Versatile BGS/FGS

Sensor of Excellent Flexibility

- ■ **BGS/FGS dual function selectable**

  BGS: Background suppression
  FGS: Background recognition (BGR)

- ■ **NPN/PNP dual output**

  NPN/PNP primary output
  models are available.

- ■ **Mutual interference prevention function**

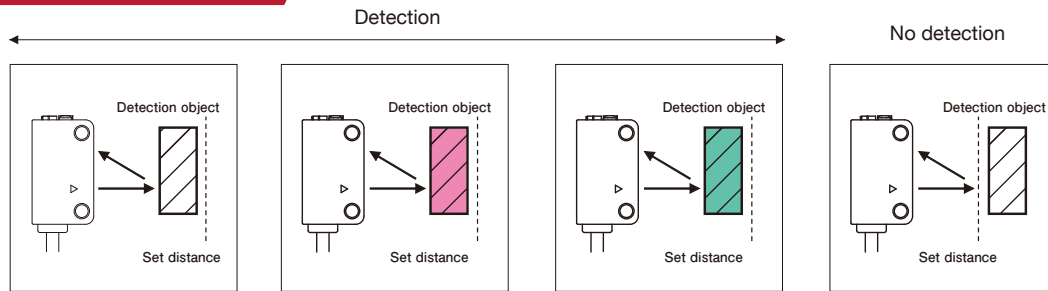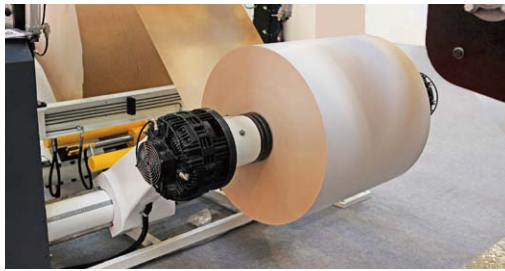**Short range**

Middle range

1 BGS/FGS switchable

BGS : Background suppression

● The sensor doesn't detect objects or background being out of the setting distance.
● This mode is suited for the detection of a target without background.

Detection principle

Detection   No detection

Objects of different color and material.
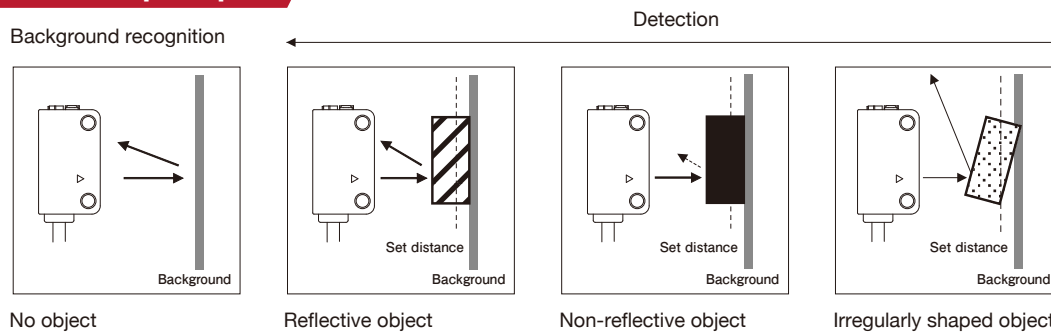

Winding diameter detection

Bottle passage detection

FGS: Background recognition: BGR (Foreground suppression)

● The sensor recognizes a background and detects a target by sensing the change in received light intensity.
● This mode is suitable for the detection of a target on a stable background.

Detection principle

Background recognition   Detection

No object   Reflective object   Non-reflective object   Irregularly shaped object
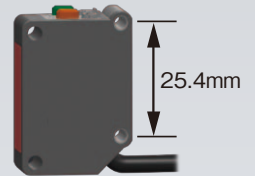

Thin work piece detection

Food detection in a processing line

2 Additional 25.4mm pitch mounting holes
(Middle range models)

In addition to the conventional 29mm pitch holes, universal inch (25.4mm) pitch holes are equipped.

