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1. Introduction

The CySmart™ application is a Bluetooth® Low Energy (LE) app developed by Cypress Semiconductor Corporation for Android smart phones and tablets.

The CySmart Android app can be used with the following Bluetooth LE devices:

- CY8CKIT-042-BLE Bluetooth LE Pioneer Kit
- CY8CKIT-062-BLE Bluetooth LE Pioneer Kit

The CySmart Android app can be used with the BLE code examples provided in PSoC® Creator™ 4.2 Integrated Design Environment (IDE). The PSoC Creator IDE can be downloaded from http://www.cypress.com/psoccreator/. To find a code example within PSoC Creator IDE, click here.

1.1 App Features

The CySmart Android app supports the following adopted Bluetooth LE profiles and services:

- Heart Rate
- Battery Service
- Health Thermometer
- Blood Pressure
- Cycling Speed and Cadence
- Running Speed and Cadence
- Glucose
- Find Me
- Proximity
- Device Information

The CySmart app also supports the following custom Cypress Bluetooth LE profiles:

- Cypress CapSense® Profile
- Cypress RGB LED Profile
- Cypress Bootloader Profile

The CySmart app also includes the following additional features:

- Data Logger
- GATT Database (GATT DB) Screen
- Bulleted style example
1.2 Software and Hardware Requirements

1.2.1 Software Requirements

Table 1-1. Software Prerequisites

<table>
<thead>
<tr>
<th>Software/Operating System Prerequisites</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android OS</td>
<td>5.1.1 (API Level 22)</td>
<td>6.0 or latest</td>
</tr>
</tbody>
</table>


1.2.2 Hardware Requirements

Table 1-2. Hardware Requirements

<table>
<thead>
<tr>
<th>Hardware Requirements</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android mobiles/tablets with Bluetooth</td>
<td>Bluetooth 4.0</td>
<td>Bluetooth 4.2 or latest</td>
</tr>
</tbody>
</table>

1.3 Installing the App

The CySmart app is available in Google Play for free. To install the app:

1. Open Google Play and search for ‘CySmart’.

2. Select the CySmart app. In the subsequent screen, select the Install button to proceed with installation.

3. When presented with the app permission dialog, press Accept to continue.

4. When the installation is complete, the CySmart app can be launched from the App Drawer.

1.4 Uninstalling the App

1. From the Android device, open Google Play.

2. From the menu, select My apps. It will display a list of installed apps in the Android device (Figure 1-2).
3. From the list, select CySmart and in the subsequent screen, select the Uninstall button to remove the app from the Android device.

1.5 Getting Started

This section helps you start with the CySmart app. It briefly describes how to connect to a Bluetooth LE peripheral device. For description, a CY8CKIT-042-BLE Pioneer Kit running a PSoC Creator 4.2 code example is used as the peripheral device.

1. Set up the CY8CKIT-042-BLE Pioneer Kit using the steps provided in the CY8CKIT-042 BLE Kit Guide.

2. Ensure that the kit is advertising.

3. Launch the CySmart app. A splash screen is displayed for a few seconds (Figure 1-3) before the app displays the Device List screen. If Bluetooth is turned OFF in the Android device, the Android OS prompts you to turn ON Bluetooth (Figure 1-4).
4. On Android 6.0 (Marshmallow) onwards, you will be asked for storage (Figure 1-5) and location (Figure 1-6) access permissions.
5. On some phone models, the Bluetooth LE device discovery will not work unless the location service is enabled. The CySmart app will alert you if the location service is disabled (Figure 1-7). The More button provides more details. Tap the Enable button to turn ON the location service. However, if you see your phone being able to discover devices even if the location service is disabled, you can then dismiss the alert by tapping the More button and checking the dismiss alert option.
6. The CySmart app performs device discovery by default when the app is opened. To manually refresh the device list, pull the Device List screen down.

7. The app lists all discovered Bluetooth LE devices (Figure 1-8). If the Bluetooth LE device of interest does not appear in the list, check whether it is powered on and advertising.

