HCHO FORMALDEHYDE TRANSMITTER

The HCHO Formaldehyde Transmitter combines a novel HCHO sensor with advanced electronic control technology, converting HCHO concentration into PPM directly. HCHO is oxidized instantaneously to generate an electrical signal. The electrical signal is then acquired and processed by a microprocessor into PPM value and is output by standard digital signal. The HCHO transmitter is pre-calibrated, enabling direct integration into measurement systems and instruments.

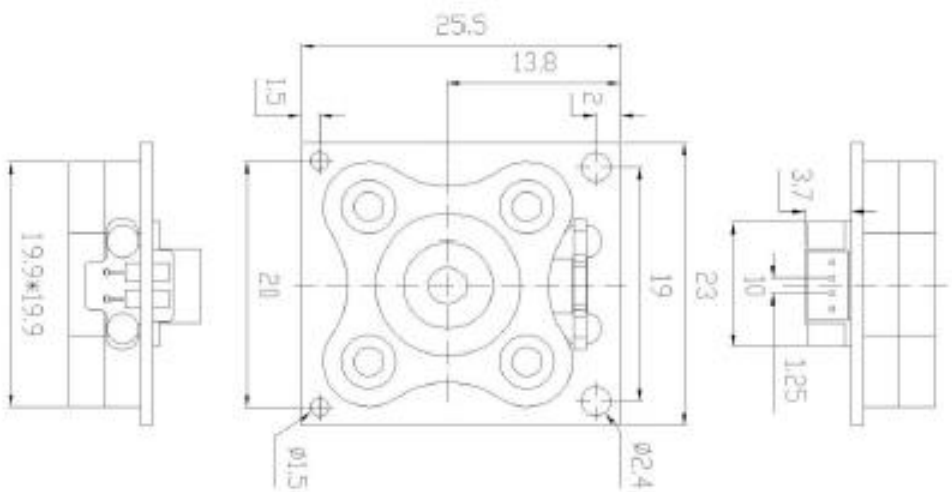
TYPICAL APPLICATIONS

- **Smart home**
- **Light industrial**
- **Portable devices**
- **Wearable devices**
- **Air conditioners**
- **Air cleaners**

KEY FEATURES

- **High precision**
- **Fast response**
- **Long service life**
- **Low power consumption**
- **High stability**
- **Pre-calibrated**

DIMENSIONS



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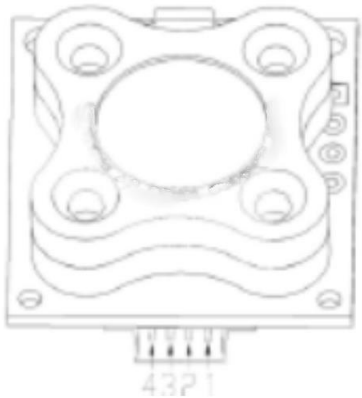
PIN LAYOUT

PIN	DEFINITION
Pin1	V in (5V)
Pin2	GND
Pin3	RXD (0 - 3.3V data input)
Pin4	TXD (0 - 3.3V data output)



TECHNICAL SPECIFICATIONS

MODEL	HCHO FORMALDEHYDE TRANSMITTER
Detection Principle	Micro fuel cell
Detectable Gas	HCHO
Detection Range	0.03 - 2ppm
Maximum Overload	10ppm
Input Voltage	5-7V
Warm up time	< 3 min
Response Time (T90)	< 40 S
Recovery Time (T10)	< 60 S
Resolution	0.001ppm
Operating Temperature Range	-20ºC to +50ºC
Operating Humidity Range	10%-90%RH (non-condensing)
Storage Condition	0~20ºC
Expected Operating Lifetime	5 years in air
Warranty Period	12 months
Net Weight	4g

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COMMUNICATION PROTOCOL

General Settings

HCHO transmitter makes use of serial communication.
Communication configuration parameters are:

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

COMMUNICATION COMMANDS

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 follows:

0	1	2	3	4	5	6	7	8
Start	Gas	Unit ppb	No decimal byte	Concentration (high byte)	Concentration (low byte)	Full range (high byte)	Full range (low byte)	Check sum
0xFF	CH20= 0X17	ppb= 0X04	0x00	0x00	0x25	0x07	0xD0	0x25

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

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

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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	0x00	0x2A	0x00	0x00	0x00	0x20	0x30

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

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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);
}
```

Please Note:

- Avoid changing or moving sensor on the transmitter.
- Avoid moving or changing electronic elements on PCB.
- Avoid exposure to organic vapours, organic solvents and high gas concentrations.
- Protect from excessive vibration and shock.

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