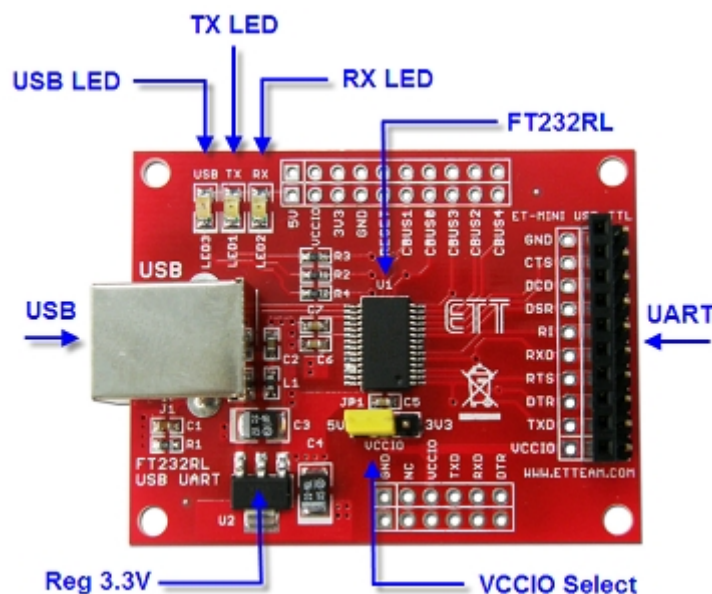# ET-MINI USB-TTL

ET-MINI USB-TTL is device to convert signal from USB to UART Serial; it is suitable for using with Microcontrollers. When it is interfaced with computer, it looks like Virtual Com Port.

Specifications of Board ET-MINI USB-TTL

1. Use IC No.FT232RL from Future Technology Devices
2. Has all Signal UART Serial completely; TXD, RXD, DTR, DSR, CTS, RTS, DCD, RI
3. Use Power Supply from Port USB directly, without interfacing from external
4. Has Circuit Regulator 3.3V 800 mA separately; so, it can supply current more than FT232RL (the maximum current is limited by Port USB of computer)
5. Has 3 LED to display status; yellow for receiving data (RX), yellow for sending data (TX), and red for USB
6. Has Jumper to choose the signal level either to be 3.3V or 5V for connection
7. Driver supports Windows 98SE/ME/2000/XP/7, Linux, Mac OS X, can download it from website: www.ftdichip.com

Devices on Board ET-MINI USB-TTL

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1. There are 3 LEDs to display the status as follows;

   - **USB**: It shows status when it connects with computer.
   - **TX**: It shows status when it sends data out.
   - **RX**: It shows status when it receives incoming data.
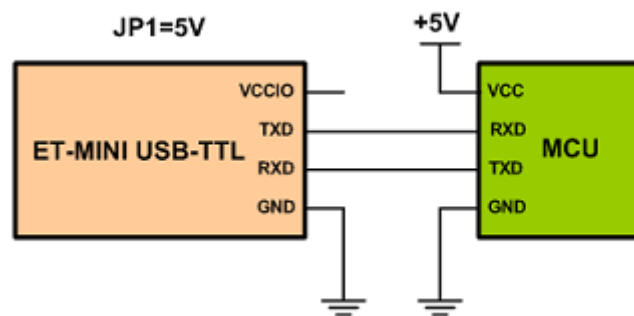
2. **Jumper VCCIO**: It chooses voltage level either to be 3.3V or 5V for interfacing with external Circuit. User has to choose the voltage level according to the actual use; moreover, user has to choose this value completely before interfacing with computer.

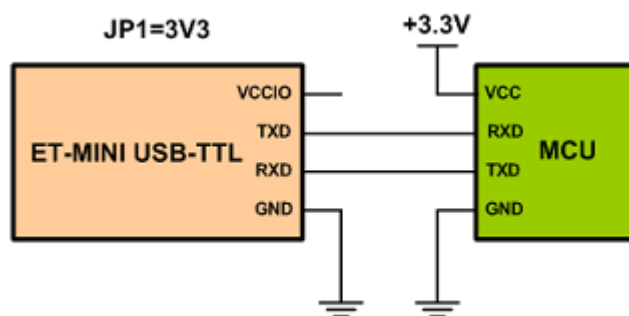3. Pins are listed in the table below;

