GPS Bee kit (with Mini Embedded Antenna)

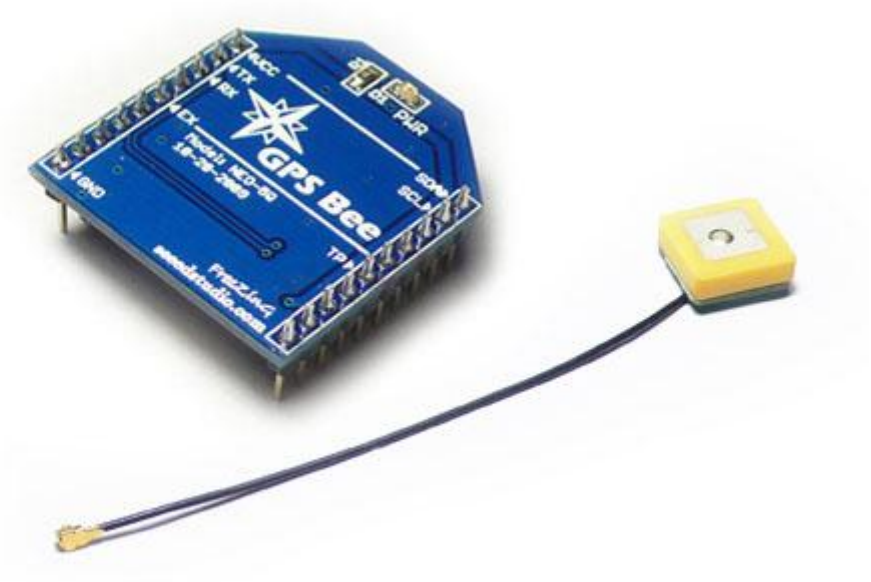
Introduction

To make the GPS module be easily compatible with the existent shield , we use the same pin packaging as XBee wireless module.So you can put the GPS module into the existent shield which compatible with XBee. Also you can use the UartSBee V4 to connect the GPS module to USB port, run a software named u-center to analyze the GPS data and to reset the GPS module parameter. Put the GPS Bee on the UartSBee V4 , and connect the UartSBee V4 to the PC , open the u-center.exe , choose the UartSB port , then you can see the data that GPS module send back , and the software analyze them and show you the specific information ,like : time , speed , latitude and longitude, ASL and so on.

Kit is come with Mini Embedded Antenna U.FL for GPS, you can also purchase another Antenna with lager size Embedded Antenna U.FL for GPS. Compatible with all shields, breakout, boards with Xbee standard sockets.

4 pin 2.54mm to 2.0mm Female jumper wire is also available for easy adaption!

Model:SEN133D1P



Features

- 50-channel u-blox 5 engine with over 1 million effective correlators
- <1 second Time To First Fix for Hot and Aided Starts
- -160dBm SuperSense® acquisition and tracking sensitivity
- Accelerated startup at weak signals for modules with KickStart feature
- Supports AssistNow Online and AssistNow Offline A-GPS services; OMA SUPL compliant
- High immunity to jamming
- 4 Hz position update rate
- Miniature 2.0mm pitch header, compatible with Xbee sockets
- UART, USB, DDC and SPI interfaces
- RoHS compliant

Application Ideas

- Application1
- Application2
- Application3

Cautions

The warnings and wrong operations possible cause dangerous.

Schematic

It is the schematic, the circuit about Eagle resource like .pdf should linked here in order to avoid memory exhausted.

Specification

Operation Conditions

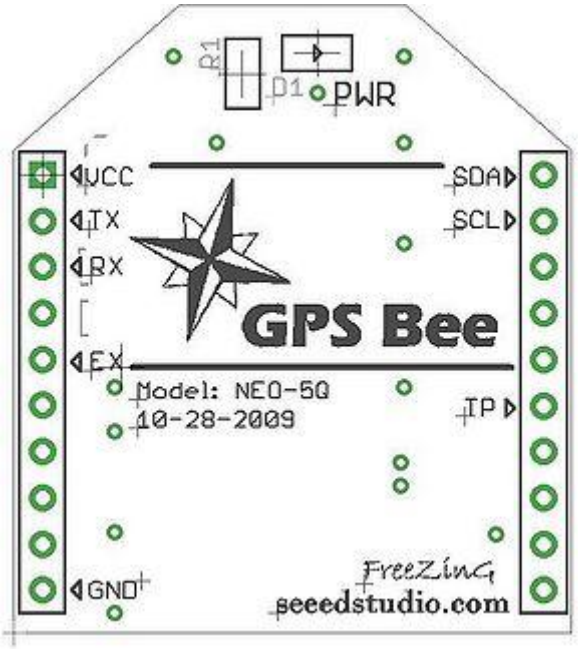
Item	Symbol	Min	Typ	Max	Unit
Power Supply	Vcc	2.7	3.0	3.6	V
Peak Supply Current (Vcc=3.6V)				150	mA
Sustained Supply Current (Vcc=3.0V)					
Acquisition			102		mA
Tracking			44		mA
Antenna Gain			30		dB
Operation temperature		-40		85	℃

