



**Future Technology Devices International Ltd.**

**Technical Note**

**TN\_133**

**Vinculum II Toolchain Release Notes**

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**Release Notes for the Vinculum II Toolchain Version 2.0.0**

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## 1 Introduction

This document contains the release notes for the Vinculum II Toolchain Version 2.0.0.

### 1.1 Overview

This document is based on the information contained in the ReadMe.txt file installed with the Vinculum-II Toolchain. Additionally recent additions and updates to that file have been included.

Sections added since the publication of the Toolchain are shown with a vertical bar on the left of the text. Any text removed or superseded is shown in ~~strikeout~~.

### 1.2 Scope

This document applies to the Version 2.0.0 release.

#### 1.2.1 Features

The Version 2.0.0 release was made on 9<sup>th</sup> May 2012.

#### 1.2.2 Enhancement

The main changes are to the VinIDE development environment. A new editor component has been used and improvements have been made to debugging interface. Bug fixes have been made for the command line compiler and assembler tools. A new build environment is also included (VinBuild.exe) which has been integrated into the IDE.

There are incremental improvements to the firmware libraries and samples.

---

## 2 Readme File for V2.0.0.

The following changes have been made from the published ReadMe-V2.0.0.txt file in the toolchain installer.

- Files added to a FAT16 root directory may not appear correctly in the directory table on disks with less than 16 sectors per cluster. This does not affect FAT32 volumes or any non-root directory.

The information in this file and previous release notes are available in the installation directory of the Vinculum II Toolchain.

### Toolchain Release Information

This is Version 2.0.0 release of the Vinculum II Toolchain, comprising the Vinculum II Integrated Development Environment, compiler tools, debugger, kernel, device drivers, libraries and sample code.

New to this release is a new editor and interface changes for the Integrated Development Environment.

### 2.1 Frequently asked questions:

- Sample applications are written to a folder with the same name as the release version in the "FTDI\Firmware\Samples\" folder in the user's "My Documents" directory to prevent overwriting of modified existing samples. If any samples will be overwritten the installer will prompt first.
- The linker will always generate a .map file with the symbols and functions in the application. It will not list symbols and functions in the libraries.
- There is no listing file generated by the linker.
- The FT\_PROG utility has been updated to program the VNC2 - the minimum Version required is V1.12.
- Breakpoints are disabled in the following circumstances: The first 3 active breakpoints are used when the debugger is started, remaining breakpoints are disabled. Breakpoints which are on a line with no valid code are disabled. A message will be displayed in the Messages Panel informing you of any breakpoints that are disabled.
- Floating point is not supported.
- If the IDE reports "The System cannot find the specified file" for a library or header file then please check that the VINC\_INCLUDE and VINL\_INCLUDE environment variables point to the correct directory. There should be four entries in each pointing to the Firmware folder in the toolchain installation directory.
- If the IDE reports "VinBuild.exe failed with return code 0" or "Could not run VinBuild.exe. Check program exists on PATH environment variable." when compiling code please check that the Vinculum II tools are installed and accessible through the PATH environment variable.

We welcome suggestions for new features or improvements to existing features.

Please see the release notes for each tool which will be available in a file called "ReadMe.txt" in the Start Menu folder. The ReadMe files for previous releases are also available in the installation directory.

### 2.2 VinAsm Readme

#### Fixed Issues:

- Issue with many switch/case statements in a file causing an exception fixed.

#### Restrictions:

- N/A

#### Known bugs:

- N/A

#### Feature requests:

- N/A

---

## 2.3 VinC Readme

### Fixed issues:

- Corrected issue with switch statement where default was the first case.
- Fixed optimisation error when the return value of a function was not assigned to a variable in an else statement if the same variable was assigned a constant in the matching if statement.
- Corrected handling of errors in preprocessor and linker when called from the compiler to return a valid compiler error code.
- Modified type mismatch warning criteria to exclude assigns involving enumerated values.
- Fixed function call parameters type mismatch warning criteria to treat int and long type the same.
- Fixed variable information for debugger not being outputted for local array.

