HaSoTec Color Frame Grabber
FG-30 PCMCIA
FG-31 ISA
FG-32 PCI
FG-33 CardBus
FG-34 PCI
FG-35 LPPCI

MS-DOS Software
Standard VGA Software

User Program

FG30VGA.EXE

Version 4.87

Contents

1. The program FG30VGA.EXE

This program contains functions to operate a HaSoTec Frame Grabber FG-30 in PCs with at least a 80286 CPU and a VGA graphics board.
When the program is started, the main menu and an empty image box appear. This box contains a palette bar on its right border. You can select functions from the menus can in one of two ways:
1. A cursor can be moved on the menu items in all directions with the arrow keys. Pressing the enter key will activate the selected item.
2. In all menu items one upper case character is marked. One can activate the function simply by pressing the corresponding key.
All functions can be cancelled by means of the escape key.
In texts, the letter in square brackets corresponds to the key for activating the function.
All following section titles correspond to one of the menu items.

1.1. [V]ideo source

When the HaSoTec Frame Grabber FG-30 is connected to a video source which supplies a signal, the VGA graphic board automatically switches to a mode simulating 256 grey levels. A standard VGA board can only show a part of the entire image if 256 grey levels are digitized. Use the arrow keys to change the part of the image that is shown.
If you are using a fast PC you will see at least every second frame from a video source. In this simple way, you can grab images and monitor a moving video source using only one monitor. The moving video source you see on the screen is already a sequence of digitized images. By pressing any key you can freeze the actual image and return to a higher VGA resolution.
The last image shown is temporary stored in the PC's main memory.

The graphic board now shows the main menu in 16-color mode. The image box contains the last digitized image in 16 grey levels. Using the following function it is possible to redisplay the image in 256 grey levels.

1.2. [C]ga 8 bit mode

This function shows the last digitized image in 256 grey levels or 256 colors. From an image with a total size of 384x288 pixels a 320x200 pixel-section will be zoomed over the entire screen. The part of the image shown can be moved using the arrow keys in all directions. [Esc]cape will cancel this function.

1.3. [A]quire

When you select this function, a submenu appears. The first function in the submenu, which is selected by pressing the key [A] once again, digitizes a grey-level image of 384x288 pixel size, as described in 1.1.
Video cameras usually have problems with low light levels. Increased noise reduces the image quality. Using averaging, each pixel is calculated from pixel values of more than one image. Good results can be obtained if the content of the image does not change until the averaging process is finished. This method is selected by the key [B] for images with a size of 384x288. A further submenu allows you to set the number of images to be averaged in the range of 2 to 256. After a number has been selected the video source is shown once again. The averaging procedure is started by pressing any key. The entire capacity of the CPU is involved in the addition of frames until the last image has been saved. For this reason there is no online display of the video source. When the averaged image has been calculated, all menu boxes close and this averaged image is shown.
The function [C] in the submenu is similar to function [A] except that it works in color. During the display of the video source, only 256 fixed colors are visible. Colors are corrected to the most frequent 256 colors when an image is frozen. Color reduction can be controlled by the Options... menu. Standard VGA modes are only of limited value for showing color images. Function [C] produces a memory-internal image with $16{,}7 \times 10^6$ colors reduced to 16 and to 256 colors for display purposes.
The rough grid of VGA color boards and the extreme level of color reduction can only result in poor image quality. A reduction to 16 colors results in even more extreme results. For grabbing in color, a HiCOLOR graphics board in conjunction with the program ET4HiCOL or with MS-Windows will produce far superior results. One can then save an image in 24-bit bitmap format (*.BMP). During the display of a video source, the color components red, green and blue can be increased by [F9], [F10] or [F11] or decreased by [Ctrl][F9], [Ctrl][F10] or [Ctrl][F11], respectively.

1.4. [H]istogram

This function shows a scaled grey-level histogram of the last image captured. This function describes the relative frequency of each grey level in a plot of 256x128 pixels. The lowest luminance value, "black", has the grey level 0 and appears on the left side of the plot. The rightmost level, "white", has the grey level 255. The color bar at the bottom of the plot shows the color or grey level assigned to obtain a display using 16 false colors. If you don`t wish to change this setting, you can leave this function by pressing the [Esc]ape key. All color or grey levels for 16 false colors are assigned to the keys [0] to [9] and [A] to [F]. You can use these color keys to edit the color bar. As long as you keep the color key pressed, you see a cursor

moving from left to right, assigning this color to the corresponding grey levels of the histogram. Color keys can be used in any order and as often as needed. The [Esc]ape key stops the editing process and all remaining values are assigned to the color key [F]. Now the image is redisplayed to show the changed image.
Saving images in 1-bit or 4-bit image file formats uses these settings to reduce the entire 8-bit pixel. In this way any false color function can be used to reduce image data from 8 to 4 or 1 bit.

