

DLAD Lights – DedoLight Architectural and Display Precision Lighting for Museum, Gallery and Display



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DEDOLIGHT DLAD LIGHTS DedoLight Architectural and Display

Precision Lighting for Museum, Gallery and Display

***dedolight**

PRECISION LIGHTING INSTRUMENTS

Contents



Standard colors shown here





DLAD Architectural and Display Lights	4
Dedolight's Decisive Advantage	5
Precision Control, Precision Lighting	6
Definable Accents	7
The World's First Focusing Asymmetric Light	8
Light Distribution	9
Utraviolet Light	10
Optional UV-Cut Filter	11
Precision Light and Shadow Projections	12
Image Projection	13
Focusing Lights	14
Projection Universal	16
Projection Halogen High Output	18
Interchangeable Lenses	20
Accessories	22
New DLAD System Overview	24
Dedolight Codes	25
Dedolights in Action	26
Light Meters and Spectral Analysis	28
Photometrics	29
Dedo Weigert Film and Dedotec Contacts B	ack Cover

Cover photo: Dedolights installed in the Museum of Islamic Ceramics, Cairo

DEDOLIGHT ARCHITECTURAL and DISPLAY LIGHTS

Our **DLAD** range encompasses a unique range of selective precision lighting instruments that are particularly well suited to use in museums (where their UV protection means visitors can at last see precious exhibits that would be harmed by other lights), while their flexibility is such that they are also ideal for art galleries, product displays or wherever precision lighting is needed.

In creating these lights, our design team had to achieve numerous breakthroughs, including:

- The first focusing museum lights
- The first asymmetric focusing museum lights
- The most efficient ever focusing or tunable lights
- The most even light distribution
- The lowest ever ultraviolet output offering enough light to view by, but barely measurable amounts of UV that could do damage.

IN FOCUS

Why are focusing lights useful or even necessary?

- Being able to change the exit angle of the light beam (flood/spot) allows you to take into account different subject sizes and different distances between the light source and the subject.
- Efficiency concentrating the light solely onto the subject to be lit minimizes energy cost.
- Lighting from a larger distance contributes to the evenness of lighting on the subject.
- You can fine tune the intensity of the light.
- Limiting the light angle by the barn doors (so that you are only lighting the subject) can allow you to adjust the intensity (Lux values measured at the subject) gradually.

Traditional focusing lights exist in two variations:

- a) The light source is movable within the reflector.
 Disadvantages: Uneven light distribution
 You won't be able to get clean control over shadow edges by using barn doors as far as such lights are even fitted with barn doors.
- b) The light source and reflector move in relation to a front lens (often a Fresnel lens) as used in studio lighting. This offers improved control of shadow edges and provides a cleaner light character. *Disadvantages*: Perfect control of shadow is not possible. Limited focusing range (little alteration of intensity possible); therefore limited use. Insufficient reach – a very narrow exit angle is not possible. Insufficient light efficiency – especially in the spot position (6% maximum efficiency). Uneven light distribution.

Dedolight's Decisive Advantage

The revolutionary optical system of our lights is based on a patented dual-lens system. The film version has already received two awards from the Oscar Committee of the Academy of Motion Picture Arts and Sciences.

It uses two specially designed aspheric lenses. The front lens is in a fixed position, while the second lens moves with the light source and the reflector. At the same time, it moves in relation to the reflector and the light source (zoom focus patent).



Advantages

- A focusing range of 1:18. Such a range is not possible in traditional constructions (1:3). This results in an incomparable variety of possibilities–from the lighting of large objects from short distances (large angle of exit), up to the lighting of small objects from a larger distance.
- Drastically improved light efficiency and output. In the spot position (narrow exit angle), this can surpass traditional systems by a factor of 5.
- More usable light in relation to lower energy consumption and lower heat emission, which in turn leads to noticeable secondary savings in air conditioning costs. A 100W halogen lamp produces 90W heat and only 10% visible light, and still requires up to 400W for air conditioning.
- Inside the light beam or over the entire lit area, we achieve a photometrically-perfect even distribution of the light intensity. This is a property that cannot be achieved by traditional lighting instruments.
- The defined beam (clean beam) without stray light makes the Dedolight system an incomparable precision instrument for precision lighting.



PRECISION CONTROL

Uncontrolled light sources will also illuminate surfaces, backgrounds and walls that are not part of the actual object to be lit.

When this then accentuates bright surfaces (such as a white wall), the human eye has a tendency to concentrate on the brighter parts of the image and get distracted from the real subject. If a viewer's attention is not well directed, the subject becomes less memorable.

DEDOLIGHT OFFERS PRECISION LIGHTING:

- By its very precise light beam without stray light.
- With the help of 8-leaf barn doors, which, in conjunction with our optical system, offer much more defined shadow edges than are possible with other light sources.
- With the help of our special 12-leaf museum barn doors (patent), it is possible to precisely light square or rectangular objects, even when the light is pointed towards the object from an angle. In practically every conceivable lighting situation, the light will come from such an angle (most of the time from above) and, in addition, from an angle away from the main surface of the object the sideways angulation of the optical axis of the light beam is often desired in order to eliminate unwanted reflections. Even when the angle is from above, straight on towards the object, the most that normal barn doors are able to do is to provide a trapezoidal shadow form, which will rarely suit the shape of a painting.
- You can get even more precise and defined light and shadow edges with our precision light projectors/imagers.

DEFINABLE ACCENTS



Just light (no accessory) Defined, but not controlled.







DBD8 Standard barndoor. Limited control when lighting from acute angle. Vertical shadow runs trapezoidal, cannot be limited to the edge of the painting.





DBD2

Patented articulated 12-leaf barndoor system. Infinitely variable control provides accurate form regardless of position of the light to the object.







DP2

Projection attachment/imager. This attachment provides another level of control allowing variable framing from razor sharp edges to soft and gradual edges.





DP2 + DPEYE Same as DP2. Additional DPEYE FILTERS subtly soften the edges, i.e. for dark paintings with broad gold frames.



THE WORLD'S FIRST ASYMMETRIC FOCUSING LIGHT

Our asymmetric optical system (diagram 1) offers a photometrically precise redistribution of the light intensity so that you can achieve perfectly even lighting without any light loss from an angle of 45°, for example. In addition, the axis of asymmetric function in our lighting system is rotatable. This means that lighting can not only be made from a 45° angle directly towards the object (such as a painting) from above, but also all other combinations of angles.

A BALANCED VIEW ON ASYMMETRIC LIGHTS

It has never before been possible to build asymmetric focusing lights (which is why it is subject to another of our patents).

For example, look at wall wash lights (in theatre, film and TV they are called cyc lights). These are built using an asymmetric reflector. In this case, the asymmetry is limited to one axis and it is definitely not a focusing light.

