Driver Installation

for Fingerprint Sensors
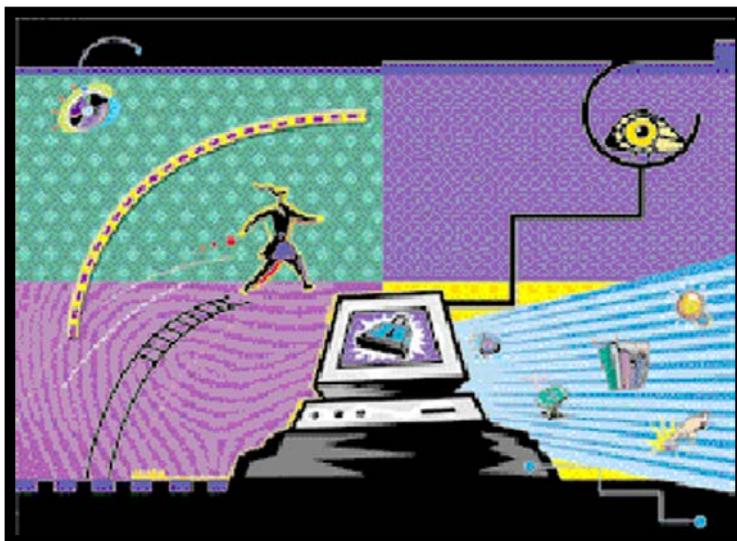
NITGEN
biometric solutions

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Features

The NITGEN&COMPANY FRD (Fingerprint Recognition Device) is a world-class fingerprint device that uses state-of-the-art technology, to facilitate biometric authentication of a user's fingerprint using a combination of quality hardware and software that is convenient and easy to use.

The FRD is equipped with high-performance and compact NITGEN&COMPANY fingerprint recognition module, which can transfer data to computers to reject any unauthorized user's access.

NITGEN&COMPANY FRD will provide the most reliable authentication by identifying fingerprints with exactness through its high-resolution fingerprint recognition technology that can be used to replace existing password-based security systems. NITGEN&COMPANY FRD is the security device for the next generation, where the security of personal data as well as corporate data is indispensable.

Typical Applications

Some typical applications for fingerprint authentication technology are as follows:

- Information Technology and Computer Network Security
- Internet Business
- Security for Banking and Financial System
- Medical Information Systems
- Further Security Field using Passwords

System Requirements

System requirements for FRD are as follows;

⊙ **USB Type**

- CD-ROM drive
- USB 1.1/2.0 port (If you are connecting the FRD Fingkey Mouse, FRD Fingkey Mouse II, FRD Fingkey Mouse III or FRD Fingkey Mouse IV into a hub, you must use a self powered USB hub.)
- 16MB RAM
- 20MB available hard disk space
- MS Windows 98(Second Edition or later version)/ME/2000/XP/2003 /Vista/7
- The FRD Fingkey Mouse II and FRD Fingkey Mouse III supports only the USB1.1 from Windows 9x and FRD Fingkey Mouse IV supports Windows 2000 or higher.

Package Contents

FRD Kits include the following; Please check the contents of your package.

1. USB Type Fingerprint Recognition Fingkey Mouse (MFDU01)
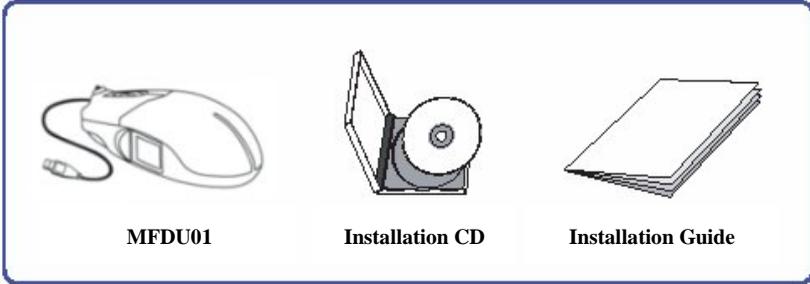
MFDU01   Installation CD   Installation Guide

