Compact Flash Floppy CFF 011

The Compact Flash floppy drive is designed as a replacement for the current 3.5" floppy drive; it should be used to replace the existing floppy drive and store the data on a Compact Flash card.

The CF card provides the capacity of several disks, which can selected using buttons. The selection is shown on a 2-digit display; an LED shows the active status.

So that the housing can be mounted vertically or horizontally, the 7-segment display can be rotated 90°.

Technical Data

Performance data

Interface connections	1 x Compact Flash connector 1 x Floppy Connector (34-pin) 1 x power plug (4-pin) 1 x Jumper (6-pin) 1 x Jumper (10-pin)
Internal interface connections and devices	2 buttons
Display	2 x 7-segment display 1 LEDs

Electrical requirements

Supply voltage	Typically +5 V	
	Minimum +4.75 V	Maximum +5.25 V
Current consumption of voltage supply	Circa 150 mA (typically)	
Starting current	4 A (max. 800 µs)	

Outer dimensions

Dimensions	25,4 mm x 101,6 mm x 149 mm (B x H x T)
Weight	315 g
Material (front, cover)	Polycarbonate plastic / sheet steel, hot-dip galvanized

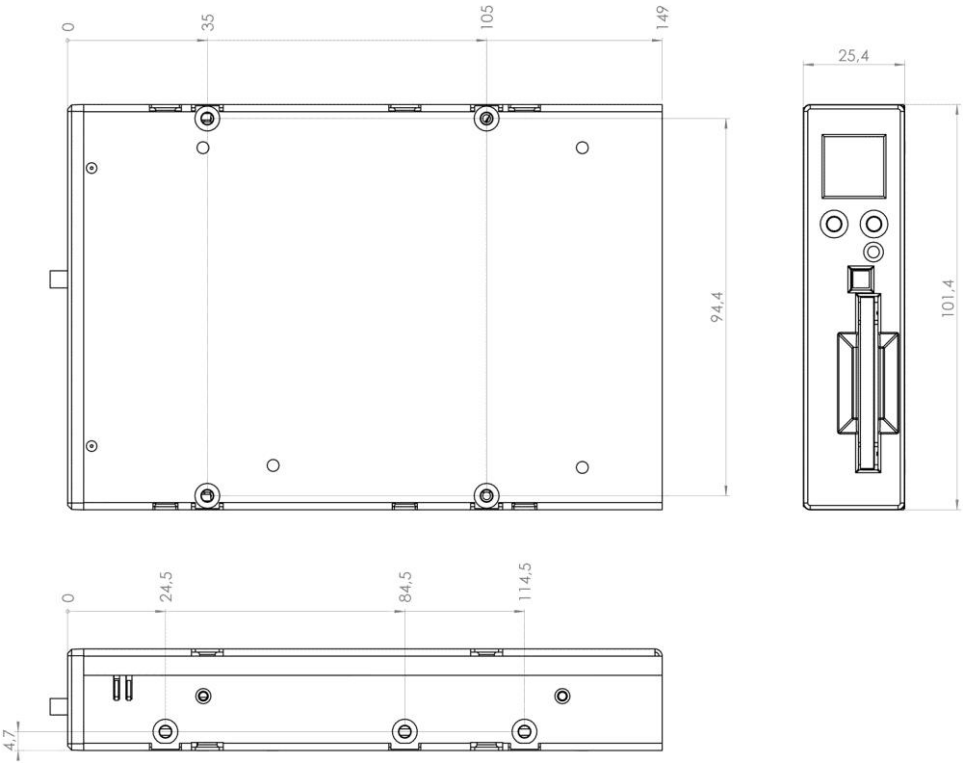
Miscellaneous

Hardware version	3.x
Article number	01-510-001 (horizontal) 01-510-002 (vertical)

Environmental conditions

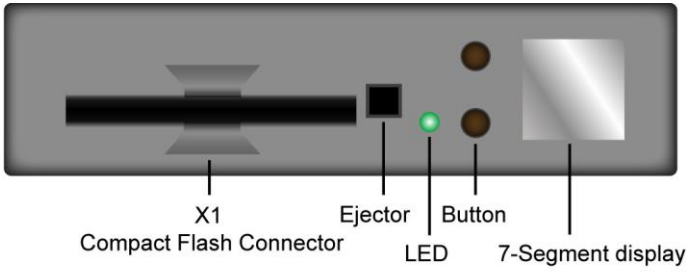
Storage temperature	-20 – +85 °C	
Operating temperature	0 - +50 °C	
Humidity	0 - 95 %, uncondensed	
EMV stability	According to EN 61000-6-2 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s²
Protection Type	EN 60529: Protected through the housing	IP 20

