



4 Port USB to RS485 High Speed Adapter w/12V DC Power Supply

Model Number: *12V DC Power Supply*

Installation Guide

Coolgear, Inc.

Version: 1.0

Date: 04/25/2024



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Revision History

Revision	Date	Comments
1.0	04/25/2024	First Release

1. Introduction

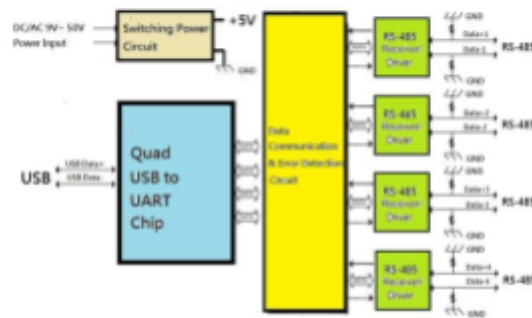
Thank you for purchasing Coolgear's 4 Port USB to RS485 High Speed Adapter. The CG-UHS4P485 is an industrial-grade USB to 4-port RS-485 adapter designed to add four high speed RS-485 communication ports to your server or PC. This USB to 4-port RS-485 adapter has easy plug-and-play and hot-swapping features, so it is automatically detected and installed. There are no IRQ & COM port conflicts, since the port doesn't require any additional IRQ, DMA, memory as resources on the system. The RS-485 port functions as a native Windows COM port, and it is compatible with Windows serial communication applications. Each RS-485 port has its own built-in serial number in the hardware, and the COM port numbers and port sequence assigned will be always maintained after every reboot.

The CG-UHS4P485 is designed for the use in the environment requiring 2-wire half duplex RS-485 modes. Two operation modes, 2-wire RS-485 with Echo and 2-wire RS-485 without Echo, are selectable by DIP switches. The operation mode of each port can be set individually, and the serial communication parameters in each port properties are configurable. Each RS-485 port is with built-in 15kV ESD protection and 600W surge protection.

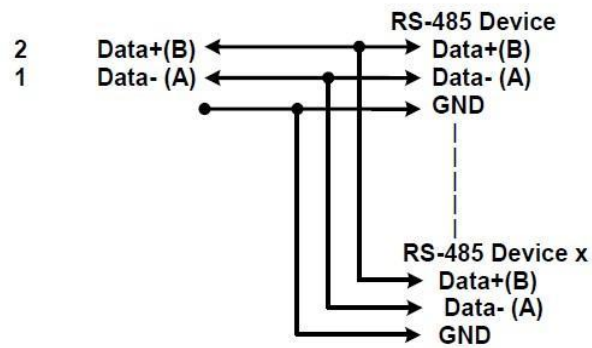
Features:

- ✓ With 2-pin power connector that has inverse polarity protection
- ✓ Adds four high speed half-duplex RS-485 serial ports via USB connection
- ✓ USB2.0 interface supports high speed 480Mbps
- ✓ Supports two operation modes: RS-485 half-duplex echo and non-echo mode
- ✓ Installs as standard Windows COM port
- ✓ COM port number can be changed to any available COM port number
- ✓ Auto transmit buffer control for 2-wire RS-485 half-duplex operation
- ✓ Built-in 15kV ESD protection for each RS-485 port
- ✓ 600W surge protection on all RS-485 bus
- ✓ Provides failure warning when reverse connection or incorrect signals detected
- ✓ Protected circuits automatically shut down the breakdown RS-485 port
- ✓ Each RS-485 port with 2kb receive buffer and 2kb transmit buffer
- ✓ Requires no IRQ, DMA, I/O port
- ✓ RS-485 termination installed on-board, enabled or disabled by jumper
- ✓ Four dual color monitor LEDs indicating operation modes, port status, activity and error
- ✓ External 4-pin DIP switch for easy setting of RS-485 echo/non-echo operation modes
- ✓ Includes 12VDC power adapter with locking screw terminal power jack for reliable connection
- ✓ Supports two power output of +5VDC, 100mA, through pin 1 (VCC) of terminal block, for external devices requiring power
- ✓ Compact palm-size box with DIN rail brackets, optional DIN rail mounting kit for mounting
- ✓ Two mounting holes on the bottom of metal case for optional DIN rail mounting adapter (DR-101) for alternative mounting onto DIN rail
- ✓ USB cable of 90cm (3ft) included and locked to the metal case for added security
- ✓ Supports Windows XP to 11, Server 2000 to Server 2022 (WHQL certified)
- ✓ Supports Linux Kernel 3.0 and above
- ✓ Supports Mac OS X 10.3 and above, driver signed by Apple

