WZ-H3T-NK Selective & High Temperature Resistant Formaldehyde Module

ProSense Technologies Co., Ltd.

Brief Introduction

WZ-H3T-NK selective & high temperature resistant formaldehyde module is the one launched specially for application in cases where temperature is higher than 60℃. WZ-H3T-NK HCHO module is the first application of solid electrolyte integrated in fuel cell vehicles to HCHO detection ----real solid electrolyte, free from electrolyte leakage or dry out; WZ-H3T-NK selective HCHO module is free from the influence of the interference gases at low concentration, such as C_2H_5OH and can generate accurate detection result. WZ-H3T-NK selective HCHO module is pre-calibrated in the factory and can be integrated into your system directly.

Typical Applications

HCHO detection in vehicle

Air conditioners

Smart home

Portable devices

Wearable devices

Air purifier

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Key Features

Selective detection

High temperature resistance

High precision

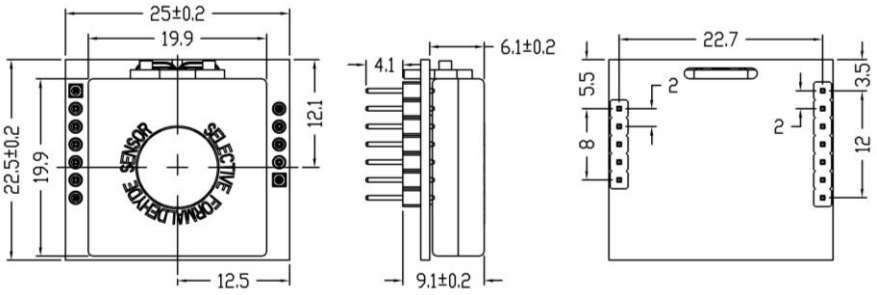
Fast response

Long service life

Low power consumption

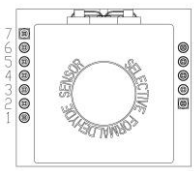
High stability

Diagram



Definition of Pins

PIN	DEFINITION
Pin1	Vin(3.3 - 5V)
Pin2	GND
Pin6	T1
Pin7	R1



Technical Specification

MODEL	WZ-H3T-NK		
Detection Principle	Micro fuel cell		
Detectable Gas	HCHO	temperature	humidity
Detection Range	0-1ppm	-40~125℃	0-100%
Overload	5ppm	/	/
Input Voltage	3.3-5V		
Response Time (T90)	<90S		
Resolution	0.01ppm	0.015℃	0.01%
Accuracy	±30ppb or ±10%, whichever is greater（25±3℃）（50±5%RH）	±0.3℃	±3%
Operating temperature range	-40℃～70℃		
Operating Humidity Range	10%－90%RH（non-condense）		
Lifetime	6 years in air		
Warranty Period	12 months		
Weight	4g		

Cross Sensitivity

Interference Gas	Concentration of Interference Gas(ppm)	Concentration of HCHO(ppm)
Alcohol	2	<0.04
C6H6	10	0
CH3COOH	10	0
NH3	10	0
CO	1000	6
H2	1000	6

Communication Protocol

General Settings

Module makes use of serial communication.

Communication configuration parameters are:

Baud rate	9600
Data bits	8 bits
Stop bit	1 bit
Parity bit	None

Communication Command

There are two communication types: active upload type and Q&A type. The default type is active upload and it sends gas concentration once every second. Commands are as follow:

0	1	2	3	4	5	6	7	8	9	10	11	12	13
start	R	R	R	data									checksum
0XFF	0X17	0X04	0X00	HCHO ppb	HCHO ppb	Range ppb	Range ppb	t +:0/-:1	t ℃	t ℃	RH% %	RH% %	XX

R means reserved

HCHO concentration = HCHO (high byte) * 256 + HCHO (low byte)

1ppm=1000ppb

Temperature = t (high byte) + t (low byte / 100)

Humidity = RH% (high byte) + RH% (low byte / 100)

Switch to Q&A mode：

0	1	2	3	4	5	6	7	8
Start	Reserved	Switch command	Q&A	Reserved	Reserved	Reserved	Reserved	Checksum
0xFF	0x01	0x78	0x41	0x00	0x00	0x00	0x00	0x46

Switch to active upload mode：

0	1	2	3	4	5	6	7	8
Start	Reserved	Switch command	Active upload	Reserved	Reserved	Reserved	Reserved	Checksum

0xFF	0x01	0x78	0x40	0x00	0x00	0x00	0x00	0x47

To read gas concentration：

0	1	2	3	4	5	6	7	8
Start	Reserved	Command	Reserved	Reserved	Reserved	Reserved	Reserved	Checksum
0xFF	0x01	0x86	0x00	0x00	0x00	0x00	0x00	0x79

To return:

0	1	2	3	4	5	6	7	8
Start	Command	Concentration (High byte) （ug/m3）	Concentration (low byte) （ug/m3）	Reserved	Reserved	Concentration (High byte) （ppb）	Concentration (low byte) （ppb）	Checksum
0xFF	0x86	B3	B2	0x00	0x00	B1	B0	0x30

Gas concentration = concentration (high byte) * 256 + concentration (low byte)

To read temperature and humidity：

0	1	2	3	4	5	6	7	8
Start	Reserved	Command	Reserved	Reserved	Reserved	Reserved	Reserved	Checksum
0XFF	0X01	0X3F	0X00	0X00	0X00	0X00	0X00	XX

To return:

0	1	2	3	4	5	6	7	8
Start	Command	data	data	data	data	data	Reserved	Checksum
0XFF	0X3F	+:0/-:1	t (℃)	t (℃)	RH%	RH%	0x00	XX

Temperature = t (high byte) + t (low byte / 100)

Humidity = RH% (high byte) + RH% (low byte / 100)

Checksum calibration

```
/**************************************************************************
*Function name：unsigned char FucCheckSum(uchar *i,ucharln)
*Function description：checksum calibration[Take Not(Byte1+Byte2+…Byte7) +1]
*Note：Take Not(Byte1+Byte2+…ByteX (X>2)
**************************************************************************/
unsigned char FucCheckSum(unsigned char *i, unsigned char ln)
{
    unsigned char j, tempq=0;
    i+=1;
```

```
    for(j=0; j<(ln-2); j++)
    {
        tempq+=*i;
        i++;
    }
    tempq=(~tempq)+1;
    return(tempq);
}
```

Notes

- Avoid changing or moving sensor on the module.
- Avoid moving or changing electronic elements on PCB.
- Avoid exposure to organic vapour, organic solvent、high gas concentration.
- Protect from excessive vibration and shock.

  No recommended for industrial safety/personal monitoring, refer to 2-FP5.

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