LX-8809A
USB Data-Logging Light Meter Manual

Introduction

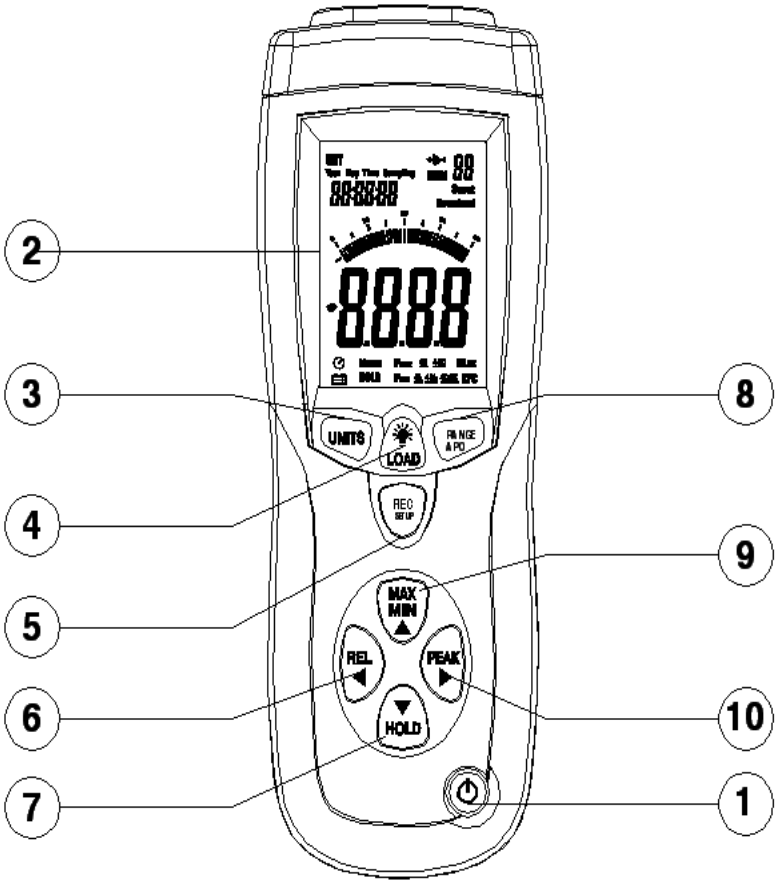
This digital data-logging light meter is a precision instrument used to measure luminance by Lux or Footcandles (FC). It meets the CIE photopic spectral response standard. When not in use the instrument should be kept in the carry case and the lens cap put onto the lens to protect it from damage.

Features

- 4 Measuring Ranges Lux.
- 4 Measuring Ranges Footcandles.
- Silicon Photo Diode Sensor with a Spectral Response Filter Fully Cosine Corrected.
- High accuracy and rapid response.
- Data Hold, Peak Hold, Min/Max Memory, Relative Function.
- 56mm High Contrast LCD with 41 Segment Bargraph, Function Indicators and Backlight.
- Auto-power Off after 15 minutes with User Disable.
- USB output.
- 99 Individual Record Memory independent of the Data-Logger.
- Data-Logger Capacity of 16,000 Readings.
- Accessories Included: Carry Case, Software and USB Connection Cable.

Specifications

- 4 Measuring Ranges for Lux: 0Lux to 400Lux, 4KLux, 40KLux, 400KLux.
- 4 Measuring Ranges for Footcandles: 0FC to 40FC, 400FC, 4KFC, 40KFC.
- Accuracy: ±3% rdg ±0.5% f.s. (<10,000Lux). ±4% rdg ±10d. (>10,000Lux)
- Sampling rate of 1.5 times per second (selectable rate for data logging).
- Operating temperature and humidity: 0°C ~ 40°C and 0%rh ~ 80%rh.
- Storage conditions: -10°C ~ 50°C and 0%rh ~ 70%rh.
- Power Source: 1 x 9V battery.
- Length of Connection Lead for Light Sensor: 1 Metre.
- Light Sensor Dimensions: 115L x 80W x 20H (mm).
- Meter Dimensions: 230L x 80W x 50H (mm).
- Weight of Unit: 390g.



Function Buttons.

1. **Power On/Off button.**
3. **UNITS Button.**
4. **Backlight and LOAD Button.**
5. **REC/SETUP Button.**
6. **PEAK Button.**
7. **HOLD Button.**
8. **RANGE/APO Button.**
9. **MIN/MAX Button.**
10. **REL Button.**

Operating Instructions.

Power On/Off, Auto Power Off and Display Back Light.

To turn the meter on press the **yellow** ⏻ **power button** (No 1) on the bottom of the unit. If auto power off is disabled, press the button again to turn the meter off.

