



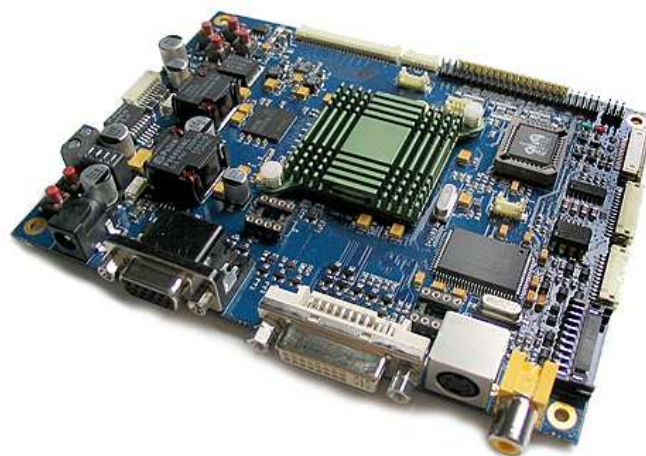
DISTEC GmbH

DATA SHEET

PRISMA-II

All-In-One Compact RGB/Video Converter Board

VGA – WUXGA



Design EN55022 and EN61000-6-2 oriented

Rev 1.7

July 14, 2008

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1. Revision History

Date	Rev.No.	Description	Page
11.08.2005	1.0	Release of preliminary data sheet	
28.03.2006	1.1	Several	All
27.04.2006	1.2	Several	All
25.05.2006	1.3	Revision history updated	4
		RGB signal range added	26
		CN7 pinning corrected	31
		Connector overview table corrected	34
		24V adaptor warning added	35
22.06.2006	1.4	General features updated	4
		Hardware features updated	5
		Electrical characteristics table – removed unnecessary symbol	28
25.07.2006	1.5	CN20 added	32
02.11.2006	1.6	Drawing with dimensions added	40
06.09.2007	1.7	Complete rework	All
14.07.2008	1.7	9.2 video mode table modified	27
		16.4.4 Scaling mode description modified	45

2. Overview

PRISMA-II is a graphics processing board, providing high-quality images for LCD TFT panels. The board supports TFT panels up to WUXGA and can be used in a variety of systems. It is developed by Distec GmbH who is able to adapt almost every TFT panel.

3. Warnings

Even the PRISMA-II is using protection circuits for most of its interfaces, it is strongly recommended preventing the attached devices from drawing too much current from the PRISMA-II.

4. General Features

- Zoom and shrink scaling
- Frame rate conversion
- Integrated Ultra-Reliable DVI receiver (optional)
- RealColor™ technology provides flesh tone adjustment
- PWM backlight intensity control
- Optional video input (Composite video, S-Video, Component Video)
- Supports VESA DDC2B and a subset of VESA DPMS standards
- Single board is suitable for mounting behind an LCD panel
- Six-button keypad interface and on-screen menus allow adjustments to the system
- Wide-range input voltage (up to 24V)
- Optional capability to mirror image on the panel
- Optional RS232 remote control capability
- Lead-free



5. Hardware Features

High-Quality Advanced Scaling

- Zoom and shrink ability
- Independent horizontal / vertical zoom and shrink
- Moiré cancellation
- Motion Adaptive De-interlacing
- Motion Adaptive Noise Reduction
- Low Angle Diagonal Interpolation

Analog RGB Input

- Supports up to UXGA at 75Hz, WUXGA at 60 Hz
- Supports sync on green (SOG) and Composite Sync modes
- Captures up to 157MHz

Ultra-Reliable DVI – Receiver

- Single Link TMDS Rx for up to 165 MHz operation
- Direct connect to all DVI compliant TMDS transmitters

Optional Video Input

- Supports Composite video, S-Video and Component Video

LVDS Interface

- Fully programmable LVDS mappings for compliance with all LVDS protocols

RealColor™ Technology

- Color filtering in YUV domain
- Digital brightness, contrast, hue and saturation control for analog, digital and video inputs

Auto-Configuration / Auto-Detection

- Phase and image positioning
- Input format detection
- Compatibility with all graphic cards and standard VESA modes

Frame Store

- Frame rate conversion
- Shrink scaling

On Screen Display

- Horizontal and vertical stretch of OSD images
- Blinking, transparency and blending

Output Format

- Single/double wide up to WUXGA 60Hz output
- Support for 8 or 6-bit panels (with high-quality dithering)

Operation Modes

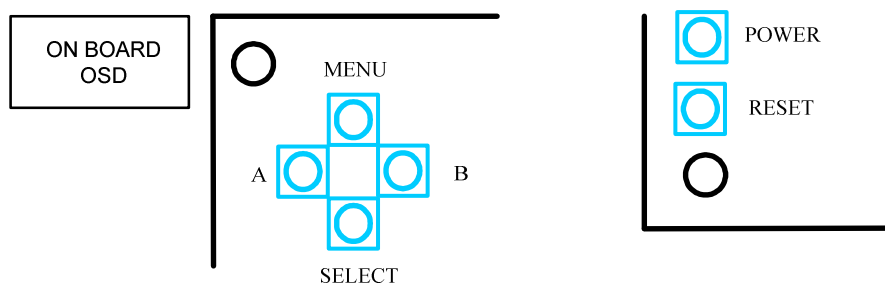
- Frame rate conversion and scaling of images
- Bypass mode with no filtering and/or frame buffering
- 1:1 centering
- Frame Sync, Free Run and Auto Sync display synchronization modes

6. OSD Menu and User Controls

The OSD allows selection of input source and fine tuning of various functional parameters like brightness, contrast etc. These parameters can be adjusted by onboard push buttons or via an external interface. Push buttons can be equipped on top or bottom side of the PRISMA II. In that case no external OSD-board is necessary. Depending on the mounting of the PRISMA II in the casing, the onboard OSD control can simplify the construction of the casing.

Remark:

Support of 4-/ 6-button OSD depends on used firmware version! 4-button OSD should only be used if mechanical backward compatibility is needed. 4-button OSD is not recommended for new designs!



Key	Function
POWER	Switch Power On / Off
RESET	Reset PRISMA II to last saved state

6.1 4-Button On-Board OSD Control

The four buttons of the OSD control can either be used to navigate within the OSD or to access various functions directly. The following two tables give you an overview about the functionality.

Key	Function	Remark
MENU	Enters the OSD Main Menu	
SELECT	Switch Input Port	Sequence is RGB, DVI, CVBS, S-Video, Component Video, RGB+CS
A	Decrease brightness	
B	Increase brightness	

Functionality while OSD is closed



Key	Function	Remark
MENU	Leave OSD main menu Leave submenu	
SELECT	Enter submenu	
	Select color	In color submenu
A	Select previous menu item	In main menu or in submenu
	Move picture to the left	In H-Position submenu
	Move picture up	In V-Position submenu
	Decrease slider value	
	Toggle On/Off	
B	Select next menu item	In main menu or in submenu
	Move picture to the right	In H-Position submenu
	Move picture down	In V-Position submenu
	Increase slider value	
	Toggle On/Off	

Functionality while OSD is open

The status LED on the external interface and the two LEDs on the PRISMA II show the current status of the board:

Color	Meaning
Green	Normal operation
Red	No signal Input signal not supported

Status LEDs



6.2 OSD Control Through External Keypad

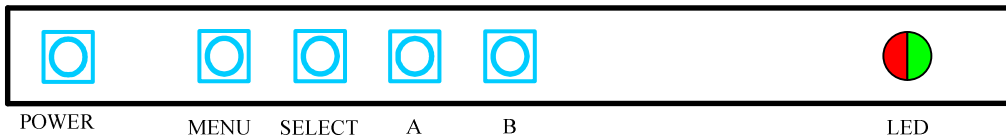
6.2.1 4-Button External OSD Control

Functions of the 4-button external keypad is exactly the same as the onboard OSD, as explained in section 5.1.

A typical external 4-button keypad:



4-BUTTON
EXTERNAL
KEYPAD



6.2.2 6-Button OSD Control

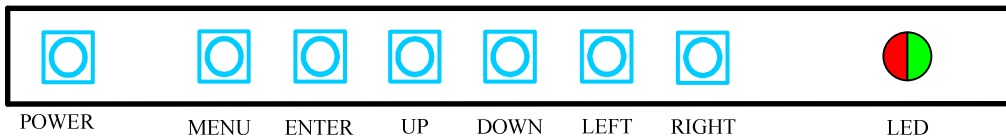
For users that wish to use a 6-button OSD, a keypad with 6 OSD control buttons is available.

User can use all OSD functions with up/down/left/right/enter/exit keys. For boards with the 6-button external keypad, 4-button on board OSD is not available.

A typical external 6-button keypad:



6-BUTTON
EXTERNAL
KEYPAD



**6-button keypad functionality while OSD is closed:**

Key	Function	Remark
MENU	Opens OSD	
ENTER	Cycles through inputs	
LEFT	Increases brightness	
RIGHT	Decreases brightness	

6-button keypad functionality while OSD is open:

Key	Function	Remark
MENU	Leave OSD main menu	
	Leave submenu	
	Leave function	
ENTER	Opens selected main/PIP/OSD/factory_reset menu	
	Opens selected sub-menu	
	Enables selected operation	In selection functions
UP	Moves up through functions	In open main/PIP/OSD menu
DOWN	Enables source selection list	In main or PIP, while sub-menus are closed
	Opens selected sub-menu	
	Moves down through functions	In open main/PIP/OSD menu
LEFT	Moves left through functions	In selected sub-menu
	Decreases set value of function slider or cycles left through possible operation modes	When a function is selected
RIGHT	Moves right through functions	In selected sub-menu
	Decreases set value of function slider or cycles left through possible operation modes	When a function is selected



6.3 OSD Control through IR Remote Control

Alternative to internal/external keypads, the PRISMA-II can also be controlled through a remote control device. In order to communicate through IR, an IR-amplifier can be attached through connector CN9 of the PRISMA-II.



Remote controller functionality:

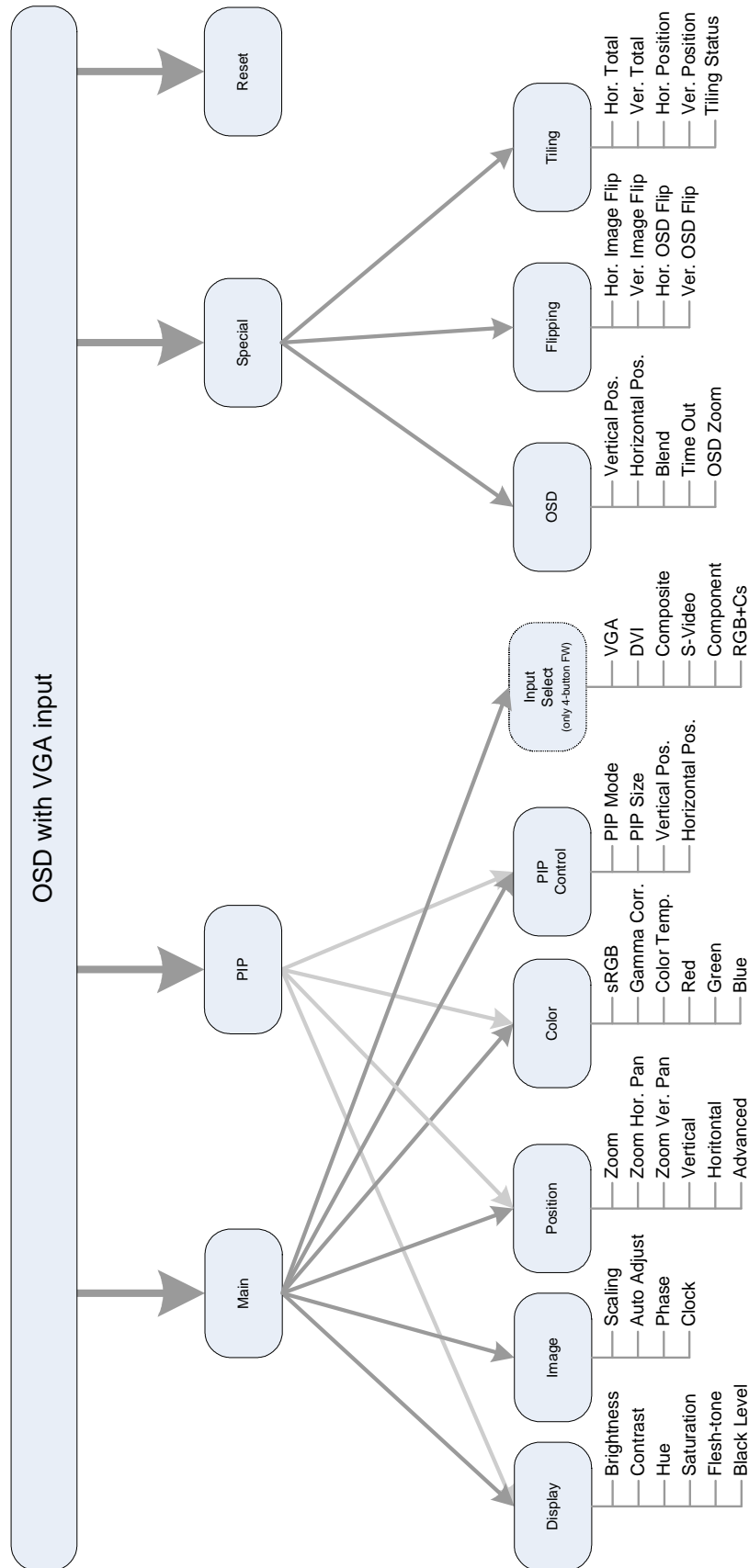
Key	Function
Power	Power on/off board
Menu	Opens OSD
Exit	Exits current sub-menu
Up	Moves up through possible selections
Down	Moves down through possible selections
Left	Moves left through possible selections or slider, or brightness down while OSD is closed
Right	Moves right through possible selections or slider, or brightness up while OSD is closed
OK	Enters chosen function, or when OSD closed, switches between sources
Ch+	Switches upward between sources
Ch-	Switches downward between sources
Red	Switches between pip, pap, and off
Green	Switches pip size(small, medium, large)
Yellow	Switches between 4 pip position(left-top, left-bottom, right-top, right-bottom)
Blue	Switches scaling mode

7. On-Screen-Menu (OSM)

All the functions of the PRISMA are controlled and adjusted using the OSD.

