Digital Control Units for LED Light Units: PD3 Series

High Performance and with Choice of External Control

Applicable Light Units
- 24V Light Units
- HLV2-series Spotlights
- High-output 24V Light Units

PD3 Series
- PD3-3024-3 Series
- PD3-5024-4 Series
- PD3-10024-8 Series

Patent Pending
Digital Control Units with High Performance and with Choice of External Control

**PD3 series**

Select from a total of nine models in three groups:

3-channel 28-W Models, 4-channel 46-W Models, and 8-channel 95-W Models.

- **Compact and Easy to Use:** 3-channel, 28-W Models
  - PD3-3024-3 Control Units

- **Ample Capacity and Many Connectable Light Units:** 4-channel, 46-W Models
  - PD3-5024-4 Control Units

- **Connects to High-output Light Units:** 8-channel, 95-W Models
  - PD3-10024-8 Control Units
<table>
<thead>
<tr>
<th>Model numbers (PD3-</th>
<th>PD3-3024-3 Control Units</th>
<th>PD3-5024-4 Control Units</th>
<th>PD3-10024-8 Control Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of channels</td>
<td>3 channels</td>
<td>4 channels</td>
<td>8 channels</td>
</tr>
<tr>
<td>Rated capacity</td>
<td>Total for all channels</td>
<td>Total for all channels</td>
<td>Total for all channels</td>
</tr>
<tr>
<td></td>
<td>28 W</td>
<td>46 W</td>
<td>95 W</td>
</tr>
<tr>
<td>24V Light Units</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
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<tr>
<td>HLV2-series</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>Spotlights</td>
<td>Supported.</td>
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<td>Supported.</td>
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<tr>
<td>Parallel</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>communications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIA-485 communications</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>communications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External light</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>intensity control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON/OFF control</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>(External trigger</td>
<td>(External trigger</td>
<td>(External trigger</td>
<td>(External trigger</td>
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<tr>
<td>input)</td>
<td>input or command</td>
<td>input or command</td>
<td>input or command</td>
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<tr>
<td></td>
<td>input via EIA-485</td>
<td>input via EIA-485</td>
<td>input via EIA-485</td>
</tr>
<tr>
<td></td>
<td>communications)</td>
<td>communications)</td>
<td>communications)</td>
</tr>
<tr>
<td>Strobe lighting</td>
<td>Supported.</td>
<td>Supported.</td>
<td>Supported.</td>
</tr>
<tr>
<td>(24V Light Units</td>
<td>(External trigger</td>
<td>(External trigger</td>
<td>(External trigger</td>
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<td>only)</td>
<td>input)</td>
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<td>input)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting times</td>
<td>40 μs, 80 μs, 120 μs,</td>
<td>40 μs, 80 μs, 120 μs,</td>
<td>40 μs, 80 μs, 120 μs,</td>
</tr>
<tr>
<td></td>
<td>200 μs, 600 μs, 1 ms,</td>
<td>400 μs, 1 ms, 4 ms,</td>
<td>400 μs, 1 ms, 4 ms,</td>
</tr>
<tr>
<td></td>
<td>10 ms, 20 ms, or 40 ms</td>
<td>10 ms, 20 ms, or 40 ms</td>
<td>10 ms, 20 ms, or 40 ms</td>
</tr>
<tr>
<td>Lighting delay time</td>
<td>10 μs max.</td>
<td>20 μs max.</td>
<td>20 μs max.</td>
</tr>
<tr>
<td>Power consumption</td>
<td>78 VA typ.</td>
<td>70 VA typ.</td>
<td>130 VA typ.</td>
</tr>
<tr>
<td>Size (W × D × H)</td>
<td>84 mm × 82.6 mm × 120 mm</td>
<td>197 mm × 82.6 mm × 120 mm</td>
<td>220 mm × 82.6 mm × 120 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>600 g max.</td>
<td>1,200 g max.</td>
<td>1,500 g max.</td>
</tr>
</tbody>
</table>

*1 The HLV-14-R/-SW/-BL/GR and HLV-27-series Spotlights cannot be used.
*2 Strobe lighting is not possible for HLV2-series Spotlights.
*3 These Control Units do not include an overdrive.
*4 HLV2-series Spotlights: 3.9 W (700 mA) max. per connector.
*5 24V Light Units: 60 W max. per connector.
*6 High-output Light Unit connector only: 95 W max.
PD3 series
PD3-series Basic Performance

1 One Power Supply for Constant Lighting, ON/OFF Lighting, and Strobe Lighting.

PWM control is possible at a frequency of 125 kHz. The light intensity can be adjusted to any of 256 levels. ON/OFF and strobe lighting control is synchronized with an external trigger signal. The lighting time can be set to any of 10 settings.

