

User Manual

NDIR CO2 Sensor Model PCL0A

PCL0A is one of the general NDIR CO2 gas modules, which adopts the NDIR principle and consists of an advanced light chamber, precise electric circuit and intelligent software. With the help of a single light source, a single channel detector, and a microprocessor, PCL0A can perform the gas concentration signal in different ways. In this product, temperature compensation has been realized as well as correction of nonlinearity. PCL0A has the function of self-calibration every 24 hours. It carries all the advantages of NDIR products, such as good selectivity, high sensitivity, long life, and independence to O2.

PCL0A is suitable for a wide range of applications including indoor air quality monitoring, ventilation system controls, automobile airflow management, etc.



1. Technical Specifications

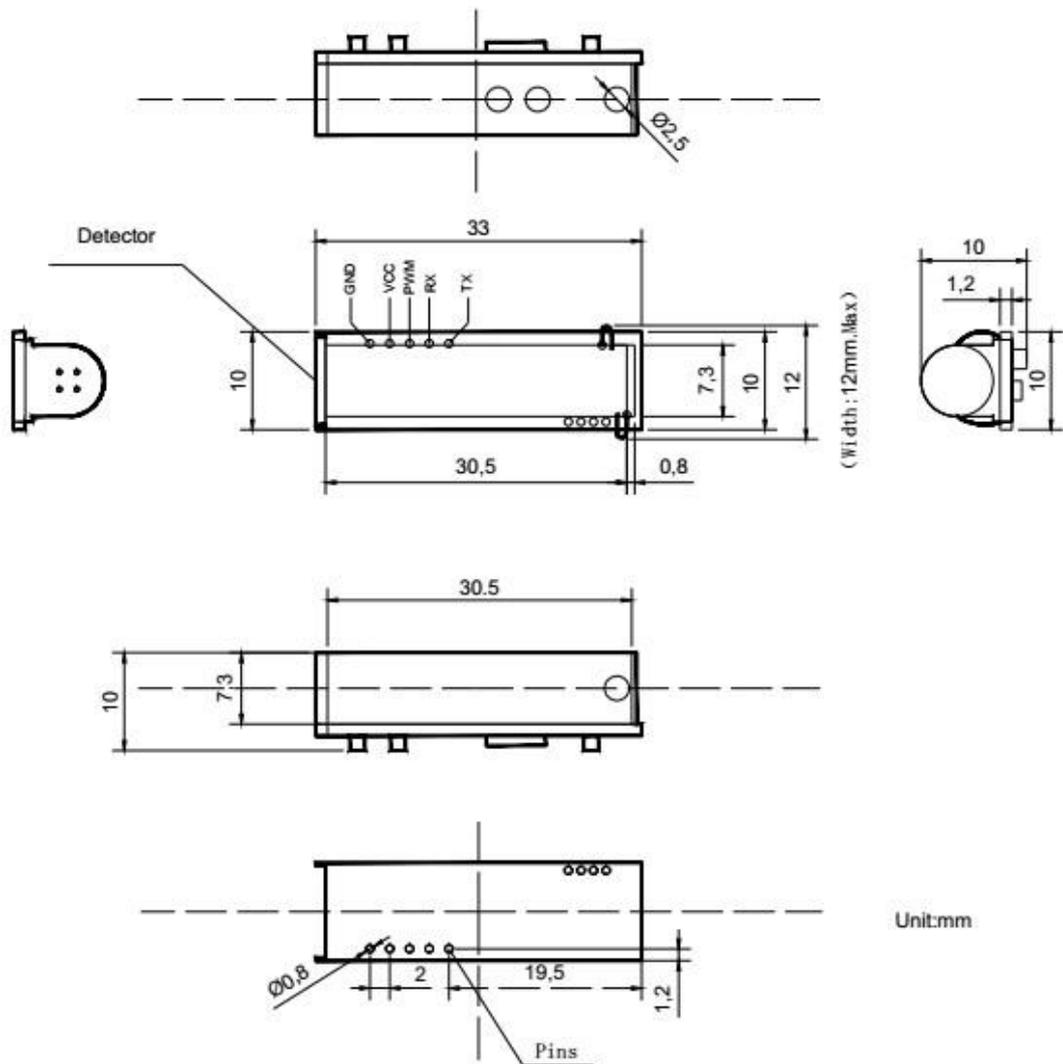
1.1 Working conditions

Description	Symbol	Value	Unit
Storage temperature	Tstg	-40 to +70	°C
Working temperature	TA	-10 to +60	°C
Working humidity	HA	0 to 95 (no condensation)	% RH
Working voltage	VDC	5±0.5	V
Working current	Iaverage	75	mA
	Ipeak	140	mA

1.2 Performance

Description	Parameter	Unit	
Working principle	NDIR		
Detection range	0-5000	ppm	
Detection accuracy	±50ppm±5% reading		
Response time T90	< 2	Min	
Warm-up time	Set to work	< 30	Sec
	precision reached	< 5	Min

1.3 Mechanical



2. Signal Output

The output modes of this sensor include UART and PWM.

