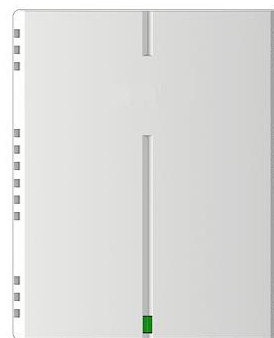


User's Manual

Carbon Dioxide Detector

Model: AT-VLC-ND-RS

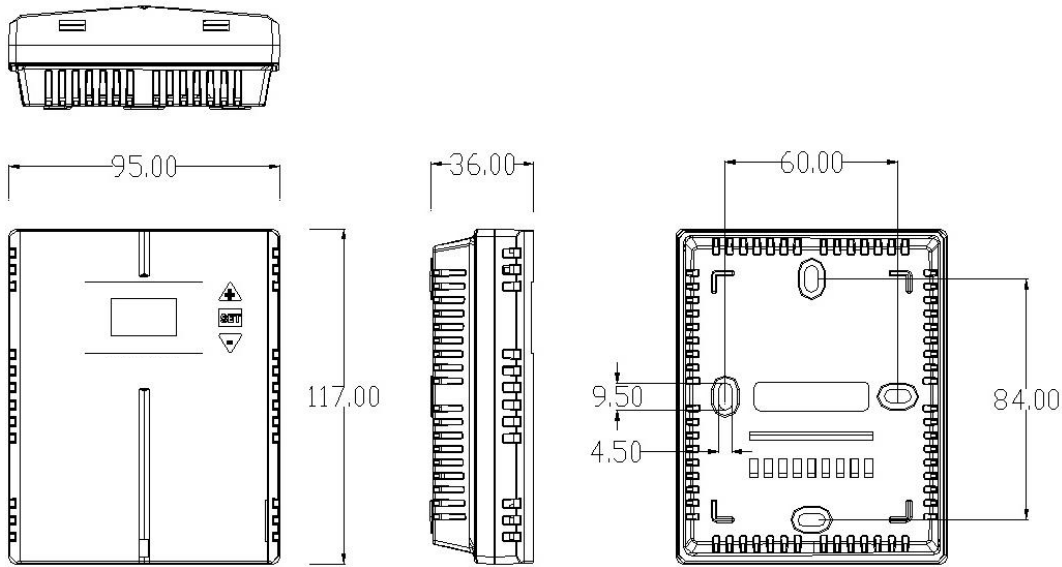


Specifications

General Data			
Power supply	24VAC/VDC±10%		
Consumption	3.5 W max. ; 2.0 W avg.		
RS485 interface	Modbus protocol 4800/9600(default)/19200/38400bps; 15KV antistatic protection, independent base address.		
LED light condition selectable	<table border="1"><tr><td>3-color mode (default) Green: ≤1000ppm Orange: 1000~1400ppm Red: >1400ppm Red flashing: CO2 sensor faulty</td><td>Working light mode Green on: working Red flashing: CO2 sensor faulty</td></tr></table>	3-color mode (default) Green: ≤1000ppm Orange: 1000~1400ppm Red: >1400ppm Red flashing: CO2 sensor faulty	Working light mode Green on: working Red flashing: CO2 sensor faulty
3-color mode (default) Green: ≤1000ppm Orange: 1000~1400ppm Red: >1400ppm Red flashing: CO2 sensor faulty	Working light mode Green on: working Red flashing: CO2 sensor faulty		
Operation condition	0~50℃; 0~95%RH, non condensing		
Storage condition	-10~60℃ / 0~80%RH		
Net Weight / Dimensions	190g /117mm(L)×95mm(W)×36mm(H)		
Installation	wall mounting with 65mm×65mm or 2"×4" wire box		
Housing and IP class	PC/ABS fireproof plastic material, protection class: IP30		
Standard	EMC approval		
Carbon Dioxide			
Sensing element	Non-Dispersive Infrared Detector (NDIR)		
CO ₂ measuring range	0~2000ppm (default)		
CO ₂ Accuracy @22℃(72°F)	±60ppm + 3% of reading or ±75ppm (whichever is greater)		
Temperature dependence	0.2% FS per℃		
Stability	<2% of FS over life of sensor (15 year typical)		
Pressure dependence	0.13% of reading per mm Hg		
Calibration	ABC Logic Self Calibration Algorithm		
Response time	<2 minutes for 90% step change typical		
Signal update	Every 2 seconds		