### Restrictions:

- Floating point not supported.
- Structs and unions may not be passed to or returned from a function. Pointers to structs and unions are allowed.
- Vacuous declarations of structures and unions is not supported.
- Structure and union assignments not supported.
- Anonymous aggregates, unnamed members in unions, are not supported.
- Compound literals expressions are not supported.
- Modulus operations treat signed values as unsigned values. Do not use with negative values.

### Known bugs:

- Function pointer definitions may not be used in function declarations or prototypes.
- Adding normal variables to ROM pointers using pointer arithmetic results in the normal variable being treated as a number of words rather than bytes.
- Compiler error generated when assigning the address a ROM pointers to a normal variable.
- Labels are generated in file scope rather than function scope so duplicate label warning can be issued incorrectly.
- Structure assignment works correctly only when size of the structure is not greater than int size (32 bits).
- Pointer addition with structure members using '+=' operator gives incorrect result.
- Error message needs to change when a structure or union is passed as argument to function. Currently it will report a type mismatch error.
- Pointer subtraction with structure members incorrect.
- Using arrays to dereference pointers does not work with int data type (high word is not copied).
- No error reported if a structure member is defined using an illegal typedef.
- Bug when initialising nested structures using nested data.

### Feature requests:

- Full ANSI compliance.

## 2.4 VinCpp Readme

### Fixed Issues:

- No changes in this release.

### Restrictions:

- N/A

### Known bugs:

- 
- Variadic macro expansion to a NULL macro causes a "P4001 argument mismatch" error.

```
#if 0
#define debug_msg(...) printf(__VA_ARGS__) // works
#else
#define debug_msg(...)          // fails
#endif
```

Feature requests:

- N/A

## 2.5 VinL Readme

Fixed Issues:

- No changes in this release.

Restrictions:

- Unused code removal can only be used with user generated code (obj files) and not with libraries (a files).

Known bugs:

- N/A

Feature requests:

- N/A

## 2.6 VinIDE Readme

Fixed Issues:

- New editor component based on Scintilla. Many improvements to the behaviour and appearance of the editor.
- Added option to Find in All Files of project or directory.
- Thread Manager fix for missing thread information with certain applications.
- Uses external build subsystem (VinBuild.exe) to compile.
- Paths to tools removed from Program Options.
- All build operations are performed in the background.
- Fix disabling and enabling toolbar and quick access bar buttons.
- Correct date format on properties window to show format from current locale.
- Flash operation will request to rebuild application if files or project have been modified.
- Start Debugging operation will request to rebuild application if files or project have been modified and reflash ROM if necessary.
- Virtual folders now always appear correctly in Project Manager window.
- Application project file information shown in Properties Window when root entry is selected in Project Manager window.
- Keyboard shortcut handling improved.
- Modifying files in the Editor is suspended during build, flash and debugging operations. Non-project files may still be modified at these times.
- Added optional version number information into Project Options. This can be used for versioning a ROM file with the VinUser.exe utility during the build process.
- Implemented copy function for Main Watch Window, Local Watch Window, Thread Manager and Memory Window.
- Can double click on Menu Tabs to auto-hide the menu buttons.

- 
- Watch windows report the address of variables in a dedicated column.

#### Restrictions:

- Verify function will only work with Program Loader V1.7 and above. Please contact support for further information on obtaining this update. The IDE will report an error box saying "Cannot verify flash contents! Use latest version of the program loader."  
Cannot add a file with the same name as an existing file in the Project Manager, even if it is in a different directory and stored in a virtual folder.
- Conditional code compilation will recompile all sources if header files are modified.
- Only one instance of the IDE may access the debugger interface at any one time. If multiple instances of the IDE are to be opened then only one may have a value other than "No Debugger" in the Debugger Interface box.
- App Wizard will not delete any thread function declarations for threads which have been modified. If parameters or the name of a thread function have been modified then a new function declaration is made.

#### Known bugs:

- Flashing a ROM file then immediately verifying may result in an Internal Error message.
- No method of cancelling a compilation or flashing operation.
- Modifying application shortcut keys has no effect on copy function for Main Watch Window, Local Watch Window, Thread Manager and Memory Window (Ctrl+C is always used).
- Cannot expand nested structures or unions in watch windows. Arrays of structures and unions does not work either.