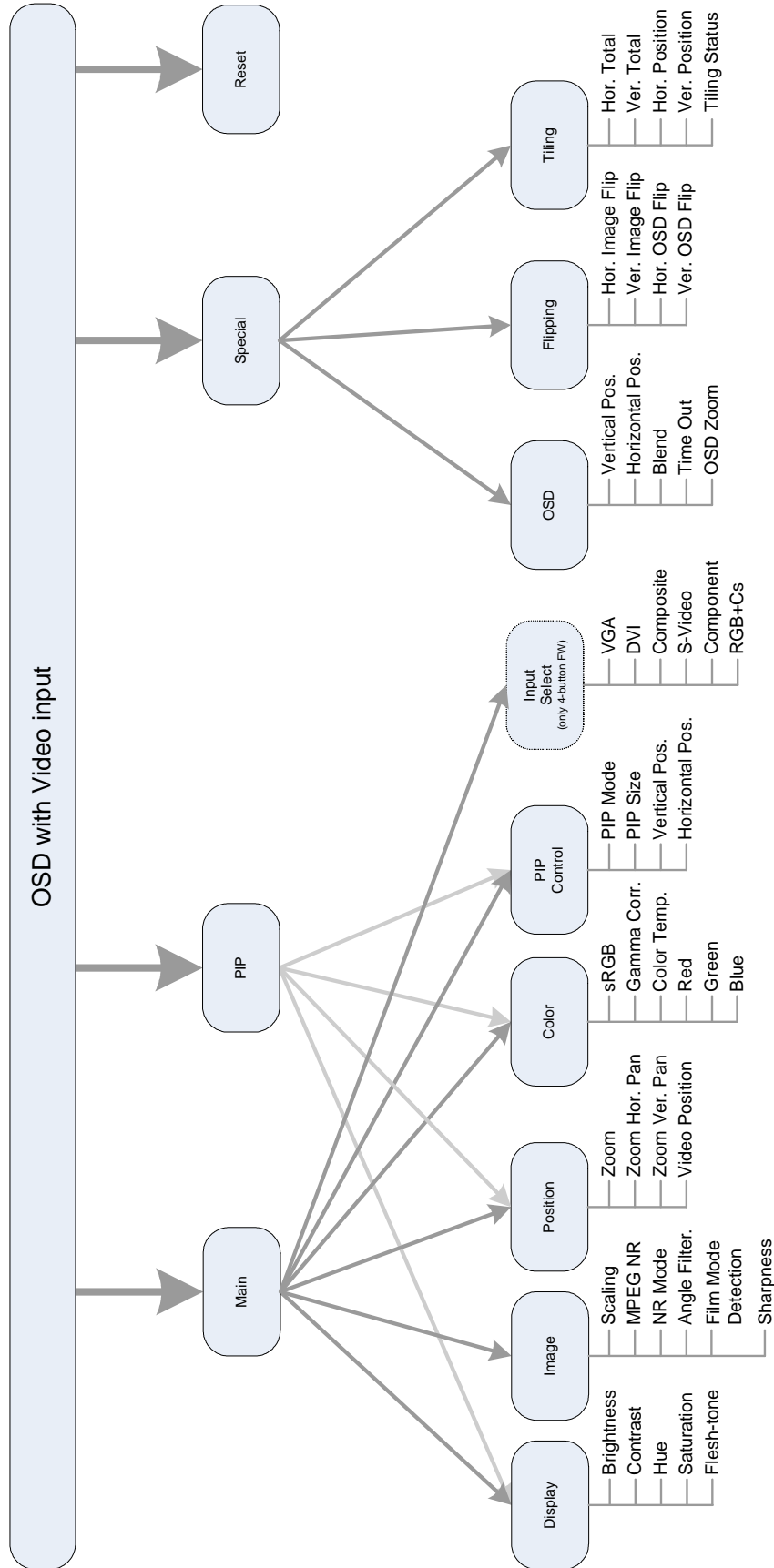


7.1 Hierarchical Overview for VGA Mode





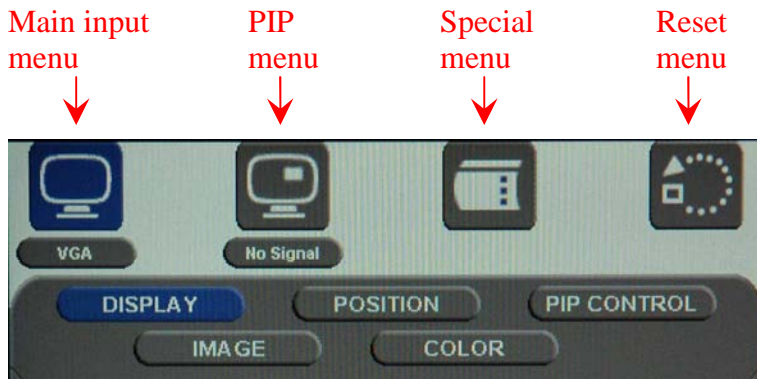
7.2 Hierarchical Overview for Video Mode





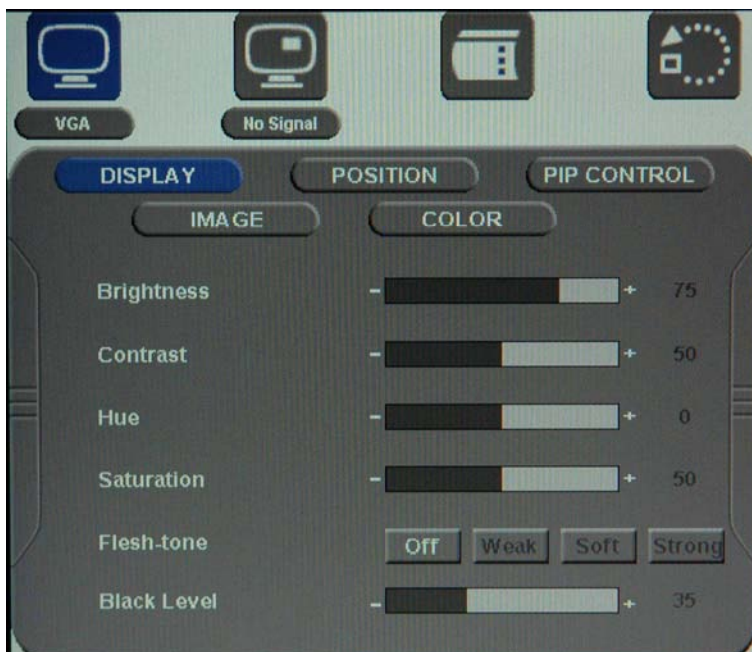
7.3 OSD Menu structure

The main-menu consists of the "main input" symbol, the "PIP" symbol, the "Extra" symbol, and the "Reset" symbol. By choosing one and pressing enter key, the sub-menus will be displayed.



The sub-menus control the functions associated with the main input of choice.

7.3.1 Sub-Menu "Display"



- Brightness:** Brightness of the image can be controlled using this function, with left and right buttons after the brightness slider is selected. This function modifies RGB data to change the brightness.
- Contrast:** Allows <Contrast> adjustment in the Y domain. The modification affects all color channels and all input types and is a direct multiplication of the Y data after YUV black level adjustment.
- Hue:** Allows <Hue> adjustment in the UV domain. The modification affects all color channels and all input types.
- Saturation:** Allows <Saturation> adjustment in the UV domain. The modification affects all color channels and all input types.

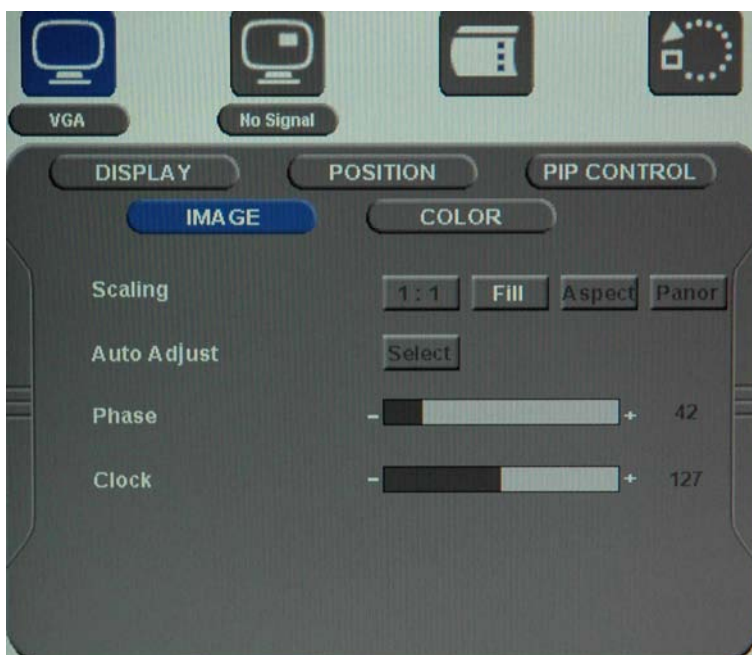


Flesh Tone: Allows adjustment of the gain of the V component in the UV domain. The modification affects all color channels and all input types. The application of <Flesh Tone> is to correct the skin color to provide a natural appearance of skin. This function has predefined values. Off/weak/soft/strong flesh-tone values can be selected.

Black Level: Allows <Black Level> adjustment in the Y domain. The modification affects all color channels and all input types and is subtracted from the Y data prior to YUV contrast adjustment.

7.3.2 Sub-Menu "Image"

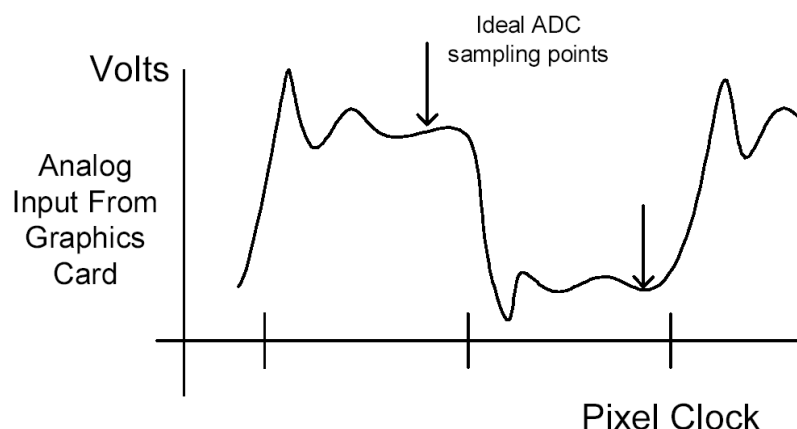
7.3.2.1 Sub-Menu "Image" (VGA mode)



Scaling: User can choose between 1:1, Fill, Aspect and Panoramic modes. For more information see section "16.4.4 Explanation of scaling modes"

Auto Adjust: Allows the performing of automatic setting adjustment. The PRISMA-II will change the settings for optimum image quality.

Phase: This function is a slider to adjust the sampling phase of the analog interface. For optimum image quality, input pixels should be sampled at the ideal sampling points as shown below:





Clock: This function is a slider to adjust the sample clock of the analog interface. This is helpful for improving the image quality for non-standard display modes.

7.3.2.2 Sub-Menu "Image" (Video mode)



Scaling: User can choose between 1:1, Fill, Aspect and Panoramic modes. For more information see section "16.4.4 Explanation of scaling modes"

MPEG NR: Allow user to manually set the level of MPEG noise reduction.

Noise Reduction: The user can choose between predefined values of noise reduction performed on the image. The levels are off/low/medium/high. The user should be aware that use of high noise reduction may lead to loss of detail on the image.

Angle filtering: Choice turning low angle interpolation algorithm on or off. Angle filtering can be used to reduce defects in lines with small angles to the horizontal direction.

