Control Units

Digital Control Units

PD3 Series

Refer to our website for product details.

CCS PD3 ▶ Search

Select digital control units matching your network

500 PWM kHz
Custom orders accepted

Ethernet
Enabled

Parallel Type
PNP input model can be selected

AC Input Types

DC Input Types

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the control unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

For information on change in model names, refer to P.327.

Features

- Each single unit is compatible with continuous, ON/OFF and strobe lighting. (Spot Light HLV Series cannot emit strobe.)
  Spot Light HLV3 Series Product Page ▶ P. 187
- Digital display enables set values to be easily checked.
- 256 stage dimmer settings.
- Select from 3 types of external control.
- AC input types and DC input types available.
- DIN rail installation is standard.
- Select from 3 channel, 4 channel or 8 channel models.
- There are four types of capacity: 3 channel/28 W, 3 channel/48 W[*1], 4 channel/46 W[*2], and 8 channel/95 W[*3].
  *1: Can be connected only with 24 V Light. *2: Lineup includes only DC-input control units.
  *3: Can be connected with both 24 V Light and Spot Light HLV Series.

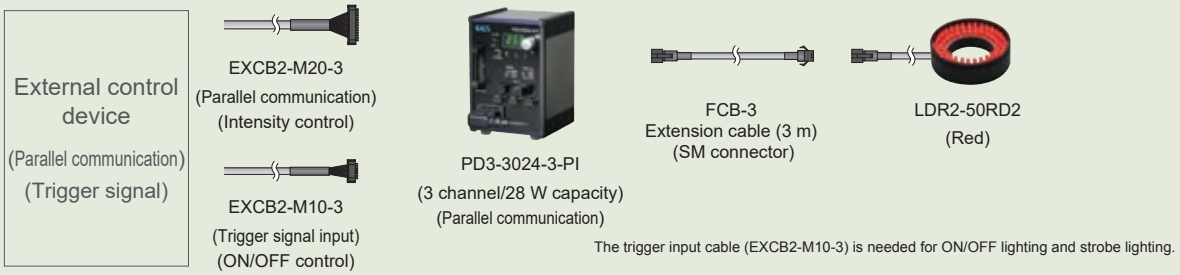
A Wide Ranging Lineup is Available and Custom Orders are Accepted

- The parallel type has the fastest switching for settings. Perform high-speed control through batch transmission.
  (External trigger signal input is available as an NPN input model (standard) or PNP input model (custom order product: PD3-PNP)) See ▶ P.323 for details
- Ethernet types support standard TCP/IP and UDP/IP protocols.
  (Models with keep-alive functions (custom order: PD3-EIK) are available) See ▶ P.324 for details
  Keep-alive functions monitor the validity of the connection of the machine to the network, wherein to prevent the connection from dropping, a signal is periodically sent between machines.
- The EIA-485 type can individually manage units using multi-drop wiring. Can manage up to 4 units.
  See ▶ P.325 for details
- PWM frequency is available in 125 kHz (standard) and 500 kHz (custom order: PD3-500).
  See ▶ P.324 for details

Example System Configuration

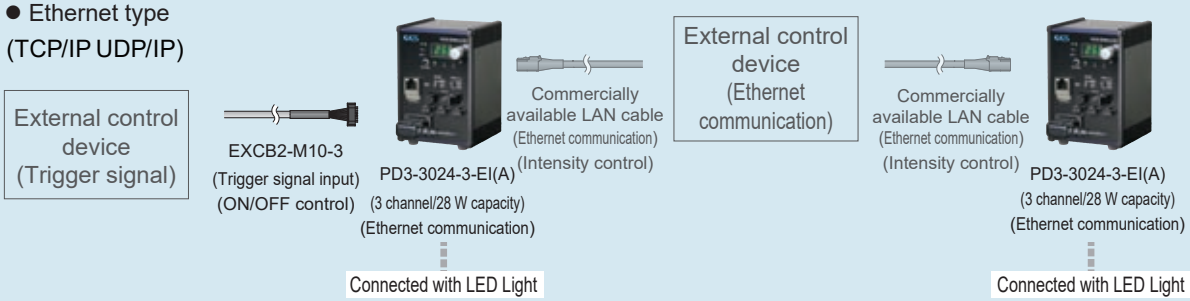
Example:
External control device — **External control cables** — **Control unit** — **Extension cables** — **LED light**

