



## **Future Technology Devices International Ltd**

### **USB to RS485 Serial Converter Cable**

CE FCC UK  
CA

## **Datasheet**

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. Future Technology Devices International Ltd will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device or system in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Future Technology Devices International Ltd, Unit1, 2 Seaward Place, Centurion Business Park, Glasgow, G41 1HH, United Kingdom. Scotland Registered Number: SC136640

## 1 Description

The **USB-RS485** cable is a USB to RS485 levels serial UART converter cable incorporating FTDI's FT232RQ USB to serial UART interface IC device which handles all the USB signalling and protocols. The cable provides a fast, simple way to connect devices with a RS485 interface to USB.

Each USB-RS485 cable contains a small internal electronic circuit board, utilising the FT232RQ, which is encapsulated into the USB connector end of the cable. The FT232RQ datasheet, [DS\\_FT232R](https://ftdichip.com/DS_FT232R), is available at <https://ftdichip.com/>. The integrated electronics also include the RS485 transceiver plus Tx and Rx LEDs which give a visual indication of traffic on the cable (if transparent USB connector specified).

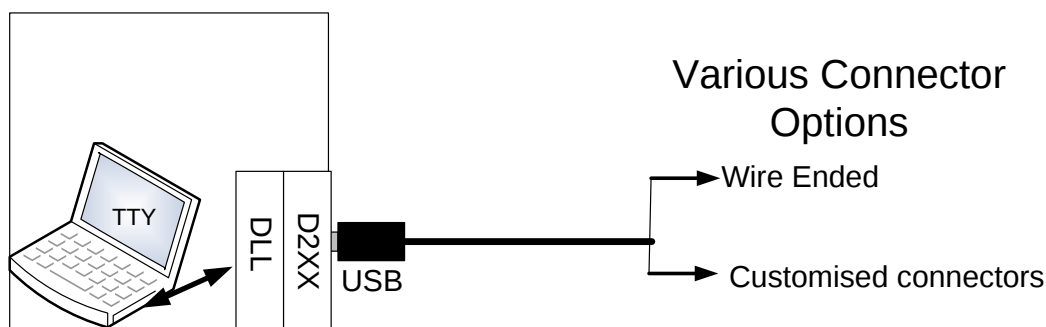
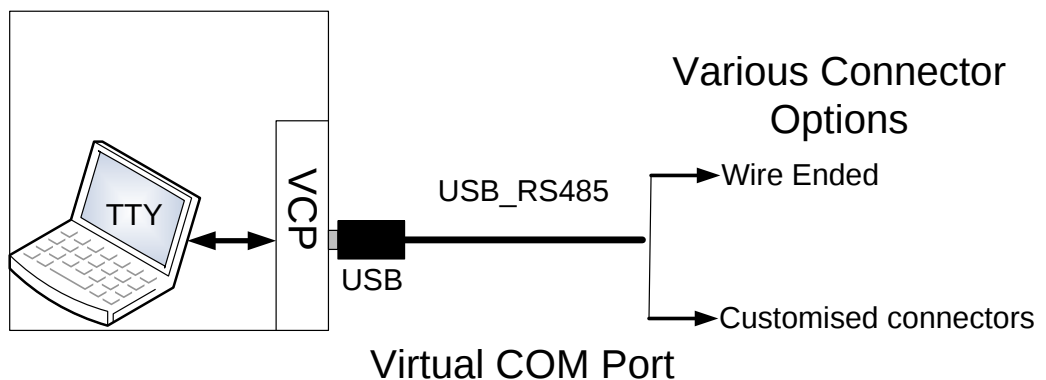
The other end of the cable is bare, tinned wire ended connections by default, but can be customised using different connectors to support various applications.

The USB-RS485 cable is designed for use at the end of an RS485 network up to approximately 10m. For longer networks or placement of the USB-RS485 cable in the middle of an RS485 network it is recommended that the attached wire is cut to 20cm or less to ensure signal integrity.

Cables are FCC, CE, UKCA and RoHS compliant.