But, when you think of it, there is almost never any lighting that doesn't come from some angle. This automatically creates a situation where one part of the subject is further away from the light source and receives drastically less light than the part that is closer to the light source (in physics, this is called the inverse square law. Double the distance = 25% of the light [diagrams 2 and 3]). Even with a focusing light, we are hopeless slaves of the inverse square law until now.Of course, it is possible to partially lower the light intensity for portions of the subject that appear to be too bright. With studio lights, usually focusing lights, partial wire scrims, so-called half scrims or graduated scrims, can be used. But, the transition between where the lower light intensity area and where the light hits the object unhindered is never gentle. It is never clean.

For this reason, we developed new filters (diagram 4) on a borosilicate substrate with a gradual neutral gray transition deposited in a special thin-film technology. This provides neutral graduated shadows with a smooth transition and no change in colour characteristics. This is another one of our toys that you will not find anywhere else.

Such aids (scrims and graduated gray filters) function on the principle that light is partially blocked or diminished. Our asymmetrical system redistributes without loss.



LIGHT DISTRIBUTION

We are especially proud about our **WORLD'S FIRST ASYMMETRIC FOCUSING LIGHTS**, which allow, for example, the lighting of a painting or an art object from an angle with a light distribution which can provide perfectly even light for both the top and bottom parts of the painting – usually not achievable with any other light source.

1 Light distribution, flood position of the focusing asymmetric light with 70W ceramic lamp measured at a distance of 2m, with optical wide-angle attachment and barn door.

2 Light distribution, flood position of the focusing asymmetric light with 100W halogen lamp measured at a distance of 2m, with optical wide-angle attachment and barn door.

3 Light distribution, flood position of the focusing asymmetric light with 150W ceramic lamp measured at a distance of 2m, with optical wide-angle attachment and barn door.

We are very proud that with our patented Double Aspheric optical system our focusing lights are able to provide a perfectly even light distribution over the entire lit field without any changes in light intensity, without any discoloration.

4 Light distribution, flood position of the focusing symmetric light with 70W ceramic lamp measured at a distance of 2m, with wide-angle and barn door.



ULTRAVIOLET – INVISIBLE BUT DEADLY

Some materials are badly affected by light, or rather the invisible, ultraviolet component of light.

A little ultraviolet can do more damage to watercolours, gouaches, photographs, textiles and organic matter than a lot of visible light.

Sunlight contains many dangerous rays. The most deadly – the cosmic rays – are deflected by the Van Allen Belt.

The dangerous part of UV (UV-C 200-300nm) is mostly filtered out by the ozone layer.

However, many discharge lamps have a much higher UV content than the sunlight that reaches us and there is no friendly ozone layer between the discharge light sources and a sensitive piece of art (or human skin).

Even the light from halogen lamps contains considerable UV (135 $\mu W/l).$

So-called "UV-stop lamps" – don't. They just lower the UV content.

Some museum advisors and curators have concluded that lowering the (visible) light level to 70 lux will provide sufficient protection. That is a particularly low light level and the human eye takes some time to adjust when coming from normal light levels.

Of course, reducing the light intensity also decreases the UV content. No light – no UV. But this practice does not seem to consider that even a low UV content is far more dangerous to sensitive materials than a much higher level of visible light.

There are two measurements:

- a) UV content of light, generally measured in μWatt/lumen.
- b) The amount of UV radiation at the object measured in mW/m2.

For endangered art, the second measurement is relevant, as well as the duration of the exposure to ultraviolet, and has to take into account the intensity of the light (wattage/efficiency/focus) and the UV content of this light source.

There are so-called UV filters in use. They don't normally cut the UV, but they do lower the UV intensity. They usually also affect the visible light by introducing a yellowish/brownish tint. Most of these filters work on an absorbing principle. We have developed a special reflective filter (using thin film technology) that cuts UV content very efficiently, below 405nm. This means that there is no change in the visible spectrum, so that you can decide what light level an exhibit really needs for visitors to see it at its best, without worrying about UV damage.

Unprecedented UV Reduction

Many curators believe that the generally accepted standard UV levels of 75 μ W/lumen for 'sensitive' material (such as oil paintings) and 30 μ W/lumen for 'very sensitive' material (such as textiles or watercolors) are far too high. David Saunders, of the Department of Conservation and Scientific Research at the British Museum, believes that museums should be aiming for a level of less than 10 μ W/lumen.

Our technology lowers the UV content to 1 or, at maximum, 2 μ W/lumen and, as far as we know, provides the most effective UV protection available.

The Russian Cultural Ministry runs a laboratory for museum safety and has specified our lights as the most effective and safe for critical museum applications.

Footnote: The degrading effects of UV on various colors and materials were studied by a scientific company in St. Petersburg (also commissioned by the Russian Ministry of Culture). The ill effects over a relatively short time of irradiation were proven for many materials. There still seems to be some uncertainty about the level of such degrading effects on oil paintings. Some say that the detrimental effects show for some period of irradiation and then more or less even out or do not continue at the same rate. Others seem to believe that the longtime effects are also considerable.

Together with the St. Petersburg lab, we have developed a series of UV meters (see page 28). In this catalogue, we will show only the meter that is most commonly used and distributed by us.

Should you also be interested in any of the other versions of UV meters and humidity, temperature and airflow meters designed for museum use, please let us know.

OPTIONAL UV-CUT FILTER

We offer a reduction of ultraviolet values in a much more effective way than any other known UV-cut filter has been able to do.



UV - Filter Behaviour

We have been successful in developing a filter coating, which effectively cuts UV-A, UV-B and UV-C radiation below 405nm. This coating is offered at an option, deposited on the inside of one of our lenses and does not affect the visible light, color rendition or transmission.

The ultraviolet radiation contained in the emitted light is usually measured in μ W / Im (microwatt per lumen).

Some critical museum specialists have specified values below 60 μW / Im.

So-called UV Stop lamps do not really stop the ultraviolet content they just lower it. Our filters go much further, bringing the emitted ultraviolet content close to values below 2 μW / Im.

This special filter is an option to all of our DLAD lights, offered at an additional price.

PRECISION LIGHT and SHADOW PROJECTIONS

When light and shadow edges need to be provided with utmost precision, our projection lighting instruments are unbeatable.

With our framing shutters (movable shadow masks), very clean light and shadow edges are adjustable without any halation, colour fringing or distortion. This sounds simple, but we are convinced that we are the only ones who can fill these tasks with unprecedented precision.

In order to provide optimal adjustment to distance and object size with optimum light efficiency, we provide seven different projection optics, including two zoom lenses.