2. DIAGRAM OF CG-UHS4P485

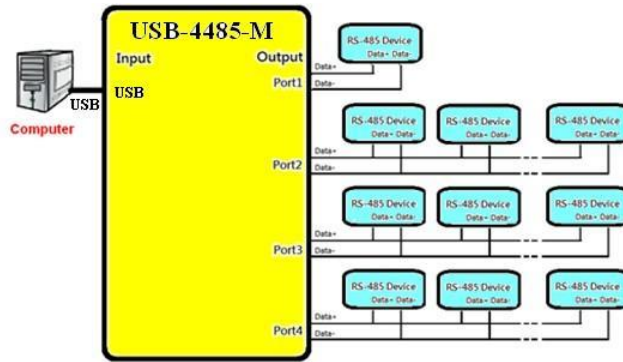


Multi-drop RS-485 2-Wire Half Duplex

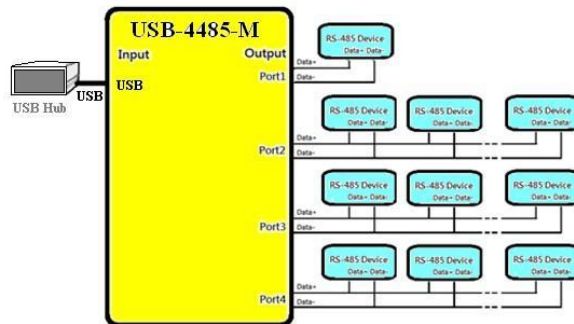


3.APPLICATIONS

Connect to USB Port of Computer



Connect to USB Port of USB Hub



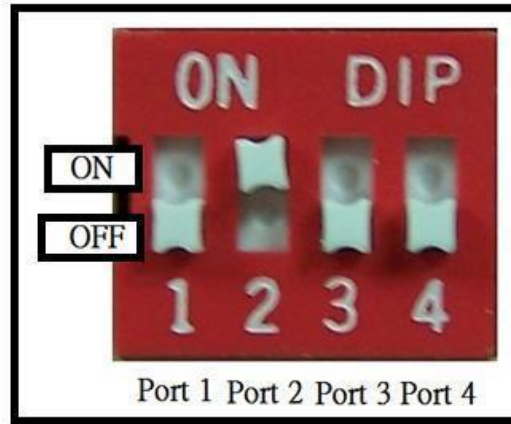
4. HARDWARE SETTINGS

Providing 5V 100mA Power Output to External Devices

The CG-UHS4P485 provides two power outputs of 5V/100mA through Pin-1 of the terminal block to the serial devices requiring power. The pin-1 of each terminal block is marked "VCC".

RS-485 Mode Setting with External DIP Switch

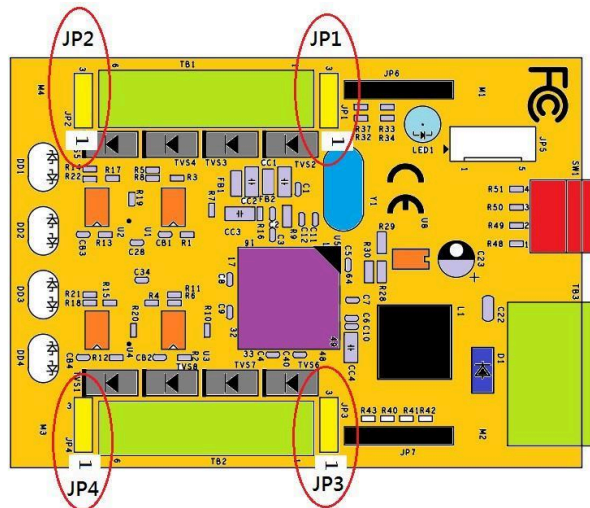
On the side of the metal case, there is a red 4-pin DIP switch, marked "SW" on the metal case, for selecting the mode of operation of each RS-485 port. You will need to set the white switch up to ON for "RS-485 with Echo Mode", or to set the white switch down to OFF for "RS-485 without Echo Mode". From left to right of the DIP switch, the digits 1, 2, 3, 4 are corresponding to Port 1, Port 2, Port 3 and Port 4 for the setting of operation modes.



