VIGATEC

Operation Manual

HDTV-Upconverter DUNE-F
Universal Scaler DUNE-Fi

Made in Germany

Issued 03/03

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1. Introduction

Congratulations!
You bought a VIGATEC product which was designed and manufactured in Germany. It will guarantee years of trouble free operation. Many customer demands have been integrated and we hope that you will enjoy the image quality and the performance of the unit. This is the first scaler incorporating Faroudja technology.

CAUTION !!!

Check the horizontal frequency range of your projector or display before connecting the DUNE-F/-Fi. The DUNE-F/-Fi outputs 128 kHz in quadrupling with 100 Hz refresh. There are only a few projectors which can handle such high scan frequencies. Be careful overriding your projector because damage can occur.

Shipped Accessories

- mains cable
- Operation manual
- Infrared remote control

1.1 First steps

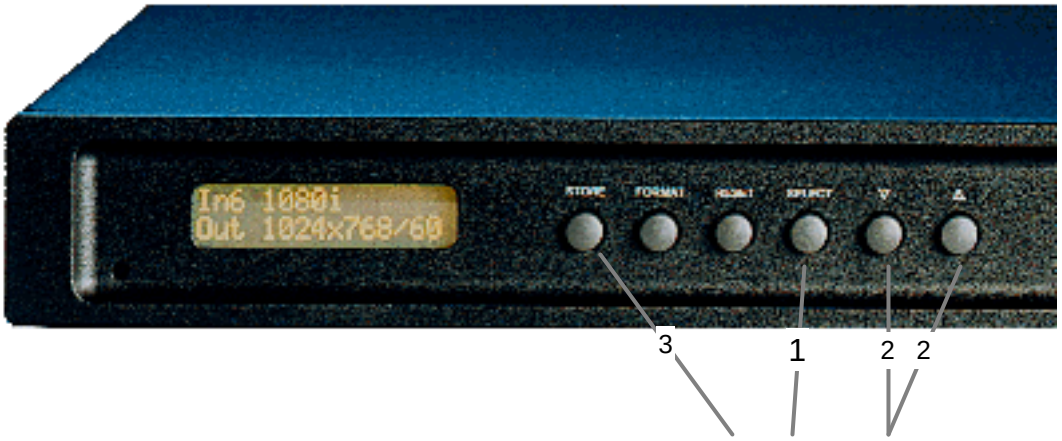
Keep the button SELECT pressed and select with UP-DOWN buttons one of the five main group menues. The group buttons will guide you to the desired sub-menue. Push SELECT, the cursor starts blinking. Now you can make adjustments with the Group buttons. To quit press SELECT again, the cursor disappears.

ATTENTION: Do not forget to store (press the STORE button), else you'll loose the changes you made.

1.2 Operation

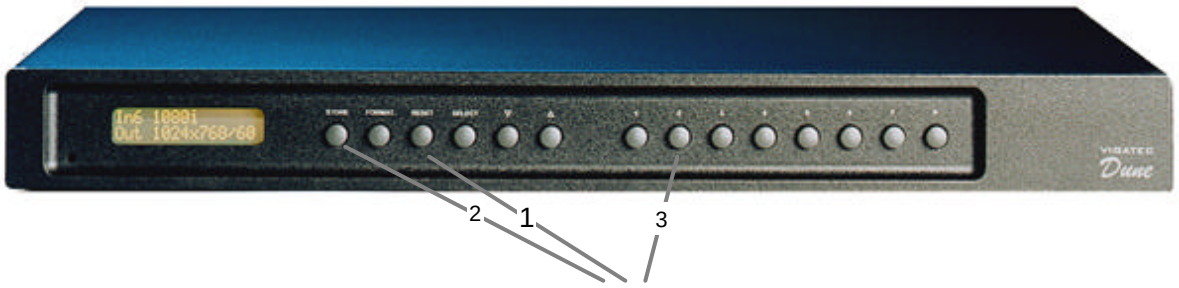
Keep **SELECT** button pressed, navigate through menue with arrow buttons

1.3 Making adjustements:



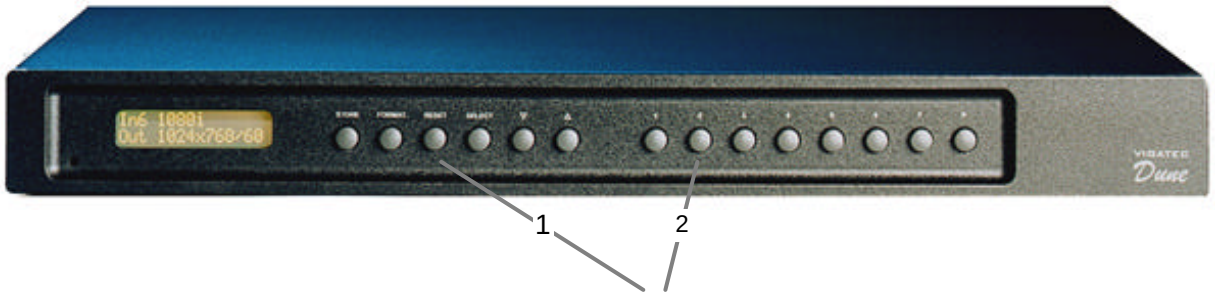
Press **SELECT** (1) button, cursor starts blinking, make adjustments with arrow buttons (2).
Press **STORE** (3) to save settings

1.4 Creating presets:



Press **RESET**(1) button,
Press **STORE**(2) button. Store Preset by pressing desired Preset Memory 1-8 (3)

1.5 Recalling presets:



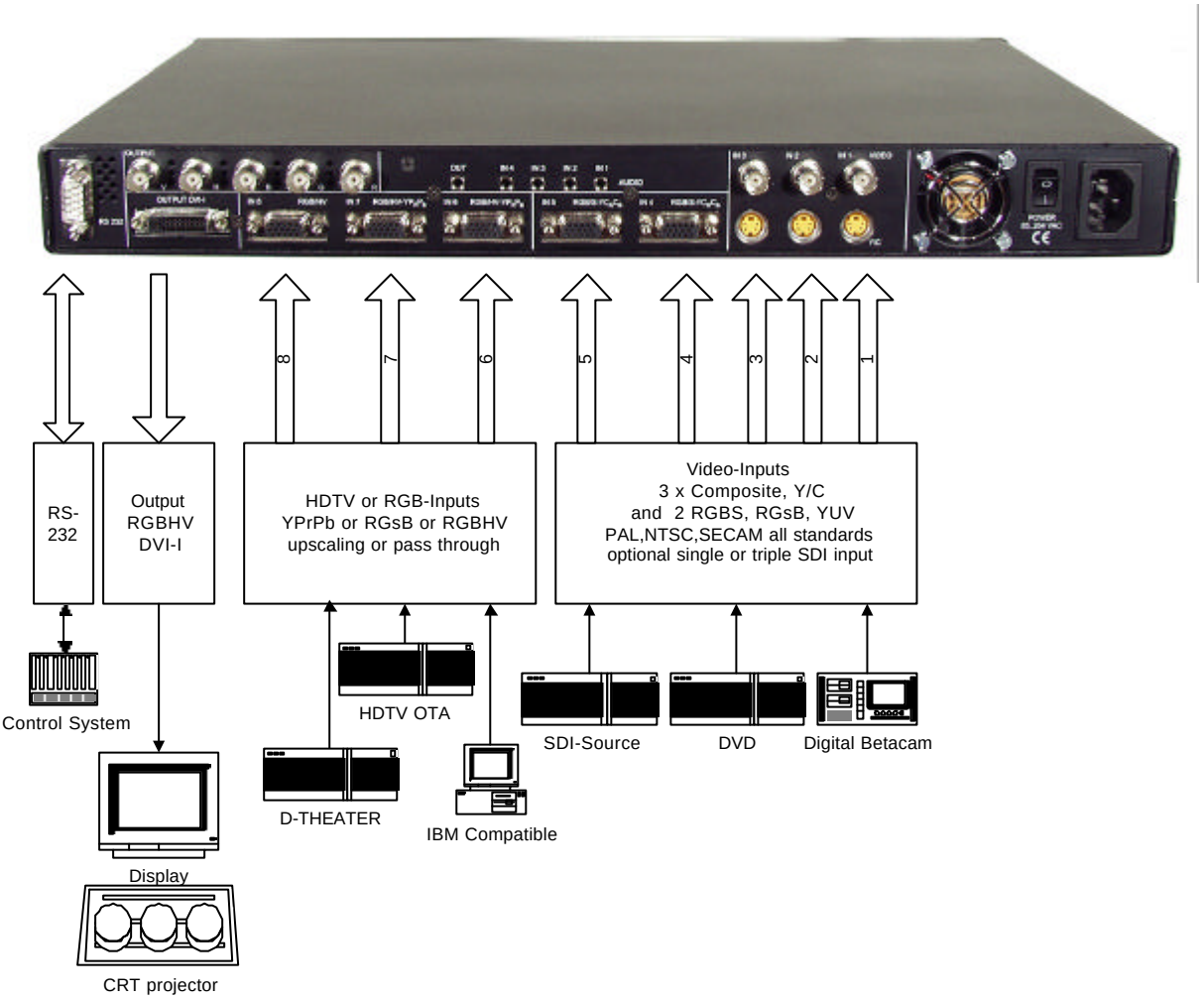
Press **RESET** (1) button,
Recall one of the 1-8 memories pressing input (2) buttons

