coolgear

Rugged Industrial 8-Port Terminal Block RS232/422/485 to USB Adapter

Model Number: *SA-8PXTB*

Installation Guide

Coolgear, Inc.

Version: 1.0
Date: 05/07/2024

Table of Contents

Revision History

Revision	Date	Comments
1.0	05/07/2024	First Release

1. Introduction

Thank you for purchasing Coolgear's Rugged Industrial 8-Port Terminal Block RS232/422/485 to USB Adapter.The product includes a metal module box and a USB cable. Each box has an upstream and a downstream USB ports to support multiple units installed in daisy-chain mode. It supports 8 serial ports which can be set in any combinations of RS232, RS422, RS485-2W, or RS485-4W modes. The UART based serial ports (2K-byte deep FIFO) are fully 16C550 UART compatible with most of the RS232C, RS422 and RS485 devices available from the market. The Isolation and Surge Protection model supports 2,500Vrms and 15KV ESD surge protection features for critical applications.

Features:

✔   USB 2.0 High Speed (480Mbits/Second) and Full Speed (12Mbits/Second) Compatible
✔   Supports 8 RS232/422/485 Combo Serial Ports
✔   RS232 Supports 3-wire Signals (TXD, RXD, GND)
✔   Supports 4-wire RS422, RS485 and 2-wire RS485 Modes
✔   Supports RS485 Auto Transceiver Turn Around by Unique Featured ATTA^{TM} Hardware
✔   128-byte deep FIFO per transmitter and receivers
✔   Each Serial Port Supports 7-pin Screw-Lock-type Terminal Blocks
✔   Supports one Downstream USB2.0 Port for Daisy-chain Expansion Modules
✔   Supports Baud Rate up to 921.6Kpbs
✔   Optional Model: Isolated and 15KV ESD Surge Protection
✔   Supports Win2000, XP, 2003, 2008, Vista, Win 7, and Linux
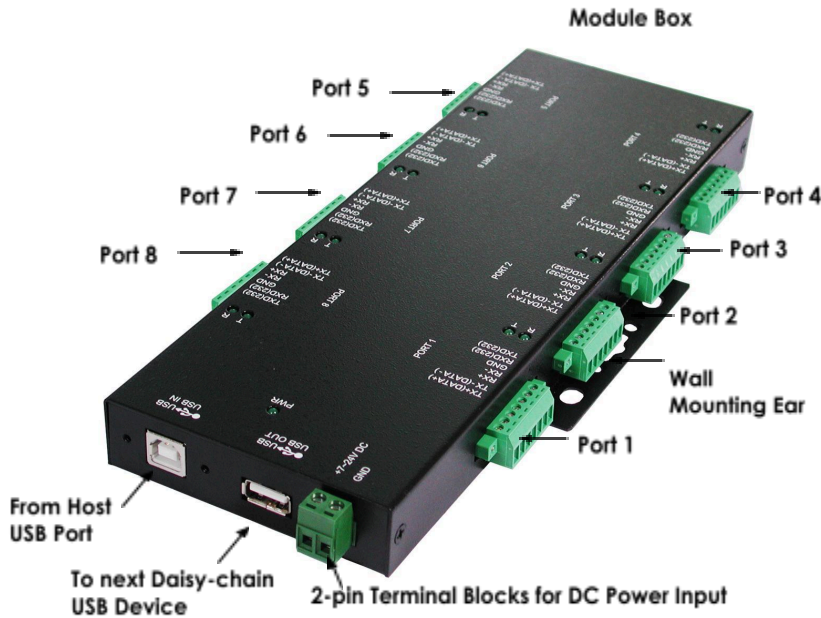
2. Packing List

