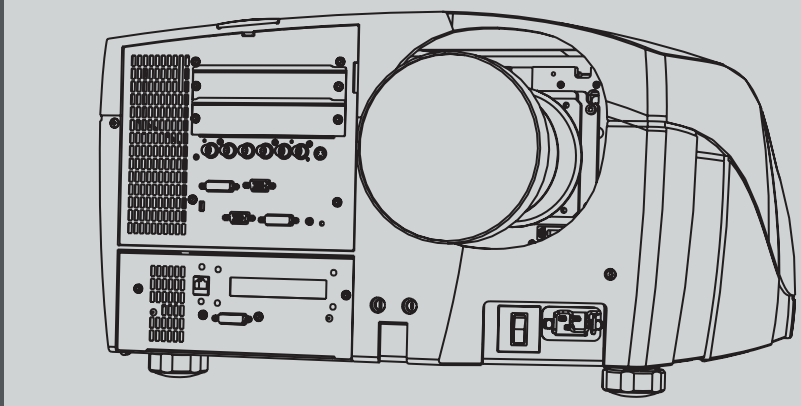
NW-12



User Guide

R9040410

R59770286/02
07/09/2009

BARCO

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TABLE OF CONTENTS

1. INTRODUCTION

Overview

- About

1.1 About

About this manual

This manual describes the Barco NW-12 projector.

It contains 4 main chapters :

1. **Installation** : The mechanical setup of the projector.
2. **Setup** : Adjusting the projection parameters in order to get the best image reproduction.
3. **Getting started** : Start the projector for daily use.
4. **Advanced** : Advanced operation and setup using the remote control and the projector's OSD.

Desktop Integration

The Barco NW-12 is a 3 chip DLP™ projector with optional Windows desktop integration that can project in full native 1200p. It is a network-centric projector (option), which greatly increases its ease-of-use in collaboration applications with large amount of data.

2. PACKAGING

2.1 Unpacking

CEE7/7

European power plug to connect the power cord to the wall outlet.

NEMA L6-20P

American power plug to connect the power cord to the wall outlet.

Content

- 1 projector (weight ± 70 kg or ± 175 lbs)
- 1 remote control unit RCU + 2 batteries.
- 2 power cables with outlet plug type CEE7 and NEMA L6-20P
- 1 User Guide
- 1 Safety manual
- 1 CD-ROM containing the Desktop Integration Software (option)

Form

The projector is packed in a cardboard box. To provide protection during transportation, the projector is surrounded with foam. The package is secured with banding and fastening clips.

Lens packaging

The Lens is supplied as an individual item and is packed in a cardboard box.

Save the original shipping cardboard and packing material, they will be necessary if you ever have to transport the lens.

CAUTION: Never transport the projector with the lens mounted on it !

Always remove the lens before transporting the projector.

How to unpack the projector ?

1. Release the cord straps.

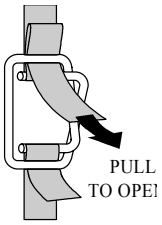

Image 2-1

2. Remove the assembly from the pallet
3. Remove the cardboard cover
4. Remove the large cardboard
5. Remove the foam parts
6. Loosen and remove the 3 screws spacers fixing the projector to the wooden board
7. Remove the projector from the board

Save the original shipping carton and packing material, they will be necessary if you ever have to ship your projector. For maximum protection, repack your projector as it was originally packed at the factory.

3. INSTALLATION GUIDELINES

Overview

- General Installation Guidelines
- Air flow guidelines
- Projector position

3.1 General Installation Guidelines

WARNING: Before installing the projector, read first the safety instructions in the safety manual (R5976125) delivered with the projector.

Insure that the projector is installed in an easy to evacuate room in case of a lamp explosion.

Ambient Temperature Conditions.

Careful consideration of things such as image size, ambient light level, projector placement and type of screen to use are critical to the optimum use of the projection system.

Max. ambient temperature : 35°C or 95°F

Min. ambient temperature : 10°C or 50 °F

The projector will not operate if ambient air temperature is higher than 40°C or 104°F).

Storage temperature: -35°C to +65°C (-31°F to 149°F)

Humidity Conditions

Storage: 0 to 98 % RH Non-condensing

Operation: 0 to 95 % RH Non-condensing

CAUTION: Harmful Environmental Contamination Precaution

Environment

Do not install the projection system in a site near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or humidity. Be aware that room heat rises to the ceiling; check that temperature near the installation site is not excessive.

Environment condition check

A projector must always be mounted in a manner which ensures the free flow of clean air into the projectors ventilation inlets. For installations in environments where the projector is subject to airborne contaminants such as that produced by smoke machines or similar (these deposit a thin layer of greasy residue upon the projectors internal optics and imaging electronic surfaces, degrading performance), then it is highly advisable and desirable to have this contamination removed prior to it reaching the projectors clean air supply. Devices or structures to extract or shield contaminated air well away from the projector are a prerequisite, if this is not a feasible solution then measures to relocate the projector to a clean air environment should be considered.

Only ever use the manufacturer's recommended cleaning kit which has been specifically designed for cleaning optical parts, never use industrial strength cleaners on the projector's optics as these will degrade optical coatings and damage sensitive optoelectronics components. Failure to take suitable precautions to protect the projector from the effects of persistent and prolonged air contaminants will culminate in extensive and irreversible ingrained optical damage. At this stage cleaning of the internal optical units will be non-effective and impracticable. Damage of this nature is under no circumstances covered under the manufacturer's warranty and may deem the warranty null and void. In such a case the client shall be held solely responsible for all costs incurred during any repair. It is the clients responsibility to ensure at all times that the projector is protected from the harmful effects of hostile airborne particles in the environment of the projector. The manufacturer reserves the right to refuse repair if a projector has been subject to wantful neglect, abandon or improper use.

Special Care for Laser Beams

Special care should be used when DLP projectors are used in the same room as performant laser equipment. Direct or indirect hitting of a laser beam on to the lens can severely damage the Digital MicroMirror Devices™ in which case there is a loss of warranty

Which screen type ?

There are two major categories of screens used for projection equipment. Those used for front projected images and those for rear projection applications.

Screens are rated by how much light they reflect (or transmit in the case of rear projection systems) given a determined amount of light projected toward them. The 'GAIN' of a screen is the term used. Front and rear screens are both rated in terms of gain. The gain of screens range from a white matte screen with a gain of 1 (x1) to a brushed aluminized screen with a gain of 10 (x10) or more. The choice between higher and lower gain screens is largely a matter of personal preference and another consideration called the Viewing angle. In considering the type of screen to choose, determine where the viewers will be located and go for the highest gain screen possible. A high gain screen will provide a brighter picture but reduce the viewing angle. For more information about screens, contact your local screen supplier.

What image size? How big should the image be?

The projector is designed for projecting an image size : min 1.00m (3.3ft) to max 15 m (49.21ft) (depending on the ambient light conditions), with the native aspect ratio of the projector.

3.2 Air flow guidelines

What are the air flow guidelines ?

The Air Outlet on the side of the Projector can reach high temperatures due to the High Light Output Range of the lamp.

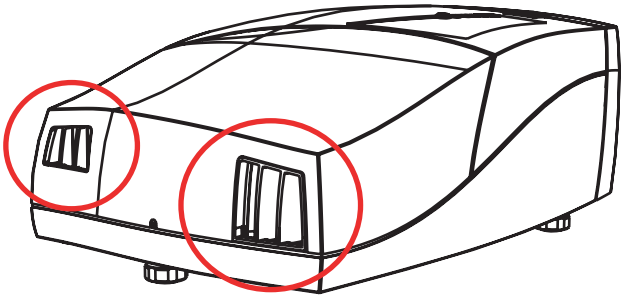

Image 3-1
Air outlets

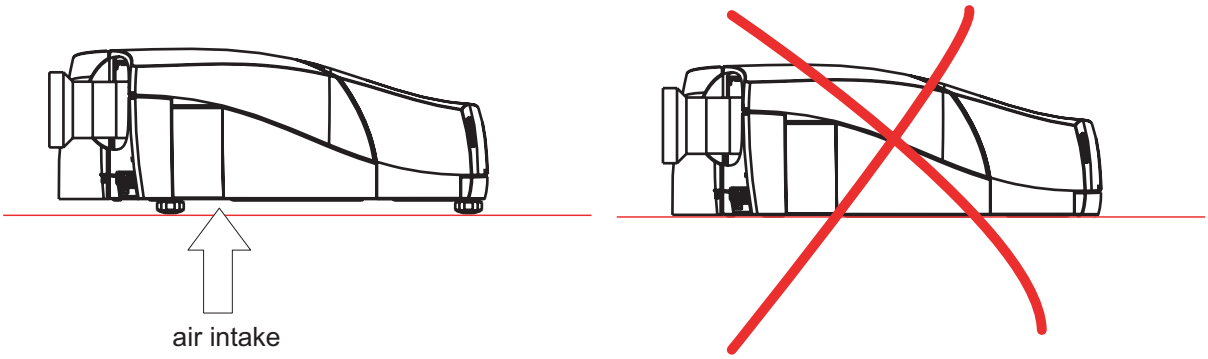

Image 3-2
Air inlet obstruction

CAUTION: Never obstruct the cooling air inlet at the bottom of the projector.

Always insure there is enough space between the bottom of the projector and the floor, to allow air to enter the projector.

WARNING: Do not touch this Air Outlet when the projector is switched on.

3.3 Projector position

Projector Position Guidelines

The lamp axis, as it is drawn on this picture, can be oriented according to the specifications:

- up to 5° in an upward/downward position.

There are no restrictions on the position of the projection axis.

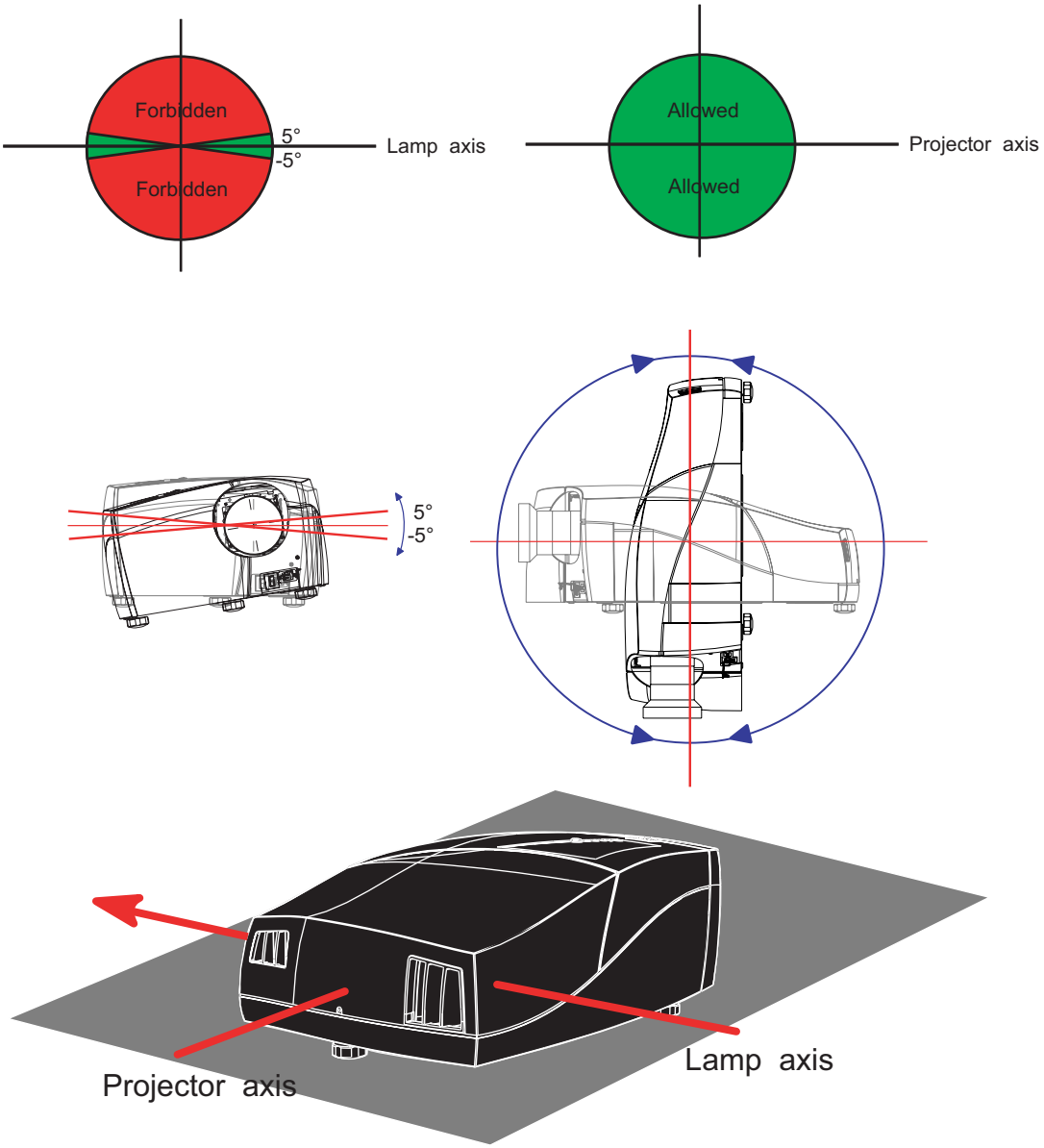

Image 3-3

CAUTION: Never operate the projector in the forbidden zones.

4. INSTALLATION

Overview

- Battery Installation in the RCU
- Lens installation
- Projector configuration
- Positioning the projector
- Connections
- Controls overview

Projector dimensions

Dimensions are given in mm and inch (1inch = 25.4 mm)

weight (without lens) : 70kg (175 lbs)

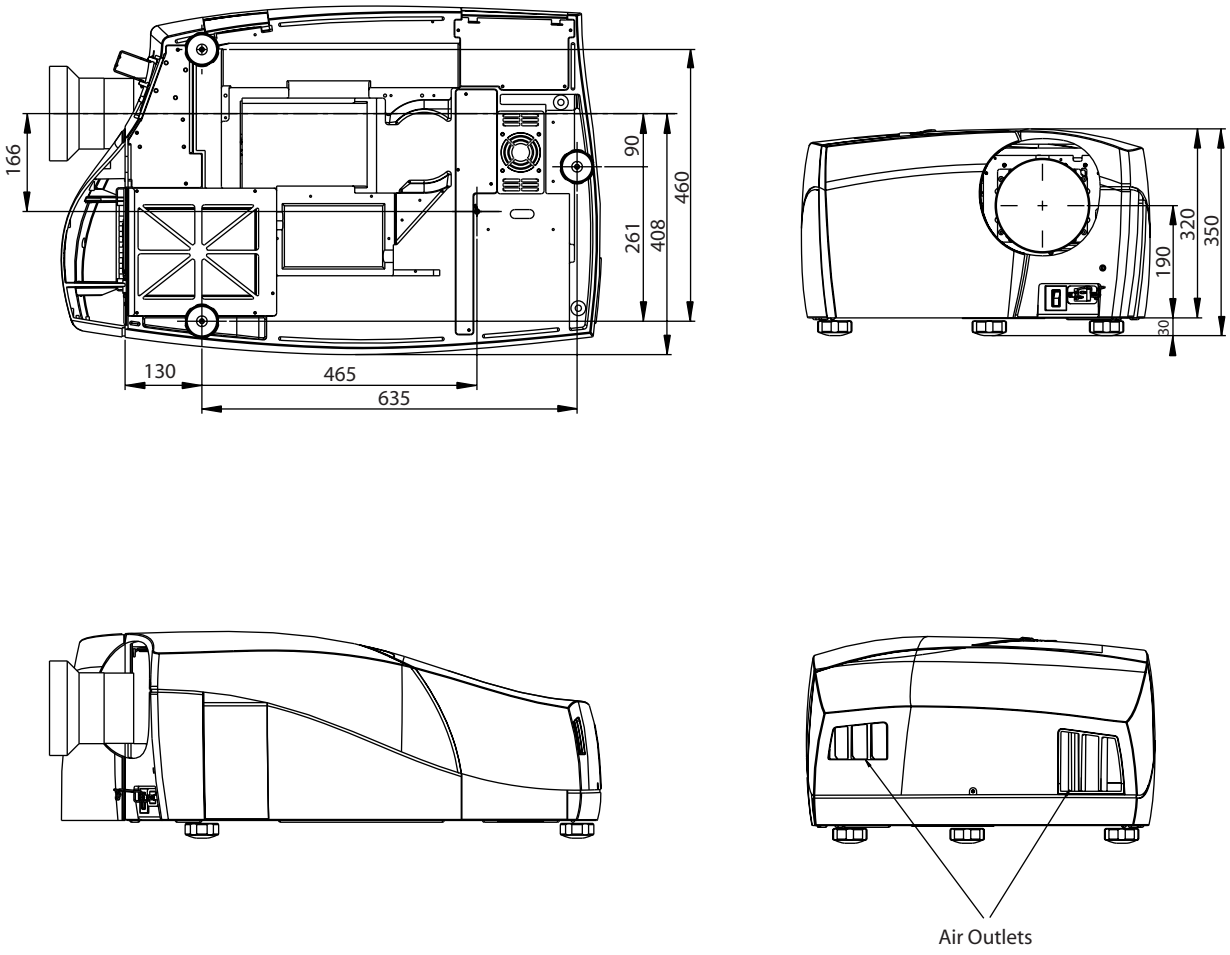

Image 4-1
Dimensions

4.1 Battery Installation in the RCU

How are the batteries delivered ?

The batteries (not yet installed to save the battery life time) are delivered inside the plastic bag with the power cord.

How to install

1. Remove the battery cover on the backside of the remote control by pushing the indicated handle a little towards the bottom of the RCU.

2. Lift up the top side of the cover at the same time.
3. Insert the 2 new 1,5 V batteries as indicated in the RCU.

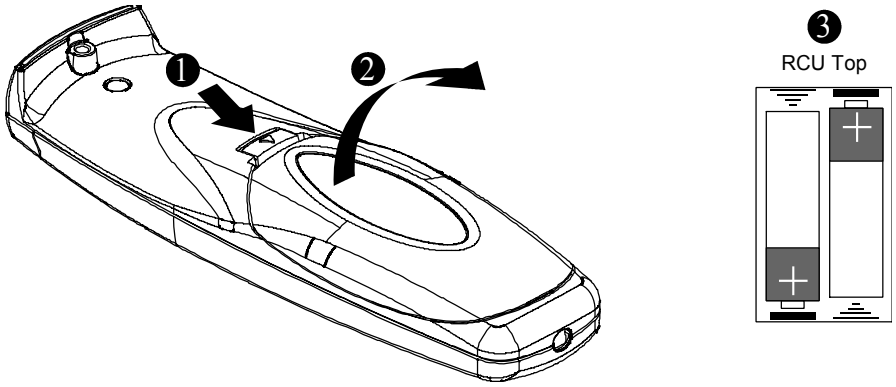

Image 4-2
Battery installation

4. Put the battery cover back on its place.

4.2 Lens installation

4.2.1 Lens range

Overview table

Lens	Partnumber
TLD+ (0.73:1)	R9842041
TLD+ (1.2:1)	R9840775
TLD+ (1.5–2.0:1)	R9842061
TLD+ (2.0–2.8:1)	R9842081
TLD+ (4.5–7.5:1)	R9842121

See the Maintenance appendix for more information about lens cleaning.

4.2.2 Lens formulas

Formulas

	Metric Formulas (meter)	Inch formulas (inch)
TLD+ (0.73:1)	PD = (0.71 x SW) + 0.09	PD = (0.71 x SW) + 3.55
TLD+ (1.2:1)	PD = (1.14 x SW) + 0.18	PD = (1.14 x SW) + 7.26
TLD+ (1.5–2.0:1)	PD_{min} = (1.42 x SW) + 0.08 PD_{max} = (1.88 x SW) + 0.12	PD_{min} = (1.42 x SW) + 3.20 PD_{max} = (1.88 x SW) + 4.90
TLD+ (2.0–2.8:1)	PD_{min} = (1.88 x SW) + 0.07 PD_{max} = (2.57 x SW) + 0.07	PD_{min} = (1.88 x SW) + 2.90 PD_{max} = (2.57 x SW) + 2.90
TLD+ 4.5–7.5:1)	PD_{min} = (4.08 x SW) + 0.07 PD_{max} = (6.85 x SW) + 0.29	PD_{min} = (4.08 x SW) + 2.89 PD_{max} = (6.85 x SW) + 11.49

The distances are measured starting from the back side of the flange of the projector lens.

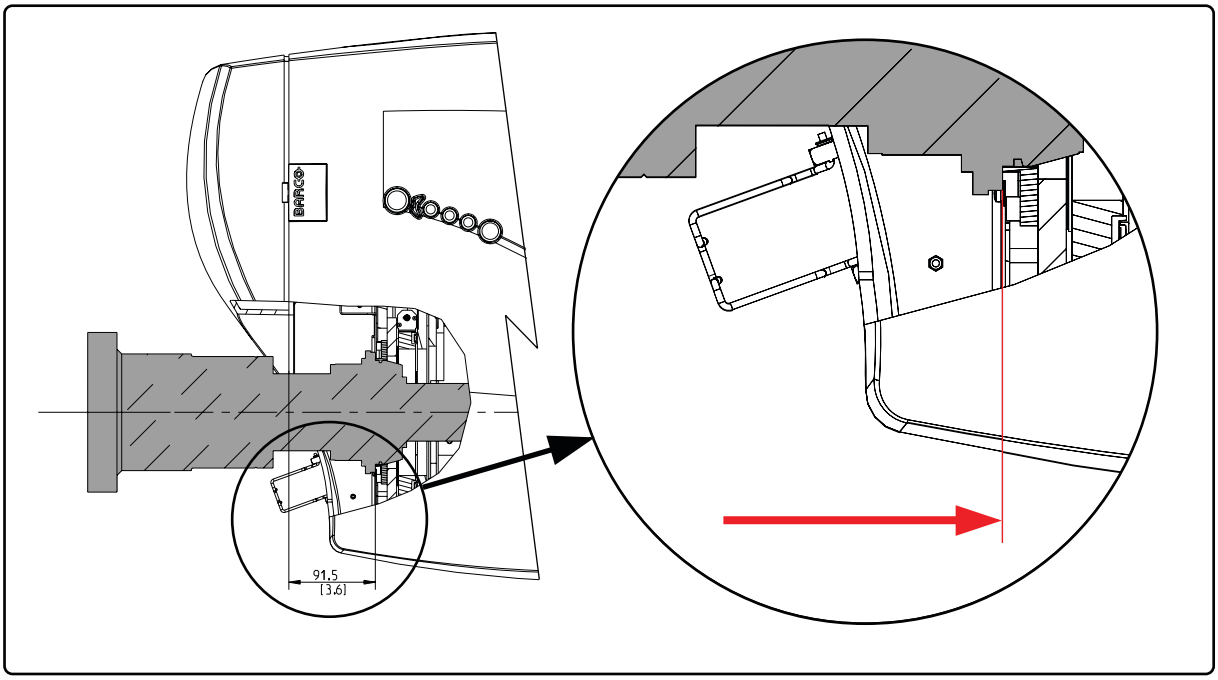

Image 4-3

4.2.3 Shift capabilities

Description

The maximum vertical and horizontal shift range depends on the lens. Shifting outside this range will not guarantee a full image i.e. some corners of the image will be clipped and will not be visible (will appear dark on the screen).

The table below gives an overview of the shift capabilities in function of the lens :

Lens range	Vertical shift	Horizontal shift
TLD+ (0.73:1)	up/down : 22%	left/right : 9%
TLD+ (1.2:1)	up/down : 113%	left/right : 54%
TLD+ (1.5-2.0:1)		
TLD+ (2.0-2.8:1)		
TLD+ (2.8-4.5:1)		
TLD (4.5-7.5:1)		

Table 4-3
Maximum shift range in function of lens

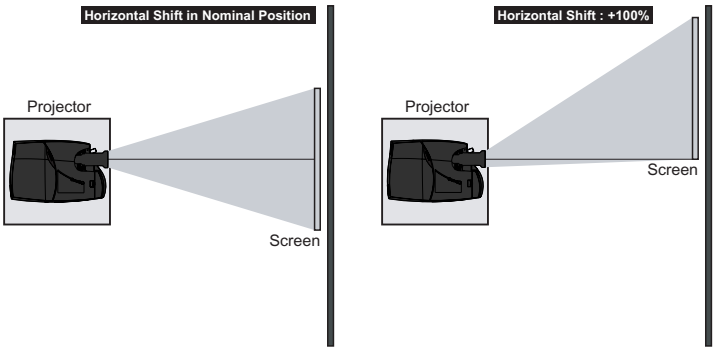

Image 4-4
Example of a horizontal shift of 100%

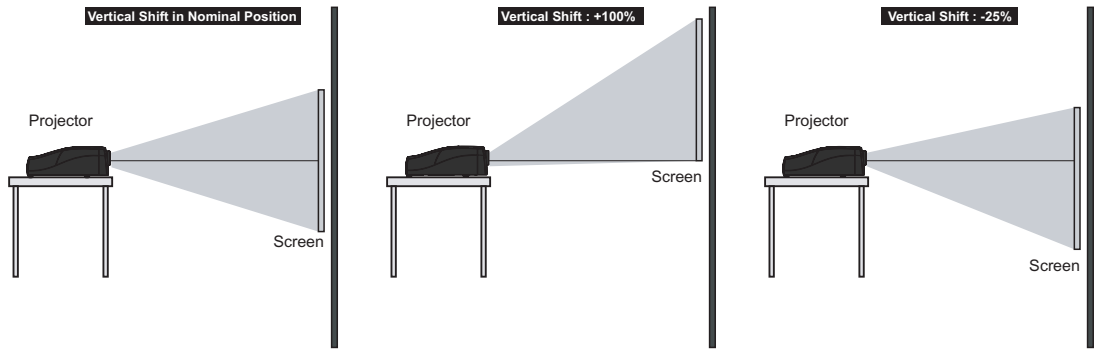

Image 4-5
Example of a vertical shift of +100% and -25%

4.2.4 Lens installation

Necessary tools

Hexagonal key 4 mm (hexagonal) - delivered with the projector

Necessary parts

- Lens
- Lens interface plate (pre-mounted on the lens holder)
- 4x M5x12 screws (delivered with the projector and with the lens)

How to install the lens ?

1. Remove the lens interface plate from the lens holder if it is still mounted to it
2. Fix the lens interface plate to the lens using the delivered screws (4)
   Note: *Install the lens and the lens interface plate with their screening **UP** or **TOP** oriented in the same direction*

   Caution: *Mind the orientation of the lens interface plate in relation to the lens.*

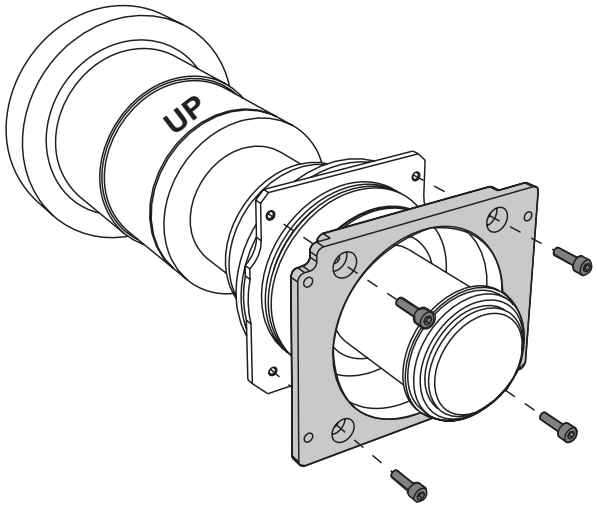

Image 4-6
Assembling the lens, screening UP to the top side

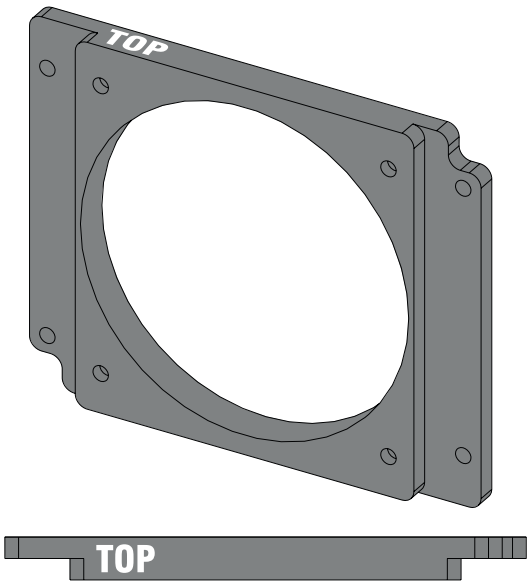

Image 4-7
Lens interface plate, screening UP to the top side

3. Mount the assembly (lens + interface plate) on the lens holder
   Insert and tighten the 4 screws with one hand while supporting the lens with the other hand
   Caution: *Mind the orientation of the lens assembly: the screenings **UP** and **TOP** must be oriented upwards (table configuration!).*

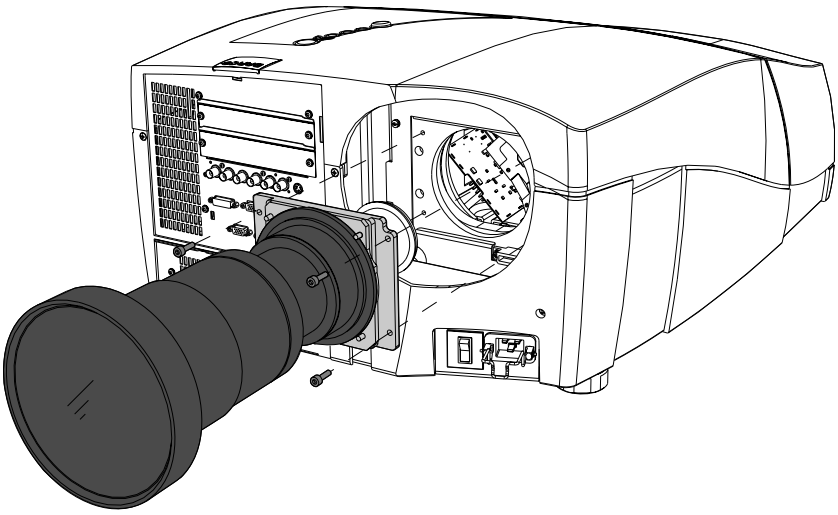

Image 4-8
Lens assembly mounting

4.3 Projector configuration

CAUTION: Projectors in ceiling configuration must have their second pump being connected mechanically and electrically! If no second pump is present in the projector, the corresponding kit must be installed first. Contact a Barco trained and certified technician.

The different configurations

Depending on the installation the projector can be mounted in different ways, the 4 different configurations are:

1. Rear/Ceiling
2. Rear/Table
3. Front/Ceiling
4. Front/Table

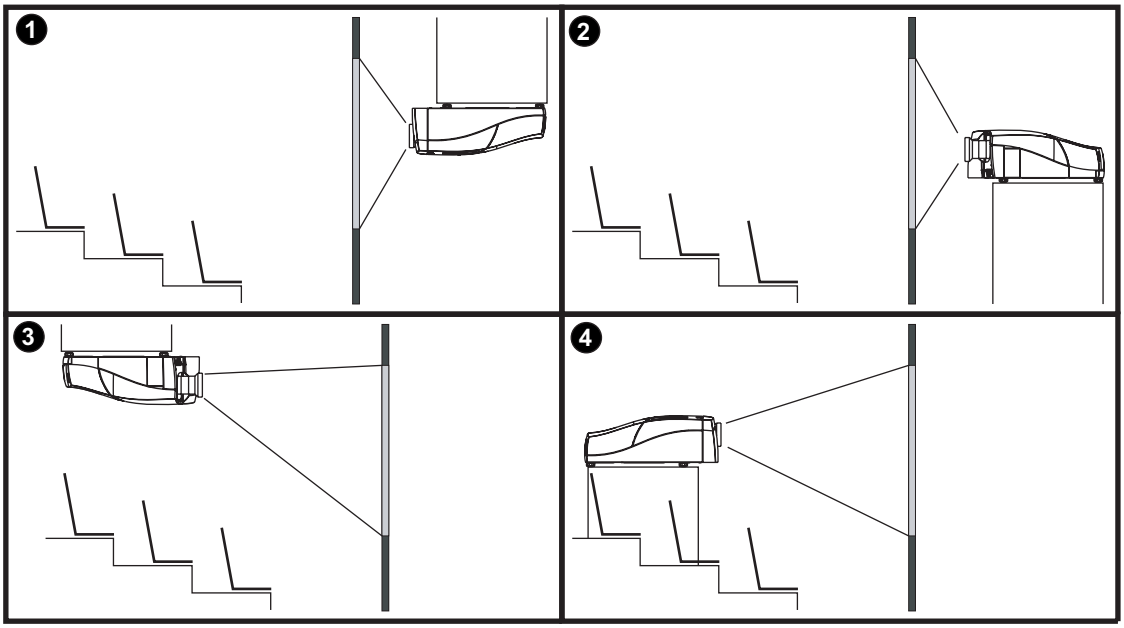

Image 4-9
Projector configurations

4.4 Positioning the projector

On-Axis projection

Projection where the projector is positioned so as to have the centre of the lens coinciding with the centre of the screen.

Positioning the projector

The position of the projector with reference to the screen may also be different depending on the installation. Basically the projector can be positioned in an On-Axis or Off-Axis configuration. Several parameters can be calculated determining the position in any installation.

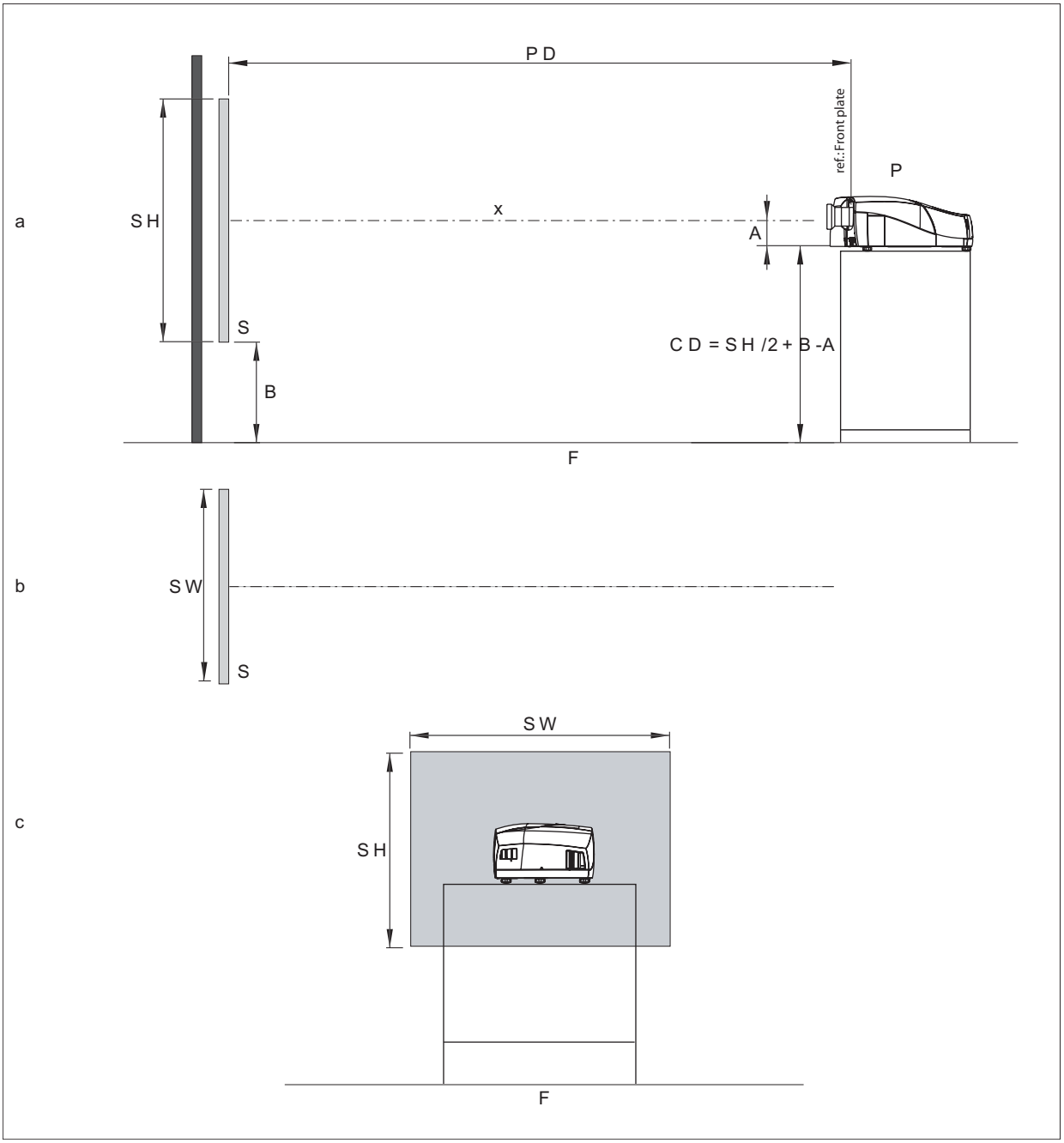

Image 4-10
ON-Axis projector installation

a Side view
b Top view
c Back view
x Optical axis projection lens
p Projector
s Screen
F Floor

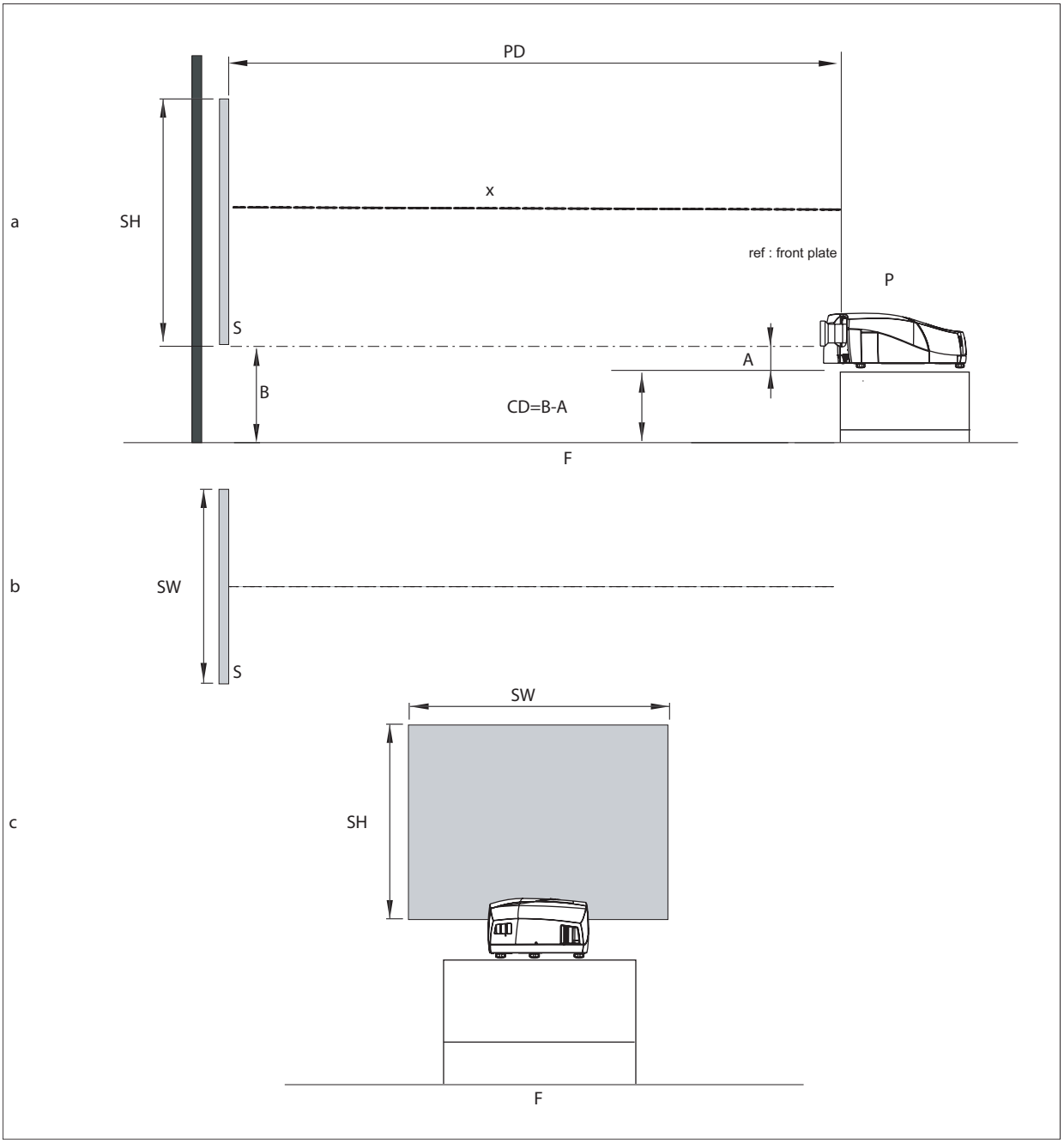

Image 4-11
OFF-Axis projector installation

a Side view
b Top view
c Back view
x Optical axis projection lens
p Projector
s Screen
F Floor

A 100% Off-Axis position means that the position of the centre of the lens is shifted by half the screen height.

4.5 Connections

Overview

- Power connection
- The front panel
- Connecting an RGB signal
- Connecting a component video signal
- Connecting a DVI signal
- Connecting a Composite video signal
- Connecting an S-Video signal
- Connecting a Computer
- Connecting a source to the desktop input
- Communications
- Multichannel Installations

4.5.1 Power connection

Electrical ratings

Projector type	Voltage (AC)	Current / Power	Frequency
NH-12	230V single phase	12 Amps	50-60 Hz
Galaxy NH-12	230V single phase	12 Amps	50-60 Hz
iD LH-12	230V single phase	12 Amps	50-60 Hz
NW-12	220–240V single phase	12 Amps	50-60 Hz
Galaxy NW-12	220–240V single phase	12 Amps	50-60 Hz
Galaxy NW-7	220–240V single phase	12 Amps	50-60 Hz

Power connection

1. Use the supplied power cord to connect the projector to the power outlet.
2. Plug the female power connector into the male connector at the front of the projector, secure the connection with the locking spring.

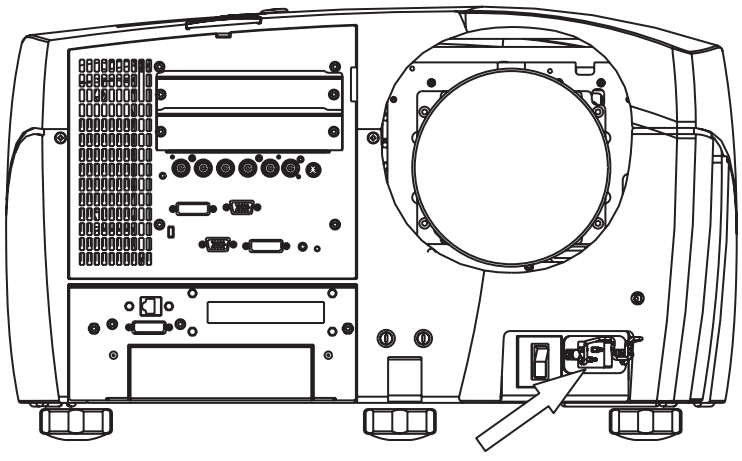

Image 4-12
Power connection

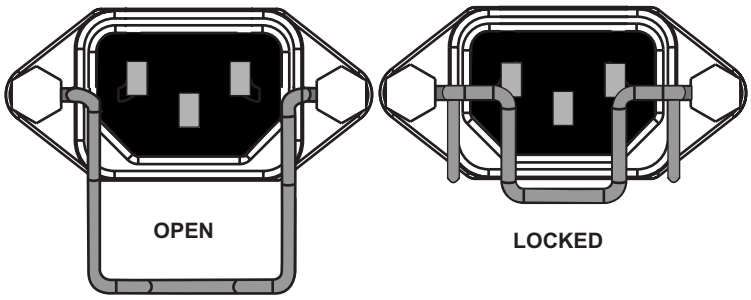

Image 4-13
Power plug spring system

4.5.2 The front panel

View

The front panel of the projector can be divided in 2 major parts :

1. Signal Input/Output section
2. System input/output section

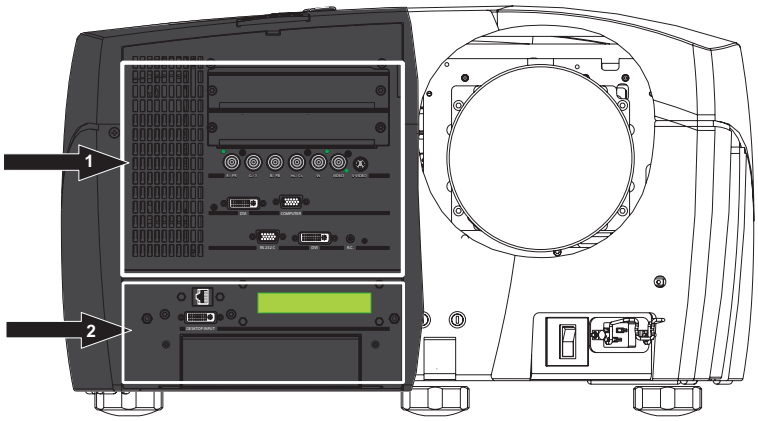

Image 4-14
Front panel connections

The signal input/output section

The input/output section has a modular architecture i.e. it is composed of several (5) slots which can be equipped with different input modules :

The different available inputs that can be installed :

- RGBHV & Video analog input
- HDCP DVI & Computer (D15) VGA input
- SDI/HDSDI (option)
- DVI/HDMI (HDCP) (option)

The different available outputs :

- DVI output & RS232 IN

The projector is by default equipped as follows:

- Layer 1: empty (can be fitted with any input board)
- Layer 2: empty (can be fitted with any input board)
- Layer 3: RGB & Video input board (fixed)
- Layer 4: DVI & D15 input board (fixed)
- Layer 5: DVI output and RS232 board (fixed)

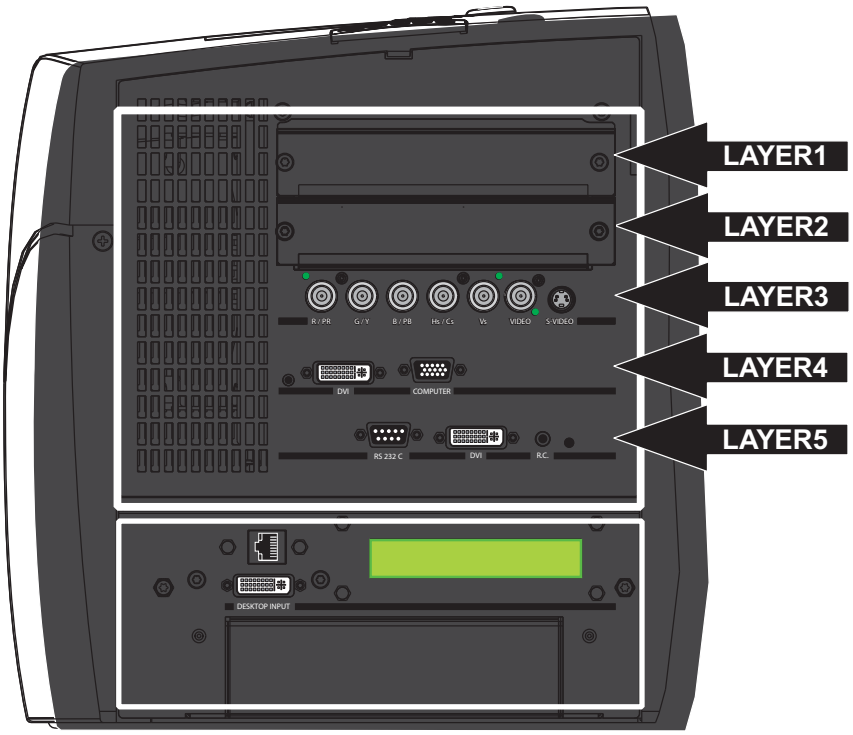

Image 4-15
Input/Output layers

Layer 3,4,5 are fixed i.e. they may only be fitted with the boards mentioned above.

An optional board (SDI/HDSDI or DVI) is to be installed on the first or second (by default empty) layer

The system section

The bottom system section holds :

- Ethernet RJ45 connection
- DVI desktop input
- LCD display

4.5.3 Connecting an RGB signal

How to connect an RGB signal ?

1. Connect the BNC connectors to the projector's RGB input

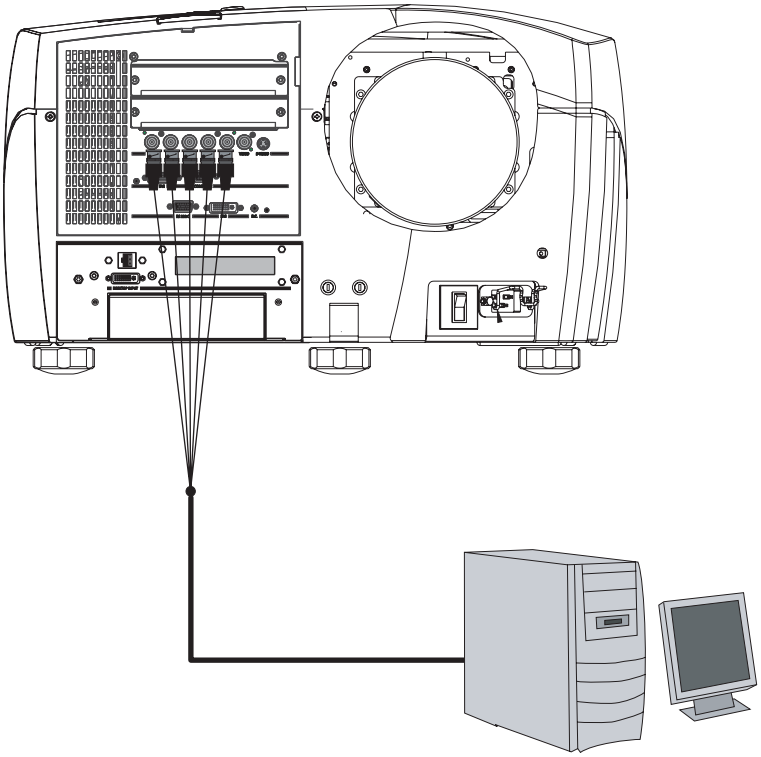

Image 4-16

4.5.4 Connecting a component video signal

Introduction

A component video signal can also be mentioned in the following way:

- YUV
- PR Y PB
- (R-Y) Y (B-Y)

How to connect a component video signal ?

1. Connect the BNC connectors to the projector’s PR Y PB input

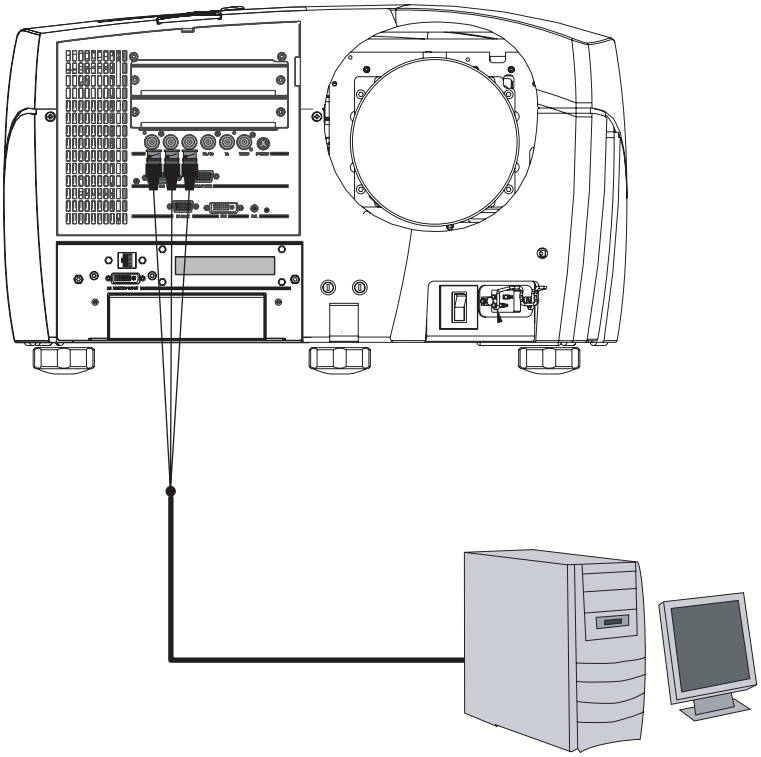

Image 4-17
Connecting a YUV signal

4.5.5 Connecting a DVI signal

Both DVI and HDCP DVI are supported and can be connected to the DVI connector of this projector.

In case a HDCP DVI signal is connected to the DVI input, the DVI output image will not show the image of this source. A gray window will be displayed instead.

How to connect a DVI signal ?

1. Connect the DVI cable to the projector's DVI input

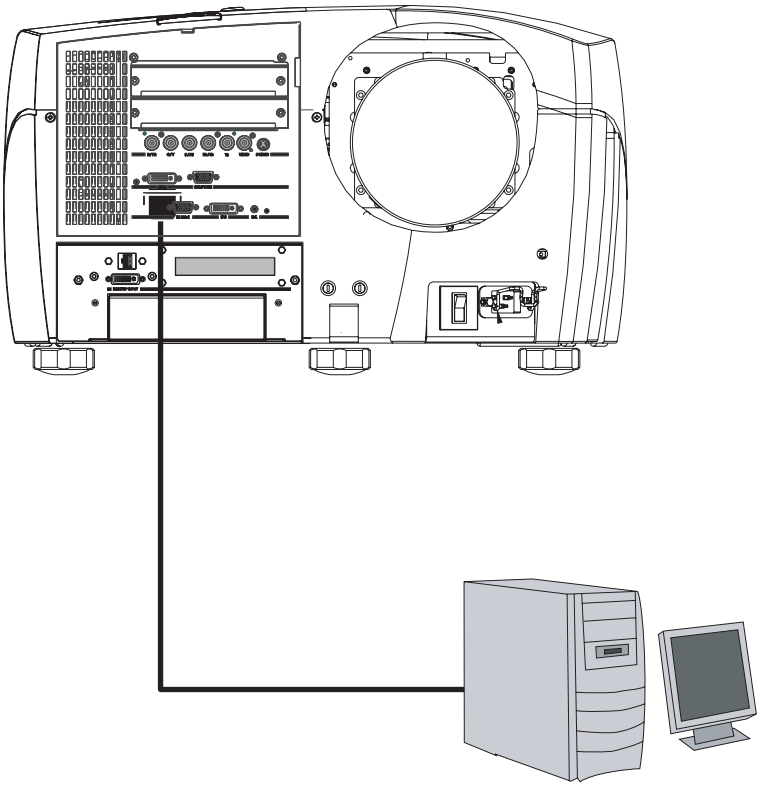

Image 4-18

4.5.6 Connecting a Composite video signal

How to connect a composite video signal ?

1. Connect the BNC connector to the projector's video input

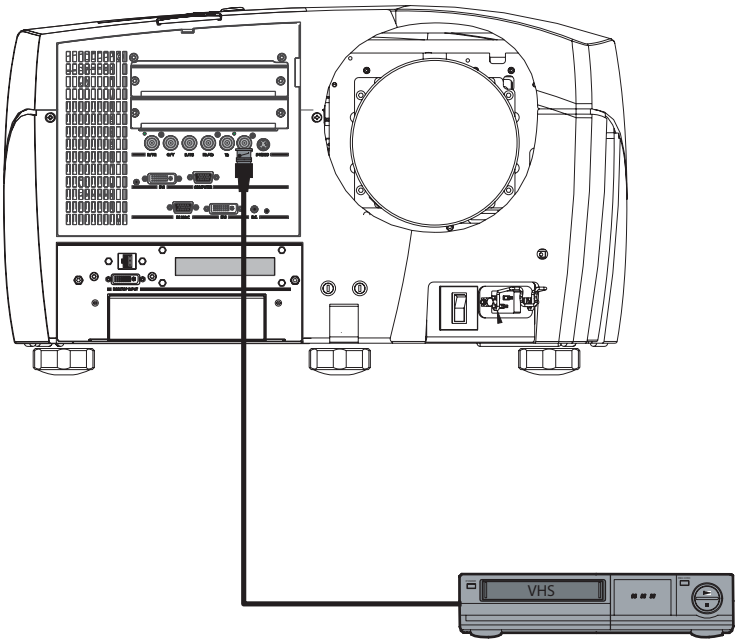

Image 4-19
Connecting a composite video signal

4.5.7 Connecting an S-Video signal

How to connect an S-Video signal ?

1. Connect the mini DIN connector to the projector's S-Video input

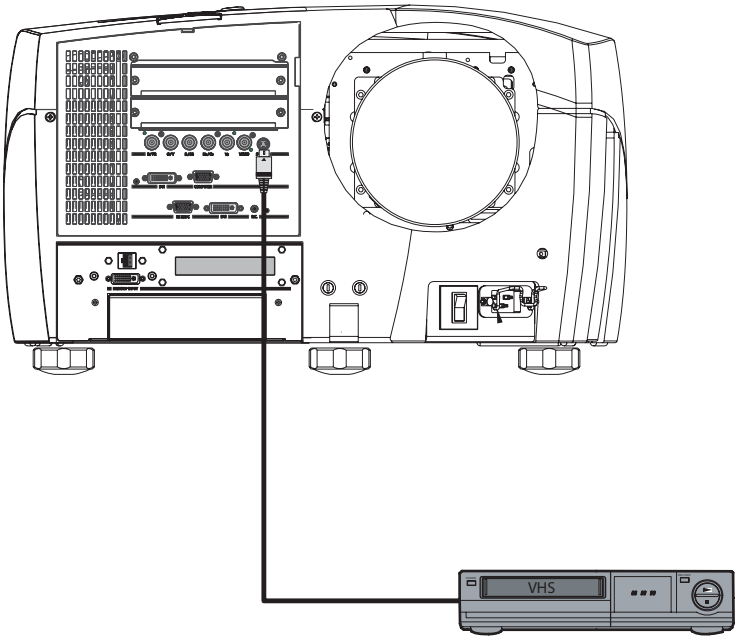

Image 4-20
Connecting an S-Video signal

4.5.8 Connecting a Computer

How to connect a computer ?