1.6 Infrared remote control and OSD

The IR remote switches inputs 1-8 directly with the corresponding numeric buttons. Pressing the group buttons (e.g. Input Group) navigates directly to the submenus. If the OSD option is installed the group options are displayed on the screen. Adjustments can be made with the arrow buttons. STORE will store user adjustments permanently. The DUNE-F/-Fi processor has an **O**n**S**creen**D**isplay factory installed allowing all user adjustments possible. Any time a group button is pressed it will be activated automatically.
The OSD remains 10 seconds then dissappears automatic. EXIT button on the remote will cease the OSD display immediately. The POWER button puts the unit in a sleep mode. To reactivate press POWER button again. INFO button acts like the PRESET button on the unit and enables PRESET selection or storage.
The Input Group button hides several sub menues which are activated by repetively pressing the button.

ATTENTION:
For technical reasons the OSD (**O**n**S**creen**D**isplay) is only visible on the analog video outputs, not on the DVI output.

2. Connections



2.1 Video inputs

Composite and S-VHS

The inputs 1-3 can be used for composite and Y/C-signals. It is not possible to use both signals at one time at one input. The default operation of the unit is BNC-Composite.

CONFIGURATION COMPOSITE

For Y/C(S-VHS)-operation it is necessary to change the input mode in ***CONFIGURATION*** -> ***INPUT MODE*** -> Press the **SELECT**-button and change with one of the **GROUP**-buttons to ***S-VHS***. Press **STORE** to save the setting for next power cycle.

CONFIGURATION S-VHS

2.2 SDI input

To activate the SDI input you must select SDI operation in the INPUT MODE menu, while INPUT 3 is the active input. LED must light or the display must show IN 3.

CONFIGURATION SDI

2.3 RGB/S and YUV

The inputs 4 + 5 accept RGB/S, RGsB and YUV signals. For YCrCb operation a break out cable VGA -> 3 BNC is required. The DUNE-F/-Fi can detect sync on green and sync on Y. For Scart operation you will need an adapter as described in the pinout section page 10.

3 input formats are selectable:

INPUT MODE RGBS	INPUT MODE RGsB	INPUT MODE YUV

2.4 HDTV and progressive video input (only DUNE-F)

Input 6 and 7 of DUNE may be configured as a HDTV input in INPUT MODE menu while the input is active. You may select 480p, 576p, 720p and 1080i in YPrPb or RGB color format. No external converters are necessary for direct connections to HDTV sources or progressive DVD-players. For 480p you may select all combinations of output resolution and frame rates, for 720p the upconversion is limited to XGA, 1080p, SXGA and D-ILA. 1080i signals are converted to 1080p or XGA, SXGA and D-ILA with some pixels cropped at top and bottom of the image.

Display using NTSC progressive and XGA Output format:

In6 480p Out XGA /60

2.5 Video outputs / output synchronization signals

The DUNE-F/-Fi offers separate H- and V-synchronization, composite-sync or RGB with Sync on green. Composite-sync can be selected in the menu ***OUTPUT –> SYNC OUTPUT -> Composite (on V)***. Be careful the composite sync is only available at the V-socket and not at the H-socket. If the unit runs in ***SEPERATE SYNC*** mode the output level of the sync signals is TTL 5 V positive or negative H and V-Sync. Composite sync can be adjusted either positive or negative. Some older projectors may require negative composite sync. The DUNE-F/-Fi also offers sync on green which is very useful for HDTV displays.

Factory default:

SYNC OUTPUT SEPERATE -

2.6 Table of scan frequencies:

Format	PAL 50 Hz	NTSC 60 Hz	PAL 100 Hz	NTSC 120 Hz	480p	720p	1080i
Linedoubling	31,25 kHz	31,5 kHz	62,5 kHz	63 kHz	yes	n.a.	n.a.
Linetripling	47 kHz	47,3 kHz	94 kHz	94,5 kHz	yes	n.a.	n.a.
Linequadrupling	62,5 kHz	64 kHz	125 kHz	126 kHz	yes	n.a.	n.a.
800 x 600	31,25 kHz	37,5 kHz	62,5 kHz	75 kHz	yes	yes (1)	yes (1)
1024 x 768	40,3 kHz	48,33 kHz	81 kHz	96,6 kHz	yes	yes (1)	yes (1)
1280 x 1024	53 kHz	63,55 kHz	n.a.	n.a.	yes	yes	yes
1365 x 1024 (D-ILA)	53 kHz	63,55 kHz	n.a.	n.a.	yes	yes	yes
1280 x 720	39,4 kHz	47,3 kHz	78,8 kHz	94,5 kHz	yes	yes	n.a.
PDP1 852 x 480	n.a.	31,5 kHz	n.a.	63 kHz	yes	n.a.	n.a.
PDP2 1024 x 1024	53 kHz	63,55 kHz	n.a.	n.a.	yes	yes	yes
PDP3 1280 x 768	40,3 kHz	48,33 kHz	n.a.	n.a.	yes	yes	yes
PDP4 1365 x 768	40,3 kHz	48,33 kHz	n.a.	n.a.	yes	yes	yes
SONY VW 10 HT	40,3 kHz	48,33 kHz	n.a.	n.a.	yes	yes	yes
1080p	n.a.	64,8 kHz	n.a.	n.a.	yes	yes	yes

(1) external antialiasing filter necessary

The projector must scan at least to one of the scan frequencies. See projectors manual or ask manufacturer.

