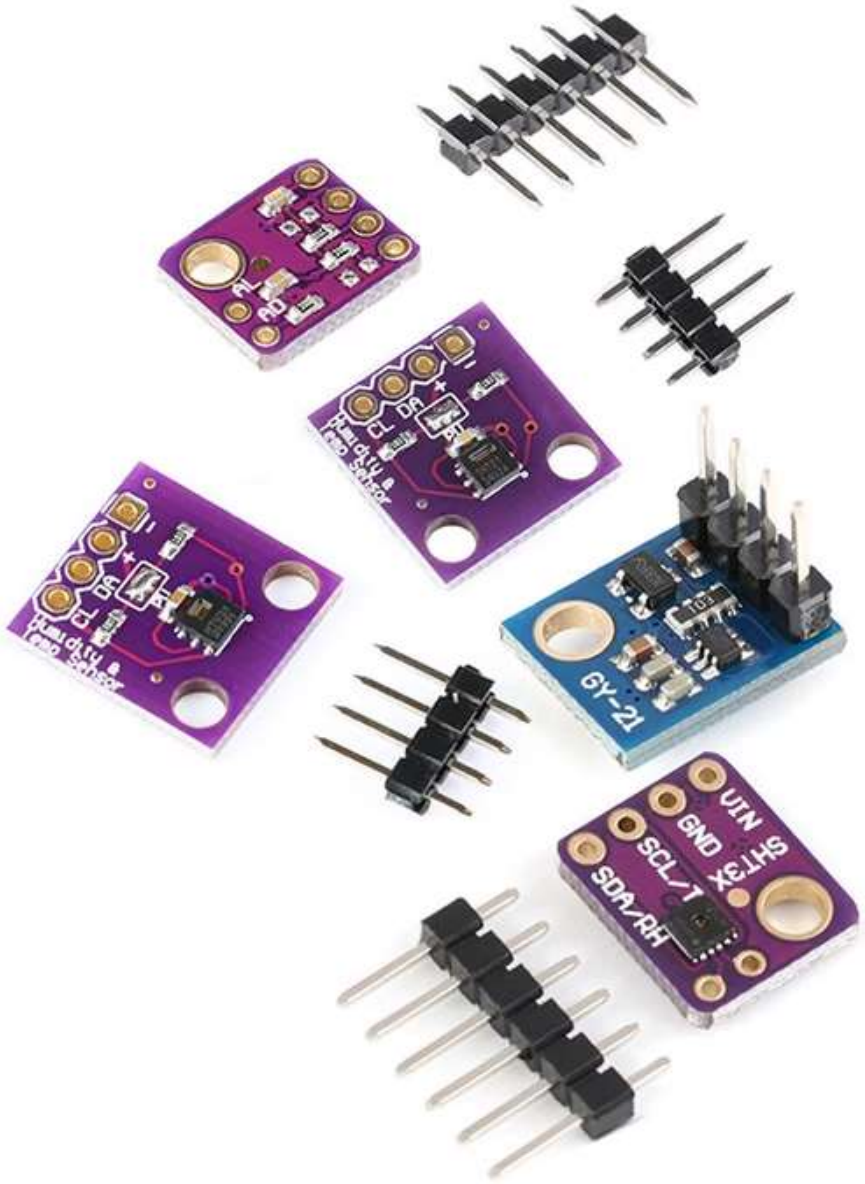
T/H sensor module

Ambient temperature and humidity measurement/Smart home/High precision and small size



Product characteristics

GY-SHT30-D module is a digital temperature and humidity sensor, its temperature measurement accuracy can reach ±0.3℃, long-term deviation can reach 0.03℃/

