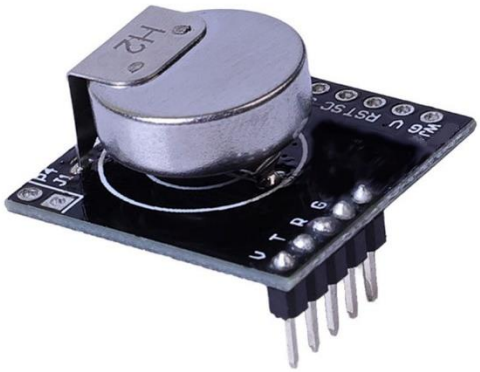
H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE



INTRODUCTION

The H2-20000F TX Hydrogen module combines our proven selective fuel cell H2 sensor with accurate advanced electronic control technology, converting H2 concentration into ppm. The module provides advantages of precision measurement, long-service life and ability to work under a wide temperature range. The module comes precalibrated and ready to integrate directly into systems.

FEATURES

- Mini size ideal for portable, fixed, low power and battery applications
- Low integration cost
- High H2 precalibrated range
- Long lifetime technology with no risk of leakage
- Low power consumption
- High sensitivity, fast response
- Selective detection, high precision
- Wide temperature range
- No poisoning from silicones

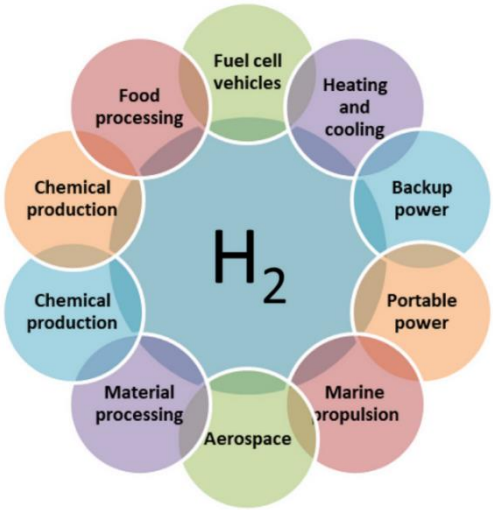
TYPICAL APPLICATIONS

- Industrial Detection & Safety Monitoring
- Portable and fixed instruments
- Hydrogen industrial plants and leak monitoring
- Hydrogen energy vehicles
- Safety monitoring in Hydrogen energy storage and transportation
- Battery charging stations and warehouses
- Battery manufacturing
- Energy engineering
- Petroleum and petrochemical industry monitoring applications
- Process applications in metallurgy, food processing, electronics industry
- Power transformers
- Fire safety

EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE, BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

EURO-GAS
MANAGEMENT SERVICES LTD

H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE



SPECIFICATION

Measuring Principle:	Mini fuel cell
Detectable Gases:	Hydrogen H2
Standard Range:	0 – 20,000ppm H2
Maximum Over-Range:	50,000ppm
Optional Ranges on request:	0-1000ppm, 0-5000ppm H2
Input Voltage:	4.5 – 6.0 V
Response Time (T_{90}):	< 60 seconds
Repeatability:	3 % typically
Lower Detectable Limit (LDL):	30 ppm
Accuracy:	+/- 4% Full Scale (25°C +/-3°C)
Linearity:	Linear
Expected Operating Life:	10 years in air
Operating Temperature Range:	-40°C to +70°C
Humidity Range (non-condensing):	10 – 90% RH
Pressure Range:	1 atm +/- 10%
Weight:	4 g
Warranty Period:	12 months from date of manufacture
Part Number:	2112B60035

All performance specifications are based upon the following environment conditions: +20°C, 50% relative humidity and 1 atm (1013 mBar or ambient pressure).

