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# FingerChip™ Demonstration Software

## From: v14.04

Congratulations for choosing FingerChip™ technology! No other technology will be able to offer such a small device with the best capture capabilities at such a low cost.

With the FingerChip™ demo software, you will be able to acquire fingerprint images, to simulate a touchpad and much more.

When the demonstration kit is installed and the FingerChip hardware is connected, you are ready to use the applications:

- FC\_Training: FC\_Training.exe continuously grabs fingerprint images
- FC\_Mouse: FC\_Mouse.exe uses the FingerChip as a touchpad
- FC\_Parameters: FC\_Parameters.exe allows the user to change FingerChip configuration
- FC\_Demo: FC\_Demo.exe is a more detailed application to acquire fingerprint images

The authentication software is not part of this installation but are available on request.



## Biometrics FingerChip™

## Application Note

(AN-33)



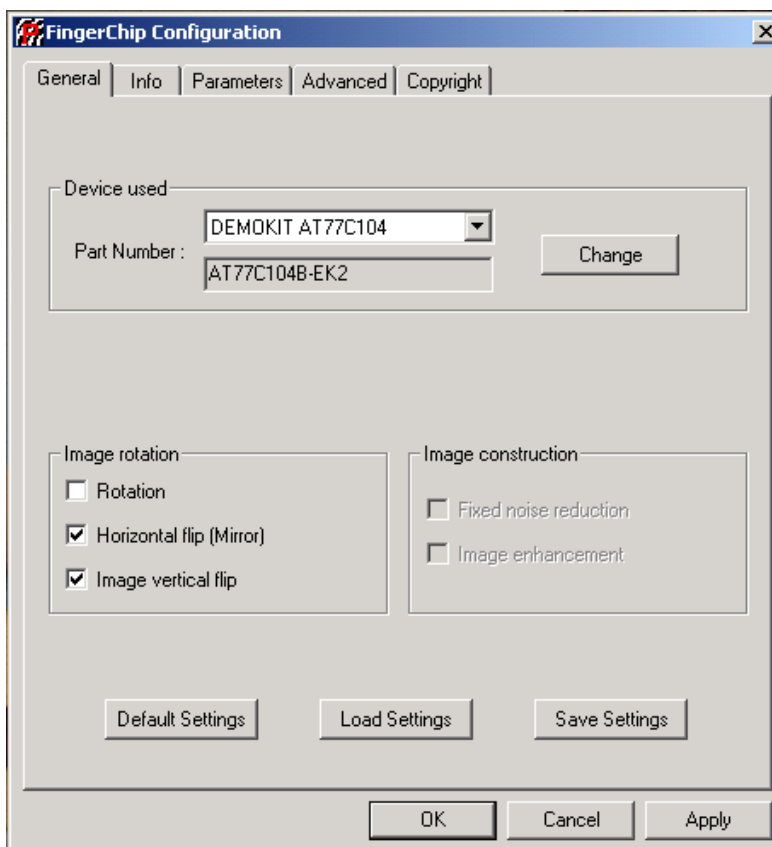
## FC\_PARAMETERS APPLICATION

This application allows user to change default parameters for the FingerChip used (Part Number) and to configure the software for all applications based on this software. The parameters are shared within other applications. This means that the customer applications can acquire finger images, without providing control as it is achieved in the FC\_Parameters application.

Note: the changes are written in Windows registers when all applications are unloaded.

