

USER MANUAL

SMART ETK Demo 1.0

VIA System Management Software

Copyright

Copyright © 2011 VIA Technologies Incorporated. All rights reserved.

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise without the prior written permission of VIA Technologies, Incorporated.

Trademarks

All brands, product names, company names, trademarks and service marks are the property of their respective holders.

Disclaimer

VIA Technologies makes no warranties, implied or otherwise, in regard to this document and to the products described in this document. The information provided in this document is believed to be accurate and reliable as of the publication date of this document. However, VIA Technologies assumes no responsibility for the use or misuse of the information in this document and for any patent infringements that may arise from the use of this document. The information and product specifications within this document are subject to change at any time, without notice and without obligation to notify any person of such change.

VIA Technologies, Inc. reserves the right to make changes to the products described in this manual at any time without prior notice.

Revision History

Version	Date	Remarks
1.00	5/3/2011	Initial release
1.01	9/1/2011	Updated section 1.1.1: Added Microsoft Windows 7
1.02	11/1/2011	Model name changed

Table of Contents

1.	Installing SMART ETK Demo 1.0	1
1.1.	System Requirements	1
1.1.1.	Software	1
1.1.2.	Hardware	1
1.2.	Installing the Application	1
1.3.	Running the Application	2
1.4.	Uninstalling the Application	2
2.	SMART ETK Demo 1.0 Overview	3
2.1.	Main SMART ETK Demo Features	3
2.1.1.	GPIO Control	3
2.1.2.	SMBus Control	3
2.1.3.	LCD Brightness Control	3
2.1.4.	Watchdog Timer	3
2.1.5.	Voltage Monitor	4
2.1.6.	Fan/Temperature Monitor	4
2.1.7.	CPU/Memory Information	4
2.1.8.	HDD Information	4
2.1.9.	Drive S.M.A.R.T. Information	4
2.1.10.	Flash Port	4
3.	Using SMART ETK Demo 1.0	5
3.1.	User Interface	5
3.2.	Control	6
3.2.1.	GPIO	6
3.2.2.	SMBus	9
3.2.3.	LCD	11
3.3.	Monitor	13
3.3.1.	Watchdog Timer	13
3.3.2.	Voltage	15

- 3.3.3. Fan/Temperature 16
- 3.3.4. CPU/Memory Info..... 17
- 3.3.5. HDD Info 18
- 3.3.6. Drive S.M.A.R.T. 19
- 3.4. Flash Port..... 20
 - 3.4.1. Backing up the BIOS firmware 20
 - 3.4.2. Modifying the BIOS firmware 21
- 3.5. About 25

1. Installing SMART ETK Demo 1.0

This section introduces the platform requirements and describes how to install and uninstall the VIA SMART ETK Demo application.

1.1. System Requirements

1.1.1. Software

- ☐ Microsoft Windows 7
- ☐ Microsoft Windows XP
- ☐ Microsoft .NET Framework 2.0 or above

1.1.2. Hardware

The VIA SMART ETK Demo application is compatible with many VIA VEPD boards. There is a specific version for each compatible mainboard model. Be sure that the correct version is available before attempting to install the application.

1.2. Installing the Application

The SMART ETK Demo application is packaged in a ZIP file named SmartETK_v1.x.x.x_model name_x86 or x64_yyyymmdd. The “**x**” represents the version number. The “**yyymmdd**” represents the year, month and date. The “**model name**” represents the model of the board (e.g., EPIA-M850). The **x86** means it can be ran in 32 bits OS and the **x64** means it can be ran in 64 bits OS.

1.3. Running the Application

Extract the files from the ZIP archive. Once the files have been extracted, click on the file named **ETK_Demo.exe** to launch the application. The application icon is shown in Figure 1.



Figure 1

1.4. Uninstalling the Application

To uninstall SMART ETK Demo 1.0, simply delete the folder that contains the application files.

