
SXtreo T19 BLE Protocol Services

Revised Document ver 1.3

Revision History	
Dt: 13/08/2020	Added Temperature records time interval
Dt: 13/08/2020	Memory records for Temperature/Contact Tracing in Internal/External Memory
Dt: 13/08/2020	Added the FOTA service in the document
Dt: 02/03/2021	For SDK testing purpose added the LED and VINBRATOR/BUZZ services

1. Generic Access Service

@name:Generic Access
@Service ID :1800
@Characteristic uuid:2A00, 2A01
@ Data value Data format is in uint16
@Property Read
@Description It shows the device name and product appearance code

2. Device Information Service

@name: Device Information
@Service ID :180A
@Characteristic uuid:2A29, 2A24, 2A27, 2A26, 2A23
@ Data value Manufacturer Name - Data format is in utf8 (string) Model Number - Data format is in utf8 (string) Hardware Revision - Data format is in utf8 (string) Firmware Revision - Data format is in utf8 (string) System ID - Data format is in Hex (struct buff)
@Property Read
@Description It shows the device information details like manufacturer name, model number, Hardware revision, Firmware revision and system ID

3. Temperature Service

<p>@name:Temperature</p> <p>@Service ID :181A</p> <p>@Characteristic uuid:2A6E</p>
<p>@ Data value</p> <p>Data format is in Byte Array RESULT: 0xA10B (Hex) = This is little Indian Format reframe LSB to MSB vice versa = 0x0BA1 = 2977 = 29.77 Deg C</p>
<p>@Property</p> <p>Read</p>
<p>@Description</p> <p>The value it shows in Hex and that should convert in decimal conversion which is in degrees Celsius with a resolution of 0.01 degrees Celsius</p>

<p>@name:Temperature Record interval</p> <p>@Service ID :181A</p> <p>@Characteristic uuid: e7e7b2aa-8ba9-47df-9d44-3be7efa9e99e</p>
<p>@ Data value</p> <p>Data format is in Byte Array Example : Minutes 0030 (30 Minutes) – Minutes 1440 (1 Day)</p>
<p>@Property</p> <p>Write Read</p>
<p>@Description</p> <p>Defining the Temperature recorded interval time settings and reading the recorded time interval.</p>

4. Battery Service

@name:Battery Level

@Service ID:180F

@Characteristic uuid:2A19

@ Data value

Data format is in uint8

@Property

Read

@Description

The Battery Level is read using from the above service to read the current battery level as a percentage from 0% to 100%; 0% represents a battery that is fully discharged, 100% represents a battery that is fully charged.

5. Current Time Service

<p>@name:Current Time</p> <p>@Service ID:1805</p> <p>@Characteristic uuid:2A2B</p>
<p>@ Data value</p> <p>10 Byte Array Data format is in Structure Pointer (struct time*)</p>
<p>@Property</p> <p>Read</p> <p>Write</p>
<p>@Description</p> <p>The timestamp Service defines the current date and time can read and set the data. It returns the 10 bytes of Hex data in date and time format.</p> <p>The format should be YY YY MM DD HH MM SS WEEKDAYNAME FRACTIONS ADJUST</p> <p>@Example : “E4 07 07 09 0D 0A 37 05 2D 01” (Read value or Write Value) - Hex Byte Array Format</p> <p>Original : 2020 07 09 13 10 55 05 45 01 (9 July 2020, 13:10:55 Friday milli secs Adjust)</p> <p>@Format Fields:-</p> <ul style="list-style-type: none"> • YY - Year MSB • YY - Year LSB • MM - Month • DD - Day • HH - Hour • MM - Minute • SS - Secs • WEEKDAYNAME - Week name (Monday=01, Tuesday=02 etc.) • FRACTIONS (millsecs) - 00 -FF

6. Memory Log Service (Erase)

@name:Memory Logs (Erase Logs)

@Service ID: cdb5433c-d716-4b02-87f5-c49263182377

@Characteristic uuid: d9d5145a-a2b8-47ff-8cd4-f6fec99589a4

@ Data value

Data format is in uint8

@Property

Write

@Description

This service Erase/Clear all the stored information in external memory.

7. Memory Log Service – Temperature (Internal)

@name:Memory Logs

@Service ID: cdb5433c-d716-4b02-87f5-c49263182377

@Characteristic uuid:

ddcecee7-29f5-40fe-904f-f0639c50fa00 (**Characteristic @1**)

ddcecee7-29f5-40fe-904f-f0639c50fa01 (**Characteristic @2**)

ddcecee7-29f5-40fe-904f-f0639c50fa02 (**Characteristic @3**)

@ Data value

Data format is in uint8 char Buffer. (127Bytes)

@Property

Read

@Description

This service stores the Temperature records with date and time stamp. The service related data length would be 127 bytes maximum..

