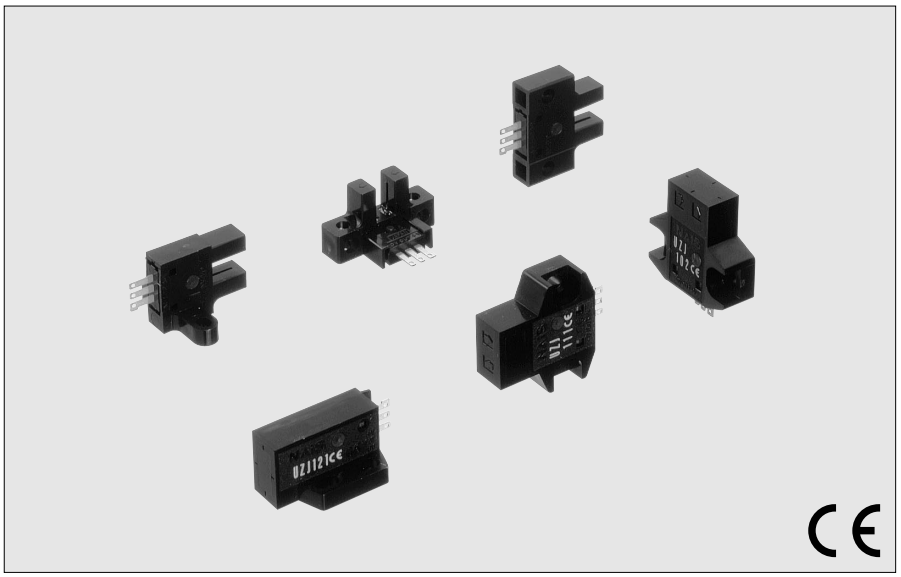
NAiS

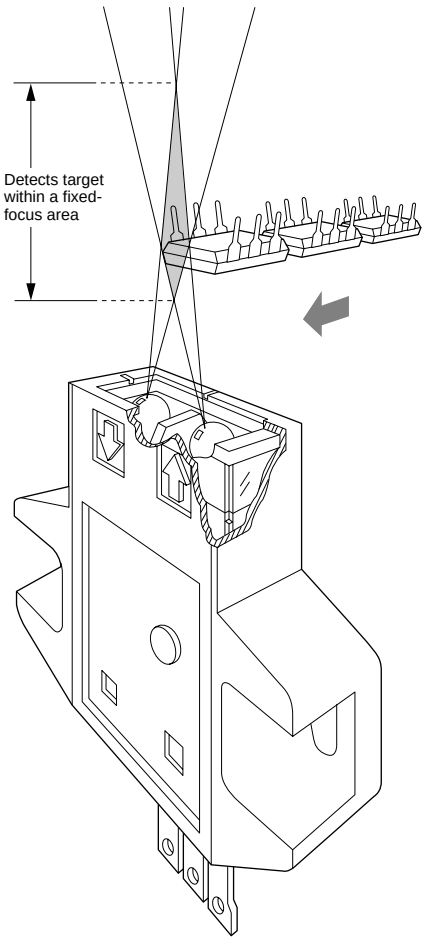
FIXED-FOCUS REFLECTIVE/ U-SHAPED TYPE MICRO-PHOTOSENSORS

UZJ Series

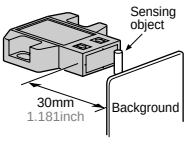
LOW-COST PERFORMANCE



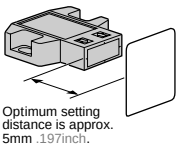
Stable Detection by Fixed-focus Reflective / UZJ1□□



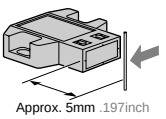
Not Affected by Background
The background will not affect the sensing performance if it is located 30mm 1.181inch or more away.



Dark Workpiece Detection
The sensor can detect even dark workpieces.



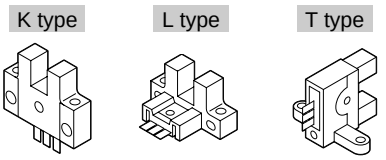
Tiny Object Detection
High performance of the sensor allows the detection of even a ϕ0.05mm ϕ.002inch copper wire.



