CCS
CREATIVE CUSTOMER SATISFACTION

LIGHTING SOLUTION

LED Light Units for Line Scan Applications
LNSP-FN Series

LNSP High-output Models

High Output and High Uniformity
Error Detection to Avoid Problems
Constant Current Control

Emitting Surface Lengths from 100 to 1,500 mm

LED Light Units for Line Scan Applications

LNSP-FN Series

LNSP High-output Models

Features | High-output Irradiation | Highly Uniform Irradiation | Constant-current Control | Error Detection (Control Unit)

- Cooling fan error detection
- LED open circuit and short circuit detection

Applications | Dark Field Applications | Bright Field Applications

Illuminance: 900,000 lx *LWD = 50 mm

Increase your inspection speed in line scan applications.

Illuminance (LWD Characteristic)

* Actual measurement values at 100% intensity and the specified radiated distances. Results may vary for individual Units.

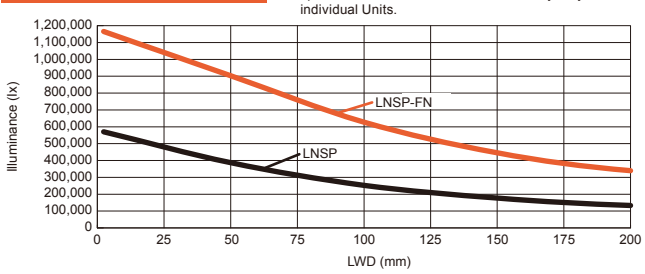
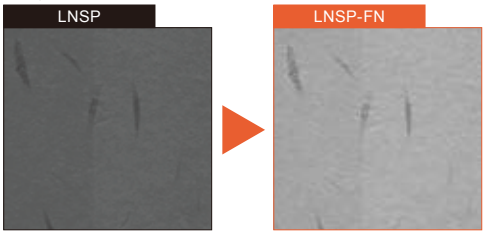


Image Comparison for Japanese Paper



Ideal for applications that require high-speed image processing.

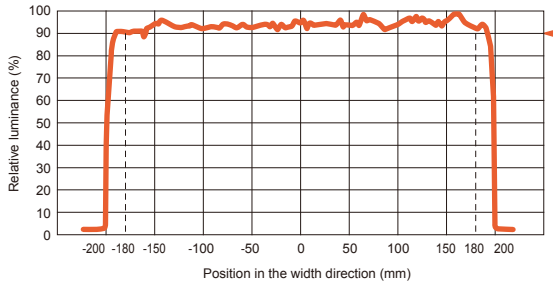
Brightness Increased! More than 2x sensitivity

*Brightness will vary based on the camera's spectral response.

High Uniformity

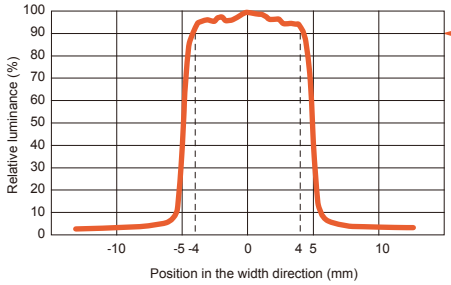
Luminance Distribution (Emitting Surface) LED Light Unit used: LNSP-400SW-FN *The data provided here is for reference only. Results for individual Units may vary.

Long Side Direction



Output of 90% or higher for effective emitting surface of 360 mm.

Short Side Direction



Output of 90% or higher for approx. 8-mm width

Lineup with Light-emitting Surface Lengths from 100 mm to 1,500 mm

Specify the emitting surface length in 100-mm increments.
We provide you with the right length of Light Unit for your specific needs.

