Future Technology Devices International Ltd

USB NMC-2.5m

USB to USB Null Modem Cable

Datasheet

1 Description

The USB-to-USB Null Modem Cable is a modern replacement for the traditional serial null modem cable. The traditional null modem cable was used to connect two PCs via their RS232 serial ports, but fewer modern PCs continue to implement the RS232 serial port.

The RS232 port has almost entirely been replaced by the USB port. However, there is still a need to transfer files between PCs that are not networked.

The FTDI USB Null Modem Cable (NMC) solves this problem and allows a user to connect two PCs using their USB ports. The user can then perform file transfers between the PCs via the USB interface.

The NMC cable contains a small internal electronic circuit board encapsulated into the USB connector at both ends of the cable. The electronics is based on the FTDI FT232RQ USB to Serial UART IC and handles all the USB signalling and protocols. The FT232RQ datasheet, DS_FT232R, is available at https://ftdichip.com/.

The NMC cable is a USB powered, USB 2.0 full speed compatible, 2.5m cable which supports data transfer rate up to 3 Mbaud at TTL levels. The NMC cable supports the FTDIChip-ID™, with each cable end programmed with a unique USB serial number. This can be used to create security or password protected file transfer between PCs. Further information and examples on this feature are available at https://ftdichip.com/ under FTDIChip-ID Projects.

The cable requires USB drivers, available free from https://ftdichip.com/, which are used to make the FT232RQ within the cable ends 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 (TTY). Another FTDI USB driver, the D2XX driver, can also be used with application software to directly access the FT232RQ though a DLL. This is illustrated in the Figure 1-1:
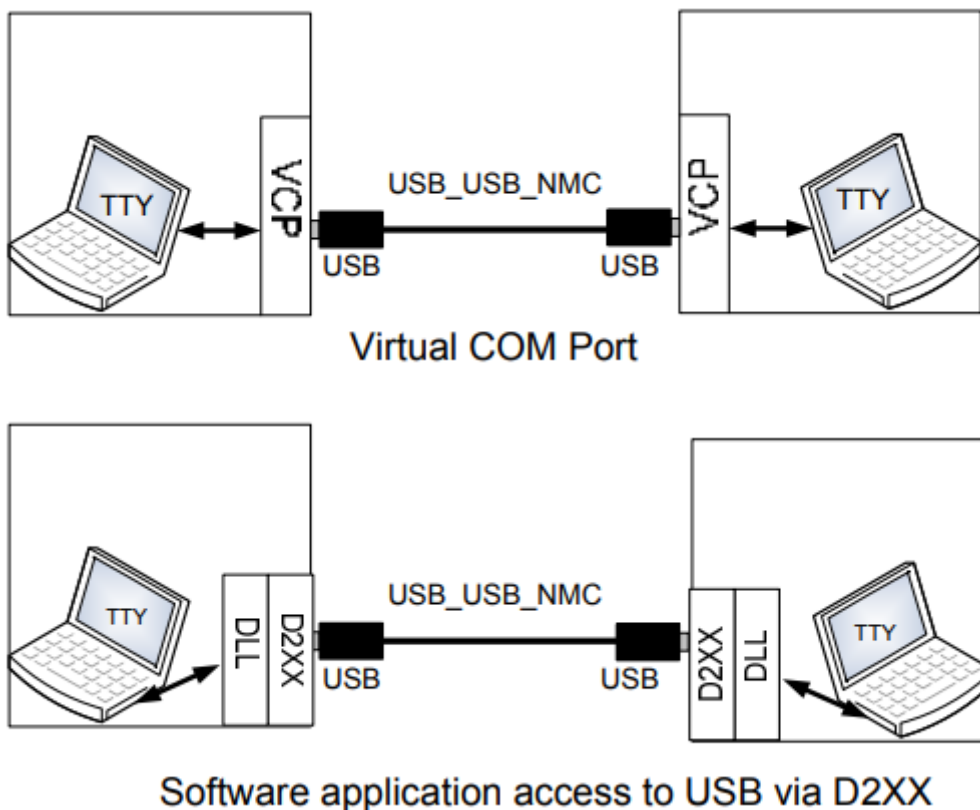

Figure 1-1 Using the USB NMC-2.5m Cable

1.1   Certifications

The FTDI USB to USB Null Modem Cable is fully RoHS compliant as well as CE, UKCA and FCC certified.

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2   Typical Applications

- PC to PC networking using USB port.
- File transfer between PCs.
- Password protected file transfer between PCs.

2.1   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.

2.2   Features

The USB NMC has the following features:

• USB powered – no external power supply needed.

• Based on back-to-back FTDI FT232RQ devices.

• Entire USB protocol handled by USB connector encapsulated electronics.

• USB Type A connector on both ends of cable.

• Data transfer rates from 300 baud to 3 Mbaud at TTL levels.

• Lower Operating (20mA) and USB suspend mode current (70µA).

• Improved EMI Performance – FCC, UKCA and CE compliant.

• Supports FT232RQ FTDIChip-ID™, with each cable end programmed with a unique USB serial number.

• Support for USB suspend and resume.

• UHCI / OHCI / EHCI host controller compatible.

• USB 2.0 Full Speed compatible.

• Custom versions also available (subject to MOQ).

• -40°C to +85° C operating temperature range.

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Web Site

http://ftdichip.com

Distributor and Sales Representatives

Please visit the Sales Network page of the FTDI Web site for the contact details of our distributor(s) and sales representative(s) in your country.

Appendix A - Cable EEPROM Configuration

Each end of the NMC 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 UD (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	USB Null Modem Cable	
Max Bus Power Current	90mA	
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 Hi-Speed device (480Mb/s).
Remote Wake Up	Disabled	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	Disabled	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 cable EEPROM in the cable can be re-programmed over USB using the utility program FT PROG which can be downloaded from https://ftdichip.com/.

Appendix B - References

Document References

[FT232R Datasheet](#)

Acronyms & Abbreviations

Terms	Description
DLL	Dynamic Link Library
EHCI	Enhanced Host Controller Interface
EEPROM	Electrically Erasable Programmable Read Only Memory
IC	Integrated Circuit
RoHS	Restriction of Hazardous Substance
OHCI	Open Host Controller Interface
TTL	Transistor-Transistor Logic
USB	Universal Serial Bus
UART	Universal Asynchronous Receiver/Transmitter
UHCI	Universal Host Controller Interface

Appendix C – List of Figures and Tables

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Appendix D – Revision History

Document Title: USB NMC-2.5m USB to USB Null Modem Cable Datasheet

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Document Feedback: Send Feedback

Revision	Changes	Date
Version 1.0	Full datasheet released	July 2008
Version 1.1	Document template updated. Added UKCA compliance and updated driver section and links.	25-07-2023