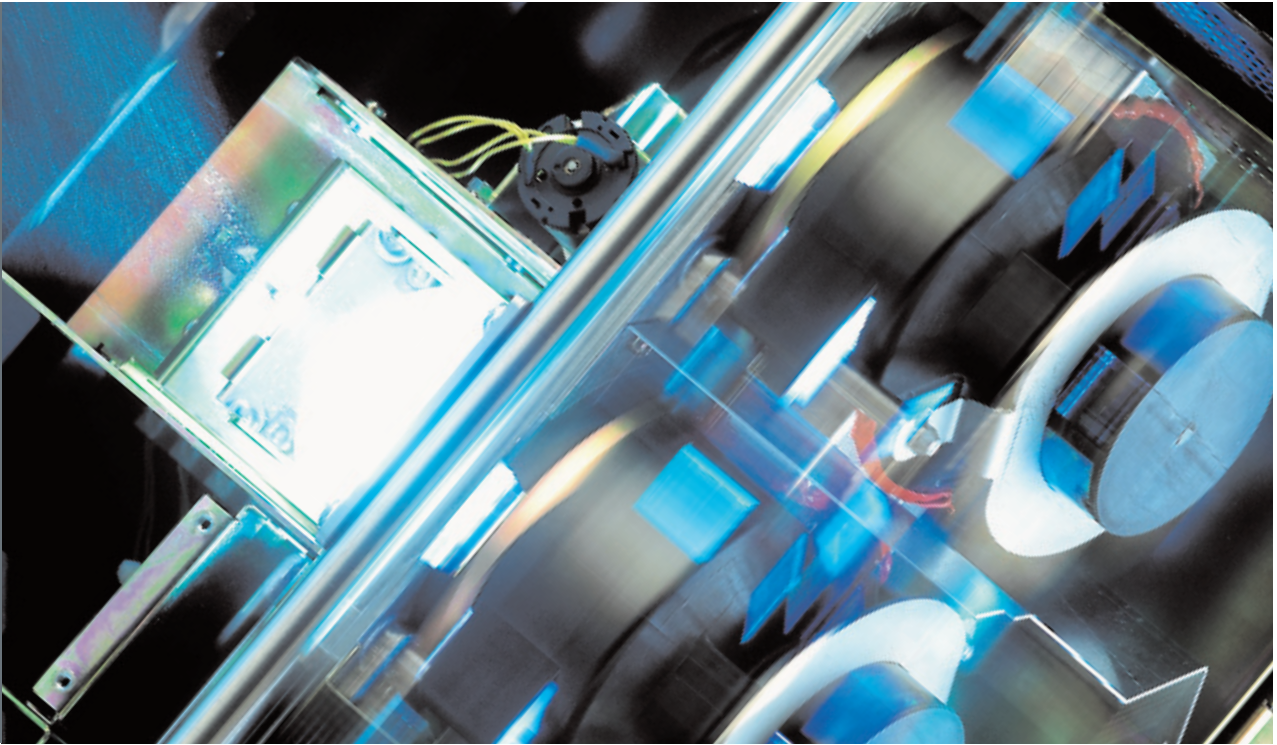
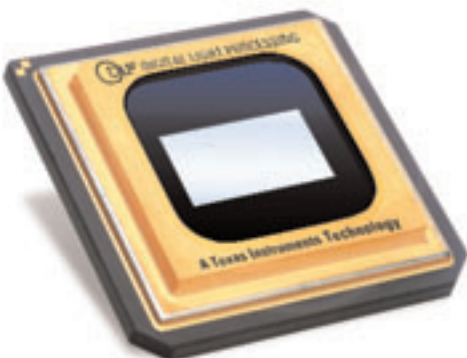


# Overview D

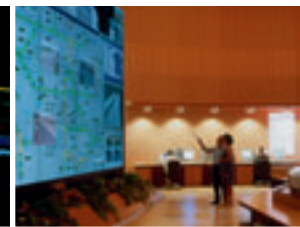
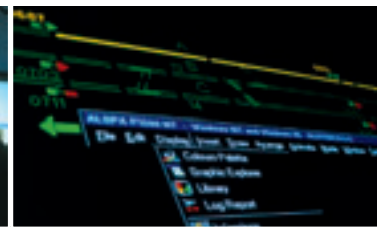


Barco DLP projection series



**BARCO**

Visibly yours



Finally, the OVERVIEW D Series affords the customer piece of mind with a system that not only provides you with the ultimate in performance, but also provides unsurpassed reliability and ease of maintenance. Barco backs these ideas with long-term product support and a wide range of specialized customer services.

# Barco Control Rooms instills confidence



- Engineered for 24/7 mission critical operation
- Superior color rendition and uniformity
- Optimized viewing ergonomics
- Designed for low cost of ownership
- Simple system maintenance



# What is DLP ?

## Digital Light Processing™ technology

DLP™ technology is a revolutionary display solution that uses an optical semiconductor to manipulate light digitally. The result is maximum fidelity, with a picture whose clarity, brilliance and color must be seen to be believed.

White light passes through a color wheel filter, causing red, green and blue light to be shone in sequence on the surface of the DMD. The switching of the mirrors, and the proportion of time they are 'on' or 'off' is coordinated according to the color shining on them. The human visual system integrates the sequential color and sees a full-color image.

### The Semiconductor

At the heart of every DLP™ projection system is an optical semiconductor known as the Digital Micromirror Device, or DMD chip.

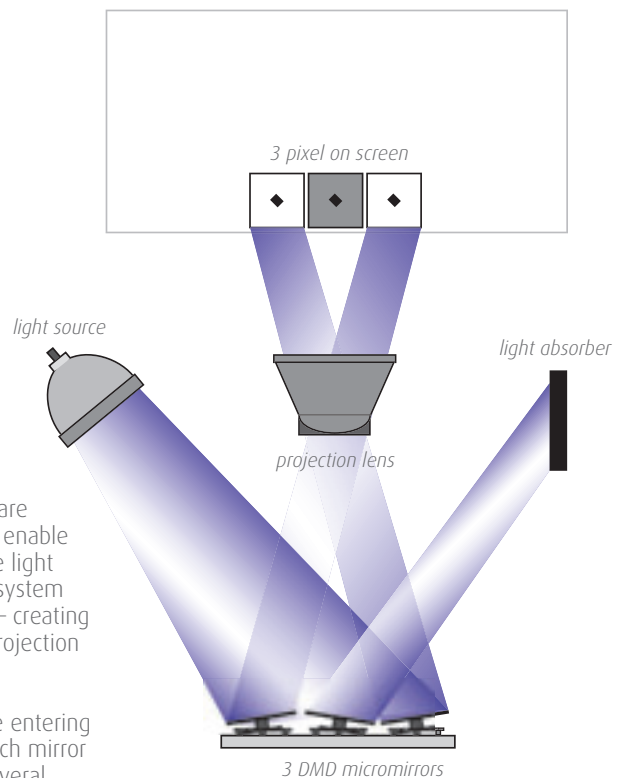
When a DMD chip is coordinated with a digital video or graphic signal, a light source, and a projection lens, its mirrors can reflect an all-digital image onto a screen. The DMD and the electronics that surround it are referred to as Digital Light Processing™ technology.



