

NH₃/H₂S/CO₂ Sensor

SenseCAP LoRaWAN® Data Logger



Overview

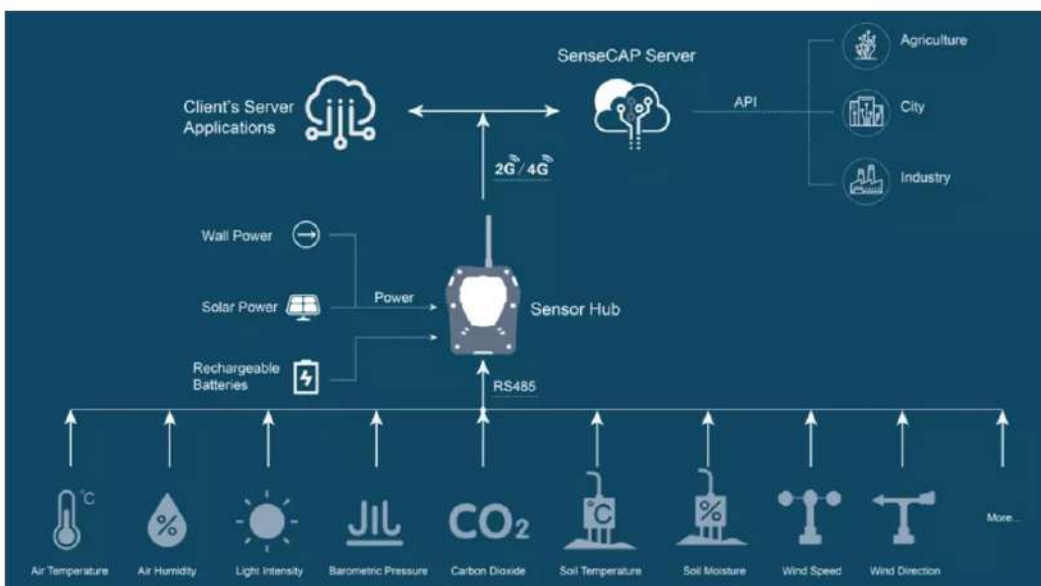
Ammonia gases are the most common cause of the stinky smell in our daily life and it has a tremendous effect on our health. A small number of ammonia gases only make you suffer from a bad smell. However, when one area concentrates a big amount of large ammonia gases, it will become toxic gas and hurt your olfactory system. There are different sources of ammonia gases whether by humans or by nature. One major source is the excretion produced by the livestock farming industry. Another major source is energy generation in heavy industry because burning coal, fuel, and natural gases produce a huge amount of ammonia gas, which increases the risk of improperly disposing of ammonia gas. RS485 NH3 Sensor S-NH3-01 adopts an imported sensor chip from Germany with the ability to monitor hydrogen sulfide concentration, air temperature, and humidity at the same time. The sensor transmits data with the help of the RS485 Modbus RTU protocol. The sensor contains excellent features as it can respond to gas or environment with high speed and sensibility, tolerate disturbance, and adopts a compensation algorithm and adjustable standards, all of that assure the accuracy of the sensor. This equipment was powered by 5V DC, able to support most of the sensors in the market. Equipment can be easily integrated into most of the system without a complex setup procedure. Solid polymer electrochemical technology is a revolutionary innovation in the field of electrochemical detection. This technology is based on the principle of electrochemical catalytic reaction triggered by different target gas leading to sending out a different electrical signal that is directly proportional to the gas concentration. The sensor module is composed of three catalytic electrodes, a solid 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, and the solid electrolyte conducts electron transfer and generates a current signal as an output. The current signal can characterize the gas concentration

Features

- 3-in-1: Monitor 3 measurements - Ammonia concentration, air temperature, and humidity in 1 single sensor.
- High Resistance of Disturbance: Tolerate extreme temperature and exposure to high levels of ammonia gas.
- User-friendly: Easy to set up and support adjustment for different uses.
- Advanced Technology: Apply the revolutionary solid polymer electrochemical technology for gas detection.
- Support Multiple Applications: Livestock farming, gas leaking detection for heavy industry and atmospheric environmental gas detection, etc.

Connect with Sensor Hub for Remote Transmission

Sensor Hub Data Logger is an easy-to-deploy 4G cellular station. It uses the MOD-BUS-RTU RS485 protocol to communicate with sensors and can collect various sensor data simultaneously. Sensor Hub consists of 4 RS485 data channels. With extension hubs / RS485 splitters, it can connect with a maximum of 32 sensors at one time. The data is collected and sent to the cloud (either to the SenseCAP server or the client's private server) via 4G/3G/2G (as shown below).



Designed with industry standards and IP66 rated, Sensor Hub is suitable for outdoor and harsh environments, resistant to UV, rain, and dust, etc. GNSS is embedded for location tracking. Sensor Hub is also equipped with 10MB onboard memory, to store more than 700,000 measurements locally in case of a bad connection.

Application

- Livestock farming (pig houses, chicken coops, cattle herding, etc.)
- Smart public toilet ammonia and odor monitoring
- Ammonia monitoring in landfills and sewage treatment plants
- Gas leak detection for heavy industry
- Atmospheric environmental gas detection
- Other sensor applications



Specification

The basic parameters	
Product model	S-NH3-01
Supply Voltage	5 ~ 24V DC (recommended 5V power supply).
Supported Protocol	MODBUS-RTU RS485
IP Rating	IP65 (The equipment should be protected from direct sunlight and rain over long periods of time).
Operating Temperature	-40°C to 50°C (best operating temperature 20 to 35 °C).
Operating Humidity	15 to 95% RH (non-condensation) (best operating humidity 50%RH).
Ambient Pressure	Atmospheric pressure $\pm 10\%$.
Cable Length	2 meters

Measurement Parameters

	Measurement	Measurement accuracy	Resolution
Ammonia	0~100 ppm	typ. $\pm 5\%$ F.S, max $\pm 10\%$ F.S	0.1 ppm
Temperature	-40~50 °C	± 0.5 °C	0.1 °C
Humidity	10~95 %RH	$\pm 5\%$	0.1 %RH

Power

Operating Current	6mA (Max, 5V DC) ; 3.2mA (typ.12V DC)
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Performance reference

	Parameter	Min	Typical value	Max	Unit
RS-485 mode	Warm-up Time ^[1]	—	5 ^[2]	—	minutes
	Poll Rate ^[3]	—	1	—	seconds
	Response time ^[4]	—	30	—	seconds

[1] The time from when the sensor is powered on to when the data is read. Note the parameter when the sensor is powered on.

[2] If started in an environment with clean air it requires less time

[3] The measurement data update interval, after the power-up warm-up time, if the power supply continues, the sensor periodically updates the reading at this interval.

[4] $T_{90} < 30s$

Part-list



1	Sensor	1
2	Mounting bracket	1
3	Self-drilling Screw (2cm)	4
4	Self-drilling Screw (6mm)	3

ECCN/HTS

HSCODE	9027100090
USHSCODE	8543708800
UPC	
EUHSCODE	8517180000
COO	CHINA
RoHS	1