Key Specification

Parameter	Specification		
Receiver Type		50 Channels GPS L1 frequency, C/A Code	
Time-To-First-Fix[2]		NEO-5G, NEO-5Q	NEO-5D, NEO-5
	Cold Start (Autonomous)	29 s	32 s
	Warm Start (Autonomous)	29 s	32 s
	Hot Start (Autonomous)	<1 s	<1 s
	Aided Starts[3]	<1 s	<3 s
Sensitivity[4]		NEO-5G, NEO-5Q	NEO-5D, NEO-5
	Tracking & Navigation	-160 dBm	-160 dBm
	Reacquisition	-160 dBm	-160 dBm
	Cold Start (Autonomous)	-144 dBm	-143 dBm
Horizontal Position Accuracy[5]	Autonomous	< 2.5 m	
	SBAS	< 2.0 m	
Accuracy of Timepulse Signal	RMS	30 ns	
	Time Pulse	Configurable: 0.25 ... 1000 Hz	
Max Navigation Update Rate		4 Hz	
Velocity Accuracy [6]		0.1m/s	
Heading Accuracy[6]		0.5 degrees	
Dynamics		≤ 4 g	
Operational Limits	Velocity	515 m/s (1000 knots)	

Please refer to u-blox neo-5Q document for more details. http://www.seeedstudio.com/depot/datasheet/NEO-5x_Data_Sheet(GPS.G5-MS5-07025).pdf

Pin definition and Rating



Pin	Name	Function
1	Vcc	Power suppl, 2.7-3.6VDC
2	TX	Serial Port 1
3	RX	Serial Port 2

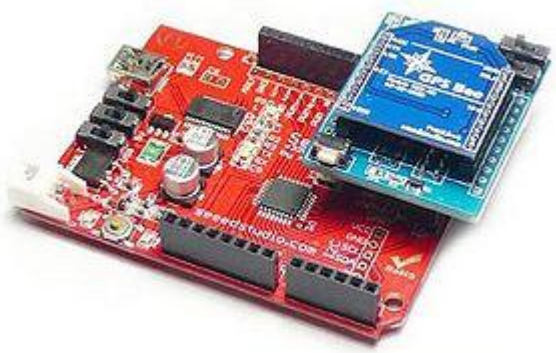
4	NC	Reserved
5	EX	Reserved
6	NC	Reserved
7	NC	Reserved
8	NC	Reserved
9	NC	Reserved
10	GND	Ground
11	NC	Reserved
12	NC	Reserved
13	NC	Reserved
14	NC	Reserved
15	TP	Configurable Pulse output (default 1Hz, max 4Hz)
16	NC	Reserved
17	NC	Reserved
18	NC	Reserved
19	SCL	I2C clock pin (configuration only)
20	SDA	I2C data pin (configuration only)

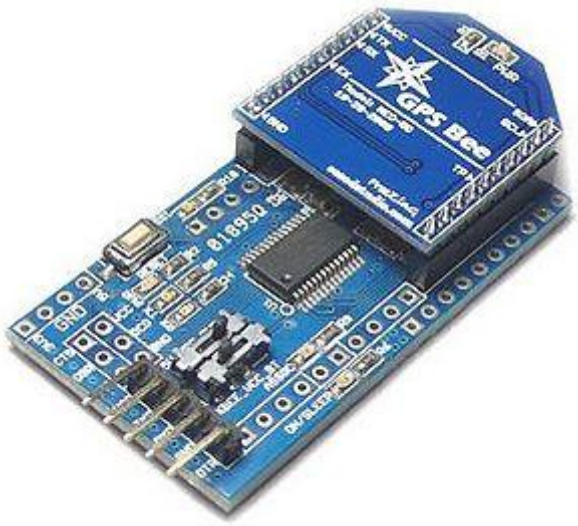
Mechanic Dimensions

Usage

1. General purpose GPS shield Benefiting from XBee compatible pinout and voltage, GPS Bee could re-use any Xbee socket, from Xbee shield to Xbee explore. For example, you may just mount the Xbee module to Arduino projects by a Xbee shield.

