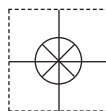


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OM-MICROLITE-8 AND OM-MICROLITE-16 DATA LOGGERS AND OM-MICROLAB And DatPass Administration Software Includes Validation Manual

**For compliance with the United States Food and Drug Administration
Title 21 Code of Federal Regulations Part 11 and with GAMP 4**



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

MicroLab and DatPass Administration Software

For use with MicroLite Data Logger

Includes Validation Manual

**For compliance with the
United States Food and Drug Administration
Title 21 Code of Federal Regulations Part 11
and with GAMP 4**

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Chapter 1: Introduction

This manual will guide you through the process of validating the DatPass and MicroLab software package to GMP 4 and FDA Title 21 CFR Part 11 guidelines. This manual will provide users with a test plan for their own performance and operational qualification of DatPass and MicroLab, together with the MicroLite data logger.

This document is comprised of the following main sections:

- Overview of FDA Title 21 CFR Part 11 and the implementation of these sections in the Omega software package.
- Necessary validation test sheets for DatPass and MicroLab.
- User guide for using the DatPass software.
- User guide for using the MicroLite data logger.
- User guide for using the MicroLab software.

It is important to understand that the implementation of the CFR guidelines is not the sole responsibility of Omega Engineering. The software user must undertake a large portion of the responsibility through the appropriate validation tests.

The software package consists of two programs:

- DatPass –MicroLab administration application
- MicroLab – Data acquisition and analysis application

To validate the software package, start by testing DatPass, followed by MicroLab. Some of these tests assume that the user is familiar with the Windows interface in addition to the DatPass and MicroLab software.

Chapter 2: What is Title 21 CFR Part 11?

The Food and Drug Administration (FDA) issued the regulations *Title 21 Code of Federal Regulations Part 11*. These regulations provide criteria for acceptance by FDA, under certain circumstances, of electronic records, electronic signatures, and handwritten signatures executed to electronic records as equivalent to paper records and handwritten signatures executed on paper. The regulations apply to all FDA program areas, and are intended to permit the widest possible use of electronic technology, compatible with FDA's responsibility to promote and protect public health. Part 11 applies to any record governed by an existing FDA predicate rule that is created, modified, maintained, archived, retrieved, or transmitted using computers and/or saved on durable storage media.

Title 21 CFR Part 11 Definitions

Electronic Record

Any combination of text, graphics, data, audio, pictorial or other information representation in digital form, that is created, modified, maintained, archived, retrieved or distributed by a computer system.

Electronic Signature

A computer data compilation of any symbol or series of symbols, executed, adopted or authorized by an individual to be the legally binding equivalent of the individual's handwritten signature.

Digital Signature

An electronic signature based upon cryptographic methods of originator authentication, computed by using a set of rules and a set of parameters such that the identity of the signer and the integrity of the data can be verified.

Closed System

An environment in which system access is controlled by persons who are responsible for the content of electronic records that is on the system.

Open System

An environment in which system access is not controlled by persons who are responsible for the content of electronic records that is on the system.

Standard Operating Procedures (SOPs)

Guidelines and rules defined by the organization implementing Title 21 CFR Part 11 compliance to instruct users what they are and are not permitted to do and how they are to perform the relevant tasks.

Omega's Software

The dual program software package achieves compliance with FDA Title 21 CFR Part 11 with: *MicroLab* and *DatPass*. The *DatPass* software is the administration software, which includes features that define the users that can log into the *MicroLab* software, their passwords and the digital signatures the users are permitted to sign data within electronic records (files). The *MicroLab* software is used to access the electronic records, display the logger data, analyze the data and allow the user to add the appropriate digital signatures to the electronic records, in addition to other features. An additional security feature is the USB port dongle, without which the *MicroLab* and *DatPass* software packages will not operate.

Chapter 3: Compliance with Title 21 CFR Part 11

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
§11.10 Controls for Closed Systems			
(a)	Validation of systems to ensure accuracy, reliability, consistent intended performance, and the ability to discern invalid or altered records.	Yes	MicroLab will not open invalid or altered data.
(b)	The ability to generate accurate and complete copies of records in both human readable and electronic form suitable for inspection, review, and copying by the agency.	Yes	To ensure data integrity, MicroLab stores data with specific formats (mlb and mpj). Data can be exported to Excel™ and stored in common formats, such as an Excel workbook or for example comma delimited or tab delimited. Only through the (mlb) and (mpj) formats can data be read back into MicroLab and only these formats support electronic signatures.
(c)	Protection of records to enable their accurate and ready retrieval throughout the records retention period.	N/A	The customer chooses which data directory to save files to. Otherwise, the default directory <i>C:\Program Files\Omega\MicroLab</i> for <i>DatPass\MicroLab Data</i> is used. System owners must establish their own SOPs to protect and restore data files.
(d)	Limiting system access to authorized individuals.	Yes	For limited access, the customer must purchase a valid software license and dongle device, preventing access to unauthorized users.
(e)	Use of secure, computer-generated, time- stamped audit trails to independently record the date and time of operator entries and actions that create, modify, or delete electronic records. Record changes shall not obscure previously recorded information. Such audit trail documentation shall be retained for a period at least as long as that required for the subject electronic records and shall be available for agency review and copying.	Yes	Every action that generates or alters an electronic record (mlb or mpj), automatically generates an entry into an encrypted log file, which can be used in audit trail. The entries are chronologically organized and cannot be edited or deleted. The entries can only be viewed using the DatPass software. It is the system owner's responsibility to create SOPs to protect and restore audit trail files.
(f)	Use of operational system checks to enforce permitted sequencing of steps and events, as appropriate	Yes	A smart and user friendly interface ensures all MicroLab operations follow a specified order. This ensures all stages are followed.

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
(g)	Use of authority checks to ensure that only authorized individuals can use the system, electronically sign a record, access the operation or computer system input or output device, alter a record, or perform the operation at hand.	Yes	When using MicroLab, users logon with a valid username and password. Further security is ensured by a USB dongle having to be connected to the workstation. All actions are recorded in an encrypted audit trail log file.
(h)	Use of device (e.g. terminal) checks to determine, as appropriate, the validity of the source of data input or operational instruction.	Yes	MicroLab checks the status of the logger at each communication – errors are automatically reported.
(i)	Determination that persons who develop, maintain, or use electronic record/electronic signature systems has the education, training, and experience to perform their assigned tasks.	N/A	System owners must provide their authorized users with relevant training.
(j)	The establishment of, and adherence to, written policies that hold individuals accountable and responsible for actions initiated under their electronic signatures, in order to deter record and signature falsification.	N/A	System owners must develop written policy in which reliability and responsibility of each user is documented.
(k)	Use of appropriate controls over systems documentation including:		
(k)(1)	Adequate controls over the distribution of, access to, and use of documentation for system operation and maintenance.	N/A	The MicroLab and DatPass Package for Title 21 CFR Part 11 compliance are supplied with detailed user guides and help files, which can be used to create SOP. Distribution, access and implementation of this documentation are the responsibility of the system owner.
(k)(2)	Revision and change control procedures to maintain an audit trail that documents time-sequenced development and modification of systems documentation.	N/A	This is the responsibility of the system owner.
§11.30 Controls for Open Systems			

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
	Persons who use open systems to create, modify, maintain, or transmit electronic records shall employ procedures and controls designed to ensure the authenticity, integrity, and, as appropriate, the confidentiality of electronic records from the point of their creation to the point of their receipt. Such procedures and controls shall include those identified in §11.10, as appropriate, and additional measures such as document encryption and use of appropriate digital signature standards to ensure, as necessary under the circumstances, record authenticity, integrity, and confidentiality.	N/A	MicroLab has been implemented as a closed system.
§11.50 Signature Manifestations			
(a)	Signed electronic records shall contain information associated with the signing that clearly indicates all of the following:		
(a)(1)	The printed name of the signer;	Yes	Stored and printed data contains: User login name, time/date stamp, and user signature meaning(s).
(a)(2)	The date and time when the signature was executed;	Yes	
(a)(3)	The meaning (such as review, approval, responsibility, or authorship) associated with the signature	Yes	
(b)	The items identified in paragraphs (a)(1), (a)(2), and (a)(3) of this section shall be subject to the same controls as for electronic records and shall be included as part of any human readable form of the electronic record (such as electronic display or printout).	Yes	Electronic signatures in MicroLab are subject to the same requirements as electronic records. Electronic signatures can be viewed electronically and can be included on a printout.
§11.70 Signature/Record Linking			
	Electronic signatures and handwritten signatures executed to electronic records shall be linked to their respective electronic records to ensure that the signatures cannot be excised, copied or otherwise transferred so as to falsify an electronic record by ordinary means.	Yes	In MicroLab, raw data and electronic signatures are permanently linked in a single file, and as such cannot be edited, deleted or separated.
§11.100 General Requirements			

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
(a)	Each electronic signature shall be unique to one individual and shall not be reused by, or reassigned to, anyone else.	Yes	DatPass software contains an authorized user list containing login name, password, and meanings list, making every user unique to the system.
(b)	Before an organization establishes, assigns, certifies or otherwise sanctions an individual's electronic signature, or any element of such electronic signature, the organization shall verify the identity of the individual.	N/A	This is the responsibility of the system owner.
(c)	Persons using electronic signatures shall, prior to or at the time of such use, certify to the agency that the electronic signatures in their system, used on or after August 20, 1997, are intended to be the legally binding equivalent of traditional handwritten signatures.	N/A	This is the responsibility of the system owner.
(c)(1)	The certification shall be submitted in paper form, and signed with a traditional handwritten signature, to the Office of Regional Operations (HFC-100), 5600 Fishers Lane, Rockville, MD 20857.	N/A	This is the responsibility of the system owner.
(c)(2)	Persons using electronic signatures shall, upon agency request, provide additional certification or testimony that a specific electronic signature is the legally binding equivalent of the signer's handwritten signature.	N/A	This is the responsibility of the system owner.
§11.200 Electronic Signature Components and Controls			
(a)	Electronic signatures that are not based upon biometrics shall:		
(a)(1)	Employ at least two distinct identification components such as an identification code and password.	Yes	DatPass Software for Title 21 CFR Part 11 compliance uses a unique dual component combination: Login username and password. Every login and new digital signature with MicroLab requires a valid username and password. MicroLab enforces the user to re-login after a time period, which is defined by the administrator via the DatPass software.

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
(a)(1)(i)	When an individual executes a series of signings during a single, continuous period of controlled system access, the first signing shall be executed using all electronic signature components; subsequent signings shall be executed using at least one electronic signature component that is only executable by, and designed to be used only by, the individual	Yes	
(a)(1)(ii)	When an individual executes one or more signings not performed during a single continuous period of controlled system access, each signing shall be executed using all of the electronic signature components.	Yes	
(a)(2)	Be used only by their genuine owners;	N/A	Information confidentiality is the responsibility of the system owner and users.
(a)(3)	Be administered and executed to ensure that attempted use of an individual's electronic signature by anyone other than its genuine owner requires collaboration of two or more individuals.	N/A	Information confidentiality is the responsibility of the system owner and users.
(b)	Electronic signatures based upon biometrics shall be designed to ensure that they cannot be used by anyone other than their genuine owners.	N/A	Biometrics are not the basis of electronic signatures generated by DatPass software for Title 21 CFR Part 11 compliance.
§11.300 Controls for Identification Codes/Passwords			
	Persons who use electronic signatures based upon use of identification codes in combination with passwords shall employ controls to ensure their security and integrity. Such controls shall include:		
(a)	Maintaining the uniqueness of each combined identification code and password, such that no two individuals have the same combination of identification code and password.	Yes	Since every user is unique in the MicroLab and DatPass systems, duplicate combinations of username and password are impossible.
(b)	Ensuring that identification code and password issuances are periodically checked, recalled, or revised, (e.g. to cover such events as password aging).	Yes	Adequate aging of passwords is the responsibility of the system owner. MicroLab allows authenticated users to change their own logon password.

Title 21 CFR Part 11 Requirements		Comments on Compliance or Requirements	
(c)	Following loss management procedures to electronically deauthorize lost, stolen, missing, or otherwise potentially compromised tokens, cards, and other devices that bear or generate identification code or password information, and to issue temporary or permanent replacements using suitable, rigorous controls.	N/A	Unauthorized access is vetoed by the DatPass software since an administrator can disable or remove any user from the system.
(d)	Use of transaction safeguards to prevent unauthorized use of passwords and/or identification codes, and to detect and report in an immediate and urgent manner any attempts at their unauthorized use to the system security unit, and, as appropriate, to organizational management.	Yes	All unsuccessful logons are recorded in the audit trail log file.
(e)	Initial and periodic testing of devices, such as tokens or cards, that bear or generate identification code or password information, to ensure that they function properly and have not been altered in an unauthorized manner.	N/A	This is the responsibility of the system owner.

References

For further information on FDA Title 21 CFR Part 11, please visit the FDA website:

www.fda.gov

For FDA guidance documents:

www.fda.gov/ora/compliance_ref/part11/

Chapter 4: DatPass Validation Tests

1 - Initial Login

Ensure that the DatPass security plug is connected to your computer's USB port.

