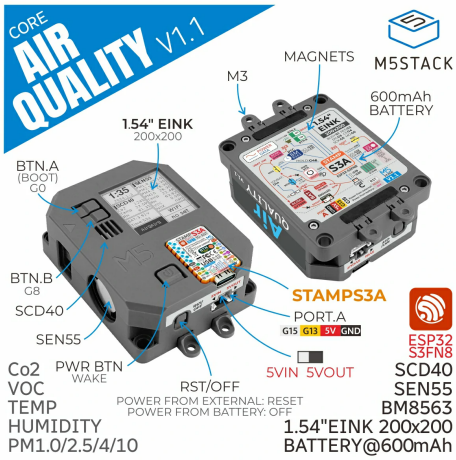
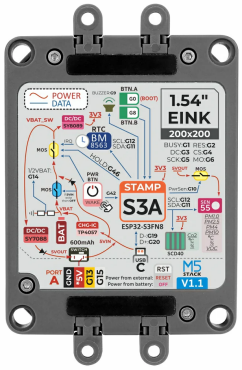
Air Quality v1.1

SKU:K131-V11





Description

Air Quality v1.1 is an integrated low-power air quality monitoring device. Compared to the previous generation, the new version adopts the Stamp-S3A master control, with optimizations and improvements in overall power consumption and Wi-Fi antenna design. The device features a 1.54-inch e-ink screen with a resolution of 200 x 200. It is equipped with a multifunctional air quality sensor SEN55 and a CO2 sensor SCD40, capable of monitoring PM1.0, PM2.5, PM4, PM10 particulates, temperature, humidity, VOC, and CO2 concentration in the air. The built-in 600mAh lithium battery and RTC low-power power management circuit allow it to achieve sleep and timed wake-up functions. The factory firmware supports uploading air quality data to the M5Stack Ezdata cloud platform, providing users with a convenient remote data viewing function. The bottom structure offers LEGO-compatible mounting holes, a magnetic base, and 4 removable mounting lugs, supporting various mounting methods. Suitable for air monitoring in homes, schools, industrial sites, and medical environments.

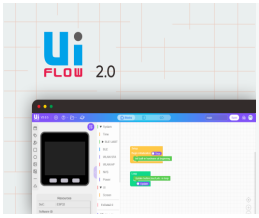
Tutorial

Quick Start

Introduction to using the Air Quality v1.1.

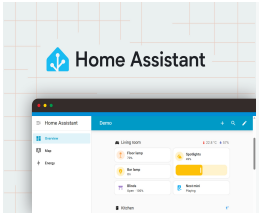
Arduino IDE

This tutorial will show you how to program and control the Air Quality v1.1 using Arduino IDE.



UiFlow2

This tutorial will show you how to control the Air Quality v1.1 device using the UiFlow2 graphical programming platform.



Home Assistant

Introducing how to integrate Air Quality V1.1 into Home Assistant

Features

- Stamp-S3A master control
- SEN55 and SCD40 sensors
- 1.54-inch e-ink screen (200 x 200 resolution)
- Built-in 600mAh lithium battery
- HY2.0-4P interface
- EZDATA cloud platform access
- RTC timed wake-up
- Development Platform
  - UiFlow2
  - Arduino IDE
  - ESP-IDF
  - PlatformIO

Includes

- 1 x Air Quality v1.1
- 1 x User Manual

Applications

- Home environment monitoring
- Industrial automation
- Medical facilities
- Scientific laboratories
- Remote monitoring applications
- Air conditioning system optimization
- Construction sites

Specifications

Specification	Parameter
SoC	ESP32-S3FN8 @Dual-core Xtensa LX7 processor
Flash	8MB
Display	GDEY0154D67@1.54"
Resolution	200 x 200px
SEN55	I2C @0x69
SCD40	I2C @0x62
Environmental Types	PM1.0, PM2.5, PM4, PM10 particulates, temperature, humidity, VOC, and CO2 concentration
RTC	RTC8563
Battery	600mAh@3.7V
Buttons	Button A, Button B, Power On button, Reset and Power Off
Grove Interface	HY2.0-4P
Buzzer	Onboard passive buzzer
Mounting Structure	LEGO mounting holes, magnetic base, and 4 M3 removable mounting lugs
Operating Temp.	0 ~ 40°C
Product Size	72.0 x 56.0 x 26.5mm
Product Weight	91.4g
Package Size	100.0 x 73.0 x 32.0mm
Gross Weight	120.0g