8. Tap on the desired device, displayed in the device list, to connect to it.
Introduction

When CySmart successfully connects to the peripheral device, the app will display a carousel screen of the services available in the device (Figure 1-9).

![Carousel Screen](image)

To view all the services available in the device, slide your finger across the carousel screen. Tapping on the desired service will take you to the corresponding service screen.

You can disconnect from a device by navigating back from the carousel screen to the **Device List** screen.

1.6 **CySmart App GUI Overview**

1.6.1 **CySmart App Device List Screen**

![Device List Screen](image)
The **Device List** screen of the CySmart app consists of the following features:

- Navigation Drawer
- Share
- Data Logger
- Device Filter

### 1.6.1.1 Navigation Drawer

The **Navigation Drawer** provides options to view the device list, Cypress BLE products, contact details, version information, and configuration settings of the app (Figure 1-11).

**Figure 1-11. Navigation Drawer**

<table>
<thead>
<tr>
<th>Navigation Drawer Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLE Devices</td>
<td>Refreshes the Bluetooth LE device list shown in the <strong>Device List</strong> screen of the app. It is equivalent to &quot;Pull down to refresh...&quot; action on the <strong>Device List</strong> screen.</td>
</tr>
<tr>
<td>Cypress</td>
<td>Provides a set of Cypress related information as sub items. These sub items are links to Cypress’ web pages that open in a web browser, provided the iOS device is connected to the Internet.</td>
</tr>
</tbody>
</table>
1.6.1.2 Settings Screen

### 1.6.1.2.1 Clear Cache on Disconnect
This option is enabled by default. With this option enabled, the Bluetooth device cache will be automatically cleared after disconnecting from the device. This will force the GATT DB discovery to be done from the peer device instead of from the local cache. This option is useful when working with code examples.

### 1.6.1.2.2 Delete Bond on Disconnect
This option is disabled by default. With this option enabled, the bonding information will be automatically deleted after disconnecting from the device. Hence, the next time you connect to the same device, the bonding procedure will be repeated.

### 1.6.1.2.3 Initiate Pairing after Connection
This option is enabled by default. If this option is enabled and pairing is supported by the peer device, the CySmart app will automatically pair the device after establishing connection with it. This does this by enabling indication for the Service Changed GATT characteristic if the latter exists. This, in turn, automatically launches the pairing procedure if pairing is supported by the peer device.

### 1.6.1.2.4 Wait for Pairing Request (seconds)
This option is set to 1 second by default. Some code examples themselves are pairing initiators. They usually initiate pairing after the connection is established. This counter defines the number of seconds the CySmart app will wait for the incoming pairing request after the connection is established and before attempting pairing by itself if the “Initiate pairing after connection” option is enabled.
1.6.1.3 Share

The Share option allows you to share the screenshot of the current app screen to various apps listed in the Android system. You can share the screenshots of the current page of the app to applications such as email and Facebook, if these applications are already installed.

The share feature is accessible from all the screens in the app.

1.6.1.4 Data Logger

CySmart logs all the Bluetooth LE related activities in a text file. The app automatically creates a log file with the current date as the name. The app creates one log file per day and stores the last seven days’ logs. Logs older than seven days will be automatically deleted by the app.

The Data Logger allows you to view the logs. It displays the current date’s log file by default. You can select the History button to view older logs (Figure 1-13). The Data Logger can be launched from all the screens in the app. The Data Logger allows you to share the .txt log file through the ‘Share’ option.

![Data Logger Screen](image)

**Figure 1-13. Data Logger Screen**

**Note:** The Data Logger logs only Bluetooth LE communication. If you are interested in debug information logged by the CySmart app, then you can view it in the Android Logcat file.
1.6.1.5 Device Filter

The Device Filter option is available in the app’s Device List screen. It allows you to filter the devices based on the name of the device.

To use the filter option, perform the following steps:

1. Select the filter icon.
2. In the text field that appears in the action bar, type the name of the device you are looking for and select the search icon in the keypad. This will filter the devices in the Device List screen and display only the devices that match your search (Figure 1-14).

