



# BLE SMART ASSET TRACKING LABEL

AUGUST 2021

# BLE SMART ASSET TRACKING LABEL DEMONSTRATOR

## FLEXIBLE DEMONSTRATOR PLATFORM

### System Overview

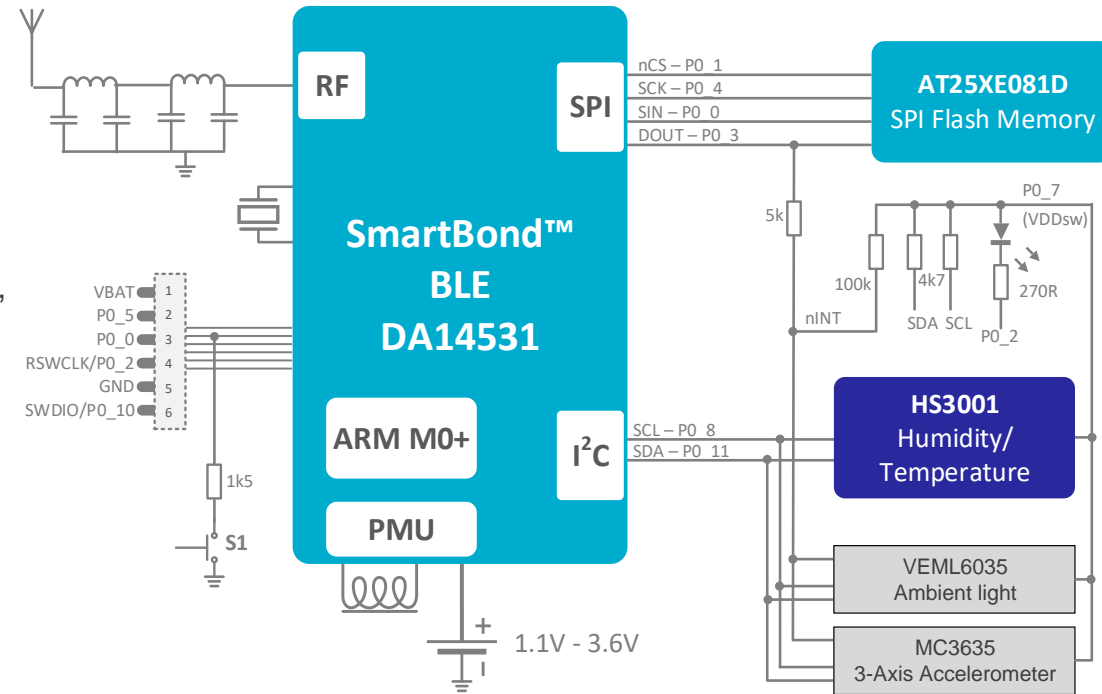
BLE connected smart asset tracking labels offer several advantages compared to traditional, passive RF interface (e.g. NFC, UHF) solutions. These labels actively measure, log and report parameters such as temperature & humidity, acceleration, and light exposure actively. Further, they can be accessed in high volume scenarios such as inventory and/or status and event control involving several thousand labels using ubiquitous devices such as smartphones, tablets or laptops. In addition, this specific demonstrator features a flexible, disposable, safe battery minimizing the logistical effort for using a battery equipped solution.

### System Benefits

- Flexible architecture to support various sensor needs:
  - Temperature & Humidity
  - Acceleration
  - Light
  - Air quality / Gas / Odor
- Active beacon function for inventory control
- Several weeks of operating time using a 20mAh flexible battery
- Minimalistic single silicon device beacon function (using DA14531 only)
- SUOTA (Software Update Over The Air)

### Target Applications

- Inventory and shipping item control and tracking
- Flexible patches for various sensing functions



Device Category	P/N	Key Features
Dialog	<a href="#">DA14531</a>	Bluetooth Low Energy SoC
Memory	<a href="#">AT25XE081D</a>	Ultra-low leakage SPI-Flash
Sensor	<a href="#">HS3001</a>	Humidity & Temperature Sensor