#### Feature requests:

- Code Folding and other editor enhancements.
- Regular Expression Searching.
- Context & Keyword help functionality.
- Code autocompletion, parameter hinting, declaration and definition hints.
- Multiple Memory Panel views and Watch Window views.
- Application Wizard to configure driver setup values, e.g. number of interfaces for USBHost driver.

## 2.7 Firmware Release Information

This is Version 2.0.0 release of the Vinculum II Firmware. Comprising of the Vinculum Kernel, Device Drivers, C Runtime Libraries and firmware sample code.

Functionality improvements to the USBHost driver, direct GPIO Control in the VOS kernel and some standard library improvements are included in this release.

### 2.7.1 VOS Kernel Readme

#### Fixed Issues:

- If `vos_create_thread_ex` failed (no memory to allocate to new thread) then it may have incorrectly overwritten memory. Will now return NULL.
- Change `IOMUX_INVLAID_IOCELL_*` return values to `IOMUX_INVALID_IOCELL_*`, correct spelling. Old definitions preserved in header file.
- Added GPIO Control Services (`GPIOCtrl.h`).

#### Restrictions:

- Watchdog operation requires a minimum of Prog\_Loader V1.7 to operation. `vos_wdt_enable()` will return an error if this is not present on the VNC2.

#### Known bugs:

- 
- N/A

Features requests:

- N/A

## 2.7.2 Runtime Libraries Readme

Fixed Issues:

- Added documentation to rename and remove functions in stdio library.
- Fixed rename function to correctly generate an 8.3 format filename for the destination file.
- Added unistd library to contain definitions, constants and miscellaneous functions. The following functions are available: chdir

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

## 2.7.3 Drivers Readme

Fixed Issues:

- USB Host driver improve enumeration process to better handle devices which assert reset during debounce period.
- BOMS driver extended to support sector sizes of 2048 bytes. However, there is no corresponding support in FAT File System driver to take advantage of this.
- FAT driver returns FAT\_FATAL\_ERROR if no resources available to open a file.
- FAT driver corrected to ensure that reopened files have current file pointer set to start of file if not appending.
- FAT driver improved implementation of file modification, creation and access times in directory entry.
- FAT driver corrected handling of errors when performing a file seek. File position only moves if seek is successful.
- Flash driver modified to allow access to page 15.
- Flash driver fixed to read only 128 bytes (64 words) from each page of flash.
- PWM driver spelling of PWM\_IN\_CONTINUOUS\_MODE changed to PWM\_IN\_CONTINUOUS\_MODE (old definition left in header file).
- SPI Slave driver fix issue where DMA FIFO buffer size was not set correctly.
- USB Host driver spelling of VOS\_IOCTL\_USBHOST\_DEVICE\_[TOGGLE|CLEAR]\_ENPOINT\_CARRY changed to VOS\_IOCTL\_USBHOST\_DEVICE\_[TOGGLE|CLEAR]\_ENDPOINT\_CARRY corrected (old definition left in header file).
- USB Host driver added VOS\_IOCTL\_USBHOST\_GET\_ENUMERATION\_HANDLE to allow tracking of enumeration events such as unplugging or insertion of devices on downstream hubs or device removals.
- USB Host CDC driver implement polling of notification element for asynchronous notifications.
- USB Host CDC driver fix response to UART state bitmap requests and line control state.
- USB Host CDC driver add VOS\_IOCTL\_USBHOSTCDC\_GET\_NETWORK\_CONNECTION to find carrier connect state.
- USB Host CDC driver change protocol requests to address the CDC Communications Interface Class control endpoint rather than the CDC Data Interface control endpoint.
- USB Host FT232 driver improve device polling function.
- USB Slave driver correct setting of endpoint max packet sizes.

- 
- SPI Slave driver fix buffer destination and size for SPI Slave 1 using DMA.

Restrictions:

- FAT library will not support ATAPI disks.
- FAT library does not support FAT12 format disks. Please use FAT16 or FAT32 format.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.4 CDCModem Sample Readme**

This will connect to a CDC device present on USB Host 1. It will establish a connection between the data interface on the CDC device and the UART on the VNC2.

This project was previously included as sample USBHostCDC.