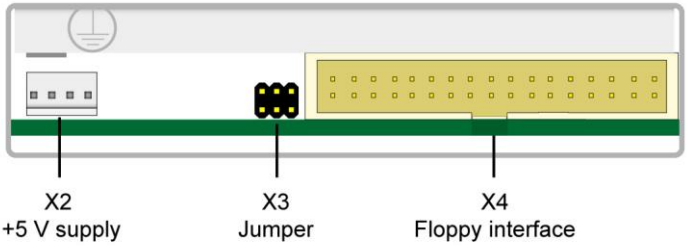
Dimensions



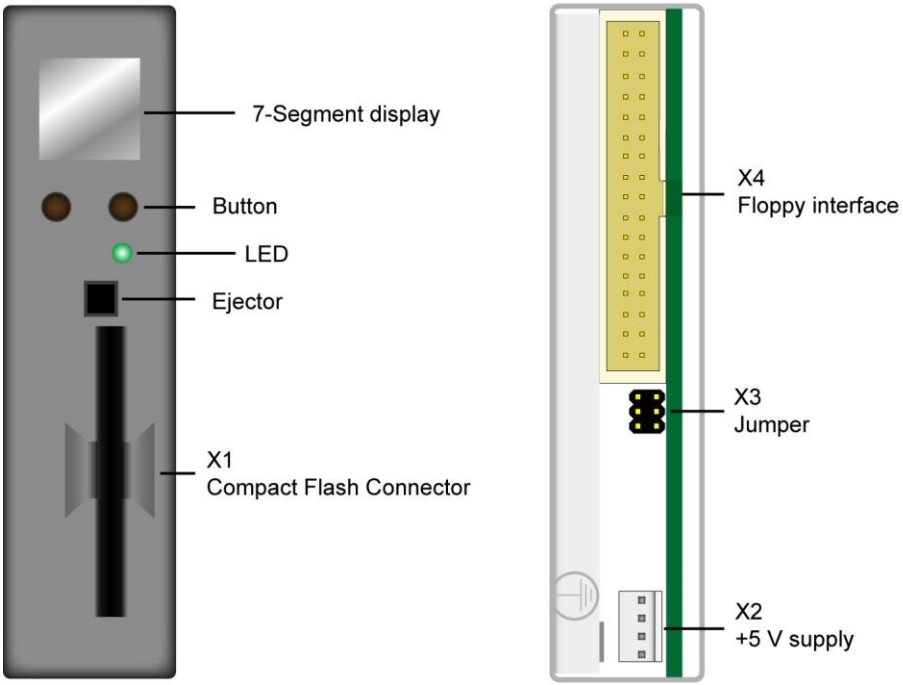
Interface connections

01-510-001

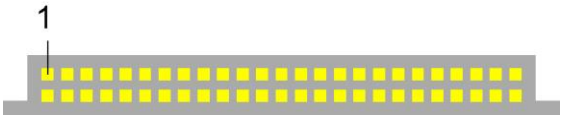




01-510-002

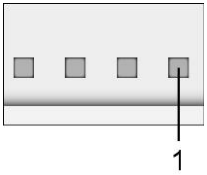

7-Segment display
Button
LED
Ejector
X1
Compact Flash Connector
X4
Floppy interface
X3
Jumper
X2
+5 V supply

X1: Compact Flash connector



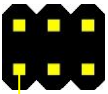
Pin	Function	Pin	Function
1	GND	26	/CD1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	/CSO	32	/CS1
8	A10	33	/VS1
9	/ATASEL	34	/IORD
10	A9	35	/IOWR
11	A8	36	/WE
12	A7	37	INTRQ
13	VCC	38	VCC
14	A6	39	/CSEL
15	A5	40	/VS2
16	A4	41	/RESET
17	A3	42	IORDY
18	A2	43	/INPACK
19	A1	44	/REG
20	A0	45	/DSAP
21	D0	46	/PDIAG
22	D1	47	D8
23	D2	48	D9
24	/IOCS16	49	D10
25	/CD2	50	GND

