improved noise level, QSense Omni offers improved Limit of Detection. The figure and table below

describe the Limit of Detection of QSense Omni at three different sampling intervals, and demonstrates the low limit

of detection achieved also at high sample rates.

The below figure and table describe speed and limit of detection (LOD) per acquisition mode.



Speed and limit of detection (LOD) per acquisition mode. Theoretical limit of Detection (LOD) at different sample intervals. Limit of detection is set to 3 times frequency noise level.

Data capture settings	Time to capture 7 harmonics (s)	f/n-noise (Hz)	LOD (ng/cm²)	D-noise ($\cdot 10^{-6}$)
Low noise	9.68	0.005	0.239	0.001
Normal	1.06	0.009	0.496	0.003
High speed	0.09	0.029	1.513	0.011

Performance characteristics. Measurements were performed with QSX 303 SiO sensors at 20°C temperature, and in deionized water at flow of 15µL/min, using one measurement channel. Each measurement mode was measured for approximately 5 minutes, and standard deviation of data points was collected within a set time range of 1 min to statistically determine noise data.