

## FREQUENCY STANDARD FN-GPS



- **Internal precision quartz oscillator**  
Accuracy class 10-10
- **Controlled by standard time**  
from the GPS satellites
- **Standard frequency 10 MHz**  
**2.048 MHz (option)**
- **Output of position, date,**  
**Time of day (UTC)**
- **Output of operating data**
- **Alarm contacts**
- **Can be used worldwide**

The frequency standard FN-GPS supplies 10 MHz, plus 2.048 MHz as an option, with an accuracy and stability determined by the standard time from the GPS satellite system. The frequency is monitored and adjusted by continuous comparison with the time markers on the GPS satellites. The comparison times are selected such that even in poor conditions, compliance with the technical data for the frequency standard FN-GPS is ensured. Frequencies other than 10 MHz are derived by direct digital synthesis.

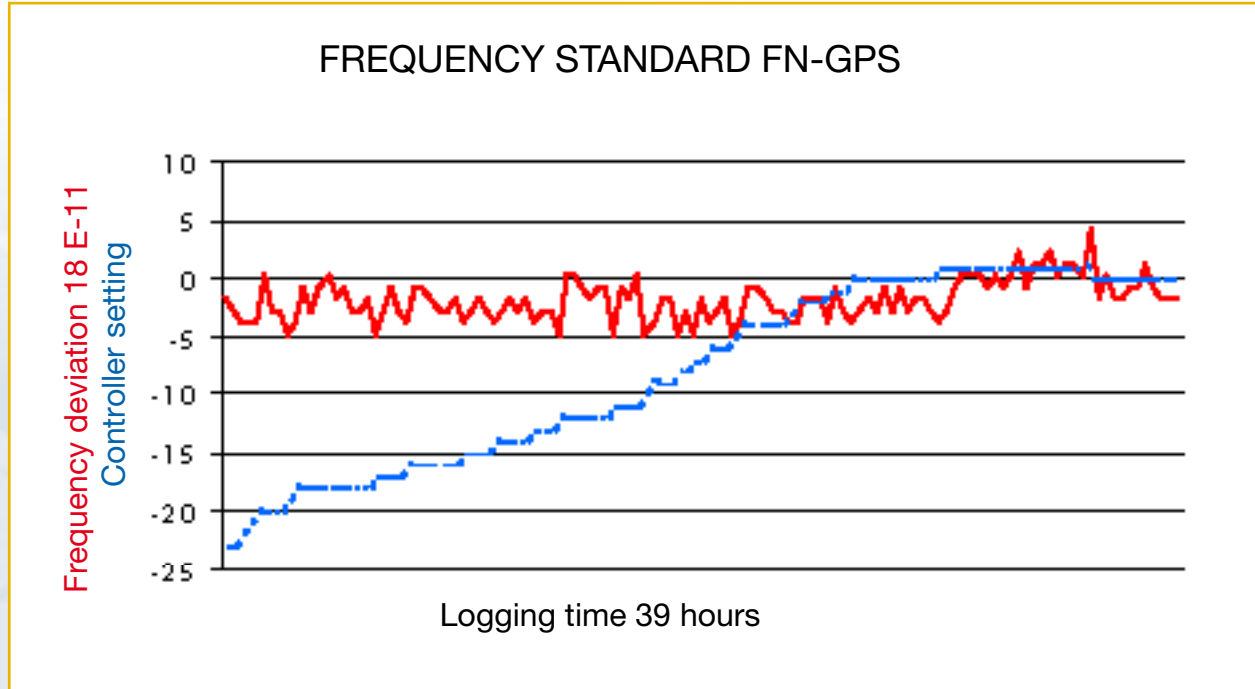
Due to the worldwide availability of the GPS satellite signals and the possibility of operating the frequency standard FN-GPS using an external battery, operation in any location is possible.

The weather-proof antenna can be fitted quickly and straightforwardly.

For monitoring and documentation, important operating data are available on a serial interface that can also be polled using a modem. The frequency deviation compared to GPS can also be polled.

As the time provided by the GPS satellite system (UTC) can be traced back to national and international standards, given appropriate logging it is not necessary to calibrate the GPS-controlled frequency standards.

## PLOT OF THE FREQUENCY UNCERTAINTY ON A FN-GPS



In instrumentation the frequency standard FN-GPS is used as a reference standard in the calibration laboratory and as an in-house standard for supply in several laboratories with a standard frequency.

In the case of mobile measuring station applications such as RF monitoring, propagation measurements, etc., precise location information is also available along with the standard frequency.

A standard frequency is supplied locally to common-frequency transmitters such as DAB-T or DVB-T and television transmitters with precision offset; this standard frequency ensures minimal frequency deviations.

For telecommunication applications, whether in PCM or SDH/SONET applications, the additional output with 2.048 MHz (option) is a high quality, reliable and fully autonomous clock source that can be used anywhere, also in areas where there is little infrastructure.

