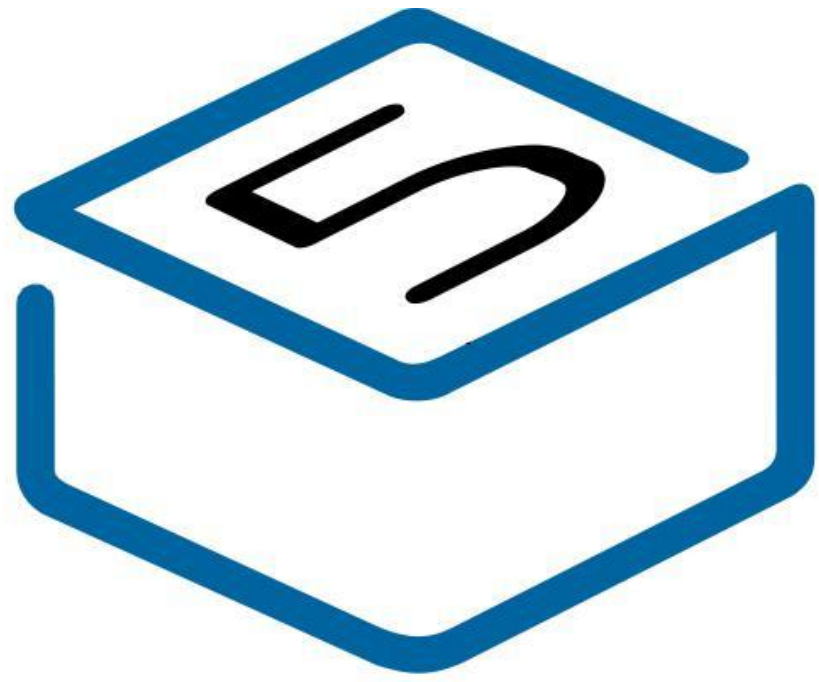
M5AtomS3R

Model:
AtomS3R



M5STACK

2024

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1. OUTLINE

AtomS3R is a highly integrated programmable controller based on the ESP32-S3 microcontroller. It integrates the **ESP32-S3-PICO-1-N8R8** main controller, WiFi and BLE functionality, 8MB onboard FLASH, and 8MB PSRAM; a 0.85-inch IPS screen; a programmable button below the screen; an internal 5V to 3.3V circuit; a BMM150 magnetometer and BMI270 accelerometer and gyroscope; an onboard Type-C interface for power supply and firmware downloading; a HY2.0-4P expansion port; six GPIO and power pins at the bottom for easy expansion. The product size is only 24*24*12.9mm, making it suitable for various embedded intelligent device applications.

1.1. ATOMS3R

1. **Communication Capabilities:**
- Main Controller: ESP32-S3-PICO-1-N8R8
- Wireless Communication: Wi-Fi (WIFI), BLE Functionality
- Infrared Transmission: Infrared transmitter for infrared control interaction Expansion
- Interface: HY2.0-4P interface, supports connection and expansion of I2C sensors

2. **Processor and Performance:**
- Processor Model: Xtensa LX7 (ESP32-S3-PICO-1-N8R8)
- Storage Capacity: 8MB Flash, 8MB PSRAM
- Processor Operating Frequency: Xtensa® dual-core 32-bit LX7 microprocessor, up to 240 MHz

3. **Display and Input:**
- Screen: 0.85-inch IPS screen
- Button: Programmable button below the screen

4. **Sensors:**
- Magnetometer: BMM150
- Accelerometer and Gyroscope: BMI270

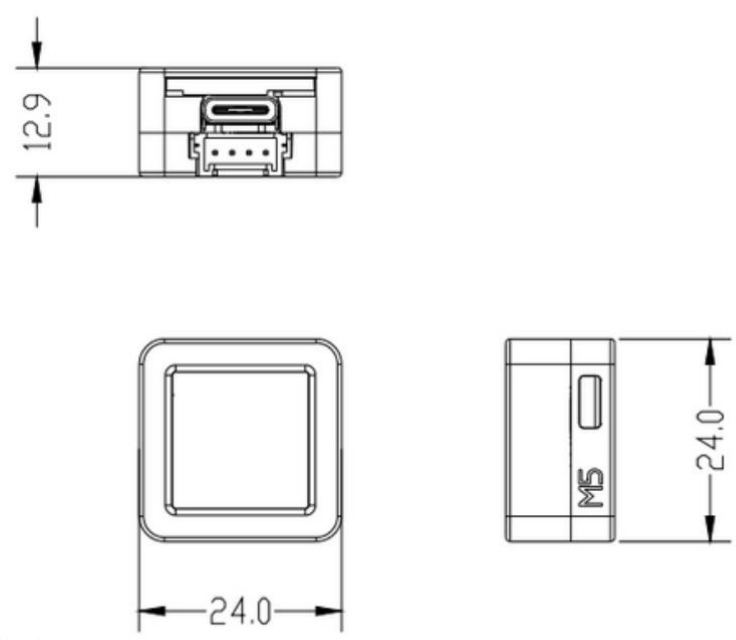
5. **GPIO Pins and Programmable Interfaces:**
- Grove Interface: Supports connection and expansion of I2C sensors
- Bottom Pins: Power and 6 GPIO pins

