

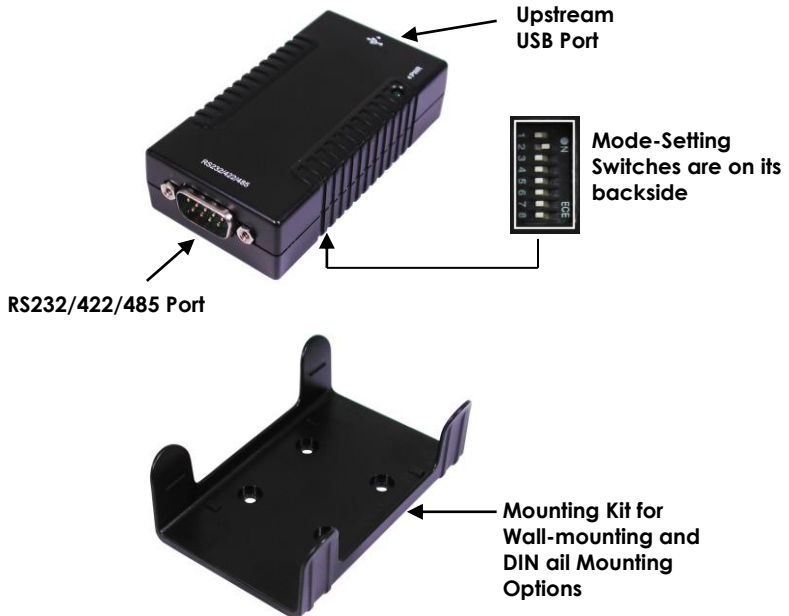
# EX-1331-4KVIS

**RS232/422/485 3-in-1 Serial to USB Adapter  
(w/ 4KV Isolation, 15KV ESD Surge Protection)**

## 1. Introduction

Thank you for purchasing this RS232/422/485 3-in-1 Serial to USB Adapter. It is an intelligent expansion module that connects to a PC or server via the Universal Serial Bus (USB), providing high-speed serial connectivity. The serial ports are fully compatible with RS232/422/485 standard by the bundled virtual COM port drivers. It provides a universal mounting Kit which can be mounted on wall, DIN Rail and other surfaces. Moreover, with the 4KV isolation, 15KV ESD surge protection and USB Screw Lock Mechanism features, it is an ideal solution for most critical applications.

## 2. Connector Layout



## Features:

- ✓ Provides 1 RS232/422/485 Serial Port over USB Port
- ✓ Provides 1 DSUB-9 Connector
- ✓ Supports USB2.0 High Speed (480Mbps) Data Rate
- ✓ Supports USB Screw Lock Mechanism Enhances Reliability
- ✓ Baud Rate from 300 bps to 921.6Kbps
- ✓ Supports 7,8 Data Bits
- ✓ Odd, Even, Mark, Space, or None parity mode
- ✓ Supports 1, or 2 Stop Bits
- ✓ Supports USB Bus Power
- ✓ Supports 4KVrms Isolation and 15KV ESD Surge Protection
- ✓ Supports Win98, Me, XP, CE, Win2000, 2003, Vista and Win 7, 8.x, 10 and Linux

## 3. Mode Switch Settings

There is an 8-pin DIP switch on the back side of the box for the required settings. Their functions are described as follows:

### ● Mode Settings:

The DIP switch has 8 pins, the first 3 pins (M0, M1, M2) are for mode settings (RS232, RS485-2wire, RS485-4wire or RS422 modes), pin 4 (TERM) is to enable or disable terminator. Pin 5 and 6 (T+, T-) are to enable or disable the bias for TX+ and TX- signals. Pin 7 and 8 (R+, R-) are to enable or disable the bias for RX+ and RX- signals.



**Note:** Pin 5 to 8 are designed for RS422 and RS485 only and should be set to **OFF** when you are setting the port to RS232 mode.

