



Pyroelectric Infrared PIR Motion Sensor Detector ADJ User's Guide

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Pyroelectric Infrared PIR Motion Sensor Detector ADJ

NOTES:

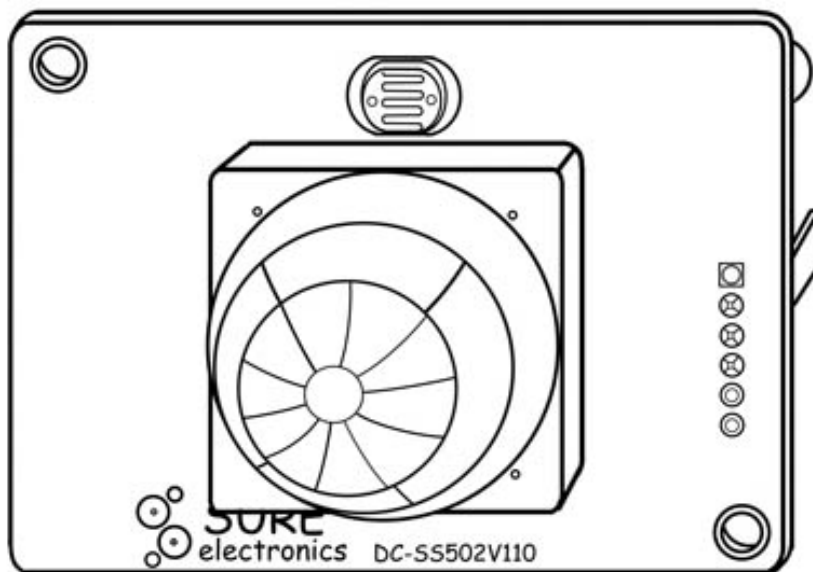
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Chapter 1. Overview

1.1 Preface

Thanks for using infrared pyroelectric detection module by Sure Electronics. This module is delicate and beautiful yet features impressive reliability. It has a wide range of working voltage, various working status options and two different control output methods (level pulse output or relay control output). Its simple-and-easy wiring method and adjustable detection sensitivity helps simplify the secondary application and it is really your ideal choice.



1.2 Functions

This module consists of a passive infrared pyroelectric sensor (PIR), Phil Neal optical filter and BISS0001 chip. It can accurately detect any moving object (e.g. human body) within the detection range and output real-time level signal. It has a preferable sensitivity and broader detection range.

Product Features:

1. Low noise, high sensitivity and broad detection range, etc.
2. Wide working supply: DC8V-24V or DC3.3V
3. Level output & relay control output (@+V_{CC})
4. Adjustable sensitivity
5. Two switching modes are available: Enable LDR/Disable LDR and Retriggerable/Non-triggerable. Please refer to table 2 for details.

Note: Never use +V_{CC} and +3.3V simultaneously.

Chapter 2. Hardware Detail

2.1 Specifications

Product's outline and pinout are shown in fig 1:

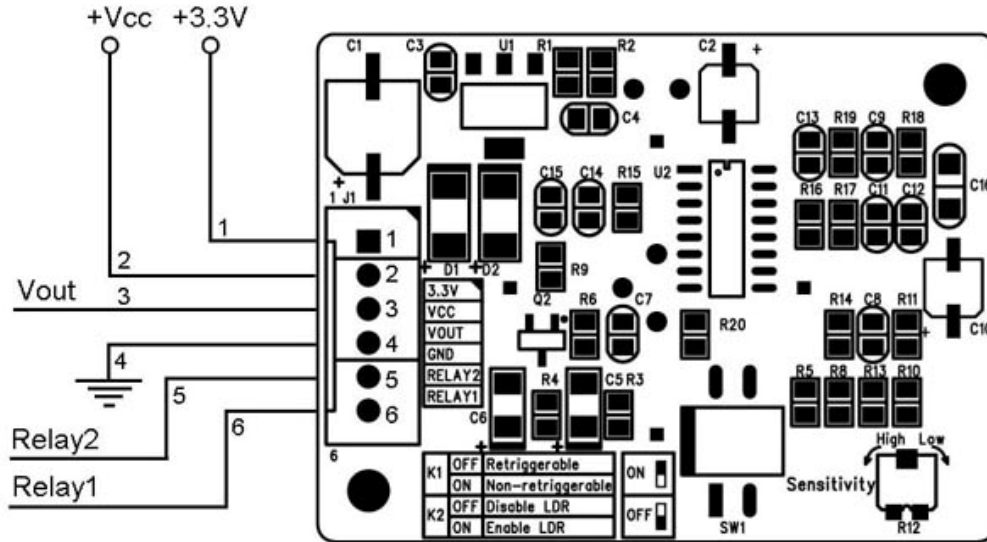


Fig 1 Outline and Pinout

Pinout

Name	Pin number	Function
+3.3V	1	Power Supply DC 3.3V
+V _{CC}	2	Power Supply DC8V-24V
OUTPUT	3	Output pin
GND	4	GND
Relay2	5	Pin 2 of relay
Relay1	6	Pin 1 of relay

Table 1 Diagram of Pins' Functions

Note: Pin 2, 3 and 4 can be used for connection and users may connect by themselves if other pins are also required.

