USB to RS-485 Converter

Part Number: USB-485-1



Communications made easy

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Windows 10 / 8 / 7

For Windows 10, 8 and 7, drivers will be installed automatically when your computer is connected to the Internet. Alternatively, you may install the drivers from the CD provided with the product.

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■ INTRODUCTION

The USB-485-1 is a port-powered USB to RS-485 converter that can be used to convert any standard USB port (USB 2.0 - backward compatible) into a two-wire balanced RS-485 port and vice versa. The unit can be used to communicate with one loop of up to 256 units of RS-485 devices and it comes with a built-in selectable 120-Ohm terminator for system reliability and easy installation. This USB to RS-485 converter cable is powered from the USB port and it supports data auto-sensing & self-adjusting, therefore, no baud rate setting is required; and with the data direction auto-turnaround technology, no flow control is necessary for RS-485 communications. The USB-485-1 uses the latest FTDI chipset and is fully compatible with Windows 10/8/7/Vista/XP/Server 2008/ Server 2003/2000/98 (32-bit), Windows 10/8/7/Vista/XP/Server 2008/Server 2003 (64-bit), Win CE, Mac, and Linux.

FEATURES

- Adds one RS-485 port to your USB port.
- Supports 256 nodes of 2-wire RS-485 devices.
- Rugged terminal block with built-in selectable 120Ω terminator.
- Operates reliably from 300 to 3M baud.
- Supports Windows 10/8/7/Vista/XP/Server 2008/Server 2003/2000/98 (32-bit), Windows 10/8/7/Vista /XP/Server 2008/Server 2003 (64-bit), Win CE, Mac, and Linux.
- Supports remote wakeup and power management.
- Built-in 15kV ESD static and circuit protection.
- Port-powered, no external power required.
- Plug and play (hot-pluggable, data format auto-sensing and self-adjusting).
- Data direction auto-turnaround, no flow control is required.
- No IRQs required, no IRQ conflicts.
- Surface Mount Technology manufactured to RoHS and ISO-9001 standards.
- Safety: Strictly certified by SGS (Cert no. E1/2013/90010C; E1/2013/90011C).
- 5-year manufacturer's warranty.

■ SPECIFICATIONS

Compatibility:	USB 2.0 and EIA/TIA RS-232/RS-485 standards
Power Source:	From USB port
Current Consumption:	Less than 60mA
RS-232 Data Rate:	300 to 3M bps (auto-sensing and self-adjusting)
Distance:	USB side: 10ft (3m); RS-485 side: Up to 4000ft (1.2km) at 19,200 bps
Connectors:	USB side: Type A Female; RS-485 side: DB-9 Male/5-Way Terminal Block
LEDs:	TX, RX and Power
Maximum number of drops:	256
End-of-Line Terminator:	120Ω (built-in, selectable)
Static Protection (ESD):	Up to 15KV
Dimensions (H x W x D):	0.8 x 1.3 x 3.6 in (20 x 32 x 92 mm) (excluding cable)
Cable Length:	3.3 ft (1 m)
Weight:	3.8 oz (108 g)
Operating Temperature:	32°F to 104°F (0°C to 40°C)
Operating Humidity:	Up to 90% RH (no condensation)

PIN ASSIGNMENT

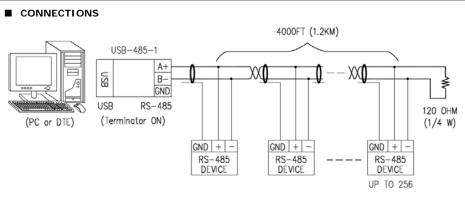
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RS-485 Side (DB-9 Male Connector / Terminal Block):

DB-9 Male:	1	2	5	6,7
Function:	B-	A+	GND	Tie to turn ON the 120Ω end-of-line terminator
Terminal Block:	A+	B-	G	120
Function:	RS485+	RS485-	GND	Tie to turn ON the 120Ω end-of-line terminator

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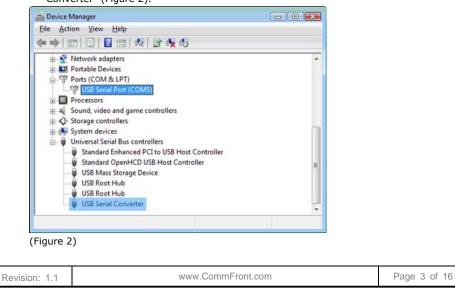


(Figure 1: 2-WIRE RS-485 MASTER-SLAVE MULTI-DROP CONNECTIONS)

Note: The 120Ω end-of-line terminator adds heavy DC loading to a system; connect it only when the data rate is over 19.2kbps or the RS-485's distance exceeds 660ft (200m).

