

# Autonics

## PHOTOELECTRIC SENSOR BUP SERIES

### MANUAL



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

- 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.
- Do not disassemble and modify this unit. If needs, please contact us.  
It may cause an electric shock and cause a fire.

#### Caution

- This unit shall not be used outdoors.  
It might shorten the life cycle of the product or give an electric shock. Use this product inside only. Do not use the product outdoors or location subject to temperatures or humidity outside. (Ex: rain, dirty, frost, sunlight, condensation, etc.)
- Do not use this unit in place where there is flammable or explosive gas.  
It may cause a fire or explosion.
- Please observe the rated voltage and do not supply AC power.  
It may result in damage to this unit.
- Please check the polarity of power and wrong wiring.  
It may result in damage to this unit.
- Do not use this unit in place where there is vibration or impact.  
It may result in damage to this unit.
- In cleaning the unit, do not use water or an oil-based detergent.  
It may cause an electric shock and cause a fire.

#### Ordering information

BUP-50 S-P	Control output	No mark	NPN open collector output
		P	PNP open collector output
S	Sensitivity type	No mark	Fixed sensitivity type
		S	Adjustable sensitivity VR built-in type
30	Sensing distance	30	30mm
		50	50mm
BUP	Item		Photoelectric sensor

#### Operation mode

Operation mode	Light ON mode	Dark ON mode
Receiver operation	Light ON	Light OFF
Operation indicator(LED)	ON	OFF
TR output	ON	OFF

If the control output terminal is short-circuited or flow beyond the rated current, the control signal will not be output normally due to operating protection circuit.

※The above specifications are subject to change without notice.

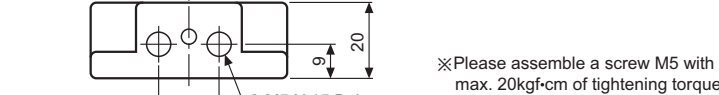
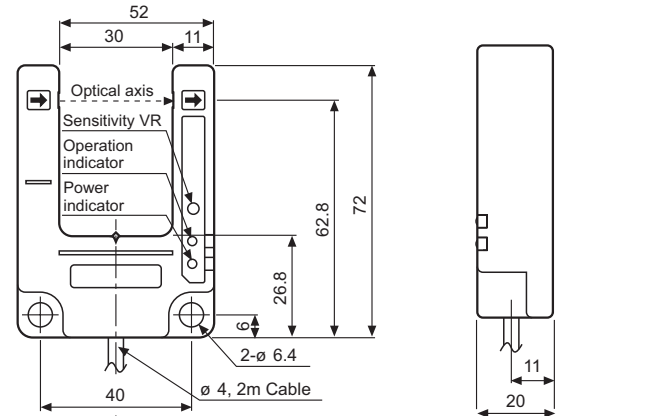
#### Specifications

Model	BUP-30	BUP-30-P	BUP-30S	BUP-30S-P	BUP-50	BUP-50-P	BUP-50S	BUP-50S-P	
Sensing target	Min.ø 4mm Opaque		Min.ø 1.5mm Opaque		Min.ø 4mm Opaque		Min.ø 1.5mm Opaque		
Operation mode	Selectable Light ON or Dark ON by control wire								
Sensing distance	30mm				50mm				
Response time	Max. 1ms								
Power supply	12-24VDC ± 10%(Ripple P-P:Max. 10%)								
Current consumption	Max. 30mA								
Light source	Infrared LED(modulated)								
Sensitivity adjustment	Fixed		Adjustable VR		Fixed		Adjustable VR		
Control output	<ul style="list-style-type: none"> <li>NPN open collector output - Load voltage: Max.30VDC, Load current : Max.200mA, Residual voltage: Max.1V</li> <li>PNP open collector output - Output voltage: Min.(Power supply-2.5)V, Load current: Max.200mA</li> </ul>								
Protection circuit	Reverse polarity protection, Short output circuit protection								
Indicator	Power indicator : Green LED, Operation indicator : Red LED								
Connection	Outgoing cable								
Insulation resistance	Min. 20MΩ (at 500VDC megger)								
Noise strength	± 240V the square wave noise(pulse width:1μs) by the noise simulator								
Dielectric strength	1000VAC 50/60Hz for 1minute								
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours								
Shock	500m/s <sup>2</sup> (50G) in X, Y, Z directions for 3 times								
Environ-ment	Ambient illumination	Sunlight: Max. 11,000lx Incandescent lamp : Max. 3,000lx							
	Ambient temperature	-25 to 65°C[BUP-30S(-P) & BUP-50S(-P) : -10 to +60°C], Storage : -25 to +70°C							
	Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH							
Protection	IP66(IEC standard)		IP50(IEC standard)		IP66(IEC standard)		IP50(IEC standard)		
Material	Case: ABS, Cap: PC								
Cable	ø 4, 4P, Length:2m, AWG 22, Insulation diameter: ø 1.2								
Accessories	—		Driver		—		Driver		
Approval	CE								
Unit weight	Approx. 90g				Approx. 140g				

