10BASE-T1S-USB-ETH User Manual

Date	Version	Description
2024/10/11	V10	

1 Description

1.1 Overview

10BASE-T1S-USB-ETH is a 10Base-T1s to 10M USB Ethernet converter with case, support Multidrop bus line and Point-to-Point, Comes with DB9 connector PIN2 To TXN-, PIN7 To TXP+. A DB9 To Terminal Board with PIN2,PIN7,GND,120ohm resistance on/off button, which is easily for end customer use with 10Base-T1 ethernet.

10BASE-T1S is a new automotive Ethernet PHY standard following 100BASE-T1 and 1000BASE-T1. With a bandwidth of 10 Mbps, multi-device shared topology, and PLCA (Physical Layer Collision Avoidance) mechanism, 10BASE-T1S provides an Ethernet-based alternative to traditional bus systems.support PLCA,10BASE-T1S is IEEE 802.3cg standard, Use UTP for communication.

Supports a data rate of up to 10 Mbps for a single twisted pair cable, suitable for up to 25 meters of full/half duplex networks, aiming to achieve collision free and deterministic transmission on multi-point networks.
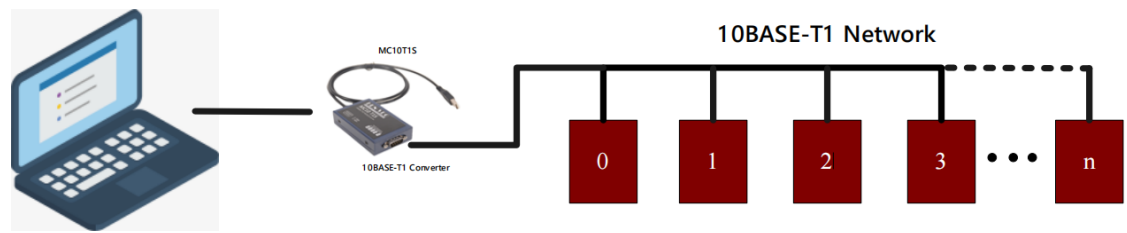
1.2 Product Features

- 10Base-T1 to 10M USB Ethernet
- Speed:10Mbps
- Point-to-Point
- Multidrop Support
- PLCA
- Status LED
- Metal Shell
- DB9 connector
- USB power supply

1.3 Specification

- USB power supply, PLCA endpoint control with USB Ethernet adapter.
- Temperature range: -40 ℃ to+85 ℃
- Power：100mW.
- Speed：10Mbit/s
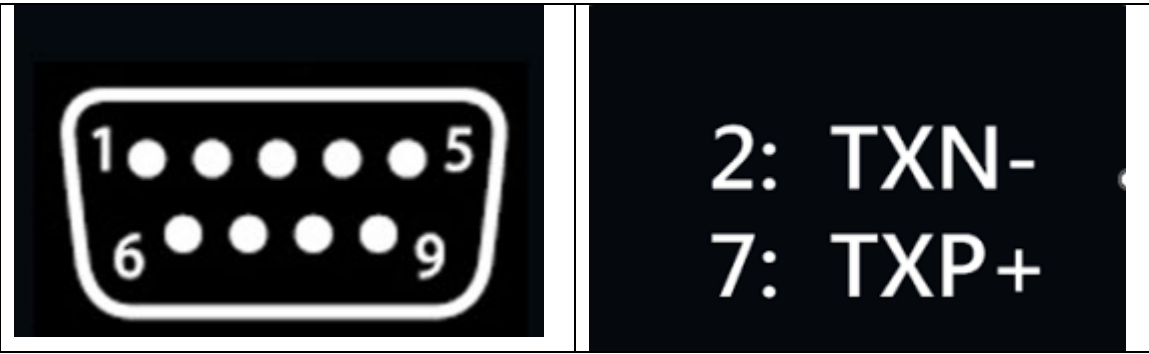- Industrial control, robotics, and automotive network data collection
- 77x50x26.5mm

1.4 Usa Case

2 Hardware

2.1 DB9 Pins Out

2.2 LED Indicate

Status LED display:

Green Led	On, Power
Yellow Led	Flashing, Driver Install
Orange Led	Flashing, Data communication. flash at different frequencies according to the amount of data

The green light will remain on when the device is plugged in. After the driver is successfully installed, the network will automatically connect, and the yellow light will flash.

