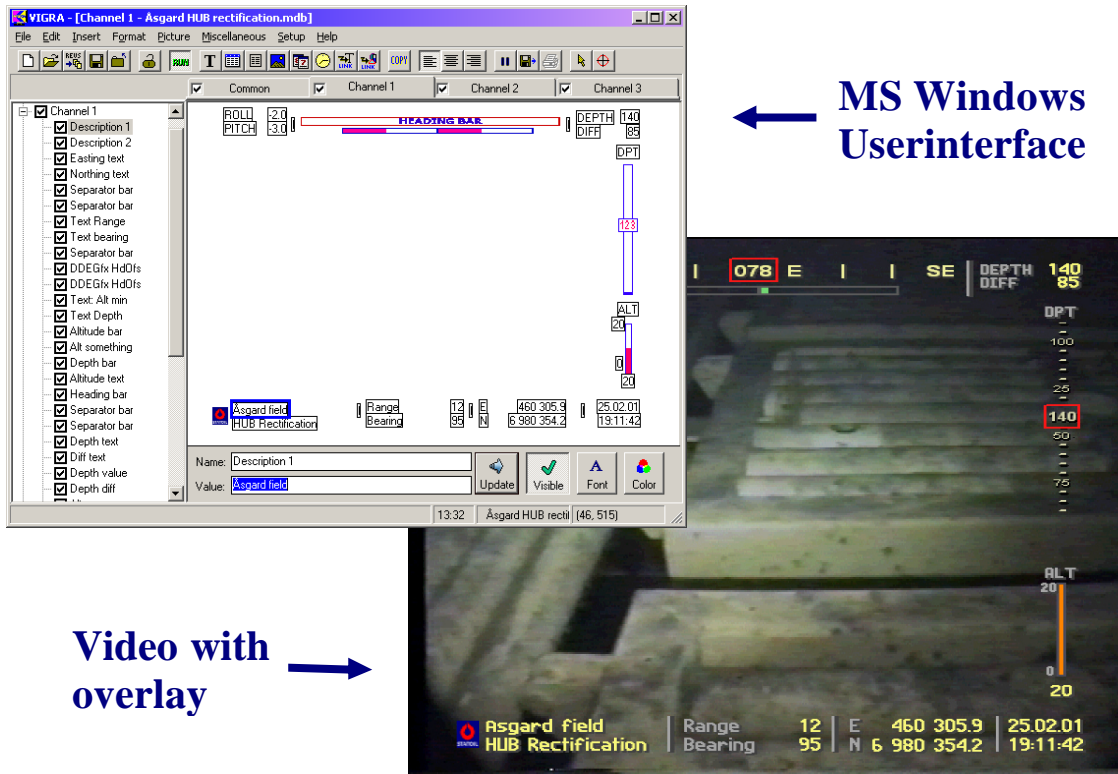


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1. Introduction

Options **VIGRA** (Video **G**raphics) is a Windows application for superimposing text and graphics ontop of live video signals:



The system is designed to work with either TARGA+, VIGA+, AVM200, IRIS boards or external VGA overlay boxes.

2. Software and hardware compatibility

2.1 Software

Options Video Graphics is a 32-bit application, and should run under the following Windows versions:

- Windows 95
- Windows 98
- Windows NT 4.0
- Windows 2000
- Windows XP

Some limitations can exist for different hardware versions

2.2 Hardware

Most standard PCs can be used.

For VIGA/TARGA: Requires a full-length ISA slot. Also see special VIGA note below!

For AVM200/IRIS: Requires a half-length PCI slot.

For external VGA overlay box: Requires dual VGA output with extended desktop.

2.2.1 Video noise problems for VIGA+ adapter

It should be noted that the VIGA+ adapter is very dependent on a stable +12VDC from the ISA bus. It has been shown that on some newer PCs the power supplies fail to deliver this stability, and the result is a noisy or flickering video picture, usually related to the variable power consumption caused by cooling fans or harddisk activity.

One way of reducing this noise is to turn off **all** kind of power save functions. Go into the BIOS settings at bootup and disable APM plus ACPI power save features.

If this does not help, then try to **a)** add an extra 12VDC supply dedicated for the motherboard and its buses, or **b)** add an extra full PC powersupply that is used for fans and disks only. Please contact us for more details should this be necessary.

3. Installation and configuration

3.1 Installing VIGA/TARGA boards

The normal installation procedure is to 1) verify that the needed hardware resources in the PC *is available*, then *reserve* the resources, 2) physically install the hardware, 3) install software, 4) configure software drivers, reboot, 5) Run the VIGRA application, fine-tune video picture through video setup dialog.

3.1.1 Find & reserve system resources

Both the TARGA+ and VIGA+ uses the same register and memory mapping. Depending on wich register base-address is selected, the following I/O addresses must be available prior to installation:

Base I/O address	All occupied I/O addresses:
200h	200h - 203h, 600h – 603h, A00h - A03h, E00h - E03h
210h	210h - 213h, 610h – 613h, A10h - A13h, E10h - E13h
220h (default)	220h - 223h, 620h – 623h, A20h - A23h, E20h - E23h
230h	230h - 233h, 630h – 633h, A30h - A33h, E30h - E33h
240h	240h - 243h, 640h – 643h, A40h - A43h, E40h - E43h
250h	250h - 253h, 650h – 653h, A50h - A53h, E50h - E53h
260h	260h - 263h, 660h – 663h, A60h - A63h, E60h - E63h
270h	270h - 273h, 670h – 673h, A70h - A73h, E70h - E73h

If more than one board are installed, reserve a address set **for each** board

For the memory mapping, either A, B, C, D or E segment can be used:

Segment	All occupied memory addresses:
Ah	A0000h – AFFFFh
Bh	B0000h – BFFFFh
Ch	C0000h – CFFFFh
Dh	D0000h - DFFFFh (default)
Eh	E0000h – EFFFFh

NOTE: Memory mapping is set from software only, no hw switches on VIGA/TARGA!

If more than one board is installed, then each board should **share** one memory segment!

Verify that the resources are available by reserving them **prior** to physically configuring and installing the board:

1. Start "Device Manager" by selecting [Start-button, Settings, Control Panels, System]
2. Double click on "Computer" to bring up computer properties dialog.

3. Select "Reserve resources", then click on "I/O" radiobutton
4. Add 4 I/O reservation areas, ranges as given above in the I/O address table.
5. Select "Memory" radio-button.
6. Add 1 memory reservation area, range as given above in the memory address table.

If no error messages are returned, then the hardware is ready for installation. Else, change the I/O base address, try to reserve resources once more. Repeat until no error messages are given.

Example: Installing 1 board at I/O base 220 hex, memory segment D:

Reserve I/O ranges (all values in hex):

220-223

620-623

A20-A23

E20-E23

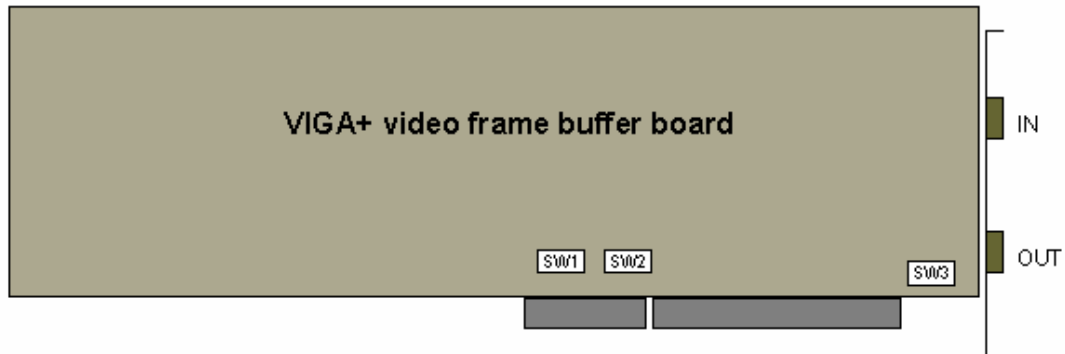
Reserve memory range (all values in hex):

D0000-DFFFF

3.1.2 Configure and install hardware

When the resource reservation step is completed, the hardware itself must be configured correspondingly. Please note that the memory segment selected in the previous section need not be set in hardware. However, I/O register address must be set using jumpers.

3.1.2.1 VIGA+ connections and switches



IMPORTANT NOTE: SW1 is incorrectly marked SW4 on some boards

SW1, I/O address: (up = ON, down = OFF)

1	2	3	4	(5)	I/O base address:
ON	ON	ON	ON	ON	200h
ON	ON	OFF	ON	ON	210h
ON	OFF	ON	ON	ON	220h (factory default)
ON	OFF	OFF	ON	ON	230h
OFF	ON	ON	ON	ON	240h
OFF	ON	OFF	ON	ON	250h
OFF	OFF	ON	ON	ON	260h
OFF	OFF	OFF	ON	ON	270h

NOTE1: SW1 position 4 should be always ON (= non-contiguous register space mapping, reserved)

NOTE2: DIP-switch in position 5 does not exist on newer VIGA+ boards.

