

- Thank you for purchasing this "OPF Series" sensor-controlled backlight.
- Before using this product, please read this manual carefully to ensure proper use.
- This product is industrial LED lighting for use as a machine vision light source.
- The warranty period of this product is one year after delivery. However, any fault attributable to natural disasters or any other similar disasters or undue alteration or repair will be excluded from the scope of the warranty.

## 1. Safety Precautions

Safety precautions for ensuring safe operation of this product are displayed as follows with the following symbols. Precautions listed here describe important information about safety. Make sure to follow them accordingly.

### ■ Safety Symbols

The safety symbols and their meanings are as follows.

	<b>Warning</b>	Indicates that any improper operation or handling may result in moderate or minor injury, and in rare cases, serious injury or death. Also indicates a risk of serious property damage.
	<b>Caution</b>	Indicates that any improper operation or handling may result in minor injury or property damage.

<b>Warning</b>			
	Do not disassemble, repair, modify, deform under pressure, or attempt to incinerate this product. Doing so may cause injury or fire.		
	Do not use this product in water or in a location where it may be exposed to water. Do not use this product if wet. Doing so may cause a fire or damage the product.		
	This product is not explosion-proof and should not be used around flammable or explosive gases or liquids. Doing so may cause ignition resulting in a fire.		
	Do not use air dusters or any spray that uses flammable gas around the product or on the inside of the product. Doing so may cause ignition resulting in a fire.		
	Do not install this product or its cables in any of the following locations. Doing so may cause a fire, damage, or a malfunction. <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">           1. Locations where dust, salt, iron powders, or vapor (steam) is present.            2. Locations subjected to corrosive gases or flammable gases.            3. Locations where water, oil, or chemical splashes may occur.            4. Locations where heavy vibrations or impacts may occur.            5. Locations where the ambient temperature exceeds the rated range.            6. Locations subject to rapid temperature changes (or where condensation occurs).         </td> <td style="width: 50%;">           7. Locations with strong electric or magnetic fields.            8. Outdoor locations or locations subject to direct sun light.         </td> </tr> </table>	1. Locations where dust, salt, iron powders, or vapor (steam) is present. 2. Locations subjected to corrosive gases or flammable gases. 3. Locations where water, oil, or chemical splashes may occur. 4. Locations where heavy vibrations or impacts may occur. 5. Locations where the ambient temperature exceeds the rated range. 6. Locations subject to rapid temperature changes (or where condensation occurs).	7. Locations with strong electric or magnetic fields. 8. Outdoor locations or locations subject to direct sun light.
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	Do not connect any power source other than the dedicated controller. Doing so may cause a fire or damage the product.		
	Do not stare directly into the light-emitting surface while the lamp is lit. Doing so may cause damage to the cornea or the retina.		
	Do not use this product in a non-industrial environment. Doing so may cause induction or radiation interference.		
	In the event of a malfunction such as smoke comes out from the product If you detect any malfunction including emission of smoke, abnormal smells or sounds, or the housing becoming very hot, immediately stop operating the product and turn off the power to the controller. Doing so may cause a fire. Repairing the product is dangerous and should in no way be performed by the customer. Contact the Optex FA sales office.		
	In case water enters the product If water or any other liquid enters the product or the cable, immediately stop operating the product and turn off the power to the controller. Using the product in this condition may cause a fire.		

<b>Caution</b>	
	Do not touch the product or the cable with wet hands. Doing so may damage the product.
	Do not drop the product or subject the product to strong impacts. Doing so may damage the product.
	During operation, this product becomes very hot. Do not keep touching it. Doing so may cause a low-temperature burn.
	Follow the instructions in this manual or the specified instruction manual when wiring the product or the dedicated controller for the correct wiring method. Incorrect wiring can damage the product or the controller or cause a malfunction.
	Use the dedicated cable for connecting the product to the controller. Use of anything other than the dedicated cable may cause a malfunction or damage the product.
	Do not excessively twist or apply stress to the cable. Doing so may damage the cable or the connector.
	When connecting the cable, make sure to hold it by the connector portion, and do not apply excessive force to the cable.
	When disconnecting the connector, be careful not to touch the terminals inside the connector, and do not allow foreign objects to enter the connector.
	Route wiring separately from high-voltage circuits and power circuits. If the wires are routed together, induction may occur, which can cause a malfunction or damage the product. If this is unavoidable, use a conductive object such as a properly grounded conduit as a shield.
	Install this product as far away from high-voltage equipment, power equipment, equipment that generates large switching surges, welders, inverter motors, or any equipment that can be a source of noise.
	Use the product within the rated ranges.
	Install this product and the dedicated controller securely. Failure to ensure secure installation can result in the products falling and becoming damaged.
	Make sure to turn the power off before connecting or disconnecting the cable. Connecting or disconnecting while energized may damage the product.

