# TMG4610

## Ultra High Stability
## Ultra Low Noise Phase

- **Allan Variation: 1s < 5 $10^{-13}$**
- **Noise phase <-122 dBc/Hz at 1Hz**

## Frequency Generator

- 4 x **5MHz sinus**
- 1 x **10MHz sinus**
- 2 x **1PPS outputs**

***GNSS or 5 MHz IN synchronization***

***Monitoring through HTTP/HTTPS using a web interface or via SNMP V2c/V3***

***Easy software update through embedded SDCard***

***NTP V4***

***Services***

- ***SYSLOG***
- ***SSH***

The TMG4610 is a time and frequency generator disciplined by GNSS or a 5MHz reference and based on an ultra high short term stability pilot.
It can achieve 5 $10^{-13}$ Allan variation (Tau=1s and 10s).

The equipment is housed in 1U 19" standard rack.

## Operation

The TMG4610 can operate either synchronized by GNSS or by a 5MHz. Its long-term stability will depend on the stability of those references.

## GNSS

The internal GNSS receiver is a specific receiver dedicated to time application. It is a multi-constellation (GPS, GLONASS, BEIDOU, GALILEO) receiver. It delivers a very high precision UTC second reference pulse.

## NTP Service

The TMG4610 includes a time service implementing standard NTP protocol (Network Time Protocol) allowing any computer or equipment linked to the network to synchronize. NTP client software must be installed on each client for its synchronization with the server.

## Oscillator

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

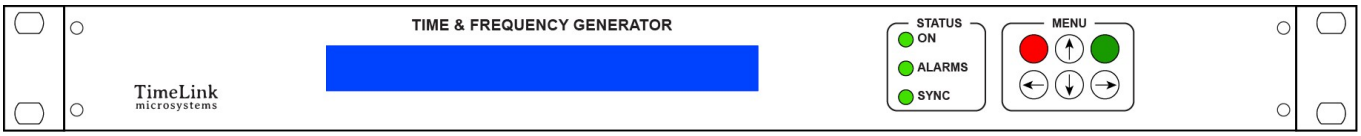
## Remote management

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

- SNMP standard protocol (MIB provided) – status only.
- A web interface using HTTP or HTTPS
- A proprietary TCP protocol (status and command)

## Configuration

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




*TMG4610 front face*

# 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 the equipment status to the network administrator.

## HTTP/HTTPS

The integrated web server allows monitoring and controlling the equipment.

## TCP remote management

Remote management in "request / response" mode.

## Connectors

1 x TNC for the GNSS antenna input
1 x BNC for the 5MHz reference frequency
1 x BNC for the 1 PPS input
2 x BNC for 1PPS output
4 x BNC for the 5MHz output frequency
1 x BNC for the 10MHz output frequency
1 x USB for serial console link.
1 x RJ45 network connection

## Network Interface

Ethernet IEEE 802.3. 10/100/1000

## 5 MHz outputs

Level +7 dBm ±1 dBm, 50 Ω
**Guaranteed** Phase noise:

| | |
|---|---|
| 0.1Hz | -95 dBc/Hz |
| 1Hz | -122 dBc/Hz |
| 10Hz | -148 dBc/Hz |
| 100Hz | -155 dBc/Hz |
| 1 KHz | -155 dBc/Hz |
| ≥ 10KHz | -155 dBc/Hz |

## 10 MHz outputs

Level +7 dBm ±1 dBm, 50 Ω
**Guaranteed** Phase noise:

| | |
|---|---|
| 0.1Hz | -85 dBc/Hz |
| 1Hz | -117 dBc/Hz |
| 10Hz | -143 dBc/Hz |
| 100Hz | -152 dBc/Hz |
| 1 KHz | -155 dBc/Hz |
| ≥ 10KHz | -155 dBc/Hz |

## 1PPS output

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

## Internal reference

OCXO type Oscillator, 5 MHz
**Free running mode**:
Short term stability:

| | |
|---|---|
| 1s | < 2.10-13 |
| 10s - 100s | < 5.10-13 |

Pincinbono stability:
< 5.10-13
T° Slope/mn < 2.510-13 RMS

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

## Console

USB compliant
Console for configuration & maintenance

## Temperature

Temperature: 0 ° 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: 90-264VAC / 47-63Hz
Power consumption: <20W 230VAC 50Hz

## Certification:

Certified Hardware CE, ROHS and ITAR free

## Dimensions:

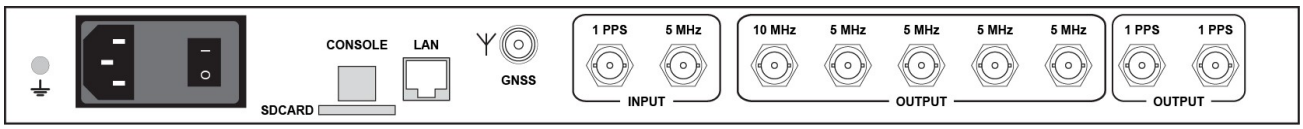
Standard 19" 1U with Depth of 305 mm
Rack 1U 19" L =483 x l =305 x H= 44 mm
OPT01: Standard 19" 1U with Depth of 400 mm

## Weight

< 3,5 kg

## MTBF :

> 100 000 h




*TMG4610 back face*

## Command code:

*TMG4610: Standard*

*Please contact us for any further options mandatory*