

Natural Light LED  
Ring Light for Stereomicroscope

# CNR-110NW

“Natural Light LED” equipped





# Natural Light LED Ring Light for Stereomicroscope CNR-110NW

- Equipped with Natural Light LEDs.  
(High color rendering of CRI98 and easy on the eyes.)
- The brightest in the industry.
- Secure a work area without any changes.

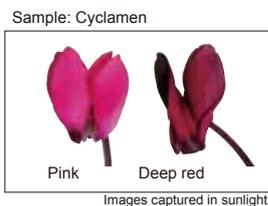
## Equipped with Natural Light LEDs

### General Color Rendering CRI98

The average color rendering index achieves an unprecedented level of CRI98. Colors can be faithfully observed as they originally appear in the sample.

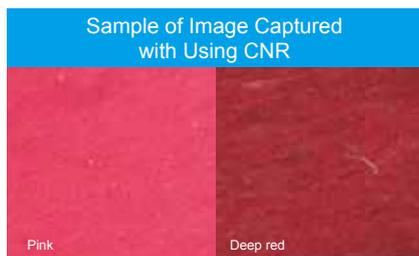
Note: This is the average rendering of evaluated test colors (eight colors specified by JIS) (correlated color temperature: 5000 K). This value is for reference only.

#### ■ Enlarged Observation of Flower Petals



#### What are color rendering properties ?

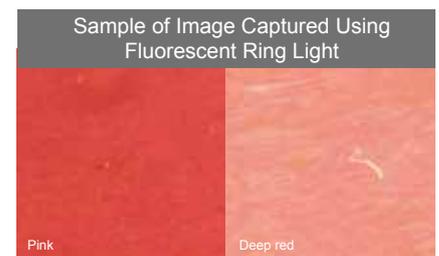
For example, white paper appears slightly orange in color under an incandescent lamp. The type of light source used affects the visibility of an object's color. How a certain light source brings out color in an object is termed "color rendering" and the characteristics used for the purpose are a light source's "color rendering properties." In general, light sources with good "color rendering properties" are able to light up an object without introducing any differences from its original hue.



The original colors of the flower can be faithfully reproduced. It is also possible to reproduce subtle color contrasts.

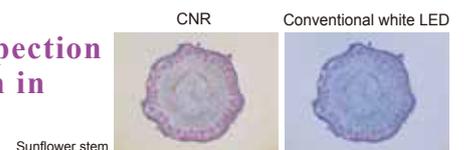


The original colors of the flower cannot be faithfully reproduced. It is not possible to reproduce subtle color contrasts.



The colors are changed, and the original colors cannot be reproduced.

**In addition, excellent performance is also provided in inspection for specks or color spots on PCB surfaces and observation in scientific fields, such as for cells in biology.**



## Eye Friendly

Note: Compared to common lights.

The amount of stress on the eyes by many-hour or closeup observation will be reduced.

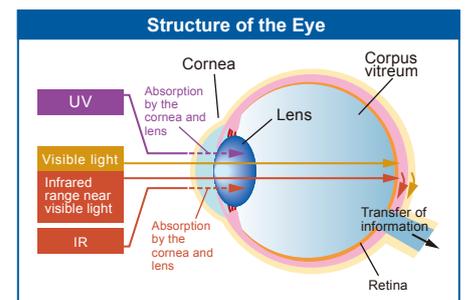
#### ■ Eye Stress from Light

##### Eyestrain

The shorter-wavelength is the greater amount of energy the light has. The shorter-wavelength light among visible light reaches the retina and may stress on it.

##### Psychological and Physiological Effects

People feel most natural (i.e., psychologically and physiologically relaxed) in sunlight, and so bluish white light, which has a high correlated color temperature, produces a sense of discomfort and results in psychological and physiological stress.

