

# USB485 USB to RS485 Converter Card



User Manual Version 1.02

RMS Technologies 2533 N. Carson St. #4698, Carson City, NV 89706-0147 1-877-301-3609 www.rmsmotion.com sales@rmsmotion.com Thank you for purchasing the USB485 converter card. This product is warranted to be free of manufacturing defects for one (1) year from the date of purchase.

#### DISCLAIMER

The information provided in this document is believed to be reliable. However, no responsibility is assumed for any possible inaccuracies or omissions. Specifications are subject to change without notice.

RMS Technologies reserves the right to make changes without further notice to any products herein to improve reliability, function, or design. RMS Technologies does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others

## Table of Contents

Specifications	
Pin Assignments	
Installation	5
Turning on Echo	Error! Bookmark not defined.
Determining Communications Port Number.	9
Changing Assigned Communications Port Nu	ımber 11
RS485 Communication	14

### 1 Specifications

#### GENERAL

UART I/F Supports 7 / 8 Bit Data, 1 / 2 Stop Bits and Odd/Even/Mark/Space/No Parity

- Data rate 300 => 250K Baud
- 384 Byte Receive Buffer / 128 Byte Transmit Buffer for high data throughput
- Adjustable RX buffer timeout
- Auto Transmit Buffer control
- Integrated Power-On-Reset circuit
- Integrated 6 MHz 48 MHz clock multiplier PLL
- USB 1.1 and USB 2.0 compatible

### VIRTUAL COM PORT (VCP) DRIVERS for

- Windows 98 / 98SE / ME
- Windows 2000 / XP

#### USB Direct Drivers + DLL Software Interface for

- Windows 98 / 98SE / ME

- Windows 2000 / XP

### 2 Pin Assignments

Pin	Function
1	A Output (-ve)
2	Ground
3	B Output (+ve)



**RS485** Connection View

**\*Note:** The Yellow LED will flash when the unit is transmitting data from the computer to the controller. The Green LED will flash when the unit is receiving data from the computer to the controller. There is no power on LED indicator. Look in your Device Manager to see if the USB485 card shows up under one of the COM Ports. This is a clear indication that the unit is in good condition and is ready to communicate.

### 3. Installation

#### Please make sure you have the following before proceeding:

- RMS Technologies USB485 converter.
- Standard USB Type A to B cable.
- RMS Technologies Manuals and Software CD.

#### Installing the Unit:

The USB485 Converter card will install two sets of drivers. One set is for the unit itself, and the second set is for the Virtual Communications Port (VCP).

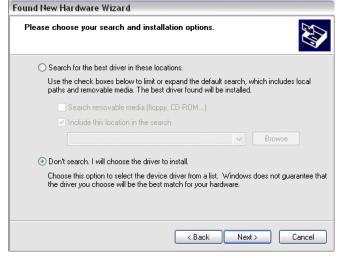
- 1. Power up the PC and start up Windows.
- 2. Connect the USB485 converter card to the PC with a USB cable.
- 3. Windows will detect a new device "RMS Motion Serial Converter"
- A window may appear with the text "Cannot Install this Hardware." Simply click on the "Back" button.



- 5. A window will prompt you for drivers:
- Choose "Install from a list or specific location (Advanced)" and click "Next."



- 7. A window will appear asking you to specify driver location.
- 8. Choose "Don't search. I will choose the driver to install." Click "Next"



- 9. Choose "Universal Serial Bus Controller" under Device Type
- 10. Choose "Have Disk ... "

- Found New Hardware Wizard

   Select the device driver you want to install for this hardware.

   Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

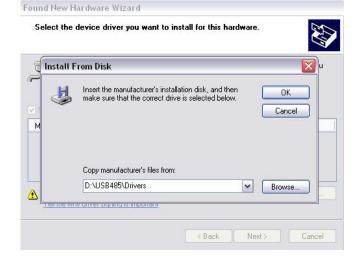
   [Unable to find any drivers for this device]

   Have Disk...

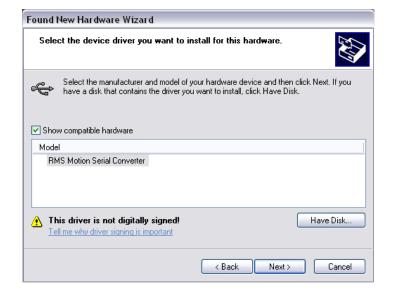
   Rext Next >

   Cancel
- Input the location of the driver files. Typically, this will be on the RMS Technologies Software and Manuals CD.