2. SMART ETK Demo 1.0

Overview

The SMART ETK Demo application enables software control over the mainboard. This application can be used as a reference for developers who are interested in implementing SMART ETK Demo controls into their own software. Developers can obtain the SMART ETK Demo SDK by contacting VIA Embedded.

2.1. Main SMART ETK Demo Features

SMART ETK Demo provides the following main features:

2.1.1. GPIO Control

SMART ETK Demo enables access to any GPIO pin in order to read from or write to the pin. GPIO pins can be set to function as either input or output pins. If the pin is set to input, high or low values can be read from the pin. If the pin is set to output, high or low values can be written to the pin.

2.1.2. SMBus Control

SMART ETK Demo provides a way to assign a slave address and set the offset. Data can then be read from or written to the slave address.

2.1.3. LCD Brightness Control

SMART ETK Demo enables the user to control the brightness of LCD displays.

2.1.4. Watchdog Timer

SMART ETK Demo enables control over the Watchdog Timer. It provides the ability to set the values for the timeout and restart timers.

2.1.5. Voltage Monitor

SMART ETK Demo enables voltage monitoring across the mainboard and CPU including +12V, -12V, VSB, +5V, +3.3V, VBAT, Vcore.

2.1.6. Fan/Temperature Monitor

SMART ETK Demo enables the monitoring of CPU fan speed, system fan speed, CPU temperature, and system temperature.

2.1.7. CPU/Memory Information

SMART ETK Demo can display information about the CPU and memory including CPU name, package, speed, physical memory size, virtual memory size, etc.

2.1.8. HDD Information

SMART ETK Demo can display information about the HDD size, available size, file system.

2.1.9. Drive S.M.A.R.T. Information

S.M.A.R.T. is an acronym for **S**elf-**M**onitoring, **A**nalysis and **R**eporting **T**echnology. This is a standard for checking whether a hard disk is good or damaged.

2.1.10. Flash Port

SMART ETK Demo has an integrated BIOS flashing utility for updating the BIOS when running Windows. The Flash Port function can also make a backup of the existing BIOS so the user can revert to the previous version if necessary.

3. Using SMART ETK Demo 1.0

3.1. User Interface

The graphical user interface (GUI) makes use of a tabbed design metaphor. Clicking on a tab will display the contents of its corresponding page. If a product does not support the features within the tabbed page, none of the items on the page will be selectable.

The GUI has two portions: the menu and the tabbed pages. Referring to Figure 2, the menu area is located on the left side (outlined in red) while the tabbed pages are on the right side (outlined in green).

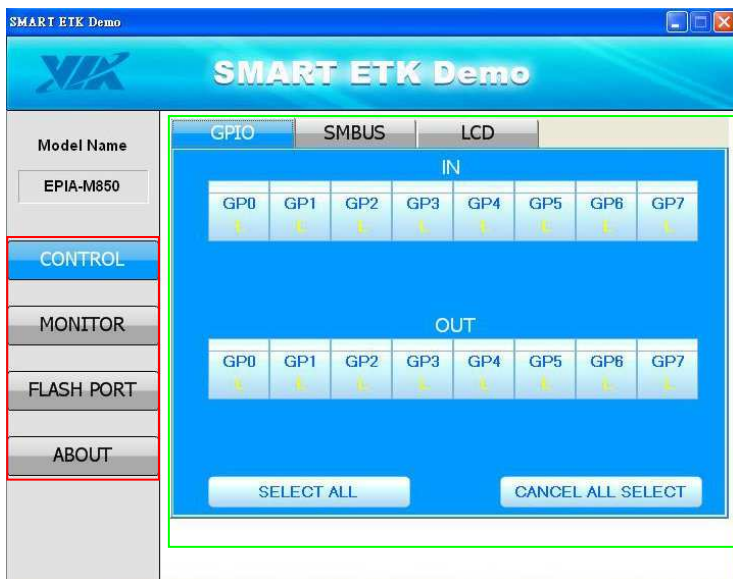


Figure 2

At the top of the menu area, the model name of the product is shown. In the example above, the model name is EPIA-M850.

