

# SyncServer Options

For customizing the:  
SyncServer S200  
SyncServer S250  
SyncServer S250i  
SyncServer S300  
SyncServer S350

## OPTIONS

- Rubidium Atomic Oscillator
- Oven Controlled Crystal Oscillator (OCXO)
- Low Frequency Radio
- Window Mounted GPS Antenna
- 48 Vdc Power Supply
- Network Time Displays
- Synchronization Software
- Inline GPS Signal Amplifier
- Lightning Arrestor
- GPS Antenna Cable Splitter
- GPS Down/Up Converter for Long Cable Runs
- T1/E1 Input/Output

Symmetricon makes it easy to configure the SyncServer S200/S250/S300/S350 to meet your specific application needs with a variety of hardware and software options. Whether your application requires specific NTP stratum behaviors controllable using oscillator upgrades, different GPS antenna solutions, or a variety of other useful options, we have a good solution for you.

Not sure how to achieve what you want? Simply call Symmetricon's network timing experts. For more than 30 years Symmetricon has defined premium time and synchronization solutions. Put our expertise to work for you.



## Rubidium Atomic Oscillator



Rubidium atomic clock oscillator upgrades improve holdover accuracy and saves you valuable time. The standard SyncServer is equipped with a temperature compensated crystal oscillator (TCXO) that keeps the server accurate to nanoseconds when tracking GPS. However, if the GPS signal is lost, thereby placing the server in holdover, the TCXO will soon drift away from perfect. Upgrading the oscillator improves the holdover accuracy significantly.

Rubidium holdover accuracy is 6 to 25 microseconds per day. The value of the upgraded oscillator is that if the GPS signal is lost the SyncServer can continue to serve very accurate NTP time. This provides IT staff plenty of time to correct the problem with no degradation or disruption in network time synchronization accuracy.

## Oven Controlled Crystal Oscillator (OCXO)



The Ovenized Crystal Oscillator (OCXO) upgrade improves holdover accuracy. By keeping the crystal oscillator at a fixed temperature, if the GPS signal is lost, thereby placing the server in holdover, the OCXO reduces clock the drift.

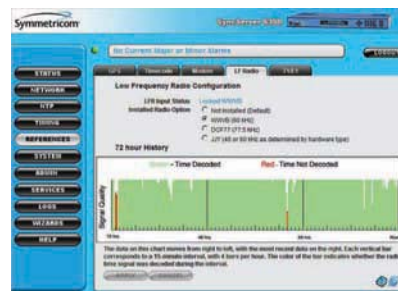
OCXO holdover accuracy is about 1 millisecond per day. The value of the upgraded oscillator is that if the GPS signal is lost the SyncServer can continue to serve accurate NTP time for several days. This provides some time to correct the problem with minimal degradation or disruption in network time synchronization accuracy.

## National Low Frequency Radio Time Broadcast Receiver



National time authorities in the United States, Japan and Europe broadcast accurate time via AM radio signals that are traceable to the national time standard. All SyncServer S300/S350 time servers are equipped to synchronize to these broadcasts via optional radio antennas.

The Symmetricom Low Frequency Radio Option (LFR) is a useful back-up time reference to GPS and also provides a legally traceable path to a national time standard. The LFR can also be used as an alternative to GPS if GPS is not a viable option.



The LF Radio web page in the S300/S350 provides AM signal availability and decoding information for a rolling 72 hour period.

The AM signals travel via ground waves and sky waves and signal strength varies with

distance from the transmitter and time of day. Generally the signals are available 24 hours a day. However, inside some structures and great distances from the transmitter the signal may be available only at night or not at all.

Accuracy: <50 milliseconds to UTC (<20 ms typical).

Option includes antenna, 50' (15 m) cable & mount. Maximum cable length is 500' (150 m).



Click links for approximate signal strength for your location:  
 US: WWVB      Europe: DCF77      Japan: JJY

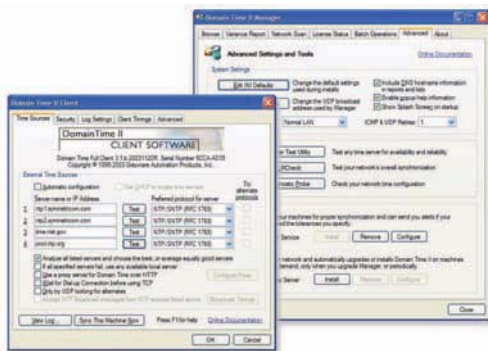
## 48 Vdc Power Supply



The 48 Vdc equipped SyncServers are supplied with primary and secondary 48 Vdc inputs to accommodate inputs from alternate DC power sources. Using diode switching, the polarity of the inputs can be different such as plus-plus, plus-minus, minus-plus, or minus-minus. Specifications are 40-60 Vdc, 50 watts maximum, 1.5 amps. Isolation: Ground input is fully floating. Either input polarity may be strapped to Chassis ground at the input terminal block.

SyncServers are sold as AC or DC models. Specify at the time of order the power supply configuration of choice. All SyncServer options are compatible with either AC or DC models.