DRIVER INSTALLATION – QUICK GUIDE

- For Windows 10, 8 and 7, drivers will be installed automatically when your computer is connected to the Internet.
- For other Operating Systems, drivers are included on the CD supplied with the converter, please refer to the details below:
 - 1) Insert the CD into the drive.
 - 2) Connect the USB-485-1 to an available USB port, and the "Found New Hardware Wizard" will guide you through the installation process. When prompted to connect to Windows Updates to search for drivers, select "No, not at this time", and follow the instructions for installing from the CD.
 - 3) Once the drivers are successfully installed, the USB-485-1 will show up in the Windows Device Manager: under "Ports (COM & LPT)" – labeled as "USB Serial Port (COMx)", and under "Universal Serial Bus controllers" - labeled as "USB Serial Converter" (Figure 2).



Important notes:

- If it's the first time you install the driver for CommFront's USB to Serial device, you will need to install the driver twice. One is for "USB Serial Converter", and the other one is for "USB Serial Port". DO NOT close the 2nd "Found New Hardware Wizard" window while installing the driver.
- 2) Upon completion of driver installations, remember to check the Windows Device Manager to make sure that the drivers are installed properly (Figure 2). If the drivers are not installed correctly, there will be a yellow exclamation icon displayed under the "Ports (COM & LPT)" or "USB Serial Bus controllers", right-click on the yellow exclamation icon and select "Update driver". Then search for the driver in the CD supplied.
- 3) The drivers are not available via Microsoft Windows Updates, however, Windows Vista will search for the drivers via Microsoft Windows Updates by default, so **disconnect your Vista PC from the internet before the driver installation**.

■ DRIVER INSTALLATION - EXAMPLES

- Example 1 (Windows Vista)
 - 1) **Disconnect your PC from the internet before driver installation**. This is because the drivers are not available via Microsoft Windows Updates, but Windows Vista will search for the drivers via Microsoft Windows Updates by default.
 - 2) Insert the CD into the drive and connect the USB-485-1 to an available USB port, the "Found New Hardware" window will pop up. Click on the "Locate and install driver software (recommended)" button to continue (Figure 3).

Wir	und New Hardware 🛛 🔊
۲	Locate and install driver software (recommended) Windows will guide you through the process of installing driver software for your device.
+	Ask me again later Windows will ask again the next time you plug in your device or log on.
۲	Don't show this message again for this device Your device will not function until you install driver software.
	Cancel

(Figure 3)

 Windows Vista will look for the driver in the CD, click on the "Next" button to continue. This will start the driver installation for "USB Serial Converter" (Figure 4).

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(Figure 4)

4) When the driver is successfully installed, the following window will pop up confirming that the driver installation of "USB Serial Converter" has been completed successfully. Click on the "Close" button to continue (Figure 5).

The software for this device has been successfully installed	
Windows has finished installing the driver software for this device:	
USB Serial Converter	
	Close

- eps 1) to 4) to install the driver for "USB Serial Port". 6) When the 2nd driver installation is completed, remember to check the Windows
- Device Manager to confirm that the drivers are installed successfully (Figure 2). The USB-485-1 will show up in the Windows Device Manager: under the "Ports (COM &

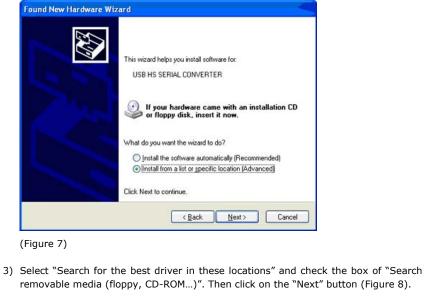
LPT)" - labeled as "USB Serial Port (COMx)", and "Universal Serial Bus controllers" labeled as "USB Serial Converter".

• Example 2 (Windows XP)

1) Insert the CD into the drive and connect the USB-485-1 to an available USB port, the "Found New Hardware Wizard" window will pop up. Select "No, not this time" and click on the "Next" button to continue (Figure 6).