● Parallel type

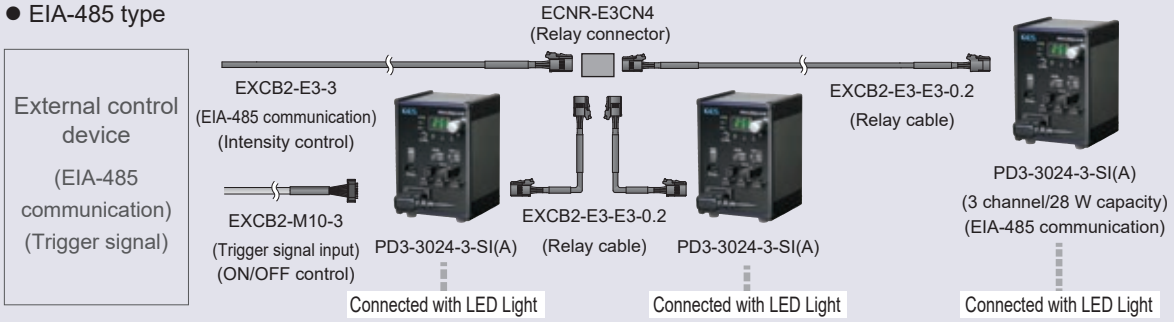


The trigger input cable (EXCB2-M10-3) is needed for ON/OFF lighting and strobe lighting.

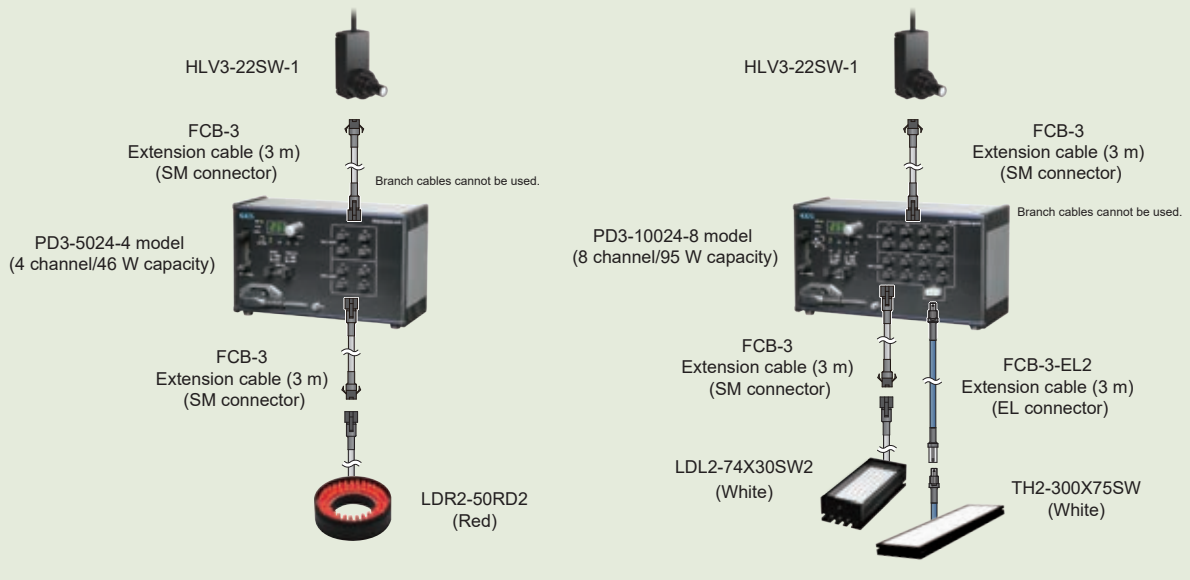
● Ethernet type
(TCP/IP UDP/IP)



● EIA-485 type



Fixture Connection Example



PD3 Series

Refer to our website for product details.

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Common Specifications: Parallel Types

External trigger signal input is also available as a PNP input (custom order).

