

Control Units for CCS LED Lights

Please select a best-suited control unit according to your intended use and objective.

Digital Control Units

PD3series

Select a Control Unit According to the Network System

The PD3-series Digital Control Units provide high performance and a choice of external control methods: parallel, EIA-485, or Ethernet communications. Depending on the outputs to the Lights, you can select from 3-channel 28 W Models, 4-channel 46 W Models, and 8-channel 95 W Models. The light intensity can be set to any of 256 different levels. Lighting control includes constant lighting, ON/OFF lighting, and strobe lighting.



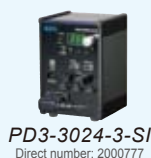
PD3-3024-3 Control Units

Compact and Easy to Use:
3-channel, 28 W Models



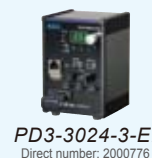
PD3-3024-3-PI
Direct number: 2000775

Parallel Communications
Output: 28 W
3 Channels
Connects to 24-V Lights



PD3-3024-3-SI
Direct number: 2000777

EIA-485 Communications
Output: 28 W
3 Channels
Connects to 24-V Lights



PD3-3024-3-EI
Direct number: 2000776

Ethernet Communications
Output: 28 W
3 Channels
Connects to 24-V Lights

PD3-5024-4 Control Units

Ample Capacity and Many
Connectable Lights:
4-channel, 46 W Models



PD3-5024-4-PI
Direct number: 2000778

Parallel Communications
Output: 46 W
4 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)



PD3-5024-4-SI
Direct number: 2000780

EIA-485 Communications
Output: 46 W
4 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)



PD3-5024-4-EI
Direct number: 2000779

Ethernet Communications
Output: 46 W
4 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)

PD3-10024-8 Control Units

Connects to High-output
Lights: 8-channel,
95 W Models



PD3-10024-8-PI
Direct number: 2000781

Parallel Communications
Output: 95 W
8 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)



PD3-10024-8-SI
Direct number: 2000783

EIA-485 Communications
Output: 95 W
8 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)



PD3-10024-8-EI
Direct number: 2000782

Ethernet Communications
Output: 95 W
8 Channels
Connects to 24-V Lights
Connects to HLV2 Series (Spotlights)

PD3-series Basic Performance

1 : One Control Unit for Constant Lighting, ON/OFF Lighting, and Strobe Lighting

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

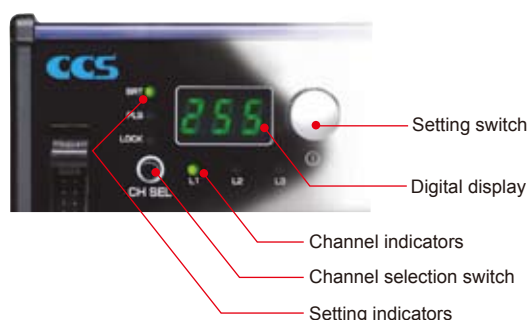
Perform PWM control at a frequency of 125 kHz. The light intensity can be adjusted to any of 256 levels. ON/OFF and strobe lighting control is synchronized with an external trigger signal. The lighting time can be set to any of 10 steps.

■ Strobe lighting time: 40 μ s, 80 μ s, 120 μ s, 200 μ s, 600 μ s, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms

*These Control Units do not include an overdrive function.

2 : Easy to Use. Digital Display Brings Easy Confirmation on Settings

The easy-to-use user interface emphasizes simple operation. A newly designed digital power supply introduces new features with digital display and digital pushbutton.



Quick Operation with a Dial Pushbutton

- Intensity setting in 256 levels
- Strobe lighting time setting
- Setting lock



Press to select.



Turn to adjust.



Hold down to lock.

Direct Number : A direct number is a 7-digit number assigned to a CCS product. You can easily access the web page providing information on any desired product by simply entering the direct number in the space provided on the CCS website pages for machine vision. (Refer to the back cover of this brochure.)