1.6.2 Graph

For some services such as the Heart Rate Measurement service, the app allows you to view the real-time values received from the peripheral device in a graph. You can view the graph by selecting the Graph icon.
1.6.3 CySmart Carousel Screen

When a device is connected, the services supported by the peripheral are displayed in the Carousel Screen (Figure 1-16). You can swipe your fingers across the screen to view each available service. Selecting a service will display the service specific screen.

For a service that is not supported by the app, the carousel will display the service as shown in (Figure 1-17). On selecting the service in the carousel, the app provides an option to view the service details in the GATT DB screen. For more details, see the GATT DB Screen section.
1.6.4 Clear Cache

The Clear Cache option empties the Bluetooth device cache. Hence, the next time the GATT DB discovery is run, the peer device will be polled and not the local cache. This option is useful when working with example projects.

1.7 Pairing/Un-pairing

The CySmart app displays the pairing status next to the device name in the **Device List** screen.

If a device is already paired, it will be indicated as shown in **Figure 1-18**. You can un-pair the device by selecting the **Paired** button.

If a device is not paired, it will be indicated as shown in **Figure 1-19**. If the device supports pairing, you can pair with the device by selecting the **Not Paired** button.
2. Features

2.1 Bluetooth LE Profiles and Services

2.1.1 Support for Adopted Bluetooth LE Services

2.1.1.1 Heart Rate Service

The Heart Rate Service screen is shown in Figure 2-1. Notifications are enabled by default and characteristic values are displayed as soon as you enter the screen.

It displays the characteristic fields listed in Table 2-1.

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Rate Measurement</td>
<td>Heart rate measurement in beats per minute (bpm).</td>
</tr>
<tr>
<td>Sensor Contact</td>
<td>Determines whether the Sensor Contact feature is supported and contact is detected</td>
</tr>
<tr>
<td>Energy Expended</td>
<td>Accumulated energy expended in kilo Joules since the last time it was reset.</td>
</tr>
<tr>
<td>RR – Interval</td>
<td>Represents the time between two consecutive R waves in an Electrocardiogram (ECG) waveform</td>
</tr>
</tbody>
</table>

Table 2-1. Heart Rate Service Characteristic Fields

Figure 2-1. Heart Rate Service

Table 2-2. Heart Rate Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>BLE_Hearth_Rate_Sensor</th>
</tr>
</thead>
</table>
2.1.1.2 Battery Service

The Battery Service screen is shown in Figure 2-2. It displays information regarding the state of the battery within the device. There are two buttons – Read and Start Notify. When you enter the screen, it reads the value and displays it. When the Start Notify button is pressed, notifications are enabled.

![Figure 2-2. Battery Service](image)

Table 2-3. Battery Service Details

<table>
<thead>
<tr>
<th>PSoc Creator Example</th>
<th>BLE_Battery_Level</th>
</tr>
</thead>
</table>
2.1.1.3 Health Thermometer
The Health Thermometer service screen is shown in Figure 2-3. Notifications are enabled by default. It displays the characteristic fields listed in Table 2-4.

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Measurement</td>
<td>Measured temperature value in Celsius/Fahrenheit depending on the temperature unit configured in the peripheral device</td>
</tr>
<tr>
<td>Sensor Location</td>
<td>Describes the type of temperature measurement in relation to the location on the human body at which the temperature was measured</td>
</tr>
</tbody>
</table>

Table 2-4. Health Thermometer Characteristic Fields

![Figure 2-3. Health Thermometer](image)

Table 2-5. Health Thermometer Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>BLE_Temperature_Measurement</th>
</tr>
</thead>
</table>
2.1.1.4 Blood Pressure

The Blood Pressure screen is shown in Figure 2-4. This screen receives data from the Bluetooth LE device over the Blood Pressure profile. It provides a button to start or stop the blood pressure evaluation. It displays characteristic fields listed in Table 2-6.