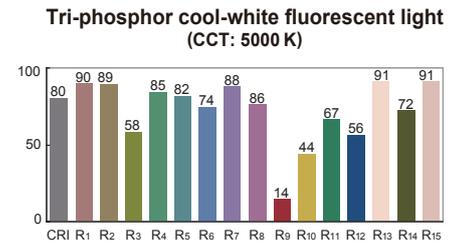
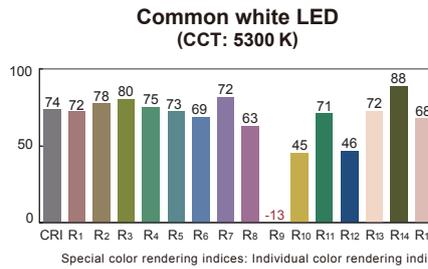
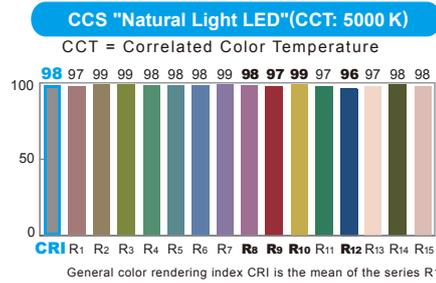


**The light of the CNR contains few components at short wavelengths, and so the retina is not exposed to significant stress. The correlated color temperature of 5000 K is close to sunlight, and so observation can be performed without discomfort.**

# A Natural Light LED can faithfully reproduce colors because the light components are close to sunlight.

## Color Rendering Index (CRI) Graphs

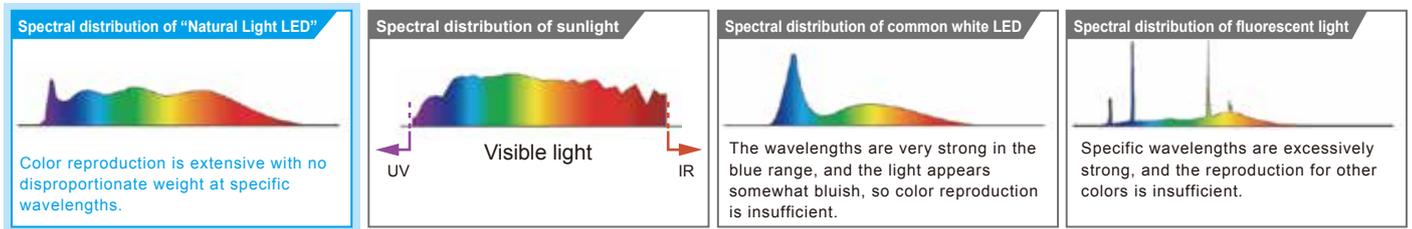
Note: Graphs of Color Rendering Indices by Light Source (Standard = 100)



It is possible to view with unprecedentedly high color rendering, particularly for violet (R8), red (R9), blue (R12), and yellow (R10).

## Spectral Distribution

The Natural Light LED has a similar spectral distribution as sunlight compared to other light sources, with broad range of wavelengths rather than a disproportionate weight at specific wavelengths. -ideal to reproduce an object's original color.



## Correlated Color Temperature

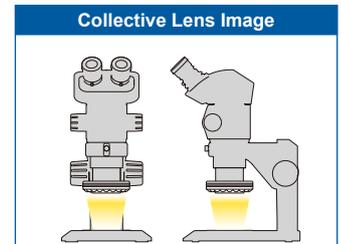
CCT is 5,000 K. This means Natural Light LED allows to see objects in their natural color.

## Light Intensity of 80,000 lx, the Highest in the Industry

Our unique collective lens enables bright illumination in the observation field of view.

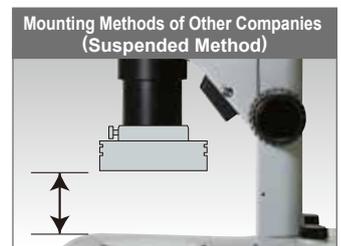
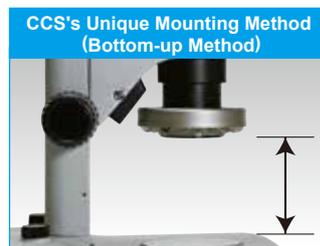
Notes:

- 1) This applies for a WD of 110 mm. (The value is for reference only.)
- 2) Achieves the highest level of brightness for LED lights for microscopes. (Based on CCS research as of September 2015.)



## Securing a Work Area without Any Changes

A unique mounting method eliminates the need to make the work area narrower under the objective lens. Work can be performed without thinking about the light when the test samples or workpiece is moved while observing.



## Low Power Consumption, Energy Savings, and Long Lifetime

Low power consumption of 5.7 W.  
The lifetime is longer than that of fluorescent lights.  
Greatly helps reduce running costs.