Learn

Power On/Off

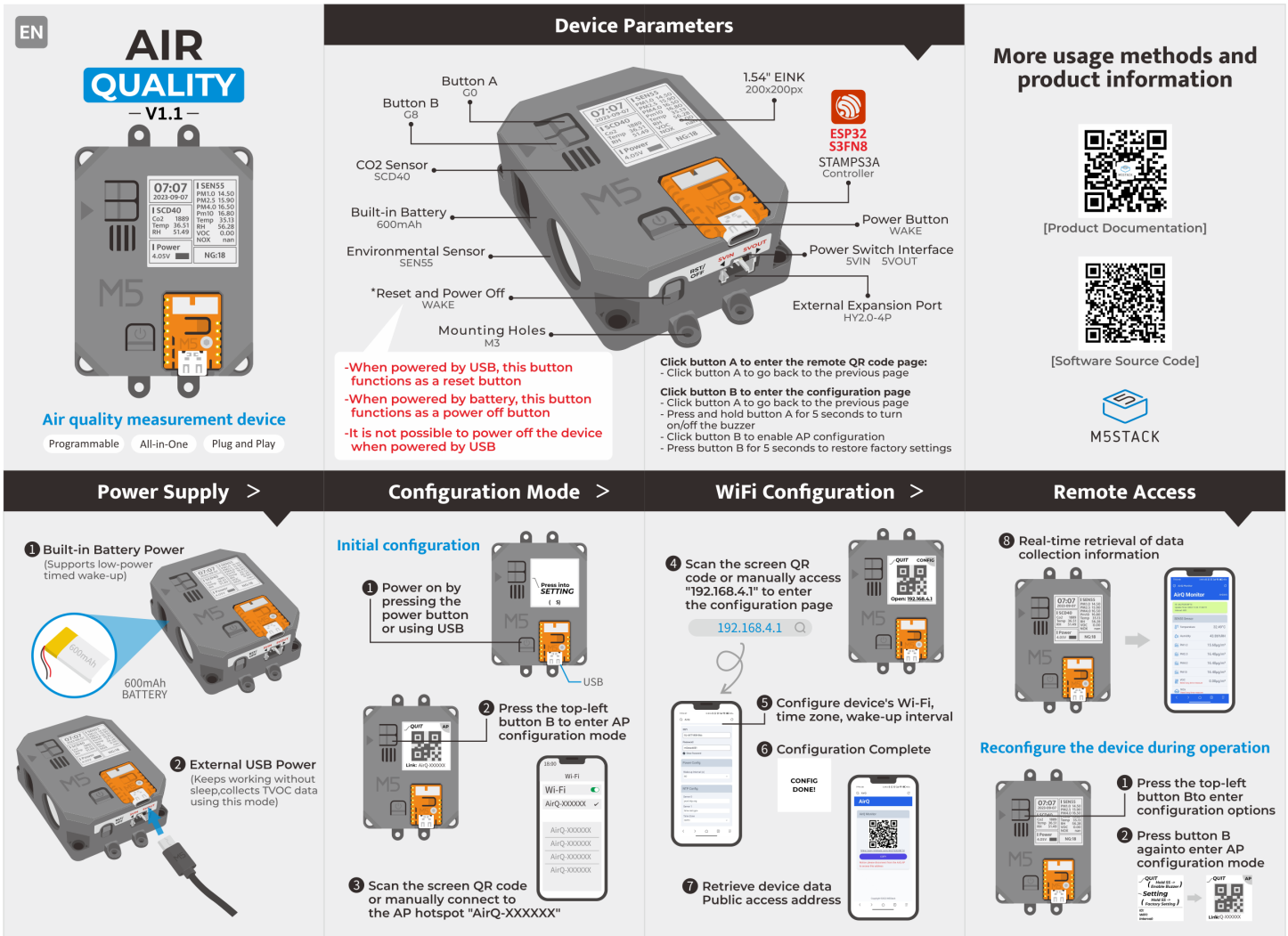
- Power On: You can power on the device by pressing the "WAKE" button, or by an IRQ signal triggered by the RTC timer. After triggering the wake signal, the program's initialization process needs to set the HOLD (G46) pin high (1) to maintain power. Otherwise, the device will return to sleep mode.

