






• Generic type with LED

- IP67 rated housing filled with resin allows washing together with line equipment.



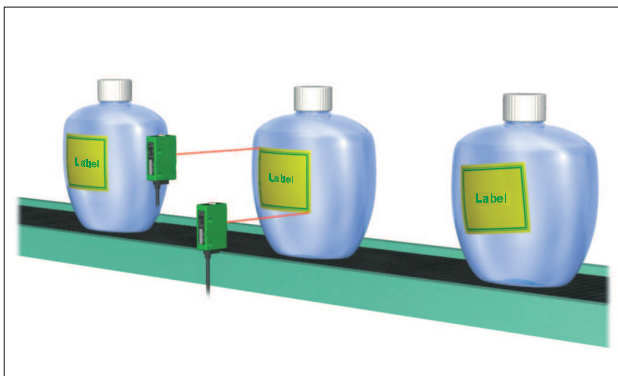
- Ultraviolet luminescence mark sensor
Model: GR12UVS
Ideal for detection of hidden or fluorescent marks

■ Type

| Detection method | Detecting distance | Model | | Light source | Operation mode | Output mode |
|--|--|------------|-----------------|--------------|---|-----------------------|
| | | NPN output | PNP output | | | |
|  Convergent reflective |  12mm±2mm | GR12RSN | GR12RSN-PN | Red LED | Light ON/Dark ON selectable (with switch) | Open collector output |
| | | GR12RN | GR12RN-PN | | | |
| | | GR12GSN | GR12GSN-PN | Green LED | | |
| | | GR12GN | GR12GN-PN | | | |
| | | GR12BSN | GR12BSN-PN | Blue LED | | |
| | GR12WSN | GR12WSN-PN | White LED | | | |
| |  20-70mm | GR40RN | GR40RN-PN | Red LED | | |
|  30-90mm | GR60RN | GR60RN-PN | | | | |
|  12mm±2mm | GR12UVS | GR12UVSPN | Ultraviolet LED | | | |


■ Applications

Detecting a shifted label



- Mark sensor with detecting distance of 30-120 mm also available
Model: GR100R (NPN output type)
GR100RPN (PNP output type)
- Luminescence mark sensor with detecting distance of 30 mm also available
Model: MS-S30UV

