



Model#: ST501

CO2/Temp/RH Indoor Air Quality Meter

Users Manual

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FEATURES & SPECIFICATIONS

Features

- 3 Independent CO2, humidity and temperature sensors
- User operated CO2 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 battery efficiency
- Easy-to-Use PC software for parameter settings and data analysis
- Internal CO2 alarm buzzer

Specifications

- CO2 sensor - GE Dual Beam Absorption Infrared™
- Temperature/Humidity sensors
- Measurement range - 0 to 5,000 ppm display
- Display Resolution - ± 1 ppm
- Accuracy - ± 75 ppm or 10% of reading (whichever is greater)
- Datalogging- 50,000 records

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Applications

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

General

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

CO2 Sensor

Type	Non-dispersive infra-red (NDIR)
Measurement Range	0 to 5,000 ppm
Accuracy	±75 ppm or 10% of reading (whichever is greater)
Resolution	±1 ppm
Response Time	2 seconds

Relative Humidity Sensor

Type	CMOSens
Measurement Range	10%-90%
Accuracy	2.5%
Resolution	0.1%
Response Time	8 Seconds

Temperature Sensor

Type	Thermistor
Measurement Range	0 to 50C
Accuracy	±0.5C from 0-50C
Resolution	0.1C
Response Time	1 seconds

Power Supply

Battery	Four AA batteries
Battery Operation	24 hours
External Power Supply	6V VDC with 0.5A

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ST501 Model Number

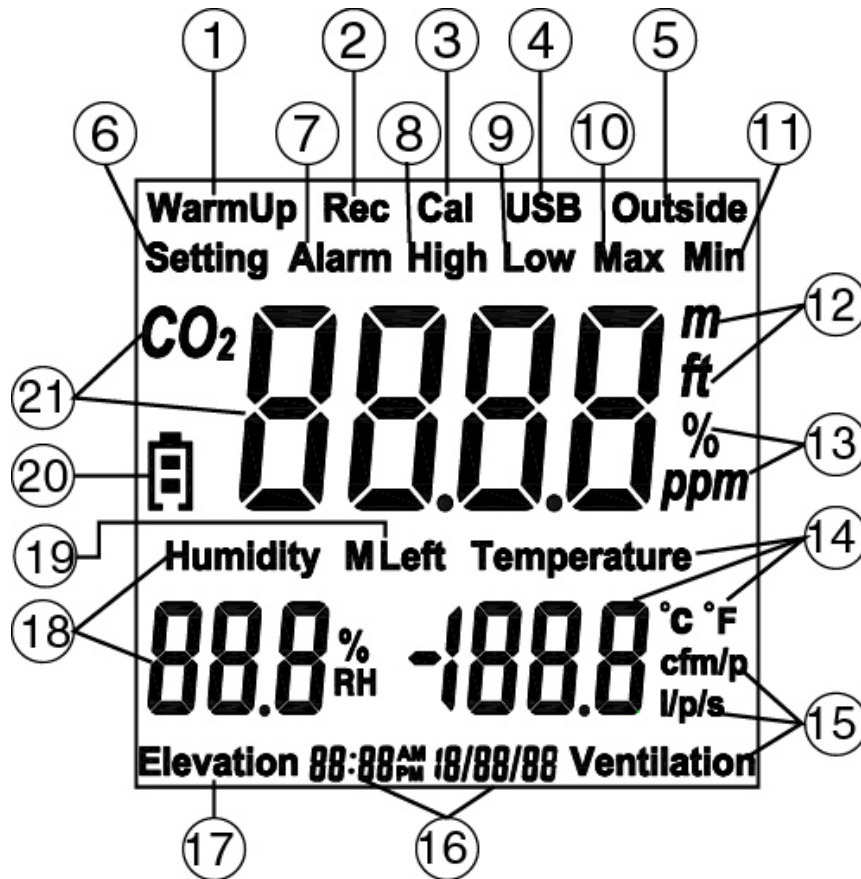
Model #	Description
ST501U	CO2/Temperature/Humidity Meter
ST501DU	CO2/Temperature/Humidity Meter with data recording



1.		Mode	4.		Down Arrow
2.		Enter	5.		Up Arrow
3.		Power	6.		Record

Buttons

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		

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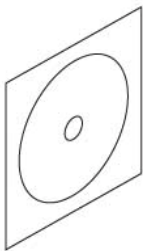
WHAT'S IN THE BOX



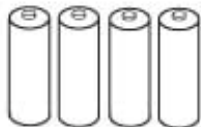
1.Main Unit



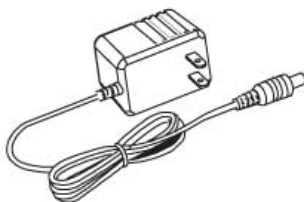
2. USB Cable



3. Installation Disk



4. 4X1.5V AA Alkaline Battery



5. 6V DC Adaptor

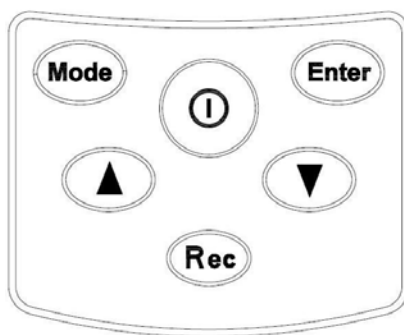
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START UP AND GENERAL OPERATION

Hold the  Power button for 2 seconds to turn on ST501.

Wait 20 seconds until the “Warm-up” turns off.

The unit is ready to use.

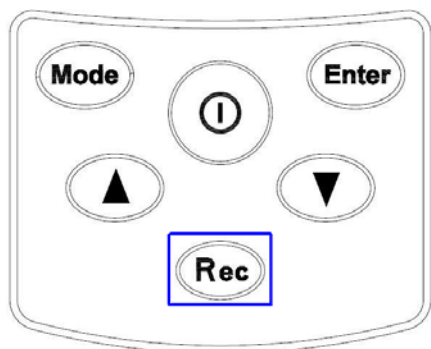


1.		Mode	4.		Down Arrow
2.		Enter	5.		Up Arrow
3.		Power	6.		Record

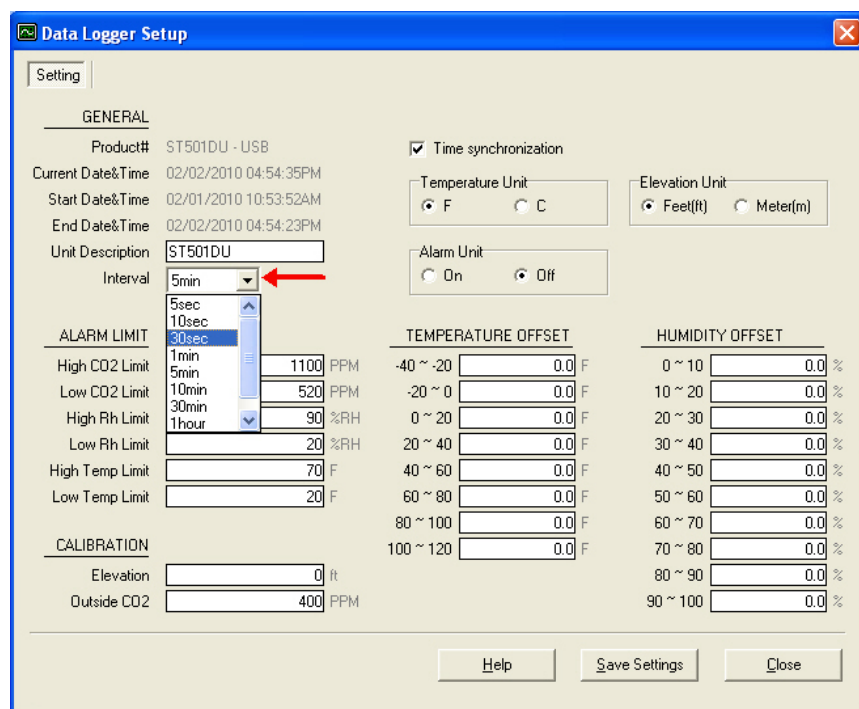
ST501 Buttons

Recording and Datalogging

Hold  for 2 seconds to start data recording.



Sampling rate (5sec / 10sec / 1min / 5min / 10min / 30min / 1 hour) can only be set from PC setup screen.



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Power Saving Mode (Datalogging)

Sampling rate longer than 5 minutes (5min / 10min / 30min / 1 hour) will automatically turn on power-saving mode. The ST501 will be in power-saving mode during the non-sampling period. One minute before the sampling time, the ST501 will turn on to take the sample. After the sampling is done, the ST501 will turn back to power-saving mode. While in the power-saving mode, the ST501 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	✓

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LCD Display and Setups

Main Screens (1-6)

1.	2.	3.
Main Screen	% of Memory Left	Maximum Reading: CO2/Rh/Temp

4.	5.	6.
Minimum Reading: CO2 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.

Press to rotate the screen in the counter-clockwise direction.

Clear Memory

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

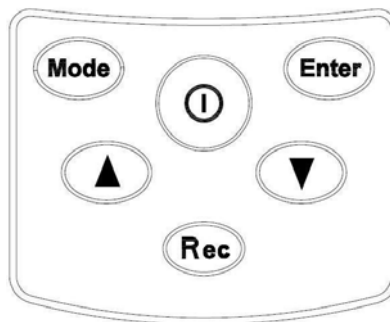
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Parameter Setup Screen (1-7)

1.	2.	3.	4.
Elevation Setting	Clock Setting	Alarm Buzzer Setting	High CO2 Alarm Setting

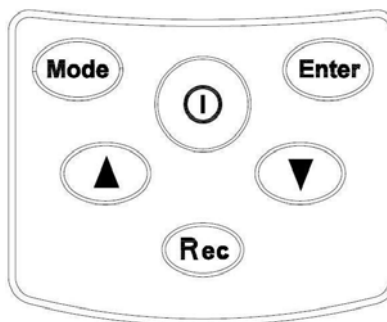
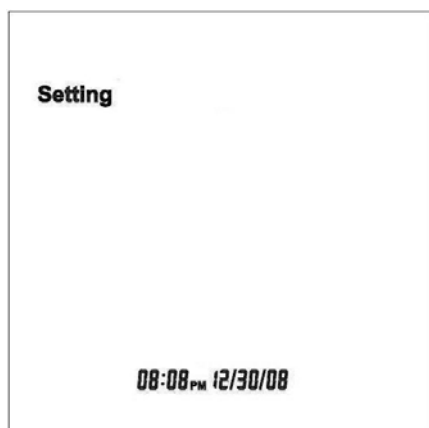
5.	6.	7.
Low CO2 Alarm Setting	Setting Outside CO2 Value	CO2 Calibration

1. Elevation Setting



- Press **Mode** and **Enter** to enter the setting menu.
- Press **Enter** to enter the setting mode. (Digits start to flash).
- Press **▲** to increase elevation setting in the interval of 500.
- Press **▼** to decrease elevation setting in the interval of 500.
- Press **Enter** again to save the settings and exit.