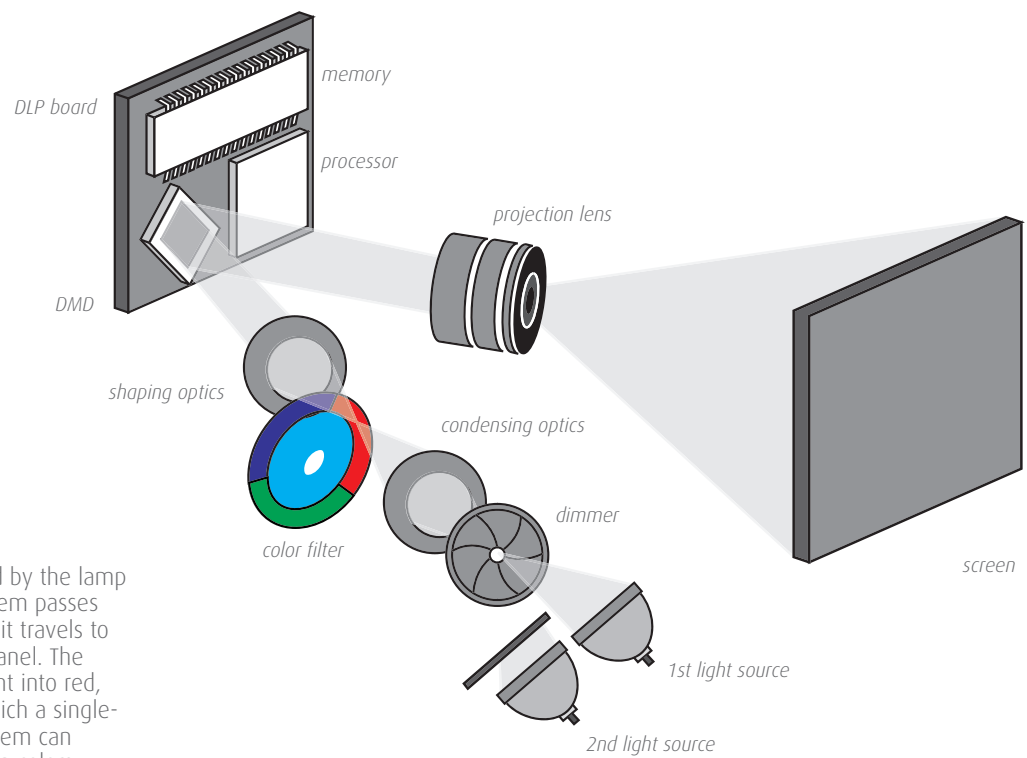
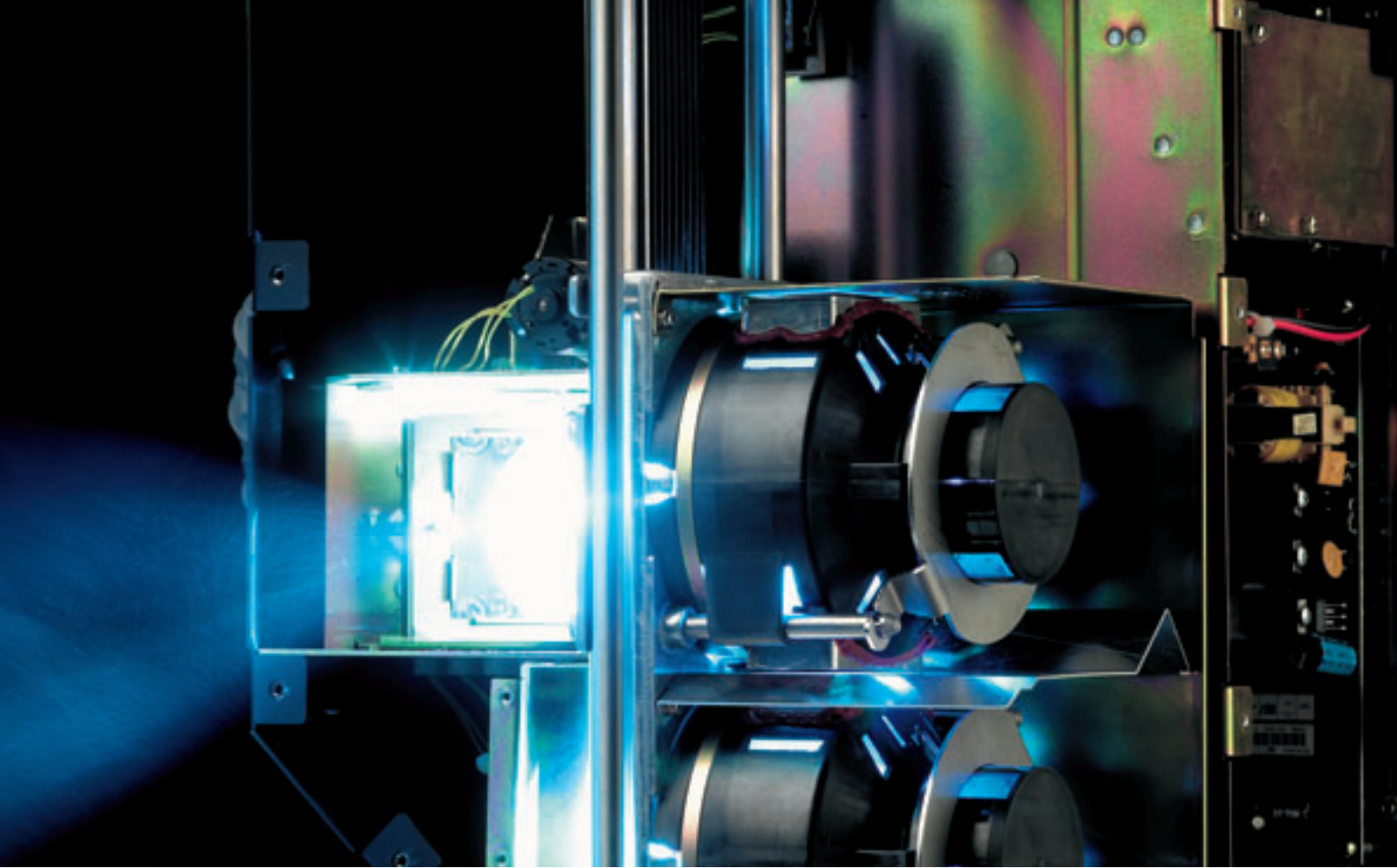
### The grayscale image