Example Logs:

Char Service@1 ----> "\$2020-07-08,11:02:30,3724#\$2020-07-08,12:02:30,3324#\$2020-07-08,13:02:30,3924#\$2020-07-08,14:02:30,3046#"

Char Service@2 ----> "\$2021-07-08,15:02:30,3724#\$2020-07-08,16:02:30,3324#\$2020-07-08,17:02:30,3924#\$2021-07-08,18:02:30,4134#"

Char Service@3 ----> "\$2021-07-08,19:02:30,3724#\$2020-07-08,20:02:30,3324#\$2020-07-08,21:02:30,3924#\$2021-07-08,22:02:30,4134#"

8. Memory Log Service – Contact Tracing (External Memory Logic)

<p>@name:Memory Logs</p> <p>@Service ID: cdb5433c-d716-4b02-87f5-c49263182377</p> <p>@Characteristic uuid:</p> <p style="padding-left: 40px;">ddcecee7-29f5-40fe-904f-f0639c50fa03 (Characteristic @3)</p> <p style="padding-left: 40px;">ddcecee7-29f5-40fe-904f-f0639c50fa04 (Characteristic @4)</p> <p style="padding-left: 40px;">ddcecee7-29f5-40fe-904f-f0639c50fa05 (Characteristic @5)</p> <p style="padding-left: 40px;">.</p> <p style="padding-left: 40px;">.</p> <p style="padding-left: 40px;">.</p> <p style="padding-left: 40px;">.</p> <p style="padding-left: 40px;">ddcecee7-29f5-40fe-904f-f0639c50fa4f (Characteristic @79)</p> <p style="padding-left: 40px;">ddcecee7-29f5-40fe-904f-f0639c50fa50 (Characteristic @80)</p>
<p>@ Data value</p> <p>Data format is in uint8 char Buffer. (127Bytes)</p>
<p>@Property</p> <p>Read</p>
<p>@Description</p> <p>This service stores the Temperature records with date and time stamp. The service related data length would be 127 bytes maximum..</p> <p><u>Example Logs:</u></p> <p>Char Service@3 ----> "\$2020-07-08,11:02:30,BC33AA112233#\$2020-07-08,12:02:30,BC33AA112232#\$2020-07-08,13:02:30, BC33AA112234#</p> <p>Char Service@4 ----> "\$2020-07-09,11:02:30,BC33AA112233#\$2020-07-09,12:02:30,BC33AA112232#\$2020-07-09,13:02:30, BC33AA112234#</p> <p>Char Service@5 ----> "\$2020-07-10,11:02:30,BC33AA112233#\$2020-07-10,12:02:30,BC33AA112232#\$2020-07-10,13:02:30, BC33AA112234#</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>Char Service@78 ----> "\$2020-08-13,09:02:30, BC33AA112234#\$2020-08-13,10:02:30,BC33AA112230#\$2020-08-13,11:02:30, BC33AA112237#</p> <p>#Char Service@79 ----> "\$2020-08-13,13:02:30, BC33AA112234#\$2020-08-13,14:02:30,BC33AA112230#\$2020-08-13,15:02:30, BC33AA112235#</p> <p>#Char Service@80 ----> "\$2020-08-14,10:02:30, BC33AA112224#\$2020-08-14,12:02:30,BC33AA112232#\$2020-08-14,13:02:30, BC33AA112232#</p>

9. Temperature Records Format

@name: Temperature Logs

@Characteristic#1 Data

\$2020-07-27,18:00:00,2999#\$2020-07-27,19:00:00,3120#\$2020-07-27,20:00:00,2900#\$2020-07-27,21:00:00,3222#

@ Example Data

\$2020-07-27,18:00:00,2999#
2020-07-27,18:00:00 = Date stamp
2999 = Temperature (29.99 Deg C)

10. Contact Tracing Records Format

@name: Social Distance contact tracing Logs

@Characteristic#1 Data

\$2020-07-28,10:00:00,B5A2B11EFF29#\$2020-07-28,10:30:00,B5A2B11EFF21#\$2020-07-28,11:00:00,B5A2B11EFF1A#

@ Example Data

\$2020-07-28,10:00:00,B5A2B11EFF29#
2020-07-28,10:00:00= Date stamp
B5A2B11EFF29 = MAC Address of remote person (6 Byte Array in Hex)