X2: Power plug



Pin	Function
1	+5 V
2	GND
3	GND
4	-

X3: Jumper



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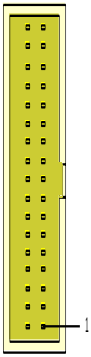
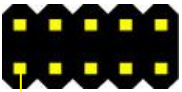
Pin	Function
1	680 Ω termination
2	GND
3	HD/ DD drive / Disk change DD drive only / Standard ready
4	GND
5	Drive A/B
6	GND

X4: Floppy Drive



Pin	Function	Pin	Function
1	GND	18	/DIR
2	/DENSEL	19	GND
3	GND	20	/STEP
4	/In use	21	GND
5	GND	22	/WDATA
6	/DSC	23	GND
7	GND	24	/WE
8	/Index	25	GND
9	GND	26	/TRK 0
10	/MEA / DSA	27	GND
11	GND	28	/WP
12	/DSB / DSB	29	GND
13	GND	30	/RDATA
14	/DSA	31	GND
15	GND	32	/HDSEL
16	/MEB / ME	33	GND
17	GND	34	/Disk change / Std. ready (siehe „Setzen der Jumper“)

X5: Jumper



1

Pin	Function
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	Button switch
10	Button switch

Applicable connectors

Power supply: 4-pin standard floppy connector
Floppy Connector: 34-Pin spring terminal

Setting the Jumper

X3:

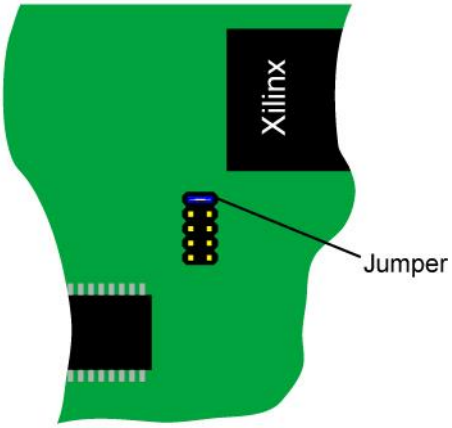
If a jumper is set on pin 1 and 2, the floppy inputs are terminated with 680 Ohms. Using this drive in older systems with long connection lines or in combination with 5 ¼ " drives require, in some circumstances, a low-ohm line termination on the end of the floppy cable. This termination can then be activated by setting jumpers on the last drive in the line. Please consult the PC handbook!

If a jumper is set on pin 3 and 4, the drive can be operated as a DD drive only. In this case, the signal on pin 34 (X4) is configured as the default Ready signal. If the jumper is not set, the drive can be used as both an HD and DD drive. The signal on pin 34 (X4) is then configured as a disc change signal (PC standard).

If a jumper is set on pins 5 and 6, the floppy cable no longer needs to be disconnected in order to switch from drive B to drive A.

X5:

If a jumper is set on pins 9 and 10, the function of the two red buttons is switched. No jumper can be set on pins 1 – 8.



Buttons

Depending on the capacity and formatting, 1 – 99 disks can be stored on the Compact Flash card. The individual diskettes can be selected with 2 buttons.

If the highest possible diskette is reached through pressing the button, the counter starts at diskette 1 with the next press of the button. If the lowest possible diskette is reached, the counter then starts with the highest diskette.

When both buttons are pressed simultaneously, the firmware version is displayed. In the event of an error, the IDE error code is shown (see "Displays – Special Cases" page 10).

While a selected diskette is being accessed, another diskette can only be selected when the respective button is pressed longer than 5 seconds.

Displays

If no compact card is in the slot, the display remains in the off state. As soon as a card is inserted, the program version blinks several times and then the selected diskette is shown.

Special cases

Display	Definition
no	1. The card is not formatted and no container file is available. 2. No sufficient supply is connected.
FF	An access error has occurred on the Compact Flash card. If both buttons are pressed simultaneously, the corresponding IDE error code appears.
UP	The card inserted is an update-card; an update is currently in progress. The display then turns off. The card must then be removed and a restart performed.
nU	The update has failed and must be repeated.

