

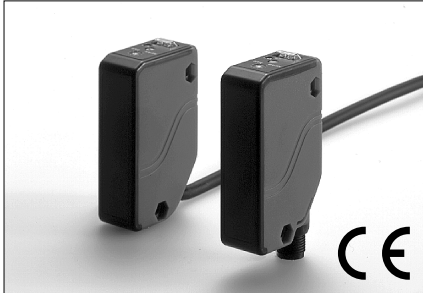
NAIS

**LONG RANGE
TRIGONOMETRIC
AREA REFLECTIVE
PHOTOELECTRIC SENSORS**

UZD3 Series

SUPERIOR ADAPTABILITY FOR COLOR VARIATION!

Distance-adjustable & Long-range Trigonometric Area Reflective Sensing Mode

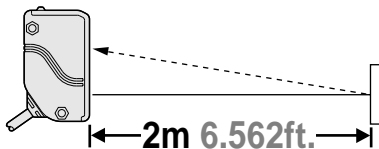


Nothing else Reaches this Size

The most miniaturized housing of $W20 \times H68 \times D40\text{mm}$
 $W.787 \times H2.677 \times D1.575\text{inch}$ in fixed-field sensing sensors even with the adjustable sensing range 2m 6.562ft. long.
 The **UZD3** series saves you space.

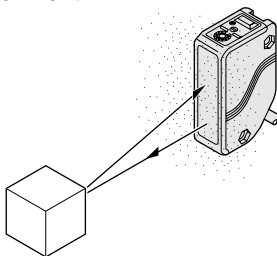
Long Sensing Range 2m 6.562ft.

The **UZD3** series catches an object 2m 6.562ft. away.
 The Long-range trigonometric area reflective sensing with sharp beam gives a variety of new ideas for your applications such as linear positioning or wide range detecting.



Insusceptible to Contamination on Lens

The trigonometric area reflective sensing keeps the detectability even if the lens is more or less contaminated by dirt, dust, mist, or smoke under unclear environment.

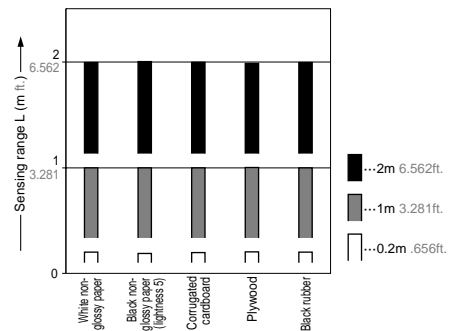


Insusceptible to Object Color or Background

As the **UZD3** series incorporates the two-divided photo-diode as the receiving element with unique processing circuitry, it detects every object at the same distance regardless of color of objects or background beyond the adjusted sensing range.

(The sensor should however be tilted if there is a shiny background.)

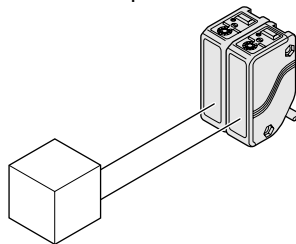
[UZD35: Correlation between material ($200 \times 200\text{mm}$ 7.874 \times 7.874inch) and sensing range (typical)]



Each object is measured the sensing range on condition that the distance adjuster has been accommodated with white non-glossy paper at the maximum of 2m 6.562ft., 1m 3.281ft. and 0.2m .656ft. long respectively.

Automatic Crosstalk Prevention

Until the **UZD3** series, no other trigonometric area reflective sensing sensor has been equipped with the automatic crosstalk prevention. Even if mounted closely together or face to face, no malfunction occurs up to two sensors.

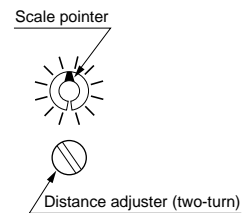


Water-tight Protection IP67

The **UZD3** series offers you confidence in use where it is washed down with water.