Table 2-6. Blood Pressure Characteristic Fields

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS</td>
<td>Systolic blood pressure value</td>
</tr>
<tr>
<td>DIA</td>
<td>Diastolic blood pressure value</td>
</tr>
</tbody>
</table>

Figure 2-4. Blood Pressure Service

Table 2-7. Blood Pressure Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>BLE_Blood_Pressure_Sensor</th>
</tr>
</thead>
</table>
2.1.1.5 Cycling Speed and Cadence

Cycling Speed and Cadence screen is shown in Figure 2-5. You need to enter a value for weight of the person (in kg) and radius of the cycle's wheel (in mm), which will be used to measure the calories burned during the cycling activity. It displays the characteristics fields listed in Table 2-8.

Table 2-8. Cycling Speed and Cadence Characteristic Fields

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadence</td>
<td>Number of wheel rotations per minute</td>
</tr>
<tr>
<td>Distance Covered</td>
<td>Total distance covered in the given time</td>
</tr>
<tr>
<td>Calories Burned</td>
<td>Calories burned in the given time</td>
</tr>
</tbody>
</table>

Figure 2-5. Cycling Speed and Cadence

Table 2-9. Cycling Speed and Cadence Service Details

<table>
<thead>
<tr>
<th>PSoc Creator Example</th>
<th>BLE_Cycling_Sensor</th>
</tr>
</thead>
</table>

Figure 2-5. Cycling Speed and Cadence

Weight: _____ kg
Radius: _____ mm

START

Time: 00:00

Cycling Speed & Cadence

Weight: 50 kg
Radius: 600 mm

STOP

Time: 00:25

Cycling Speed & Cadence

- kcal
- rpm

Cycling Speed & Cadence

- kcal
- rpm

0.56 km

11.2354 kcal
120 rpm
2.1.1.6 Running Speed and Cadence

The Running Speed and Cadence service screen is shown in Figure 2-6. You need to enter a value for weight and press the Start button to measure the calories burned during the running activity. It displays the characteristic fields listed in Table 2-10.

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous Speed</td>
<td>Instantaneous speed of running</td>
</tr>
<tr>
<td>Distance Covered</td>
<td>Total distance covered in the given time</td>
</tr>
<tr>
<td>Calories Burned</td>
<td>Calories burned in the given time</td>
</tr>
</tbody>
</table>

Table 2-11. Running Speed and Cadence Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>BLE_Running_Speed_Cadence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluetooth SIG References</td>
<td>GATT specification:</td>
</tr>
</tbody>
</table>
2.1.1.7 **Glucose**

The Glucose Service screen is shown in Figure 2-7. The app allows you to retrieve patient records from the peripheral device and view them. Retrieve records using the ‘Read Last’ or ‘Read All’ option. ‘Read Last’ fetches only the last record, whereas, ‘Read All’ fetches all records from the peripheral device and displays the last record by default. View a record by selecting the record from the drop-down list.

Selecting ‘Delete All’ will delete the records stored on the peripheral device. Select this only if you want to permanently delete the records.

Select ‘Clear’ to clear the values displayed on the screen. This will clear only the view. It will not delete the records in the peripheral.

The drop-down list displays “No Record” when no record is retrieved or when the retrieved records are removed by selecting ‘Delete All’ or ‘Clear’.

In some records, if there is more information that can be retrieved, a small ‘i’ icon will be displayed on the top right below the drop-down list. Pressing the icon will open a new screen that displays the context information (Figure 2-8).

The Glucose Service screen displays the characteristic fields listed in **Table 2-12**.

