

# DATASHEET - SR SERIES NTP NETWORK TIME SERVER

## KEY FEATURES

Linux based true Stratum 1 NTP time servers

Industry leading 5 year warranty

12 channel GPS, MSF, DCF-77 and dual reference clock options

Rugged, compact, 1U high rack-mountable enclosure

Very low power consumption aiding reliability

High stability TCXO options for extended holdover

Secure, easy to use HTTPS / SSL / SSH configuration

## BENEFITS

Synchronize thousands of network time clients

Accurately synchronize time critical processes

Accurate, traceable time reference inside your firewall

Reliable timing information derived from atomic time

Simple to install, configure and maintain

## WARRANTY & SUPPORT



## COMPLIANCE



## PRODUCT OVERVIEW

TimeTools new SR Series NTP servers provides a complete range of Linux based true Stratum 1 NTP Network Time Servers that provide a real breakthrough in price and performance.

Housed in a rugged, yet compact, 1U high, rack-mountable enclosure, the SR series takes up minimal valuable rack-space.

By utilising a customized Linux kernel and an unmodified version of the latest network time protocol distribution, NTP version 4.2, the SR series offers true NTP / SNTP functionality.

*"The SR series provides a reliable, highly accurate, traceable, source of time inside your firewall".*

**!!! UPDATE !!!** The SR series is now provided with a cutting-edge high-sensitivity GPS receiver that can often operate with an indoor located GPS antenna. Additionally, the new receivers can operate from a single satellite-in-view making operation from a window often possible. These features potentially provide a great saving on installation costs when compared to traditional roof-mounted GPS antennas. Of course, our GPS antennas are completely weather-proof and can still be roof-mounted, if required.

### Multiple Reference Clock Options

Multiple optional external reference clock combinations can be provided with the SR series; GPS, MSF radio, DCF-77 radio and dual GPS / radio reference capabilities. The SR series provides true flexibility.

### High Stability and Performance

High-stability disciplined TCXO oscillator options are available to maintain accurate time for extended periods in the event of GPS / radio reference clock signal loss.

### Secure Configuration and Maintenance

An easy to use password-protected user interface (HTTP / HTTPS / SSL / SSH) is provided for system configuration and management. FTP can be utilised to download NTP statistics and upload firmware upgrades, provided by TimeTools free of charge.

### 5-Year Warranty

The SR Series NTP Server is a low-power convection cooled device with no moving parts, aiding long-term reliability. Our confidence in the reliability of the device is reflected in the provision of an industry leading 5-year warranty.

### SR7110

The SR7110 is an entry-level Linux based true NTP time server at a highly competitive price. It can utilise GPS or LF radio time references to provide stratum 1 NTP functionality, ideal for synchronising digital wall clocks and smaller networks.

### SR9210

The mid-range SR9210 provides a high specification NTP network time reference. It incorporates a high-throughput Ethernet network interface, combined with the ability to accept GPS, LF radio or dual reference GPS / LF radio external time references. The SR9210 is an ideal time reference where a large number of network time clients are to be synchronised accurately and reliably.

### SR9750 / SR9850

The top-of-range SR9750 and SR9850 has all of the advanced features of the SR9210 but also incorporates a high-stability GPS / LF disciplined Temperature Controlled Crystal Oscillator (TCXO). The high precision TCXO backup reference clock provides extended holdover periods in the event of primary reference signal loss.



