Autonics

4-channel U-shaped Photoelectric Sensors

BUM Series

PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Highly reliable 4 channel detection
- High-speed response time under 1 ms
- Built-in reverse power protection circuit and output short overcurrent protection circuit
- IP65 protection rating (IEC standard)

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g., nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
Failure to follow this instruction may result in personal injury, economic loss or fire.

02. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.
Failure to follow this instruction may result in explosion or fire.

03. Do not disassemble or modify the unit.
Failure to follow this instruction may result in fire.

04. Do not connect, repair, or inspect the unit while connected to a power source.
Failure to follow this instruction may result in fire.

05. Check 'Connections' before wiring.
Failure to follow this instruction may result in fire.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.

02. Use a dry cloth to clean the unit, and do not use water or organic solvent.
Failure to follow this instruction may result in fire.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
- When connecting an inductive load such as DC relay or solenoid valve to the output, remove surge by using diodes or varistors.
- Use the product after 0.5 sec of the power input.
  When using a separate power supply for the sensor and load, supply power to the sensor first.
- 18-35 VDC⎓ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Wire as short as possible and keep it away from high voltage lines or power lines to prevent surge and inductive noise.
- When using switching mode power supply (SMPS), ground F.G. terminal and connect a condenser between 0V and F.G. terminal to remove noise.
- When using a sensor with a noise-generating equipment (e.g., switching regulator, inverter, and servo motor), ground F.G. terminal of the equipment.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category III

Product Components

Model	BUM4-40D-W-4M	BUM4-40D-W-□/A	BUM4-40D-W-□/B
Product components	Product, instruction manual		
Bracket	-	H01, H04	H03, H04
M5 bolt	-	× 2	× 2
M12 bolt / nut	-	× 4	× 4

CE EAC

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

BUM4	-	40	D	-	W	-	❶	/	❷

❶ Cable length
2M: 2 m
3M: 3 m
4M: 4 m

❷ Applied bracket
No mark: None (4 m of cable length model)
A: H01, H04
B: H03, H04

Cautions during Installation

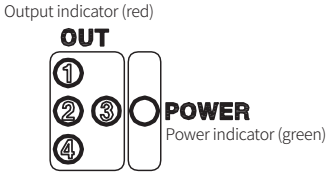
- Be sure to install this product by following the usage environment, location, and specified ratings. Consider the listed conditions below.
  - Installation environment and background (reflected light)
  - Sensing distance and sensing target
  - Direction of target's movement
- For installation, tighten the screw with a torque of 2 N m. Mount the brackets correctly to prevent the twisting of the sensor's optical axis.
- Do not impact with a hard object or bend the cable excessively. That could decrease the product's water resistance.
- Use this product after the test. Check whether the indicator works appropriately for the positions of the detectable object.

Operation Timing Chart

Operation mode	Dark ON
Received light	Received / Interrupted
Output indicator (red)	ON / OFF
Transistor output	ON / OFF

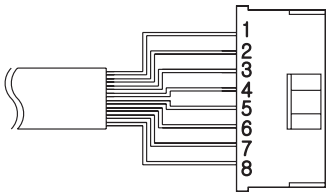
Indicators

- There is an output indicator(red) and a power indicator (green) in each channel on the side of the body.



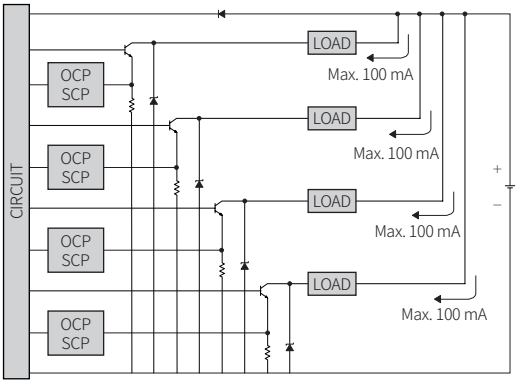
Connections

- Connector: JST SALES AMERICA Inc. VHR-8N



Pin	Color	Function
1	Pink	OUT 1
2	White	OUT 2
3	Gray	OUT 3
4	Black	OUT 4
5	Blue	0 V
6	Blue	
7	Brown	+V
8	Brown	