25.4mm

3 Wide selection of detection distance

Detection distance of 30mm, 40mm, 50mm and 100mm are available for Short range model, and 100mm, 150mm, 200mm and 300mm are available for Middle range model. Distance setting is not necessary when using the sensor at the specified distance.

4 Automatic interference prevention (Up to 2 sensors)

Prevents the mutual interference between adjacent two sensors by shifting the transmitting pulse automatically.
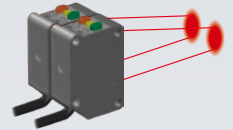
5 NPN/PNP dual output

The dual output enables inventory management more efficient. Model numbers followed by "P" are PNP models for which PNP output is allocated to the primary (black/ PIN 4) output.

Unique optical design realizes better performance and long detection distance with the compact housing (Short range models)

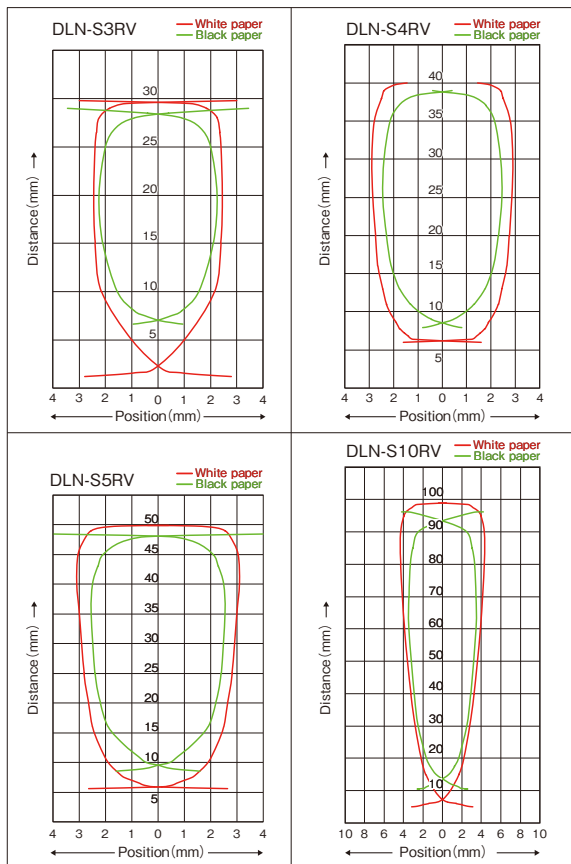**Maximum detection distance: 100mm (Actual size)**

Available in sizes smaller than conventional BGS sensors and cover various methods of photo sensing.
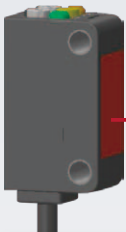
Response Curves : Detecting Position

