



Digital Pyroelectric Infrared Sensor (Model: RDB223)

User's Manual

Version: 1.0

Valid from: 2019-11-25

Zhengzhou Winsen Electronics Technology Co., Ltd

Statement

This manual copyright belongs to Zhengzhou Winsen Electronics Technology Co., LTD. Without the written permission, any part of this manual shall not be copied, translated, stored in database or retrieval system, also can't spread through electronic, copying, record ways.

Thanks for purchasing our product. In order to let customers use it better and reduce the faults caused by misuse, please read the manual carefully and operate it correctly in accordance with the instructions. If users disobey the terms or remove, disassemble, change the components inside of the sensor, we shall not be responsible for the loss.

The specific such as color, appearance, sizes &etc, please in kind prevail.

We are devoting ourselves to products development and technical innovation, so we reserve the right to improve the products without notice. Please confirm it is the valid version before using this manual. At the same time, users' comments on optimized using way are welcome.

Please keep the manual properly, in order to get help if you have questions during the usage in the future.

Zhengzhou Winsen Electronics Technology CO., LTD.

RDB223 Digital Pyroelectric Infrared Sensor

Digital PIR sensor RDB223, is an integrated design of sensitive element and signal processing chip, packaged sensitive element and IC chip into sensor shield. Sensitive element transfer the human movement signal to high-precision digital chip for data processing. Then the sensor gives digital signal for easy using.

Features:

- * High-precision AD signal process
- * Differential signal input mode, anti-interference ability
- * Wide voltage power supply(1.5~4.5V) and power consumption
- * Digital TTL signal output

Applications

Security product
Human body induction toys
Human body induction lamps, and switches
Industrial automation control
Smart home
IOT terminals
Intelligent appliance



Technical Parameter

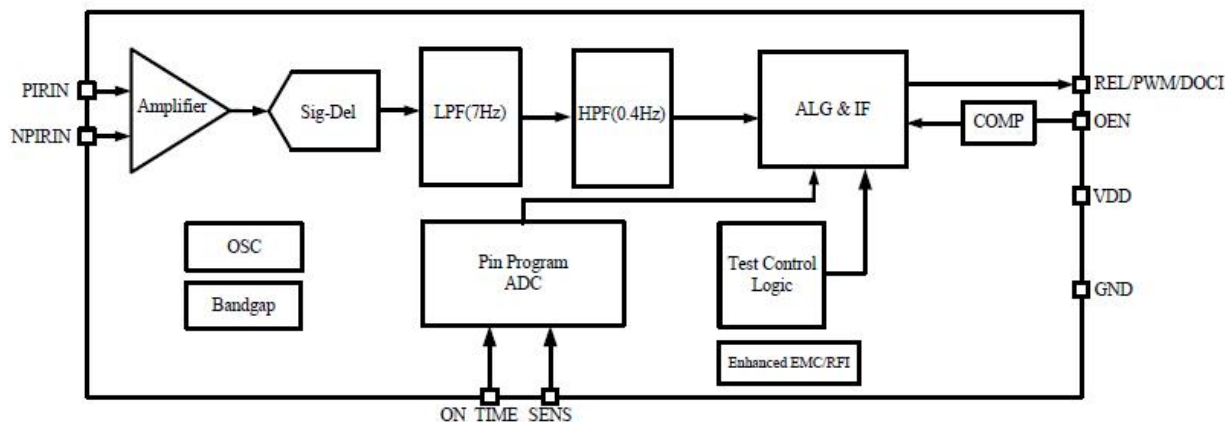
1. Max Limit

Parameter	Symbol	Min	Max	Unit	Note
Voltage	V _{DD}	-0.3	4.5	V	25℃
Storage temperature	T _{ST}	-40	125	℃	

2. Working condition(T=25℃)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Working condition						
Voltage	V _{DD}	1.5	3.0	4.5	V	Power supply mode
Current	I _{DD}		10		uA	10uA @3V@25℃
Sensitivity	V _{SENS}		104		uV	
Temperature	W _{ST}	-25		85	℃	
Output Pin(REL)						
Output drive current	I _{REL}	-5		5	mA	
Block time			2.0		S	
Delay time	ON _{TIME}		1.0		S	
Oscillators and filters						
Low filter cut-off frequency				7	Hz	
High filter cut-off frequency				0.4	Hz	
Chip oscillator frequency	F _{CLK}			32	KHz	
Chip oscillator error	F _{CLK_Err}	-1000		1000	Ppm/K	-20~80℃