Model name							
NPN Input Model		PD3-3024-3-PI	PD3-5024-4-PI(A)	PD3-10024-8-PI	PD3-3024-3-PT	PD3-5024-3-PT	PD3-5024-4-PT(A)
PNP Input Model		PD3-3024-3-PI-PNP	PD3-5024-4-PI-PNP(A)	PD3-10024-8-PI-PNP	PD3-3024-3-PT-PNP	PD3-5024-3-PT-PNP	PD3-5024-4-PT-PNP(A)
Input voltage (rated)		100 to 240 VAC (+10% -15%)			24 VDC (21.6 to 26.4 V)		
Lighting method		Continuous / Strobe lighting (no overdrive)					
Drive method		Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system		Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system
Intensity control method		PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control		PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control
No. of channels		3 channels	4 channels	8 channels	3 channels		4 channels
Applicable light unit (rated)		Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 8 channels: 95 W (EL connector: one 95 W connector) *When using EL connector: L1 (CH1)	Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input Total for 3 channels: 48 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W
PWM frequency		125 kHz					
Error detection display		"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)		"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)
Overcurrent protection		Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.					
Power consumption (typ.)		78 VA	70 VA	130 VA	32 W	52 W	
Frequency		50/60 Hz			–		
Output voltage (rated)		24 VDC					
Intensity setting		Manual: 256-step using the front 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: 11-step using the front setting switch					
		External: 4-bit input (M0 to M3), write pulse (TRGWR), and channel selection (CHSEL0 to CHSEL2)					
Error detection output		External control connector 19(OC)-20(OE) pin with transistor output When normal: Non-conducting, With overcurrent output detected: Conducting					
External control connector		Trigger input: MIL connector, 10-pin					
		Intensity/Lighting mode setting: MIL connector, 20-pin					
Operating environment		Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)					
Storage environment		Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)					
Cooling method		Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling
Applicable standards		CE, UKCA, RoHS compliant					
Material/Surface processing		Material: aluminum and resin, Surface processing: blue alumite					
Weight		600 g max.	1,200 g max.	1,500 g max.	400 g max.		850 g max.
Accessories		3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, Base Brackets x 1 set (PD3-5024-4-PI(A)/-PI-PNP(A), PD3-10024-8-PI/-PI-PNP)			User Manual x 1, Base Brackets x 1 set (PD3-5024-4-PT(A)/-PT-PNP(A))		

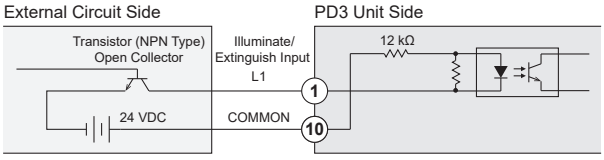
Connection Example

Refer to the User Manual for more information.

External Trigger Signal Connection Example

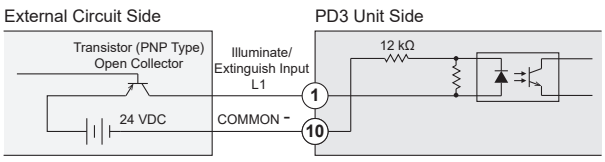
NPN Input Model

Sink Type (NPN)



PNP Input Model

Source Type (PNP)

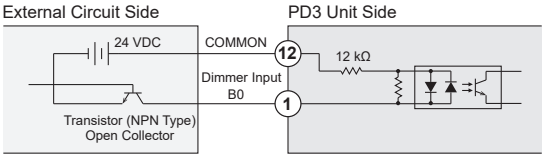


Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

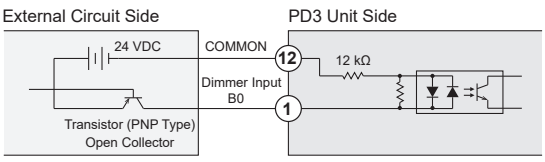
Trigger Principle Setting Switch	Input Signal	Photocoupler	ON/OFF Mode	Strobe Mode
HIGH	HIGH	OFF	LED ON	LED ON for Set Time
	LOW	ON	LED OFF	No Change
LOW	HIGH	OFF	LED OFF	No Change
	LOW	ON	LED OFF	LED ON for Set Time

External Signal Connection Example (Parallel Type)

Sink Type (NPN)



Source Type (PNP)



Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

	Input Signal	Photocoupler	Data
Sink Type	HIGH	OFF	1
	LOW	ON	0
Source Type	HIGH	ON	0
	LOW	OFF	1

Common Specifications: Ethernet Type

External trigger signal input PNP input model (custom order) and model with keep alive function (custom order) are also available.