The cable is USB powered and USB 2.0 full speed compatible. Each cable is 1.8m long and supports a data transfer rate up to 3 Mbaud. Each cable supports the FTDIChip-ID™, with a unique USB serial number programmed into the FT232RQ. This feature can be used to create a security or password protected file transfer access using the cable. Further information and examples on this feature are available at <https://ftdichip.com/> under [FTDIChip-ID Projects](#).

The USB-RS485 cables require USB drivers, available free from <https://ftdichip.com/>, which are used to make the FT232RQ in the cable appear as a virtual COM port (VCP). This then allows the user to communicate with the USB interface via a standard PC serial emulation port (for example TTY). Another FTDI USB driver, the D2XX driver, can also be used with application software to directly access the FT232RQ on the cable through a DLL. This is illustrated in the Figure 1.1.



**Software application access to USB via D2XX**

**Figure 1.1 Using the USB-RS485 Cable**

## 2 Cable Part Numbers

The following Table 2.1 gives details of the available USB-RS485 cables.

| Part Number                 | Description                                                                                                                                                                                                                                                | End Connector*                     | Cable details                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------------|
| USB-RS485-WE-1800-BT        | <b>USB</b> to UART cable with <b>RS485</b> level UART signals. <b>B</b> lack cable, <b>T</b> ransparent USB connector                                                                                                                                      | <b>Wire Ended</b> (no connector)   | <b>1.8m</b> cable, 6 core, UL2464 24 AWG, diam=5mm |
| USB-RS485-WE-5000-BT        | <b>USB</b> to UART cable with <b>RS485</b> level UART signals. <b>B</b> lack cable, <b>T</b> ransparent USB connector                                                                                                                                      | <b>Wire Ended</b> (no connector)   | <b>5.0m</b> cable, 6 core, UL2464 24 AWG, diam=5mm |
| *<br>USB-RS485-CC-LLLL-CU-X | <b>USB</b> to UART cable with <b>RS485</b> level UART signals.<br><b>C</b> = cable colour ( <b>B</b> black or <b>T</b> transparent),<br><b>U</b> = USB connector colour ( <b>T</b> transparent or <b>B</b> black)<br><b>X</b> = voltage (P is 5V, G is 0V) | <b>CC</b> = Connector description. | LLLL = Length of cable.                            |

**Table 2.1 USB-RS485 Cables Descriptions and Part Numbers**

\* FTDI supports customised end connector designs. For more information, please contact FTDI Sales Team ([sales1@ftdichip.com](mailto:sales1@ftdichip.com))

**Note:** The tolerance for the 1.8 meter length cable is +/-30mm and +/-50mm for 5 meter length cable.

### 2.1 Certifications

FTDI USB-RS485 cable is fully RoHS compliant as well as CE, UKCA and FCC certified.

FCC Part 15, Subpart B, Class B. CISPR 22: 1997+A1: 2000, Class B. ICES-003: 2004, Class B.

ANSI C63.4-2003.



### 2.2 USB Compliant

The USB-RS485 cables are fully compliant with the USB 2.0 specification.