For example: "D:\USB485\DRIVERS" and click "OK."



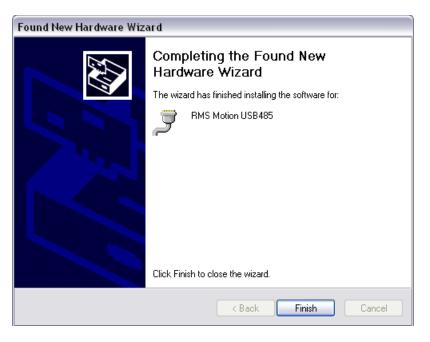
12. Select "RMS Motion Serial Converter" from the device list, click "Next".



13. Select "Continue Anyway" when warned about Windows Logo Testing.

Found New I	Hardware Installation
Please <del>w</del> a	The software you are installing for this hardware: RMS Motion Serial Converter
Ŷ	has not passed Windows Logo testing to verify its compatibility with Windows XP. ( <u>Tell me why this testing is important</u> .) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation
	< Back Next > Cancel

14. Click "Finish." to complete installation.



- 15. Once you have clicked "Finish," Windows should automatically detect another new device. This will begin the installation of the VCP drivers.
- 16. Repeat steps 5-14 replacing "RMS Motion Serial Converter" with "RMS Motion USB485."

#### If unit is echoing every character twice:

Simply turn off echo in the Properties section of your communication device.	Connect To Settings
For example, if you are working in HyperTerminal, go to: File → Properties → Settings tab → ASCII setup Uncheck "Echo typed characters locally".	ASCII Sending         ✓ Send line ends with line feeds         □ Echo typed characters locally         Line delay:       □ milliseconds.         Em       Character delay:       □ milliseconds.         AN       Character delay:       □ milliseconds.         Tel       ASCII Receiving       □         Bad       □ ppend line feeds to incoming line ends       □         □ Force incoming data to 7-bit ASCII       ✓       Wrap lines that exceed terminal width
	OK Cancel OK Cancel

## 3. Determining Communications Port Number

Upon installation, the RMS MOTION USB485 will be assigned a COM PORT number. This number is dependent upon the number of existing COM PORTS already present in your Windows operating system.

To determine what COM PORT number the USB485 has been assigned:

- 1. Right click your "My Computer" icon and choose "Properties."
- 2. Select the "Hardware" tab.
- 3. Click on "Device Manager"

System	n Restor	e	Automa	tic Updates	Remote
General		Computer N	lame	Hardware	Advanced
Add Har	dware V	/izard			
Ż	The A	dd Hardware	Wizard he	elps you install han	dware.
				Add Hardw	are Wizard
Device N	Manage				
	TI D				
	on you		Jse the Di	the hardware devi evice Manager to	
	on you	ır computer. Ī	Use the De evice.		change the
Hardwar	on you proper	ır computer. Ü ties of any de Driver Signir	Use the De evice.	evice Manager to	change the
Hardwar	on you proper	ır computer. Ū ties of any de Driver Signir s	Jse the Do evice. ng rovide a w	evice Manager to Device Manager to	change the 1anager
Hardwar	on you proper	ır computer. Ū ties of any de Driver Signir s vare profiles p	Jse the Do evice. ng rovide a w	evice Manager to Device Manager to	fanager
Hardwar	on you proper	ır computer. Ū ties of any de Driver Signir s vare profiles p	Jse the Do evice. ng rovide a w	evice Manager to Device M avay for you to set u ons.	fanager

- 4. In the Device Manager, the following should be listed:
  - a. Under Ports (COM & LPT), there should be listed "RMS Motion USB485 (COMX)" where X is the Communications Port # assigned to the device, it is assigned to COM8 in this example. This setting may be changed and will be discussed in the next section.
  - b. Under Universal Serial Bus controllers, there should be listed "RMS Motion Serial Converter."

