

# TMG5150

## Time Code Generator:

- STANAG 4372 / 4430
- ICD-GPS-060 HaveQuick
- IRIG-B00x
- 1PPS, NMEA ZDA
- 8 outputs

### Two synchronization sources :

1. HQ/PPS or NMEA/PPS
2. HQ/PPS or NMEA/PPS

### 8 outputs, programmable in factory among:

- 1PPS
- IRIG-B00x
- ICD-GPS-060 HaveQuick
- STANAG 4430/4372
- NMEA ZDA

### Output Electrical interfaces (configurable in factory):

- RS485 (default)
- TTL
- ICD-GPS-060

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

### NTP V4 & Default PTP profile

### Services

- SYSLOG
- SSH

The equipment is a time generator disciplined by an external reference and based on a high stability pilot to guarantee hold over performance when losing its external reference.

Two synchronization sources are available and can be used individually or with a priority definition. Each source can be a HQ/PPS source or a NMEA/PPS source.

Its 8 outputs can be configured amongst IRIG-B00X, 1 PPS, ICD-GPS-060 HaveQuick, STANAG 4430/4372, NMEA ZDA. The equipment is housed in 1U 19" standard rack.

## NMEA Synchronization

The equipment is synchronized by:

- an NMEA ZDA time code over RS485 (default configuration) or TTL and a 1PPS electrical format TTL, RS485 or ICD-GPS-060 (default configuration)
- or a HaveQuick time code (defined below).

NMEA source signal(s) can be connected to input 1 or 2.

## HQ Synchronization

The equipment is synchronized by an HaveQuick code amongst:

- STANAG 4246 HQI, 4246 HQII
- STANAG 4372 HQIIIA
- STANAG 4430 STM, 4430 xHQ
- ICD-GPS-060 HaveQuick
- ICD-GPS-060 BCD
- DOD-STD-1399 (on demand)

and its 1PPS electrical format TTL, RS485 or ICD-GPS-060 (default configuration). HQ source signal(s) can be connected to input 1 or 2.

## TIME CODE-PPS Generation

The equipment can generate eight independent digital time signals outputs within the following formats:

- 1 PPS
- ICD-GPS-060 HaveQuick
- IRIG-B00X
- STANAG 4430 (XHQ)
- STANAG 4372 (HQIIA)
- NMEA ZDA

**The electrical format can be adjusted at factory only on-demand amongst: RS485, ICD-GPS-060, TTL.**

## Oscillator

An internal OCXO 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, the long-term stability remains better than  $5 \times 10^{-11}$ .

## NTP & PTP Services

This equipment includes a time service implementing standard NTP & PTP protocol (Network Time or Precision Time Protocol) allowing any computer or equipment linked to the network to synchronize.

NTP/PTP client software must be running on each client for its synchronization with the server.

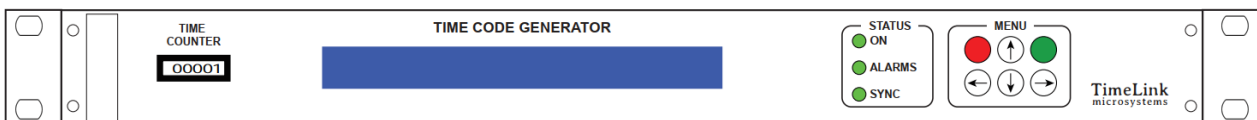
## Remote monitoring

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

- The SNMP standard protocol (MIB provided)
- A web interface using HTTP or HTTPS
- A proprietary UDP or TCP protocol adding control features

## Configuration

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



TMG5150 front panel

## Specifications

### NTP/PTP

**NTP (Network Time Protocol)**  
NTP (RFC 1305) SNTP (RFC 1361)  
using UDP 123 port.

### PTP (Precision Time Protocol)

Main port only  
PTP v2 IEE1588-2008  
Slave & Grandmaster  
Default PTP profile

### 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 monitoring and controlling of the equipment.

### TCP / UDP

Remote monitoring in :  
- "push" mode UDP / TCP  
- "request / response" mode TCP

### Connectors

2 x SubD9 for the inputs  
1 x SubD25 for the 8-time code outputs  
1 x USB for serial console link  
1 x RJ45 NTP network connection  
1 x RJ45 PTP network connection

### Network Interface

Ethernet IEEE 802.3. 10/100/1000

### Configurable outputs:

- **1 PPS output**

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

- **IRIG-B outputs**

IRIG-B00x non modulated IRIG-B signal

- **STANAG TIME CODE**

The following time codes are available

- ICD-GPS-060 HQ
- STANAG 4372 HQIIA Message
- STANAG 4430 XHQ Message
- NMEA ZDA

### Internal reference

10 MHz Oscillator High end

#### Free running mode:

Short term stability:  
1s <  $2 \cdot 10^{-11}$   
10s - 100s <  $2 \cdot 10^{-11}$   
Long term stability:  
1 day <  $1 \cdot 10^{-9}$   
1 month <  $3 \cdot 10^{-8}$   
1 year <  $2 \cdot 10^{-7}$

#### Locked running mode:

Long term stability: <  $5 \cdot 10^{-11}$

### Console

USB compliant  
Console for configuration & maintenance

### Temperature

Operating 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)

### DC Power supplies

DC supply : 9-36 VDC with fuse  
Total Power consumption: <40W  
With fuse & secured Jaeger connectors

### Certification:

**Certified Hardware CE, ROHS, Reach, ITAR free & EAR 99**

### Dimensions:

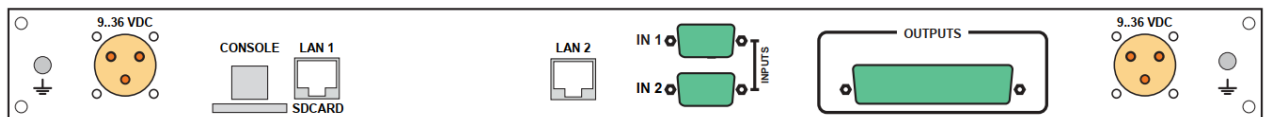
Standard rack 19" 1U with Depth 14 <sup>61</sup>/<sub>64</sub> in

### Weight

< 8lb.

### MTBF:

> 150 000 h



Back Panel

### Order code : TMG5150

Please contact us for any further options needed

THE 8 OUTPUTS ARE CONFIGURABLE: *Performed only in factory*  
a 16 digits code is representing the configuration of the SUBD 25 output connector for each of the 8 outputs

It is composed of:

- a **Letter**, indicating the type of output signal
- a **Number**, indicating the electrical format of the output

#### Outputs code example:

**B2 H1 G1 A0 F3 B2 E1 E3**

**Output 1: 1PPS TTL**

**Output 2: STANAG 4430 RS485**

**Output 8: NMEA ZDA ICD-GPS-060**

Letter	Output signal
A	OFF, no signal
B	1PPS
C	IRIG-B002
D	IRIG-B006
E	NMEA ZDA
F	ICD-GPS-060 HQ
G	STANAG 4372 iii
H	STANAG 4430 XHQ

Number	Electrical format
0	Not configured
1	RS485
2	TTL
3	ICD-GPS-060