

D-120 CO2 Sensor Manual

KingCan Industry Corporation

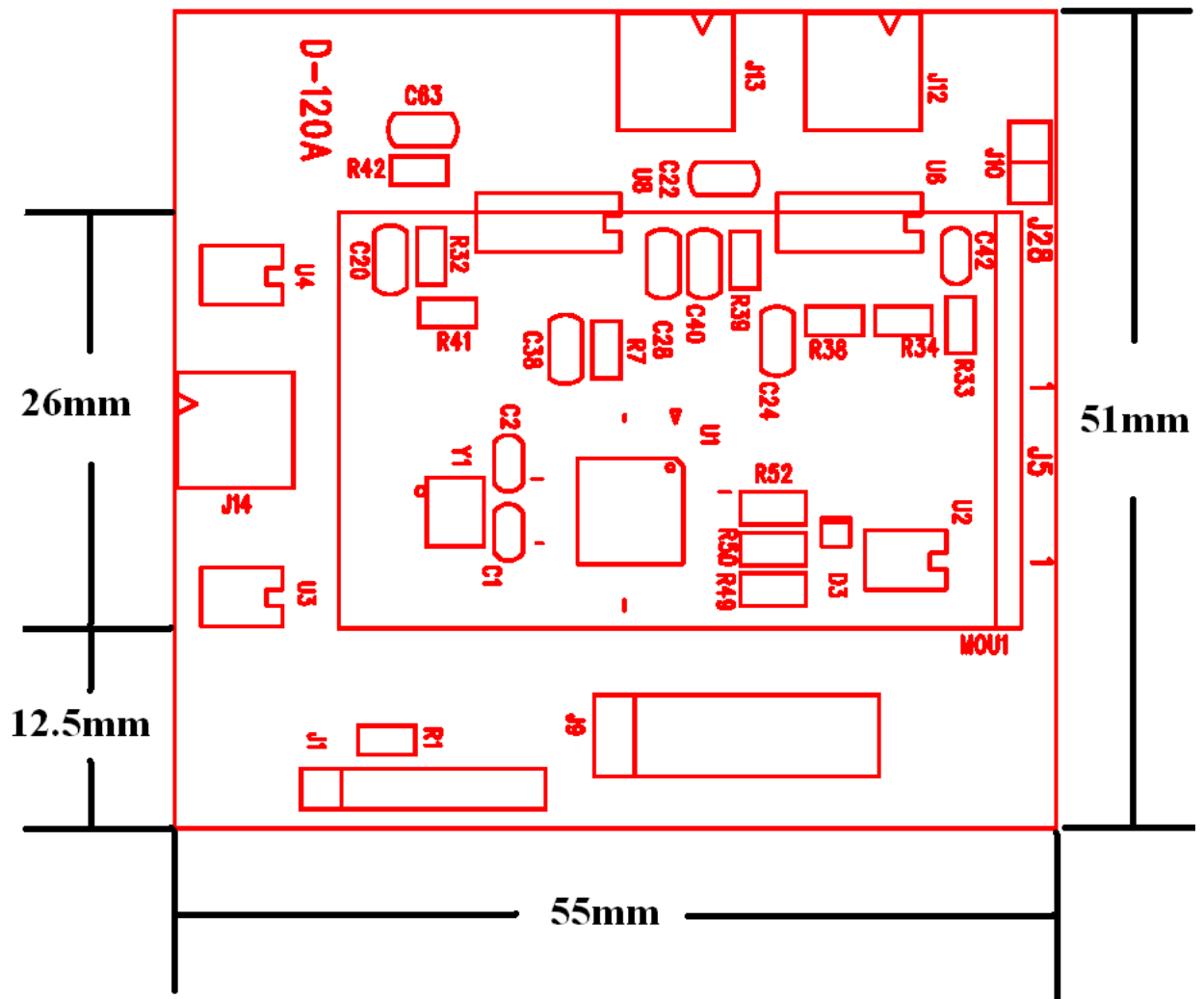
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CO2 Module D-120



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Dimensions



CO2 Module D-120 Specification

General Performance

Storage Temperature Range.....	-30°C ~+70 °C
Operating Temperature Range.....	0°C ~50 °C
Operating Humidity Range.....	0 to 95% RH (non-condensing)
Operating Environment.....	Residential, commercial, industrial spaces and potentially dusty air ducts used in HVAC (Heating Ventilation and Air-Conditioning) systems.
Warm-up Time.....	≤ 3 min. (@ full specs ≤ 15 minutes)

