TOSUN

TSync01 Product Manual

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tosunai.com

Copyright Information

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What Is TSync01?

TSync01 is a high-precision time synchronization device designed for systems requiring accurate time synchronization. By integrating advanced GPS satellite reception technology, it ensures system time accuracy and consistency.

TOSUN Devices Supporting TSync01

- TC1014 Pro
- TC1018 Pro
- TC1034 Pro+
- TC1038 Pro
- Tlog1038
- TC1054 Pro
- TC1055 Pro
- ...

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1. About this User Manual

1.1 Disclaimer

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2. TSync01

2.1 Product Overview

TSync01 is a high-precision time synchronization device designed for systems that require accurate and stable timekeeping. By integrating advanced GPS satellite receiver technology, it ensures consistent, reliable time synchronization across the entire system.

Users can configure both relative and absolute synchronization modes. Serving as a time server, the device supports up to six slave devices on the synchronization network and offers a simple, portable, and easy-to-use solution.

2.2 Features

- ✓ us (microsecond)-level time synchronization to meet the needs of various time-sensitive applications.
- ✓ Support for multiple GPS satellite systems. TSync01 is compatible with BeiDou, GPS, GLONASS, and other global satellite systems, ensuring optimal time signal reception in diverse environments.
- ✓ Flexible synchronization modes. Users can configure the device for either relative or absolute time synchronization based on actual requirements.

Relative Time Synchronization: Adjusts the slave device time dynamically by analyzing pulse signals, ensuring relative synchronization among multiple slave devices. (Suitable for scenarios where absolute time is not required, but synchronized timing among devices is essential.)

Absolute Time Synchronization: Obtains standard UTC time from GPS satellite signals and adjusts the slave device time accordingly, achieving absolute synchronization across multiple devices. (Ideal for applications with high time precision requirements and a need for absolute time accuracy.)

*Absolute time synchronization mode requires an external antenna to receive GPS signals. Please ensure a stable antenna connection and an unobstructed environment to guarantee GPS accuracy.

2.3 Technical Data

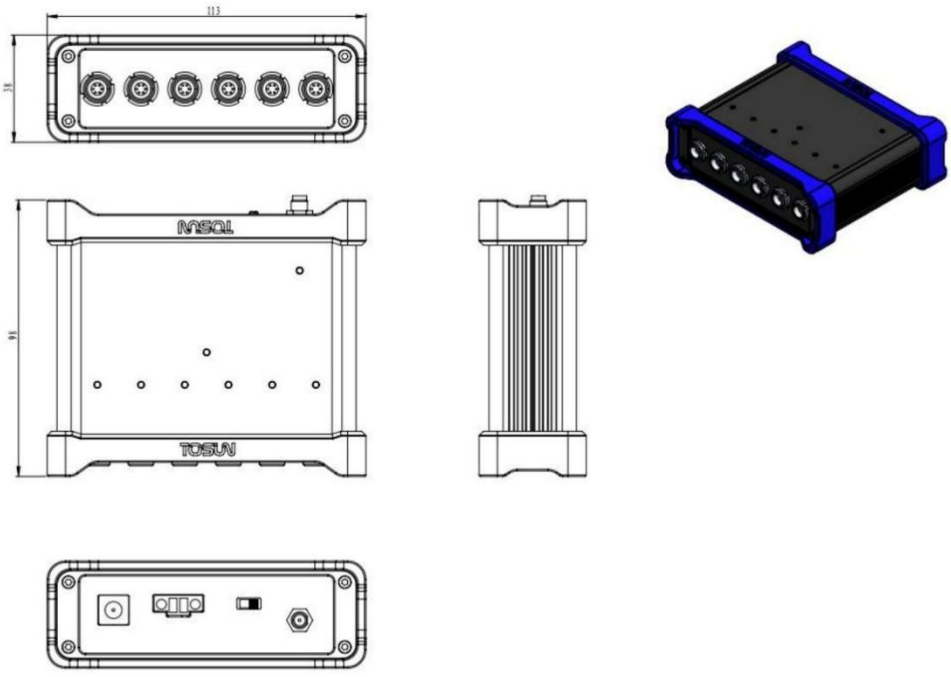
Channel	6* CH
Interface	LEMO aviation connector
Time Synchronization Accuracy	us (microsecond)-level time synchronization
Power Supply	Phoenix terminal power supply or power adapter (9-32V)
Power Consumption	3W
Case Material	Metal
Dimension	113*98*38mm
Weight	Approx. 281g (without packaging) /Approx. 1375.7g (with packaging)

Operating Temperature	-40℃~80℃
Operating Humidity	10% ～ 90% (non-condensing)
Operating Environment	Keep away from corrosive gases

2.4 Electrical Data

Parameter		Test Condition	Minimum Value	Typical Value	Maximum Value	Unit
Operating Voltage	DC power supply	6-channel time synchronization	9	12	32	V
Operating Current	DC power supply	6-channel time synchronization	--	0.16	--	A
Power Consumption	DC power supply	6-channel time synchronization	--	1.92	--	W