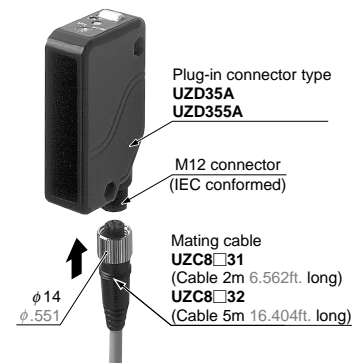
Mechanical Two-turn Adjuster with Scale Pointer

The **UZD3** series features the mechanical two-turn distance adjuster and the scale pointer that shows the set distance remarkably.



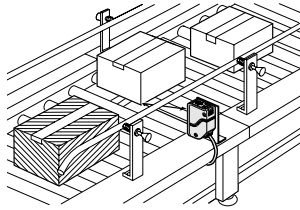
Plug-in Connector Type

With one-touch disconnection, any one can replace the sensor in a minute. If a trouble happens, it assists your maintenance with ease.

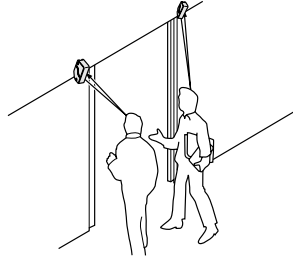


APPLICATIONS

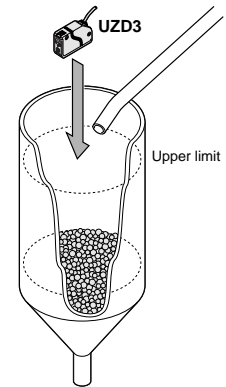
Detecting cardboard boxes travelling at random



Detecting people in front of automatic door



Detecting level in hopper

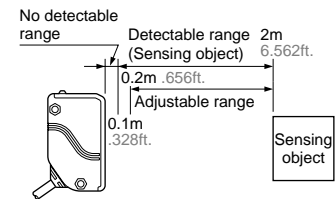


ORDER GUIDE

Type	Appearance	Adjustable range (*1)	Model No.	Output
NPN output tupe			UZD35	NPN open-collector transistor
PNP output type			UZD355	PNP open-collector transistor

Note: No mounting bracket is attached to the sensor. They are optionally supplied as your selection.

(*1): The adjustable range stands for the range able to be set the maximum operation distance with the distance adjuster.
Objects can be detected from 0.1m .328ft. away.



Plug-in connector type

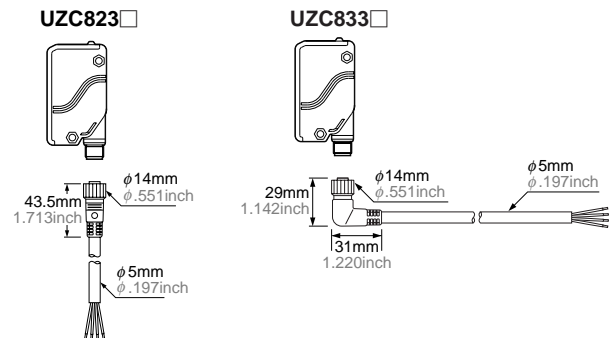
The sensor with a connector is also available. When ordering this type, add suffix "A" at the end of the model number. Purchase a mating cable separately.

e. g.) The plug-in connector type for **UZD35** is "**UZD35A**".

• Mating cable

Type	Model No.	Description
Straight	UZC8231	Length: 2m 6.562ft.
	UZC8232	Length: 5m 16.404ft.
Elbow	UZC8331	Length: 2m 6.562ft.
	UZC8332	Length: 5m 16.404ft.

Cable type: Cabtyre cable with four 0.2mm² conductors



OPTION

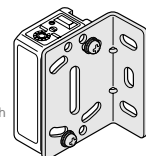
Designation	Model No.	Description
Sensor mounting bracket	UZD851	Back angled mounting bracket
	UZD852	Front angled mounting bracket

(*1): The plug-in connector type does not allow to use some mounting brackets because of the protrusion of the connector.