	Operation Mode	SW1	SW2	SW3	SW4
RS-485	Half-duplex, 2 wire, with Echo	ON	ON	ON	ON
	Half-duplex, 2 wire, without Echo	OFF	OFF	OFF	OFF

Termination Resistors

Inside the unit, there are four 3-pin pin headers (JP1, JP2, JP3, JP4) for setting the RS485 termination resistors for each RS-485 port. By default, termination resistors are disabled. To enable RS-485 termination resistors, short the pin1 and pin2 of the 3-pin header. You will need to open up the metal case and short the jumper to enable termination.



Jumper	Function
JP1 1-2	Enables termination of 120Ω of port 1 Short jumper 1-2
JP1 2-3	Disable termination Default setting of port 1
JP2 1-2	Enables termination of 120Ω of port 2 Short jumper 1-2
JP2 2-3	Disable termination Default setting of port 2
JP3 1-2	Enables termination of 120Ω of port 3 Short jumper 1-2
JP3 2-3	Disable termination Default setting of port 3
JP4 1-2	Enables termination of 120Ω of port 4 Short jumper 1-2
JP4 2-3	Disable termination Default setting of port 4

Terminal Block (TB1) Pin-out Information

Pin Number	Pin Type	Description
Pin 1 (VCC)	<i>Power</i>	Provides +5VDC 100mA output power
Pin 2 (Data+1)	<i>Input/output</i>	RS-485 transmit/receive data, positive polarity
Pin 3 (Data-1)	<i>Input/output</i>	RS-485 transmit/receive data, negative polarity
Pin 4 (GND)	<i>Ground</i>	GND: Signal Ground
Pin 5 (Data+2)	<i>Input/output</i>	RS-485 transmit/receive data, positive polarity
Pin 6 (Data-2)	<i>Input/output</i>	RS-485 transmit/receive data, negative polarity

Terminal Block (TB2) Pin-out Information

Pin Number	Pin Type	Description
Pin 1 (VCC)	<i>Power</i>	Provides +5VDC 100mA output power
Pin 2 (Data+3)	<i>Input/output</i>	RS-485 transmit/receive data, positive polarity
Pin 3 (Data-3)	<i>Input/output</i>	RS-485 transmit/receive data, negative polarity
Pin 4 (GND)	<i>Ground</i>	GND: Signal Ground
Pin 5 (Data+4)	<i>Input/output</i>	RS-485 transmit/receive data, positive polarity

Pin 6 (Data-4)	<i>Input/output</i>	RS-485 transmit/receive data, negative polarity
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LED Indicators

LED Color	Serial Port	Function
LED 1 Green	<i>Port 1</i>	Serial port 1 is transmitting data in non-Echo mode
LED 1 Green/Red	<i>Port 1</i>	Serial port 1 is transmitting data in Echo mode
LED 1 Red	<i>Port 1</i>	Serial port 1 is receiving data
LED 2 Green	<i>Port 2</i>	Serial port 2 is transmitting data in non-Echo mode
LED 2 Green/Red	<i>Port 2</i>	Serial port 2 is transmitting data in Echo mode
LED 2 Red	<i>Port 2</i>	Serial port 2 is receiving data
LED 3 Green	<i>Port 3</i>	Serial port 3 is transmitting data in non-Echo mode
LED 3 Green/Red	<i>Port 3</i>	Serial port 3 is transmitting data in Echo mode
LED 3 Red	<i>Port 3</i>	Serial port 3 is receiving data
LED 4 Green	<i>Port 4</i>	Serial port 4 is transmitting data in non-Echo mode
LED 4 Green/Red	<i>Port 4</i>	Serial port 4 is transmitting data in Echo mode
LED 4 Red	<i>Port 4</i>	Serial port 4 is receiving data

