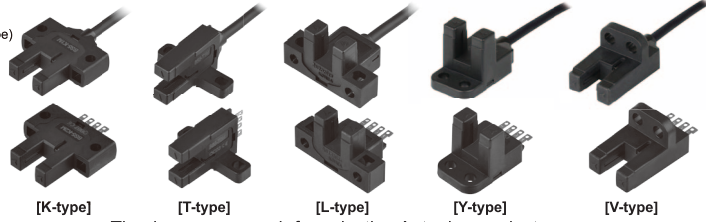


Autonics PHOTO MICRO SENSOR BUILT AMPLIFIER BS5 SERIES

M A N U A L



(Connector type)



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.

2. Do not disassemble or modify this unit. Please contact us if it is required.
It may cause electric shock and cause a fire.

Caution

1. Please check the polarity of power and wrong wiring.

It may cause damage to the unit. Check the cable position and power voltage range. Cut off the power for wiring cables.

2. Do not use this unit where there is flammable or explosive gas.

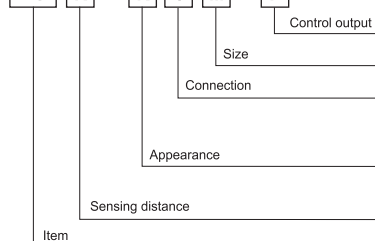
It may cause a fire or explosion.

3. In cleaning the unit, do not use water or an oil-based detergent.

It may cause a fire, give an electric shock or damage to product.

Ordering information

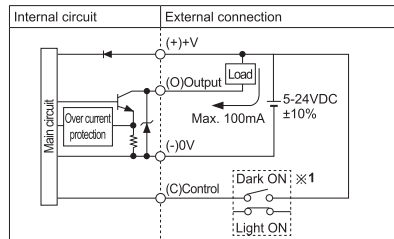
BS K - K 1 M - P



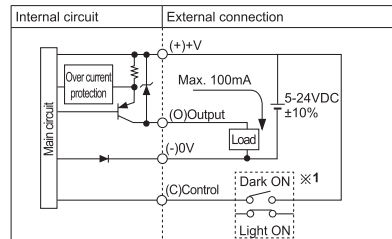
No mark	NPN open collector output
P	PNP open collector output
M	Middle
1	Cable Type
2	Connector Type
K	K-Type
T	T-Type
L	L-Type
Y	Y-Type
V	V-Type
5	Unit: mm(fixed)
BS	Photoelectric sensor series

Control output circuit diagram

•NPN open collector output

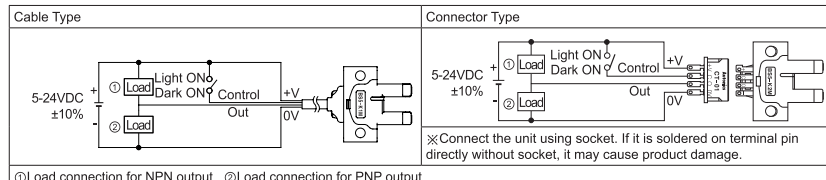


•PNP open collector output



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

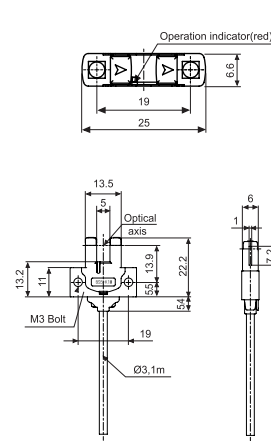
Connection



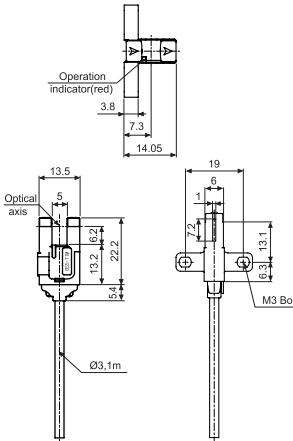
※The above specifications are subject to change and some models may be discontinued without notice.

