

### FEATURES

#### PROBLEMS

#### Space

There is not enough space to install the sensors.

#### Oily environment

Oil mist causes malfunction of the sensors installed on tooling machines.

#### High Cost

Cost of the sensors is high and may exceed the budget.

#### SOLUTIONS

#### IP67G Oil-Resistant

Cable is also oil-proof.

#### Cost Reduction

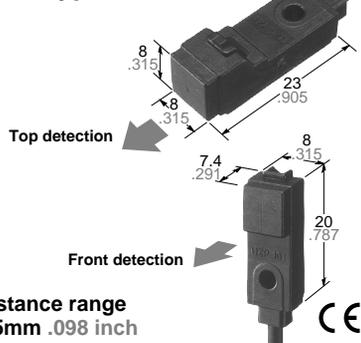
High performance is offered at an economical price.

ALL UZP SERIES

#### LIST OF UZP SERIES

mm inch

#### UZP1 type

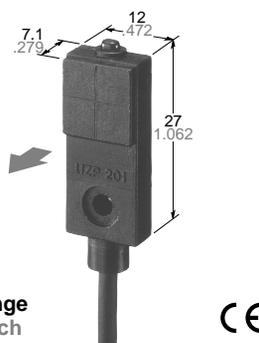


#### Micro-Assembly Allows Selection of Positioning

With micro-assembly, top detection or front detection can be selected according to the mounting places.

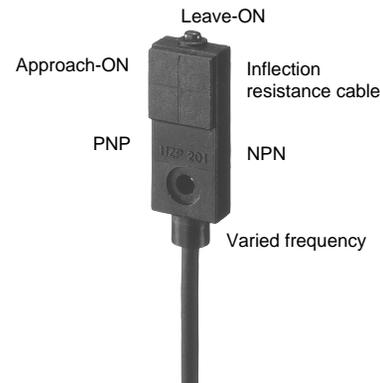


#### UZP2 type

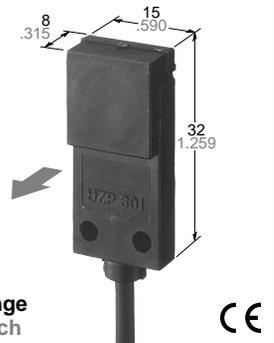


#### 8 Models

A wide variety of selections is possible.

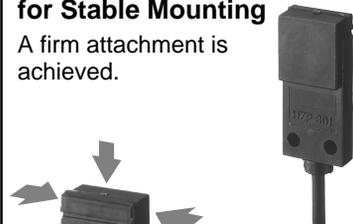


#### UZP3 type



#### Two-Point Attachment for Stable Mounting

A firm attachment is achieved.



#### Easy-to-See Operation Indicator

It is equipped with a clearly visible operation indicator which can be checked from 4 different directions.

## PRODUCT TYPE

### UZP3 Type

Type		Part No.	Varied frequencies
Approach-ON	NPN Output	UZP301	UZP321
	PNP Output	UZP302	UZP322
Leave-ON	NPN Output	UZP311	UZP331
	PNP Output	UZP312	UZP332

### UZP2 Type

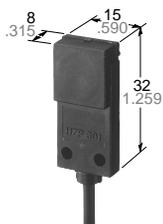
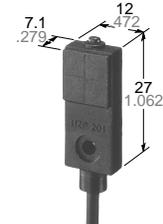
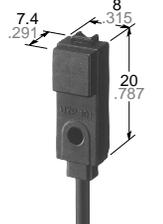
Type		Part No.	Varied frequencies
Approach-ON	NPN Output	UZP201	UZP221
	PNP Output	UZP202	UZP222
Leave-ON	NPN Output	UZP211	UZP231
	PNP Output	UZP212	UZP232

### UZP1 Type

Type			Part No.	Varied frequencies
Approach-ON	NPN Output	Front detection	UZP101	UZP121
	NPN Output	Top detection	UZP141	UZP161
Leave-ON	NPN Output	Front detection	UZP111	UZP131
	NPN Output	Top detection	UZP151	UZP171