Model name	–	PD3-3024-3-EI(A)	PD3-5024-4-EI(A)	PD3-10024-8-EI(A)	PD3-3024-3-ET(A)	PD3-5024-3-ET(A)	PD3-5024-4-ET(A)
	PNP Input Model	PD3-3024-3-EI-PNP(A)	PD3-5024-4-EI-PNP(A)	PD3-10024-8-EIPNP(A)	PD3-3024-3-ET-PNP(A)	PD3-5024-3-ET-PNP(A)	–
	With Keep-Alive Function	PD3-3024-3-EIK	PD3-5024-4-EIK	PD3-10024-8-EIK	PD3-3024-3-ETK	PD3-5024-3-ETK	PD3-5024-4-ETK
Input voltage (rated)		100 to 240 VAC (+10% -15%)			24 VDC (21.6 to 26.4 V)		
Lighting method		Continuous / Strobe lighting (no overdrive)					
Drive method		Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system		Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system
Intensity control method		PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control		PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control
No. of channels		3 channels	4 channels	8 channels	3 channels		4 channels
Applicable light unit (rated)		Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 8 channels: 95 W (EL connector: one 95 W connector) *When using EL connector: L1 (CH1)	Light units with 24 VDC input Total for 3 channels: 28 W	Light units with 24 VDC input Total for 3 channels: 48 W	Light units with 24 VDC input, HLV Series (Spot Light) Total for 4 channels: 46 W
PWM frequency		125 kHz					
Error detection display		"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)		"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV Series only)
Overcurrent protection		Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.					
Power consumption (typ.)		78 VA	70 VA	130 VA	32 W	52 W	
Frequency		50/60 Hz			–		
Output voltage (rated)		24 VDC					
Intensity setting		Manual: 256-step using the front setting switch					
		External: Command input via TCP/IP or UDP/IP communication					
ON/OFF setting		External trigger input or command input via TCP/IP or UDP/IP communication					
Lighting mode setting		Manual: 11-step using the front setting switch					
		External: Command input via TCP/IP or UDP/IP communication					
Error detection output		Command sent when overcurrent output is detected.					
External control connector		Trigger input: MIL connector, 10-pin					
		Intensity/Lighting mode setting: RJ-45 connector					
Operating environment		Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)					
Storage environment		Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)					
Cooling method		Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling
Applicable standards		CE, UKCA, RoHS compliant					
Material/Surface processing		Material: Aluminum and resin, Surface processing: Blue alumite					
Weight		600 g max.	1,200 g max.	1,500 g max.	400 g max.		850 g max.
Accessories		3-prong AC cord with ground terminal (2 m) x 1, User Manual x 1, Base Brackets x 1 set (PD3-5024-4-EI(A)/-EI-PNP(A)/-EIK, PD3-10024-8-EI(A)/-EIPNP(A)/-EIK)			User Manual x 1, Base Brackets x 1 set (PD3-5024-4-ET(A)/-ET-PNP(A)/-ETK)		

Keep-alive functions monitor the validity of the connection of the machine to the network to prevent the connection from dropping, a signal is periodically sent between machines.

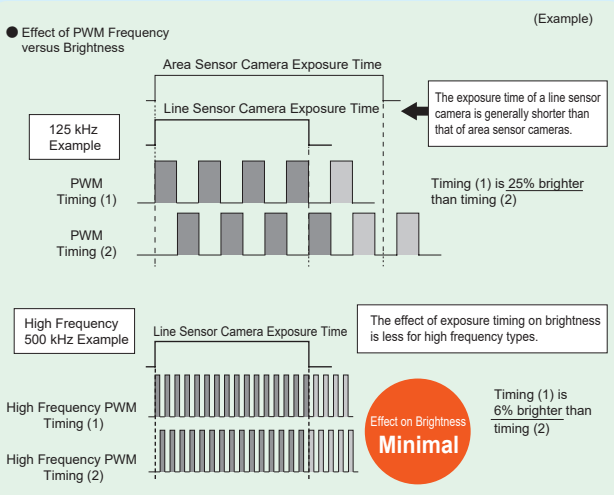
Lineup of Models with 500 kHz PWM Frequency <Custom Order Products>

When selecting a digital power supply, consider using the higher frequency type. Power supplies with a PWM frequency of 500 kHz can be made to order. Contact our local sales office for details.

Introducing High Frequency Power Supplies (Custom Order)

PD3-10024-8 Series

- PWM Dimmer Control (500 kHz)
- 95 W Capacity (EL Connector: 1 Channel)
- AC Input
- 3 types of external control
  - Parallel communication
  - Ethernet communication
  - EIA-485 communication



PD3 Series

Refer to our website for product details.

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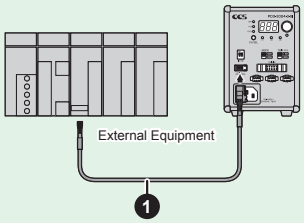
Common Specifications: EIA-485 Type

