

Stainless steel housing type

# Z-M / BGS-ZM series



M8 Connector type

Cable type

- IP69K: Highly water resistant
- Tough structure for food processing line needs washing with high temperature and high pressure water.
- Achieves long sensing distance.
- 8 turn sensitivity adjustment potentiometer (BGS type)

## Applications



For production line needs washing



For production line with detergent splash



For meat and fresh food processing line

## Product Types

| Cable / QD      | Output | Diffuse             |
|-----------------|--------|---------------------|
| <b>Distance</b> |        | <b>0 - 800mm</b> *1 |
| Cable           | NPN    | ZD-M80N             |
|                 | PNP    | ZD-M80P             |
| M8-QD           | NPN    | ZD-M80CN            |
|                 | PNP    | ZD-M80CP            |

| Cable / QD      | Output | Retro reflective      |
|-----------------|--------|-----------------------|
| <b>Distance</b> |        | <b>0.01 - 5.5m</b> *2 |
| Cable           | NPN    | ZR-M550N              |
|                 | PNP    | ZR-M550P              |
| M8-QD           | NPN    | ZR-M550CN             |
|                 | PNP    | ZR-M550CP             |

| Cable / QD      | Output | Through beam |
|-----------------|--------|--------------|
| <b>Distance</b> |        | <b>30m</b>   |
| Cable           | NPN    | ZT-M3000N    |
|                 | PNP    | ZT-M3000P    |
| M8-QD           | NPN    | ZT-M3000CN   |
|                 | PNP    | ZT-M3000CP   |

| Cable / QD      | Output | BGS                  |                      |
|-----------------|--------|----------------------|----------------------|
| <b>Distance</b> |        | <b>10 - 100mm</b> *3 | <b>10 - 300mm</b> *3 |
| Cable           | NPN    | BGS-ZM10N            | BGS-ZM30N            |
|                 | PNP    | BGS-ZM10P            | BGS-ZM30P            |
| M8-QD           | NPN    | BGS-ZM10CN           | BGS-ZM30CN           |
|                 | PNP    | BGS-ZM10CP           | BGS-ZM30CP           |

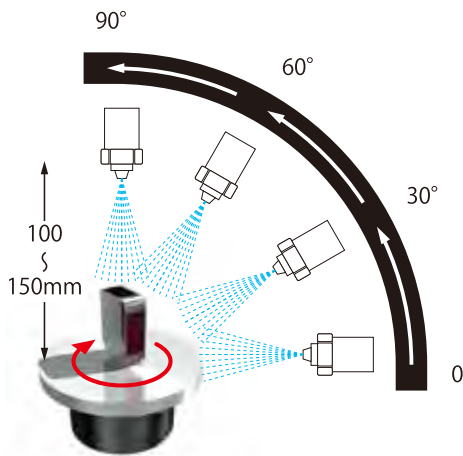
\* 1 With 200mm x 200mm white paper

\* 2 With V-61

\* 3 With 100mm x 100mm white paper

## IP69K protection

IP69K is an rating of German standard DIN 40050-9 extends the IEC 60529 rating system for high-pressure, high-temperature wash-down applications.



Test condition:

A sensor on the turn table that rotates 5 times per minutes.

Pressure: 80~100bar

Flow rate: 14~16 litre/minute

Temperature: +80°C / -5°C

Distance from nozzle: 100~150mm

Nozzle angle: 0°, 30°, 60°, 90°

Testing period: 30sec per every angle

\* IP69K doesn't mean to guarantee that the sensor works under the test condition above. The sensor won't work correctly when the lens gets wet and the light is refracted.