<table>
<thead>
<tr>
<th>Characteristic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose Measurement</td>
<td>Measurement of glucose level in kg/L</td>
</tr>
<tr>
<td>Recording Time</td>
<td>Timestamp including date and time at which the glucose measurement was recorded</td>
</tr>
<tr>
<td>Type</td>
<td>Type of glucose measurement (for example, capillary whole blood)</td>
</tr>
<tr>
<td>Sample Location</td>
<td>Location from where the blood sample was taken to measure glucose level</td>
</tr>
</tbody>
</table>

Figure 2-7. Glucose Service
2.1.1.8 Find Me Profile (Immediate Alert Service)

Immediate Alert Service (IAS) is displayed as ‘Find Me’ service as shown in Figure 2-9. The Find Me Service screen allows you to select an Alert Level. The peripheral device will respond according to the alert type selected.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Allowed Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Level</td>
<td>No Alert, Mild Alert, High Alert</td>
</tr>
</tbody>
</table>
2.1.1.9 Proximity Profile (Link Loss and Tx Power Service)

Link Loss and Tx Power services are combined under the Proximity screen, as shown in Figure 2-10. The Proximity screen allows you to select the type of Alert Level for Link Loss service.

Table 2-15. Link Loss Service Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Allowed Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Level</td>
<td>No Alert, Mild Alert, High Alert</td>
</tr>
</tbody>
</table>

For the Tx Power service, the Proximity screen displays the value of Tx Power Level characteristic. The Tx Power Level value is also displayed graphically as shown in Figure 2-10.

Table 2-16. Tx Power Characteristic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tx Power</td>
<td>Current transmit power level in dBm.</td>
</tr>
</tbody>
</table>
2.1.1.10 Device Information

The Device Information screen (Figure 2-11) displays the value of the following characteristics in the Device Information service:

- Manufacturer Name
- Model Number
- Serial Number
- Hardware Revision
- Software Revision
- Firmware Revision
- System ID
- Regulatory Certification Data List
- PnP ID

If a characteristic value is not available in the peer device, then the corresponding field in the Device Information screen will be empty.

Table 2-17. Find Me and Proximity Profile Details

<table>
<thead>
<tr>
<th>PSoc Creator Example</th>
<th>BLE_FindMe, BLE_Proximity</th>
</tr>
</thead>
</table>
| Bluetooth SIG References | GATT specification:  
Immediate Alert  
Link Loss:  
Tx Power:  

2.1.2.10 Features
2.1.2 Cypress Custom Bluetooth LE Profiles/Services

2.1.2.1 CapSense Profile (CapSense Service)

The Cypress CapSense Profile is used to send CapSense data over a Bluetooth LE link. The CapSense service defines a separate characteristic for each CapSense widget. The app provides a separate screen and carousel image for each characteristic supported by it.

The following characteristics are supported under the CapSense Service in the app:

- CapSense Proximity
- CapSense Slider
- CapSense Button

The code examples for the Cypress CapSense profile can be found along with the CY8CKIT-042-BLE Pioneer Kit installer.
2.1.2.1.1 **CapSense Proximity**
The CapSense Proximity screen (Figure 2-12) shows the proximity level notified by the CapSense Proximity characteristic as a bar graph. The app beeps when the proximity value exceeds 50 percent.

![Figure 2-12. CapSense Proximity Service](image)

2.1.2.1.2 **CapSense Slider**
The CapSense Slider screen (Figure 2-13) shows the finger position on the CapSense slider as notified by the CapSense Slider characteristic. When there is no contact of the finger with the slider, the slider image on the screen greys out.

![Figure 2-13. CapSense Slider Service](image)
2.1.2.1.3 CapSense Button

The CapSense Button screen (Figure 2-14) shows the ON/OFF states of the CapSense button as notified by the CapSense Button characteristic. The ON state is indicated in green and the OFF state is indicated in blue.

Figure 2-14. CapSense Buttons Service

![CapSense Button Screen]

Table 2-19. CapSense Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSoC_4_BLE_CapSense_Proximity, PSoC_4_BLE_CapSense_Slider_LED</td>
<td>Cypress CapSense Profile <a href="http://www.cypress.com/CypressCustomProfiles">www.cypress.com/CypressCustomProfiles</a></td>
</tr>
</tbody>
</table>

2.1.2.2 RGB LED Service

The RGB LED screen is shown in Figure 2-15. It displays the Color Gamut for choosing the color of the LED. To choose a color, place your finger on the Color Gamut and drag the pointer to the desired color. The RGB components of the selected color are displayed in a table. The RGB LED will change its color based on the color pointed to in the Color Gamut.