Sensor mounting bracket

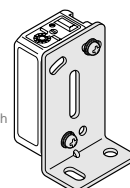
• UZD851

Material : SPCC
Includes two screws of M4 × 25mm .984inch and two M4 nuts



• UZD852

Material : SPCC
Includes two screws of M4 × 25mm .984inch and two M4 nuts



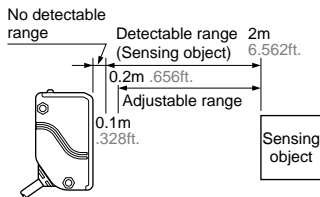
SPECIFICATIONS

Item	Type Model No.	Distance-adjustable & Long-range Trigonometric area reflective Sensing Mode	
		NPN Output	PNP Output
		UZD35	UZD355
Adjustable range (*1)	0.2 to 2m .656 to 6.562ft.		
Sensing range (with white non-glossy paper and adjuster in max.)	0.1 to 2m .328 to 6.562ft.		
Hysteresis	10% or less at operation distance		
Repeatability	Beam axial: 10mm .394inch or less, Perpendicular to beam axis: 1mm .039inch or less		
Supply voltage	10 to 30V DC Ripple P-P: 10% or less		
Current consumption	50mA or less	55mA or less	
Output	NPN open-collector transistor • Maximum sink current: 100mA • Applied voltage: 30V DC or less • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)		PNP open-collector transistor • Maximum source current: 100mA • Applied voltage: 30V DC or less • Residual voltage: 1V or less (at 100mA source current) 0.4V or less (at 16mA source current)
	Output operation	Switchable either Sense-ON or Sense-OFF	
	Short-circuit protection	Incorporated	
Response time	2ms or less		
Operation indicator	Red LED (lights up when the output is activated)		
Stability indicator	Green LED (lights up during the stable Light or the stable Dark condition)(*2)		
Distance adjuster	Mechanical two-turn adjuster with scale pointer		
Automatic crosstalk prevention	Incorporated		
Environmental resistance	Protection	IP67(IEC)	
	Ambient temperature	-20 to + 55°C -4 to + 131°F (No dew condensation nor icing allowed), Storage: -25 to + 70°C -13 to + 158°F	
	Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH	
	Ambient illuminance	Sun light: 10,000 lx at the light-receiving face Incandescent lamp: 3,000 lx at the light-receiving face	
	Noise immunity	Power line: 240Vp, 10ms cycle, and 0.5µs pulse duration (with noise simulator) Radiation: 300Vp, 10ms cycle, and 0.5µs pulse duration	
	Voltage withstandability	AC 1,000V for one min. between all terminals connected and enclosure	
	Insulation resistivity	20MΩ or more at 250V Megger between all terminals connected and enclosure	
	Vibration-proof	10 to 55Hz frequency, 0.75mm amplitude, and X, Y, and Z directions each for two hours (unenergized)	
	Shock-proof	500m/s ² acceleration {approx. 50G}, and X, Y, and Z directions each for three times (unenergized)	
Emitting element	Infrared LED (modulated)		
Material	Polyarilate		
Cable	Three-0.3mm ² -core cabtyre cable of 2m 6.562ft. long		
Cable extension	Extendable up to 100m 328.084ft.long with equivalent cable of which core is 0.3mm ² or more		
Weight	Approx. 150g 5.29oz		
Accessory	Adjusting screwdriver: 1pc.		

(*1): The adjustable range stands for the maximum sensing range able to be set with the adjuster.

The sensor can also detect an object placed at 0.1m .328ft. or less distant.

(*2): Refer to "PRECAUTIONS FOR PROPER USE" (P.80) for the stability indicator.