A DMD panel's micromirrors are mounted on tiny hinges that enable them to tilt either toward the light source in a DLP™ projection system (ON) or away from it (OFF) — creating a light or dark pixel on the projection surface.

The bit-streamed image code entering the semiconductor directs each mirror to switch on and off up to several thousand times per second. When a mirror remains on average longer in the on state than in the off state, it introduces a light gray pixel. If the off state dominates, a dark gray pixel is projected.



In this way, the mirrors in a DLP™ projection system can reflect pixels in up to 1,024 shades of gray to convert the video or graphic signal entering the DMD into a highly detailed grayscale image.



### Adding color

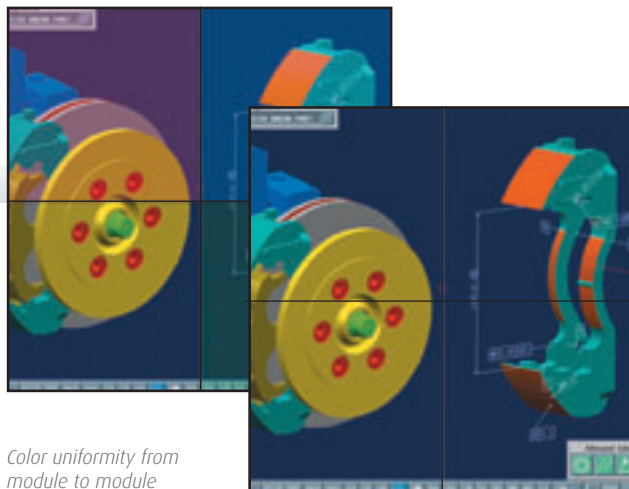
The white light generated by the lamp in a DLP™ projection system passes through a color wheel as it travels to the surface of the DMD panel. The color wheel filters the light into red, green, and blue, from which a single-chip DLP™ projection system can create at least 16.7 million colors.

# The features of the Barco DLP solution

## Light output

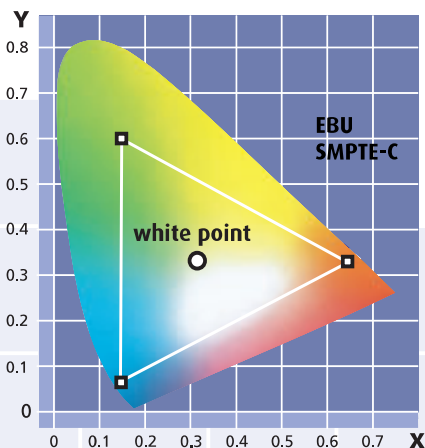
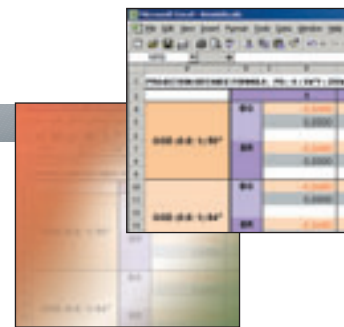
Based on many years of experience and several thousand display channels worldwide, Barco Control Rooms knows what looks best to the eye. Images projected by DLP technology are always crystal clear and the technology comes close to reproducing the exact mirror image of its source material. The light output has been optimized with respect to contrast, uniformity,

viewing angle, color and cost-of-ownership. Each of the components of the display solution, from lamp to screen, including all optical components, DLP chip, color wheel, electronics, projection lens, mirrors and structure have been carefully selected or designed in order to meet the high demands of 24/7 mission critical operation.



Color uniformity from module to module

Color uniformity for each screen



Barco's solution is designed to meet EBU standards

## Color

A large color triangle provides crisp saturated colors. Designed to meet EBU standards, the Barco Control Rooms DLP solution allows seeing natural video and realistic skin tones. Color is of major importance, especially for the broadcast environment, situation rooms with video conferencing, the medical and surveillance market. For the control rooms, this brings superb color contrast for laying out all kinds of diagrams for utilities control centers, traffic & surveillance centers, command & control centers and Network Operation Centers.

## Color correction

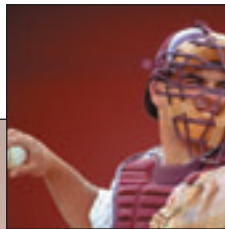
The color correction algorithm takes advantage of the internal resolution of 13 bits per color.

## Color uniformity

DLP is a reflective technology. The reflectance of all mirrors is equal and color uniformity is not altered by the chip. Utilization of high quality optical components and projection lens guarantee optimal color uniformity within each module. A careful selection of the color wheel filters results in excellent module to module color uniformity.

## Contrast

At least as important as light output is contrast. The contrast values of the Barco Control Rooms DLP solution are among the highest in the industry. Moreover, the screen has been selected to have minimum reflection from ambient lighting, leaving the viewer with a high contrast image.



High contrast images



High resolution

## Color temperature & Degamma

The color temperature of the white point is selected to be 6500 K, which is the same as the color temperature of the sun, providing natural images. For video and the broadcasting environment this is a must. Gamma correction is possible by setting user definable gamma values.



## Resolution

DLP technology is offered in XGA (1024x768) and SXGA\* (1400x1050). High resolution increases the amount of viewable data, which is important for items like Asian characters, medical data, GIS, or just to show large applications with several video or RGB sources.

