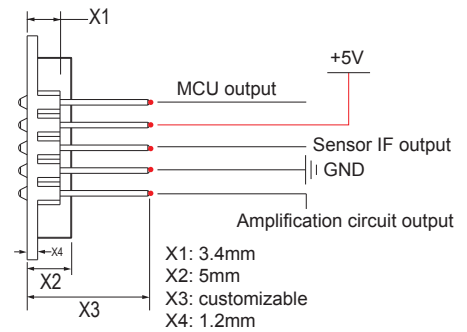
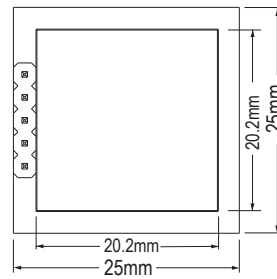
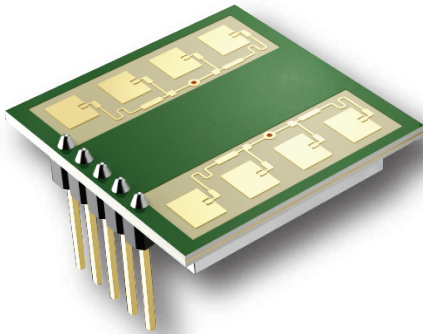


Combined Radar Sensor Module

Model:PD-V20SL



**Suggest connecting a 1-5K resistor in parallel at the IF output port.
Choose the appropriate sensitivity!**

Description

PD-V20SL is a multi-function radar sensor with a center frequency of 24.125GHz, a multi-functional combination module developed by PDLUX technical team. The module consists of a microwave sensor, a signal amplifier and an MCU. The module has a variety of mode outputs, which is convenient for different users to choose different needs and apply to different products, which is a patented product independently developed by PDLUX. Can be directly used in automatic door detection induction, security detection induction, automatic lighting induction and other products, detection resolution is very high.

Basic parameters:

Operating voltage: 3-5V

Operating current: <15mA

Operating frequency: 24GHz-24.25GHz

Detection distance: 3-14 meters

According with EN 300440, EN 62479

RED directive - 2014/53/EU

According with FCC Part 15.249

According with EN 62321, ROHS directive - 2011/65/EU

According with REACH directive - 1907/2006/EC

Introduction to the output of multiple modes

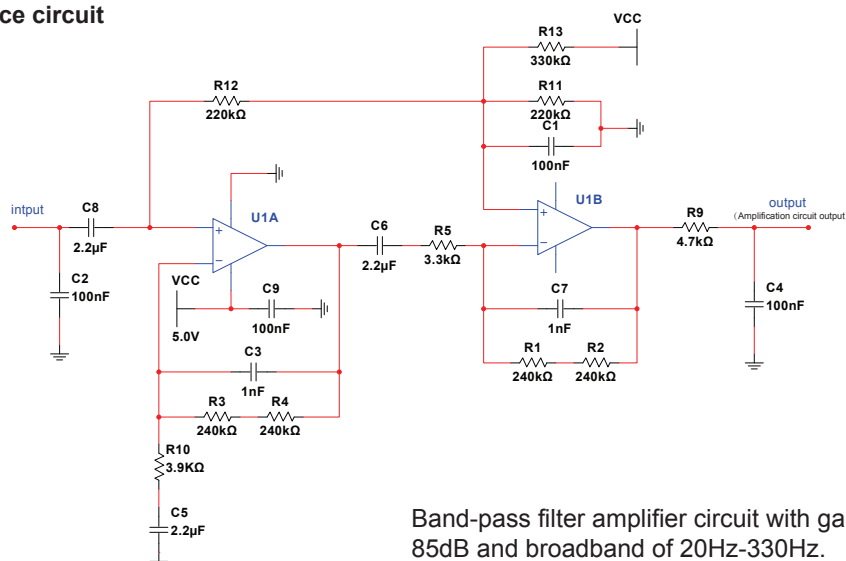
- 1. Sensor signal output:

It is equivalent to the low-frequency signal directly output by the sensor without any processing. The user needs an external signal amplifier circuit to use this output port, and can configure the amplifier circuit with different performance according to needs.