- Power Off: When there is no USB external power, press the RST button to shut down. Alternatively, without USB external power, set HOLD (GPIO46) = 0 during program execution to cut power and shut down.

Download Mode

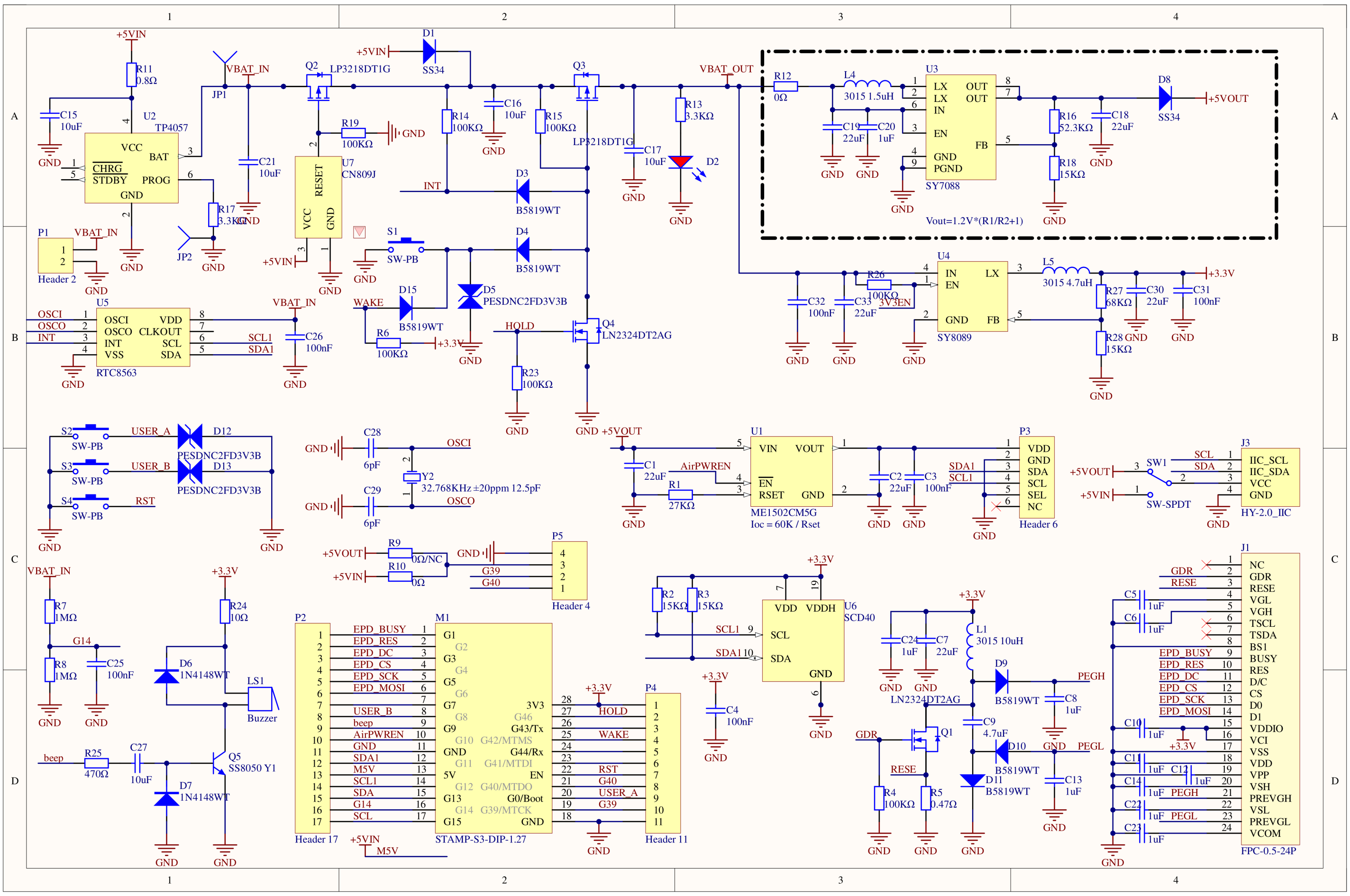
To enter download mode, first power off the device, then hold the BooT button on the Stamp-S3A or the G0 button on Air Quality v1.1 while inserting the USB. Release the button after powering on.

