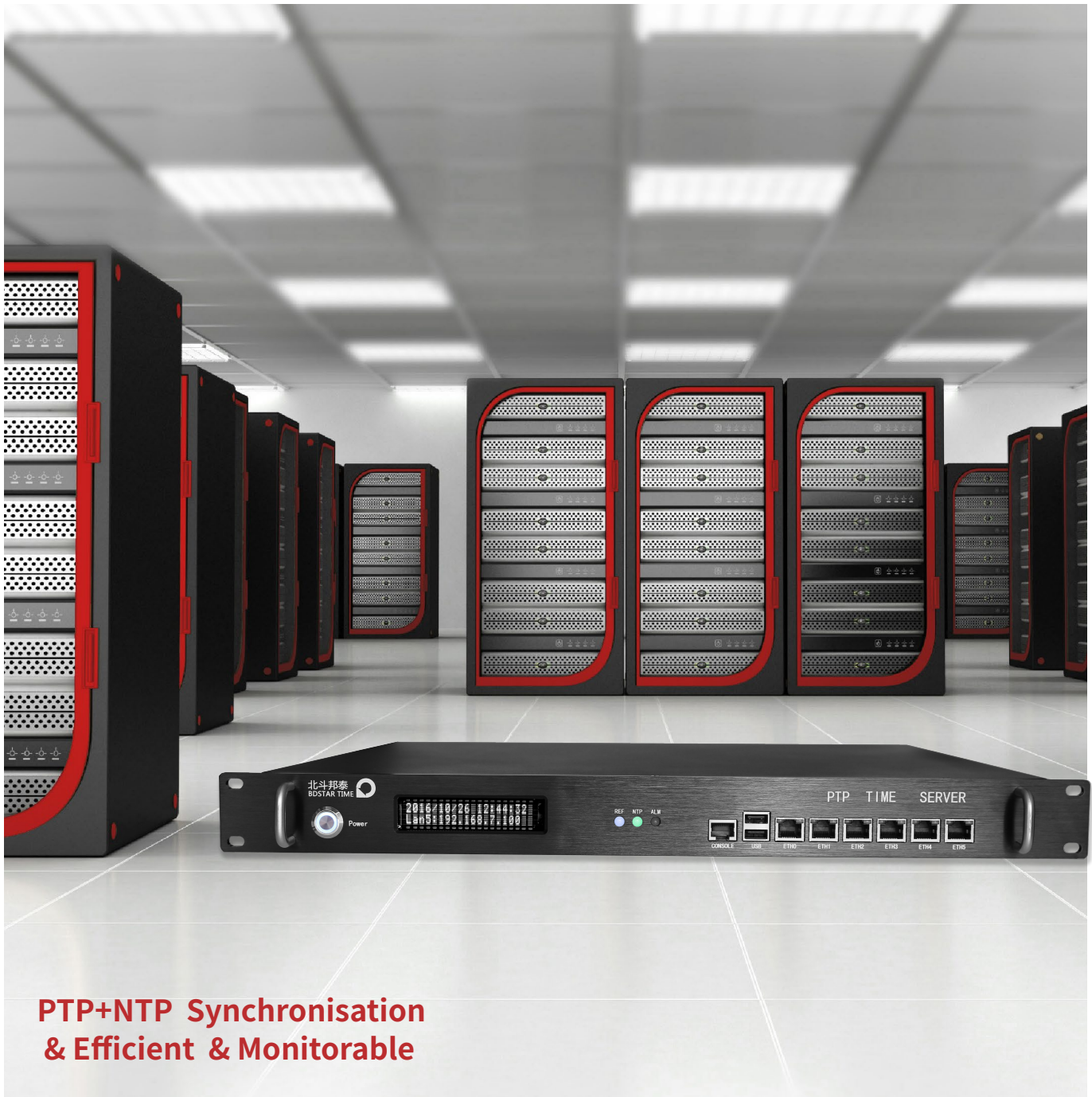
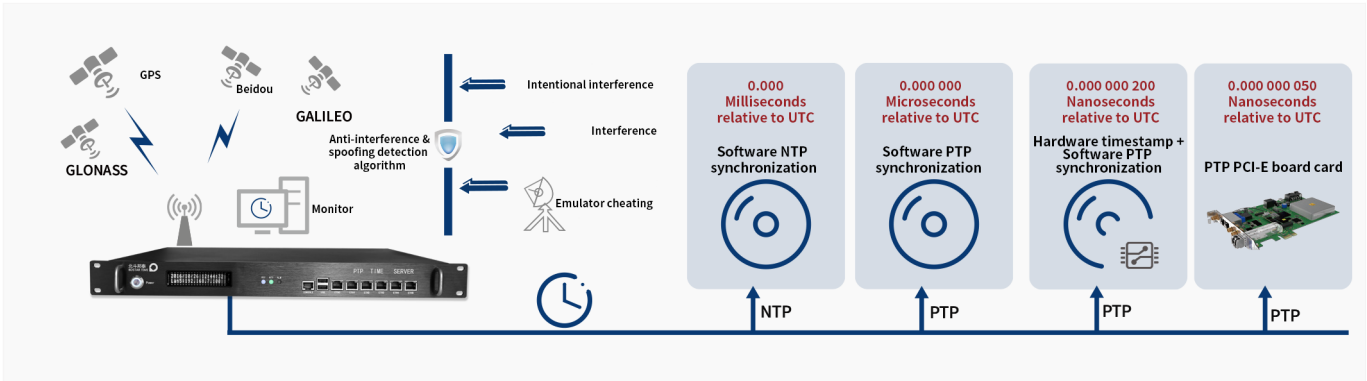