## SPECIFICATIONS

mm inch

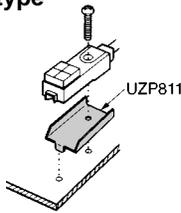
Type  Product name  Item	UZP3 type		UZP2 type		UZP1 type		
	Front sensing				Top sensing		
	Cable type						
							
	Approach-ON	UZP301	UZP302	UZP201	UZP202	UZP101	UZP141
	Varied frequencies	UZP321	UZP322	UZP221	UZP222	UZP121	UZP161
	Leave-ON	UZP311	UZP312	UZP211	UZP212	UZP111	UZP151
	Varied frequencies	UZP331	UZP332	UZP231	UZP232	UZP131	UZP171
Distance range (*1)	5mm .197 inch ±10%		3mm .118 inch ±20%		2.5mm .098 inch ±20%		
Detectable distance (*1)	0 to 4mm 0 to .157 inch		0 to 2mm 0 to .079 inch		0 to 1.8mm 0 to .071 inch		
Standard detectable target	Steel plate 20 × 20 × t1mm .787 × .787 × t.039 inch				Steel plate 15 × 15 × t1mm .590 × .590 × t.039 inch		
Hysteresis	20% or less of the distance range						
Repeatability	0.04mm .002 inch or less						
Operating voltage range	12 to 24V DC±10% Ripple P-P: 10% or less						
Rated power consumption	15mA or less						
Output	NPN output (open-collector)	PNP output (open-collector)	NPN output (open-collector)	PNP output (open-collector)	NPN output (open-collector)		
	NPN open-collector transistor Current sink: Max. 100mA Applied voltage: 30V DC or less Residual voltage: 1V or less (at 100mA current sink) 0.4V or less (at 16mA current sink)			PNP open-collector transistor Current source: Max. 100mA Residual Voltage: 1V or less (at 100mA current source) 0.4V or less (at 16mA current source)			
Maximum response frequency	250Hz or less		500Hz or less				
Indicator	Red LED (lights when output is ON)						
Protective construction	IP67 (IEC)						
Ambient temperature	-10 to 55°C -14 to 131°F with no dew or ice condensation (operation), -30 to +80°C -22 to 216°F (storage)						
Ambient humidity	45 to 85% RH (operation), 35 to 95% RH (storage)						
Noise resistance	Power line: 240Vp, 0.5µs pulse duration (by noise simulator)						
Initial breakdown voltage	1,000V AC: Between input/output and external housing for 1 min.						
Initial insulation resistance	Min. 50MΩ Between input/output and external housing at 250V DC						
Vibration resistance	10 to 55Hz (1 cycle/min.), double amplitude 1.5mm .059 inch (2h each on 3 axes) at power OFF						
Shock resistance	1,000m/s <sup>2</sup> (approx. 100G) (3 times each on 3 axes) at power OFF						
Range fluctuation	Temperature	Less than -10 to +15% of range at 20°C 68°F					
	Voltage	Less than ±2% at ±10% fluctuation of voltage supply					
Material	Housing: Black PBT (gray PBT for varied frequency type), indicator: polyarylate						
Cable	0.15mm <sup>2</sup> .006 inch <sup>2</sup> × 3 cores with 1m 3.28 feet of oil, heat and cold resistant cable				0.08mm <sup>2</sup> .003 inch <sup>2</sup> × 3 cores with 1m 3.28 feet of oil, heat and cold resistant cable		
Cable extension	Extensible up to 100m 328.09 ft. using a cable of min. 0.3mm <sup>2</sup> .012 inch <sup>2</sup>						
Weight	Approx. 20g .71 oz	Approx. 20g .71 oz	Approx. 20g .71 oz	Approx. 20g .71 oz	Approx. 12g .43 oz	Approx. 12g .43 oz	
Accessories	—	—	UZP821 (mounting bracket): 1 piece M3 pan-headed screw, washer, spring washer and nut: 1 set nonskid rubber: 1 piece		UZP811 (mounting bracket): 1 set		

\*1 Range and detectable distance are the distances to the standard detectable target.