---

## **Table of Contents**

|                                                     |                                                                |           |
|-----------------------------------------------------|----------------------------------------------------------------|-----------|
| <b>1</b>                                            | <b>Description .....</b>                                       | <b>2</b>  |
| <b>2</b>                                            | <b>Cable Part Numbers.....</b>                                 | <b>3</b>  |
| 2.1                                                 | Certifications.....                                            | 3         |
| 2.2                                                 | USB Compliant .....                                            | 3         |
| <b>3</b>                                            | <b>Typical Applications.....</b>                               | <b>5</b>  |
| 3.1                                                 | Driver Support.....                                            | 5         |
| 3.2                                                 | Features .....                                                 | 5         |
| <b>4</b>                                            | <b>Features of FT232RQ applicable to USB-RS485 Cable .....</b> | <b>6</b>  |
| <b>5</b>                                            | <b>USB-RS485-WE-LLLL-CU-X .....</b>                            | <b>7</b>  |
| 5.1                                                 | USB-RS485-WE Connections and Mechanical Details.....           | 7         |
| 5.2                                                 | USB-RS485-WE Cable Signal Descriptions .....                   | 8         |
| 5.3                                                 | USB-RS485-WE Electrical Parameters .....                       | 8         |
| 5.4                                                 | Local Echo .....                                               | 9         |
| <b>6</b>                                            | <b>Cable PCB Block Diagram.....</b>                            | <b>10</b> |
| <b>7</b>                                            | <b>USB-RS485 – Schematic .....</b>                             | <b>11</b> |
| <b>8</b>                                            | <b>Contact Information .....</b>                               | <b>12</b> |
| <b>Appendix A - Cable EEPROM Configuration.....</b> |                                                                | <b>13</b> |
| <b>Appendix B - List of Figures and Tables.....</b> |                                                                | <b>14</b> |
| List of Figures .....                               |                                                                | 14        |
| List of Tables.....                                 |                                                                | 14        |
| <b>Appendix C - Revision History .....</b>          |                                                                | <b>15</b> |

### 3 Typical Applications

- USB to serial RS485 level converter.
- Upgrading legacy peripherals to USB.
- Interface Microcontroller UART or I/O to USB.
- Interface FPGA or PLD to USB.
- USB Instrumentation PC interface.
- USB industrial control.
- USB password protected file transfers.

### 3.1 Driver Support

**Royalty free VIRTUAL COM PORT (VCP) and D2XX Direct Drivers** are available for the following Operating Systems (OS):

- Windows
- Linux
- Mac
- Android (J2xx / D2xx only)

See the following website link for the full driver support list including OS versions and legacy OS.

<https://ftdichip.com/drivers/>

**Virtual COM Port (VCP)** drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port.

**D2XX Direct Drivers** allow direct access to the USB device through a DLL. Application software can access the USB device through a series of DLL function calls. The functions available are listed in the [D2XX Programmer's Guide](#) document which is available from the [Documents](#) section of our website.

Please also refer to the [Installation Guides](#) webpage for details on how to install the drivers.

### 3.2 Features

- USB-RS485 converter cable provides a USB to RS485 serial interface with customised end connectors.
- Entire USB protocol handled by the electronics in the cable.
- EIA/TIA-485 communication interface with low power requirements.
- UART interface support for 7 or 8 data bits, 1 or 2 stop bits and odd / even / mark / space / no parity.
- Internal EEPROM with user writeable area.
- FTDI's royalty-free VCP allow for communication as a standard emulated COM port and D2XX 'direct' drivers provide DLL application programming interface.
- Visual indication of Tx and Rx traffic via LEDs in the transparent USB connector.
- X-On / X-Off software handshaking.
- Data transfer rates from 300 baud to 3 Mbaud.
- Support for FT232RQ FTDIChip-ID™ feature for improved security.
- Low USB bandwidth consumption.
- UHCI / OHCI / EHCI host controller compatible.
- USB 2.0 Full Speed compatible.
- -40°C to +85°C operating temperature range.
- Cable length is 1.80m or 5.0m.
- ESD Protection for RS-485 I/O's  
±15kV Human Body Model (HBM)  
±15kV EN61000-4-2 Air Gap Discharge  
±8kV EN61000-4-2 Contact Discharge
- FCC, UKCA, CE and RoHS compliant.
- Custom versions available on request (subject to MOQ).
- RoHS Compliant.

---

## 4 Features of FT232RQ applicable to USB-RS485 Cable

The USB-RS485 cable uses FTDI's FT232RQ USB to serial UART IC device. This section summarises the key features of the FT232RQ which apply to the USB-RS485 USB to serial RS485 converter cables. For further details, and a full features and enhancements description consult the FT232RQ datasheet. This is available from <https://ftdichip.com/>.