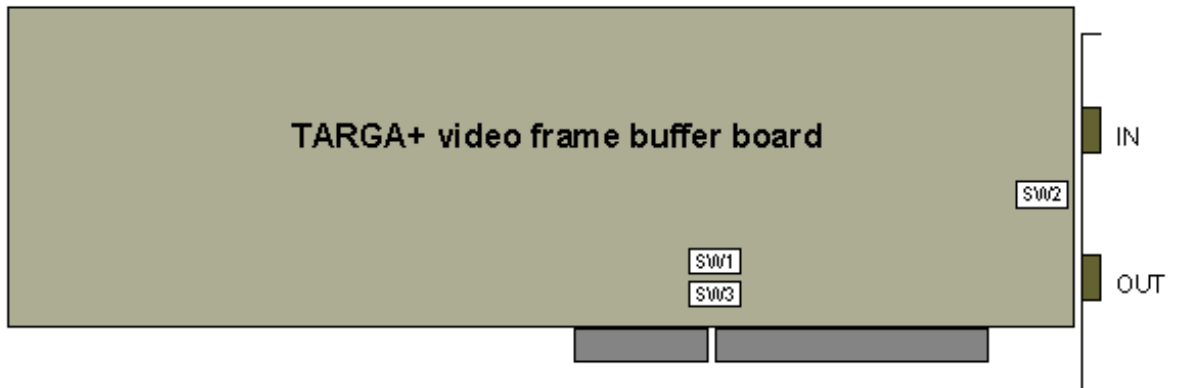
SW2, Host interrupt: (up = ON, down = OFF)

All SW2 positions should be always OFF (= no interrupt!)
(SW2 all off is factory default)

SW3, Video output: (up = ON, down = OFF)

1	2	3	4	I/O base address:
OFF	ON	OFF	ON	S-Video output
ON	OFF	ON	OFF	H/V sync output (factory default)

3.1.2.2 TARGA+ connections and switches



SW1, I/O address: (up = ON, down = OFF)

1	2	3	4	5	I/O base address:
ON	ON	ON	ON	ON	200h
ON	ON	OFF	ON	ON	210h
ON	OFF	ON	ON	ON	220h (factory default)
ON	OFF	OFF	ON	ON	230h
OFF	ON	ON	ON	ON	240h
OFF	ON	OFF	ON	ON	250h
OFF	OFF	ON	ON	ON	260h
OFF	OFF	OFF	ON	ON	270h

NOTE: SW1 position 4 & 5 should be always ON (= non-contiguous register space mapping, reserved)

SW2, Video output: (up = ON, down = OFF)

ON = S-Video output, OFF = H/V sync output (factory default)

SW3, Host interrupt: (up = ON, down = OFF)

All SW3 positions should be always OFF (= no interrupt!)
(all off is factory default)

3.1.2.3 VIGA and TARGA video connectors

Both VIGA+ and TARGA+ boards have the same video in / out connectors.

The connectors are 9 pin female DSUB's. The pin layout is as follows:

VIDEO IN (upper DSUB)	
Pin:	Description
1	Ground
2	Ground
3	RGB Red
4	RGB Green
5	RGB Blue
6	Composite video
7	Composite sync
8	Y (S-Video)
9	C (S-Video)

VIDEO OUT (lower DSUB)	
Pin:	Description
1	Ground
2	Ground
3	RGB Red
4	RGB Green
5	RGB Blue
6	Composite video
7	Composite sync
8	Y (S-Video) / H sync
9	C (S-Video) / V sync

NOTE: Video out, pin 8 and 9 is selected with VIGA+ SW3 or TARGA+ SW2

Both video boards can accept Composite, S-Video (separate Y/C) or RGB signals as input. The output can be any one of these, but not necessary the same format as the input. So if you have a camera with composite output and a video recorder which accepts S-Video signals, then configure the TARGA/VIGA to use Composite as input, and S-Video as output!

3.1.3 Important video-hardware install note

The VIGA+ and TARGA+ cards produces a lot of heat during operation. It is important to have sufficient cooling in the cabinet. If over-heating occurs, components on the boards can melt.

Our industrial PC hardware supplier, Electronix AS (tel +47 22 12 83 50), can supply "bracket cooling-fans" to be mounted between the cards installed in a PC (part no BF-01)

3.1.4 Hardware calibration of video overlay cards

There is a company in Stavanger that can calibrate VIGA+ and TARGA+ boards. Contact Vastveit Elektronikk, Leif Vastveit, leif@vastveitelektronikk.no
Phone: +47 51 81 59 90. Fax: +47 51 81 59 99

3.2 Installing AVM200 board

The AVM200 board is a half-length PCI card and is installed as follows

1. Install AVM200 board(s) in a free PCI slot. If passive backplane with multiple PCI slots, ensure that the primary PCI slots are used (wrong slots can cause overlay to fail – too slow DMA transfer)
2. Boot computer
3. The board(s) will be found and you will be asked for driver.
 - Insert VIGRA CD-ROM (assumes D: is the CD-ROM drive)
 - Select "Search for the best driver for your device"
 - Select "Specify a location" checkbox, then click Browse
 - Select D:\VIGRA\AVM Driver
4. Complete the installation of the driver. **DO NOT REBOOT!**
5. Repeat step 3-4 if multiple channel configuration (1 round per board!)
6. When finished, if running Windows 2000 SP3 or newer (possibly including WinXP), then run OSRLoader utility (see on VIGRA CD), and **unregister wdpnp.sys**.

3.3 Installing PXC200 stillpicture card (for AVM200)

The PXC200 board is used together with AVM200 to produce stillpictures which can be saved to disk.

1. Install board in a free PCI slot
2. Add SVIDEO cable from AVM SVIDEO out to SVIDEO connector on PXC200A
3. Boot computer
4. The board will be found and you will be asked for driver.
5. Insert CD-ROM and point to D:\VIGRA\PXC200A Driver\WinNT or Win9x
(WinNT = Windows NT/2000/XP, Win9x=Windows 95/98/Me)
6. Complete the installation of the driver
7. The "New Hardware" dialog will be shown once more, repeat previous 2 steps.

3.4 Installing external VGA overlay box (Eclipse)

1. Connect VGA cable between secondary VGA output on PC, to “PC IN” connector on overlay box
2. Connect video source (e.g. camera) to Composite video IN, or to S-VIDEO in
3. Connect video target (e.g. monitor/VCR) to Composite video OUT, or to S-VIDEO OUT (if using composite as input, then also use composite as output!)
4. Connect power to VGA overlay box
5. On the VGA overlay box: Press Menu button.
 - Use Menu button to cycle through choices.
 - Use + to select a submenu, then Menu-button again to cycle
 - Use + and – to adjust an option
6. Set the following options:
 - a. Flicker red. = 4
 - b. Overlay, Signal type = CVid (composite) or SVid (S-Video), depending on signal type
 - c. Overlay, Mode = Overlay
 - d. Overlay, Keyer = Hard
 - e. Overlay, Key level = 0
 - f. Advanced, Video standard = PAL or NTSC (PAL if European videotype)
7. Back on the Windows PC, enable extended desktop on secondary VGA output.
Set resolution of secondary VGA port to 800x600
8. Set VIGRA Config program to VGA overlay, and set
 - Left = Width of primary monitor, e.g. 1024 if 1024x768 resolution
 - Top = 0
 - Width = 800
 - Height = 600
9. Activate the VIGRA demo overlay page
10. On the overlay box, exit any menu, and press “Auto set” button on remote control.
You will see the overlay adjust and stretch on screen. A beep is heard when finished.
11. Press “STORE” on the remote control. A beep will be heard when finished.

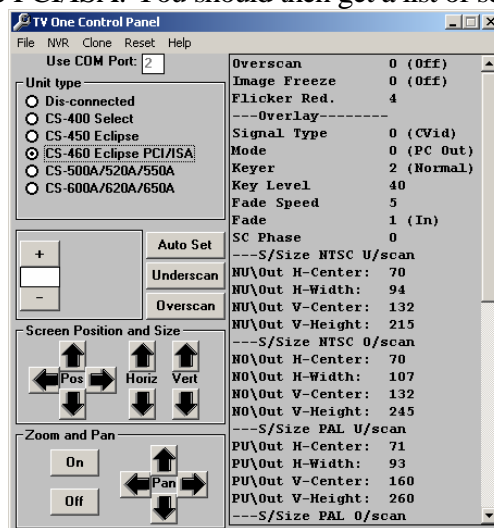
The settings will now be remembered even after the unit is turned off!

3.5 Installing external VGA overlay box (MagicView)

1. Connect VGA cable between secondary VGA output on PC, to “SCAN CVTR” connector on overlay box
2. Connect video source (e.g. camera) to Composite video IN, or to S-VIDEO in
3. Connect video target (e.g. monitor/VCR) to Composite video OUT, or to S-VIDEO OUT (if using composite as input, then also use composite as output!)
4. Connect power to VGA overlay box. Use either USB power cable, or PS/2 connector power cable (or use a 5VDC power source, + on center pin)
5. Press POWER button on the overlay box
6. Press GENLOCK button until OVERLAY mode is selected
7. Use cursor-keys to position the overlay.
8. Back on the Windows PC, enable extended desktop on secondary VGA output. Set resolution of secondary VGA port to 800x600
9. Set VIGRA Config program to VGA overlay, and set
 - Left = Width of primary monitor, e.g. 1024 if 1024x768 resolution
 - Top = 0
 - Width = 800
 - Height = 600
10. Activate the VIGRA demo overlay page
11. Press FINE TUNE button on overlay box

3.6 Installing multichannel internal VGA overlay

1. Install Matrox G450 quad-display or other similar quad-display
2. Attach monitors to all 4 VGA outputs + onboard VGA
3. Disable onboard VGA
4. Reboot
5. Make all monitors to appear side-by-side, 1st monitor 1024x768, 2nd, 3rd and 4th to be 800x600. Apply settings.
6. Drag toolbar so it appears on monitor 1
7. Apply and reboot and verify that monitor ordering is still the same!
8. Install VIGRA software. Set 3-channel VGA system
9. Set offsets according to resolution of 1st monitor, e.g. if 1024, then set Left1=1024, Left2=1024+1*800, Left3=1024+2*800
10. Top offsets are normally always zero
11. Complete VIGRA installation. If VGA overlay boards are not initialized you will only see a black background with overlay text/graphics ontop.
12. To configure a internal VGA overlay card, do as follows:
 - a. Connect custom serial-cable to mini-din connector on VGA board
 - b. Connect 9-pin DSUB to COM2
 - c. Start TV-One control panel. Select use COM-port 2, and click CS-460 Eclipse PCI/ISA. You should then get a list of settings:



- d. Set the following:
 - Overlay, Signal Type = CVid (composite) or SVid (SVIDEO)
 - Overlay, Mode = Overlay
 - Overlay, Keyer = 3 (Hard)
 - Overlay, Key level = 0
- a. Click Autoset
 - Select [NVR, Store Settings] from menu
 - Select [NVR, VGA Store] from menu

3.7 Installing IRIS 3-channel overlay card

The video connectors:



From left to right we have: #1 OUT, #1 IN - #2 OUT, #2 IN - #3 OUT, #3 IN

Each input connector is **3 pin “Lemo B”** and the supplied cable ends up in two male BNC connectors.

