

((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



AMN



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

AMN3 digital output for battery-free devices (170µA)

Available lens colors: white and black

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Ordering information

EKM

EKM  11

← Sensor → ← Lens → Suffix

● Sensor type

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

● Lens type

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

● Lens color

 **1** : White
2 : Black
3 : Pearl white

● Suffix

 **K** : The following products have "K" at the end
EKMB13, EKMB43, EKMC26, EKMC46

● Lensless

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

AMN

AMN3 

← Sensor → ← Lens →

● Lens type

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

● Lens color

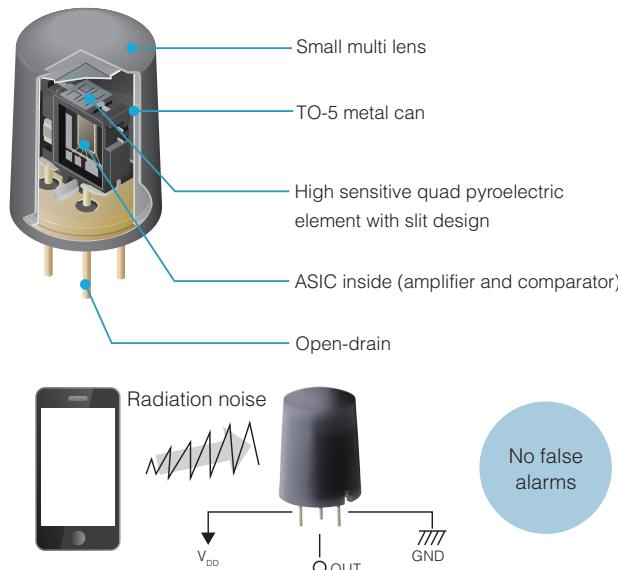
 **1** : Black
2 : White

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.

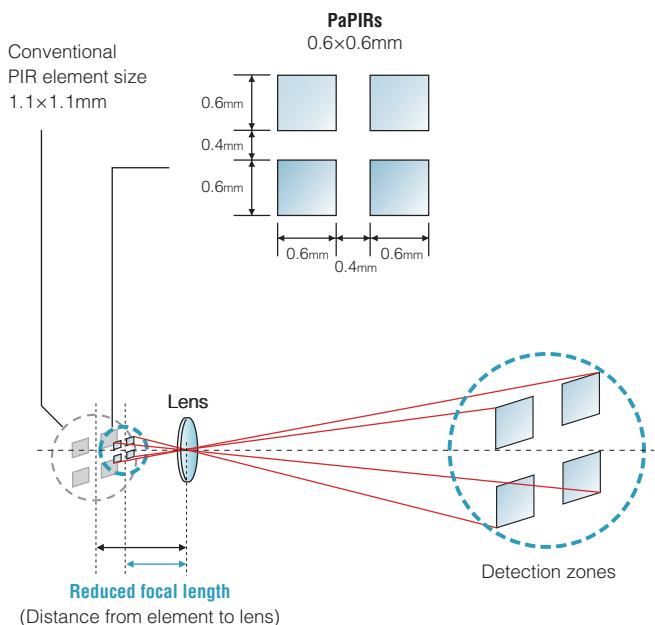
Easy design-in

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).



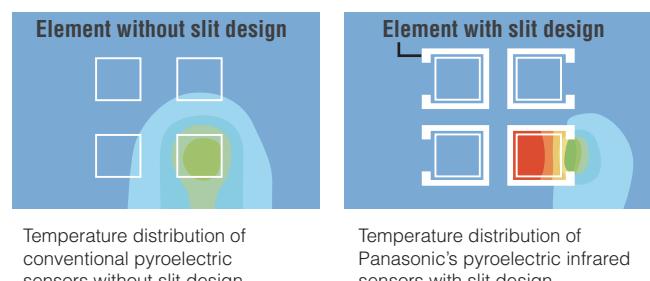
Small and optimal lens design

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.



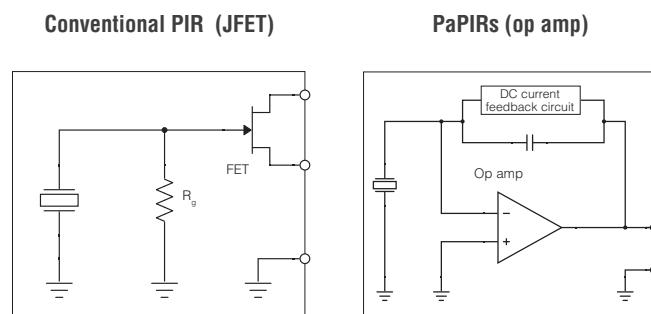
Best in class sensitivity

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. $\Delta T = 4^\circ\text{C}$)

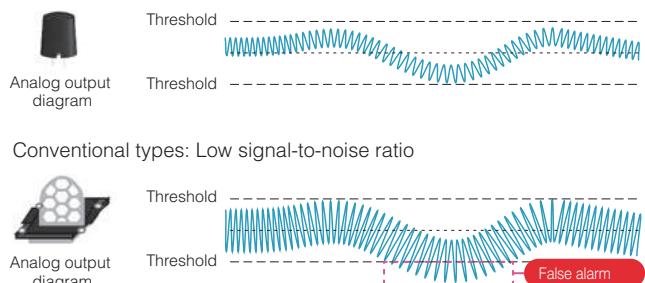


Best in class signal-to-noise ratio

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.



PaPIRs: High signal-to-noise ratio



Lead-free pyroelectric element

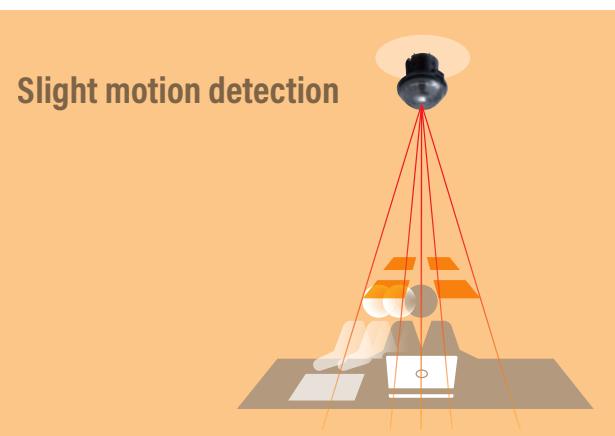
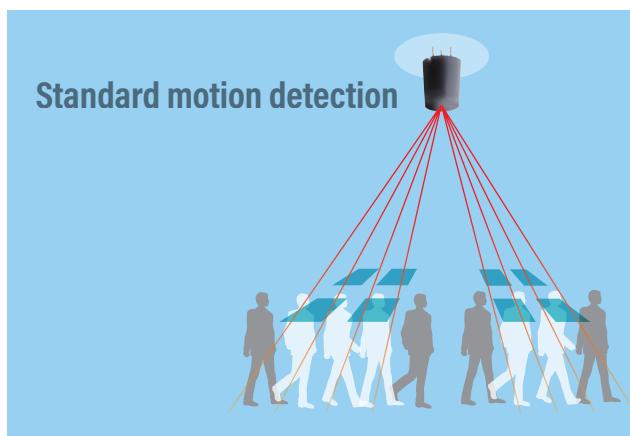
A ferroelectric Lithiumtantalate (LiTaO_3) single lead-free crystal is used as the pyroelectric element for Panasonic PIR motion sensors. Conventional PIR motion sensors normally use a ceramic base material (e.g. PZT) for the pyroelectric element, which contains lead in many cases.

Low current consumption EKMB (WL)

Reduction of current consumption (1, 2 or $6\mu\text{A}$) 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



Standard Detection Types

	Standard	Low Profile	Flat Square	AMN series Standard
Lens color	*Pearl white	*Black	*White	*Black
Detection area coverage	97° 106° 3m 6.8m 8.0m	110° 110° 3m 8.5m 8.5m	115° 115° 3m 9.3m 9.3m	106° 120° 3m 8.0m 10.5m
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
Lens color	*Pearl white	*Black	*White	*White
Detection area coverage	99° 108° 7m 16.3m 19.3m	69° 12m φ16.5m	45° 92° 15m 12.6m 31.0m	120° 107° 5m 17.3m 13.5m
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

Slight Motion Detection Types

	Ultra Slight	Slight Motion	Standard & Slight	AMN series Slight Motion
Lens color	*White White / Black / Pearl white	*Black White / Black / Pearl white	*White White / Black / Pearl white	*Black White / Black
Detection area coverage				
Reference page	P. 18	P. 19	P. 20	P. 21
Typical application	 Lighting controls Wall air conditioners IP cameras	 Lighting controls Wall air conditioners IP cameras	 Lighting controls Ceiling air conditioners	 Base lighting Ceiling air conditioners Heaters

Specific Area Detection Types

	Wall Installation	Horizontally Wide Detection	Wide Detection	AMN series Spot Detection
Lens color	*Pearl white White / Black / Pearl white	*Black White / Black / Pearl white	*White White / Black / Pearl white	*Black White / Black
Detection area coverage				
Reference page	P. 22	P. 23	P. 24	P. 25
Typical application	 Digital signage IoT module Thermostats	 Digital signage Thermostats Base lighting	 Lighting controls Wall air conditioners IP cameras	 Digital signage Sterilization stand Hot desking

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	EKMB110111	EKMB110112	EKMB110113
					Analog		2µA	EKMB120111	EKMB120112	EKMB120113
						Standard	6µA	EKMB130111K	EKMB130112K	EKMB130113K
							170µA	EKMC160111	EKMC160112	EKMC160113
	Low Profile				Digital	Standard	170µA	EKMC260111K	EKMC260112K	EKMC260113K
					Analog		1µA	EKMB110711	EKMB110712	EKMB110713
	Flat Square				Digital	Standard	2µA	EKMB120711	EKMB120712	EKMB120713
					Analog		6µA	EKMB130711K	EKMB130712K	EKMB130713K
Long Distance Detection Types	AMN series Standard				Digital	Standard	170µA	EKMC260711K	EKMC260712K	EKMC260713K
							1µA	EKMB111011	EKMB111012	EKMB111013
						Standard	2µA	EKMB121011	EKMB121012	EKMB121013
							6µA	EKMB131011K	EKMB131012K	EKMB131013K
	Long Distance				Digital	Standard	170µA	EKMC161011	EKMC161012	EKMC161013
					Analog		170µA	EKMB110611	EKMB110612	EKMB110613
	High Density Long Distance				Digital	Standard	1µA	EKMB120611	EKMB120612	EKMB120613
					Analog		2µA	EKMB130611K	EKMB130612K	EKMB130613K
Slight Motion Detection Types	Ultra Wide & Long Distance				Digital	Standard	170µA	EKMC260611K	EKMC260612K	EKMC260613K
							1µA	EKMB111111	EKMB111112	EKMB111113
						Standard	2µA	EKMB121111	EKMB121112	EKMB121113
							6µA	EKMB131111K	EKMB131112K	EKMB131113K
	AMN series 10m Detection				Digital	Standard	170µA	EKMC261111K	EKMC261112K	EKMC261113K
					Analog		—	170µA	EKMB110311	EKMB110312
Specific Area Detection Types	Ultra Slight				Digital	Standard	1µA	EKMB110911	EKMB110912	EKMB110913
					Analog		2µA	EKMB120911	EKMB120912	EKMB120913
						Standard	6µA	EKMB130911K	EKMB130912K	EKMB130913K
							170µA	EKMC160911	EKMC160912	EKMC160913
	Slight Motion				Digital	Standard	1µA	EKMB119111	EKMB119112	EKMB119113
					Analog		2µA	EKMB129111	EKMB129112	EKMB129113
	Standard and Slight				Digital	Standard	6µA	EKMB139111K	EKMB139112K	EKMB139113K
					Analog		170µA	EKMC169111	EKMC169112	EKMC169113
Specific Area Detection Types	AMN series Slight Motion				Digital	Standard	1µA	EKMB119311	EKMB119312	EKMB119313
							2µA	EKMB129311	EKMB129312	EKMB129313
	Wall Installation				Digital	Standard	6µA	EKMB139311K	EKMB139312K	EKMB139313K
							170µA	EKMC169311	EKMC169312	EKMC169313
	Horizontally Wide Detection				Digital	Standard	1µA	EKMB110511	EKMB110512	EKMB110513
					Analog		2µA	EKMB120511	EKMB120512	EKMB120513
	Wide Detection				Digital	Standard	6µA	EKMB130511K	EKMB130512K	EKMB130513K
					Analog		170µA	EKMC160511	EKMC160512	EKMC160513
AMN series Spot Detection					Digital	Standard	170µA	EKMC260511K	EKMC260512K	EKMC260513K
							1µA	EKMB110811	EKMB110812	EKMB110813

*Please contact us if a higher or a lower sensitivity is required.

*All lens can be adopted with any applications.

