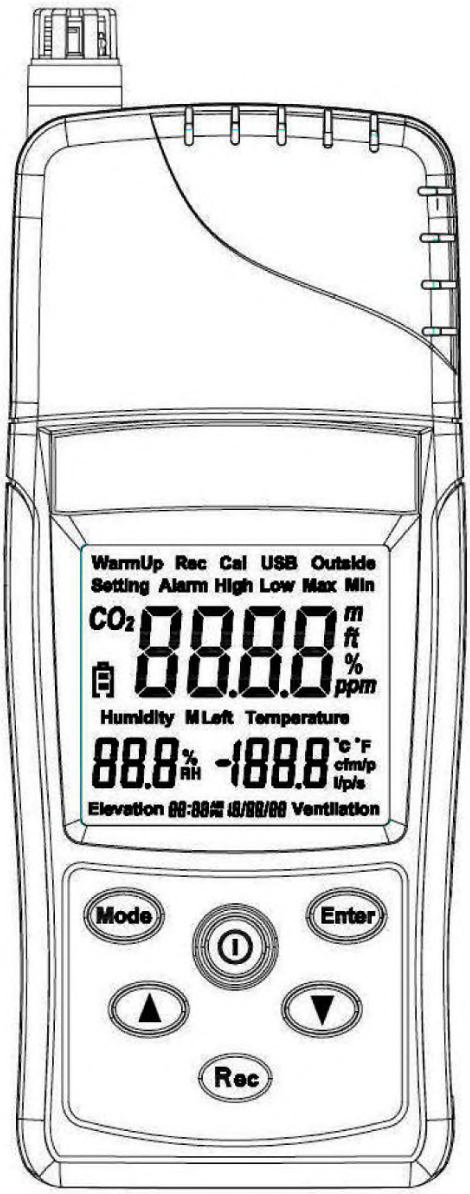
ST-501

CO2 / Temp / RH Indoor Air Quality Meter
User's Manual



HB2ST5010003

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1. FEATURES & SPECIFICATIONS

Features

- 3 Independent CO_2, humidity and temperature sensors.
- User operated CO_2 calibration.
- Datalogging : 50,000 records.
- Fast USB download (50,000 records in less than 10 seconds).
- Internal backup battery to maintain date / time setting.
- Power management IC to increase batter efficiency.
- Easy- to-Use PC software for parameter settings and data analysis.
- Internal CO_2 alarm buzzer.

Specifications

- CO_2 Sensing Method : NDIR (Non-Dispersive Infrared)
- Measures : Carbon dioxide in PPM, temperature (℉ or ℃), % Relative Humidity
- CO_2 Measurement range : 0~9999 ppm (2001~9999 ppm over range)
- CO_2 Accuracy : ± 75ppm, ± 8% of reading (0~2000 ppm)
- Display Resolution : ±1 ppm
- Datalogging : 50,000 records.

Applications

- Building HVAC monitoring.
- Indoor air quality survey.
- Locate the presence of combustion fumes from vehicles and appliances.

General

Operation Condition	32-122°F (0-50°C)
	0-95%,RH,non-condensing
Storage Temperature	-4 to 140°F (-20 to 60°C)

CO_2 Sensor

Type	Non-dispersive infra-red (NDIR)
Measurement Range	0~9999 ppm (2001~9999 ppm over range)
Accuracy	± 75ppm, ± 8% of reading (0~2000 ppm)
Resolution	±1 ppm
Response Time	Reaches 90% in approximately 2 minutes

Relative Humidity Sensor

Type	CMOSens
Measurement Range	1%-99%
Accuracy	±3.0%RH(20~80%) ±5.0%RH(<20%,>80%)
Resolution	0.1%
Response Time	8 Seconds

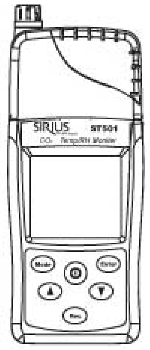
Temperature Sensor

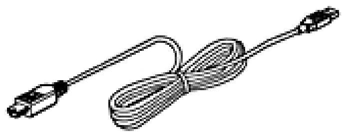
Type	Thermistor
Measurement Range	0 to 50°C
Accuracy	±1.0°C from 0-50°C
Resolution	0.1°C
Response Time	1 seconds

Power Supply

Battery	4 AA alkaline battery
Battery Operation	24 hours
External Power Supply	6V VDC with 0.5A

