BIOFOTONICA

The Wizard Technology

QCMagic EpsilonPi

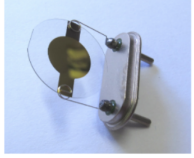
Quartz Crystal Microbalance

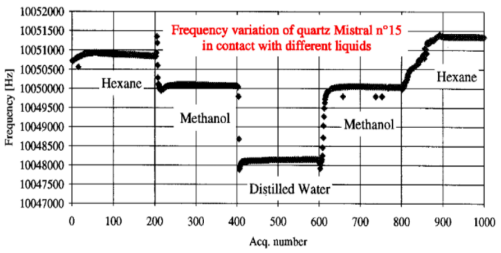
manufactured by

ElbaTech srl

Soluzioni elettroniche e Innovazione

A Quartz Crystal Microbalance measures a mass variation per unit area by measuring the change in frequency of a quartz crystal resonator





It works both in gaseous and liquid environments by a Plexiglass or Teflon measuring chamber, which allows both static and flow-through experiments
Fundamental frequency: 6 MHz ±0.05Hz

TECHNICAL SPECIFICATIONS

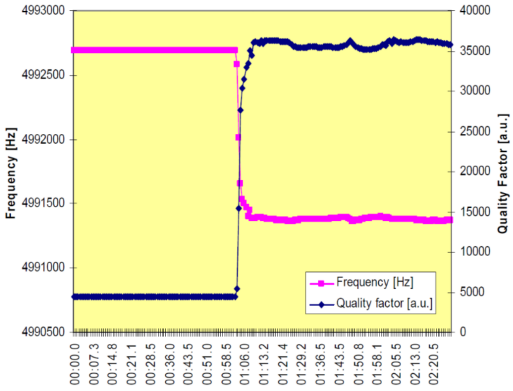
Instrument	
Parameter	***Value***
Measured quantities	Oscillation Frequency Quality Factor (= 1 / Dissipation Factor)
Oscillator's base frequency	5 MHz
Gate interval	0.1s to 10s
Frequency Resolution	±0.05 Hz
Frequency stability	100 ppm/°C
Counter logic	32 bit
Interface	Ethernet
Instrument outputs	Δf (proportional to electrode mass) ΔV(proportional to quality factor)
Local display	4 lines x 40 chars displays f and Q
Auxiliary connectors	2 back-panel BNC
Auxiliary outputs	DC voltage proportional to Δf DC voltage proportional to ΔQ
Crystal port	standard 125 mm (HC6/U)
Data Acquisition Software	Included, multi platform (run on Windows, Linux, MacOs)
Power supply	External ±15VDC,+5VDC (Power supply included)
Operating temperature	0° to 55°C
Enclosure	Aluminium box, IP40
Physical dimensions	230 x 85 x 190 mm (L x H x W)

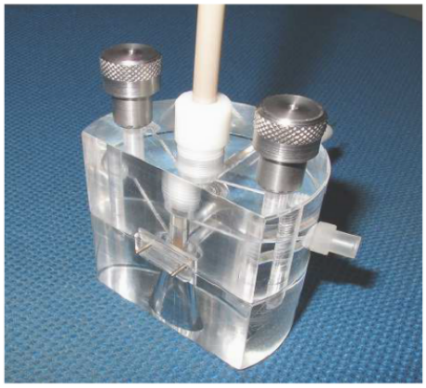
Quartz Crystal	
Parameter	***Value***
Type	AT-cut
Fundamental frequency	5 MHz
Blank diameter	13.66 mm (0.538 inch)
Electrode diameter	6.78 mm (0.267 inch)
Electrode surface material	100Å Cr + 1000Å Au
Surface finish	Etched (~ 3 µm roughness) Lapped (< 1 µm roughness)

Measuring Chamber	
Parameter	***Value***
Type	Static & Flow-through
Material	Plexiglass, Teflon or Plastic
Flow connectors	Female Luer
O-rings	Silicon
Chamber volume	12 microliters (µl)
Inlet tubing volume	16 microliters (µl)
Mounting	By two manual knobs
Shape	Cylinder
Dimensions	Diameter 40mm Height 45mm

QCMagic-Q: mass and quality factor in real time

Measurement of the quartz crystals Quality Factor was proven to give key information about many experimental quantities and parameters that frequency measurements alone cannot provide. By a feedback-based circuitry, our device can track the Quality Factor together with Frequency, while sustaining the oscillation even in demanding damping conditions, at an acquisition rate fast enough to follow the dynamics of many biological, chemical and electrochemical events. Our USB-interfaced base unit can be either equipped with standard oscillators or with the novel f-Q measuring endpoint, thus offering the maximum flexibility with minimal economical effort.





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