

USB to RS-232/RS422/485

URK-228-I USB To Serial Operation Manual



First Edition, Feb 2012

Table of Contents

1. Introduction	2
2. Package checklist	3
3. Product Specification	4
4. Product Panel Views Description	7
URK-228I Product Views	7
USB Type B Connector	7
Serial I/O Port of RS-232/422/485	8
Terminator	8
LED Indicators	9
5. URK-228I Driver installation	10
Driver Installation	10
6. Hardware Installation & Setup	15
Hardware installation	15
Hardware setup	17
Appendix A - Pin Outs and Cable Wiring	21
USB Layout Diagram	21
RS-232 Pin Assignment	21
RS-232 Wiring Diagram	22
RS-422 Pin Assignment	22
RS-422 Wiring Diagram	22
RS-485 Wiring Diagram	22

1

Introduction

Thank you for your purchase of URK-228I as the USB to serial adapter. Featuring USB(Universal Serial Bus) interface technology, it is converted the USB to RS-232 or industrial RS422/485 , so can be easily adopted for industrial machines with RS232 or RS422/485 interfaces. URK-228I is compatible with fully compatible with the USB V1.0~2.0 . URK-228I's electrical power is from USB port and doesn't need any power adapter. You can connect a PC USB port or USB hub to URK-228I via the USB cable and High-Speed RS-232/422/485 serial port (Auto-Detection) which features easy connectivity for traditional serial devices in your working environments.

The RS232 standard supports handshaking signals (such as RTS, CTS) and full-duplex communication. For the RS485 control, it is completely transparent to user and their software written for Half-Duplex COM works without any extra modification effort.

URK-228I meets the industrial level as provide 3000 VDC of isolation to protect the host computer or other connected equipments from ground loops and destructive voltage spikes on the RS-232/422/485 data lines. It also offers internal surge-protection on data lines. Internal high-speed transient suppressors on each data line protect URK-228I from dangerous voltages levels or spikes.

2

Package checklist

URK-228I product is shipped with the following items:

- 1 unit of URK-228I USB to RS-232/422/485 converter
- 1 unit of A type to B type USB cable
- Software CD Include User Operation Manual

NOTE: Notify your sales representative if any of the above items is missing or damaged

3

Product Specification

- **Serial Port**
 - **RS-232**
 - No. of Ports : RS-232 * 1 Port
 - Port Type : DB9 male
 - RS-232 Signals : DCD , RX , TX , GND , RTS , CTS , DTR , DSR
 - Receive buffer : 128 Byte
 - Transmit buffer : 256 Byte
 - Baud Rate Speed : 300 bps ~ 921.6k bps
 - Parity : None , Odd , Even , Space , Mark
 - Data Bit : 7 , 8
 - Stop Bit: 1 , 2
 - Flow Control : X-On / X-Off or Hardware
 - Optical isolation protection : 3000V DC
 - Connected Serial port type identification : Auto-Detection
 - 15KV ESD for all signal

- **RS-422/485**

- No. of Ports : 422/485 * 1 Port (Terminal Block)
- RS-422 Signals : RxD+ , RxD- , TxD+ , TxD- in Full-duplex (Surge Protection)
- RS-485 Signals : Data+ , Data- in Half-duplex (Surge Protection)
- Receive buffer : 128 Byte
- Transmit buffer : 256 Byte
- Baud Rate Speed : 300 bps ~ 230.4k bps
- Built-in RS-422/RS-485 Terminal Resistor (Surge Protection)
- Optical isolation protection : 3000V DC
- Connected Serial port type identification : Auto-Detection
- Built in Terminal 120 Ohm Terminal resistor SW selection ON/OFF
- 15KV ESD for all signal

- **USB Port**

No. of Ports : USB * 1 Port

- Fully compatible with the USB V1.0, V1.2, V2.0
- USB type B connector
- Baud Rates : Full speed 12 Mbps.