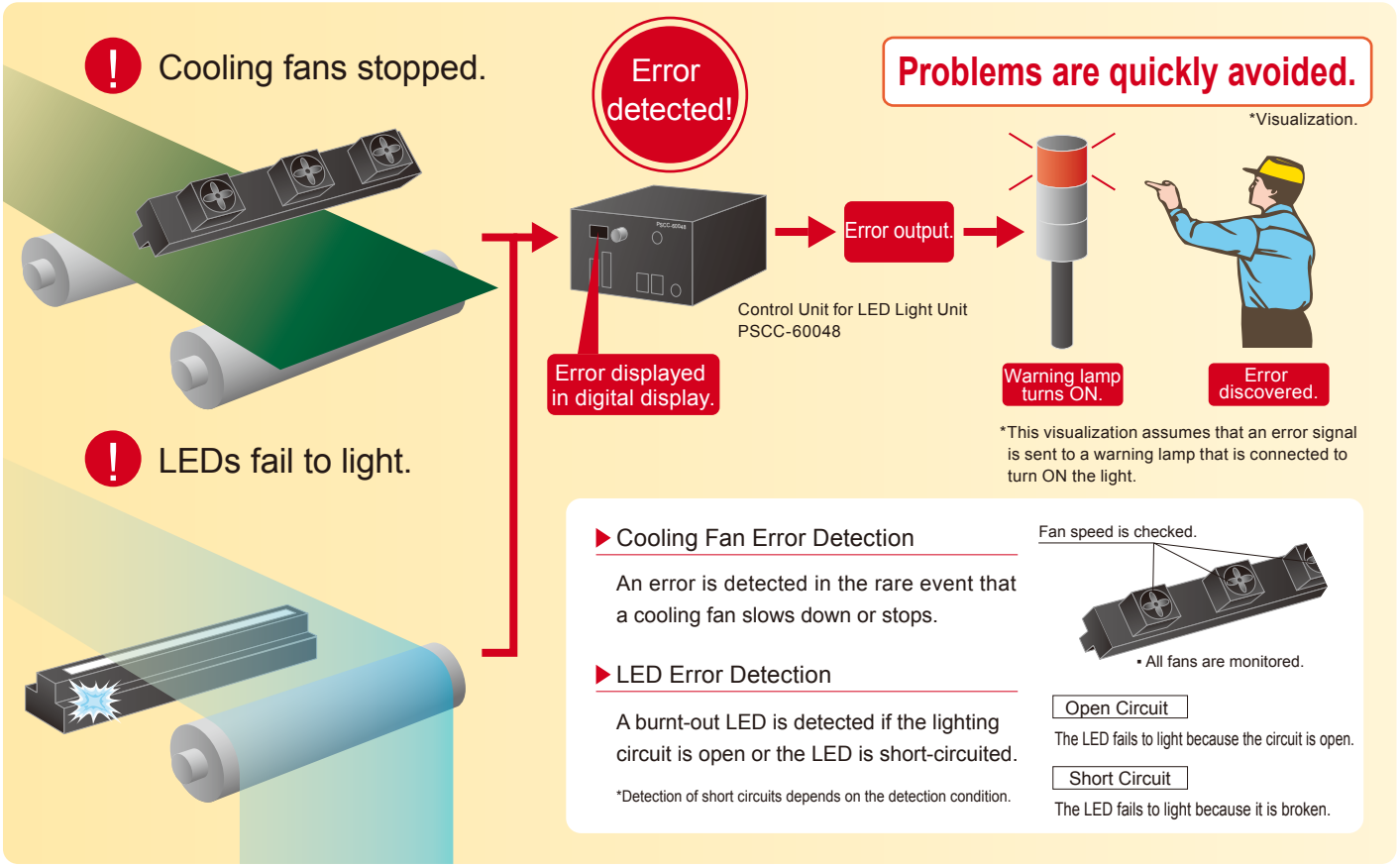
You can specify lengths in 100-mm increments between 100 mm...

...and 1,500 mm.

You can order custom lights with emitting surface lengths up to 3,000 mm. For details, please contact a CCS sales office.

Error Detection

Notification of Light Unit Errors



Cooling Fan Error Detection

An error is detected in the rare event that a cooling fan slows down or stops.

Fan speed is checked.

▪ All fans are monitored.

LED Error Detection

A burnt-out LED is detected if the lighting circuit is open or the LED is short-circuited.

*Detection of short circuits depends on the detection condition.

Open Circuit

The LED fails to light because the circuit is open.

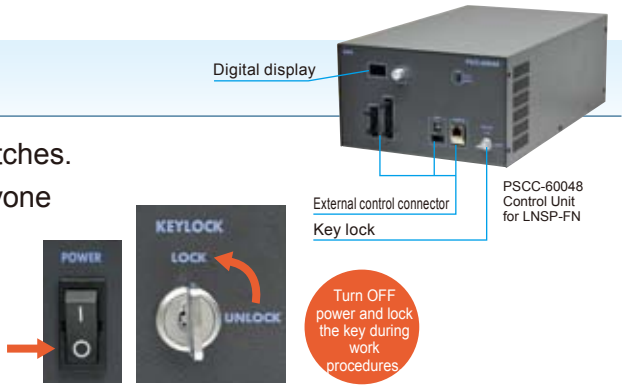
Short Circuit

The LED fails to light because it is broken.

