DATASHEET - SC SERIES COMPACT NTP TIME SERVERS

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, Aluminium 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 SC 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.

The SC Series are compact NTP servers, housed in rugged, aluminium enclosures. Ideal for applications with space saving requirements.

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

"The SC 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 SC series; GPS, MSF radio, DCF-77 radio and dual GPS / radio reference capabilities. The SC 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 SC 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.

SC7105
The SC7105 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.

SC9205
The mid-range SC9205 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 SC9205 is an ideal time reference where a large number of network time clients are to be synchronised accurately and reliably.

SC9705
The top-of-range SC9705 has all of the advanced features of the SC9205 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.

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Product Comparison Chart

Model	SC 7105	SC 9205	SC 9705
Protocols			
NTP v2, v3, v4	✓	✓	✓
SNTP	✓	✓	✓
NTP Peering		✓	✓
NTP Multicast		✓	✓
NTP Broadcast		✓	✓
NTP MD5 Authentication		✓	
NTP Requests / Second (typical)	> 200	> 1,000	> 1,000
Maximum Number of NTP Clients (typical)	> 12,000	> 64,000	> 64,000
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)		✓	✓
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
LF Accuracy	10 –50 msec	1 –20 msec	1 –20 msec
NTP Accuracy	< 10 msec UTC	< 250 usec	< 250 usec
24 Hour TCXO Holdover (GPS disciplined, typical @ 25C)	-	-	< ± 10 msec (2.3e10^{-7})
Optional Buffered 1 PPS Output on BNC		✓	✓

SPECIFICATION

MECHANICAL \ ENVIRONMENTAL

- **Dimensions** 168 x 165 x 54 mm (6.5" x 6.5" x 2.2")
- **Construction** 1.8mm Aluminium
- **Weight** approx 0.8Kg (1.8lbs)
- **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 ~ +70C
- **Storage Temperature** -20C ~ +85C
  (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 BaseT , 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 IEC Inlet
- **PPS:** Buffered pulse per second output on BNC (optional)

INTEGRAL GPS RECEIVER

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

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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 SC 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 SC 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 up to and 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

SC Series NTP Time Servers

SC 7105 GPS \ LF NTP Server	SC7105-00
SC 9205 GPS \ LF \ Dual Reference NTP Server	SC9205-00
SC 9705 GPS \ LF \ Dual Reference NTP Server with TCXO	SC9705-00

Scope of Supply: SC 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 SC 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 SC 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