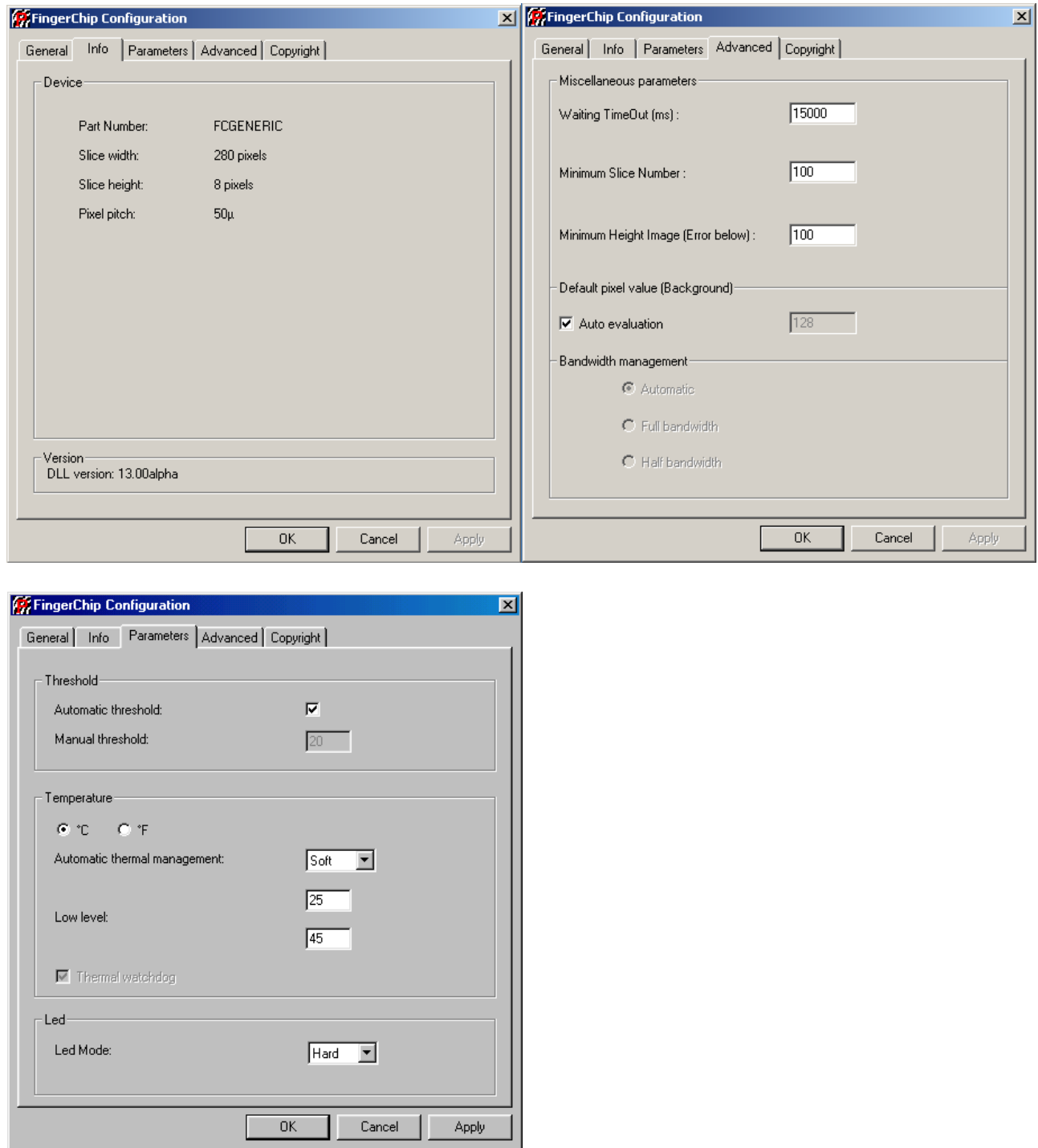
In this application, the greyed parameters are invalid and reserved for future use.

Launch the application and choose your Part Number and/or your parameters.



The “Default” button retrieves the default value for the Part Number chosen. If your Part Number does not correspond to one of the factory default Part Number, this button is not available.

You can select the part number from the available list (eg ‘DEMOKIT AT77C104’). The “Change” button also allows changing the Part Number: Note that changing this parameter is equivalent to changing demonstrator profile. This can be achieved only if the device is not in use “Load” and “Save” settings allow you export and import all the parameters available in FC\_Parameters application. You can easily change settings, from a profile to another.



You can have help by F1. This document will opens (PDF format).

## FC\_TRAINING APPLICATION

This application allows to continuously grabbing fingerprints.

Launch the application and sweep your finger as often as you want. The fingerprint is displayed.