Error Detection

The four dual-color LEDs are also for error indication. After the SER-4485-M is powered up, the dual-color green and red LEDs will light on simultaneously when any of the RS485 port has incorrect signals or the signal connection is reversed. You can locate the failed port or devices connected according to the failure indication LED.



The table below shows LED 1 to LED 4 for serial port error indication. The error indication will be present by initial check after the SER-4485-M is powered up.

LED Color	Error Serial Port	Function
LED 1 Green + Red	Port 1	The serial port 1 (RS-485) has abnormal signals. The breakdown RS-485 port is shut down temporarily.
LED 2 Green + Red	Port 2	The serial port 2 (RS-485) has abnormal signals. The breakdown RS-485 port is shut down temporarily.
LED 3 Green + Red	Port 3	The serial port 3 (RS-485) has abnormal signals. The breakdown RS-485 port is shut down temporarily.
LED 4 Green + Red	Port 4	The serial port 4 (RS-485) has abnormal signals. The breakdown RS-485 port is shut down temporarily.

5. INSTALLATION

Windows 10/8.1/8/Server 2007 Driver Installation

You need to have administrator privileges to install the CG-UHS4P485 drivers under Windows 10/8.1/8/Server 2007. The Windows 8.1 driver is WHQL-certified. It is very simple to install the driver through Windows Update Service. It is recommended to install the driver from the internet, since the driver is most updated.

Please proceed with the following steps to install the Windows 8.1/8/7/Server 2007 driver:

1. Connect your PC to the internet.
2. Plug in CG-UHS4P485 to a free USB port.
3. Your computer will load and install the Windows driver automatically.
4. The driver installation is completed.
5. The CG-UHS4P485 now is installed as four "USB Serial Port (COMx)" attached to "USB Serial Converter" under Device Manager of the System Properties screen.

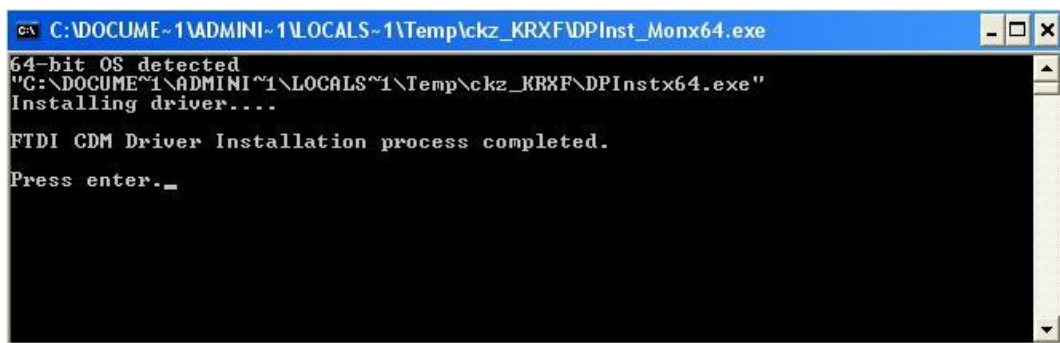
Windows 7/Vista/2003/XP/2000 Driver Installation

You need to have administrator privileges to install any new drivers under Windows 7/Vista/2003/XP/2000. To install the driver or update the configuration please log onto Windows as administrator.

Note: Do not connect the USB-to-Serial adapter to the USB port of your computer before you finish driver installation.