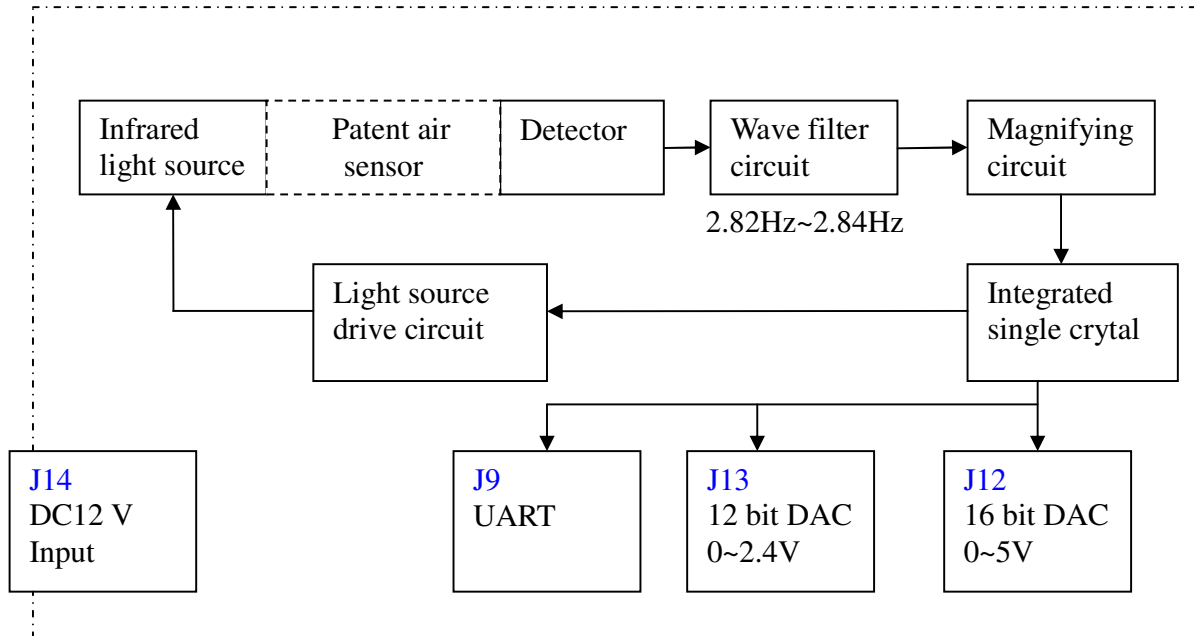
Electrical Mechanical

Power Input.....	12 VDC
Current Consumption.....	50 mA average < 110 mA peak current (averaged during IR lamp ON, 150 msec) < 300 mA peak power (during IR lamp start-up, the first 20 msec)
Electrical Connections.....	Terminals not mounted or PCB terminal Block
Dimensions.....	55mm L×51mm W×25mm H

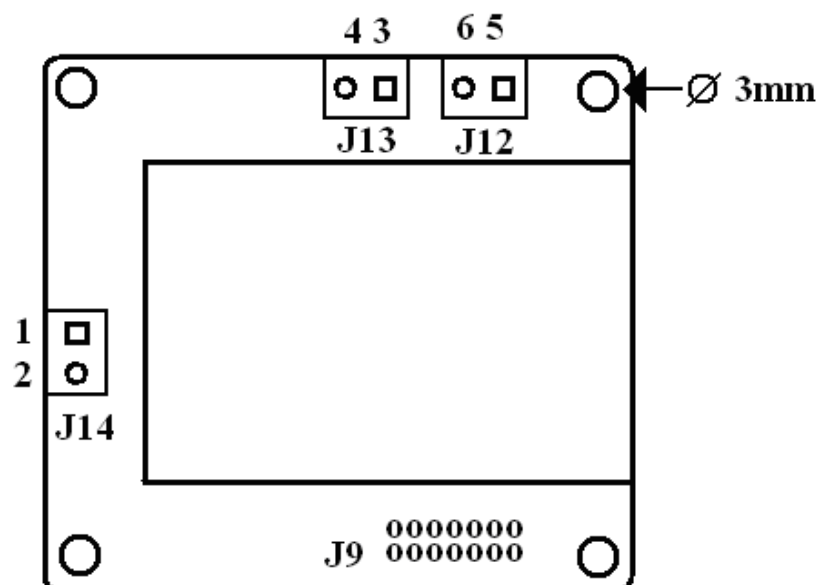
CO2 Measurement

Sensing Method.....	non-dispersive infrared (NDIR)
Sampling Method.....	diffusion
Response Time (90%).....	< 5 minutes diffusion time
CO2 Measurement Range.....	0~3000 ppm
Accuracy.....	± 5 % of Full Scale
J13 CO2 Linear Conversion Range.....	0 ~2.4 VDC for 0~3000 ppm
Resolution.....	2 mV
J12 CO2 Linear Conversion Range.....	0 ~3 VDC for 0~3000 ppm
Resolution.....	10 mV
UART Serial com port.....	CMOS UART with Rx Tx
Baud Rate.....	9600
Start Bits.....	1
Data Bits.....	8
Stop Bits.....	1
Parity.....	none
Protocol.....	none