IMAGE PROJECTION

Under the name "Imager", we have seven different instruments for different tasks. In general, such systems are plagued by seven sins:

- Chromatic aberration
- Halation
- Distortion
- Low resolution
- Poor contrast rendition
- Uneven light distribution

With our experience and the quality of our optical design, we were able to eliminate all of these defects and to introduce a system that offers both maximum transmission and light efficiency.

We have several different imaging systems to choose from:

a) Steel gobos: There are more than 300 ready-made light and shadow patterns available (separate catalogue). Black and white images without gray scales.

Customized patterns can be delivered quickly.

- b) Glass gobos black and white: Gray scales are also possible. Available with high-resolution grid patterns.
- c) Glass gobos single colour: Often used to project logos, text or symbols.
- d) Glass gobos multicolour: Using a photolithographic process, colour separations are transferred to four extremely thin layers of glass, etched and then combined. High resolution.
- e) Slide projection a projection system using heat-reflecting dichroic filters and fan cooling:

Dependent on the light source used (light output/heat). The slides have a limited lifetime and may have to be exchanged occasionally. A slide's lifetime also depends on its density/transmission and the prevailing colour.

A blue motive/diapositive will bleach out more quickly than an orange coloured one.

f) Invisible lighting – visible detail: For example, a free-standing statue can be lit with four light sources so that the optimum impression of its plasticity can be achieved. Even when visitors walk completely around the statue, they will not become aware of any light source.

By shadow masks, which take into consideration the exact placement of each light source, angle of incident and perspective – only the object itself will be lit without any visible shadows or other light effects.

This procedure demands planning and preparation. Even so, for some projects, it is a fascinating capability and we have to admit it is also fascinating for us. Therefore, we would like to work with you on such tricky and thus-far unusual lighting methods.

FOCUSING LIGHTS

DLAD-H100

Precision focusing light for halogen lamps Patented Double Aspheric optical system

Extreme high focusing range

Precision beam, no stray light

Lamps:

Halogen, loi	ng-life (400	0h), 3000	К
100W/12V	GY6.35	4000h	1800 lumer
75W/12V	GY6.35	4000h	1450 lumer
50W/12V	GY6.35	4000h	910 lumer
35W/12V	GY6.35	4000h	600 lumer
20W/12V	GY6.35	4000h	320 lumer

DLAD-C35

Precision focusing light for long-life ceramic lamp

35W ceramic lamp available as WDL G12 – 3000 K, 3300 lumen available as NDL G12 – approx. 4000 K, 3100 lumen

DLAD-C70

Precision focusing light head

Double Aspheric optics

For long-life ceramic lamps 70W available as WDL G12 – 3000 K, 6700 lumen available as NDL G12 – approx. 4000 K, 6500 lumen

DLAD-C150

Precision focusing light

For long-life ceramic lamps 150W available as WDL G12 – approx. 3000 K, 14500 lumen available as NDL G12 – approx. 4000 K, 13700 lumen BA-DAY 150W, approx. 5600 K, 13000 lumen









DLAD-HA100

Focusing light head

Patented Double Aspheric optics

Patented optics for asymmetric light distribution functional through entire focusing range

For halogen lamps

Lamps:							
Halogen, long-life (4000h), 3000 K							
100W/12V	GY6.35	4000h	1800 lumen				
75W/12V	GY6.35	4000h	1450 lumen				
50W/12V	GY6.35	4000h	910 lumen				
35W/12V	GY6.35	4000h	600 lumen				
20W/12V	GY6.35	4000h	320 lumen				

DLAD-CA35

Focusing light head

Patented Double Aspheric optics

Patented optics for asymmetric light distribution functional through entire focusing range

For ceramic lamps 35W available as WDL G12 – 3000 K, 3300 lumen available as NDL G12 – approx. 4000 K, 3100 lumen

DLAD-CA70

Focusing light head

Patented Double Aspheric optics

Patented optics for asymmetric light distribution functional through entire focusing range

For ceramic lamps 70W available as WDL G12 – 3000 K, 6700 lumen available as NDL G12 – approx. 4000 K, 6500 lumen

DLAD-CA150

15

Focusing light head

Patented Double Aspheric optics

Patented optics for asymmetric light distribution functional through entire focusing range

For ceramic lamps 150W available as WDL G12 – approx. 3000 K, 14500 lumen available as NDL G12 – approx. 4000 K, 13700 lumen



PROJECTION UNIVERSAL

DEDOLIGHT ARCHITECTURAL and DISPLAY LIGHTS with combination:

- for Projection Attachment/Imager for light framing (versions F)
- for projections of shadow patterns from Gobo or Iris (version G – requires Gobo holder for Gobo)

DLAD-HFU100

Light head for combination with Projection Attachment/Imager

Universal version accepts all seven different lenses

Works with halogen lamps: Halogen, long-life (4000h) 3000 K

Idi	ogen, ion	g-me (4000	n), 3000 r	`	
100	W/12V	GY6.35	4000h	1800	lumen
75	5W/12V	GY6.35	4000h	1450	lumen
50	W/12V	GY6.35	4000h	910	lumen
35	5W/12V	GY6.35	4000h	600	lumen
20	W/12V	GY6.35	4000h	320	lumen

This version, DLAD-HFU100, works with integrated framing shutters for light framings.

DLAD-HGU100

Same light in combination with Projection Attachment/ Imager but for universal receptacle for Gobos or Iris

. . . .

Works with halogen lamps:

Halogen, long-life (4000h), 3000 K							
100W/12V	GY6.35	4000h	1800 lumen				
75W/12V	GY6.35	4000h	1450 lumen				
50W/12V	GY6.35	4000h	910 lumen				
35W/12V	GY6.35	4000h	600 lumen				
20W/12V	GY6.35	4000h	320 lumen				





DLAD-HFU100 DLAD-HGU100







DLAD-CFU35 DLAD-CFU70 DLAD-CFU150 DLAD-CGU35 DLAD-CGU70 DLAD-CGU150

DLAD-CFU35

Light head for combination with Projection Attachment/ Imager for shadow projection and shaping

For ceramic lamp 35W available as WDL G12 – 3000 K, 3300 lumen available as NDL G12 – approx. 4000 K, 3100 lumen

DLAD-CFU70

Light head for combination with Projection Attachment/ Imager

For ceramic lamps 70W available as WDL G12 – 3000 K, 6700 lumen available as NDL G12 – approx. 4000 K, 6500 lumen

DLAD-CFU150

Light head for combination with Projection Attachment/ Imager with framing shutters for light framings

For ceramic lamps 150W available as WDL G12 – approx. 3000 K, 14500 lumen available as NDL G12 – approx. 4000 K, 13700 lumen BA-DAY 150W, approx. 5600 K, 13000 lumen

DLAD-CGU35

Light head for combination with Projection Attachment/ Imager with receptacle for Gobos and Iris