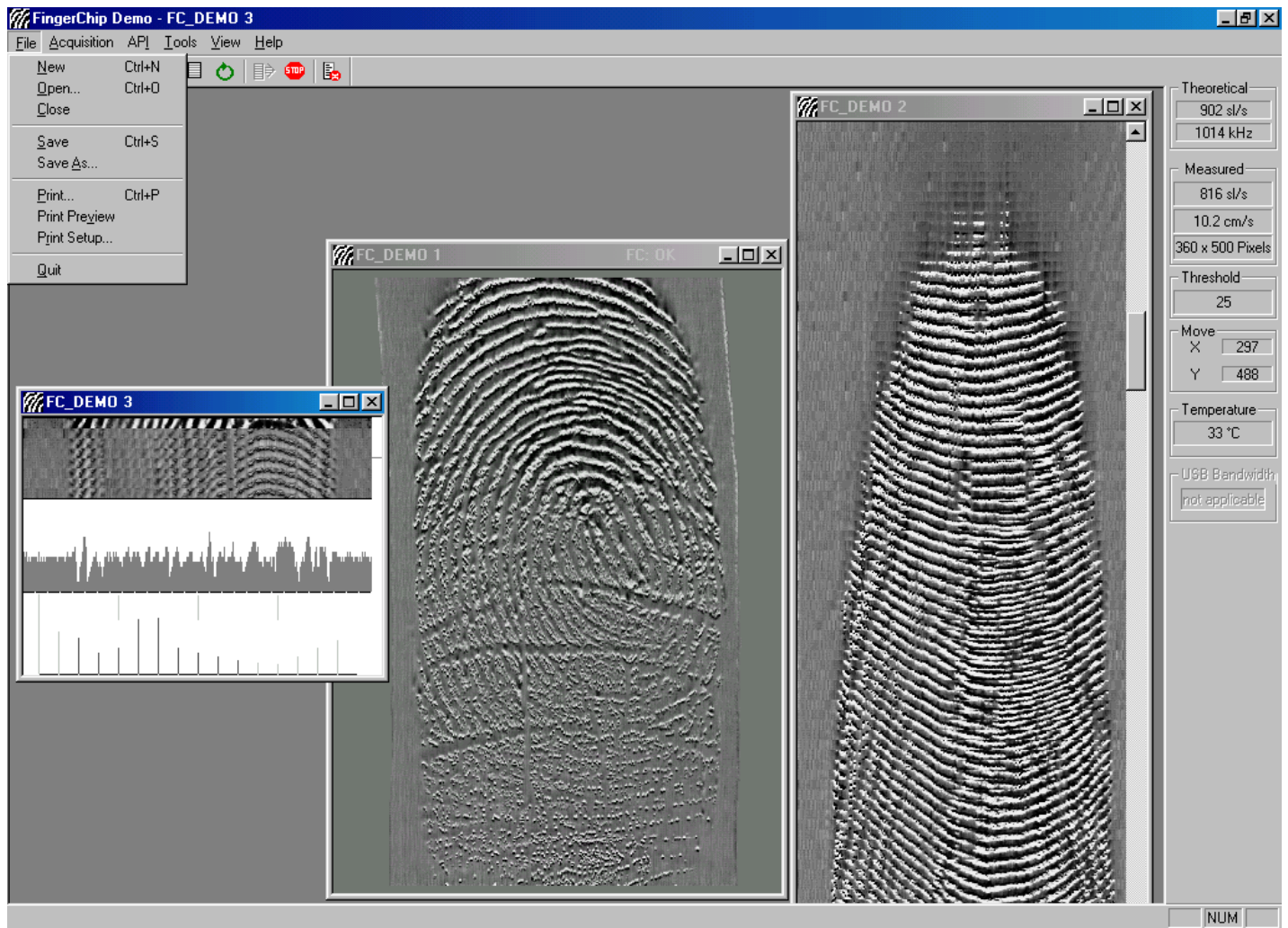
The areas are greyed when they deliver information that are not valid for the current device family.

## FC\_DEMO APPLICATION

With this application, you will be able to use the basic functions of the FingerChip, save fingerprint images, see the original slices.

FC\_Demo is an application which manipulates bitmap images. These objects are created by the acquisition and reconstruction functions or can be loaded from disk (.bmp files).

The areas are greyed when they deliver information that are not valid for the current device family.



## Menu Bar

### File Menu

You will find in this menu all generic functions you can use to find in a “File” menu concerning the management of the files, the closing and printing of the application.

### Acquisition Menu

The acquisition menu gathers the complete functions of the software. The result of these functions doesn't need further treatment.

### API Menu

The API menu allows testing all basic functions of the FingerChip demonstration toolkit.

### Tools Menu

The tools menu contains a link to the FC\_Parameters application and local software configuration. Note that FC\_Parameters is fully independent.

