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  \(^*\)**

Increase your inspection speed in line scan applications.

Image Comparison for Japanese Paper

Ideal for applications that require high-speed image processing.

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

**High Uniformity**

LED Light Unit used: LNSP-400SW-FN

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

**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 fans stopped.

LEDs fail to light.

Problems are quickly avoided.

Error output

Error displayed in digital display.

Control Unit for LED Light Unit
PSCC-60048

Warning lamp turns ON.

Error detected!

Error discovered.

Communications protocol
Standard
Transmission medium

TCP/IP  UDP/IP
IEEE 802.3, 802.3u, 802.3x
10 Mbps or 100 Mbps (Automatically detected.)
10Base-T or 100Base-TX

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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications protocol</td>
<td>TCP/IP, UDP/IP</td>
</tr>
<tr>
<td>Standard</td>
<td>IEEE 802.3, 802.3u, 802.3z</td>
</tr>
<tr>
<td>Interface</td>
<td>100Base-T or 100Base-TX</td>
</tr>
</tbody>
</table>

Parallel Communications Connection Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>EIA-485 compliant</td>
</tr>
<tr>
<td>Baud rate</td>
<td>19200 bps</td>
</tr>
<tr>
<td>Data bit length</td>
<td>8 bits</td>
</tr>
<tr>
<td>Parity bit</td>
<td>None</td>
</tr>
<tr>
<td>Stop bit</td>
<td>1 bit</td>
</tr>
</tbody>
</table>

*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

Light Working Distance: 100 mm
Measurement direction: Long side

Light Working Distance: 200 mm
Measurement direction: Long side

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

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

*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.

**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.

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

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

**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.

**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.

---

4
Specifications

<table>
<thead>
<tr>
<th>Direct number</th>
<th>1600</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED color</td>
<td>White (SW)</td>
</tr>
<tr>
<td>Correlated color temperature</td>
<td>5,800 K (typ.)</td>
</tr>
<tr>
<td>Case material</td>
<td>Acrylic, aluminum alloy, POM, and stainless steel plates</td>
</tr>
<tr>
<td>Cable length</td>
<td>300 mm</td>
</tr>
<tr>
<td>Connectors</td>
<td>Metal Connector (PTC04-12A26G-37M18)</td>
</tr>
<tr>
<td>Operating environment</td>
<td>Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)</td>
</tr>
<tr>
<td>Storage environment</td>
<td>Temperature: -20 to 80°C, Humidity: 20% to 85% (with no condensation)</td>
</tr>
<tr>
<td>CE Marking</td>
<td>Safety standards: Conforms to EN 60511, EMC standard: Conforms to EN61000-6-2 and EN 61000-6-4</td>
</tr>
<tr>
<td>Environmental regulation</td>
<td>RoHS compliant</td>
</tr>
<tr>
<td>Cooling method</td>
<td>Forced air cooling</td>
</tr>
<tr>
<td>Accessories</td>
<td>Frame rail (for emitting surface length up to 1,000 mm, seven for emitting surface length over 1,100 mm), one FG line (2 m long), one set screw (M3)</td>
</tr>
</tbody>
</table>

Spectral distribution

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Relative light output (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>100</td>
</tr>
<tr>
<td>380</td>
<td>80</td>
</tr>
<tr>
<td>460</td>
<td>60</td>
</tr>
<tr>
<td>540</td>
<td>40</td>
</tr>
<tr>
<td>620</td>
<td>20</td>
</tr>
<tr>
<td>700</td>
<td>10</td>
</tr>
<tr>
<td>780</td>
<td>5</td>
</tr>
<tr>
<td>860</td>
<td>2</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable length</th>
<th>Weight (max.)</th>
<th>Operating environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCB-2</td>
<td>2 m</td>
<td>1.1 kg</td>
<td>Temperature: 0 to 40°C, Humidity: 20% to 85%</td>
</tr>
<tr>
<td>GCB-3</td>
<td>3 m</td>
<td>1.5 kg</td>
<td></td>
</tr>
<tr>
<td>GCB-5</td>
<td>5 m</td>
<td>2.4 kg</td>
<td></td>
</tr>
<tr>
<td>GCB-10</td>
<td>10 m</td>
<td>4.6 kg</td>
<td></td>
</tr>
<tr>
<td>GCB-20</td>
<td>20 m</td>
<td>8.9 kg</td>
<td></td>
</tr>
</tbody>
</table>

LED Light Unit Cables

These cables are used to connect LED Light Units to Control Units.

For mounting

Four nut slots

Fan air inlets

2×M3 (To attach FG line, same on opposite side.)

For mounting

Four nut slots

Detail View A

Dimension Diagram (mm)

LNSP-FN series
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

**Specifications**
- Model: PSCC-60048
- Direct number: 2000646
- Light control method: Constant lighting
- Drive method: Constant-current system
- Light control method: Variable current control
- Number of channels: 1 channel
- Output power: 582 W
- Light intensity control: 1 channel (37-pin metal connector)
- Parallel communications: B-type CURRENT value setting
- EIA-485 communications: Command input via EIA-485 communications
- Ethernet communications: Command input via TCP/IP or UDP/IP communications
- Error detection: Cooling fan error, LED open circuit, LED short circuit, etc.
- Accessories: 3 meter long 3-prong power cord with ground terminal (1), keys (2), 7000 g max.
- Steel plate, thickness of cover: 1.0, thickness of chassis: 2.0, N3 leather tone finish
- Cooling method: Forced air cooling
- Storage temperature and humidity: Temperature: 0 to 40°C, Humidity: 20% to 85% RH (with no condensation)
- Operating temperature and humidity: Temperature: 20 to 60°C, Humidity: 20% to 85% RH (with no condensation)
- Power consumption (typical): 43 VDC max., 582 W max. (including 30 W max. for fans)
- Input power: 1channel, 750 VA
- Rated frequency (50/60 Hz)
- Safety standard: CE Marking: Conforms to EN 61010-1, EMC standard: Conforms to EN 61326-1, Class A
- Environment: RoHS compliant
- Panel thickness: 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)

**Optional External Control Cables**
- 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-M9D-3
- **ON/OFF Input Cable**
  - Direct number: 3000682
  - Model: EXCB2-M10-3
- **EIA-485 Serial Communications Cable**
  - Direct number: 3000685
  - Model: EXCB2-63-3
- **Parallel Communications and ON/OFF Input Cable**
  - Direct number: 3000684
  - Model: EXCB2-M10M2D-3

**Dimension Diagrams**

**Parallel Communications Cable**
- Direct number: 3000672
- Model: EXCB2-E3-E3-D-2

**EIA-485 Communications Junction Cable**
- Direct number: 3000671
- Model: EXCB2-E3-E3-0.2

**ON/OFF Input Cable**
- Direct number: 3000682
- Model: EXCB2-M10-3

**EIA-485 Serial Communications Cable**
- Direct number: 3000685
- Model: EXCB2-63-3

**Parallel Communications and ON/OFF Input Cable**
- Direct number: 3000684
- Model: EXCB2-M10M2D-3
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**
- **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).

---

CCS, LIGHTING SOLUTION, and LNSP are all registered trademarks or trademarks of CCS, Inc.

**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.

---

**CCS Inc.**

**Headquarters**
Shimodaichiu-agaru, Karasuma-dori, Kamigyo-ku, Kyoto 602-8011 Japan
Phone: +81-75-415-8284 / Fax: +81-75-415-8278
URL: http://www.ccs-grp.com  E-mail: intsales@ccs-inc.co.jp

Copyright(c) 2012 CCS Inc. All Rights Reserved.