For ceramic lamp 35W available as WDL G12 – 3000 K, 3300 lumen available as NDL G12 – approx. 4000 K, 3100 lumen

DLAD-CGU150

Light head for combination with Projection Attachment/ Imager with receptacle for Gobos and Iris and framing shutters for light framings

For ceramic lamps 150W available as WDL G12 – approx. 3000 K, 14500 lumen available as NDL G12 – approx. 4000 K, 13700 lumen BA-DAY 150W, approx. 5600 K, 13000 lumen

DLAD-CGU70

Light head for combination with Projection Attachment/ Imager with receptacle for Gobos and Iris

For ceramic lamps 70W available as WDL G12 – 3000 K, 6700 lumen available as NDL G12 – approx. 4000 K, 6500 lumen BA-DAY 150W, approx. 5600 K, 13000 lumen

PROJECTION HALOGEN HIGH OUTPUT

HALOGEN LIGHTS 12V

For combination with Projection Attachment/Imager Highest light efficiency by use of deep reflector Patented double sided Aspheric lens system

DLAD-HFW100

Built-in framing shutters for light framing

Works with wide-angle lenses 50mm, 60mm, 85mm as well as zoom lenses 70-120mm and 85-150mm

Works with halogen lamps: Halogen long-life (4000h) 3000 K

halogen, ior	ig-ille (400	JUN), SUUU r	`	
100W/12V	GY6.35	4000h	1800	lumen
75W/12V	GY6.35	4000h	1450	lumen
50W/12V	GY6.35	4000h	910	lumen
35W/12V	GY6.35	4000h	600	lumen
20W/12V	GY6.35	4000h	320	lumen

DLAD-HGW100

Built-in gobo slot for light framing

Works with wide-angle lenses 50mm, 60mm, 85mm

Will also work with zoom lenses 70-120mm and 85-150mm

With Projection Attachment/ Imager for use with Gobos or Iris

Works with halogen lamps:							
Halogen, long-life (4000h), 3000 K							
100W/12V	GY6.35	4000h	1800 lumen				
75W/12V	GY6.35	4000h	1450 lumen				
50W/12V	GY6.35	4000h	910 lumen				
35W/12V	GY6.35	4000h	600 lumen				
20W/12V	GY6.35	4000h	320 lumen				

DLAD-HFW100 DLAD-HGW100

DLAD deep GOBO 85 mm



DLAD-HFN100

Built-in framing shutters for light framing

Works with long focal length lenses, like Dedolight lens 150mm and 185mm

Also works with zoom lenses 70-120mm and 85-150mm

Works with halogen lamps:

Halogen, long-life (4000h), 3000 K								
100W/12V	GY6.35	4000h	1800 lumen					
75W/12V	GY6.35	4000h	1450 lumen					
50W/12V	GY6.35	4000h	910 lumen					
35W/12V	GY6.35	4000h	600 lumen					
20W/12V	GY6.35	4000h	320 lumen					

DLAD-HGN100

DLAD-HGN100

Built-in framing shutters for light framing

Works with long focal length lenses, like Dedolight lens 150mm and 185mm

Will also work with zoom lenses 70-120mm and 85-150mm

With Projection Attachment/ Imager for use with Gobos or Iris

Works with halogen lamps:							
Halogen, long-life (4000h), 3000 K							
100W/12V	GY6.35	4000h	1800 lumen				
75W/12V	GY6.35	4000h	1450 lumen				
50W/12V	GY6.35	4000h	910 lumen				
35W/12V	GY6.35	4000h	600 lumen				
20W/12V	GY6.35	4000h	320 lumen				

COLORS AVAILABLE FOR DEDOLIGHT DLAD LIGHTS

Standard colors:

White Silver Black

For custom color change a surcharge applies, please specify RAL number..

INTERCHANGEABLE LENSES



DPL50M

50mm lens f2.8

DPL60M

60mm lens f2.4

DPL85M

85mm lens f2.8

DPL150M

150mm lens eagle eye f2.2

D185M

185mm lens f 3.5

DLZ120M

70-120mm zoom lens f3.5

DPLZ150M

85-150mm zoom lens f3.5

The State Tretyakov Gallery, Moscow (above), DASA-Deutsche Arbeitsschutz Ausstellung, Dortmund (below)

ACCESSORIES

DBD-8 / DBD-8W

8-leaf barn door

Small leaves have two helper leaves to eliminate unwanted light exit

DBD 2

Super museum barn door

A 12-leaf barn door designed for precision work. A unique patented system, which allows individual rotation of each main leaf to create trapezoidal shapes when lighting rectangular objects from off-axis angle. Both smaller leaves are fitted with four spring-loaded helper leaves to make sure that no unwanted light escapes. DLWA / DLWAW

Optical wide-angle attachment with special negative lens – widens exit angle to maximum – with integrated 8-leaf barn door for precision control

DGRADF 0.3 DGRADF 0.6 DGRADF 0.9

Graduated neutral grey glass filters with dichroic coating

Soft edge transition from clear glass to neutral grey

Available in three densities: ND03 – transition at densest part 50 percent ND06 – transition at densest part 25 percent ND09 – transition at densest part 12.5 percent

Great help in smoothing light distribution when lighting from an angle.

DFCOL-2

DPGGH

Glass Gobo holder for size M Gobos

DPG

Steel Gobo size M

DPIR

Full metal Iris, allowing the creation of almost perfectly round images and varying sizes 18 leaves

Dichroic color effect filter

Available in the following colors:

Red Red Magenta Full Orange Yellow Orange Yellow Light Green Full Green Turquoise Light Blue Medium Blue Purple DFCOL2R DFCOL2RM DFCOL2FO DFCOL2O DFCOL2LG DFCOL2FG DFCOL2FG DFCOL2LB DFCOL2LB DFCOL2MB DFCOL2P

DPGH

Gobo holder

DLAD Dedolight Architecture and Display lights

A Asymmetrical light distribution – we are very proud of this patented optical breakthrough. This is the world's first focusing light source, which provides and asymmetrical light distribution. Especially suitable for lighting of objects from an angle where it is desirable to have equal light intensity on the entire subject.