- If using composite then connect the **Composite 1 BNC**
- If using SVIDEO or Y/C then connect the **Y/C BNCs**

Each output connector is **4 pin “Lemo B”** and the supplied cable ends up in three male BNCs:

- If using composite then connect the **Composite BNC**
- If using SVIDEO or Y/C then connect the **Y/C BNCs**

When connecting video cables to the Video Overlay Unit, **DO NOT FORCE** the cables into the connectors, check carefully that pin-count and alignment is OK!

Driver installation:

1. Insert CD-ROM and point to D:\VIGRA\IRIS Driver
2. Run the command **“Install IRIS driver.cmd”**
(If running Windows 2000, first copy sc.exe to C:\WinNT\System32)
3. Shutdown computer
4. Install board in a free PCI slot
5. Boot computer
6. The board will be found and you will be asked for driver.
7. Point to D:\VIGRA\IRIS Driver on CD-ROM
8. Complete the installation of the driver
9. Reboot computer.
10. Install Sentinel Superpro driver (see following sections)
11. Install VIGRA software (see following sections)

12. Run VIGRA Config and set IRIS-type board, set resolution to PAL 360x576 or NTSC 360x486, and add channels to get 3 channels in total.

3.8 Installing Sentinel Superpro hardware key

The VIGRA system is protected by a Sentinel Superpro hardware key. Just plug the key into the PC parallel port. If a printer is already connected to the parallel port, then reconnect printer cable on the Sentinel Superpro key. Printer communication will work transparent to the key.

3.9 Installing the software

NOTE: For Windows NT / 2000, see separate installation guide!!

Insert disk 1 of the installation disks, then execute SETUP.EXE on the floppy. This will install the VIGRA application in the directory you chose.

After installation is completed, the VIGRA configuration utility will automatically be executed (see next section). Complete the configuration, then reboot the computer.

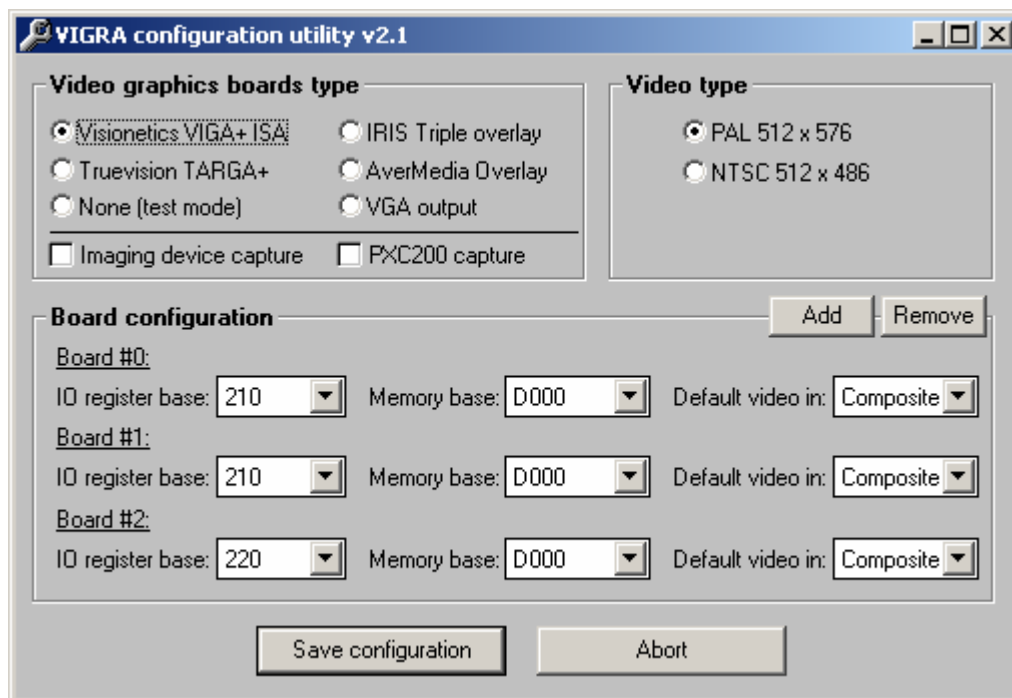
After reboot the VIGRA application can be started from the Start menu (press **Start, Programs, Options Video Graphics**)

3.10 Configure software drivers

The drivers for the boards is currently old 16-bit DOS drivers, and they must be started from CONFIG.SYS and AUTOEXEC.BAT

Options has created an utility that will make the configuration of the drivers an easy task to perform.

Just start the VIGRACFG.EXE program (found in the VIGRA application directory), and the following window will appear:



Now, first select if it is VIGA or TARGA and type of PAL / NTSC board you have installed. Then for each board set the same IO register base and memory base as you selected in the previous sections.

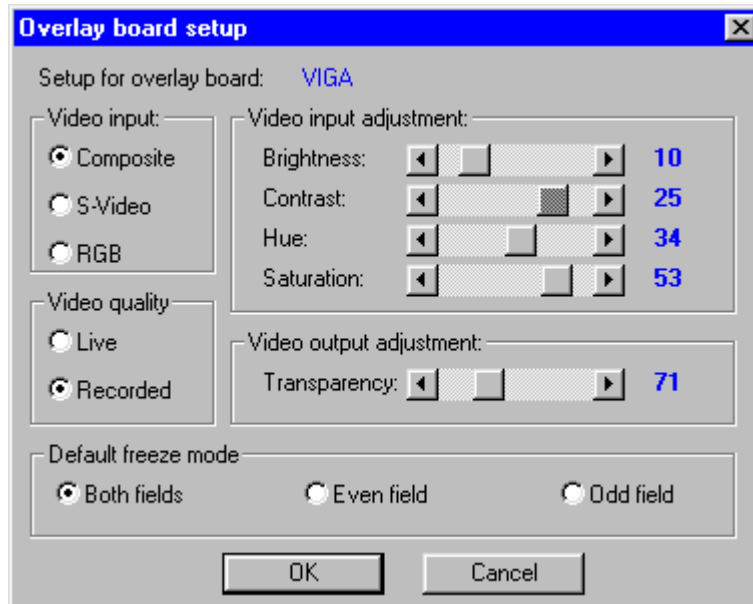
The "Default video in" combo-box defines how the board should be initialized during startup. The video-type can later be changed from VIGRA program.

After you have completed the configuration, press "Save configuration". The utility will then update all necessary configuration files (including CONFIG.SYS and AUTOEXEC.BAT)

Finally, restart your computer and you are then ready to run the Options Video Graphics application for the first time!

3.11 Fine-tuning video in VIGRA application

After all previous configuration steps are completed, power up and start the **VIGRA** application from Windows. Then select [Setup, Video settings] from the menu. The following dialog will appear:



Video input + quality:

Select what kind of video source you have connected to the VIGA. If the source is a camera or good quality broadcasted signals then set "Live" video quality, else set "Recorded"

NOTE: Video output is simultaneously available for all three video types, and is not selected through software.

Video input adjustment:

These parameters are like the ones found on TVs and monitors. Adjust the picture to a good combination of the adjustment parameters

NOTE: Hue adjustment will only have effect on NTSC video.

Video output adjustment:

The only parameter available for adjusting video out is transparency of overlay objects. If transparency is set to 0 then overlay objects can be very dominating in the picture, setting transparency to 60-70 makes a more soft merging with the video.

Default freeze mode:

An interlaced video picture is built up of two fields; even and odd. One picture is also called a frame. When drawing the interlaced picture, every second line is drawn in first pass (odd), then a second pass (even) is made filling in all missing lines.