Reference information										
FOV (H x V)	Detection zones		Detection distance		Recommended applications					
106°×97°	64	5.0m		     				P.10		
110°×110°	32	5.0m		     				P.11		
115°×115°	40	5.0m		     				P.12		
120°×106°	104	5.0m		     				P.13		
108°×99°	92	12.0m		     				P.14		
69°×69°	128	12.0 / 14.5m		     				P.15		
92°×45°	188	10.0 / 15.0m		     				P.16		
120°×107°	80	5.0 – 10.0m		     				P.17		
107°×107°	192	2.5 – 4.1m 5.2 – 8.0m (for Standard motion)		     				P.18		
104°×104°	112	2.5 – 4.0m		     				P.19		
44°×44° 91°×91°	36 48	2.2 – 3.1m		     				P.20		
107°×106°	104	2.0 – 3.3m		     				P.21		
56°×112°	68	12.0m/6.0m/3.0m		     				P.22		
122°×35° 150°×36°	88 16	5.0m		     				P.23		
130°×130°	208	2.5 – 5.9m		     				P.24		
57°×42°	24	5.0 – 5.6m		     				P.25		

EKM - Standard Detection Type



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:	
• $\Delta T \geq 4^{\circ}C$	
• 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

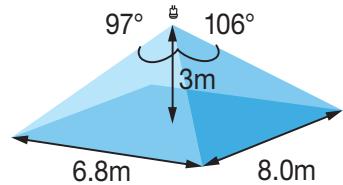
Further information on electrical characteristics please see page 42

Preference type

Flat lens for an unobtrusive integration

Lens diameter 9.5mm

Detection area coverage



Typical applications



Base lighting

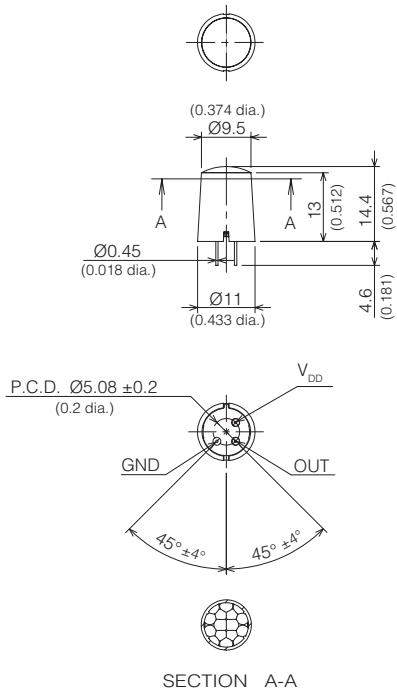


Digital signage

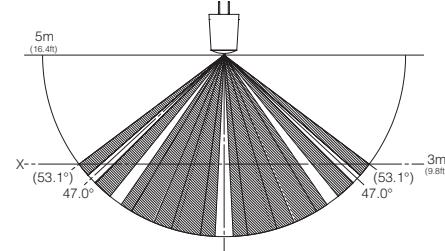


IP cameras

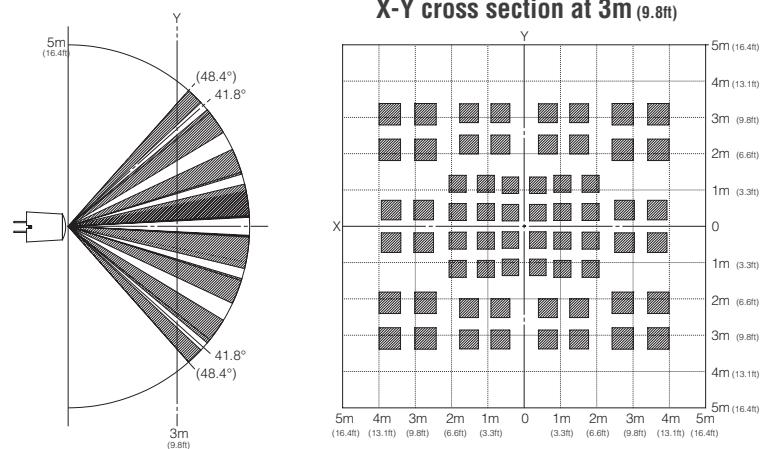
Dimension (in mm, inches in brackets)



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	1 μ A	Digital	Standard	EKMB1101111	EKMB1101112	EKMB1101113
	2 μ A	Digital	Standard	EKMB1201111	EKMB1201112	EKMB1201113
Economy	6 μ A	Digital	Standard	EKMB1301111K	EKMB1301112K	EKMB1301113K
	170 μ A	Digital	Standard	EKMC1601111	EKMC1601112	EKMC1601113
Special	170 μ A	Analog	Adjustable	EKMC2601111K	EKMC2601112K	EKMC2601113K
	6 μ A	Digital	High			
	170 μ A	Digital	High			
	170 μ A	Digital	Low			

Please contact us if a higher or a lower sensitivity is required.

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



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:	<ul style="list-style-type: none"> › $\Delta T \geq 4^\circ C$ › 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

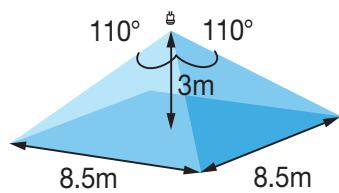
Further information on electrical characteristics please see page 42

Lower height lens design
[14.4mm → 10.9mm]

Comparable performance to
PaPIRs standard detection type
lens

Fit with superior product design

Detection area coverage



Typical applications



Lighting controls

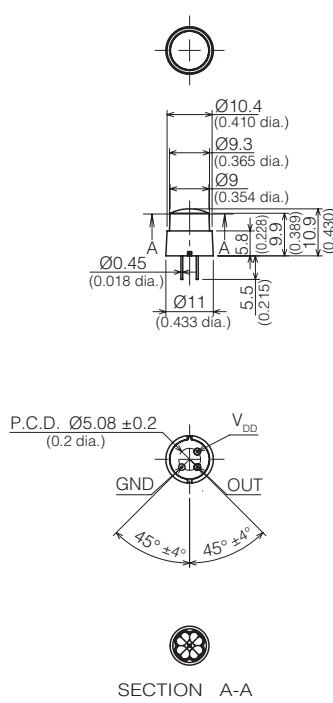


Digital signage

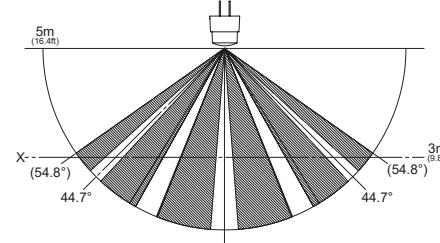
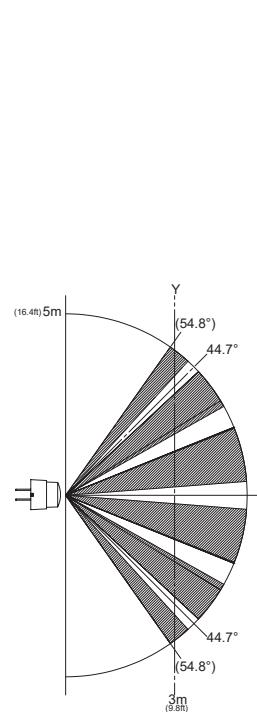


IP cameras

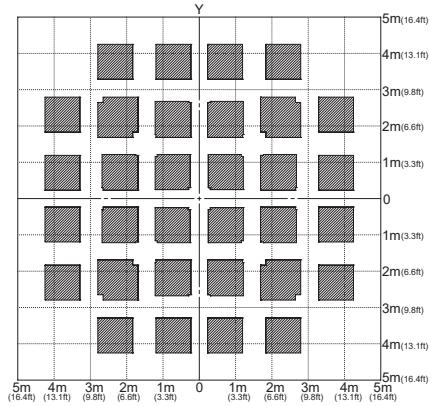
Dimension (in mm, inches in brackets)



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	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

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

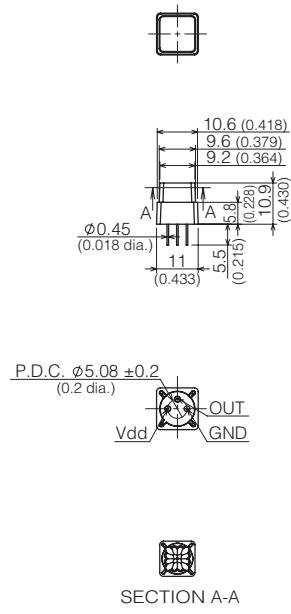
EKM – Flat Square Type



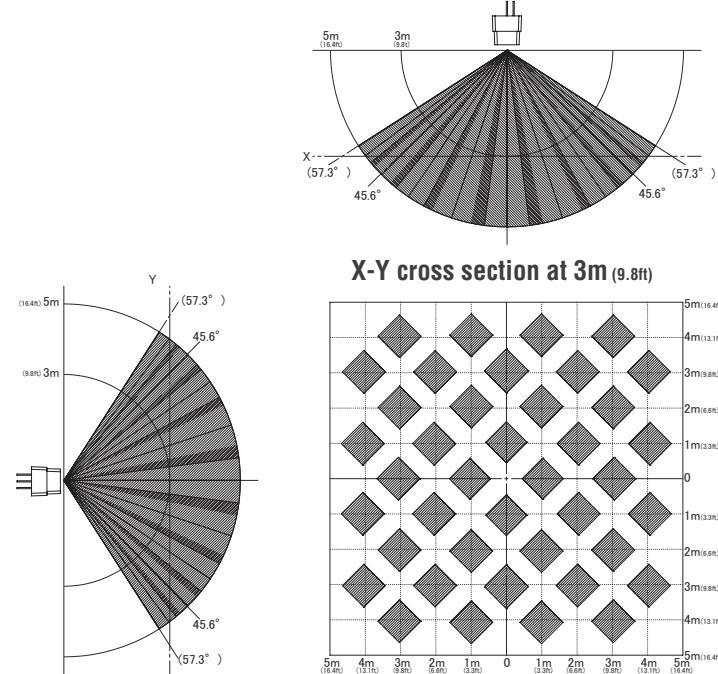
Specified detection distance (Note 1)	Up to 5.0m
Typical ceiling installation height (Note 2)	3.0m
Field of view	115° x 115°
Detection zones	40
Note 1:	
• $\Delta T \geq 4^\circ\text{C}$ • Object speed: 1.0m/s • Object size: 700 x 250mm • Crossing 2 detection zones	Note 2: The sensitivity of passive 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

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	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

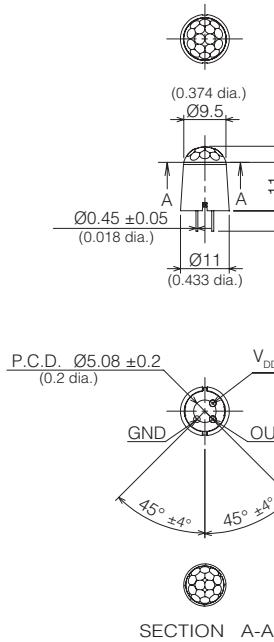
AMN - Standard Detection Type



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:	
> $\Delta T \geq 4^{\circ}\text{C}$	
> 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	

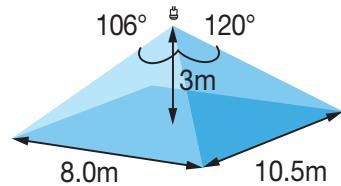
Further information on electrical characteristics please see page 44

Dimension (in mm, inches in brackets)



Detection area coverage

Small lens diameter of only 9.5mm



Typical applications



Base lighting

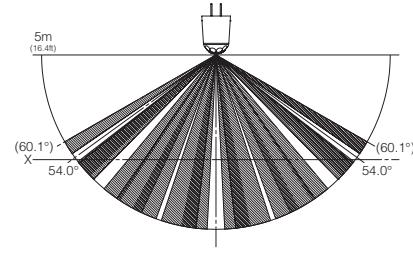


Ceiling air conditioners

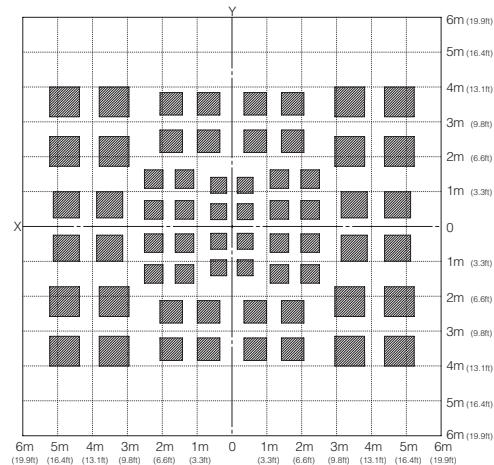
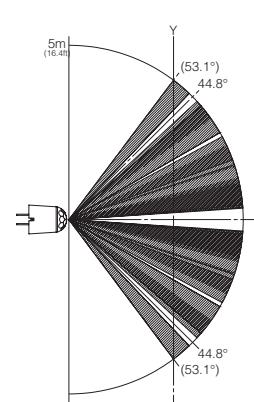


Heaters

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

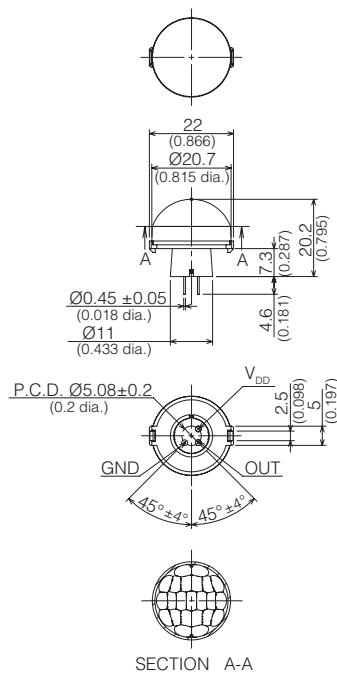
EKM - Long Distance Detection Type



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:	
> $\Delta T \geq 4^\circ\text{C}$	
> 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

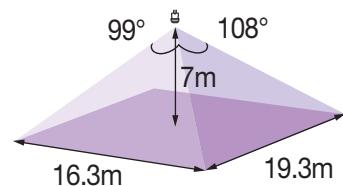
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)



Lens diameter 20.7mm
Wide detection angle and long distance

Detection area coverage



Typical applications



Street lighting

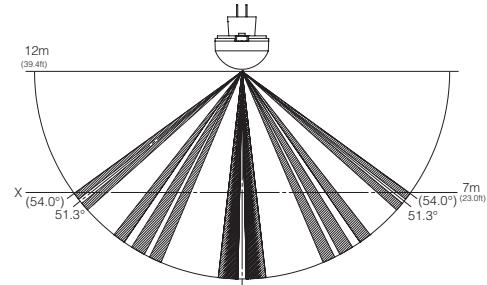


High-bay lighting

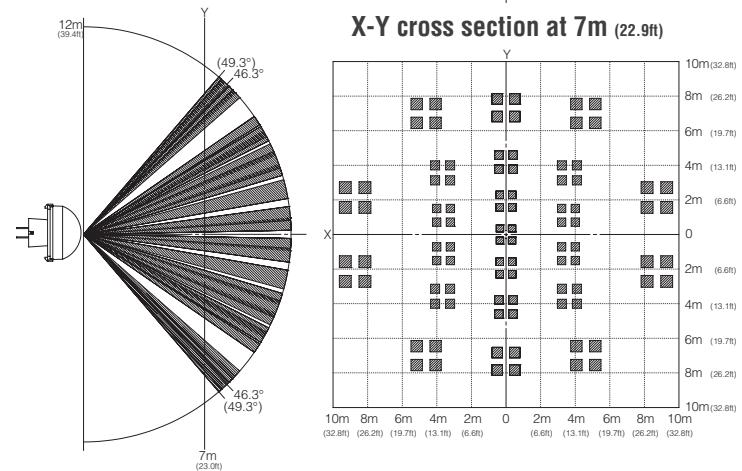


Ceiling air conditioners

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
Special	170µA	Analog	Adjustable	EKMC2603111K	EKMC2603112K	EKMC2603113K
	6µA	Digital	High			
	170µA	Digital	High			
	170µA	Digital	Low			

Please contact us if a higher or a lower sensitivity is required.