## High-pressure, high-temperature, detergent wash-down resistant Tough structure

- Top cover : Poly Ether Sulphone (PES)**  
Oil, detergent, high-temperature resistant. Top level protection in transparent plastic.
- SW, Pot: Poly Ether Etherketone (PEEK)**  
Shock, scratch, stress, heat resistant. Highly resistant to chemical except concentrated sulfuric acid.
- Housing : SUS316L**  
Highly corrosion-resistant. Detergent, bactericide resistant.
- Printing by laser marking**  
There is no label attached so you don't have to care about interfusion into foods of the label unsticked.
- Lens PPSU for thru-beam, diffuse type**  
Chemical, heat resistant. Very stable material.
- Lens PMMA with SiO coating for retro reflective type**  
Oil, scratch resistant. Water repellent and anti-static.
- Gasket (FKM), cable (PVC)**  
Chemical, oil resistant and flexible.

## Longest sensing distance in the class

High brightness LED by 4 element enables longest sensing distance in the class.

- 4 element LED (A InGaP-LED)**
- Through beam type**  
Sensing distance: 30m
- Retro reflective type**  
Sensing distance: 5.5m
- Diffuse type**  
Sensing distance: 80mm

## 8 turn sensitivity adjustment (BGS Type)

8 turn sensitivity adjustment potentiometer helps easy mounting and easy position adjustment.

8 turn potentiometer



- C
- C2
- E
- J
- J2
- J3
- V
- V2
- V3
- V4
- SR-Q
- S
- Z
- BGS-Z
- Z2
- ZM
- K
- BGS-2S
- Y
- DM-18T
- Accessory

# Specifications

| Model                            | Through beam   | Retro reflective   | Diffuse  | BGS                                   |                 |
|----------------------------------|--|--|--|---------------------------------------|-----------------|
| <b>Cable type</b>                | NPN ZT-M3000N  | ZR-M550N   | ZD-M80N  | BGS-ZM30N                             | BGS-ZM10N       |
|                                  | PNP ZT-M3000P  | ZR-M550P   | ZD-M80P  | BGS-ZM30P                             | BGS-ZM10P       |
| <b>M8 connector type</b>         | NPN ZT-M3000CN4  | ZR-M550CN4   | ZD-M80CN4  | BGS-ZM30CN4                           | BGS-ZM10CN4     |
| <b>M8 (3-pin) connector type</b> | PNP ZT-M3000CP4  | ZR-M550CP4   | ZD-M80CP4  | BGS-ZM30CP4                           | BGS-ZM10CP4     |
|                                  | NPN ZT-M3000CN3  | ZR-M550CN3   | ZD-M80CN3  | BGS-ZM30CN3                           | BGS-ZM10CN3     |
| <b>M12 connector type</b>        | PNP ZT-M3000CP3  | ZR-M550CP3   | ZD-M80CP3  | BGS-ZM30CP3                           | BGS-ZM10CP3     |
|                                  | NPN ZT-M3000N-M12  | ZR-M550N-M12   | ZD-M80N-M12  | BGS-ZM30N-M12                         | BGS-ZM10N-M12   |
|                                  | PNP ZT-M3000P-M12  | ZR-M550P-M12   | ZD-M80P-M12  | BGS-ZM30P-M12                         | BGS-ZM10P-M12   |
| <b>Supply voltage</b>            | DC10~30V Inc. 10% ripple   |  |  |                                       |                 |
| <b>Power consumption</b>         | Emitter : 15mA max.<br>Receiver : 15mA max.  |  | 18mA max.  | 28mA max.                             |                 |