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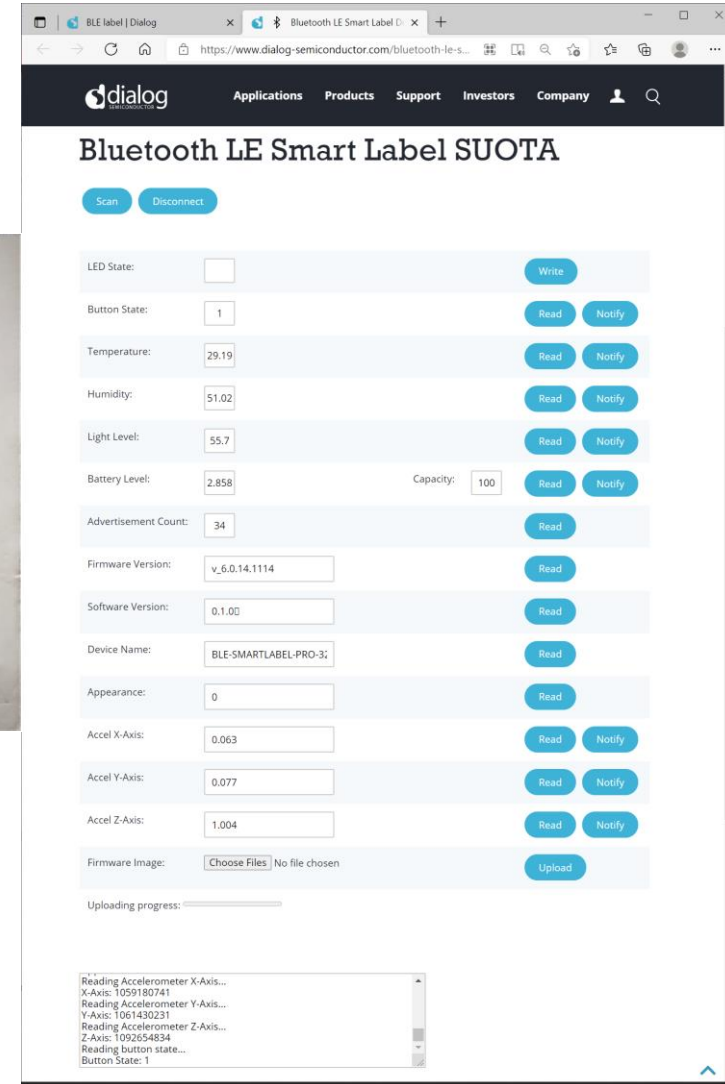
## USER INSTRUCTIONS 1/3

For a more quick demonstrator overview go to:  
<https://www.dialog-semiconductor.com/products/bluetooth-low-energy/ble-label>

The Web-App is located at:  
<https://www.dialog-semiconductor.com/bluetooth-le-smart-label-demonstration>  
 Google Chrome, Microsoft Edge or Safari on an Android phone or a Windows or MAC computer are required!

**iOS is NOT supported**

- press the 'ON' push-button on the label for >2s and release
- the LED will illuminate for 1s then begin blinking slowly ~ every 3 sec.
- click on the 'SCAN' button in the web-app
- select the 'BLE-SMARTLABEL-PRO-xxxx'
- Click 'OK' and wait until the communication is established – the LED stops blinking!  
 (please see the log-window on the bottom of the page)
- Start using the different features!
  
- The label has a built-in timer and turns off after 15 / 30 min (connected / unconnected state)
- Disconnect the BLE label and press the push-button again for >2s to turn off the label – the LED will flash 3x



# BLE SMART ASSET TRACKING LABEL DEMONSTRATOR

## USER INSTRUCTIONS 2/3

### Powering On

- Press and hold the button for 1 second or longer.  
The LED will illuminate for approximately 1 second and then start slowly blinking to indicate the label is advertising.

### Low Battery

- The battery voltage is measured when powering on to ensure there is enough capacity to operate normally. If the battery is found to be low the LED will blink quickly 10 times and the label will then return to the power off state. The battery threshold is set 2Vmin.

### Powering Off

- When the device is advertising it can be powered off by pressing and holding the button for 1 second or longer. The LED will blink quickly 3 times and then enter the power off state.

### Timeouts

- Advertising Timeout  
When advertising, the label will return to the power off state if a connection is not made within 30 minutes. Once this time period has expired the LED will blink quickly 3 times and then the label will enter the power off state.
- Connected Timeout  
When connected, the label will return to the power off state if a connection is maintained for more than 15 minutes. Once this time period has expired the LED will blink quickly 3 times and then the label will enter the power off state.





# BLE SMART ASSET TRACKING LABEL DEMONSTRATOR

## USER INSTRUCTIONS 3/3

The Bluetooth LE Smart Asset Tracking Label Web-Application can be used to pair the label to a PC or android device using a Chromium based browser such as Google Chrome or Microsoft Edge.