When there is data communication, the Orange light will flash at different frequencies according to the amount of data. (The status may depend on different hardware versions)
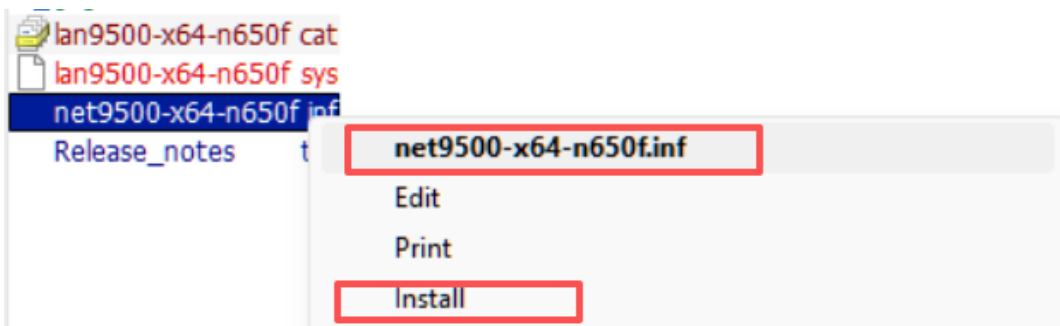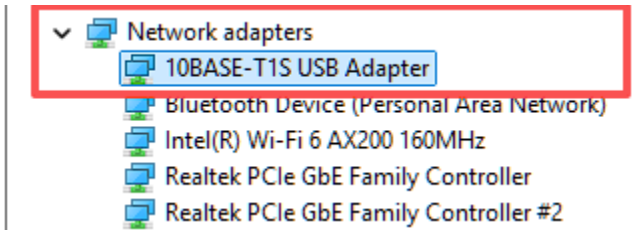
2.3 Test Case Connection

3 Windows Use Case

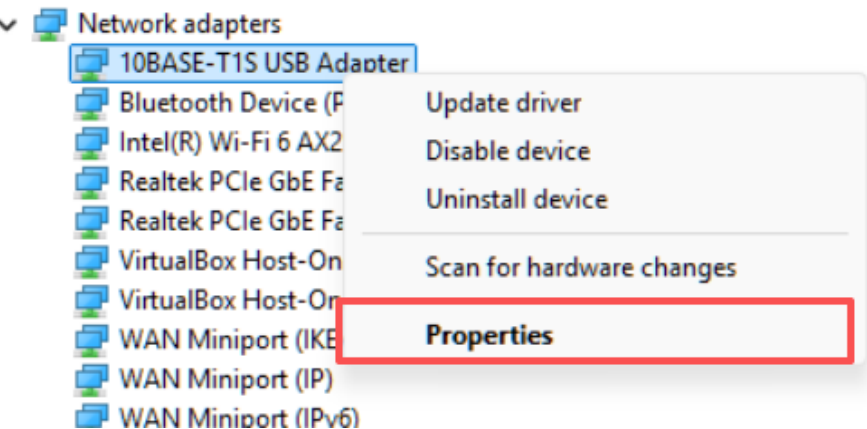Connection follow Chapter 2.3.