At first power on the instrument defaults to a 15 min "Auto Power Off".
To disable auto power off press **REC/Setup** button (No 4) and **RANGE/APO** button (No 8) simultaneously until this symbol,  disappears from the bottom left of the display. Repeat to re-enable the auto power off.

To illuminate the back light press the **LOAD** button (No 4). Repeat to turn off the back light.

Selection of Measurments and Ranges in Lux or Footcandels.

To change measurement unit press the **UNITS** button (No 2). This changes the displayed values from Lux to Footcandles, or vice versa. 1FC = 10.76Lux.

There are 4 measuring ranges for Lux and Footcandels. Press **RANGE/APO** button (No 8) to scroll through the measuring ranges. Should the display show **"OL"** then the range selected is to low for the measured value. Select the next range up. Repeat until the instrument displays a value. The selected range is displayed below the main reading.

Connect the sensor to the instrument. Remove the black plastic cover protecting the sensor and the instrument will display the measured value.

To Set Time, Date and Data-Logging Sampling Time.

The time, date and sampling rate has to be set for recording and storing measurements.

To enter this setup mode, press and hold down for 5 Seconds the **REC/Setup** button (No 5) and the **UNITS** button (No 3) simultaneously. The word **'Time' and the hour digits** should be flashing. You are now in the setup mode.
The 4 keys (No's 6,7,10 and 9) with arrows are used to change the data and scroll through the set up menu. The Hour is the first part of the program and is flashing. Use the up/down arrow button's (No's 7 and 9) to increase or decrease the displayed hour. When the hour is correct, press the right arrow button (No 10) which then moves the setup to minutes. Again using up/down arrow button's (No's 7 and 9) change the displayed digits to the correct value. Repeat this process to set the Seconds, Sampling Time, Month, Date and Year. Note: The sampling time is for the data logger recording only. The true sampling rate of the instrument is 1.5 times per second. To exit the setup program press and hold down for 5 Seconds the **REC/Setup** button (No 5) and the **UNITS** button (No 3) simultaneously.

Data Hold.

This function allows the current reading to be frozen on the display. Press **HOLD** button (No 7) to activate. An indicator in the bottom of the display will show **Manu Hold**. Press **HOLD** again to cancel data hold and the instrument will display current measured values.

Minimum/Maximum Values.

This function is activated by pressing **MIN MAX** button (No 9) and will display the minimum and maximum values since the instrument was switched on. The first value is the maximum measured value with a **Manu Max** indicator shown in the bottom of the display. Press the **MIN MAX** button again. The displayed value is the minimum measured value with **Manu Min** indicator shown in the bottom of the display. Press **MIN MAX** again to cancel data hold and the instrument will display current measured values.

Peak Hold.

This functions purpose is to display only the highest or lowest measured value and is activated by pressing the **PEAK** button (No 6). The first value is the highest measured value with a **Manu Pmax** indicator shown in the bottom of the display. Press the **PEAK** button again. The displayed value is the lowest measured value with **Manu Pmin** indicator shown in the bottom of the display. Press **PEAK** again to cancel peak measuring and the instrument will display current measured values.

Relative Readings.

This function is used to read measured values compared to a memorised value. When a value is established, press the **REL** button (No 10). The displayed values will then be deviations to the relative stored value and shown as plus or negative value with a **Manu** indicator shown in the bottom of the display. Press the **REL** button again to exit this function and the instrument will display current measured values.

Recall 99 Memory Function.

The instrument has an independent memory separate to the data logger. It is used to memorise individual measured values for recall without using a computer connection. To memorise a reading press **REC Setup** button (No 5). In the top right hand corner of the display an indicator will appear **"MEM 01"**. This confirms the measured value has been memorised as record number 1. Press **REC Setup** again and the indicator will display as **"MEM 02"**. This confirms the measured value has been memorised as record number 2. This can be repeated for up to 99 readings.

To recall the readings from the memory press and hold for 5 seconds the **LOAD** button (No 4). Using the up and down buttons (No's 7 and 9) will allow you to scroll through each memorised value.

To clear the memory press and hold for 5 seconds the **LOAD and REC Setup** buttons at the same time. **MEM CL** will appear in the top right hand corner of the display whilst the memory is cleared. When the memory is clear the instrument will revert back to normal measuring mode.

To Read the "Recall 99 Memory" via the software**.** On the top menu line click on **Mem(M)**. The software will now download the memorised values and when complete auto open a new window listing the reading Number, Measured Value with the Date and Time the measurement was memorised. This data can be saved or printed.

Low Battery Indication.

When the battery power falls below the required voltage a battery symbol  will appear on the display. To change the battery slide the back cover off, disconnect the expired battery and replace.