Control Unit

3 Selection of Three Types of External Control

The lineup includes models with external control through parallel, EIA-485, or Ethernet communications to suit any network environment.

PD3-series
External Controls

External Light
Intensity Control

ON/OFF
Control

Strobe
Lighting

*These Control Units do not include an overdrive.

Parallel communications

EIA-485 communications

Ethernet communications



4 Selection of Installation Method to Match the Site, with DIN Rail Mounting as a Standard Feature

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



● Free-standing Installation



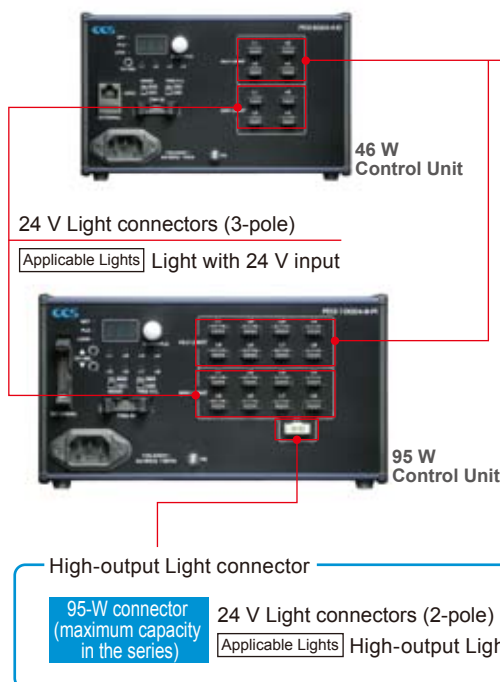
● Bottom-mounted Installation

*A Base Bracket is required for bottom-mounted installation.



● Installation on DIN Rail

5 Connection of Both 24 V Lights and HLV2-series Spotlights to 46 W or 95 W Control Units



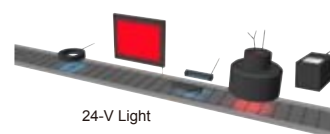
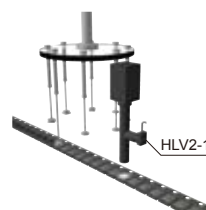
HLV2-series Spotlight connectors

Applicable Lights

- HLV2-series
- HLV2-22-NR-3W-series
- HLV2-3M-RGB-3W
- HLV-24-series
- HLV-24-3W-series
- HLV-24-NR-series
- HLV-24-NR-3W-series
- HLV-3M-RGB-3W



PD3-10024-8 Control Unit



24-V Light

HLV2-14-series Light

Connection Examples

- Connect 24 V Lights of many different types.
- Connect HLV2-series Spotlights.
- Connect 24 V Lights and HLV2-series Spotlights at the same time.
- Connect a High-output 24 V Light (95 W Control Unit only).

Etc.

Control Units for CCS LED Lights

Please select a best-suited control unit according to your intended use and objective.

PD3-series External Controls

Parallel Communications for Quick Changeover of Settings and High-speed Data Transfer.

PD3-3024-3-PI

Direct number: 2000775



Capacity: 28 W

3 Channels

Connects to 24-V Lights

PD3-5024-4-PI

Direct number: 2000778



Capacity: 46 W

4 Channels

Connects to 24-V Lights

Connects to HLV2 Series
(Spotlights)

PD3-10024-8-PI

Direct number: 2000781



Capacity: 95 W

8 Channels

Connects to 24-V Lights

Connects to HLV2 Series
(Spotlights)

External Light Intensity Control

Control the light intensity to 256 levels with parallel communications.

ON/OFF Control

Turn the Lights ON or OFF by inputting an external trigger signal.

Strobe Lighting

*Possible only for 24-V Lights.

Turn ON the Lights for the set time after inputting the external trigger signal.

Strobe lighting time: 40 μ s, 80 μ s, 120 μ s, 200 μ s, 600 μ s, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms

*These Control Units do not include an overdrive.

