

Future Technology Devices International Ltd

Datasheet Chipi-X Cable



Chipi-X is a USB to full-handshake RS232 cable with a male DB9 connector. This cable is available with or without an enclosure.

1 Introduction

The Chipi-X cable is a USB to RS232 level full-handshake UART cable. Chipi-X utilises FTDI's [FT231XS](#) USB to full-handshake UART IC and FT3243S RS232 transceiver IC. A male DB9 (aka DE9) connector provides the connectivity for RS232 communications and a USB-A plug tethered by a 10cm cable to the PCB provides connectivity for USB communications.

All components used are Pb-free (RoHS compliant).

1.1 Features

- Entire USB protocol handled on the FT231XS chip
- FTDI's royalty-free VCP and D2XX drivers eliminate the requirement for USB driver development in most cases
- UART interface support for 7 or 8 data bits, 1 or 2 stop bits and odd / even / mark / space / no parity
- Fully assisted hardware or X-On / X-Off software handshaking
- Data transfer rates from 300 baud to 250 kilo-baud at RS232 voltage levels
- 512 byte receive buffer and 512 byte transmit buffer utilising buffer smoothing technology to allow for high data throughput
- Adjustable receive buffer timeout
- ESD protection on RS232 I/Os exceeding $\pm 15\text{kV}$ IEC1000-4-2 Air Gap Discharge, $\pm 15\text{kV}$ for Human Body Mode (HBM) and $\pm 8\text{kV}$ IEC1000-4-2 Contact Discharge
- ESD protection on USB lines exceeding $\pm 2\text{kV}$ for Human Body Mode (HBM), $\pm 200\text{V}$ for Machine Mode (MM) and $\pm 500\text{V}$ for Charged Device Mode (CDM)
- Integrated MTP-ROM for storing USB VID, PID, serial number and product description strings
- Low operating and USB suspend current
- Low USB bandwidth consumption
- USB 2.0 Full Speed compatible
- -40°C to 85°C extended operating temperature range
- Latch-up Free



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2 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 via our website.

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

3 Ordering Information

Part Number	Description
Chipi-X	Generic part number, no part assigned to this part number.
CHIPI-X10	USB to RS232 converter with a 10cm cable and an enclosure.

Table 3.1 – Chipi-X Ordering Information

4 Certifications

The Chipi-X cables are fully RoHS compliant as well as CE, UKCA and FCC certified.



5 Functional Description

5.1 Block Diagram

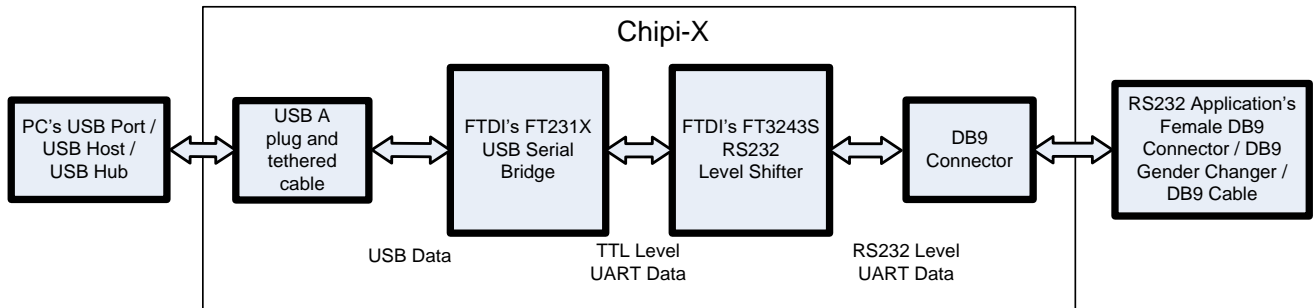


Figure 5.1 – Chipi-X Block Diagram

5.2 Electrical Details

Parameter	Description	Minimum	Typical	Maximum	Units	Conditions
Vtrans	Transmitter output voltage swing	+/- 5	+/- 6.5	+/- 15	V	
Vrec	Receiver input voltage range	-25		+25	V	

Table 5.1 – Chipi-X I/O Characteristics

Description	Conditions	Minimum	Typical	Maximum
ESD HBM	RS-232 Inputs and Outputs		±15 kV	
EN61000-4-2ContactDischarge	RS-232 Inputs and Outputs		±8 kV	
EN61000-4-2AirGapDischarge	RS-232 Inputs and Outputs		±15 kV	