C Ceramic lamps

Much higher light efficiency than halogen lamps (approximately four times more light output). Long lifetime, approximately 6000h, which usually would calculate for two years operation in a museum. Available in three different wattages:

<u>35W</u>

- available as WDL G12 -

3000 K, 3300 lumen

- available as NDL G12 approx. 4000 K, 3100 lumen

70W

- available as WDL G12 – approx. 3000 K, 14500 lumen

approx. 3000 K, 14500 lum - available as NDL G12 –

approx. 4000 K, 13700 lumen - BA-DAY 150W, approx. 5600 K, 13000 lumen

id <u>150W</u>

- available as WDL G12 approx. 3000 K, 14500 lumen
 - available as NDL G12 approx. 4000 K, 13700 lumen PA DAY 150 M, 200200
- BA-DAY 150 W, approx. 5600 K, 13000 lumen

For all three wattages 35 W, 70 W and 150 W, the lower color temperatures WDL approx. 3000 lumen and NDL approx. 4000 K are available. For the 150W we also offer the highly light efficient BA-DAY with clean daylight color spectrum and characteristics. **DALI** Digital Addressable Lighting Interface is a communication protocol for individually addressable light fittings in the architectural field.

DIM Dimming option. High frequency dimming available for lights with halogen lamps.

DMX512-A Is a communication protocol for light fixtures in stage lighting.

H Halogen lamp Usually for museum, galleries and display. It is desirable to work with long-life lamps, which are now offered with 3000 or 4000h lifetime. Here we are mainly talking about 12V lamp with GY6.35 base, available from several manufacturers.

GY6.35 4000h 1800 lumen 1800 lumen 1450 lumen 910 lumen 600 lumen GY6.35 4000h 320 lumen GY6.35 4000h 4000h 4000h GY6.35 4000h GY6.35 GY6.35 00W/12V 75W/12V 50W/12V 35W/12V 20W/12V 90W/12V Svlvania)

12V lamps 100W can also be found with much higher light output and higher color temperature but with relatively short life expectancy. That is why those lamps occasionally are used for temporary exhibitions, displays or shows lasting only a few days, namely:

100W/12V ANSI type FCR 3600 lumen, life expectancy approx. 100h, possibly longer when undervolted For special purposes we can also deliver the lights (option) with 24 V/150 W transformers. This type of lamp does not exist with "real" longlife property, but such lamps offer very high output like ANSI code FCS, 6000 lumen, rated life expectancy 50h – in our experience good for 120h and possibly for 500h or 600h if 10 percent undervolted. A little bit longer lifetime is offered by:

ANSI code FDV, 24V/150W, 5000 lumen, 300h rated life expectancy, double or more when slightly undervolted.

U Refers to lights which work with Projection Attachment/ Imager, universal version. Fits all of our lenses – wide-angle and telephoto and different versions of Projection Attachment/ Imager, namely: **G** Projection Attachment/ Imager suitable for **G**obo, Iris (lose framing shutter blades)

F Framing shutter (built-in)

N Narrow angle referring to longer focal length lenses, like 150mm, 185mm and the two zoom lenses W Wide, referring to Projection Attachment/Imager, suitable for shorter focal length lenses. Wide angle of light exit for 50mm, 60mm, 85m and the two zoom lenses

Please note: types U, V, F, N and W cannot be used as focusing lights. They are dedicated Projection Attachment/Imager lights with best technical function for solely this purpose.

WA Refers to optical wide-angel attachment for lighting of larger objects from close proximity, especially useful for asymmetric version of lights

LIGHT METERS and SPECTRAL ANALYSIS

VD Spectrocolorimeter (1600-16000K CCT)

Spectral-Analysis of light sources: relative spectral distribution, chromaticity coordinates x, y, u, v, tristimulus values X, Y, Z and correlated colour temperature Tc

Works as Stand-Alone Unit and can be connected to any Computer with the Free Spectrocolorimeter Software.

PKM (model 06)

UV Meter for UV-A, -B and -C - Illuminace (Lux), Irradiance (mW/m²) and UV/VIS (μW/Im)

> Range: 10-20.000 lux (visible), 10-40.000 mW/m² (uv)

PHOTOMETRICS

	DLAD-H100 (12V/100W)									
Distance	Meter	1	2	3	4	5	10	15	20	
	Feet	3'	6'	9'	12'	15'	30'	45'	60'	
Flood	Lux	1053	263	117	66	42				
	Foot Candle	98	24	11	6	4				
Medium	Lux	2835	709	315	177	113				
	Foot Candle	263	66	29	16	11				
Spot	Lux	14580	3645	1620	911	583	145	64		
	Foot Candle	1355	340	150	85	54	14	6		

	DLAD-C70 (70W/NDL)									
Distance	Meter	1	2	3	4	5	10	15	20	
	Feet	3'	6'	9'	12'	15'	30'	45'	60'	
Flood	Lux	2745	686	305	172	110				
	Foot Candle	255	64	28	16	10				
Medium	Lux	7686	1922	854	480	307	77			
	Foot Candle	714	179	79	45	29	7			
Spot	Lux	16110	4028	1790	1007	644	161	72		
	Foot Candle	1497	374	166	94	60	15	7		

DLAD-C70 (70W/WDL)									
Distance	Meter	1	2	3	4	5	10	15	20
	Feet	3'	6'	9'	12'	15'	30'	45'	60'
Flood	Lux	3555	889	395	222	142			
	Foot Candle	330	83	37	21	13			
Medium	Lux	9954	2489	1106	622	398	100		
	Foot Candle	925	231	103	58	37	9		
Spot	Lux	20250	5063	2250	1266	810	203	90	51
	Foot Candle	1882	470	209	118	75	19	8	5

DLAD-C150 (150W/NDL)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	4320	1080	480	270	173	43						
	Foot Candle	401	100	45	25	16	40						
Medium	Lux	12096	3024	1344	756	484	121	54					
	Foot Candle	1124	281	125	70	45	11	5					
Spot	Lux	21150	5288	2350	1322	846	212	94					
	Foot Candle	1966	491	218	123	79	20	9					

DLAD-C150 (150W/WDL)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	5715	1429	635	357	229	57						
	Foot Candle	531	133	59	33	21	5						
Medium	Lux	16000	4000	1778	1000	640	160	71					
	Foot Candle	1487	372	165	93	59	15	7					
Spot	Lux	32400	8100	3600	2025	1296	324	144	81				
	Foot Candle	3011	753	335	188	120	30	13	8				

DLAD-HA100 (12V/100W)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	880	220	97	55								
	Foot Candle	82	21	9	5								
Medium	Lux	1680	420	186									
	Foot Candle	156	39	17									
Spot	Lux	3040	760	337	190	122							
	Foot Candle	282	71	31	18	11							

DLAD-HA100 (12V/100W WA)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	168	42	19									
	Foot Candle	16	4	2									
Medium	Lux	208	52	23									
	Foot Candle	19	5	2									
Spot	Lux	240	60	27									
	Foot Candle	22	6	3									

DLAD-CA70 (70W/NDL)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	1600	400	178	100	64							
	Foot Candle	149	37	17	9	6							
Medium	Lux	2600	650	289	163	104	26						
	Foot Candle	241	60	27	15	10	2						
Spot	Lux	4400	1100	489	275	176	44						
	Foot Candle	409	102	45	26	16	4						

