

**DLN** series (Infrared LED type)

**c ₹1**° us ∈ €

# Versatile BGS/FGS sensor with an Infrared LED light source





# ■ For specific applications

where an invisible light spot is preferable, such as automatic faucets or gaming machines.

# ■ For specific materials

that absorb visible red light.

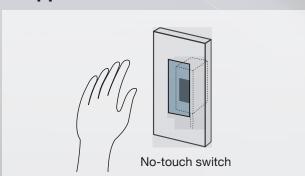
## **■** BGS/FGS selectable

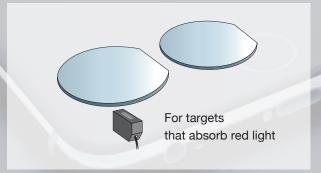
BGS: Background suppression FGS: Background recognition (BGR)

## ■ NPN/PNP dual output

for more efficient inventory management.

## Application





#### **■ SPECIFICATION**

Output mode       NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:2V or less         Light source (wavelength)       Infrared LED (850nm)         Response time       0.5 ms or less         Hysteresis       5% or less         Indicator       Operation indicator: orange LED Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (**4)         Material       Case       PBT         Lens       Attached cable (outer diameter \$0.0mm)       Attached cable (outer diameter \$0.0mm)         0.15mm² × 4 cores 2m black       Ozem² × 4 cores 2m black         Weight       32g	- OI LOII IC	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Detecting distance (**1)         10 to 100mm         10 to 200mm (setting from 90 to 200mm)           Setting distance (**2)         24 to 100mm         90 to 300mm (setting from 201 to 300mm)           Set distance at factory         40mm         200mm           Power supply         12 to 24VDC, class 2 / Ripple 10% or less           Current consumption         16mA or less         18mA or less           Operation mode         Light ON / Dark ON selectable (by switch)           Output mode         NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:2V or less           Light source (wavelength)         NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:2V or less           Light source (wavelength)         NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:1V or less           Light source (wavelength)         NPN / PNP open collector outputs (**3) NPN open collector output / Load current 100mA(30VDC.class 2) or less / Residual voltage:2V or less	Mod	el	DLN-S4V	DLN-S20MV	
Setting distance (**2)   24 to 100mm   90 to 300mm (setting from 201 to 300mm)	Detection method		BGS (Background suppression) / FGS (Background recognition)		
Set distance at factory         40mm         200mm           Power supply         12 to 24VDC. class 2 / Ripple 10% or less           Current consumption         16mA or less         18mA or less           Operation mode         Light ON / Dark ON selectable (by switch)           Output mode         NPN / PNP open collector 2 outputs (%3) NPN open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less           Light source (wavelength)         Infrared LED (850nm)           Response time         0.5 ms or less           Hysteresis         5% or less           Indicator         Operation indicator: one put indicator: one put indicator: green LED           Volume         Distance setting volume (5-turn endless potentiometer)           Switch         BGS / FGS selector. Light ON / Dark ON selector           Circuit protection         Output short circuit / Reverse connection / Surge protection           Anti interference         Automatic mutual interference prevention function (%4)           Material         Case Lens         PBT           Lens         Attached cable (outer diameter φ3.0mm)         Attached cable (outer diameter φ4.0mm)           0.15mm² × 4 cores 2m black         0.2mm² × 4 cores 2m black           Weight	Detecting distance (%1)		10 to 100mm		
Power supply         12 to 24VDC, class 2 / Ripple 10% or less           Current consumption         16mA or less         18mA or less           Operation mode         Light ON / Dark ON selectable (by switch)           Output mode         NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:1V or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / PNP open collector output / Load current 100mA(30VDC,class 2)or less / PR open collector output / Load current 100mA(30VDC,class	Setting distance (%2)		24 to 100mm	90 to 300mm	
Current consumption       16mA or less       18mA or less         Operation mode       Light ON / Dark ON selectable (by switch)         Output mode       NPN / PNP open collector 2 outputs (%3) NPN open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less         Hybreresis       Distance setting volume (5:00m)         Operation indicator: orange LED       Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Automatic mutual interference prevention function (%4)         PBT         Attached cable (outer diameter φ3.0mm)       O,15mm² × 4 cores 2m black         Weight         Attached cable (outer diameter φ3.0mm)       O,2mm² × 4 cores 2m black <th colspan="2">Set distance at factory</th> <th>40mm</th> <th>200mm</th>	Set distance at factory		40mm	200mm	
Operation mode         Light ON / Dark ON selectable (by switch)           Output mode         NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:2V or less PNP open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:2V or less           Light source (wavelength)         Infrared LED (850nm)           Response time         0.5 ms or less           Hysteresis         5% or less           Indicator         Operation indicator: orange LED Stability indicator: green LED           Volume         Distance setting volume (5-turn endless potentiometer)           Switch         BGS / FGS selector. Light ON / Dark ON selector           Circuit protection         Output short circuit / Reverse connection / Surge protection           Anti interference         Automatic mutual interference prevention function (**4)           Material         Case         PBT           Lens         Polycarbonate           Connection         Attached cable (outer diameter φ 4.0mm) 0.15mm²×4 cores 2m black           Weight         32g	Power supply		12 to 24VDC, class 2 / Ripple 10% or less		