1. Connect the D15 connector to the projector's computer input

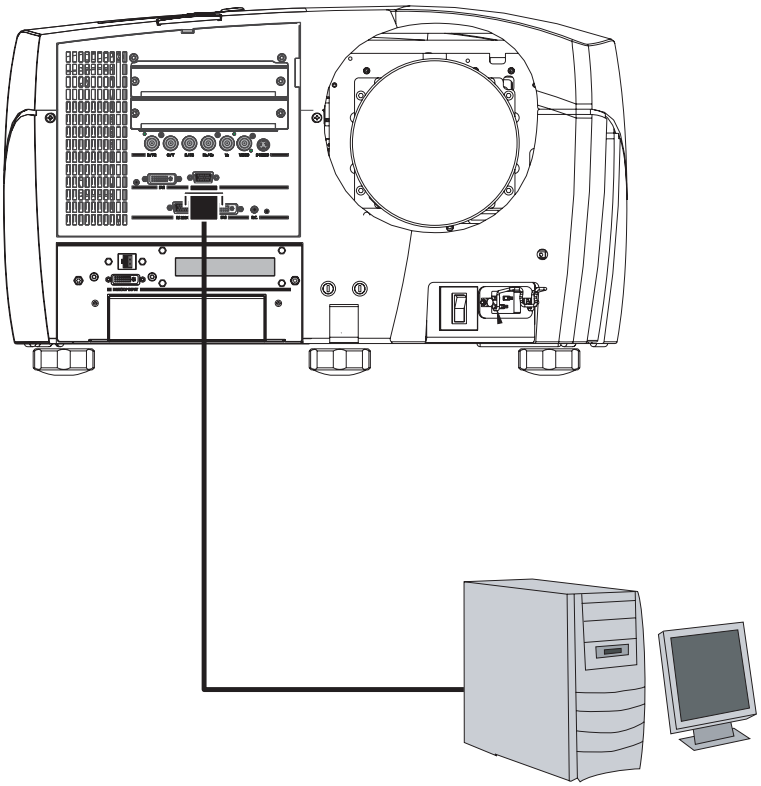

Image 4-21
Connecting a computer

4.5.9 Connecting a source to the desktop input

How to connect a desktop source to the desktop input ?

1. Connect the source to the desktop input connection (DVI connector)

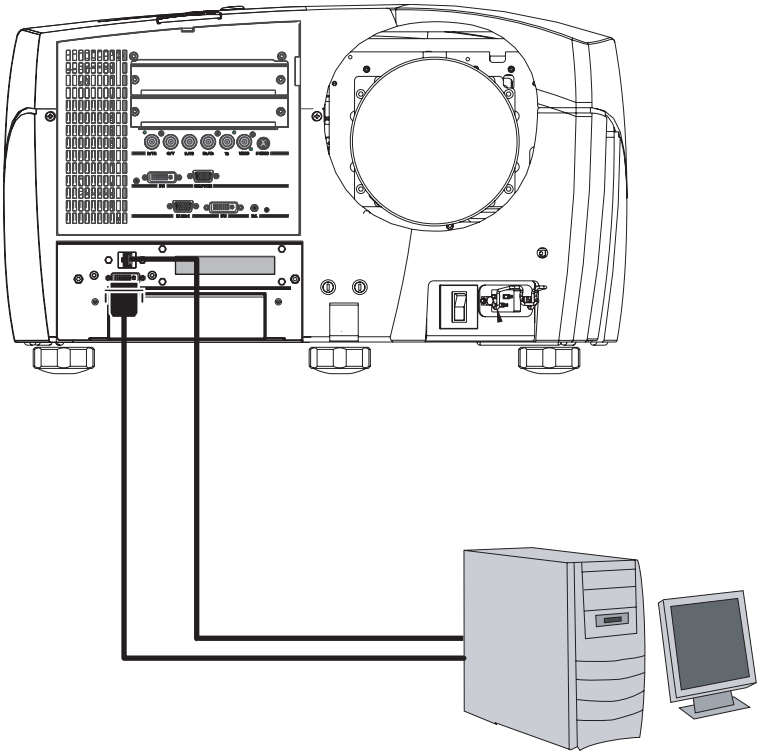

Image 4-22
Connecting a desktop input

Tip: *An Ethernet connection must also be set to allow Desktop integration*

The projector can be connected to a LAN or can be connected to a desktop PC via a crossed cable (as indicated above).

The desktop can be enabled/disabled, "Desktop", page 117

Using the desktop input makes only sense when using the Barco Desktop integration software. The Desktop integration software is covered in the Desktop integration User Guide.

4.5.10 Communications

Overview

- Network connections
- Network settings
- RS232 communication

4.5.10.1 Network connections

What can be done ?

The projector can be connected to a network allowing it to be accessed from any connected network device. The Ethernet connection can be used to upload/download projector software and/or to set up communication (TCP-packets) with the projector. This network can be a local area network or a small dedicated network

Following operations are made possible :

- file transfer for firmware upgrade
- easy adjustment of projector
- storage of multiple projector configurations and set ups.
- wide range of control possibilities.
- linking the projectors to allow uniform color (Linked Dynacolor) and brightness (CLO) ,...
- ...

The connection to the projector can be done via a crossed cable or via a HUB on the local network (LAN).

The Ethernet connection is also used to allow the Desktop integration. The software on the delivered CDROM must therefore be installed on the desktop PC. See the Desktop integration software User Guide.

How to connect the projector ?

1. Connect the RJ 45 male plug to the projector's RJ 45 female connector

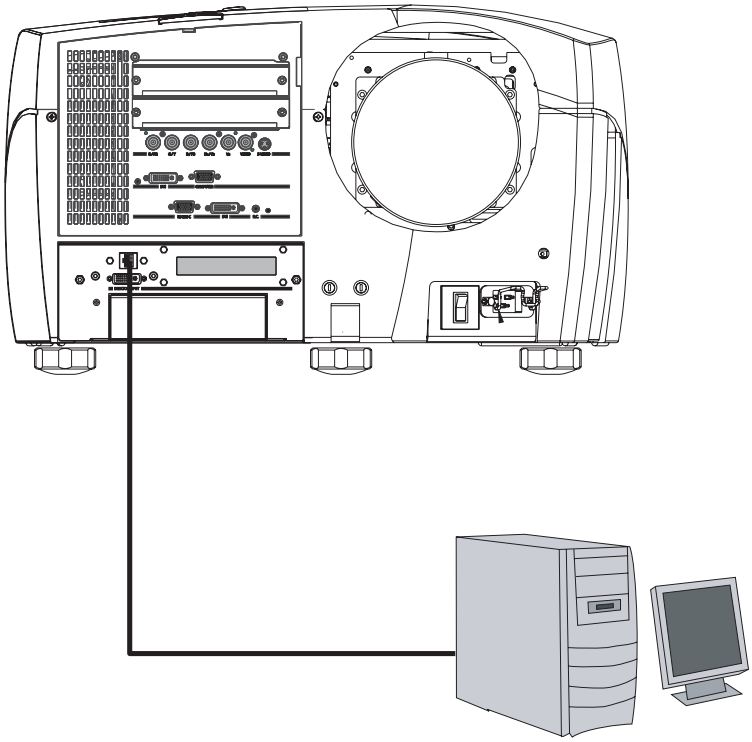

Image 4-23
Crossed cable connection

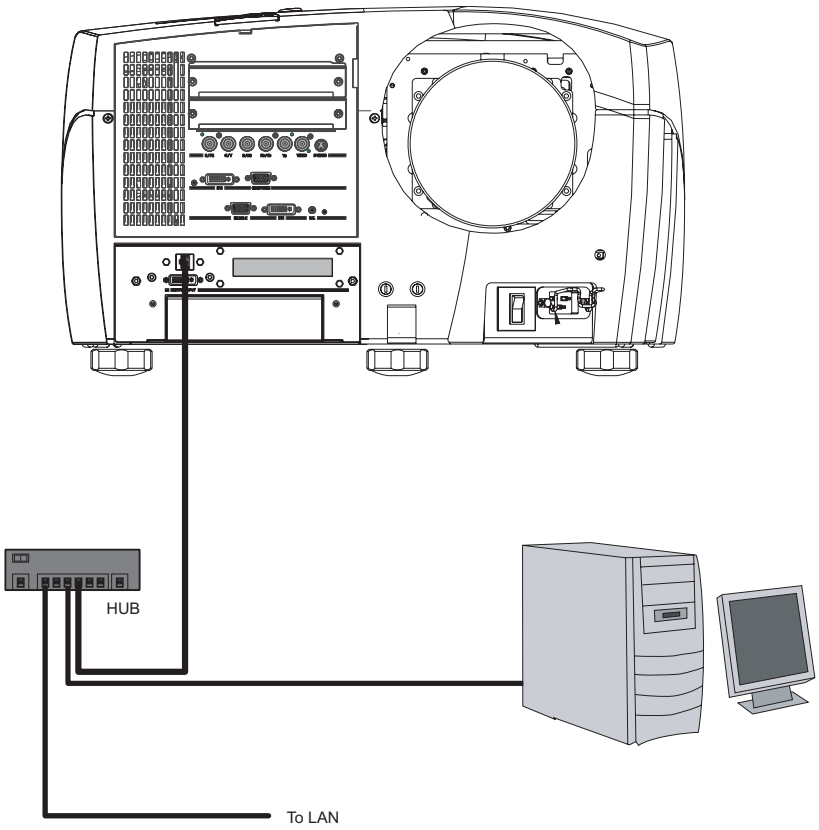

Image 4-24
Connection via a hub

See *Network settings* to set the communication port.

The linking of projectors is treated in the section “Setup of the linked projectors in a multichannel system”

4.5.10.2 Network settings

CAUTION: Make sure that a DHCP server is available in the network and works fine.

In normal conditions, the network detection takes few seconds. This means that the total time needed to go from power ON to Standby mode is only a few seconds. This value can vary depending on the speed of the network connection.

But when the DHCP setting of the projector is set to Yes and the network does not allow the projector to obtain an IP address from the DHCP server, the startup time will be delayed by upto five minutes. After this time, a time-out occurs if the network detection fails, and the projector starts up without any network connection.

What can be done?

These settings are used to set the Ethernet Communication parameters.

Following parameters are available :

MAC Address	MAC Address of the projector (This is a non-adjustable value programmed into the Ethernet board).
IP Address (Current)	IP Address of the projector (This is a non-adjustable value).
Subnet Mask	Subnet Mask (This is a non-adjustable value)
Gateway	Gateway (This is a non-adjustable value)
DHCP	DHCP setting: • *Yes*: The projector will dynamically obtain its IP address from the DHCP server. • *No*: The IP address needs to be entered manually. Note that when selecting **Fixed IP** the IP settings fields are enabled
IP Address	Fixed IP Address of the projector : this field can be edited when Fixed IP is selected
Subnet Mask	Subnet Mask : this field can be edited when Fixed IP is selected
Gateway	Gateway : this field can be edited when Fixed IP is selected
Hostname	Hostname : this field can be edited when DHCP is selected

How to set up the network settings ?

1. Press the **MENU** key to activate the Menu bar.
2. Push the cursor key ← or → to highlight *Installation* in the menu bar.
3. Push the ↓ key to pull down the *Installation* menu.
4. Push the cursor key ↑ or ↓ to highlight *Network settings* and press **ENTER** to select.

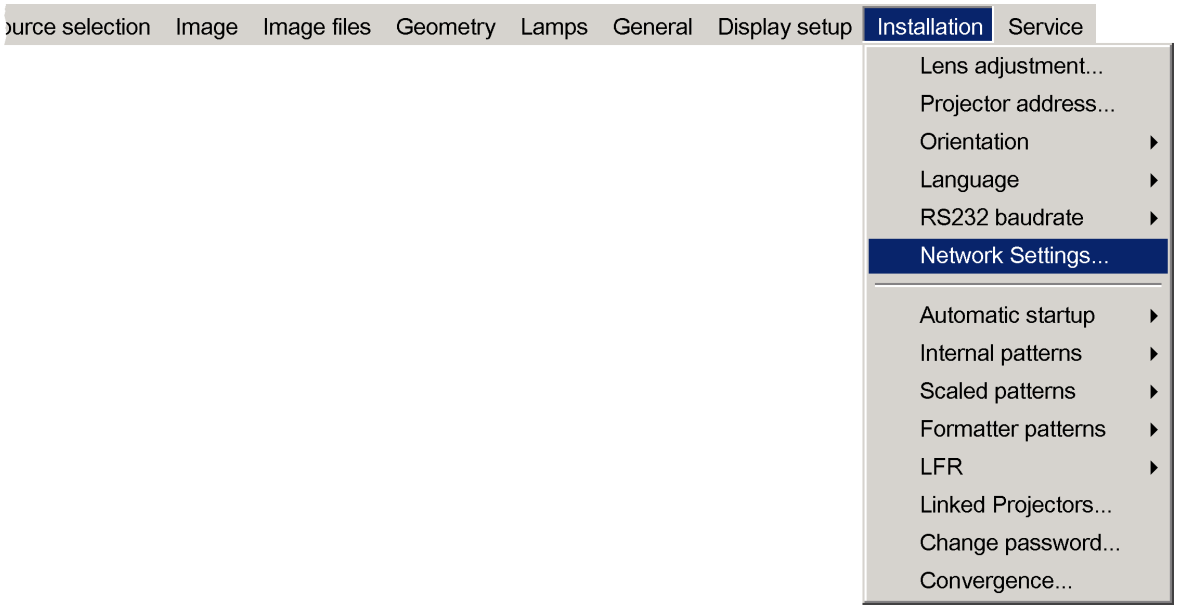

Image 4-25

A dialog box will be displayed.

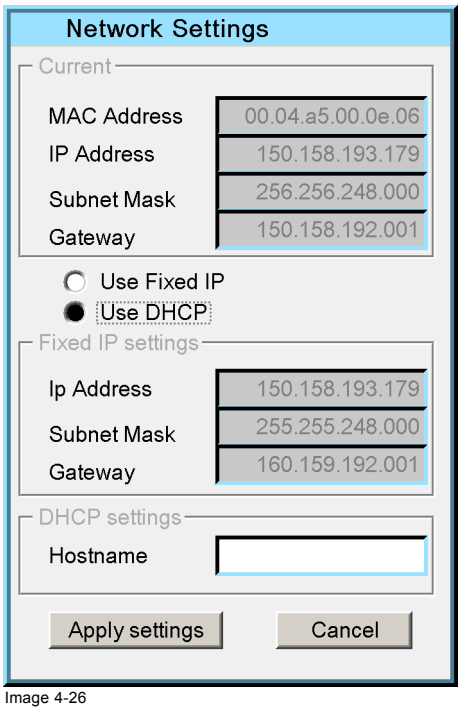

Image 4-26

5. Push the cursor key ↑ or ↓ to highlight the desired parameter.
6. Use the cursor key ← or → , the numeric keys on the RCU, or the local keypad, to edit and change the values.
7. Press **Apply settings** to apply the changes

   A dialog box is shown. The different executed operations are shown with a checkbox. The last operation *Restarting network* takes a few seconds more.

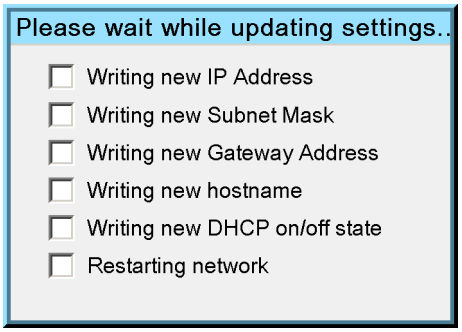

Image 4-27

4.5.10.3 RS232 communication

What is possible with the RS232 connection ?

1. Remote control :
2. Data communications: sending data to the projector or copying the data from the projector to a memory device (hard disc, floppy, etc.).

How to connect the RS232 ports?

1. Connect the D9 connector from the RS232 cable to the RS Input on the projector.

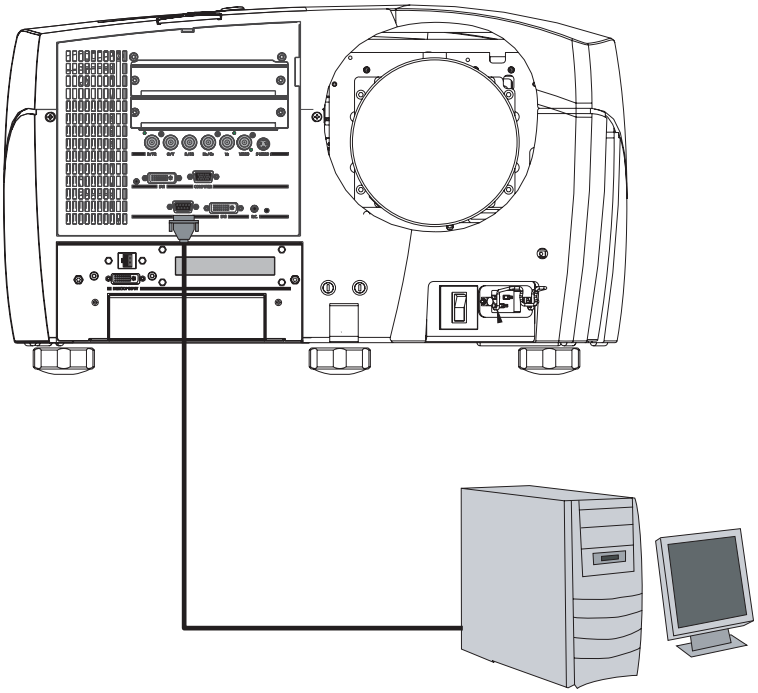

Image 4-28
RS232 connection

4.5.11 Multichannel Installations

Overview

- Linked CLO
- Linked Dynacolor

4.5.11.1 Linked CLO

Linking CLO in a multichannel system

The linking of the projectors to allow CLO and Dynacolor information interchange is done via the Ethernet connection.

To set the projector as Master see “Setup of the linked projectors in a multichannel system”.

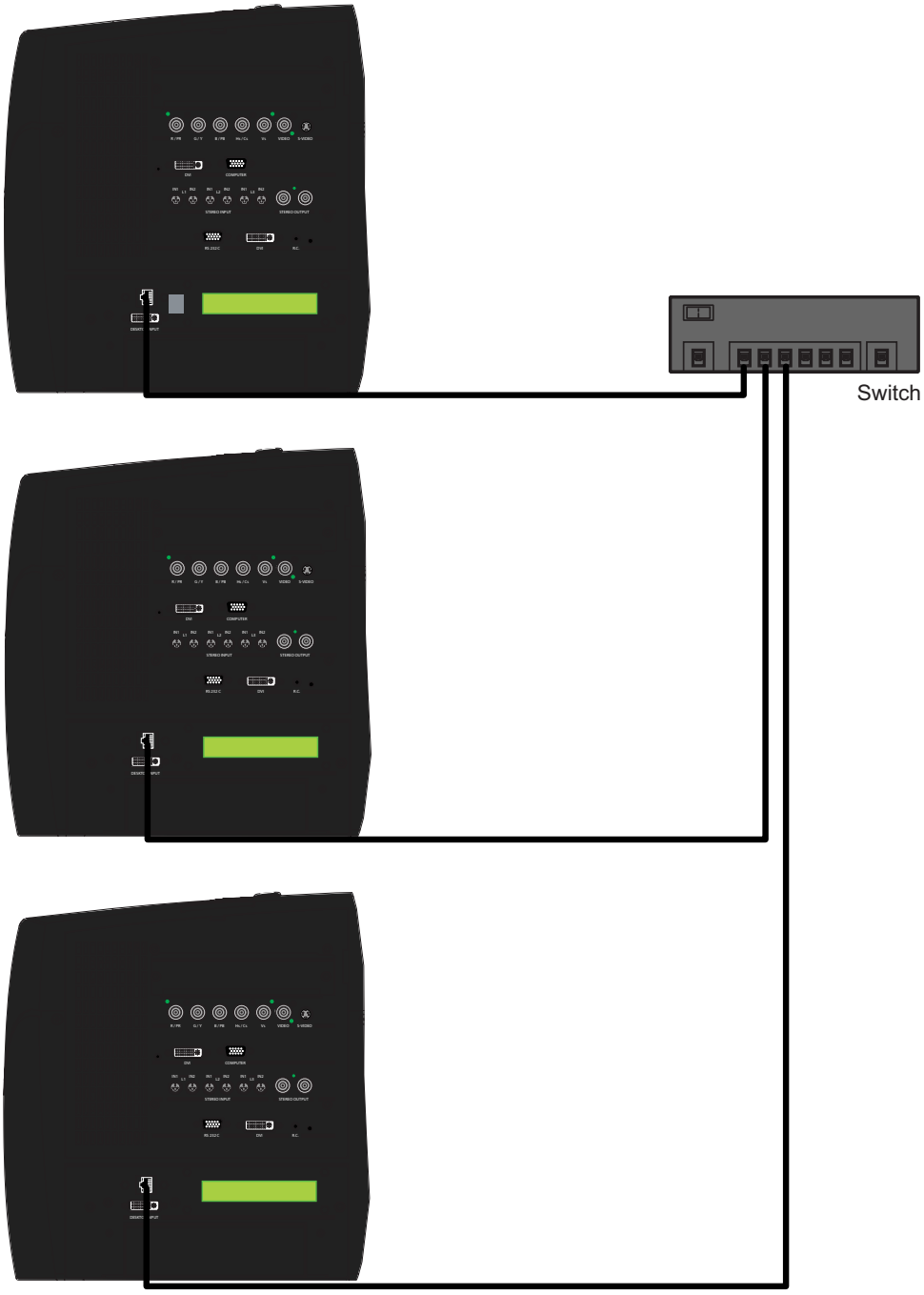

Image 4-29

4.5.11.2 Linked Dynacolor

Linking Dynacolor in a multichannel system

The linking of the projectors to allow Dynacolor and CLO information interchange is done via the Ethernet connection.

To set the projector as Master see “Setup of the linked projectors in a multichannel system”.

4.6 Controls overview

RCU

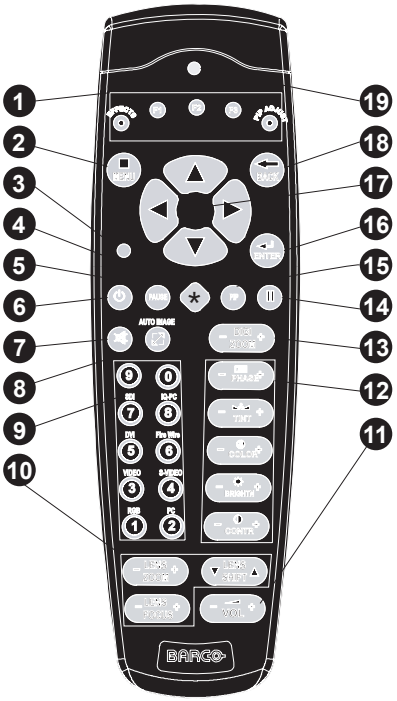

Image 4-30
Remote Control Unit

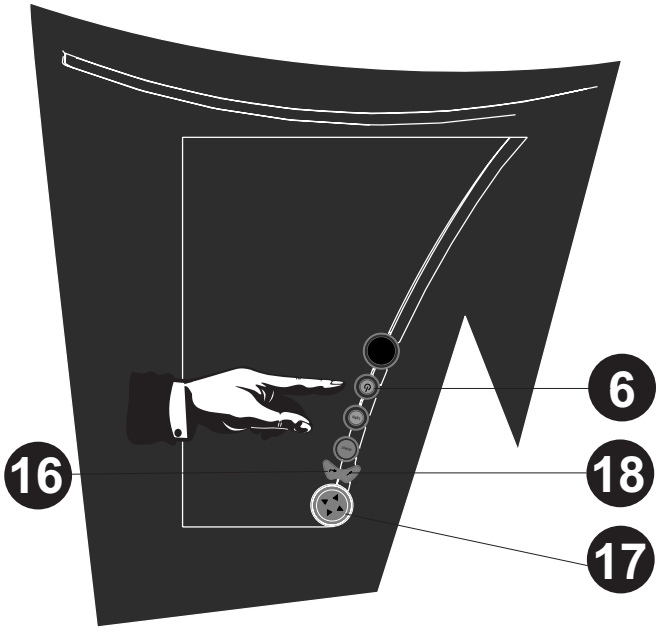

Image 4-31
Local keypad

The following table gives an overview of the different functionalities of the keys that can be found on the RCU:

1	Function keys	Not used
2	MENU	Menu key, to enter or exit the Tool bar menu
3	Address key	(Recessed key), to enter the address of the projector (between 0 and 9). Press the recessed address key with a pencil, followed by pressing one digit button between 0 and 9
4	LOGO	Cycle through Focus and Convergence internal patterns
5	PAUSE	To stop projection for a short time, press 'PAUSE'. The image disappears but full power is retained for immediate restarting.
6	STANDBY	Standby button, to start projector when the power switch is switched on and to switch off the projector without switching off the power switch **Attention: Switching to Standby. When the projector is running and you want to go to standby, press the standby key for 2 seconds.**
7	MUTE	Not used
8	Auto image	Not used
9	Digit buttons	Direct input selection
10	Lens control	Use these button to obtain the desired ZOOM, SHIFT, FOCUS
11	VOL	Not used
12	Picture Controls	Use these buttons to obtain the desired picture analog level
13	DIGI ZOOM	Not used
14	FREEZ	Not used
15	PIP	Not used
16	ENTER	To confirm an adjustment or selection in the menu
17	Cursor keys	To make menu selections, to perform bare scale adjustments or to zoom/focus when the direct access is active
18	BACK	To leave the selected menu or item (go upwards to previous menu)
19	RCU operation indication led	Lights up when a button on the remote control is pressed. (This is a visual indicator to check the operation of the remote control)

The LCD display

The LCD display on the bottom of the front panel allows to inform the user on the status of the projector and other information like warnings etc.

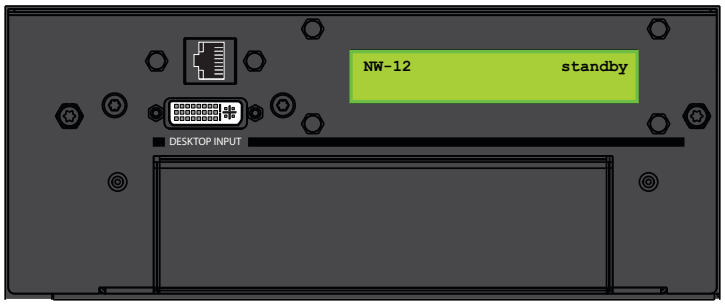

Image 4-32

See the Appendix for a listing of the existing error messages.

5. SETUP

Overview

- Powering up the projector
- Starting up the projector
- Setting up the RCU address
- Setting up the projector address (only if necessary)
- Setting up the orientation
- Adjusting the lens
- Setup the baud rate for serial communication
- Preferences
- Setup of linked projectors in a multichannel system

5.1 Powering up the projector

How to power up the projector ?

1. Switch the power switch to “1”

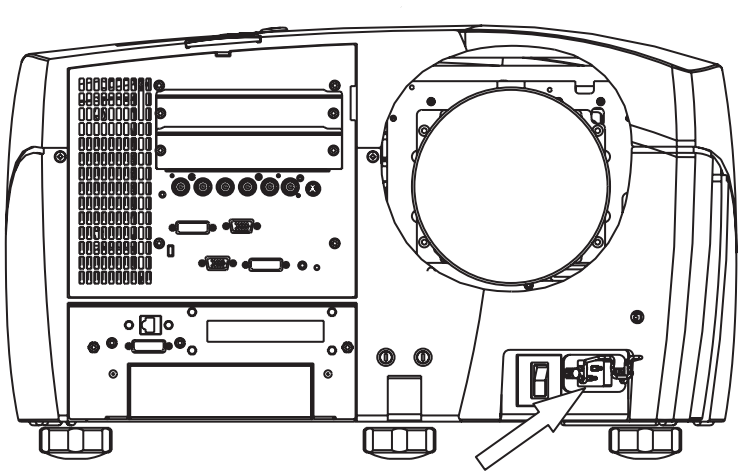

Image 5-1
Power switch

2. The software will be initialized. This may take up to 30 seconds. During this phase the LCD display is lit (1). The initialization is followed by the keypad lighting up briefly (5 seconds) and the projector Standby status (2) .

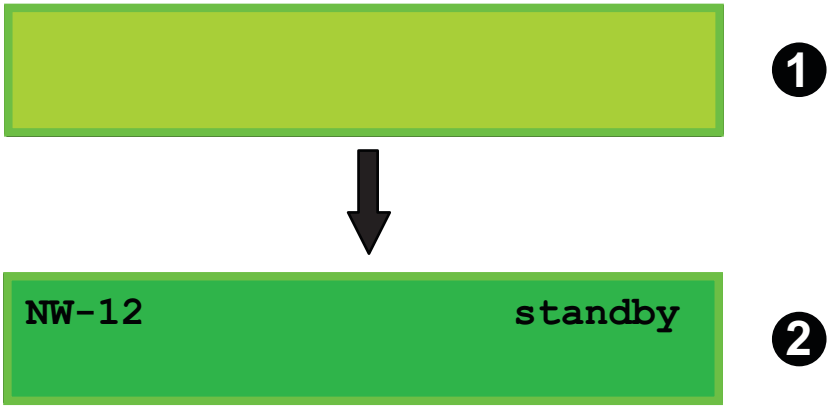

Image 5-2
Switch ON sequence

In normal conditions, the network detection takes about 25 seconds. This means that the total time needed to go from power ON to Standby mode can take up to 85 seconds. This value can vary depending on the speed of the network connection.

If the network cable is plugged in, but no real network is connected to it, this start-up time can take up to 120 seconds: 60 seconds where the backlight of the LCD display is ON but no message is displayed, increased by 60 seconds during which the LCD display shows the text BOOT.

Image 5-3

Standby status

The standby status is shown on the LCD display. An information field will rotate between the following information strings :

- Projector name
- Hostname : this is the name defined in the network settings menu, see Network settings
- IP address
- Baudrate
- RCU private address
- RCU common address

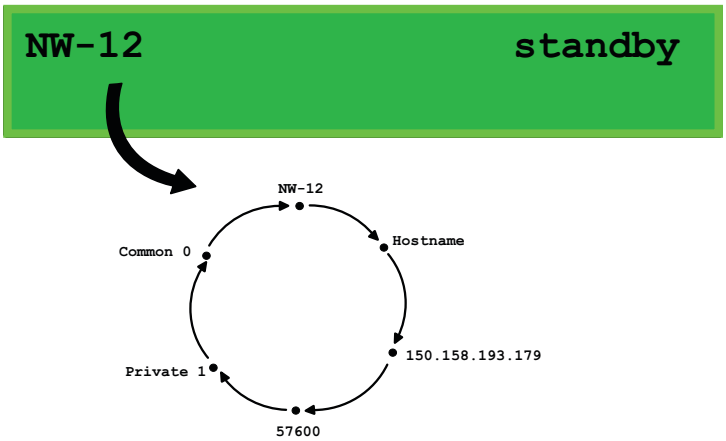

Image 5-4
Standby status

5.2 Starting up the projector

How to start up the projector ?

1. Press the **Standby** button on the RCU or on the local keypad

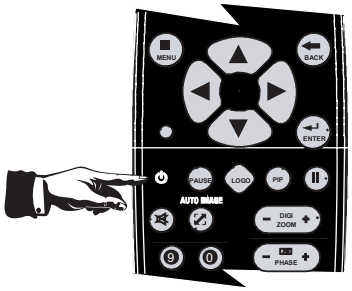

Image 5-5

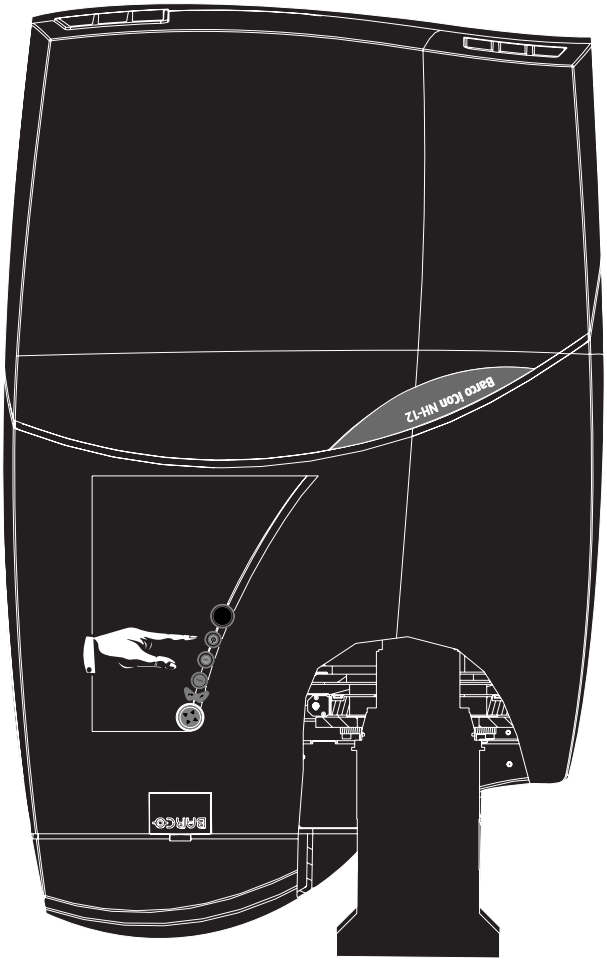

Image 5-6

2. The projection lamp is started up. This may take up to 15 seconds. During this phase the LCD display and the keypad are lit (1). The progression is shown with the asterisk characters adding up (2). This is followed by the projector *Power on* mode (3).

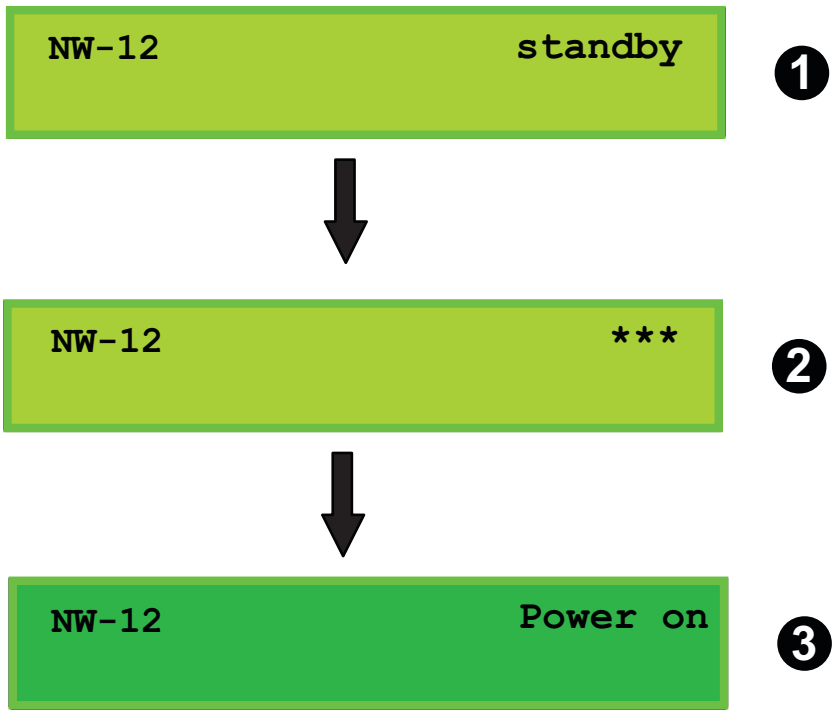

Image 5-7
Startup sequence

Once the projector is operational, the information strings are rotating in the same way as in the standby mode (see Standby Status)

5.3 Setting up the RCU address

What has to be done ?

To allow the communication between the RCU and the projector the RCU has to be programmed with the same address as the projector.

This address must be in the range 0-9.

To know the address of the projector, one can visualize it in projection mode (on screen) as well as in standby mode (shown with the LED's on top cover of the projector).

At this stage, the image projected may happen to be upside down or mirrored, this can be set in the *Installation* menu under *Projector orientation* (see further setting up the projector's orientation).

Displaying the Projector Address in projection mode)

1. Press the **Address** key (recessed key on the RCU) with a pencil.

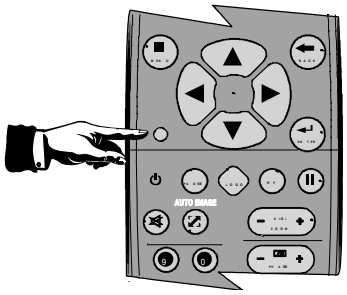

Image 5-8

The projector's address will be displayed on the screen in a Textbox

Programming the RCU

1. Push the address key If the address is not entered within 5 seconds, the RCU returns to its default address (zero address) and controls then all projectors in the room.
2. Enter the same address with the digit buttons **within 5 seconds** after pushing the address key.

   The projector can now be controlled with the RCU.

For example : if the projector address is 3, then press "3" on the RCU to set the RCU's address to match the projector's address.

Common address/Projector address : Beside the projector address, the projector disposes also of a Common address which can be set to "0" or "1" (by default "0").

In other words, an RCU set to address "0" will always control a projector regardless of its projector address (since it uses the common address).

5.4 Setting up the projector address (only if necessary)

What can be done ?

The projector is shipped with projector address set to "0"

In some cases the projector address must be changed, for example if an unique RCU is used to control 2 or more projectors (independently).

In the OSD menu *Projector Address*, the following addresses can be programmed :

- Projector address: address defined by the user, may be from 0 to 255
  0-9 is used for RCU communication, 0–255 being used for RS232 serial communication.
- Common address : address may be 0 or 1

How to change the projector's address ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation*
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Projector address*

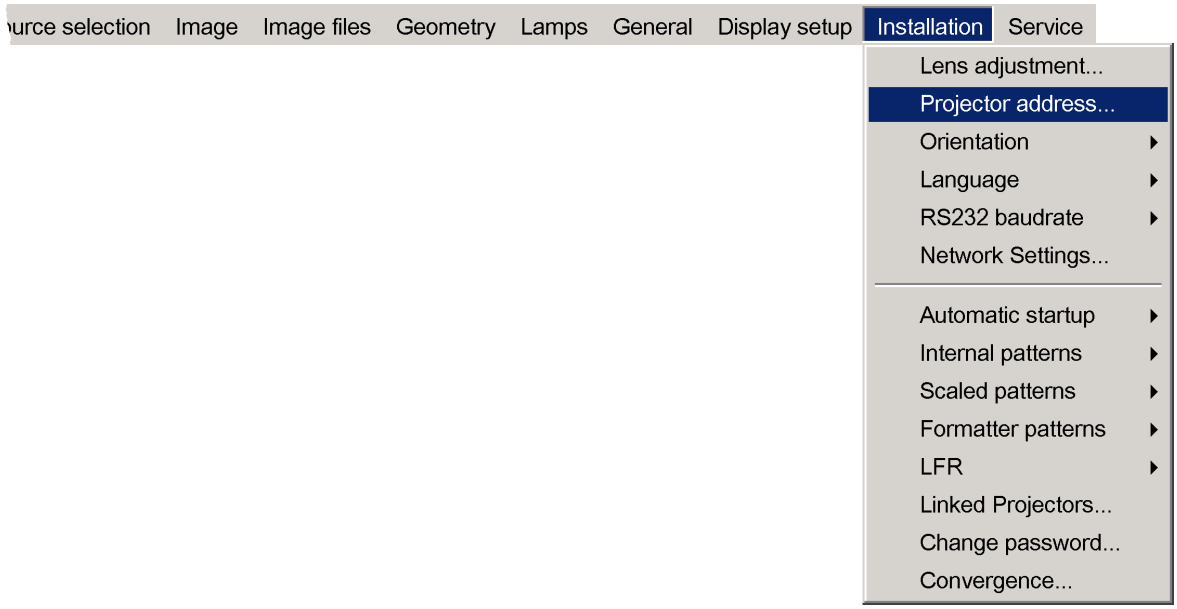

Image 5-9

5. Press **ENTER**

   A dialog box appears on the screen

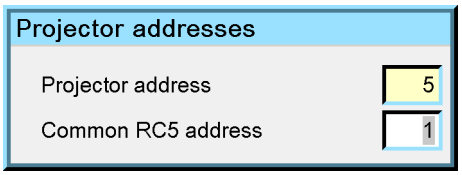

Image 5-10

6. Enter the new projector address with the digit keys on the RCU, the local keypad or the cursor keys.

How to change the common address ?

1. Proceed in the same way as for the projector address

5.5 Setting up the orientation

What must be done ?

Depending on the mechanical orientation of the projector, the projector's internal settings have to be adapted.

The projector is shipped (default) with a table/front orientation.

How to set the orientation ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item

3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Orientation*
5. Press → to pull down the menu
6. Use ↓ or ↑ to select the desired orientation

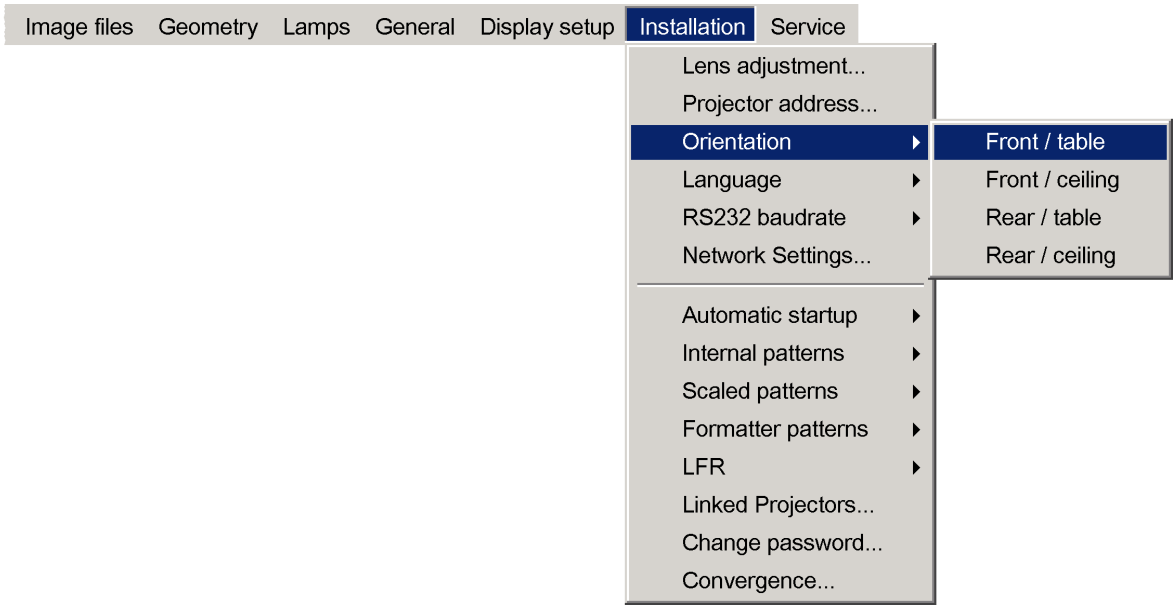

Image 5-11

7. Press **ENTER**

   The projection is adapted and a bullet shows the active configuration.

5.6 Adjusting the lens

What must be done ?

Depending on the projection distance and the lens used, the image may not be at the desired size, position and/or may be out of focus.

The projector will always allow you to shift your image Vertically as well as horizontally to position it on the screen. In addition, motorized lenses will also allow you to Zoom and focus the image.

All these lens parameters can be adjusted using the RCU, the local keypad or in the Installation menu of the projector's OSD.

- Zoom (only for motorized lenses)
- Focus (only for motorized lenses)
- horizontal/vertical Shift

The lens can also be adjusted via the dedicated keys on the remote.

How to Zoom/focus or shift via the RCU (or keypad)

1. Press **LENS ZOOM** or
   LENS FOCUS or **LENS SHIFT** on the RCU

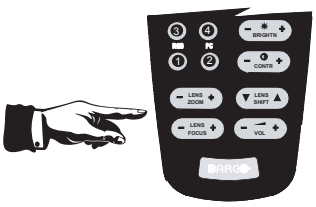

Image 5-12

2. Use the arrow keys to adjust

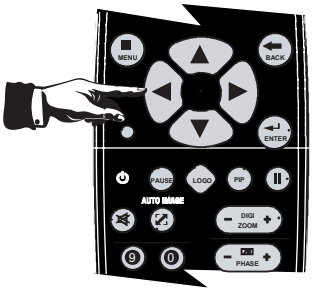

Image 5-13

How to Zoom/focus or shift in the OSD ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation*
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Lens adjustments...*

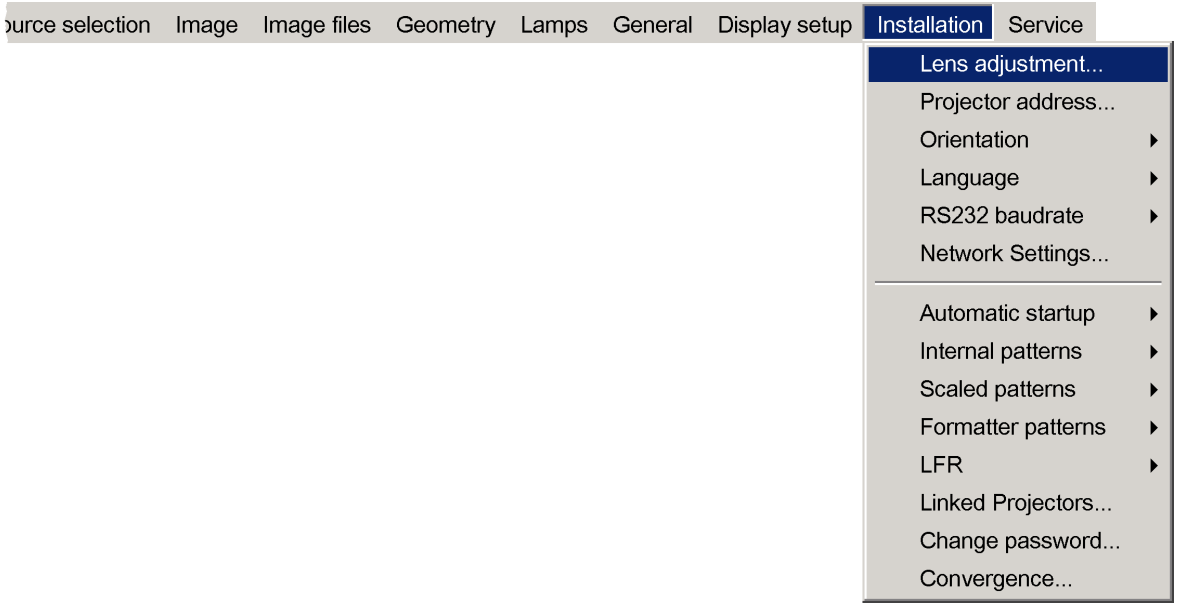

Image 5-14

5. Press **ENTER**

   A text box appears on the screen, follow the instructions.

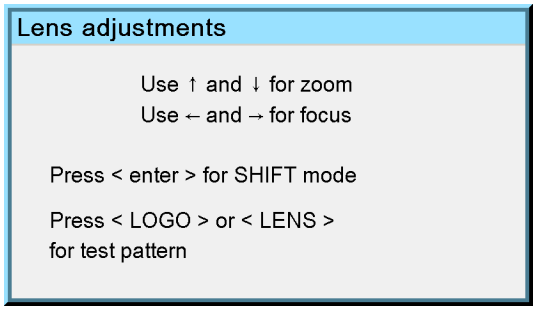

Image 5-15

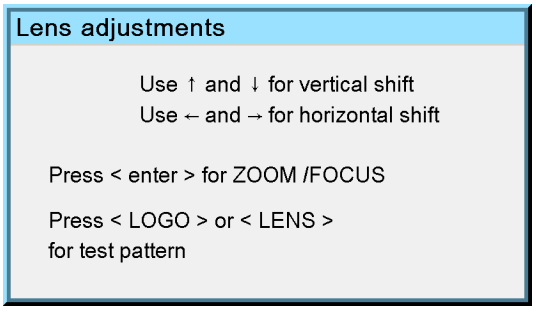

Image 5-16

The use of a sheet of paper held in front of the screen can be useful to determine the focus plane (position for best focus)

5.7 Setup the baud rate for serial communication

What can be done ?

The RS232 IN port of the projector allows you to communicate with any other equipment disposing of an RS232 port (generally a PC) using the RS232 protocol. The baud rate must be set to the same value on both the projector and the other equipment.

How to change the baud rate?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *RS232 baud rate*

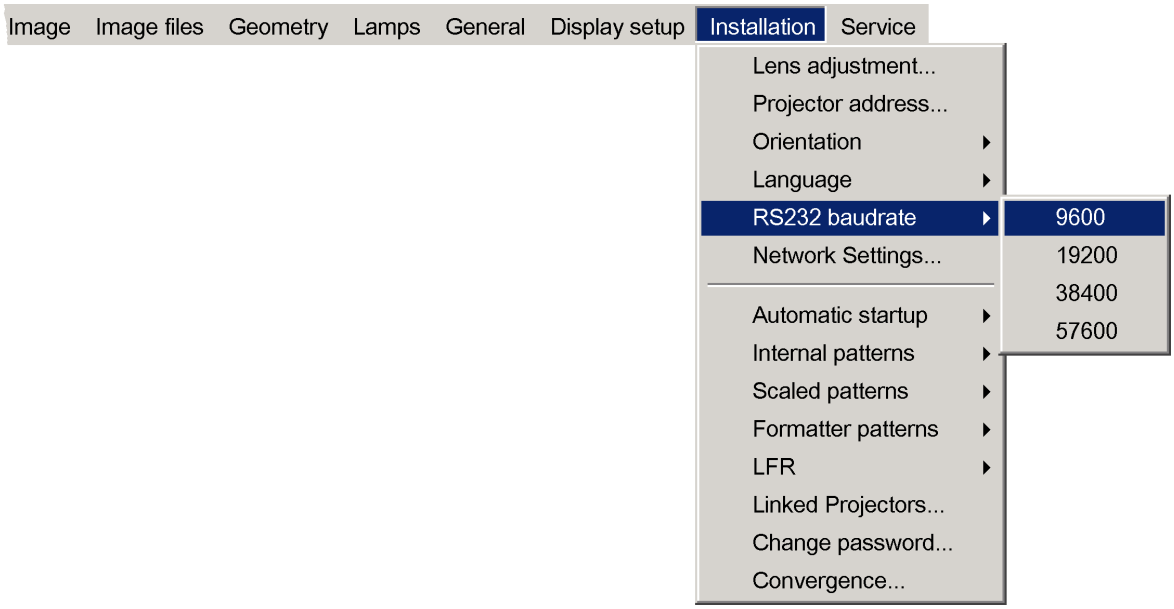

Image 5-17

5. Press → to pull down the menu
6. Use ↓ or ↑ to select the desired baud rate
7. Press **ENTER**

Always select the highest rate unless otherwise specified.

5.8 Preferences

Overview

- Language setting
- Automatic startup
- Change password

5.8.1 Language setting

How to change the Language ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Language*

5. Press → to pull down the menu
6. Use ↓ or ↑ to select the desired language

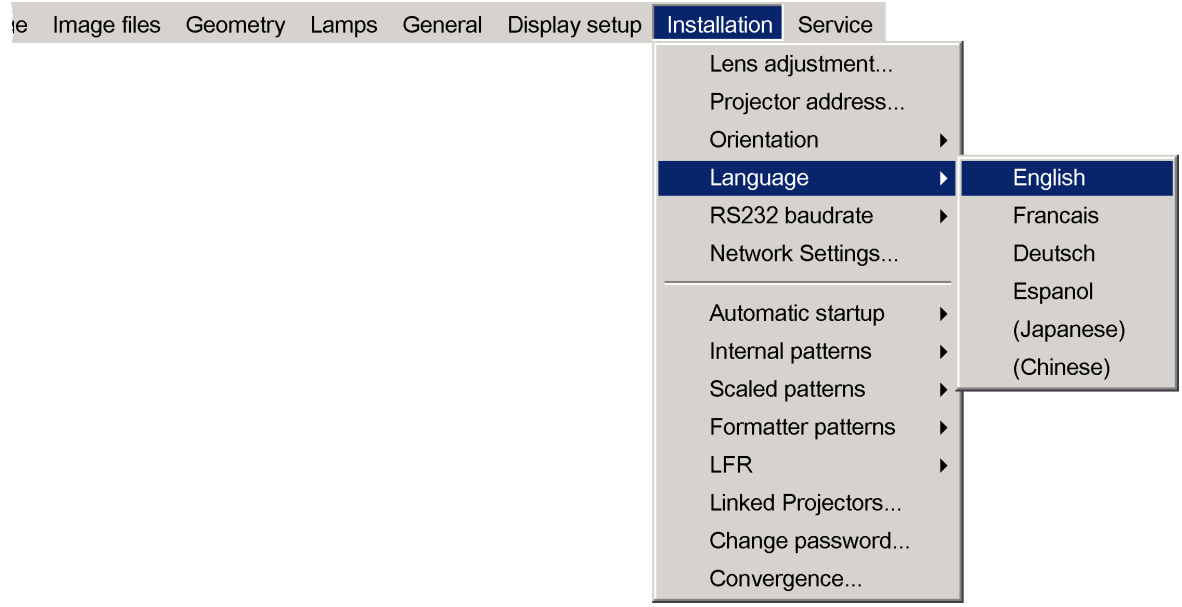

Image 5-18

7. Press **ENTER**

   The language is adapted and a bullet shows the active selection.

5.8.2 Automatic startup

What can be done ?

The automatic startup allows to bypass the standby state i.e. start up without going in standby state after switching on the projector.

This means that the automatic startup allows immediate restart of the projector after a power failure (breakdown), i.e. without passing through the standby state, by recovering the previous settings (previous source,...).

This function can be disabled if undesired or inadequate for safety reasons.

CAUTION: If the Automatic startup function is enabled one must be aware of the fact that it involves safety precautions

Make sure that the projector (or the operators!) will not be affected by altered environmental conditions when restarting at power resume.

Unless it is required, it is advised to leave this setting OFF.

How to enable/disable the Automatic startup?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Automatic startup*
5. Press → to pull down the menu
6. Use ↓ or ↑ to enable/disable the automatic startup

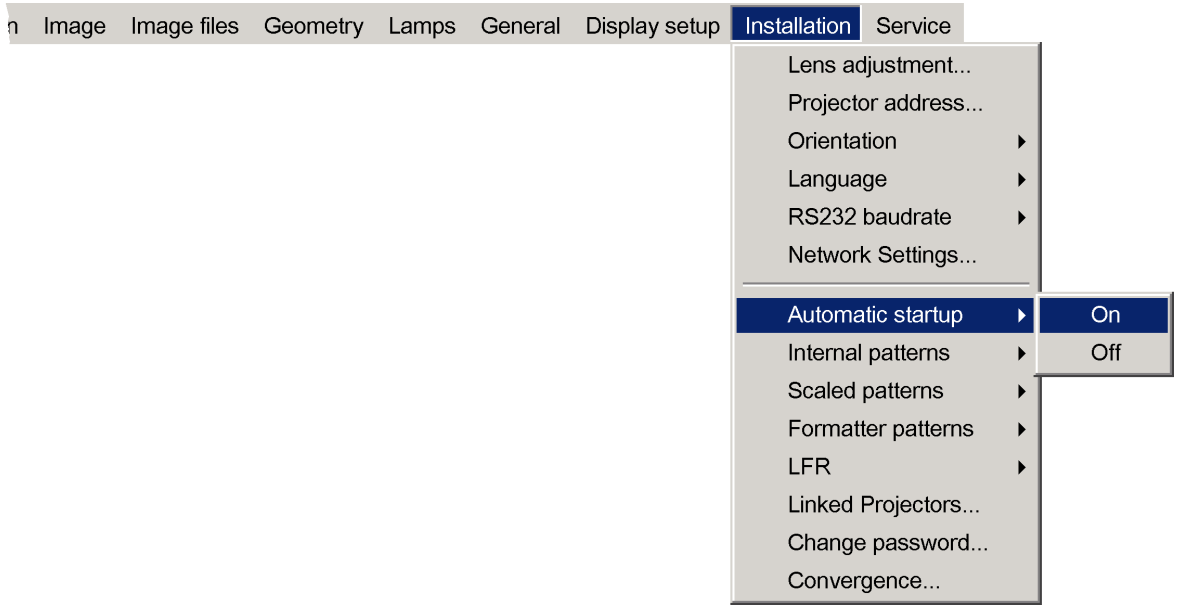

Image 5-19

7. Press **ENTER**

5.8.3 Change password

What can be done ?

The password used to access the advanced (*More...*) items can be reprogrammed.

How to change the password ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Change password...*

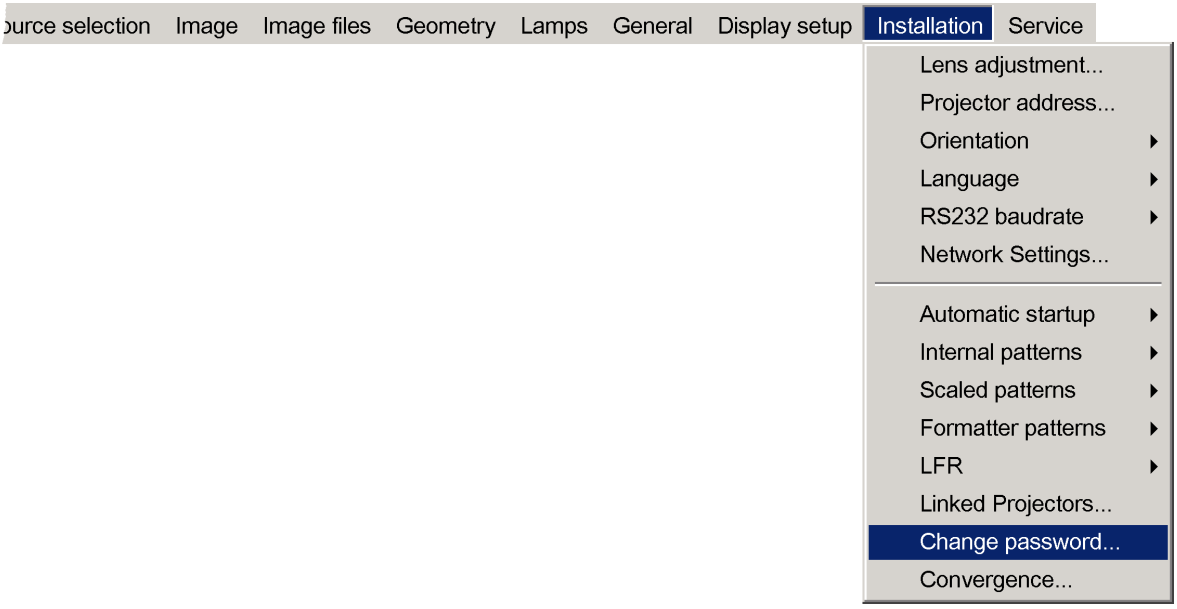

Image 5-20

5. Press **ENTER**

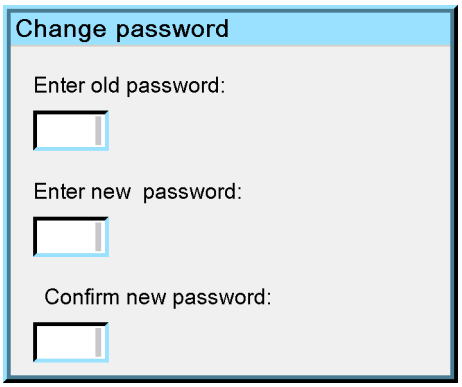

Image 5-21

5.9 Setup of linked projectors in a multichannel system

What can be done ?