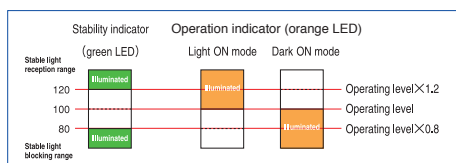
Rating/Performance/Specification

| Type | NPN type | GR12RN | GR12RSN | GR12GN | GR12GSN | GR12BSN | GR12WSN | GR40RN | GR60RN | GR12UVS |
|---------------------------------|---|--|------------|--------------|---|--|--|--|--------------|---|
| | PNP type | GR12RN-PN | GR12RSN-PN | GR12GN-PN | GR12GSN-PN | GR12BSN-PN | GR12WSN-PN | GR40RN-PN | GR60RN-PN | GR12UVSPN |
| Detection method | Convergent reflective | | | | | | | | | |
| Detecting distance | 12mm ± 2mm | | | | | | | 20-70mm | 30-90mm | 12mm ± 2mm |
| Power source | 12 – 24 VDC ±10% / Ripple: 10 % or less | | | | | | | | | |
| Current consumption | 35mA or less | | | 30mA or less | | | | 38mA or less | 40mA or less | 26mA or less |
| Output mode | NPN type | NPN open collector output Rating: sink current 100 mV (30 VDC) or less | | | | | | | | |
| | PNP type | PNP open collector output Rating: source current 100 mV (30 VDC) or less | | | | | | | | |
| Operation mode | Light ON / Dark ON selectable (with switch) | | | | | | | | | |
| Anti interference feature | Available (up to two units) | | | | | | | | | |
| Spot diameter | ø1mm | | | | | | | | | |
| Smallest detectable mark width | 0.5 mm (green mark on white background) | 0.5 mm (red mark on white background) | | | 0.5 mm (yellow mark on white background) | 1 mm (primary color mark on white background) | 1 mm (green mark on white background) | 2 mm (green mark on white background) | — | |
| Response time | 0.5 ms or less | | | | | | | | | 1ms |
| Light source (Light wavelength) | Red LED(660nm) | Green LED(525nm) | | | Blue LED (470nm) | White LED | Red LED(660nm) | Ultraviolet LED (375nm) *2 | | |
| Volume (VR) | 4 turn sensitivity adjustment without stopper provided | | | | | | | | | |
| Indicator | Light reception indicator (Red LED) Stability indicator (Green LED) | | | | | | | | | Light reception indicator (Orange LED) Stability indicator (Green LED) |
| Short circuit protection | Provided | | | | | | | | | |
| Material | Case:Polyarylate Lens:Polycarbonate (lens of GR12UVS: glass) | | | | | | | | | |
| Connection | Cable type (outer diameter: dia.4.2mm) 0.3 mm ² x 3 cores, 2 m | | | | | | | | | Cable type (outer diameter: dia.4.2mm) 0.3 mm ² x 3 cores, 3 m |
| Weight | Approx.80 g | | | | | | | | | Approx.100 g |
| Notes | *1 At detecting distance 40 mm. | | | | | | | | | |
| | *2 (Note)  Do not look straight into the light source while illuminated. The strong UV ray may damage the eye if seen only for a short time. If it is unavoidably necessary to look, be sure to use glasses, etc. with UV protection. | | | | | | | | | |
| Accessory | Screwdriver for adjustment, mounting bracket, operation manual | | | | | | | | | Informative label |

Environmental Specification

| | |
|-------------------------|--|
| Ambient light | 3,000 lx or less |
| Ambient temperature | -25 - +55 °C (non-freezing) Storage: -30 - +70 °C |
| Ambient humidity | 35-85%RH (non-condensing) |
| Protective structure | IP67 |
| Vibration | 10-55 Hz / 1.5 mm double amplitude / 2 hours each in 3 direction |
| Shock | 1000 m/s ² / 2 times each in 3 directions |
| Dielectric withstanding | 1,000 VAC for 1 minute |
| Insulation resistance | 500 VDC, 20 MΩ or higher |

- The operation indicator (orange LED) and stability indicator (green LED) respectively show different received light intensity levels as described in the figure.
- After aligning the optical axis and adjusting the sensitivity, make sure light reception and light blocking are within the stable ranges by blocking and unblocking the lights with a detection object repeatedly.
Setting within the stable range increases the reliability against variations in the environment after installation.

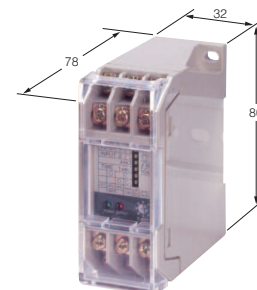


- The orange LED is the operation indicator.
For the light ON mode, the indicator is illuminated when the light is detected.
For the dark ON mode, the indicator is illuminated when the light is blocked.

