

Technical White Paper – **FBiDrive (CQ+S)**

July, 2004

A. Introduction

1. Overview

The portion of online activity – such as, online trading, banking, and shopping - in our daily life is getting greater but the growth of online crime is threatening computer users with its incredibly hazardous behavior.

FBiDrive(CQ+S) is designed and focused on the personal security and convenience in the digital world. It is portable, durable, and user friendly solution for any knowledge and age groups.

2. Key Features

a. Easy Installation

■ Initial Drive Installation

- Quick, automated installation with CD included in product package
- Installation program prepares FBiDrive and registers user fingerprint to protect storage and software application

■ Installing on Other Windows PCs

- Device Driver – Easy installation without additional CD-Rom or program on Windows ME, 2000, XP. (Additional driver is required on Windows 98SE.)
- Application Programs – No additional installation process needed to install application programs.

b. Fingerprint Authentication

■ Authentec's "Trueprint" is adopted as a fingerprint authentication algorithm.

- Proven to defeat falsified fingerprint attempts by measuring subsurface of skin instead of "scanning" visible print lines

■ Built-in fingerprint sensor controls access to the application and the flash memory storage

■ Secure user data through fingerprint authentication.

- ID's and Passwords will be saved and used only after fingerprint authentication so there is no possibility of the user information exposure and there is no hassle of memorizing many ID's and Passwords.
- Ultimate user data security by fingerprint user authentication.

■ PC protection through fingerprint authentication.

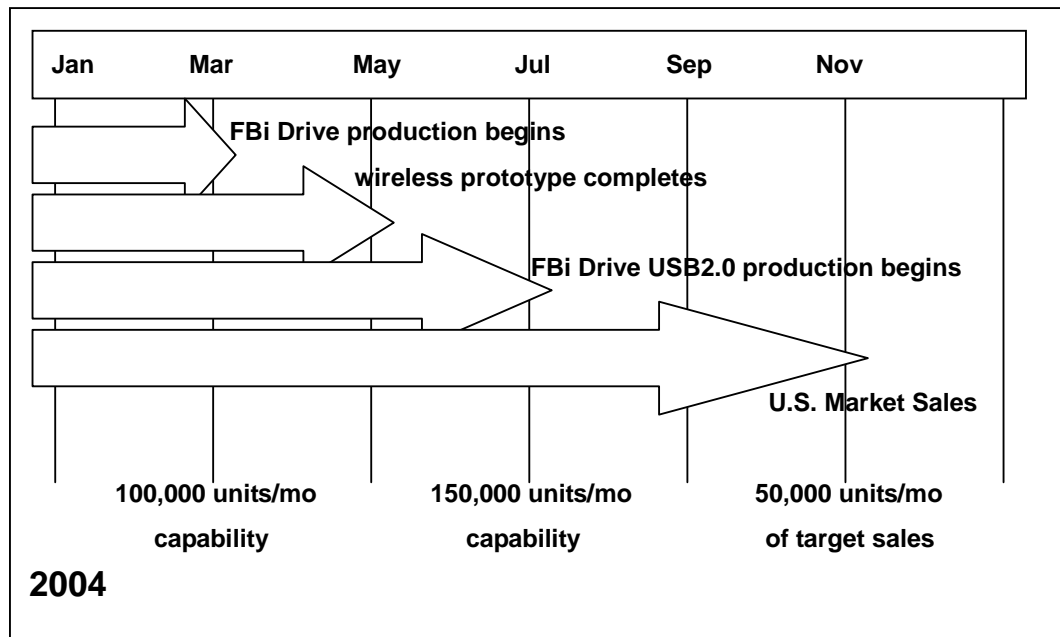
- Windows Logon
- Screen Saver Lock
- Data encryption / lock system using fingerprint technology.
- Adopting online verification through fingerprint authentication.
 - Internet fingerprint authentication
 - Network fingerprint authentication

- c. Flash Memory Storage
 - 128MB up to 2G for user data area, 4G by special order
 - Recognized as a removable disk drive.
 - Compatible with windows applications
 - Disk access control with fingerprint authentication

- d. Data Encryption – Secure data lock program (Using Utility program-SafeBOX)
 - Data encryption using fingerprint authentication
 - SEED Encryption Method, Key Generation through the user registration
{ User ID + User Password + Product Serial Number + Fingerprint Template }