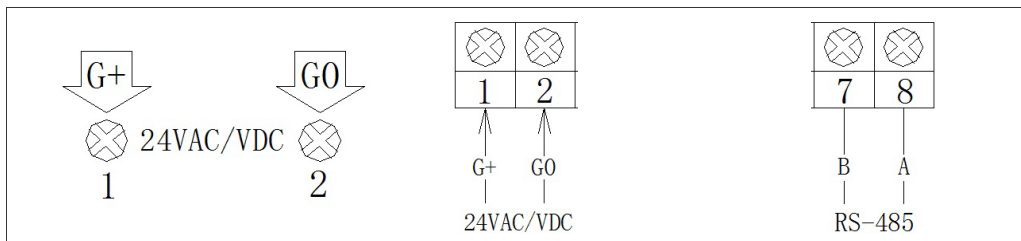
Display resolution	1ppm	
Warm-up time	2 hours (first time) / 2 minutes (normal operation)	
Temperature and RH (option)		
Temperature sensor (selectable)	Digital integrated temperature and humidity sensor or NTC thermistor	
Measuring range	-20~60°C/-4~140F	0~100%RH relative humidity
Accuracy	Temp.: $\pm 0.5^{\circ}\text{C}$ @25°C	RH: $\pm 3.0\%$RH (20%~80%RH)

Dimension and Mounting



- ◆ Please note the power supply is 24VAC/VDC±10%. Don't install the detector with over the voltage.
- ◆ First of all, please prepare a flat head screwdriver and gently put it deep inside of the hole on the bottom of the detector housing. Then slant the screwdriver and open the cover gently. Do not mount it near diffuser or any steam source, in direct sunlight.
- ◆ Mount the wall plate. Place the detector against the wall at desired location; make sure wires can be passed through the notch on the wall plate.
- ◆ Connect wires to terminal strips. Make sure wiring connection correct and secure.
- ◆ Finally close the cover gently.

Wiring Diagram



Modbus Register

Mode: RTU (MSB First)

Baud Rate: 1-4800 2-9600 3-14400 4-19200 5-38400 bps default: 2-9600bps

Start Bits: 1

Data Bits: 8

Stop Bits: 1 / 2

default : 2

Parity: None / Odd / Even

default: None

Modbus Address: 1~247

default: 1

Register Map

Support Function: 3 4 6 16

Starting Register Decimal	Data Description	Function	Read/Write	Length	Format	Valid Response	
0	CO2 Measurement	4	R	2	Float inverse	0~5000 ppm	
2	Temperature Measurement	4	R	2	Float inverse	0.0~50.0 °C	
4	Humidity Measurement	4	R	2	Float inverse	0.1~100.0 %RH	
Starting Register Decimal	Data Description	Function	Read/Write	Length	Format	Selection	Default
0	Modbus Address	3/6	R/W	1	INT16	1~247	1
1	Modbus rate	3/6	R/W	1	INT16	1-4800bps 2-9600bps 3-14400bps 4-19200bps 5-38400bps	2
2	Modbus Stop Bit	3/6	R/W	1	INT16	1-None 1Stop Bit; 2-None 2Stop Bit; 3-Odd 1Stop Bit; 4-Even 1Stop Bit	2
3	CO2 offset	3/6	R/W	1	INT16	-300~300ppm	0
4	Temperature offset	3/16	R/W	2	Float inverse	-5.0~5.0 °C	0.0
6	Relative Humidity offset	3/16	R/W	2	Float inverse	-10~10 %RH	0.0
8	Logic of Relay Control	3/16	R/W	1	INT16	0- Increase CO2 1- Decrease CO2	1
10	Warm-up Time	3/6	R/W	1	INT16	1~600 Seconds	10
11	CO2 Max. Measurement	3/6	R/W	1	INT16	400~10,000 ppm	2000
12	CO2 PID Control Setpoint	3/6	R/W	1	INT16	400~5,000 ppm	800
13	CO2 Relay Control min. Setpoint	3/6	R/W	1	INT16	400~5,000ppm	780

14	CO2 Relay Control max. Setpoint	3/6	R/W	1	INT16	400~5,000ppm	820
15	LED work mode	3/6	R/W	1	INT16	0- 3 color mode; 1- 2 color mode	0
16	Buzzer alarm	3/6	R/W	1	INT16	0- Disable 1- Enable	1
17	Buzzer alarm Setpoint of CO2	3/6	R/W	1	INT16	400~5,000ppm	1400
18	LED switch from green to yellow	3/6	R/W	1	INT16	400~5,000ppm	1000
19	LED switch from yellow to red	3/6	R/W	1	INT16	400~5,000ppm	1400