Panasonic

(((PaPIRs))) (((PaPIRs+)))

PIR MOTION SENSORS 2025

Special designs from Panasonic that provide high sensitivity and reliability

Pyroelectric infrared motion sensors from Panasonic for optimal usability and reliability

Panasonic develops and produces PIR motion sensors, which combine easy integration, high reliability and environment-friendly materials. The Panasonic PIR motion sensors abbreviated as PaPIRs, have different series of products, including:

EKM

EKMB (WL) digital output for battery-operated devices (1, 2, 6µA)
EKMC (VZ) digital and analog output for battery-free devices (170µA)
Available lens colors: white, black and pearl white

AMN

AMN3 digital output for battery-free devices (170µA)
Available lens colors: white and black

CONTENT

Ordering information

EKM

EKM ① ② ③ ④ ④ **1 1** ⑤ ⑥

← Sensor → ← Lens → Suffix

● **Sensor type**

① ② ③

B11, B12, B13, B43 : WL Series
C16, C26, C46 : VZ Series

● **Lens type**

④ ④

01 : Standard
03 : Long Distance
04 : Wall Installation
05 : Horizontally Wide
06 : High Density Long Distance
07 : Low Profile
08 : Wide Detection
09 : Ultra Slight Motion
10 : Flat Square
11 : Ultra Wide & Long Distance
91 : Slight Motion
93 : Standard & Slight Motion

● **Lens color**

⑤

1 : White
2 : Black
3 : Pearl white

● **Suffix**

⑥

K : The following products have “K” at the end
EKMB13, EKMB43, EKMC26, EKMC46

● **Lensless**

EKMB1100100, EKMB1200100, EKMB1300100K, EKMB4300100K
EKMC1600100, EKMC2600100K, EKMC4600100K

AMN

AMN3 ① **11** ②

← Sensor → ← Lens →

● **Lens type**

①

1 : Standard
2 : Slight Motion
3 : Spot
4 : 10m

● **Lens color**

②

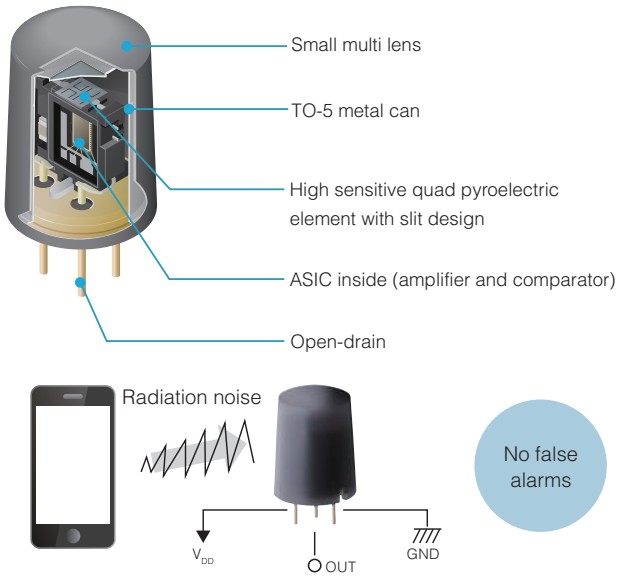
1 : Black
2 : White

Design features

The PIR motion sensors from Panasonic offer crucial advantages over conventional PIR motion sensors. The unique design concept (explained below) ranges from the production of the pyroelectric sensing devices to the internal signal processing, thus guaranteeing an optimal detection capability and high reliability.

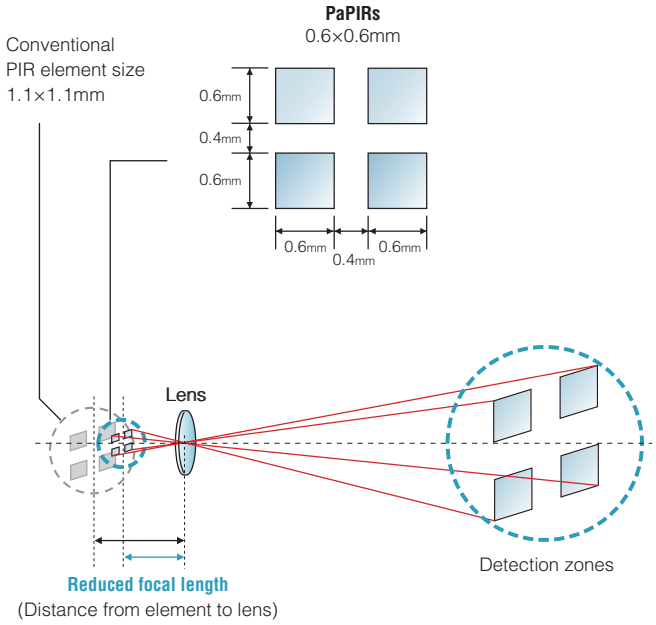
Easy design-in

The integrated amplifier/comparator circuit inside a TO-5 metal can (digital type) prevents interferences caused by electromagnetic fields, such as those generated by cell phones and wireless devices. A special differential circuit design is introduced for the **EKMB 6µA** type for applications where a high noise resistance is required (up to GHz range).



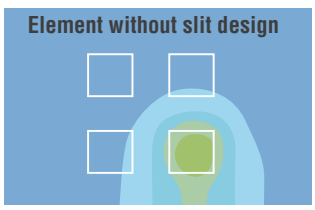
Small and optimal lens design

Thanks to the special design of the small pyroelectric elements, it is possible to use a smaller lens size while keeping the same detection area and distance compared to conventional sensors.

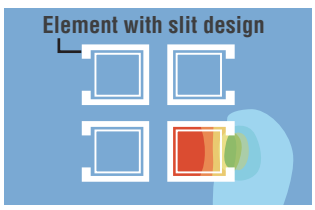


Best in class sensitivity

The sensitivity has been significantly improved thanks to a unique slit design of the pyroelectric elements. The separated sensing areas prevent thermal crosstalk between the single sensing elements. Therefore, reliable detection is possible even if the temperature difference between the background (e.g. floor/wall) and the target object (human) is small. (e.g. ΔT = 4°C)



Temperature distribution of conventional pyroelectric sensors without slit design

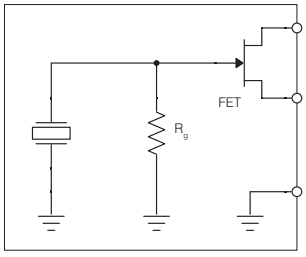


Temperature distribution of Panasonic's pyroelectric infrared sensors with slit design

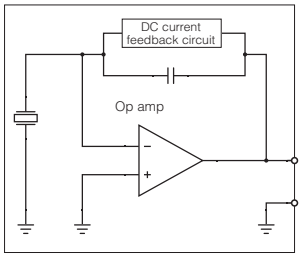
Best in class signal-to-noise ratio

Improved signal-to-noise ratio thanks to a special I/V circuit which is used for converting a current signal from the pyroelectric element to voltage. Panasonic PIR motion sensors perform by the feedback capacitor and the operational amplifier, different from the conventional FET-type, thereby decreasing the probability of false alarms due to temperature fluctuation.

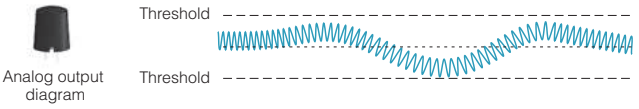
Conventional PIR (JFET)



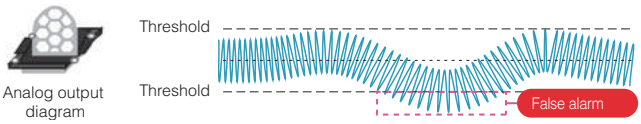
PaPIRs (op amp)



PaPIRs: High signal-to-noise ratio



Conventional types: Low signal-to-noise ratio



Lead-free pyroelectric element

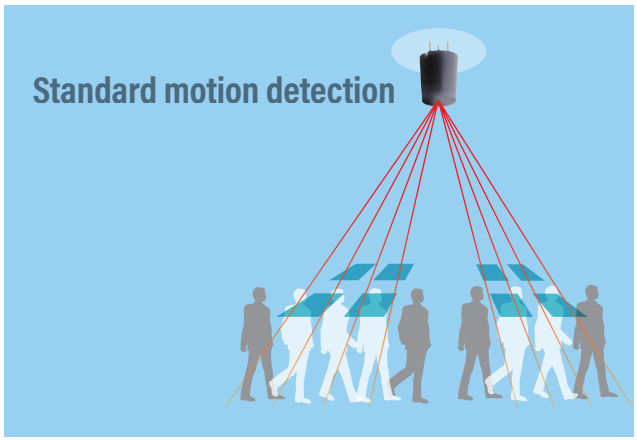
A ferroelectric Lithiumtantalate ($LiTaO_3$) single lead-free crystal is used as the pyroelectric element for Panasonic PIR motion sensors. Conventional PIR motion sensors normally use a ceramic base material (e.g. PZT) for the pyroelectric element, which contains lead in many cases.

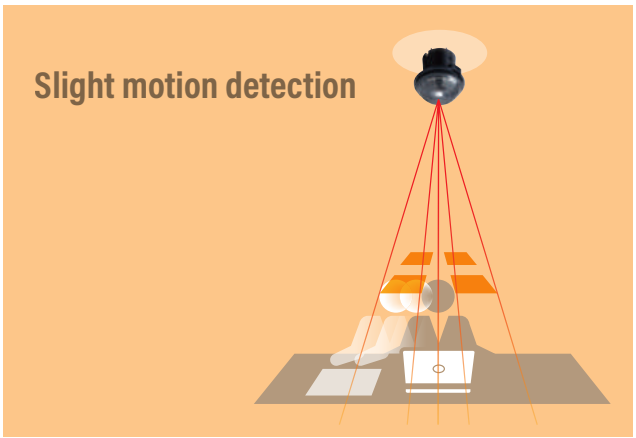
Low current consumption EKMB (WL)

Reduction of current consumption (1, 2 or 6µA) thanks to the special circuit design technology allows battery life to be extended for battery-driven products.

Detection principle

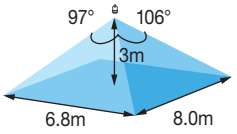
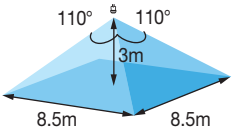
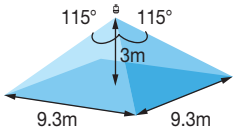
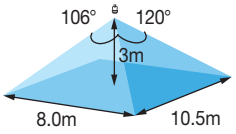
Difference of Standard & Slight motion by lens design



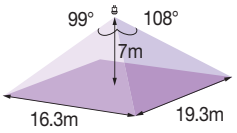
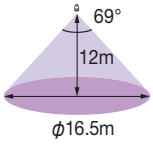
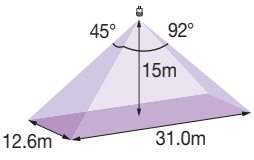
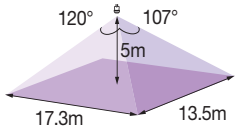


(Specified detection conditions)

Standard Detection Types

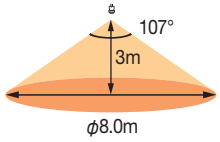
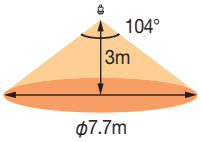
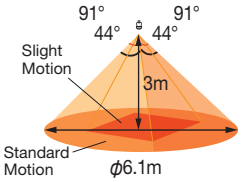
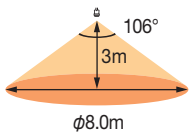
	Standard	Low Profile	Flat Square	AMN series Standard
				
	*Pearl white	*Black	*White	*Black
Lens color	White / Black / Pearl white	White / Black / Pearl white	White / Black / Pearl white	White / Black
Detection area coverage				
Reference page	P. 10	P. 11	P. 12	P. 13
Typical application	 Base lighting  Digital signage  IP cameras	 Lighting controls  Digital signage  IP cameras	 Air purifier  IoT module  Thermostats	 Base lighting  Ceiling air conditioners  Heaters

Long Distance Detection Types

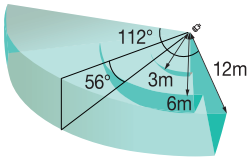
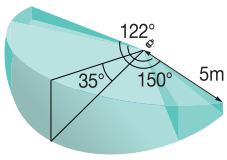
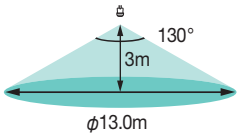
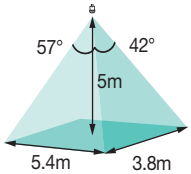
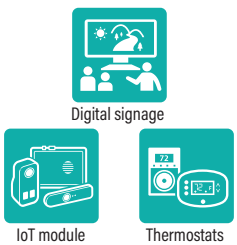
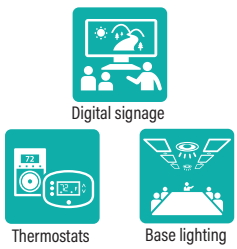
	Long Distance	High Density Long Distance	Ultra Wide & Long Distance	AMN series 10m Detection
				
	*Pearl white	*Black	*White	*White
Lens color	White / Black / Pearl white	White / Black / Pearl white	White / Black / Pearl white	White / Black
Detection area coverage				
Reference page	P. 14	P. 15	P. 16	P. 17
Typical application	 Street lighting  High-bay lighting  Ceiling air conditioners	 High-bay lighting  Wall air conditioners  IP cameras	 Street lighting  High-bay lighting  IP cameras	 Wall air conditioners  Air purifier  Heaters

at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

Slight Motion Detection Types

	Ultra Slight	Slight Motion	Standard & Slight	AMN series Slight Motion
				
	*White	*Black	*White	*Black
Lens color	White / Black / Pearl white	White / Black / Pearl white	White / Black / Pearl white	White / Black
Detection area coverage				
Reference page	P. 18	P. 19	P. 20	P. 21
Typical application				

Specific Area Detection Types

	Wall Installation	Horizontally Wide Detection	Wide Detection	AMN series Spot Detection
				
	*Pearl white	*Black	*White	*Black
Lens color	White / Black / Pearl white	White / Black / Pearl white	White / Black / Pearl white	White / Black
Detection area coverage				
Reference page	P. 22	P. 23	P. 24	P. 25
Typical application				

Lens categories		Lens color			Sensor			Part number		
		White	Black	Pearl white	Output	Sensitivity	Current consumption	White	Black	Pearl white
Standard Detection Types	Standard				Digital	Standard	1μA	EKMB1101111	EKMB1101112	EKMB1101113
							2μA	EKMB1201111	EKMB1201112	EKMB1201113
							6μA	EKMB1301111K	EKMB1301112K	EKMB1301113K
							170μA	EKMC1601111	EKMC1601112	EKMC1601113
					Analog	Adjustable	170μA	EKMC2601111K	EKMC2601112K	EKMC2601113K
	Low Profile				Digital	Standard	1μA	EKMB1107111	EKMB1107112	EKMB1107113
							2μA	EKMB1207111	EKMB1207112	EKMB1207113
							6μA	EKMB1307111K	EKMB1307112K	EKMB1307113K
							170μA	EKMC1607111	EKMC1607112	EKMC1607113
					Analog	Adjustable	170μA	EKMC2607111K	EKMC2607112K	EKMC2607113K
	Flat Square				Digital	Standard	1μA	EKMB1110111	EKMB1110112	EKMB1110113
							2μA	EKMB1210111	EKMB1210112	EKMB1210113
							6μA	EKMB1310111K	EKMB1310112K	EKMB1310113K
							170μA	EKMC1610111	EKMC1610112	EKMC1610113
					Analog	Adjustable	170μA	EKMC2610111K	EKMC2610112K	EKMC2610113K
	AMN series Standard				Digital	Standard	170μA	AMN31112	AMN31111	–
Long Distance Detection Types	Long Distance				Digital	Standard	1μA	EKMB1103111	EKMB1103112	EKMB1103113
							2μA	EKMB1203111	EKMB1203112	EKMB1203113
							6μA	EKMB1303111K	EKMB1303112K	EKMB1303113K
							170μA	EKMC1603111	EKMC1603112	EKMC1603113
					Analog	Adjustable	170μA	EKMC2603111K	EKMC2603112K	EKMC2603113K
	High Density Long Distance				Digital	Standard	1μA	EKMB1106111	EKMB1106112	EKMB1106113
							2μA	EKMB1206111	EKMB1206112	EKMB1206113
							6μA	EKMB1306111K	EKMB1306112K	EKMB1306113K
							170μA	EKMC1606111	EKMC1606112	EKMC1606113
					Analog	Adjustable	170μA	EKMC2606111K	EKMC2606112K	EKMC2606113K
	Ultra Wide & Long Distance				Digital	Standard	1μA	EKMB1111111	EKMB1111112	EKMB1111113
							2μA	EKMB1211111	EKMB1211112	EKMB1211113
							6μA	EKMB1311111K	EKMB1311112K	EKMB1311113K
							170μA	EKMC1611111	EKMC1611112	EKMC1611113
					Analog	—	170μA	EKMC2611111K	EKMC2611112K	EKMC2611113K
	AMN series 10m Detection				Digital	Standard	170μA	AMN34112	AMN34111	–
Slight Motion Detection Types	Ultra Slight				Digital	Standard	1μA	EKMB1109111	EKMB1109112	EKMB1109113
							2μA	EKMB1209111	EKMB1209112	EKMB1209113
							6μA	EKMB1309111K	EKMB1309112K	EKMB1303913K
							170μA	EKMC1609111	EKMC1609112	EKMC1609113
					Analog	Adjustable	170μA	EKMC2609111K	EKMC2609112K	EKMC2609113K
	Slight Motion				Digital	Standard	1μA	EKMB1191111	EKMB1191112	EKMB1191113
							2μA	EKMB1291111	EKMB1291112	EKMB1291113
							6μA	EKMB1391111K	EKMB1391112K	EKMB1391113K
							170μA	EKMC1691111	EKMC1691112	EKMC1691113
					Analog	Adjustable	170μA	EKMC2691111K	EKMC2691112K	EKMC2691113K
	Standard and Slight				Digital	Standard	1μA	EKMB1193111	EKMB1193112	EKMB1193113
							2μA	EKMB1293111	EKMB1293112	EKMB1293113
							6μA	EKMB1393111K	EKMB1393112K	EKMB1393113K
							170μA	EKMC1693111	EKMC1693112	EKMC1693113
					Analog	Adjustable	170μA	EKMC2693111K	EKMC2693112K	EKMC2693113K
	AMN series Slight Motion				Digital	Standard	170μA	AMN32112	AMN32111	–
Specific Area Detection Types	Wall Installation				Digital	Standard	1μA	EKMB1104111	EKMB1104112	EKMB1104113
							2μA	EKMB1204111	EKMB1204112	EKMB1204113
							6μA	EKMB1304111K	EKMB1304112K	EKMB1304113K
							170μA	EKMC1604111	EKMC1604112	EKMC1604113
					Analog	Adjustable	170μA	EKMC2604111K	EKMC2604112K	EKMC2604113K
	Horizontally Wide Detection				Digital	Standard	1μA	EKMB1105111	EKMB1105112	EKMB1105113
							2μA	EKMB1205111	EKMB1205112	EKMB1205113
							6μA	EKMB1305111K	EKMB1305112K	EKMB1305113K
							170μA	EKMC1605111	EKMC1605112	EKMC1605113
					Analog	Adjustable	170μA	EKMC2605111K	EKMC2605112K	EKMC2605113K
	Wide Detection				Digital	Standard	1μA	EKMB1108111	EKMB1108112	EKMB1108113
							2μA	EKMB1208111	EKMB1208112	EKMB1208113
							6μA	EKMB1308111K	EKMB1308112K	EKMB1308113K
							170μA	EKMC1608111	EKMC1608112	EKMC1608113
					Analog	Adjustable	170μA	EKMC2608111K	EKMC2608112K	EKMC2608113K
	AMN series Spot Detection				Digital	Standard	170μA	AMN33112	AMN33111	–