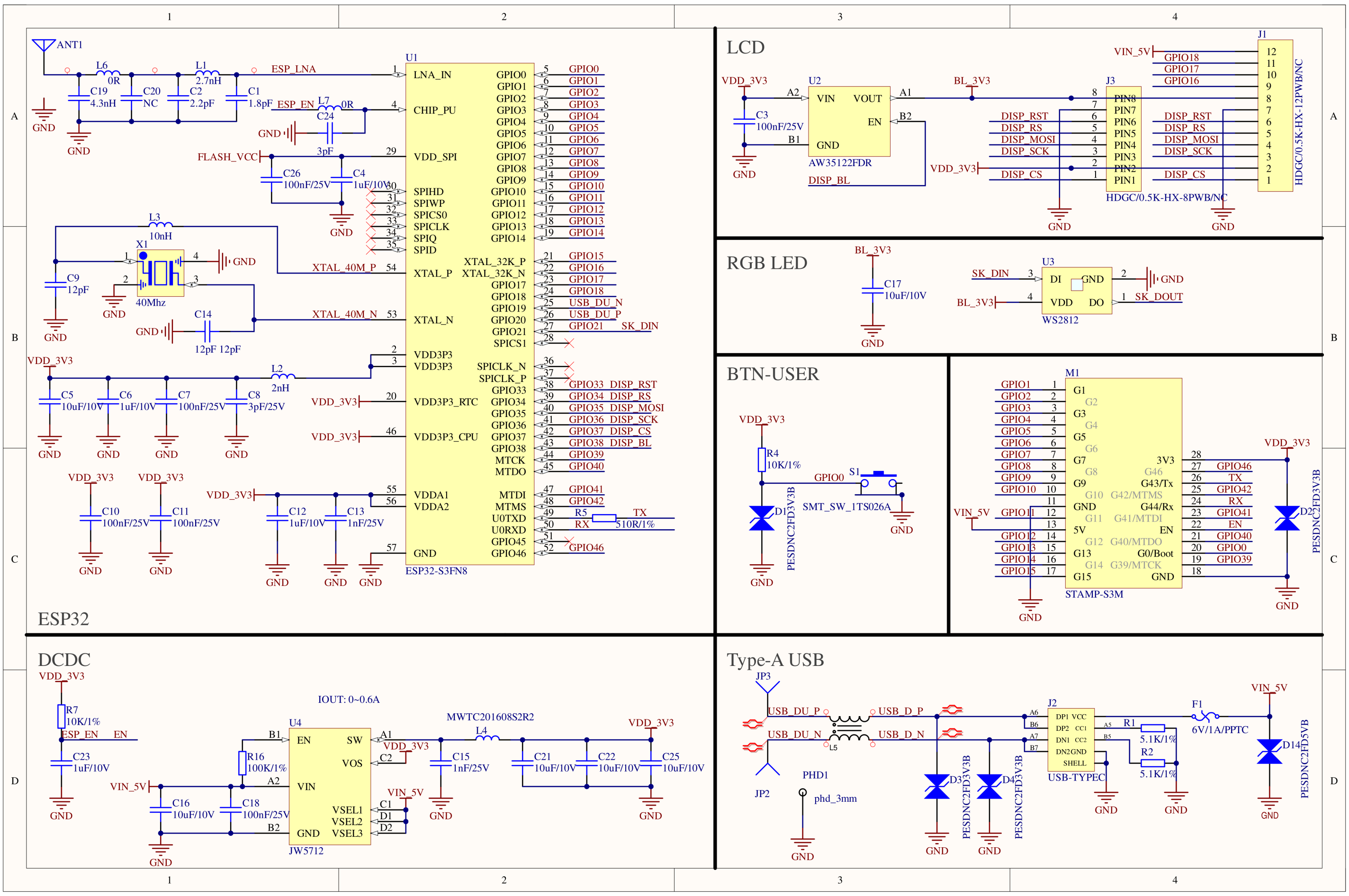
User Manual



Schematics

- Air Quality v1.1 Schematics PDF
- Stamp-S3A Schematics PDF


TP4057
RTC8563
LP3218DT1G
CN809J
SY7088
Vout=1.2V*(R1/R2+1)
SY8089
ME1502CM5G
Ioc = 60K / Rset
Header 6
HY-2.0_IIC
32.768KHz ±20ppm 12.5pF
Header 4
SCD40
STAMP-S3-DIP-1.27
Header 17
Header 11
FPC-0.5-24P
LN2324DT2AG
SS8050 Y1
Buzzer


ESP32
ESP32-S3FN8
LCD
AW35122FDR
HDGC/0.5K-HX-8PWB/NC
HDGC/0.5K-HX-12PWB/NC
RGB LED
WS2812
BTN-USER
SMT_SW_1TS026A
