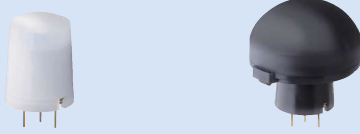# EKMC (VZ) series

Current consumption **170μA** | **Digital output**

Standard detection type

Long distance detection type

Wall installation type

○Economy type suitable for a wide range of applications

Recommended applications

Lighting control, lighting equipment, heaters,
ventilators or air conditioners,
security equipment for IP cameras,
intrusion alarms, digital signage, vending machines,
multi-function printers, display panels for meeting rooms, PCs

Lensless type available
170μA type: EKMC1600100

Specifications

Detection performance	Model no.	Current consumption	Lens color	Output type	Detection distance	Detection area		Detection zones
						Horizontal	Vertical	
Standard detection type	EKMC1601111	170μA	White	Digital	5m	94°	82°	64
	EKMC1601112		Black					
	EKMC1601113		Pearl white					
Long distance detection type	EKMC1603111		White		12m	102°	92°	92
	EKMC1603112		Black					
	EKMC1603113		Pearl white					
Wall installation type	EKMC1604111		White		12m (1st step lens) 6m (2nd step lens) 3m (3rd step lens)	40°	105°	68
	EKMC1604112		Black					
	EKMC1604113		Pearl white					

■Ordering information

E K M C 1 6 □ □ 1 □ □

●PaPIRs motion sensor

●Detection (Lens)
00: Lensless / 01: 5m distance standard /
03: 12m long distance / 04: Wall installation type

●Lens color
0: Lensless / 1: White /
2: Black / 3: Pearl white

●Lens
0: Lensless / 1: with lens

Characteristics

■Maximum rated values

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

■Electrical characteristics

Items		Symbol	EKMC (VZ) type	Conditions
Operating voltage	Max	Vdd	6.0V	—
	Min		3.0V	
Current consumption (in standby mode) Note 1)	Ave	Iw	170μA	Ambient temperature: 25℃ Iout=0 Vdd: 5V
Output current (during detection) Note 2)	Max	Iout	100μA	Ambient temperature: 25℃ Vout≧Vdd-0.5
Output voltage (during detection period)	Min	Vout	Vdd-0.5V	Ambient temperature: 25℃ Open at no detection
Circuit stability time (when voltage is applied)	Max	Twu	30 sec	Ambient temperature: 25℃ Iout=0 Vdd: 5V

Note 1) Current consumption during detection period is the total value of current consumption
in standby mode add to output current.
Note 2) Please select an output resistors (pull-down concept) in accordance with Vout so that
the output current is lower than or equal to 100μA. If the output current is more than
100μA, this may cause false alarms.

Timing chart

Power supply — ON / OFF

Detecting target — Present / Absent

Output voltage — ON / OFF

Twu
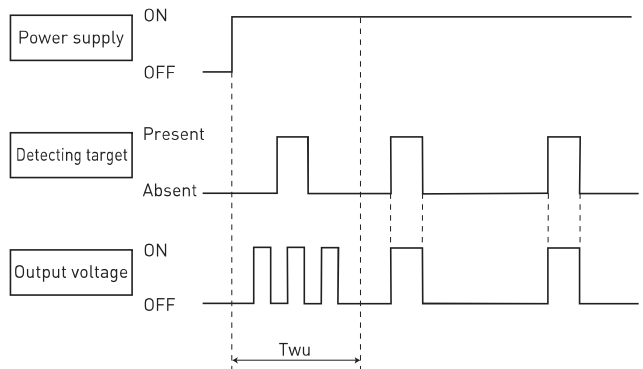
【Explanation of the timing】
Twu: Circuit stability time: max. 30 sec
During this stage, the output's status is undefined (ON/OFF) and detection
is therefore not guaranteed.
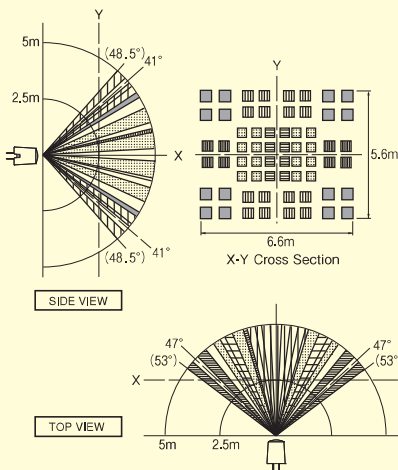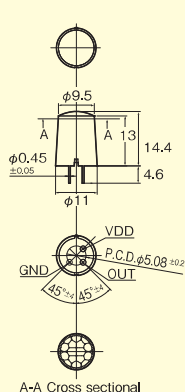
Lenses for the EKMB/EKMC series