- **Driver OS Support**

- Windows – 98 / 98E / 2000 / XP(32/64) / Server (2003,2008) / Vista(32/64) / Win-7(32/64) / XP Embedded / Win CE 4.2/5.0 and 6.0
- Mac Os-x / Os(8/9) , Linux 2.4 / greater

- **Power :USB bus power as voltage DC +5V**

- **Led Lamp :**

SYS (Red), Rx (Orange), Tx (Green)

- Environment :
 - Operating Temperature: 0°C ~ 70°C
 - Storage Temperature : -20°C ~ 85°C

- Humidity: 5-95% RH

- Dimensions : 88 * 91 * 27 mm (W * D * H)

- WEIGHT : 94 gm

- Regulatory Approvals :
 - EMC : FCC Class A, CE Class A
 - WARRANTY : 1 Year

4

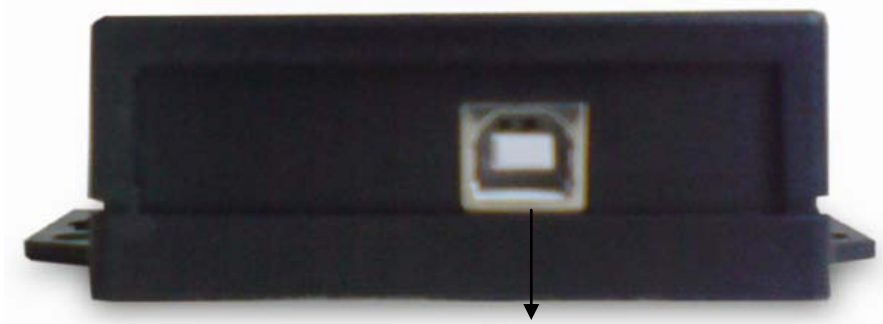
Product Panel Views Description

URK-228I Product Views



USB Type B Connector

Power Outlet - The URK-228I USB to RS-232/422/485 is powered by USB (Universal Serial Bus) port a single 5V DC (Inner positive/outer negative) power supply and 500mA of current. To connect the USB cable to between a PC USB port or USB hub and URK-228I's USB port. If the power is properly supplied, the SYS indicator of red color LED will be on.

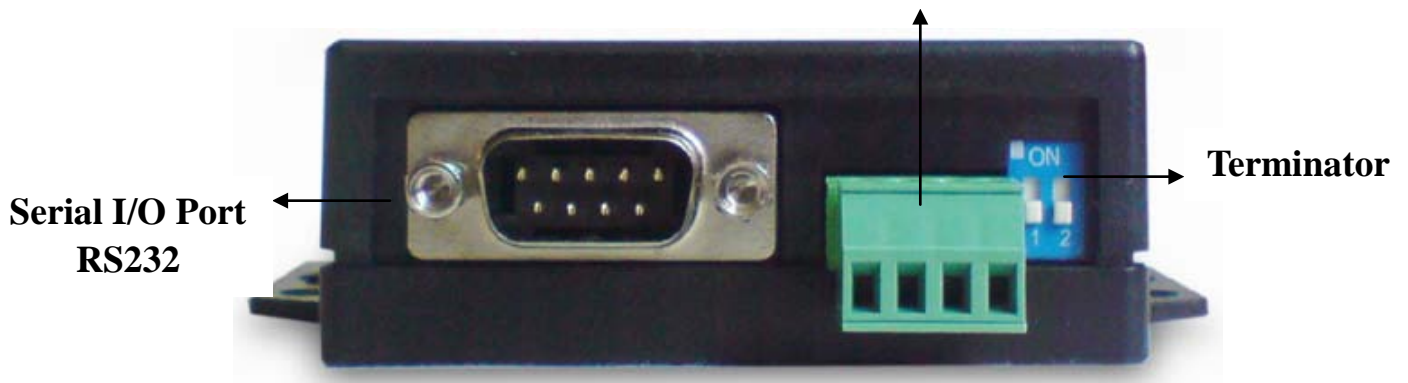


USB Type B Port

URK-228I's USB port is a USB type B connector and it is fully compatible with the USB V1.1~2.0

