WCEX-MCON-USBA

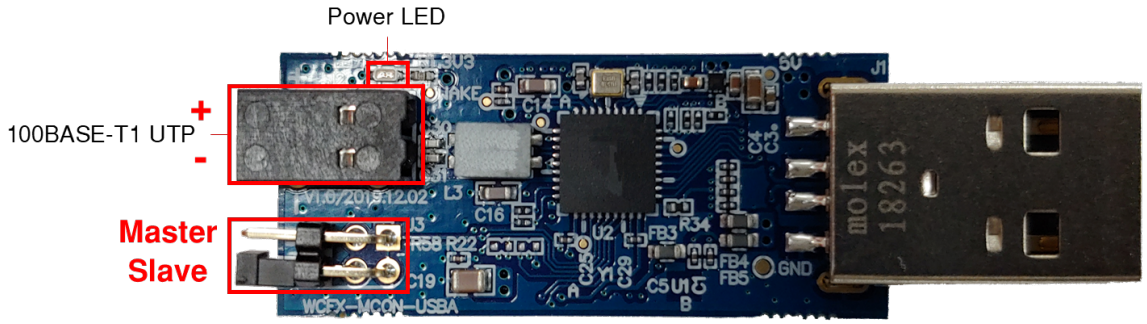
User Guide

Revision History

Version	Date	Author	Description
1.0	2020.01.10	Jungyu Ahn	User manual draft was written.

1. General Information

The **WCEX-MCON-USBA** makes your computer use IEEE 100BASE-T1.



< Figure 1. WCEX-MCON-USBA >

Key Features:

(1) 1 × 100BASE-T1 connector
(2) 1 × USB Type-A plug
(3) 1 × Power LED
(4) 1 × Master / Slave mode selection jumper

2. Hardware Specification

Speed / Duplex	100 Mbps / Full Duplex
Interface	USB 2.0 Type-A
	2-pin Terminal Block (For IEEE 100BASE-T1)
Mode	IEEE 100BASE-T1 Master
	IEEE 100BASE-T1 Slave
Dimension	55 mm × 16 mm
Input Power	5V (USB powered)
Current Consumption	Typ. 120 mA
	Max 150 mA
Operational Temperature	-20 °C ~ 80°C (-40 °C ~ 85°C except USB plug)

< Table 1. H/W Specification of WCEX-MCON-USBA>

3. Additional Information

(1) The length of twisted pair cable is up to 15 meters via IEEE 100BASE-T1 specification.

4. Installation

(1) H/W Connection

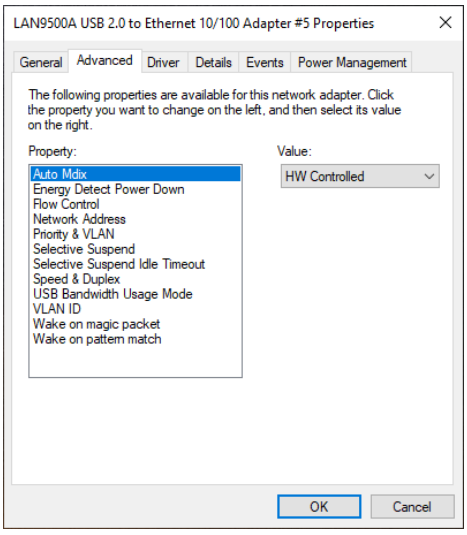
① Connect 100BASE-T1 twisted pair cable into terminal block of the WCEX-MCON-USBA.

② Set mode selection jumper properly.
If the opposite device was master, the WCEX-MCON-USBA should be slave mode. If the opposite device was slave, the WCEX-MCON-USBA should be master mode.

③ Connect the WCEX-MCON-USBA into your computer and check lighting on the power LED.

(2) Device Driver Installation for Windows 10

In Microsoft Windows 10, NIC driver of LAN9500A would be installed automatically. You can see your NIC as *LAN9500A USB2.0 to Ethernet 10/100 Adapter* in Control Panel > Network and Internet > Network Connections. If the driver was not work properly, you may config network adapter. Open properties window via double click on your network adapter, click *Configure* and see Advanced tab in new window.



< Figure 2. Driver Configuration Tab for Windows 10 >

You can change properties of the device in it. If you used two or more WCEX-MCON-USBA devices in a network, each device should have own network addresses, so you need to check and modify *Network Address*. You may also need to modify *Speed & Duplex* property as *100 Mbps Full Duplex*. The last, though WCEX-MCON-USBA is disabled *Auto Mdix* in hardware, you may need to change the property as OFF state.

(3) Device Driver Installation for Linux

① Clone driver patch and installation script from our git repository.

git clone https://github.com/wayties/mcon ~/mcon

② Download linux driver of Microchip's LAN9500A at following link.

https://www.microchip.com/SWLibraryWeb/producttc.aspx?product=SRC-LAN95xx-LINUX

③ Move Microchip's LAN9500A driver to linux driver directory.

mv lan9500_linux_1.02.05.tar.gz ~/mcon/drivers/linux

④ Run DKMS installation script with sudo (root permission)

cd ~/mcon/drivers/linux
sudo ./dkms.sh

5. Test Result

< Figure 3. Two devices with 9 meters Unshielded-Twisted-Pair (UTP) cable >

Two WCEX-MCON-USBA connected each other via 9 meters UTP cable and one is Master mode, and another is Slave mode. The devices connected on different host computer and set different network address and IP address. And one sent UDP packets to another using *iperf*. The result is below.

```
jgahn@JGAHN-WAYTIES:~$ iperf -c 192.168.202.103 -u -e -b 100M
------------------------------------------------------------
Client connecting to 192.168.202.103, UDP port 5001 with pid 260
Sending 1470 byte datagrams, IPG target: 112.15 us (kalman adjust)
UDP buffer size:  160 KByte (default)
------------------------------------------------------------
[  3] local 192.168.202.101 port 55579 connected with 192.168.202.103 port 5001
[ ID] Interval       Transfer     Bandwidth      PPS
[  3] 0.00-10.00 sec   114 MBytes  95.7 Mbits/sec 8139 pps
[  3] Sent 81402 datagrams
[  3] Server Report:
[  3] 0.00-10.00 sec   114 MBytes  95.7 Mbits/sec   0.268 ms    1/81402 (0.0012%) -/-/-/- ms 8137 pps
jgahn@JGAHN-WAYTIES:~$
```

< Figure 4. UTP transmission results using IPerf >

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