3. Activate Adjustment mode

Keep the **SELECT** button pressed and press one of the **UP-DOWN** buttons for stepping through the different group settings:

IMAGE -> CONFIGURATION -> ENHANCEMENT -> ALIGNMENT ->OUTPUT -> AUDIO -> ASPECT RATIO -> SYSTEM

3.1 Making adjustments

Press one of the **ARROW** buttons to select parameter to change. Press **SELECT** button -> cursor blinks -> change value or select setting with one of the **ARROW** buttons -> Press **SELECT** -> cursor disappears ->Press **STORE** button. The adjustments are saved for each input separately and are recalled any time the unit is power cycled or input changes.

e.g. Input

```
STANDARD SELECT
PAL B,G,H,I
```

4. Picture adjustments

4.1. Adjustments IMAGE (inputs 1-5: Brightness, Contrast, Saturation, Hue only NTSC)

The adjustments for Brightness, Contrast, Saturation have similar impact as with monitors or TV-sets. There is no real optimum setting. Perfect image balance is a matter of attached projector or display and personal preferences. ***HUE*** is only available with NTSC-signals.

```
BRIGHTNESS
+ 6,2 %
```

4.2 Adjustments CONFIGURATION

4.2.1 Noise Reduction

The DUNE offers a very effective digital noise filter. It removes noise of low quality signals like VHS tapes or analog reception of broadcast signals.

4.2.2 Comb-Filter (only Input 1-3)

The comb filter is needed to remove cross color artifacts of the PAL,SECAM or NTSC encoding process. It can be deactivated for demonstration purposes. An activated Comb filter never has a negative impact so it should be ON all the time. The function is only available in the composite input mode. The used type of comb filter meets broadcast standards and delivers outstanding performance.

4.2.3 Input Mode

This setting activates the Y/C (S-VHS) input mode on inputs 1-3.
If input 4 or 5 is active the function provides toggling between RGB/S, RGsB and YUV.
To use the SDI input you will have to select SDI in the INPUT MODE of input 3 to activate this operation.

4.2.4 Input Standard

Not all video standards can be detected automatically. If the image is black and white a manual selection of input standard may be required, e.g. SECAM sources have to be selected and stored. The necessity for a manual selection is usually indicated by a black and white image togehter with heavy distortion of the displayed image. Simply step through the standards until the display shows proper color images.

4.2.5 Film Mode Proc.

For standard operating the DUNE-F/-Fi should be left in FILM all the time. It willl recognize film or video based sources automatically. Whenever there is very little motion in video based source material it may be the case that you will have to switch to ***Video only*** and engage forced 3-D Video processing.

4.2.6 Film Det. Sense

This adjustment changes the sensivity for the detection of film cadences. The factory default (***Medium***) obtains best results for NTSC sources, for PAL sources the best result you'll get with the adjustment ***Low***.

4.2.7 Cross Color Suppression

For analog input sources in S-VHS or composite video the cross color suppression reduces the dot crawling remaining in the image. It has no effect on SDI input sources.

4.2.8 3-D Video

The 3-D Video circuit reduces jaggies of moving diagonal objects introduced by the interlaced scanning process of video cameras. The achieved quality matches the deinterlacing of film based sources and delivers broadcast quality results.

4.3 Adjustment ENHANCEMENT

The new DUNE-F/-Fi uses a powerful enhancement circuit that allows seperate enhancement of luminance and chrominance signals after the deinterlacing process. The available settings are ***ENHANCEMENT GAIN, HORIZONTAL DETAIL, VERTICAL DETAIL, DETAIL THRESHOLD, EDGE, EDGE THRESHOLD, HORIZONTAL*** and ***VERTICAL COLOR SHARPNESS***.
Horizontal Detail and ***Vertical Detail*** have effect on small detail in the image, edge works on the large transitions. The threshold parameter determines the start level for the enhancement function. This avoids enhancement of noise and also acts as a noise reduction function.
In general there are thousands of combinations for the enhancement setting and it is a matter of personal preference which adjustment suits best. Too high values will introduce artificial noise in the image and should be avoided.

The enhancement is available for inputs 1-5 and for all sources including SDI. Each input has its own memory so different settings are possible.

4.4 Adjustment ALIGNMENT

4.4.1 Horiz. Shift, Horiz. Offset and Vertical Shift

This function enables horizontal or vertical shifting of the image. If the image contains undesired lines like closed caption it is possible to move this in the blanking area. Distortion of the picture during adjustments can occur.

4.4.2 Horiz. Zoom and Vertical Zoom

The DUNE-F/-Fi offers a certain percentage of zoom both in vertical and horizontal direction. Together with the shift function it is a powerful tool to zoom in the active picture area for magnification. The higher the zoom factor the lower the video image quality.

4.4.3 Input Size and Shift

The ***Horizontal Size*** and ***Vertical Size*** adjustments allow the increase of active pixels. Digital projectors or displays sometimes do show black bars at the borders of their panel area.These unused panel area may then be filled increasing the active size of the image.
Horizontal Shift and ***Vertical Shift*** allow the positioning of the active area on the physical panel device. Do not forget to STORE the settings after making adjustments. Do not use the Size and Shift functions with CRT projectors because the projector itself is offering these adjustments without affecting the image sharpness.

4.4.4 Color Phase

Color Phase adjusts the delay between LUMA and CHROMA signals. It works only for Y/C and composite. Usually no adjustments are necessary but a colored halo effect around sharp edges may be an indication for a delay and a necessary compensation.

4.5 Aspect ratio conversion

The DUNE-F/-Fi offers an aspect ratio conversion utility to resize anamorphotic images of DVDs for 16:9 screen or display. It also converts a non-anamorphotic signal to an anamorphotic image for ease of operation. The projector may stay in the 16:9 setup all the time even with non enhanced DVDs.
8 Memories have been preprogrammed and may be recalled using the FORMAT button and then pressing one of the illuminated input buttons.
!!!! Not all conversions are possible with all output resolutions. There are restrictions, see the format table. If you press FORMAT button and only 3 LEDs are lighting, then these are the available conversions for the selected output resolution. For resolutions equal or higer XGA there are no restrictions.

Factory Memory:

MEMORY
1

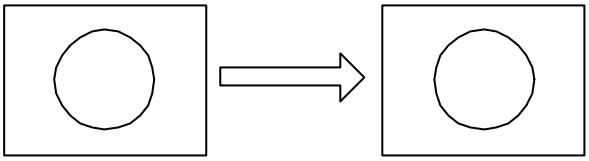
Remote operation of format conversion: Aspect ratio conversions may be exectuted from the remote.Press the FORMAT button, then select one of the 8 memories.

ATTENTION !
Please take care of the resistrictions. Not all format conversions are executable at lower output resolutions: Memory 6 and 7 require a minimum of 1024 Pixel per line. Therefore Memory 6 and 7 require at least output resolutions of 1024 x 768, 1280 x 1024 or D-ILA , memory 4 and 5 require output resolutions of Linetripling , Linequadrupling or 1024 x 768,
1280 x1024 or D-ILA.

