

# EKMC(VZ) series

Current consumption **170 $\mu$ A** **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  
170 $\mu$ A 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	170 $\mu$ A	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

**EKMC16**    **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

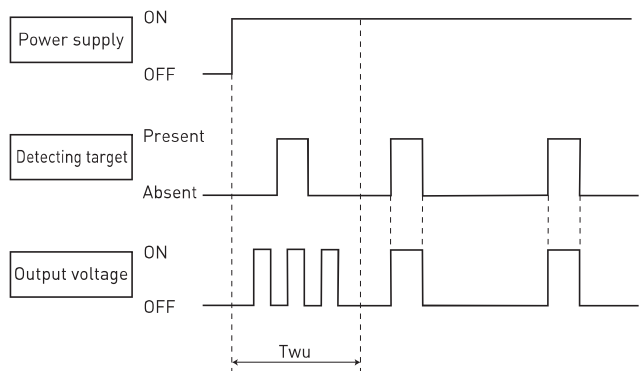
Items	Value
Power supply voltage	-0.3 to 7V
Ambient temperature	-20 to +60°C (no frost, no condensation)
Storage temperature	-20 to +70°C

■ 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	170 $\mu$ A	Ambient temperature: 25°C Iout=0 Vdd: 5V
Output current (during detection) Note 2)	Max	Iout	100 $\mu$ A	Ambient temperature: 25°C Vout $\geq$ Vdd-0.5
Output voltage (during detection period)	Min	Vout	Vdd-0.5V	Ambient temperature: 25°C Open at no detection
Circuit stability time (when voltage is applied)	Max	Twu	30 sec	Ambient temperature: 25°C 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 100 $\mu$ A. If the output current is more than 100 $\mu$ A, this may cause false alarms.

## Timing chart



[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

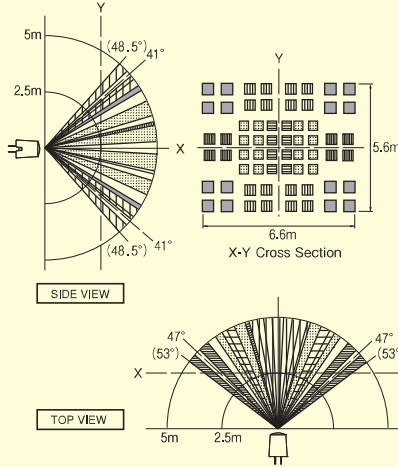
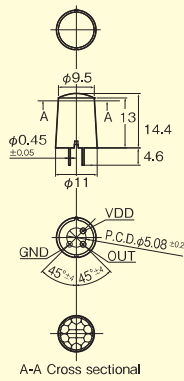
## Dimension (mm)

## Detection zone

## Detection characteristics

### Standard detection type

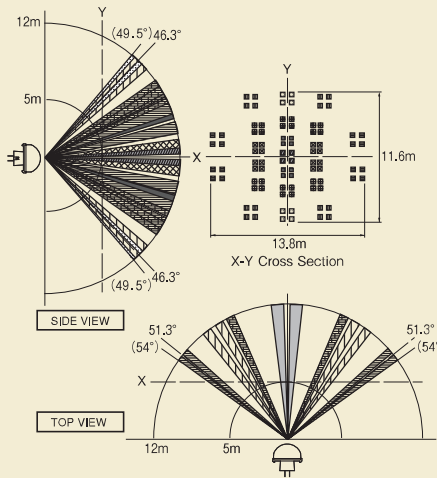
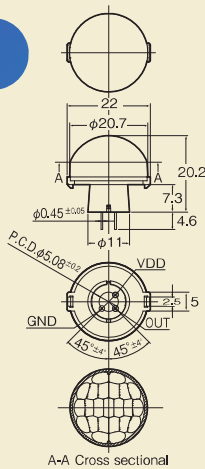
CAD data



Detection distance	Max. 5m
Field of view	94°×82°
Detection zone	64 beams
Detection condition	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1.0m/s</li> <li>Target concept: Human body with an approx. size of 700×250mm</li> <li>Target moving direction: Crossing the detection beam.</li> </ul>

### Long distance detection type

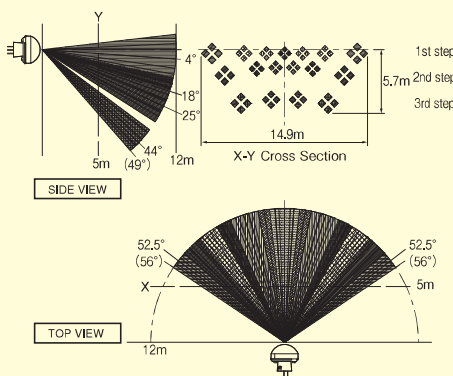
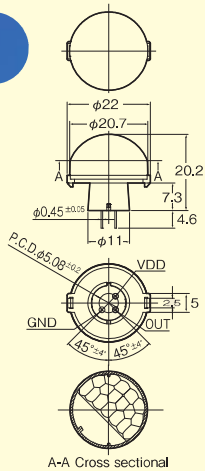
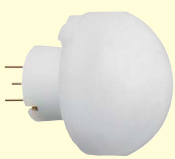
CAD data



Detection distance	Max. 12m
Field of view	102°×92°
Detection zone	92 beams
Detection condition	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1.0m/s</li> <li>Target concept: Human body with an approx. size of 700×250mm</li> <li>Target moving direction: Crossing the detection beam.</li> </ul>