*Please contact us if a higher or a lower sensitivity is required.
*All lens can be adopted with any applications.

at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

Reference information

FOV (H×V)	Detection zones	Detection distance	Recommended applications	
106°×97°	64	5.0m	Lighting controls, Lighting controls, Base lighting, Digital signage, IoT module, IP cameras	P.10
110°×110°	32	5.0m	Lighting controls, Digital signage, IoT module, AI speaker, Thermostats, IP cameras	P.11
115°×115°	40	5.0m	Air purifier, Digital signage, IoT module, AI speaker, Thermostats, Elderly care robot	P.12
120°×106°	104	5.0m	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Ceiling air conditioners, Heaters	P.13
108°×99°	92	12.0m	Lighting controls, Base lighting, Street lighting, High-bay lighting, Wall air conditioners, Ceiling air conditioners	P.14
69°×69°	128	12.0 / 14.5m	Lighting controls, Base lighting, Street lighting, High-bay lighting, Wall air conditioners, IP cameras	P.15
92°×45°	188	10.0 / 15.0m	Street lighting, High-bay lighting, IP cameras, Lighting controls, Hot desking, Base lighting	P.16
120°×107°	80	5.0 – 10.0m	Lighting controls, Lighting for walk-in closet, Air purifier, Wall air conditioners, Ceiling air conditioners, Heaters	P.17
107°×107°	192	2.5 – 4.1m 5.2 – 8.0m (for Standard motion)	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Hot desking, IP cameras	P.18
104°×104°	112	2.5 – 4.0m	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Hot desking, IP cameras	P.19
44°×44° 91°×91°	36 48	2.2 – 3.1m	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Hot desking, Ceiling air conditioners	P.20
107°×106°	104	2.0 – 3.3m	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Ceiling air conditioners, Heaters	P.21
56°×112°	68	12.0m/6.0m/3.0m	Lighting for walk-in closet, Digital signage, IoT module, Hot desking, Thermostats, Wall air conditioners	P.22
122°×35° 150°×36°	88 16	5.0m	Lighting controls, Digital signage, IoT module, Hot desking, Thermostats, Base lighting	P.23
130°×130°	208	2.5 – 5.9m	Lighting controls, Base lighting, Hot desking, Wall air conditioners, Ceiling air conditioners, IP cameras	P.24
57°×42°	24	5.0 – 5.6m	Lighting controls, Lighting controls, Lighting for walk-in closet, Digital signage, Hot desking, Sterilization stand	P.25

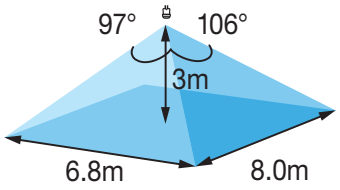
EKM - Standard Detection Type

Preference type

Flat lens for an unobtrusive integration

Lens diameter 9.5mm

Detection area coverage

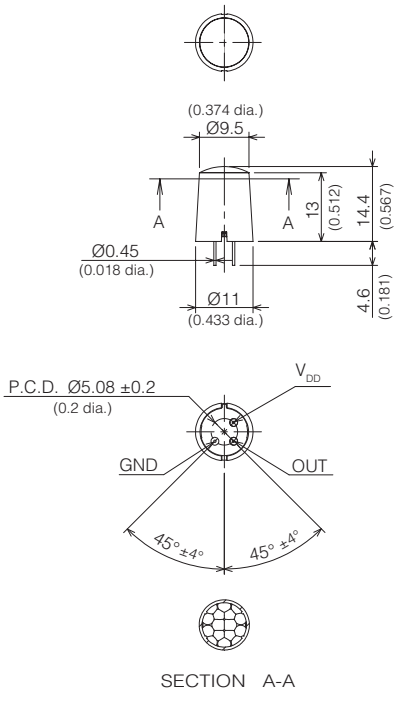


Specified detection distance (Note 1)	up to 5m
Typical ceiling installation height (Note 2)	3.0m
Field of view	106° x 97°
Detection zones	64
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

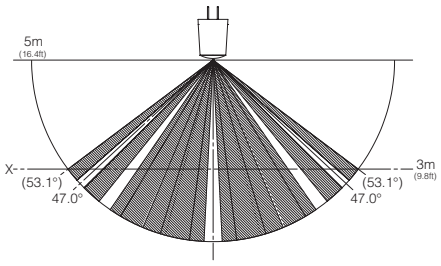
Further information on electrical characteristics please see page 42

Typical applications

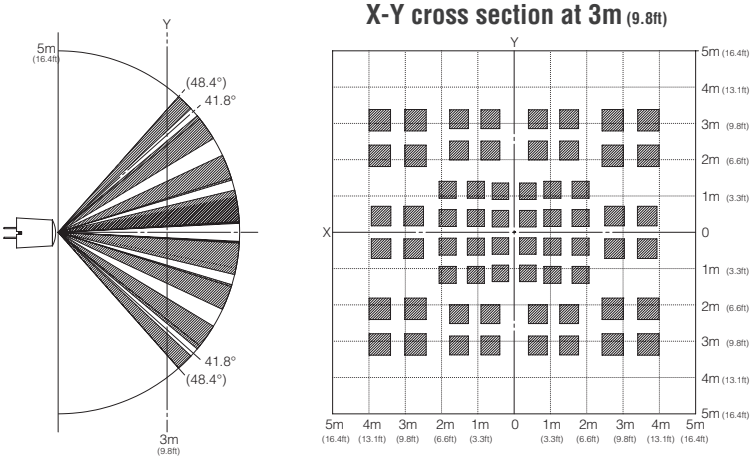
Dimension (in mm, inches in brackets)



Detection area (reference)



X-Y cross section at 3m (9.8ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1101111	EKMB1101112	EKMB1101113
	2μA	Digital	Standard	EKMB1201111	EKMB1201112	EKMB1201113
Economy	6μA	Digital	Standard	EKMB1301111K	EKMB1301112K	EKMB1301113K
	170μA	Digital	Standard	EKMC1601111	EKMC1601112	EKMC1601113
	170μA	Analog	Adjustable	EKMC2601111K	EKMC2601112K	EKMC2601113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

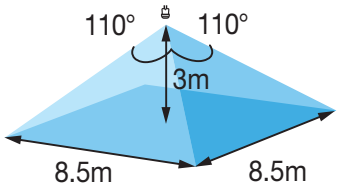
EKM - Low Profile Type

Lower height lens design [14.4mm→10.9mm]

Comparable performance to PaPIRs standard detection type lens

Fit with superior product design

Detection area coverage

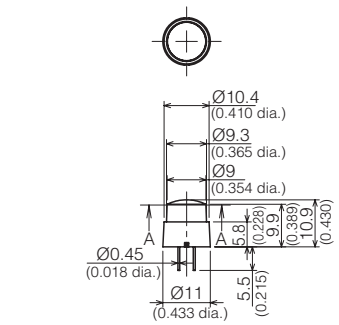


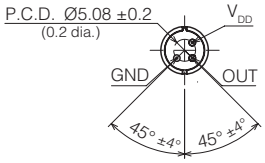
Specified detection distance (Note 1)	up to 5m
Typical ceiling installation height (Note 2)	3.0m
Field of view	110° x 110°
Detection zones	32
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

Typical applications

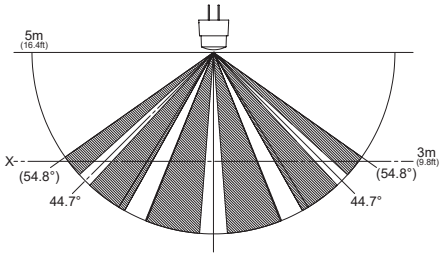
Dimension (in mm, inches in brackets)

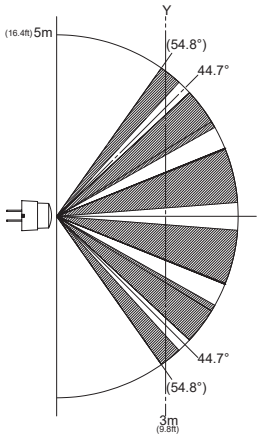




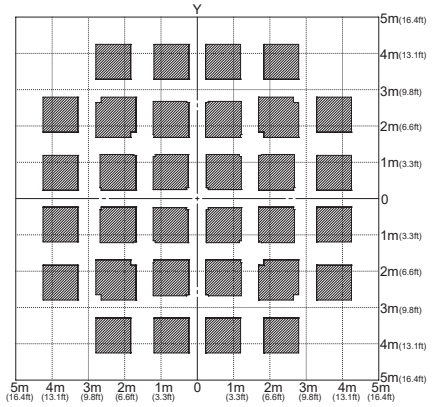
SECTION A-A

Detection area (reference)





X-Y cross section at 3m (9.8ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1107111	EKMB1107112	EKMB1107113
	2μA	Digital	Standard	EKMB1207111	EKMB1207112	EKMB1207113
Economy	6μA	Digital	Standard	EKMB1307111K	EKMB1307112K	EKMB1307113K
	170μA	Digital	Standard	EKMC1607111	EKMC1607112	EKMC1607113
	170μA	Analog	Adjustable	EKMC2607111K	EKMC2607112K	EKMC2607113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

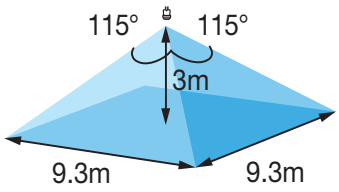
EKM – Flat Square Type

Detection area: 9m x 9m (@3m installation height)

Flat & square lens design: 10.6 x 10.6mm

Low profile: 10.9mm

Detection area coverage

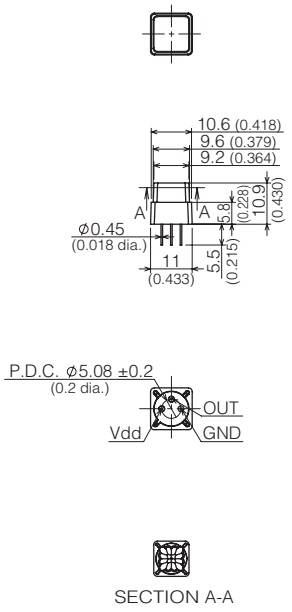


Specified detection distance (Note 1)	Up to 5.0m
Typical ceiling installation height (Note 2)	3.0m
Field of view	115° x 115°
Detection zones	40
Note 1: › ΔT ≥ 4°C › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

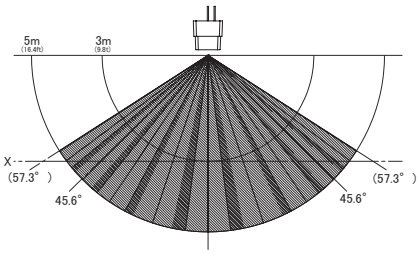
Typical applications

Further information on electrical characteristics please see page 42

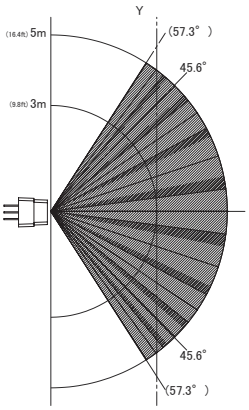
Dimension (in mm, inches in brackets)

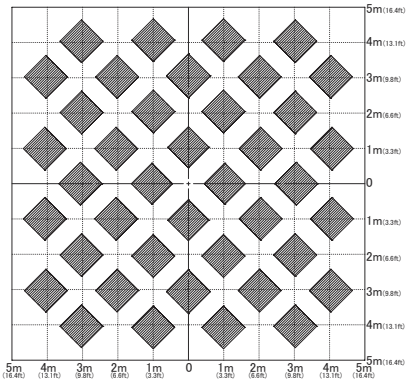


Detection area (reference)



X-Y cross section at 3m (9.8ft)





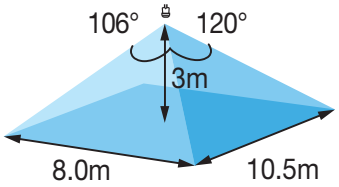
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1110111	EKMB1110112	EKMB1110113
	2μA	Digital	Standard	EKMB1210111	EKMB1210112	EKMB1210113
Economy	6μA	Digital	Standard	EKMB1310111K	EKMB1310112K	EKMB1310113K
	170μA	Digital	Standard	EKMC1610111	EKMC1610112	EKMC1610113
	170μA	Analog	Adjustable	EKMC2610111K	EKMC2610112K	EKMC2610113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

AMN - Standard Detection Type

Small lens diameter of only 9.5mm

Detection area coverage

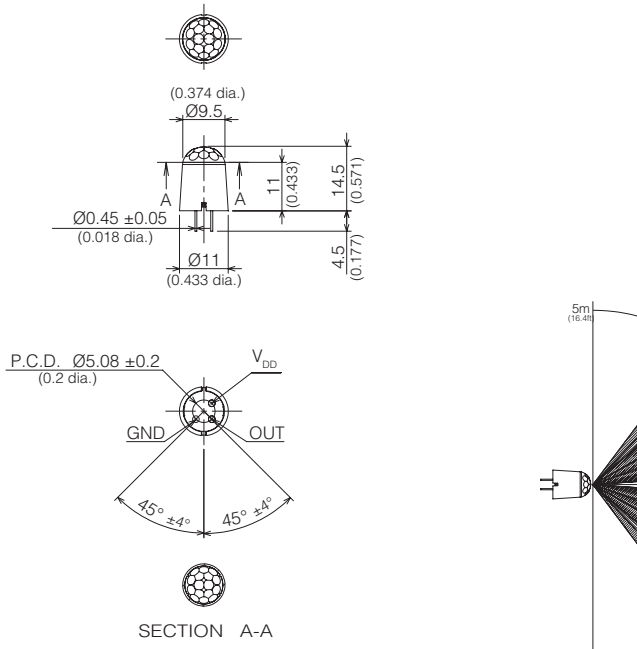


Specified detection distance (Note 1)	up to 5m
Typical ceiling installation height (Note 2)	3.0m
Field of view	120° x 106°
Detection zones	64
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

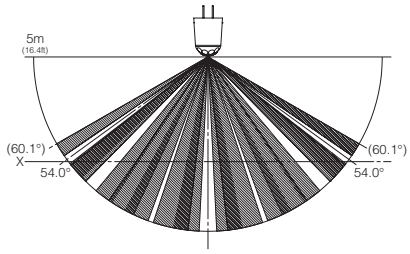
Typical applications

Further information on electrical characteristics please see page 44

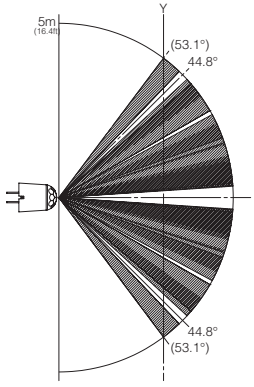
Dimension (in mm, inches in brackets)

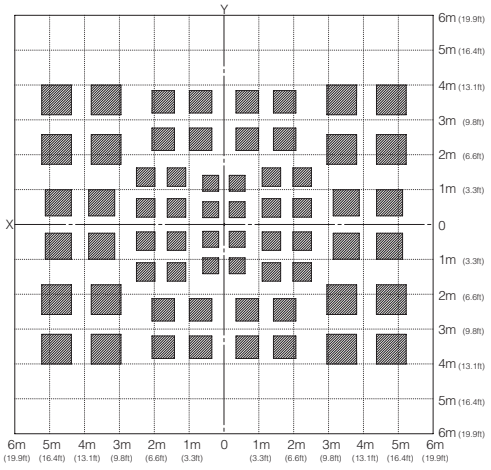


Detection area (reference)



X-Y cross section at 3m (9.8ft)





Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black
NaPiOn	170μA	Digital	Standard	AMN31112	AMN31111

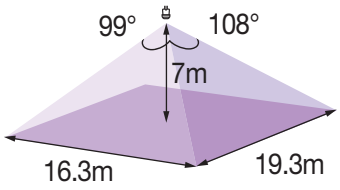
Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain

EKM - Long Distance Detection Type

Lens diameter 20.7mm

Wide detection angle and long distance

Detection area coverage



Specified detection distance (Note 1)	up to 12m
Typical ceiling installation height (Note 2)	7.0m
Field of view	108° x 99°
Detection zones	92

Note 1:
- ΔT ≥ 4°C
- Object speed: 1m/s
- Object size: 700 x 250mm
- Crossing 2 detection zones