Table 5.2 – Chipi-X ESD Tolerance

6 Chipi-X Signals and Pin Out

6.1 RS232 Signals

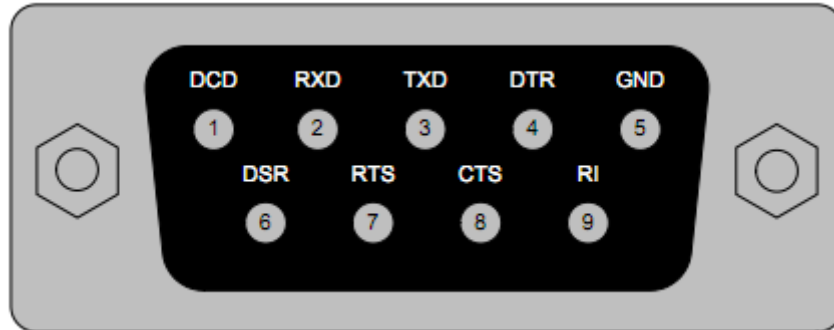


Figure 6.1 – Chipi-X DB9 Pin Out

DB9 pin No.	Name	Type	Description
1	DCD	Input	Data Carrier Detect control input.
2	RXD	Input	Receive Asynchronous Data input.
3	TXD	Output	Transmit Asynchronous Data output.
4	DTR	Output	Handshake signal: Data Terminal Ready control output.
5	GND	Ground	Device ground supply pin
6	DSR	Input	Handshake signal: Data Set Ready control input
7	RTS	Output	Handshake signal: Request To Send Control Output
8	CTS	Input	Handshake signal: Clear to Send Control input
9	RI	Input	Ring Indicator control input. When remote wakeup is enabled in the FT231XS's internal MTP-ROM taking RI# low can be used to resume the PC USB host controller from suspend.

Table 6.1 – Chipi-X RS232 Signals

6.2 USB Signals

Wire Colour.	Name	Type	Description
Red	VBUS	Power	5V power.
White	DM	Signal	USB data.
Green	DP	Signal	USB data.
Black	GND	Ground	Ground.
Black (longer wire)	Shield	Shield	Cable shield.

