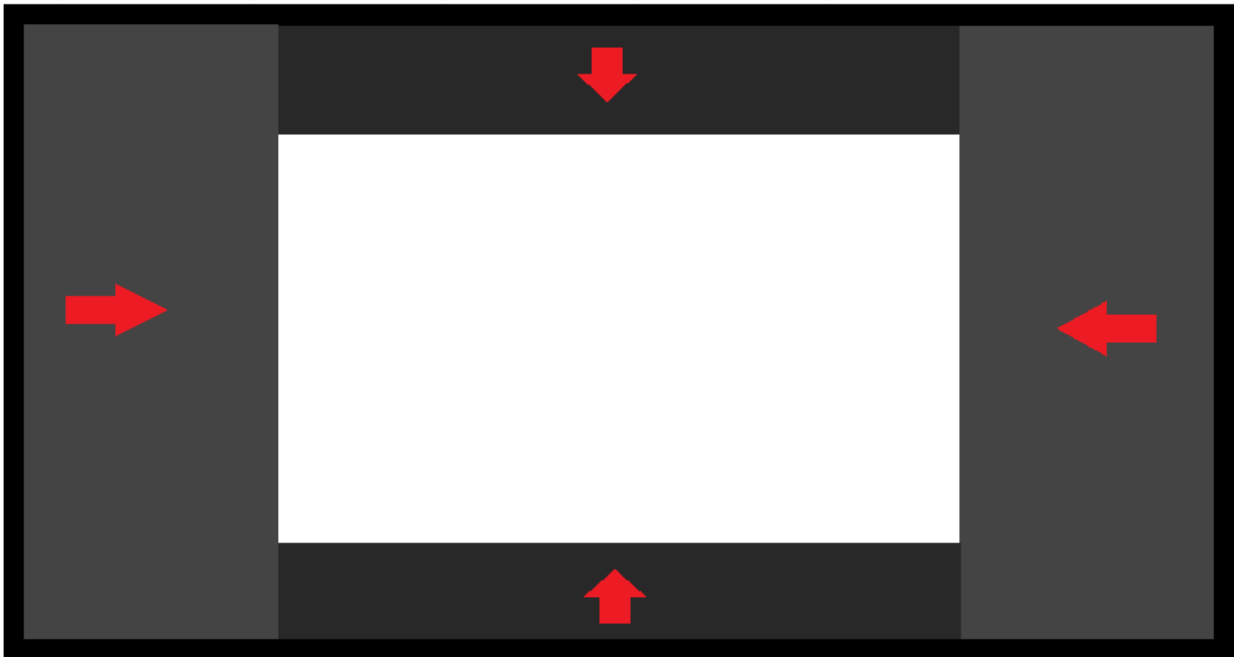


4-Way Masking Screens

All pulse-based products

Document Rev.1



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Introduction

This document is describing how to specify and install a projector on a 4 way masking screen. It includes the technical challenges as well as how to solve them with our projector. All setup information is based on using prospector.

Connecting your projector to a network

1. Start by preparing the projector and your device
 - a. Make sure your projector and your device (pc, pad, phone) is connected to the same network.
 - b. Go to your browser preferable google chrome and enter the IP address for your projector followed by the port number :9999 example 192.168.8.10:9999
 - c. Click on login in the menu and enter the correct pin in the login window 292920



4-Way masking screen

A 4-way masking screen is being used when you always want to get the biggest possible image on the screen or take advantage of as much as the screen wall as possible. The standard aspect ratio for screens like this is 2.0:1. That will give you max width with scope content and max height when the content is 16:9.

We recommend a 16:9 projector for this type of screen and the below example is based on that.