1.5. [O]ptions

This function can be used to set all FG-30-related parameters. The keys [page up] and [page down] can be used to change parameters. The meaning of these parameters is described in the user documentation of the program FG30CLIP.

1.6. e[X]change

When digitizing grey-level images with a size of 384x288 pixels, two frames will fit into the PC's memory. E[X]change swaps the buffers of both images. A background image appears as an icon in the top right corner. If frames are captured with averaging, the second frame will be destroyed.

1.7. [G]reyscale 16

This function sets the palette to 16 grey levels.

1.8. [P]alette & color

Section 1.4 describes how to assign colors to grey levels. The number of these colors was limited to 16. These colors can be manipulated through color lookup tables. When you start this function, a window containing the actual palette appears. Use the [up] and [down] arrow keys to move to the color you wish to manipulate. You can then manipulate this color using the [left] and [right] arrow keys. The effect of manipulating palette colors results in immediate changes of colors on the screen. No information is lost, however, as the changes have no effect on the pixels in the frame buffer. Selecting this function also switches from 16 grey levels to color. The color bar disappears if you press the [Esc]ape key.

1.9. [R]edisplay

This function updates the screen with the last digitized frame.

1.11. [Z] Zoom

When you start this function, a movable (arrow keys) box appears. When you move this box onto an area of interest, a small zoomed display is shown. Pressing any other key terminates this function.

1.12. [H]elp

This menu item shows the version number of this program.

1.13. [T] Test and service

In a submenu, various service functions can be selected.
The function *[D]ump ...* can be used to present memory areas in hexadecimal and ascii forms. After activating this function, you can specify the starting address in a range from 0 to 16 Mbyte. Use the [enter] key to “walk through” the memory. [Esc]ape closes this function.

The function *[S]how system settings* can be used to show some system-internal values. If there is more then one frame grabber installed, a base address allows you to switch between boards. The function *[R]eading performance test* can be used to detect the hardware throughput of a system.

The function [*G]raphic board performance* is another test to check the speed of a graphics board. Fast PCs can reach values of about 60 images per second. The function *Grey bar* produces a test image.

1.14. [S] Save

The export of images into other program systems is of special interest for many users. This program version supplies 12 image formats. Every menu item leads to a dialog box in which the filename of the output file can be specified. If the destination software can work with various image formats it is recommended that you use a format which leads a minimum loss of information. Thus, the best choice is a TIFF format.

1.15. [L] Load

Most of the file formats which can be saved can be reloaded by this function.

1.16. [B]ackground

This function allows you to show hidden areas of false color images. The main menu disappears. This function may be of interest while you are using screen capturing utilities. Any key can be used to leave this function.

1.17. [F] Movies

This function can be used to play and record image sequences. These functions can only be used in conjunction with an appropriate EMS-driver that supports the standards LIM EMS 4.0 or LIM EMS 3.2. If you install an EMS driver, up to 128 image buffers are available
The function *[A]cquire film* can be used to record image sequences at slow frame rates. Each recorded image is shown as an icon.
A high speed recording can be realized using *[Q]uick capture*. This works without showing any images while recording. At the end of the recording, the sequence will be shown in a loop until [Esc]ape is pressed. During the replay, all parts of the sequence can be selected by using the arrow keys.
Captured sequences can be replayed at any time using the function *r[E]play in 256 grey levels*. If *replay [C]ount* is set to 0 the player loops until it is interrupted manually. The Count value can be specified in a range from 0 to 255. The function *replay [D]elay* can be used to slow down the output of a sequence. Values can range from 0 to 255.
With *[R]eplay film*, a film sequence can be shown in false color mode.
Each Image can be accessed from a sequence using the function *[G]et frame n from film*. The reverse is possible with [*P]ut frame n to film*. Captured sequences can be saved as *.FLM files by using the function *[W]rite film to disk*. To restore a film use the function *[F]ilm from disk*.

1.18. [B] Exit

Answer the question with [Y] to end the program.