**Internal EEPROM.** The internal EEPROM in each cable is used to store USB Vendor ID (VID), Product ID (PID), device serial number, product description string and various other USB configuration descriptors. Each cable is supplied with the internal EEPROM pre-programmed as described in **Appendix A –Cable EEPROM Configuration**. The internal EEPROM descriptors can be programmed in circuit, over USB without any additional voltage requirement. It can be programmed using the FTDI utility software called [FT\\_PROG](#), which can be downloaded from [FTDI Utilities](#) on the FTDI website (<https://ftdichip.com/>). Additionally, there is a user area of the internal EEPROM available to system designers to allow storing of data (note that this is not modified by MPROG).

**Lower Operating and Suspend Current.** The FT232RQ has a low 15mA operating supply current and a very low USB suspend current of approximately 70µA. (Note that during suspend mode, the current drawn by any customised cable application which uses the USB supply, should not exceed 2.5mA to remain USB compliant).

**Low USB Bandwidth Consumption.** The USB interface of the FT232RQ, and therefore the USB-RS485 cables has been designed to use as little as possible of the total USB bandwidth available from the USB host controller.

**FTDICHIP-ID™.** The FT232RQ includes the new FTDICHIP-ID™ security dongle feature. This FTDICHIP-ID™ feature allows a unique number to be burnt into each cable during manufacture. This number cannot be reprogrammed. This number is only readable over USB can be used to form the basis of a security dongle which can be used to protect any customer application software being copied. This allows the possibility of using the USB-RS485 cables as a dongle for software licensing. Further to this, a renewable license scheme can be implemented based on the FTDICHIP-ID™ number when encrypted with other information. This encrypted number can be stored in the user area of the FT232RQ internal EEPROM, and can be decrypted, then compared with the protected FTDICHIP-ID™ to verify that a license is valid. Web based applications can be used to maintain product licensing this way. An application note, [AN232R-02](#), available from FTDI website (<https://ftdichip.com/>) describes this feature.

**Improved EMI Performance.** The USB-RS485 cables are FCC, UKCA and CE certified.

**Extended Operating Temperature Range.** The USB-RS485 cables are capable of operating over an extended temperature range of -40° to +85° C thus allowing them to be used in automotive or industrial applications.

## 5 USB-RS485-WE-LLLL-CU-X

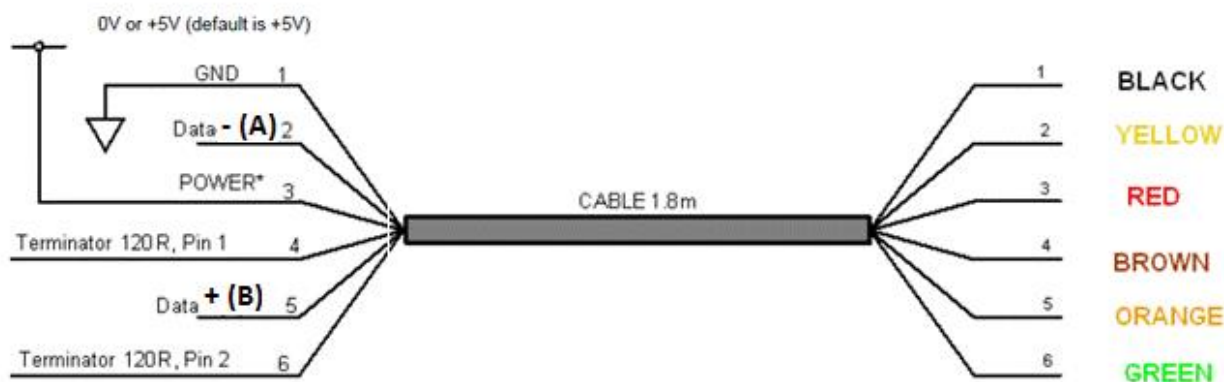
The USB-RS485-WE cable is un-terminated; it has bare and tinned wires.