● Short range models

Detecting object : 50×50mm white paper   50×50mm black paper

DLN-S3RV
— White paper
— Black paper

DLN-S4RV
— White paper
— Black paper

DLN-S5RV
— White paper
— Black paper

DLN-S10RV
— White paper
— Black paper

● Middle range models

Detecting object : 100×100mm white paper   100×100mm black paper

DLN-S10RMV
— White paper
— Black paper

DLN-S15RMV
— White paper
— Black paper

DLN-S20RMV
— White paper
— Black paper

DLN-S30RMV
— White paper
— Black paper
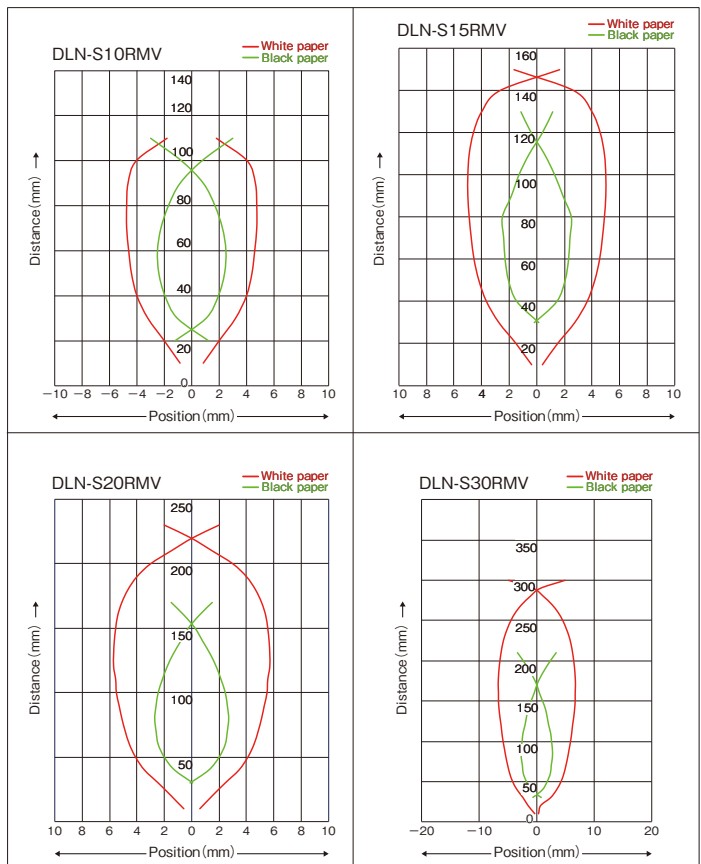
■ SPECIFICATION

Model		Short range				Middle range			
Attached cable	NPN model	DLN-S3RV	DLN-S4RV	DLN-S5RV	DLN-S10RV	DLN-S10RMV	DLN-S15RMV	DLN-S20RMV	DLN-S30RMV
		DLN-S3RV-Y5	DLN-S4RV-Y5	DLN-S5RV-Y5	DLN-S10RV-Y5	DLN-S10RMV-Y5	DLN-S15RMV-Y5	DLN-S20RMV-Y5	DLN-S30RMV-Y5
	PNP model	DLN-S3RVP	DLN-S4RVP	DLN-S5RVP	DLN-S10RVP	DLN-S10RMVP	DLN-S15RMVP	DLN-S20RMVP	DLN-S30RMVP
		DLN-S3RVP-Y5	DLN-S4RVP-Y5	DLN-S5RVP-Y5	DLN-S10RVP-Y5	DLN-S10RMVP-Y5	DLN-S15RMVP-Y5	DLN-S20RMVP-Y5	DLN-S30RMVP-Y5
connector	NPN model	DLN-S3RV-J	DLN-S4RV-J	DLN-S5RV-J	DLN-S10RV-J	DLN-S10RMV-J	DLN-S15RMV-J	DLN-S20RMV-J	DLN-S30RMV-J
	PNP model	DLN-S3RVP-J	DLN-S4RVP-J	DLN-S5RVP-J	DLN-S10RVP-J	DLN-S10RMVP-J	DLN-S15RMVP-J	DLN-S20RMVP-J	DLN-S30RMV-J
Detection method		BGS (Background suppression) / FGS (Background recognision)							
Detecting distance		10 to 30mm	10 to 40mm	10 to 50mm	10 to 100mm	10 to 100mm	10 to 150mm	10 to 200mm	20 to 300mm
Setting distance (※1)		24 to 30mm	30 to 40mm	40 to 50mm	30 to 100mm	90 to 100mm	100 to 150mm	150 to 200mm	100 to 300mm
Set distance at factory(※2)		30mm	40mm	50mm	100mm	100mm	150mm	200mm	300mm
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 (※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)		Four-element (AlGaInp) LED (660nm)							
Response time		0.5ms or less							
Hysteresis		5% or less							
Indicators		Operation indicator: orange LED Stability indicator: green LED							
Adjustment volume		Distance setting volume (5-turn endless potentiometer)							
Selectors		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 φ3.0mm) 0.15mm²×4 cores 2m black / 5m black(＊＊＊-Y5)				Attached cable (outer diameter φ4.0mm) 0.15mm²×4 cores 2m black / 5m black(＊＊＊-Y5)			
		M8 4 pin connector (Cable with connector is separately available.)							
Weight		32g (2m cable), 74g (5m cable)				60g (2m cable), 135g (5m cable)			
		M8 4 pin connector : 6g				M8 4 pin connector : 12g			
Accessory		Instruction manual, screw driver (Mounting bracket: seperately available)							

