



RFD77101 Simblee Module

SIMBLEE BLE FUNCTIONS REFERENCE

Simblee™ BLE Stack

- **SimbleeBLE.begin()**

This function starts the BLE Stack and begins advertising.

Example:

```
SimbleeBLE.begin();
```

- **SimbleeBLE.end()**

This function stops the BLE Stack and stops advertising.

Example:

```
SimbleeBLE.end();
```

- **SimbleeBLE.deviceName**

This variable allows you to set the BLE device name as it will appear when advertising

Example:

```
SimbleeBLE.deviceName = "Simblee"; //Sets the device name to Simblee
```

- **SimbleeBLE.advertisementData**

This variable allows you to set the BLE advertisement data.

Example:

```
SimbleeBLE.advertisementData = "Unit A"; //Will include Unit A in the advertisement packet.
```

Note: Advertisement length and deviceName length must be <= 18 bytes

- **SimbleeBLE.advertisementInterval**

This variable allows you to set the BLE advertisement interval in milliseconds.

Example:

```
SimbleeBLE.advertisementInterval = 100; //Sets the interval to 100ms
```

- **SimbleeBLE.txPowerLevel**

This variable allows you to set the BLE transmit power in dBm. You can select any value between -20 to +4 dBm in 4dBm increments. (ex. -20, -16, -12, -8, -4, 0, +4)

Example:

```
SimbleeBLE.txPowerLevel = +4; //Sets the transmit power to max +4dBm
```

- **SimbleeBLE.send()**

This function allows you to send data via BLE. `SimbleeBLE.send(char data)` or `SimbleeBLE.send(const char *data, int len)`;

Example:

```
SimbleeBLE.send = (1); //Sends a 1
```

or

```
SimbleeBLE.send = (myarray, 5); //Sends a character array called myarray with a length of 5
```

Simblee™ BLE Functions

BLE Stack

Simblee™ BLE Stack Continued

- SimbleeBLE.sendByte()

This function allows you to send a Byte via BLE.

Example:

```
uint8_t myByte = 50;
SimbleeBLE.sendByte = (myByte); //Sends myByte
```

- SimbleeBLE.sendInt()

This function allows you to send a INT via BLE.

Example:

```
int myByte = 5000;
SimbleeBLE.sendInt = (myByte); //Sends myByte
```

- SimbleeBLE.sendFloat()

This function allows you to send a float via BLE.

Example:

```
float myNumber = 16.49;
SimbleeBLE.sendFloat = (myNumber); //Sends myNumber
```

- SimbleeBLE.radioActive

This function allows you to check whether the radio is active or not. Since the radio take priority over resources when it is active, this is very useful in timing critical applications, where you can wait until the radio is off to run your critical code.

Example:

```
// Wait while the Radio is active
while (SimbleeBLE.radioActive)
;
// Timing Critical Code goes here
```

Simblee™ BLE Functions Callbacks

Simblee™ BLE Callbacks

- SimbleeBLE_onAdvertisement()

This function allows you to run a piece of code everytime the radio advertises.

Example:

```
void SimbleeBLE_onAdvertisement(bool start){  
  // Insert code here  
}
```

- SimbleeBLE_onConnect()

This function allows you to run a piece of code everytime you connect to the radio.

Example:

```
void SimbleeBLE_onConnect(){  
  // Insert code  
}
```

- SimbleeBLE_onDisconnect()

This function allows you to run a piece of code everytime you disconnect to the radio.

Example:

```
void SimbleeBLE_onDisconnect(){  
  // Insert code here  
}
```

- SimbleeBLE_onReceive()

This function returns data from the radio.

Example:

```
void SimbleeBLE_onReceive(char *data, int len){  
  uint8_t myByte = data[0]; // store first char in array to myByte  
  Serial.println(myByte); // print myByte via serial  
}
```

- SimbleeBLE_onRSSI()

This function returns the dBm signal strength after connecting

Example:

```
void SimbleeBLE_onRSSI(int rssi){  
  Serial.println(rssi); // print rssi value via serial  
}
```

Simblee™ BLE Functions

Sleep and Wake

Simblee™ Sleep and Wake

- **Simblee_ULPDelay()**

This function sets the module in an ultra low power delay for the amount of time specified. `Simblee_ULPDelay(uint64_t ms);`

Example:

```
Simblee_ULPDelay(350); // 350 milliseconds
Simblee_ULPDelay(SECONDS(350)); //350 seconds
Simblee_ULPDelay(MINUTES(350)); //350 minutes
Simblee_ULPDelay(HOURS(10)); // 10 hours
Simblee_ULPDelay(DAY(3)); // 3 days
Simblee_ULPDelay(INFINITE); // Stay in ultra low power mode until interrupt from the BLE or pin
Wake()
```