Notes: The specification shows the X-Y cross section at 5m.

Digital Output type: Open-drain

Analog Output type: Op-amp

EKM - Ultra Wide & Long Distance Detection Type



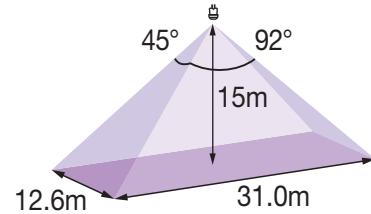
Specified detection distance (Note 1)	10m / 15m
Typical ceiling installation height (Note 2)	15.0m (High sensitivity sensor) *10.0m (Standard sensitivity sensor)
Field of view	92° x 45°
Detection zones	188
Note 1:	<ul style="list-style-type: none"> > $\Delta T \geq 4^\circ\text{C}$ > Object speed: 1m/s > 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

Smallest aisle high bay sensor (lens Ø32.6mm)

High sensitivity on the aisle entry and exit area
Optimized for radial movement

Detection area coverage



Typical applications



Street lighting

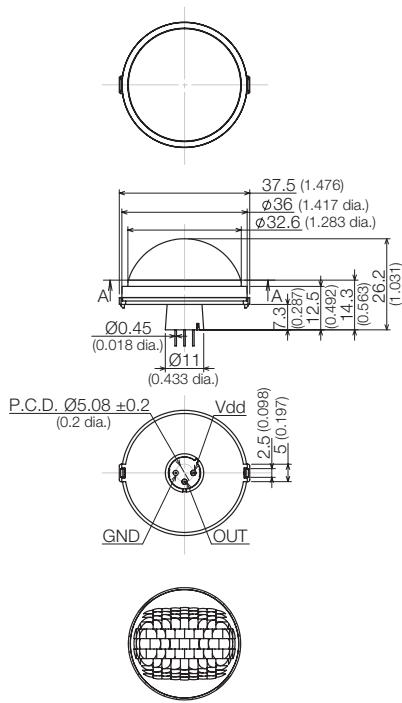


High-bay lighting

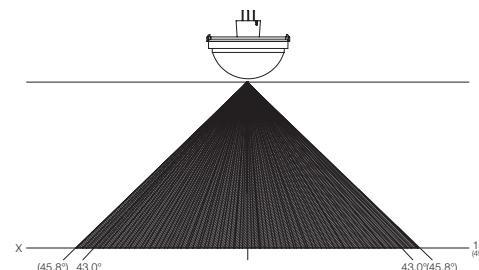


IP cameras

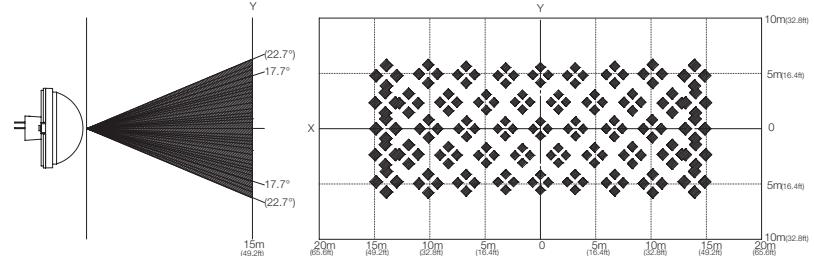
Dimension (in mm, inches in brackets)



Detection area (reference)



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



SECTION A-A

Please contact us if you install at ceiling 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	
Special	170µA	Analog	Adjustable	EKMC2611111K	EKMC2611112K	EKMC2611113K	
	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

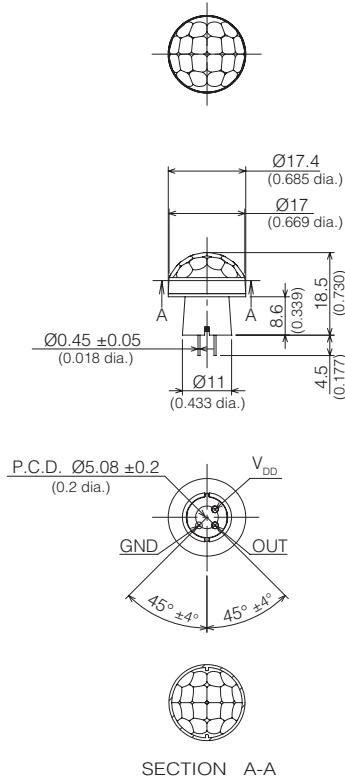
AMN - 10m Detection Type (Long Distance)



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:	<ul style="list-style-type: none"> › $\Delta T \geq 4^{\circ}\text{C}$ › 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

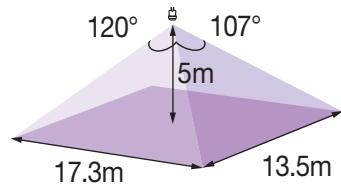
Further information on electrical characteristics please see page 44

Dimension (in mm, inches in brackets)



Smaller type than long distance lens
Lens diameter 17.4mm

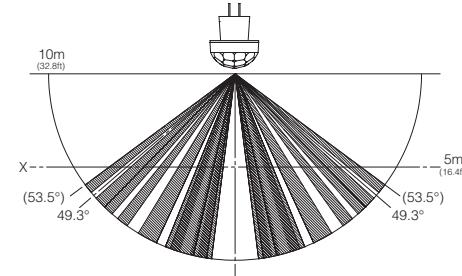
Detection area coverage



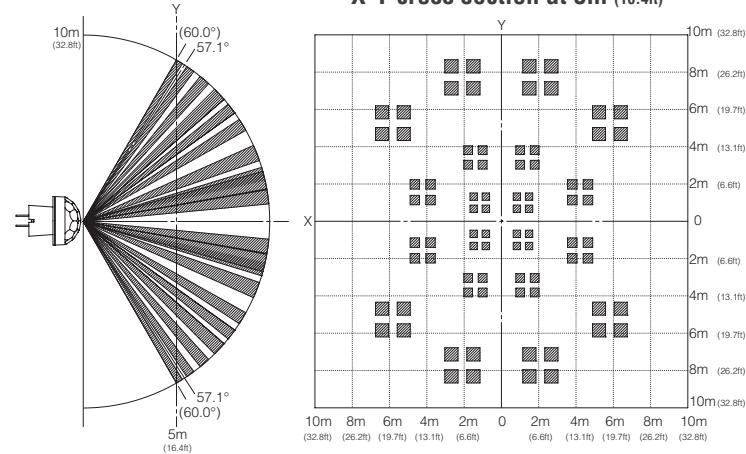
Typical applications



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	AMN34112	AMN34111

Note: Digital Output type: Open-drain

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

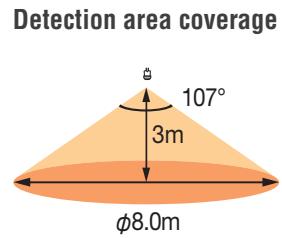
EKM - Ultra Slight Motion Detection Type



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:	
• $\Delta T \geq 4^{\circ}\text{C}$	
• 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

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



Typical applications



Lighting controls

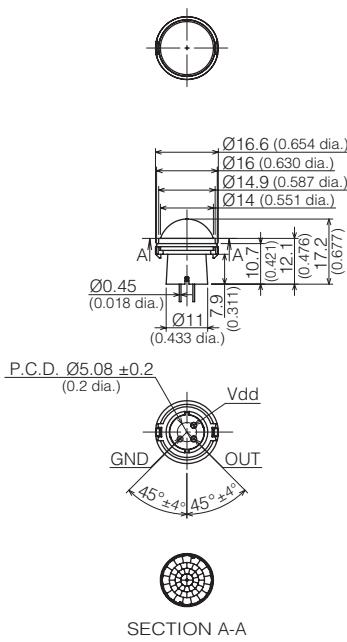


Wall air conditioners

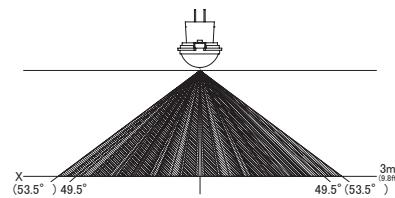


IP cameras

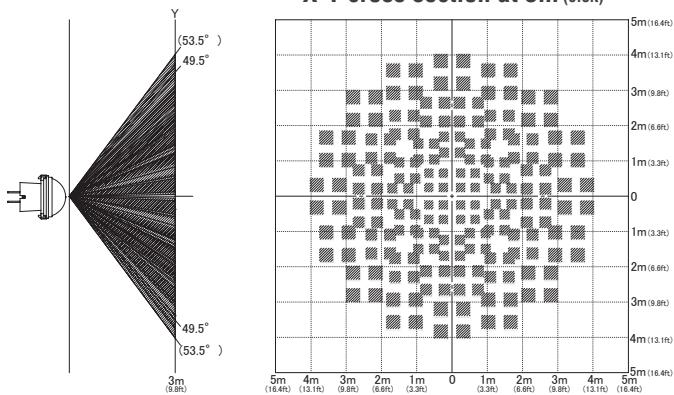
Dimension (in mm, inches in brackets)



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	1 μA	Digital	Standard	EKMB1109111	EKMB1109112	EKMB1109113	
	2 μA	Digital	Standard	EKMB1209111	EKMB1209112	EKMB1209113	
Economy	6 μA	Digital	Standard	EKMB1309111K	EKMB1309112K	EKMB1309113K	
	170 μA	Digital	Standard	EKMC1609111	EKMC1609112	EKMC1609113	
	170 μA	Analog	Adjustable	EKMC2609111K	EKMC2609112K	EKMC2609113K	
Special	6 μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170 μA	Digital	High				
	170 μA	Digital	Low				

Notes: The specification shows the X-Y cross section at 2.5m.

Digital Output type: Open-drain

Analog Output type: Op-amp

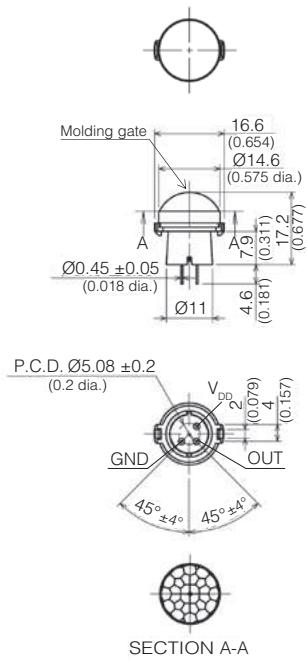
EKM - Slight Motion Detection Type



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:	
• $\Delta T \geq 4^\circ\text{C}$ • 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

Further information on electrical characteristics please see page 42

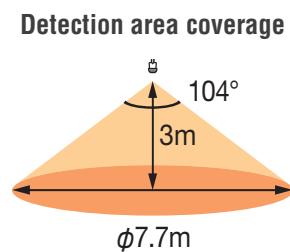
Dimension (in mm, inches in brackets)



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)



Typical applications



Lighting controls

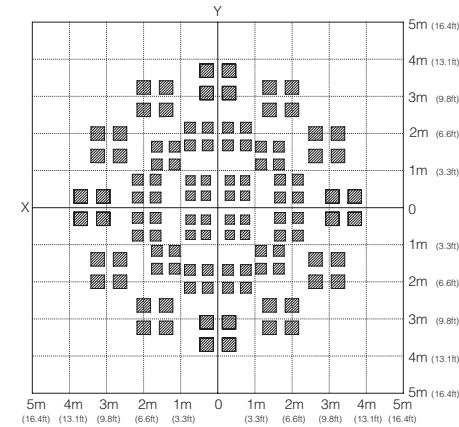
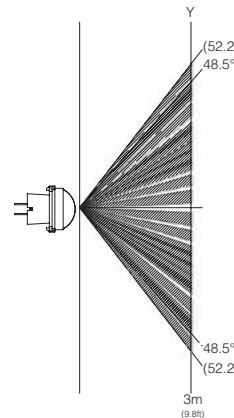
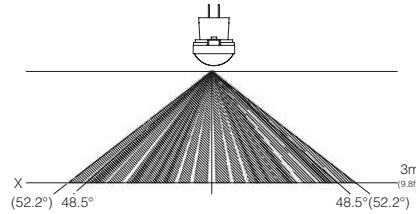


Wall air
conditioners



Ceiling air
conditioners

Detection area (reference)



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	
Special	170µA	Analog	Adjustable	EKMC2691111K	EKMC2691112K	EKMC2691113K	
	6µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170µA	Digital	High				
	170µA	Digital	Low	Please contact us if a higher or a lower sensitivity is required.			