## Reliability

The digital nature of DLP™ technology means that it's not susceptible to environmental factors like heat, humidity, or vibration, which can cause an image to degrade over time. The Barco Control Rooms solution guarantees an original-quality picture time and time again, with zero hassle and minimal maintenance. All components are carefully chosen to provide high Mean Time Between Failure and minimal Mean Time To Repair.

## Design

The Digital Micromirror Device at the core of DLP™ technology can modulate light very quickly, meaning that only one panel is required. Barco Control Rooms has integrated this chip into a projection subsystem with an innovative approach and optimized for 24/7 operation.

The projection engine is split into a projection unit, which is smaller and lighter than the illumination unit. This unique feature has many advantages and also allows easy integration of future technology improvements without having to replace the full engine.

## Future proof

New firmware can be uploaded by remote interface.



- **Modular design**
- **Image optimization**
- **Built in redundancy**
- **Low Mean Time To Repair concept**
- **High Mean Time Between Failure concept**
- **Image equalizing capability**
- **On-screen menus**

*Module*

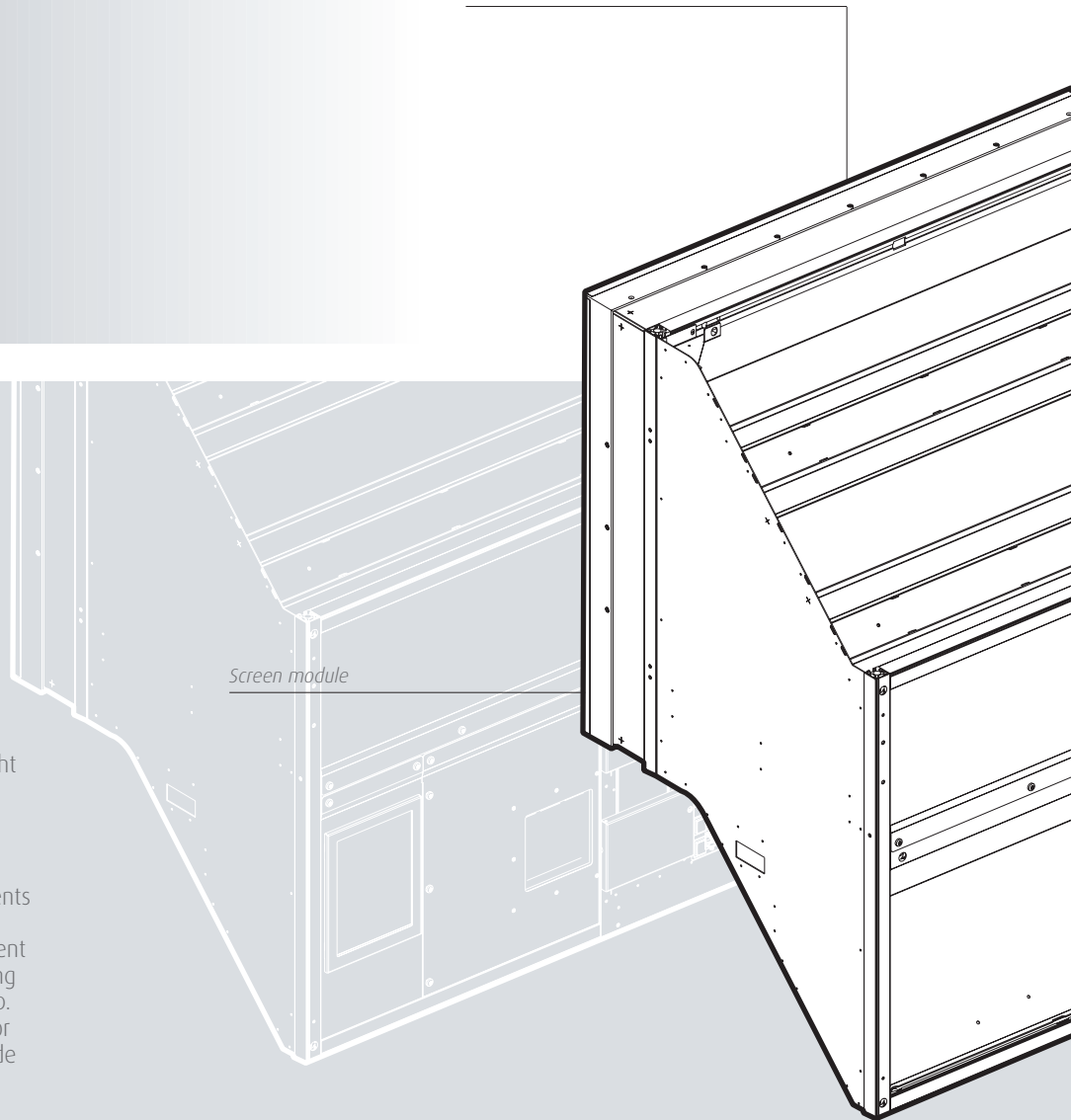
*Screen module*

### **Image optimization**

From lamp to screen, the whole light path is designed by Barco Control Rooms to deliver optimal picture quality.

In addition to high quality components in each step of the light path, an automated, patent pending alignment system insures optimal light coupling between the lamp and the DLP chip. The system allows compensation for tolerancing of the lamp burner inside the lamp housing. This results in superior brightness and uniformity.