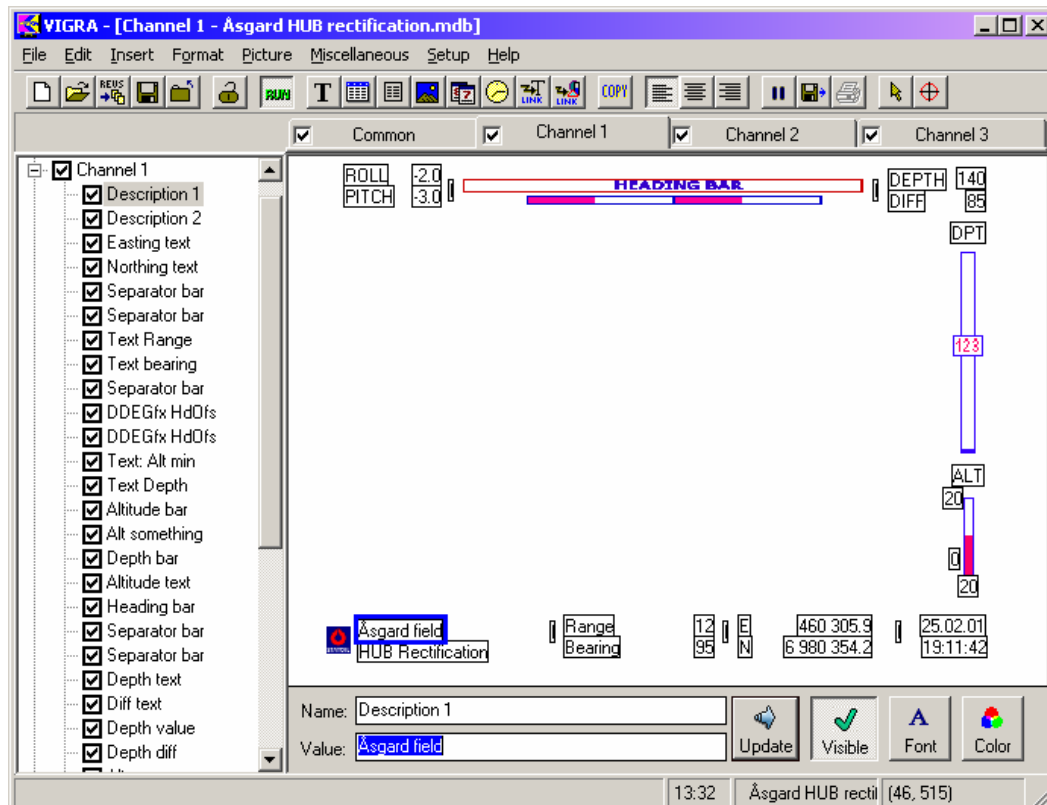
When freezing a picture with movements you will sometimes get a mix with one field from one picture, the other field from the next picture. The result is a lot of flicker in the picture.

By setting freeze mode to only even or odd field, the flickering can be removed. The drawback is a picture with less details (half the resolution in vertical direction). Therefore, only use odd/even grabbing when flickering is a problem.

4. Normal operation

When you start **VIGRA** you will be presented with a window consisting of a toolbar, a channel selector bar, a work area and a statusbar.

This screen snapshot shows you how the window looks like when you are running a three-channel system and have opened an overlay file with some bitmap, date/time and text fields:




- The menu let you choose among the various functions by using the keyboard or mouse.
- For quick access, the most used functions is also on the toolbar. By moving the mouse over a button a hint flag will appear which shows what the button does.
- Below the toolbar is the video channel selection bar. Any operation done in the program will only affect the selected channel. (however: the "Common" channel will be shown on all video channels!!)
- Rightbutton-menu on each object on the overlay page also speeds up access to related functions.
- The treeview provides a second way to access individual objects, also here the right-button brings up the menu!
- The workspace is divided into two parts:


- The upper part simulates the output of the active overlay. The layout is approximately the same as what you see on your video image.
- The lower part is where you can enter text in selected object (also called a field!)
- The statusbar shows you various information like name of active overlay file, coordinates of selected object, detailed info about button function, etc..

The next subsections will show you how to use the program.

4.1 Open/closing overlay file


First you have to activate the video channel where the operation should be performed. Click on "Overlay 1" for channel 1, "Overlay 2" for channel 2 etc.

To open, click  (open) on the toolbar. A dialog will appear where you can select which overlay file to open. After clicking OK in the dialog the file will be loaded and the overlay objects will appear on your video image.

To close, click  (close) on the toolbar. Overlay objects will then disappear from video monitor.

NOTE: If you want **VIGRA** to automatically load a given file at startup, then choose [Misc, Application setup] from the menu, and then specify the file to load in the "Auto open filename" text box (or click Current button to use the file that is currently open).









4.2 Creating new overlays

To create a new overlay click  (new) on the toolbar. You will then be presented to a new, blank workspace. Changes you make here will not affect other overlay pages, so just play around and try out the various functions.

If you want to use an existing overlay page as a basis for your new page, then just open the existing file, select [File, Save as] from the menu, specify a new name and finally press enter. You now have a brand new copy of your old page. Changes to the new page will not affect the old one!

4.2.1 Adding text and logos

New overlay objects can be added by clicking on any of the following toolbar buttons:

-  Inserts a new text field. Text can be changed using the keyboard
-  Inserts a new text table. Good for text organized in rows and columns.
-  Inserts a new text file.
-  Inserts a bitmap object. For displaying logos etc.
-  Inserts a new date object. Date format can be customized.
-  Inserts a new time object. Time format can be customized.
-  Inserts a new DDE link object. For displaying dynamic data from external sources.
-  Inserts a new graphical DDE link object. For displaying dynamic data from external sources.

4.3 Editing and moving objects

Text edit

To change contents of a text object you first click on it with the mouse. The object will then become the selected object (or field, which it also is called). Now you can enter text in the Data-field on the lower part of the workspace. When you press ENTER (or click on the Update-button) the new text will be displayed on the video. If you leave the object without updating, the text-changes you have done will be lost.

Moving objects

Moving objects is done by holding down the left mouse-button over the object, and then drag it to its new position. When you release the mouse-button, the object will stop moving.

If you want to drag several objects simultaneously, then click on the background and drag a box around those objects. Next move the box by clicking inside the box and then drag.

NOTE: The move-function can be disabled by entering lock-mode, this is done by clicking the lock-button on the buttonbar, or choose [Misc, Lock] from the menu. Enable again by a new click on the lock/unlock-button.

Text alignment

On the toolbar you will see three text-alignment buttons:

 (left),  (center) and  (right).

The position of overlay objects are defined with one reference-position (refpos) and the assigned alignment type:

- If Left-align then the start-position of the text-string is equal to refpos.
- If Right-align then the end-position of the text-string is equal to refpos.
- If Center-align then the center-position of the text-string is equal to refpos.

So unlike f.ex. Word, when you press one of the alignment buttons the object will not be aligned relative to the width of the screen, but relative to its reference position.

Quick alignment tip

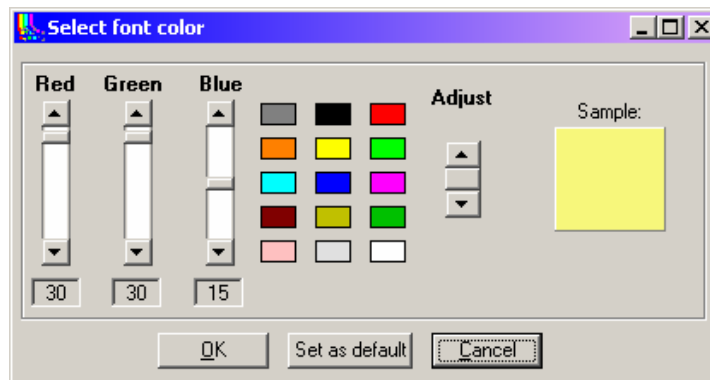
If you want to make a text box inherit alignment type and either the same horizontal or vertical position as another text box, then do as follows:

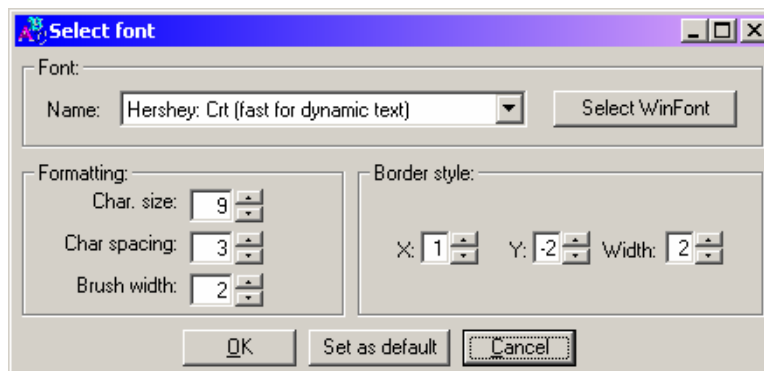
1. Drag a rectangle around objects to align, or click each object while Control key is pressed.
2. Use alignment buttons in lower right corner to perform desired alignment

4.4 Changing appearance of objects

For text-fields you can change color and font properties, and for bitmap-fields you can change the transparent color (for which color the video should shine through). For example to remove the white border around a logo, you select white as the overlay / transparent color.

To access the font and color dialogs, you first activate the desired object, and then press and hold down the right mouse-button. A menu will appear at the cursor, and you can select Color or Font menu-items:





Color and font changes you do to text objects will be displayed immediately on the video. Play around and find your optimal settings! It is important to test the text settings for all kind of video pictures. Dark / light video pictures can give different effects on your overlay text.

All settings have a "Default" button. By clicking this button the current setting will be saved in the system, and then used as default for all new objects.

NOTE: For the font border style "3D transp.", the offset values X and Y will have no effect. However, Adjusting W parameter to positive / negative values will give interesting effects! (try it out with large font sizes!)

NOTE 2: Bitmap color changes won't be displayed until you press OK in the color dialog.

NOTE3: Don't change font or color for time-objects when the program is in RUN-mode. If you do so, the screen will be messed up at the location of the time-object.


NOTE4: You can change font / color of several objects simultaneously. To do this, first drag a box around the wanted objects, then right-click on one object and perform the changes. When clicking OK, all objects will be updated!