- Strobe Lighting Times
  - 40 µs, 80 µs, 120 µs, 200 µs, 600 µs, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms

  * Strobe lighting is not possible for HLV2-series Spotlights.

2 Easy to Use. Digital Displays for Easy Setting

The easy-to-use user interface emphasizes easy operation. The digital display and pushbutton dial are only part of the new design features of these Digital Control Units.

Quick Operation with a Pushbutton Dial
- Intensity setting to 256 levels.
- Strobe lighting time setting
- Setting lock

Press to select
Turn to adjust
Hold down to lock
The lineup includes models with external control through parallel, EIA-485, or Ethernet communications to suit any network environment.

### 3 Ethernet Communications.
Selection of Three Types of External Control

### 4 Standard DIN Rail Mounting.
Selection of Installation Method to Match the Site

*These installation examples show a PD3-3024-3 Control Unit.

### 5 Connection of Both 24V Light Units and HLV2-series Spotlights to 46-W or 95-W Control Units
Parallel Communications for Quick Changeover of Settings and High-speed Data Transfer.

**PD3-3024-3-PI**
- Capacity: 28 W
- 3 Channels
- Connects to 24V Light Units

**PD3-5024-4-PI**
- Capacity: 46 W
- 4 Channels
- Connects to 24V Light Units

**PD3-10024-8-PI**
- Capacity: 95 W
- 8 Channels
- Connects to HLV2 Spotlights

**External Light Intensity Control**
Control the light intensity to 256 levels with parallel communications.

**ON/OFF Control**
Turn the Light Units ON or OFF by inputting an external trigger signal.

**Strobe Lighting**
- 40 µs, 80 µs, 120 µs, 200 µs, 600 µs, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms

*These Control Units do not include an overdrive.

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**Examples of Combining External Control Cables**
*The External Control Cable is sold as an option.

- **External Control with Parallel Communications**
  - External Light Intensity Control
  - Parallel Communications Cable (EXCB2-M20-3)

- **External Control with Trigger Input**
  - ON/OFF or Strobe Control
  - Trigger Input Cable (EXCB2-M10-3)

- **External Control with Parallel Communications and Trigger Input**
  - External Light Intensity Control
  - ON/OFF or Strobe Control
  - Parallel Communications/Trigger Input Branch Cable (EXCB2-M10M20-3)

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**Communications Example**
- Parallel Signal Output
  - Channel numbers
  - Light Intensities
  - Strobe times, etc.

- PD3-series Control Unit (with Parallel Communications)

- All settings received in a batch.

- Settings are changed quickly.

- The settings are updated in a batch for the Light Unit on the specified channel.

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* These Control Units do not include an overdrive.
EIA-485 Serial Communications for ID Management on Multidrop Wiring. Manage Up to Four Control Units.

**Examples of Combining External Control Cables**

*The External Control Cable is sold as an option.*

- **External Control with EIA-485 Communications**
  - External Light Intensity Control
  - ON/OFF Control
  - EIA-485 Communications Cable (EXCB2-E3-3)

- **External Control with Trigger Input**
  - ON/OFF or Strobe Control
  - Trigger Input Cable (EXCB2-M10-3)

*You can also use the EIA-485 Communications Cable and the Trigger Input Cable together.*

**Communications Specifications**

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

*Maximum transmission distance: 30 m*

PD3-series Control Unit (with Ethernet Communications)

Manage individual Control Units with IP addresses.

Communications Example

Manage all Control Units that are assigned IP addresses.

ON/OFF or Strobe Control
External Control with Trigger Input

External Light Intensity Control
Control the light intensity to 256 levels with command inputs on Ethernet communications.