### View Menu

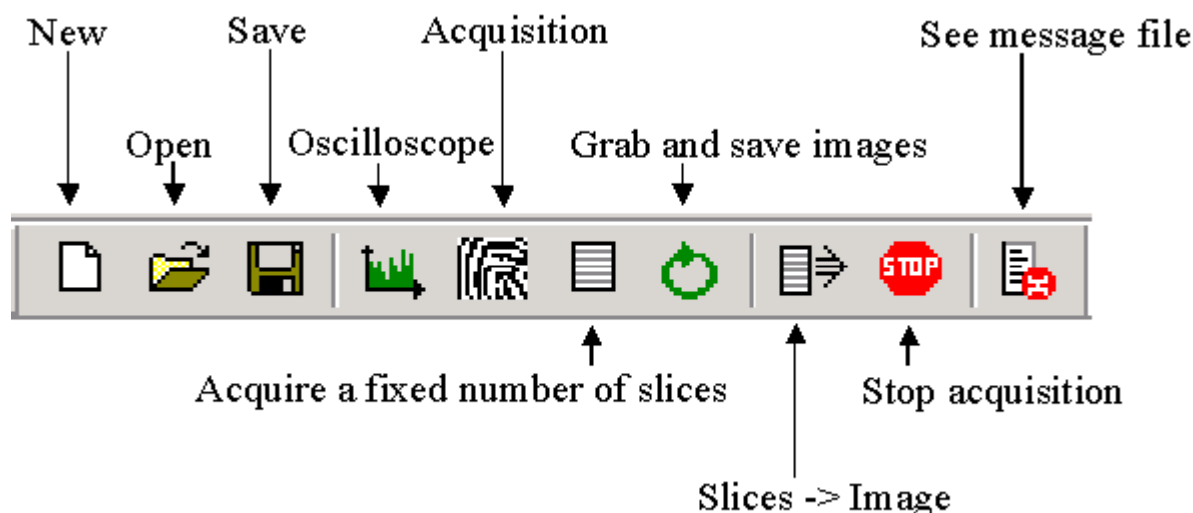
You will find in this menu all generic functions to manage Toolbars and Status bars.

### Help Menu

The help menu provides the information about the authors and the legal information of the software. A help PDF file is also accessible.

## Toolbar

The toolbar allows to easily access some of the functions detailed in ‘Menu Bar’ section. These functions correspond to the current use of FC\_Demo. See the menus for more functions.



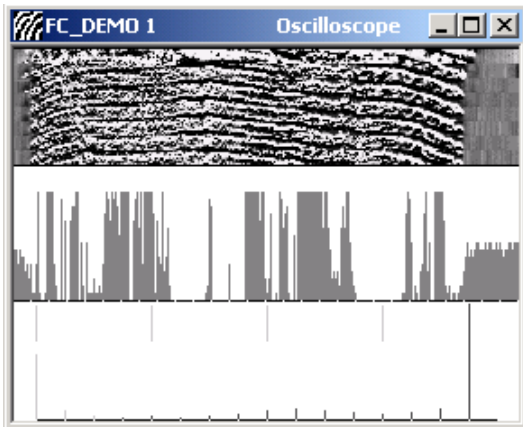


## Acquisition Menu

### Oscilloscope (F2)

This function captures continuously 8 slices. It also displays pixels values of one horizontal line and a histogram of grey colors dispersion.

By upper and down arrow, you can select the horizontal line you want to see.



slice 1

slice 8

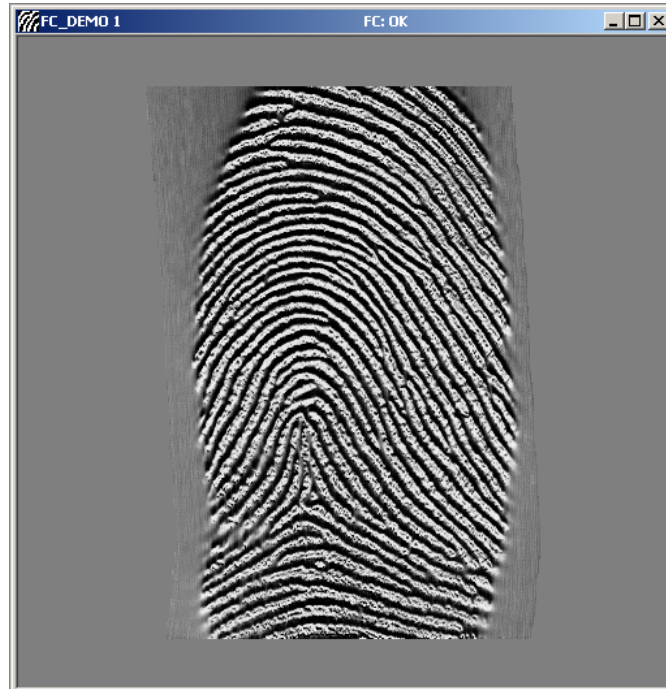
values of the selected pixel line

histogram of the selected slice

### Acquisition (F3)

This is a full function, which grabs a fingerprint.