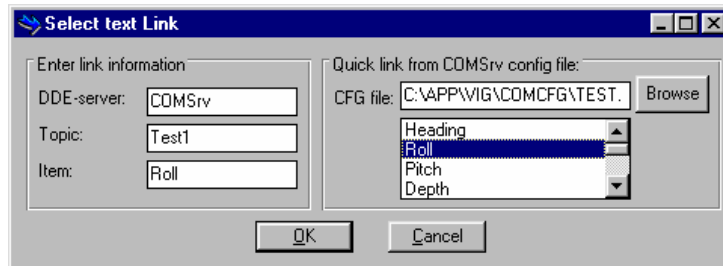
4.5 Creating text link-objects

Link object is a special text field which can be linked to other, dynamic data. For example heading information from a ROV. To do this, there must be running some COM-server software in addition to **VIGRA**. Any data that the COM-server makes available to other via DDE is possible to display on the video.

Bundled with Options Video Graphics is a flexible utility called COMSrv. This is a DDE-server providing decoded data from a COM-port. Look at appendix A for more information on how to set up and use COMSrv.

The following steps shows how to add link fields that can connect to programs like COMSrv:

1. Open up an existing file, or create a new one.
2. Click  (New Linked Obj) button on the toolbar. The following dialog will appear:



3. In the different fields, enter this information:

DDE-server: The name of the DDE server (e.g. COMSrv)
Topic: A valid topic in the server (e.g. ROV)
Item: A valid item in the server (e.g. Depth)

A DDE server usually supports only **one topic**, and then **several data items**.

NOTE: You need to know the exact names for server/topic/item. If not correct, the link won't work

NOTE2: If the COM-server used is the one supplied by Options, then click on the "Browse" button to select a config file, then select the link field in the listbox. This will update the Server/Topic/Item textboxes with correct information.

4. When finished defining the link, press ENTER.
5. To see the dynamic data on video, make sure the COM-server is running, then press the RUN button. If **VIGRA** cant find the requested data, it will display a message box that says "Sorry, can't link". In that case, you have either typed something wrong, the COM-server is not running, or the COM-server don't support the requested data.

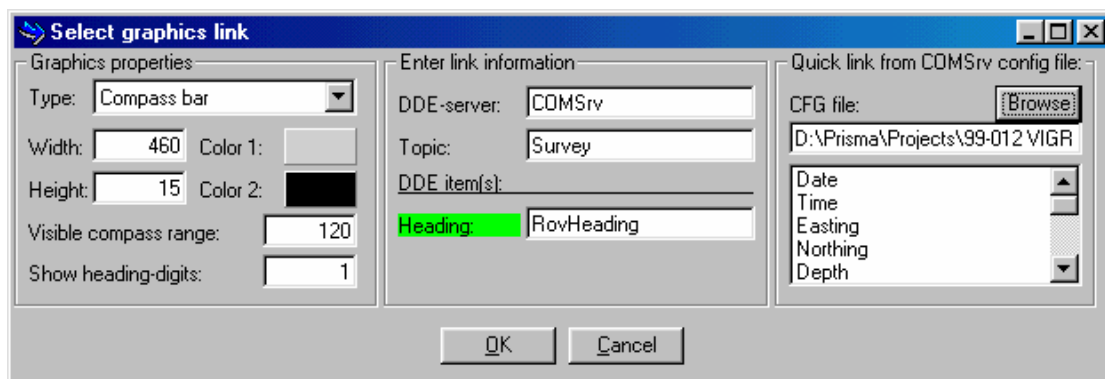
4.6 Creating graphic link objects

Graphic link object is a special dynamic graphic object that can be linked to numeric data from other application. The graphic figures currently supported are:

- Heading bar
- Horizontal gauge (bar graph)
- Vertical gauge (bar graph)
- Roll & pitch (virtual horizon)

To add a dynamic figure, follow these steps:

1. Open up an existing file, or create a new one.
2. Select [Insert, Dynamic graphics] from the menu. The following dialog will then appear (here also with sample data inserted!):




3. Select the graphics type
4. Enter Width and height (video pixels) of object
5. Double-click any of the color-buttons to change colors.
6. Enter custom params for the selected graphics type.
7. Enter correct link information (see text link objects)
8. Press OK when finished.
9. Press RUN in main window to see effect of graphic object.

TIP: For gauges to grow/shrink in the opposite direction, swap the min,max parameters!

4.7 Modifying date & time format

Date and time fields can be customized by modifying the initial "dd.mm.yy" and "hh:mm:ss" strings. To do this modification, follow these steps:

1. Make sure the  (RUN) button is **not** pressed.
2. Activate the date/time field you want to modify (click on it with the mouse)
3. Enter the format string as given in the list below.





4. Press "Update" button.
5. Press "RUN" button to see the effect of the new format. Repeat from step 1 if not satisfied.

Example formats (assuming the time 14:34:52 and date 28.06.98):

Format:	Result:
hh	Hour, 14
mm <i>or</i> nn	Minutes, 34
ss	Seconds, 52
dd	Date, 28
ddd	Date, (day of week)
mm	Month (only when in date context)
yy	Year, 98
yyyy	Year, 1998

4.8 Still picture operations

The **VIGRA** application can freeze, save, load and print still pictures. The operations are easily accessible through 2 buttons on the toolbar. Depending on the current mode (live / frozen), buttons will change appearance:

Live mode:  (freeze) and  (load picture) buttons are displayed.
 Freeze mode:  (live) and  (save picture) buttons are displayed

To freeze a picture, press FREEZE on the toolbar, then observe the frozen picture on your video monitor. If there is movements causing flicker in the picture, then press LIVE on the toolbar, next select [Picture, Freeze variants, Even/odd field] from the menu. This will freeze a new picture containing only half the information contained in a full video-picture. Due to the interlaced format of video pictures, the resulting picture looks almost as good as a normal full-frozen picture, and the flicker is removed! Try it out!

NOTE: Default freeze-mode for the toolbar button can be configured from the video setup dialog, (select [Setup, Video Setup] from the menu).

To save a frozen picture, press SAVE PICTURE on the toolbar (when in freeze mode!).

The VIGRA application will then suggest a default filename built like this:

DDHHMMSS.TGA (DD = day in the month, HH = hour, MM = minutes, SS = seconds, TGA = default extension for Truevision Targa pictureformat)

To load a previously saved still-picture, press LOAD PICTURE on the toolbar (when in live mode!). This will display the picture on your video monitor.

To print a freezed picture, press PRINT button on the toolbar (when in freeze mode!). This operation requires that a compatible print client is running. The only currently supported client is Paint Shop Pro version 3 (16 bit) and version 4 (32 bit). If PSP is running then the still-picture will be loaded into PSP and automatically printed to the default printer.

To define which PSP version to use in the VIGRA application; select [Setup, Application settings] from the menu, then select PSP 3 or 4 as print client.

For more information on Paint Shop Pro, please see appendix C.


4.8.1 Using keyboard to perform still-picture operations

For fast and easy operation we have mapped the following keys to some stillpicture operations:

- F5 - Toggle freeze / live (default freeze mode)
- Shift-F5 - Toggle freeze / live even field
- Ctrl-F5 - Toggle freeze / live odd field
- Ctrl-Shift-F5 - Toggle freeze / live both fields (full frame)
- F6 - Save the current picture (displays the Save As dialog)
- Shift-F6 - Load a still-picture (displays the Load dialog)

- F7 - Auto-operation:
 - 1) If currently in freeze mode then set live,
 - 2) Freeze,
 - 3) Save picture using DDHHMMSS.TGA format,
 - 4) Set live mode again.

4.9 Video pointer operations

By clicking  (video pointer) on the toolbar, VIGRA will enter a special mode where the workarea is replaced with a gray box of same size. Whenever the Windows mouse-cursor moves over this area, a similar cursor is also moved around on the video picture itself.

When in pointer-mode, freehand drawing can be made by pressing and holding the left button on the mouse. Drawing color can be selected from the lower part of the window.

Measurment functions can also be performed using the video pointer. Currently this is an unsupported feature but feel free to play around with it!

To leave pointer-mode, press the VIDEO POINTER button once more. Any freehand-drawings made will be removed.

NOTE: Freehand-drawings will not appear on still-pictures either. Such drawings must then be applied after the still-picture is taken.






5. Functions summary
















5.1 Main menu

Menuitem:	What:
File	
New	Creates a new, blank overlay file.
Open	Opens a existing overlay file.
Close	Closes the active overlay file, blanks screen.
Save	Saves the active overlay file to disk.
Save as	Also saves the file, but using another file-name
Exit	Exits the program
Edit	
Copy	Makes a copy of the selected text object, using same size, font and color.
Delete	Deletes the active object.
Bring to front	Draws the current object on top of all other objects.
Send to back	Draws the current object behind all other objects.
Insert	
Static text line	Inserts a new text object on the overlay.
Text file	Inserts a new text file
Text table	Inserts a new text table
Bitmap...	Inserts a new bitmap object (logos etc..) on the overlay.
Time	Inserts a new time object on the overlay.
Date	Inserts a new date object on the overlay.
Dynamic text...	Inserts a new link object on the overlay.
Dynamic graphics...	Inserts a new graphical link object on the overlay.
Video measurments	Inserts a field linked to video measurment parameters (select param from submenu!)
Format	
Alignment	Changes alignment mode of single objects or relative alignment between multiple objects.
Vertical spacing	Set even spacing between selected fields, also option for increase / decrease of spacing.
Font	Changes the font of active text object.
Color	Changes the color of active object.
Border color	Changes the border color of active object.

