

LED Lighting Controller

OPPD Series

Ultra-compact controller

- 1/12 the size of conventional models
- Easily visible digital display
- Full synchronization between external illumination control input and PWM



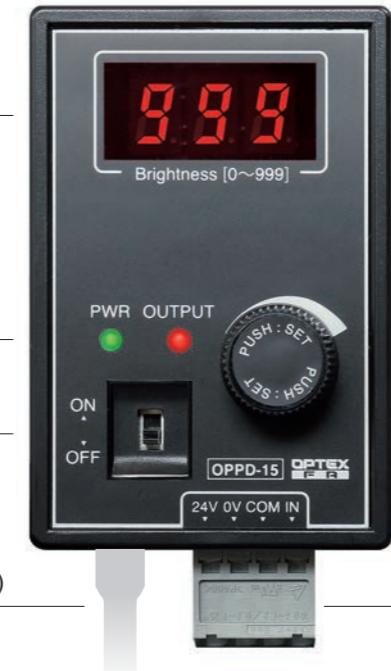
Introducing an LED lighting controller packed with advanced features in the industry's smallest compact size class!

Dimming value digital display [0 to 999]

Power and Output indicators

Output selection switch

Illumination output (12 VDC)



Actual size

W48 × H72 × D30 mm
(not including dial and connector)

Dimming value setting dial

24 VDC input / lighting control input screw-less terminal block

Specifications

OPPD	Model	PWM Frequency / Dimming	Illumination Output	Capacity [W]	Input Voltage	Weight [g]
OPPD	OPPD-15	100 kHz, 1,000 steps				
OPPF	OPPD-15-f500	500 kHz, 200 steps	1ch	15	24 VDC ±10%	60
OPPCW	OPPD-15-f1M	1 MHz, 64 steps				

Options

OPPD panel mounting bracket

Model	Weight [g]
BKT-OPPD	50

Model OPPD-15-f500

■ 200 steps even with a PWM frequency of 500 kHz thanks to 100 MHz operation clock ultra-high-speed digital control

With conventional models, 32 steps at a PWM frequency of 500 kHz is typical. However, with a 100 MHz operation clock capable of ultra-high-speed digital control, OPPD Series controllers are capable of up to 200 steps at 500 kHz, more than 6 times that of conventional models, the industry's highest specification. The OPPD Series can be used for high-precision dimming control in high-speed inspection lines with short shutter speeds as well as with high-speed line cameras with high capture speeds

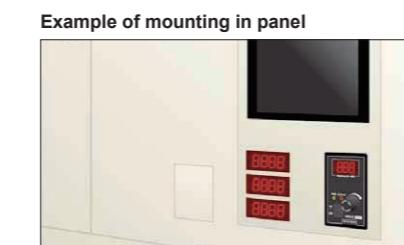
Model OPPD-15-f1M

■ Industry's highest PWM frequency at 1 MHz

New models with a further improved PWM frequency of 1 MHz are now available. At a frequency of twice that of 500 kHz models, light intensity variation has been reduced by half. Dimming is possible at 64 steps.



One-touch DIN-rail mounting and removal allow for significant reductions in workload. Also, because no extra bracket is required, installations are firm and stable.