## Synchronization Software



Network time synchronization software is an essential part of distributing time to synchronize the network. Symmetricom's Domain Time II is a comprehensive software solution that simplifies network time synchronization. Versatile time clients and software servers keep the network hierarchy synchronized to a master clock such as the SyncServers. Easy to use management tools simplify and automate many tasks related to keeping these clients up-to-date. Monitoring functions track the synchronization across the network and notify you of any problems. The result is a reliable time synchronization system that requires little management overhead and offers tremendous value to the integrity of network operations and applications.

See [http://www.ntp-systems.com/product\\_software.asp](http://www.ntp-systems.com/product_software.asp) for full details and the datasheet

## T1/E1 Input/Output



A T1/E1 frequency reference can be a useful, seamless back-up in the event GPS or other time of day reference becomes unavailable. The S350 automatically detects and tracks an attached T1 or E1 signal (MHz or Mbps) and is ready to smoothly synchronize to it if a higher priority signal is lost.

The T1 output (1.544 Mbps) has ESF framing and B8ZS line coding enabled at 100 ohms. The E1 output (2.048 Mbps) has FAS framing and CRC-4 multiframe with HDB3 line coding enabled. AIS may be manually selected for either output. Signals cannot be mixed, T1 in and E1 out or vice versa is not supported.

Signal input/output is via the D9 connector. D9 adapters to wire wrap and BNC are available. T1/E1 option available only with SyncServer S350 and requires the OCXO or Rubidium oscillator to meet the G.811 MTIE specification.

## Network Time Displays



Symmetricom's Network Time Displays are maintenance free clocks that keep accurate time by synchronizing their time—over the network—to a network time server. These clocks use existing Ethernet network infrastructure and the standard network time protocol (NTP) to keep the time correct. Display formats include 12 or 24 hour format as well as daylight savings time transitions so that the display should never need the time adjusted.

Automatic network address configuration via DHCP coupled with display discovery and remote management software makes for easy and complete configuration and control of the displays over the network from a single PC.

See [http://www.ntp-systems.com/product\\_time\\_displays.asp](http://www.ntp-systems.com/product_time_displays.asp) for full details and the datasheet.

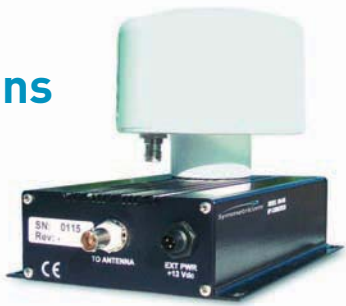
## GPS Antenna Cable Accessories



Antenna cable accessories enable versatile solutions that are simple to achieve. Inline GPS amplifiers are an easy way to extend cable runs from 150 feet (45 meters) to 300 feet (90 meters). Lightning arrestors provide valuable electrical shock protection to the SyncServer. Antenna cable splitters leverage a single antenna and cable between two GPS equipped time servers.

Details can be found at:  
[http://www.ntp-systems.com/antenna\\_solutions.asp](http://www.ntp-systems.com/antenna_solutions.asp)

## GPS Down/Up Converter for Long Cable Runs



GPS signal down/up conversion is required when signal losses in the antenna cable limit the distance between the receiver and the antenna assembly. Signal strengths and noise immunity as well as the cost benefits over the use of low loss cable and amplifiers are the main advantages of using the Antenna Down/Up Converter assembly.

The down converter antenna and up converter unit replace the standard L1 GPS antenna. The signal output from the converter is L1 C/A code that can be decoded by any L1 GPS receiver. Cable lengths of up to 1500 feet (457 meters) are supported.

Details can be found at:  
[http://www.symmttm.com/pdf/Gps/ds\\_gps\\_antenna.pdf](http://www.symmttm.com/pdf/Gps/ds_gps_antenna.pdf)

## Window Antenna Option



SyncServers can track GPS satellites through a window and still maintain accurate time. Depending on user entered position accuracy; time accurate to 5 microseconds to UTC is possible from tracking a single intermittent GPS satellite. A position accurate to 1 km provides accuracy to 100 microseconds.

This option includes a Window Antenna with suction cup, a 6 foot (2 meter) cable, and a BNC-to-TNC adapter to connect to the standard antenna/cable that ships with SyncServers.

No special GPS receiver software upgrade is required. Compatible with all SyncServer standard antenna accessories. Use in place of standard GPS roof antenna that ships with all GPS equipped models.

Note: some window glazing blocks the GPS signals preventing the SyncServer from tracking GPS.

## Option Availability Matrix

	S200	S250i	S250	S300	S350
Rubidium Upgrade	•	•	•	•	•
OCXO Upgrade	•	•	•	•	•
40-60 Vdc Power Supply	•	•	•	•	•
Time Displays	•	•	•	•	•
Synchronization Software	•	•	•	•	•
Window Antenna	•		•	•	•
GPS Down Up Converter	•		•	•	•
GPS Antenna Cable Accessories	•		•	•	•
Low Frequency Radio				•	•
T1/E1 Input/Output					•