Serial I/O Port

Serial I/O Port RS-485/RS-422



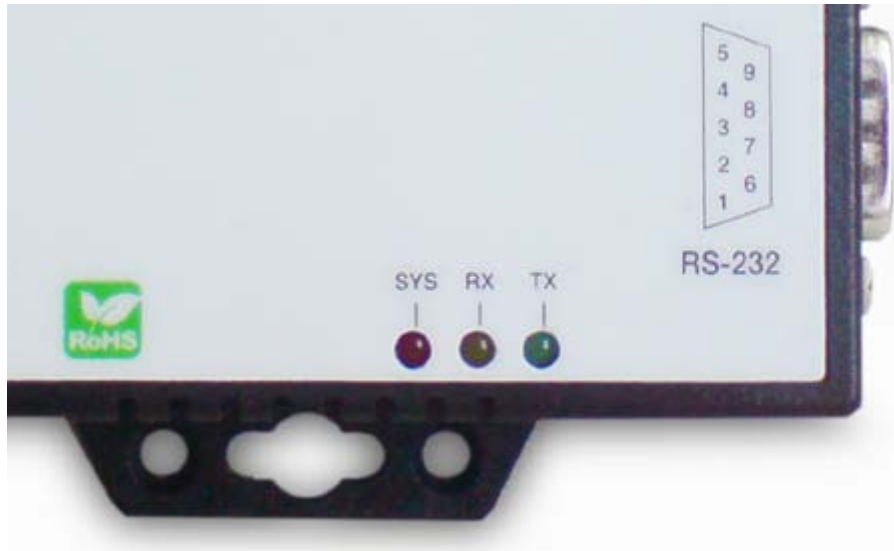
Serial I/O Port of RS-232/422/485

To connected the serial data cable between the converter and the serial device. Follow the parameter setup procedures to configure the converter (see the following chapters).

Terminator

The purpose is for compensating signal attenuation in long distance connection at RS-485/422 . If the switch 1 & 2 are set in "ON" position, the signal compensation will be activated. To disable the function, just to set switch 1 & 2 to OFF position.

LED Indicators



SYS (Red) :

It is a power indicator (When the power is on, the SYS LED will be on.)

RX (Orange) :

Data received indicator (When data are received from the USB, the RX LED will be on.)

TX (Green) :

Data sent indicator (When data are sent out to the USB, the TX LED will be on.)

5

URK-228I Driver Installation

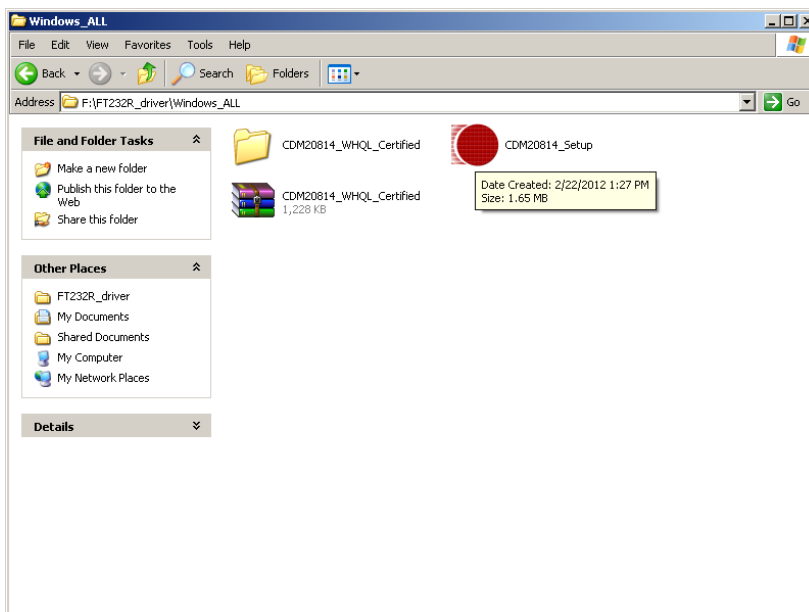
When setting up URK-228I adapter for the first time, you have to install FT232R as “URK-228I Driver” first in your computer device before connecting it. There are several kind OS as Windows 98 / XP / 2000 / VISTA..., Linux ... , Mac.... The utility CD is enclosed in the device box.