year, which is used SHT30 millet also uses the same sensor to measure temperature and humidity, with reliable stability.
The SHT3X series temperature and humidity sensors are initially available in a series of versions: SHT30 low-cost and SHT31 Standard.
The SHT3X series combines multiple functions and various interfaces with a wide, friendly operating voltage range (2.4V to 5.5V).
The SHT3X series is smarter, more reliable and more accurate than the previous generation of sensors.
It is more functional, has higher signal processing power, and can read temperature and humidity values through different pins.
In addition, the release of this version also further expands the SHT3X series of products.
Extending the application range with a thin film shield, this PTFE film provides IP67 rated water and dust protection, so it can be used in harsh environments where water and dust can affect the accuracy and performance of the sensor.
The detection module of the GY-213v-HTU21D temperature and humidity sensor uses the HTU21D chip to obtain ambient temperature and humidity.
S17021 12C Humidity and Temperature sensor is a monolithic CMOS integrated circuit with integrated humidity and temperature sensor elements, an analog-to-digital converter.
Converter, signal processing, calibration data and 12C interface.
Patented, industry-standard, low-K polymer dielectrics for detecting humidity enable the construction of low-power, monolithic CMOS sensor ics with low drift and hysteresis, as well as good long-term stability.
The humidity and temperature sensors are factory calibrated and the calibration data is stored in on-chip non-volatile memory.
This ensures that the sensors are fully interchangeable and do not require recalibration or software changes.
The S17021 is available in a 3x3mm DFN package and is reflow soldable.
It can be used as a hardware and software compatible upgrade to existing RH/ temperature sensors at 3×3mm
The DFN-6 package is upgraded with a wider range and lower power consumption for precise sensing.
An optional factory-mounted cover provides a low-profile, convenient way to protect sensors (e.g., reflow) during assembly and throughout the life of the product, excluding liquids (hydrophobic/oleophobic) and particulates.
In applications ranging from HVAC/R and asset tracking to industrial and consumer platforms, the S17021 provides an accurate, low-power, factory-calibrated digital

solution for measuring humidity, dew point and temperature.
The SHT21, a new generation of Sensirion humidity and temperature sensors, sets a new standard in terms of size and intelligence: it is embedded in a reflow friendly dual row flat pin-free DFN package with a base of 3 x 3mm and a height of 1.1mm.
The sensor outputs a calibrated digital signal in standard 12C format.
With a newly designed CMOSens® chip, an improved capacitive humidity sensor and a standard band-gap temperature sensor, the SHT21 has significantly improved and exceeded the reliability levels of previous generation sensors (SHT1× and SHT7x).
A new generation of humidity sensors, for example, has been improved to make them more stable in high-humidity environments.
Each sensor is calibrated and tested.
The batch number is printed on the surface of the product, while the electronic identification number is stored inside the chip - these identification numbers can be read by entering a command.
In addition, the resolution of the SHT21 can be changed by input commands (8/12bit or 12/14bit RH/T), the sensor can detect the state of low battery power, and output checksums to help improve the reliability of communication.
Thanks to improved sensors and miniaturization, it is more cost-effective - and ultimately all devices will benefit from cutting-edge, energy-efficient operating modes.
The SHT21 can be tested using a new test package, EK-H4.

Product details

型号	GY-SHT30-D	SHT31	GY-213v-HTU21D	SI7021	SHT21
工作电压	2.4V~5.5V 推荐 3.3V	2.4V~5.5V	1.5 ~ 3.6V	3~5V(带电平转换)	3.1V~3.6V
工作温度	-40~125℃	-40~125℃	-40 ~ 125℃	-40~+125℃	-40 ~ +125℃
储存温度	-40~150℃	-40~125℃	-40 ~ 125℃	-40~+125℃	-40 ~ +125℃
测温范围	5℃~60℃	-40~125℃	-40 ~ 125℃	-40~+125℃	-40 ~ +125℃
湿度范围	20%RH~80%RH	0-99.99%RH	0 ~ 100%RH	0~100%RH	0 ~ 100%RH
温度精度	±2%RH	±0.3℃	±0.3℃	±0.4℃（max），10~85℃	±0.3℃（25℃典型）
湿度精度	±0.3℃	±2%RH	±2%RH（20%RH~80%RH）	±3%RH（max），0~80%RH	±2%RH（0~80%RH 典型）
测温时间	<2S	1s	6~50ms		
RH 响应时间	<2S	8 秒（tau63%）	3~16ms		
温度分辨率	0.015℃		0.01~0.04℃		
湿度分辨率			0.04~0.7%RH		
通讯接口	I2C（最高达 1MHz）	I2C（最高达 1MHz）	I2C 接口	I2C 接口	I2C 接口

Pin definition

GY-SHT30-D pin

VIN: Power supply voltage
GND: Ground
SCL: Serial clock
SDA: Serial data

SHT31 pin

VIN: Supply voltage 2.4~5.5V (3.3V recommended)
GND: Ground
SCL: 12C serial clock line
SDA: 12C serial data cable
AL: Indicates alarm status
AD: Address pin, connected to VCC or GND do not float

GY-213v-HTU21D pin

GND: Ground
3.3V: 3.3V power input
SDA: 12C serial data cable
SCL: 12C serial clock cable

