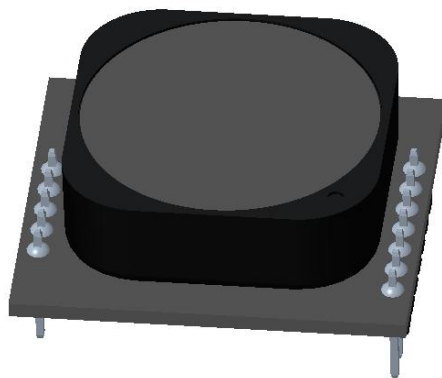# WZ-HNK-24T Selective & High Temperature Resistant Formaldehyde Module

ProSense Technologies Co., Ltd.

Brief Introduction

WZ-HNK-24T selective formaldehyde module, the upgrade version of WZ-H3T-NK, integrated the solid electrolyte with advanced production technique to realize the greatest improvement in performance/cost ratio. As WZ-H3T-NK, this new version can detect HCHO concentration, temperature and humidity at the same time, but with higher accuracy and stability.
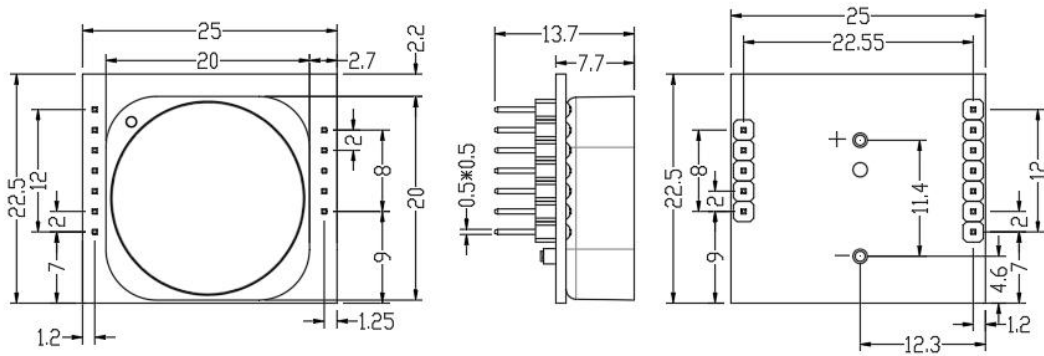
Typical Applications

HCHO detection in vehicle

Air conditioners

Smart home

Portable devices

Wearable devices

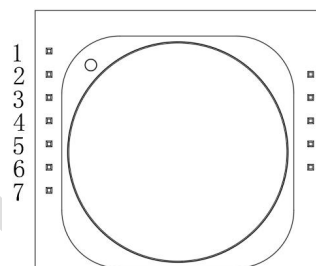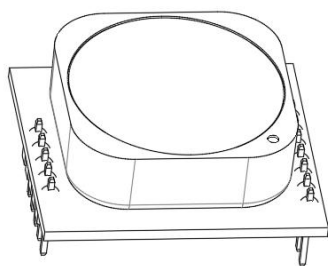Air purifier

... …

Key Features

Selective detection

High temperature resistance

High precision

Fast response

Long service life

Low power consumption

High stability

Diagram

Definition of Pins

Pin1	RXD	Module receive pin
Pin2	TXD	Module send pin
Pin6	GND	3.3V-5V
Pin7	VCC	

Technical Specification

MODEL	WZ-HNK-24T		
Detection Principle	Micro fuel cell		
Detectable Gas	HCHO	temperature	humidity
Detection Range	0-1ppm	−40~125℃	0-100%
Overload	2ppm	/	/
Input Voltage	3.3-5V		
Response Time (T90)	<90S		
Resolution	0.01ppm	0.015℃	0.01%
Accuracy	±25ppb 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	24 months		

Weight	4g

Cross Sensitivity

Interference Gas	Concentration of Interference Gas(ppm)	Concentration of HCHO(ppm)
Alcohol	2	<0.01
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.