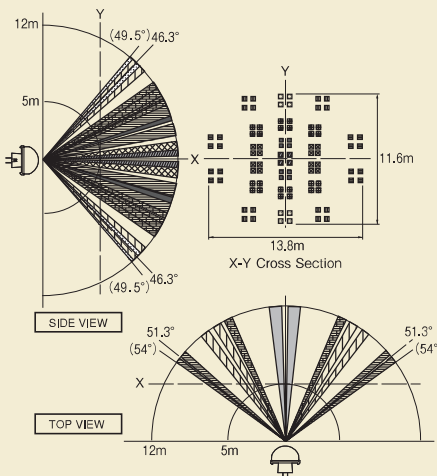|	Dimension (mm)	Detection zone	Detection characteristics

Standard detection type

CAD data

φ9.5
φ0.45 ±0.05
A A 13
14.4
4.6
φ11

VDD
GND P.C.D.φ5.08 ±0.2 OUT
45°±4° 45°±4°

A-A Cross sectional

SIDE VIEW
5m
2.5m
(48.5°) 41°
(48.5°) 41°
X
5.6m
6.6m
X-Y Cross Section

TOP VIEW
47° (53°)   47° (53°)
X
5m   2.5m

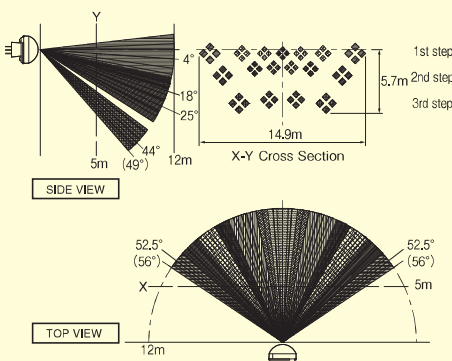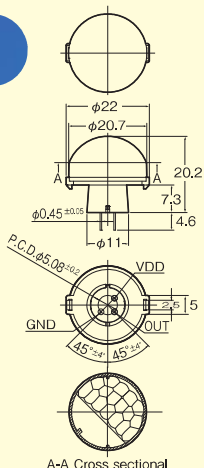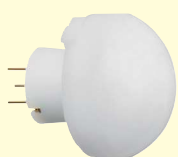| Detection distance	Max. 5m
Field of view	94°×82°
Detection zone	64 beams
Detection condition	・The temperature difference between the target and the surroundings must be higher than 4℃. ・Movement speed: 1.0m/s ・Target concept: Human body with an approx. size of 700×250mm ・Target moving direction: Crossing the detection beam.

Long distance detection type

CAD data

22
φ20.7
A A
20.2
7.3
4.6
φ0.45 ±0.05
φ11
P.C.D.φ5.08 ±0.2
VDD
2.5 5
GND OUT
45°±4° 45°±4°

A-A Cross sectional

SIDE VIEW
12m
5m
(49.5°) 46.3°
(49.5°) 46.3°
X
11.6m
13.8m
X-Y Cross Section

TOP VIEW
51.3° (54°)   51.3° (54°)
X
12m   5m

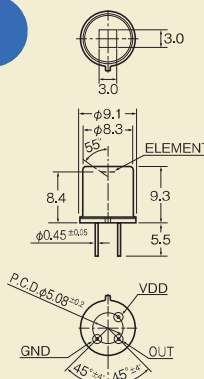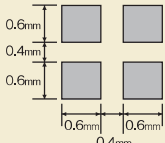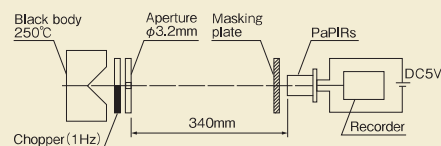| Detection distance	Max. 12m
Field of view	102°×92°
Detection zone	92 beams
Detection condition	・The temperature difference between the target and the surroundings must be higher than 4℃. ・Movement speed: 1.0m/s ・Target concept: Human body with an approx. size of 700×250mm ・Target moving direction: Crossing the detection beam.

