

# TMG5000

GNSS/IRIG-B  
disciplined T/F  
generator  
with 8 configurable  
outputs (IRIG-B, PPS,  
Digital, Analog  
10Mhz)

The TMG5000 is a GNSS disciplined time & frequency generator specifically designed for applications requiring different type of time & frequency signals on the same unit.

The 8 independent outputs are programmable in order to get IRIGB, 1PPS, or 10 MHz on each output.

The equipment is housed in 1U 19" standard rack. GNSS signal is used for long term disciplining of the internal oscillator.

## Source GNSS/IRIG-B

The internal GNSS receiver is a specific receiver dedicated to time application. It's a bi-constellation model able to acquire both GPS and GLONASS satellites simultaneously. It delivers a very high precision UTC second reference pulse.

An analog B122 IRIG-B source can also be used as a primary or secondary time source

## 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  $1 \times 10^{-9}$  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 TMG5000 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.

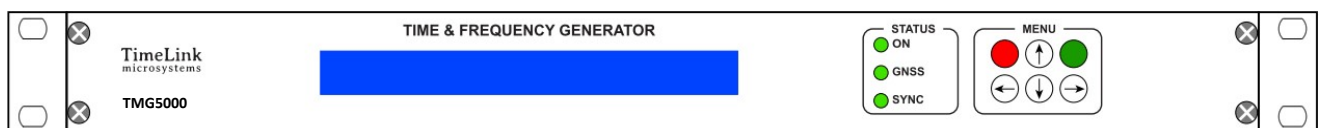
## Remote control

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

- The SNMP standard protocol (MIB provided)
- A proprietary UDP or TCP protocol

## Configuration

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



TMG5000 front panel

## Specifications

### 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

The integrated web server allows viewing the status of the equipment.

### TCP / UDP

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

### 1 PPS output

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

### IRIGB input

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

### IRIGB outputs

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

### 10 MHz Outputs

Level  $+13 \text{ dBm} \pm 1 \text{ dBm}$ ,  $50 \Omega$   
**Guaranteed** Phase noise:  
1Hz -90 dBc/Hz  
10Hz -110 dBc/Hz  
100Hz -130 dBc/Hz  
1 KHz -140 dBc/Hz  
 $\geq 10\text{KHz}$  -145 dBc/Hz

### Internal reference

OEXO type Oscillator, 10 MHz  
**Free running mode:**  
Short term stability:  
1s < 2.10-11  
10s - 100s < 2.10-11  
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.  
Bi-constellation GPS/GLONASS  
<  $\pm 50$  ns / UTC

### Digital signals

4 signals defining by the user.  
1  $\mu$ s pulse width of 999 ms or frequency of 1Hz to 1MHz with a level of 0 to 5 volts.

### GNSS type

Multi-constellation GNSS  
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  
1 x BNC for the IRIG-B input  
1 x BNC outputs for 1PPS  
1 x BNC input for 1PPS  
8 x BNC output for programmable outputs: 1PPS, IRIG B12x, IRIG B00x, 10MHz & digital frequencies  
1x SUB'D 9-pin female for serial console  
1 x 9-pin female SUB'D for serial console link.  
1x SUB'D 9-pin female for "AUX" optional  
1 x RJ45 network connection

### Temperature:

Temperature:  $-10^\circ$  to  $60^\circ \text{C}$   
Storage temperature:  $-20^\circ$  to  $70^\circ \text{C}$   
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 and ITAR free

### Dimensions:

Standard 19" 1U with Depth of 350 mm

### Weight:

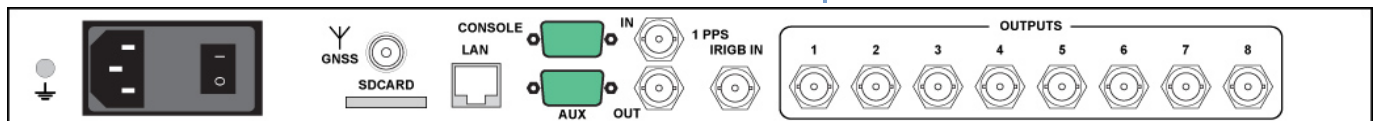
< 3 kg

### MTBF

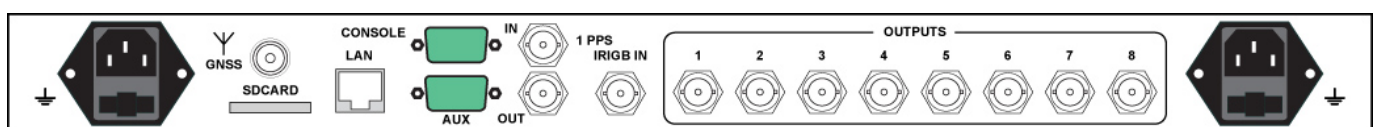
> 100 000 h  
> 150 000 h with OPT 2<sup>nd</sup> AC input

### OPT 2<sup>nd</sup> Power supply:

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



TMG5000 rear panel



TMG5000 OPT 2<sup>nd</sup> AC input rear panel

### Ordering code

TMG5000: Standard model  
TMG5000 OPT 2<sup>nd</sup> AC input