ON/OFF Control
• External trigger signal input
• Command input via Ethernet communications
Turn the Light Units ON or OFF with inputs.

Strobe Lighting
* Possible only for 24V Light Units.
Turn ON the Light Units for the set time after inputting the external trigger signal.

Strobe Lighting Times
40 μs, 80 μs, 120 μs, 200 μs, 600 μs, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms
* These Control Units do not include an overdrive.

Examples of Combining External Control Cables

External Control via Ethernet Communications
External Light Intensity Control
ON/OFF Control
Ethernet LAN cable

External Control with Trigger Input
ON/OFF or Strobe Control
Trigger Input Cable
(EXCB2-M10-3)

* The External Control Cable is sold as an option.

* You can also use the LAN cable and the Trigger Input Cable together.

Communications Specifications

<table>
<thead>
<tr>
<th>Communication protocol</th>
<th>TCP/IP, UDP/IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>IEEE802.3, IEEE802.3u, and IEEE802.3x</td>
</tr>
<tr>
<td>Band rate</td>
<td>10 Mbps/100 Mbps (Automatically detected)</td>
</tr>
<tr>
<td>Transmission medium</td>
<td>10Base-T or 100Base-TX</td>
</tr>
</tbody>
</table>

PC
Server
Server
Server
Other devices

Other devices

PD3-3024-3-EI
Capacity: 28 W
3 Channels
Connects to 24V Light Units

PD3-5024-4-EI
Capacity: 46 W
4 Channels
Connects to 24V Light Units
Connects to HLV2 Spotlights

PD3-10024-8-EI
Capacity: 95 W
8 Channels
Connects to 24V Light Units
Connects to HLV2 Spotlights
PD3-3024-3 Series

**Common Specifications**

- **Lighting method**: Constant lighting/strobe lighting
- **Drive method**: Constant-voltage system
- **Light intensity control method**: PWM control and lighting time control
- **Number of channels**: 3 channels
- **Applicable Light Units (rated)**: 24V DC input, Total for all channels: 28 W
- **PWM frequency**: 125 kHz
- **Error detection display**: Front-panel digital OCP display
- **Overcurrent protection**: Operates at 107% of rated output current or higher. Reset by pressing operation setting switch for at least 1 second or by cycling the power supply.
- **Input voltage (rated)**: 100 to 240V AC
- **Power consumption (typ.)**: 78 VA
- **Frequency**: 50/60 Hz
- **Output voltage (rated)**: 24V DC
- **Output current (rated)**: Total for 3 channels: 1.1 A
- **Operating temperature and humidity**: Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)
- **Storage temperature and humidity**: Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)
- **Cooling method**: Natural air cooling
- **CE Marking**: Safety standard: Conforms to EN 61010-1, EMC standard: Conforms to EN 61326, Class A.
- **Material and surface processing**: Material: Aluminum and resin, Surface processing: Blue alumite
- **Weight**: 600 g max.

**Accessories**: 2-m long 3-prong power cord with ground terminal

* Do not intentionally short-circuit the positive and negative output terminals.

**PD3-3024-3-PI (Control Unit with Parallel Communications) Specifications**

- **Direct number**: 2000775
- **Light intensity setting**: Manual
  - Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input
  - Command input via EIA-485 communications
- **Lighting mode setting**: Manual
  - Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: NPN transistor output between pins 19 (OC) and 20 (OE) of external control connector
  - Normal: Open    Overcurrent output detected: Closed
- **External control connector**: Trigger input
  - MIL connector, 10 pins
  - MIL connector, 20 pins

**PD3-3024-3-SI (Control Unit with EIA-485 Serial Communications) Specifications**

- **Direct number**: 2000777
- **Light intensity setting**: Manual
  - Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input or command input via EIA-485 communications
  - Command input via EIA-485 communications
- **Lighting mode setting**: Manual
  - Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: Command sent when overcurrent output is detected.
- **External control connector**: Trigger input
  - MIL connector, 10 pins
  - Lighting intensity/lighting mode setting
  - e-CON connector, 20 pins

**PD3-3024-3-EI (Control Unit with Ethernet Communications) Specifications**

- **Direct number**: 2000776
- **Light intensity setting**: Manual
  - Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input or command input via TCP/IP or UDP/IP communications
  - Command input via TCP/IP or UDP/IP communications
- **Lighting mode setting**: Manual
  - Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: Command sent when overcurrent output is detected.
- **External control connector**: Trigger input
  - MIL connector, 10 pins
  - Lighting intensity/lighting mode setting
  - RJ-45 connector

* 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).