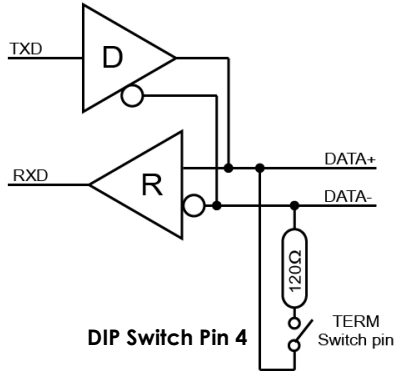
M0	1	■	ON
M1	2	■	
M2	3	■	
TERM	4	■	
T+	5	■	
T-	6	■	
R+	7	■	
R-	8	■	

Modes	<b>Settings</b> <b>M0</b> <b>M1</b> <b>M2</b> <b>(ON)→</b>																									
<b>RS232</b> <b>(Default)</b>	<table border="1"> <tr><td>M0</td><td>1</td><td>■</td><td rowspan="8">ON</td></tr> <tr><td>M1</td><td>2</td><td>■</td></tr> <tr><td>M2</td><td>3</td><td>■</td></tr> <tr><td>TERM</td><td>4</td><td>■</td></tr> <tr><td>T+</td><td>5</td><td>■</td></tr> <tr><td>T-</td><td>6</td><td>■</td></tr> <tr><td>R+</td><td>7</td><td>■</td></tr> <tr><td>R-</td><td>8</td><td>■</td></tr> </table>	M0	1	■	ON	M1	2	■	M2	3	■	TERM	4	■	T+	5	■	T-	6	■	R+	7	■	R-	8	■
M0	1	■	ON																							
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TERM	4	■																								
T+	5	■																								
T-	6	■																								
R+	7	■																								
R-	8	■																								
<b>RS485-2W</b>	<table border="1"> <tr><td>M0</td><td>1</td><td>■</td><td rowspan="8">ON</td></tr> <tr><td>M1</td><td>2</td><td>■</td></tr> <tr><td>M2</td><td>3</td><td>■</td></tr> <tr><td>TERM</td><td>4</td><td></td></tr> <tr><td>T+</td><td>5</td><td></td></tr> <tr><td>T-</td><td>6</td><td></td></tr> <tr><td>R+</td><td>7</td><td></td></tr> <tr><td>R-</td><td>8</td><td></td></tr> </table>	M0	1	■	ON	M1	2	■	M2	3	■	TERM	4		T+	5		T-	6		R+	7		R-	8	
M0	1	■	ON																							
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T+	5																									
T-	6																									
R+	7																									
R-	8																									
<b>RS485-4W</b>	<table border="1"> <tr><td>M0</td><td>1</td><td>■</td><td rowspan="8">ON</td></tr> <tr><td>M1</td><td>2</td><td>■</td></tr> <tr><td>M2</td><td>3</td><td>■</td></tr> <tr><td>TERM</td><td>4</td><td></td></tr> <tr><td>T+</td><td>5</td><td></td></tr> <tr><td>T-</td><td>6</td><td></td></tr> <tr><td>R+</td><td>7</td><td></td></tr> <tr><td>R-</td><td>8</td><td></td></tr> </table>	M0	1	■	ON	M1	2	■	M2	3	■	TERM	4		T+	5		T-	6		R+	7		R-	8	
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M2	3	■																								
TERM	4																									
T+	5																									
T-	6																									
R+	7																									
R-	8																									
<b>RS422</b>	<table border="1"> <tr><td>M0</td><td>1</td><td>■</td><td rowspan="8">ON</td></tr> <tr><td>M1</td><td>2</td><td>■</td></tr> <tr><td>M2</td><td>3</td><td>■</td></tr> <tr><td>TERM</td><td>4</td><td></td></tr> <tr><td>T+</td><td>5</td><td></td></tr> <tr><td>T-</td><td>6</td><td></td></tr> <tr><td>R+</td><td>7</td><td></td></tr> <tr><td>R-</td><td>8</td><td></td></tr> </table>	M0	1	■	ON	M1	2	■	M2	3	■	TERM	4		T+	5		T-	6		R+	7		R-	8	
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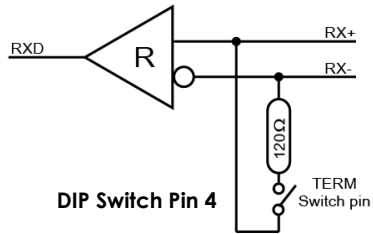
● **Termination Resistor Settings:**

The pin 4 of the DIP switch is to enable the 120 Ohm termination resistor between RX+ and RX- signals.

