

- Thank you for using **TAKEX** products.
- Please read this manual carefully prior to use the sensor.

1 SPECIFICATIONS

Type	Straight	Side view	Straight			
NPN output type	UX-T100D	UX-T50DS	UX-R2	UX-R3	UX-R5	UX-R5V
PNP output type	UX-T100DPN	UX-T50DSPN	UX-R2PN	UX-R3PN	UX-R5PN	UX-R5VPN
Detection method	Through beam		Diffuse reflective			
Detecting distance	1000mm	500mm	3-20mm	3-30mm	3-50mm	3-50mm ※1
Detection object	φ4mm (opaque) Min.	φ5mm (opaque) Min.	100×100mm white paper			
Thread size	M5×0.5		M6×0.75			
Power supply	12-24V DC ±10% / Ripple 10% Max.					
Current consumption	Transmitter 15mA Max. Receiver 15mA Max.		20mA Max.			
Output mode	Open collector					
NPN output type	Rating : sink current 80mA (30VDC) Max.					
PNP output type	Rating : source current 80mA (30VDC) Max.					
Operation mode	Dark ON		Light ON			
Response time	0.5 ms Max.					
Operating angle	2° (Receiver)	10° (Receiver)	_____			
Light source	Red LED (630nm)	Red LED (625nm)	Infrared LED (870nm)			
Indicator	Operation : Orange. Stability : Green					
Sensitivity adjustment	_____					Potentiometer ※1
Short circuit protection	Built-in					
Material	Case, Nut, Washer : SUS303, Lens : Polysulfone					
Connection	Permanently attached cord (outer dimension : dia. 2.8) 2m length					
	Trns : 0.15sq.×2 core Rcvr : 0.15sq.×3 core		0.15sq.× 3 core			
Mass	Trns : 30 g. Rcvr : 30 g		30 g			

※1 The rotating torque should be 0.8 N·cm or less for the potentiometer.

2 ENVIRONMENTAL SPECIFICATION

Ambient light	3,000 lx Max.
Ambient temperature	Operating : -25 to +55°C Storage : -30 to +70°C (non-freezing)
Ambient humidity	35 to 85%RH (non-condensing)
Protective structure	I P67
Vibration	10 to 55Hz / 1.5mm amplitude / 2 hours each in 3 direction
Shock	500m/s ² / 3 times each in 3 directions
Dielectric withstanding	500VAC for 1 minute
Insulation resistance	500VDC mega, 20MΩ or higher

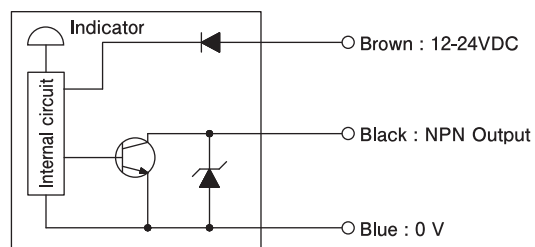
3 INDICATORS

- The operation indicator (orange LED) and stability indicator (green LED) show the levels of received light intensity as described in the figure.
- 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 both operation are within the range that allows stable activation and deactivation.
- Setting in the range which allows stable operation achieves higher reliability against changes in the operating environment generated after installation.

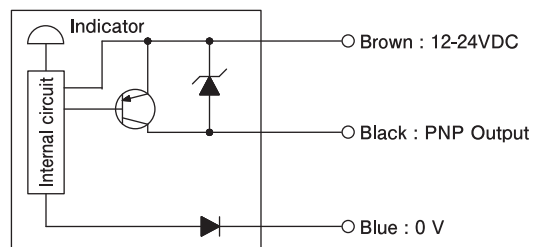
Stability indicator (green LED)		Operation indicator (orange LED)		
Stable activation range	ON	Light ON mode	Dark ON mode	
120	ON	ON	---	--- Threshold × 1.2
100	---	---	---	--- Threshold
80	ON	---	ON	--- Threshold × 0.8
Stable deactivation range				

4 INPUT/OUTPUT CIRCUIT AND CONNECTION

(NPN output)



(PNP output)



- The transmitter for the through beam type has power cables only.
- The output transistor becomes OFF when it's short circuit or overload. Make sure all connections are correct before turning the power on.

5 INSTALLATION

(Through beam)

- Install the transmitter and the receiver linearly. By swinging the transmitter vertically and horizontally, find the range where the operation indicator (orange) turns on and direct the sensor in the center of the range. Adjust the position of the receiver in the same way.

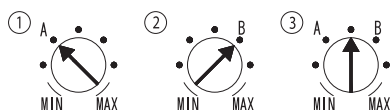
(Diffuse reflective)

- Set the sensor so that the operation indicator (orange) turns on when a detection object is placed at a given position and turns off when it is removed.
- Keep any background away from the detection position. If necessary use black surface with low reflectance.
- This sensor is not equipped with sensitivity adjustment, find a setting and detecting position where the sensor stably detects the object by changing the distance, angle or background.

(Diffuse reflective with sensitivity adjustment)

※ When any light reflecting object is in the background.