2. Clock Setting

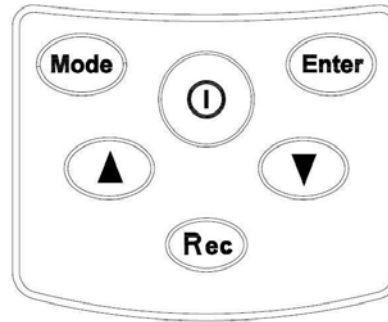


- Press **Mode** and **Enter** to enter the setting menu.
- Press **▼** 1 x time to reach the Clock-Setting screen.
- Press **Mode** to rotate between digits.

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)

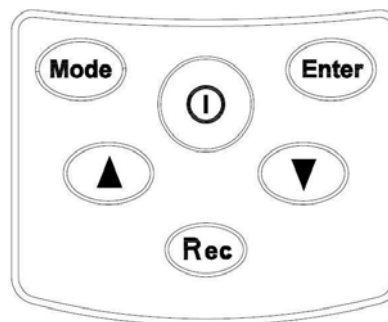
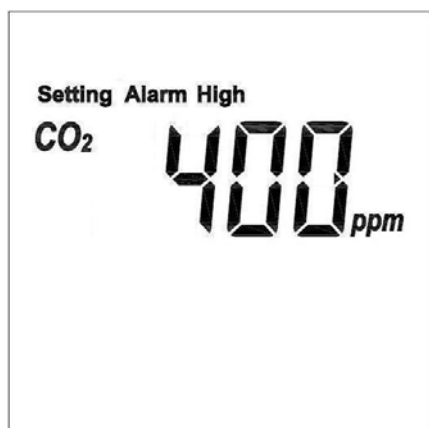
Press **Enter** to save and exit the Time Setting menu.

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.

4. CO2 High Alarm Setting

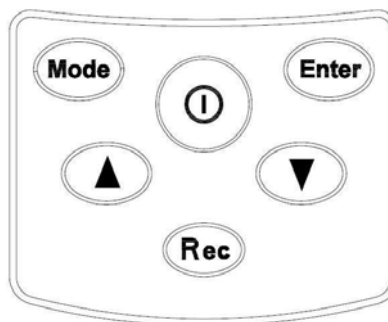
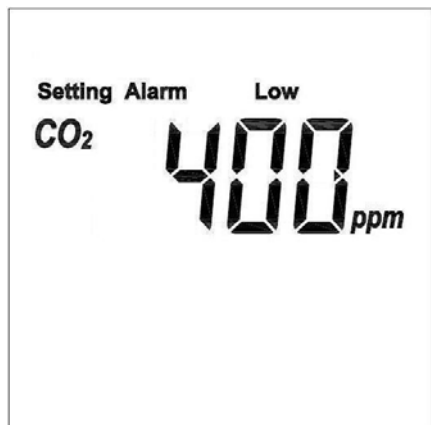


- Press **Mode** and **Enter** to enter the setting menu.
- Press **Down arrow** 3 times
- Press **Enter** to enter the High Alarm Setting Menu (First digit starts to flash)
- Press **Mode** to rotate between digits

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

Press **Enter** to save and exit the High Alarm Setting menu.

5. CO2 Low Alarm Setting

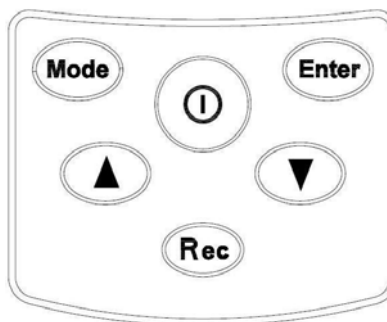
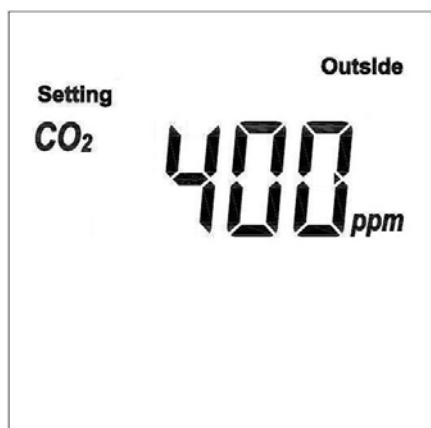


- Press **Mode** + **Enter** to enter the setting menu
- Press **▼** 4 times
- Press **Enter** to enter the Low Alarm Setting Menu (First digit starts to flash)
- Press **Mode** to rotate between digits

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)

Press Enter to save and exit the Low Alarm Setting menu.

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



Enter Outside CO2 Manually:

- Press **Mode** + **Enter** to enter the setting menu.
- Press **Down arrow** 5 times
- Press **Enter** to enter the Outside CO2 setting Menu (First digit starts to flash)
- Press **Mode** to rotate between digits

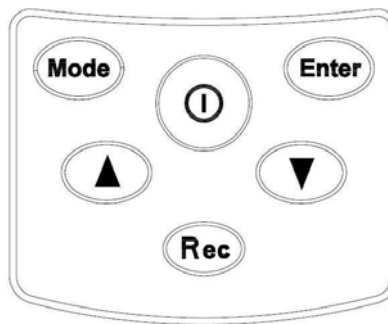
Unit	Enter Value
1st digit	Use Up arrow and Down arrow Select (0-9)
2nd digit	Use Up arrow and Down arrow Select (0-9)
3rd digit	Use Up arrow and Down arrow Select (0-9)
4th digit	Use Up arrow and Down arrow Select (0-9)

Press **Enter** to save and exit the Low Alarm Setting menu.

Accept current CO2 reading as Outside CO2 value

Press and hold **Enter** to 2 seconds. The current CO2 reading will be stored in the memory.

7. CO2 Calibration using ST501

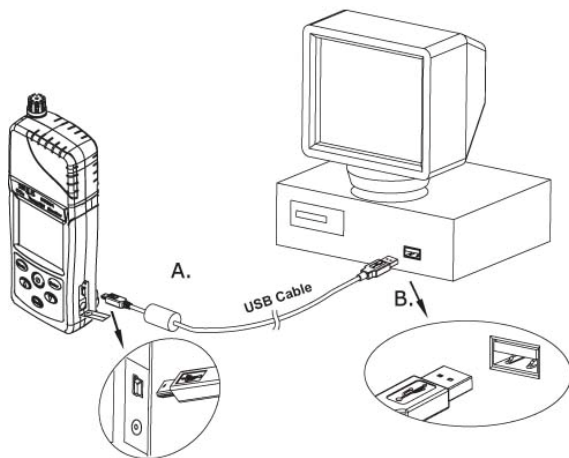


- Press  +  to enter the setting menu.
- Press  6 times
- Press  to start calibration
- PPM reading will flash while calibrating
- Press  to stop the calibration (LCD will display "Err")
- When the calibration is completed, the LCD screen will display "SUCC"
- Press  to exit the CO2 calibration menu
- Press  +  to return to the main menu

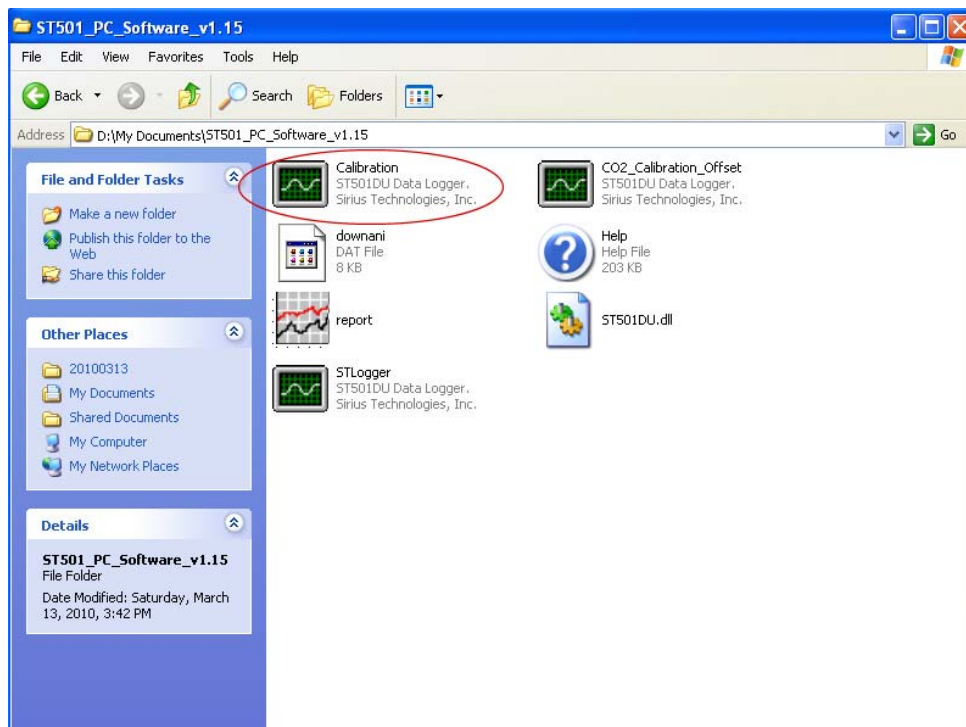
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CO2 Calibration- Using PC software

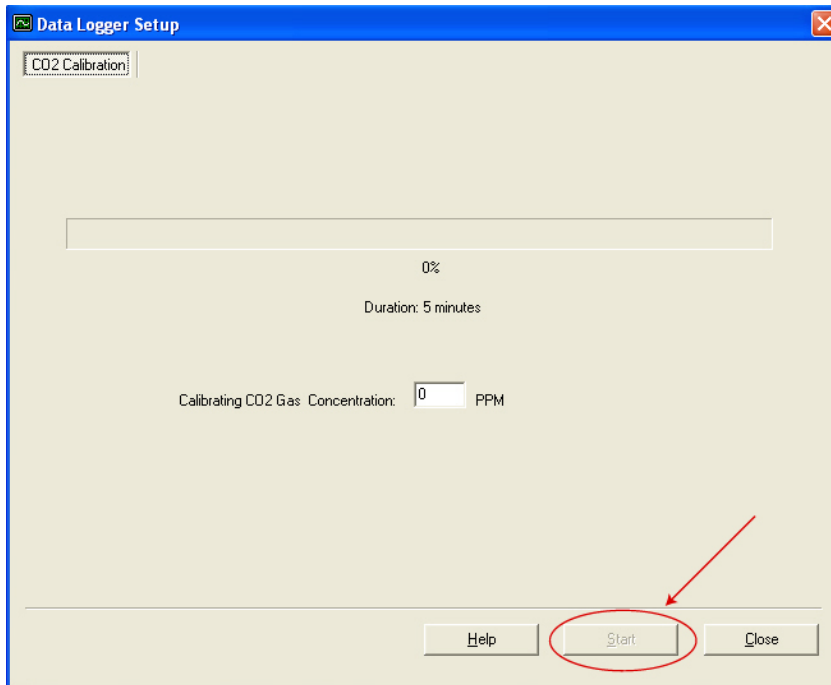
1. Connect ST501 and PC together with a USB cable.