The LLLL specifies the length of the cable in cm. The CU specifies the colour of the cable and the colour of the USB connector. The cable can be either Black or transparent. The USB connector comes default as transparent because of LED implemented inside the plug but can be sold in black colour as well. For simplicity, the LLLL and CU have been dropped from the following descriptions.

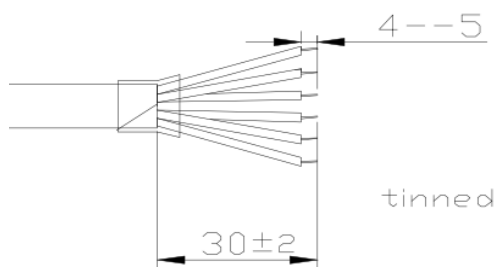
The cable outputs 5V power on the wire by default. This can be modified to output 0V power. The letter X in the part number indicates the output power selection.

### 5.1 USB-RS485-WE Connections and Mechanical Details

The following Figure 5.1 shows the cable signals and the wire colours for the signals on the USB-RS485-WE cable.



**Figure 5.1 USB-RS485-WE Connections**



**Figure 5.2 USB-RS485-WE Mechanical Details (dimensions in mm)**



**Figure 5.3 USB-RS485-WE Cable images**

## 5.2 USB-RS485-WE Cable Signal Descriptions

| Colour | Name         | Type         | Description                                                                                                                                                                                                                                                            |
|--------|--------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Black  | GND          | GND          | Device ground supply pin.                                                                                                                                                                                                                                              |
| Brown  | Terminator 1 | Input        | Pin 1 of 120R Terminating Resistor. Only Required if the USB-RS485-WE cable is the first or last device in a multi-drop RS485 System, to meet RS485 Termination Requirements.                                                                                          |
| Red    | POWER        | Output       | Default output is +5V when active, 0V during suspend. Power output can be customized to 0V, if required, contact FTDI Sales Team ( <a href="mailto:sales1@ftdichip.com">sales1@ftdichip.com</a> ). Switchable power to external device, 250mA max. OFF during suspend. |
| Orange | Data+(B)     | Bi-Direction | Data + RS-485 'B' Signal                                                                                                                                                                                                                                               |
| Yellow | Data-(A)     | Bi-Direction | Data - RS-485 'A' Signal                                                                                                                                                                                                                                               |
| Green  | Terminator 2 | Input        | Pin 2 of 120R Terminating Resistor. Only Required if the USB-RS485-WE cable is the first or last device in a multi-drop RS485 System, to meet RS485 Termination Requirements.                                                                                          |

**Table 5.1 USB-RS485-WE Cable Signal Descriptions**

## 5.3 USB-RS485-WE Electrical Parameters

| Parameter      | Description                 | Minimum | Typical | Maximum | Units | Conditions                                                                                                                                   |
|----------------|-----------------------------|---------|---------|---------|-------|----------------------------------------------------------------------------------------------------------------------------------------------|
| VCC_5V         | Output Power Voltage*       | 4.25    | 5.0*    | 5.25    | V     | This only applies when cable has been configured to output 5V. The range is dependent on the USB port that the USB-RS485-WE is connected to. |
| I <sub>o</sub> | Output Power Current***     | -       |         | 250     | mA    | Must be less than 2.5mA during suspend.                                                                                                      |
| T              | Operating Temperature Range | -40     |         | +85     | °C    |                                                                                                                                              |

**Table 5.2 USB-RS485-WE I/O Operating Parameters**

\*Default is 5V.

\*\*\*Only applies when POWER output is 5V.

| Parameter                 | Description                         | Minimum | Typical | Maximum | Units | Conditions                 |
|---------------------------|-------------------------------------|---------|---------|---------|-------|----------------------------|
| <b>Receiver Input</b>     |                                     |         |         |         |       |                            |
| VCM                       | Common-mode input voltage range     | -7      |         | +12     | V     |                            |
| IN                        | Input Current                       |         |         | 1.0     | mA    | VIN = +12V                 |
|                           |                                     |         |         | -0.8    |       | VIN = -7V                  |
| VTH                       | Differential Threshold Voltage, VTH | -0.2    |         | +0.2    | V     |                            |
| VIHYST                    | Input Hysteresis                    |         | 20      |         | mV    |                            |
| RIN                       | Input Resistance, RIN               | 12      | 15      |         | kΩ    |                            |
| <b>Transmitter Output</b> |                                     |         |         |         |       |                            |
| VOD                       | Differential Output Voltage, dVOD   | 1.5     |         | 5       | V     | With RL = 54Ω. CL = 50pF * |