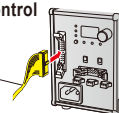
Examples of Combining External Control Cables

*External Control Cables are sold as options.

External Control with Parallel Communications

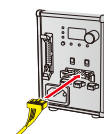
External Light Intensity Control

Parallel Communications Cable (EXCB2-M20-3)



External Control with Trigger Input

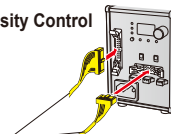
ON/OFF or Strobe Control
Trigger Input Cable (EXCB2-M10-3)



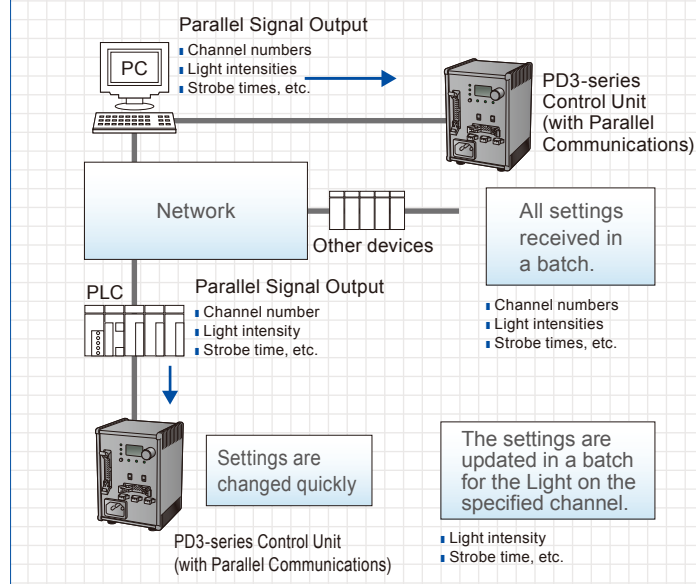
External Control with Parallel Communications and Trigger Input

External Light Intensity Control with ON/OFF or Strobe Control

Parallel Communications/Trigger Input Branch Cable (EXCB2-M10-3)



Communications Example



Control Unit

PD3-series External Controls

EIA-485 Serial Communications for ID Management on Multidrop Wiring. Manage Up to Four Control Units.

PD3-3024-3-SI

Direct number: 2000777



Capacity: 28 W

3 Channels

Connects to 24-V Lights

PD3-5024-4-SI

Direct number: 2000780



Capacity: 46 W

4 Channels

Connects to 24-V Lights

Connects to HLV2 Series
(Spotlights)

PD3-10024-8-SI

Direct number: 2000783



Capacity: 95 W

8 Channels

Connects to 24-V Lights

Connects to HLV2 Series
(Spotlights)

External Light Intensity Control

Control the light intensity to 256 levels with command inputs on EIA-485 communications.

ON/OFF Control

- External trigger signal input
- Command input via EIA-485 communications

Turn the Lights ON or OFF with inputs.

Strobe Lighting

*Possible only for 24-V Lights.

Turn ON the Lights for the set time after inputting the external trigger signal.

Strobe lighting time: 40 μ s, 80 μ s, 120 μ s, 200 μ s, 600 μ s, 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 Cables are sold as options.

● External Control with EIA-485 Communications

External Light Intensity Control
ON/OFF Control

Parallel Communications Cable (EXCB2-E3-3)



