



Future Technology Devices International Ltd.

VPROG VNC1L Reflasher Application Manual

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1 VPROG VNC1L Reflasher

The <u>FTDI Vinculum VNC1L-1A device</u> is an embedded USB host controller with a Flash based microcontroller. It is possible to reprogram the Flash memory with new firmware via the UART interface using the VNC1L-1A's internal bootloader.

The VPROG application provided on the <u>Vinculum web site</u> can be used to reprogram the VNC1L-1A with new firmware in this way.

1.1 VPROG VNC1L Reflasher Application

The VPROG application can be used to reprogram the Flash memory of the VNC1L-1A and is available as a free <u>download from the Vinculum web site</u>. VPROG requires an <u>FTDI 232 (USB-UART) device</u> using the <u>Windows CDM (D2XX) drivers</u>. It is possible to use other devices with a UART, but these will require a different application which must be written by the developer.

To reprogram the VNC1L Flash memory, perform the following steps:

- If required, use jumpers to enable the bootloader in the VNC1L device. See the hardware considerations is section for more information on this.
- Connect the FTDI 232-based reprogramming interface to the PC and install the CDM (D2XX) drivers.
- Download VPROG from the Vinculum web site downloads page.
- Download the required firmware from the Vinculum web site downloads page.
- Run VPROG.exe.

😻 VPROG VNC1L-1A Flash Programmer	
Select a device: I v Selected File:	ROM File Program

• Click on the drop down box and select the description of the FTDI 232 device being used to reprogram the Vinculum device.

👽 VPROG VNC1L-1A Flash Programmer	×
Select a device: UM232R Selected File:	ROM File Program

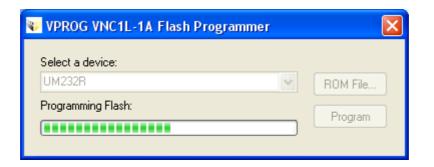
• Click the "ROM File..." button and browse to the ROM file to be programmed into the VNC1L.

Open			? 🗙
Look jn:	🛅 Firmware 🔽 G) 🤣 📂 🛄-	
My Recent Documents	WDIFFUL_V01-10.ROM		
Desktop			
My Documents			
My Computer			
	File name: VDIFFUL_V01-10.ROM	•	<u>O</u> pen
My Network	Files of type: ROM Files (*.ROM)	• (Cancel

• Once a file is selected, the file path is displayed on the form. If a valid ROM file has been chosen and an FT232 has been selected, the device may be reprogrammed. Click "Program" to reprogram the VNC1L.

😻 VPROG VNC1L-1A Flash Programmer	X
Select a device:	ROM File
Selected File: C:\Firmware\VDIFFUL_V01-10.ROM	Program

• A progress bar indicates how much of the reprogramming process is complete.



• A second progress bar is displayed while verifying the Flash memory.

😻 VPROG VNC1L-1A Flash Programmer	
Select a device:	ROM File
Verifying Flash:	Program

• A message box is displayed at the end indicating that the reprogramming has completed and was successful.

Inform	ation 🛛 🔀
į)	VNC1L-1A Flash reprogrammed and verified.
	ок

1.2 VPROG VNC1L Reflasher Hardware Considerations

In order for the VNC1L to be reprogrammed, the device must be powered up with its bootloader active. This is done by powering the chip up with the PROG# pin tied low. The PROG# pin may be controlled in two ways:

- Manually by a jumper
- FT232R CBUS pins can be used to programatically set the VNC1L chip into program mode

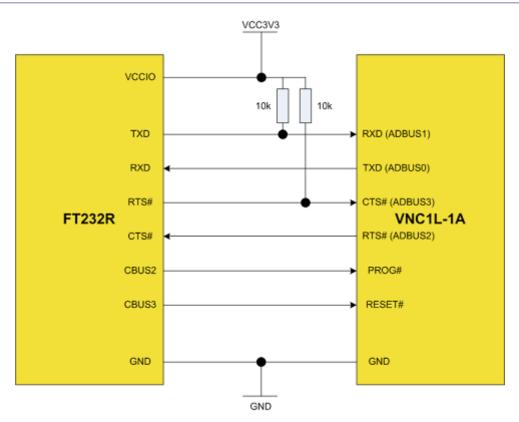
NOTE: If the firmware in the VNC1L should become corrupted, the device is only recoverable via the UART and bootloader. All VNC1L designs should provide access to the UART, PROG# and RESET# pins to allow for device recovery.

The VPROG application attempts to set program mode using CBUS2 of an FT232R device (connected to PROG# on the VNC1L) and then reset the VNC1L to run mode using CBUS3 (connected to RESET# on the VNC1L). For the PROG# pin to be controlled programatically, the FT232R device is required because it uses the CBUS bit bang mode which is only available on the FT232R. Other FTDI USB-serial devices may be used to reprogram the VNC1L using the VNC1L Reflasher application, but program mode must be set using a jumper.

To use CBUS bit bang mode on the FT232R it must be enabled in the EEPROM (see <u>AN232R-01 Bit Bang Modes for the FT232R and FT245R</u>). An example suitable MProg configuration for an FT232R device to be used in this way is shown below. MProg is available as a <u>free download from the FTDI web site</u>.

MProg - Multi Device EEPROM Prog File Device Tools Help	rammer (Edit Mode)	×
	₽ ₫ ≠ ? 0	
Basic Details Device Type FT232R USB VID / PID FTDI Default Vendor ID 0403 Product ID 6001 BM / C Device Specific Options USB Version Number USB 2.0 Disable USB Serial Number Pull Down IO Pins in USB Suspend	USB Power Options Bus Powered Self Powered USB Serial Number Control Serial Number Prefix (2 digits) FT Use Fixed Serial Number Fixed Serial Number (8 digits) FTP1W65N USB Remote Wake Up Enable USB Remote Wake Up Plug & Play (FT232 Series Only) Enable Plug And Play	FT2232C Options FT232R Invert RS232 Signals Invert TXD Invert RXD Invert RXD Invert RXB Invert CTS# Invert DTR# Invert DCD# Invert RI# I/O Controls TXDEN C0 TXDEN C1 I/O Mode C2
Product and Manufacturer Descriptor String Manufacturer Product Descriptio FTDI UM232R		I/O Mode
Programming Options Only Program Blank Devices		High Current I/O's

An example block diagram of how to connect an FT232R device to the VNC1L is shown below.



2 Revision History

Version 1.0 **Release Date**

September 2006

Comments Initial release

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Please visit the <u>Sales Network</u> page of the <u>FTDI web site</u> for the contact details of our distributor(s) in your country.

4 Disclaimer

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This document provides preliminary information that may be subject to change without notice.

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