BioLogic

ACOUSTIC WAVE SENSING SYSTEMS
FOR MASS & DISSIPATION MEASUREMENTS

BluQCM.

The BluQCM Product Line

The **BluQCM** systems allow a **real-time** and **sensitive** monitoring of surface-bound interactions, such as adsorption and desorption processes, characterization of molecular interactions, protein conformational changes and electrochemically-driven mass changes.

The **BluQCM** technology is based on the acoustic wave sensing principle which enables an accurate detection of mass and structural changes on the sensor surface. The system can be coupled to a **Bio-Logic potentiostat/galvanostat system** to perform **electrochemical QCM** measurements.

The platforms are **versatile**, allowing the use of different types of acoustic wave sensors, including up to **150 MHz** High Fundamental Frequency (HFF) sensors and 5 MHz to 10 MHz sensors. The platforms also include high accuracy temperature and flow control for applications sensitive to temperature and requiring the renewal of liquid medium. The **BluQCM** products exist in single and multichannel versions: **BluQSD** for single channel and **BluQMD** for multichannel.

Both instruments allow dissipation determination and measurements at multiple overtones for a comprehensive description of the rheological properties of the layer.

BluQCM QSD: small and mighty

The **BluQCM QSD** is a single channel, compact and modular instrument. Its low footprint and lightweight makes it particularly suitable for crowded labs. It is available as standalone, with temperature control or/and flow control.

	Catalog n°
QSD-300	**AW-QSD-300**
QSD-TCU	**AW-QSD-TCU**
QSD-FCU	**AW-QSD-FCU**

BluQCM QMD: the «workhorse»

The **BluQCM QMD** is designed for people requiring measurements on more than one channel. Compared to the **BluQCM QSD**, the **QMD** is provided with temperature control by default and can be populated by up to four channels. The fluidic part is more evolved as it can distribute up to four different reagents or buffers. Furthermore the fluidic channel also includes a degasser for a smooth bubble-free operation. The number of channels is totally configurable for the analyzer and the fluid controller.

QMD-300

	Catalog n°
2 channels	**AW-A20/2**
3 channels	**AW-A20/3**
4 channels	**AW-A20/4**

FLOW CONTROL UNIT: QMD-FCU

	Catalog n°
1 channel	**AW-F20/1**
2 channels	**AW-F20/2**
3 channels	**AW-F20/3**
4 channels	**AW-F20/4**

Sensors and cells

Cells.

Cells \ Sensors		14 mm wrapped	1'' wrapped	HFF
For A20+ platform	In-batch eQCM	**AW-GBQ01Q** (Glove box) **AW-BEQ01Q**	**AW-BEQ02Q**	**AW-BEQ01HQ**
	Flow eQCM	**AW-FEQ01Q**	N/A	**AW-FEQ01HQ**
	Flow QCM	**AW-FQ01Q**	N/A	**AW-FQ01HQ**
	In-batch QCM	**AW-BQ01Q**	**AW-BQ02Q**	**AW-BQ01HQ**

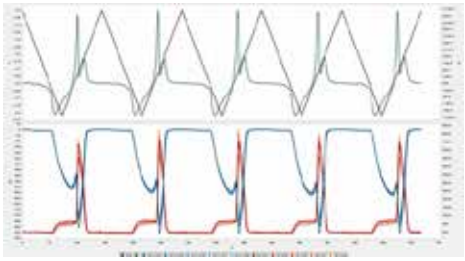
Reference and counter electrodes have to be purchased separately (except for eQCM flow cells where the Pt plate counter electrode is integrated in the lid of the cell).
Compatible counter and reference electrodes are shown in the following table:

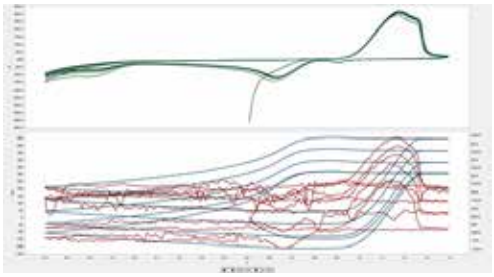
	Reference electrode		Counter electrode
	Aqueous	Non-aqueous	
In-batch eQCM cells	RE-1B **A-012167**	RE-7 **A-012171**	Pt wire 23 cm coiled **A-002234**
Flow eQCM cells	RE-1S **A-012168**	RE-7S **A-012172**	Pt disk integrated in the cell lid

Quick locking and reliable cells

The unique design of the cell offers:

- **Fast** and easy resonator positioning for greater efficiency and higher throughput.
- Optimized **contact** between the resonator and connector for more stable and reliable measurements.





Monitoring, flow management and data analysis

The software enables the user to manage the entire experiment. One interface manages both the acoustic and electrochemical interface, and can provide flow management as well if needed.

Moreover, an analysis package is also available to process the data on-line.

Sensors.

