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Getting Started

Introduction

The objective of this post is to explain how to upload an Arduino program to the ESP32-1732S019 module, from JCZN .

http://www.jczn1688.com/zlxz

The ESP32-S3 WiFi and Bluetooth chip is the latest generation of Espressif products. It has a dual-core 32-bit MCU, which integrates WiFi HT40 and Bluetooth/BLE 4.2 technology inside.

ESP32-S3-wroom-1 has a significant performance improvement. It is equipped with a high-performance dual-core Tensilica LX7 MCU. One core handles high speed connection and the other for standalone application development. The dual-core MCU has a 240 MHz frequency and a computing power of 600 DMIPS.

In addition, it supports Wi-Fi HT40, Classic Bluetooth/BLE 4.2, and more GPIO resources.

Installing using Arduino IDE

Programming the ESP32-S3

An easy way to get started is by using the familiar Arduino IDE. While this is not necessarily the best environment for working with the ESP32-S3, it has the advantage of being a familiar application, so the learning curve is flattened.

We will be using the Arduino IDE for our experiments.

1, Installing using Arduino IDE

we first need to install version 1.8.19 of the Arduino IDE (or greater), for example, the Arduino installation was in "C/Programs(x86)/Arduino".

download release link:

https://downloads.arduino.cc/arduino-1.8.19-windows.exe

2, This is the way to install Arduino-ESP32 directly from the Arduino IDE.

Add Boards Manager Entry

Here is what you need to do to install the ESP32 boards into the Arduino IDE:

(1) Open the Arduino IDE.



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- (2) Click on the File menu on the top menu bar.
- (3) Click on the Preferences menu item. This will open a Preferences dialog box.



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- (4) You should be on the Settings tab in the Preferences dialog box by default.
- (5) Look for the textbox labeled "Additional Boards Manager URLs".
- (6) If there is already text in this box add a coma at the end of it, then follow the next step.
- (7) Paste the following link into the text box :

Stable release link:

https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json Development release link:

https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_dev_index.json

(8) Click the OK button to save the setting.

The textbox with the JSON link in it is illustrated here:



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	Theme:	Default theme \checkmark (requires restart of Arduino)		
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т	🗹 Verify code after upload	Use external editor		
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In	More preferences can be edit	ed directly in the file		:\\
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	(edit only when Arduino is n	ot running)		
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- (9) In the Arduino IDE click on the Tools menu on the top menu bar.
- (10) Scroll down to the Board: entry
- (11) A submenu will open when you highlight the Board: entry.
- (12) At the top of the submenu is Boards Manager. Click on it to open the Boards Manager dialog box.
- (13)In the search box in the Boards Manager enter "esp32".



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(14) You should see an entry for "esp32 by Espressif Systems". Highlight this entry and click on the Install button.

This will install the ESP32 boards into your Arduino IDE



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🐵 Boards Manager	×
Type All V	
Ar duino AVR Boards Built-In by Arduino version 1.8.3 INSTALLED Boards included in this package: Arduino Yún, Arduino Uno, Arduino Uno Mini, Arduino Uno WiFi, Arduino Diecimila, Arduino Nano, Arduino Mega, Arduino MegaADK, Arduino Leonardo, Arduino Leonardo Ethernet, Arduino Micro, Arduino Esplora, Arduino Mini, Arduino Ethernet, Arduino Fio, Arduino BT, Arduino LilyPadUSB, Arduino Lilypad, Arduino Pro, Arduino ATMegaNG, Arduino Robot Control, Arduino Robot Motor, Arduino Gemma, Adafruit Circuit Playground, Arduino Yún Mini, Arduino Industrial 101, Linino One. Online Help More Info	
Arduino Mbed OS Edge Boards	
by Arduino Boards included in this package: Arduino Edge Control. <u>Online Help</u> <u>More Info</u>	
Arduino Mbed OS Nano Boards	~
Downloading platforms index Cance	1

Once the installation completes, we need to select the correct board options for the "ESP32 Arduino" board. In the board type, in the tools tab, we choose "ESP32S3 Dev Module".



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* FT6X36: <u>h</u>	USB CUC On Boot: Disabled	,		ESP32 Dev Module	
* GT911: <u>ht</u>	USB Firmware MSC On Boot: Disabled	,		ESP32-WROOM-DA Module	
* XPT2046:	Use Dru On Boot: Disabled	ć	<u>git</u>	ESP32 Wrover Module	
* LVGL Conf	CDU Essences "240MUs (MiS)"	ć		ESP32 PICO-D4	
* Copy your	CPO Frequency: 240MHz (WIFI)	, ,		ESP32-S3-Box	
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* GT911: <u>ht</u>	USB Firmware MSC On Boot: "Disab	ed" >	
* XPT2046:	USB DFU On Boot: "Disabled"	>	
*	Upload Mode: "UART0 / Hardware 0	CDC" >	
* LVGL Conf	CPU Frequency: "240MHz (WiFi)"	>	
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* #define L	Partition Scheme: "Default 4MB with	spitts (1.2MB APP/1.5MB SPIFFS)" >	
* #define L	Core Debug Level: "None"	>	
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"C:\\Users\\zha	ang'pei\\AppData\\Local\\Ardu:	inol5//packages//esp32//tools//xtensa	<pre>-esp32s3-elf-gcc\\gcc8_4_0-esp-2021r2-patch3/bin/xtensa-esp32s3-elf-g++"</pre>
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"C:\\Users\\zha	ng'pei\\AppData\\Local\\Ardu	ino15\\packages\\esp32\\tools\\xtensa	-esp32s3-elf-gcc\\qcc8 4 0-esp-2021r2-patch3/bin/xtensa- <u>esp32s</u> 3-elf-g++"
<			>

Set and In the programmer entry of the same tab, we choose "esptool".