| <b>Sensing distance</b>          | 30m  | 0.01 - 5.5m (*1)   | 0 - 800mm (*2)   | 10 - 300mm (*3)                       | 10 - 100mm (*3) |
| <b>Adjustable distance</b>       | -  |  |  | 20 - 300mm (*3)                       | 20 - 100mm (*3) |
| <b>Spot size</b>                 | φ1200mm at 30m   | φ300mm at 5.5m   | φ40mm at 800mm   | φ19mm at 250mm                        | φ6mm at 80mm    |
| <b>Response time</b>             | 500μs  |  |  |                                       |                 |
| <b>Hysteresis</b>                | -  |  | 20% Max  | 5% Max                                | 3% Max          |
| <b>Operating temp</b>            | -25 to +55°C   |  |  |                                       |                 |
| <b>Operating humidity</b>        | 35 to 85%  |  |  |                                       |                 |
| <b>Vibration resistance</b>      | 10~55Hz double amplitude 1.5mm X,Y,Z 2hours  |  |  |                                       |                 |
| <b>Shock resistance</b>          | 100G (1000m/s <sup>2</sup> ) X,Y,Z 3times  |  |  |                                       |                 |
| <b>Protection category</b>       | IEC :IP67 DIN :IP69K   |  | IEC :IP67 DIN :IP69K   | Reflector is IP67                     |                 |
| <b>Light source</b>              | 4 element red LED  |  |  |                                       |                 |
| <b>Indicator</b>                 | Red LED: output, Green LED: stable,<br>Emitter of thru-beam type doesn't have in dicator           |  |  | Orange LED: output, Green LED: stable |                 |
| <b>Sensitivity adjustment</b>    | 1 turn potentiometer   |  |  | 8 turn potentiometer                  |                 |
| <b>Operating mode</b>            | Light ON/Dark ON selectable by switch  |  |  |                                       |                 |
| <b>Control output</b>            | NPN (PNP) Open collector, Max.100mA/DC30V  |  |  |                                       |                 |
| <b>Cable</b>                     | Cable length: 2m, φ4   |  |  |                                       |                 |
| <b>Conformity</b>                | CE Feilen Level 3  |  |  |                                       |                 |
| <b>Environmental illuminance</b> | Sunlight: 10,000 lux max. Incandescent lamp: 3,000 lux max.  |  |  |                                       |                 |
| <b>Material</b>                  | Housing: SUS316L<br>Top cover: PES<br>Lens: PPSU<br>Switch, Pot: PEEK<br>Cable: PVC<br>Gasket: FKM | Housing: SUS316L<br>Top cover: PES<br>Lens: PMMA<br>Switch, Pot: PEEK<br>Cable: PVC<br>Gasket: FKM | Housing: SUS316L<br>Top cover: PES<br>Lens: PPSU<br>Switch, Pot: PEEK<br>Cable: PVC<br>Gasket: FKM |                                       |                 |
| <b>Accessory</b>                 | Mounting bracket:BEF-W100B   |  | Mounting bracket:BEF-W100B<br>Reflector: V-61  | Mounting bracket:BEF-W100B            |                 |

