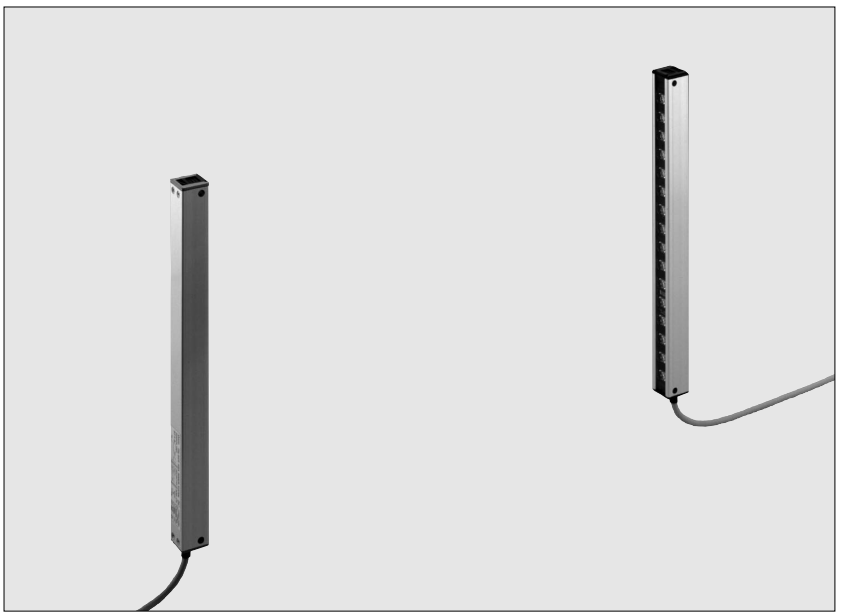
NAiS

20mm .787inch LIGHT PITCH AREA (LIGHT CURTAIN) SENSORS

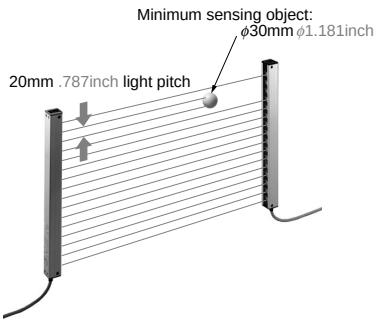
UZK200 Series

HIGH RELIABILITY, WIDE COVERAGE OF 7m 22.97ft X 1,260mm 49.606inch HIGH



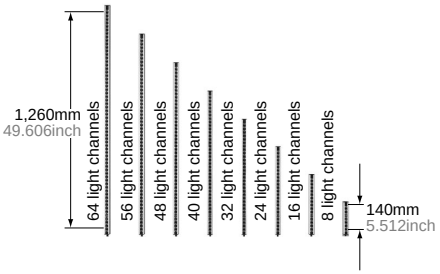
20mm .787inch Light Pitch Minimum Sensing Object: ϕ30mm ϕ1.181inch

The narrow 20mm .787inch light pitch is able to detect min. ϕ30mm ϕ1.181inch opaque objects.



Wide Product Range

The **UZK200** series is available in 8 sizes from 140mm 5.512inch (8 light channels) to 1,260mm 49.606inch (64 light channels) high. Spatter protection hood types are available to protect the sensing faces against spatters, arcs or welding sparks.



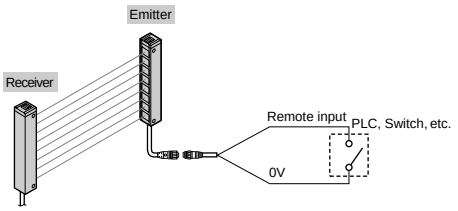
Fail-Safe Disign

Self-diagnostic Function

Both the emitter and the receiver automatically check internal circuits every 5ms.
The sensor can actuate an output that when detecting a failure in the sensor, can cause the machine to stop.
An indicator will show the cause of the failure.