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	Core Debug Level: "None"	:	· · · · · · · · · · · · · · · · · · ·	
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	Arduino Runs On: "Core 1"	:	uning form 4	
CIC.Grawce	Events Run On: "Core 1"	:	using tone 4	
tft.drawCe	Port		font 6	
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// Note th	Programmer: "Esptool"	:	Esptool	
	Burn Bootloader			
// draw a f	floating point number			
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int xpos =	50; // x position			
int ypos =	110; // y position			
int font =	2; // font number only 2,4,6,7 valid. Font 6 only conta	ins characters	[space] 0 1 2 3 4 5 6 7 8 9 0 : a p m	
xpos += tIt	t.drawrioat(pi, precision, xpos, ypos, font); // Draw rounded	number and ret	urn new xpos deita for next print position	
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Invalid library	found in C:\Users\zhang'pei\Documents\Arduino\libraries\Touch	_test: no head	Hers files (.h) found in C:\Users\zhang'pei\Documents\Arduino\libraries\Touch_test	
112	ESP32 Dev Mo	dule, Disabled, Defa	ilt 4MB with spiffs (1.2MB APP/1.5MB SPIFFS), 240MHz (WiFi/BT), DIO, 80MHz, 4MB (32Mb), 921800, Core 1, Core 1, None on	соме
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It's important to note that after the code is uploaded, the device will start to run it. So, if we want to upload a new program, wee need to reset the power of the device, in order to guarantee that it enters flashing mode again.

First program

Since this platform is based on Arduino, we can use many of the usual functions. As an example for the first program, the code bellow starts the Serial port and prints "hello from ESP32" every second.

void setup() { Serial.begin(115200); }	
void loop() { Serial.println("hello from ESP32"); delay(1000); }	

If everything is working fine, we will see the output in the serial console shown.



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* LVGL: htt	Board: "ESP32S3 Dev Module"	>	
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* Touch lib	USB Mode: "Hardware CDC and JTAG"	>	
* FT6X36: <u>h</u>	USB CDC On Boot: "Disabled"	>	
* GT911: <u>ht</u>	USB Firmware MSC On Boot: "Disabled"	>	
* XPT2046:	USB DFU On Boot: "Disabled"	>	
*	Upload Mode: "UART0 / Hardware CDC"	>	
* LVGL Conf	CPU Frequency: "240MHz (WiFi)"	>	
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"C:\\Users\\zha	ng'pei\\AppData\\Local\\Arduino15	\packages\\esp32\\tools\\xtensa-esp32s3-elf-gco	c\\gcc8_4_0-esp-2021r2-patch3/bin/xtensa-esp32s3-elf-g++"
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"C:\\Users\\zha	ng'pei\\AppData\\Local\\Arduinol5	<pre>\packages\\esp32\\tools\\xtensa-esp32s3-elf-gco</pre>	c\\gcc8_4_0-esp-2021r2-patch3/bin/xtensa-esp32s3-elf-g++"
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"C:\\Users\\zha	ng'pei\\AppData\\Local\\Arduino15	<pre>\packages\\esp32\\tools\\xtensa-esp32s3-elf-gco</pre>	c\\gcc8_4_0-esp-2021r2-patch3/bin/xtensa-esp32s3-elf-g++"
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<			✓

Again thank you for so much concern.. Hopefully, it's the beginning of a wonderful relationship!

Sample program usage

At present, only a preliminary explanation and introductory use are given to the samples displayed on the screen, and the corresponding examples in the data center are found, as shown in the figure:



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🛄 此电脑	3_3-3_TFT_PDQgraphicstest	2022/9/30 16:44	文件夹			
🧊 3D 对象	3_3-3-TFT-LVGL-Benchmark	2022/9/30 18:07	文件夹			
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The examples in the red circle are all based on the Arduino_GFX library as the basic application. This library supports various commonly used driver chips, such as ST7735, ST7789, ILI9341, etc., and has good compatibility.

Arduino_GFX library file installation:

Open the library manager in Arduino, search for Arduino_GFX, and click instal .