DLAD-CA70 (70W/NDL WA)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	380	95	42									
	Foot Candle	35	9	4									
Medium	Lux	440	110	49	28								
	Foot Candle	41	10	5	3								
Spot	Lux	520	130	58									
	Foot Candle	48	12	5									

DLAD-CA150 (150W/NDL)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	2800	700	311	175	112	28						
	Foot Candle	260	65	29	16	10	3						
Medium	Lux	4000	1000	444	250	160	40						
	Foot Candle	371	93	41	23	15	4						
Spot	Lux	6400	1600	711	400	256	64						
	Foot Candle	594	149	66	37	24	6						

DLAD-CA150 (150W/NDL WA)													
Distance	Meter	1	2	3	4	5	10	15	20				
	Feet	3'	6'	9'	12'	15'	30'	45'	60'				
Flood	Lux	720	180	80	45	29							
	Foot Candle	67	17	7	4	3							
Medium	Lux	760	190	85	48	30							
	Foot Candle	71	18	8	4	3							
Spot	Lux	820	205	91	51								
	Foot Candle	76	19	8	5								

DLAD-HFU100 with 185mm lens (12V/100W)													
Distance	metres	0,5	1	2	3	4	5	7					
	feet	1,5	3	6	9	12	15	21					
Diameter	cm	9	18	36	54	72	90	126					
Round Ø	inch	4	7	14	21	28	35	50					
	cmxcm	7	13	26	39	52	65	91					
Size square	inch	3	5	10	15	20	26	36					
Illumination	lux	24000	6000	1500	667	375	240	122					
Illumination	fc	2249	562	141	62	35	22	11					

DLAD-HFU100 with 150mm lens (12V/100W)													
Distance	metres	0,5	1	2	3	4	5	7					
	feet	1,5	3	6	9	12	15	21					
Diameter	cm	11	22	44	66	88	110	154					
Round Ø	inch	4	9	17	26	35	43	61					
Sizo coupro	cmxcm	8	16	32	48	64	80	112					
Size square	inch	3	6	13	19	25	32	44					
Illumination	lux	19200	4800	1200	533	300	192	98					
Illumination	fc	1799	450	112	50	28	18	9,2					

DLAD-HFU100 with 85mm lens (12V/100W)													
Distance	metres	0,5	1	2	3	4	5	7					
Distance	feet	1,5	3	6	9	12	15	21					
Diameter	cm	23	45	90	135	180	225	315					
Round Ø	inch	9	18	35	53	71	89	124					
	cmxcm	17	34	67	101	134	168	235					
Size square	inch	7	13	26	40	53	66	92					
Illumination	lux	4800	1200	300	133	75	48	24					
Illumination	fc	450	112	28	12	7	4,5	2.3					

DLAD-HFU100 with 60mm lens (12V/100W)													
Distance	metres	0,5	1	2	3	4	5	7					
	feet	1,5	3	6	9	12	15	21					
Diameter	cm	32	64	127	191	254	318	445					
Round Ø	inch	13	25	50	75	100	125	175					
	cmxcm	23	47	93	140	186	233	326					
Size square	inch	9	18	37	55	73	92	128					
Illumination	lux	2256	564	141	63	35	23	12					
Illumination -	fc	211	53	13	6	3	2,1	1,1					

DLAD-HFU100 with 50mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	37	74	148	222	296	370	518		
Round Ø	inch	15	29	58	87	117	146	204		
	cmxcm	27	54	108	162	216	270	378		
Size square	inch	11	21	43	64	85	106	149		
Illumination	lux	1600	400	100	44	25	16	8		
	fc	150	37	9	4	2	1,5	0,8		

	DLAD-HFU100 with zoom lens 70-120mm at 70mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	27	53	106	159	212	265	371			
Round Ø	inch	10	21	42	63	84	104	146			
Size coupre	cmxcm	20	39	78	117	156	195	273			
Size square	inch	8	15	31	46	61	77	108			
Illumination ·	lux	2848	712	178	79	45	28	15			
	fc	267	67	17	7	4	2.7	1.4			

	DLAD-HFU100 with zoom lens 70-120mm at 120mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	15	30	59	89	118	148	207			
Round Ø	inch	6	12	23	35	46	58	81			
Sizo coupro	cmxcm	11	22	44	66	88	110	154			
Size square	inch	4	9	17	26	35	43	61			
Illumination	lux	8160	2040	510	227	128	82	42			
	fc	765	191	48	21	12	7,6	3,9			

DLAD-HFU100 with zoom lens 85-150mm at 85mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	22	44	87	131	174	218	305		
Round Ø	inch	9	17	34	51	69	86	120		
Sizo cauaro	cmxcm	16	32	63	95	126	158	221		
Size square	inch	6	12	25	37	50	62	87		
Illumination ·	lux	4320	1080	270	120	68	43	22		
	fc	405	101	25	11	6	4,0	2,1		

DLAD-HFU100 with zoom lens 85-150mm at 150mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	12	24	48	72	96	120	168		
Round Ø	inch	5	9	19	28	38	47	66		
Sizo coupro	cmxcm	9	18	36	54	72	90	126		
Size square	inch	4	7	14	21	28	35	50		
Illumination	lux	11840	2960	740	329	185	118	60		
	fc	1110	277	69	31	17	11,1	5,7		

DLAD-CFU70 with 185mm lens (70W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	9	19	37	56	74	93	130		
Round Ø	inch	4	7	15	22	29	36	51		
Sizo cauaro	cmxcm	7	14	27	41	54	68	95		
Size square	inch	3	5	11	16	21	27	37		
Illumination	lux	52000	13000	3250	1444	813	520	265		
	fc	4873	1218	305	135	76	49	25		

	DLAD-CFU70 with 150mm lens (70W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	11	23	45	68	90	113	158			
Round Ø	inch	4	9	18	27	35	44	62			
Sizo cauaro	cmxcm	8	17	33	50	66	83	116			
Size square	inch	3	7	13	20	26	33	46			
Illumination	lux	43200	10800	2700	1200	675	432	220			
	fc	4049	1012	253	112	63	40	21			

	DLAD-CFU70 with 85mm lens (70W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	23	46	92	138	184	230	322			
Round Ø	inch	9	18	36	54	72	91	127			
	cmxcm	17	34	67	101	134	168	235			
Size square	inch	7	13	26	40	53	66	92			
Illumination -	lux	11760	2940	735	327	184	118	60			
	fc	1102	276	69	31	17	11	5,6			