Note: After installation, the first user to login to the DatPass software is automatically assigned the user name *Admin*. He is classified as an administrator.

Test #	Test Description	Expected Result	Result
1.1	Double click the DatPass icon on the Desktop.	Verify that the <i>User Login</i> dialog box opens.	
1.2	Click New User in the login window.	a. Verify that the <i>New User Login</i> window opens. b. Verify that the <i>New User</i> drop-down menu displays the <i>Admin</i> user name.	
1.3	a. Populate the <i>New User ID</i> , <i>Confirm User ID</i> , <i>New Password</i> and <i>Confirm Password</i> fields, and click OK . b. Exit the DatPass software. c. Launch the DatPass software.	a. Once DatPass is launched, verify that the <i>User Login</i> window opens. b. Verify that the newly created User ID and User Password are correct (click OK and verify successful login to DatPass).	

2 - File Menu


Test #	Test Description	Expected Result	Result
2.1	On the File menu, click Open . Navigate to: <i>My Documents\Omega\DatPass</i> . Note: You will only find files saved in this directory if data, such as the Audit Trail log, has been previously saved.	a. Verify that the <i>Open</i> dialog box opens. b. Select a file to open, and click Open . c. Verify that the file opens, and the table data is displayed in the main DatPass window.	
2.2	On the File menu, click New .	Verify that the DatPass main window is clear i.e. there is no Audit Trail log data.	
2.3	On the File menu, click Print . Note: For this action to succeed, the main DatPass window must be populated	Verify that the <i>Print Dialog</i> dialog box opens.	

Test #	Test Description	Expected Result	Result
	with Audit Trail log data.		
2.4	On the File menu, click Print Preview .	Verify that the <i>Print Preview</i> dialog box opens, and the file you chose to print is displayed.	
2.4.1	a. In the <i>Print Preview</i> dialog box, click Print . b. In the <i>Print Dialog</i> dialog box, using the <i>From</i> and <i>To</i> drop-down menus, choose the time period to be printed. c. Select the page orientation, either <i>Portrait</i> or <i>Landscape</i> . d. Click OK . e. In the <i>Print</i> dialog box, ensure that the correct printer is selected in the <i>Name</i> field and click OK .	Verify that the data is printed at the selected printer and fits the time range chosen and desired page orientation.	
2.4.2	In the <i>Print Preview</i> dialog box, click Next Page . Note: This button is only active if the data has more than one page.	Verify that the next page of data is displayed.	
2.4.3	In the <i>Print Preview</i> dialog box, click Prev Page . Note: This button is only active if the data has more than one page.	Verify that the previous page of data is displayed.	
2.4.4	In the <i>Print Preview</i> dialog box, click Two Page . Note: This button is only active if the data has more than one page.	a. Verify that the data is displayed on two pages. b. Verify that the Two Page button is now inactive and the One Page button appears next to it.	
2.4.5	In the <i>Print Preview</i> dialog box, click Zoom In .	Verify that the data displayed on the screen now appears larger (has zoomed in).	
2.4.6	In the <i>Print Preview</i> dialog box, click Zoom Out .	Verify that the data displayed on the screen has now returned to the previous (normal) size (has zoomed out).	
2.4.7	In the <i>Print Preview</i> dialog box, click Close .	a. Verify that the <i>Print Preview</i> dialog box closes. b. Verify that you have now returned to the main DatPass window.	
2.5	On the File menu, click Print Setup .	Verify that the <i>Print Setup</i> dialog box opens.	

Test #	Test Description	Expected Result	Result
2.6	On the File menu, click Log off .	Verify that the <i>User Login</i> dialog box opens.	

3 - Administration

Test #	Test Description	Expected Result	Result
3.1	On the Administration menu, click User Administration .	a. Verify that the <i>User Administration</i> dialog box opens. b. Verify that <i>Admin</i> appears under the <i>User Name</i> tab and <i>Administrator</i> appears under the <i>Group</i> tab.	
3.1.1	a. In the <i>User Administration</i> dialog box, click Add User . b. Enter a new user name in the <i>User Name</i> field. c. Select a Group from the Group drop-down menu: Administrator, Approver, or User. Under the <i>Login Settings</i> heading: d. Enter a number in the <i>Password min length</i> field (for example, 4). e. Enter a number in the <i>User ID min length</i> field (for example, 4). f. Enter number of days in the <i>Password expiration time (days)</i> field (for example, 1). g. Use the drop-down menu in the <i>Inactivity Timeout</i> field to select the duration (for example, 00:05:00). h. Click OK .	Verify that a new user has been added to the <i>User Administration</i> dialog box, listing the correct User Name and Group.	
3.1.2	a. Launch the DatPass software and add click New User . b. Using the new user account created in test 3.1.1, fill in the <i>New User ID</i> , <i>Confirm New User ID</i> , <i>New Password</i> and <i>Confirm Password</i> fields. c. Click OK .	Verify that the DatPass software opens.	






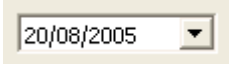
Test #	Test Description	Expected Result	Result
3.1.3	Launch the DatPass software. In the <i>User Login</i> dialog box: a. Enter an incorrect user name and a correct password. b. Enter a correct user name and an incorrect password. c. Enter an incorrect user name and password.	Verify that in all three login tests, the DatPass software does not open.	
3.2	In the <i>User Administration</i> dialog box, select the newly added user (see test 3.1.1) and click Properties .	a. Verify that the User Properties dialog box opens. b. Verify that the properties entered when adding the user (in test 3.1.1) are correct.	
3.2.1	a. In the <i>User Properties</i> dialog box, change the user group using the drop-down menu in the <i>Group</i> field. For example, from <i>User</i> to <i>Approver</i> . b. Click OK .	Verify that the user group was successfully changed by reopening the User Properties dialog box and checking the Group field.	
3.2.2	a. In the <i>User Properties</i> dialog box, change the <i>Login Settings</i> . b. Click OK .	Verify that the <i>Login Settings</i> were successfully changed by reopening the User Properties dialog box and checking the relevant Login Settings.	
3.3	In the <i>User Administration</i> dialog box, select a user and click Deactivate .	Verify that the user icon is now marked with a white cross in a red background, as follows: 	
3.3.1	Open the DatPass software and attempt to login with the user name and password of the newly deactivated user.	Verify that a dialog box opens with the message: <i>Your user account was deactivated. Please refer to your system administrator.</i>	
3.3.2	a. In the <i>User Administration</i> dialog box, select the previously deactivated user and click Activate . b. Exit DatPass, then reopen DatPass and login with the user name and password of the newly activated user.	Verify that you are able to successfully login to DatPass.	

Test #	Test Description	Expected Result	Result
3.3.3	a. In the User Administration dialog box, select a user and click Renew Password . b. Exit DatPass, and then reopen DatPass and attempt to login with that user.	a. Verify that a new DatPass dialog box opens with the message: <i>Your password was reset. Please enter a new password.</i> b. After clicking OK , verify that a new <i>Change Password</i> dialog box opens.	
3.3.4	a. In the <i>Change Password</i> dialog box, enter a new password and then confirm this password. b. Click OK .	Verify that the DatPass software opens.	
3.3.5	Launch the DatPass software and login using the user name and new password created in step 3.3.4.	Verify that the DatPass software opens.	
3.4	On the Administration menu, click Group Administration .	a. Verify that the <i>Group Administration</i> dialog box opens. b. Verify that the group names <i>User</i> , <i>Approver</i> and <i>Administrator</i> are displayed.	
3.4.1	In the <i>Group Administrator</i> dialog box, click Add Group .	Verify that the <i>Group Properties</i> dialog box opens.	
3.4.2	a. In the <i>Group Properties</i> dialog box, enter a new name in the <i>Group Name</i> field. b. Click the <i>New</i> check box. c. Click OK .	a. Verify that the <i>Group Administration</i> dialog box opens. b. Verify that the newly created group is displayed in the <i>Group Name</i> list.	
3.4.3	In the <i>Group Administrator</i> dialog box, select the newly created group and click Properties .	Verify that there is only one check box selected (in this case, <i>New</i>).	
3.4.4	In the <i>Group Administrator</i> dialog box, select one of the listed groups and click Remove Group . Note: You will not be able to remove a group if there are still users who are members of this group.	a. Verify that a dialog box opens with the message: <i>Are you sure you want to remove <Group Name> group?</i> b. Click Yes .	
3.4.5	On the Administration menu, click Group Administration .	Verify that the group you have removed is no longer displayed in the <i>Group Name</i> list.	

4 - Help

Test #	Test Description	Expected Result	Result
4.1	On the Help menu, click About DatPass .	a. Verify that the <i>About DatPass</i> dialog box opens. b. Verify that the DatPass version number and copyright are displayed. c. Verify the link http://www.omega.com/ works.	

5 - Toolbar Icons

Test #	Icon	Test and Expected Result	Result
5.1	Open 	Refer to test 2.1.	
5.2	Print 	Refer to test 2.3.	
5.3	User Administration 	Refer to tests 3.1 to 3.3.	
5.4	Group Administration 	Refer to test 3.4.	
5.5	Refresh 	a. Wait several minutes (for users to perform actions) and click Refresh . b. Verify that the Audit Trail data has been refreshed (you will see new actions added to the table).	
5.6	Calendar 	Use the drop-down menu to open the calendar and select a date. Verify that the data from this date is displayed on your screen. Note: Only those dates with recorded data will be displayed.	

Chapter 5: MicroLab Validation Tests

1 - Login

Test #	Test Description	Expected Result	Result
1.1	a. Launch the MicroLab software. The <i>User Login</i> dialog box opens. b. In the <i>User ID</i> field, enter the User ID created in test 1.3 of the DatPass Validation Test. c. In the <i>User Password</i> field, enter an <i>incorrect</i> password.	Verify that the MicroLab software does not open and an <i>Incorrect Password</i> message window opens.	
1.2	a. In the <i>User Login</i> dialog box, in the <i>User ID</i> field, enter an <i>incorrect</i> User ID. b. In the <i>User Password</i> field, enter the User Password created in test 1.3 of the DatPass Validation Test.	Verify that the MicroLab software does not open and an <i>Incorrect User ID</i> message window opens.	
1.3	In the <i>User Login</i> dialog box, enter an incorrect User ID and User Password.	Verify that the MicroLab software does not open and an <i>Incorrect User ID</i> message window opens.	
1.4	In the <i>User Login</i> dialog box, login using the User ID and User Password created in test 1.3 of the DatPass Validation Test.	Verify that the MicroLab software is launched.	

2 - File Menu

Test #	Test Description	Expected Result	Result
2.1	On the File menu, click New .	Verify that the MicroLab main window is clear i.e. there is no data in the graph and table in the main window.	
2.2	On the File menu, click Open .	Verify that the <i>Open</i> dialog box opens.	
2.2.1	In the <i>Open</i> dialog box, select a file and click Open .	Verify that the selected file opens, and that the appropriate data is displayed in the graph and table in the main window.	

Test #	Test Description	Expected Result	Result
2.3	On the File menu, click Save As .	Verify that the <i>Save As</i> dialog box opens.	
2.3.1	a. In the <i>Save As</i> dialog box, in the <i>File name</i> field, enter the name of the file to be saved. b. Click Save .	a. Verify that the file was actually saved. Navigate to: <i>C:\Programs Files\Omega\MicroLab\MicroLab Data</i> . b. Verify that the file was saved in the <i>MicroLab</i> folder.	
2.4	On the File menu, click Display Properties .	Verify that the <i>Display properties</i> dialog box opens.	
2.4.1	Under the <i>Decimal place settings</i> heading in the <i>Display Properties</i> dialog box: a. Change the <i>Temperature data</i> field to 3. b. Change the <i>Humidity data</i> field to 2. c. Change the <i>External data</i> field to 1. d. Click OK .	Verify that in the data table in the main MicroLab window, the decimal places for the temperature and humidity data (and any external sensors) have been updated accordingly.	
2.4.2	In the <i>Display properties</i> dialog box, under the <i>Date format settings</i> heading are four options for the date format. Click on any one of the formats not already selected.	a. Verify that for the graph in the main MicroLab window, the Time (x) axis has been updated accordingly. b. Verify that for the data table in the main MicroLab window, the Time (Date) column has been updated accordingly.	
2.5.	On the File menu, click Print .	Verify that the <i>Print options</i> dialog box opens.	
2.5.1	In the <i>Print options</i> dialog box, click the <i>Graph</i> radio button.	Verify that the <i>Report data selection</i> option is disabled.	
2.5.2	In the <i>Print options</i> dialog box: a. Click the <i>Graph</i> radio button. b. Click Print .	Verify that the <i>Print</i> dialog box opens.	
2.5.2.1	In the <i>Print</i> dialog box, confirm that the correct printer is selected in the <i>Name</i> drop-down menu and click OK .	Verify that the graph was printed at the selected printer.	