## Product Comparison Chart

Model	SR 7110	SR 9210	SR 9750	SR 9850
<b>Timing Protocols</b>				
NTP v2, v3, v4	✓	✓	✓	✓
SNTP	✓	✓	✓	✓
NTP Peering		✓	✓	✓
NTP Multicast		✓	✓	✓
NTP Broadcast		✓	✓	✓
NTP MD5 Authentication		✓	✓	✓
NTP Requests / Second (typical)	> 200	> 1,000	> 1,000	> 2,500
Maximum Number of NTP Clients (typical)	> 12,000	> 64,000	> 64,000	> 160,000
NMEA RS232 Output		✓	✓	✓
<b>Time Reference Options</b>				
12 Channel GPS Receiver – High Sensitivity Indoor, Over-Determined Clock, Single Satellite Operation	✓	✓	✓	✓
LF - MSF (UK) Reference Clock	✓	✓	✓	✓
LF - DCF-77 (German) Reference Clock	✓	✓	✓	✓
Dual GPS and LF Radio Reference Clocks		✓	✓	✓
<b>Monitoring and Reporting</b>				
SNMP v1 / v2c Trap Alarms (Can be disabled)		✓	✓	✓
System Logging (Syslog)	✓	✓	✓	✓
Remote System Logging (Remote Syslog)		✓	✓	✓
GPS Satellites in View & Signal to Noise Ratio (SNR)	✓	✓	✓	✓
<b>Configuration Protocols</b>				
HTTP (Web) / HTTPS (SSL Secure Sockets Layer)		✓	✓	✓
SSH (Secure Shell)		✓	✓	✓
TELNET	✓	✓	✓	✓
FTP	✓	✓	✓	✓
Console (RS232)	✓	✓	✓	✓
DHCP		✓	✓	✓
<b>Oscillator Options</b>				
Standard Crystal Oscillator	✓	✓		
High Stability GPS\LF Disciplined TCXO Oscillator			✓	✓
<b>Timing (typical)</b>				
GPS Accuracy	1 msec UTC	60 nsec UTC	60 nsec UTC	60 nsec UTC
LF Accuracy	10 –50 msec	1 –20 msec	1 –20 msec	1 –20 msec
NTP Accuracy (GPS Synchronised)	< 10 msec UTC	< 250 usec	< 250 usec	< 5 usec
24 Hour TCXO Holdover (GPS disciplined, typical @ 25C)	-	-	< ± 10 msec (2.3e10 <sup>-7</sup> )	< ± 4.3 msec (1e10 <sup>-7</sup> )
Optional Buffered 1 PPS Output on BNC		✓	✓	✓

## SPECIFICATION

### MECHANICAL \ ENVIRONMENTAL

- **Dimensions** 483 x 205 x 44 mm (19.0" x 8.05" x 1.73")
  - **Construction** 1U High 19" Rack mount, 1.8mm Aluminium
  - **Weight** approx 2.2Kg (4.84lbs)
  - **Power Supply** Universal 100-250VAC 50-60Hz CE/UL/CSA Approved PSU (Optional 9-36VDC IN and 85-250VDC IN versions available)
  - **Power Consumption** approx 5W
  - **Operating Temperature** 0C ~ +50C
  - **Storage Temperature** -10C ~ +60C (Extended Temperature Range Options Available)
  - **Relative Humidity** 95% non-condensing
- Approvals** CE, EN61000-6-1, EN61000-6-3, FCC

### INPUT \ OUTPUT

- **LAN** 10/100 Mbit Base T , RJ45 auto-sensing
- **Serial Console:** 9 way 'D' RS232, 9600, N, 8, 1
- **GPS Antenna Input** TNC female
- **LF/AUX Input:** 9 way 'D'
- **Power:** Double Fused Switched IEC Inlet
- **PPS:** Buffered pulse per second output on BNC (optional)

### INTEGRAL GPS RECEIVER

- **Type:** 12 Channel, L1 1575.42 MHz, High Sensitivity
- **Features:** High sensitivity, Over-determined clock modes
- **Timing:** GPS Time Traceable to UTC (USNO)
- **Accuracy (typical):** +/- 60 nsec UTC
- **Acquisition (Cold Start):** 38 sec

# GPS and LF Antenna Options and Accessories



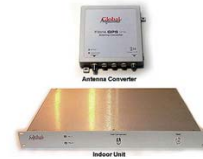
## Jam-Resistant GPS Antenna

The TWS3978 high gain permanent mount GPS antenna is ideal for timing applications such as the SR Series. It features a perfectly tuned custom ceramic patch element for maximum signal reception, ESD circuit protection, a very low noise (0.5 dB) 3 stage LNA circuit and a SAW filter, enabling the TWS3978 to provide a reliable and clear GPS signal while minimizing loss-of-lock, even when conditions are less than ideal.