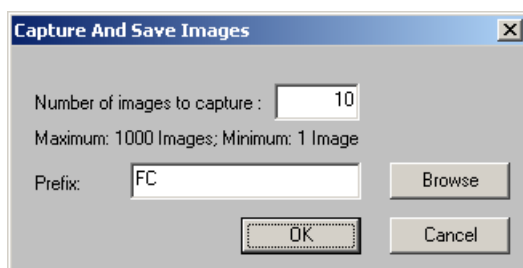
Select "Acquisition" and sweep your finger, your fingerprint is displayed.



Note: because of the reconstruction on the fly by slice packets, the source slices are not stored in memory, thus it is not possible to see them.

## Grab and save images

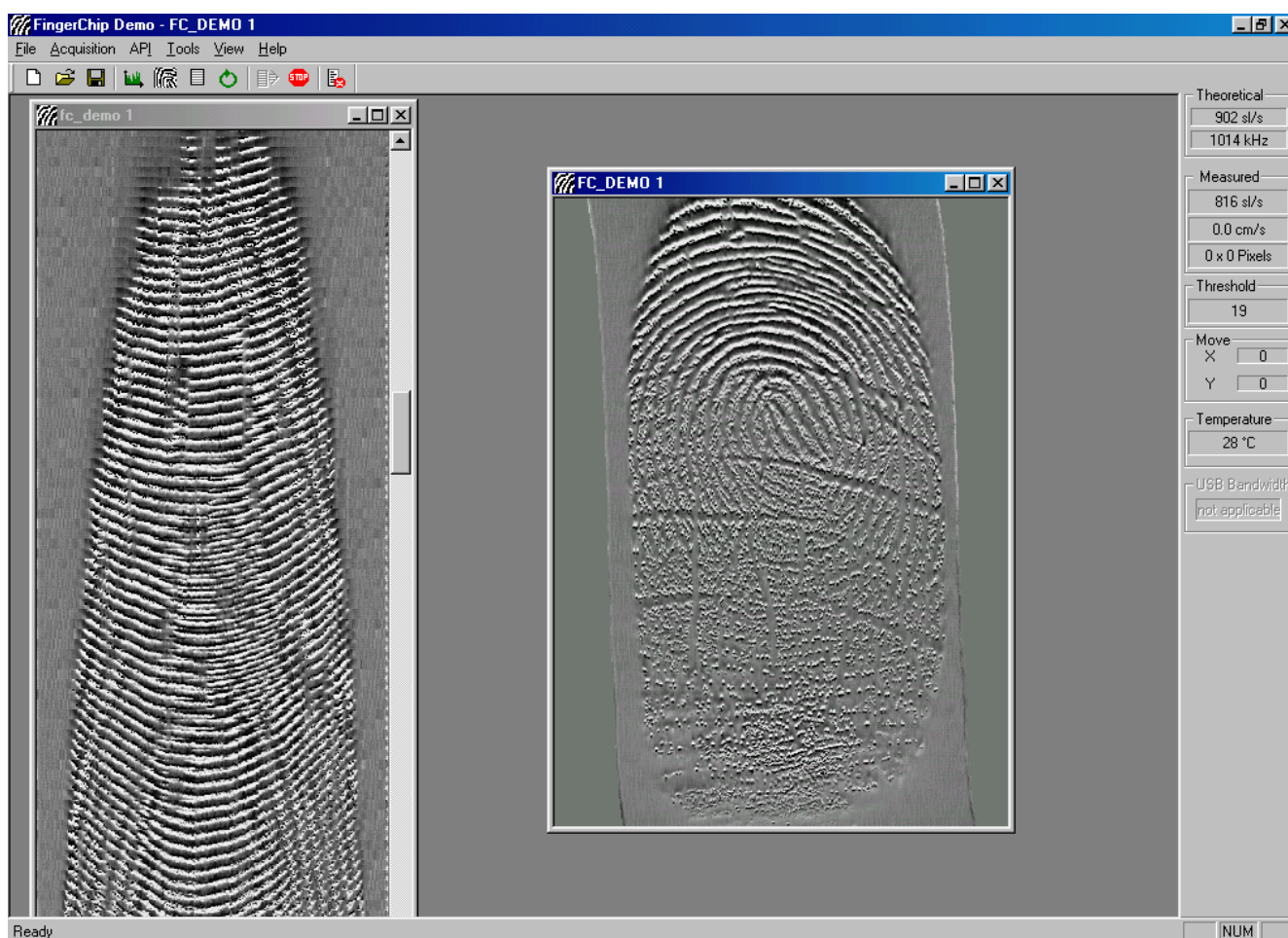
This function allows acquiring and storing a fixed number of fingerprints. First the user selects the image number and the location of the saved images.



