TimeLink
microsystems

TMS6002

Secure NTP/PTP Server with Multi-source synchronization

NTP server stratum 1

High stability 10 MHz output: <1x10-10 in the long term

GNSS (multi-constellation)/IRIG-B/NMEA multi-source synchronisation

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 ± 50ns / UTC when synchronized by GNSS

Client synchronization within 5 ms (<2 ms typical)

Unlimited number of client

Number of transactions > 800 / second

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 to one of the two possible time sources. 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 pulse top pulse (1 PPS)

PTP

For more precise synchronization, PTP protocol (Precise Time Protocol) can be used.

Multi-source synchronization

The equipment synchronizes on the available source among GNSS, analog IRIG-B or NMEA/PPS. It can also manage several sources in parallel using a priority list.

The internal GNSS receiver is a specific receiver dedicated to time application. It is able to acquire 24 or more satellites (depending on the type of receiver) simultaneously. It delivers a very high precision second UTC reference pulse.

Remote control

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

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

An UDP frame containing the time and status of the equipment is emitted every second.

Oscillator

An internal OCXO type oscillator provides a 10 MHz frequency used to maintain time with a stability of (Δ F/F) $1x10^{-9}$/day in case of loss of external time source (No GNSS signal or free running mode)
When disciplined (GNNS locked running mode) the stability is better than $1x10^{-10}$

Configuration

The entire configuration of the equipment is contained in a removable SDCARD memory for easy system configuration and equipment update. In case of equipment replacement, the current configuration can be simply 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.
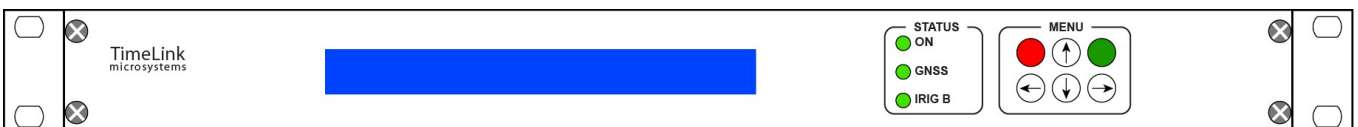
TMS6002 Front panel

TimeLink microsystems

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 control and monitoring based on Events..

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

SSH (Secure Shell Protocol)
SSH allows accessing securely the equipment.
It's especially used to update the internal software of the equipment.

Connectors
1 x TNC for the GNSS antenna input
1 x BNC output for 1PPS
1 x Subd9 NMEA/PPS input
1 x RJ45 network connection

Network Interface
IEEE 802.3. 10/100/1000 Ethernet
IEEE 801.2X Authentication

1PPS Accuracy
±100 ns over UTC when the equipment is synchronized by GNSS

Syslog

PTP (Precision Time Protocol)
PTP v2 IEE1588-2008
Default PTP profile
Two step clock operation
Multicast addressing
1 port 100/1000 Base-T
Ethernet IEEE 802.3.

Console
A console link for equipment maintenance is available on the front panel. To compensate for the rarefaction of RS232 serial interfaces on PCs, the equipment allows a direct connection in USB, a USB / serial converter is integrated. This USB connection is dedicated to a serial link and cannot accommodate any other type of device.

On request, the Console link can be RS232-type on a 9-pin SubD connector or removed.

Internal Reference
Internal 10MHz. OCXO Oscillator
Output 10 MHz sine +13 dBm / 50 Ω
Free running mode:
Long-term stability
< 1.10^{-9} / day
< 4.10^{-8} / month
< 3.10^{-7} / year

Power Supply
The equipment is powered by the main 230V via two redundant power supplies for better reliability
Power supply range 85 to 260VAC at 40-60 Hz
Power consumption: 30 W

MTBF
TMS6002 : 100 000 h

Temperature
Operating temperature: -20 ° to 60 ° C
Storage temperature: -20 ° to 70 ° C
Operating relative humidity:
10% to 90% (non-condensing)
Storage relative humidity:
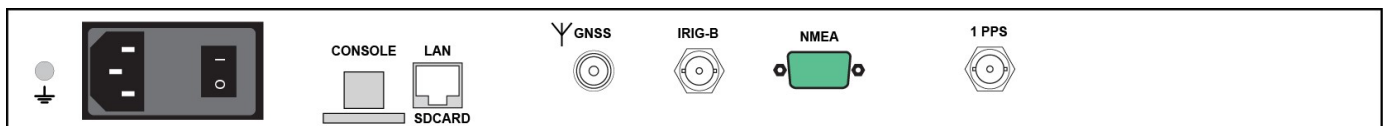5% to 95% (non-condensing)

Dimensions
Rack 1U 19 "Depth 13.8 in

Weight
< 6.61 lb including the power cable

Certification
Certified CE, ROHS and ITAR Free

Option
Ruggedized rack
Redundant Power Supply
Additional hardware isolated Independent 100/1000Mbits NTP/PTP Ethernet port (up to 8)
OCXO stability

TMS6002 back panel

Ordering code
TMS6002: standard model