Model name	PD3-3024-3-SI(A)	PD3-5024-4-SI(A)	PD3-10024-8-SI(A)
Input voltage	100 to 240 VAC (+10% -15%)		
Lighting method	Regular Emission/Strobe Emission (Without Overdrive)		
Drive method	Constant-voltage system	24 V LIGHT: Constant-voltage system	HLV LIGHT: Constant-current system
Intensity control method	PWM Control Or Light Emission Time Control	24 V LIGHT: PWM control or light emission time control HLV LIGHT: Variable-current control	
No. of channels	3 channels	4 channels	8 channels
Applicable light units (rated)	24 VDC Input Lights, 3 Channel Total: 28 W	24 VDC Input Lights, HLV Series (Spot Lighting) 4 Channel Total: 46 W	24 VDC Input Lights, HLV Series (Spot Lighting) 8 Channel Total: 95 W (EL connector: 1 connector 95 W)
PWM frequency	125 kHz		
Error detection display	Front Digital "OCP" Display: Overcurrent Error	Front Digital "OCP" Display: Overcurrent error "EFN" Display: Fan stop error "EID" Display: ID error (HLV Series only)	
Overcurrent protection	Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.		
Power consumption (typ.)	78 VA	70 VA	130 VA
Frequency	50/60 Hz		
Output voltage (rated)	24 VDC		
Dimmer setting	Manual: 256 stages via front setting switch		
	External: Command input via EIA-485 communication		
ON/OFF setting	External: Trigger input or command input via EIA-485 communication		
Emission mode setting	Manual: 11 stages via front setting switch		
	External: Command input via EIA-485 communication		
Error detection output	Command Sending for Overcurrent Detection		
External control connector	Trigger Input: MIL connector 10-pole		
	Dimmer/Emission Mode Setting: e-Con Connector 3-Pole		
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)		
Cooling method	Natural air-cooling	Forced cooling	
Applicable standards	CE, UKCA, RoHS compliant		
Electrical appliance and Material safety law	–	Specified electrical equipment (DC power supply) compliant with technical standards	
Material/Surface processing	Material: Aluminum, resin, Surface processing: Navy anodizing		
Weight	600 g max.	1,200 g max.	1,500 g max.
Accessories	2 m 3-prong AC power cable with ground terminal, User Manual x 1, Bottom installation bracket x 1 set (PD3-5024-4-SI(A)/10024-8-SI(A))		

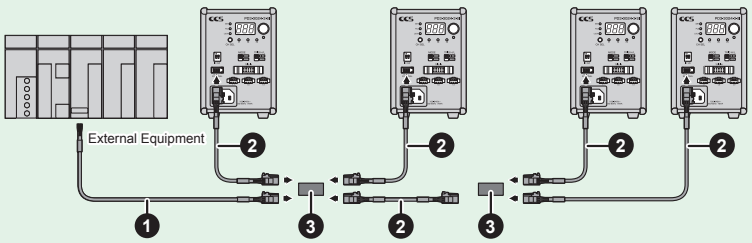
EIA-485 Communication Cable Connection Method

EIA-485 communication types identify based on ID switch settings, enables up to 4 units to be connected on one signal line. The options differ depending on the number of units to be connected. Refer to the following connection diagram.

For 1 connected unit



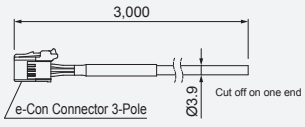
For 4 connected units



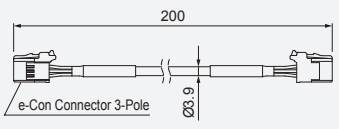
* illustration shows PD3-3024-3-SI

Options

1 EXCB2-E3-3



2 EXCB2-E3-E3-0.2

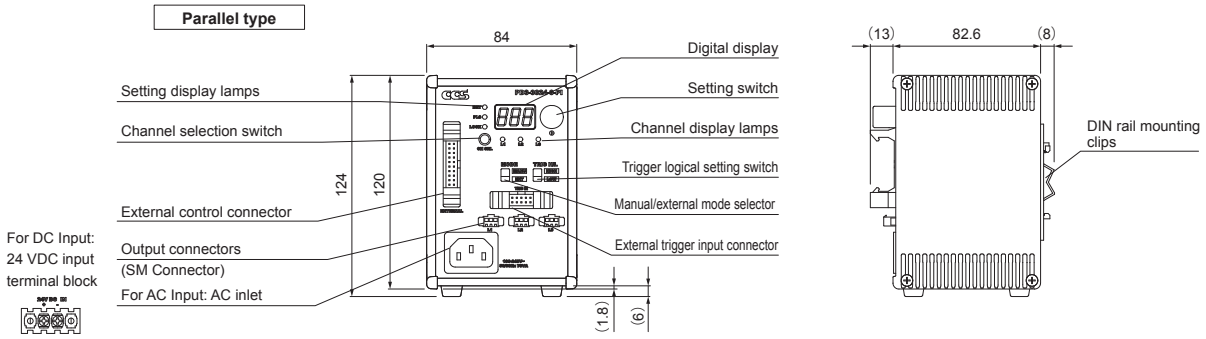


3 ECNR-E3CN4

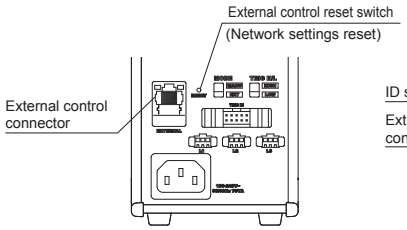
Dimensions (mm)