Then, the user sweeps his finger to obtain all the images.

## Slices -> Image

From a slice acquisition (First you have to get an image of slices), this function reconstructs the fingerprint. A window contains the fingerprint and a second the initial image of slices.



Note that if your demonstrator is plugged on an UHCI port, every about 400 slices, a slice can be a little more contrasted. This is due to UHCI request management, which leads to integration time irregularity in the slice acquisition.



**Stop acquisition (F4)**

When one of the others functions is too long, or if you want to cancel an acquisition, you may press 'Stop acquisition'. This will stop continuous functions (as 'Oscilloscope' and 'Grab and save images').

## API Menu

### Open Device

This basic function declares a user. Note that there may be only one user connected at a time. See the error codes documentation for more information about the returned code.

### Close Device

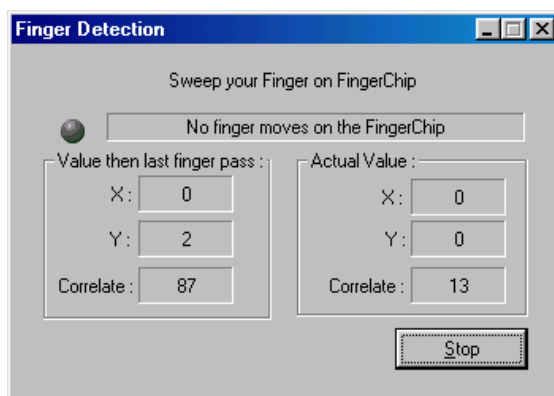
This basic function declares that the current user will release the pre-emption.

### Get Image

This function is the same as “Acquisition Menu: Acquisition”.

### Test Finger Presence And Displacement

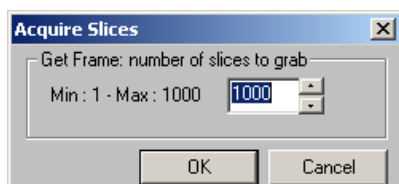
This function detects displacement on the FingerChip and updates information displayed below:

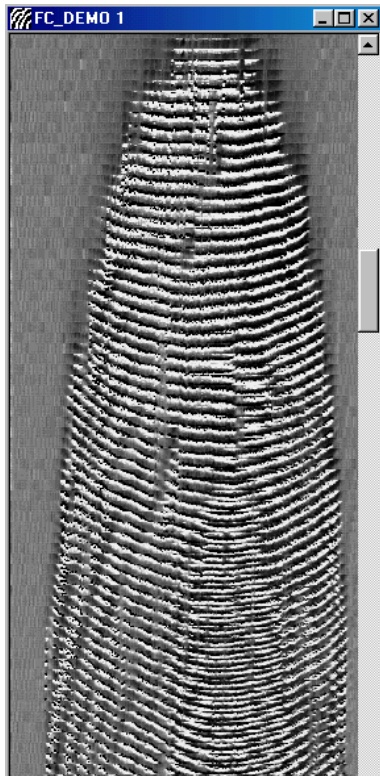


### Acquire a fixed number of slices

The user has to select the number of slices and then acquires the slices.

For Bioki reader the amount of slices to acquire corresponds to the finger sweep and is directly computed by the driver: so the ‘Acquire Slices’ window isn’t created.



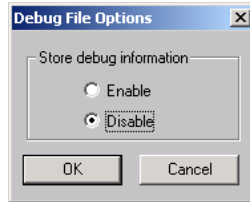


## Reconstruct image from slices

This function is the same as “Acquisition Menu: Slices->Image”.

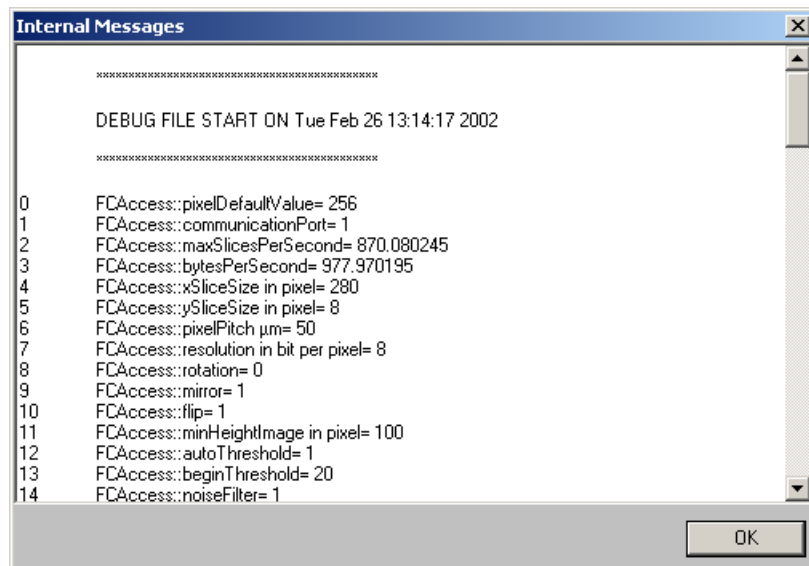
### Configure message file

This menu allows to enable or disable debug file information. The option is disabled by default.