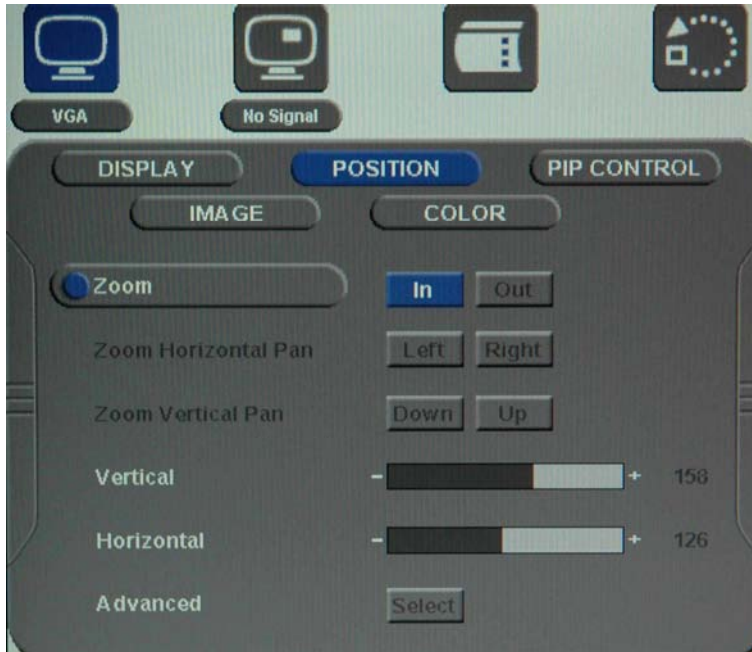
Film mode detection: Turns on and off film mode detection. In film mode, recursive motion adaptive de-interlacing algorithms are used to provide better image during fast motion in image.

Sharpness: Allows setting of the image sharpness through a slider. Sharpness affects the visibility of edges.



7.3.3 Sub-Menu "Position"

7.3.3.1 Sub-Menu "Position" (VGA mode)



Zoom: Selection of image zooming in and out.

Zoom Horizontal Pan: Allows moving the zoomed image left and right.

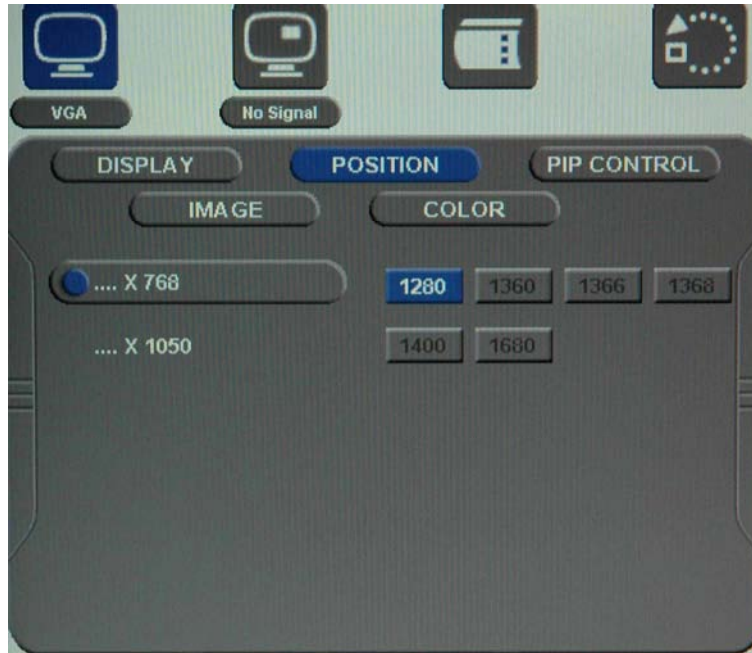
Zoom Vertical Pan: Allows moving the zoomed image up and down.

Vertical: This slider moves the image up and down.

Horizontal: This slider moves the image left and right.



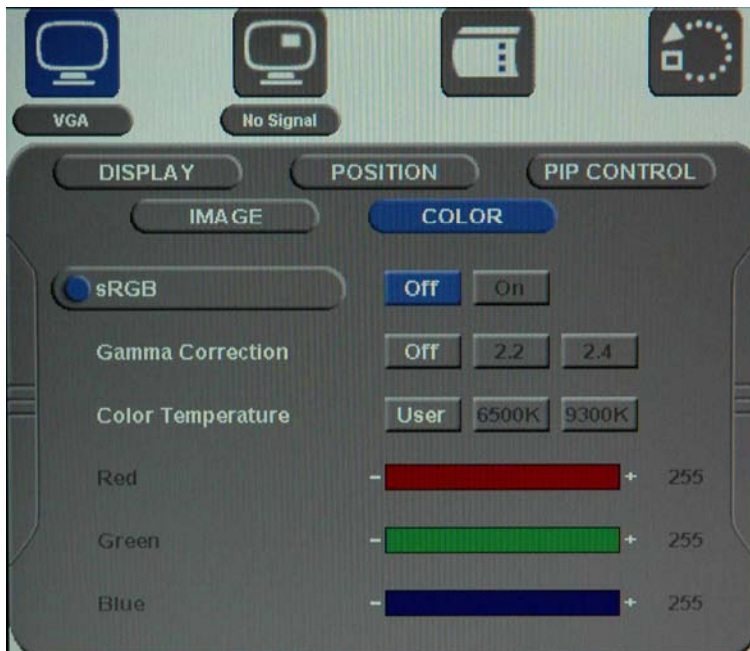
Advanced: Opens the following sub-menu and let you select the exact resolution of the input signal.



7.3.3.2 Sub-Menu "Position" (Video mode)

Similar to VGA mode, but the Vertical and Horizontal sliders do not exist.

7.3.4 Sub-Menu "Color"



sRGB: It has no function and should not be used.

Gamma Correction: Turns gamma correction off, or sets its value to one of two predefined values.

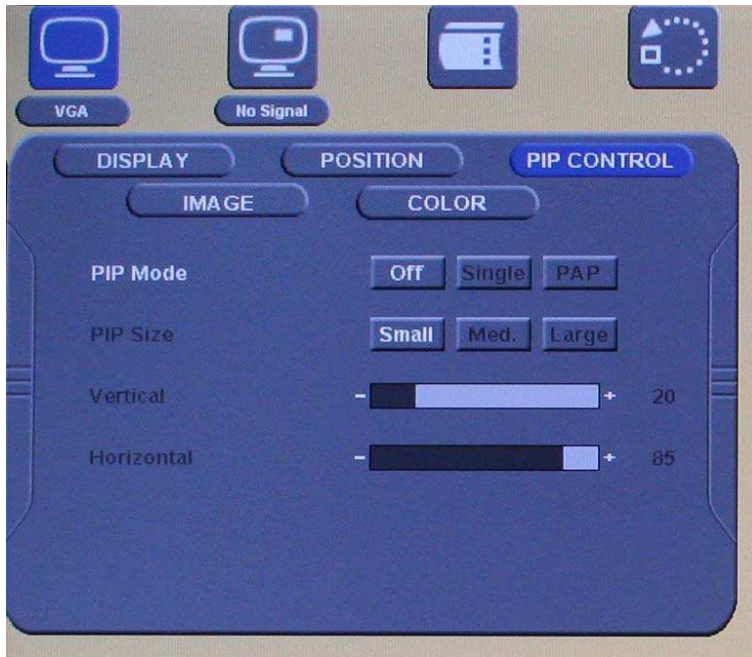


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Color Temperature: User can set the color temperature to either self defined values, or to predefined values of 6500K or 9300K.

Red/Green/Blue: These three sliders are used to decrease/increase intensities of each color.

7.3.5 Sub-Menu "PIP-Control"



PIP Mode: User can select single Picture-In-Picture mode, Picture-And-Picture, or turn off the secondary image.

PIP Size: Three PIP sized are selectable, as small/medium/large.

Vertical: User can move PIP left/right using this slider.

Horizontal: User can move PIP up/down using this slider.



7.4 Menu "Input Select"

Select "Main input" from the main-menu and press the "down" button to open the source select window.



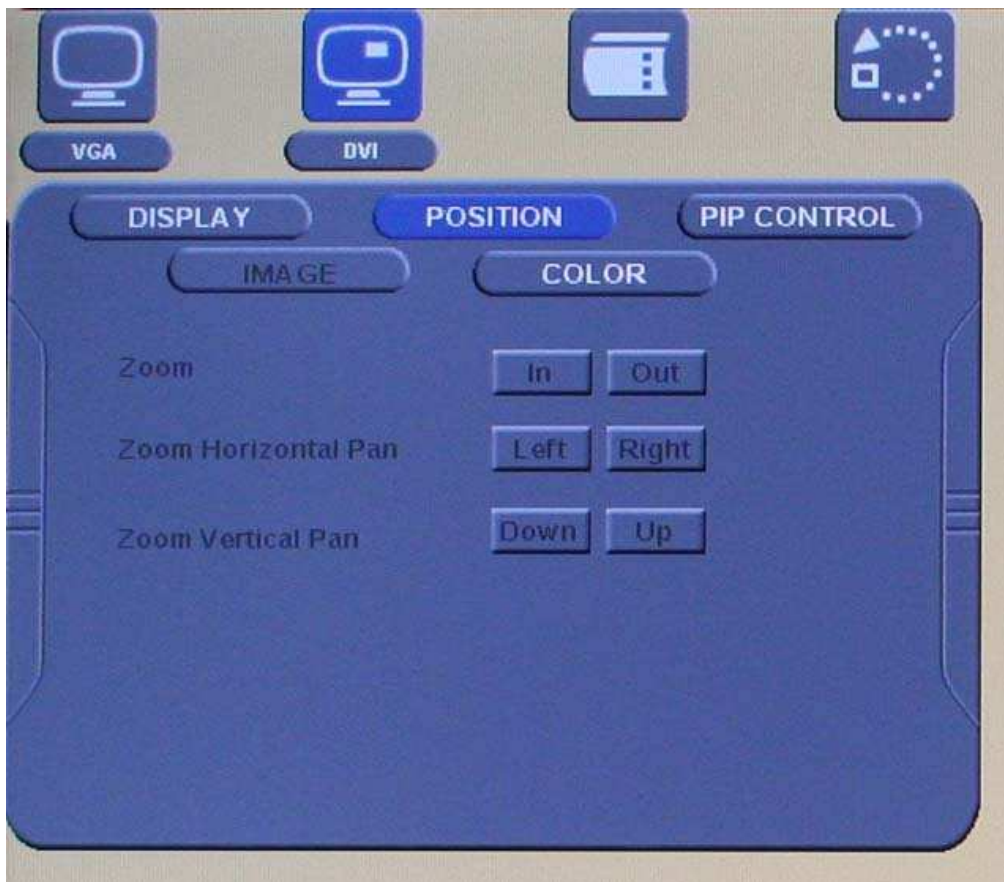
Use the "Left" and "Right" buttons to select the desired input and confirm the selection with the "Enter" button..



7.5 Main-Menu "PIP"

The PIP-Control under the PIP menu does the exact same function as the PIP-Control under the Main. In all other menus, the functions below PIP and Main are the exact same, with the difference that the ones under Main control the main image, and the ones under PIP menu control the PIP image.

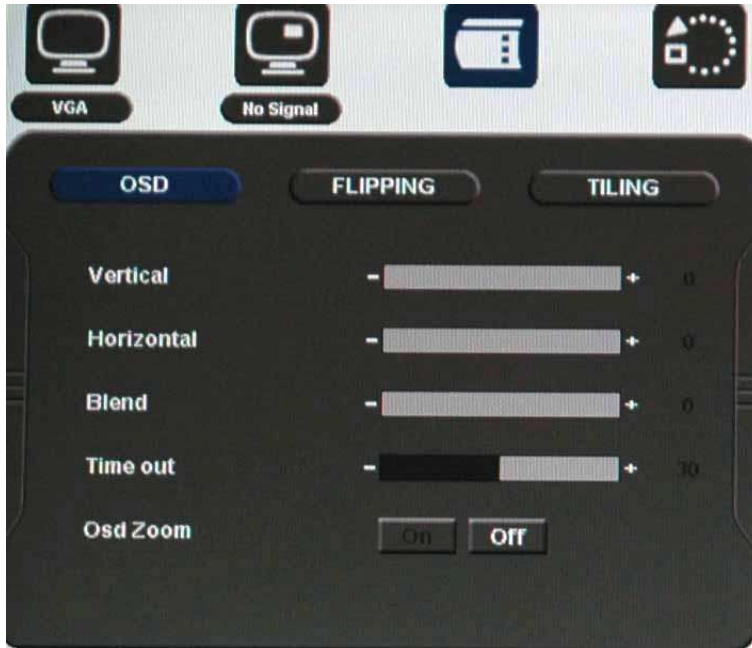
The only different menu under PIP is the Position control menu. In this menu, the Horizontal and Vertical sliders do not exist, just as in the video mode position menu:





7.6 Main-Menu "Special"

7.6.1.1 Sub-Menu "OSD"



Vertical: This slider moves the OSD left/right across the screen.

