

uArm Controller

快速入门手册





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▶ 产品概述

uArm Controller 是一款基于 Arduino MEGA 2560 的开源硬件,具有广泛的可扩展功能。搭配各种外设使用,创造无限的可能。



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硬件参数

规格					
重量	0.15kg				
尺寸(L*W*H)	150mm*132mm*281mm				
连接方式	Micro USB				
输入电压	USB 5V				
主控	ATMEGA2560 (兼容 Arduino)				
显示器	128x64 OLED				
按钮	4				
旋转电位计	1				
ТуреС	4 (只能用于 uArm 连接)				
RGB LED	1				
Micro SD	1				
4P 连接器	2 路数字 IOs +2 路 IIC				
外部 I/O	6 个数字 IOs				
工作温湿度	0°C-35°C 30%RH-80%RH				
存储温湿度	-20°C-60°C 30%RH-80%RH				





128X64显示屏引脚定义

LCD_CS	D 4 2
LCD_RES	D 4 3
LCD_CD	D 4 4
LCD_SCK	D 3 0
LCD_MOSI	D 3 5

Solution SD卡引脚定义

TF_CS	D13
T F _ S C K	SCK(D53)
TF_MOSI	MOSI(D51)
TF_MISO	MISO(D50)

⑤ 五 向 开 关 揺 杆 引 脚 定 义

JOY_UP	D 3 3
JOY_DOWN	····· D 4 1
JOY_LEFT	D 3 2
JOY_RIGHT	D 3 7
JOY_CENTR	E D 4 0
(按下低电平,松开高	5电平)

● 蜂鸣器引脚定义	
BUZZER	D45

(硬件PWM控制)

❷ 按键引脚定义

BUTTON_A	D47
BUTTON_B	D49
BUTTON_C	D12
BUTTON_D	D11
按下低电平,松开高电平)	

❹ RGB LED引脚定义

R G B _ L E D _ R ····· D 2
RGB_LED_G D3
R G B _ L E D _ B D 5
(低电平亮,高电平灭,可用硬件PWM控制)

⑥ IIC 设备地址

EEPROM 24C128地址	D13
ADXL345 地址	SCK(D53)

⑧旋转	电位计引脚定	义
ROTAR	Y	A15
(测量模拟)	量)	

•外设接口引脚定义(1.27mm 4P)

接口	1	2	3	4
Port1	SCL	SDA	5V	GND
Port 2	SCL	SDA	5V	GND
Port 3	D25	D24	5V	GND
Port 4	D23	D22	5V	GND



•扩展io接口引脚定义

1: 12V (NC)	2: GND	3: TXD0	4: D4	5: D8	6: D53
7: 5V	8: 3.3V	9: RXD0	10: D6	11: D9	12: D10



•TypeC接口定义

有两路TypeC为TTL 串口通信,为UART2、UART3 有两路TypeC为RS485通信,为UART1 注意:市面上四芯的TYPE-C不支持此接口,可以选择接后面的测试点)



■硬件安装



■出厂程序使用

按下复位键,复位系统 使用摇杆控制贪吃蛇上、下、左、右运动



छ sketch_dec26	ia An	rdui	ino 1.8.8			-		×		
File Edit Sketch	100	IS F	негр							
00 R F		Au	to Format					C	Ctrl+T	
		Arc	chive Sketch							
sketch_dec26a		Fix	Encoding & Rela	ad						
<pre>void setup() {</pre>		Ma	anage Libraries					0	Ctrl+Sh	ift+I
// put your se		Sei	rial Monitor					0	Ctrl+Sh	ift+M
}		Sei	rial Plotter					C	Ctrl+Sh	ift+L
		Wi	iFi101 / WiFiNINA	Firmware U	pdater					
void loop() {	Г	Ro	ardı "Arduino/Ge	nuino Mega	or Me	aga 250	50"		1	
// put your ma		00	aru. Aruuno/de	nuno mega		sya 250				
		Pro	ocessor: "ATmega	a2560 (Mega	a 2560))"				1
}		Ро	rt: "COM11 (Ardu	iino/Genuino	Mega	a or Me	ega 256	50)"		1
		Ge	et Board Info							
		Pro	ogrammer: "AVRI	SP mkll"						:
		Bu	ırn Bootloader							