High-speed Response Time: 20µs / UZJ2□□

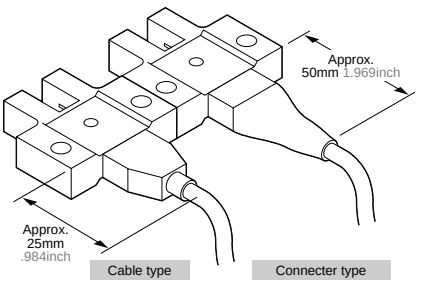
High-speed-Response Time: 20µs (in the light-receiving condition)

Wide Product Range



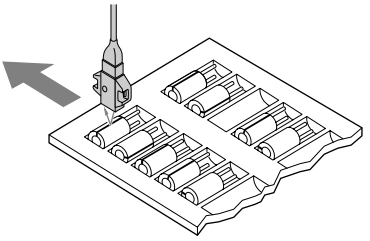
DC Power Operated
A supply voltage of 5 to 24V DC±10% is required.

Cable type is also available
No soldering required.
Achieves space saving & reliability.

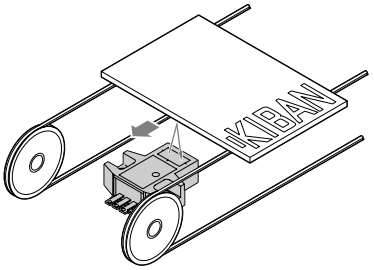


APPLICATIONS

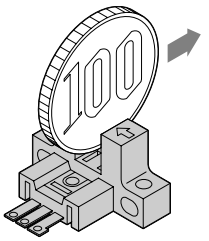
Presence sensing of a capacitors on trays



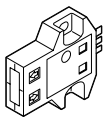
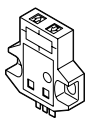
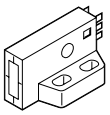
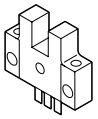
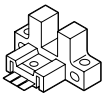
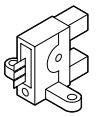
Positioning and pass sensing of circuit boards



Counting of coins

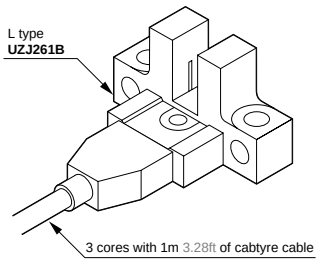


ORDER GUIDE

		Appearance	Sensing range	Model No.	Output operation
Fixed-focus reflective	Top sensing		2.5 to 8mm .098 to .315inch Center 5mm .197inch	**UZJ101**	Light-ON
				UZJ102	Dark-ON
	Front sensing			**UZJ111**	Light-ON
				UZJ112	Dark-ON
	L type (top sensing)			**UZJ121**	Light-ON
				UZJ122	Dark-ON
U-shaped thru-beam	K type		5mm .197inch (Fixed)	**UZJ251**	Dark-ON
				UZJ252	Light-ON
	L type			**UZJ261**	Dark-ON
				UZJ262	Light-ON
	T type			**UZJ271**	Dark-ON
				UZJ272	Light-ON

With cable type (for U-shaped type only)
U-shaped type is available with cable. (Cable length: 1m 3.28ft). When ordering this type, add suffix "**B**" to the end of the model number.

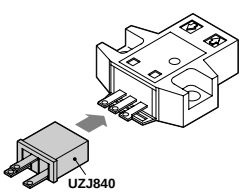
e.g.): Cable type of **UZJ251** is "**UZJ251B**".



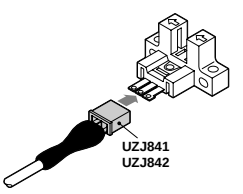
OPTION

Component	Model No.	Description
Connector	**UZJ840**	Dedicated connector
Connector with cable	**UZJ841**	Cable length: 1m 3.28ft
	UZJ842	Cable length: 3m 9.84ft