Note 2:
The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Typical applications

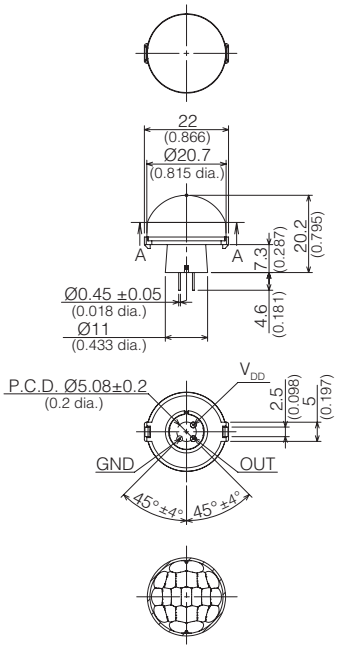
Street lighting

High-bay lighting

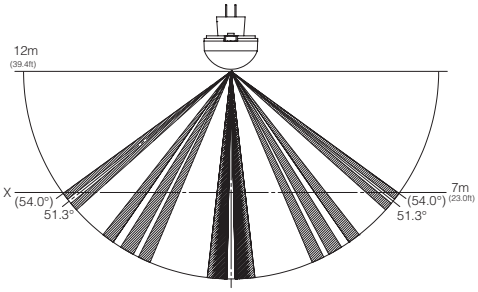
Ceiling air conditioners

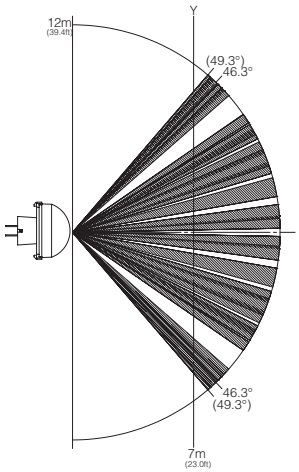
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)

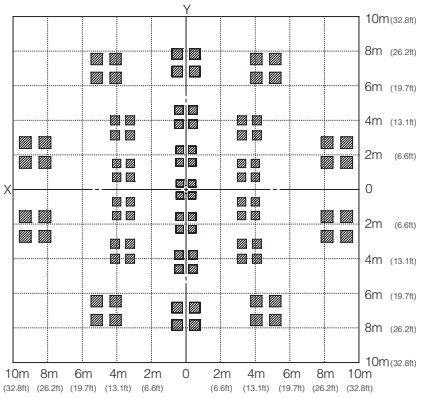


Detection area (reference)





X-Y cross section at 7m (22.9ft)



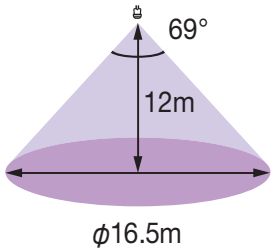
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1103111	EKMB1103112	EKMB1103113
	2μA	Digital	Standard	EKMB1203111	EKMB1203112	EKMB1203113
Economy	6μA	Digital	Standard	EKMB1303111K	EKMB1303112K	EKMB1303113K
	170μA	Digital	Standard	EKMC1603111	EKMC1603112	EKMC1603113
	170μA	Analog	Adjustable	EKMC2603111K	EKMC2603112K	EKMC2603113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - High Density Long Distance Detection Type

Smallest long range sensor
Lens diameter 19.3mm
Additional lip (20.45mm) ready for an o-ring

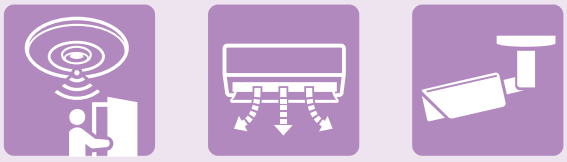
Detection area coverage



Specified detection distance (Note 1)	12m / 14.5m
Typical ceiling installation height (Note 2)	12.0m
Field of view	69° x 69°
Detection zones	128
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

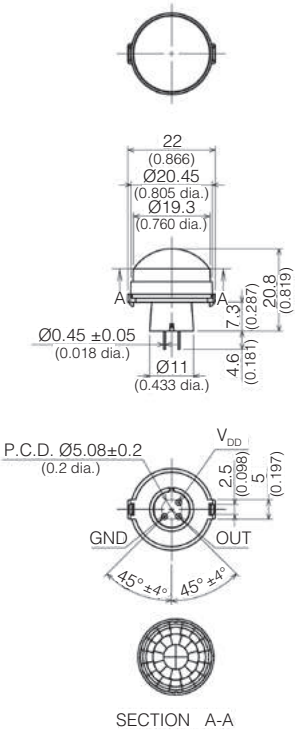
Further information on electrical characteristics please see page 42

Typical applications



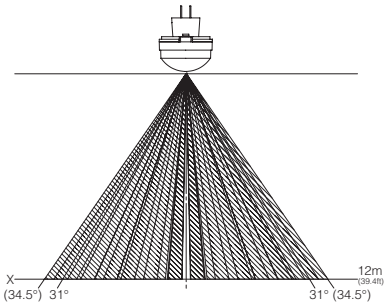
Lighting controls | Wall air conditioners | IP cameras

Dimension (in mm, inches in brackets)

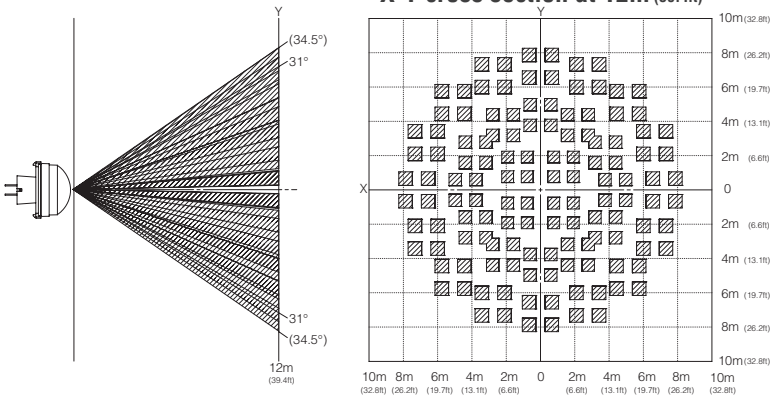


SECTION A-A

Detection area (reference)



X-Y cross section at 12m (39.4ft)



Please contact us if you install at celling height 17m

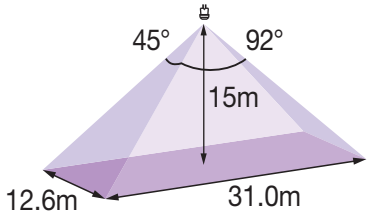
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1106111	EKMB1106112	EKMB1106113
	2μA	Digital	Standard	EKMB1206111	EKMB1206112	EKMB1206113
Economy	6μA	Digital	Standard	EKMB1306111K	EKMB1306112K	EKMB1306113K
	170μA	Digital	Standard	EKMC1606111	EKMC1606112	EKMC1606113
	170μA	Analog	Adjustable	EKMC2606111K	EKMC2606112K	EKMC2606113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Ultra Wide & Long Distance Detection Type

- Smallest aisle high bay sensor (lens Ø32.6mm)
- High sensitivity on the aisle entry and exit area
- Optimized for radial movement

Detection area coverage



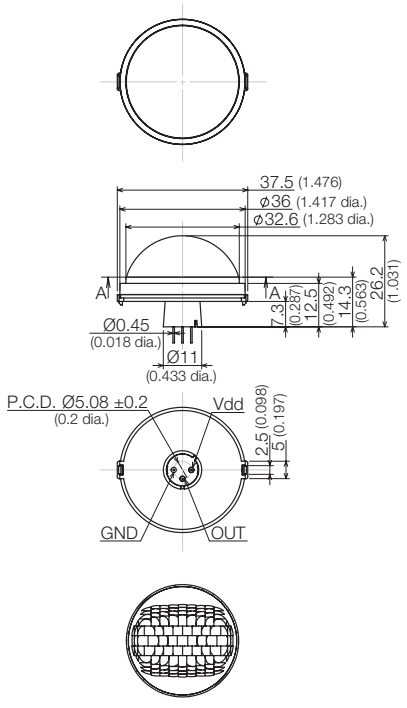
Specified detection distance (Note 1)	10m / 15m
Typical ceiling installation height (Note 2)	15.0m (High sensitivity sensor) *10.0m (Standard sensitivity sensor)
Field of view	92° x 45°
Detection zones	188
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

Typical applications

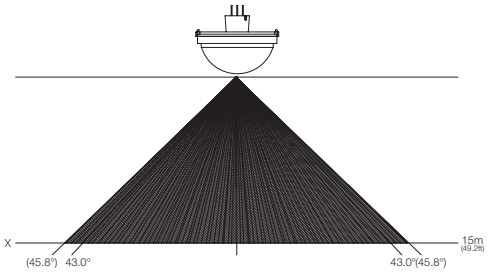
Street lighting | High-bay lighting | IP cameras

Dimension (in mm, inches in brackets)

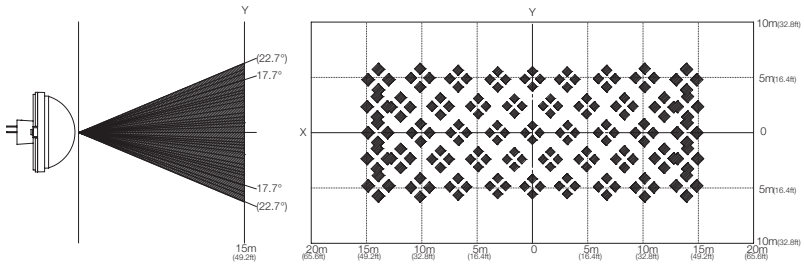


SECTION A-A

Detection area (reference)



X-Y cross section at 15m (49.2ft)



Please contact us if you install at celling height 10m

Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1µA	Digital	Standard	EKMB1111111	EKMB1111112	EKMB1111113
	2µA	Digital	Standard	EKMB1211111	EKMB1211112	EKMB1211113
Economy	6µA	Digital	Standard	EKMB1311111K	EKMB1311112K	EKMB1311113K
	170µA	Digital	Standard	EKMC1611111	EKMC1611112	EKMC1611113
	170µA	Analog	Adjustable	EKMC2611111K	EKMC2611112K	EKMC2611113K
Special	6µA	Digital	High*	Please contact us if a higher or a lower sensitivity is required.		
	170µA	Digital	High*			
	170µA	Digital	Low			

Notes: High threshold sensitivity types have a lower threshold-to-noise ratio. Please contact us for further details
Digital Output type: Open-drain
Analog Output type: Op-amp

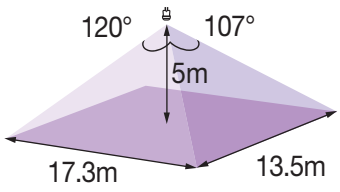
at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

AMN - 10m Detection Type (Long Distance)

Smaller type than long distance lens

Lens diameter 17.4mm

Detection area coverage



Specified detection distance (Note 1)	up to 5 - 10m
Typical ceiling installation height (Note 2)	5.0m
Field of view	120° x 107°
Detection zones	80

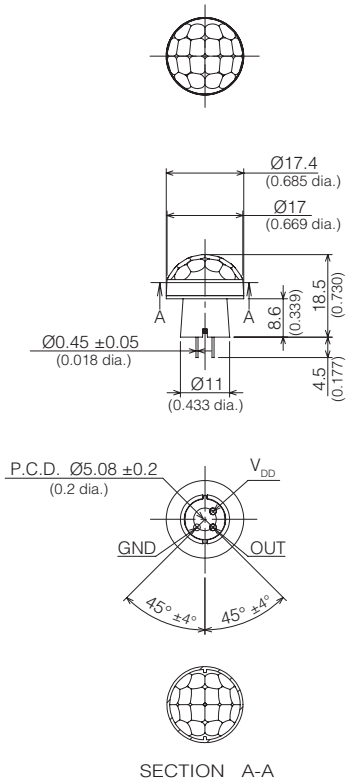
Note 1:
- ΔT ≥ 4°C
- Object speed: 1m/s
- Object size: 700 x 250mm
- Crossing 2 detection zones

Note 2:
The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

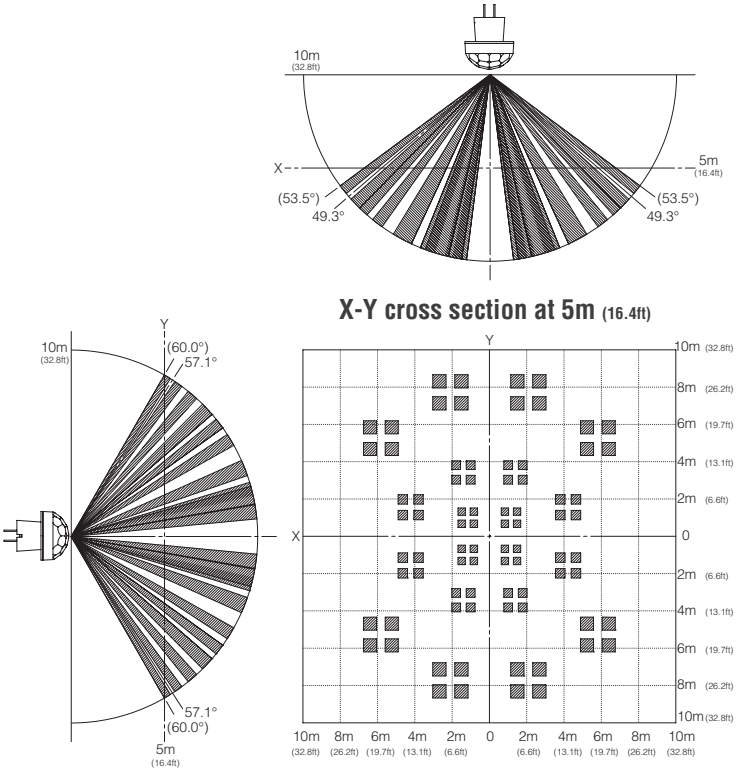
Typical applications

Further information on electrical characteristics please see page 44

Dimension (in mm, inches in brackets)



Detection area (reference)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black
NaPiOn	170µA	Digital	Standard	AMN34112	AMN34111

Note: Digital Output type: Open-drain

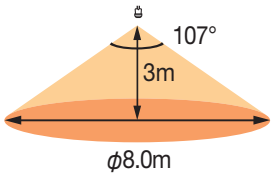
EKM - Ultra Slight Motion Detection Type

Optimized for the detection of smallest movements and objects

Extremely small Lens as a Slight motion detection type

Same mechanical dimensions like the Wide Detection Type

Detection area coverage

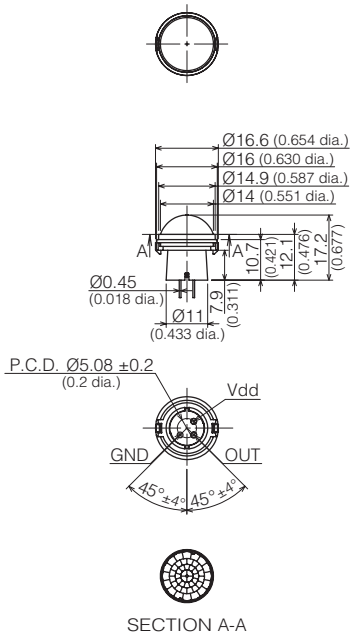


Specified detection distance (Note 1)	2.5m ~ 4.1m
Typical ceiling installation height(Note 2)	3.0m
Field of view	107° x 107°
Detection zones	192
Note 1: › ΔT ≥ 4°C › Object speed: 0.5m/s (Slight motion) 1.0m/s (Standard motion) › Object size: 200 x 200mm (Slight motion) 700 x 250mm (Standard motion) › Crossing 1 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

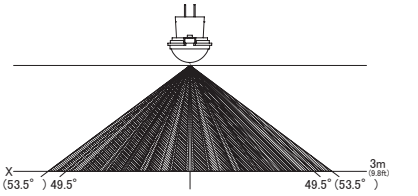
Further information on electrical characteristics please see page 42

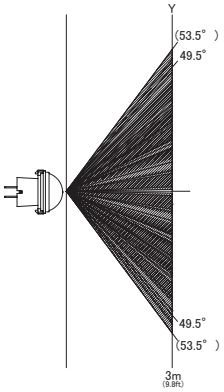
Typical applications

Dimension (in mm, inches in brackets)

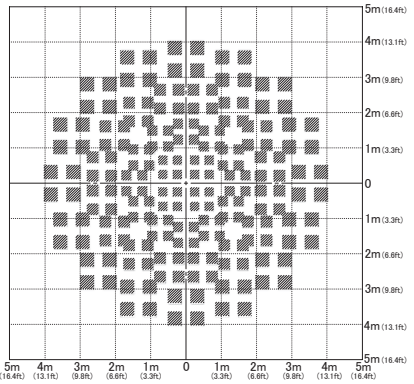


Detection area (reference)





X-Y cross section at 3m (9.8ft)



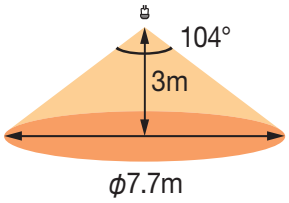
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1109111	EKMB1109112	EKMB1109113
	2μA	Digital	Standard	EKMB1209111	EKMB1209112	EKMB1209113
Economy	6μA	Digital	Standard	EKMB1309111K	EKMB1309112K	EKMB1309113K
	170μA	Digital	Standard	EKMC1609111	EKMC1609112	EKMC1609113
	170μA	Analog	Adjustable	EKMC2609111K	EKMC2609112K	EKMC2609113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Slight Motion Detection Type

Optimized for small movements
Lens diameter 14.6mm
Almost the same mechanical dimensions like the Standard and Slight Motion Detection Type (lens diameter 0.3mm smaller)