Applicable power supply unit

PS Series

High capacity of 200 mA at 12 VDC



(General purpose type) PS3N

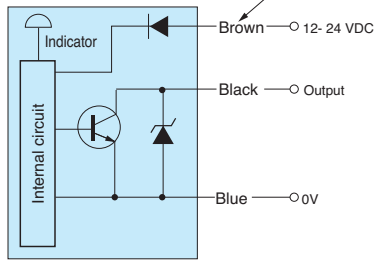
PS3N-SR

(Multifunctional type) PS3F

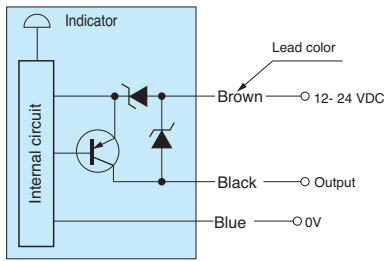
PS3F-SR

Input/Output Circuit and Connection

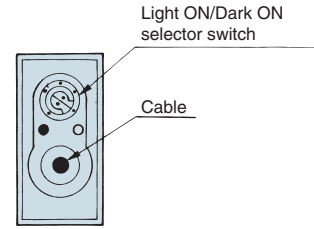
• NPN output



• PNP output



• Operation mode switching

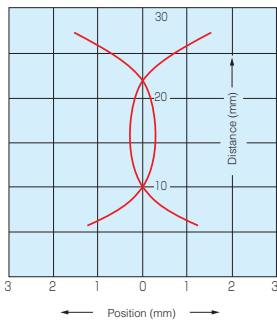


Turning all the way to the left enables the Light ON mode.
Turning all the way to the right enables the Dark ON mode.

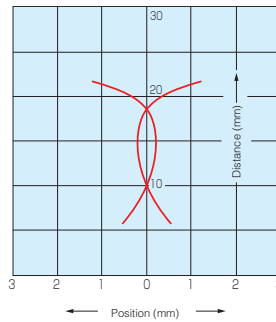
- The output transistor turns off when load short circuit or overload occurs.
- Check the load and turn the power back on.

Response Curves : Detecting Position (Typical)

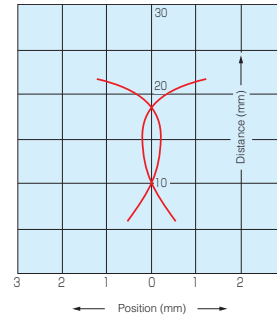
GR12RSN • GR12RN
(50 x 50 White drawing paper)



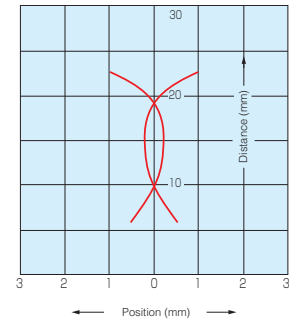
GR12BSN
(50 x 50 White drawing paper)



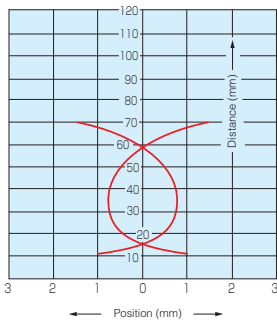
GR12WSN
(50 x 50 White drawing paper)



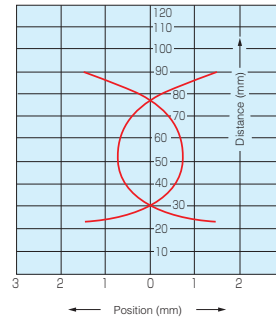
GR12GSN • GR12GN
(50 x 50 White drawing paper)



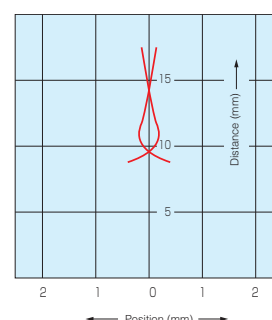
GR40RN
(50 x 50 White drawing paper)



