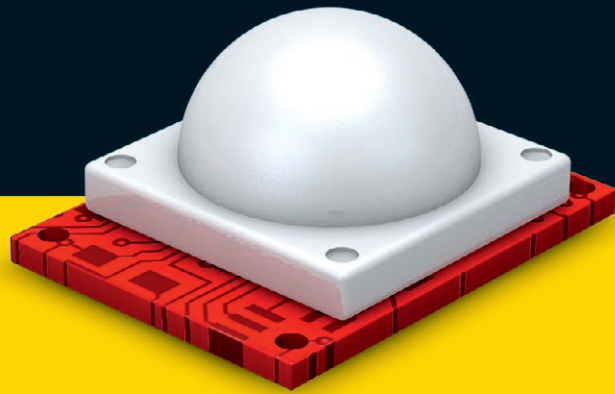


# Planet Motion Detectors

PIR modules  
PIR sensors  
PIR controllers



Edition 2007

**Intertec**  
C o m p o n e n t s



## Content

### Content

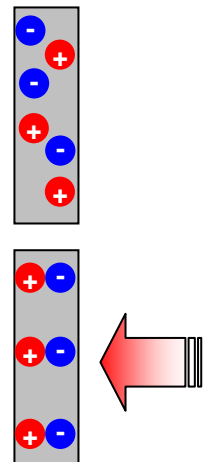
- I. PIR Sensor 3
- II. PIR Controller 4
- III. PIR Module 5

## Explanations

### Pyroelectric Effect

The pyroelectric effect is the polarization of certain materials due to changes of temperature. In PIR sensors the change of temperature is caused by infrared rays.

The polarization can be measured and amplified used as electric signal.

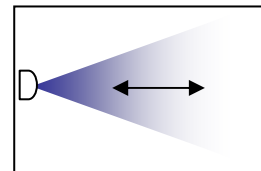


### Legal

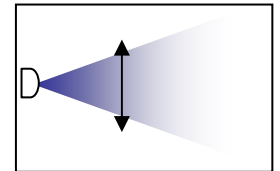
This document informs about a selection of products we sell. The information included is believed to be accurate and reliable. However, Intertec Components GmbH assumes no responsibilities for inaccuracies, not for patent rights or any other rights. Change without notice is prohibited.

### Function

PIR sensors are ideal to detect movements of animals or humans. Strongest detection is at right angle to radius.



Weakest detection



Strongest detection

### Contact

#### Intertec Components GmbH

Erdinger Straße 45

85356 Freising

Germany

[www.intertec-components.de](http://www.intertec-components.de)

[info@intertec-components.de](mailto:info@intertec-components.de)

### Notes

- PIR-Sensors are to prevent from rapid environmental temperature changes, strong shock or vibration.
- For outdoor use: apply suitable optical filter and an anti dew construction
- Detection range may vary in different environmental temperature condition



# PIR Detectors

## ITV-P-RExx

### PIR Sensor Chips (NICERA)


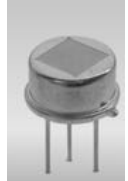


#### Description

Nippon Ceramic Co.Ltd (Nicera): "The pyrosensor, as developed and supplied to the market by NICERA, is being used world wide for many applications. For example, light switch control, visitor acknowledgement, security systems and burglar alarms. Utilizing our expertism gained by years of state of the art expertise, we satisfy marketing needs for high quality and low cost."

#### Features

Please ask for NICERA catalogue with detailed descriptions

#### Overview

Name	Picture	Description	Application
REP05B		<b>Quad</b> Two independent dual element pyrosensors in combination. By using appropriate optics nuisance alarm from sources such as small animals are much reduce. Provides higher rejection against external noise.	<ul style="list-style-type: none"> <li>Security Burglar alarm (To avoid false alarm by small animals nuisance alarm)</li> </ul>
RE46B		<b>Omni-directional Quad</b> Omni directional characteristics is achieved by unique 4 element configuration. Technical merits of single and dual type have successfully met on this model.	<ul style="list-style-type: none"> <li>Security Burglar alarm (for ceiling mount applications)</li> <li>Automatic lighting switches</li> </ul>
RE200B		<b>General Purpose Dual</b> This model satisfies customer's cost reduction need, keeping most performance of dual element type at reasonable level.	<ul style="list-style-type: none"> <li>Automatic lighting switches</li> <li>Security burglar alarm</li> <li>Toys</li> </ul>
RE431B		<b>High Sensitivity 4 elements dual</b> A new dual type with high sensitivity and S/N ratio and wide field of view. Excellent human body detection is achieved by optimal element pattern.	<ul style="list-style-type: none"> <li>Security burglar alarm</li> <li>Automatic lighting switches</li> </ul>