Test #	Test Description	Expected Result	Result
2.5.3	In the <i>Print options</i> dialog box: a. Click the <i>Table</i> radio button. b. Under the <i>Report data selection</i> heading, ensure the <i>Print all data</i> check box is selected. c. Click Print .	Verify that the <i>Print</i> dialog box opens.	
2.5.3.1	In the <i>Print</i> dialog box, confirm that the correct printer is selected in the <i>Name</i> drop-down menu and click OK .	Verify that the graph was printed with all of its data (as defined in test 2.5.3), at the selected printer.	
2.5.4	In the <i>Print options</i> dialog box: a. Click the <i>Table</i> radio button. b. Under the <i>Report data selection</i> heading, ensure the <i>Print all data</i> check box is not selected, thereby enabling the <i>From</i> and <i>To</i> fields. c. Using the <i>From</i> and <i>To</i> fields, define the date and time range to print. d. Click Print .	Verify that the <i>Print</i> dialog box opens.	
2.5.4.1	In the <i>Print</i> dialog box, confirm that the correct printer is selected in the <i>Name</i> drop-down menu and click OK .	Verify that the graph was printed with the specific date and time range (as defined in test 2.5.4), at the selected printer.	
2.6	On the File menu, click Print Setup .	Verify that the <i>Print Setup</i> dialog box opens.	
2.7	On the File menu, click Log Off .	Verify that the <i>User Login</i> dialog box opens.	

3 - View Menu

Test #	Test Description	Expected Result	Result
3.1	On the View menu, click Display Data map to unselect it (removing the tick by the menu entry).	Verify that the Data Map pane has been removed from the left of the main MicroLab window.	
3.2	On the View menu, click Display Graph to unselect it	Verify that the graph has been removed from the center of the	

	(removing the tick by the menu entry).	main MicroLab window.	
3.3	On the View menu, click Display Table to unselect it (removing the tick by the menu entry).	Verify that the table has been removed from the right of the main MicroLab window.	

4 - Graph Menu

Note: In order to perform the tests in this section, a graph must be displayed in the main MicroLab window. Refer to test 2.2 regarding opening a file.

Test #	Test Description	Expected Result	Result
4.1	<ul style="list-style-type: none"> a. On the Graph menu, click Graph Properties. b. Ensure that <i>Time</i> is selected in the <i>Select axis</i> drop down menu. c. Ensure the <i>Auto scale</i> check box is not selected, thereby enabling the <i>From</i> and <i>To</i> fields. d. Using the <i>From</i> and <i>To</i> fields, define a new date and time range. e. Click OK. 	Verify that the time scale of the graph in the main MicroLab window has been updated accordingly.	
4.1.1	<ul style="list-style-type: none"> a. In the <i>Graph properties</i> dialog box, click Set default zoom. b. In the <i>Default zoom setting</i> dialog box, enter a time range in the <i>Start</i> and <i>End</i> fields. c. Click Set. d. Click the <i>Use default zoom</i> check box. e. Click OK. 	Verify that the time scale of the graph in the main MicroLab window has been updated accordingly.	


Test #	Test Description	Expected Result	Result
4.1.2	<ul style="list-style-type: none"> a. In the <i>Graph properties</i> dialog box, select <i>Temperature</i> in the <i>Select axis</i> drop-down menu. b. The <i>Min</i> and <i>Max</i> temperature fields are now active. Enter -26 in the <i>Min</i> field and 22 in the <i>Max</i> field. c. Click OK. 	Verify that the temperature scale of the graph in the main MicroLab window has been updated accordingly.	
4.1.3	<ul style="list-style-type: none"> a. In the <i>Graph properties</i> dialog box, click the Lines tab. b. Select <i>Time</i> in the <i>Select plot</i> drop-down menu. c. Change the X Axis color to red, by using the <i>Color</i> drop-down menu. 	Verify that the <i>Time</i> axis of the graph in the main MicroLab window is now red.	
4.1.4	<ul style="list-style-type: none"> a. In the <i>Graph properties</i> dialog box, click the Lines tab. b. Select <i>Temperature</i> in the <i>Select plot</i> drop-down menu. c. Under the <i>Line</i> heading, ensure the <i>Visible</i> check box is selected. d. Change the Temperature axis color to green, using the <i>Color</i> drop-down menu. e. Using the <i>Style</i> drop-down menu, select the solid line option. f. Using the <i>Weight</i> drop-down menu, select the thinnest line option. 	In the graph in the main MicroLab window, verify that the <i>Temperature</i> axis is green and the line plotting the temperature data is green, solid and thin.	
4.1.5	<ul style="list-style-type: none"> a. In the <i>Graph properties</i> dialog box, click the Lines tab. b. Click Restore defaults. 	Verify that all axis and line defaults have been restored in the graph in the main MicroLab window.	
4.2	On the Graph menu, click Export Graph to Excel .	Verify that the displayed graph is exported to Excel.	

Test #	Test Description	Expected Result	Result
4.3	a. On the Graph menu, click Zoom . b. Click down and hold the left mouse button and drag the <i>Zoom</i> cursor over the area of the graph to be zoomed. c. Release the left mouse button to set the zoom area.	Verify that the selected area of the graph is zoomed in.	
4.4	On the Graph menu, click Autoscale .	Verify that the graph in the main MicroLab window is restored and displayed in full.	
4.5	a. On the Graph menu, click Crop . b. Click down and hold the left mouse button and drag the <i>Crop</i> cursor over the area of the graph to be cropped. c. Release the left mouse button to crop the selected area.	Verify that the selected area of the graph has been cropped – only the selected area should be visible.	
4.6	a. On the Graph menu, click Copy Graph . b. Paste the graph into another application such as <i>Microsoft Office Word</i> .	Verify that the graph has been successfully copied.	
4.7	On the Graph menu, click Dew Point and select <i>Internal Temperature</i> .	Verify that the dew point is shown on the graph in the main MicroLab window.	

5 - Logger Menu

Note: Ensure that the MicroLite is connected to the PC and is recognized by the MicroLab software.

Test #	Test Description	Expected Result	Result
5.1	a. On the Logger menu, click Setup Logger . b. In the <i>MicroLite info</i> section of the <i>Setup</i> dialog box, enter a new name to identify the MicroLite in the <i>Comment</i> field. c. Click Send Setup .	<i>MicroLite Info Section Verification</i> a. Enter the <i>Setup</i> dialog box and verify that the <i>Comment</i> field is correctly updated. b. Verify that the S/N is correct for the MicroLite that is currently connected to the MicroLab.	

Test #	Test Description	Expected Result	Result
		<ul style="list-style-type: none"> c. Verify that the MicroLite firmware version number is displayed. d. Verify that the arrow on the Battery Level meter is located on the far right of the green bar. 	
5.2	<ul style="list-style-type: none"> a. On the Logger menu, click Setup Logger. In the <i>Setup</i> section of the <i>Setup</i> dialog box: b. Click either the ° C or ° F radio button next to the <i>Temperature unit</i> heading. c. In the <i>Interval (hh:mm:ss)</i> field, select the time interval for MicroLite sampling (from 1 sec to 2 hours). d. Click the <i>Timer run</i> check box. Using the <i>Timer run</i> date and time fields, set the time for the MicroLite to begin sampling. e. Click Send Setup. 	<p><i>Setup Section Verification</i></p> <ul style="list-style-type: none"> a. Enter the <i>Setup</i> dialog box. b. Verify that when the <i>Interval</i> is adjusted (test 5.2c), so does the <i>Recording time</i>. c. Verify that all updates made in test 5.2 have been updated in the <i>Setup</i> dialog box. d. After exiting the <i>Setup</i> dialog box, download the MicroLite data and verify (in the data table) that the data date and time range, as well as the data interval, correspond with what you defined in <i>Setup</i>. 	
5.3	<ul style="list-style-type: none"> a. On the Logger menu, click Setup Logger. In the <i>Alarm levels</i> section of the <i>Setup</i> dialog box: b. Enter new <i>Low</i> and <i>High</i> values in the <i>Temperature</i> and <i>Humidity</i> fields. c. Click Send Setup. d. Download data from the MicroLite into MicroLab, so that the data is displayed in a graph in the main MicroLab window. e. Click the <i>Show Alarm levels</i> icon  in the MicroLab tool bar. 	<ul style="list-style-type: none"> a. In the MicroLab main window, verify that the <i>Low</i> and <i>High</i> alarm levels for <i>Temperature</i> on the graph as a light blue and light red line respectively. b. Verify that these alarm levels correspond to the alarm levels previously defined in the <i>Setup</i>. 	



Test #	Test Description	Expected Result	Result
5.3.1	a. On the Logger menu, click Setup Logger . In the <i>Alarm levels</i> section of the <i>Setup</i> dialog box: b. Click Cancel alarm levels to restore the default levels adjusted in test 4.2. c. Click Send Setup . d. Repeat tests 5.3d and 5.3e above.	a. In the MicroLab main window, verify that the <i>Low</i> and <i>High</i> alarm levels for <i>Temperature</i> appear on the graph as a light blue and light red line respectively. b. Verify that the default alarm levels have been restored as follows: <i>Temperature</i> : Low: -40 °C/-40 °F, High: 80 °C/176 °F	
5.4	a. On the Logger menu, click Setup Logger . b. In the <i>Setup</i> dialog box, click Send Setup .	a. Verify that the message: <i>Setup will clear the MicroLite memory. Do you want to proceed?</i> appears. Click Yes . b. Verify that the <i>Reason Dialog</i> box opens. Enter a reason for performing this action e.g. Test. c. Verify that the <i>Status</i> window opens and that all statuses are successfully sent (noted with a green check mark). A <i>Completed</i> status should appear at the bottom of this window. d. Click Close .	
5.5	On the Logger menu, click Download .	Verify that the MicroLite data is downloaded into the MicroLab main window. Note: Ensure that the MicroLite has been recording data to download.	
5.6	On the Logger menu, click Run .	a. Verify that the message: <i>Logger is already running. Do you wish to proceed with a new logging session?</i> appears. b. Verify that the <i>Reason Dialog</i> box opens. Enter a reason for performing this action e.g. Test. c. Verify that the MicroLite LCD starts collecting data.	
5.7	On the Logger menu, click Stop .	a. Verify that the <i>Reason Dialog</i> box opens. Enter a reason for performing this action e.g. Test. b. Verify that <i>Stop</i> appears in the MicroLite LCD display,	













Test #	Test Description	Expected Result	Result
		indicating that the MicroLite is now in Stop mode and will stop collecting data.	
5.8	On the Logger menu, click Set Celsius .	Verify that the temperature data is shown in the MicroLite LCD display in <i>Celsius</i> .	
5.9	On the Logger menu, click Set Fahrenheit .	Verify that the temperature data is shown in the MicroLite LCD display in <i>Fahrenheit</i> .	
5.10	On the Logger menu, click Com Setup .	a. Verify that the <i>Communication Setup</i> dialog box opens. b. Verify that the MicroLite you have connected to the PC is identified. The check box for the port to which the MicroLite is connected should be selected. Verify that the message <i>MicroLite is connected</i> appears.	
5.10.1	On the Logger menu, click Com Setup . In the <i>Communication Setup</i> dialog box, click Try to connect .	a. Verify that the PC ports are being scanned. b. Verify that a confirmation message appears indicating that the MicroLite is detected.	

6 - Help Menu






Test #	Test Description	Expected Result	Result
6.1.	On the Help menu, click About MicroLab .	a. Verify that the <i>About MicroLab</i> dialog box window opens. b. Verify that the MicroLab version number and copyright are displayed. c. Verify the link http://www.omega.com/ works.	

7 – Main Toolbar Icons

Test #	Icon	Test Description and Expected Result	Result
7.1	Open 	Click this icon and refer to test 2.2.	
7.2	Save 	a. Clicking the Save icon will save the current data. b. Verify that the data was saved by following test 2.2 and opening the	

Test #	Icon	Test Description and Expected Result	Result
		data file which was just saved.	
7.3	Print 	Click this icon and refer to test 2.5.	
7.4	Export 	Click this icon and refer to test 4.2.	
7.5	Run 	Click this icon and refer to test 5.6.	
7.6	Stop 	Click this icon and refer to test 5.7.	
7.7	Setup 	Click this icon and refer to tests 5.1 - 5.4.	
7.8	Download 	Click this icon and refer to test 5.5.	
7.9	Data Map 	Click this icon and refer to test 3.1.	
7.10	Graph 	Click this icon and refer to test 3.2.	
7.11	Table 	Click this icon and refer to test 3.3.	
7.12	Statistics 	Click this icon and verify that statistics such as Min, Max and Average values appear on the bottom of the graph.	
7.13	°C/°F 	Click this icon and verify that the units on the graph and table are toggled between Celsius and Fahrenheit.	
7.14	Alarm 	Click this icon and refer to test 5.3.	

8 - Graph Toolbar Icons

Test #	Icon	Test Description	Expected Result	Result
8.1	Zoom In 	a. Click the Zoom In icon. b. Click down and hold the left mouse button and drag the <i>Zoom In</i> cursor over the area of the graph to be zoomed. c. Release the left mouse button to set the zoom area. Note: Repeat this step to continue zooming in. Right click to zoom out.	a. Verify that the selected area of the graph is zoomed in. b. Verify that the right click option zooms out.	
8.2	Pan 	a. Click the Pan icon. b. Place the <i>Pan</i> cursor over the graph, hold down the left mouse button and proceed to pan the graph up, down, left and right.	Verify that the graph pans up, down, left and right.	
8.3	Auto scale 	a. Zoom in on an area of the graph. b. Click the Auto scale icon	Verify that the graph is restored and displayed in full.	
8.4	Cursor 	a. Click the Cursor icon. b. Drag the graph cursor to any coordinate on the graph.	a. Verify the graph cursor is displayed. b. Verify that the chosen coordinate is displayed in the first row of the table in the MicroLab main window.	
8.5	Graph Properties 	Click this icon and refer to tests 4.1 and 4.2.	Refer to test 4.1.	