Before installing this product, please make sure the following accessories are well packed in the box：
▫   Metal Expansion Module Box 1
▫   USB2.0 Cable x 1
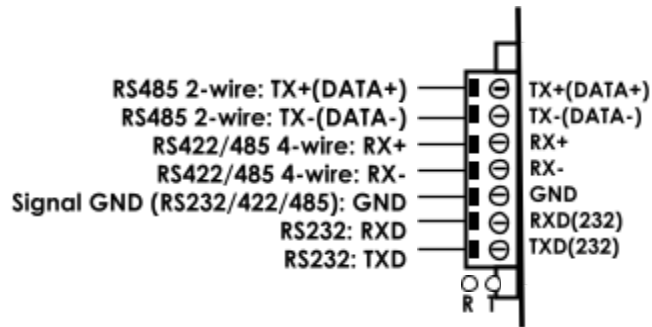▫ Driver CD × 1
▫ This Installation Guide × 1

(Mark the check box to help you check it)

3. Connector Layout

- **Connectors:**

- **7-pin Terminal Blocks Pin Assignment for Port 1 ~ 8:**

Left label	Pin
RS485 2-wire: TX+(DATA+)	TX+(DATA+)
RS485 2-wire: TX-(DATA-)	TX-(DATA-)
RS422/485 4-wire: RX+	RX+
RS422/485 4-wire: RX-	RX-
Signal GND (RS232/422/485): GND	GND
RS232: RXD	RXD(232)
RS232: TXD	TXD(232)

- **LEDs:**
  T (Green): Blinking when sending data
  R (Green): Blinking when receiving data
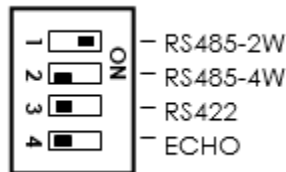
4. Mode and Terminator Switch Settings

There are 16 4-pin DIP switches on the back side of the box for Port 1 to Port 8. 8 of them are mode switches (marked M1 to M8 for Port 1 to Port 8 respectively) and the other 8 are terminator configuration switches (marked T1 to T8 for Port 1 to Port 8 respectively).
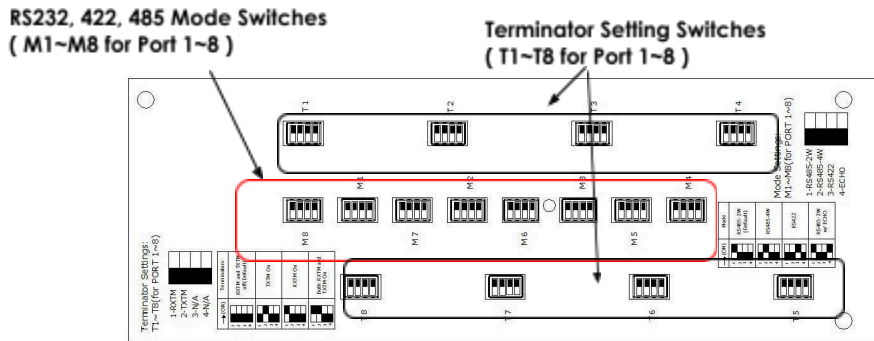
1. Mode Switches (M1 to M8 for Port 1 to Port 8 respectively):

Each M1 to M8 has 4 switch pins which are marked with their function names as in the following diagram. Pin 1 is to enable RS485 2 wire mode (when ON), pin 2 enables RS485 4 wire mode (ON), pin 3 enables RS422 mode (ON) and pin 4 enables Echo option (ON). Please refer to the following table for more detail.

M1 to M8 DIP Switches:

Mode Setting Table:

Switch Settings		Description
1 — RS485-2W 2 — RS485-4W 3 — RS422 4 — ECHO	ON	**RS485 2-wire mode (Default)**
1 — RS485-2W 2 — RS485-4W 3 — RS422 4 — ECHO	ON	RS485 4-wire mode
1 — RS485-2W 2 — RS485-4W 3 — RS422 4 — ECHO	ON	RS422 mode
1 — RS485-2W 2 — RS485-4W 3 — RS422 4 — ECHO	ON	Echo mode enabled (**Note:** Only applicable for RS485-2W mode)

1. Terminator Switches (T1 to T8 for Port 1 to Port 8 respectively):

The design of each RS485 and RS422 port has built-in 2 120 Ohm termination resistors. One is in between RX+ and RX-, controlled by DIP switch pin 1; another is in between TX+ and TX-, controlled by DIP switch pin 2. When the switch pin is set ON, the corresponding terminator resistor is enabled, otherwise it is disabled (floated). Both switch pins were set to OFF by the factory default settings.

