



ZP04 Combustible Gas
Detection Module
(Model:ZP04)

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ZP04 Combustible Gas Detection Module

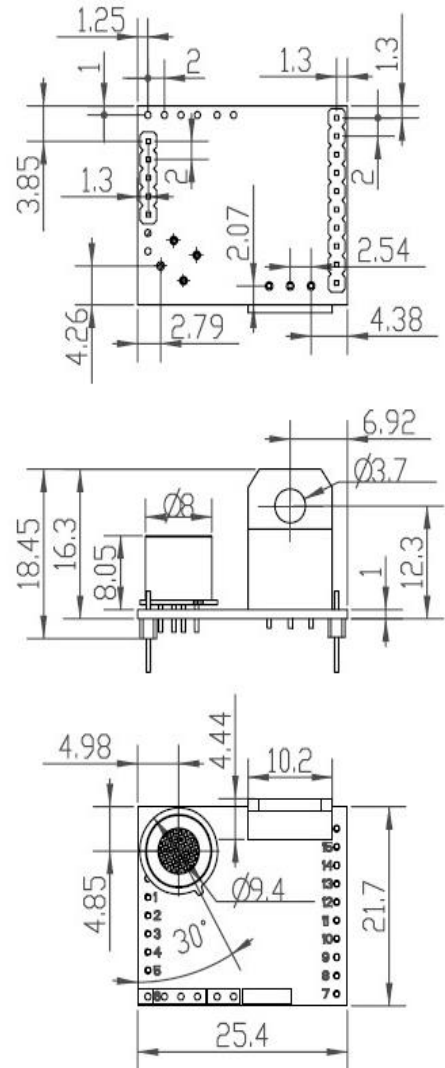
Profile

ZP04 adopts plat surfaced semiconductor sensor, which has basic functions of household gas leak alarm, electric power light, warm-up light, fault lamp, output signal of alarm lamp; buzzer, relay, output signal of electromagnetic valve; input signal of testing button, canceling warm-up button input. This module can be used for complete device development of household gas leak alarm.



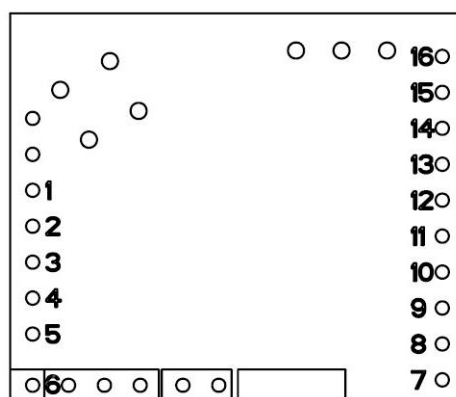
Parameters

| | |
|-----------------------------|---|
| Model | ZP04 |
| Detection Gas | Natural gas |
| Detection Range | 1~25%LEL |
| Type of sensor | Flat surfaced semiconductor type |
| Response time | < 30s |
| Resume time | < 30s |
| Working Voltage | 9~12 V |
| Working Current | < 80mA |
| Output | To be external connection with 4 LED, 2 buttons, 1 buzzer, 1 DC relay and 1 electromagnetic valve |
| Accuracy | ±3%LEL(under 25°C) |
| Expected Lifespan | >2 years |
| Standard Working Conditions | Temperature: -10~55°C Humidity: 0~95%RH |
| Storage Conditions | Temperature: -20~70°C Humidity: 20%~95%RH |
| Dimension | 25.4×21.7×22.6mm(L×W×H) |



