materiały pobrane ze strony: https://www.instructables.com/id/Digispark-DIY-The-smallest-USB-Arduino/ 2017-06-21

Digispark DIY: the Smallest USB Arduino



<u>Digispark</u> is an ATtiny85 based microcontroller development board come with USB interface. Coding is similar to Arduino, and it use the familiar Arduino IDE for development.

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Specification:

Support for the Arduino IDE 1.0+ (OSX/Win/Linux) Power via USB or External Source - 5v or 7-35v (automatic selection) On-board 500ma 5V Regulator Built-in USB (and serial debugging) 6 I/O Pins (2 are used for USB only if your program actively communicates over USB, otherwise you can use all 6 even if you are programming via USB) 8k Flash Memory (about 6k after bootloader) I2C and SPI (vis USI) PWM on 3 pins (more possible with Software PWM) ADC on 4 pins Power LED and Test/Status LED (on Pin0)

Step 1: Prerequisite



ain Program F	uses	LockBits	Advan	iced HW Se	ttings HW	Info Auto				
Fuse	Va	ue								
SELFPRGEN	~									
RSTDISBL										
DWEN										
SPIEN	-									
WDTON										
		un out do	tootion -	-+ VCC_2 7 \/						
		wri-out de	Rectiona	al VCC=2.7 V						
СКОПТ	- H							_		
SUT_CKSEL	PLI	. Clock; SI	itart-up tir	me PWRDWI	N/RESET: 1	K CK/14 CK	+ 64 ms	•		
EVTENDED	0.5									
HIGH	OXF OVF									
LOW	OxE	1								
	[will									
] Auto read								-		
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Step 2: Burning Bootloader to ATTINY85

Like Arduino, Digispark require a bootloader to be running on ATTINY85. The bootloader will occupied 2KB flash memory.

Download bootloader

- 1. Download Micronucleus bootloader for ATTINY85
- 2. Extract the file (micronucleus-t85-master.zip) to any folder
- 3. You can find the bootloader file at micronucleus-t85-master\firmware\releases folder
- 4. Use micronucleus-1.06.hex for the bootloader

Burning bootloader to ATTINY85

You must use the correct fuses bit for the bootloader

Extended: 0xFE High: 0xDD Low: 0xE1

Note: The above fuse bit will not enable reset as I/O, so you can have only 5 I/O instead of 6 I/O. I'm still try to figure out on how to set it to 6 I/O

I'm using AVRISP MKII In System Programmer and AVR Studio software for burning bootloader.

Step 3: Installing Digispark USB Driver

Digispark use USB to communicate with computer, so your computer must install Digispark USB driver

1. Download Arduino for Digispark which come with USB driver

2. Extract the file (DigisparkArduino-Win32-1.0.4-March29.zip) to any folder

3. Execute DigisparkArduino-Win32\DigisparkWindowsDriver\InstallDriver.exe to start installing the USB driver



Step 4: Digispark Schematic

The Digispark and Digistump names an ogos (or d For full details and license information please see http://digistump.com/wiki/digispark/policy



I provide two schematics, first one is the official schematic for Digispark, the other one is for testing purposes which the 5v is get from USB port and hence it is lesser components and much more simple.

Step 5: Plug in Digispark to Computer



- 1. Plug in Digispark to the USB port of computer
- 2. USB device is detected for first time use and prompt you to installing Digispark bootloader.
- 3. Click on Next button until finish.

Step 6: Configure Digispark Software

👓 sketch_may20a	a Arduino 1.0.4	
File Edit Sketch	Tools Help	
Sketch_may20a	Auto Format Ctrl+T Archive Sketch Fix Encoding & Reload Serial Monitor Ctrl+Shift- ArduBlock	+M
	Board	Digispark (Tiny Core)
	SenarPort	Digispark 16.0mnz - NO USB (Tiny Core)
	Programmer Burn Bootloader	 Digispark 8mhz - NO USB (Tiny Core) Digispark 1mhz - NO USB (Tiny Core) Arduino Uno
		Arduino Duemilanove w/ ATmega328