Found New Hardware Wiz	ard
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy Can Windows connect to Windows Update to search for software? Yes, this time only Yes, this time only Yes, now and gvery time I connect a device Who, not this time
	< <u>Back</u> Next> Cancel
Figure 6)	

2) Select "Install from a list or specific location (Advanced)" to install the driver from CD (Figure 7).



removable media (floppy, CD-ROM...)". Then click on the "Next" button (Figure 8).

lease ch	oose your search and installation options.
⊙ <u>S</u> ea	tch for the best driver in these locations.
	the check boxes below to limit or expand the default search, which includes local s and removable media. The best driver found will be installed.
E	Search removable media (floppy, CD-ROM)
0	Include this location in the search:
	Bjowse
O Dor	't search. I will choose the driver to install.
	ose this option to select the device driver from a list. Windows does not guarantee the driver you choose will be the best match for your hardware.
	< Back Next > Cancel

(Figure 8)	
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4) When the driver is successfully installed, the following window will pop up, confirming that the driver installation of "USB Serial Converter" has been completed. Click on the "Finish" button to continue (Figure 9).

Completing the Found New
Hardware Wizard
The wizard has finished installing the software for:
USB Serial Converter
Click Finish to close the wizard.
< Back Finish Cancel

(Figure 9)

- 5) The 2nd "Found New Hardware" window will pop up, prompting you to install the driver for "USB Serial Port". DO NOT close this window! And repeat steps 1) to 4) to install the driver for "USB Serial Port".
- 6) When the 2nd driver installation is completed, remember to check the Windows Device Manager to confirm that the drivers are installed successfully (Figure 2). The USB-485-1 will show up in the Windows Device Manager: under "Ports (COM & LPT)" – labeled as "USB Serial Port (COMx)", and under "Universal Serial Bus controllers" - labeled as "USB Serial Converter".

•	Example	3	(Windows	2000)
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 Insert the CD into the drive and connect the USB-485-1 to an available USB port, the "Found New Hardware Wizard" window will pop up. Click on the "Next" button to continue (Figure 10).

Found New Hardware Wizard	
	Velcome to the Found New lardware Wizard is wizard helps you install a device driver for a ardware device.
	< Back Next> Cancel

(Figure 10)

 Select "Search for a suitable driver for my device (recommended)" and click on the "Next" button to continue (Figure 11).

all Hardware Device Drivers A device driver is a software progra an operating system.	am that enables a hardware device to work with
This wizard will complete the installa	ation for this device:
USB HS SERIAL CONVE	RTER
needs driver files for your new device	am that makes a hardware device work. Windows ce. To locate driver files and complete the
	17
Installation click Next. What do you want the wizard to do	
What do you want the wizard to do	

 Check the box of "CD-ROM drives", and then click on the "Next" button to continue (Figure 12).

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Locate Driver Files Where do you want Windows to searc	sh for driver files?
Search for driver files for the following l	hardware device:
USB HS SERIAL CONVERT	ER
The wizard searches for suitable driver any of the following optional search loc	s in its driver database on your computer and in sations that you specify.
To start the search, click Next. If you a insert the floppy disk or CD before click	are searching on a floppy disk or CD-ROM drive, king Next.
Optional search locations:	
Floppy disk drives	
CD-ROM drives	
Specify a location	
Microsoft Windows Update	
	< <u>B</u> ack <u>N</u> ext> Cancel

4) Windows will automatically locate the driver, for example, "e:\drivers\windows 2000_server 2003_xp_vista x32\ftdibus.inf". Click on the "Next" button to continue (Figure 13).

river File	es Search Results
The wi	zard has finished searching for driver files for your hardware device.
The wid	and found a driver for the following device:
2	USB HS SERIAL CONVERTER
Window	vs found a driver for this device. To install the driver Windows found, click Next.
-050	e:\drivers\windows 2000_server 2003_xp_vista x32\ftdibus inf
	and also found other drivers that are suitable for this device. To view a list of rivers or install one of these drivers, select the following check box, and then click
🗖 Inst	all one of the other drivers
	< Back Next> Cancel

5) When the driver is successfully installed, the following window will pop up, confirming that the driver installation of "USB Serial Converter" has been completed. Click on the "Finish" button to continue (Figure 14).