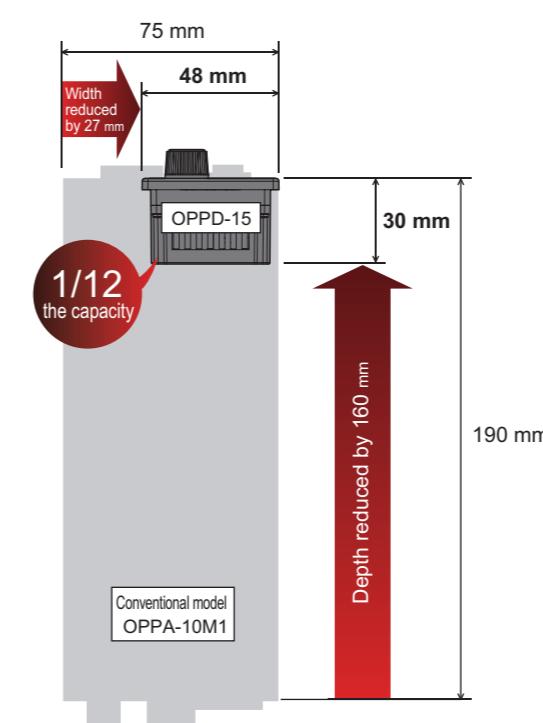


An optional bracket is available for panel installation. Mounting the controller on a panel is convenient for such cases as when the dimming value is frequently changed.

Features

■ Compact, industry's smallest class size!

Thanks to high-density mounting technology and an optimal heat dissipation design, the OPPD Series boasts a size just 1/12 that of conventional digital dimming products. Devices are compact and palm-sized at only W48 × H72 × D30 mm.



■ Easily visible digital display with 1,000 dimming steps!

The OPPD Series features an easily visible digital display with 1,000 dimming steps. Pushing the dimming dial to select the digit to adjust. This makes it possible to configure up to 1,000 steps quickly. In addition, operation can be locked by pressing and holding the push button.



Save dimming values to internal memory

By storing the dimming value in the built-in EEPROM, the value will be retained even if the power is turned OFF.

When the line stops, the dimming value will not be lost even if the main equipment power is turned OFF to save energy.

OPR	Ring
OPR-SF	
OPB	Bar
OPB-S	OPB
OPF	Backlight
OPX	Coaxial
OPS-S	Spot

OPPD	OPPF	OPPCW
OPPF		
OPPCW		

OP	MDF
Options	

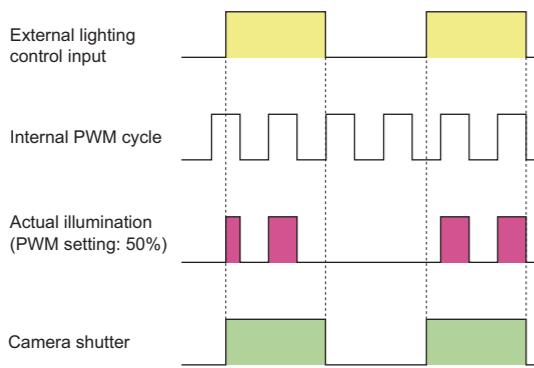
OPPD	OPPF	OPPCW
OPPF		
OPPCW		

OP	MDF
Options	

■ **No changes in brightness thanks to full synchronization between illumination control input and PWM**
Even with fast shutter speeds, illumination is synchronized when using external input lighting, eliminating variations in brightness.

Conventional

The internal input for external control and the PWM frequency are not synchronized, so brightness will vary with every illumination.

**External control lighting mode**

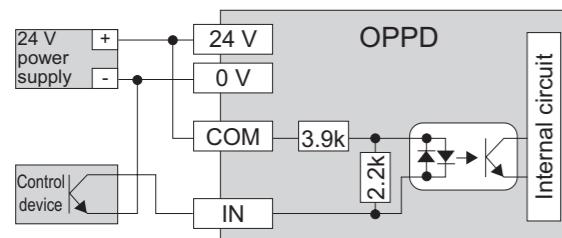
The polarity of external lighting control can be switched between "Lighting ON at input" and "Lighting OFF at input." Even when the external input is ON, the output switch can be used to turn the lighting ON and OFF.

Illumination status		External input	
		OFF	ON
Output selection switch	ON	Lit	Not lit
	OFF	Not lit	Lit

When external input (24 V) is ON, high-speed operation at 18.5 μ s is possible. Response times with external input ON and external input OFF are different.