Detection area coverage

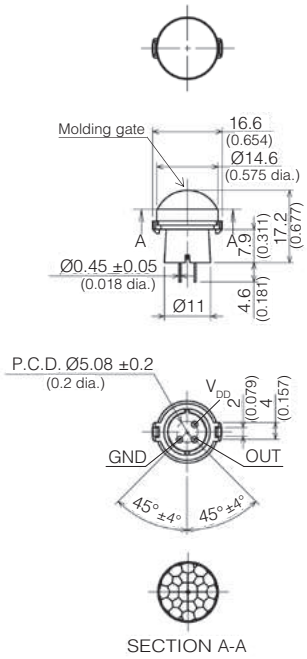


Specified detection distance (Note 1)	up to 2.5m - 4m
Typical ceiling installation height (Note 2)	3.0m
Field of view	104° x 104°
Detection zones	112
Note 1: › ΔT ≥ 4°C › Object speed: 0.5m/s › Object size: 200 x 200mm › Crossing 1 detection zone	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

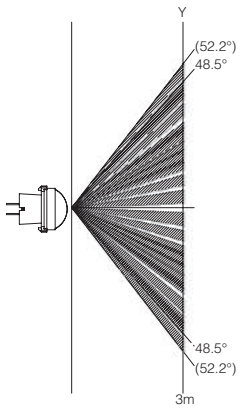
Typical applications

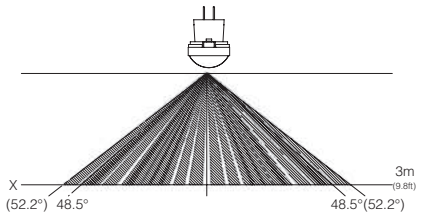
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)

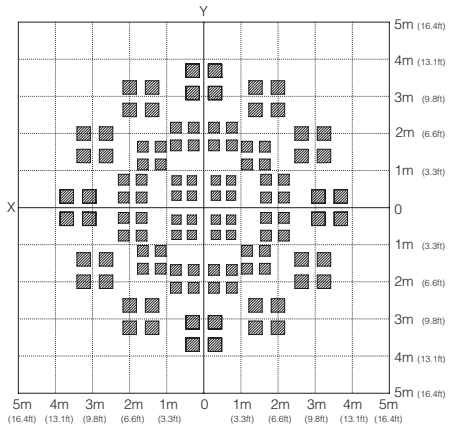


Detection area (reference)





X-Y cross section at 3m (9.8ft)



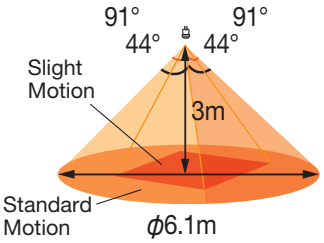
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1µA	Digital	Standard	EKMB1191111	EKMB1191112	EKMB1191113
	2µA	Digital	Standard	EKMB1291111	EKMB1291112	EKMB1291113
Economy	6µA	Digital	Standard	EKMB1391111K	EKMB1391112K	EKMB1391113K
	170µA	Digital	Standard	EKMC1691111	EKMC1691112	EKMC1691113
	170µA	Analog	Adjustable	EKMC2691111K	EKMC2691112K	EKMC2691113K
Special	6µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170µA	Digital	High			
	170µA	Digital	Low			

Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Standard and Slight Motion Detection Type

The rectangular center zone is optimized detecting smallest movements.
Lens diameter 14.9mm
Almost the same mechanical dimensions like the Slight Motion Detection Type (lens diameter 0.3mm bigger)

Detection area coverage



Specified detection distance (Note 1)	up to 2.2m - 3.1m
Typical ceiling installation height (Note 2)	3.0m
Field of view slight motion area	44° x 44°
Field of view standard motion area	91° x 91°
Detection zones slight motion area	36
Detection zones standard motion area	48

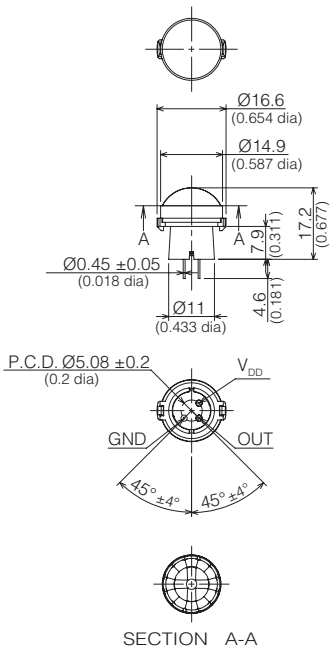
Note 1:
- ΔT ≥ 4°C
- Object speed: 0.5m/s (slight motion area)
  1m/s (standard motion area)
- Object size: 200 x 200mm (slight motion area)
  400 x 200mm (standard motion area)
- Crossing 1 detection zone (slight motion area)
- Crossing 2 detection zones (standard motion area)

Note 2:
The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

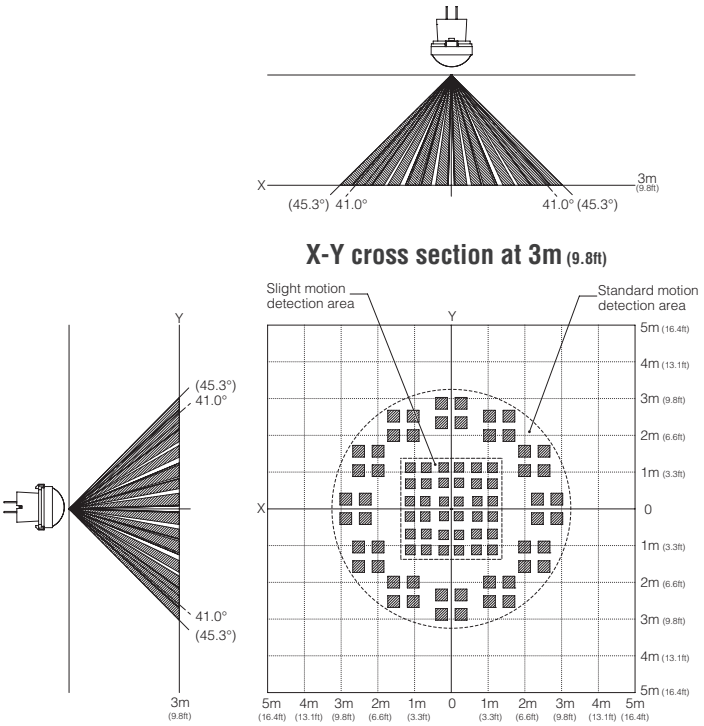
Typical applications

Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)



Detection area (reference)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1193111	EKMB1193112	EKMB1193113
	2μA	Digital	Standard	EKMB1293111	EKMB1293112	EKMB1293113
Economy	6μA	Digital	Standard	EKMB1393111K	EKMB1393112K	EKMB1393113K
	170μA	Digital	Standard	EKMC1693111	EKMC1693112	EKMC1693113
	170μA	Analog	Adjustable	EKMC2693111K	EKMC2693112K	EKMC2693113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

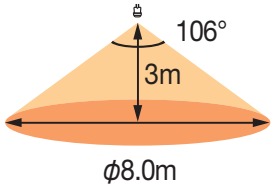
Notes: The specification shows the X-Y cross section at 2.2m.
Digital Output type: Open-drain
Analog Output type: Op-amp

at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

AMN - Slight Motion Detection Type

Optimized for small movements

Detection area coverage

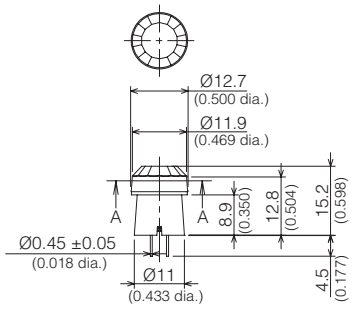


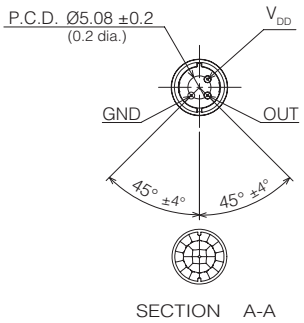
Specified detection distance (Note 1)	up to 2m - 3.3m
Typical ceiling installation height (Note 2)	3.0m
Field of view	107° x 106°
Detection zones	104
Note 1: › ΔT ≥ 4°C › Object speed: 0.5m/s › Object size: 200mm x 200mm › Crossing 1 detection zone	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Typical applications

Further information on electrical characteristics please see page 44

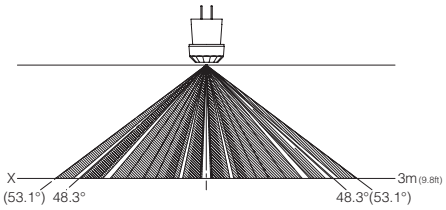
Dimension (in mm, inches in brackets)



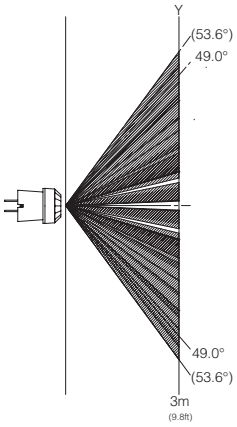


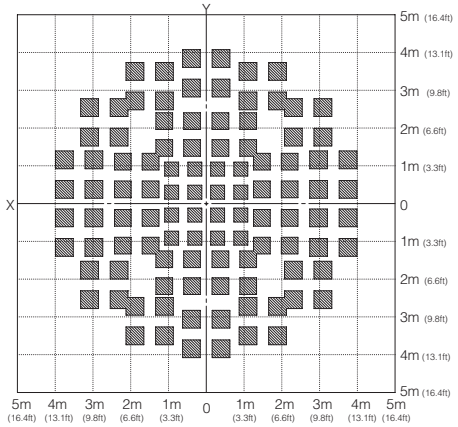
SECTION A-A

Detection area (reference)



X-Y cross section at 3m (9.8ft)





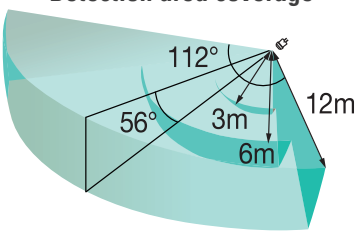
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black
NaPiOn	170μA	Digital	Standard	AMN32112	AMN32111

Notes: The specification shows the X-Y cross section at 2m.
Digital Output type: Open-drain

EKM - Wall Installation Type

Lens diameter 20.7mm
Similar dimensions like the Long Distance Detection Type

Detection area coverage

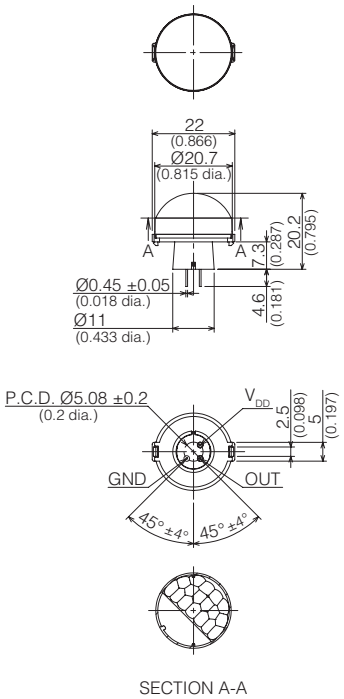


Specified detection distance (Note 1 & 2)	up to 12m (1st step lens) up to 6m (2nd step lens) up to 3m (3rd step lens)
Field of view	56° x 112°
Detection zones	68
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

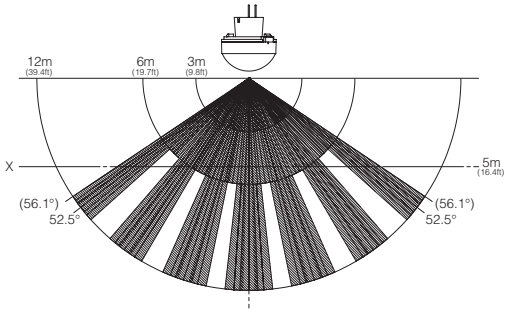
Typical applications

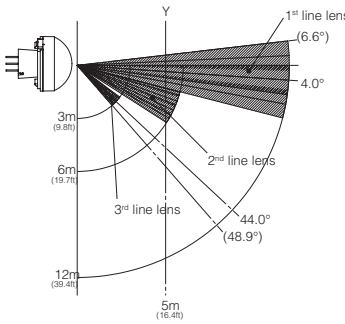
Dimension (in mm, inches in brackets)



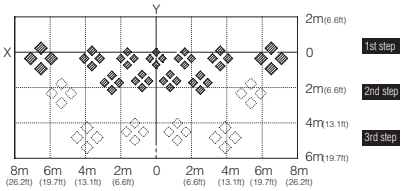
SECTION A-A

Detection area (reference)





X-Y cross section at 5m (16.4ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1104111	EKMB1104112	EKMB1104113
	2μA	Digital	Standard	EKMB1204111	EKMB1204112	EKMB1204113
Economy	6μA	Digital	Standard	EKMB1304111K	EKMB1304112K	EKMB1304113K
	170μA	Digital	Standard	EKMC1604111	EKMC1604112	EKMC1604113
	170μA	Analog	Adjustable	EKMC2604111K	EKMC2604112K	EKMC2604113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

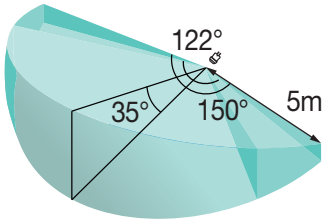
Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Horizontally Wide Detection Type

World's first PIR with "Approach Sensing" technology

Panasonic presents the world's first PIR sensor in the shape of a hammerhead with a special optic, which is more sensitive to radial motion.

Detection area coverage

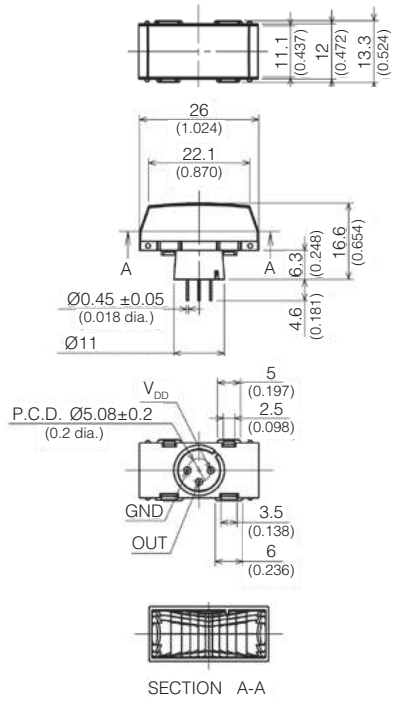


Specified detection distance (Note 1 & 2)	up to 5m
Field of view area A	122° x 35°
Field of view area B	150° x 36°
Detection zones area A	88
Detection zones area B	16
Note 1: › ΔT ≥ 4°C (Area A) › ΔT ≥ 8°C (Area B) › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

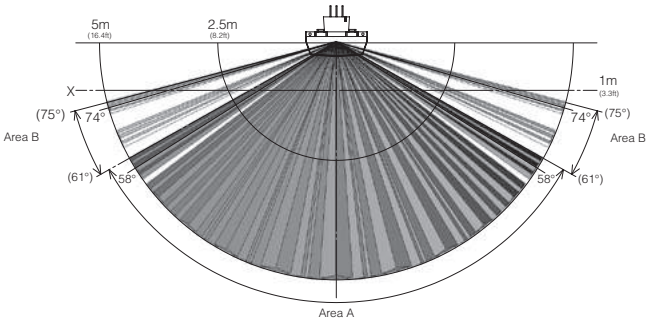
Typical applications

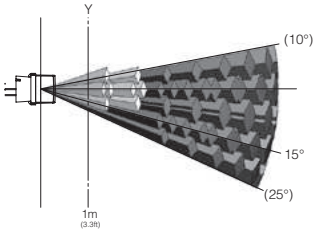
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)

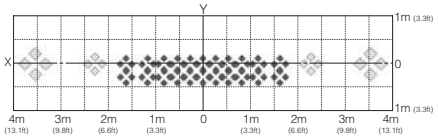


Detection area (reference)





X-Y cross section at 1m (3.3ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1105111	EKMB1105112	EKMB1105113
	2μA	Digital	Standard	EKMB1205111	EKMB1205112	EKMB1205113
Economy	6μA	Digital	Standard	EKMB1305111K	EKMB1305112K	EKMB1305113K
	170μA	Digital	Standard	EKMC1605111	EKMC1605112	EKMC1605113
	170μA	Analog	Adjustable	EKMC2605111K	EKMC2605112K	EKMC2605113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

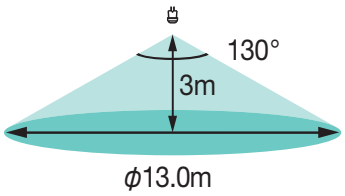
Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

EKM - Wide Detection Type

Large detection area: ø12.9m
(@3m installation height)
Lens diameter: 14mm

Detection area coverage

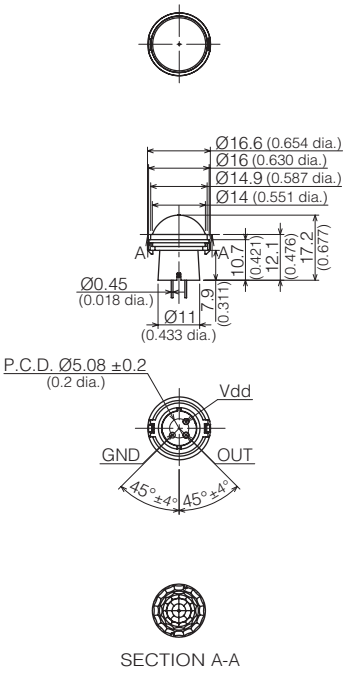


Specified detection distance (Note 1)	2.5m ~ 5.9m
Typical ceiling installation height(Note 2)	3.0m
Field of view	130° x 130°
Detection zones	208
Note 1: › ΔT ≥ 4°C › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

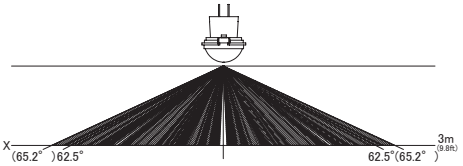
Typical applications

Dimension (in mm, inches in brackets)