IDE error codes

Display	Definition
01	General error
02	Timeout error
04	Compact Flash status error (not finished, write error...)
10	The sector could not be found
40	Non-correctable error
80	Incorrect block detected

Rotating the 7-Segment Display

To rotate the 7-segment display, the four screws must first be removed.	
The cover can then be removed	

Next, the front panel is removed.	
Rotate the 7-segment display 90° into the second socket terminal.	 

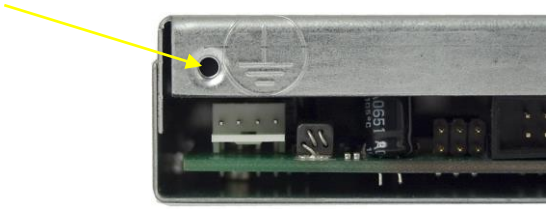
Wiring and Mounting Instructions

Earth Connection

It is important to establish a low-Ohm connection to ground to ensure error-free function. The earth connection must be made with the maximum cross section and largest electrical surface possible.

To establish a sufficient connection to ground, a ground cable must be connected to the marked threads on the back of the device.

M3 threads



Shielding

For the floppy wire, a shielded cable is recommended, which should then be connected to ground in the Compact Flash floppy as well as in the PC.

Cable length

The maximum permitted length of the cable is 60 cm.

When using two CFF 011 drives in one system, one drive must be jumpered (drive A) while the second drive cannot be jumpered (drive B)!

Compact Flash Floppy Tool

Free download under:

http://www.sigmatek-automation.com/en/products/special-applications/diskette-emulator/cff-011/

under the section Downloads.

The Compact Flash Floppy Tool allows data on a 3.5" diskette drive to be stored on a Compact Flash card and reverse. The compact flash card provides the capacity of several diskettes ("images"). Depending on the capacity and formatting, 1 – 99 disks can be stored on the Compact Flash card.

For comfortable operation, it is recommended that the "CompactFlashFloppyTool.exe" be stored on the hard drive. Installing the software is not required.

Additionally the "ImDisk" tool can be installed with the “imdiskinst130.exe“ installation program. This tool is a virtual disc driver used to easily edit the single disc images.The image, which is included in the virtual disc, is displayed as a drive in the explorer.

The manufacturer recommends using industrial grade Compact Flash cards.

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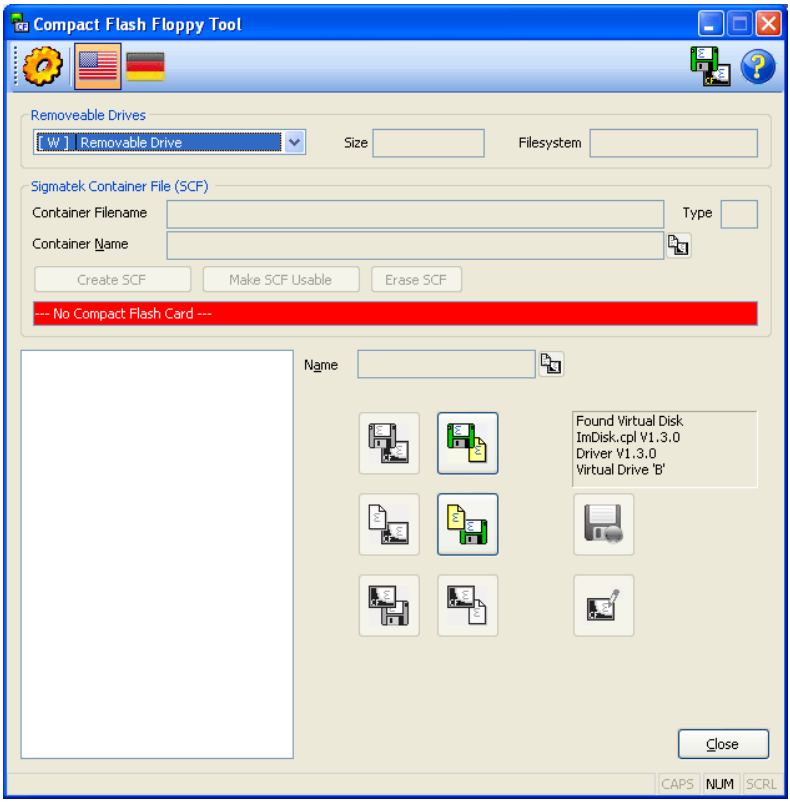
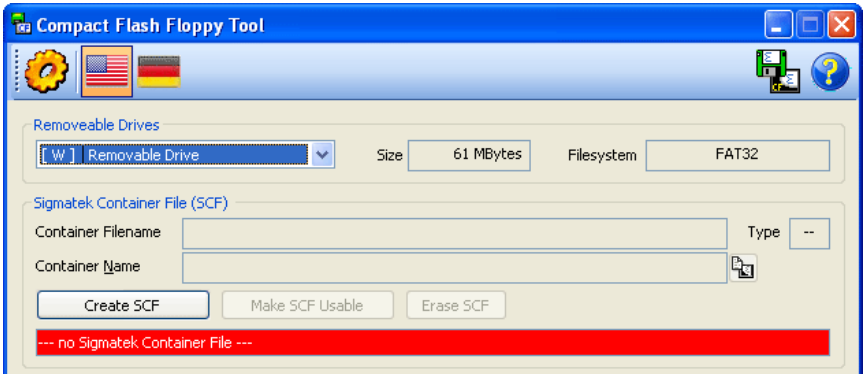
1. Using a New Compact Flash