There are four menu categories that can be selected: **Control**, **Monitor**, **Flash Port** and **About**. The menu categories can be selected by clicking on their respective buttons.

3.2. Control

The **Control** menu category contains three functions: GPIO, SMBus, and LCD.

3.2.1. GPIO

The GPIO tabbed page is the default page of the SMART ETK Demo application. It is the first page that shows when SMART ETK Demo launches.

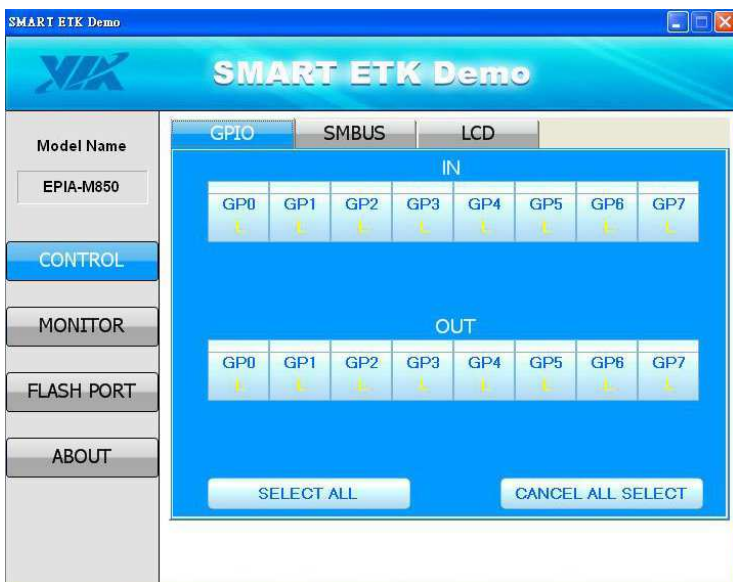


Figure 3

The GPIO page provides an easy and intuitive graphical interface for controlling the GPIO pins on the mainboard. Users can easily select one or more GP Input pins to read high or low potential. Users can also easily select one or more GP Output pins to send high or low potential.

When the bar above the GP name is green, that means the particular GP pin which it corresponds to is being controlled through the SMART ETK Demo application. To access a GP pin, simply click on the bar to enable it. The GPIO settings will be automatically updated every 0.5 seconds.

Figure 4 shows that GP Input 0 is selected with its potential set to low. And GP Input 1 is selected with its potential set to high.

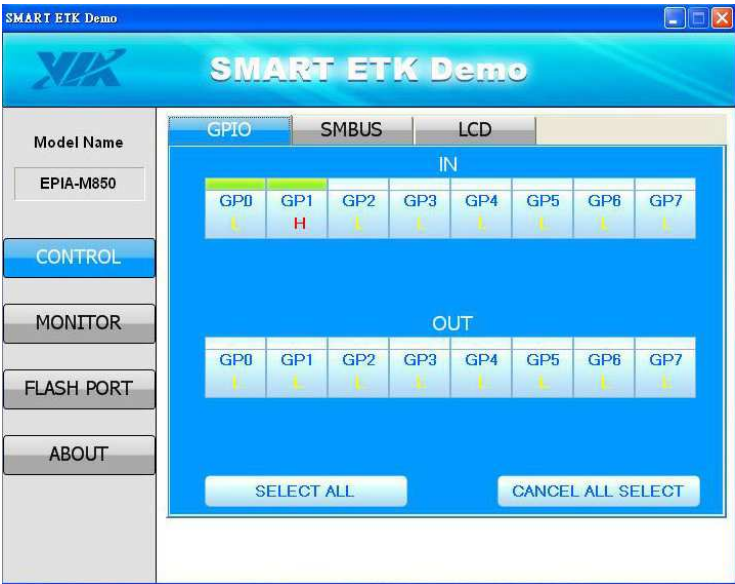


Figure 4

To toggle the potential from low to high or vice versa, move the mouse cursor directly over the **H** or **L** of the desired GP pin and click to toggle the setting.

