

TAKEX

PHOTOSENSOR
(with built-in amplifier)

**TAKENAKA ELECTRONIC
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middle-G (N TYPE) SERIES Instruction Manual

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

SPECIFICATIONS



		NPN-OUTPUT				PNP-OUTPUT			
Flying lead Models	Side-on	GT5RSN	GMR2RSN	GSR05RSN	GSZ5RS	GT5RSPN-N	GMR2RSPN-N	GSR05RSPN-N	*GSZ5RSPN
	Basic	GT5RN	GMR2RN	GSR05RN	GSZ5R	GT5RPN-N	GMR2RPN-N	GSR05RPN-N	GSZ5RPN
Connector Models	Side-on	GT5RSN-J	GMR2RSN-J	GSR05RSN-J	*GSZ5RS-J	GT5RSPNN-J	GMR2RSPNN-J	GSR05RSPNN-J	*GSZ5RSPN-J
	Basic	GT5RN-J	GMR2RN-J	GSR05RN-J	GSZ5R-J	GT5RPNN-J	GMR2RPNN-J	GSR05RPNN-J	*GSZ5RPN-J
Detection method		Throughbeam	Polarized Retro-reflection	Diffuse reflection	Convergent beam	Throughbeam	Polarized Retro-reflection	Diffuse reflection	Convergent beam
Range ※		7m	0.03~1.5m (K-71 is used)	500mm	20~50mm	7m	0.03~1.5m (K-71 is used)	500mm	20~50mm
Object resolution		φ20mm (min.) Opaque object	_____	100×100mm White paper		φ20mm (min.) Opaque object	_____	100×100mm White paper	
Power supply		12—24V DC ±10%, Ripple 10% (max.)							
Current consumption		Trns : 20mA Rcvr : 20mA	30mA		25mA	Trns : 20mA Rcvr : 25mA	35mA		30mA
Output mode	Output	NPN open collector Sink current : 100mA, 30VDC (max.)				PNP open collector Source current : 100mA, 30VDC (max.)			
	Stability output	NPN open collector Sink current : 50mA, 30VDC (max.)				PNP open collector Source current : 50mA, 30VDC (max.)			
Operating mode		Light/Dark-On selectable							
Residual Voltage		1V (max.)				2V (max.)			
Response time		0.5ms (max.)							
Beam deviation		10° (Rcvr)	30° (Reflector)	_____		10° (Rcvr)	30° (Reflector)	_____	
Hysteresis		_____		10% (max.)		_____		10% (max.)	
Light source		Red LED (700nm)							
LED Indicator		Trns : Power (Red) Rcvr : Operation (Red) Tolerance (Green)	Operation (Red) Tolerance (Green)			Trns : Power (Red) Rcvr : Operation (Red) Tolerance (Green)	Operation (Red) Tolerance (Green)		
Volume (VR)		SENS : sensitivity VR							
Switch (SW)		Light-on / Dark-on selectable switch							
Short protection		Built-in							
Material		Case : Polyarylate Lens : Acrylic							
Connection	Flying lead	Flying lead (φ4.2) Through-beam Transmitter 0.3mm ² ×2 2m (Gray) Through-beam Receiver 0.2mm ² ×4 2m (Black)							
	Connector	M8 connector							
Mass	Flying lead	Trns : 80g Rcvr : 80g	Approx. 80g			Trns : 80g Rcvr : 80g	Approx. 80g		
	Connector	Trns : 25g Rcvr : 25g	Approx. 25g			Trns : 25g Rcvr : 25g	Approx. 25g		
Accessories		Reflector K-71				Reflector K-71			
Driver for sensitivity VR									

CONNECTOR TYPE "—J"

(-J : Quick disconnect type M8, 4 pin)

