

SyncSystem 4380A

Master Timing Reference



Key Features

- Timing accuracy: <math><10\text{ ns RMS}</math>
- Frequency accuracy: <math><1\text{E}-13</math> at 1 day
- Phase noise: -110 dBc/Hz (1 Hz offset)
- Holdover: 250 ns at 1 day
- Network Time Protocol (NTPv4)
- Hot-swappable user output modules
- Redundant and hot-swappable power supplies
- SSHv2 Network Management Console
- L1/L2 GPS receiver mitigates effect of ionospheric delay changes and supports advanced GPS processing
- Remote software upgrades through network
- External frequency reference input enables augmented timing performance when higher stability frequency standard is available

The Microsemi® SyncSystem 4380A provides superior time and frequency performance in a highly configurable 1U rack-mountable package, building upon the successful 4370A DVB SyncSource. The combination of a high-performance internal atomic oscillator and L1/L2 GPS receiver ensures accurate synchronization of the system with UTC (USNO) while still providing the excellent phase noise and short-term stability demanded by metrology, aerospace, communications, and defense applications.

Configurable and Scalable

The 4380A is well suited to satisfy your current timing needs and provide the scalability to meet future requirements. Each 4380A has six expansion ports for hot-swappable user output modules that provide a wide array of timing signals.

Enhanced Timing Performance

Although the 4380A already employs an internal rubidium oscillator, the unit also has the ability to use an external frequency reference (for example, 5071A, MHM 2010) when available. This further enhances the performance of the 4380A without requiring additional upgrades.

Positioning Data

Recognizing that timing is often just one component of our customers' overall solution, positioning data from the internal L1/L2 GPS receiver is also provided to users. GPS measurement data can either be logged to internal memory for subsequent downloading and post-processing or output in real-time through the Ethernet port. The 4380A has the ability to produce a REceiver INdependent eXchange (RINEX) file that allows users to post-process the GPS observations and determine the antenna position to typically under one centimeter.

Remote Monitoring and Control

A GB Ethernet interface allows users to remotely monitor and control the unit as well as upgrade the system software and firmware. Support for RS-232 is also available through the use of a USB/RS-232 adapter and the local USB ports.

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Specifications

Standard Input/Output Signals

- GPS input
Connector: TNC(F)
Antenna voltage: 0, 5 VDC, or 12 VDC (selectable)
- 10 MHz input
Connector: BNC(F)
Level: 10 dBm \pm 3 dB
Impedance: 50 Ω
Format: sine wave
- Serial
Connector: DB9(M) (requires USB to RS-232 converter)
Format: RS-232
Baud: 115,200 (others available upon request)
- Network interface
Connector: RJ-45
Interface: 10/100/1000 BASE-T
- 4385A—AC power input module (2 included)
Connector: IEC 60320 C-14 Inlet
Voltage: 100 VAC–240 VAC, 45 Hz–65 Hz
- 4386A—DC power input module (optional, requires DC option in chassis)
Connector: 3-pin (mating connector: AMP #1-350346-0)
Voltage: 22 VDC–60 VDC
- 4394A—PPS/DC IRIG output module (optional)
PPS (default configuration)
Outputs: 2
Connector: BNC(F)
Level: >2.4 V high, <0.8 V low (into 50 Ω)
Pulse width: 100 μ s \pm 10%
Rise time: <2 ns
Jitter: <100 ps
DC IRIG (default configuration)
Outputs: 2
Connector: BNC(F)
Format: B003
Level: >2.4 V high, <0.8 V low (into 50 Ω)
- 4395B-10—10 MHz output module (optional)
Outputs: 4
Connector: BNC(F)
Level: 13 dBm \pm 2 dB
Format: sine wave
Harmonics: <-40 dBc
Impedance: 50 Ω
- 4387A—IRIG output module (optional)
Outputs: 4
Connector: BNC(F)
Format: B123
Level: 3 Vpp (into 50 Ω)
Modulation ratio: 10:3

Mechanical/Environmental

- Size: 1.75" (h) \times 19.00" (w) \times 19.00" (d)
- Weight: 20 lbs (9.1 kg)
- Operating temperature: 0 $^{\circ}$ C–50 $^{\circ}$ C
- Humidity: 0%–95% non-condensing
- Power: 55 Watts

Timing Performance

- NTP: Stratum-1 (~100 NTP requests/second)
- Time accuracy: <10 ns RMS
- Frequency accuracy: 1E–13 at 1 day
- Temperature stability: 3E–10 (0 $^{\circ}$ C to 50 $^{\circ}$ C)
- Aging: 5E–11/month
- Holdover: 250 ns at 1 day
- Allan deviation (GPS locked)

1 s	6E–13
10 s	8E–13
100 s	8E–13
1,000 s	6E–13
10,000 s	6E–13
100,000 s	1E–13
- Phase noise (4395B-10)

1 Hz	-110 dBc/Hz
10 Hz	-132 dBc/Hz
100 Hz	-145 dBc/Hz
1 kHz	-150 dBc/Hz
10 kHz	-155 dBc/Hz
100 kHz	-155 dBc/Hz
1 MHz	-155 dBc/Hz

Optional Accessories

- 4387A: AM IRIG
- 4395B-1: 1 MHz output module
- 4395B-5: 5 MHz output module
- 4395B-10: 10 MHz output module
- 4394A: PPS/DC IRIG output module
- 4334A: Epoch pulse output card
- 4387A: AM IRIG
- 4337A: AM IRIG epoch card
- 4393A: 4-channel PPS measurement card
- 94000-115200: RS-232 console interface (115,200 bps) included
- 94001-5071A: 5071A serial converter (9600 bps)
- 90240-TT30: Antenna cable, LMR-240, 30 m, TNC(M)-TNC(M)
- 90000-L1L2: Inline GPS signal amplifier, L1/L2
- 92000 L1/L2: GPS antenna included



Rear Panel View