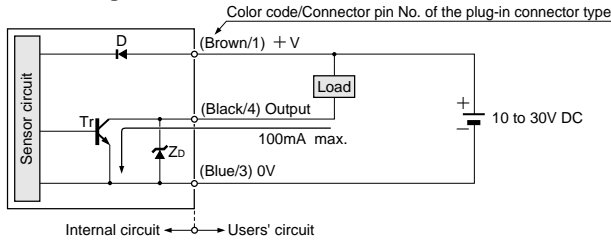


TYPICAL WIRING DIAGRAMS

**UZD35
UZD35A**

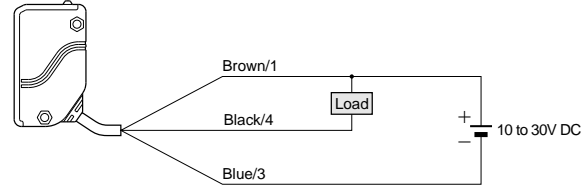
NPN output

I/O circuit diagram

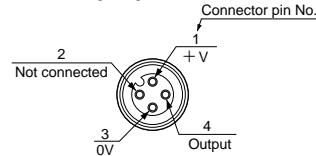


Symbol...D : Reverse polarity protection diode
Zd : Surge absorption zener diode
Tr : NPN output transistor

Wiring diagram



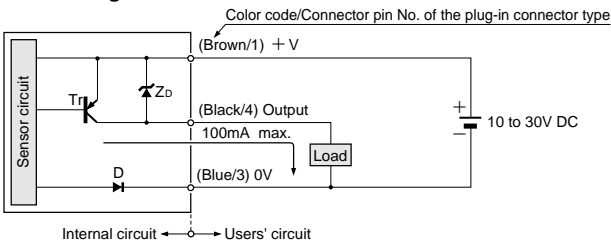
Connector pin position



**UZD355
UZD355A**

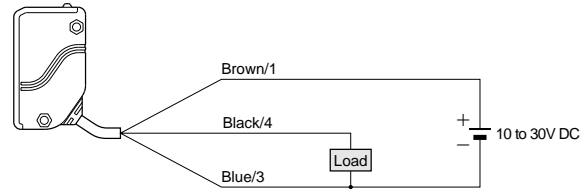
PNP output

I/O circuit diagram

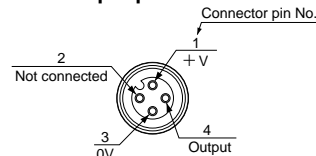


Symbol...D : Reverse polarity protection diode
Zd : Surge absorption zener diode
Tr : PNP output transistor

Wiring diagram



Connector pin position



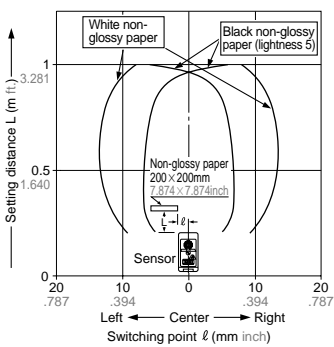
SENSING FIELDS

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

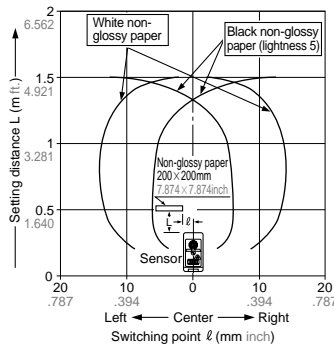
**UZD35, 35A
UZD355, 355A**

Sensing fields

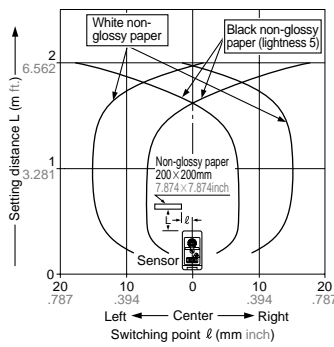
• Adjusted distance: 1m 3.281ft.



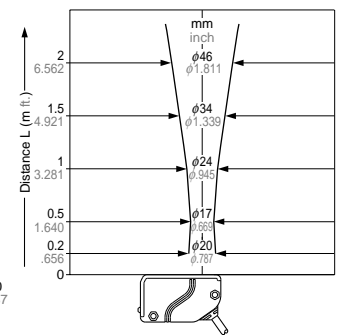
• Adjusted distance: 1.5m 4.921ft.



