COMPACT SIZE GENERAL USE PHOTOELECTRIC SENSORS

UZA Series

EXHAUSTIVE PERSUIT OF THE BASIC PERFORMANCE



NAIS

Compact Size

Depth is only 20mm .787inch.



Waterproof

IP67 housing (temporarily submersible) stainless steel brackets.

Strong Light Beam Potential

UZA20, **UZA205** use an infrared light beam strong enough to penetrate 20 sheets of copy paper (highly resistant to contamination).



Easy Alignment

The width of the emitted beam makes alignment easy for the thru-beam, while the use of a visible red LED does the same for the retroreflective version.



Reliable Detection of Transparent Targets

UZA25, **255** have unique optics and electronics design to "see" transparent objects.

Close Mounting of Two Sensors

UZA23, **UZA24**, and **UZA26** are equipped with an automatic crosstalk prevention function to allow side by side mounting.



Plug-in Connector Type is Available

By one-touch disconnection, any one can replace the sensor in a minute. If a trouble happens, the **UZA** with the connector assists your maintenance with ease.



Transparent Objects can be Detected Reliably

UZA25 detect transparent objects reliably because of its unique optical system and electronic circuit.

Pass sensing of pet bottles



Detectable transparent objects

[by using a **UZZ112** reflector at optimum] condition (*1) When the passing position of the sensing object places at the center of the sensor and reflector.

(*1) : The optimum state is the condition that the sensitivity is set at the limit level where a stability indicator just starts to light up.

ℓ: Length, t : Thickness

Sensing object	The size of a sensing object
Glass boads	□50mm 1.969inch t=1.0mm .039inch
	φ50mm <i>φ</i> 1.969inch <i>ℓ</i> =50mm 1.969inch t=2.0mm .078inch
Cylindrical glasses	φ100mm φ 3.937inch ℓ=50mm 1.969inch t=2.3mm .091inch
Acrylic boards	□50mm 1.969inch t=1.5mm .059inch
Styrols (floppy cases)	□50mm 1.969inch t=1.2mm .047inch
Food wrapping films	□50mm 1.969inch t=10µm
Cigarette case films	□50mm 1.969inch t=20µm
Venyl sacks	□50mm 1.969inch t=30µm
Dethemise	<i>ф</i>55mm <i>ф</i> 2.165inch
Per Dollies	<i>ф</i>70mm <i>ϕ</i> 2.756inch
Glass bins	<i>6</i>65mm <i>6</i> 2.559inch

APPLICATIONS

Content check inside paper pouches Detection of white specular goods

Detection of rubber sheets







ORDER GUIDE

			Appearance	Sensing range	Model No.	Sensing output	Emitting element
NPN output type	Thru-beam			10m 32.808ft.	UZA20 UZA24		Infrared LED
	ive	ive With oolariz- ing filters		0.1 to 3m (*1) .328 to 9.843ft.			Red LED
	Retroreflect	For transparent object sensing Long sensing range		50 to 1,000mm (*1) 1.969 to 39.370inch	UZA25	NPN open-collector transistor	Infrared LED
	use ctive	Long sensing range	—	800mm 31.496inch	UZA23		Infrared LED
	Diffu	Short sensing range		300mm 11.811inch	UZA26		
PNP output type	Thru-beam			10m 32.808ft.	UZA205		Infrared LED
	tive	With oolariz- ing filters		0.1 to 3m (*1) .328 to 9.843ft.	UZA245		Red LED
	Retroreflect For transparent object sensing range		50 to 1,000mm (*1) 1.969 to 39.370inch	UZA255	PNP open-collector transistor	Infrared LED	
	use ctive	Long sensing range		800mm 31.496inch	UZA235		Infrared LED
	Diffu	Short range		300mm 11.811inch	UZA265		

Cautions: Mounting bracket is not supplied with UZA series so that users' can select it in accordance with mounting methods. Purchase optional sensor mounting brackets (five types) are available for users' need. See next page.

(*1) : The sensing range of the retroreflective sensor is the figure using a **UZZ112** reflector. Possible setting range of the reflector is indicated as a sensing range. Therefore, the sensor can detect an object within a sensing range of 0.1m .328ft.(**UZA25**: 50mm 1.969inch).

Self-diagnosis output type (Equipped for NPN output type only and not equipped for UZA25. Self-diagnosis output type is also available. A package without a reflector



A package without a reflector is also available for the model Nos. of UZA24 and UZA25. **Plug-in connector type** (Not available with the self-diagnosis output 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 connector type for UZA20 is "UZA20A".