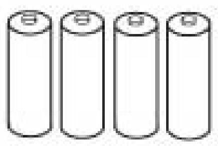
2. Accessories

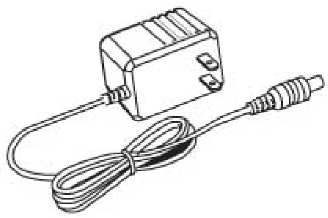




Main Unit

USB Cable





4X1.5V AA

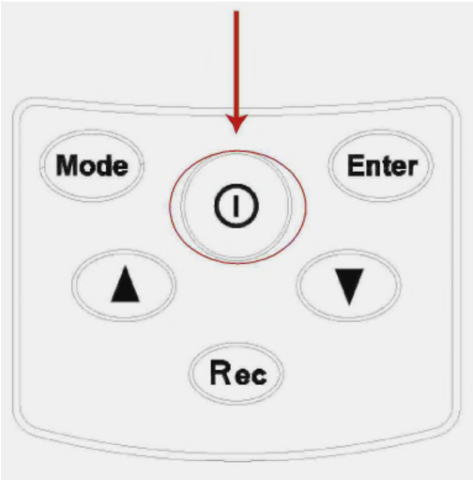
Alkaline Battery

6V DC Adaptor

3. START UP AND GENERAL OPERATION

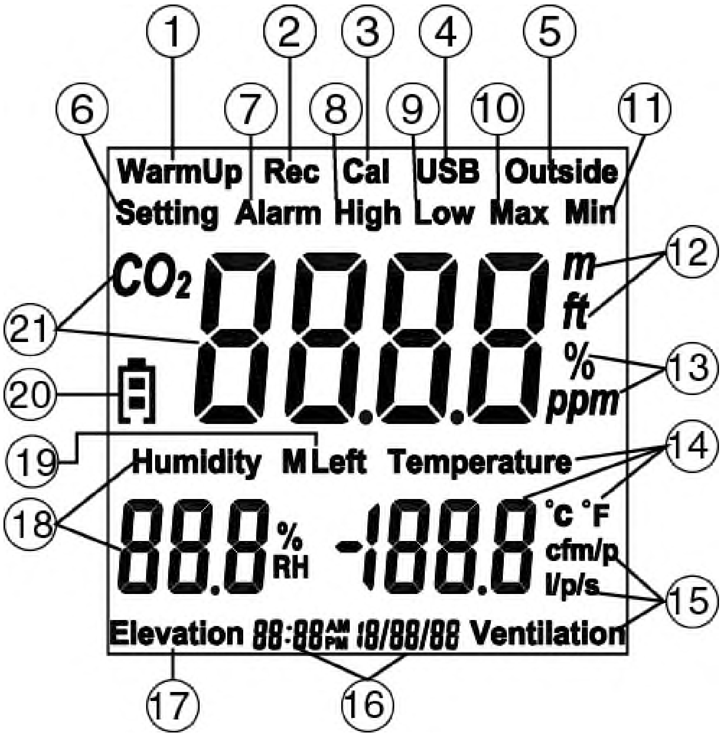
Start Up

- Hold the Power button for 2 seconds to turn on Meter.



- Wait few seconds until the “Warm-up” sign turns off.
- The unit is ready to use.

LCD Display

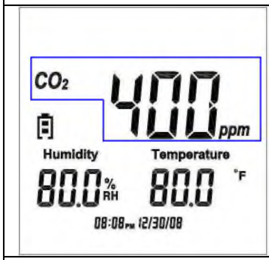
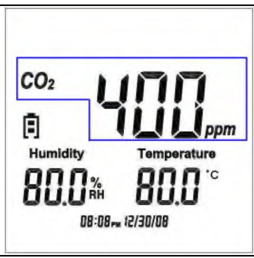
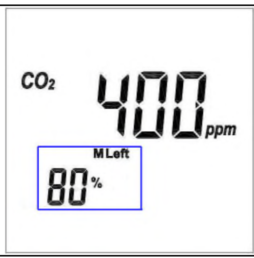
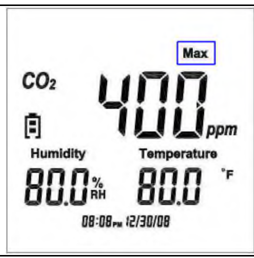


