

# Line Sensor Light Unit LNSD Series



High luminance type

High uniformity type

## Versatile Light Unit of High Luminance and High Uniformity

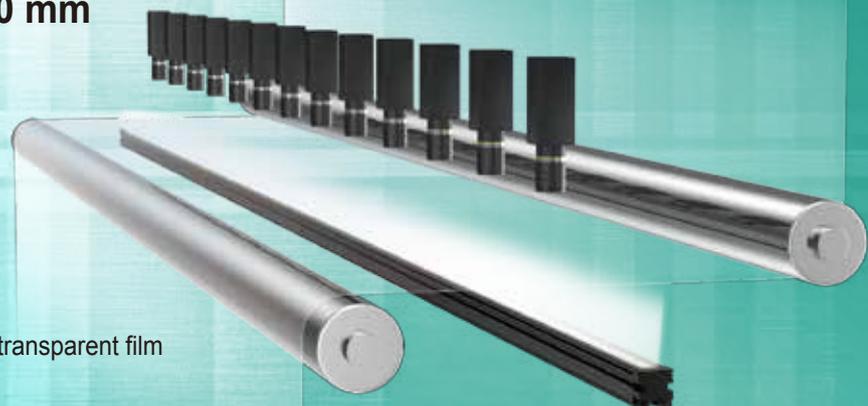
**LED colors: White, red, and blue**

(Red and blue models are scheduled to be released in the beginning of 2015.)

**Emitting surface length: 100 to 3,000 mm**

### Inspection Applications

- 1) Dents, foreign substances, and fish-eye holes on transparent film
- 2) Blots, unevenness, and scratches on metallic foil
- 3) Oil spots, holes, and edge breaking on paper
- 4) Blots, mixing of hairs, and crude density on non-woven fabric



Inspection for foreign substances  
on transparent film

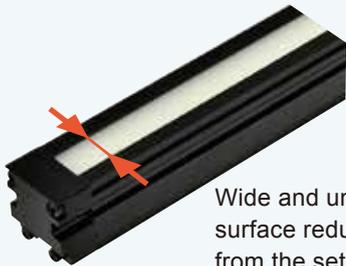
# Easy-to-use, compact, and lightweight!

## Features

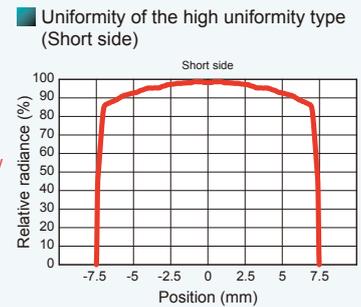
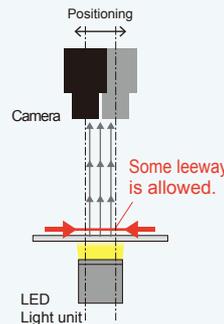
### 1 Easy to set up with a Line camera

The wide and uniform emitting surface facilitates the positioning of the camera. You can improve the efficiency of the setting work.

Emitting surface width: 15 mm

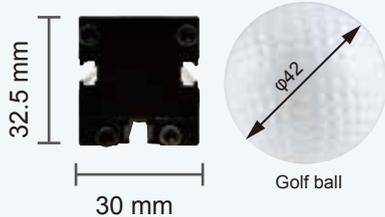


Wide and uniform emitting surface reduces the burden from the setting work.



### 2 Compact and lightweight

Space-saving 30-mm width!



Compact design!

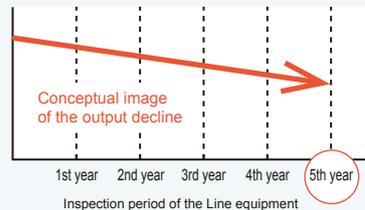
Lightweight 200 g for a 100-mm model



### 3 No need for replacement for 5 years

Expected life time: 50,000 Hours

\* Light intensity: 70%, Environment temperature: 50°C  
Calculated value where the light output drops to 50%  
(This value does not guarantee the quality of this product.)