PD3-3024-3-PI / PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-PT / PD3-3024-3-ET(A) / PD3-5024-3-PT / PD3-5024-3-ET(A)

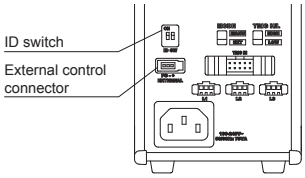
Parallel type

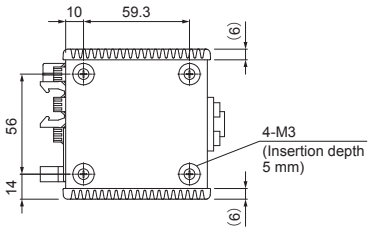


Ethernet type



EIA-485 type



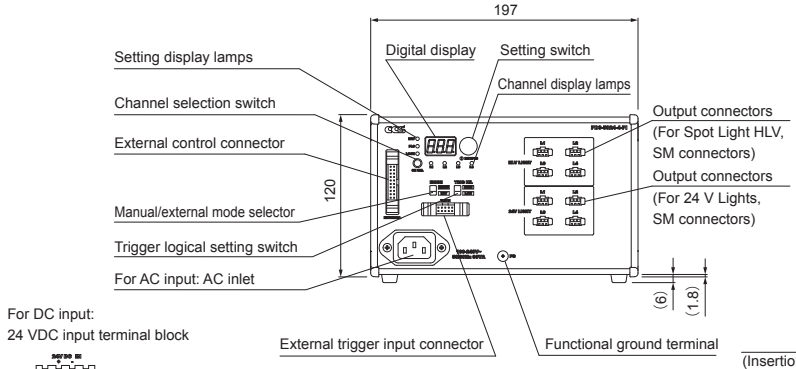


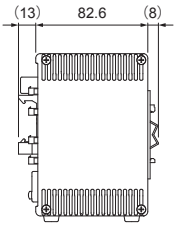
Ethernet/EIA-485 types have the same external dimensions as the parallel type.

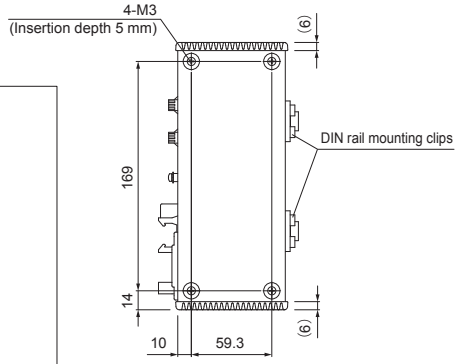
Dimensions (mm)

PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)

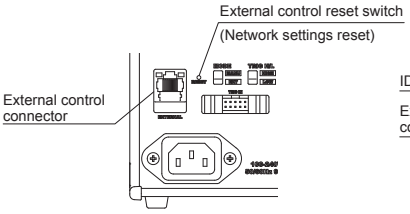
Parallel type



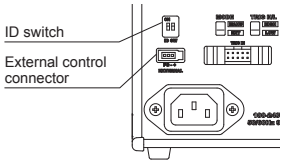




Ethernet type



EIA-485 type



Ethernet/EIA-485 types have the same external dimensions as the parallel type.