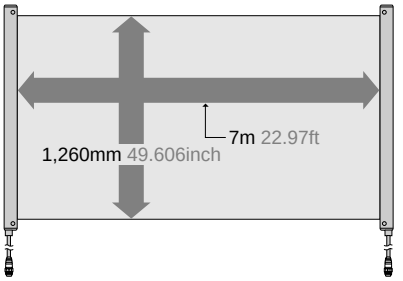
Emission Disable Function

Emission is stopped by remote input to see if the output follows it.
This is convenient for operation check before start-up.



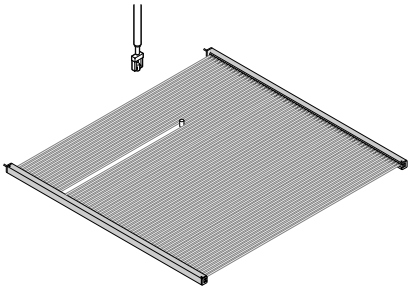
Long Sensing Range: 7m 22.97ft

Thanks to a 7m 22.97ft sensing range with 20mm .787inch light pitch, a wide area, Max. 1,260mm × 7m 49.606inch × 22.97ft, can be covered.

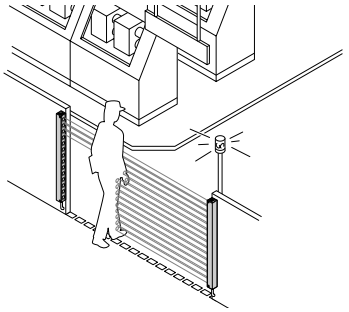


APPLICATIONS

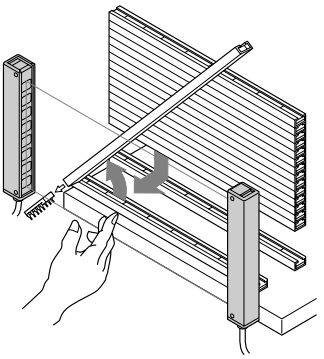
Check remaining work pieces



Guards unmanned production areas

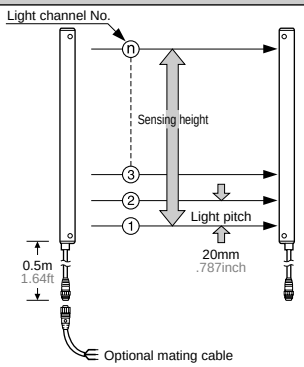
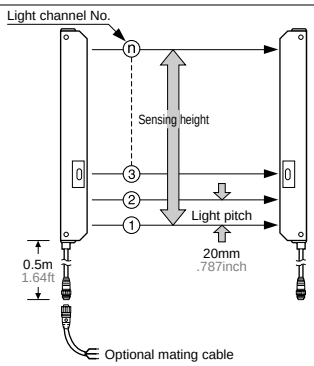


Guards handlers

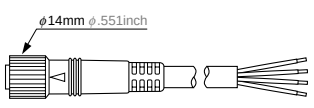


ORDER GUIDE

Sensor

	Appearance (mm inch)	Sensing range	Model No.	Number of light channels	Sensing height (mm inch)
Area sensor		7m 22.97ft	**UZK200**	8	140 5.512
			UZK210	16	300 11.811
			UZK220	24	460 18.110
			UZK230	32	620 24.409
			UZK240	40	780 30.709
			UZK250	48	940 37.008
			UZK260	56	1,100 43.307
			UZK270	64	1,260 49.606
with spatter protection hood			**UZK200C**	8	140 5.512
			UZK210C	16	300 11.811
			UZK220C	24	460 18.110
			UZK230C	32	620 24.409
			UZK240C	40	780 30.709
			UZK250C	48	940 37.008
			UZK260C	56	1,100 43.307
			UZK270C	64	1,260 49.606

