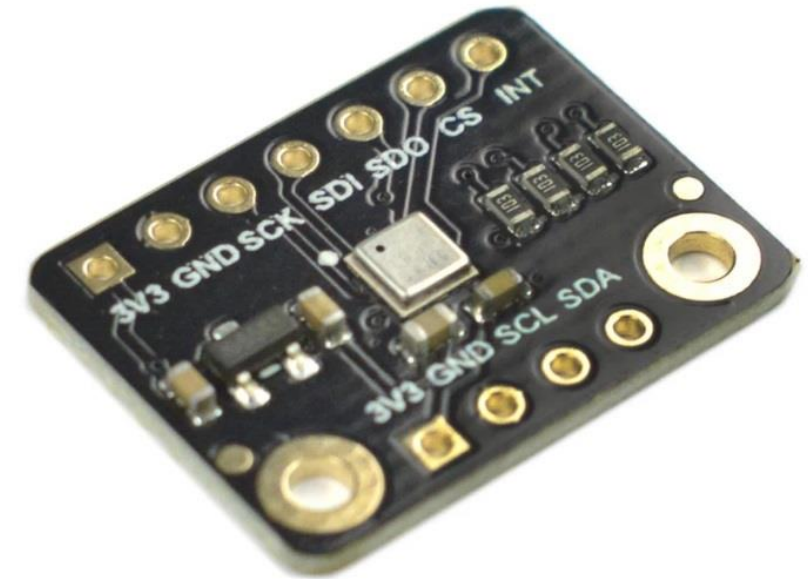


Fermion: ENS160 Smart Air Quality Sensor

Overview

This Fermion: ENS160 Air Quality Sensor, based on ScioSense's new ENS160 sensor chip, is specifically designed for indoor air quality monitoring and offers detection of multiple IAQ data(TVOC, eCO2, AQI).

The innovative TrueVOC™ technology combines the metal oxide(MOX) technology to bring this sensor superior accuracy, fast response, anti-interference, etc. With intelligent on-chip algorithms, the ENS160 can directly output rich and easy-to-understand environmental data. Preheat the sensor 3 minutes before use then you can obtain accurate data more quickly. What's more, the built-in automatic baseline correction algorithm ensures the long-term stability of the sensor.



Order Code

Order Code	Brand	Description
E34004-001	DFRobot	Fermion: ENS160 Smart Air Quality Sensor

Fermion: ENS160 Smart Air Quality Sensor



Specification

- Power Supply Voltage: 3.3V
- Working Current: 29mA
- Warm-up Time: <3 minutes
- Interface Mode: I2C, SPI
- I2C Address: 0x52, 0x53(Default)
- Operating Temperature Range: -40°C~85°C
- Working Humidity Range: 5%RH~95%RH
- eCO2 Measurement Range: 400ppm~65000ppm
- TVOC Measuring Range: 0ppb~65000ppb
- Product Size: 20×15mm/0.79×0.59inch
- Mounting Holes: hole pitch: 15mm, aperture: 2mm

Fermion: ENS160 Smart Air Quality Sensor



Features

- Multiple IAQ outputs (TVOC, eCO2, AQI), various environmental data
- Less than 3 minutes warm-up time, get data faster
- Built-in algorithm, more accurate output
- Automatic baseline correction, more stable for long-term use

Application

- Air purification/home automation device
- Environmental pollution detection
- HVAC/Ventilation System
- Building Automation/Smart Thermostat
- Electrical appliances/ range hoods

Fermion: ENS160 Smart Air Quality Sensor



Air Quality Index

AQI Reference

Level	Description	Suggestion	Recommended Stay Time
5	Extremely bad	In unavoidable circumstances, please strengthen ventilation	Not recommended to stay
4	Bad	Strengthen ventilation, find sources of pollution	Less than one month
3	Generally	Strengthen ventilation, close to the water source	Less than 12 months
2	Good	Maintain adequate ventilation	Suitable for long-term living
1	Excellent	No suggestion	Suitable for long-term living

eCO2/CO2 Concentration Reference

eCO2/CO2	Level	Suggestion
21500	Terrible	Indoor air pollution is serious and requires ventilation
1000-1500	Bad	Indoor air is polluted, ventilation is recommended
800-1000	Generally	Can be ventilated
600-800	Good	Keep it normal
400-600	Excellent	No suggestion

Fermion: ENS160 Smart Air Quality Sensor



Air Quality Index

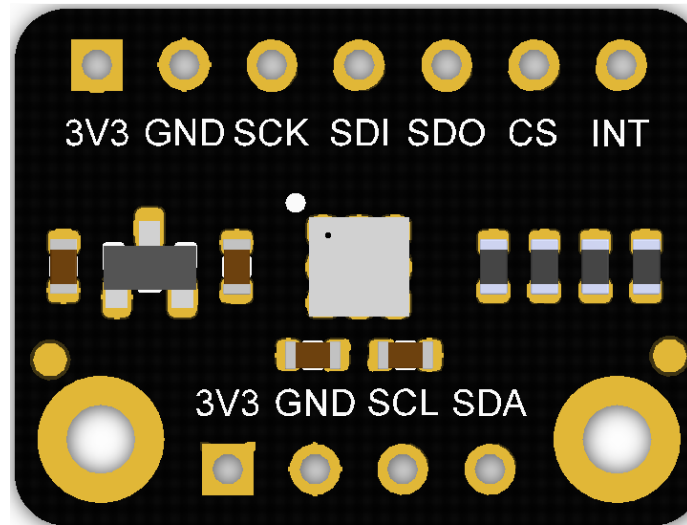
TVOC Concentration Reference

TOVC(ppb)	Effects on Human Health
>6000	Headaches and nerve problem
750-6000	Restless and headache
50-750	Restless and uncomfortable
<50	No effect

