Control Units

Digital Control Units
PD3 Series

Select digital Control Units matching your network

500 PWM kHz
Custom orders accepted

Ethernet
Enabled

DC Input Types

AC 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.258.

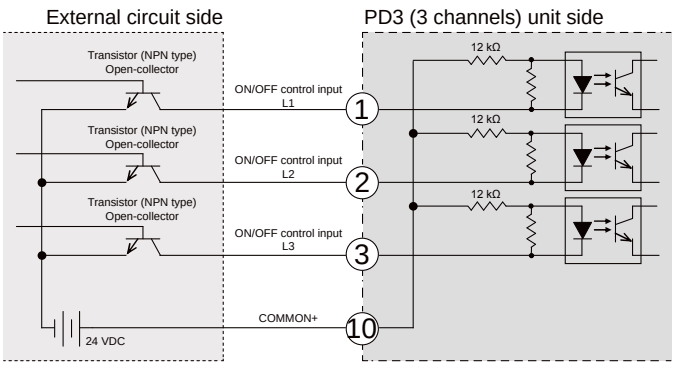
Features

- 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. 151)
  (Spot Light HLV2 series Product Page ► P. 157)
- Digital display makes it easy to check settings.
- Ethernet-compatible with a selection of three types of external controls.
- DIN rail installation is standard.
- There are four types of capacity: 3 channels/28 W[*1], 3 channels/48 W[*1][*2], 4 channels/46 W[*3], and 8 channels/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.
- The parallel type has the fastest switching for settings. Perform high-speed control through batch transmission.
- The Ethernet type supports standard protocols TCP/IP and UDP/IP. Pursuing even more convenience.
- The EIA-485 type can individually manage units using multi-drop wiring. Can manage up to 4 units.

Example Connection

Refer to the “Instruction Guide” for details.

Example connection of external trigger signal



Connection specifications (for each terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
24 VDC	26.4 VDC	14.4 VDC min. / 1 mA min.	5 VDC max. / 0.4 mA max.

Trigger logical setting switch	Input signal	Photocoupler	ON/OFF mode	Strobe mode
HIGH	HIGH	OFF	LED ON	LED is ON for the specified time.
	LOW	ON	LED OFF	No change
LOW	HIGH	OFF	LED OFF	No change
	LOW	ON	LED ON	LED is ON for the specified time.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

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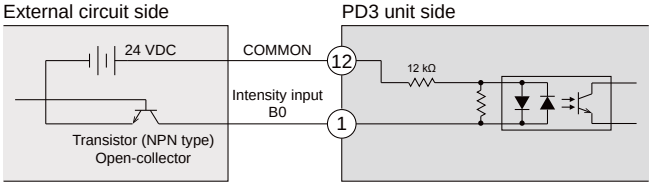
Example connections of external signal (parallel type)

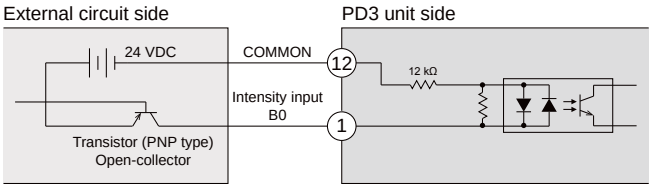
Sink type

External circuit side / PD3 unit side



Source type

External circuit side / PD3 unit side



Connection specifications (for each terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
24 VDC	26.4 VDC	14.4 VDC min. / 1 mA min.	5 VDC max. / 0.4 mA max.