Mating cable

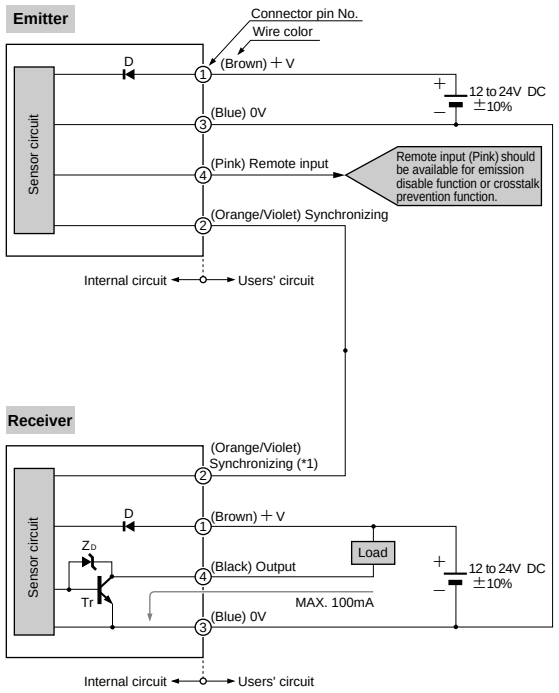
Appearance	Model No.	Description	
	**UZK841**	Length: 3m 9.84ft Weight: Approx. 600g 21.16oz	0.5mm²×4 core cabtyre cable Outer diameter: ϕ7mm ϕ.276inch A connector is fixed on the end. One set consists of two cables.
	UZK842	Length: 7m 22.97ft Weight: Approx. 950g 33.51oz	