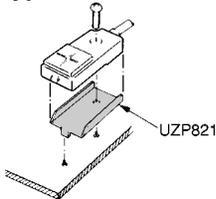
## MOUNTING BRACKET

Product name	Part No.	Description
Accessory	UZP811	Mounting bracket for UZP1 type
	UZP821	Mounting bracket for UZP2 type
Option	UZP812	Mounting bracket for UZP1 type
	UZP822	Mounting bracket for UZP2 type
	UZP831	Mounting bracket for UZP3 type
	UZP832	Mounting bracket for UZP3 type

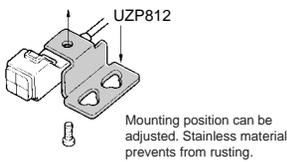
### • Mounting bracket UZP811 For UZP1 type



### • Mounting bracket UZP821 For UZP2 type



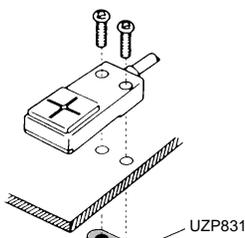
### • Mounting bracket UZP812 For UZP1 type



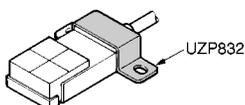
### • Mounting bracket UZP822 For UZP2 type



### • Mounting bracket UZP831 For UZP3 type

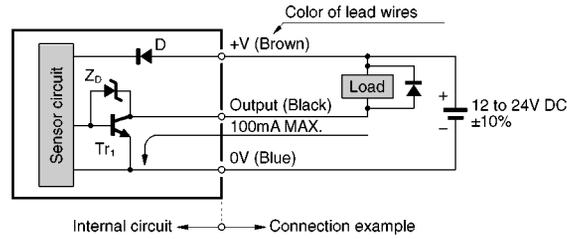


### • Mounting bracket UZP832 For UZP3 type

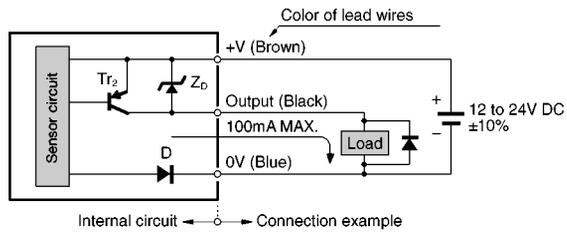


## OUTPUT CIRCUIT DIAGRAM

### • NPN output (open collector)



### • PNP output (open collector)

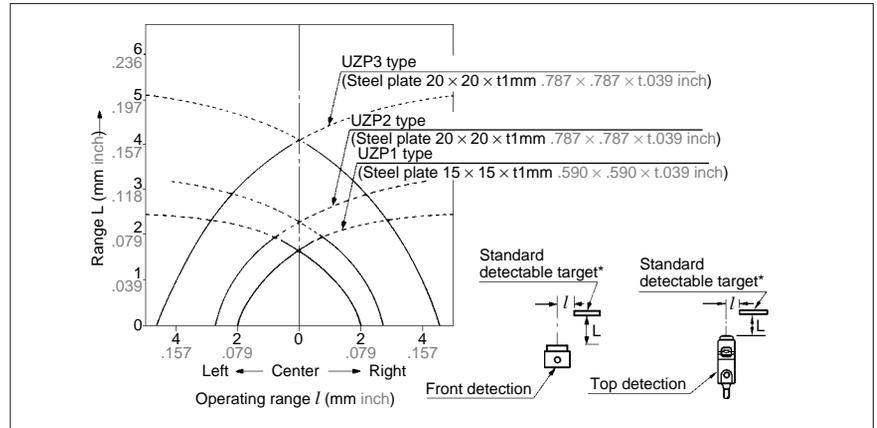


Signals	D	: Reverse polarity protection diode
	Z <sub>D</sub>	: Surge absorption zener diode
	Tr <sub>1</sub>	: NPN output transistor
	Tr <sub>2</sub>	: PNP output transistor

