

Bluetooth Temperature Data Logger

DevelopDoc

For Android SDK

Status	<input type="checkbox"/> Draft <input type="checkbox"/> Review <input checked="" type="checkbox"/> Publish <input type="checkbox"/> Revise		
Version	3.0.16		
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Preface

The Bluetooth Temperature data logger refers to BT04/BT04B/BT05/BT05B/TempU06+ series devices. This document introduces APP development by using Java language on Android platform.

I . Using Android Studio to create a new project

Put com.tzone.btlogger.jar package into the libs folder, and then add content to dependencies in the build.gradle file under the present project, as follow compile files('libs/com.tzone.btlogger.jar')

Android Manifest file specification:

```
<uses-permission android:name="android.permission.BLUETOOTH" />
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name="android.permission.RECEIVE_BOOT_COMPLETED" />
<uses-feature android:name="android.hardware.bluetooth_le" android:required="true" />
```

II . Initialize SDK

Initialize on the APP startup interface,as MainActivity interface

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    .....
    BleManager.getInstance().init(getApplication());
    BleManager.getInstance()
        .setReConnectCount(3, 5000)
```

```
.setConnectOverTime(20000)
.setOperateTimeout(5000);
```

```
}
```

Reference sample program: `com/tzone/btloggerexample/MainActivity.java`

III . Search device

1. Scan device broadcast

As follow:

```
BleScanRuleConfig scanRuleConfig = new BleScanRuleConfig.Builder()
```

```
.setScanTimeOut(1000 * 60).build();
```

```
BleManager.getInstance().initScanRule(scanRuleConfig);
```

```
BleManager.getInstance().scan(new BleScanCallback() {
```

```
    @Override
```

```
    public void onScanFinished(List<BleDevice> scanResultList) {
```

```
        Log.i(TAG, "onScanFinished => " + scanResultList.size());
```

```
    }
```

```
    @Override
```

```
    public void onScanStarted(boolean success) {
```

```
        Log.i(TAG, "onScanStarted => " + success);
```

```
    }
```

```
    @Override
```

```
    public void onScanning(BleDevice bleDevice) {
```

```
        if (bleDevice == null)
```

```

        return;

        Log.i(TAG, "onScanning => " + bleDevice.getMac() + " " +
bleDevice.getName());

        Scan device = new Scan();

        device.fromBroadcast(bleDevice) ;

        //query condition

    }

});

```

Reference sample program: com/tzone/btloggerexample/MainActivity.java

2. Specify device ID

Eg: search specify device ID = 012345678, as follow:

```

String deviceId = "012345678";
if(device.getID().equals(deviceId)){
    .....
}

```

3. Specify type of device list

Eg: search specify device type is TempU06+, as follow:

```

if(device.getDeviceType() == DeviceType.TempU06){
    .....
}

```

Description: 1. In SDK, device type TempU06 is TempU06+
2. The value is -100, it means null

IV. Extract device data report

1. Connect device

```

BleManager.getInstance().connect(_Device.getMac(), new BleGattCallback() {
    @Override
    public void onStartConnect() {
        Log.i(TAG, "onStartConnect: OK");
    }

    @Override

```

```

        public void onConnectFail(BleDevice bleDevice, BleException exception) {
            Log.i(TAG, "onConnectFail: bleDevice => " + (bleDevice != null ?
bleDevice.getMac() : " null"));
            BleManager.getInstance().destroy();
        }

        @Override
        public void onConnectSuccess(BleDevice bleDevice, BluetoothGatt gatt, int status) {
            Log.i(TAG, "onConnectSuccess: bleDevice => " + (bleDevice != null ?
bleDevice.getMac() : " null"));
            _BleDevice = bleDevice;
            InitDataManager();
        }

        @Override
        public void onDisConnected(boolean isActiveDisConnected, BleDevice device,
BluetoothGatt gatt, int status) {
            Log.i(TAG, "onDisConnected: bleDevice => " + (device != null ? device.getMac() :
" null"));
            _BleDevice = null;
        }
    });

```

2.Initialize DataManager object