3. Internal frame



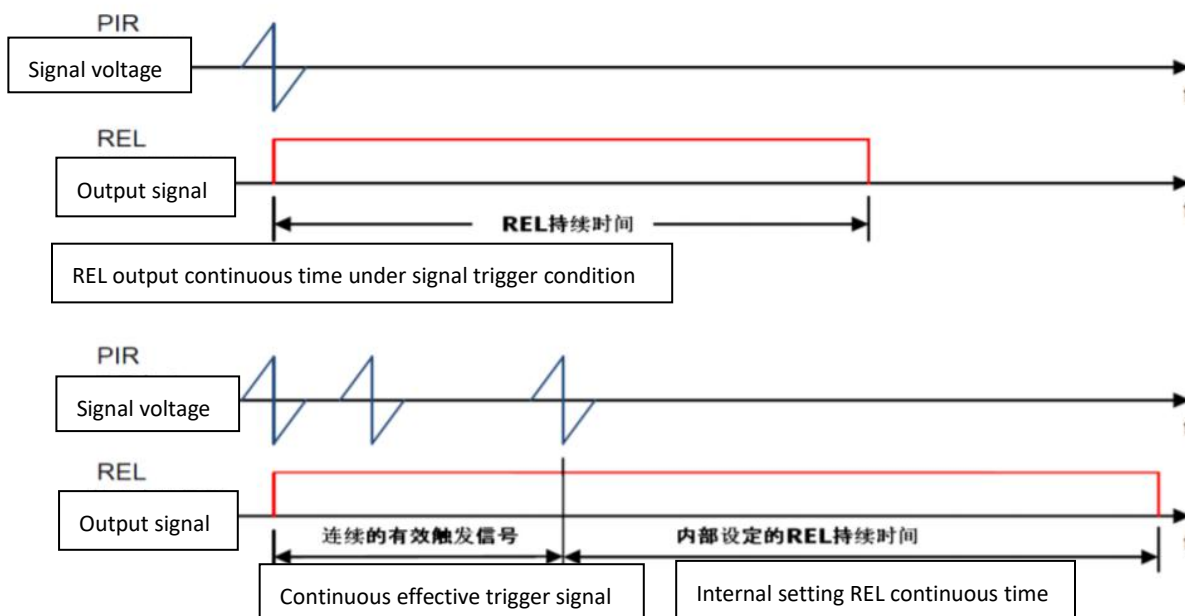
4. Trigger mode

In the normal detection condition, the following two conditions are valid:

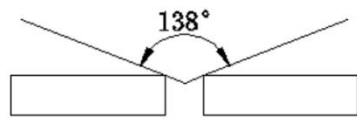
- (1) When the signal amplitude successively exceeds the positive and negative thresholds within 4S ;
- (2) The signal amplitude exceeds 5 times the threshold;

After the sensor is effectively triggered, the REL pin outputs 1s high level. During the high level output period, if the effective trigger signal is detected again, the output high time is recalculated.

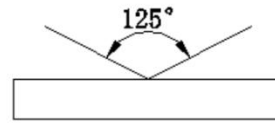
Remark: The sensor has warm-up time. After power on, the REL pin outputs high level for 10 seconds and low level for 2 seconds. Warm-up time has nothing to do with ONTIME



Sensor Detection Angle

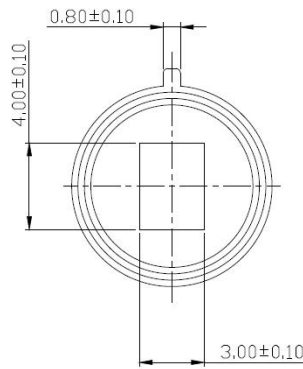


X-X

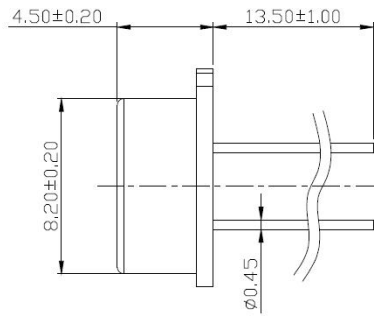


Y-Y

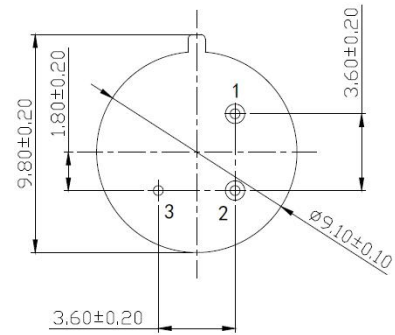
Component Structure (Unit: mm)