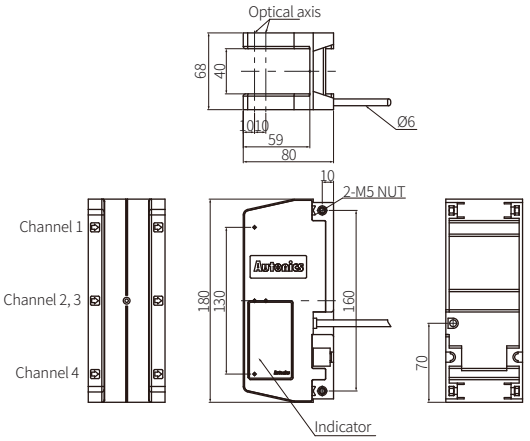
Circuit



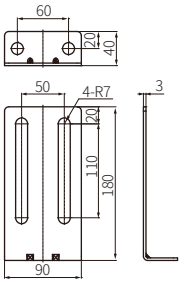
- OCP (over current protection), SCP (short circuit protection)
- If short-circuit the control output terminal or supply current over the rated specification, normal control signal is not output due to the protection circuit.

Dimensions

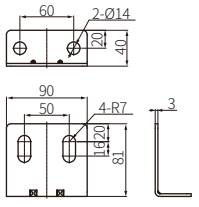
- Unit: mm, For the detailed drawings, follow the Autonics website.,



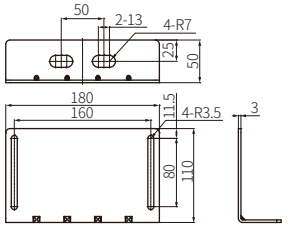
■ **Bracket H01**



■ **Bracket H03**



■ **Bracket H04**



Specifications

Model	BUM4-40D-W-4M	BUM4-40D-W-□/A	BUM4-40D-W-□/B
Sensing type	Through-beam		
Sensing distance	40 mm		
Sensing target	Opaque materials		
Min. sensing target	≥ Ø 4 mm		
Response time	≤ 1 ms		
Light source	Infrared		
Peak emission wavelength	940 nm		
Operation mode	Dark ON mode		
Indicator	Output Indicator (red), power indicator (green)		
Approval	CE EAC		
Unit weight (packaged)	≈ 500 g (≈ 510 g)	≈ 500 g (≈ 1.5 kg)	≈ 500 g (≈ 1.5 kg)

Power supply	18-35 VDC⎓ ±10 % (ripple P-P: ≤ 10%)
Current consumption	≤ 50 mA
Control output	NPN open collector output (individual 4 output)
Load voltage	≤ 35 VDC⎓
Load current	≤ 100 mA
Residual voltage	≤ 4 VDC⎓
Protection circuit	Reverse power protection circuit, output short overcurrent protection circuit
Insulation resistance	≥ 20 MΩ (500 VDC⎓ megger)
Noise immunity	±240 VDC⎓ the square wave noise (pulse width: 1 μs) by the noise simulator
Dielectric strength	1,000 VAC~ 50/60 Hz for 1 min
Vibration	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500 m/s² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient illuminance (receiver)	Sunlight: ≤ 11,000 lx, incandescent lamp: ≤ 3,000 lx
Ambient temperature	-25 to 65 °C, storage: -25 to 70 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)
Protection rating	IP65 (IEC standard)
Connection	Cable type
Cable spec.	Ø 6 mm, 8-wire, 2 m / 3 m / 4 m model
Wire spec.	AWG22 (1.2 mm, 60-core)
Material	Case, cover: ABS