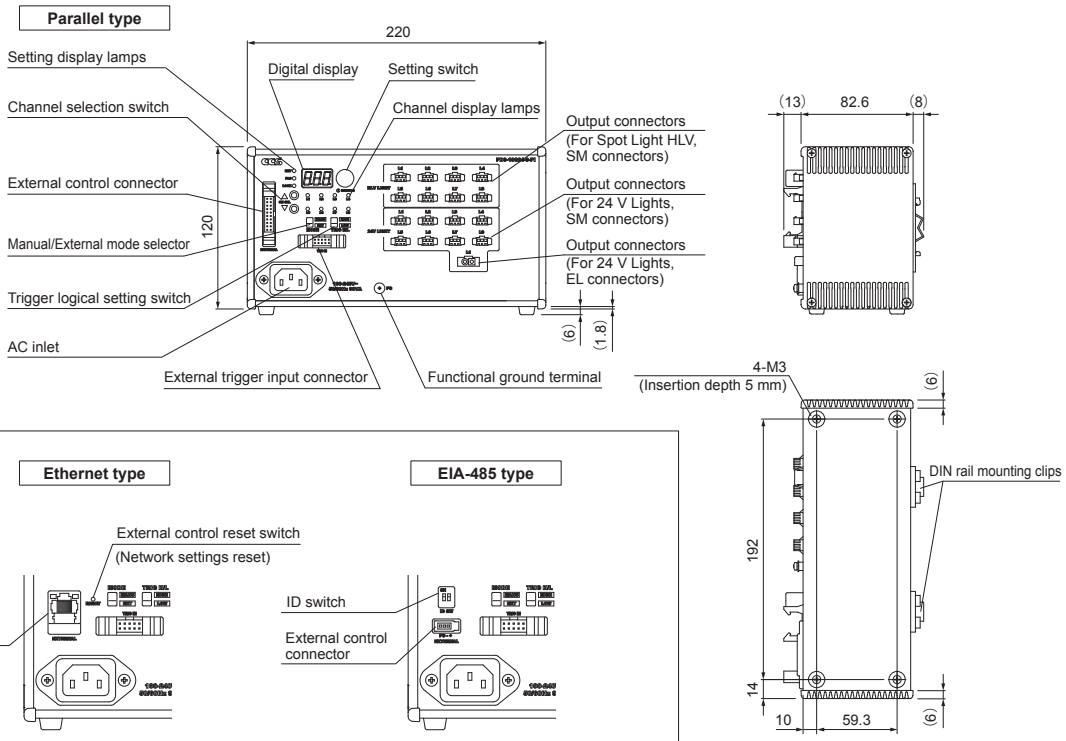
PD3 Series

Refer to our website for product details.

CCS PD3 ▶ Search

Dimensions (mm)

PD3-10024-8-PI / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)



Ethernet/EIA-485 types have the same external dimensions as the parallel type.

Differences Between Specifications and Models

[(A) attached to end of model number] Ex.: PD3-3024-3-EI → PD3-3024-3-EI(A)

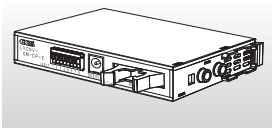
Contents Changed		Applicable Models
Software Change	● Command specifications for changing the setting values for dimmer control commands (F commands) as a batch have been added. ● Command specifications for changing the status of each channel for ON/OFF commands (L commands) as a batch have been added.	PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-ET(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-ET(A) / PD3-5024-3-ET(A) / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)
DIN Rail Mount Added	● The number of DIN rail mounts for 50 W power supplies has increased from 1 to 2.	PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)

Options

Trigger Voltage Level Conversion Unit

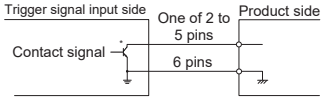
· Can be used when performing trigger input from a device with 3.3 V, 5 V or 12 V output (PCB, etc.).
· It can also be used when performing trigger input using a contact signal such as a relay.

Be sure to prepare an AC adapter with 24 V output separately as a control unit source.



Connection Example

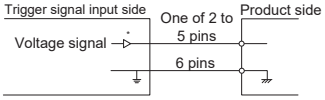
When driving with non-voltage contact



* Elements used: Photocoupler, open collector or driver IC

Trigger signal input	Trigger signal output	Photocoupler inside the control unit for LED lights
Open	ON	ON
Short	OFF	OFF

When driving with high voltage signal



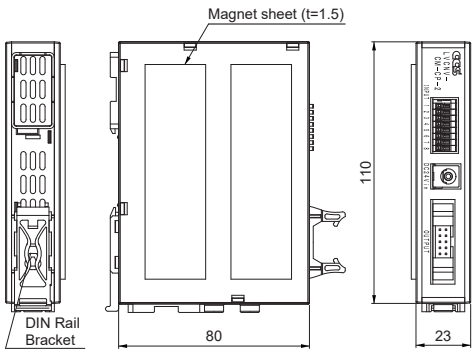
* Elements used: Buffer, HS-CMOS or driver IC

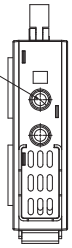
Trigger signal input	Trigger signal output	Photocoupler inside the control unit for LED lights
High	ON	ON
Low	OFF	OFF

Trigger signal output	Trigger signal input	Description
ON	High	Input voltage range: +3 to 13.2 VDC, input current: Approximately 8 mA (at 12 VDC input, per terminal)
	Open	Terminal voltage: Approx. 2.9 V
OFF	Low/Short	Input voltage range: 0.0 to +0.5 VDC, input current: Approximately -3 mA (at 0 VDC input, per terminal)

When the trigger signal to this product is set to High or Open (non-conducting), the trigger signal output from this product turns ON. When it is set to Low or Short (conducting), the trigger signal output is turned OFF.