EPROM Memory Back Up.

The EPROM has a 2nd battery backup so no data is lost due to main battery changes.

Maintenance and Calibration.

In order to ensure accurate readings the lens should be cleaned using a damp cloth to remove any dust or dirt. Do not store the instrument where the temperatures are excessively low or high or the humidity is excessively high. This should be considered especially when leaving instruments in vehicles.

Re Calibration of this instrument will vary due to operating conditions and regulations. It is recommended that the meter is re calibrated at least once every 12 months. ATP offers a fully traceable calibration service to national standards. Please call our technical help line for current prices. 01530 566804.

Recommended Illumination Values.

LOCATIONS		Lux	FC
OFFICE	Conference, Reception room	200~750	18~70
	Clerical work	700~1,500	65~140
	Typing drafting	1,000~2,000	93~186
FACTORY	Visual work at production line	300~750	28~70
	Inspection work	750~1,500	70~140
	Electronic parts assembly line	1,500~3,000	140~279
	Packing work, Entrance passage	150~300	14~28
HOTEL	Public room, Cloakroom	100~200	9~18
	Reception	200~500	18~47
	Cashier	750~1,000	70~93
STORE	Indoors Stairs Corridor	150~200	14~18
	Show window, Packing table	750~1,500	70~140
	Forefront of show window	1,500~3,000	140~279
HOSPITAL	Sickroom, Warehouse	100~200	9~18
	Medical Examination Room	300~750	28~70
	Operating room, emergency treatment	750~1,500	70~140
SCHOOL	Auditorium, Indoor Gymnasium	100~300	9~28
	Class room	200~750	18~70
	Laboratory, Library, Drafting, room	500~1,500	47~140

Installing the Software

Start Windows and insert the **CD** into the CD drive. Install Wizard should detect and install the software.

If install wizard does not appear automatically go to **START** at the bottom of the desktop, then **Run . . .** Browse for **Light Meter (D:)** which is the name of the software.

Click on **Light Meter (D:)** This will open up the files stored within the **CD**. Open the **SETUP** file and follow the instructions to install the software.

Once this is complete you will see this icon, 

appear on your desktop. The installation was successful, but before you can use the software you need to install the hardware drivers. **Do not remove the CD**.

Installing the Hardware Drivers.

You do not need to install the hardware drivers if you already have installed it the following ATP Data Logging Instruments as they all use the same program.

SL-8851 USB Logging Sound Level Meter.
SL-8852 Data Logging Sound Level Meter.
LX-1309 USB Logging Lux Meter.

With the CD for the software still in the CD drive, turn the instrument on, then connect the meter to the computer using the USB cable supplied.

A message will appear to show the computer has detected new hardware in the USB port. Double click on this message. A new window will appear asking you to install the hardware. On this window click **'No, not this time'**, as you do not need to connect to the windows update. Follow the instructions to install the hardware, but **before** you press FINISH check that it reads 'CP2101 USB Composite Device' in the window (this is the first hardware driver). Click **FINISH.**

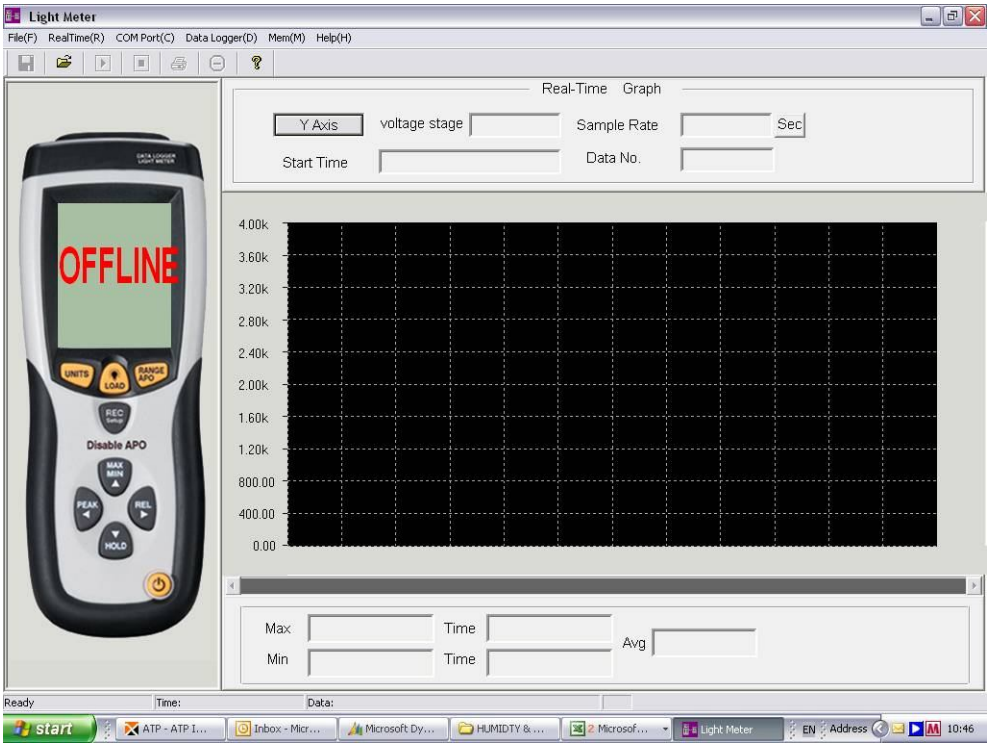
The window will now ask to install the hardware; this is to install the second driver. Install in the same way as you did for the previous driver. In the last window it should show '**CP2101 USB to UART Bridge Controller'**. Click **FINISH** and both hardware drivers should now be installed.