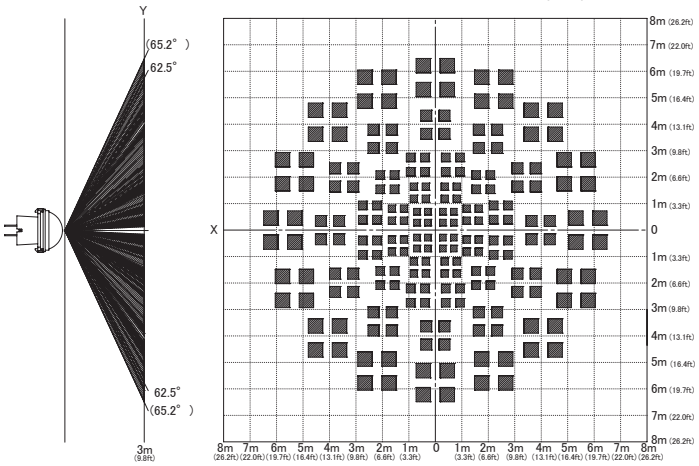


SECTION A-A

Detection area (reference)



X-Y cross section at 3m (9.8ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
High-end	1μA	Digital	Standard	EKMB1108111	EKMB1108112	EKMB1108113
	2μA	Digital	Standard	EKMB1208111	EKMB1208112	EKMB1208113
Economy	6μA	Digital	Standard	EKMB1308111K	EKMB1308112K	EKMB1308113K
	170μA	Digital	Standard	EKMC1608111	EKMC1608112	EKMC1608113
	170μA	Analog	Adjustable	EKMC2608111K	EKMC2608112K	EKMC2608113K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

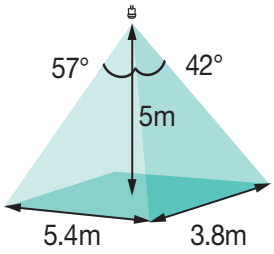
Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

at **https://industrial.panasonic.com/ww/products/pt/papirs/models**

AMN - Spot Detection Type

Flat lens
Lens diameter 8.9mm
Narrow field of view

Detection area coverage

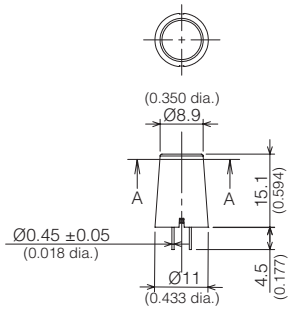


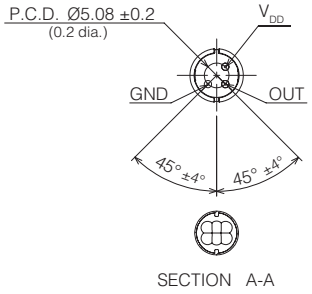
Specified detection distance (Note 1)	up to 5m - 5.6m
Typical ceiling installation height (Note 2)	5.0m
Field of view	57° x 42°
Detection zones	24
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 44

Typical applications

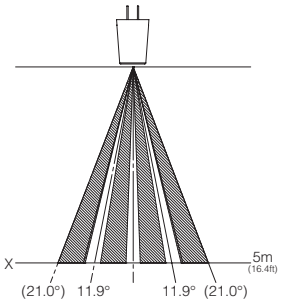
Dimension (in mm, inches in brackets)



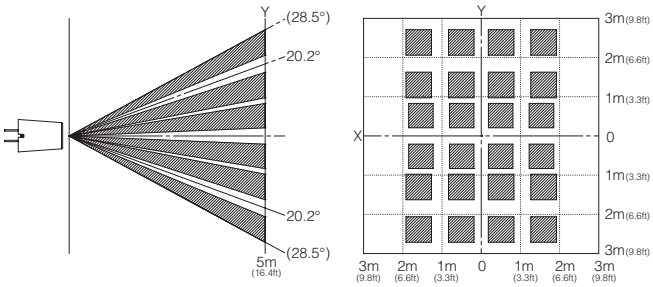


SECTION A-A

Detection area (reference)



X-Y cross section at 5m (16.4ft)



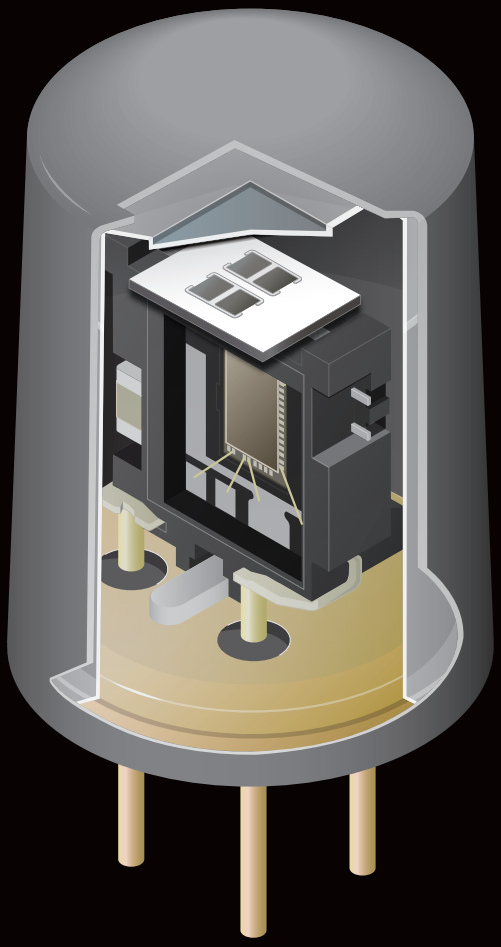
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black
NaPiOn	170μA	Digital	Standard	AMN33112	AMN33111

Note: Digital Output type: Open-drain

MEMO

PaPIRs+

PIR Motion Sensors
Evolution



PaPIRs Plus

Ordering information

EKM

EKM ① ② ③ ④ ④ **81** ⑤ ⑥

← Sensor → ← Lens → Suffix

● Sensor type

① ② ③

B13, B43 : WL Series
C16, C26, C46 : VZ Series

● Lens type

④ ④

01 : Standard
03 : Long Distance
05 : Horizontally Wide
06 : High Density Long Distance
07 : Low Profile
08 : Wide Detection
09 : Ultra Slight Motion
11 : Ultra Wide & Long Distance
12 : Flat Wide
74 : Spot Detection

● Lens color

⑤

1 : White
2 : Black
3 : Pearl white

● Suffix

⑥

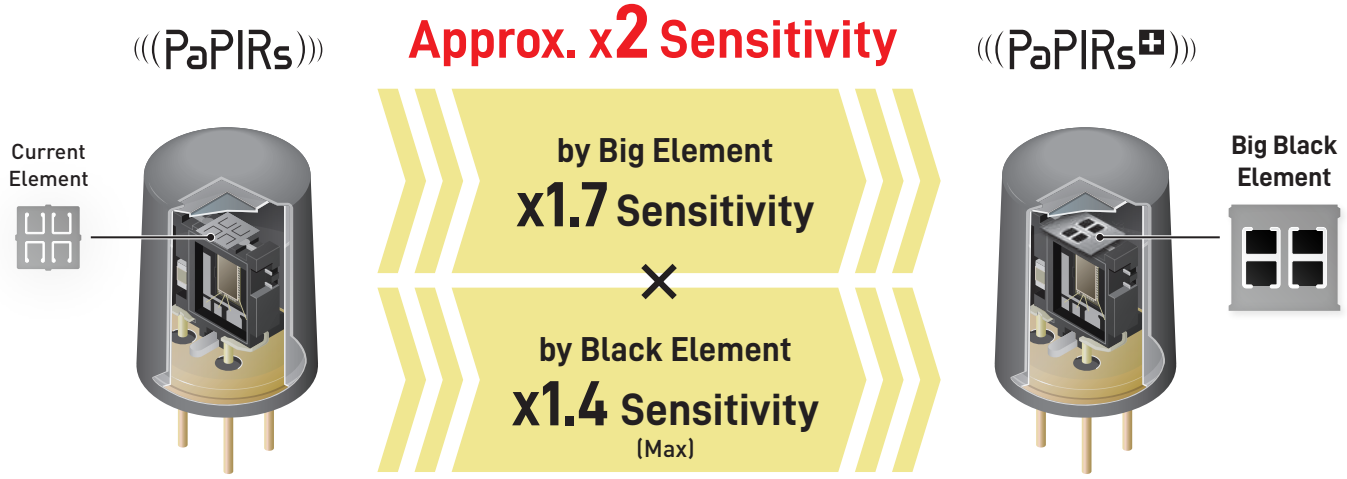
K : The following products have “K” at the end
EKMB13, EKMB43, EKMC26, EKMC46

● Lensless

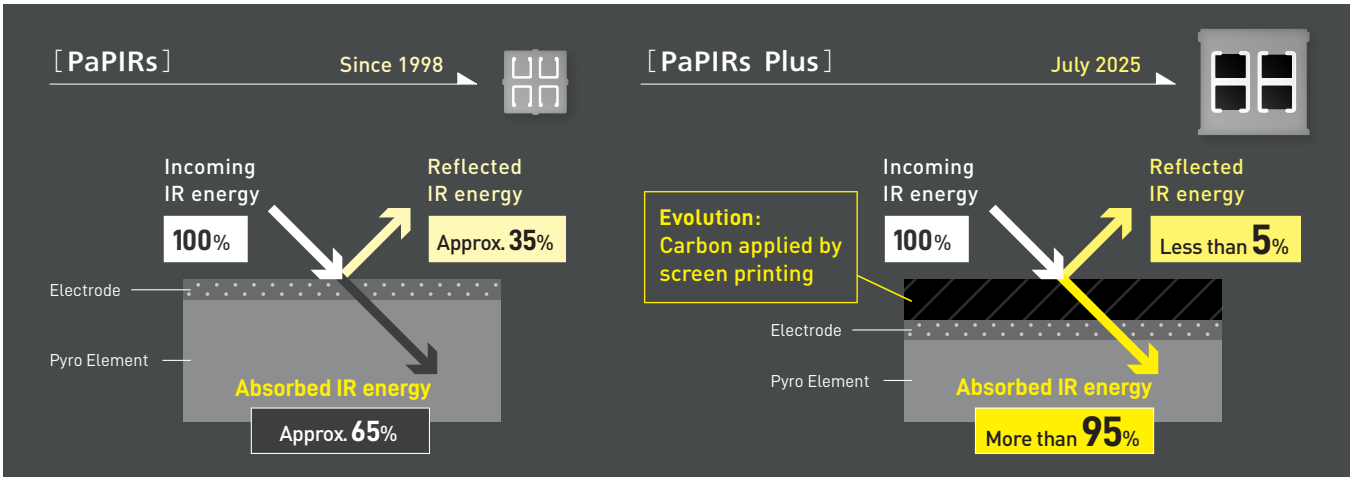
EKMB1300800K, EKMB4300800K
EKMC1600800, EKMC2600800K, EKMC4600800K

The pyroelectric element of PaPIRs has further evolved into a “Big & Black Element”

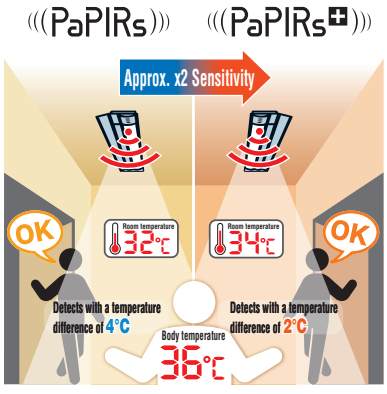
Achieves approximately x2 sensitivity with the Big & Black element



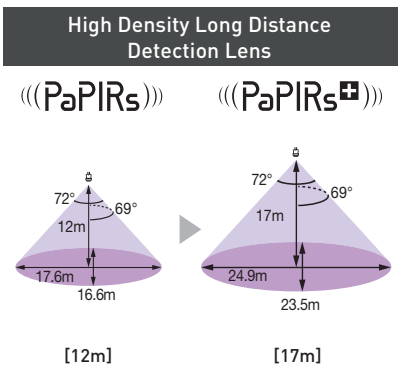
Improved infrared absorption rate



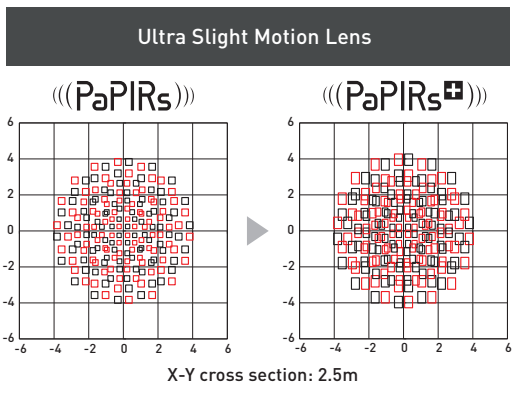
Enhanced detection temperature difference



Extended detection distance

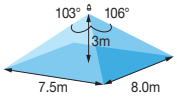
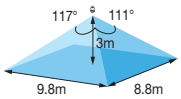


Higher density detection area

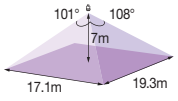
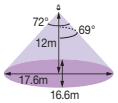
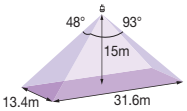


at **https://industrial.panasonic.com/ww/products/pt/papirs**

Standard Detection Types

	Standard	Low Profile
		
	*Pearl white	*Black
Lens color	White / Black / Pearl white	White / Black / Pearl white
Detection area coverage		
Reference page	P. 32	P. 33
Typical application	Base lighting, Digital signage, IP cameras	Lighting controls, Digital signage, IP cameras

Long Distance Detection Types

	Long Distance	High Density Long Distance	Ultra Wide & Long Distance
			
	*Pearl white	*Black	*White
Lens color	White / Black / Pearl white	White / Black / Pearl white	White / Black / Pearl white
Detection area coverage			
Reference page	P. 34	P. 35	P. 36
Typical application	Street lighting, High-bay lighting, Ceiling air conditioners	High-bay lighting, Wall air conditioners, IP cameras	Street lighting, High-bay lighting, IP cameras

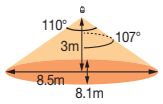
Lens categories		Lens color			Sensor			Part number		
		White	Black	Pearl white	Output	Sensitivity	Current consumption	White	Black	Pearl white
Standard Detection Types	Standard				Digital	Standard	6μA	EKMB1301811K	EKMB1301812K	EKMB1301813K
							170μA	EKMC1601811	EKMC1601812	EKMC1601813
					Analog	Adjustable	170μA	EKMC2601811K	EKMC2601812K	EKMC2601813K
	Low Profile				Digital	Standard	6μA	EKMB1307811K	EKMB1307812K	EKMB1307813K
							170μA	EKMC1607811	EKMC1607812	EKMC1607813
					Analog	Adjustable	170μA	EKMC2607811K	EKMC2607812K	EKMC2607813K
Long Distance Detection Types	Long Distance				Digital	Standard	6μA	EKMB1303811K	EKMB1303812K	EKMB1303813K
							170μA	EKMC1603811	EKMC1603812	EKMC1603813
					Analog	Adjustable	170μA	EKMC2603811K	EKMC2603812K	EKMC2603813K
	High Density Long Distance				Digital	Standard	6μA	EKMB1306811K	EKMB1306812K	EKMB1306813K
							170μA	EKMC1606811	EKMC1606812	EKMC1606813
					Analog	Adjustable	170μA	EKMC2606811K	EKMC2606812K	EKMC2606813K
	Ultra Wide & Long Distance				Digital	Standard	6μA	EKMB1311811K	EKMB1311812K	EKMB1311813K
							170μA	EKMC1611811	EKMC1611812	EKMC1611813
					Analog	—	170μA	EKMC2611811K	EKMC2611812K	EKMC2611813K
Slight Motion Detection Types	Ultra Slight				Digital	Standard	6μA	EKMB1309811K	EKMB1309812K	EKMB1309813K
							170μA	EKMC1609811	EKMC1609812	EKMC1609813
					Analog	Adjustable	170μA	EKMC2609811K	EKMC2609812K	EKMC2609813K
Specific Area Detection Types	Flat Wide Detection				Digital	Standard	6μA	EKMB1312811K	EKMB1312812K	EKMB1312813K
							170μA	EKMC1612811	EKMC1612812	EKMC1612813
					Analog	Adjustable	170μA	EKMC2612811K	EKMC2612812K	EKMC2612813K
	Horizontally Wide Detection				Digital	Standard	6μA	EKMB1305811K	EKMB1305812K	EKMB1305813K
							170μA	EKMC1605811	EKMC1605812	EKMC1605813
					Analog	Adjustable	170μA	EKMC2605811K	EKMC2605812K	EKMC2605813K
	Wide Detection				Digital	Standard	6μA	EKMB1308811K	EKMB1308812K	EKMB1308813K
							170μA	EKMC1608811	EKMC1608812	EKMC1608813
					Analog	Adjustable	170μA	EKMC2608811K	EKMC2608812K	EKMC2608813K
	Spot Detection				Digital	Standard	6μA	EKMB1374811K	EKMB1374812K	—
							170μA	EKMC1674811	EKMC1674812	—
					Analog	Adjustable	170μA	EKMC2674811K	EKMC2674812K	—

*Please contact us if a higher or a lower sensitivity is required.
*All lens can be adopted with any applications.

at https://industrial.panasonic.com/ww/products/pt/papirs/models

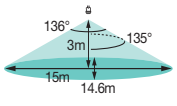
Slight Motion Detection Types

Ultra Slight

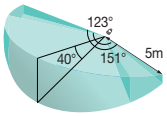
Lens color	*White White / Black / Pearl white
Detection area coverage	
Reference page	P. 37
Typical application	 Lighting controls  Wall air conditioners  IP cameras

Specific Area Detection Types

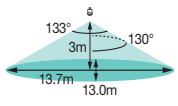
Flat Wide Detection

Lens color	*White White / Black / Pearl white
Detection area coverage	
Reference page	P. 38
Typical application	 IP cameras  IoT module  Wall air conditioners

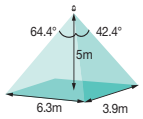
Horizontally Wide Detection

Lens color	*Black White / Black / Pearl white
Detection area coverage	
Reference page	P. 39
Typical application	 IoT module  Digital signage  Thermostats