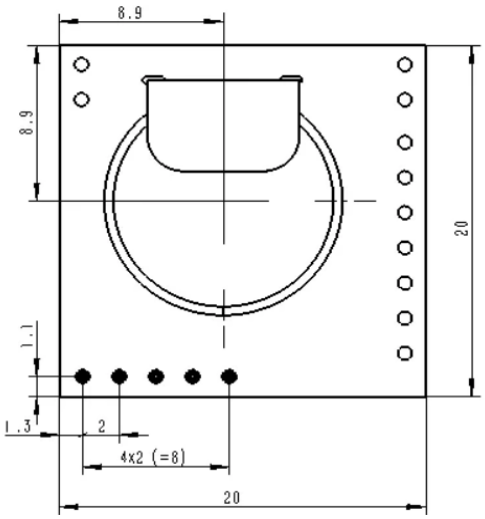
EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE,
BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

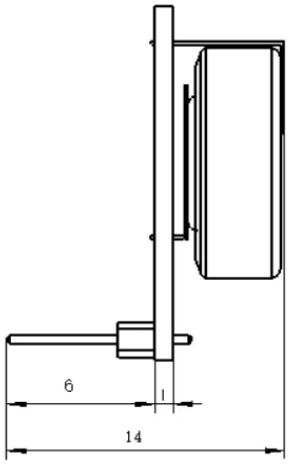
EURO-GAS
MANAGEMENT SERVICES LTD

H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE

DIMENSIONS

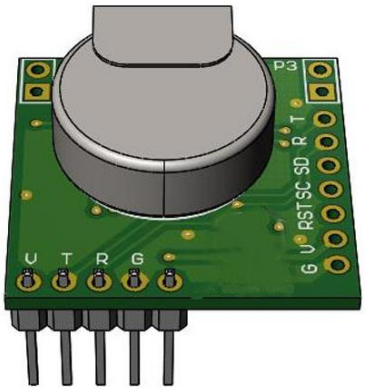
All dimensions are in millimetres mm.
All tolerances are +/- 0.15mm.

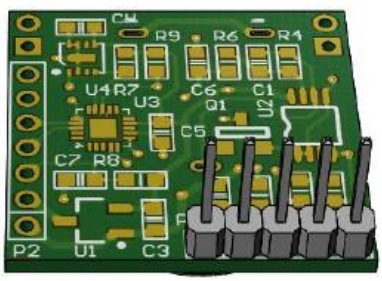




PIN OUTPUTS

PIN	DEFINITION
PIN 1	Vin (3.3 – 5V)
PIN 2	GND
PIN 3	TXD
PIN 4	RXD
PIN 5	Vin (5V)





EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE, BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

EURO-GAS
MANAGEMENT SERVICES LTD

H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE

COMMUNICATION PROTOCOL

General Settings: The Module uses TTL 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	H2=0x17	Ppb+0x04	0x00	0x00	0x25	0xXX	0xXX	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

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

EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE,
BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

EURO-GAS
MANAGEMENT SERVICES LTD

H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE

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)	Check Sum
0xFF	0x86	0x00	0x2A	0x00	0x00	0x00	0x20	0x30

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

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);
}
```

EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE,
BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

EURO-GAS
MANAGEMENT SERVICES LTD

H2-20000F TX – HYDROGEN DIGITAL TRANSMITTER MODULE

CROSS SENSITIVITY

Gas	Concentration (ppm)	Output Signal (ppm H2 equivalent)
Alcohol	1000	＜10ppm

NOTES

- Avoid changing or moving the sensor on the module.
- Avoid moving or changing electronic elements on PCB.
- Avoid exposure to organic vapours, organic solvents and high gas concentrations.
- Sensors are designed to operate in a wide range of harsh environments and conditions. However, it is important to avoid exposure to high concentrations of solvent during storage, fitting into instrumentation and operation. When using sensors on PCBs, degreasing agents should be used prior to the sensor being fitted.
- Protect from excessive vibration and shock.
- See Operating Notes for more details.

EURO-GAS MANAGEMENT SERVICES LTD, CHURSTON HOUSE,
BASCOMBE ROAD, CHURSTON FERRERS, DEVON, TQ5 0JJ, UK
☎: +44 (0)1803 844414
sales@euro-gasman.com www.euro-gasman.com

EURO-GAS
MANAGEMENT SERVICES LTD