Products you can use Medea, Balder, Loki and Wodan

Example with a 16:9 projector

Technical details for the example

- The screen is 2.0:1
- 4 meter wide (13 feet),
- the projector is sitting 8 meter (26,2 feet) away.
- Your content is 2.35:1, 2.2:1, 1.85:1 and 16:9

Lens Calculations

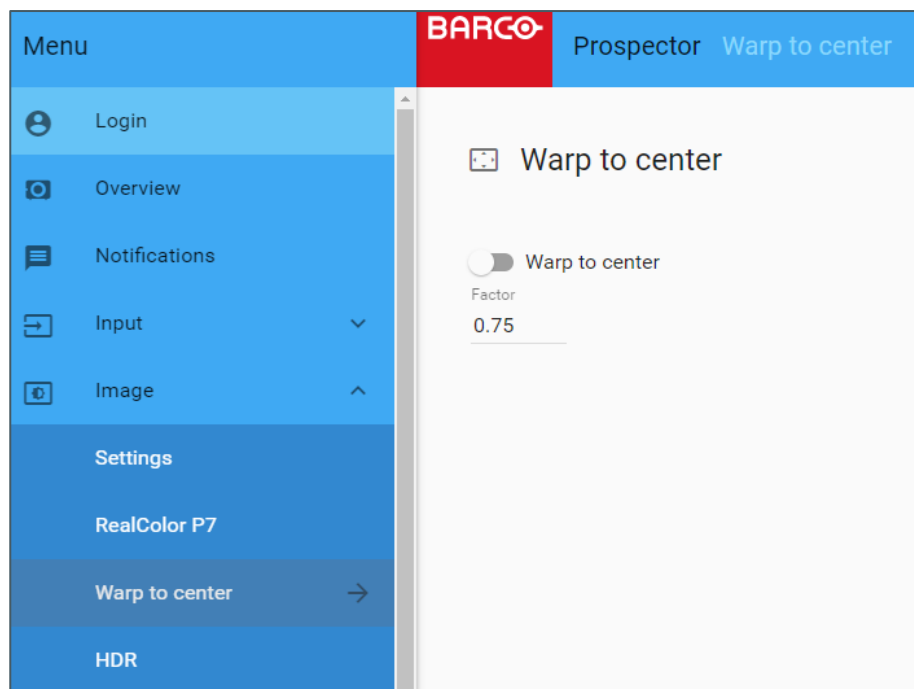
First step is to calculate the lens: use the formula: $\text{Throw} = \text{Distance} / \text{Width} \rightarrow \text{Throw} = 8 / 4$, $\text{Throw} = 2$
26,2 feet / 13 feet = 2

The lens you need is EN41. Always calculate based on the widest width of the screen.

Setting up all aspect ratio's

To support all the different formats we use the function called **warp to center**.

To enable the correct formats you have to use prospector.



Prospector Image/Warp to Center page



- Projector uses max width for all formats with aspects above 2.0:1 like 2.2:1 and 2.35:1
- Projector uses max height for all formats with aspects below 2.0:1 like 1.85:1 and 16:9

That means as long as you show 2.39:1 aspect ratio content the warp to center feature will be off. For all other formats it will be on. Below you will see some examples and how to calculate the factor you will need to use.

Calculate formats above 2.0:1

The first step is more to understand how to control the masking of the screen.

Don't use the warp to center function as you always use the full width

This calculation is just to understand how far you need to run your top/bottom masking and is not related to any projector control.

First thing we do is to calculate the screen sizes for the different aspects you are using:

- 2.39:1 → screen width / aspect ratio → $4 / 2.39 = 1.67$ → screen format is 4 m wide x 1.67m height
- 2.35:1 → screen width / aspect ratio → $4 / 2.35 = 1.70$ → screen format is 4 m wide x 1.70m height
- 2.20:1 → screen width / aspect ratio → $4 / 2.20 = 1.82$ → screen format is 4 m wide x 1.82m height

Based on the screen format you can calculate how much of the top and bottom mask you need to use