- 2. Amplified signal output:

This output port has been amplified by a 20Hz-330Hz low-pass amplification circuit (see attachment). Users who meet this bandwidth can directly use this output port, and through this Amplification circuit output port and a 20K potentiometer (potentiometer in series with a 1K-2K resistor) can adjust the sensitivity, which is very convenient.

Reference circuit



Band-pass filter amplifier circuit with gain of 85dB and broadband of 20Hz-330Hz.

Note: The built-in amplifier circuit is the standard configuration of this module, if the bandwidth of this amplifier circuit is not enough, we can customize it according to the user's needs.

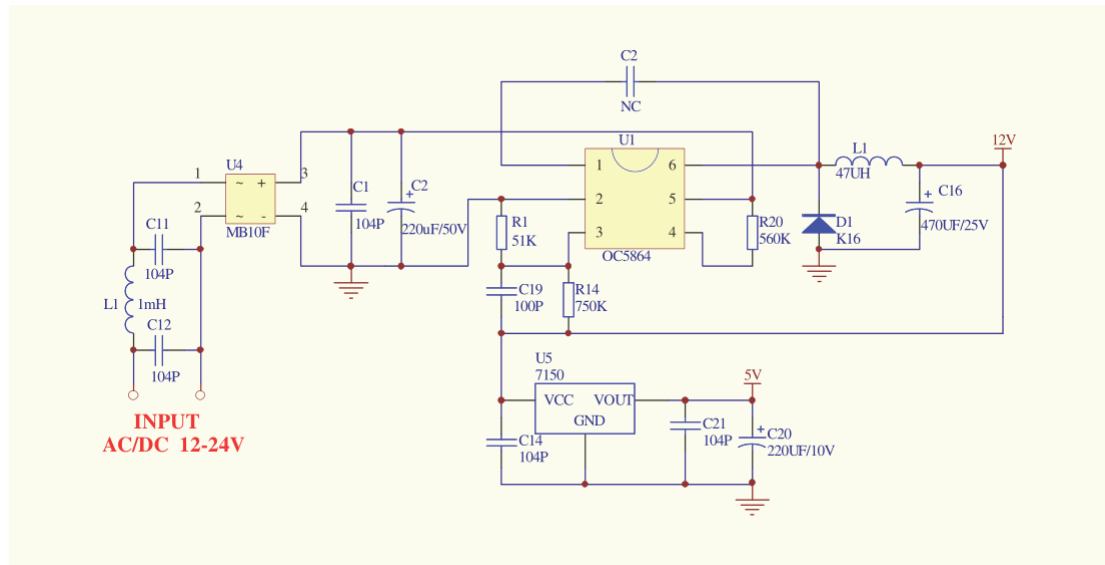
- **3. MCU execution output:**

This output port is already the execution output port after the sensor has been amplified and processed by the MCU. The sensor detects the movement of the object and outputs a 1 second execution pulse output (the length of the output pulse can be customized according to user needs). It can be directly applied to automatic door sensors, and can also be applied to radar detector products that meet this requirement. This output port can be connected with a 4.7K resistor to drive the LED as an indicator.

- **4. application tips:**

Since PD-V20SL is already a mobile detection + signal amplification circuit +MCU a variety of outputs, users only need to add a good performance of the power supply part, a potentiometer plus light tube indicator light can form a complete automatic door sensor. In order to make the product performance stable and reliable, this product has relatively high requirements for the power supply, a stable performance, small ripple coefficient, excellent anti-interference performance of the power supply is very important.