Please proceed with the following steps to install the driver:

1. Insert the "USB COM Series Driver and Utility" CD into your CD-ROM.
2. The "USB COM Series Driver and Utility CD" window appears.
3. Under "Driver Installation", double click "Windows 7/Vista/2003/XP/2000 Driver" to install the device driver.
4. The USB COM install program will auto-detect the OS and install the driver automatically. (Note: there will be another confirmation window in Windows 7 or Vista, please click on "OK" to confirm the driver installation program).



```
C:\DOCUMENTS\ADMINI~1\LOCALS~1\Temp\ckz_KRXP\DPInst_Monx64.exe
64-bit OS detected
"C:\DOCUMENTS\ADMINI~1\LOCALS~1\Temp\ckz_KRXP\DPInstx64.exe"
Installing driver...
FTDI CDM Driver Installation process completed.
Press enter._
```

5. After the message "FTDI CDM Driver Installation process completed" appears, press "Enter" to complete the driver installation.

6. Plug in the USB-to-Serial adapter to the USB port of your computer. Windows will finish installing the driver files.

Verify Installation

You can now verify the installation by looking under Device Manager of the System Properties screen ("Device Manager" can be accessed from Start → Settings → Control Panel → System Properties → Hardware → Device → Device Manager).

The device should have been installed as a "USB Serial Port (COMx)" under "USB Serial Converter".

Changing COM Port Number & Properties

This feature is particularly useful for programs which only work with certain COM port numbers such as HyperTerminal. Please ensure that you do not change to a COM port number that is already in use.

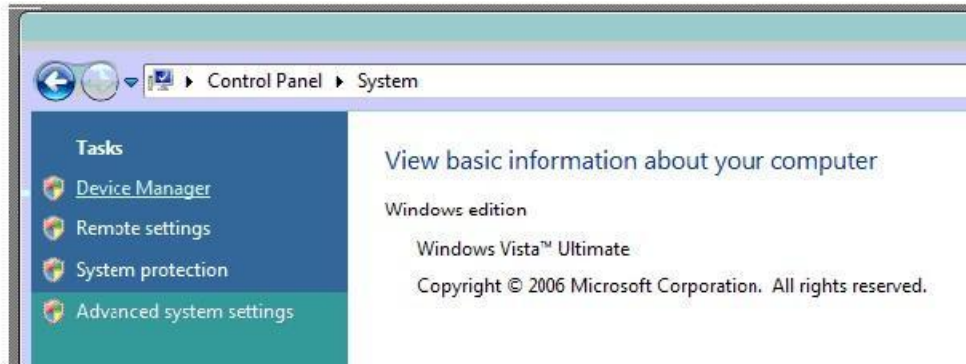
To change the virtual COM port properties:

1. Select "USB Serial Port".
2. Click "Properties".
3. Select "Port Setting" and "Advanced".
4. Click the drop down arrow on COM Port Number and scroll to the required COM port. Select "OK".
5. Return to the Device Manager Screen. You will see that the USB Serial Port installation has been changed to the new COM Port Number.

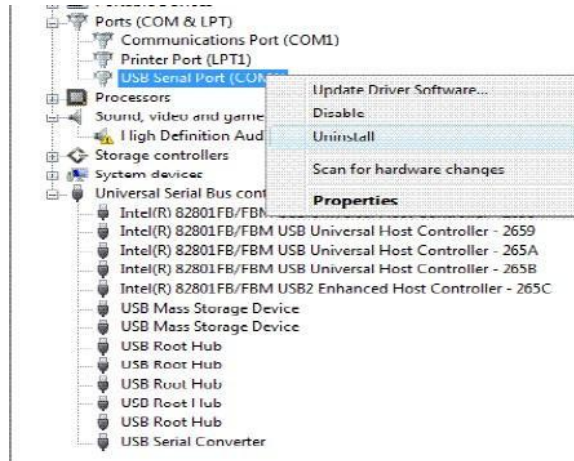
Uninstalling Windows 10/8.1/8/7/Vista Drivers

Windows 7 and above has many new security features. You need to proceed with the following steps to uninstall the Windows 10/8.1/8/7/Vista driver:

1. The USB to serial devices must connect to the PC.
2. Press the "Start" button and select "Control Panel".
3. Select "Classic View" from the top left hand corner and then "System" from the list.
4. Select "Device Manager" from the top left hand corner.



