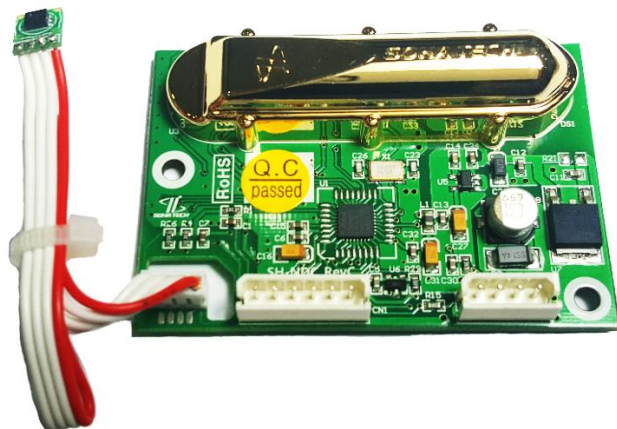


CO₂ Module: Model: SH-NDTH



■ Application

- ✧ CO₂ Control for IAQ
- ✧ Building, Hospital, School
- ✧ Air cleaner, Air conditioner
- ✧ Mushroom control, Boiler control

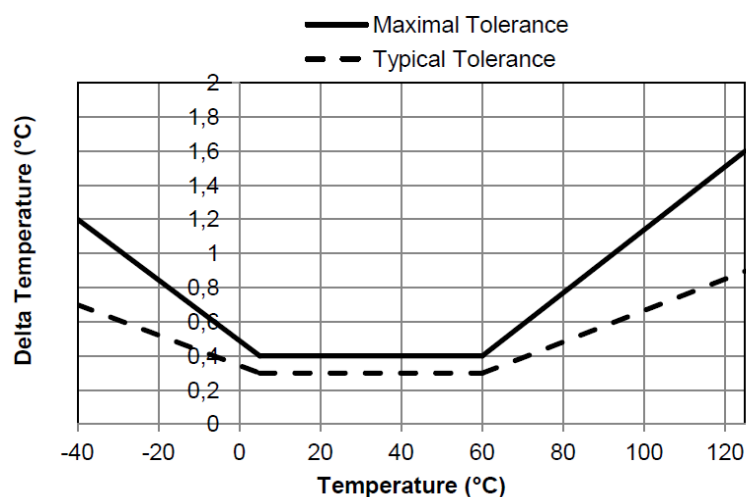
■ Technical Specification

1. CO₂ Sensor

Measuring Type	Non-Dispersive Infrared (NDIR)
Measuring Range	0 ~ 3,000 / 5,000 / 10,000ppm
Accuracy	FS ±2%, measured value±3% @ 0 ~ 50°C
Response Time	Every 2.0 Seconds
Warm-up Time @25°C	< 90Sec
Operating Condition	0 ~ 50°C, 0 ~ 95% RH (Non Condensing)
Output	Analog : 0~3VDC (0~3000, 5000, 10000ppm) [CN2]
	UART: 9600bps [CN1] / TTL Level 3.3V
Power Input	DC7V ~ 12V Input
	Fixed(Other Made): 5 VDC Regulated (±4%)
Consumption Current	Normal 38mA, Peak point 80mA
Interface	4PIN Header [CN2], 6PIN Header [CN1]
	Molex 5267 included. With 2.54mm spacing.
	Dimension
Size	(W)65 mm x (H)45 mm x (D)17.6 mm (±0.5 mm), Weight : 22 g

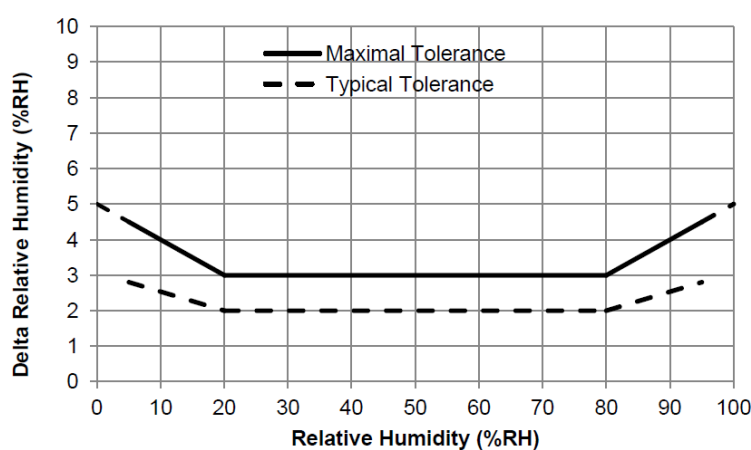
2. Temperature Sensor

Range	-25 ~ 80 °C ,
Accuracy	±0.3 °C
Response Time	5 ~ 30 Sec



3. Humidity sensor

Range	0 ~ 100 %RH
Accuracy	±2 %RH Max. ±3 %RH
Response Time	8 Sec



♣ This product can be changed for quality improvement without notification.

■ Features

1. Cutting-Edge NDIR (Non-dispersive Infrared) Method that detects CO₂ in the air.
2. Analog and Digital output by request of control system
 - A. Analog Output: 0~3V (0~3000ppm/0~5000ppm/0~10,000ppm)
 - B. Digital Output: UART (3.6V Level RS-232) Output

※ Enable to make changes in specifications and protocol on customer's demands.

