

- Thank you for using **TAKEX** products.
- Please read this manual carefully prior to use the sensor.

SPECIFICATIONS

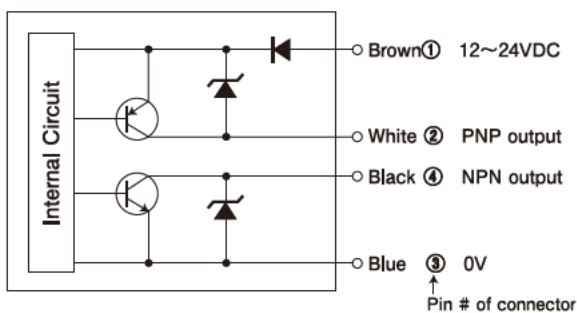


Models	DL-S100R	DL-S100R-J	DL-S202R	DL-S202	DL-S202-J
Detection method	Background suppression				
Setting distance	0.2~1m (by adjustment volume)		0.2~2m (by adjustment volume)		
Detecting distance	0.1~1m (200×200 white paper)		0.1~2m (200×200 white paper)		
Power supply	12 to 24VDC ±10%. Ripple 10% Max.				
Current consumption	30mA or less				
Output mode	NPN/PNP open collector 2 outputs Rating : 100mA (30VDC) or less NPN output : Sink current, PNP output : Source current				
Operating mode	Light ON / Dark ON selectable				
Response time	2ms. or less				
Hysteresis	10% or less				
Light source	Red LED (650nm)		Infrared LED (880nm)		
Light-sensitive element	2 segment photodiode				
Indicators	Red LED : Operation indicator, Green LED : Stability indicator				
Potentiometer	NEAR-FAR : 5-turn optical distance adjustment				
Switch	Light ON / Dark ON selectable switch				
Circuit protection	Provided				
Materials	Case and lens : polycarbonate				
Connection	Attached cable (Outer dimension: dia.4mm) 0.2mm ² 4 cores 2m length	M8 4 pin connector pigtail Outer dimension: dia.4mm 0.2mm ² 4 cores	Attached cable (Outer dimension: dia.4mm) 0.2mm ² 4 cores 2m length	M8 4 pin connector pigtail Outer dimension: dia.4mm 0.2mm ² 4 cores	
Weight	Approx.100g	Approx.60g	Approx.100g	Approx.60g	

ENVIRONMENTAL SPECIFICATION

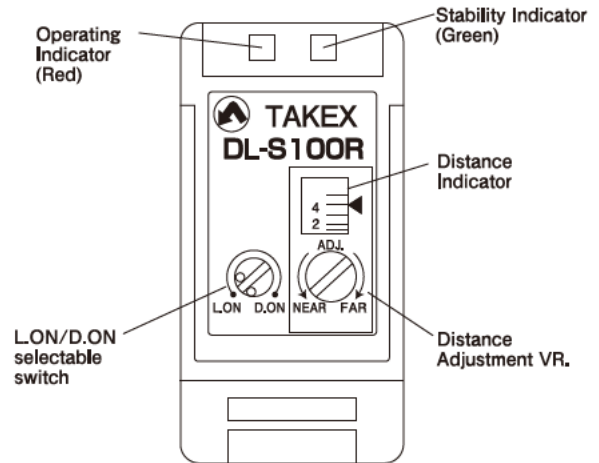
Ambient light	Sunlight : 10,000 lx or less Incandescent light : 3,000 lx or less
Temperature range	Operating : -25 to +55°C
Humidity	35 to 85%RH
Enclosure rating	I P 66
Vibration resistance	10 to 55Hz, 1.5mm double amplitude, 2 hr. in X, Y and Z directions
Shock resistance	500m/s ² 3 times in X, Y and Z directions
Dielectric strength	1,000VAC for 1 minutes
Insulation resistance	Min. 20MΩ (at 500VDC)

OUTPUT CIRCUIT



Loaded short circuit or overload shuts off the output transistor.
Turn the power back on after checking the loaded condition.

PANEL DESCRIPTION



● Operation indicator

Red LED turns on when an output is activated.

● Stability indicator

When the receiving light intensity exceeds 120% of the threshold level, Green LED turns on.

● Light ON / Dark ON selectable switch.

- ① Light ON : Turn to counterclockwise.
- ② Dark ON : Turn to clockwise.
- ③ Set the switch at the either end position.

