

# GF8007

## BeiDou/GPS Binary Multi-source time Synchronization Server

The GB8007 time synchronization system provides accurate synchronization time signals to various power system automation devices by using the second synchronization signals and time information messages sent by Beidou navigation system, GPS( GPS) satellites.



### Applications

1. Providing time synchronization signals for power network automation devices such as fault recorder, event recorder, microcomputer relay protection device, microcomputer measurement and control device, merging unit, intelligent terminal and various safety automatic devices, telecontrol and microcomputer monitoring system, dispatching control system, etc.
2. The standard clock used for frequency monitoring, means the system frequency error accumulation is compared with the schedule by the difference between the power frequency clock and the standard time.
3. The synchronous clock used for phase measurement, the GB8007 is used for synchronizing the sampling pulse, and the synchronization error is very small, which can ensure the accuracy of phase measurement.
4. For fault location, especially for the development of dual-terminal traveling wave ranging principle of the device to create conditions.
5. For relay protection device test, inspection line longitudinal protection (high frequency phase difference protection device).

### Features

1. Independent GPS/BeiDou binary system has wide signal coverage, high signal intensity and convenient distributed installation. Especially suitable for power plant, substation, communication base station and other equipment time synchronization.
2. All-weather signal coverage, independent two-star system each other to ensure a long continuous high-precision timing.
3. Multiple 32-bit high-speed microprocessors + large-scale integrated FPGA chips, parallel high-speed data processing and various code, excellent performance.
4. High-precision punctuality frequency is derived from adaptive synchronization technology, closed-loop control punctuality technology to tame constant temperature crystal oscillator, to achieve long-time high-precision punctuality.
5. Automatic selection of clock source according to priority, when receiving and decoding external IRIG-B (DC) code, automatic delay compensation correction technology is used to improve timing accuracy.
6. Separate 10 M/100M network ports (each port has a separate MAC address), flexible configuration, can be used in

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different sub-nets or different physical isolation networks, using NTP/SNTP protocols to provide time synchronization services.

7. Having two PTP V2 high-precision timing ethernet interfaces while down-compatible with V1 protocols, ecom-level timing accuracy, support multicast and unicast transmission modes, and support the best master clock selection algorithm.
8. Time interface using plug-in structure, users can be customized based on demand, a variety of configuration methods, it's convenient to manage and upgrade.
9. Providing group programmable pulse, each group can be set separately to PPS, PPM, PPH, flexible and convenient.
10. High performance, wide range switching power supply, AC-DC compatible input, convenient and reliable, stable operation.
11. All signal input and output interfaces are photoelectric isolation measures, safe and reliable.
12. 3U Frame structure, 19 inch standard chassis, plug-in functional interface module, easy installation and maintenance.

## Parameters

### Parameters

#### 1. Output Signal

Timing signal type	Interface Type	Timing accuracy		Interface parameters	Number of interfaces
		Beidou-1	GPS		
Pulse	TTL level	-0.14μS	-0.06μS	5V level	2 channels
	Air contact	1μS	1μS	C/E room pressure 300 V/50mA	6 channels
	Optical fiber output	-0.14μS	-0.06μS	multimode, wavelength 850/1310 nm	6 channels
IRIG-B Time Code	TTL level	-0.08μS	0.01μS	5V level	2 channels
	RS485 level	0.12μS	0.2μS	Differential balance level	10 channels
	Optical fiber output	-0.08μS	0.01μS	multimode, wavelength 850/1310 nm	6 channels
	(AC) AC code	10μS	10μS	Transformer isolation output	4 channels
Serial port	RS232	0.18mS	0.18mS	DB9 interface	2 channels
	RS485/422	0.18mS	0.18mS	Phoenix terminal	10 channels
Ethernet	NTP/SNTP	10mS	10mS	RJ45 interface	2 channels
	PTP	0.2μS	0.2μS	RJ45 interface	2 channels

#### 2. Input Signal

Name of clock source	Technical parameters	Remarks
Beidou-1	Receiver frequency :2491.75MHz	Built-in
	Carrier frequency :1615.68 MHz	
	Acceptance sensitivity :-127.6 dBmW	
	Capture time :35 S < 10 S; hot start and cold start	
	Timing accuracy :≤100 ns( unidirectional),≤20 ns( bidirectional)	

**2. Input Signal**

GPS	Receiver frequency :1575.42 MHz (L1 signal)	Built-in
	Receiving sensitivity: capture <-160 dBW, tracking <-163 dBW	
	Capture time :200 S <25 S; hot start and cold start	
	Timing accuracy :≤100 ns (1pps versus UTC time)	
	Simultaneous tracking: no less than 4 satellites in cold start; no less than 1 satellite in hot start; up to 12 satellites can be tracked at the same time, parallel 12 channels.	
IRIG-B Time Code	The IRIG-B code shall comply with the provisions of the IRIG Standard 200-04 and contain the year and time signal quality information (reference IEEE C37.118-2005), the time is standard Beijing time.	Built-in
	Type of interface: multimode fiber, operating wavelength 850 nm or 1310 nm.	
	When the optical fiber is transmitted, the light should correspond to the high level, and the light should go out to the low level.	
	Adopt IRIG-B000 format.	
PTP input	An automatic time delay compensation correction technique is used to μs the timing accuracy better than 1 μs.	Built-in
	With E2E and P2P two modes of timing.	
Core punctuality clock module	Support one-step, two-steps working mode.	Built-in
	Adopt high precision constant temperature crystal frequency precision reaches 2 E-11 order of magnitude.	
	Self-service error ≤3.5 us/24H.	

**3. Others**

Name of parameter	Parameters
Environmental parameters	Working temperature :-20 to +70°C
	Storage temperature :-45 to +85°C
	Humidity :<95%
Power supply	Power supply :220 V±20% or 110 V±20%,47 Hz-63 Hz
	DC power supply :220 V±20% or 110 V±20%
	Power consumption ≅15 W
EMC grade	Grade IV specified in the GB/T17626-2008
Alarm signal	Relay air contact (250 V,5A)
Appearance Weight	Standard 19" Case, height is 3 U, back pluggable structure, weight is 5 KG. Up to 8 slots are free to select various functional interface cards.

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