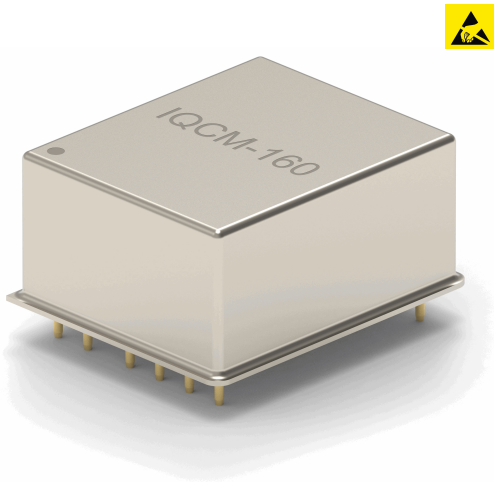
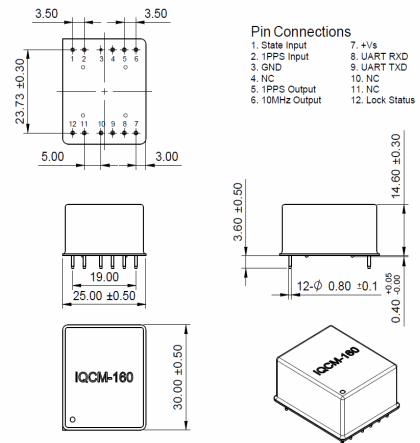


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Outline (mm)



### Description

- A disciplined OCXO incorporating synchronization to a 1PPS input and compatible with GPS, GLONASS, BEIDOU and GALILEO or alternative 1PPS source. Holdover stability up to 1.5µs over 8hours, achieved using an adaptive algorithm.
- Key features:
  - Reference input: 1PPS
  - Temperature Stability: ±0.2ppb
  - Holdover: ±1.5µs/8h @ ΔT=±10°C after power up 7 days.
  - Input and Output: 1PPS input, 1PPS output and 10MHz output.
  - Internal parameters of the algorithm, including maintenance alarms and message are available to the user via serial port.
  - Mechanical Size: 30mmx25mmx15mm

### Frequency Parameters

- Frequency: 10.0MHz
- Frequency Stability: ±0.20ppb
- Frequency Stability: @ Vs=3.3V; load=15pF; TA varies from -40°C to 85°C, temperature slope less than 2°C per minute.
- Accuracy (24 hours average value when locked to 1PPS): ±0.005ppb max
- Short Term Stability (@ Vs=3.3V, TA=25°C, 1s): ±0.01ppb max
- Ageing (Vs=3.3V and TA=25°C): ±0.5ppb max per day, ±30ppb max per year

### Electrical Parameters

- Supply Voltage: 3.3V ±5%
- 1PPS Input (pin 2): 1PPS input signal from GNSS receiver or reference signal.
- Warm-up current: 750mA max
- Steady state current (@ 25°C): 350mA max
- AC ripple (10Hz to 1MHz): 50mV pk-pk max

### Operating Temperature Ranges

- -40 to 85°C

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### Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- CMOS input and output levels:  
Input/Output High: 2.4V min  
Input/Output Low: 0.4V max
- 1PPS Output (pin 5):  
Pulse width: 10ms typ  
Accuracy (synchronizing with 1PPS reference):  $\pm 50$ ns max  
Holdover ( $\Delta T = \pm 10^\circ\text{C}$ , 8 hours holdover after power up for 7 days; temperature slope less than  $2^\circ\text{C}$  per minute)  $\pm 1.5\mu\text{s}$  max
- 10MHz Output (pin 6): CMOS
- State Input (pin 1): the clock module synchronizes its local clock to a reference input such as 1PPS from GPS. It will perform normal synchronization algorithm when the state input pin is driven high. It can also be forced to work in free-run or holdover status when the state input pin is driven low. Note: pin 1 (state-input) must be asserted 'high' or 'low' and should not be left unconnected.
- Lock Status (pin 12):  
Indicates the lock status of the clock module. High level indicates the module is locked to the external 1PPS reference. After power-up and before the module locks to 1PPS input, the status of the module is in 'free-run' and the lock output is low.  
If the 1PPS reference is lost, the module switches to holdover mode and the lock output is low.

