

Bluetooth® Low Energy Demo



This addendum only applies to the following HealthWeigh models: 150-10-5BLE, 150-10-7BLE, 150-10-6BLE, 250-10-2BLE, 250-10-4BLE, 350-10-8BLE, 350-10-3BLE, 350-10-3MBLE, 350-10-4BLE, 350-10-7BLE, 350-10-2BLE, 550-10-1BLE and 650-10-1BLE.



To verify the Bluetooth® Low Energy connection, Rice Lake Weighing Systems recommends downloading nRF™ Connect from an application store and installing the application to a mobile device.

Follow the information below when attempting to connect to the Bluetooth® Low Energy (BLE) Demo system:

Connection Procedure:

1. The system powers on and the BLE server profile starts. The system stabilizes and goes to zero. As long as the system remains at zero, the system is hidden from BLE client scans.
2. When the system exits the zero state, due to a load being placed on the load cell, the BLE server profile starts scanning and waits for a BLE client to connect.
3. Once a connection is made, the profile sends a notification to the connected BLE client, which reads the data from the server. In order for the client to get the notification, the client must enable the notification on the desired characteristics, right after the connection is made. An additional notification is sent after 2.5 seconds from the moment the connection was made. This extra notification helps a Windows® BLE client to get the notification on the correct time.
4. As long as the client remains connected, the server maintains the connection. The server and client remain connected even if the scale is returned to zero. If the system remains at zero for 15 seconds, the profile stops scanning and the system becomes hidden from BLE client scans.

Profile Description:

1. The device scanning name is "HealthWeigh".
2. The pairing code is 123456, although it is not required for establishing a BLE connection with the module.
3. The "WeightMeasurement" characteristics always hold the last weight that has been locked by the system.
4. Although the services and characteristics have 128bit UUIDs, which makes the services and characteristics "Custom", the service and its characteristics follow the official "WeightScaleService" scheme—found at: https://www.bluetooth.com/specifications/gatt/viewer?attributeXmlFile=org.bluetooth.service.weight_scale.xml. For each Gatt element, the corresponding official 16bit UUID is embedded in the 128bit UUID, in the third and fourth bytes.
5. A short description on the service structure and functionality. The official 16bit UUID is marked bold on the 128bit UUID, for each GATT element that's described here. Each GATT element UUID is the combination of the official UUID, embedded in the base UUID 0x1248 **XXXX** 84211000 8000 00805F9B34FA.



Most of the features and fields in the services and characteristics are not used.

- A. The "WeightScaleService" UUID=0x1248 **181D** 84211000 8000 00805F9B34FA contains two characteristics:
 - i. "WeightScaleFeature" UUID=0x1248 **2A9E** 84211000 8000 00805F9B34FA [org.bluetooth.characteristic.weight_scale_feature](https://www.bluetooth.com/specifications/gatt/viewer?attributeXmlFile=org.bluetooth.characteristic.weight_scale_feature); this char contains flags and switches, which allows the consumer of the service to know about features supported by this profile implementation; for example, the resolution of the weight measurement of the system is ReadOnly
 - ii. "Weight Measurement" UUID=0x1248 **2A9D** 84211000 8000 00805F9B34FA [org.bluetooth.characteristic.weight_measurement](https://www.bluetooth.com/specifications/gatt/viewer?attributeXmlFile=org.bluetooth.characteristic.weight_measurement); this char holds the actual data that the service has to offer; it contains data that is relevant to a specific measurement; the weight, TimeStamp, UserID, BMI and Height are the data pieces that construct the entire character; additionally, one byte is dedicated for flags at the start of the char; for example, the first bit indicates the unit of measurement (Imperial/SI)