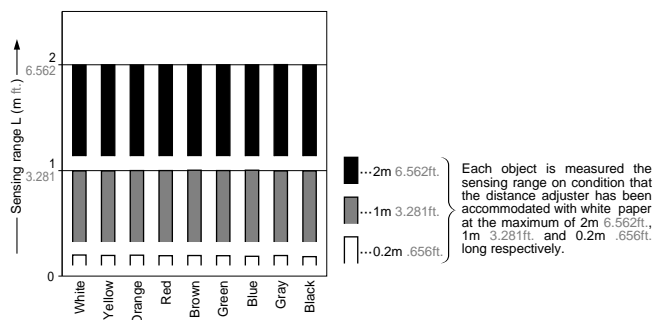
• Adjusted distance: 2m 6.562ft.



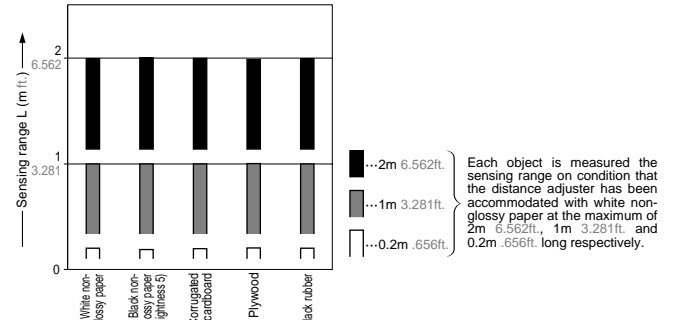
Emitting beam



Correlation between color (200x200mm 7.874x7.874inch) and sensing range



Correlation between material (200x200mm 7.874x7.874inch) and sensing range



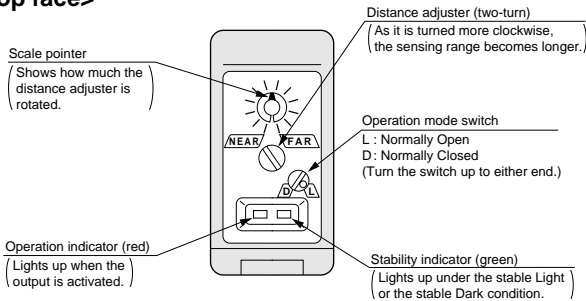
PRECAUTIONS FOR PROPER USE



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.

Distance adjustment

<Top face>



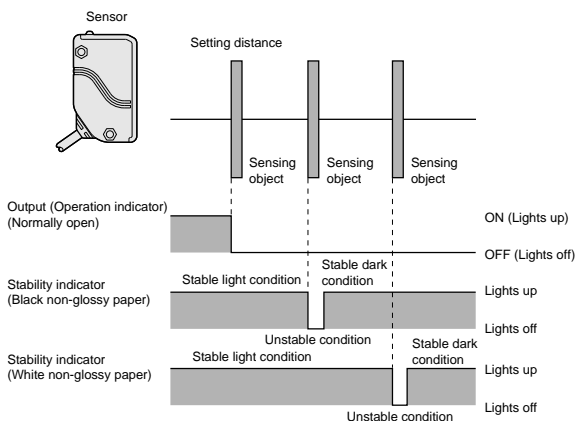
<Adjusting procedure>

①	Turn the distance adjuster counterclockwise fully to the minimum distance of approx. 0.2m .656ft.	
②	Locate your sample object at the place that you expect the sensor to detect. Turn the adjuster gradually clockwise and find out the point (A) where the sensor goes into the light condition.	
③	Remove the object. Turn the adjuster clockwise until the sensor goes into the light condition again. Once it switches on, turn the adjuster back a little until the sensor goes into the dark condition where called the point (B). (If the sensor does not go into the light condition over the scale without the object, the point (B) shall be identified as the maximum point in the scale.)	
④	Settle the adjuster at the center between the point (A) and (B) that should be the optimum sensing point to detect your object.	

