

UM2 Series

Embedded Amplifier Photo Sensors



- Highly-advanced type of ultra miniature sensor
- High-intensity indicator and red LED light source
Allows long distance checking of both sensor operation and light transmission.
- NPN and PNP output types are available
- Excellent water resistance to IP 67 standard
Sensor allows washing with water.

Type

Detection method	Detecting distance	Model	In-line sensitivity adjustment volume	Operation mode	Output mode
↑ Through-beam type	150mm	UM2-T15DT	—	Dark-ON (Contact Takex for Light-ON type.)	NPN Open collector (Contact Takex for PNP-output type.)
		UM2-T15DTV	Provided		
	500mm	UM2-T50DT	—		
		UM2-T50DTV	Provided		
		UM2-T50DS	—		
		UM2-T50DSV	Provided		
▼ Limited reflection type	5~30mm	UM2-Z3SV	Provided	Light-ON	
		UM2-Z3DSV		Dark-ON	

- In-line sensitivity adjustment allows for wider range of applications
Models with space-saving and easy-to-use in-line volume adjustment are available.



- Length of cord between sensor (receiver) and in-line sensitivity adjustment : 300 mm (fixed)
- Mounting bracket (separately available): model UM-V2

Rating/Performance/Specification

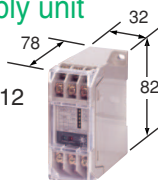
Type		UM2-T15DT	UM2-T15DTV	UM2-T50DT	UM2-T50DTV	UM2-T50DS	UM2-T50DSV	UM2-Z3SV	UM2-Z3DSV		
Rating/performance	Detection method	Through-beam type						Limited reflection type			
	Detecting distance	150mm			500mm			5 - 30mm*			
	Detection object	φ 2mm (Min.) Opaque			φ 3mm (Min.) Opaque			—————			
	Power supply	24V DC ±10% / Ripple 10% max. *1						12 - 24V DC ±10%/ Ripple 10% max.			
	Current consumption	Transmitter	15mA max.						26mA max.	30mA max.	
		Receiver	15mA max.	22mA max.	15mA max.	22mA max.	15mA max.	22mA max.			
	Output mode	NPN open collector Rating: sink current 80 mA (30 VDC) max. (PNP output type also available. *2)									
	Operation mode	Dark-ON						Light-ON	Dark-ON		
	Response time	0.5ms max									
	Operating angle	15° (at receiver)						—————			
Hysteresis	—————						Up to 10% of detecting distance				
Specification	Light source (light wavelength)	Red LED (660nm)									
	Indicator	Operation indicator (orange LED)—— For through-beam type, provided on receiver. Stability indicator (green LED)									
	Volume (VR)	—————	In-line sensitivity adjustment	—————	In-line sensitivity adjustment	—————	In-line sensitivity adjustment				
	Material	Case	ABS resin								
		Lens	Acrylic resin								
	Connection	Permanently attached cord (outer dimension: dia. 2.8)									
		Transmitter: 0.15sq. 2 core 2 m length (gray) Receiver: 0.15sq. 3 core 2 m length (black)						0.15sq. 3 core 2 m length (black)			
	Mass	Transmitter	Approx. 30g						Approx. 40g		
		Receiver	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 40g			
	Accessory	Mounting screws, washers, nuts (material: Fe), screwdriver for adjustment (provided for models with adjustment volume only), operation manual									
Notes	*Standard detection object: 50 x 50 mm white drawing paper						*1 12 VDC type also available. *2 PNP output type models identified by XPE at the end of model number. Comes with output conversion unit.				

Environmental Specification

Environment	Ambient light	3,000 lx max.
	Ambient temperature	-25 - +55 -C (non-freezing)
	Ambient humidity	35 - 85%RH (non-condensing)
	Protective structure	IP67
	Vibration	10 - 55 Hz / 1.5 mm amplitude / 2 hours each in 3 direction

