

# TAKEX

PHOTOSENSOR  
with built-in amplifier

## UM SERIES Instruction Manual

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### SPECIFICATIONS



Models	NPN output		UM-T15T	UM-T15TV	UM-T50T	UM-T50TV	UM-T50S	UM-T50SV	UM-T15T1	UM-T15TV1	UM-T50T1	UM-T50TV1	UM-T50S1	UM-T50SV1	UM-R3T	UM-R3TV	UM-R5T	UM-R5TV	UM-Z3SV	
	Light ON	Dark ON	UM-T15DT	UM-T15DTV	UM-T50DT	UM-T50DTV	UM-T50DS	UM-T50DSV	UM-T15DT1	UM-T15DTV1	UM-T50DT1	UM-T50DTV1	UM-T50DS1	UM-T50DSV1	UM-R3DT	UM-R3DTV	UM-R5DT	UM-R5DTV	UM-Z3DSV	
PNP output	Light ON	Dark ON	—	—	—	—	UM-T50SP	UM-T50SVP	—	—	—	—	—	—	UM-R3TP	UM-R3TVP	UM-R5TP	UM-R5TVP	UM-Z3SVP	
	Detection method		Through beam												Diffuse reflective				Convergent reflective	
Detection distance		150mm			500mm			150mm			500mm			2 to 30mm (50×50mm White card)		2 to 50mm (50×50mm White card)		5 to 30mm (50×50mm White card)		
Detection object		φ 3mm or more Opaque																		
Power Supply		24VDC ±10%, Ripple 10% or less						12VDC ±10%, Ripple 10% or less						12V to 24VDC ±10%, Ripple 10% or less						
Current draw (Approx)	Transmitter	15mA												20mA (NPN)	27mA (NPN)	20mA (NPN)	27mA (NPN)	27mA (NPN)		
	Receiver (NPN)	17mA	22mA	17mA	22mA	17mA	22mA	17mA	22mA	17mA	22mA	17mA	22mA	17mA	22mA	28mA (PNP)	35mA (PNP)	28mA (PNP)	35mA (PNP)	35mA (PNP)
Output mode	NPN output	NPN Open collector Rating : Sink current 80mA (30VDC) or less																		
	PNP output	PNP Open collector Rating : Source current 80mA (30VDC) or less																		
Response time		0.5ms or less																		
Hysteresis		—															10% or less of the detecting distance			
Light source		Red LED																		
Indicator		Receiver : Operation indicator (red LED), Stability indicator (green LED)												Receiver : Operation indicator (red LED), Stability indicator (green LED)						
Sensitivity adjustment	—		In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	—	In-line volume	
	300mm between the sensor and in-line sensitivity adjustment unit (fixed)																			
Material	Case	LCP (Filler : PP)																		
	Lens	PMMA			PC			PMMA			PC			PMMA			PC			
Connection		Attached cable : 2m Transmitter : 0.15mm <sup>2</sup> × 2core (gray) dia. φ 2.5mm Receiver : 0.15mm <sup>2</sup> × 3core (black) dia. φ 2.7mm												0.15mm <sup>2</sup> × 3core (black) dia. φ 2.7mm						
Weight (Approx)	Transmitter	30g												30g	30g	30g	30g	40g		
	Receiver	30g	40g	30g	40g	30g	40g	30g	40g	30g	40g	30g	40g	30g	40g	30g	30g	30g	30g	40g
Accessory		Instruction manual, screws (M2×10mm, M2.6×12mm for UM-T50S series, UM-Z3SV series), nuts, washers and a screwdriver for adjustment (for models which model number ends with "V")																		

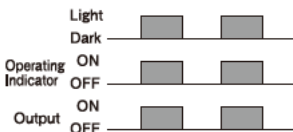
※ Discontinued as of 2013

### AMBIENT CONDITIONS

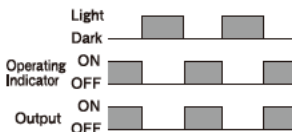
Ambient light	3,000 lx or less
Ambient temp.	-25°C to +55°C (non-freezing)
Ambient humidity	35 to 85%RH (non-condensing)
Protection	I P64
Vibration	10 to 55Hz, 1.5mm Amplitude, 2 Hr., 3 Directions
Shock	500m/s <sup>2</sup> / 3 times each in a directions
Dielectric withstanding	1,000 VAC for 1 minute
Insulation resistance	500 VDC Megger 20MΩ or higher

### OPERATION

#### ● Light ON



#### ● Dark ON



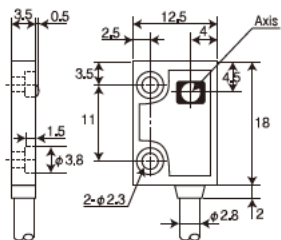
(ABH-IHS-0018-4)

**DIMENSIONS**

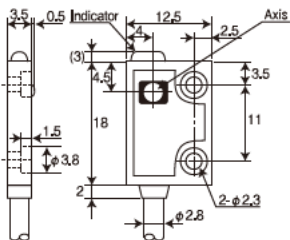
(in mm)

NPN/PNP output models and Light ON/Dark ON models have the same dimensions respectively.