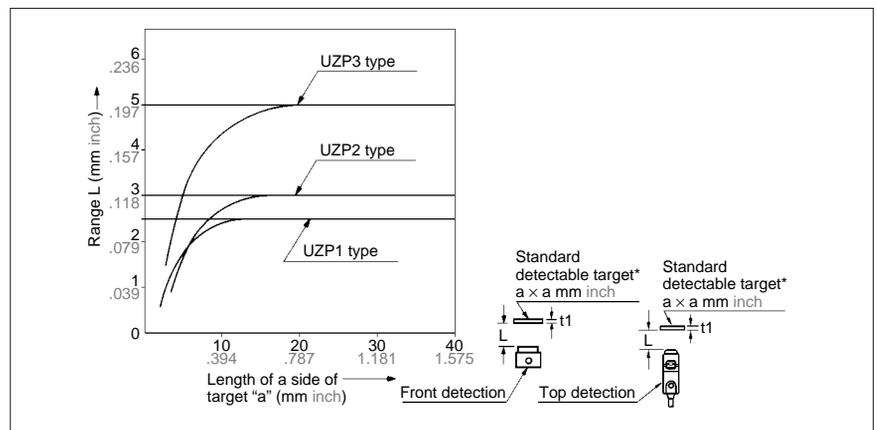
## TYPICAL DETECTION CHARACTERISTICS

(These are typical ranges, and are subject to slight changes from model to model.)

### • Operating range characteristics



### • Target size VS range



\*Standard detectable target is a steel plate.

## PRECAUTIONS FOR PROPER USE

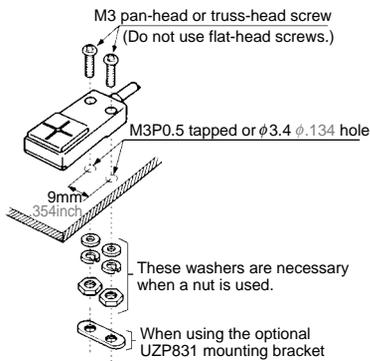


These products are **not** safety sensors and are **not** designed or intended to be used to protect life and prevent bodily injury or property damage.

### • MOUNTING

#### UZP3 type

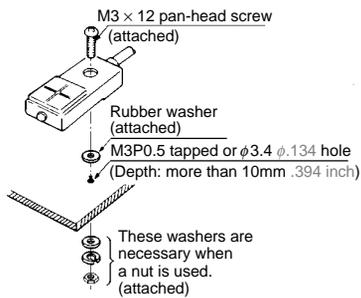
- The tightening torque must not exceed 1N·m {10.2kgf·cm}.
- When mounting the sensor with optional mounting bracket (UZP831) or with a nut, the mounting hole diameter should be  $\phi 3.4\text{mm}$  .134inch.
- Screws, nuts and washers are not provided.



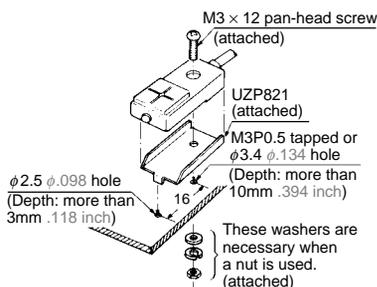
#### UZP2 type

- The tightening torque must not exceed 0.5N·m {5.1kgf·cm}.
- When mounting the sensor with a nut, the mounting hole diameter should be  $\phi 3.4\text{mm}$  .134inch.

#### <One attachment point>

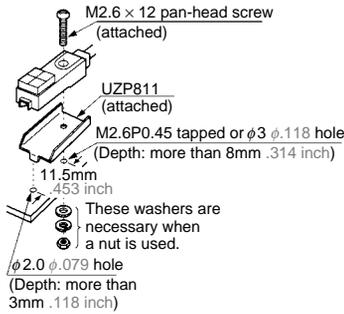


#### <Two attachment points>



#### UZP1 type

- The tightening torque must be as follows:  
UZP101: Max. 0.5N·m {5.1kgf·cm}.  
UZP141: Max. 0.5N·m {5.1kgf·cm}.
- When mounting the sensor with a nut, the mounting hole diameter should be  $\phi 3\text{mm}$  .118inch.
- When using accessory screw and nut, thickness of mounting board must be less than 2.3mm .091inch.
- When using a screw other than the one attached, use M2.6 truss-head screw.