Connector
• UZJ840



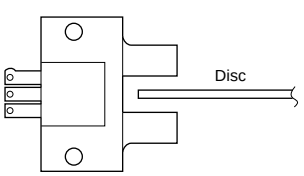
Connector with cable
• UZJ841
• UZJ842

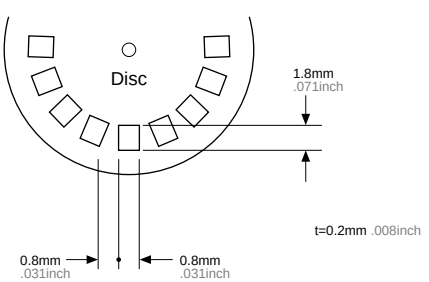


SPECIFICATIONS

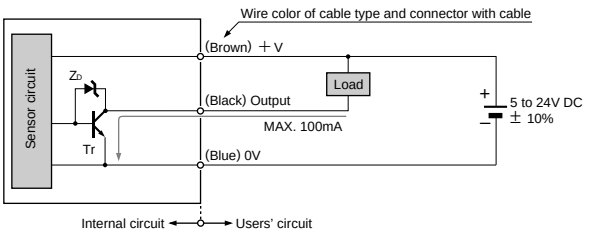
Data \ Sensing mode		Fixed-focus reflective						U-shaped thru-beam					
		Top sensing		Front sensing		L type (top sensing)		K type		L type		T type	
Model No.		**UZJ101**	**UZJ102**	**UZJ111**	**UZJ112**	**UZJ121**	**UZJ122**	**UZJ251**	**UZJ252**	**UZJ261**	**UZJ262**	**UZJ271**	**UZJ272**
Sensing range		2.5 to 8mm .098 to .315inch (center: 5mm .197inch) with non-glossy white paper (15×15mm .591×.591inch) (*1)						5mm .197inch (Fixed)					
Min. sensing object		ϕ0.05mm ϕ.002inch copper wire (at 5mm .197inch)						0.8×1.8mm .031×.071inch translucent object					
Hysteresis		Max. 20% of an operation range						0.05mm .002inch					
Repeatability		0.08mm .003inch (vertical direction for a light axis) (*2)						0.03mm .001inch					
Supply voltage		5 to 24 V DC ± 10% Ripple P-P: 5% or less						5 to 24 V DC ± 10% Ripple P-P: 10% or less					
Consumption		Average: 25mA or less, Peak: 80mA or less						30mA or less					
Output		NPN open-collector transistor Sink current: Max. 100mA Applied voltage: 30V DC or less Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)											
	Output operation	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON
	Short-circuit protection	Equipped						——					
Response time		0.8ms or less						At the light-receiving condition: 20µs or less At the light-interrupted condition: 200µs or less (response frequency: 500Hz or more) (*3)					
Operation indicator		Red LED (turns on when the output is in the ON state)											
Environmental resistance	Ambient tempetarure	–10 to + 55°C + 14 to + 131°F, Storage: –25 to + 80°C –13 to + 176°F						–25 to + 60°C –13 to + 140°F, Storage: –30 to + 80°C –22 to + 176°F					
	Ambient humidity	45 to 85%RH (with no dew nor ice condensation), Storage: 45 to 85%RH											
	Ambient light	Sun light: 11,000ℓx at the light-receiving face, Incandescent: 3,500ℓx at the light-receiving face						Fluorescent light: 1,000ℓx at the light-receiving face					
	Noise	Power line: 240Vp with 10ms cycle and 0.5µs pulse duration, Radiation: 300Vp with 10ms cycle and 0.5µs pulse duration (by a noise simulator)						Power line: 200Vp with 10ms cycle and 1µs pulse duration, Radiation: 400Vp with 10ms cycle and 1µs pulse duration (by a noise simulator)					
	Vibration	1.5mm .059inch amplitude at the frequency of 10 to 55Hz in each of X, Y, and Z directions for 2 hours each in the power OFF state						1.5mm .059inch amplitude at the frequency of 10 to 2,000Hz (peak acceleration: 20G) in each of X, Y, and Z directions for 4 cycles (4 minute cycle) each in the power OFF state					
	Shock	500m/s^2 {approx. 50G} impulse in each of X, Y, and Z directions for 3 times each in the power OFF state						15,000m/s^2 {approx. 1,500G} impulse in each of X, Y, and Z directions for 3 times each in the power OFF state (0.5ms pulse shock)					
Emitting Element		Infrared LED (modulated)						Infrared LED (non-modulated)					
Material		Enclosure: Polycarbonate, Terminal part: HSM (Ag plating)						Enclosure: PBT, Terminal part: HSM (Ag plating)					
Cable extension		Extensible up to 2m 6.56ft by using a min. 0.3mm^2 cable. (If the cable is extended for more than 2m 6.56ft, capacitor of 10µF must be connected between + V and 0V terminals.						Extensible up to 100m 328.08ft by using a 0.3mm^2 or more cable					
Weight		Approx. 4.5g .16oz				Approx. 4g .14oz		Approx. 3g .11oz					

