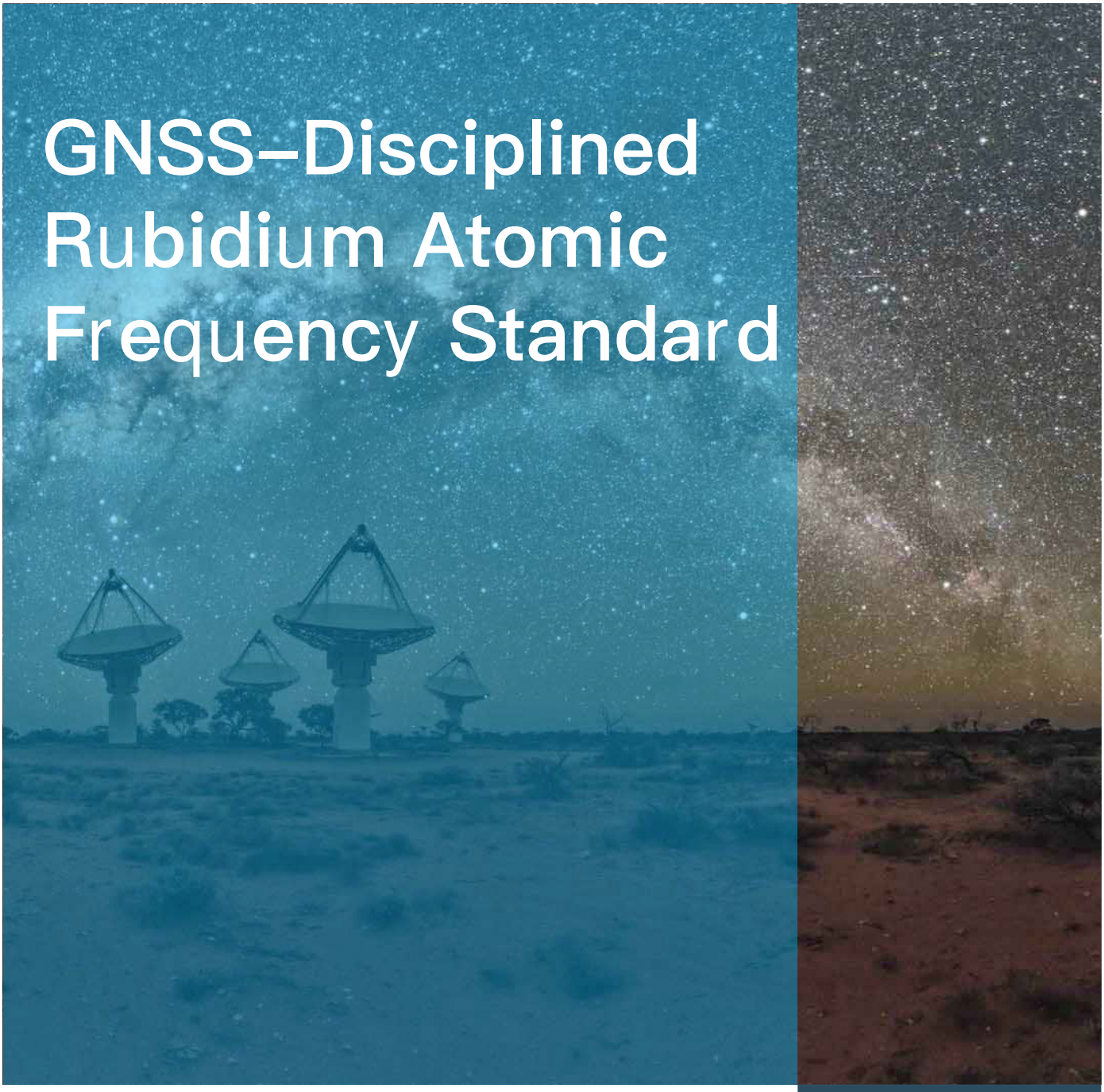
北斗邦泰
BDSTAR TIME

GNSS-Disciplined Rubidium Atomic Frequency Standard



Full GNSS Reception
High-Performance Rubidium Atomic Clock
Combined with Ultra-Stable Crystal Oscillators

BDPNT.COM

GNSS-Disciplined Rubidium Atomic Frequency Standard T760

Cesium clock-grade GNSS-Disciplined rubidium atomic clock and ultra-stable crystal oscillator combination