● External Control with Trigger Input

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

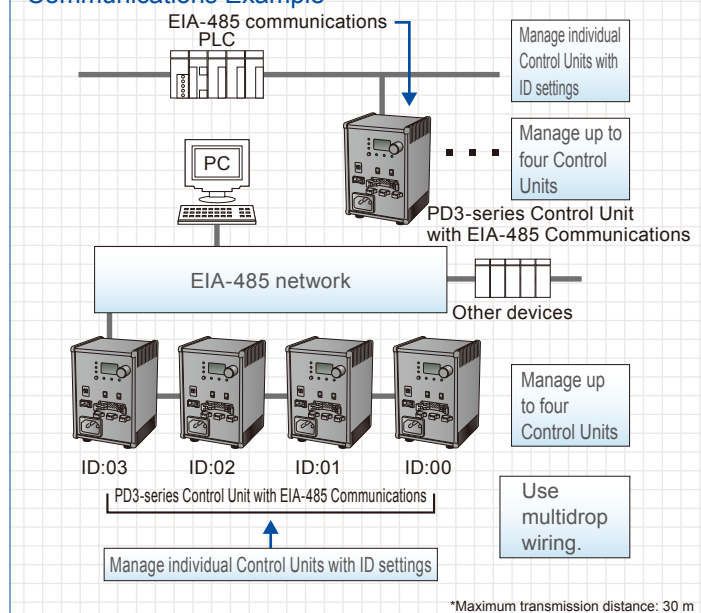


* You can also use the EIA-485 Communications Cable and the Trigger Input Cable together.

Communications Specifications

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

Communications Example



*For multidrop wiring, use the optional EXCB2-E3-E3-0.2 EIA-485 Communications Relay Cable.

Control Units for CCS LED Lights

Please select a best-suited control unit according to your intended use and objective.

PD3-series External Controls

Ethernet Communications with Standard TCP/IP and UDP/IP Protocols. The User-friendly Solution.

PD3-3024-3-EI

Direct number: 2000776



Output: 28 W

3 Channels

Connects to 24-V Lights

PD3-5024-4-EI

Direct number: 2000779



Output: 46 W

4 Channels

Connects to 24-V Lights

Connects to HLV2 Series (Spotlights)

PD3-10024-8-EI

Direct number: 2000782



Output: 95 W

8 Channels

Connects to 24-V Lights

Connects to HLV2 Series (Spotlights)

External Light Intensity Control

Control the light intensity in 256 levels with command inputs through Ethernet communications.

ON/OFF Control

- External trigger signal input
 - Command input via Ethernet communications
- ON/OFF light control with input signal.

Strobe Lighting

*Applicable only for 24 V Lights.

Turn ON the Lights for the set time after inputting the external trigger signal.

Strobe lighting time: 40 μ s, 80 μ s, 120 μ s, 200 μ s, 600 μ s, 1 ms, 4 ms, 10 ms, 20 ms, or 40 ms

*These Control Units do not include an overdrive function.

Examples of Wiring External Control Cables

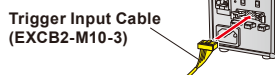
External Control via Ethernet Communications

- External Light Intensity Control
- ON/OFF Control



External Control with Trigger Input

- ON/OFF or Strobe Control



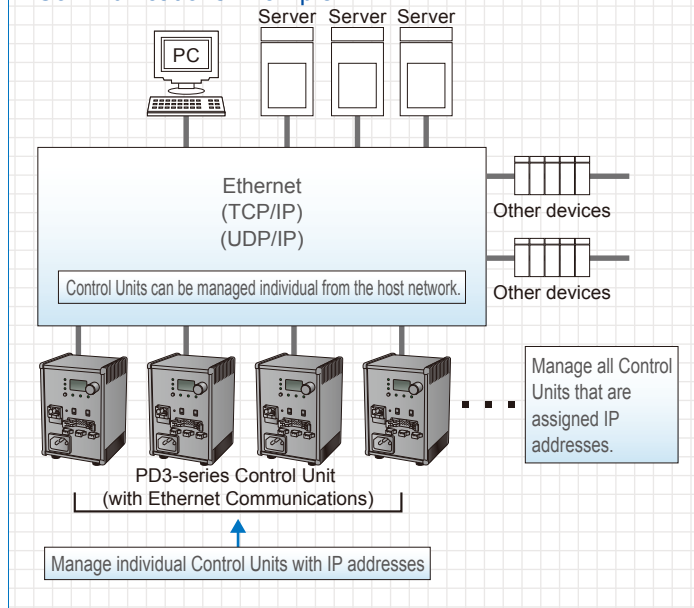
*External Control Cables are sold as options.