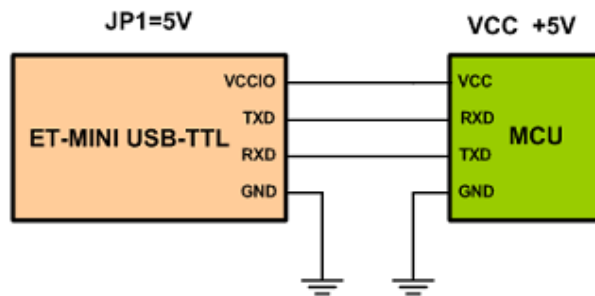| Name	Type	Description
VCCIO	Power	Pin Reference Voltage from the connected circuit
TXD	Output	Pin for sending UART Serial Data
DTR	Output	Data Terminal Ready
RTS	Output	Request to Send
RXD	Input	Pin for receiving UART Serial Data
RI	Input	Ring Indicator
DSR	Input	Data Set Ready
DCD	Input	Data Carrier Detect
CTS	Input	Clear to Send
GND	Power	Pin Ground of Board ET-MINI USB-TTL
5V	Power	Pin +5V Voltage Output from Port USB
3V3	Power	Pin +3.3V Voltage Output from Circuit Regulator
RESET	Input	Pin for reset from external, it runs at Logic 0. If it is unused, it is floated.
CBUS0	I/O	It can configure this pin; the standard value is set as **TXLED#** that is connected with LED. TX Status of this Pin is Logic 0 when sending out data.
CBUS1	I/O	It can configure this pin; the standard value is set as **RXLED#** that is connected with LED. RX Status of this Pin is Logic 0 when receiving data.
CBUS2	I/O	It can configure this pin; the standard value is set as **TXDEN**. It enables to send out data when it is used with RS485.
CBUS3	I/O	It can configure this pin; the standard value is set as **PWREN#** that is connected with LED. USB Status of this pin is Logic 0 when it is interfaced with USB and it is Logic 1 when it enters safe mode.
CBUS4	I/O	It can configure this pin; the standard value is set as **SLEEP#**. This Pin is Logic 0 when it enters safe mode.

Example of interfacing with ET-MINI USB-TTL

1. **Microcontroller uses +5V Power Supply and it has own supply.** This connection of Microcontroller uses its own +5V Power Supply, without using any Power Supply from Board ET-MINI USB-TTL because this circuit needs +5V Voltage for connection. So, user has to set Jumper VCCIO(JP1) to the position of 5V as well.
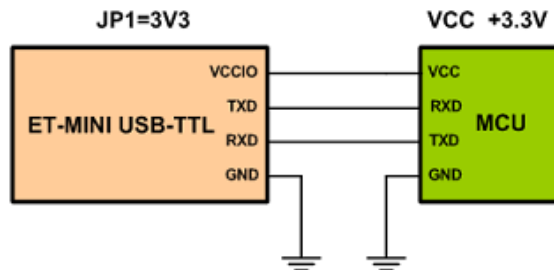

2. **Microcontroller uses 3.3V Power Supply and it has own supply.** This connection of Microcontroller uses its own +3.3V Power Supply, without using any Power Supply from Board ET-MINI USB-TTL because this circuit needs +3.3V Voltage for connection. So, user has to set Jumper VCCIO(JP1) to the position of 3V3 as well.

3. **Microcontroller uses +5V Power Supply and it uses Power Supply from Board ET-MINI USB-TTL.** This connection of Microcontroller uses +5V Power Supply from Board ET-MINI USB-TTL because this circuit needs +5V Voltage for connection. So, user has to set Jumper VCCIO(JP1) to the position of 5V as well.