## MXS / DXS Ultra High Gain Radio Antenna

The MXS / DXS LF antenna is a unidirectional ultra-high gain ferrite antenna for the SR series NTP servers. The highly sensitive active antenna is ideal for low signal strength areas. The antenna is available in MSF (UK) and DCF-77 (German) transmitter versions. The antenna is provided with 5m of cable which can easily be extended up to 100m using RG58 coax.



## LF / GPS Over Optical Fibre

A LF / GPS over fibre system allows RF radio and GPS signals to be transmitted with minimal losses over long cable distances. It provides a secure and interference free link through noisy environments. The technology transparently provides cross-site connection between a LF radio / GPS antenna and receiver unit.



## GPS Surge Suppressor

The SPP-GPS is a multi-strike, maintenance free GPS surge suppressor. It protects valuable network equipment from potential lightning strikes and other voltage surges.



## GPS Inline Amplifier – 20db

The GPS inline amplifier offers an extra 20db of gain on top of the antenna gain. This allows for extended GPS cable runs beyond 100m, depending on cable types.



## GPS Splitters – 2 to 32 Way Options

TimeTools can provide a range of GPS splitters to allow multiple GPS devices to share a single GPS antenna. Available with a range of outputs in either compact or rack-mount enclosures.

## Product Codes

### SR Series NTP Time Servers

SR 7110 GPS \ LF NTP Server	SR7110-00
SR 9210 GPS \ LF \ Dual Reference NTP Server	SR9210-00
SR 9750 GPS \ LF \ Dual Reference NTP Server with TCXO	SR9750-00
SR 9850 GPS \ LF \ Dual Reference NTP Server with TCXO	SR9850-00

*Scope of Supply: SR Series NTP Time Server, IEC Mains Lead, Console Configuration Cable, Product User Guide and NTP Client CD.*

(Optional 9-36VDC IN, 85-250VDC IN and extended temperature range versions available.)

### Optional SR Series LF (Radio) Reference Clock Antennas

High-Gain MSF (UK) Active Antenna	SR-MLS-00
High-Gain DCF-77 (German) Antenna	SR-DLS-00
Ultra-High-Gain MSF (UK) Antenna	SR-MXS-00
Ultra-High-Gain DCF-77 (German) Antenna	SR-DXS-00

### Optional SR Series GPS Reference Clock Antennas and Accessories

Jam-Resistant Pole Mounting GPS Antenna and Mount	T-WS3978
30m RG58 Cable	TCX-030
50m RG58 Cable	TCX-050
Additional cable lengths available on request	
GPS Surge Suppressor	SPP-GPS
GPS Amplifier – 20db	T-AD200-8
LF / GPS over optical fibre systems	P.O.A
GPS Splitters – 2 to 32 way, compact or rack-mount	P.O.A

*TimeTools Limited has relied on representations made by its suppliers in certifying this product as RoHS compliant.*

*TimeTools Limited is not responsible for the operation or failure of operation of GPS satellites or LF time & frequency broadcasts or the availability of GPS satellite or LF radio signals.*

*In no event will TimeTools Limited be liable for any indirect, special, incidental, or consequential damages from the sale or use of this product. This disclaimer applies both during and after the term of the warranty. TimeTools Limited disclaims liability for any implied warranties, including implied warranties of merchantability and fitness for a specific purpose.*

*All specifications subject to change without notice.*

*Terms and conditions of sale available on request.*

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