

Why are some of my magnetometer readings -4096?

When the magnetometer reads -4096, it means the sensor reading is overflowing at the current gain setting.

From section 9.2.4 of the [LSM303DLH datasheet](#) (599k pdf):

In the event the ADC reading overflows or underflows for the given channel, or if there is a math overflow during the bias measurement, this data register will contain the value -4096 in 2's complement form. This register value clears after the next valid measurement is made.

Although this is not mentioned in the LSM303DLM or LSM303DLHC datasheets, it seems to apply for those sensors as well.

To avoid overflowing, try reducing the gain by setting the three gain-setting bits in CRB_REG_M. If you are using our Arduino library, insert this code into the setup method after `compass.enableDefault()`; to get the lowest gain (largest sensor input field range) possible:

```
1 // see the description of the CRB_REG_M register in the datasheet for other values ?  
2 compass.writeMagReg(LSM303_CRB_REG_M, 0b11100000);
```

Alternatively, you can use the `setMagGain()` function to do the same thing:

```
1 // see LSM303.h for other values  
2 compass.setMagGain(LSM303::magGain_81);
```