# TAKEX GLASS DETECTION SENSOR

# ASG SERIES Instruction Manual

TAKENAKA ELECTRONIC INDUSTRIAL CO.,LTD.

Head office, factory : 20-1 Shinomiya Narano-cho, Yamashina-ku, Kyoto 607-8032, Japan
Telephone : +81-75-581-7111
FAX : +81-75-581-7118

## 1 OUTLINE

This product is a flat type sensor designed to be incorporated in a robot arm for detecting glass boards for liquid crystal or semiconductor wafer.
The optical system is adjusted to detect angled glass reliably.
Light-On open collector output can be obtained by just turning on power as an amplifier is built in.

## 2 SPECIFICATION

| Model | NPN type | ASG-S20R | ASG-S20RV | ASG-Z15R | ASG-Z15RV |
|---|---|---|---|---|---|
| | PNP type | ASG-S20RPN | ASG-S20RVPN | ASG-Z15RPN | ASG-Z15RVPN |
| Detection | | Diffuse reflective | | Convergent reflective | |
| Detecting object | | Transparent glass | | | |
| Range | | Transparent glass 20㎜ or less Max. 25㎜ (※) | | Transparent glass 3-15㎜ Max. 18㎜ (※) | |
| Power supply | | 12 to 24VDC ±10%, Ripple 10% (Max.) | | | |
| Light source | | Red LED 2 pcs | | | |
| Current consumption | NPN type | 25mA or less | 30mA or less | 25mA or less | 30mA or less |
| | PNP type | 30mA or less | 35mA or less | 30mA or less | 35mA or less |
| Operating mode | | Light-on | | | |
| Output mode | NPN type | NPN open collector, Rating : Sink current 50mA (30VDC) Max. | | | |
| | PNP type | PNP open collector, Rating : Source current 50mA (30VDC) Max. | | | |
| Short circuit protection | NPN type | Built-in | | | |
| | PNP type | Built-in | — | Built-in | — |
| Indicators | | Operating (Orange) | | | |
| Sensitivity | | — | Equipped | — | Equipped |
| Response time | | 0.5ms or less | | | |
| Cable | | Attached cable 2m (Outer dia. 2.7㎜) | | | |
| Weight (Max.) | | 30 g | | | |
| Others | | Instruction manual | | | |

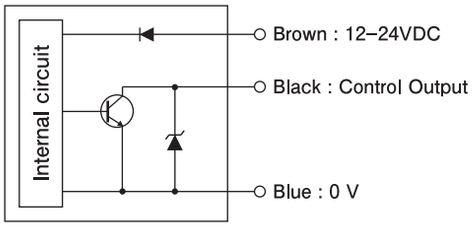
(※) The maximum distance means the distance to the furthest part of an inclined transparent glass.
The sensor without sensitivity adjustment must be used with no object interfering with the detection in the surrounding area.

## 3 ENVIRONMENTAL CHARACTERISTICS

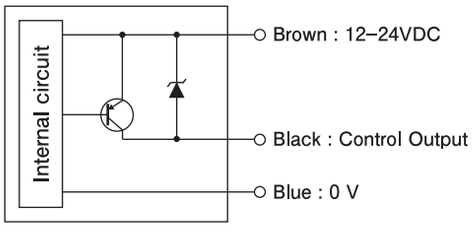
| | |
|---|---|
| Ambient light | 5,000 lx (Max.) |
| Temperature range | −10 to +55℃ (non-freezing) |
| Humidity | 35 to 85%RH (non-condensing) |
| Vibration resistance | 10 to 55Hz, 1.5㎜ double amplitude, 2hr. in X, Y and Z directions |
| Enclosure rating | I P40 |