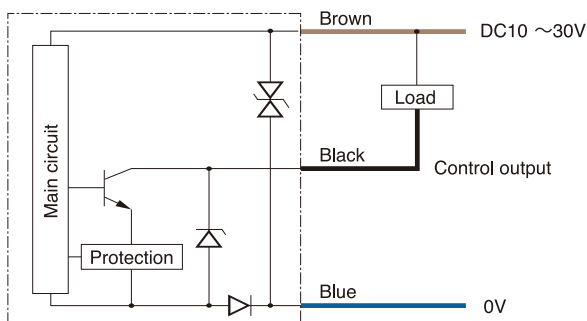
(\*1) With V-61

(\*2) With 200mm x 200mm white paper

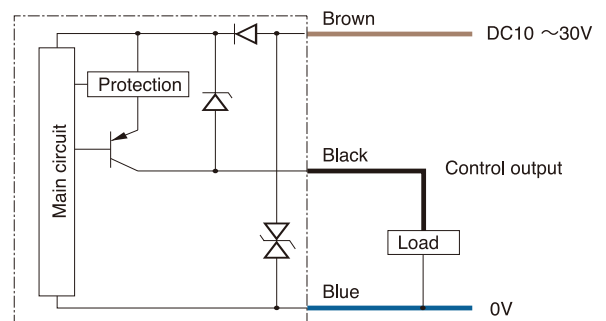
(\*3) With 100mm x 100mm white paper

## Circuit diagram

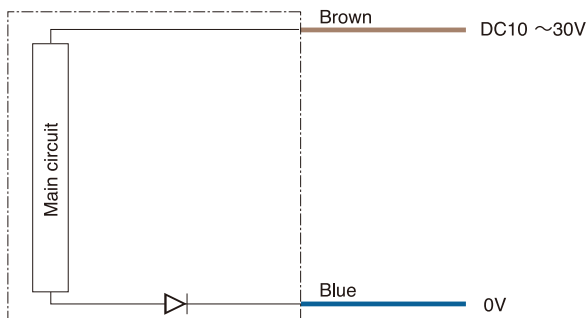
### NPN output



### PNP output



### Through beam emitter



### Notes

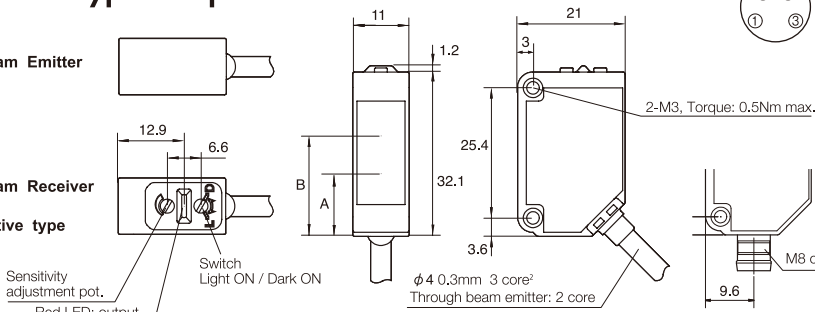
- When using switching regulator for power supply, please connect frame ground to earth ground.
- Wiring close to high voltage or power line to motors may cause malfunction because of inductive noise. Please wire separated from those lines.
- Please wait around 100msec before use sensor output after power up.

# Dimensions

## General Use Type except BGS

Through beam Emitter

Through beam Receiver  
Diffuse type  
Retro reflective type



M8 Connector

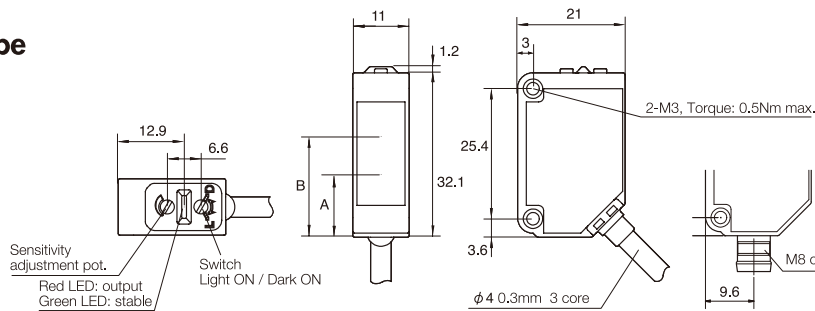
M8 (3-pin) Connector

M12 Connector

- ① DC10~30V
- ③ GND
- ④ Control Output

| Type             | A Light axis | B Light axis |
|------------------|--------------|--------------|
| Through beam     | 19.6         | 19.6         |
| Diffuse          | 12.2         | 19.1         |
| Retro reflective |              | 19.6         |

## BGS Type



| Type | Model    | A Light axis | B Light axis |
|------|----------|--------------|--------------|
| BGS  | BGS-ZM10 | 10.7         | 18.5~20.2    |
|      | BGS-ZM30 |              | 18.5~20.5    |