4.5.1 The aspect ratio table

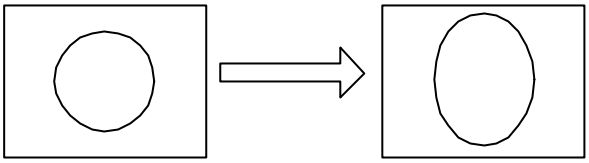
ASPECT RATIO CONTROL

MEMORY 1



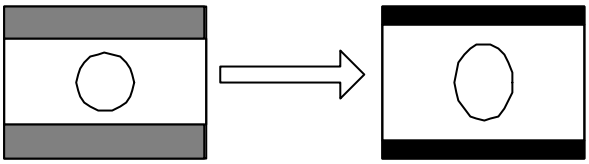
No conversion, standard operation

MEMORY 2



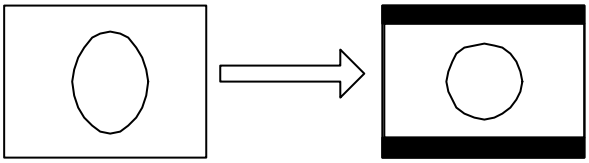
Reverse stretch for non-anamorphic sources in 16:9 ratio

MEMORY 3



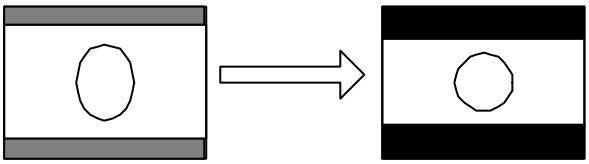
Reverse stretch for non-anamorphic sources in 2,35:1 ratio incl. cropping

MEMORY 4



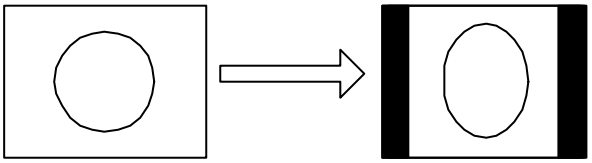
16:9 conversion for 16:9 anamorphic sources in 16:9 ratio

MEMORY 5



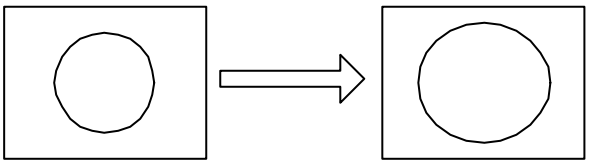
16:9 conversion for 16:9 anamorphic sources in 2,35:1 ratio

MEMORY 6



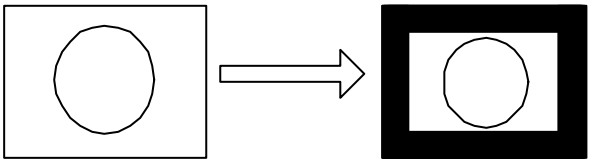
Reverse stretch for non-anamorphic sources in 4:3 ratio

MEMORY 7



Plasma mode for 16:9 screens, image stretch in all directions
Parts of 4:3 original image are cropped

MEMORY 8



Windowboxing for 16:9 screens
Full display of original 4:3 image

4.5.2 Aspect ratio conversion for 480p, 575p, 720p, 1080i, PAL and NTSC.

Following aspect ratio conversions are available for progressive sources and HDTV signals

Format	1	2	3	4	5	6	7	8
480p	x	x	x	x	x			
575p	x	x	x	x	x			
720p	x			x	x			
1080i	x			x	x			

The general restrictions are listed on page 12

Available aspect ratio conversions (50, 100z):

Format	1	2	3	4	5	6	7	8
Linedoubling	x	x	x					
Linetripling	x	x	x	x	x			
Linequadrupling	x	x	x	x	x			
800 x 600	x	x	x					
1024 x 768	x	x	x	x	x	x	x	x
1280 x 1024	x	x	x	x	x	x	x	x
1365 x 1024 (D-ILA)	x	x	x	x	x	x	x	x
1280 x 720	x	x	x			x	x	
PDP1 852 x 480	x	x	x					
PDP2 1024 x 1024	x	x	x	x	x	x	x	x
PDP3 1280 x 768	x	x	x			x	x	
PDP4 1365 x 768	x	x	x			x	x	
SONY VW 10 HT	x	x	x			x	x	
1080p	x	x	x					

Available aspect ratio conversions (60, 120z):

ASPECT RATIO	1	2	3	4	5	6	7	8
Linedoubling	x	x	x					
Linetripling	x	x	x	x	x			
Linequadrupling	x	x	x	x	x			
800 x 600	x	x	x					
1024 x 768	x	x	x	x	x	x	x	x
1280 x 1024	x	x	x	x	x	x	x	x
1365 x 1024 (D-ILA)	x	x	x	x	x	x	x	x
1280 x 720	x	x	x	x	x	x	x	
PDP1 852 x 480	x	x	x					
PDP2 1024 x 1024	x	x	x	x	x	x	x	x
PDP3 1280 x 768	x	x	x			x	x	
PDP4 1365 x 768	x	x	x			x	x	
SONY VW 10 HT	x	x	x			x	x	
1080p	x	x	x					

5. Adjustments OUTPUT

5.1 Output Standard

Pressing the **SELECT**-button initiates the blinking cursor. Change output resolution with the **UP-DOWN** button. Please refer to the table of scan frequencies. If the projector is based on CRT technology the preferred settings are linedoubling, tripling or quadrupling. If the display is a digital LCD-or DLP device, it is recommended to select the native panel resolution.

5.2 Frame Rate (only DUNE-F)

The DUNE-F offers field doubling for flicker free PAL video material. Generally CRT based

projectors will benefit by increased light output. Changing the ***FRAME RATE*** from 50 to 75 or 100 Hz or from 60, to 90 or 120 Hz increases the scan frequency. The projector must be able to scan to the related horizontal scan frequency. Not all output resolutions are supported for all available frame rates. Please refer to the table of scan frequencies. Some LCD projectors are not synchronizing on 50 Hz frame rates.

5.3 DVI-I Output

The DVI-I output carries 2 signals. One digital referred as DVI-D and one analog referred as DVI-A or VGA (adapter required). The DVI-D is single link and may be used for up to 10 meters. A special DVI-VGA adpater is necessary for the second RGB ouput.

ATTENTION !!

For higher resolutions and frame rates (higher than 50/60Hz) the DVI connection over 5m may cause troubles resulting in image artefacts. This is no malfunction of the DUNE. The DVI standard is specified for 5 meter cable only, but for lower resolutions the signal may be good enough for up to 10 meters.

6. Adjustments AUDIO and operating WAVE

6.1 Volume, Bass, Treble, Balance, Gain

Each stereo input offers separate adjustments for ***VOLUME, BASS***, ***TREBLE***, ***GAIN*** and ***BALANCE.*** The adjustments are stored separately for each channel and are recalled any time the audio/video input is changed. The gain adjustment is needed to reduce the input level if distortion occurs even with low volume setting.

6.2 Input Select

This function routes the audio inputs to the video inputs. Select the desired video input then assign one of the 4 selectable audio inputs to this video input. Press **STORE** button.

6.3 Input(EXT.)

Attention !!!

A serial cable must be connected to the WAVE audio delay if you want to use this feature.

The DUNE-F/-Fi can control the VIGATEC WAVE audio delay via its serial port (baud rate 19200 baud). Any of the 6 digital input ports of the WAVE be assigned to the active video input. Selecting the analog input 7 of the WAVE can expand the number of swichtable and delayable inputs to 10. In the INPUT SELECT menu you will have the ability to assign an analog input and send the output signal to the WAVE

Wiring Diagram:

6.4 Delay (EXT.)

Attention !!!

Wave must be connected

The delay may be programmed for any of the 8 video inputs independently. This will allow the compensation of any video delay introduced by different sources. The DUNE will send the appropriate RS-232 command to the WAVE and change the DELAY setting as programmed. Press **STORE** button .

7. Adjustments SYSTEM

7.1 VFD Illumination: The display brightness may be adjusted in 3 levels

7.2 LEDs ON/OFF: Activates/deactivates the input LEDs.

7.3 IR REMOTE: Activates/deactivates the IR Remote operation.

7.4 Memory Option 1

This option organizes the PRESET settings. You have the choice of ***50/60 Hz Common*** or **50/60 Hz Separate** . The selection of ***50/60 Hz Common*** allows the storage of the full configuration of the DUNE-F/-Fi including the output settings into a **50/60 Hz Separate** of your choice.
50/60 Hz Separate is a comfortable function which will allow you to have different configurations for one PRESET for PAL and NTSC operation including alignment settings which are very useful for any users who frequently change their source material. e.g. for PAL you may want to have LD/100 Hz and for NTSC LQ/60 Hz as output choice. If you have memorized these settings for PRESET 1 then any time you change from PAL to NTSC the unit will change its configuration according to what you once stored for this source.