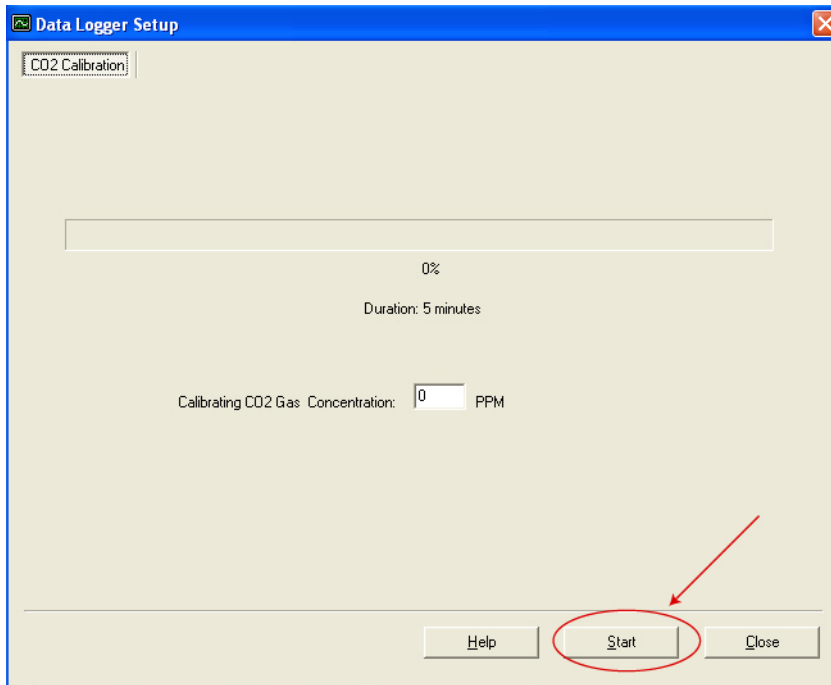
2. Click “Calibration”



3. Connection status- unit not connected.

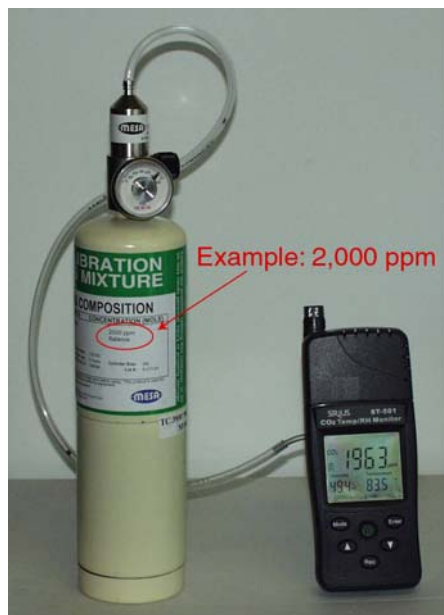
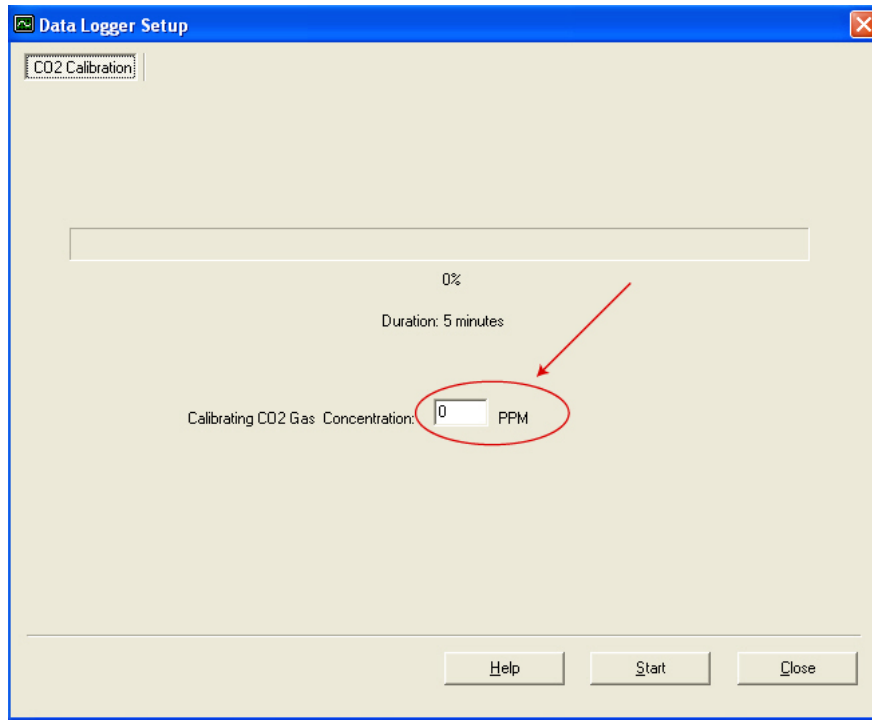


4. Connection status- connected. ST501 is ready for calibration.



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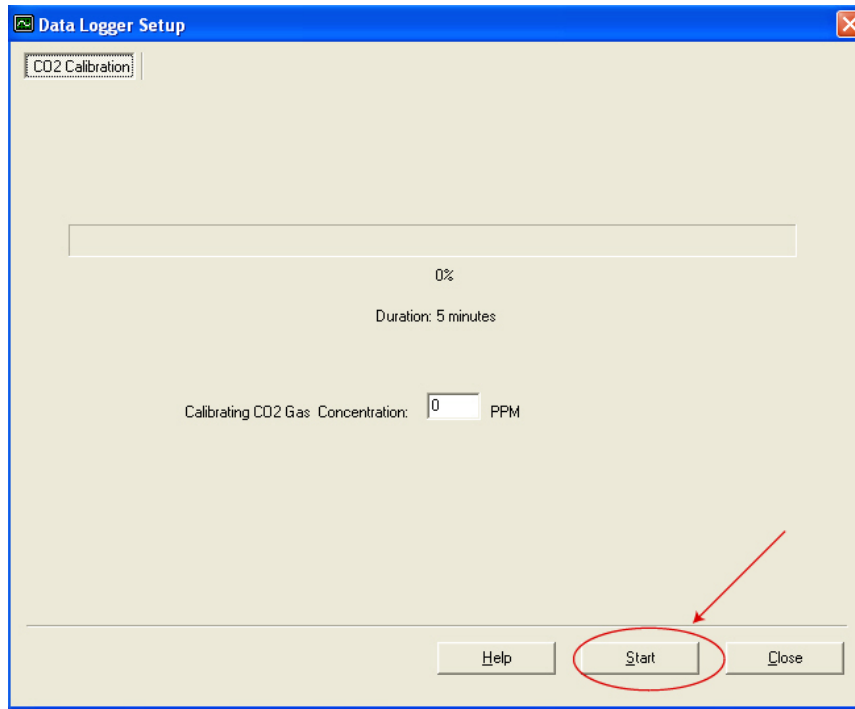
5. Enter calibration gas ppm(see picture below) or using average outdoor CO2 value of 400ppm.



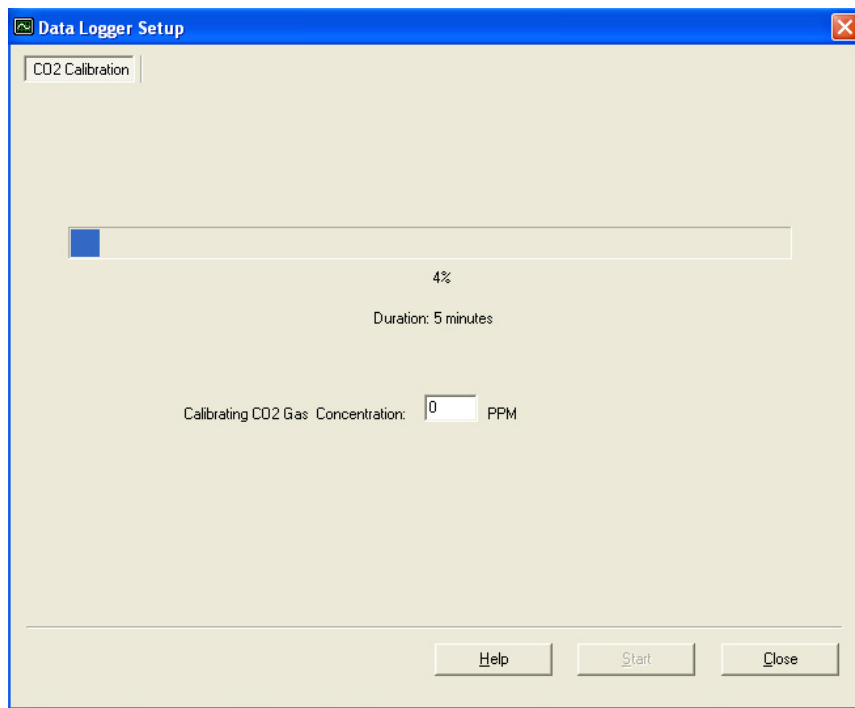
418-B Cloverleaf Dr. Baldwin Park, CA 91706

•TEL:(626)934-0100 • FAX:(626)934-0161 •E-Mail: INFO@SIRIUSTEC.COM

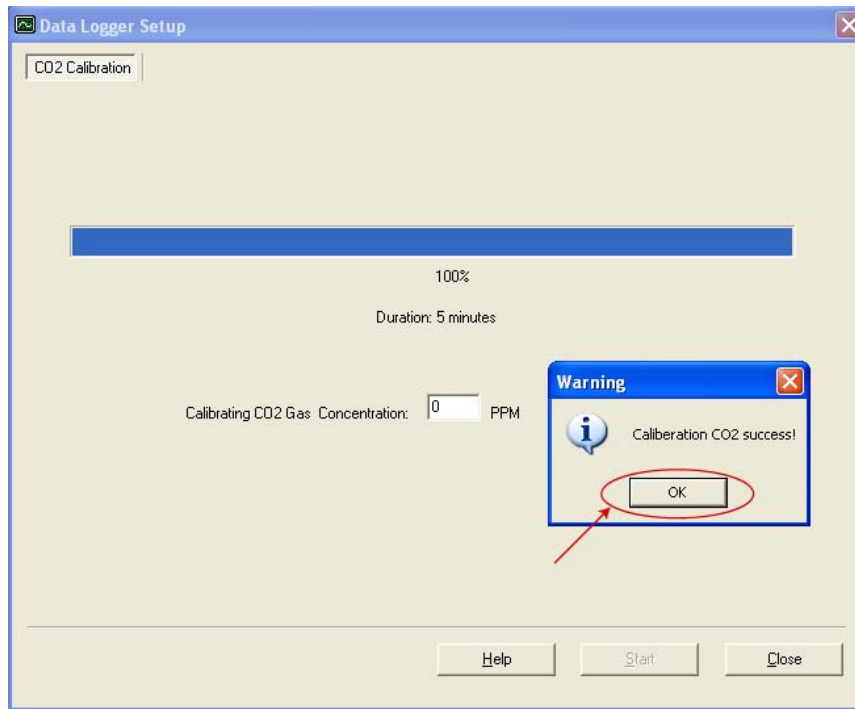
6. Click Start to start calibration.



