CT2500

High Precision Synchronization Server

Description

The CT2500 is a high-performance IEEE 1588 server developed for the high-precision time requirements in various industries, it can be used as a BITS. It meets the high precision time requirement from various industries, the time accuracy can reach +/-30ns. Full redundant design ensures the safety and reliability of products. The new design meets the EMC and RoHS environmental safety requirements.

CT2500 is a compact designed product, it offers 1U and 2U frames depending on the requirements of I/O interface configuration. Core components such as satellite input module, power module and clock module all support redundancy configuration, which improves the reliability of the product. Meanwhile, CT2500 is a plug-in designed product with all cards support hot swap to facilitate daily maintenance. In addition to supporting the high-precision IEEE 1588 output, CT2500 also support E1, 2MHz, 10MHz, IRIG-B, 1PPS+TOD output.

CT2500 is widely used in mobile operators, power system, broadcast system, rail transit system, intelligent hospital, financial system, civil aviation system, smart city and other industries. CT2500 can be used as BITS devices, NTP time server, IEEE 1588(PTP) time server, etc.

Product View

CT2500(2U) Front view

CT2500(2U) Rear view

Slot Layout

CT2500(1U) slot layout

PWR_B	Input/Output3	Input/Output1	CPT/OCXO Clock2	FAN
PWR_A	Input/Output2	Manage	CPT/OCXO Clock1	

PWR_B	Input/Output3	Input/Output1	Rub Clock	FAN
PWR_A	Input/Output2	Manage		

CT2500(2U) slot layout

	Output9	Output7	Output5	FAN
PWR_B	Output8	Output6	Output4	
	Input/Output3	Input/Output1	CPT/OCXO Clock2	FAN
PWR_A	Input/Output2	Manage	CPT/OCXO Clock1	

	Output9	Output7	Rub Clock2	FAN
PWR_B	Output8	Output6		
	Input/Output3	Input/Output1	Rub Clock1	FAN
PWR_A	Input/Output2	Manage		

Key Features

- 19-inch,1U or 2U design.
- Supporting hot-swap and expansion chassis; Fully redundant design with high robust.
- Providing 7 day * 24 hours uninterrupted service.
- Enriched LCD status display.
- Support centralized monitoring and management by remote NMS via Ethernet
- -48V DC or 220V AC Power Supply Redundancy.
- Rubidium or high stability OCXO configurable.
- Support PTP, NTP, SyncE, 1PPS, 1PPS+TOD, IRIG-B, 10MHz, 2MHz, 2Mb output.
- Each PTP port support 1000 PTP clients at 128PPS, Each card include 4 PTP port, support 2048 PTP clients at 128PPS;
- Support IEEE 1588v2 default profile, ITU-T G.8275.1, G.8275.2, G.8265.1, G.8273.2 profile.
- Single NTP port capacity: 500 transactions per second for SW NTP; 90000 transactions per second for HW NTP.
- NTP/PTP support IPv4 and IPv6;
- Fan card mounted for cooling, 1 fan card for 1U frame, 1~2 fan card for 2U frame.

Network Protocols

- NTP (v1, v2, v3, v4)
- IEEE1588v2
- SNTP (v4)
- DHCP
- ARP
- HTTPS
- IPv4/IPv6
- FTP / SFTP
- SYSLOG
- SSH/SCP

Standard Compliance

- IEEE 1588v2 (PTP)
- ITU-T G.8272, G.8262, G.8264, G.8273.2, G.8275.1, G.8275.2, G.8265.1
- ITU-T G.811, G.812
- RFC 1059 (NTPv1), RFC 1119 (NTPv2), RFC 1305 (NTPv3), RFC 5905 (NTPv4), RFC 4330(SNPTv4).

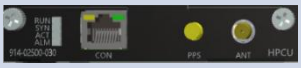
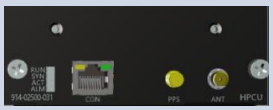
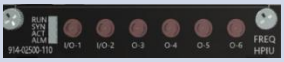
Security

- Configuration settings backup and restore
- High level of security: HTTPS, SSHv2
- Supervision possible via syslog
- Field upgrades via SFTP

Management

- IP configuration by front panel buttons.
- Local configuration and supervision Information available via CLI(RS232).
- Time and synchronization status is available on the alphanumerical front display.
- Firmware upgrade via FTP or SFTP.