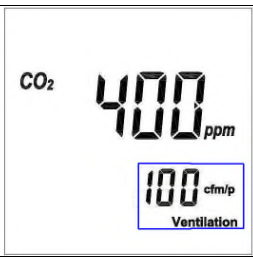
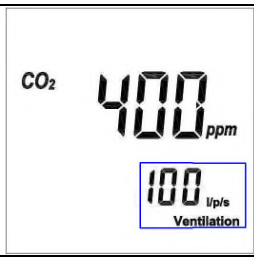
1.	Warm Up	12.	Meter / Foot
2.	Recording	13.	% PPM
3.	Calibration	14.	Temperature Reading
4.	USB	15.	Flow Rate
5.	Outside- CO2	16.	Time & Date
6.	Setting	17.	Elevation
7.	Alarm	18.	Humidity
8.	High	19.	Memory Left
9.	Low	20.	Battery
10.	Maximum	21.	CO2 Reading
11,	Minimum		

1.	Mode	Mode	4.	▼	Down Arrow
2.	Enter	Enter	5.	▲	Up Arrow
3.	⏻	Power	6.	Rec	Record

Meter Buttons

Display Screen (1-7)

1.	2.	3.	4.
			
Main Screen Temp.(F)	Main Screen Temp.(C)	% of Memory Left	Maximum Reading: CO_2 / Rh / Temp

5.	6.	7.
		
Minimum Reading: CO_2 Humidity & Temperature	CFM / P ventilation (Cubic Foot Per Minute Per Person)	l / p / s Ventilation (Liter Per Second)

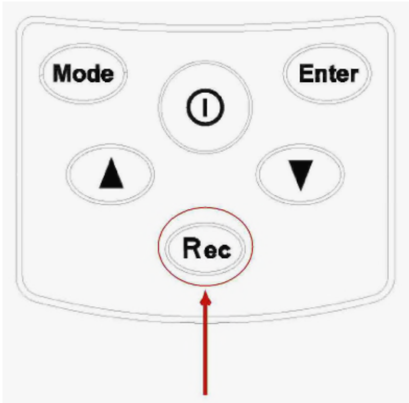
- Press  to rotate the screen in the clockwise direction.=2
- Press  to rote the screen in the counter-clockwise direction.

Clear Memory

- Press  &  together to clear the datalogging memory and restore the memory capacity back to 100%.

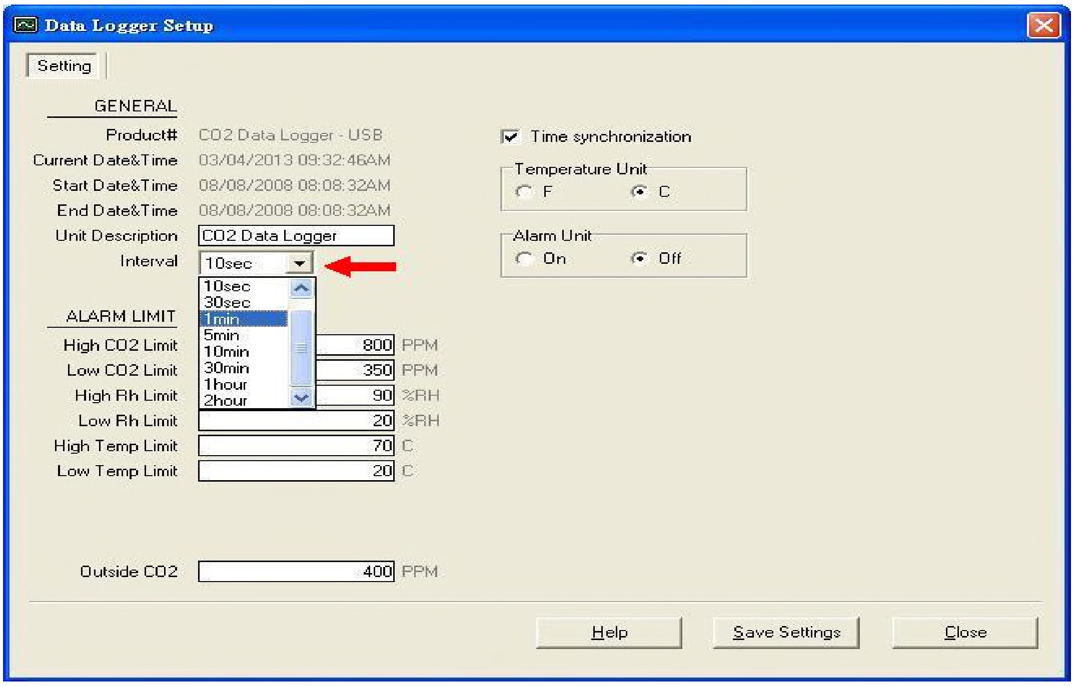
Recording and Datalogging

Hold  for 2 seconds to start data recording.