2. USB Type Fingerprint Recognition Fingkey Mouse II (MFDU03)

MFDU03   Installation CD   Installation Guide

3. USB Type Fingerprint Recognition Fingkey Mouse III (MFDU13)

MFDU13   Installation CD   Installation Guide
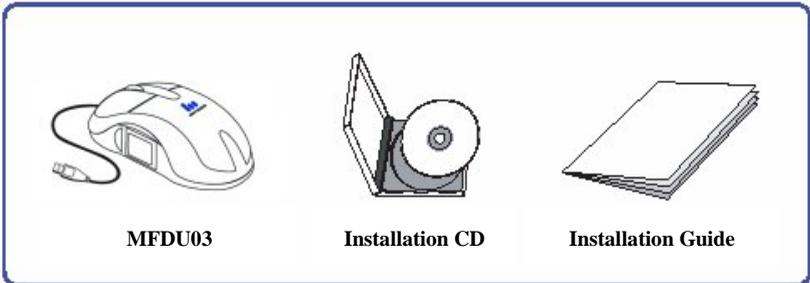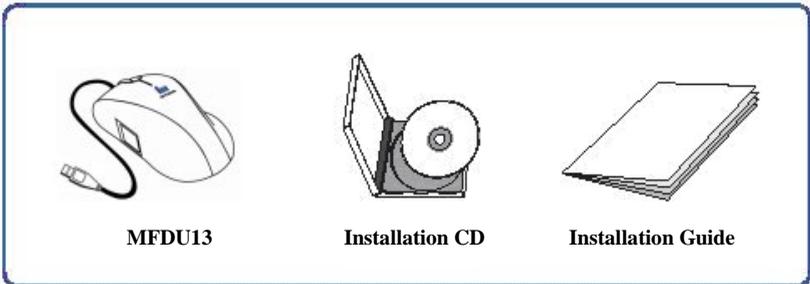
4. USB Type Fingerprint Recognition Fingkey Mouse IV (MFDU06)

MFDU06	Installation CD	Installation Guide

5. USB Type Fingerprint Recognition Fingkey Hamster (HFDU01/04/06)

HFDU01/04/06	Installation CD	Installation Guide

6. USB Type Fingerprint Recognition Fingkey Hamster II (HFDU11/14/06M)

HFDU11/14/06M	Installation CD	Installation Guide

7. USB Type Fingerprint Recognition Fingkey Hamster III (HFDU06S)
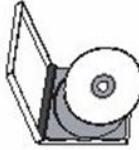
| HFDU06S | Installation CD | Installation Guide |
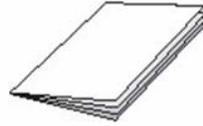
8. USB Type Fingerprint Recognition eNBioScan-C1 (HFDU08)
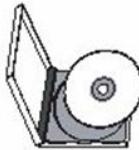
| HFDU08 | Installation CD | Installation Guide |
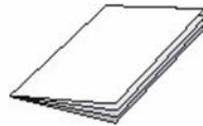
Product Types

It is important to know the type of FRD you are installing prior to beginning the installation process in order to ensure that the device is configured correctly on your system. If you are not certain, please refer to the diagrams below or locate the model number on the bottom of the fingerprint device.

After you have identified the type of FRD that you are installing, follow the installation guide to install the drivers and use the FRD.

1. USB Type Fingerprint Recognition Fingkey Mouse (MFDU01)
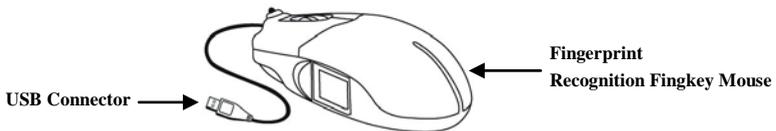
USB Connector ⟶   ⟵ **Fingerprint Recognition Fingkey Mouse**