● Distance adjustment VR.

- ① Detecting distance becomes longer when turning the VR. clockwise (FAR), and becomes shorter when turning it counterclockwise (NEAR).
- ② Distance adjustment volume is a 5-turn endless potentiometer. The distance indicator shows the turning count from NEAR (1) to FAR (5).

The stability indicator turns on when there is enough margin in receiving light intensity. It does not indicate a margin in detecting distance. The reflectivity of the detecting object affects the receiving light intensity. The detecting performance is stable when the stability indicator turns on upon detecting an object.

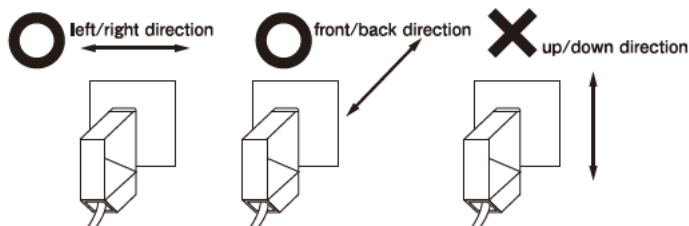
ADJUSTMENT

- ① Face the sensor to the detection direction and temporarily fix it.
- ② Without a detection object, turn the distance adjustment volume counterclockwise from the FAR position. Find the point where the operation indicator turns off (point A). If the operation indicator turns off even at the FAR, it is regarded as point A.
- ③ Place a detection object at the detecting position and turn the adjustment volume clockwise from the NEAR position. Find the point where the operation indicator turns on (point B). If the operation indicator turns on even at the NEAR, it is regarded as point B.
- ④ Set the volume at the middle position between points A and B. Confirm the stability indicator turns on while a detection object is in the detecting position. The receiving light intensity is below 120% of the threshold if the stability indicator turns off.
- ⑤ Fix the sensor firmly to avoid displacement due to shock or vibration.



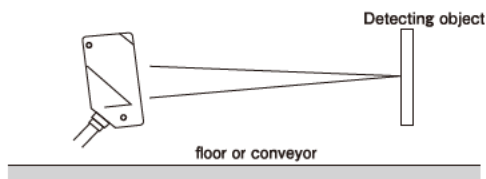
INSTALLATION

- Tightening torque is 0.8N·m or less when mounting by screw.
- The sensor must be positioned so that the target passes as shown in below.

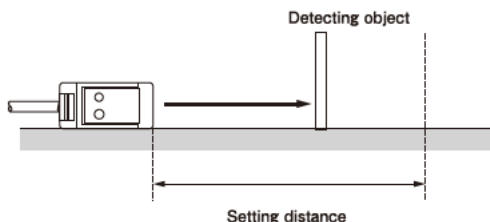


※ In case of detection within adjusted detecting distance, it is possible to detect above direction.

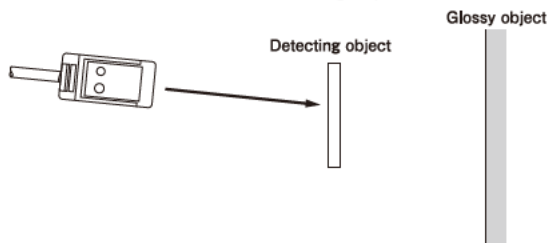
- If there is a floor or conveyor closely under the sensor, tilt the sensor in order to avoid a false detection.



- For the detection within a setting distance. It is possible to mount as shown in below.



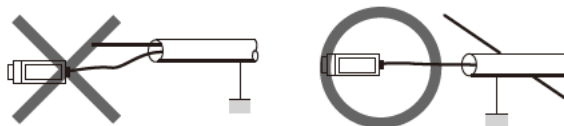
- In case of detecting a glossy metal or mirror like object, the sensor may not detect depending on the angle of the object.
- When there is a glossy metal or mirror like object in the background, the detection may not be stable. Mount the sensor at a slight angle as below and confirm the detection with the detecting object.



- There is a dead zone in an area close to the sensor. The range of the dead zone depends on the properties of the detection object like color, gloss or reflectivity.
- Do not install the sensor where strong light from the sun, fluorescent or LED light enters the optical window of the sensor.