**Dimension Diagrams (mm)**

- Control Unit with Parallel Communications
- Control Unit with EIA-485 Communications
- Control Unit with Ethernet Communications

* The Control Unit with EIA-485 or Ethernet Communications has the same dimensions as Control Units with Parallel Communications.
**PD3-5024-4 Series**

- **Common Specifications**
  - Lighting method: Constant lighting/strobe lighting
  - Drive method: 24V LIGHT connectors: Constant-voltage system, HLV LIGHT connectors: Constant-current system
  - Light intensity control method: 24V LIGHT connectors: PWM control and lighting time control, HLV LIGHT connectors: Variable-current control
  - Number of channels: 4
  - Applicable Light Units (rated): 24V LIGHT connectors: Light Units with 24V DC input, HLV LIGHT connectors: HLV2/HLV-series Spotlights, Total for 4 channels: 48 W
  - PWM frequency: 125 kHz
  - Error detection display: Front-panel digital OCF display: Overcurrent error, EFN display: Fan Stop Error, and EID display: ID error (HLV2/HLV-series Spotlights only)
  - Overcurrent protection: Operates at 70% of rated output current or higher. Restart by pressing operation setting switch for at least 1 second or by cycling the power supply
  - Input voltage (rated): 100 to 240V AC
  - Power consumption (typ.): 70 VA
  - Frequency: 50/60 Hz
  - Output voltage (rated): 24V DC
  - Output current (rated): Total for 4 channels: 1.91 A
  - Accessory:
    - Weight: 1,250 g max.
    - Dimensions: 169 x 82.6 x 82.6 mm
    - DIN rail mounting bracket
    - Rubber feet
  - CE Marking: Conforms to EN 61010-1, EMC standard: Conforms to EN 61326, Class A.
  - Material and surface processing:
    - Material: Aluminum and resin, Surface processing: Blue alumite
  - Cooling method: Forced air cooling
  - Operating temperature and humidity: Temperature: 20 to 60°C, Humidity: 20% to 85% (with no condensation)
  - Storage temperature and humidity: Temperature: ~20 to 60°C, Humidity: 20% to 85% (with no condensation)
  - Overcurrent protection:
    - Normal: Open
    - Overcurrent output detected: Closed
  - Error detection display:
    - Fan Stop Error
    - EID display: ID error (HLV2/HLV-series Spotlights only)
  - Overcurrent protection:
    - Normal: Open
    - Overcurrent output detected: Closed

- **PD3-5024-4-PI (Control Unit with Parallel Communications) Specifications**
  - Direct number: 2000775
  - Light intensity setting: Manual
  - ON/OFF setting: External trigger input
  - Lighting mode setting: Manual
  - Error detection output: NPN transistor output between pins 19 (OC) and 20 (OE) of external control connector
  - External control connector: Trigger input

- **PD3-5024-4-SI (Control Unit with EIA-485 Serial Communications) Specifications**
  - Direct number: 2000770
  - Light intensity setting: Manual
  - ON/OFF setting: External trigger input or command input via EIA-485 communications
  - Lighting mode setting: Manual
  - Error detection output: Command sent when overcurrent output is detected
  - External control connector: Trigger input

- **PD3-5024-4-EI (Control Unit with Ethernet Communications) Specifications**
  - Direct number: 2000779
  - Light intensity setting: Manual
  - ON/OFF setting: External trigger input or command input via TCP/IP or UDP/IP communications
  - Lighting mode setting: Manual
  - Error detection output: Command sent when overcurrent output is detected
  - External control connector: Trigger input

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**Dimension Diagrams (mm)**

- **Control Unit with Parallel Communications**
  - Digital display
  - Setting switch
  - Channel selection switch
  - External control connector
  - Manual/external mode selector
  - Trigger logic switch
  - Functional ground terminal