Chapter 6: MicroLite User Guide

Introduction

The MicroLite is a compact 16-bit USB data logger designed for accurate temperature monitoring for a wide range of applications. Due to its low cost, the MicroLite can be used as a *One Trip Logger*, for monitoring temperature of perishable goods during transportation, for example. Other typical applications include warehousing of food, monitoring of controlled environments i.e. in the pharmaceutical industry, and many more.

Using the MicroLite

The MicroLite can be used as a standalone device to monitor temperature levels. The MicroLite LCD screen continuously displays the current temperature recordings and the maximum and minimum temperature readings. You can also define minimum and maximum alarm levels for a specific data logging session, and the LCD screen will also show any alarm levels that may have been breached as well as the duration of the alarm. The data stored by MicroLite can be easily downloaded to any computer for further viewing and analysis using the MicroLab software, and can also be exported to an Excel spreadsheet.



Getting Started

The MicroLite data logger you have purchased is shipped in a plastic box with a Quick Start Guide printed on the rear of the box.

The box contains one MicroLite data logger and one small magnet accessory (located in the placeholder on the MicroLite packaging). Read more about the purpose of this magnet on page 34.

In order to save battery life, MicroLite is shipped in *Stop Mode*. This means that before you can start recording, you must first connect MicroLite to the PC and set it up with the MicroLab software.

Refer to Chapter 8: MicroLab User Guide to learn how to run the MicroLite from the software, including how to set up the logger. Once MicroLite receives the Setup command from the software, it begins logging the temperature data immediately or waits for a predefined time to start logging.

Reading the MicroLite Display

The MicroLite has a 3-digit (with one decimal place) 7-segment LCD screen, which is able to display the following information:

- The temperature reading currently recorded
- The lowest and highest temperature recorded to that point
- Low and/or high alarm level breach
- Duration of low and/or high alarm level breach
- Low battery warning

Data Displays

The LCD displays the data in a continuous cycle, alternating in duration according to the order shown in the table below:

Time on Screen (seconds)	Data Reading	Example of Reading on Screen
8	Temperature (in Celsius or Fahrenheit)	25.5 °C
2	Low alarm duration *	^{AL-L} 1.55H
2	High alarm duration *	^{AL-H} 1.05H
2	Minimum temperature reading	^{MIN} 23.2 °C
2	Maximum temperature reading	^{MAX} 30.1 °C
2	Low battery warning *	BATT LO

** If relevant (only displayed in event of alarm/low battery)*

Current Temperature Reading

This is the last temperature reading recorded by the MicroLite. If the sampling interval is once per second, then the reading will be updated for each of the four seconds it displayed on the LCD. Therefore you will be looking at the actual temperature recorded at that very moment.

MicroLite Alarm

MicroLite displays an alarm notification whenever any alarm level is exceeded.

AL-L – The temperature reading is *lower* than its low alarm level (as defined in the logger Setup).

AL-H – The temperature reading is *higher* than its high alarm level (as defined in the logger Setup).

The alarm notification remains until the next time you download data to a PC.

The alarm duration on the logger's LCD is calculated in hours. For example, the shortest possible duration of 0.01 hours means the logger has been in alarm for between 0 and 36 seconds.

A duration of 1.55 hours means the logger has been in alarm for 93 minutes.

If the MicroLite is in a Low and High alarm simultaneously, then it will show the duration for both alarms.

Note: When the MicroLite is in Cyclic mode, the Low or High alarm level displayed represents the lowest or highest readings recorded since the MicroLite starting logging data, irrelevant of how many cycles the logger has recorded.

Minimum and Maximum Temperature Readings

The logger display automatically scrolls through the Min/Max temperature readings while sampling.

These readings are simply the minimum and maximum temperature values recorded by the MicroLite up until that point. If your logger has breached an alarm level, look at the MIN and MAX readings to see the extent of the low or high alarm level breach. These readings are constantly updated.

MicroLite Working Modes

MicroLite is always set in one of five possible modes. These modes are all activated via the MicroLab software.

Stop

MicroLite is idle and is not recording.

When pressing **Stop** in the MicroLab software, the logger LCD immediately ceases to record data, instead displaying **STOP** and scrolling through the alarm durations (if alarms were previously recorded).

Run

MicroLite is recording data. It will stop recording automatically when its memory has reached full capacity (8,000 or 16,000 samples depending on the model).

Cyclic Run

Similar to Run mode, but MicroLite will continuously sample data, recording over old data when the memory reaches its capacity, beginning with the earliest data recording.

Timer Run

MicroLite can be configured to start recording at a predetermined time. When MicroLite is set for such a run, its status is set to Timer Run. The logger LCD displays **tRUN**.

Push to Run

MicroLite will only begin logging data when the user operates the logger's reed switch with the MicroLite magnet. The logger LCD displays **PUSH**.

USB Port Connection

The MicroLite interfaces with the computer via any of its USB Host ports. In order to be detected by the computer and by the MicroLab software, the USB driver must *first* be installed. USB driver installation is part of the software installation.

MicroLite LCD Status when Connected to USB

The USB connection status is always displayed on the MicroLite LCD when connected or disconnected from a USB port.

The LCD flashes **USB ON** once when connected and flashes **USB OFF** once when disconnected from the USB port.

The logger LED (located adjacent to the logger's USB connector) also lights up green when connected to the USB port.

If the MicroLite is in **Run** mode when connected to the USB port, the LCD will only display the current temperature reading and will not scroll through the other readings.

If the MicroLite is in **Stop** mode when connected to the USB port, the LCD will display **STOP**. If the logger had recorded an alarm during the previous data logging session, then the LCD will also scroll through the alarm durations.

The MicroLite Battery

The MicroLite runs on a standard 3V CR2032 lithium battery.

The battery maintains the MicroLite's Real-Time Clock (RTC). The logger's time/date settings are synchronized with the PC when you perform a Setup. Removing the battery will return the logger's time/date settings to the default of 01 Jan 2004.

Battery Level

The MicroLite battery level indication is provided in the MicroLab software's Setup dialog.

The MicroLite battery's maximum lifespan is approximately two years. This long battery life is achieved by the MicroLite putting itself *to sleep* between data recordings. While in sleep mode, the data logger consumes a minimal amount of power.

MicroLite *wakes up* for a few micro-seconds whenever it has to record a data sample or display new data on the LCD screen.

Replacing the Battery

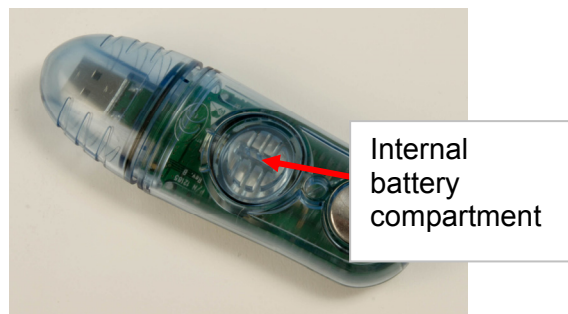


Figure 1: MicroLite battery compartment

As shown in the figure above, the MicroLite internal lithium battery is located under a removable plastic cover.

To replace the battery, simply use the groove in the plastic cover to twist the cover open, and pull out the battery. When twisting the cover back into position, ensure that the small ridge on the battery cover is in line with the similar ridge on the logger case, as indicated in the figure below.

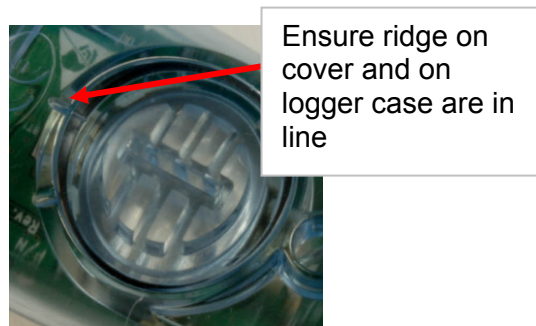


Figure 2: Closing battery compartment

Note: Be sure to twist the plastic cover properly back into a sealed position, to maintain the MicroLite's dust and waterproof IP68 compliancy.

As stated previously, replacing the battery will lose the MicroLite's time/date settings. These can be restored the next time you Setup the logger using MicroLab. After replacing the battery, the MicroLite LCD will display PUSH, indicating it is in Push to Run mode.

Once you connect the logger to the PC's USB port, you will be able to run the logger without the need for the magnet.

In addition, you will still be able to download the data previously recorded onto the MicroLite, before you removed the battery. This data is not lost.

Using the MicroLite Magnet

The MicroLite includes the magnet accessory (stored in the magnet placeholder in the MicroLite packaging).

This magnet is used to activate the logger when in **Push to Run** mode. There is a reed relay on the MicroLite's circuit board which is closed using the magnet, thereby activating the logger.

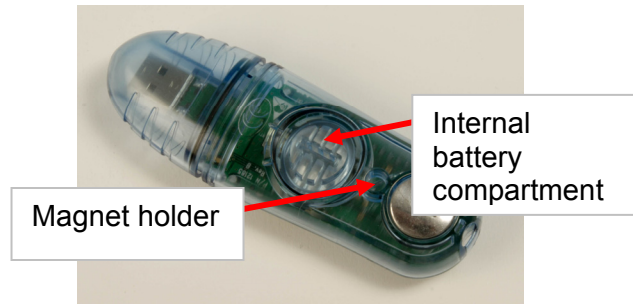


Figure 3: MicroLite magnet holder

To activate the MicroLite when in Push to Run mode, place the magnet inside the small holder next to the battery compartment for two seconds, and then remove the magnet. The MicroLite LCD will immediately move to Run mode and live temperature data will be displayed.

Chapter 7: DatPass User Guide

Introduction

DatPass is administration software which supports the assignment of passwords and operating privileges for Omega's MicroLab CFR software.

DatPass defines the users that can log onto DatPass, their passwords, digital signatures and the action they are permitted to take.

DatPass also maintains an audit trail that keeps track of all users' activities.

Together with MicroLab, DatPass forms a dual program software package that complies with FDA Title 21 CFR Part 11.

Installing DatPass

System requirements

To work with DatPass and MicroLab software, your system should be equipped with the following:

Software

- Windows 95, 98, 2000, XP and Vista (Windows 95 will not support USB)
- Internet Explorer 4.0, or later

Hardware

- Pentium 300 MHz or higher
- 32 MB RAM (64 MB recommended)
- 5 MB available disk space

Installing the software


Note: Do not connect the USB Security dongle to the PC until the installation is complete

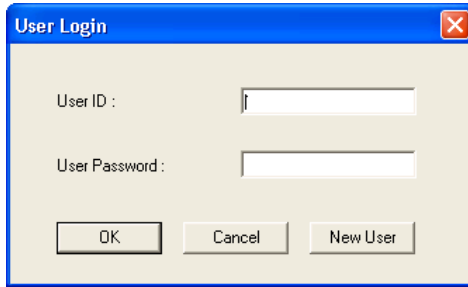
1. Insert the Omega software CD into your CD drive.
2. Enter the DatPass folder on the CD and click the setup.exe file.
3. The DatPass software installation process will begin. The USB Security dongle HASP device drivers will first be installed. Upon completion, the message *The operation was successfully completely* will be displayed. Click **OK** to continue to the next stage of the DatPass installation.
4. Follow the on-screen instructions to complete the DatPass installation.
5. Once the installation is complete, you may then connect the USB Security dongle to the PC. The dongle will be automatically recognized as new hardware by the PC.

First Time Running DatPass

Note: DatPass will not run unless the USB Security dongle is connected to the PC

The first user that opens DatPass is automatically assigned as an Administrator and is given the user name Admin. To start working with DatPass the administrator needs to define his own user ID and password:

1. Double click the **DatPass** icon  on your desktop to display the **User Login** dialog box:



The 'User Login' dialog box has a blue title bar with the text 'User Login' and a close button. It contains two text input fields: 'User ID :' and 'User Password :'. Below these fields are three buttons: 'OK', 'Cancel', and 'New User'.

2. Click **New User**.



The 'New User Login' dialog box has a blue title bar with the text 'New User Login' and a close button. It contains a dropdown menu for 'New User :' with 'Admin' selected. Below this are four text input fields: 'New User ID :', 'Confirm User ID :', 'New Password :', and 'Confirm Password :'. At the bottom are 'OK' and 'Cancel' buttons.

3. Enter a user ID in the **New User ID** text box.
4. Confirm the user ID in the **Confirm User ID** text box.
5. Enter a password in the **New Password** text box.