	Manage							
ile Acti			L materia				 	
	•	ß	<b>N</b>					
📙 ID-3	355							
	Batteries							
	Computer							
	Disk drives							
	Display add							
	DVD/CD-R Human Int							
	IDE ATA/A		ontrollers					
	Keyboards		ointing devices					
	Modems	ither po	anding devices					
	Monitors							
	Network a	danter	-					
	PCMCIA ad							
	Ports (CON							
19	Commi	inicatio	/ ins Port (COM:	ŭ.				
	ECP Pr	inter P	ort (LPT1)					
		Intion I	ISB485 (COM8	)				
	Processors			·				
and the	Smart card		rs					
			game controll	ers				
	System de		1					
			us controllers					
				2.0 Enhanced H	lost Controllei	- 24CD		
				Universal Host				
	🖨 Intel(R	) 8280	1DB/DBM USB	Universal Host	Controller - 2	4C4		
-	🖨 Intel(R	) 8280	1DB/DBM USB	Universal Host	Controller - 2	4C7		
-	🖨 RMS M	lotion S	erial Converte	r				
	😪 USB Ro	oot Hub	0					
	🥰 USB Ro							
	😴 USB Ro							
.i.,,,	😪 USB Ro	oot Hub	)					

## 4. Changing the Assigned Communications Port Number

Upon installation, the USB485 device will assign itself the lowest free Communications Port number. This setting can be changed to any free communications port that is not in use by Windows.

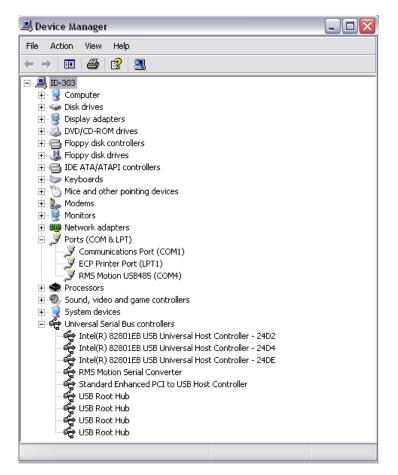
Note: Previously installed devices no longer on the system may cause some COM Ports to be listed as in use. The USB485 may be set to use these numbers, but please be sure that the device previously using the port is disconnected.

#### To Change the Assigned Com Port Number:

- 1. Right click your "My Computer" icon and choose "Properties."
- 2. Select the "Hardware" tab.
- 3. Click on "Device Manager"

System Properties
System Restore Automatic Updates Remote
General Computer Name Hardware Advanced
Add Hardware Wizard
The Add Hardware Wizard helps you install hardware.
Add Hardware Wizard
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing Device Manager
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK Cancel Apply

4. In the Device Manager, find "RMS Motion USB485" under "Ports (COM & LPT)".



5. Double click on "RMS Motion USB485" to go to Properties.

MS Motion USB485 (COM8) Properties 🛛 🔹 🔀						
General	Port Settings Driv	/er				
J	RMS Motion USB485 (COM8)					
	Device type:	Ports (COM & LPT)				
	Manufacturer:	RMS Technologies				
	Location:	on RMS Motion Serial Converter				
This o	e status device is working pro i are having problem the troubleshooter.	operly. is with this device, click Troubleshoot to Troubleshoot				
		I roubleshoot				
Device	usage:					
Use thi	s device (enable)		~			
		ОК	Cancel			

6.	Select the "Port Settings" Tab and cli	ick
	on "Advanced."	

RMS Motion USB485 (COM8) Properties 🔹 👔 🔀
General Port Settings Driver
Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
Advanced Restore Defaults
OK Cancel

7. In the Advanced Settings window you may change the assigned COM port number. Click "OK", and the RMS Motion USB485 is changed to the new COM Port Number.

Ivanced Settings for COM8				? >
COM Port Number: COM8 USB Transfer Sizes Select lower settings to correct pr Select higher settings for faster pr Receive (Bytes): Transmit (Bytes):	- SS	w baud rates.		OK Cancel Defaults
BM Options Select lower settings to correct re Latency Timer (msec):	sponse problems.			
- Miscellaneous Options Minimum Read Timeout (msec):	0 💌	Serial Enumerator Serial Printer	<b>N</b>	
Minimum Write Timeout (msec):	0 💌	Cancel If Power Off Event On Surprise Removal Set RTS On Close		

## 5. RS485 Communication

#### The Interface

The EIA specification RS485 defines an integrated circuit that is to be used to connect up to 32 nodes to a two-wire party line bus that does not exceed 4,000 ft. in length, and for use with data rates up to 10M Baud.

The two-wire bus must be terminated at one-end for short wire runs and at both ends if the runs exceed 20 ft. One of the two wires must be biased positive with respect to the other by approximately 700 millivolts.

For wire runs over 20 ft, twisted pair cable with a characteristic impedance of approximately 100 to 200 ohms, and the far end of the run should be terminated by a 150 ohm resistor across the line pair. For runs under 20ft almost any wire can be used.