No need for replacement until the inspection for the Line equipment in its 5th year

### 4 Stable quality even in a harsh environment

Operation temp.

50°C allowed

Heat resistant design for a high temperature environment



- Optimized case design for heat dissipation
- Heat resistant cable and diffusion plate
- Other components for thorough heat resistance

\* For details of the operating temperature of the Control Units and the optional accessories, refer to the CCS website or *General Catalog of LED Lighting for Machine Vision Applications*.

### 5 Abundant lineup, total of 180 models

■ Two types: High luminance and high uniformity

■ Three colors: White, red, and blue  
(Red and blue models are scheduled to be released in the beginning of 2015.)

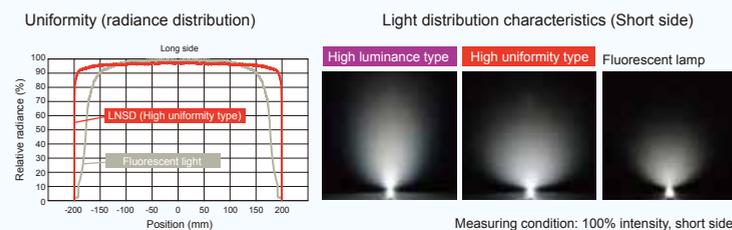
■ Length of 100 to 3,000 mm  
(Emitting surface length, 100-mm pitch)



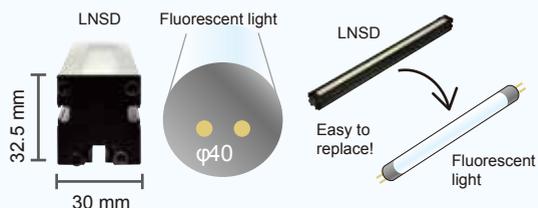
# Try the LNSD! It's the quickest way.

## Optimum for replacing your fluorescent lights!!

**1** It has excellent brightness and the same uniformity as a fluorescent light.

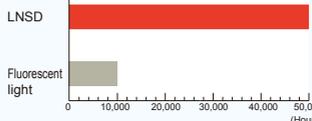


**2** Great for replacing fluorescent lights due to the equal size



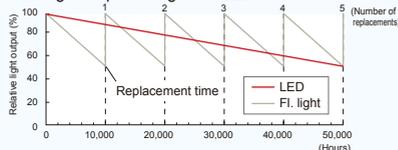
**3** Cost-reducing

Comparison of the life time between the LNSD (white) and the fluorescent light



\* Light intensity: 70%. Operation temperature: 50°C  
Calculated value where the light output drops to 50%.  
(This value does not guarantee the quality of this product.)  
\* The life time of the fluorescent light is estimated as 10,000 hours according to CCS's research.

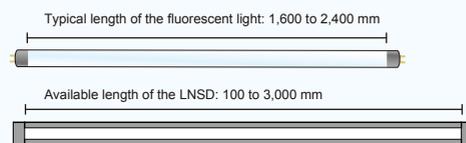
Replacements for fluorescent lights and the light-output changes for LEDs



\* The graph above is a conceptual image.  
Replacement of the fluorescent light is assumed to be performed at every 1,000 hours.

