

## XR8M-L Manual of Human Body Sensing Module

### I. Module description

XR6M-L human body sensing module: It is a digital intelligent automatic control product based on passive human infrared technology, with high sensitivity and strong reliability, which is widely used in all kinds of automatic sensing electrical equipment.

### II. the functional characteristics

1. PIR metal shell is wrapped and grounded, and digital signal processing is adopted inside, which directly outputs high and low levels, and the anti-interference performance is enhanced.
2. Repetitive trigger mode: after the induction outputs a high level, if a human body moves in its sensing range during the delay time period, its output will remain at a high level all the time, and the set delay time will only change to a low level after the person leaves (i.e., the induction module will automatically postpone a delay time period after detecting each activity of the human body, and take the last activity time as the starting point of the delay time).

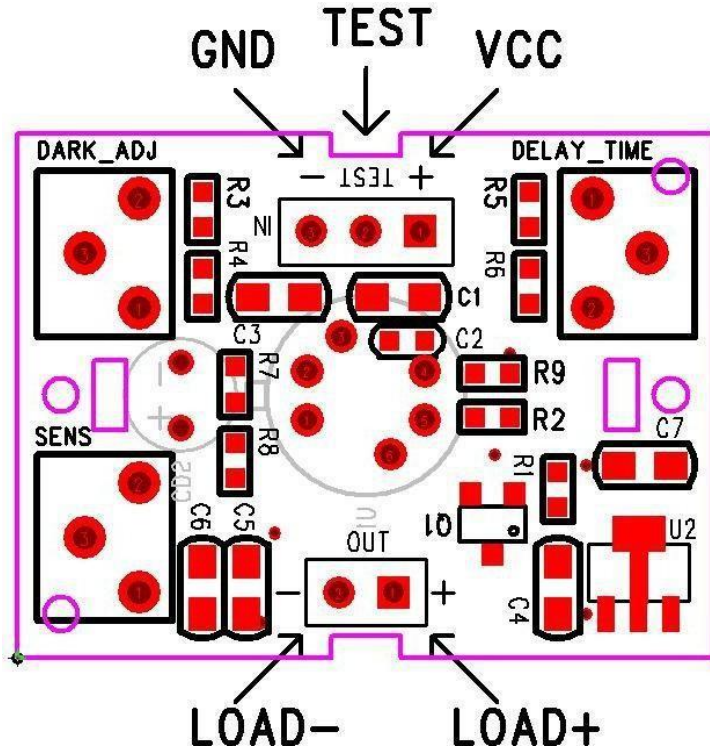
### III. Technical parameters

3. Operating voltage: DC 3.8V-12V; ;
4. Static current:  $\leq 30\mu\text{a}$ ;
5. Sensitivity (SENS): adjustable;
6. Light control (DARK\_ADJ): adjustable;
7. DELAY\_TIME: adjustable;
8. Blocking time: not adjustable (2 seconds);
9. Trigger mode: repeatable;
10. Sensing range:  $\leq 115$  degree cone angle, sensing distance  $\leq 8\text{m}$ ;
9. Working temperature:  $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$
11. 10. overall dimensions of PCB: 32mm\*24mm
12. Module lens: 8002-4

### IV. Physical drawing



V. Functional diagram



The picture is for reference only, and does not mean that it has a certain function.

VI. Function description

1. VCC: working voltage and input power supply voltage, with the range of (DC 3.8V-12V).
2. TEST: it is the output test pin. When there is an output, it is a high level of 3.3V; ; When there is no output, it is low level 0V.
3. LOAD+, LOAD-: the positive and negative of the load; The on-load voltage is equal to the voltage of VCC, and the maximum on-load current is 100mA (heavy current drive can be replaced according to customer requirements).
4. SENS: for sensitivity adjustment: the sensitivity is the highest when it is adjusted clockwise; When you turn it counterclockwise to the bottom, the sensitivity is lowest.
5. DARK\_ADJ: it is light control adjustment; When it is turned clockwise, it will be sensed by day and night; When you turn it counterclockwise to the end, it will only be sensed at 0Lux at night.
6. DELAY\_TIME: delay adjustment; When it is turned clockwise, the induction output will be delayed by 2 seconds (the shortest); When turning counterclockwise to the bottom, the induction output will be delayed by 70 minutes (the longest). (For details, please refer to the delay schedule on page 3 of XR612 PIR specification)

Remarks:

1. When the optical control terminal (OEN) is not used, the potentiometer DARK\_ADJ is adjusted clockwise to the bottom (the power supply of 3.3V); is connected to the two pins (OEN) of the sensor);
2. When the sensitivity terminal (SENS) is not used, the potentiometer SENS is adjusted clockwise to the end (one pin of the sensor (SENS) is grounded), and its sensor sensitivity is the maximum by default;
3. When the delay terminal (ONTIME) is not used, the potentiometer DELAY\_TIME is adjusted clockwise to