Notes: The specification shows the X-Y cross section at 2.5m.

Digital Output type: Open-drain

Analog Output type: Op-amp

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

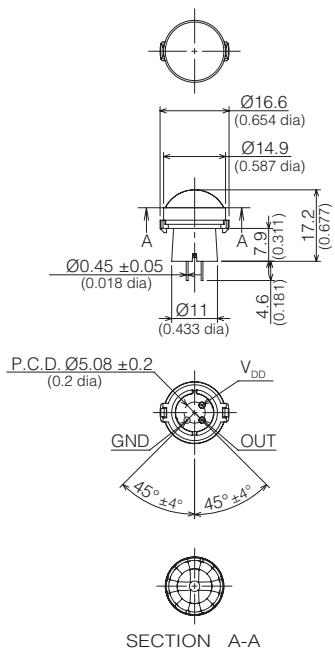
EKM - Standard and Slight Motion Detection Type



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:	
> $\Delta T \geq 4^{\circ}\text{C}$	
> 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	

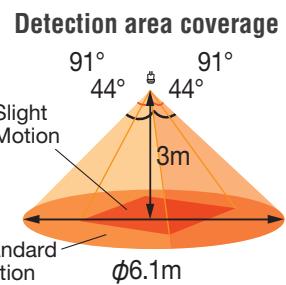
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)



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)



Typical applications



Lighting controls

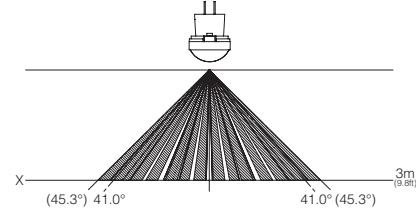


Wall air conditioners

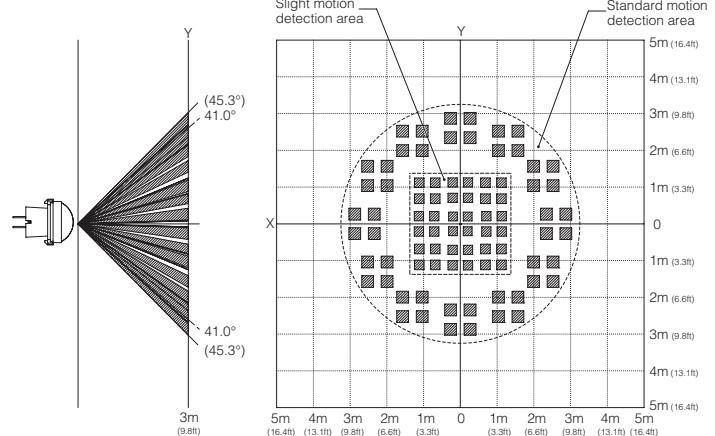


Ceiling air conditioners

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	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

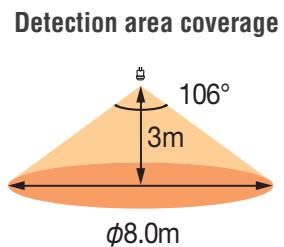
AMN - Slight Motion Detection Type



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:	Note 2: The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended
<ul style="list-style-type: none"> > $\Delta T \geq 4^{\circ}\text{C}$ > Object speed: 0.5m/s > Object size: 200mm x 200mm > Crossing 1 detection zone 	

Further information on electrical characteristics please see page 44

Optimized for small movements



Typical applications



Base lighting

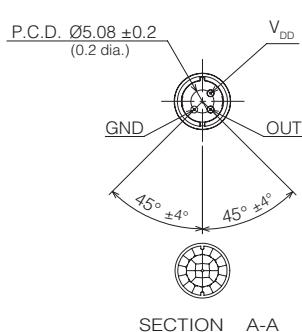
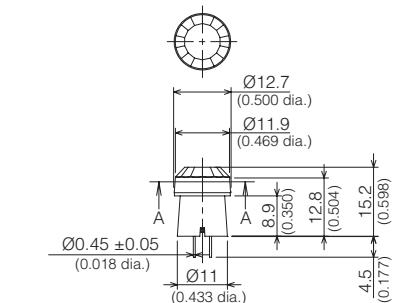


Ceiling air conditioners



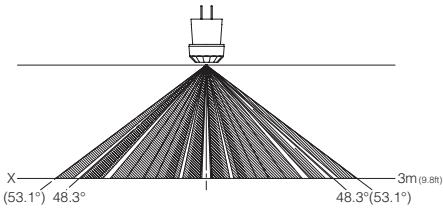
Heaters

Dimension (in mm, inches in brackets)

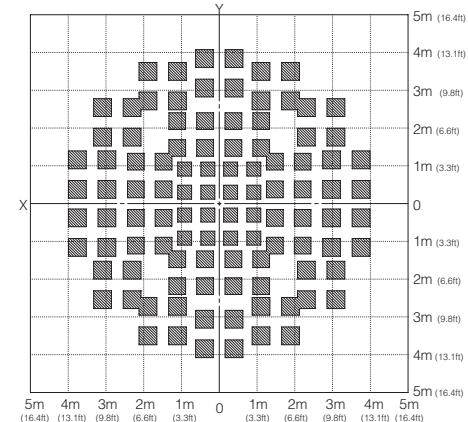
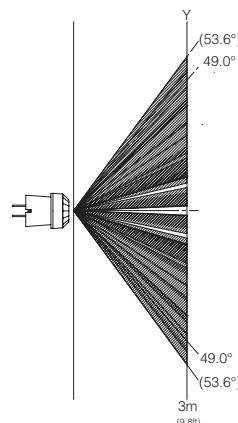


SECTION A-A

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

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

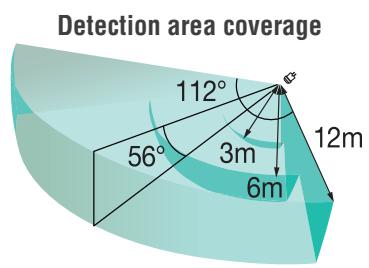
EKM - Wall Installation Type



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: › $\Delta T \geq 4^{\circ}\text{C}$ › 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

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



Typical applications



Digital signage

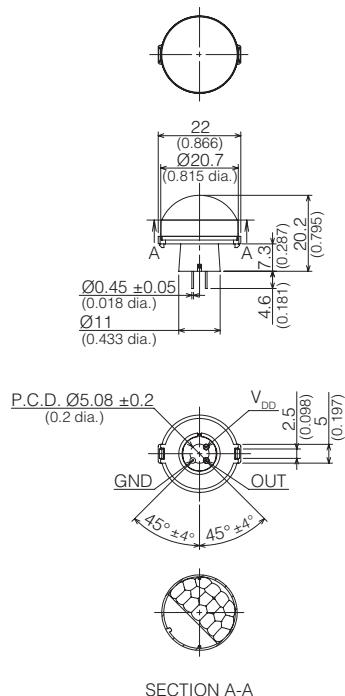


IoT module

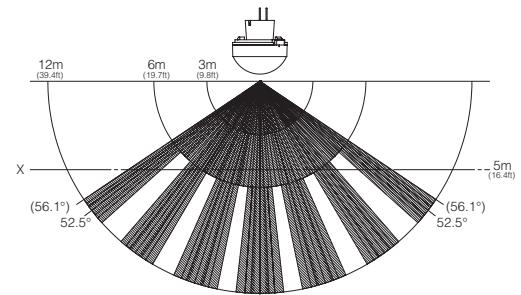


Thermostats

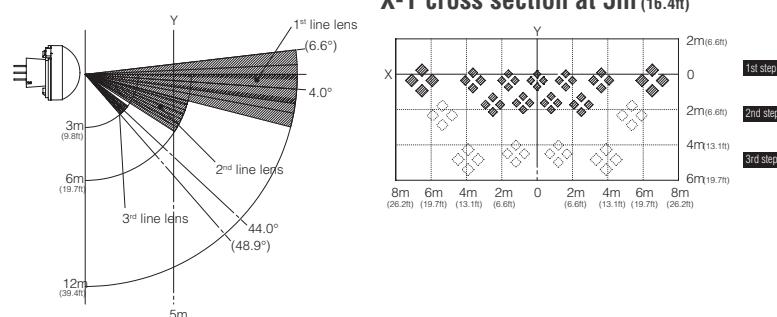
Dimension (in mm, inches in brackets)



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	1 μA	Digital	Standard	EKMB1104111	EKMB1104112	EKMB1104113	
	2 μA	Digital	Standard	EKMB1204111	EKMB1204112	EKMB1204113	
Economy	6 μA	Digital	Standard	EKMB1304111K	EKMB1304112K	EKMB1304113K	
	170 μA	Digital	Standard	EKMC1604111	EKMC1604112	EKMC1604113	
Special	170 μA	Analog	Adjustable	EKMC2604111K	EKMC2604112K	EKMC2604113K	
	6 μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170 μA	Digital	High				
	170 μA	Digital	Low				

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

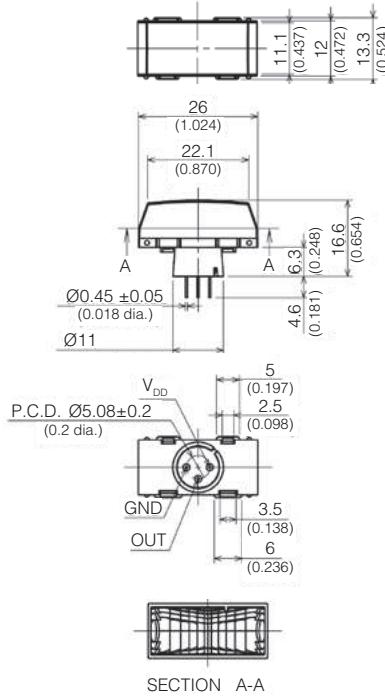
EKM - Horizontally Wide Detection Type



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

Further information on electrical characteristics please see page 42

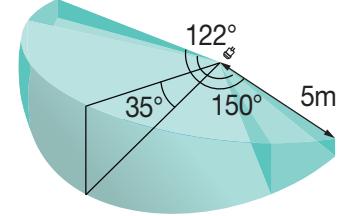
Dimension (in mm, inches in brackets)



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



Typical applications



Digital signage

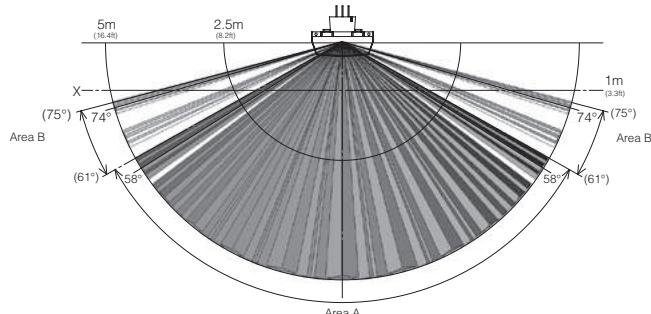


Thermostats

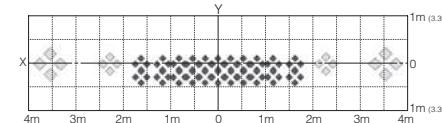


Base lighting

Detection area (reference)



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



Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

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	
Special	6µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170µA	Digital	Low	Please contact us if a higher or a lower sensitivity is required.			