To un-install the drivers (in the "add or remove programs") you will not find two separate drivers. You will find one driver called '**CP210x USB to UART Bridge Controller'** this is because both drivers are saved together, so by un-installing this you are in fact un-installing both the drivers.

Using the Software.

Connect the instrument to the computer with the USB cable. Open the software by clicking on the icon.

If there is no connection the software will display **OFFLINE** in the instrument image. Check the connections are correct and plugged in.



If the software still displays **'OFFLINE'** there is no connection. To create a connection go to **Com Port (C)** icon (Top Menu Line), click and on the drop down menu select **Com3 (M).** The light meter image on the software should now be displaying the same information as your light meter. In some cases this com port will not work and **Com4 (4)** or another may have to be selected, by selecting **Other Com** and choosing the appropriate com port where the information is being displayed on the light meter. This works exactly as it would with **Com3 (M)** selected.

When the connection is made, on the top right side of the instrument display you will see this symbol,  and the word "Scout". The software will show an image of the instrument and display measured values the same as the instrument.

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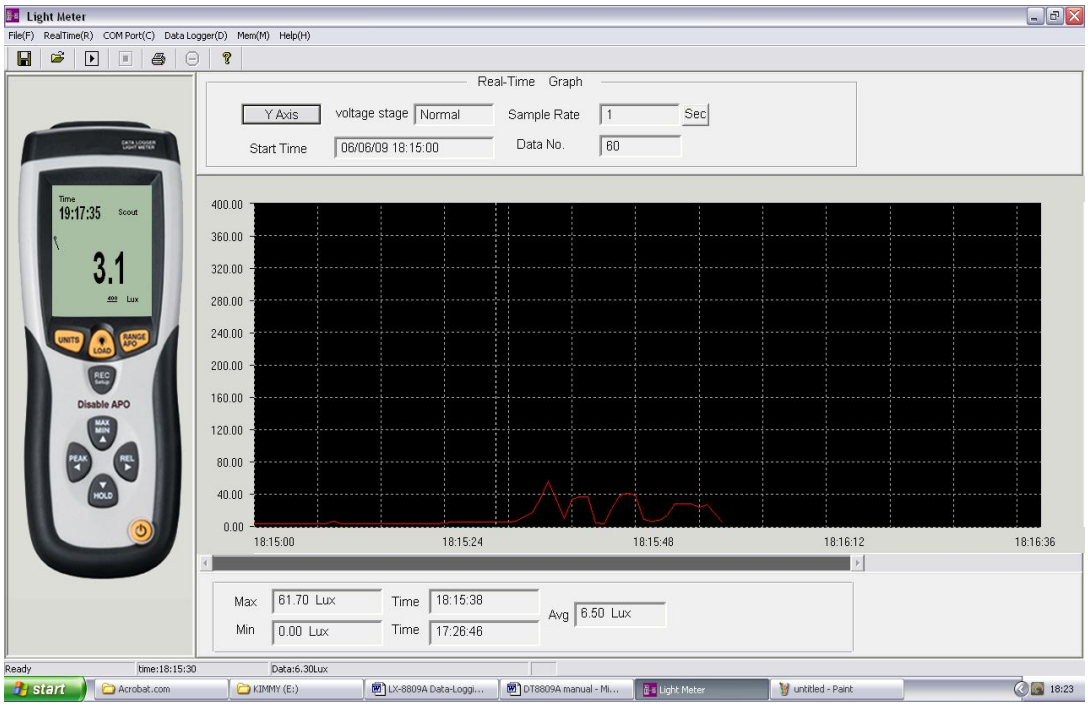
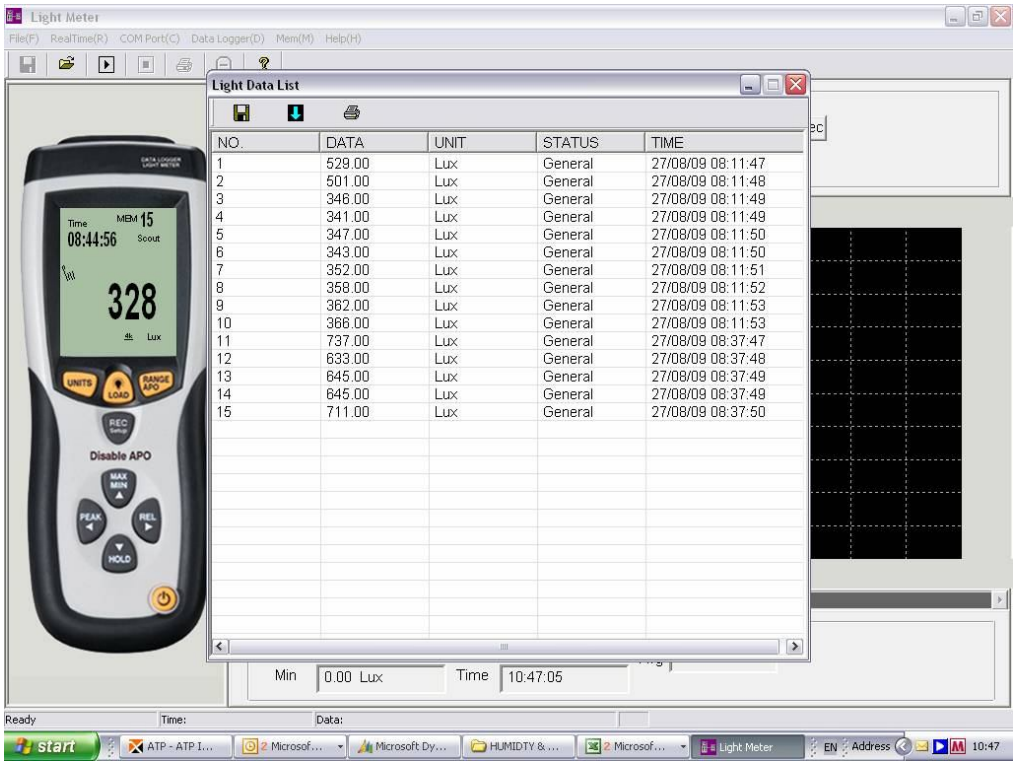