Note：The distance is adjusted to the "Set distance at factry" for each corresponding model by using a white paper, at which the sensor has optimum sensitivity.
※1 When using 50×50mm white paper for short range models and 100×100mm white paper for middle range models.
※2 The detection distance becomes longer than the specification when the distance setting volume is turned clockwise from the factory set position.
※3 Do not use the NPN and the PNP outputs simultaneously.
※4 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 lx 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	I P 67
Vibration	10 to 55Hz double amplitude/1.5mm 2 hours each in 3 directions
Shock	500 m/s² 3 times each in 3 directions
Dielectric withstanding	1,000 VAC 1 minute
Insulation resistance	500 VDC megger, 20MΩ or more

<Pin No.>	NPN model	PNP model
NPN output	4	2
PNP output	2	4
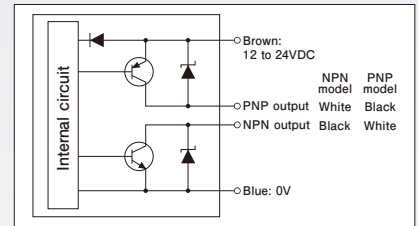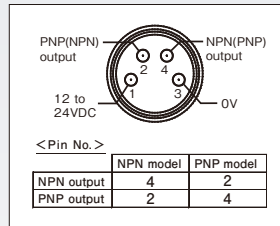
■ DIMENTION (in mm)
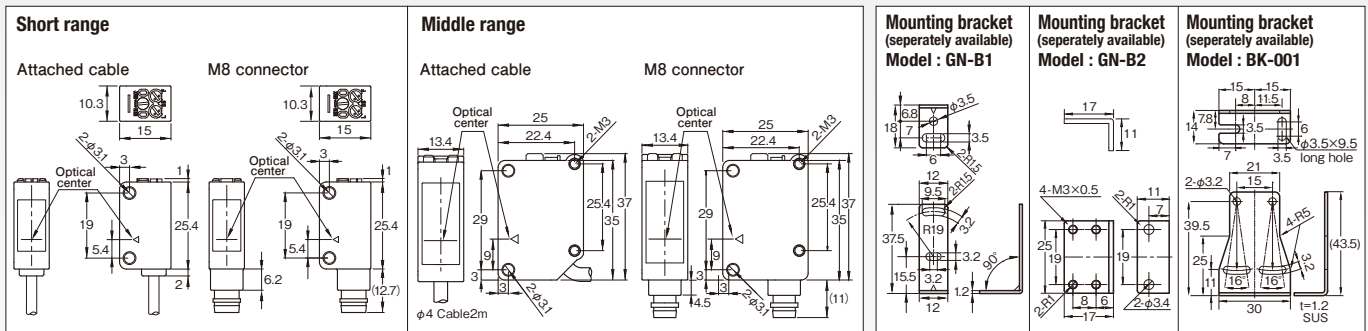
CAUTION
- This product is designed for industrial applications to detect a various kinds of objects. It has no function to prevent disasters, accidents, death or injuries.
- TAKEX will not held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.
- 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 reliabilty or considerable care or attention to safety.
- Read this instruction manual carefully and use the product properly according to it.
- This instruction manual including the specifications and dimensions may be subject to change without notice.

VEGETABLE OIL INK