5. Installing the Module Box

1. Plug the USB Type-A end of the supplied USB cable into the USB host port on your PC or into an available USB port on an USB hub. Connect the other Type-B end to the rear Type-B connector of this Module Box.

2. The Module Box is powered by the 2-pin terminal blocks instead of the USB bus, please connect the +7~12V DC power (not provided with this product) for proper operation (the polarity must be applied correctly). If you have another USB device that needs to be connected with daisy-chain mode, please connect it to the USB Type-A downstream connector.

3. If you are connecting a RS232 device to the Module Box, then the 3 RS232 pins on the terminal blocks are required. The RS232 mode does not need any extra DIP switch settings, simply connect to the terminal blocks' pin 5, 6 and 7 and leave the rest pin 1~4 unconnected. Each port can only work in one mode at the same time. The RS232 mode is not set by DIP switches. Instead, it is automatically supported by the separate connector pins.

4. Proceed with Software Driver Installation.

5. The connection is explained as the following diagram:
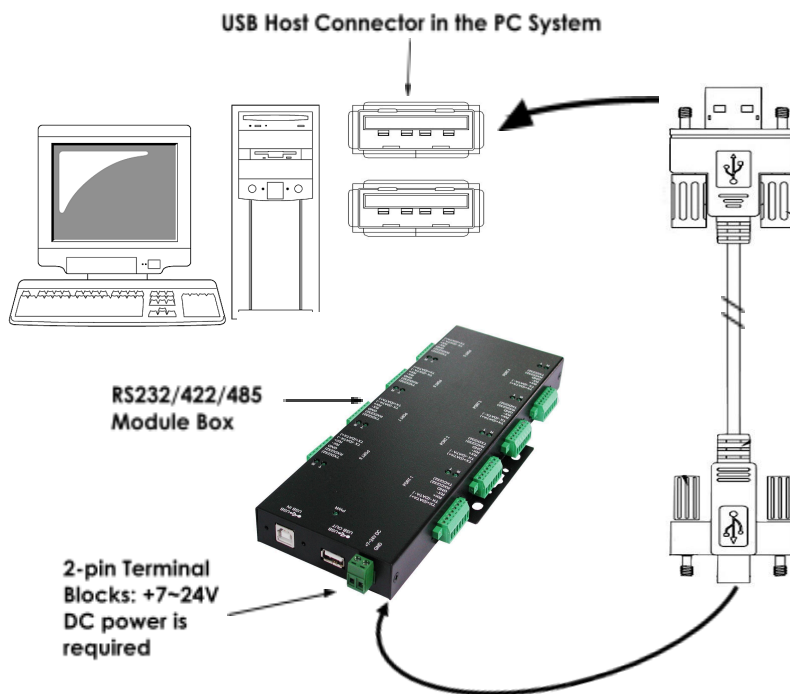
6. Software Installation

This Adapter 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 Win98, ME, 2000 or XP, when prompted for the location of the drivers, specify your CD-ROM drive and the locations according to the following table:
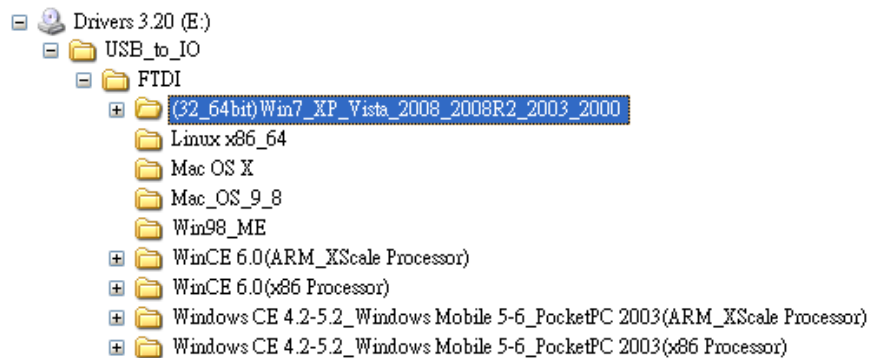
1. **Installing Drivers for (32-bit and 64-bit) Win7, XP, Vista, 2008, 2003 and 2000:**