**4** Supports 1,600 to 2,400 mm length as with the fluorescent light

**3,000 mm max.**  
(100-mm pitch)

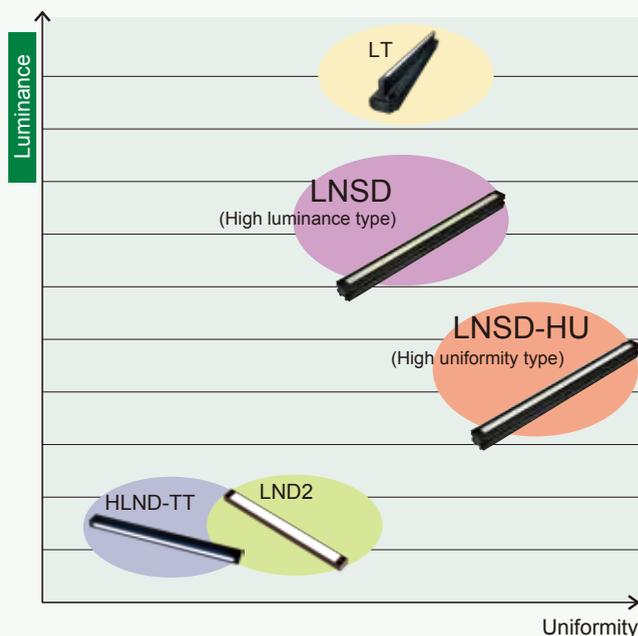


## Balanced performance of the LNSD series

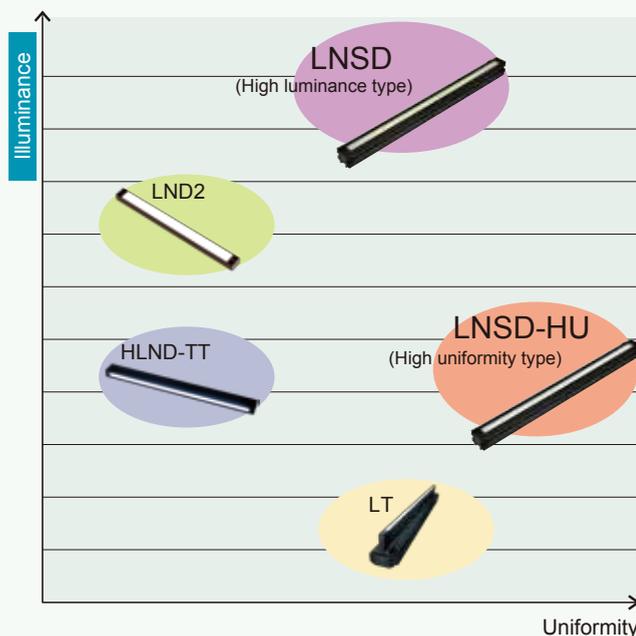
The performance balance map below shows the usability of the LNSD series.

(Conceptual image)

Comparison between the luminance and the uniformity



Comparison between the illuminance and the uniformity



**Consider the LNSD series first for your workpiece inspection!**

# 2 types (High luminance/high uniformity) X 3 colors (White, red, and blue) X 30

## Data (White)

### Brightness

Luminance

High luminance type **265,000** cd/m<sup>2</sup>

High uniformity type **125,000** cd/m<sup>2</sup>

Illuminance

(LWD=50 mm)

High luminance type **101,000** lx

High uniformity type **56,000** lx

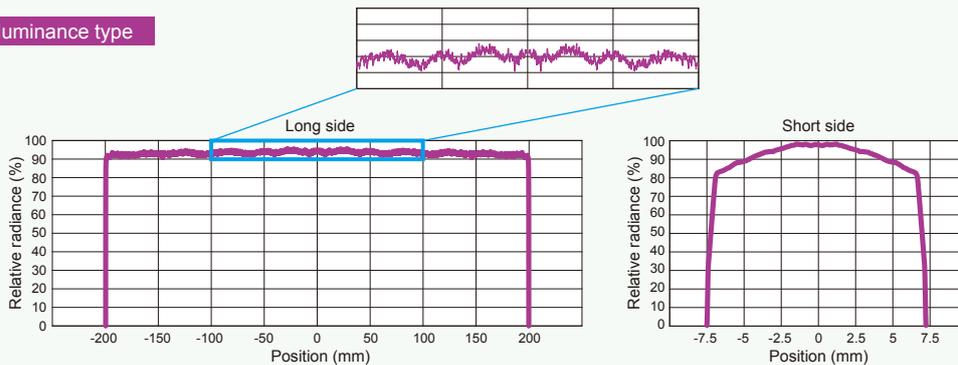
\* "LWD" is a distance from the Light Unit to the workpiece.