Top view



Side view

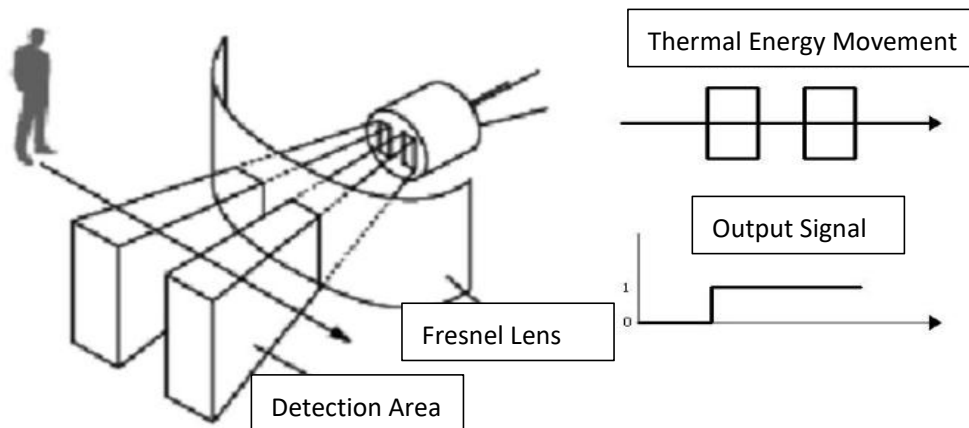


Bottom view

Pin Definition

Item	Name	Definition
1	VDD	sensor power supply pin
2	REL	sensor output pin, TTL high/low level output
3	VSS	power ground