All the URK-228I USB to RS-232/422/485 Adapters must be installed the driver first before you use it.

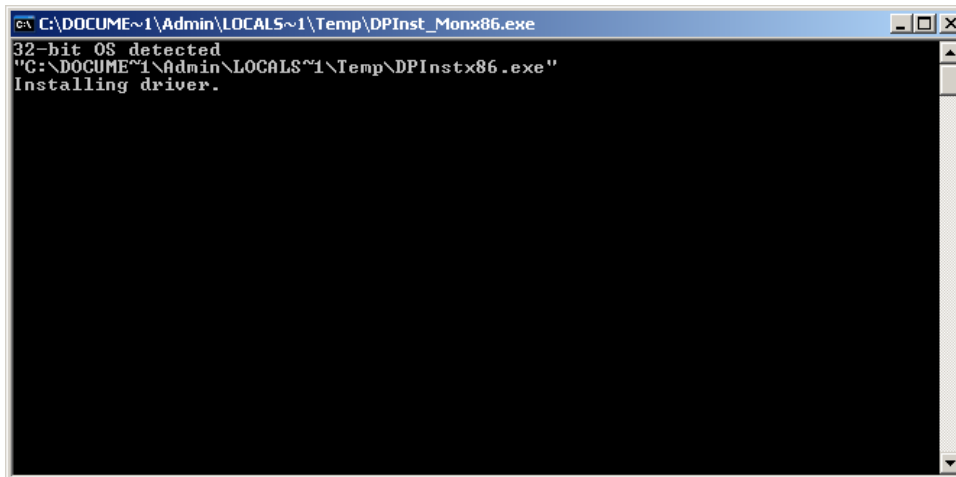
● Driver Installation

When connecting up URK-228I adapter for the first time, you have to install the driver software in your computer first.

A. Install FT-232R software(CDM20814_Setup.EXE)

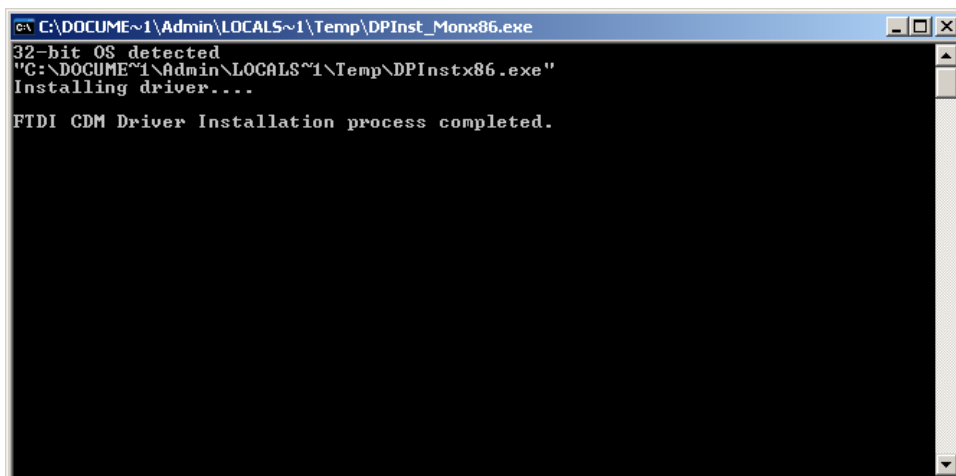


B. 畫面一



```
ca C:\DOCUME~1\Admin\LOCAL5~1\Temp\DPInst_Monx86.exe
32-bit OS detected
"C:\DOCUME~1\Admin\LOCALS~1\Temp\DPInstx86.exe"
Installing driver.
```

