

QCM-3 Mass Measuring Instrument for (Quartz) Crystal Microbalances

QCM-3 is a highly advanced mass measuring instrument for adherently deposited films on the surface of a (quartz) crystal resonator. It is dedicated to research activities and specific applications in vacuum, gases or liquids.



Specifications

Frequency range	0.1 to 42 MHz
Frequency resolution	1 Hz ; 0.1 Hz or 0.01 Hz
Series resistance range	5 Ω to 3000 Ω
Series resistance resolution	0.1 Ω
Temperature range	-200°C to 500°C (Pt - 1000 sensor)
Temperature resolution	0.01°C
Crystal current range(RMS)	0 to 100 mA
Crystal current resolution	0.01 mA
Analog channels resolution	16 bit
Communication	RS - 232C serial port standard USB (using USB to serial adapter)
Power requirements	12 V DC (wall type) 5 W during warm up (10 minutes) 3.2 W after stabilization

QCM-3 works together with the "[Dual Oscillator \(DO-1\)](#)" and the "[QCM-soft](#)".

It measures :

- two independent frequencies
- two independent series resistance
- one temperature
- one driving level (crystal current RMS)

In addition the software **QCM-soft** calculates :

- deposited mass and its rate
- film thickness and its rate

All measured and calculated data are logged and displayed both numerically and graphically by the **QCM-soft**.

The measurement ground is separated from the computer ground using optocouplers. Thus, it is possible to connect an external voltage or current source to the crystal electrode.