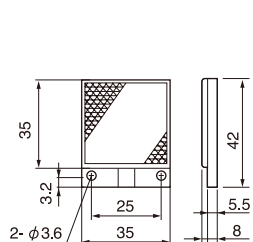
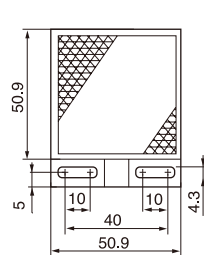
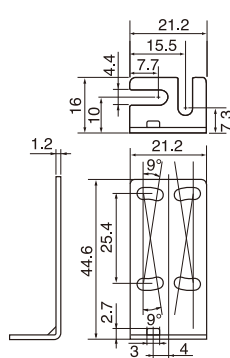
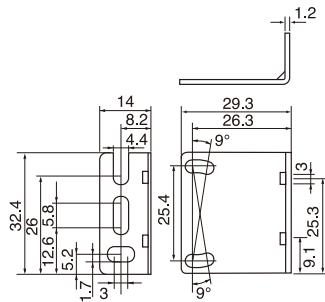
## Reflectors for LED Type

Standard bracket BEF-W100-A  
Accessory for M8 QD type sensors

Standard bracket BEF-W100-B  
Accessory for cabled type sensors

Standard reflector V-61  
(Standard, LED type)

Small reflector V-42  
(Optional, LED type)

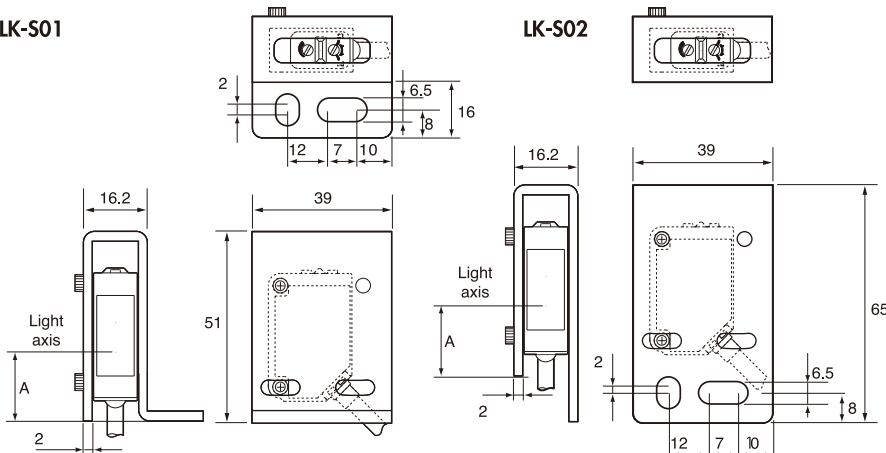
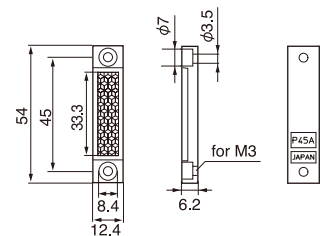


## Protective mounting bracket

LK-S01

LK-S02

Tiny reflector P-45A  
(Optional, LED type)



| Type                        | A Light axis |
|-----------------------------|--------------|
| Through beam                | 26.6         |
| Diffuse<br>Retro reflective | 19.2         |
| BGS                         | 17.7         |

