TMS6002

Secure NTP Server with Multi-sources of synchronization

NTP server stratum 1

Multi-sources of synchronisation
- GNSS (multi-constellations)
- IRIG-B
- NMEA

HTTPS Monitoring and Control through a Web based Interface

Secure access to the server by SSH

Monitoring with SNMP V2c, V3

On-site equipment update

Protected configuration on SDCARD

Hardware Accuracy of PPS ± 100ns / UTC when synchronized by GNSS

Number of NTP requests > 800 / second covering all our activities for all our customers

The TMS6002 is rack mount equipment able to provide a high stable time source on an Ethernet TCP / IP network.
The TMS6002 is a time server that uses the Network Time Protocol (NTP) to synchronize all connected computers on the network.

NTP Server

The equipment provides an NTP service in request / response mode in stratum1 when it is synchronized on an external time source. The server manages frame authentication.
The client computers can be synchronized with a precision better than 5 ms.
The server has the following main interfaces:
• Network connection IEEE802.3 100/1000 Mbs
• Synchronous UTC top pulse (1 PPS)

Multi synchro. sources

The equipment synchronizes on the GNSS and optionally on analog IRIG-B or NMEA/PPS.
It can also manage these several sources in parallel using a priority list.

The internal GNSS receiver is a multi-constellation receiver dedicated to time application. It can acquire 24 or more satellites (depending on the type of receiver) simultaneously. It delivers an exceedingly high precision second UTC reference pulse.

Remote monitoring

The remote monitoring and control of the equipment is done via the network, using:

- standard SNMP protocol (MIB provided)
- standard SSH protocol

A TCP or UDP frame containing the time and status of the equipment can be emitted every second.

Standard Oscillator

An internal CFPT type oscillator provides a 10 MHz frequency used to maintain time in case of loss of external time source (No GNSS signal or free running mode)
When disciplined (GNSS locked running mode) the stability is better than $2x10^{-10}$.

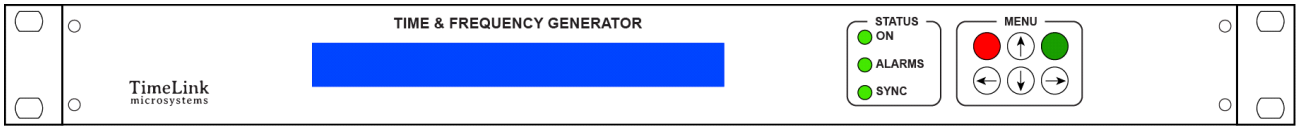
With Option OPT3-x you can have better stability and phase noise by including an accurate OCXO oscillator.

Configuration

The entire configuration of the equipment is in a removable SDCARD memory for easy system configuration and equipment update to guarantee the security. In case of equipment replacement, the current configuration can simply be transferred by plugging the SDCARD in the new equipment minimizing the MTTR.

802.1X Authentication

Before transmitting over the network, the equipment can perform authentication according to the 801.2X protocol.



TMS6002 Front panel

Specifications

NETWORK PROTOCOLS

NTP (Network Time Protocol)

NTP (RFC 1305) SNTP (RFC 1361) using UDP 123 port
Server configuration V3, V4 or automatic V3/V4

HTTPS

Advanced web interface for equipment control and monitoring

SNMP (Simple Network Management Protocol)

(RFC 1155, 1157, 1213) V2c, V3
SNMP provides the equipment status to the network administrator.
For security reasons no configuration changes can be made with this protocol.

SSH (Secure Shell Protocol)

SSH allows accessing securely the equipment.
It is especially used to update the internal software of the equipment.

Network Interface

IEEE 802.3 10/100/1000 Ethernet
IEEE 801.2X Authentication

Connectors

1 x TNC for the GNSS antenna input
1 x BNC output for 1PPS
1 x BNC input for IRIGB (optional)
1 x BNC output for IRIGB (optional)
1 x Subd9 NMEA/PPS input
1 x, 2 x or 4 x RJ45 network connection (optional)

Syslog

Standard Syslog message logging

Console

USB compliant Console for configuration & maintenance

1PPS Accuracy

±100 ns over UTC when the equipment is synchronized by GNSS

Internal Reference

Internal 10MHz. CFPT Oscillator.
Optional accurate OCXO.