External input (at 24 V) response time until ON: 18.5 μ s, until OFF: 65 μ s

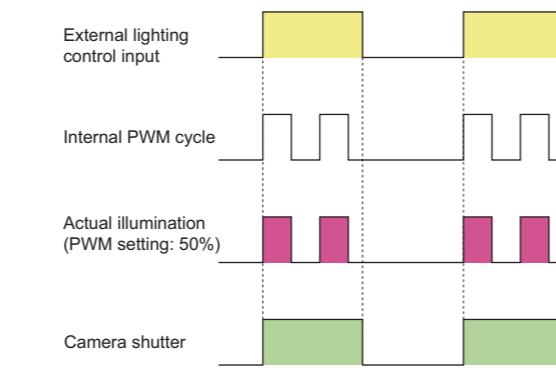
Illumination status response time		External input	
		ON → OFF	OFF → ON
Output selection switch	ON	Illumination operation 65 μ s	Illumination OFF operation 18.5 μ s
	OFF	Illumination OFF operation 65 μ s	Illumination operation 18.5 μ s

Connection to external device (illumination control)**With NPN open collector output device**

*When connecting voltage output control equipment, input 12 to 30 VDC between IN and COM.
The photocoupler input is bipolar.

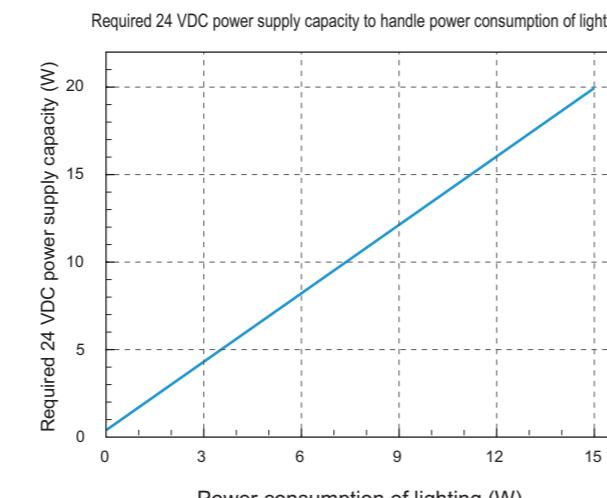
Full synchronization between illumination control input and PWM

The external control input and PWM are synchronized before starting is initiated, preventing variations in the cumulative illumination times of each lighting.

**Required 24 VDC power supply capacity**

Based on the power consumption of the lighting to be connected, select a 24 VDC power source that offers more than the required capacity.

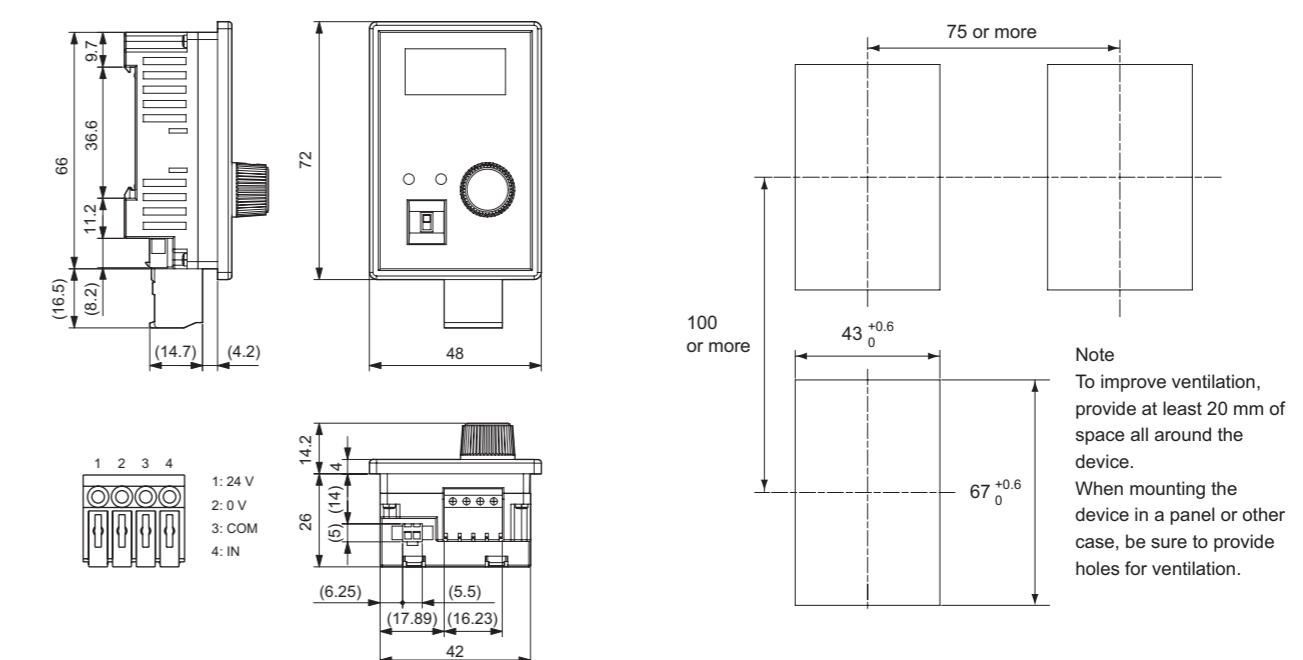
*Max. power consumption of connectable LED lighting: 15 W

