

# Skylight™ Indoor GPS Timing System

Open a New Window to Accurate Time for your Network

- **GPS time without an outdoor installation**
- **Official “Legally Traceable Time” for your network and other devices**
- **For leased facilities, urban canyons, buildings with prohibitively expensive cable runs**
- **Attractive antenna panel designed for office installations**
- **Works with other Global Navigation Satellite Systems for improved reliability**
- **High stability internal oscillator maintains precise time even when GPS signal is intermittent**



*Skylight includes indoor GPS antenna panel, cable, and SecureSync GPS time Server*

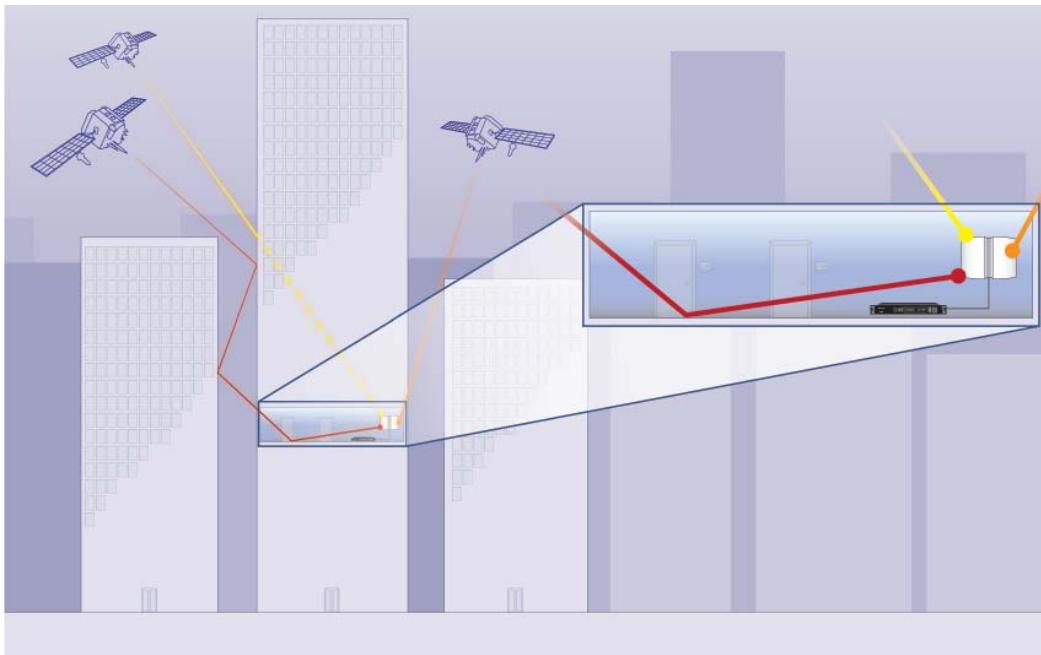


*Decorative cover is ideal for use in conference rooms and office spaces*

Even though synchronizing network master clocks and time servers to GPS is well-known as the standard for the most time-sensitive applications, some data centers and critical server locations are not conducive to traditional roof-top GPS antenna installation. Skylight™ provides a solution. Consisting of an indoor GPS antenna panel, a configuration of Spectracom's SecureSync® modular GPS time server, and an interconnect cable, Skylight opens new possibilities for accurate GPS time.

GPS signals are weak and often impractical in urban environments due to limited visibility of the sky, and constraints of roof-top access and long GPS antenna cable runs. Skylight is a result of Spectracom's expertise in GPS reception and applications for precision timing. Proprietary algorithms use a combination of high sensitivity receivers, the expanding constellation of various global navigation systems, accurate internal oscillators and assisted GPS to extract the GPS on-time point to sub-microsecond accuracy even in areas with somewhat limited GPS reception.

Skylight does not work everywhere. A signal to noise ratio above about 30 dBc/N<sub>0</sub> at the antenna panel is required. Subterranean and other radio-isolated locations will still need to be synchronized using other techniques (such as over a network via a PTP master-slave combination) versus by GPS directly. However, exterior walls or walls across from a window in above ground floors of a building are likely candidates for Skylight. Even urban canyon situations can be considered as neighboring buildings can often redirect signals to the antenna panel that contain useful timing information for the Skylight system. And the signal does not have to be available 24/7. By using a precise stable oscillator and our proprietary disciplining algorithms, Skylight needs the GPS signal for only a few hours a day. Often the RF noise is reduced at night which can allow Skylight to maintain legally traceable time even if signal acquisition is subpar during the day.



**How Skylight Works:** Whether a particular location is suitable for indoor GPS via Skylight depends on several factors. The antenna should be located as close to an exterior wall as possible. It is not necessary for the antenna to be located at a window because in many cases walls attenuate the signal less than the coatings found on modern high efficiency windows. The presence of structures surrounding a building can also affect the availability of signals in a positive or negative way. In general, the higher in the building the antenna is located, the better. Placement near a window can be advantageous if the window is free of coatings and other window coverings or blinds that will block the signal.

## Simple Set-up

The indoor antenna panel can be mounted facing towards or away from the wall it is mounted on, or the decorative cover can be removed and it can be placed on top of a server rack, or even above ceiling tiles. It then gets connected via a coaxial cable to a Spectracom SecureSync® modular time and frequency reference system. The SecureSync is a 1RU NTP time server, PTP grandmaster, and provider of virtually any other network or physical synchronization signal. You can configure the SecureSync at time of order to suit your application for precision timing.

## Specifications

### System Performance

Contact the factory for additional performance specifications.

#### 1 PPS Output:

Low Phase Noise OCXO	
<b>Accuracy to UTC</b> (1-sigma locked to GPS)	±300 ns
<b>Holdover</b> (constant temp after 2 weeks of GPS lock)	
After 4 hours	0.5 µs
After 24 hours	10 µs
<b>Signal Waveforms and Levels:</b> TTL (5v p-p), into 50 ohm, BNC	

## Physical

### Antenna Panel

- 14" W x 15" H x 3" D (35.5 cm W x 31.8 cm H x 7.6 cm D)
- Weight: 4.2 lbs. (1.9 kg)

### Cover

- 20" W x 18" H x 4.5" D (50.8 cm W x 45.7 cm H x 11.4 cm D)
- Weight: 4.8 lbs. (2.2 kg)

**Cable:** 25 foot RF cable provided (type N to SMA)

## Ordering Information

### Master Clock/Time Server

#### 1200-023

SecureSync is configured with AC power input, low phase noise OCXO internal oscillator, and GNSS (GPS + GLONASS) as primary reference.

### Add

SS OPT-SKY: Skylight™ Package (includes SS OPT-GNS GLONASS option)

### Option Modules

Up to 6 option modules can be accommodated per unit. For option module choices, refer to SecureSync Technical Specifications.



SecureSync includes 10 MHz and 1PPS reference signals, a high performance NTP server and network management (10/100 BaseT). Add other option modules/cards to add functionality such as PTP capability and 3x 10/100/1000 network ports.