• Description

The sensor is designed for the measurement of CO2 concentration in gas phase. It has all the advantages from NDIR products, such as good selectivity, high sensitivity, long life and independence to O2.

• Performance Characteristics

Output Mode: UART, PWM

High precision

Dual channel

Size:64mm×20mm×13mm(L×W×H）

• Environmental

Storage temperature: -40 ℃ ~ 70 ℃

Working temperature：-20 ℃ ~ 70 ℃

Working humidity: 0 % ~ 95%RH non-condensing

• Main Application

Indoor air monitoring

Ventilating system

In cars

Smart house

Others

• Interface

Pin Number	Function
1	TTL TXD
2	TTL RXD
3	PWM Output
4	GND
5	VCC

Product Dimensions

All dimensions in mm
All tolerances ±0.2 mm unless otherwise stated

• Installation Instructions

The Module has two connectors.The sensor module Connector1 model is PH-2A and the Connector2 model is EH-3AW.The connector type of the customer matching Connector1 is PH-2Y and the Connector2 is EH-3Y. (If necessary, a special connecting line can be provided for the customer, please note the line length and communication mode of the order.) The module cannot work in dusty environment for a long time.Supply power should be in is proper range.

• How To Place Order

In order to get the product you want, please specify the following information when place your order:
1.Model of the module.
2.Measuring Range and detection accuracy of the module.
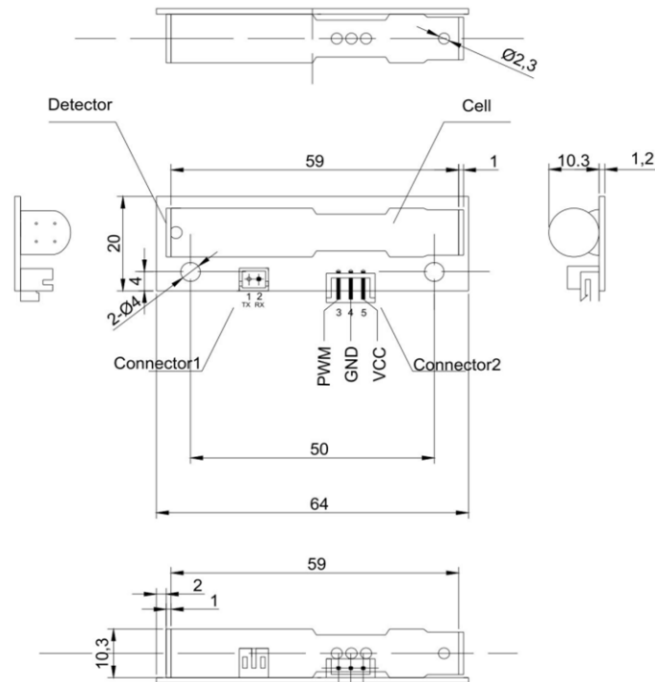For example:
IRM-Z01-4K 400-4000ppm ±70ppm±5% reading

Note

The performance data in this document was tested under standard conditions using the test circuit and test environment recommended by the NDIR CO2 sensor.

Sensor performance varies under different environmental conditions, please contact us if you need more details.

• Technical Data

Description	Parameter	Unit
Detection range	400-4000	ppm
Detection accuracy	±70ppm±5% of reading	/
Response time T_{90}	＜3	minute
Warm-Up time	Set to work＜30	second
	Precision reached＜15	minute
Working voltage	5±0.5	V
Working current	$I_{average}$：80	mA
	I_{peak}： 140	mA

• PWM Output

PIN 3 is the PWM output,   definition is: Concentration range：400-4000ppm CO2

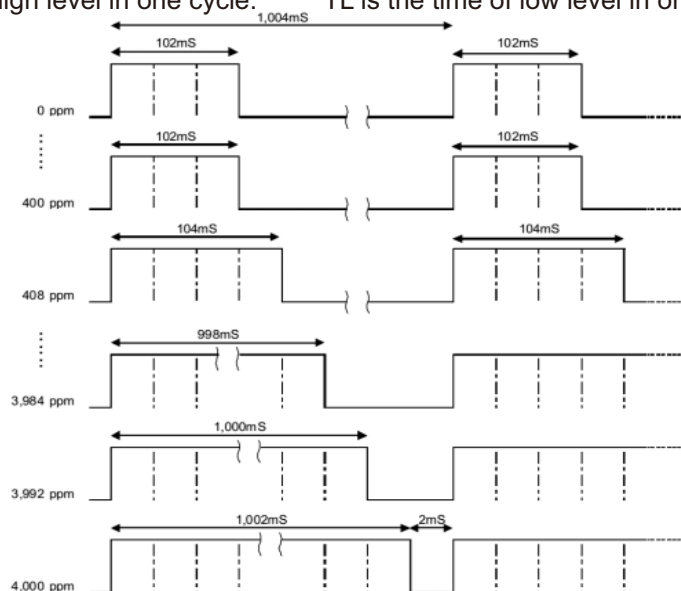Cycle: 1004 ms ±5%   High level output of initial period:102ms (nominally)

Central period:1002.0ms ±2%   Low level output of end period:2ms (nominally)

Formula to calculate the CO2 concentration in PWM:

Cppm =4000×（TH-2ms）/(TH+TL-4ms)   where Cppm is the CO2 concentration,   unit in ppm；

TH is the time of high level in one cycle.   TL is the time of low level in one cycle.

• UART Protocol

Baud rate：19200bps, 8 bytes, first byte is stop, no check byte. The reading and return data is hexadecimal.

Concentration uploaded automatically in ASCII with the format：

32	32	x	x	x	x	x	32	p	p	m	\r	\n

For example：output of 12345 ppm：

		1	2	3	4	5		p	p	m	

0x20, 0x20, 0x31, 0x32, 0x33, 0x34, 0x35, 0x20, 0x70, 0x70, 0x6d,