TMG1720

GNSS / 1PPS disciplined time & frequency generator

The TMG1720 is a GNSS disciplined time & frequency generator designed for a wide range of applications.
The equipment is housed in 1U 19" standard case.
GNSS signal is used for long term disciplining of the internal oscillator.

GNSS

The internal GNSS receiver is a specific receiver dedicated to time application. It is a multi-constellation model able to acquire both GPS, GALILEO, BEIDOU and GLONASS satellites (a selection of 2 of them simultaneously). It delivers a very high precision UTC second reference pulse.

IRIG-B generator

The equipment includes an IRIG-B time code generator that allows to provide: an IRIG-B122/B126 signal (amplitude modulated analog signal).
These signals are in phase with the internal 1PPS equipment itself synchronized on the 1PPS of GNSS reference.

Oscillator

An internal OCXO type oscillator provides a 10 MHz frequency used to maintain time. The stability of this oscillator is better than ± $1x10^{-9}$ per day in case of loss of external time source.
When disciplined by the GNSS, the long term stability remains better than $5x10^{-11}$.

NTP Service

The TMG1720 includes a time service implementing standard NTP protocol (Network Time Protocol) allowing any computer or equipment linked to the network to synchronize. Customer's computers can be synchronized with an accuracy of 1 to 10ms. NTP client software must be installed on each client for its synchronization with the server.

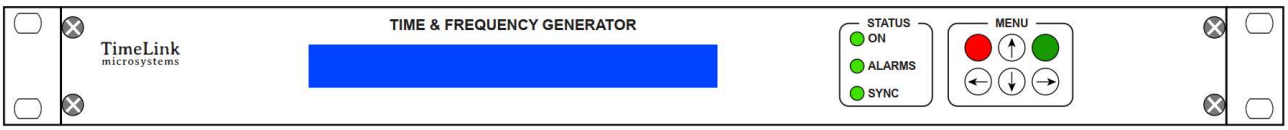
Remote monitoring

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

- The SNMP (SNMP V2c or V3) standard protocol (MIB provided)
- A web server through HTTP/HTTPS
- The standard SSH protocol
- A proprietary TCP or UDP frame containing the time and status of the equipment.

Configuration

The overall configuration of the unit is stored on a removable SDCARD memory which allows easy configuration and software update.



TMG1720 front panel

Specifications

Outputs

1 PPS output

TTL level
Accuracy of ±100 ns relative to UTC when locked to GNSS.

IRIG-B outputs

IRIG B122 / B126
Modulated code (B12x): 3V ±0.5 V peak-peak 1/1: 1/3 ratio isolated by transformer. BNC connectors (analog)

10 MHz Output

Level +13 dBm ±1 dBm, 50Ω
Guaranteed Phase noise:

1Hz	<-90 dBc/Hz
10Hz	<-110 dBc/Hz
100Hz	<-130 dBc/Hz
1 kHz	<-145dBc/Hz

Internal reference

OCXO type Oscillator, 10 MHz
free running mode:
Short-term stability (between 1s and 10s): < 2.10^{-11}
Long-term stability
< 1.10^{-9} / day
< 3.10^{-8} / month
< 1.10^{-7} / year
disciplining mode:
Long term stability:
< 5.10^{-11}

GNSS Antenna type

TNC connector
3V or 5V active antenna
Powered by receiver
(Antenna not included)

Console

USB Console for configuration & maintenance

Connectors:

1 x TNC for the GNSS antenna input
1 x BNC for 1PPS output
1 x BNC for 1PPS input
1 x BNC for IRIG-B12x output
1 x BNC for 10MHz frequency output
1 x USB console
1 x RJ45 network connection

Temperature:

Temperature: -10 ° to 60 ° C
Storage temperature: -20 ° to 70 ° C
Relative Humidity range: 10% to 90% (non-condensing)
Storage Relative Humidity: 5% to 95% (non-condensing)

Power supply:

2x 230V AC main supply : 1 in option
EEC socket 2P + with filter &On / Off switch voltage: 85-264VAC / 47-440Hz
Power consumption:
<20W 230VAC 50Hz per supply

Certification:

Certified Hardware CE, ROHS, Reach
ITAR Free EAR99

Network Protocols

NTP

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

SNMP

(Simple Network Management)
(RFC 1155, 1157, 1213) V2c or V3
SNMP provides to the network administrator the equipment status.

HTTP / HTTPS

The integrated web server allows to monitor and control the equipment.

TCP / UDP

Remote "push" mode (UDP/ TCP) or "request / response" mode (TCP).

Dimensions:

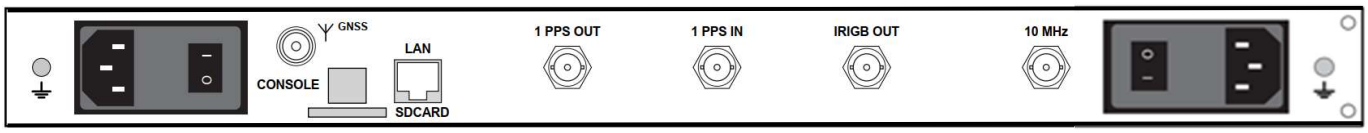
Standard 19" 1U with Depth of 350 mm

Weight:

<3 kg

MTBF

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



TMG1720 OPT1.1 rear panel

Ordering code

TMG1720: Standard model

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

OPT2.X Ethernet Port extension X=1 to 3 Lan2 to Lan4

OPT3 OCXO stability