

Core Synchronization Device - TFT 3001

High Precision Rubidium/OCXO Core Sync Device

Timing is the first requirement of human information interaction since ancient times. Nowadays, information technology and communication technology are constantly updated with each passing day, and the requirements for time-frequency synchronization of various systems are getting higher and higher. For example, today's 5G communication network requires the time source, time transmission, and end device, time synchronization performance to reach 10 to 30ns. In order to cope with the deployment of future networks, our company has specially developed the TFT3001 series of high-precision synchronous products.



TFT3001 series high-precision synchronization equipment can be widely used in communication, power, military and other systems, with time frequency tracing, local clock time, time transmission and time frequency output functions. TFT3001 Supports configuration and maintenance-free functions, and provides a network management platform and indicator display. The timing network can be a star, chain and complex models. The equipment output performance meet 30ns accuracy, it can be widely used in telecommunications, electric power and military communication, provide a reliable and high-performance time-frequency synchronization signals.

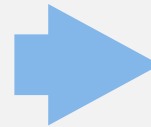
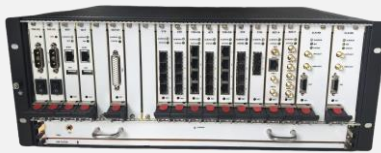
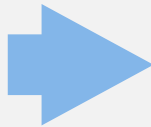
- ❖ Suitable in 19 inch rack (4U);
- ❖ Support 7*24 hours uninterrupted service;
- ❖ Support Ethernet NMS management;
- ❖ Support dual -48V DC redundant power;
- ❖ Support PTP, NTP, SyncE output

- ❖ Support IEEE 1588v2 default profile, ITU-T G.8275.1, ITU-T G.8275.2, ITU-T G.8265.1 profile.
- ❖ Support PTP/NTP bounding, PTP and NTP output can be configured at the same port;
- ❖ NTP concurrent output capability 600000 times per second;
- ❖ IPv4 and IPv6 supported at NTP/PTP

TFT 3001 Application Case

- ⌚ Synchronization and Time-as-a-Service (TaaS) applications with the high availability
- ⌚ PTP & Sync-E 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 (TaaS) into data center, financial, health and media networks
- ⌚ Railway transit network synchronization
- ⌚ Broadcast system, intelligent hospitals, financial system, civil aviation system, smart city synchronization
- ⌚ Smart Power Grid synchronization

GNSS
PTP
1PPS + TOD
10MHz
BITS

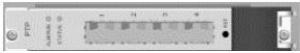
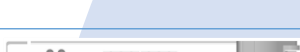


2MHz / 2Mbps
PTP
PPS + TOD
NTP
B-AC / B-DC

TFT 3001 Slot Layout

1	2	3a	3b	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
PWR - 48V	PWR - 48V	MC P	MC P	2MB / 2MHz	2MB / 2MHz	2MB / 2MHz	2MB / 2MHz	PTP	PTP	NTP	NTP	1PPS + TOD	1PPS + TOD	REF - A	REF - A	REF - F	CLK - RB	CLK - RB
FAN																		

TFT 3001 Cards / Modules

	PTP Module	In/Output configurable. 4x SFP ports 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	NTP Module	Output module. 4x SFP ports 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	1PPS + TOD	Output module. 4x RJ45 RS422 ports 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	E1 Module	Output module. DB25 port (32x outputs) 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	B-DC Electrical	Output module. 4x BNC @TTL 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	B-DC Optical	Output module. 4x ST-Optical 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	B-AC	Output module. 4x BNC 5W (norm working condition) 232(L) * 100(W) * 20(H) mm
	MCP	Management module. 1x GE(RJ45) port
	REF-A	Universal input module, 1*GNSS input; 1*1PPS+TOD input; 1*10MHz input, 1*2MHz/2Mbps input.
	PTPI	PTP input module, 2*PTP input(GE,SFP)
	CLK	Clock module, 1*1PPS out and 1*10MHz out; Rubidium or OCXO embedded

TFT 3001 Holdover performance

If external source is not available, TFT3001 will use embedded OCXO or Rubidium clock as working clock. OCXO or Rubidium option clock performance show as below:

Item	OCXO	Rubidium
Frequency stability	$\pm 3 \times 10^{-10}$ per day	$\pm 5 \times 10^{-12}$ per day
Temperature stability	$\pm 1.5 \times 10^{-10}$ @ $-40^{\circ}\text{C} \sim 75^{\circ}\text{C}$	$\pm 6 \times 10^{-10}$ @ $-20^{\circ}\text{C} \sim 50^{\circ}\text{C}$
Phase holdover	30us per day	500ns per day
Aging(30 days after powered on)	$\pm 3 \times 10^{-10}$ per day	$\pm 5 \times 10^{-12}$ per day
	$\pm 5 \times 10^{-9}$ per month	$\pm 5 \times 10^{-11}$ per month

TFT3001 key feature

- Suitable in 19 inch rack(4U);
- Support 7*24 hours uninterrupted service;
- Support Ethernet NMS management;
- Support dual -48V DC redundant power;
- Support PTP, NTP, SyncE output
- Support IEEE 1588v2 default profile, ITU-T G.8275.1 profile.
- Support PTP/NTP bounding, PTP and NTP output can be configured at the same port;
- NTP concurrent output capability 600000 times per second;
- IPv4 and IPv6 supported at NTP/PTP port;

Supported Network Protocol

- IEEE1588v2(PTP)
- ITU-T G.8264, G.8273.2.
- ITU-T G.8275.1, G.8275.2, G.8265.1
- RFC 1059 (NTPv1), RFC 1119 (NTPv2), RFC 1305 (NTPv3), RFC 5905 (NTPv4)
- ARP
- IPv4/IPv6
- FTP
- Telnet/SSH
- SNMP

Environment

- Dimension: 435.8mm x 176.7mm x 305mm (WxHxD)
- Operation temperature (ambient): -5 to +60°C
- Storage temperature: -40 to +70°C
- Humidity: 0 to 95% (non-condensation)
- Dual DC PSU: -48VDC (Tolerant -36 ~ -72VDC).

TFT3001 In/Out interface

- 1~3*GNSS(GPS/BDS/GLONASS/GALILEO) input;
- 1~8*2MHz/2Mbps input;
- 1~3*1PPS+TOD input;
- 1~3*10MHz input;
- 4~48*PTP/NTP output;
- 4~48*IRIG-B output;
- 4~48*1PPS+TOD output;
- 32~384*2MHz/2Mbps output;

Phase & Frequency Accuracy

- 10MHz Frequency Performance: better than 5E-13/day when locked to GNSS
- 1PPS Phase Performance: better than ±30ns when locked to GNSS

Management Port

- CLI local management via serial port (USB)
- Telnet configure or monitor device
- HTTP based visible management
- SNMP based centralized management