



## Digital power supply with enhanced lighting control functions

### PD4 Series



60 W model



120 W model

### PD4-A Series

NEW

To be available shortly



30 W model



120 W 8-channel model

Ethernet



### Features

- Continuous lighting, ON/OFF mode, or strobe mode
- Lighting output of 30 W<sup>\*1</sup> / 60 W<sup>\*2</sup> / 120 W available
- Number of channels: 2 channels / 4 channels / 8 channels<sup>\*3</sup>
- Ethernet / parallel external control
- Trigger input signals and parallel input signals support both NPN and PNP connection.
- 1,024 steps of precise intensity settings
- All types feature natural air cooling, improving installability.
- Can be switched to PWM frequency 500 kHz mode.<sup>\*1</sup>
- Trigger input signal and parallel input signal 5 V input is possible.<sup>\*1</sup>

<sup>\*1</sup> PD4-A Series only<sup>\*2</sup> PD4 Series only<sup>\*3</sup> 8-channel is for 120 W model only<sup>\*4</sup> 256 light intensity setting levels in PWM frequency 500 kHz mode for the PD4-A Series.

### Various Lighting Control Functions

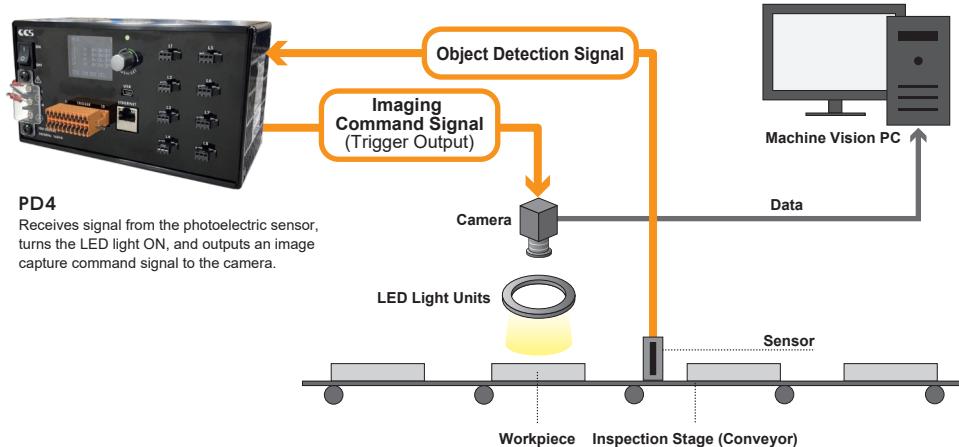
- Turn lights on in desired pattern with sequence control function
- Supports PLC link function for easy integration with PLCs
- Trigger output function simplifies the synchronization of the camera and lighting
- With Recipes setting, save lighting settings in a maximum of 8 recipes
- Real-time information monitoring from applications, such as operating status and operation logs



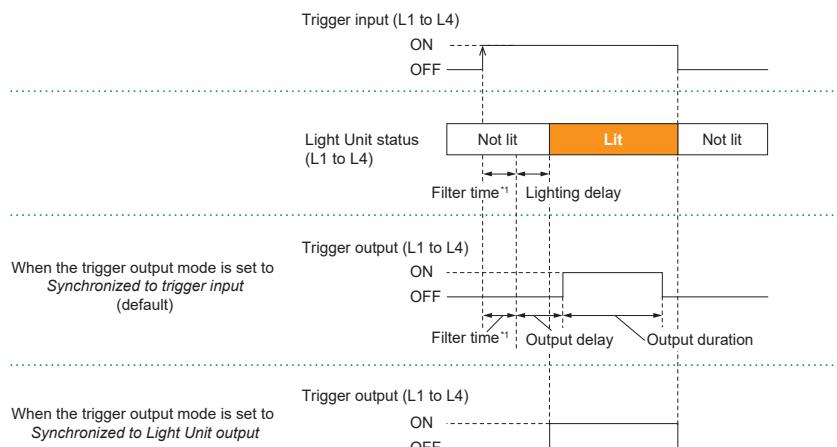
## Trigger Output Mode

Sends an output trigger signal to the camera so the timing of the light and camera can be synchronized.