Wide Detection

Lens color	*White White / Black / Pearl white
Detection area coverage	
Reference page	P. 40
Typical application	 Lighting controls  Wall air conditioners  IP cameras

Spot Detection

Lens color	*Black White / Black
Detection area coverage	
Reference page	P. 41
Typical application	 Digital signage  Sterilization stand  Hot desking

Reference information

FOV (H×V)	Detection zones	Detection distance	Recommended applications	
106°×103°	64	5.0m	Lighting controls, Lighting controls, Base lighting, Digital signage, IoT module, IP cameras	P.32
117°×111°	32	5.0m	Lighting controls, Digital signage, IoT module, AI speaker, Thermostats, IP cameras	P.33
108°×101°	92	12.0m	Lighting controls, Base lighting, Street lighting, High-bay lighting, Wall air conditioners, Ceiling air conditioners	P.34
72°×69°	128	17.0 / 20.5m	Lighting controls, Base lighting, Street lighting, High-bay lighting, Wall air conditioners, IP cameras	P.35
93°×48°	188	15.0 / 20.0m	Street lighting, High-bay lighting, IP cameras, Lighting controls, Hot desking, Base lighting	P.36
110°×107°	192	2.5 – 4.1m 5.2 – 8.0m (for Standard motion)	Lighting controls, Lighting controls, Base lighting, Wall air conditioners, Hot desking, IP cameras	P.37
136°×135°	416	3.5m/2.5m	Street lighting, High-bay lighting, IP cameras, Lighting controls, Hot desking, Base lighting	P.38
122°×35° 150°×36°	88 16	5.0m	Lighting controls, Base lighting, Digital signage, IoT module, Hot desking, Thermostats	P.39
133°×130°	208	2.5 – 5.9m	Lighting controls, Base lighting, Hot desking, Wall air conditioners, Ceiling air conditioners, IP cameras	P.40
64.4°×42.4°	24	5.0 – 5.6m	Lighting controls, Lighting controls, Lighting for walk-in closet, Digital signage, Hot desking, Sterilization stand	P.41

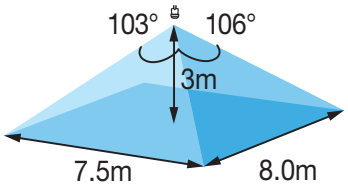
EKM - Standard Detection Type

Preference type

Flat lens for an unobtrusive integration

Lens diameter 9.5mm

Detection area coverage

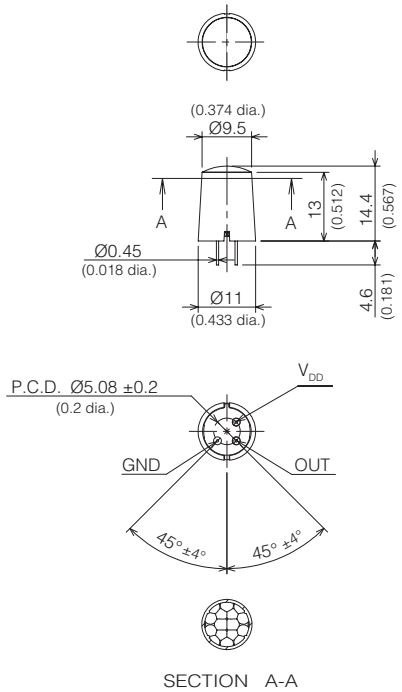


Specified detection distance (Note 1)	up to 7m
Typical ceiling installation height (Note 2)	3m
Field of view	106° x 103°
Detection zones	64
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

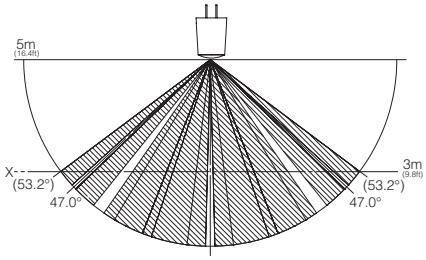
Typical applications

Further information on electrical characteristics please see page 42

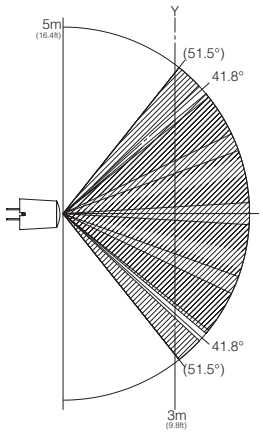
Dimension (in mm, inches in brackets)

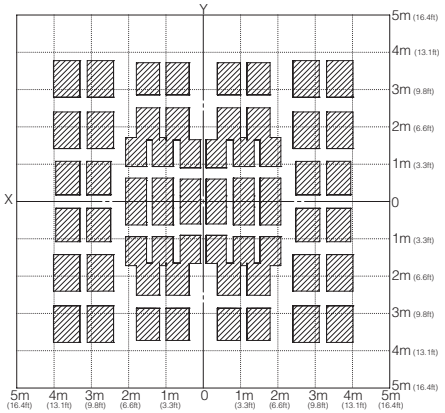


Detection area (reference)



X-Y cross section at 3m (9.8ft)





Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1301811K	EKMB1301812K	EKMB1301813K
	170μA	Digital	Standard	EKMC1601811	EKMC1601812	EKMC1601813
	170μA	Analog	Adjustable	EKMC2601811K	EKMC2601812K	EKMC2601813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 3.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

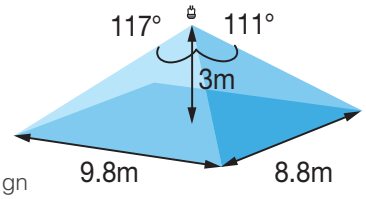
EKM - Low Profile Type

Lower height lens design [14.4mm→10.9mm]

Comparable performance to PaPIRs standard detection type lens

Fit with superior product design

Detection area coverage

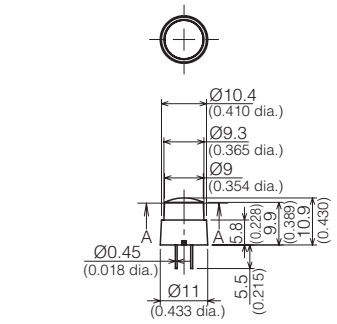


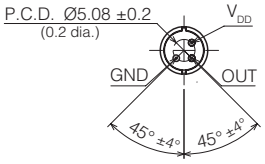
Specified detection distance (Note 1)	up to 7m
Typical ceiling installation height (Note 2)	3m
Field of view	117° x 111°
Detection zones	32
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

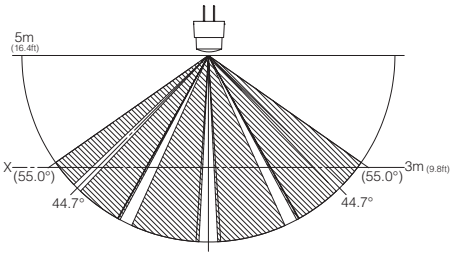
Typical applications

Dimension (in mm, inches in brackets)

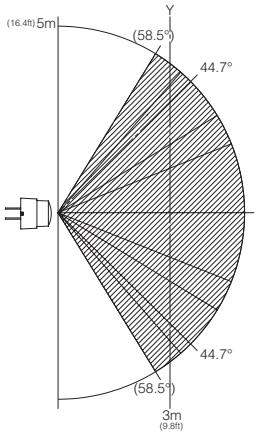


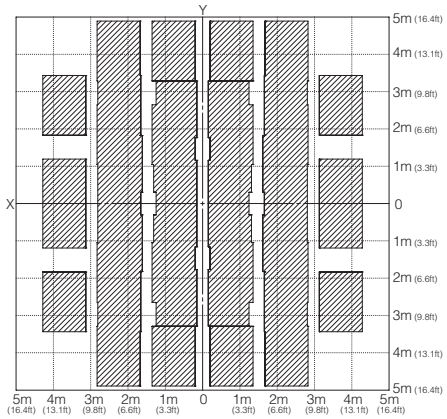


Detection area (reference)



X-Y cross section at 3.0m (9.8ft)





Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1307811K	EKMB1307812K	EKMB1307813K
	170μA	Digital	Standard	EKMC1607811	EKMC1607812	EKMC1607813
	170μA	Analog	Adjustable	EKMC2607811K	EKMC2607812K	EKMC2607813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

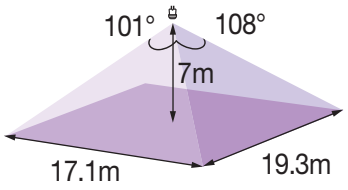
Notes: The specification shows the X-Y cross section at 3.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Long Distance Detection Type

Lens diameter 20.7mm

Wide detection angle and long distance

Detection area coverage



Specified detection distance (Note 1)	up to 17m
Typical ceiling installation height (Note 2)	7m
Field of view	108° x 101°
Detection zones	92

Note 1:
- ΔT ≥ 4°C
- Object speed: 1m/s
- Object size: 700 x 250mm
- Crossing 2 detection zones

Note 2:
The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Typical applications

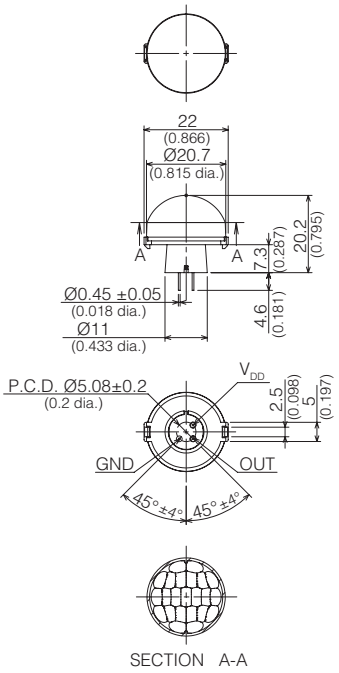
Street lighting

High-bay lighting

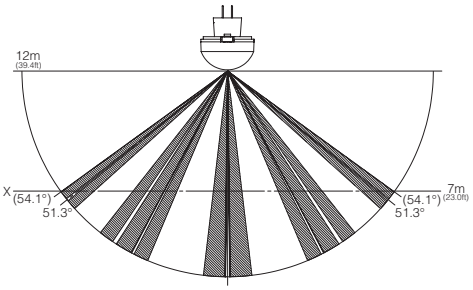
Ceiling air conditioners

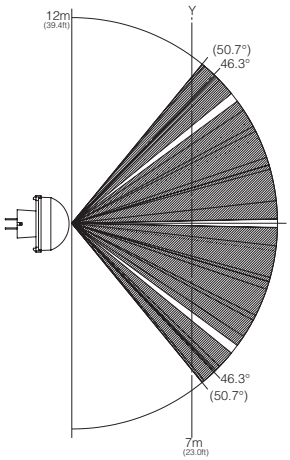
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)

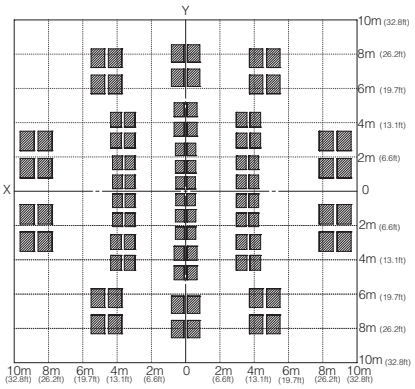


Detection area (reference)





X-Y cross section at 7m (23.0ft)



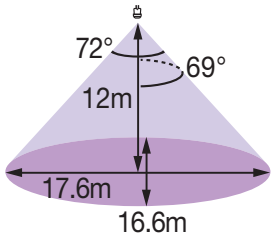
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1303811K	EKMB1303812K	EKMB1303813K
	170μA	Digital	Standard	EKMC1603811	EKMC1603812	EKMC1603813
	170μA	Analog	Adjustable	EKMC2603811K	EKMC2603812K	EKMC2603813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - High Density Long Distance Detection Type

Smallest long range sensor
Lens diameter 19.3mm
Additional lip (20.45mm) ready for an o-ring

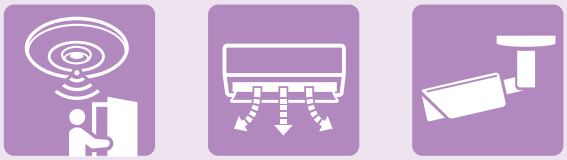
Detection area coverage



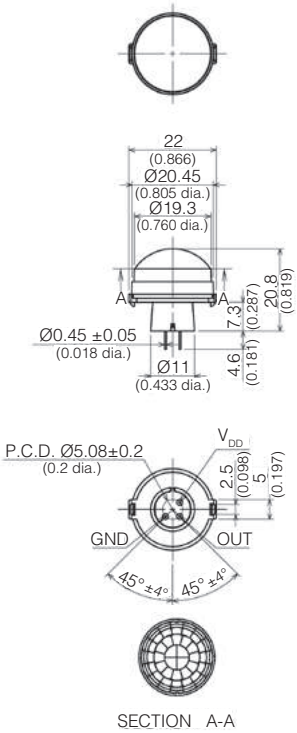
Specified detection distance (Note 1)	17m / 20.5m
Typical ceiling installation height (Note 2)	12m
Field of view	72° x 69°
Detection zones	128
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

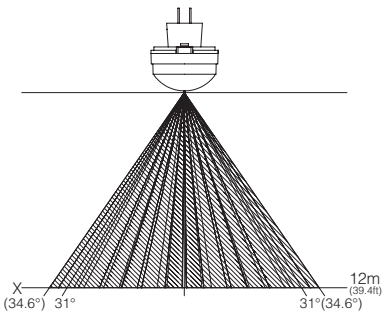
Typical applications



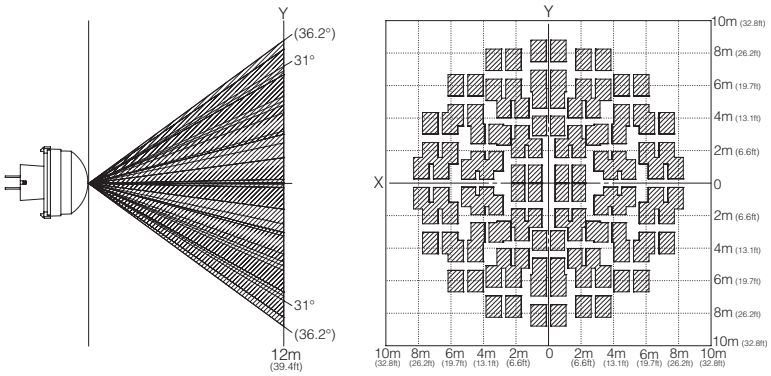
Dimension (in mm, inches in brackets)



Detection area (reference)



X-Y cross section at 12m (39.4ft)



Please contact us if you install at celling height 17m

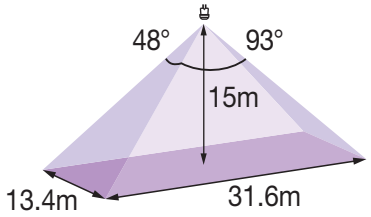
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1306811K	EKMB1306812K	EKMB1306813K
	170μA	Digital	Standard	EKMC1606811	EKMC1606812	EKMC1606813
	170μA	Analog	Adjustable	EKMC2606811K	EKMC2606812K	EKMC2606813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Ultra Wide & Long Distance Detection Type

- Smallest aisle high bay sensor (lens Ø32.6mm)
- High sensitivity on the aisle entry and exit area
- Optimized for radial movement

Detection area coverage



Specified detection distance (Note 1)	15m / 20m
Typical ceiling installation height (Note 2)	15.0m (Standard sensitivity sensor) *20.0m (High sensitivity sensor)
Field of view	93° x 48°
Detection zones	188

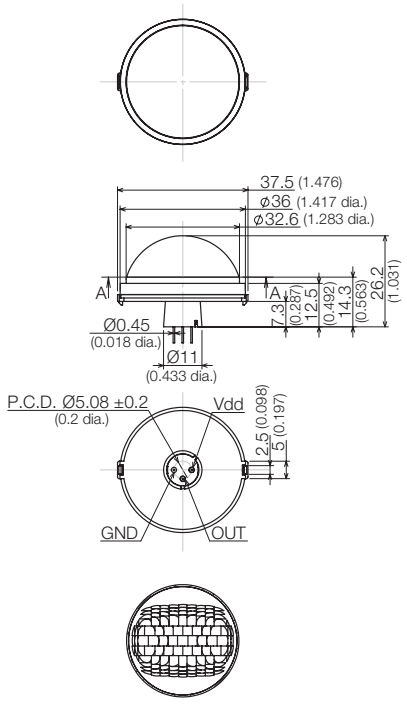
Note 1:
- ΔT ≥ 4°C
- Object speed: 1m/s
- Object size: 700 x 250mm
- Crossing 2 detection zones

Note 2:
The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Typical applications

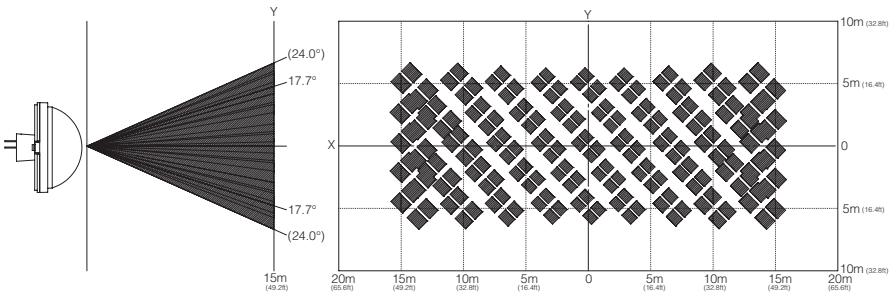
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)



SECTION A-A

Detection area (reference)



X-Y cross section at 15m (49.2ft)

Please contact us if you install at celling height 10m

Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6µA	Digital	Standard	EKMB1311811K	EKMB1311812K	EKMB1311813K
	170µA	Digital	Standard	EKMC1611811	EKMC1611812	EKMC1611813
	170µA	Analog	Adjustable	EKMC2611811K	EKMC2611812K	EKMC2611813K
Special	6µA	Digital	High*	Please contact us if a higher or a lower sensitivity is required.		
	170µA	Digital	High*			
	170µA	Digital	Low			

