Masterclock®

Multi-functional Master Clocks

MCR-HSO Module

Key Features

- Available in three precision grade levels
- Typical holdover stability of 1 ppb/day, or better with OCXO
- Optional 10MHz Sine Wave Frequency Reference Output
- Locks to most accurate time source (GPS Receiver, Time Code Reader, NTP Client)
- May be added to **MCR1000**, **MCR5000** or **MCRPCIe**

Additional Option MCR-10Mhz
10MHz Sine Wave Reference Output Option

***MCR-HSO* Module**

Masterclock's MCR-HSO (High Stability Oscillator) is an add-in module option for Master Clock Reference devices which provides precision time and frequency for a wide range of applications. Affordable price and flexible order options make this a popular add-in for meeting critical time keeping during holdover (loss of primary reference such as GPS) as well as for specialized applications requiring a precise frequency reference.
The HSO option maintains excellent holdover stability of 1ppb/day or better using an OCXO. Various grade level options are available for specific applications.
An optional precision frequency 10MHz sine wave reference output is available as a source for laboratory use, or an RF reference such as cellular applications. When locked to GPS, the 10 MHz sine wave frequency will have the same long-term stability as an atomic clock. Each MCR may be ordered with an MCR-HSO module option. The MCR-HSO option is required fro all 10 MHz sine wave references.

Optional Interconnects:
10MHz Ref -
SMA female (MCR1000, MCRPCIe)
BNC female (MCR500)

Specifications		High Stability Oscillator (HSO) Grade Option		
Freq = 10.000000 MHz Ref Waveform = Sine wave		**1**	**3**	**4**
Oscillator Type		VCTXO	OCVCXO	OCVCXO
Level (dBm) @ 50Ohms		7dBm ±2dBm	7dBm ±1dBm	8dBm ±1dBm
Freq Stability - Aging /day		TBD	±1.0 ppb/day (1x10E-9)	±0.1 ppb/day (1x10E-10)
Freq Stability - Aging/year		±1 ppm/year ($1x10E^{-6}$)	±0.3 ppm/year ($3x10E^{-7}$)	±0.1 ppm/year ($1x10E^{-7}$),
Short Term Stability (Allan Variance) 1 sec gate		TBD	≤ 1.0 e^{-10}	≤ 5.0 e^{-11}
Time Drift per Year (max)		±3 sec	±.0.3 sec	±0.15 sec
Temp Stability		±2.5ppm (-30 to 75°C)	±0.010 ppm (-5 to 50°C)	±0.050 ppm (0 to 50°C)
Gain		1	1	1
Number of Outputs – (10 MHz Sine wave Option)		1 (clipped sine wave)	1	1
Harmonic		NA	-30dBc Max	-30dBc Max
Phase Noise (dBc/Hz) @ 10MHz	**1Hz**	NA	NA	-95
	10Hz	NA	-120	-125
	100Hz	NA	-130	-140
	1kHz	NA	-140	-150
	10kHz	NA	-145	-150
	100kHz	NA	-145	-150

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