Feature

+ Built-in high-performance rubidium atomic clock and OCXO
+ Automatic Calibration of Rubidium Clock Frequency Using GNSS
+ Highly sensitive GNSS concurrent reception to adapt to the harsh global environment
+ Supports Full GNSS: GPS/QZSS、GLONASS、BeiDou、GALILEO
+ Cesium-clock-level, rubidium atomic clock and temperaturecontrolled crystal oscillator combined frequency standard
+ Daily average accuracy <5E-13
+1s\10s\100s\ Stability 3E-12
+ Provides four 10 MHz ultra-low-noise isolated amplifier outputs
+ Provides six independent 10/100/1000 Mbps network interfaces
+ Built-in high-performance rubidium atomic clock, 24-hour deviation of 200 ns;
+ Advanced anti-jamming and anti-spoofing detection algorithms
+VFD Ultra-Wide HD Vacuum Fluorescent Display Designed for Extreme Low Temperatures
+ Support SSH,SSL,SCP,SNMP,CustomMIB,HTTPS,Telnet
+ Relative to UTC time accuracy reaches nanosecond level
+ MTBF > 100000 hours
+ Secure and efficient web user interface1.2

Application

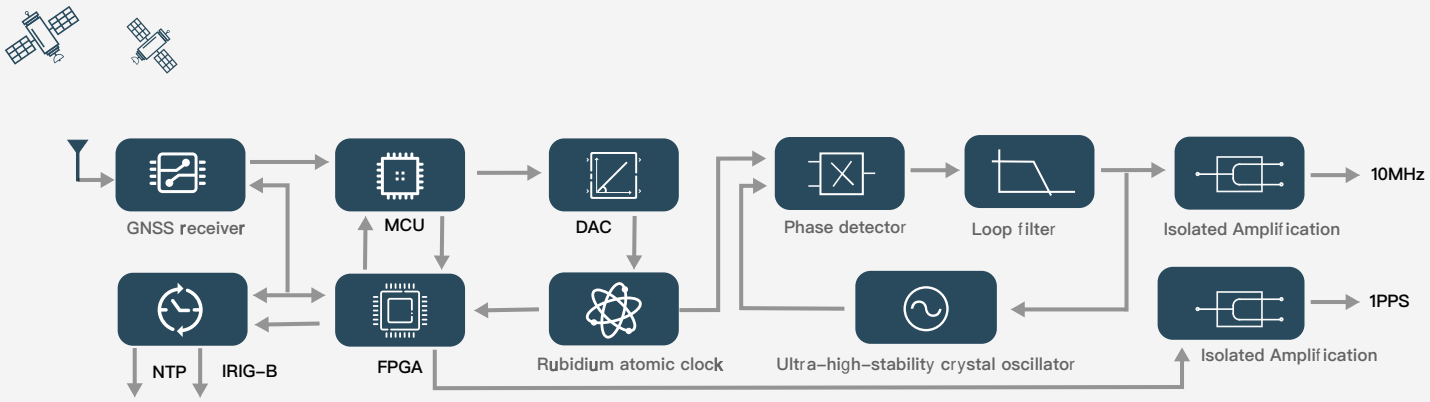
+ Used in metrological calibration, deep-space exploration, and radar communications
+ Can synchronize the clocks of hundreds of thousands of devices , including clients, servers, and workstations

Overview

The T760 GNSS-Disciplined Rubidium Atomic Frequency Standard primarily consists of a high-precision timing GNSS receiver, a high-performance rubidium atomic clock, a low-phase-noise locked crystal oscillator, a control module, and a low-noise amplifier module. By integrating digital phase-locking technology, it combines the long-term stability of GNSS, the low aging characteristics of rubidium atomic clocks, and the high short-term stability and low phase noise of crystal oscillator (OCXO), resulting in an innovative low-phase-noise, high-precision atomic frequency standard that excels in both long-term and short-term stability and offers high accuracy. When locked to GNSS, its 10 MHz frequency stability matches that of standard cesium clocks, providing excellent value for money.

The T760 GNSS-Disciplined rubidium atomic frequency standard outputs a 1PPS signal,which is derived by frequency division of the rubidium atomic clock signal and is synchronized with the UTC time output by GNSS. Compared to the raw GNSS 1PPS, the frequency-divided pulse has been smoothed to eliminate the effects offluctuations and jumps in the raw pulse, thereby providing a reproducible UTC time reference. When GNSS signals are lost or abnormal, the device intelligently detects the issue and automatically switches to rubidium atomic clock time-keeping mode, continuously providing a highly stable time and frequency signal. The device software employs multiple anti-interference detection and identification algorithms developed by BDSTAR TIME to detect signal anomalies caused by interference and malicious attacks on GNSS signals. It can be flexibly configured with various clock signal outputs.

The T760 GNSS-Disciplined rubidium atomic frequency standard features a 2U half-width chassis design and can output 10 MHz sine and square waves, 5 MHz and 1 MHz sine waves, 1PPS, and TOD information (optional support for multiple 100 MHz, 90 MHz, 80 MHz, and IRIG-B outputs). It is widely applicable in fields such as radar, communications, metrology and calibration, power systems, electronic countermeasures, and aerospace telemetry and control.