T680- PTP/NTP Time Synchronization Server

PTP High-precision time synchronization
financial industry applications



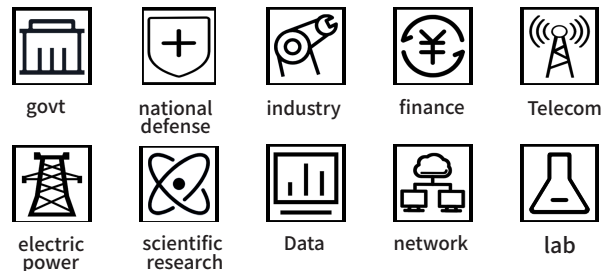
**PTP+NTP Synchronisation
& Efficient & Monitorable**



Important features

- NTP + PTP support without additional hardware support
- Less than 20ns for client synchronization accuracy
- Support Full GNSS (GPS, Beidou, Galileo, GLONASS)
- The option supports 1G / 10G / 40G / Ethernet
- Support for 1 PPS + TOD, IRIG-B, GPIO, and PTP inputs
- PPS input is supported through serial input in NMEA format
- Built-in high performance constant temperature crystal oscillator, 24 hours 5 μ s
- Advanced anti-jamming and deception detection algorithms
- Compatible with both the IPv6 and IPv4 protocols
- Multiple clock types that support Master-Slave, BC, OC, and TC modes
- Support unicast, multicast, mixed mode delivery, the best clock(BMC) algorithm
- The structural design is compatible with single power supply, redundant power supply or DC power supply
- Supports two layer link layer protocol and four layer UDP protocol
- The option supports a 5 / 10 / 20 / 25 MHz frequency output
- Support for sending and receiving timestamp and delay request-response to two message measurement mechanisms
- High-precision pps synchronization and output, used for clock transmission, verification and demonstration
- Support for Localised (China) Kirin Operating System
- The delayed measurement mode supports both the point-to-point and end-to-end modes
- Support the clock priority mechanism, which allows users to set or adjust their priorities
- Can be used with servers or switches that support the IEEE 1588 protocol
- Support pc machine, server and laptop computer
- Have the time synchronization accuracy monitoring function
- Strong anti-interference ability, to maintain a stable time synchronization performance
- The whole network port supports PTP and NTP normal network communication
- Support for heartbeat detection and bonding function
- Another NTP server that forms a level 2 clock
- Intuitive network management interface, facilitate user operation control management
- Equipped with self-developed NTP service + PTP service monitoring software