6. **Others:**
- Onboard Interface: Type-C interface for programming and serial communication
- Physical Dimensions: 24*24*12.9 mm, with an M2 screw hole on the back for fixation

2. SPECIFICATIONS

Parameter and Specification		Value
MCU		ESP32-S3-PICO-1-N8R8 @ Xtensa dual-core 32-bit LX7, 240MHz
Communication Capability		Wi-Fi,BLE,OTG/CDC function, infrared emitter, I2C sensor expansion
Supply Voltage		4.5~5.5V DC
Flash Storage Capacity		8MB-Flash
PSRAM Storage Capacity		8MB-PSRAM
Screen		0.85-inch IPS screen, GC9107 driver, resolution 128*128
Sensors		BMM150 magnetometer, BMI270 accelerometer and gyroscope
Button		1 user button
Expansion Interface		HY2.0-4P interface for connecting and expanding I2C sensors
Dimensions		24 * 24 * 12.9 mm
Operating Temperature		-10° C to 40° C
MIC	Wi-Fi Working Frequency	802.11b/g/n20:2412 MHz-2472 MHz
		802.11n40:2422 MHz-2462 MHz
		802.11b:2484 MHz
	BLE Working Frenquency	2402MHz-2480MHz
CE	Wi-Fi Working Frequency	802.11b:2412 MHz-2472 MHz
		802.11g:2412 MHz-2472 MHz
		802.11n-HT20:2412 MHz-2472 MHz
		802.11n-H40:2422 MHz-2462 MHz
	Wi-Fi Transmit Power	802.11b:17.27dBm
		802.11g:16.82dBm
		802.11n-HT20:16.17dBm
		802.11n-H40:16.22dBm
	BLE Working Frenquency	2402MHz-2480MHz
	BLE Maximum EIRP	5.52dBm
FCC	Wi-Fi Working Frequency	2412 MHz-2472 MHz (802.11b,g,n-HT20)
		2422 MHz-2462 MHz(802.11n-H40)
	Wi-Fi Maximum Conducted Peak Output Power	21.76dBm
	BLE Working Frenquency	2402MHz-2480MHz(BLE 1M/2M)
	BLE Maximum Conducted Peak Output Power	8.71dBm
	Rated Current	0.5A
	Manufacturer	M5STACK TECHNOLOGY CO., LTD.
	Manufacturer address	501, Tangwei Business Building, Tangwei Community, Fuhai Street,
		Bao’an District, Shenzhen, China

2.1 Product Size



UNIT: MM

3. QUICK START

3.1. Print WiFi information

1. Open Arduino IDE (Refer to https://docs.m5stack.com/en/arduino/arduino_ide for the installation guide for the development board and software)
2. Press and hold the reset button for 2 seconds until the green light turns on
3. Select the ESP32S3 DEV Module board and the corresponding port, then upload the code
4. Open the serial monitor to display the scanned WiFi and signal strength information

ESP32S3R_WIFI | Arduino 1.8.19

File Edit Sketch Tools Help

ESP32S3R_WIFI

```
#include "WiFi.h"

void setup() {
  Serial.begin(115200);
  WiFi.mode(WIFI_STA);
  WiFi.disconnect();
  delay(100);

  Serial.println("Scanning for WiFi networks...");
  int n = WiFi.scanNetworks();
  if (n == 0) {
    Serial.println("No networks found.");
  } else {
    Serial.print(n);
    Serial.println(" networks found.");
    for (int i = 0; i < n; ++i) {
      Serial.print(i + 1);
      Serial.print(": ");
      Serial.print(WiFi.SSID(i));
      Serial.print(" (");
      Serial.print(WiFi.RSSI(i));
      Serial.print(")");
      Serial.println((WiFi.encryptionType(i) == WIFI_AUTH_OPEN) ? " " : "*");
      delay(10);
    }
  }
  Serial.println("");
}

void loop() {
  // put your main code here, to run repeatedly:
}
```