Note: The password is case sensitive

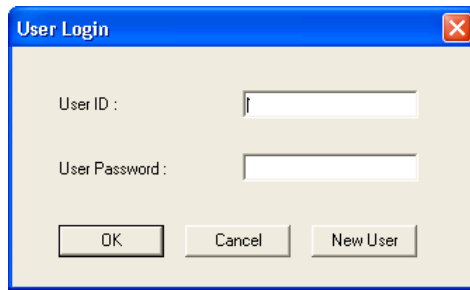
6. Confirm the password in the **Confirm Password** text box.
7. Click **OK**.

The User ID and Password created here can also be used to access the MicroLab software.

Login to DatPass

Old User

1. Double click the **DatPass** icon  on your desktop to display the **User Login** dialog box:




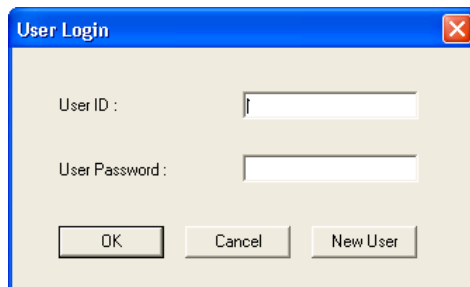
A dialog box titled "User Login" with a blue header bar and a close button (X) in the top right corner. It contains two text input fields: "User ID :" and "User Password :". Below the fields are three buttons: "OK", "Cancel", and "New User".

2. Enter your user ID and password, and then click **OK**.

New User

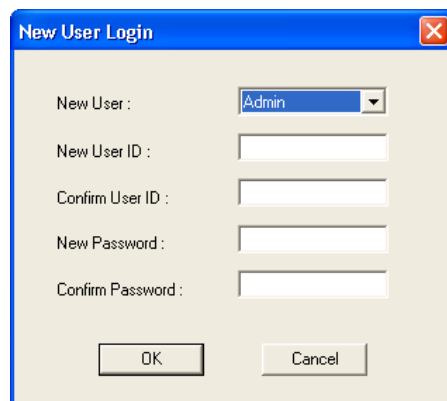
You can only login as a new user to DatPass or MicroLab if the Admin has created a new user in DatPass. Refer to the *Adding a New User* section on page 38.

1. Double click the **DatPass** icon  on your desktop to display the **User Login** dialog box:



A dialog box titled "User Login" with a blue header bar and a close button (X) in the top right corner. It contains two text input fields: "User ID :" and "User Password :". Below the fields are three buttons: "OK", "Cancel", and "New User".

2. Click **New User**.



A dialog box titled "New User Login" with a blue header bar and a close button (X) in the top right corner. It contains a dropdown menu for "New User :" with "Admin" selected. Below it are four text input fields: "New User ID :", "Confirm User ID :", "New Password :", and "Confirm Password :". At the bottom are two buttons: "OK" and "Cancel".

3. Select your user name in the **New User** text box.
4. Enter a user ID in the **New User ID** text box.
5. Confirm the user ID in the **Confirm User ID** text box.
6. Enter a password in the **New Password** text box.

Note: The password is case sensitive

7. Confirm the password in the **Confirm Password** text box.
8. Click **OK**.

User Administration

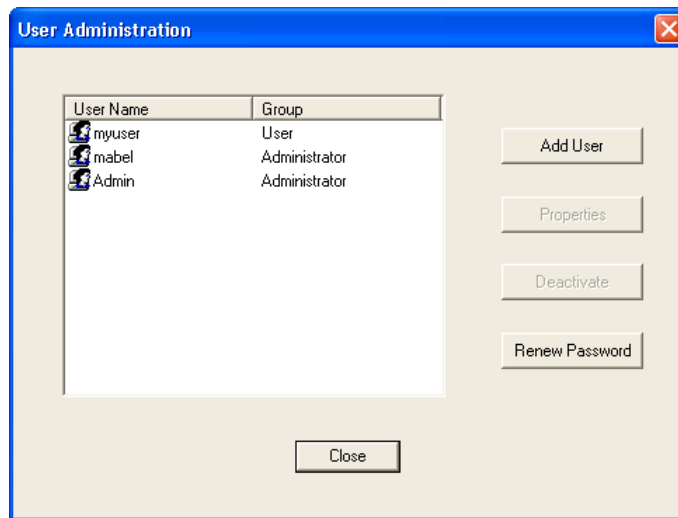
Note: If are working in an archived audit trail (refer to page 44), then to access **User Administration** you must first exit DatPass and login again to load the Current database.

Adding a User

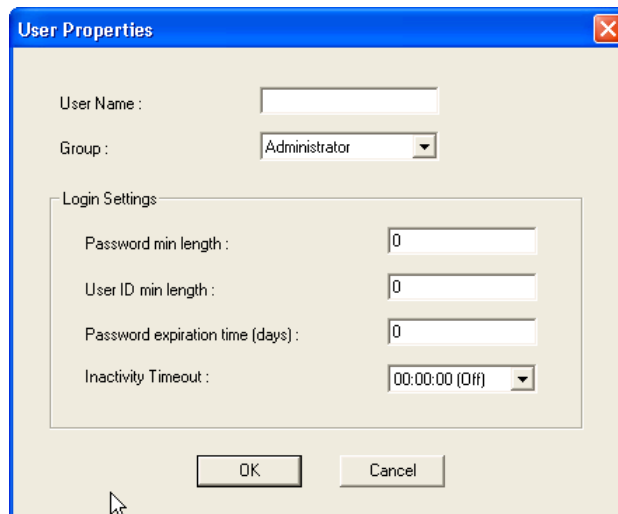
An administrator can add new users, assign privileges to the user and set the login preferences.

To add a new user:

1. Click **User Administration**  on the main toolbar.



2. Click **Add User**.



3. Enter a user name in the **User Name** text box.
4. Select a user group in the **Group** drop-down menu.
5. Set the login preferences in the **Login Settings** area.
6. Click **OK**.

Changing User Properties



1. Click **User Administration** on the main toolbar.

The 'User Administration' dialog box contains a table with two columns: 'User Name' and 'Group'. It lists three users: 'myuser' (User), 'mabel' (Administrator), and 'Admin' (Administrator). To the right of the table are four buttons: 'Add User', 'Properties', 'Deactivate', and 'Renew Password'. A 'Close' button is at the bottom center.

User Name	Group
myuser	User
mabel	Administrator
Admin	Administrator

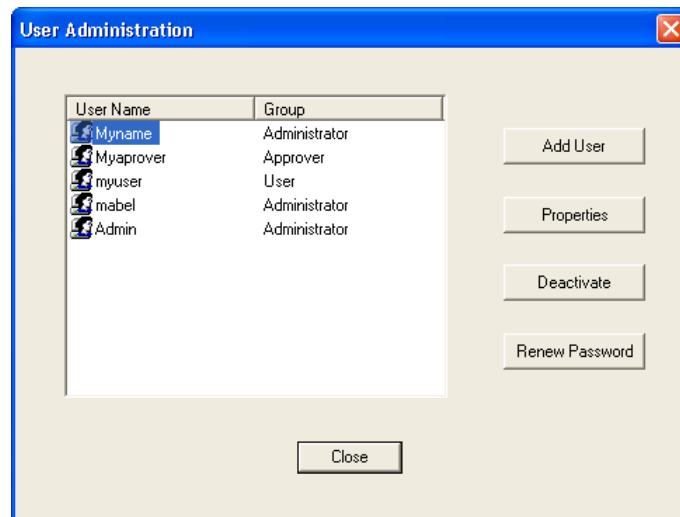
2. Select a user name from the list, then click **Properties**.

The 'User Properties' dialog box has fields for 'User Name' (containing 'Myname') and 'Group' (a dropdown menu set to 'Administrator'). Below these is a 'Login Settings' section with four rows: 'Password min length' (0), 'User ID min length' (0), 'Password expiration time (days)' (0), and 'Inactivity Timeout' (01:00:00). 'OK' and 'Cancel' buttons are at the bottom.

3. Modify the user group and/or the settings, and then click **OK**.

Deactivating a User

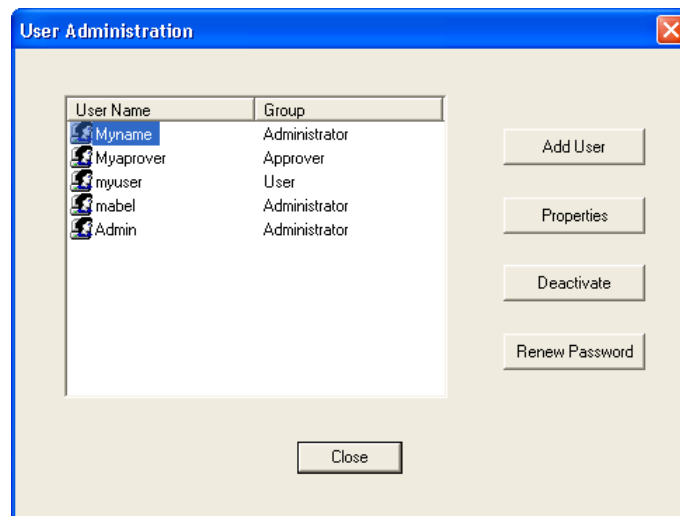
1. Click **User Administration**  on the main toolbar.



2. Select a user name from the list, and then click **Deactivate**.
You can always reactivate the user by repeating the process, and then clicking **Activate**.

Changing Password

1. Click **User Administration**  on the main toolbar.



2. Select a user name from the list, and then click **Renew Password**.
The next time the user will open DatPass, he will be prompted to enter a new password.

Group Administration

Note: If are working in an archived audit trail (refer to page 44), then to access **Group Administration** you must first exit DatPass and login again to load the Current database.

Group Privileges

Users are assigned to user groups and are granted the privileges granted to the group. A privilege is a user's right to perform a specific task in DatPass or MicroLab.

DatPass comes with three predefined user groups: **Administrator**, **Approver** and **User**. See the table below for the privileges granted to each group.

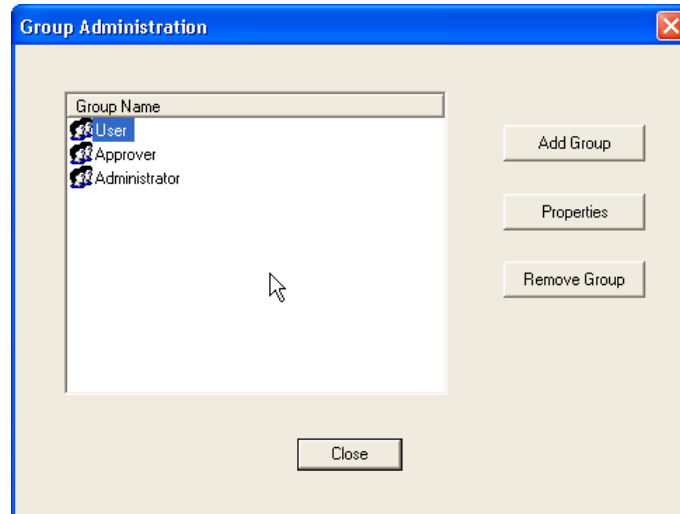
Privilege	Administrator	Approver	User
Data			
New	✓	✓	✓
Open files	✓	✓	✓
Save files	✓	✓	✓
Save as	✓	✓	✓
User administration	✓		
View/Maintain Audit trail	✓		
Exit application	✓	✓	✓
Copy graph	✓	✓	✓
Crop data	✓	✓	✓
Export data to Excel	✓	✓	✓
Printout	✓	✓	✓
Update email settings	✓	✓	✓
Update store data folder	✓	✓	✓
Edit cradle map	✓	✓	✓
Set active cradle range	✓	✓	✓
Add electronic signature	✓	✓	
Logger controls			
Communication setup	✓	✓	✓
Download	✓	✓	✓
Setup	✓	✓	✓
Run	✓	✓	✓
Stop	✓	✓	✓
Calibrate	✓		
Temp units	✓	✓	✓
Daily download software settings	✓	✓	✓
Define sensors	✓	✓	✓

The administrator can create a new user group and delete unused groups.

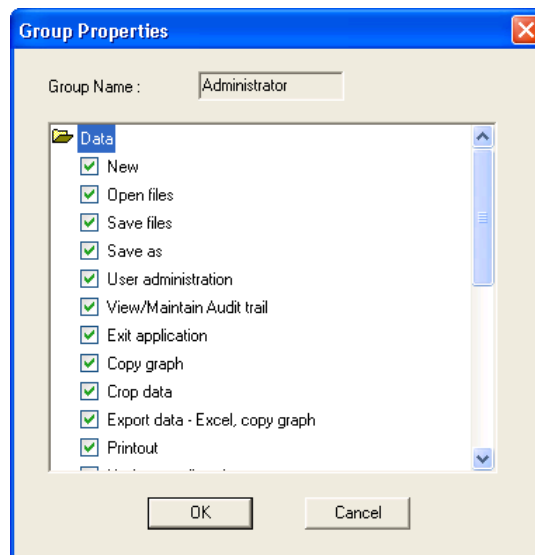
Changing Group Privileges



1. Click **Group Administration** on the main toolbar.



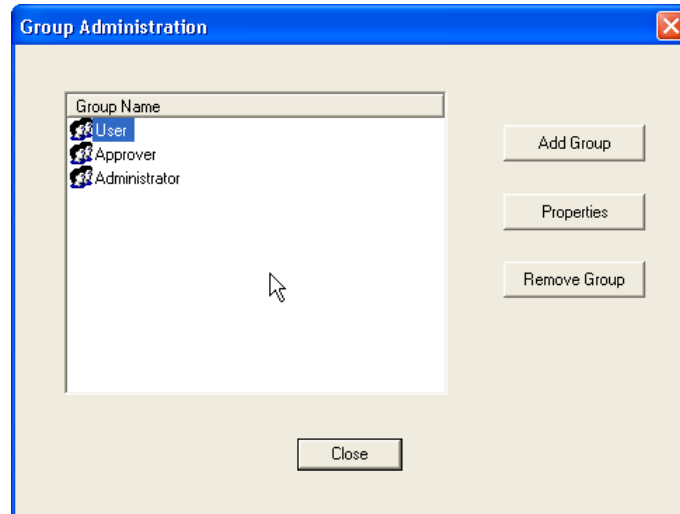
2. Click a group name to select it, and then click **Properties**.