Output mode       NPN / PNP open collector 2 outputs (**3) NPN open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:1V or less PNP open collector output / Load current 100mA(30VDC,class 2) or less / Residual voltage:2V or less         Light source (wavelength)       Infrared LED (850nm)         Response time       0.5 ms or less         Hysteresis       5% or less         Indicator       Operation indicator: orange LED Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (**4)         Material       Case       PBT         Lens       Attached cable (outer diameter \$0.0mm)       Attached cable (outer diameter \$0.0mm)         0.15mm² × 4 cores 2m black       Ozem² × 4 cores 2m black         Weight       32g	Current cons	sumption	16mA or less	18mA or less	
PNP open collector output / Load current 100mA(30VDC,class 2)or less / Residual voltage:2V or less  Light source (wavelength)  Response time	Operation mode		Light ON / Dark ON selectable (by switch)		
Response time       0.5 ms or less         Hysteresis       5% or less         Indicator       Operation indicator: orange LED Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (※4)         PBT         Lens       Polycarbonate         Connection       Attached cable (outer diameter φ 3.0mm) 0.15mm² × 4 cores 2m black       O.2mm² × 4 cores 2m black         Weight       32g       60g	Output mode				
Hysteresis       5% or less         Indicator       Operation indicator: orange LED Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (※4)         PBT         Lens       Polycarbonate         Connection       Attached cable (outer diameter φ 3.0mm) 0.15mm² × 4 cores 2m black       Attached cable (outer diameter φ 4.0mm) 0.2mm² × 4 cores 2m black         Weight       32g       60g	Light source (wavelength)		Infrared LED (850nm)		
Indicator       Operation indicator: orange LED Stability indicator: green LED         Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (※4)         PBT         Lens       Polycarbonate         Connection       Attached cable (outer diameter φ 3.0mm) 0.15mm² × 4 cores 2m black       Attached cable (outer diameter φ 4.0mm) 0.2mm² × 4 cores 2m black         Weight       32g       60g	Response time		0.5 ms or less		
Volume       Distance setting volume (5-turn endless potentiometer)         Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection         Automatic mutual interference prevention / Surge protection         Automatic mutual interference prevention function (¾4)         PBT         Connection       Attached cable (outer diameter Φ 3.0mm)       Attached cable (outer diameter Φ 4.0mm)         0.15mm² × 4 cores 2m black       0.2mm² × 4 cores 2m black         Weight       32g       60g	Hysteresis		5% or less		
Switch       BGS / FGS selector, Light ON / Dark ON selector         Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (¾4)         PBT         Connection       Attached cable (outer diameter Φ3.0mm)       Attached cable (outer diameter Φ4.0mm)         O.15mm² × 4 cores 2m black       O.2mm² × 4 cores 2m black         Weight       32g       60g	Indicator		Operation indicator: orange LED Stability indicator: green LED		
Circuit protection       Output short circuit / Reverse connection / Surge protection         Anti interference       Automatic mutual interference prevention function (¾4)         Material       Case Lens       PBT         Polycarbonate         Connection       Attached cable (outer diameter φ3.0mm) 0.15mm² × 4 cores 2m black       Attached cable (outer diameter φ4.0mm) 0.2mm² × 4 cores 2m black         Weight       32g       60g	Volume				
Anti interference       Automatic mutual interference prevention function (¾4)         Material       Case PBT         Lens       Polycarbonate         Connection       Attached cable (outer diameter φ3.0mm) O.15mm² × 4 cores 2m black       Attached cable (outer diameter φ4.0mm) O.2mm² × 4 cores 2m black         Weight       32g       60g	Switch				
Case     PBT       Lens     Polycarbonate       Connection     Attached cable (outer diameter φ3.0mm) 0.15mm² × 4 cores 2m black     Attached cable (outer diameter φ4.0mm) 0.2mm² × 4 cores 2m black       Weight     32g     60g	Circuit protection				
Material     Lens     Polycarbonate       Connection     Attached cable (outer diameter φ3.0mm) 0.15mm² × 4 cores 2m black     Attached cable (outer diameter φ4.0mm) 0.2mm² × 4 cores 2m black       Weight     32g     60g	Anti interference		Automatic mutual interference prevention function (※4)		
Connection       Attached cable (outer diameter φ3.0mm) 0.15mm² × 4 cores 2m black       Attached cable (outer diameter φ4.0mm) 0.2mm² × 4 cores 2m black         Weight       32g       60g	Material	Case	PBT		
Connection         0.15mm² × 4 cores 2m black         0.2mm² × 4 cores 2m black           Weight         32g         60g		Lens	Polycarbonate		
	Connection				
Accessory Instruction manual screw driver (Mounting bracket: seperately available)	Weight		32g	60g	
indication managing control (meaning practice expendency	Accessory		Instruction manual, screw driver (Mounting bracket: seperately available)		