The user interface of the projector allows to link up to 10 (slave) projectors to a single Master projector. The linking itself is done through an Ethernet connection (see **Communications**). The 'software' linking itself is done in the *Linked projectors* menu of the *Installation* menu.

A single dialog box allows to declare (in the Master projector !) the 10 slave projectors by their IP address or host name and to set the following parameters to be controlled by the Master i.e. it allows to add the projector to the different control loops by a simple check :

- CLO: adding the projector to this control loop will allow the brightness (light output) of the projector to be controlled by the master
- Dynacolor : adding the projector to this control loop will allow the displayed primary and secondary colors of the projector to be controlled by the Master

This information has to be declared in the Master projector since this projector must know all the projectors it has to talk to.

The *linked projector* menu in the Slave projectors will remain greyed out.

How to start up the linked projector menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* item
3. Press ↓ to Pull down the *Installation* menu
4. Use ↑ or ↓ to select *Linked projectors...*

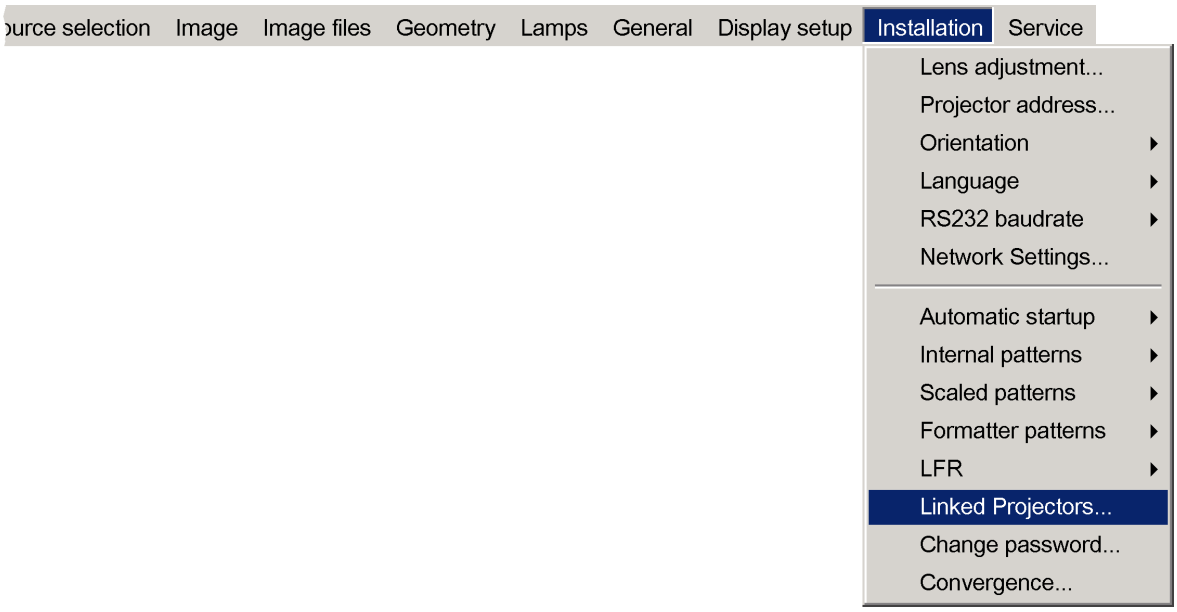

Image 5-22

5. Press **ENTER**

A dialog box is displayed

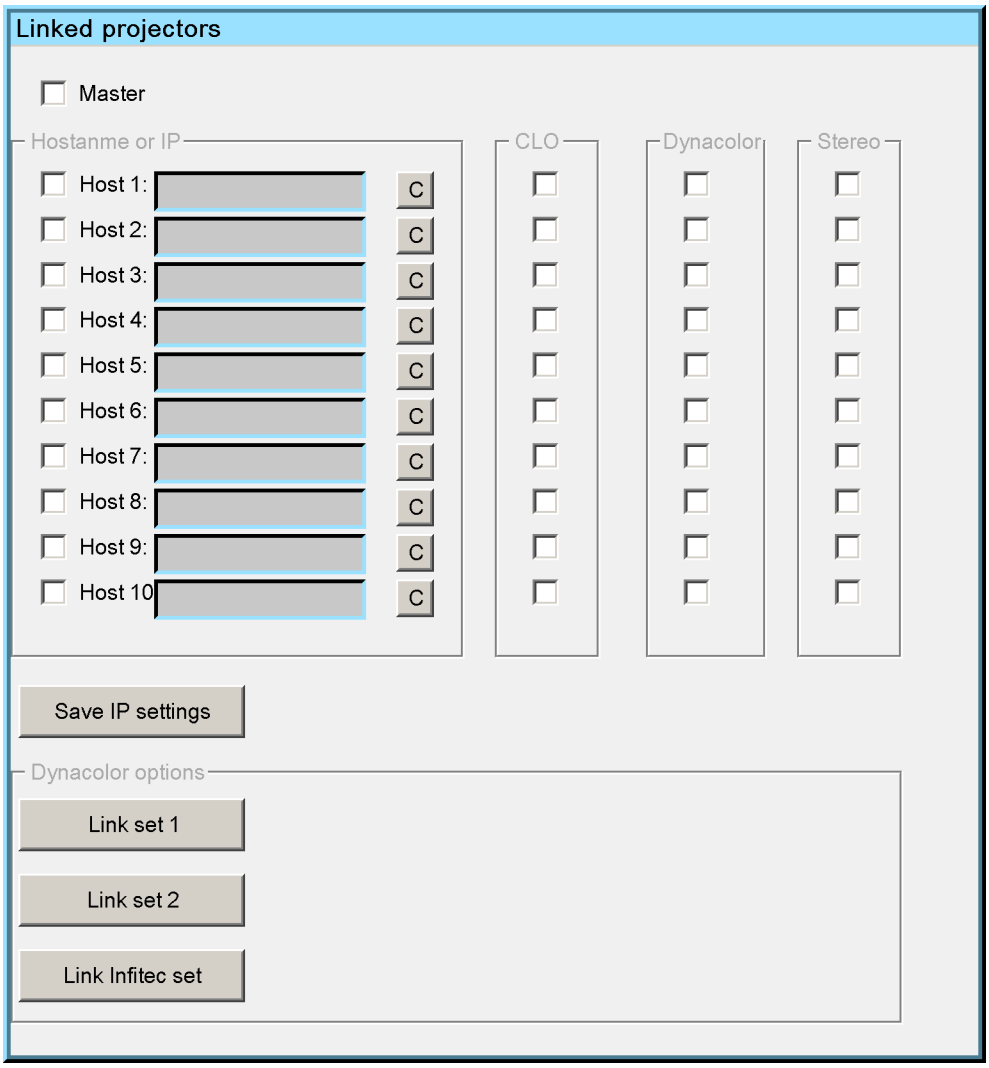

Image 5-23

How to set a projector to Master ?

1. In the linked projector menu of the projector to be set as Master, Select the *Master* check box and press **ENTER**

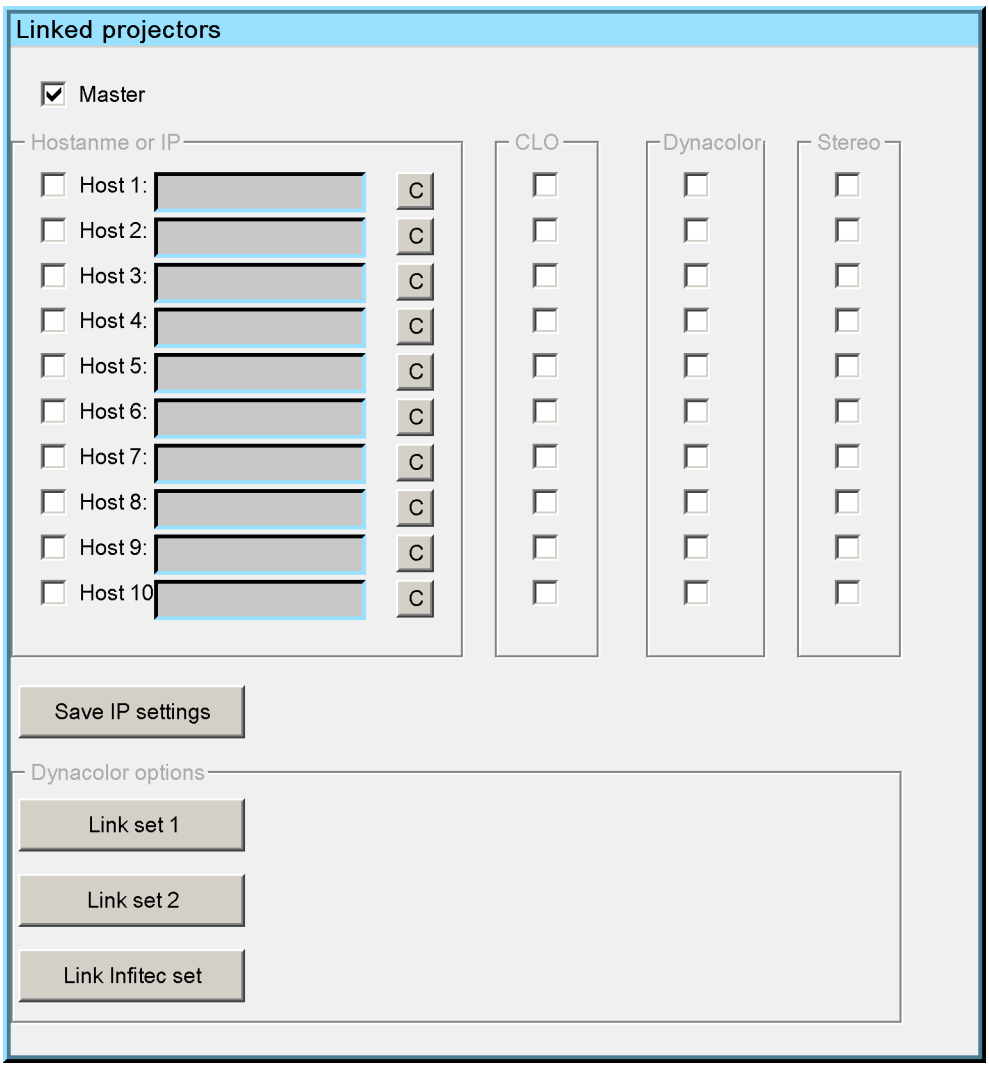

Image 5-24

How to set a projector as Slave ?

1. In the linked projector menu of the master projector, Select the *Hostx* check box and press **ENTER**

   The ip address edit box is enabled

2. Fill in the IP address or Host name of the projector to be declared as slave i.e. to be controlled by the Master
   For example IP address 150.158.193.110

3. Select and press **ENTER** for the desired parameters to be controlled by the master i.e. *CLO* and/or *Dynacolor* and/or *Stereo*

It is advised to declare the projector by a Host name (unique name in the network).

The *Dynacolor options* are used to perform the Dynacolor linking, see Dynacolor adjustment in the Display Setup menu.

6. GETTING STARTED

Overview

- Starting up the projector
- Selecting a source
- Adjusting the image

6.1 Starting up the projector

How to start up the projector ?

1. Press the **Standby** button on the RCU or on the local keypad. See *Setup* for the detailed projector startup sequence.

6.2 Selecting a source

How to select a source ?

1. Press the digit, corresponding to the desired source, on the remote control.

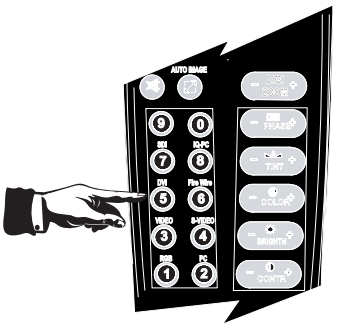

Image 6-1

6.3 Adjusting the image

How to adjust the image ?

1. Use the Image setting buttons on the RCU

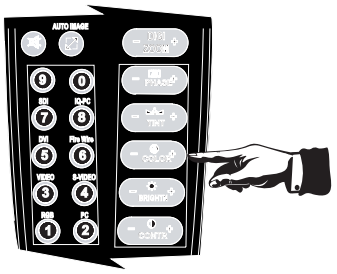

Image 6-2

7. ADVANCED

Overview

- Using the menu
- Using the Dialog boxes
- Source selection
- Image
- Image files
- Geometry
- Lamps
- General
- Display setup
- Installation
- Service

7.1 Using the menu

Menu Layout

A grey line (menu separator) indicates the transition between standard and advanced menu parameters.

Three suspension points indicate that the menu item hides a dialog box or a text box.

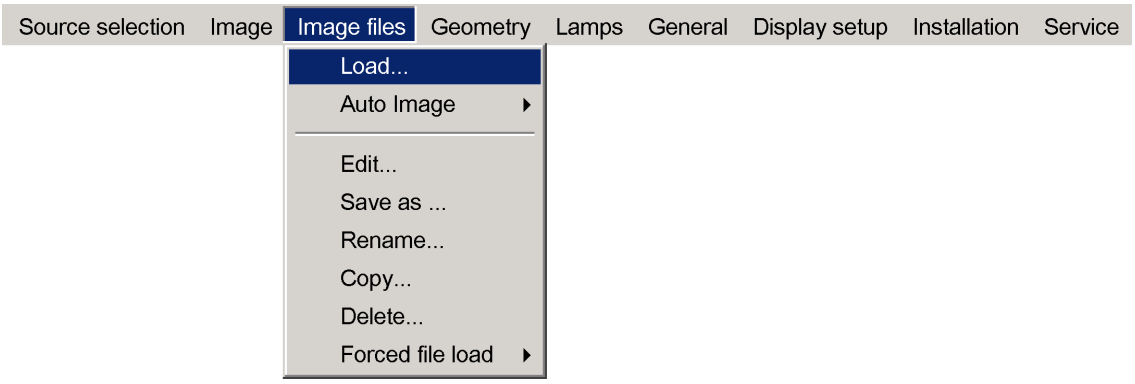

Image 7-1

The menus inserted in this manual are of the advanced type: all the items are visible. The menus seen by a standard user on the screen will hence not correspond with the menus in the manual i.e. the advanced items will not be visible, they will be replaced with "*More...*"

Greyed out menus or menu items are not available

Menu password

The advanced menu items are only visible after entering a password. The default password is '*0000*' .

This password can be changed in the *Installation* menu.

How to pull down a menu ?

1. Use ↓ to pull down a menu

How to pull down a submenu ?

1. Use → to pull down a submenu

How to exit the submenu ?

1. Press **BACK** to exit a submenu

Press MENU to exit the menu

When the menu has been exited for more than 1 minute, the advanced user password has to be re entered.

7.2 Using the Dialog boxes

How to use the dialog boxes ?

Some parameters are modified by means of a dialog box, where selections can be made and/or values can be entered.

The values can be entered in several ways:

Entering numeric values using the numeric keys on the remote control

1. Press **ENTER** to activate the input field.

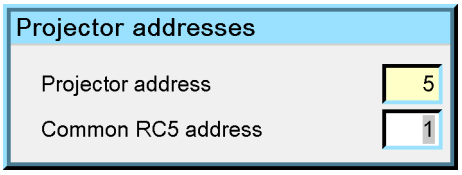

Image 7-2

2. Key in the desired value.

Entering numeric values using the arrow keys on the remote control

1. Press **ENTER** to activate the input field.
2. Press ← or → to select the digit to be changed.

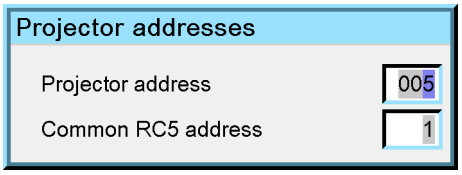

Image 7-3

3. Press ↓ or ↑ to increase or decrease the value.

Entering numeric values using the arrow keys on the local keypad

1. Press **ENTER** to activate the input field.
2. Press ← or → to select the digit to be changed.
3. Press ↓ or ↑ to increase or decrease the value.

To confirm the changes always press ENTER.

Use ↓ or ↑ to browse between the different fields.

In some cases an alphanumeric value (file name, ...) has to be entered. Use ↑ or ↓ to scroll through the character values once the input field is activated.

Following characters can be browsed in this particular order:

Decimal scroll list: 0123456789

Signed decimal scroll list: 0123456789-

ASCII scrolllist:ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789+-*/&@#.;.abcdefghijklmnopqrstuvwxyz

7.3 Source selection

Overview

- Source selection
- Composite video
- S-Video
- RGB-YUV
- PC

7.3.1 Source selection

Selecting a source

The Source selection menu allows to select one of the different inputs. Another method to select an input source is via the remote control using the numeric keys or by using the local keypad.

Selecting a source from the menu bar (OSD) will always display that source in a **full screen** mode.

The source names in the menu bar are adapted automatically depending on the type of boards installed in the projector. For example :

- L2 RGB-YUV
- L3 DVI
- ...
  In this case, an RGB-YUV board is installed in the second layer (L2), a DVI board is installed in the third layer (L3) ,...

When selecting a source with a different aspect ratio than the projector's resolution aspect ratio), the source can be shown in its native resolution or can be re-scaled to the projector's resolution, the latter case brings of course some loss of quality.

The resolution of the projector is 1920 x 1200, which is an aspect ratio of 16:10

7.3.2 Composite video

When

Select composite video when you are in presence of a PAL or NTSC video signal.

A composite video signal is often available on a yellow cinch connector of a Camera, VCR or DVD player.

How to select the composite video input ?

1. Press **MENU** to activate the Tool bar
2. Press ↓ to Pull down the Source Selection menu

   The menu will contain one item *Lx Video*, **x** being the layer on which the composite video is connected (for example L2 Video if the signal is connected to layer 2)
3. Use ↑ or ↓ to select *Lx Video*

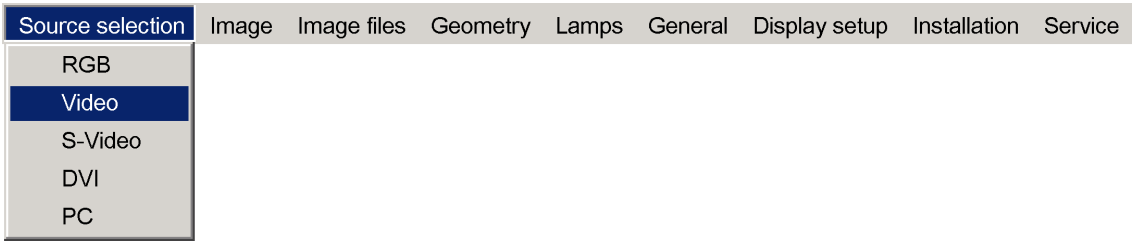

Image 7-4

4. Press **ENTER** to confirm your choice

   A bullet indicates the selected composite video source which now appears on the screen.

Adjustments on a Composite video signal

The projectors allows different adjustments on a composite video signal. Depending on the type of signal (NTSC /PAL) the terminology may differ :

- Contrast
- Brightness
- Color : adjusts the level of color saturation in a PAL signal
- Tint : adjusts the level of color saturation in an NTSC signal
- AGC: Automatic Gain Control

7.3.3 S-Video

When

Select the S-Video input when in presence of a video signal also called S-VHS signal.

An S-Video signal is available on the Mini-Din connector of a camera, VCR or DVD player.

Adjustments on a S-Video signal

The projectors allows different adjustment on a video signal. Depending on the type of signal (NTSC /PAL) the terms differ :

- Color : adjusts the level of color saturation in a PAL signal
- Tint : adjusts the level of color saturation in an NTSC signal

How to select the S-Video input ?

1. Press **MENU** to activate the Tool bar
2. Press ↓ to Pull down the Source Selection menu

   The menu will contain one item *Lx S-Video*, **x** being the layer on which the composite video is connected (for example L3 S-Video if the signal is connected to layer 3)

3. Use ↑ or ↓ to select *Lx S-Video*

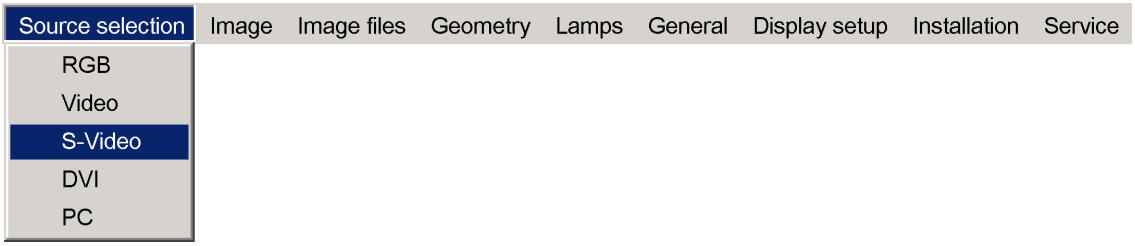

Image 7-5

4. Press **ENTER** to confirm your choice

   A bullet indicates the selected composite video source which now appears on the screen.

7.3.4 RGB-YUV

When

Select RGB-YUV when in presence of a data signal of the type RGB+ sync connected to the RGB input (5 BNC's) or a component signal of the type (R-Y)/Y/(B-Y).

These signals are often available on a VGA D15 connector of a PC or another image generator.

An RGB data signal can have its sync signal added in different ways, refer to the Installation section for more information on the RGB+sync signals accepted by the RGB input.

How to select the RGB input ?

1. Press **MENU** to activate the Tool bar
2. Press ↓ to Pull down the Source Selection menu

   The menu will contain one menu *Lx RGB-YUV*, **x** being the layer on which the RGB signal is connected (for example L1 RGB-YUV if the signal is connected to layer 1).
3. Use ↑ or ↓ to select *Lx RGB-YUV*
4. Use → to open the menu
5. Use ↑ or ↓ to select *RGB* or *YUV*

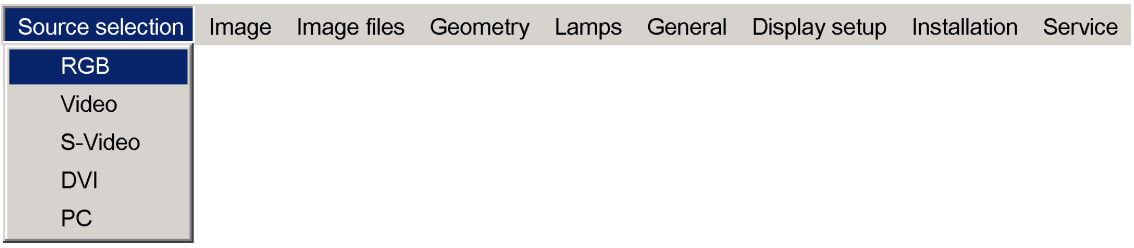

Image 7-6

6. Press **ENTER** to confirm your choice

   A bullet indicates the selected source which now appears on the screen.

Adjustments on an RGB signal

The projector allows different adjustments on an RGB signal :

- Contrast
- Brightness
- Phase
- Input balance
- AutoImage : or manual edit of the image file settings

7.3.5 PC

When

Select PC when you are in presence of a data signal of the RGB + sync form connected to the D15 input connector of the projector.

An RGB data signal can have its sync signal added in different ways, refer to the Installation section for more information on the RGB+sync signals accepted by the PC input.

How to select the PC input ?

1. Press **MENU** to activate the Tool bar
2. Press ↓ to Pull down the Source Selection menu

   The menu will contain one item *Lx PC*, **x** being the layer on which the PC signal is connected (for example L4 PC if the signal is connected to layer 4)
3. Use ↑ or ↓ to select *Lx PC*

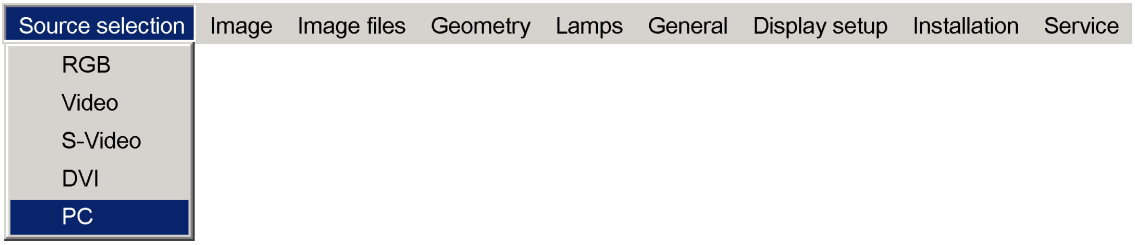

Image 7-7

4. Press **ENTER** to confirm your choice

   A bullet indicates the selected composite video source which now appears on the screen.

7.4 Image

Overview

- Image settings
- Gain control on Video
- Aspect ratio
- Color temperature
- Input balance (RGB signals only)

7.4.1 Image settings

7.4.1.1 Setting the Contrast

Contrast adjustments

Adjust the contrast to “brighten” the white parts of the image.

It is recommended to adjust the brightness before adjusting the contrast.

How to change the Contrast

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Contrast*
7. Press **ENTER**

   On the screen appears now a slider box

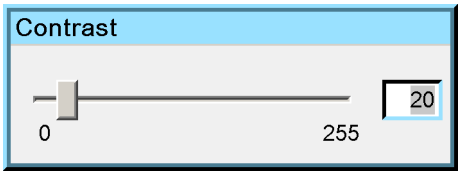

Image 7-8

8. Use ←or → , the numeric keys on the remote, or the keypad to change the contrast

7.4.1.2 Setting the Brightness

Brightness adjustment

Adjusting the brightness will affect the dark areas of the image. Increase the brightness to “lighten” up the parts that are too dark.

How to change the Brightness

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Brightness*
7. Press **ENTER**

   On the screen appears now a slider box

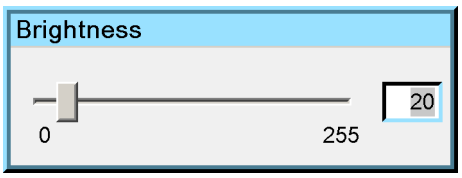

Image 7-9

8. Use ←or → , the numeric keys on the remote, or the keypad to change the brightness

7.4.1.3 Color (Video signals only)

Color adjustment

Adjust the Color to obtain more or less saturated colors.

How to change the Color

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Color*
7. Press **ENTER**

   On the screen appears now a slider box

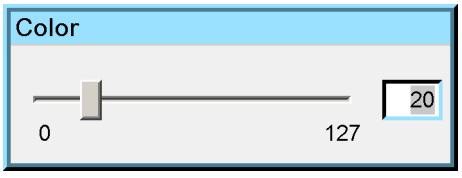

Image 7-10

8. Use ←or → , the numeric keys on the remote, or the keypad to change the color

7.4.1.4 Tint (NTSC video signals only)

Tint adjustment

Tint adjustment is only applicable for NTSC video signals. The tint adjustment allows the reddish and greenish tones to be corrected.

How to change the Tint

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item

3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Tint*
7. Press **ENTER**

   On the screen appears now a slider box

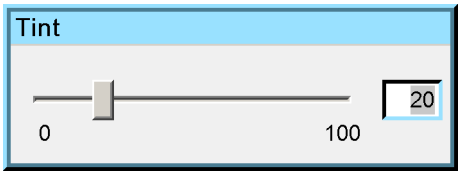

Image 7-11

8. Use ←or → , the numeric keys on the remote, or the keypad to change the Tint

7.4.1.5 Sharpness (Video signals only)

How to adjust the Sharpness

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Sharpness*
7. Press **ENTER**

   On the screen appears now a slider box

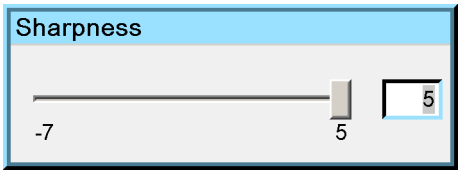

Image 7-12

8. Use ←or → , the numeric keys on the remote, or the keypad to change the Sharpness

7.4.1.6 Gamma

Gamma adjustment

The gamma parameter determines the way your encoded (luminance) signal is transformed into brightness at the output of the projector. A correct gamma setting will allow the use of a maximum of gradations (brightness levels) in the projected image. Changing the gamma mainly changes the midtones of the image.

How to adjust the Gamma

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Gamma*
7. Press **ENTER**

On the screen appears now a slider box

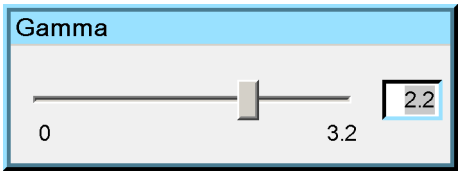

Image 7-13

8. Use ←or → , the numeric keys on the remote, or the keypad to change the Gamma

7.4.1.7 Phase (RGB signals only)

Phase adjustment

A bad phase adjustment will result in bad transitions and sometimes noise. (for example text will not be clear).

How to adjust the Phase

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Phase*
7. Press **ENTER**

   On the screen appears now a slider box

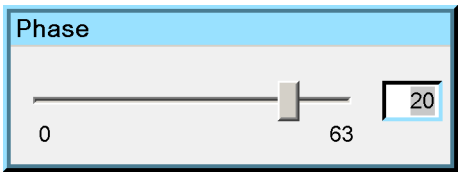

Image 7-14

8. Use ←or → , the numeric keys on the remote, or the keypad to change the Phase

7.4.1.8 Noise Reduction (only for video signals)

How to remove noise in the image

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Noise Reduction*
7. Press **ENTER**

   On the screen appears now a slider box

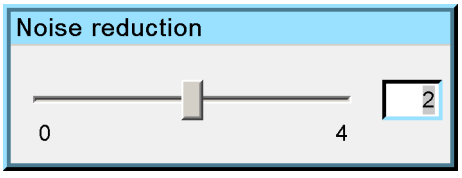

Image 7-15

8. Use ←or → , the numeric keys on the remote, or the keypad to change the Noise Reduction

7.4.2 Gain control on Video

7.4.2.1 Automatic Gain on Video

Automatic Gain on Video is only for Video signals

Enabling/disabling the Automatic Gain on Video

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *Settings*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Gain Control on Video*
7. Press → to pull down the menu
8. Use ↓ or ↑ to select *Auto*
9. Press → to pull down the menu
10. Use ↓ or ↑ to enable (ON) or disable (OFF) the Automatic Gain on Video
11. Press **ENTER**

    A white bullet shows the active setting

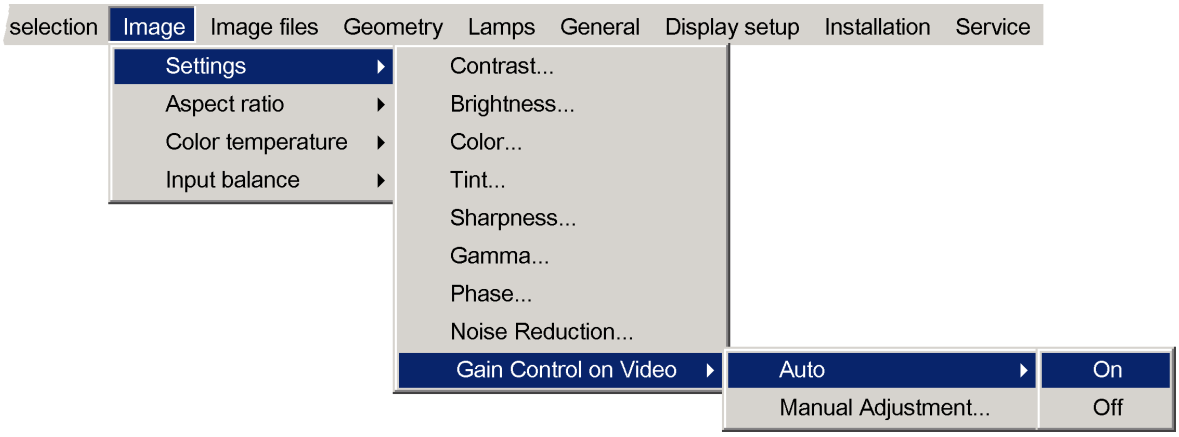

Image 7-16

The AGC can be disturbing in case of Macrovision encoded signals, therefore the AGC can be disabled (OFF) at any time

7.4.2.2 Manual gain control on Video

What can be done ?

Beside the Automatic gain control there is the possibility to manually set the gain of the incoming video signal. When the Automatic gain control is enabled (ON), the manual setting does not affect the gain, Automatic gain control must therefore be disabled. The manual gain control must be done on an external pattern with white areas (grey scale bar pattern)

How to set the Manual Gain Control ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *Settings*

5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Gain Control on Video*
7. Press → to pull down the menu
8. Use ↓ or ↑ to select *Manual*

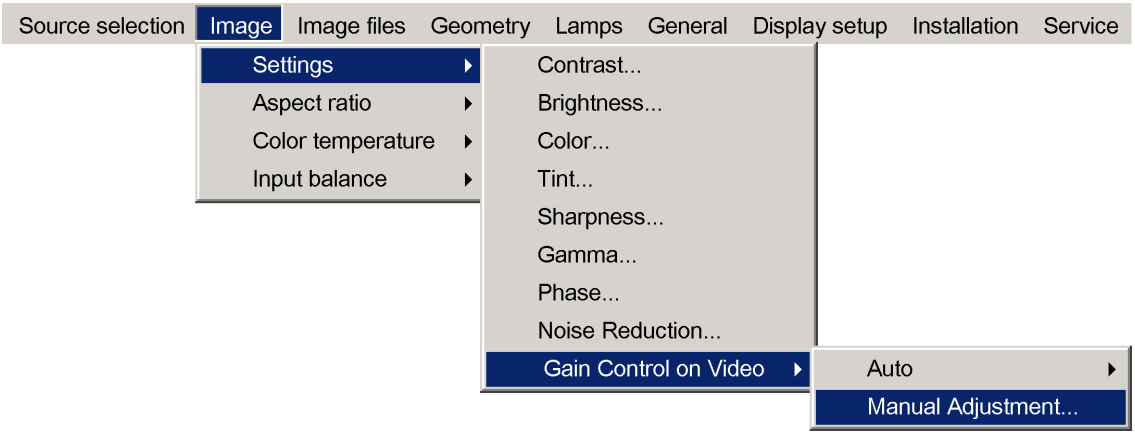

Image 7-17

9. Press **ENTER**

   A scroll bar is displayed

Image 7-18

10. Use ← or →, the numeric keys on the remote, or the keypad to change the gain so as to obtain homogeneous white parts in the image.

7.4.3 Aspect ratio

Aspect ratios

The standard aspect ratio used in broadcast television is the 4:3 ratio.

However, most of the DVD sources nowadays use the wide screen 16:9 or even the Cinemascope™ 2.35:1 aspect ratio.

Some DVD sources may even use the anamorphic 16:9 or anamorphic 2.35:1 to take advantage of the higher vertical resolution offered by the 4:3 ratio. The term “anamorphic” means that the original wide screen image is squeezed in order to fit the 4:3 aspect ratio.

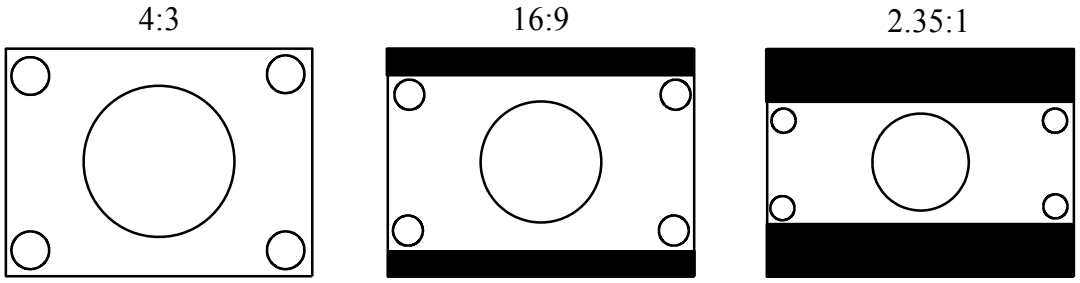

Image 7-19
Common non- anamorphic aspect ratios in (non-HDTV) DVD sources

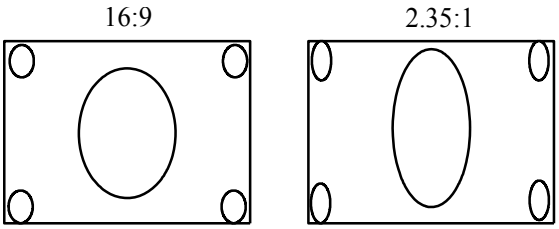

Image 7-20
Anamorphic aspect ratios in (non-HDTV) DVD sources

In native HDTV DVD players the image is a real 16:9 format.

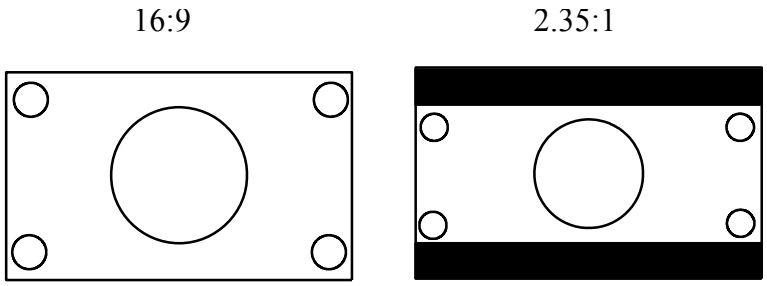

Image 7-21
Aspect ratios in native HDTV DVD sources

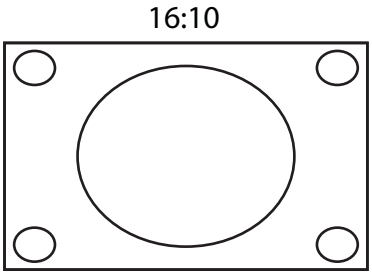

Image 7-22
Aspect ratio for WUXGA (1920x1200)

What can be done ?

The aspect ratio setting forces the projector to project an image using a defined aspect ratio :

- Auto
- 4:3
- 16:9
- 16:10
- 5:4
- Custom

The settings do not refer to the aspect ratio of the source !

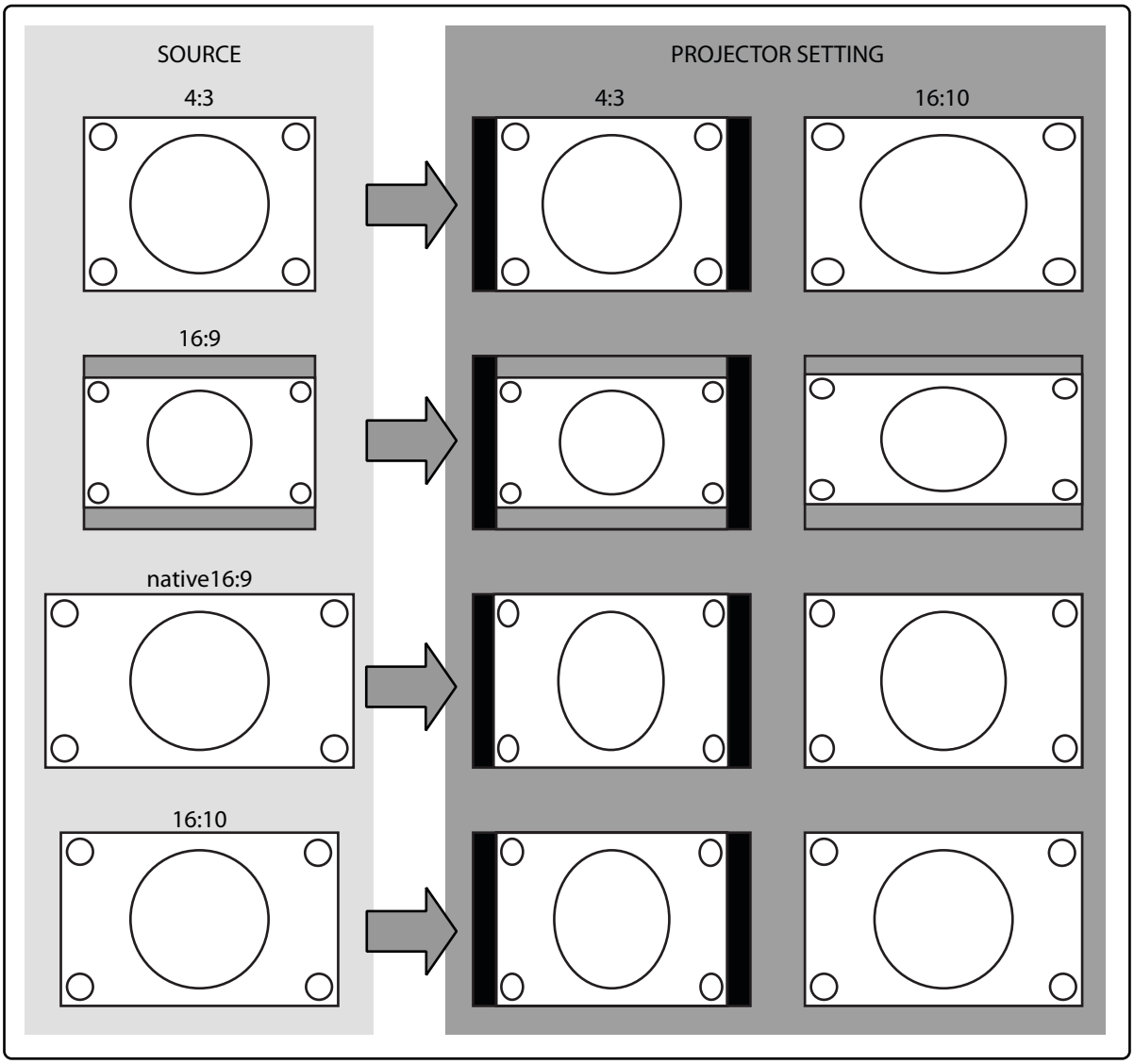

Image 7-23

We can conclude that the thumb rule for DVD projection is to always leave the projector in 4:3 format (except when dealing with anamorphic sources).

The Auto function calculates an aspect ratio based on the information stored in the image files whereas Custom allows to set a personnel ratio.

Selecting Auto in case of a Video source may shrink the image horizontally

The aspect ratio setting only affects the active source window, the desktop being locked on the native aspect ratio.

How to change the Aspect ratio ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Image*
3. Press ↓ to Pull down the *Image* menu

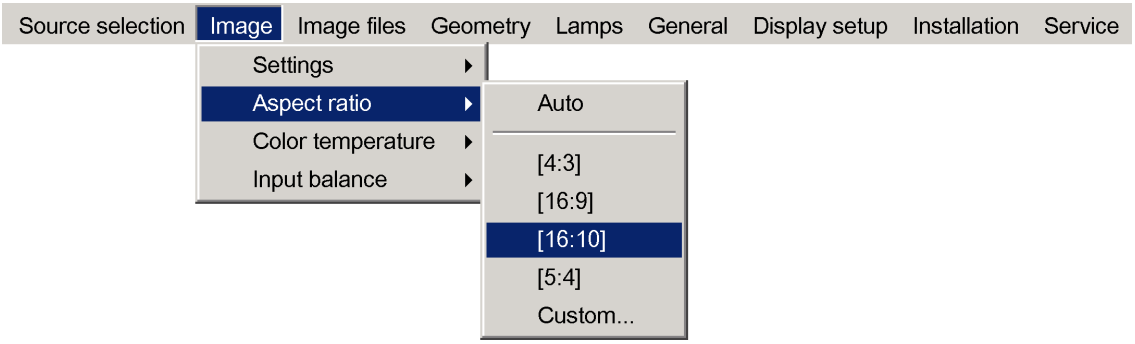

Image 7-24

4. Use ↑ or ↓ to select *Aspect ratio*
5. Use → open the *Aspect ratio* menu
6. Use ↑ or ↓ to select the desired ratio
7. Press **ENTER** to confirm

The aspect ratio settings are greyed out in case the *Show native resolution* or the *Full screen representation* setting is enabled.

How to set a custom Aspect ratio ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Image*
3. Press ↓ to Pull down the *Image* menu

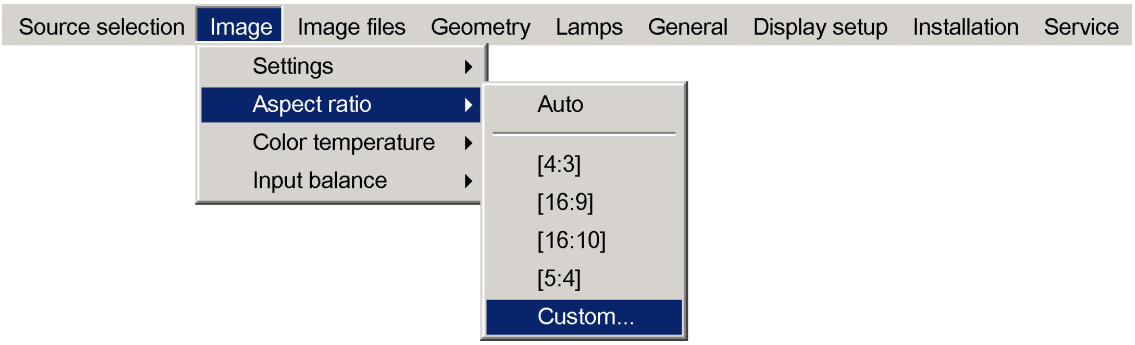

Image 7-25

4. Use ↑ or ↓ to select *Aspect ratio*
5. Use → open the *Aspect ratio* menu
6. Use ↑ or ↓ to select *Custom*
7. Press **ENTER** to confirm

   A dialog box is displayed

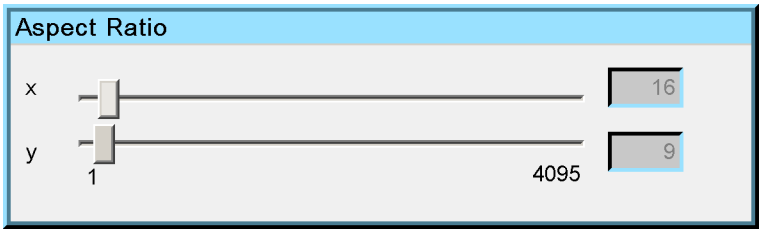

Image 7-26

8. Enter the values for width and height of the image

   The image aspect ratio is updated.

7.4.4 Color temperature

What can be done ?

The color temperature can be selected for the white point of the source. This is done according to the type of source:

- Projector white
- computer : 9300 K
- Video : 6500 K
- Film : 5400 K
- Broadcast : 3200 K

These calibrated presets can be selected and will provide optimum color tracking.

Changing the Dynacolor settings will not affect the (white) color temperature of the source. Except if the color temperature is set to “projector white”.

In the Desktop integration mode the color temperature can be set for each window separately.

How to select a preset color temperature ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *Color temperature*
5. Press → to pull down the menu
6. Use ↓ or ↑ to select the desired preset color temperature
7. Press **ENTER**

   The color temperature of the image is adapted and a bullet shows the active setting.

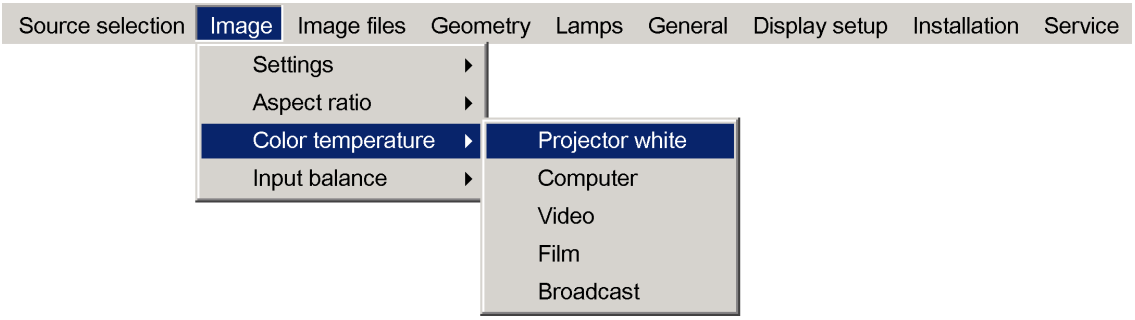

Image 7-27

7.4.5 Input balance (RGB signals only)

Introduction: Unbalanced color signals

When transporting signals, there always is a risk of deterioration of the information contained in the signals.

The alterations of the three color signals will happen independently i.e. the colors will end to be unbalanced.

Image 7-28

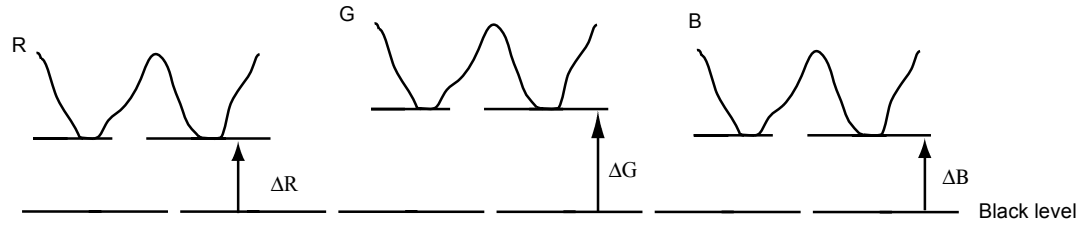

Image 7-29

The objective of input balancing

The objective in input balancing is to “set” the same black level and the same white level for the three colors of a particular input source.

Black level setting : brightness

White level setting : contrast

The same absolute black and white level for the three colors allows the same reference for brightness and contrast control of the picture!

These two references also set the range in which the ADC will work for that particular source (this also explains why each input balance setting is linked to a particular source and thus saved in the image file).

How can it be done ?

To balance the three color signals of a particular source there are conditions; in fact we must know the black and the white level of the source i.e. :

1. the considered source must be able to generate a white signal, ideally a 100% white (background) full screen pattern
2. the considered source must be able to generate a black signal, ideally a 100 % black (background) full screen pattern

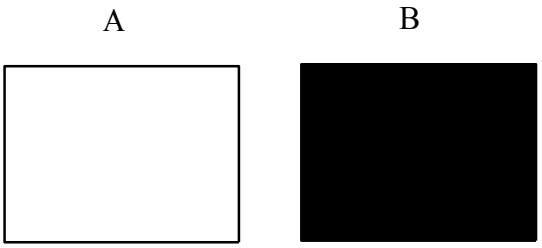

Image 7-30

White balance : In the projector, we will set the contrast for each color until we get a 100% light output picture when projecting a 100% white image (image A)

Black balance : In the projector, we will set the brightness for each color until we get a 0% light output picture when projecting a 100% black image (image B).

The black balance can be done automatically with *Automatic Black level*.

The changeover from min to max is indicated by the apparition of bright spots, also called “digital noise”

An alternative to a full screen white/black pattern is a black-and-white checkerboard pattern where the white blocks will be used for white balance and the black blocks for black balance.

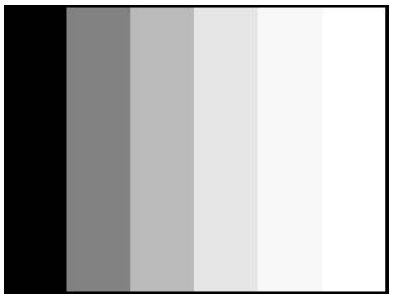

Image 7-31

How to set Automatic Black level ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image* item
3. Press ↓ to Pull down the *Image* menu
4. Use ↑ or ↓ to select *Input balance*
5. Press → to pull down the menu
6. Use ↓ or ↑ to select *Automatic Black level...*
7. Press ↓ to pull down the menu
8. Use ↑ or ↓ to enable (*ON*) or to disable (*OFF*) *Automatic Black level*

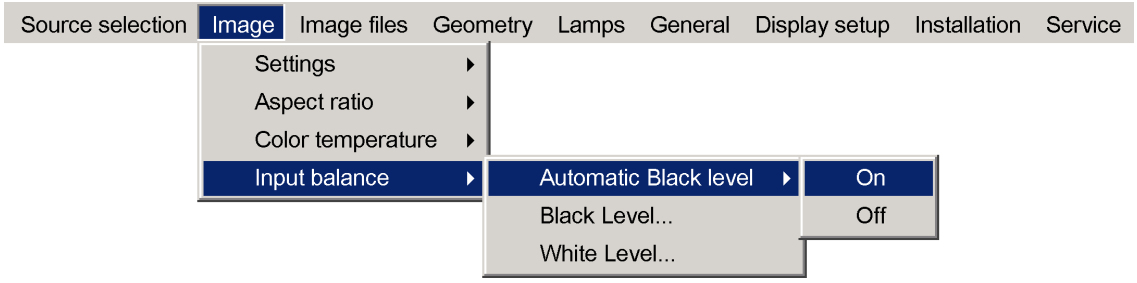

Image 7-32

9. Press **ENTER** to confirm

   A white bullet shows the active setting

Performing Black input balance

1. Select a black pattern (or gray scale as alternative)
2. Press **MENU** to activate the Tool bar
3. Press → to select the *Image* item
4. Press ↓ to Pull down the *Image* menu
5. Use ↑ or ↓ to select *Input balance*
6. Press → to pull down the menu
7. Use ↓ or ↑ to select *Black level...*

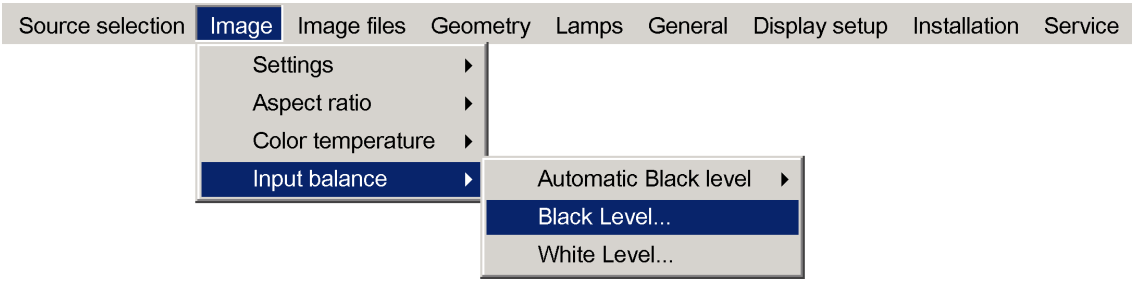

Image 7-33

8. Press **ENTER**

   A dialog box is displayed

9. Adjust the red black level on a minimal value

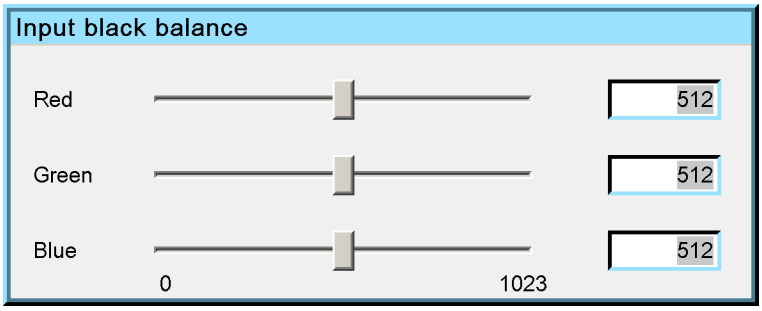

Image 7-34

10. Adjust the blue black level to a minimal value

    Note: *this minimal value is not necessary , provided that the 2 other colors are not influencing too much the color to be adjusted, in fact the aim is to minimize the effect of the two other colors since there is a risk of reaching too soon the transition (bright spots) due to the contribution of these two other colors signals.*

11. Adjust the Green black level until bright spots appear on the black part of the image
12. Adjust the Blue black level until bright spots appear on the black part of the image
13. Adjust the Red black level until bright spots appear on the black part of the image

    The projected image should now be noisy neutral grey.

If one uses a checkerboard pattern, the bright spots should appear in the black blocks.

Black Level... **is greyed out if** ***Automatic Black level*** **is enabled (ON).**

Performing White input balance

1. Select a white pattern (or gray scale as alternative)
2. Press **MENU** to activate the Tool bar
3. Press → to select the *Image* item
4. Press ↓ to Pull down the *Image* menu
5. Use ↑ or ↓ to select *Input balance*
6. Press → to pull down the menu
7. Use ↓ or ↑ to select *White level...*

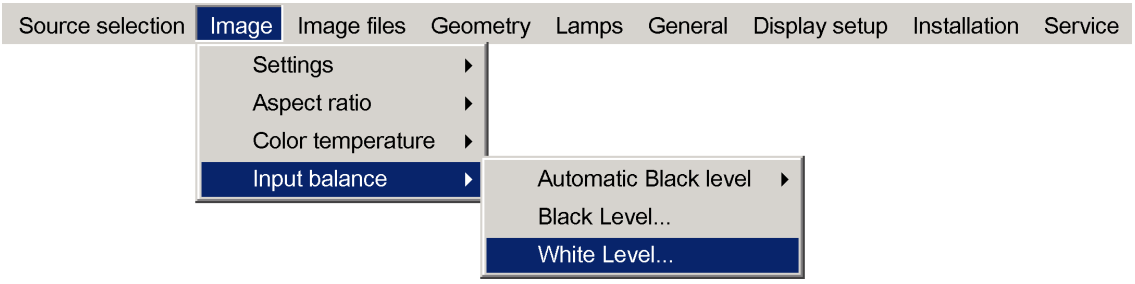

Image 7-35

8. Press **ENTER**

   A dialog box is displayed

9. Adjust the red white level (gain) on a minimal value

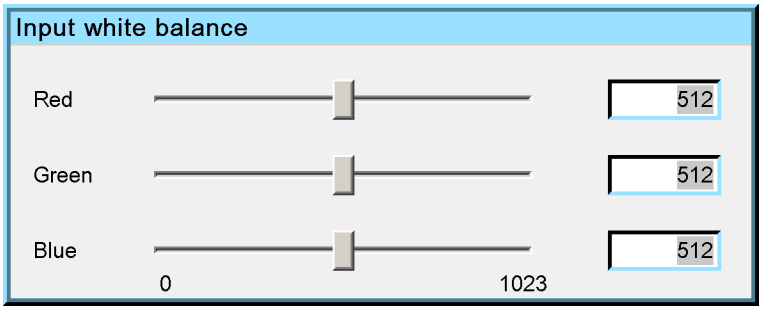

Image 7-36

10. Adjust the blue white level (gain) to a minimal value

    Note: *this minimal value is not necessary , provided that the 2 other colors are not influencing too much the color to be adjusted, in fact the aim is to minimize the effect of the two other colors since there is a risk of reaching too soon the transition (bright spots) due to the contribution of these two other colors signals.*

11. Adjust the Green white level (gain) until bright spots appear on the white part of the image

12. Adjust the Blue white level (gain) until bright spots appear on the white part of the image

13. Adjust the Red white level (gain) until bright spots appear on the white part of the image

    The projected image should now be noisy neutral grey.

If one uses a checkerboard pattern, the bright spots should appear in the white blocks.

The input balance settings are stored in the image file, each source has its own input balance.