COM20

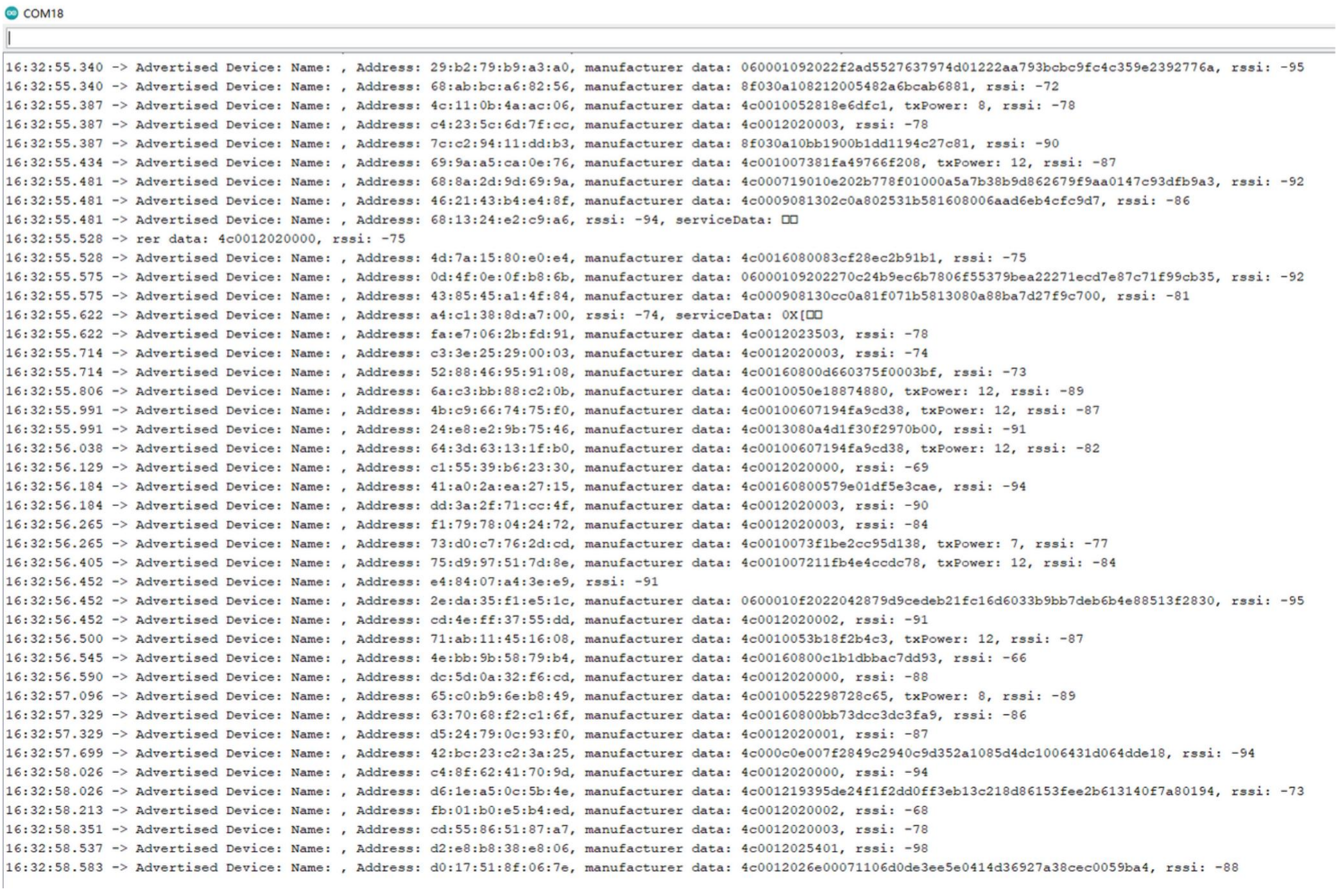
```
17:20:58.755 -> Scanning for WiFi networks...
17:20:58.755 -> 35 networks found.
17:20:58.755 -> 1: M5-UiFlow-Zone (-34)*
17:20:58.801 -> 2: XLOT (-34)*
17:20:58.801 -> 3: M5-R&D (-39)*
17:20:58.801 -> 4: WiFi_ADF4 (-39)*
17:20:58.801 -> 5: DIANJIXZ (-45)*
17:20:58.848 -> 6: Xiaomi_32BD (-47)*
17:20:58.848 -> 7: M5-UiFlow-Zone (-53)*
17:20:58.848 -> 8: M5-UiFlow-Zone (-54)*
17:20:58.848 -> 9: CenturyLink2842 (-55)*
17:20:58.848 -> 10: M5-UiFlow-Zone (-56)*
17:20:58.895 -> 11: esp-shui (-56)*
17:20:58.895 -> 12: CMCC-FSNg (-57)*
17:20:58.895 -> 13: YUESHIQI-602 (-57)*
17:20:58.895 -> 14: ChinaNet-hZsm (-57)*
```

Autoscroll Show timestamp Newline

3. QUICK START

3.1. Print BLE information

1. Open Arduino IDE (Refer to https://docs.m5stack.com/en/arduino/arduino_ide for the installation guide for the development board and software)
2. 2. Press and hold the reset button for 2 seconds until the green light turns on
3. 3. Select the ESP32S3 DEV Module board and the corresponding port, then upload the code
4. 4. Open the serial monitor to display the scanned BLE and signal strength information



4. FCC Warning

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna. — Increase the separation between the equipment and receiver. — Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. — Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The SAR was tested for the device in the body worn mode, and it can meet the SAR limit of FCC.