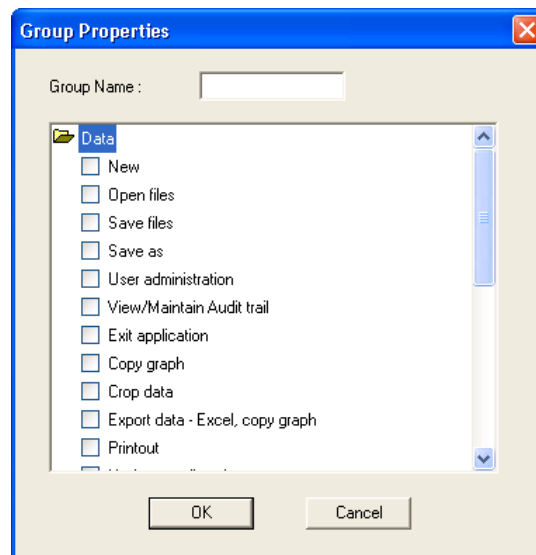
3. To add a privilege to the group, check the check box next to it.
4. To remove a privilege from the group, uncheck the check box next to it.
5. Click **OK**.

Adding a New Group of Users

1. Click **Group Administration**  on the main toolbar.



2. Click **Add Group**.

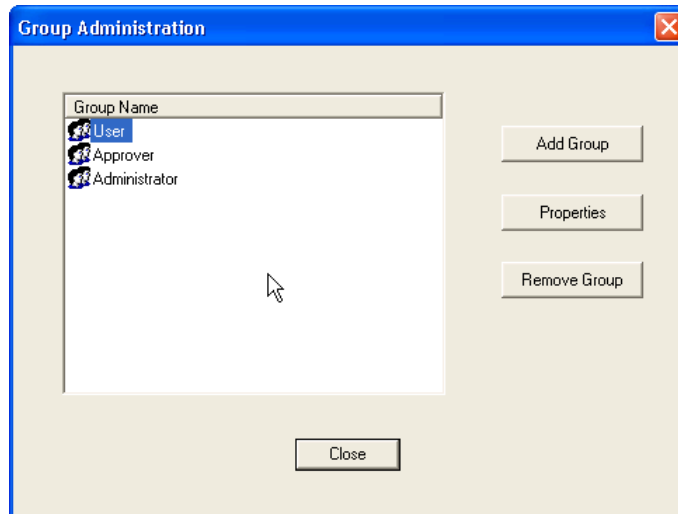


3. Type in a group name in the **Group Name** text box.
4. To add a privilege to the group, check the check box next to it.
5. To remove a privilege from the group, uncheck the check box next to it.
6. Click **OK**.

Removing a User Group

1. Ensure that the group you want to remove is not assigned to any user.

2. Click **Group Administration**  on the main toolbar.



3. Click the group name to select it, and then click **Remove Group**.
4. Click **Close**.

Audit Trail

DatPass maintains an audit trail that automatically records any user activity within DatPass or MicroLab software.

The audit trail shows who has accessed the system and what operations he has performed, along with a date & time stamp of the activity. The audit trail also tracks invalid logins to the system.

The administrator can view the audit trail on screen or print any part of it.

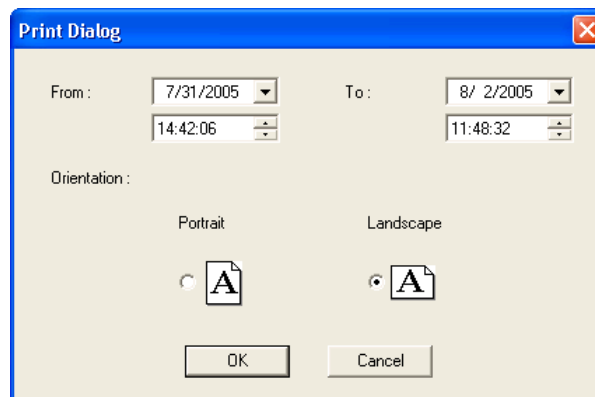
DatPass allows you to create new audit trails while automatically saving the current trail.

Whenever a user uses the command **Run**, **Stop** or **Setup** for a MicroLite, from MicroLab, the user is prompted to type a reason for his action. In such cases the audit trail records and displays the reason.

Printing the Audit Trail



1. Click **Print** on the main toolbar.



2. Select the start date and time in the **From** pick lists.
3. Select the end date and time in the **To** pick lists.

4. Select the page orientation.
5. Click **OK**.

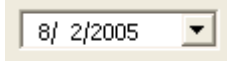
Refreshing the Audit Trail



To refresh the audit trail display click **Refresh** on the main toolbar.

Viewing a Specific Date

To view audit trail entries on a specific date:

1. Click the down arrow next to the date drop-down list  on the main toolbar.
2. Select the desired date.
The display will automatically scroll to the selected date.

Starting a New Audit Trail

Click **File** on the main menu, and then click **New**.

DatPass will automatically save the current audit trail, and open a new blank audit trail log.

DatPass saves the audit trail under the name: DatPass [date and time].

Note: You can only open a new audit trail when working in the Current database

Opening an Old Audit Trail



1. Click **Open** on the main toolbar.
2. Navigate to the folder: *My Documents\Omega\DatPass*
3. Double click the desired file name.

Note: DatPass saves the audit trail under the name: DatPass [date and time]

To return to the current audit trail, repeat steps 1 and 2, then double click the file:
Current

Moving the Current Database

The Current.mdb file is by default located in the DatPass directory on your local computer. This file contains the current audit trail of user activity in DatPass and MicroLab.

When the Current database is located locally, it only tracks user activity on your computer. In order to maintain an audit trail of user activity over a network, rather than locally, you must store the DatPass Current.mdb file in a directory on the main network server to which the MicroLab users are connected.

To move the database file in DatPass:

1. Click **Move Database** on the **File** menu.

2. In the **Set Database Path** dialog box, click **Browse** and browse to the new location of the database file.
3. Ensure that all MicroLab software is closed and exit DatPass, then re-enter DatPass.
4. You should receive a system message confirming the database move, and you should also be able to view the action in the Audit Trail.

Note: You will only be able to move the database if you have the Group privilege to do so. The **Move Database** check box must be checked in the **Group Properties** dialog box.

When the Current.mdb file has been moved using DatPass, the database path must also be updated for all MicroLab software users on the network.

To correct the database file path in MicroLab:

1. When logging into the software for the first time following a database move, you will see a system message stating that the database file was not found.

In the next dialog box, enter the default system password (refer to the

Move Database Password section below) and click **Browse**.

2. Browse to the new path of the database file, as defined in DatPass, and click **OK**.
3. Login in to the software as you normally would.

The DatPass Admin will now be able to view the audit trail of all users of the MicroLab software on the network.

Move Database Password

The default password allowing users of MicroLab to correct the database file path once it has been moved is:

omega

This password is case sensitive and cannot be changed.

Chapter 8: MicroLab User Guide

MicroLab Software Overview

The **MicroLab** software was designed to allow for the programming of the desired data recording specifications for MicroLite, to enable the downloading of recorded data to a PC, and to store, view and analyze the data. This software is also integrated with the DatPass Administration application, as outlined earlier in this document. Any activity in MicroLab is monitored in the DatPass Audit Trail.

The **Logger** menu handles all communication between the PC and MicroLite, such as programming the desired recording mode, starting or stopping data recording, as well as downloading the data.

The **View** menu controls the various data display options. Data can be viewed in graph format, in table format, or in both. The **Data Map** is a separate pane that displays a list of the open data sets. It can also be used to quickly navigate through the data sets.

The **Graph** menu contains all the commands needed to format and edit the graph.

The most common tasks and commands are available as buttons on the **main toolbar** and on the **graph toolbar**.

Software Installation

System Requirements

To work with MicroLab your system should be configured with the following:

Software

- Windows 98 SE, Windows 2000, Windows XP, Server 2003 and Vista
- Internet Explorer 5.0 or higher

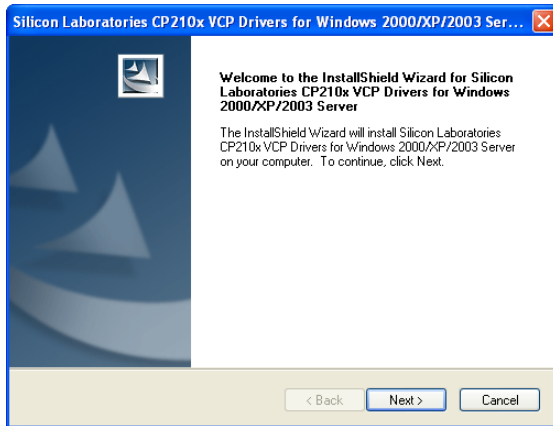
Hardware

- Pentium 200 MHz or higher
- 32 MB RAM (64 MB recommended)
- 5 MB available disk space for the MicroLab application

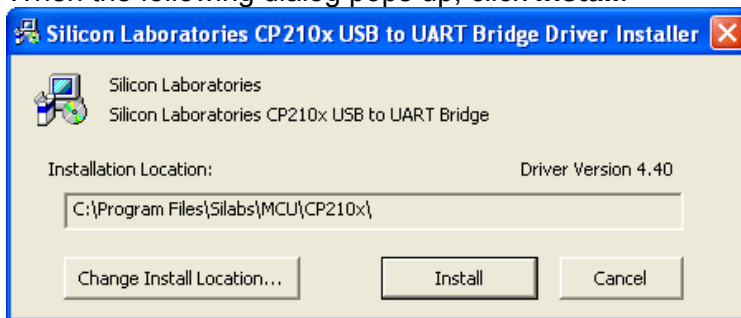
Installation Procedure

Note: Do not connect the MicroLite to the computer until installation of software and USB driver is complete.
--

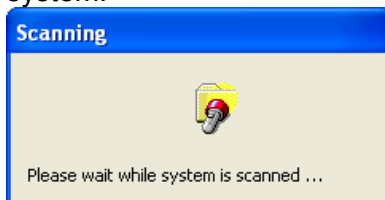
1. Insert the Omega software CD into your PC CD drive and browse to the MicroLab folder. Run the setup.exe installation file.
2. The MicroLab software will first be installed. Follow the on-screen instructions to continue the installation process.
3. Once the MicroLab software has been installed the Silicon Laboratories USB driver installation will begin automatically. The driver is required in order for the computer to detect the MicroLite logger.
4. Follow the on-screen instructions to continue the installation process. The default installation location is C:\SiLabs.




5. When the following dialog pops up, click **Install**.



6. The installation of the driver could take up to one minute or more, depending on the system.



7. Once installed, click **Finish** to close the USB driver Install Wizard dialog.
8. The main MicroLab InstallShield Wizard now resumes.
9. After a few more seconds, the installation process is completed. Click **Finish**.
10. Connect the MicroLite to a USB port on your PC. The PC will automatically detect the MicroLite as new hardware. After a few seconds you will see a message stating that the device is ready for use.
11. Double click the MicroLab shortcut on your desktop  to launch the software. If the MicroLite is connected to the PC the software will automatically detect it.

Troubleshooting

When connected to the PC USB port the MicroLite was not detected by the software.

Ensure that the USB driver was installed properly.

If it is, then the MicroLite LED will light green when connected to the USB.

Go to **Control Panel > Add/Remove Programs** (in WinXP), and check that the driver is installed:



If not, you must rerun the MicroLite setup.exe to install the driver.

If the driver is installed, ensure that there is no other device sharing the USB com port with the MicroLite.

Getting Started

Logging in to MicroLab


When launching the MicroLab application you will need a username and password in order to access the software. The USB security dongle must also be connected to the PC. Please read Chapter 7: DatPass User Guide to learn how to use the dongle and how to define a user for MicroLab.

Logging Off from MicroLab

When you have finished using the MicroLab software you may go to **File > Log Off** to sign out from the application without exiting it altogether. To access the MicroLab functionality again simply enter the login details in the **User Login** dialog that is open on the screen.

Setting up the MicroLite

Use the **Setup** dialog box to view or change the MicroLite settings.