**RS485-2wire mode:**



**RS485-4wire or RS422 mode:**



**Terminator disabled (OFF, default):**

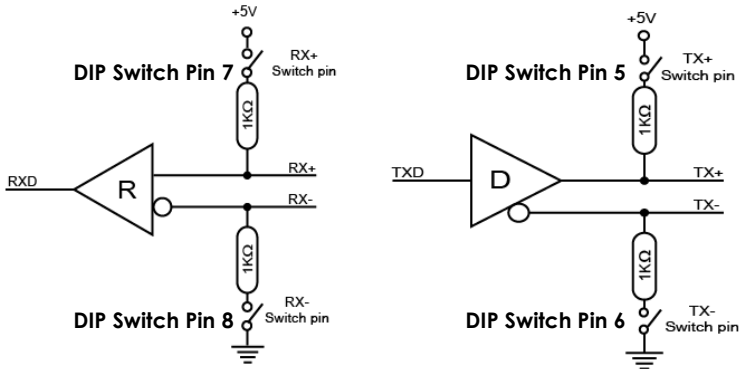
M0	1	ON	
M1	2		
M2	3		
TERM	4		■
T+	5		
T-	6		
R+	7		
R-	8		

**Terminator enabled (ON):**

M0	1	ON	
M1	2		
M2	3		
TERM	4		■
T+	5		
T-	6		
R+	7		
R-	8		

● **Bias Resistors Enable/Disable:**

Pin 5 to 8 of the DIP switch are to enable (ON) or disable (OFF) the 4 bias resistors for TX+, TX-, RX+, RX- signals respectively. Please note that you have to set them to OFF if you are setting the port in RS232 mode.



**Disable (default) all 4 Bias resistors for TX+, TX-, RX+ and RX-:**

M0	1	ON	
M1	2		
M2	3		
TERM	4		
T+	5		■
T-	6		■
R+	7		■
R-	8		■

**Enable all 4 Bias resistors for TX+, TX-, RX+ and RX-:**

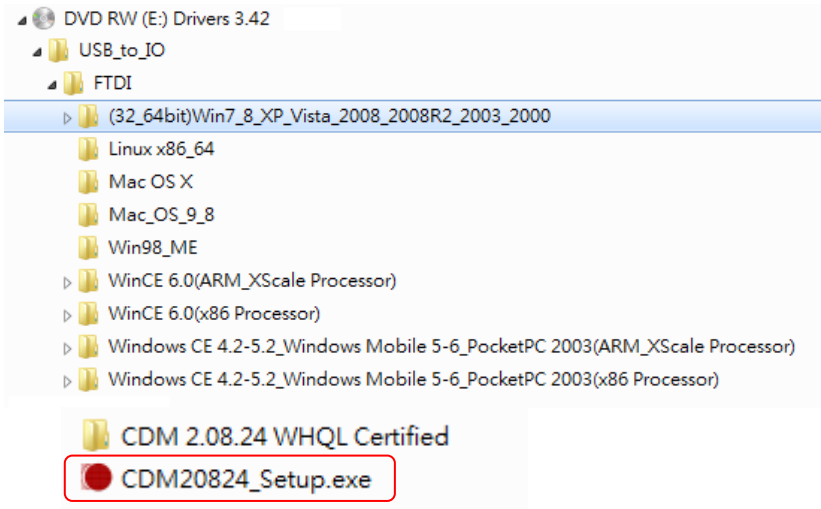
M0	1	ON	
M1	2		
M2	3		
TERM	4		
T+	5		■
T-	6		■
R+	7		■
R-	8		■

## 4. Installing Drivers

This Adapter Cable can be hot-plugged to the USB port of your computer due to the specifications of USB. It supports the following operating systems. The drivers were shipped in the following folders on the supplied driver CD.