2.5 Mechanical Data



2.6 Scope of Delivery

✓ Main device: TSync01

✓ 12V2A power adapter

✓ BeiDou-2 GPS antenna

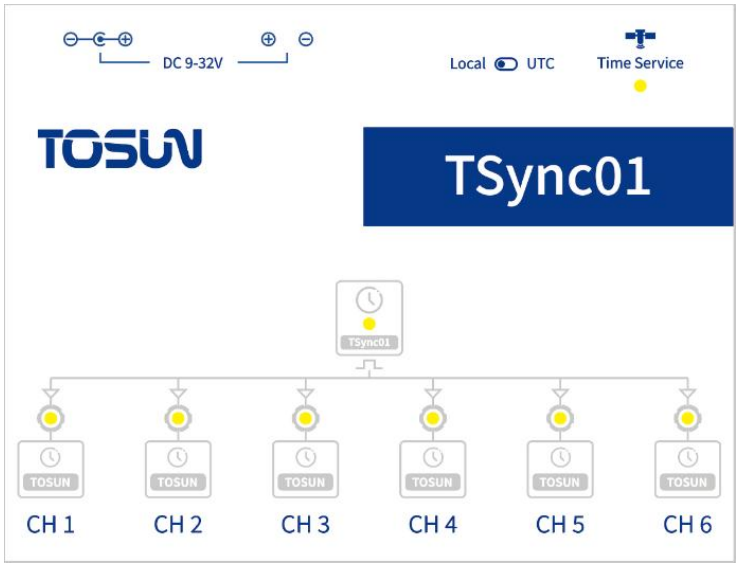
✓ LEMO aviation connector cable *6；

2.7 Hardware Interface

- GPS antenna interface
- Mode switch
- Phoenix terminal power supply port
- Power adapter supply port
- Synchronization channels CH1-CH6

2.8 LED

Diagram of LED indicator:



Description of indicator:

Indicator	**Definition**
Time Service	Satellite positioning indicator
TSync01	Mode indicator
CH 1-6	Synchronization channel 1-6 indicator

Description of LED color:

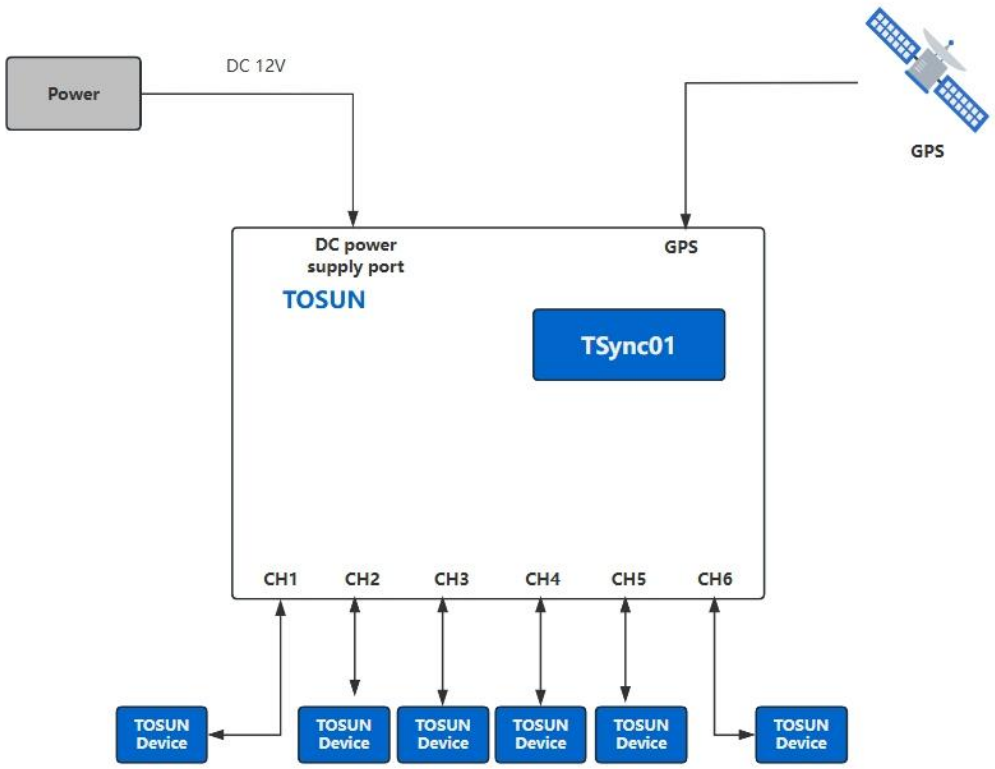
Color	**Description**
Time Service Green	Satellite positioning successful
TSync01 Green	Relative time synchronization mode
TSync01 Yellow	Absolute time synchronization mode
CH 1-6 Green	Synchronization channel connected to a device

2.9 Optional Accessories

1. Enclosure mounting bracket

3. Quick Start

3.1 System Connection



Provide 12V power to the TSync01 device, connect the GPS antenna (for absolute synchronization mode), and connect the devices requiring time synchronization to the TSync01 using LEMO aviation cables to achieve synchronization for up to six slave devices.