Table 6.2 – Chipi-X USB Lines

7 Module Dimensions

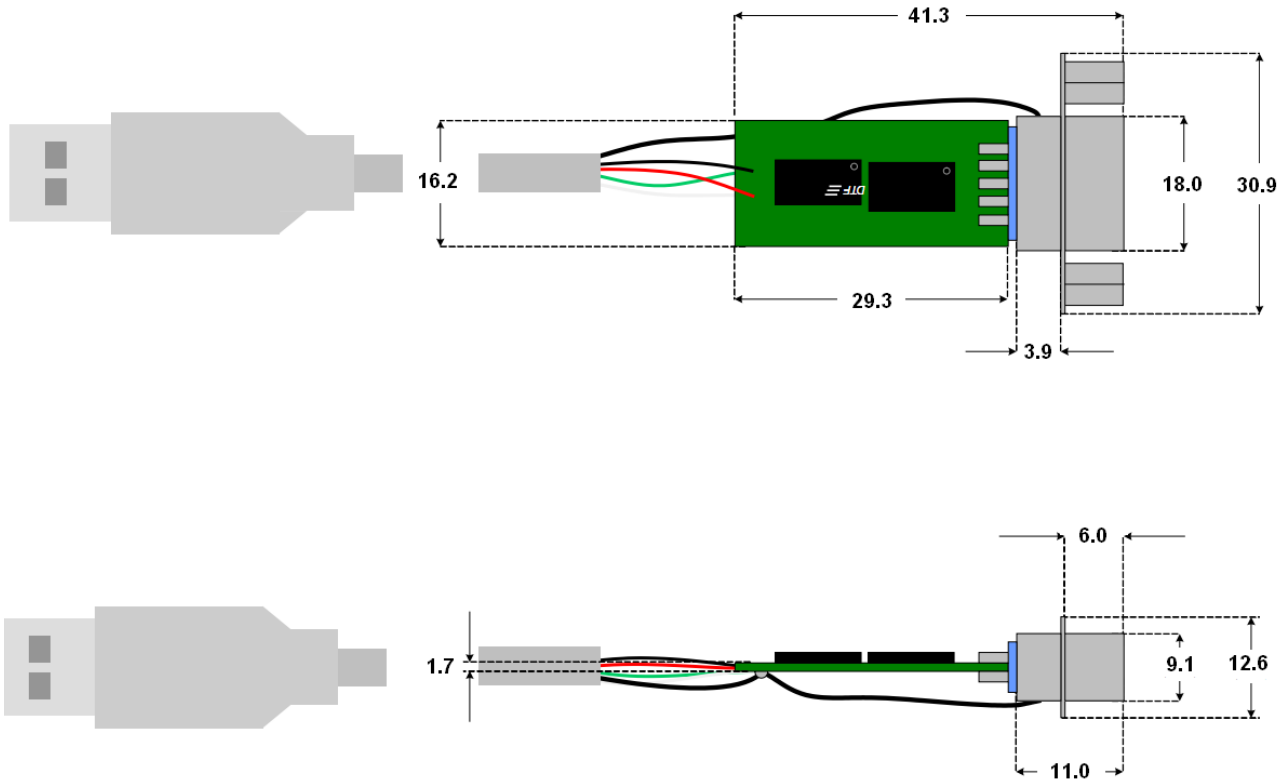


Figure 7.1 – Chipi-X Dimensions

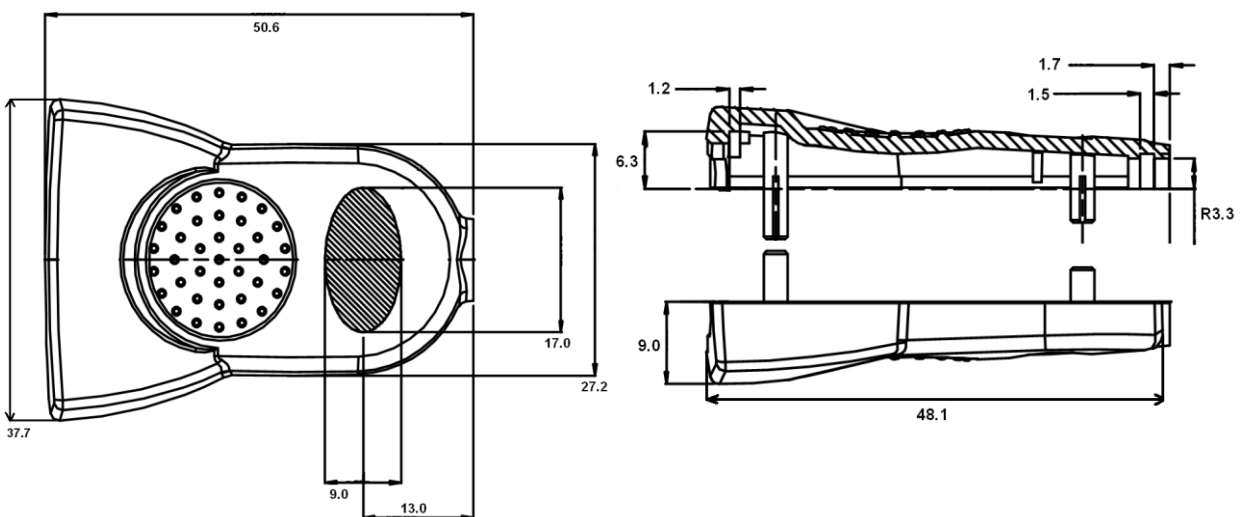


Figure 7.2 – Enclosure Dimensions

All dimensions are given in millimetres.

Chipi-X cables only use lead free components, and are fully compliant with European Union directive 2002/95/EC.