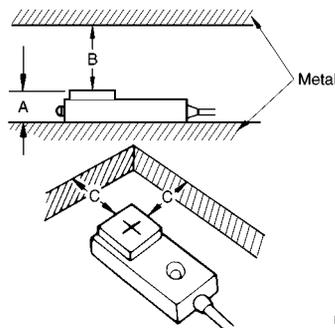


- If a switching regulator is used for the power source of the sensor, be sure to ground the frame ground (F.G.) terminal to an actual ground.
- Do not use the sensor's output signal for 10ms (NPN type), 50ms (PNP type) immediately after power is turned ON.
- Avoid wrong wiring as none of the models in the UZP series are protected against output short-circuit.
- Do not run sensor cables near high-voltage lines or power lines, or put them together in the same raceway. This warning should be strictly observed to prevent malfunctions caused by inductive interference.
- Avoid placement where the sensor will be exposed to chemical agents such as organic solvents.
- Metal dust covering the sensing face will cause a malfunction.

### • INFLUENCE OF SURROUNDING METAL

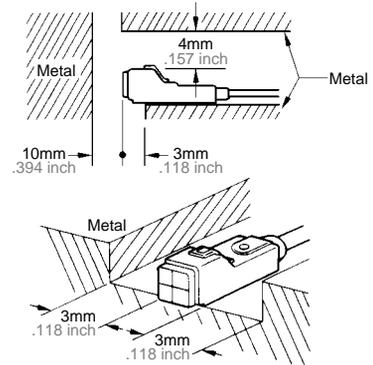
When there are metals near the sensor, keep the minimum distance in the table blow.

#### Front detection



	UZP3 type	UZP2 type	UZP1 type
A	8.314	7.275	7.275
B	20.787	20.787	8.315
C	7.276	10.394	3.118

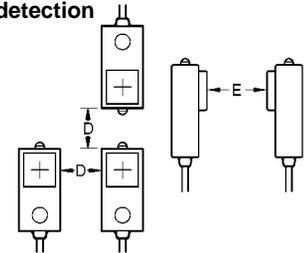
#### Top detection



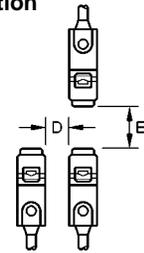
### • MUTUAL INTERFERENCE

When plural sensors are installed in parallel or face to face, keep the minimum distance in the table blow.

#### Front detection



#### Top detection



mm inch

	UZP3 type		UZP2 type		UZP1 type	
	Sensors of varied frequencies	Sensors of identical frequency	Sensors of varied frequencies	Sensors of identical frequency	Sensors of varied frequencies	Sensors of identical frequency
D	0 (*1)	30.118	0 (*1)	20.787	0 (*1)	12.472
E	25.983	60.236	15.590	40.157	15.591	30.1181

\*1 Up to two sensors can be installed side by side without clearance. When three sensors or more are installed with the identical clearance, D must be more than the following figures.  
UZP3 models : 7.5mm .295 inch  
UZP2 models : 4mm .157 inch  
UZP1 models : 2mm .079 inch

### • RANGE

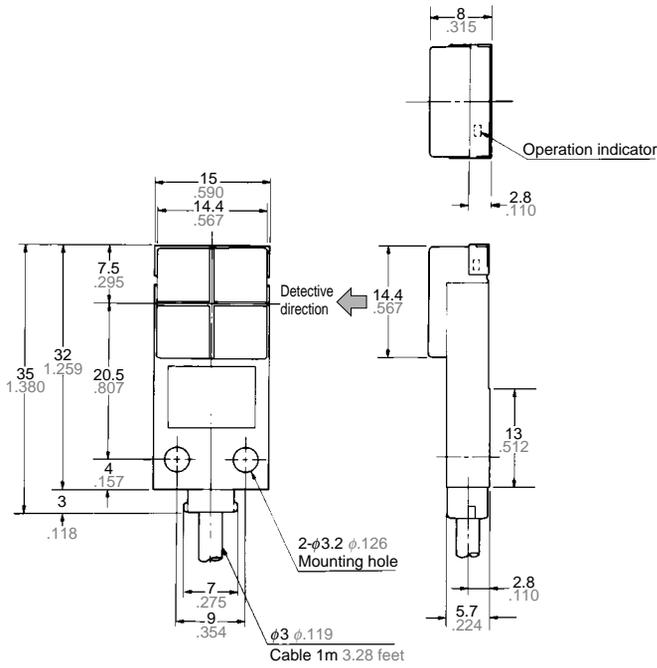
The range listed in the specifications is for the standard target. For nonferrous object detection, the range is obtained by multiplying the correction coefficient in the table below.