Completing the Found New Hardware Wizard	
USB Serial Converter	
Windows has finished installing the software for this device.	
The hardware you installed will not work until you restart your computer.	
To close this wizard, click Finish.	

(Figure 14)

- 6) The 2nd "Found New Hardware" window will pop up, prompting you to install the driver for "USB Serial Port". DO NOT close this window! And repeat steps 1) to 5) to install the driver for "USB Serial Port".
- 7) When the 2nd driver installation is completed, remember to check the Windows Device Manager to confirm that the drivers are installed successfully (Figure 2). The USB-485-1 will show up in the Windows Device Manager: under "Ports (COM & LPT)" – labeled as "USB Serial Port (COMx)", and under "Universal Serial Bus controllers" - labeled as "USB Serial Converter".

■ TROUBLESHOOTING

General

- Make sure that the USB-485-1 is connected to your USB port, and the driver is installed correctly (Figure 2); otherwise, please reinstall the driver (Please refer to the "Driver reinstallation examples" below).
- 2) Make sure the "Power" LED on USB-485-1 is lit up.
- 3) Perform a loopback test by using CommFront's 232Analyzer software (included on the CD supplied with the converter): Connect two numbers of USB-485-1 converters (A+ to A+, B- to B-) to your USB ports and run two instances of the 232Analyzer software, then send commands from one COM port, you should receive an echo of the commands sent on the other COM port. By performing a simple loopback test like this, you can test both the transmitter and receiver of the converter. This is very helpful when you are in doubt about the performance of your converter (Figure 15).

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Data format	
C Hex C	Dec C Oct C Bin @ ASOII
2.03	Delay 0 ms Repeat 0 Interval 0 ms Stop
and the second sec	sed commands - © 00h-0Fh C 10h-1Fh Programmable buttons (ASCII) - © 1-16 C 17-32
	H STX ETX EOT ENQ ACK BEL AT1 AT2 AT3 AT4 AT5 AT6 AT7 AT8
BS H	T LF VT FF CR SO SI S1 S1 S2 S3 S4 S5 S6 S7 S8
Data format (F	
	Dear C Det C Bin @ ASCII
	Formatted view C Description RX time: 50 ms y
	Baud rate: 19200bps; Parity: Even; Data bit: 8; Stop bit: 1; Handshaking; None 🔷
TX data form	hat ASCII, RX data format ASCII
*******	* COM Port Opened ********
Data sent C	ommFront
CO TX O DS	R & CTS & DCD & RI & DTR & RTS & BRK &
	mode: Debugging / Simulating
- Send comman	
	Dec C Oct C Bin G ASCII
	Delay 0 ms Repeat 0 Interval 0 ms Stop
A CONTRACTORY	red commands - © 00h - 0Fh C 10h - 1Fh Programmable buttons (ASCII) - © 1-16 C 17-32
NUL SO	
BS HT	LF VT FF CR SO SI S1 S2 S3 S4 S5 S6 S7 S8
Data format (R	
12000	Search string.
	Formalted view Description RX time: 50 ms y Clear
	Baud rate: 19200bps; Parity: Even; Data bit. 8; Stop bit. 1; Handshaking: None
	ion mode: Debugging / Simulating at ASCII: FX data format ASCII
	COM Port Opened *********
	COM Port Opened
Data receive	d: CommFront
O TX O DSF	CTS C DCD C RI C DTR C RTS C BRK C
igure 15)	
· j =· · · ,	
buor rol	nstallation examples
	-
	ght not be installed properly if the above driver installation procedures were
	d; for example, the user did not disconnect the PC from the internet while
	rivers on Vista machines, or the 2 nd "Found New Hardware Wizard" window
	before the driver installation was completed. Below are some examples
owing ho	w to reinstall the drivers.
ample 1	(Windows Vista)
mptoms	: A yellow exclamation icon appears besides the "USB Serial Converter". Also,
	display of the "Ports (COM & LPT)" in the Windows Device Manager (Figure
).	