4. **Microcontroller uses +3.3V Power Supply and it uses Power Supply from Board ET-MINI USB-TTL.** This connection of Microcontroller uses +3.3V Power Supply from Board ET-MINI USB-TTL because this circuit needs +3.3V Voltage for connection. So, user has to set Jumper VCCIO(JP1) to the position of 3V3 as well.
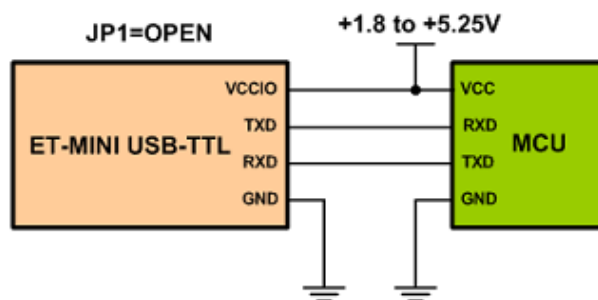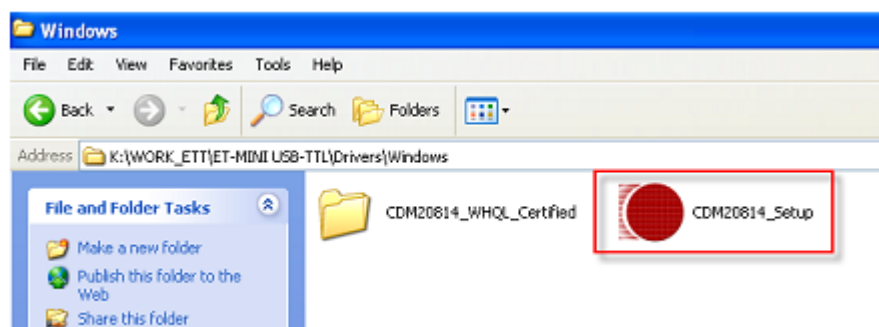

5. **Microcontroller uses Power Supply in the range of +1.8V to +5.25V.** This connection is suitable for interfacing with Microcontroller that uses low voltage in the range of +1.8V to 5.25V. In this case, Microcontroller needs to have its own Power Supply; moreover, user has to remove Jumper VCCIO(JP1) from the device because it not allowed to supply +3.3V or +5V.
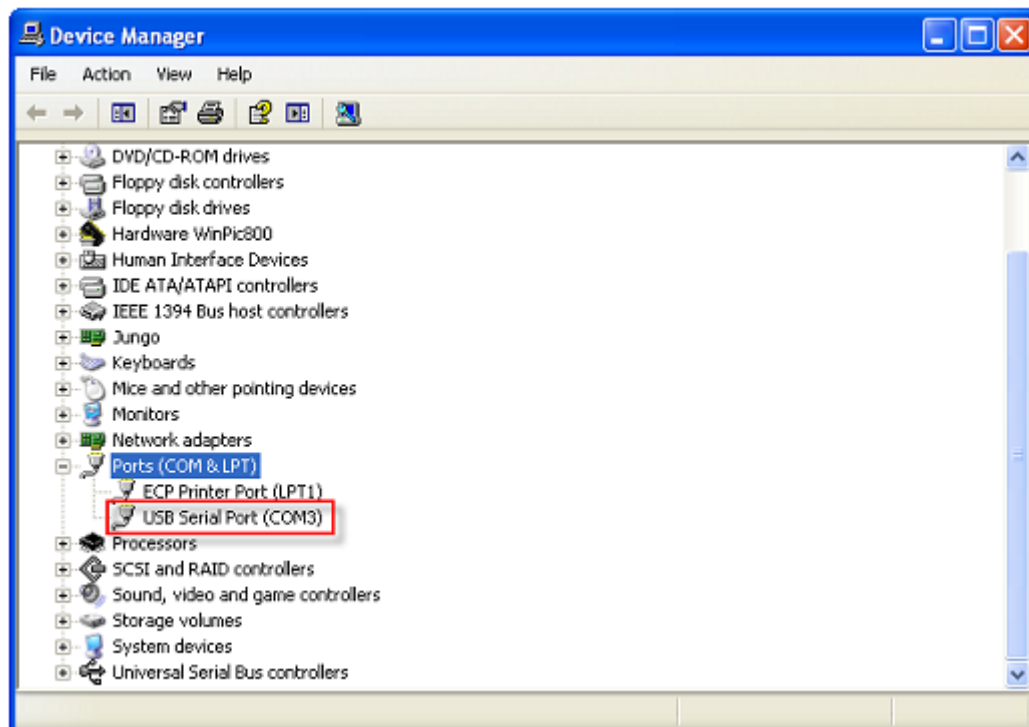
How to install Driver of ET-MINI USB-TTL

1. Open Folder **ET-MINI USB-TTL\Drivers\Windows** in CD-ROM and install **File CDMXXXXX_Setup** (*XXXXX* is version of Driver). In this case, user has to wait until the process of installing the Driver successfully and completely.

2. Interface ET-MINI USB-TTL with computer through Port USB; next, Windows found new hardware and it installs ET-MINI USB-TTL automatically. When the installation is complete, LED USB is lit up(ON).