SPECIFICATIONS

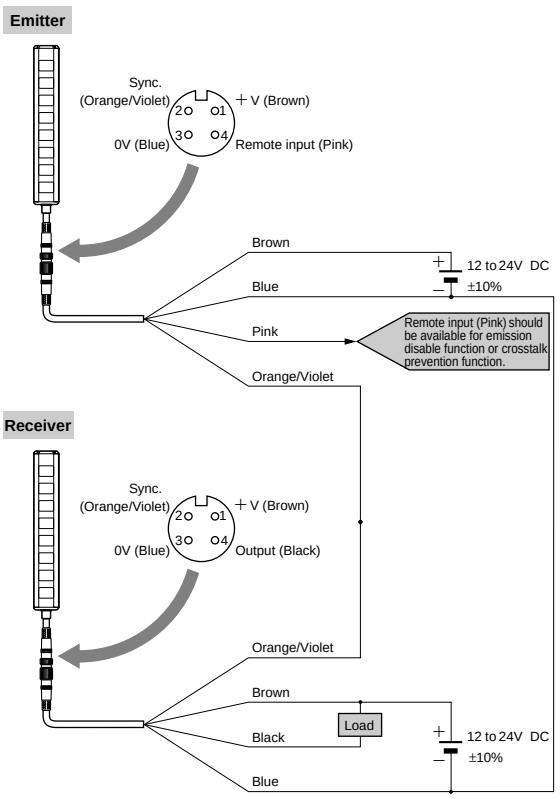
Data \ Number of light channels	8	16	24	32	40	48	56	64
Model No.	**UZK200**	**UZK210**	**UZK220**	**UZK230**	**UZK240**	**UZK250**	**UZK260**	**UZK270**
With spatter protection hood	**UZK200C**	**UZK210C**	**UZK220C**	**UZK230C**	**UZK240C**	**UZK250C**	**UZK260C**	**UZK270C**
Sensing height	140mm 5.512inch	300mm 11.811inch	460mm 18.110inch	620mm 24.409inch	780mm 30.709inch	940mm 37.008inch	1,100mm 43.307inch	1,260mm 49.606inch
Sensing range	7m 22.97ft							
Light pitch	20mm .787inch							
Sensing object	Opaque object of min. ϕ30mm ϕ1.181inch (*1)							
Supply voltage	12 to 24 V DC ± 10% Ripple P-P: 10% or less							
Consumption	Emitter: 55mA or less Receiver: 60mA or less		Emitter: 70mA or less Receiver: 75mA or less		Emitter: 85mA or less Receiver: 90mA or less		Emitter: 100mA or less Receiver: 105mA or less	
Output	NPN open-collector transistor Sink current: Max. 100mA Applied voltage: 30V DC or less Residual voltage: 1.6V or less (at 100mA sink current)							
Output operation	ON when all light channels are in the light-receiving condition OFF when one-or-more light channels are in the light-interrupted condition (OFF when the sensor fails. Refer to P.6 “Operation matrix.”)							
Short-circuit protection	Provided							
Response time	12ms or less							
Emission disable function	Provided							
Indicator – Emitter	Emitting indicator: Green LED (turns on when emitting, blinks in case the emitting circuit fails or the cable connected between synchronizing and remote inputs breaks with operating crosstalk prevention function which is on sensor B. turns off when the emission is stopped.)							
Indicator – Receiver	Operation indicator: Red LED (turns on when one-or-more light channels are interrupted, and blinks when any ambient light is received) Stable light-receiving indicator: Green LED (turns on when all light channels are received.) Unstable light-receiving indicator: Yellow LED (turns on when one-or-more light channels are unstable) *The three-color indicator blinks in regular order when the receiving circuit fails and blinks simultaneously when the output failure occurs. The operation indicator and unstable light-receiving indicator blink alternately when the emitting circuit fails or the synchronizing wire breaks.							
Crosstalk prevention function	Provided							
Environmental resistance – Protection	IP65 (IEC)							
Environmental resistance – Ambient tempetarure	–10 to + 55°C + 14 to + 131°F (with no dew nor ice condensation), Storage: –10 to + 60°C + 14 to + 140°F							
Environmental resistance – Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH							
Environmental resistance – Ambient light	Sunlight: 20,000 ℓx at the light-receiving face, Incandescent: 3,500 ℓx at the light-receiving face							
Environmental resistance – Noise	Power line: 240Vp with 10ms cycle and 0.5µs pulse duration, Radiation: 300Vp with 10ms cycle and 0.5µs pulse duration (by a noise simulator)							
Environmental resistance – Withstand voltage	1,500V AC applied between the live parts and enclosure for 1 min.							
Environmental resistance – Insulation	Min. 20MΩ applied between the live parts and enclosure at 500V DC							
Environmental resistance – Vibration	1.5mm .059inch amplitude at the frequency of 10 to 55Hz in each of X, Y, and Z directions for 1 hour each in the power OFF state							
Environmental resistance – Shock	100 m/s^2 {approx. 10G} impulse in each of X, Y, and Z directions for 3 times each in the power OFF state							
Emitting Element	Infrared LED (modulated)							
Material	Protective enclosure: Aluminum, Module case: ABS, Front cover: Acrylic, Lens: Acrylic							
Cable	0.5mm^2×4 cores with 0.5m 1.64ft of cabtyre cable with a round connector *Use optional mating cables to connect this							
Cable extension	Extendable up to 20m 65.62ft by using 0.5mm^2 or more cable on each emitter and receiver.							
Weight	Approx. 500g 17.64oz	Approx. 840g 29.63oz	Approx. 1,170g 41.27oz	Approx. 1,500g 52.91oz	Approx. 1,830g 64.55oz	Approx. 2,170g 76.54oz	Approx. 2,500g 88.18oz	Approx. 2,830g 99.83oz
with spatter protection hood	Approx. 630g 22.22oz	Approx. 1,080g 38.10oz	Approx. 1,530g 53.97oz	Approx. 1,990g 70.20oz	Approx. 2,440g 86.07oz	Approx. 2,900g 102.29oz	Approx. 3,350g 118.17oz	Approx. 3,800g 134.04oz
Accessories	**UZK831** (mounting bracket): 1set							

(*1): ϕ35mm ϕ1.378inch-or-more opaque objects are detectable when the set distance is 0.5m 1.64ft or less.