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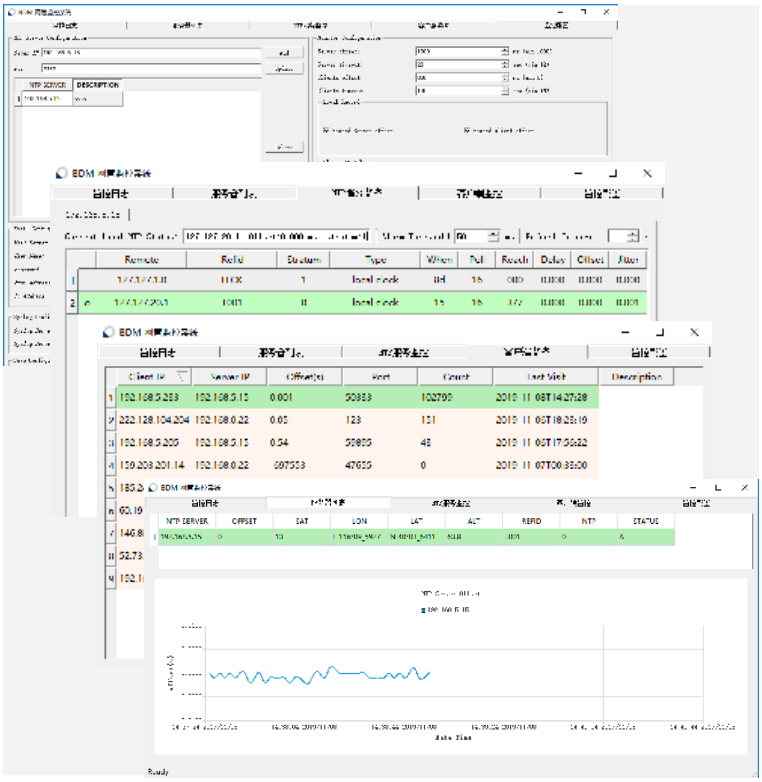
NTP Output: 6 channels, 1000M auto-negotiating Ethernet interfaces, GNSS reference, primary time server, synchronization accuracy of 1 μs
User terminal synchronization accuracy: 0.5

Software Performance

Unified Network Monitoring Software

BDMonitor unified time synchronization monitoring software capable of monitoring satellite data, server information, and client information. Satellite data includes satellite time, lock status, number of satellites locked, latitude and longitude, altitude, and other information. Server information includes NTP timing status, synchronization status, server time, network configuration, and other details. Monitoring alerts support protocols such as syslog and email, or can be stored in a local log. It supports monitoring of at least 10,000 clients, allowing users to configure alert types and levels to select which alerts are reported. Network parameters can be queried and configured directly within the monitoring software, which also features rubidium clock taming/holding and (remote) monitoring of lock loss/lock acquisition status. Full-line cable – CA23-RP antenna surge arrester.



Optional

Opt-H

Low-noise 10 MHz output

Stability: < 1E-12/1s
< 6E-13/10s
< 6E-13/100s
< 5E-13/ day (GNSS locked)

Phase noise: ≤ -100dBc/Hz @1Hz
≤ -130dBc/Hz @10Hz
≤ -145dBc/Hz @100Hz
≤ -160dBc/Hz @1kHz
≤ -170dBc/Hz @10kHz

Distortion:

Harmonic: ≤-50 dBc

Non-harmonic: ≤-90 dBc

Opt-100

Low-noise 100 MHz output

Phase noise: ≤ -105dBc/Hz @10Hz
≤ -125dBc/Hz @100Hz
≤ -145dBc/Hz @1kHz
≤ -150dBc/Hz @10kHz

Other indicators are the same as at 10 MHz.

Opt-BDC

IRIG-B DC code input decoding accuracy: 10 ns

Opt-B3

BDS/B3 Military Code Entry

Other Options:
Supports multi-channel 30.72 MHz, 80 MHz, RS485, RS422, 1PPS, 1PPM, 1PPH, IRIG-B AC, and PTP outputs. Complies with the electromagnetic compatibility requirements specified in Section 3.9.1 of GJB2242-94,

Standard Configuration

1 main unit
1 high-sensitivity timing antenna with 50-meter cable
1 mounting bracket
1 1.5-meter power cord
1 (3-meter) Ethernet cable
1 user manual
(User Manual, NTP Client Time Synchronization Software, SNTP Time Synchronization Software, BDMonitor Network Time Synchronization System Unified Monitoring Software, and Synchronization Reference Overview for Windows, Unix, Linux, AIX, Solaris, and oth