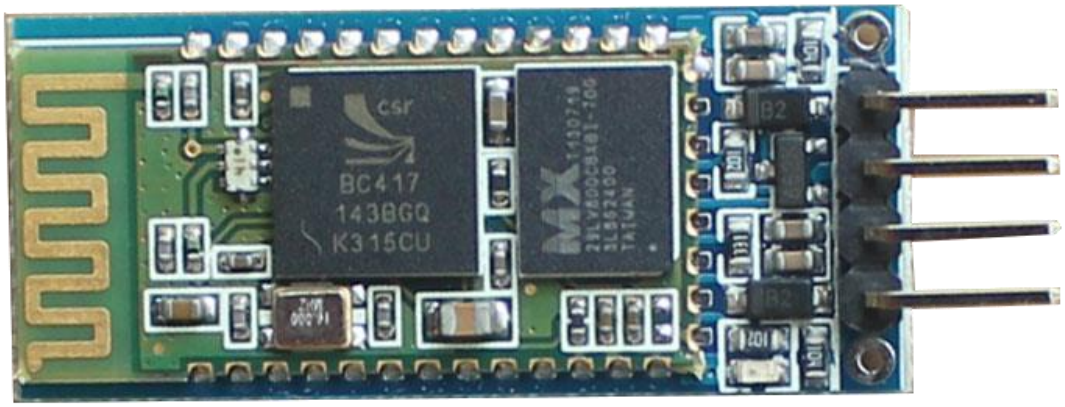
Bluetooth module HC06

INTRODUCTION

Bluetooth modules are designed for wireless data transmission between small distances it Considered as wireless personal area network technology (WPAN) it works at ultra-high frequencies (UHF). Regarding to industrial, scientific and medical (ISM) radio bands witch governing industrial, scientific and medical frequencies, the Bluetooth range from 2.402 GHZ to 2.480.

It considers as the cheapest method for data transmission, easiest and more flexible compared to other methods. It even can transmit files reach to 25 Mb/s.

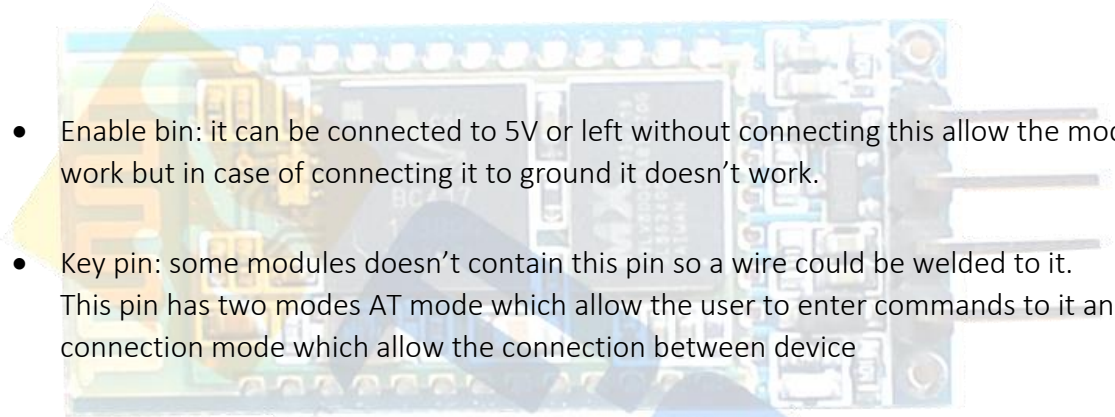
This technique depends on frequency hopping spread spectrum technique (FHSS) it use this technique to avoid interference with other devices and it a full duplex transmission which mean it can transmit and receive at same time.



Bluetooth module HC06 Features

- Operating voltage: 5 v

- Slave: is a model for a communication protocol in which one device or process known as the master controls one or more other devices or processes known as slaves.



- Enable bin: it can be connected to 5V or left without connecting this allow the module to work but in case of connecting it to ground it doesn't work.

- Key pin: some modules doesn't contain this pin so a wire could be welded to it.
  This pin has two modes AT mode which allow the user to enter commands to it and connection mode which allow the connection between device

  ### How Bluetooth connection occurs

  1- The master device sends request to all surrounding Bluetooth modules, all slave modules reply with the 48-bit number which is unique for each Bluetooth device similar to MAC address.
  2- when the master determines the slave wants to pair with it starts synchronization process as the master send message with the internal date, time, type of the device, services provided by him and operating frequency these process occurred in base band layer.
  3- after that the link manager layer in which Link Management Protocol (LMP) responsible for authentication and authorization process, data Encryption and frequency hopping management.
  4- then in the next layer Logical Link Control and Adaptation Protocol (L2CAP) which responsible for data transmission management and data divide into packets.
  5- using Service Discovery Protocol (SDP) the master Bluetooth module determines the service provided by the slave (profile) depending on this profile the master determines the type of data to send to this device.
  6- finally the paring action occurs when the master device gives the pin number to allow the master to exchange data at any time.

<table>
<tr><td colspan="5">Application/profiles</td></tr>
<tr><td rowspan="3">audio</td><td>RFCOMM PROTOCOL</td><td>SERVICE DISCOVERY PROTOCOL</td><td>TELEPHONY CONTROL PROTOCOL</td><td rowspan="3">control</td></tr>
<tr><td colspan="3">Logical Link Control and Adaptation Protocol</td></tr>
<tr><td colspan="3">Link Manger</td></tr>
<tr><td colspan="5">Base Band</td></tr>
<tr><td colspan="5">Physical Radio</td></tr>
</table>