Increased Safety with Interlock

Maintain safety during work with the power OFF and key switches. You can prevent the Light Units from being turned ON by anyone but the key manager, or from being turned ON accidentally when setting up Light Units or performing maintenance.

*Locking the light intensity is also possible when using parallel communications for external control.
*Refer to NTLPxREFERENCE *PSCC-60048 Control Units for LED Light Units User Manual* for specific application information.



Ethernet Communications

You can build a Light Unit control system based on Ethernet communications. Also, you can control the Light Units with parallel or EIA-485 communications.

Ethernet Communications Specifications

Communications protocol	TCP/IP UDP/IP
Standard	IEEE 802.3, 802.3u, 802.3x
Baud rate	10 Mbps or 100 Mbps (Automatically detected.)
Transmission medium	10Base-T or 100Base-TX

Parallel Communications Connection Specifications

Rated input voltage	24 VDC
Maximum input voltage	26.4 VDC
ON voltage/ON current	20 VDC min./6 mA min.
OFF voltage/OFF current	3 VDC max./1 mA max.
Response time	Approx. 100 ms
Input impedance	6.8 kΩ (per terminal)

EIA-485 Communications Specifications

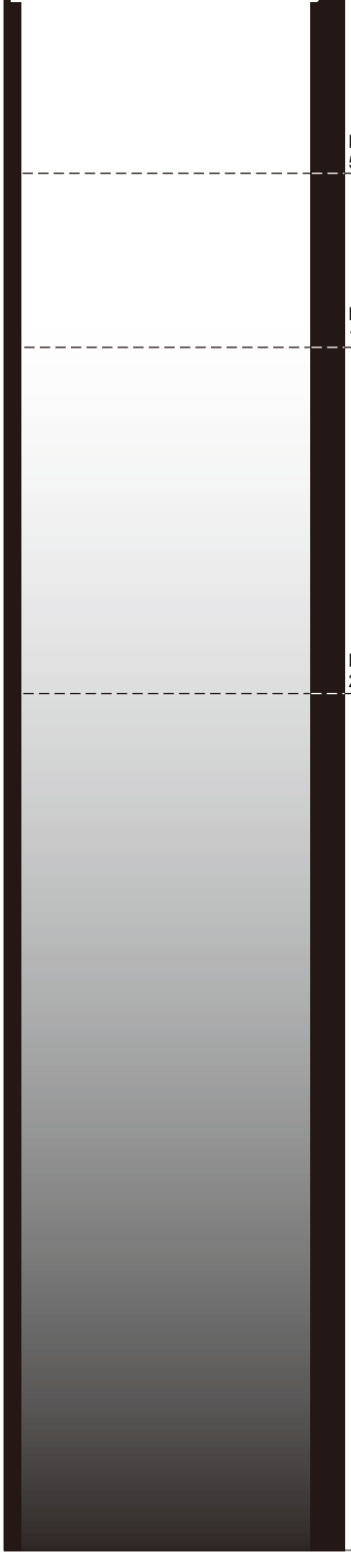
Protocol	EIA-485 compliant
Baud rate	19200 bps
Data bit length	8 bits
Parity bit	None
Stop bits	1 bit

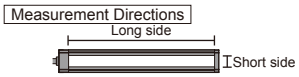
*Refer to NTLPxREFERENCE *PSCC-60048 Control Units for LED Light Units User Manual* for specific application information.