(Please note that the Samsung Android Internet browser does not work (V13.0.2.9))

The current web-app supports the following functions:

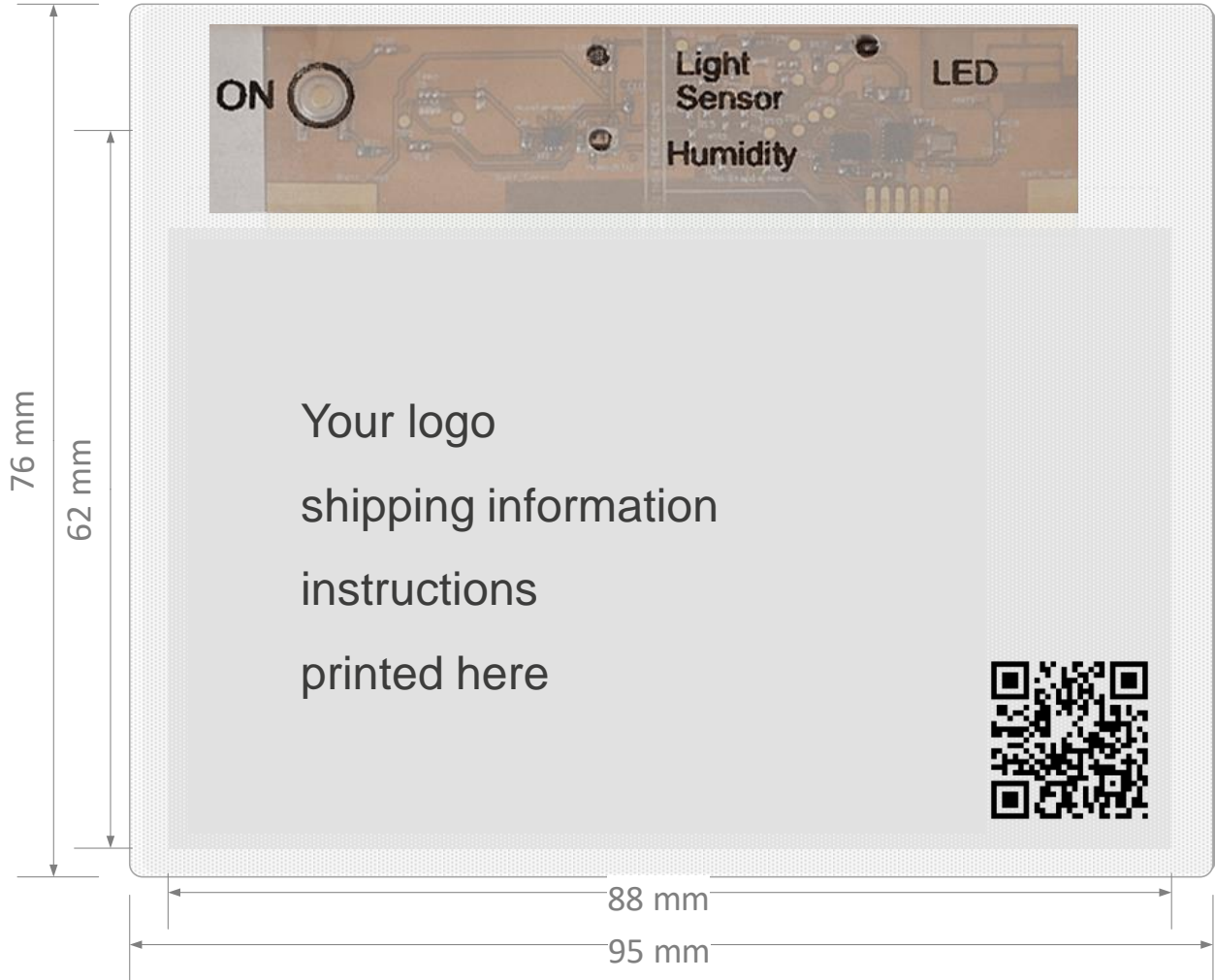
- Pair phone – press the SCAN button and select the detected label
- Read the battery level in Volt and provide a n SoC estimate
- Set the LED state (write a value > '0' to turn ON and '0' to turn Off again)
- Read the button state
- Read the temperature
- Read the humidity
- Read the light sensor level
- Read Firmware, Software, Device Name and Appearance information
- Read the 3 axis of the accelerometer
- Conduct a Firmware Software Update Over The Air (SUOTA), providing an easy path for adding customized functions





# BLE SMART ASSET TRACKING LABEL DEMONSTRATOR

## DIMENSION, PHYSICAL OUTLINE



BLE Smart Asset Tracking Label dimensions

~ 95 x 76 x 2.5 mm

Printable area ~88 x 55 mm



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[Renesas.com](https://www.renesas.com)