DATASHEET - SR SERIES NTP NETWORK TIME SERVER

KEY FEATURES

Linux Based True Stratum 1 NTP Time Servers

Single and Dual Independent LAN Options

GPS, Radio and Dual Reference Capability

Rugged, Compact, 1U-High Rack-mountable Enclosure

High-Stability TCXO Options for Extended Holdover

Secure, Easy to Use, Configuration

Universal 100-250VAC PSU (DC IN options)

BENEFITS

Simple to Install, Configure and Maintain

Synchronize Thousands of Network Time Clients

Accurately Synchronize Time Critical Processes

Reliable, Traceable Source of Time, Inside Your Firewall

WARRANTY & SUPPORT

Industry Leading 5-Year Warranty

Free Unlimited Lifetime Support

Free Lifetime Firmware Updates

COMPLIANCE

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PRODUCT OVERVIEW

TimeTools SR Series provides a complete range of Linux based, true Stratum-1, NTP Network Time Servers that represent 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.

GPS, Radio and Dual Reference Clock Options

Multiple 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.

The SR series is also 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 weatherproof and can be roof-mounted outdoors.

High Stability Extended Holdover Option

High-stability GPS/LF disciplined Temperature Controlled Crystal Oscillator (TCXO) options are available to maintain accurate time for extended periods in the event of GPS / radio reference clock signal loss.

Secure Configuration and Maintenance

A secure (HTTPS), easy to use, password-protected user interface is provided for system configuration and management. FTP/SCP can be utilised to download NTP statistics and upload firmware upgrades, available from 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 – Entry Level, Competitive Price

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 clocks, DVR's and smaller networks.

SR9210 – Feature Rich, Value

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 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 – High Stability, Extended Holdover

The SR9750 provides all the features of the SR9210 with the additional benefit of a high-stability disciplined TCXO oscillator for extended holdover in the event of primary reference loss. Ideal where a highly reliable source of time is required.

SR9860D – Dual LAN, High Accuracy

The top-of-range SR9860D incorporates dual independent LAN capability for synchronising multiple networks. It also provides enhanced precision along with a GPS/LF disciplined TCXO for extended holdover. Ideal for reliably synchronising multiple, large, networks with a high degree of accuracy.

Product Comparison Chart

Model	SR 7110	SR 9210	SR 9750	SR 9860D
Network				
LAN 10/100 Mbit BaseT , RJ45 auto-sensing	Single LAN	Single LAN	Single LAN	Dual LAN
Timing Protocols				
NTP v2, v3, v4, SNTP v3, v4	✓	✓	✓	✓
NTP Peering		✓	✓	✓
NTP Broadcast		✓	✓	✓
NTP MD5 Authentication		✓	✓	✓
NTP Requests / Second (typical)	> 200	> 1,000	> 1,000	**> 5,000**
Maximum Number of NTP Clients (typical)	> 12,000	> 64,000	> 64,000	**> 320,000**
NMEA RS232 Output		✓	✓	✓
Time Reference Options				
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		✓	✓	✓
Monitoring and Reporting				
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)	✓	✓	✓	✓
Configuration Protocols				
HTTP (Web) / HTTPS (SSL Secure Sockets Layer)	✓	✓	✓	✓
SSH (Secure Shell), SCP (Secure Copy Protocol)		✓	✓	✓
TELNET, FTP	✓	✓	✓	✓
Console (RS232)	✓	✓	✓	✓
DHCP	✓	✓	✓	✓
Oscillator Options				
Standard Crystal Oscillator	✓	✓		
High Stability GPS\LF Disciplined TCXO Oscillator			✓	✓
Timing (typical)				
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 (typical, GPS Synchronised)	< 10 msec UTC	< 250 usec	< 250 usec	**< 1 usec**
24 Hour TCXO Holdover (GPS disciplined, typical @ 25C)	-	-	< ± 10 msec $(2.3e10^{-7})$	**< ± 4.3 msec $(1e10^{-7})$**
Buffered 1 PPS Output		Option	Option	✓

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
- **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 (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	SR7110-10
SR 9210 GPS \ LF \ Dual Reference NTP Server	SR9210-10
SR 9750 GPS \ LF \ Dual Reference NTP Server with TCXO	SR9750-10
SR 9860D GPS \ LF \ Dual Reference NTP Server with TCXO	SR9860D-10

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.)
(Extended Temperature Range Options 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