## ■ Handling Precautions

1. After carefully considering the intended use, required specifications, and usage conditions, install and use the product within the specified ranges.
2. All specifications may be changed without notice.
3. When using this product, it is the responsibility of the customer to ensure necessary safety designs in hardware, software, and systems in order to prevent any threat to life, physical health, and property due to product malfunction or failure.
4. This product is not intended for use with nuclear power, railways, aviation, vehicles, medical equipment, food-handling equipment, or any application where particular safety measures are required. Absolutely do not use this product for any of these fields.
5. This product cannot be used in applications that directly or indirectly detect human bodies for the purpose of ensuring safety. Do not use this product as a detection device for protecting the human body.
6. Do not use this product for the development of weapons of mass destruction, for military use, or for any other military application. Moreover, if this product is to be exported, comply with all applicable export laws and regulations, including the "Foreign Exchange and Foreign Trade Act" and the "Export Administration Regulations," and carry out the necessary procedures pursuant to the provisions therein.
7. For more details on conformity to the Restriction of Hazardous Substances Directive for this product, please contact an Optex FA sales representative. Before using this product, fully examine the applicable environmental laws and regulations, and operate the product in conformity to such laws and regulations. Optex FA does not assume any responsibility for damages or losses occurring as a result of noncompliance with applicable laws and regulations.

## 2. Lineup

Type	Model		Luminescence area	Weight	Power consumption
Diffuse type (compatible with conventional models)	OPF-S27x27□-DF	○	27×27mm	35g	2.2W
	OPF-S43x35□-DF	○	43×35mm	50g	3.7W
	OPF-S51x51□-DF	○	51×51mm	60g	5.2W
	OPF-S63x60□-DF	○	63×60mm	80g	6.7W
	OPF-S77x77□-DF	○	77×77mm	130g	9.0W
	OPF-S100x100□-DF	○	100×100mm	180g	13.0W
Convergent type	OPF-125x125□-DF	—	125×125mm	260g	18.0W
	OPF-150x150□-DF	—	150×150mm	340g	23.5W
	OPF-S27x27□-PS	○	27×27mm	35g	2.2W
	OPF-S43x35□-PS	○	43×35mm	50g	3.7W
	OPF-S51x51□-PS	○	51×51mm	60g	5.2W
	OPF-S63x60□-PS	○	63×60mm	80g	6.7W
	OPF-S77x77□-PS	○	77×77mm	130g	9.0W
	OPF-S100x100□-PS	○	100×100mm	180g	13.0W
	OPF-125x125□-PS	—	125×125mm	260g	18.0W
	OPF-150x150□-PS	—	150×150mm	340g	23.5W

□ = W (white), B (blue), R (red)

\*For "FALUX sensing," connect only to an OPFF Series (Ver. 109/410 or later) lighting controller.

## 3. Specifications

<b>Illumination color</b>	White	Blue	Red
<b>Color temperature/wavelength</b>	6,500 K	470 nm	630 nm
<b>Input voltage</b>	12 VDC *Connect to dedicated controller.		
<b>Degradation of LED</b>	For brightness to drop 10% (100% variable lighting, 30°C, after 10,000 hours) *Typical values		
<b>Classification(IEC62471:2006)</b>	Exempt group	Risk Group 1(Low-Risk)	Exempt group
<b>Applicable regulations/standards</b>	EMC compliant (2014/30/EU) / EN 61326-1:2013		
<b>Protection rating</b>	IP40 (IEC 60529: 1989/A1: 1999 + A2: 2013)		
<b>Operating temperature/humidity</b>	0 to 40°C/35 to 85% RH (no condensation)		
<b>Storage temperature/humidity</b>	-20 to 70°C/35 to 95% RH (no condensation)		
<b>Vibration resistance</b>	10 to 55 Hz; amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions		
<b>Shock resistance</b>	Approximately 10 G, 3 times in each of the X, Y, and Z directions		
<b>Material</b>	Housing: Aluminum alloy and stainless steel		
<b>Options</b>	Abrasion-resistant cover, polarizing plate, and bracket		

## 4. Precautions for Correct Use

### Installation

- Install it to material with good heat dissipation characteristics because this product requires heat dissipation. If the temperature of the housing will exceed 55°C, install the housing to a metal bracket with four times the surface area of the product's light-emitting surface.
- Use mounting screws equal to or shorter than the specified length, and tighten the screws to the specified torque.
  - Tightening torque for product mounting screws (M3): 60 cN·m
  - Tightening torque for polarizing plate mounting screws (M2): 5 cN·m
- Please note that the narrow directivity angle type has built-in optical film, so the light-emitting surface should not be subject to outside impacts. Impacts may affect the lens structure of the optical film and carry a risk of causing localized reductions in luminance.