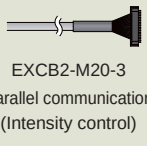
	Input signal	Photocoupler	Data
Sink type	HIGH	OFF	1
	LOW	ON	0
Source type	HIGH	ON	0
	LOW	OFF	1

Example System Configuration

Example:
External control device — **External control cables** — **Control Unit** — **Extension cables** — **LED Light**

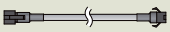
● Parallel type

External control device
(Parallel communication)
(Trigger signal)

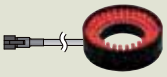


EXCB2-M20-3
(Parallel communication)
(Intensity control)

PD3-3024-3-PI
(30 W capacity)
(Parallel communication)



FCB-3
(3 m)



LDR2-50RD2
(Red)
(Power consumption: 3.1 W)

EXCB2-M10-3
(Trigger signal input)
(ON/OFF control)

The Trigger Input Cable (EXCB2-M10-3) is needed for ON/OFF lighting and strobe lighting.

● Ethernet type (TCP/IP UDP/IP)

External control device
(Trigger signal)

EXCB2-M10-3
(Trigger signal input)
(ON/OFF control)

PD3-3024-3-EI(A)
(30 W capacity)
(Ethernet communication)

Connected with LED Light

Commercially available LAN cable
(Ethernet communication)
(Intensity control)

External control device
(Ethernet communication)

Commercially available LAN cable
(Ethernet communication)
(Intensity control)

PD3-3024-3-EI(A)
(30 W capacity)
(Ethernet communication)

Connected with LED Light

● EIA-485 type

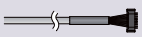
External control device
(EIA-485 communication)
(Trigger signal)

ECNR-E3CN4
(Relay connector)

EXCB2-E3-3
(EIA-485 communication)
(Intensity control)

EXCB2-E3-E3-0.2
(Relay cable)

PD3-3024-3-SI(A)
(30 W capacity)
(EIA-485 communication)



EXCB2-M10-3
(Trigger signal input)
(ON/OFF control)

PD3-3024-3-SI(A)

Connected with LED Light

EXCB2-E3-E3-0.2
(Relay cable)

PD3-3024-3-SI(A)

Connected with LED Light

Connected with LED Light

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

PD3 Series

Common Specifications: Parallel Types

AC input: PD3-3024-3-PI / PD3-5024-4-PI(A) / PD3-10024-8-PI
DC input: PD3-3024-3-PT / PD3-5024-3-PT / PD3-5024-4-PT(A)

Model name	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)
Input voltage	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)	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	NPN Transistor output between pins 19 (OC) and 20 (OE) of the external control connector Normal operation: Open, Overcurrent output detected: Closed					
External control connector	Trigger input: MIL connector, 10-pin					
	Intensity/Lighting mode setting: MIL connector, 20-pin					
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	Forced air cooling		Natural air cooling		Forced air cooling
CE marking	Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A			EMC standard: Conforms to EN61326-1 Class A		
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, Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-PI(A) / 10024-8-PI)			Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-PT(A))		

Common Specifications: Ethernet Type

AC input: PD3-3024-3-EI(A) / PD3-5024-4-EI(A) / PD3-10024-8-EI(A)
DC input: PD3-3024-3-ET(A) / PD3-5024-3-ET(A) / PD3-5024-4-ET(A)

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)
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)	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 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	Forced air cooling		Natural air cooling		Forced air cooling
CE marking	Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A			EMC standard: Conforms to EN61326-1 Class A		
Material/Surface processing	Material: Aluminum and resin, Surface processing: Blue alumite			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, Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-EI(A) / 10024-8-EI(A))			Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-ET(A))		

Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

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Common Specifications: EIA-485 Types

AC input: PD3-3024-3-SI(A) / PD3-5024-4-SI(A) / PD3-10024-8-SI(A)