*Fan module*





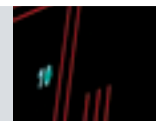
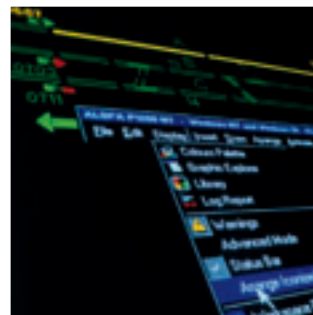
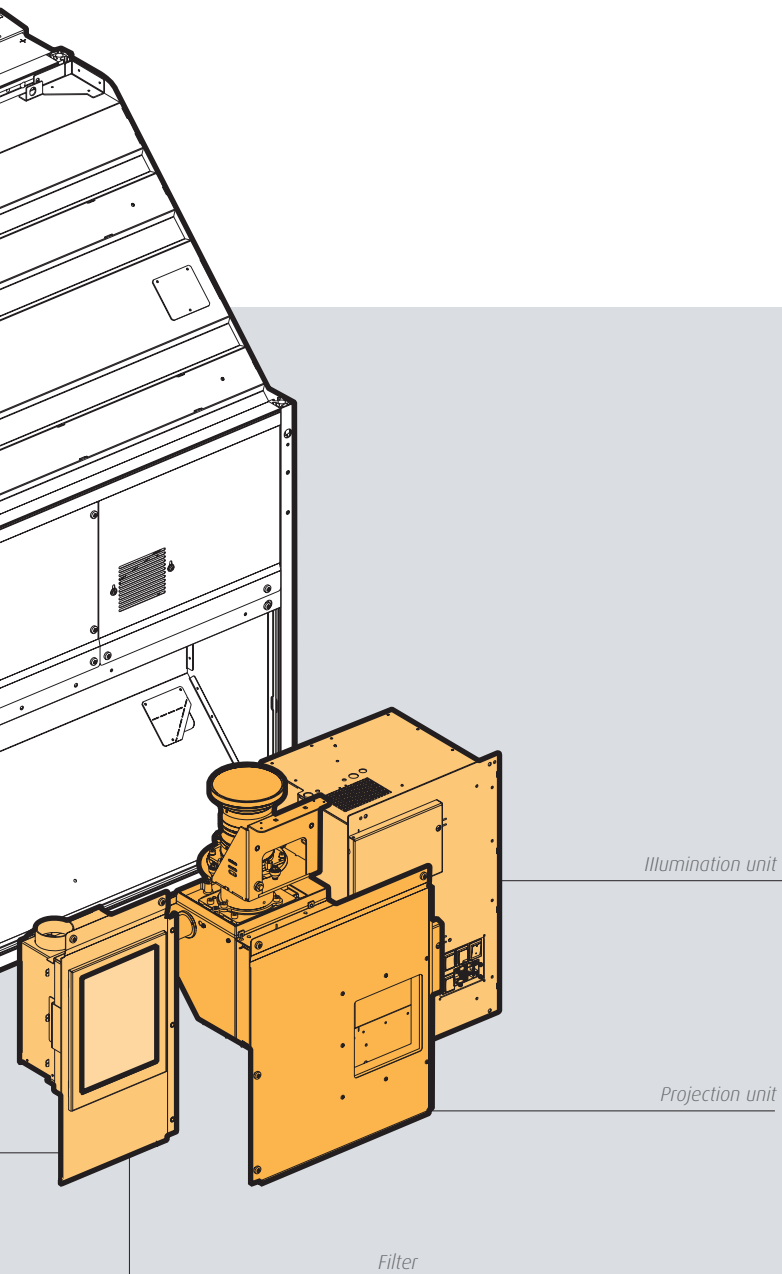
## Barco's added value

## Modular design

Barco offers a range of display solutions in the OVERVIEW series that are designed to form display walls of any size, in a linear or curved setup. The closed modular structure requires minimal installation depth.

All components are engineered to deliver a highly reliable and superior quality image display to the operator. The displays can be seamlessly integrated into any center already in use.

The modular concept has also been applied within each module. Thanks to the separate fan-module, projection unit and illumination unit, maintenance from the rear of the system is very easy. Filter and lamps can be replaced from the outside.



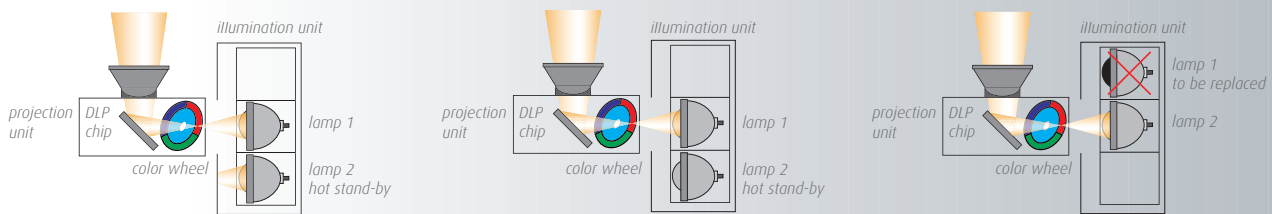
# Barco's added value

## Built in redundancy

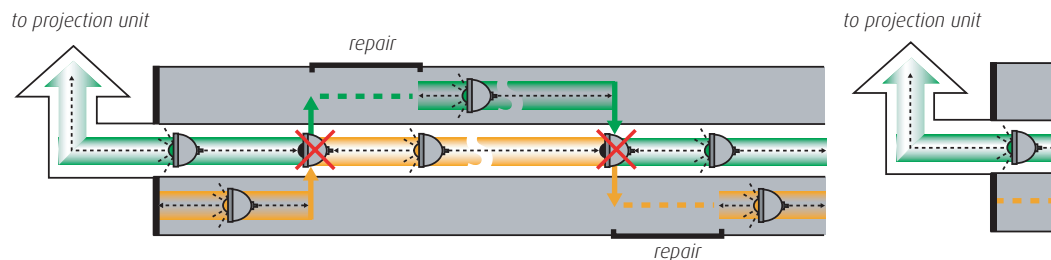
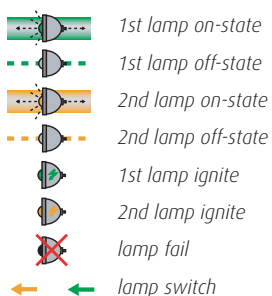
The conception of the projection engine in terms of redundancy deals with its weakest link - the lamp, which is the main consumable. The lamps are combined with the lamp electronics in the illumination unit, which is physically separated from the projection unit.

In some mission critical applications, the loss of light, even for a short time interval is not acceptable. Therefore, the dual lamp mechanism with two lamps can be run in the following modes: Hot stand-by, Cold stand-by or Auto switch mode.

The redundant lamp feature also decreases the amount of service interventions for lamp replacement. Lamp replacement can be planned in instead of being a randomized operation. Therefore the redundant lamp concept increases operational efficiency. Finally, operators don't get distracted from their task and can concentrate on display wall content.