Application area

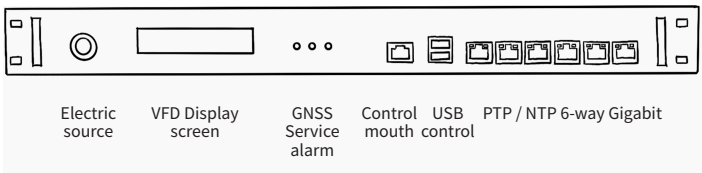


Summary

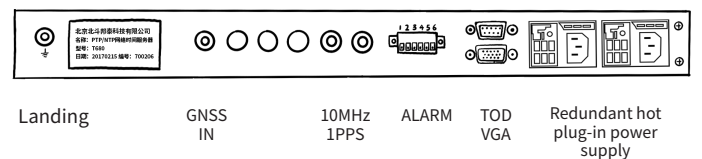
T680 PTP / NTP time synchronization server, and PTP and NTP timing service for integration, can support NTP and SNTP network synchronization protocol, also can use PTP to provide high precision clock synchronization and timestamp function, let multiple devices through network protocol to achieve high performance and high available distributed system, can also use the ptp4L daemon to monitor and evaluate the time synchronization accuracy of Linux PTP. Full GNSS concurrent reception, sophisticated clock tame algorithms, and local clock combinations provide flexible and superior performance to calmly meet the evolving network architecture requirements. The hardware of the equipment adopts redundant architecture design. The high-precision clock is directly derived from the atomic clock of each satellite in the GNSS system, and the local clock source is tamed through the signal analysis, so as to realize the function of keeping the local clock accurately after the loss of satellite signals. The device software adopts a variety of anti-interference detection and identification algorithms of BDSTAR TIME to detect abnormal GPS signals caused by interference and malicious attacks. Unique embedded hardware design, efficient Linux operating system, can flexibly expand a variety of clock signal output. At the same time, it supports TOD, 10 MHz, 1 PPS, logging, USB port upgrade and download, and dry contact alarm functions. Combined with the whole network time unified monitoring software independently developed by BDSTAR TIME, it can easily realize network time synchronization and effective monitoring.

T680 PTP / NTP time synchronization server can be widely used in government, defense, industrial automation, financial and securities trading, telecommunications networks, data centers, enterprise networks, power energy, scientific research and laboratory and other fields.

Front view



Back view



Qualification

Time agreement

- NTP v2,v3,v4; Conforms with RFC5905
- SNTP v3,v4: Conforms with RFC9505
- PTPv2(Linux Precision Time Protocol)

Satisfying criteria

- ITU-T G.8262, G.8265, G.8275.1,G.8275.2
- ITU-T G.8273 T-GM, T-BC and T-TSC
- ITU-T G.812 Type III, IV
- ITU-T G.813 Option 1
- G.8261

Server performance

- PTP: Master and slave synchronization accuracy 20ns and terminal synchronization accuracy 50ns (general network card)
- NTP: User terminal synchronization accuracy: 100 μ s
- PTP: supports unicast clients with an unlimited number of multicast clients
- NTP requests: 23,000 requests / s
- Can be connected to another clock server to form a level 2 clock

Time GNSS receiver

- Receiver type: 72-channel professional timing type GPS/QzSS L1 C/A, GLONASS L10F, BeiDou B1, SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN, Galileo E1B/C
- Data update rate: parallel GNSS up to 4Hz
- Positioning accuracy 2.5 m CEP; cold start: 28s; auxiliary cold start 2s;
- Time timing accuracy: 20ns
- Sensitivity: tracking and navigation -166dBm; cold start -157dBm