Horizontal: This slider moves the OSD up/down across the screen.

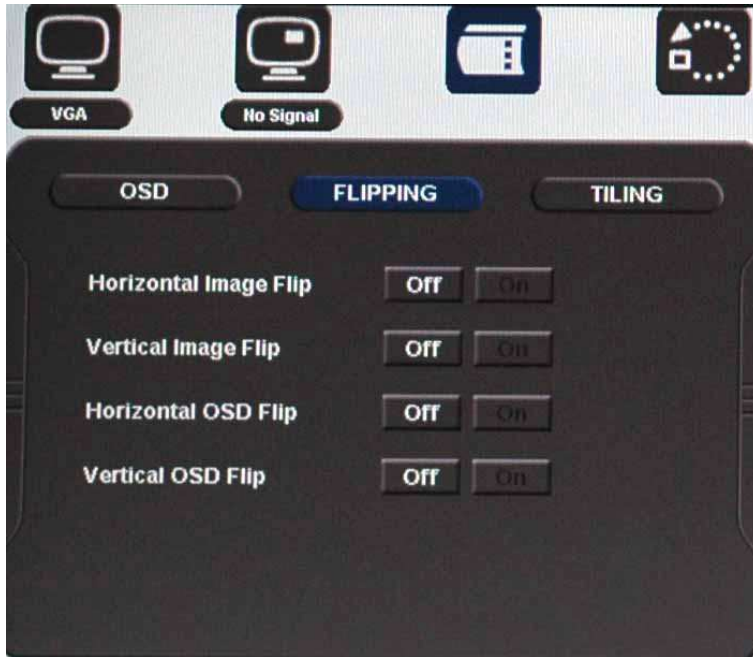
Blend: This slider sets the amount of blending of OSD into the background.

Time out: This slider sets the time, in seconds, in which the inactive OSD will shut itself down.

OSD Zoom: Enables and disables zooming into the OSD.



7.6.1.2 Sub-Menu "Flipping"



Horizontal Image Flip: Mirrors the image at the x-axis

Vertical Image Flip: Mirrors the image at the y-axis

Horizontal OSD Flip: Mirrors the OSD at the x-axis

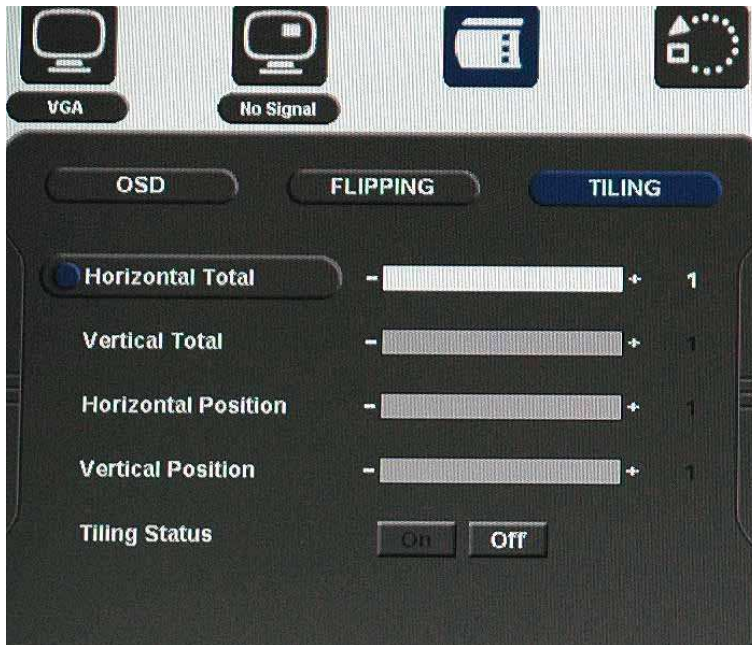
Vertical OSD Flip: Mirrors the OSD at the y-axis

Note: Flipping horizontally and vertically at the same time, rotates the image/OSD by 180°.



7.6.1.3 Sub-Menu "Tiling"

The tiling function (for video wall applications) can be used with all input types.



Horizontal Total: Defines the total horizontal number of displays.

Vertical Total: Defines the total vertical number of displays.

Horizontal Position: Defines the horizontal position of the actual display unit.

Vertical Position: Defines the vertical position of the actual display unit

Tiling Status: Enables/disables the tiling function

Example: 3 by 3 video wall: Definition of **Horizontal/Vertical** display position:

Horizontal \ Vertical	1	2	3
1	1/1	2/1	3/1
2	1/2	2/2	3/2
3	1/3	2/3	3/3

Limitations:

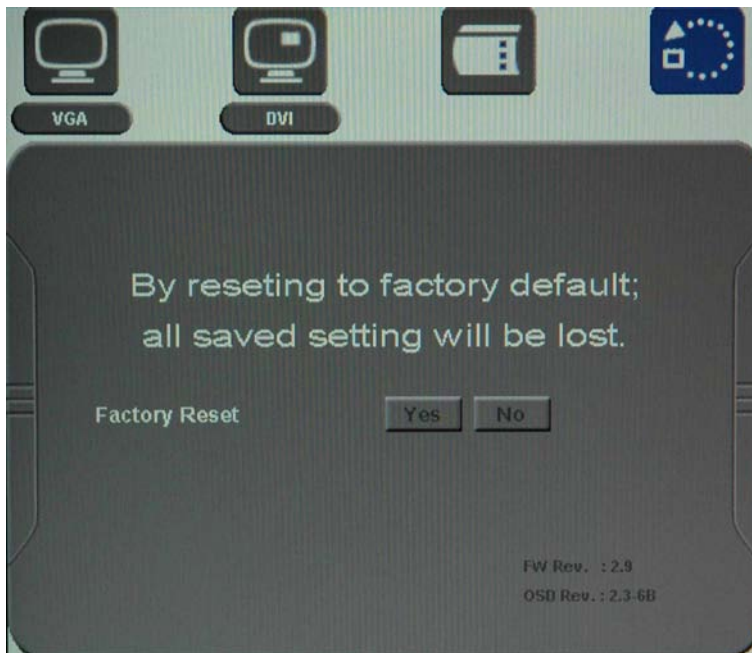
- Tiling property can not be used while image is flipped or PAP (picture and picture) is active.
- Image flipping can not be adjusted while tiling is on.
- Image and position menus are disabled while tiling is on.

Note:

- For best results the Horizontal Total and Vertical Total has to be set to the values which is one of the integer dividers of the input width/height. For example if input is 1280x768 horizontal total has to be set to 2, 4, 5, 8, 10, 16 and vertical total has to be set to 2, 3, 4, 6, 8, 12, 16.



7.7 Main-Menu "Reset"



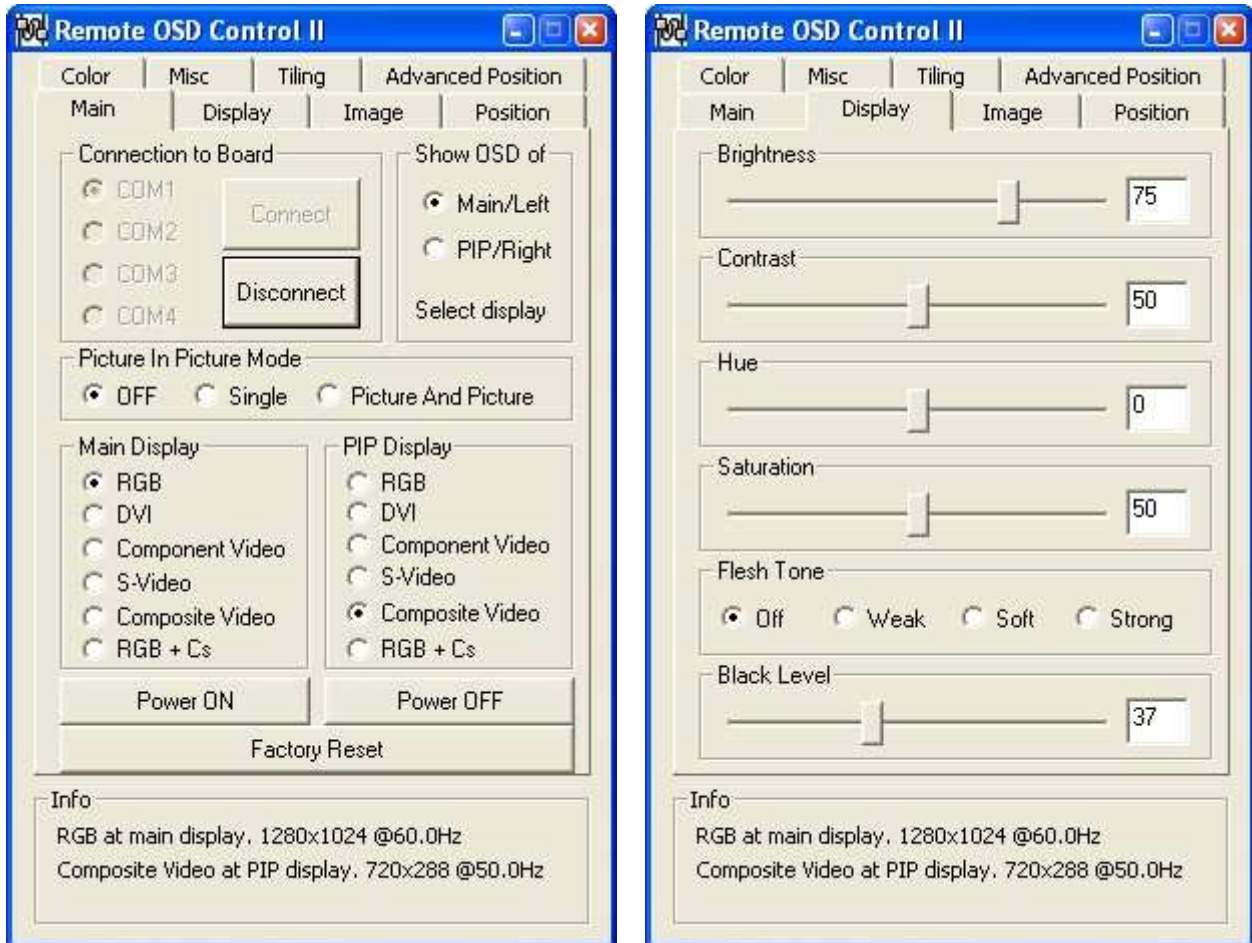
By selecting yes and pressing enter, the user can reload the factory settings. All setting previously set by the user will be lost.

In the lower right corner the actual revisions of the Firmware and the OSD are displayed.



8. Remote OSD Control

PRISMA-II can also be controlled by a remote computer, through a serial port, with an RS232 cable connection. All OSD functions can be used this way, with the additional feature of creating and saving multiple personal settings.



Detailed information can be found in the document “ROSDCUsersManual.pdf”.



9. Supported Input Modes

The PRISMA-II can support the following input modes (support for RGB is mandatory; DVI & video support depend on the PRISMA-II type). The modes are detected when presented to the input and previous alignments for setup are automatically recalled.

9.1 RGB / DVI

In general the PRISMA-II can support video modes at the RGB/DVI input within the following constraint:
The signal sample frequency on the input is less than 165MHz.

The factory preset supported input modes include:

Resolution	Refresh Rate (Hz)	Remarks	Resolution	Refresh Rate (Hz)	Remarks
720 x 400	85	VESA	1024 x 768	75	VESA
640 x 350	85	VESA	1024 x 768	75	MAC
640 x 400	85	VESA	1024 x 768	85	VESA
720 x 400	70	IBM	1280 x 768	60	
720 x 350	70	IBM	1360 x 768	60	
640 x 350	70	IBM	1152 x 864	70	
640 x 400	70	IBM	1152 x 864	75	VESA
640 x 400	56		1152 x 870	75	MAC
640 x 480	60	VESA	1152 x 900	66	SUN
640 x 480	67	MAC	1152 x 900	76	SUN
640 x 480	72	VESA	1280 x 960	60	VESA
640 x 480	75	VESA	1280 x 960	85	VESA
640 x 480	85	VESA	1280 x 1024	60	VESA
800 x 600	56	VESA	1280 x 1024	60	HP
800 x 600	60	VESA	1280 x 1024	67	IBM
800 x 600	72	VESA	1280 x 1024	70	NCD
800 x 600	75	VESA	1280 x 1024	72	HP
800 x 600	85	VESA	1280 x 1024	75	VESA
832 x 624	75	MAC	1280 x 1024	76	SUN
1024 x 768	60	VESA	1280 x 1024	85	VESA
1024 x 768	60	MAC	1600 x 1200	60	VESA
1024 x 768	70	VESA	1600 x 1200	75	VESA
1024 x 768	72	IBM	1920 x 1200	60	VESA

All mentioned modes are non-interlaced. Input modes with very high refresh rates might be scaled down in order to protect the display from damage.

Full scales adjust range at RGB inputs of the internal analogue to digital converter is between 0.55V and 0.90V. Since the RGB signal is divided in half by the 75ohm line impedance, the signal on the VGA cable should be between 1.1V to 1.8V peak-to-peak.