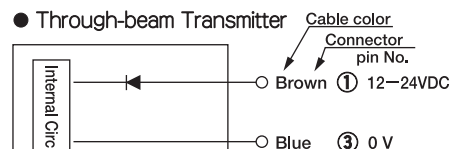
- Available receptacle cables as an option.
 - Straight type : F B C - 4 R 2 S (2m length)
 - L angle type : F B C - 4 R 2 L (2m length)

USABLE AMBIENT CONDITIONS

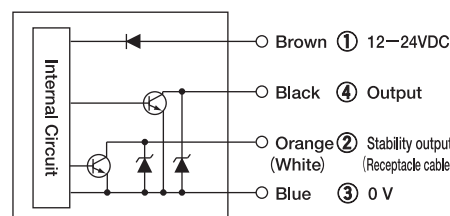
Ambient light	Withstands 5,000 lx (max.)
Operating temp	-25 to +55°C
Ambient humidity	35 to 85%RH
Protection	I P 67
Vibration	10~55Hz 1.5mm Amplitude 2h., 3 Directions
Dielectric Withstanding	AC1000V 1 min.
Insulation resistance	20MΩ min. at 500VDC
Shock	500m/s ² 3 times, 3 directions

※ : Models followed by ※ are discontinued.
For the Polarized Retro-reflection type, the figures show the installation range of the reflector.
The range and the object resolution differs according to the reflector to be used.
Perform detection test by using actual object to be detected.
The detection distance of diffuse-reflective type sensor differs largely depending on the light permeability of the object.

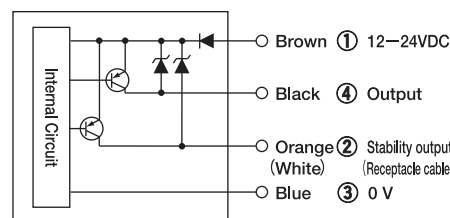
OUTPUT CIRCUIT



NPN output

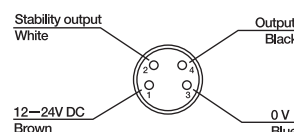
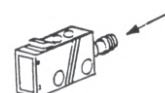


PNP output



- Loaded short circuit or overlord shuts off the output transistor.
- Turn the power back on after checking the loaded condition.
- When the stability output (orange cable or white cable) is not used, do not connect other lines or take the insulation processing of the cable.

(Connector type Pin No.)



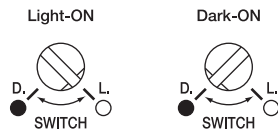
- The figure shows cable color for the optional cable with M8 connector which is sold separately.
- Transmitter of Throughbeam type uses Brown : 12-24VDC and Blue : 0V only.

TAKEX

MANU.NO.ABH-HS-0028-4

OPERATING MODE

- All types are equipped with Light/Dark-ON selectable switch.

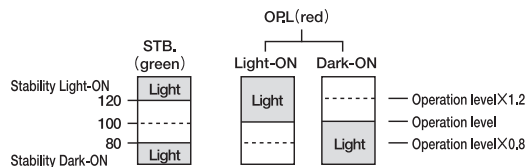


Light-ON Position (L)

Dark-ON Position (D)

INDICATOR

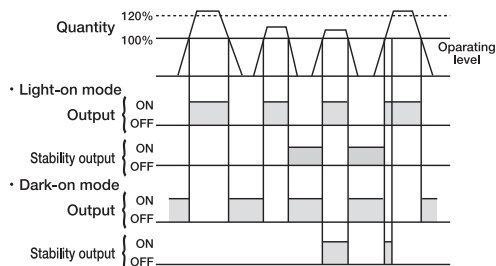
- Operating indicator : Red.
Stability indicator : Green.
- Confirm to get stable light capacity by repeating of light-on and dark-on after adjustment of light axis and sensitivity.



- Red LED of receiver means the operating indicator.
In case it's L.ON (Light-on), this indicator lights when receiver the LED.
- In case it's D.ON (Dark-on), this indicator lights when shutting the LED.
- Light-on and Dark-on after adjustment of light axis and sensitivity.