Restrictions:

- This has only been tested on a Samsung SGH-E900 mobile phone.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.5 USBHost FT232 UART Echo Sample Readme**

This demonstration application reads data from an FT232 device on USB port 1 and relays it to the UART interface. The FT232 and the UART are set to 9600 baud.

This sample was previously called USBHostFT232Echo.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

---

## 2.7.6 Firmware Update (AN 159) Readme

First release to be used with Application Note 159. See document named "AN\_159 Vinculum-II Firmware Programming".

Fixed Issues:

- N/A

Restrictions:

- Fragmented ROM files not supported. Do "CHKDSK <filename>" from command line to check.

Known bugs:

- N/A

Features requests:

- N/A

## 2.7.7 GPIO Interrupt Sample Readme

This demonstrates the use of the GPIO kernel service to handle GPIO interrupt events.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMUX setting for this sample to function.
- The IOMUX routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

## 2.7.8 KITT Sample Readme

This demonstrates the use of the GPIO kernel service to flash LEDs in sequence.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMUX setting for this sample to function.
- The IOMUX routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- 
- N/A

Features requests:

- N/A

### **2.7.9 Hello World (Library) Sample Application Readme**

This demonstrates the use of the FAT file system to write a message to a test file. The file is called TEST.TXT and will be appended with the phrase "Hello World!" every 5 seconds.

This version uses stdio calls to write a the file on the disk.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMUX setting for this sample to function.
- The IOMUX routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.10Philosophers Sample Readme**

This demonstrates message passing and resource management within the VOS kernel using the well known dining philosophers problem.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMUX setting for this sample to function.
- The IOMUX routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.11PWMBreathe Sample Readme**

This demonstrates the use of PWM to vary the brightness of LEDs with a "breathing" effect.

Restrictions:

- 
- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
  - The V2Eval boards Rev 1 require a different IOMUX setting for this sample to function.
  - The IOMUX routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.12RTCExample Sample Readme**

This demonstrates the use of the NXP PCF2123 Real Time Clock to set/read the time and start a countdown timer.

Restrictions:

- The RTC driver will only work with the RTC device listed above.
- This sample has been written for the Ethernet/MP3/RTC shield designed by FTDI for the Vinco development platform.
- The driver must uses GPIO Port B to recieve interupts from the RTC device.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.13Runtime Sample Readme**

This demonstrates the use of the stdio library for writing formatted data to the UART.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.14SDCard Sample Readme**

This project initialises an SD card in SPI mode and then attempts to create a file called TEST.TXT on the SD card.

The file is then appended with the string "Hello World!".

---

Fixed Issues:

- N/A

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.15 TickTock Sample Readme**

This demonstrates the use of the timer driver to flash LEDs in at different intervals corresponding to the specified timer period.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMux setting for this sample to function.
- The IOMux routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.16 ButtonsLights Sample Readme**

This demonstrates the use of the GPIO kernel service to handle interrupts and signal other threads. Buttons SW1 to SW4 will turn on the corresponding light LED1 to LED4. Pressing SW5 will increase the brightness of LED5 using a PWM output. Control of the PWM is performed in a separate thread.

Restrictions:

- This sample has been designed for the V2Eval Board Rev 2.0 and later. V2Eval Boards have the version printed on the silk screen next to the V2EVAL label.
- The V2Eval boards Rev 1 require a different IOMux setting for this sample to function.
- The IOMux routing can be customised by the user to suit a custom PCB or other FTDI supplied evaluation module.

Known bugs:

- N/A

Features requests:

- N/A

### 2.7.17MP3FlashDisk Sample Readme

This demonstrates how to play songs (MP3 & WMA) from a flash drive. It will automatically find MP3 & WMA files in the root directory of the disk and play them one after another. Three push buttons can be attached to emulate a MP3 player.

Restrictions:

- This sample has been designed only for the Vinco board and the Vinco MP3\_Ethernet\_RTC shield.