3.1 Install Driver (WIN10 Or above)

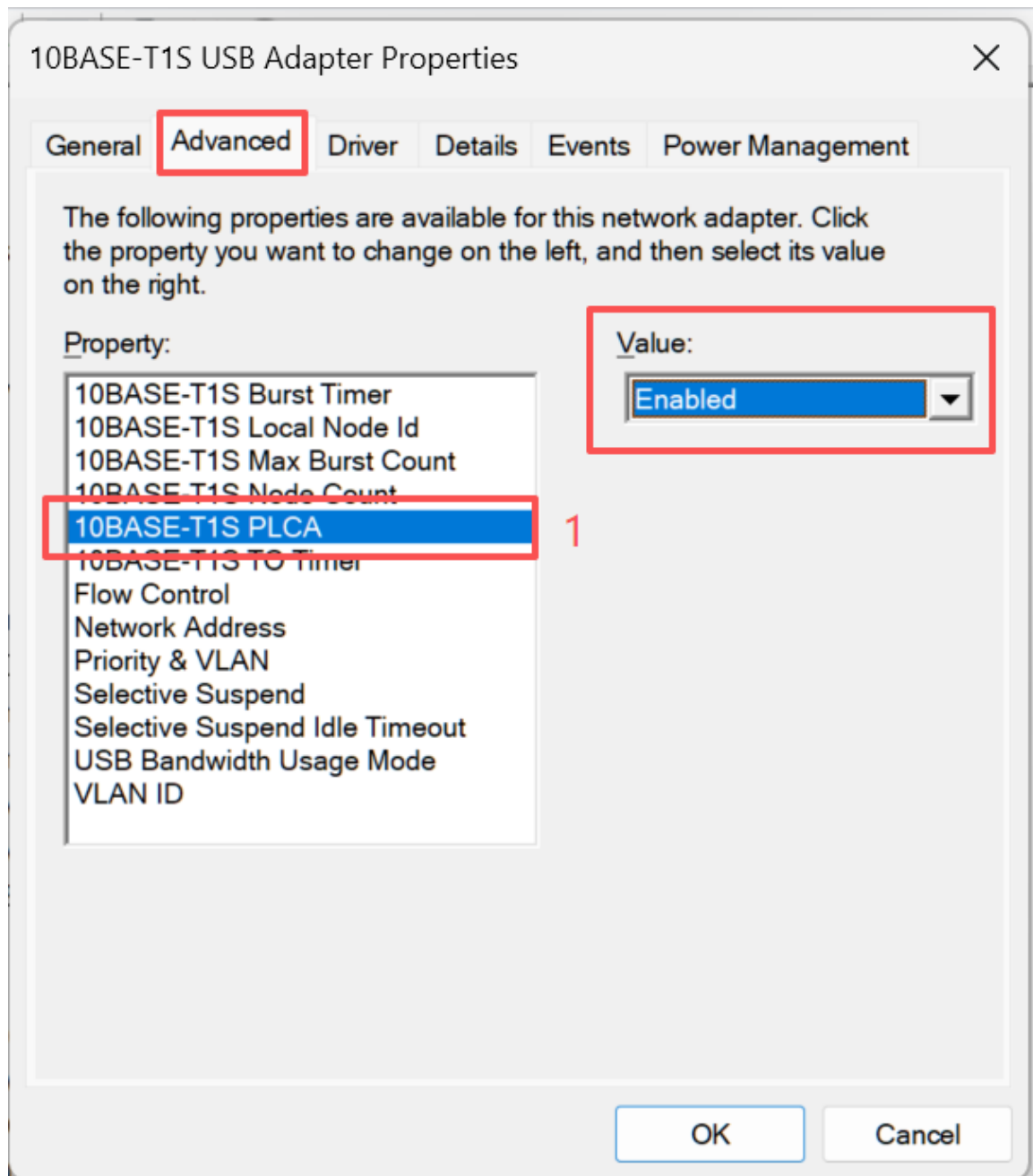Plug device to your PC, the you can find 10BASE-T1S USB Adapter from your device manager.

