

Autonics

PHOTO MICRO SENSOR BUILT AMPLIFIER

BS5 SERIES

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

※ Please keep these instructions and review them before using this unit.

※ Please observe the cautions that follow;

Warning Serious injury may result if instructions are not followed.

Caution Product may be damaged, or injury may result if instructions are not followed.

※ The following is an explanation of the symbols used in the operation manual.

Caution: Injury or danger may occur under special conditions.

Warning

1. In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device. It may cause a fire, human injury or damage to property.

Caution

1. Cable Connection

There is no reverse polarity protection circuit, therefore it can be damaged by wrong connection. Check each terminal layout, range of power voltage and connect after cutting off the power.

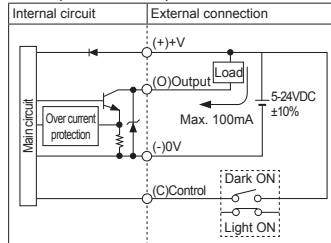
Ordering information

BS 5 - K 2 M - P

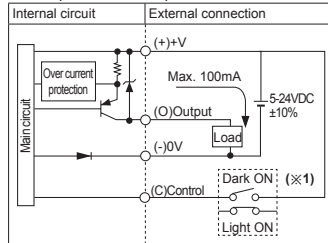
BS	Item	No mark	NPN open collector output
5	Sensing distance	P	PNP open collector output
-	Appearance	M	Middle
K	Connection	2	Connector Type
2	Size	K	K-Type
M	Control output	T	T-Type
-		L	L-Type
P		Y	Y-Type
		V	V-Type
		5	Unit: mm(fixed)
		BS	Photoelectric sensor series

Control output circuit diagram

•NPN open collector output



•PNP open collector output

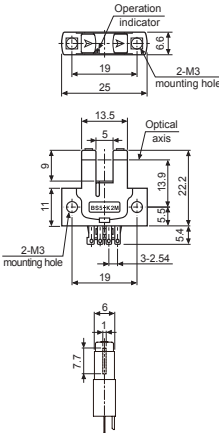


(※1) Operation mode selection: Connect Control(C) terminal into terminal +V(+) to operate Light ON mode. Dark ON mode is available with disconnection status.

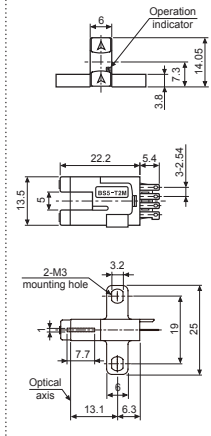
※ The above specifications are subject to change without notice.

Dimensions

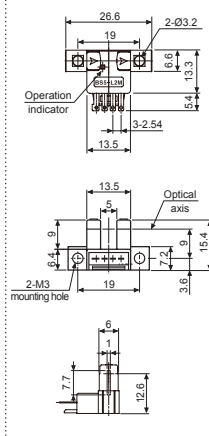
•BS5-K2M / BS5-K2M-P



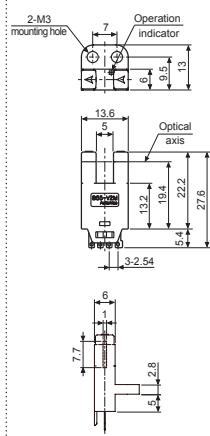
•BS5-T2M / BS5-T2M-P



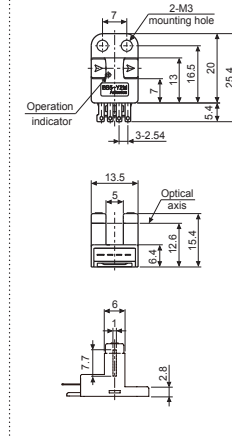
•BS5-L2M / BS5-L2M-P



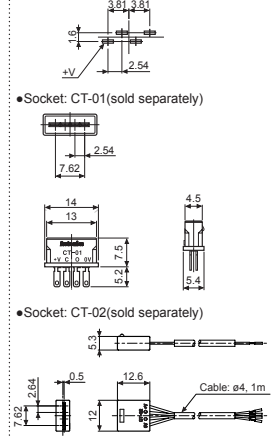
•BS5-V2M / BS5-V2M-P



•BS5-Y2M / BS5-Y2M-P



(Unit: mm)



