

PTC1000

PTP (Precision Time Protocol) Clock Converter



- Support IEEE1588v2, the synchronization accuracy reaches $\pm 100\text{ns}$
- Support ITU-T.G.8261/G.8262 SyncE, the synchronization accuracy can reach $\pm 50\text{ns}$ with SyncE enabled
- Support 1 100Base-FX SC/ST/FC or 1 10/100Base-TX RJ45 IEEE1588 input
- Support max 4 10/100Base-TX RJ45 Ethernet ports
- Support PPS output, IRIG-B TTL outputs, and IRIG-B AM modulation
- Support both vertical and horizontal Din-Rail installation
- Exceeds IEC61850-3 & IEEE1613
- CE, FCC, UL508 Class1 Div2 certificates (Certifications for newly added models with switching ability are still pending)



Overview

PTC1000 Clock Converter realizes the conversion from PTP to IRIG-B and PPS (Pulse Per Second). This allows the industrial devices that are equipped with IRIG-B clock interfaces and PPS interface to conveniently access PTP network. This provides economic solution for evolving legacy network into future-proofing PTP network and achieve high precision synchronization required in industrial control system.

The PTC1000 supports both vertical and horizontal Din-Rail installation. It provides one 100M fiber/copper port for IEEE1588 input, max 4 10/100Base-TX RJ45 Ethernet ports. Time output signal includes PPS, IRIG-B (DC) and IRIG-B (AC).

*Latest Updates:

1. Power supply 24DC (18-36VDC) has been upgraded to 24DCW (18-72VDC).
2. PTC1000 has been added with new model options which supports 4 10/100Base-TX RJ45 Ethernet ports which eliminates the need for an additional Ethernet switch in the location where only 1-4 IEDs exist. New added models are RFA (Ready for announcement) so far.
3. PTC1000-T/M/S Certifications including CE, FCC and UL508 Class1 Div2 have been finalized. The certifications for newly added models with switching ability are still pending.

Features & Benefits

1. Network Management and Monitoring: supports CLI, Telnet, WEB management, Kyvision centralized management, SNMPv1/v2, LLDP
2. Synchronization Protocol: supports IEEE1588v2, ITU-G.8261/G.8262 SyncE
3. Device Management: supports FTP upgrade and FTP file transmission
4. Network Partition: supports VLAN

Technical Specifications

Standard

IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE1588v2, ITU-G.8261/G.8262

Protocols

VLAN, GMRP, IGMP-Snooping; Telnet, HTTP, SNMPv1/v2, LLDP; PTP,RTC; FTP

Switch Properties

Number of VLANs: 256
 VLAN ID: 1-4094
 MAC Table: 8K
 Packet Buffer: 1Mbit
 Packet Forwarding Rate: 1.4Mpps
 Switching Delay: $5\mu\text{s}$

Interface

Fast Ethernet Port: 1 100Base-FX, SM/MM port, FC/SC/ST connector or 1 10/100Base-TX RJ45 port as IEEE1588 input, max 4 10/100Base-TX RJ45 Ethernet ports
 Console Port: RS232 (RJ45 connector)
 Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max
 Clock Interface: BNC interface, 2-pin 5.08 mm-spacing pluggable terminal blocks, 4-pin 5.08mm-spacing pluggable terminal block

Clock Signal

PPS: TTL level +5V, 50 Ω , Rising edge based, pulse width 20ms-200ms, stepped by 20ms (configurable in software)
 IRIG-B DC: TTL level +5V, 50 Ω , Rising edge based
 IRIG-B AM: Vp-p, 3V-10V (configurable in software, default Vp-p: 4.5V), 600 Ω , Modulation Ratio 3:1, 4:1, 5:1, 6:1 (optional, default modulation ratio is 3:1)

LED

LEDs on Front Panel
 Running LED: Run
 Alarm LED: Alarm
 Power LED: PWR1, PWR2
 Interface LED: Link/ACT, Speed
 PTP Sync LED: Sync

Transmission Distance

Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
 Multi Mode Fiber: 1310nm, 5km (100M)
 Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 80km (100M)