Notes: High threshold sensitivity types have a lower threshold-to-noise ratio. Please contact us for further details
Digital Output type: Open-drain
Analog Output type: Op-amp

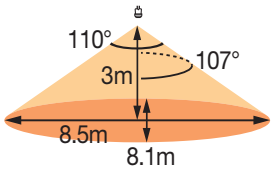
EKM - Ultra Slight Motion Detection Type

Optimized for the detection of smallest movements and objects

Extremely small lens: 14mm diameter

Same mechanical dimensions like the Wide Detection Type

Detection area coverage

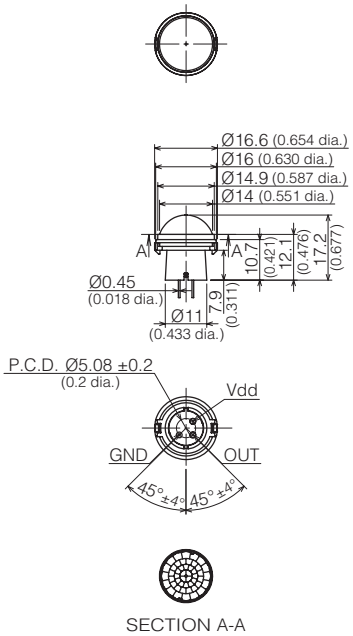


Specified detection distance (Note 1)	3.5m ~ 5.7m
Typical ceiling installation height(Note 2)	3.0m
Field of view	110° x 107°
Detection zones	192
Note 1: › ΔT ≥ 4°C › Object speed: 0.5m/s (Slight motion) 1.0m/s (Standard motion) › Object size: 200 x 200mm (Slight motion) 700 x 250mm (Standard motion) › Crossing 1 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

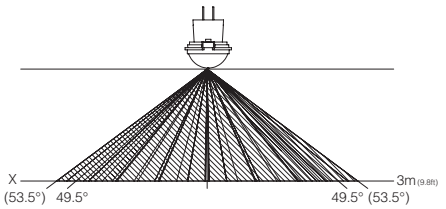
Further information on electrical characteristics please see page 42

Typical applications

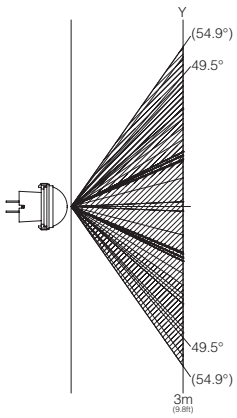
Dimension (in mm, inches in brackets)

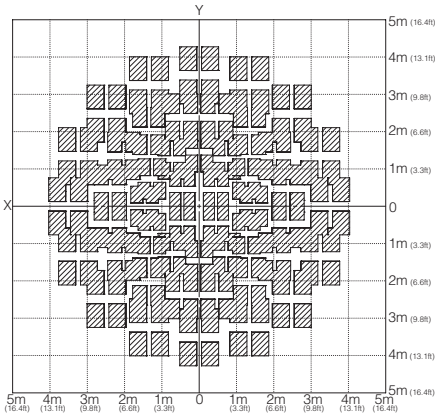


Detection area (reference)



X-Y cross section at 3.0m (9.8ft)





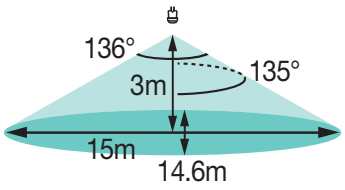
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1309811K	EKMB1309812K	EKMB1309813K
	170μA	Digital	Standard	EKMC1609811	EKMC1609812	EKMC1609813
	170μA	Analog	Adjustable	EKMC2609811K	EKMC2609812K	EKMC2609813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 3.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Flat wide detection type

Featuring both wide-angle coverage and high-density in a single lens.
The flat-top lens makes the customer's product look better.

Detection area coverage

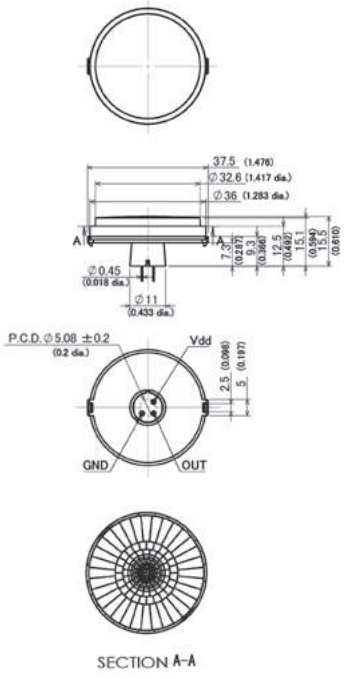


Specified detection distance (Note 1)	2.5m ~ 5.9m
Typical ceiling installation height(Note 2)	3.0m
Field of view	136° x 135°
Detection zones	416
Note 1: › ΔT ≥ 4°C › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

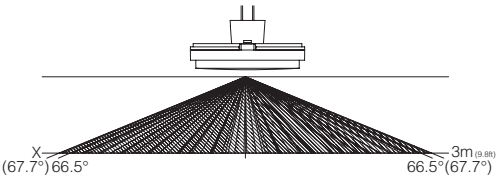
Further information on electrical characteristics please see page 42

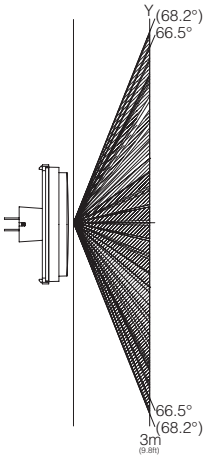
Typical applications

Dimension (in mm, inches in brackets)

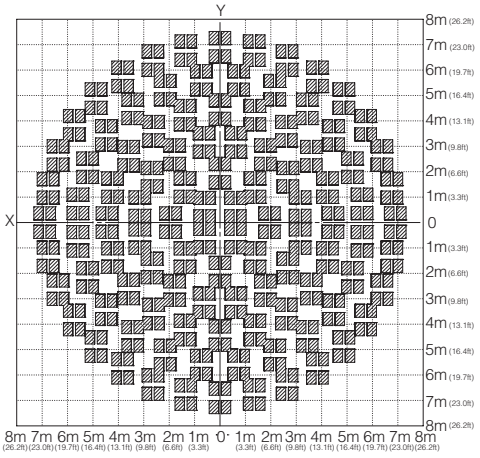


Detection area (reference)





X-Y cross section at 3.0m (9.8ft)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1312811K	EKMB1312812K	EKMB1312813K
	170μA	Digital	Standard	EKMC1612811	EKMC1612812	EKMC1612813
	170μA	Analog	Adjustable	EKMC2612811K	EKMC2612812K	EKMC2612813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

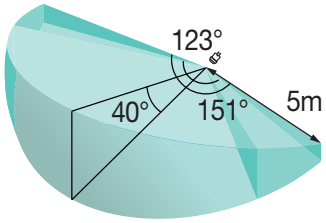
Notes: The specification shows the X-Y cross section at 2.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Horizontally Wide Detection Type

World's first PIR with "Approach Sensing" technology

Panasonic presents the world's first PIR sensor in the shape of a hammerhead with a special optic, which is more sensitive to radial motion.

Detection area coverage

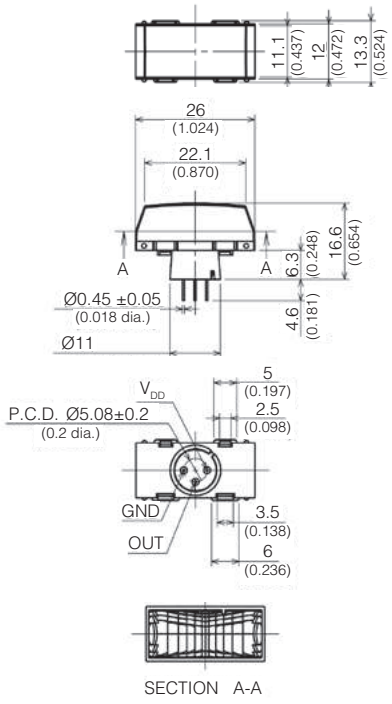


Specified detection distance (Note 1 & 2)	up to 5m
Field of view area A	123° x 40°
Field of view area B	151° x 41°
Detection zones area A	88
Detection zones area B	16
Note 1: › ΔT ≥ 4°C (Area A) › ΔT ≥ 8°C (Area B) › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

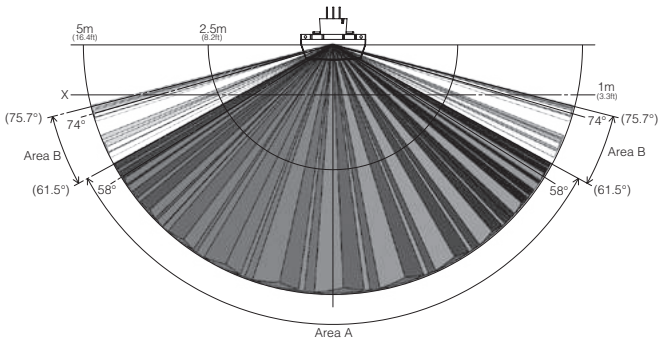
Typical applications

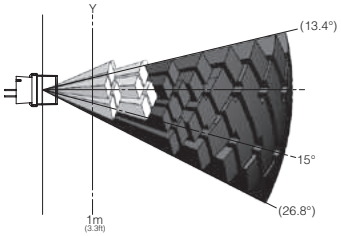
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)

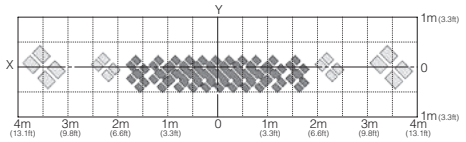


Detection area (reference)





X-Y cross section at 1m (3.3ft)



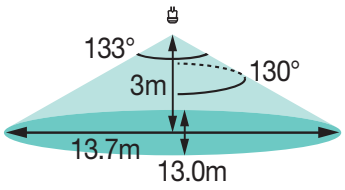
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1305811K	EKMB1305812K	EKMB1305813K
	170μA	Digital	Standard	EKMC1605811	EKMC1605812	EKMC1605813
	170μA	Analog	Adjustable	EKMC2605811K	EKMC2605812K	EKMC2605813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Wide Detection Type

Large detection area: ø12.9m
(@3m installation height)
Lens diameter: 14mm

Detection area coverage

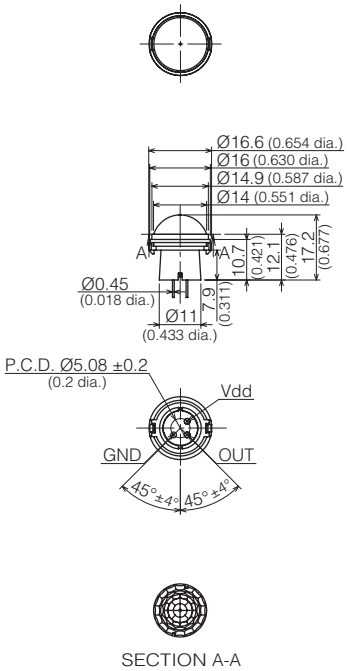


Specified detection distance (Note 1)	3.5m ~ 8.2m
Typical ceiling installation height(Note 2)	3.0m
Field of view	133° x 130°
Detection zones	208
Note 1: › ΔT ≥ 4°C › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

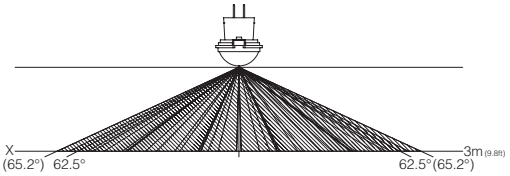
Further information on electrical characteristics please see page 42

Typical applications

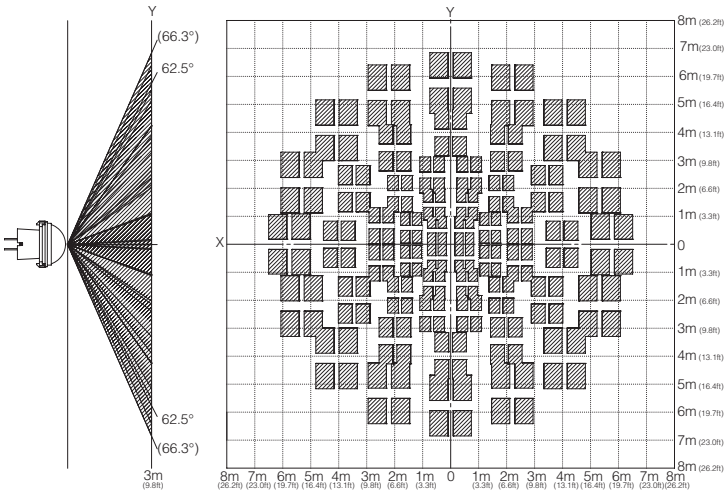
Dimension (in mm, inches in brackets)



Detection area (reference)



X-Y cross section at 3.0m (9.8ft)



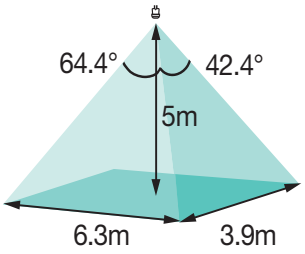
Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6μA	Digital	Standard	EKMB1308811K	EKMB1308812K	EKMB1308813K
	170μA	Digital	Standard	EKMC1608811	EKMC1608812	EKMC1608813
	170μA	Analog	Adjustable	EKMC2608811K	EKMC2608812K	EKMC2608813K
Special	6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.		
	170μA	Digital	High			
	170μA	Digital	Low			

Notes: The specification shows the X-Y cross section at 3.5m.
Digital Output type: Open-drain
Analog Output type: Op-amp

Spot Detection Type

Flat lens
Lens diameter 8.9mm
Narrow field of view

Detection area coverage

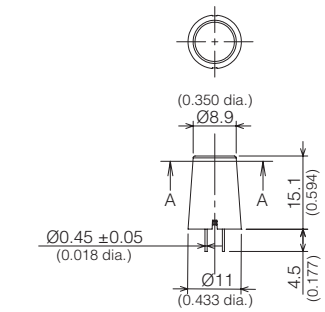


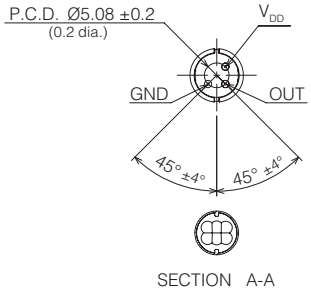
Specified detection distance (Note 1)	up to 7m - 7.8m
Typical ceiling installation height (Note 2)	5m
Field of view	64.4° x 42.4°
Detection zones	24
Note 1: › ΔT ≥ 4°C › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones	**Note 2:** The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

Further information on electrical characteristics please see page 42

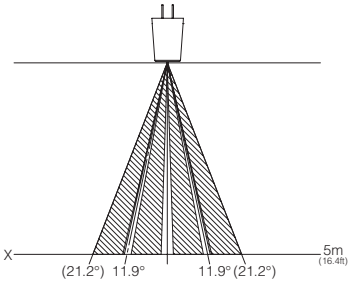
Typical applications

Dimension (in mm, inches in brackets)

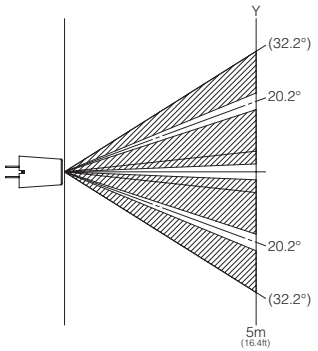


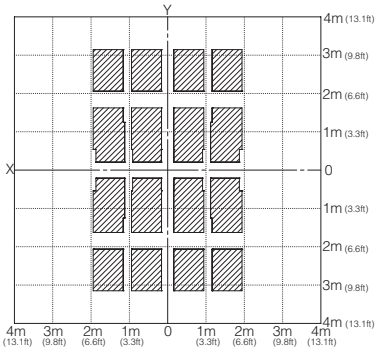


Detection area (reference)



X-Y cross section at 5.0m (16.4ft)





Standby current consumption	Output type	Threshold sensitivity	White	Black
6μA	Digital	Standard	EKMB1374811K	EKMB1374812K
170μA	Digital	Standard	EKMC1674811	EKMC1674812
170μA	Analog	Adjustable	EKMC2674811K	EKMC2674812K
6μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.	
170μA	Digital	High		
170μA	Digital	Low		

Notes: The specification shows the X-Y cross section at 7m.
Digital Output type: Open-drain
Analog Output type: Op-amp

EKM - Characteristics

EKM - Maximum rated values

Items	EKMB series	EKMC series
Power supply voltage	-0.3 to 4.5V DC	-0.3 to 7V DC
Ambient temperature	-20 to 60°C -20 to 55°C (high sensitivity type) (no frost, no condensation)	
Storage temperature	-20 to 70°C	

EKM - Electrical characteristics (digital output types)

Items	Symbol		EKMB11□ series (1µA)	EKMB12□ series (2µA)	EKMB13□K series (6µA)	EKMC16□ series (170µA)	Conditions
Operating voltage	V_{DD}	Max	4.0V DC			6.0V DC	–
		Min	2.3V DC			3.0V DC	
Current consumption (in standby/sleep mode) Note 1	I_W	Ave	1µA	2µA	6µA	170µA	Ambient temperature: 25°C I_{OUT} = 0A EKMB series: V_{DD} = 3V DC EKMC series: V_{DD} = 5V DC
Output current (during detection period) Note 2	I_{OUT}	Max	100µA				Ambient temperature: 25°C $V_{OUT} \geq V_{DD}$ – 0.5V DC
Output voltage (during detection period)	V_{OUT}	Min	V_{DD} – 0.5V				Ambient temperature: 25°C
Circuit stability time (when voltage is applied)	t_{WU}	Ave	25 seconds		–	–	Ambient temperature: 25°C I_{OUT} = 0A EKMB series: V_{DD} = 3V DC EKMC series: V_{DD} = 5V DC
		Max	210 seconds		10 seconds	30 seconds	

Note 1: The total current consumption during detection is the current consumption in standby mode (I_W) plus the output current (I_{OUT}). For the 1µA type the average current consumption (I_W) is 1µA in sleep mode and 1.9µA in standby mode. Please also refer to the timing charts on the next page.

