NAiS

MICRO TYPE PROXIMITY SENSORS

UZP Series

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.

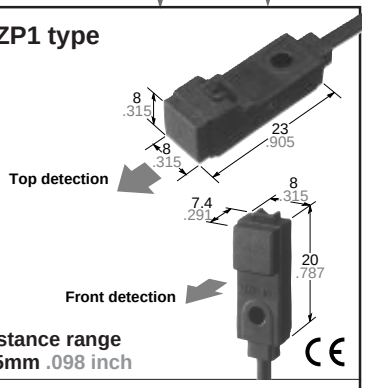
Cost Reduction
High performance is offered at an economical price.

ALL UZP SERIES

LIST OF UZP SERIES

mm inch

UZP1 type

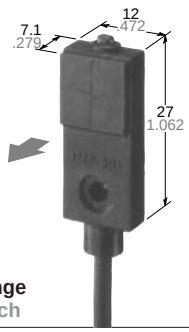


Distance range
2.5mm .098 inch

Micro-Assembly Allows Selection of Positioning

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

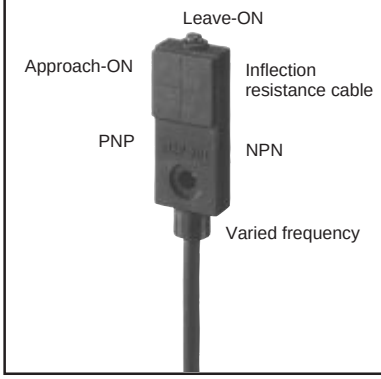
UZP2 type



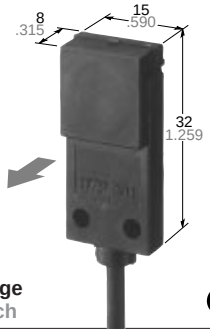
Distance range
3mm .118 inch

8 Models

A wide variety of selections is possible.



UZP3 type



Distance range
5mm .197 inch

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

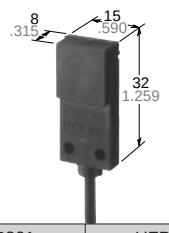
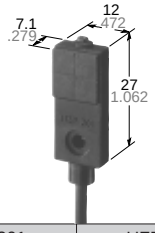
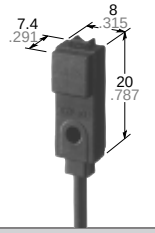
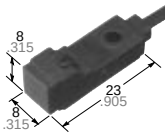
Type		Part No.	Varied frequencies
Approach-ON	NPN Output	UZP201	UZP221
	PNP Output	UZP202	UZP222
Leave-ON	NPN Output	UZP211	UZP231
	PNP Output	UZP212	UZP232

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

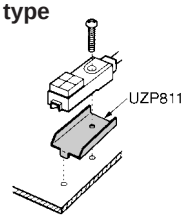
Item \ Type / Product name		UZP3 type		UZP2 type		UZP1 type	
		Front detection					Top detection
		Cable type					
							
Approach-ON		UZP301	UZP302	UZP201	UZP202	UZP101	UZP141
	Varied frequencies	UZP321	UZP322	UZP221	UZP222	UZP121	UZP161
Leave-ON		UZP311	UZP312	UZP211	UZP212	UZP111	UZP151
	Varied frequencies	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/s² {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		0.15mm² .006 inch² × 3 cores with 1m 3.28 feet of oil, heat and cold resistant cable				0.08mm² .003 inch² × 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. 0.3mm² .012 inch²					
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.

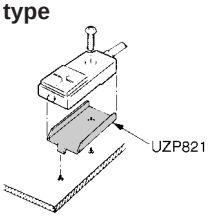
MOUNTING BRACKET

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

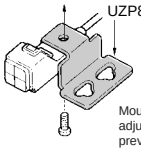
• Mounting bracket UZP811
For UZP1 type



• Mounting bracket UZP821
For UZP2 type

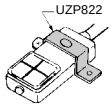


• Mounting bracket UZP812
For UZP1 type

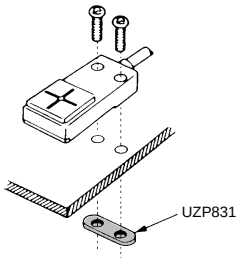


Mounting position can be adjusted. Stainless material prevents from rusting.

