

10BASE-T1S-USB-ETH User Manual



Date	Version	Description
2024/10/11	V10	

	10BASE-T1S-USB-ETH 10Base-T1 to 10M USB Ethernet
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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.

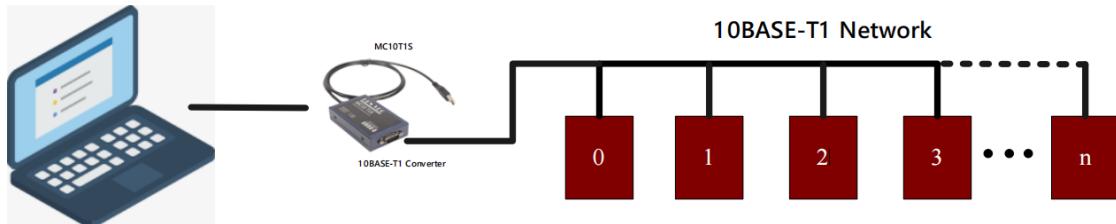
1.2 Product Features

- 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

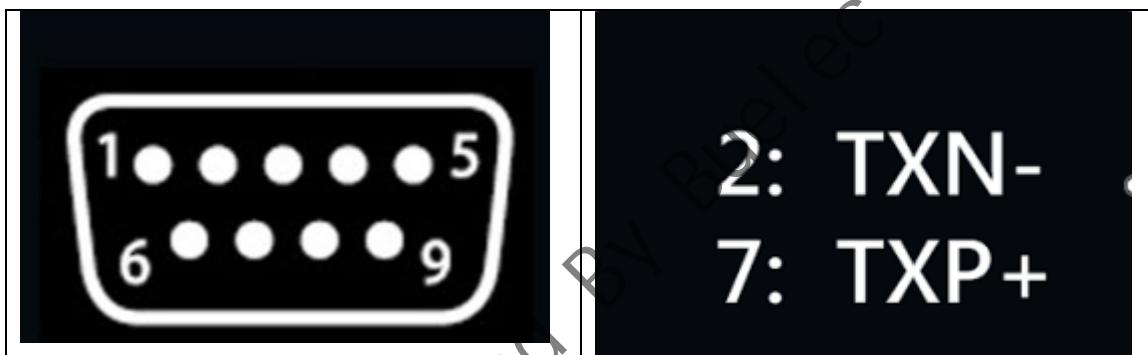
- USB power supply, PLCA endpoint control with USB Ethernet adapter.
- Temperature range: -40 °C to +85 °C
- Power: 100mW.
- Speed: 10Mbit/s
- Industrial control, robotics, and automotive network data collection
- 77x50x26.5mm

1.4 Use Case



2 Hardware

2.1 DB9 Pins Out



2.2 LED Indicate

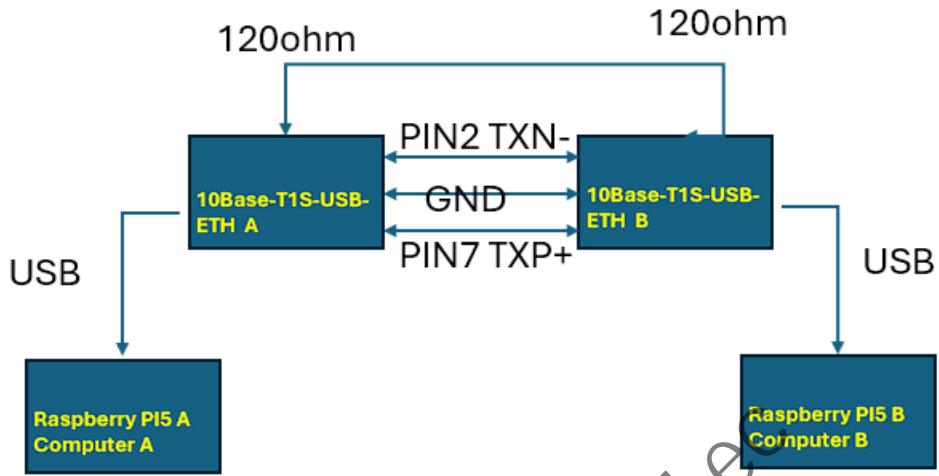
Status LED display:

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

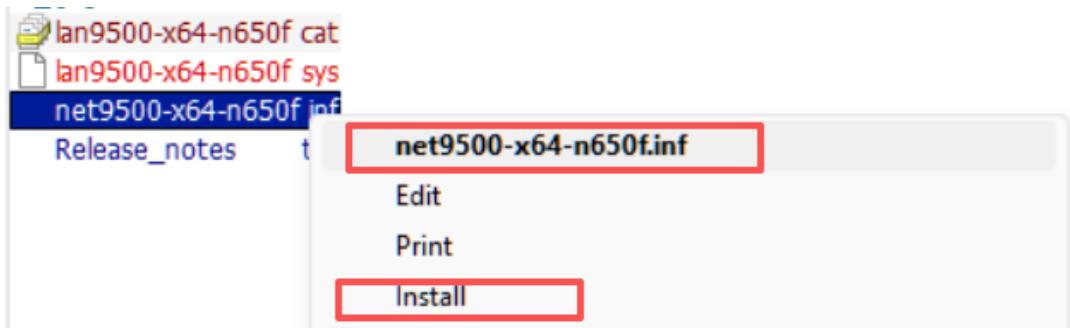




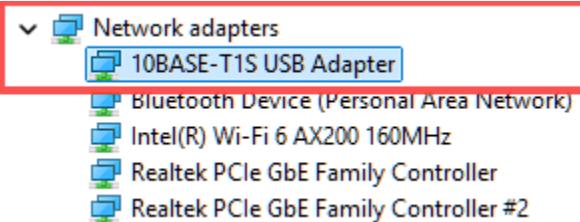
3 Windows Use Case

Connection follow Chapter 2.3.

3.1 Install Driver (WIN10 Or above)

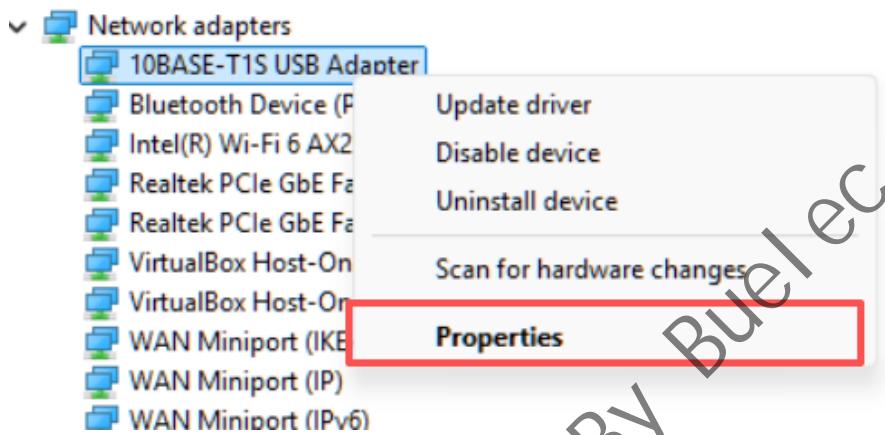


Plug device to your PC, the you can find 10BASE-T1S USB Adapter from your device manager.