2.2 Diagram of Internal Pin J5 and J6

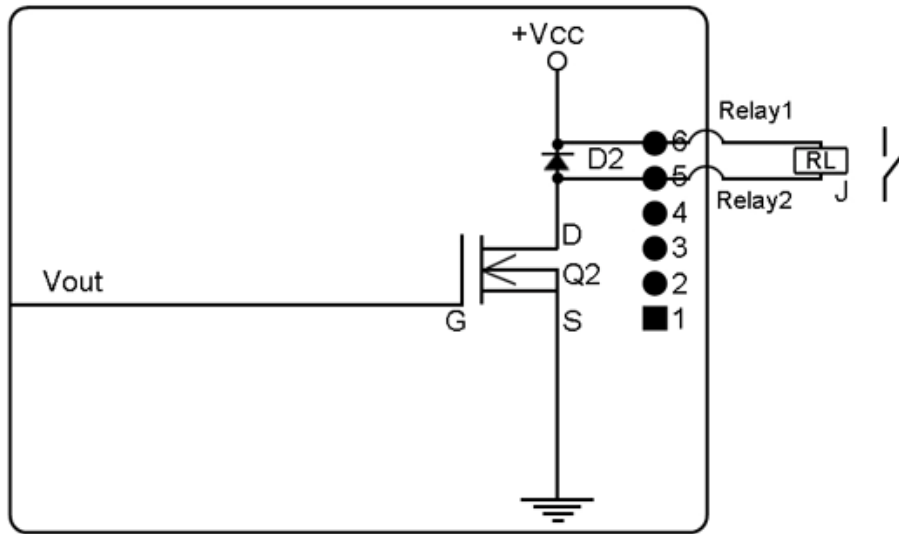


Fig 2 Diagram of Inner Structure of J5 and J6

2.3 Switching Mode Options

Switch	Status	Function	Note
K1	ON	Non-retriggerable	This module cannot be triggered continuously during the output of high level. It can only be triggered when the module starts outputting low level after resuming from high level. Interval between two high levels is 2-3s. Refer to fig 4 for time sequence.
	OFF	Retriggerable	This module can be triggered continuously during the output of high level. The module will not stop outputting high level until there is no trigger. Refer to fig 3 for time sequence diagram.
K2	ON	Enable LDR	When ambient light reaches a certain level, the module will not be triggered and will keep outputting low level.
	OFF	Disable LDR	Ambient light is irrelevant to the trigger of the module.

Table 2 Switch Status Diagram

Note: +V_{CC} should be used to connect power supply when a relay is connected like shown in fig 2.

Chapter 3. Electrical Characteristics

3.1 Ratings

Symbol	Name	Rating
T	Operating Temperature Range	0°-60°
+V _{CC}	Operating Power Supply1	DC 8V-24V
+3.3V	Operating Power Supply2	DC 3.3V
V _{out}	Output HIGH Voltage	3.5V(@12V); 3.2V(@3.3V)
I	Working current (No load@12V)	4.7mA.
RL	Load resistor	>600Ω
T _x	Retention time of output high level	10-12 seconds refer to fig 3 and 4
T _i	Interval between 2 high levels	2-3 seconds ^{<1>} refer to fig 3 and 4
Detection Range	Normal detection range (@ 26 °C and maximum sensitivity)	3-4m ^{<2>}
Angle of Detection	100° taper	When human moves sideward relative to the module, its sensitivity will reach highest and will reach lowest when human moves vertically.

Table 3

Note: <1>: Work in non-retriggering mode.

<2>: When the module detects any proximity of ambient or human temperature, the detection distance and sensitivity falls drastically and sometimes the proximity may cause temporary failure. This failure is not ever lasting and the circuit will regain its normal working status when the temperature difference becomes huge.

Note: Contact us if you need to redefine the range of TX or TI. Sure Electronics will try its best to serve you and you may refer to chapter 6 for contact info.