### Maintenance

- Do not use thinners, benzene, acetone, alcohol, or kerosene to clean the light-emitting surface. If dust or the like gets on the light-emitting surface, wipe with a soft cloth (such as a lens cleaner). Wiping forcefully may result in scratches appearing.

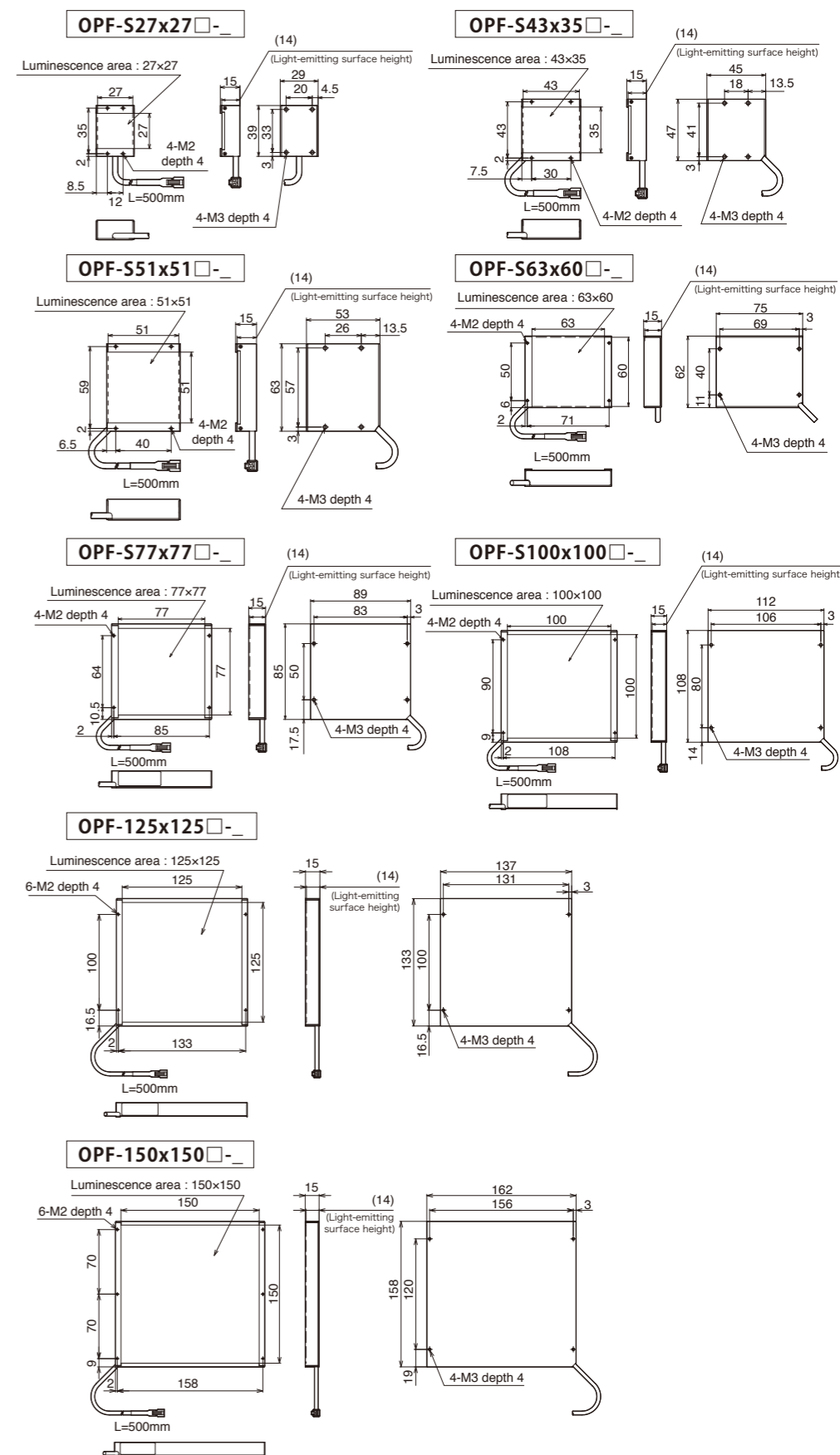
### Power

- To use the brightness monitor and feedback function, connect the product to an OPFF Series LED lighting controller (Ver. 109/410 and later).
- \* When not using the brightness monitor or feedback function (when used just for illumination), use a 12 VDC power source.

### Brightness monitor and feedback function (FALUX sensing)

Set the PWM frequency of the controller (OPFF Series) to 100 kHz (the initial value) or 50 kHz. If the lighting extension cable is longer than five meters, it may be difficult for the voltage of the lighting to rise due to the voltage drop resulting from the cable's inductance component and the cable's conductor resistance. This may result in a feedback error. In such cases, either use a cable that is shorter than five meters, or set the PWM frequency of the OPFF Series to 50 kHz.

## 5. Dimensions



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