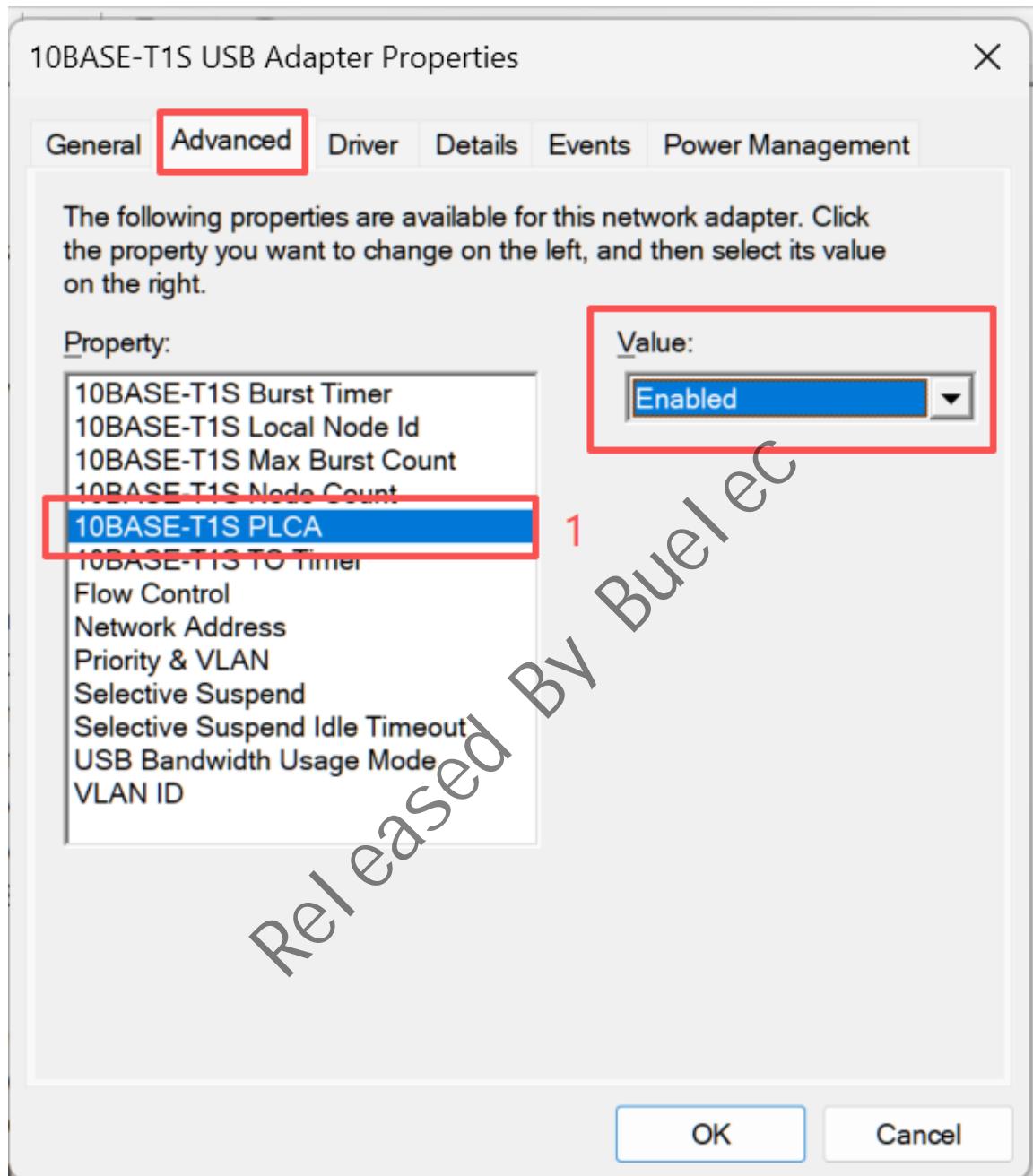


3.2 10BASE-T1S USB Adapter Properties

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



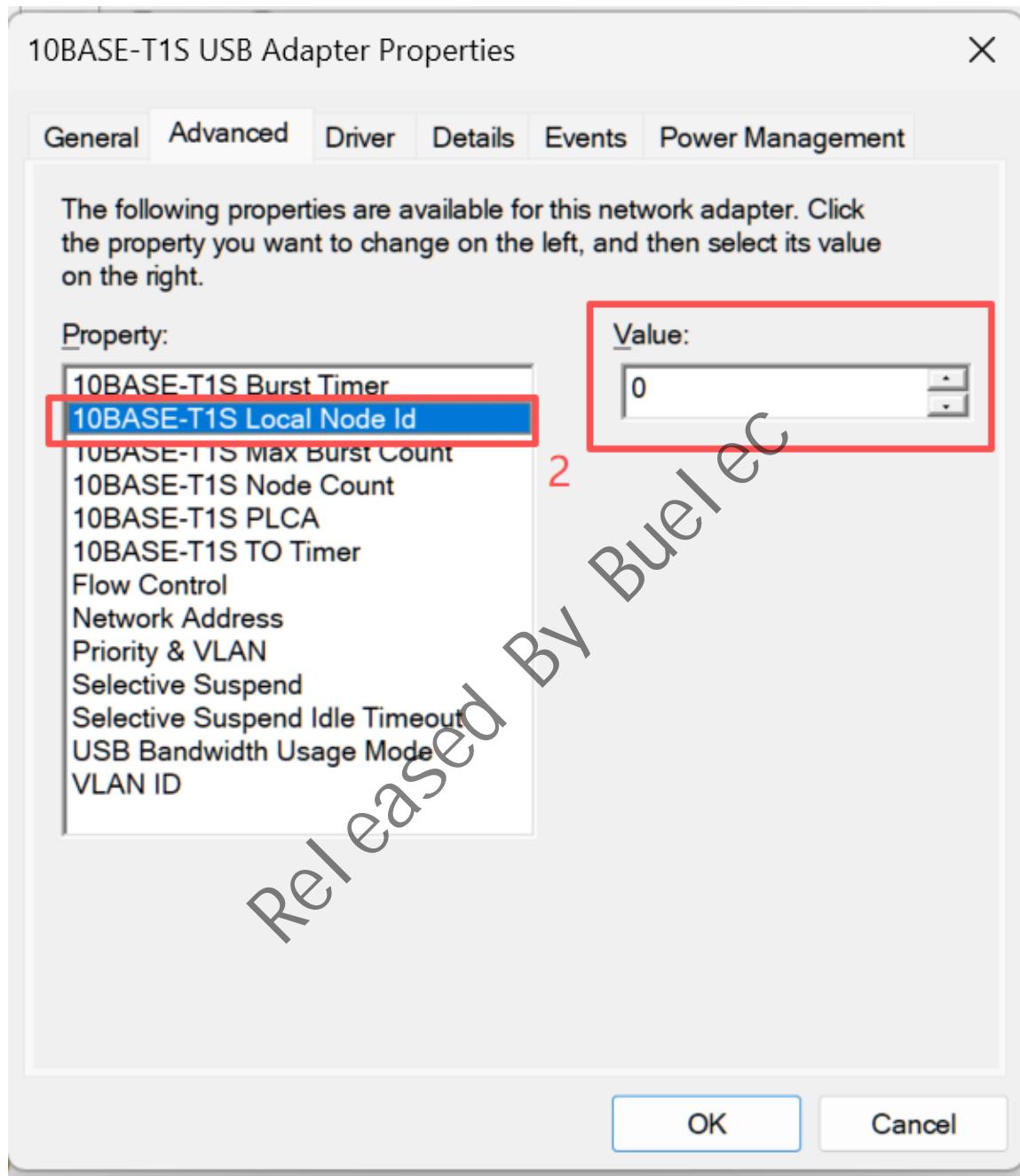