Note: Using a white paper, the products have been adjusted at the factory to have the optimum sensitivity at a detection distance of 40 mm and 200 mm respectively.

\*\*1 When a white paper of 50 mm x 50 mm is used for DLN-S4V and 100 mm x 100 mm for DLN-S20MV.

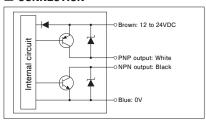
\*\*2 The detection distance becomes longer than the specification when the distance setting volume is turned clockwise from the factory set position.

- Do not use the NPN and the PNP outputs simultaneously.
- Check the operation when two sensors are installed adjacently. The mutual interference prevention function may not work properly depending on conditions of installation or detecting objects.

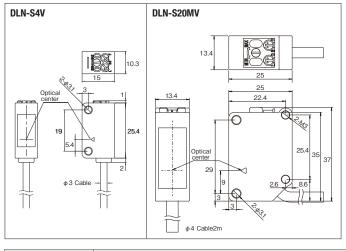
#### **■ ENVIRONMENTAL SPECIFICATION**

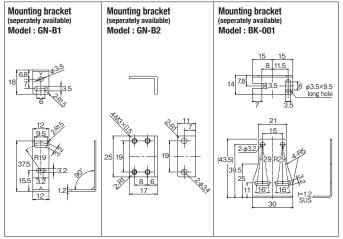
Ambient light	5,000 Ix or less	
Ambient temperature	-25 to +55℃	
Storage temperature	-40 to +70℃ (non-freezing/non-condensing)	
Ambient humidity	35 to 85%RH (non-condensing)	
Protective structure	IP 67	
Vibration	10 to 55Hz double amplitude/1.5mm 2 hours each in 3 directions	
Shock	500 m/s <sup>2</sup> 3 times each in 3 directions	
Dielectric withstanding	1,000 VAC 1 minute	
Insulation resistance	500 VDC megger, 20MΩ or more	

#### **■** CONNECTION



### ■ DIMENTION (in mm)







- This product is designed for industrial applications to detect a various kinds of objects. It has no function to prevent disasters, accidents, death or injuries.
- TAKEX will not held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including liahtnina surae.
- This product cannot be used as safety equipment.
- This product is designed and manufactured for industrial use. It cannot be used where there is a requirement for a high degree of reliability or considerable care or attention to safety.
- Read instruction manual carefully and use the product properly according to it.
   The specifications and dimensions may be subject to change without notice.



Takenaka Sensor Group

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