LNSP-FN Data

Illuminance Distribution Graph

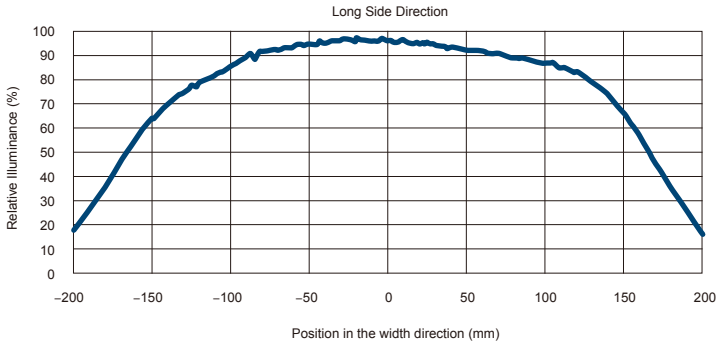
LED Light Unit used: LNSP-400SW-FN





Light Working Distance: 50 mm

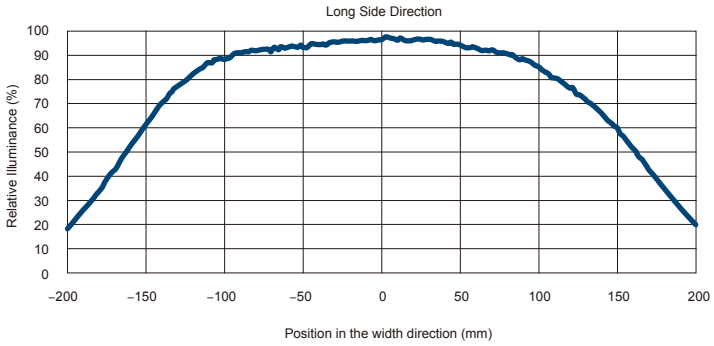
Measurement direction: Long side



*Actual measurement values at 100% intensity and light working distance of 50 mm. Results may vary for individual Units.

Light Working Distance: 100 mm

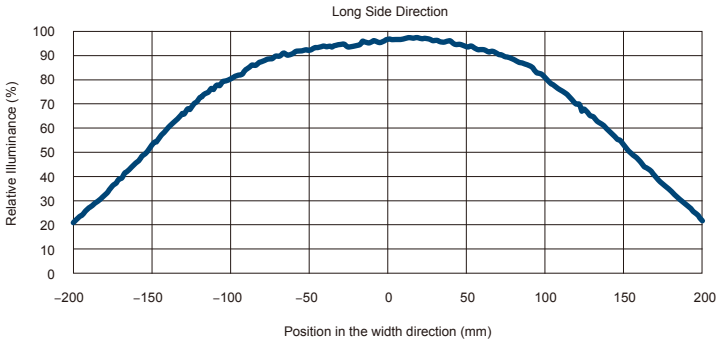
Measurement direction: Long side



*Actual measurement values at 100% intensity and light working distance of 100 mm. Results may vary for individual Units.

Light Working Distance: 200 mm

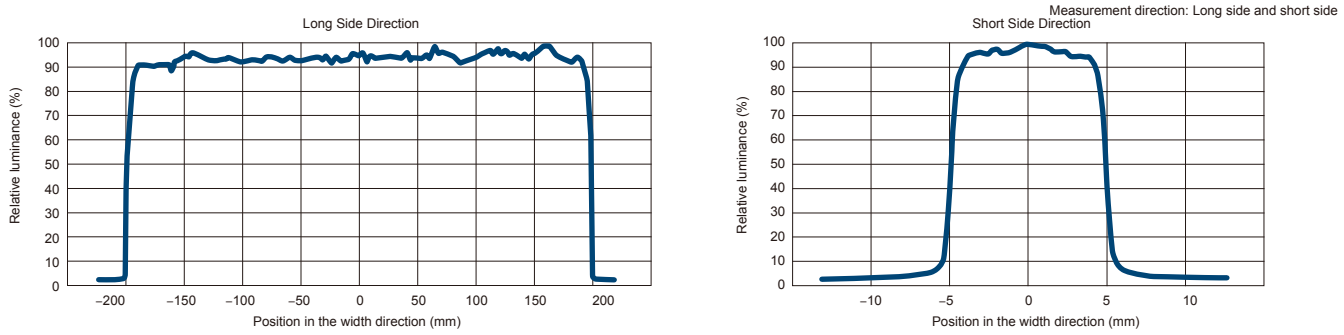
Measurement direction: Long side



*Actual measurement values at 100% intensity and light working distance of 200 mm. Results may vary for individual Units.

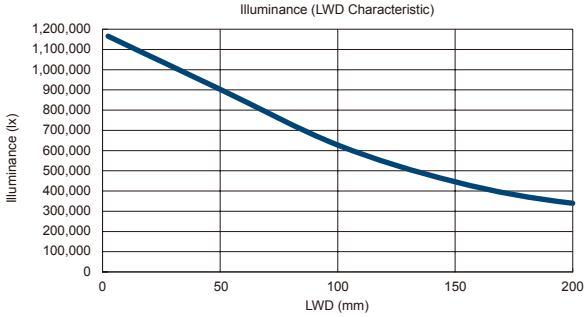
LNSP-FN Data

Luminance Distribution (Emitting Surface) LED Light Unit used: LNSP-400SW-FN



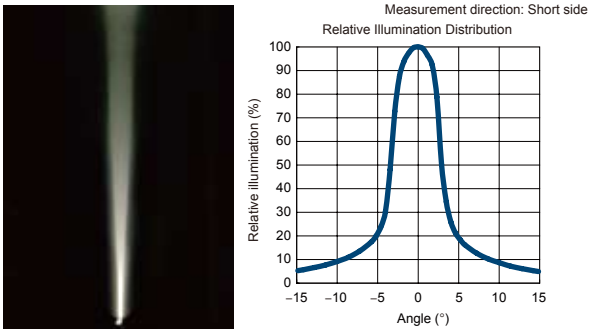
*The data provided here is for reference only. Results for individual Units may vary.