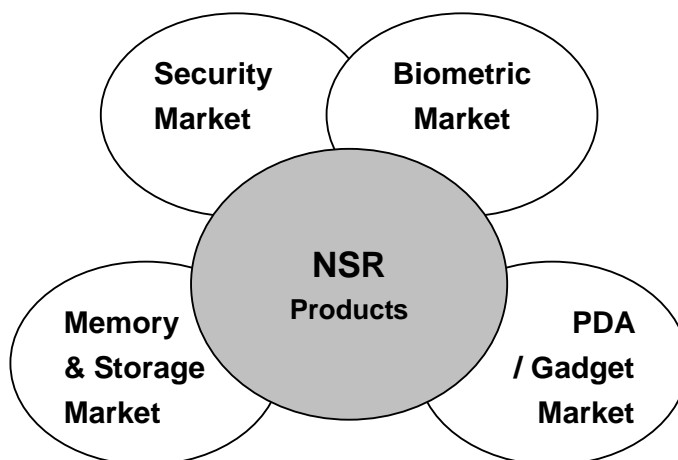
- e. USB Interface
 - USB supported. (Version 2.0 supported. Backward compatible with Version 1.1)
 - Easy, compatible, and reliable connection method.
 - USB cable included

3. Road Map



4. Comparison

Newport Scientific Research, LLC company Market Position

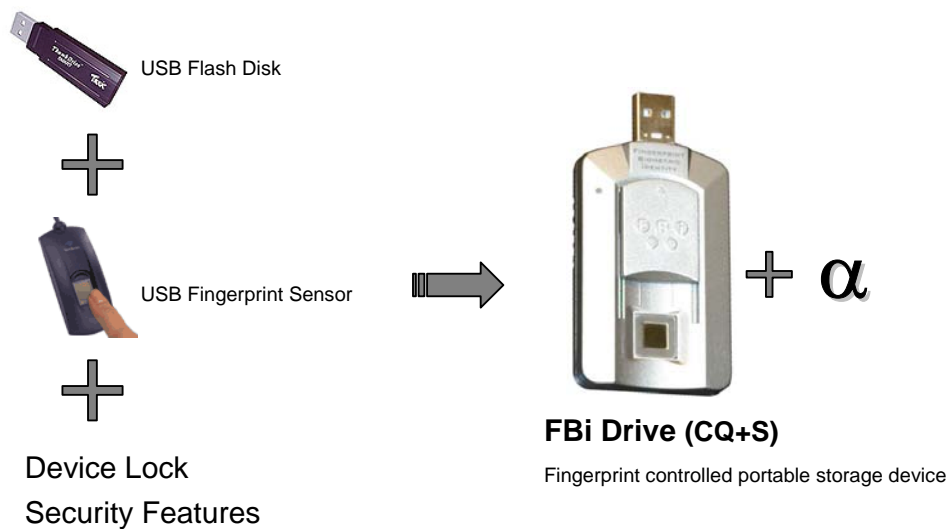


Feature Comparison with Existing Personal Devices

	User Verification	User Application	Storage	Device Lock Control	Data Encryption
FBiDrive(CQ+S)	Yes	Yes	Yes	Yes	Yes
USB Flash Storage	No	No	Yes	No	No
Hand-held Computer	No	Yes	Yes (Small)	Some	No
FP Sensor Device	Yes	No	No	No	No/Some

B. FBiDrive(CQ+S)

1. What is FBiDrive(CQ+S) Device?

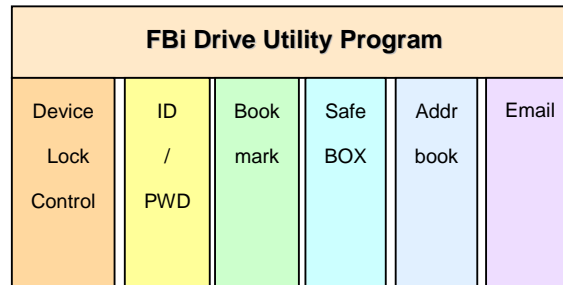


FBiDrive(CQ+S) is a distinctive solution comparing with existing fingerprint devices or flash memory storages. Flash memory storages are well known as convenient storages but the users are not free from data theft or drain. Equipped with fingerprint authentication sensor, large memory storage, and its own applications, FBiDrive(CQ+S) is a portable versatile multi functional personal authentication device.

User fingerprint information is stored in the device and flash memory storage access is controlled after user fingerprint authentication.