	DLAD-CFU70 with 50mm lens (70W NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	38	75	150	225	300	375	525			
Round Ø	inch	15	30	59	89	118	148	207			
Size cauaro	cmxcm	27	55	109	164	218	273	382			
Size square	inch	11	21	43	64	86	107	150			
Illumination -	lux	3680	920	230	102	58	37	19			
	fc	345	86	22	10	5,4	3,4	1,8			

	DLAD-CFU70 with 60mm lens (70W NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	33	65	130	195	260	325	455			
Round Ø	inch	13	26	51	77	102	128	179			
Sizo coupro	cmxcm	24	47	94	141	188	235	329			
Size square	inch	9	19	37	56	74	93	130			
Illumination	lux	5440	1360	340	151	85	54	28			
	fc	510	127	32	14	8	5,1	2,6			

	DLAD-CFU70 with zoom lens 70-120mm at 70mm (70W NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	27	54	107	161	214	268	375			
Round Ø	inch	11	21	42	63	84	105	148			
Sizo cauaro	cmxcm	19	39	77	116	154	193	270			
Size square	inch	8	15	30	46	61	76	106			
Illumination ·	lux	6560	1640	410	182	103	66	33			
	fc	615	154	38	17	10	6,1	3,1			

	DLAD-CFU70 with zoom lens 70-120mm at 120mm (70W NDL)											
Distance	metres	0,5	1	2	3	4	5	7				
	feet	1,5	3	6	9	12	15	21				
Diameter	cm	15	29	58	87	116	145	203				
Round Ø	inch	6	11	23	34	46	57	80				
Sizo coupro	cmxcm	11	21	42	63	84	105	147				
Size square	inch	4	8	17	25	33	41	58				
Illumination	lux	18080	4520	1130	502	283	181	92				
	fc	1694	424	106	47	26	17	8.6				

	DLAD-CFU70 with zoom lens 85-150mm at 85mm (70W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
Distance	feet	1,5	3	6	9	12	15	21			
Diameter	cm	22	43	86	129	172	215	301			
Round Ø	inch	8	17	34	51	68	85	119			
Sizo cauaro	cmxcm	16	32	63	95	126	158	221			
Size square	inch	6	12	25	37	50	62	87			
Illumination	lux	9440	2360	590	262	148	94	48			
	fc	885	221	55	25	14	8,8	4,5			

DLAD-CFU70 with zoom lens 85-150mm at 150mm (70W/NDL)											
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	12	24	48	72	96	120	168			
Round Ø	inch	5	9	19	28	38	47	66			
Sizo cauaro	cmxcm	9	17	34	51	68	85	119			
Size square	inch	3	7	13	20	27	33	47			
Illumination	lux	25280	6320	1580	702	395	253	129			
	fc	2369	592	148	66	37	24	12			

DLAD-CFU150 with 185mm lens (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
Distance	feet	1,5	3	6	9	12	15	21		
Diameter	cm	10	21	41	62	82	103	144		
Round Ø	inch	4	8	16	24	32	40	57		
	cmxcm	7	15	29	44	58	73	102		
Size square	inch	3	6	11	17	23	29	40		
Illumination	lux	84800	21200	5300	2356	1325	848	433		
	fc	7948	1987	497	221	124	79	41		

DLAD-CFU150 with 150mm lens (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
Distance	feet	1,5	3	6	9	12	15	21		
Diameter	cm	12	25	49	74	98	123	172		
Round Ø	inch	5	10	19	29	39	48	68		
	cmxcm	9	18	35	53	70	88	123		
Size square	inch	3	7	14	21	28	34	48		
Illumination ·	lux	76800	19200	4800	2133	1200	768	392		
	fc	7198	1799	450	200	112	72	37		

DLAD-CFU150 with 85mm lens (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	24	48	96	144	192	240	336		
Round Ø	inch	9	19	38	57	76	95	132		
	cmxcm	18	36	72	108	144	180	252		
Size square	inch	7	14	28	43	57	71	99		
Illumination	lux	19840	4960	1240	551	310	198	101		
	fc	1859	465	116	52	29	19	9		

	DLAD-CFU150 with 60mm lens 150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
Distance	feet	1,5	3	6	9	12	15	21			
Diameter	cm	34	67	134	201	268	335	469			
Round Ø	inch	13	26	53	79	106	132	185			
Size cauero	cmxcm	25	50	100	150	200	250	350			
Size square	inch	10	20	39	59	79	99	138			
Illumination	lux	8320	2080	520	231	130	83	42			
	fc	780	195	49	22	12	8	4			

DLAD-CFU150 with 50mm lens (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	40	79	158	237	316	395	553		
Round Ø	inch	16	31	62	93	125	156	218		
Sizo cauaro	cmxcm	30	59	118	177	236	295	413		
Size square	inch	12	23	46	70	93	116	163		
Illumination	lux	5600	1400	350	156	88	56	29		
	fc	525	131	33	15	8	5	3		

DLAD-CFU150 with zoom lens 70-120mm at 70mm (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	28	56	112	168	224	280	392		
Round Ø	inch	11	22	44	66	88	110	154		
Sizo cauaro	cmxcm	20	41	81	122	162	203	284		
Size square	inch	8	16	32	48	64	80	112		
Illumination	lux	11360	2840	710	316	178	114	58		
	fc	1065	266	67	30	17	11	5		

	DLAD-CFU150 with zoom lens 70-120mm at 120mm (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
Distance	feet	1,5	3	6	9	12	15	21			
Diameter	cm	15	31	61	92	122	153	214			
Round Ø	inch	6	12	24	36	48	60	84			
Sizo cauaro	cmxcm	11	23	45	68	90	113	158			
Size square	inch	4	9	18	27	35	44	62			
Illumination	lux	30560	7640	1910	849	478	306	156			
	fc	2864	716	179	80	45	29	15			

DLA- CFU150 with zoom lens 85-150mm at 85mm (150W/NDL)											
Distance	metres	0,5	1	2	3	4	5	7			
	feet	1,5	3	6	9	12	15	21			
Diameter	cm	23	46	92	138	184	230	322			
Round Ø	inch	9	18	36	54	72	91	127			
Size cauaro	cmxcm	17	34	67	101	134	168	235			
Size square	inch	7	13	26	40	53	66	92			
Illumination	lux	15680	3920	980	436	245	157	80			
	fc	1470	367	92	41	23	15	7			

	DLAD-CFU150 with zoom lens 85-150mm at 150mm (150W/NDL)										
Distance	metres	0,5	1	2	3	4	5	7			
Distance	feet	1,5	3	6	9	12	15	21			
Diameter	cm	13	25	50	75	100	125	175			
Round Ø	inch	5	10	20	30	39	49	69			
Size couero	cmxcm	9	19	37	56	74	93	130			
Size square	inch	4	7	15	22	29	36	51			
Illumination	lux	38400	9600	2400	1067	600	384	196			
	fc	3599	900	225	100	56	36	18			