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

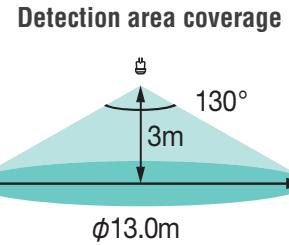
EKM - Wide Detection Type



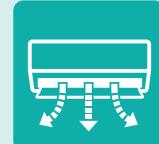
Specified detection distance (Note 1)	2.5m ~ 5.9m
Typical ceiling installation height (Note 2)	3.0m
Field of view	130° x 130°
Detection zones	208
Note 1:	<ul style="list-style-type: none"> › $\Delta T \geq 4^\circ\text{C}$ › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones
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

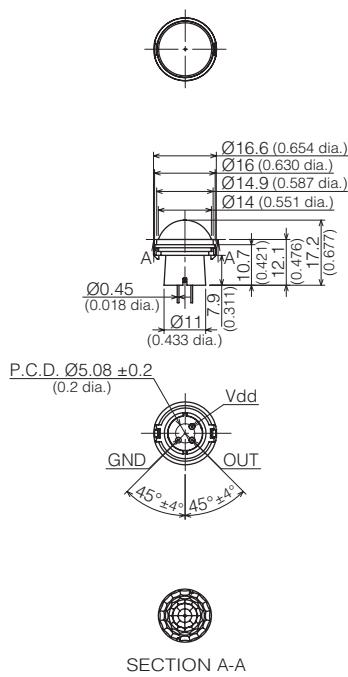
Large detection area: $\varnothing 12.9\text{m}$
(@3m installation height)
Lens diameter: 14mm



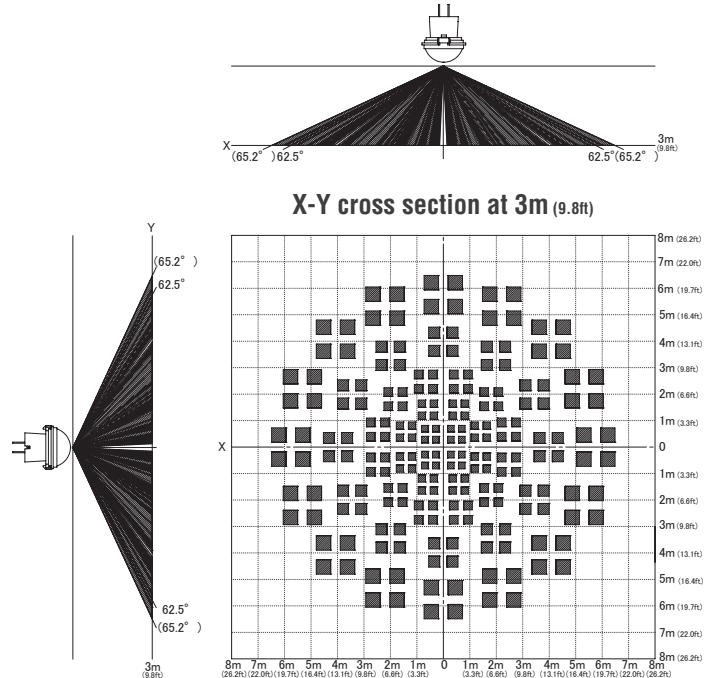
Typical applications



Dimension (in mm, inches in brackets)



Detection area (reference)



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

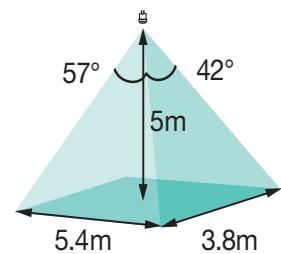


Specified detection distance (Note 1)	up to 5m - 5.6m
Typical ceiling installation height (Note 2)	5.0m
Field of view	57° x 42°
Detection zones	24
Note 1:	Note 2: The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended
<ul style="list-style-type: none"> > $\Delta T \geq 4^{\circ}\text{C}$ > Object speed: 1m/s > Object size: 700 x 250mm > Crossing 2 detection zones 	

Further information on electrical characteristics please see page 44

Detection area coverage

Flat lens
Lens diameter 8.9mm
Narrow field of view



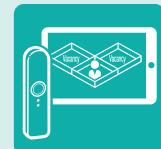
Typical applications



Digital signage

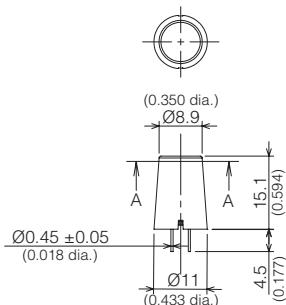


Sterilization stand

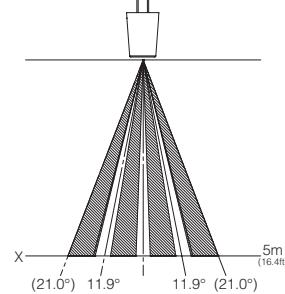


Hot desking

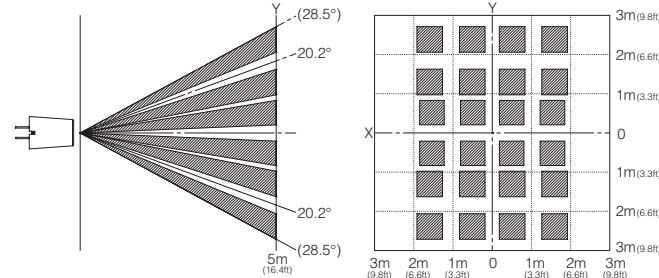
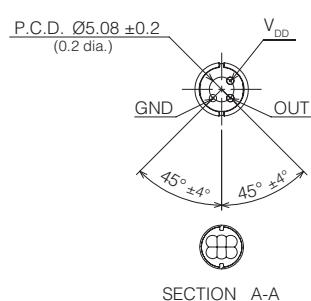
Dimension (in mm, inches in brackets)



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

Standard Detection Type

Long Distance Detection Type

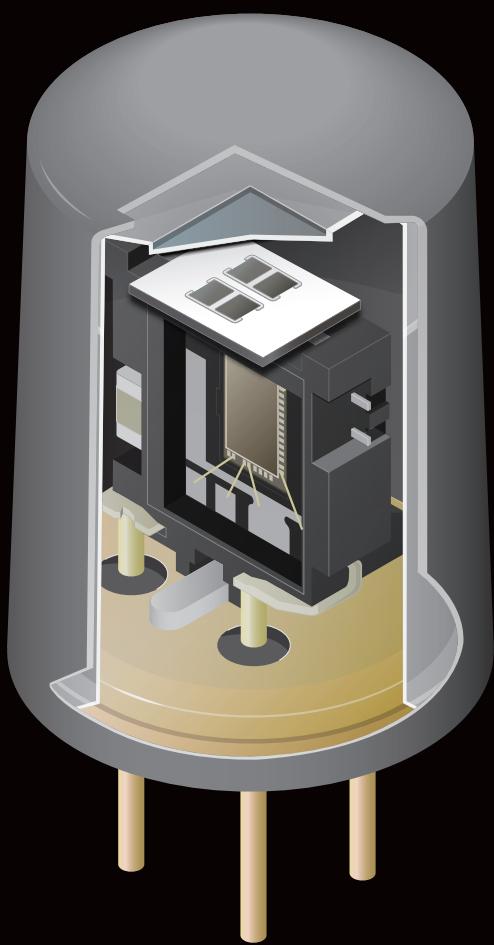
Slight Motion Detection Type

Specific Area Detection Type

MEMO

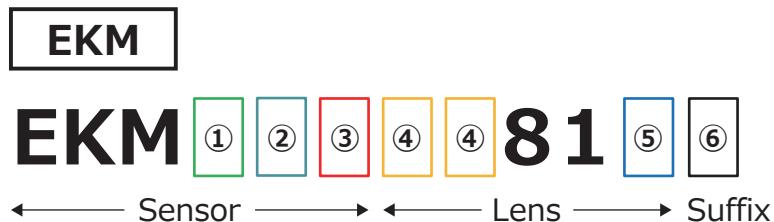
((PaPIRs⁺)))

PIR Motion Sensors **Evolution**



PaPIRs Plus

Ordering information



● Sensor type

① **②** **③** **B13, B43** : WL Series
C16, C26, C46 : VZ Series

● Lens type

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

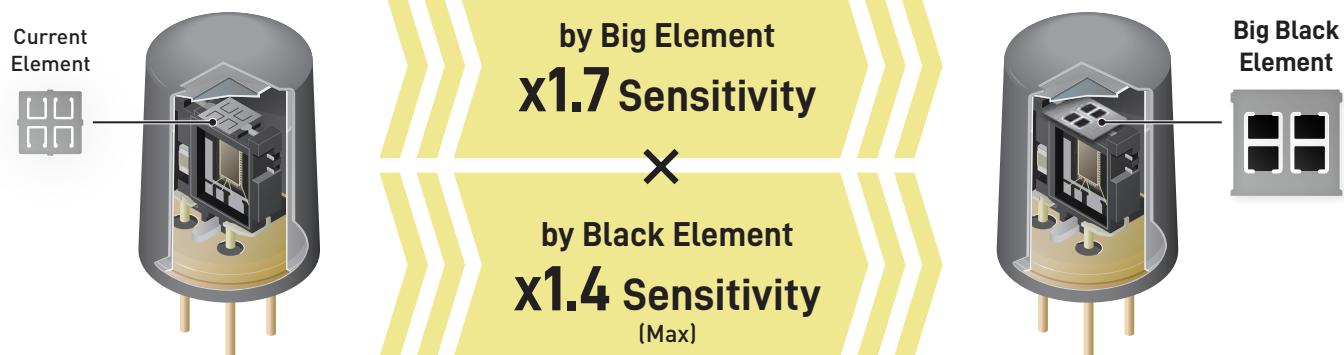
● Lensless

EKMB1300800K, EKMB4300800K
EKMC1600800, EKMC2600800K, EKMC4600800K

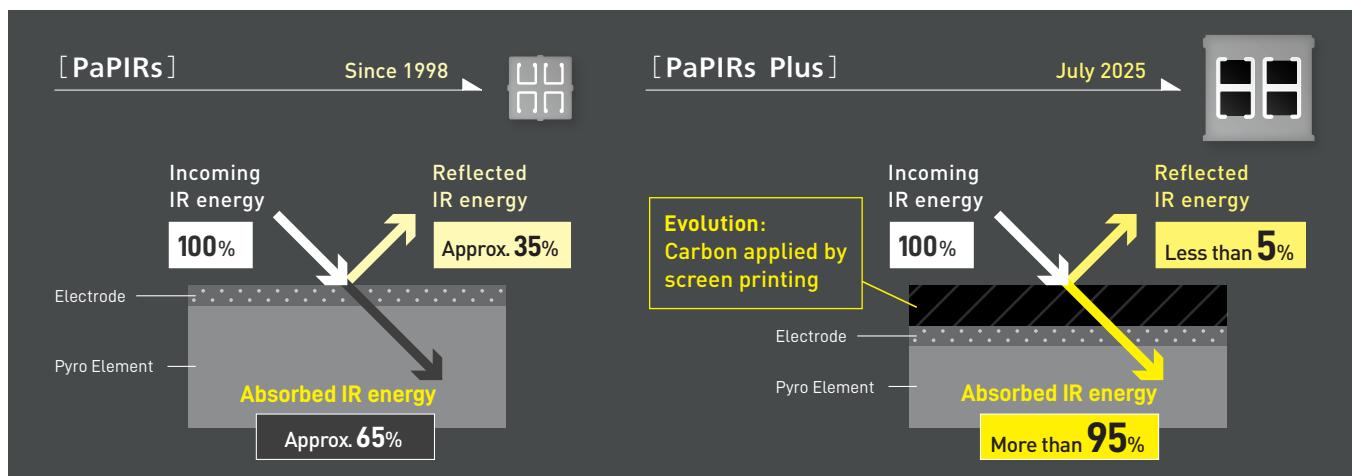
The pyroelectric element of PaPIRs has further evolved into a “Big & Black Element”

Achieves approximately x2 sensitivity with the Big & Black element

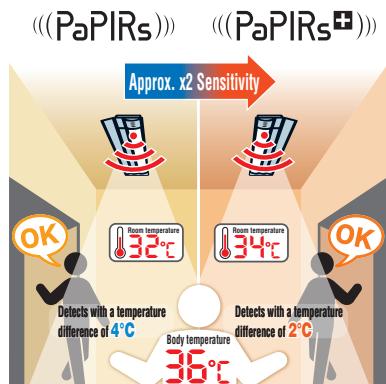
((PaPIRs)) Approx. x2 Sensitivity ((PaPIRs⁺))



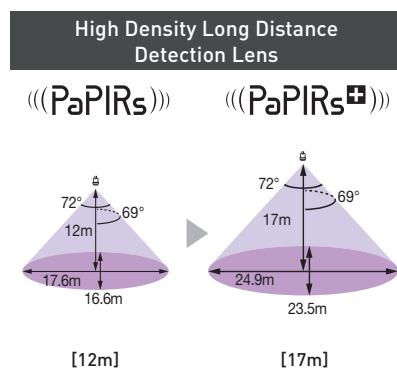
Improved infrared absorption rate



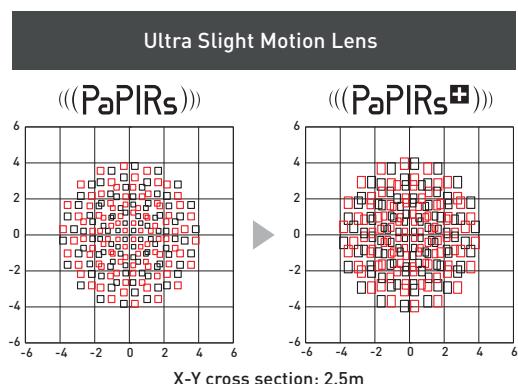
Enhanced detection temperature difference



Extended detection distance



Higher density detection area



Standard Detection Types				Long Distance Detection Types						
	Standard	Low Profile		Long Distance	High Density Long Distance	Ultra Wide & Long Distance				
Lens color	*Pearl white	*Black		*Pearl white	*Black	*White				
Detection area coverage	White / Black / Pearl white 103° 3m 7.5m → 8.0m	White / Black / Pearl white 117° 3m 9.8m → 8.8m		White / Black / Pearl white 101° 7m 17.1m → 19.3m	White / Black / Pearl white 72° 12m 17.6m → 16.6m	White / Black / Pearl white 48° 15m 13.4m → 31.6m				
Reference page	P. 32	P. 33		P. 34	P. 35	P. 36				
Typical application	Base lighting Digital signage IP cameras	Lighting controls Digital signage IP cameras		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	
					Adjustable	170µA	EKMC1601811	EKMC1601812	EKMC1601813	
	Low Profile			Digital	Standard	6µA	EKMB1307811K	EKMB1307812K	EKMB1307813K	
					Adjustable	170µA	EKMC1607811	EKMC1607812	EKMC1607813	
Long Distance Detection Types	Long Distance			Digital	Standard	6µA	EKMB1303811K	EKMB1303812K	EKMB1303813K	
					Adjustable	170µA	EKMC1603811	EKMC1603812	EKMC1603813	
	High Density Long Distance			Digital	Standard	6µA	EKMB1306811K	EKMB1306812K	EKMB1306813K	
					Adjustable	170µA	EKMC2606811K	EKMC2606812K	EKMC2606813K	
Specific Area Detection Types	Ultra Wide & Long Distance			Digital	Standard	6µA	EKMB1311811K	EKMB1311812K	EKMB1311813K	
					Adjustable	170µA	EKMC1611811	EKMC1611812	EKMC1611813	
	Ultra Slight			Digital	Standard	6µA	EKMB1309811K	EKMB1309812K	EKMB1309813K	
					Adjustable	170µA	EKMC1609811	EKMC1609812	EKMC1609813	
Flat Wide Detection				Digital	Standard	6µA	EKMB1312811K	EKMB1312812K	EKMB1312813K	
					Adjustable	170µA	EKMC1612811	EKMC1612812	EKMC1612813	
	Horizontally Wide Detection			Digital	Standard	6µA	EKMB1305811K	EKMB1305812K	EKMB1305813K	
					Adjustable	170µA	EKMC1605811	EKMC1605812	EKMC1605813	
Wide Detection				Digital	Standard	6µA	EKMB1308811K	EKMB1308812K	EKMB1308813K	
					Adjustable	170µA	EKMC1608811	EKMC1608812	EKMC1608813	
	Spot Detection			Digital	Standard	6µA	EKMB1374811K	EKMB1374812K	—	
					Adjustable	170µA	EKMC1674811	EKMC1674812	—	

*Please contact us if a higher or a lower sensitivity is required.