7.5 Image files

Overview

- Introduction to Image files
- Load file
- Forced file load
- Auto Image
- Edit file
- Save as (create a custom file)
- Rename file
- Copy
- Delete

7.5.1 Introduction to Image files

Image files

An image file contains the main characteristics of a source (number of active lines,...). The projector's memory contains a list of files corresponding to the most common sources : standard files.

When a new source corresponds to one of these files, a custom file is created. The custom file is automatically saved if a setting is altered (contrast, ...). The *Save as...* function allows to create and save a custom file.

The active file can always be edited in order to fit exactly the source specifications.

AutoImage creates automatically the best suited image file (custom file) for a new source. AutoImage is used when :

- a new source is detected: AutoImage creates a new custom file which can always be edited if necessary.

- the AutoImage is launched via the button on the RCU, the projector's OSD or from the desktop's OSD

File notation

The notation of the image file happens as follows :

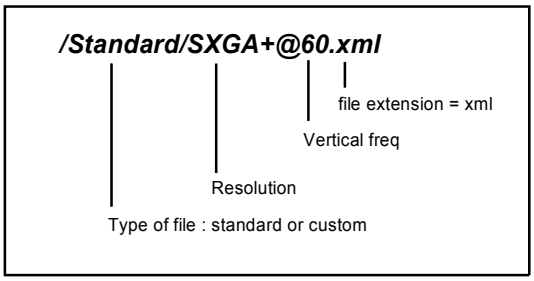

Image 7-37

7.5.2 Load file

When to load a file ?

In some cases the user wants a particular file to be used for the display of a particular source. In this case the user should load the desired file from the image files menu. The load file option will allow the user to choose between several files corresponding more or less to the active source specifications.

In normal operation the file selection (load) will be done automatically by Auto Image.

How to load a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Load*

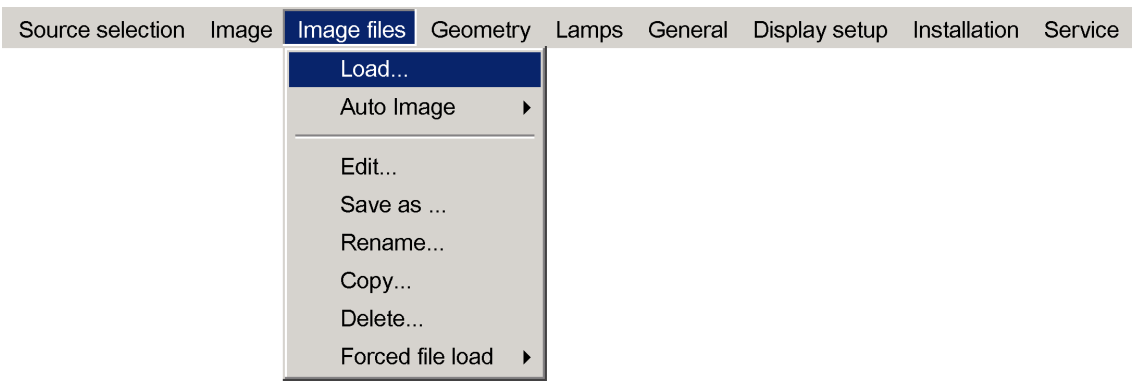

Image 7-38

5. Press **ENTER**
   A dialog box is displayed

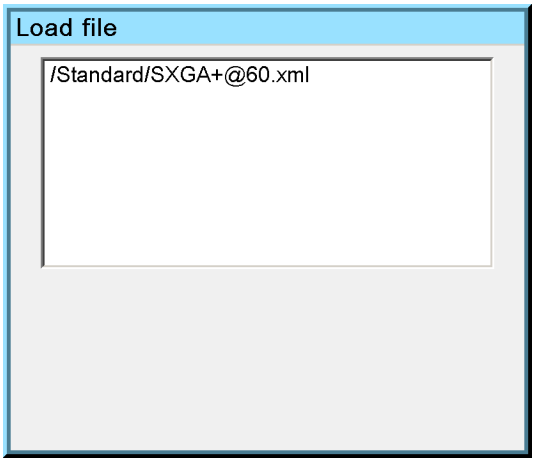

Image 7-39

6. Use ↑ or ↓ to select the desired file
   Tip: *For more information (specifications) on the image files see the Appendix section*
7. Press **ENTER**

   The file is loaded and the image is adapted.

What to do if the image is not perfect ?

If the displayed image is not correct after Auto Image or after selecting the best fitting file, go to the Edit menu, select the active file and change the settings.

7.5.3 Forced file load

Forced file load

In some cases the user wants only one particular file to be loaded for a particular input (source) i.e. to prevent the (automatic) load of an inadequate file.

One can link a file to every input of each layer.

If a file is already selected (forced) to that particular input it will be indicated in the menu.

How to force a file to be loaded ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Forced file load*
5. Press → to open the menu
6. Use ↑ or ↓ to select the desired layer (for example Layer 1)
7. Press → to open the menu
8. Use ↑ or ↓ to select the desired input

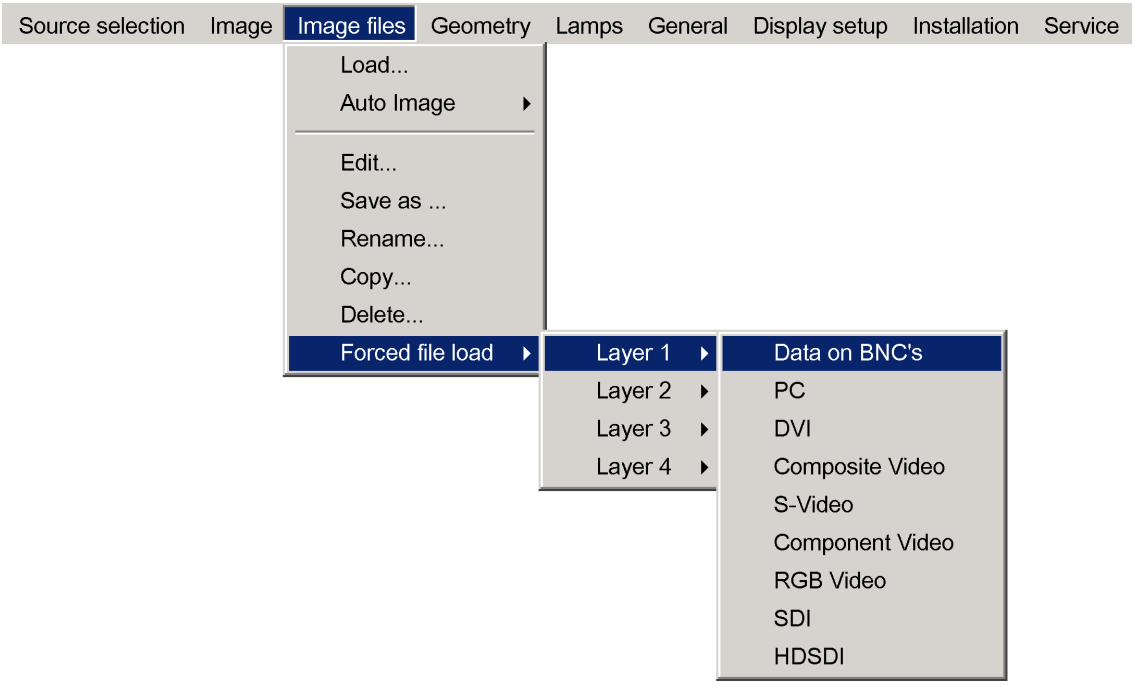

Image 7-40

Note: *Inputs that are not hardware compatible with this layer are greyed out.*

Note: *if a file is already forced for that input it will be shown on the right.*

9. Press **ENTER**
   The *Load* dialog box is displayed
10. Use ↑ or ↓ to select the desired file (for example **/Standard/SXGA+@60.xml**)
11. Press **ENTER**

    The file is selected and will be loaded in the future.

To delete the forced file, go to the desired input and press ENTER.

7.5.4 Auto Image

What can be done ?

Auto Image creates the best suited image file for the connected source.

It calculates/measures several source parameters :

- Total pixels per line
- Start pixel
- Phase
- Contrast/Brightness levels

Auto Image only works for data images.

The measure of the total number of pixels per line can be done through 2 methods

- Limited scan: a windowing system is used to allow fast tracking.
  The operation takes about 20 seconds (depending on file)
- Full scan: tracking is done over the full range.
  The operation takes about 1.5 minutes (depending on file)

How to launch Auto Image?

1. Press **MENU** to activate the Tool bar

2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Auto Image*
5. Press → to open the menu
6. Use ↑ or ↓ to select the desired file scan method

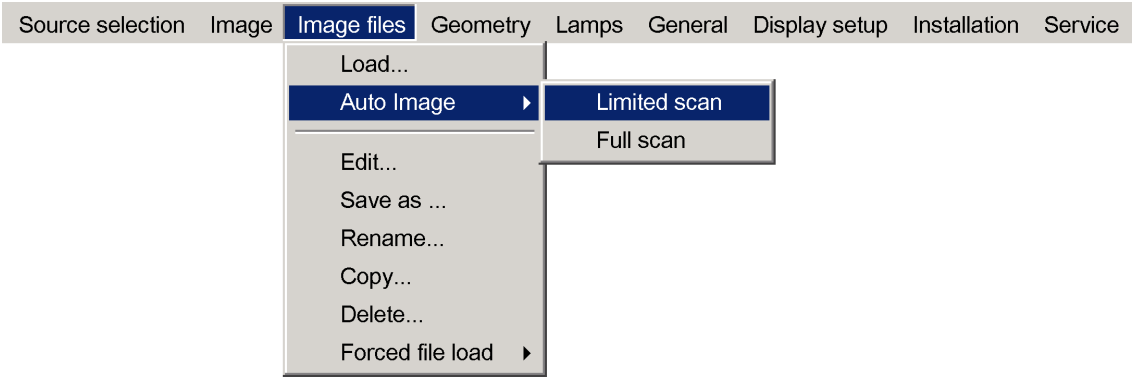

Image 7-41

7. Press **ENTER**

AutoImage acts on the active window. The image in the window may move and change in aspect during the AutoImage process.

Auto Image can also be launched via the RCU with the dedicated AutoImage key.

7.5.5 Edit file

What can be done with the Edit file menu ?

The Edit file menu makes it possible to change the settings of the file according to the real settings of the connected source. Consult the source specifications before entering the data.

only the active file can be edited

How to edit a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Edit*

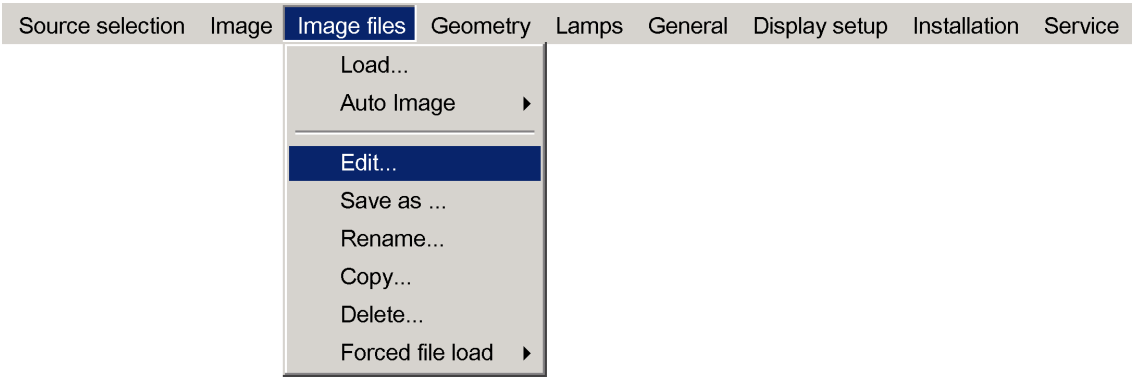

Image 7-42

5. Press **ENTER**
   A dialog box containing the active file is displayed

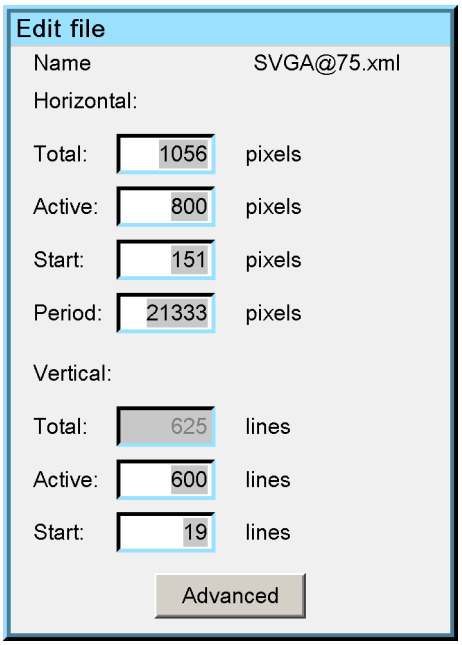

Image 7-43

6. Use ←or →, the numeric keys on the remote, or the keypad to edit and change the values, confirm with ENTER
   Note: *greyed out fields can not be updated (total pixels)*

Which items can be adjusted ?

The following items can be adjusted :

- Total horizontal pixels
- Active horizontal pixels
- Horizontal start in pixels
- Horizontal period in ns
- Active vertical lines
- Vertical start in lines

Advanced settings for Video sources

The **advanced** button enables the advanced settings for a video source.

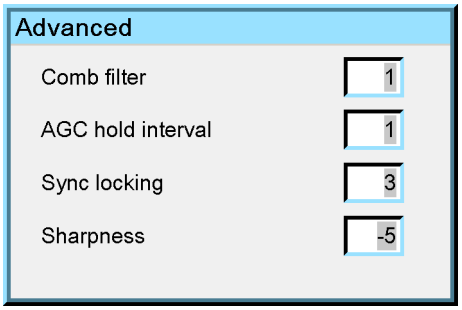

Image 7-44

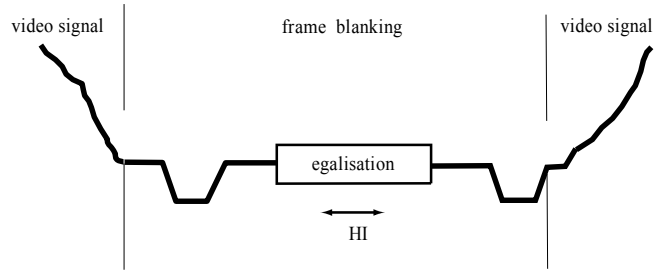

Image 7-45
HI AGC Hold interval

The **Comb filter** is by default enabled.

The **AGC hold interval** is the time interval in which the AGC is inhibited (AGC hold = no update in video amplitude measurement), the advanced parameter allows to choose a short or long hold interval.

A long AGC hold interval eliminates Macrovision® disturbances since the AGC is hold during a long interval, thus reducing the probability to encounter a Macrovision® pulse.

The **sync locking setting** is recommended for poor video signals (ex: poor TV signals).

Sharpness adjustment can be chosen to be coarse or fine.

It is recommended to use the default values.

Advanced settings for Analog Data sources (e.g. RGB HS/VS)

The **advanced** button enables the advanced settings for a data source.

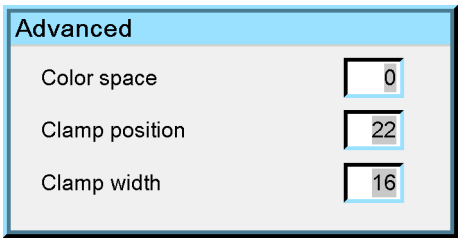

Image 7-46

- *Color space* : allows to select between 5 different color spaces
  - RGB
  - ITU_BT_709
  - SMPTE_240M
  - ITU_BT_601
  - EBU
- *Clamp position* : allows to set the clamp pulse position in the clamping circuit
- *Clamp width* : allows to set the width of clamp pulse in the clamping circuit

It is recommended to use the default values.

Advanced settings for Digital Data sources (DVI and HDSDI)

The **advanced** button enables the advanced settings for a DVI source.

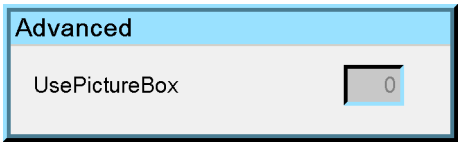

Image 7-47

UsePictureBox can be disabled (**0**) or enabled (**1**). By default, it is disabled which means that only few timings can be changed. In case of a DVI source this is not a problem.

In very specific situations however (e.g. iBlend), more changes to the timings may be needed, such as the setting of the *Start pixels, Active pixels, Start lines, Active lines*. In that case, hit **Enter** and change the slider to position **1**, thus enabling more settings in the *Edit file* menu.

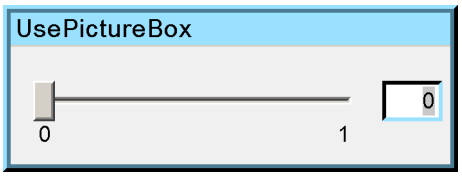

Image 7-48

In the current software versions (1.22 for (Galaxy)NH-12, 1.23 for (Galaxy) NW-12, 1.02 for SIM 5W), changing the *UsePictureBox* settings also inverts the interlacing!

7.5.6 Save as (create a custom file)

Creating a custom file

When the loaded file is a standard file there is a possibility of saving it as a custom file (= creating a custom file) , this is done with the save as function. The saved file will always be a custom file (saved in the custom directory)

For sources that are often used, a custom file should be created. This custom file will then be loaded automatically and will prevent the AutoImage from being launched.

How to save a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Save as...*

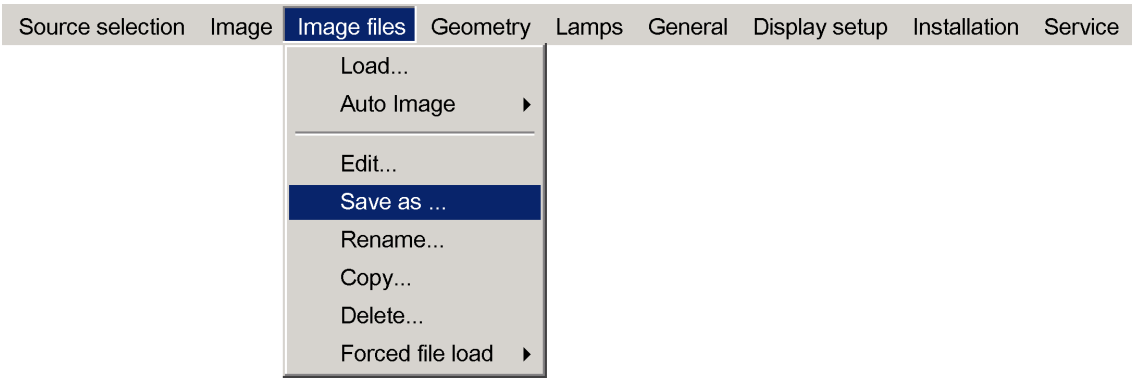

Image 7-49

5. Press **ENTER**
   A dialog box is displayed
   Use ←or →, ↓ or ↑ the numeric keys on the remote, or the keypad to edit and change the file name, confirm with ENTER.

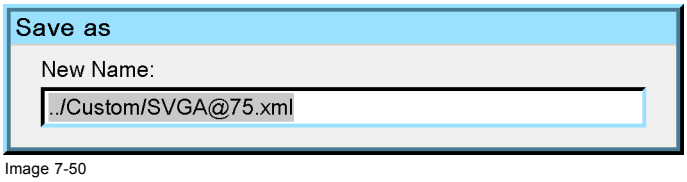

Image 7-50

7.5.7 Rename file

How to rename a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *Rename*

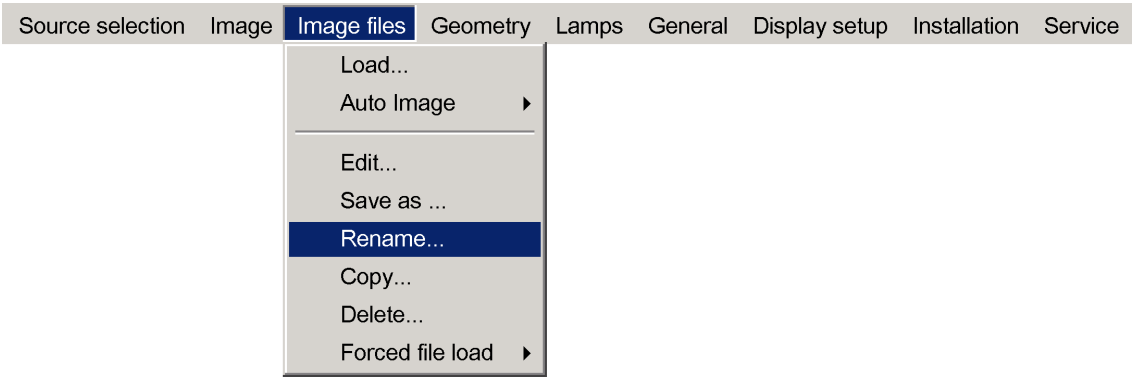

Image 7-51

5. Press **ENTER**
   A dialog box is displayed
   Use ←or →, ↓ or ↑ the numeric keys on the remote, or the keypad to edit and change the values, confirm with ENTER.

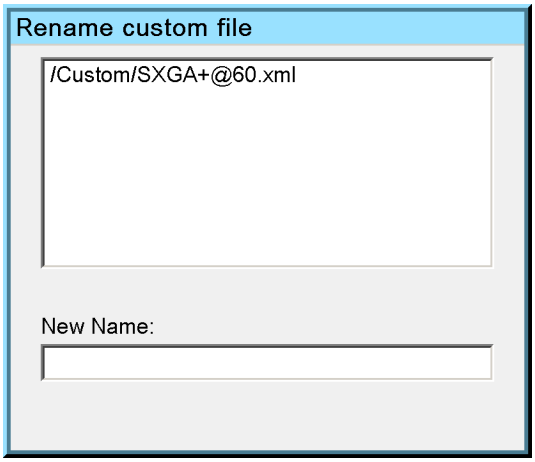

Image 7-52

7.5.8 Copy

Copy a file

The copy function allows to copy a file (standard or custom) to a custom file (to the custom directory).

How to copy a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *copy*

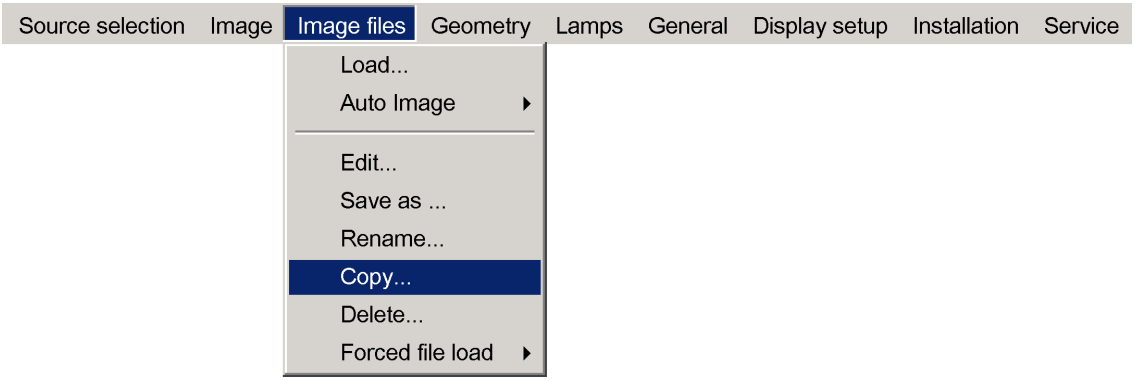

Image 7-53

5. Press **ENTER**
   A dialog box is displayed

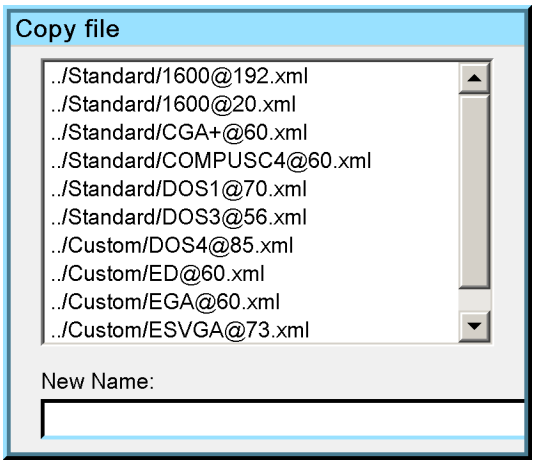

Image 7-54

6. Use ↑ or ↓ to select the file to be copied
7. Press **ENTER**

   The file name is copied in the edit field
8. Use the keys on the remote to change the name of the destination file

7.5.9 Delete

How to delete a file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Image files* item
3. Press ↓ to Pull down the *Image files* menu
4. Use ↑ or ↓ to select *delete*

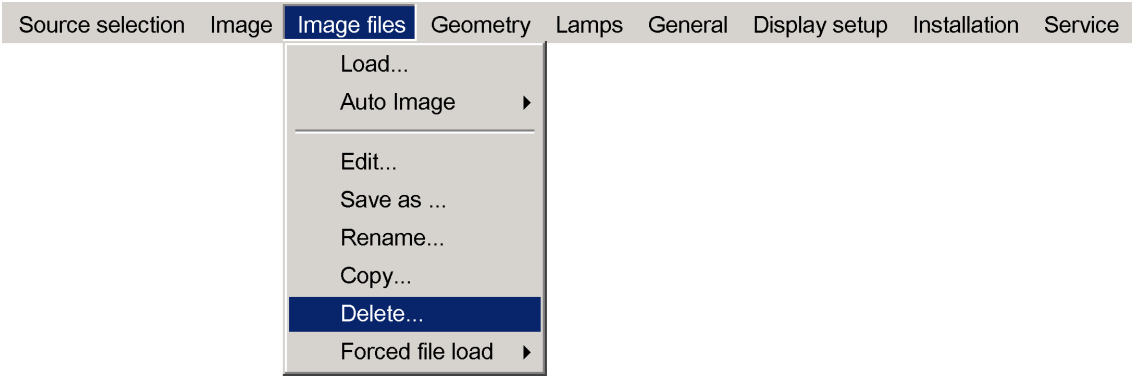

Image 7-55

5. Press **ENTER**

A dialog box is displayed

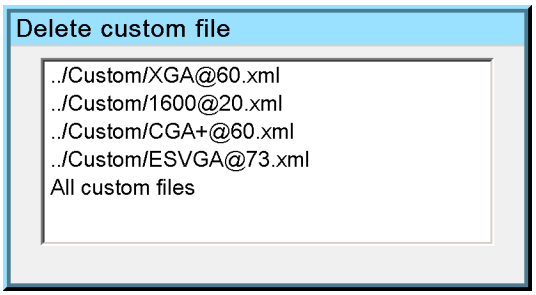

Image 7-56

6. Use ↑ or ↓ to select the desired file
7. Press **ENTER**

   The selected file is deleted and is removed from the list

7.6 Geometry

Overview

- Introduction
- Geometry files
- Accessing the Geometry menu
- Geometry distortions
- Load
- Edit

7.6.1 Introduction

What can be done ?

With the geometry corrections, this projector can be used in a wide variety of curved and flat-screen applications, ranging from flat or straightforward cylindrical displays to the wildest shapes that can be imagined: by pre-distorting the image inside the projector, a correct geometry can be achieved on curved screens, without requiring additional computational power on the IG's side.

7.6.2 Geometry files

Description

A geometry file contains the geometry corrections. The projector's memory contains a list of files created for demo purposes e.g. to demonstrate the warping capabilities of the projector. These files are called standard files.

The active file can always be edited in order to fit exactly the screen shape. Editing a standard file will automatically create a custom file.

The file notation in the *Geometry files* menu describes a file path.

For example : **/Standard/Dist_file1.xml**

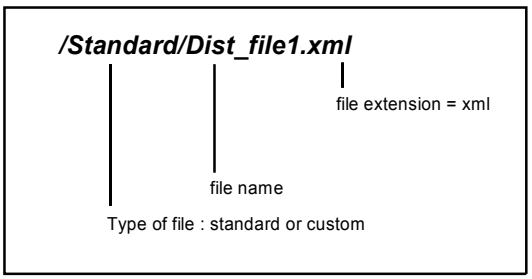

Image 7-57
Geometry file notation

Standard	file directory, also the type of file : Custom or Standard
Dist_file1	file name
xml	file extension

Available Geometry operations

- Load : loads an existing standard or custom geometry file
- Edit : allows to edit a custom geometry file
- Rename : allows to rename the geometry file
- Copy : allows to copy the geometry file
- Delete : allows to delete the geometry file

7.6.3 Accessing the Geometry menu

How to access the Geometry menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Geometry*
3. Press ↓ to Pull down the Geometry menu

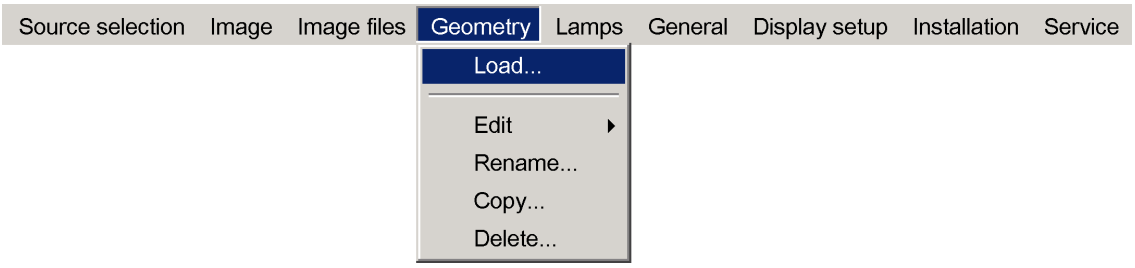

Image 7-58

7.6.4 Geometry distortions

What can be done ?

The available geometry corrections are the **2x2** mode corrections i.e. :

- Keystone
- Linearity

The option program (see *Option key* in the *Service* menu) allows, however, to upgrade the geometry features to up to the **33x33** mode i.e. a geometry adjustment consisting of the entire image divided in **33x33** regions that can be shifted to the desired location.

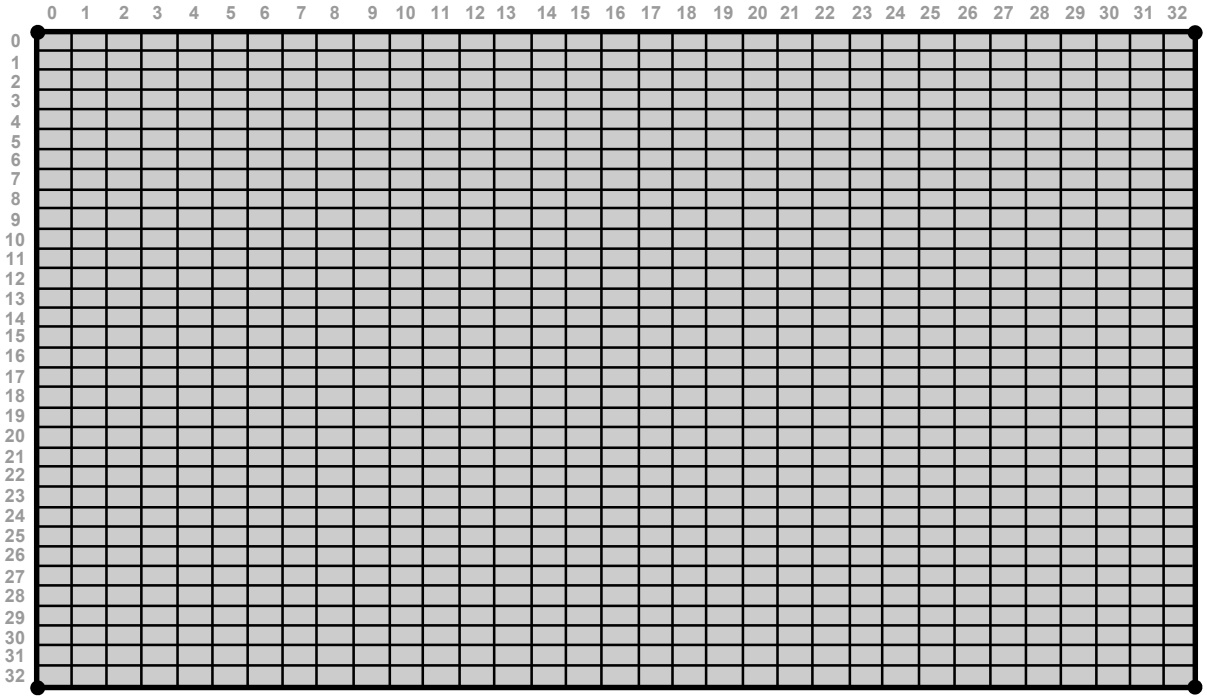

Image 7-59
Full geometry correction (optional) : The screen is divided in 33x33 regions

Modes and Levels

The geometry adjustment is divided in 6 groups or modes :

- 2x2 : standard
- 3x3 : optional
- 5x5 : optional
- 9x9 : optional
- 17x17 : optional
- 33x33 : optional

These modes represent 21 levels, each level represents a group of points (or zones). Each level will interact with other levels, adjusting a point on a certain level will affect points in the levels underneath.

The level of the adjustment gives a measure of this impact. A level 1 adjustment happens on the 4 corners of the image and will thus affect the whole image whereas a level 21 will only affect the adjusted point (called local points).

This interaction is also visible in the edit menu (see Geometry Edit wizard)

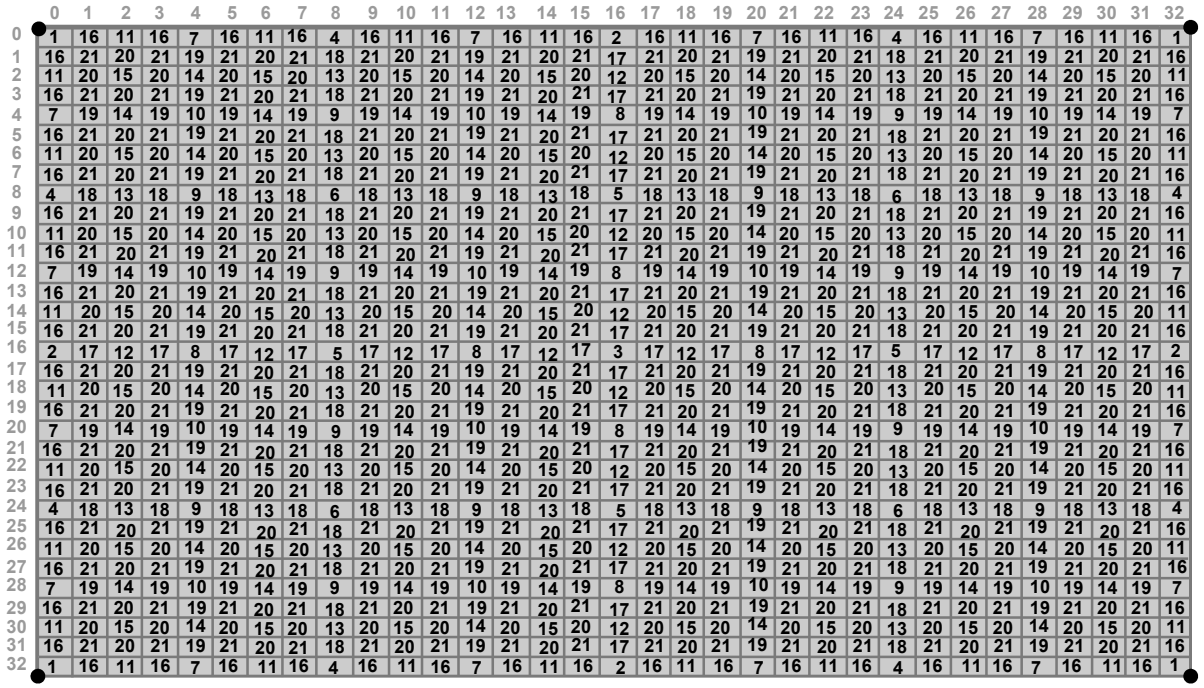

Image 7-60
Geometry levels

Level Hierarchy

The fact that the adjustment affects other points means that a certain hierarchy must be respected when adjusting the geometry.

The hierarchy or levels are indicated in the following image

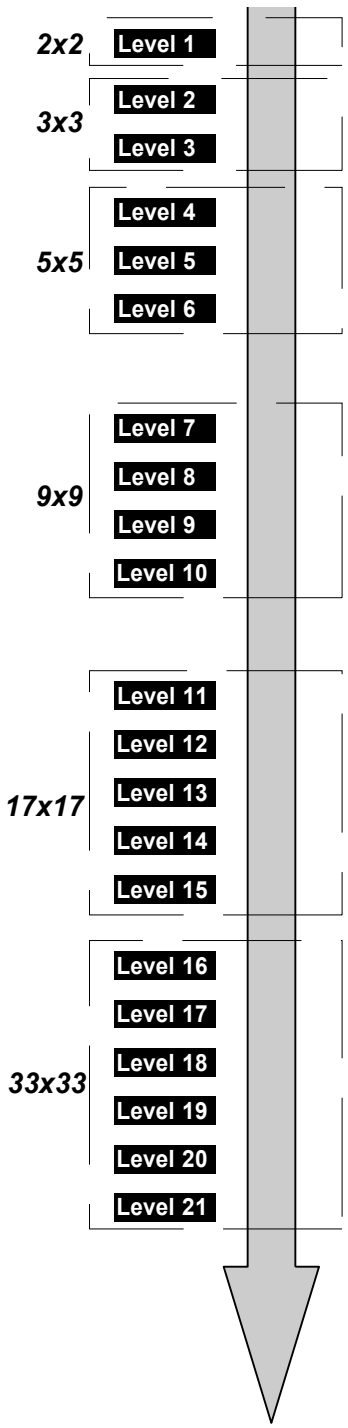

Image 7-61
Geometry level hierarchy

On top of this hierarchy, the *2x2* points. Adjusting points on level 1 will affect level 2 till 21.

At the bottom of the structure we find the *33x33* points adjustment, adjusting grid points on level 21 will not affect any other points, these are called local points.

7.6.5 Load

How to load a geometry file ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Geometry*
3. Press ↓ to Pull down the Geometry menu
4. Press ↓ to select *Load*

5. Press **ENTER**

   A dialog box is displayed

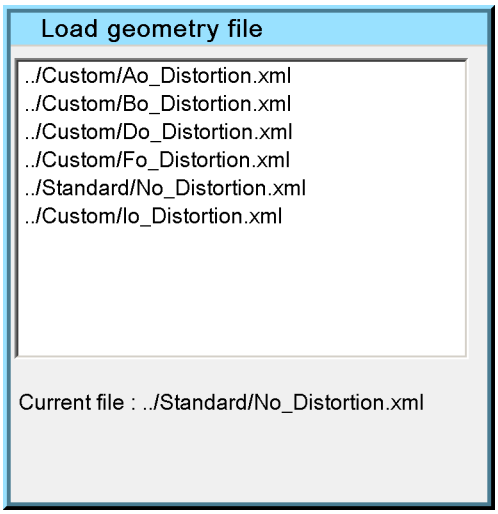

Image 7-62

6. Use the cursor key ↑ and ↓ to select the desired geometry file
7. Press **ENTER**

   Tip: *When starting a new geometry setup it is advised to select the "No_Distortion" file.*

   The file is loaded and the geometry settings are adapted.

7.6.6 Edit

Overview

- Accessing the Geometry Edit menu
- Geometry Edit wizard
- Geometry Edit Modes
- Editing a geometry file
- Axis link
- Shift Adjustment
- Transport Delay
- Sharpness
- Geometry Reset
- Rename a Geometry File
- Copy a Geometry File
- Delete a Geometry File

7.6.6.1 Accessing the Geometry Edit menu

How to access the Geometry Edit menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Geometry*
3. Press ↓ to Pull down the Geometry menu
4. Press ↓or ↑ to select *Edit*
5. Press → to open the Edit menu

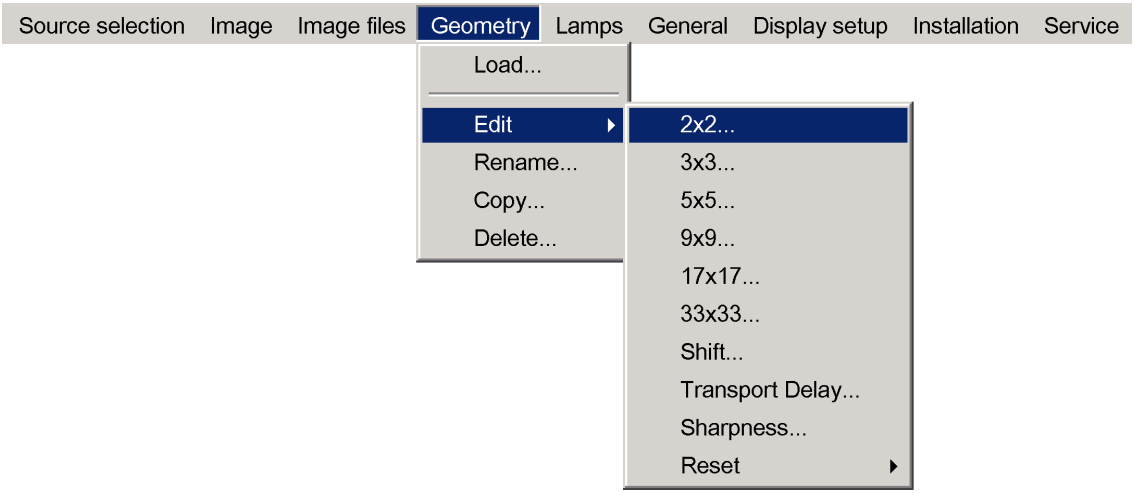

Image 7-63

7.6.6.2 Geometry Edit wizard

The geometry wizard

When entering the *Edit* mode, the *Edit* dialog box is displayed. When selecting a point in a certain adjustment, a yellow box shows the selection and a blue dotted box is placed around the selected grid point, indicating the interaction zone.

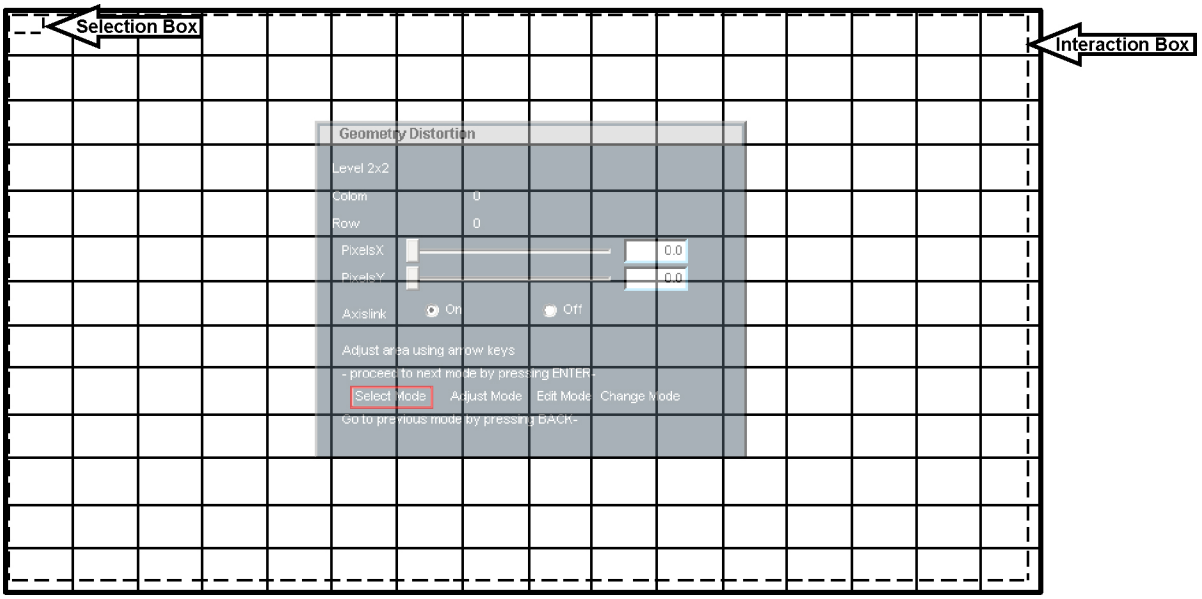

Image 7-64

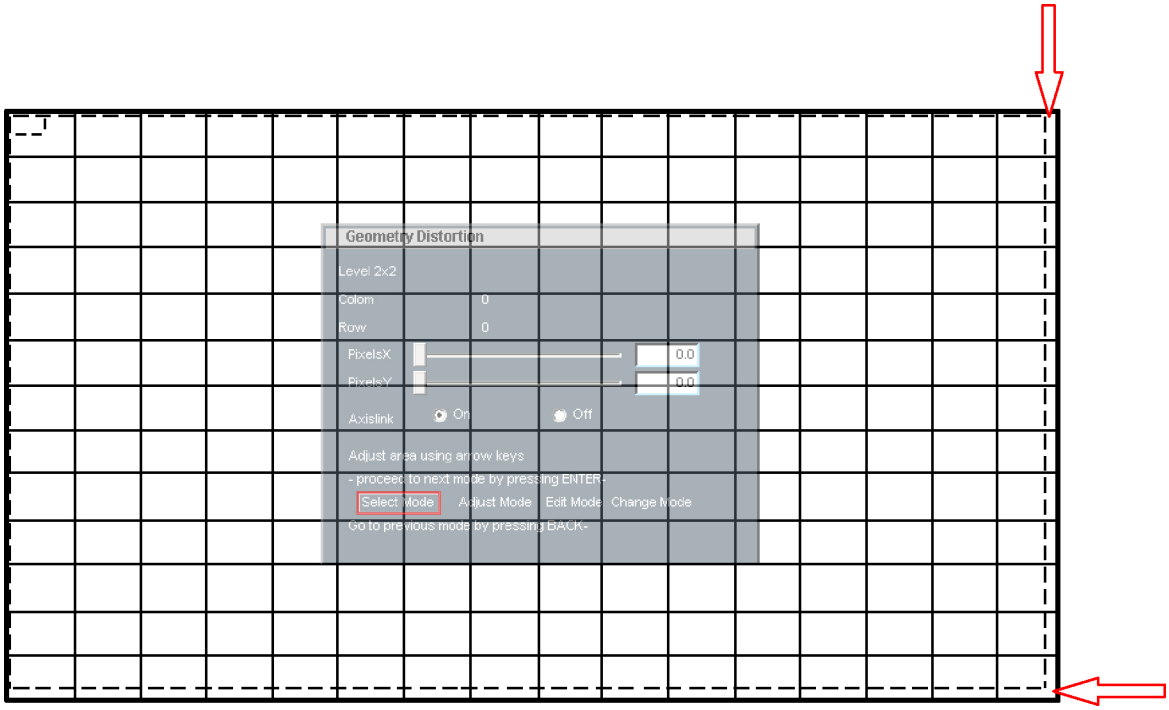

Image 7-65

Note that the dialog box is transparent so as to allow the preview of the adjustment over the whole screen during the adjustment (the image to be adjusted is not hidden by the dialog box)

Description of the Edit dialog box

An intuitive user interface is used to perform all the geometry corrections. This gives the user real-time access to the distortion characteristics. Each individual point can be selected and shifted to the desired location in real time.

Depending on the geometry mode, the dialog box may slightly differ, the dialog box below is for a *2x2* mode adjustment.

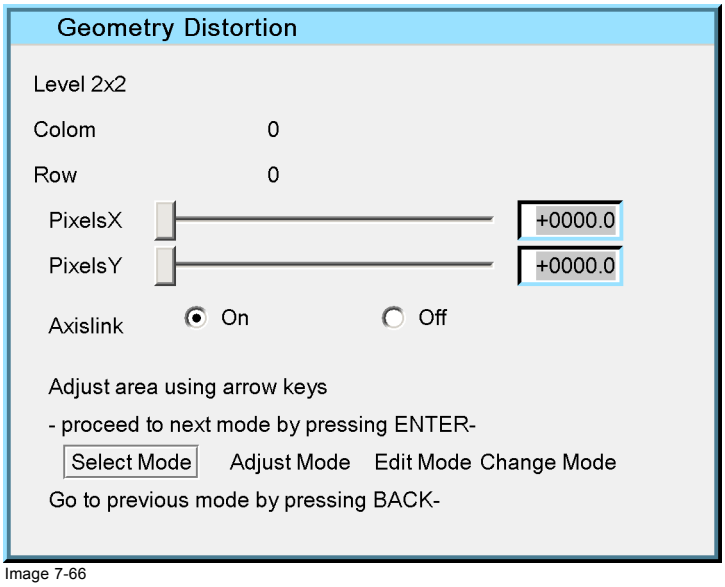

Image 7-66

Field /adjustment	Description	Notes
Level 2x2	gives the selected geometry adjustment. In this case, a 2x2 adjustment	

Field /adjustment	Description	Notes
Colom	column corresponding to the selected point	in a 2x2 adjustment column will be between 0 and 32 (steps of 32)
Row	row corresponding to the selected point	in a 2x2 adjustment row will be between 0 and 32 (steps of 32)
PixelX	this slider box adjusts the new position of the point along the x axis	High values can introduce some clipping effects
PixelY	this slider box adjusts the new position of the point along the y axis	High values can introduce some clipping effects
edit box PixelX	this edit box allows to edit the position of the point along the x axis	
edit box PixelY	this edit box allows to edit the position of the point along the y axis	
Axislink	see 'Axislink'	
Modes	see 'Geometry Edit Modes'	

Table 7-2
dialog box legend

When applying a distortion to the image this may take a certain time. During this operation, a text box is shown.

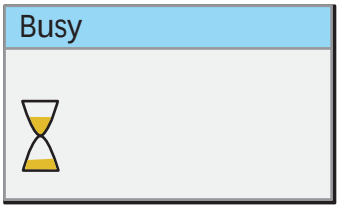

Image 7-67
Busy message

7.6.6.3 Geometry Edit Modes

The geometry Edit Modes

- Select mode : allows to select the desired area on the screen using the arrows. From 0 to 32 along the x and y axis.
- Adjust mode : allows to perform the correction (in real time) using the arrows. The adjustment is done in small steps of 0.1 pixels.
- Edit mode : allows to select the desired control (edit box, ...) in the dialog box.
- Change mode : allows to change the values in the controls (edit box, radio buttons, ...) of the dialog box.

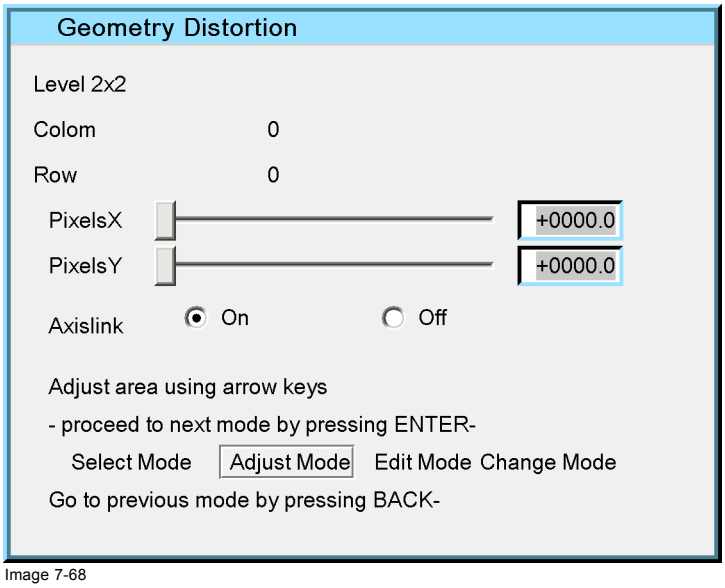

Image 7-68

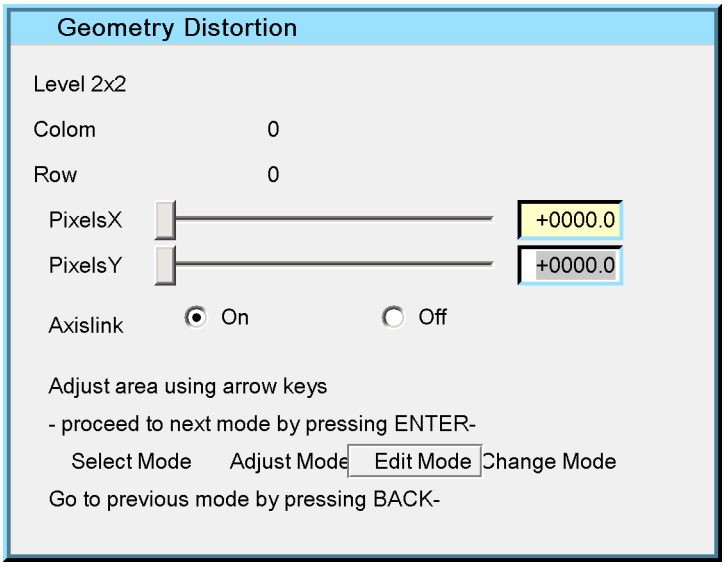

Image 7-69

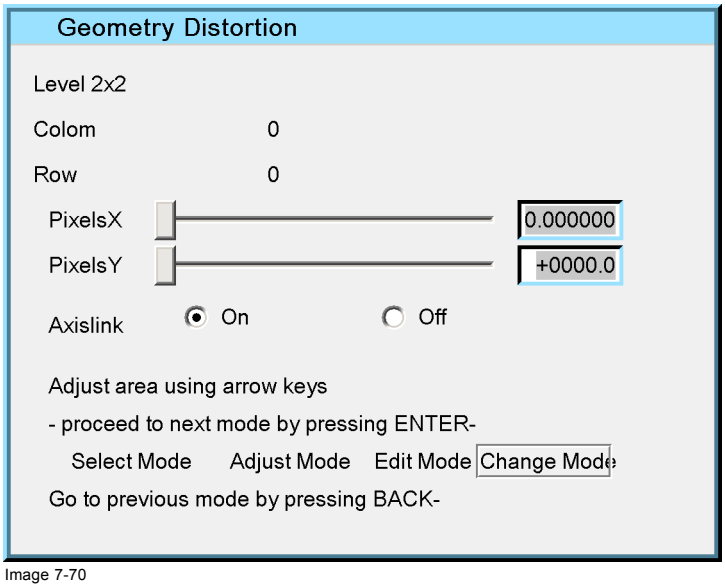

Image 7-70

How to select an Edit Mode ?

1. When the *Edit* dialog box is displayed, the *Select* mode is selected by default.
2. To go to the next mode (go to the right) press **ENTER**.
3. To return to a previous mode (go to the left) use **BACK**

7.6.6.4 Editing a geometry file

Introduction

The following procedures are written for a **2x2** mode adjustment. This adjustment involves the adjustment of the 4 corner points of the image. This is a **level 1** adjustment and will affect the whole image.

The adjustment procedure is similar for all the modes. The only thing to keep in mind is the order in which the points will be adjusted i.e. always start with the lowest level points and end with the highest level zones (see **Geometry distortions/level hierarchy**) .

A **3x3** mode adjustment gives the following new points to be adjusted (the 4 points of the 2x2 mode being already adjusted : they are therefore left out of the grid). Note that in this mode, 2 levels are involved, the **level 2** and the **level 3**.

A **5x5** mode adjustment gives the following new points to be adjusted. Note that in this mode 3 levels are involved, **level 4, 5** and **level 6** (previous adjusted points are left out).

...

How to start up the geometry edit ?

1. Start up the Geometry *Edit* menu
2. Press ↓ to select *2x2...*
3. Press **ENTER**

   A dialog box is displayed. The *Select* mode is enabled and the top/left (row = 0 ; colom = 0) corner is selected

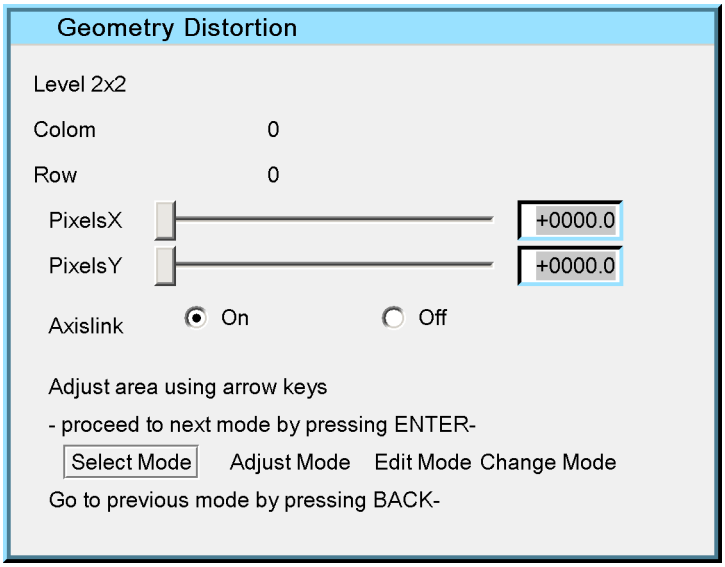

Image 7-71

How to select another point ?