Wall installation type

CAD data

φ22
φ20.7
A A
20.2
7.3
4.6
φ0.45 ±0.05
φ11
P.C.D.φ5.08 ±0.2
VDD
2.5 5
GND OUT
45°±4° 45°±4°

A-A Cross sectional

SIDE VIEW
Y
4°
18°
25°
44° (49°)
5m   12m
1st step
5.7m 2nd step
3rd step
14.9m
X-Y Cross Section

TOP VIEW
52.5° (56°)   52.5° (56°)
X
5m
12m   5m

Detection distance	1st step lens	Max. 12m
	2nd step lens	Max. 6m
	3rd step lens	Max. 3m
Field of view	40°×105°	
Detection zone	68 beams	
Detection condition	・The temperature difference between the target and the surroundings must be higher than 4℃. ・Movement speed: 1.0m/s ・Target concept: Human body with an approx. size of 700×250mm ・Target moving direction: Crossing the detection beam.	

Lensless type

CAD data

3.0
3.0
φ9.1
φ8.3
55°
ELEMENT
8.4   9.3
φ0.45 ±0.05   5.5
P.C.D.φ5.08 ±0.2
VDD
GND OUT
45°±4° 45°±4°

■PIR element
0.6mm
0.4mm
0.6mm
0.6mm   0.6mm
0.4mm

Detection sensitivity	Average: 5.6μW/cm² Maximum: 7.6μW/cm²

※Detection sensitivity is measured by following system

■Test setup
Black body 250℃
Aperture φ3.2mm
Masking plate
PaPIRs
DC5V
Chopper (1Hz)
340mm
Recorder

CAD data **CAD data can be downloaded from the** (((PaPIRs))) **PaPIRs WEB site.** | Panasonic PaPIRs | [Search]

Please refer to the formal specification for the dimension, and the tolerance ※Please note that the horizontal and vertical field of view depends on the position of the metal tab on which the lens is mounted.

8

Horizontally wide detection type

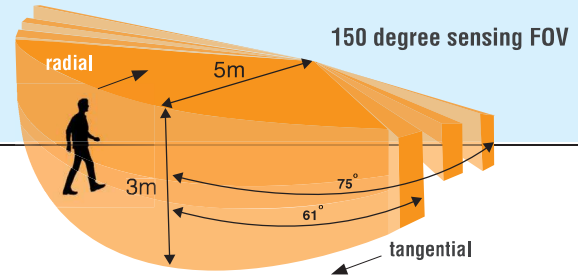Current consumption **1/2/6/170µA** **Digital output**

NEW

> **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.

Recommended applications

Wall switches, thermostats, IP cameras, wake-up switch for displays, intrusion alarm sensors (e.g. for windows and doors), door intercom systems, entrance and garden lamps, automatic door systems, vending machines

150 degree sensing FOV

radial 5m
3m
75°
61°
tangential

Horizontally wide detection type

		1µA	2µA	6µA	170µA
▶ **Current consumption in standby mode** (1µA type: in sleep mode)		1µA	2µA	6µA	170µA
▶ **Output**		Digital (open collector)			
▶ **Lens color**	White	EKMB1105111	EKMB1205111	EKMB1305111K	EKMC1605111
	Black	EKMB1105112	EKMB1205112	EKMB1305112K	EKMC1605112
	Pearl white	EKMB1105113	EKMB1205113	EKMB1305113K	EKMC1605113

Dimension (mm)	Detection zone	Detection characteristics

CAD data by request

(0.437) 11.1
12 (0.472)
13.3 (0.524)

(1.024)
22.1 (0.870)

16.6 (0.654)
6.3 (0.248)
A   A
4.6 (0.181)

Ø 0.45 ±0.05 (0.018 dia.)
Ø 11 (0.433 dia.)