D120 System Block Diagram



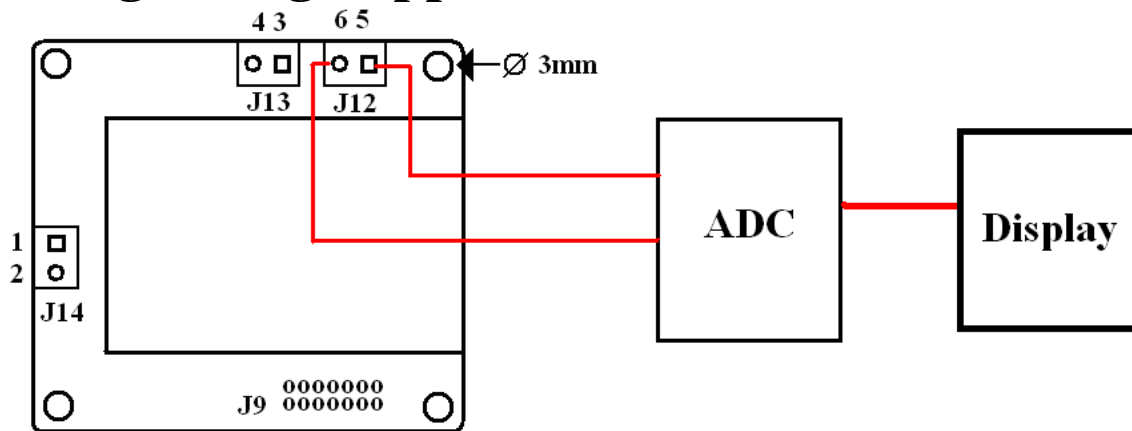
Contact Illustration



- 1 DC12V
- 2 Ground
- 3 CO2 analog signal output(0~2.4V)
- 4 Ground
- 5 CO2 analog signal output(0~ 5 V)
- 6 Ground

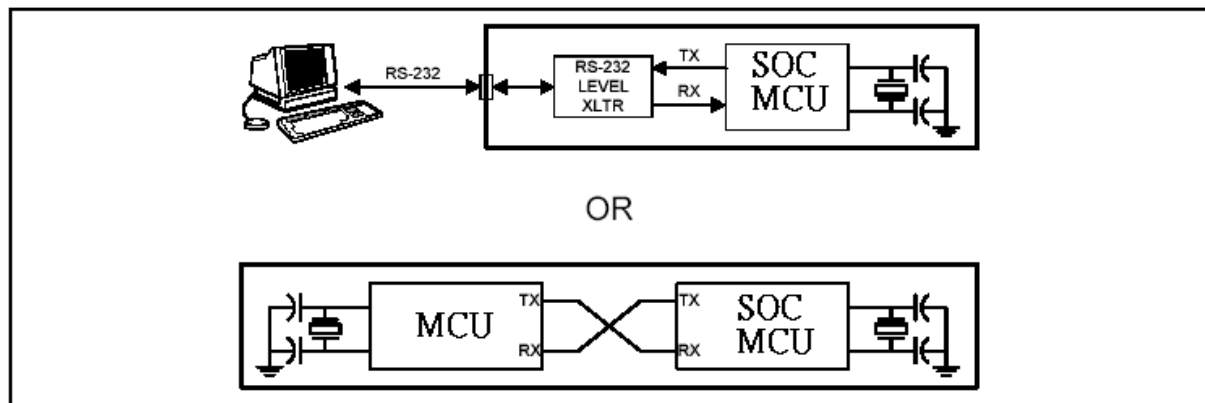
- J9-7 TX
- J9-8 RX
- J9-11 Ground
- J9-12 DC3.3V output
- J9-13 Ground
- J9-14 DC12V