Dual lamp system will provide 100% on the availability of your display wall

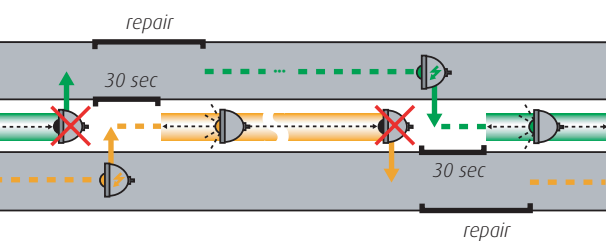
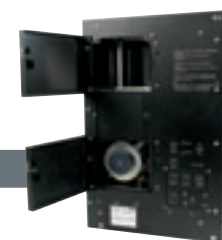


### Hot stand-by:

The two lamps are on. The second lamp brings redundancy to the system and guarantees an image at all times.

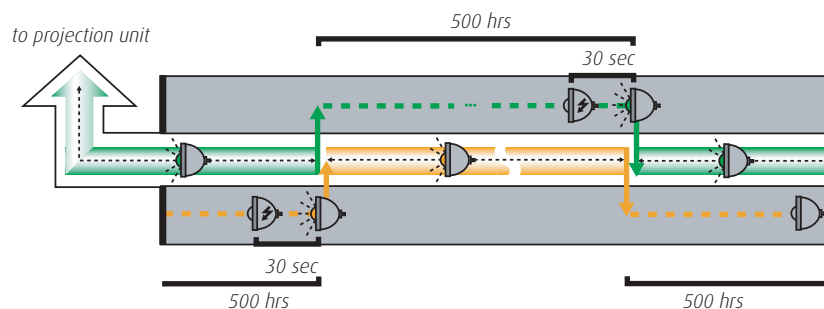


*Illumination unit incorporates dual lamp*



#### **Cold stand-by:**

The 'redundant' lamp is started up after lamp failure of the 'master' lamp, which takes around 30 seconds.



#### **Auto switch mode:**

The two lamps are used sequentially and ensures that both lamps are being used the same amount of time.

# Barco's added value

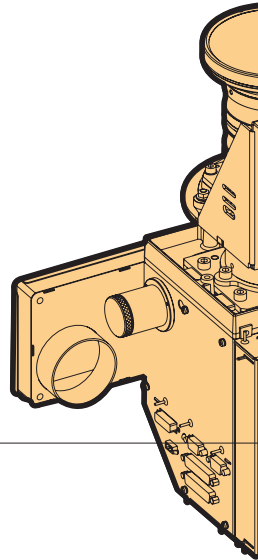
## Low Mean Time To Repair concept

The concept of the projection module is optimized for low Mean Time To Repair. The projection unit is build up out of building blocks combining functionality, each of which one is optimized for maintenance or repair work.

*Placed in fixed position in module and therefore needs no adjustment*



*Easily removable electronic boards without projection unit removal*



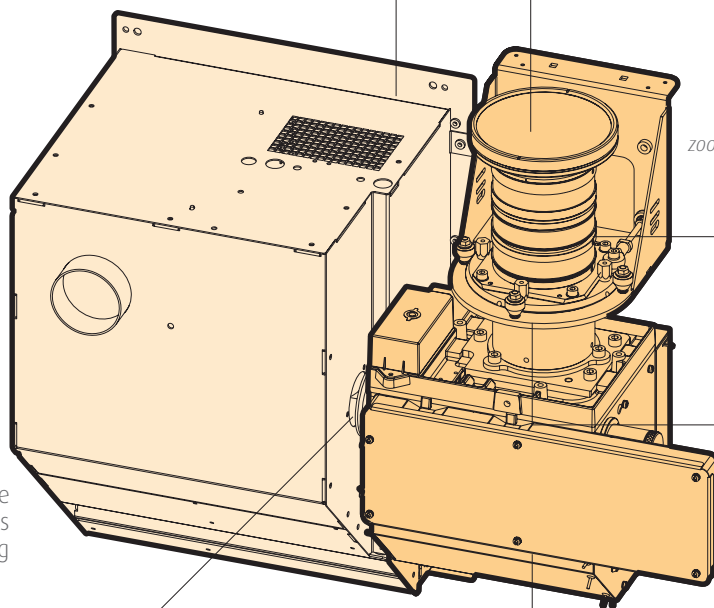
*Illumination unit needs no adjustment because fixed in place*

*High quality lens for optimal image sharpness*

## Easy to adjust

The projection unit contains the core optical elements and low power electronics. Because of this it is small and lightweight. In addition to this, the engine is equipped with a mini-zoom lens to accurately map the image onto the screen. Both of these design considerations allow for an easy adjustment of the projection unit.

The projection unit contains the color wheel, which is removable without removing the projection unit and without the need for readjustment. The frame containing the electronics boards can also be removed without removing the projection unit.



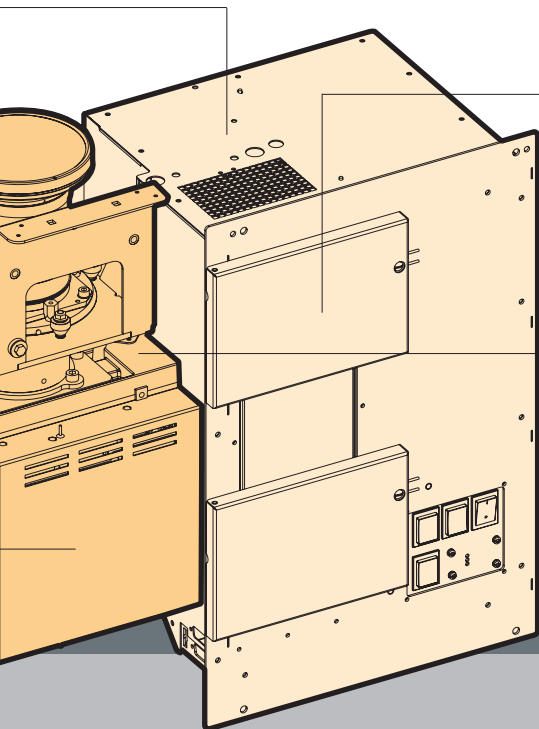
*Mini-zoom lens: zooming without having to lift the projector leads to reduced installation time*

*Easy adjustment for keystone, rotation and lensshift*

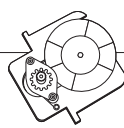
*Automated patent pending lamp adjustment optimizes coupling from illumination unit into projection unit*