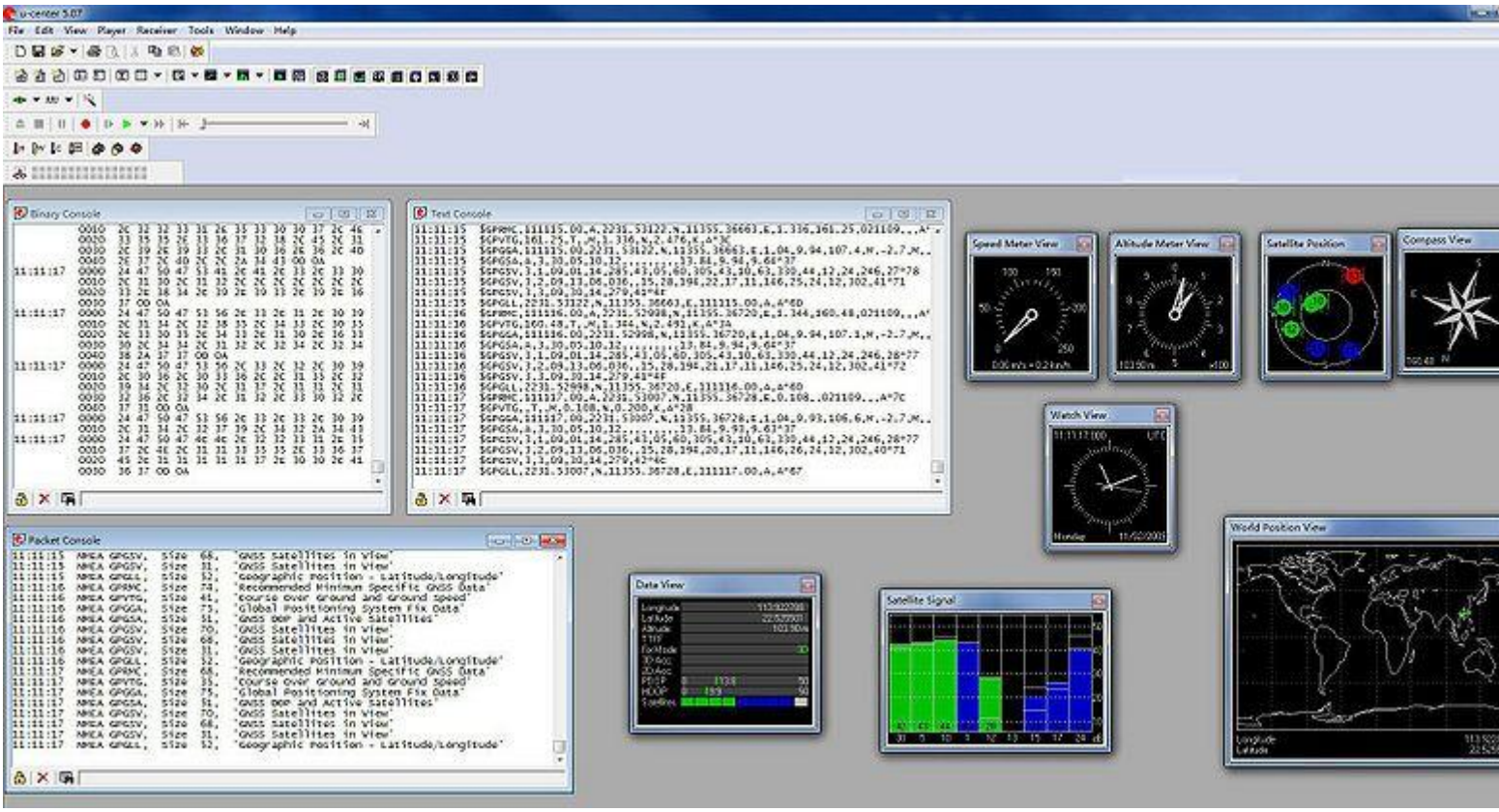
2.