Front panel

- The VFD high-brightness LCD screen

Displays the satellite receiving status, time, satellite number, latitude, longitude, altitude, IP and working status of each network card and system

- Three color indicator light

Indicates whether the reference source is available, whether the clock service is activated, and whether the satellite is locked

- PTP+ NTP network port: RJ-45, 6-way, 10 / 100 / 1000M adaptive
- Console: RJ-45,1-way, RS232 level, PTP + NTP control port
- USB: 1 route, backup, recovery, upgrade function

Back panel

- Antenna in: BNC, 1 road, GNSS, output 5V DC
- TOD: DB-9 female, 1-way, RS232 level, time and position information
- VGA: DB-9 female, 1 route, display output
- ALARM Dry contact point alarm: 3 pairs, power supply, GPS, port capacity alarm
- 1 PPS: BNC, 1 route, precision of 20ns

High-Performance OCXO

Signal	Item	Index	
10MHz output	Wave form	sine wave	
	Output power	> 7dBm	
	Harmonic suppression	<-30dBc	
	1s Stability	< 3E-12	
	Phase noise	@1Hz	\leq - 95dBc
		@10Hz	\leq - 130dBc
		@100Hz	\leq - 145dBc
		@1kHz	\leq - 150dBc
@10kHz		\leq - 155dBc	
Taming accuracy	\leq 1E - 12		

Pulse output

Signal	Item	Index
1PPS output	Wave form	square wave
	High level voltage	3.3V \pm 0.2V
	Low level voltage	0V \pm 0.2V
	High level pulse width	100ms
	Alignment	Rising along the alignment
	Output impedance	51 Ω
	Synchronous accuracy	< 20ns

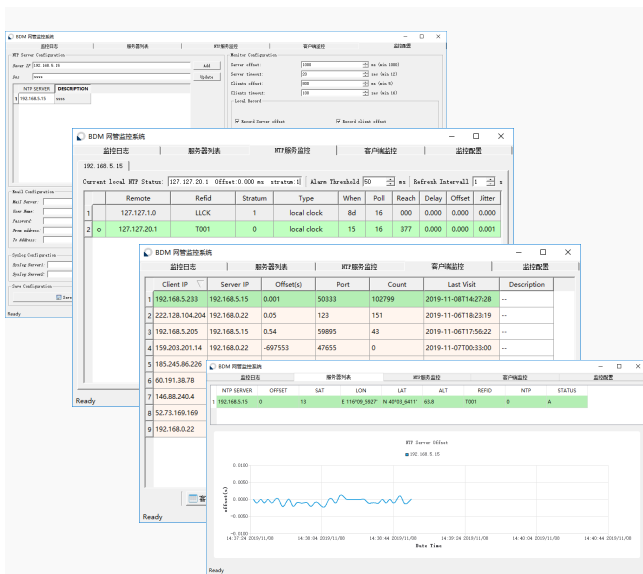
Physical and environmental parameters

- Dimensions: 1U chassis, 440x44.5x364mm
- Weight: 3 kg
- Power supply: 2-way hot plug (Opt-P), 220V \pm 20%, 47Hz ~ 63Hz
- Operating temperature: -10 $^{\circ}$ C ~ + 55 $^{\circ}$ C (main engine) -40 $^{\circ}$ C ~ + 75 $^{\circ}$ C (antenna)
- Storage temperature: -45 $^{\circ}$ C ~ + 85 $^{\circ}$ C
- Humidity: 95% no condensation
- Power consumption: 50W

