TMS4000

Powerful & secure NTP server with GPS and IRIGB input

Stratum 1 NTP Server

Secure access to the server using SSH protocol

SNMP V2c Monitoring

Software update on site

Configuration on SDCARD

PPS accuracy ±50ns / UTC when locked to GNSS

Clients synchronization within 10 ms (< 2 ms typical)

Unlimited number of clients

Number of transactions > 800 / second

Long term stability of the 10 MHz output : < 1x10-10

The TMS4000 is a rack mount equipment able to provide a high stability time source through any Ethernet TCP/IP network.

The TMS4000 uses the NTP standard protocol (Network Time Protocol) allowing any computer or equipment linked to the network to synchronize.

NTP Server

Customers calculators can be synchronized with an accuracy of 1 to 10 ms. NTP client software must be installed on each client for its synchronization with the server.

The server provides the following interfaces:

- Ethernet interface IEEE802.3 10/100 Mbs.
- 10 MHz frequency issue from the internal own oscillator.
- Top second pulse (1 PPS) synchronous to UTC.
- Serial RS232 auxiliary link for extensions.

The TMS4000 uses either two independent sources to get the time and ensure its own synchronization:

- An integrated GNSS receiver.
- An IRIG input.

Priority is given to the GNSS source when available because of its greater accuracy.

GNSS

The GNSS receiver is a specific receiver dedicated to time applications, it is able to acquire 12 or more satellites (depending on the type of receiver) simultaneously. It delivers a very high precision top second (PPS).

Irig-B

The IRIGB signal is a standard dedicated to time distribution. It uses a 1 kHz carrier, amplitude modulated (code B12x).

Remote control

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

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

Also, an UDP frame containing the time and status of the equipment is emitted every second.

Oscillator

An internal OCXO type oscillator allows to have a 10 MHz sine output and maintain time with a stability of (Δ F / F) 1x10-9/jour in case of loss of external time source (no IRIGB and no GPS).

Configuration

The entire configuration of the equipment is contained in a removable Micro SDCARD memory.

TMS4000 front face

Specifications

Network Protocols

NTP

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

SNMP

(Simple Network Management Protocol)
(RFC 1155, 1157, 1213) V2c
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 to access securely the equipment.
It's especially used to update the internal software of the equipment.

Connectors

TNC for GPS antennae input.
BNC isolated for IRIGB input.
BNC for 10 MHz and 1PPS outputs.
SUB'D 9 pins female for the serial auxiliary link.
RJ45 for network connection.

Network Interface

Ethernet IEEE 802.3. 10/100 Base TX.

1 PPS Accuracy

± 100 ns relative to UTC when locked to GNSS.
± 500 ns relative to the beginning of the IRIGB frame when the equipment is synchronized by IRIGB.

IRIGB Code

IRIG-B, amplitude modulated sine signal 1/3, 1/1 – isolated by transformer.
Approved codes may contain or not the year information.

Internal reference

OCXO type Oscillator, 10 MHz.
10 MHz sine output +13 dBm/50 Ω.
Long term stability in free running mode:
<1.10-9 / day,
<4.10-8 / month,
<3.10-7 / year.
Long term stability in locked mode:
< 1.10-10.

GNSS Antennae

Antennae type to be specified when ordering.

Dimensions

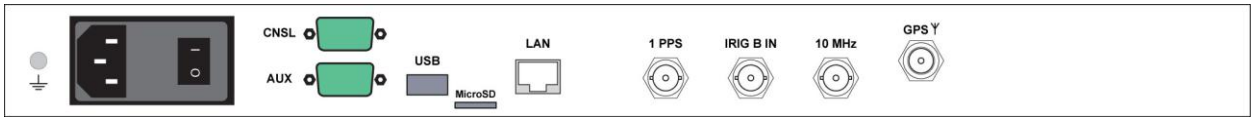
Rack 1U, 19''
Weight : 3 kg
Consumption : 30 W

MTBF

TMS4000 : 100 000 h
TMS4000-R : 150 000 h

Ordering code

TMS4000: standard model
TMS4000-R: equipment with 2 power supply in redundant mode.



TMS4000 rear face