2. USB Type Fingerprint Recognition Fingkey Mouse II (MFDU03)

USB Connector ⟶   ⟵ **Fingerprint Recognition Fingkey Mouse II**
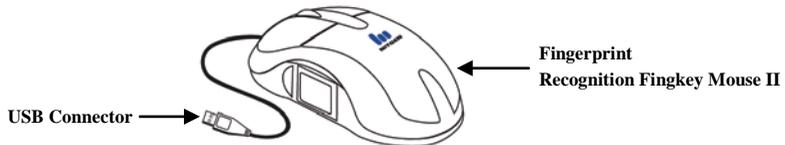
3. USB Type Fingerprint Recognition Fingkey Mouse III/IV (MFDU13/MFDU06)
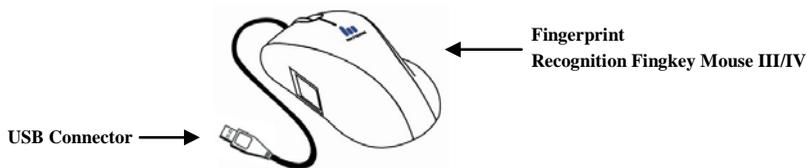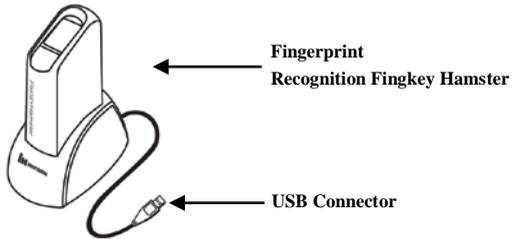
USB Connector ⟶   ⟵ **Fingerprint Recognition Fingkey Mouse III/IV**

4. USB Type Fingerprint Recognition Fingkey Hamster (HFDU01/04/06)

Fingerprint
Recognition Fingkey Hamster

USB Connector

5. USB Type Fingerprint Recognition Fingkey Hamster II (HFDU11/14/06M)

Fingerprint
Recognition Fingkey Hamster II

USB Connector

6. USB Type Fingerprint Recognition Fingkey Hamster III (HFDU06S)

Fingerprint
Recognition Fingkey Hamster III

USB Connector

7. USB Type Fingerprint Recognition eNBioScan-C1 (HFDU08)

Fingerprint
Recognition eNBioScan-C1

USB Connector

Driver Installation

USB Driver Installation

USB Driver Installation

NOTE!
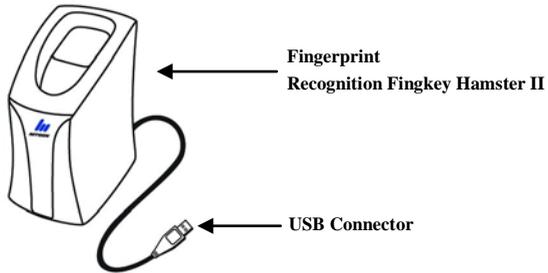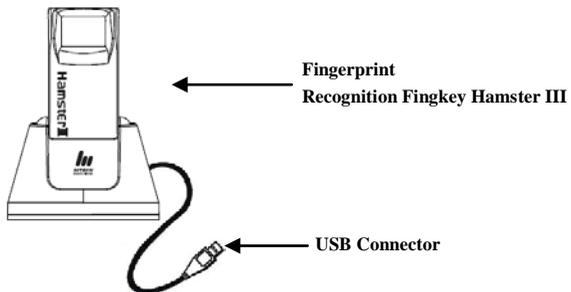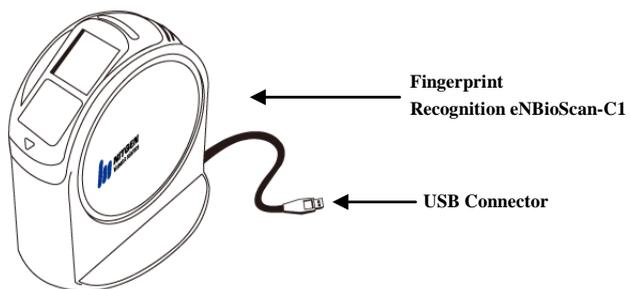
      If you are installing the USB Fingkey Mouse, USB Fingkey Mouse II or USB Fingkey Mouse III in the Windows 98 environment, the Windows 98 Installation CD will be required if there are no Human Interface Device (HID) drivers installed on your system.

NOTE!

      Finish all the programs that use NITGEN&COMPANY device, and disconnect the device from your system before installing device driver.

1. Prior to beginning the installation, please close all applications that are running.

2. Do not plug in the USB FRD until after the drivers have been installed on your system.

3. Insert the Installation CD in your CD-ROM drive. The installation program will start automatically.

NOTE!

      The USB FRD Fingkey Mouse, USB FRD Fingkey Mouse II, USB FRD Fingkey Mouse III and USB FRD Fingkey Mouse IV will be enabled after the driver is installed, so it may be necessary to install the driver using a PS/2 mouse or the <Tab> key on the keyboard.

4. Follow the instructions presented by the Setup Wizard during the driver installation process.

5. Select the device you are using and click "Next".

 NOTE!