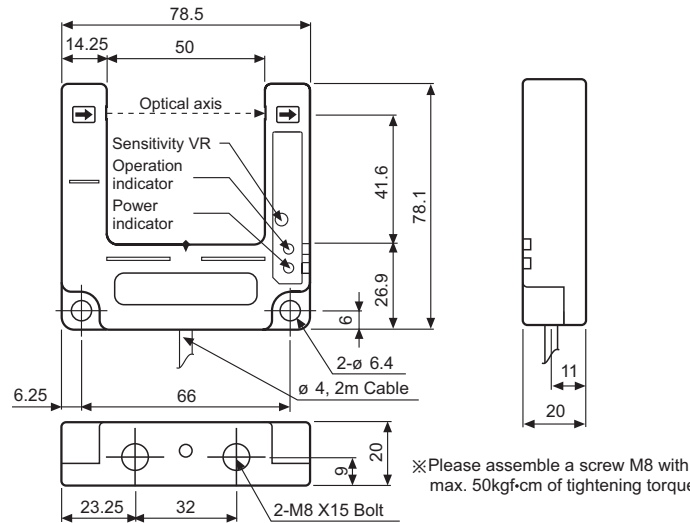
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

#### Dimensions

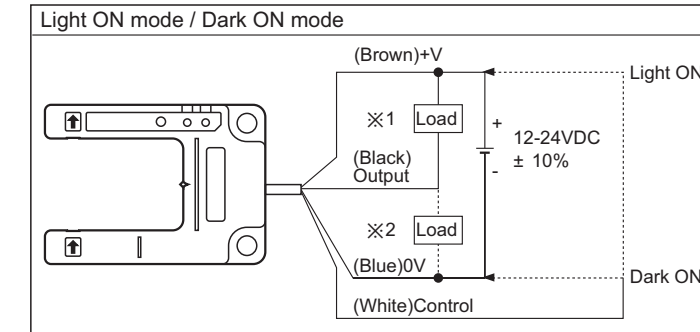
• BUP-30, BUP-30-P, BUP-30S, BUP-30S-P (Unit:mm)