### Trigger Output Application Example



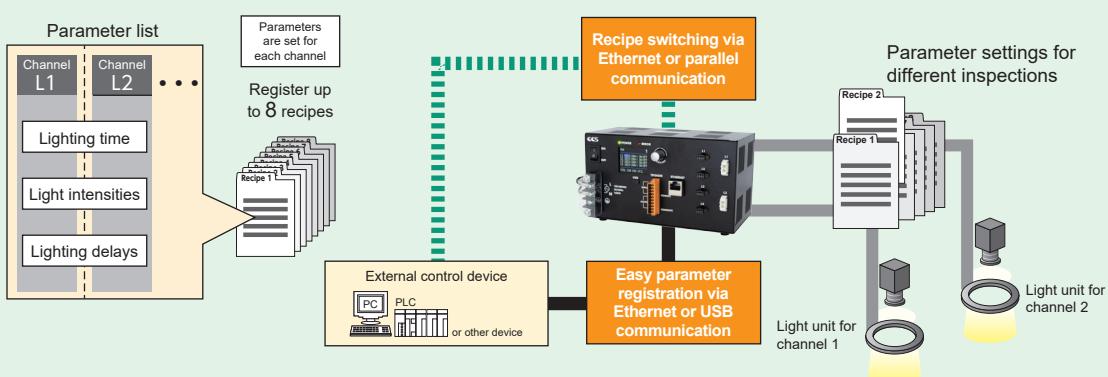
### Trigger Output Signal Connection Example



\*1 Filter time can be set when noise is mixed in with the signal input from the trigger pin.

## Recipes

Save lighting settings in a maximum of 8 recipes. Parameter settings such as intensity values for each channel and other inspection-specific parameter settings can be registered in advance, allowing for easy setting changes simply by recalling recipes.



<b>PD4/PD4-A</b>	PD3
	PD2
	CD-VA
	POD
	PTU2
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	CN-4024-2-EIPT
	PB-2430-1
	CC-ST-1024
	PJ2
	PJ
	CC-PJ-0707
	PSCC
	PSB4
	PSB3-30024

Control Units and Controllers

Lens Filters  
Diffusion Plates  
Polarizing Plates  
Light Control Films  
Fixtures, etc.  
Brackets  
SM/EL Cables

Options

## PD4/PD4-A Series



Refer to our website for product details.