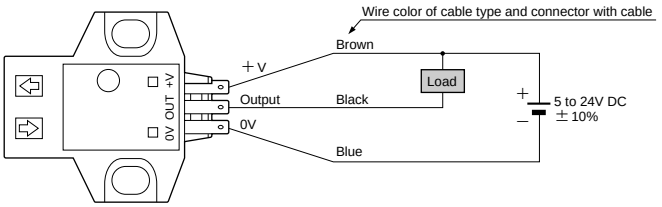
(*1): The sensing range may extend to 12.5mm .492inch in maximum with white non-glossy paper on a certain product.
(*2): Repeatability of the fixed-focus reflective sensor is tested using a non-glossy white paper (15×15mm .591×.591inch) at 5mm .197inch.
(*3): Response frequency of the U-shaped type is tested using the disc as shown below.





TYPICAL WIRING DIAGRAMS





Symbol ... ZD: Surge absorption zener diode
Tr: NPN output transistor

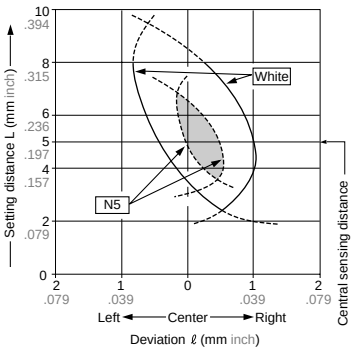
SENSING FIELDS

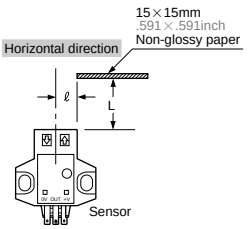
These are typical sensing fields, which may vary slightly from unit to unit.

UZJ1□□

Sensing field
Horizontal (left and right) direction

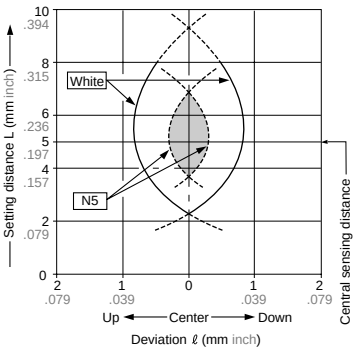
The sensors can be mounted side by side.

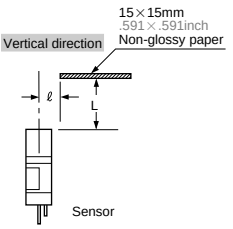




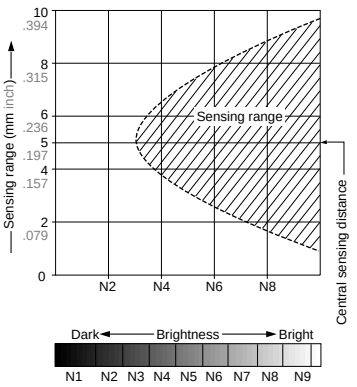
Vertical (up and down) direction

The sensors can be mounted side by side.





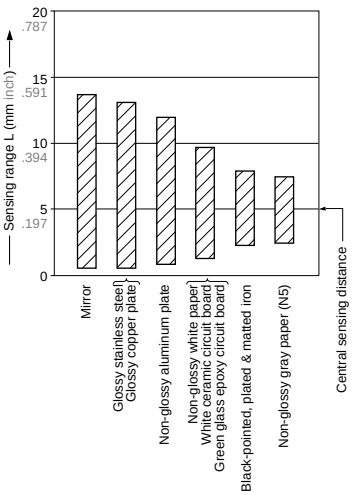
Brightness – Sensing range correlation



The shaded area shown in the figure at left indicates the sensing range. Be sure to set up the sensor with enough margin – the sensing range may vary from unit to unit.