Power Supply

230V AC main supply:
EEC socket 2P + with filter
On / Off switch voltage: 90-264VAC / 47-63Hz
Power consumption: <20W @ 230VAC 50Hz

Temperature

Operating temperature: 0 ° to 60 ° C
Storage temperature: 0 ° to 70 ° C
Operating relative humidity:
10% to 90% (non-condensing)
Storage relative humidity:
5% to 95% (non-condensing)

Certification

Certified Hardware CE, ROHS, REACH, ITAR free & EAR99

Dimensions:

Standard 19" 1U with Depth of 350 mm
Rack 1U 19" L =483 x l =350 x H= 44 mm

Weight

< 6.61 lb. including the power cable

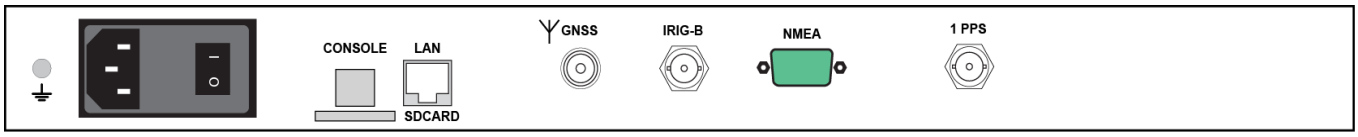
MTBF

> 100 000 h
> 150 000 h with OPT1& SDT-OPT6 combined

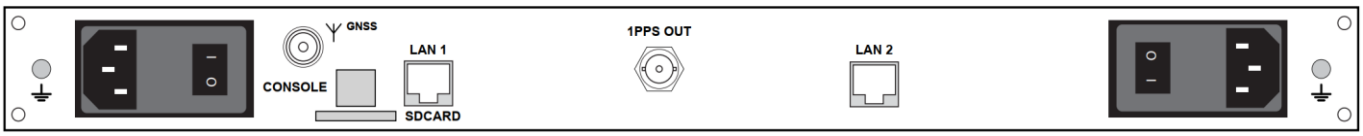
Available Options

- AC- DC Redundant Power Supplies
- Up to 4 Ethernet port
- Ethernet port security
- OCXO stability

Please contact us for any further options



TMS6002-MULTI – GNSS, IRIGB and NMEA Back panel



TMS6002 Standard OPT1-OPT2.2 Back panel

Ordering code

TMS6002: *standard model – GNSS synchronization*
TMS6002-B12X*: GNSS and B12X synchronization*
TMS6002-B00X*: GNSS and B00X synchronization*
TMS6002-NMEA*: GNSS and NMEA/PPS synchronization*
TMS6002-MULTI: *GNSS, IRIGB and NMEA/PPS synchronization*

Additional Options are available for each equipment above and they can be combined.

OPT1 *Double AC power*
OPT2-x *Ethernet Port x=2 to 4*
OPT3-x *x=1 OCXO stability x=2 OCXO High stability*
OPT4 *Ethernet port security*
OPT5 *IRIG B 12x output & NMEA/PPS synchronization only (No GNSS possible)*
OPT6-x *DC power supply x=1 36 V or x=2 48 V*

OPT3 -1: OCXO 10 MHz MEDIUM STABILITY

Free running
Short term stability 1s, 10s: < 2.10^{-11}
Long term stability
< 1.10^{-9} / **day** < 3.10^{-8} / **month** < 2.10^{-7} / **year**

GNSS disciplined
Long term stability: < 1.10^{-10}

OPT3 -2: OCXO 10 MHz HIGH STABILITY

Free running
Short term stability 1s, 10s:
< 1.10^{-12}
Long term stability
< 5.10^{-10} / **day**
< 5.10^{-9} / **month**
< 3.10^{-8} / **year**

GNSS disciplined
Long term stability: < 1.10^{-10}

Frequency Output Level
Adjustable in factory
from 0 to +13 dBm ±2 dBm

Phase Noise :

1 Hz	< -100 dBc
10 Hz	< -130 dBc
100 Hz	< -150 dBc
1 KHz	< -155 dBc
≥10 KHz	< -155 dBc