

TMS5050

**NTP/NTS/PTP
Server synchronized
by either GNSS,
IRIGB or
1PPS/NMEA**

NTP server stratum 1

Configurable NTP automatic switch to Stratum 2 over loss of sync source

IEEE-1588 PTPv2 Grandmaster with multi profile support (Option)

Monitoring with SNMP V2c, V3

PC based modular hardware architecture, running Linux Ubuntu Server, making the equipment administration just like any standard server (other Linux distribution or Windows possible)

The equipment can be connected to regular screen/mouse/keyboard for easy GUI interaction

Hardware Accuracy of PPS ± 25 ns vs UTC if GNSS disciplined

The TMS5050 is rack mount equipment able to provide a high stable time source on an Ethernet TCP / IP network.

The TMS5050 is a time server that uses the Network Time Protocol (NTP) or/and the Precise Time Protocol (PTP) to synchronize all connected computers on the network. It is also capable of providing time code outputs

NTP Server

The equipment provides an NTP service in request / response mode in stratum 1 when it is synchronized on an external time source. The server manages frame authentication (using Symmetric keys mechanism or NTS protocol).

The client computers can be synchronized with a precision better than 1 ms.

The server has the following main interfaces:

- Ethernet IEEE802.3 100/1000 Mbs
- Synchronous UTC top pulse (1 PPS)

PTP Grandmaster

For more precise synchronization, PTP protocol (Precise Time Protocol) can be used. The TMS5050 integrates a PTPv2 grandmaster on any ports, but can act as any PTP role if needed. Most commonly used profiles are supported.

Remote monitoring

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

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

Synchronization

The equipment synchronizes on the GNSS and optionally on analog/digital IRIG-B or NMEA/1 PPS.

The internal GNSS receiver is a multi-constellation (up to 3 simultaneously) receiver with good performance for time application. It delivers a very high precision 1 PPS UTC reference pulse.

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 2×10^{-10}

Configuration

The entire configuration of the equipment is located in a removable SSD hard drive for easy system configuration and equipment update.

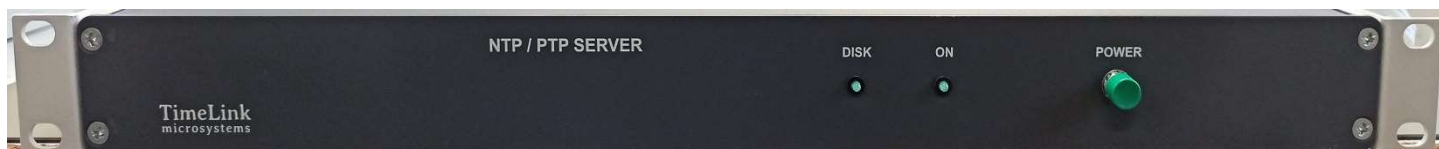
802.1X Authentication

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

Time code outputs

Available outputs are:

- IRIG-B007
- AFNOR 87500 RS422
- STANAG 4430 HQ and STM
- ICD-GPS-060 BCD
- NMEA
- 1 PPS
- Frequencies (10 MHz & below)



TMS5050 – 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

NTS (Network Time Security)

NTS (RFC 8915) includes a Key Establishment (NTS-KE) protocol that uses the Transport Layer Security (TLS) in order to authenticate NTP packets.

PTP (Precision Time Protocol)

PTP v2 IEE1588-2008
PTP profiles: default, automotive, enterprise and telecoms

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 (depending on options)

1 x SMA for the GNSS antenna input
1 x SUBD9 for I/O (1 PPS, time codes, ...),
 > RS485 or TTL 5V electric formats
1 x BNC input for analog IRIGB input
2 x RJ45 network connection
1 x VGA and/or 1 x HDMI
4 x USB
1 x SUBD9 Serial COM

NMEA (when selected)

NMEA messages (GGA, RMC, GSV, ZDA, GNS, GSA, GST, VTG, GLL, DTM, GBS) from the internal GNSS can be provided (one serial baud rate for all outputs) when GNSS signal is available or not.

Syslog

Standard Syslog message logging

1PPS Accuracy

±25 ns over UTC when the equipment is synchronized by GNSS

Internal Reference

Internal 10MHz. CFPT Oscillator.
Optional 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, Reach, ROHS, ITAR free and ERA99

Dimensions:

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

Weight

< 3Kg including the power cable

MTBF

> 100 000 h
> 150 000 h with OPT1.x

Options

- PTP
- Redundant Power Supply
- X Ethernet ports
- OCXO stability



TMS5050 – Standard Back panel (NTP only)

Ordering code:

TMS5050-STD:

GNSS synchronization with 2 LAN (NTP only)

TMS5050-STD-PTP:

GNSS synchronization with 2 LANs (PTP and NTP)

TMS5050-IRIGBANA:

IRIGB synchronization with 2 LAN (NTP-only)

TMS5050-IRIGBANA-PTP:

IRIGB synchronization with 2 LANs (PTP and NTP)

TMS5050-IRIGBNUM:

IRIGB synchronization with 2 LAN (NTP-only)

TMS5050-IRIGBNUM-PTP:

IRIGB synchronization with 2 LANs (PTP and NTP)

Additional Options for each equipment types above are available and combinations can be implemented

OPT1.X Double AC Power X=1 or DC power X=2

OPT2.X X Ethernet ports X=2 or 4 (X=4 ==> 4 LAN RJ45 connections)

OPT3 OCXO stability