S17021 Pin

VIN: Power positive

GND: ground

SCL: 12C serial clock line

SDA:12C serial data cable

SHT21 pin

GND: Ground

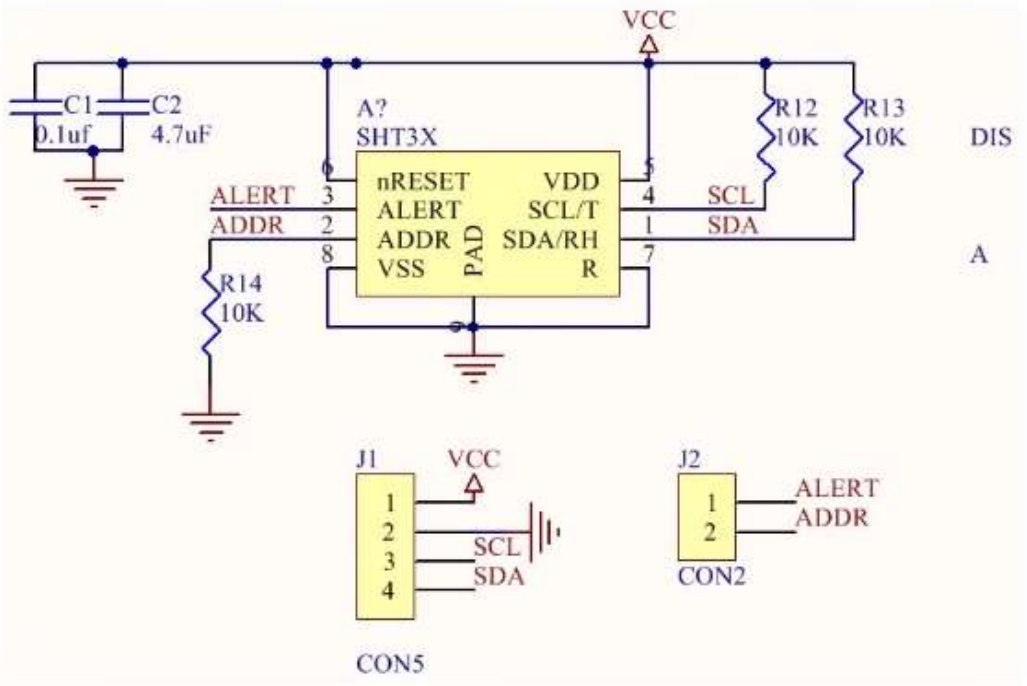
3.3V: Power positive

SDA: 12C serial data cable

SCL:12C serial clock cable

Instructions for use

GY-SHT30-D instructions



SHT3x-DIS	I2C Address in Hex. representation	Condition
I2C address A	0x44 (default)	ADDR (pin 2) connected to VSS
I2C address B	0x45	ADDR (pin 2) connected to VDD

SHT31 Description

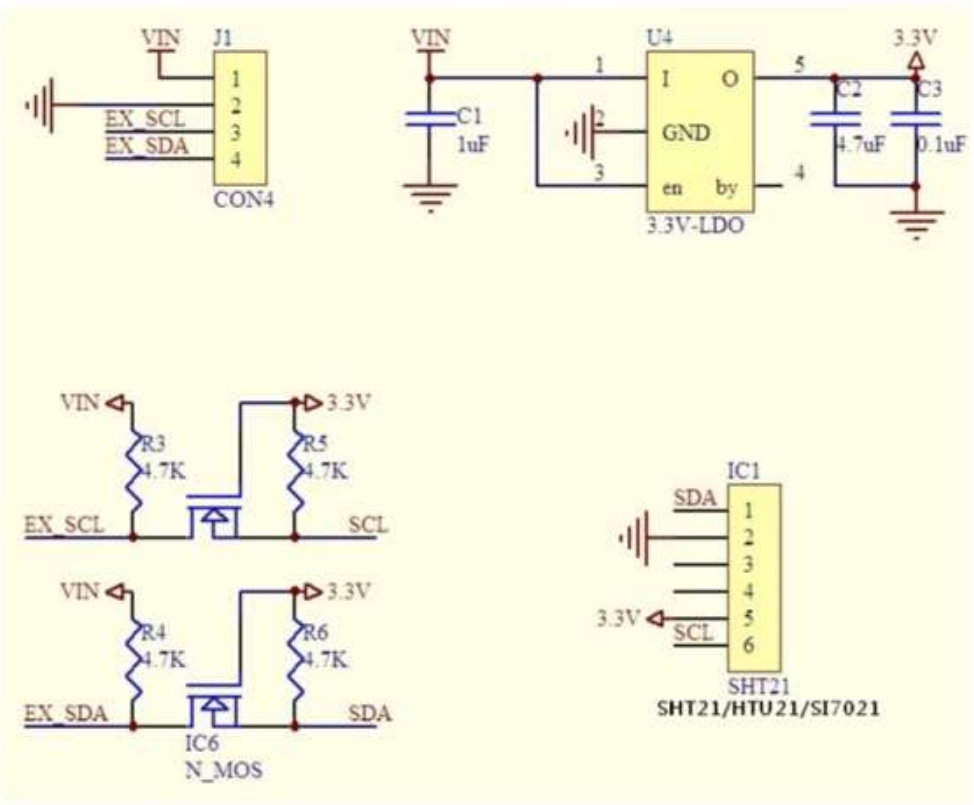
MCU and module communication with the standard 12C communication mode can be connected, which AL indicates the alarm state of the pin is not suitable when it is best to suspend, use can be connected to the interrupt pin of the MCU, AD pin for the address pin, must be connected to the high level or low level, do not suspend.