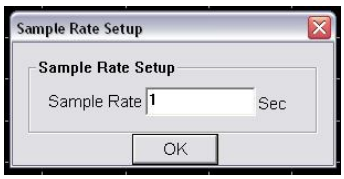
Reading the Recall 99 Memory Function via the software.

On the top menu line click on **Mem(M)**. The software will now download the memorised values and when complete auto open a new window listing: - The Reading Number, Measured Value with the Date and Time the measurement was memorised. This data can be saved or printed.



General Recording using the Software.

Open the software and connect the instrument. On the top menu icons, click on **RealTime(R)**. On the drop down menu click **Run**. A new window will open “Sample Rate Setup”.



The sample rate can be set from 1 second up to 99 seconds. Click OK. The software will now log results from the instrument. Note. Data is captured based on the date and time of the connected computer irrespective of the date and time settings on the instrument.

To stop recording click on **RealTime(R)**. On the drop down menu click **Stop**.

Alternatively recordings can be made using the Stop/Go buttons located at the top of the software.

Stop Go

Viewing saved Data.

When stopped the data can be view as a graph and by moving the mouse over the data line the time and measured value will be displayed at the bottom of the software.

The graph has a zoom facility. Hold the right button of the mouse near to the area, then drag and draw a box to cover the data line. On releasing the mouse button the zoom auto focus to the selected area. This can be auctioned 3 times for in depth analysis.

To undo the zoom click this icon in the top menu. 

Data Logging.

Ensure date, time and sampling rate are set correctly. Sample rate can be set from 1 second up to 99 seconds.

