

SensorLab for uLog Single User license

Windows, Linux and Mac OS X

This part of the document forms the legal software license which entitles the purchasing individual or organisation to install and run one copy of SensorLab standard for uLog on one computer at a time on any supported operating systems.

You should retain this document safely along with your proof of purchase.
A low cost upgrade to an unlimited user site license is also available - see below.

Software download and installation

Download the latest SensorLab software from www.logitworld.com/software. For detailed instructions, please download the comprehensive SensorLab installation and user manuals also from the LogITworld website.

Windows - To install the program just run (double click) the Setup program (.exe file) or the Setup Package (MSI file) in the "Installer" folder. Follow the instructions shown on the screen, confirming each display when asked. You may be prompted to enter your administrator password during the installation.

Mac - SensorLab for Mac OS X is distributed in a disk image (DMG) file. To install SensorLab on the computer, log on as the computer Administrator. Locate the SensorLab DMG file. eg. "SensorLab 1.0.0 for Mac OS X.dmg". SensorLab can be installed by selecting SensorLab in the "Installer" folder. Confirm each request in the installation dialogue. After installation the program should appear in the main Applications folder.

Linux - Locate the SensorLab tgz file (eg. "SensorLab 1.0.0 for Linux.tgz") and click on it. Select Extract and locate a suitable temporary location, such as a folder in your Documents. After extraction the selected folder will contain all the files, folders and documentation for SensorLab. (Please see the "SensorLab Installation on Linux" PDF document on the website for full information).

Warranty

uLog sensors are guaranteed for 12 months from date of purchase provided they are used for education or home experimentation purposes in accordance with instructions and not exposed to extremes of temperature, moisture or electricity. There are no user serviceable parts inside. This is a return to base warranty so you are responsible for the cost of returning the item to your supplier or DCP and we will pay return postage, UK. However before returning any item please contact your supplier or DCP to authorise the return.

Other uLog products

Shown below is the range of uLog products available at time of publication. You can also use the uLog sensor adapter to connect any of over 50 LogIT Microsense sensors direct to your computer.

uLog sensors and accessories, as well as over 200 other LogIT family products, are available from LogIT World and suppliers around the world. Check www.logitworld.com or contact your supplier for the latest information.

Each uLog sensor is supplied with SensorLab for uLog single user software license for Mac OS X, Windows, Linux

- D104010n uLog USB Temperature sensor. Range: -10 to +110°C + alternative Kelvin & Fahrenheit scales
- D104015n uLog USB Light level & waveform sensor. Range: 0-100,000 Lux
- D104020n uLog USB Sound Level & waveform sensor. Range: 40-100dBA
- D104030n uLog USB Ranger motion sensor. Ranges: Distance 200-5000mm and Echo time 30,000µS
- D104035n uLog USB Light gates - master & slave light gates pair for timing etc
- D104200n uLog USB LogIT sensor adapter with CD-connects most LogIT Microsense sensors direct to USB
- D104055n uLog USB Carbon Dioxide Sensor for measuring gaseous CO₂. Range 0 - 10,000ppm
- D104025n uLog USB pH adapter and pH electrode set. Range: 1-14pH with replaceable pH electrode
- D104050n uLog USB pH•Ion•mV adapter - use pH or Ion selective electrodes or measure +/-1250mV
- D104045n uLog pH electrode - specially designed to plug straight into the uLog pH•mV adapter
- D100112n pH electrode on 1m cable & BNC plug - use with uLog pH•mV adapter or other pH products
- D100072n BNC to 4mm adapter - so you can use standard 4mm leads with the uLog pH•mV adapter
- D104305n SensorLab for uLog site license upgrade - license for unlimited users on an education site
- D104300n uLog USB 3 metre extension cable - enables uLog to be used further away from computer

LogIT Sales and Support:

www.logitworld.com



Waste electrical and electronic products must not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or Retailer for recycling advice.

uLog

Carbon Dioxide

Overview

Multicolour indicator

Colour corresponds to the sensor channel on the computer screen and flashes during logging (viewable in vent)

CO₂ sensor vent

Range from 0 to 10000ppm

SensorLab Software offers a choice of different scales



USB Socket

For both power and data connection to computer

Easy USB sensing and datalogging

Getting started with uLog

- 1 Download and install SensorLab software for your computer (see back page for more information)
- 2 Run SensorLab and plug your uLog sensor into a free USB port
Wait for a few minutes for the sensor to stabilise - you should see live readings from your sensor on the screen
(See preparing for use on opposite page)
- 3 Click on the Start 'tick' button on the SensorLab software.
You should see a graph recording your live readings
- 4 To mark an event, click on the Mark 'tick' button again.
You will add a small arrow marker at the top of the graph
- 5 To stop logging, click on the stop 'X' button.
Your graph will show the complete set of data

Congratulations, you have recorded your first sensor data using uLog!