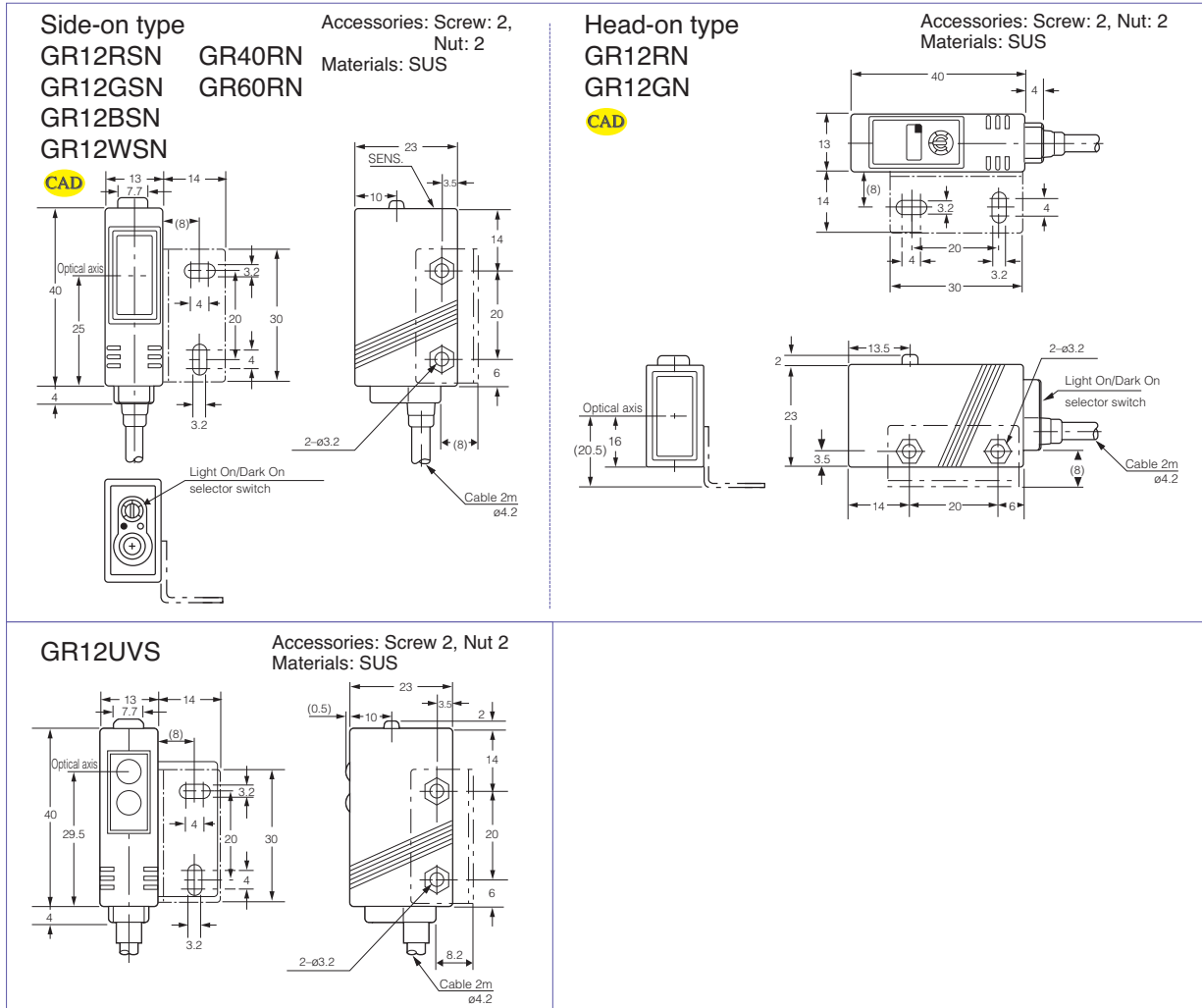
GR60RN
(50 x 50 White drawing paper)



GR12UVS
(50 x 50 White drawing paper)



Dimensions (in mm)



Sensitivity adjustment

The sensitivity adjustment is a 4 turn pot. without stopper. Turning four revolutions clockwise (to LIGHT) enables the maximum sensitivity and turning four revolutions counterclockwise (to DARK) enables the minimum sensitivity. There is no stop on the pot. and it can be turned more than four revolutions. Turning the pot the other way immediately makes the adjustment effective and there is no play in the adjustment.

- Place the detection object at the given position and direct the spot on a region with high reflectance. Turn up the sensitivity adjustment gradually from MIN and find the point at which the light reception indicator (LIGHT) is illuminated (Point A).
- Direct the spot on a region with low reflectance, further turn up the sensitivity adjustment gradually from Point A until the light reception indicator is illuminated. Turn down the adjustment gradually from that point and find the point at which the light reception indicator goes out (Point B).
If the light reception indicator is not illuminated even after turning four revolutions, the point reached after turning four revolutions is regarded as Point B.
- Set the adjustment at midway between Points A and B.