```

public void InitDataManager() {
    if (_BleDevice == null)
        return;
    if (_DataManager == null) {
        if (_Device.getDeviceType() == DeviceType.TempU06)
            _DataManager = new com.tzone.bt.u06.DataManager();
        else if (_Device.getDeviceType() == DeviceType.BT04)
            _DataManager = new com.tzone.bt.bt04.DataManager();
        else if (_Device.getDeviceType() == DeviceType.BT04B)
            _DataManager = new com.tzone.bt.bt04b.DataManager();
        else if (_Device.getDeviceType() == DeviceType.BT05)
            _DataManager = new com.tzone.bt.bt05.DataManager();
        else if (_Device.getDeviceType() == DeviceType.BT05B)
            _DataManager = new com.tzone.bt.bt05b.DataManager();
        else {
            return;
        }
        _DataManager.InitSetting(_BleDevice, dataCallback);
    }
}

```

```

        _Report = null;
        if (_Device.getDeviceType() == DeviceType.TempU06) {
            _DataManager.Notify();
        } else {
            _DataManager.Unlock(Password);
        }
    }
}

```

3.Open the notification

```
_DataManager.Notify();
```

Description: BT04/BT04B/BT05/BT05B no notification need to be opened

4.Unlock

```
_DataManager.Unlock(Password);
```

Description: BT04/BT04B/ BT05/BT05B must be unlocked to operate. TempU06+ whether or not to unlock according to the password level. Please refer to the device user manual for details.

5.Get device status

```
_DataManager.GetLogStatus();
```

```

//Device status type
enum DeviceRecordType {
    Initialize, //Initialization state
    Stop, //Stop (device button stop)
    Stop_USB, //USB stop
    Stop_StorageFull, //Storage full stop
    Stop_App, //APP stop
    Recording, //recording
    Delay, //delay
}

```

6.Set extract time period

```

long beginTime = 0;
long endTime = 0;
_DataManager.SetConfig(beginTime, endTime );

```

Description: when the value is 0, it means all data extracted from the device

7.Get alarm setting

```
_DataManager.GetAlarm();
```

8.Get Mark setting

```
_DataManager.GetMark();
```

9.Get extract data information

```
_DataManager.RequestDataInfo();
```

```
String[] info = new String[13];  
info[0] // Data Count  
info[1] // Begin Time  
info[2] // Time Span  
info[3] // Record Status  
info[4] // Delay Time  
info[5] // Repeat Start  
info[6] // Temperature Unit  
info[7] // Stop Button  
info[8] // Start Mode  
info[9] // Start Time  
info[10] // Description  
info[11] // NOTE  
info[12] // MKT
```

10.Open receive

```
_DataManager.Receive(true);
```

11.Close receive

```
_DataManager.Receive(false);
```

12.Generate report

```
_Report.Generate();
```


13.The introduction of other function

	Function	Function name	BT04	BT04B	BT05	BT05B	TempU06+	
1	Start record	SetStart	V	V	V	V	V	
2	Stop record	SetStop	V	V	V	V	V	
3	Set Mark	SetMark	X	X	X	X	V	Do not support models of BT04 /BT04B/BT05/ BT05B
4	Set flight mode	SetFlighMode	X	X	X	X	V	

Reference sample program: com/tzone/btloggerexample/DeviceActivity.java

V . Modify device parameter

1. Connect device

```

BleManager.getInstance().connect(_Device.getMac(), new BleGattCallback() {
    @Override
    public void onStartConnect() {
        Log.i(TAG, "onStartConnect: OK");
    }

    @Override
    public void onConnectFail(BleDevice bleDevice, BleException exception) {
        Log.i(TAG, "onConnectFail: bleDevice => " + (bleDevice != null ?
bleDevice.getMac() : " null"));
        BleManager.getInstance().destroy();
    }

