

Good CO2 Meters

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Intro

Good CO2 meters are hard to find and above all they are quite expensive. The only good and attractive CO2 meter, is the Aranet 4, which has a good readability, battery can last for one year, auto calibrate can be switched off.

This device costs about 200 Euro.

We have build two good CO2 meters at an affordable price.

Why is auto calibrate so bad?

Suppose you're in a room where the CO2 is 1200 ppm when you go to bed. The room is badly ventilated, so in the morning the CO2 is still at 700 ppm. When the CO2 meter is in auto calibrate mode, the lowest value it has seen in 24 hours will be 700 ppm. Now auto calibrate assumes this 700 ppm is the outside CO2 level and thus subtract 300 ppm from every future measurement.



Modifying an existing Tuya CO2 meter, based on the MHZ19D CO2 sensor.

Total costs about 45 Euro



Good CO2 sensor, (NDIR)
No auto calibration (unless explicitly set)
Can only be calibrated at 400 ppm
Power consumption, about 2.3 Watt
Runs ESPEasy (freeware) met P2P, (and Tuya/SmartLife)
Suited for any home automation system

Hacking a very bad power supply adapter, and mounting a SCD40 CO2 sensor.

Total costs less than 25 Euro



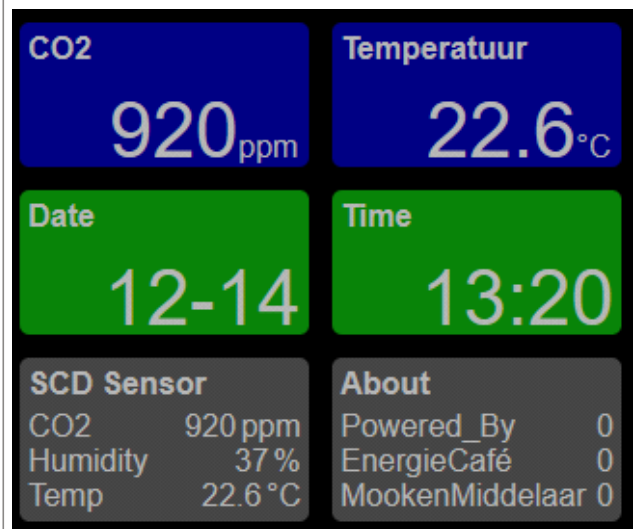
Good CO2 sensor, (photoacoustic NDIR)
No auto calibration (unless explicitly set)
Can be calibrated at any CO2 value
Low power consumption, less than 1 Watt
Runs ESPEasy (freeware) met P2P
Suited for any home automation system

Goede CO2 sensor, (photoacoustic NDIR)
 Geen auto kalibratie (tenzij je dat instelt)
 Kan eenvoudig zelf worden gekalibreerd
 Laag stroomverbruik, minder dan 1 Watt
 Draait op ESPEasy (freeware) met P2P
 Geschikt voor elk home automation systeem
 Uitgevoerd als netadapter: 230V
 Kosten onderdelen 20 Euro

Parameter (conditie)	Waarde
CO2 Bereik	0 .. 40,000 ppm
CO2 Nauwkeurigheid (0..2000ppm)	+/- (50 ppm +5%)
CO2 Repeatability	+/- 10 ppm
CO2 Response Time	60 sec
Temperatuur	-10 .. 60 °C
Temperatuur nauwkeurigheid	+/- 1 °C
Temperatuur Repeatability	+/- 0.1 °C
Temperatuur Response Time	120 s
Temperatuur Drift	<0.03 °C /jaar
RH Bereik	0 .. 100 %
RH Nauwkeurigheid	+/- 10%
RH Repeatability	+/- 0.4%
RH Drift	<0.25% / jaar
Vermogen Totaal	<0.7 Watt

Temperatuur (en dus ook RH) is door inbouw wat minder, maar opgesteld op een vaste plaats, kan de temperatuur (en daarmee ook de RH) eenvoudig worden gekalibreerd.

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This device has a good NDIR CO2 Sensor: the Winson MHZ19D.
 It has Tuya / SmartLife WIFI connection.
 It costs between 35 and 40 Euro's.
 The main disadvantage is that it's self-calibrating (24 hours cycle, but you can calibrate it manually too).

Parameter (condition)	Value
CO2 Range	0 .. 5,000 ppm
CO2 Accuracy	+/- (50 ppm +5%)
CO2 Repeatability	+/- 10 ppm
CO2 Response Time	60 sec

	Temperature	-10 .. 50 °C
	Temperature accuracy	+/- 0.3 °C
	Temperature Response Time	120 s
	RH Range	0 .. 100 %
	RH Accuracy	+/- 2%
	Total Power	? Watt