*Very small lightweight projection unit is easy to handle and to adjust*

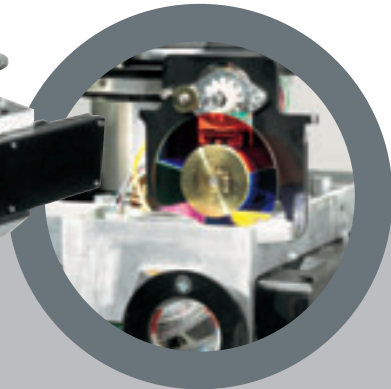




*Failed lamp can be changed while other lamp maintains the image*



*Easy-plug cassette with color wheel*



#### **Easily removable illumination unit**

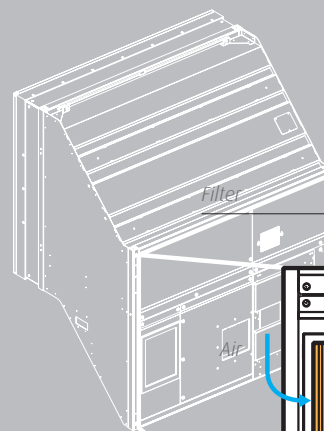
*Power supplies and high power electronics can be easily serviced after removal of illumination unit*

*The illumination unit can be provided as a spare part without having to buy a full second projection engine*

#### **High Mean Time Between Failure concept**

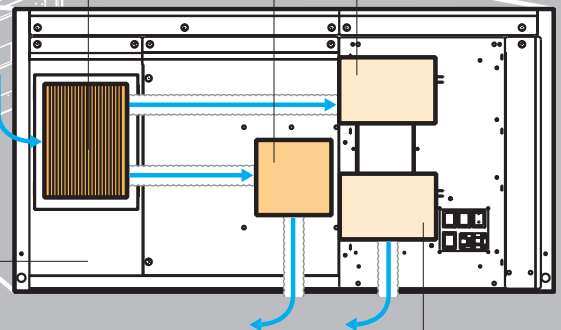
All components have been selected carefully for delivering a product with high Mean Time Between Failure. The design of the projection module in terms of cooling and integration of the parts has been optimized to prolong the lifetime of the product.

- DLP chip: 100,000 hours depending on the application
- High MTBF color wheel
- High MTBF power supply and electronic components
- No loss of image during lamp change
- Special attention to cooling
- No dust in module
- Projection unit and illumination unit are kept in overpressure over a fine filter: no dust in engine



*No dust and hot air in module*

*Projection unit and illumination unit are kept in overpressure with filtered air, keeping the engine clean and increase the lifetime of all components*



*Redundant lamp system and high MTBF power supply MTTR lamp = "0"*

## The integration of Optical Dimming allows **image equalizing** capability

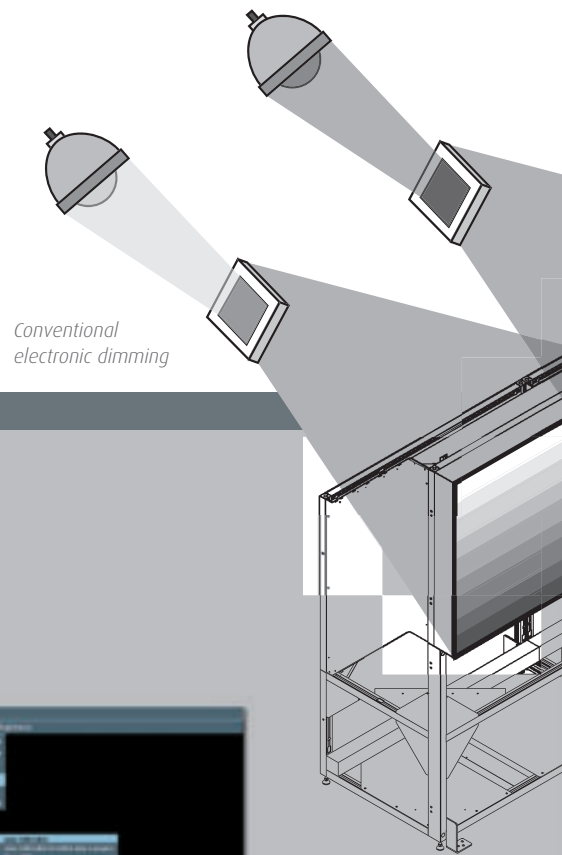
Optical Dimming allows brightness adjustment of the lamp within 50-100% range before the light reaches the DLP chip. This feature allows to control brightness of all the screens to reach equal luminance values.

In particular, this design allows for the following advantages compared to conventional electronic dimming:

- dimming of the lowest black level
- brightness control without loss of contrast
- brightness control without loss of color depth

By applying patent pending Dynamic Feedback technology to the Optical Dimmer, every module can be set to an arbitrary luminance value and be calibrated to this "brightness setpoint". This way all modules can be set to a common luminance value while retaining the original contrast and color depth, which makes the display wall look like 'one picture'. A feedback central loop maintains a constant brightness level over time and therefore allows the display image to remain equal in time and from module to module.

Finally, the dimmer can be used for ergonomic reasons, where the whole wall can be dimmed in certain applications, for instance for day and night modes.

