

# M\_Q135.h

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<code>
/*****
****/
/*!
@file      MQ135.h
@author    G.Krocker (Mad Frog Labs)
@license   GNU GPLv3
@section   HISTORY

v1.0 - First release
*/
/*****
****/
#ifndef MQ135_H
#define MQ135_H
#if ARDUINO >= 100
#include "Arduino.h"
#else
#include "WProgram.h"
#endif

/// The load resistance on the board
#define RLOAD 10.0
/// Calibration resistance at atmospheric CO2 level
#define RZERO 65
/// Parameters for calculating ppm of CO2 from sensor resistance
#define PARA 116.6020682
#define PARB 2.769034857
</code>

```

\*Rzero is the value of the resistor in the MQ-135 sensor in the presence of clean air. Where the CO<sub>2</sub> value is around 397.13 ppm as given below. The Rzero value varies for each individual sensor and can be found using another Arduino

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[[amc2021:group1:extras:r0:start|code]]
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\*RLOAD meanwhile is the external resistor value that is connected to the MQ-135 sensor, which in this case is 10kΩ.

\*Important parameters are for calculating CO<sub>2</sub> of 116.6 and 2.79 are taken from a calibration graph as seen from the

[[https://www.electronicoscaldas.com/datasheet/MQ-135\_Hanwei.pdf|datasheet]]. This shows the sensitivity of the sensor varies for each gas.

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{{ :amc2021:groupL:extras:mq-135:screenshot_2021-09-03_at_01.11.54.png |here}}
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<code>
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```
/// Parameters to model temperature and humidity dependence
#define CORA 0.00035
#define CORB 0.02718
#define CORC 1.39538
#define CORD 0.0018

/// Atmospheric CO2 level for calibration purposes
#define ATMOCO2 397.13

class MQ135 {
private:
    uint8_t _pin;

public:
    MQ135(uint8_t pin);
    float getCorrectionFactor(float t, float h);
    float getResistance();
    float getCorrectedResistance(float t, float h);
    float getPPM();
    float getCorrectedPPM(float t, float h);
    float getRZero();
    float getCorrectedRZero(float t, float h);
};
#endif
</code>
```

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