Sampling rate (5sec / 10sec / 1min / 5min / 10min / 30min / 1 hour / 2 hour)

can only be set from PC setup screen.



Datalogging Power Saving Mode

Sampling rate longer than 5 minutes (5min / 10min / 30min / 1 hour/2 hours) will automatically turn on power-saving mode. The Meter will be in power-saving mode during the non-sampling period. One minute before the sampling time, the Meter will turn on to take the sample. After the sampling is done, the Meter will turn back to power-saving mode. While in the power-saving mode, the Meter will not respond to any key inputs.

Hold 

for 2 seconds to exit the datalogging mode.

Sampling Interval	**Power-Saving**
5 seconds	
10 seconds	
1 minutes	
5 minutes	✓
10 minutes	✓
30 minutes	✓
1 hour	✓
2 hour	✓

CFM / P (Cubic Foot Per Minute per Person) Calculation Example

CFM/P=10600 / (Cs-Co)

- Cs=CO2 reading
- Co=CO2 outside reading

Example:

10,600 Constant

650 Cs=CO_2 reading

400 Co=CO_2 outside reading

42.4 CFM / P

10,600 / (650-400) = 42.4 (CFM / P)

L / P / S (Liter Per Second)

L / P / S= (CFM/P)x28.32 / 60

Example:

48.60	=CFM / P (Cubic Foot Per Minute / person)
28.32	=1 Cubic Foot = 28.3168466 Liters
60.00	=Divided by 60 to get per second reading
22.9	=L / P / S (Liter Per Second)

48.6 x28.32 / 60=22.9 (L / P / S)

Parameter Setup Screen (1-5)

1.	2.	3.	4.
			
Setting Outside CO_2 Value	Clock Setting	Alarm Buzzer Setting	High CO_2 Alarm Setting

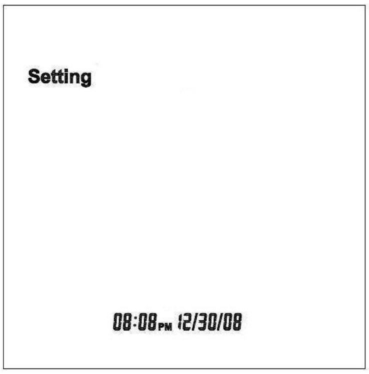
5.

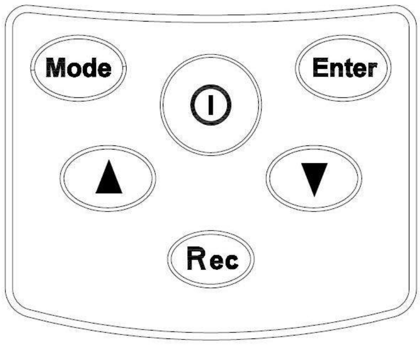
Low CO_2 Alarm Setting

1. Enter Outside CO2 Value (default setting is 400ppm)

⚠	**Outside CO2 400 PPM, for laboratory calibration use only. Do not modify without authorization.**

2. Clock Setting

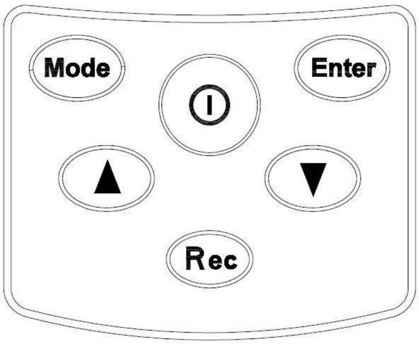


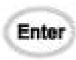


- Press (Mode) and (Enter) to enter the setting menu.
- Press (▼) 1 x time to reach the Clock-Setting screen.
- Press (Enter) to enter Clock-Setting mode.
- Press (Mode) to rotate between digits.
- Press (Enter) to save and exit the Time Setting menu.
- Press (Mode) and (Enter) to return to the Main menu.

