



**We are committed to the supply of all types of substrate wafers to the microelectronics industry**

## Monitor Crystals

### Quartz Monitor Crystals 100% manufactured in house from raw material to final product

We control every distinct production step in the manufacture of our Quartz Monitor Crystals, from the supply of the high Q raw Quartz to the super precise Wire Saws used to cut the primary wafers. Add to this a strictly controlled lapping and contouring process and you have the foundation for a truly superior Quartz Monitor Crystal. By using our six stage proprietary washing process and angstrom level accuracy electrode plating all in clean room conditions we manufacture a truly advanced quality Quartz Monitor Crystal.



### Specifications:

#### Chrome/Gold Plated Quartz Monitor Crystal Specification:

Marking Frequency	6.000MHz	6.000MHz	5.000MHz	5.000MHz
Nominal Frequency	5.983MHz	5.983MHz	4.960MHz	4.995MHz
Adjustment Tolerance	±7KHz@25°C			±5KHz@25°C
Crystal Cutting	AT	IT	AT	AT
Oscillation Mode	Foundation Mode			
Resonance Resistance	<15 Ω			
Shunt capacitance	<7 pF			
Operating Temperature	0°C ~ +70°C			
Storage Temperature	-40°C ~ +105°C			
Diameter	13.97mm ± 0.03mm			12.45mm ± 0.03mm
Electrode of Plane Side	Chrome (Cr) / Gold (Au)			
Electrode of Convex Side	Chrome (Cr) / Gold (Au)			

#### HANGZHOU FREQCONTROL ELECTRONIC TECHNOLOGY LTD.

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### Aluminum/Silver, Chrome /Silver Plated Quartz Monitor Crystal Specification

	Aluminum/Silver	Chrome/Silver	
Marking Frequency	6.000MHz	6.000MHz	5.000MHz
Nominal Frequency	5.983MHz	5.983MHz	4.960MHz
Adjustment Tolerance	±7KHz@25°C	±7KHz@25°C	
Crystal Cutting	AT	AT	
Oscillation Mode	Foundation Mode	Foundation Mode	
Resonance Resistance	<15 Ω	<15 Ω	
Shunt capacitance	<7 pF	<7 pF	
Operating Temperature	0°C ~ +70°C	0°C ~ +70°C	
Storage Temperature	-40°C ~ +105°C	-40°C ~ +105°C	
Diameter	13.97mm±0.03mm	13.97mm±0.03mm	
Electrode of Plane Side	Aluminum (Al) / Silver (Ag)	Chrome (Cr) / Silver (Ag)	
Electrode of Convex Side	Aluminum (Al) / Silver (Ag)	Chrome (Cr) / Silver (Ag)	

### Blank Quartz Monitor Crystal Specification:

Marking Frequency	6.000MHz		5.000MHz			
Nominal Frequency	6.060MHz	5.010MHz	5.040MHz	5.050MHz	5.050MHz	5.050MHz
Adjustment Tolerance	±10KHz@25°C					
Material	Top grade Z bar					
Crystal Cutting	AT	IT/SC	AT	AT	AT	AT
Oscillation Mode	Foundation Mode					
Resonance Resistance	<15 Ω	<15 Ω	<20 Ω	<20 Ω	<20 Ω	<20 Ω
Diopter	Customized					Customized
Angle	Per Customer or design for clients					
Operate Temperature	0°C ~ +70°C					
Storage Temperature	-40°C ~ +105°C					
Diameter (±0.03mm)	13.97mm			12.45mm	13.97mm	

Also Materials: Langasite , Sapphire , LiNbO<sub>3</sub>, LiTaO<sub>3</sub> , Quartz etc available

Cut angles : AT .IT. SC. .... and any designed angle acceptable .

Electrodes : quartz crystals are available in alloy, gold and silver

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CHINA QUARTZ TECHNOLOGY

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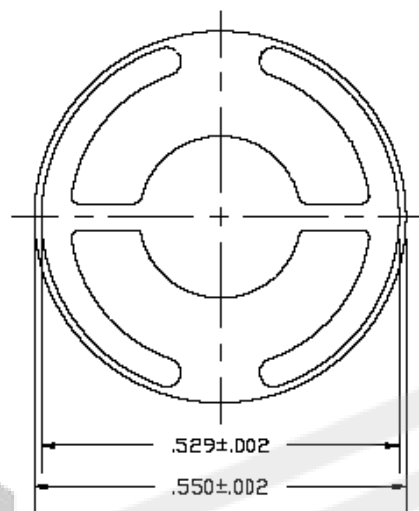
## How to Choose the right Crystal

Our continuing research into quartz crystal characteristics results in ongoing improvements to offer the highest reliability in your process.

We recommend gold crystals for most applications. They have low contact resistance, high chemical stability. The gold electrodes crystals are best suited for low stress material coating monitoring, Such as gold, silver, copper film thickness control.

Silver crystals will provide superior performance in processes with high heat loads, such as sputtering. They may also improve the deposition of oxides.

Alloy crystals are recommended for optical coating with dielectric materials and for semiconductor processes with high-stress materials, Such as SiO, SiO<sub>2</sub>, MgF<sub>2</sub>, TiO<sub>2</sub> and so on.



## Advantages

Plano-convex configuration suppresses unwanted modes for greater accuracy.

AT-cut crystal orientation enhances stability over a wide range of operating temperatures.

Improving of adhesion underlayer from electrode-to-crystal assures the crystals' reliability and long-life.

Gold or silver electrode coating for maximum electrode life.

100% testing of each crystal's frequency and activity (Series resistance).

Compatibility with all CQT sensor heads and most other manufactures instruments.

Clean room processing to avoid particulate contamination.

## Three convenient packages:

Black flat-pack carousel dispenser with vacuum plastic bags-holds 10 crystals which are extracted by vacuum pencil or dispensed directly into the holder.

White flat-pack carousel dispenser with vacuum plastic bags-holds 10 crystals which are extracted by vacuum pencil or dispensed directly into the holder.

Compact box with vacuum plastic bags and crystals in dust-free paper bags-holds 5 crystals which are extracted by vacuum pencil or plastic tweezers.

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