Pin Function Description

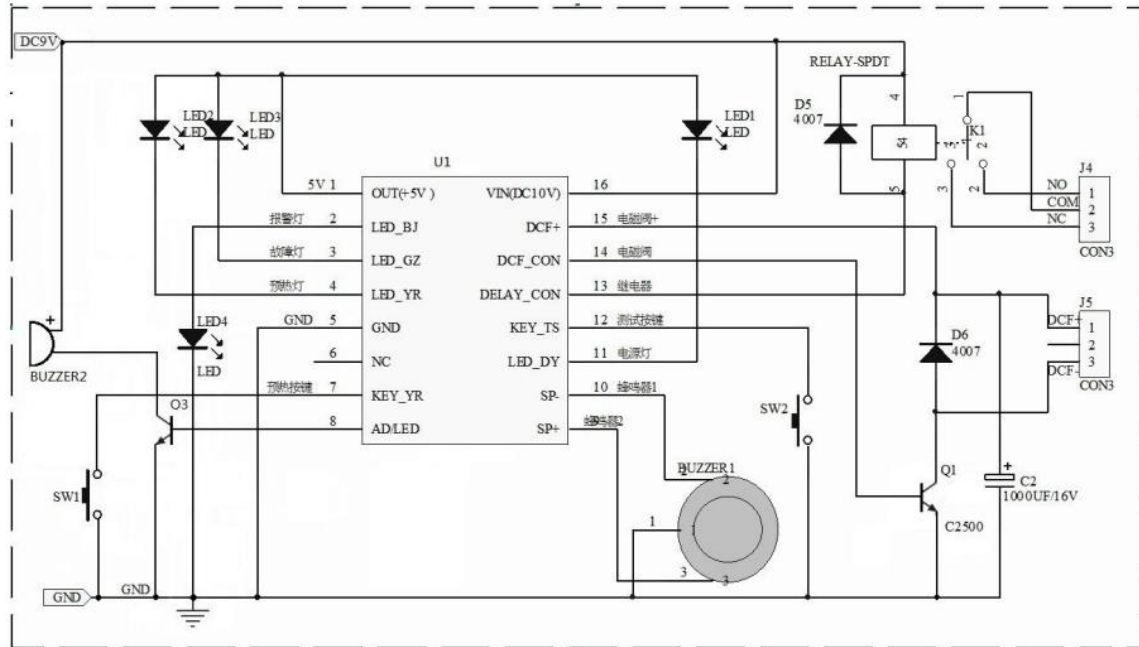
Fig2. ZP02 Pins



| Pin No. | Function | Functional description |
|---------|--------------------------------|---|
| Pin1 | DC5V | +5V output |
| Pin2 | Alarm lamp LED drive | To output high level when alarming |
| Pin3 | Fault lamp LED drive | To output low level when it has fault |
| Pin4 | Warm-up lamp LED drive | To output low level during the warm-up course |
| Pin5 | GND | Direct current supply |
| Pin6 | NC | Hang in the air |
| Pin7 | Warm-up button keystroke | To cancel warm-up by knobbing down this button during the warm-up course |
| Pin8 | Electric magnetic buzzer drive | To control the conducting of electric magnetic buzzer |
| Pin9 | Buzzer drive 1 | Piezoelectric buzzer (three-terminal)oscillator output |
| Pin10 | Buzzer drive 2 | Piezoelectric buzzer (three-terminal)oscillator output |
| Pin11 | Electric Power lamp LED drive | To output low level during normal operating period |
| Pin12 | Test button keystroke | To detect basic function by knobbing down this button during normal operating period |
| Pin13 | Relay drive | When giving alarm ,to output low level and connect with relay directly |
| Pin14 | Electromagnetic valve drive | When giving alarm ,to output high level(specific refer to application circuit) |
| Pin15 | Electromagnetic valve drive | To charge electromagnetic valve in voltage regulation and capacity during normal operating period |
| Pin16 | Vin | Module power input |

Application Principles

This module can be used for complete device development of household gas leak alarm.



ZP04 reference diagram of application principle

Diagram of application principle BOM

| No | Material label | Material name | Model and specification of material | Quantity |
|----|----------------|--------------------------|-------------------------------------|----------|
| 1 | U1 | Module | ZP0 module | 1 |
| 2 | D5、D6 | Kenotron tube | 1N4007 | 2 |
| 3 | LED1 | Light emitting diode | Green | 1 |
| 4 | LED2、LED3 | Light emitting diode | Yellow | 2 |
| 5 | LED4 | Light emitting diode | Red | 1 |
| 6 | K1 | Electromagnetic relay | DC9V | 1 |
| 7 | Q1 | Audion | C2500 | 1 |
| 8 | BUZZER1 | Buzzer | 9V piezoelectric buzzer | 1 |
| 9 | SW1、SW2 | touch switch | | 2 |
| 10 | C2 | electrolytic capacitor | 1000uF/16V | 1 |
| 11 | Q3 | Audion | 9013 | 1 |
| 12 | BUZZER2 | electric magnetic buzzer | 9V electric magnetic buzzer | 1 |

Installation instruction

This module connects with external part by adopting PH2.0 configuration of single-row inserting pin. When using it, you just need insert the module into pre-set circuit. If the joint strength of the module need to be enhanced, you can weld the module on the circuit board directly.

Cautions

1 .Following conditions must be prohibited

1.1 Exposed to organic silicon steam

Module will lose sensitivity and never recover if it absorbs organic silicon steam. Module must avoid exposing to silicon bond, fixture, silicon latex, putty or plastic contain silicon environment.

1.2 High Corrosive gas

If the sensors are exposed to high concentration corrosive gas (such as H₂S, SO_x, Cl₂, HCl etc.), it will not only result in corrosion of sensors structure, also it cause sincere sensitivity attenuation.

1.3 Touch water

Sensitivity of the sensors will be reduced when splattered or dipped in water.

1.4 Freezing

Do avoid icing on sensor's surface, otherwise sensing material will be broken and lost sensitivity.

2 .Following conditions must be avoided

2.1 Water Condensation

Indoor conditions, slight water condensation will influence sensors' performance lightly. However, if water condensation on sensing material surface and keep a certain period, sensors' sensitive will decrease.

2.2 Used in target gas with high concentration

No matter the sensor is electrified or not, if it is placed in high gas concentration for long time, sensors characteristic will be affected. If lighter gas sprays the sensor, it will cause extremely damage.

2.3 Long time storage

The sensors resistance will drift reversibly if the module is stored for long time without electrify, this drift is related with storage conditions. Modules should be

stored in airproof bag without volatile silicon compound. For the modules with long time storage but no electrify, they need long galvanical aging time for stability before using. The suggested aging time as follow:

Stable3.

| Storage Time | Suggested aging time |
|----------------------|------------------------|
| Less than one month | No less than 48 hours |
| 1 ~ 6 months | No less than 72 hours |
| More than six months | No less than 168 hours |

2.4 Long time exposed to adverse environment

No matter the modules electrified or not, if exposed to adverse environment for long time, such as high humidity, high temperature, or high pollution etc., it will influence the module's performance badly.

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