#### • Correction coefficient

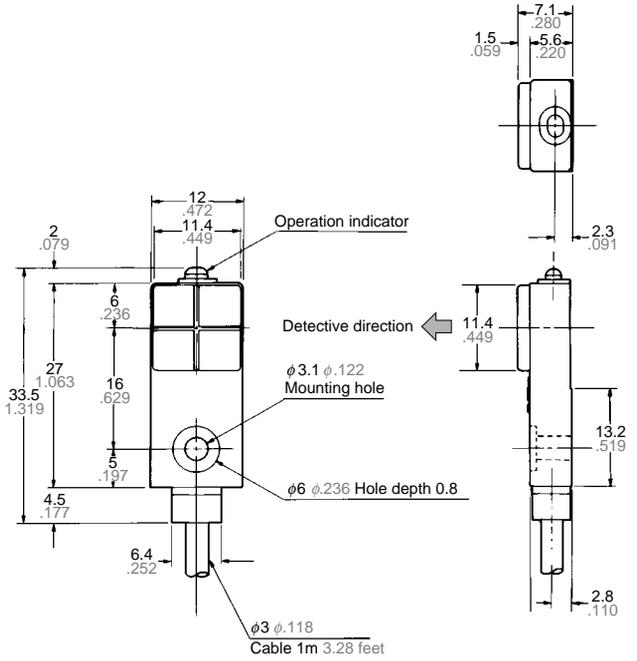
	UZP3 type	UZP2 type	UZP1 type
Steel	1.0	1.0	1.0
Stainless steel (SUS304)	Approx.0.68	Approx.0.7	Approx.0.76
Brass	Approx.0.47	Approx.0.4	Approx.0.5
Aluminium	Approx.0.45	Approx.0.35	Approx.0.48