Before running:

- Currently the application only plays back the first 25 songs found. To change this limit, adjust the macro MAX\_SONG\_COUNT in MP3FlashDisk.c
- Due to a limit in the SPI transfer speed, only songs at 96kbps or lower can be played smoothly.
- Three push buttons can be attached as follows to emulate a MP3 player:

```
VCC (3.3 V) ----- Resistor (10 kOhm) ----- Push button 1 ----- GND
                                                    |
                                                    |
                                                    |
                                                    Vinco pin J5-1
```

```
VCC (3.3 V) ----- Resistor (10 kOhm) ----- Push button 2 ----- GND
                                                    |
                                                    |
                                                    |
                                                    Vinco pin J5-2
```

```
VCC (3.3 V) ----- Resistor (10 kOhm) ----- Push button 3 ----- GND
                                                    |
                                                    |
                                                    |
                                                    Vinco pin J5-3
```

- Push button 1 is used to play/pause and skip songs, specifically:
  - + Short press (> 0.1s and < 0.8s): play/pause
  - + Long press (>0.8s): skip to the next song
- Push button 2 is used control volume, specifically:
  - + Short press (> 0.1s and < 0.8s): decrease volume

- 
- + Long press (>0.8s): increase volume
  - Push button 3 is used to fast forward/rewind by 5 seconds in a song, specifically:
    - + Short press (> 0.1s and < 0.8s): fast forward
    - + Long press (>0.8s): rewind
  - Since a long button press takes about 0.8s to be recognized, the program will delay for about 0.8s since a button is pressed to verify if it is a short press or a long press. Hence there will be a delay of about 0.8s since the button is press before the operation is performed. As a result, even for short presses, two consecutive presses should still be about 1s apart from each other (i.e. do not press too fast).
  - The use of an external power supply (provided with the purchase of Vinco) is recommended.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.18USBHost Android Accessory LED Sample Readme**

This will attempt to find a USB device that supports the Android accessory mode and enable it.

Once enabled, the application will wait to receive a toggle command from the Android device and will respond with a status byte to indicate the current state of the LED being toggled.

This has been tested with a Samsung Nexus S phone (Android 2.3.4) and a Motorola Xoom tablet (Android 3.1).

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.19USBHost Still Image Camera Sample Readme**

This demonstration application will take a photo on a compatible (PMP compliant) camera and copy the image taken onto a Flash disk.

The camera is connected to USB Host 1 and the Flash disk to USB Host 2.

Restrictions:

- Only tested on Canon Powershot SX 110 IS

Known bugs:

- N/A

---

Features requests:

- N/A

### **2.7.20USBHost Device Descriptors Sample Readme**

This will decode and display standard device descriptors for devices inserted into the USBHost ports. The UART interface is used to both display the descriptors and ask the user which port (1 or 2) to query.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.21USBHost FT4232Hub Sample Readme**

This demonstration application connects to ports A and B on an FT4232 device connected to USB Port 1. An FT4232Hub module is typically used for this demo.

The program will receive data from PORT A and relay it to PORT B on FT4232H using a packet size of 16 bytes.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.22USBHost Generic Device Driver and Application Sample Readme**

Example layered driver for a USB device. Provides a read, write and IOCTL interface to USB device.

Connect to the device using the attach IOCTL function then read and write using the vos\_dev\_read and vos\_dev\_write functions.

Restrictions:

- N/A

Known bugs:

- N/A

---

Features requests:

- N/A

### **2.7.23 USBHost GPS Logger Sample Readme**

This demonstration application connects to a GPS receiver via an FT232 device at 4800 baud and saves the output of the receiver in a file on a flash disk. The GPS receiver is connected to USB Host 1 and the Flash disk to USB Host 2.

Restrictions:

- GPS receiver must use an FT232 device.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.24 USBHost HID Class Sample Readme**

This demo will read in data from an interrupt endpoint on a HID class device and output it to the UART interface. It is hardcoded to use a Logitech Wingman joystick although this can be changed to any device VID and PID or modified to allow any HID class device.

The device to test is connected to USB Port 1.

Restrictions:

- Reports are set to be 5 bytes. For a USB keyboard or scanner this is typically 8 bytes.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.25 USBHost HID Class Sample 2 Readme**

This demo will read in data from interrupt endpoints on two HID class devices and output the received data to the UART interface. It will not check the device type connected although this can be changed to check for specific HID class devices. The program will wait until devices are plugged into both USB ports before starting.

It has been tested with various keyboard, barcode scanners and games controllers.