Dynamic text link	Changes link source for link objects.
Dynamic graphics properties	Changes DynaGfx link & display properties
Picture	
Freeze picture	Freezes the video picture using current freeze defaults
Freeze variants	Let user select even/odd/both field freeze mode
Instant snapshot	Automatic saving of stillpicture without freezing the video.
Save	Saves freezed image to disk.
Load	Loads image from disk, displays it on video out.
Print	Prints currently freezed picture.
Miscellaneous	
Run mode	Toggles RUN mode.
Lock objects	Toggles lock-mode for moving of objects.
Video pointer	Shows / hides the video pointer
Text editor	Starts the text-editor for quick field edit.
Redraw ovl.	Redraws the overlay on the video picture.
Diagnostics	Displays a diagnostic window
Setup	
Video settings	Displays dialog for adjusting the video picture.
Application settings	Sets application options; default paths and which file to auto-open on startup.
Help	
Please	Displays a info-box with phone-# for assistance.
About	Version & copyright info

5.2 Toolbar

Button:	What:
	Creates a new overlay.
	Opens an existing overlay.
	Closes the active overlay.
	Activates time and link objects
	Inserts a new text field / object.

	Inserts a new bitmap object.
	Inserts a new time object.
	Inserts a new date object.
	Inserts a new text link object (DDE link!)
	Copies the active object.
	Left aligns the active object(s).
	Center aligns the active object(s).
	Right aligns the active object(s).
	Toggles lock-mode for moving of objects
	Activates freeze mode for the video picture
	Activates live mode for the video picture
	Loads a freezed picture from disk
	Saves the currently freezed picture to disk.
	Prints the currently freezed picture.
	Display pointer on video, enter drawing-mode.

5.3 Right-button menu

Menuitem:	What:
Alignment	Shows the align submenu.
Vertical spacing	Shows the vertical spacing submenu
Bring to front	Displays object on top of others if occupying same area (only effective on PC-screen)
Send to back	Displays object on behind others if occupying same area (only effective on PC-screen)
Color	Defines color of object (overlay-color for bitmaps)
Border color	Defines border color of object
Font	Defines font of text-objects
Delete object	Deletes the object.
Link source	For link-fields only: Defines link source!
DynaGfx props.	For DynaGfx-fields only: Defines display&link properties.

6. Troubleshooting

If any trouble, please call the programmer, Gard Bjering, tel 90 50 54 48.

6.1 Bug reporting

If you find any bugs in the VIGRA application, please report this to Options ANS. For us to be able to reproduce and hopefully fix the bug, we need the following information:

- Version of operating system (Win 98 or Win 95)
- Version of VIGRA application
- All user-actions done from startup of program until bug was detected.
- Preferably a copy of the active overlay file.

6.1.1 Known bugs

Color distortion on still picture operations

For multi-channel configurations there has been observed color distortions when grabbing still pictures. The bug occurs only seldom, without any good reason (probably bug in VIGA+ driver code). To recover from the error, try selecting [Misc, Redraw overlay] for each of the channels. This operation will reinitialize the video driver. If that does not work, try shutting down PC, then turn back on.

7. Contact details

Options AS

Address:

Options AS
Verven 24a
P.O.Box 436
4002 STAVANGER

Phone:

(+47) 51 86 31 10

Fax:

(+47) 51 86 31 11

Email:

post@options.no

Web:

<http://www.options.no>

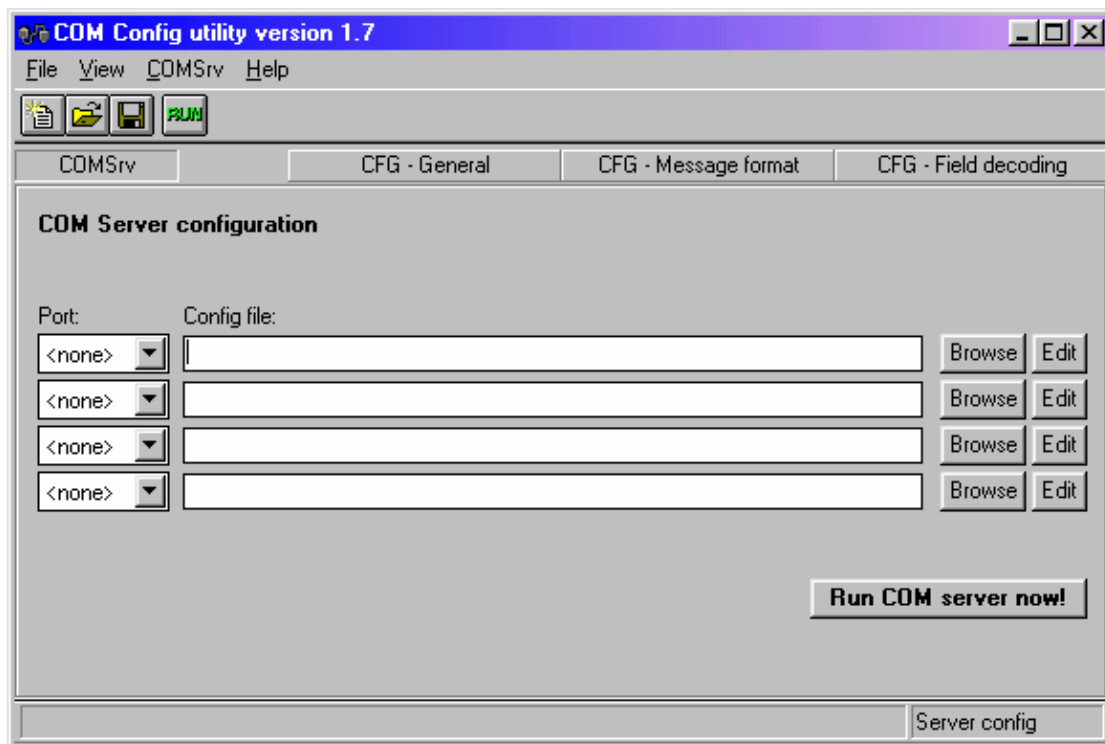
8. Appendix A: Serial COM Config and Server

COM Server (COMSrv) is an utility for decoding data from serial ports and then make the data available to other applications through DDE (a Windows standard for Dynamic Data Exchange).

COM Config (COMCfg) is a tool for creating the decoder config files used by COMSrv.

8.1 Creating a decoder file using COM Config

Start the Communication Config utility from Windows Start menu. (found in the Options Video Graphics group). You will see the following application window:



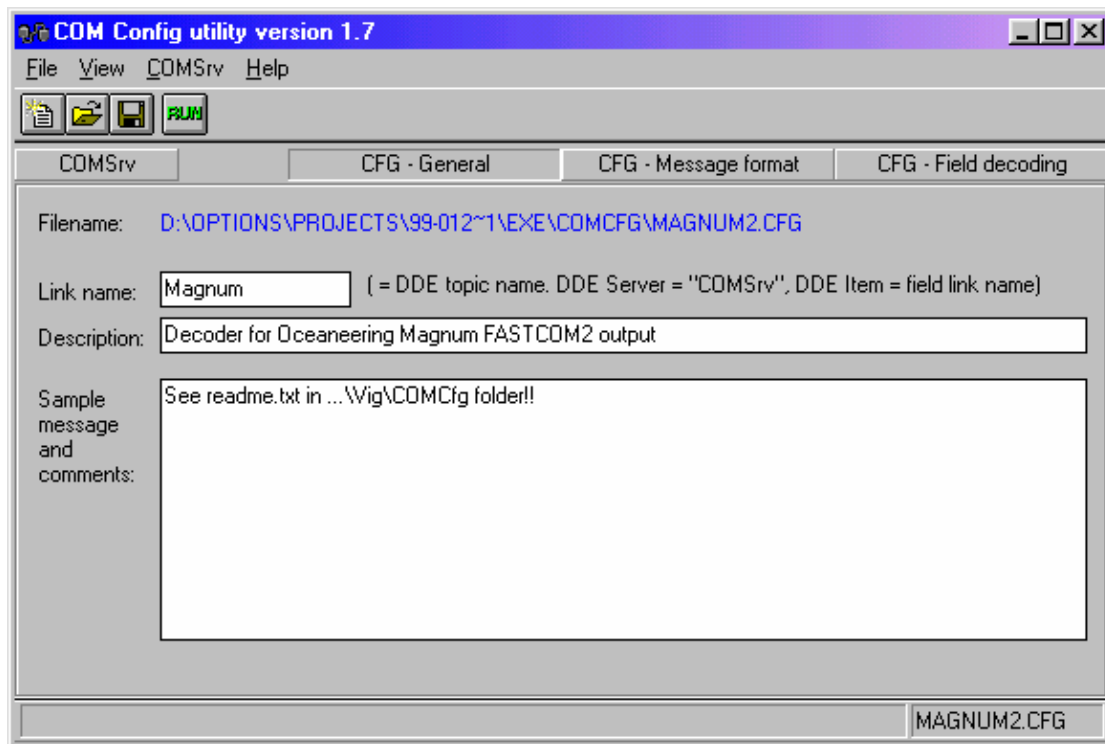
Here you can define which decoder files to use, up to 4 files simultaneously. Select COM port from the dropdown listbox, and click on “Browse” button to select the decoder file. When finished, click “Run COM server now” button.

If you can not find a suitable decoder, then follow these steps:

1. **Either:** Start from scratch, select [File, New] from menu
Or: Use an existing decoder as basis. Select [File, Open] from menu, open the

- decoder you want to use as basis, then select [File, Save As] from menu, assign a new decoder name (max 8 chars).
2. Define general settings in the “CFG – General” tab. (see subsection below)
 3. Define message format in the “CFG – Message format” tab. (see subsection below)
 4. Define field formats in the “CFG – Field decoding” tab. (see subsection below)
 5. Save the decoder.
 6. Make sure you have the decoder activated at desired COM port in the first window (“COMSrv” tab)
 7. Click “Run COM Server now!” button.