2. Application Software Features

a. Software schema



S/W Configuration

b. Device Lock

- Flash memory storage access is controlled by the access control program.
- FBiDrive (CQ+S) storage is divided by an application / fingerprint storage (< 4Mb) and a large storage (128M Up to 2G).
- In the default stage, the protected storage will be used as 'read only'.
- A user is allowed to access the large storage when authorized by Device Lock Utility.
- A user can easily manage the storage access and the write protection function unlock.
- A user is not allowed to use the large storage when the user is not authorized. PassMos Plus has a protection for loss or infrequent use.

c. User Authentication

- Secures device by fingerprint authentication
- Fingerprint authentication has two major methods. One is 'the image matching method' and 'the minutiae information calculating method' which is comparing calculated data of characters of user fingerprint.
- 'The image matching method' is usually used in legal/governmental departments and criminal investigations because of its accuracy from actual images. 'The minutiae information calculating method' requires relatively small size of data so it is a popular method when online or network activities.
- Including Master User, four users can be registered in one FBiDrive (CQ+S) device and each user can independently use the applications and storage.
- Master User is allowed to delete user information and their data but can not open their information or data.
- Each User can open his/her own data only.

d. Bookmark

- Saves bookmarks by each user and they are compatible with files of Internet Explorer
- Most internet users store the bookmarks in their systems and it is very hard to recall the bookmarks when using different systems. Bookmark Memory saves users from lowering work efficiency and time wasting on any systems.

e. ID/Password

- Existing scraping method is a coordination memory method which makes a lot of errors since it memorized vertical and horizontal coordinates and they are changed when the webpage is updated each time.
- Stores internet member ID's and Passwords and a user can login web sites after fingerprint authentication without typing ID's and Passwords.
- Web site will be searched and registered ID and Password will be typed automatically in the login page.
- Fingerprinting will be required all the time when using ID/Password feature.

f. Address Book

- A personal contact list organizer. Address Book is compatible with Outlook and Outlook Express files.
- Address Book data can be organized by groups.
- 'CVS' format files can be exported to a system or imported from a system.
- Fingerprinting will be required when using Address Book data because of the security matter.

g. Email

- Managing multi email accounts and sending emails directly from Address Book email address list.
- Email program is based on the Microsoft Outlook Express engine. Email management – receiving, sending, organizing, etc. – activities are required fingerprinting.
- Fingerprinting is required when searching emails.

h. Safe Box (Data Encryption Technology)

- User can encrypt and decrypt files to secure data with fingerprint authentication feature.
- Secured storage. A user locks and unlocks files/folders with fingerprint. Drag and drop function supported.
- It can not be opened when data is copied to other location.

i. Properties (Data Backup / Restore)

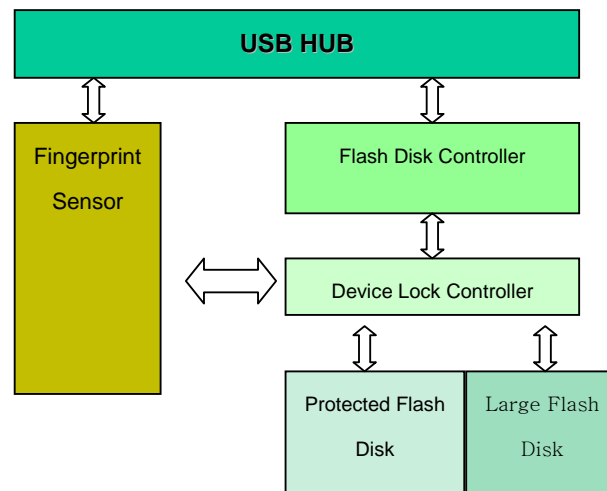
- Backup
 - User can backup data to the different location.
 - User can decide the backup location.
- Restore
 - Restoring the backup data.
 - Restore feature requires the user – who encrypted the data - fingerprinting
- Importing and exporting data between PassMos utility and systems. Required fingerprint authentication.
- Background sound effect mute feature supported.

j. Help

- Provides updated software, manuals, and online data backup service.

3. Hardware

a. Hardware Block Diagram



H/W Configuration

b. Fingerprint Algorithm

AuthenTec's unique, patented imaging technology.

During imaging, a small signal is coupled onto the fingers living layer. More than 9000 individual elements in the sensor matrix form a planar antenna array that receives this signal, creating a digital pattern that mimics very accurately the fingerprints underlying structure.