and the second s		
File Action View Help		
**	12 秋市	
E 🙀 COMMERONT-PC		
E 💽 Computer		
🗉 👝 Disk drives		
🗉 🏪 Display adapters		
DVD/CD-ROM drives		
Floppy disk drives Floppy drive controllers		
Q Human Interface Devices		
E Ca IDE ATA/ATAPI controller		
E - Keyboards		
· A Mice and other pointing d	evices	
Monitors		
Network adapters		
Portable Devices		
Processors Sound, video and game of	and the second se	
Storage controllers	Incroners	
E System devices		
Universal Serial Bus contro	llers	
- 🖗 Standard Enhanced PC	I to USB Host Controller	
🚽 🏺 Standard OpenHCD U	8 Host Controller	
- 🖗 USB Mass Storage Dev	ce	
USB Root Hub		
USB Root Hub		
- K Use server converter.	Update Driver Software	
aunches the Update Driver Softw	Disable	
	Uninstall	
	Sector and the sector sector sector	
	Course Service and a service and a service of the s	
	Scan for hardware changes Properties	

- icon, and select "Update Driver Software..." (Figure 16).2) Click on the "Browse my computer for driver software" button to continue (Figure
- 17).

ow do you want to search for driver software?		
Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device.		
Browse my computer for driver software Locate and install driver software manually.		
	Cancel	

 Locate the driver in the CD provided and click on the "Next" button to continue (Figure 18).

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Browse for driver software on your computer		
Search for driver software in this location:		
E\Drivers\Windows 2000_Server 2003_XP_VISTA X32	· Browse	
Let me pick from a list of device drivers on n This list will show installed driver software compatible wit software in the same category as the device.		

4) When the driver is successfully updated, the following window will pop up, confirming that the driver installation of "USB Serial Converter" has been completed. Click on the "Close" button to exit (Figure 19).

Update Driver Software - USB Serial Converter	×
Windows has successfully updated your driver software	
Windows has finished installing the driver software for this device:	
USB Serial Converter	
	Close
Jure 19)	Close

Example 2 (Windows Vista)

Symptoms: A yellow exclamation icon appears besides the "USB Serial Port" (Figure 20).

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Device Manager		
File Action View Help		
***	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Disk drives Disk drives Disk drives Display adapters Display drak drives Display drive controllers Display drive controllers Disk drives Disk drives	es Sers	
Portable Devices	Update Driver Software	
Sound, video and g Storage controllers	Disable Uninstall	
System devices Universal Serial Bus Standard Enhan	Scan for hardware changes	
USB Mass Storage D USB Mass Storage D USB Root Hub USB Root Hub USB Serial Converte	levice	

(Figure 20)

- Right-click on the "USB Serial Port" that displays with the yellow exclamation icon, and select "Update Driver Software..." (Figure 20).
- 2) Click on the "Browse my computer for driver software" button to continue (Figure 21).

•	Search automatically for updated driver software	
	generation automatically for updated univer software for your device.	
•	Browse my computer for driver software Locate and install driver software manually.	
	vere and insum unity solving manually.	

(Figure 21)

 Locate the driver in the CD provided, and click on the "Next" button to continue (Figure 22).

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Browse for driver software on your computer
Search for driver software in this location:
E\Drivers\Windows 2000_Server 2003_XP_VISTA X32 Browse
Include subfolders
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.

4) When the driver is successfully updated, the following window will pop up, confirming that the driver installation of "USB Serial Port" has been completed. Click on the "Close" button to exit (Figure 23).

Update Driver Software - USB Serial Port (COM5)	
Windows has successfully updated your driver software	
Windows has finished installing the driver software for this device:	
USB Serial Port	
	Close

Example 3 (Windows Vista/XP/2003/2000/98/ME)

Symptoms: No yellow exclamation signs, but COM port does not exist or is not functioning.

- 1) Locate and execute the driver un-installation program FTDIUNIN.exe in its respective folder. For example, for Windows 2000/Server_2003/XP/Vista 32-bit, the un-installation program is located at "E:\Drivers\Windows 2000_Server 2003_XP_Vista X32\"
- Unplug the USB-485-1, and click on the "Continue" button to uninstall the drivers (Figure 24).

lf your USB device is connec	ted, please unplug it now	
Press Continue to uninstall th	e drivers, or Cancel to quit.	
Continue	Cancel	

3) Click on the "Finish" button to complete the un-installation of the drivers (Figure 25).

Uninstallin	g VID_0403&PID_0	5010	
Deleting re Deleting fil	gistry entries		
Press Finis	h to exit.		

- (Figure 25)
- 4) Follow the correct driver installation procedures above to reinstall the drivers for your USB-485-1 converter.

SUPPORT

Check out CommFront's website: <u>www.CommFront.com</u> for product updates, FAQs, and other support.

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