- ① Place a detection object at a given position and turn up the sensitivity adjustment volume from MIN until the operation indicator turns on (Point A).
- ② Remove the object and turn down the Sensitivity adjustment volume from MAX until the operation indicator turns off (Point B). (MAX is regarded as Point B if the operation indicator doesn't turn off at MAX.)
- ③ Set the volume at the middle point between Points A and B.



※ When no light reflecting object is in the background

- ① Place a detection object at a given position and turn up the sensitivity volume from MIN until the operation indicator turns on (Point A).
- ② Set the volume at the middle point between Point A and MAX. Make sure that the operation indicator and turns on when the detection object is placed at the given position.



6 NOTES

- When there is any reflective objects (wall, floor, or equipment) within the directional field between the transmitter and the receiver, the sensor may not detect an object due to unwanted light caused by reflection. Ensure a correct mounting position.

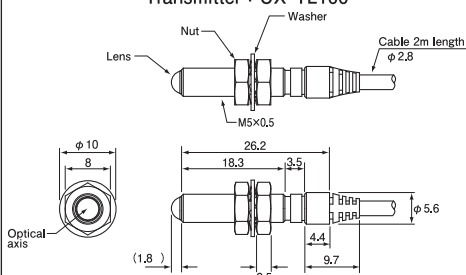
7 PRECAUTIONS DURING USE

- Use attached nuts and washer for mounting the sensor.
- Tighten the nuts with a torque of 1.0 N·m or less. The thread may be stripped if an excess torque is applied.
- Check the mounting position and the optical axis before fixing the sensor. Once the sensor is fixed, the mounting angle is not adjustable.
- Clean the lens by a soft and dry cloth periodically. A stain or dirt stuck on the lens deteriorates the performance. Do not use organic solvent including alcohol and thinner.
- Avoid turning the power on and off consecutively.
- Though this sensor has IP67 rated housing, do not use the sensor where water is splashing constantly or under the water.
- 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 DC power unit with an insulated transformer or a switching regulator, be sure to ground the frame ground (FG) terminal.
- 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 equipment.
- When extending the wire, use 0.3mm² cable or more in size and limit the length up to 10m. Check a voltage drop.
- Limit the current of the power supply to 1A.

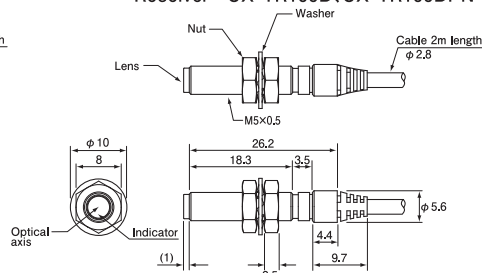
8 DIMENSIONS (in mm)

Through beam (straight type)

UX-T100D Transmitter : UX-TL100

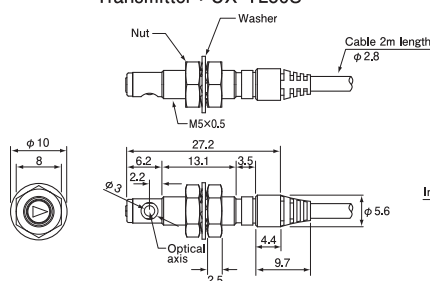


Receiver : UX-TR100D, UX-TR100DPN

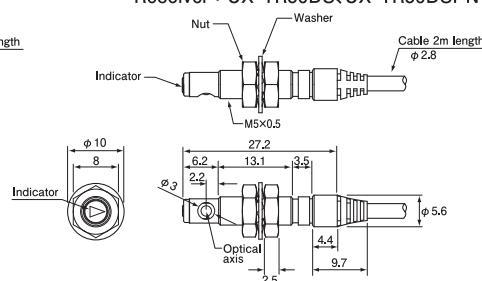


Through beam (Side view type)

UX-T50DS Transmitter : UX-TL50S

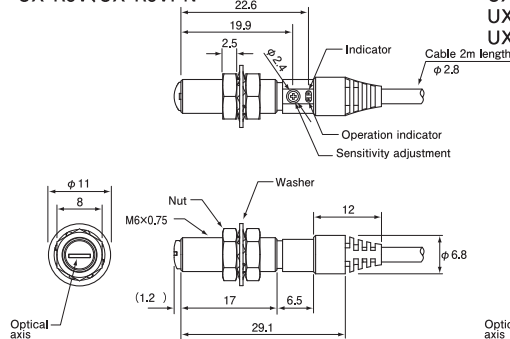


Receiver : UX-TR50DS, UX-TR50DSPN

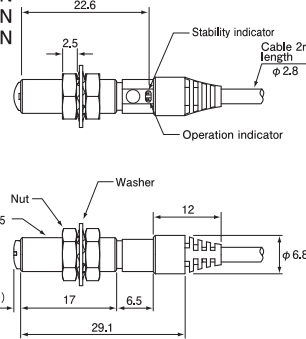


Diffuse reflection

UX-R5V, UX-R5VPN



UX-R5, UX-R5PN
UX-R3, UX-R3PN
UX-R2, UX-R2PN



- 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 held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.