9.2 Video

The PRISMA-II is equipped with a RCA connector (for composite video) and a 4-pin mini DIN connector (for Y/C video). The following table shows the basic characteristics of the supported video formats.

Characteristics	NTSC M	PAL D/B/G/H/I
Total lines per frame	525	625
Total pixels per line	858	864
Active lines per frame	480	576
Active pixels per line	720	720
Frames per second	60 (59,94)	50
Line frequency (kHz)	15,750	15,625
Interlace ratio	2:1	2:1
Aspect ratio	4:3	4:3
Color sub carrier frequency (MHz)	3.5795	4.4336

The active part of the video signal is scaled to full screen. From the maximum of 720 pixels horizontally only 700 are used. This avoids black borders on the left or right of the image since only a small number of video source output all 720 pixels.

The PRISMA-II also accepts Component Video Input (YPbPr or RGB+CS), through a JST S4B-PH-SM3-TB connector, designated as CN14. Supported modes are:

NTSC/480I/525I	- 720 x 240 x 60I
PAL/576I/625I	- 720 x 288 x 50I
480P/525P	- 720 x 480 x 60P
576P/625P	- 720 x 576 x 50P

It is suggested that YPbPr or RGB+CS signal levels on the cable be in the range 1.7V – 3.2V, for optimum image quality.



10. Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Note
Supply Voltage	V_{In}	11,7	24,4	VDC	1), 2)
Storage Temperature	T_{St}	-35	+85	°C	
Operating Temperature	T_{Op}	0	+60	°C	
	T_{Op}	0	+70	°C	3)

Note (1) Within operating temperature range.

Note (2) Permanent damage to the device may occur if maximum values are exceeded.

Note (3) For versions without video decoder.

11. Electrical Specification

Remark: All values are average values of repeated measurements. Other PRISMA-II types or PRISMA-II /panel combinations may have different electrical characteristics.

Item	Condition	MIN.	TYP.	MAX.	Unit	Note
Supply Voltage (V_{in})		11.7	12.0	24.0	VDC	1, 2
Current Consumption	Stand-by	130	160	175	mA	
	Sleep mode	120	150	160	mA	
	Board only	350	370	380	mA	
	VGA	1.08	1.12	1.14	A	3
	SVGA	0.98	1.02	1.10	A	4
	XGA	2.11	2.17	2.23	A	5
	SXGA	2.25	2.36	2.45	A	6
	UXGA	4.20	4.24	4.29	A	7

- 1) Supply voltage limits are for the PRISMA-II, inverter supply limits must be met as well, if the inverter is to be powered by the PRISMA-II board.
- 2) If a supply voltage of 24V is used, only displays which require a panel power of 3,3V or 5,0V can be used!
- 3) VGA panel -> LG Philips LB104V03 (A1) with PS-0350-072 inverter
- 4) SVGA panel -> Optrex T-51512D121J-FW-A-AB with PS-0308-021R inverter
- 5) XGA panel -> Samsung LTM150XH-L06 with GH027 inverter
- 6) SXGA panel -> Samsung LTM170EU-L11 with GH140A inverter
- 7) UXGA panel -> Samsung LTM213U6-L01 with BL2006001-01 inverter
- 8) For versions without video, 70°C.

Attention:

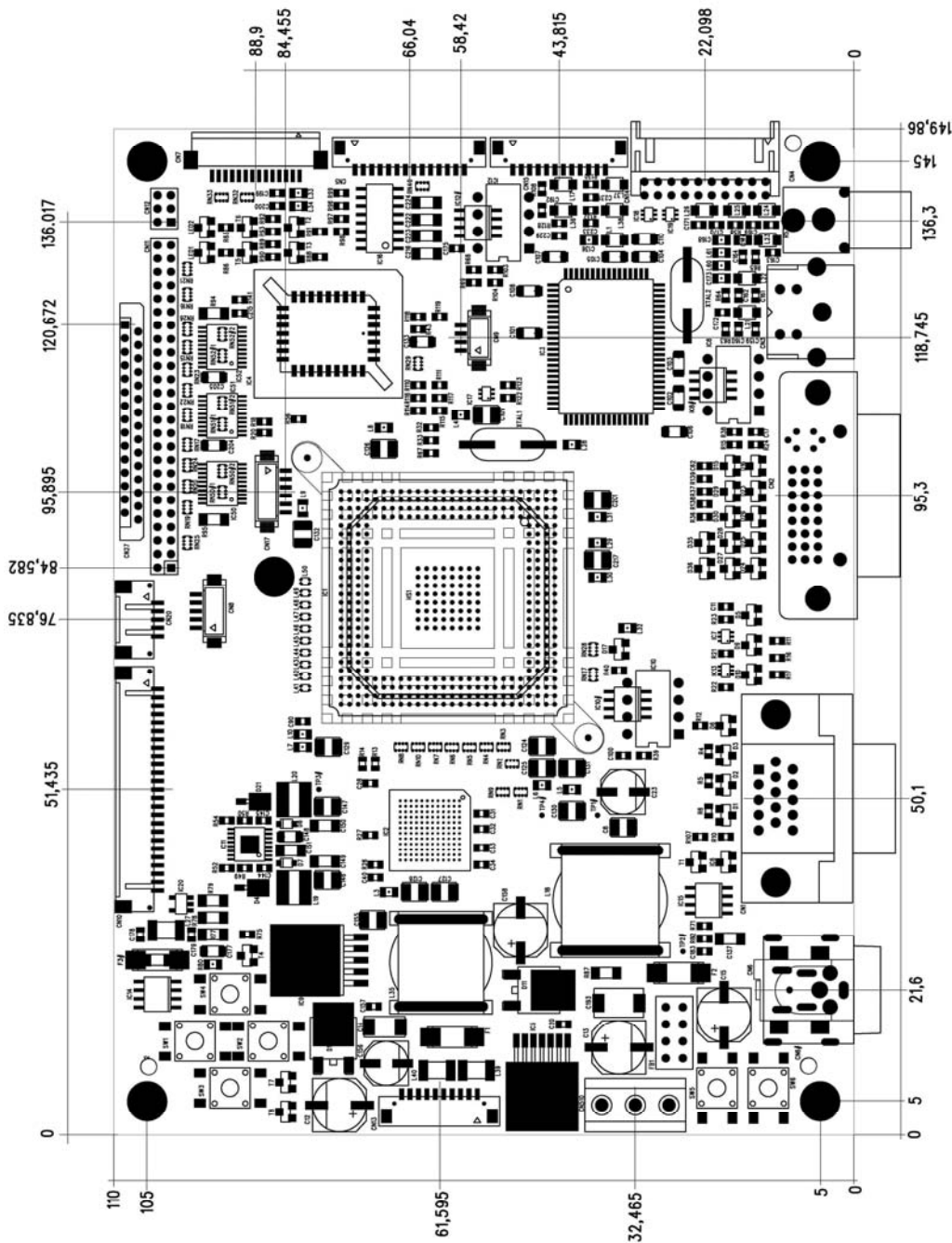
- If an input voltage of 24V is used:
 - PRISMA-II card can only drive displays which require a panel power of 3,3V or 5,0 V (selectable by the jumpers R77/R78).
In this case panels which require a 12V panel power can not be used and will be permanently damaged if connected.
 - Only 24V inverters can be connected to the backlight supply connector CN13-1.



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12. Mechanical Specification

ITEM	DESCRIPTION	REMARKS
Length	150,0 mm	$\pm 0,2$ mm
Width	110,2 mm	$\pm 0,2$ mm
Height	17,0 mm	$\pm 0,2$ mm

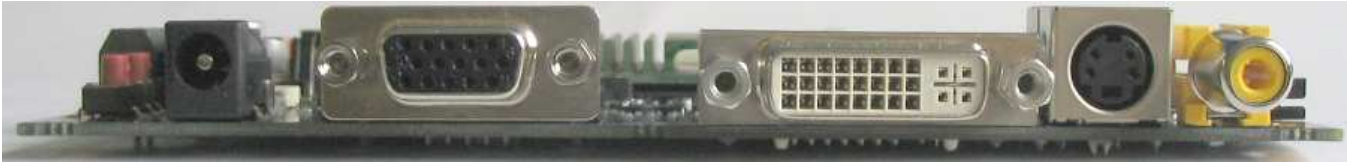




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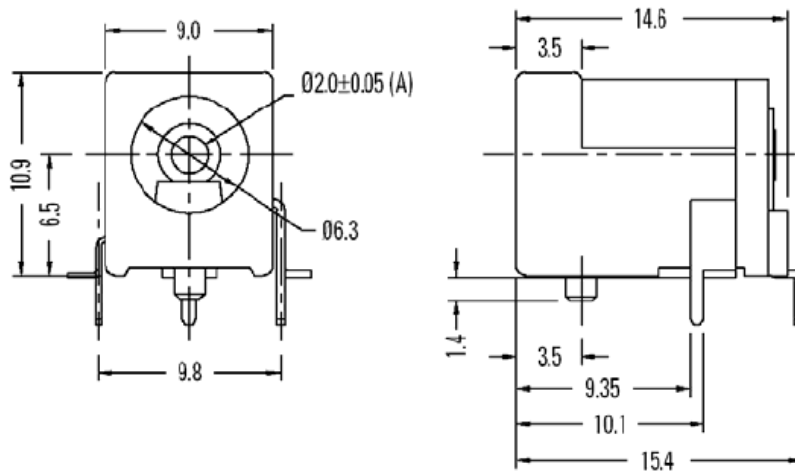
DATA SHEET

PRISMA-II

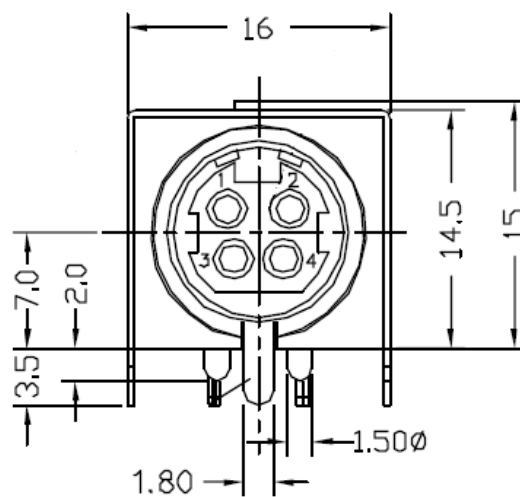


From Left to Right:

- 1- Power Input
- 2- RGB – Input
- 3- DVI – Input
- 4- Y/C – Input
- 5- Composite Video Input



Default



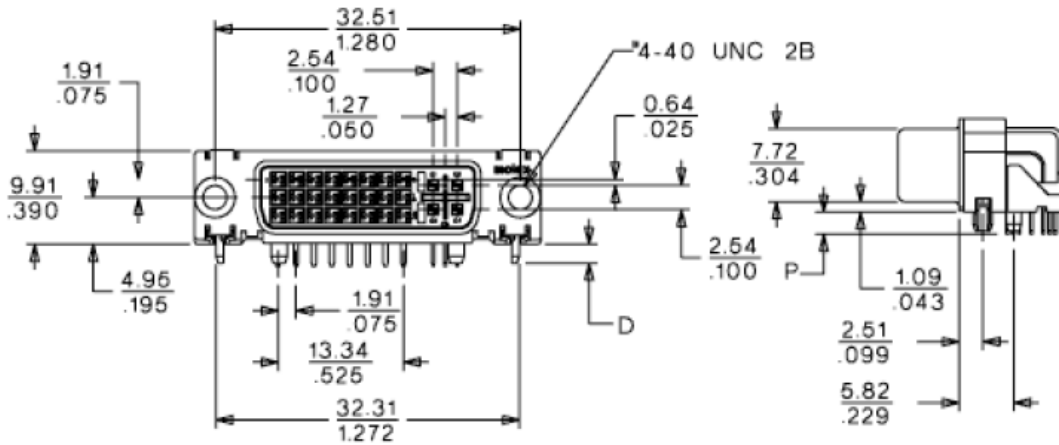
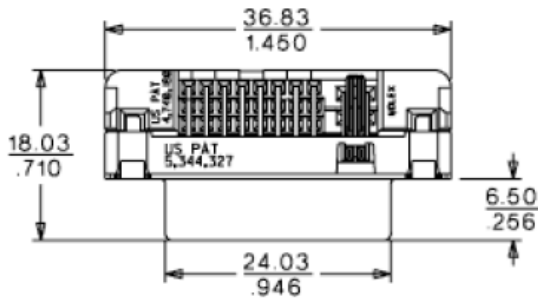
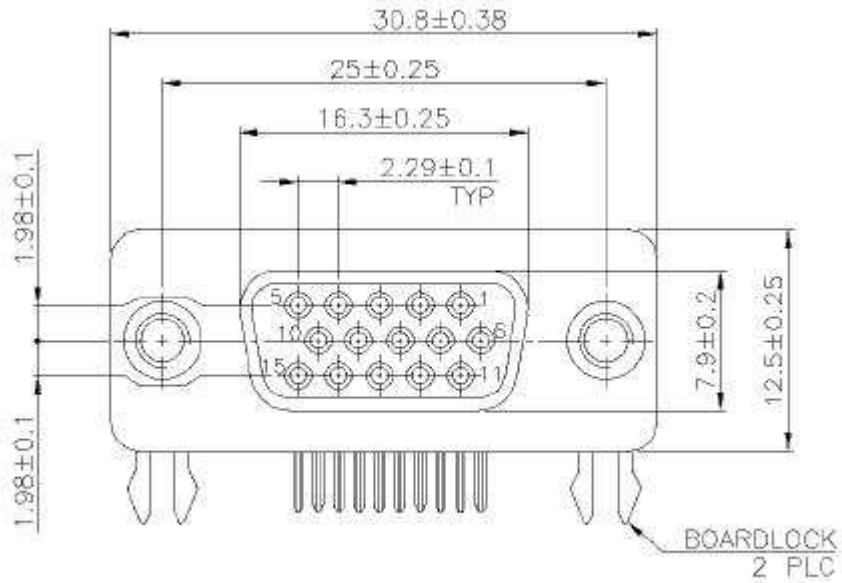
Optional