* The LAN cable and the Trigger Input Cable can be used together.

Communications Specifications

Communications protocol	TCP/IP UDP/IP
Standards	IEEE802.3, IEEE802.3u, IEEE802.3x
Baud rate	10 Mbps/100 Mbps (Automatically detected.)
Transmission medium	10BASE-T, 100BASE-TX

Communications Example



Control Unit



● PD3-3024-3 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 Lights (rated)	24-VDC 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 240 VAC
Power consumption (typ.)	78 VA
Frequency	50/60 Hz
Output voltage (rated)	24 VDC
Output current (rated)	Total for 3 channels: 1.1 A
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	Natural air cooling
CE Marking	Safety standard: Conforms to EN 61010-1, EMC standard: Conforms to EN 61326, Class A.
Material and surface processing	Materials: Aluminum and resin, Surface processing: Blue alumite
Weight	600 g max.
Accessories	2-m long power cord with 3-prong connector (with ground terminal)

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

● PD3-5024-4 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 channels
Applicable Lights (rated)	24V LIGHT connectors: Lights with 24-VDC input, HLV LIGHT connectors: HLV2/HLV-series Spotlights, Total for 4 channels: 46 W
PWM frequency	125 kHz
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 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 240 VAC
Power consumption (typ.)	70 VA
Frequency	50/60 Hz
Output voltage (rated)	24 VDC
Output current (rated)	Total for 4 channels: 1.91 A
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, Class A.
Material and surface processing	Materials: Aluminum and resin, Surface processing: Blue alumite
Weight	1,200 g max.
Accessories	2-m long power cord with 3-prong connector (with ground terminal)

*HLV LIGHT: Strobe lighting is not possible for HLV2-series Spotlights. The HLV-14-R/-SW/-BL/GR and HLV-27-series Spotlights cannot be connected.

*Strobe lighting is possible only with 24-V Lights. (These Control Units do not include an overdrive function.)

● PD3-10024-8 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	8 channels
Applicable Lights (rated)	24V LIGHT connectors: Lights with 24-VDC input, HLV LIGHT connectors: HLV2/HLV-series Spotlights, Total for 8 channels: 95 W (High-output Light connector: 95 W (1 connector))
PWM frequency	125 kHz
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 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 240 VAC
Power consumption (typ.)	130 VA
Frequency	50/60 Hz
Output voltage (rated)	24 VDC
Output current (rated)	Total for 8 channels: 3.95 A
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, Class A.
Material and surface processing	Materials: Aluminum and resin, Surface processing: Blue alumite
Weight	1,500 g max.
Accessories	2-m long power cord with 3-prong connector (with ground terminal)

*HLV LIGHT: Strobe lighting is not possible for HLV2-series Spotlights. The HLV-14-R/-SW/-BL/GR and HLV-27-series Spotlights cannot be connected.

*Strobe lighting is possible only with 24-V Lights. (These Control Units do not include an overdrive function.)

● Specifications of Control Unit with Parallel Communications

Light intensity setting	Manual	Set to any of 256 levels on front-panel setting switch.
	External	8-bit input (B0 to B7), write pulse (BRTWR), and channel selection (CHSEL0 to CHSEL2)
ON/OFF setting	External trigger input	
Lighting mode setting	Manual	Set to any of 11 levels on front-panel setting switch.
	External	4-bit input (M0 to M3), write pulse (TRGWR), and channel selection (CHSEL0 to CHSEL2)
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
	Lighting intensity/lighting mode setting	MIL connector, 20 pins

● Specifications of Control Unit with EIA-485 Communications

Light intensity setting	Manual	Set to any of 256 levels on front-panel setting switch.
	External	Command input via EIA-485 communications
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.
	External	Command input via EIA-485 communications
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, 3 pins

