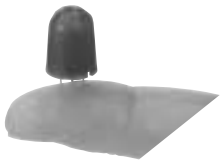
NAiS

MOTION SENSOR (PASSIVE INFRARED TYPE)

MP MOTION SENSOR 'NaPiOn'



Standard type

Slight motion detection type

Spot type

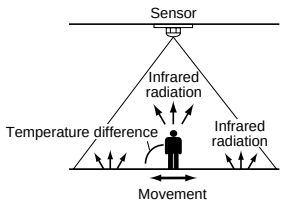
10 m detection type

What is passive infrared type?

This sensor detects changes in infrared radiation which occur when there is movement by a person (or object) which is different in temperature from the surroundings.

① As this sensor detects temperature differences, it is well suited to detecting the motion of people by their body temperature.

② Wide sensing area.



FEATURES

1. The world's smallest with a built-in amplifier

Extremely compact. Ideal for use in miniaturized devices.

2. Dual lens colors (white and black) are provided

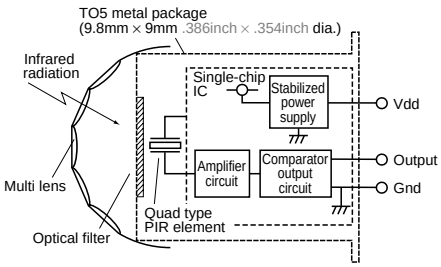
With an ultrasmall design and dual lens colors (white and black), it is inconspicuous, allowing the user to select either white or black to match the equipment color. This provides greater flexibility in equipment design.

3. Both digital output and analog output (with adjustable sensitivity) are available.

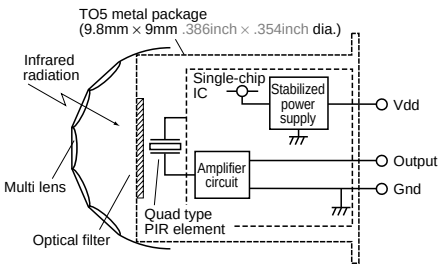
4. Built-in amplifier for easy use

Has a built-in amplifier, and can be connected directly to a microcomputer.

• Block diagram of the digital output circuit



• Block diagram of the analog output circuit



NaPiOn web page URL:
http://www.napion.com/

5. Detects even slight motion of a person

With our sensor, even slight motions made by people will be detected easily.

• Fine motion detection capability within approximately 2 meters of sensor.

Standard type:
Detects movement of approximately 30cm 11.811inch.

Slight motion detection type:
Detects movement of approximately 20cm 7.874inch.

6. Noise withstanding capability

Circuitry is contained in a TO5 metal package, providing at least twice the noise withstanding capability as conventional type.

• Comparison example of noise withstanding capability

	Distance at which motion sensor is not affected by cellular phone noise
Conventional type	Min. 1 to 2m 3.281 to 6.562ft
MP Motion Sensor	Min. 1 to 2cm .394 to .787inch

APPLICATIONS

1. Home appliances

Useful for saving energy in air conditioner, television, personal computer, or ventilator and air purifier

2. Amusement machine market

Useful for saving energy and for automated guidance in theme parks and large video games

3. Equipment in service market

Useful for automated guidance, automated announcements and energy saving in vending machines, ATMs, etc.

4. Lighting market

Automated on/off controls, etc. for lamps, desk lamps, indoor lights, halls, stairway lights, etc.