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PRISMA-II

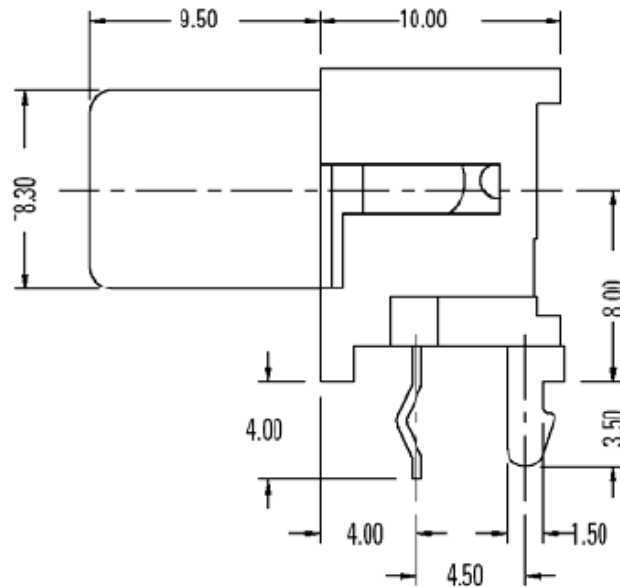
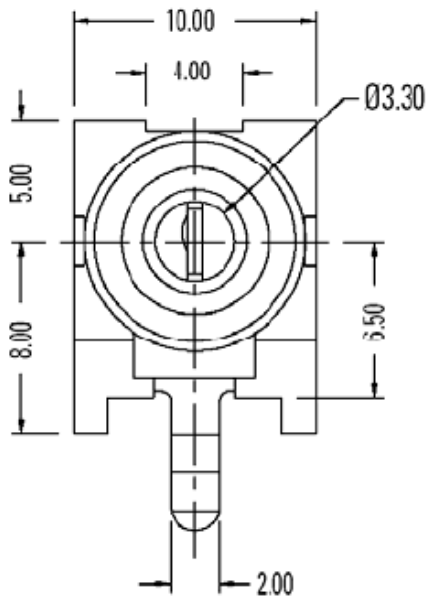
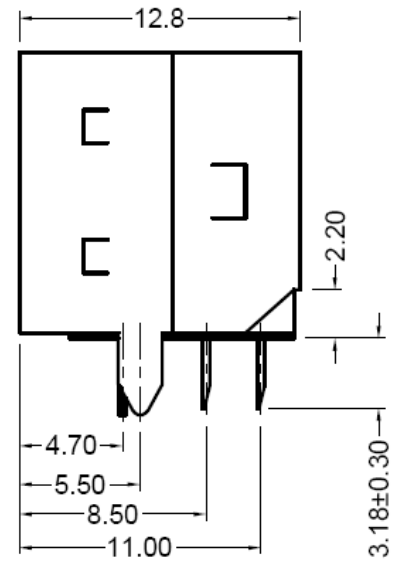
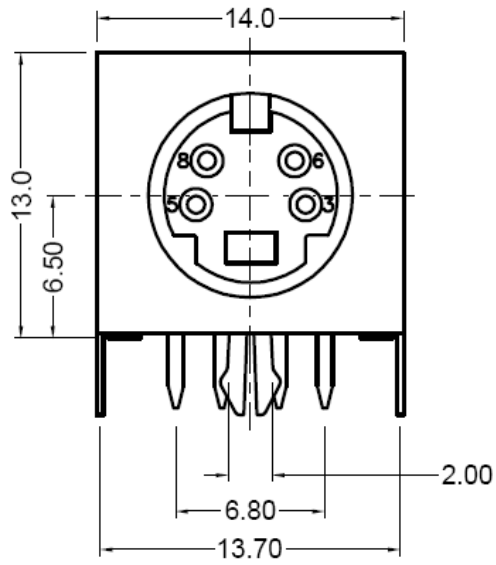




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DATA SHEET

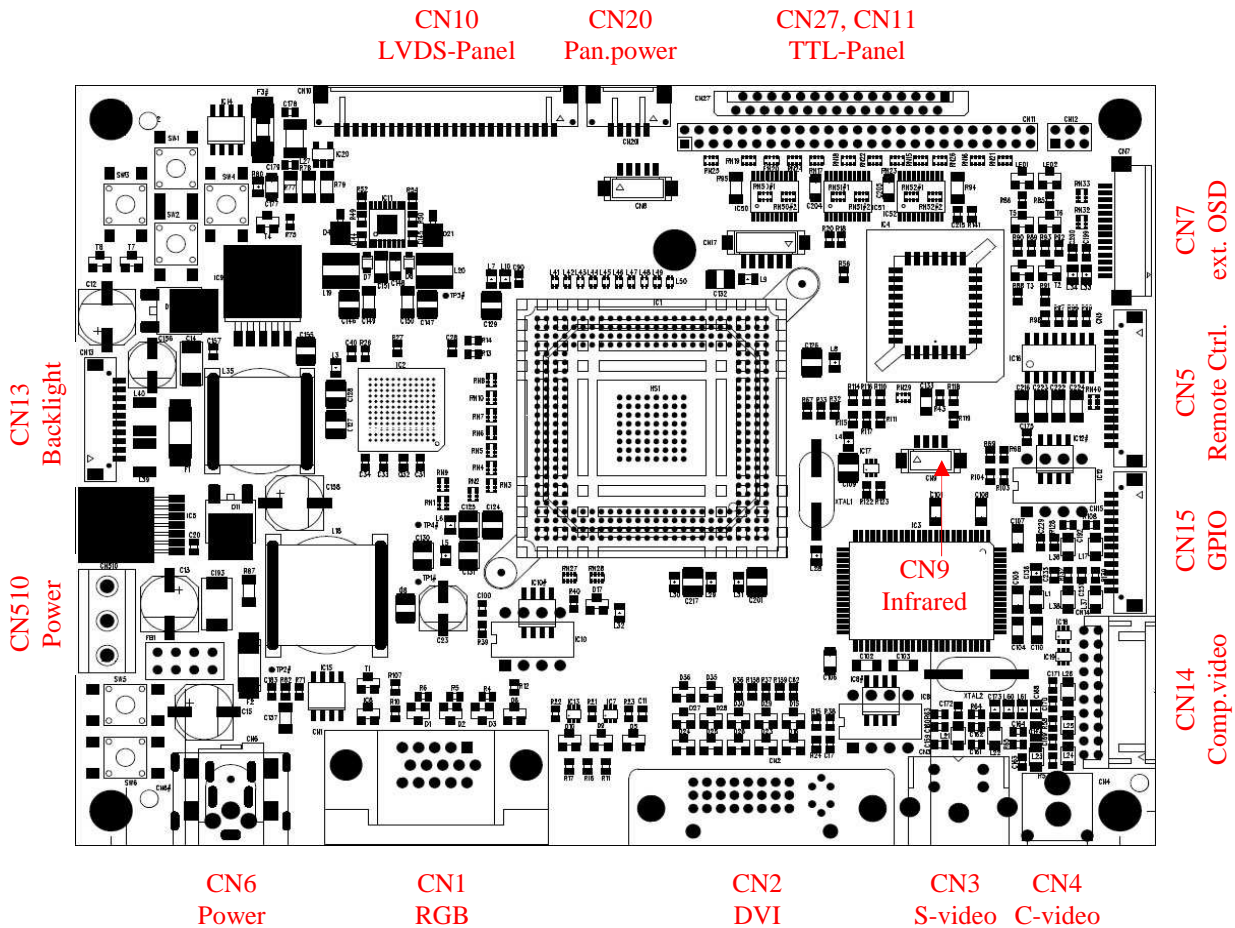
PRISMA-II





13. Connectors

The following drawing shows the input and output interfaces of the PRISMA II. The design is implemented as a single printed circuit board.



Onboard OSD controls

Can be equipped on top or bottom side. If PRISMA II is mounted on casing back plane, no additional external OSD-Board is necessary

13.1 Overview

CN	DESCRIPTION	TYPE	MANUFACTURER
CN1	Analog Input	15-pin H-DSUB female	---
CN2	DVI	DVI-I female	e.g. Molex
CN3	S-Video Input	4-Pin Mini DIN female	e.g. Kycon
CN4	C-Video Input	RCA	e.g. Kycon
CN5	Serial Programming / RS232 Remote Control	DF13-14P-1.25H	Hirose
CN6	Power Supply Input	Power Jack 2.0 mm	e.g. Kycon
CN6#	Power Supply Input	Power Jack 4-pin	e.g. Singatron
CN7	OSD Control	52271-1479	Molex
CN8	Gprobe	DF13B-5P-1.25V	Hirose
CN9	Infrared	DF13B-4P-1.25V	Hirose
CN10	Dual LVDS	DF14-25P-1.25H	Hirose



CN	DESCRIPTION	TYPE	MANUFACTURER
CN11	TTL Interface I	2mm / 2x25 pin / Pin header	---
CN12	TTL Interface II	2mm / 2x3 pin / Pin header	---
CN13	Backlight Power Supply	DF13-10P-1.25H	Hirose
CN14	Component Video In	DF11-20DP-2DS	Hirose
CN15	GPIO	DF13-12P-1.25H-	Hirose
CN20	Additional LVDS power	DF14-5P-1.25H	Hirose
CN27	TTL Interface	52030-3029	Molex
CN510	Power Supply Input	Adapter bushing	---

13.2 Input Connectors

13.2.1 CN1: RGB – ANALOGE INPUT CONNECTOR

Pin	Signal	Description
1	RED	Analog Red
2	GREEN	Analog Green
3	BLUE	Analog Blue
4	NC	Not connected
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground

Pin	Signal	Description
9	VGA_5V	Fused VCC
10	GND	Ground
11	NC	Not Connect
12	VGA_SDA	DDC Data
13	HSYNC	Horizontal Sync Input
14	VSYNC	Vertical Sync Input
15	VGA_SCL	DDC Clock

13.2.2 CN2: DVI CONNECTOR

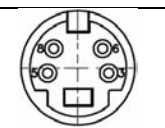
Pin	Signal	Description
1	TMDS2-	Differential TMDS Data 2-
2	TMDS2+	Differential TMDS Data 2+
3	GND	TMDS Shield
4	NC	Not connected
5	NC	Not connected
6	DVI_SCL	DDC EDID data clock
7	DVI_SDA	DDC EDID data
8	DVI_VS	Analog VSYNC
9	TMDS1-	Differential TMDS Data 1-
10	TMDS1+	Differential TMDS Data 1+
11	GND	TMDS Shield
12	NC	Not connected
13	NC	Not connected
14	DVI_5V	5V / 100mA Power Supply
15	GND	Ground

Pin	Signal	Description
16	DISPDET	Hot Plug Detection
17	TMDS0-	Differential TMDS Data 0-
18	TMDS0+	Differential TMDS Data 0+
19	GND	TMDS Shield
20	NC	Not connected
21	NC	Not connected
22	GND	TMDS Clock Shield
23	TMDSSCL-	Differential TMDS Clock -
24	TMDSSCL+	Differential TMDS Clock +
C1	NC	Not connected
C2	NC	Not connected
C3	NC	Not connected
C4	NC	Not connected
C5	NC	Not connected
C6	NC	Not connected

13.2.3 CN3: S-VIDEO INPUT CONNECTOR

Pin	Signal	Description
3	GND	Ground
5	GND	Ground

Pin	Signal	Description
6	Y	Luminance
8	C	Chrominance



**13.2.4 CN4: C-VIDEO INPUT CONNECTOR**

Pin	Signal	Description
1	GND	Ground
2	CVBS	Composite video signal

13.2.5 CN5: SERIAL COMMUNICATION CONNECTOR

Pin	Signal	Description
1	T1_OUT / TXD	RS232 / serial output port
2	R1_IN / RXD	RS232 / serial input port
3	NC	Not connected
4	NC	Not connected
5	NC	Not connected
6	NC	Not connected
7	DCD	Not connected