7.5 Memory Option 2

In this menu you may select if you want to include the input for the PRESET configuration or not. If you inlclude the input switching, then you may control output setting with input selection. This is very useful if you change to HDTV inputs and you want to increase the output resolution to 1080p. This is then a one button PRESET operation only. With the input excluded you may have different PRESET settings for the same input. Very useful for different enhancement settings.

7.6 SW-Download SELECT

see chapter 11, Firmware UPDATE

7.7 Communication

The Vigatec scalers may be adjusted to 9600, 19200 and 38400 baud for the serial interface. Default setting is 19200 baud.

7.8 RESET

RESET activates factory defaults for the active inputs. The buttons **SELECT** and **PRESET** have to be pressed simultaneously for at least 3 seconds.

7.9 Loading default settings and resetting user memory

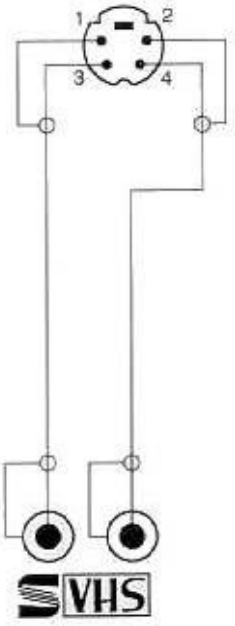
To clear the internal EEPROM and totally reset the unit to factory defaults it is necessary to press the STORE button while powering on the unit. This is necessary after firmware upgrades and may help if you detect a non standard behaviour of the unit.

7.10 Recovery start from internal ROM

The Vigatec scalers have a factory programmed EPROM and a user writable FLASH memory that stores the new version if upgrades have been performed. In case something went wrong with the Firmware upgrade you may start the unit from the factory EPROM. Press SELECT button while powering ON.

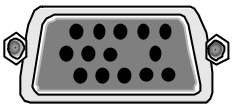
8. Pin out

8.1 Y/C (S-VHS) (Input 1-3)



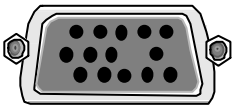
- pin 1 - C-Ground
- pin 2 - Y-Ground
- pin 3 - C-Chroma
- pin 4 - Y-Luma

8.2 YPrPb/VGA-Input (Input 6,7,8)



- pin 1 - Red/Pr
- pin 2 - Green/Y
- pin 3 - Blue/Pb
- pin 4 - N/C
- pin 5 - N/C
- pin 6 - R-Ground/PR-Ground
- pin 7 - G-Ground/Y-Ground
- pin 8 - B-Ground/PB-Ground
- pin 9 - No Pin
- pin 10 - Ground
- pin 11 - N/C
- pin 12 - N/C
- pin 13 - H. Sync
- pin 14 - V. Sync
- pin 15 - N/C

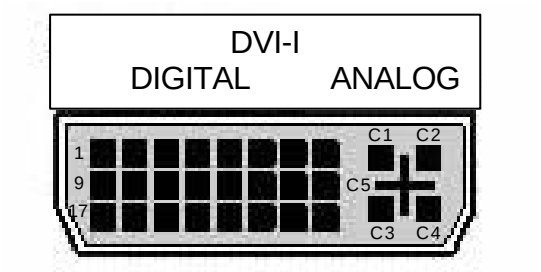
8.3 RGBS or YUV-Input (Input 4 + 5)



- pin 1 - Red - V
- pin 2 - Green -Y
- pin 3 - Blue - U
- pin 4 - N/C
- pin 5 - N/C
- pin 6 - R-V-Ground
- pin 7 - G-Y-Ground
- pin 8 - B-U-Ground
- pin 9 - N/C
- pin 10 - Ground
- pin 11 - N/C
- pin 12 - N/C
- pin 13 – N/C
- pin 14 - Composite Sync
- pin 15 - N/C

8.4 DVI-I Ausgang

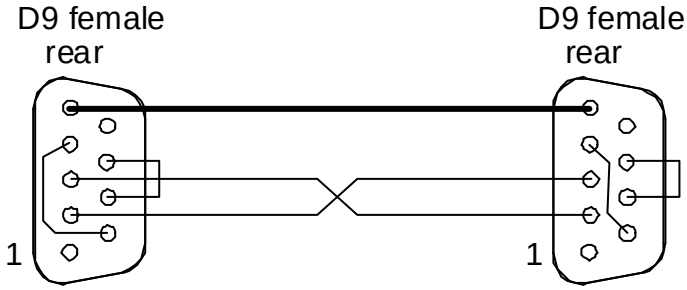
- pin 1 - T.M.D.S Data 2-
- pin 2 - T.M.D.S Data 2+
- pin 3 - T.M.D.S Data 2/4 Shield
- pin 4 - N.C.
- pin 5 - N.C.
- pin 6 - N.C
- pin 7 - N.C.
- pin 8 - Analog Vertical Sync
- pin 9 - T.M.D.S Data 1-
- pin 10 - T.M.D.S Data 1+
- pin 11 - T.M.D.S Data 1/3 Shield
- pin 12 - N.C.
- pin 13 - N.C.
- pin 14 - 5 V Power
- pin 15 - Ground
- pin 16 - Hot Plug Detect
- pin 17 - T.M.D.S Data 0-
- pin 18 - T.M.D.S Data 0+
- pin 19 - T.M.D.S Data 0/5 Shield
- pin 20 - N.C
- pin 21 - N.C.
- pin 22 - T.M.D.S Clock Shield
- pin 23 - T.M.D.S Clock +
- pin 24 - T.M.D.S Clock -
- pin C1 - Analog Red
- pin C2 - Analog Green
- pin C3 - Analog Blue
- pin C4 - H-Sync
- pin C5 - Ground



8.5 RS-232

The DUNE may be controlled by using a simple RS-232 null modem cable.
Baud rate is adjustable in the **SYSTEM -> COMMUNICATION** menu.

Pinout: Necessary connections are TX, RX and Ground.

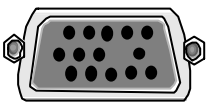


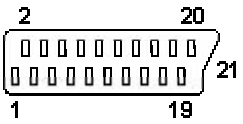
8.6 Adapter SCART to VGA-plug for inputs 4 + 5

Pinout VGA

Pinout SCART-plug
Male

- pin 1 - Red ---------- pin 15
- pin 2 - Green ---------- pin 11
- pin 3 - Blue ---------- pin 7
- pin 4 – N/C
- pin 5 - N/C
- pin 6 - R-Ground ---------- pin 13
- pin 7 - G-Ground ---------- pin 9
- pin 8 - B-Ground ---------- pin 5
- pin 9 - N/C
- pin 10 - Ground ---------- pin 17
- pin 11 - N/C
- pin 12 - N/C
- pin 13 – N/C
- pin 14 - Composite Sync ---------- pin 19
- pin 15 - N/C