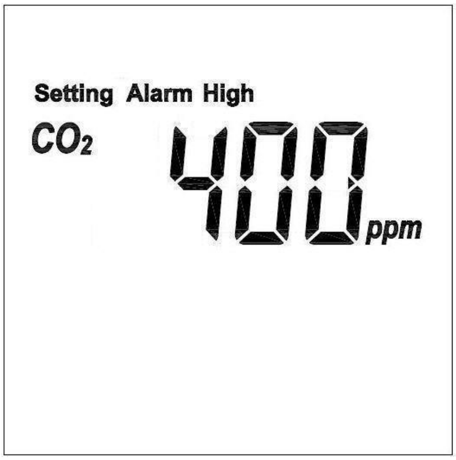
Unit	Enter Value (0-9)	Range
Hour	Use (▲) and (▼)	(0AM -11PM)
Minute	Use (▲) and (▼)	(0-59)
Month	Use (▲) and (▼)	(1-12)
Date	Use (▲) and (▼)	(1 to 31)
Year	Use (▲) and (▼)	(2001-2037)

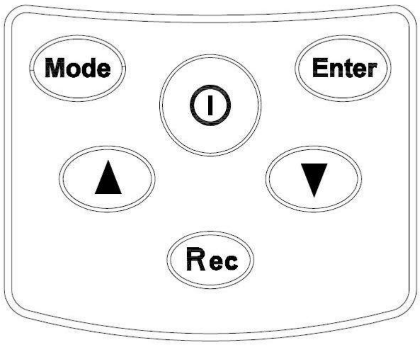
3. Audible Alarm Setting



- Press  and  to enter the setting menu.
- Press  2 times.
- Press  to enter the Audible Alarm Setting Page. Current audible alarm status (On / Off) will start to flash.
- Use  and  keys to switch between On / Off.
- Press  to save and exit.
- Press  and  to return to the Main menu.

4. CO2 High Alarm Setting

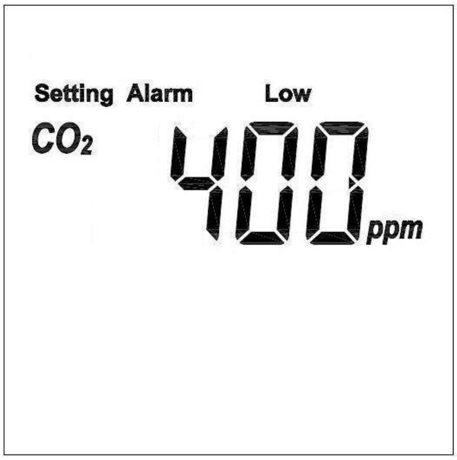


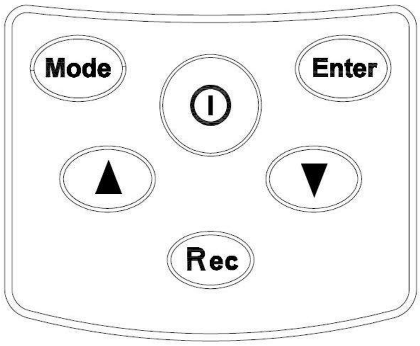


- Press Mode and Enter to enter the setting menu.
- Press ▼ 3 times.
- Press Enter to enter the High Alarm Setting Menu (First digit starts to flash).
- Press Mode to rotate between digits.
- Press Enter to save and exit the High Alarm Setting menu.
- Press Mode and Enter to return to the Main menu.

Unit	Select Digit	Enter Value
1st digit	Mode	Use ▲ and ▼ Select (0-9)
2nd digit	Mode	Use ▲ and ▼ Select (0-9)
3rd digit	Mode	Use ▲ and ▼ Select (0-9)
4th digit	Mode	Use ▲ and ▼ Select (0-9)

5. CO_2 Low Alarm Setting





- Press Mode + Enter to enter the setting menu.
- Press ▼ 4 times.
- Press Enter to enter the Low Alarm Setting Menu (First digit starts to flash).
- Press Mode to rotate between digits.
- Press Enter to save and exit the Low Alarm Setting menu.
- Press Mode and Enter to return to the Main menu.

Unit	Enter Value
1st digit	Use ▲ and ▼ Select (0-9)
2nd digit	Use ▲ and ▼ Select (0-9)
3rd digit	Use ▲ and ▼ Select (0-9)
4th digit	Use ▲ and ▼ Select (0-9)

4. Software installation

1. Link website https://www.tenmars.com/
   or scan below QR code:
2. Search ST-501.
3. Click on the ST-501 photo.
4. Click **File Download**, then select **Software Download**.
5. Download and unzip the software.
6. For the latest software information and installation procedures, please refer to the **software installation guide**.

5. WARRANTY

Meter is warranted for a period of twelve (12) months from the date of purchase to be free of defects in material or workmanship. This warranty does not apply to damage resulting from accident, alteration, abuse, loss of parts or repair by other than Sirius Technologies, Inc. The equipment will be repaired or replaced, at our option, without charge to the owner for parts or labor incurred in such repair. This warranty shall not apply unless the equipment is returned for our examination with all transportation charges prepaid.