



WIMOTO – BLE SMART DEVICE RELEASE NOTE – VER 1.0.3

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1 Overview

Wimoto is developing a smart device which integrates many sensors for BLE Climate profile (Temperature, Humidity, and Light), Grow profile (Light, Soil Temperature, and Soil Moisture) and Sentry profile (Light, Temperature, and Humidity), Thermo profile and Water profile on Nordic semiconductor nRF51822 based hardware platform. This device can be configured and managed by corresponding app on mobile devices like iPhone, Android and a proprietary gateway.

This release contains the Climate, Grow, Sentry, Thermo and Water Profiles with complete features integrated.

This is the release note for Wimoto BLE Release version 1.0.3.

1.1 Audience

This release is intended for engineering/ testing team of Wimoto.

1.2 Scope

- Incorporates the comments/feedback from customer testing.

- Replaced accelerometer driver – changed from MMA8653 to MMA7660

2 Release content

The Code for Final release has been pushed to the folder WimotoBLE with the tag “Wimoto Final Release”

This release includes the following features:

serial#	Feature Name	Sub-Feature Description
1	Base I/O functions	Basic read/write functions for I2C
2	Driver for TMP102	Driver with required feature level abstraction APIs for TMP102
3	Driver for TMP006	Driver with required feature level abstraction APIs for TMP006
4	Driver for ISL29023	Driver with required feature level abstraction APIs for ISL29023
5	Driver for MMA7660FC	Driver with required feature level abstraction APIs for MMA7660FC
6	Driver for HTU21D	Driver with required feature level abstraction APIs for HTU21D
7	Driver for Analog proprietary sensors	Driver with required feature level abstraction APIs.
8	Driver for Digital proprietary sensors	Driver with required feature level abstraction APIs.
9	BLE broadcast framework	Read data provided by all profiles from sensors and advertise the same data in broadcast mode using the nRF51822 evaluation board
10	BLE peripheral service profiles	Advertise the alarm service characteristics provided by climate and grow profiles.
11	BLE alarm notification framework	The user can set a low value and high value and set an alarm for receiving alarm notification if the parameters are out of range
12	Data logger service in all profiles	Log the data read from respective sensors to flash
13	Device Firmware Update over BLE	Update the device with new firmware over the air.
14	128 Bit vendor specific UUID integrated to all profiles	Since the custom services does not have a standard UUID all service, vendor specific custom UUID's has to be used

The state machine implemented in the Wimoto final release version 1.0.0 is slightly different from the Incremental Release 1 due to recommendation from Nordic for improved and efficient design. The new state machine state diagram starts with connectable mode and remains there until a mode switch characteristics has been triggered from the central device, once it is triggered and the device is disconnected from central device the code enters to broadcast mode

3 Changes in the code

1. Changed clock setup in ble_stack_init to
"NRF_CLOCK_LFCLKSRC_RC_250_PPM_2000MS_CALIBRATION"
2. Changed the I2C – SDA & SCL pins. SDA = P0.16 and SCL = P0.15
3. In Sentry profile accelerometer sensor has changed from MMA8653FC to MMA7660FC
4. Input pins for the ADC and Digital sensors has changed and they are given below and the modifications are done in wimoto.h header file, except for PWM pin number which is in wimoto_sensors.h

Pin Name	Pin number on nRF51822
Grow Profile	
PWM generation	P0.01
Soil moisture sensor	P0.02
Water Profile	
Water Level	P0.01
Water Presence	P0.00
Sentry Profile	
PIR sensor	P0.02
Interrupt pin for MMA7660	P0.04
Thermo Profile	
Probe temperature sensor	P0.01
Probe temperature sensor energize pin	P0.02

4 System Requirements

The System requirements for testing this release are given below:

- Hardware - nRF51822 Evaluation board (PCA10001), development dongle (PCA10000),
- Software - Keil uVision, Nordic SDK, Nordic Master Control Panel v3.5 and nRFgo Studio

5 Fixed issues

- Square wave generation.
- Energize Thermistor temperature probe
- Clean Up issues
- Battery level service

6 Other Updates

- Changed accelerometer driver from MMA8653 to MMA7660FC.

7 Known Issues

- No known issues

8 Installation Guide

8.1 Steps for installing Release and making the Test environment

1. *Download the Keil uVision project from GitHub*
2. Copy the folder ble_wimoto_clim_app / ble_wimoto_grow_app / ble_wimoto_water_app / ble_wimoto_thermo_app/ to the nrf51822\Board\pca10001\ble folder in the nrf51_sdk directory Open the project, Check any library files or include files are missing from the project. If yes add those files from the Nordic SDK library folders
3. Copy the device_firmware_updates to the nrf51822\Board\6310\ble folder in the nrf51_sdk directory for setting up the bootloader
4. Initially the device_firmware_updates project must be flashed to the *nRF51822 evaluation board* , to use the DFU
5. Build the projects and download the *code to the nRF51822 evaluation board*

The functional testing for the features mentioned has been completed using the Nordic master control panel and emulator.