•Mating cable

Туре	Model No.	Description			
Straight	UZZ8031	Length: 2m 6.562ft.	Cabtyre cable with four 0.5mm ²		
	UZZ8032	Length: 5m 16.404ft.	conductors		
Elbow	UZZ8131	Length: 2m 6.562ft.	With the connector on one end.		
Elbow	UZZ8132	Length: 5m 16.404ft.	Two cables a set.		





OPTION

Component	Model No.	Description			
	UZA801 (<i>\phi</i> 0.5mm <i>\phi</i> .020inch)	When fitted to one side	Sensing range: 400mm 15.748inch [UZA20 Min. sensing object: ϕ 12mm ϕ .472inch		
		When fitted to both sides	Sensing range: 20mm .787inch [UZA20] Min. sensing object: ϕ 0.5mm ϕ .020inch		
Circular slit mask	UZA802 (ø1mm ø.039inch)	When fitted to one side	Sensing range: 900mm 35.433inch [UZA2 Min. sensing object: ϕ 12mm ϕ .472inch		
sensor only)		When fitted to both sides	Sensing range: 100mm 3.937inch [UZA20] Min. sensing object: ϕ 1mm ϕ .039inch		
	UZA803	When fitted to one side	Sensing range: 2m 6.562ft. [UZA20] Min. sensing object: ϕ 12mm ϕ .472inch		
	φ.079inch)	When fitted to both sides	Sensing range: 400mm 15.748inch [UZA20] Min. sensing object: ϕ 2mm ϕ .079inch		
	UZA804	One side slit-on	Sensing ra Min. sensi	nge: 2m 6.562ft. [UZA20⊡] ng object: <i>φ</i> 12mm <i>φ</i> .472inch	
	(0.5×6mm .020×.236inch)	Both side slit-on	Sensing range: 400mm 15.748inch [UZA20] Min. sensing object: 0.5mm×6mm .020×.236inch		
Rectangular slit mask	UZA805	One side slit-on	Sensing range: 3m 9.843ft. [UZA20] Min. sensing object: <i>φ</i> 12mm <i>φ</i> .472inch		
(For thru-beam sensor only)	(1×6mm .039×.236inch)	Both side slit-on	Sensing range: 1m 3.281ft. [UZA20]] Min. sensing object: 1mm×6mm .039×.236inch		
	UZA806 (2×6mm .079×.236inch)	One side slit-on	Sensing range: 5m 16.404ft. [UZA20] Min. sensing object: <i>φ</i> 12mm <i>φ</i> .472inch		
		Both side slit-on	Sensing range: 400mm 15.748inch [UZA20] Min. sensing object: 2mm×6mm .079×.236inch		
Reflector	UZZ110	Sensing range: 0.1 to 1m .328 to 3.281ft. [UZA24]] 50 to 250mm 1.969 to 9.843inch [UZA25]]			
(For retroreflective		Sensing object: 0.1 to 1.5m, 328 to 4.921ft [UZA24]			
sensor only)	UZZ111	50 to 500mm 1.969 to 19.685inch [UZA25] Min. sensing object: \$\phi35mm \phi1.378inch			
Reflector	UZZ1100	Protective mounting Protects the reflecto	bracket for UZZ110 r from damage and keeps an exact alignment		
mounting	UZZ1110	For UZZ111			
bracher	UZZ1120		For UZZ112		
Reflective tape	UZZ101	Ambient temperature: -25 to + 50°C -13 to + 122°F Ambient humidity: 35 to 85%RH The performance of the article		Sensing range: 0.1 to 0.5mm .004 to .020inch [UZA24[]]	
(For retroreflective sensor only) (*1)	UZZ102	tape may deteriorate if it is used under a pressed condition. Do not cut the tape to use. Doing so may lose the performance		Sensing range: 0.1 to 0.7mm .004 to .028inch [UZA24[]] 0.15 to 0.4mm .006 to .016inch [UZA25[]]	
	UZA821	Foot angled mounting bracket Usable as the mounting bracket for UZZ110			
Sensor mounting	UZA822	Foot di-angled mounting bracket Saving height and mountable on the flat Usable as the mounting bracket for UZZ110			
bracket (*2)	UZA823	Protective mounting bracket Protects the sensor from damage and keeps an exact alignment			
	UZA824	Back di-angled mounting bracket			
	UZA825	Back angled mounting bracket			

(*1): **UZZ101** and **UZZ102** can not be used for **UZA25**... (*2): Two sets are required for the thru-beam sensor.