7. Calibrating.



8. Calibration complete, click “OK” to exit.



If “Calibration Failed” message shows up or the ST501 failed to respond,

- a. Remove the batteries from ST501
- b. Reinstall batteries
- c. Restart calibration

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PC SOFTWARE & DRIVER INSTALLATION

Installation Requirements:

Minimum system requirements for the software:

-Pentium III - 500 MHz processor or equivalent with 128 megabytes of RAM.

Optimal Performance:

-Pentium 4 - 2.8 gigahertz processor or equivalent with 256 megabytes or RAM.

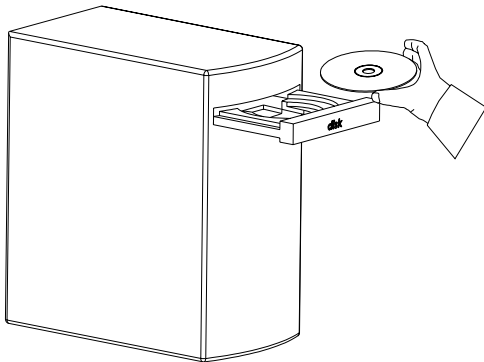
Operating System Requirements:

-Windows 2000

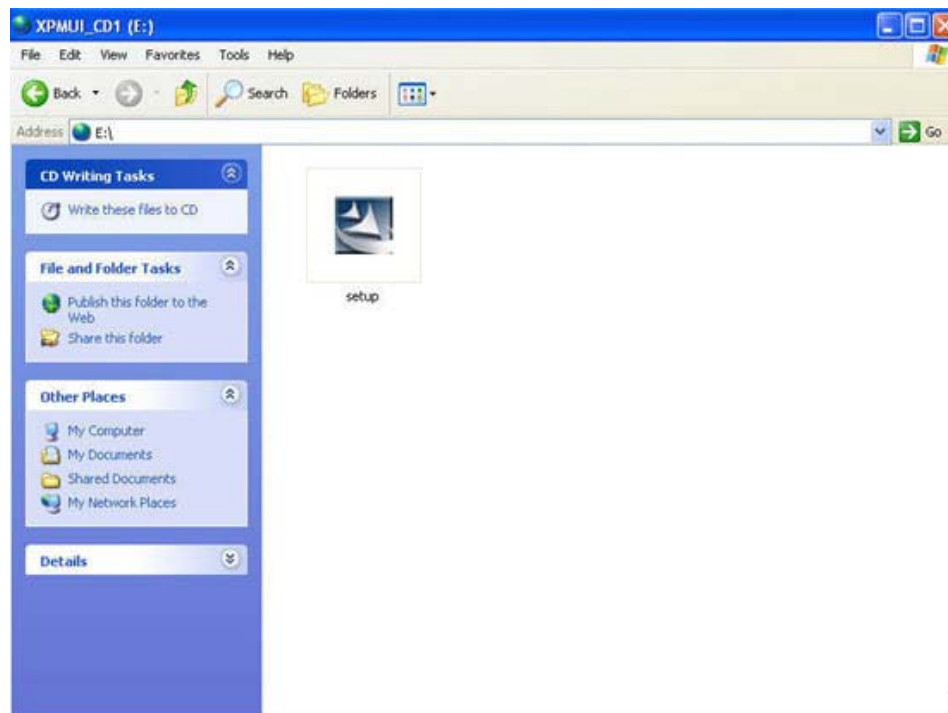
-Windows XP

PC DRIVER INSTALLATION

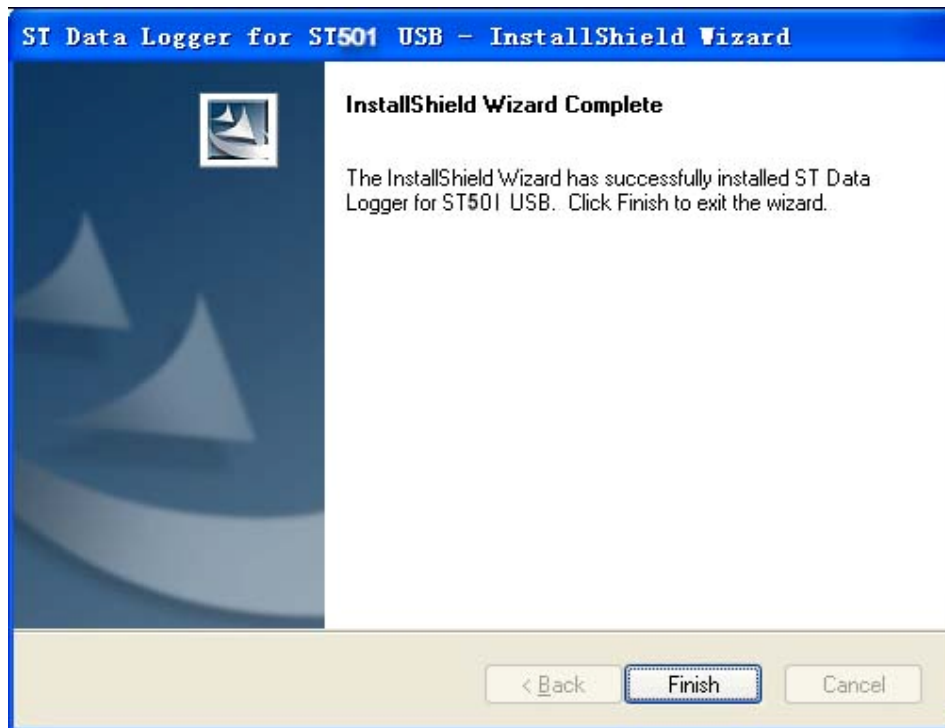
1. Insert the CD into the disk drive.



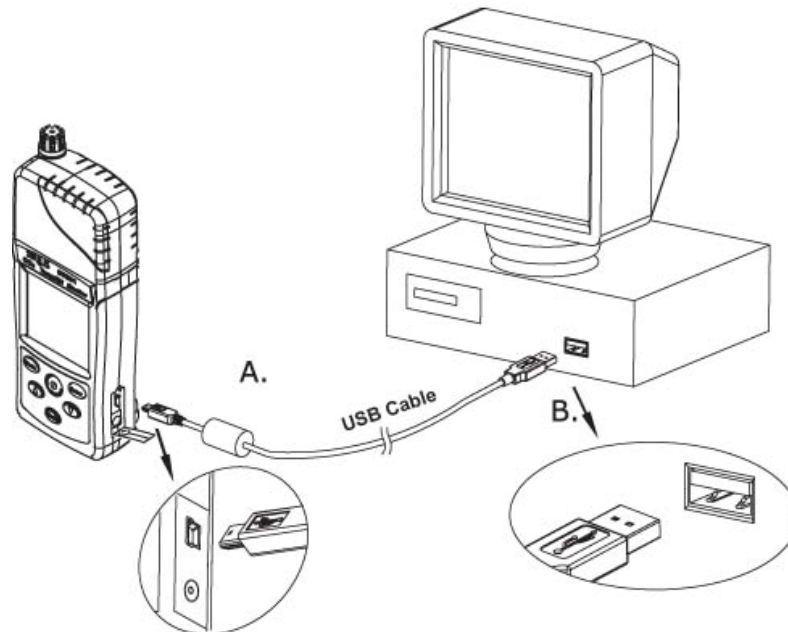
2. Click Setup to start installation.



3. Follow the steps on the Installation Shield Wizard and click Finish to complete the installation.



4. Connect ST501 and PC together with a USB cable.



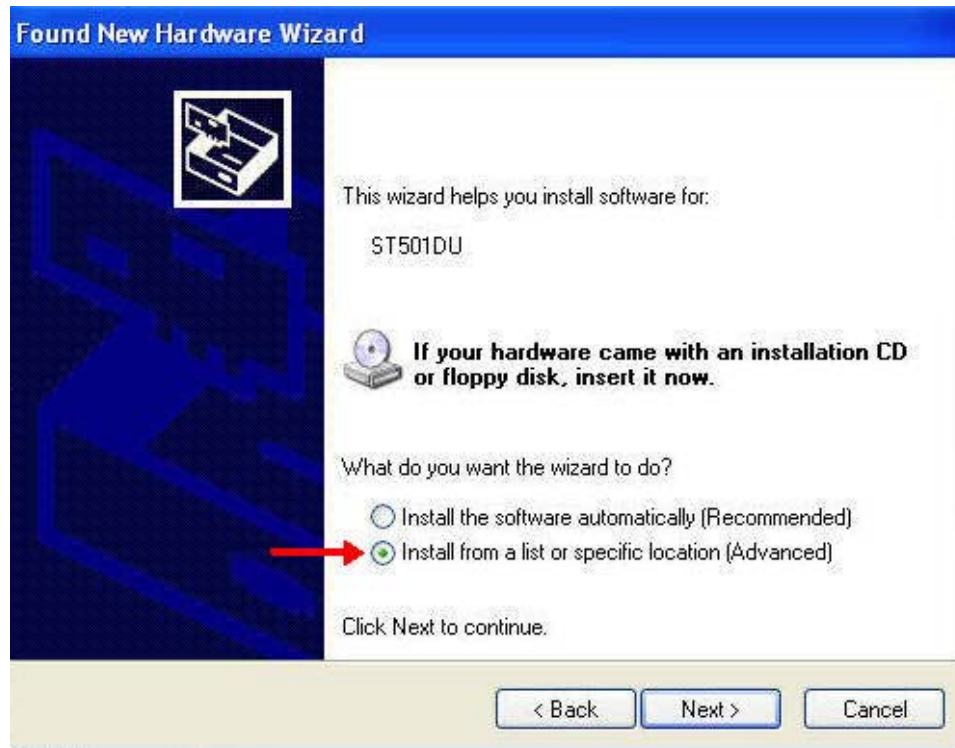
5. ST501 detected

- Windows XP will detect the ST501 after PC and ST501 is connected with a USB cable .



