

# EX-1309-9

## RS232/422/485 3-in-1 to USB2.0 Adapter Cable, w/ DB9M Connector

### 1. Introduction

Congratulation on your purchasing this high performance 4-port RS232/422/485 3-in-1 to USB2.0 Adapter Cable. It supports 1 serial port which can be set in RS232, RS422, RS485-2W, or RS485-4W modes. The UART based serial port is fully compatible with most of the RS232C, RS422 and RS485 devices available from the market. It is an ideal solution for most of serial applications.

#### Features:

- ✓ USB 2.0 Full Speed (12Mbps) Compatible
- ✓ Supports 1x DB9-Male-Connector RS232/422/485 3-in-1 Serial Port
- ✓ Supports 4-wire RS422, RS485 and 2-wire RS485 Modes
- ✓ Supports RS485 Auto Transceiver Turn Around by Unique Featured ATTA™ Hardware
- ✓ Supports Baud Rate up to 921.6Kpbs
- ✓ Supports Win2000, XP, 2003, 2008, Vista, Win 7, 8.x, 10, Linux and others

### 2. Connector Layout



### 3. Mode Switch Settings

There is an eight 8-pin DIP switch next to the connector for changing the operating modes, enable/disable terminator and the bias for transmitter and receiver signals.

#### 1. 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-) is for biasing TX+ and TX- signals. Pin 7 and 8 (R+, R-) is to enable or disable bias for RX+ and RX- signals.



**Note:** Pin 4 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	■	

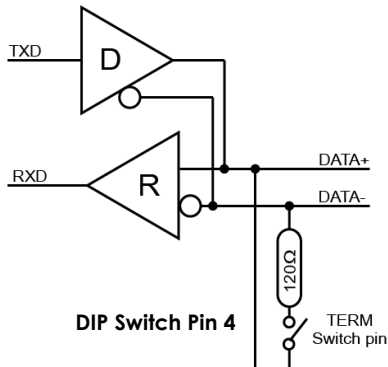
Modes	Settings			
	M0			
	M1			
	M2			
	(ON)→			
RS232	M0	1	■	ON
	M1	2	■	
	M2	3	■	
	TERM	4	■	
	T+	5	■	
	T-	6	■	
	R+	7	■	
	R-	8	■	

<b>RS485-2W (Default)</b>	<table><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																							
M1	2	■																								
M2	3	■																								
TERM	4																									
T+	5																									
T-	6																									
R+	7																									
R-	8																									
<b>RS485-4W</b>	<table><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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R+	7																									
R-	8																									
<b>RS422</b>	<table><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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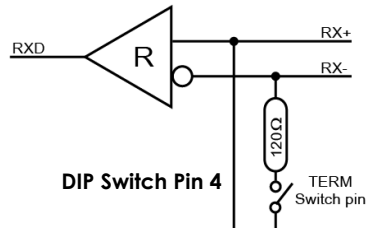
## 2. Termination Resistor Settings:

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:



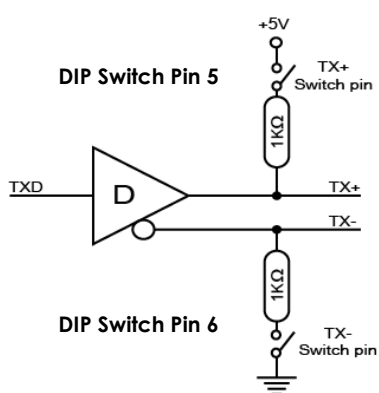
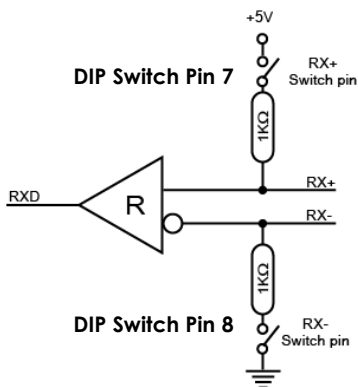
**Terminator disabled (OFF, default) Terminator enabled (ON)**