TYPICAL WIRING DIAGRAMS



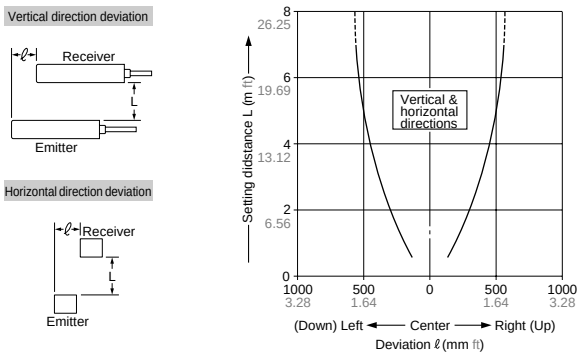
Symbol ... D: Reverse polarity protection diode
Z_D: Surge absorption zener diode
Tr: NPN output transistor



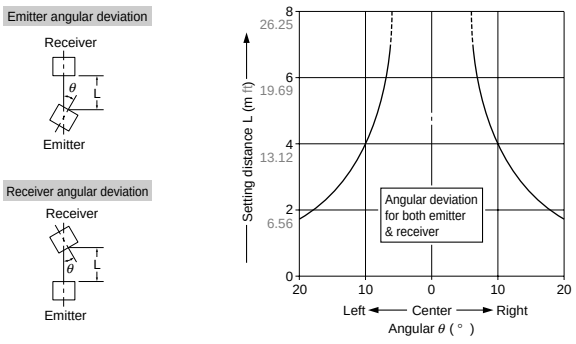
SENSING FIELDS

These are typical sensing fields, which may slightly change from model to model.

Parallel deviation (All models)



Angular deviation (All models)



PRECAUTIONS FOR PROPER USE

- This product is not a safety sensor.
  Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery.
  It is a normal object detection sensor.
- This sensor is not for press machine safeguard.
  Do not use this sensor for any press machine.
- It is available for area sensors which conform to safety standard.
  If you need it, contact our distributors.

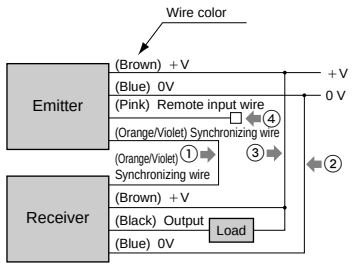
Mounting

Do not use the sensor without the front cover and/or the protective enclosure. Otherwise, IP protection cannot be maintained and contact failure of the modular unit connecting parts may occur.

Tightening torque must not exceed 2N·m {20.3kgf·cm}.

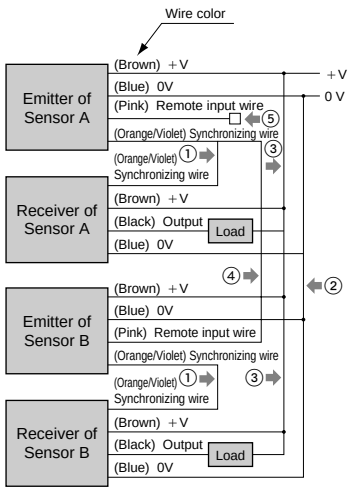
Wiring

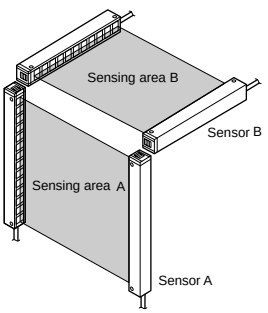
Operation of one set of sensor



① Connect both the synchronizing wires.
② Connect both the 0V wires in common.
③ Both the +V wires must be the same voltage even common connection is not necessary.
④ Cap the remote input wire when the emission disable function is not used.

Operation of two sets of sensor (Using crosstalk prevention function)

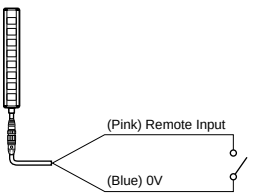




① Connect both the synchronizing wires.
② Connect both the 0V wires in common.
③ Both the +V wires must be the same voltage even common connection is not necessary.
④ Connect the remote input wire of sensor B to the synchronizing wire of the sensor A to prevent crosstalk between sensors A and B.
⑤ Cap the remote input wire of the sensor A when the emission disable function is not used.