### See message file

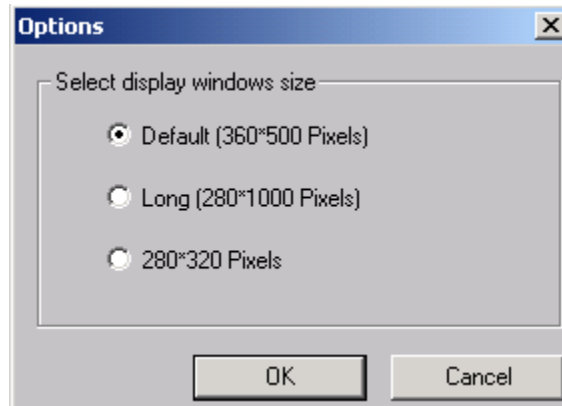
This function displays the debug file.



## Tools Menu

### Options... (F10)

The first selection field, “Select display windows size”, concerns the size of the next window you will open. Note that most of the windows you open are automatically resized.



## Help Menu

### About

Information about this application is displayed:

### Contents (F1)

With this menu, you reach this application note file (PDF format).

### Quick guide

A Readme PDF file describes the installation steps.

## Hotkeys

You can launch functions described below by hotkeys:

F1: Help

F2: Oscilloscope

F3: Acquisition

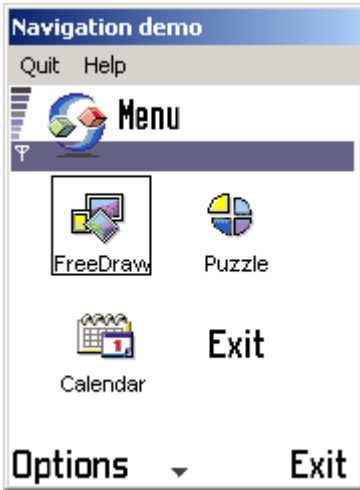
F4: Stop acquisition



## FC\_MOUSE APPLICATION

General remark: the AT77C104 chip embeds navigation and click functionalities in addition to the standard fingerprint acquisition. The click operation is either managed by the AT77C104 either performed by pressing one of the two buttons which are aligned with the sensor.

When starting FC\_Mouse the following menu appears. Each of the four applications (icons) is related to a different navigation and click capability of the AT77C104.



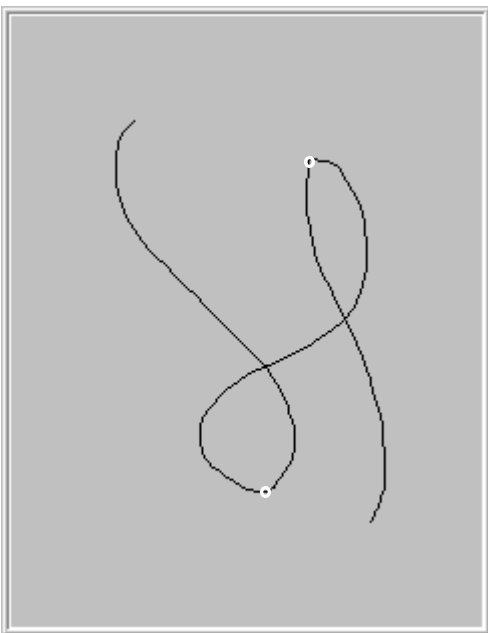
And now, forget your mouse, and use the demokit:

- Navigation and click are done with the FingerChip

These applications are accessible by clicking on one of the icon. Exiting from these application require that you press the ESC button. They are described below.

### Free Draw icon

This application shows the free motion capabilities of the AT77C104 chip. The aim is to allow the user to move and trace the cursor inside a defined window (clicks appear as white circles).



## Puzzle icon

With this application the user has to point and click on the number shown under the label 'Select this number'. When a number is pointed and clicked the score is updated.