Circular slit mask

Fitted to the front surface of the sensor with one-push.



Rectangular slit mask Fitted to the front surface of the sensor with one-push. Rectangular slit mask (Stainless steel)







Supplied with 2 pieces of M3×12mm .472inch screws

Sensor mounting bracket •UZA821 •UZA822



Supplied with 2 pieces of M3 × 12mm .472inch screws.

.4/2inch screws.



Supplied with 2 pieces of M3 X 14mm .551inch screws. Supplied with 2 pieces of M3 X 12mm .472inch screws.

•UZA824

•UZA825



Supplied with 2 pieces of M3 × 12mm .472inch screws.

SPECIFICATIONS

Turce		20	Thru boom	Retroreflective		Diffuse reflective		
	iy	pe	Inru-beam	With polarizing filters	For transparent object sensing	Long sensing range	Short sensing range	
	Model	NPN output type	UZA20	UZA24	UZA25	UZA23	UZA26	
Item	No.	PNP output type	UZA205	UZA245	UZA255	UZA235	UZA265	
Sen	sing range	•	10m 32.808ft.	0.1 to 3m .328 to 9.843ft.(*1)	50 to 1,000mm 1.969 to 39.37inch(*1)	800mm 31.496inch (*2)	300mm 11.811inch (*2)	
Sensing object		t	Opaque object of ¢12mm ¢.472inch or more	Prevaluation of the specular object of \$\$\$ 00000000000000000000000000000000		& transparent object.		
Hyst	eresis						15% or less of an operation distance	
Rep (vert	eatability ical directio	n for a light axis)		0.5mm .020inch or less		1mm .039i	nch or less	
Sup	ply voltage)		12 to 24	V DC±10% Ripple P-P: 109	% or less		
Con	sumption	NPN output type	Emitter: 35mA or less Receiver: 25mA or less	30mA or less 35mA or le		or less		
	sumption	PNP output type	Emitter: 35mA or less Receiver: 30mA or less	35mA	or less	40mA	or less	
Sensing output			<npn output="" type=""> <pnp output="" type=""> NPN open-collector transistor PNP open-collector transistor Sink current: 100mA max. Source current: 100mA max. Applied voltage: 30V DC or less Applied voltage: 30V DC or less Residual voltage: 1.5V or less (at 100mA sink current) Residual voltage: 1.5V or less (at 100mA source current) 0.4V or less (at 16mA sink current) 0.4V or less (at 16mA source current)</pnp></npn>					
[Output o	peration		Selectio	on of Light-ON/Dark-ON by	a switch		
	Short-cir	cuit protection			Equipped			
Res	ponse time	e	1ms or less					
Ope	ration indi	cator	Red LED (lights up when the sensing output is in the ON state)					
Stab	oility indica	tor	Green LED (lights up at the stable light-receiving or the stable light-interrupted conditions)					
Pow	er indicato	or	Red LED					
Sen	sitivity adju	uster	Equipped with a continuously variable adjuster					
Automatic crosstalk prevention function				Two units of sensors can be mounted closely.		Two units of sensors can be mounted closely		
	Protectio	n		IP67 (IEC)				
e	Ambient	temperature	–25 to + 55°C –13 to 131°F (No dew condensation nor icing allowed), Sto			d), Storage: -30 to + 70°C	–22 to 158°F	
stan	Ambient	humidity		35 to 85%RH, Storage: 35 to 85%RH				
resi	Ambient	light	Sun light: $10,000\ell \times at$ the light-receiving face, Incandescent light: $3,000\ell \times at$ the light-receiving face					
ental	Noise		Power line: 240Vp with 0.5µs pulse duration (28 to 100Hz), Radiation: 300Vp with 10ms cycle and 0.5µs pulse duration (by a noise simulate					
uno	Withstan	d voltage	1,000V AC applied between the live parts and enclosure for 1 min.					
Invir	Insulation	า	$20M\Omega$ min. applied between the live parts and enclosure at 250V DC					
	Vibration		1.5mm amplitude at the frequency of 10 to 500Hz in each of X, Y and Z directions for 2 hours each in the power OFF state					
	Shock		500m/s² {approx. 50G} impulse in each of X, Y and Z directions for 3 times each in the power OFF state					
Emit	ting eleme	ent	Infrared LED (modulated)	Red LED (modulated)		Infrared LED (modulated)		
Mate	erial		Enclosure-Lens-Indicator cover: Polycarbonate, Front cover: Polycarbonate (Acrylic for UZA24					
Cab	le			0.2mm ² ×3 cores with 2	m of oil resistant cable (2 c	ores for the emitter only)		
Cable extension			Extendable up to 100m 328.084ft. by using 0.3mm ² or more cable (Thru-beam sensor: each emitter and receiver)					
Weight			Emitter: Approx. 45g 1.59oz Receiver: Approx. 50g 1.76oz	Z Approx. 50g 1.76oz				
Accessories Screwdriver for the sensitivity adjustment : 1pc UZZ112 (reflector): 1pc. Screwdriver for the sensitivity adjustment: 1pc. Screwdriver for the sensitivity			sitivity adjustment: 1pc.					
 (*1): The sensing range and sensing object of the retroreflective senaor is the figure using a UZZ112 reflector. Possible setting range of the reflector is indicated as a sensing range. Therefore, the sensor can detect the object within a sensing range of 0.1 mm .004inch (UZA25: 50mm 1.969inch) (*2): The sensing range of the diffuse reflective sensor is the figure using an object of non-glossy white paper (200 × 200mm 7.874 × 7.874inch). (*3): The beam sensor of retroreflective mode with polarizing filters may not stably detect specular or glossy objects over transparent film. Refer to "PRECAUTIONS FOR PROPER USE" (e,g.): Can wrapped by clear film Aluminum sheet covered by plastic film Silver sticker or paper with transparent membrane 				3m 9.843ft. (UZA25 : 1,000mm 39.37inch				