\* Light Units used: High luminance type LNSD-400SW, High uniformity type LNSD-400SW-HU

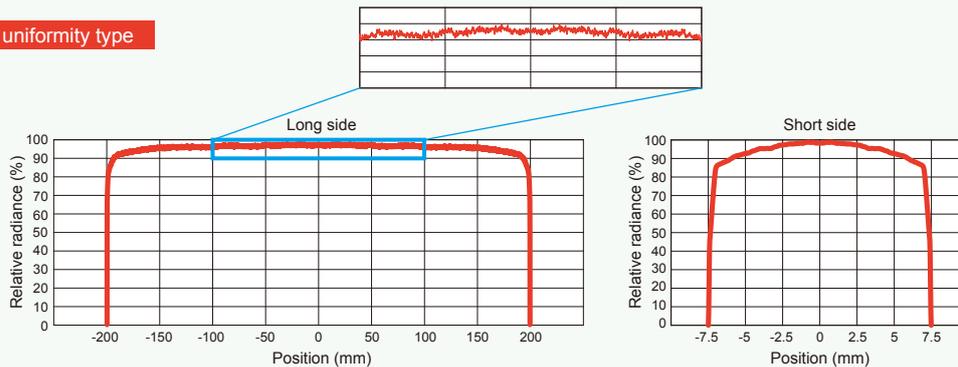
\* This data is for reference only. This does not guarantee the quality of this product.

### Uniformity (Radiance distribution)

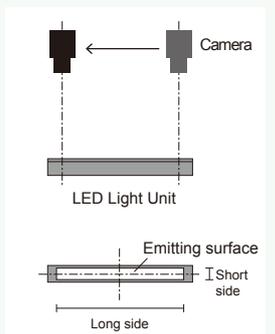
High luminance type



High uniformity type



Measuring method of the radiance distribution



\* Light Units used: High luminance type LNSD-400SW, High uniformity type LNSD-400SW-HU

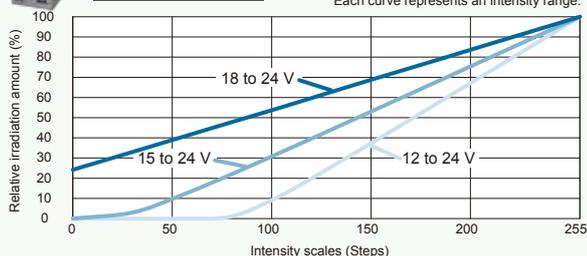
\* This data is for reference only. This does not guarantee the quality of this product.

### Graph of the correlation between intensity and light output



Analog Control Unit  
PSB3-30024

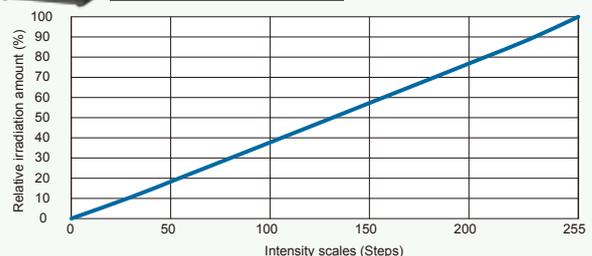
\* Each curve represents an intensity range.



\* Actual measured values when the Analog Control Unit PSB3-30024 is used. They do not guarantee the quality of this product.



Digital Control Unit  
PD3-10024-8 series



\* Actual measured values when the Digital Control Unit PD3-10024-8 series is used. They do not guarantee the quality of this product.

