

**FEATURES**

- Ceramic substrate and ruggedized mounts for high reliability
- Industry-standard 8 pin DIL package for ease of design
- Full screening to MIL-O-55310C, Class B available
- Radiation tolerant version available for space applications

**DESCRIPTION**

EQXO-2000BM series oscillators are designed and manufactured by Euroquartz Ltd for aerospace, defence and similar applications where high-reliability clock oscillators are required. The oscillator is produced in the industry-standard 8 pin DIL oscillator package. EQXO-2000BM series oscillators incorporate a custom designed, all-ceramic oscillator substrate and a ruggedized three-point crystal mounting system inside a hermetically-sealed metal package. The specification ensures that EQXO-2000BM series oscillators provide an accurate and reliable source of clock signals regardless of the severity of the environment in which it operates.

**RADIATION TOLERANCE**

For equipment to be used in space or the upper atmosphere the EQXO-2000BM series oscillators may be produced in a radiation tolerant version. Designated EQXO-2000BMH, this variant of the oscillator will withstand ionizing radiation to resist electrical failures for a total radiation dose of 40krad(SI).

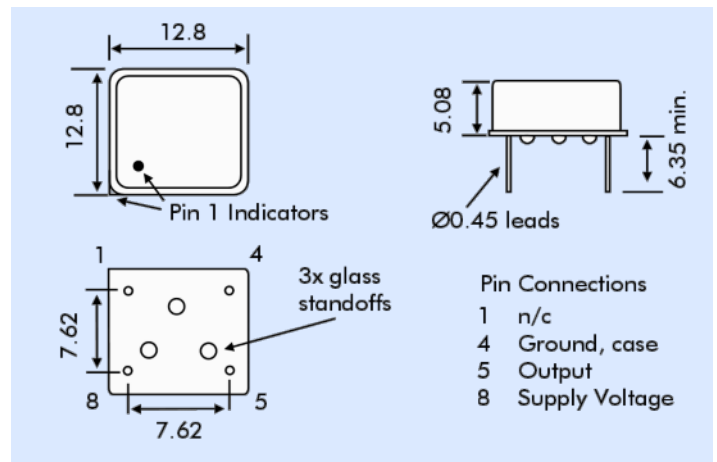
**SPECIFICATION**

Model No:	EQXO-2000BM
Frequency Range:	30kHz to 70.0MHz
Calibration Tolerance at 25°C:	±10ppm to ±25ppm
Frequency Stability*	
EQXO-2100BM:	±100ppm over -55° to +125°C
EQXO-2050BM:	±50ppm over -55° to +125°C
Supply Voltage:	+5.0 Volts DC±10%
Output:	CMOS, 50pF/10 TTL loads
Ageing:	±3pm max in first year
Symmetry:	45%/55%
Operating Temperature Range:	-55° to +125°C
Storage Temperature Range:	-55° to +125°C
Construction:	Ceramic substrate, resistance welded can.

\* Frequency stability is inclusive of frequency adjustment at 25°C and any variations due to load change, ageing, supply voltage change (±10%) and variations attributable to shock and vibration, (see *Qualification Approval and Environmental Specification.*)

**CURRENT CONSUMPTION /RISE & FALL TIMES**

Frequency Range	Supply Current (mA max.)	Rise/Fall Time (ns max.)
30kHz ~ 1.0MHz	10	10
1.0MHz ~ 4.0MHz	15	10
4.0MHz ~ 20MHz	20	10
20MHz ~ 35MHz	35	10
35MHz ~ 50MHz	40	5
50MHz ~ 65MHz	70	5

**OUTLINE & DIMENSIONS**

**MODEL NUMBERS**

Model Number	Calibration Tolerance at 25°C	Frequency Stability -55° to +125°C	Radiation Tolerant
EQXO-2050BM	±10ppm	±50ppm	No
EQXO-2100BM	±25ppm	±100ppm	No
EQXO-2050BMH	±10ppm	±50ppm	Yes
EQXO-2100BMH	±25ppm	±100ppm	Yes

**MIL SCREENING**

EQXO-2000BM series oscillators may be ordered screened i.a.w. the schedules detailed in 'Qualification Approval and Environmental Specification' on page 2 of this specification.

**PART NUMBER GENERATION**

Frequency / Model Number / Plating\* / Screening (if required)

Example: **10.000MHz EQXO-2100BMH Screened**

\*Note: Lead and base plating is gold flashed over nickel as standard. If nickel plating only is required enter / - nickel / in this position.

**QUALIFICATION APPROVAL & ENVIRONMENTAL SPECIFICATION**

<b>Vibration:</b>	10Hz to 60Hz, 0.75mm displacement, 60Hz to 2000Hz, 98.1m/s <sup>2</sup> acceleration 30 minutes in each of three mutually-perpendicular planes.
<b>Shock:</b>	981 m/s <sup>2</sup> for 6ms, three shocks in each direction along three mutually-perpendicular planes.
<b>Thermal Shock:</b>	MIL-STD-202 Method 107
<b>Storage Temperature:</b>	-55°C for 24 hrs., then +150°C, 24 hrs.
<b>Moisture Resistance:</b>	85% Relative Humidity at 85°C for 24hrs.
<b>Seal:</b>	Fine leak not to exceed 1x10 <sup>-8</sup> mB litres of helium leakage, then Gross Leak Test.
<b>Terminal Strength:</b>	MIL-STD-202 Method 211
<b>Solerability:</b>	MIL-STD-202 Method 208

**SCREENING**

Screening in accordance with MIL-O-55310C Class B.  
All devices are 100% tested to the following conditions:

<b>Stabilization Bake:</b>	Vacuum storage at 150°C for 24 hrs.
<b>Temperature Cycling:</b>	-55°C to +125°C, 10 cycles
<b>Constant Acceleration:</b>	49000m/s <sup>2</sup> for 1 minute inY1 plane.
<b>Seal:</b>	Fine leak not to exceed 1x10 <sup>-8</sup> mB litres of helium leakage, then Gross Leak Test.
<b>Dynamic Burn-in:</b>	125°C for 168hrs.
<b>Electrical Test:</b>	Frequency, output waveform, output Voltage/power, input current/power.

**RADIATION TOLERANT VERSIONS**

Radiation tolerant versions of EQXO-2000BM series oscillators have been designed and are manufactured to ensure no functional failures will occur in any electrical test for a total radiation dose of 40krad(Si). EQXO-2000BM series oscillators so manufactured have the letter 'H' appended to the 'BM' in the part number suffix:

**20.000MHz EQXO2100BMH**

A paper is available describing the general problems encountered in the design of electrical systems needing to withstand radiation encountered in the upper atmosphere and space.

*N.B. Contains 0.024g Pb*