• Applicable power supply unit

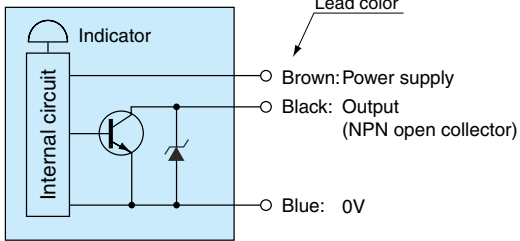
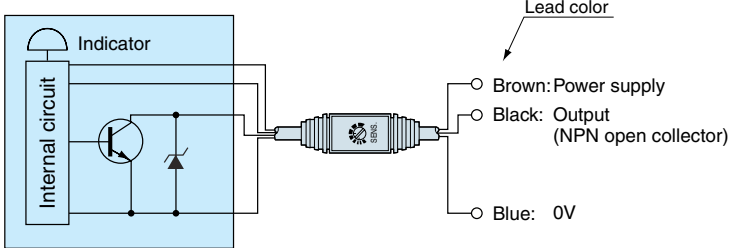
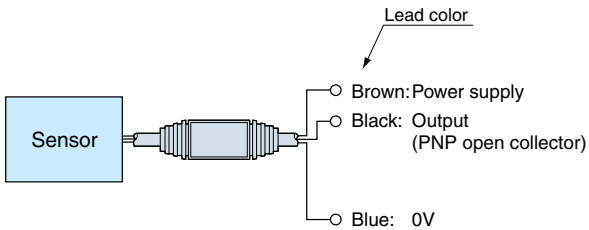
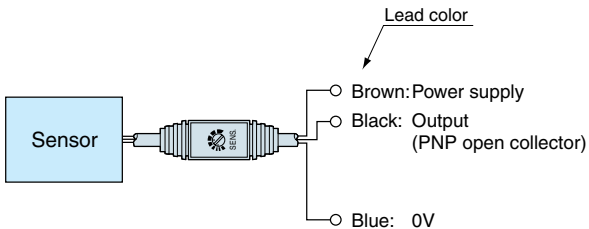
PS series
High capacity of 200 mA at 12 VDC



(General-purpose type) PS3N
PS3N-SR
(Multifunctional type) PS3F
PS3F-SR

UM2

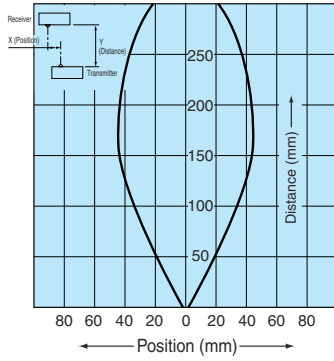
Input/Output Circuit and Connection

Model	Input/output circuit and connection
<p>NPN output type</p> <p>UM2-T15DT</p> <p>UM2-T50DT</p> <p>UM2-T50DS</p>	 <p>The transmitter is provided with power supply lines (brown: operating power; blue: 0 V) only.</p>
<p>NPN output type with in-line sensitivity adjustment</p> <p>UM2-T15DTV</p> <p>UM2-T50DTV</p> <p>UM2-T50DSV</p> <p>UM2-Z3SV</p> <p>UM2-Z3DSV</p>	 <p>The transmitter is provided with power supply lines (brown: operating power; blue: 0 V) only.</p>
<p>PNP output type</p> <p>UM2-T15DTP</p> <p>UM2-T50DTP</p> <p>UM2-T50DSP</p>	<p>PNP open collector output available with in-line output conversion unit.</p>  <p>The transmitter is provided with power supply lines (brown: operating power; blue: 0 V) only.</p>
<p>PNP output type with in-line sensitivity adjustment</p> <p>UM2-T15DTVP</p> <p>UM2-T50DTVP</p> <p>UM2-T50DSVP</p> <p>UM2-Z3SVP</p> <p>UM2-Z3DSVP</p>	<p>PNP open collector output available with in-line volume/output conversion unit.</p>  <p>The transmitter is provided with power supply lines (brown: operating power; blue: 0 V) only.</p>

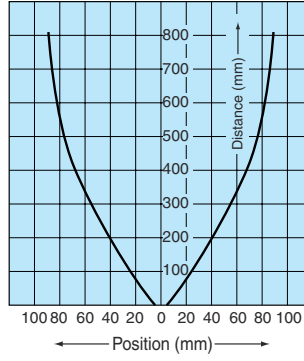
Characteristics (Typical Example)