•点击上传按钮,如下图,上传固件。



■软件安装

1.下载Arduino IDE (www.arduino.cc)

2.GitHub例程(https://github.com/uArm-Developer/Controller) 3.Arduino接口参考说明(https://www.arduino.cc/reference/en/) 4.开发语言为C/C++

注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

•配置Arduino IDE硬件平台及COM口(COM口为电脑自动分配),使用IDE自行编写代码或者使用GitHub例程代码进行开发。

■ Github demo说明

Branch: master •	New pull request		Create new file	Upload files	Find file	Clone or download 🔻
🤨 TopgunZh Ado	2018-12-25			L	atest comm	it 8963a4b Dec 25, 2018
doc		Add 2018-12-25				Dec 25, 2018
driver		Update 2018-12-25				Dec 25, 2018
image		Update 2018-12-25				Dec 25, 2018
scene_demo		Update 2018-12-25				Dec 25, 2018
sch		Add 2018-12-25				Dec 25, 2018
README.md		update				Nov 9, 2018

doc文件夹下存放的是使用手册 driver文件夹下存放的是外设例程 image文件夹下存放的是产品图片 scene_demo文件夹下存放的是场景demo sch文件夹下存放的是uArmController的原理图

• 外设驱动

Branch: master Controller / driver /		Create new file	Uploa
Update 2018-12-25			Latest
button_driver	Update 2018-12-25		
joystick_driver	Update 2018-12-25		
ed_RGB_diver	Update 2018-12-05		
eled_12864_driver	Update 2018-12-05		

driver下暂有四个例程(会不断更新例程,具体看Github内容)

button_driver
 硬件连接请参考 硬件参数->按键引脚定义

 1、下载工程文件button_driver.ino (https://github.com/uArm-Developer/Controller/tree/master/driver/button_driver) 如何从Github下载单个文件请参考 (https://github.com/uArm-Developer/SwiftProForArduino/ wiki/How-to-download-single-file-from-GitHub)
 2、配置Arduino IDE,选择板子为"Arduino/Genuino Mega or Mega 2560",COM根 据电脑所分配的COM口进行选择,如下图。

\odot	button_driver	Ardu	uino 1.8.7		—	\times
File	Edit Sketch	Tools	Help			
			Auto Format	Ctrl+T		Ø
			Archive Sketch			
b	utton_driver		Fix Encoding & Reload			
1	/******		Manage Libraries	Ctrl+Shift+I		1
2	#define BUTT		Serial Monitor	Ctrl+Shift+M		- 1
3	#define BUTT		Serial Plotter	Ctrl+Shift+L		- 1
4	#define BUTT					- 1
5	#define BUTT		WiFi101 Firmware Updater			- 1
7	void setup()		Board: "Arduino/Genuino Mega or Mega 2560"	>		- 1
8	// put you		Processor: "ATmega2560 (Mega 2560)"	>		- 1
9	Serial.be		Port: "COM95 (Arduino/Genuino Mega or Mega 2560)"	>		
10	Serial.pr		Get Board Info			
11	pinMode(BU					
12	pinMode(BU		Programmer: "Arduino as ISP"	>		
13	pinMode(BU		Burn Bootloader			
14	pinMode(BU	TTON_I	D, INPOT_POLLOP);		1	
15	}					
16						
17	void loop()	{				
18	// put you	r main	n code here, to run repeatedly:			
19	if(digital	Read (1	<pre>BUTTON_A) = LOW) {</pre>			