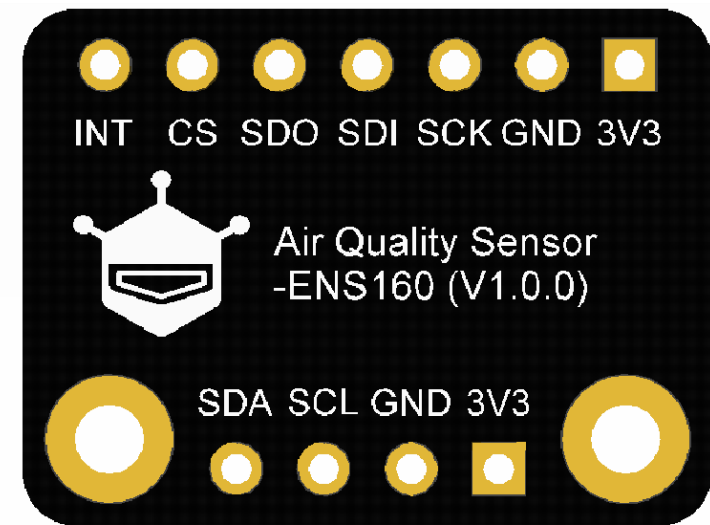
Fermion: ENS160 Smart Air Quality Sensor

Board Overview

Num	Label	Description
1	3V3	Power +
2	GND	GND
3	SCL	I2C clock line
4	SDA	I2C data line
5	SCK	Serial clock
6	SDI	Serial data input
7	SDO	Serial data output
8	CS	Chip-select
9	INT	Interrupt Pin



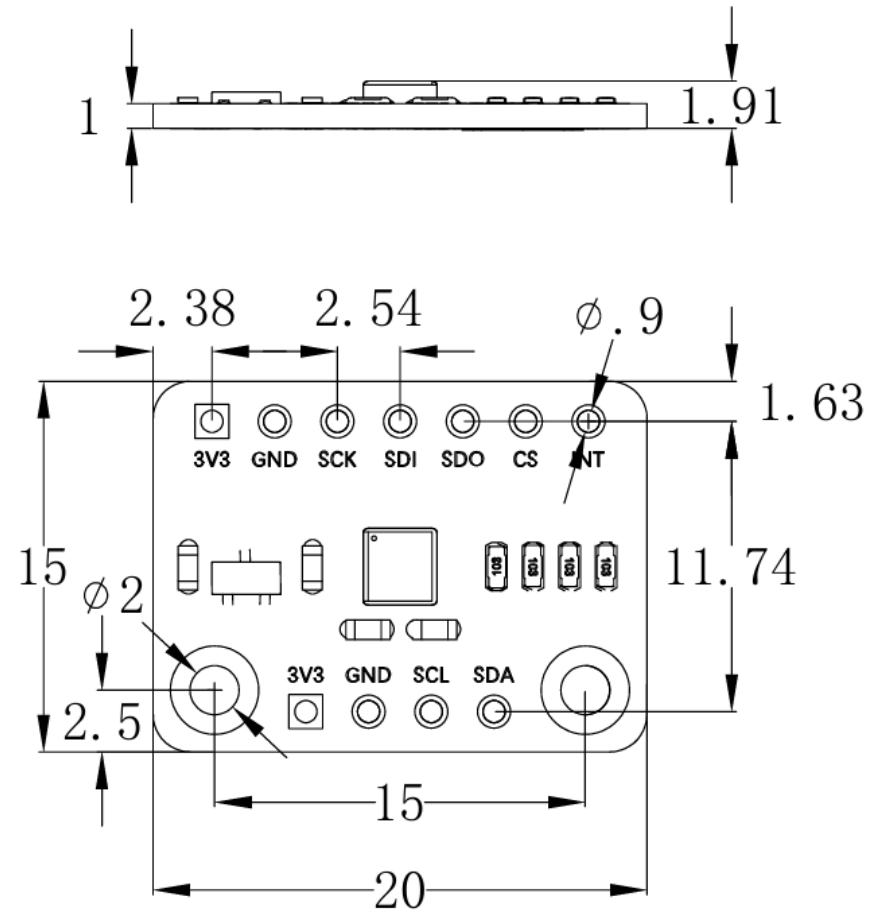
TOP



BOTTOM

Fermion: ENS160 Smart Air Quality Sensor

Dimension



Fermion: ENS160 Smart Air Quality Sensor



Documents and Files

- [ENS160 Datasheet](#)

Fermion: ENS160 Smart Air Quality Sensor



Revision History

Date	Revision	Change description
30/10/2025	1.0	Initial release