USB 



Bluetooth GPS module

Work with UartSB as a USB port GPS module. You may use powerful Ucenter to get practical details easily. Or, add a Bluetooth module to get a Bluetooth GPS module for your projects.



Click here to see the legible and complete image.

Source Code Examples

Please note that all of the Demo sketches presented below make use of the FileLogger library. Please refer to this thread at the Arduino Forum and download the library from its project page at Google Code.

Also, a few Seeeduino Stalker users have shared some of the code developed by them in a thread at the Arduino Forum.

Demo 1 - SD card usage

Using a FileLogger library to store all the data from GPSBee on to the SD Card. Compatible with Arduino 0023 and 2G FAT16 SD card.

```
#include <Fat16.h>
#include <Fat16util.h>
#include <MsTimer2.h>//The Time2 Interrupt Library
```

```
SdCard card;
Fat16 myFile;//Creat a Fat16 system depanding on Fat16 Library

String recvBuf;
String HeadMessage = "$GPRMC";

unsigned char recv;
unsigned char flag;
int nameIndex = 0;
int Gpsflag;
char name[]="datalog.txt";

void stopGps()
{
  Gpsflag = 0;
}

void setup()
{
  Serial.begin(19200);
  flag = 0;
  card.init();
  // initialize a FAT16 volume
  Fat16::init(&card);
  myFile.open(name, O_CREAT | O_APPEND | O_WRITE);

  MsTimer2::set(450,stopGps);//Set Timer2 Interrupt every 900ms(at 8MHz)
}

void loop()
{
  if(Serial.available())
  {
    recv = Serial.read();
    if(recv == 0x0A)
    {
      recvBuf = "";
    }
    recvBuf += recv;
    nameIndex = recvBuf.indexOf(HeadMessage);
    if(nameIndex != -1)//if there has HeadMessage there will not return -1,so we can know is
ther a new message
    {
       recvBuf = "";
       flag = 1;
    }
    if(flag == 1)
    {
      Gpsflag = 1;
      MsTimer2::start();
      myFile.print(HeadMessage);//wo miss the headmessage up there,so we add the head message
before we add the next
      while(Gpsflag)//Get one Packet message during the 900ms,cause the GPS send the message
every 1 second
      {
         while(Serial.available())
         {
           myFile.print((char)Serial.read());
         }
      }
      flag = 0;//clear the flag,waiting for the next Packet
      MsTimer2::stop();
      myFile.close();//Close and Save
      myFile.open(name,O_APPEND | O_WRITE);//allow to Write
      Serial.flush();//Clear the Serial Buff
    }
  }
}
```

Bill of Materials (BOM) /parts list

All the components used to produce the product.

FAQ

Please list your question here:

Support

If you have questions or other better design ideas, you can go to our forum or wish to discuss.

Version Tracker

Revision	Descriptions	Release
GPS Bee kit (with Mini Embedded Antenna)	-	Nov 08, 2009
v0.91	complement	Mar 15, 2011

Bug Tracker

Bug Tracker is the place you can publish any bugs you think you might have found during use. Please write down what you have to say, your answers will help us improve our products.

Additional Idea

The Additional Idea is the place to write your project ideas about this product, or other usages you've found. Or you can write them on Projects page.

Resources

- Datasheet for u-blox 5
- U-center
- GPSBee Schematic.pdf
- File:GPSBee v1.2(PCB).pdf
- File:Fat16.zip
- Fat16 Lib for Arduino 1.0

How to buy

Here to buy GPS Bee kit (with Mini Embedded Antenna): http://www.seeedstudio.com/depot/gps-bee-kit-with-mini-embedded-antenna-p-560.html?cPath=84_89

See Also

- Bee series

Licensing

This documentation is licensed under the Creative Commons Attribution-ShareAlike License 3.0 Source code and libraries are licensed under GPL/LGPL, see source code files for details.

External Links

Links to external webpages which provide more application ideas, documents/datasheet or software libraries

Category: Sensors

Structure

- Product
- Service
- Guides
- Projects
- Freelancer

Current Events

- Propagate
- GROVE System
- Open source service
- DSO Nano

Visual Catalogs

- Microcontrollers
- Bee series
- Frame Series
- Batteries and Chargers

Support

- Recent changes
- Help
- FAQ

Toolbox

- What links here
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