注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

3、上传固件,如下图,点击上传按钮

<pre> So button_driver Arduino 1.8.8 -</pre>		
ile Edit Sketch Tools Help button_driver /************************************	💿 button_driver Arduino 1.8.8 —	×
button_driver	ile Edit Sketch Tools Help	
button_driver		ø
/*************************************	button_driver	
#define BUTTON_A 47 #define BUTTON_B 49 #define BUTTON_C 12	/*************************************	^
#define BUTTON_B 49	#define BUTTON_A 47	
#1.f PUTTON 0 10	#define BUTTON_B 49	
	#1.f: 10	

4、测试,打开串口助手

⊚ joystick_driver Arduino 1.8.8	_		×
<u>F</u> ile <u>E</u> dit <u>S</u> ketch <u>T</u> ools <u>H</u> elp			
	Seria	l Monitor	Ø
joystick_driver			•

5、点击按键可以观察到终端打印的log

💿 COM6 (Arduino/Genuino Mega or Mega 2560)	_	×
		Send
button test		
button c		
button a		
button b		
button d		

√ 115200 baud ∨

Clear output

Newline

• joystick_driver

硬件连接请参考 硬件参数->五向开关摇杆引脚定义

1、下载工程文件joystick_driver.ino

(https://github.com/uArm-Developer/Controller/tree/master/driver/joystick_driver) 如何从Github下载单个文件请参考

(https://github.com/uArm-Developer/SwiftProForArduino/

wiki/How-to-download-single-file-from-GitHub)

2、配置Arduino IDE,选择板子为"Arduino/Genuino Mega or Mega 2560",COM根据电脑所分配的COM口进行选择,如下图。

💿 joystick_driver Ar	rduino 1.8.8 — 🗆	×	
<u>File Edit Sketch Too</u>	ls <u>H</u> elp		
	Auto Format	Ctrl+T	
	Archive Sketch		
joystick_driver	Fix Encoding & Reload		
/10101010101010101010101010101010101010	Manage Libraries	Ctrl+Shift+I	
#define JOY_UP	Serial Monitor	Ctrl+Shift+M	Ν
#define JOY_DOWN	Serial Plotter	Ctrl+Shift+L	
#define JOY_LEFT #define JOY_RIGH #define JOY_CENT	WiFi101 / WiFiNINA Firmware Updater		
waerine jor_obari	Board: "Arduino/Genuino Mega or Mega 2560"		>
<pre>void setup() {</pre>	Processor: "ATmega2560 (Mega 2560)"		>
// put your se	Port: "COM6 (Arduino/Genuino Mega or Mega 2560)"		>
Serial.begin(Get Board Info		
Serial.print(Drogrammer "A\/PICD mbil"		``

注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

3、上传固件,如下图,点击上传按钮

💿 joystick_driver Arduino 1.8.8	_		\times
<u>File Edit Sketch T</u> ools <u>H</u> elp			
			ø
joystick_driver			
		-	

🥺 joystick_driver Arduino 1.8.8	_		×
ile <u>E</u> dit <u>S</u> ketch <u>T</u> ools <u>H</u> elp			
9 🖸 🗈 🗳	Seria	l Monitor	ø
joystick_driver			•

5、拨动摇杆开关可以观察到终端打印的log

💿 COM6 (Arduino/Genuino Mega or Mega 2560)			_	
jøystick testjøystick test				
joystick up				
joystick down				
joystick left				
joystick right				
joystick center				
Autoscroll Show timestamp Newline	~	115200 bau	4 ~	Clea
		-	_	

00 led_RGB_diver | Arduino 1.8.7 X File Edit Sketch Tools Help Auto Format Ctrl+T 0 Archive Sketch led_RGB_diver Fix Encoding & Reload 1 /******* Manage Libraries... Ctrl+Shift+I 2 #define RGB Serial Monitor Ctrl+Shift+M 3 #define RGB_ Serial Plotter Ctrl+Shift+L 4 #define RGB 5 WiFi101 Firmware Updater 6 enum rgb_mod Board: "Arduino/Genuino Mega or Mega 2560" RED = 0,7 Processor: "ATmega2560 (Mega 2560)" S GREEN, 9 BLUE, Port: "COM95 (Arduino/Genuino Mega or Mega 2560)" 10 } rgb_mode = Get Board Info 11 Programmer: "Arduino as ISP" 12 void setup() 13 // put you Burn Bootloader 14 pinMode (RGB_LED_R, UUTPUT); 15 pinMode (RGB_LED_G, OUTPUT); 16 pinMode (RGB_LED_B, OUTPUT); 17 } 18 19 void loop() {