● Specifications of Control Unit with Ethernet Communications

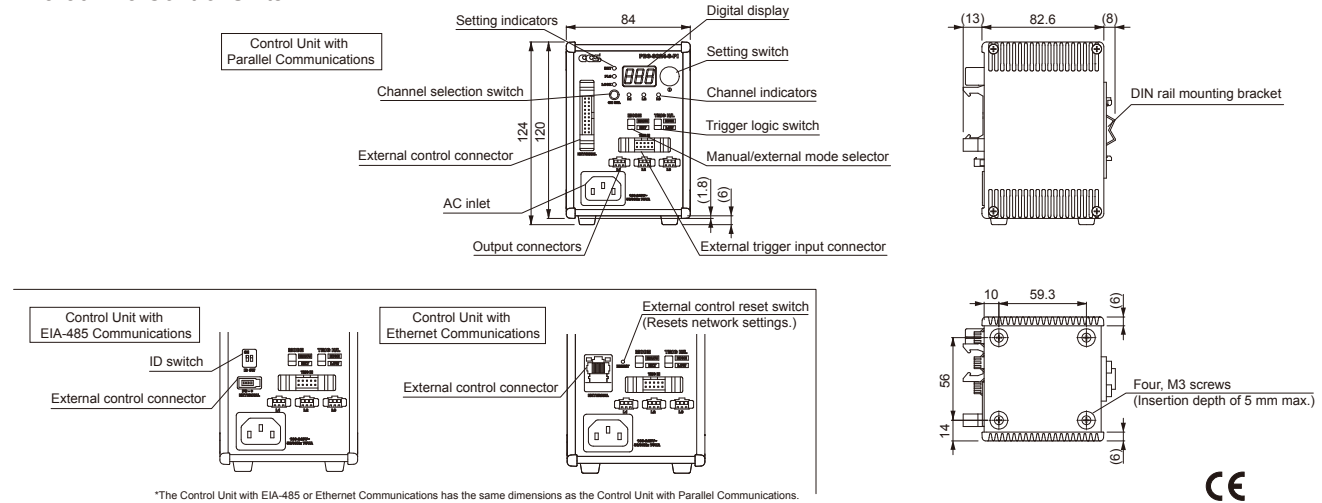
Light intensity setting	Manual	Set to any of 256 levels on front-panel setting switch.
	External	Command input via TCP/IP or UDP/IP communications
ON/OFF setting	External trigger input or command input via TCP/IP or UDP/IP communications	
Lighting mode setting	Manual	Set to any of 11 levels on front-panel setting switch.
	External	Command input via TCP/IP or UDP/IP communications
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

Control Units for CCS LED Lights

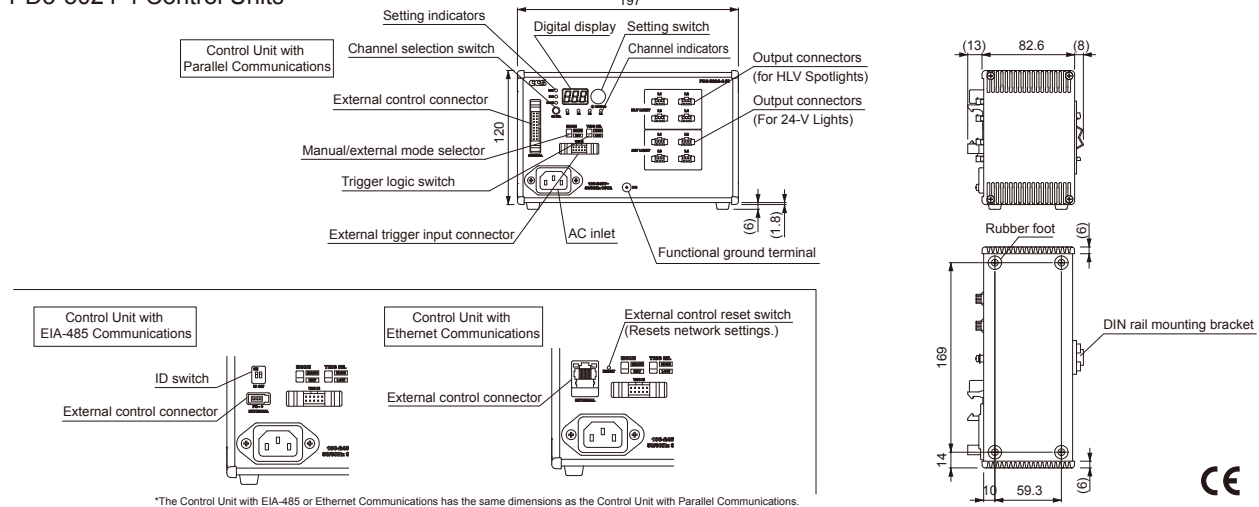
Please select a best-suited control unit according to your intended use and objective.