(The brightness indicated in the left figure may vary slightly from the actual brightness.)

Material (15×15mm .591×.591inch) – Sensing range correlation



The bar graph on the left indicates the sensing range. Be sure to set up the sensor with enough margin – the sensing range may vary from unit to unit.

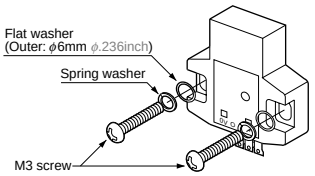
PRECAUTIONS FOR PROPER USE

All models

These products are **not** safety sensors and are **not** designed or intended to be used to protect life and prevent bodily injury or property damage.

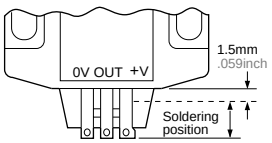
Mounting
To mount the sensor, use M3 screw and ϕ6mm ϕ.236inch diameter washer with the following tightening torque.

Model No.	Tightening torque
UZJ1□□ **UZJ25**□ **UZJ27**□	0.49N·m {5kgf·cm}
UZJ26□	0.29N·m {3kgf·cm}



Soldering
When soldering directly to the terminals, strictly observe the following conditions.

Item \ Model No.	**UZJ1**□□	**UZJ2**□□
Soldering temperature	Max. 260°C 500°F	
Soldering time	Max. 10 sec.	Max. 3 sec.
Soldering position	Refer to the figure at the right	



Wiring
Make sure to connect the frame ground (F.G.) terminal as the sensor is not equipped with reverse polarity circuit protection (provided in **UZJ1**□□ only) or output short-circuit protection.

Precaution must be taken when the sensor is used in an electrically noisy place.
If the sensor is placed near a device which emits a large surge, such as a motor, solenoid or magnetic value, etc., use a surge absorber.

Power supply should be turned off before wiring.

Verify that voltage fluctuations do not exceed the rated value.

When using a switching regulator power supply (readily available in the market), always ground the frame ground (F.G.) terminal.

When using equipment which generates noise (switching regulator or inverter motor, etc.) near the sensor, ground the frame ground (F.G.) terminal of the equipment.

Do not run sensor cables near high-voltage lines or power lines, nor put them together in the same raceway. Doing so may cause malfunctions due to inductive interference.

Others
Do not use the sensor output signal for 50ms immediately after the power is supplied to the sensor.

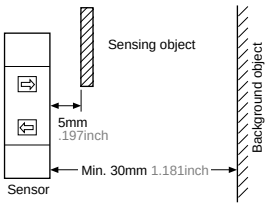
The sensor must not be directly exposed to organic solvents.

Do not use the sensor where it may be exposed to steam or dusts, or immersed in water.

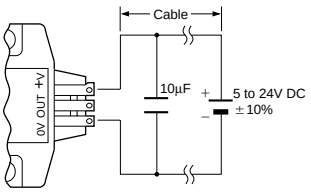
Avoid places where the sensor may be directly exposed to fluorescent lights with rapid-starters or high frequency lighting as it may affect the sensing performance.

UZJ1□□

Setting
The optimum setting distance (central sensing distance) is 5mm .197inch.
The sensor will ignore specular backgrounds more than 30mm 1.181inch away.

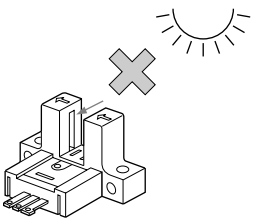


Wiring
Use a cable of over 0.3mm^2 and 2m 6.56ft in length. If the cable is shorter than 2m 6.56ft, attach a capacitor of approx. 10µF between +V and 0V terminals.



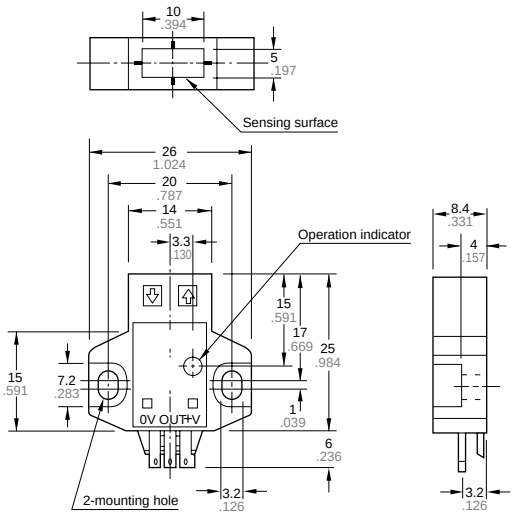
UZJ2□□

Others
Sensor is designed to be built in the machine and has no special ambient light counter-measure.
Be sure to avoid any direct ambient lights.