HOW TO USE STABILITY OUTPUT

This stability output is suitable for confirmation of misalignment of the light axis, decreasing in the quantity of received light and alternation of environment after installation.
If the quantity of received light do not reach within the stable range (per 120%), it will be output.



ADJUSTMENT

(1) Throughbeam Type

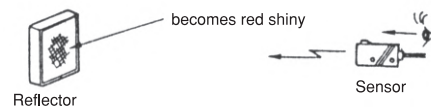
- Adjust the axis of transmitter at the position where the lens surface of receiver becomes reddest by swinging out the light source up/down and right/left direction.



- Adjust receiver to the center of range by swinging out up/down, right/left.
Confirm the green LED Lights.
Red LED (OPL) is operation indicator.
Selectable Light/ON/Dark-ON.

(2) Polarized Retro-reflection Type

- ① Set the polarized reflector (mirror) and sensor.
Adjust the axis at the position where the mirror becomes red shiny.



- ② Set the sensitivity adjuster (SENS.) to MAX.
- ③ Turn the SENS. counterclockwise in case that target object such as transluence object blocks the axis.

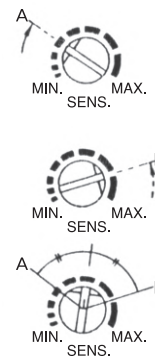
- The range depends on reflector type.

Reflector Type	K-71	K-7	S-25
Range	0.03~1.5m	0.03~2.5m	70~400mm

(3) Diffuse reflection Type (LIGHT-ON Operation)

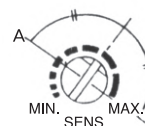
- ◆ In case of reflective background

- ① Set a target object to the desired position and then increase the sensitivity adjustment gradually from the minimum position until the indicator LED is on (Point A).
- ② Remove the target object and gradually decrease the sensitivity adjustment from the maximum position until the LED is off (Point B). If the LED is still off even though the potentiometer is at the maximum position, this maximum position should be the point B.
- ③ Set the potentiometer at the center between Point A and B.



- ◆ In case of no-reflective background

- ① Point A is the same point mentioned above.
- ② Set the potentiometer at the center between Point A and MAX.
Confirm both of red LED and green LED light.



NOTES

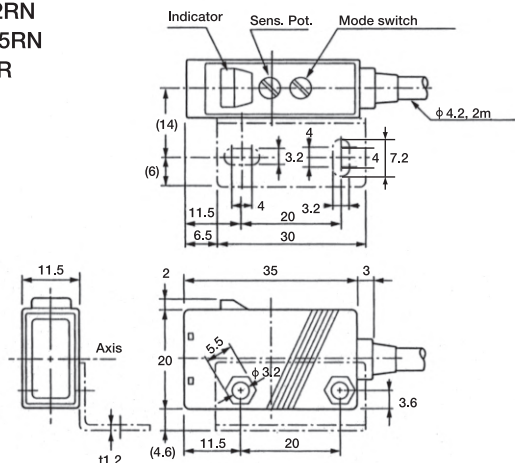
- Use a dry, soft cloth for cleaning the lens and case and lightly wipe it off. Never use solvents such as thinner or alcohohol.
- Use power supply and voltage in the specification range.
- Never cycle on/off continually.
- Don't use the sensor where direct water spray continuously occurs, or under water although this sensor is waterproof (IP67).
- When a commercial available switching regulator is used, ground the FG (frame ground) terminal.
- Sole wiring through metal tube is required by high power or voltage line.
- Tightening torque is within 0.6N·m when mounting by screw.

DIMENSIONS

(in : mm, Tightning torque 0.6N·m Max.)