These examples in this guide are based on selection of the USB Fingkey Mouse III (MFDU13) as an example. The USB Fingkey Hamster II (HFDU11/14/06M/06S) and eNBioScan-C1(HFDU08) has not a device selective process.

6. When driver installation is completed, it is necessary to check the device status to ensure that it was installed correctly. You will be prompted to connect the USB FRD as shown in the diagram below:

7. Connect the FRD to the USB port, and wait a moment. You can also click "Plug in later" to install it at a later time.
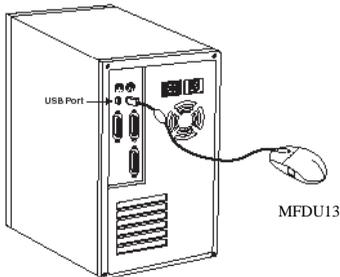
8. The New Hardware Installation Wizard will automatically show you the process of installing USB Composite, HID and FRD drivers. If you are installing a USB Fingkey Hamster, only the FRD driver will be installed.

9. When the device installation process is completed, a window will be displayed indicating that "Setup Wizard Complete".

10. Check the 'Device Diagnostic Tool' check box and click "Finish". At this time the installation process will be completed, and the hardware test utility will be run automatically.

Refer to Chapter 3 'How to use the Device Diagnostic Tool' for more information on using device diagnostic tool to ensure that the FRD is successfully installed.

Chapter 3
How To Use The Device Diagnostic Tool

Running the Diagnostic Tool

NFD
- Device
- Enroll
- Verify
- Fingerprint Quality Check
- Multi Device
- General
- About

Running the Diagnostic Tool

1. Click Start-Run to run the testing program.

2. Type 'NFD' and click "OK".
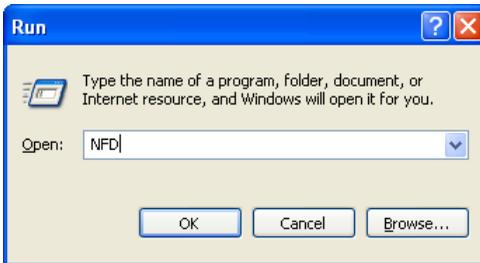
NFD

- Device
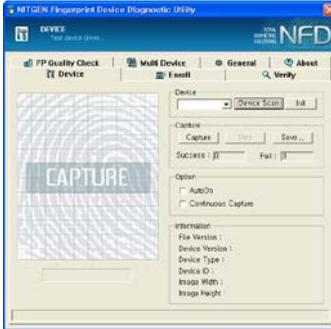
1. Click "Device Scan" to display the list of all devices in the system.

2. Select a device you wish to use and then initialize.
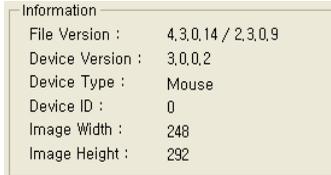
3. Choose a certain device from the list and click "Init" to initialize the device, which makes it possible to capture or use other functionalities of the tab. Without initialization, other functionalities of the tab cannot be used.

4. Click "Init" to output device information.

5. Click "Save" or right-click on the image to save the fingerprint image as BMP. If the fingerprint is not input, the image will not be saved.

6. There are options in capturing fingerprints.

7. The "AutoOn" option use only HFDU06, HFDU08 and HFDU11/14/06M/06S.

8. It will not be able to use "Continuous Capture" and "AutoOn" simultaneously. If it is in the process of one using, it will not be able to move with the different tab.

USB Device:

At present, devices that can be supported are USB-typed HFDU01/04/06, HFDU08, MFDU01, MFDU03/13, MFDU06 and HFDU11/14/06M/06S. Click "Device Scan" with a driver installed to display types of USB devices that are connected to the system.