Illuminance Graph LED Light Unit used: LNSP-1500SW-FN



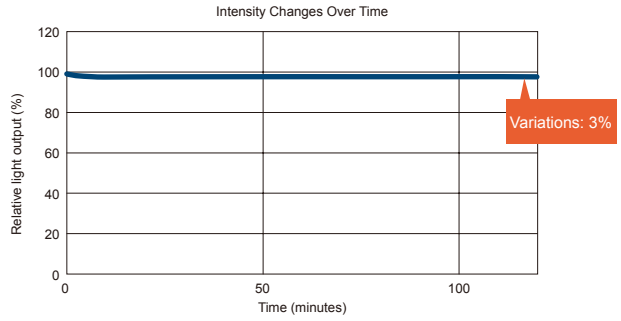
*Actual measurement values at 100% intensity and the specified light working distances. Results may vary for individual Units.

Light Distribution Characteristics LED Light Unit used: LNSP-400SW-FN



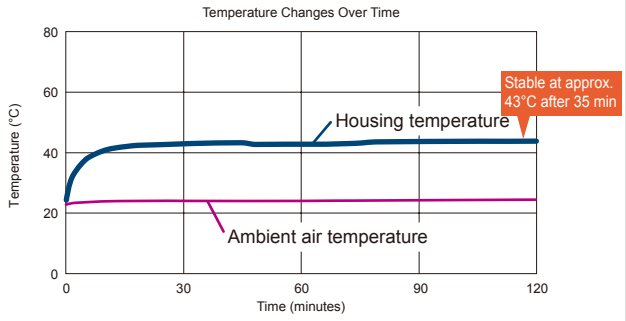
*The data provided here is for reference only. Results for individual Units may vary.

Intensity Changes over Time LED Light Unit used: LNSP-1500SW-FN



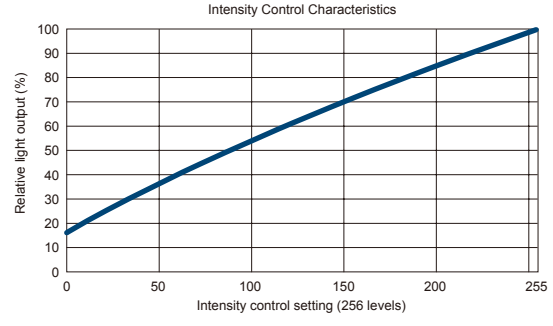
* Actual measurement values at 100% intensity, constant lighting, and an ambient air temperature of 25°C. Results may vary for individual Units.

Temperature Changes Over Time LED Light Unit used: LNSP-1500SW-FN



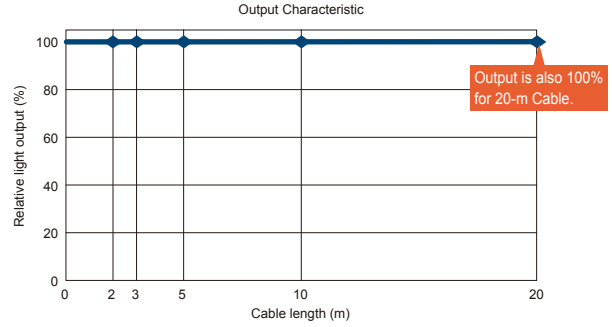
*Actual measurement values at 100% intensity and constant lighting. Results may vary for individual Units.

Light Output Characteristics LED Light Unit used: LNSP-1500SW-FN



*Actual measurement values with a PSCC-60048 Analog Control Unit. Results may vary for individual Units.

LED Light Unit Cable Length vs. Output Characteristic LED Light Unit used: LNSP-1500SW-FN

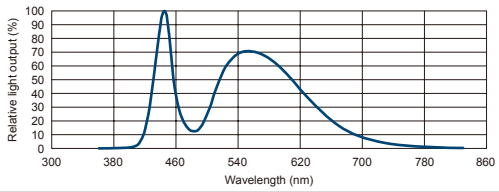


*Actual measurement values at 100% intensity and constant lighting. Results may vary for individual Units.