(*1): Turn the distance adjuster gradually and lightly with the attached screwdriver. If the distance adjuster is over-turned or pressed heavily, it may be damaged.

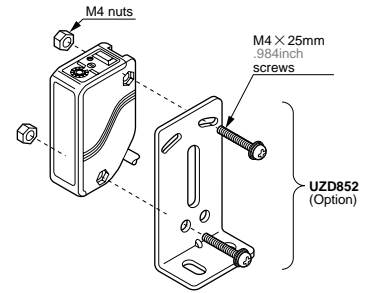
Stability indicator

• UZD3 series incorporates the two-divided photo-diode as the receiving element. The sensor compares two parts of it; which one receives incident beam reflected by an object more intensely to the other. Because this optical system is based on the angle of incident beam, the sensor generates output relating to the distance between the sensor and the object. However, the stability indicator signifies the sufficiency of incident beam, not the distance operability. As an object is approaching to the sensor, the unstable condition that the indicator light off and immediately on again arises before the maximum operating point that the operation indicator lights up. It also shifts according to the difference of reflection ratio among objects. Make sure that the stability indicator always lights up while the sensor is detecting your object.

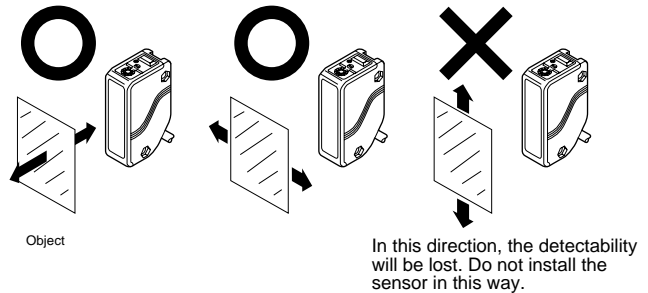


Mounting

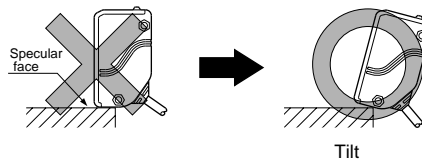
- Tightening torque should be 0.8N·m{8.2kgf·cm} or less.



- Make sure which directions your objects move to the sensor.



- If your object is specular such as aluminum foil or copper foil, or its surface is painted or coated glossily, the sensor may not detect it by wrinkle on it or the severity of the sensing angle.
- Tilt the sensor slightly upwards to prevent the irregular reflection where the sensor is placed on a specular substance.



- If there is a specular substance or the like beyond the sensing field, the sensor may lose the detectability by slight angle change or motion of it. In such case, angle the sensor not to be affected and test the detectability in actual.
- Some object may produce the dead zone right in front of the sensor.

Wiring

- Do not supply power while wiring.
- Verify that supply voltage ripple is within the rating.
- With a commercial switching regulator, ground the F.G. terminal.
- Where equipment generating noise such as a switching regulator or an inverter motor is placed around the sensor, ground its F.G. terminal.
- Do not run the sensor cable along any high-voltage or power cable in parallel or in a same raceway. It may cause a malfunction by induction.

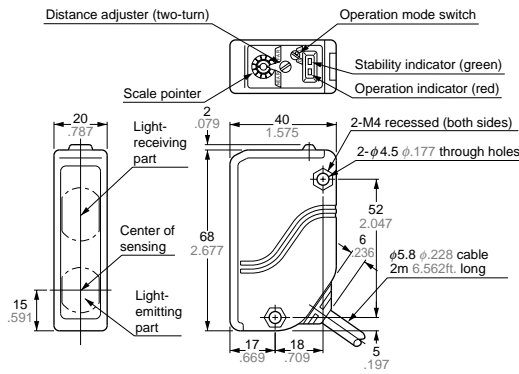
Others

- Do not use the sensor output signal for 50ms immediately after the power is supplied to the sensor.
- Avoid places where the sensor will be directly exposed to fluorescent lamp of rapid starter or high frequency lighting as it may affect the sensing performance.