## 4 WIRING AND OUTPUT CIRCUIT

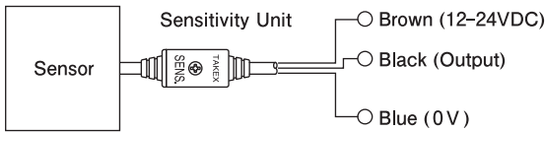
● NPN OUTPUT TYPE
- MODEL : ASG-S20R ASG-Z15R
- MODEL : ASG-S20RV ASG-Z15RV




● PNP OUTPUT TYPE
- MODEL : ASG-S20RPN ASG-Z15RPN
- MODEL : ASG-S20RVPN ASG-Z15RVPN




● WITH SENSITIVITY ADJUSTMENT TYPE
- MODEL : ASG-S20RV ASG-Z15RV
  ASG-S20RVPN ASG-Z15RVPN



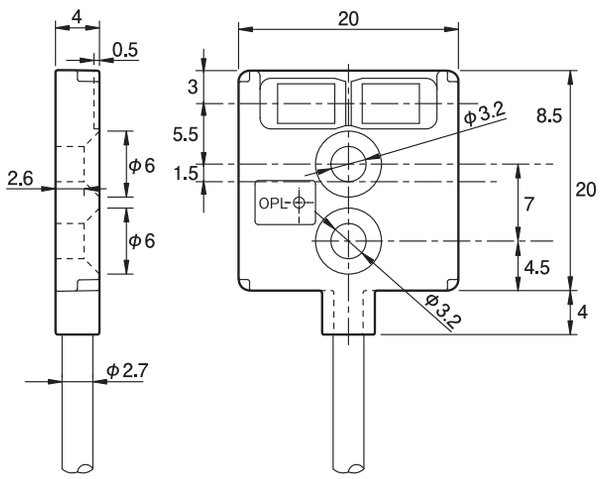

● The output transistor becomes OFF when it's short circuited or overloaded.
● Make sure all connections are correct before turning the power on.

## 5 DIFFERENCE BETWEEN ASG-S20R AND ASG-Z15R

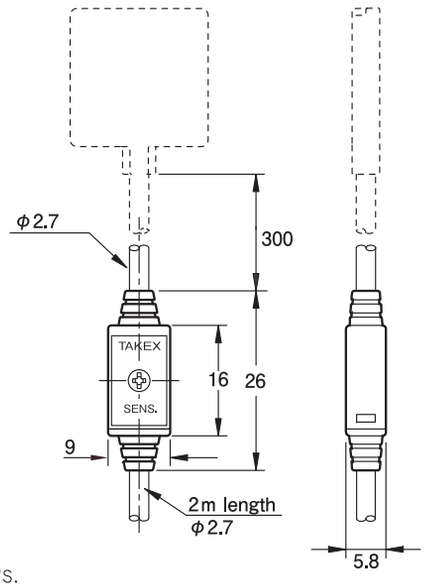
● **ASG-S20R** is a diffuse-reflective type sensor with a wide activation range.
If the glass is warped, the detecting distance can be 25㎜ at maximum.
● **ASG-Z15R** is a convergent reflective sensor with a wide activation range.
If the glass is warped, the detecting distance can be 18㎜ at maximum.
The sensor is not activated by a transparent glass in contact with the sensor.

## 6 DIMENSIONS (in mm)

● MODEL : ASG-S20R ASG-Z15R
ASG-S20RPN ASG-Z15RPN



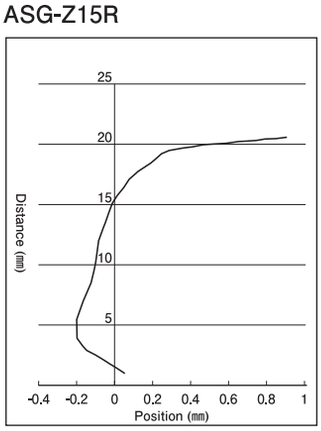

● MODEL : ASG-S20RV ASG-Z15RV
ASG-S20RVPN ASG-Z15RVPN



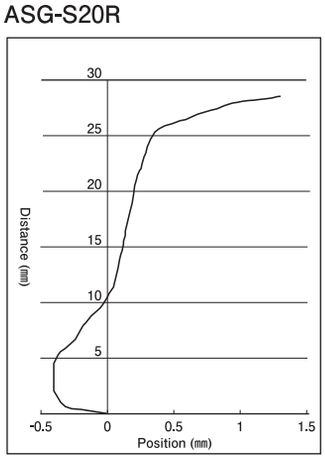

● No mounting bracket is provided.
● Tightening torque should be 0.15 N·m or less when mounting by screws.

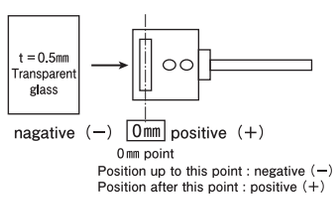
## 7 ACTIVATION POSITION CHARACTERISTICS (Typical Example)

● ASG-Z15R




● ASG-S20R




## 8 INSTALLATION AND PRECAUTION

● Use M3 flat screws for mounting and tighten it with a torque of 0.15N·m or less.
The enclosure may be broken when the screw is tighten with overtorque.
● This sensor can be used as a versatile diffuse reflective sensor.
● External dimension of the attached cable is φ2.7mm and 0.15mm$^2$×3 core.
When solderless terminal is used, be careful to pressurize it as the wire is very thin.
● Do not face the sensor toward inverter flourescent lamps.
● Do not use organic solvent including alcohol and thinner to clean the sensor.
● Limit the current of the power supply to 1A.
● When using a DC power unit with an insulated transformer or a switching regulator, be sure to ground the frame ground (FG) terminal.

● 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.