

## TMG4320

### GNSS disciplined time & frequency generator

The TMG4320 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 is 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 IRIG-B12x signal (amplitude modulated analog signal) on both outputs.
- An unmodulated signal IRIG-B00x (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  $5 \times 10^{-11}$ .

#### NTP Service

The TMG4320 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.

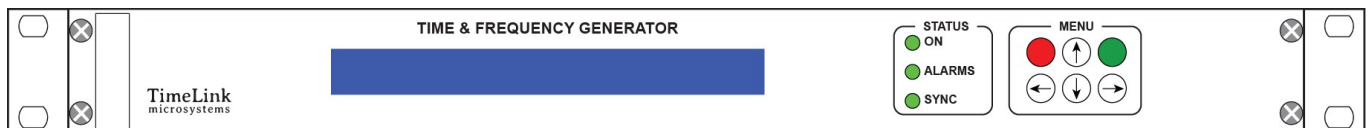
#### Remote control

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.



TMG4320 front panel

## Specifications

### Outputs

#### 1 PPS output

##### 2 outputs

TTL level

Accuracy of  $\pm 100$  ns relative to UTC when locked to GNSS.

#### IRIGB outputs

Selectable format on both types of outputs:

##### IRIG B12x 2 outputs

Modulated code (B12x): 3V  $\pm 0.5$  V peak-peak 1/1: 1/3 ratio isolated by transformer. BNC connectors (analog)

##### IRIG B00x 1 output

Non modulated DCLS  
RS422/RS485 interface

#### NMEA OUTPUT 1

Output frames in standard NMEA GGA and RMC Emission at 4800 baud, 1 time per second on connector "OUTPUT 1" DB9.

Electrical interface RS232

#### 10 MHz Outputs

##### 4 outputs

Level +13 dBm  $\pm 1$  dBm, 50  $\Omega$

##### 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

OEXO type Oscillator, 10 MHz

##### free running mode:

Short term stability:

1s ...10s < 1.10-12

Long term stability:

1 day < 5.10-10

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 (2 constellations at the same time). <  $\pm 50$  ns / UTC

#### GNSS Antenna type

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

#### Console

RS232 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 B12X  
4 x BNC outputs Frequency 10MHz  
1xSUB'D9 female "OUTPUT 1" for NMEA output  
1xSUB'D9 female "OUTPUT 2" for IRIG-B DCLS output  
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 & free ITAR & EAR

#### HTTP

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

#### 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  
SNMP provides to the network administrator the equipment status.

#### 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: 4 RS422 NMEA & 4 RS422 IRIG B00X outputs

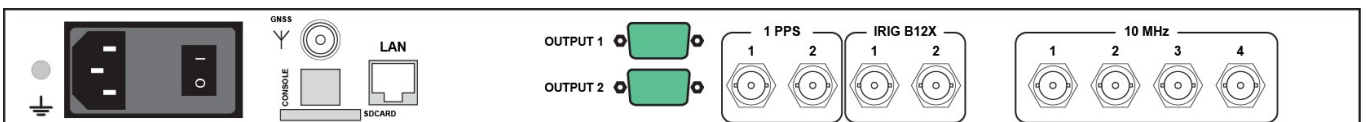
4 NMEA outputs (GGA, GLL, RMC, VTG, ZDA)  
4 IRIG B002 outputs  
RS422 electrical interface

##### OPT2: 2<sup>nd</sup> AC Power supply – No IRIGB12X, NO PPS

2<sup>nd</sup> 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 2<sup>nd</sup> AC input

##### OPT3: Anti-Spoofing & Anti-Jamming

Spoofing detection and Jamming reduction when used with a dedicated antenna.



Standard TMG4320 rear panel

### Ordering code

TMG4320: Standard model

TMG4320 Opt1: 4 RS422 NMEA & 4 RS422 IRIGB00X

TMG4320 Opt2: 2<sup>nd</sup> AC Power supply

TMG4320 Opt3: Anti-spoofing & Anti-Jamming

Please feel free to contact us if you need any other specifications