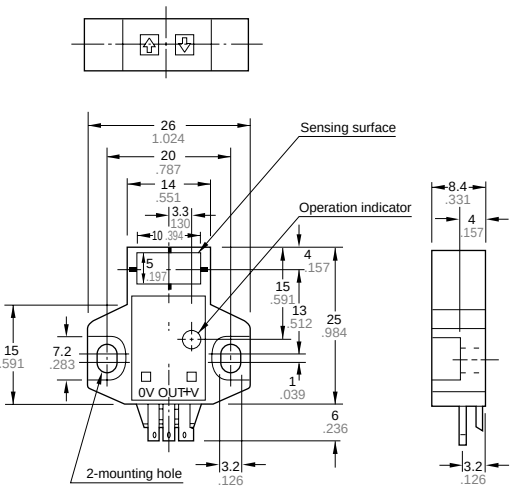


DIMENSIONS (Unit: mm inch)

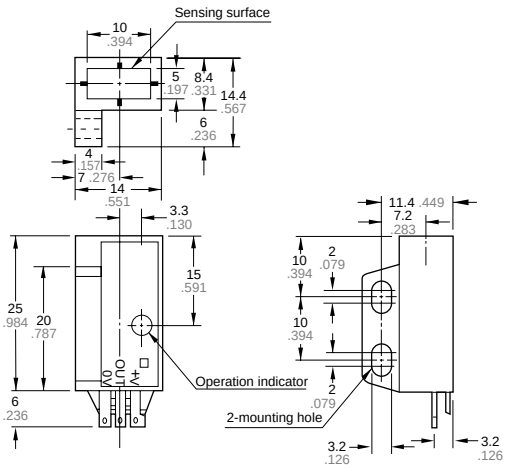
UZJ101 UZJ102 Sensor



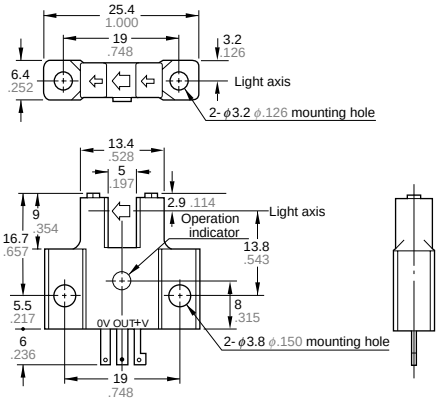
UZJ111 UZJ112 Sensor



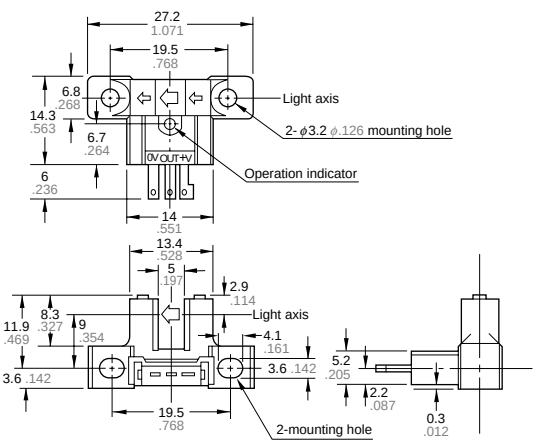
UZJ121 UZJ122 Sensor



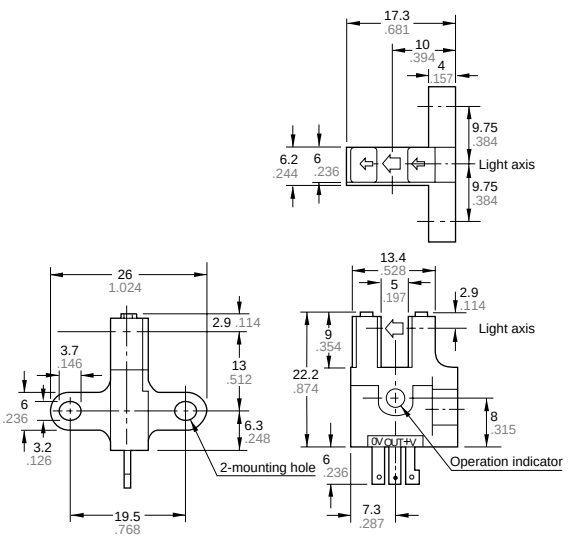
UZJ251 UZJ252 Sensor



UZJ261 UZJ262 Sensor