Model Name: LVCNV-CM-CP-2-MG-WOC





*1 Use it as an aid when placing the unit with the top facing up and fixing the unit to the wall surface or L-shaped bracket. Note that fixing with only the provided screw holes may cause the product to fall.

* This product is custom-made. Contact our local sales office for details.

Options

External control cables

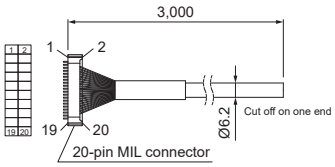
Dimensions (mm)

Parallel communication cable

Used for performing external control via parallel communication. You can select the channel, intensity setting and lighting mode (continuous, ON/OFF and strobe modes).

The trigger input cable shown (EXCB2-M10-3) below is needed for ON/OFF lighting and strobe lighting.

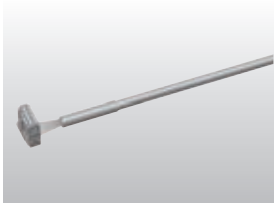
Model name: EXCB2-M20-3



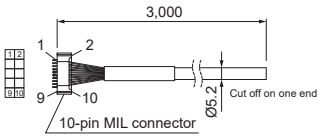
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

Trigger input cable

Cable through which external trigger signals are input by parallel bit method. Used when performing ON/OFF or strobe lighting using an external trigger signal.



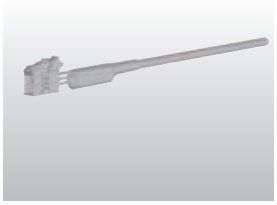
Model name: EXCB2-M10-3



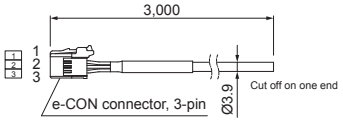
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

EIA-485 communication cable

Used for performing external control via EIA-485 communication. You can select the channel, intensity setting, ON/OFF setting and lighting mode (continuous, ON/OFF and strobe modes).



Model name: EXCB2-E3-3



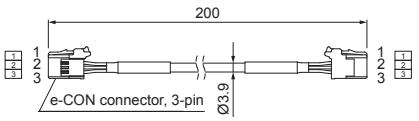
PIN No.	Line color	Embedded line color
1	Black	None
2	Black	White
3 (shielded)	Drain wire	None

EIA-485 communication relay cable

Relay cable necessary if using with two or more PD3 Series units connected for EIA-485 communication.

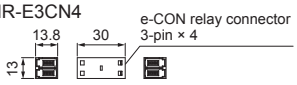
EIA-485 communication relay connector

Model name: EXCB2-E3-E3-0.2



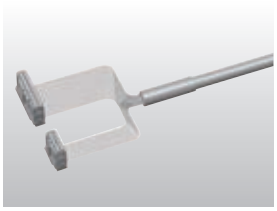
Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections.
You can download this information from the product website page.

Model name: ECNR-E3CN4

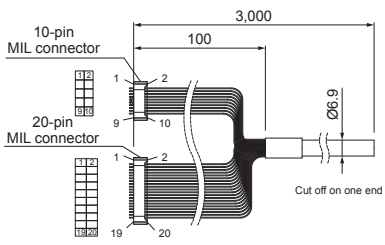


Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



Model name: EXCB2-M10M20-3



20-pin MIL connector

PIN No.	Line color	Marking
1	Orange	Black2
2	Orange	Red2
3	Gray	Black2
4	Gray	Red2
5	White	Black2
6	White	Red2
7	Yellow	Black2
8	Yellow	Red2
9	Pink	Black2
10	Pink	Red2
11	Orange	Black3
12	Orange	Red3
13	Gray	Black3
14	Gray	Red3
15	White	Black3
16	White	Red3
17	Yellow	Black3
18	Yellow	Red3
19	Pink	Black3
20	Pink	Red3

10-pin MIL connector

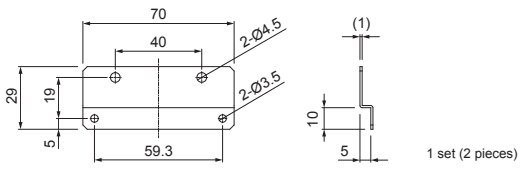
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

Base brackets

Bracket for securing PD3 Series units to the floor, shelving and similar locations.

Base Brackets are included with PD3-5024-4 and PD3-10024-8 models.

Model name: BK-PD3



1 set (2 pieces)