# PIR Detectors

## ITV-P-KC778B

PIR Controller  
Low cost Version



20 pin DIP



20 pin SOIC

### Description

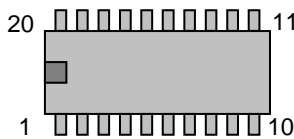
This Master PIR Control Chip has been designed for easy implementation of AC control functions that use a Passive Infra-Red (PIR) motion detector. Due to its high sensitivity and reliability, it is also widely used in security products.

Please ask for detailed datasheet

### Features

- Minimum external component
- High sensitivity
- High RFI immunity
- Daylight adjustment
- Off delay timer

### Pin Assignemt



Pin	Name	Description
1	VCC	Supply Voltage (5V)
2	Sensitivity	PIR Motion Sensitivity Input
3	Offset Filter	PIR Motion Offset Filter
4	Anti-Alias	PIR Anti-Alias Filter
5	DC-CAP	PIR Gain Stabilization Filter
6	VReg	Voltage Regulator Output
7	Pyro (D)	Pyro Drain Reference
8	Pyro (S)	Pyro Source Input Signal
9	GND (A)	Analog Circuitry Ground
10	GND (D)	Digital Circuitry Ground
11	Daylight Adj.	Adjustment and CdS Input
12	Daylight Sense	Silicon Photo Diode Input
13	Gain Select	PIR Gain Select Tri-State Input
14	ON/AUTO/OFF	Mode Select Tri-State Input
15	Toggle	Mode Select Toggle Input
16	OUT	Lights ON/OFF Input
17	LED	PIR Motion Indicator Output
18	C	OFF Timer Oscillator Input
19	R	OFF Timer Oscillator Output
20	FRef	Frequency Ref. Oscillator

### Operation Data

Value	min.	typ.	max.
V <sub>CC</sub> [V]	4	5	15
I <sub>CC</sub> [mA]		0,3	
Input Voltage on any pins [V]	GND -0.5		V <sub>CC</sub> +.05
PIR Power Supply Rejection Ratio [dB]	74		
PIR Input Gain [dB]	62		68
Overall Gain Variation [%]			5
Overall Threshold Variation[%]			7
Pin 7 Reference Voltage [V]	2,3	2,5	2,7
Pin 11 Pull Down Current [µA]		5	
Pin13 Pull-Up Current [µA]		5	
Pin14 Pull-Up Current [µA]		10	
Pin 15 Pull-Down Current [µA]		10	
Pin 16 Output Impedance [Ω]			35
Pin 17 Output Impedance [Ω]	375	500	625
Pin19 Output Impedance [Ω]	30	40	50
Operating Temperature	-25		+100
Storage Temperature	-55		+125



# PIR Detectors

## ITV-P-KC7783R

### PIR Sensor Module Low Cost Version



#### Description

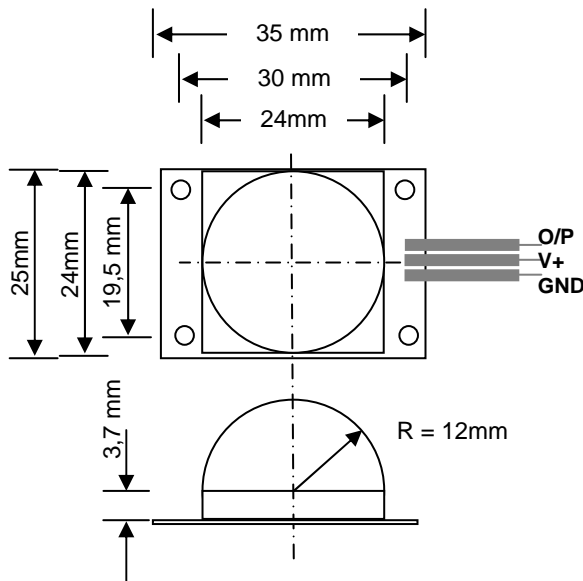
This PIR module is designed for human body detection. It is suitable for cost effective consumer products.

