

GF-880X Series

01/02/03/04/05

Multi-GNSS Disciplined Oscillator

Ideal for base stations, PMR, PTP/NTP grand master clocks, satellite ground stations and as replacement for atomic oscillators

- Generates UTC-synchronized 1PPS (pulse per second) and continuously disciplined 10 MHz
- Achieves time stability required by 5G mobile base stations.
- Holdover function that maintains performance for 24 hours even if signals from GNSS satellites are lost
- Reduces design cycle (time-to-market)

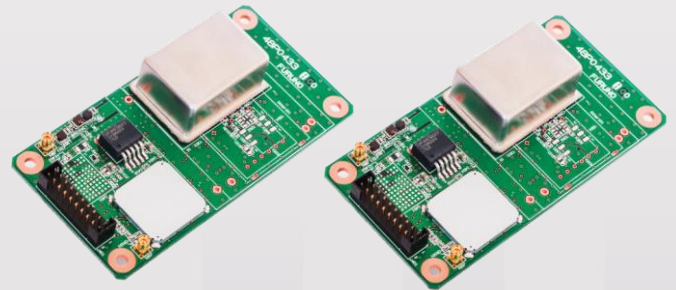
GF-880x series is a full-featured multi-GNSS disciplined oscillator (GNSSDO), embedded with multi-GNSS receiver, OCXO, LDO regulator and antenna detection circuit in a compact pin-header module.

It provides outputs of 1pps, synchronized with UTC and reference frequency (10MHz) signal. The necessary functions for GNSS receivers required for mobile base stations and PTP grand master clocks have been integrated into a single module. It allows users to free themselves from designing around GNSS and reduces design cycle (time-to-market) of wireless systems.

Market research has confirmed that the number of radio systems using GNSS time synchronization, e.g. PMR, local 5G, and V2X, has been increasing year on year. In urban areas, these systems experience problems caused by urban canyons (signals blocked) and multipath (signals reflected, etc). Our GF-880x series is ideal for base stations in urban areas as it features embedded solutions that protect against multipath, jamming (interference wave), spoofing, and interruption of GNSS signals, thus preventing problems that may occur once the system is operational. The GF-880x delivers carrier-grade performance and quality cultivated in mobile base stations with our standard products.

GF-8801/8802/8803 are small, low height form factor for users needing a small footprint. GF-8804/8805 have a larger form factor to accommodate longer holdover performance. All models are equipped with Dynamic Satellite Selection™* and have the same output format. Users can select a product to suit their application.

* a new satellite signal selection algorithm developed by NTT



	GF-8801	GF-8802	GF-8803	GF-8804	GF-8805
Grade					
Timing	●	●	●	●	●
GNSS					
GPS+QZSS/SBAS	●	●	●	●	●
GLONASS	●	●	●	●	●
Galileo	●	●	●	●	●
Frequency band					
L1	●	●	●	●	●
Interface					
UART	●	●	●	●	●
Features					
Time pulse output (1PPS)	●	●	●	●	●
Multipath mitigation (DSS™)	●	●	●	●	●
Anti-jamming	●	●	●	●	●
Anti-spoofing	●	●	●	●	●
T-RAIM	●	●	●	●	●
Holdover	-	●	●	●	●
Power supply					
Power-supply voltage	3.7V	3.7V	3.7V	5.5V	5.5V

Model	GF-8801	GF-8802	GF-8803	GF-8804	GF-8805
Equipped Oscillator	TCXO		OCXO		
GNSS Reception Capability	GPS L1C/A, GLONASS L1OF, Galileo E1B/E1C, QZSS L1C/A, QZSS L1S, SBAS L1C/A				
GNSS Concurrent Reception	32 channels				
Sensitivity *1	GPS/ Tracking : > -162 dBm, Acquisition : > -148 dBm GLONASS/ Tracking : > -158 dBm, Acquisition : > -144 dBm Galileo/ Tracking : > -146 dBm, Acquisition : > -136 dBm QZSS/ Tracking : > -147 dBm, Acquisition : > -131 dBm				
ITU-T Recommendation	Compliant with G.8272 PRTC-A		Compliant with G.8272 PRTC-A, PRTC-B		
1PPS Stability *2	< 4.5 ns(1σ)				
1PPS Accuracy *2	< ±40 ns (vs UTC)				
1PPS Accuracy (Long term holdover)	-	< ±50μs/24h	< ±10μs/24h	< ±5μs/24h	< ±1.5 us/24h
1PPS Accuracy (Short term holdover)	-	< ±3μs/1h (Typ)		< ±400ns/1h (Typ)	
10 MHz Output	Square pulse		Square pulse, Sine wave		
10 MHz Short Term Stability (Root Allan variance (=1s))	< 5 x 10 ⁻¹⁰	< 5 x 10 ⁻¹¹	< 2 x 10 ⁻¹¹	< 1 x 10 ⁻¹¹	
10 MHz Long Term Stability (24h average)	< ±1 x 10 ⁻¹¹	< ±1 x 10 ⁻¹²			
10 MHz Long Term Stability (24h average, Holdover)	-	< ±1 x 10 ⁻⁹	< ±2 x 10 ⁻¹⁰	< ±1 x 10 ⁻¹⁰	< ±3 x 10 ⁻¹¹
Initial Stabilization Time	< 5 minutes (until lock state)				
Supply Voltage	3.7 VDC			5.5 VDC	
Power Consumption *3	< 150 mA	450 mA (Typ)	600 mA (Typ)	400 mA (Typ)	
Antenna Detection	Short and Open Detection				
Operating Temperature	-40°C ~ +85°C				
Outer Size	34x 27x 11mm	34x 27x 15.5mm	34x 27x 20mm	100x 52x 20mm	
Protocol	eSIP (NMEA 0183 Standard Ver 4.10)				
Function	Anti-Jamming (8CW), Multipath Mitigation (Dynamic Satellite Selection™), Anti-Spoofing, T-RAIM, Synchronization with external pulse				

*1 Measurement platform with recommended active antenna

*2 Open sky

*3 When supply voltage is stabilized



For GF-8801~03



For GF-8804~05

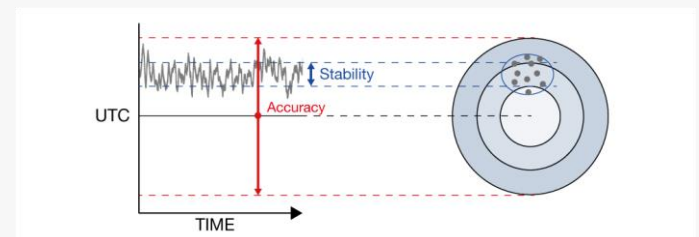
Evaluation Kit

An evaluation kit that can be used simply by connecting the GNSS antenna and power source.

Connect the PC with a USB port to communicate. Output time pulse (1PPS) and 10 MHz reference frequency (selectable) from a SMA terminal.

Contents: GNSS antenna, CD (GNSS Conductor GF), USB cable

Defining accuracy and stability



Accuracy refers to the maximum error deviation from UTC true value.

Stability refers to the degree of variation from accuracy over a period of time.

* FURUNO defines accuracy on the basis of UTC (vs UTC).



Recommended antenna

In combination with the recommended antenna (AU-217), the GF-88 series performs perfectly.

AU-217 has high noise immunity and IP67 environmental resistance.

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Specifications subject to change without notice