There are two ways to select all of the GPIO pins. One way is to manually select each bar over the GPIO pins. The second way is to click on the **SELECT ALL** button, which is outlined in red in Figure 5 below.

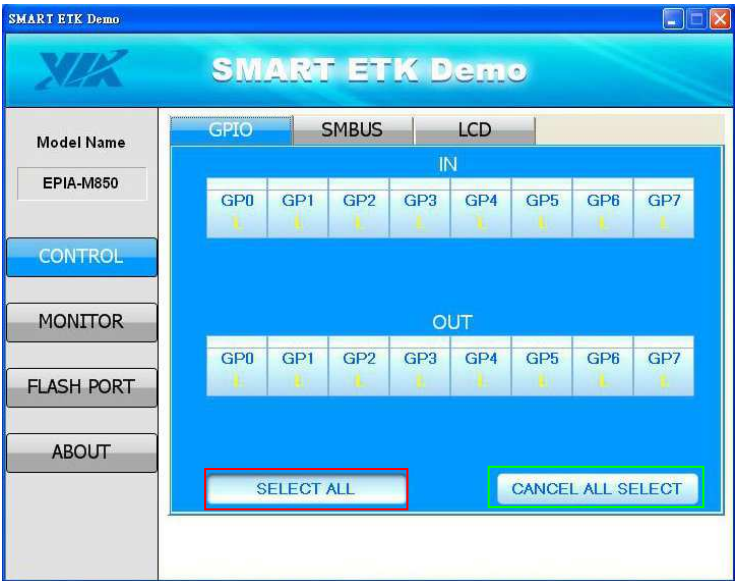


Figure 5

Similarly, there are two ways to deselect all of the GPIO pins. One way is to manually deselect each bar over the GPIO pins. The second way is to click on the **CANCEL ALL SELECT** button, which is outlined in green in Figure 5 above.

3.2.2. SMBus

The SMBus tab is the second tabbed page in the **Control** menu category as shown in Figure 6.



Figure 6

The SMBus page provides access to read data from or write data to a connected SMBus device. In order to use this feature, the slave address and offset of the target device must be entered into the corresponding fields on the SMBus page.

To toggle between reading and writing modes, click on the large blue button immediately below the words **Read/Write**. The large blue button will show either an **R** for reading data from the slave address or a **W** for writing data to the slave address. See Figure 7 and Figure 8 for examples of reading and writing respectively.



Figure 7



Figure 8

3.2.3. LCD

The LCD page is the third tabbed page in the **Control** menu category as shown in Figure 9 below.



Figure 9

The LCD page provides access for controlling the brightness of the LCD and to turn the LCD backlight brightness control on or off.

To adjust the brightness levels of the LCD, click on the left or right arrow. There are 10 levels of brightness as indicated by the brightness meter. The green bars indicate the current level of brightness.

The button at the bottom portion of the LCD page toggles the LCD backlight brightness control on and off. Figure 10 shows the LCD backlight brightness control is off. Figure 11 shows the LCD backlight brightness control is on.



Figure 10



Figure 11

3.3. Monitor

The **Monitor** menu category has six functions: Watchdog Timer, Voltage, Fan/Temperature, CPU/Memory Info, HDD Info, and Drive S.M.A.R.T.

3.3.1. Watchdog Timer

The Watchdog Timer page will be immediately visible in the tabbed page area after selecting the **Monitor** menu category.



Figure 12

3.3.1.1. Starting the Timer

To activate the Watchdog Timer, a timeout value must be entered in the **Timeout** field. The timeout value can only be an integer from 1 to 255. Once the timeout value has been set, simply click on the **Start** button to activate the Watchdog Timer.