ORDERING INFORMATION

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Output
1: Digital output
2: Analog output

Detection performance
1: Standard detection type
2: Slight motion detection type
3: Spot detection type
4: 10m detection type

Feature
1: PC board mounting type

Operating voltage
1: 5V DC

Lens color
1: Black
2: White

PRODUCT TYPES

1. Digital output

Rated operating voltage	Detection performance	Ambient temperature	Lens color	Part No.	Packing quantity	
					Inner	Outer
3 to 6 V DC	Standard detection type	–20 to +60°C –4 to +140°F	Black	AMN11111	50 pcs.	1,000 pcs.
			White	AMN11112		
	Slight motion detection type		Black	AMN12111		
			White	AMN12112		
	Spot detection type		Black	AMN13111		
			White	AMN13112		
	10m detection type		Black	AMN14111		
			White	AMN14112		

2. Analog output

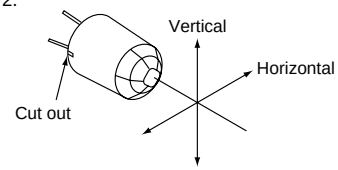
Rated operating voltage	Detection performance	Ambient temperature	Lens color	Part No.	Packing quantity	
					Inner	Outer
4.5 to 5.5 V DC	Standard detection type	–20 to +60°C –4 to +140°F	Black	AMN21111	50 pcs.	1,000 pcs.
			White	AMN21112		
	Slight motion detection type		Black	AMN22111		
			White	AMN22112		
	Spot detection type		Black	AMN23111		
			White	AMN23112		
	10m detection type		Black	AMN24111		
			White	AMN24112		

PERFORMANCE

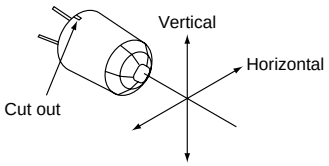
1. Detection performance

Items		Standard detection type	Slight motion detection type	Spot detection type	10m detection type	Conditions of objects to be detected
Rated detection distance*Remark 1		5m 16.404ft (Max.)	2m 6.562ft (Max.)	5m 16.404ft (Max.)	10m 32.808ft (Max.)	1. Detectable difference in temperature between the target and background for the spot type is more than 4°C 39.2°F. 2. Movement speed • Standard detection type/Spot detection type/ 10m detection type: 1.0 m/s • Slight motion detection type: 0.5 m/s 3. Detection object = human body (size is 700mm × 250mm 27.559inch × 9.843inch, but for the slight motion detection type the size is 200mm × 200mm 7.874inch × 7.874inch)
Detection range	Horizontal*Remark 2	100°	91°	38°	110°	
	Vertical*Remark 2	82°	91°	22°	93°	
	Detection zone*Remark 3	64 zones	104 zones	24 zones	80 zones	

2.



(Standard detection/ Slight motion detection type)



(Spot detection type/ 10 m detection type)

*Remarks1. Depending on the difference in temperature between the background and detection target and the speed at which the target moves, these sensors may be capable of detection beyond the detection distances stated above. Nevertheless, they should be used within the prescribed detection distances. For further details, refer to the detection range diagram on page 7.

3. Regarding of detection zone, please refer to “DETECTION PERFORMANCE” on page 7.

2. Rating (Measuring condition: ambient temp. = 25°C 77°F) (Common to All types)

Items	Specified value	Remarks
Power supply voltage	–0.3 to 7 V DC	
Usable ambient temperature	–20 to 60°C –4 to +140°F	No freezing and condensing at low temperature.
Storage temperature	–20 to 70°C –4 to +158°F	

3. Electrical characteristics (Measuring condition: ambient temp. = 25°C 77°F; operating voltage = 5V) (Common to All types)

1) Digital output

Items			Symbol	Specified value	Measured conditions
Reted operating voltage		Minimum Typical Maximum	Vdd	3.0 V DC — 6.0 V DC	
Reted consumption current (Standby) *Remark		Typical Maximum	Iw	170 µA 300 µA	Iout = 0
Output (when detecting)	Current	Maximum	Iout	100 µA	Vout 7 Vdd–0.5
	Voltage	Minimum Maximum	Vout	Vdd –5 Vdd (Same as operating voltage)	Open when not detecting
Circuit stability time		Typical Maximum	Twu	7 s 30 s	

Remark: The current which is consumed during detection consists of the standby consumed current plus the output current.