注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

• led_RGB_driver

硬件连接请参考硬件参数->RGB led引脚定义

1、下载工程文件led_RGB_diver.ino

https://github.com/uArm-Developer/Controller/tree/master/driver/led_RGB_diver 如何从Github下载单个文件请参考 (https://github.com/uArm-Developer/SwiftProForArduino/

wiki/How-to-download-single-file-from-GitHub)

2、配置Arduino IDE,选择板子为"Arduino/Genuino Mega or Mega 2560",COM根据电脑所分配的COM口进行选择,如下图。

3、上传固件,如下图,点击上传按钮

🥺 led_RGB_diver Arduino 1.8.7 —			
Eile Edit Sketch Tools Help			
🕑 📀 💽 🔛 Upload			ø
led_RGB_diver			

4、测试,RGB灯会以红色、绿色、蓝色交替点亮

•oled_12864_driver

硬件连接请参考硬件参数->128X64显示屏引脚定义

1、下载工程文件oled_12864_driver.ino

(https://github.com/uArm-Developer/Controller/tree/master/driver/oled_12864_driver)

如何从Github下载单个文件请参考

(https://github.com/uArm-Developer/SwiftProForArduino/

wiki/How-to-download-single-file-from-GitHub)

2、配置Arduino IDE,选择板子为"Arduino/Genuino Mega or Mega 2560",COM根据电脑所分配的COM口进行选择,如下图。



注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

oled_1286	4_driver Arduino 1.8.8		-	_		×	
File Edit Sket	ch Tools Help		_				
	Verify/Compile	Ctrl+R				Ø	
	Upload	Ctrl+U					
oled_1:	Upload Using Programmer	Ctrl+Shift+U					
#include	Export compiled Binary	Ctrl+Alt+S				^	
/********	Show Sketch Folder	Ctrl+K	008/			_	
#define 1	Include Library) curric		Man	age Lik	oraries	Ctrl+Shift+I
#define J	Add File			Add	.ZIP Lik	orary	
#define LCD_S	CK 30						
#define LCD_M	OSI 35			Ardu	ino lib	raries	
				Brid	ge		
USGLIB_SH1106_128X64 uSg(LCD_SCK, LCD_MOSI, LCD_CS, LCD_				EEPF	ROM		
void cotum()	l .			Espl	ora		
// nut your setum code here, to run once:			Ethernet				
pinMode(LCD_RES, OUTPUT);			Firmata				
digitalWrite(LCD_RES, HIGH);				GSM	1		
u8g.firstPa	ge();			HID			

4、安装u8glib

💿 Library Manager	×
Type All v Topic All v uSglib	
-ypez (senar monitor) indulaciystar) izer graphic aspiays (aagiio / aagziiom /) More info	^
U8g2 by oliver Monochrome LCD, OLED and eInk Library. Display controller: SSD1305, SSD1306, SSD1309, SSD1322, SSD1325, SSD1327,	
SSD1329, SSD1606, SSD1607, SH1106, SH1107, SH1108, SH1122, T6963, RA8835, LC7981, PCD8544, PCF8812, HX1230, UC1601, UC1604, UC1608, UC1610, UC1611, UC1701, ST7565, ST7567, ST7588, ST75256, NT7534, IST3020, ST7920, LD7032,	
KS0108, SED1520, SBN1661, IL3820, MAX7219. Interfaces: I2C, SPI, Parallel. Monochrome LCD, OLED and eInk Library. Successor of U80lib. Supported display controller: SSD1305, SSD1306, SSD1309, SSD1322, SSD1325, SSD1327, SSD1329	
SSD1606, SSD1607, SH1106, SH1107, SH1108, SH1122, T6963, RA8835, LC7981, PCD8544, PCF8812, HX1230, UC1601, UC1604, UC1608, UC1611, UC1701, ST7555, ST7562, ST7588, ST75756, NT7534, IST7020, ST7820, UD2032, KS0108,	
SED150, SBN1661, IL3820, MAX7219. Supported interfaces: I2C, SPI, Parallel. Features: UTF8, >700 fonts, U8x8 char output.	

