PROCOMSOL
Process Communications Solutions

HM-BLE User Manual

Introduction

The HM-BLE HART® Modem, Bluetooth Low Energy is designed to connect mobile devices to HART networks via wireless Bluetooth Low Energy (BLE) technology. Once the HART connection is made, the Host application software (App) can then configure, monitor, and document HART based instrumentation from up to 100m away.

System Diagram

The complete system consists of a Host App running on a mobile device with BLE, HM-BLE, and HART network. The mobile device can be Android or iOS.
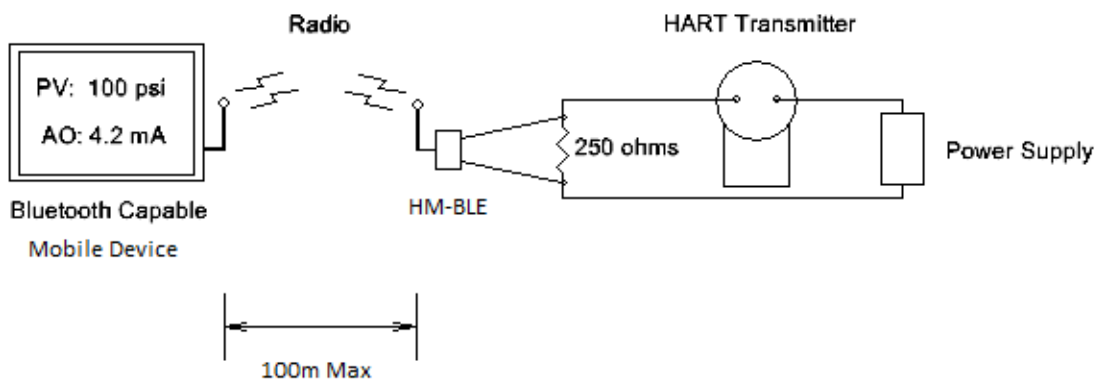

Figure 1. Bluetooth Low Energy System Diagram

Bluetooth Range

Note that BLE range is limited by the Host mobile device. Each device type (phone vs tablet) and even manufacturer (Samsung vs Apple) has different ranges.

Software Drivers

No additional software drivers need to be installed.

Battery

The HM-BLE contains a Li-Ion rechargeable battery. A fully charged battery will provide 19 hours of continuous service.

Battery Charging

Simply connect the HM-BLE to a USB Port using the supplied USB cable. The yellow "Charge On" LED should illuminate. Note that near a full charge, the "Charge On" LED may blink. Device chargers for Host mobile devices can also be used to charge the battery.

Power Switch and LED
Press the power switch to turn on the unit. The green "Power" LED will illuminate when the unit is on. Press the power switch again to turn the unit off. Turn the unit off when not in use to conserve battery life.

Battery Charge Error
When the red "Charge Error" LED illuminates, there is a battery charge error condition. This is most likely due to high temperature on the battery. Remove the USB cable from the unit and turn the unit off. Put the unit in a cool location and wait 30 minutes before attempting a recharge. Contact ProComSol, Ltd if the condition persists.

Initial Setup/ Bluetooth Modem Discovery
Unlike Classic Bluetooth, no initial setup or discovery is required. To use, turn on the HM-BLE, launch your App, and the App will scan for available Bluetooth Low Energy devices. Simply select the desired modem in the list. The scan name is "HART BLE Modem".

Multiple HM-BLE Modems
When several modems are in the same area, it may require trial and error to determine which modem is connected to the desired HART network.

HART Connections
The modem can be connected in one of two ways: across the loop load resistor (A – B) or across the HART transmitter terminals (C – D). See Figure 2.
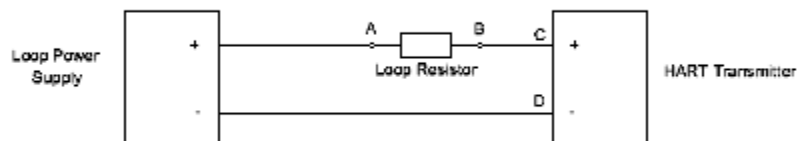

Figure 2. HART Connections

Troubleshooting

Problem:
Will not communicate

Verify the following:
1. Loop power supply is on.
2. Loop resistance between 250 ohms and 1Kohms.
3. Loop current within HART limits.
4. If multi drop configuration, all transmitters in loop have unique addresses.
5. Modem HART connections across loop resistor or across transmitter terminals.
6. Battery is charged.
7. Modem power switch is on and LED is illuminated.

Problem:
Communications unreliable

Verify the following:
1. You are in radio range of the master transmitter.
2. Remove the USB charging cable from the modem. If this is not practical, reverse the modem HART connections.
3. Vary the orientation of the master transmitter or the HM-BLE to improve radio link strength.
4. Battery is charged.
5. HART connections made before power turned on.
6. Transmitter not in Burst mode. Communications can occur in Burst mode, but more retries will be necessary for success.

Warranty
The HM-BLE is warranted for 1 year for materials and workmanship. Contact Support at ProComSol, Ltd if having any problems. An RMA (Return Material Authorization) number obtained from ProComSol, Ltd is required on all returned items.

Notice of FCC Compliance
This product contains a radio module that has been tested and found to comply with the FCC Part15 Rules. These limits are designed to provide reasonable protection against harmful interference in approved installations. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Modifications or changes to this equipment not expressly approved by ProComSol, Ltd may void the user's authority to operate this equipment.

Contains Transmitter Module FCC ID: ZAT26M1

Contact Information

ProComSol, Ltd
Process Communications Solutions
13001 Athens Ave
Suite 220
Lakewood, OH 44107
USA

Phone: 216.221.1550
Fax: 216.221.1554
Email: sales@procomsol.com
          support@procomsol.com
Web: www.procomsol.com