- **Control Unit with EIA-485 Communications**
  - External control connector
  - ID switch

- **Control Unit with Ethernet Communications**
  - External control reset switch
  - RJ-45 connector

*The Control Unit with EIA-485 in Ethernet Communications has the same dimensions as Control Units with Parallel Communications.*
**Common Specifications**

- **Lighting method**: Constant lighting/strobe lighting
- **Drive method**: 24V LIGHT connectors: Constant-voltage system, HLV LIGHT connectors: Constant-current system
- **Lighting intensity control method**: 24V LIGHT connectors: PWM control and lighting time control, HLV LIGHT connectors: Variable-current control
- **Number of channels**: 8 channels
- **Applicable Light Units (rated)**: 24V LIGHT connectors: Light Units with 24V DC input, HLV LIGHT connectors: HLV2/HLV-series Spotlights. Total for 8 channels: 95W (High-output Light Unit connector: 95W (1 connector))
- **PWM frequency**: 125kHz
- **Error detection display**: Front-panel digital OCP display: Overcurrent error, EFN display: Fan Stop Error, and EID display: ID error (HLV2/HLV-series Spotlights only)
- **Overcurrent protection**: Operates at 10% of rated output current or higher. Read by pressing operation setting switch for at least 1 second by cycling the power supply.

**Accessories**

- 2-m long 3-prong power cord with ground terminal, Base Brackets
- Material: Aluminum and resin, Surface processing: Blue anodized
- Weight: 1,500 g max.

**PD3-10024-8-P1 (Control Unit with Parallel Communications) Specifications**

- **Direct number**: 2000781
- **Light intensity setting**: Manual: Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input
- **Lighting mode setting**: Manual: Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: Normal: Open, Overcurrent output detected: Closed
- **External control connector**: Trigger input, MIL connector, 10 pins

**PD3-10024-8-S1 (Control Unit with EIA-485 Serial Communications) Specifications**

- **Direct number**: 2000783
- **Light intensity setting**: Manual: Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input or command input via EIA-485 communications
- **Lighting mode setting**: Manual: Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: Command sent when overcurrent output is detected.
- **External control connector**: Trigger input, MIL connector, 10 pins

**PD3-10024-8-E1 (Control Unit with Ethernet Communications) Specifications**

- **Direct number**: 2000782
- **Light intensity setting**: Manual: Set to any of 256 levels on front-panel setting switch.
- **ON/OFF setting**: External trigger input or command input via TCP/IP or UDP/IP communications
- **Lighting mode setting**: Manual: Set to any of 11 levels on front-panel setting switch.
- **Error detection output**: Command sent when overcurrent output is detected.
- **External control connector**: Trigger input, MIL connector, 10 pins

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**Dimension Diagrams**

* The Control Unit with EIA-485 or Ethernet Communications has the same dimensions as Control Units with Parallel Communications.
External Control Cables

- **Parallel Communications Cable**
  This Cable is used for external control with parallel communications. The channel, light intensity setting, and lighting mode (constant mode, ON/OFF mode, or strobe mode) can be selected.

- **Trigger Input Cable**
  This cable is used to input an external trigger signal using parallel bits. The external trigger signal can be used to turn Light Units ON or OFF, or to flash the strobes.

- **EIA-485 Serial Communications Cable**
  This Cable is used for external control with EIA-485 communications. The channel, light intensity setting, ON/OFF setting, and lighting mode (constant mode, ON/OFF mode, or strobe mode) can be selected.

- **EIA-485 Serial Communications Relay Cable**
  This Cable is required to connect two or more PD3-series Control Units with EIA-485 communications.

- **Parallel Communications/Trigger Input Branch Cable**
  This Cable includes the Parallel Communications Cable and the Trigger Input Cable in one cable.

Base Brackets

These Brackets are used to secure a PD3-series Control Unit to the floor, a shevel, or other surface.
* The Base Brackets are included with the PD3-5024-4 and PD3-10024-8 Control Units.

**Dimension Diagrams (mm)**

- **Parallel Communications Cable**
- **Trigger Input Cable**
- **EIA-485 Serial Communications Cable**
- **EIA-485 Serial Communications Relay Cable**
- **Parallel Communications/Trigger Input Branch Cable**

**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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