**Table 5.3 USB-RS485-WE I/O Pin Characteristics**

\* - The 54 ohms is the equivalent of two 120 ohm termination resistors placed on each side of the transmission line and the input impedance of 32 receivers on the line.

| Description                 | Conditions                | Minimum | Typical | Maximum |
|-----------------------------|---------------------------|---------|---------|---------|
| ESD HBM                     | RS-485 Inputs and Outputs |         | ±15 kV  |         |
| EN61000-4-2ContactDischarge | RS-485 Inputs and Outputs |         | ±8 kV   |         |
| EN61000-4-2AirGapDischarge  | RS-485 Inputs and Outputs |         | ±15 kV  |         |

**Table 5.4 USB-RS485-WE ESD Tolerance**

## 5.4 Local Echo

RS485 systems often have local echo enabled. This means any data transmitted by a device is echoed back to itself.

The USB-RS485-WE cable allows for local echo to be enabled/disabled by changing a bit in the FT232RQ EEPROM. If CBUS4 in the EEPROM is set for "PWREN#" local echo is enabled. If CBUS4 in the EEPROM is set for "TXDEN" local echo is disabled.

Users can enable/disable the local echo setting with the [Echo Configuration Utility](#).

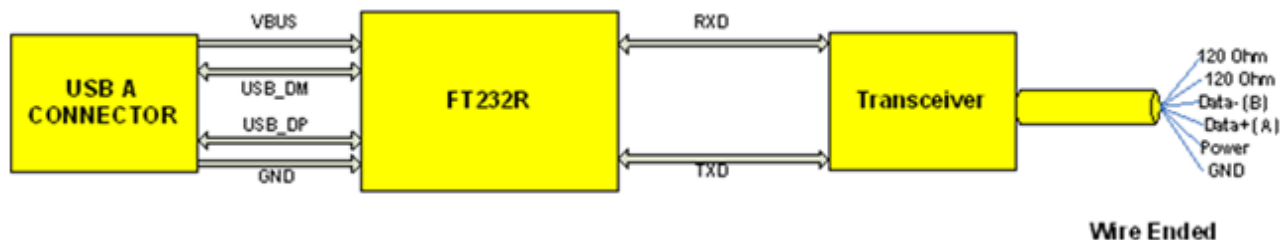
If required, other EEPROM settings (including local echo) can also be configured with the [FT\\_PROG](#) utility.

The default for the local echo is disabled (CBUS4 set for "TXDEN").

## 6 Cable PCB Block Diagram

The block diagram for the small internal electronic circuit board, utilising the FTDI FT232RQ, which is encapsulated into the USB connector end of the cable, is shown in Figure 6.1.

Customised versions of the cable are also available. Users interested in customised versions of these cables should contact [FTDI sales \(sales1@ftdichip.com\)](mailto:sales1@ftdichip.com).



**Figure 6.1 Block diagram of PCB Used in the USB to RS485 Serial Converter Cable**

Schematic for converter cable, USB-RS485 is shown below in Figure 7.1.



