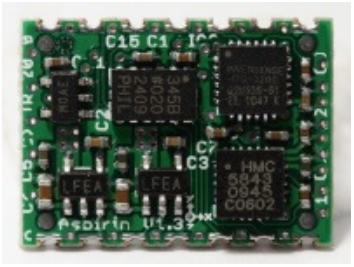
AspirinIMU

From Paparazzi

Contents



Aspirin IMU

The next generation flat multi degree of freedom inertial measurement unit. It uses digital 3-axis sensors which allow for a very small size and price. Other features include onboard voltage regulators, EEPROM for storing calibration data and extra sensors such as a barometer.

Hardware Revision History

Version #	*Release Date*	*Release Notes*
v2.1(current)	03/2012	2nd Gen Production Release
v2.0	11/2011	2nd Gen Prototype
v1.5	04/2011	Updated Production Release
v1.4	03/2011	Prototype Update
v1.3	08/2010	Initial Production Release
v1.2	07/2010	Prototype Update
v1.1	07/2010	Prototype Update
v1.0	07/2010	Initial Prototype

Features

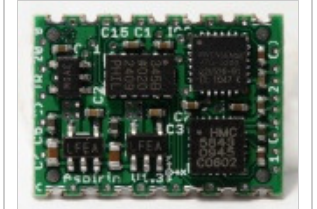
- 3-axis accelerometer
- 3-axis gyroscope
- 3-axis magnetometer
- Onboard voltage regulation
- Onboard I2C EEPROM
- Onboard barometer (*v2.1*)
- Standard footprint across versions

- Single PCB flat form-factor
- Fits directly onto Lisa/M, carriers for Booz and Lisa/L, or for LPC21xx integration

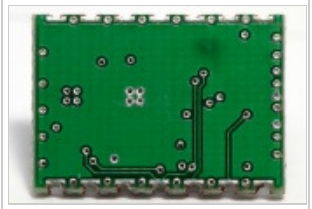
Aspirin Feature Matrix

Version	*Accelerometer*	*Gyroscope*	*Magnetometer*	*Barometer*	*Regulators*	*EEPROM*	*Comments*
v2.1	MPU-6000	MPU-6000	HMC5883	MS5611	1x 3.3V (LP2992)	yes	
v2.0	MPU-6000	MPU-6000	HMC5883	none	1x 3.3V (LP2992)	yes	
v1.5	ADXL345	IMU-3000	HMC5883	none	2x 3.3V (LP2992)	yes	
v1.4	ADXL345	IMU-3000	HMC5883	none	2x 3.3V (LP2992)	yes	
v1.3	ADXL345	ITG-3200	HMC5843	none	2x 3.3V (LP2992)	yes	
v1.2	ADXL345	ITG-3200	HMC5843	none	2x 3.3V (LP2992)	yes	
v1.1	ADXL345	ITG-3200	HMC5843	none	2x 3.3V (LP2992)	yes	
v1.0	ADXL345	ITG-3200	HMC5843	none	2x 3.3V (LP2992)	yes	Also has SC18IS600 SPI-I2C interface

Note: Aspirin 2.1 is coming in several population versions. The current version available at http://thequadshot.com has the MPU-6000 and HMC5843 fitted, the pressure sensor is not mounted. You can find the list of fitted sensors on Aspirin 2.1 in the eeprom block 4.



Aspirin IMU front



Aspirin IMU back

Aspirin IMU on Lisa/L compatible carrier board

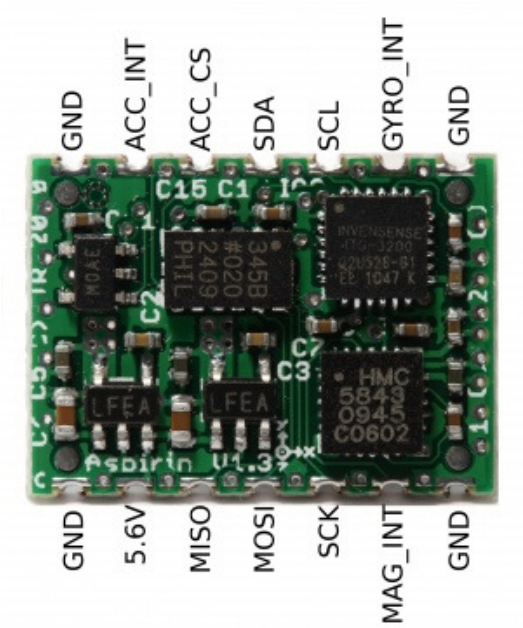
Aspirin flat carrier board for Lisa/L (without IMU mounted)

Pinout

Note that Aspirin uses a standard footprint and pinout across all versions, with certain exceptions. The chip select (CS) and interrupt (Int) pins are not always assigned to the same devices. A good example is with the introduction of the MPU-6000 device. Check the schematics for details.