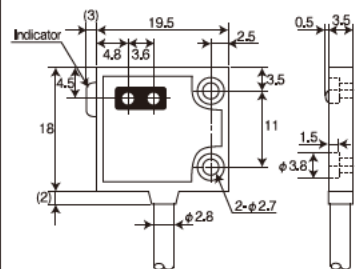
- MODEL · UM-T15DT, UM-T15DTV(※5)  
UM-T15DT1, UM-T15DT1V(※5)  
Transmitter



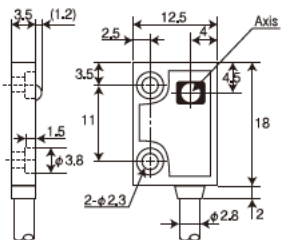
Receiver



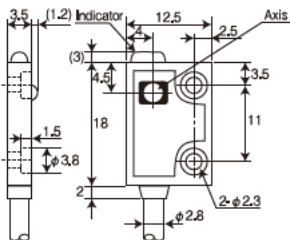
- MODEL · UM-R3T  
MODEL · UM-R3TV(※5)



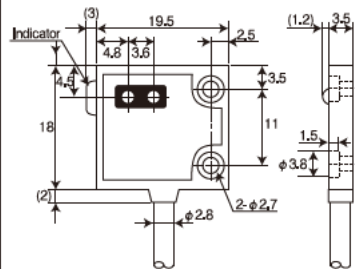
- MODEL · UM-T50DT, UM-T50DTV(※5)  
UM-T50DT1, UM-T50DT1V(※5)  
Transmitter



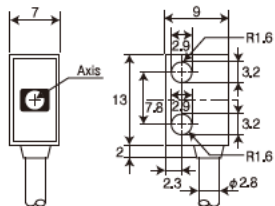
Receiver



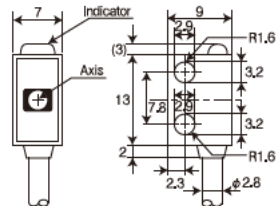
- MODEL · UM-R5T  
MODEL · UM-R5TV(※5)



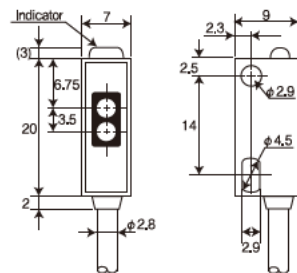
- MODEL · UM-T50DS, UM-T50DSV(※5)  
UM-T50DS1, UM-T50DS1V(※5)  
Transmitter



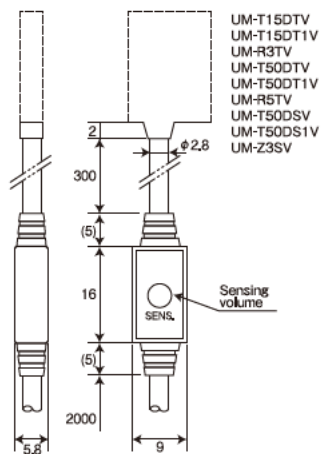
Receiver



- MODEL · UM-Z3SV(※5)



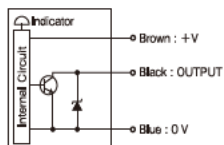
(※5) With sensitivity adjustment



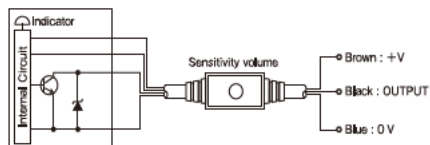
## OUTPUT CIRCUIT

(Throughbeam type receiver.)

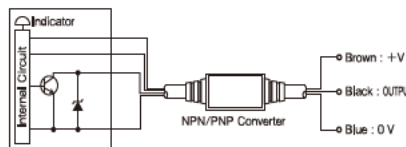
### (NPN output type)



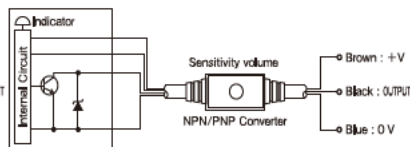
### (NPN output with sensitivity volume)



### (PNP output type)



### (PNP output with sensitivity volume)



- If a load short circuit or overload occurs, the output transistor turns off. Check the load before restoring the power.

## PRECAUTIONS DURING USE

- Use this product within the product rating and specification.
- Clean the lens by a soft cloth.  
Do not use organic solvent including alcohol and thinner to clean the product.
- Be sure to route the sensor cables separate from any power transmission or high voltage line, or else use shielded cables. Using the same conduit or duct as high voltage or power lines will cause malfunctions or damage because of electromagnetic induction.
- When using a switching regulator, be sure to ground the frame ground (FG) terminal.
- Avoid turning the power on and off consecutively.
- When extending the cables, use conductors of  $0.3\text{mm}^2$  cross-sectional area of more and check the voltage drop. The length should not exceed 10m.
- Limit the current of the power supply to 1A.
- Mounting brackets are not attaches.
- High frequency fluorescent lamps or inverters may cause faulty operation as these equipment may emit light or noise of similar modulated frequency that photo sensors generate. Do not install the sensor in the vicinity of high frequency.
- Do not apply a torque beyond  $0.1\text{N}\cdot\text{m}$  to the Sensitivity Adjustment Volume.
- A transient overcurrent may flow in when a capacitor or a coil is connected to the load.
- The guarantee period of this product is one year after the delivery.
- If any defect is found during the guarantee period, Takenaka will repair or replace the defective product.
- This product is an industrial sensor which issues an output upon detecting an object. It does not have any function to prevent accidents, death or injuries.
- Takenaka will not be held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.