STEMMER IMAGING

LNSP-FN series

Specifications

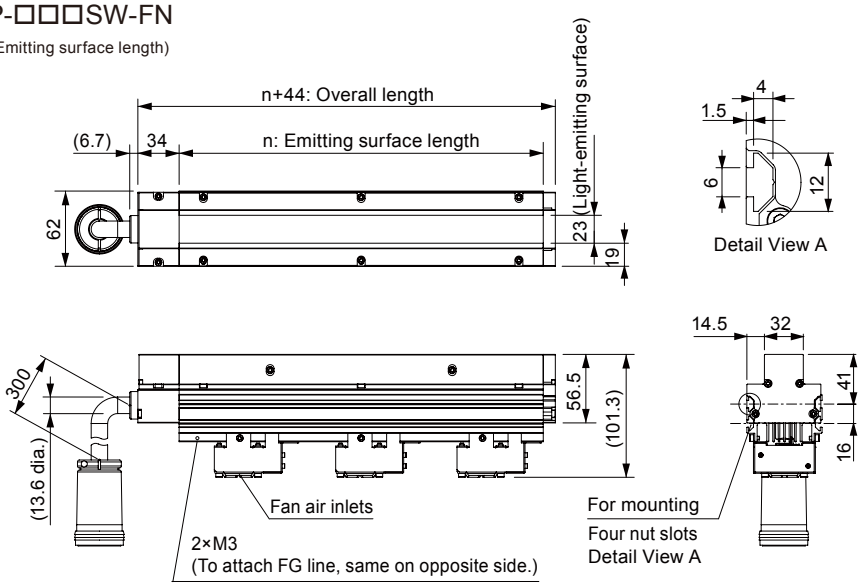
Direct number	1600
LED color	White (SW)
Correlated color temperature	5,800 K (typ.)
Case material	Acrylic, aluminum alloy, POM, and steel plates
Cable length	300 mm
Connectors	Metal Connector (PRC04-12A26S-37M18)
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)
CE Marking	Safety standards: Conforms to EN 62471, EMC standard: Conforms to EN61000-6-2 and EN 61000-6-4.
Environmental regulation	RoHS compliant
Cooling method	Forced air cooling
Accessories	Frame nuts (four for emitting surface length up to 1,000 mm, seven for emitting surface length over 1,100 mm), one FG line (2 m), one set screw (M3)
Spectral distribution	

Model	Light-emitting surface length	Power consumption (max., including fans)	Weight (max.)
LNSP-100SW-FN	100 mm	41 W	900 g
LNSP-200SW-FN	200 mm	81 W	1,400 g
LNSP-300SW-FN	300 mm	117 W	1,900 g
LNSP-400SW-FN	400 mm	157 W	2,400 g
LNSP-500SW-FN	500 mm	192 W	2,900 g
LNSP-600SW-FN	600 mm	233 W	3,400 g
LNSP-700SW-FN	700 mm	268 W	3,900 g
LNSP-800SW-FN	800 mm	309 W	4,400 g
LNSP-900SW-FN	900 mm	345 W	4,900 g
LNSP-1000SW-FN	1,000 mm	384 W	5,500 g
LNSP-1100SW-FN	1,100 mm	425 W	6,000 g
LNSP-1200SW-FN	1,200 mm	460 W	6,500 g
LNSP-1300SW-FN	1,300 mm	501 W	7,000 g
LNSP-1400SW-FN	1,400 mm	536 W	7,500 g
LNSP-1500SW-FN	1,500 mm	576 W	8,000 g

Dimension Diagram (mm)

LNSP-□□□SW-FN

(□□□: Emitting surface length)



Model	n	No. of cooling fans
LNSP-100SW-FN	100	1
LNSP-200SW-FN	200	2
LNSP-300SW-FN	300	3
LNSP-400SW-FN	400	4
LNSP-500SW-FN	500	5
LNSP-600SW-FN	600	6
LNSP-700SW-FN	700	7
LNSP-800SW-FN	800	8
LNSP-900SW-FN	900	9
LNSP-1000SW-FN	1,000	10
LNSP-1100SW-FN	1,100	11
LNSP-1200SW-FN	1,200	12
LNSP-1300SW-FN	1,300	13
LNSP-1400SW-FN	1,400	14
LNSP-1500SW-FN	1,500	15

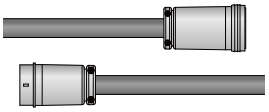
CE

Options

LED Light Unit Cables

These cables are used to connect LED Light Units to Control Units.
Use the Cable that is suitable for your installation site.