Pin	Signal	Description
8	DSR	Not connected
9	RTS	Not connected
10	DTR	Not connected
11	CTS	Not connected
12	+5V	+5V power supply
13	GND	Ground
14	NC	Not connected

13.2.6 CN6: POWER SUPPLY CONNECTOR

Pin	Signal	Description
Center	+12V/+24V	12V/24V Power supply (up to 3A)
Bottom	GND	Ground

13.2.7 CN6#: POWER SUPPLY CONNECTOR (optional)

Pin	Signal	Description
1,3	+12V/+24V	12V Power supply (up to 7A)
2,4	GND	Ground

13.2.8 CN510: POWER SUPPLY CONNECTOR

Pin	Signal	Description
1	+5V	5V Power supply (optional)
2	GND	Ground

Pin	Signal	Description
3	+12V/+24V	12V/24V Power supply (up to 5A)

13.2.9 CN7: OSD CONTROL PANEL CONNECTOR

Pin	Signal	Description
1	GND	GND
2	+5V	+5V supply
3	+3V	+3V supply
4	GPIO_G01_B4	System power on/off
5	LED_GREEN	Status LED green (signal good)
6	LED_RED	Status LED red (no signal)
7	LVADC_IN1	For use with voltage controlled keypad

Pin	Signal	Description
8	GPIO_G01_B7	TBD
9	GPIO_G01_B4	TBD
10	GPIO_G01_B6	PIP on/off
11	GPIO_G01_B3	OSD – Key B
12	GPIO_G01_B2	OSD – Key A
13	GPIO_G01_B1	OSD - Key SELECT
14	GPIO_G01_B0	OSD - Key MENU

**13.2.10 CN9: Remote control IR-amplifier connector**

Pin	Signal	Description
1	IR	Amplified IR signal
2	+3.3V	3.3V Power supply

Pin	Signal	Description
3	+5V	5V Power supply
4	GND	Ground

13.2.11 CN14: COMPONENT VIDEO INPUT CONNECTOR

Pin	Signal	Description
1	Pb	Analog Pb
2	GND	Ground
3	Y	Analog Y
4	GND	Ground
5	Pr	Analog Pr
6	GND	Ground
7	V_EXT	External video input
8	GND	Ground
9	+3.3V	+3.3V supply
10	SCL_TUNER	I2C clock

Pin	Signal	Description
11	SDA_TUNER	I2C tuner
12	+5V	+5V supply
13	NC	Not connected
14	TXT_CTRL	Closed caption text control
15	R_TXT	Closed caption red data
16	G_TXT	Closed caption green data
17	B_TXT	Closed caption blue data
18	FB_TXT	Closed caption fast blank
19	SVS_OUT	Vertical sync out for CC
20	SHS_OUT	Horizontal sync out for CC

13.2.12 CN15: GPIO

Pin	Signal	Description
1	+5V	5V Power supply
2	GPIO_0	General Purpose Port 0
3	GPIO_1	General Purpose Port 1
4	GPIO_2	General Purpose Port 2
5	GPIO_3	General Purpose Port 3
6	GPIO_4	General Purpose Port 4

Pin	Signal	Description
7	GPIO_5	General Purpose Port 5
80	GPIO_6	General Purpose Port 6
9	GPIO_7	General Purpose Port 7
10	SCL	
11	SDA	
12	GND	Ground

13.3 Output Connectors**13.3.1 CN10: LVDS CONNECTOR**

Pin	Signal	Description
1	SVCC	Switched panel power supply +3,3V/ +5V/ Vin (fused)
2		
3	GND	Ground
4		
5	LVA3+	LVDS data 1st pixel
6	LVA3-	LVDS data 1st pixel
7	LVACL+	LVDS clock 1st pixel
8	LVACL-	LVDS clock 1st pixel
9	LVA2+	LVDS data 1st pixel
10	LVA2-	LVDS data 1st pixel
11	LVA1+	LVDS data 1st pixel
12	LVA1-	LVDS data 1st pixel
13	LVA0+	LVDS data 1st pixel

Pin	Signal	Description
14	LVA0-	LVDS data 1st pixel
15	LVB3+	LVDS data 2nd pixel
16	LVB3-	LVDS data 2nd pixel
17	LVBCL+	LVDS clock 2nd pixel
18	LVBCL-	LVDS clock 2nd pixel
19	LVB2+	LVDS data 2nd pixel
20	LVB2-	LVDS data 2nd pixel
21	LVB1+	LVDS data 2nd pixel
22	LVB1-	LVDS data 2nd pixel
23	LVB0+	LVDS data 2nd pixel
24	LVB0-	LVDS data 2nd pixel
25	EBKL	Enable backlight signal

**13.3.2 CN11: TTL – Signal CONNECTOR**

Pin	Signal	Description
1	+Vin	Board input power
2	+Vin	
3	GND	Ground
4	GND	
5	SVCC	Switched power supply 3,3V/5V
6	SVCC	
7	NC	Not connected
8	GND	Ground
9	ABLUE2	Blue data 2 / 1st pixel
10	ABLUE3	Blue data 3 / 1st pixel
11	ABLUE4	Blue data 4 / 1st pixel
12	ABLUE5	Blue data 5 / 1st pixel
13	ABLUE6	Blue data 6 / 1st pixel
14	ABLUE7	Blue data 7 / 1st pixel
15	BBLUE2	Blue data 2 / 2nd pixel
16	BBLUE3	Blue data 3 / 2nd pixel
17	BBLUE4	Blue data 4 / 2nd pixel
18	BBLUE5	Blue data 5 / 2nd pixel
19	BBLUE6	Blue data 6 / 2nd pixel
20	BBLUE7	Blue data 7 / 2nd pixel
21	AGREEN2	Green data 2 / 1st pixel
22	AGREEN3	Green data 3 / 1st pixel
23	AGREEN4	Green data 4 / 1st pixel
24	AGREEN5	Green data 5 / 1st pixel
25	AGREEN6	Green data 6 / 1st pixel

Pin	Signal	Description
26	AGREEN7	Green data 7 / 1st pixel
27	BGREEN2	Green data 2 / 2nd pixel
28	BGREEN3	Green data 3 / 2nd pixel
29	BGREEN4	Green data 4 / 2nd pixel
30	BGREEN5	Green data 5 / 2nd pixel
31	BGREEN6	Green data 6 / 2nd pixel
32	BGREEN7	Green data 7 / 2nd pixel
33	ARED2	Red data 2 / 1st pixel
34	ARED3	Red data 3 / 1st pixel
35	CLK (SCLK)	Pixel clock
36	VSYNC (FLM)	Vertical Sync
37	DE	Display Enable
38	HSYNC (LP)	Horizontal Sync
39	GND	Ground
40	EBKL	Backlight enable signal
41	ARED4	Red data 4 / 1st pixel
42	ARED5	Red data 5 / 1st pixel
43	ARED6	Red data 6 / 1st pixel
44	ARED7	Red data 7 / 1st pixel
45	BRED2	Red data 2 / 2nd pixel
46	BRED3	Red data 3 / 2nd pixel
47	BRED4	Red data 4 / 2nd pixel
48	BRED5	Red data 5 / 2nd pixel
49	BRED6	Red data 6 / 2nd pixel
50	BRED7	Red data 7 / 2nd pixel

6-bit A-channel, HSYNC, VSYNC, CLK and DE can be +3.3V or 5.0V signal level. Others are +3.3V.

13.3.3 CN12: TTL – Signal CONNECTOR

Pin	Signal	Description
1	ABLUE0	Blue data 0 / 1st pixel
2	ABLUE1	Blue data 1 / 1st pixel
3	AGREEN0	Green data 0 / 1st pixel
4	AGREEN1	Green data 1 / 1st pixel
5	ARED0	Red data 0 / 1st pixel
6	ARED1	Red data 1 / 1st pixel

**13.3.4 CN13: BACKLIGHT SUPPLY CONNECTOR**

Pin	Signal	Description
1	Vin	Backlight power supply (same as input voltage)
2	GND	Ground
3	EBKL	Enable backlight signal
4	BR_CTRL	Brightness control signal
5	+5V	5V power supply

Pin	Signal	Description
6	+5V	5V power supply
7	Vin	Backlight power supply (same as input voltage)
8	Vin	Backlight power supply (same as input voltage)
9	GND	Ground
10	GND	Ground

13.3.5 CN20: PANEL EXTRA POWER CONNECTOR

Pin	Signal	Description
4,5	GND	Ground
2,3	SVCC	Switched panel power supply +3,3V/ +5V/ SV _{CC} = V _{CC} (fused)
1	Jumper selectable voltage	Selectable +3.3V/+5V/GND

13.3.6 CN27: 6 BIT TTL-SIGNAL CONNECTOR

Pin	Signal	Description
1	GND	Ground
2	CLK	Pixelclock
3	GND	Ground
4	HSYNC	Horizontal sync
5	VSYNC	Vertical sync
6	GND	Ground
7	ARED2	Red 2
8	ARED3	Red 3
9	ARED4	Red 4
10	ARED5	Red 5
11	ARED6	Red 6
12	ARED7	Red 7
13	GND	Ground
14	AGREEN2	Green 2
15	AGREEN3	Green 3

Pin	Signal	Description
16	AGREEN4	Green 4
17	AGREEN5	Green 5
18	AGREEN6	Green 6
19	AGREEN7	Green 7
20	GND	Ground
21	ABLUE2	Blue 2
22	ABLUE3	Blue 3
23	ABLUE4	Blue 4
24	ABLUE5	Blue 5
25	ABLUE6	Blue 6
26	ABLUE7	Blue 7
27	GND	Ground
28	DE	Display enable signal
29	SVCC	Switched power supply
30	SVCC	3,3V/5V/Vin

All data lines, HSYNC, VSYNC, CLK and DE can be +3.3V or 5.0V signal level (5.0V optional)



14. Jumper Settings

Warning

Factory jumper settings should not be modified!

Wrong jumper settings may permanently damage to the board and attached devices.

Please check all voltages carefully before connecting the display or backlight inverter,

JUMPER – SETTING R77/78/79	PANEL SUPPLY VOLTAGE
Setting	Description
R77 closed or 0R (1206 size) soldered	Panel supply voltage: +3.3V
R78 closed or 0R (1206 size) soldered	Panel supply voltage: +5V
R79 closed or 0R (1206 size) soldered	Panel supply voltage: +12V
R87 closed or 0R (1206 size) soldered	

Only one of R77, R78 and R79 should be assembled at the same time.

JUMPER – SETTING R94/95	SIGNAL LEVEL OF 6-BIT SINGLE PIXEL TTL PANEL DATA
Setting	Description
R94 closed or 0R (1206 size) soldered	Signal level = +3.3V
R95 closed or 0R (1206 size) soldered	Signal level = +5V

Only one of R94 or R95 should be assembled at the same time.

There are a lot more jumpers on the board, which should not be modified!

15. Supported Panels

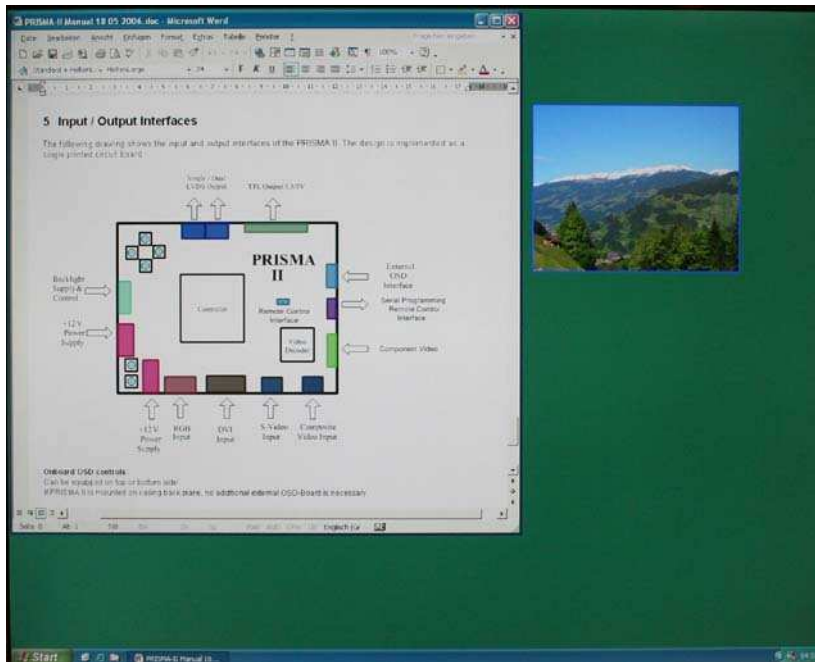
The PRISMA-II can support all single/dual pixel 6/8 bit LVDS panels, single pixel 8-bit TTL panels, single/dual pixel 6-bit TTL panels, up to a resolution of WUXGA at 60Hz, or UXGA at 75Hz.



