



Future Technology Devices International Ltd

USB NMC-2.5m

USB to USB Null Modem Cable

Datasheet

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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 The RS232 port has almost entirely been replaced by the USB port.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 FT232R USB to Serial UART IC and handles all the USB signalling and protocols. The FT232R datasheet, DS_FT232R, is available at <http://www.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 <http://www.ftdichip.com> under FTDIChip-ID Projects.

The cable requires USB drivers, available free from <http://www.ftdichip.com>, which are used to make the FT232R 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 FT232R through a DLL. This is illustrated in the **Figure 1.1**:

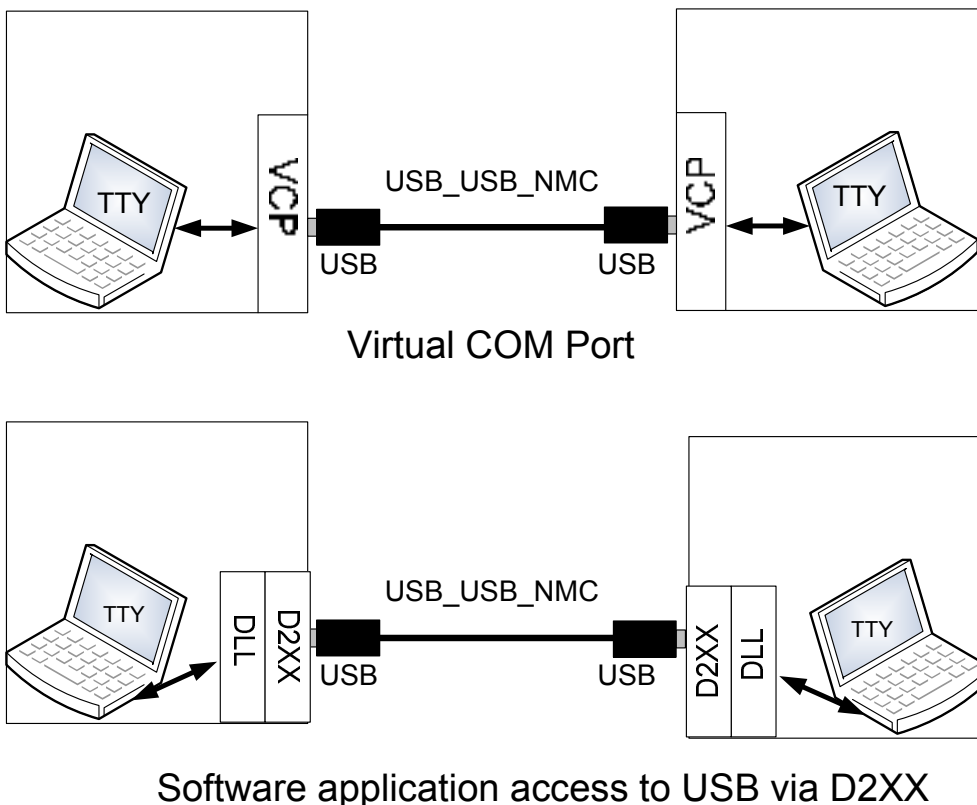


Figure 1.1 USB to USB Null Modem Cable Example

The NMC maximum operating current is 20mA (per USB connector), with a very small USB suspend current (70µA).

The cable is fully FCC and CE compliant and operates over an extended temperature range.

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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) DRIVERS for...

- Windows 98, 98SE, ME, 2000, Server 2003, XP and Server 2008
- Windows XP and XP 64-bit
- Windows Vista and Vista 64-bit
- Windows XP Embedded
- Windows CE 4.2, 5.0 and 6.0
- Mac OS 8/9, OS-X
- Linux 2.4 and greater

Royalty free D2XX *Direct* Drivers (USB Drivers + DLL S/W Interface)

- Windows 98, 98SE, ME, 2000, Server 2003, XP and Server 2008
- Windows XP and XP 64-bit
- Windows Vista and Vista 64-bit
- Windows XP Embedded
- Windows CE 4.2, 5.0 and 6.0
- Linux 2.4 and greater

The drivers listed above are all available to download for free from www.ftdichip.com. Various 3rd Party Drivers are also available for various other operating systems - see www.ftdichip.com for details.

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 and CE compliant.
- Supports FT232R 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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Appendix A - FT232R EEPROM Configuration

Each end of the NMC cable is controlled by the FTDI FT232R IC. This FT232R 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 Error! Reference source not found..

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 be 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	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 3.1 Default Internal EEPROM Configuration

The internal EEPROM in the FT232R can be re-programmed over USB using the utility program MPROG. MPROG can be downloaded from the www.ftdichip.com. Version 2.8a or later is required for the FT232R 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 - Revision History

Version 1.00 Full datasheet released

July 2008

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