1. Connect MicroLite to the PC.
2. Click **Setup**  to open the **Setup** dialog box.

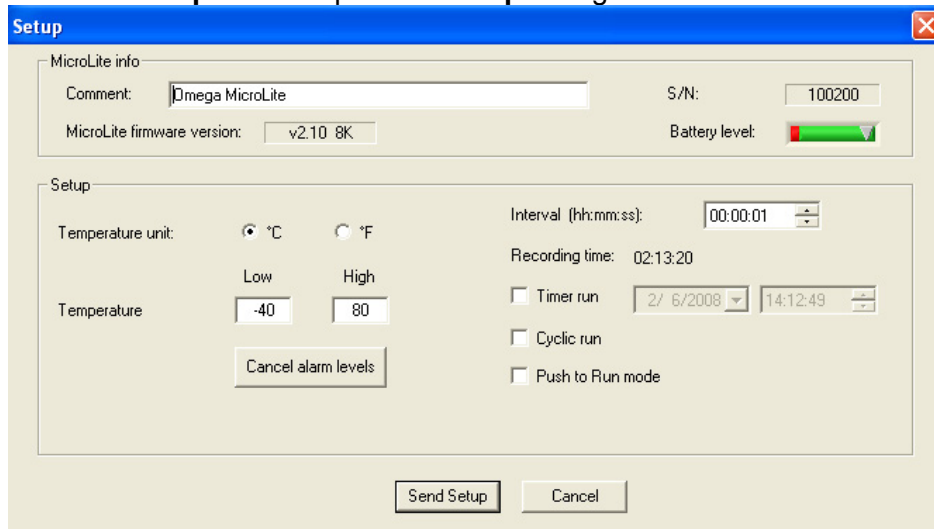


Figure 4: Setup dialog box

The dialog box consists of two main sections:

- **MicroLite info**

Comment

Click the text box and type a name that will serve to identify the specific MicroLite (e.g. its location).

S/N

Displays the MicroLite's serial number.

Battery Level

Shows the current status of the MicroLite battery. If the indicator is in the red zone the battery should be replaced.

MicroLite firmware version

Displays the firmware version and the memory capacity, either 8K (8,000) or 16K (16,000) samples.

- **Setup**

Temperature unit

To set the temperature unit in the MicroLite display, select the option you want (Celsius or Fahrenheit).

Temperature alarm

Type in the desired Low and High alarm levels. If the MicroLite records a reading that exceeds either of these levels, the MicroLite's LCD will display an alarm notification.

The default alarm levels are the lower and upper ends of the temperature sensor range. Click **Cancel Alarm** to restore the default levels.

Interval

This determines the logging interval, or the time interval between successive data recordings.

The time format is hh:mm:ss. Set the time setting to select a recording time interval from **1 second to 2 hours**. For example, to set a time interval of one hour, five minutes and thirty seconds, click the hours (hh) and type 1 or use the arrows to select 01. Click the minutes (mm) and type 5 or use the arrows, and finally, click the seconds (ss) and type 30 or select 30 using the arrows.

Recording Time

Displays the total recording time according to the logging interval selected.

Timer run

Select the **Timer run** check box if you want MicroLite to start recording at a predetermined time. This option is convenient if you are using several MicroLite at once and want them to all begin logging at the same time.

Use the time and date selectors to set the start time.

Cyclic run

In **Cyclic run** mode, the MicroLite overwrites the old measurements (starting with the oldest recorded data) once the MicroLite's memory is full. Click the **Cyclic run** check box to operate in this mode.

If the check box is unselected, MicroLite will operate in **Normal run** mode and will stop recording when the memory is full.

Push to run

In **Push to run** mode, the MicroLite will only start recording data when you use the MicroLite magnet to close the reed relay on the MicroLite's circuit board, thereby causing the logger to start recording data. This is convenient for when you wish to start recording data soon (but not immediately) following setup, or at an unspecified time.

Completing the Setup


Click **Send Setup** to send the new settings to the MicroLite and begin recording. This will complete the setup. Click **Cancel** if you do not wish to change the setup at this stage.

Note: The **Send Setup** command erases all existing data in the MicroLite.

If you select **Timer run** mode, MicroLite will wait in standby mode, displaying **tRUN**. It will begin recording at the specified time.


If you select **Push to Run** mode, MicroLite will also wait in standby mode, displaying **PUSH** until the magnet is used to start the logger.

Starting Data Recording

Click **Run**  every time you want to start a new recording. The **Run** command erases all previous data in the MicroLite memory and begins recording.

Note: If you setup the MicroLite using the **Setup** command, it will automatically begin recording, and you don't have to click **Run**.

Stopping Data Recording

Click **Stop**  to stop recording. In Stop mode, MicroLite keeps all recorded data but does not record new data. Use this mode to save battery power.

Temperature Sensor Calibration

A new MicroLite comes fully calibrated. After a long period of use however, you may want to recalibrate the Temperature sensor.

The calibration is made directly to the MicroLite firmware i.e. the calibrated data is displayed on the logger LCD, not just in the software following data download. Calibration must be carried out while MicroLite is connected to the PC.

Calibration Password

To prevent accidental change of the calibration, the calibration procedure is protected by a password.

The default password is: 1234.

To change the password:

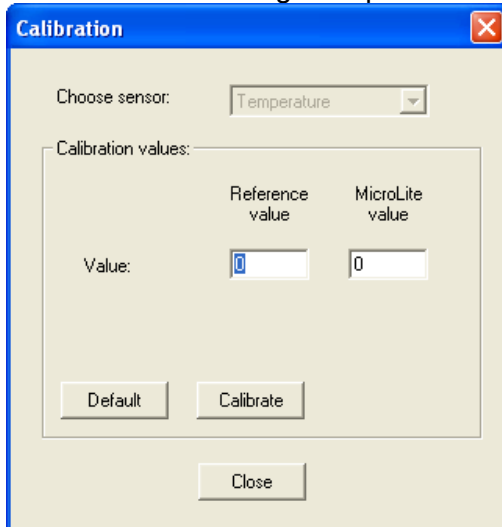
1. Click **Logger** on the main menu, and then click **Calibration**.
2. Click **Change Password** to open the **Change Password** dialog box.
3. Enter the current password in the **Current Password** field.
4. Enter the new password in the **New Password** field.

5. Enter the new password a second time in the **Confirm New Password** field to confirm your new password.
6. Click **OK**.

Note: The password must include at least 4 characters and is **case sensitive**.

Temperature Calibration

1. Connect the MicroLite to the PC.
2. Click **Logger** on the main menu, and then click **Calibration**.
3. Enter the calibration password, and then click **OK**.
4. The Calibration dialog will open.



5. Enter the Reference value: this is the temperature value you expect the logger to display.
6. Enter the MicroLite value: this is the temperature value the logger is currently displaying, when compared with the reference value.
7. Click **Calibrate**.

To restore default calibration, click **Default**. This will remove any calibration applied to the MicroLite.

Communication Setup

Communication between the PC and the MicroLite unit takes place automatically whenever you send a command to the MicroLite. However, the Communication Setup dialog box can be used for more advanced communication options.

Click **Logger** on the main menu and select **Com setup** to open the **Communication Setup** dialog box:

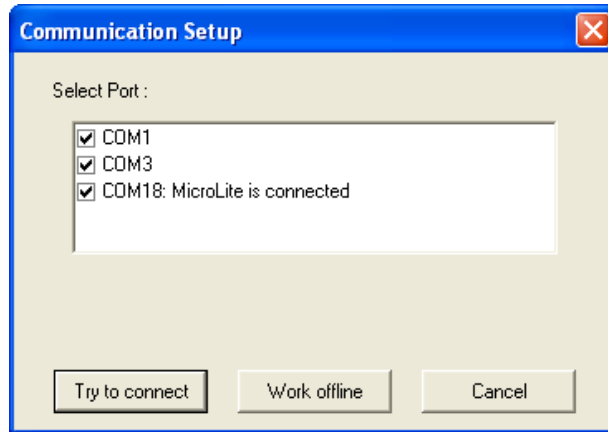



Figure 5: Communication Setup dialog box

The selected COM ports are available for communication.

1. Click **Try to connect** to establish communication.
2. Click **Work offline** to work with saved files and no logger detection is required.

Note: You can speed up the MicroLite detection process by only selecting the COM which is being used by the MicroLite.

Downloading Data

1. Connect MicroLite to the PC.
2. Open the MicroLab software.
3. Click **Download**  on the main toolbar.

The MicroLite will first be detected and then the download will begin. Once the data has been downloaded, it will be displayed both in the graph and in the table, and a new data icon will be added to the Data Map:



You can now connect a different MicroLite to the PC and download its data as well. The number of downloads is limited only by the memory available on the computer. Use the Data Map (refer to page 55) to navigate between the different data sets.

Saving Data

To save the displayed data, click **Save**  on the main toolbar. The data currently displayed by the graph will be saved in the MicroLite Data folder:

C:\Program Files\Omega\MicroLab\MicroLite Data

The data file name consists of the MicroLite name (Comment, refer to page 50) and of the time and date at which it was saved.

To save data in a different location or under a different name, use the **Save as...** command from the File menu:

1. Select **Save as...** from the **File** menu.
2. Enter a new name in the File name box.


3. To save the data in a different folder, select a drive and/or folder from the **Save in** dialog box.
4. Click **Save**.

If you've downloaded data from more than one MicroLite and you want to save all the data sets, select **Save all** from the **File** menu.

Note: If you want to remove unwanted data before saving, apply the Crop tool (refer to page 57).

MicroLab Basics

Opening Files


1. Click **Open**  on the main toolbar.
2. To open a file that was saved in a different folder, select a drive and/or folder in the **Look in** dialog box.
3. Double-click the file you want to open.

Displaying Properties

You can change the way numbers and dates will be displayed on screen.


1. Click **File** on the main menu, and then click **Display properties**.
2. Under **Decimal place settings**, enter the number of decimal places you want to display (enter a number between 0 and 4) for each sensor.
3. Under the **Date format settings**, select the desired format option.
4. Click **OK**.

Printing a Graph

1. Click **Print**  on the main toolbar to open the **Print Options** dialog box.
2. Click the **Graph** option.
3. Click **Print** to open the **Print** dialog box.
4. Click **OK**.

Printing a Table

The displayed data can also be printed as a table. The printed table will include data from all MicroLite's that are currently represented on the graph (to learn how to add or remove data sets from the graph, refer to page 55) as well as the MicroLite name, serial number and the alarm level setup. Data that exceeds any of the alarm levels will be highlighted by arrows.


1. Click **Print**  on the main toolbar to open the **Print Options** dialog box.
2. Click the **Table** option.
3. If you want to print only part of the data, uncheck the check box and select the desired time and date in the *From* and *To* boxes.
4. Click **Print** to open the **Print** dialog box and click **OK**.

Viewing the Data

Display Options

MicroLab's main window consists of three parts: the **graph**, the **table** and the **Data Map**. You can display all three parts simultaneously (the default view) or any combination of them.

Graph

Click **Graph**  to display or remove the graph. The graph displays the data sets plotted vs. time.

In order to keep the graph clear and simple, only two Y-axes can be shown on the graph simultaneously. If there are three curves in the graph, one of the Y-axes will be hidden. To make this axis visible, select the corresponding plot with the cursor (refer to page 55). You can identify the Y-axis by its color, which matches the plot color.

Table


Click **Table**  to display or remove the table.


The data in the table always matches the data that is currently displayed on the graph.


Data Map

Click **Data Map**  to display or remove the Data Map.

The Data Map is a separate window that displays the list of data sets that were downloaded or opened in the current session. Use the Data Map to navigate through the available plots and to keep track of the data that is displayed in the graph and/or table windows.

When you double-click on a MicroLite icon  in the Data Map, MicroLab jumps to the corresponding data and displays it in the graph and table windows. It also expands the Data Map to show the Temperature sensor data set.


A graph icon  indicates that the data set is currently being displayed. Double-click on the icon to clear the data set from the display.

An empty icon  indicates that the data set is not being displayed. Double-click on the icon to add the data set to the display.

To collapse the sensor list under an individual MicroLite, click the minus sign (-) next to the MicroLite icon.


To expand the sensor list under an individual MicroLite, click the plus sign (+) next to the MicroLite icon.

To remove an individual MicroLite from the Data Map, right-click on its icon, then click **Remove data**.


To remove all data sets from the Data Map, right-click the Data Sets icon , then click **Remove all data**.

The Cursor

Use the cursor to view individual data recording values, or to reveal a hidden Y-axis. MicroLab enables you to display up to two cursors simultaneously.


To display the first cursor, double-click on an individual data point or click **Cursor**  on the graph toolbar. You can drag the cursor with the mouse to any other point on the plot, or to another plot altogether.

The point coordinates of the selected data recording will appear in the status bar at the bottom of the graph window.

To display a second cursor, double-click anywhere on the graph or click **Second cursor**  on the graph toolbar.

Graph Features

1. Zooming

Click **Zoom in**  on the graph toolbar and drag the cursor diagonally to select the area you want to magnify. Release the mouse button to zoom in to the selected area.


Click on the **Zoom in** button a second time to turn off the Zoom tool.


2. Autoscale

Click **Autoscale**  on the graph toolbar for the full data display.

Double-click on an individual axis to auto scale it separately.