U8glib by oliver Version 1.19.1 INSTALLED

A library for monochrome TFTs and OLEDs Supported display controller: SSD1306, SSD1309, SSD1322, SSD1325, SSD1327, SH1106, UC1601, UC1610, UC1611, UC1701, ST7565, ST7920, KS0108, LC7981, PCD8544, PCF8812, SBN1661, TLS8204, T6963. More info

Select version ~ Install

Close

5、上传固件,如下图,点击上传按钮

💿 oled_12864_driver | Arduino 1.8.8 \times ____ <u>File Edit Sketch Tools Help</u> Ø 4 ÷ oled_12864_driver

6、查看显示屏效果



•场景例程

Branch: master New pull request	Create new file Upload files	Find fil
🤨 TopgunZh Update 2018-12-25		Latest co
and doc	Add 2018-12-25	
a driver	Update 2018-12-25	
image	Update 2018-12-25	
scene_demo/joystick_with_uArm	Update 2018-12-25	
in sch	Add 2018-12-25	
README.md	update	

scene_demo下暂时有一个例程(会不断更新例程,具体看Github内容)

•joystick_with_uArm

1、使用TypeC线连接uArmController及uArm Swift Pro



2、接上uArm Swift Pro电源



3、使用USB线连接uArmController与电脑





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4、下载工程文件joystick_with_uArm.ino

(https://github.com/uArm-Developer/Controller/tree/master/scene_demo/joystick_with_uArm)

如何从Github下载单个文件请参考

(https://github.com/uArm-Developer/SwiftProForArduino/

wiki/How-to-download-single-file-from-GitHub)

5、配置Arduino IDE,选择板子为"Arduino/Genuino Mega or Mega 2560",COM根据电脑所分配的COM口进行选择,如下图

⊚ joystick_with_u	IArm	Arduino 1.8.8		_		×	
File Edit Sketch	Tools	Help					
	A	uto Format rchive Sketch				Ctrl	۲
<pre>#include <u8glib #include="" (stdia)<="" pre=""></u8glib></pre>	F N	ix Encoding & Reload Ianage Libraries				Ctrl	+Shift+I
#include "coord_	s	erial Monitor erial Plotter				Ctrl-	+Shift+N +Shift+L
/#0000000000000000	V	ViFi101 / WiFiNINA Fin	mware Update	r	-01		
#define LCD_CS #define LCD_RES	P	oard: "Arduino/Genui rocessor: "ATmega25	60 (Mega or M	ega 250))"	50°		
#define LCD_CD #define LCD_SCK #define LCD_MOSI	G	et Board Info	Genuino Mega	or Meç	ga 2560)		

注意:当uArm Controller连接电脑的时候,需要按下复位键复位系统。

6、打开库管理器,如下图



7、安装u8glib



00	joysti	ck_with_uArm	Arduino 1.8.8 -	-	\times
<u>F</u> ile	<u>E</u> dit	<u>S</u> ketch <u>T</u> ools	<u>H</u> elp		
0	0				ø
ic	wstick	with uArm &	coord convertioncoord_convertib		-

9、测试,使用摇杆控制uArm前后左右运动,旋转电位计控制uArm上下运动,按键C 切换速度,按键D控制夹子开关。

■发布说明

版本	说明	
V1.0.0	创建	Topgun
V1.0.1	增加出厂程序使用	Topgun