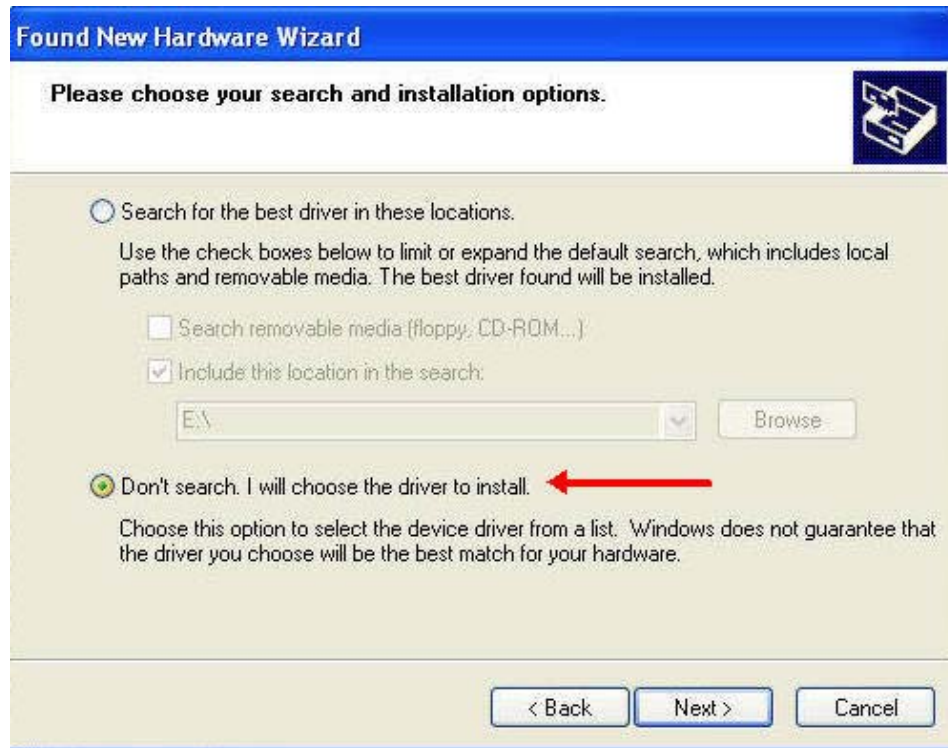
6. Found New Hardware Wizard

- Click “Install from a list of specific location (Advanced).”
- Click “Next”



7. Found New Hardware Wizard

- Select “Don’t search, I will choose the driver to install”.
- Click “Next”.

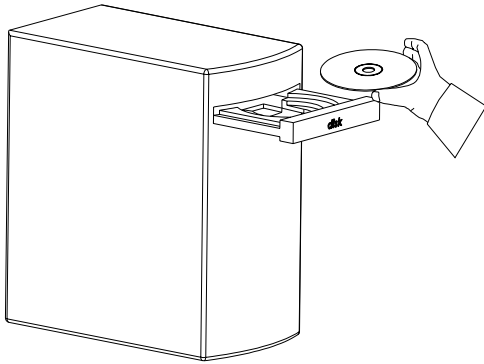


8. Select driver

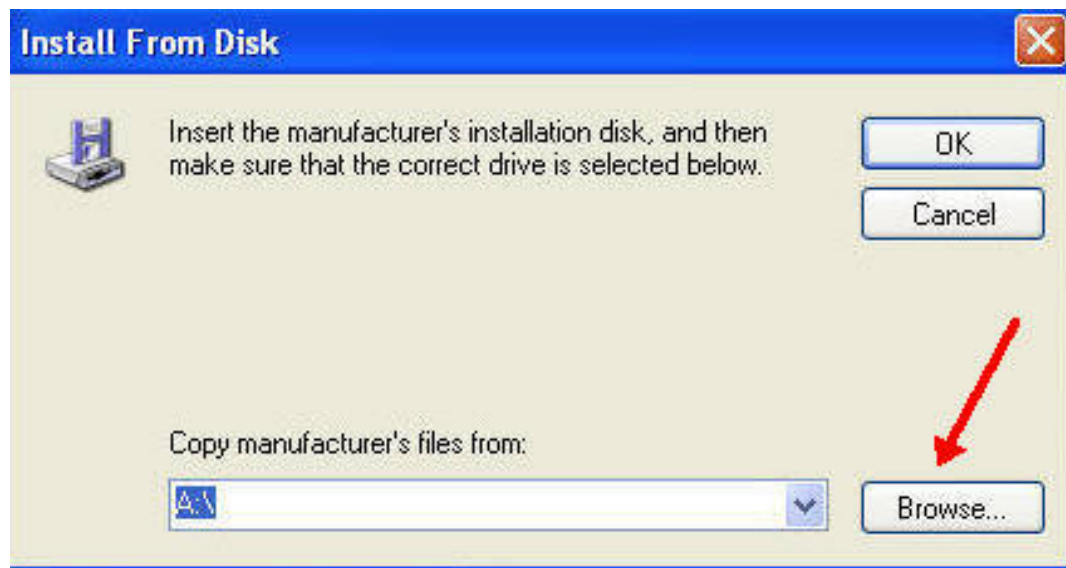
- Select “Have Disk”.
- Click “Next”.



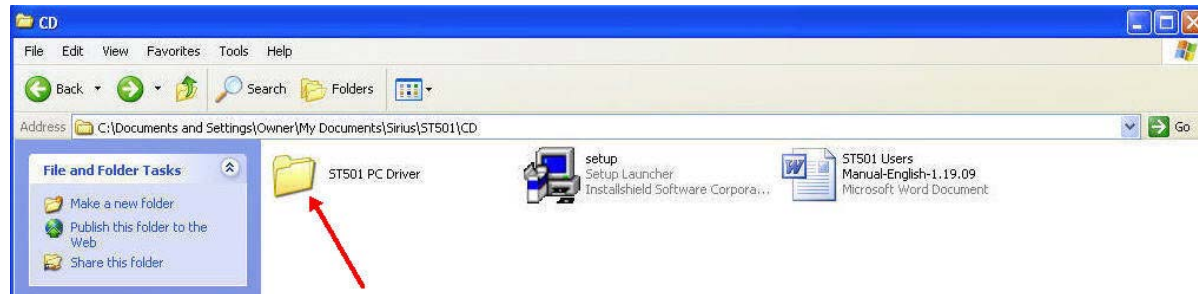
9. Insert the included CD into the CD drive



10. Click Browse to locate the driver file.

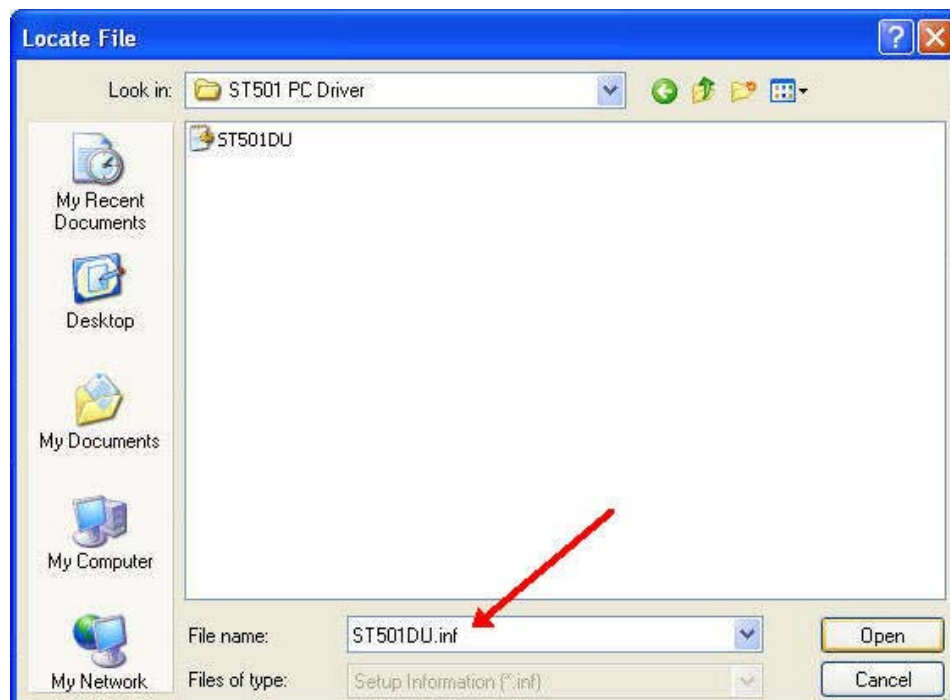


11. Open “ST501 PC Driver” Folder.



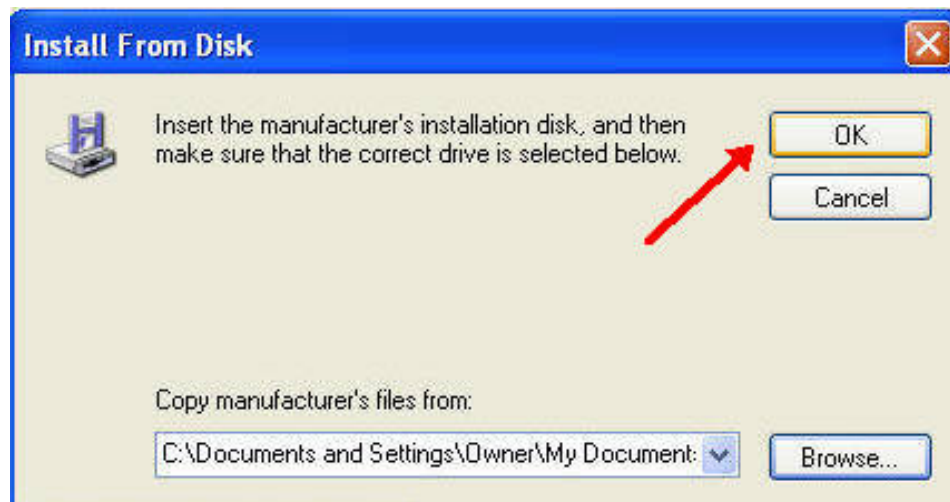
12. Locate ST501driver file

- Locate the driver file- “ST501DU.inf”.
- Click Open.