3.2 Diagram of Time Sequence

Retriggerable waveform

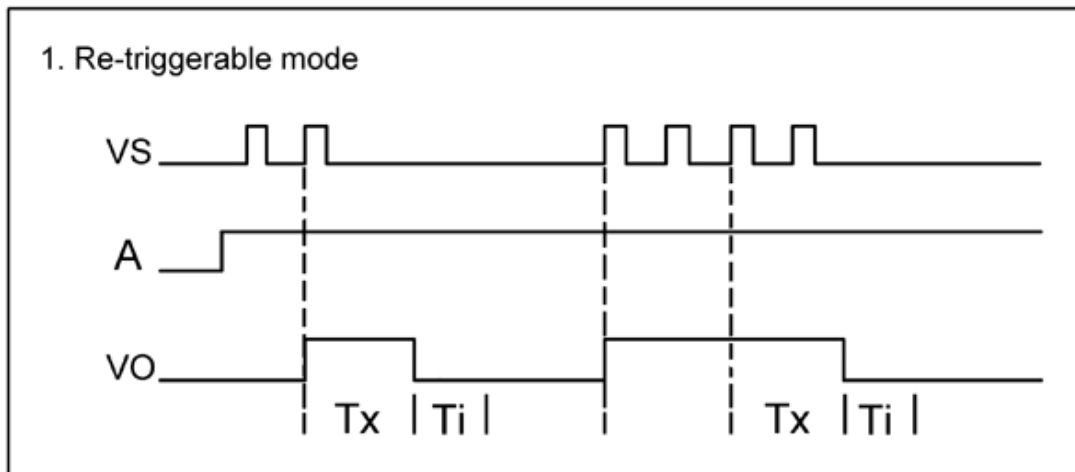


Fig 3 Retriggerable Time Sequence Diagram

NON-retriggerable waveform

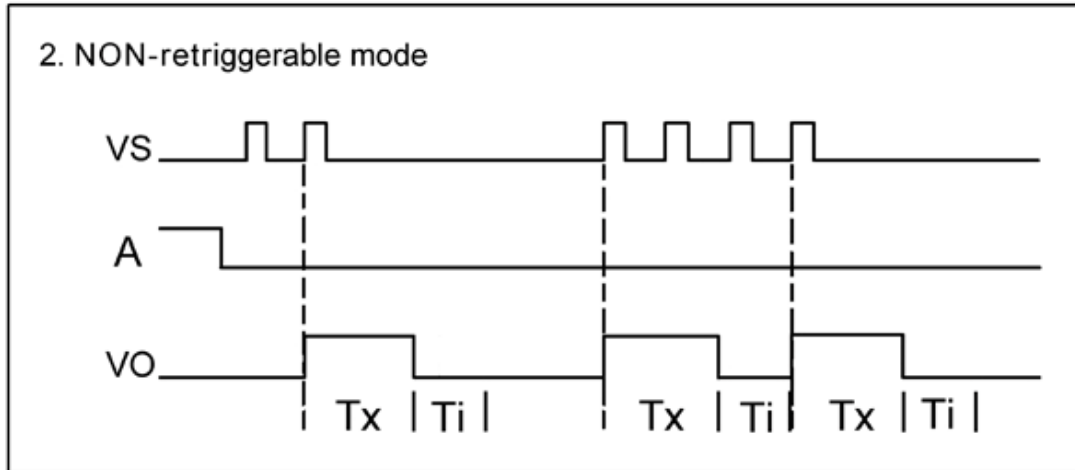


Fig 4 Non-retriggerable Time Sequence Diagram

Note: VS means the high level triggered by human or moving objects in the detection range;
A stands for Retriggerable (High level) or Non-retriggerable (Low level);
VO stands for module output (Vout) and control signal of relay (high level effective).

3.3 Detection Range

The designed detection distance of infrared module is shown in fig 5. The viewing angle of detection range is 100° and sensitivity adjustment is also allowed.