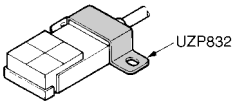
• Mounting bracket UZP822
For UZP2 type



• Mounting bracket UZP831
For UZP3 type

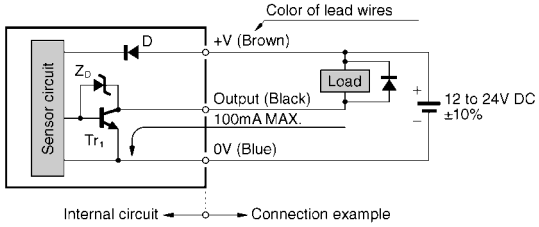


• Mounting bracket UZP832
For UZP3 type

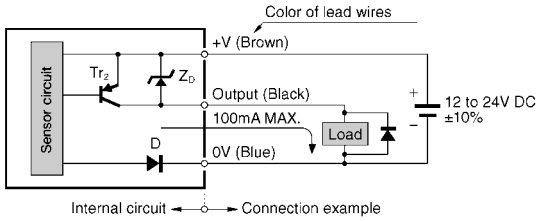


OUTPUT CIRCUIT DIAGRAM

• NPN output (open collector)



• PNP output (open collector)

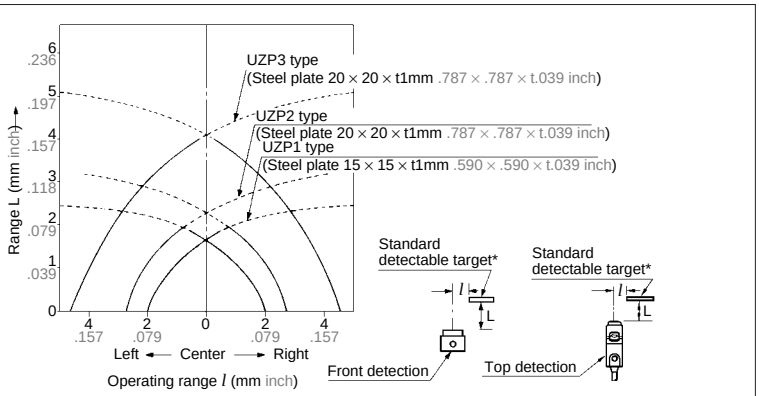


Signals		
	D	: Reverse polarity protection diode
	Z_D	: Surge absorption zener diode
	Tr_1	: NPN output transistor
	Tr_2	: PNP output transistor

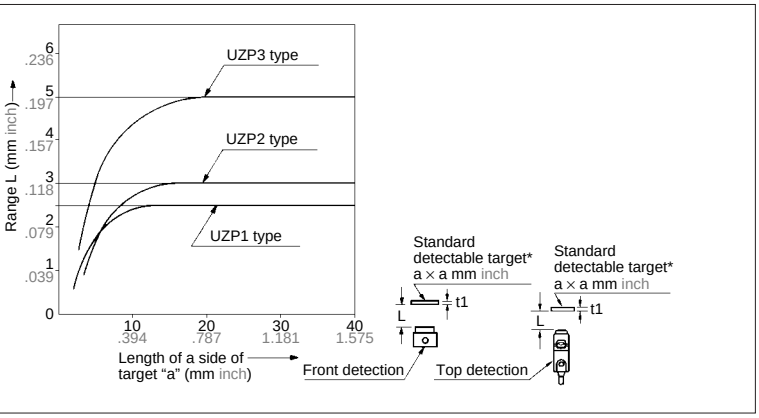
TYPICAL DETECTION CHARACTERISTICS

(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.