### 1. Driver Locations on the CD

These instructions are for installing the drivers from the CD supplied with the product. If you are installing drivers for Windows, when prompted for the location of the drivers, specify your DVD drive and the locations according to the following folder list:



2. **Installing Drivers for (32-bit and 64-bit) Win7, 8.x, 10, XP, Vista, 2008, 2003 and 2000:**

- Insert the Driver CD supplied with the Adapter Cable.
- Run (or double click) the Installer Program (e.g. **CDM20824.exe**) in the following folder of the driver CD:

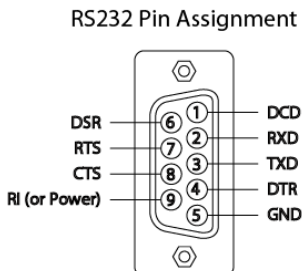
**USB\_to\_IO\FTDI\32\_64bit\Win7\_8\_XP\_Vista\_2008\_2008R2\_2003\_2000**

- Follow the instructions of the installer program to complete the setup procedures.
- Plugging the Adapter Cable will hook the drivers into the Windows kernel automatically.

## 5. Connector Pin Assignments

The pin assignment of the DB9 male connector of the Adapter Cable is dependent on its operation modes. Please refer to the following figure for the corresponding mode:

### 1. RS232 Pin Assignment:

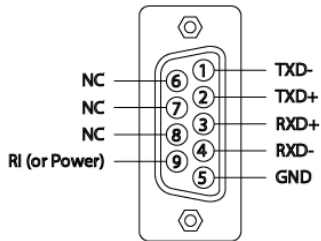


### RS232 DB9(Male) to DB9(Male) Wiring:

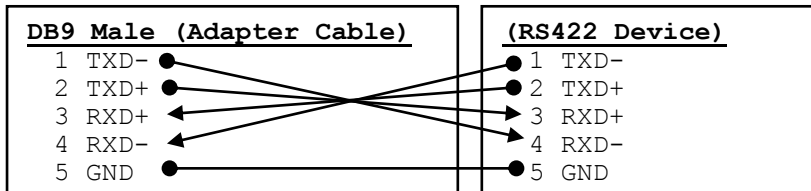
<u>DB9 Male (Adapter Cable)</u>	<u>DB9 Male (Serial Device)</u>
1 DCD	1 DCD
2 RXD	2 RXD
3 TXD	3 TXD
4 DTR	4 DTR
5 GND	5 GND
6 DSR	6 DSR
7 RTS	7 RTS
8 CTS	8 CTS

## 2. RS422 and RS485-4wire Pin Assignment:

RS422 and RS485-4wire  
Pin Assignment

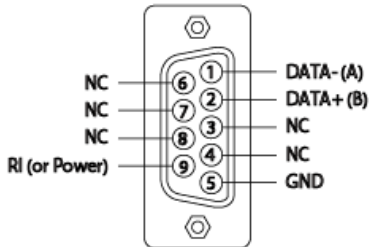


### RS422 Cable Wiring:

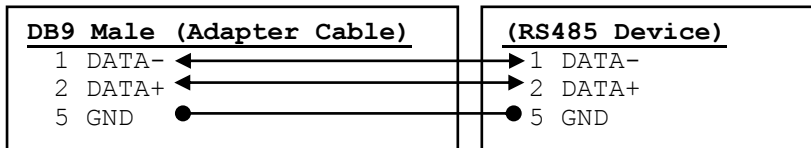


## 3. RS485-2wire Pin Assignment:

RS485-2wire  
Pin Assignment



### RS485-2wire Cable Wiring:





## 5. Specifications

Type	Specifications
Device Connector	DB9 male
Cable	USB
Host Connector	USB Type-B (Supports Screw-lock)
Number of Ports	1
RS-232 Signals	TXD, RXD, RTS, CTS, DTR, DSR, DCD, GND
RS422 Signals	TXD+, TXD-, RXD+, RXD-, GND
RS485-4wire Signals	TXD+, TXD-, RXD+, RXD-, GND
RS485-2wire	DATA+(B)/DATA-(A)
Baud Rate	110 bps to 921.6Kbps
Data Bits	5,6,7,8
Stop Bits	1, 1.5, 2
I/O address/IRQ	Plug-and-Play (various)
Parity	None, Even, Odd
Flow Control	RTS/CTS, XON/XOFF
Isolation	4KVrms
ESD Surge Protection	15KV
Power Requirement	5V/110mA (USB Bus Powered)
Operating Temperature	0 to 55°C(32 to 132°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)