

## SW1052

### GPS disciplined time-frequency generator with NMEA output



The SW1052 is a GPS synchronised time code generator to be used in a wide range of applications. The equipment is housed in a 19" , 1 U rack mount. The equipment includes different oscillator's types with a long term disciplining algorithm based on the GPS high stability signal.

On the front face, an alphanumeric LCD display, allows time, satellites visibility & operation mode visualisation. The status of the system is shown by mean of 3 LED's (power supply, satellites tracking, slaved oscillator).

A six keypads keyboard provide the man machine interface and the monitoring of the SW1052.

The equipment main function are :

- A frequency reference source
- A GPS receiver
- A Time code generator (IRIG B002 and 1 PPS)
- A direct NMEA output for GGA and RMC, GPS standard frames.

#### Oscillators

There is a choice in internal oscillators, depending on the stability and phase noise required. The oscillator is long term disciplined using the GPS signal.

In case of GPS' time loss, when starting the equipment, the starting hour of the IRIG B generator could be entered using the front face keyboard.

The rear face of the equipment holds all the input/output signals :

12 connectors are used :

- GPS antenna input,
- One IRIG B002 output,
- 4 outputs : 10 MHz sine frequency, (FRE),
- 2 outputs : 1PPS,
- One NMEA DB9 output,
- One DB9 female (AUX2) RS232 serial link
- One auxiliary output RJ45(AUX1)
- One network output RJ45(LAN)

Power supply uses a CEE standard 230V AC connector with fuse, filter & ON/OFF switch.

#### GPS

The GPS receiver is a Trimble Resolution T module able to acquire 12 satellites. The module delivers a high precision, top second reference.

#### Irig-B

The IRIG B generator provides a signal compliant with 200-98 RFC Standard on a RS485 serial link. It's also automatically phase synchronised on the 1 PPS signal coming from the GPS.

#### NTP Server

The equipment distributes time to precisely synchronize client computer clocks over a network. One mode is implemented : on request.

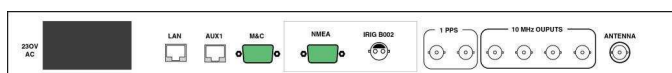
Client computer clocks can be synchronized from 1 to 10 milliseconds.

An NTP client/daemon is required for client-side synchronization with any network time server.

#### Remote control

A Windows® management & control software is provided with the equipment. Remote control is available through RS232 or Ethernet TCP/IP network.

Information's on equipment status are available with SNMP protocol (SNMP protocol Enterprise MIB). Network parameters are initialized through RS232 port or front face keyboard.



REAR FACE

## SW1052

# GPS disciplined time-frequency generator with NMEA output

## Specifications

**1 PPS precision :** < 15 ns with GPS receiver (the receiver is locked on a fixed position).

**Time signal phase :** ± 200 ns, with regards to the 1PPS reference signal.

**Generated code :** IRIG-B002. Compliant with RFC 200-98 standard. RS485 Serial link on BR2 connector.

**Visualisation :** Universal Time or Local Time.

**Internal reference :** OCXO, Low noise, etc... 10 MHz or 5 MHz.

**Frequency output :** Internal oscillator frequency : 10 or 5 MHz. Level +13 dBm/50 Ohm. BNC female connectors.

**1 PPS outputs :** rising time < 20 ns, width 10 µs, TTL signal, impedance 50 Ohms. Connector female BNC.

**NMEA auxiliary output :** standard NMEA GPS frames GGA & RMC . Emission speed : 4800 bauds, every second on DB9 connector.

**Remote control :** Settings & remote control using asynchronous serial link. RS232 levels.

**GPS antenna :** antennas & cables length in options.

**Connectors :** BNC for analog and pulse signals, 9 pins females Sub'D for serial RS232 links. RJ45 for TCP/IP.

**Dimensions :** 1U rack when OCXO oscillators are used. Width = 19" (483 mm), Height = 1U (44.5 mm), Depth = 295 mm.

**Weight :** 5 Kg

**Consumption :** 30 W

**MTBF =** 65 000 h

**Network Time Protocol :**

NTP (RFC 1305) SNTP (RFC 1361) ; TIME (RFC 868)

**Network Transport Protocol :** UDP/IP

**Simple Network Management (SNMP) :**

SNMP provides the network administrator with the NTP Time Server Protocol, network status, and statistics.

**Network Interface :** UDP/IP (TCP/IP) Ethernet IEEE 802.3. 10Base-T connector

**Network Timing Accuracy :**

1 to 10 milliseconds typical

Oscillators	OCXO	OCXO
Short term stability	PULSAR -FB210	standard
1s	< 2.10 <sup>-11</sup>	< 2.10 <sup>-11</sup>
10s – 100s	< 2.10 <sup>-11</sup>	< 2.10 <sup>-11</sup>
Long term stability		
Day	< 2.10 <sup>-10</sup>	< 5.10 <sup>-10</sup>
Month	< 5.10 <sup>-9</sup>	< 1.5.10 <sup>-9</sup>
Year	< 5.10 <sup>-8</sup>	< 1.10 <sup>-7</sup>
Long term stability with GPS		
Day	< 3.10 <sup>-12</sup>	< 2.10 <sup>-11</sup>
Month	< 2.10 <sup>-12</sup>	< 2.10 <sup>-11</sup>
Year	< 2.10 <sup>-12</sup>	< 2.10 <sup>-11</sup>
Phase noise		
1 Hz	< -105 dBc/Hz	< -90 dBc/Hz
10 Hz	< -135 dBc/Hz	< -120 dBc/Hz
100 Hz	< -145 dBc/Hz	< -135 dBc/Hz
1 KHz	< -155 dBc/Hz	< -140 dBc/Hz
10 KHz	< -160 dBc/Hz	< -145 dBc/Hz
Harmonics	< -50 dBc	< -50 dBc
Spurious	< -80 dBc	< -80 dBc
Stability/Temperature [0, 50°C]	< 5.10 <sup>-10</sup> pp	

## Ordering information : SW1052-O-F

O= X(OCXO) or FB(low noise) Oscillator type

F= 5 (5 MHz) ou 10 (10 MHz) Internal oscillator frequency