Power Requirements

Power Input: 24DCW (18-72VDC), 220AC/DCW(85-264VAC/77-300VDC)
 Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
 Power Consumption: <4W (PTC1000-T, PTC1000-S/M)
 <7W (PTC1000-5T, PTC1000-1S/M-4T)
 Overload Protection: Support
 Reverse Connection Protection: Support
 Redundancy Protection: Support (only for 24DCW option)

Physical Characteristics

Housing: Aluminum, fanless
 Protection Class: IP40
 Dimensions (WxHxD): 62.4x139x119.5 mm (2.45x5.47x4.70 in.)
 Weight: <0.75kg (1.653 pound)
 Mounting: Vertical or Horizontal Din-Rail

Environmental Limits

Operating Temperature: -40 to 85°C (-40 to 185°F)
 Storage Temperature: -40 to 85°C (-40 to 185°F)
 Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF

350,000hrs

Warranty

5 years

Approvals

CE, FCC, UL508 Class1 Div2 (PTC1000-T/M/S only, newly added models are pending)

Industrial Standard

EMI:
 FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:

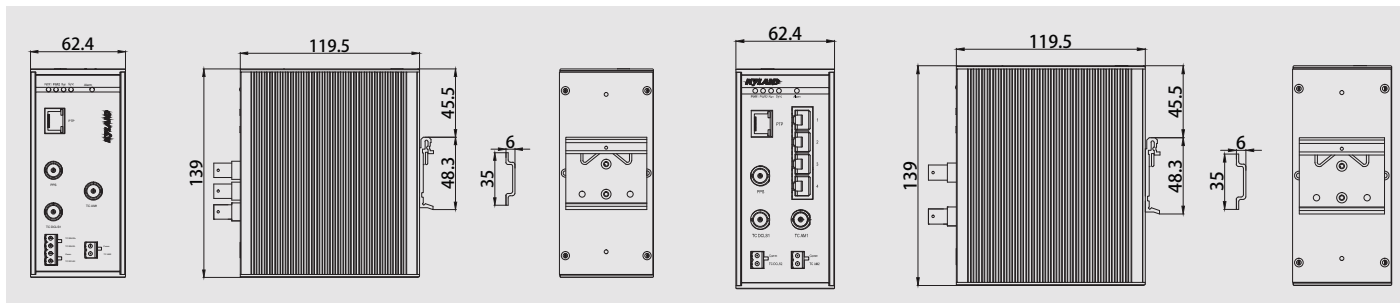
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
 IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
 IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
 IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
 IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
 IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
 IEC61000-4-9 (Pulsed magnetic field): 1000A/m
 IEC61000-4-10 (Damped oscillation): 100A/m
 IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
 IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:

IEC60068-2-6 (Vibration)
 IEC60068-2-27 (Shock)
 IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
 Power: IEC61850-3, IEEE1613

Mechanical Drawing



Ordering Information

PTC1000 - - - -
 Ports Distance Connector PS

Ports

T = 1 10/100Base-TX RJ45 port
 M = 1 100Base-FX multi mode port
 S = 1 100Base-FX single mode port
 5T = 5 10/100Base-TX RJ45 ports
 1M-4T = 1 100Base-FX multi mode fiber port, 4 10/100Base-TX RJ45 ports
 1S-4T = 1 100Base-FX single mode fiber port, 4 10/100Base-TX RJ45 ports
 (5T, 1M-4T, 1S-4T are still in RFA, not ready for sales yet)

Distance: Fiber Distance

1310-5 = 1310nm, 5km
 1310-40 = 1310nm, 40km
 1310-60 = 1310nm, 60km

1550-80 = 1550nm, 80km

Connector: Fiber Connector

SC = SC Connector
 ST = ST Connector
 FC = FC Connector

PS: Power Supply

24DCW = 18-72VDC, dual redundant power inputs
 220AC/DCW = 85-264VAC/77-300VDC, single power input

Example Order Codes

PTC1000-1M-4T-1310-5-SC-220AC/DCW
 1 multi mode 1310nm 5km fiber port with SC connector, and 4 10/100Base-TX RJ45 ports, 85-264VAC/77-300VDC power supply