2.1 Pinout

- 1 TTL TXD
- 2 TTL RXD
- 3 PWM Output
- 4 +5 VCC
- 5 GND



2.2 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
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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

2.3 PWM Output

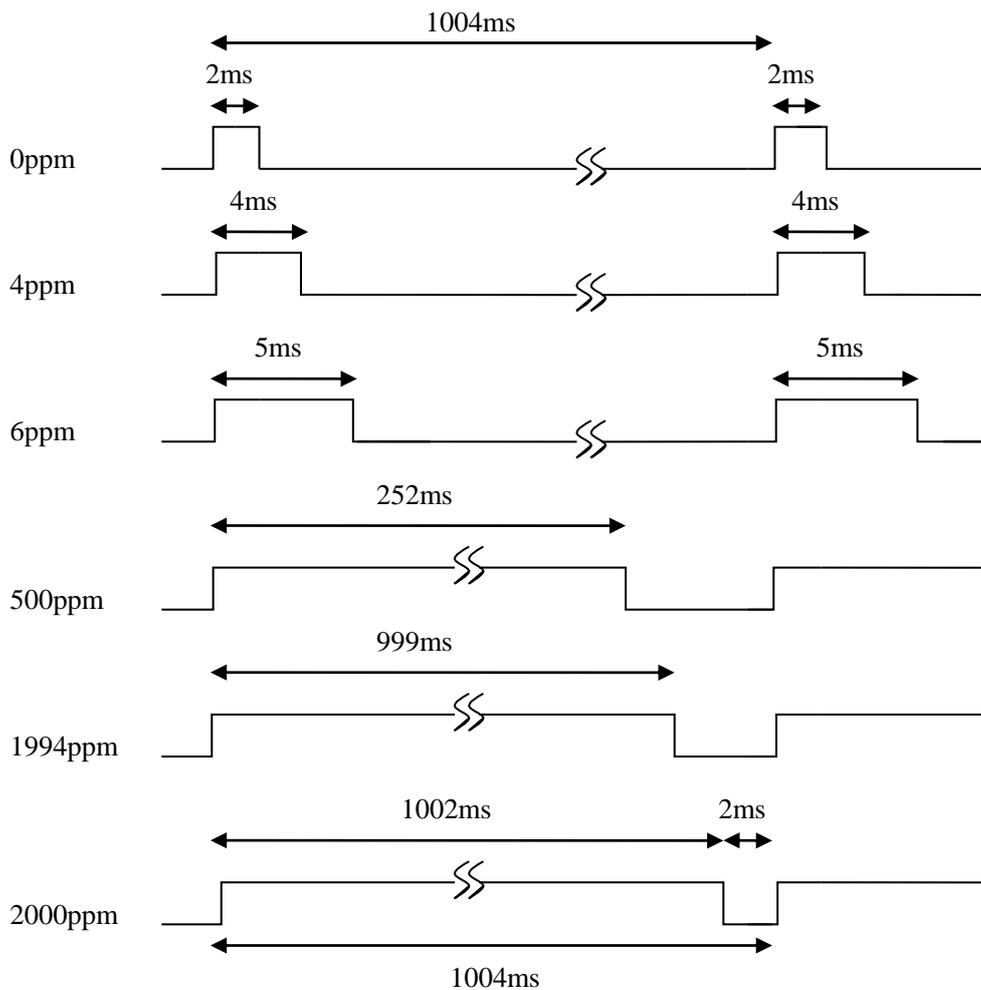
PIN 3 is the PWM output with the following definition:

Concentration range: 0-5000ppm CO₂

Cycle: 1004 ms ±5%

How to calculate the positive pulse width of PWM based on CO₂ concentration:

$$\text{The positive pulse width} = (\text{PPM concentration} / 2) + 2\text{ms}$$



PWM OUTPUT

3. Installation instructions

The distance between the installation holes is 2 mm. Connect the module to a client through the single-row socket with a connection distance of 2 mm.

4. Maintenance and storage

The module should not be working in a dusty environment for a long time to avoid reducing sensor lifespan. The power supply should be in a proper range per specifications.