STAMP-S3M
DCDC
IOUT: 0~0.6A
JW5712
MWTC201608S2R2
Type-A USB
USB-TYPEC
6V/1A/PPTC

PinMap

Power Control

ESP32-S3	G10	G46	G42	G14
SEN55 POWER SWITCH	AirPWREN			
HOLD		HOLD		
WAKE			WAKE	
BATTERY DETECT				G14

Display

ESP32-S3	G1	G2	G3	G4	G5	G6
GDEY0154D67	BUSY	RST	D/C	CS	SCK	MOSI

Input Interaction

ESP32-S3	G9	G0	G8
BEEP	beep		
BUTTON A		USER_A	
BUTTON B			USER_B

Sensors

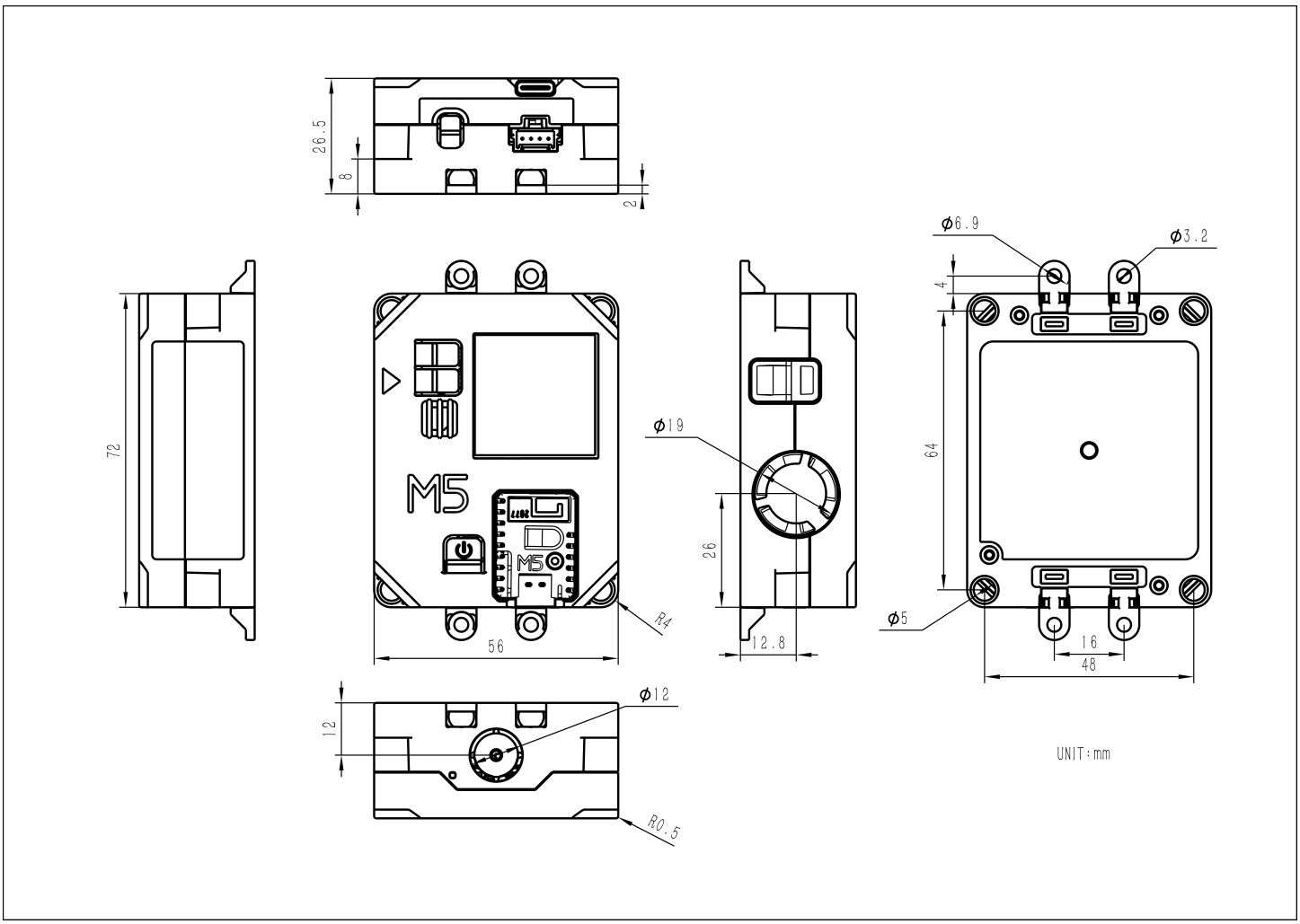
ESP32-S3	G11	G12
SEN55	SDA	SCL
SCD40	SDA	SCL
RTC8563	SDA	SCL