1. Press → to select the next adjustment point

The column is adapted to 32

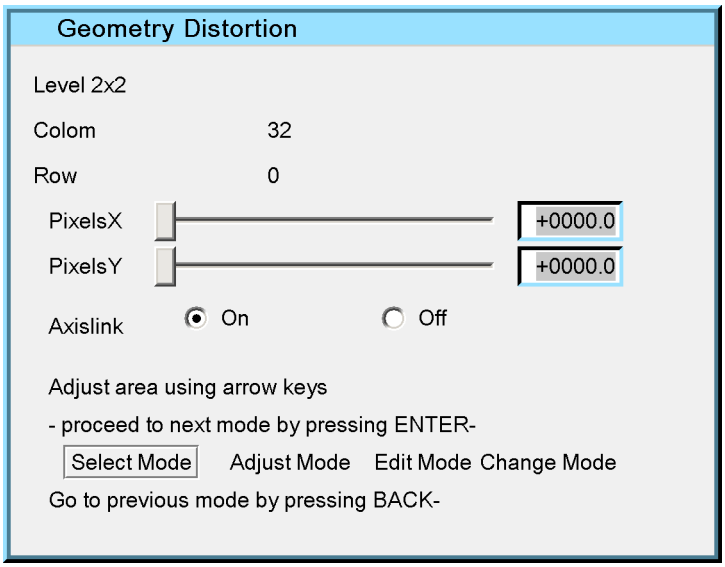

Image 7-72

2. Press ↓ to select the next adjustment point

The row is adapted to 32

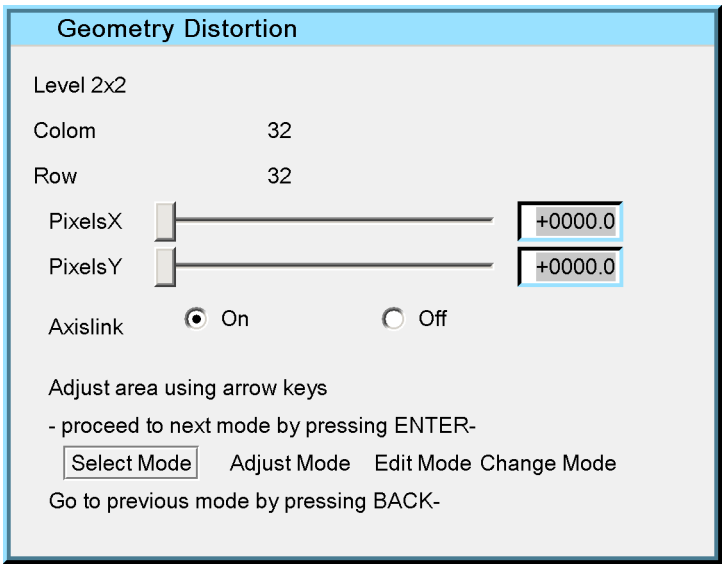

Image 7-73

3. Press ← to select the next adjustment point

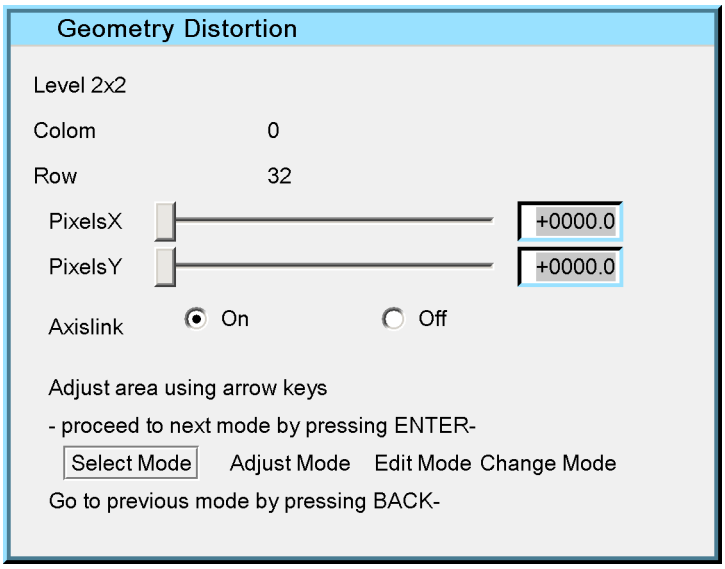

Image 7-74

How to adjust using the Adjust mode ?

Adjusting point (row =0 ; column =0) by 100 (pixels) along the x axis in the *2x2* mode

1. Press **ENTER** to go to the *Adjust Mode*

   The *Adjust mode* is selected

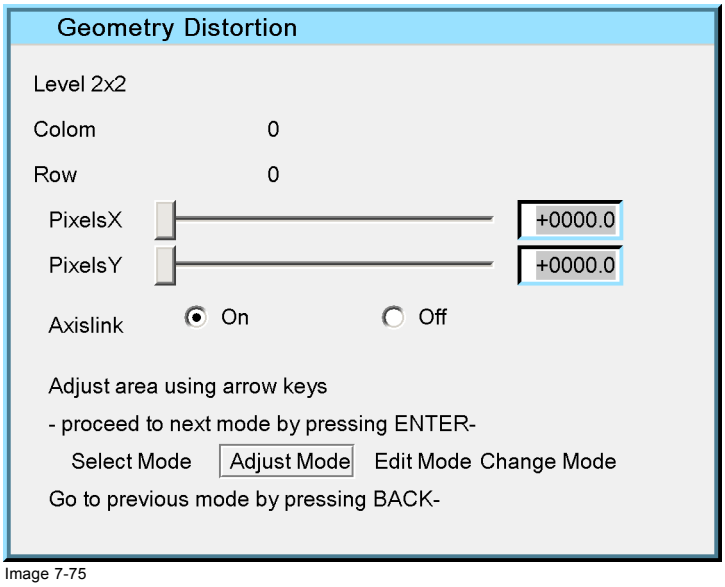

Image 7-75

2. Use ← and → to adapt the value of *PixelsX*
   Tip: *Use ↑ and ↓ to adapt the value of PixelsY*

   The image is distorted along the X axis. Notice the unaffected regions.

The adjustment is done in small steps. Adjusting for instance from 0 to 100 using the *Adjust mode* is not the ideal method. The use of the *Edit* and *Change mode* is more appropriate.

How to adjust using the Edit and Change mode ?

Adjusting point (row =0 ; column =0) by 100 (pixels) along the x axis in the 2x2 mode

1. Press 2 times **ENTER** to go to the *Edit Mode*

The *Edit mode* is selected

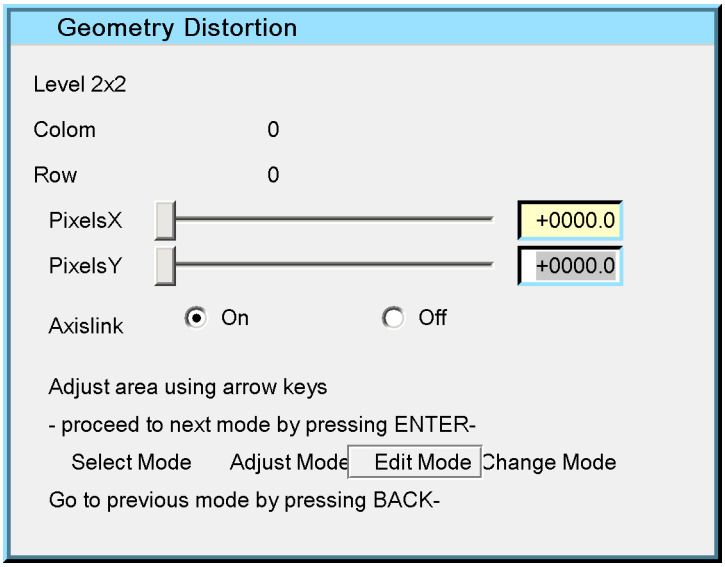

Image 7-76

2. Use ↑ and ↓ to select the *PixelsX* edit box

   The *PixelsX* edit box is focused

3. Press **ENTER**

   The *PixelsX* edit box is put in edit mode

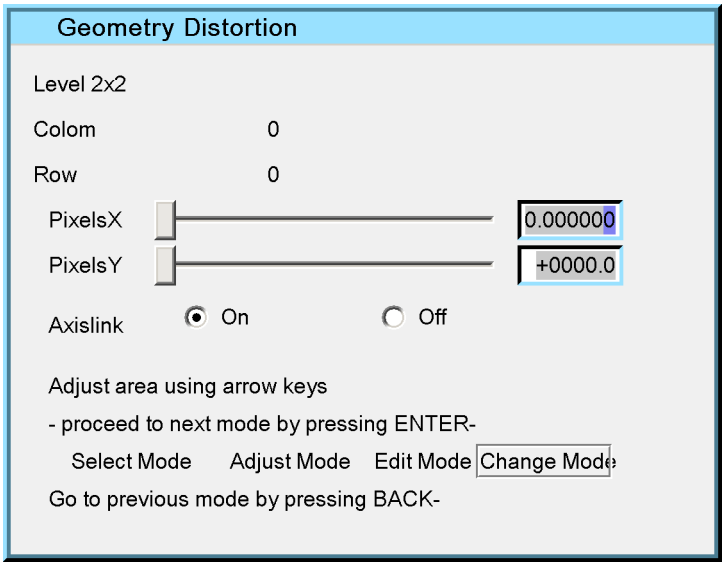

Image 7-77

4. Use ← and → to select the digit and use ↑ and ↓ to increment/decrement the digit
   Tip: *One can also use the numeric digits to fill in the desired value ?*

   The image is distorted along the X axis. Notice the unaffected regions.

7.6.6.5 Axis link

What is AxisLink ?

When *AxisLink* is set to *On*, the adjustment coordinate system will coincide with the edges of the distorted image.

Following example will show a basic *2x2* adjustment with *AxisLink* set *On* and *Off*.

1. Start with a non distorted image, assume the left top corner is selected.

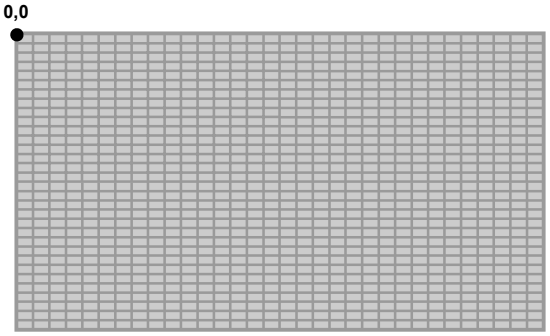

Image 7-78

2. Shift the left top corner +300 pixels to the left.

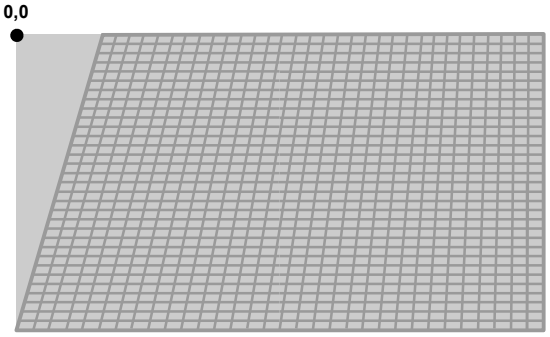

Image 7-79

3. Shift the left corner +300 pixels downwards.

AxisLink = ON	The coordinate system used for the adjustment will coincide with the edges of the distorted image, this will result in a quick adjustment when dealing with complex setups.
AxisLink = OFF	The coordinate system used for the adjustment is absolute.

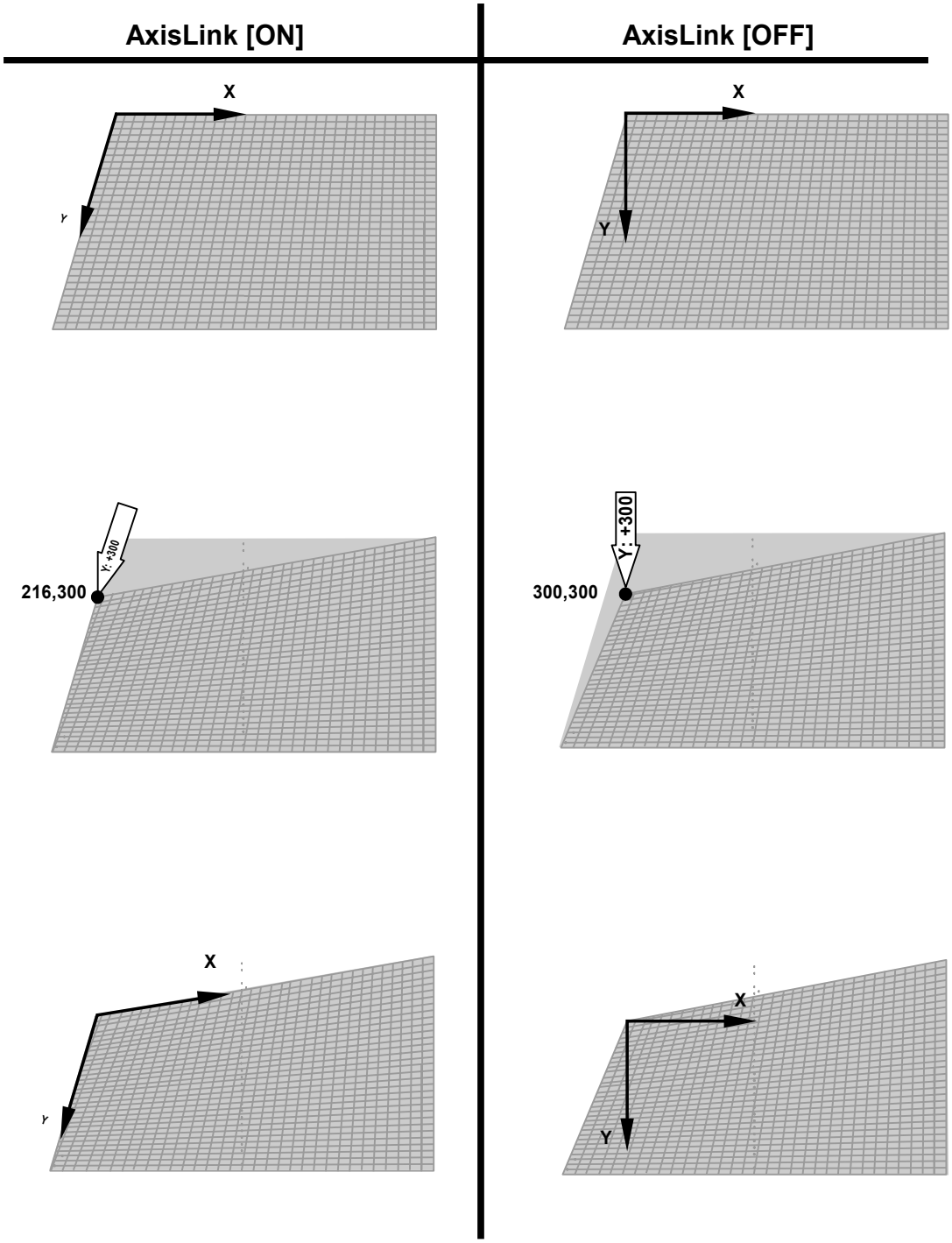

Image 7-80

How to set AxisLink ON ?

1. Start up the *Geometry Edit* menu
2. The *Edit mode* is selected

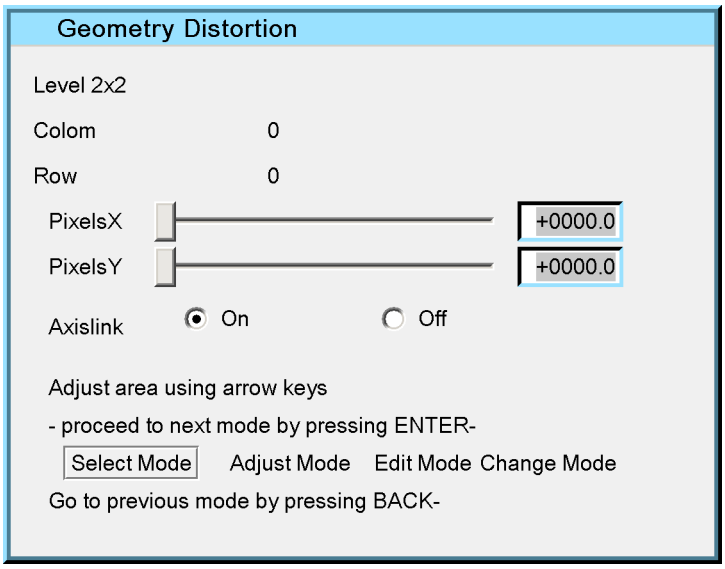

Image 7-81

3. Use ↑ and ↓ to select the *AxisLink* radio buttons

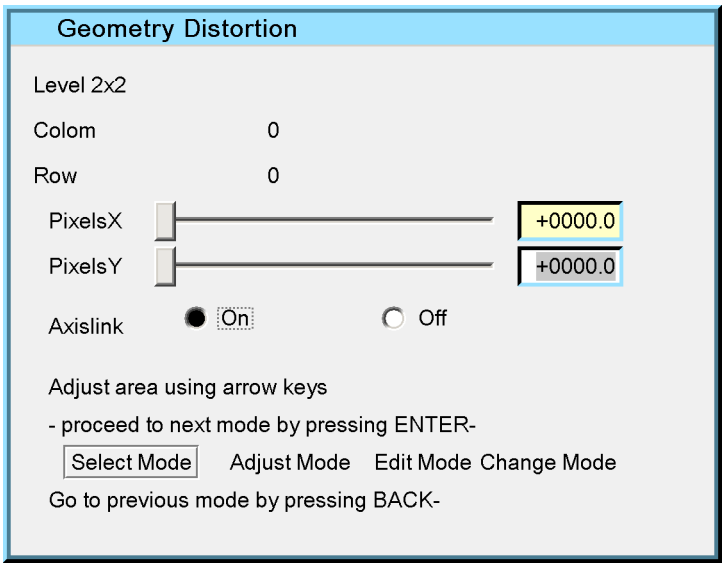

Image 7-82

4. Use ← and → to select the *ON* or *OFF* radio buttons
5. Press **ENTER** to enable/disable the selected radio button
6. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.6 Shift Adjustment

What can be done with the Shift adjustment ?

With the Shift adjustment it is possible to shift the whole image. This is considered as a displacement of the 4 corner points of the *2x2* mode. The same dialog box is used as for the geometry edit.

How to use the Shift adjustment?

1. Start up the Geometry *Edit* menu
2. Press ↓ to select *Shift ....*
3. Press **ENTER**

   A dialog box is displayed. Note that In the shift adjustment, the *Adjust* mode is selected by default (instead of the *Select* mode for the other geometry adjustments).
4. Press **ENTER** to go to the *Edit Mode*

The *Edit mode* is selected

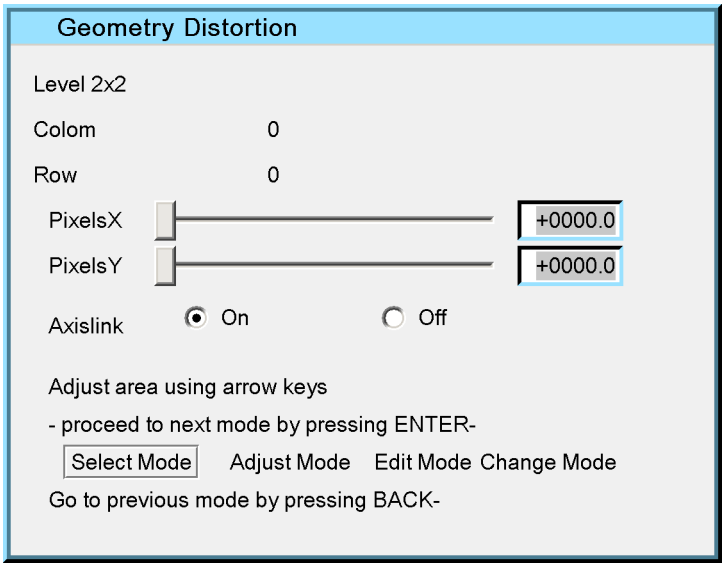

Image 7-83

5. Use ↑ and ↓ to select the *PixelsX* edit box

The *PixelsX* edit box is focused

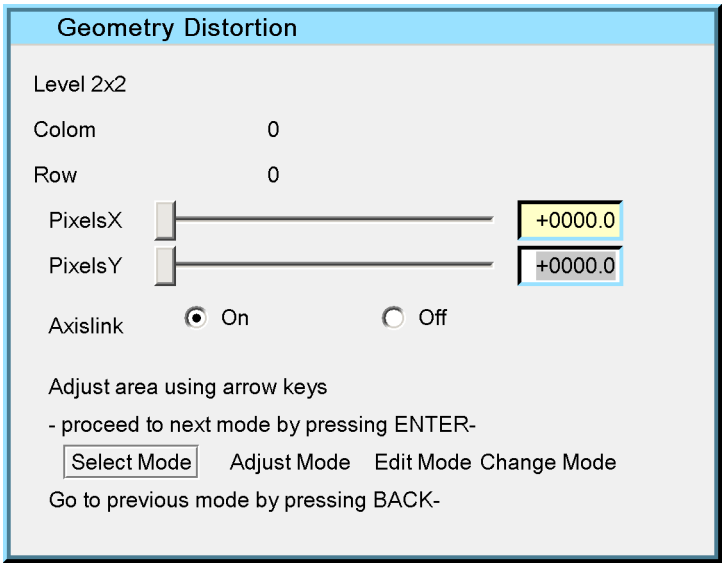

Image 7-84

6. Press **ENTER**

The *PixelsX* edit box is put in edit mode

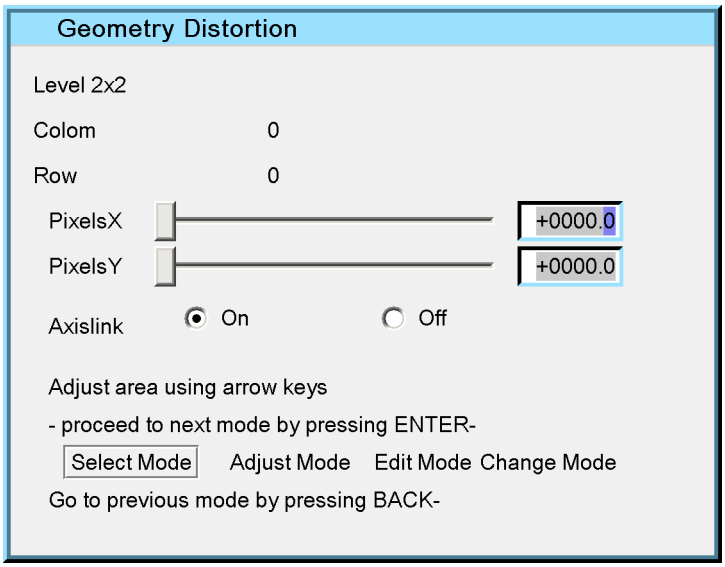

Image 7-85

7. Use ← and → to select the digit and use ↑ and ↓ to increment/decrement the digit
   Tip: *One can also use the numeric digits to fill in the desired value ?*

   The image is shifted along the X axis.

8. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.7 Transport Delay

What is Transport Delay ?

The Transport Delay is the interval between the time at which an image frame is received from the first FPGA of the PMP and the time at which the processing of this frame starts in the second FPGA of the PMP.

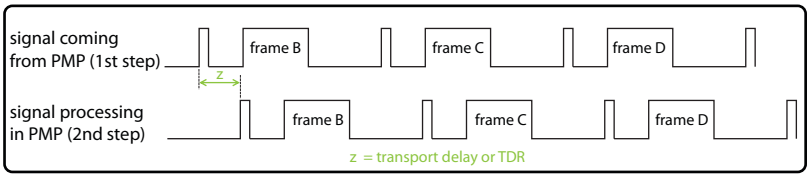

Image 7-86
Transport delay

During this delay all image information is stored in a memory block on the PMP.

A Transport Delay set to the maximum value of 1023, corresponds with a delay of 16 ms.

What can be done with the Transport Delay ?

The data flow of any frame starts with pixel 1 of line 1 of this frame and is processed line by line.

In the example of a top side bow distortion, the first pixel to be displayed is not pixel 1 of the original line 1, but pixel x (>1) of the original line 1. This means that every pixel which comes before pixel x in the original line 1 must be stored in a temporary memory, before the processing of the frame can start.

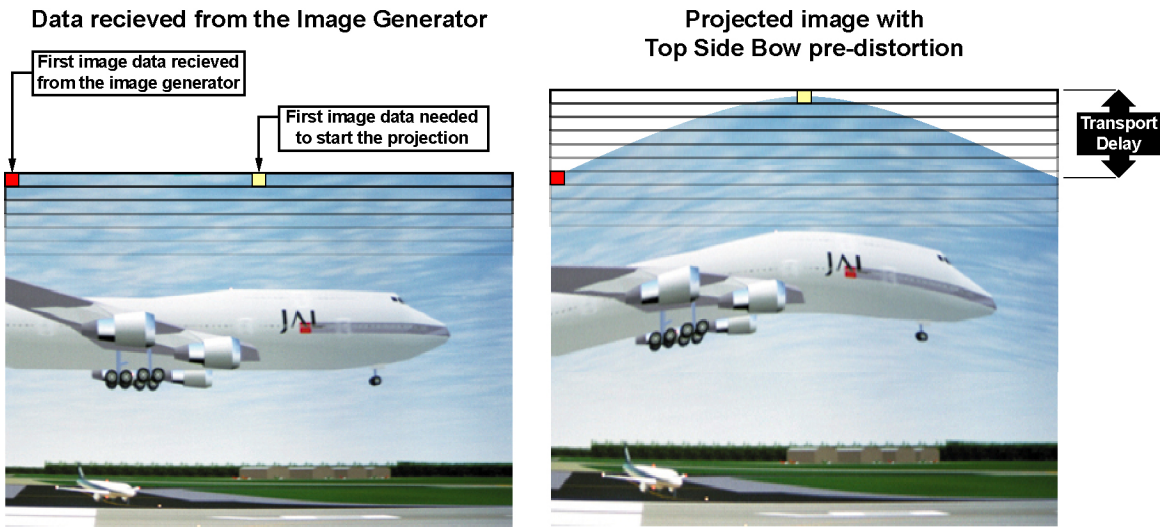

Image 7-87
Transport Delay basic principle

The Transport delay can be adjusted manually or can be set to automatic.

A short Transport delay creates a small delay with respect to the source, but a large delay is needed in case extremely distorted images are needed (extremely curved screens).

A delay set too short may introduce 'clipping' phenomenons in the image.

How to set Transport Delay to manual or automatic ?

1. Start up the Geometry *Edit* menu
2. Push the cursor key ↑ or ↓ to highlight *Transport Delay...* and press **ENTER** to select.

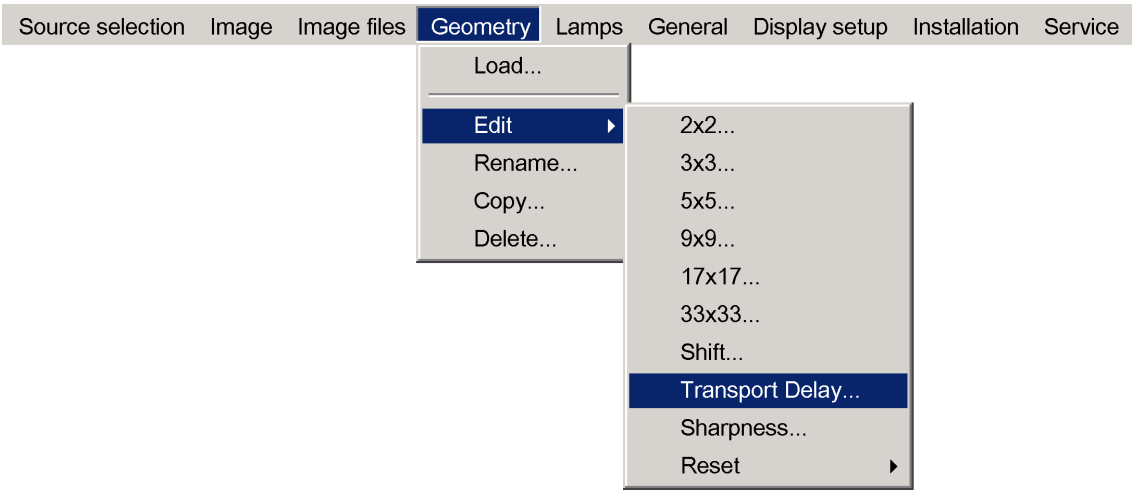

Image 7-88

The *Transport Delay* dialog box will be displayed.

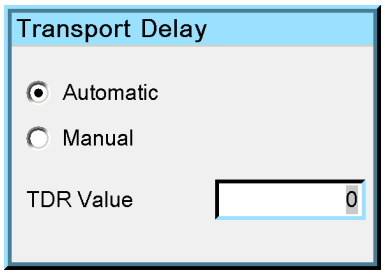

Image 7-89

3. Push the cursor key ↑ or ↓ to select the radio buttons

4. Press **ENTER** to check the desired radio button
5. Press **BACK** to return to the *Geometry Edit* menu.

How to adjust the Transport Delay manually?

1. Display the *Transport Delay* dialog box (see procedure above)

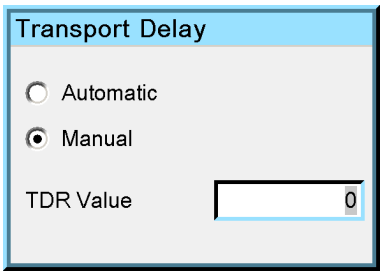

Image 7-90

2. Use the cursor key ← or → , the numeric keys on the RCU, or the local keypad, to edit and change the value of the Transport Delay.
   Note: *The Transport Delay is by default set to 200.*

   The Transport Delay Range can be set from 0 to 1023.

   Tip: *When the transport delay needs to be adjusted In a multi channel setup, first adjust the transport delay of all projectors one by one, leave the projector with the maximum value, then set all other projectors to this maximum value.*
3. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.8 Sharpness

What can be done ?

In some extreme warping conditions digital noise may appear in the warped regions. The sharpness adjustment in the Geometry menu allows to get rid of these perturbations.

How to adjust the geometry Sharpness ?

1. Start up the Geometry *Edit* menu
2. Push the cursor key ↑ or ↓ to highlight *Sharpness...* and press **ENTER** to select.

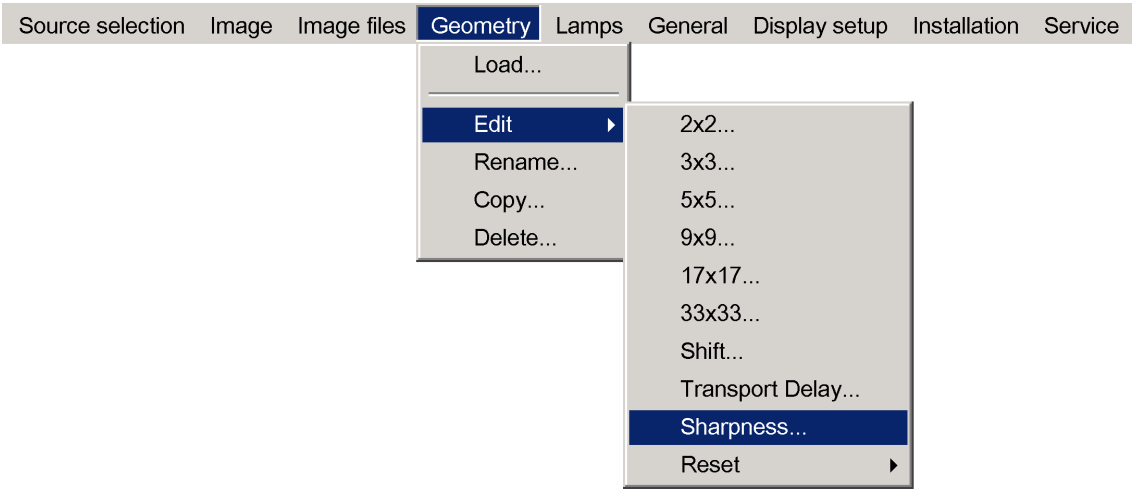

Image 7-91

The *Sharpness* dialog box will be displayed.

Image 7-92

3. Use the cursor key ← or → , the numeric keys on the RCU, or the local keypad, to edit and change the value of the Sharpness.
   Note: *The Sharpness can be set from –8 to +8.*
4. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.9 Geometry Reset

Overview

- Reset all levels
- Restore to a level

7.6.6.9.1 Reset all levels

How to reset all levels?

1. Start the Geometry *Edit* menu
2. Push ↓ or ↑ to select *Reset*
3. Push the → key to pull down the menu.
4. Push ↓ or ↑ to highlight *Reset all levels....*

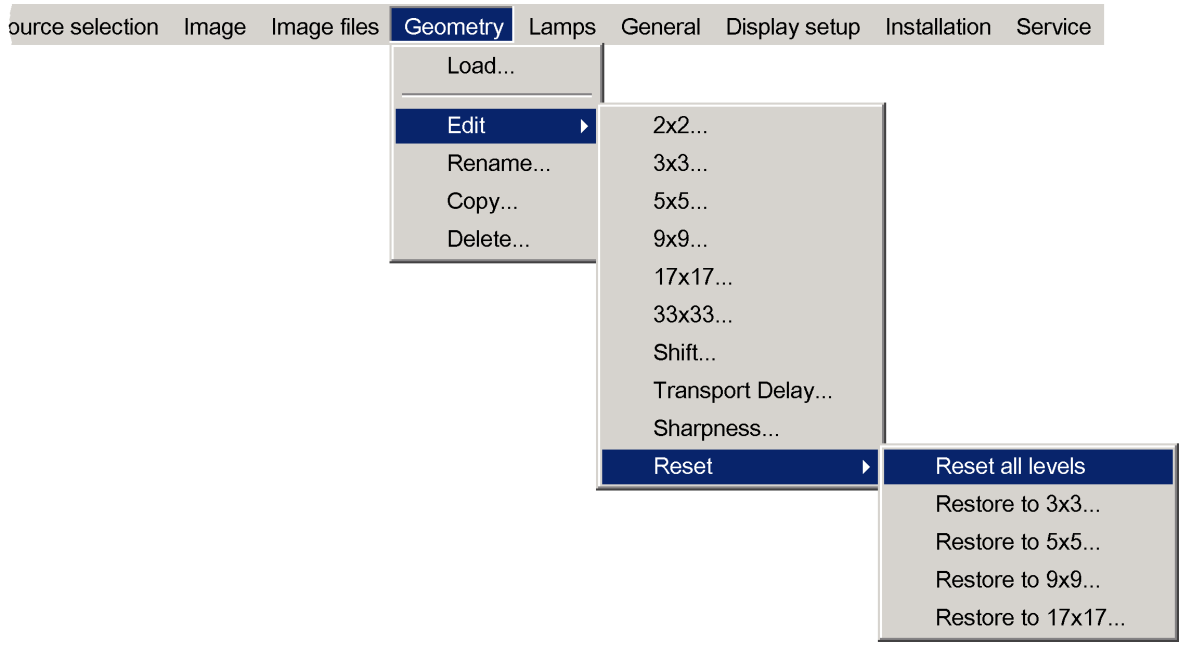

Image 7-93

All the levels are reset. If these levels contained geometry corrections, this will be noticed in the image by a jump.

5. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.9.2 Restore to a level

What can be done ?

Restore to a level means that all the higher level geometry corrections are reset (all geometry correction values are set to 0). The correction values of the level and all the lower levels are kept.

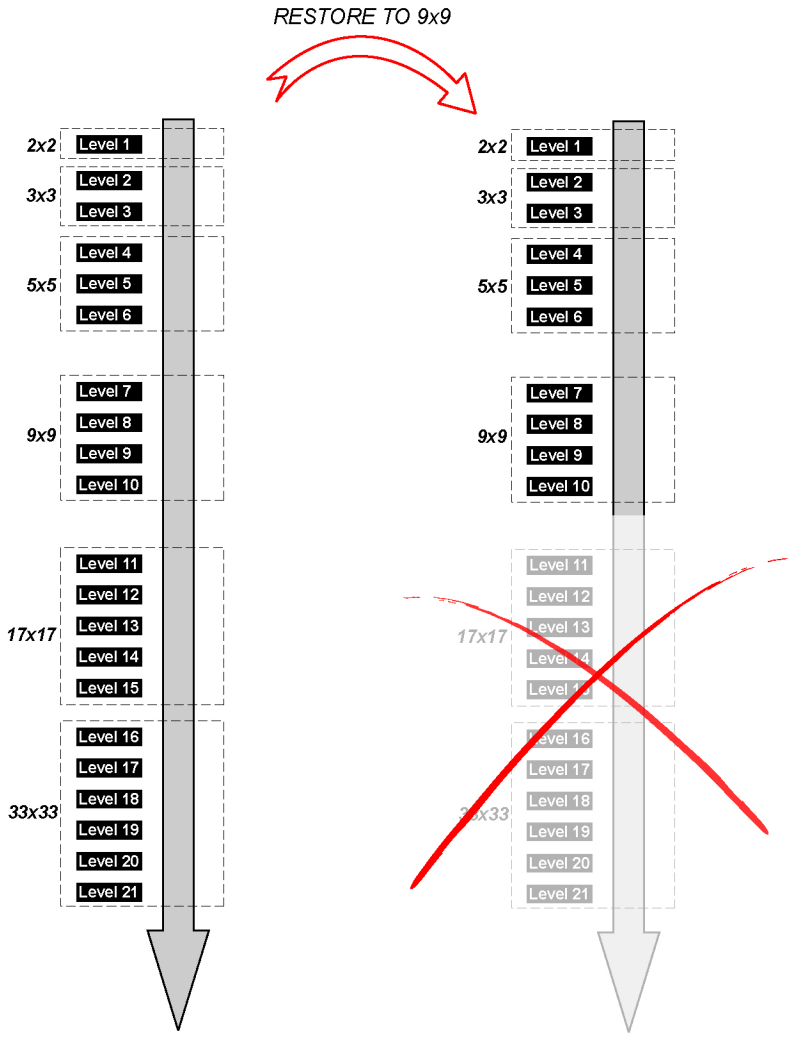

Image 7-94
Geometry Restore example : restoring to a 9x9 level

How to restore to a level ?

1. Start the Geometry *Edit* menu
2. Push ↓ or ↑ to select *Reset*
3. Push the → key to pull down the menu.
4. Push ↓ or ↑ to highlight the desired level to restore, *Restore to ....*

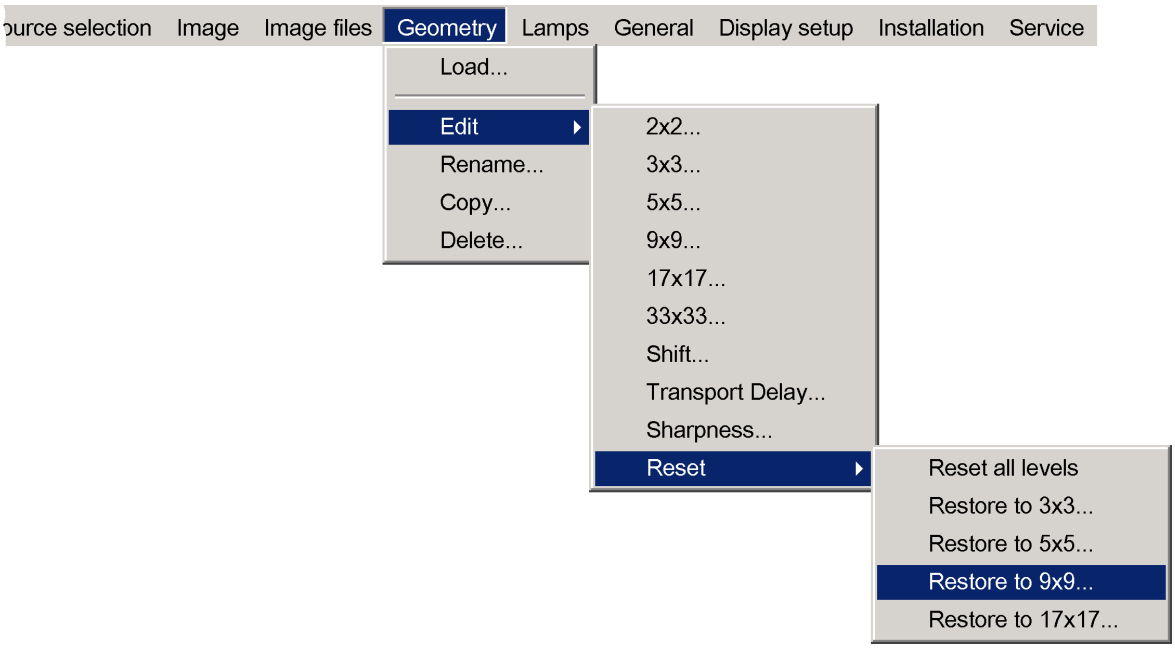

Image 7-95

The higher levels are reset. If these levels contained geometry corrections, this will be noticed in the image by a more or less accentuated jump.

5. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.10 Rename a Geometry File

How to rename a geometry file ?

1. Start up the Geometry menu
2. Press ↓ to select *Rename*

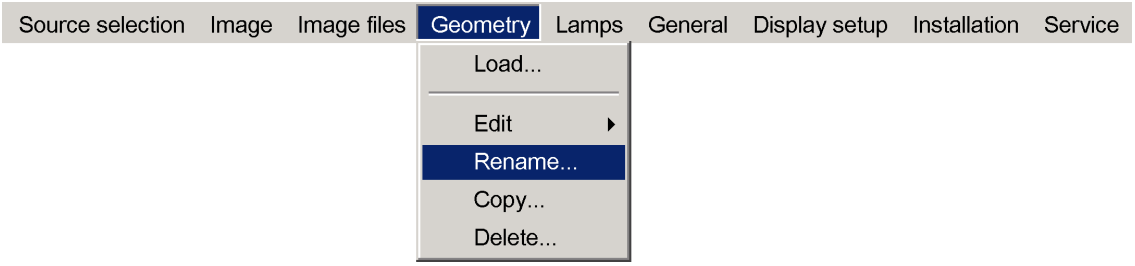

Image 7-96

3. Press **ENTER**

A dialog box is displayed

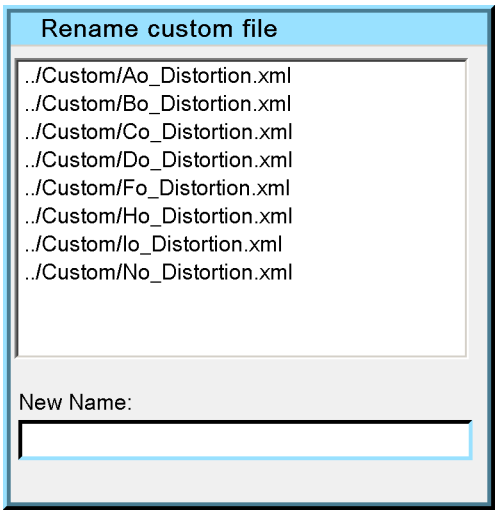

Image 7-97

4. Use the cursor key ← or → to go to the next or previous characters and use ↓ or ↑ to browse through the characters
5. Press **ENTER**

   The file is renamed.
6. Press **BACK** to return to the *Geometry Edit* menu

7.6.6.11 Copy a Geometry File

How to Copy a Geometry File?

1. Start up the Geometry menu
2. Press ↓ to select *Copy*

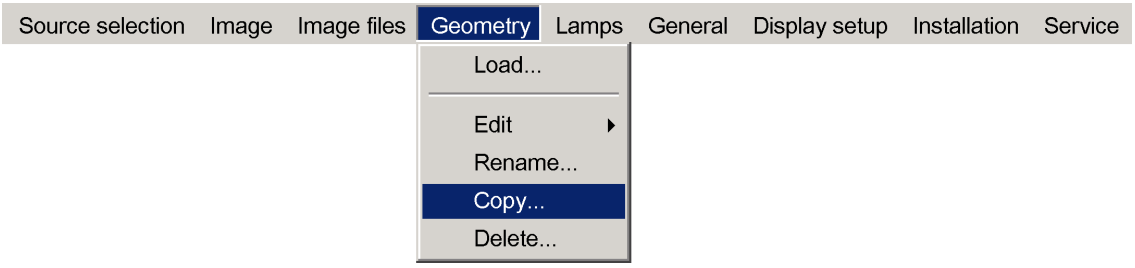

Image 7-98

3. Press **ENTER**

A dialog box is displayed

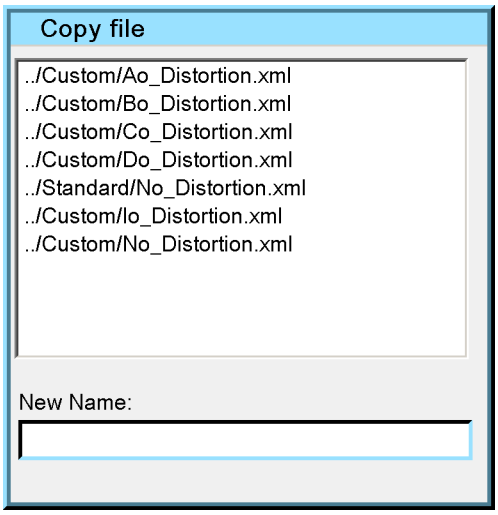

Image 7-99

4. Use the cursor key ↑ and ↓ to select the desired geometry file
5. Press **ENTER** to select.
6. Use the cursor key ← or → , the numeric keys on the RCU, or the local keypad, to edit and change the values, confirm with **ENTER**.
7. Press **BACK** to return to the *Geometry Edit* menu.

7.6.6.12 Delete a Geometry File

How to Delete a Geometry File?

1. Start up the Geometry menu
2. Press ↓ to select *Delete*

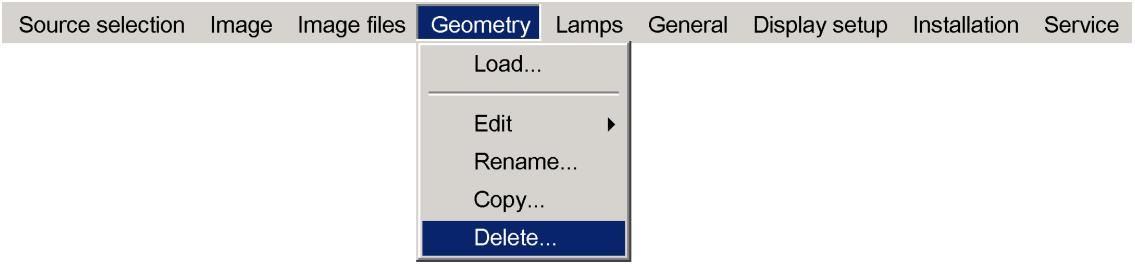

Image 7-100

3. Press **ENTER**

   A dialog box is displayed

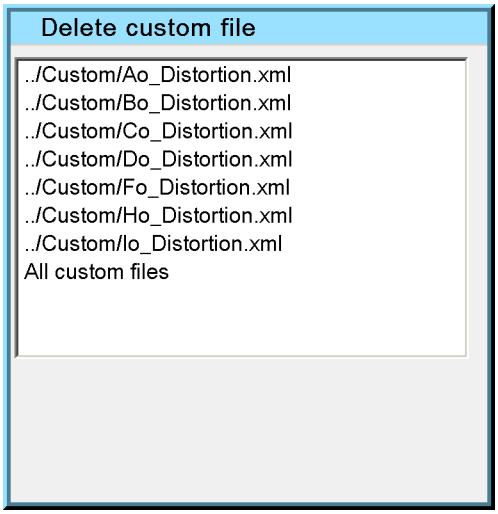

Image 7-101

4. Use the cursor key ↑ and ↓ to select the desired geometry file and press **ENTER** to select.

   A message will be displayed.

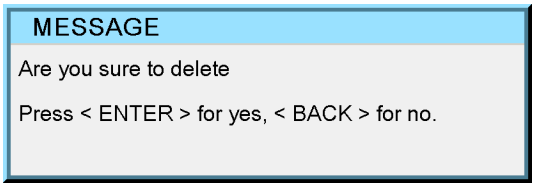

Image 7-102

5. Press **ENTER** to confirm.

   The selected file is deleted and removed from the list.

6. Press **BACK** to return to the *Geometry Edit* menu.

7.7 Lamps

Overview

- Lamp info
- Lamp runtime warning
- Lamp Power Mode
- Constant Light Output (CLO)

7.7.1 Lamp info

What can be done?

All information about the lamp is stored inside the lamp house (EEPROM) and can be displayed via the projector's OSD. This is read only information and can not be changed.

Following Lamp Information can be consulted :

Values	Description
Power :	
Minimum	minimum power
Maximum	maximum power
Current	current power
Lumens	light output (arbitrary unit)
Runtime :	
Current	Total time the lamp is used in this projector

Values	Description
Warning	Time set at which a warning is generated. Using the lamp longer than the maximum run time may damage the projector
Number of strikes	Total times the lamp is started up
Hardware :	
Serial number	Unique serial number of the lamp
Article number	Article number of the lamp
EEPROM version	version of the EEPROM used in the lamp housing

Table 7-4
Lamp Information

How to display the lamp info ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Lamp* item
3. Press ↓ to Pull down the *Lamp* menu
4. Use ↑ or ↓ to select *Info...*

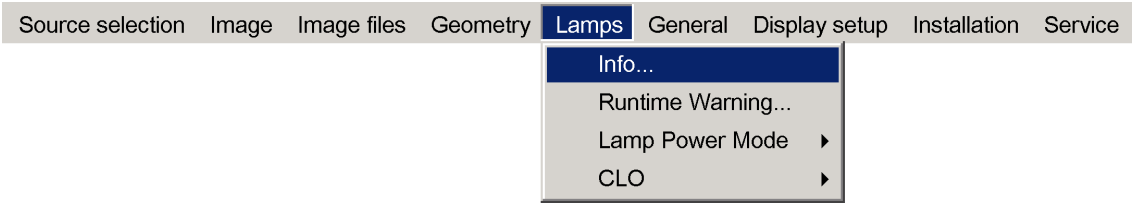

Image 7-103

5. Press **ENTER**

   A text box is displayed

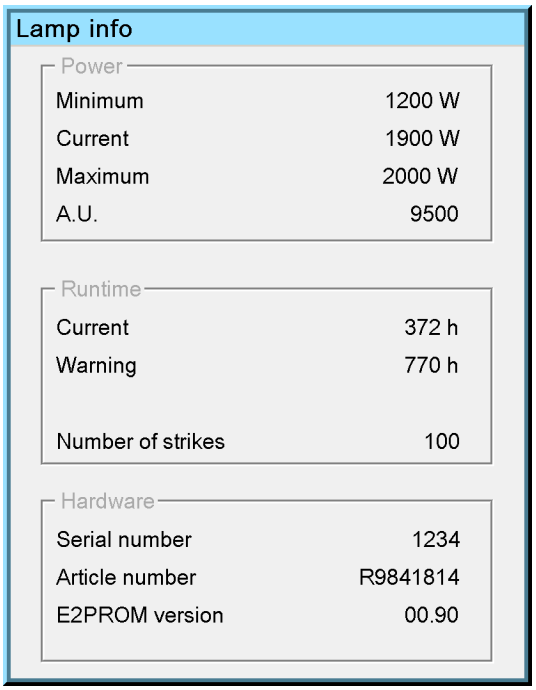

Image 7-104

7.7.2 Lamp runtime warning

What can be done ?

When the lamp has reached a predetermined runtime , a warning message will be displayed on the screen. The lamp runtime warning can be set in a range from 30 to 200 hours. The runtime warning is displayed by default at 30 hours before end of lamp lifetime. This warning message can be removed by hitting **Back** on the RCU.

When the *Warning messages* are disabled in the hidden *Service* menu, the lamp runtime warning will only be displayed at the next startup of the projector, not during a session. Enabling or disabling *TextBox* does not affect the display of the lamp runtime warning.

How to set the lamp runtime warning ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Lamps* item
3. Press ↓ to pull down the *Lamps* menu
4. Use ↑ or ↓ to select *Runtime warning...*

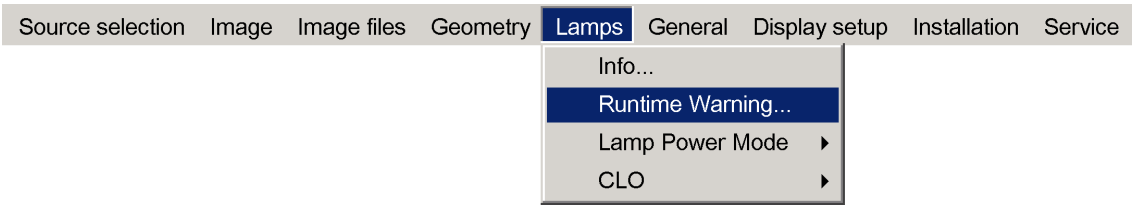

Image 7-105

5. Press **ENTER**

   A dialog box is displayed

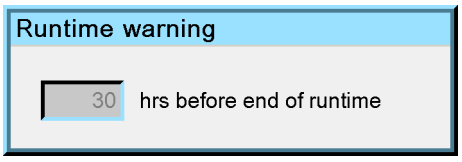

Image 7-106

6. Use ←or →, the numeric keys on the remote, or the keypad to change the runtime warning setting.

7.7.3 Lamp Power Mode

What can be done?

The Lamp can be set to the normal or economic mode.

Following Mode Settings are available:

NORMAL	Normal Light Output
ECONOMIC	Reduced Light Output

Table 7-5
(Lamp) Mode Settings

Economic mode is not available in Galaxy NW-7.

CLO is not possible in the economic mode

How to set the lamp power mode ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Lamp* item
3. Press ↓ to Pull down the *Lamp* menu
4. Use ↑ or ↓ to select *Lamp Power Mode*
5. Press → to Pull down the menu
6. Use ↑ or ↓ to select *Normal/Economic*

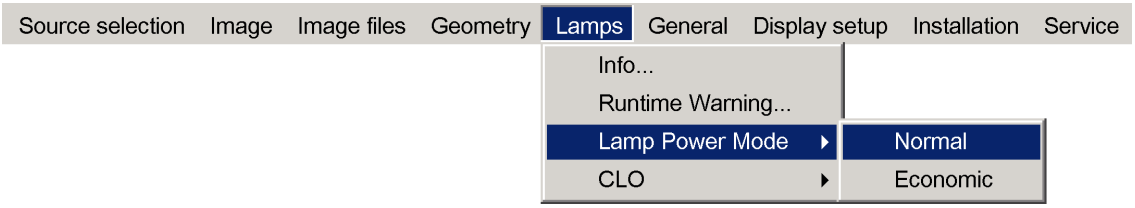

Image 7-107

7. Press **ENTER**

   A drop or rise in light output can be noticed

7.7.4 Constant Light Output (CLO)

Overview

- Constant Light Output Mode
- CLO Target
- Linked CLO

7.7.4.1 Constant Light Output Mode

What can be done?

Constant Light Output allows to force a constant light output (set in the *CLO Target ...* menu) of the projector over a certain period. This will eliminate uncontrolled light output drop caused by natural aging of the lamp. The light output is checked every 5 minutes, if the target is not met, the lamp power is adjusted.

Setting CLO off means that the lamp will operate at constant power (no power adaptation to meet constant light output).

In the illustration below, a normal light output curve is shown over the first 1000 hours, image 7-108. By using CLO and setting the target to 60% of the maximum light output, one will be able to operate during approximately 500 hours with a constant light output, image 7-109.

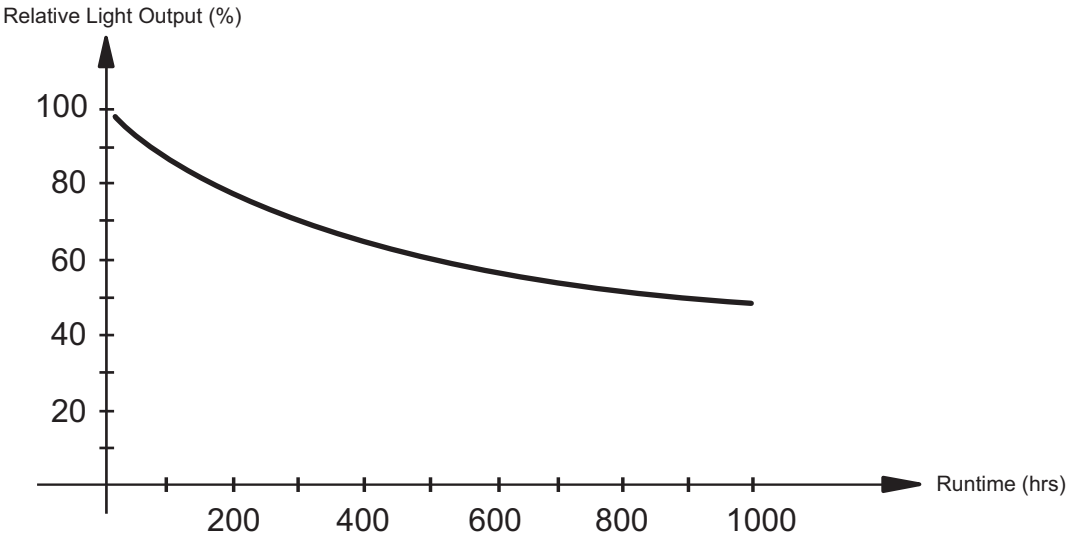

Image 7-108

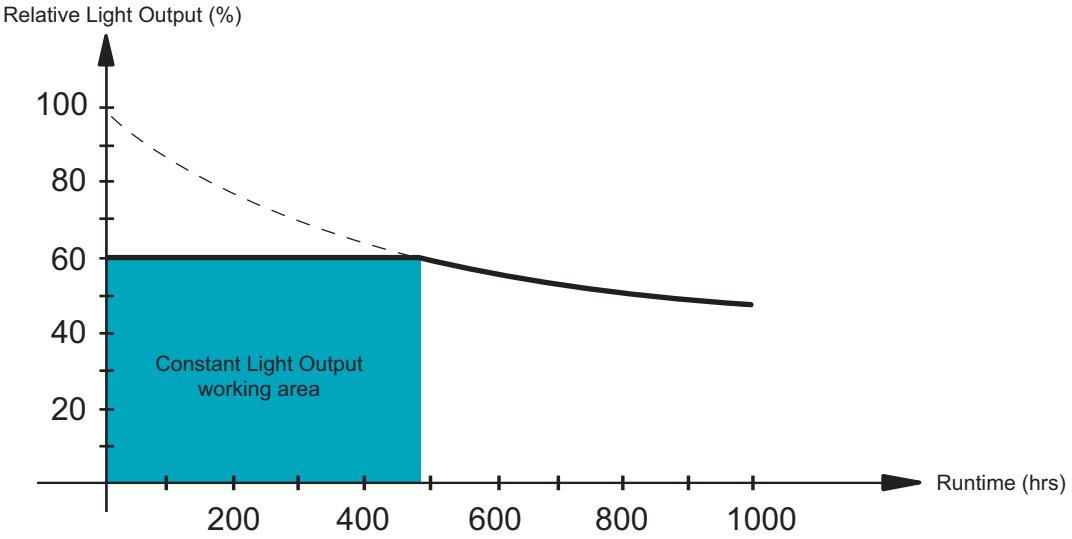

Image 7-109

CLO can not be enabled (ON) if the lamp is working in *Economic* mode.

How to set the CLO On or Off ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Lamp* item
3. Press ↓ to Pull down the *Lamp* menu
4. Use ↑ or ↓ to select *CLO*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Mode*
7. Press → to pull down the menu
8. Use ↑ or ↓ to select *ON* or *OFF*

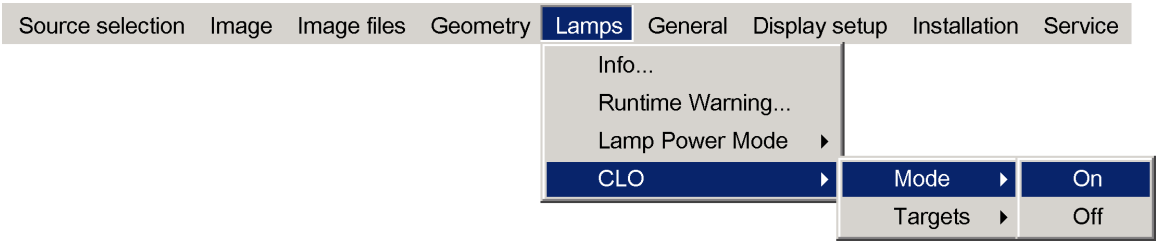

Image 7-110

9. Press **ENTER**

   A bullet shows the active setting

7.7.4.2 CLO Target

What must be done?

The light output target for the CLO is set in this menu. This value will be forced on the projector provided the CLO has been set *ON*.

Two targets can be set : one for the standard mode and one for the Infitec™ mode.

