Understanding the sensor

MPU 6050

↳ 6 degrees of freedom

(3-axis MEMS accelerometer + 3-axis gyroscope)

↳ ±2g to ±16g

How sensitivity works/how g's are calculated:

- Determined by register 1C (ACCEL_CONFIG)

8 bits

ACCEL_CONFIG

7	6	5	4	3	2	1	0
X Self Test	Y Self Test	Z Self Test	AFS_SEL + 2 bits determines sensitivity			-	-

AFS_SEL

↳ 2 bits

Dec	Bin	Sensitivity
0	00	±2
1	01	±4
2	10	±8
3	11	±16

* need to get ±16 sense

ACCEL_CONFIG (1C)
needs to be

0 0 0 1 1 0 0 0 = 0x18 Hex

AFS-SELECT

Sensitivity	LSB/g
±16	~~2048~~ ← old datasheet 1024 – new datasheet

How Lsb works

↳ least significant bit

L

Sensor outputs raw values as 16 bits

16 bits highest possible value

= 1111111111111111_2

(also equal to 65535

∴ 65535 possible readings

for -2g to 2g = 4000 mG

4000 / 65535 = 0.061

For -16g to 16g = 16000

16000 / 65535 = 0.244 mG

∴ Each '1' unit of raw values = 0.244 mG change