*All lens can be adopted with any applications.

Slight Motion Detection Types		Specific Area Detection Types							
Ultra Slight		Flat Wide Detection		Horizontally Wide Detection		Wide Detection			
Lens color	*White	Lens color	*White	Lens color	*Black	Lens color	*White	Spot Detection	
Detection area coverage	White / Black / Pearl white	Detection area coverage	White / Black / Pearl white	Detection area coverage	White / Black / Pearl white	Detection area coverage	White / Black / Pearl white	Detection area coverage	White / Black
Reference page	P. 37	Reference page	P. 38	Reference page	P. 39	Reference page	P. 40	Reference page	P. 41
Typical application	 Lighting controls	 IP cameras	 IoT module	 Digital signage	 Thermostats	 Wall air conditioners	 IP cameras	 Hot desking	

Reference information									
FOV (H x V)	Detection zones		Detection distance		Recommended applications				
106°×103°	64	5.0m							P.32
117°×111°	32	5.0m							P.33
108°×101°	92	12.0m							P.34
72°×69°	128	17.0 / 20.5m							P.35
93°×48°	188	15.0 / 20.0m							P.36
110°×107°	192	2.5 – 4.1m 5.2 – 8.0m (for Standard motion)							P.37
136°×135°	416	3.5m/2.5m							P.38
122°×35° 150°×36°	88 16	5.0m							P.39
133°×130°	208	2.5 – 5.9m							P.40
64.4°×42.4°	24	5.0 – 5.6m							P.41

EKM - Standard Detection Type

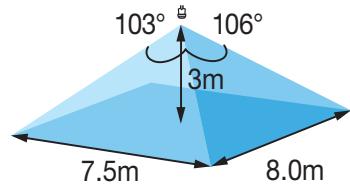


Specified detection distance (Note 1)	up to 7m
Typical ceiling installation height (Note 2)	3m
Field of view	106° x 103°
Detection zones	64
Note 1:	
• $\Delta T \geq 4^\circ C$	
• Object speed: 1m/s	
• Object size: 700 x 250mm	
• Crossing 2 detection zones	
Note 2:	The sensitivity of passive infrared 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

Preference type
Flat lens for an unobtrusive integration
Lens diameter 9.5mm

Detection area coverage



Typical applications



Base lighting

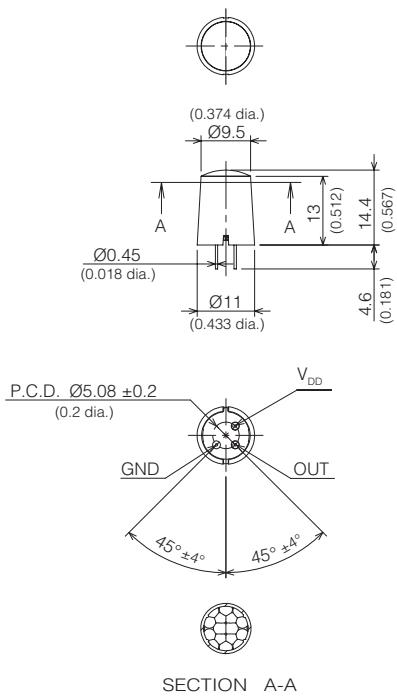


Digital signage

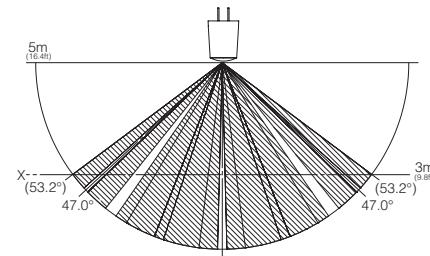


IP cameras

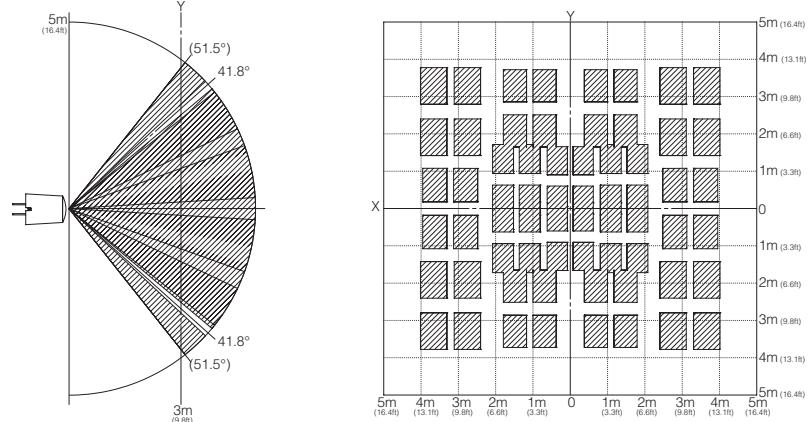
Dimension (in mm, inches in brackets)



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



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:	
> $\Delta T \geq 4^\circ\text{C}$	
> 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

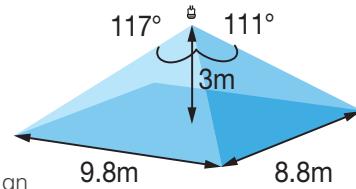
Further information on electrical characteristics please see page 42

Lower height lens design
[14.4mm → 10.9mm]

Comparable performance to
PaPIRs standard detection
type lens

Fit with superior product design

Detection area coverage



Typical applications



Lighting controls

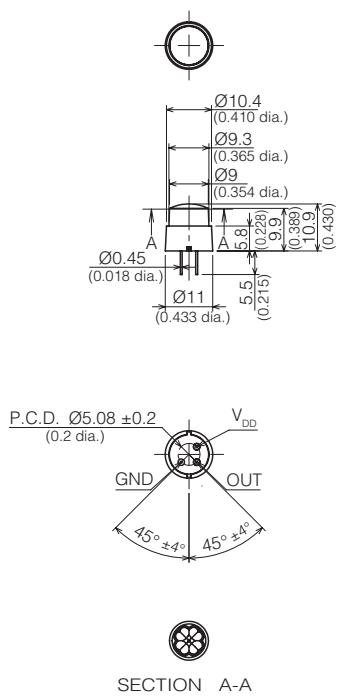


Digital signage

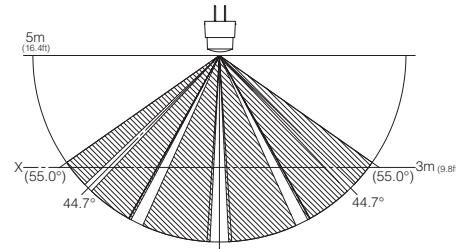


IP cameras

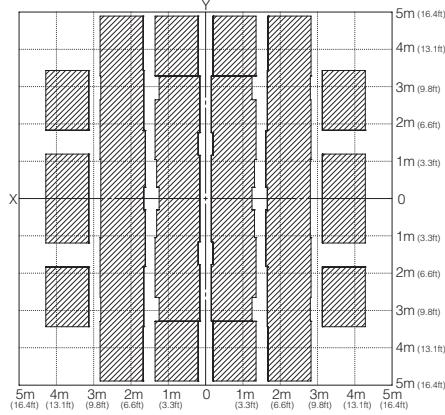
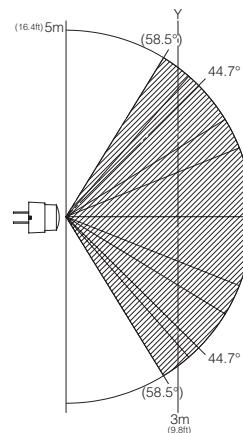
Dimension (in mm, inches in brackets)



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

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

EKM - Long Distance Detection Type

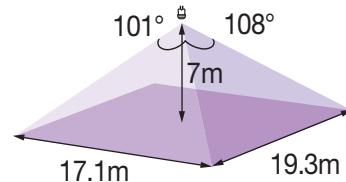


Specified detection distance (Note 1)	up to 17m
Typical ceiling installation height (Note 2)	7m
Field of view	108° x 101°
Detection zones	92
Note 1:	<ul style="list-style-type: none"> › $\Delta T \geq 4^\circ\text{C}$ › Object speed: 1m/s › Object size: 700 x 250mm › Crossing 2 detection zones
Note 2:	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

Lens diameter 20.7mm
Wide detection angle and long distance

Detection area coverage



Typical applications



Street lighting

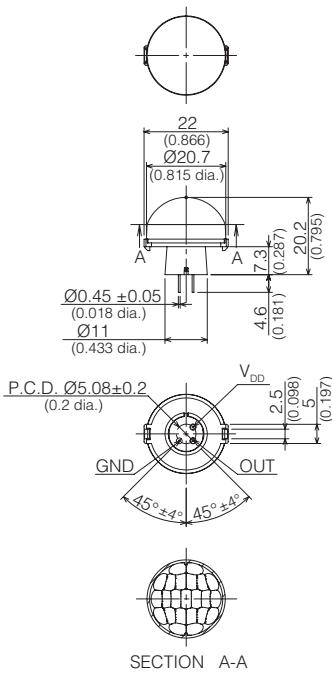


High-bay lighting

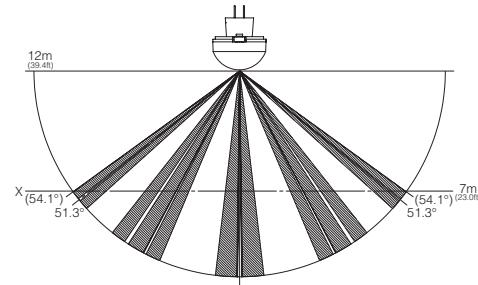


Ceiling air conditioners

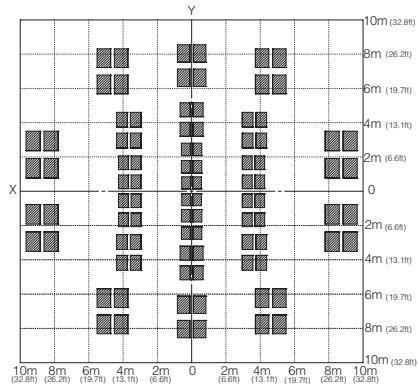
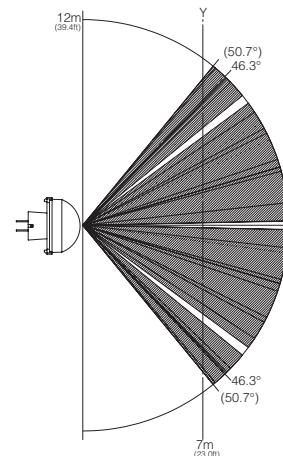
Dimension (in mm, inches in brackets)



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				
	170µA	Digital	High				
	170µA	Digital	Low	Please contact us if a higher or a lower sensitivity is required.			