Description of GY-213v-HTU21D

The module adopts the standard 12C communication mode, and the module has pull-up resistance. Users do not need to pull-up resistance

SI7021 Description

Reference circuit:



When the user uses the 12C protocol to communicate with the module, there is no need to pull up the resistor, and the basic slave address of the 7-bit resistor module is 0×40

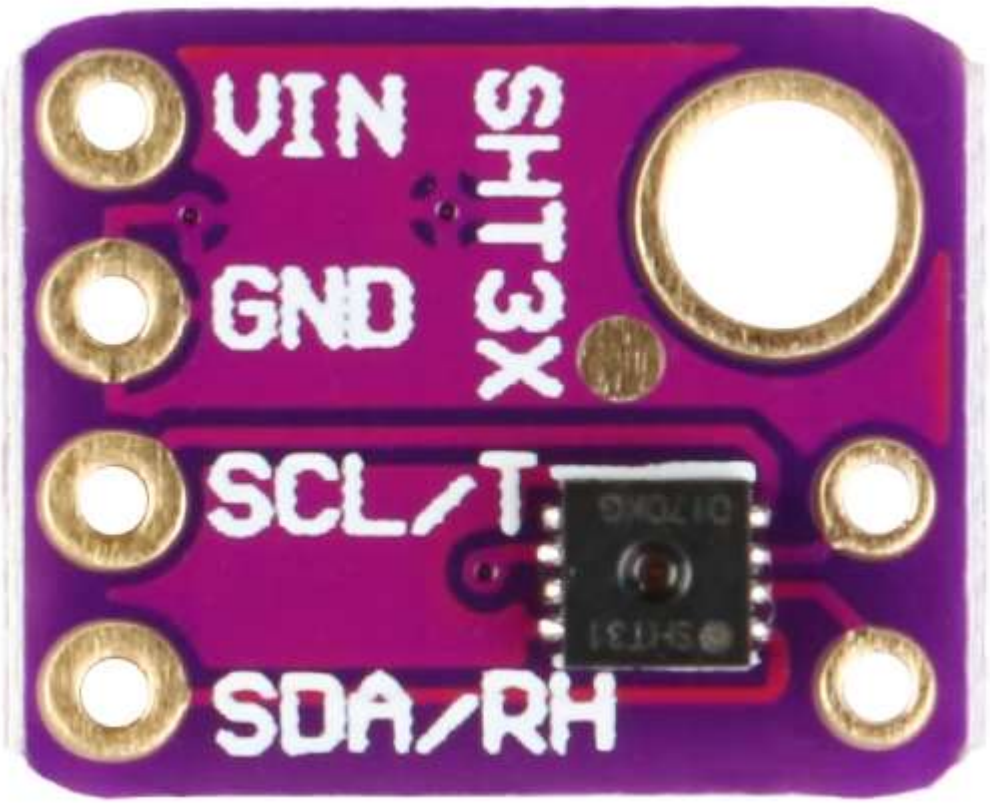
Table 10. I²C Slave Address Byte