Card Description

Card Type	Management unit	ETH unit	OCXO Clock unit
			
Features	1 * USB port; 1 * COM port; 1 * NMS port; 3 * Alarm output.	4 * SFP port, FE/GE/10GE adaptable; SyncE/NTP/PTP output on all port; port1 support SyncE/NTP/PTP input.	1 * COM port; 1 * 1PPS in/out configurable port; 1 * GNSS input port.
Card Type	Rubidium clock unit	Power unit	Fan unit
		 	
Features	1 * COM port; 1 * PPS in/out configurable port; 1 * GNSS input port.	DCPU: 1 * -48V DC input; ACPU : 1 * 220V AC input;	3 fan included in each fan unit, 1 ESD end on front panel.
Card Type	Balance frequency unit	Unbalance frequency unit	Mixed I/O unit
			
Features	4 * balance frequency output(RJ48, 120Ω); port1 & port2 can be configure as input.	6 * unbalance frequency output(SMB, 75Ω); port1 & port2 can be configure as input.	1 * 1PPS/TOD or IRIG-B in/out(RJ45); 2 * E1 or 2MHz in/out(SMB); 2 * 10MHz or 1PPS in/out(SMA)

Input

- Up to 2 clock card supported, each card support 1 * GNSS input, 1 * 1PPS input/output configurable.
- Up to 3 mix card supported, each card support 2 * 2Mpbs/2MHz (SMB, 75Ω); 2 * 1PPS/10MHz(SMA); 1 * PPS+TOD or IRIG-B (RJ45); All ports input/output configurable.
- Each unbalance frequency card port1&port2 can be configure as input port.
- Each balance frequency card port1&port2 can be configure as input port.
- Each ETH card port1 can be configure as input port.

Output

- Up to 3 output card supported at 1U chassis, up to 9 output card supported at 2U chassis.
- Each unbalance frequency card support 6 * 2Mpbs/2MHz(SMB, 75Ω).
- Each balance frequency card support 4 * 2Mpbs/2MHz(RJ48, 120Ω).
- Each ETH card support 4 * NTP/PTP/SyncE (FE/GE/10GE).

Frequency and Phase Performance

Frequency index:
- - Frequency accuracy while locked GNSS: ±5E-12
- - Pull-in range:±1.6E-8
- - Holdover-in range:±1.6E-8
- - Jitter: < 0.01UI

Phase index:
- - Phase accuracy while locked GNSS:±30nsec from UTC*
- - Phase transient: ≤61ns
- - Phase discontinuity: ≤61ns

Internal Time Base

Embedded oscillator or rubidium provide stable time output in case of external synchronization failure.

Item	OCXO	Rubidium
frequency stability	±5E-8	±5E-11
Temperature stability	±1E-7 @-40℃~85℃	±1E-10 @ -10℃~60℃
Phase Holdover	10us/day	1us/day
Aging (after 30 days)	±2E-10 per day	±5E-12 per day
	±2E-9 per month	±5E-11 per month
	±2E-8 per year	±5E-10 per year

GNSS Receiver Features

- GNSS satellites status
- Configurable SNR, Elevation
- User-configurable antenna cable delay compensation
- Voltage to antenna +3~5VDC
- Antenna connector SMA-F (50ohm)
- Multi -band, Multi-constellation 128-channel GNSS receiver
- GPS (L1C/A L2C), GLONASS (L1OF, L2OF),BDS (B1I, B2I) ,Galileo (E1B/C E5b)
- Four concurrent GNSS constellations

Environmental

- Dimensions:
  440×280×44mm(1U)
  440×280×88mm(2U)
- Operating temperature (ambient): -10 ~ +60℃
- Humidity: 0 ~ 95% (without condensation)

Power Supply

- Hot-swappable, modular AC-PSU: 100 ~ 240V AC (47 ~ 63Hz) with over-voltage and over-current protection
- Hot-swappable, modular DC-PSU: -48 ~ -60V DC (tolerate -36 ~ -72V DC) with over-voltage and over-current protection
- Power consumption: less than 120W

Application in Network

- Synchronization and time-as-a-service applications with the high availability
- Timing distribution at the edge of mobile backhaul and fronthaul Telecom networks for frequency and phase synchronization
- Synchronization delivery within buildings for indoor small cell radio base stations
- Synchronization of legacy network architectures based on NTP and SSU
- Time as a service into data center, financial, health and media networks
- Rail transit network synchronization
- Radio and television system, intelligent hospitals, financial system, civil aviation system, smart city synchronization
- Smart power grid synchronization