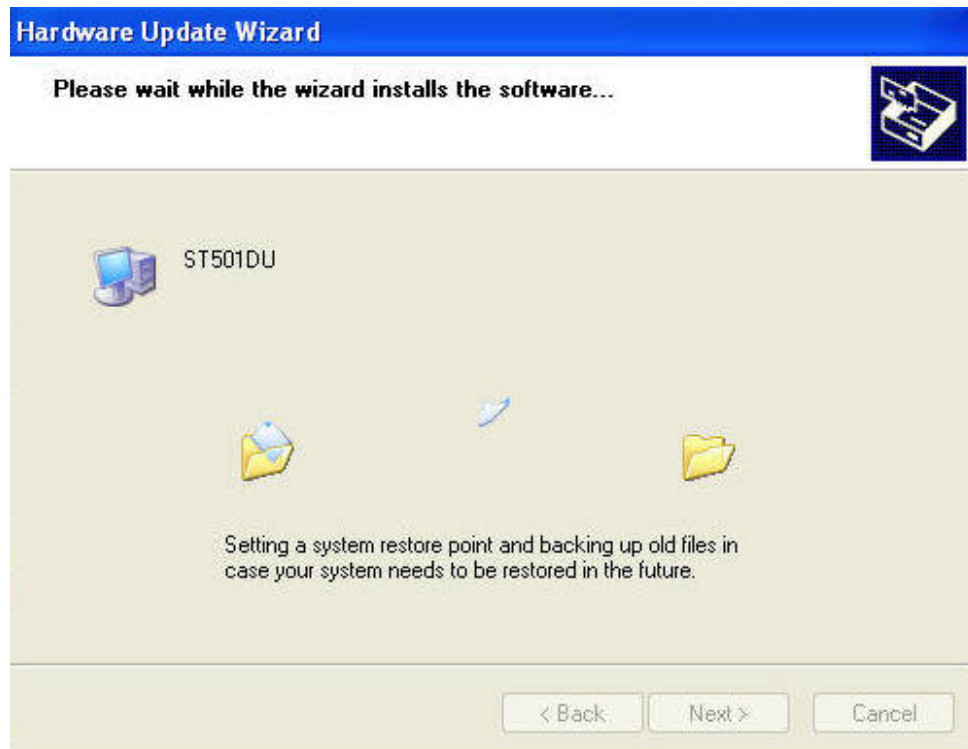
13. Install From Disk

- The driver file, "ST501DU.inf" is selected.
- Click OK.

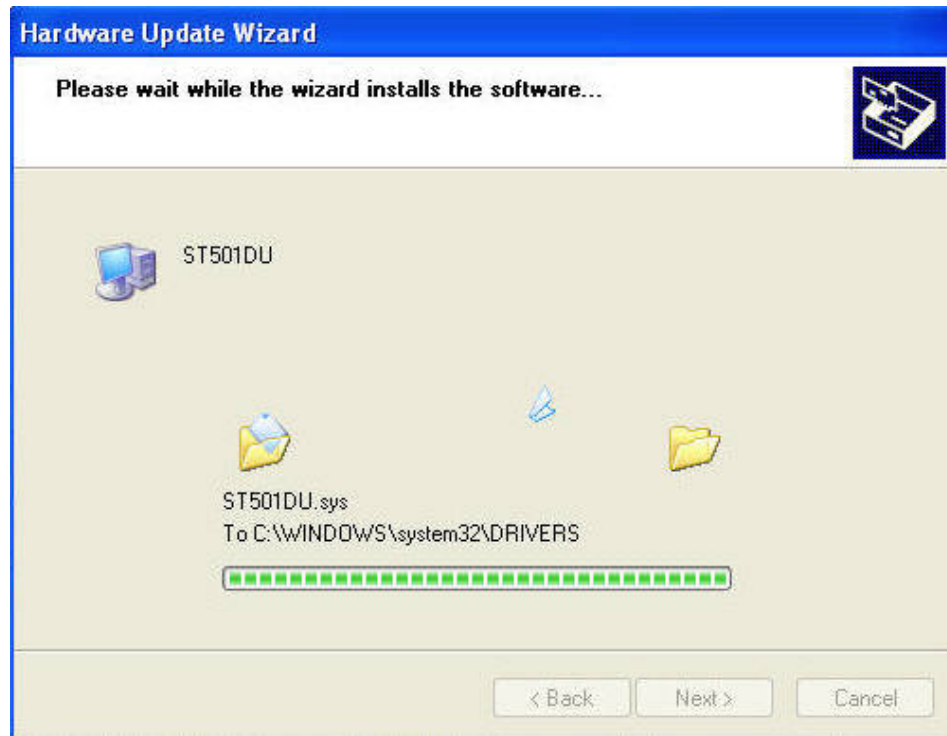


14. Hardware Update Wizard

Window XP is updating the ST501DU driver.



15. Window XP is updating the ST501 driver



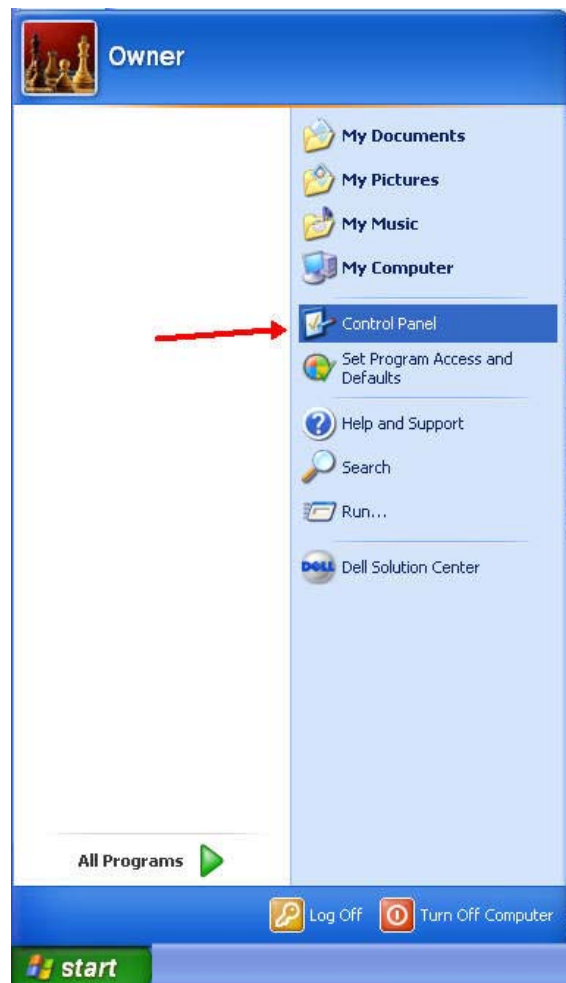
16. Driver Installation Completed

- Update completed.
- Click “Finish” to complete the driver installation.



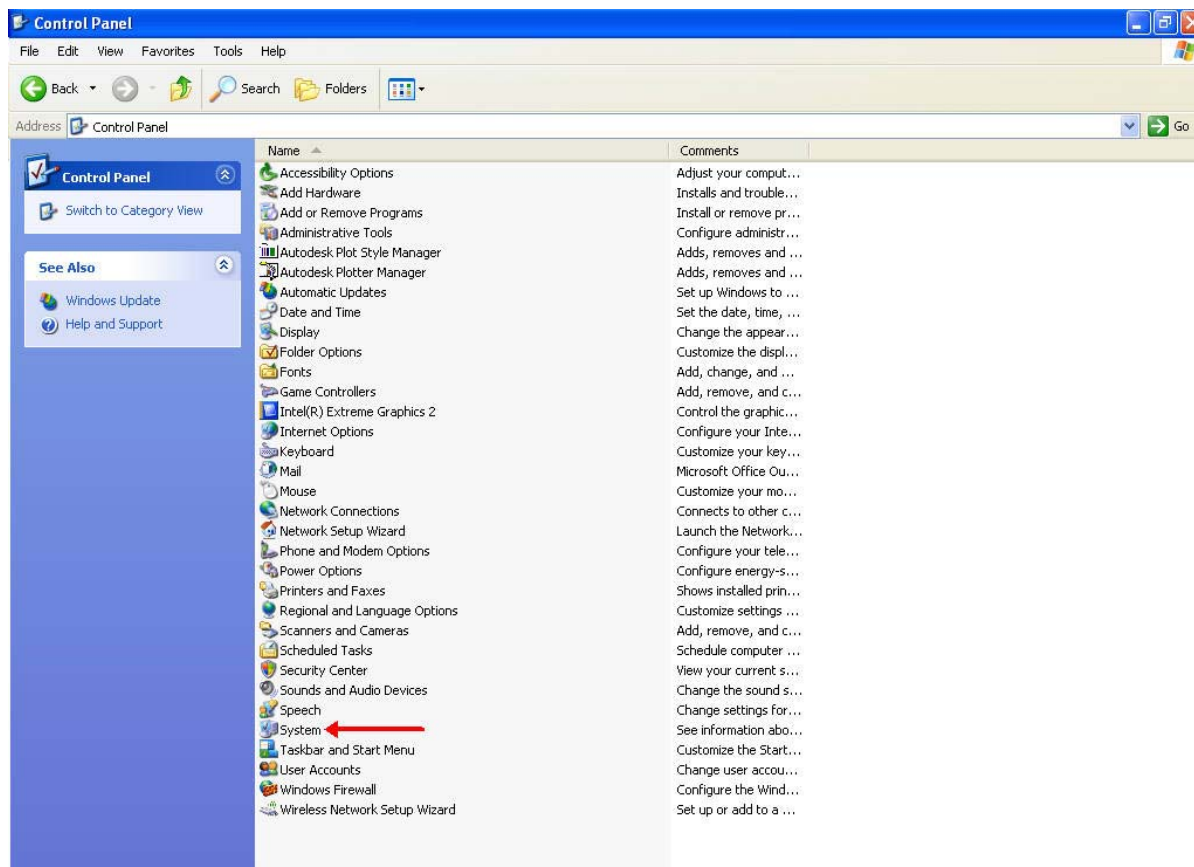
17. Driver Verification

- Select “Start”
- Select “Control Panel”
- Select “System”
- Select “Hardware”
- Click “Device Manager”