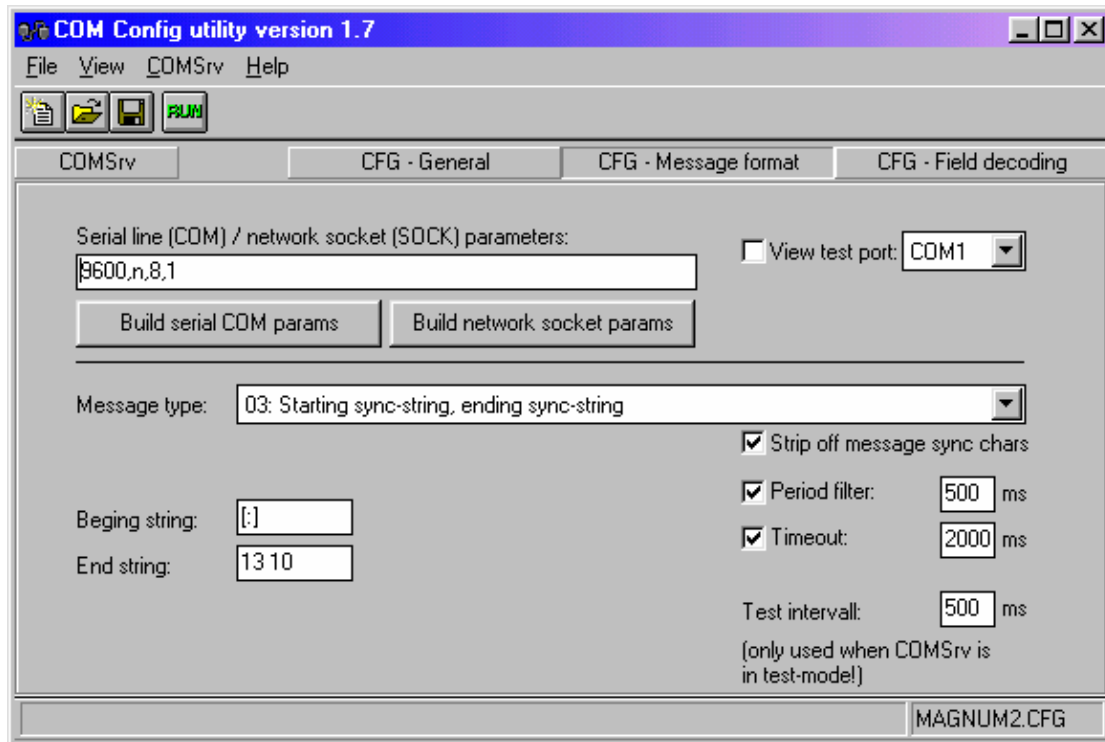
8.1.1 The “CFG – General” tab



This section defines the link towards client programs, as well as two fields for decoder description and other comments.

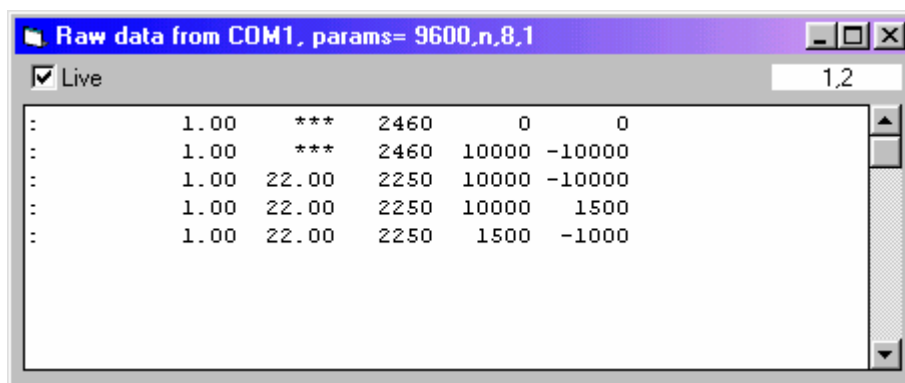
The link name should not contain spaces or special characters. It will be used as “DDE Topic name”

8.1.2 The “CFG – Message format” tab



This section defines the format of the data messages that is continuously received on the serial port (or network socket port)

Use the “Build” buttons to define either serial or network parameters. Next you can select a COM or SOCK port from the drop-down listbox, and then put a checkmark in the “View test port” checkbox. This will display a new window with the raw data from the data source:



Note: Whenever you make changes to the serial/network parameters you will need to click on/off the “View test port” checkbox. This activates the parameter changes.

Use the “live” checkbox to temporary stop the raw data stream. Then it is easier to analyse the received data!

Here is explanation to the various message types:

Message type 01: Starting sync-string, constant length

Example: A message that always starts with a “\$” and is always 50 bytes long

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00	23:59:58	359,1	1,1	0,1
				99,3	23,10
					CL
	\$19.10.00	23:59:59	359,8	1,0	0,2
				100,5	21,20
					CL
	\$20.10.00	00:00:00	0,9	0,8	0,1
				102,2	19,33
					CL

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

With this message type you must also fill in these parameters:

Begin string: **[\$]**
 Constant length: **50**

Message type 02: Ending sync-string, constant length

Example: A message that always ends with CR/LF and is always 49 bytes long. Start of message can vary since it is here part of the date.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	19.10.00	23:59:58	359,1	1,1	0,1
				99,3	23,10
					CL
	19.10.00	23:59:59	359,8	1,0	0,2
				100,5	21,20
					CL
	20.10.00	00:00:00	0,9	0,8	0,1
				102,2	19,33
					CL

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

With this message type you must also fill in these parameters:

End string: **13 10**
 Constant length: **49**

Message type 03: Starting sync-string, ending sync-string

Example: A message that always starts with a “\$” and always ends with CR/LF. Length of the message can vary.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00	23:59:58	359,1	1,1	0,1 99,3 23,10 CL
	\$19.10.00	23:59:59	359,8	1,0	0,2 100,5 21,20 CL
	\$20.10.00	00:00:00	0,9	0,8	0,1 102,2 19,33 CL

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

With this message type you must also fill in these parameters:

Begin string: **[\$]**
 End string: **13 10**

Message type 05: Starting sync-string, N x ending sync-strings

Example: A multiline message that always starts with a "\$" and each line ends in CR/LF.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00	23:59:58	359,1	1,1	0,1 99,3 23,10 CL
	595894,7	6717991,6	1,2	23 CL	
	\$19.10.00	23:59:59	359,8	1,0	0,2 100,5 21,20 CL
	595895,2	6717993,3	1,1	25 CL	

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

With this message type you must also fill in these parameters:

Begin string: **[\$]**
 End string: **13 10**
 # of endstrings: **2**

Message type 09: Ending sync-string, variable length

Example: A message that always ends with CR/LF, however both the start and length of each message can vary.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	19.10.00	23:59:58	359,1	1,1	0,1 99,3 23,10 CL
	19.10.00	23:59:59	359,8	1,0	0,2 100,5 21,20 CL
	20.10.00	00:00:00	0,9	0,8	0,1 102,2 19,33 CL

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

With this message type you must also fill in these parameters:

End string: **13 10**
 Max length: **60**

Additional message formatting parameters

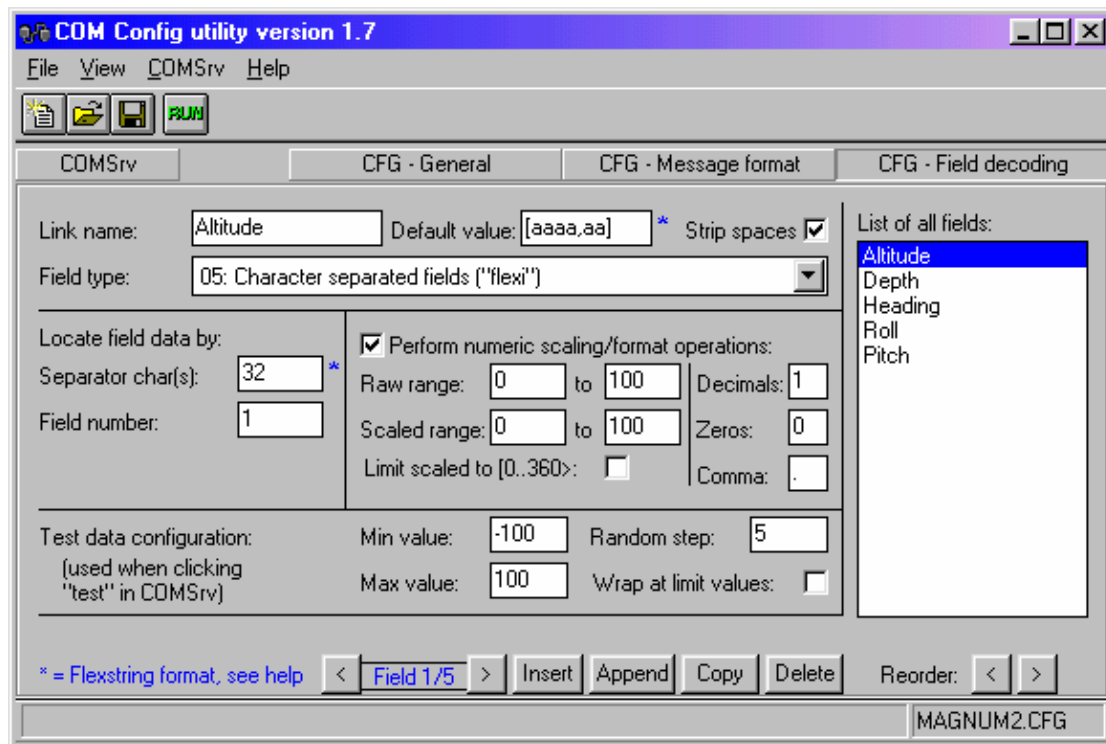
Strip of message sync chars means that starting and ending sync characters/strings will be stripped off from the message before field decoding starts. Usually you will need to have this option checked!