Restrictions:

- The program will make no attempt to recover after either device is removed.
- Reports are assumed to be 8 bytes.

Known bugs:

- 
- N/A

Features requests:

- N/A

### **2.7.26 USBHost Printer Sample Readme**

This will connect to a printer class device present on USB Host 1 and will print the device ID string on the printer.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.27 USBHost Microphone Sample Readme**

This demonstration application reads isochronous data from a USB microphone on USB Port 1 and sends the raw data to the UART port. The UART is set to 9600 baud. A USB Streaming Audio interface is searched for on the USB Host to use as the source of the data.

Restrictions:

- The constant ISO\_TRANSFER\_SIZE must be set to the size of data sent by the endpoint of the device.
- Only tested on a small selection of USB microphones available on the market.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.28 Webcam Demo Sample Readme**

Please refer to Application Note AN\_158 Webcam Application Using OLED Display. This is available from the FTDI website.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.29 USBHost HID Class Sample Readme**

This demo will read in data from interrupt endpoint on a HID class devices and output the received data to the UART interface. It will not check the device type connected although this can be changed to check for specific HID class devices.

It has been tested with various keyboards.

Restrictions:

- Reports are assumed to be 8 bytes.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.30 USBSlave FT232 Sample Readme**

This demonstration application emulates an FT232 device in the VNC2 and simply echoes data received from the host. It demonstrates how to use the USBSlaveFT232 driver.

The VNC2 is connected to the host (PC) via USB Port 1.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.31 USBSlave HID Keyboard Sample Readme**

This demonstration application emulates a HID keyboard on the VNC2. It will simulate pressing keys 'a' through to 'z' repeatedly. The key presses will be interpreted by the host computer as real key presses and the application with the focus will act as if the keys were actually being pressed.

**WARNING:** This may cause applications to misbehave or data to be overwritten on the host computer.

The VNC2 must be connected to the host via USB Port 1.

Restrictions:

- N/A

---

Known bugs:

- N/A

Features requests:

- N/A

Bug fixes:

- Resolved an issue where casting the USB slave handle when attaching the HID keyboard driver resulted in slow performance.
- Cleaned up code.
- Called VOS\_IOCTL\_USBSLAVE\_CONNECT to connect to bus before configuring endpoints.

### **2.7.32USBSlave Function Switch Sample Readme**

This demonstration application demonstrates how to dynamically switch the USB slave function to appear as a different device to the USB host. The device initially emulates an FT232 device. If GPIO B 1 is toggled low, the mode is toggled between FT232 and a HID keyboard and vice versa.

The VNC2 is connected to the host (PC) via USB Port 1.

Restrictions:

- N/A

Known bugs:

- N/A

Features requests:

- N/A

Fixes:

- Called VOS\_IOCTL\_USBSLAVE\_CONNECT to connect to bus before configuring endpoints.

### **2.7.33VNC1L V2DAP Firmware Readme**

Fixed Issues:

- Updated drivers.

Restrictions:

- When using with a V2EVAL board Rev 1 always REMOVE jumper JP9.
- V2DAP CDC driver not implemented therefore data-mode use of CDC devices not supported.
- ATAPI flash disks are not supported. SCSI flash disks with a sector size of 512 bytes are supported.
- LEDs do not flash during enumeration.
- EEPROM commands for FT232 devices connected USB Host are not supported in V2DAP or V2DPS. USBHostFT232 Driver allows the EEPROM data to be changed.
- V2DPS and V2DAP firmware must be compiled at optimisation level 1 or above due to space restriction in the ROM. This affects some watch variables while debugging. A solution to allow full debugging will be provided at a later date.

---

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.34VNC1L V2DPS Firmware Readme**

Fixed Issues:

- Updated drivers.
- Added SPI and FIFO support for V2DPS firmware.

Restrictions:

- When using with a V2EVAL board Rev 1 always REMOVE jumper JP9.
- ATAPI flash disks are not supported. SCSI flash disks with a sector size of 512 bytes are supported.
- LEDs do not flash during enumeration.
- EEPROM commands for FT232 devices connected USB Host are not supported in V2DAP or V2DPS. USBHostFT232 Driver allows the EEPROM data to be changed.
- V2DPS and V2DAP firmware must be compiled at optimisation level 1 or above due to space restriction in the ROM. This affects some watch variables while debugging. A solution to allow full debugging will be provided at a later date.