To configure a new or newly formatted Compact Flash card for the drive, the following steps must be followed.

a) Open the "CompactFlashFloppyTool.exe" file. If no compact flash is inserted, the following window appears:



If a new or newly formatted (wit FAT16 or FAT32, non NTFS) compact flash card is inserted, the following dialog appears.



The drive description (i.e.: drive W), capacity (61 Mbytes) and file system (FAT32) of the compact flash card is displayed.

b) Press the Create SCF button to open the " Create Sigmatek container file" window.

Under "Container Name", a user-defined container name can be assigned. Under "Number of images", the number of "diskettes" for which the Compact Flash is configured can be defined.

With the "Copy program to the Flash card" control box, the Compact Flash Floppy Tool is stored on the Compact Flash card. Depending on the storage capacity of the Compact Flash used, the available memory space for images ("diskettes") can be reduced.

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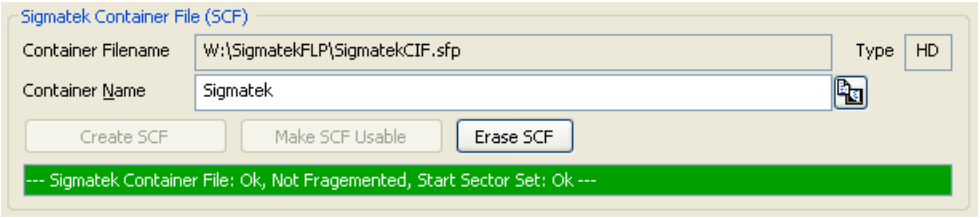
The "Create autorun.inf file" box, the Compact Flash Floppy Tool is automatically started as long as the autostart function in Windows is activated. This option does not reduce the space available for diskette images.

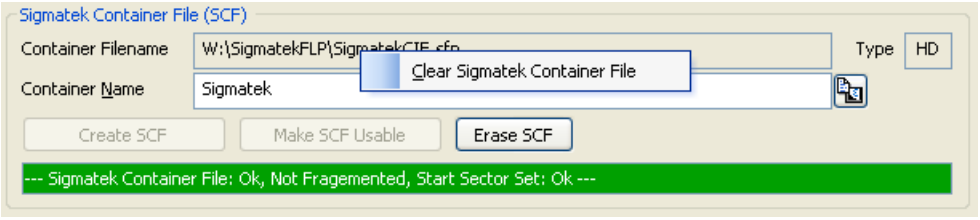
c) When the 

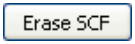
button is pressed, the Sigmatek container file is created.

Once the Sigmatek container file is created, the following display appears:



If the mouse pointer is located over the "Container file name" field, the right mouse button can be used to delete the entire container and steps b) and c) must be repeated.



d) Via the 

button the CF card can be deleted and restored, in order to use it under Windows again later on.