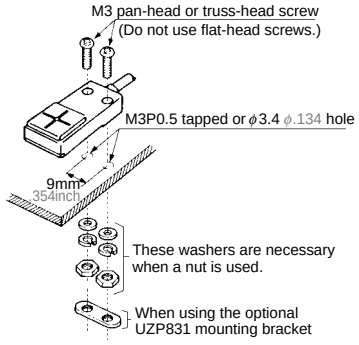
PRECAUTIONS FOR PROPER USE

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

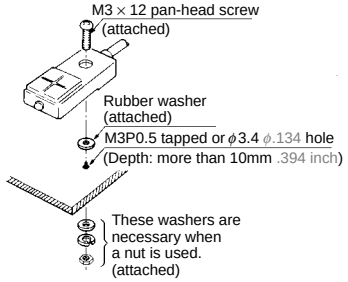
- The tightening torque must not exceed 1N·m {10.2kgf·cm}.
- When mounting the sensor with optional mounting bracket (UZP831) or with a nut, the mounting hole diameter should be ϕ3.4mm .134inch.
- Screws, nuts and washers are not provided.



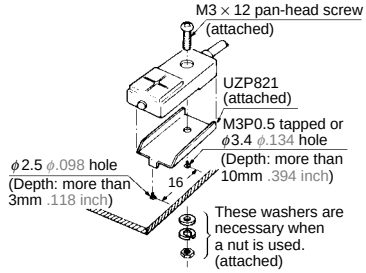
UZP2 type

- 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 ϕ3.4mm .134inch.

<One attachment point>

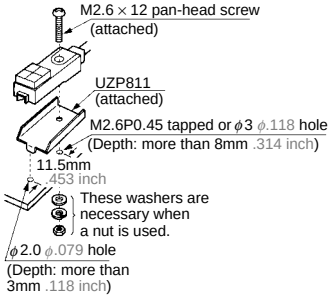


<Two attachment points>



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 ϕ3mm .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.

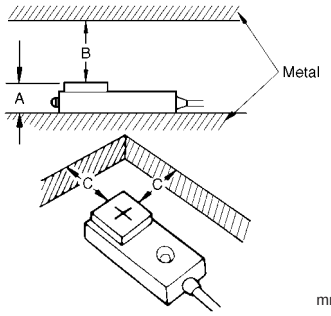


- If a switching regulator is used for the power source of the sensor, be sure to ground the frame ground (F.G.) terminal to an actual ground.
- Do not use the sensor's output signal for 10ms (NPN type), 50ms (PNP type) immediately after power is turned ON.
- Avoid wrong wiring as none of the models 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.

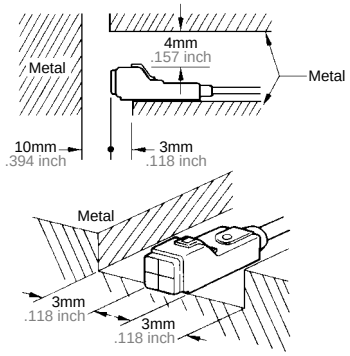
Front detection



mm inch

	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

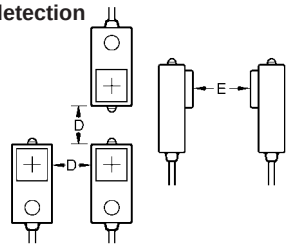
Top detection



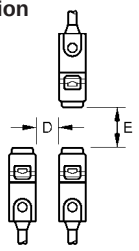
• MUTUAL INTERFERENCE

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 1.18	0 (*1)	20 .787	0 (*1)	12 .472
E	25 .983	60 2.36	15 .590	40 1.57	15 .591	30 1.181