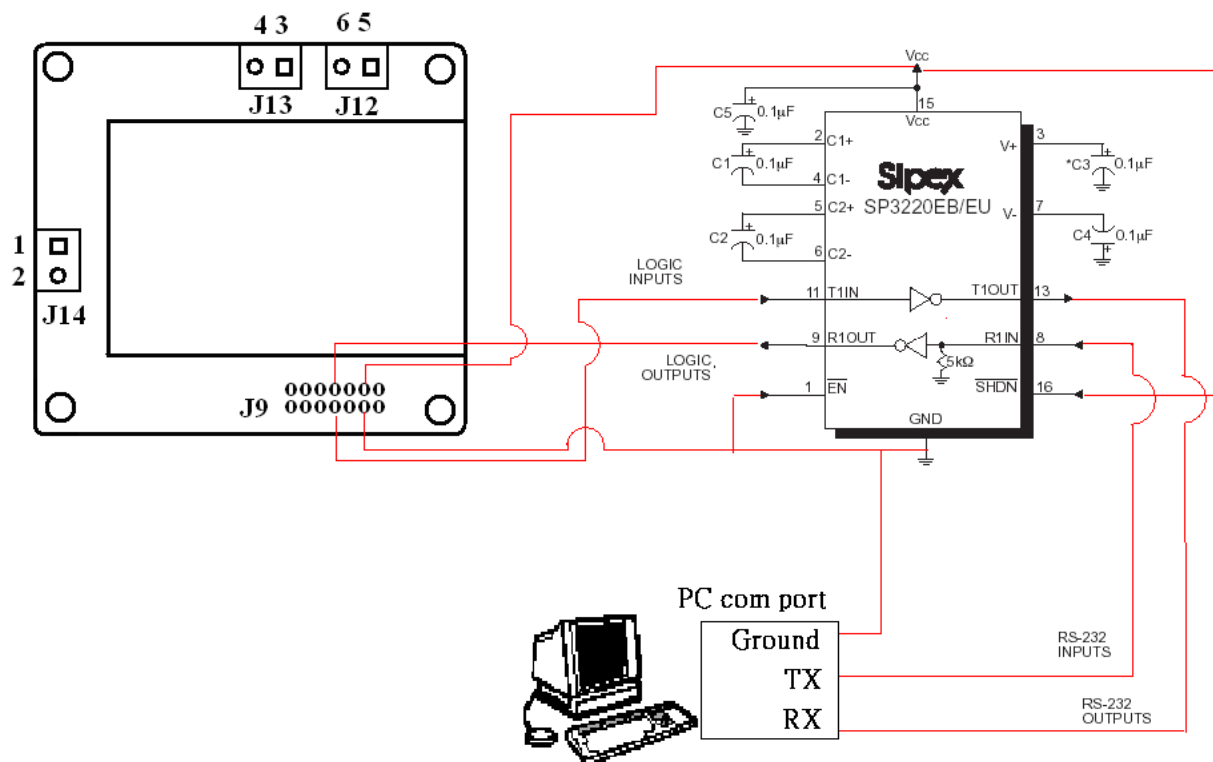
Analog Voltage Application



- 1 DC12V
- 2 Ground
- 3 CO2 analog signal output(0~2.4V)
- 4 Ground
- 5 CO2 analog signal output(0~ 5 V)
- 6 Ground

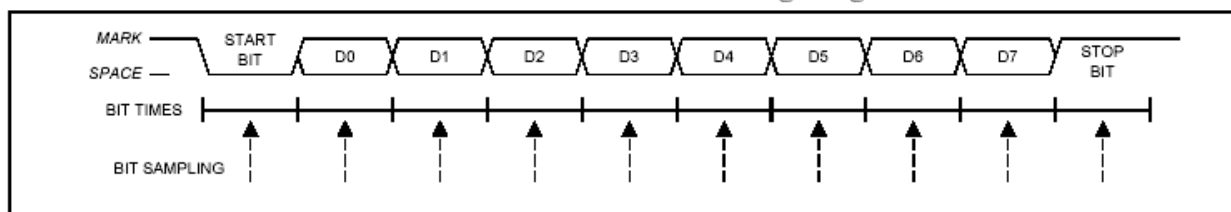
Serial Port Connection





J9-7 TX
J9-8 RX
J9-11 Ground
J9-12 3.3VDC output

UART Mode 1 Timing Diagram



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Example :

Convey Cycle 2.82 sec/time , Baud Rate is 9600 , time width of a bit is $1/9600=104\mu\text{Sec}$

When convey 1200 through TX (J9-7) of SOC MCU,

- 1、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "Space"。
- 2、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "1"。
- 3、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "2"。
- 4、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "0"。
- 5、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "0"。
- 6、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "Enter"。
- 7、One Start bit, sending Data 0~Data 7 then sending Stop bit, character is "\n"。

Need 7.29msec to convey data a time.

	Bit sampling state						
	1	2	3	4	5	6	7
Start Bit	0	0	0	0	0	0	0
Data 0	0	1	0	0	0	1	0
Data 1	0	0	1	0	0	0	1
Data 2	0	0	0	0	0	1	0
Data 3	0	0	0	0	0	1	1
Data 4	0	1	1	1	1	0	0
Data 5	1	1	1	1	1	0	0
Data 6	0	0	0	0	0	0	0
Data 7	0	0	0	0	0	0	0
Stop Bit	1	1	1	1	1	1	1
ASCII							
Hex	02	31	32	30	30	0D	0A
Char	Space	1	2	0	0	Enter	\n