- Enroll
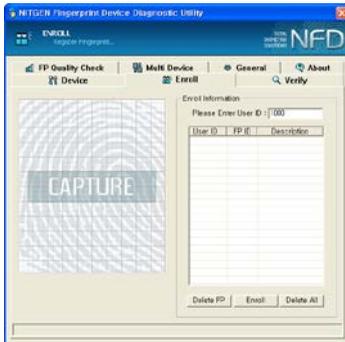
1. Enroll users using eNBSP SDK, based on the device selected from the Device tab. Enrolled fingerprint information is used to authenticate fingerprints in the Verify tab.
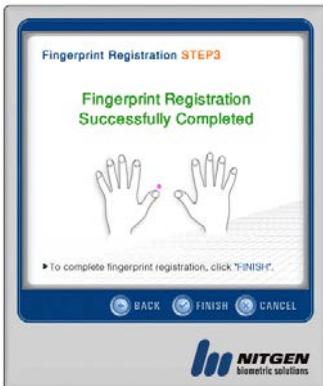
2. Click "Enroll" to display the UI for fingerprint enrollment. Select a fingerprint to register and click "finish".
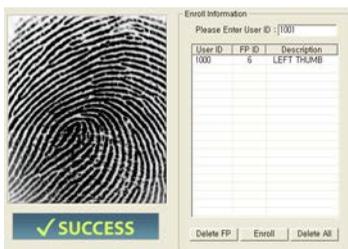
3. If the fingerprint is successfully input, the user ID is registered and "SUCCESS" is displayed.

4. A user ID automatically increments from 1000. A fingerprint ID is automatically selected from 1 to 10, each corresponding to from the thumb of the right hand to the little finger of the left hand in an orderly manner. A user ID can be changed within the range of 1000~9999. If a user ID and a fingerprint ID are identical, a message "Do you want to update it?" will be pop up.
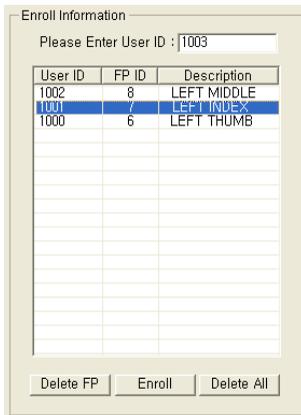
5. Click "Delete FP" to remove the selected fingerprint information from the list. Click "Delete All" to delete all information in the list.

- Verify
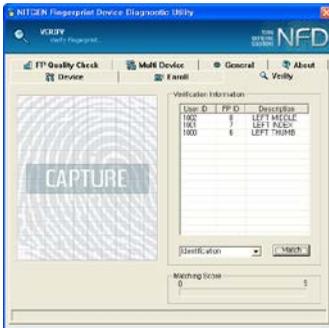
1. User information input from the Enroll tab is displayed on the list. Using this user information, verification is performed. There are two types of authentication: Verification(1:1) and Identification(1:N).

2. Select "Identification" and then click "Match" to perform verification. If there is a fingerprint that matches, related information is displayed.
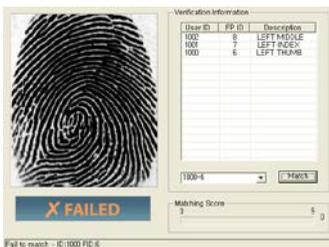
3. Or select a user ID and a fingerprint ID to attempt verification. Choose "1000-6" as a fingerprint but use the fingerprint input as "1001-7". Then attempt to match both. The system displays the result by comparing the two.

4. Matching Score is output when authentication attempted. It is a result of matching an input fingerprint with existing fingerprint data. The score range is 0 ~ 9. The score is compared with the security level value of the General tab, determining success or failure. If the security level is 5 and the matching score is lower than 5, verification fails. If the score is higher than 5, on the other hand, verification is passed. If a fingerprint input is too dry or to wet or it is not properly input, the score can turn out to be low.

- Fingerprint Quality Check
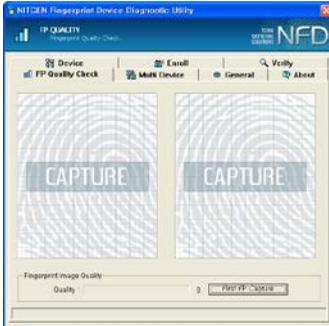
1. You can check the status of fingerprints before enrolling fingerprints or attempting verification.

2. Input the same fingerprint twice. The picture on the left is an example of an image of an improperly input fingerprint.

3. This is an image of a properly input fingerprint. Make sure to input the core of a fingerprint.

4. It is recommended that a minimum value required to enroll a fingerprint be bigger than 3. It can be less than 2 but it can bring about low verification ratio. The same fingerprint with different positions on the sensor can change values because fingerprint features are located differently.