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

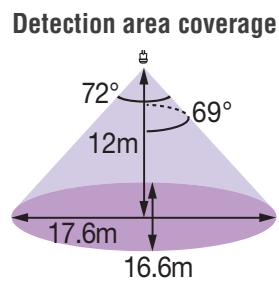
EKM - High Density Long Distance Detection Type



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:	
• $\Delta T \geq 4^\circ\text{C}$	
• 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

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



Typical applications



Lighting controls

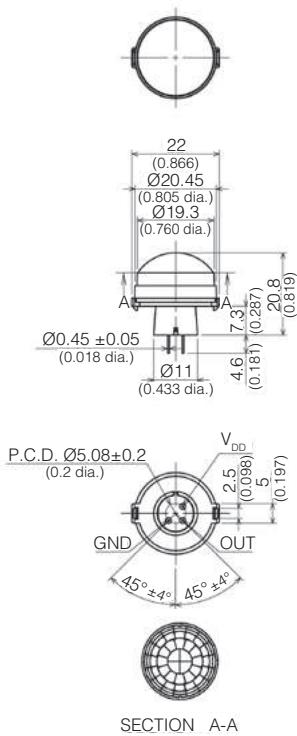


Wall air conditioners

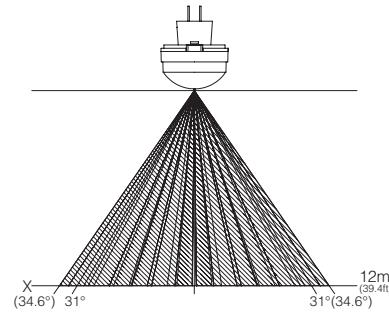


IP cameras

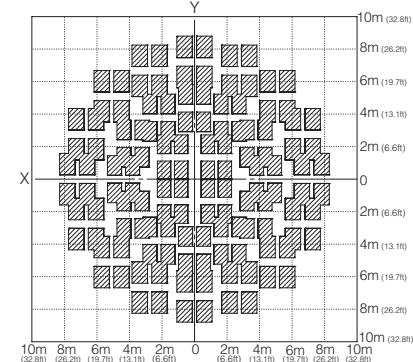
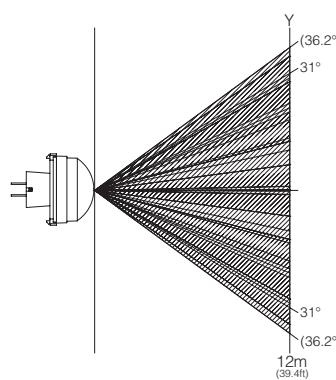
Dimension (in mm, inches in brackets)



Detection area (reference)



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



Please contact us if you install at ceiling 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

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

EKM - Ultra Wide & Long Distance Detection Type



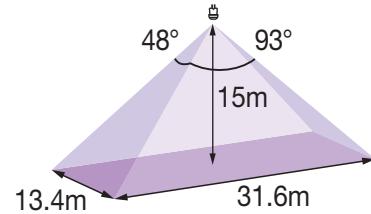
Specified detection distance (Note 1)	15m / 20m
Typical ceiling installation height (Note 2)	15.0m (Standard sensitivity sensor) *20.0m (High sensitivity sensor)
Field of view	93° x 48°
Detection zones	188
Note 1:	<ul style="list-style-type: none"> > $\Delta T \geq 4^\circ\text{C}$ > Object speed: 1m/s > 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

Smallest aisle high bay sensor (lens Ø32.6mm)

High sensitivity on the aisle entry and exit area
Optimized for radial movement

Detection area coverage



Typical applications



Street lighting

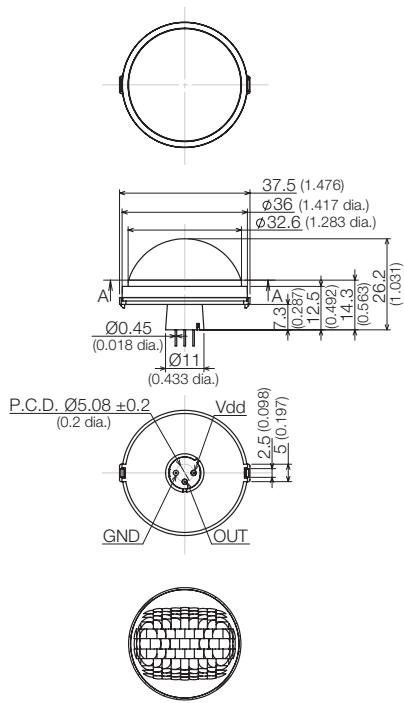


High-bay lighting

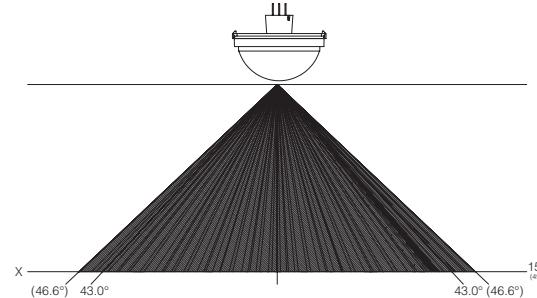


IP cameras

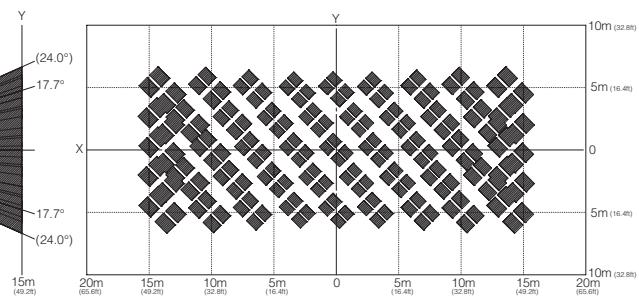
Dimension (in mm, inches in brackets)



Detection area (reference)



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



SECTION A-A

Please contact us if you install at ceiling 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

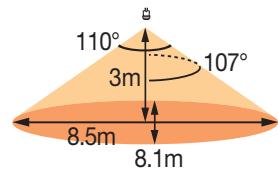


Specified detection distance (Note 1)	3.5m ~ 5.7m
Typical ceiling installation height (Note 2)	3.0m
Field of view	110° x 107°
Detection zones	192
Note 1:	
• $\Delta T \geq 4^{\circ}\text{C}$	
• Object speed: 0.5m/s (Slight motion)	
1.0m/s (Standard motion)	
• Object size: 200 x 200mm (Slight motion)	
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

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



Typical applications



Lighting controls

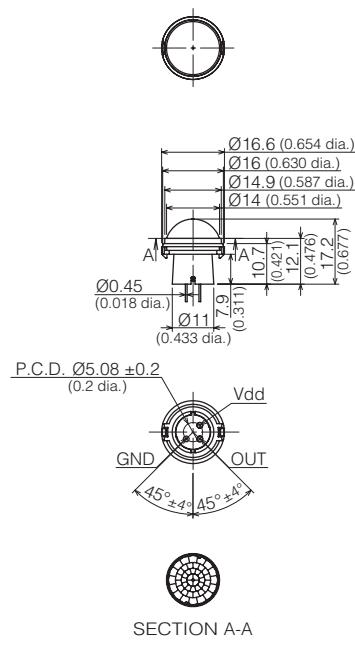


Wall air conditioners

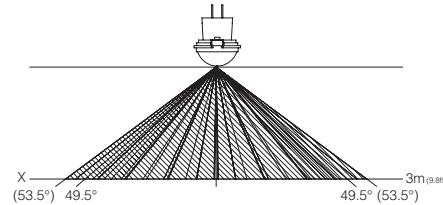


IP cameras

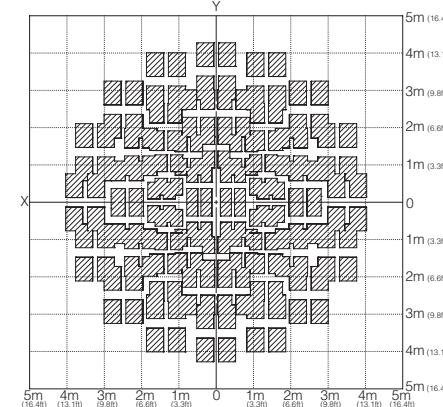
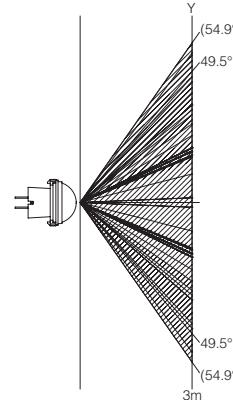
Dimension (in mm, inches in brackets)



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	6 μA	Digital	Standard	EKMB1309811K	EKMB1309812K	EKMB1309813K	
	170 μA	Digital	Standard	EKMC1609811	EKMC1609812	EKMC1609813	
	170 μA	Analog	Adjustable	EKMC2609811K	EKMC2609812K	EKMC2609813K	
Special	6 μA	Digital	High				
	170 μA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170 μA	Digital	Low				

Notes: The specification shows the X-Y cross section at 3.5m.

Digital Output type: Open-drain

Analog Output type: Op-amp

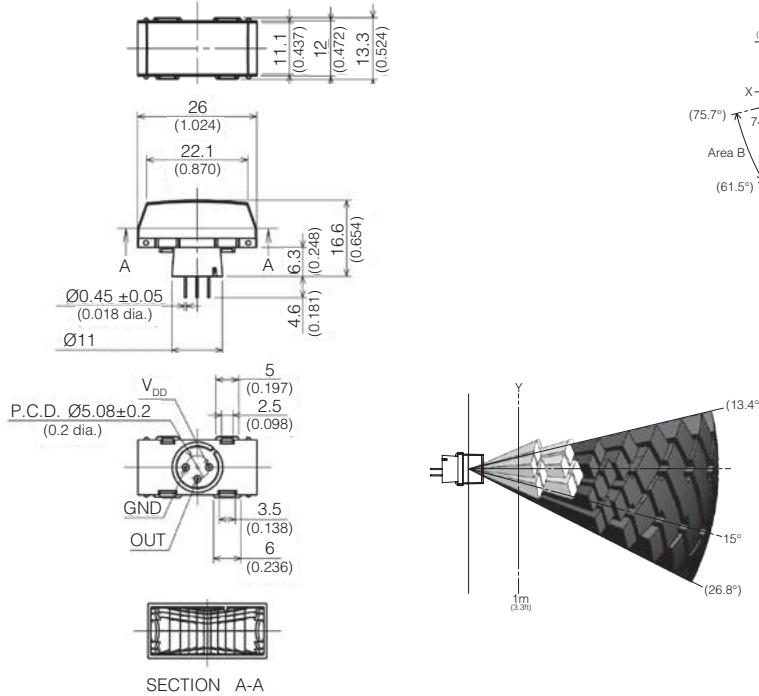
EKM - Horizontally Wide Detection Type



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

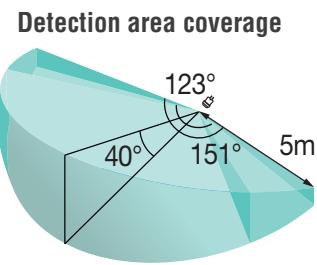
Further information on electrical characteristics please see page 42

Dimension (in mm, inches in brackets)



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.



Typical applications



Digital signage

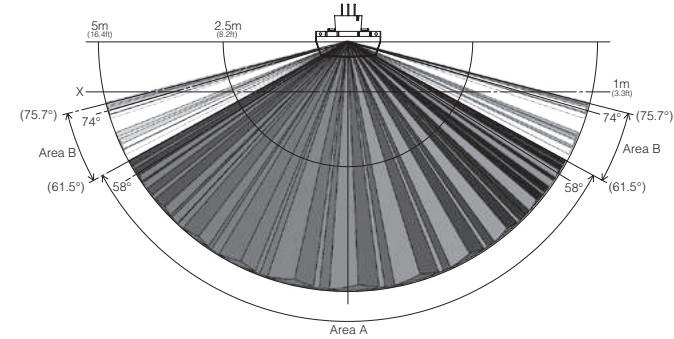


Thermostats

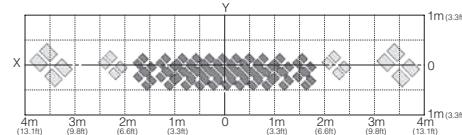


Base lighting

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				
	170µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.			
	170µA	Digital	Low				

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

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

EKM - Wide Detection Type

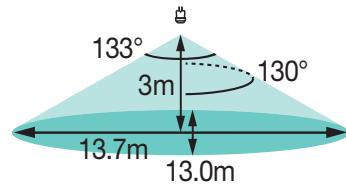


Specified detection distance (Note 1)	3.5m ~ 8.2m
Typical ceiling installation height (Note 2)	3.0m
Field of view	133° x 130°
Detection zones	208
Note 1:	<ul style="list-style-type: none"> › $\Delta T \geq 4^\circ\text{C}$ › Object speed: 1.0m/s › Object size: 700 x 250mm › Crossing 2 detection zones
Note 2:	The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended

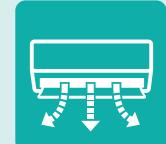
Further information on electrical characteristics please see page 42

Large detection area: $\varnothing 12.9\text{m}$
(@3m installation height)
Lens diameter: 14mm

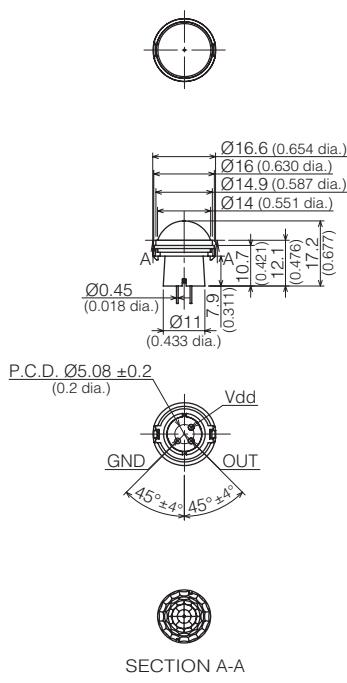
Detection area coverage



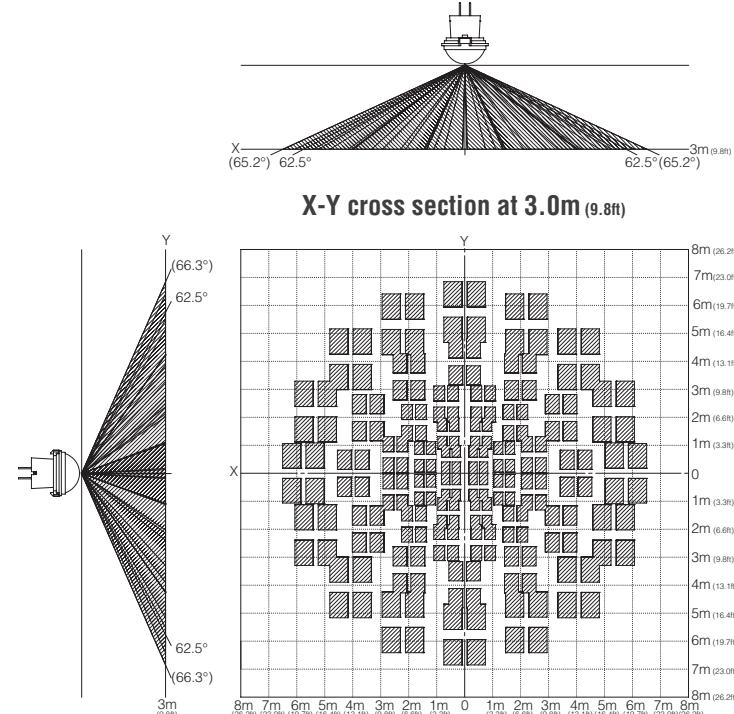
Typical applications



Dimension (in mm, inches in brackets)



Detection area (reference)



Notes	Standby current consumption	Output type	Threshold sensitivity	White	Black	Pearl White
Economy	6 μA	Digital	Standard	EKMB1308811K	EKMB1308812K	EKMB1308813K
	170 μA	Digital	Standard	EKMC1608811	EKMC1608812	EKMC1608813
	170 μA	Analog	Adjustable	EKMC2608811K	EKMC2608812K	EKMC2608813K
Special	6 μA	Digital	High			
	170 μA	Digital	High			
	170 μA	Digital	Low			

Please contact us if a higher or a lower sensitivity is required.