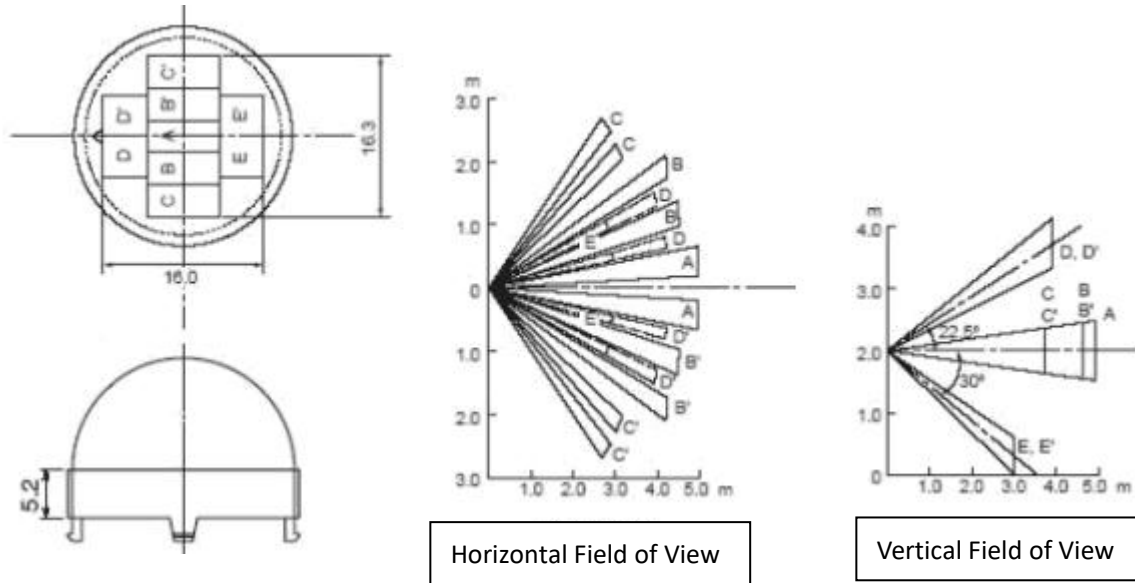
Frequency characteristic



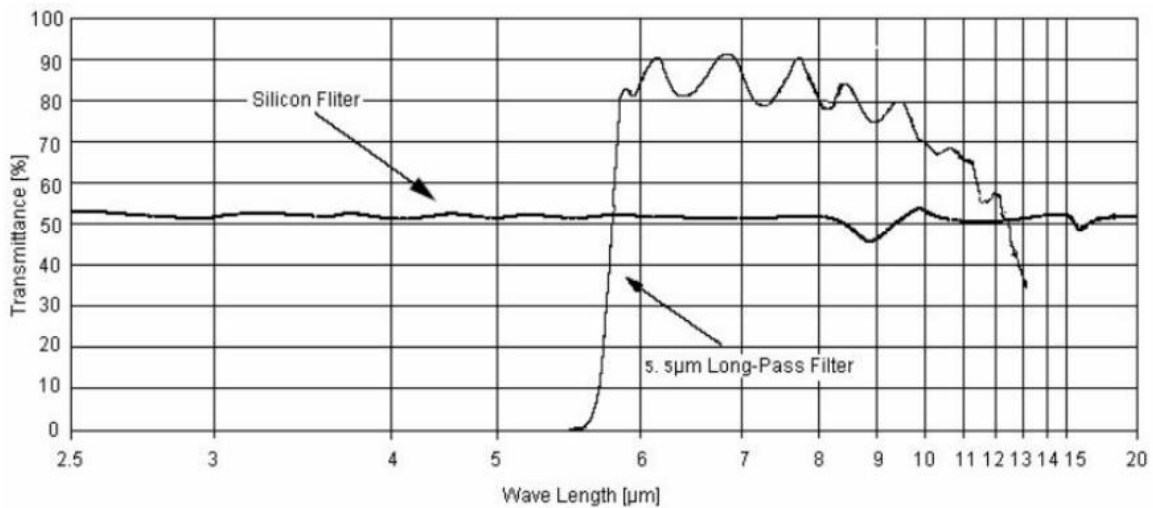
Fresnel Lens:

Fresnel Lens used, would determine the sensor's detection angle and distance, which can correspond to a variety of detection range and distance, according to customers'

requirement.

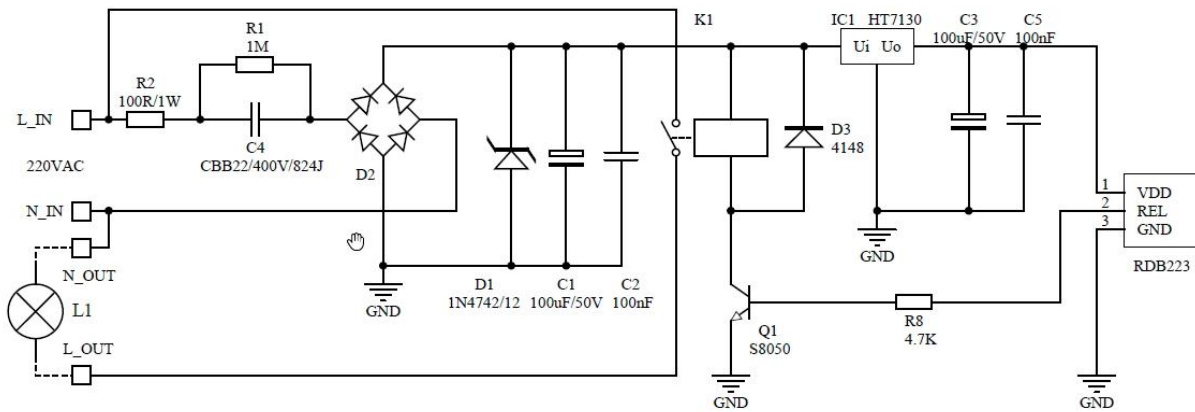


Wave Length



Note: The graph shows a typical 5μm infrared filter reference, and the curve is the average of infrared pass rate. The window material is a special vacuum coating of semiconductor wafers.

Typical Application circuit



Cautions:

1. The sensor's parameter is obtained by standard testing condition after 1 minute's settling time.
2. Please pay attention on Sensor's window direction, must combine with Fresnel lens to get a perfect detecting angle.
3. Sensors detecting distance is affected by ambient temperature, moving objects' temperature, Fresnel lens, Amplifier amplification factor, the comparator threshold voltage setting...etc. please take a comprehensive consideration of various parameters when using the sensors.
4. Please do not touch the window area to avoid damaging to the optical filter.
5. Please handle the sensor with care when using it.
6. Please try to use hand soldering and make the soldering time as short as possible. Soldering temperature should be less than 350°C, and soldering time be less than 3 seconds.
7. Please get electrostatic protective measures when using this product, as applying static electricity of ±800V or more may damage the sensor.

Note: To keep continual product development, we reserve the right to change design features without prior notice.

Zhengzhou Winsen Electronics Technology Co., Ltd

Add: No.299, Jinsuo Road, National Hi-Tech Zone,
Zhengzhou 450001 China

Tel: +86-371-67169097/67169670

Fax: +86-371-60932988

E-mail: sales@winsensor.com

Website: www.winsen-sensor.com