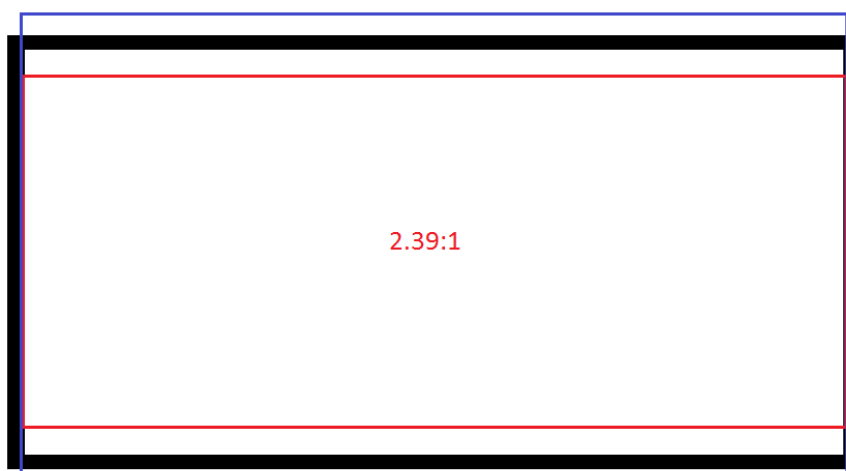
For 2.39 aspect ratio content you need to run the mask 16,5cm from each side.

(Screen height – screen height in aspect ratio) / 2 = masking movement top and bottom

- The screen has a height of 2 meter (6,5 feet)
- screen height in 2.39 = 1,67 meter height

2 meter – 1,67 meter = 0,33 meter / 2 (top and bottom masking) = 0,165m = 16,5cm

6,5 feet(height) – 5,44 feet (height in 2.39) = 1.06 feet / 2 = 0.53 feet = 6.36 inches



Blue is projector, red is source



Calculate All formats below 2.0:1 (Warp to center function)

This step is to calculate the warp to center ratio and is important for projector control.

16:9 on a 2.0:1 Screen

16:9 → screen height x aspect ratio → $2 * 1.778 = 3.56$ = screen format is 3.56m wide x 2m height

- Factor you need to use is
 - aspect ratio / screen aspect or new width / screen width
 - $1.778 / 2.0 = 0.89$ or $3,56/4 = 0,89$

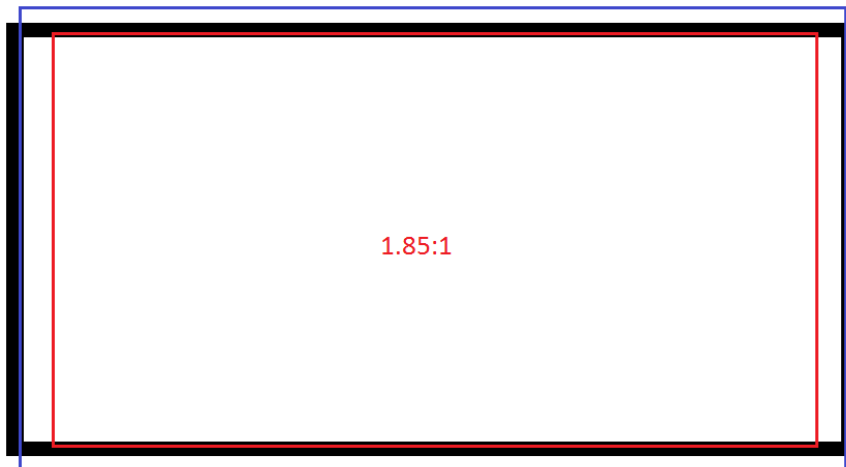
Set warp to center at 0.89

1.85 on a 2.0:1 Screen

1.85:1 → screen height x aspect ratio → $2 * 1.85 = 3.7$ = screen format is 3.7m x 2m height

- Factor you need to use is
 - aspect ratio / widest aspect or new width / screen width
 - $1.85 / 2.00 = 0.93$ or $3,7/4 = 0.93$