Period filter can be used to decrease the update rate on the video, if the data source is sending data very fast.

Timeout can be set to ensure a full reset of the COM-port after a certain time period of inactivity on the port.

Test interval defines the update rate used when testing with random data.

8.1.3 The “CFG – Field decoding” tab



This section defines how to decode individual fields within messages. To the right in the picture you can see a listbox with the defined fields. The rest of the window defines properties for the active/highlighted entry.

Link name defines the DDE link name clients should use when requesting data from the field.

Default value defines the default value to send to client before any data is received on the serial port.

Strip spaces defines if space characters surrounding the field should be stripped of before sent to client (check this to ensure proper left/right alignment on video)

Field type defines how to find the field value within the message string. See further description below!

Perform numeric scaling/format operations defines scaling/formatting options. Enter 2 raw values and corresponding scaled values, e.g. 0 to 1000 and 0 to 100 to “downscale” a raw integer value 0..1000 to 0..100.

Limit scaled to [0..360> is used with heading fields to ensure correct rounding in the transition between 359 and 0 degrees.

Decimals defines how many digits to use behind the decimal comma.

Zeros defines how many leading zeros to use.

Comma defines which decimal comma separator to use (normally “.” or “,”)

Test data configuration defines min/max/step/wrap for random test values to use for the field. Test values are activated when clicking the “Test” checkbox in the COMSrv program, ideal for testing if no data-source is connected.

Next thing, here is explanation to the various field types:

Field type 01: Absolute start-pos, constant length

Example: A field that always can be found in the same position, and with same length.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00	23:59:58	359,1	1,1	0,1
			99,3	23,10	CL
	\$19.10.00	23:59:59	359,8	1,0	0,2
			100,5	21,20	CL
	\$20.10.00	00:00:00	0,9	0,8	0,1
			102,2	19,33	CL

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

Here, to get the heading field (#3) you will need to use these parameters:

Start pos: **20**

Constant length: **5**

Field type 02: Starting sync string, constant length

Example: A field that always has a leading text, and has constant length:

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$ALT 10,5 HDG 359,1CL	\$HDG 359,8 RL 1,0 PT 0,9CL	\$ALT 10,1 DPT 192 HDG 0,9CL		

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

Here, to get the heading field (prefixed with HDG) you will need to use these parameters:

Pre string: **[HDG]**
 Constant length: **6**

Field type 03: Ending sync string, constant length

Same as type 2, except the sync string comes after the actual field value.

Field type 04: Character separated fields (strict)

Example: Each field is separated by a single “;”. If no data for a field, then there will be two “;;” next to each other.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00;23:59:58;359,1;1,1;0,1;99,3;23,10CL	\$19.10.00;23:59:59;359,8;1,0;0,2;100,5;21,20CL	\$20.10.00;00:00:00;0,9;0,8;0,1;102,2;19,33CL		

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

Here, to get the heading field (#3) you will need to use these parameters:

Separator char(s): **[;]**
 No of chars before: **2**

Field type 05: Character separated fields (flexi)

Example: Each field is separated by one or more spaces (ASCII 32). Before the first field there can be zero or more spaces. There cannot exist empty fields.

Offset:	1	2	3	4	5
	1234567890	1234567890	1234567890	1234567890	1234567890
Data:	\$19.10.00 23:59:58 359,1 1,1 0,1 99,3 23,10CL	\$19.10.00 23:59:59 359,8 1,0 0,2 100,5 21,20CL	\$20.10.00 00:00:00 0,9 0,8 0,1 102,2 19,33CL		

Note: **CL** means here CR/LF, carriage return+line feed, ascii code 13+10

Here, to get the heading field (#3) you will need to use these parameters:

Separator char(s): **[]** (note: a single space between brackets!)

Field number: 3

As an alternative the parameters could also be written like below, since ASCII-value of space is 32:

Separator char(s): 32
Field number: 3

8.2 Running the COM server

Follow these steps:

1. Start the Communication Config utility from Windows Start menu.
2. Make sure the correct COM-port(s) and config-file(s) is defined in the COMSrv tab. Up to 4 COM channels can run simultaneously.
3. Press RUN button. Ffolo sdfkjhsdkjfhskdjfh skdjf
4. Verify that correct data is received in the text-boxes inside COMSrv.

Next time you can start COM server directly. It will automatically use the same decoder(s) as last time it runned.

8.3 DDE interface

When COMSrv application is running, other applications can access its data through the following DDE interface:

DDE Server:	Always the constant string COMSrv
DDE Topic:	As given in [General], Name in the active CFG file. Ex: [General] Name = ROV14 This gives the DDE topic as ROV14
DDE Item:	As given in [FieldN], Name in the active CFG file. Ex: [Field3] Name = Heading This gives the DDE item as Heading

8.4 FlexString format

The COM Config utility uses a special string format to allow the user to enter non-printable characters (e.g. carriage return, line feed, tab, etc....)

FlexString format is used to define strings containing a mix of ASCII control codes and standard ASCII text. Control codes can be written as decimal or hexadecimal numbers, while standard text must be surrounded in [brackets].

Decimal numbers are written straight-forward, while hex-numbers can be written using a) **&H** prefix or b) **0x** prefix or c) **h** suffix.

Examples for defining various EndString sync characters:

Example:	Resulting EndString:
EndString = 13 10	ASCII codes 13 and 10
EndString = [end] 13 10	The text "end", then ASCII codes 13 and 10
EndString = 0xA &HB Ch	ASCII codes 10, 11 and 12
EndString = [*]	The symbol "*" (ASCII 42)
EndString = 42	The symbol "*" (ASCII 42)

9. Appendix B: Bitmap rescaling

A pixel on standard video monitor (PAL) is **not** quadratic. A pixel on a PC monitor is quadratic.

Therefore, when an unscaled picture grabbed from video is displayed on your VGA monitor, it will appear stretched in vertical direction.

Likewise, if a standard PC bitmap (ex: logo or similar) is displayed on a overlay page, it will look compressed on the video.

To overcome these problems, use the following scaling:

9.1 PC to Video bitmap

To get correct video bitmap size:

Either: Stretch your PC bitmap by 50% in vertical direction

Or: Compress your PC bitmap by 33.33% in horizontal direction

9.2 Video to PC bitmap

To get correct PC bitmap size:

Either: Stretch your video bitmap by 50% in horizontal direction

Or: Compress your video bitmap by 33.33% in vertical direction

10. Appendix C – Use of Paint Shop Pro

Paint Shop Pro is a very good toolkit that can be used to view, edit and print pictures grabbed with the video overlay system. In this appendix Paint Shop Pro is called PSP.

10.1 How to get it

The latest shareware version can always be found at <http://www.jasc.com>. If you continue to use it, please purchase a registered version, pricing details given on their web pages.

Also you can find a fairly up-to-date version in the Shareware folder of the VIGRA CD.

Run the setup program and the program will install itself. At first run PSP will ask you which picture types to register for use with PSP. Click on the “Select All” button to make PSP the default editor for all picture types.

10.2 How to use with stillpictures from VIGRA

In this section we assume the stillpictures are stored in C:\APP\VIGRA\FrzBMP

10.2.1 Open in Paint Shop Pro

1. Start Paint Shop Pro
2. Select [File, Browse] from the menu
3. Use the mouse to click into the C:\APP\VIGRA\FrzBMP folder. You will now see small “thumbnails” of all the stillpictures stored in that folder.
4. Double-click on the stillpicture to view. When it opens you will notice that it seems to be stretched in the vertical direction.

10.2.2 Resizing to get correct aspect ratio

1. Open the resize dialogbox by selecting [Image, Resize] from the menu.
2. Click OFF (no checkmark in) the “Maintain Aspect ratio” checkbox.
3. Select “Percentage of original” radiobutton
4. Set [width = 100% and height = 67%] **or** [width = 150% and height = 100%]
(the last alternative will probably give best picture quality)
5. Click OK and see the image beeing resized.

10.2.3 Printing the picture

1. Open page setup dialog by selecting [File, Page setup] from the menu.
2. Select paper orientation; portrait or landscape.
3. Use the “Scale” and “Fit to page” controls to adjust print size.
4. Click OK
5. Open print dialog by selecting [File, Print] from the menu.
6. Make sure the printer is correct, click OK

10.2.4 Saving to different file format

1. Open Save dialog by selecting [File, Save as] from the menu
2. Select folder for where to store the new file.
3. Select correct file type in the “Save as type” dropdown listbox.
We suggest “Compuserve Graphics Interchange – GIF” as a good format for loss-less compression.
If small loss of picture quality is acceptable, then select “JPEG – JFIF compliant”
4. Type in new filename and press SAVE button.

10.3 How to prepare logos for use on Video

Before a logo can be put onto video, it should be stretched a bit in vertical direction. (50 percent extra, see appendix B)

Also the number of colors should be no more than 256.

1. Open the logo in Paint Shop Pro
2. Resize to horizontal=100%, vertical=150% (see previous section for details)
3. Reduce number of colors by selecting [Colors, Decrease color depth, 256 colors (8 bit)]
4. Save file again and open in VIGRA program.