**DIMENSIONS (Unit: mm inch)**

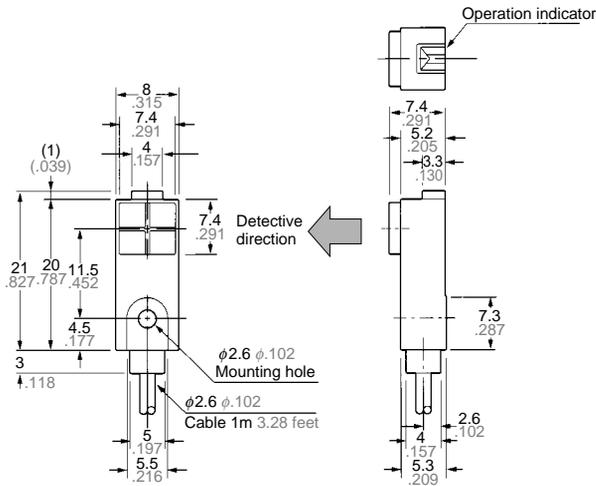
**UZIP3**



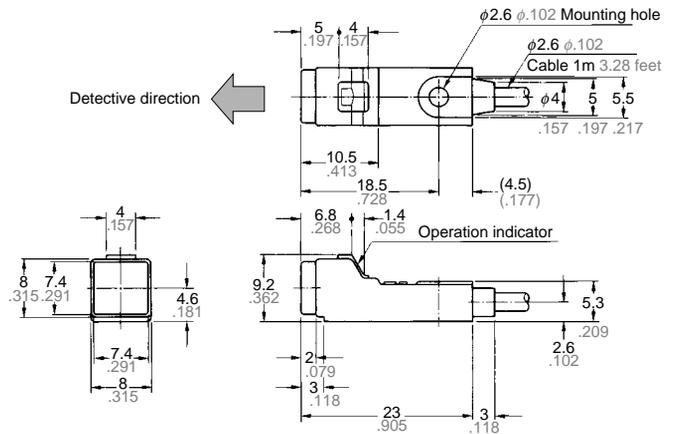
**UZIP2**



**UZIP101, UZIP111  
UZIP121, UZIP131**

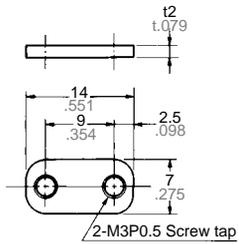


**UZIP141, UZIP151  
UZIP161, UZIP171**



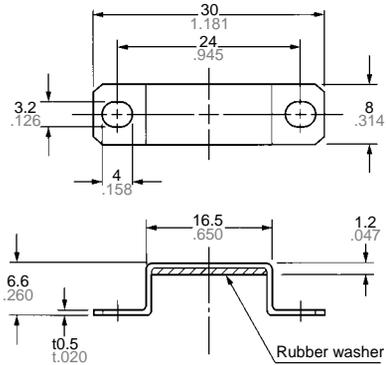
**DIMENSIONS (Unit: mm inch)**

**UZP831** Sensor mounting bracket (option)



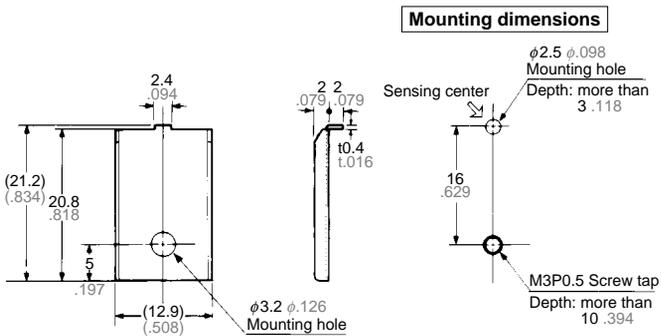
Material: SPC

**UZP832** Sensor mounting bracket (option)

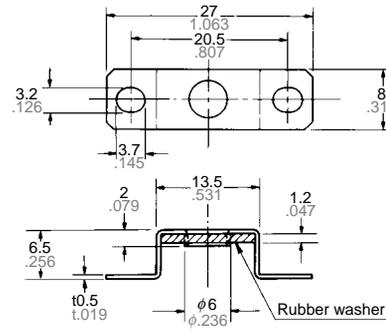


Material: Enclosure...Stainless steel (SUS304)  
Rubber washer...FKM (Fluoric rubber)

**UZP821** Sensor mounting bracket (accessory)

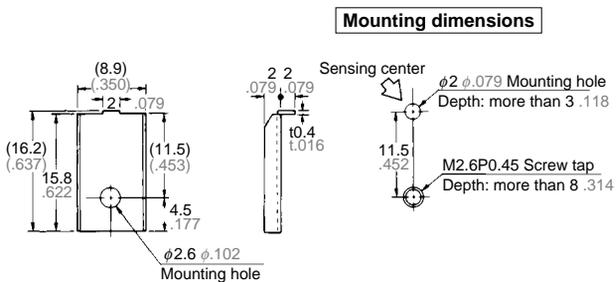


**UZP822** Sensor mounting bracket (option)



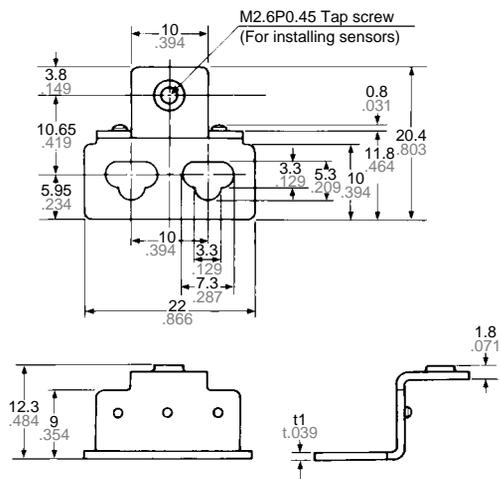
Material: Enclosure...Stainless steel (SUS304)  
Rubber washer...FKM (Fluoric rubber)

**UZP811** Sensor mounting bracket (accessory)



Material: SPC (uni-chrome plated)  
(Each set of M2.6×12 truss-head screws,  
nut, spring washer and flat washer)

**UZP812** Sensor mounting bracket (option)



Material: Stainless steel (SUS304)  
(One M2.6×8 pan-head screw  
and two M3×8 flat-head screws)