    @Override
    public void onConnectSuccess(BleDevice bleDevice, BluetoothGatt gatt, int status) {
        Log.i(TAG, "onConnectSuccess: bleDevice => " + (bleDevice != null ?
bleDevice.getMac() : " null"));
        _BleDevice = bleDevice;
        InitConfigManager();
    }

    @Override
    public void onDisConnected(boolean isActiveDisConnected, BleDevice device,
BluetoothGatt gatt, int status) {
        Log.i(TAG, "onDisConnected: bleDevice => " + (device != null ? device.getMac() :
" null"));
    }

```

```

        _BleDevice = null;
    }
});

```

2. Initialize ConfigManager object

```

public void InitConfigManager() {
    if (_BleDevice == null)
        return;
    ConfigManagerBase _ConfigManager = null;
    if (_ConfigManager == null) {
        if (_Device.getDeviceType() == DeviceType.TempU06)
            _ConfigManager = new com.tzone.bt.u06.ConfigManager();
        else if (_Device.getDeviceType() == DeviceType.BT04)
            _ConfigManager = new com.tzone.bt.bt04.ConfigManager();
        else if (_Device.getDeviceType() == DeviceType.BT04B)
            _ConfigManager = new com.tzone.bt.bt04b.ConfigManager();
        else if (_Device.getDeviceType() == DeviceType.BT05)
            _ConfigManager = new com.tzone.bt.bt05.ConfigManager();
        else if (_Device.getDeviceType() == DeviceType.BT05B)
            _ConfigManager = new com.tzone.bt.bt05b.ConfigManager();
        else {
            return;
        }
        _ConfigManager.InitSetting(_BleDevice, configCallback);
    }

    if (_Device.getDeviceType() == DeviceType.TempU06) {
        _ConfigManager.Notify();
    } else {
        _ConfigManager.Unlock(Password);
    }
}

```

3. Open the notification

```

_DataManager.Notify();

```

Description: BT04/BT04B/BT05/BT05B no notification need to be opened

4. Unlock

```

_DataManager.Unlock(Password);

```

Description: BT04/BT04B/BT05/BT05B must be unlocked to operate. TempU06+ must be unlocked to operate in low/high level encryption.

5. The introduction of read,modify function parameter

	Function	Function name	BT04	BT04B	BT05	BT05B	TempU06+	
1	Get device information	GetDeviceInfo	√	√	√	√	√	
2	Set password	SetPassword	√	√	√	√	√	
3	Set device name	SetDeviceName	√	√	√	√	√	
4	Set device time	SetDateTime	√	√	√	√	√	
5	Get device time	GetDateTime	√	√	√	√	√	
6	Set broadcast parameter	SetBroadcastSetting	√	√	√	√	×	TempU06+ do not support
7	Get broadcast parameter	GetBroadcastSetting	√	√	√	√	×	
8	Set log parameter	SetLogSetting	√	√	√	√	√	
9	Get log parameter	GetLogSetting	√	√	√	√	√	
10	Set PDF parameter	SetPDFSetting	√	√	√	√	√	BT04/BT04B/BT05/BT05B can set description and remark only
11	Get PDF Parameter	GetPDFSetting	√	√	√	√	√	
12	Set alarm parameter	SetAlarm	√	√	√	√	√	
13	Get alarm paramete	GetAlarm	√	√	√	√	√	

Description: 1. Temperature, Humidity, Power, Voltage= -1000, it means null

2. Time = 0, it means time is error

3. Different types have different functions, if the device does not have this parameter interface, the return is null, please refer to the protocol document and operation manual for details.

VI. Cautions

1. The BLE function can be used only on Android version 4.3 and above, the location permission must be obtained to use the scan method on Android 6.0 and above, some mobile phone need to turn on the location function.

2. It is recommended to have a period of time between the two operations. For example, after the connection is successful, notify or write at interval of 100ms. For specific time data, you can try to select the shortest effective time on different mobile phone.