3.3 10BASE-T1S PLCA Enable



3.4 10BASE-T1S Local Node Id Value Setting

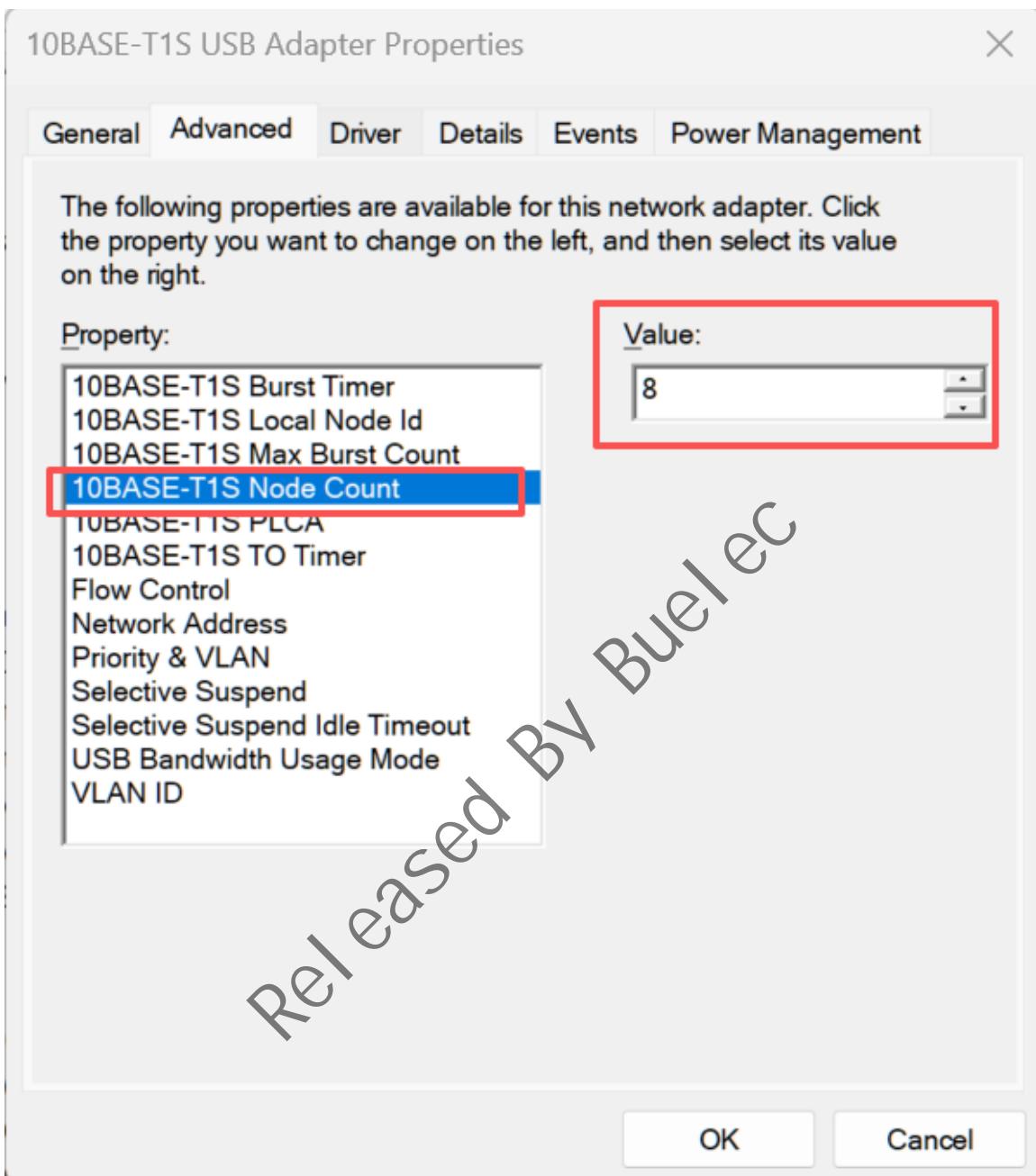
Note: Node Id value must be different from PLCA network, from 0,1,2,3,etc...