The interface shows a 4x4 grid of numbers from 1 to 16. Below the grid, there is a text input field containing the number '1' and a label 'Select this number'. To the right of the input field is a score display showing '0 - 0' with the label 'Score' below it.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

1  
Select this number

0 - 0  
Score

## Calendar scrolling

This is an emulation of a standard cell phone calendar application: the scrolling and clicking capabilities allows to navigate in the months, days, meetings and edit texts.

The interface shows a calendar for June. At the top, there is a header with a calendar icon, the month 'June', and the date '01/06/2003'. Below the header is a table with days of the week (Mo, Tu, We, Th, Fr, Sa, Su) and dates. The date '1' is highlighted in the top right cell. At the bottom, there are two buttons: 'Options' and 'Back'.

June  
01/06/2003

	Mo	Tu	We	Th	Fr	Sa	Su
							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30						

Options Back

Clicking on the desired day opens the window below.



Thursday

19/06/2003

09 :
10 :
11 :
12 :
13 : Weekly
14 : Monthly
15 :
16 :

Options Back

Selecting an hour allows the user to fill in the form below.



Meeting navigation

Object Object of the meeting

This is the content of the meeting.  
You can use FingerChip  
to test click and navigation

OK

Backward navigation through the different windows is achieved with ESC.

## STANDARD TWAIN USE

For the reader (BIOKI01) that deliver Twain data, once drivers and Twain Dll have been installed, it is possible to use them from any standard imaging application.

## USB BANDWIDTH

Please note that these readers require nearly whole USB1.1 bandwidth.

## BUG REPORT

Send your bug reports to

[fingerchip@atmel.com](mailto:fingerchip@atmel.com)

with all relevant files that may help the debug.

## HISTORY

The followings show the changes compared to the previous release:

Version	Description
V14.04	It's now easier to change part number in FC_Parameters.
V14.02	The GUI of FC_Mouse has been modified.
V14.01	AT77C104B-EK2 reader is supported.
V14.00	AT77C104A-EK1 reader is supported.
V13.03	Better USB management for BIOKI01 reader
V13.02	BIOKI01 reader is supported. Windows Xp is supported.
V13.01	FCSWEEP06 reader is supported.
V13.00	OHCI support Better detection of defective FingerChip Minor bug corrections
V12.00	ANSI C Dll API Error number clarification
Before V12.00	The history has been flushed.



## Atmel Headquarters

### **Corporate Headquarters**

2325 Orchard Parkway  
San Jose, CA 95131  
TEL (408) 441-0311  
FAX (408) 487-2600

### **Europe**

Atmel SarL  
Route des Arsenaux 41  
Casa Postale 80  
CH-1705 Fribourg  
Switzerland  
TEL (41) 26-426-5555  
FAX (41) 26-426-5500

### **Asia**

Atmel Asia, Ltd.  
Room 1219  
Chinachem Golden Plaza  
77 Mody Road Tsimhatsui  
East Kowloon  
Hong Kong  
TEL (852) 2721-9778  
FAX (852) 2722-1369

### **Japan**

Atmel Japan K.K.  
9F, Tonetsu Shinkawa Bldg.  
1-24-8 Shinkawa  
Chuo-ku, Tokyo 104-0033  
Japan  
TEL (81) 3-3523-3551  
FAX (81) 3-3523-7581

## Atmel Product Operations

### **Atmel Colorado Springs**

1150 E. Cheyenne Mtn. Blvd.  
Colorado Springs, CO 80906  
TEL (719) 576-3300  
FAX (719) 540-1759

### **Atmel Grenoble**

Avenue de Rochepleine  
BP 123  
38521 Saint-Egreve Cedex, France  
TEL (33) 4-7658-3000  
FAX (33) 4-7658-3480

### **Atmel Heilbronn**

Theresienstrasse 2  
POB 3535  
D-74025 Heilbronn, Germany  
TEL (49) 71 31 67 25 94  
FAX (49) 71 31 67 24 23

### **Atmel Nantes**

La Chantrerie  
BP 70602  
44306 Nantes Cedex 3, France  
TEL (33) 0 2 40 18 18 18  
FAX (33) 0 2 40 18 19 60

### **Atmel Rousset**

Zone Industrielle  
13106 Rousset Cedex, France  
TEL (33) 4-4253-6000  
FAX (33) 4-4253-6001

### **Atmel Smart Card ICs**

Scottish Enterprise Technology Park  
East Kilbride, Scotland G75 0QR  
TEL (44) 1355-357-000  
FAX (44) 1355-242-743

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### **e-mail**

[literature@atmel.com](mailto:literature@atmel.com)

### **Web Site**

<http://www.atmel.com>

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