QCB Series



Cable diameter: 16.5 mm
Allowable cable bending radius: 99 mm

Direct number	3000815	3000816	3000817	3000818	3000819
Model	QCB-2	QCB-3	QCB-5	QCB-10	QCB-20
Cable length	2 m	3 m	5 m	10 m	20 m
Weight (max.)	1.1 kg	1.5 kg	2.4 kg	4.6 kg	8.9 kg

Control Units for LNSP-FN

Analog Control Unit for LED Light Unit: PSCC-60048

Features

- Constant-current system.
- Light intensity control to 256 levels.
- 1 channel/1 connector (37-pin metal connector)
- Output: 582 W
- Use Ethernet, parallel, or EIA-485 communications for external control.
- External controls (Dimming control and ON/OFF control)
- Error detection for cooling fan error, LED open circuit, LED short circuit, etc.
- Interlock with key switch or external control via parallel communications

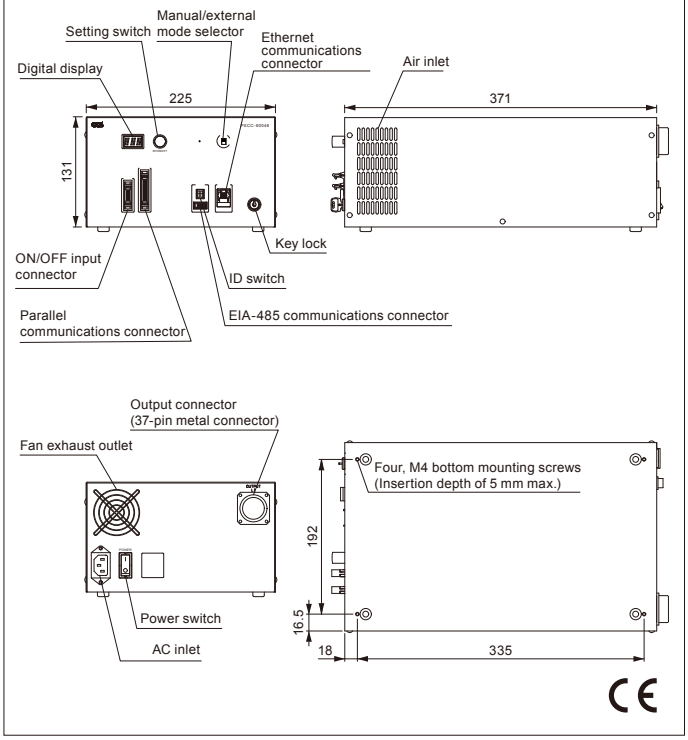
Front View

Rear View

Specifications

Model		PSCC-60048	
Direct number		2000846	
Lighting method		Constant lighting	
Drive method		Constant-current system	
Light control method		Variable current control	
Number of channels		1 channel	
Applicable Light Units (rated)		43 VDC max., 582 W max. (including 30 W max. for fans)	
Light intensity control		Manual and external intensity control	Front manual/external switch (MODE)
	Manual	Set any of 256 levels via the setting switch. Press and hold the switch for 2 seconds to lock the intensity value.	
	External	Parallel communications	8-bit intensity value setting (B0 to B7) and write signal (WR)
		EIA-485 communications	Command input through EIA-485 communications
		Ethernet communications	Command input via TCP/IP or UDP/IP communications
		External control mode can be selected by pushing the setting switch while turning ON the power to the Control Unit.	
Lighting control		Parallel bit input	OFF signal (ON/OFF)
		EIA-485 communications	Command input through EIA-485 communications
		Ethernet communications	Command input via TCP/IP or UDP/IP communications
EIA-485 communications settings		ID	Set via the front ID switch (00 to 03). Maximum of 4 connected Units.
		Terminating resistance	Set via the front ID switch. (Terminating resistance is connected only when ID is set to 00.)
Error detection display		LED burnout detection, open circuit	Front digital "E01" display
		LED burnout detection, short circuit	Front digital "E02" display
		Light Unit fan slowdown or stoppage	Front-panel digital "F01" to "F15" display
		Communications error detection	Front digital "E04" display
		Connector unconnected detection	Front digital "E04" display
		Internal Control Unit error detection	Front digital "E05" display
Error detection output	Parallel communications	Output to pins 19 and 20. Photocoupler isolation. Open-collector output. Closed for alarm (Load current: 10 mA max.)	
	EIA-485 communications	Confirmed with status command via EIA-485 communications. (Command sent at error occurrence.)	
	Ethernet communications	Confirmed with status command via TCP/IP or UDP/IP communications. (Command sent at error occurrence.)	
Input power		100 to 240 VAC (+10%, −15%), 50/60 Hz	
Power consumption (typical)		750 VA	
Operating temperature and humidity		Temperature: 0 to 40°C, Humidity: 20% to 85% RH (with no condensation)	
Storage temperature and humidity		Temperature: −20 to 60°C, Humidity: 20% to 85% RH (with no condensation)	
Cooling method		Forced air cooling	
CE Marking		Safety standard: Conforms to EN 61010-1, EMC standard: Conforms to EN 61326-1, Class A.	
Environmental regulation		RoHS compliant	
Material, coating, and surface processing		Steel plate, thickness of cover: 1.0, thickness of chassis: 2.0, N3 leather tone finish	
Weight		7,000 g max.	
Accessories		2 meter long 3-prong power cord with ground terminal (1), keys (2)	