C. 安裝完成。(視窗自動關閉)



```
ca C:\DOCUME~1\Admin\LOCAL5~1\Temp\DPInst_Monx86.exe
32-bit OS detected
"C:\DOCUME~1\Admin\LOCALS~1\Temp\DPInstx86.exe"
Installing driver...
FTDI GDM Driver Installation process completed.
```

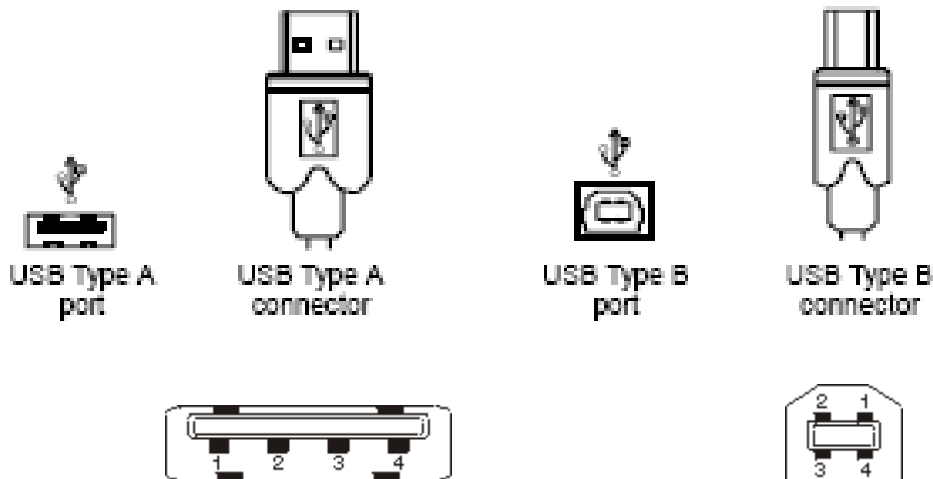
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URK-228I Hardware Installation & Setup

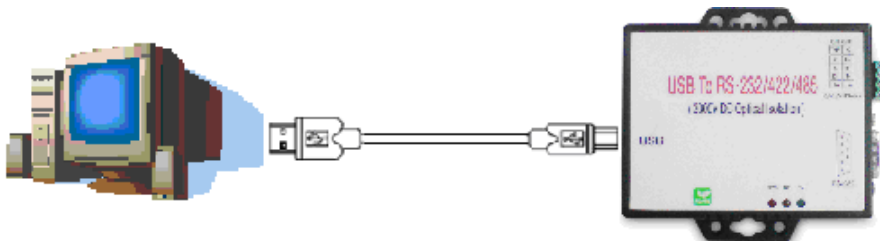
● Hardware Installation

1. Power on your computer and until OS is ready after booting

2. USB cables have two distinct connectors. The Type A connector is used to connect the cable from a USB device to the Type A port on a computer or USB hub. The Type B connector is used to attach the USB cable to a USB device.



3. Connect USB cable between a PC USB port or USB hub and URK-228I of type B USB port.



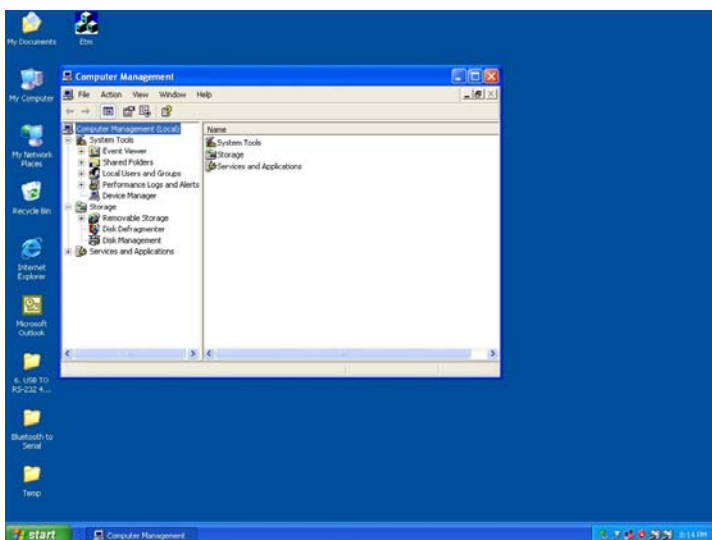
4. Connect the serial port (RS232 or RS422 or RS485) equipments to URK-228I of USB to serial converter.
5. After connecting URK-228I USB to serial converter then a message as “ New device has been connected” will be pop-up on screen. However, the FT232R driver needs to be installed in PC in advance.
6. The SYS indicator of red LED will be turn into on. The URK-228I USB to serial adapter is active.