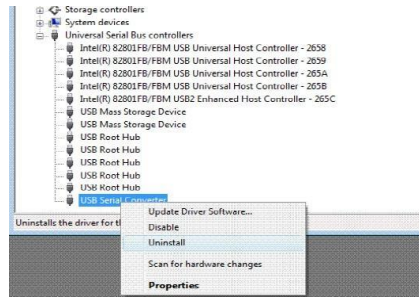
5. Locate your device under the Ports (COM & LPT) section and right click on it to bring up the menu shown.



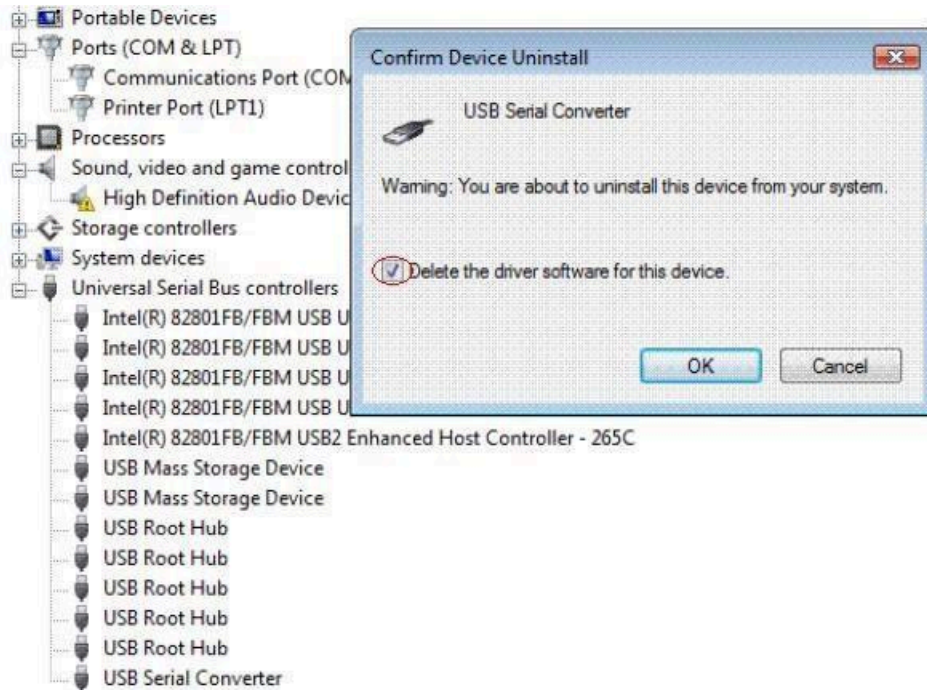
6. Select uninstall and check “Delete the driver software for this device” in the next window and press “OK”.



7. Repeat step 5 to step 6 three more times to delete the driver software for each port of USB-4485-M.
8. Locate your device under the Universal Serial Bus Controllers section, and right click on it to bring up the menu shown.



9. Select uninstall and check “Delete the driver software for this device” in the next window and press “OK”.



10. Repeat step 8 and step 9 to delete the driver software for all devices.

Uninstalling Windows 2003/XP/2000 Drivers

Please proceed with the following steps to uninstall the 2003/XP/2000 driver:

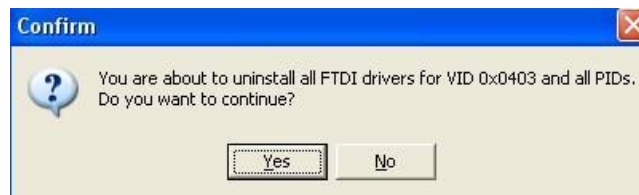
1. Insert the “USB COM Series Driver and Utility” CD into your CD-ROM.
2. The “USB COM Series Driver and Utility CD” window appears.
3. Under “Driver Uninstalling”, click “Windows 2003/XP/2000 driver uninstall” to uninstall the device driver. When the following window appears, click “Clean System” to uninstall the 2003/XP/2000 drivers.



