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Wio Extension RTC



The Wio Extension - RTC is an extension board for Wio LTE, it can provide the Real-Time Clock function via the I2C port. This board is based on NXP PCF8523 chip, which can provide year, month, day, weekday, hours, minutes, and seconds information.

This board is powered by Micro-USB port, communicate with the Wio LTE via I2C port, and we also provide a USB power output which can be turned off/on by a on-board switch, so that you can use the Wio Extension - RTC board to power the Wio LTE. When the power supply to Wio boards (Like the following picture), the standby current of whole system is less than 1 uA.

Feature

- Extensibility
- Able to supply Wio boards with 3.3 voltage.

Hardware Overview



Switch: manually turn on/off the external output power

- 12C Grove Port: access to RTC and EEPROM via I2C
- 2 Micro USB: Powering the module
- **USB**: Provide 5V power for external output



Platforms Supported

Arduino	Raspberry Pi	BeagleBone	Wio	LinkIt ONE

Getting Started

Play With Arduino

Materials required

Wio LTE Boards	Wio-Extension-RTC	Grove - Buzzer	Grove - Red LED

Since Wio Extension - RTC just controlling USB power supply set from I2C, you can use this board to manage the power supply almost for every MCU boards powering from USB.

Note

1 Please plug the USB cable gently, otherwise you may damage the port. Please use the USB cable with 4 wires inside, the 2 wires cable can't transfer data. If you are not sure about the wire you have, you can click here to buy

2 Each Grove module comes with a Grove cable when you buy. In case you lose the Grove cable, you can click here to buy.

Hardware

- Step 1. Connect the Wio-Extension-RTC to the I2C port of the Wio LTE Boards.
- Step 2. Connect Wio LTE Boards.to PC via a USB cable.
- Step 3. Connect Grove Buzzer or Grove Red LED to D38 of Wio LTE.



Software

Attention

If this is the first time you work with Arduino, we strongly recommend you to see Getting Started with Arduinobefore the start. The driver of this board is rely on the head file of seed STM32F4 Board(JP mirror) by Seed K.K., so whether you have installed your wio board with the tutorial of Getting Started with Arduino, you need to do the following step.

Step 1 Install library Open your Arudino IDE, click on File > Preferences, and copy below url to Additional Boards Manager URLs.

http://www.seeed.co.jp/package_SeeedJP_index.json

0.0	Preferences	
	Settings Network	
Sketchbook location:		
/Users/yoshi/Documents/Ar	duino	Browse
Editor language:	English (English)	of Arduino)
Editor font size:	12	
Interface scale:	Automatic 100 0% (requires restart of Arduino)	
Theme:	Default theme 🖸 (requires restart of Arduino)	
Show verbose output during:	🗹 compilation 🛛 🛃 upload	
Compiler warnings:	None 🔤	
Display line numbers		
Enable Code Folding		
Verify code after upload		
Use external editor		
Aggressively cache compi	led core	
Check for updates on star	tup	
Update sketch files to new	v extension on save (.pde -> .ino)	
Save when verifying or up	loading	
Additional Boards Manager UR	Ls: json,http://www.seeed.co.jp/package_SeeedJP_index.json,https://raw.gith	ub 📁
More preferences can be edite	d directly in the file	
/Users/yoshi/Library/Arduing	15/preferences.txt	
(edit only when Arduino is not	running)	

Click on Toos > Board > Board Manager, and enter wio to the text box.

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Seeed Seeed Online More in	STM32F4 Bo included in thi Wio LTE Cat. 1 help ofo	ard (JP mirror) s package:	by Seeed K.K.		1.1.0 😋	Install
Seeed Boards Seeed Online More in	DP STM32F4 I included in thi Wio 3G, Seeeo help fo	Boards by Seee s package: d Wio LTE M1/NB	d K.K. version 1.5.0 INSTALL 1(BG96).	ED		
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						2-12

Click Seeed STM32F4 Board(JP mirror) by Seeed K.K. then an Install button appear, click on it to finish the step, this process takes about 5 minutes to half an hour, which depend on the speed of your network. Click on Tools > Manage Libraries, and enter wio to the text box.

Type	All	0	Topic	All	3	wio Ite	
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Wio L' The L' More J	TE for Arduino : TE module drive zfo	ry Seeed X Ir for Wio I	L.K. Versit LTE.	n 2.4.0 ENSTA			
Wio L The L Hore I	TE for Arduino : TE module drive da	y Seed X Ir for Wio I	L.K. Versit LTE.	- 2.4.0 INSTA	LLED		

Click wio LTE for Arduino by Seeed K.K. then an Install button appear, click on it to finish the step.

Unzip the sample sketch, and open wiortc-sample.ino with Arduino IDE.

Step2 Download the code

- 1. Press and hold BOOT button at back side of the Wio LTE and plug the USB to PC.
- 2. We will see STM BOOTLARDER in device manager.
- 3. Select Tools \rightarrow Boards \rightarrow Wio_Tracker_LTE.



- 4. Select Sketch \rightarrow Upload to upload the code to Wio_LTE.
- 5. Press RST button to enable the COM port. Tips

When you download most Arduino bords, you need to choose a right COM port, but for this board, you must keep the COM configuration to be blank.

wonc-sample	Alduno 1.8.5		
<u>File Edit Sketch</u>	<u>T</u> ools <u>H</u> elp		
	Auto Format	Ctrl+T	
wiortc-sample	Archive Sketch Fix Encoding & Reload		
<pre>#include <wio "wio<="" #include="" pre=""></wio></pre>	Serial Monitor Serial Plotter	Ctrl+Shift+M Ctrl+Shift+L	
//////////////////////////////////////	WiFi101 Firmware Updater		111,
<pre>#define BOOT_</pre>	Board: "Wio Tracker LTE" Port	>	
111111111111	Get Board Info		111
// Global var	Programmer: "AVRISP mkll"	>	
WioLTE Wio;	Burn Bootloader		

1. Use Serial monitor to print the serial message.

#include <WioLTEforArduino.h>
1#include "WioRTC.h"

4#define BOOT_INTERVAL (30) // [sec.]

```
1 SerialUSB.println("");
3 SerialUSB.println("--- START ------
1----");
4
1
5 // Low-level initialize
1
6 SerialUSB.println("### I/O Initialize.");
1 Wio.Init();
7
1 SerialUSB.println("### Power supply ON.");
8 Wio.PowerSupplyGrove(true);
1 delay(500);
9
// Device initialize
0
2
1 SerialUSB.println("### Device initialize.");
2 Wire.begin();
2 RTC.begin();
2
2 // Completed
4
2 SerialUSB.println("### Completed.");
5 }
2
6void loop()
2{
7 uint8_t val;
2 RTC.EepromRead(0, &val, sizeof(val));
8 SerialUSB.print("EEPROM value is ");
2 SerialUSB.println(val);
9
3 val++;
0 RTC.EepromWrite(0, &val, sizeof(val));
3
1 SerialUSB.println("Beep.");
3 pinMode(WIO_D38, OUTPUT);
2 digitalWrite(WIO_D38, HIGH);
3 delay(200);
3 digitalWrite(WIO D38, LOW);
3
4 SerialUSB.println("Shutdown.");
3 RTC.SetWakeupPeriod(BOOT INTERVAL);
5 RTC.Shutdown();
3 while (1) {}
6 }
3
3////
8
3
9
4
0
```

After you download the sample sketch, Wio Extension - RTC set to shut down the system for 30 sec with 1RTC.SetWakeupPeriod(BOOT_INTERVAL);

and then set to shut down the whole system on ${\tt lRTC.Shutdown();}$

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