- Multi Device
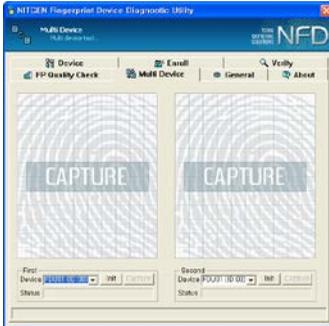
1. You can check the efficiency of the multi device function. First it does "Device Scan" from the Device tab.

2. It uses from device list to select the device, click the "Init" button. It will be able to use HFDU04, HFDU06, HFDU08, HFDU11/14/06M/06S, MFDU03/13 and MFDU06. HFDU06, HFDU08 and HFDU11/14/06M/06S capture fingerprint by AutoOn. HFDU04, MFDU03/13 and MFDU06 must click "Capture" button.
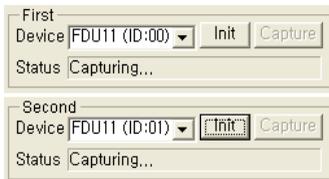
3. Simultaneously the image capture is possible from both sides devices.

4. If it will move with the different tab, current operation is discontinued.

- General
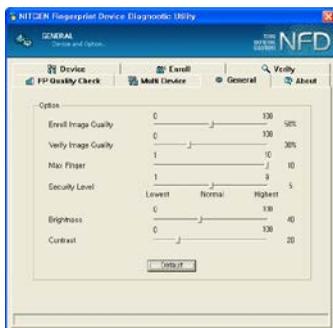
1. Option values used in eNBSP SDK are set up. The values are applied to other tabs. If "Init" is not selected on the Device tab, Brightness and Contrast are set at "0", which cannot be changed.

2. The pictures left shows images of a fingerprint with two different Brightness values. If a fingerprint is too dry or too wet, change Brightness and Contrast to get an optimal image.

3. The maximum number of fingerprint that can be input is 10 as a default. If it is changed to "1", only one fingerprint is allowed to be registered from the Enroll tab. The Security Level is important, determining success or failure of verification on the Verify tab. Click "Default" to initialize.

- About

1. It contains NFD version and copyright. Click the image to go to the NITGEN&COMPANY homepage. (http://www.nitgen.com)

Chapter 4
Troubleshooting
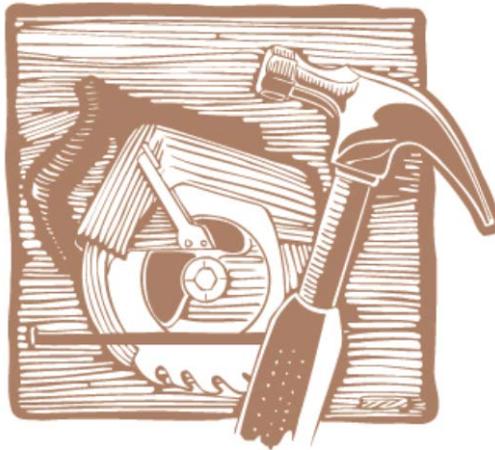
USB FRD Problems

Driver Installation without Installshield wizard

USB FRD Problems

<When the USB FRD doesn't work >

1. Verify that the USB connector of FRD is connected to the USB port correctly.

2. Click **Start-Setting-Control Panel-System** icon and select the '**Device Manager**' tab to verify that the Fingkey Mouse driver is installed correctly. If it is not installed correctly as shown below, repeat the installation process and be sure to select the USB Fingkey Mouse.
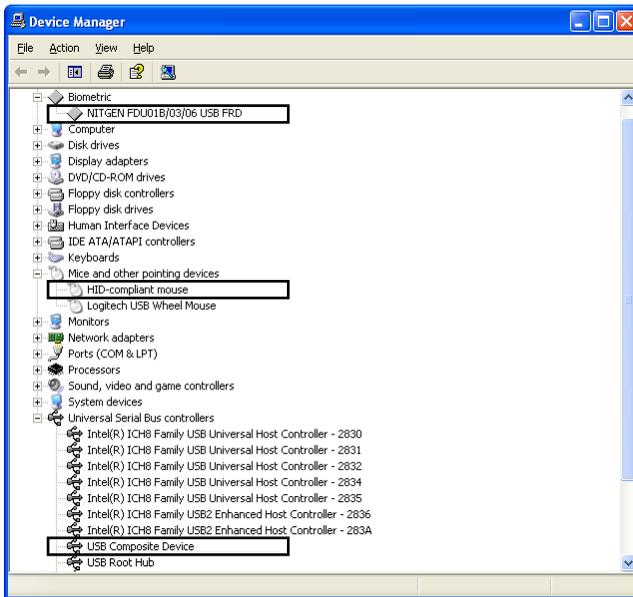
3. If you are using the FRD connected to a USB port in a USB keyboard or Hub, verify that the USB keyboard or Hub has it's own power-supply. The USB FRD uses almost 110mA of electric power, so it should only be connected to hubs that are self-powered.