Dimension Diagrams (Unit: mm)

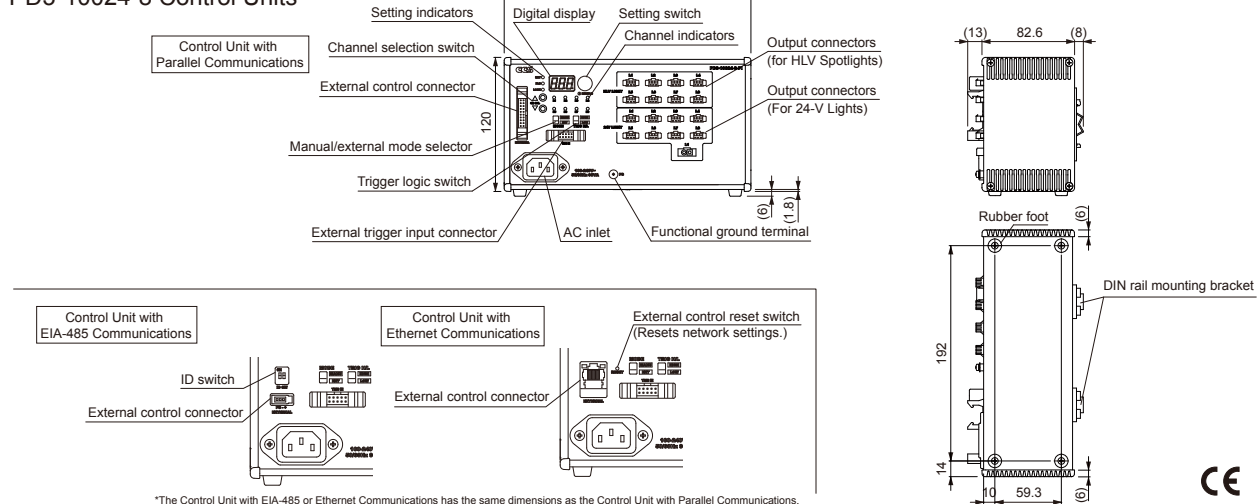
PD3-3024-3 Control Units



PD3-5024-4 Control Units



PD3-10024-8 Control Units



Options for PD3 Series

External Control Cables

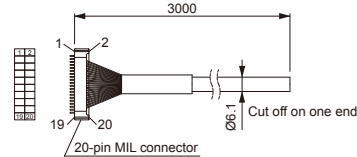
Parallel Communications Cable

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.



Dimension Diagrams (Unit: mm)

EXCB2-M20-3 Direct number: 3000683



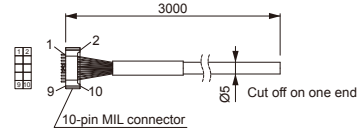
PIN No.	Wire color	Marks	PIN No.	Wire color	Marks
1	Orange	Black 1	11	Orange	Black 2
2	Orange	Red 1	12	Orange	Red 2
3	Gray	Black 1	13	Gray	Black 2
4	Gray	Red 1	14	Gray	Red 2
5	White	Black 1	15	White	Black 2
6	White	Red 1	16	White	Red 2
7	Yellow	Black 1	17	Yellow	Black 2
8	Yellow	Red 1	18	Yellow	Red 2
9	Pink	Black 1	19	Pink	Black 2
10	Pink	Red 1	20	Pink	Red 2

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 Lights ON or OFF, or to flash the strobes.