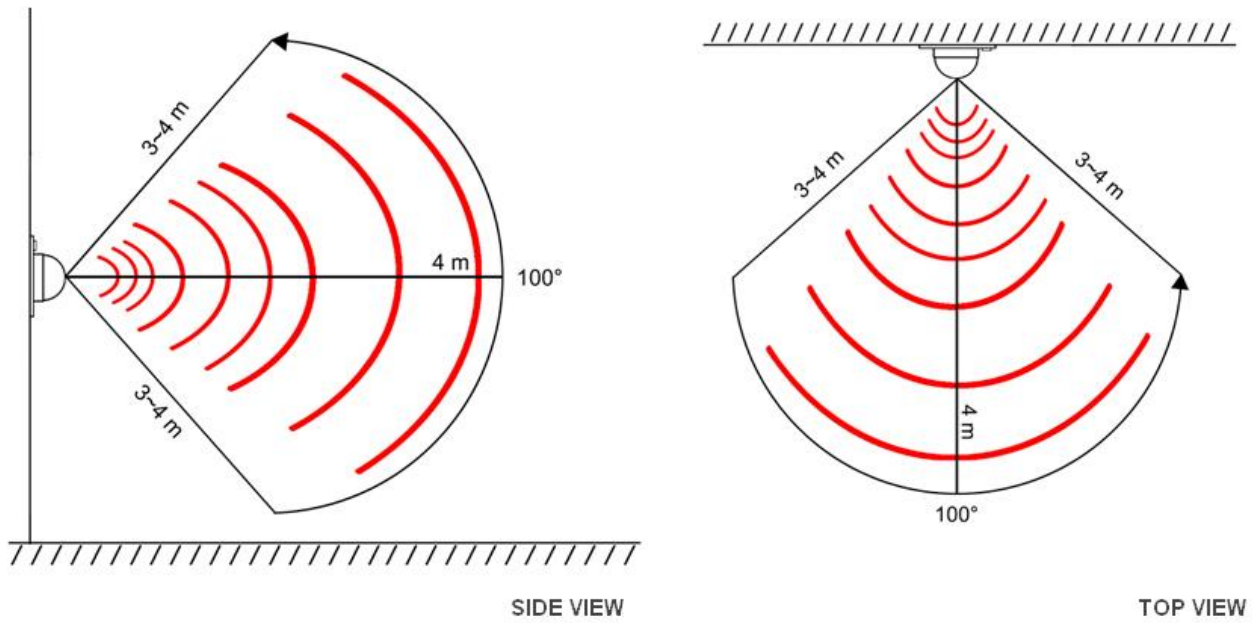
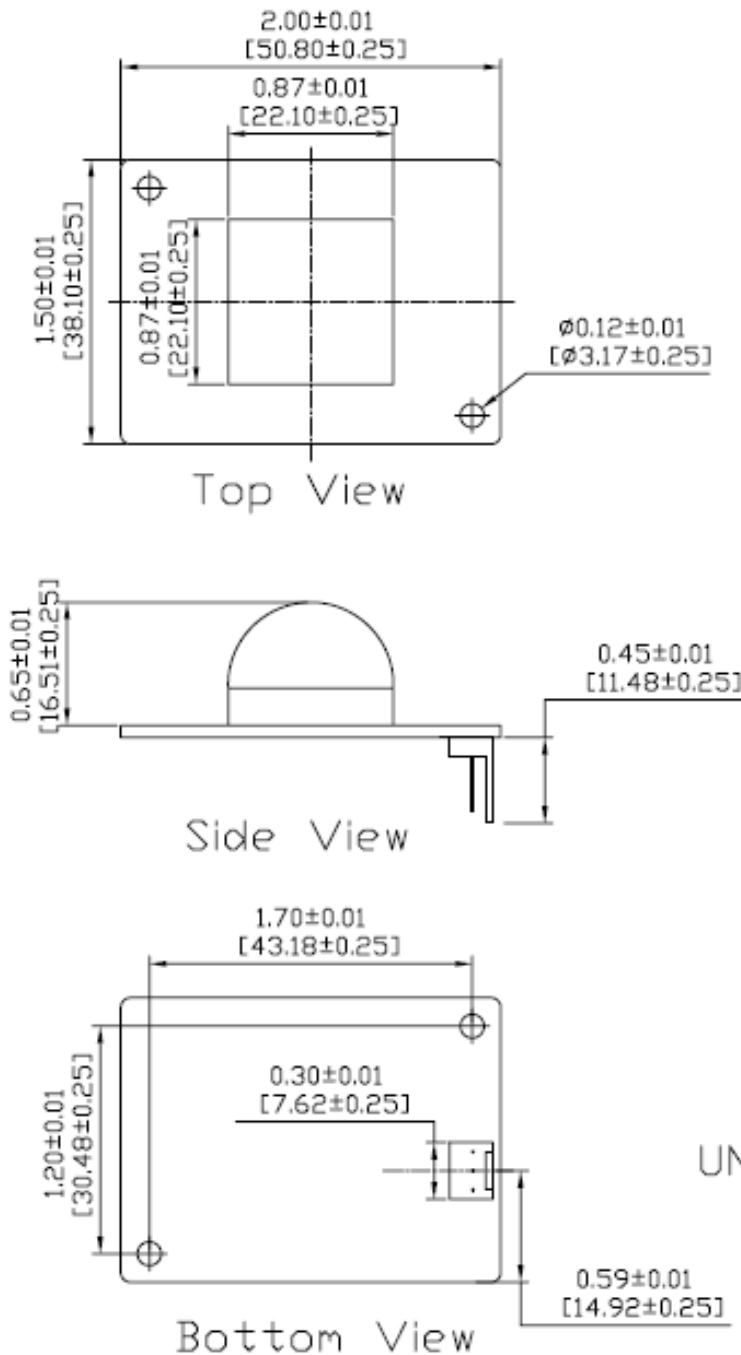