4. After installed the new device driver, if the device will not operate, connect again.

5. When "Unknown device" is located in Device Manager, the FRD connect again to USB port which in back of your motherboard.

\<When you use the FRD with any other high-speed USB devices>

1. When the FRD is connected on your computer together with any other high-speed USB devices such as USB Camera or USB Scanner etc., it cannot be used at the same time as these devices. Close the programs that are using these devices before using the FRD.

2. Because the FRD(HFDU01/MFDU01) is a high-speed USB device and uses almost 66% of your system USB limit, the USB device will not function concurrently with any other device using more than 40% of the USB bandwidth.

3. Fingkey Hamster(HFDU04/06), Fingkey Hamster II, Fingkey Mouse II, Fingkey Mouse III, Fingkey Mouse IV and eNBioScan-C1 adopts a bulk type, enabling the user to use other USB devices simultaneously. This, however, can degrade the quality of fingerprint images.

\<When any other mouse driver is installed on your computer>

1. When the Logitech mouse driver is installed on your computer, FRD Fingkey Mouse performance is very slow.

2. Click **Start-Setting-Control Panel-Mouse** icon and "Motion" **tab** to adjust the speed of mouse pointer.

3. If you cannot adjust the speed of mouse pointer, remove the existing Logitech mouse driver to use FRD.

\<When be connected to the USB 1.1>

1. Performance of Fingkey Hamster(HFDU04) and Fingkey Hamster II are maximized in USB2.0. There should be no problem with connecting to the USB1.1 port but this can display the message below.
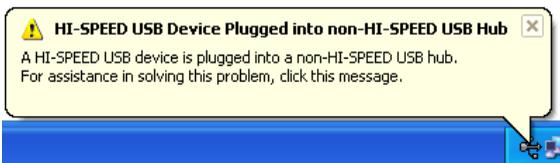
2. Performance of Fingkey Hamster(HFDU06), Fingkey Hamster II(HFDU06M/06S) and eNBioScan-C1(HFDU08) is maximized in USB2.0. When is connected in USB1.1 Hub, the normality cannot operate. So you must connect in USB2.0.

<When BLUE SCREEN occur in driver installation process>

1. When the device driver of subordinate version is installed on your computer, when connects the device, BLUE SCREEN will be able to occur. You must install the device driver which is provided and connect the device.

2. When the device driver installing, the version of driver is not updated, the BLUE SCREEN will be able to occur. This case must change the windows update option.

The windows update option change the following:
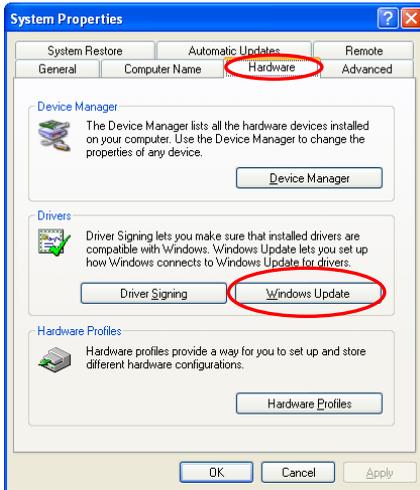
or

That cannot be able to connect in windows update site, then the device driver install.

\<Caution\>

1. When will change the new device, always install the last version of device driver.

2. Finish all the programs that use NITGEN device, and disconnect the device from your computer before installing device driver.