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💿 LVGL_Arduino | Arduino 1.8.19

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<pre>FT_eSIL tt FT_FABS Tot FLOC*</pre>	static lv_colo	Flash Frequency: "80MHz"	>	
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💿 LvglWidgets | Arduino 1.8.19 × Edit Sketch Tools Help LvglWidgets * LVGL Widgets * This is a widgets demo for LVGL - Light and Versatile Graphics Library * import from: https://github.com/lvgl/lv_demos.git * Dependent libraries: * LVGL: https://github.com/lvgl/lvgl.git 💿 Library Manager × * FT6X36: https://github.com/str * GT911: https://github.com/TAMC Type All v Topic All ~ Arduino_GFX https://github.com/marcmerlin/ArduinoOnPc-FastLEL More info * XPT2046: https://github.com/Pa LVGL Configuration file: Install * Copy your_arduino_path/librar by Moon On Our Nation Version 1.2.8 INSTALLED Arduino. GFX is a GFX library for various color displays with various data bus interfaces Arduino_GFX is a Arduino graphics library. Currently support GSA01 round display. GG9106, GG9107, GG9503V, HX8347C, HX8347D, HX8352C, HX8357A, HX8357B, IL16485, IL19225, IL19321, IL19341, IL19342(MS5tack), IL19469, IL19468, IL19468, IL19468, IL19469, IL19411, IL19469, IL19469, IL19411, IL19469, IL19412, IL19469, IL1 * to your_arduino_path/libraries, * Then find and set: * #define LV_COLOR_DEPTH * #define LV TICK CUSTOM * For SPI display set color swap * #define LV_COLOR_16_SWAP 1 * Optional: Show CPU usage and H * #define LV_USE_PERF_MONITOR 1 GFX4d 4D Systems Pty Ltd //#include "lv_demo_widgets.h" Graphics Library for the gen4-IoD by 4D Systems This is a library which enables graphics to be easily added to the gen4-IoD modules using the Arduino IDE or Workshop4 IDE. gen4-IoD is powered by the ESP8266. #include <lvgl.h> More info #include <demos/lv_demos.h> Close * Start of Arduino GFX setting essiully created C:\\Users\\zhang'pei\\AppData\\Local\\Arduino15\\packages\\esp32\\hardware\\esp32\\2.0.3/tools/gen_esp32part.exe" -q "C:\\Users\\ZHANG'~1\\AppData\\Loc Using library lvgl at version 8.3.0-dev in folder: C:\Users\zhang'pei\Documents\Arduino\libraries\lvgl Using library Arduino_GFX-master at version 1.2.8 in folder: C:\Users\zhang'pei\Documents\Arduino\libraries\Arduino_GFX-master Using library SPI at version 2.0.0 in folder: C:\Users\zhang'pei\AppData\Local\Arduino15\packages\esp32\hardware\esp32\2.0.3\libraries\SPI Using library Wire at version 2.0.0 in folder: C:\Users\zhang'pei\AppData\Local\Arduino15\packages\esp32\hardware\esp32\2.0.3\libraries\Wire Using library gt911-arduino-main at version 1.0.2 in folder: C:\Users\zhang'pei\Documents\Arduino\libraries\gt911-arduino-main C:\\Jstang'pei\\AppData\\Local\\Arduinol5\\packages\\esp32\\tools\\tensa-esp32s3-elf-gcc\\gcc8_4_0-esp-2021r2-patch3/bin/xtensa-esp32s3-elf-size'
Sketch uses 551605 bytes (52%) of program storage space. Maximum is 1048576 bytes.
Global variables use 65524 bytes (19%) of dynamic memory, leaving 262156 bytes for local variables. Maximum is 327680 bytes.

Although the Arduino_GFX library has many advantages, it may also have a troublesome place for ordinary users, that is, after the installation

About the use of PDQgraphicstest:

Find the data center 3_3-3_TFT_PDQgraphicstest As shown:



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Download library files .

Arduino_GFX library



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🐵 Library Manager	×
Type All V Topic All V GFX	
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GEN by Alexander 'Spirik' Spiridonov A library for creation of graphic multi-level menu. Features editable menu items, such as variables (supports int, byte, float, double, boolean, char[17] data types) and option selects. User-defined callback function can be specified to invoke when menu item is saved. Supports buttons that can invoke user-defined actions. <u>More info</u>	
GPX Library for Arduino by Moon On Our Nation ersion 1.2.8 INSTALLED Arduino_GFX is a GFX library for various color displays with various data bus interfaces Arduino_GFX is a Arduino graphics library. Currently support GC9A01 round display, GC9106, GC9107, GC9503V, HX8347C, HX8347D, HX8352C, HX8357A, HX8357B, IL16485, IL19225, IL19331, IL19341, IL19342(M5Stack), IL19481, IL19486, IL19488, IL19806, JBT6K71, NT35310, NT35510, NT39125, R61529, SEPS525, SSD1283A, SSD1331, SSD1351, ST7701, ST7735, ST7789, ST7796 and virtually all Raspberry Pi DPI display. Currently support software SPI (8-bit and 9-bit), hardware SPI (8-bit, ESP32 also support 9-bit), 8-bit parallel interface(AVR, ESP32, RPi Pico, RTL8720, STM32), 16-bit parallel interface(ESP32 and RPi Pico) and RGB Panel interface(ESP32S3). More info	~
CI	.ose

After compiling, you can run PDQgraphicstest normally.