3. Manual scaling


- Click **Graph properties**  on the graph toolbar to open the **Graph Properties** dialog box.
- Select the **Scale** tab, and choose the axis you want to scale in the **Select axis** drop-down menu.
- Unselect the **Auto scale** check box and enter the new values in the value fields.
- In the time axis, you can either enter the time and date manually, or select it with the up and down arrow buttons.
- Click **OK**.

To restore auto scaling, click **Autoscale** .

4. Default zooming

If you usually need to view a specific time frame (i.e. workday hours), use the Default zooming tool. You can set the start and end time of the time span and then use it whenever you open a file or download data from the MicroLite.


To set the default zoom:

- Click **Graph Properties**  on the graph toolbar, then click **Set Default Zoom**.
- Enter the start and end times, then click **Set**.

To zoom to the default zoom:

- Click **Graph Properties**  on the graph toolbar.
- Check the **Use default zoom** check box and click **OK**.

Every file and every data recording you download will automatically open in the default zoom as long as the **Use default zoom** check box remains selected.


To restore auto scaling, click **Autoscale** .

5. The Stretch/Compress Axis Tool

Move the cursor onto one of graph axes. The cursor icon changes to a double arrow symbol (\leftrightarrow), indicating that you can stretch or compress the axis scale. Drag the symbol to the desired location. Repeat the procedure for the other axis, if necessary.

6. Panning

Use the pan tool after zooming any part of the graph that is outside the zoomed area.

To do so, click **Pan**  on the graph toolbar, then click anywhere on the graph and drag the graph to view another area.

Click **Pan** a second time to turn off the Pan tool.

Cropping the Data

Cropping enables you to trim the edges of a data set. Use it to remove unwanted data.


1. Zoom to the data range you want to keep.
2. Click **Graph** on the menu bar, and then click **Crop**.
All data outside the zoomed area will be **permanently** removed.

Formatting the Graph

You can change a data line's color, style or width. You can also add markers that represent the data points on the graph and format their style and color.

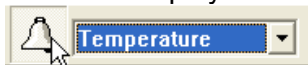
The Y-axis color matches the corresponding plot's color and will change accordingly.

The Time axis color can be changed separately:

1. Click **Graph properties**  on the graph toolbar to open the **Graph Properties** dialog box.
2. Select the **Lines** tab, and then select the plot or axis you want to format in the **Select plot** drop-down menu.
3. From here, you can format the line's color, style and width, as well as the markers' color and style. To remove the line or the marker, uncheck the corresponding visible check box.
4. To restore the default formatting, click **Restore default**, and click **OK**.


Displaying Alarm Levels

Click the Display Alarm Level icon on the main toolbar



to enable the Temperature alarm levels to be displayed on the graph.

Changing the Temperature Units


Click **Toggle °C/°F** button  to change the temperature scale from Fahrenheit to Celsius and vice versa.

Note: To change the units in the MicroLite display, use the **Setup** dialog box.

Adding Annotations to the Graph

MicroLab allows you to add annotations to the graph. An annotation is always attached to a specific data point.

To add an annotation:

1. Place the cursor on the point to which you want to add the annotation.
2. Click **Add new annotation**  on the graph toolbar
3. Type the annotation in the **New annotation caption** text box.
4. Click **OK**.

To move an annotation:

1. Click **Move annotation**  on the graph toolbar
2. Drag the annotation to any location on the graph you choose.
3. Click **Move annotation** a second time.

To edit an annotation:

1. Place the cursor on the point to which the annotation is attached.
2. Click **Graph** on the menu bar.
3. Click **Edit annotation**.
4. Edit the annotation in the text box.
5. Click **OK**.


To delete an annotation:

1. Place the cursor on the point to which the annotation is attached.
2. Click **Graph** on the menu bar.
3. Click **Delete annotation**.

To hide all annotations:

1. Click **Graph** on the menu bar.
2. Click **Show annotations** to uncheck it.

Exporting Data to Excel

Click **Export to Excel**  to export the currently displayed data to an Excel spreadsheet. MicroLab will open a new Excel workbook displaying the data along with the MicroLite info, including the MicroLite name, serial number and alarm levels setup. If Excel is not installed on the PC then the data will be exported to a CSV text file.

Export File Settings

If MicroLab fails to export the data properly i.e. all of the data is displayed in one row of the worksheet, you can change the export file settings. This ensures that the data is exported using comma separated values (CSV).

1. Click **File** on the main menu, then click **Export file settings**,
2. Select the **Ignore regional settings** check box.
3. Click **OK**.

Copying the Graph as a Picture

You can copy the graph to the clipboard as a picture and then paste it into other Windows programs, such as Word and PowerPoint:

1. On the **Graph** menu, click **Copy graph**.
2. Open the destination file.
3. In the destination file, right-click and select **Paste**.

Viewing more than one Data Set on the Graph

MicroLab lets you view more than one data set in Graph and Table view at the same time, allowing you to compare the data from several data sets side by side.

Note: To use this feature the data sets must have been recorded using the same sampling rate e.g. every 1 minute

There are two modes when using the Multi-graph feature:

Standard mode

The time scale of all data on the graph is the same. The time and date of data recorded in the first data set included on the graph is used.

For example, if you have a graph whose data was recorded starting 10:00AM on August 11, then all additional data added to the graph will be displayed with the same recording date.

The MicroLab data table below shows all data in the graph having the same time scale:

		Omega MicroLite	Omega MicroLite 2
	Time (Date)	Temperature (°C)	Temperature (°C)
0	06-Feb-08 13:44:29	27.06	27.22
1	06-Feb-08 13:44:30	27.07	27.23
2	06-Feb-08 13:44:31	27.07	27.23
3	06-Feb-08 13:44:32	27.07	27.22
4	06-Feb-08 13:44:33	27.07	27.22
5	06-Feb-08 13:44:34	27.07	27.23
6	06-Feb-08 13:44:35	27.07	27.23
7	06-Feb-08 13:44:36	27.07	27.23
8	06-Feb-08 13:44:37	27.08	27.23
9	06-Feb-08 13:44:38	27.08	27.23
10	06-Feb-08 13:44:39	27.08	27.23
11	06-Feb-08 13:44:40	27.08	27.23
12	06-Feb-08 13:44:41	27.08	27.23
13	06-Feb-08 13:44:42	27.08	27.23
14	06-Feb-08 13:44:43	27.08	27.23

Figure 6: MicroLite data table

Plot sync mode

To display data on the graph using the data's actual time scale i.e. the time and date when the data was actually recorded, use the **Plot sync** feature. This will also shift all data in the data table accordingly.

Once you've added the data to the graph, on the **Graph** menu, select **Plot sync** to enable the feature. To return to Standard mode, unselect **Plot sync**.

Note: The time scale of all data is rounded to the same resolution as the time scale of the original data on the graph.

Analysis Tools

Setting the Analysis Tools Parameters

1. Click **Analysis** on the menu bar, then click **Set Functions' Parameters** to open a dialog box:

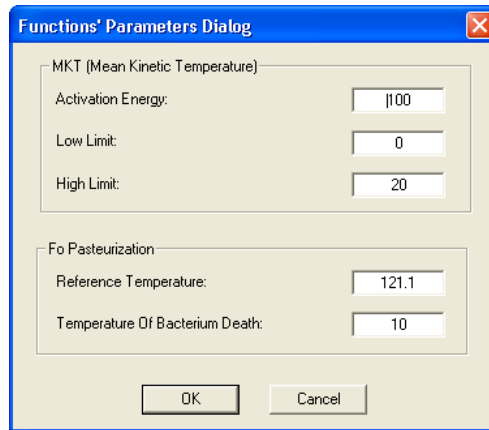


Figure 7: Functions Parameters

2. Type in the desired parameters, and then click **OK**.

Histogram

Use this tool to create a frequency distribution of the selected data set.

To create a histogram:

1. Use the cursor to select a plot on the graph.
2. Click **Analysis** on the main menu bar, then click **Histogram**.

MicroLab displays a histogram of the selected data and creates a new entry in the Data Map.

Use the Data Map (refer to page 55) to hide the histogram or to return to the original data sets.

You can modify the histogram to your needs. You can set the upper limits of the first bin and the lower limit of the last bins, and refine the histogram by increasing the number of bins.

To modify the histogram:

1. Click **Analysis** on the main menu, then click **Histogram** a second time to open a dialog:

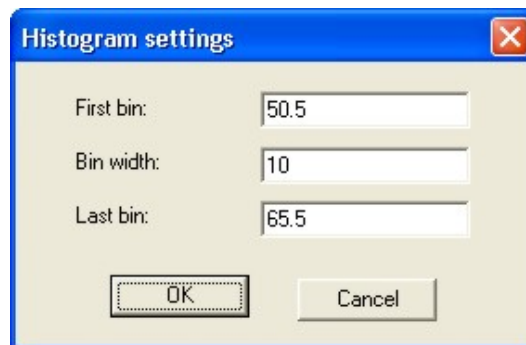


Figure 8: Histogram settings

2. Enter the desired values for the first bin, the bin width and last bin, and then click **OK**.

You can repeat the process for further modification.

Pasteurization

Use this tool to create and display an FO Pasteurization curve:
Click **Analysis** on the menu bar, then click **FO pasteurization**.

Statistics

Use the statistics tool to display statistics of each data set in the graph.

The statistics include:

Minimum – The smallest value in the data set.

Maximum – The largest value in the data set.

Average – The average of all the numbers in the data set.

MKT – The Mean Kinetic Temperature.

To display statistics:











Click **Statistics**  on the main toolbar.





MicroLab will display the statistics in the information bar at the bottom of the graph window.

To hide the statistics, click **Statistics**  a second time.









Toolbar Buttons

Main (Upper) Toolbar

	<i>Open</i>	Opens saved files
	<i>Save</i>	Saves the data that is currently displayed
	<i>Print...</i>	Opens the Print Option dialog box
	<i>Export</i>	Exports the displayed data to an Excel spreadsheet
	<i>Run</i>	Begins recording data
	<i>Stop</i>	Stops recording data
	<i>Setup</i>	Opens the Setup dialog box
	<i>Download</i>	Downloads data from the MicroLite onto the PC
	<i>Data Map</i>	Displays or removes the Data Map
	<i>Graph</i>	Displays or removes the graph

	<i>Table</i>	Displays or removes the table
	<i>Statistics</i>	Displays or removes the data's statistics
	<i>°C/°F</i>	Displays the desired unit of temperature
	<i>Alarm</i>	Displays or removes temperature alarm levels from the graph

Graph (Lower) Toolbar

	<i>Add annotation</i>	Adds new annotation to the graph
	<i>Move annotation</i>	Relocates the annotation on the graph
	<i>Zoom in</i>	Activates the zoom tool
	<i>Pan</i>	Activates the pan tool
	<i>Autoscale</i>	Returns the graph to full view
	<i>Graph properties</i>	Opens the Graph Properties dialog box
	<i>Cursor</i>	Toggles the first cursor
	<i>Second cursor</i>	Toggles the second cursor

Specifications

MicroLite

Models:

- OM-MICROLITE-8 - Temperature sensor; 8,000 sample memory
- OM-MICROLITE-16 - Temperature sensor; 16,000 sample memory

Internal Temperature sensor:

- Range: -40 °C to 80 °C
- Resolution: A/D resolution: 16-bit, 0.1°C
- Accuracy (all ranges): 0.3 °C
- Response time: ~ 20 minutes
(Thermal conductor enabling fast response time)
- Software calibration is possible

Outputs:

- 3-digit 7-segment LCD with decimal point
- USB 2.0 interface

Memory Capacity:

- 8,000 samples or 16,000 samples, depending on MicroLite model

LCD Unit Icons:

- °C, °F, AL-H, AL-L, MIN, MAX

Power Supply:

- Internal Lithium Battery: 3V, CR2032
- Battery Life: Approximately two years

Sampling Rate:

- User defined: From once every second to once every two hours

Dimensions:

- 11 x 3.9 x 2.6 cm

Weight:

- 45.5 g

Standards:

- Water and dust proof IP68 compliance (submerged at 0.5 meters for 30 minutes)
- CE and FCC standard compliance

Software

MicroLab Software Features

- Runs on Windows 98/2000/ME/XP/VISTA
- Integration with DatPass Admin application
- Fast data download from the MicroLite
- Graphic visualization of the MicroLite data
- Data displayed in graphs and tables

Data export to EXCEL

Graphic analysis tools such as Markers, Zoom

Setup windows, for setting the MicroLite unit name, sampling rate and alarm level

Sampling rate: Once every second to once every two hours

MicroLite sensor calibration

Display of MicroLite battery level

Visual alarm levels on the graph and table

MicroLab System Requirements

Software

Windows 98 or later

Internet Explorer 4.0 or later

Hardware

Pentium 200 MHz or higher

32 MB RAM (64 MB recommended)

5 MB available disk space for the MicroLab application

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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- ☑ Turbine/Paddlewheel Systems
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- ☑ Benchtop/Laboratory Meters
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- ☑ Communications-Based Acquisition Systems
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- ☑ Datalogging Systems
- ☑ Recorders, Printers & Plotters

HEATERS

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- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

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- ☑ pH, Conductivity & Dissolved Oxygen Instruments