Model name	PD3-3024-3-SI(A)	PD3-5024-4-SI(A)	PD3-10024-8-SI(A)
Input voltage (rated)	100 to 240 VAC (+10% -15%)		
Lighting method	Continuous / Strobe lighting (no overdrive)		
Drive method	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	
No. of channels	3 channels	4 channels	8 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)
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)	
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		
Intensity setting	Manual: 256-step using the front setting switch		
	External: Command input via EIA-485 communication		
ON/OFF setting	External trigger input or command input via EIA-485 communication		
Lighting mode setting	Manual: 11-step using the front setting switch		
	External: Command input via EIA-485 communication		
Error detection output	Command sent when overcurrent output is detected.		
External control connector	Trigger input: MIL connector, 10-pin		
	Intensity/Lighting mode setting: e-CON connector, 3-pin		
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	Forced air cooling	
CE marking	Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A		
Material/Surface processing	Material: Aluminum and resin, Surface processing: Blue alumite		
Weight	600 g max.	1,200 g max.	1,500 g max.
Accessories	3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-SI(A) / 10024-8-SI(A))		

Changes in specifications and model names

The suffix "(A)" has been added to the end of several model names, e.g. "PD3-3024-3-EI" has been changed to "PD3-3024-3-EI(A)".

	Specification changes	Relevant models
Software changes	A new command feature has been added to the light intensity setting command (the F command) which enables setting the light intensity of all channels with a single command. A new command feature has been added to the ON/OFF setting command (the L command) which enables setting the state of all channels with a single command.	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)
Additional DIN rail mounting clip	The number of DIN rail clips on 50 W Control Units has been increased from one to two.	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)

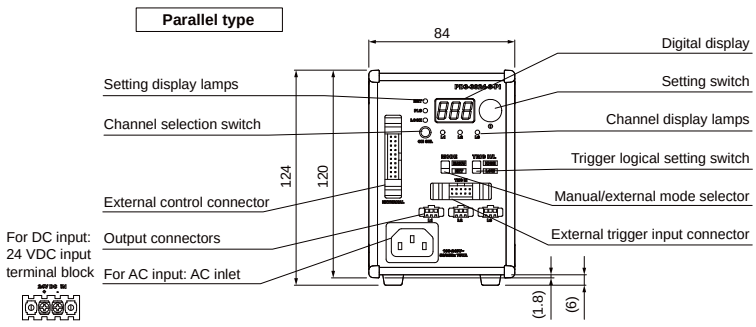
A unit with a PWM frequency of 500 kHz can be made for custom orders. Please contact your sales representative for details.

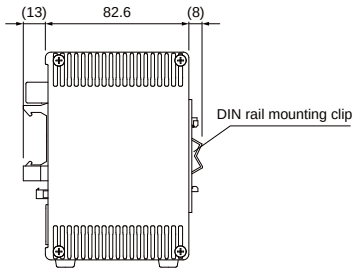
For the effect on brightness due to differences in PWM frequency, refer to P. 327.

Dimensions (mm)

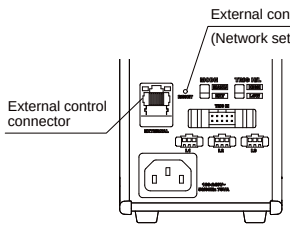
PD3-3024-3-PI / PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-PT / PD3-3024-3-ET(A) / PD3-5024-3-PT / PD3-5024-3-ET (A)