8 Chipi-X Circuit Schematic

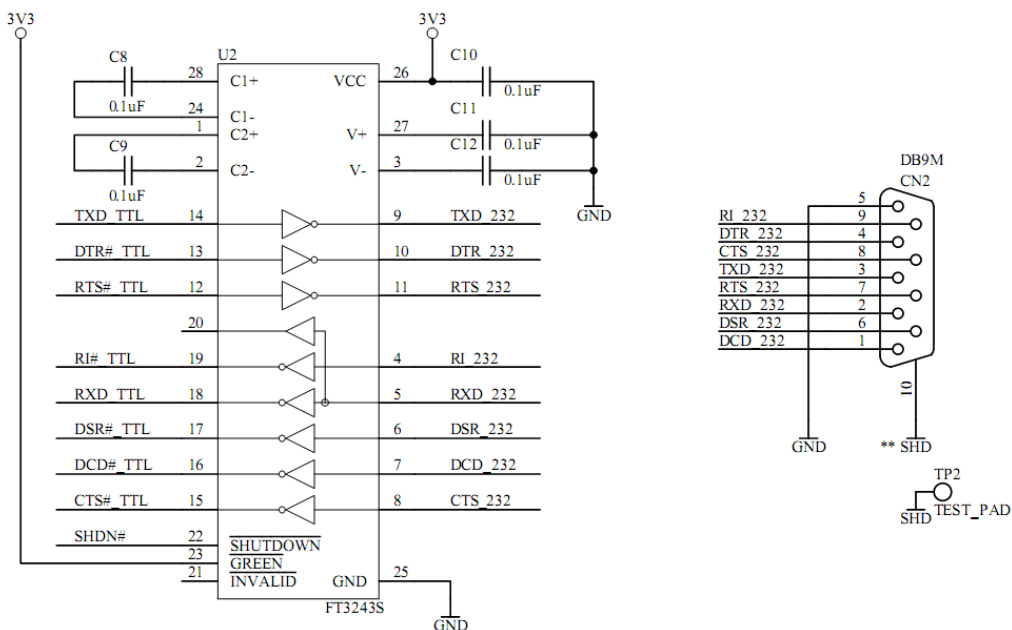
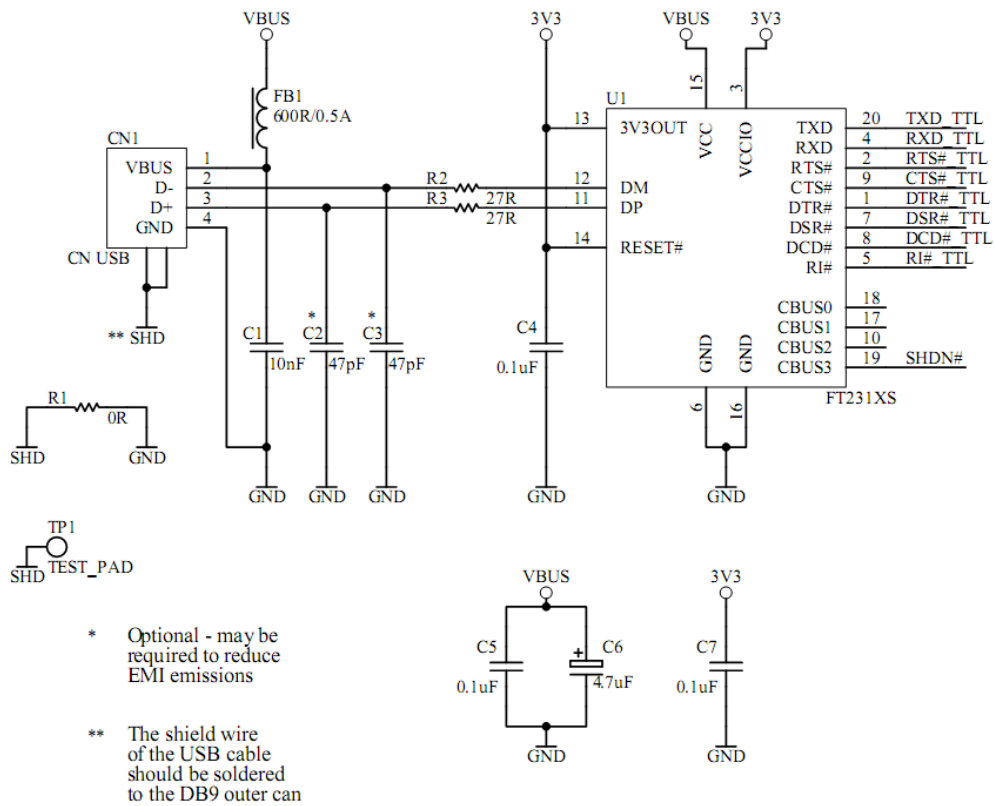


Figure 8.1 – Chipi-X Circuit Schematic

9 Internal MTP ROM Configuration

Following a power-on reset or a USB reset the FT231X will scan its internal MTP ROM and read the USB configuration descriptors stored there. The default values programmed into the internal MTP ROM in the FT231XS used on the Chipi-X are shown in Table 9.1.

Parameter	Value	Notes
USB Vendor ID (VID)	0403h	FTDI default VID (hex)
USB Product ID (PID)	6015h	FTDI default PID (hex)
Serial Number Enabled?	Yes	
Serial Number	See Note	A unique serial number is generated and programmed into the MTP ROM during final test of the UM232R module.
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	Chipi-X	
Max Bus Power Current	90mA	
Power Source	Bus Powered	
Device Type	FT231X	
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	Enabled	Taking RI# low will wake up the USB host controller from suspend.
High Current I/Os	Disabled	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.
CBUS0	Tristate	
CBUS1	Tristate	
CBUS2	Tristate	
CBUS3	SLEEP#	
Invert UART	Disabled	Signal on this pin becomes TXD# if enable.

Table 9.1 – Default Internal MTP ROM Configuration

The internal MTP ROM in the FT231X can be programmed over USB using the utility program [FT_PROG](#). FT_PROG can be downloaded from <https://ftdichip.com/>. 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 via support1@ftdichip.com for this service, also see [TN_100](#) and [TN_101](#).

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Appendix B – Revision History

Document Title: DS_CHIPI-X
Document Reference No.: FT_000634
Clearance No.: FTDI# 288
Product Page: [Chipi-X10](#)
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
Version 1.0	Initial Datasheet Released	14-03-2012
Version 1.1	Correct typo on page 1	07-06-2016
Version 1.2	Added UKCA compliance and logos. Updated driver section and links.	07-07-2023