● Hardware Setup

When URK-228I adapter has successfully connected and you can setup more detail parameters by computer's manage.

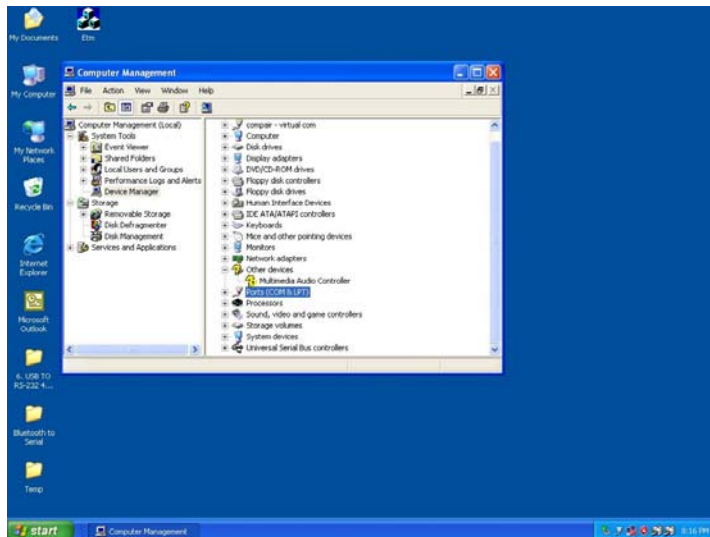
A. Into "Manage" icon in My Computer

Click "My Computer" icon and then press the right side button of mouse. After you click the manage item on list bar then "Computer Management(Local) list will be pop-up .



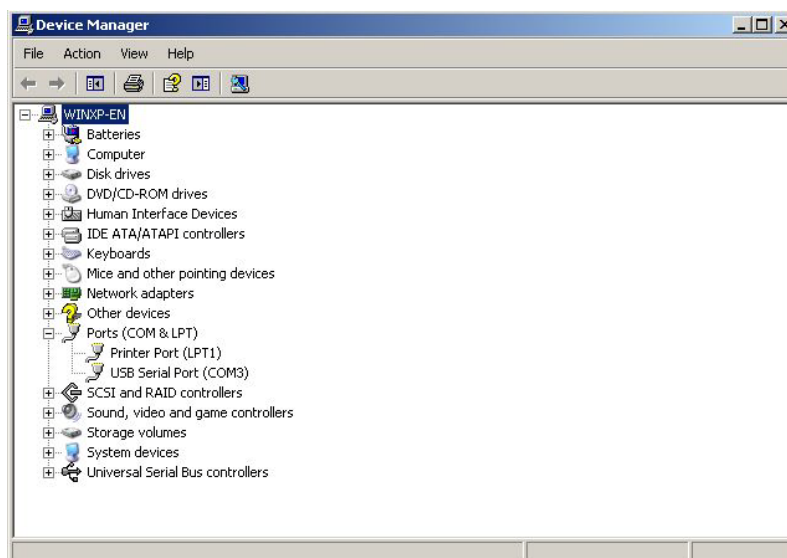
B. Choose “Device Manager” and click “Ports(COM & LPT)” in Device Manager

Click “Device Manager” item, all devices of computer will be list on right site of screen and then click “Ports (COM & LPT)” item for looking for more COM devices.



