COMARK
A Fluke Company

Bluetooth® API

Application Programming Interface

V1 Issue 3



Copyright © 2022 Comark Instruments

Bluetooth 4.0 API

This document refers to API Version 3 dated 18 April 2019.

This document is intended for an app developer, describing how to connect to a Comark Bluetooth Thermometer such as the Pocketherm (BT125/BT250) or one of our Bluetooth Handheld Thermometers (BT42/BT48). Comark Bluetooth Thermometers use Bluetooth 4.0 to transmit temperature readings. This document assumes you are familiar with Bluetooth 4.0 and the generic attribute profile (GATT). The generic attributes (GATT) defines a hierarchical data structure that is exposed to connected Bluetooth Low Energy (LE) devices.

For more information visit
www.bluetooth.com
https://developer.bluetooth.org/gatt/services
https://developer.bluetooth.org/gatt/characteristics

This API is intended to be used with a Comark Bluetooth Thermometers; this will act like a GATT server. A GATT server is a device which stores data locally and provides data access methods to a remote GATT client (the App).

The device name which appears during a scan is made up of the model and serial number e.g., 'P250 11150002'

The health thermometer service is used to indicate the temperature and a button press. Temperature readings are pushed once a second to the client.

Comark Bluetooth Thermometers use the following Bluetooth 4 Services

Service	Assigned Number
Health Thermometer Service	0x1809
Battery Service	0x180F
Device Information Service	0x180A

Copyright © 2022 Comark Instruments

Health Thermometer Service

Service Assigned Number: 0x1809

Characteristic Name	Assigned Number	Property
Temperature Measurement	0x2A1C	Indicate
Intermediate Temperature	0x2A1E	Notify

The Temperature Measurement and Intermediate Temperature characteristic have the same format and is defined as a variable length structure containing a Flags field, a Temperature Measurement Value field, optionally a Time Stamp field and/or a Temperature Type field. For this version it is fixed to 5 bytes as the time stamp field and type field are not used. Intermediate Temperature characteristic are pushed once a second when a connection is made. The client needs to enable and subscribe to this notification. When the button is pressed the Intermediate Temperature characteristic is stopped and a Temperature Measurement characteristic is pushed. The client needs to enable and subscribe to this indication.

Important Notes:

- Comark Bluetooth Thermometers will transmit a reading of 0x007FFFFF if an invalid reading is measured or a fault is detected due to a broken senor for example, then it will disconnect the Bluetooth connection.
- As the temperature readings come in assign a timestamp to it. If a displayed reading is older than 3 seconds, remove it from view, take no actions with it and disconnect the Bluetooth connection as this indicates a fault.
- Do NOT leave a stale or an invalid reading on display or allow it to be logged.

Byte 1: contains the flag field

Bit 0	Temperature Scale	0 = Celsius, 1 = Fahrenheit
Bit 1	Time Stamp Field Present Flag	Always 0 as it is not present
Bit 2	Temperature Type Present Flag	Always 0 as it is not present

Byte 2 to 5: Is a 4 byte float (IEEE-11073) representing the temperature reading with the least significant byte first (i.e. little endian).

Important Note:

Depending on the hardware the duration of the button press may be momentary or for the duration of the button being pressed, to avoid false button readings only accept a button reading if the previous temperature measurement was a non-button reading.

Copyright © 2022 Comark Instruments

Battery Service

Service Assigned Number: 0x180F

Characteristic Name	Assigned Number	Property
Battery Level	0x2A19	Read

This indicates the current charge level of the battery. 100% represents fully charged while 0% represents fully discharged. On this version you can only read the battery level the notify option is not available. If less than 20% warn user to change battery.

Important Notes:

This value is updated approximately every 10 seconds and should be read accordingly.

Device Information Service

Service Assigned Number: 0x180A

Characteristic Name	Assigned Number	Property	Example
Manufacturer Name String	0x2A29	Read	Comark
Model Number String	0x2A24	Read	P250 Issue 1
Serial Number String	0x2A25	Read	11150001
Hardware Revision String	0x2A27	Read	1:1:1
Firmware Revision String	0x2A26	Read	BL600:v1.5.70.0
Software Revision String	0x2A28	Read	1:1
System ID	0x2A23	Read	0x123456FFFE9ABCDE

Important Note:

For version 1 API the minimum Software Revision String referred to in the device information is 1:1 The Software Revision String shows which API version the instrument is compatible with. This shows two numbers separated by a colon. The first number refers to the Bluetooth module feature version and the second refers to the Bluetooth Thermometer feature version. As new features and Bluetooth services / characteristic are added this version number may change. The App should check this to make sure the instrument is compatible. It may be possible to upgrade the instrument to the latest API.
Contact Comark for more information.

Copyright © 2022 Comark Instruments

Third Party Apps and Sample Code

At the time of writing this document the hardware uses a Laird BL600-SA Bluetooth module.

Sample code for Android an IOS can be found on their web site.

http://www.lairdtech.com/

Also the following Apps can connect to the Pocketherm

BLE Tool by LAPIS Semiconductor Co Ltd.
CySmart BLE Test & Debug Tool by Cypress Semiconductor Inc.

Revision History

Issue No.	Date	Revision Notes
1	10 June 2016	First Release
2	11 July 2016	Incorrect IEEE number for temperature format specified
3	18 April 2019	Added references to BT42 and BT48

Copyright © 2022 Comark Instruments



Comark Instruments
P.O. Box 500
Beaverton, OR 97077, USA
Toll Free: (800) 555 6658
Email: sales@comarkUSA.com

Comark Instruments
52 Hurricane Way
Norwich, Norfolk, NR6 6JB
United Kingdom
Tel: +44 (0) 207 942 0712
Email: sales@comarkinstruments.com

0451 0775

All rights reserved. Data subject to alteration without notice. All trademarks are the property of their respective owners. Modification of this document is not permitted without written permission from Comark Instruments.