Fig 5 Diagram of Detection Range

NOTE: When human moves sideward relative to the module, its sensitivity will reach highest, and will reach lowest when human moves vertically.

Chapter 4. Mechanical Drawing

Mechanical Drawing



Chapter 5. Applications

5.1 Applications

Infrared module is now a widely accepted product in various applications in society, such as moving body detection, automatic control, proximity switch, electronic anti-theft, security protection, remote measure like shown in table 4.

Automatic Control	Electronic Anti-theft, Security
Automatic lamp or automatic door control in places like public area, walkway or store. Auto flushing control in toilet.	Can be used for security application, such as prevention of human or animal from breaking into some important or dangerous area.
Human Body Detection	Miscellaneous
Automatic pedestrian flow count Note: This infrared module is especially suitable for applications in which pedestrian flow is small and the use of this module might be affected by some external factors	When someone is paying a visit, surveillance devices like monitor will be enabled automatically or automatic door bell application. Automatic shuttering of video camera or digital camera when human movement is detected.

Table 4

Note: This infrared cannot be used in the following environment:

1. Direct exposure under intense sunlight, automobile headlights or incandescent lamp.
2. Places in which air-conditioner, refrigerator or stove exist, which make the temperature changes drastically.
3. Places in which furniture, obstacles or large-scaled bonsai exist.
4. Never install the infrared module in places that face windows or places in which strong airflow exists.

5.2 Typical Application

Automatic lamp control like shown in fig 6.

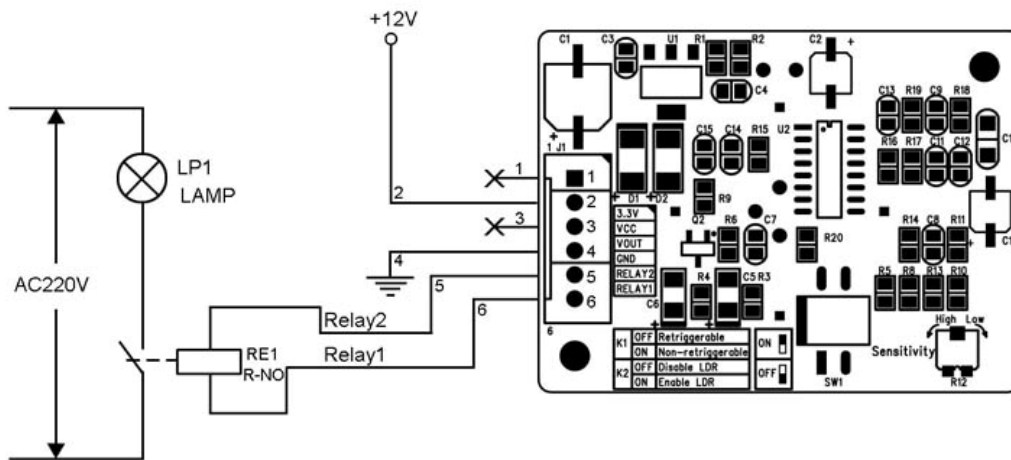


Fig 6 Diagram of Lamp Automatic Control

Wire the infrared module with relay as per the following steps:

1. Connect pin 2 with +12V DC supply, and pin 4 with the ground.
2. Connect pin 5 and 6 with weak electricity pin of relay
3. Power up the lamp with mains.

Function:

When human movement is detected in the infrared detection range, the module will output a relay control signal which makes relay work and the lamp is thus illuminated. Over a period of time, infrared module lowers its output automatically which switch off the relay and consequently, the lamp is powered off. This infrared can work in either retriggerable or non-retriggerable mode controlled by switch K1.

When K2 is switched on, this module can be used to control lamps in public walkway. The module won't work during daylight time and will be enabled when ambient light weakens and lamps are thus controlled.

Note: Recommended installation height 2-3m, to achieve optimum effect, you may adjust the viewing angle.

Chapter 6. Contact Us

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