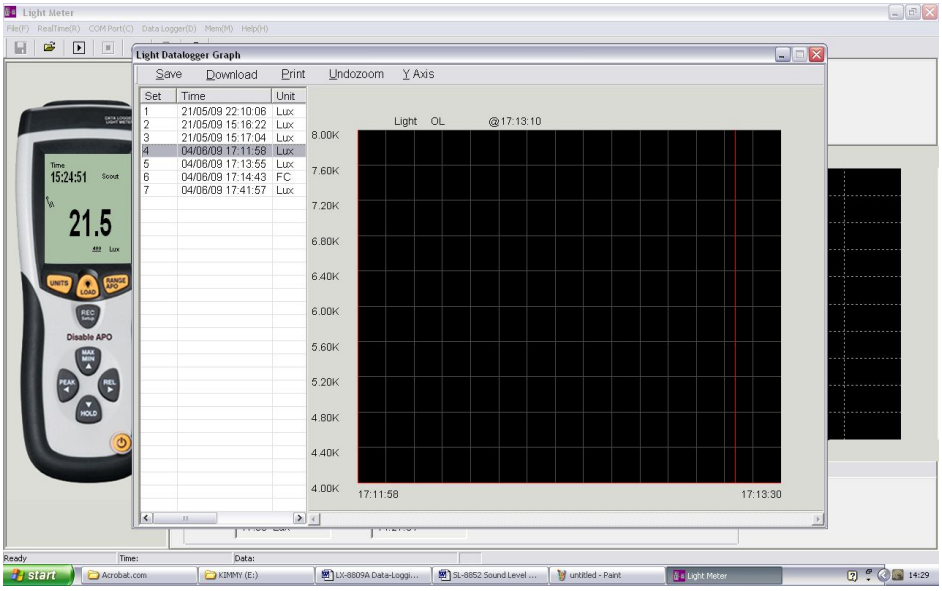
Auto power off has to be disabled.

To set the instrument to record mode press and hold **REC Setup** button (No 4) until in the top right corner on the display **MEM 01** appears. The instruments is now logging measured values as per the set sampling time. To stop data logging press and hold **REC Setup** until the **MEM01** disappears. To take a second set of data repeat until **MEM02** appears. Multiple or single data logging sets can be stored up to a maximum of 16,000 measurements. If the data logger is full then **OL** will appear in the MEM sector.

To View Logged Data.

Connect the instrument to the computer and open the software.

Click on **Data Logger(D)** icon on the menu bar at the top of the screen. A loading window saying **'Logging…'** will appear. This window will auto close when the download is complete and open a new window giving a line listing of data sets.



Double click on the data that you wish to view and a red line will appear on the graph. The zoom facility and file save work as previously detailed.

To delete the data files, press and hold **REC/Setup**, then turn the instrument on. The instrument display will show "del" to indicate the memory has had its data sets deleted.

Trouble Shooting

Meter will not connect

First make sure when you are using the meter with the software that a clock symbol is not showing in the bottom left hand corner, because this is the symbol that indicates that auto power off is enabled. If this is not disabled by pressing **REC/Setup** button (No 4) and **RANGE/APO** button (No 8) simultaneously on the meter before connecting, you will not be able to connect it at all.

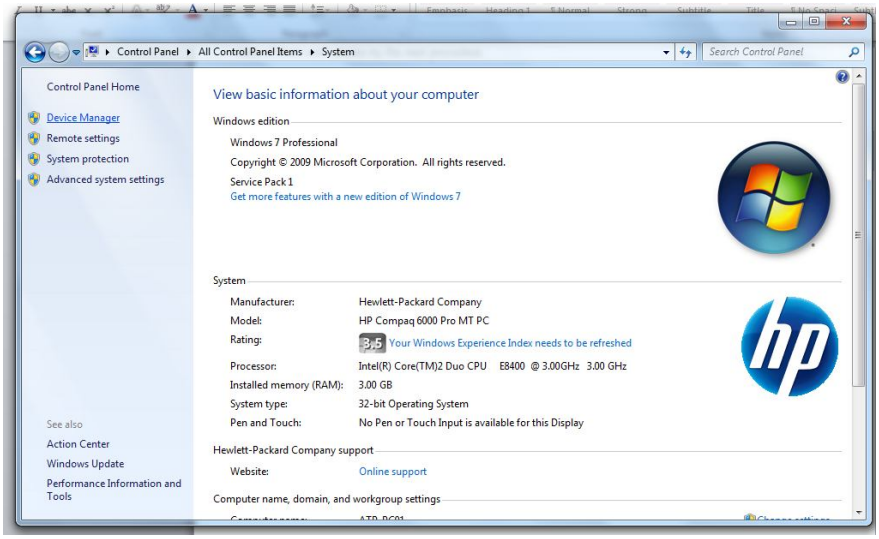
If this is not the case, have you worked your way through the different com ports listed on the software. If you have and none of them work please try the next procedure.

If the hardware has been installed correctly you will be able to find out what com port your meter will work with. To do this please follow the following instructions, but please note that these instructions were done using Windows 7 so if you are running a different version of windows it may be in a different place.