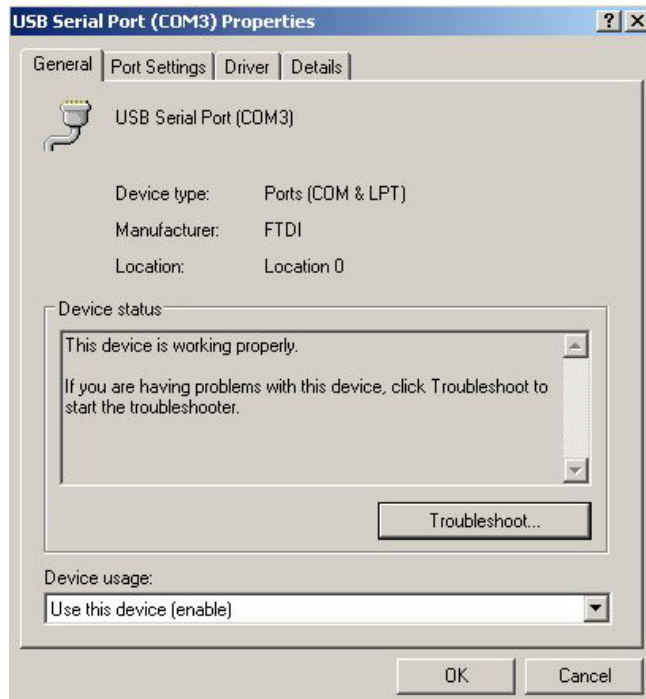
C. Detail parameters of FT232R USB to UART Bridge Controller

Click “USB Serial Port” for getting more detail information of the device.



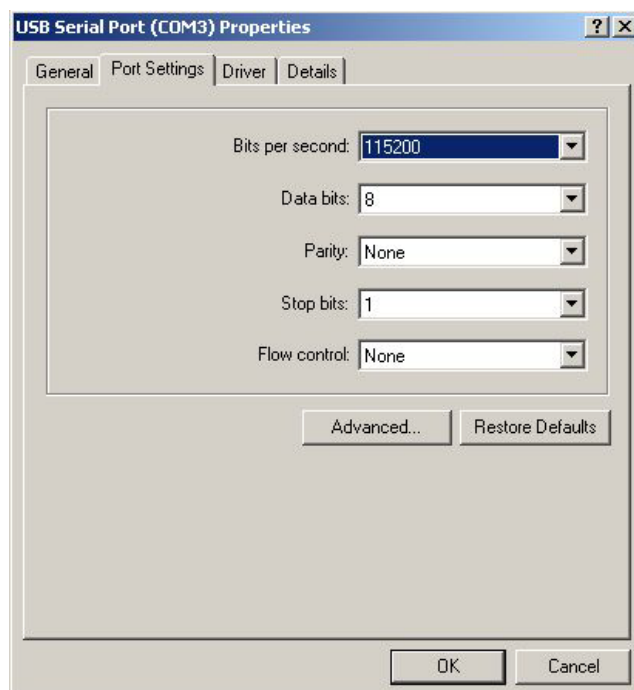
D. Device status of FT232R USB to UART Bridge Controller

This is showing the statuses of device and some product general information. COM port number of device is also display on.