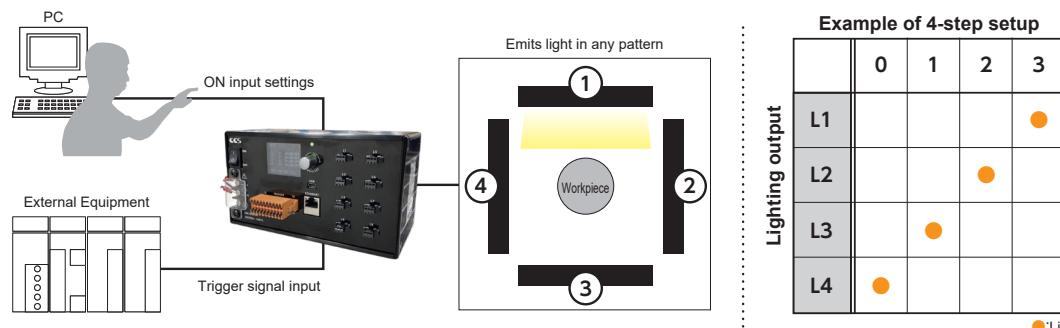
CCS PD4

▶ Search



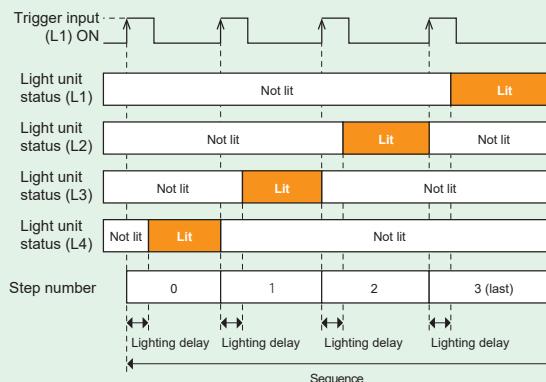
## ➤ Sequence

Program a maximum of 16 steps of ON input, turn lights on in desired pattern. For example, when using 4-quadrant bar lights or segmented lights to illuminate from multiple directions, the emission patterns for each channel can be stored and switched ON / OFF by trigger input.

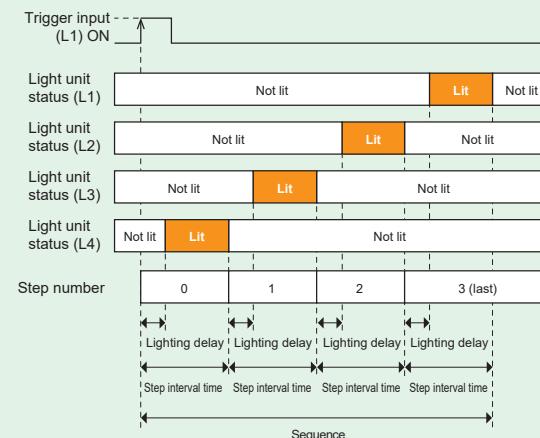


## ■ Difference in lighting operation depending on trigger operation mode setting values

## ● When the Set Value of the Trigger Operation Mode Is 1-Trigger 1-Step Sequence Operation



## ● When the Set Value of the Trigger Operation Mode Is 1-Trigger N-Steps Sequence Operation



- In addition to lighting pattern, light intensity and lighting time can also be set in levels\*
- Added function enabling change of lighting pattern implementation order and multiple implementations (up to 32 times)\*
- Added mode enabling change of sequence numbers in trigger operation mode via trigger input\*

\*This function is only available with the PD4-A Series.

## ■ Sequence Control Application Examples: Imaging using photometric stereo method

The workpiece is illuminated and imaged in each direction. It is possible to generate images that highlight only the unevenness or extract only the pattern by using the differences of each captured image.

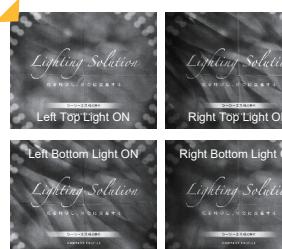
## ● Character inspection of patterned tiles



By removing patterns and extracting unevenness, it is possible to acquire images in which characters can be easily recognized.

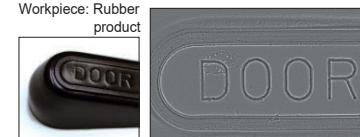
Imaged by illumination from 4 directions

## ■ Imaging Example (4 Divisions)



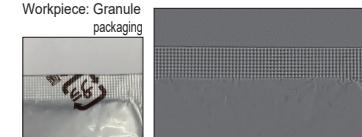
Composed by image processing

## ● Surface imaging on rubber products



By enhancing the unevenness of the rubber product, it is possible to acquire images in which characters can be easily recognized.

## ● Heat seal inspection



Removes the pattern and halation and obtains information on the unevenness of the heat seal.