3.2 10BASE-T1S USB Adapter Properties

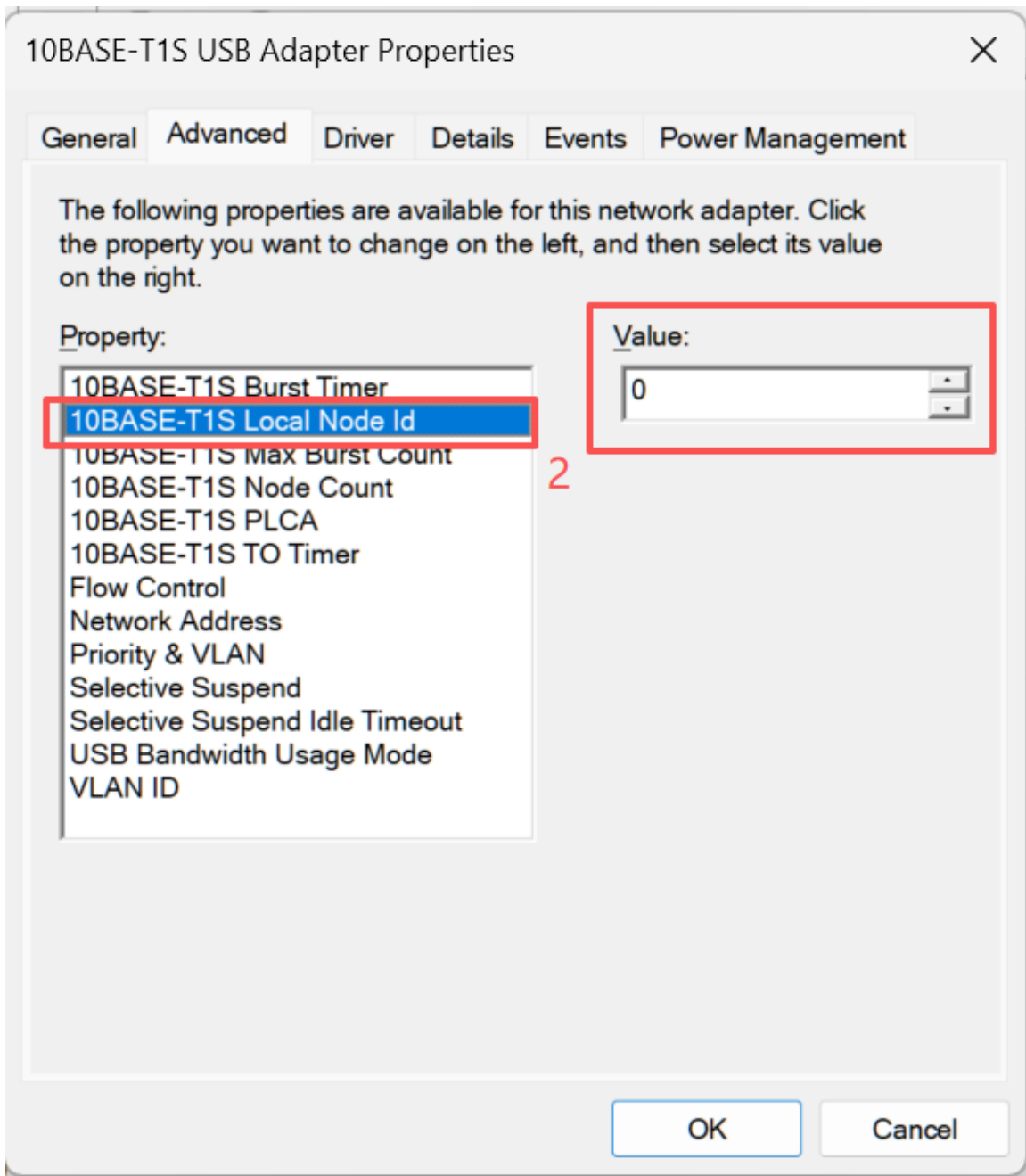Right click on the 10BASE-T1S USB Adapter, select Properties