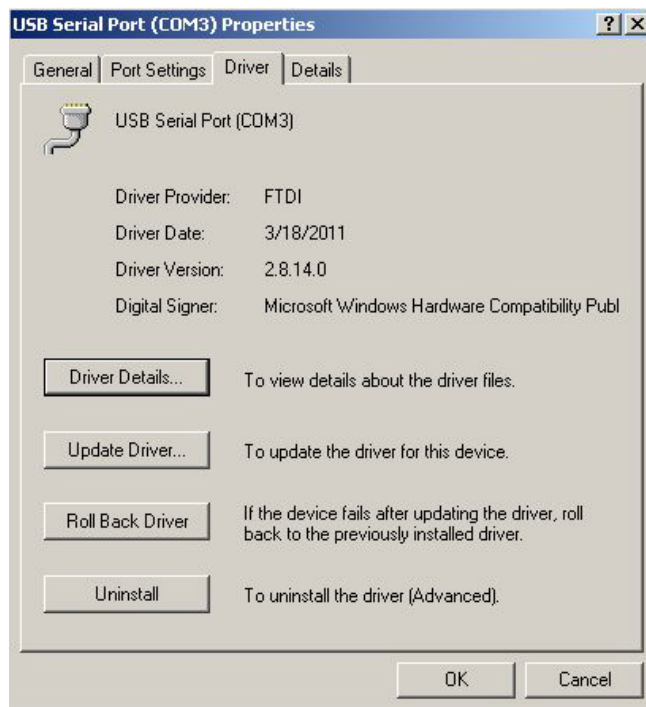
E. "Driver" detail information

This is for checking more detail information of driver in this device.



F. “Details” item

It is for checking device ID numbers as device instance ID.

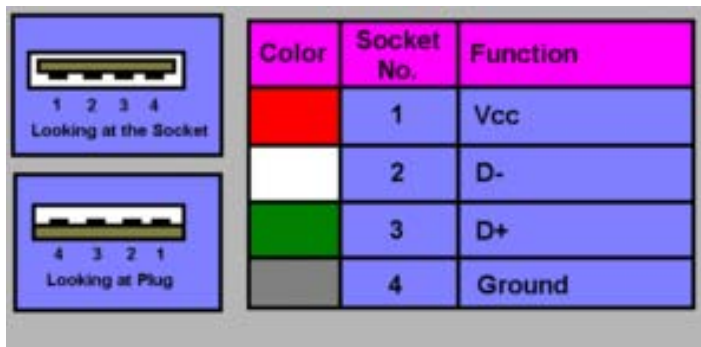


Appendix A

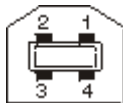
Pin outs and Connector

USB Layout Diagram

Type A USB Connector

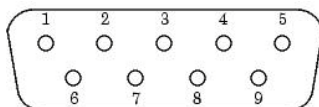


Type B USB Connector



RS-232 Pin Assignment

The pin assignment scheme for a 9-pin male connector is given below.



PIN 1 : DCD

PIN 2 : RXD

PIN 3 : TXD

PIN 4 : DTR

PIN 5 : GND

PIN 6 : DSR

PIN 7 : RTS

PIN 8 : CTS

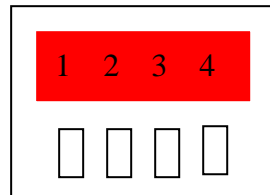
PIN 9 : X

❑ **RS-232 Wiring Diagram**

Serial Device	URK-228I
<u>2 RX</u>	<u>3 TX</u>
<u>3 TX</u>	<u>2 RX</u>
<u>5 GND</u>	<u>5 GND</u>
<u>7 RTS</u>	<u>8 CTS (Flow Control)</u>
<u>8 CTS</u>	<u>7 RTS (Flow Control)</u>

❑ **RS-422 Pin Assignment**

The pin assignment scheme for a 4-pin RS-422 is given below.



RS-422 : PIN 1 : T+ PIN 2 : T- PIN 3 : R+ PIN 4 : R-
 RS-485 : PIN 1 : D+ PIN 2 : D-

❑ **RS-422 Wiring Diagram**

Serial Device	URK-228I
<u>R-</u>	<u>2 T-</u>
<u>R+</u>	<u>1 T+</u>
<u>T-</u>	<u>4 R-</u>
<u>T+</u>	<u>3 R+</u>

❑ **RS-485 Wiring Diagram**

Serial Device	URK-228I
<u>D-</u>	<u>2 D-</u>
<u>D+</u>	<u>1 D+</u>