\* Custom products with a PWM frequency of 500 kHz are also available. Please contact your CCS sales representative for details.

sizes (100 mm to 3,000 mm) = 180 models to meet your needs

## Product lineup

Model name: High luminance type LNSD-□□□□○○ High uniformity type LNSD-□□□□○○-HU

Model name	Emitting surface length	LED color	Power consumption (max.)	Extension cable	Recommended Control Unit	Weight (max.)
High luminance type/High uniformity type (Add "-HU" at the end of the model name.)	LNSD-100	White(SW)/Red(RD, Scheduled to be released)/Blue(BL, Scheduled to be released)	11 W	FCB-EL2  (1 m, 2 m, 3 m, 5 m, 10 m, 15 m)	Analog Control Unit PSB3-30024  or *2 Digital Control Unit PD3-10024-8	200 g
	LNSD-200		21 W			320 g
	LNSD-300		31 W			460 g
	LNSD-400		41 W			590 g
	LNSD-500		51 W			720 g
	LNSD-600		61 W			860 g
	LNSD-700		71 W			990 g
	LNSD-800		81 W			1,120 g
	LNSD-900		91 W			1,240 g
	LNSD-1000		101 W			1,370 g
	LNSD-1100		111 W			1,500 g
	LNSD-1200		121 W			1,640 g
	LNSD-1300		White: 131 W Red: 132 W/Blue: 131 W			1,770 g
	LNSD-1400		White: 141 W Red: 142 W/Blue: 141 W			1,910 g
	LNSD-1500		White: 151 W Red: 152 W/Blue: 151 W			2,040 g
	LNSD-1600		White: 161 W Red: 162 W/Blue: 161 W	2,170 g		
	LNSD-1700		White: 171 W Red: 172 W/Blue: 171 W	2,300 g		
	LNSD-1800		White: 181 W Red: 182 W/Blue: 181 W	2,440 g		
	LNSD-1900		192 W	2,570 g		
	LNSD-2000		202 W	2,700 g		
	LNSD-2100		212 W	2,830 g		
	LNSD-2200		222 W	2,960 g		
	LNSD-2300		232 W	3,090 g		
	LNSD-2400		242 W	3,220 g		
	LNSD-2500		White: 230 W Red: 227 W/Blue: 230 W	3,350 g		
	LNSD-2600		White: 239 W Red: 236 W/Blue: 239 W	3,480 g		
	LNSD-2700		White: 248 W Red: 245 W/Blue: 248 W	3,610 g		
	LNSD-2800		White: 257 W Red: 255 W/Blue: 257 W	3,740 g		
	LNSD-2900		White: 267 W Red: 264 W/Blue: 267 W	3,870 g		
	LNSD-3000		White: 276 W Red: 273 W/Blue: 276 W	4,000 g		
				A pair of FCB-EL2  (1 m, 2 m, 3 m, 5 m, 10 m, 15 m)	Analog Control Unit PSB3-30024	

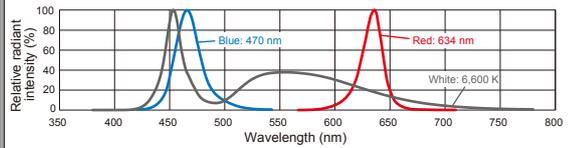
\* For details of the Control Units and the optional parts, refer to the CCS website or *General Catalog of LED Lighting for Machine Vision Applications*.

\*1 There are two input connectors for the Light Unit whose length of the emitting surface is more than 1,200 mm. To install the Light Unit, use two Extension cables of the same length. Using the cables of different length may cause uneven emission due to a difference in voltage drop by DC resistance of the cables.

\*2 Custom products with a PWM frequency of 500 kHz are also available for the Digital Control Unit PD3 series. Please contact your CCS sales representative for details.

## Common specifications

Type	High luminance/High uniformity (Add "-HU" at the end of the model name.)			Cable length	300 mm
LED color	White	Red (Scheduled to be released)	Blue (Scheduled to be released)	Operating environment	Temperature: 0 to 50°C, Humidity: 20% to 85% RH (with no condensation)
Correlated temp. (typ.)	6,600 K	-		Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85% RH (with no condensation)
Peak wavelength (typ.)	-	634 nm	470 nm	Cooling method	Natural air cooling
Input voltage (max.)	24 VDC				
Connector	EL connector (ELP-02V)				
Polarity/signal	1: (+), 2: (-)				
CE marking	Safety standard: EN62471 compliant				
Environmental regulation	RoHS compliant				
Case material	Aluminum alloy, Resin				



\* This data is for reference only. It does not guarantee the quality of this product. \* Red and blue models are scheduled to be released in 2015 winter.

