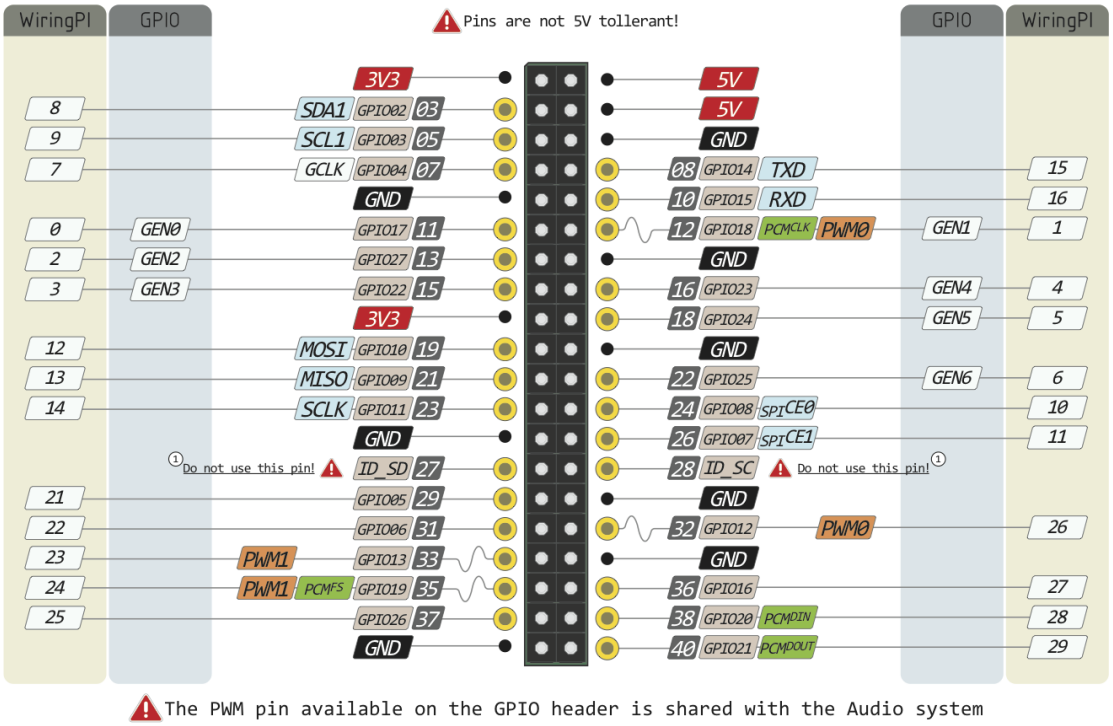
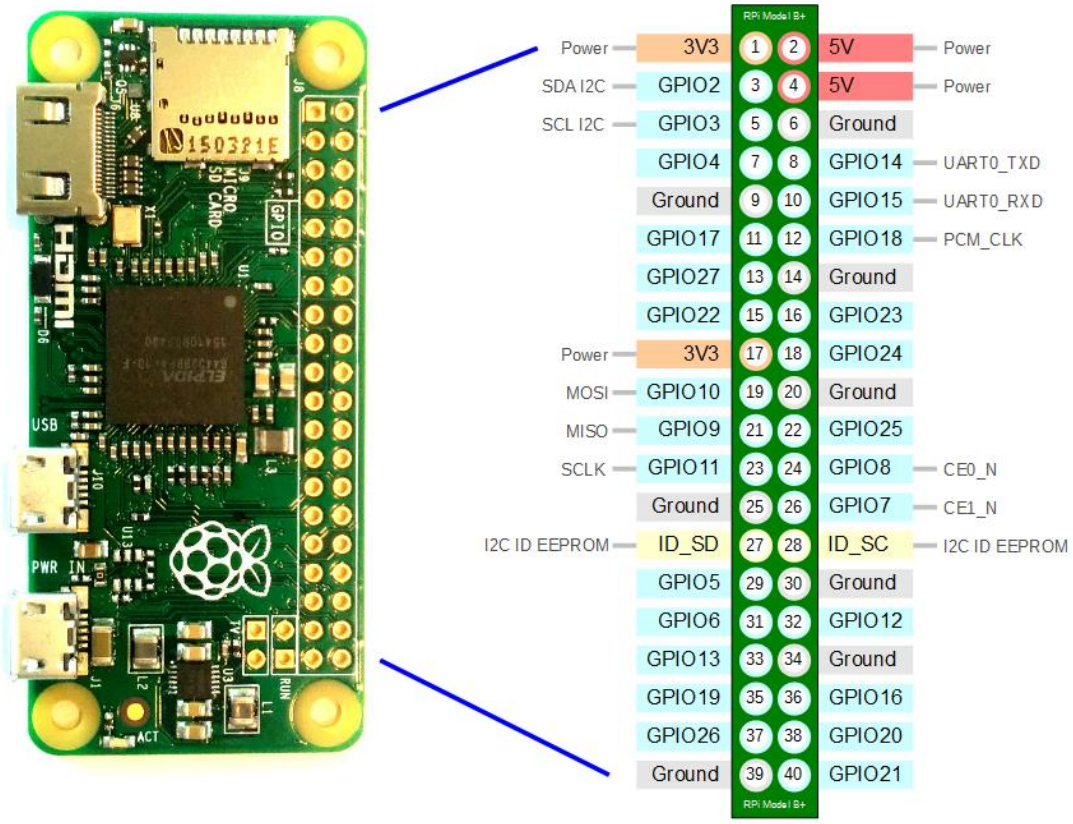