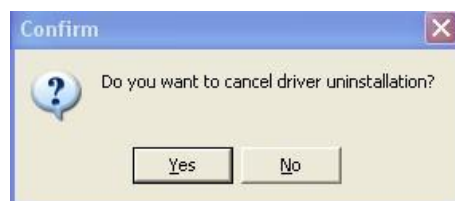
5. You need to disconnect all USB-to-serial adapters from your PC when the message below appears. Double click "OK" to start uninstalling Windows 2003/XP/2000 USB-to-Serial drivers.



6. Double click "Yes" to confirm.



7. Click "No" to proceed.

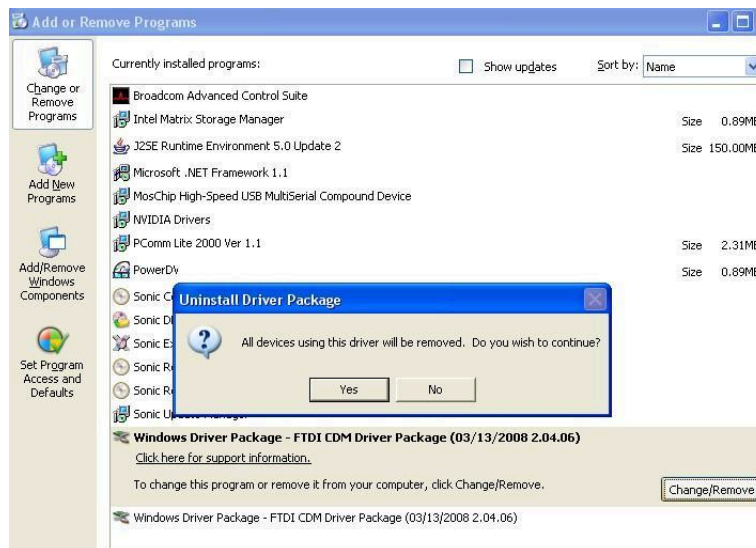


8. When the message "Status: System clean completed" appears, click "Exit" to complete the USB to serial drivers uninstall.



9. Press “Start” and select “Control Panel”.

10. Click Add or Remove Programs.



11. Remove the first “Windows Driver Package – FTDI CDM Driver Package (...)”.

12. Click “Change/Remove” and “Yes” to remove the first Windows Driver Package.

13. Remove the second “Windows Driver Package – FTDI CDM Driver Package (...)”.

14. Click “Change/Remove” and “Yes” to remove the second Windows Driver Package.

15. Reboot the computer to complete the driver uninstall.

6. SPECIFICATIONS

USB Bus

Compliance	USB 2.0 Full Speed, USB 1.1 compliant
Speed	480Mbps, hi-speed USB
Connector	USB type B
Fifo	2k bytes transmit and receive
Operating Systems	<ul style="list-style-type: none"> • Supports Windows XP to 11, Server 2000 to Server 2022 (WHQL certified) • Supports Linux Kernel 3.0 and above • Supports Mac OS X 10.3 and above, driver signed by Apple
Installation	The driver is already installed (Linux), or automatically downloading and installing device drivers after Device connection (Windows).

Serial Interface

Interface	RS-485
Number of Ports	4
Connector	6-pin terminal block
Max Speed	up to 12Mbps
RS-485 Signals (2 wire)	Data-, Data+, GND
Protection	15kV ESD protection for all signals

Serial Communication Parameters

Data Bits	7, 8
Parity	None, Even, Odd, Mark, Space
Stop Bit	1, 2
Flow Control	Hardware (RTS, CTS), XON/XOFF

Power

Power Input	12VDC, 2A power adapter
Power Output	5VDC, 100mA through pin 1 of terminal block

Mechanical

Casing	SECC metal chassis with DIN rail bracket
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Environmental

Operating Temperature	0°C to 55°C (32°F to 131°F)
Storage Temperature	-20°C to 75°C (-4°F to 167°F)
Operating Humidity	5% to 95% RH
Safety Approvals	CE, FCC

Contact Us:

Coolgear Inc.
 5120 110th Avenue North
 Clearwater, Florida 33760 U.S.A.