Directional characteristics

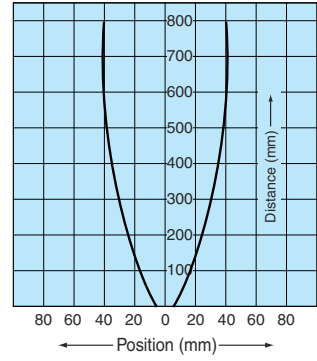
UM2-T15DT · UM2-T15DTV



UM2-T50DT · UM2-T50DTV

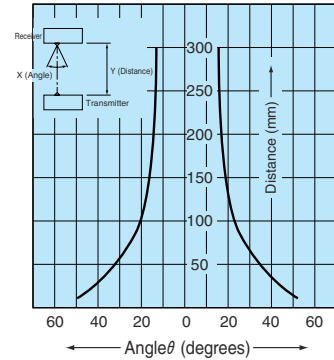


UM2-T50DS · UM2-T50DSV

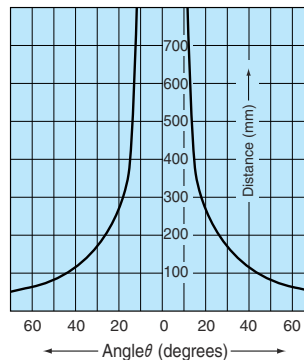


Operating angle characteristics

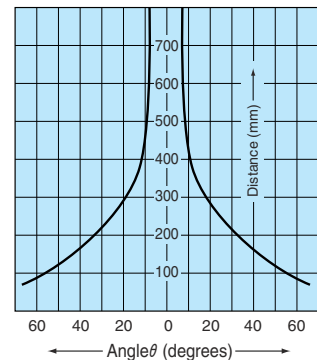
UM2-T15DT · UM2-T15DTV



UM2-T50DT · UM2-T50DTV

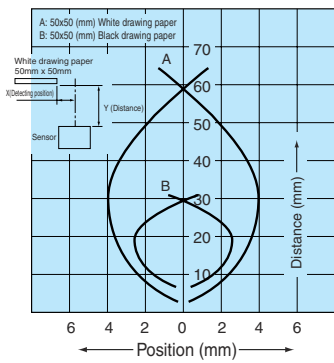


UM2-T50DS · UM2-T50DSV



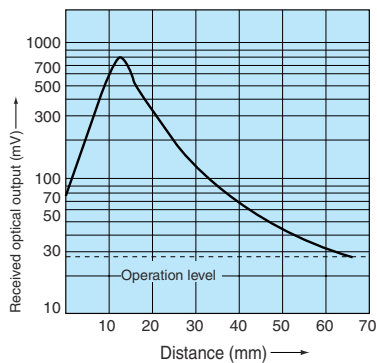
Activation area characteristics

UM2-Z3SV · UM2-Z3DSV



Distance-area characteristics

UM2-Z3SV · UM2-Z3DSV



UM2

For Correct Use

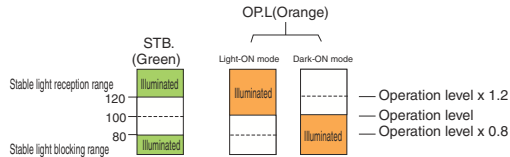
Be sure to follow the instructions in the operation manual provided for correct use of the product.



- Do not use the product for detection for the protection of human body.
- When using the product for safety purposes, ensure safety with the control system as a whole as well as the detection.
- This product is not explosion proof.

About indicators

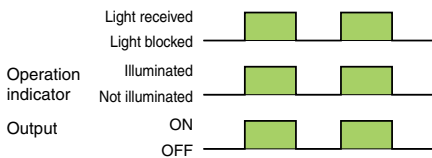
- The operation indicator (orange LED) and stability indicator (green LED) show the levels of light intensity as described in the figure below.
- After aligning the optical axis and adjusting the sensitivity, use a detection object to block and unblock the light beam several times to make sure that the sensitivity level is in a range that allows stable activation and deactivation. Setting the sensitivity in a range allowing stable operation achieves higher reliability against changes in the operating environment generated after the sensitivity is set.



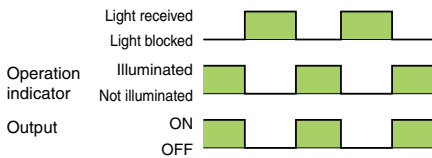
- The orange LED (OP.L) is the operation indicator. In the L.ON (light ON) mode, the indicator is illuminated when a certain amount of light is detected. In the D.ON (dark ON) mode, the indicator is illuminated when a certain amount of light is not detected.

Operation timing chart

Light-ON mode

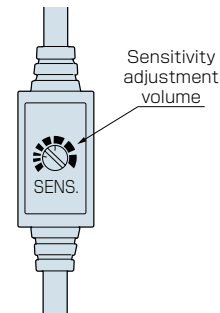


Dark-ON mode



Sensor mounting and adjustment

- No mounting bracket is provided.
- For mounting, use the M2 x 10 screws, washers and nuts provided. The tightening torque should not exceed 0.3 N·m. Excessively high torque may damage the sensor.
- The models with an in-line volume allows sensitivity adjustment when light is not adequately blocked due to translucent or small objects in detection with a through-beam-type sensor or when any influence of the background must be avoided or the amount of reflected light is small in detection with a reflective-type sensor. Turning the volume counterclockwise reduces the sensitivity.



Notes on usage

- Avoid use in which the power is turned on and off consecutively.
- For output, avoid the transient condition immediately after power-up (50 ms).
- To extend the cord, use thick wires (at least 0.3 mm²) and limit their length to within 50 m whenever possible. Take voltage drop into consideration when the length exceeds 50 m.
- Be sure to route the sensor lines separately from any power transmission or high-voltage line. Using the same conduit or duct may cause electric induction, which leads to faulty operation or damage.