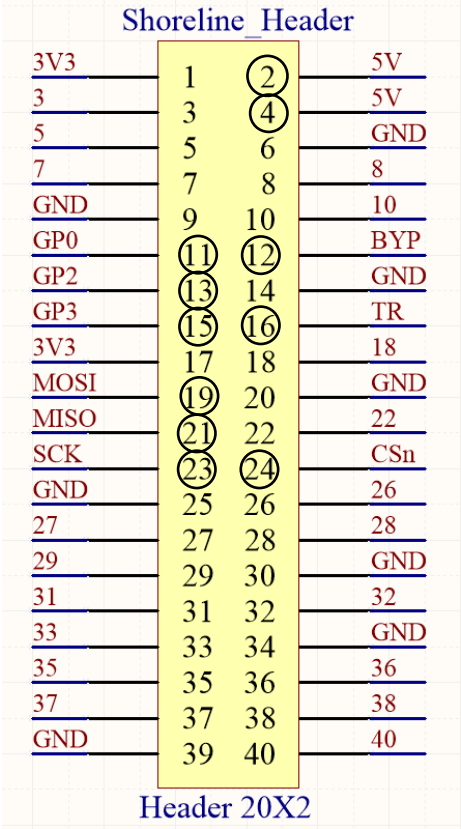
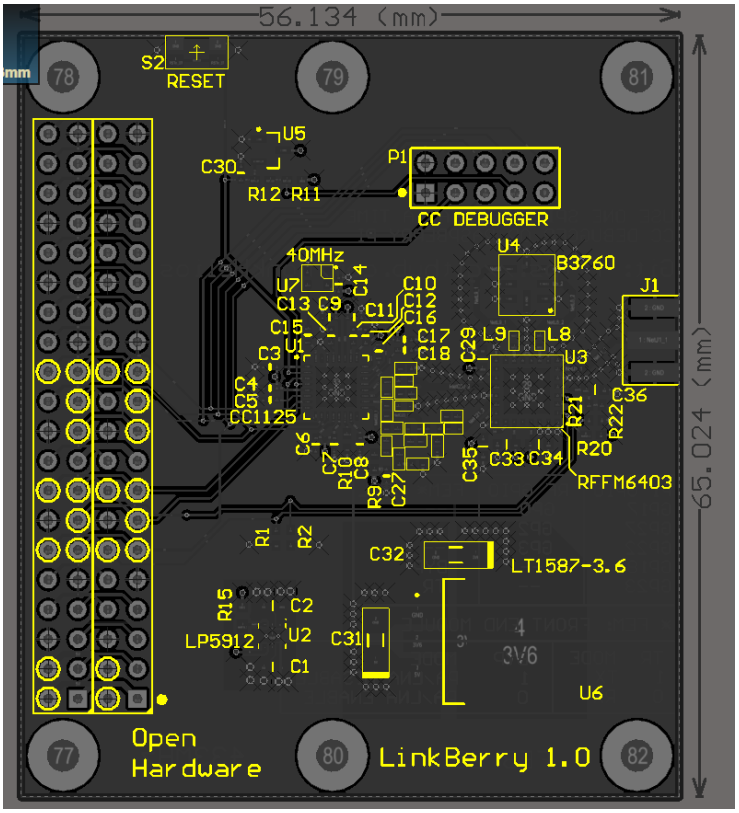
RAS_PI pinouts:





TELEMETRY BOARD:





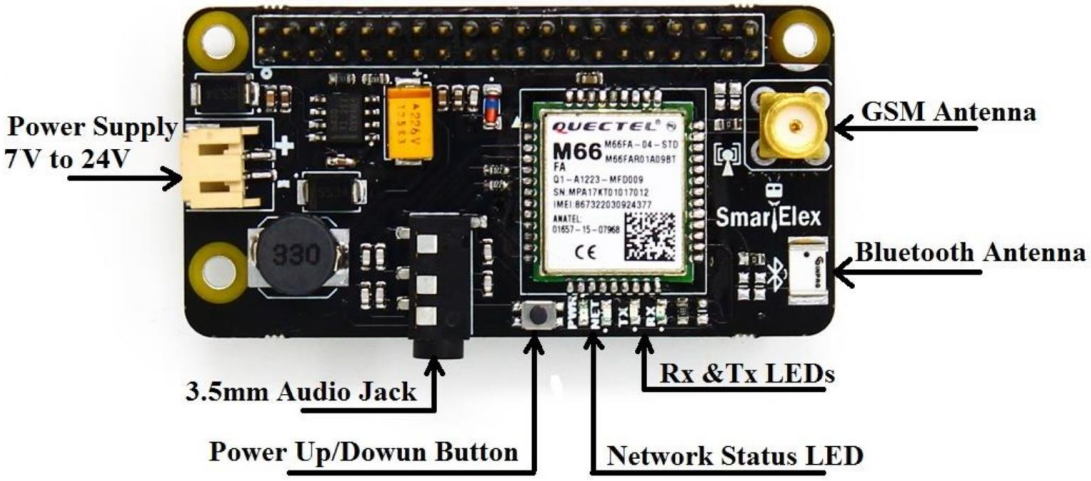
Bidirectional SPI communication needs to be established between the Pi and the Telemetry board
Encircled pins are used by the telemetry board
Rotate any one diagram by 180deg
Pins 19, 21, 23, 24 are used for SPI communication between the Pi and the RF IC (CC1125, TI)
Pins 11, 13, 15 are GPIO pins of the CC1125 (read CC1125 documentation for their usage)
Pins 12, 16 are control pins of the front-end module (RFFM6403)

Header Pin No.	Pi GPIO	CC1125 GPIO	RFFM6403 CTRL
11	GP17	GP0	-----
13	GP27	GP2	-----
15	GP22	GP3	-----
12	GP18	-----	BYP
16	GP23	-----	TR

TR	MODE
1	TX
0	RX

BYP	MODE
1	PA/LNA Disable
0	PA/LNA Enable

GSM BOARD:



The HAT uses the Quectel M66 Module. All communication with the HAT is through a serial interface. AT commands are used to configure and communicate with the HAT. The HAT allows you to use a software serial port on your Raspberry Pi. An onboard 3.5mm Audio Jack allows you to connect a headphone to answer calls.

Features:

- Quad-band module (850/ 900/ 1800/ 1900MHz).
- Works on 7V ~ 24V.
- Operates at -35° C ~ +80° C.
- Include Onboard Bluetooth BT 3.0 with antenna.
- Controlled via AT commands.
- Autobauding 4800bps to 115200bps.
- Maximum download speed 85.6kbps.
- Send/Receive SMS
- Make/Receive voice call with 3.5mm audio jack.

HAT Connection with Raspberry Pi:

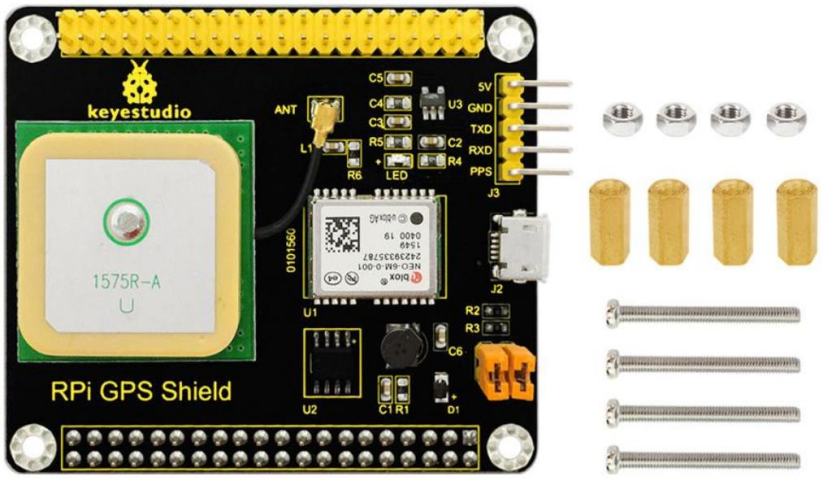
HAT	Raspberry Pi Pins
Rx	GPIO14 / BCM14 /UART0 Tx
Tx	GPIO15 / BCM15/ UART0 Rx
Reset	GPIO25 / BCM25

Note:

To Power on HAT Press Power button for moment (5s to 10s) and press same button to power down shield.

GPS BOARD:

keyestudio RPI GPS Shield



Connection Method

To get started, hook the GPS module up to your Pi as follows, cross-connecting the TX and RX pins (TX on one device goes to RX on the other and vice versa), and supply 5V from the Pi to the VIN pin on the GPS module.

For the Raspberry Pi 3 you need to explicitly enable the serial port on the GPIO pins. The reason for this is a change with the Pi 3 to use the hardware serial port for Bluetooth and instead use a slightly different software's serial port for the GPIO pins.

A side effect of this change is that the serial port will actually change speed as the Pi CPU clock throttles up and down--this will unfortunately cause problems for most serial devices like GPS receivers!

 # NOTE: GPS and GSM boards use the same two pins for serial communication so, we need to mux and demux the RX and TX pins.

 # The GPIO pins for the mux and demux shall be updated once designed

 # Information about the sensor board shall also be updated once it is designed, for now reserve the I2C bus for the sensors.

 # SPI communication between the telemetry board and Pi will also be required at the ground station.