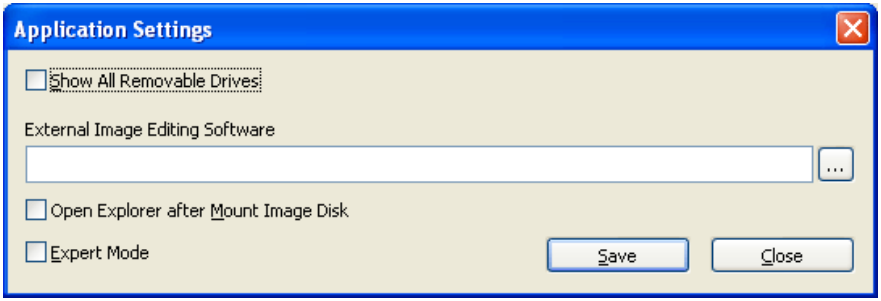
2. Settings

With a mouse click on the program symbol in the upper left corner of the Compact Flash Floppy Tool window, a menu with the following entries is opened:

An overview of selectable points

Selection	Menu symbols	Function
Application settings		Here, various application settings can be changed.
Registration of .SFP file ending		The program adds the file ending of the Sigmatek container file to the registry of the computer being used. A double click on a Sigmatek container file now opens the program automatically.
Language		Language conversion: German/English
Info…		Shows the version number and program information
Help		Opens the quick help

The "Application settings" window appears as shown below:



When the control box "Show all removable Drives" is activated, the program detects all removable drives using the manufacturer/product description (system manager). This is then shown in the program window under "removable drives" and the desired Compact Flash can be selected.

In the input line, an external program can be entered with which Compact Flash images can be edited (i.e. WinImage from www.winimage.com).

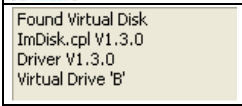
Press the  button to select the path for an external program.

To edit Compact Flash images, the editing program should always be called from the Compact Flash Floppy Tool using the  button.

Activating the "Expert mode" control box provides additional functions (see point 3 "Additional Functions in Expert Mode").

If the control box next to "Open Explorer after Mount Image Disk" is activated and the  button is pressed, then the Explorer will automatically be opened and the virtual drive will be selected.

3. Overview of Program Functions

Button	Function
	Copies diskette to Compact Flash – copy data from the diskette to the Compact Flash card.
	Copy diskette to image file – copies the image files from the disk to the hard drive (for later use).
	Copy image files to the Compact Flash – copies the image files from the hard drive to the Compact Flash card.
	Copy image file to diskette – copies the image files from the hard drive to the diskette.
	Copy Compact Flash to the diskette – copy data from the Compact Flash card to the diskette.
	Copy Compact Flash to image file – copies the image files from the Compact Flash card to the hard drive (for later use).
	Save container or image name after changes.
	Shows whether the virtual driver, respectively, the disc including the corresponding drive letter hast been found or not.
	Includes the image file (that has been selected in the left window) to the virtual drive. The disc content can then be edited, for example with the Explorer. This is only possible when the "ImDisk" tool has been installed.
	In a path is entered in the application settings, the program starts editing the image. If images were changed, the user is asked whether the changes should be accepted.
	Ends the Compact Flash Floppy Tool.

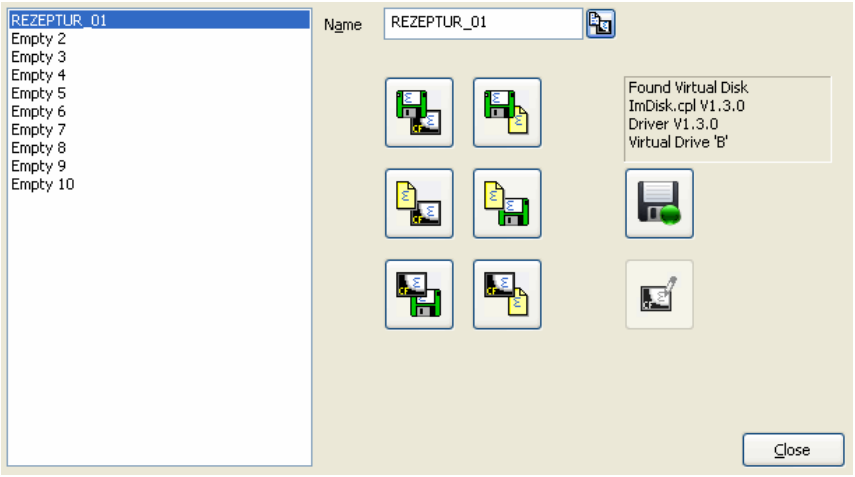
Additional functions in **Expert mode**

Button	Function
	Hex view Compact Flash image – display mode of the select Compact Flash image (single entry) in the hexadecimal system
	Hex view Compact Flash – display mode of Compact Flash data in the hexadecimal system
	Hex View Floppy – display mode of floppy disk data in the hexadecimal system
	Using the "FPGA Update" button, updates can be selected and loaded.