How to set the CLO target ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Lamp* item
3. Press ↓ to Pull down the *Lamp* menu

4. Use ↑ or ↓ to select *CLO*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Target*
7. Press → to pull down the menu
8. Use ↑ or ↓ to select *Normal Mode ...*

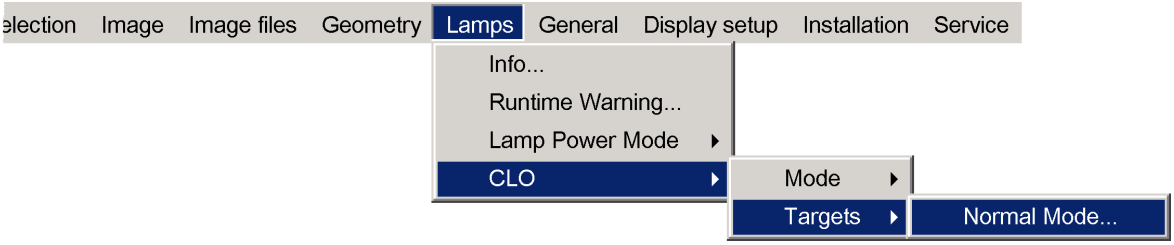

Image 7-111

9. Press **ENTER**

   A dialog box is displayed

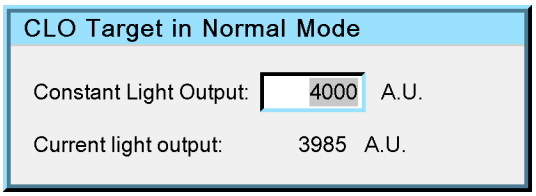

Image 7-112

10. Use ←or →, the numeric keys on the remote, or the keypad to change the target value.

7.7.4.3 Linked CLO

Introduction

Projectors in a multichannel setup use the same kind of lamp. These lamps may slightly differ in their output and will in certain cases have different runtimes, this will result in a difference in light output between the projectors.

By using the constant light output in a **Master/Slave** configuration, it is possible to track and maintain the brightness levels of the projectors, the projectors will deliver an equal light output.

In a multichannel setup (max. 10 projectors) it is possible to link the CLO values of all projectors. One projector will act as master, all slave projectors will track and maintain the CLO setting of this master projector.

Following CLO Settings are available:

MASTER	Master projector to control the CLO in a chain of projectors, the target value in the Master projector will be the target value for all projectors set as slave and which are listed in “Linked Projectors”
SLAVE	Follows the master projector to adjust the CLO
OFF	no linking (note : if CLO mode is ON, it will applied on the projector itself)

Table 7-6
CLO Settings

The linked projectors must be defined by their IP addresses or Hostnames. This is done in the *Linked projectors* menu in the *Installation* menu.

7.8 General

Overview

- Identification
- Pause
- Freeze
- Standby Timer
- Desktop

7.8.1 Identification

The projector's identification screen

The identification screen displays the projector's main characteristics

How to display the identification screen ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *General*
3. Press ↓ to Pull down the General menu
4. Use ↑ or ↓ to select *Identification*

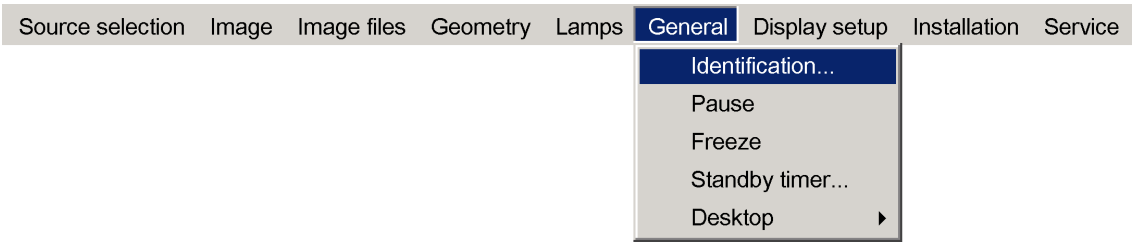

Image 7-113

5. Press **ENTER**

   On the screen appears a text box.

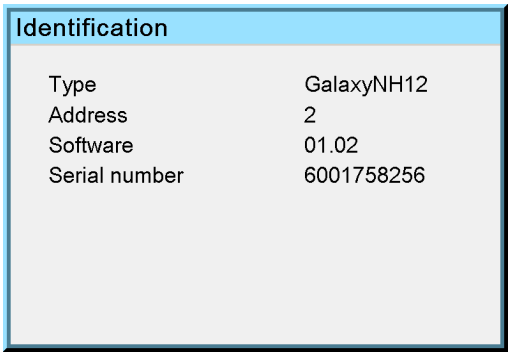

Image 7-114

6. Press **MENU** or **BACK** to exit or to go back to the previous menu

7.8.2 Pause

Pause

The Pause function allows to stop the image display, the projector remaining with full power for immediate restart. The image display is interrupted and the projected background is black.

How to pause the image display?

1. Press **MENU** to activate the Tool bar
2. Press → to select *General*
3. Press ↓ to Pull down the General menu
4. Use ↑ or ↓ to select *Pause*

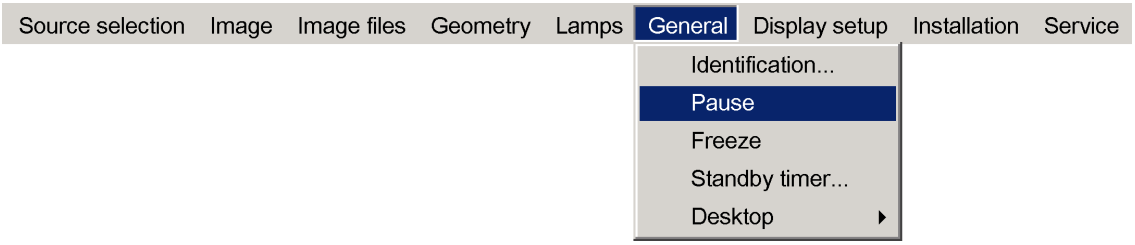

Image 7-115

5. Press **ENTER**

The projection can also be interrupted using the PAUSE key on the RCU. To restart the image projection press PAUSE

7.8.3 Freeze

Freezing the image

With the Freeze function, the image can be frozen. To restart the image, reuse the Freeze function or press the **FREEZE** button on the remote.

How to freeze the image ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *General*
3. Press ↓ to Pull down the General menu
4. Use ↑ or ↓ to select *Freeze*

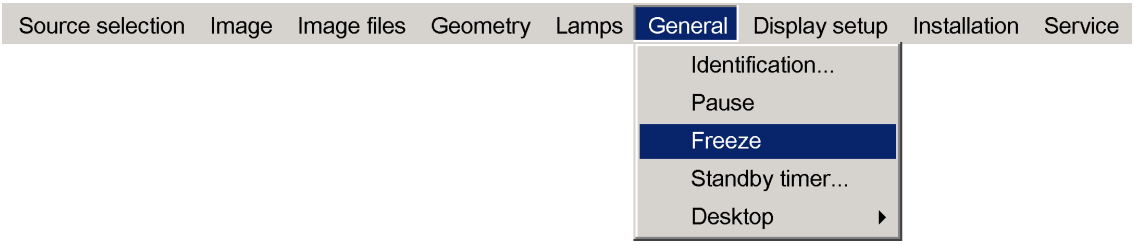

Image 7-116

5. Press **ENTER** to activate the Freeze function

The image can also be frozen using the FREEZE key on the RCU

7.8.4 Standby Timer

What can be done ?

If there is no signal, and the standby timer is enabled, a dialog box is displayed and the projector will shut down after a pre determined time.

The countdown time can be set in a dialog box in a range from 180 to 3600 seconds (default value = 300). The Timer can also be disabled.

How to enable the timer ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *General*
3. Press ↓ to Pull down the General menu
4. Use ↑ or ↓ to select *Standby Timer*

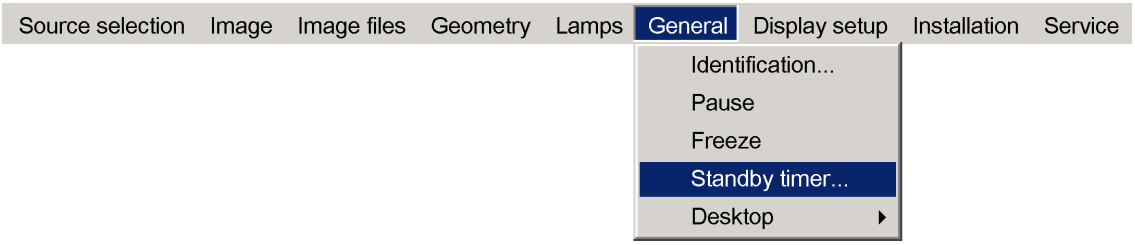

Image 7-117

5. Press **ENTER**

   A dialog box is displayed

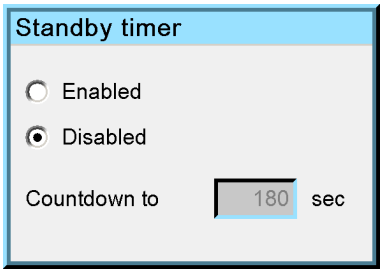

Image 7-118

6. Use ↑ or ↓ to select the radio button *Enabled,* a box surrounds the selected item, press **ENTER** to activate
7. Use ↑ or ↓ to browse to the input field
8. Use ←or→ , the numeric keys on the remote or the keypad to change the countdown time
9. Press **MENU** or **BACK** to exit or to go back to the previous menu

7.8.5 Desktop

What can be done ?

An external source can be connected to the projector in order to be used as desktop i.e. as background for the connected sources. The desktop source which is in general a PC can then be used to manage the projector sources which act as source windows on top of the desktop image. An Ethernet link between the desktop PC and the projector allows the control of the source windows.

How to enable the desktop ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *General*
3. Press ↓ to Pull down the General menu
4. Use ↑ or ↓ to select *Desktop*
5. Press → to open the menu
6. Use ↑ or ↓ to select *ON*

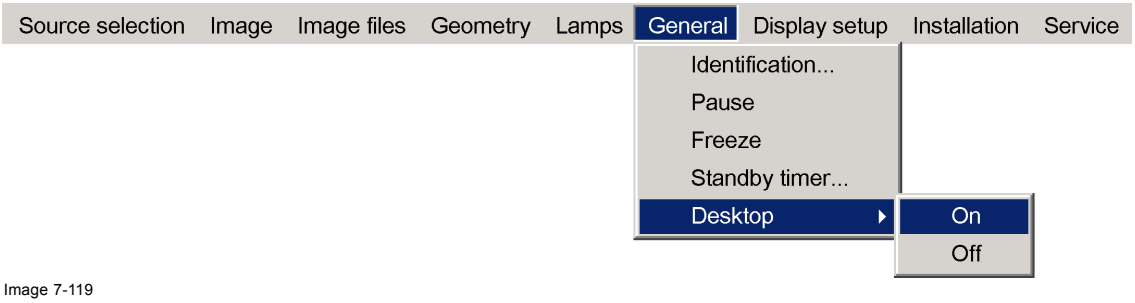

Image 7-119

7. Press **ENTER**

   The desktop is displayed if the desktop PC is connected (see connections)

Using Desktop makes only sense when using the Barco Desktop integration software. The Desktop integration software is covered in the Desktop integration User Guide.

7.9 Display setup

Overview

- Textbox
- Full screen synchronous representation
- Menu bar position
- Status bar position
- Slider box position
- Dynacolor
- Soft edge
- AutoImage Setup

7.9.1 Textbox

What can be done ?

The Text box function allows to choose whether the different text boxes are displayed or not.

How to enable/disable the Textbox ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Textbox*
5. Press → to pull down the menu
6. Use ↓ or ↑ to enable (*ON*) or disable (*OFF*) the textbox

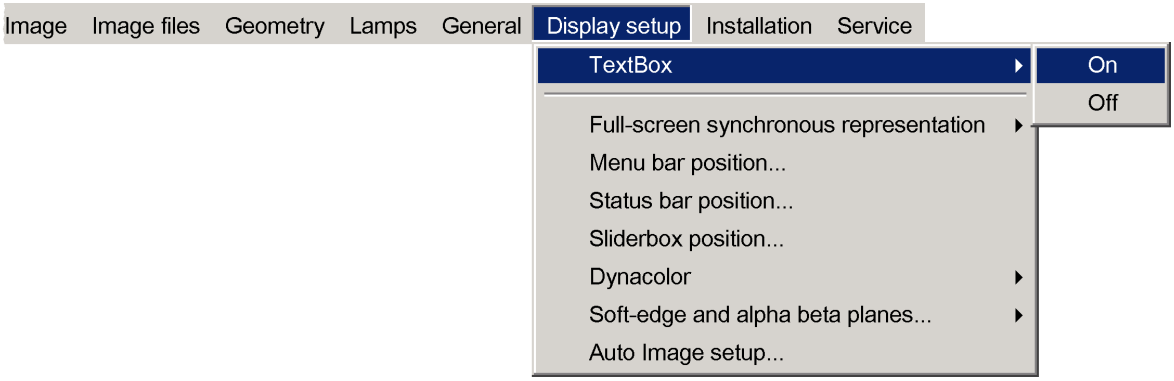

Image 7-120

7. Press **ENTER**

   A white bullet shows the active setting

7.9.2 Full screen synchronous representation

What can be done?

In full screen, the display can be driven in synchronous or asynchronous mode. In the synchronous mode, the display will be refreshed at the same vertical frequency as the displayed source.

In the asynchronous mode, the display will be refreshed at a fixed vertical frequency depending on the OSD setting, instead of the vertical frequency of the displayed source.

The maximal vertical refresh rate of the display is 120Hz.

Fixed vertical refresh rate during asynchronous mode:

50 Hz or 60 Hz if the projector is Galaxy NW-7 and 60 Hz if the projector are (Galaxy) NW-12/NH-12, NW-12, iD LH12, iCon NH-12.

Galaxy NW-7 has an extra step procedure which is described below !

If *Full screen synchronous representation* is disabled, smoothly moving images can show chopped motion!

How to enable/disable the full-screen synchronous representation in (Galaxy) NW-12/NH-12, NW-12, iD LH12, iCon NH-12 ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Full-screen synchronous representation*
5. Press → to open the menu
6. Use ↑ or ↓ to select ON to enable or OFF to disable
7. Press **ENTER**

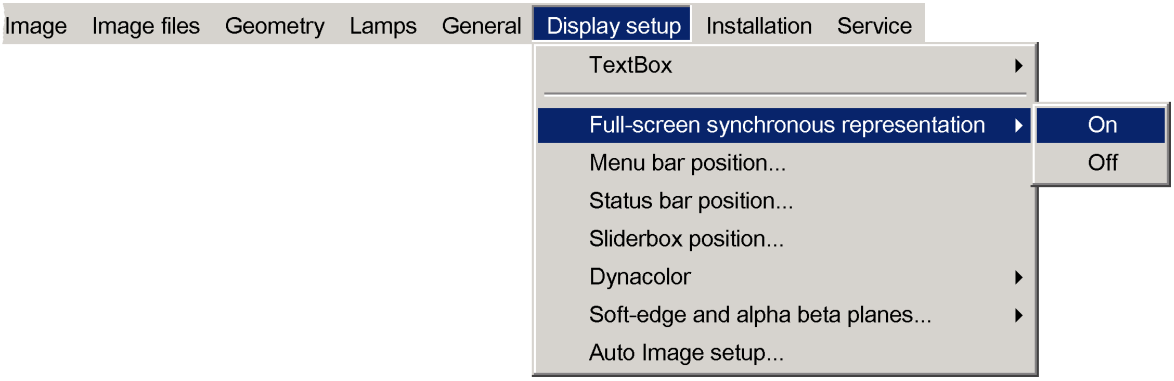

Image 7-121

A bullet shows the active setting

How to enable/disable the full-screen synchronous representation in Galaxy NW-7?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Full-screen synchronous representation*
5. Press → to open the menu
6. Use ↑ or ↓ to select *Mode*
7. Press → to open the menu
8. Use ↑ or ↓ to select ON to enable or OFF to disable
9. Press **ENTER**

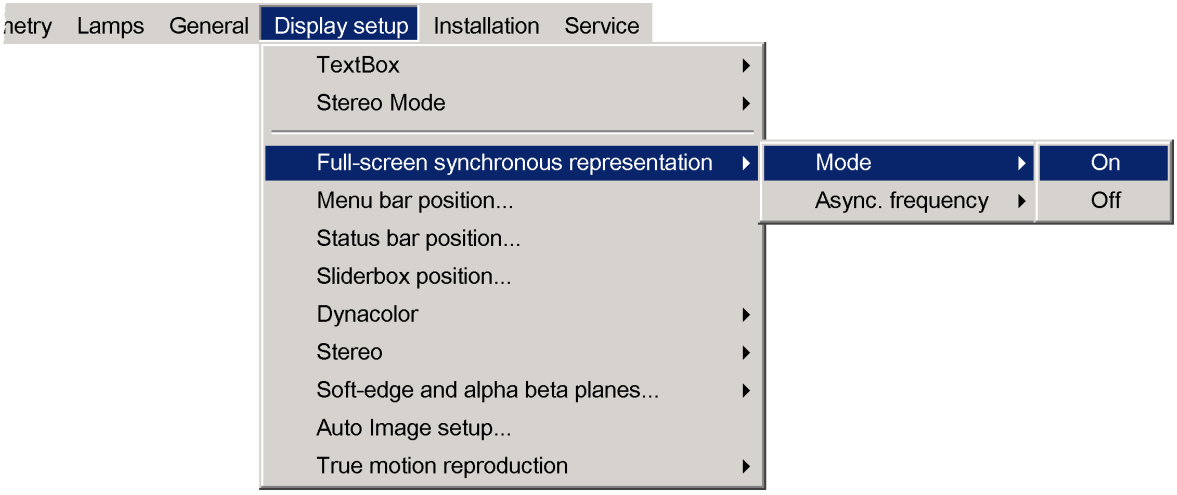

Image 7-122

A bullet shows the active setting

7.9.3 Menu bar position

What can be done ?

The menu tool bar can be centered vertically , the range being from top of the screen to the middle of the screen. This can be useful in applications where the top image content is not displayed (soft edge region).

How to center the menu ?

1. Press **MENU** to activate the tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Menu bar position menu*
5. Press **ENTER**

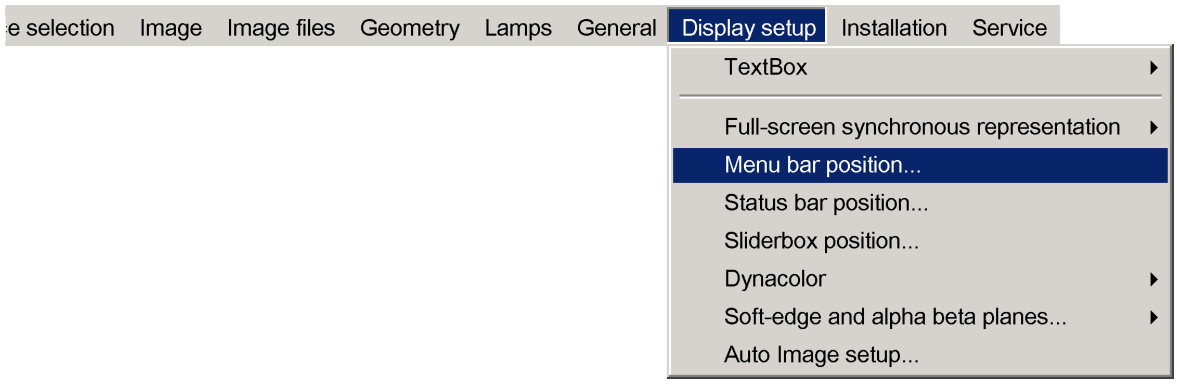

Image 7-123

6. Use ↑ or ↓ to position the Menu bar

7.9.4 Status bar position

What can be done ?

The status bar (wizard menu) can be centered vertically , the range being from bottom of the screen to the middle of the screen. This can be useful in applications where the bottom image content is not displayed (soft edge region).

How to center the menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Status bar position*

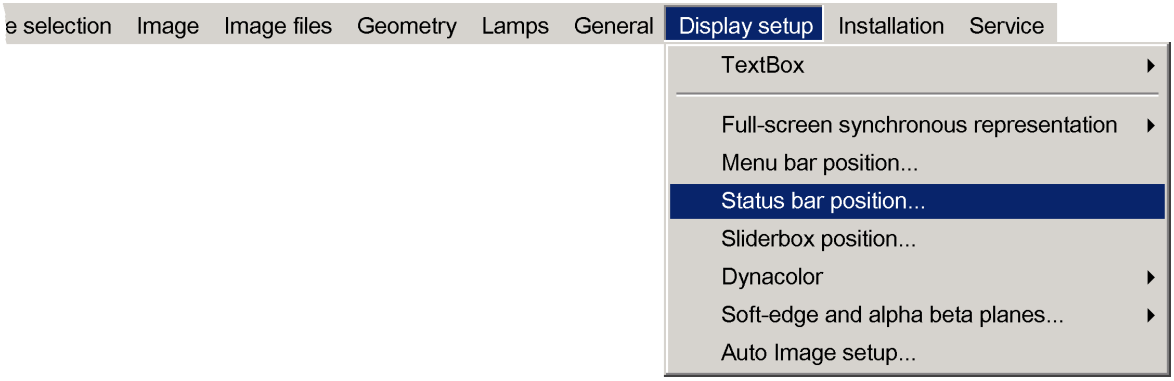

Image 7-124

5. Press **ENTER**
6. Use ↑ or ↓ to position the status bar

7.9.5 Slider box position

What can be done ?

The slider box function allows to display or hide the different boxes used for instance for picture settings (contrast, ...).

How to reposition the slider box?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Slider box position*

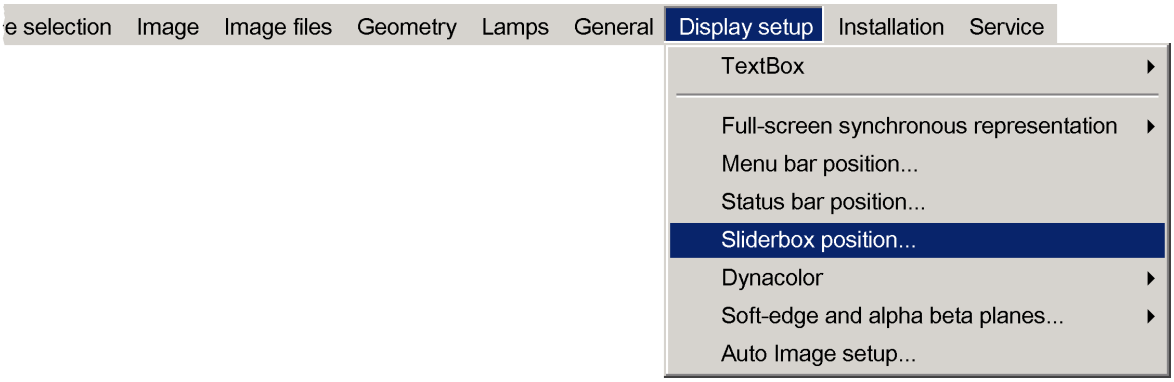

Image 7-125

5. Press **ENTER**

   A slider box is displayed. Use the 4 arrow keys to drag the box to the desired position.

There is a coarse and a fine adjustment of the position, use ENTER (when slider box is displayed) to switch between the two.

7.9.6 Dynacolor

Overview

- Introduction
- Dynacolor adjustment
- Black Color Matching

7.9.6.1 Introduction

What can be done?

DynaColor™ will eliminate channel-to-channel color variations or, in case of a single projector, force a desired color reproduction.

How to define color?

The CIE chromaticity diagram is one way to plot the colors the human eye can see.

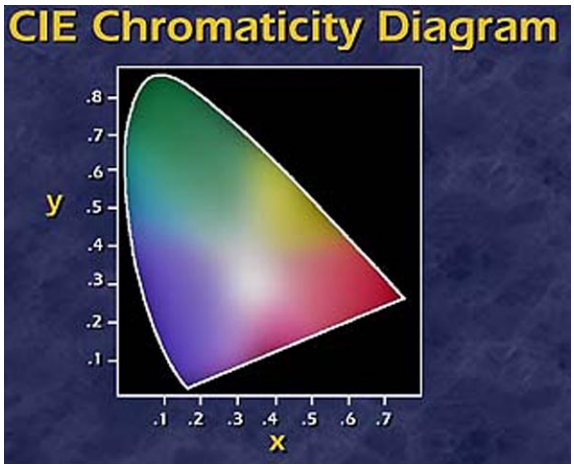

Image 7-126
The CIE chromaticity diagram

A projector can only reproduce a certain color gamut within this diagram. This color gamut is defined by the triangle formed by the x, y coordinates of Red Green and Blue. These parameters are used by the DynaColor™ adjustment in the projector.

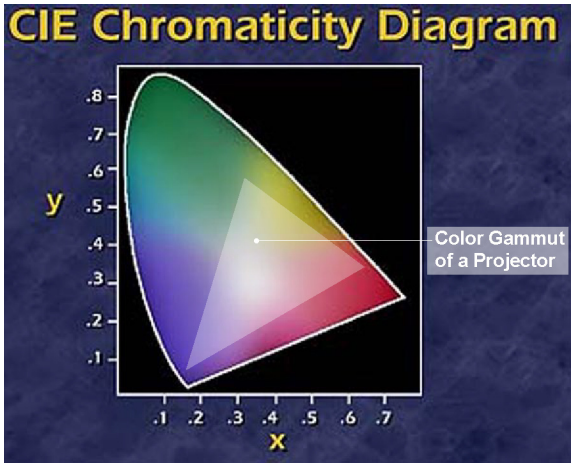

Image 7-127
The projector color gamut is defined by the triangle formed by the x, y coordinates of Red Green and Blue

Due to the tolerance on optical components the x, y values of this color gamut of each projector will differ.

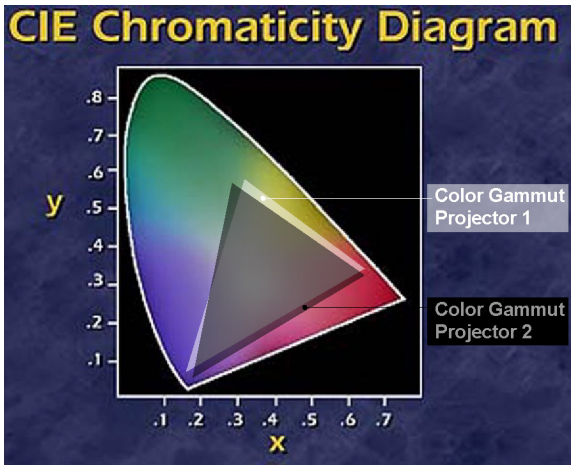

Image 7-128
The color gamut of each projector will differ

When working with a multichannel setup, these color differences between different projectors can be smooth out by matching the color gamuts of the different projectors to a Common Color Gamut.

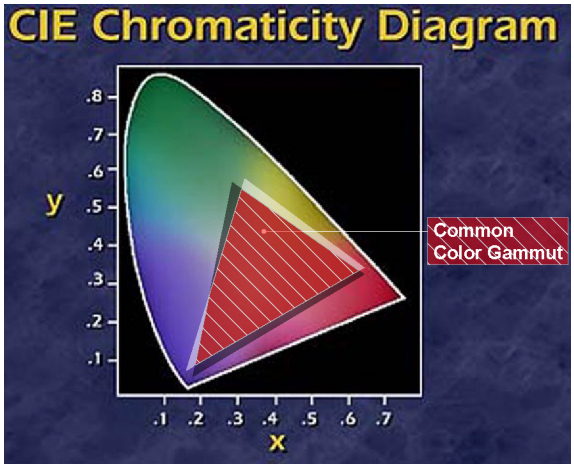

Image 7-129
Common Color Gamut

The Common Color Gamut

In a basic setup with 2 projectors, the perimeter of the Common Color Gamut is described by the 6 points of intersection of the 2 separate color gamuts.

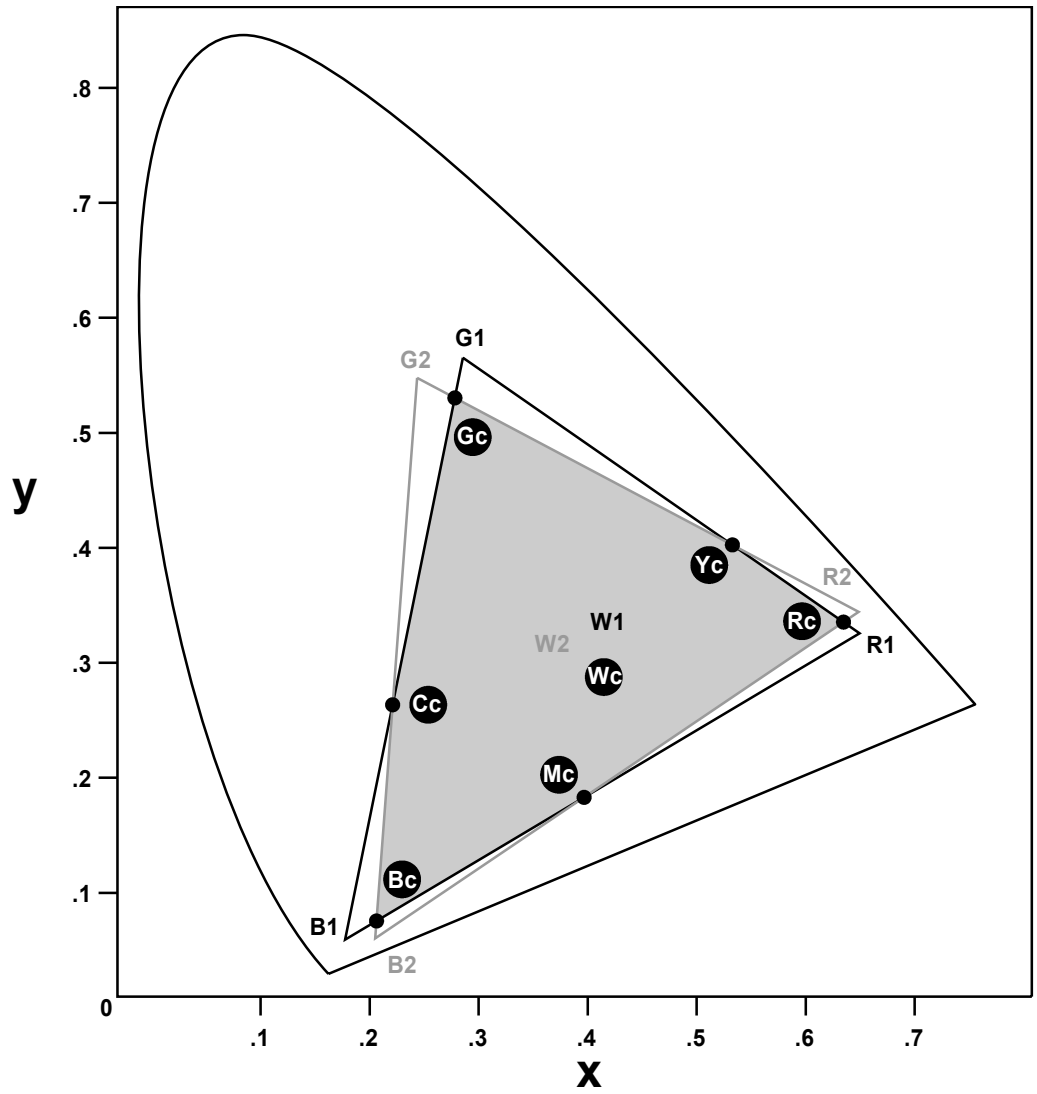

Image 7-130
The Common Color Gamut

R1 Red projector 1
R2 Red projector 2
G1 Green Projector 1
G2 Green Projector 2
B1 Blue Projector 1
B2 Blue Projector 2
W1 White Projector 1
W2 White Projector 2
Rc Red Common Color Gamut
Gc Green Common Color Gamut
Bc Blue Common Color Gamut
Cc Cyan Common Color Gamut
Mc Magenta Common Color Gamut
Yc Yellow Common Color Gamut
Wc White Common Color Gamut

The following parameters can be adjusted within DynaColor™:

- the x, y coordinates and L (Light Output) of the 6 Common Color Gamut perimeter points.
- the x, y coordinates and L (Light Output) of the White point of the Common Color Gamut.

The Dynacolor™ Interface

Following parameters are available in the Dynacolor™ Interface:

Measured Values	These are the colors the projector displays when no color changes are made
Red x, y	Coördinates for the Red point
Green x, y	Coördinates for the Green point
Blue x, y	Coördinates for the Blue point
White x, y	Coördinates for the White point

Red L	Red Light output
Green L	Green Light output
Blue L	Blue Light output
White L	White Light Output = Red + Blue + Green Light output

Desired Values	These are the colors you want the projector to display when the status is enabled
Red x, y	Coördinates for the Red point
Green x, y	Coördinates for the Green point
Blue x, y	Coördinates for the Blue point
Cyan x, y	Coördinates for the Cyan point
Yellow x, y	Coördinates for the Yellow point
Magenta x, y	Coördinates for the Magenta point
White x, y	Coördinates for the White point
Red L	Red Light Output
Red Lmax	Maximum available Red Light Output
Green L	Green Light Output
Green Lmax	Maximum available Green Light Output
Blue L	Blue Light Output
Blue Lmax	Maximum available Blue Light Output
Cyan L	Cyan Light Output
Cyan Lmax	Maximum available Cyan Light Output
Yellow L	Yellow Light Output
Yellow Lmax	Maximum available Yellow Light Output
Magenta L	Magenta Light Output
Magenta Lmax	Maximum available Magenta Light Output
White L	White Light Output
White Lmax	Maximum available White Light Output

Factory Preset	Sets the measured parameters back to the factory preset for the current set
Calibration	This starts the calibration procedure for the measured points of the current set (Changing these settings may seriously affect the performance of the projector).
Default Desired	This will reset the desired parameters to no color change values (measured values). This can be interesting to recalculate the secondary colors.

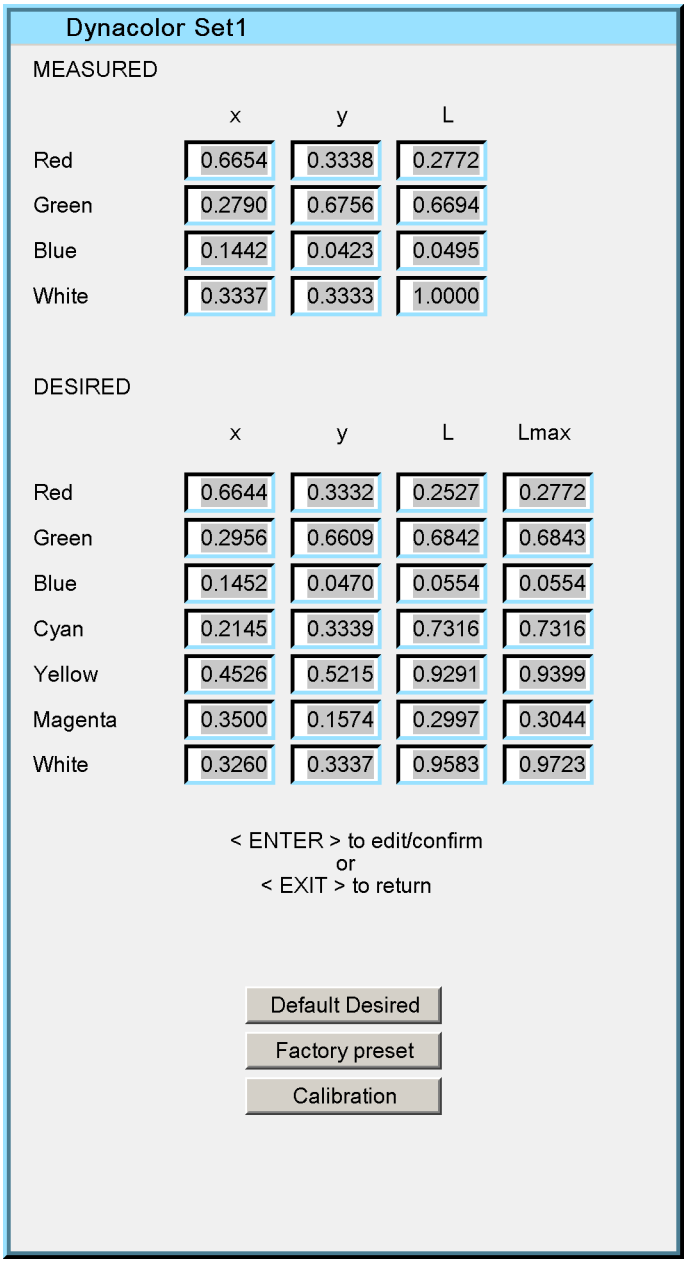

Image 7-131

7.9.6.2 Dynacolor adjustment

Overview

- Introduction
- Calibration for the standard mode (for multiple projectors)
- Common color values

7.9.6.2.1 Introduction

Although DynaColor can also be used in case of a single projector to force a desired color reproduction, we will cover only the case where multiple projector have to be color matched using DynaColor.

Standard Dynacolor adjustment procedure (multiple projectors)

The adjustment of Dynacolor consists of :

1. Measuring the color values for each projector (Calibration procedure)
2. Calculating the common values filling them in the desired value of every projector

Infitec Dynacolor adjustment procedure (in the projector)

The adjustment of Dynacolor for Infitec consists of :

1. Measuring the color values for each filter (Calibration procedure) in Infitec mode
2. perform filter Matching the common values will be filled in automatically by the projector

The Infitec Dynacolor calibration can also be done over multiple projectors. Common values must be calculated and filled in every projector.

In case one uses linked Dynacolor, the master projector will calculate the common values and force them on all (the linked) slave projectors

7.9.6.2.2 Calibration for the standard mode (for multiple projectors)

What has to be done ?

The calibration of Dynacolor consists of measuring the color values of each projector. The measurements have to be done in a dark environment. Make sure all external lights are off (even a PC screen can produce too much unwanted light). Use a light meter (PR655, LMT, …) and at a fixed position during the entire measurement. In the procedure below we consider a system of 2 projectors.

CAUTION: Only to be done by qualified personnel ! Never change the values if not needed. Altered color values will not guarantee optimal image reproduction.

How to calibrate Dynacolor for projector 1 ?

1. Select *Set1* (see procedure above)
2. Press **Calibrate** in the Dialog box

   A red full screen test pattern is displayed.
3. Press **ENTER**

   A dialog box is displayed for the Red color

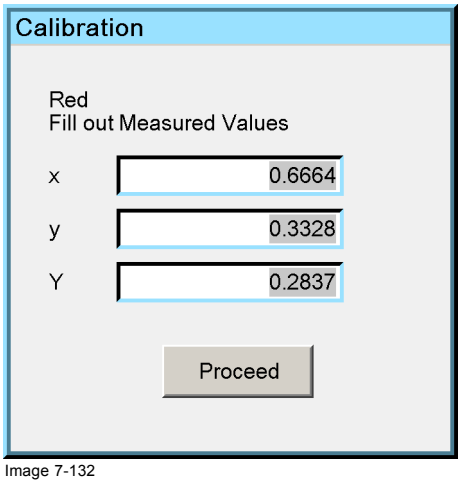

Image 7-132

4. Fill in the measured x and y and coordinates and the Y value
   Note: *the Y value will be transformed in a L value by the projector*
5. Press **Proceed**

   A Green test pattern is displayed
6. Proceed in the same way for Green and Blue as for the Red color
7. The values are finally updated in the measured values of the Dynacolor dialog box.

8. Press **Default desired** to copy the measured values for Red, Green and Blue and to calculate the secondary colors Cyan, Yellow and Magenta.

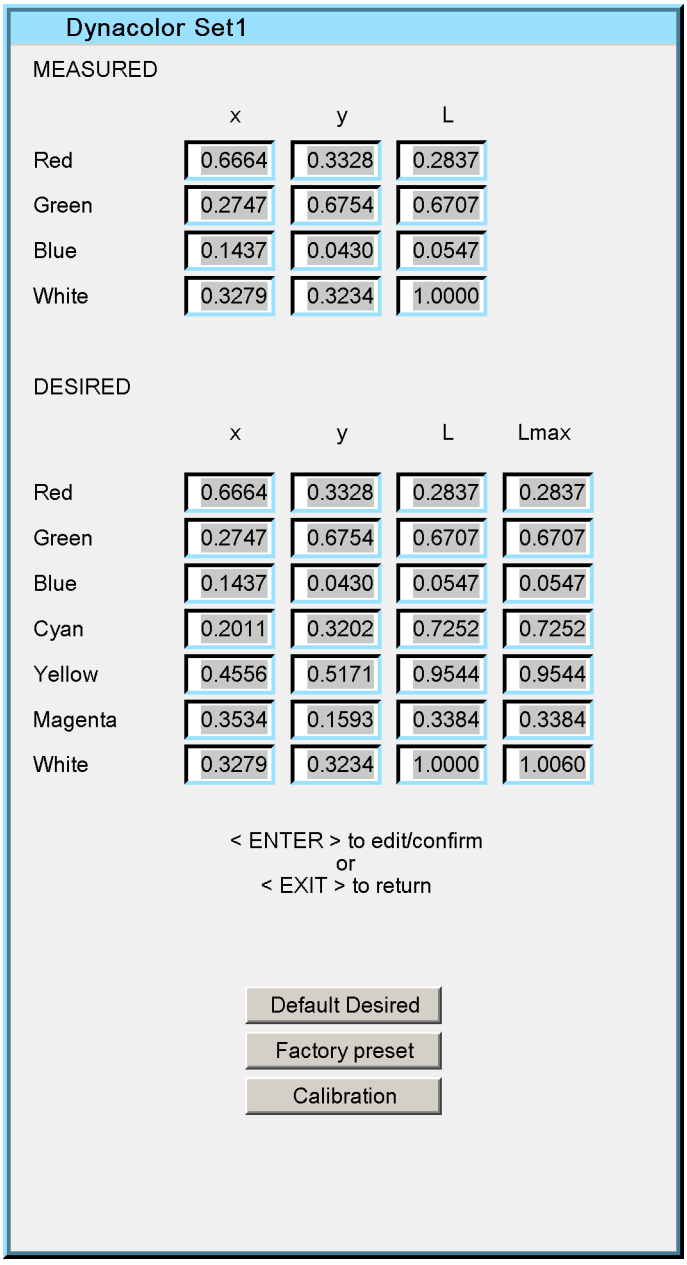

Image 7-133

How to calibrate Dynacolor for projector 2

1. Proceed in the same way as for projector 1

Let's consider we obtain following values

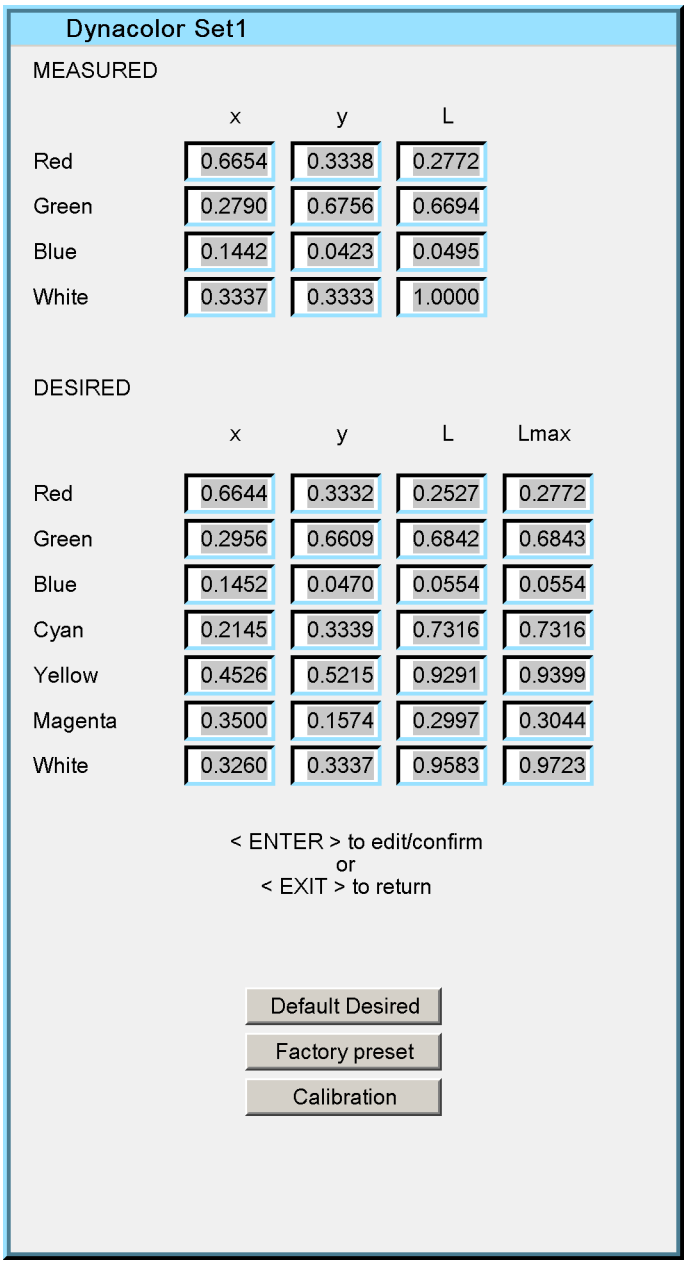

Image 7-134

7.9.6.2.3 Common color values

What can be done ?

The common color value scan be determined manually or automatically.

Manually : Calculating the common color values

1. calculate the common values and fill them in the *Desired values* of both projectors.

   Both projectors will now operate within the same color gamut.

Automatically : Link Set

1. Start up the *Linked Projector* menu of the Master projector
2. In the Linked Projector menu press the **Link Set 1** button

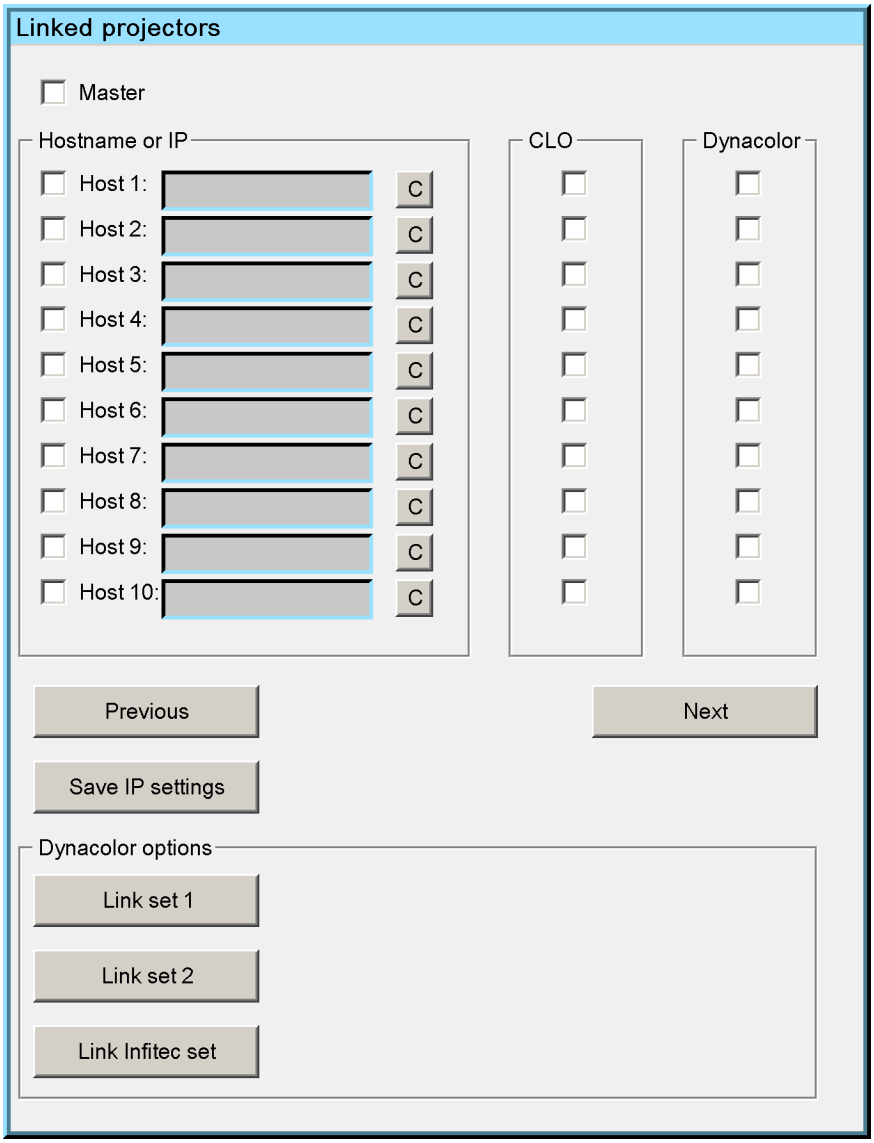

Image 7-135

The common color values are automatically calculated based on the measured values of both projectors and these calculated values are put in the *Desired values* of both projectors. Both projectors will now operate within the same color gamut.

Link Set can only be performed if the linked CLO has been enabled, see *Linked Projectors*.

7.9.6.3 Black Color Matching

Overview

- Introduction
- Black Color adjustment for Set 1

7.9.6.3.1 Introduction

Black Color uniformity

In a multi channel system the color of “black” can differ over the different channels/projectors. This can be matched using the Black color matching function. This function allows to adjust the Red, Green and Blue contribution to the black color produced.

In the same way as for the Dynacolor, this adjustment can be done for Set 1 and Set2

The procedure below is done for set 1.

The procedure has to be done for all the channels (projectors)

7.9.6.3.2 Black Color adjustment for Set 1

How to adjust black color for Set 1 ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *Dynacolor*
5. Press → to open the menu
6. Use ↑ or ↓ to select *Black Color matching*
7. Press → to open the menu
8. Use ↑ or ↓ to select for example *Set1*

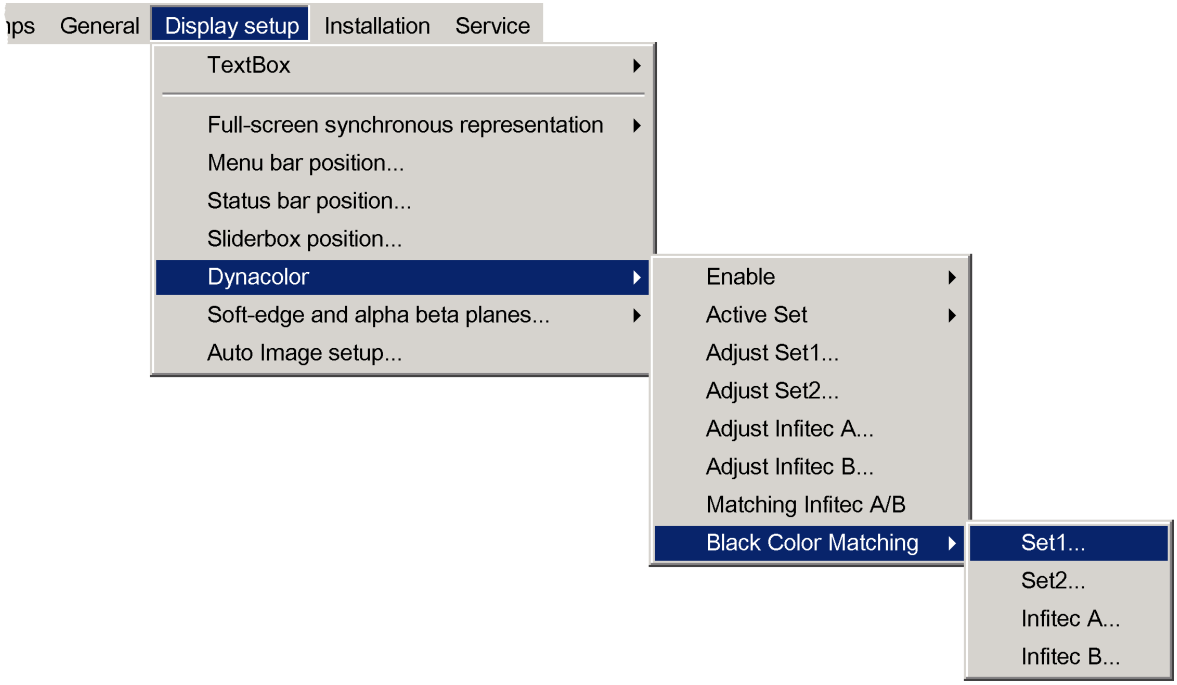

Image 7-136

9. Press **ENTER**

A dialog box is displayed

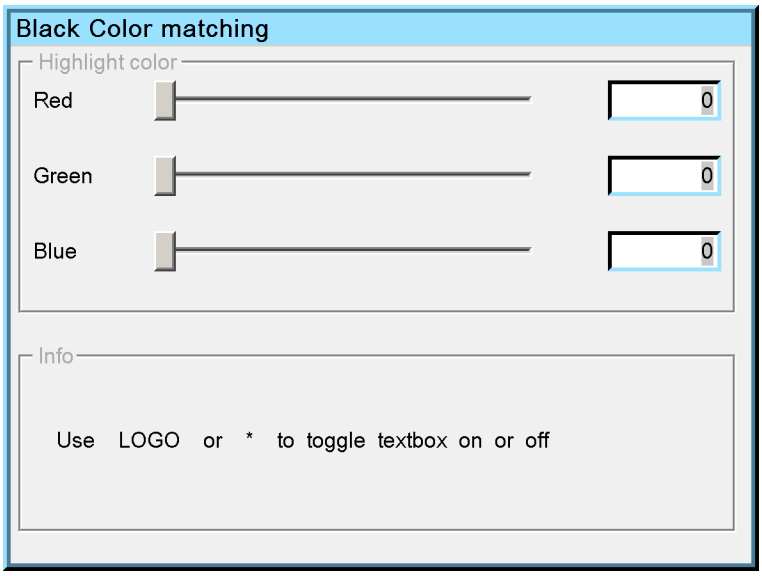

Image 7-137

10.Use ←or →, the numeric keys on the remote, or the keypad to change the settings.

7.9.7 Soft edge

Overview

- Introduction
- Soft edge adjustments
- Accessing the Soft edge menu
- Soft edge edit
- Black level
- Blanking

7.9.7.1 Introduction

What can be done?

When working in a multichannel setup the Soft edge feature enables an image blending that gives the appearance of a single image, thus achieving realistic immersion for the majority of simulation and virtual reality applications.

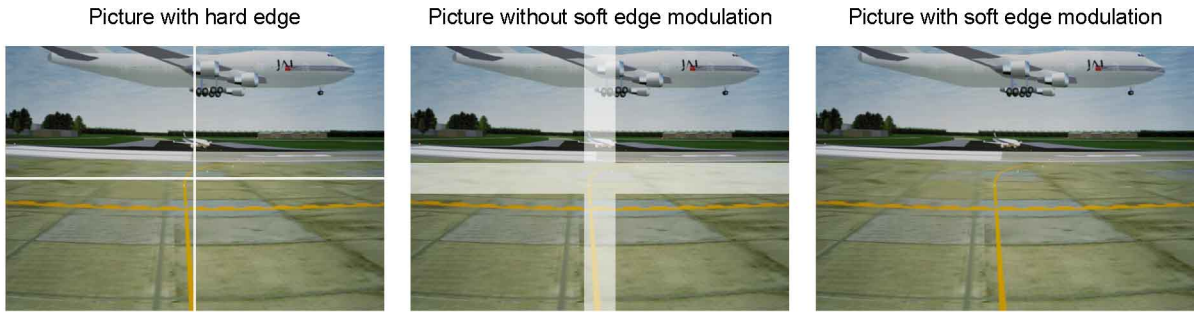

Image 7-138
Soft edge : purpose

What is the Basic Principal of (electronic) Soft Edge ?

The principle of edge blending is achieved by linear modulation of the light output in the overlap zone so that the light output in that zone equals the light output of the rest of the image.

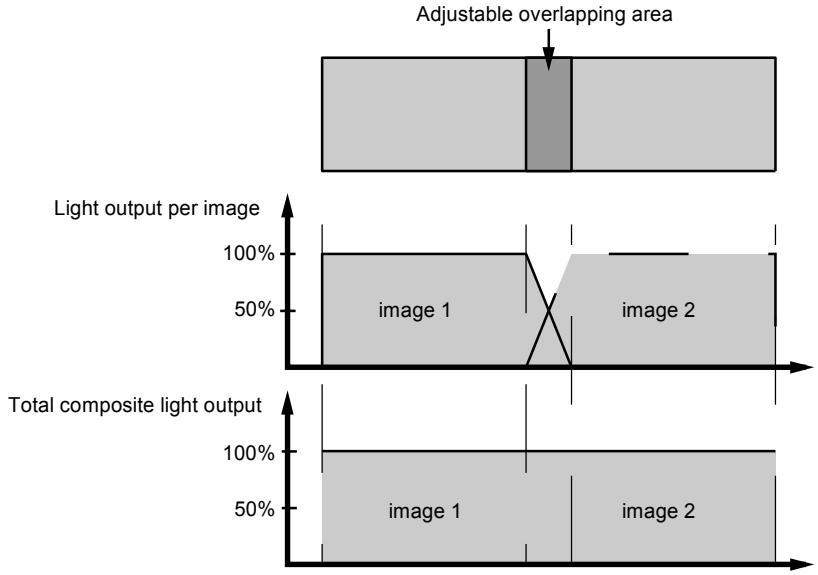

Image 7-139
Soft Edge Basic Principle

Internal versus external (Alpha planes)

The projector offers 2 methods to achieve soft edging :

1. Internal soft edges : the contour and shape can be adjusted in the projector using the soft edge edit wizard
2. External Alpha planes : An external file is sent to the projector and is memorized. This file contains data corresponding to the shape contour of the soft edge

Soft Edge Preparations

To ensure proper soft edge adjustment, be sure that the following adjustments are done perfectly on all projectors:

- Geometry
- Color Matching (Input Balance, Dynacolor ...)

When projecting on a cylindrical screen, the adjustments mentioned above can be done by using the projector adjustments in combination with Polaris.

Polaris is a Test Pattern Generator software that can generate a user-defined test pattern that is used to align projection systems. It also has the ability to generate predefined patterns for standardized projection systems. The software is developed to run on IRIX (Order numbers for Polaris: R9898300 for a 6 months license, R9893301 for a full license).

Note that the soft edges are placed on the distorted image i.e. it surrounds the limits of the distorted image.

7.9.7.2 Soft edge adjustments

What can be done ?

The soft edge adjustment consists of the adjustment of one or more edges of the image. Each zone where the blending is to be applied is divided in 16 zones delimited by 25 adjustments points. These points are numbered from 0 to 25 and can be shifted to the desired location to determine the total size and shape of the soft edge zone.

This high number of adjustment points allow to meet any complicated soft required for special curved screens.

The default soft edge size (prior to the adjustment) corresponds to 12.5% of the image.