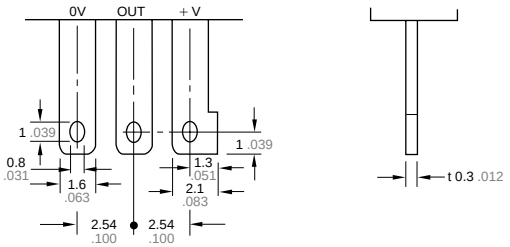


UZJ271 UZJ272 Sensor

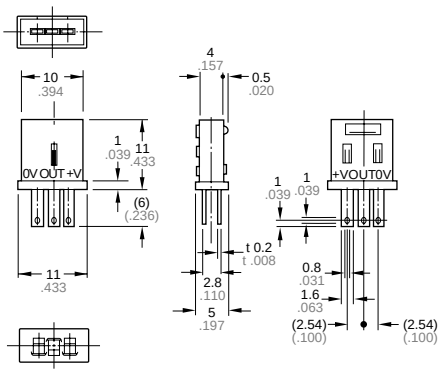


DIMENSIONS (Unit: mm inch)

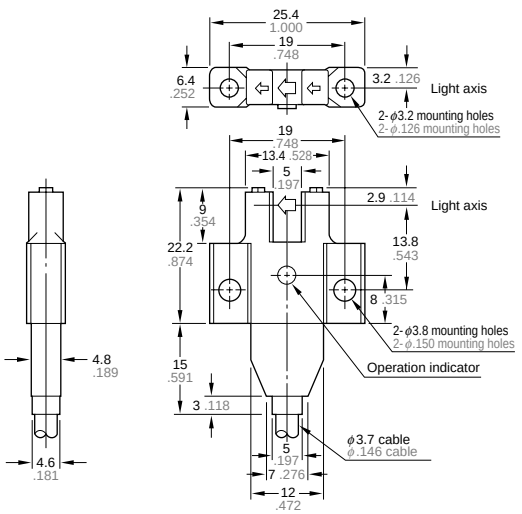
*Terminal part (All models)



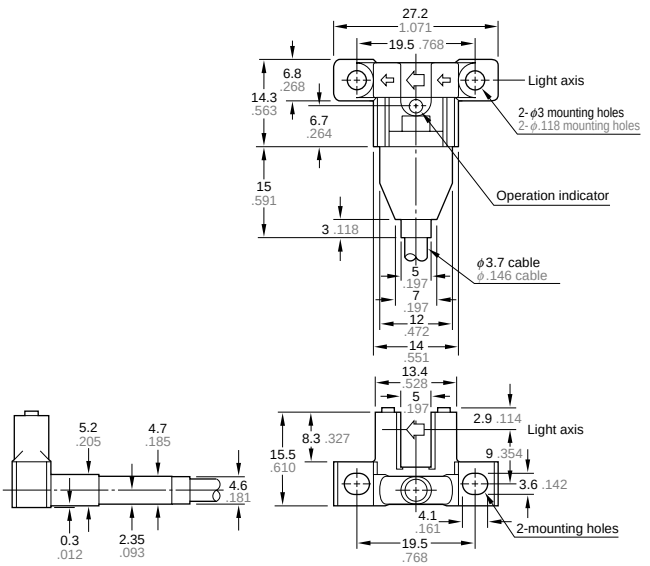
UZJ840 Connector



UZJ251B UZJ252B Sensor with cable type



UZJ261B UZJ262B Sensor with cable type



UZJ271B UZJ272B Sensor with cable type