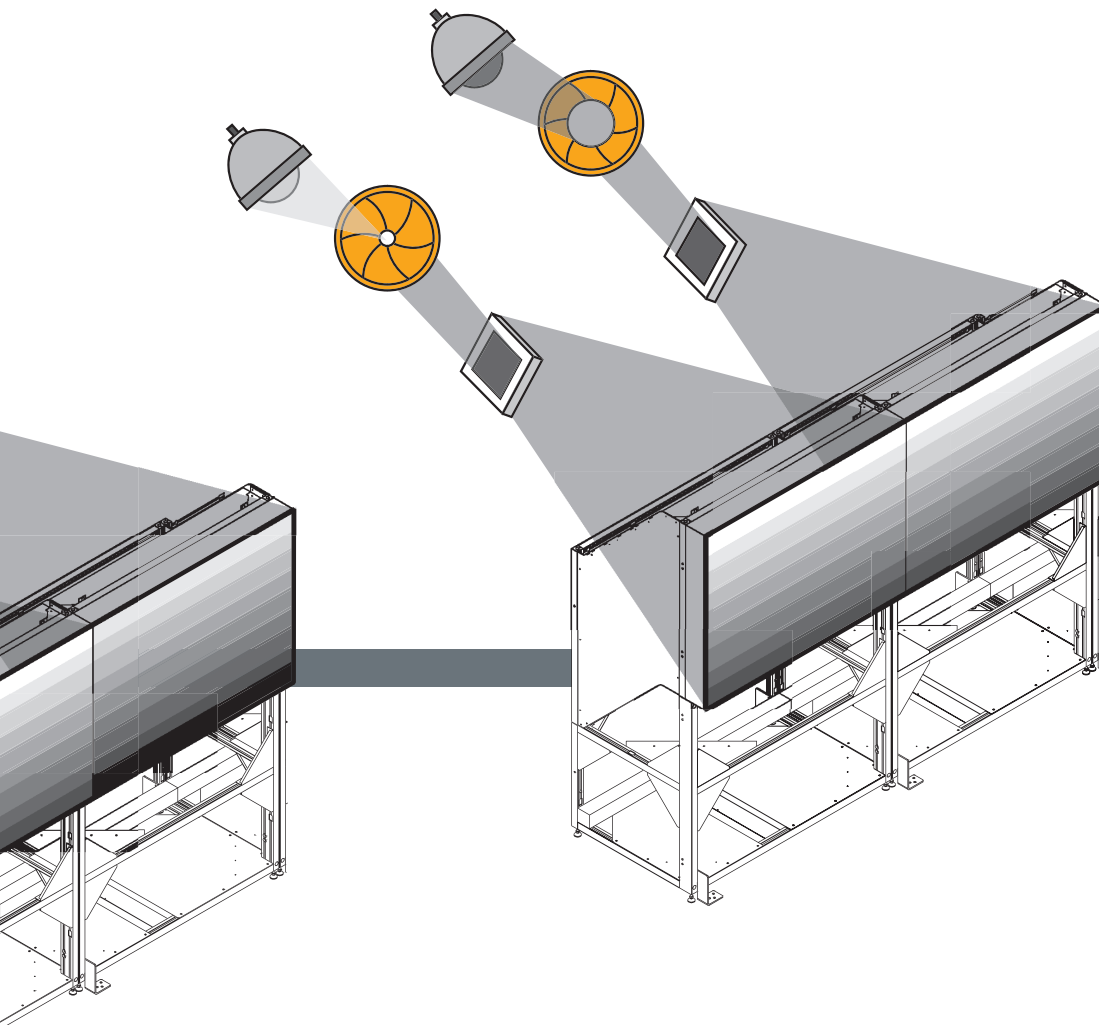


## On-screen menus

An extensive on-screen display gives access to a clear and extensive menu for displaying the status or for accessing the control parameters of the projection module such as numerous patterns that are stored for image optimization, lamp changes, dimming, brightness & contrast control,...The menu supports many languages including Asian characters.

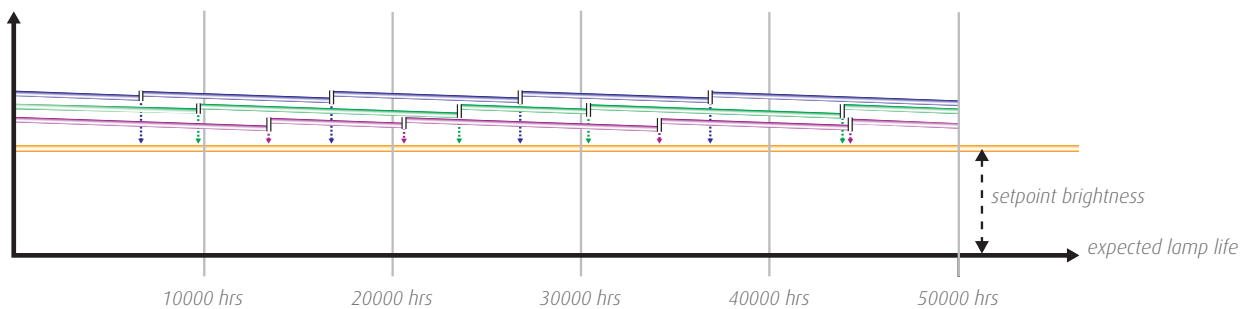


## Barco's added value



*Barco's image equalizing concept allows control of brightness of all the screens without loss of contrast or color depth*

*luminance display module*



— module 1

— module 2

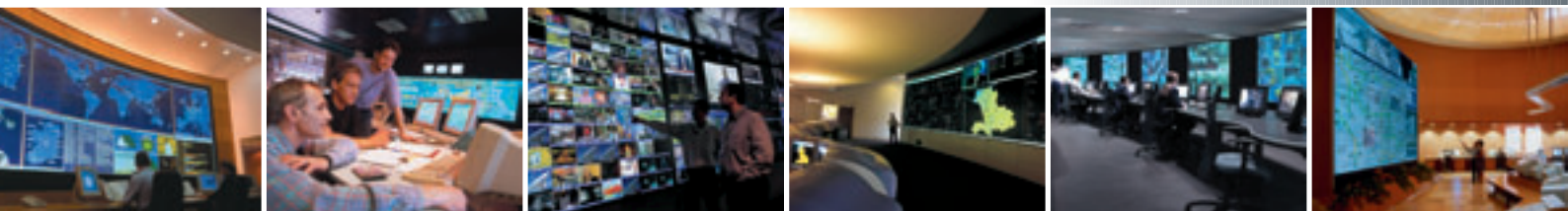
— module 3

— constant luminance

|| new lamp

*All modules are set to a well defined brightness setpoint. The complete display wall is maintained at this value - also over time*

With a worldwide market share of over 50%, Barco Control Rooms has become the industry standard in the field of monitoring solutions for Control & Operation Centers in telecom, traffic, surveillance, public utilities, broadcasting, finance and service providing companies. Barco Control Rooms is renowned for its flexible, market-specific approach, successfully implemented in over a thousand control rooms worldwide.



Fully committed to quality, Barco Control Rooms offers full technical support as well as on-site training. With its head offices in Belgium and Germany, Barco Control Rooms is represented in more than 30 countries across the globe. With a yearly R&D effort of 10% of its turnover, Barco Control Rooms ensures it remains at the forefront of technology.

Ref. no. R599668 April 2006

Barco Control Rooms is an ISO 9001 registered company.  
The information and data given are typical for the equipment described. However any individual item is subject to change without any notice.  
DLP™ technology by Texas Instruments offers crystal clear images with superior quality. DLP is a trademark of Texas Instruments.  
The latest version of this product sheet can be found on [www.barcocontrolrooms.com](http://www.barcocontrolrooms.com)

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