3.3 10BASE-T1S PLCA Enable

3.4 10BASE-T1S Local Node Id Value Setting

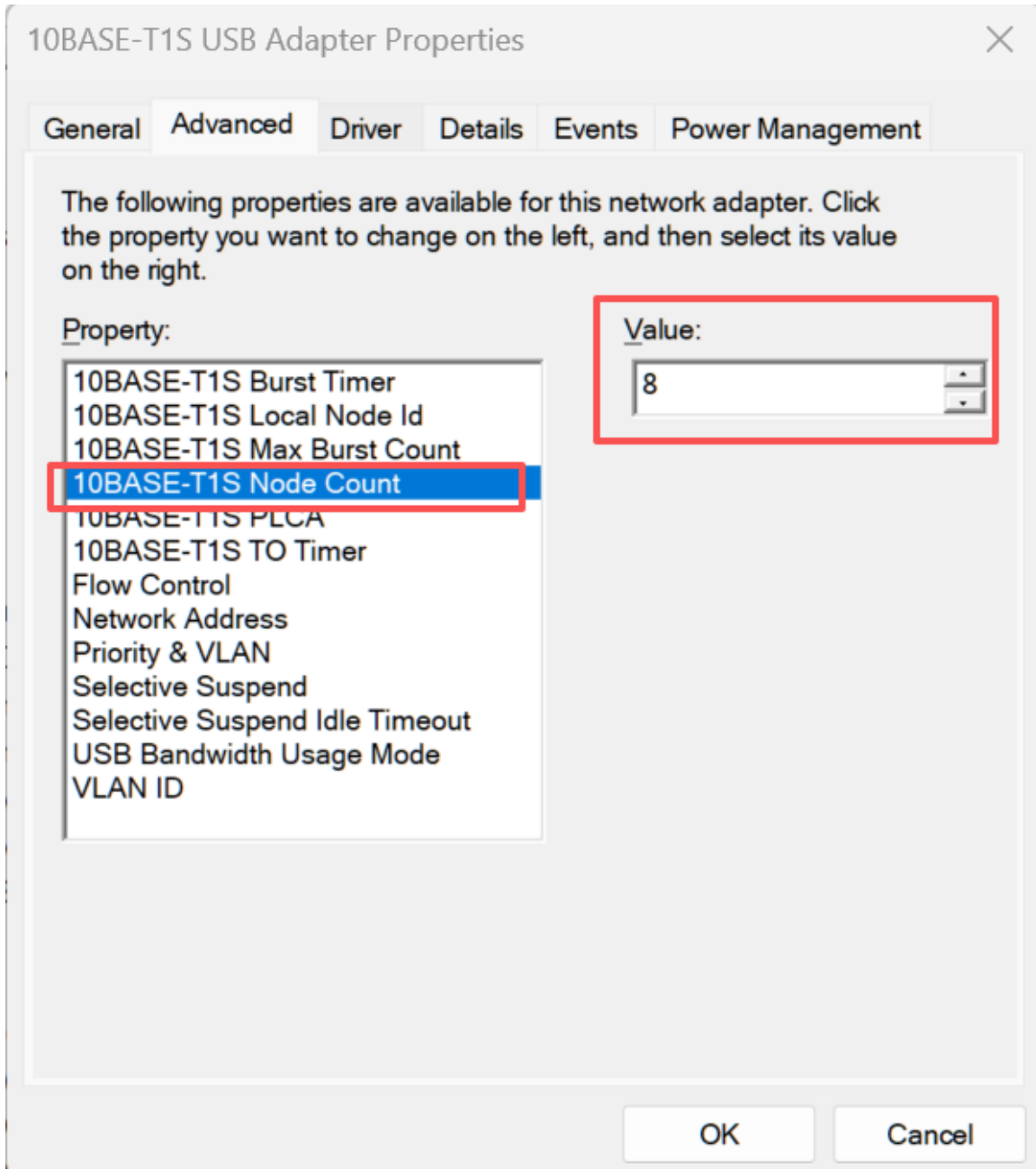Note: Node Id value must be different from PLCA network, from 0,1,2,3,etc…

We set computer A value 0, computer B value 1

3.5 10BASE-T1S Node Count Value

You can set network maximum Node Count, we set 8 here.

3.6 10BASE-T1S USB Adapter IP Setup

Note: Turn Off firewall from your Computers.
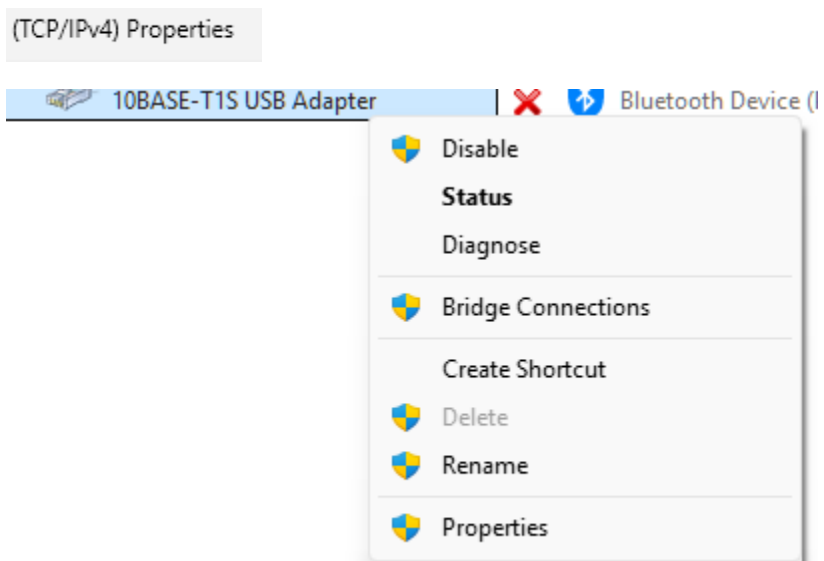
Find 10BASE-T1S USB Adapter from

Control Panel\All Control Panel Items\Network and Sharing Center\Change Adapter Settings