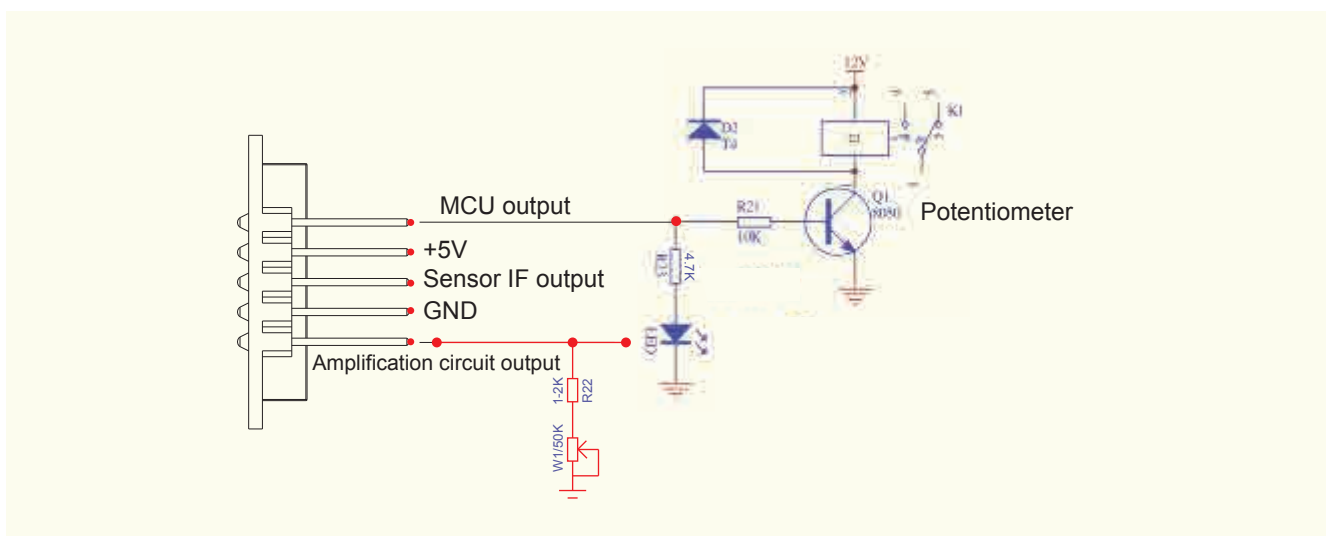
4.1. Power supply configuration: The following figure is a wide voltage switching power supply. The input voltage can be directly used in the AC12V-24V range, or DC12V-35V voltage. The quality of the power supply is very important, so the PCB should be carefully planned when designing the power supply, because the selection of a reasonable principle circuit is only one of them, and the distribution of components on the circuit board and the rationality of the wiring will produce different performance. A well-performing power supply has excellent anti-interference performance and an extremely low ripple coefficient. Excellent power supply is the basis of stable operation of PD-V20SL. The following circuits are for reference only.



AC/DC Power Supply Circuit (for reference only)

- **5. Relay execution circuit**

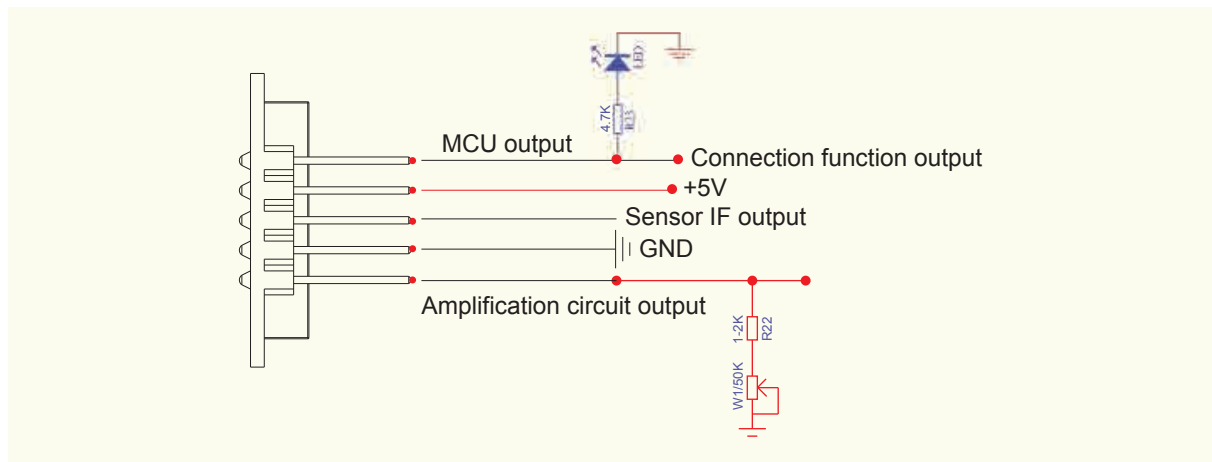
This part of the circuit is selected according to the user's needs. Conventional automatic door sensors have different control methods, and have different control voltages, the following is the reference circuit of 12V relay control, and it can also be controlled by MOS tube, reed relay, photoelectric coupling, etc.