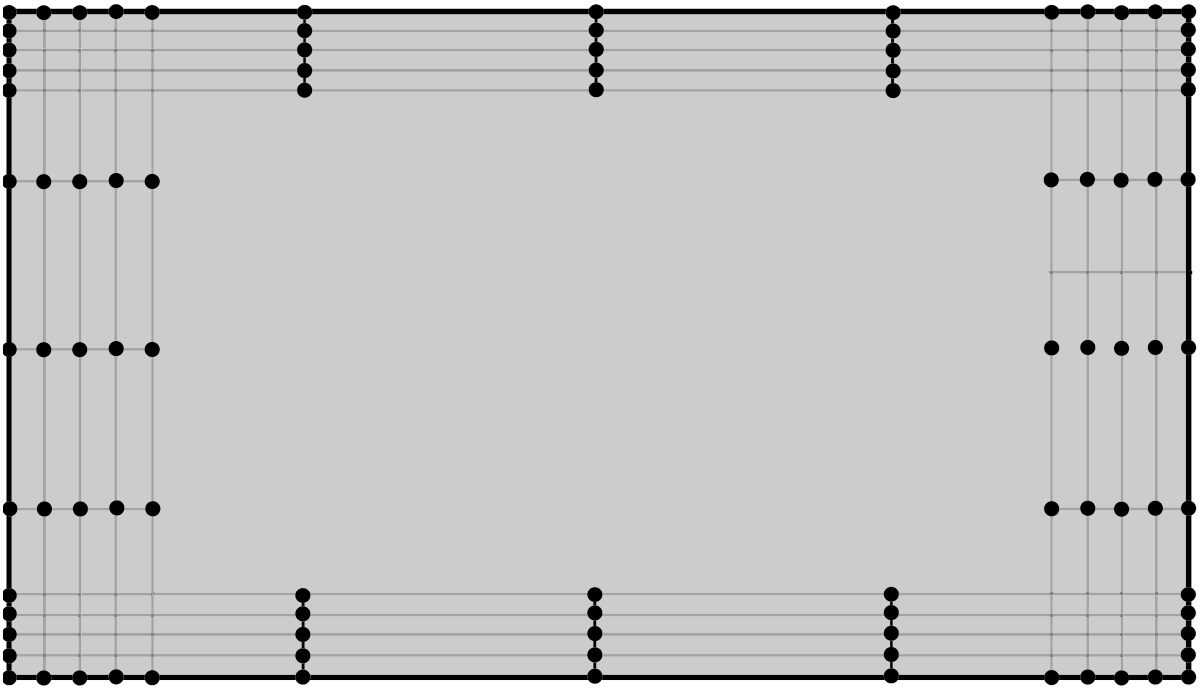

Image 7-140
Soft edge : adjustment points

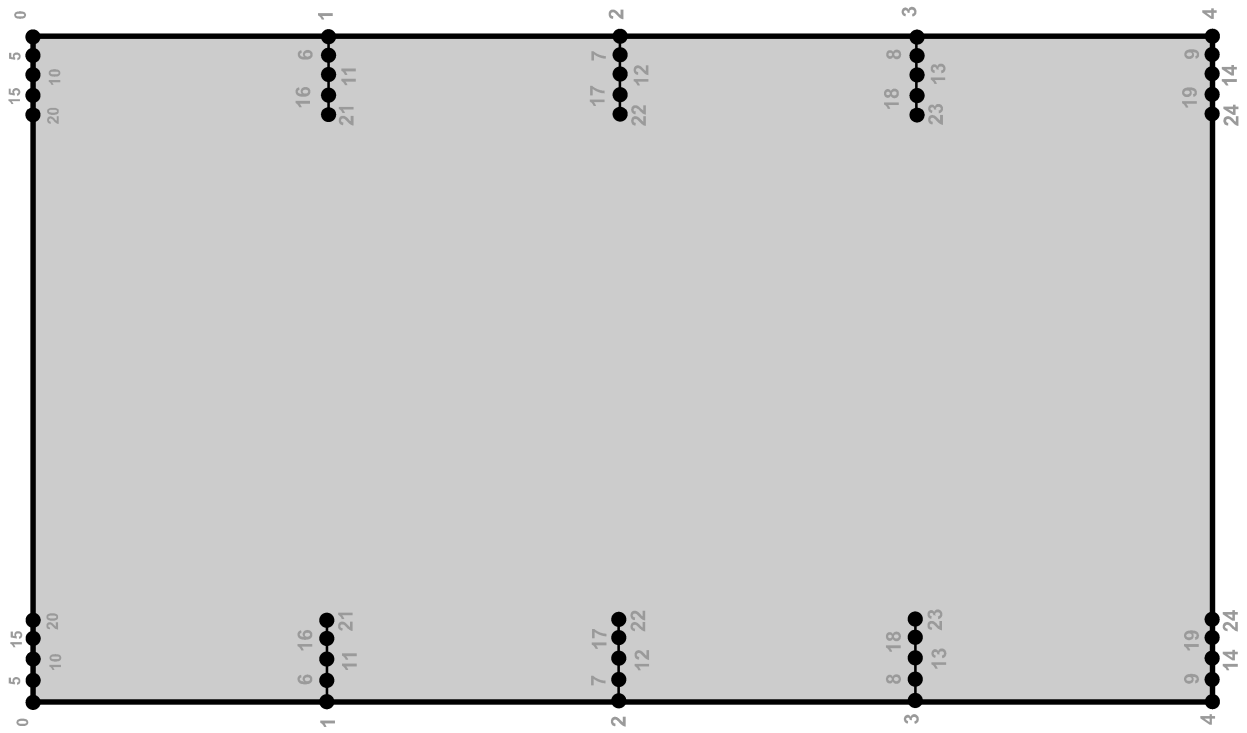

Image 7-141
Soft edge : points numbering, Top and bottom side edges

Image 7-142
Soft edge : points numbering, left and right side edges

Levels

The soft edge adjustment is divided in 6 levels.

Each level represents a group of points and interacts with other levels, adjusting a point on a certain level will affect points in the levels underneath.

The level of the adjustment gives a measure of this impact. A level 1 adjustment happens on the 4 corners of the soft edge zone and will thus affect the whole zone whereas a level 6 will only affect the adjusted point (called local points). The image below shows the levels in the left side soft edge zone.

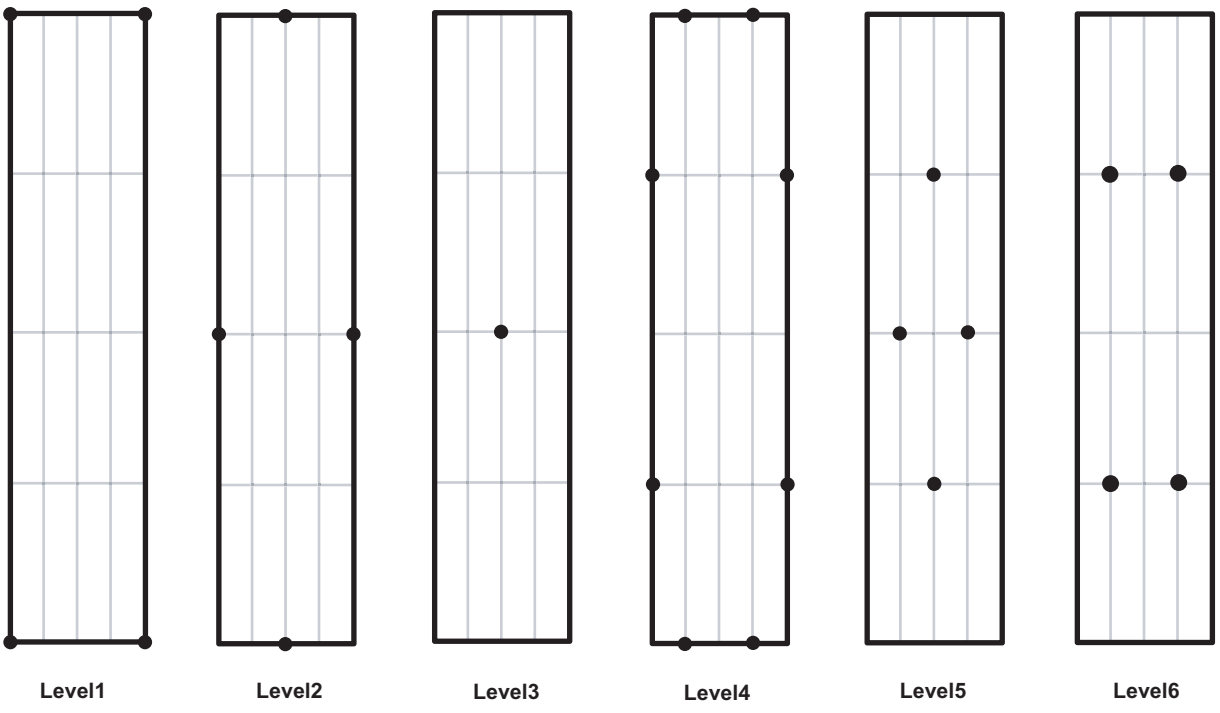

Image 7-143
Side Soft edge zone: levels

Level Hierarchy

The fact that the adjustment affects other points means that a certain hierarchy must be respected when adjusting the geometry.

The hierarchy or levels are indicated in the following image

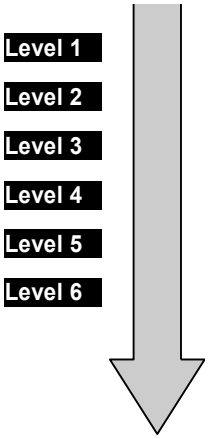

Image 7-144
Soft edge : Level hierarchy

On top of this hierarchy, the level 1 points. Adjusting points on level 1 will affect level 1 till 6.

At the bottom of the structure we find the level 6 points, adjusting on level 6 will not affect any other points, these are called local points.

7.9.7.3 Accessing the Soft edge menu

How to access the Soft edge menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select *Display setup*
3. Press ↓ to pull down the menu
4. Push ↓or ↑ to select *Soft edge*
5. Push the → key to pull down the menu.

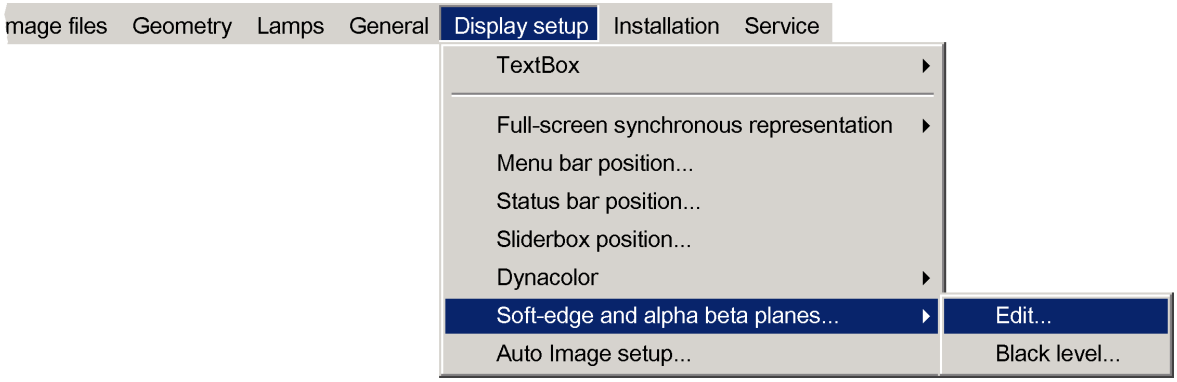

Image 7-145

7.9.7.4 Soft edge edit

Overview

- The soft edge edit wizard
- The soft edge edit modes
- Creating/editing a soft edge
- Alpha planes

7.9.7.4.1 The soft edge edit wizard

The geometry wizard

When entering the *Edit* mode, the *Edit* dialog box is displayed.

Description of the Edit dialog box

An intuitive user interface is used to perform all the Soft edge adjustments.

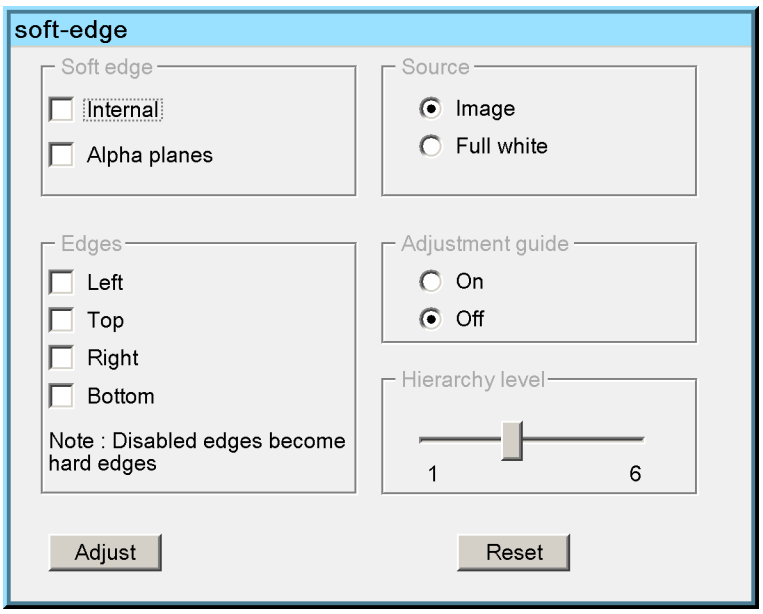

Image 7-146

Field /adjustment	Description	Notes
Planes	Allows to select the type of soft edges : - internal soft edge - Alpha-Beta planes	
Edges	It is possible to select one or more of the 4 edges of the image: Left/Top/Right/Bottom	A Disabled edge is a hard edge. Adjusting a hard edge results in a blanking adjustment. See blanking
Source	The background image on which the soft edge adjustment is applied can be the source or a full white image (pattern)	The procedures in this manual are explained using a full white background
Adjustment guide	An adjustment guide consisting of a 4 brightness graduated bars can be applied on the background image during the soft edge adjustment	
Hierarchy level	Allows to select the level of the adjustment.	
Reset	The soft edge shape is set to default settings.	Soft edge shape follows geometry settings, the shape of the soft edge is set to 12.5%, enabled edges stay enabled, disabled edges stay disabled

Table 7-10
dialog box legend

7.9.7.4.2 The soft edge edit modes

The Edit Modes

- Select mode : allows to select the desired point using the ←and→ arrows or to select the desired level or edge using the ↓and ↑ arrows.
- Adjust mode : allows to perform the correction (in real time) using the arrows.
- Edit mode : allows to select the desired control (edit box, ...) in the dialog box.
- Change mode : allows to change the values in the edit boxes of the dialog box.

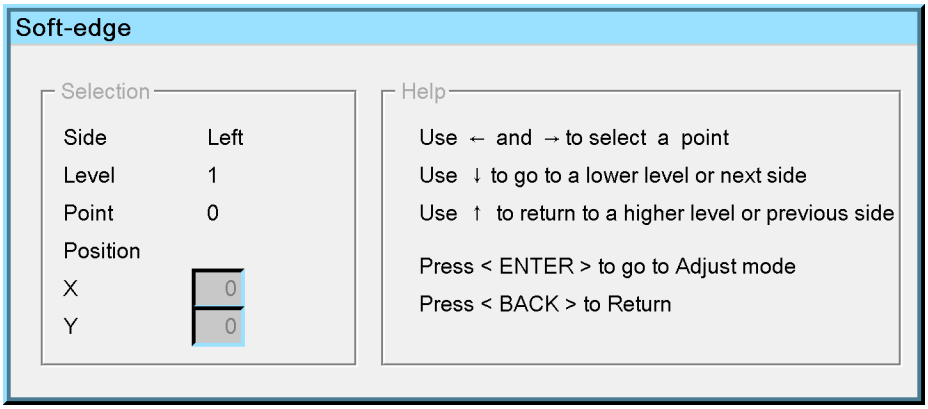

Image 7-147

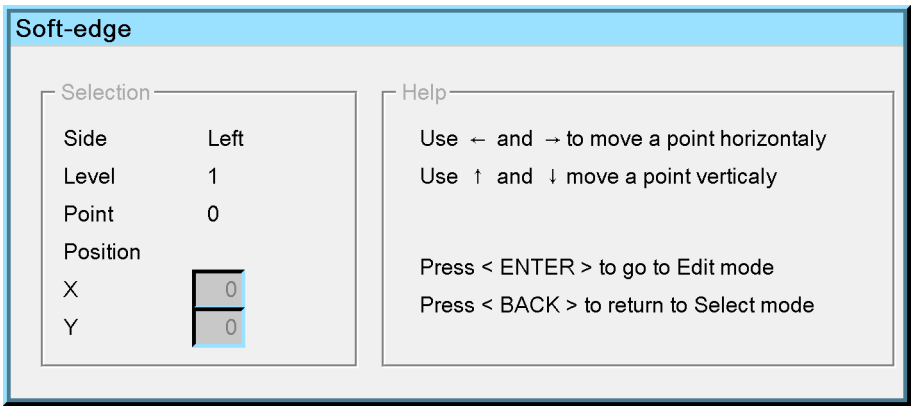

Image 7-148

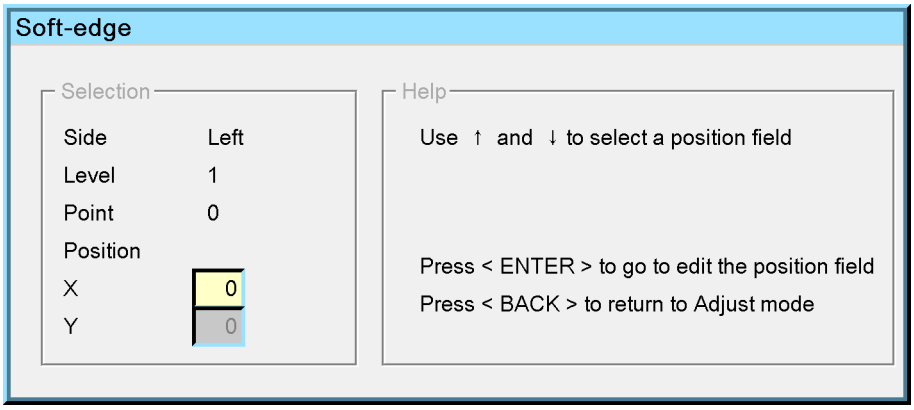

Image 7-149

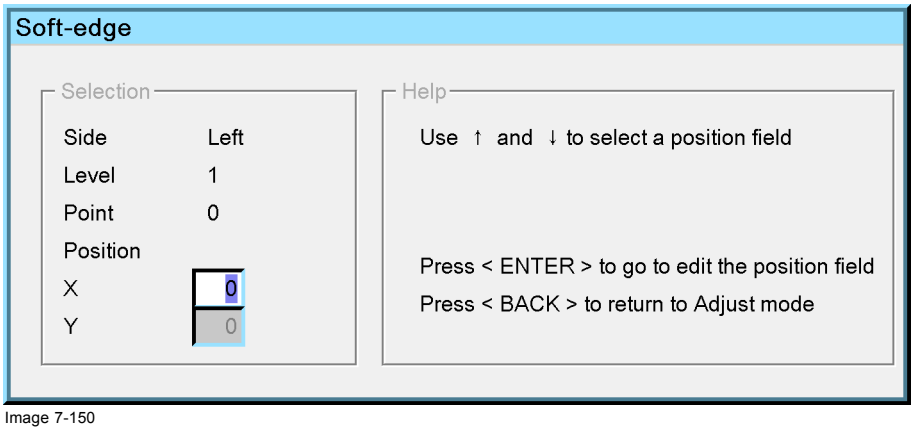

Image 7-150

How to select an Edit Mode ?

1. When the *Edit* dialog box is displayed, the *Select* mode is selected by default.
2. To go to the next mode press **ENTER**.
3. To return to a previous mode use **BACK**

7.9.7.4.3 Creating/editing a soft edge

Description

In this example we will create an internal soft edge where we will adjust the left side zone (displace one point along the x axis).

How to start up the edit dialog box ?

1. Press the **MENU** key to activate the Tool bar.
2. Push the cursor key ← or → to highlight *Display setup*
3. Push the ↓ key to pull down the menu.
4. Push ↓or ↑ to select *Soft edge and alpha beta planes*
5. Push the → key to pull down the menu.
6. Push the cursor key ← or → to highlight *Edit...*

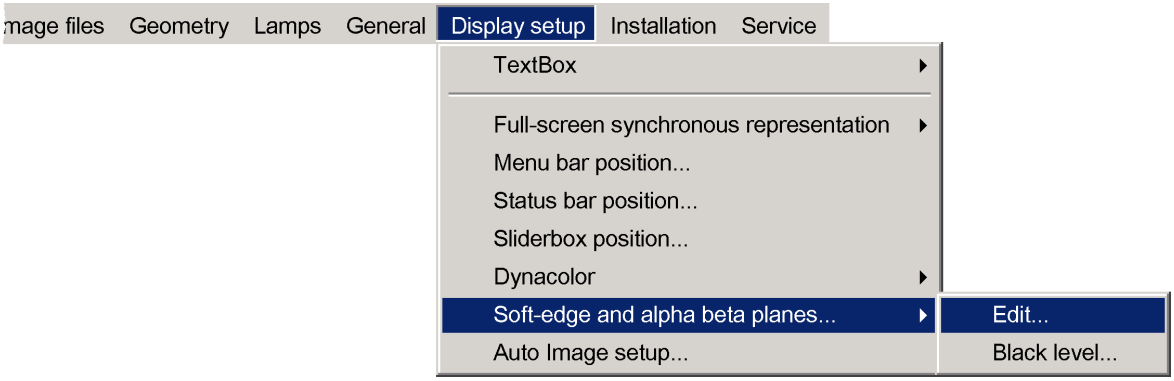

Image 7-151

7. Press **ENTER**

   The soft edge dialog box will be displayed.

How to select the soft edge type ?

The internal soft edge type is selected by default

1. Push ↓or ↑ to select the *Internal* check box

The item is focused

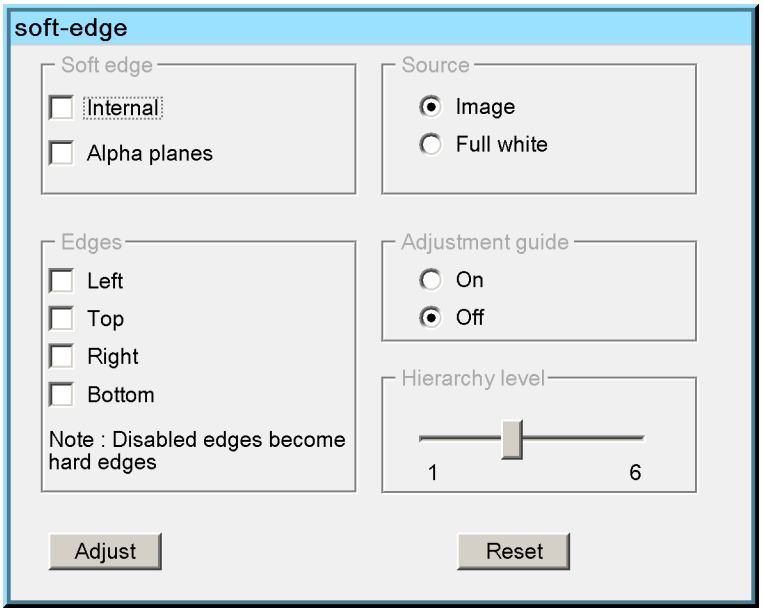

Image 7-152

2. Press **ENTER**

The internal soft edge is selected

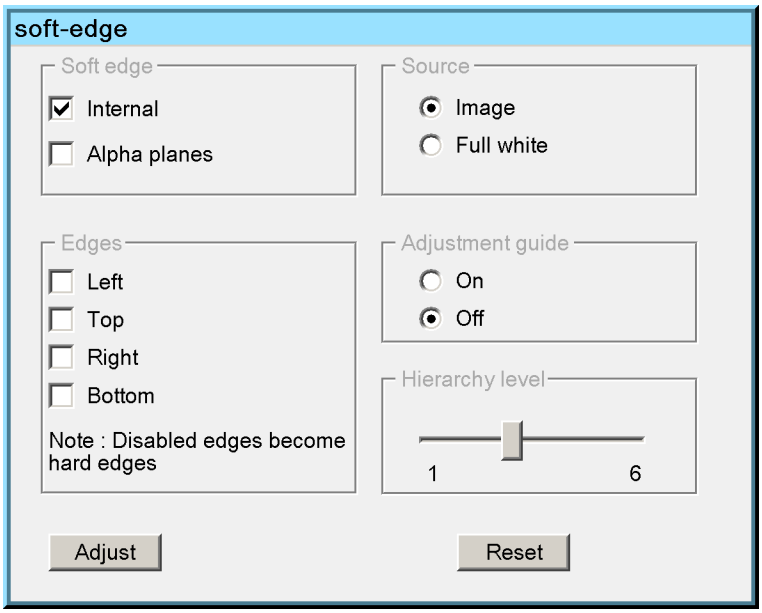

Image 7-153

How to enable the soft edges ?

1. Push ↓or ↑ to select the desired *Edges* check box

The item is focused

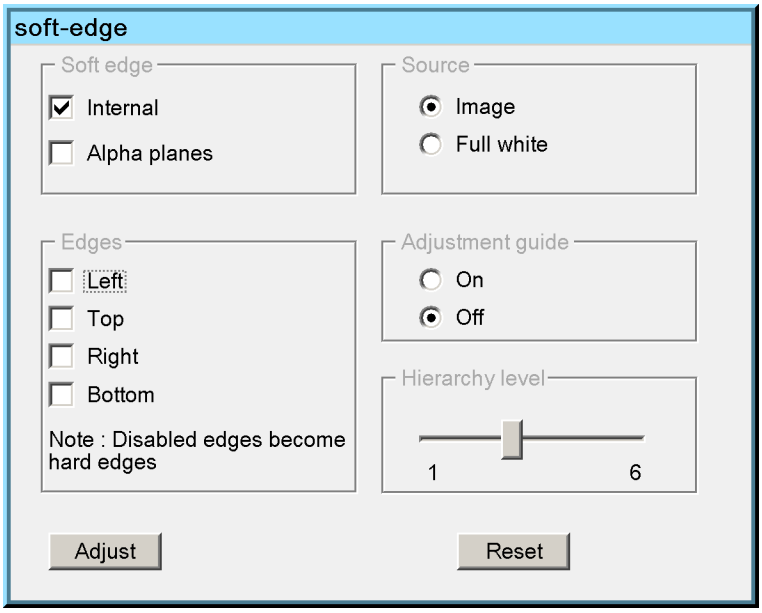

Image 7-154

2. Press **ENTER**

The selected check boxes are checked

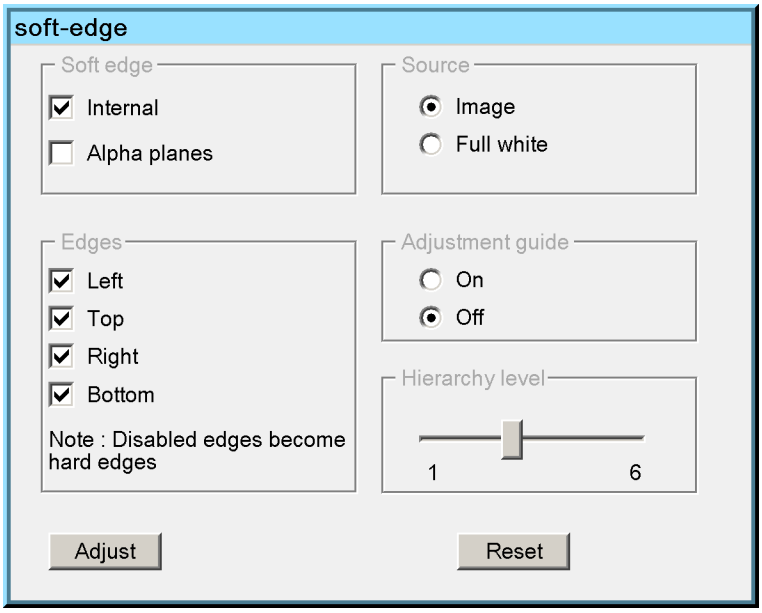

Image 7-155

3. Do the same for the other desired edges

The default soft edge is applied on the selected edges

How to select the source (background) ?

1. Push ↓or ↑ to select the desired *Source* check box. in this case we will perform the adjustment on a Full white background.

The item is focused

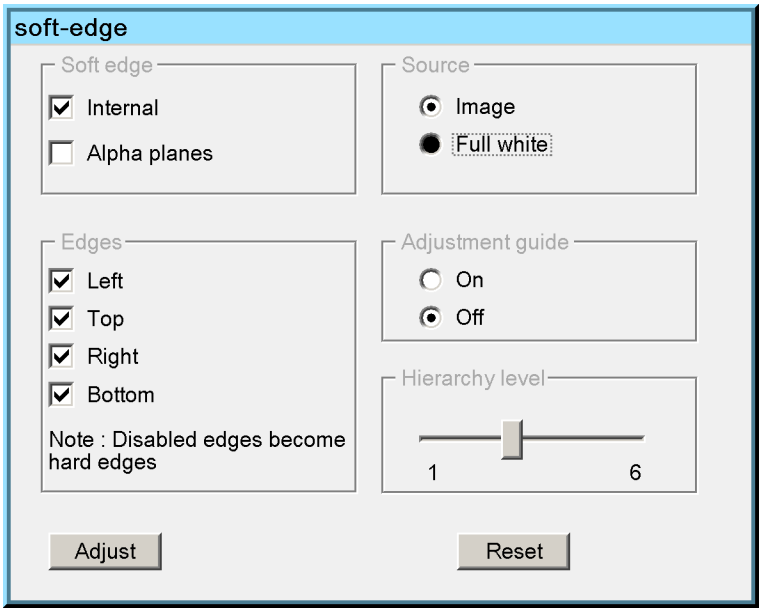

Image 7-156

2. Press **ENTER**

The selected check box is checked and a full white image is displayed with the soft edges on the 4 sides

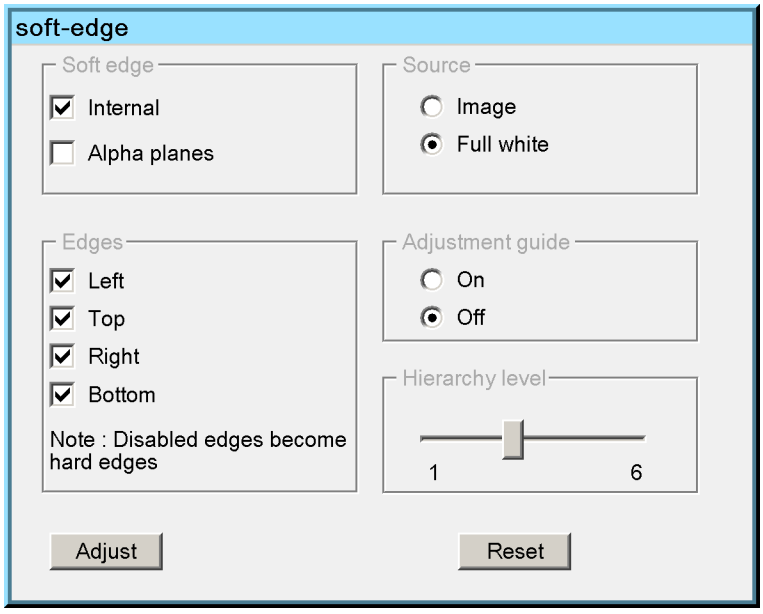

Image 7-157

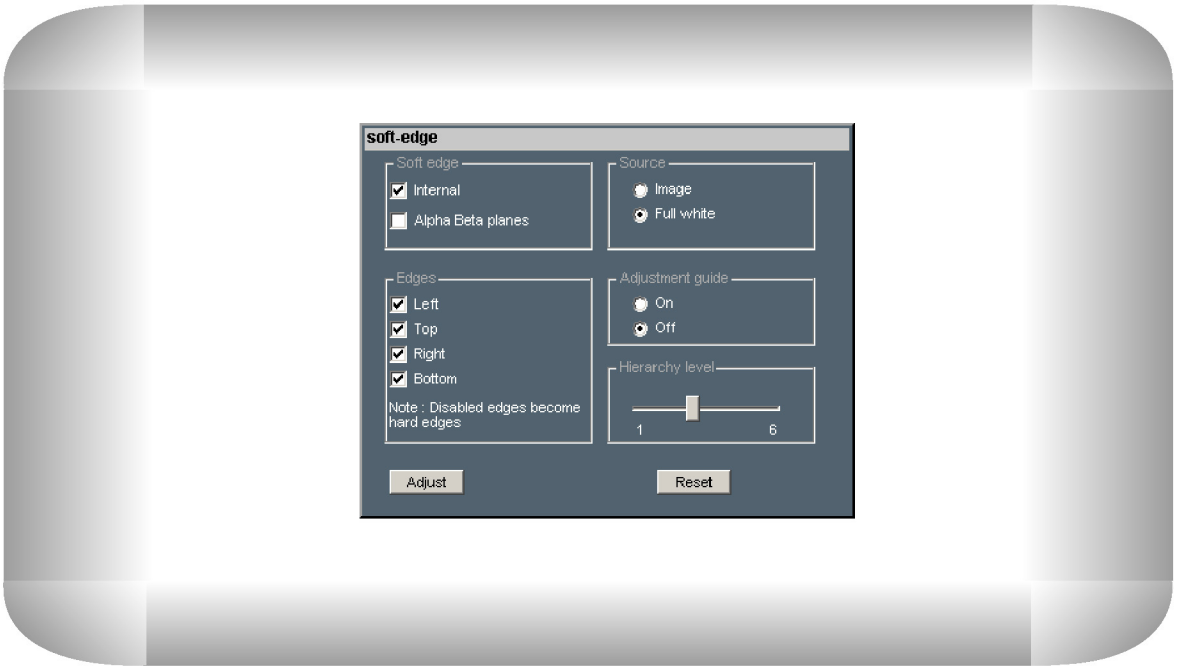

Image 7-158

How to enable the adjustment guide ?

1. Push ↓or ↑ to select the check box ON to enable the adjustment guide

   The item is focused

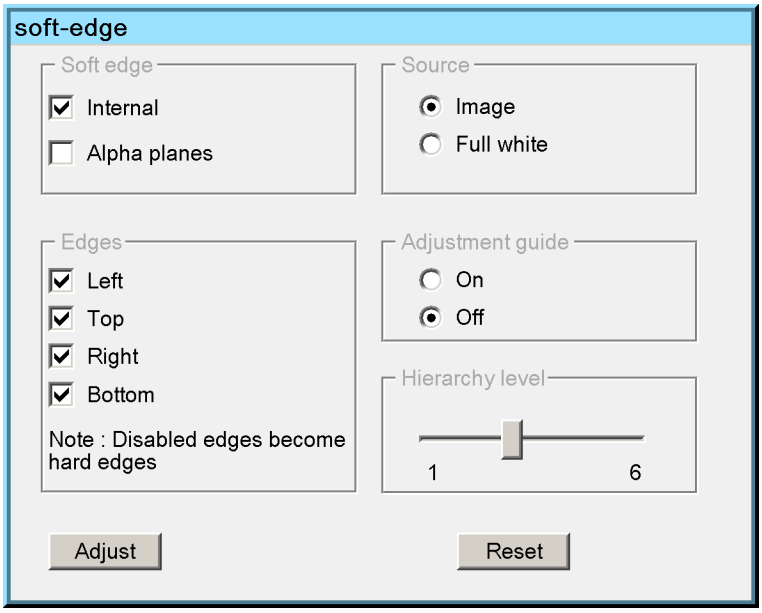

Image 7-159

2. Press **ENTER**

The selected check box is checked and the guide is displayed (vertical and horizontal grey scale bars)

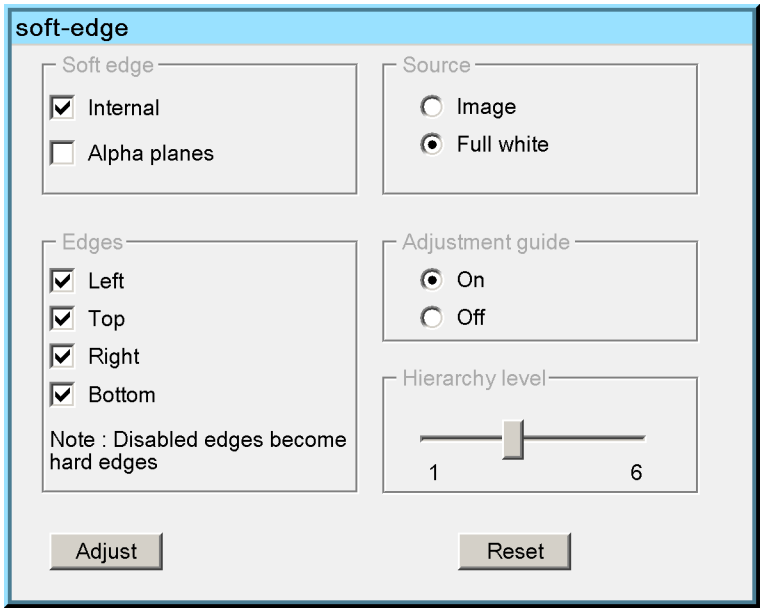

Image 7-160

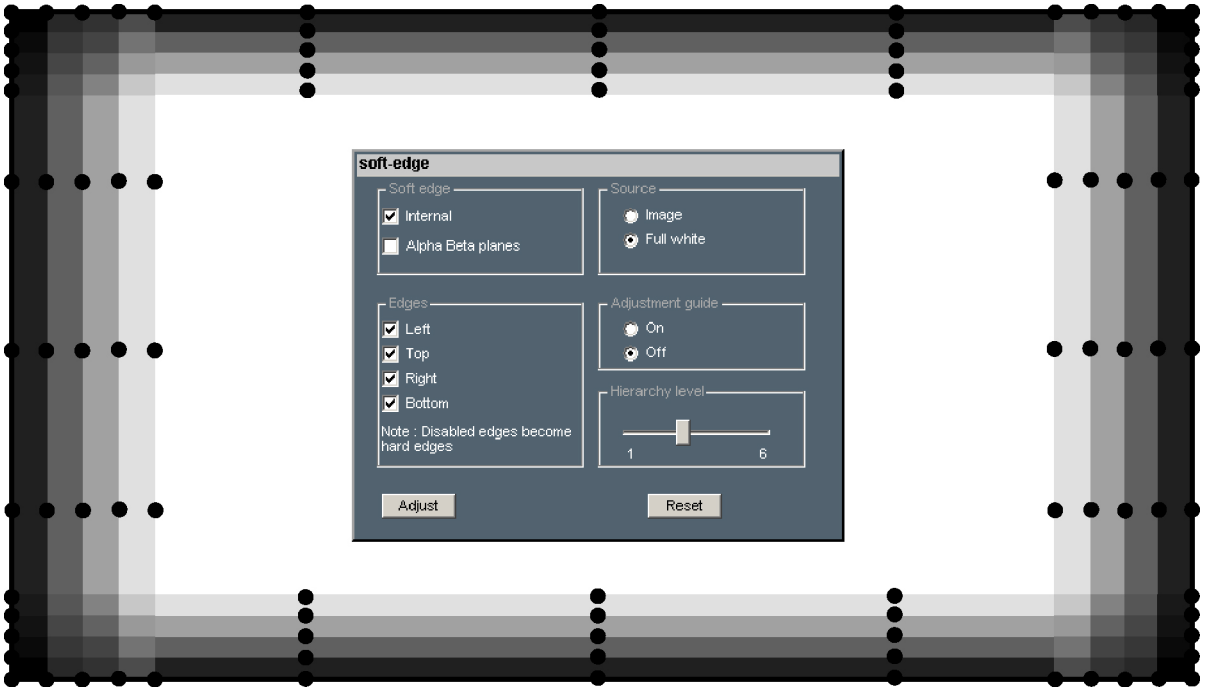

Image 7-161

How to set the hierarchy level ?

1. Push ↓or ↑ to select the hierarchy level slider box

The item is focused

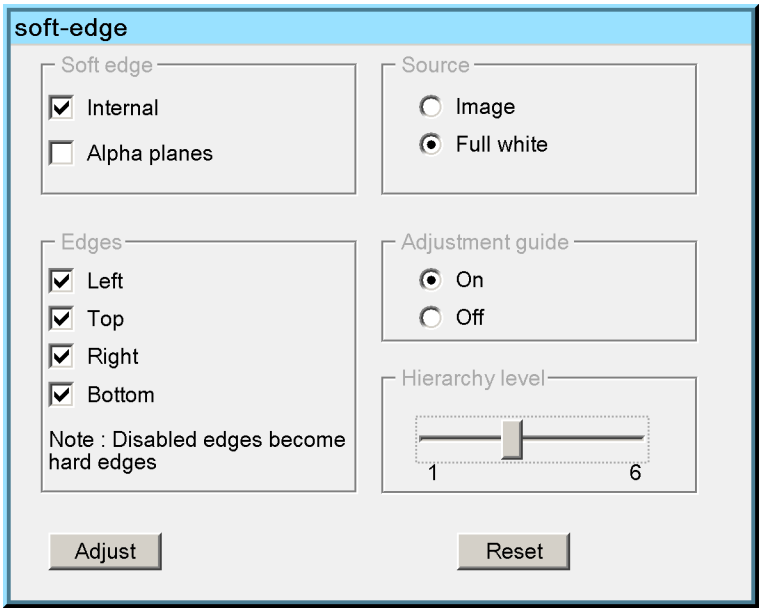

Image 7-162

2. Use the ← and → to select the level (from 1 to 6)

How to adjust the soft edge ?

1. Press **Adjust**

   A Edit dialog box is displayed and the left side soft edge zone is selected. The default level is the level 1.

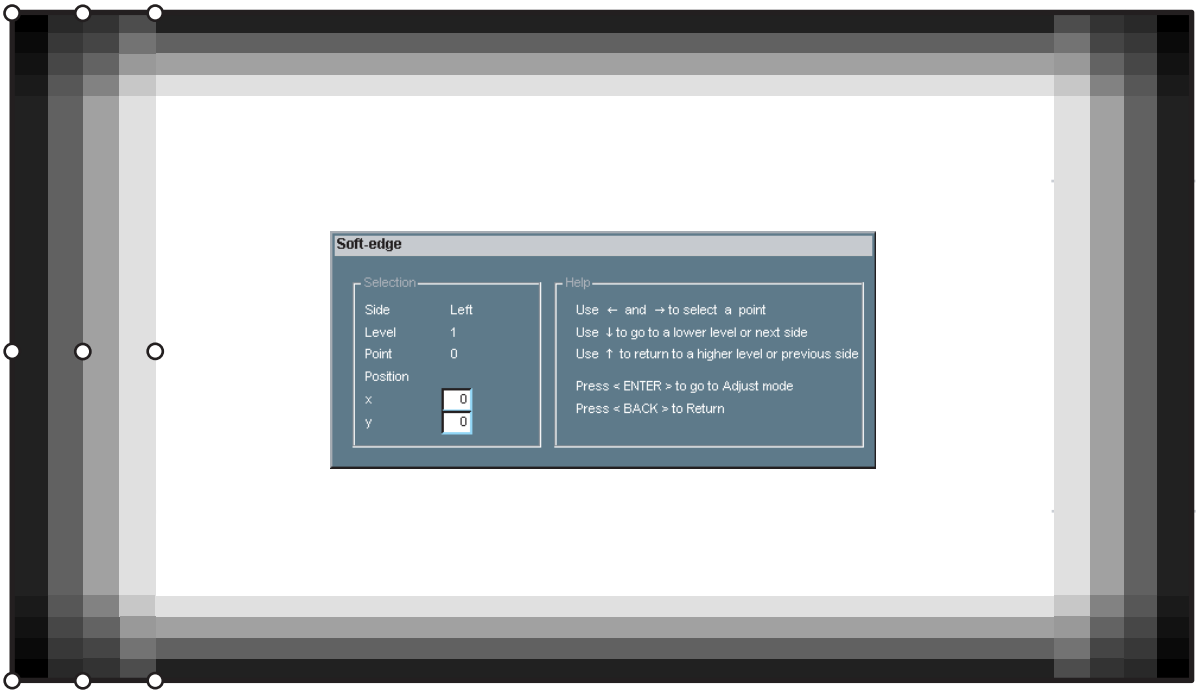

Image 7-163

2. Use the arrows to select a point to be displaced
3. Press **ENTER** to go to the Edit mode
4. Use the arrows to select the desired field
5. Press **ENTER** to edit the field

   The edit field is put in the edit mode

6. Use the arrows or the digits to fill in the desired *x* position of the selected point (in this case the left top point of level 1)
7. Press **ENTER** to confirm

The selected point is displaced to the new position (x=100 ; Y=0).

Image 7-164

8. Press **BACK** to exit

   A dialog box is displayed. Press **ENTER** to confirm

All the points of the higher levels (level 2, ...) are altered by this adjustment. The points that belong to the same level (level 1) remain in the same position (anchors).

7.9.7.4.4 Alpha planes

Alpha plane specification

An alpha plane is a bitmap file which will be applied to the image in order to obtain a desired soft edge. The file must be a *.TIFF* file and it must have the same resolution as the projector's native resolution. It may be compressed.

Uploading an alpha plane file

Alpha planes must be uploaded in the following projector directory (accessible via FTP) :

/D/display/Softedge

The file must be named as follows :

alpha.tiff

The free storage capacity on the D-drive is about 8 MB. it is needed to store the image files, geometry files, factory backup, Alpha planes and Beta planes. Practically, about **6 MB** will be available for the Alpha + Beta plane.

The alpha plane will only be applied if it has been activated in the *Edit...* menu's dialog box (see procedure below)

How to activate an alpha plane ?

1. Press the **MENU** key to activate the Tool bar.
2. Push the cursor key ← or → to highlight *Display setup*
3. Push the ↓ key to pull down the menu.
4. Push ↓or ↑ to select *Soft edge and alpha beta planes*
5. Push the → key to pull down the menu.

6. Push the cursor key ← or → to highlight *Edit...*

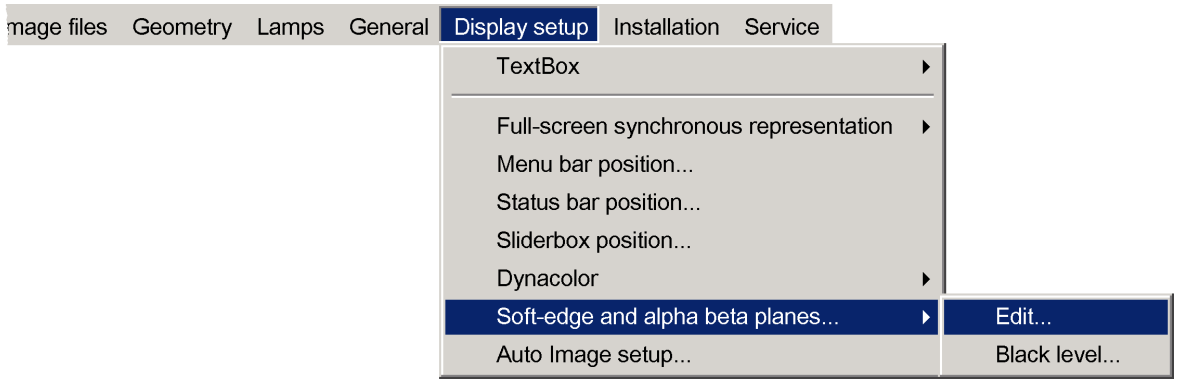

Image 7-165

7. Press **ENTER**

   A dialog box will be displayed.

8. Use the arrows to select the *Alpha planes* check box and press **ENTER**

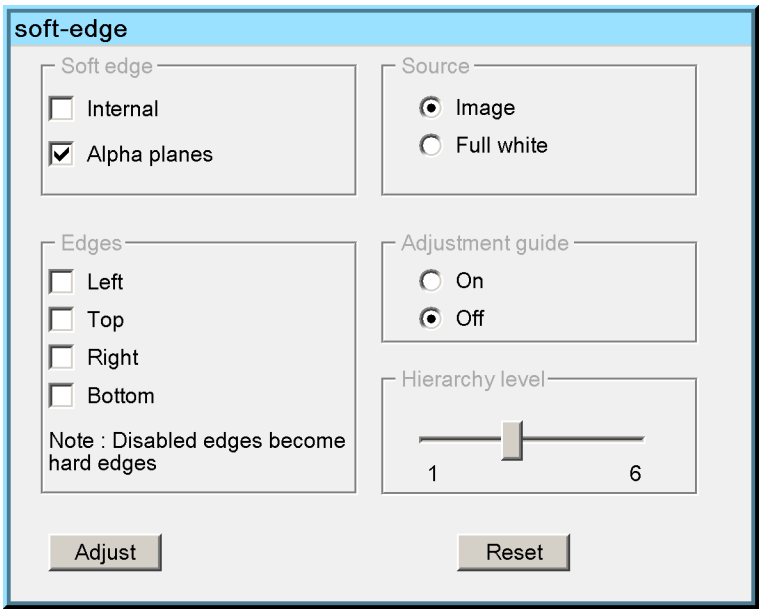

Image 7-166

Note: *It will take a certain time for the alpha plane to be applied*

7.9.7.5 Black level

Overview

- Introduction
- Internal black level
- Beta planes

7.9.7.5.1 Introduction

Brightness uniformity

In a multi channel system the brightness can vary over the different channels/projectors. The brightness level can be matched using :

1. CLO: in this case the light power is matched over the different projectors, see *CLO* in the *Lamps* section
2. Black level : this will act on the brightness of the “black” color of the image part situated outside the soft edge zones.

Internal black level versus Beta Planes

In the same way as for the soft edge adjustment (Internal vs Alpha planes) this black level adjustment can be fixed **internally** by using a dialog box or externally by uploading a user defined **Beta plane**. This beta plane will contain the values for the brightness *offset* to be applied to the image.

Both methods will allow to compensate for the typical double brightness phenomenon in the soft edge zones by increasing the brightness of the rest of the image.

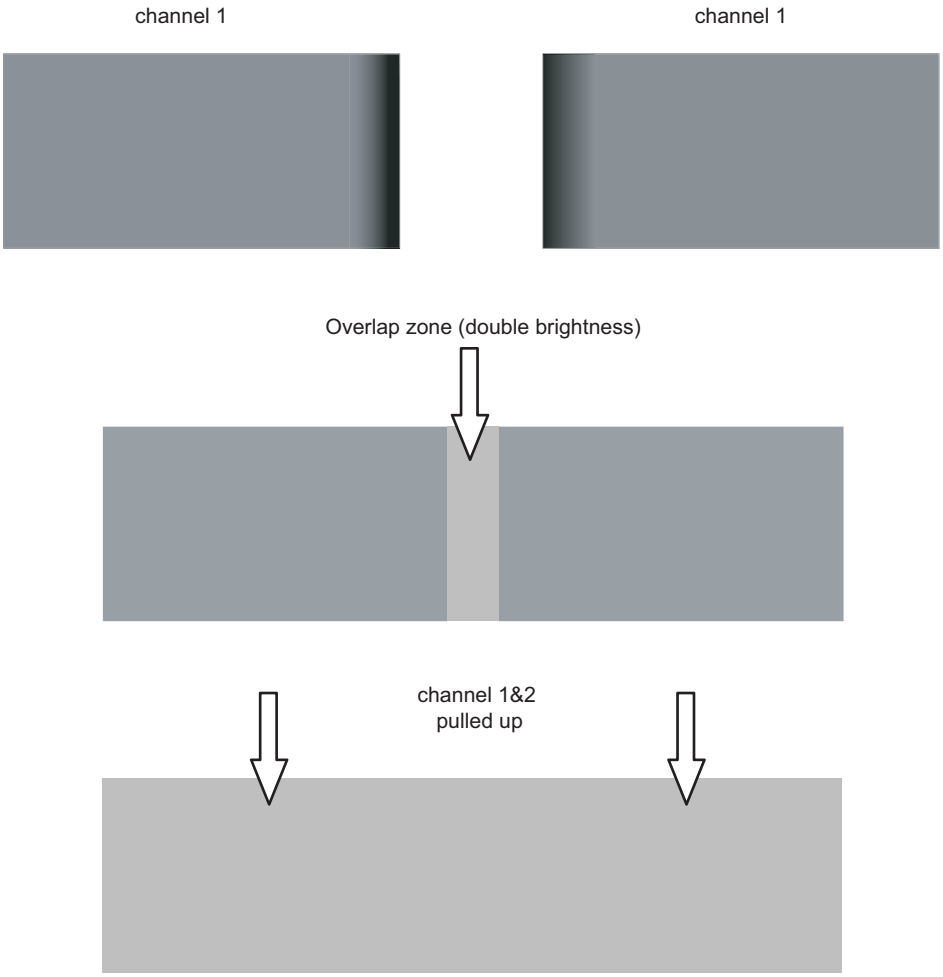

Image 7-167
Black level : double brightness compensation

It is worth noting however, that (internal) black level (via the dialog box) is to be used for simple linear soft edge zones (like in the illustration above). Curved soft edge zone should be done using (external) beta planes.

The Black level adjustment has to be done for all the channels (projectors)

7.9.7.5.2 Internal black level

What can be done ?

Internal black level can be adjusted via the projector's software using a dialog box. The dialog box allows to add an offset to the black level of the image in the zones outside the soft edge zones. The range goes from 0 to 255.

How to adjust the internal black level ?

1. Press the **MENU** key to activate the Tool bar.
2. Push the cursor key ← or → to highlight *Display setup*

3. Push the ↓ key to pull down the menu.
4. Push ↓or ↑ to select *Soft edge and alpha beta planes*
5. Push the → key to pull down the menu.
6. Push the cursor key ← or → to highlight *Black level...*

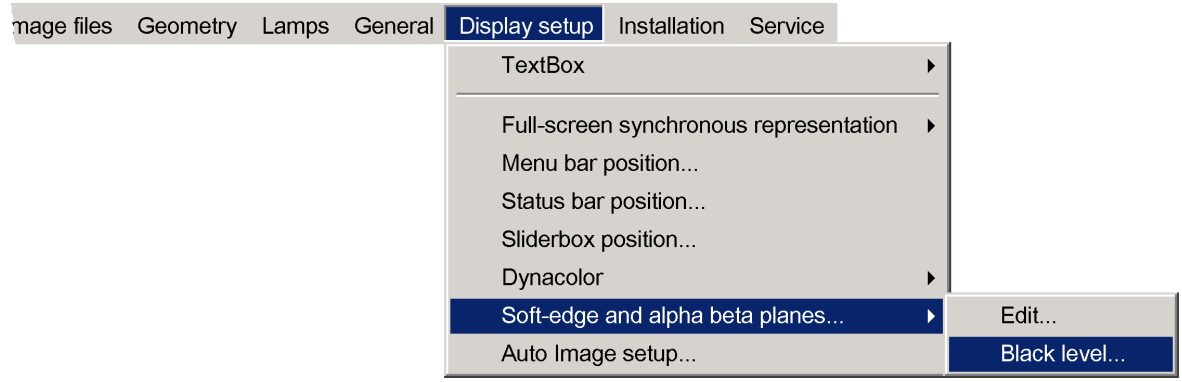

Image 7-168

7. Press **ENTER**

   A dialog box will be displayed.

Image 7-169

8. Use the arrows to select the *Internal* check box and press **ENTER**
   Note: *It will take a certain time for the internal black level to be applied*
9. Use the arrows or digits to fill in the desired values for the black level.

7.9.7.5.3 Beta planes

Beta plane specification

A beta plane is a bitmap file which will be applied to the image (outside the soft edge zones) in order to obtain a desired brightness level. The file must be a *.TIFF* file and it must have the same resolution as the projector's native resolution. It may be compressed.

Uploading a Beta plane file

Beta planes must be uploaded in the following projector directory (accessible via FTP) :

/D/display/Softedge

The file must be named as follows :

beta.tiff

The free storage capacity on the D-drive is about 8 MB. it is needed to store the image files, geometry files, factory backup, Alpha planes and Beta planes. Practically, about **6 MB** will be available for the Alpha + Beta plane.

The Beta plane will only be applied if it has been activated in the *Black level...* menu's dialog box (see procedure below)

How to activate a beta plane ?

1. Press the **MENU** key to activate the Tool bar.
2. Push the cursor key ← or → to highlight *Display setup*
3. Push the ↓ key to pull down the menu.
4. Push ↓or ↑ to select *Soft edge*
5. Push the → key to pull down the menu.

6. Push the cursor key ← or → to highlight *Black level...*

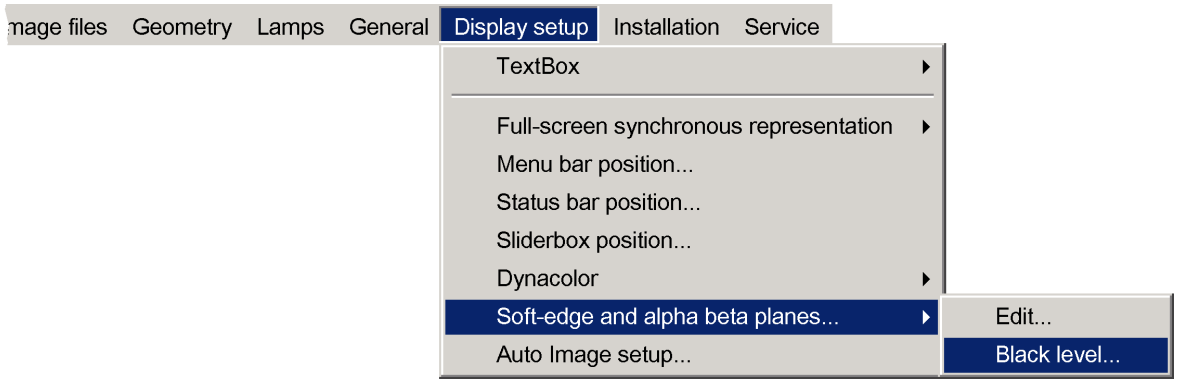

Image 7-170

7. Press **ENTER**

   A dialog box will be displayed.

Image 7-171

8. Use the arrows to select the *Beta planes* check box and press **ENTER**
   Note: *It will take a certain time for the beta plane to be applied*

7.9.7.6 Blanking

What can be done?

Blanking or hard edging affects only the edges of the image and is used to frame the projected image on the screen and to hide unwanted image information (or noise) or to put two images next to each other without overlap (soft edge). This is also called “stitching”.

The adjustment of hard edges is done in the same menu as the soft edge with the *Edges* disabled (unchecked).

How to setup a hard edge shape ?