Control Units and Controllers	
PD4/PD4-A	PD3 PD2 CD-VA POD PTU2 PF CX CN-EPOE CN-4024-2-EIPT PB-2430-1 CC-ST-1024 PJ2 PJ
CC-PJ-0707	PSCC PSB4 PSB3-30024
Lens Filters	
Diffusion Plates	
Polarizing Plates	
Light Control Films	
Fixtures, etc.	
Brackets	
SM/EL Cables	
Options	

## Example System Configuration

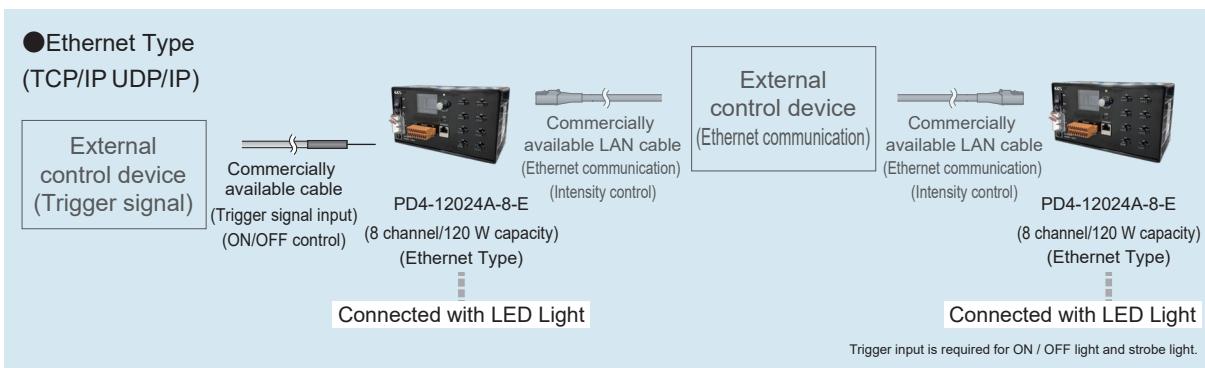
Example:

External control device — External control cables — Control unit — Extension cables — LED light

### ● Parallel Type



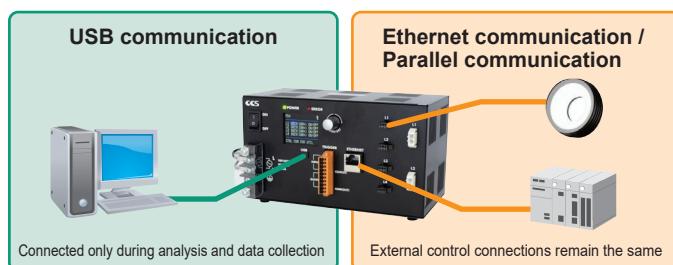
### ● Ethernet Type (TCP/IP UDP/IP)



## USB Communication

Equipped with a USB connector (Mini-B) to enable data communication with a PC while connected to external control devices.

### USB Connection Image



## Light and power adapter compatibility table (example)

To connect to the HLV3 Series, use a power adapter (sold separately).

Light Model Name	Emitting Color					Power Adapter Model Name (Custom Order)
HLV3-14	RD	SW	BL	GR	—	Model Name: RB-82-24-15SP Quantity of Light: 0.9X, Power Consumption: 7.3W <sup>1</sup>
HLV3-22-1 / -1C	RD	SW	BL	GR	—	Model Name: RB-56-24 Quantity of Light: 0.8X, Power Consumption: 11W <sup>1</sup>
HLV3-22-2 / -2C	RD	SW	BL	GR	—	Model Name: RB-56-24 Quantity of Light: 0.8X, Power Consumption: 18W <sup>1</sup>
HLV3-22-4S / 4M /-4C HLV3-22-NR-4 HLV3-22IR860	RD	SW	BL	GR	IR	Model Name: RB-56-24 Quantity of Light: 0.7X, Power Consumption: 25W <sup>1</sup>

<sup>1</sup> Power consumption is the total value of the applicable light and power adapter. Note) Quantity of light will be lower than when using the PJ Series control unit dedicated for spot lights.





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	PJ2
	PJ
	CC-PJ-0707
	PSCC
	PSB4
	PSB3-30024

Lens Filters

Diffusion Plates

Polarizing Plates

Light Control Films

Fixtures, etc.