Relay switch connection reference circuit diagram

- 6. add a detection sensitivity adjustment potentiometer

In order to control the detection distance, PD-V20SL can be connected with an external sensitivity adjustment potentiometer, so that the detection distance can be controlled within the appropriate range through the potentiometer, the connection method can refer to the following connection diagram.



Peripheral circuit connection schematic

The different components and application schemes of PD-V20SL multifunctional radar sensor products are introduced above. In addition to the above functions with independent use, it can also be secondary developed according to the different requirements of users for functions, so that the product can customize different functions according to the individual needs of users.

- 7. User function customization

7.1. Detection Function Customization:

To put it simply, it means what kind of product it is used for. For example, when used in automatic door sensor products, the MCU produces a pulse signal, and users with special requirements can describe the requirements clearly, and we can design the program according to the needs of users. Users can also connect the MCU at the pulse output and design all subsequent functions by themselves, which is convenient for users to personalize.

7.2. For security sensor products:

Can be used for security products more programs, we can support users independent development; Or the user proposes a solution, PDLUX will write the software according to the solution proposed by the user.

7.3. For automatic lighting products:

PD-V20SL can send out the needs of simple and low-configuration automatic lighting sensors, and users can directly configure an epitaxial execution circuit on the MCU output port to form a simple sensor circuit and products.

- 8. Support users to develop personalized functions

The PD-V20SL module provides open program writing function. That is, users can write programs according to the characteristics of their own products, and write directly from 5 ports, and can independently develop personalized features and functions of products, and easily write out the different functions that users want through software.

- 9. Precautions

9.1. Attention should be paid to the protection of static electricity in the production process.

9.2. Since the thickness of the circuit board is only 1.2mm, the pin header can not be excessively forced, especially the excessive force on the side can easily cause the internal circuit to break and damage the sensor.

9.3. K-band radar sensors have special requirements for the material and thickness of the housing. The general shell material is made of ABS engineering plastic, with a thickness of 1.5-3mm. The spacing between the plane antenna of the sensor and us is 5-7mm, which should be matched and modified according to the actual trial installation. Metal shields must not be used on the front of the sensor, otherwise the sensor will not be able to detect moving objects from the front properly.

The PD-V20SL simplifies product development. Product detection resolution is high, as long as the power supply and the actuator are equipped according to the need, only one piece of PD-V20SL can complete the automatic door sensor, security sensor, automatic induction lamp products. Its power consumption is only one-third of that of conventional sensors. The production method can be tailored to the individual needs of different users, so that a combined sensor can produce different functions.

The PD-V20SL combined multifunctional radar sensor is a product developed and patented by PDLUX, and PDLUX can provide technical support.

This manual is programmed for the current content of this product and is subject to change and modification without notice to the manufacturer!

Without the permission of the Company, it is strictly forbidden to reproduce the contents of this manual for other purposes.

Patented products, counterfeits will be prosecuted!

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