## No Infrared or ultraviolet radiation

Only minimal amounts of infrared and ultraviolet radiation are emitted, which greatly minimizes color fading and other damage caused to target objects.

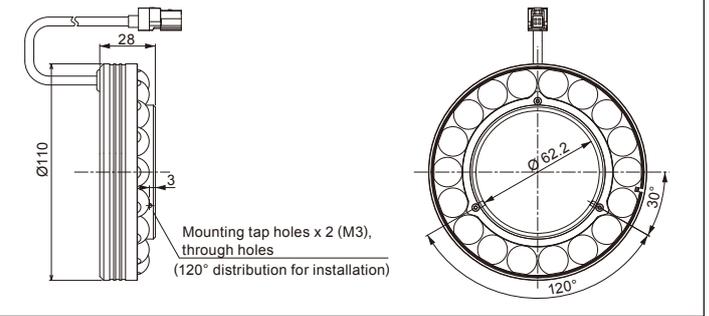
## Specifications

Model	CNR-110NW
LED color	Daytime white color
Input voltage	24V DC
Power consumption (max.)	5.7W
Environmental Regulation	RoHS compliant
Material	Aluminum alloy, PMMA, Steel plate
Cable length	1m
Weight	280g max.
Accessories	Light fixing ring: 54 mm dia. 60 mm dia.

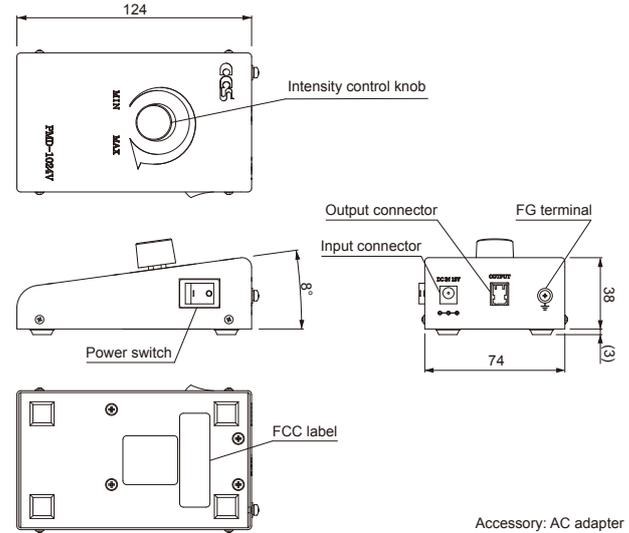
Product name	Dedicated power supply for CNR-110NW
Model	PMD-1024V
Lighting method	Constant lighting
Drive method	PWM control
No. of channels	1 channel
PWM frequency	3.9KHz
Light control	Operation by the intensity control knob
Maximum cable length	1 m max. for lighting cable and 3 m max. for FG cable
Input voltage (rating)	100 to 240V AC
Input voltage (range)	90 to 264V AC
Power consumption (typ.)	20VA
Frequency	50/60Hz
FCC	FCC
PSE	PSE
Environmental Regulation	RoHS compliant
Weight	400g max.
Accessories	AC adapter x 1, Instruction guide x 1

## Dimensional Diagrams (mm)

CNR-110NW



PMD-1024V



## CNR-compatible Microscopes

Manufacturer	Model
NIKON	<b>SMZ-1, SMZ-2B, SMZ445, SMZ460, SMZ645, SMZ660, SMZ800, SMZ1000, SMZ1500</b> The SMZ-1, SMZ-2B, SMZ445, and SMZ460 require a separately sold adapter (AD-CMR-G-OBA60).
OLYMPUS	<b>SZ61 (51/6045/4060/4045/3060), SZX7 (9), SZ4045CHI, 6045CHI</b>

## PMD-1024V Power Supply for Optimal CNR Performance

### Main Features

- Control the light intensity of the CNR in unlimited steps from 0% to 100%.
- The light intensity is easy to control with high-usability enclosure design.
- Available with AC input (AC adapter provided).



## Notes

- Carefully read the product's instruction manual before use to ensure correct operation.
- Product specifications and design are subject to change without notice.
- Examples of workpiece imaging in this catalog are a guide that may be informative for choosing illuminations.
- Please check the functions of the equipment and requirements when choosing.



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Descriptions in this catalog are based on information available as of September 2015. 02002-02-0904-CNR