14 mm wrapped 5 MHz	Catalog n°
Polished finish, Cr/Au electrode, 10 pcs	**AW-R5AU10P**
Polished finish, Ti/Au electrode, 10 pcs	**AW-R5AU11P**
Polished finish, Cr/Au/SiO_2 electrode, 10 pcs	**AW-R5SIO2P**
Rough finish, Ti/Au electrode, 10 pcs	**AW-R5AU11**

14 mm wrapped 10 MHz	Catalog n°
Polished finish, Cr/Au electrode, 10 pcs	**AW-R10AU10P**
Polished finish, Ti/Au electrode, 10 pcs	**AW-R10AU11P**
Polished finish, C electrode, 10 pcs	**AW-R10C10P**
Polished finish, Pt electrode, 10 pcs	**AW-R10PT10P**

1 INCH 5 MHz	Catalog n°
Polished finish, Cr/Au electrode, 5 pcs	**AW-R5AU20P**
Polished finish, Ti/Au electrode, 5 pcs	**AW-R5AU21P**
Polished finish, Pt electrode, 5 pcs	**AW-R5PT20P**

1 INCH 9 MHz	Catalog n°
Polished finish, Ti/Au electrode, 5 pcs	**AW-R9AU21P**
Rough finish, Ti/Au electrode, 5 pcs	**AW-R9AU21**

Note that for electrochemistry experiments Ti/Au electrodes are recommended.

HFF-QCM	Catalog n°
50 MHz, 1 mm Cr/Au electrode, 5 pcs	**AW-R50AU01H**
100 MHz, 1 mm Cr/Au electrode, 5 pcs	**AW-R100AU01H**
150 MHz, 0.5 mm Cr/Au electrode, 5 pcs	**AW-R150AU01H**

LOVE WAVE	Catalog n°
120 MHz, 3.5 mm x 4.5 mm Cr/Au electrode, 5 pcs	**AW-R120AU01L**

Note that minimal quantities are specified for most of the sensors, please contact your local reseller for further information.

Specifications

BluQCM QSD.

QSD-300

General function	
Operation modes	Tracking[1] and high resolution[2] at single and multiple overtones
Sensors technologies	QCM, HFF-QCM, LOVE-SAW
Cells available	See p.3
Liquid volume above sensor/µL	3 – 45 (depending on sensor and cell type)
Temperature control	Optional (QSD-TCU)
Measurement in air	Yes
Simultaneous overtones measurements	Up to 7 (up to 13th)
Dimensions (HxWxD)/mm	90 x 220 x 260
Weight/ kg	3
Sensor	
Frequency range/MHz	4 – 160
Best frequency resolution/Hz	0.1
Best frequency accuracy/Hz	± 0.5
Max. acquisition rate[3]/points/s	250
Best mass sensitivity in liquid[4]/pg/cm²	50
Best dissipation sensitivity	10^{-7}

1 Tracking mode provides the full impedance spectrum of the sensor around resonance frequency
2 Patented fast and high-resolution single frequency point measurement
3 High-resolution mode at single frequency
4 For HFF-QCM

QSD-TCU

General function	
Temperature control range/°C	15 - 45
Temperature stability/°C	±0.05
Dimensions (H x W x D)/mm	60 x 220 x 260
Weight/kg	4.5

QSD-FCU

General function	
Max. flow rate range/µL/min	0.0125 - 21250
Other flow rates possible with different syringe volume configuration	
Flow rate range for a 250 µL syringe/µL/min For smooth flow syringes	0.625 - 1062.5
Dimensions (H x W x D)/mm	195 x 70 x 250
Weight/kg	0.75

BluQCM QMD.

QMD-300

General function	
Operation modes	High Resolution Mode Tracking Mode
Sensors technologies	QCM, HFF-QCM, LOVE-SAW
Number of cell modules	Up to 4 cell modules
Sensor cell	Different types available
Volume above sensor/µL	3 - 25 (depending on sensor and cell type)
Temperature control Temperature range/°C	Integrated in the system (Peltier) 20-40 ± 0.05
Measurement in air	Yes
Simultaneous overtones measurements	Up to 7 (up to 13th)
Remote control and monitoring interface via ethernet	
Dimensions (HxWxD)/mm	320 x 750 x 450
Weight/kg	25
Sensor	
Frequency range/MHz	5 - 160
Frequency resolution/mHz	1
Frequency stability/ppm	± 0.05, over 0 to 50 °C
Frequency accuracy/Hz	± 0.1
Max. sweeping time	12 frequency points/second

QMD-FCU

General function	
Up to 4 flow-through channels	
Each channel includes:	1 positive displacement syringe pump (250 µL) 1 distribution valve (up to four different buffers/reagents) 1 in-line degasser 1 injection valve for sample injection 1 solenoid pump for precise sampling
The 4 flow channels can be operated individually or simultaneously	
The standard version of QMD-FCU works simultaneously with QMD-300	
Built-in thermostatic system for temperature control of liquids	
Remote control and monitoring interface with AWSuite	
Dimensions (HxWxD)/mm	450 x 750 x 450
Weight/kg	35, with complete 4 module configuration

BioLogic

Headquarters
Bio-Logic SAS
4, rue de Vaucanson
38170 Seyssinet-Pariset - France
Phone: +33 476 98 68 31
Fax: +33 476 98 69 09

www.biologic.net