4. Editing Compact Flash Images

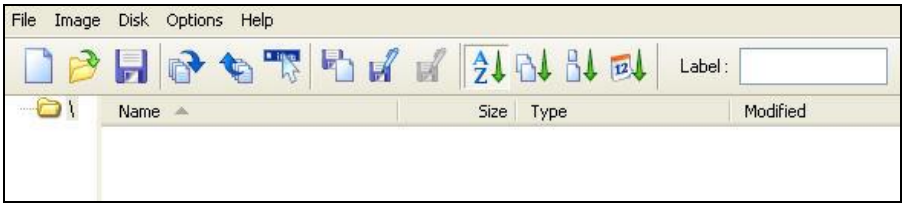
This example demonstrates the editing of a Compact Flash image using WinImage (www.winimage.com).

An empty Compact Flash image ("diskette") was renamed "REZEPTUR_01". Next we would like to save a text document called "Recipe_Batter" from the desktop in the "image REZEPTUR_01".



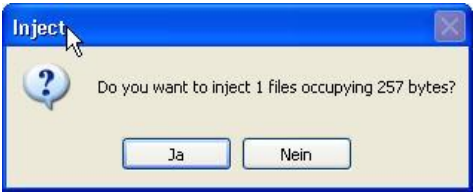
The Compact Flash image ("diskette") also be marked or selected (blue background).

Click on the  button to start WinImage (See point 2 "Application settings").



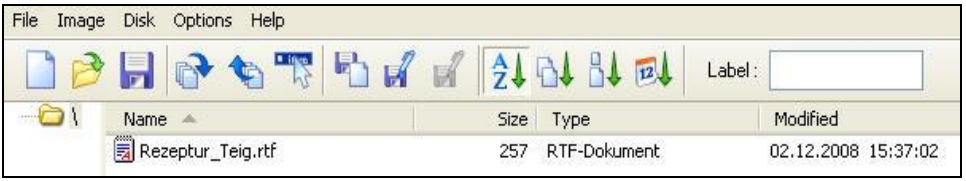
Using the Drag & Drop method, place a text file from the desktop in the WinImage window.

A window then appears:



Click "Yes" to confirm.

The text document is now loaded in the WinImage.



Save and close WinImage using the  button

The WinImage program can now be closed.

In the following window, confirm the changes:

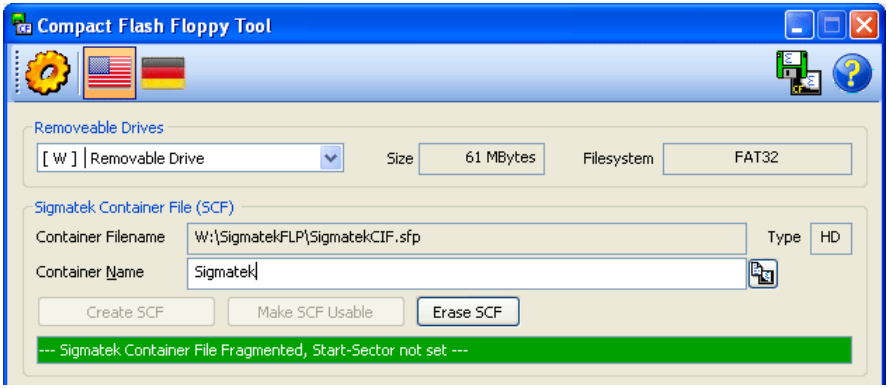
The process is now complete.

Using the  button, the stored file can be displayed

With "DEL/Enft" or with a click with the right mouse button and "Delete File", files can be deleted from the "diskette".

5. Defragmentation of the compact flash

If the compact flash appears to be fragmented, the following is displayed:



So that a Compact Flash can be used for a Sigmatek container file, a "start sector" must be set. If a start sector cannot be set, the Compact Flash must be defragmented (recommended: HDiskDefrag von http://www.withopf.com/tools/hdiskdefrag).

This process can take several minutes.

After defragmenting, delete the Sigmatek container file and repeat point 1 "Using a new Compact Flash".