Note 2: Please select an output resistor (pull-down concept) in accordance with V_{OUT} so that the output current is maximum 100µA.

EKM - Electrical characteristics (analog output types)

Items	Symbol	EKMC26□K series		Remarks
Operating voltage	V_{DD}	Max	5.5V	–
		Min	3.0V	
Current consumption (in standby mode) Note1	I_W	Ave	170µA	Ambient temperature = 25°C I_{OUT} = 0A
		Max	350µA	
Output current (during detection period) Note 2	I_{OUT}	Max	200µA	–
Analog output saturated voltage	V_H	High	Min. 1.9V	–
	V_L	Low	Max. 0.2V	–
Output offset voltage (at non detection) Note 3	V_{OFF}	Max	1.2V	Ambient temperature: 25°C Steady output voltage at non detection
		Ave	1.1V	
		Min	1.0V	
Steady noise	V_N	Max	150mV_{PP}	–
		Ave	80mV_{PP}	
Circuit stability time (after applying voltage)	t_{WU}	Max	30 seconds	Ambient temperature: 25°C I_{OUT} = 0A

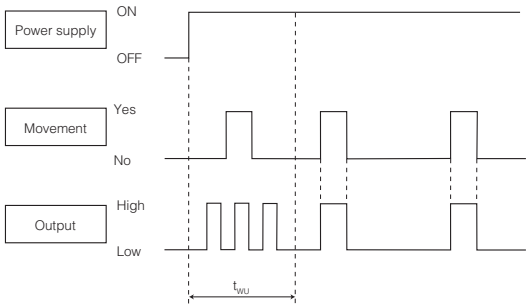
Note 1: The total current consumption during detection is the current consumption in standby mode (I_W) plus the output current (I_{OUT}).

Note 2: The output offset voltage has a certain tolerance. Please assure to measure the offset voltage before setting the upper and lower threshold values. Otherwise the threshold window could be unsymmetrical relative to the offset voltage.

Note 3: The internal circuit threshold of the EKMC16 series corresponds to output offset voltage(Vos)±0.22V. The threshold of the EKMC46 series corresponds to half of this.

Timing chart

2µA / 6µA / 170µA type (digital output)

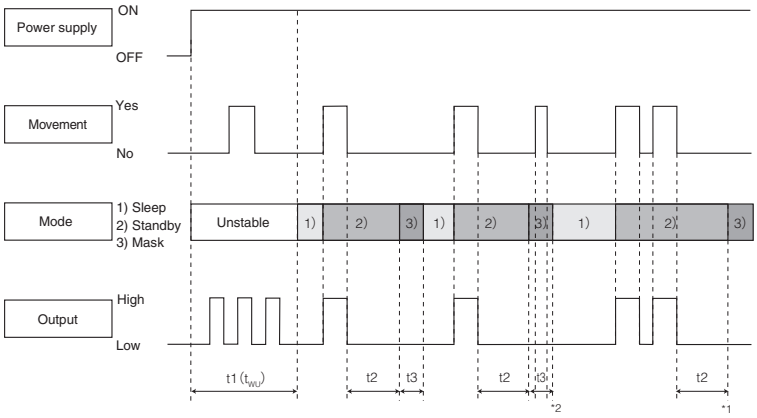


Explanation of the timing

t_{WU} Circuit stability time: about 25 seconds (typ.) for 2µA type, max. 10 seconds for 6µA type, max. 30 seconds for 170µA type.

While the circuitry is stabilizing after the power is turned on, the sensor output is not fixed in the High or Low state. This is true regardless of whether or not the sensor has detected anything.

1µA type (digital output)



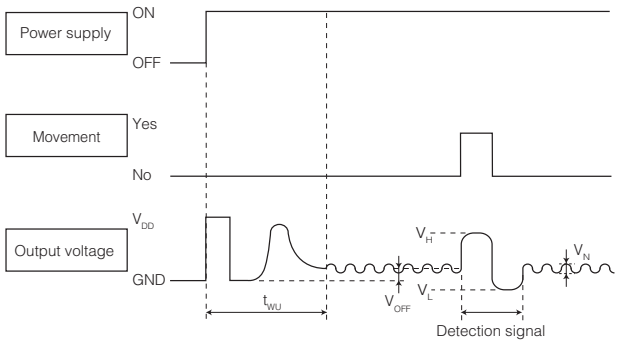
Explanation of modes

1)	Sleep mode:	When the output is Low. The electrical current consumption is around 1µA
2)	Standby mode:	After the sensor's output has reached High status, the sensor switches to standby mode. The electrical current consumption gets close to 1.9µA. When the sensor's output returns to its Low value after the "hold time" has expired, the sensor switches again to sleep mode.
3)	Mask mode:	Time during which the output is forced to Low status after the end of the standby mode. (No detection is possible during this period.)

Explanation of the timing

t1)	(t_{WU})	Circuit stability time: about 25 seconds (typ.) While the circuitry is stabilizing after the power is turned on, the sensor output is not fixed in the High or Low state. This is true regardless of whether or not the sensor has detected anything.
t2)	Standby hold time:	About 2.6 seconds (typ.) after the last detection of a signal. (*1)
t3)	Mask time:	About 1.3 seconds (typ.) During this stage, even if the sensor detects something, the output will not switch to High. (*2)

170µA type (analog output)



Explanation of the timing

t_{WU} Circuit stability time: max. 30 seconds

While the circuitry is stabilizing after the power is turned on, the sensor output is not fixed. This is true regardless of whether or not the sensor has detected anything.

AMN - Characteristics

AMN - Maximum rated values (digital output types)

Items	Value
Power supply voltage	-0.3 to 7V DC
Ambient temperature	-20 to +60°C (no frost, no condensation)
Storage temperature	-20 to +70°C

AMN - Electrical characteristics (digital output types)

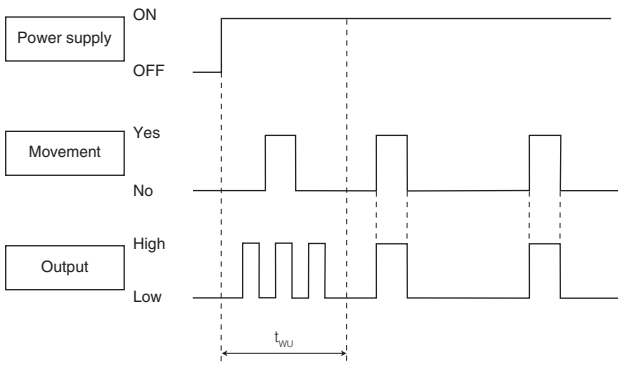
Items	Symbol	AMN3* series		Conditions
Operating voltage	V_{DD}	Max	6.0V DC	–
		Min	3.0V DC	
Current consumption (in standby mode) Note 1	I_W	Ave	170µA	Ambient temperature: 25°C I_{OUT} = 0A V_{DD} = 5V DC
Output current (during detection) Note 2	I_{OUT}	Max	100µA	Ambient temperature: 25°C $V_{OUT} \geq V_{DD} - 0.5$V DC
Output voltage (during detection)	V_{OUT}	Min	V_{DD} - 0.5V	Ambient temperature: 25°C
Circuit stability time (when voltage is applied) Note 3	t_{WU}	Max	30 seconds	Ambient temperature: 25°C I_{OUT} = 0A V_{DD} = 5V DC

Note 1: The total current consumption is equal to the current consumption in standby mode (I_W) plus the output current (I_{OUT}).

Note 2: Please select an output resistor (pull-down concept) in accordance with V_{OUT} so that the output current is maximum 100µA. If the output current is more than 100µA, this may cause false alarms.

Note 3: The sensor temperature has to be constant for the time specified.

Digital output



Explanation of the timing

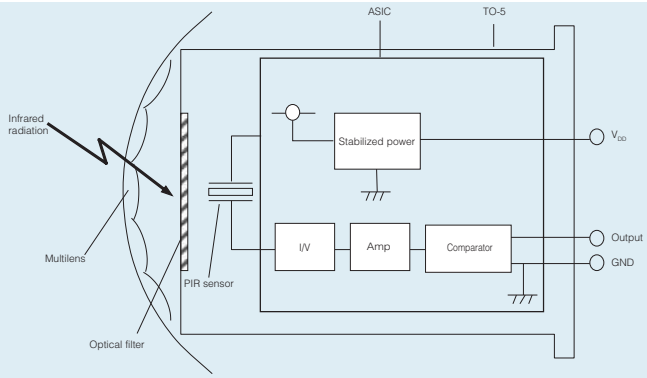
t_{WU} Circuit stability time: max. 30 seconds

While the circuitry is stabilizing after the power is turned on, the sensor output is not fixed in the High or Low state. This is true regardless of whether or not the sensor has detected anything.

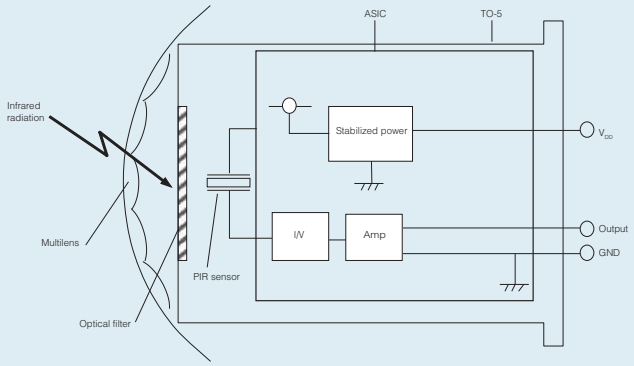
Technical information

Block diagram output circuit

Digital output with integrated amplifier and comparator

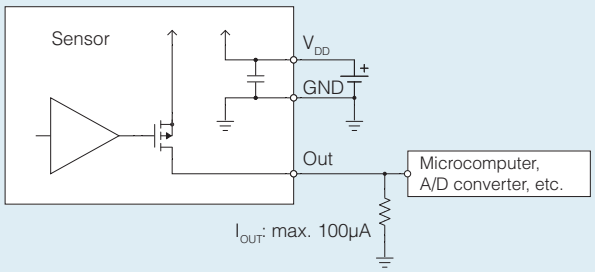


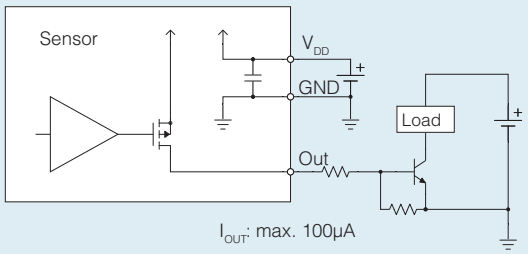
Analog output with integrated amplifier



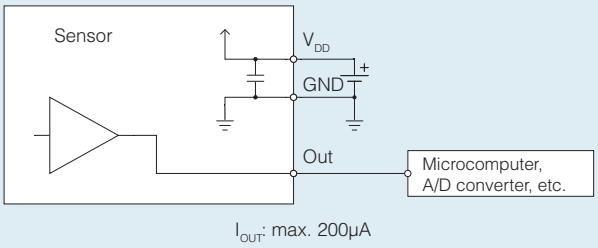
Wiring diagram

Digital output





Analog output



I_{OUT}: max. 200µA

Notes: **Digital output types:**

The output signal for the digital output type is from inside FET drain, therefore pull-down resistors are necessary. Please select an output resistor (pull-down concept) in accordance with V_{OUT} so that the output current is maximum 100µA. If the output current is more than 100µA, this may cause false alarms.

If the microcomputer has a pull-down function, there is no need for a resistor as long as the output current does not exceed 100µA.

Analog output types (EKMC26 series):
In either case, a microcomputer or a resistor needs to be chosen in accordance to V_{OUT}, so that the output current is maximum 200µA.

Cautions for use

Basic principles

PaPIRs are pyroelectric infrared sensors that detect variations in infrared rays.
However, detection may not be successful in the following cases: lack of movement or no temperature change in the heat source. They could also detect the presence of heat sources other than a human body. Efficiency and reliability of the system may vary depending on the actual operating conditions:

1) Detecting heat sources other than the human body, such as:
   a) small animals entering the detection area
   b) When a heat source, for example sun light, incandescent lamp, car headlights etc., or strong light beam hit the sensor regardless whether the detection area is inside or outside.
   c) Sudden temperature change inside or around the detection area caused by hot or cold wind from HVAC, or vapor from a humidifier, etc.
2) Difficulty in sensing the heat source
   a) Glass, acrylic or similar materials standing between the target and the sensor may not allow a correct transmission of infrared rays.
   b) Non-movement or quick movements of the heat source inside the detection area.
3) Expansion of the detection area
   In case of a considerable difference in the ambient temperature and the human body temperature, the detection area may be larger than the configured detection area.
4) Malfunction / Detection error
   On rare occasions, an erroneous detection signal may be output due to the nature of pyroelectric element. When the application cannot tolerate erroneous detection signals, take countermeasures by introducing a pulse-count circuit, etc.
5) Detection distance
   Panasonic's PIR Motion sensors state the detection distance in the specifications because they are usually provided with the lens (please refer to item 6 for lensless types). The PIR Motion sensor could detect variations in infrared rays however such variations are decided by following three factors.
   - The temperature difference between the target and the surroundings:
     The larger the temperature difference, the easier it is to detect targets.
   - Movement speed: If the target is moving at a slower or faster speed than specified in the tables, the detection ability may be lower.
   - Target size: The human body is the standard. If the target is smaller or larger than specified in the table, the detection ability may be lower.
     The detection distance explained in our data sheet is defined by the three factors mentioned above. Panasonic's standard for the temperature difference between the target and the surrounding is defined as 4°C. The larger the temperature difference, the longer the detection distance. If the temperature difference is 8°C, which is twice as much as the standard, the detection distance will be approx. 1.4 times longer than the distance at 4°C. For example, if targets at a distance of 5m can be detected at 4°C, then the sensor can detect targets at a distance of 7m at 8°C. (This is based on the theory that the detection sensitivity will vary inversely with the square of the distance.)
6) Lensless Type
   The lensless type cannot detect any targets because it is not possible to focus infrared variations into the sensor chip. It is not possible to determine the detection distance and the field of view without a lens. Please provide your own lens based on your lens design concept.
7) Lens material and the plate setting in front of the lens
   Typically, the only material that can be passed by infrared rays is Polyethylene.
   (The lens material of Panasonic's PIR Motion sensors is "High density polyethylene, HDPE".) When you need to set a plate in front of the lens, please choose one made from the Polyethylene. Please note the thickness or color of the plate will affect the detection ability, e.g. it may make the detection distance shorter. Therefore, please confirm by testing the sensor with the plate under realistic conditions.

Cautions

1) Refer to the newest specification regarding optimal operating environment conditions.
2) Do not solder with a soldering iron above 350°C (662°F) or for more than 3 seconds.
   This sensor should be hand-soldered.
3) To maintain stability of the product, always mount it on a printed circuit board.
4) Do not use liquids to wash the sensor. If washing fluid gets into the lens, it can reduce the performance.
5) Do not use a sensor after it has fallen on the ground.
6) The sensor may be damaged by ±200 volts of static electricity.
   Avoid direct hand contact with the pins and be very careful when operating the product.
7) When wiring the product, always use shielded cables and minimize the wiring length to prevent noise disturbances.
8) The inner circuit board can be destroyed by a voltage surge.
   The use of surge absorption elements is highly recommended.
   Surge resistance: below the power supply voltage value indicated in the section on maximum rated values.
9) Please use a stabilized power supply. Noise from the power supply can cause operating errors.
   Noise resistance: max. ±20V (square waves with a width of 50ns or 1µs)
   To reduce the effect of noise from the power supply , install a capacitor on the sensor's power supply pin.
10) Operation errors can be caused by noise from static electricity, lightnings, cell phones, amateur radio, broadcasting offices, etc
11) The detection performance can be reduced by dirt on the lens, please be careful.
12) The lens is made of soft materials (Polyethylene).
    Please avoid adding weight or impacts that may change its shape, causing operation errors or reduced performance.
13) The specified temperature and humidity levels are suggested to prolong usage. However, they do not guarantee durability or environmental resistance.
    Generally, high temperatures or high humidity levels will accelerate the deterioration of electrical components. Please consider both the planned usage and environment to determine the expected reliability and length of life of the product.
14) Do not attempt to clean this product with detergents or solvents such as benzene or alcohol, as these can cause shape or color alterations.
15) Avoid storage in high, low temperature or liquid environments.
    Also, avoid storage in environments containing corrosive gas, dust, salty air etc.
    Adverse conditions may cause performance deterioration and the sensor's main part or the metallic connectors could be damaged.
16) Storage conditions
    Temperature: +5 to +40°C, humidity: 30 to 75%
    Please use within 1 year after delivery.

Safety precautions

Obey the following precautions to prevent injury or accidents.

1) Do not use these sensors under any circumstance in which the range of their ratings, environment conditions or other specifications are exceeded. Using the sensors in any way which causes their specifications to be exceeded may generate abnormally high levels of heat, emit smoke, etc., resulting in damage to the circuitry and possibly causing an accident.
2) Our company is committed to making products of the highest quality and reliability. Nevertheless, all electrical components are subject to natural deterioration, and durability of a product will depend on the operating environment and conditions of use. Continued use after such deterioration could lead to overheating, smoke or fire. Always use the product in conjunction with proper fire-prevention, safety and maintenance measures to avoid accidents, reduction in product life expectancy or break-down.
3) Before connecting, check the pin layout by referring to the connector wiring diagram, specifications diagram, etc., to verify that the connector is connected properly. Mistakes made in connection may cause unforeseen problems in operation, generate abnormally high levels of heat, emit smoke, etc., resulting in damage to the circuitry.
4) Do not use any motion sensor which has been disassembled or remodeled.
5) Failure modes of sensors include short-circuiting, open-circuiting and temperature rises. If this sensor is to be used in equipment where safety is a prime consideration, examine the possible effects of these failures on the equipment concerned, and ensure safety by providing protection circuits or protection devices.
   Example : Safety equipment and devices, traffic signals, burglar and disaster prevention devices, controlling and safety device for trains and motor vehicles

MEMO

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