9. Technical Data DUNE-F / DUNE-Fi

Dimensions		483 mm x 44,45 mm x 280 mm
Weight		approx. 3 kg
Colour		black
Power Supply		86 – 264 V, max 40 VA
Display Illumination		adjustable in 3 steps
Video-Inputs	**1-3**	3 x composite, BNC, 4 Line-comb-Filter, Bandwith 6 MHz Recognized Standards PAL B,G, PAL M, PAL N, NTSC M, NTSC 4,43 MHZ, SECAM
	1-3	3 x Y/C , 3 x Mini-Din Input 1-3, Bandwith 6 MHz
	3	SDI, SMPTE 259M
	4-5	2 x RGB/YUV, Bandwith 7 MHz, SubD HD15 female Synchronisation on RGsB, RGBS, YUV, YUV with external Sync Blackburst or composite video
	6+7 (DUNE-F)	Input 6,7 accepts progressive or HDTV signals in YPrPb or RGsB, RGB/HV format as 480p, 576p, 720p and 1080i
	6,7,8 (DUNE-F)	3 X VGA with 200 MHz bandwith loop through, HDTV RGsB,RGB/HV input signals in 480p, 576p, 720p and 1080i
	6,7,8 (DUNE-Fi)	3 X VGA with 200 MHz bandwith loop through
Audio-Inputs	**1-4**	4 x Stereo unbalanced max. +18 dBu
Video-Output		RGB/S TTL positive or negative, or RGB/HV with TTL positive or negative 5 x BNC and DVI-I, both active DVI-D and DVI-A compatible
Audio-Output		Stereo audio unbalanced, max +18 dBU
Remote Control		Infrared, RS-232, baudrate adjustable from 9600-38400
Fan		temperature controlled

10. RS-232 Protocol

DUNE-F / DUNE-Fi Remote Commands 021122

Protocol: 9600/19200/38400 baud, 8 bits, 1 stopbit, no parity, no handshake
Default: 19200

General format: **3 ASCII characters, carriage return code.**

At functions with belonging value (e.g. n%) additionally: (decimal number), second return code.

Please refer also the table 'Allowed/Functional Commands regarding Input Signal'.

Function	Code		Numerical Value	Corresponds to Value/Function
<OVERALL/GENERAL>				
Input 1	**"IN1"**	& Chr$(13)		**(input 1 select)**
Input 2	**"IN2"**	& Chr$(13)		**(input 2 select)**
Input 3	**"IN3"**	& Chr$(13)		**(input 3 select)**
Input 4	**"IN4"**	& Chr$(13)		**(input 4 select)**
Input 5	**"IN5"**	& Chr$(13)		**(input 5 select)**
Input 6	**"IN6"**	& Chr$(13)		**(input 6 select)**
Input 7	**"IN7"**	& Chr$(13)		**(input 7 select)**
Input 8	**"IN8"**	& Chr$(13)		**(input 8 select)**
Preset 1	**"PR1"**	& Chr$(13)		**(preset 1 recall)**
Preset 2	**"PR2"**	& Chr$(13)		**(preset 2 recall)**
Preset 3	**"PR3"**	& Chr$(13)		**(preset 3 recall)**
Preset 4	**"PR4"**	& Chr$(13)		**(preset 4 recall)**
Preset 5	**"PR5"**	& Chr$(13)		**(preset 5 recall)**
Preset 6	**"PR6"**	& Chr$(13)		**(preset 6 recall)**
Preset 7	**"PR7"**	& Chr$(13)		**(preset 7 recall)**
Preset 8	**"PR8"**	& Chr$(13)		**(preset 8 recall)**
Store	**"STO"**	& Chr$(13)		**(= Store key)**
Preset 1 Store	**"PS1"**	& Chr$(13)		**(store to preset 1)**
Preset 2 Store	**"PS2"**	& Chr$(13)		**(store to preset 2)**
Preset 3 Store	**"PS3"**	& Chr$(13)		**(store to preset 3)**
Preset 4 Store	**"PS4"**	& Chr$(13)		**(store to preset 4)**
Preset 5 Store	**"PS5"**	& Chr$(13)		**(store to preset 5)**
Preset 6 Store	**"PS6"**	& Chr$(13)		**(store to preset 6)**
Preset 7 Store	**"PS7"**	& Chr$(13)		**(store to preset 7)**
Preset 8 Store	**"PS8"**	& Chr$(13)		**(store to preset 8)**
Reset	**"RES"**	& Chr$(13)		**(reset per input)**
Reset All	**"INI"**	& Chr$(13)	**{Message:**	**(factory preset)**
	+ "YES"	& Chr$(13)	**"Are you sure ?"}**	
(Value up)	**"VUP"**	& Chr$(13)		**(current value +)**
(Value down)	**"VDN"**	& Chr$(13)		**(current value -)**

<IMAGE, Video/Component>						
Contrast	**"CON"**	& Chr$(13)	**0..63**	& Chr$(13)	**0..98,8**	**%**
Brightness	**"BRI"**	& Chr$(13)	**-127..126**	& Chr$(13)	**-50,2..+49,4**	**%**
Saturation	**"SAT"**	& Chr$(13)	**0..255**	& Chr$(13)	**0..100**	**%**
Hue	**"HUE"**	& Chr$(13)	**-127..+127**	& Chr$(13)	**-44,6..+44,6**	**°**
Enhancement	**"ENH"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	

Function	Code	Numerical Value	Corresponds to Value/Function

<CONFIGURATION, Video/Component>						
Noise Reduction	**"NFI"**	& Chr$(13)	**0..5**	& Chr$(13)	**off/ step 1..5**	
Comb Filter	**"CFI"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
Input Mode (Video)	**"IMV"**	& Chr$(13)	**0..2**	& Chr$(13)	**composite/S-VHS/D1**	
Input Mode (Comp.)	**"IMC"**	& Chr$(13)	**0..2**	& Chr$(13)	**YUV/RGsB/RGBS**	
Input Standard	**"VST"**	& Chr$(13)	**0..6**	& Chr$(13)	***(table 1)**	
Film Mode Proc.	**"FMP"**	& Chr$(13)	**0/1**	& Chr$(13)	**video only/enable**	
Film Det. Sense	**"FDS"**	& Chr$(13)	**0..2**	& Chr$(13)	**low/medium/high**	
NTSC 2:2 Pulldown	**"N22"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
Cross Color Suppression	**"CCS"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
DCDi	**"DCD"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	

