

Sensor-controlled Spot Lighting

OPS-S Series Instruction Manual

- Thank you for purchasing this "OPS-S Series" sensor-controlled spot lighting.
- 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 two years (one year for radiant quantity), starting from the delivery date. Optex FA will repair or replace the product free of charge if it should fail to function or if the radiant quantity of the product should drop to 50% or less of its initial radiant quantity within the specified warranty period. 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.

	Warning	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.
	Caution	Indicates that any improper operation or handling may result in minor injury or property damage.

Warning	
	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. 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.
	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 or 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.

Caution	
	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.
6. Do not use this product as a detection device for protecting the human body.
7. 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.
8. 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			Power consumption	Input voltage
High-brightness type	OPS-S20W	Applicable	Applicable	2.8W	DC12V
	OPS-S20R			2.5W	
	OPS-S20B			2.8W	
Highly uniform type	OPS-S20W-U			2.8W	
	OPS-S20R-U			2.5W	
	OPS-S20B-U			2.8W	

3. Specifications

Model	High-brightness type	OPS-S20W	OPS-S20R	OPS-S20B
	Highly uniform type	OPS-S20W-U	OPS-S20R-U	OPS-S20B-U
Illumination color		White	Red	Blue
Color temperature/wavelength		6,300K	640nm	470nm
Input voltage	12 VDC *Connect to dedicated controller.			
Power consumption		2.8W	2.5W	2.8W
Light-emitting surface size	φ 7mm			
Recommended PWM frequency	50kHz~150kHz			
Self-oscillation frequency when DC voltage is applied	50kHz~60kHz			
Ambient temperature/humidity	0 to 40°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; 8 hours in each of the X, Y, and Z directions			
Shock resistance	10 G, 3 times in each of the X, Y, and Z directions			
Classification (IEC62471:2006)	OPS-S20W / OPS-S20B(-U) : Risk Group 2 (Moderate-Risk) OPS-S20W-U / OPS-S20R(-U) : Risk Group 1 (Low-Risk)			
Applicable regulations/standards	EMC (2014/30/EU), RoHS (2011/65/EU, MIIT Order No.32) / EN 61326-1:2013			
Protection rating	IP40 (IEC 60529:1989 / A1:1999+A2:2013)			
Degradation of LED	40,000h		30,000 h	40,000 h
	*For brightness to drop 30% (100% duty cycle, 25°C) *Typical values			
Protection circuit	Internal temperature ≥ 100°C: Self-sustained shutdown			
Material	Housing: ADC12, Lens: PC (UV-resistant)			
Weight	40 g			

Model selection according to telecentric lens		WD (mm)			
Magnification	0.1x~0.3x	—			
	0.5x	—			
	0.8x	—			
	1x				
	1.5x				
	2x				
	3x				
	4x				
	6x				
	8x				

- Highly uniform type OPS-S20□-U
- High-brightness type OPS-S20□
- Available with both highly uniform and high-brightness types

4. Precautions for Correct Use

Installation

- Install it to material with good heat dissipation characteristics because this product requires heat dissipation.
- 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

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 wiping may result in scratches appearing.

Power

- To use the brightness monitor and feedback function, connect the product to an OPFF Series LED lighting controller (excluding 500 kHz models).
- * When not using the brightness monitor or feedback function (when used just for illumination), power sources other than the OPFF Series can also be used. When using a controller (power source) other than the OPFF Series, when a dimming value is set to +/-85% and above, the set dimming value and the actual emission brightness will not be proportional. In order to operate the "FALUX-it" voltage conversion circuit, the time it takes for PWM to turn ON is longer because the self-oscillation circuit is operating. (Applicable controllers: OPDD, OPCCW, OPPE, OPFA, OPP, OPWW)

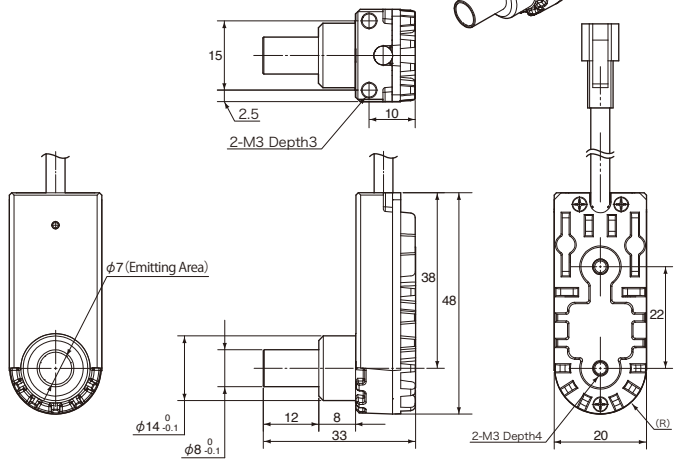
Brightness monitor and feedback function

- Please note that the feedback function may not work properly if the light-emitting surface is irradiated with strong light.
- 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 low.
- To use the brightness monitor and the feedback function of OPS-S series (Version : 7 or later), please use LED controller Advanced "OPFF series (Version : 109/410 or later)". Lighting device's version is verified by OPFF's operation. Please refer to the OPFF's instruction manual for detailed procedure.
- * When not using the brightness monitor or feedback function (when used just for illumination), use a 12 VDC power source.

5. Dimensions

Details of Connector

	1 plus + (White)	2 minus - (Black)
	SMR-02V-B	SMP-02V-BC
Contact	BYM-001T-0.6	BHF-001T-0.8SS



■ China RoHS compliant

Refer following homepage about "Commitment to China RoHS".
http://www.optex-fa.com/rohs_cn/

OPTEx FA CO., LTD.

Headquarters : 91 Chudoji-Awata-cho Shimogyo-ku Kyoto 600-8815 JAPAN

OPTEx FA Homepage	http://www.optex-fa.jp
OPS-S Series products do not use parts considered strategic materials.	

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