■ Output Specification

1. Digital specification (3.6V Level RS-232)

1) SH-NDTH Format (ASCII Data)

- Baud 9600bps
- Data output cycle : 2 Sec

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
CO ₂ Value				B	Temp. Value(*)					B	Humidity Value(*)			CR	LF	

B= Blank [0x20]

Output example) CO₂ = 1000 ppm, Temp. = 25.0°C, Humidity = 65.8%,

1000 025.0 65.8[CR][LF]

Hex value : 0x31, 0x30, 0x30, 0x30, 0x20, 0x20, 0x32, 0x35,
0x2e, 0x30, 0x20, 0x36, 0x35, 0x2e, 0x38, 0x0d,
0x0a

2. Analog output specification(CO₂ Only)

- CO₂: 0 ~ 3 V(0 ~ 3,000 / 5,000 / 10,000ppm (Option))

**** Output Current: Max 30mA**

Analog Output table

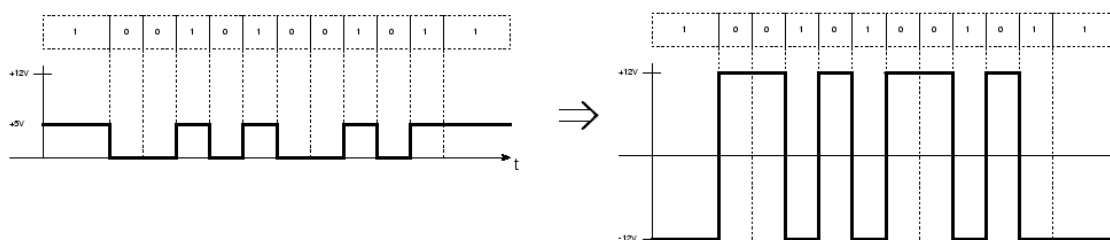
	3000ppm	5000ppm	10000ppm
0V	0ppm	0ppm	0ppm
1V	1000ppm	1666.7ppm	3333.3ppm
2V	2000ppm	3333.3ppm	6666.7ppm
3V	3000ppm	5000ppm	10000ppm

■ PC communication

1. UART interface

- Use RS-232 interface converter

Communicate with PC using TTL signal is unsuitable,
Thus, communication by change voltage level



2. Communication Program

- Use Hyper terminal or other Communication Program

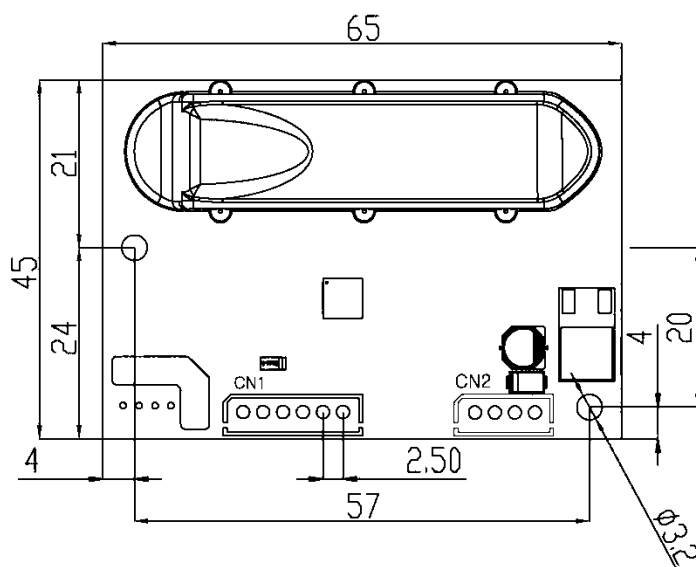
■ Cautions

1. Vulnerable to shock and it can arouse changes in characteristic.
2. When make alterations on product, Please do it after technical consult with us.
3. Please avoid installation at environment that not match with working temperature and humidity
4. When install at external environment, please installed inside exterior case.
5. When install at environment that worrying about condensation, please ask to us. (Coating Option)

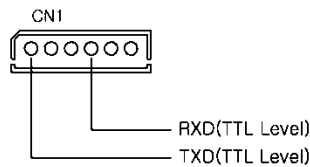
6. Dimension

■ Dimension(mm)

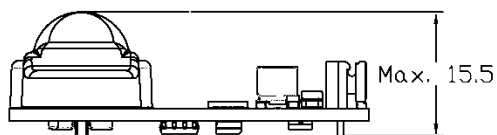
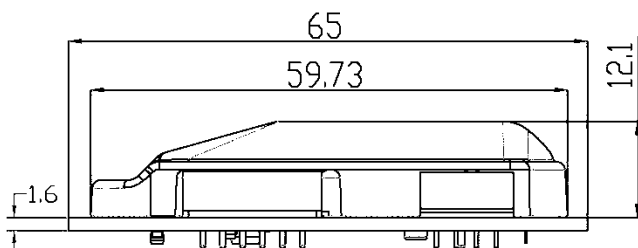
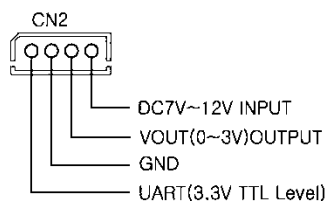
- SIZE : 65(W) * 45(H) * 15.5(D)



Molex: 5267-6P(Pith 2.54mm)



Molex: 5267-4P(Pith 2.54mm)



CO₂ SENSOR Segmentation

MODEL	RANGE	
SH-NDTH	003	0~3,000ppm
	005	0~5,000ppm
	010	0~10,000ppm
	020	0~2%
	030	0~3%
	050	0~5%

Example for CO₂ naming system
SH-NDTH-005(5,000ppm)