Brackets

SM/EL Cables

Options

## Common Specification: Ethernet Type Model numbers ending with -NC: AC cable not included

Series	PD4 Series				PD4-A Series				
Model Name <sup>1</sup>	PD4-6024-2-E(-NC)	PD4-6024-4-E(-NC)	PD4-12024-2-E(-NC)	PD4-12024-4-E(-NC)	PD4-3024A-2-E(-NC)	PD4-3024A-4-E(-NC)	PD4-12024A-8-E(-NC)		
Input power supply	100 to 240 VAC ( $\pm 10\%$ ), 50/60 Hz								
Lighting method	Continuous / Strobe lighting (no overdrive)								
Drive method	Constant-voltage system								
Intensity control method	Continuous lighting: PWM control / Strobe lighting: PWM control and lighting time control								
Number of channels	2 channels	4 channels	2 channels	4 channels	2 channels	4 channels	8 channels		
Applicable light units (rated)	Light units with 24 VDC input, Total channels: 60 W (SM connector: one 60 W connector)	Light units with 24 VDC input, Total channels: 120 W (SM connector: one 60 W connector, EL connector: one 120 W connector)	*When using EL connector: L1 (CH1), L2 (CH2)		Light units with 24 VDC input, Total channels: 30 W (SM connector: one 30 W connector)	Light units with 24 VDC input, Total channels: 120 W (SM connector: one 60 W connector)			
Trigger input voltage	24 V				5 to 24 V				
PWM frequency	125 kHz				Select from 125 kHz and 500 kHz				
Overcurrent protection	Yes.				Operates at 114% min. of rated output current (per channel) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.	Operates at 109% min. of rated output current (per channel) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overpower protection	Yes.				Operates at 119% min. of rated output power (channel total) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.	Operates at 120% min. of rated output power (channel total) *Do not create an intentional short circuit between the positive (+) and negative (-) outputs.			
Overvoltage category	Category II								
Power consumption (max.)	155 VA	170 VA	84 VA	165 VA					
Inrush current (typ.) From a cold start	27 A (at 100 VAC), 63 A (at 240 VAC)	14 A (at 100 VAC), 34 A (at 240 VAC)	30 A (at 100 VAC), 70 A (at 240 VAC)	14 A (at 100 VAC), 34 A (at 240 VAC)					
Light intensity setting	Select from 1,024 levels and 256 levels *The PD4-A Series has 256 levels when selecting PWM frequency 500 kHz.								
External control method	Ethernet communication, PLCCOM communication, USB communication								
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation), Altitude: 2,000 m max. Protective ground class: Class I, Pollution degree: 2, Indoor use only								
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)								
Cooling method	Natural air cooling								
Applicable standards	CE <sup>2</sup> , UKCA, KC (model number ending with "-NC" only), RoHS compliant								
Material/surface processing	Steel sheet, black (leather satin)				Steel sheet, aluminum, resin, black alumite				
Weight	1.5 kg max.				0.62 kg max.	1.3 kg max.			
Accessories	One hardware manual, one Power Terminal Block Cover, two M4 screws for the cover, one 2-m-long 3-prong AC power cable with ground terminal <sup>1</sup> , one Trigger Terminal Block								

<sup>1</sup> Model numbers ending with -NC do not include an AC cable. Example model number: PD4-3024A-2-E-NC

Model number for AC cable alone is ACC-JIS-125-7-M5-2. See P.298 for details.

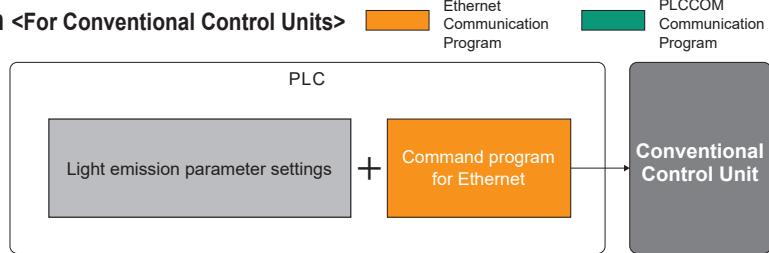
<sup>2</sup> CE compliance is conditional for PWM frequency 500 kHz. For details, please refer to the operation manual.

