



Ammonia Gas Module 0-100ppm
TB200B-EC4-NH₃-100-01
Technical Specification

» Product Overview

The TB200B-Series Ammonia Gas Module brings a lot of high-precision detection technology from Germany and the design concept of the German team together. The core sensor uses a liquid electrochemical sensor. This series of sensors has the advantages of long life, anti-poisoning, low power consumption, etc. It is a new generation of electrochemical gas sensors.

The TB200B module uses UART digital signal output, eliminating the customer's understanding of the sensor application and the tedious work of calibration.

» Features

- ☞ Low power consumption and sleeping mode (suitable for and IoT applications)
- ☞ Combined with intelligent algorithms, it has stronger adaptability to the environment, more accurate detection, and stable zero point
- ☞ Good anti-toxicity
- ☞ New microcircuit design, strong anti-electromagnetic interference ability
- ☞ Fast response, fast return to zero, plug and play
- ☞ RoHS approved eco-friendly design

» Application

- ☞ Leak detection
- ☞ TLV monitoring
- ☞ Semiconductor industry
- ☞ Livestock industry
- ☞ Cooling system
- ☞ Industrial exhaust emission monitoring
- ☞ Food and Refrigeration
- ☞ Environmental monitoring



» Principle

Liquid electrochemical sensing technology is a revolutionary innovation in the field of electrochemical detection. Based on the principle of electrochemical catalytic reaction, this technology detects the output signals of the electrochemical reactions of different gases, and accurately measures the gas concentration through the signal amount.

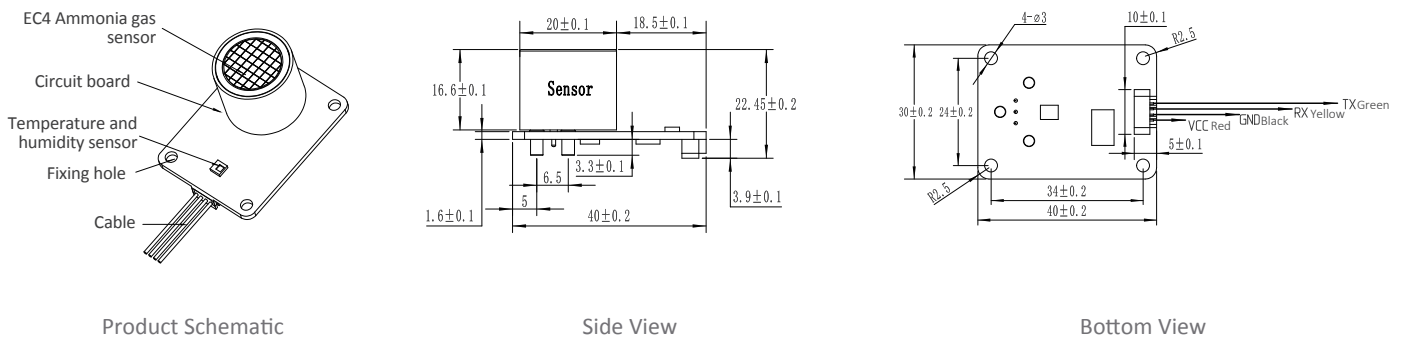
The sensor is composed of three catalytic electrodes, liquid electrolyte and gas diffusion holes. The gas reaches the working electrode of the sensor through the diffusion holes, an electrochemical redox reaction occurs on the porous micro-surface of the electrode, the liquid electrolyte conducts electron transfer, and generate a current signal as an output. The current signal can characterize the gas concentration.

» Order Informations

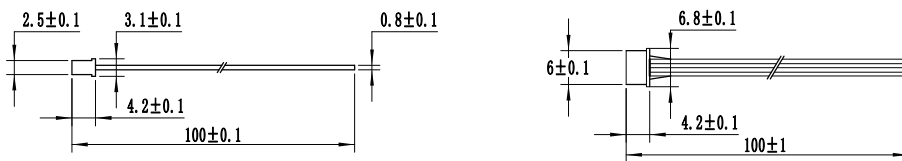
Product	Part Number	Range	Resolution
Ammonia Gas Module	04-TB200B-EC4-NH ₃ -100-01	0-100ppm	0.1ppm
4Pin Cable	02-MOD-CABLE-4PIN-01		