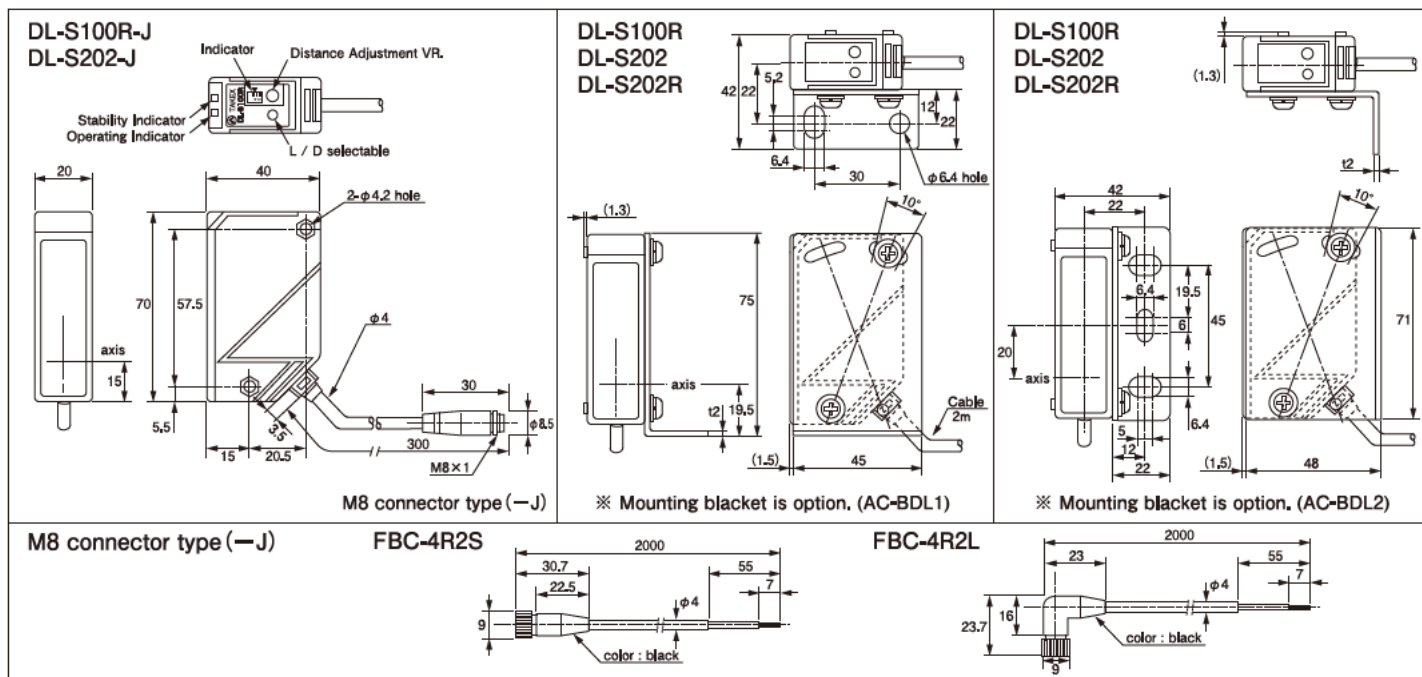
NOTES

- Use power supply within the rated voltage and current in the specification.
- Limit the current of the power supply to 2A.
- When using a DC power unit with an insulated transformer or a switching regulator, be sure to ground the frame ground (FG) terminal.
- When extending the cables, use conductors of at least 0.3mm² cross-sectional area and the length should not exceed 100m.
- Use a metal conduit to avoid malfunction or damage caused by induction where the wiring should be laid close to high-voltage cables or power lines.



- Avoid turning the power on and off consecutively.
- Do not use the sensor where water is splashing constantly or under the water. To use the sensor in an environment containing a corrosive gas or exposed to a splash of chemicals or oils, or a place exposed to vibration or shock may cause false operation.
- Clean the lens by a soft and dry cloth periodically. A stain or dirt stuck on the lens deteriorates the performance. Do not use organic solvent including alcohol and thinner.

DIMENSIONS (unit : mm)



- The guarantee period of this product is one year after the delivery.
- If any defect is found during the guarantee period, Takenaka will repair or replace the defective product.
- This product is an industrial sensor which issues an output upon detecting an object. It does not have any function to prevent accidents, death or injuries.
- Takenaka 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.