3.3.1.2. Refreshing the Timer

In a real application, the Watchdog Timer should refresh automatically. But for the purposes of debugging, SMART ETK Demo includes a **Refresh** button to force a simulation of refreshing the timer. The **Refresh** button is only available when the timer is counting. To simulate refreshing the timer, click on the **Refresh** button.



Figure 13

3.3.1.3. Stopping the Timer

To stop the timer, simply click on the **Stop** button.

3.3.1.4. Resetting the Timer

The timeout value can be reset as long as the timer is not running. While the timer is running the **Timeout** field is not selectable. First, stop the timer, then input the new value in the **Timeout** field. Then, click on the **Start** button to reset the timer.

3.3.2. Voltage

The Voltage page is the second tabbed page in the **Monitor** menu category as shown in Figure 14 below. This page provides certain voltage values from the board/system. If an item is not supported by that board/system, the characters "N/A" will be displayed in the value field. The following table shows a description of possible voltages.



Figure 14

3.3.3. Fan/Temperature

The Fan/Temperature page is the third tabbed page in the **Monitor** menu category as shown in Figure 15 below. This page provides the values of the CPU fan speed, system fan speed, CPU temperature and system temperature. If an item is not supported by that board/system, the text string "N/A" will be displayed in the value field. If the system fan speed and system temperature are supported but the value still shows "Please check H/W.", that means the mainboard model cannot load the system fan or thermal sensor.

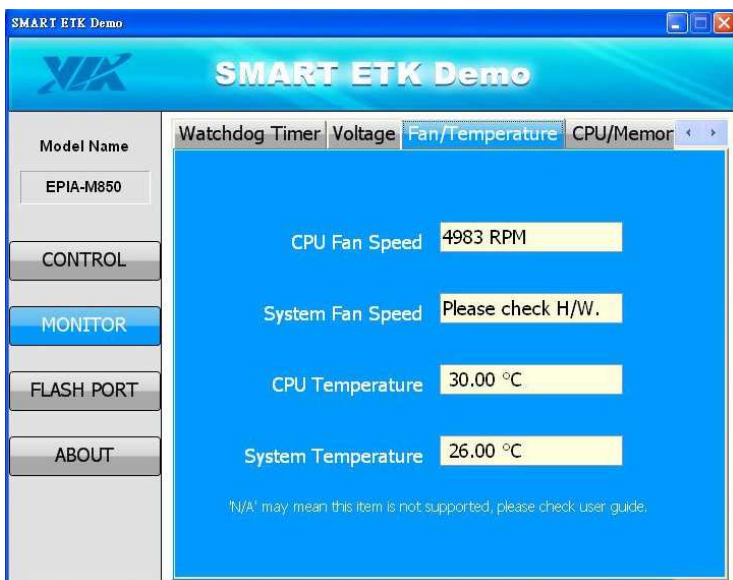


Figure 15

3.3.4. CPU/Memory Info

The CPU/Memory Info page is the fourth tabbed page in the **Monitor** menu category as shown in Figure 16 below. This page provides information about the CPU name, package type, physical memory, virtual memory, etc.