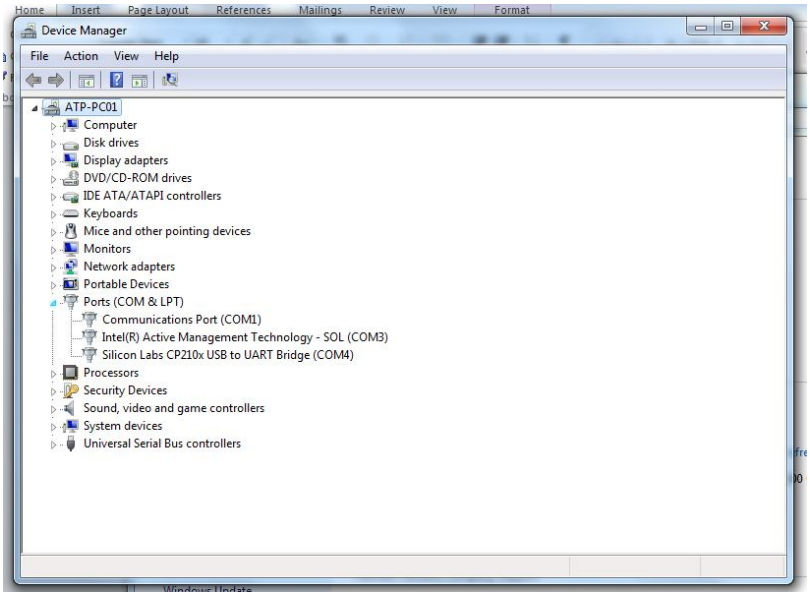
Go to **START** on the tool bar at the bottom of your laptop.

Go to **Control Panel** and find a computer icon with the word **SYSTEM**

Double click on this icon and on the left hand side of the **System** window click on **Device Manager.**



This will open a window called **Device Manager** (this window can be seen on the right hand side):



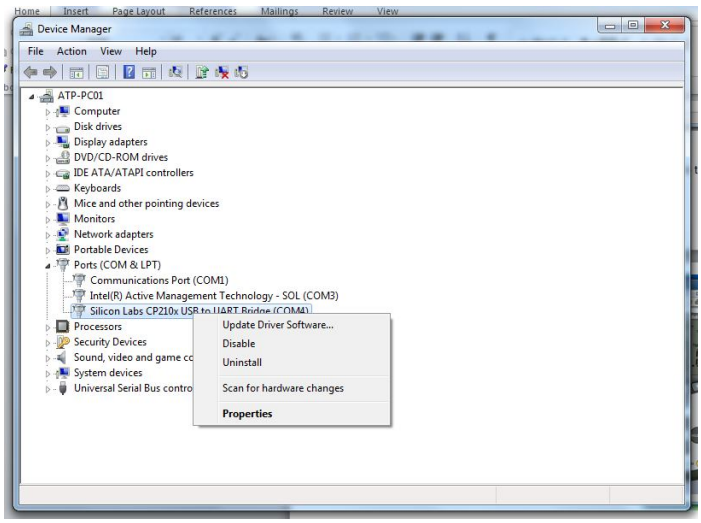
In the Device Manager list look for **Ports (COM & LPT)** and click on the **+** sign next to it to drop down a list of the hardware in your computer and next to each one there will be a COM or LPT number, this tells you which port or LPT it will work with. The name of the hardware you are looking for is **Silicon Labs CP210x USB to UART Bridge** and next to this there will be a com port number. For example on my computer this hardware will work when com port 4 is selected on the software.

If the hardware is not listed, this means that the hardware was not installed correctly. (Please look at the section for **No Hardware Listed in Device Manager**)

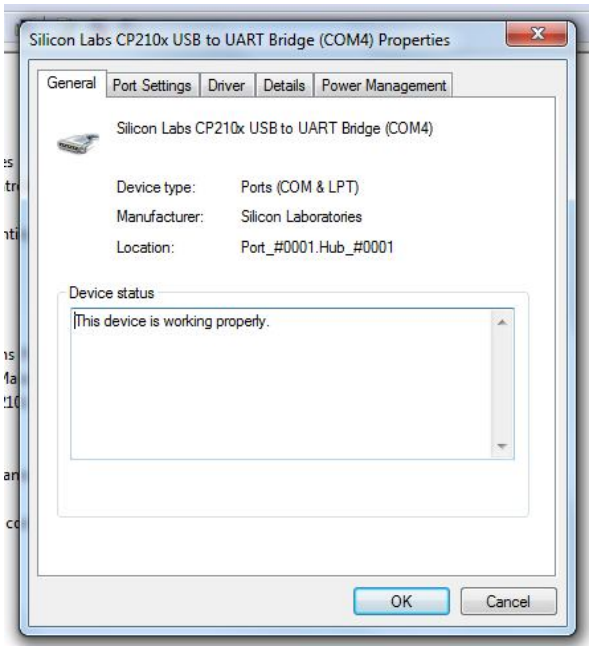
If the hardware is listed please make sure that the com port assigned to the hardware is below 10, because the software will not allow you to connect with com ports higher than this.