Driver Installation without Installshield wizard

1. There are device models below \EasyInstall\FDU\. Select a model and then an O/S folder for the system. Use the inf file below the O/S folder. The folder contains files required to install device models. In the HamsterMouse folder, fdu01.cat, Venus.dll and VenusDrv.sys exist, in the HamsterII folder, fdu11.cat, NGStar.dll and NGStar.sys exist, while fdu08.cat, nfrd08c.dll and nfrd08c.sys exist in the eNBioScanC1 folder. Below is the folder structure of EasyInstallation:

```
EasyInstall
    FDU
        HamsterMouse
            Drivers
                win2000xp
        HamsterII
            Drivers
                win2000xp
        eNBioScanC1
            Drivers
                win2000xp
```

NOTE!
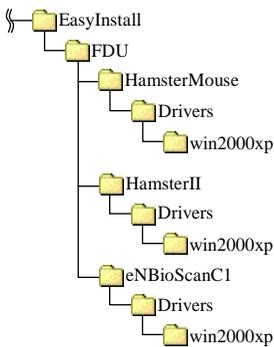
The path of EasyInstallation may change. So check the location before installation. The HamsterMouse folder contains Fingkey Mouse, Fingkey Mouse II, Fingkey Mouse III, Fingkey Mouse IV and the Fingkey Hamster driver, the HamsterII folder contain Fingkey Hamster II driver, while the eNBioScanC1 folder has the eNBioScan-C1 driver in it.

Safety Information

FCC Part 15 :

(1) Caution : Any changes or modification in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(2) Class B Digital Device : This Equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for Help.

(3) Class A Digital Device : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Limited Warranty

The NITGEN&COMPANY warrants to the purchaser of the NITGEN&COMPANY's product ("Product"), if properly used and installed, will be free from defects in material and workmanship and will substantially conform to the NITGEN&COMPANY's publicly available specifications for a period of one year after date the Product was purchased.

If the Product, which is the subject of this Limited Warranty, fails during the warranty period for reasons covered by this Limited Warranty, the NITGEN&COMPANY, at its option will :

REPAIR the Product by means of hardware and/or software; **OR**

REPLACE the Product with another product; **OR**, if the NITGEN&COMPANY is

unable to repair or replace the Product,

REFUND the then-current value of the Product.

THIS LIMITED WARRANTY, AND ANY IMPLIED WARRANTIES THAT MAY APPLY ONLY TO THE ORIGINAL PURCHASER OF THE PRODUCT OF THE NITGEN&COMPANY AND LAST ONLY FOR AS LONG AS SUCH PURCHASER CONTINUES TO OWN THE PRODUCT OF THE NITGEN&COMPANY.

EXTENT OF LIMITED WARRANTY

The NITGEN&COMPANY does not warrant that your Product will be free from design defects or errors known as "errata". Current characterized errata are available upon request.

This limited warranty does not cover any costs relating to removal or replacement of any Product that is soldered or otherwise permanently affixed to your electrical boards of the Product.

This limited warranty does not cover damages due to external causes, including accident, demolition, usage not in accordance with product instruction, misuse, neglect, alteration, repair, improper installation, or improper testing.

HOW TO OBTAIN WARRANTY SERVICE

To obtain warranty service for your Product, you may contact the reseller of the NITGEN&COMPANY in the local country, or you may contact the NITGEN&COMPANY.

To request warranty service from the NITGEN&COMPANY, you should call the NITGEN&COMPANY at 82-2-556-7115 during the warranty period during normal business hours, excluding holidays.

Please be prepared to provide :

    (1) your name, address, and telephone number

    (2) proof of purchase

    (3) serial number of the Product

    (4) an explanation of your problem

    [Note: The Customer Service Representative may need additional information from

    your depending on the nature of the problem]

The replacement is warranted under this written warranty and is subject to the same limitations and exclusions for the remainder of the original warranty period or one year, whichever is longer.

WARRANTY LIMITATIONS AND EXCLUSIONS

THESE WARRANTIES REPLACE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMIT TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE NITGEN&COMPANY DECLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES SO THIS LIMITATION MAY NOT APPLY TO YOU.

ALL EXPRESS AND IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

LIMITATION OF LIABILITY

THE NITGEN&COMPANY'S RESPONSIBILITY UNDER THIS, OR ANY OTHER WARRANTY, IMPLIED OR EXPRESS, IS LIMITED TO REPAIR, REPLACEMENT OR REFUND, AS SET FORTH ABOVE. THESE REMEDIES ARE THE SOLE AND EXCLUSIVE REMEDIES FOR ANY BREACH OF WARRANTY. THE NITGEN&COMPANY IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR UNDER ANY OTHER LEGAL THEORY INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY, AND ANY COSTS OF REINSTALLING. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.