» Structure Diagram (unit: mm)

TB200B-EC4-NH₃-100-01 Dimension diagram



4Pin cable size diagram



» Specification

Principle	Liquid Electrochemical Detection Technology	
Detection of Gas	Ammonia Gas	
Detection Range	0-100ppm	Resolution: 0.1ppm
Lowest Detection Limit	1ppm	
Full-scale Accuracy Error	± 5% F.S	
Repeatability	≤ 2%	
Settling Time	Stored in clean air for the first power on < 1 minutes	
Response Time	T50: <20 seconds; T90: <50 seconds	
Calibration Gas	100ppm measurement range: 50ppm Ammonia gas calibration Note: The air distribution standard is based on clean air as the background air, with a humidity of 50%, and a normal temperature environment	
Sensor Expected Lifetime	> 2 years	
Output	The standard output is: 3.3V UART digital signal (see below for communication protocol) ; Optional custom Modbus protocol Interface definition: VCC- Red, GND- Black, RX- Yellow, TX- Green; Baud rate: 9600 Data bits: 8 bits Stop bits: 1 bit	
Get Data Command	The communication is divided into active uploading and Q & A. The default is Q & A mode after power-on. You can use instructions to switch between the two modes. Return to Q & A mode after power off or switch power mode	
Working Voltage	3.3-5.5V DC	
Working Current	< 5mA	
Power Consumption	25mW @ 5V DC	
Working Temperature	-40 °C to +55 °C	
Optimal Working Temperature	25 °C	
Working Humidity	15% - 95% RH. (Non-condensing)	
Optimum Working Humidity	50% RH.	
Working Pressure	Atm ± 10%	
Circuit Board Size	40 x 30 x 5.6 (mm)	
Module Size	40 x 30 x 22.45 (mm)	
Weight	< 25g	
Temperature and Humidity Sensor Data	Temperature Range: (-40 to 85) °C Relative Error: ± 0.2 °C	Humidity Measurement Range: (10 - 95)% RH. non-condensing Relative Error: ± 2%
Warranty	12 months from the date of shipment	

» Cross Sensitivity

Gas	Formula	Concentration (ppm)	Response(ppm)
Ammonia	NH ₃	50	50
Carbon Monoxide	CO	20	1.50
Ethanol	C ₂ H ₆ O	50	1.43
Methanol	CH ₄ O	50	1.61
Ethylene	C ₂ H ₄	20	0
Chlorine	Cl ₂	10	0
Ethylene Oxide	ETO	20	0
Hydrogen Chloride	HCl	10	0
Nitrogen Dioxide	NO ₂	50	0
Sulphur Dioxide	SO ₂	20	7.50
Tetrahydrothiophene	C ₄ H ₈ S	5	0

Note: 1) The above interference factors may vary due to different sensors and service life. Please refer to the actual test results.
 2) This table is not complete for all gases, and the sensor may be sensitive to other gases.

Disclaimer

The EC Sense performance data stated above is based on data obtained under test conditions using the EC Sense gas distribution system and AQS test software. In the interest of continuous product improvement, EC Sense reserves the right to change design features and specifications without notice. We are not responsible for any loss, injury or damage caused by this. EC Sense assumes no responsibility for any indirect loss, injury or damage resulting from the use of this document, the information contained therein or any omissions or errors herein. This document does not constitute an offer to sell. The data it contains are for informational purposes only and cannot be considered a guarantee. Any use of the given data must be evaluated and determined by the user to comply with federal, state and local laws and regulations. All specifications outlined are subject to change without notice.

Warning

EC Sense sensors are designed for use in a variety of environmental conditions. However, due to the principles and characteristics of electrochemical sensors and to ensure normal use, users must strictly follow this article during storage, assembly and operation of the module. General-purpose PCB circuit board application methods and illegal applications / violation of the application will not be covered by the warranty. Although our products are highly reliable, we recommend checking the module's response to the target gas prior to utilization to ensure on-site use. At the end of the products service life, please do not discard any electronics in the domestic waste, instead follow the local governments electronic waste recycling regulations for disposal.



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