*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

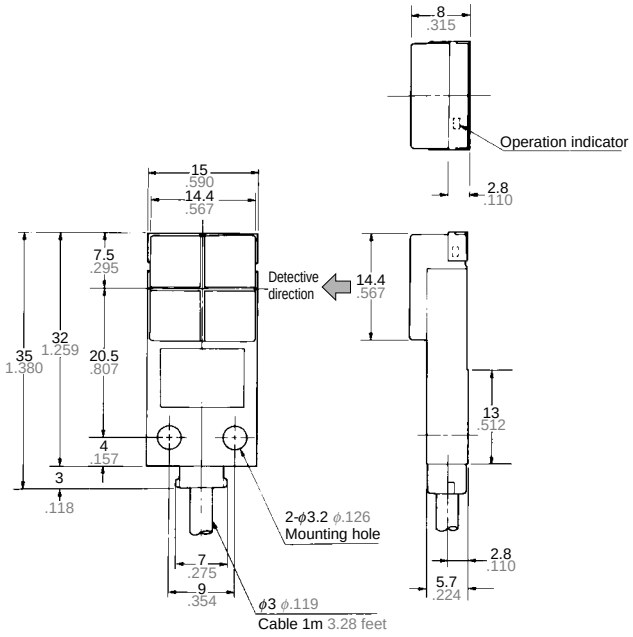
The range listed in the specifications is for the standard target. For nonferrous object detection, the range is obtained by multiplying the correction coefficient in the table below.

• Correction coefficient

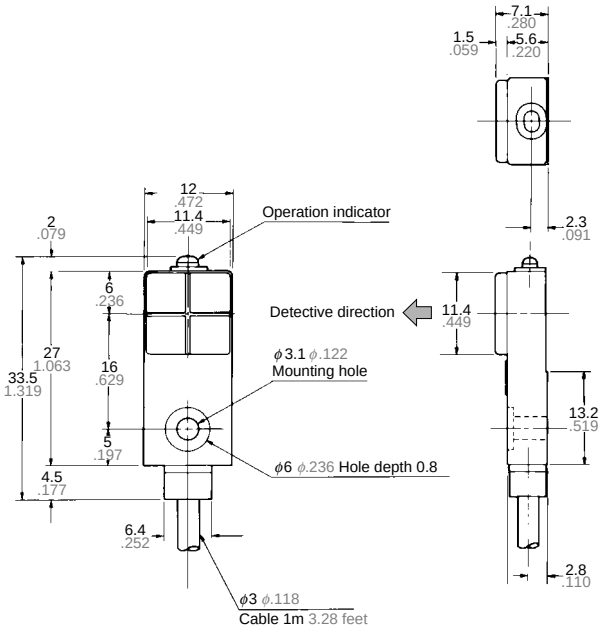
	UZP3 type	UZP2 type	UZP1 type
Steel	1.0	1.0	1.0
Stainless steel (SUS304)	Approx.0.68	Approx.0.7	Approx.0.76
Brass	Approx.0.47	Approx.0.4	Approx.0.5
Aluminium	Approx.0.45	Approx.0.35	Approx.0.48

DIMENSIONS (Unit: mm inch)