## PLCCOM Communication

Easily control lighting and read/write data without creating complicated programs for Ethernet.

### Without PLCCOM Communication <For Conventional Control Units>

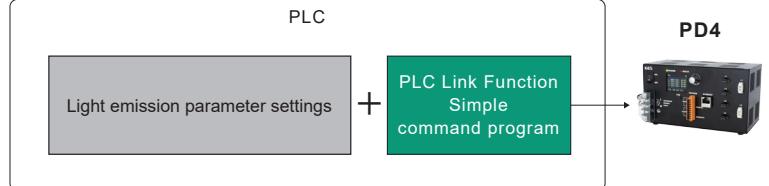
Complex command programs are required to set various lighting parameters.



Ethernet Communication Program  
PLCCOM Communication Program

### With PLCCOM Communication <For PD4>

Set and control various lighting parameters with a simple command program thanks to the PLC link function.



### PLCCOM Communication Specifications

For PLCs supporting MC protocol	For PLCs supporting FINS commands
<ul style="list-style-type: none"> <li>Device : Data register</li> <li>Protocol : MC protocol for MELSEC-Q Series</li> <li>Frame : 3E frame</li> <li>Transmission code : Binary</li> <li>Transport : TCP or UDP</li> </ul>	<ul style="list-style-type: none"> <li>I/O Memory : DM Area</li> <li>Protocol : FINS Commands</li> <li>Transmission code : Binary</li> <li>Transport : TCP or UDP</li> <li>FINS node address : For the TCP setting, specify the address that is automatically assigned by the PLC. For the UDP setting, specify the 4th octet of the IP address of the control unit. (Eg. When the IP address is 192.168.0.123, specify 123.)</li> </ul>

For details, see "Overview of PLCCOM Communication" on the operation manual.

Can be downloaded from the web page. <https://www.ccs-grp.com/products/series/371>

## PD4/PD4-A Series



Refer to our website for product details.

CCS PD4

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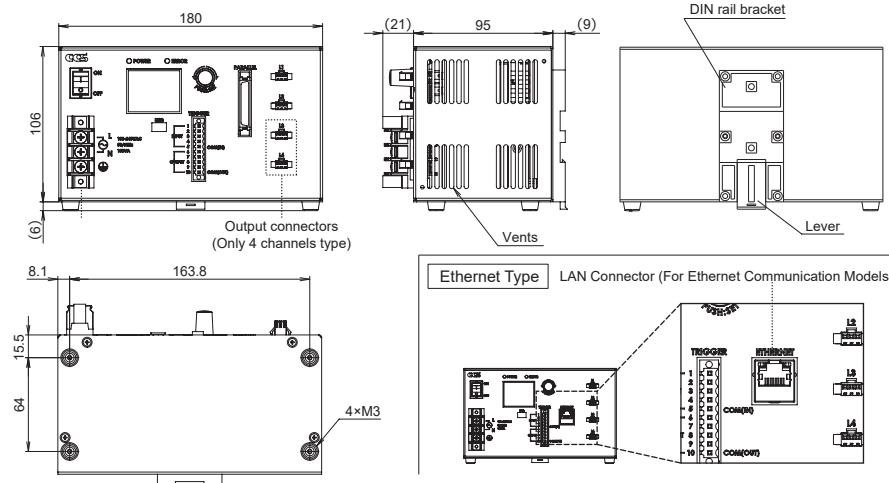