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

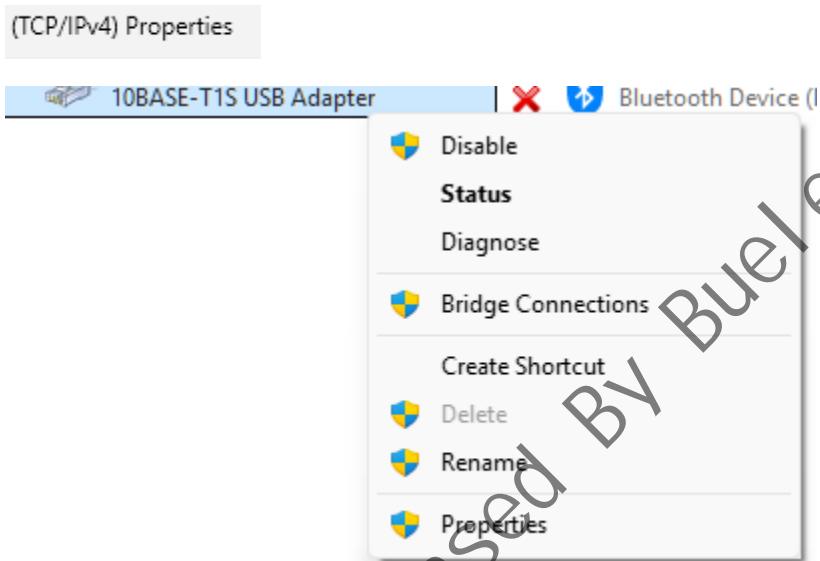
Note: Turn Off firewall from your Computers.

Find 10BASE-T1S USB Adapter from

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



Find (TCP/IPv4) Properties after right click of



3.7 IP Setting

Computer A IP

<p>General</p> <p>You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.</p> <p><input type="radio"/> Obtain an IP address automatically <input checked="" type="radio"/> Use the following IP address:</p> <p>IP address: 190 . 19 . 1 . 9 Subnet mask: 255 . 255 . 0 . 0 Default gateway: 190 . 19 . 1 . 1</p> <p><input type="radio"/> Obtain DNS server address automatically <input checked="" type="radio"/> Use the following DNS server addresses:</p> <p>Preferred DNS server: 8 . 8 . 8 . 8 Alternate DNS server: 8 . 8 . 4 . 4</p> <p><input type="checkbox"/> Validate settings upon exit Advanced...</p>	<p>Computer A IP:</p> <p>190.19.1.9 255.255.0.0 190.19.1.1 8.8.8.8 8.8.4.4</p>
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Computer B IP

<p>General</p> <p>You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.</p> <p><input type="radio"/> Obtain an IP address automatically <input checked="" type="radio"/> Use the following IP address:</p> <p>IP address: 190 . 19 . 1 . 90 Subnet mask: 255 . 255 . 0 . 0 Default gateway: 190 . 19 . 1 . 1</p> <p><input type="radio"/> Obtain DNS server address automatically <input checked="" type="radio"/> Use the following DNS server addresses:</p> <p>Preferred DNS server: 8 . 8 . 8 . 8 Alternate DNS server: 8 . 8 . 4 . 4</p> <p><input type="checkbox"/> Validate settings upon exit Advanced...</p>	<p>Computer B IP:</p> <p>190.19.1.90 255.255.0.0 190.19.1.1 8.8.8.8 8.8.4.4</p>
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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
[ 5]  0.00-10.70  sec  11.5 MBytes  8.99 Mbits/sec
----- sender
                           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
[ 4]  0.00-10.00  sec  11.4 MBytes  9.53 Mbits/sec
                           sender
                           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