



This design guide provides profile and interface details for the design of a Bluetooth® LE v4.2 (BLE) software module supporting custom wireless connections to the ANR M40 Muscle Sense neuromuscular transmitter from BLE capable devices for embedded monitor and control applications.

The information in this guide is only specific to the ANR model M40 device and is not intended as a Bluetooth® design guide. The designer's knowledge of Bluetooth® is assumed. For more information about Bluetooth® including development guides, specifications and other resources, visit Bluetooth.com.

Reference the M40 Product sheet (available at ANRcorp.com/Documentation) for design data specific to the M40.

DESIGN GUIDE

The Bluetooth® software module needs to implement the Central GAP role.

The first step for the Central device is to Discover Peripherals.

The M40 Advertising Data supports Manufacturer Specific Data.

Manufacturer Specific Data starts with the Company ID.

The company ID for ANR Corp is 0x05DA.

This can be used during Peripheral Discovery to find an M40 device.

(remember that encoding is Little Endian, i.e., low byte first.)

The second step is to Discover Services and Characteristics.

The M40 implements the following GATT Profile:

- Device Info Service UUID: 0x180A
 - Model Number Characteristic UUID: 0x2A24
 - Serial Number Characteristic UUID: 0x2A25
 - Firmware Revision Characteristic UUID: 0x2A26
 - Hardware Revision Characteristic UUID: 0x2A27
 - Software Revision Characteristic UUID: 0x2A28
- Automation IO Service UUID: 0x1815
 - Analog Characteristic UUID: 0x2A58
 - Digital Characteristic UUID: 0x2A56
- Battery Service UUID: 0x180F (only available in v1.5 and higher)
 - Battery Level Characteristic UUID: 0x2A19

After GATT discovery, the next step is to set the M40 Device ID colors (this value sets the M40 to display a color code used to identify M40 devices).

BLE read/write functions are used to set Device ID in the Digital Characteristic value.

- Encoding = 8-bit unsigned integer; Range = 1-24.

Finally, the EMG value can be read.

BLE read/notify functions are used to retrieve the EMG reading in the Analog Characteristic value.

- Encoding = 16-bit unsigned integer; Range = 0-1023.

Setting the Notify bit of the Analog Characteristic Configuration causes the M40 to report its Analog Characteristic value every 100 ms.

The Battery Level can be read any time.

BLE read function is used to retrieve the Battery Level Characteristic value.

- Encoding = 8-bit unsigned integer; Range = 0-100 (%).