• BUP-50, BUP-50-P, BUP-50S, BUP-50S-P

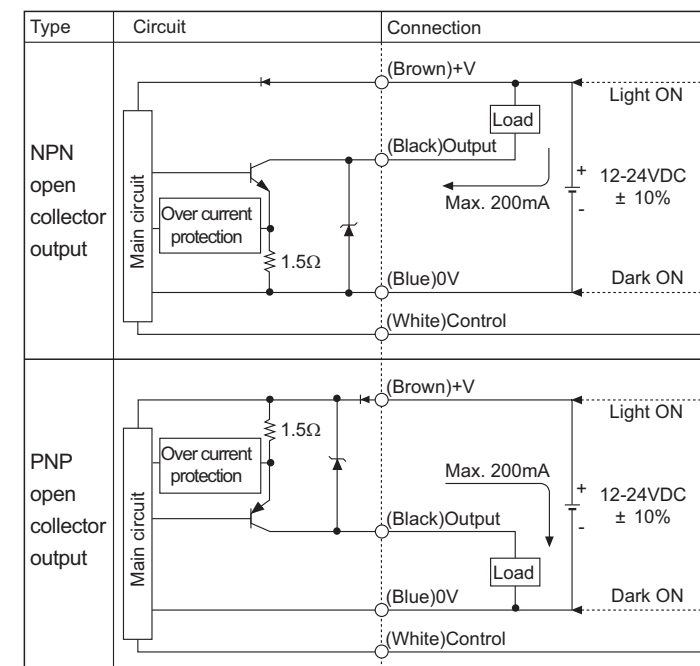


#### Connection



※1: Load connection for NPN open collector output  
※2: Load connection for PNP open collector output

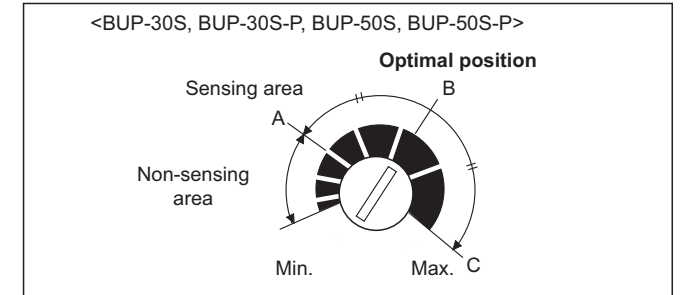
#### Control output circuit diagram



#### Mounting & Adjustment

Check the position where the photoelectric sensor will be used and the connection then supply the power and set sensitivity as below.

•Sensitivity adjustment

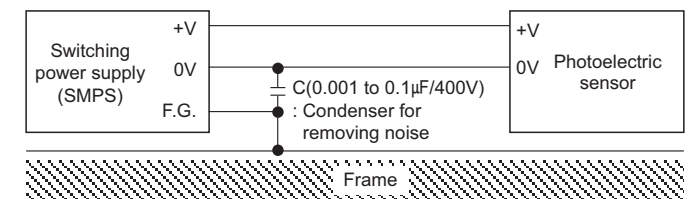


When place a target within sensing range of sensor, turn the VR from minimum position until the operation indicator is turned on in dark ON mode or turned off in Light ON mode. this position is 'A'.

Turn the VR to 'B' in the middle between 'A' and 'C' which is the maximum sensitivity position, this will be the optimal sensitivity position.(The operation indicator is able to be operated where the the lowest sensitivity position.)

#### Caution for using

- Intercept a strong source of light as like sunlight, spotlight within inclination angle range of photoelectric sensor.
- The photoelectric sensor may cause malfunction under the fluorescent lamp light, so be sure to use cut-off light with panel.
- When wire the photoelectric sensor with high voltage line or power line in the same conduit, it may cause malfunction or mechanical trouble. Therefore please wire separately or use different conduit.
- Avoid installing the unit where there is severe corrosive gas, or dust, etc.
- In case of connect DC relay as inductive load to output, please remove surges by using diode or varistor.
- The photoelectric sensor cable shall be used as short as possible, because it may cause malfunction by noise through the cable.
- When it is stained by dirt on lens, please clean the lens with dry cloth, but do not use an organic materials such as alkali, acid, chromic acid.
- When use switching power supply as the source of supplying power, F.G. terminal shall be good earth ground and condenser for removing noise shall be installed between 0V and F.G. terminal.



- Installation environment
  - It shall be used indoor
  - Altitude Max. 2,000m
  - Pollution Degree 2
  - Installation Category III

※It may cause malfunction if above instructions are not followed.

#### Major products

- Proximity sensors
- Area sensors
- Door/Door side sensors
- Counters
- Rotary encoders
- Power controllers
- Panel meters
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Photoelectric sensors
- Fiber optic sensors
- Pressure sensors
- Timers
- Display units
- Sensor controllers
- Graphic/Logic panels

**Autonics Corporation**  
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