Parallel type

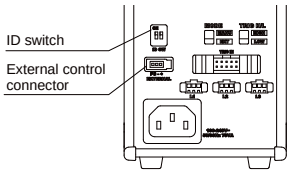




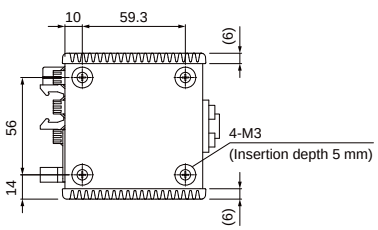
Ethernet type



EIA-485 type



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

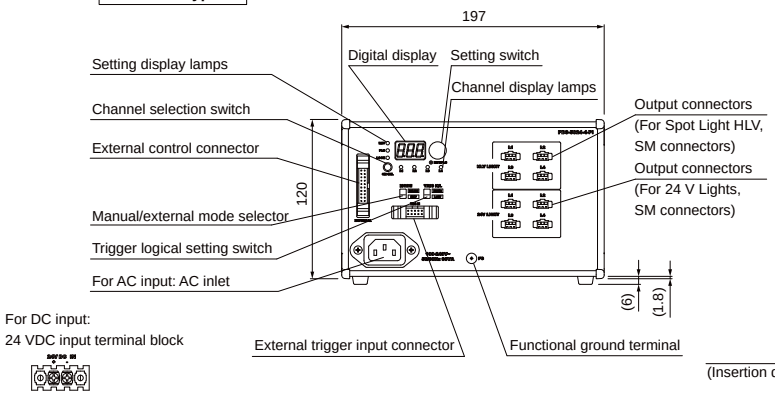


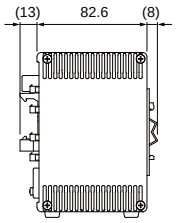
PD3 Series

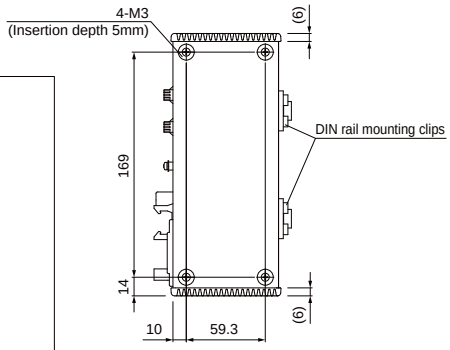
Dimensions (mm)

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)

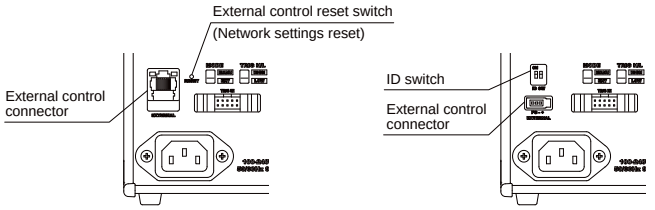
Parallel type







Ethernet type **EIA-485 type**

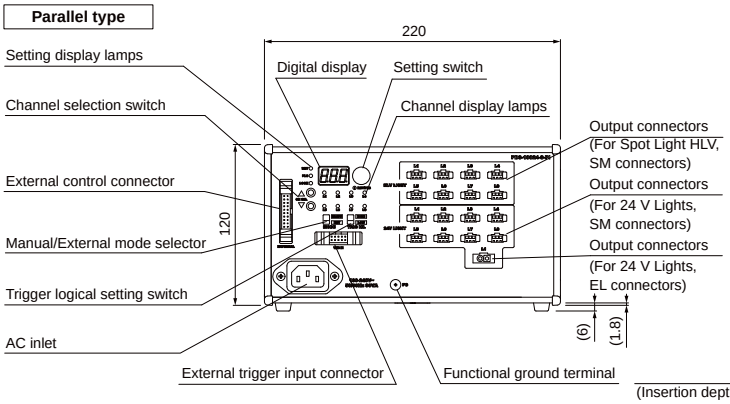


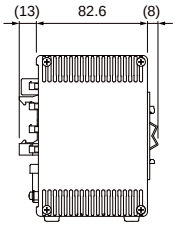
Ethernet/EIA-485 types have the same external dimensions as the parallel type.

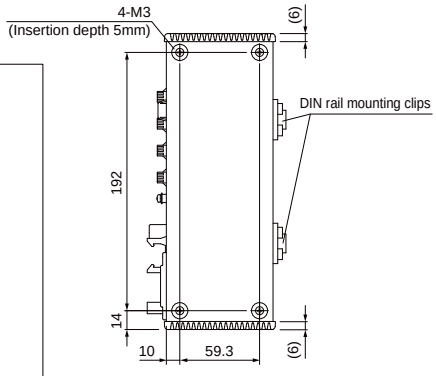
Dimensions (mm)