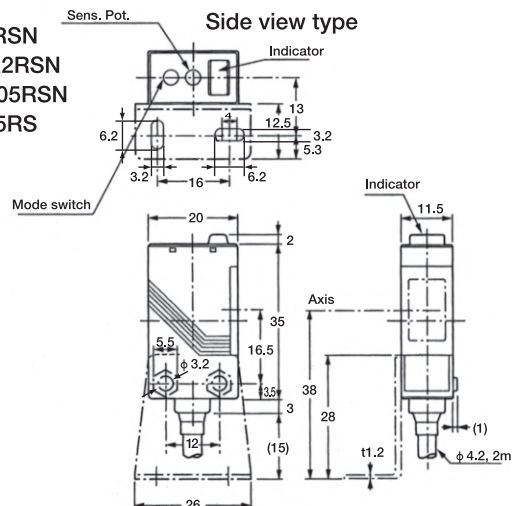
GT5RN
GMR2RN
GSR05RN
GSZ5R

Basic type

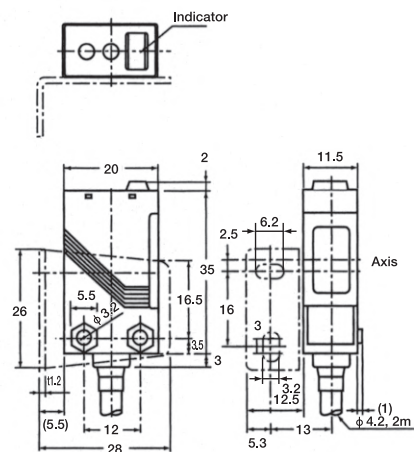
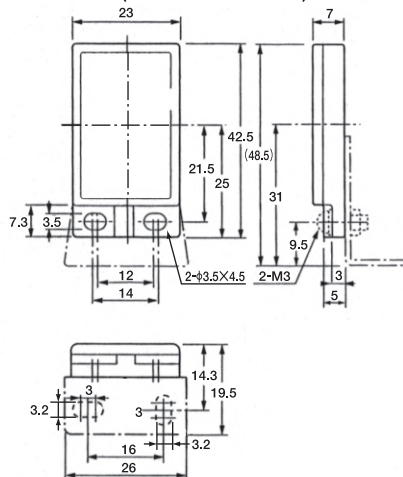


GT5RSN
GMR2RSN
GSR05RSN
GSZ5RS

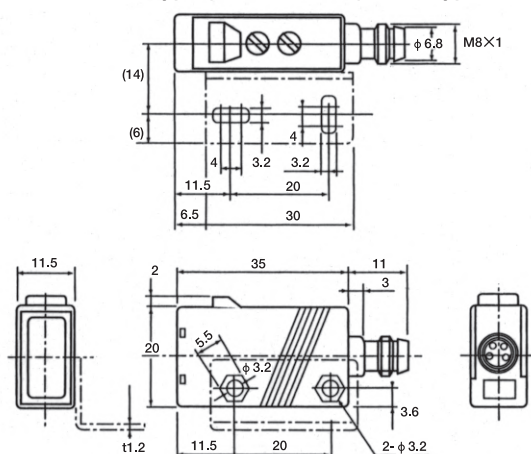
Side view type



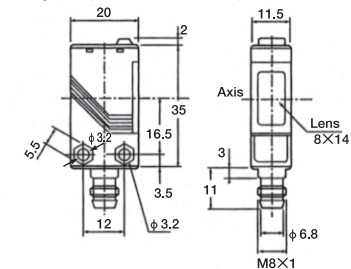
(K-71 Reflector)



“—J” type (M8 connector) Basic type

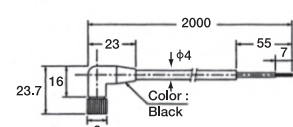
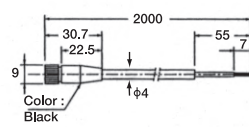


“—J” type (M8 connector) Side view type



FBC-4R2S

FBC-4R2L



- This sensor is designed to detect a specific object. It is not provided with control functions for prevention of injuries or accidents in itself.
- 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.
- Specifications and dimensions may be subject to change without notice.