TYPICAL WIRING DIAGRAMS



SENSING FIELDS

All models

Correlation between setting distance and excess gain



UZA20

Thru-beam Parallel deviation







Parallel deviation with circular slit masks (ø0.5mm .020inch)



Parallel deviation with circular slit masks (ø1mm .039inch)



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

SENSING FIELDS

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



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.

Mounting

Tightening torque should be 0.5N·m{5.1kgf·cm} or less.



Operation mode selection switch



The stability indicator (green) lights up when the light-receiving intensity of the signal light is sufficient against the operation level.

If the light-receiving level where the stability indicator lights up, the sensor can detect stably without affecting the temperature and the voltage change at the light-receiving operation and the light-interrupted operation.



Sensitivity setup

1	NIM	Turn the sensitivity adjuster over counterclock- wise, set the min. sensitivity position (MIN.).
2	MAX.	Turn the sensitivity adjuster clockwise slowly at the "Light-receiving" condition, check the point (A) where the sensor turns on in the "light" state.
3	(Contraction of the second sec	Turn the sensitivity adjuster clockwise at the "Light-interrupted" condition, check the point (B) where the sensor turns off in the "light" state after operating at the light-receiving condition. (When the sensor does not operate, at the "light" state with turning it over clockwise, the position where turned it over is the point (B).)
4	Optimum position (A) VIIII MAX	The optimum position is halfway between point (A) and (B).

(*1): Turn the sensitivity adjuster slowly with the attached driver. If turn it over, be aware the sensor may be damaged.



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.

Transparent object sensing UZA25 \square of the retroreflective sensor

The optimum sensing is possible when the sensing position of a transparent sensing object is set at the center of the sensor and the reflector. If setting the sensing position near the sensor or the reflector, the sensing may be unstable. In this case, set the sensing position at the center of the sensor and the reflector.



When the sensor detects a rough plastic receptacle or glass bin, the light-receiving intensity may differ in accordance with the sensing position or direction. Adjust the sensitivity by turning the sensing object and confirms the stable sensing condi-

If your object is a specular cylinder, feed it with standing, not lying, as the figure A. The sensor may fail to detect the lying object as the figure B.



UZA24, Retroreflective mode with polarizing filters As light is polarized by the transparent film or membrane, UZA24 may not detect the object covered or wrapped by it.



Others

tion.

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



(*1): The emitter of the thru-beam sensor is not incorporated with it.(*2): It is substituded with the power indicator (red) on the emitter of the thru-beam sensor.



(*1): The emitter of the thru-beam sensor is not incorporated with it.(*2): It is substituded with the power indicator (red) on the emitter of the thru-beam sensor.







UZA822

Sensor mounting bracket (option)







UZA824

Sensor mounting bracket (option)



Mounting drawing



UZA825

Sensor mounting bracket (option)







UZZ1110

Mounting bracket for **UZZ111** reflector (option)



Mounting drawing



UZZ1120

Mounting bracket for UZZ112 reflector (option)



Mounting drawing

