TMG4420

GNSS disciplined time & frequency generator

The TMG4420 is a GNSS disciplined time & frequency generator specifically designed for low noise 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's a multi-constellation model able to acquire at the same time two constellations amongst GPS, GALILEO, GLONASS and BEIDOU. It delivers a very high precision UTC second reference pulse.

Irig-B generator

The equipment includes a IRIG time code generator that allows to provide:
- an IRIGB12x signal (amplitude modulated analog signal) on both outputs.
- An unmodulated signal IRIGB00x (DCLS) on a RS485 serial link.

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 $\pm 5 \times 10^{-10}$ per day in case of loss of external time sourcing.
When disciplined by the GNSS, the long term stability remains better than 5×10^{-11}.

NTP Service

The TMG4420 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 10 ms. NTP client software must be installed on each client for its synchronization with the server.

Remote control

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

- The SNMP standard protocol (MIB provided)
- A proprietary UDP or TCP protocol
- An internal web server

Configuration

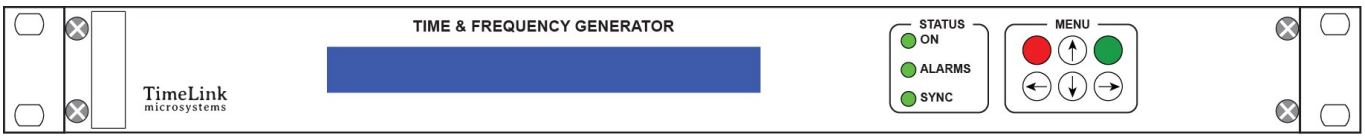
The overall configuration of the unit is stored on a removable SDCARD memory which allows remote software update easily.

Cyber

- Syslog available
- Configurable firewall
- Minimalized Linux distribution

Specific OCXO control

The equipment incorporates a specific GNSS disciplined algorithm dispatching frequency corrections by maximized steps so that frequency jumps are minimized.



TMG4420 front panel

Specifications

Outputs

1 PPS output

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

IRIGB outputs

Selectable format on both types of outputs: standard, Bxx6 or IEEE1344
IRIG B12x 2 outputs
Modulated code (B12x) : 3V ±0.5 V peak-peak 1/1: 1/3 ratio isolated by transformer. BNC connectors (analog)
IRIG B00x 1 output
No modulated (B00x)
RS422/RS485 interface

10 MHz Outputs

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

1Hz	<-105 dBc/Hz
10Hz	<-135 dBc/Hz
100Hz	<-155 dBc/Hz
1 KHz	<-158 dBc/Hz
10 KHz	<-162 dBc/Hz
100 KHz	<-162 dBc/Hz
1MHz	<-162 dBc/Hz
Spurious:	< -80 dBc
Harmonics:	< -30 dBc

Internal reference

OCXO type Oscillator, 10 MHz
free running mode:
Short term stability:

1s ..10s	< 5.10-13

Long term stability:

1 day	< 2.10-10
1 month	< 5.10-9
1 year	< 3.10-8

locked running mode:
Long term stability: < 5.10-11

GNSS receiver

Time dedicated receiver with TRAIM. multi-constellation GPS, GALILEO, BEIDOU, GLONASS (Two constellations at the same time). < ±50 ns / UTC

GNSS Antenna type

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

Console

USB compliant
Console for configuration & maintenance

Connectors:

1 x TNC for the GNSS antenna input
2 x BNC outputs for 1PPS
2 x BNC outputs for IRIG B122
4 x BNC outputs Frequency 10MHz
SUB'D 1 x 9-pin female for serial console
1 x 9-pin female SUB'D for output IRIG B002
SUB'D 1 x 9-pin female to output the output "AUX" optional
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:

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

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.

SNMP

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

HTTP/HTTPS

The integrated web server allows to view the status of the equipment.

TCP / UDP

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

Dimensions:

Standard 19" 1U with Depth of 350 mm

Weight:

< 3 Kg < 4 Kg with OPT2

MTBF

> 100 000 h >150 000 h with OPT2

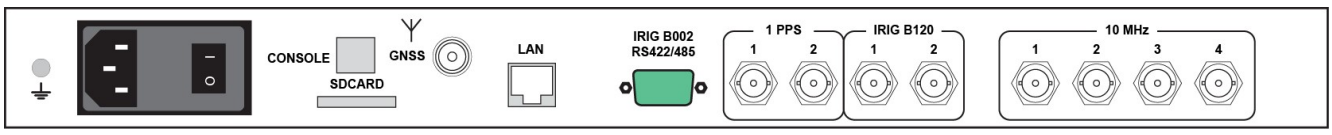
OPTIONS:

OPT1: NMEA

Output frames in standard NMEA GGA and RMC Emission at 4800 baud, 1 time per second on connector "AUX" DB9.
Electrical interface RS232 or RS 422

OPT2 : 2nd AC Power supply

2nd 230V AC mains supply:
EEC socket 2P + with filter & On / Off switch voltage: 85-264VAC / 47-440Hz
Power consumption: <20W 230VAC 50Hz
> 150 000 h with OPT2 2nd AC input



TMG4420 standard rear panel

Ordering code

TMG4420: Standard model
TMG4420 Opt1: NMEA output
TMG4420 Opt2: 2nd AC Power supply
Please call us for any further needs