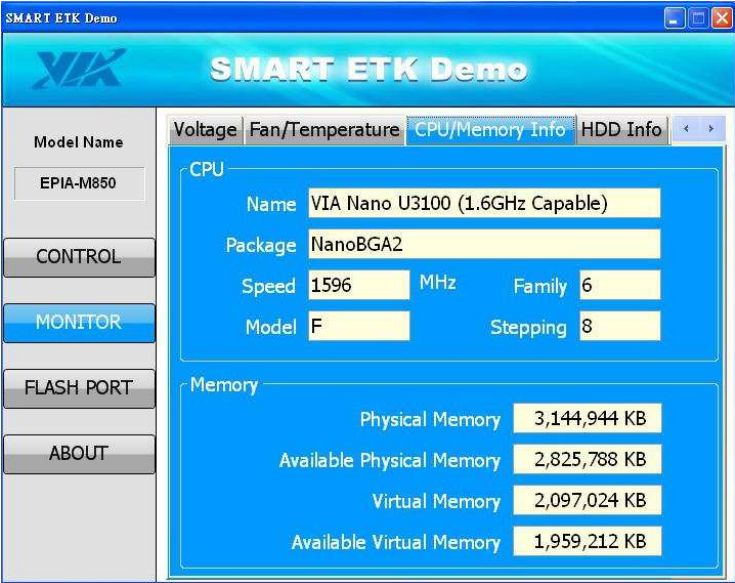


Figure 16

The HDD Info page is the fifth tabbed page in the **Monitor** menu category as shown in Figure 17 below. This page provides information about the hard disk on the board/system including disk label, size, file system, etc.

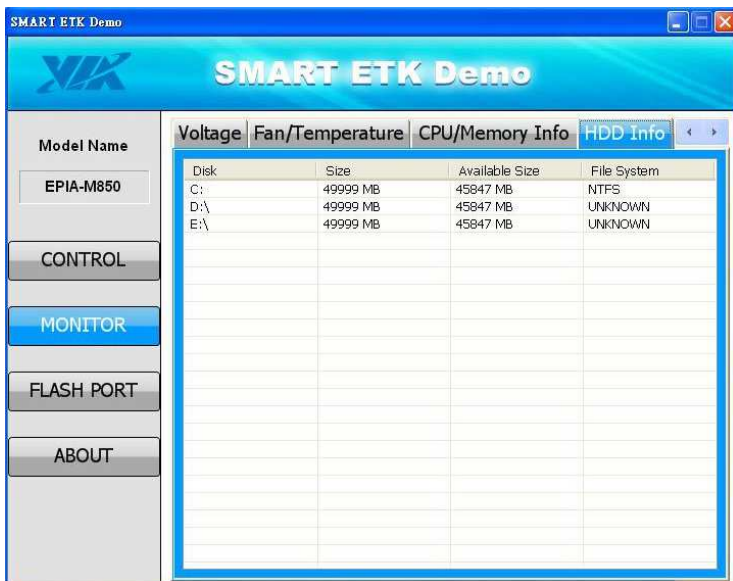


Figure 17

3.3.6. Drive S.M.A.R.T.

The Drive S.M.A.R.T. page is the sixth tabbed page in the **Monitor** menu category as shown in Figure 18 below. This page provides information about the hard disk S.M.A.R.T. values.



The screenshot shows the SMART ETK Demo application window. The left sidebar contains buttons for Model Name, CONTROL, MONITOR (highlighted), FLASH PORT, and ABOUT. The main area has three tabs: CPU/Memory Info, HDD Info, and Drive S.M.A.R.T. Info (selected). The Drive S.M.A.R.T. Info tab displays a table with drive information and a list of SMART attributes.

Drive	Serial	Size
WDC WD5000AAJS-19A8B2	WD-WCAT00544275	476940 MB

ID	Name	Value	Threshold	Worst
01	Raw Read Error Rate	200	51	200
03	Spin Up Time	158	21	157
04	Start/Stop Count	100	0	100
05	Reallocated Sector Count	200	140	200
07	Seek Error Rate	100	0	253
09	Power On Hours	100	0	100
0A	Spin Retry Count	100	0	100
0B	Calibration Retry Count	100	0	100
0C	Power Cycle Count	100	0	100
C0	Power-Off Retract Count	200	0	200
C1	Load Cycle Count	200	0	200
C2	Temperature Celsius	110	0	105
C4	Reallocated Event Count	200	0	200
C5	Current Pending Sector	200	0	200
C6	Offline Uncorrectable	100	0	253
C7	UDMA CRC Error Count	200	0	200
C8	Multi Zone Error Rate	100	0	253

Figure 18

3.4. Flash Port

The **Flash Port** menu category enables the user to modify or backup the BIOS firmware.