DIMENSIONS (Unit: mm inch)

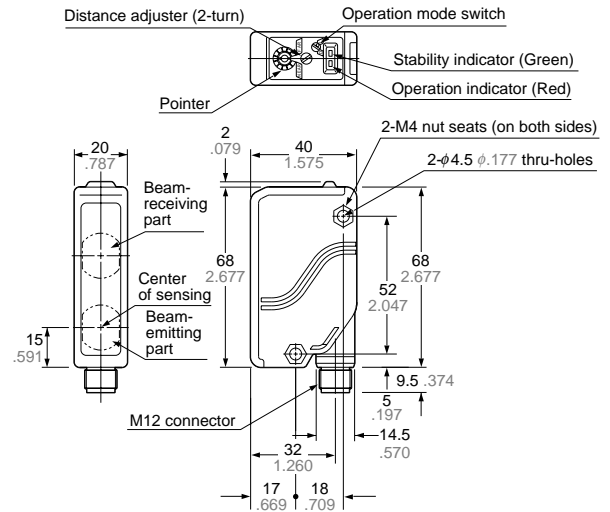
UZD35 UZD355

Sensor



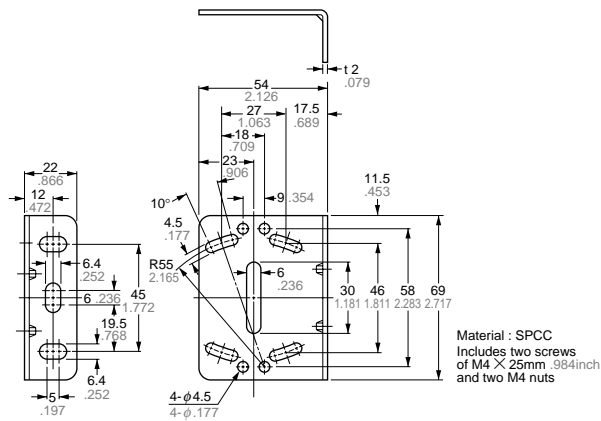
UZD35A UZD355A

Sensor

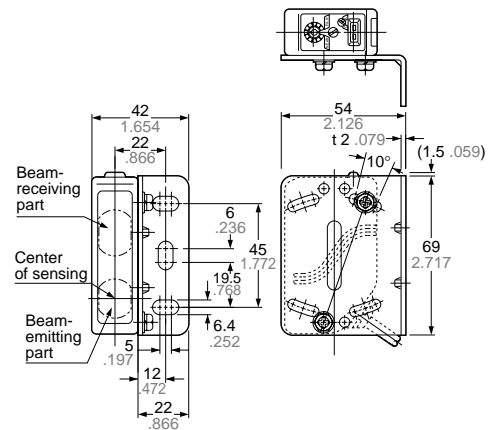


UZD851

Sensor mounting bracket (option)

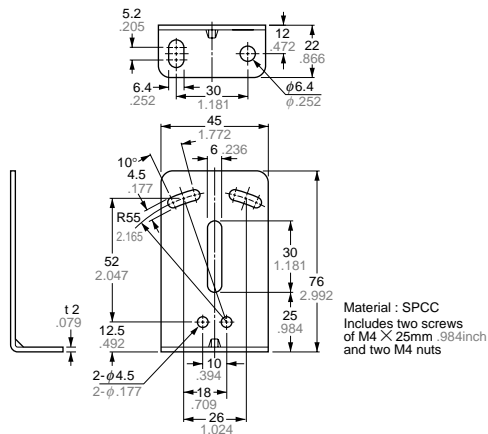


Assembled dimensions



UZD852

Sensor mounting bracket (option)



Assembled dimensions

