AG-2-CHX-MA2610(D)

----- Pre-calibrated module Instruction Manual

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Product Description

The AG-2-CHX-MA2610(D) is an embedded type module equipped with the Figaro's semiconductor Sensor TGS2610-D00, capable of detecting via gases such as Hydrogen (H_2) in diverse environments. The module has been pre-calibrated before leaving the factory and has good durability, stability, and anti-poisoning. It includes a built-in temperature sensor for data correction via software algorithms to minimize environmental impact on measurement accuracy. It utilizes digital communication through a UART bus output for gas concentration readings, which allows users to easily and quickly integrate the module into various systems. This makes it suitable for both residential and industrial gas detection applications.

Technical Specification

Item	Specification
Model Number	AG-2-H2-MA2610(D)
Target Gases	Hydrogen
Sensing Principle	Semiconductor
Detection Range	0 ~ 4,000 ppm
Resolution	See corresponding sensor
Measurement Error	< ±5% FS
Operating Voltage	5V±0.1V DC
Operating Current	See corresponding sensor spec
Output Signal	UART (+3.3V TTL)
Temperature Range	-10 - 55°C
Humidity Range	0% -90%RH
Pressure Range	1 ± 0.1 atm
Storage Temperature	10 - 40°C
Size	L*W*H=41mm*27mm*22mm (TGS2610-D)
Expected Life	See the corresponding sensor data sheet for details.

Product Appearance and Dimensions
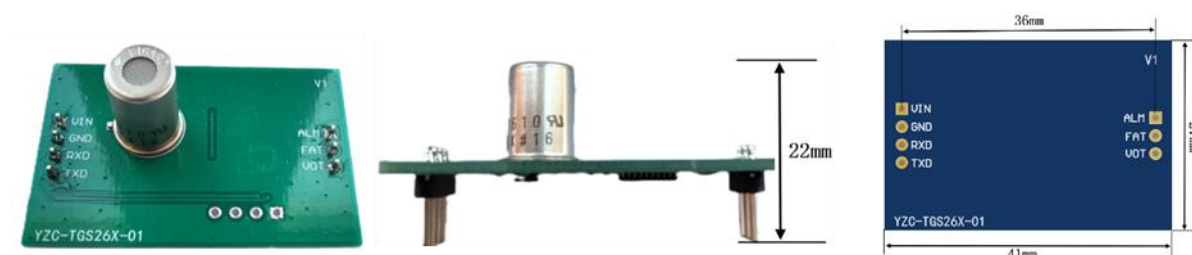
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Pin Configuration

The module reserves a 3P + 4P pin header with a pitch of 2.54 mm as the electrical interface. Pin descriptions are as follows:

Pin Number	Name	Functional Description
1	VIN	Power supply, 5V DC
2	GND	Signal ground
3	RXD	Serial port input, Connected to the host TXD
4	TXD	Serial port output, Connected to the host RXD
5	VOT	Module onboard 3.3V reference power output (maximum output capacity 50mA)
6	FAT	Fault signal output pin (reserved)
7	ALM	Alarm signal output pin (reserved)

Note:

1) After being powered-on, the module needs approximate 4 minutes to warm up. Once the process is complete, the module enters into normal monitoring state.
2) After being powered-on, the module's serial port outputs a frame of data containing status and concentration values every 1 second.

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Communication Protocol and Description

1. Serial communication adopts module active upload data mode, data upload interval 1 second.

2. UART serial port:
   Baud rate: 4800, data bits: 8bit, stop bits: 1bits, parity bit: no parity

3. The data frame is 5 bytes and has the following data format:

Frame Header	Status	Conc. high byte	Conc. low byte	Checksum
0xAA	State	D(H)	D(L)	Sum

   Checksum Sum = 0xAA + State + D(H) + D(L)

   The module state byte is defined as follows:

Operating properly	Module Circuit Fault	Power On to Warm Up
0x80	0x81	0x82

   Note: Concentration values are all 0 during the module warm-up period; When the concentration value is 0xffff, it indicates an over-range condition.
   Example:
   Module upload: 0xAA 0x80 0x00 0x0A 34
   Indicates that the module is in normal monitoring state and the current gas concentration is 10%LEL.

4. The above communication protocols are only for module testing, and can also be customized according to customer requirements.

Application Notes

1. The module is not protected against reverse polarity or ESD (Electrostatic Discharge). Users should ensure correct power connection and implement appropriate ESD protection measures when using the module.
2. Exceeding the module power supply voltage range may cause damage to the module or the module may fail to operate properly.
3. Please follow precautions specific to the sensor when using the module.

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