1. Press the **MENU** key to activate the Tool bar.
2. Push the cursor key ← or → to highlight *Display setup*
3. Push the ↓ key to pull down the menu
4. Push ↓or ↑ to select *Soft edge*
5. Push the → key to pull down the menu.
6. Push the cursor key ← or → to highlight *Edit...*

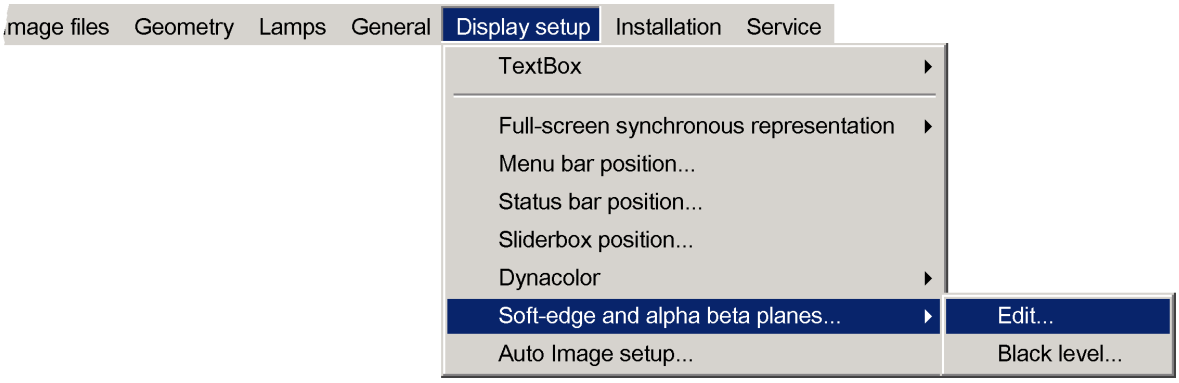

Image 7-172

7. Press **ENTER**

The soft edge dialog box will be displayed.

8. Uncheck all the edges
9. Adjust the soft edge as desired (same procedure as above)
10. Press **BACK** to return to the *Display setup* menu.

7.9.8 AutoImage Setup

What can be done ?

AutoImage allows to detect automatically the characteristics of the source (total pixels per line,...) and uses this information to adapt the image to the display.

AutoImage can adapt the image based on following data :

- Total pixels/ lines
- Start pixel/lines
- Phase
- Contrast/brightness levels

AutoImage works only for data signals.

To launch Autoimage, see *AutoImage* in the *Image files* menu

How to set up AutoImage?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Display setup* item
3. Press ↓ to Pull down the *Display setup* menu
4. Use ↑ or ↓ to select *AutoImage setup*

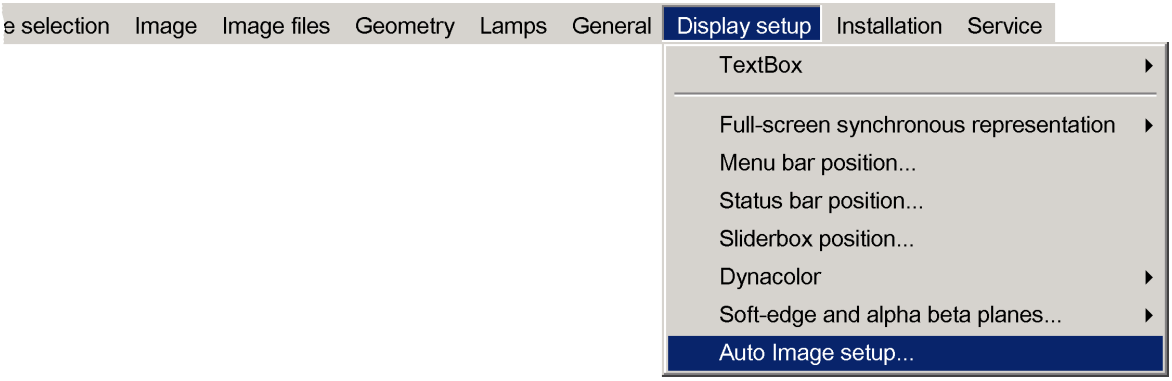

Image 7-173

5. Press **ENTER**

A dialog box is displayed.

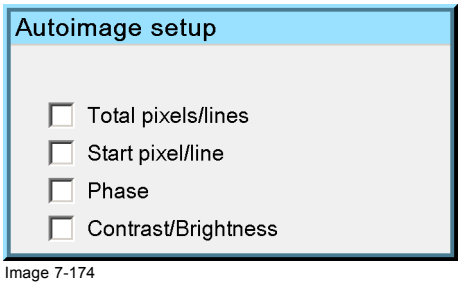

Image 7-174

6. Use the arrow keys to select the desired check box and press **ENTER** to activate or deactivate the item.

7.10 Installation

Overview

- Internal Patterns
- Scaled patterns
- Formatter patterns
- LFR
- Convergence

Not all the menu items of the Installation menu are handled in this chapter. The other items are treated in the *Installation* or *Setup* chapter .

7.10.1 Internal Patterns

Overview

The projector is equipped with different internal patterns which can be used for adjustment purposes.

Geometry adjustments can not be used on these internal patterns.

Image 7-175
Outline

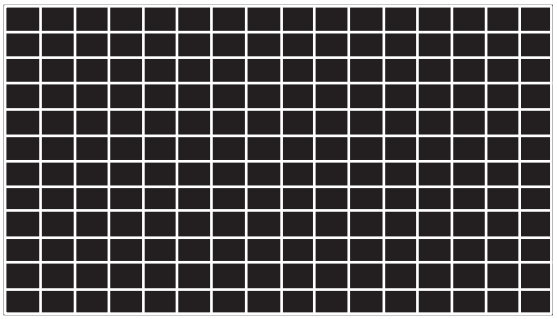

Image 7-176
Hatch

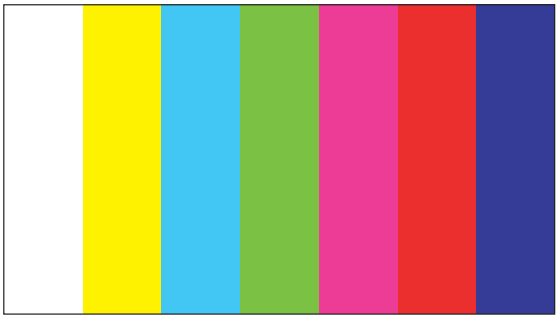

Image 7-177
Color bars

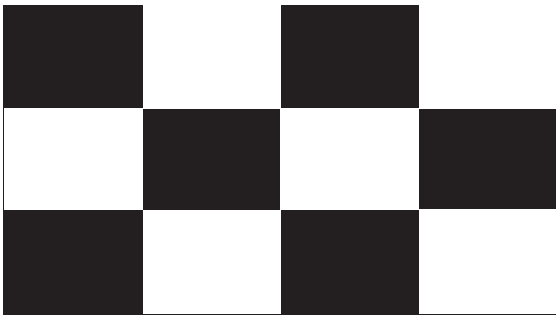

Image 7-178
Checkerboard

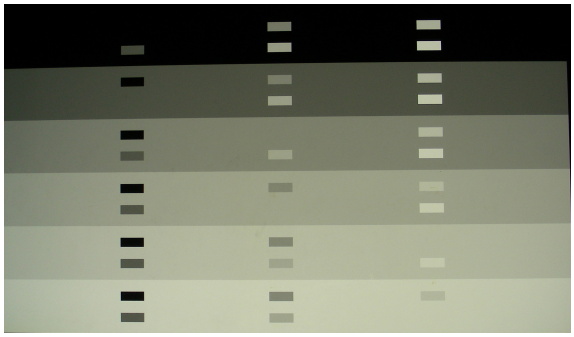

Image 7-179
HGBWS

Image 7-180
H pattern

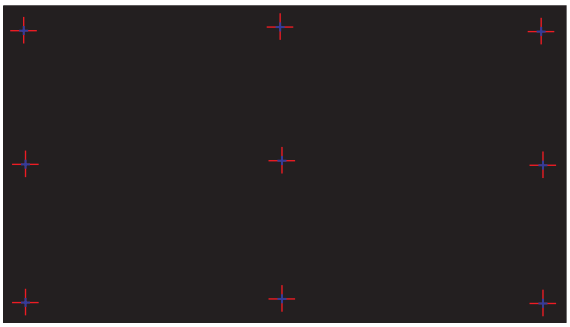

Image 7-181
Convergence

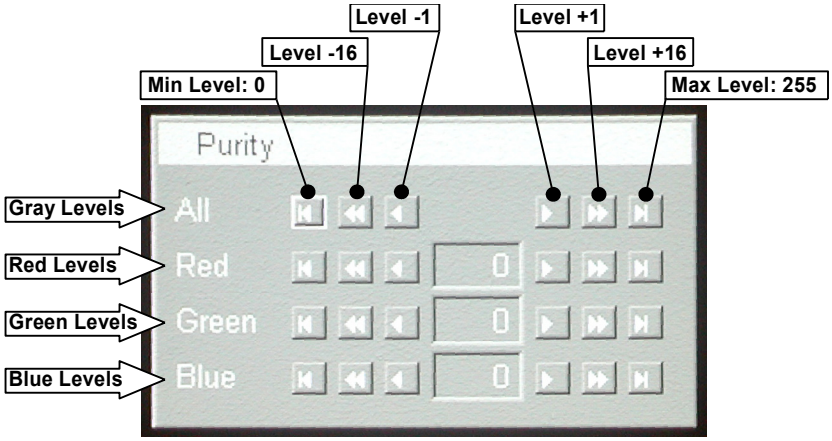

Image 7-182
Purity

How to select an internal pattern ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* menu
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Internal Patterns*

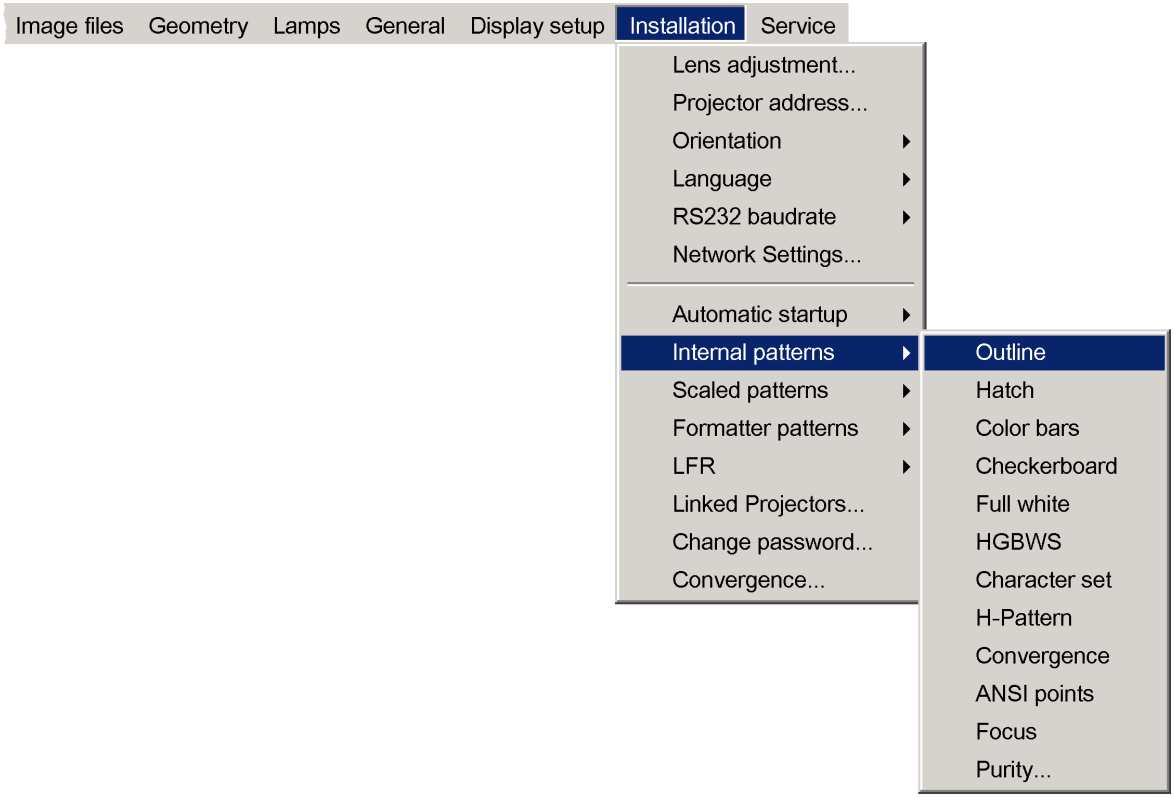

Image 7-183

5. Press → to Pull down the menu
6. Use ↑ or ↓ to select the desired internal pattern
7. Press **ENTER**
   The active selection is shown with a white bullet

7.10.2 Scaled patterns

Overview

Unlike the Internal Patterns, the Scaled Patterns will be distorted according to the active Geometry File.

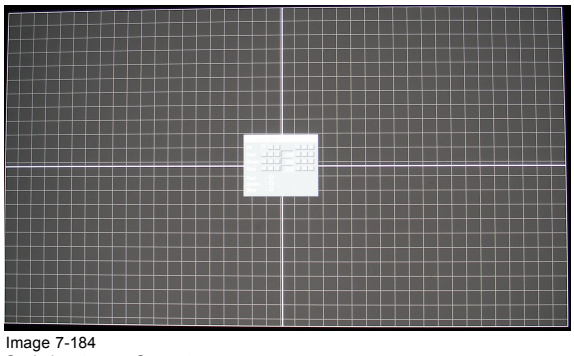

Image 7-184
Scaled patterns : Geometry

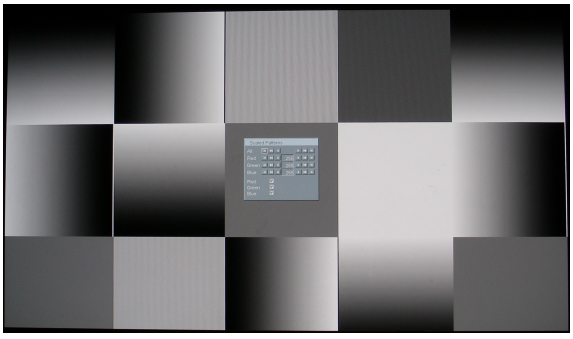

Image 7-185
Scaled patterns : Gray levels

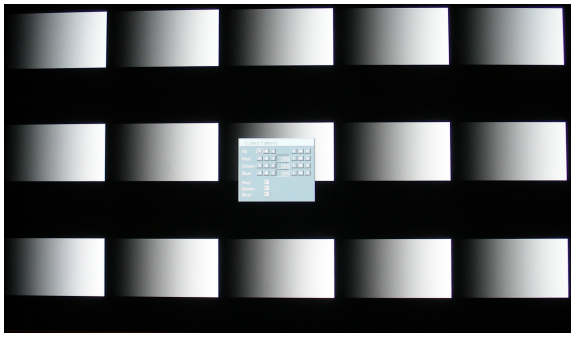

Image 7-186
Scaled patterns : Stereo pattern

How to select an internal pattern ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* menu
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Internal Patterns*

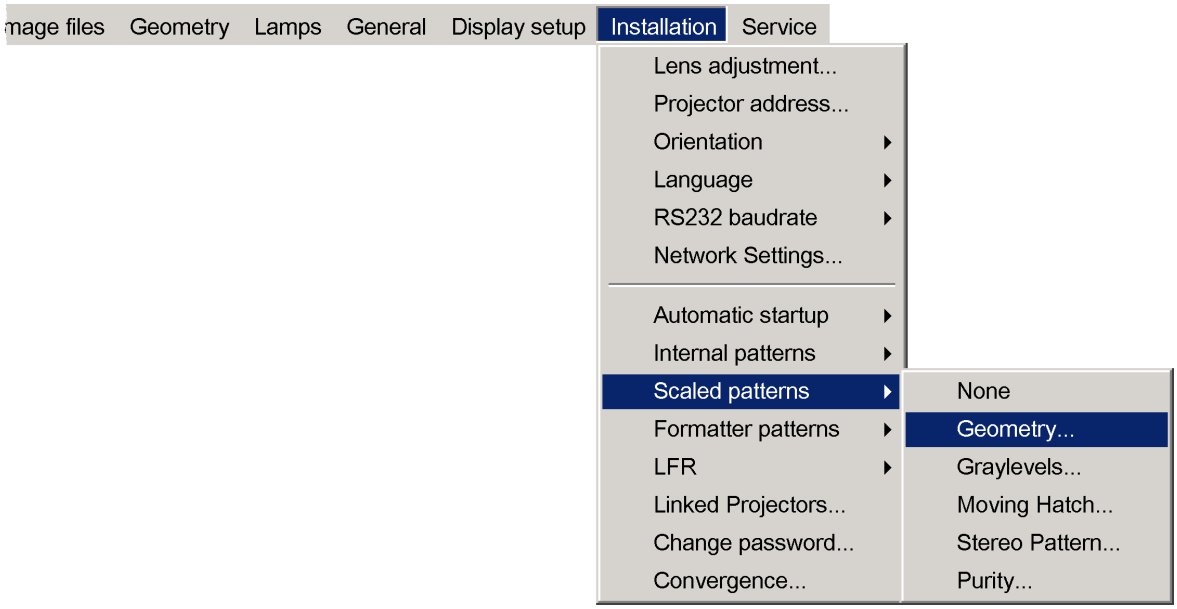

Image 7-187

5. Press → to Pull down the menu
6. Use ↑ or ↓ to select the desired pattern
7. Press **ENTER**
   The active selection is shown with a white bullet

7.10.3 Formatter patterns

Overview

Image 7-188
Horizontal ramp

Image 7-189
Vertical ramp

How to select a formatter pattern ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* menu
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Formatter Patterns*

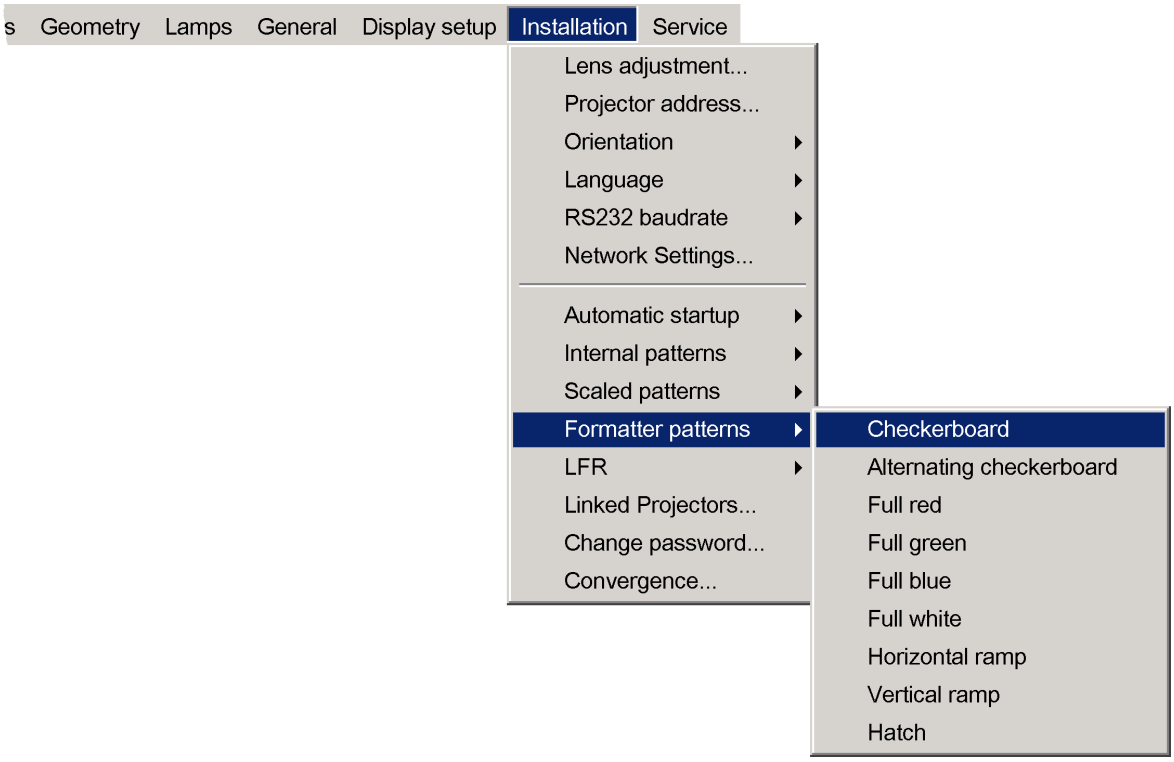

Image 7-190

5. Press → to Pull down the menu
6. Use ↑ or ↓ to select the desired pattern
7. Press **ENTER**
   The active selection is shown with a white bullet

7.10.4 LFR

How to use the LFR ?

1. The LFR is by default *ON*. Leave it in the default position.

7.10.5 Convergence

What can be done?

It is possible to electronically force a spacial delay (expressed in pixels) to one of the main colors. This can be done both in horizontal and in vertical way.

The goal is for each pixel to position the red channel, the green channel and the blue channel on top of each other.

Changing the default convergence settings will lead to loss of data: for each pixel you shift one color of the image, you will lose on line (horizontal or vertical, depending on the setting) of this color.

E.g. If you change the vertical convergence setting for green from 0 to 1, the green information of the horizontal top line will be lost.

How to launch the convergence dialogbox?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Installation* menu
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Convergence*

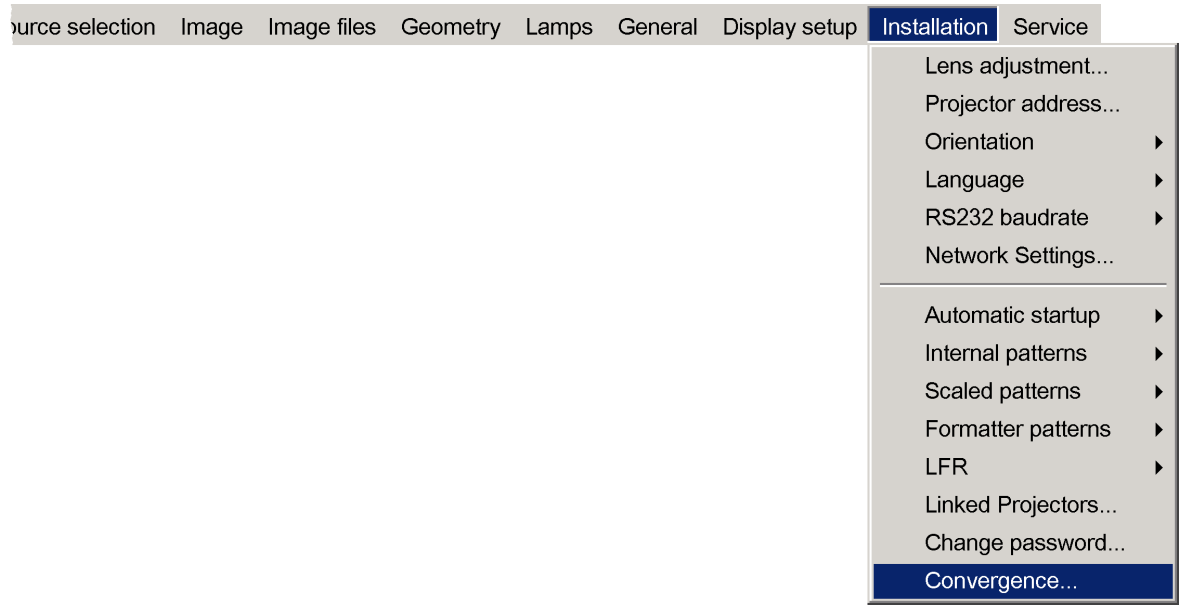

Image 7-191

5. Press **ENTER**

   The dialog box to adjust the convergence is displayed.

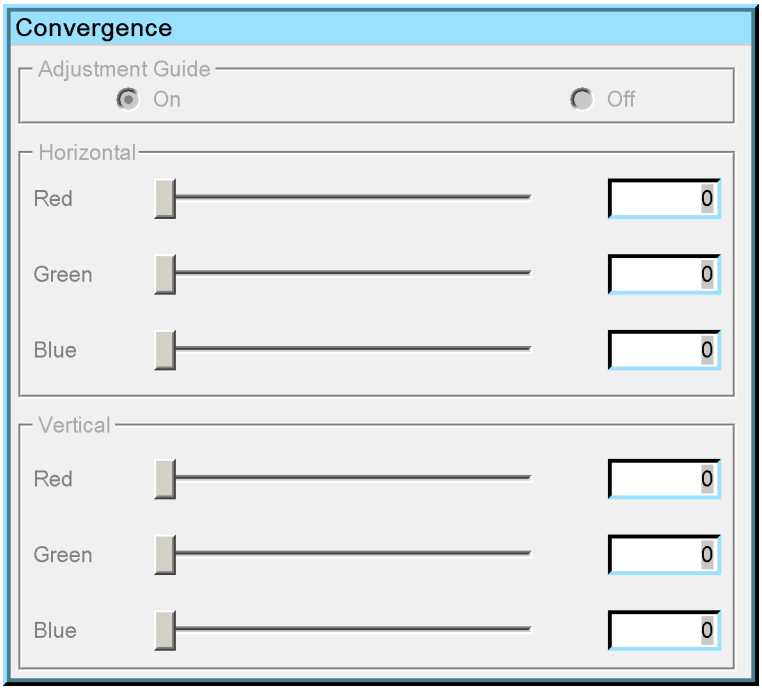

Image 7-192

How to adjust the convergence?

1. In the box *Adjustment guide* go to the radio button **On** and hit **Enter**

   This will switch on the internal pattern.
2. In the box *Horizontal* use the slider bars or enter a value (0 .. 3) in the data box of the color you want to shift horizontally.
3. In the box *Vertical* use the slider bars or enter a value (0 .. 3) in the data box of the color you want to shift horizontally.

7.11 Service

Overview

- Diagnostics
- Option key
- Calibration of CLO sensor
- Operation options

7.11.1 Diagnostics

Diagnostics

See the*Troubleshooting* section

7.11.2 Option key

CAUTION: This menu is only intended for authorized personnel! Only to be used to activate your option key purchased at Barco!

How to activate a new purchased option ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Option key...*

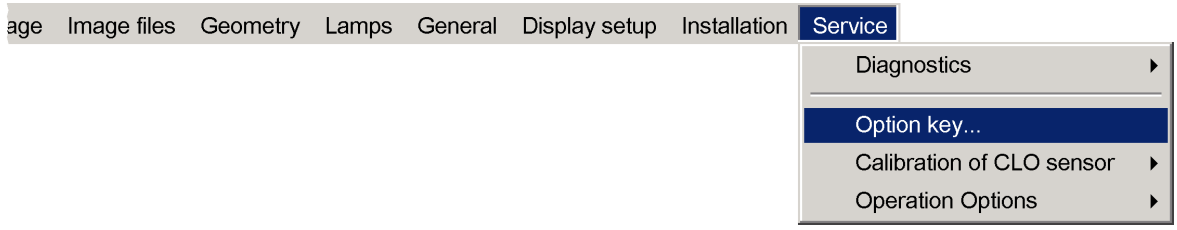

Image 7-193

5. Press **ENTER**

   A dialog box is displayed

Image 7-194

6. Fill in the key by using the digit and the arrow keys

7.11.3 Calibration of CLO sensor

How to calibrate the CLO sensor ?

1. See the service manual for the complete procedure

7.11.4 Operation options

Overview

- AutoImage
- Warning messages

7.11.4.1 AutoImage

What can be done ?

AutoImage can be disabled. In case of a new (unknow) source, no automatic file selection will be done. Instead, a more or less suited file will be selected, resulting in a misaligned image. Image settings must be done manually (edit image file).

How to enable/disable AutoImage ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Operation options*
5. Press → to pull down the menu
6. Press ↓ to select Autoimage
7. Press → to pull down the menu
8. Use ↑ or ↓ to select *On/Off*
9. Press **ENTER**

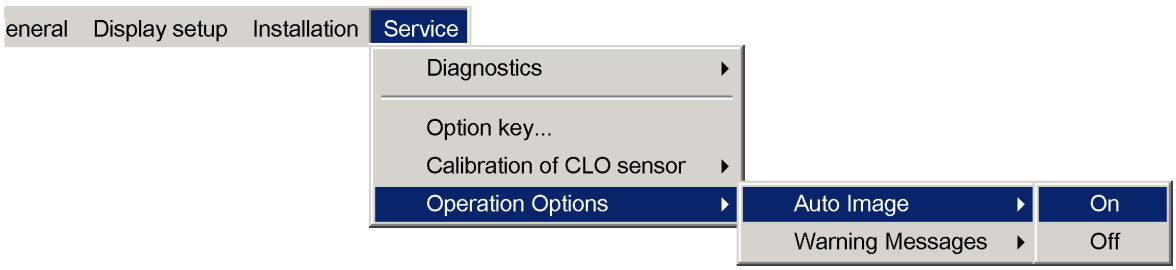

Image 7-195

A white bullet shows the active setting

7.11.4.2 Warning messages

What can be done?

It is possible to block some Warning messages during projector runtime. The table below gives an overview of those messages that can be suppressed during runtime.

Warning message	Sim 5W	Galaxy NH-12 Galaxy NW-12 Galaxy NW-7	Description
NO SIGNAL	x	x	In case no incoming Sync is detected
Lamp error icon	x		In case of an actual lamp or LPS problem
Lamp runtime warning	x	x	Max lamp runtime almost reached
Lamp runtime exceeded	x	x	Max lamp runtime exceeded
Desktop resolution not valid		x	Desktop input signal resolution is out of specification.
Wait box	x	x	An hourglass icon that is displayed during processing

For safety reasons, the warning messages *Lamp runtime warning* and *Lamp runtime exceeded* will always pop up during start-up of the projector. They can only be suppressed during projector runtime.

How to enable/disable Warning Messages?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the *Service* menu
4. Use ↑ or ↓ to select *Operation options*
5. Press → to pull down the *Operation Options* menu
6. Use ↑ of ↓ to select *Warning Messages*
7. Press → to pull down the *Warning Messages* menu
8. Use ↑ or ↓ to select *On* or *Off*
9. Press **ENTER** to confirm

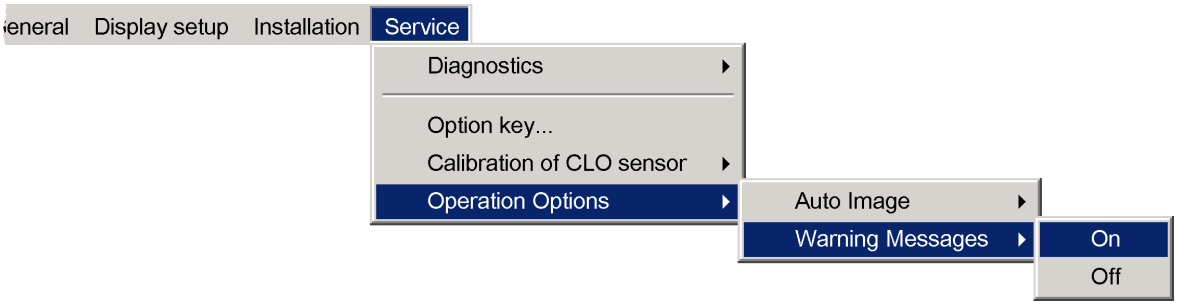

Image 7-196

A white bullet shows the active setting

8. MAINTENANCE

About this chapter

This chapter contains detailed maintenance procedures like lens cleaning, etc. These procedures can easily be performed by the operator or owner of the projector.

Overview

- Cleaning the lens
- Cleaning the exterior of the projector
- Regular check of the cooling liquid level

8.1 Cleaning the lens

To minimize the possibility of damage to optical coatings, or scratches to lens surfaces, we have developed recommendations for cleaning. FIRST, we recommend you try to remove any material from the lens by blowing it off with clean, dry deionized air. DO NOT use any liquid to clean the lenses.

Necessary tools

Toraysee™ cloth (delivered together with the lens kit). Order number : R379058.

How to clean the lens ?

1. Always wipe lenses with a CLEAN Toraysee™ cloth.
2. Wipe lenses in a one single direction.
   Warning: *Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.*
3. Do not leave the cleaning cloth in either an open room or lab coat pocket, as doing so can contaminate the cloth.
4. If smears occur when cleaning lenses, replace the cloth. Smears are the first indication of a dirty cloth.

CAUTION: Do not use fabric softener when washing the cleaning cloth or softener sheets when drying the cloth.

Do not use liquid cleaners on the cloth as doing so will contaminate the cloth.

Other lenses can also be cleaned safely with this Toraysee™ cloth.

8.2 Cleaning the exterior of the projector

How to clean the exterior of the projector ?

1. Switch off the projector and unplug the power cord at the projector side.
2. Clean the housing of the projector with a damp cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution.

8.3 Regular check of the cooling liquid level

Type of reservoir

Two different reservoir sizes are available. The type which is installed in the projector can easily be detected:

- **smaller reservoir**: consists of three parts: body, top lid, bottom lid
- **bigger reservoir**: consists of two parts: body, top lid

Image 8-1
Types of reservoirs

Interval of the level check

The liquid level of the cooling system must be checked on a regular basis. This must be done by a trained and qualified technician. The interval depends on the size of the reservoir.

It must be checked **before first use** of the projector! Once the projector has been used before, the cooling liquid level must be checked **on every lamp change** or **every three months (small container)** or **every six months (big container)** , whatever comes first. If the liquid level is not within the specifications, cooling liquid must be added.

9. TROUBLE SHOOTING

Overview

- Error codes
- Trouble shooting through the OSD
- Basic troubleshooting guide

9.1 Error codes

9.1.1 Introduction

Error display

The LCD module is located at the front side of the projector underneath the input module. It will display error codes in case a problem is encountered.

Image 9-1
LCD Display : error display

Syntax of the error codes

The error code exists out of a prefix, two digits and a short message. E.g. `P11 Power Fail`. Possible prefixes are:

- T: temperature error
- F: fan error
- L: lamp error
- P: power error
- H: hardware error

If ever you have to contact Barco's Helpdesk concerning an error code, make sure to mention the prefix and both digits, since this data is most useful for Barco engineers to determine which actions have to be taken.

9.1.2 Overview of the error codes

Temperature errors

Description	Location	Prefix	Code	Message
Air pressure	PB	T	10	PB overtemp
Microcontroller	PB	T	11	PB overtemp
PFC heat sink	PB	T	12	PB overtemp
Ambient	PB	T	15	PB overtemp
Air pressure	XFAN	T	20	XFAN overtemp
Microcontroller	XFAN	T	21	XFAN overtemp
SMPS heat sink	XFAN	T	22	XFAN overtemp
Ambient	XFAN	T	25	XFAN overtemp
Lamp overtemperature or open LPS door	Control engine	T	50	Lamp overtemp
DMD overtemperature	Controle engine	T	51	DMD overtemp

Fan errors

Description	Location	Prefix	Code	Message
fan top LPS	PB	F	10	LPS top fan error

Description	Location	Prefix	Code	Message
fan side LPS	PB	F	11	LPS side fan error
Pump	PB	F	14	Pump error
fan PMP	PB	F	22	PMP fan error
fan cold mirror	PB	F	23	Mirror fan error
fan bottom lamp	PB	F	24	Lamp fan error
fan power box	PB	F	26	PB fan error
fan engine top	XFAN	F	30	Top fan error
fan engine bottom	XFAN	F	31	Bottom fan error
fan vertical lamp	XFAN	F	32	Vertical fan error
fan x-fan supply & prism	XFAN	F	34	XFAN error

Lamp errors

Description	Location	Prefix	Code SW >= v1.20	Message
Communication	Lamp info	L	10	Lamp info error
Address	Lamp info	L	11	Lamp info error
Size	Lamp info	L	12	Lamp info error
Checksum	Lamp info	L	13	Lamp info error
Data range	Lamp info	L	14	Lamp info error
LPS comm	LPS	L	21	LPS1 error
Lamp fail	LPS	L	22	Lamp fail
?	LPS1	L	30	LPS1 error
PFC failure	LPS1	L	31	LPS1 PFC failure
LPS failure	LPS1	L	32	LPS1 LPS failure
Boost failure	LPS1	L	33	LPS1 boost failure
?	LPS1	L	34	LPS1 error
?	LPS1	L	35	LPS1 error
Current error	LPS1	L	36	LPS1 current error
Voltage error	LPS1	L	37	LPS1 voltage error
Power error	LPS1	L	38	LPS1 power error

Power errors

Description	Location	Prefix	Code	Message
380VM	PB	P	10	PB supply error
VRMS	PB	P	11	PB supply error
++3V3	PB	P	12	PB supply error
++5V	PB	P	13	PB supply error
+27V	PB	P	14	PB supply error
+17V	PB	P	15	PB supply error
++3V3 vs. –5V	PB	P	16	PB supply error
++3V3	XFAN	P	20	XFAN supply error
+24V	XFAN	P	23	XFAN supply error
++12V	XFAN	P	26	XFAN supply error

Hardware errors

Description	Location	Prefix	Code	Message
Invalid firmware	PB	H	10	PB firmware

Description	Location	Prefix	Code	Message
PB comm	PB	H	11	power fail
Power supply fail	PB	H	12	power fail
Invalid firmware	XFAN	H	20	XFAN firmware
XFAN comm	XFAN	H	21	cooling fail
Cooling supply fail	XFAN	H	22	cooling fail
Cyclone configure	PMP	H	30	FPGA config error
Cyclone init	PMP	H	31	FPGA init error
Cyclone file error	PMP	H	32	FPGA file error
PIP configure	PMP	H	40	FPGA config error
PIP init	PMP	H	41	FPGA init error
PIP file error	PMP	H	42	FPGA file error
Warp configure	PMP	H	50	FPGA config error
Warp init	PMP	H	51	FPGA init error
Warp file error	PMP	H	52	FPGA file error
Preformatter configure	Preformatter	H	60	FPGA config error
Preformatter init	Preformatter	H	61	FPGA init error
Preformatter file error	Preformatter	H	62	FPGA file error
DVI-out configure	Output layer	H	70	FPGA config error
DVI-out init	Output layer	H	71	FPGA init error
DVI-out file error	Output layer	H	72	FPGA file error

9.2 Trouble shooting through the OSD

What can be done ?

The projector bus allows the diagnostic of different hardware components divided in two main groups.

- I²C diagnostics : a number of internal electronic boards can be diagnosed and a graphical interface shows whether an error is
- Lamps and power supply : lamp temperature and power related failures are logged and can be checked at any time.
- Formatter : Allows to monitor the status and communication of the formatter and satellites
- Cooling : the measured temperatures can be monitored as well as the different fan speeds
- Display mode : allows to monitor the signal characteristics (frequency and mode) at the last image process stage (display)
- Warning messages : setting the warning messages *ON* will allow to receive on screen warning messages

How to display the I²C diagnostics menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Diagnostics*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select I²C and press **ENTER**

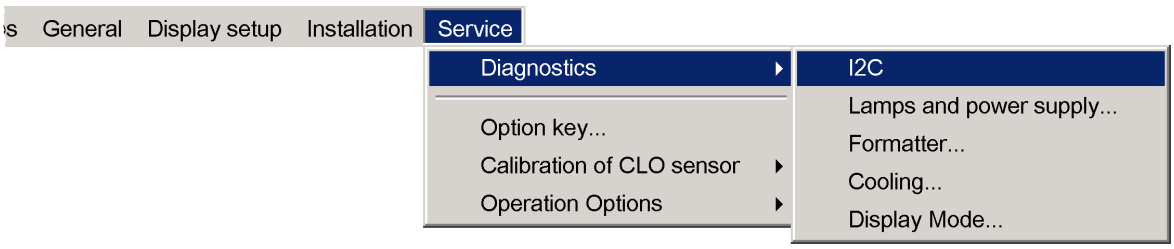

Image 9-2

A text box is displayed

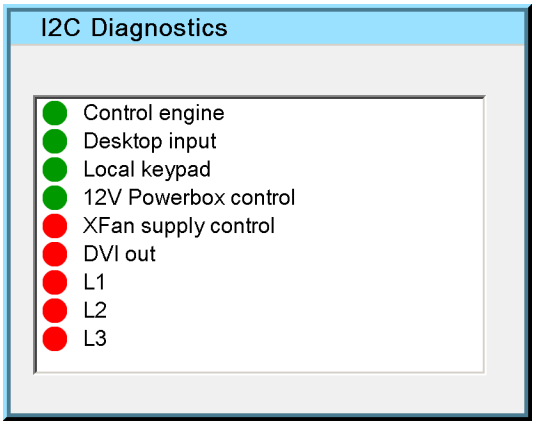

Image 9-3

How to display the Lamps and power supply diagnostic menu ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Diagnostics*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Lamps and power supply* and press **ENTER**

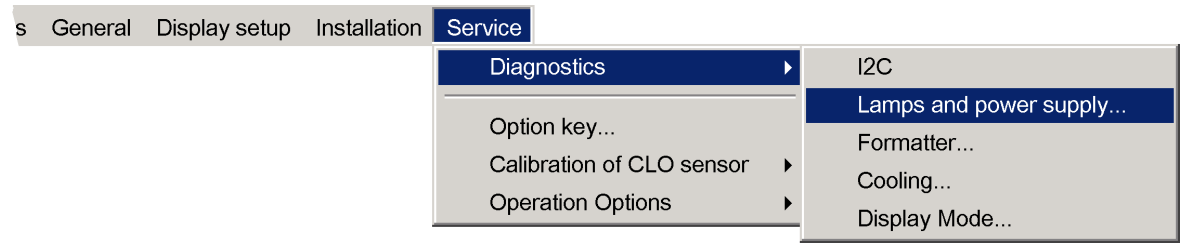

Image 9-4

A text box is displayed

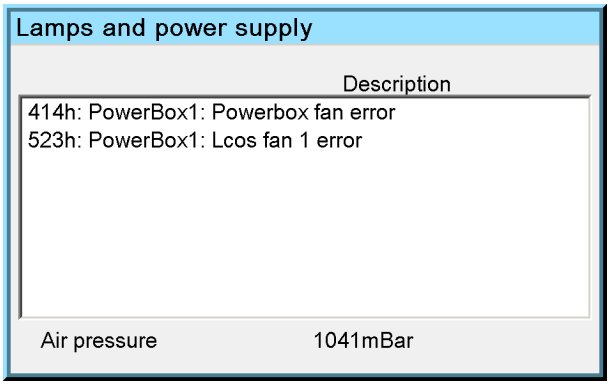

Image 9-5

How to display the formatter status information ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Diagnostics*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Formatter...* and press **ENTER**

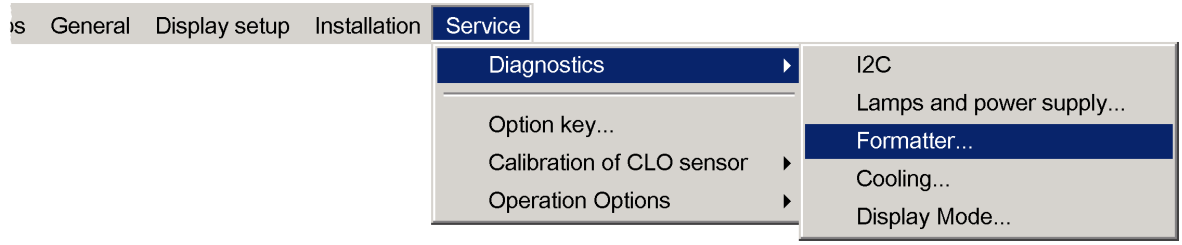

Image 9-6

A text box is displayed

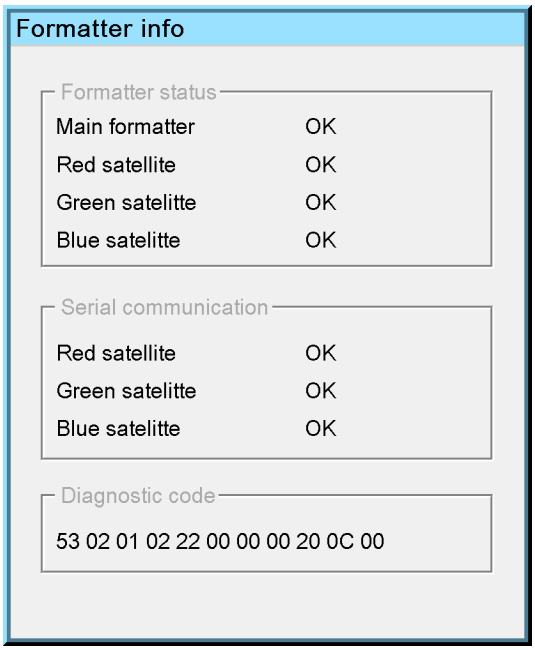

Image 9-7

How to display the temperatures and the fan speeds ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Diagnostics*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Cooling...* and press **ENTER**

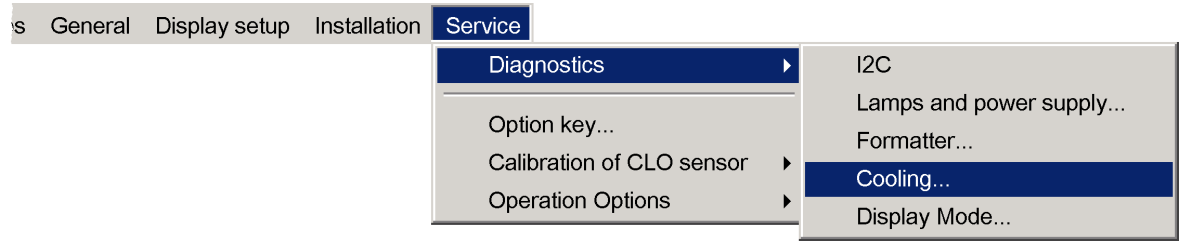

Image 9-8

A text box is displayed

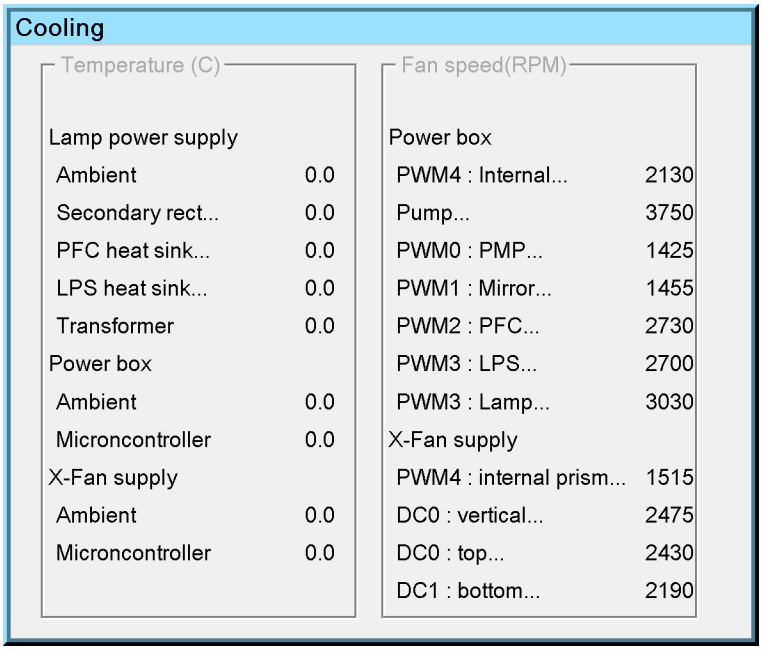

Image 9-9

How to display the Display mode info ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Diagnostics*
5. Press → to pull down the menu
6. Use ↑ or ↓ to select *Display mode...*and press **ENTER**

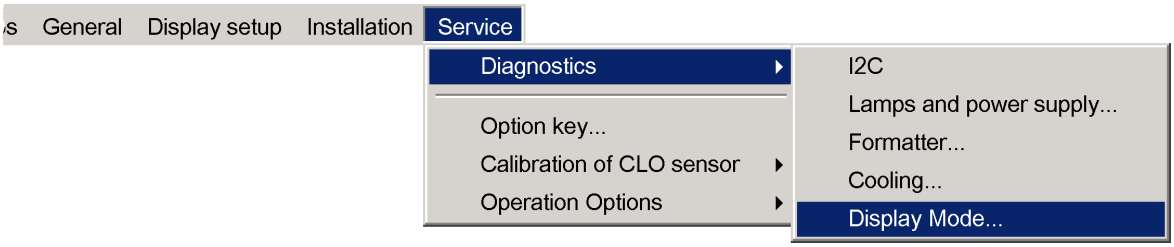

Image 9-10

A text box is displayed

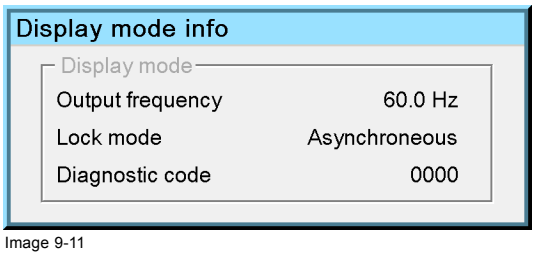

Image 9-11

How to enable the warning messages ?

1. Press **MENU** to activate the Tool bar
2. Press → to select the *Service* item
3. Press ↓ to Pull down the menu
4. Use ↑ or ↓ to select *Operation options*
5. Press → to pull down the menu

6. Press ↓ to select *Warning messages*
7. Press → to pull down the menu
8. Use ↑ or ↓ to select *On*
9. Press **ENTER**

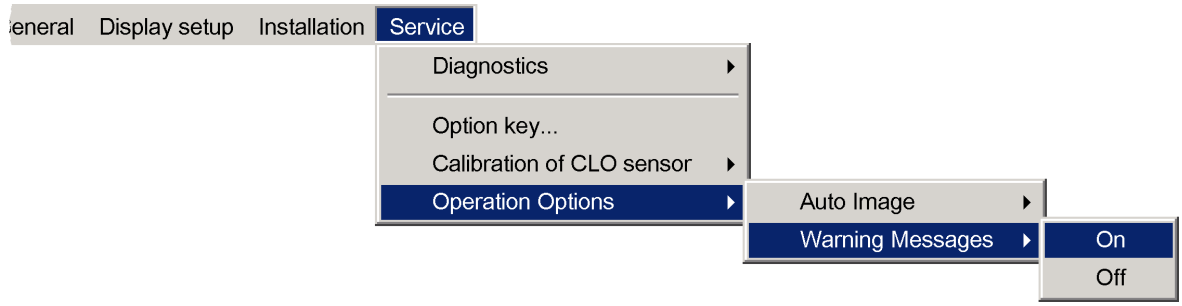

Image 9-12

A white bullet shows the active setting

9.3 Basic troubleshooting guide

About this chapter

In this section we start from the symptoms that can be seen in case of an unusual situation to come to a possible cause and solution or to detect which module is causing the problem. It is a **first level tool** which implies that it will not be possible to come to a solution at all times. If no solution can be found by using this troubleshooting guide, please contact **your dealer**.

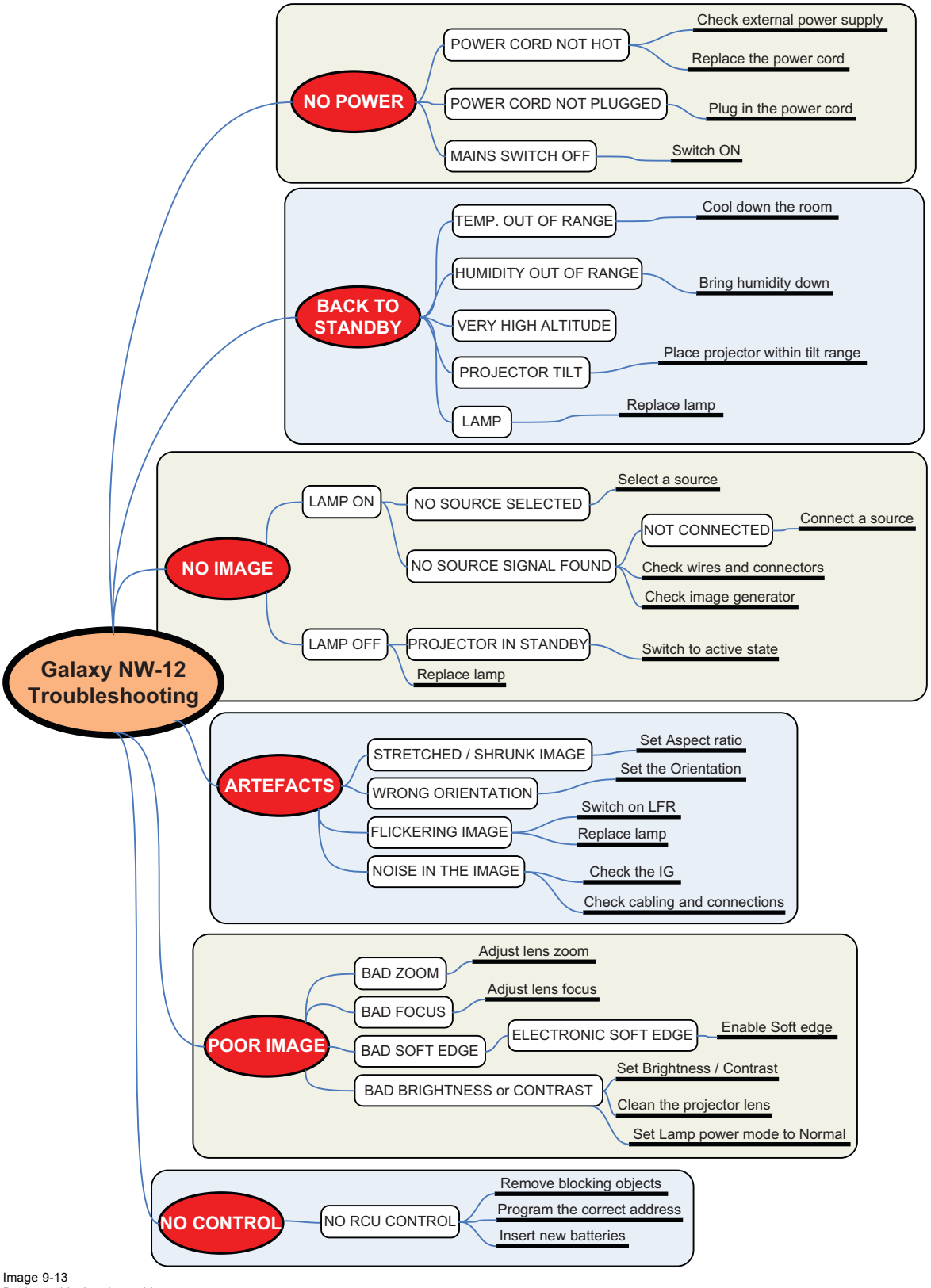

Image 9-13
Basic troubleshooting guide

10. IMAGE FILES

Overview

- List of standard Image files

10.1 List of standard Image files

Overview Table

Name[1]	Ltot[2]	Lact[3]	Ptot[4]	Pact[5]
DOS3@56.xml	440	400	848	640
VGA@75.xml	500	480	840	640
VGA1@85.xml	509	480	832	640
VGA@73.xml	520	480	832	640
NTSC_LIMO_X2@60.xml	520	482	1024	834
VGA@60.xml	525	480	800	640
NTSC@60.xml	525	482	858	675
Video525@60.xml	525	472	720	680
RgbVideo525@60.xml	525	472	720	680
PAL_LIMO_X2@50.xml	620	574	1024	834
SVGA@75.xml	625	600	1056	800
SVGA@56.xml	625	600	1024	800
Video625@50.xml	625	560	720	680
RgbVideo625@50.xml	625	560	720	680
PAL@50.xml	625	576	864	675
SVGA@60.xml	628	600	1056	800
SVGA@85.xml	631	600	1048	800
1600@192.xml	651	600	2160	1600
ESVGA@73.xml	660	624	1120	832
SVGA_1@72.xml	666	600	1040	800
SG_60_3@60.xml	720	680	1260	960
HD_60P@60.xml	750	720	1650	1280
XGA_1@75.xml	800	768	1312	1024
XGA_GS@75.xml	801	768	1328	1024
XGA_1@70.xml	806	768	1328	1024
XGA@60.xml	806	768	1344	1024
XGA@85.xml	808	768	1376	1024
XGA@72.xml	808	768	1376	1024
XGA_2@70.xml	815	768	1368	1024
EXGA@60.xml	895	864	1520	1152
EXGA@85.xml	907	864	1576	1152
EXGA1@70.xml	912	864	1480	1152

1. Name: name of file, contains the settings.
2. Ltot: total lines in one field
3. Lact: active lines in one field.
4. Ptot : total pixels on one horizontal line.
5. Pact: active pixels on one horizontal line.

Name[1]	Ltot[2]	Lact[3]	Ptot[4]	Pact[5]
MXGA@100.xml	930	864	1568	1152
1600@60.xml	932	900	2128	1600
EXGA2@70.xml	945	864	1512	1152
EXGA@80.xml	958	864	1440	1152
SXGA2@60.xml	1000	960	1800	1280
EXGA2@75.xml	1002	864	1464	1152
SXGA2@85.xml	1011	960	1728	1280
COMPUSC4@60.xml	1025	960	1296	1024
SXGA_L@60.xml	1041	1024	1344	1280
SXGA@50.xml	1047	1024	1680	1280
WSXGA@60.xml	1060	1024	2144	1600
SXGA_1@72.xml	1061	1024	1680	1280
SXGA@76.xml	1066	1024	1664	1280
SXGA@75.xml	1066	1024	1688	1280
SXGA@60.xml	1066	1024	1688	1280
SXGA+_1@60.xml	1066	1050	1688	1400
SXGA_2@72.xml	1069	1024	1690	1280
SXGA@85.xml	1072	1024	1728	1280
SXGA+_2@60.xml	1089	1050	1864	1400
HD_1080P@60.xml	1118	1080	2576	1920
HD_1080I@60.xml	1125	1080	2200	1920
HD_30P@30.xml	1125	1080	2200	1920
HD_25I@50.xml	1125	1080	2640	1920
HD_25P@25.xml	1125	1080	2640	1920
HD_24SF@48.xml	1125	1080	2750	1920
HD_24P@24.xml	1125	1080	2750	1920
WUXGA@60.xml	1245	1200	2592	1920
UXGA@85.xml	1250	1200	2160	1600
UXGA@75.xml	1250	1200	2160	1600
UXGA@70.xml	1250	1200	2160	1600
UXGA@60.xml	1250	1200	2160	1600
SG_50@50.xml	1250	1200	2085	1600
WSXGA+@60.xml	1304	1050	2272	1680
SXGAP2@60.xml	1325	1280	1392	1024
SXGAP@70.xml	1326	1280	1440	1024
S1600@67.xml	1334	1280	2240	1600
WUXGA_2@60.xml	1490	1200	2624	1920
1920x1440@60.xml	1500	1440	2600	1920
QXGA@56.xml	1586	1536	2784	2048
QXGA@60.xml	1589	1536	2800	2048
UXGAP1@59.xml	1620	1600	1252	1200
UXGAP2@60.xml	1656	1600	1648	1200

GLOSSARY

CEE7/7

European power plug to connect the power cord to the wall outlet.

NEMA L6-20P

American power plug to connect the power cord to the wall outlet.

On-Axis projection

Projection where the projector is positioned so as to have the centre of the lens coinciding with the centre of the screen.

INDEX

H

I

L

M

N

O

P

R

S

T

U

V

W

LIST OF TABLES