Figure 2-15. LGB LED Service

![RGB LED Screen]
Table 2-20. RGB LED Service Details

<table>
<thead>
<tr>
<th>PSoc Creator Example</th>
<th>PSoc_4_BLE_CapSense_Slider_LED (provided along with the CY8CKIT-042-BLE Pioneer Kit installer)</th>
</tr>
</thead>
</table>
| References           | Cypress RGB LED Profile  
|                      |  [www.cypress.com/CypressCustomProfiles](http://www.cypress.com/CypressCustomProfiles)          |

2.1.2.3 Cypress Bootloader Service

The CySmart app supports the PSoc 4 MCU Bootloader (CYACD firmware file format) and the PSoc 6 MCU Bootloader (CYACD2 firmware file format).

The Bootloader service is shown in Figure 2-16. This service allows you to upgrade the firmware on Bluetooth LE devices that implement the Cypress Bootloader service.

The CySmart App supports three types of upgrades:

- Application-Only Upgrade
- Application and Stack Upgrade – using a single combined file
- Application and Stack Upgrade – using two separate files

Figure 2-16. Cypress Bootloader Service

To perform a firmware upgrade, follow these steps:

1. Before connecting to the peripheral device, ensure that it is not paired with the Android device; if paired, then unpair it manually. To find the pairing status of the device and modify it, see the Pairing/Un-pairing section.
2. Connect to the peripheral device and select the Bootloader Service in the carousel.
3. Select the type of upgrade in the “Select Upgrade Option” screen (Figure 2-17). This will take you to the “Select Firmware Upgrade files” screen.
4. In the “Select Firmware Upgrade files” screen, a list of available CYACD and CYACD2 files will be displayed. If the desired CYACD/CYACD2 file is not present in the list, place it in the “CySmart” folder:
   a. Connect the Android device to your computer and make sure the screen is unlocked.
   b. Use the file explorer in your computer to navigate to the “CySmart” folder in the Android device.
   c. Copy the CYACD/CYACD2 file from the computer to the “CySmart” folder in the Android device.

   If the CYACD/CYACD2 file is available in another location on the Android device or in an application such as mail/Dropbox, go to the file location and select the file. Select the option to open the file with CySmart app. This will open the CySmart app and the file will be copied to the CySmart app folder. In subsequent tries, selecting the file will automatically copy the file and open the CySmart app.

   After the file is successfully transferred, you should be able to view the file in the “Select Firmware Upgrade files” screen. Upon selecting the CYACD file, the Active Application and the Security Key options will be available for setting. For the CYACD2 file, the Active Application and the Security Key options will be unavailable as this information is already encoded in the CYACD2 file.

   For CYACD files only: Select the Active Application if dealing with the Dual-Application Bootloader project. Select either Image1 or Image2. No Change, the default option, means the project you are dealing with is not the Dual-Application Bootloader project.

   For CYACD files only: Enter the Security Key if dealing with the Security Key-enabled Bootloader project.

5. Press the Upgrade button. The progress of the upgrade is shown in the subsequent screen. If any errors are identified, they are reported by the app.

6. While the upgrade is in progress, it can be stopped using the Stop button.

7. On completion of the upgrade, the app will disconnect from the peer device.

   Table 2-21. OTA Firmware Upgrade Service Details

<table>
<thead>
<tr>
<th>PSoC Creator Example</th>
<th>BLE_External_Memory_Bootloadable, BLE_External_Memory_Bootloader</th>
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<tr>
<td>References</td>
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<td></td>
<td><a href="http://www.cypress.com/CypressCustomProfiles">www.cypress.com/CypressCustomProfiles</a></td>
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Note: For information on how to use signing/encryption of the CYACD2 files, refer to the PSoC Creator 4.2 code example CE222802 - PSOC 6 MCU ENCRYPTED BOOTLOADER.
2.2 GATT DB Screen

The GATT DB screen allows you to view the GATT database of the device to which the CySmart app is connected. The GATT DB option is always available in the carousel screen as shown in Figure 2-18.