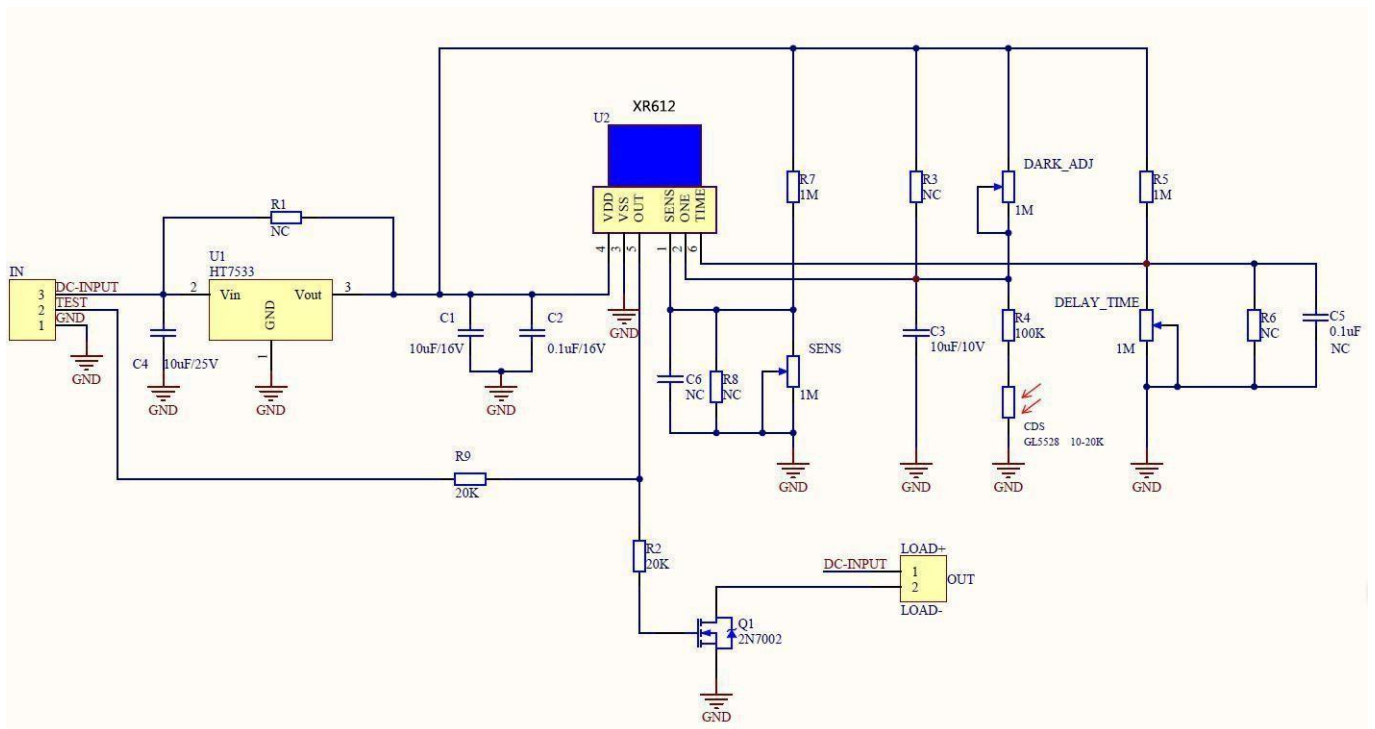
the end (6 pins of the sensor (ONTIME) are grounded), and its delay time is 2s by default;

- The default delay time of the module is the shortest, the sensitivity is the highest, and there is no light control (sensing all day and night). Its functions of optical control terminal (OEN), sensitivity terminal (SENS) and time delay terminal (ONTIME) can be reasonably matched and used according to its application requiremen

### VII. Functional characteristics

- The external metal shell is wrapped and grounded, which enhances the anti-interference performance; Internal digital signal processing is used to directly output high and low levels. Safety regulations and certification have great advantages.
- Sensitivity, light control and time delay can be adjusted by potentiometer.
- Repetitive trigger mode: after the induction outputs a high level, during the delay period, if a human body moves in its induction range, its output will remain at a high level all the time, and it will change to a low level only after the person leaves, and then it will be delayed (that is, the induction module will automatically postpone a delay period after detecting each activity of the human body, and take the time of the last activity as the starting point of the delay time).

### VIII. Schematic diagram of module



## IX. Matters needing attention

1. PIR is a pyroelectric infrared sensor for detecting infrared changes. Detection of heat sources outside the human body, or without temperature change and movement of heat sources, may not be possible. Pay attention to the following general matters. Be sure to confirm the performance and reliability through the actual use status.

- 1) When detecting heat sources outside the human body
    - (1) When small animals enter the detection range
    - (2) When the far infrared direct sensor of sunlight, automobile headlights, incandescent lamps, etc.
    - (3) When the temperature in the detection range changes drastically due to the warm air and cold air of the cold greenhouse equipment and the water vapor of the humidifier, etc.
  - 2) When it is difficult to detect heat source
    - (1) When there are substances such as glass and acryl which are difficult to transmit far infrared rays between the sensor and the detected object
    - (2) When the heat source in the detection range hardly moves, or moves at a high speed.
2. When the detection area is enlarged.

When the temperature difference between the ambient temperature and the human body is large (above about 20°C), even if it is outside the specified detection range, there is sometimes a wide detection area.

### 3. About other uses

- 1) When there are stains on the window, it will affect the detection performance, so please pay attention.
- 2) The lens is made of weak material (polyethylene). After the load or impact is applied to the lens, it will cause poor movement and performance deterioration due to deformation and damage, so please avoid the above situation.
- 3) Static electricity above 200 V may cause damage. Therefore, please be very careful when operating, and avoid touching terminals directly with your hands.
- 4) In the case of welding wires, please do the welding within 3 seconds when the soldering iron temperature is below 350°C. When soldering through solder bath, it may lead to performance deterioration, so please avoid it.
- 5) Please avoid cleaning this sensor. Otherwise, the cleaning solution intrudes into the lens, which may cause the performance deterioration.
- 6) In order to prevent the influence of interference, it is recommended to use shielded wires and shorten the distribution as much as possible.
- 7) Fresnel lens and finished shell must be installed first (the iron shell and pins of the sensor can't be exposed) before testing, otherwise the sensing effect is poor, and the wind will easily cause misoperation.
- 8) Each Fresnel lens has a fixed focal length, so be sure to pay attention when installing. If the focal length is not adjusted properly, the sensing sensitivity will be reduced



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