Control Panel Home

Change adapter settings

Change advanced sharing settings

10BASE-T1S USB Adapter

Find (TCP/IPv4) Properties after right click of

(TCP/IPv4) Properties

10BASE-T1S USB Adapter | ✖ 🔵 Bluetooth Device (

- 🛡 Disable
- **Status**
- Diagnose
- 🛡 Bridge Connections
- Create Shortcut
- 🛡 Delete
- 🛡 Rename
- 🛡 Properties

3.7 IP Setting

Computer A IP

	Computer A IP: 190.19.1.9 255.255.0.0 190.19.1.1 8.8.8.8 8.8.4.4

Computer B IP

	Computer B IP: 190.19.1.90 255.255.0.0 190.19.1.1 8.8.8.8 8.8.4.4

3.8 Test Report

190.19.1.9 As server

```
.\iperf3.exe -B 190.19.1.9 -s
```

190.19.1.90 As Client

```
.\iperf3.exe -c 190.19.1.90 -B 190.19.1.9 -w 10M
```

```
                                        .\iperf3.exe -B 190.19.1.9 -s
-------------------------------------------------------------
Server listening on 5201
-------------------------------------------------------------
Accepted connection from 190.19.1.90, port 52251
[  5] local 190.19.1.9 port 5201 connected to 190.19.1.90 port 52252
[ ID] Interval           Transfer     Bandwidth
[  5]   0.00-1.00   sec   981 KBytes  8.03 Mbits/sec
[  5]   1.00-2.00   sec  1.08 MBytes  9.10 Mbits/sec
[  5]   2.00-3.00   sec  1.09 MBytes  9.10 Mbits/sec
[  5]   3.00-4.00   sec  1.08 MBytes  9.08 Mbits/sec
[  5]   4.00-5.00   sec  1.09 MBytes  9.10 Mbits/sec
[  5]   5.00-6.00   sec  1.08 MBytes  9.08 Mbits/sec
[  5]   6.00-7.00   sec  1.09 MBytes  9.10 Mbits/sec
[  5]   7.00-8.00   sec  1.09 MBytes  9.10 Mbits/sec
[  5]   8.00-9.00   sec  1.08 MBytes  9.08 Mbits/sec
[  5]   9.00-10.00  sec  1.08 MBytes  9.10 Mbits/sec
[  5]  10.00-10.70  sec   774 KBytes  9.09 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bandwidth
[  5]   0.00-10.70  sec  0.00 Bytes  0.00 bits/sec          sender
[  5]   0.00-10.70  sec  11.5 MBytes  8.99 Mbits/sec          receiver
-------------------------------------------------------------
Server listening on 5201
```

190.19.1.9 As Client

```
.\iperf3.exe -c 190.19.1.90 -B 190.19.1.9 -w 10M
```

190.19.1.90 As Server

```
.\iperf3.exe -B 190.19.1.90 -s
```

```
PS                   \iperf-3.1.3> .\iperf3.exe -c 190.19.1.90 -B 190.19.1.9 -w 10M
Connecting to host 190.19.1.90, port 5201
[  4] local 190.19.1.9 port 1049 connected to 190.19.1.90 port 5201
[ ID] Interval           Transfer     Bandwidth
[  4]   0.00-1.00   sec  11.0 MBytes  92.1 Mbits/sec
[  4]   1.00-2.00   sec  1.12 MBytes  9.44 Mbits/sec
[  4]   2.00-3.00   sec  1.00 MBytes  8.40 Mbits/sec
[  4]   3.00-4.00   sec  1.12 MBytes  9.43 Mbits/sec
[  4]   4.00-5.00   sec  1.12 MBytes  9.44 Mbits/sec
[  4]   5.00-6.00   sec  1.00 MBytes  8.38 Mbits/sec
[  4]   6.00-7.00   sec  1.12 MBytes  9.44 Mbits/sec
[  4]   7.00-8.00   sec  1.12 MBytes  9.44 Mbits/sec
[  4]   8.00-9.00   sec  1.00 MBytes  8.39 Mbits/sec
[  4]   9.00-10.00  sec  1.12 MBytes  9.44 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bandwidth
[  4]   0.00-10.00  sec  20.8 MBytes  17.4 Mbits/sec                 sender
[  4]   0.00-10.00  sec  11.4 MBytes  9.53 Mbits/sec                 receiver
```

4 Linux Use Case

Connection as chapter 2.3

Follow

https://github.com/buelec-tech/10Base-T1S-USB-ETH/blob/main/README.md

5 Packing List

- 1x10Base-T1S-USB-ETH
- 1XDB9 To Terminal Board