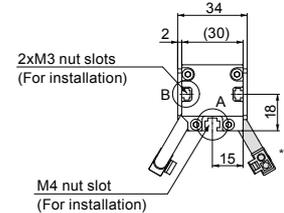
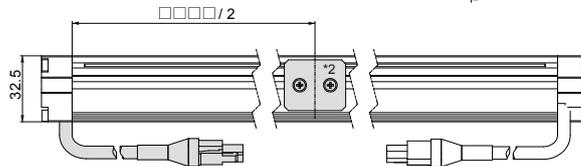
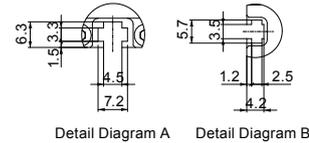
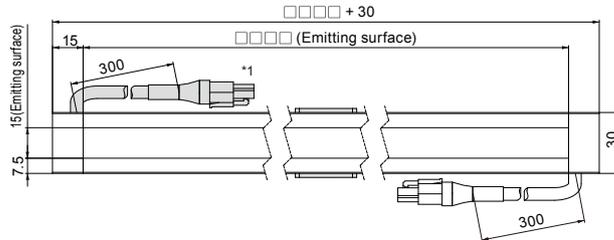
## Dimensions (mm)

### LNSD-□□□□SW/RD/BL

(□□□□: Emitting surface length)  
("HU" is at the end of the model name for the High uniformity type.)

\*1 There are two connectors only for the Light Unit whose length of the emitting surface is more than 1,200 mm.

\*2 There are reinforcing metal fittings only for the Light Unit whose length of the emitting surface is more than 1,600 mm.

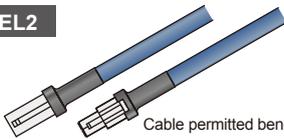


## Optional Accessories

### Extension cables (EL connector)

The length of the connecting cable of the Light Unit is 300 mm. Use appropriate Extension cables in accordance with your installation environment.

### FCB-EL2



Cable permitted bending radius: 55.5 mm

### Straight cables

Model	FCB-1-EL2	FCB-2-EL2	FCB-3-EL2	FCB-5-EL2	FCB-10-EL2	FCB-15-EL2
Cable length	1 m	2 m	3 m	5 m	10 m	15 m
Usage	Extends the cable length between the Light Unit and the Control Unit.					

\* For details of other optional cables, refer to the CCS website or *General Catalog of LED Lighting for Machine Vision Applications*.

## Control Units

### Analog Control Unit (Constant voltage)

### PSB3-30024

- Constant voltage system
- Intensity control with variable voltage
- 300 W capacity (EL connectors: 150 W max./connector)
- AC input
- 1 channel (2 connectors)
- 3 ways of external control in a single Unit
  - Parallel communications
  - Analog input
  - EIA-485 communications



Refer to the CCS website.



### Digital Control Unit

### PD3-10024-8 Series

- PWM intensity control
- 95 W capacity (One EL connector)
- AC input
- 3 ways of external control
  - Parallel communications
  - Ethernet communications
  - EIA-485 communications

\* Custom products with a PWM frequency of 500 kHz are also available. Please contact your CCS sales representative for details.



Refer to the CCS website.



## CAUTION

- To ensure proper and safe use of the product, please read the instruction Guide completely before using the product.
- The design and specifications of this product are subject to change without notification for product improvement.
- The workpiece imaging examples included in this pamphlet are intended to serve only as references to help you select a suitable Light Unit. Please verify the functionality and conditions required for your particular application before you make a final selection. The sample workpieces used in this pamphlet have been processed specifically for sample imaging. They are not intended to represent product quality and performance.



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