OSCILLOQUARTZ

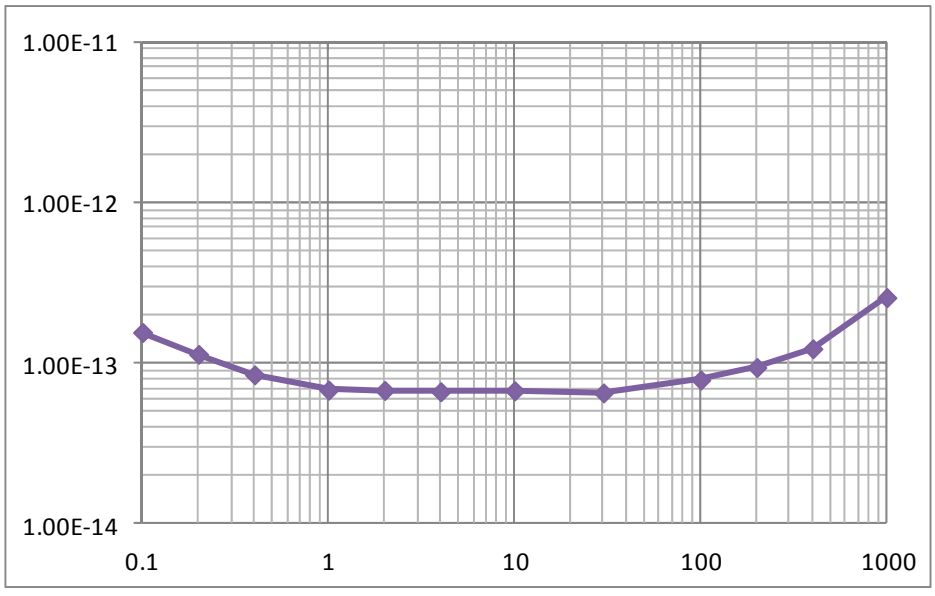
Oven Controlled Crystal Oscillator 8607

10 times more stable than any other OCXO

MANUFACTURING

TIME & FREQUENCY

Best ever short term stability features ADEV better than $8x10^{-14}$ @3s to 30s.



A COMPANY OF THE SWATCH GROUP

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The 8607-B series is the second generation of OCXO's developed by Oscilloquartz using the technique of housing a state-of-the-art BVA SC-cut crystal resonator and its associated oscillator components in double oven technology. This has resulted in a significant improvement in overall frequency stability corresponding to more than 10 times better performances than any other OCXO's available on the market. The BVA itself consists of an electrodeless, SC-cut, 3rd overtone quartz crystal resonator, decoupled from its mounting structure by four rigid bridges.

This unique design has resulted in substantial features by eliminating:

- The perturbing surface contacts between electrodes and resonator
- The contamination problems linked to ion migration in the resonator
- The mechanical constraints in the mounting connections

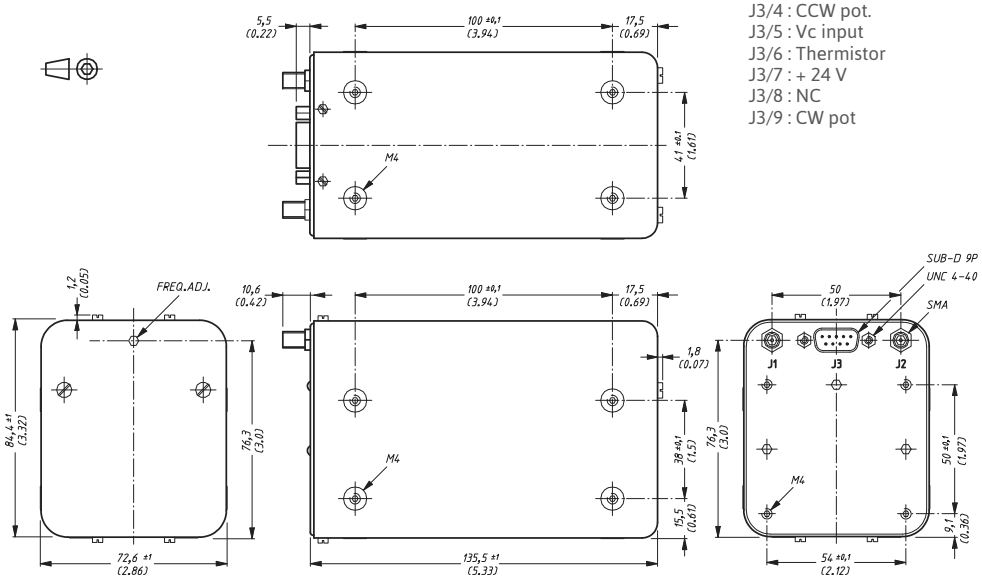
Based on the production and delivery of more than 10'000 units in BVA technology, the 8607-B features enhanced performances and is available in different versions to suit a wide variety of applications.

Furthermore, the 8607-B BVA quartz crystal oscillator represents an excellent alternative to compact atomic standards.