DLAD-HFW100 with 150mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
Distance	feet	1,5	3	6	9	12	15	21		
Diameter	cm	15	30	60	90	120	150	210		
Round Ø	inch	6	12	24	35	47	59	83		
Size couero	cmxcm	10	20	40	60	80	100	140		
Size square	inch	4	8	16	24	32	39	55		
Illumination	lux	35680	8920	2230	991	558	357	182		
	fc	3344	836	209	93	52	33	17		

DLAD-HFW100 with 85mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	26	53	105	158	210	263	368		
Round Ø	inch	10	21	41	62	83	103	145		
Sizo cauaro	cmxcm	18	35	70	105	140	175	245		
Size square	inch	7	14	28	41	55	69	97		
Illumination	lux	12640	3160	790	351	198	126	64		
	fc	1185	296	74	33	19	12	6		

DLAD-HFW100 with 60mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	35	70	140	210	280	350	490		
Round Ø	inch	14	28	55	83	110	138	193		
	cmxcm	25	50	100	150	200	250	350		
Size square	inch	10	20	39	59	79	99	138		
Illumination	lux	6880	1720	430	191	108	69	35		
	fc	645	161	40	18	10	6,4	3,3		

DLAD-HFW100 with 50mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	39	78	155	233	310	388	543		
Round Ø	inch	15	31	61	92	122	153	214		
Sizo cauaro	cmxcm	28	55	110	165	220	275	385		
Size square	inch	11	22	43	65	87	108	152		
Illumination	lux	4160	1040	260	116	65	42	21		
	fc	390	97	24	11	6	3,9	2,0		

DLAD-HFW100 with zoom lens 70-120mm at 70mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	31	63	125	188	250	313	438		
Round Ø	inch	12	25	49	74	99	123	172		
Sizo cauaro	cmxcm	21	43	85	128	170	213	298		
Size square	inch	8	17	33	50	67	84	117		
Illumination	lux	6240	1560	390	173	98	62	32		
	fc	585	146	37	16	9	6	3		

DLAD-HFW100 with zoom lens 70-120mm at 120mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	17	34	68	102	136	170	238		
Round Ø	inch	7	13	27	40	54	67	94		
	cmxcm	12	24	48	72	96	120	168		
Size square	inch	5	9	19	28	38	47	66		
Illumination	lux	14880	3720	930	413	233	149	76		
	fc	1395	349	87	39	22	14	7		

DLAD-HFW100 with zoom lens 85-150mm at 85mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	25	50	100	150	200	250	350		
Round Ø	inch	10	20	39	59	79	99	138		
	cmxcm	18	36	72	108	144	180	252		
Size square	inch	7	14	28	43	57	71	99		
Illumination	lux	8640	2160	540	240	135	86	44		
	fc	810	202	51	22	13	8	4		

DLAD-HFW100 with zoom lens 85-150mm at 150mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	14	28	55	83	110	138	193		
Round Ø	inch	5	11	22	33	43	54	76		
Sizo coupro	cmxcm	11	22	44	66	88	110	154		
Size square	inch	4	9	17	26	35	43	61		
Illumination	lux	17280	4320	1080	480	270	173	88		
	fc	1619	405	101	45	25	16	8		

DLAD-HFN100 with 185mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	10	20	40	60	80	100	140		
Round Ø	inch	4	8	16	24	32	39	55		
	cmxcm	7	14	28	42	56	70	98		
Size square	inch	3	6	11	17	22	28	39		
Illumination ·	lux	41600	10400	2600	1156	650	416	212		
	fc	3899	975	244	108	61	39	20		

DLAD-HFN100 with 150mm lens (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	15	30	60	90	120	150	210		
Round Ø	inch	6	12	24	35	47	59	83		
Sizo cauaro	cmxcm	10	20	40	60	80	100	140		
Size square	inch	4	8	16	24	32	39	55		
Illumination	lux	45600	11400	2850	1267	713	456	233		
	fc	4274	1068	267	119	67	43	22		

DLAD-HFN100 with 85mm lens (12V100W)										
Distance	metres	0,5	1	2	3	4	5	7		
Distance	feet	1,5	3	6	9	12	15	21		
Diameter	cm	26	53	105	158	210	263	368		
Round Ø	inch	10	21	41	62	83	103	145		
Size coupre	cmxcm	18	35	70	105	140	175	245		
Size square	inch	7	14	28	41	55	69	97		
Illumination	lux	12640	3160	790	351	198	126	64		
	fc	1185	296	74	33	19	12	6		

DLAD-HFN100 with zoom lens 70-120mm at 70mm (12V/100W)										
Distanco	metres	0,5	1	2	3	4	5	7		
Distance	feet	1,5	3	6	9	12	15	21		
Diameter	cm	31	63	125	188	250	313	438		
Round Ø	inch	12	25	49	74	99	123	172		
Size couero	cmxcm	21	43	85	128	170	213	298		
Size square	inch	8	17	33	50	67	84	117		
Illumination	lux	6080	1520	380	169	95	61	31		
	fc	570	142	36	16	9	6	3		

DLAD-HFN100 with zoom lens 70-120mm at 120mm (12V/100W)										
Distance	metres	0,5	1	2	3	4	5	7		
	feet	1,5	3	6	9	12	15	21		
Diameter	cm	17	34	68	102	136	170	238		
Round Ø	inch	7	13	27	40	54	67	94		
	cmxcm	12	24	48	72	96	120	168		
Size square	inch	5	9	19	28	38	47	66		
Illumination -	lux	17600	4400	1100	489	275	176	90		
	fc	1649	412	103	46	26	16	8		

DLAD-HFN100 with zoom lens 85-150mm at 85mm (12V/100W)												
Distance	metres	0,5	1	2	3	4	5	7				
	feet	1,5	3	6	9	12	15	21				
Diameter	cm	25	50	100	150	200	250	350				
Round Ø	inch	10	20	39	59	79	99	138				
Size square	cmxcm	18	36	72	108	144	180	252				
	inch	7	14	28	43	57	71	99				
Illumination	lux	8320	2080	520	231	130	83	42				
	fc	780	195	49	22	12	8	4				

DLAD-HFN100 with zoom lens 85-150mm at 150mm (12V/100W)												
Distance	metres	0,5	1	2	3	4	5	7				
	feet	1,5	3	6	9	12	15	21				
Diameter	cm	14	28	55	83	110	138	193				
Round Ø	inch	5	11	22	33	43	54	76				
Size square	cmxcm	10	20	40	60	80	100	140				
	inch	4	8	16	24	32	39	55				
Illumination	lux	19200	4800	1200	533	300	192	98				
	fc	1799	450	112	50	28	18	9				

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