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

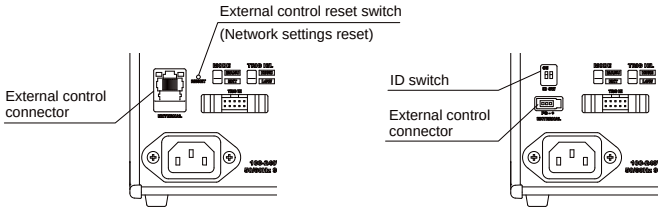
Parallel type







Ethernet type **EIA-485 type**



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

Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

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Options

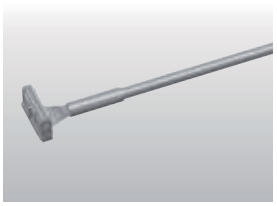
External control cables

Dimensions (mm)

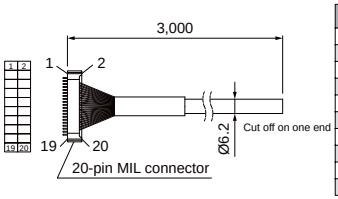
Parallel communication cable

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



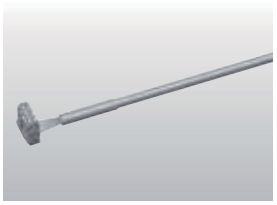
Model name: EXCB2-M20-3



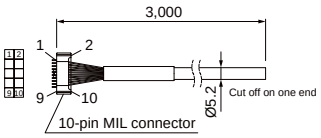
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1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



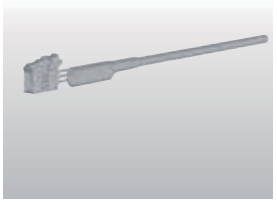
Model name: EXCB2-M10-3



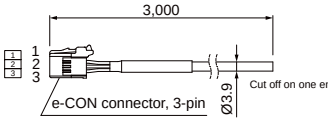
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

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).



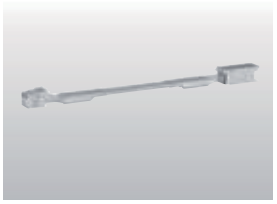
Model name: EXCB2-E3-3



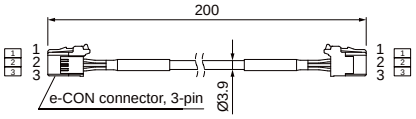
PIN No.	Line color	Embedded line color
1	Black	None
2	Black	White
3 (shielded)	Drain wire	None

EIA-485 communication relay cable

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



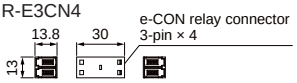
Model name: EXCB2-E3-E3-0.2



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

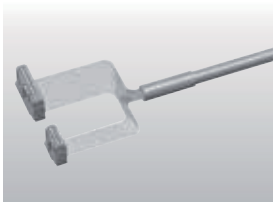
EIA-485 communication relay connector

Model name: ECNR-E3CN4

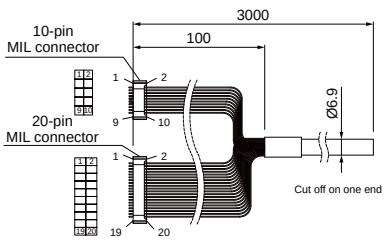


Parallel communication/Trigger input branch cable

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



Model name: EXCB2-M10M20-3



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

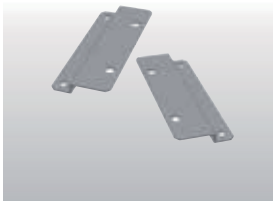
20-pin MIL connector

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

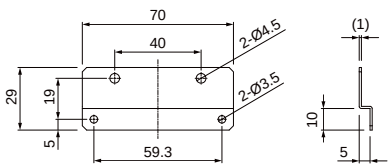
Base brackets

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)