Function	**Code**		**Numerical Value**		**Corresponds to Value/Function**	
<ENHANCEMENT, Video/Component>						
Enhancement Gain	**"ENG"**	& Chr$(13)	**0..3**	& Chr$(13)	**low/mid/high/very high**	
Horizontal Detail	**"HDT"**	& Chr$(13)	**0..15**	& Chr$(13)	**off/step 1..15**	
Vertical Detail	**"VDT"**	& Chr$(13)	**0..15**	& Chr$(13)	**off/step 1..15**	
Detail Threshold	**"DTT"**	& Chr$(13)	**0..15**	& Chr$(13)	**step 0..15**	
Edge	**"EDG"**	& Chr$(13)	**0..10**	& Chr$(13)	**off/step 1..10**	
Edge Threshold	**"EDT"**	& Chr$(13)	**0..15**	& Chr$(13)	**step 0..15**	
Horiz. Color Sharpn.	**"CSH"**	& Chr$(13)	**0..15**	& Chr$(13)	**off/step 1..15**	
Vertical Color Sharpn.	**"CSV"**	& Chr$(13)	**0..7**	& Chr$(13)	**off/step 1..7**	
Lowpass Filter	**"LPF"**	& Chr$(13)	**0..2**	& Chr$(13)	**off/reduced/soft**	
<ALIGNMENT, Video/Component>						
Horiz. Shift	**"HSF"**	& Chr$(13)	**-n..+m**	& Chr$(13)	**-n..+m**	(range depends
Vertical Shift	**"VSF"**	& Chr$(13)	**-n..+m**	& Chr$(13)	**-n..+m**	on OStd)
Horiz. Zoom	**"HZO"**	& Chr$(13)	**[-pixel]**	& Chr$(13)	**[-pixel]**	(see note)
Vertical Zoom	**"VZO"**	& Chr$(13)	**[-lines]**	& Chr$(13)	**[-lines]**	
Horiz. Size	**"HSZ"**	& Chr$(13)	**[+pixel]**	& Chr$(13)	**[+pixel]**	
Vertical Size	**"VSZ"**	& Chr$(13)	**[+lines]**	& Chr$(13)	**[+lines]**	
Color Phase	**"CPH"**	& Chr$(13)	**-3..5**	& Chr$(13)	**-3..5**	
<IMAGE, DTV/VGA>						
Contrast (DTV/Graphic)	**"GCN"**	& Chr$(13)	**-21..45**	& Chr$(13)	**-16..35**	**%**
Brightness (DTV/Graphic)	**"GBR"**	& Chr$(13)	**-64..63**	& Chr$(13)	**-50..50**	**%**
<CONFIGURATION, DTV/VGA>						
Input Standard (DTV/Graphic)	**"GST"**	& Chr$(13)	**0..17/128**	& Chr$(13)	***(table 2)**	
Input Mode (DTV)	**"IMD"**	& Chr$(13)	**0..2**	& Chr$(13)	**YPrPb/RGsB/RGBHV**	
<ALIGNMENT, DTV/VGA>						
Phase	**"GPH"**	& Chr$(13)	**0..31**	& Chr$(13)	**0..348,75**	°
Horizontal Shift	**"HSF"**	& Chr$(13)	**-n..+m**	& Chr$(13)	**-n..+m**	(range depends
Vertical Shift	**"VSF"**	& Chr$(13)	**-n..+m**	& Chr$(13)	**-n..+m**	on OStd)
Horiz. Size	**"HSZ"**	& Chr$(13)	**[+pixel]**	& Chr$(13)	**[+pixel]**	
Vertical Size	**"VSZ"**	& Chr$(13)	**[+lines]**	& Chr$(13)	**[+lines]**	
Clocks per Line	**"CPL"**	& Chr$(13)	**256..2047**	& Chr$(13)	**256..2047**	

	Code		**Numerical Value**		**Corresponds to Value/Function**

Function						
<OUTPUT>						
Output Standard	**"OST"**	& Chr$(13)	**0..13**	& Chr$(13)	***(table 3)**	
Freeze	**"FRZ"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
Sync Output	**"SYO"**	& Chr$(13)	**0..4**	& Chr$(13)	***(table 4)**	
Frame Rate	**"FRT"**	& Chr$(13)	**0/1/2**	& Chr$(13)	**(video rate x1/x1,5/x2)**	Hz
DVI Output	**"DVI"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
<AUDIO>						
Volume	**"VOL"**	& Chr$(13)	**0..63**	& Chr$(13)	**-78,75..0 (à1,25)**	dB
Bass	**"BAS"**	& Chr$(13)	**-7..7**	& Chr$(13)	**-14..14 (à2)**	dB
Treble	**"TRE"**	& Chr$(13)	**-7..7**	& Chr$(13)	**-14..14 (à2)**	dB
Balance	**"BAL"**	& Chr$(13)	**-31..31**	& Chr$(13)	**-38,75..0 (à1,25)**	dB
Gain	**"GAI"**	& Chr$(13)	**0..3**	& Chr$(13)	**0..+18,75 (à6,25)**	dB
Input Select	**"AIN"**	& Chr$(13)	**1..4**	& Chr$(13)	**audio input 1..4**	
Input (Ext.)	**"XAI"**	& Chr$(13)	**0..8**	& Chr$(13)	**mute/input 1..7/off**	
Delay (Ext.)	**"DLY"**	& Chr$(13)	**0..17**	& Chr$(13)	**0..340 (à20)**	msec
<SYSTEM>						
Software Download	**"SWD"**	& Chr$(13)				
Communication	**"COM"**	& Chr$(13)	**0/1/2**	& Chr$(13)	**9600/19200/38400**	baud
VFD Brightness	**"VFD"**	& Chr$(13)	**0..3**	& Chr$(13)	**step 1..4**	
LEDs	**"LED"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
IR Remote	**"IRR"**	& Chr$(13)	**0/1**	& Chr$(13)	**off/on**	
Memory Option 1	**"MO1"**	& Chr$(13)	**0/1**	& Chr$(13)	**50/60Hz common/separate**	
Memory Option 2	**"MO2"**	& Chr$(13)	**0/1**	& Chr$(13)	**excl./incl. input select**	
Power Off	**"POF"**	& Chr$(13)				
Power On	**"PON"**	& Chr$(13)				
EEPROM Readout	**"EER"**	& Chr$(13)			**(sends EE data in ASCII hex)**	
EEPROM Write	**"EEW"**	& Chr$(13)			**(receives and stores EE data)**	
<ASPECT RATIO>						
Format	**"FMM"**	& Chr$(13)	**1..8**	& Chr$(13)	**(recall)**	
Horiz. Zoom Mode	**"HZM"**	& Chr$(13)	**0..2**	& Chr$(13)	**normal/panorama 4/5,- 3/4**	

Example switching input 2 and S-VHS mode: **IN2(RET)INV(RET)1(RET)**
Example setting contrast to 30%: **CON(RET)19(RET)**

Table 1	Video Standards
0	PAL B,G,H,I
1	NTSC M
2	SECAM
3	NTSC 44
4	PAL M
5	PAL N
6	PAL 60

Table 2	Graphic Input Standards	
0	640x480	60Hz
1	640x480	72Hz
2	640x480	75Hz
3	720x400	70Hz
4	800x600	56Hz
5	800x600	60Hz
6	800x600	72Hz
7	800x600	75Hz
8	800x600	85Hz
9	1024x768	60Hz
10	1024x768	70Hz
11	1024x768	75Hz
12	575p	50Hz
13	480p	60Hz
14	720p	60Hz
15	1080i	60Hz
16	DTC 100	60Hz
17	(Switched Thru)	
128	(Auto)	

Table 3	Output Standards		Possible Frame Rates (only DUNE-F)	
0	SVGA		50,75,100	60,90,120
1	XGA		50,75,100	60,90,120
2	SXGA		50	60
3	Linedoubling		50,75,100	60,90,120
4	Linetripling		50,75,100	60,90,120
5	Linequadrupling		50,75,100	60,90,120
6	PDP 1	852x480		60,90,120
7	PDP 2	1024x1024	50	60
8	PDP 3	1280x768	50	60
9	PDP 4	1365x768	50	60
10	VW 10		50	60
11	D-ILA		50	60
12	720p		50,75,100	60,90,120
13	1080p		50	60

Table 4	Sync Output
0	separate negative
1	separate positive
2	composite negative
3	composite positive
4	on green

Function	Code		Returns:
<STATUS COMMANDS/READBACK>			
Send Status	**"STT"**	& Chr$(13)	contents of the status displays (2x16 characters).
(Display Readback)	**"#"**	& Chr$(13)	contents of the current displays (2x16 characters).
Echo On	**"EON"**	& Chr$(13)	all received characters
Echo Off	**"EOF"**	& Chr$(13)	
Auto Status On	**"AS1"**	& Chr$(13)	status display at any change, e.g. input changes
Auto Status Off	**"AS0"**	& Chr$(13)	or standard changes. Default off.

Zoom Values

The zoom values [-pixel] resp. [-lines] are differences to the size of the input picture.

For example:

The input image has 576 lines. A value of -1 enlarges a bit,

a value of -288 enlarges the image by a factor of 2.

Valid values: input pixels (or lines) >= input pixels (or lines) +value >= 16 (zero or negative only).