5 (0.197)
VDD   2.5 (0.098)
P.C.D. Ø 5.08 ±0.2 (0.2 dia.)
GND   3.5 (0.138)
OUT   6 (0.236)

SECTION A-A

(10°)
15°
(25°)
1m (3.3ft)

Y
X   O
4m 3m 2m 1m O 1m 2m 3m 4m
(13.1ft)(9.8ft)(6.6ft)(3.3ft) (3.3ft)(6.6ft)(9.8ft)(13.1ft)
1m (3.3ft)
Detection Area A

Detection Area A
Detection Area B

(61°) 58   58 (61°)
Detection Area B   Detection Area B
(75°) 74°   74° (75°)
X   1m (3.3ft)
5m 2.5m
(16.4ft)(8.2ft)

Detection distance		Max. 5m*	
Field of view	Area A	122° x 35°	
	Area B	150° x 20°	
Detection zone	Area A	88	
	Area B	16	
Detection condition ▲	Area A	• The temperature difference between the target and the surroundings must be higher than 4°C. • Movement speed: 1m/s • Target concept: human head with an approx. size of 700x250mm • Target moving direction: crossing 2 detection zones	
	Area B	• The temperature difference between the target and the surroundings must be higher than 8°C. • Movement speed: 1m/s • Target concept: human body with an approx. size of 700x250mm • Target moving direction: crossing 2 detection zones	

* Under specified detection conditions
▲ Please refer to "Cautions for use" (page 18) and "Basic principles"(page 18, point 5), for more details

Please contact your local sales representative for detailed specifications.

Standard and slight motion detection type

NEW

› 2 functions in 1 lens
High Sensitivity Centre ZONE: Optimized for detecting small movements and small objects
Normal Sensitivity Outer ZONE: Optimized for detecting larger movements of larger objects
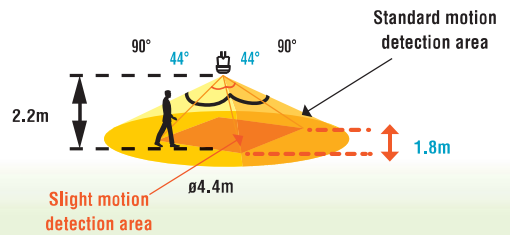
Recommended applications

Lighting control, heaters, ventilators or air conditioners, IP cameras, intrusion alarms, digital signage, vending machines, multi-function printers, display panels for meeting rooms, PCs

Standard motion detection area

90° 44° 44° 90°

2.2m

1.8m

ø4.4m

Slight motion detection area

Standard and slight motion detection type

	Current consumption in standby mode (1µA type: in sleep mode)	1µA	2µA	6µA	170µA
▶	**Output**	Digital (open collector)			
▶ **Lens color**	White	EKMB1193111	EKMB1293111	EKMB1393111K	EKMC1693111
	Black	EKMB1193112	EKMB1293112	EKMB1393112K	EKMC1693112
	Pearl white	EKMB1193113	EKMB1293113	EKMB1393113K	EKMC1693113

Dimension (mm)	Detection zone	Detection characteristics

CAD data by request

16.6 (0.654 dia)
Ø14.9 (0.587 dia)
A
7.9 (0.311)
17.2 (0.677)
Ø0.45 ±0.05 (0.018 dia)
4.6 (0.181)
Ø11 (0.433 dia)
P.D.CØ5.08 ±0.2 (0.2 dia)
VDD
GND   OUT
45° ±4°   45° ±4°
SECTION A-A

Slight motion detection area
Standard motion detection area

(45.3°)
41.0°
Y
3m(9.8ft)
2m(6.6ft)
1m(3.3ft)
X
0
1m(3.3ft)
2m(6.6ft)
3m(9.8ft)
41.0°
2.2m (7.2m)
(45.3°)
3m(9.8ft) 2m(6.6ft) 1m(3.3ft) 0 1m(3.3ft) 2m(6.6ft) 3m(9.8ft)
X-Y Cross Section (2.2m) (7.2m)

(45.3°) 41.0°   41.0° (45.3°)
X   2.2m (7.2m)

Detection distance	Max. 2.2m*	
Field of view	Slight motion	44° x 44°
	Standard motion	90° x 90°
Detection zone	Slight motion	36
	Standard motion	48
Detection condition ▲	Slight motion	• The temperature difference between the target and the surroundings must be higher than 4°C. • Movement speed: 0.5m/s • Target concept: human head with an approx. size of 200x200mm • Target moving direction: crossing 1 detection zone
	Standard motion	• The temperature difference between the target and the surroundings must be higher than 4°C. • Movement speed: 1.0m/s • Target concept: human body with an approx. size of 400x200mm • Target moving direction: crossing 2 detection zones

* Under specified detection conditions
▲ Please refer to "Cautions for use" (page 18) and "Basic principles" (page 18, point 5), for more details

Please contact your local sales representative for detailed specifications.