Dimensions

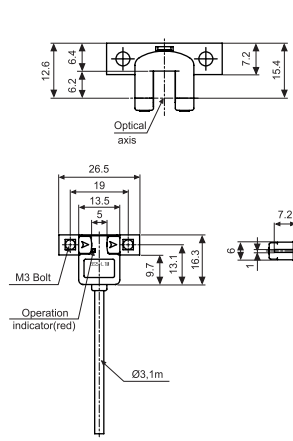
•BS5-K1M / BS5-K1M-P



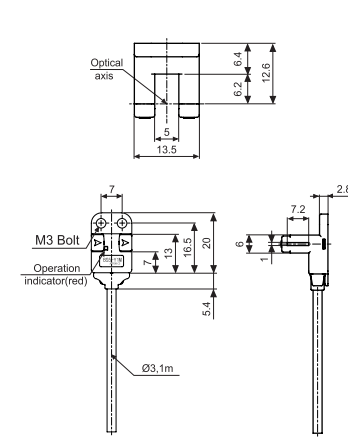
•BS5-T1M / BS5-T1M-P



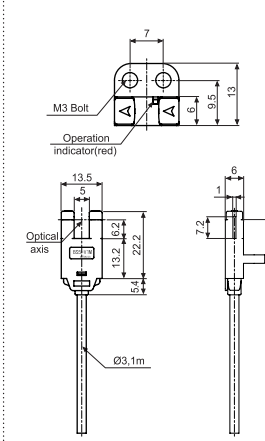
•BS5-L1M / BS5-L1M-P



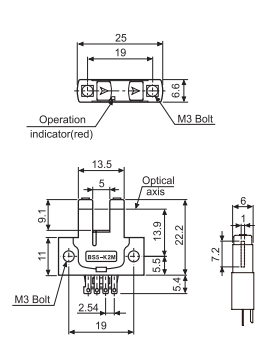
•BS5-Y1M / BS5-Y1M-P



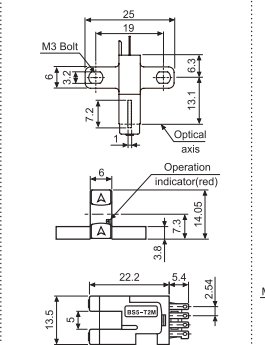
•BS5-V1M / BS5-V1M-P



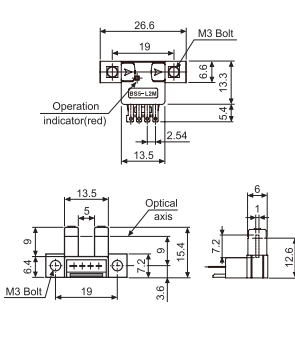
•BS5-K2M / BS5-K2M-P



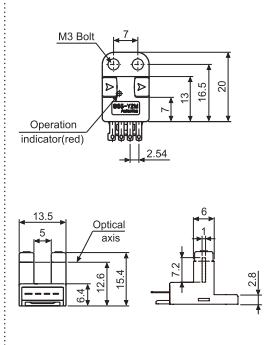
•BS5-T2M / BS5-T2M-P



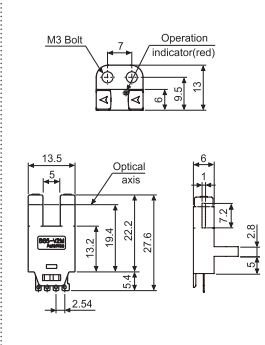
•BS5-L2M / BS5-L2M-P



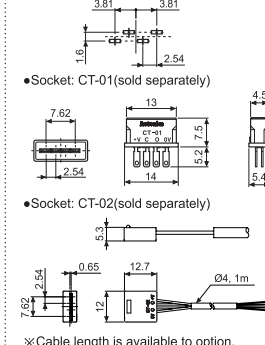
•BS5-Y2M / BS5-Y2M-P



•BS5-V2M / BS5-V2M-P



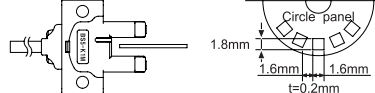
•Hole cut-out when inputting socket on PCB



Specifications

Model	BS5-K1M	BS5-T1M	BS5-L1M	BS5-Y1M	BS5-V1M	BS5-K2M	BS5-T2M	BS5-L2M	BS5-Y2M	BS5-V2M
NPN Open collector output	BS5-K1M-P	BS5-T1M-P	BS5-L1M-P	BS5-Y1M-P	BS5-V1M-P	BS5-K2M-P	BS5-T2M-P	BS5-L2M-P	BS5-Y2M-P	BS5-V2M-P
PNP Open collector output	BS5-K1M	BS5-T1M	BS5-L1M	BS5-Y1M	BS5-V1M	BS5-K2M	BS5-T2M	BS5-L2M	BS5-Y2M	BS5-V2M
Sensing type	Through-beam(not modulated)									
Sensing distance	5mm fixed									
Sensing target	0.8 × 2mm 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%)									
Power supply	Max. 30mA(at 26.4VDC)									
Light source	Infrared LED(940nm)									
Operation mode	Light ON, Dark ON selectable by control wire					Light ON, Dark ON selectable by control terminal				
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	Cable type					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/s²(approx. 50G) in X, Y, Z directions for 3 times									
Environment	Ambient illumination: Fluorescent lamp: Max. 1,000lx(receiver illumination)									
Environment	Ambient temperature: -20 to 55°C, Storage: -25 to 85°C									
Environment	Ambient humidity: 35 to 85%RH, Storage: 35 to 85%RH									
Protection	IP50(IEC standard)									
Material	PBT									
Cable	Ø3mm, 4-wire, 1m(AWG28, Core diameter: 0.08mm, Number of cores: 19, Insulator out diameter: Ø0.88mm)									
Approval	—									
Weight*2	Approx. 50g(Approx. 30g)									

※1: Response frequency is the value getting from revolving the circle panel below.



※2: The weight is with packaging and the weight in parentheses is only unit weight.

※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

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

- There is no protection of external light source in this unit which is for built-in, please intercept external light source from the receiver.
 - When wiring the photoelectric sensor with high voltage line, power line in a same conduit, it may cause malfunction or mechanical problem, please do wire separately or use different conduit.
 - 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.
 - For soldering on the connector type terminals, keep the temperature max. 260°C and do not heat for more than 3 sec. Solder 1.5mm away from terminal source part.
 - Use M3 screws and tighten with max. 0.49N.m(5.0kgf.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.
 - 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.
 - Avoid installing the sensor adjacent to:
 - ⓐ Severe vapor or dust
 - ⓑ Water, oil, or chemicals such as organic matter, strong flux & alkali, etc.
 - ⓒ Strong direct ray of the sun
 - Installation environment
 - ⓐ It shall be used indoor
 - ⓑ Altitude Max. 2,000m
 - ⓒ Pollution Degree 2
 - ⓓ 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

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■ E-mail: sales@autonics.com

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