# Options

**Standard reflector V-61**  
(Except ZR-QX200)



**Small reflector V-42**



**Tiny reflector P-45**



**Protective mounting brackets**

**LK-S01**



**LK-S02**



**JCN-S : M8 Straight type**



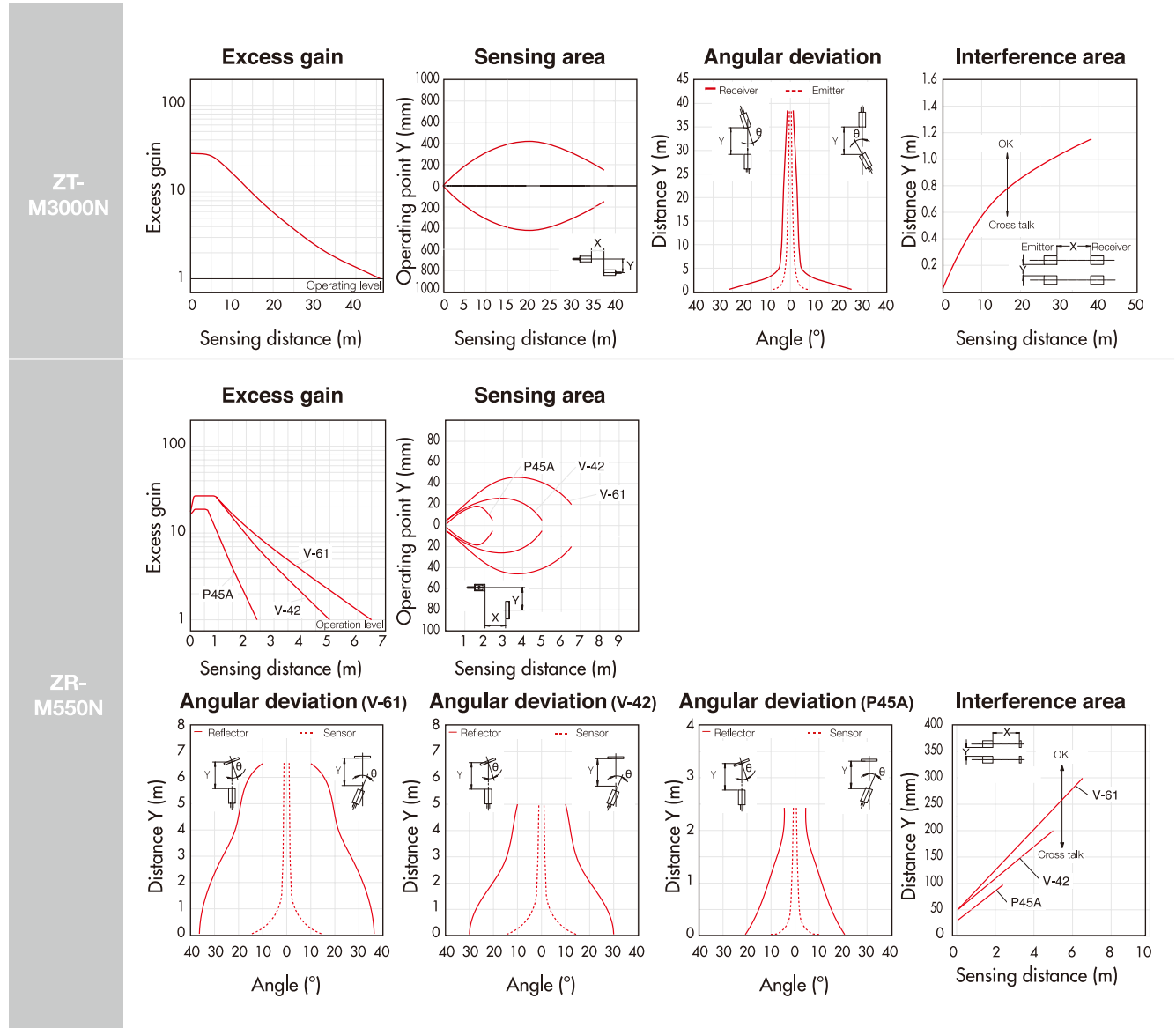
JCN-S : 2 meter  
JCN-5S : 5 meter  
JCN-10S : 10 meter