3.4.1. Backing up the BIOS firmware

Before flashing the BIOS, it is ideal to make a backup of the existing BIOS firmware. Sometimes, new BIOS ROM files can cause unforeseen problems. Without a backup, it will not be possible to revert to the previous BIOS firmware.

To create a backup of the existing BIOS firmware, click on the Backup BIOS button (outlined in Figure 19).

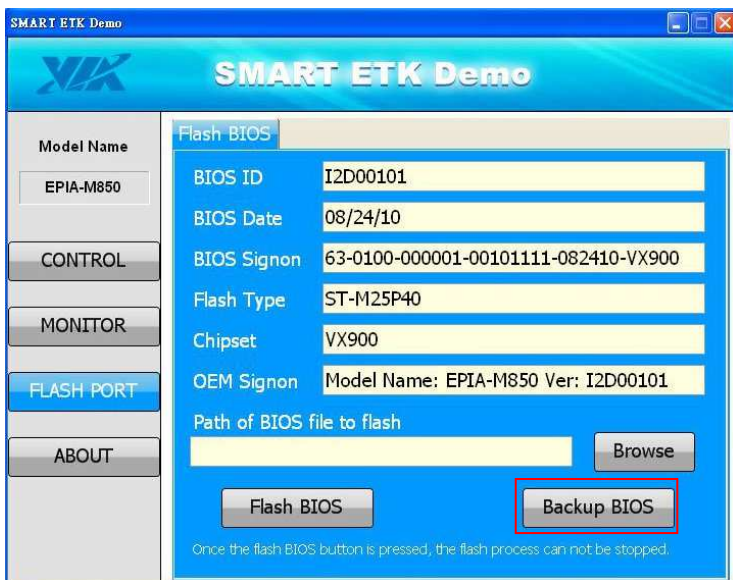


Figure 19

After clicking on the button, a file browser window will be displayed as shown in Figure 20.

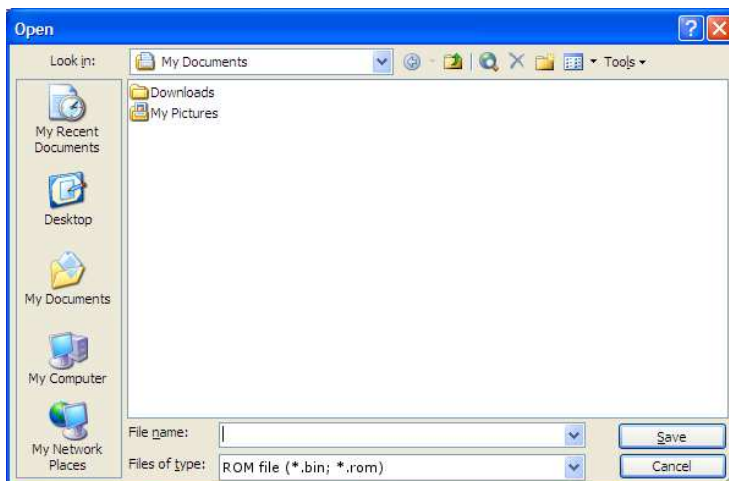


Figure 20

Navigate the file browser to the location where the existing BIOS firmware will be saved. Then click the **Save** button. A notification will be displayed to inform whether a backup file was successfully created or not.

3.4.2. Modifying the BIOS firmware

To replace the BIOS firmware with a newer or older version, click on the **Browse** button (outlined in Figure 21).



Figure 21

After clicking on the button, a file browser window will be displayed as shown in Figure 22.

