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Digital MEMS alcohol sensor

(Model: ZM03)

user's Guide

Version number: 1.3

Implementation date: 2017.09.20

Zhengzhou Weisheng Electronic Technology Co., Ltd.

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statement

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Micro flow sensor series

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ZM03 alcohol sensor

Product introduction

ZM03 alcohol sensor consists of MEMS-based Si-based micro hot plates and clean air

The medium conductivity metal oxide semiconductor gas sensor composition.

When the sensor is in a gas environment, the conductivity of the sensor

It changes with the concentration of the gas being detected in the air. The higher the concentration of the gas, the

The higher the conductivity of the sensor. The sensor has high sensitivity, small precision, and uses I2C digital

The signal output mode facilitates the observation of multiple sensor networks and presets one pin as a report.

Alarm trigger signal output can be widely used in many fields such as environmental safety, portable instruments and so on.

Performance parameters

Operating Voltage

3.0V

Working current

≤25mA

Maximum heating power

80mW

Range

50ppm

output method

I2C slave mode

default address

0x55

I2C rate

10-100kbps

Pull-up resistor

External pull-up resistor required

Pin definition

1

INT

5

NC

2

SCL

6

FAULT

3

SDA

7

VCC

4

GND

8

GND

Features

MEMS process

Stable and reliable

Ultra low power consumption

High sensitivity

Anti-electromagnetic interference

Application site

Portable instrument

Industrial and mining safety

medical hygiene

On-site control

Weather monitoring

Figure 1: Sensor Pin Diagram

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Sensor size

Instructions

The sensor needs to be warmed up after power on for about 60 seconds. After warm-up is complete, the sensor enters normal operation.

The sensor is connected to the I2C bus, and the host sends a read command to the sensor address in turn 0x55 0xaa (hexadecimal)

In the read state, the sensor will immediately return an 8-bit data value, which represents the current alcohol concentration value, the greater the value, the alcohol concentration

The higher the degree. The lowest value is 1, and the highest value is 200. If the range is 5ppm, the read value is 50, and the current concentration is

5\*50/200=1.25ppm.

The INT pin is always low. When the alcohol concentration exceeds the preset level, the INT pin outputs a high level. The default concentration value is passed by default

The maximum range of the sensor. The following figure shows the complete waveform of an I2C communication process for reference.

Figure 2: Sensor Dimensions

Figure 4: I2C Communication Waveforms

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Precautions

1, must be avoided

1.1 Exposure to steam of volatile silicon compounds

Sensors should be protected from exposure to silicon adhesives, hair spray, silicone rubber, putty, or other areas where volatile silicon compounds are present. Such as

The surface of the sensor absorbs the vapor of the silicon compound, and the sensitive material of the sensor is covered with silicon dioxide formed by decomposition of the silicon compound.

Suppresses the sensitivity of the sensor and is not recoverable.

1.2 Highly Corrosive Environment

Sensors exposed to high concentrations of corrosive gases (such as H2S, SOX, Cl2, HCl, etc.) not only cause heating materials

Corrosion or damage to the sensor leads can cause irreversible deterioration of sensitive material properties.

1.3 Alkali, alkali metal salts, halogen pollution

Sensors that are contaminated with alkaline metals, especially salt sprays, or exposed to halogens, such as freon, can also cause performance deterioration.

1.4 Contact with water

Splashing water or immersing in water can cause the sensor's sensitivity to deteriorate.

1.5 Icing

Ice formation on the surface of sensor-sensitive materials can cause the sensitive layer to crack and lose its sensitive properties.

2, as far as possible to avoid the situation

2.1 Condensate

Under indoor conditions of use, slight condensation can have a slight effect on sensor performance. However, if water condenses on the sensitive layer

Face and maintain for a while, sensor characteristics will decline.

2.2 in a high concentration of gas

Regardless of whether the sensor is powered or not, long-term placement in high-concentration gas will affect the sensor characteristics. If used directly with lighter gas

To the sensor, it will cause great damage to the sensor.

2.3 Long-term exposure to extreme environments

Whether the sensor is powered or not, long-term exposure to extreme conditions, such as extreme conditions of high humidity, high temperature or high pollution, sensors

Performance will be seriously affected.

2.4 Vibration

Frequent and excessive vibration can cause resonance inside the sensor and break. Use pneumatic screwdrivers/ultrasound during transit and assembly lines

Wave welding opportunities generate such vibrations.

2.5 Impact

If the sensor is subjected to a strong impact or impact it will cause its internal breakage.

2.6 Welding

During the welding process, the rosin flux with the least chlorine content is used, and protective measures are taken to protect the sensor.

Violation of the above conditions of use will degrade sensor characteristics

Zhengzhou Weisheng Electronic Technology Co., Ltd.

Address: 299 Jinsuo Road, High-tech Development Zone, Zhengzhou City

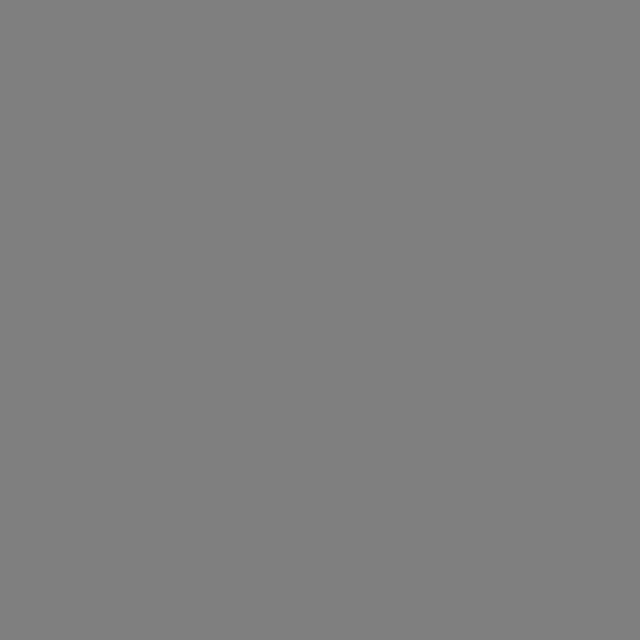
Phone: 0371-60692955/60932966/60932977

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Micro signal: winsensor

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**Original Chinese text:**

数字MEMS 酒精传感器

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