11. iBeacon Format

<p>@name: iBeacon</p>
<p>@ Advertising message:</p> <p>0x0201061AFF4C000215E2C56DB5DFFB48D2B060D0F5A71096E027100B86C5</p>
<p>@ Data value</p> <p>Data format is in String</p> <p>Beacon UUID : E2C56DB5DFFB48D2B060D0F5A71096E02710 Temperature : 0B86 (Hex) = 2950 = 29.50 Deg C</p>
<p>@Property</p> <p>Read</p>
<p>@Description</p> <p>This is beacon protocol information is getting for every 200ms – 1 sec range that contains the protocol flags, length, manufacturer ID, beacon identifier, Beacon UUID and Temperature data.</p>

12. OTA Service

@name:OTA

@Service ID : 1D14D6EE-FD63-4FA1-BFA4-8F47B42119F0

@Characteristic uuid: F7BF3564-FB6D-4E53-88A4-5E37E0326063

@ Data value

Data format is in uint_8.

@Property

Write (.hex or .bin or .gbl image files which converts in to byte parsing)

@Description

OTA will update the firmware inside the BLE and giving the location to keep the .hex/.bin/.gbl.

13. T19 Settings (Optional Internal)

<p>@name: Distance Calibration Settings (Contact Tracing Purpose)</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c9d</p>
<p>@ Data value</p> <p>Data format is in Byte Array Example : Approx 1ft '0040' (Hex) – Approx 12ft '0050' (Hex)</p>
<p>@Property</p> <p>Write Read</p>
<p>@Description</p> <p>Defining the signal range in terms of feet Calibration as per your work place</p>

<p>@name: Major Number Settings</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c9e</p>
<p>@ Data value</p> <p>Data format is in Byte Array Example : '0' (Hex) – '2710' (Hex) i.e number from 0 - 10000</p>
<p>@Property</p> <p>Write Read</p>
<p>@Description</p> <p>Defining the Major numbering for which department identification or serial number</p>

<p>@name: Beacon Mode to BLE mode Settings</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c9c</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '00' – BEACON MODE (DEFAULT) Example : '01' – BLE MODE</p>
<p>@Property</p> <p>Write Read</p>
<p>@Description</p> <p>Defining the BLE mode or BEACON Mode</p>

<p>@name: Beacon Normal or Power Saver Mode Settings</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c9b</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '00' – POWER SAVER MODE (DEFAULT) Example : '01' – BLE NORMAL MODE</p>
<p>@Property</p> <p>Write Read</p>
<p>@Description</p> <p>Defining the NORMAL or POWER SAVER Mode (After change the settings it reboot the device)</p>

<p>@name: BLE Factory Mode Settings</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c9a</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '01' – FACTORY SET MODE</p>
<p>@Property</p> <p>Write</p>
<p>@Description</p> <p>Set the BLE device in Factory settings mode (It reboot the device)</p>

<p>@name: BLE Read Write Mode Settings</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c90</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '00' – Read Mode Example : '01' – Write Mode</p>
<p>@Property</p> <p>Read Write</p>
<p>@Description</p> <p>Based on this Write mode it allow all the settings which you want to configure.</p>

@name: BLE Tx power Level Range extending feature

@Service ID : 1804

@Characteristic uuid: 2A07

@ Data value

Data format is in uint_8

Example : '00' – Default

Example : '01' – Extended as per BLE RF

Example : '02' – Extended as per BLE RF

Example : '03' – Extended as per BLE RF

Example : '04' – Extended as per BLE RF

Example : '05' – Extended as per BLE RF

Example : '06' – Extended as per BLE RF

@Property

Read

Write

@Description

This setting increase the RF distance based on the TX power level between (0dBm – 6dBm) By default it configure the 0dBm.

<p>@name: BLE LED ON/OFF Testing</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c96</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '01' – LED ON MODE</p>
<p>@Property</p> <p>Write</p>
<p>@Description</p> <p>Set the LED On and off immediately.</p>

<p>@name: BLE VIBRATOR/BUZZER ON/OFF Testing</p> <p>@Service ID : 3ac38b50-f9f2-4a5f-82b5-8a2f68f9a69e</p> <p>@Characteristic uuid: 10005a81-bf5a-466f-993e-f3e04fdf9c97</p>
<p>@ Data value</p> <p>Data format is in uint_8</p> <p>Example : '01' – VIB/BUZZ ON MODE</p>
<p>@Property</p> <p>Write</p>
<p>@Description</p> <p>Set the VIB/BUZZ On and off immediately.</p>