### Output Control

- UART: is an LVTTTL-compatible port and needs an external translator to work with other signal types (such as RS-232C or RS-485).
- UART Serial Interface (Pins 8 & 9)  
Baud rate: 9600 for management, 115200 for TOD  
Data bits: 8  
Parity: N  
Stop Bits: 1
- UART Tx: Data word output in sync with 1PPS output.

### Noise Parameters

- Phase Noise (typ @  $25^\circ\text{C}$ ):
  - 110dBc/Hz @ 10Hz
  - 143dBc/Hz @ 100Hz
  - 155dBc/Hz @ 1kHz
  - 155dBc/Hz @ 10kHz
  - 155dBc/Hz @ 100kHz
  - 160dBc/Hz @ 1MHz
- Phase Noise (max @  $25^\circ\text{C}$ ):
  - 100dBc/Hz @ 10Hz
  - 138dBc/Hz @ 100Hz
  - 150dBc/Hz @ 1kHz
  - 150dBc/Hz @ 10kHz
  - 150dBc/Hz @ 100kHz
  - 155dBc/Hz @ 1MHz

### Environmental Parameters

- Storage Conditions:  
Temperature:  $-55$  to  $105^\circ\text{C}$   
Humidity: 30 to 80%
- Shock: IEC68-2-27 Test Ea, severity 50A, 50g 11ms half sinewave, 3 times in three mutually perpendicular axis.
- Vibration (IEC 68-2-06 Test Fc): 0.75mm acceleration, 10g, 10Hz to 500Hz, one cycle per 30min, test 2 hours. 3 times in three mutually perpendicular axis.
- ESD Level:  
Human Body Model (HBM): ANSI/ESDA/JEDEC JS-001-2010; HBM class 2, 2kV to 4kV  
Machine Model (MM): ANSI/ESDA/JEDEC JS-001-2010; MM class B, 200V to 400V

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### Ordering Information

- Ordering Example:
  - Frequency\*
  - Model\*
  - Holdover\* (std  $\pm 1.5\mu\text{s}$ )\*
  - Time (std 8hrs)\*
  - Temperature change (std  $\pm 10^\circ\text{C}$ )\*

### Compliance

- RoHS Status (2015/863/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

### Packaging Details

- Pack Style: Bulk      Bulk pack
- Pack Size: 1

### Output Data Word (Format Key: c=Character, d=Numerical Digit, s=Sign)

Field No.	Name	Format	Description	Length
0	\$PDP\$	\$ccc	Message ID, Protocol Header	4
1	Reserve	dd	Reserve	2
2	Reserve	d	Reserve	1
3	CStatus	c	Current Status (F = warm up, L = lock, H = holdover)	1
4	TrackStatus	d	Track Status (Q = fast track, S = slow track)	1
5	cPHDiff	sdddd	Current phase difference, 1 unit = 6.25ns	5
6	CurrentDACValue	dddd.dddd	Current DAC (Voltage control value1)	10
7	DecayFactor1	dddd.dddd	Decay Factor1	10
8	Temperature	dddd.dddd	Current Temperature	10
9	HCNT	ddd	Power on hours count	3
10	DecayFactor2	dddd.dddd	Decay Factor2	10
11	AgingLastN	dddd.dddd	AgingLastN	10
12	MiddleDAC	dddd.dddd	The MiddleDAC Value	10
13	CurrentAging	dddd.dddd	CurrentAging Value	10
14	Reserve	d-dd	Reserve	4
15	Reserve	dddd.dddd	Reserve	10
16	Reserve	dddd	Reserve	5
17	Reserve	dddd	Reserve	5
18	Reserve	dddd	Reserve	5
19	AverageForDAC	dddd	PhaseAverageForDAC	5
20	VendorName	dddd	iqdfq	5
21	PowerSecs	ddddddd	Power On Time(seconds)	7
22	Reserve	d	Reserve	1
23	LockSecs	dd	Lock time(*100 seconds), max.=99	2
24	Reserve	ddd	Reserve	3
25	END		<CR><LF>	2

[Click for FOQs on IQD Advance Clock Modules](#)

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