## ↗ Dimensions (mm)

## ● PD4 Series

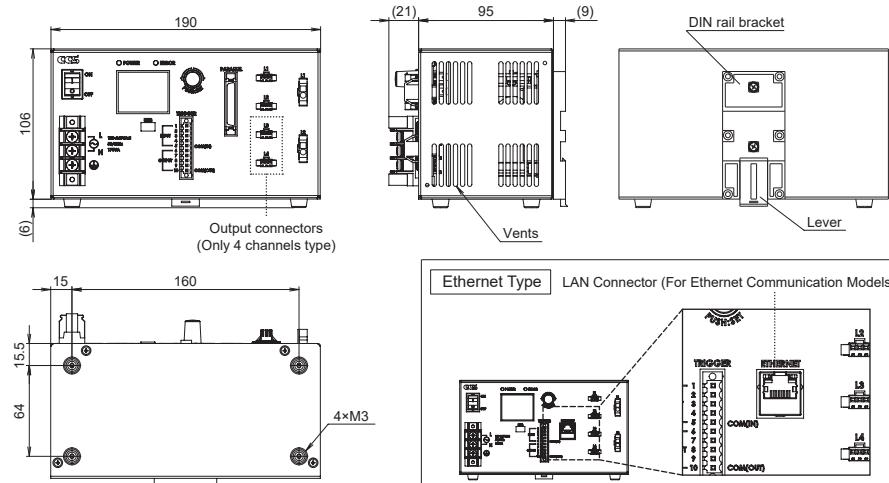
PD4-6024-4-E / PD4-6024-4-P / PD4-6024-2-E / PD4-6024-2-P