**Note:**

When using in conjunction with other equipment, the characteristics of the other equipment will affect the power supply, so be sure to choose a power supply that has a sufficient margin (about twice as much) as that shown in the table.

Specifications

Model	OPPD-15	OPPD-15-f500	OPPD-15-f1M
Input voltage		24 VDC $\pm 10\%$	
Current consumption		Max. 0.9 A	
Dimming control	PWM dimming Frequency: 100 kHz, 1,000 steps	PWM dimming Frequency: 500 kHz, 200 steps 5-step numerical display (0, 5, 10, 15, ..., 995)	PWM dimming Frequency: 1 MHz, 64 steps 15-step numerical display (0, 15, 30, 45, ..., 990)
Dimming setting	Rotary knob / push switch built-in, 7-segment 3-digit display		
Output voltage	12 VDC		
Illumination control input	12 to 30 VDC ON voltage: 8 V or more, OFF voltage: 1.7 V or less, Max. input voltage: 30 V, Input resistance: 3.9 k Ω , Insulated		
Illumination control response time	With 24 V input (OFF → ON): 18.5 μ s ON → OFF: 65 μ s With 12 V input (OFF → ON): 22.0 μ s ON → OFF: 65 μ s		
Recommended wiring	Single wire: $\phi 0.8$ mm (20 AWG), Twisted wire: 0.50 mm 2 (20 AWG)		
Available wiring	Single wire: $\phi 0.4$ mm to $\phi 1.2$ mm (26 AWG to 16 AWG) Twisted wire: 0.2 mm 2 to 1.25 mm 2 (24 AWG to 16 AWG) Wire diameter: $\phi 0.18$ mm or more, Strip length: 9 mm		
Ambient temperature/humidity	0 to 50°C / 35 to 85% RH (no condensation)		
Storage temperature/humidity	-20 to 70°C / 35 to 95% RH (no condensation)		
Vibration resistance	10 to 55 Hz; amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions		
Shock resistance	Approximately 10 G, 3 times in each of the X, Y, and Z directions		
Material	Polycarbonate		
Protection rating	IP30 (IEC 60529: 1989 / A1: 1999 + A2: 2013)		
Applicable regulations	EMC (2014/30/EU) / RoHS (2011/65/EU, MIIT Order No.32)		
Applicable standards	EN 61000-6-2: 2005 / AC: 2005, EN 55011: 2009 / A1: 2010		
Accessories	Screw-less terminal block × 1		

Dimensions**All OPPD Series models**

Panel mounting dimensions (panel mounting hole: 67 × 43 mm)
Mountable thickness: 1 to 4 mm

(unit: mm)

Note
To improve ventilation, provide at least 20 mm of space all around the device.
When mounting the device in a panel or other case, be sure to provide holes for ventilation.