Toll Free: 1 888-688-2188
Local: 1 727-209-1300
Fax: 1 727-209-1302

Safety	<ul style="list-style-type: none"> • Read the entire Installation Guide before implementing this product for your application. This guide contains important information about electrical connections that must be followed for safe and proper operation. • Inspect the product closely for visual defects before putting it to use. • Keep away from areas where moisture builds, this product contains electrical components that can be damaged by moisture build up, this can adversely affect your equipment connected to it. • Do not disassemble the product. Handling the product's internal components can expose it to ESD (Electro-Static Discharge) hazards that can affect the function of the device. • If this product is not functioning properly, email our support team at support@coolgear.com.
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USB CHARGING & CONNECTIVITY EXPERTS
Within Every Great Machine

For over 20 years our rugged, off-the-shelf USB hubs, chargers, and serial products are ready to go for your next project. Based in the US, Coolgear has successfully engineered and deployed millions of connectivity solutions into industrial, medical, automotive, commercial, and aerospace industries.

We understand the importance of reliability, build quality, & consider all our customers' applications as critical, wanting to ensure long-lasting event-free integrations.

Compliance Statement

View compliance within the product's respective Technical Data Sheet, found on the product's online listing.

Technical Support

When you reach out to Coolgear support, you'll find yourself in the hands of a solution-oriented and knowledgeable expert ready to answer whatever question you throw at them. If you ever need help with your product, visit coolgear.com/support for support tickets, downloads, and other support resources. For the latest drivers, please visit coolgear.com/download.

Product Standard Warranty

One (1) Year Warranty from Date of Purchase Invoice. Coolgear will repair or replace any Product determined to be defective and which has been returned, at your risk and expense, to Coolgear. Where Coolgear determines in its sole judgment that repair or replacement of such Product is not reasonable, Coolgear will keep the non-conforming Product and refund to you the amount you paid for such Product. Returned Products shall be subject to the balance of the Warranty Period otherwise applicable. Any reconditioned parts used by Coolgear shall be subject to all the same provisions as otherwise applicable to new parts. THE FOREGOING DESCRIBES COOLGEAR'S SOLE LIABILITY, AND YOUR SOLE REMEDY, FOR ANY BREACH OF WARRANTY. IF YOU DO NOT AGREE WITH THE TERMS OF THIS LIMITED WARRANTY, YOU MUST RETURN THE PRODUCTS UNUSED AND IN THEIR ORIGINAL CONTAINERS TO YOUR ORIGIN OF PURCHASE.

Limitation of Liability

This Limited Warranty does not cover: (i) defects or damages resulting from natural causes, casualty, accident, misuse or abuse, neglect, alterations, service or repair by other than Coolgear, including without limitation by you; (ii) improper installation or de-installation, operation or maintenance, improper connections with peripherals or other causes not arising out of defects in the materials or workmanship of Products; (iii) any Product for which the warranty sticker has been removed, modified or defaced; (iv) normal wear and tear; (v) damage to or loss of repaired or replaced Products during shipping by Coolgear except when such damage or loss is caused by poor or inadequate packaging by Coolgear; or (vi) Products purchased outside the United States. UNDER NO CIRCUMSTANCES WILL COOLGEAR BE LIABLE FOR ANY LOSS OF USE, INTERRUPTION OF BUSINESS OR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING LOST PROFITS) REGARDLESS OF THE FORM OF ACTION WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT PRODUCT LIABILITY OR OTHERWISE, EVEN IF COOLGEAR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE TOTAL LIABILITY OF COOLGEAR HEREUNDER EXCEED THE GREATER OF \$50.00 OR THE AMOUNT YOU ACTUALLY PAID FOR THE PRODUCT GIVING RISE TO SUCH LIABILITY, REGARDLESS OF THE CAUSE OF ACTION, IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE. NOT ALL JURISDICTIONS ALLOW SUCH LIMITATIONS OF DAMAGES SO THE FOREGOING LIMITATIONS MAY NOT APPLY TO YOU.

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