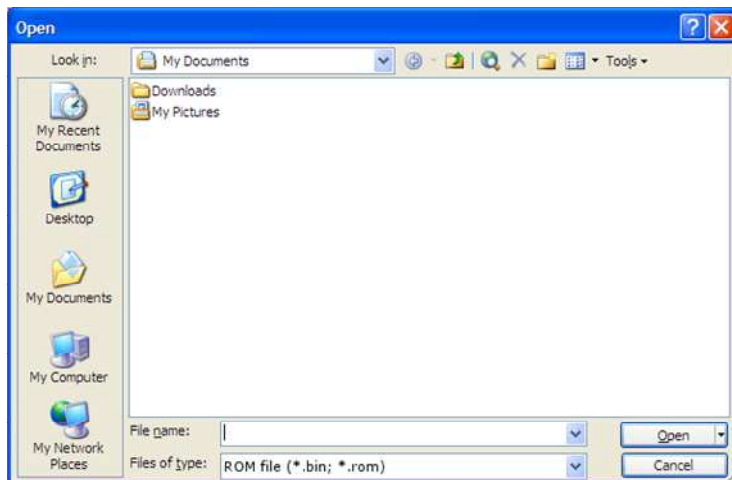


Figure 22

Navigate the file browser to the location where the new (or old) BIOS ROM file is saved. Then click the **Open** button. The path to the file will populate the field outlined in Figure 23.



The screenshot shows the SMART ETK Demo application window. The window has a blue header with the VIX logo and the title 'SMART ETK Demo'. On the left side, there is a vertical menu with buttons: 'Model Name', 'CONTROL', 'MONITOR', 'FLASH PORT' (which is highlighted in blue), and 'ABOUT'. The 'Model Name' button shows 'EPIA-M850'. The main area of the window is titled 'Flash BIOS' and contains several fields and buttons. The fields are: 'BIOS ID' (I2D00101), 'BIOS Date' (08/24/10), 'BIOS Signon' (63-0100-000001-00101111-082410-VX900), 'Flash Type' (ST-M25P40), 'Chipset' (VX900), and 'OEM Signon' (Model Name: EPIA-M850 Ver: I2D00101). Below these fields is a label 'Path of BIOS file to flash' followed by a text input field that is highlighted with a red rectangle. To the right of this field is a 'Browse' button. Below the input field are two buttons: 'Flash BIOS' and 'Backup BIOS'. At the bottom of the window, there is a small text note: 'Once the flash BIOS button is pressed, the flash process can not be stopped.'

Figure 23

Once the correct path has been entered, click on the **Flash BIOS** button to commence the BIOS firmware update as shown in Figure 24. A notification will be displayed to inform whether a BIOS update was successful or not.



Figure 24

IMPORTANT:

Do not interrupt the BIOS flashing procedure once it has started. Interrupting the BIOS flashing procedure will result in a corrupted BIOS. If the BIOS firmware is corrupted, then the system will not be able to boot up.

3.5. About

The **About** menu category displays the software version, supported OS, release date, and VIA's copyright declaration. See Figure 25 below.



Figure 25



Taiwan Headquarters

1F, 531 Zhong-Zheng Road
Xindian District, New Taipei City 231,
Taiwan

TEL: 886.2.2218.5452
FAX: 886.2.2218.5453
Email: embedded@via.com.tw



USA

940 Mission Court
Fremont, CA 94539
USA

TEL: 1.510.683.3300
FAX: 1.510.687.4654
Email: embedded@viatech.com



Europe

In den Dauen 6
53117 Bonn
Germany

TEL: 49.228.688565.0
FAX: 49.228.688565.19
Email: embedded@via-tech.de



China

Tsinghua Science Park Bldg. 7
No. 1 Zongguancun East Road
Haiden District, Beijing, 100084
China

TEL: 86.10.59852288
FAX: 86.10.59852299
Email: embedded@viatech.com.cn



Japan

3-15-7 Ebisu MT Bldg. 6F
Higashi, Shibuya-ku
Tokyo 150-0011
Japan

TEL: 81.3.5466.1637
FAX: 81.3.5466.1638
Email: embedded@viatech.co.jp



Korea

2F, Sangjin Bldg., 417
Dogok Dong, Gangnam-Gu
Seoul 135-854
South Korea

TEL: 82.2.571.2986
FAX: 82.2.571.2987
Email: embedded@via-korea.com