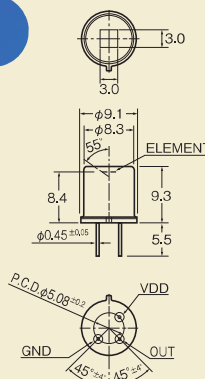
### Wall installation type

CAD data

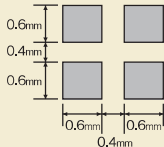


Detection distance	1st step lens	Max. 12m
	2nd step lens	Max. 6m
	3rd step lens	Max. 3m
Field of view	40°×105°	
Detection zone	68 beams	
Detection condition	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1.0m/s</li> <li>Target concept: Human body with an approx. size of 700×250mm</li> <li>Target moving direction: Crossing the detection beam.</li> </ul>	

### Lensless type



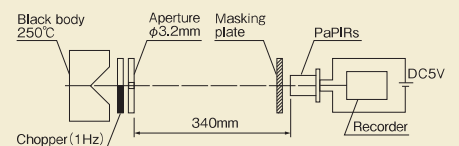
#### PIR element



Detection sensitivity	<p>Average: 5.6μW/cm<sup>2</sup></p> <p>Maximum: 7.6μW/cm<sup>2</sup></p>
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※Detection sensitivity is measured by following system

#### Test setup



# Horizontally wide detection type

Current consumption **1/2/6/170µA**

Digital output

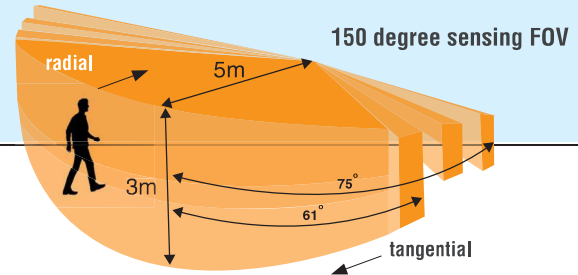
## > World's first PIR with "Approach Sensing" technology

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



Horizontally wide detection type

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

Dimension (mm)	Detection zone	Detection characteristics																		
<p><b>CAD data by request</b></p>		<table border="1"> <tr> <td>Detection distance</td> <td colspan="2">Max. 5m*</td> </tr> <tr> <td rowspan="2">Field of view</td> <td>Area A</td> <td>122° x 35°</td> </tr> <tr> <td>Area B</td> <td>150° x 20°</td> </tr> <tr> <td rowspan="2">Detection zone</td> <td>Area A</td> <td>88</td> </tr> <tr> <td>Area B</td> <td>16</td> </tr> <tr> <td rowspan="2">Detection condition ▲</td> <td>Area A</td> <td> <ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1m/s</li> <li>Target concept: human head with an approx. size of 700x250mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul> </td> </tr> <tr> <td>Area B</td> <td> <ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 8°C.</li> <li>Movement speed: 1m/s</li> <li>Target concept: human body with an approx. size of 700x250mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul> </td> </tr> </table>	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	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1m/s</li> <li>Target concept: human head with an approx. size of 700x250mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul>	Area B	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 8°C.</li> <li>Movement speed: 1m/s</li> <li>Target concept: human body with an approx. size of 700x250mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul>
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\* 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

Current consumption **1/2/6/170µA**

Digital output



### > 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

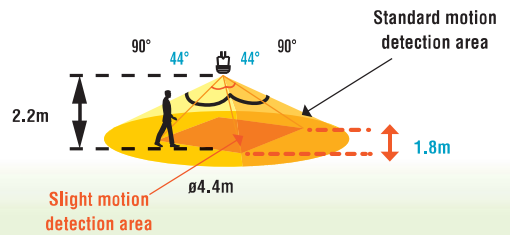


### Recommended applications

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 and slight motion detection type



► Current consumption in standby mode (1µA type: in sleep mode)	1µA	2µA	6µA	170µA	
	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																		
<p><b>CAD data by request</b></p> <p>SECTION A-A</p>	<p>X-Y Cross Section (2,2m) (7,2m)</p>	<table border="1"> <tr> <td>Detection distance</td> <td colspan="2">Max. 2.2m*</td> </tr> <tr> <td rowspan="2">Field of view</td> <td>Slight motion</td> <td>44° x 44°</td> </tr> <tr> <td>Standard motion</td> <td>90° x 90°</td> </tr> <tr> <td rowspan="2">Detection zone</td> <td>Slight motion</td> <td>36</td> </tr> <tr> <td>Standard motion</td> <td>48</td> </tr> <tr> <td rowspan="2">Detection condition ▲</td> <td>Slight motion</td> <td> <ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 0,5m/s</li> <li>Target concept: human head with an approx. size of 200x200mm</li> <li>Target moving direction: crossing 1 detection zone</li> </ul> </td> </tr> <tr> <td>Standard motion</td> <td> <ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1.0m/s</li> <li>Target concept: human body with an approx. size of 400x200mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul> </td> </tr> </table> <p>* Under specified detection conditions                      ▲ Please refer to "Cautions for use" (page 18) and "Basic principles"(page 18, point 5), for more details</p>	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	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 0,5m/s</li> <li>Target concept: human head with an approx. size of 200x200mm</li> <li>Target moving direction: crossing 1 detection zone</li> </ul>	Standard motion	<ul style="list-style-type: none"> <li>The temperature difference between the target and the surroundings must be higher than 4°C.</li> <li>Movement speed: 1.0m/s</li> <li>Target concept: human body with an approx. size of 400x200mm</li> <li>Target moving direction: crossing 2 detection zones</li> </ul>
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Please contact your local sales representative for detailed specifications.

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