- **Simblee_pinWake()**

This function configures a pin to wake up the device

Example:

```
pinMode(5, INPUT); // set pin 5 to input
Simblee_pinWake(5, HIGH); // configures pin 5 to wake up device on a high signal
```

- **Simblee_pinWoke()**

This function allows you to test whether a pin caused a wakeup

Example:

```
Simblee_ULPDelay(INFINITE); // stay in ULP forever
if (Simblee_pinWoke(5))
//do something here if pin 5 caused us to wake up
Simblee_resetPinWake(5); // reset state of pin that caused wakeup
Note: You must resetPinWake otherwise you will be stuck in the pinWoke loop.
```

- **Simblee_resetPinWake()**

This function resets the state of a pin that caused a wakeup. You must reset this after using a pinWoke function otherwise you will be stuck in your pinWoke loop.

Example:

```
if (Simblee_pinWoke(5))
//do something here if pin 5 caused us to wake up
Simblee_resetPinWake(5); // reset state of pin that caused wakeup
```

Simblee™ BLE Functions

Sleep and Wake continued

Simblee™ Sleep and Wake continued

- **Simblee_pinWakeCallback()**

This function configures a pin to wake the device and execute a callback. `Simblee_pinWakeCallback(uint32_t ulPin, uint32_t dwWake, pin_callback_t callback);`

Example:

```
pinMode(6, INPUT); // set pin 6 to input
Simblee_pinWakeCallback(6, HIGH, myPinCallback); // configure pin 6 to wake up the
device and run function "myPinCallback"
```

- **Simblee_systemReset()**

This function resets the system.

Example:

```
Simblee_systemReset();
```

- **Simblee_systemOff()**

This function turns the system off into an ultra low power state where it can wake up via a pinWake.

Example:

```
Simblee_systemOff();
```

Simblee™ BLE Functions

iBeacon

Simblee™ iBeacon

```
SimbleeBLE.iBeacon = true; //Enable iBeacon advertising  
SimbleeBLE.begin(); //Start BLE stack
```

Example with custom UUID, Major, Minor and Measured Power:

```
SimbleeBLE.iBeacon = true; //Enable iBeacon advertising  
uint8_t uuid[16] = {0xE2, 0xC5, 0x6D, 0xB5, 0xDF, 0xFB, 0x48, 0xD2, 0xB0, 0x60, 0xD0, 0xF5, 0xA7,  
0x10, 0x96, 0xE0}; //Custom iBeacon UUID  
memcpy(SimbleeBLE.iBeaconUUID, uuid, sizeof(SimbleeBLE.iBeaconUUID)); SimbleeBLE.iBeacon  
Major = 1234; //Custom iBeacon Major  
SimbleeBLE.iBeaconMinor = 5678; //Custom iBeacon Minor SimbleeBLE.iBeaconMeasuredPower =  
0xC6; //2's complement iBeacon Power Measurement at 1 Meter (default is 0xC5 = -59dBm  
SimbleeBLE.begin(); //Start BLE stack
```

Simblee™ Miscellaneous Functions

- Simblee_temperature()

This function returns a sample from the on-chip temperature sensor. `Simblee_temperature(int scale)`

Example:

```
float temp = Simblee_temperature(CELSIUS); // returns temperature in Celsius and stores in float temp
or
float temp = Simblee_temperature(AHRENHEIT); // returns temperature in Celsius and stores in float temp
```

- Serial.begin (baud, RX pin, TX pin)

This function is a standard Arduino function, but the Simblee allows you to map the UART to any of the available GPIOs, to map them to GPIOs other than the default GPIO 0 and GPIO 1 you can use this function.

Example:

```
Serial.begin(9600, 2, 3); // Starts the UART at 9600 with RX on GPIO 2 and TX on GPIO 3
```

-Wire.beginOnPins (SCL pin, SDA pin)

This function allows you to map the I2C pins from the default GPIO 5 and GPIO 6 to any of the available GPIOs.

Example:

```
Wire.beginOnPins(2, 3); // Starts the I2C interface with SCL on GPIO 2 and SDA on GPIO 3
```

-Remapping the SPI pins

To remap the SPI pins from the default MISO (GPIO 3), SCK (GPIO 4), MOSI (GPIO 5), SS/CS (GPIO 6) to any of the available GPIOs open up the variant.h file in the /variants/Simblee folder and modify the following definitions:

Example:

```
#define PIN_SPI_SS (6u)
#define PIN_SPI_MOSI (5u)
#define PIN_SPI_MISO (3u)
#define PIN_SPI_SCK (4u)
```

For more information on programming the Simblee modules, please see:

[Simblee Quick Start Guide](#)

[Simblee User Guide](#)

[Getting Started with SimbleeCOM](#)

[Getting Started with Simblee for Mobile](#)