Set warp to center at 0.93



Blue is projector, red is source


Last example is 4:3

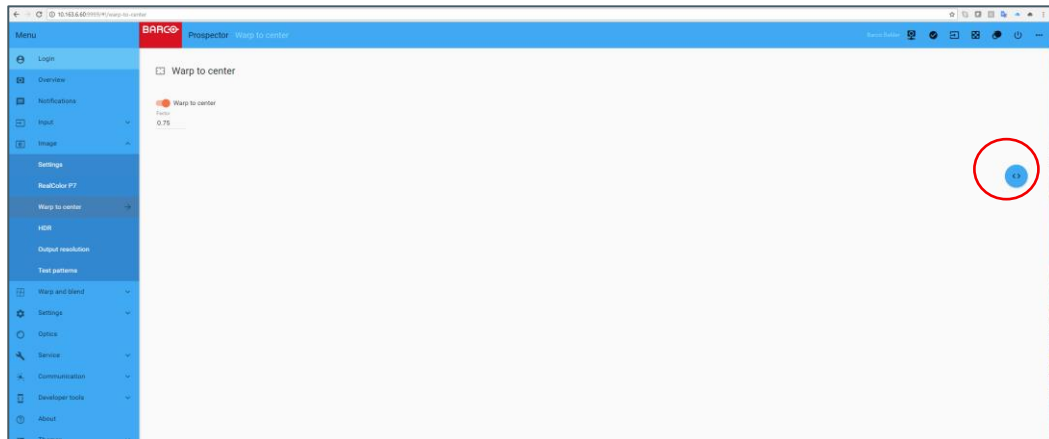
- 4:3 → screen height x aspect ratio → $2 * 1.333 = 2,67$ = screen format is 2,67m x 2m height
- Factor you need to use is
 - aspect ratio / widest aspect
 - $1.333 / 2.00 = 0.67$ or $2,67/4 = 0.67$
 - **Set warp to center at 0.67**

As you can see you use full height but the side masking need to be moved 67cm in from each side.



To find the JSON command you need to use

From prospector, when you have calculated the factor, you enable the little button looking like this  in prospector. All the way in the bottom right of the prospector window

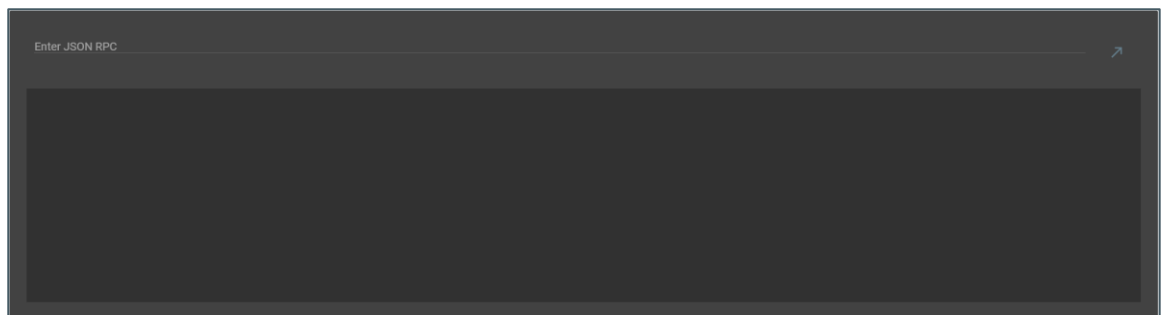


Prospector Image/Warp to center window

From that click the arrowbutton down and pencil. That will enable the command window



Below is command window you use to find the command you use.



When you test the warp to center function with the calculated factor, the JSON command will be generated on the fly and you will see it the window above.

For content above 2.0:1 screen aspect ratio

The JSON command is:

```
"jsonrpc":"2.0","method":"property.set","params":{"property":"image.window.main.center16_9.enable","value":false},"id":1}
```



For content below 2.0:1 screen aspect ratio

To set a custom value to get aspect ratio's below 2.0:1 you need to activate the warp to center. This first example is content in 16:9:

```
"jsonrpc":"2.0","method":"property.set","params":{"property":"image.window.main.center16_9.factor","value":"0.75"},"id":xx}
```

Where the "value": "0.75" is the factor you need to calculate as explained previously in the document.

The ID is something you will get from the command window above when you test the function in JSON. A Unique ID will be generated based on what the factor is.

The ID is only important if you need to get feedback from the system that the command is properly set.

The system will reply with a command like this:

```
{  
  "jsonrpc": "2.0",  
  "id": 1234,  
  "result": null  
}
```

If the response contains "result", it was successful, otherwise it will contain "error" (and not "result")

The below is an example without the ID

```
{"jsonrpc":"2.0","method":"property.set","params":{"property":"image.window.main.center16_9.factor","value":"0.75"}}
```