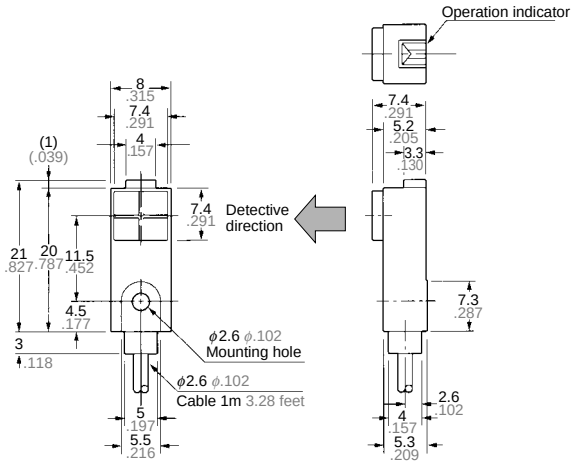
UZP3□□



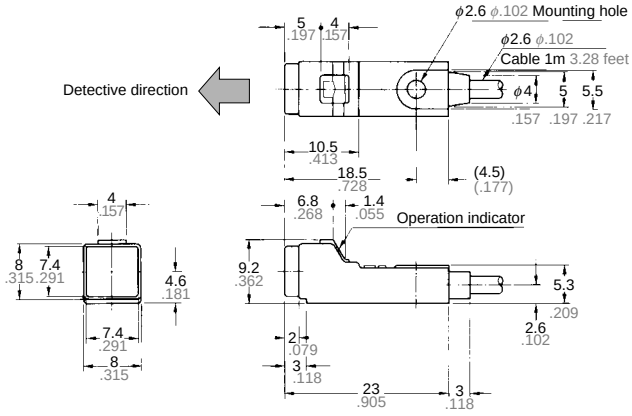
UZP2□□



UZP101, UZP111 UZP121, UZP131

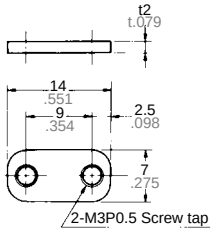


UZP141, UZP151 UZP161, UZP171



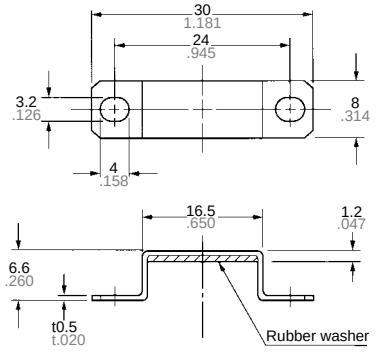
DIMENSIONS (Unit: mm inch)

UZP831 Sensor mounting bracket (option)



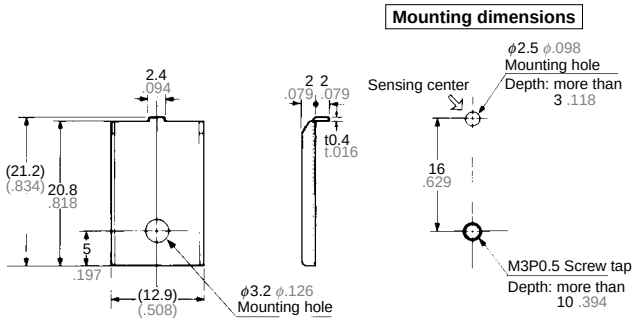
Material: SPC

UZP832 Sensor mounting bracket (option)

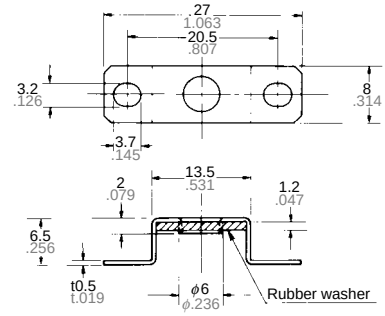


Material: Enclosure...Stainless steel (SUS304)
Rubber washer...FKM (Fluoric rubber)

UZP821 Sensor mounting bracket (accessory)

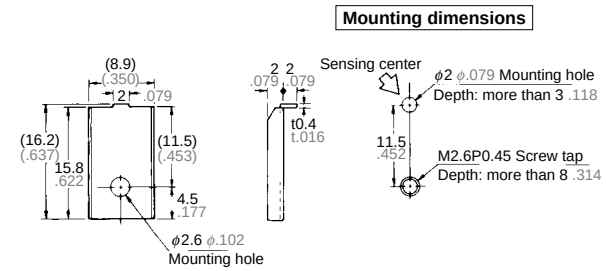


UZP822 Sensor mounting bracket (option)



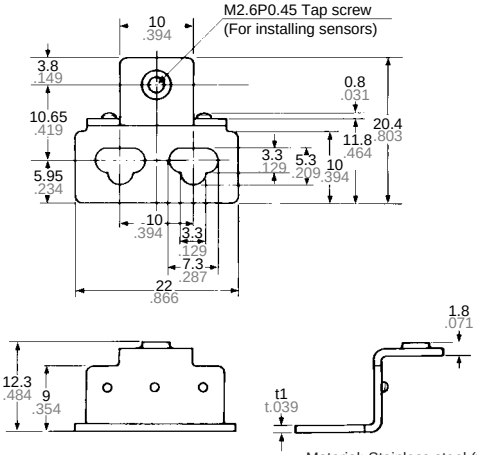
Material: Enclosure...Stainless steel (SUS304)
Rubber washer...FKM (Fluoric rubber)

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)