

HM-BT-DUAL User Manual

Introduction

The HM-BT-DUAL HART® Modem, Bluetooth Low Energy is designed to connect mobile devices to HART networks via wireless Bluetooth Low Energy (BLE) technology or Classic Bluetooth. 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 HART Communicator App running on a mobile device with Bluetooth, HM-BT-DUAL HART Modem, and HART network. The mobile device can be Windows, Android, or iOS.

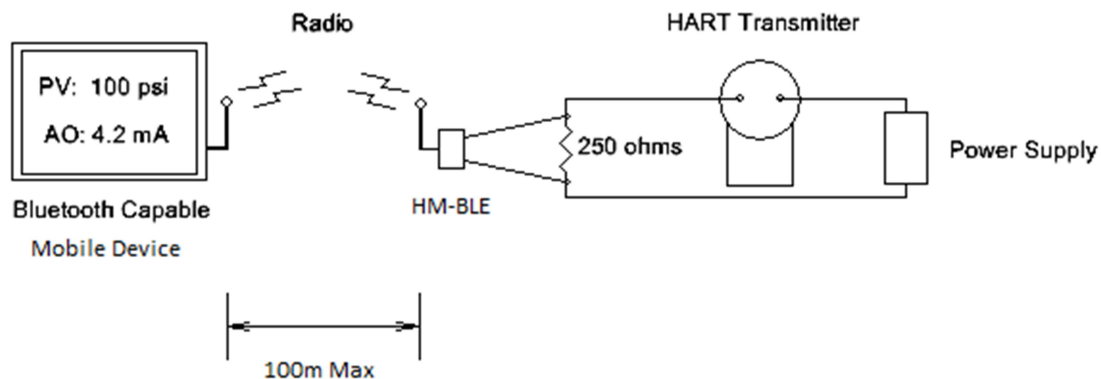


Figure 1. Bluetooth Low Energy System Diagram

Bluetooth Range

Note that Bluetooth range is limited by the Host mobile device. Each device type (phone vs tablet) and even manufacturer (Samsung vs Apple) has different ranges. The range of the HM-BT-DUAL is 100m, but most mobile devices have a range of 10m.

Software Drivers

No additional software drivers need to be installed.

Battery

The HM-BT-DUAL contains a Li-Ion rechargeable battery. A fully charged battery will provide 100 hours of continuous service.

Battery Charging

Simply connect the HM-BT-DUAL to a USB Port using the supplied USB cable. The yellow “Charge On” LED should illuminate. Device chargers for Host mobile devices can also be used to charge the battery.

A blinking “Charge On” LED indicates a battery charging error. Disconnect the USB cable immediately.

The following may be the cause of the charge error:

1. Battery disconnected from the modem PCB board. Return to ProComSol for repair. Note an RMA is required for us to accept any returns.
2. The ambient conditions are too warm. Move to a cooler location, wait 30 minutes, and try again. Contact ProComSol, Ltd if the condition persists.

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.

HART Activity LED

A blinking red “HART Activity” LED indicates HART communications are active. Note that some HART hosts do not continuously send commands, so a non-blinking LED does not necessarily mean there are communication issues.

Initial Setup/ Bluetooth Modem Discovery Classic Bluetooth

Windows

1. Press the power switch (SW1) to turn on the modem
2. Click on the Bluetooth icon on the Windows System bar. You may need to click the “Show hidden icons” icon.
3. Click the Bluetooth icon
4. Click “Add a Bluetooth Device”
5. On the screen that appears, click “Add device”
6. Click Bluetooth for the kind of device to add
7. The modem should appear as “HART BT Modem”. You may need to click “Show all devices”. Note that “HART BLE Modem” is also the modem, but only use the “HART BT Modem”.
8. Click HART BT Modem
9. Click Connect when prompted to pair
10. Verify “Your device is ready to go!” message
11. Click Done
12. Click “More Bluetooth settings” button near the bottom of the Windows screen
13. Click the “COM Ports” Tab.
14. The COM port that will be used for BT communications is the “Outgoing” COM port that is called “HART BT Modem ‘AMP-SPP’”.
15. Launch DevCom2000 and go to the “Options->Basic” menu.
16. Select the COM port from Step 6 above.
17. Click OK to save the settings.
18. Click “New Device” to attempt a connection to your HART device.

Android

The HM-BT-MODEM will show as HART BT Modem during discovery for Classic Bluetooth. Once selected, a Pairing Prompt will appear. Simply accept the PIN given.

There is no need to enter any additional information or a different PIN than what is shown. The Pairing prompt will only appear for the initial connection attempt. After the initial pairing, the modem is remembered in the Android operating system.

Initial Setup/ Bluetooth Modem Discovery Bluetooth Low Energy Android/iOS (Apple)

Unlike Classic Bluetooth, no initial setup or pin acknowledgment is required. To use, turn on the HM-BT-DUAL, 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-BT-DUAL 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.

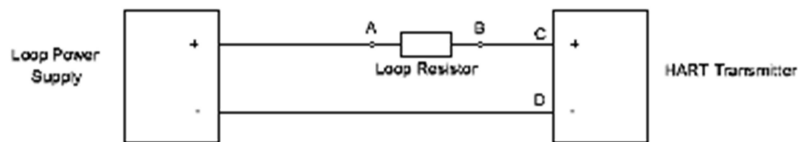


Figure 2. HART Connections

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-BT-DUAL to improve radio link strength.
4. Battery is charged.
5. HART connections made before power turned on.

Warranty

The HM-BT-DUAL 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: X3ZBTMOD11

Contact Information**ProComSol, Ltd**

Process Communications Solutions
20525 Center Ridge Rd
Suite 320
Rocky River, OH 44116
USA

Phone: 216.221.1550

Email: sales@procomsol.com
support@procomsol.com

Web: www.procomsol.com