Outline and electrical connections (all dimensions in mm & inches)

SMA connectors
J1 : = 7 dBm / 50 Ω
J2 : = 7 dBm / 50 Ω

SUB D connector
J3/1 : Thermistor
J3/2 : 0V (GND)
J3/3 : Ground
J3/4 : CCW pot.
J3/5 : Vc input
J3/6 : Thermistor
J3/7 : + 24 V
J3/8 : NC
J3/9 : CW pot



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Features

- Best short term stability
- Excellent frequency stability over temperature range.
- Ultra low phase noise and outstanding short term stability
- Excellent static "g " sensitivity

Benefits

- Ideal as a stand-alone reference clock with reduced calibration intervals
- Excellent immunity to temperature gradients
- Ultra-clean signal generation for frequency multiplication
- Reduced effects on phase noise characteristics
- Compatible with CCITT level 2 recommendations and T1X1 Stratum 2 requirements

Applications

- Frequency distribution systems for satellite ground stations
- Radio navigation and positioning equipment
- GPS and Loran-C receivers
- Atomic fountain , Cesium and Hydrogen atomic frequency standards
- Measuring and calibration equipment
- Frequency synthesizers
- Satellite communications
- Very Long Base Interferometer (VLBI)
- Synchronization of digital networks and switching equipment

Aging Option

Standard / Option	**Standard**	**Option G**	**Option H**	**Option J**
Aging per day	$2x10^{-11}$ pp	$1x10^{-11}$ pp	$5x10^{-12}$ pp	$3x10^{-12}$ pp
Aging per year	$4x10^{-9}$ pp	$3x10^{-9}$ pp	$2x10^{-9}$ pp	$1x10^{-9}$ pp
After continuous operation of	30 days	60 days	90 days	90 days

Frequency option over temperature range

$1x10^{-10}$ peak to peak from –30°C to +60° C	Option B1
$1x10^{-10}$ peak to peak from –15°C to +60° C	Option C
$0.5x10^{-10}$ peak to peak from –15°C to +60° C	Option C5

Short term stability option	**Tau = 1.0 S**	**Tau = 3.0s — 30s**	**Option**
Sigma Tau < 0.8 x 10^{-13} (option valid only @ 5 MHz)	1,0 x 10^{-13}	8 x 10^{-14}	Option 08

Short term stability option	**Tau = 1.0 S — 30s**	**Option**
Sigma Tau < 2.5 x 10^{-13}	2.5 x 10^{-13}	Option 25
Sigma Tau < 2.0 x 10^{-13}	2.0 x 10^{-13}	Option 20
Sigma Tau < 1.5 x 10^{-13}	1.5 x 10^{-13}	Option 15
Sigma Tau < 1.0 x 10^{-13}	1.0 x 10^{-13}	Option 10

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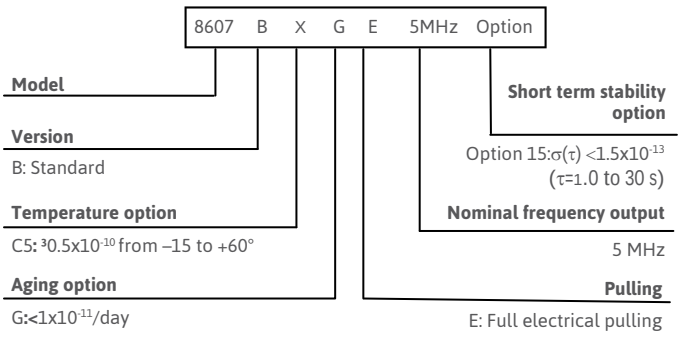
Version	B	Option
	Standard	
Crystal resonator	SC Cut BVA technology	
Standard frequencies	5 MHz	
Optional frequency	10 MHz	
Operating temperature range (X)	-30°C to +60°C	See table
Frequency stability (Δ f/f)		
Long term stability (aging after 30 days of continuous operation)	$2x10^{-11}$/day $5x10^{-10}$/month $4x10^{-9}$/year	G: $1x10^{-11}$/day H: $5x10^{-12}$/day J: $3x10^{-12}$/day See table
Over temperature range (γ)	≤ $2x10^{-10}$ peak to peak	See table
Versus power supply	$5x10^{-11}$ (Vcc ±10%)	
Versus load changes	$2x10^{-11}$ (50Ω ±10%)	
Short term stability σ (τ)	$5x10^{-13}$ (1-30s)	Lower value : see table
g sensitivity	< $5x10^{-10}$ / g	
Frequency control range	Standard : **E** Full Electrical	Option : **M** Mechanical
Fine adjustment option E	>± $1x10^{-7}$ <± $1.5x10^{-7}$ by external control voltage 0 to +10 Volts	
Coarse adjustment option M	>=± $1x10^{-7}$ by built-in 10 turn pot. with external control voltage at +5 Volts	
Fine adjustment option M	>± $2x10^{-8}$ by external control voltage 0 to +10Volts (with built-in potentiate meter centered for nominal frequency at +5 Volts)	
Output specifications	On both SMA connectors	
Wave form	Sine	
Level / Impedance	7 dBm ± 1/50Ω	
Phase noise at 5 MHz & 10 MHz (Bw=1Hz)	See table page 4	
Harmonics	< -40 dBc	
Spurious	< -70 dBc	
Power supply		
Input voltage range (DC)	+24V DC ± 10%	
Power consumption	< 3W after warm-up at 25°C, < 10W during warm-up	
Environment		
Storage temperature	-30°C to 85°C	
Vibration	MIL STD 167-1	
Shock	30g, 11ms, 3 shocks in each direction of the main axis	
Size (LxWxH)	138 x 73 x 88 mm	
Weight	900 g	
Outline & electrical connections	See drawing page 2	

Phase noise (BW = 1 Hz) Options

Frequencies	5 MHz		10 MHz	
Standard / Option L	Standard	Option L	Standard	Option L
Phase noise 1 Hz	- 125 dBc	- 130 dBc	-118 dBc	- 122 dBc
10 Hz	- 145 dBc	- 145 dBc	-137 dBc	- 137 dBc
100 Hz	- 153 dBc	- 153 dBc	-143 dBc	- 143 dBc
1'000 Hz	- 156 dBc	- 156 dBc	-145 dBc	- 145 dBc
10'000 Hz	- 156 dBc	- 156 dBc	- 145 dBc	- 145 dBc



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