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.A	GND	5V	G13	G15

Model Size

- Air Quality v1.1 Model Size PDF



Datasheets

- SEN55 Datasheet
- SCD40 Datasheet
- GDEY0154D67 Datasheet

Softwares

Arduino

- Air Quality v1.1 Arduino Quick Start
- Air Quality v1.1 Arduino M5Unified Library
- Air Quality v1.1 Arduino M5GFX Library

UiFlow2

- Air Quality v1.1 UiFlow2 Quick Start

PlatformIO

- Air Quality v1.1 Factory Firmware

```
[env:m5stack-stamp-s3]
platform = espressif32
board = esp32-s3-devkitc-1
framework = arduino
upload_speed = 1500000
build_flags =
    -DESP32S3
    -DCORE_DEBUG_LEVEL=5
    -DARDUINO_USB_CDC_ON_BOOT=1
    -DARDUINO_USB_MODE=1

lib_deps =
    https://github.com/m5stack/M5Unified.git#develop
    https://github.com/m5stack/M5GFX.git#develop
    sensirion/Sensirion I2C SEN5X@^0.3.0
    sensirion/Sensirion I2C SCD4x@^0.4.0
    tanakamasayuki/I2C BM8563 RTC@^1.0.4
    mathertel/OneButton@^2.0.3
    bblanchon/ArduinoJson @ ^6.21.3
```

Easyloader

Easyloader	Download	Note
Air Quality v1.1 User Demo	download	/

Other

- Air Quality v1.1 Restore Factory Firmware

Restore Factory Firmware

If the Air Quality v1.1 device was previously flashed with UIFlow firmware and bound to a user, please unbind the device from the UIFlow2 device list before re-flashing the Air Quality v1.1 factory firmware. Otherwise, the factory firmware may not be able to upload data to Ezdata properly.

Video

- Air Quality product feature introduction

K131 AirQ 视频.mp4

Product Comparison

Product Compare		
	Air Quality v1.1	**Air Quality**
Core Module	Stamp-S3A	Stamp-S3
Antenna Design	Optimized antenna design, better signal reception	Standard antenna design
Module Boot Key	Optimized button feel, 4.0 x 3.0 x 2.0mm button size	Button size 2.6 x 1.6 x 0.55mm