HMC5883L Compass

<https://cdn-shop.adafruit.com/datasheets/HMC5883L_3-Axis_Digital_Compass_IC.pdf>

What does it do ?

Low-field magnetic sensing to 12-bit ADC that enables 1-2 degree accuracy.

Power Supply Voltage: 2.16 to 3.6V

Control Flow:

1. Does it need enabling or configuration before use (calibration)?

In built self test measurement done with internal nominal magnetic field.

1. Does it measure automatically or on demand?
2. Continuous-Measurement Mode (user selectable rate with output register overwritten at every reading.)
3. Single-Measurement Mode then turns idle
4. Idle-Mode
5. How do you configure it (if applicable)? NOTE: only write to first 3 registers

Configuration Register A – sets data output rate and measurement configuration.

Configuration Register B – sets the device gain

Mode Register – 2bit selector for sensor mode

Data Output X, Y and Z - store the measurement result from channels X and Y (16 bits)

1. How do you request a measurement and read back the result?

1. Write CRA (00) – send 0x3C 0x00 0x70 (8-average, 15 Hz default or any other rate, normal measurement)

2. Write CRB (01) – send 0x3C 0x01 0xA0 (Gain=5, or any other desired gain)

3. For each measurement query:

Write Mode (02) – send 0x3C 0x02 0x01 (Single-measurement mode) Wait 6 ms or monitor status register or DRDY hardware interrupt pin Send 0x3D 0x06 (Read all 6 bytes. If gain is changed then this data set is using previous gain)

Convert three 16-bit 2’s compliment hex values to decimal values and assign to X, Z, Y, respectively.

1. What conversion is needed to convert the result into something useful?

Output is in 3-dimensions (XYZ)