

TMG5020

Time Code Generator:

UTC, 1PPS, IRIG-B

Frequency Generator

- 10MHz

- 8 programmable outputs

**Multi sources synchronization:
GNSS, IRIG-B12X, External PPS**

**Low noise 10 MHz output (long term
stability $<1 \times 10^{-10}$)**

**8 programmable outputs (1PPS,
IRIGB, 10MHz)**

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

**Easy software update through
embedded SDCard**

NTP V4

Services

- **SYSLOG**
- **802.1X**
- **SSH**
- **RTC**

TMG5020 is a time and frequency generator disciplined by an external reference and based on a high stability pilot to guarantee hold over performance when losing its external reference.

Its 8 programmable outputs can be selected amongst IRIGB, 1 PPS, 10MHz, adjustable 1 PPS (Start and width) and adjustable digital clock (within a selection of available frequency).

The equipment is housed in 1U 19" standard rack

GNSS

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

Irigr-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).

These signals are in phase with the internal 1PPS equipment itself synchronized on the 1PPS of GNSS reference.

Multi-source synchronization (IRIGB12X, GNSS, PPSIN)

The equipment synchronizes on the available input source: GNSS, IRIGB12X or PPSIN

Source priority can be setup.

Oscillator

An internal OCXO type oscillator provides a 10 MHz frequency used to maintain time. The stability of this oscillator is better than 1×10^{-9} per day in case of loss of external time sourcing.

When disciplined by the GNSS, the long term stability remains better than 5×10^{-11} .

NTP Service

The TMG5020 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.

Remote monitoring

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

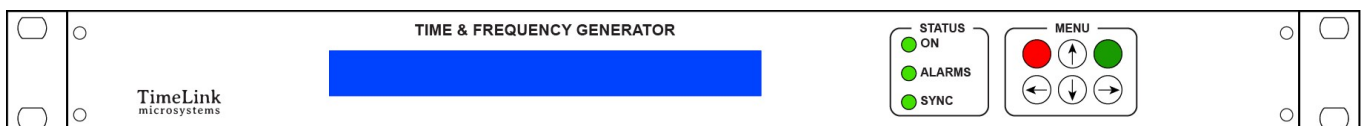
- The SNMP standard protocol (MIB provided)
- A web interface using HTTP or HTTPS
- A proprietary UDP or TCP protocol adding control features

Configuration

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

Options

- 2nd power supply AC / DC
- Internal pilot



TMG5020 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 to the network
administrator the equipment status.

HTTP/HTTPS

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

TCP / UDP

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

Connectors

1 x TNC for the GNSS antenna input
1 x BNC output for 1PPS
8 x BNC output for programmable outputs:
1PPS, IRIG B12x, IRIG B00x, 10MHz & digital
frequencies
1 x USB for serial console link.
1 x RJ45 network connection
1 x BNC input for 1PPS
1 x BNC input for IRIGB IN

Network Interface

Ethernet IEEE 802.3. 10/100/1000

1 PPS output

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

Programmable outputs

• IRIGB outputs

Selectable format on both types of
outputs: B12x, or IEEE1344

IRIG B12x

Modulated code (B12x): up to $8V \pm 0.5V$
peak-peak 1/1: 1/3 ratio isolated by
transformer. BNC connectors (analog)

IRIG B00x

No modulated (B00x)
DCLS interface

• Digital signals

Pulse signals: programmable start & Width
Frequency: 1Hz, 1KHz, 10KHz, 100KHz, 1MHz
with a level of 0 to 5 volts.

• 10 MHz Outputs

Level $+13 \text{ dBm} \pm 1 \text{ dBm}$, 50Ω

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

OcXO 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

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:

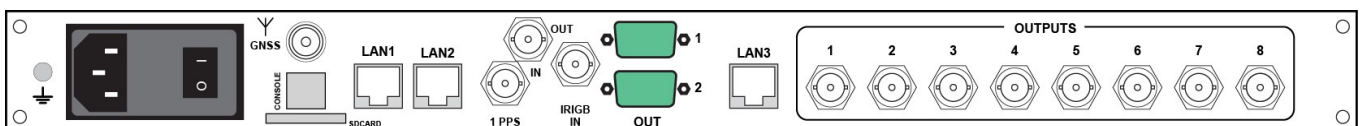
Standard 19" 1U with Depth of 350 mm
Rack 1U 19" L=483 x l=350 x H= 44 mm
OPT01: Standard 19" 1U with Depth of 400
mm

Weight

< 3 kg

MTBF :

> 100 000 h
> 150 000 h with OPT1



TMG5020 back face Opt03

Commande code:

TMG5020: Standard

TMG5020 OPT01 : 2 power supplies option (with 400mm depth rack)

TMG5020 OPT02: « HOLDOVER » : specific pilot for improved holdover

TMG5020 OPT03 : additional NTP ports (LAN1/LAN3 10/100/1000, LAN2 10/100)