Dimension Diagram (mm)



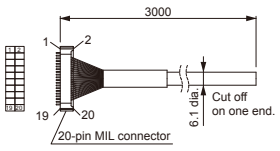
Optional External Control Cables

Dimension Diagrams (mm)

These Cables are used for parallel or EIA-485 communications. Select the right cable for the required control method.

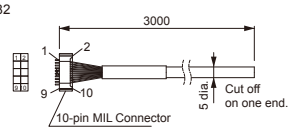
Parallel Communications Cable

Direct number: 3000683
Model: EXCB2-M20-3



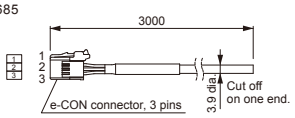
ON/OFF Input Cable

Direct number: 3000682
Model: EXCB2-M10-3



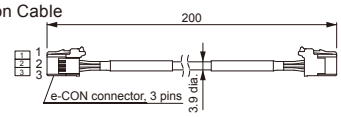
EIA-485 Serial Communications Cable

Direct number: 3000685
Model: EXCB2-E3-3



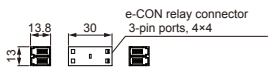
EIA-485 Communications Junction Cable

Direct number: 3000721
Model: EXCB2-E3-E3-0.2



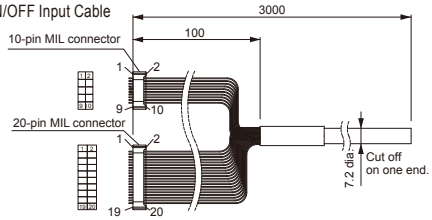
Relay Connector

Direct number: 3000720
Model: ECNR-E3CN4



Parallel Communications and ON/OFF Input Cable

Direct number: 3000684
Model: EXCB2-M10M20-3



STEMMER IMAGING

LED Light Units for Line Scanning

LNSP Series

Dark Field Applications

Direct No. 1500

At 400,000 lx, these Light Units represent the brightest class in the industry for natural air cooling. Light diffusion is suppressed with a unique radiation structure to minimize brightness changes for distance. This lets you flexibly set the distance between the inspection object and Light Unit. We can manufacture light-emitting surface lengths from 100 mm to 1,000 mm in 100-mm increments.

*Actual measurement result for a radiated distance of 50 mm.

LN-HK-STK Series

Dark Field Applications

Direct No. 1290

Cylindrical lenses enable the radiation of focused line light. There is a selection of two light-emitting surface lengths: 60 mm and 200 mm. You can change the position of the Lens Unit on the end to flexibly set the radiated light focal distance or width.

HLND Series

R-type Light Units — Dark Field Applications

T-type Light Units — Bright Field Applications

Direct No. 1280

R-type Light Units: The use of a highly transmissive diffusion plate achieves a high output that is ideal for diffused lighting. T-type Light Units: The use of a widely diffusive diffusion plate achieves a highly uniform output that is ideal for flat lighting. We can manufacture light-emitting surface lengths for either type from 100 mm to 2,700 mm in 100-mm increments.

LT Series

Bright Field Applications

Direct No. 1281

Unique optics achieve the twin goals of high uniformity and high luminance. They enable highly precise inspections, and can also be used for high-speed scan rates. We can manufacture light-emitting surface lengths from 100 mm to 1,800 mm in 100-mm increments.

Direct Numbers:

You can easily access the information page for any of our products by entering the product's 7-digit direct number in the designated box on the CCS website (image processing page).

Caution

- To ensure proper and safe use of the product, please read the Instruction Guide completely before using the product.
- For product improvement, specifications and designs are subject to change without notice.

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CCS Creative Customer Satisfaction

CCS Inc.