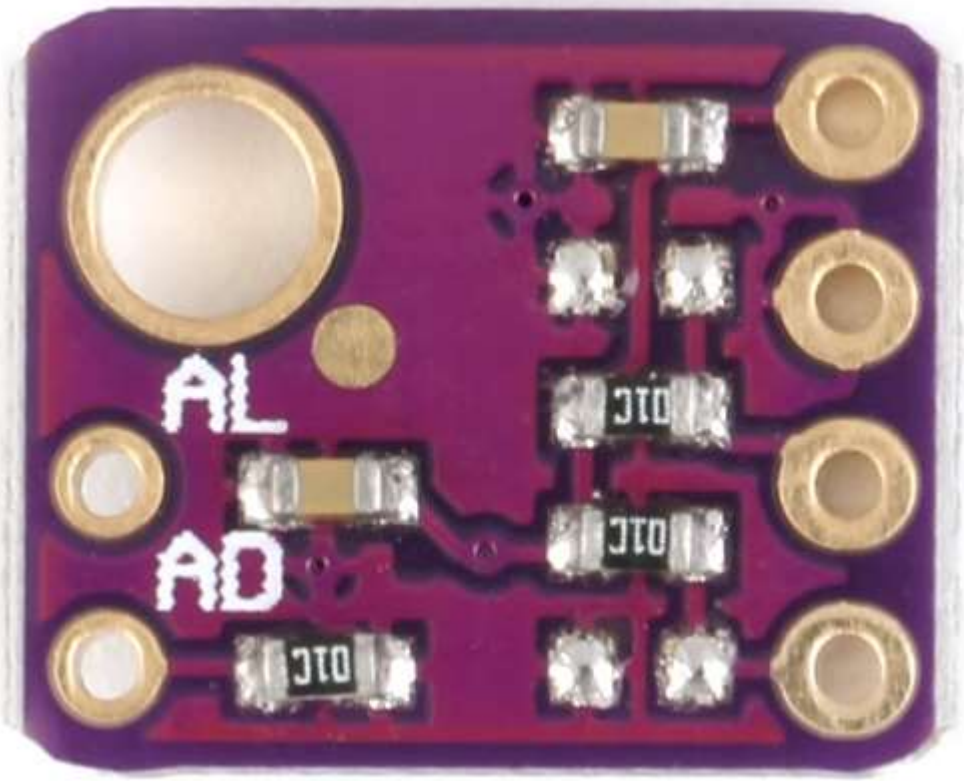
A6	A5	A4	A3	A2	A1	A0	R/W
1	0	0	0	0	0	0	0

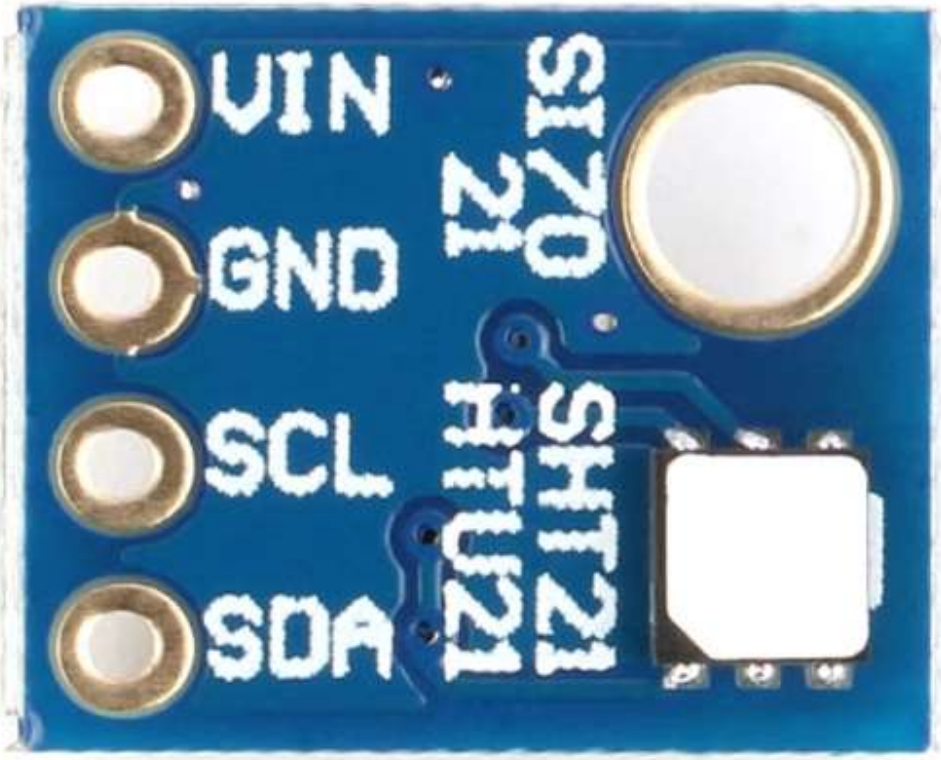
SHT21 Description

Module adopts standard 12C mode communication, the internal module has pull-up resistor, no additional pull-up is required, 7-bit 11C device address is 1000000, the user can read and write the module according to the manual.

Product Photograph


VIN
GND
SHT3X
SCL/T
SDA/RH


AL
AD


VIN
GND
SCL
SDA
3VO
INT
SHDN