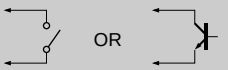
Emission disable function

Contacting the remote input wire (pink) into Low causes the emission to stop and emitting indicator to turn off.
Because this function turns the output on and off without any object, it is useful for start-up inspection.



Signal condition

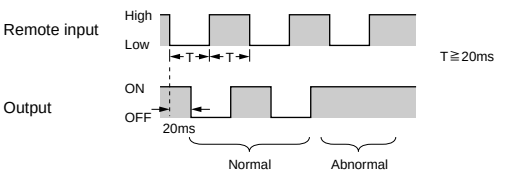
Non-voltage contact or NPN open-collector



Low (0 to 1V): emission disable
High (4.5V to 30V or open): emission

(*1): When the crosstalk prevention is used, stop the emission of both sensors simultaneously with a common switch.

If the output follows the state (High or Low) of the remote input, the sensor is normal. If it does not, the sensor is not operating normally.



Wiring

Power supply should be turned off before wiring.

Verify that voltage fluctuations will not exceed the rated value.

When using a switching regulator power supply (readily available in the market), always ground the frame ground (F.G.) terminal.

When using equipment which generates noise (switching regulator or inverter motor, etc.) near the sensor, ground the frame ground (F.G.) terminal of the equipment.

Do not run sensor cables near high-voltage lines or power lines, nor put them together in the same raceway. Doing so may cause malfunctions due to inductive interference.

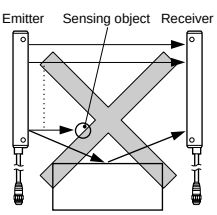
Others

Do not use the sensor output signal for 1.5 sec. immediately after power is supplied to the sensor.

Do not use the sensor where it may be exposed to steam or immersed in water.

Avoid places where the sensor may be directly exposed to fluorescent lights with rapid-starters, high frequency lighting, or light of the others or beacons as it may affect the sensing performance.

Install sensors where they can not be affected by the light reflected by machine or workpieces.



If the light reflected by a machine or a workpieces is received, the light interruption status may be lost.

PRECAUTIONS FOR PROPER USE

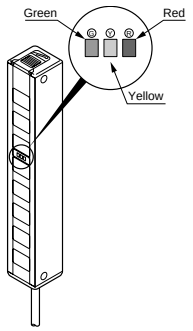
Operation matrix: Possible to know operating conditions of sensors by output status, and indicators on sensors.

☼: ON ◑: Blink ●: OFF △: Uncertainty according to the situation ×: Lock up the failure state

Data \ Unit			Emitter	Receiver (*1)			
				Indicator			Output
			Emitting indicator (Green LED)	Stable light-receiving indicator (Green LED)	Unstable light-receiving indicator (Yellow LED)	Operation indicator (Red LED)	
Normal operation	Stable light-receiving (All lights are received)		☼	☼	●	●	ON
	Stable light-interruption (One or more lights are interrupted)			●		☼	OFF
Abnormal condition (sensor)	Emitting element failure		☼	●	●	☼	OFF
	Emitting circuit failure		◑		Alternate ◑	◑	
	Receiving element failure		☼	●	●	☼	OFF
	Receiving circuit failure			Sequential ◑	◑	◑	
	Output circuit failure			◑	Simultaneous ◑	◑	×
	Power cable broken	Receiver	☼	●	●	●	OFF
		Emitter	●		Alternate ◑	◑	
	Synchronizing cable broken		☼				
	Synchronizing/Remote input wire broken (Sensor B only when the crosstalk prevention function is availed.)		◑				
	Ambient light check	Faint ambient light	☼	△	△	◑	△
		Intense ambient light		●	●		OFF
	Unstable light-receiving (Insufficient light intensity)				☼	●	ON

(*1): The indicators on a receiver show the following operation according to the light intensity.