- Easy connection via 3 leads flat cable
  - Special output duration can be requested
  - Wide range of operation voltage
  - High RFI immunity
  - High sensitivity
  - Minimum output pulse can be customer specified
  - IC soft package by dice bonding technique
- Minimum output pulse can be customer specified.

#### Features

- detection angle** horizontal: 60° vertical: 60°
- detection range** 5 m
- sensor** RE200B (NICERA) dual element
- controller** KC778B (COMedia)
- use**  indoor  outdoor
- daylight adjust.**  yes  no
- output signal**  digital (high)  analog (+)  
 digital (low)  analog (-)
- power up delay**  yes: 24 Sec.  no
- lense included**  yes (fresnel)  no

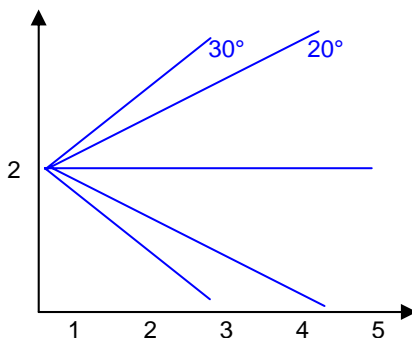
#### Mechanical Drawing



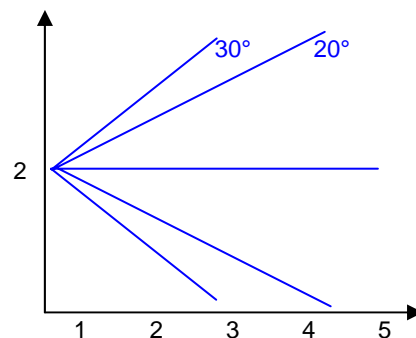
#### Operation Data

Value	min.	typ.	max.
operation current [mA]		n.n.	
standby current [mA]		0,3	
operation voltage [V]	4,7	5,0	12,0
output voltage high [V]		5,0	
output voltage (low) [V]	-	-	-
output duration [Sec]	0,5		
operation temperature [°C]	-20	20	50
humidity range [%]	0		95

#### Horizontal View Pattern



#### Vertical View Pattern





## ITV-P-KC7786

### PIR Sensor Module



#### Description

This PIR module is small sized especially designed for security application. The module can be manufacturer specified.

- Built in regulator and amplifier
- Open collector output
- Connection via 3 pin terminal of standard 1''pitch
- High immunity to RFI and line noise
- High sensitivity with special noise reduction

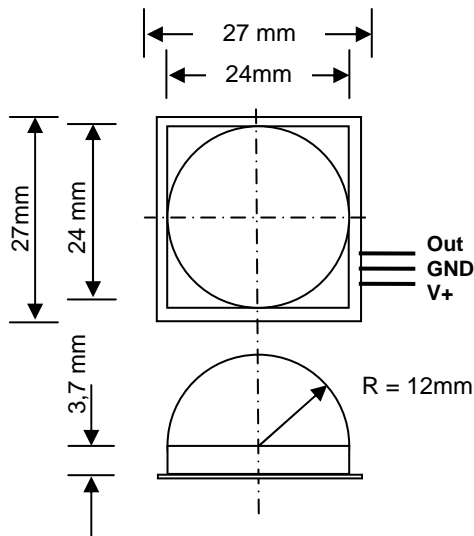
Typical application:

- automatic illumination system
- intruder alarm system

#### Features

- detection angle** horizontal: 100° vertical: 60°
- detection range** 5 m
- sensor** RE200B (NICERA) dual element
- controller** KC778B (COMedia)
- use**  indoor  outdoor
- daylight adjust.**  yes  no
- output signal**  digital (high)  analog (+)  
 digital (low)  analog (-)
- power up delay**  yes: 25 sec  no
- lense included**  yes (fresnel)  no

#### Mechanical Drawing



#### Operation Data

Value	min.	typ.	max.
operation current [mA]		0,6	
standby current [mA]		0,4	
operation voltage [V]	10	12	14
output voltage (high) [V]	-	-	-
output voltage (low) [V]		0,2	
output duration [Sec]	0,5		
operation temperature [°C]	-20		50
humidity range [%]	0		95

#### Horizontal View Pattern

n.n.

#### Vertical View Pattern

n.n.