Figure 2-18. GATT DB Selector in Carousel Screen

The GATT DB screen allows you to view the following details of the GATT DB of the peripheral device:

- Services
- Characteristics and Characteristic Details
- Characteristic Descriptors and Characteristic Descriptors Details

The GATT DB screen will display the Read, Write, Notify, or Indicate button based on the property of the current characteristic being viewed.
The GATT DB Services screen (Figure 2-19) lists all the services supported by the device. Selecting a service will take you to the GATT DB Characteristics screen (Figure 2-20).

---

**Figure 2-19. GATT DB Services**

![GATT DB Services](image)

**Figure 2-20. GATT DB Characteristics**

![GATT DB Characteristics](image)
The GATT DB Characteristics screen lists all the characteristics associated with the selected service. Selecting a characteristic will take you to the GATT DB Characteristic Details screen. (See Figure 2-21) The GATT DB Characteristic Details screen allows you to perform actions supported by the characteristics.

If the characteristic supports ‘Write’, you will be allowed to write a value. The app accepts both Hex input as well as ASCII input for the value to be written (Figure 2-22).
If the characteristic has one or more associated descriptors, this screen will display a **Descriptor** button. Selecting the **Descriptor** button takes you to the GATT DB Characteristic Descriptor screen (Figure 2-23).

Figure 2-23. GATT DB Characteristic Descriptors
The GATT DB Characteristic Descriptor screen displays the list of descriptors associated with the characteristic. Selecting a descriptor will take you to the GATT DB Characteristic Descriptor Details screen (Figure 2-24). This screen provides an option to read, write, and enable/disable notification and indication of the characteristic when supported.
### Document Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Issue Date</th>
<th>Origin of Change</th>
<th>Description of Change</th>
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<tr>
<td>**</td>
<td>05/07/2015</td>
<td>VARB</td>
<td>New Android App User Guide Documentation</td>
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<tr>
<td>*A</td>
<td>05/26/2015</td>
<td>VARB</td>
<td>Updated Screenshots</td>
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<td></td>
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<td></td>
<td>Updated sections Navigation Drawer, Cypress Bootloader Service, Cypress BLE Remote Control RDK Emulator</td>
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<td>*B</td>
<td>09/02/2015</td>
<td>VARB</td>
<td>Updated screenshots for Cycling Speed and Cadence, Running Speed and Cadence, OTA Bootloader, Capsense Proximity Service, Remote RDK Emulator and GATT DB Added Glucose section</td>
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<td>Updated Cypress BLE Remote RDK Emulator section</td>
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<td>Updated PSoC Creator version to 3.3</td>
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<td>SAHO</td>
<td>Update copyright year</td>
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<td>Update Cypress logo</td>
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<tr>
<td>*D</td>
<td>12/20/2018</td>
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<td>Updated template</td>
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<td>Updated PSoC Creator version to 4.2. Updated the minimum supported and recommended Android version. Updated screenshots to reflect the new Cypress logo. Added description of permissions required by the CySmart app for its work. Added description of the new Settings screen. Clarified that the Data Logger only logs the BLE communication and that the debug info can be viewed in the Android Logcat file. Fixed typo in alert name of Find Me and Proximity services. Updated OTAFU section with the description of the</td>
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<td></td>
<td>a. Active Application and the Security Key Bootloader features. b. New CYACD2 firmware file format for PSoC 6 MCU Bootloader project. Deleted the Cypress BLE Remote Control RDK Emulator section due to two factors:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a. The kit is now obsoleted by Cypress b. The app doesn’t work on Android 5.1 onward due to the OS preventing read/write/notify permission on HID characteristics to all user apps and the minimum supported Android version is now 5.1.1.</td>
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