EXCB2-M10-3 Direct number: 3000682



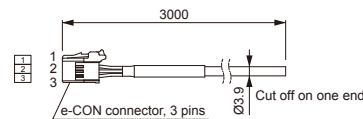
PIN No.	Wire color	Marks
1	Orange	Black 1
2	Orange	Red 1
3	Gray	Black 1
4	Gray	Red 1
5	White	Black 1
6	White	Red 1
7	Yellow	Black 1
8	Yellow	Red 1
9	Pink	Black 1
10	Pink	Red 1

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.



EXCB2-E3-3 Direct number: 3000685



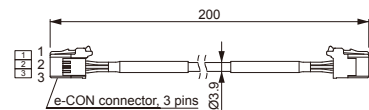
PIN No.	Wire color	Embedded line color
1	Black	None
2	Black	White
3 (shield)	Drain wire	None

EIA-485 Serial Communications Relay Cable

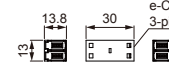
This Cable is required to connect two or more PD3-series Control Units with EIA-485 communications.



EXCB2-E3-3-0.2 Direct number: 3000721



Relay connector
Direct number: 3000720
Model name: ECNR-E3CN4



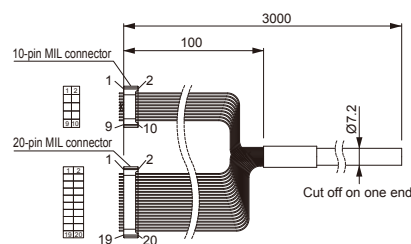
e-CON relay connector,
3-pin, 4x4

Parallel Communications/Trigger Input Branch Cable

This Cable includes the Parallel Communications Cable and the Trigger Input Cable in one cable.



EXCB2-M10M20-3 Direct number: 3000684



20-pin MIL connector					
PIN No.	Wire color	Marks	PIN No.	Wire color	Marks
1	Orange	Black 2	11	Orange	Black 3
2	Orange	Red 2	12	Orange	Red 3
3	Gray	Black 2	13	Gray	Black 3
4	Gray	Red 2	14	Gray	Red 3
5	White	Black 2	15	White	Black 3
6	White	Red 2	16	White	Red 3
7	Yellow	Black 2	17	Yellow	Black 3
8	Yellow	Red 2	18	Yellow	Red 3
9	Pink	Black 2	19	Pink	Black 3
10	Pink	Red 2	20	Pink	Red 3

10-pin MIL connector					
PIN No.	Wire color	Marks	PIN No.	Wire color	Marks
1	Orange	Black 1	11	Orange	Black 3
2	Orange	Red 1	12	Orange	Red 3
3	Gray	Black 1	13	Gray	Black 3
4	Gray	Red 1	14	Gray	Red 3
5	White	Black 1	15	White	Black 3
6	White	Red 1	16	White	Red 3
7	Yellow	Black 1	17	Yellow	Black 3
8	Yellow	Red 1	18	Yellow	Red 3
9	Pink	Black 1	19	Pink	Black 3
10	Pink	Red 1	20	Pink	Red 3

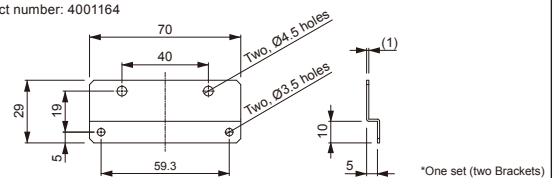
Base Brackets

These Brackets are used to secure a PD3-series Control Unit to the floor, a shelf, or other surface.

* The Base Brackets are included with the PD3-5024-4 and PD3-10024-8 Control Units.



BK-PD3 Direct number: 4001164



*One set (two Brackets)