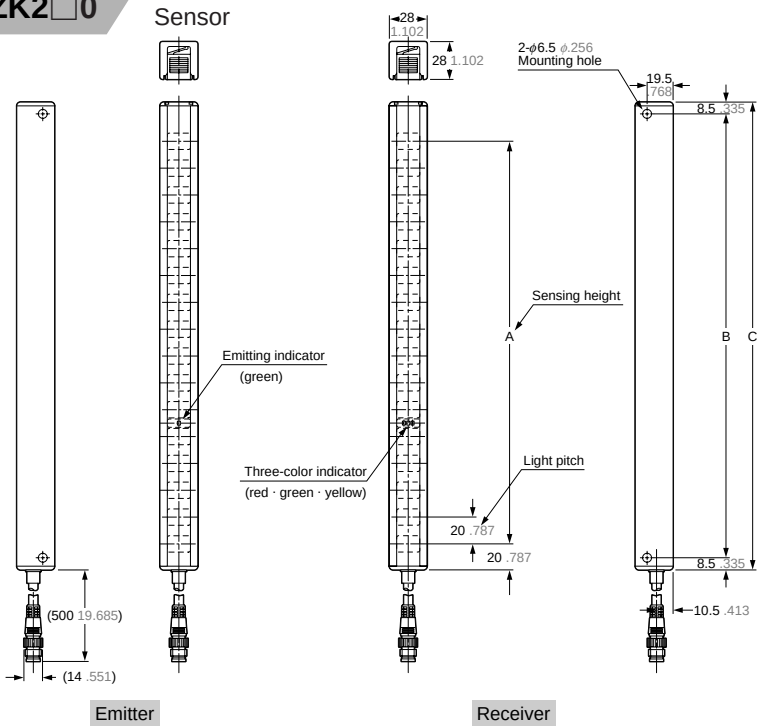
Light-receiving intensity (%)	Output operation	Indicator operation: Ⓖ Stable light-receiving indicator	Ⓨ Unstable light-receiving indicator	Ⓡ Operation indicator
Much ↑	Light-receiving operation	☼ ON		
125%	(ON)		☼ ON	
100%	Light-interrupted operation			☼ ON
↓ Little 0%	(OFF)			



DIMENSIONS (Unit: mm inch)

