TMG5022

Time Code Generator:

- UTC
- Countdown
- 1PPS
- IRIG-B
- Numerical Time

Frequency Generator

- 10MHz
- 8 programmable outputs

GNSS synchronization and CD control through Numerical Time

Low noise 10 MHz output (long term stability <1x10^{-10})

8 programmable outputs: 1PPS, IRIG-B (up to 4 UTC, up to 4 countdown), 10MHz

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

Easy software update through embedded SDCard

NTP V4 and Numerical Time

Services
- *SYSLOG*
- *SSH*

Able to access to some functions thru the front panel

The TMG5022 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 IRIG-B (4 UTC time and 4 count down time), 1 PPS standard and adjustable, 10MHz.

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

Operation

The TMG5022 can operate either in remote mode where countdown is controlled through the received numerical time or in autonomous mode where the countdown is controlled via the front face of the equipment.

GNSS synchronization is required to phase the equipment 1PPS.

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 an exceedingly high precision UTC second reference pulse.

IRIG-B generator

The equipment includes an IRIG-B time code generator that allows to provide:
- An IRIG-B12x signal (amplitude modulated analog signal).
- An unmodulated signal IRIG-B00x (DCLS).

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 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}.

NTP Service

The TMG5022 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 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 software update.

Options

- 2nd power supply AC / DC
- Enhanced pilot
- Please call us for any further option requested

TMG5022 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 the equipment status to the network administrator.

HTTP/HTTPS

The integrated web server allows monitoring and controlling the equipment.

Numerical Time IN/OUT

Per CNES specification

TCP remote management

Remote management in "request / response" mode.

Connectors

1 x TNC for the GNSS antenna input
1 x BNC input for 1PPS
1 x BNC input for IRIG-B IN
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 for Numerical Time acquisition and equipment management interface

Network Interface

Ethernet IEEE 802.3. 10/100/1000

Programmable outputs

• IRIG-B outputs

Selectable format on both types of outputs: standard, B12X, or IEEE1344
IRIG-B12x
Modulated code (B12x): up to 8V ±0.5 V peak-peak 1/1: 1/3 ratio isolated by transformer. BNC connectors (analog)
IRIG-B00x
Non modulated (B00x)
DCLS interface

• 10 MHz outputs

Level +13 dBm ±1 dBm, 50 Ω
Guaranteed Phase noise:

1Hz	-90 dBc/Hz
10Hz	-110 dBc/Hz
100Hz	-130 dBc/Hz
1 KHz	-140 dBc/Hz
≥ 10KHz	-145 dBc/Hz

PPS output

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

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	< 1.10-9
1 month	< 3.10-8
1 year	< 2.10-7

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, REACH, ITAR free and EAR99

Dimensions:

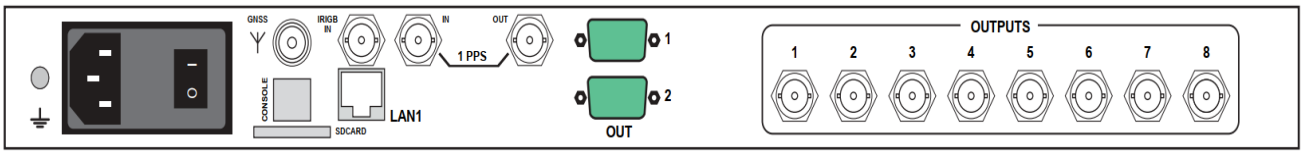
Standard 19" 1U with Depth of 305 mm
Rack 1U 19" L =483 x l =305 x H= 44 mm
OPT01: Standard 19" 1U with Depth of 400mm

Weight

< 3 kg with standard version

MTBF:

> 100 000 h
> 150 000 h with OPT1



TMG5022 back panel

Command code:

TMG5022: Standard

TMG5022 OPT1.X: Redundant AC Power (X=1) or Redundant DC power (X=2)

TMG5022 OPT02 « HOLDOVER » : specific pilot for improved holdover

TMG5022 OPT03 « 2.048MHz » : 1 specific output 2048kHz (G.703) thru dB9

Please contact us for any further options mandatory