More with SensorLab

You can use SensorLab to do much more than display live readings and a graph. Just hover the pointer over any icon to see what it does. Full details of all functions are in the SensorLab user manual available on logitworld.com - here are a few of the extra features you can explore:

- Change range or calibration of a sensor: Click the icon above the gauge when you start
- Change logging type: SensorLab defaults to automatic logging
- Switch a sensor display on or off: Click on gauge display or when graphing click on tick
- Zoom in on a graph: Draw a box around where you wish to zoom or click Magnifier icon
- Take precise readings from graph: Click on graph & position cursor with mouse or arrows
- Label different points on the graph: Click IA icon or Graph / Annotate
- Change SensorLab complexity level: Click level icon bottom right of screen to increment
- Find information about the experiment: Click on the i icon
- To print graph: Click on the Printer icon or select menu File / Print menu
- Save SensorLab file onto your computer: Click Disc icon or use File / Save As menu
- Export data in a different format for use in another program or share: File / Export menu

Using multiple uLog sensors

You can connect several uLog adapters and sensors to the same computer for multi channel logging on the same graph. The multicolour LED on each uLog will show which sensor is displayed on which channel (especially useful if using several sensors of the same type). Note that the number of uLog sensors you can use is dependant on the computers processing power, number of USB ports available and the USB power available (particularly limited on smaller computers).

Use a high quality powered USB hub to increase both number of USB ports and power capacity. You can move uLog sensors further away from the computer by using a USB extension cable.

Other SensorLab functions

As well as graphs, SensorLab can also display data from some sensors in different ways.

Oscilloscope: Some analogue sensors which respond quickly (such as sound, light, voltage) can also be displayed as a live oscilloscope waveform on your computer screen - to view the output of a sensor as a waveform click the oscilloscope icon on the home screen. You can also store and transfer the screen data onto the normal graph for later analysis.

Setup: The setup icon on the home screen (cog wheel) enables you to change the types of logging. You can also select Timing from this option to use with sensors such as Light Gates etc

Full details of scope & all SensorLab functions are in the user manual available on logitworld.com

Carbon Dioxide sensor

The Carbon Dioxide sensor is designed to measure the amount of Carbon Dioxide gas present in air. It provides measurements in ppm (Parts Per Million). It uses NDIR (Non Dispersive Infrared Absorbance) to measure the CO₂ molecules present in the air.

Specifications

Range:	0 - 10000 ppm (resolution 1 ppm)
Accuracy:	+/- 0.02% volume CO ₂ +/- 3% of reading
Update rate:	Every 2 seconds
Operating Conditions:	0°C to 50°C (32°F to 122°F) 0 to 85% RH, non condensing
Storage conditions:	-40°C to 70°C (-40°F to 158°F)

Power:	USB 4.5 - 5.25V 30mA average, 400mA peak
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Life expectancy:	15 years nominal in commercial environments
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Care

This sensor is not waterproof. Do not use the sensor in excessive damp conditions or extremes of temperature as permanent damage will result.

Do not disassemble this sensor, there are no user serviceable parts inside.

Ideas for experiments

- Environmental monitoring of CO₂ levels.
- Greenhouse CO₂ monitoring.
- Plant growth and measurements of optimum growing conditions.
- Photosynthesis studies.
- Human breath composition.
- Office/Classroom/Home environmental studying.

Preparing for use

When first plugged into a USB port the sensor should ideally be left for 10 minutes for the internal sensor to stabilise and give the most accurate readings, although usable readings can be obtained after 2 minutes.

Recalibration

Your CO₂ sensor is supplied pre-calibrated but accuracy can change over time.

To recalibrate the sensor, the following steps must be performed outside on a dry day and ensure there is a good flow of fresh air around the sensor

- Connect the sensor to a suitable computer running the SensorLab software.
- Allow the sensor to stabilise for 10 minutes.
- Select 'Calibrate 400ppm' from the drop down menu above the sensor bar in SensorLab.
- Leave the sensor to calibrate to 400ppm for a few minutes - there is a countdown timer to help
- Your sensor is now calibrated.

If the recalibration fails for any reason, remove from the computer, then reconnect and attempt the above again.

Note: When calibrating, make sure the sensor is not just dangled out of a window. The reason is that any CO₂ from the room could move over the sensor giving a false reading and will make the calibration incorrect.

It is also advisable to set the calibration running and then return a few minutes later. This is also to prevent false readings of CO₂ during the calibration.