## 8 Contact Information

### Head Office – Glasgow, UK

Future Technology Devices International Limited  
Unit 1, 2 Seaward Place, Centurion Business Park  
Glasgow G41 1HH  
United Kingdom  
Tel: +44 (0) 141 429 2777  
Fax: +44 (0) 141 429 2758

E-mail (Sales) [sales1@ftdichip.com](mailto:sales1@ftdichip.com)  
E-mail (Support) [support1@ftdichip.com](mailto:support1@ftdichip.com)  
E-mail (General Enquiries) [admin1@ftdichip.com](mailto:admin1@ftdichip.com)

### Branch Office – Tigard, Oregon, USA

Future Technology Devices International Limited  
(USA)  
7130 SW Fir Loop  
Tigard, OR 97223  
USA  
Tel: +1 (503) 547 0988  
Fax: +1 (503) 547 0987

E-Mail (Sales) [us.sales@ftdichip.com](mailto:us.sales@ftdichip.com)  
E-Mail (Support) [us.support@ftdichip.com](mailto:us.support@ftdichip.com)  
E-Mail (General Enquiries) [us.admin@ftdichip.com](mailto:us.admin@ftdichip.com)

### Branch Office – Taipei, Taiwan

Future Technology Devices International Limited  
(Taiwan)  
2F, No. 516, Sec. 1, NeiHu Road  
Taipei 114  
Taiwan, R.O.C.  
Tel: +886 (0) 2 8797 1330  
Fax: +886 (0) 2 8751 9737

E-mail (Sales) [tw.sales1@ftdichip.com](mailto:tw.sales1@ftdichip.com)  
E-mail (Support) [tw.support1@ftdichip.com](mailto:tw.support1@ftdichip.com)  
E-mail (General Enquiries) [tw.admin1@ftdichip.com](mailto:tw.admin1@ftdichip.com)

### Branch Office – Shanghai, China

Future Technology Devices International Limited  
(China)  
Room 1103, No.666 West Huaihai Road,  
Shanghai, 200052  
China  
Tel: +86 21 62351596  
Fax: +86 21 62351595

E-mail (Sales) [cn.sales@ftdichip.com](mailto:cn.sales@ftdichip.com)  
E-mail (Support) [cn.support@ftdichip.com](mailto:cn.support@ftdichip.com)  
E-mail (General Enquiries) [cn.admin@ftdichip.com](mailto:cn.admin@ftdichip.com)

### Web Site

<http://ftdichip.com>

### Distributor and Sales Representatives

Please visit the Sales Network page of the [FTDI Web site](http://ftdichip.com) for the contact details of our distributor(s) and sales representative(s) in your country.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any Future Technology Devices International Ltd (FTDI) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested FTDI devices and other materials) is provided for reference only. While FTDI has taken care to assure it is accurate, this information is subject to customer confirmation, and FTDI disclaims all liability for system designs and for any applications assistance provided by FTDI. Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless FTDI from any and all damages, claims, suits or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. Future Technology Devices International Ltd, Unit 1, 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH, United Kingdom. Scotland Registered Company Number: SC136640

## Appendix A - Cable EEPROM Configuration

Each USB-RS485 cable is controlled by the FTDI FT232RQ IC. This FT232RQ device contains an EEPROM which contains the USB configuration descriptors for that device. When the cable is plugged into a PC or a USB reset is performed, the PC will read these descriptors. The default values stored into the internal EEPROM are defined in the table below.

| Parameter                         | Value       | Notes                                                                                                                                                         |
|-----------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USB Vendor ID (VID)               | 0403h       | FTDI default VID (hex)                                                                                                                                        |
| USB Product ID (PID)              | 6001h       | FTDI default PID (hex)                                                                                                                                        |
| Serial Number Enabled?            | Yes         |                                                                                                                                                               |
| Serial Number                     | See Note    | A unique serial number is generated and programmed into the EEPROM during device final test.                                                                  |
| Pull down I/O Pins in USB Suspend | Disabled    | Enabling this option will make the device pull down on the UART interface lines when the power is shut off (PWREN# is high).                                  |
| Manufacturer Name                 | FTDI        |                                                                                                                                                               |
| Product Description               | See note    | USB-RS485-WE                                                                                                                                                  |
| Max Bus Power Current             | 250mA       |                                                                                                                                                               |
| Power Source                      | Bus Powered |                                                                                                                                                               |
| Device Type                       | FT232R      |                                                                                                                                                               |
| USB Version                       | 0200        | Returns USB 2.0 device description to the host. Note: The device is a USB 2.0 Full Speed device (12Mb/s) as opposed to a USB 2.0 High Speed device (480Mb/s). |
| Remote Wake Up                    | Disabled    |                                                                                                                                                               |
| High Current I/Os                 | Enabled     | Enables the high drive level on the UART and CBUS I/O pins.                                                                                                   |
| Load VCP Driver                   | Enabled     | Makes the device load the VCP driver interface for the device.                                                                                                |
| Invert TXD                        | Disabled    | Signal on this pin becomes TXD# if enable.                                                                                                                    |
| Invert RXD                        | Disabled    | Signal on this pin becomes RXD# if enable.                                                                                                                    |
| Invert RTS#                       | Disabled    | Signal on this pin becomes RTS if enable.                                                                                                                     |
| Invert CTS#                       | Disabled    | Signal on this pin becomes CTS if enable.                                                                                                                     |