Known bugs:

- N/A

Features requests:

- N/A

### **2.7.35VNC1L VF2F2 Firmware Readme**

Fixed Issues:

- Updated drivers.

Restrictions:

- ATAPI flash disks are not supported. SCSI flash disks with a sector size of 512 bytes are supported.
- LEDs do not flash during enumeration.
- V2F2F does not wait for GPIO input before starting. This was an input switch on the VNC1L version to start copying. Once powered up and the USB buses are enumerated then the firmware will start a copy.

Known bugs:

- N/A

Features requests:

- N/A

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## 2.8 Revision Information

Installer: 2.0.0 (9523)

### 2.8.1 Compiler Tools

VinAsm: 2.0.0 (9530)

VinAr: 2.0.0 (9497)

VinC: 2.0.0 (9550)

VinCpp: 2.0.0 (9517)

VinL: 2.0.0 (9507)

VinDbg: 2.0.0 (9558)

VinPrg: 2.0.0 (9519)

VinUser: 2.0.0 (9507)

### 2.8.2 Development Environment

VinIDE: 2.0.0 (9565)

### 2.8.3 Firmware

Kernel: 2.0.0 (3212)

### 2.8.4 Libraries

ctype: 2.0.0 (3501)

errno: 2.0.0 (3501)

stdio: 2.0.0 (3501)

unistd: 2.0.0 (3501)

stdlib: 2.0.0 (3501)

string: 2.0.0 (3501)

### 2.8.5 Drivers

ADC\_MCP3008: 2.0.0 (3190)

BOMS: 2.0.0 (3539)

FAT: 2.0.0 (3539)

FIFO: 2.0.0 (3118)

GPIO: 2.0.0 (3539)

PWM: 2.0.0 (3494)

SDCard: 2.0.0 (3118)

SPIMaster: 2.0.0 (3176)

SPISlave: 2.0.0 (3539)

StillImage: 2.0.0 (3539)

---

Timers: 2.0.0 (3539)  
UART: 2.0.0 (3272)  
USBHost: 2.0.0 (3539)  
USBHostCDC: 2.0.0 (3532)  
USBHostFT232: 2.0.0 (3494)  
USBHostPrinter: 2.0.0 (3019)  
USBSlave: 2.0.0 (3494)  
USBSlaveFT232: 2.0.0 (3539)  
USBHostAndroidAccessory: 2.0.0 (3019)  
RTC: 2.0.0 (3118)  
ethernet\_w5100: 2.0.0 (3219)  
Flash: 2.0.0 (3494)  
MP3\_VS1053: 2.0.0 (3494)  
USBHostHID: 2.0.0 (3531)

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## 4 Appendix A – References

### Document References

- 1) AN\_151 Vinculum II User Guide
- 2) AN\_145 Vinculum II Toolchain Installation Guide
- 3) AN\_158 Vinculum II Webcam Application Using OLED Display
- 4) AN\_155 Vinculum II SD Card Example
- 5) AN\_159 Vinculum II Firmware Flash Programming
- 6) AN\_172 Vinculum II Using the USB Slave Driver
- 7) AN\_171 Vinculum II USB Host Using the CDC Driver
- 8) AN\_163 Vinculum II USB Slave Detecting Disconnect
- 9) AN\_164 Vinculum II USB Slave Writing a Function Driver
- 10) AN\_147 Vinculum II Using Bulk Only Mass Storage (BOMS) Class Devices Example
- 11) AN\_148 Vinculum II Using USB Still Image Capture Devices
- 12) AN\_144 Vinculum II IO\_Mux Configuration Utility User Guide
- 13) AN\_189 Vinculum II Using the LFAT Driver

### Acronyms and Abbreviations

Terms	Description

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## 5 Appendix B – List of Tables & Figures

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## 6 Appendix C– Revision History

Revision	Changes	Date
1.4.2	Initial Release	2011-08-11
1.4.4	Updated Release	2011-10-27
2.0.0	Updated Release	2012-05-08