Select Control Panel

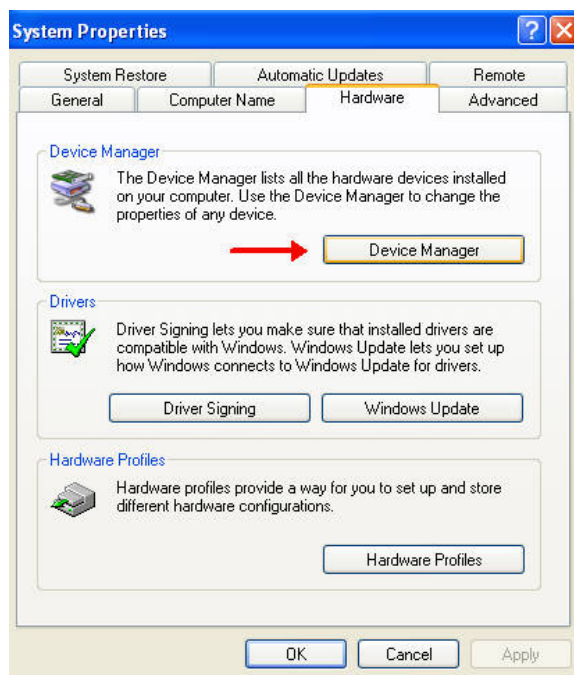
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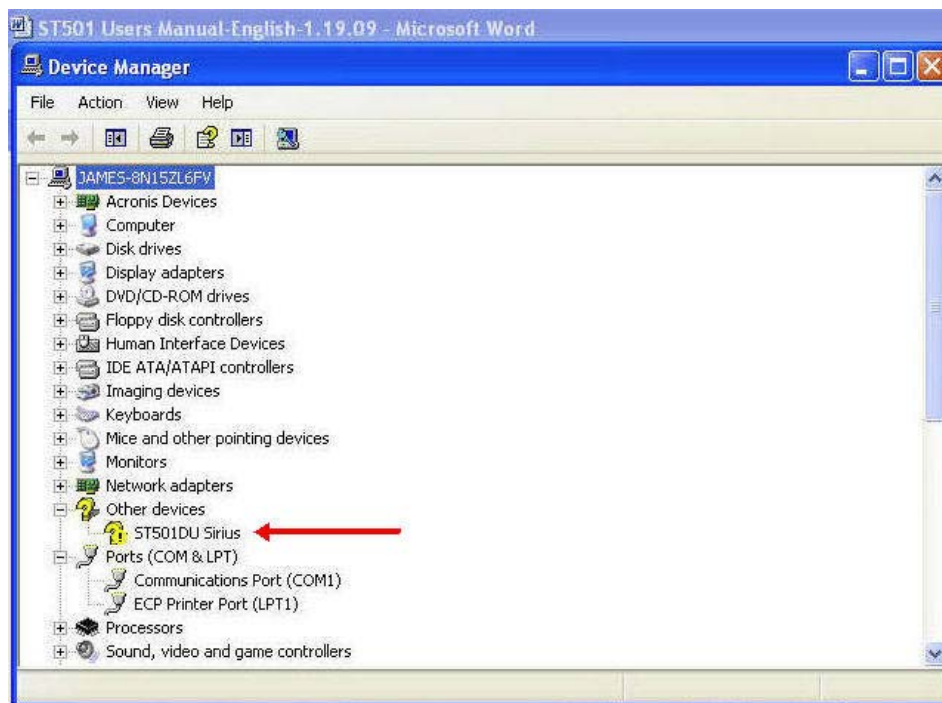
Select System

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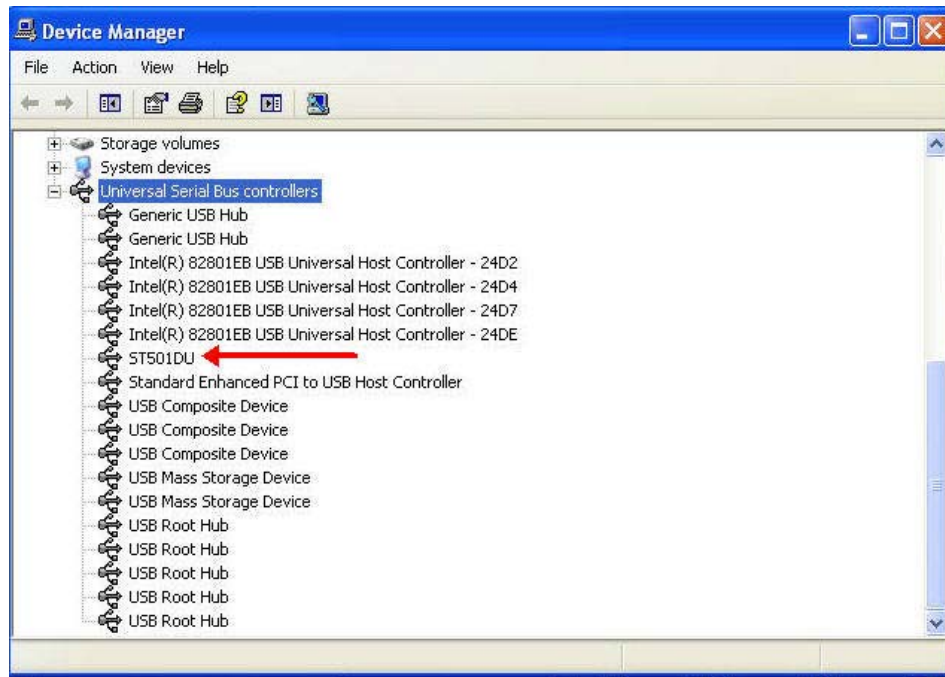
•TEL:(626)934-0100 •FAX:(626)934-0161 •E-Mail: INFO@SIRIUSTEC.COM



Select Device Manager



Before Driver Installation



After Driver Installation

18. Installed Driver Detail



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USING PC SOFTWARE

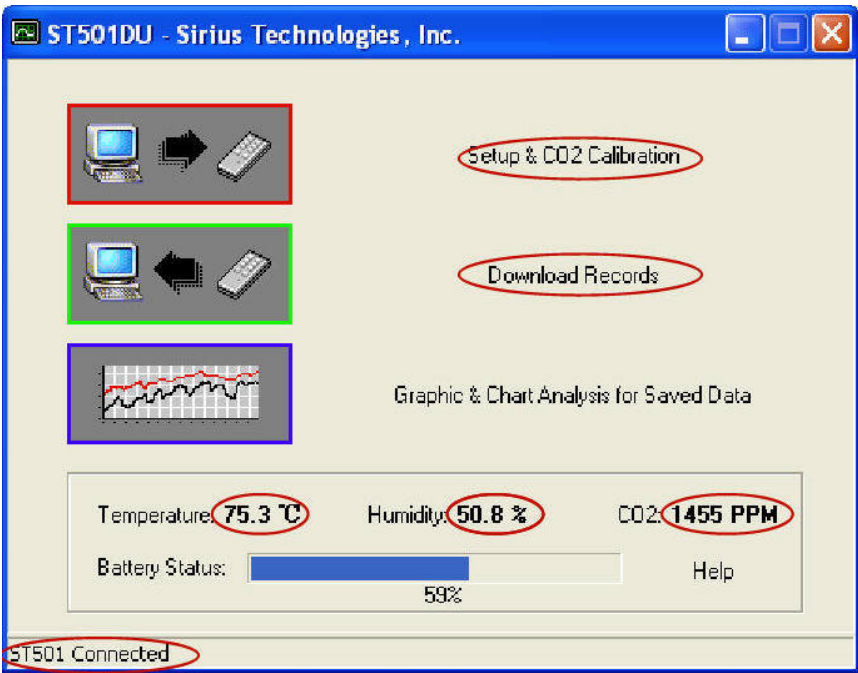
- Start Window XP software.
- Click on All programs, Click on ST501.
- Click on ST Logger to start the PC program.



Connection Status



No Connection Screen



Connected Screen

Setup Screen

The screenshot shows the 'Data Logger Setup' window with the 'Setting' tab selected. The window is divided into three main sections: GENERAL, ALARM LIMIT, and CALIBRATION. In the GENERAL section, the 'Current Date&Time' is set to 11/17/2007 10:59:57, and the 'Interval' is set to 5sec. In the ALARM LIMIT section, the 'High CO2 Limit' is set to 100 PPM. In the CALIBRATION section, the 'Elevation' is set to 0 m, 'Temperature Offset' is 0.0 C, and 'Outside CO2' is 400 PPM. The 'Save Settings' button is highlighted with a red circle.

Section	Field	Value	Unit
GENERAL	Product#	ST501DU - USB	
	Current Date&Time	11/17/2007 10:59:57	
	Start Date&Time	07/25/2007 23:28:21	
	End Date&Time	07/26/2007 05:01:41	
	Unit Description	ST501DU	
GENERAL	Interval	5sec	
	Time synchronization	☒	
GENERAL	Temperature Unit	☐ F ☒ C	
	Ventilation Unit	☒ LPS ☐ CFM/P	
ALARM LIMIT	High CO2 Limit	100	PPM
	Low CO2 Limit	20	PPM
	High Rh Limit	90	%RH
	Low Rh Limit	20	%RH
	High Temp Limit	70	C
	Low Temp Limit	20	C
CALIBRATION	Elevation	0	m
	Temperature Offset	0.0	C
	Outside CO2	400	PPM
CALIBRATION	Elevation Unit	☐ Feet(ft) ☒ Meter(m)	
	Buttons	Help, Save Settings, Close	

The values in the white area can be changed by the user.

High CO2 Limit PPM

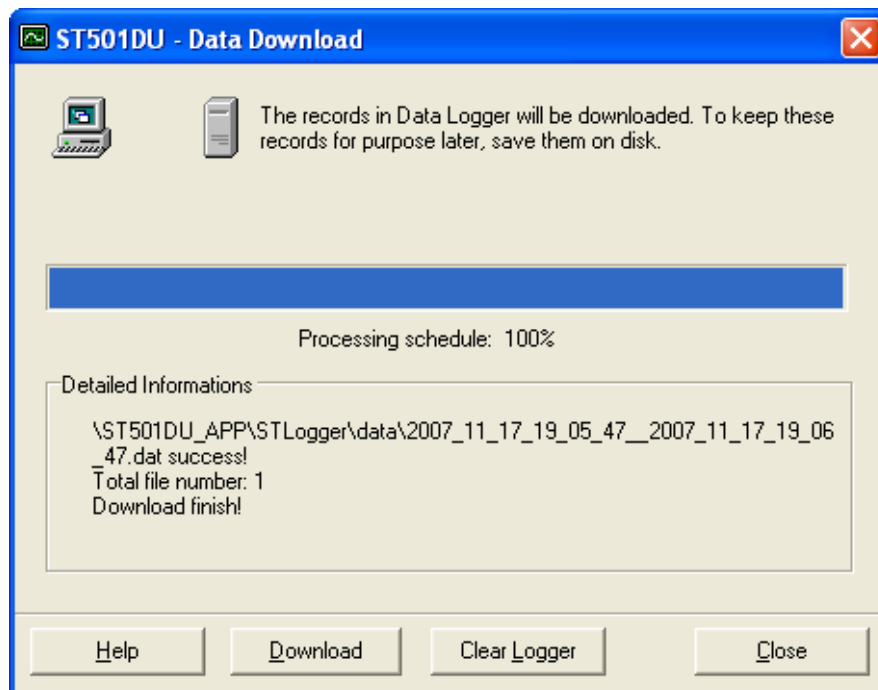
The value in the inverted area can not be changed by the user.

Product# ST501DU - USB

Click Save Settings to save the values to ST501.

Download Records

- Click Download to download the stored data.