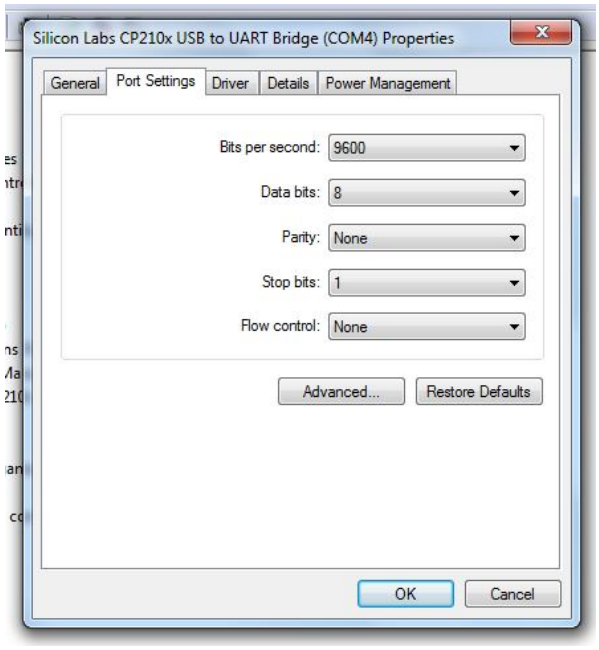
When you know what com port has been selected go back to your software, make sure auto power off is disabled on the meter by pressing **REC/Setup** button (No 4) and **RANGE/APO** button (No 8) simultaneously, and select your com port number. If your com port number is higher than 5, select **Other(O)** and type in the number (i.e. 6 if its 6 or 9 if it is 9)
If the com port assigned to your hardware is showing as higher than 10 in **Device Manager**, please follow the procedure below.

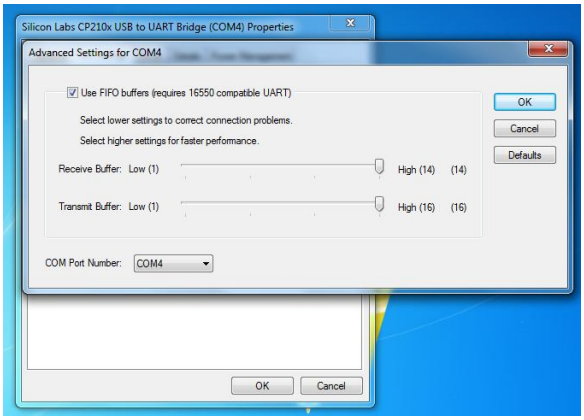
While you are still in the **Device Manager** window, right hand click on your hardware to bring up a menu (as seen below)



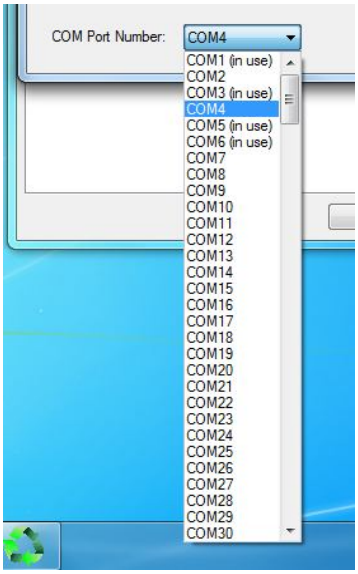
Select **Properties** at the bottom of this menu, to bring up the Properties window for the Silicon Labs hardware. Then select the Port Settings Tab at the top of the properties window







Now select **Advanced** at the bottom of the Port Settings window.



In the **Advanced Settings** window you can change the com port your meter is assigned to by clicking on the arrow next to the current com port (see picture on the right) and select any com port below 10. Press OK when you have changed it on the **Advanced Settings** window and **Properties** window.

If your software was open during this change please close it and unplug your meter because the software will not detect the changes until it is re-opened.

Re-connect your meter, press **REC/Setup** button (No 4) and **RANGE/APO** button (No 8) simultaneously to disable auto power off, re-open the software and connect your meter by selecting the new com port number.

If the meter still does not connect, repeat the procedure and select another com port because the one you previously selected could be assigned to a different device already i.e. memory stick software.

Repeat again if necessary until you find a com port between 1 and 10 that works.

No Hardware Listed in Device Manager

Uninstall the software and see if you can find the hardware listed in the add/remove programs

If you can see it, remove it, so you can re-install everything again.

If you cannot see it, remove just the software and try re-installing everything from scratch.

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