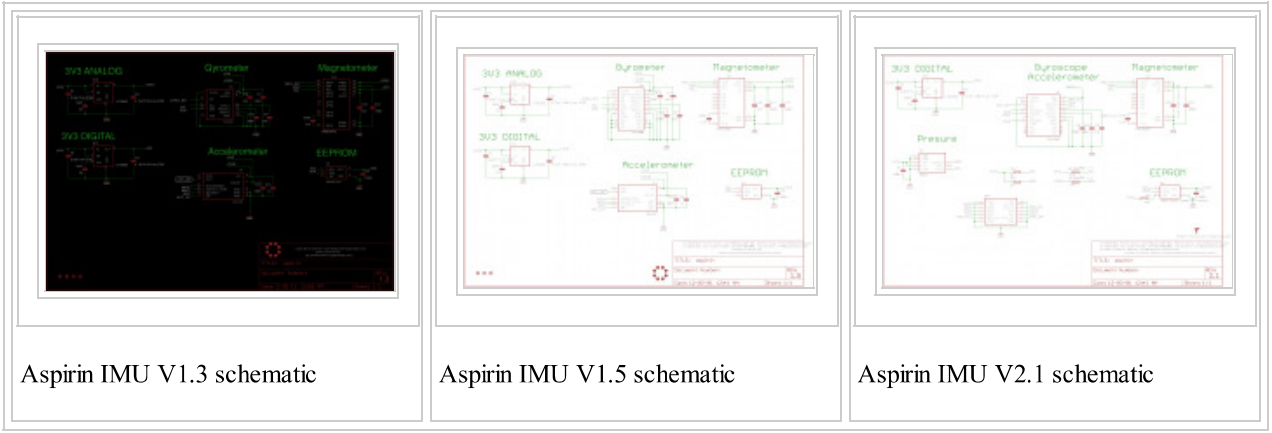
Warning: When mounting Aspirin on Lisa/M note that the pin labeled GND on Aspirin (in the right upper corner on the following picture) is connected on Lisa/M to GYRO_SS. To prevent a software error induced shorting of the Lisa/M GYRO_SS pin to ground, remove the

castellation or remove the connection on that pad. In future versions of Aspirin the right upper GND pad will be changed to Non Connected (NC).



Schematics

Schematics are available under http://paparazzi.enac.fr/wiki_images/Cc-by-sa-3-0.png (http://creativecommons.org/licenses/by-sa/3.0/) license. For additional intermediate schematics see Downloads.



Aspirin IMU V1.3 schematic | Aspirin IMU V1.5 schematic | Aspirin IMU V2.1 schematic

Drivers and Support

Please see the IMU subsystem page for details on configuring Paparazzi for using an Aspirin IMU.

The drivers for this IMU are available in the Paparazzi GitHub repository (https://github.com/paparazzi/paparazzi/blob/master/sw/airborne/subsystems/imu/imu_aspirin.c) .

PCB and assembled boards suppliers

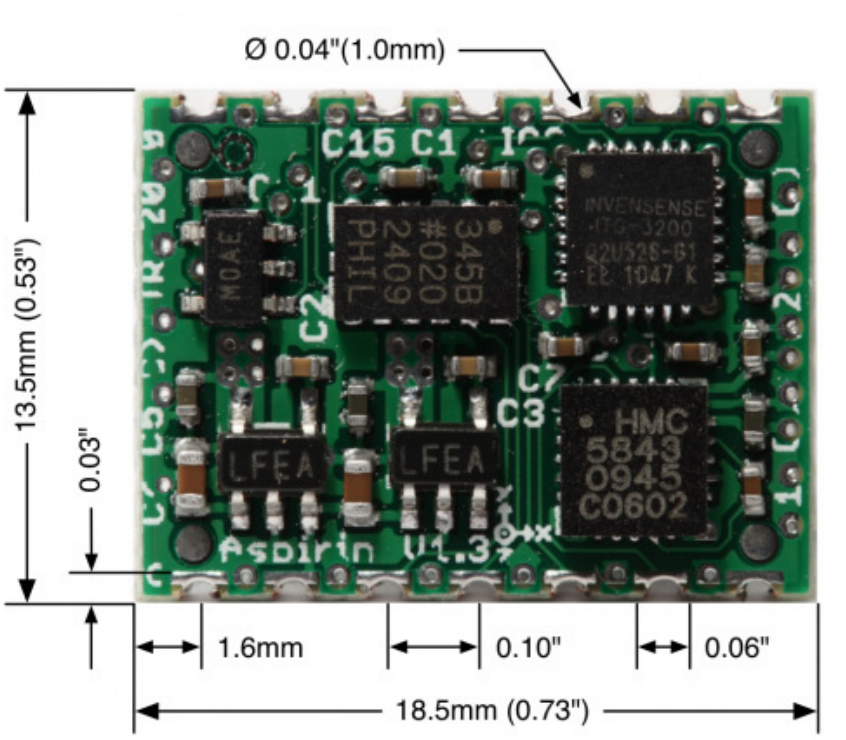
Aspirin IMU is available in the Transition Robotics/Quadshot Online Shop (http://thequadshot.com/collections/all) .

There are three options of Aspirin IMU:

- Without a carrier board (http://thequadshot.com/products/aspirin-imu)
- With Booz carrier board (http://thequadshot.com/products/aspirin-imu)
- With next generation flat carrier board (http://thequadshot.com/products/aspirin-imu)

- The flat carrier board can be purchased separately as well (http://thequadshot.com/products/lisa-l-aspirin-flat-carrier)

Mechanical Dimensions



The overall height of the board is about 3mm.

Downloads

Source files

- download available on GitHub: *Aspirin IMU and Carrier Board Cadsoft Eagle 6 Design (https://github.com/paparazzi/paparazzi-hardware/tree/master/controller/sensors/imu/aspirin)*

Gerber & Drill files

- download *NOT YET AVAILABLE* Need generated gerbers and drill files

Assembly files

- download *NOT YET AVAILABLE* Need Aspirin Components layouts (pdf)
- download *NOT YET AVAILABLE* Need Aspirin Bill Of Material

Retrieved from "http://paparazzi.enac.fr/wiki/AspirinIMU"
Categories: Hardware | User Documentation