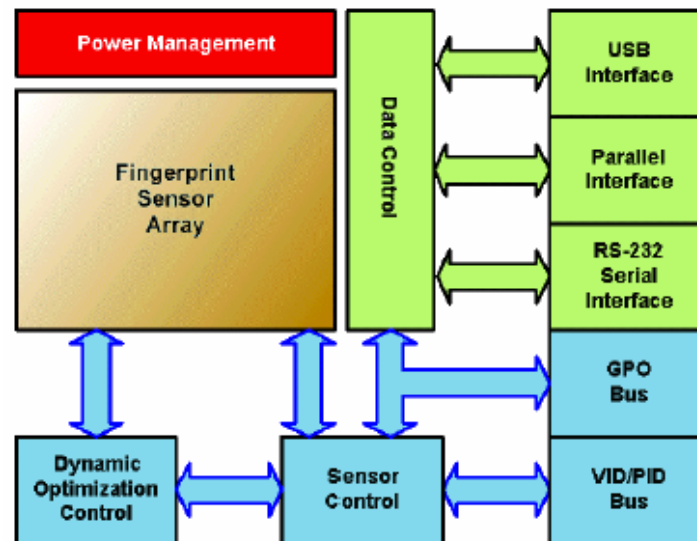
A powerful complementary utility within TruePrint is called Dynamic Optimization. This tool analyzes each image, controlling up to 15 parameters to optimize the fingerprint image, without regard to unusual skin conditions or surface contamination.

c. Hardware Specification Table

Interface	Universal Serial Bus (USB)
Supported OS	Windows 98, Windows Me, Windows 2000, Windows XP
<i>Disk Part</i>	
Disk Type	(Using NAND Flash Memory) 32MB, 64MB, 128MB available
Disk Read Transfer	> 900KB / second
Disk Write Transfer	> 600KB / second
Erase Cycle	1,000,000 times
<i>Fingerprint Part</i>	
Fingerprint Capture	13.3 frames/second
Image density	250-1000dpi (selectable)
Fingerprint Detection Matrix	96*96 pixels
Fingerprint Scratch and Impact resistant	stress-tested to 41,000 psi
Power Supply	USB Powered (no external power required)
Power Consumption	< 110mA (under operating)
USB Suspend	< 1mA
LED	Connected : Green <i>Active : Blinking</i>
Operating Temperature	0 to 45
Storage Temperature	-10 to 70
Relative Humidity under operating	20% ~ 80%
Relative Humidity under storage	5% ~ 95%
Insertion	>5,000 cycle
Data Retention Time	10 years
Noise	0 dB
Safety Compliance	FCC

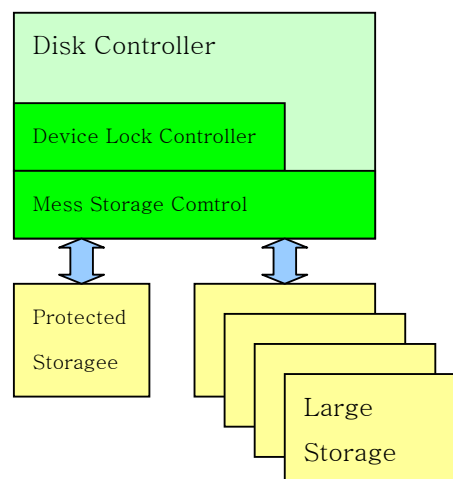
d. Fingerprint Authentication Sensor

- Unlike optical type fingerprint sensor, a silicon type Authentec fingerprint sensor detects live fingers and allows 15 degrees of rotation each direction. It has fast detection time and low error rate – over 99.75%.
- AES4000 Finger pint Sensor chip
 - 144-pin LQFP package
 - 20 x 20 x 1.4 mm (.79 x .79 x .055 in)



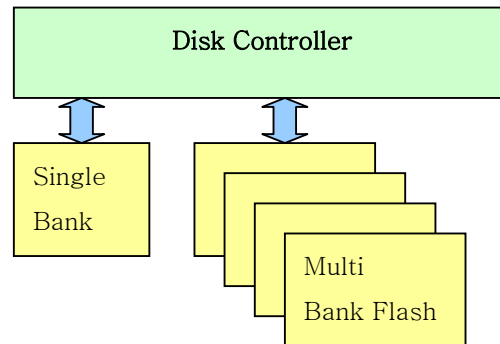
e. Device Lock

- Flash memory storage access is controlled by user fingerprint authentication.



f. Flash Memory Storage

- The importance of the storage devices is greater as computer technology develops rapidly, floppy disks and CD's are still most popular form of storage devices. FBiDrive(CQ+S) brought innovational large-sized built in flash memory storage to upgrade the digital activity.



g. Data Encryption

- Creating different 'encryption key' for each user and encrypt the user information and data files. File and user information will be decrypted only after user fingerprint authentication.
- 128bit SEED Algorithm used
- key
 - { ID + Password + Serial Number + FingerPrint Template Data }

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