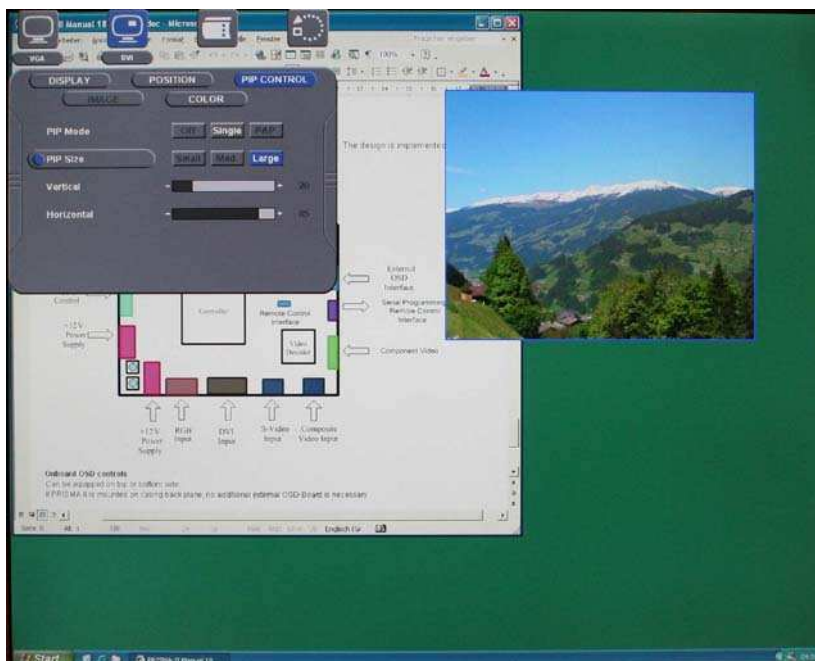
16. Appendix A: Special features

16.1 PIP

Abbreviated form of Picture-In-Picture, the PIP function allows the user to view a second input over the main input selected. The following picture shows Video-PIP over PC-main channel.



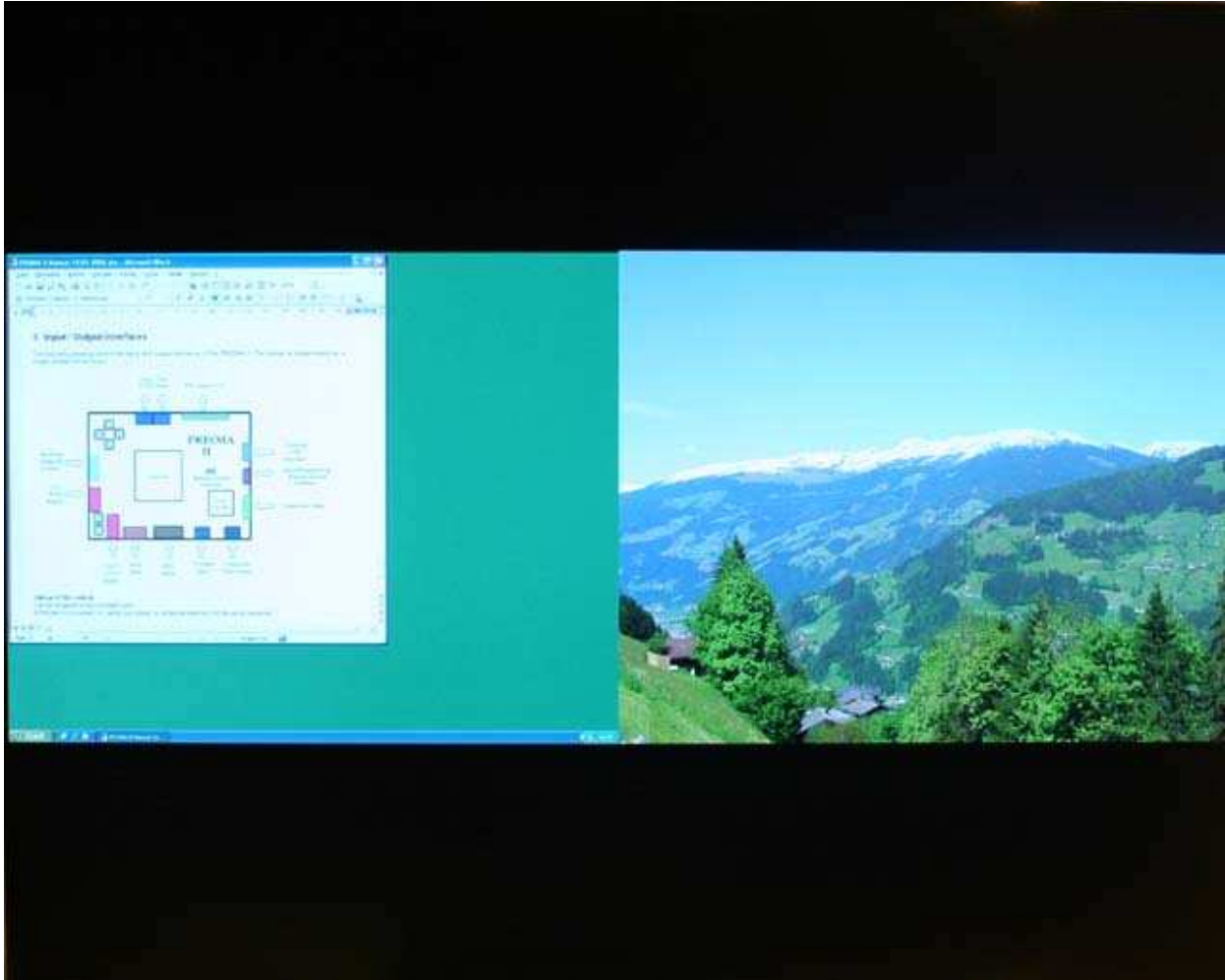
The PIP window can be viewed in three user-selected sizes, and can be moved to any position across the screen as seen in following picture:





16.2 PAP

Abbreviated from Picture-And-Picture, the PAP function allows the user to view two channels of choice side by side on the screen, as seen in the following picture:

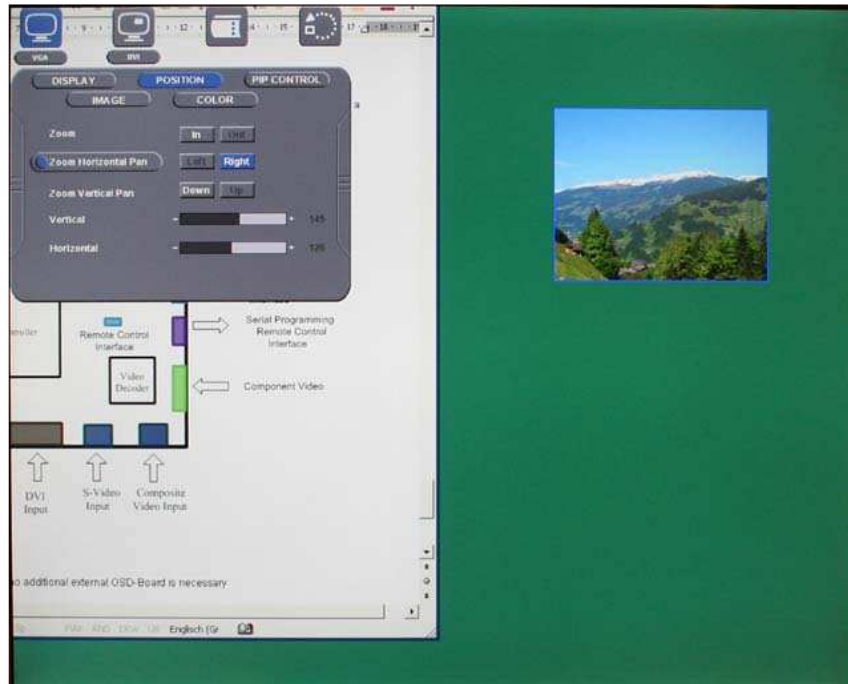




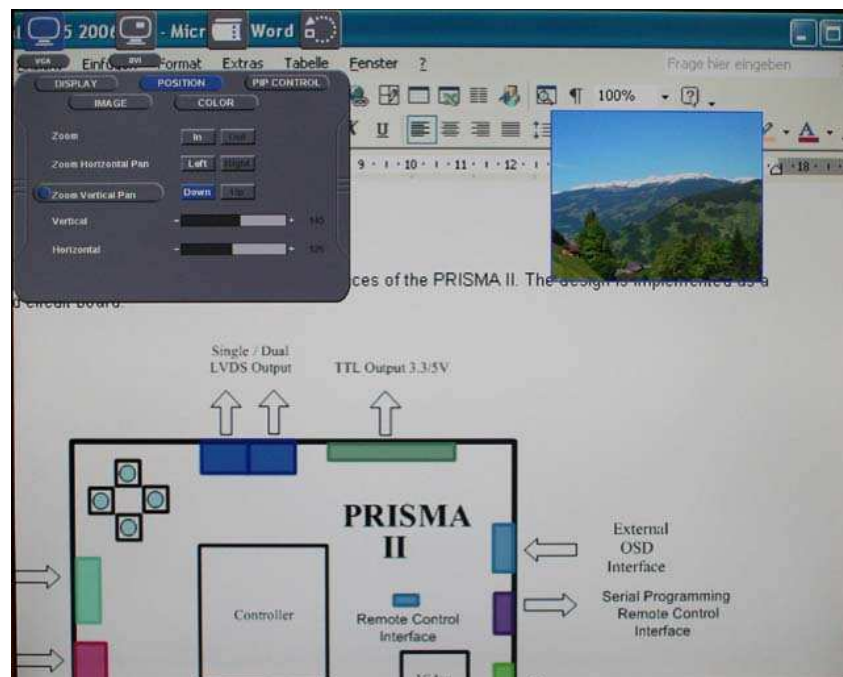
16.3 Zoom & Pan

Zoom & Pan function allows the user to zoom into the main view using OSD controls, and move across the zoomed view in all directions. The PIP window is completely independent and will not be affected by this function:

Following picture shows a slight zoom into the VGA background, to the center of the view:



The following picture is a greater amount zoom, followed by pan to the upper middle of the PC screen:





16.4 Enhanced Image Quality

16.4.1 MADI

The system utilizes motion adaptive de-interlacing (MADI) algorithms, which detect the difference between still image and motion picture and uses different image processing techniques in constructing the image.

The following pictures show the difference of standard protocols to that of MADI using algorithms:



Standard protocol



MADI applied

As can be seen clearly, MADI algorithms provide superior image quality in fast motion pictures.

16.4.2 3D Noise Reduction (NR)

Application of 3D noise reduction during image processing can greatly improve image quality, especially when the input is transmitted through a noisy environment:



No NR



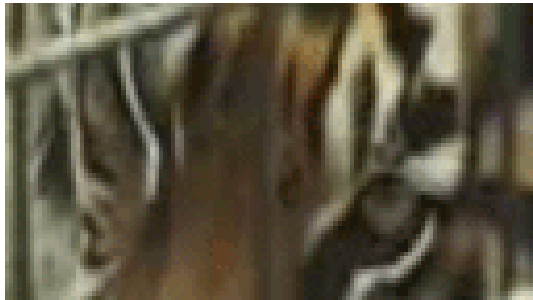
3D NR



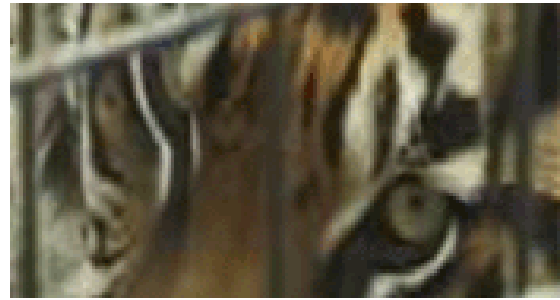
16.4.3 New Video Decoder

PRISMA-II contains a video decoder that is superior in performance compared to the standard decoders. This results in better video image quality:

You can see the quality difference in the eye of the tiger:



Standard



PRISMA-II



16.4.4 Explanation of scaling modes

Scaling modes are used to convert different input formats into a suitable image preferred by the user. In this section, a general overview of scaling modes is given. Some scaling modes may not be available according to the given input/output format combination.

16.4.4.1 Scaling mode "1:1"

Available only if the resolution (both width and height) of the input is lower than the resolution of the panel. The image is placed at exactly the same resolution, and the surrounding non-image area (if it exists) is filled black.

16.4.4.2 Scaling mode "Aspect"

Picture is always linearly scaled as long as horizontal or vertical picture reaches first the boundary of the TFT display. Ratio of width to height remains unchanged. Any non-image area is filled black.

16.4.4.3 Scaling mode "Fill"

Regardless of the input or panel resolution, width and height are scaled down or up to fit the panel's resolution.

16.4.4.4 Scaling mode "Panoramic"

Available only on customer request. For every combination of input and panel resolution, a specific table is created. With the standard firmware, this option is disabled.



DISTEC GmbH

DATA SHEET

PRISMA-II

Our company network supports you worldwide with offices in Germany, Turkey, Great Britain and the USA. For more information please contact:



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