Software performance

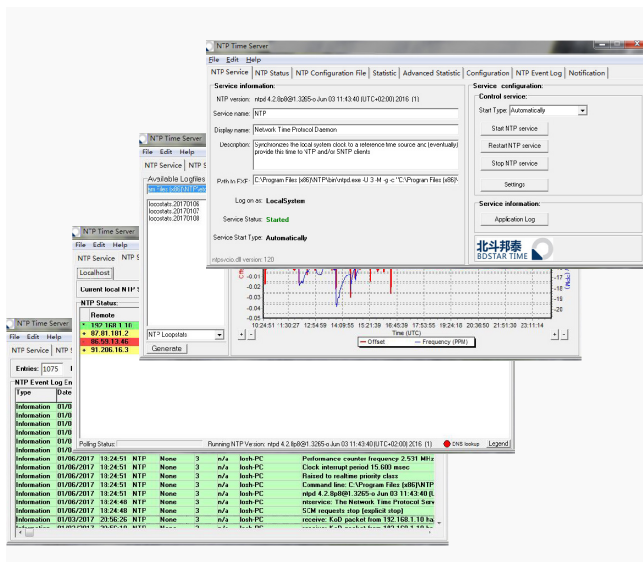
The whole network time unified monitoring software

BDMonitor -The whole network time unified monitoring software, can monitor the satellite information, server information, client information. Satellite information includes satellite time, lock status, number of locks, latitude and longitude, height and other information; server information includes NTP timing status, synchronization status, server time, network configuration, etc., monitoring and alarm information supports syslog, Email and other protocols or storage events to the local log. Support no less than 10000 client monitoring, and can set alarm type and alarm level according to report. In the monitoring software, it can directly query and configure the network parameters, with the function of taming / keeping, locking / locking state (remote) monitoring.



The NTP client synchronization software

Provide window system NTP protocol timing software, running in service mode, and provide the interface of operation state monitoring, control and configuration



The SNTP client time synchronization software

Provide window system SNTP protocol timing software, support startup and tray operation, add multiple NTP time server addresses, and automatically switch when NTP time server is not available.

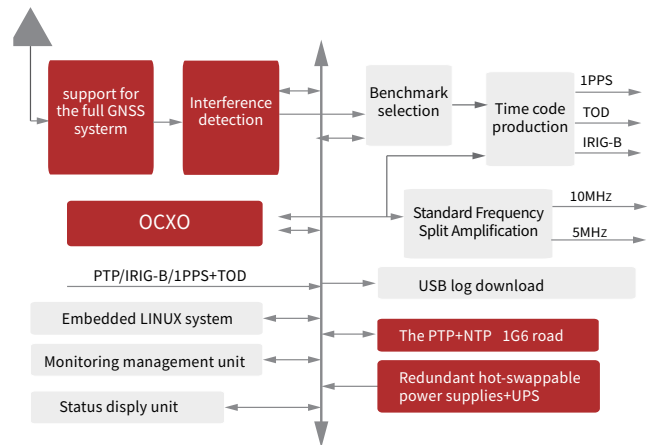
The PTP status monitoring and management

Check the synchronization deviation from satellite to GM system and synchronize the system clock, display the synchronization deviation of GM clock and GNSS time / frequency in real time, GM and Slave synchronization configuration and detect master and slave synchronization deviation, can load GNSS, synchronization log / load 1588/802.1AS synchronization log / load the synchronization log of GM system clock synchronization log.

PTP client

Support general X86, platform and ARM platform, support Linux, operating system and Localised (China) Kirin Operating System.

Composition block diagram



Standard layout

- 1 mainframe
- 1 high-sensitivity timing antenna for 50 m cable
- Install 1 set of brackets
- Two 1.5 m power lines
- One 1.5-m control line
- 13-meter network cable
- 1 Chinese manual
- 1 CD (instruction manual, PTP configuration manual, NTP client time synchronization software)
- SNTP timing software, BDMonitor network time synchronization system unified monitoring
- Synchronisation reference for software, windows/Unix/Linux/AIX/ Solaris, etc. (Overview)

Selected information

Number	Describe
-BDC	IRIG-B DC input
-B3	BDS/B3 Army code input
-A80-200	Standard 80 m, 150 m, 200m, antenna cable
-CA23-RP	Antenna arrester