



# 4411A

## GPS Disciplined Crystal Oscillator Reference

### KEY FEATURES

- Provides Five Timing Signal Types
  - 1 PPS: 4 TTL Outputs
  - 10 MHz: 4 Sinewave Outputs  
1 TTL Output
  - IRIG-B: 4 Modulated Outputs  
2 DC Level Shift Outputs
- Front Panel Time Display
- Front Panel LEDs Indicate System Status
- Ethernet Monitoring
- Stratum 1 via GPS

The 4411A is a time and frequency recovery system that generates precise signals traceable to UTC. It utilizes a GPS disciplined crystal oscillator frequency reference to provide timing outputs characterized by the short-term stability of the crystal reference and the longterm stability of GPS.

The versatility of the 4411A makes it suitable for a variety of applications. It provides multiple copies of 5 different timing signals on the rear of the 1U-high, 19" rack-mount chassis.

Year, day, and time-of-day are displayed on the front panel. The standard Ethernet connection simplifies integration with complex systems by allowing health and status information to be monitored remotely.



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## 4411A Specifications

### ELECTRICAL SPECIFICATIONS

- GPS Antenna input: BNC female with 5 V on center conductor
- 10 MHz Sine output (4)
  - Connector: BNC female
  - Level:  $13 \pm 1$  dBm
  - Impedance:  $50 \pm 5\Omega$
  - SSB Phase noise
    - 1 Hz: -85 dBc/Hz
    - 10 Hz: -115 dBc/Hz
    - 100 Hz: -135 dBc/Hz
    - 1 kHz: -145 dBc/Hz
    - 10 kHz: -150 dBc/Hz
  - Long term stability in Holdover:  $<5 \times 10^{-10}$  per month
- 10 MHz TTL Output (1)
  - Connector: BNC female
  - Level: 3 V into  $50\Omega$
- 1PPS Output (4)
  - Connector: BNC female
  - Level: 4.5 V into  $50\Omega$
  - Impedance:  $50 \pm 5\Omega$
  - UTC Offset accuracy: 50 ns RMS
  - Holdover accuracy: 15  $\mu$ s over 24 hours
- IRIG-B Modulated output (4)
  - Connector: BNC female
  - Timecode: IRIG-B 123
  - Level: 3 Vpp into  $50\Omega$
  - Impedance:  $50 \pm 5\Omega$
  - Accuracy:  $7 \pm 2$   $\mu$ s relative to 1PPS
- IRIG-B DC Level shift output (2)
  - Connector: BNC female
  - Timecode: IRIG-B 003
  - Level: 4.4 V into  $50\Omega$

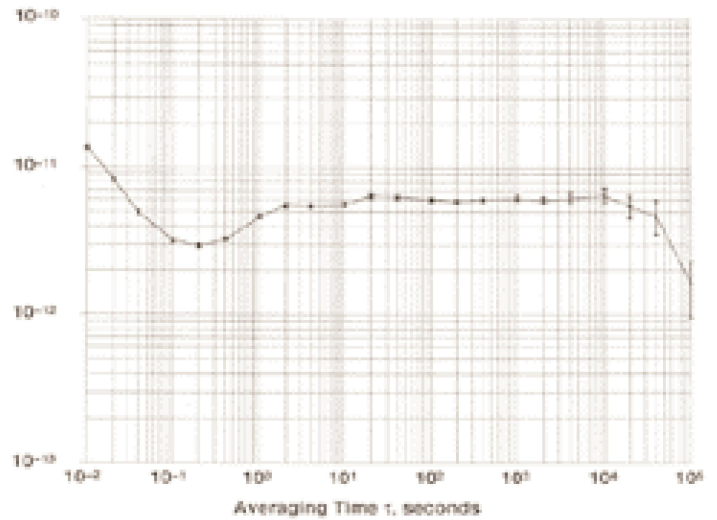
### ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

- Temperature range: 0°C-50°C (operating)
- Humidity: 0-95% Non-condensing (operating)
- AC Input: 90 – 264 V AC, 85 W, 47 – 63 Hz
- Dimensions: 1.75" (4.45 cm) H x 19" (48.26 cm) W x 12" (30.48 cm) D
- Weight: 9 lb (4 kg)

### OPTIONS

- 001 GPS Antenna
- 002 30 m GPS Antenna cable
- 003 60 m GPS Antenna cable
- 004 Lightning arrestor

### Allan Deviation $\sigma_y(\tau)$



Typical Frequency Stability



Rear View



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