Notes: The specification shows the X-Y cross section at 3.5m.

Digital Output type: Open-drain

Analog Output type: Op-amp

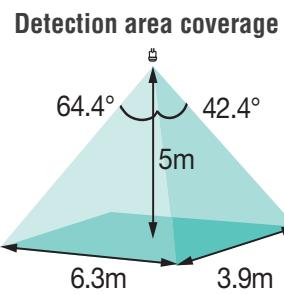
Spot Detection Type



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:	Note 2: The sensitivity of passive infrared sensors is influenced by environmental conditions, so a performance evaluation test under representative conditions is recommended
<ul style="list-style-type: none"> > $\Delta T \geq 4^{\circ}\text{C}$ > Object speed: 1m/s > Object size: 700 x 250mm > Crossing 2 detection zones 	

Further information on electrical characteristics please see page 42

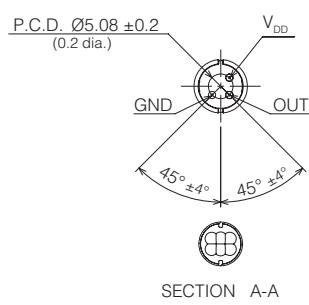
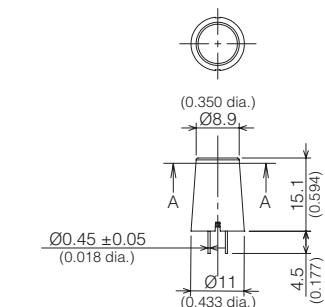
Flat lens
Lens diameter 8.9mm
Narrow field of view



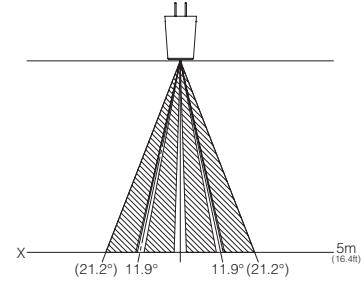
Typical applications



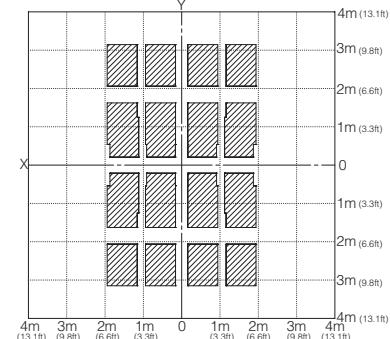
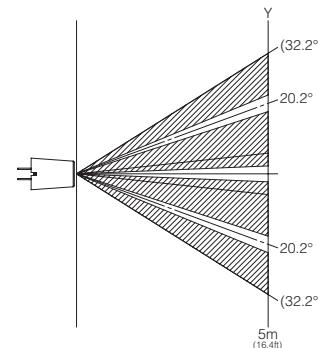
Dimension (in mm, inches in brackets)



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		
170µA	Digital	High	Please contact us if a higher or a lower sensitivity is required.	
170µA	Digital	Low		

Notes: The specification shows the X-Y cross section at 7m.

Digital Output type: Open-drain

Analog Output type: Op-amp

Standard Detection Type

Long Distance Detection Type

Slight Motion Detection Type

Specific Area Detection Type

EKM - Characteristics

EKM - Maximum rated values

Items	EKMB series	EKMC series
Power supply voltage	-0.3 to 4.5VDC	-0.3 to 7VDC
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	4.0VDC		6.0VDC	-
		Min	2.3VDC		3.0VDC	
Current consumption (in standby/sleep mode) Note 1	I_w	Ave	1µA	2µA	6µA	170µA
Output current (during detection period) Note 2	I_{OUT}	Max	100µA			Ambient temperature: 25°C $V_{OUT} \geq V_{DD} - 0.5VDC$
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: $V_{DD} = 3VDC$ EKMC series: $V_{DD} = 5VDC$
		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) Note 1	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 $I_{OUT} = 0A$

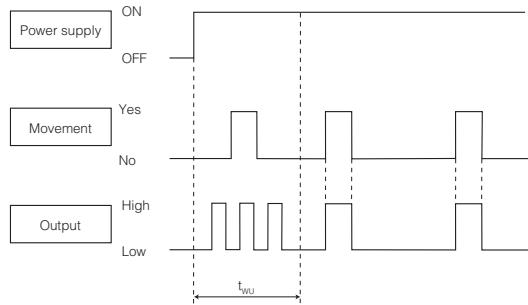
Note 1: The total current consumption during detection is the current consumption in standby mode (I_w) plus the output current (I_{OUT}).

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.

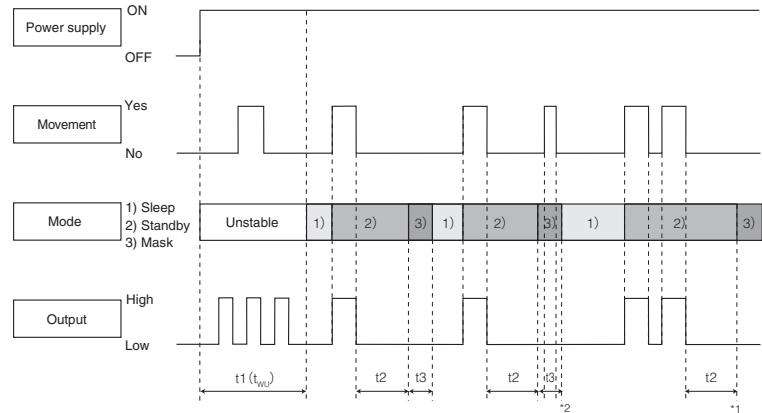
Note 3: The internal circuit threshold of the EKMC16 series corresponds to output offset voltage(V_{OS}) $\pm 0.22V$. The threshold of the EKMC46 series corresponds to half of this.

Timing chart

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



1µA 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.

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})

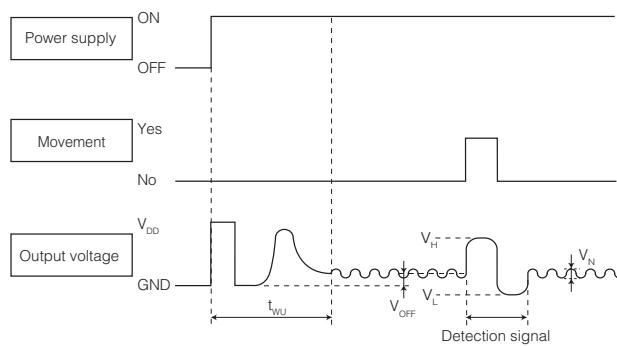
Circuit stability time: about 25 seconds (typ.)

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)

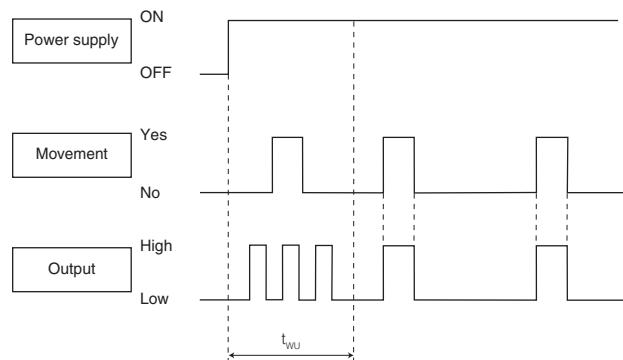
Items	Symbol	AMN3* series		Conditions
Operating voltage	V_{DD}	Max	6.0V DC	-
		Min	3.0V DC	
Current consumption (in standby mode) Note 1	I_w	Ave	170µA	Ambient temperature: 25°C $I_{OUT} = 0A$ $V_{DD} = 5VDC$
Output current (during detection) Note 2	I_{OUT}	Max	100µA	Ambient temperature: 25°C $V_{OUT} \geq V_{DD} - 0.5VDC$
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 $I_{OUT} = 0A$ $V_{DD} = 5VDC$

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

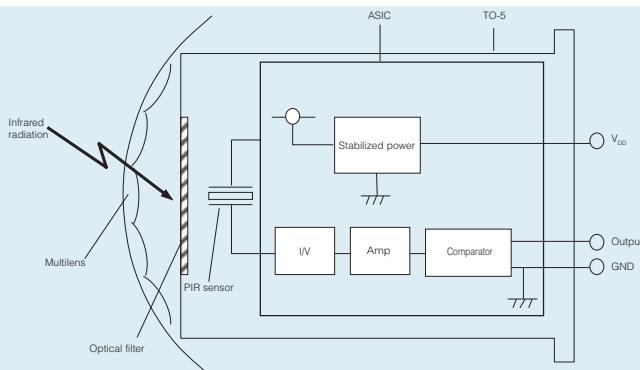
t_{wu} Circuit stability time: max. 30 seconds

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.

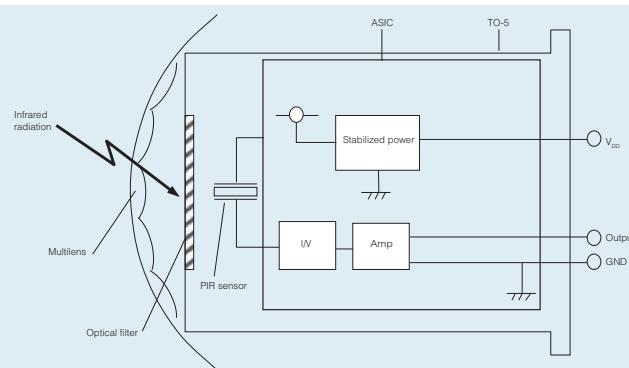
Technical information

Block diagram output circuit

Digital output with integrated amplifier and comparator

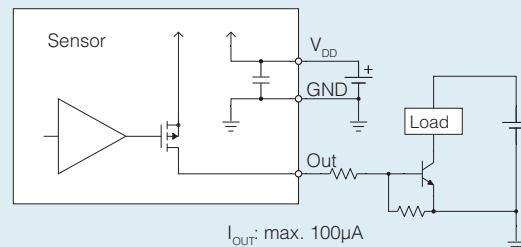
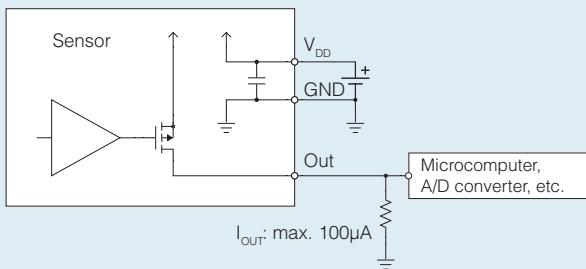


Analog output with integrated amplifier

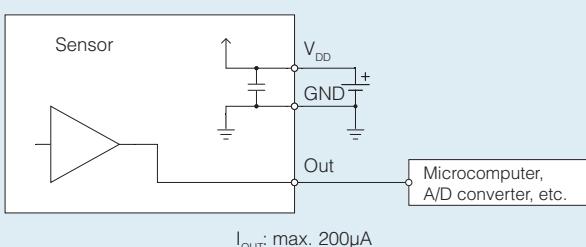


Wiring diagram

Digital output



Analog output



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.

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

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. ± 20 V (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.

MEMO

Global Network

Europe

Headquarters Panasonic Industry Europe GmbH
Austria Panasonic Industry Austria GmbH
The Netherlands Panasonic Industry Benelux B.V.
Czech Republic Panasonic Industry Europe GmbH
France Panasonic Industry Europe GmbH
Panasonic Electric Works Sales Western Europe B.V.
Germany Panasonic Industry Europe GmbH
Hungary Panasonic Industry Europe GmbH
Ireland Panasonic Industry UK Ltd
Italy Panasonic Industry Italia srl
Nordic Countries Panasonic Industry Europe GmbH
Poland Panasonic Industry Poland sp. z o.o.
Spain Panasonic Industry Europe GmbH
Switzerland Panasonic Industry Europe GmbH
United Kingdom Panasonic Industry Europe GmbH
Panasonic Industry United Kingdom Ltd.

East Asia

China Panasonic Industry (China) Co., Ltd.
Hong Kong Panasonic Industrial Devices Sales (Hong Kong) Co., Ltd.
Taiwan Panasonic Industrial Devices Sales Taiwan Co., Ltd.
Korea Panasonic Industrial Devices Sales Korea Co., Ltd.
Japan Panasonic Industry Co., Ltd.

Asia-Pacific

Singapore Panasonic Industry Sales Asia Pacific
Thailand Panasonic Industrial Devices Sales (Thailand) Co., Ltd.

The Americas

United States
(Headquarters in NJ) Panasonic Industrial Devices Sales Company of America
Canada Panasonic Canada Inc
Brazil Panasonic Do Brasil Limitada

Panasonic Corporation Electric Works Company

Electrical Construction Materials Business Unit

■ Address: 1048, Kadoma, Kadoma-shi

Osaka 571-8686, Japan

■ Web: <https://industrial.panasonic.com/ww/products/pt/papirs>
(PIR Motion Sensor PaPIRs)

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