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

M0	1	NO
M1	2	
M2	3	
TERM	4	
T+	5	
T-	6	
R+	7	
R-	8	

**3. 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-:**

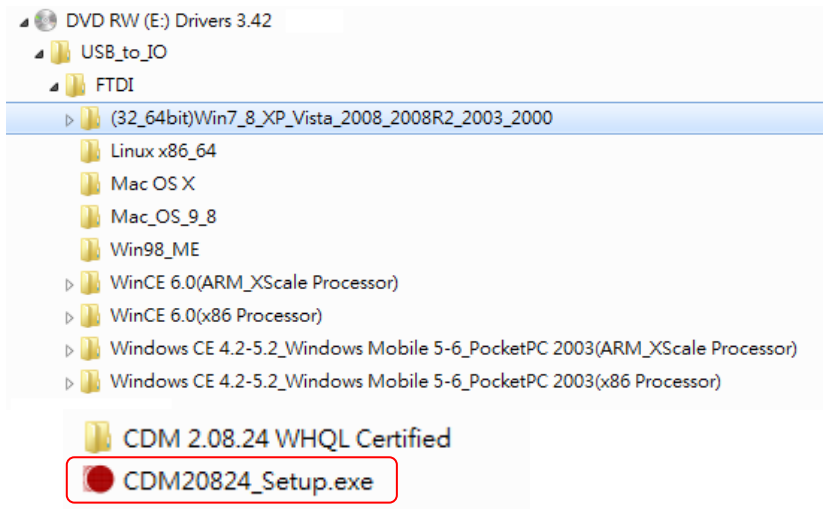
M0	1	ON
M1	2	
M2	3	
TERM	4	
T+	5	■
T-	6	■
R+	7	■
R-	8	■

## 4. Software Installation

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:

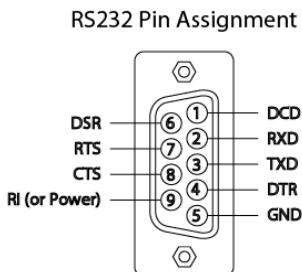
`\USB_to_IO\FTDI\ (32_64bit) Win7_8_XP_Vista_2008_2008R2_2003_2000`

- 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:

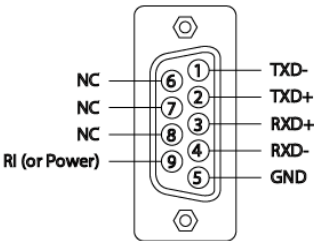


### RS232 DB9(Male) to DB9(Male) Wiring:

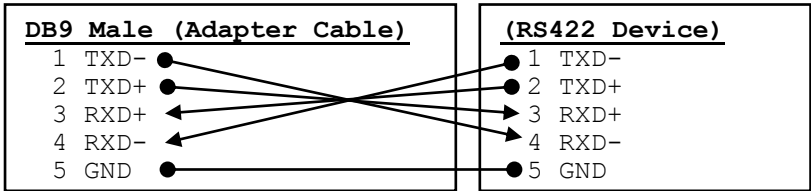
<u>DB9 Male (Adapter Cable)</u>		<u>DB9 Male (Serial Device)</u>
1 DCD	←	1 DCD
2 RXD	←	2 RXD
3 TXD	←	3 TXD
4 DTR	←	4 DTR
5 GND	←	5 GND
6 DSR	←	6 DSR
7 RTS	←	7 RTS
8 CTS	←	8 CTS

2. RS422 and RS485-4wire Pin Assignment:

RS422 and RS485-4wire  
Pin Assignment

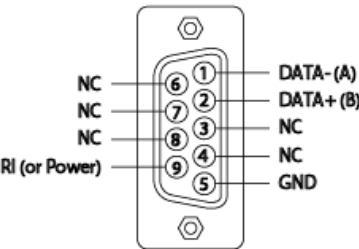


RS422 Cable Wiring:

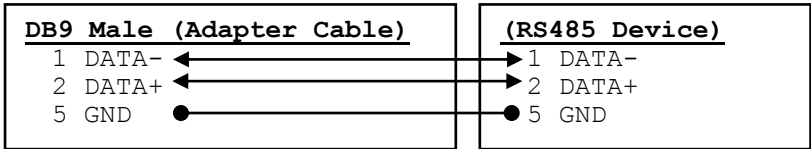


3. RS485-2wire Pin Assignment:

RS485-2wire  
Pin Assignment



RS485-2wire Cable Wiring:



## 5. Specifications

Type	Specifications
Device Connector	DB9 male
Cable	USB
Host Connector	USB Type-A
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
Power Requirement	5V/110mA (USB Bus Powered)
Operating Temperature	0°C to 55°C (32 to 132°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20°C to 85°C (-4 to 185°F)