3.2 Mode Selection

The TSync01 device provides flexible synchronization mode selection, allowing users to configure either relative time synchronization or absolute time synchronization based on actual needs. The mode can be switched using the toggle switch on the TSync01 device.

Relative Time Synchronization: Adjusts slave device time dynamically by analyzing pulse signals to achieve relative synchronization among multiple slave devices. Suitable for scenarios where absolute time is not required, but synchronized timing among slave devices is needed.

Absolute Time Synchronization: Acquires standard UTC time from GPS satellite signals to synchronize slave device time, ensuring absolute synchronization among multiple slave devices. Suitable for scenarios requiring high-precision timing and absolute time reference.

*Absolute time synchronization mode requires an antenna connection to receive GPS signals. Please ensure the antenna is securely connected and placed in an unobstructed environment to guarantee GPS accuracy.

4. Inspection and Maintenance

The main electrical components of the TSync01 product are semiconductor components. Although the equipment has a long service life, they may also accelerate aging and significantly reduce their service life under an incorrect environment. Therefore, during the use of the equipment, periodic inspection should be carried out to ensure that the use environment maintains the required conditions.

It is recommended to conduct inspections at least once every 6 months to 1 year. Under improper environmental, more frequent inspections should be conducted. As shown in the table below, if you encounter problems during maintenance, please read the following content to find the possible causes of the problem. If the problem still cannot be solved, please contact Shanghai TOSUN Technology Ltd.

Item	Inspection	Standard	Action
Power Supply	Inspect for voltage fluctuations at the power supply end	Power supply port +12V DC	Use a voltage meter to check the power input end. Take necessary actions to keep the voltage fluctuations within the acceptable range.
Surrounding Environment	Check the ambient temperature of the surrounding environment. (Including the internal	-40℃~+80℃	Use a thermometer to check the temperature and ensure that the ambient temperature within in the acceptable

	temperature of enclosed environments)		range.
	Check the ambient humidity. (Including the internal humidity of enclosed environments)	The relative humidity must be within the range of 10% to 90%	Use a hygrometer to check the humidity and ensure that the ambient humidity within the acceptable range.
	Check for the accumulation of dust, powder, salt, and metal shavings	No accumulation	Clean and protect the equipment.
	Check for any contact with water, oil, or chemical sprays on the equipment	No contact	Clean and protect the equipment if necessary.
	Check for the presence of corrosive or flammable gases in the equipment area	No presence	Inspect by the smell, or using a sensor.
	Check for levels of vibration and shock	Vibration and shock are within the acceptable range	Install padding or other shock-absorbing devices if necessary.
	Check for noise sources near the equipment	No significant noise source	Isolate the equipment from noise sources or protect the equipment.
Wiring Installation	Check the crimped connectors in the external wiring	Ensure enough space between the connectors	Visually inspect and adjust if necessary.
	Check for damage in the external wiring	No damage	Visually inspect and replace the wiring if necessary.

TOSUN

Engineer Everything !

Software

Support CAN(FD)/LIN/FlexRay/SOME/IP and DoIP

UDS diagnostics/ECU flashing/CCP/XCP calibration

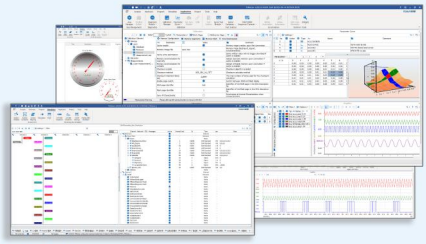
Embedded code generation/Application builder

Encrypted release/Logging and bus replay

Graphical programming/Residual bus simulation

C and Python scripting

Bus monitoring/Transmiting/Automated testing



TSMASTER

Hardware

1/2/4/8/12-channel CAN FD/CAN to USB/PCIe device

1/2/6-channel LIN to USB/PCIe device

Multi channel FlexRay/CAN FD to USB/PCIe device

Multi channel automotive Ethernet/CAN FD to USB/PCIe device

Automotive Ethernet media conversion device (T1 to Tx)

Multi-channel CAN FD/Ethernet/LIN datalogger

TTS test systems

-CAN FD/CAN/FlexRay/LIN communication boards

-Relay and fault injection boards

-Resistors for sensor simulation

-Digital I/O, Analog I/O boards available

CAN CAN FD LIN FlexRay OPEN ALLIANCE

Solutions

- Bus Conformance
- Network Automation Testing System
- Charging Testing System
- EMB Calibration Testing Equipment
- Information Security Solutions
- Steer-by-Wire Chassis Testing Solutions
- EOL Testing Equipment
- Motor Performance
- Durability Testing Solutions
- FCT

About TOSUN

The core product, TSMaster, is a comprehensive tool for automotive R&D, testing, production, and after-sales. It integrates essential functions with hardware support to streamline processes and ensure precision, making it ideal for automotive professionals.

International Organization

ASAM CiA

Quality Assurance

ISO9001:2015

CE Certification

CE

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