



# Low-angle Ring Lights

## LDR2-LA/LDR-LA-1 Series

### Ideal for edge detection and highlighting scratches on glossy surfaces

Low-angle illumination is ideally suited for edge detection and for emphasizing incused characters or scratches on metal surfaces.



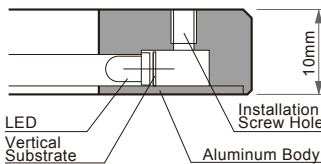
### Low-angle illumination can be used to highlight characteristic features of workpieces

The LDR-LA-1 is an ultra-low-angle illumination system with an ultra-thin design of just 10 mm. The thin design means that only minimal space is required for installation. At a working distance from the light of 5 to 10 mm, the system can emphasize edges and height variations when taking photographs.

Sample Edge Detection Using a 1-Yen Coin



Cross-Sectional Illustration of the LA-1 Series



LDR-146LA-1

### Aluminum Body Also Acts as a Highly Effective Heat Sink

Aluminum is used as the outer material for nearly all of the image processing LEDs systems produced by CCS. Aluminum is a good heat conductor and acts as a heat sink to keep the internal temperature of the illumination system from rising. Heat can be a major problem for LED illumination systems, decreasing light intensity and reducing the life of the LEDs. The use of an aluminum body helps minimize these problems.



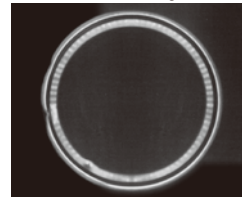
LDR2-74SW-LA

### Compatible with Optional Diffusion Rings and Diffusion Plates

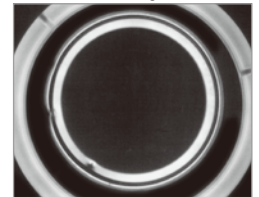
#### Comparison of can's dent image

Light used: LDR2-132RD-LA Diffusion Ring: DF-LDR-132LA

Without Diffusion Ring



With Diffusion Ring

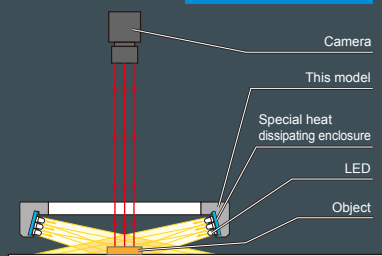


Using a Diffusion Ring or Diffusion Panel suppresses glare and LED reflections that may be a problem when capturing images of glossy workpieces.

#### Illumination structure of LDR2-132-LA

A flexible circuit board is fixed at the desired angle to illuminate the workpiece from a low angle.

#### Heat dissipating construction



#### Examples of Low-Angle Ring Light Images

##### Inspection of Printed Characters on the Bottom of a Battery

A WD of 15 mm emphasizes printed characters.

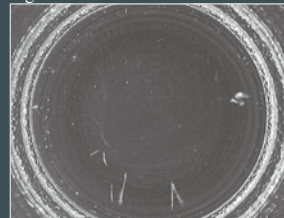
Light used: LDR-75LA-1



##### Inspection of Disposable Camera Lenses for Damage

Low-angle illumination emphasizes scratches on the lens surface.

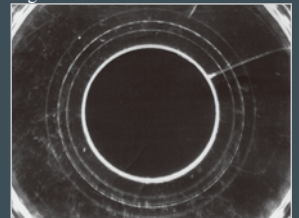
Light used: LDR2-132RD-LA



##### Inspection of CD-ROM for Inner Ring Cracking

Low-angle illumination emphasizes cracks while preventing LED reflections from appearing in the photographed image.

Light used: LDR2-74RD-LA



# Product Lineup Table

Direct Number : You can easily access the web page providing information on any desired product by simply entering the 7-digit direct number in the space provided. (Refer to the back cover of this brochure.)

Series	Direct Number	Model Name	Color	Power Consumption	Option	Dimension
LDR2-LA	1001453	LDR2-48RD-LA	●	12V / 2.4W	D	1
	1002724	LDR2-48SW2-LA	○	24V / 3.1W		
	1001452	LDR2-48BL-LA	●			
	1003004	LDR2-48GR-LA	●			
	1001490	LDR2-74RD-LA	●		12V / 4.5W	D
	1002725	LDR2-74SW2-LA	○	24V / 5.7W		
	1001487	LDR2-74BL-LA	●			
	1001488	LDR2-74GR-LA	●			
	1001370	LDR2-100RD-LA	●		12V / 9.0W	D
	1002726	LDR2-100SW2-LA	○	24V / 12W		
	1001368	LDR2-100BL-LA	●			
	1001369	LDR2-100GR-LA	●			
	1001398	LDR2-132RD-LA	●	12V / 13W	D	4
	1002727	LDR2-132SW2-LA	○	24V / 16W		
	1001391	LDR2-132BL-LA	●			
	1001396	LDR2-132GR-LA	●			
	1001411	LDR2-170RD-LA	●		12V / 18W	D
	1002757	LDR2-170SW2-LA	○	24V / 22W		
	1001407	LDR2-170BL-LA	●			
	1001409	LDR2-170GR-LA	●			
1001420	LDR2-208RD-LA	●	12V / 22W		D	6
1002758	LDR2-208SW2-LA	○	24V / 28W			
1001417	LDR2-208BL-LA	●				
1001418	LDR2-208GR-LA	●				

Series	Direct Number	Model Name	Color	Power Consumption	Option	Dimension
LDR-LA-1	1001316	LDR-75LA-1	●	12V / 3.0W	—	7
	1001323	LDR-75LA-1-SW	○	24V / 4.1W		
	1001318	LDR-75LA-1-BL	●			
	1001319	LDR-75LA-1-GR	●			
	1001348	LDR-96LA-1	●	12V / 3.0W	—	8
	1001353	LDR-96LA-1-SW	○	24V / 4.1W		
	1001350	LDR-96LA-1-BL	●			
	1001351	LDR-96LA-1-GR	●			
	1001136	LDR-146LA-1	●	12V / 4.8W	—	9
	1001140	LDR-146LA-1-SW	○	24V / 6.5W		
	1001137	LDR-146LA-1-BL	●			
	1001139	LDR-146LA-1-GR	●			
	1001163	LDR-176LA-1	●	12V / 6.0W	—	10
	1001166	LDR-176LA-1-SW	○	24V / 8.2W		
	1001164	LDR-176LA-1-BL	●			
	1001165	LDR-176LA-1-GR	●			
	1001169	LDR-206LA-1	●	12V / 7.2W	—	11
	1001172	LDR-206LA-1-SW	○	24V / 9.8W		
1001170	LDR-206LA-1-BL	●				
1001171	LDR-206LA-1-GR	●				

\*The following letters indicate options.

D: Diffusion Plate

\*For further details on these options, refer to page 92.

## Dimension Diagrams (Unit: mm)

