

1. If counting the reserved registers, there are in total 123 registers in the LSM303DLHC module, with 64 registers for Linear acceleration sensor and 59 registers for Magnetic field sensor. If not counting the reserved registers, there are 45 registers in total, with 30 register for Linear acceleration sensor and 15 registers for Magnetic field sensor.
2. Acceleration: x\_acceleration at 0xA8 and 0xA9, y\_acceleration at 0xAA and 0xAB, z\_acceleration at 0xAC and 0xAD. (Acceleration sensor has slave address 0x32)  
Magnetic: x\_mag at 0x03 and 0x04, y\_mag at 0x07 and 0x08, and z\_mag at 0x05 and 0x06. (Magnetic sensor has slave address 0x3C)
3. For all of the output data, there are 16 bits per channel, which is why we need to read two bytes for each channel output.
4. I think we can use capacitor such that one surface is fixed while the another surface will move when there are acceleration, so with different acceleration the distance between the surfaces will be different and the capacitance will be different. By measuring the capacitance, we can measure the acceleration. To measure acceleration in different axis, just position the capacitors in different orientations.