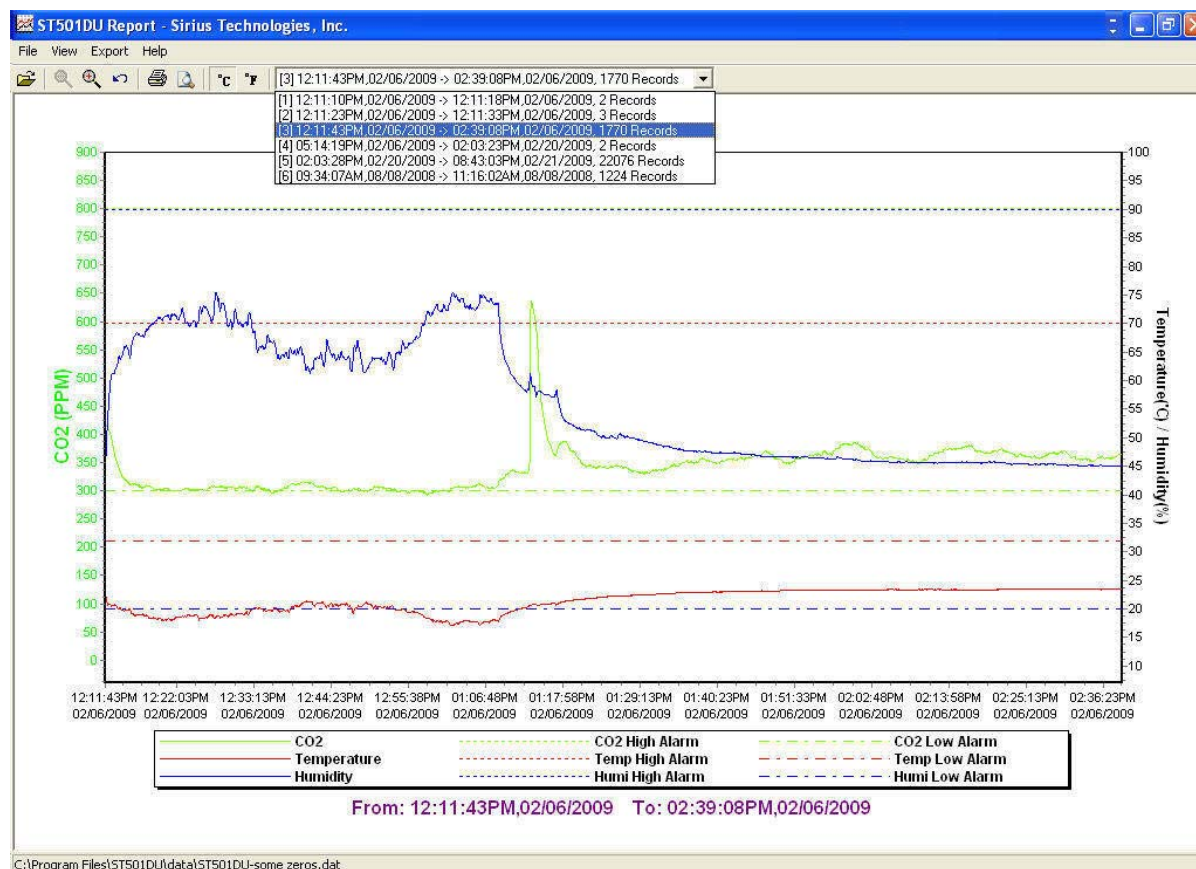


Download completed screen

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Graphic & Chart Analysis

Downloaded data will first be displayed in graphic format.



Each data groups are listed according to the date of acquisition. Lowest group number represents earliest acquisition date.



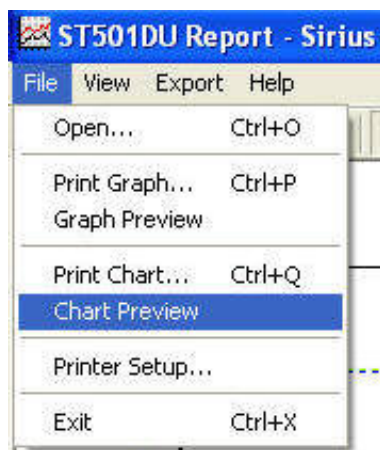
418-B Cloverleaf Dr. Baldwin Park, CA 91706

•TEL:(626)934-0100 •FAX:(626)934-0161 •E-Mail: INFO@SIRIUSTEC.COM

Data in Text Format

To display data in Listing format:

- Click File
- Click Chart Preview



Sirius Technologies, Inc.

Text Listing Format

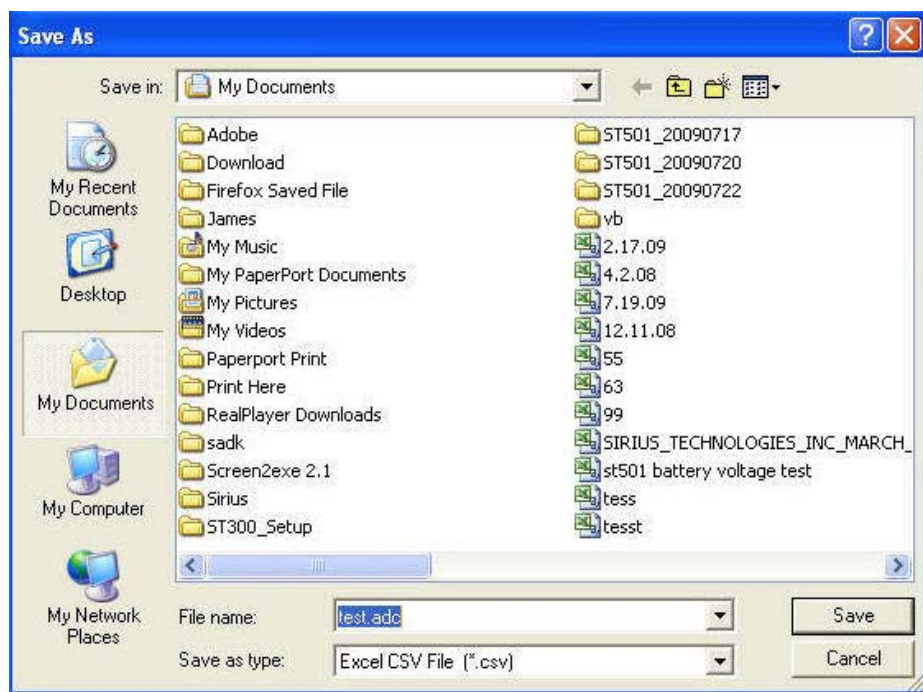
Product Name: ST501DU
Description: STLogger Record Data
Start Date&Time: 12:11:43PM,02/06/2009
End Date&Time: 02:39:08PM,02/06/2009
Interval: 5 seconds
Record Count: 1770
CO2 Alarm High: 800 PPM
CO2 Alarm Low: 300 PPM
Temp Alarm High: 70.0 °C
Temp Alarm Low: 32.0 °C
Humi Alarm High: 90 %
Humi Alarm Low: 20 %

No.	Date	Time	Temp(°C)	Alarm	Humi(%)	Alarm	CO2(PPM)	Alarm
1	12:11:43PM	02/06/2009	22.7	Low	45.6		412	
2	12:11:48PM	02/06/2009	22.5	Low	45.9		415	
3	12:11:53PM	02/06/2009	22.1	Low	47.6		416	
4	12:11:58PM	02/06/2009	21.5	Low	50.0		417	
5	12:12:03PM	02/06/2009	20.8	Low	52.5		411	
6	12:12:08PM	02/06/2009	20.6	Low	54.3		410	
7	12:12:13PM	02/06/2009	20.8	Low	55.4		409	
8	12:12:18PM	02/06/2009	20.8	Low	57.3		406	
9	12:12:23PM	02/06/2009	20.7	Low	58.4		404	
10	12:12:28PM	02/06/2009	20.9	Low	59.8		401	
11	12:12:33PM	02/06/2009	20.6	Low	60.4		396	
12	12:12:38PM	02/06/2009	20.5	Low	60.9		393	
13	12:12:43PM	02/06/2009	20.6	Low	61.2		388	
14	12:12:48PM	02/06/2009	20.6	Low	61.2		384	
15	12:12:53PM	02/06/2009	20.6	Low	61.2		378	
16	12:12:58PM	02/06/2009	20.7	Low	61.2		372	
17	12:13:03PM	02/06/2009	20.8	Low	61.3		367	
18	12:13:08PM	02/06/2009	20.5	Low	61.7		363	
19	12:13:13PM	02/06/2009	20.5	Low	62.2		358	
20	12:13:18PM	02/06/2009	20.6	Low	62.4		355	
21	12:13:23PM	02/06/2009	20.3	Low	62.4		352	
22	12:13:28PM	02/06/2009	20.3	Low	62.5		350	
23	12:13:33PM	02/06/2009	20.0	Low	63.2		346	
24	12:13:38PM	02/06/2009	19.9	Low	64.0		344	
25	12:13:43PM	02/06/2009	20.0	Low	64.3		339	
26	12:13:48PM	02/06/2009	20.1	Low	64.1		337	
27	12:13:53PM	02/06/2009	20.2	Low	63.7		334	
28	12:13:58PM	02/06/2009	20.0	Low	63.8		333	
29	12:14:03PM	02/06/2009	19.9	Low	64.1		329	
30	12:14:08PM	02/06/2009	19.8	Low	64.4		326	
31	12:14:13PM	02/06/2009	19.8	Low	64.5		325	
32	12:14:18PM	02/06/2009	19.7	Low	64.8		324	
33	12:14:23PM	02/06/2009	19.6	Low	65.6		323	
34	12:14:28PM	02/06/2009	19.6	Low	65.9		322	
35	12:14:33PM	02/06/2009	19.8	Low	65.7		321	
36	12:14:38PM	02/06/2009	19.8	Low	66.0		319	
37	12:14:43PM	02/06/2009	19.8	Low	66.1		318	
38	12:14:48PM	02/06/2009	19.9	Low	66.0		316	
39	12:14:53PM	02/06/2009	19.9	Low	65.8		316	
40	12:14:58PM	02/06/2009	19.8	Low	65.6		315	
41	12:15:03PM	02/06/2009	19.8	Low	65.3		314	
42	12:15:08PM	02/06/2009	19.9	Low	64.8		313	

Sirius Technologies, Inc.

Data Export

Select export data type: Text or Excel CSV



Click Save to save the file in .CSV/Txt format.



File Saved.

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Sirius Technologies, Inc.

WARRANTY

Sirius Technologies, Inc. equipment 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 to:

Sirius Technologies, Inc.
418-B Cloverleaf Drive
Baldwin Park, CA 91706
U.S.A.

<http://www.siriustec.com>