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	Serial Port	<u> </u>	
-	Programmer) (Digispark
	barri boodoader		AVR ISP AVRISP mkII USBtinvISP

1. Run Digispark Arduino-Win32\Digispark-Arduino-1.0.4\arduino.
exe to starting Arduino IDE

- 2. Click on Tools>Board>Digispark (Tiny Core)
- 3. Click on Tools>Programmer>Digispark

Step 7: Upload Sketch to Digispark



😎 Start Arduino 1.0.4
File Edit Sketch Tools Help
Start
<pre>// the setup routine runs once when you press reset: void setup() { // initialize the digital pin as an output. pinMode(0, OUTPUT); //LED on Model B pinMode(1, OUTPUT); //LED on Model A }</pre>
<pre>// the loop routine runs over and over again forever: void loop() { digitalWrite(0, HIGH); // turn the LED on (HIGH is the voltage digitalWrite(1, HIGH); </pre>
Done uploading.
erasing: 55% complete
erasing: 60% complete
erasing: 65% complete
>> Eep! Connection to device lost during erase! Not to worry
>> This happens on some computers - reconnecting
>> Reconnected! Continuing upload sequence
> Starting to upload
writing: /Uk complete
writing: 75% complete
Starting the user and
vinning: 100% complete
> Micronucleus done. Thank you'
Digispark (Tiny Core) on COM1

Upload an example. Click on File > Examples > Digispark_Example > Start Coding is look like this:

// the setup routine runs once when you press reset: void setup() { // initialize the digital pin as an output. pinMode(0, OUTPUT); //LED on Model B pinMode(1, OUTPUT); //LED on Model A }
// the loop routine runs over and over again forever:
void loop() {
 digitalWrite(0, HIGH); // turn the LED on (HIGH is the voltage level)
 digitalWrite(1, HIGH);
 delay(1000); // wait for a second
 digitalWrite(0, LOW); // turn the LED off by making the voltage LOW
 digitalWrite(1, LOW);
 delay(1000); // wait for a second
}

Follow step below to upload sketch to Digispark.

1. Unplug Digispark from computer before click on the Upload button

2. Click on Upload button now

3. Plug in Digispark to computer when it prompt for "Plug in device now..."

4. If you see "*running: 100% complete*". Congraturation! you have own a working Digispark.

Step 8: Test the Digispark



Connect a 330ohm resistor & LED to both pin5(Digital 0) and pin6(Digital 1) of ATTINY85. Plug the Digispark to computer, both LED is start blinking now.

e Edit Sketch Tools	Help		
New	Ctrl+N		
Open	Ctrl+O		
Sketchbook	•		-
Examples		Arduino_Examples	•
Close	Ctrl+W	Digispark_Examples	Charlieplex
Save	Ctrl+S	Arduino EEPROM	EEPROM
Save As	Ctrl+Shift+S	Arduino Esplora	Expander
Upload	Ctrl+U	Arduino Ethernet	Infrared
Upload Using Programmer	Ctrl+Shift+U	Arduino Firmata	MotorShield
Page Setup	Ctrl+Shift+P	Arduino_GSM	Rfm12b
Print	Ctrl+P	Arduino_LiquidCrystal	Start
		Arduino_SD	
Preferences	Ctrl+Comma	Arduino_Servo	•
Quit	Ctrl+Q	Arduino_SoftwareSerial	•
-		Arduino_SPI	•
		Arduino_Stepper	•
		Arduino_WiFi	•
		Arduino_Wire	•
		DigisparkJoystick	•
		DigisparkKeyboard	•
		DigisparkLCD	•
		DigisparkLPD8806	•
		DigisparkMouse	•
		DigisparkRcSeq	•
		DigisparkRGB	•
		DigisparkSoftRcPulseIn	•
		DigisparkSoftRcPulseOut	•
		DigisparkSoftSerial	•
		DigisparkTinyRTClib	•
	I	DigisparkUSB	•
		TinyWireM_Digispark	•

Step 9: What Can Do With Digispark

See examples

My website:

http://ediy.com.my/index.php/blog/item/72-digispark-diy-the-smallest-usb-arduino