# Technical data FN-GPS

## GPS receiver

Reception frequency: L1 (1575.42 MHz)  
 Code: C/A (coarse acquisition, civil access)  
 Reception channels: 8 channels continuous  
 Sensitivity: -134 dBm  
 Interruption in operation on site: 1 min

## Antenna

General: Active, weather-proof  
 Characteristic: Hemispherical  
 Impedance: 50 Ω  
 Cable length: 50 m  
 Temperature range: - 30 °C ... + 75 °C

## Reference oscillator

Type: OCXO  
 Frequency: 10 MHz  
 Output signal level: + 6dBm into 50 W, sinusoidal  
 Connection: BNC socket  
 Phase noise (10 kHz from carrier): -146 dBc/Hz  
 (1 kHz from carrier): -136 dBc/Hz  
 Short-term stability: 1 x 10<sup>-11</sup> (1s)  
 Ageing: Compensated by GPS  
 Temperature effect: Compensated by GPS  
 Uncertainty: ≤ 1 x 10<sup>-10</sup>  
 OCXO unsynchronised:  
 Ageing (after 30 days continuous operation):  
 ≤ 3 x 10<sup>-10</sup>/day  
 ≤ 5 x 10<sup>-8</sup>/year  
 Temperature effect (+5°C...+45°C): ≤ 3-10<sup>-9</sup>  
 Mean temperature coefficient: ≤ 1 x 10<sup>-10</sup>/ °C

## 2.048 MHz clock frequency (option)

Frequency: 2.048 MHz  
 Level: 1V<sub>eff</sub> into 75, sinusoidal  
 (CCITT recommendation G.703)  
 Connection: BNC socket  
 Short-term stability: As for reference oscillator  
 Free running: As for reference oscillator  
 GPS controlled operation: As for reference oscillator

## Time marker

Time marker: 1 pulse/s  
 Uncertainty: ≤ 100ns relative to UTC (typ.)

Output signal level: TL, 100 ms pulse width  
 Connection: BNC socket

Monitoring of operation:

Remote polling:

Operating state of GPS receiver, number of satellites visible and tracked, time/date (UTC), geographical position, GPS data valid/invalid, ident no and S/N for the satellites tracked, frequency deviation of the FN-GPS, timing signal deviation, D/A converter setting.

Data format: ASCII  
 Interface: RS 232

## Output of instrument data

Data output: Status of the GPS receiver; number of satellites (visible); time, date (UTC); position (longitude, latitude, height);

Timing signal valid/invalid; frequency deviation from the GPS comparison value; temporal deviation on timing signal; ident no. and S/N for the satellites tracked; alarm status of hardware and GPS receiver

Format: ASCII data  
 Interface: RS 232  
 Connection: 25-pin socket

## Alarms

Alarm (relay): No OCXO control reserve; function of the GPS receiver; operating voltages

Relay switching data: 100 V/200 mA  
 Connection: 7-pin stereo jack MCX

## General

GPS LED (green):  
 1...4 x flashing / time interval: Initialisation phase  
 Continuous flashing: Valid time markers are being calculated

Continuously illuminated: OCXO is being regulated

SERVICE LED (red):  
 1...4 \* flashing / time interval: Initialisation phases  
 1 \* flashing / time interval: Warning

Continuous flashing: Alarm

## OVEN LED (OCXO):

(yellow): Quartz oven not at temperature setpoint

(green): Quartz oven at temperature setpoint

### Power supply (mains)

Voltage: 115 V/125 V, 230 V/250 V, ≤ 10%

Electrical safety: EN 61010

Power consumption: Approx. 55 VA

Power supply (battery):

Voltage: 9 V ... 20 V (floating)

or 30 V ... 80 V (floating, option)

Power consumption: Approx. 40 W

Interference suppression (EMC): CE marking

Quality standard:

Manufactured in accordance with ISO 9001

Operating temperature: +5 °C ... +45 °C

Dimensions (W x H x D): 447 mm x 88 mm x 416 mm

Weight: Approx. 8.5 kg

### Accessories supplied

1	Power cable
1	Battery connector
1 set	Replacement fuses
1	Operating manual
1	GPS antenna with 50 m cable

### Order codes

FN-GPS Order no. 86812.002

Option

Additional clock frequency

2.048 MHz Order no. 86812.101

Option

Battery power supply 22 V-90 V

(9 V-18 V) Order no. 86812.110

Option antenna cable 75 W, 50 m Order no. 86812.111

19" adapter Order no. 86302.101

Schomandl Distributor:



**MCS Test Equipment Ltd**

Unit 5-6 Station Yard,  
Llanrwst, Conwy,  
North Wales,  
LL26 0EH

Tel: 08453 62 63 65

Fax: 08453 62 36 16

Email: [sales@mcs-testequipment.co.uk](mailto:sales@mcs-testequipment.co.uk)

Web: [www.mcs-testequipment.co.uk](http://www.mcs-testequipment.co.uk)