UZK2□0

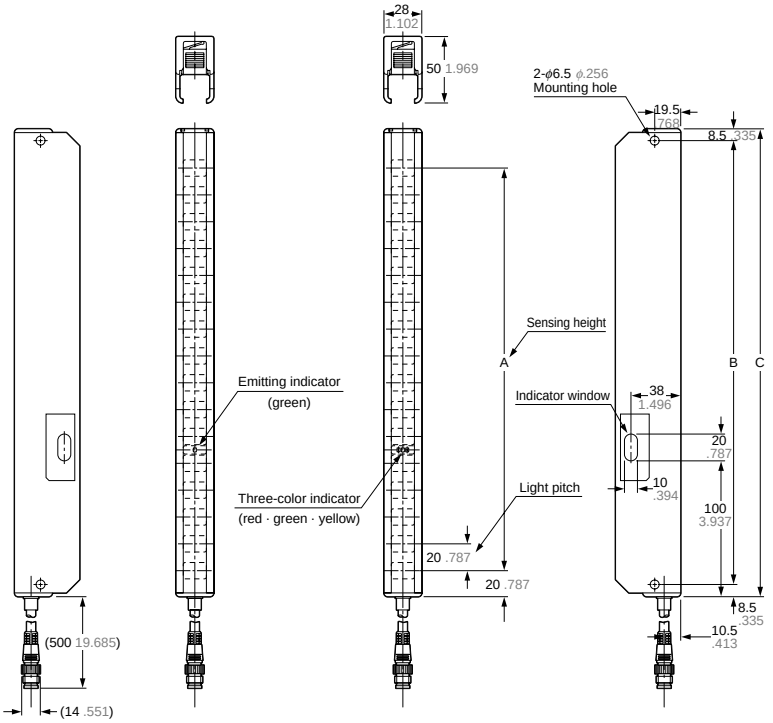
Sensor



Model No.	A	B	C
UZK200	140 5.512	172 6.772	189 7.441
UZK210	300 11.811	332 13.071	349 13.740
UZK220	460 18.110	492 19.370	509 20.039
UZK230	620 24.409	652 25.669	669 26.339
UZK240	780 30.709	812 31.969	829 32.638
UZK250	940 37.008	972 38.268	989 38.937
UZK260	1,100 43.307	1,132 44.567	1,149 45.236
UZK270	1,260 49.606	1,292 50.866	1,309 51.535

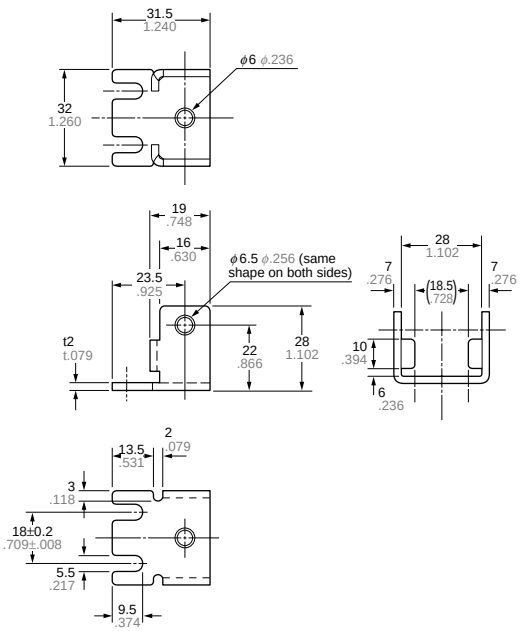
DIMENSIONS (Unit: mm inch)

UZK2□0C Sensor



Model No.	A	B	C
UZK200C	140 5.512	172 6.772	189 7.441
UZK210C	300 11.811	332 13.071	349 13.740
UZK220C	460 18.110	492 19.370	509 20.039
UZK230C	620 24.409	652 25.669	669 26.339
UZK240C	780 30.709	812 31.969	829 32.638
UZK250C	940 37.008	972 38.268	989 38.937
UZK260C	1,100 43.307	1,132 44.567	1,149 45.236
UZK270C	1,260 49.606	1,292 50.866	1,309 51.535

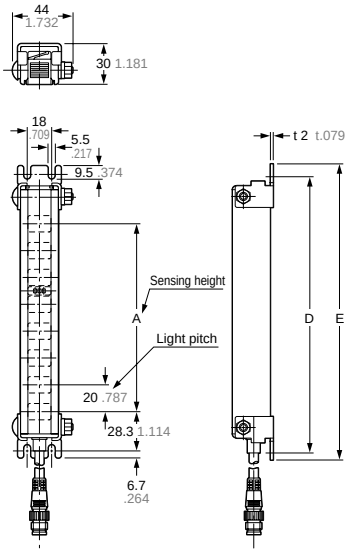
UZK831 Sensor mounting bracket (accessories)



Material: SPCC (uni-chrome plating)

4 pieces of mounting brackets
(Each of 4 pieces of M6×40mm 1.575inch truss screws and spring washers are supplied.)

Mounting drawing
Mounting drawing for **UZK2□0**.
Mount same as the spatter protection hood type (**UZK2□0C**).



Model No.	A	D	E
UZK200 (C)	140 5.512	205 8.071	219 8.622
UZK210 (C)	300 11.811	365 14.370	379 14.921
UZK220 (C)	460 18.110	525 20.669	539 21.220
UZK230 (C)	620 24.409	685 26.969	699 27.520
UZK240 (C)	780 30.709	845 33.268	859 33.819
UZK250 (C)	940 37.008	1,005 39.567	1,019 40.118
UZK260 (C)	1,100 43.307	1,165 45.866	1,179 46.417
UZK270 (C)	1,260 49.606	1,325 52.165	1,339 52.716