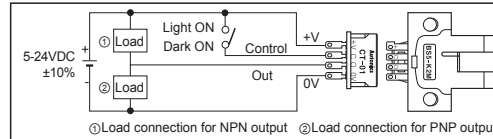
Specifications

Model	NPN output	BS5-K2M	BS5-T2M	BS5-L2M	BS5-Y2M	BS5-V2M
	PNP output	BS5-K2M-P	BS5-T2M-P	BS5-L2M-P	BS5-Y2M-P	BS5-V2M-P
Sensing type	Through-beam(Not modulated)					
Sensing distance	5mm fixed					
Sensing target	ø0.8 × 1mm Opaque materials					
Hysteresis	0.05mm					
Response time	Light ON: Max. 20μs, Dark ON: Max. 100μs					
Response frequency ^{※1}	2kHz					
Power supply	5-24VDC ±10%(Ripple P-P: Max. 10%)					
Current consumption	Max. 30mA(at 26.4VDC)					
Light source	Infrared LED(950nm)					
Operation mode	Light ON, Dark ON selectable by control wire					
Control output	NPN or PNP open collector output • Load voltage: Max. 30VDC • Load current: Max. 100mA • Residual voltage: Max. 1.2V					
Protection circuit	Reverse power polarity protection, Overcurrent protection					
Indicator	Operation Indicator: red LED					
Connection	Connector type					
Insulation resistance	Min. 20MΩ(at 250VDC megger)					
Noise resistance	±240V the square wave noise(pulse width: 1μs) by the noise simulator					
Dielectric strength	1,000VAC 50/60Hz for 1 minute					
Vibration	1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours					
Shock	500m/s ² (approx. 50G) in X, Y, Z directions for 3 times					
Environment	Fluorescent lamp: Max. 1,000h;(Receiver illumination)					
Ambient illumination						
Ambient temperature	-20 to 55°C, Storage: -25 to 85°C					
Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH					
Protection	IP50(IEC standard)					
Material	PBT					
Approval	CE					
Unit weight	Approx. 30g					

※ The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.
※1: Response frequency is the value getting from revolving the circle panel below.



Connection



※ Connect the unit using socket. If it is soldered on terminal pin directly without socket, it may cause product damage.

① Load connection for NPN output ② Load connection for PNP output

Operation mode

Operation mode	Light ON	Dark ON
Receiver operation	Received light Interrupted light	Received light Interrupted light
Operation indicator (Red LED)	ON OFF	ON OFF
Transistor output	ON OFF	ON OFF

Caution for using

- External light source**
There is no protection of external light source in this unit which is for built-in, please intercept external light source from the receiver.
 - Connection**
Do not wire with power line or high voltage line. Use separated conduit to avoid malfunction or damage by inductive current.
 - Noise generator**
If there are machines generating noise at surrounding photo micro sensor(Switching regulator, inverter motor etc.), be sure to earth F.G. terminals of machines.
 - Soldering(When soldering on terminals directly)**
Keep the temperature max. 260°C and do not heat the terminal for more than 3 secs. Solder 1.5mm away from terminal source part.
 - Installation**
Use M3 screws and tighten with max. 0.49N.m(5.0kg.cm) torque. When screwing, use a flat washer(ø6). Be sure that sensing part is not to be touched by any objects. If the sensing part is damaged, it may cause malfunction.
 - Maintenance**
If the sensor is installed at place where there are a lot of dust and humidity, clear the receiver and the emitter with dry cloth. Pollution of the receiver and the emitter can occur malfunction of the sensor.
 - Others**
Avoid installing the sensor adjacent to ;
① Severe vapor or dust
② Water, oil, or chemicals such as organic matter, strong flux & alkali, etc.
③ Strong direct ray of the sun
 - Installation environment**
① It shall be used indoor ② Altitude Max. 2,000m ③ Pollution Degree 2 ④ Installation Category II
- ※ Please keep the above precautions to avoid malfunction and damages.

Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connectors/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse/Rate/meters
- Display units
- Sensor controllers
- Laser marking system(Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system

Autonics Corporation
http://www.autonics.com

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