   - Insert the Driver CD supplied with the Adapter.
   - Run (or double click) the Installer Program (e.g. **CDM20600.exe**) in the following folder of the driver CD:

     \USB_to_IO\FTDI\ (32_64bit)Win7_XP_Vista_2008_2008R2_2003_2000

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

7. Terminal Blocks Pin assignment
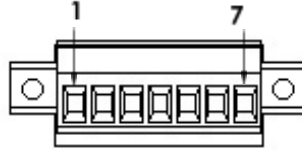
Pin No.	Signal Name	Support Modes
1	TX+ (DATA+)	RS485 2-wire, RS485 4-wire, RS422
2	TX- (DATA-)	RS485 2-wire, RS485 4-wire, RS422
3	RX+	RS485 4-wire, RS422
4	RX-	RS485 4-wire, RS422
5	GND	RS485 2-wire, RS485 4-wire, RS422 and RS232
6	RXD	RS232
7	TXD	RS232

8. Specifications

Connectors	Upstream USB: Type-B Downstream USB: Type A Devices: 7-pin 3.5mm Terminal Blocks x 8
Cable	USB Screw-Lock-Type Cable
Bus Interference	USB2.0
Number of Ports	8
RS232 Signals	TXD, RXD, GND
RS485 2-wire mode	DATA+, DATA-, GND
RS485 4-wire and RS422 modes	TX+, TX-, RX+, RX-, GND
Baud Rate	110 bps to 921.6Kbps
Data Bits	5,6,7,8,9
Stop Bits	1, 1.5, 2
I/O address/IRQ	Plug-and-Play (various)
Parity	None, Even, Odd, 1, 0
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)
Power Consumption	12V/0.5A for Isolation and Surge Protection 12V/0.2A for non-Isolation Model

9. Mechanical Drawing
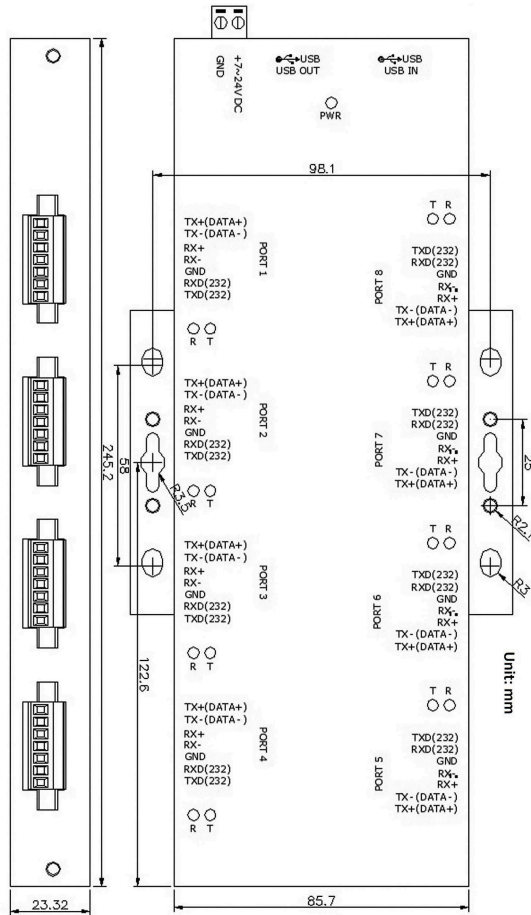
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Clearwater, Florida 33760 U.S.A.   **Fax:** 1 727-209-1302

Safety	
Safety	• 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.

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.

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