

# Atomic Clock

## KEY FEATURES

Power Consumption <115mA

Aging <3.0E-10/month

Ultra-Low Power Mode for Power

Consumption well below 100mW

10MHz CMOS –compatible Output

RS-232 Interface for Monitoring and Control

## APPLICATIONS

Underwater Sensor Systems

GPS Receivers

Autonomous Sensors Networks

Unmanned Vehicles

Backpack Radios

Anti-LED Jamming Systems

## ELECTRICAL SPECIFICATIONS (All specifications at 25 °C 3.3VDC unless otherwise specified)

<b>RF Output</b>	-001	-002
Frequency	10MHz	10MHz
Format	CMOS	CMOS
Amplitude	0-3.3V	0-3.3V
Load Impedance	1MΩ	1MΩ
Quantity	1	1

### 1PPS Output

Rise Time	<5ns	<5ns
Pulse With	400us	400us
Level	0-3.3V	0-3.3V
Load Impedance	1MΩ	1MΩ
Quantity	1	1

### 1PPS Input

Format	Rising edge	Rising edge
Low Lwvel	<0.5V	<0.5V
High Level	>2.5V	>2.5V
Input Impedance	1MΩ	1MΩ

### Serial Communications

Protocol	RS232	RS232
Format	CMOS 0-3.3V	CMOS 0-3.3V
Tx/Rx Impedance	1MΩ	1MΩ
Baud Rate	57600	57600

### Built-IN Test Equipment (BITE) output

Format	CMOS 0-3.3V	CMOS 0-3.3V
Load Impedance	1MΩ	1MΩ
Logic	0= Normal option 1=Alarm	

### Power Input

Total Poer	<115mW	<125mW
Input Voltage	3.3±0.1 VDX	3.3±0.1 VDX
Current	<35 mA	<38 mA

### PHYSICAL SPEC

Size	40mm x 35mm x 11mm	40mm x 35mm x 11mm
Wight	<35g	<35g
MTBF	>100,000 hours	>50,000 hours

### ENVIRONMENTAL SPECIFICATION

Operatong Temperature	-10°C ~+70°C	-40°C ~+85°C
Frequency Change Over Operatong Temp Range	±5 x 10 <sup>-10</sup>	±1 x 10 <sup>-9</sup>
Frequency Change Over Allowable Input Voltage Range	<±3 x 10 <sup>-10</sup>	<±3 x 10 <sup>-10</sup>
Magnetic Sensitivity(±0.5 Gause)	<±4 x 10 <sup>-10</sup> /Gause	<±4 x 10 <sup>-10</sup> /Gause
Radiated Emissions	Compliant to FCC part 15, Clase B, when mounted in PCB	Compliant to FCC part 15, Clase B, when mounted in PCB

## ENVIRONMENTAL SPECIFICATIONS

Vibration	Maintains lock under MIL-STD-810 method 514.5, Procedure 1.7.7grms	Maintains lock under MIL-STD-810 method 514.5. Procedure 1.7.7grms
Humidity	0 to 95% RH per MIL-STD-810 Method 507.4.	0 to 95% RH per MIL-STD-810 Method 507.4.

## Storage and Transport(non-operating)

Temperature	-55°C~90°C	-55°C~90°
Shock(1 ms half-sine)	500g	500g
Vibration	Maintains lock under MIL-STD-810, Method 514.5, Procedure 1,7.7grms	Maintains lock under MIL-STD-810, Method 514.5, Procedure 1,7.7grms

## PERFORMANCE PARAMETERS

001

002

Stability(Allan Deviation)	ADEV	ADEV
TAU=1sec	$2 \times 10^{-10}$	$3 \times 10^{-10}$
TAU=10sec	$2 \times 10^{-11}$	$1 \times 10^{-10}$
TAU=100sec	$2 \times 10^{-11}$	$3 \times 10^{-11}$
TAU=1000sec	$7 \times 10^{-10}$	$1 \times 10^{-11}$

## RF Output Phase Noise(SSB)

1Hz	<-53dBc/Hz	<-53dBc/Hz
10Hz	<-75dBc/Hz	<-75dBc/Hz
100Hz	<-115dBc/Hz	<-115dBc/Hz
1000Hz	<-128dBc/Hz	<-128dBc/Hz
10000Hz	<-134dBc/Hz	<-134dBc/Hz
100,000Hz	<-140dBc/Hz	<-140dBc/Hz

## Frequency Accuracy

Calibration at shipment	$5 \times 10^{-11}$	$5 \times 10^{-11}$
Retrace(48 hrs off)	$5 \times 10^{-11}$	$5 \times 10^{-11}$
Aging	$<3 \times 10^{-10}$ / month	$<3 \times 10^{-10}$ / month
1PPS Syc	$\pm 50$ ns	$\pm 50$ ns

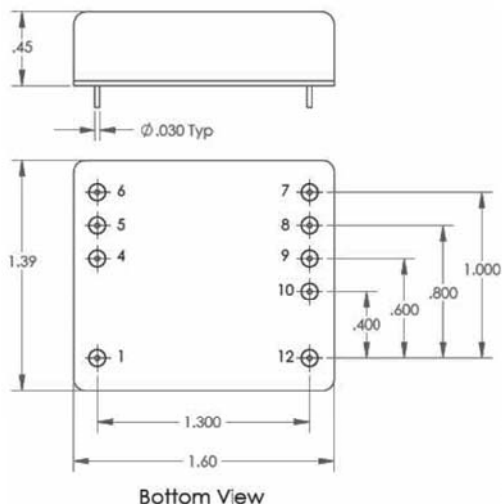
## Digital Tuning

Range	$\pm 2 \times 10^{-8}$	$\pm 2 \times 10^{-8}$
Resolution	$1 \times 10^{-12}$	$1 \times 10^{-12}$

## Analog Tuning

Range	$\pm 2 \times 10^{-8}$	$\pm 2 \times 10^{-8}$
Resolution	$1 \times 10^{-12}$	$1 \times 10^{-12}$
Input	0-2.5 into 100k $\Omega$	0-2.5 into 100k $\Omega$

## MECHANICAL INTERFACE



## PIN NO. FUNCTION

1	Tune
2	N/A
3	N/A
4	BITE
5	Tx
6	Rx
7	Vcc
8	GND
9	1 PPS IN
10	1 PPS OUT
11	N/A
12	10 MHz OUT