Parallel Type



PD4-12024-4-E / PD4-12024-4-P / PD4-12024-2-E / PD4-12024-2-P

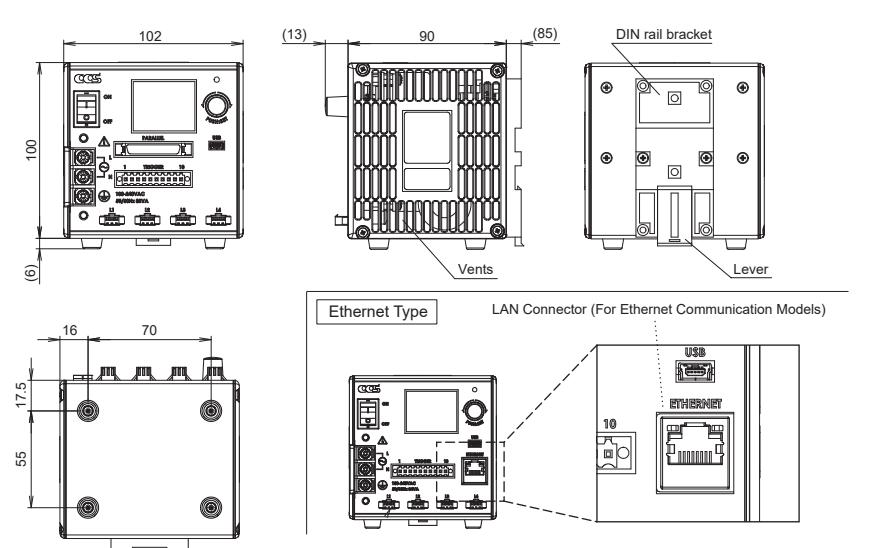
Parallel Type



## ● PD4-A Series

PD4-3024A-2-E / PD4-3024A-2-P / PD4-3024A-4-E / PD4-3024A-4-P

Parallel Type

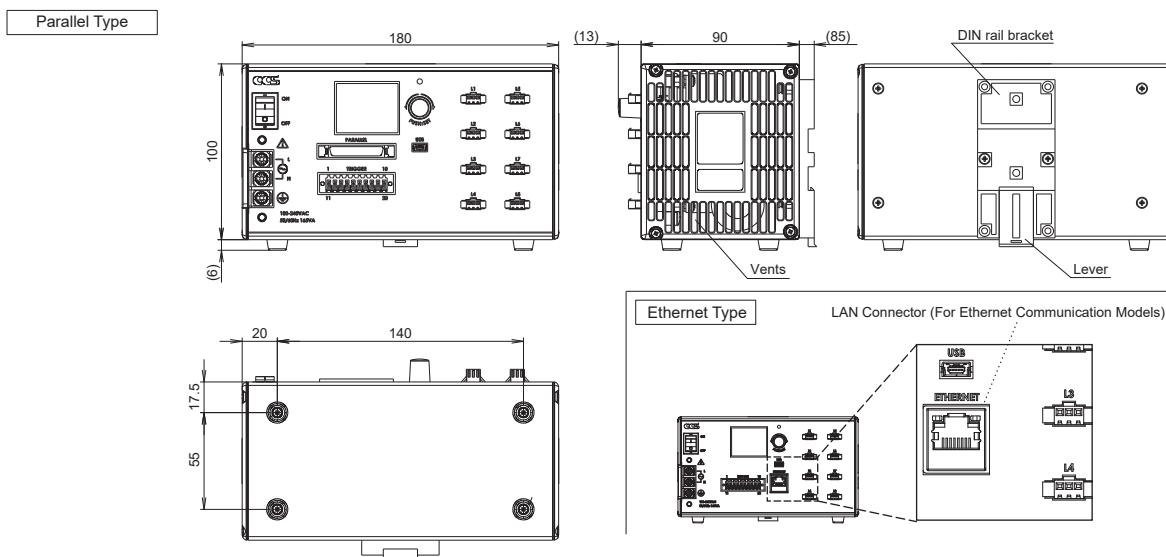




PD4/PD4-A	
PD3	
PD2	
CD-VA	
POD	
PTU2	
PF	
CX	
CN-EPOE	
CN-4024-2-EIPT	
PB-2430-1	
CC-ST-1024	
PJ2	
PJ	
CC-PJ-0707	
PSCC	
PSB4	
PSB3-30024	
Lens Filters	
Diffusion Plates	
Polarizing Plates	
Light Control Films	
Fixtures, etc.	
Brackets	
SM/EL Cables	

## Dimensions (mm)

PD4-12024A-8-E / PD4-12024A-8-P



## Options

Parallel Communication Cable Model Name: EXCB2-FX40-3

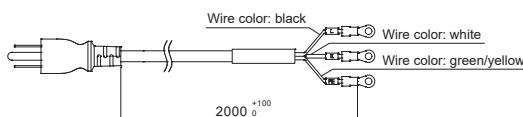
Used for performing external control via parallel communication.



PIN No	Line Color	Marking									
1	Orange	Red 1	11	Orange	Red 2	21	Orange	Red 3	31	Orange	Red 4
2	Orange	Black 1	12	Orange	Black 2	22	Orange	Black 3	32	Orange	Black 4
3	Gray	Red 1	13	Gray	Red 2	23	Gray	Red 3	33	Gray	Red 4
4	Gray	Black 1	14	Gray	Black 2	24	Gray	Black 3	34	Gray	Black 4
5	White	Red 1	15	White	Red 2	25	White	Red 3	35	White	Red 4
6	White	Black 1	16	White	Black 2	26	White	Black 3	36	White	Black 4
7	Yellow	Red 1	17	Yellow	Red 2	27	Yellow	Red 3	37	Yellow	Red 4
8	Yellow	Black 1	18	Yellow	Black 2	28	Yellow	Black 3	38	Yellow	Black 4
9	Pink	Red 1	19	Pink	Red 2	29	Pink	Red 3	39	Pink	Red 4
10	Pink	Black 1	20	Pink	Black 2	30	Pink	Black 3	40	Pink	Black 4

AC Power Cable Model Name: ACC-JIS-125-7-M4-2

\* Model numbers ending with -NC do not include an AC cable.



## Setting Applications

- All functions can be set, from basic lighting functions such as light intensity and lighting time to applied functions such as trigger output, recipe setting, and sequence control.
- Information such as lighting operation status and operation log can be monitored in real time



\* Setting applications available differ between PD4 Series and PD4-A Series.

Please download from our website upon confirmation of the existing power supply series.