3. User can check if it has installed the Driver of ET-MINI USB-TTL successfully. Click **Control Panel → System**; choose Tab **Hardware** and Choose **Device Manager**; and finally, user can see the additional Hardware USB Serial Port as shown in the picture below;

How to test Board ET-MINI USB-TTL

1. Interface Pin TXD and RXD together as shown in the picture and then interface ET-MINI USB-TTL with computer completely.

2. Open Program HyperTerminal, click menu **Start > Programs > Accessories > Communication > HyperTerminal.**
3. Window Connection Description appears; user can identify the preferable name and then click **OK.**

4. Interface with Port that has been installed ET-MINI USB-TTL completely; in this case, it is **COM3**. Next, click **OK.**

5. Setup Baud Rate as preferable; in this case, it sets **9600**; sets **Flow Control** as **None;** and finally, click **OK.**

6. User can type any message and it will be displayed on the Program HyperTerminal as shown in the picture below. While typing message, LED displays status of TX and RX by blinking that means that it is in the process of sending/receiving data.

How to change position number of COM PORT

1. Go to **Control Panel > System,** choose Tab **Hardware** and choose **Device Manager.** In this case, user can see the Hardware list that is in the position of COM3 as shown in the picture below (the COM PORT number can be changed, depending on each computer).

2. Referred to the picture, if ET-MINI USB TTL is in the position of COM3 but user requires changing the position number to COM2 instead, user has to double-click **USB Serial Port(COM3);** window **Properties** appears and then click Tab **Port Setting** and click Button **Advanced**…

3. Change COM PORT Number to COM2 as shown in the picture below and then click **OK** to confirm the change. Next, user needs to restart computer or scan to find new Hardware.

100mil(2.54mm)

2200mil(55.88mm)

400mil(10.16mm)

850mil(21.59mm)

1700mil(43.18mm)

USB   TX RX

USB

LED3 LED1 LED2

5V VCCIO 3V3 GND RESET CBUS1 CBUS0 CBUS3 CBUS2 CBUS4

ET-MINI USB-TTL

GND
CTS
DCD
DSR
RI
RXD
RTS
DTR
TXD
VCCIO

R3
R2
R4

C7
C6

U1

ETT

100mil(2.54mm)

J1
C1
R1

C3 5V   3V3
JP1   C5
VCCIO

FT232RL
USB UART

C2
L1

C4

U2

GND NC VCCIO TXD RXD DTR

WWW.ETTEAM.COM

100mil(2.54mm)

Ø 125mil(3.175mm)

100mil(2.54mm)

1600mil(40.64mm)

L1
bead

+5V
U2
LM1117-3.3
+3V3

C2
10n
C3
10uF
IN   OUT
GND   TAP
TAP
C4
10uF

JP1
VCCIO

+5V
+3V3

VCCIO

C5
100n

U1
FT232RL

+5V

C6
100n

J1
USB

VBUS
D-
D+
GND

USB

SH2
SH1

C1
10n
R1
1M

D-
D+

USBDM
USBDP

NC
NC
RESET#
OSCI
OSCO

3V3OUT

RESET

C7
100n

VCCIO
VCC

AGND GND GND TEST

VCCIO
VCC

TXD
RXD
RTS#
CTS#
DTR#
DSR#
DCD#
RI#

CBUS0
CBUS1
CBUS2
CBUS3
CBUS4

TXD
RXD
RTS
CTS
DTR
DSR
DCD
RI

CBUS0
CBUS1
CBUS2
CBUS3
CBUS4

R2 560R
R3 560R
R4 560R

+5V

LED2
RX
LED1
TX
LED3
USB

H1
VCCIO 1
TXD   2
DTR   3
RTS   4
RXD   5
RI   6
DSR   7
DCD   8
CTS   9
       10

H2
VCCIO 1
TXD   2
DTR   3
RTS   4
RXD   5
RI   6
DSR   7
DCD   8
CTS   9
       10

H3
VCCIO 1
TXD   2
DTR   3
RTS   4
RXD   5
RI   6
DSR   7
DCD   8
CTS   9
       10

H4
NC   1
       2
VCCIO 3
TXD   4
RXD   5
DTR   6

H5
NC   1
       2
VCCIO 3
TXD   4
RXD   5
DTR   6

+3V3 +5V
H6
       1
VCCIO 2
       3
       4
RESET 5
CBUS1 6
CBUS0 7
CBUS3 8
CBUS2 9
CBUS4 10

+3V3 +5V
H7
       1
VCCIO 2
       3
       4
RESET 5
CBUS1 6
CBUS0 7
CBUS3 8
CBUS2 9
CBUS4 10

LOGO ETT

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