**Table 0.1 Default Internal EEPROM Configuration**

The internal EEPROM in the cable can be re-programmed over USB using the utility program [FT\\_PROG](#). FT\_PROG can be downloaded from <https://ftdichip.com/>. Version 2.8a or later is required for the FT232RQ chip. Users who do not have their own USB Vendor ID but who would like to use a unique Product ID in their design can apply to FTDI for a free block of unique PIDs. Contact FTDI support for this service.

---

## **Appendix B - List of Figures and Tables**

### **List of Figures**

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| Figure 1.1 Using the USB-RS485 Cable.....                                             | 2  |
| Figure 5.1 USB-RS485-WE Connections.....                                              | 7  |
| Figure 5.2 USB-RS485-WE Mechanical Details (dimensions in mm) .....                   | 7  |
| Figure 5.3 USB-RS485-WE Cable images .....                                            | 7  |
| Figure 6.1 Block diagram of PCB Used in the USB to RS485 Serial Converter Cable ..... | 10 |
| Figure 7.1 Schematic of USB-RS485 Converter Cable .....                               | 11 |

### **List of Tables**

|                                                                |    |
|----------------------------------------------------------------|----|
| Table 2.1 USB-RS485 Cables Descriptions and Part Numbers ..... | 3  |
| Table 5.1 USB-RS485-WE Cable Signal Descriptions .....         | 8  |
| Table 5.2 USB-RS485-WE I/O Operating Parameters.....           | 8  |
| Table 5.3 USB-RS485-WE I/O Pin Characteristics .....           | 9  |
| Table 5.4 USB-RS485-WE ESD Tolerance.....                      | 9  |
| Table 0.1 Default Internal EEPROM Configuration .....          | 13 |

## Appendix C - Revision History

Document Title: USB TO RS485 SERIAL CONVERTER CABLE Datasheet  
Document Reference No.: FT\_000117  
Clearance No.: FTDI #75  
Product Page: [Cables](#)  
Document Feedback: [Send Feedback](#)

| Revision      | Changes                                                                                                                                                   | Date         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Version Draft | First Draft                                                                                                                                               | January 2009 |
| Version 1.0   | First Release                                                                                                                                             | 11-02-2009   |
| Version 1.1   | Added and corrected images                                                                                                                                | 14-05-2009   |
| Version 1.2   | Corrected default state of the power pin<br>Added Windows 7 64-bit<br>Added Description – Length of the cable/wire recommendations                        | 29-10-2009   |
| Version 1.3   | Changed TT to BT (Transparent to Black cable)                                                                                                             | 18-12-2009   |
| Version 1.4   | Edited figure 5.1, 6.1 and table 5.1 , signals A Data +ve and B Data -ve<br>Added FCC Certification details<br>Added section 2.1 USB Compliant Logo       | 27-07-2010   |
| Version 1.5   | Added UKCA compliance. Updated part number to FT232RQ.<br>Added USB-RS485-WE-5000-BT part number and tolerance note.<br>Updated driver support and links. | 14-07-2023   |