Erlaubte Kommandos in Abhängigkeit der Inputsignale /
Allowed functional Commands regarding Input Signal

		Video		S-VHS		Component		SDI			
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	DTV	VGA
I Contrast	CON	X	X	X	X	X	X	X	X		
M Contrast (DTV/VGA)	GCN									X	X
A Brightness	BRI	X	X	X	X	X	X	X	X		
G Brightness (DTV/VGA)	GBR									X	X
E Saturation	SAT	X	X	X	X	X	X	X	X		
Hue	HUE		X		X		X				
Enhancement	ENH	X	X	X	X	X	X	X	X		
C Noise Reduction	NRE	X	X	X	X	X	X				
O Comb Filter	CMB	X	X								
N Input Mode (Video)	IMV	X	X	X	X			X	X		
F Input Mode (Component)	IMC					X	X				
I Input Mode (DTV)	IMH									X	
G Input Standard	VST	X	X	X	X	X	X			X	X
U Input Standard (DTV/VGA)	GST										
R Film Mode Proc.	FMP	X	X	X	X	X	X	X	X		
A Film Det. Sense	FDS	X	X	X	X	X	X	X	X		
T NTSC 2:2 Pulldown	N22		X		X		X		X		
. Cross Color Suppression	CCS	X	X	X	X	X	X	X	X		
DCDi	DCD	X	X	X	X	X	X	X	X		
E Enhancement Gain	ENG	X	X	X	X	X	X	X	X		
N Horizontal Detail	HDT	X	X	X	X	X	X	X	X		
H Vertical Detail	VDT	X	X	X	X	X	X	X	X		
A Detail Threshold	DTT	X	X	X	X	X	X	X	X		
N Edge	EDG	X	X	X	X	X	X	X	X		
C Edge Threshold	EDT	X	X	X	X	X	X	X	X		
E Horiz. Color Sharpness	CSH	X	X	X	X	X	X	X	X		
Vertical Color Sharpness	CSV	X	X	X	X	X	X	X	X		
Low Pass Filter	LPF	X	X	X	X	X	X				
A Phase	PHA									X	X
L Horizontal Shift	HSF	X	X	X	X	X	X	X	X	X	X
I Vertical Shift	VSF	X	X	X	X	X	X	X	X	X	X
G Horizontal Zoom	HZO	X	X	X	X	X	X	X	X		
N Vertical Zoom	VZO	X	X	X	X	X	X	X	X		
E Horiz. Size	HSZ	X	X	X	X	X	X	X	X	X	X
M Vertical Size	VSZ	X	X	X	X	X	X	X	X	X	X
. Color Phase	CPH	X	X	X	X						
Clocks per Line	CPL									X	X
O Output Standard	OST	X	X	X	X	X	X	X	X		
U Sync Output	SYO	X	X	X	X	X	X	X	X		
T DVI Output	DVI	X	X	X	X	X	X	X	X	X	X
P Freeze	FRZ	X	X	X	X	X	X	X	X	X	X
. Frame Rate	FRT	X	X	X	X	X	X	X	X		
A Volume	VOL	X	X	X	X	X	X	X	X	X	X

U Bass	BAS	X	X	X	X	X	X	X	X	X	X
D Treble	TRE	X	X	X	X	X	X	X	X	X	X
I Balance	BAL	X	X	X	X	X	X	X	X	X	X
O Gain	GAI	X	X	X	X	X	X	X	X	X	X
Input Select	AIN	X	X	X	X	X	X	X	X	X	X
Input (Ext.)	XAI	X	X	X	X	X	X	X	X	X	X
Delay (Ext.)	DLY	X	X	X	X	X	X	X	X	X	X
A Format	FMM	X	X	X	X	X	X	X	X	X	
R Horiz. Zoom Mode	HZM	X	X	X	X	X	X				
S SoftwareDownload	SWD	X	X	X	X	X	X	X	X	X	X
Y Communication	COM	X	X	X	X	X	X	X	X	X	X
S VFD Brightness	VFD	X	X	X	X	X	X	X	X	X	X
T LEDs	LED	X	X	X	X	X	X	X	X	X	X
E IR Remote	IRR	X	X	X	X	X	X	X	X	X	X
M Memory Option 1	MO1	X	X	X	X	X	X	X	X	X	X
Memory Option 2	MO2	X	X	X	X	X	X	X	X	X	X
Power Off	OPOF	X	X	X	X	X	X	X	X	X	X
Power On	POB	X	X	X	X	X	X	X	X	X	X
EEPROM Readout	EER	X	X	X	X	X	X	X	X	X	X
EEPROM Write	EEW	X	X	X	X	X	X	X	X	X	X

11. Firmware Upgrade of the Vigatec DUNE-F/-Fi

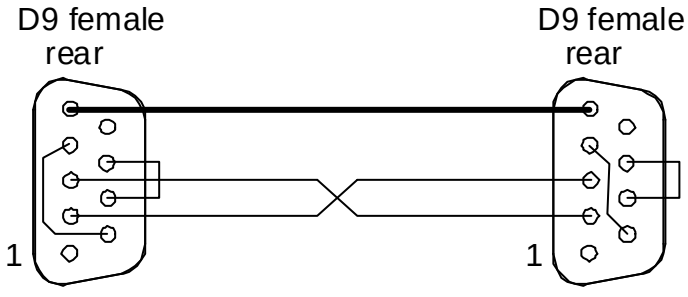
ATTENTION:

The newer Hyperterminal Software shipped with the latest Windows ME releases or other new operating systems does have a severe bug. The firmware upgrade will not work . Please use the Terminal-Software included in the Terminal.zip which may be downloaded from our website.

Necessary Hardware:

1 PC with WIN XXXX and Terminal software (can be downloaded form our website)
1 Serial Cable with 2 female connectors, Null Modem Cable

Pinout



1 TXT-File from Vigatec Download area

Procedure:

1. Connnect the DUNE-F/-Fi with your COM 1/COM2 port of your PC

2. First copy the TXT-File in a folder.

3. Start the terminal program. You can download the zip file "terminal.zip" from our website www.vigatec.de and extract the files into a folder of your choice.

4. The program must now be configured for download of data over the COM-port.
   Select direct connection over COM 1 or COM 2

5. For proper operation you must configure following parameters

   Bits per second = 19200
   Data bits = 8
   Parity = None
   Stop bits = 1
   Flow control = None

6. After confirming the menu you are connected. Switch on the DUNE-F/-Fi.
   The unit returns status information which should be displayed in the window. Any time you hit a button a status information is returned by the unit and displayed in the window.
   If not, something is wrong and you should repeat the procedure or check the cable.

7. If you have status information returned and displayed in the window you must prepare the DUNE-F/-Fi for the download procedure. Keep SELECT button pressed and select SYSTEM GROUP with the up/down buttons. Step through the menu unitil you reach SW DOWNLOAD.

   Push SELECT then keep the UP or DOWN button pressed for 3 seconds. The unit will display ERASING CHIP and then SOFTWAREDOWNLOAD-READY.

8. Now the unit is ready and you can download the data. In the menu please select SENDFILE or alike. Now you must browse and search the folder you copied the TXT file after you downloaded IT from our website. After opening/confirming the selected file; the transfer procedure starts immediately. The transfer is finished after apporximately 120 seconds. The unit restarts itself and displays the new firmware version.

9. Now you must clear the EEPROM. Switch the unit off. While switching mains on keep the STORE button pressed unitl the unit display EE FACTORY SET.

10. That is it. Your unit has now new firmware and hopefully the problems you had are solved with the new version. As there are many projectors and displays coming out new every week, we cannot guarantee a 100% compatibility with all of them.