**JCN-L : L-shape M8 type**



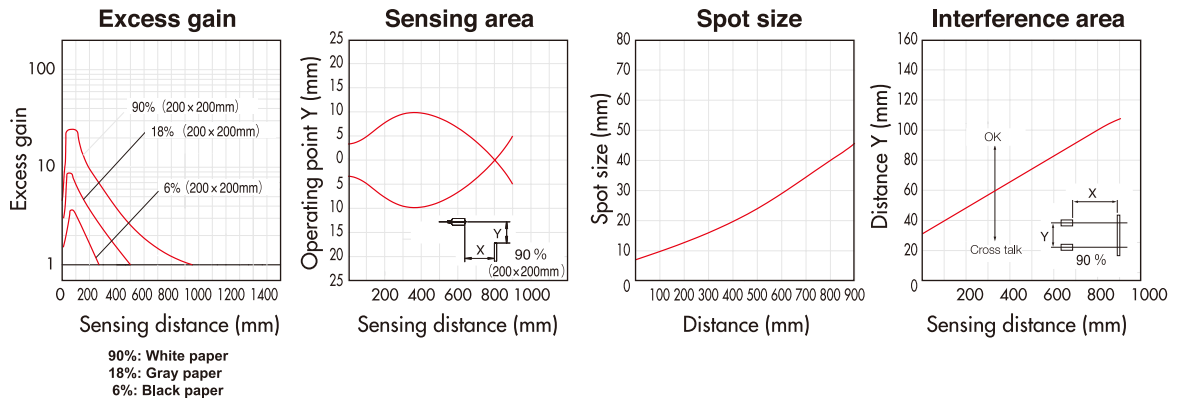
JCN-L : 2 meter  
JCN-5L : 5 meter  
JCN-10L : 10 meter

# Reference (typical)

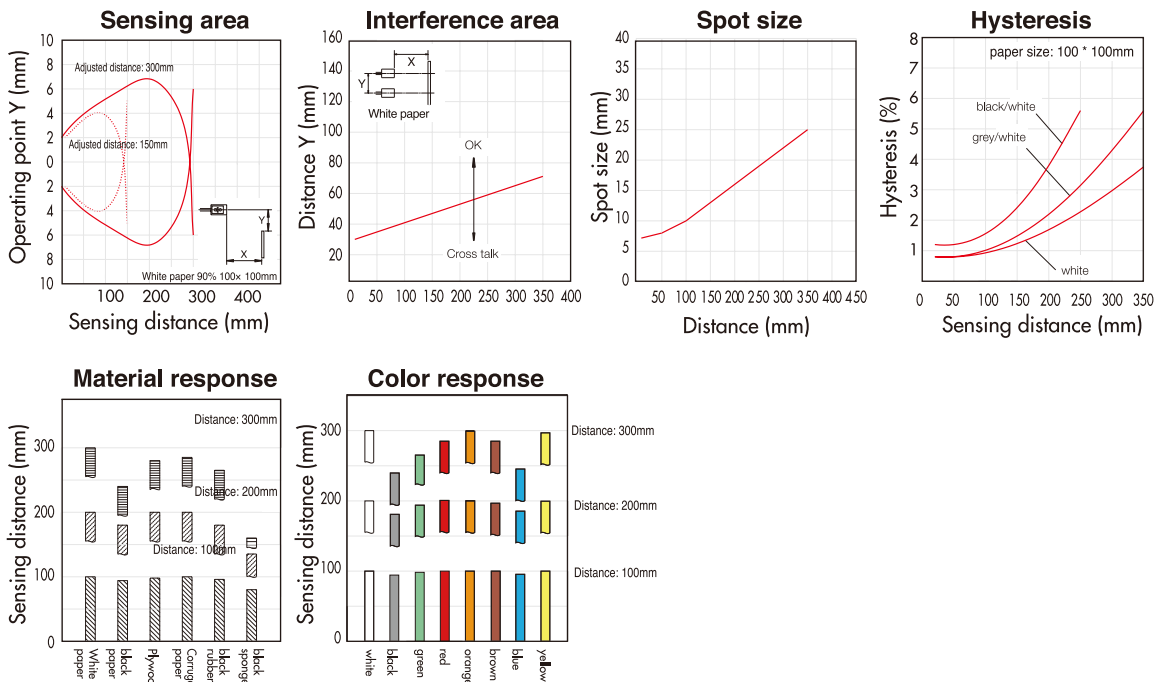


# Reference (typical)

ZD-M80N



BGS-ZM30N



BGS-ZM10N

