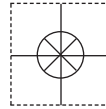


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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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

OM-DAQLINK Series Data Loggers

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Chapter 1:

Introduction

Light, Portable and Independent Logging

With built-in temperature and humidity sensors, plus four external probe inputs the OM-DAQLINK Series standalone data loggers ensure a low cost, reliable and accurate solution. OM-DAQLINK Series data loggers are 16-bit, mobile data acquisition devices for continuous indoor or outdoor data monitoring.

The OM-DAQLINK Series is comprised of two data logger models, measuring a broad range of parameters on four external inputs for direct measurement and recording of PT-100, thermocouple, 0 to 1 V, 4 to 20 mA, contact, frequency and pulse sensors, as well as internal temperature and relative humidity sensors.

With its high resolution and fast Analog to Digital converter (ADC), OM-DAQLINK Series data loggers meet the majority of data acquisition requirements in most industrial applications. Every OM-DAQLINK Series data logger is embedded with a unique serial number and can be loaded with a descriptive comment for safe identification. An internal clock and calendar keeps track of the time and date of every sample measured.

OM-DAQLINK Series data loggers can automatically activate external alarm events when data is outside a specified range. Email and SMS notifications can be sent to predefined contacts.

OM-DAQLINK key benefits include:

- Real-time logging - Online operation with data results on screen
- Independence - Manual or PC operation with on-site monitoring via two-row LCD display
- Intuitively - Simple keypad and easy-to-navigate menus
- Long life - Low-power consumption and rechargeable battery lasting up to six months
- Flexibility - Four alarm levels with visual LCD, and audible alarms
- Non-stop logging - Continuous data storage to large onboard memory and periodic USB downloads

DataSuite Software Support

The OM-DAQLINK system is powered by the powerful DataSuite software. The Windows™ based software is the central management interface of the OM-DAQLINK network. When connected via USB cable to the PC, OM-DAQLINK data can be monitored online and displayed in real-time graphs or tables. Analyze data with various mathematical tools, or export data to a spreadsheet.

The software also enables you to configure, calibrate or update the firmware of OM-DAQLINK units via direct USB connection.

DataSuite provides one software platform for a wide range of Omega products in addition to the OM-DAQLINK data loggers, such as the OM-DATANET wireless system and OM-MICROLITE and OM-MICROLOGPRO portable, standalone loggers. DataSuite lets you monitor and compare data from multiple systems in a singular, uniform view.

DataSuite key benefits include:

- Software GUI based on proven Omega platforms
- Multiple data view features
- Map view displaying unit location, signal path and strength
- Alarm features with 4 alarm levels sending email and SMS notifications
- Reporting module for creating and generating reports with selected distribution
- Analysis features including dew point analysis, FO Pasteurization, histogram, statistics with export to Excel and CSV formats

Chapter 2:

OM-DAQLINK Overview

2.1. The OM-DAQLINK System

The basic OM-DAQLINK system contains at least one of the following units:

- OM-DAQLINK data logger – Part Number OM-DAQLINK-TEMP or OM-DAQLINK-TEMPRH
- Mini-USB communication cable
- Power adapter (one per OM-DAQLINK unit ordered)
- DataSuite software CD containing user guide

2.1.1. The Data Logger

There are two data logger models compatible with the OM-DAQLINK system. These loggers support up to four external sensors and two internal sensors, temperature and humidity, depending on the specific model. Data is recorded and stored to the logger's internal memory and transmitted over the network to the DataSuite software running on the PC.

The data logger is programmed to consume as little power as possible during operation, in order to conserve the battery life. When not transmitting or recording data the units are in *sleep* mode and they *wake up* when needed.

The battery for the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH is rechargeable and can run up to several months on one charge, depending on the logger configuration.

Note: Battery life depends on the logger sampling rate, transmission rate, type of sensor, and number of measured sensors.

OM-DAQLINK Data Loggers



Part Number: OM-DAQLINK-TEMP

Four external channel data logger with two internal sensors, Humidity and Temperature

Memory Capacity: ~59,000 samples

Power supply: AC or battery operated



Part Number: OM-DAQLINK-TEMPRH

Four external channel data logger with internal Temperature sensor

Memory Capacity: ~59,000 samples

Power supply: AC or battery operated

2.1.2. Hardware Accessories

The OM-DAQLINK system includes the following accessories:

- Mini-USB cable for connecting data logger to PC
- Power adapter to power the data logger

Chapter 3:

OM-DAQLINK Implementation Guide

Omega recommends first time users of the OM-DAQLINK system read this chapter before drilling down into the many features of the system described later in the user guide. The Implementation Guide will give you a clear understanding of the basic aspects of setting up the system, and getting the data logger up and running.

3.1. Pre-setup Requirements

Prior to commencing with the OM-DAQLINK implementation you must have the following requirements in place:

PC

- 24/7 availability, if online data monitoring is required
- Reliable AC power
- Sufficient hard disk space to store loggers' data
- One free USB port

OM-DAQLINK devices

At least one OM-DAQLINK logger OM-DAQLINK-TEMP or OM-DAQLINK-TEMPRH.

Mini-USB cable

The mini-USB cable connects the data logger to the PC for logger configuration and data download (and is supplied with the DataSuite software kit).

3.2. Launching the Software

1. Install the DataSuite software on the PC workstation. Refer to section 5.1: Installing DataSuite Software on page 25 for more details.
2. Once the software and associated components have been installed, launch DataSuite from your DataSuite desktop shortcut.
3. The main DataSuite window is launched. The default view is called **Map View**.

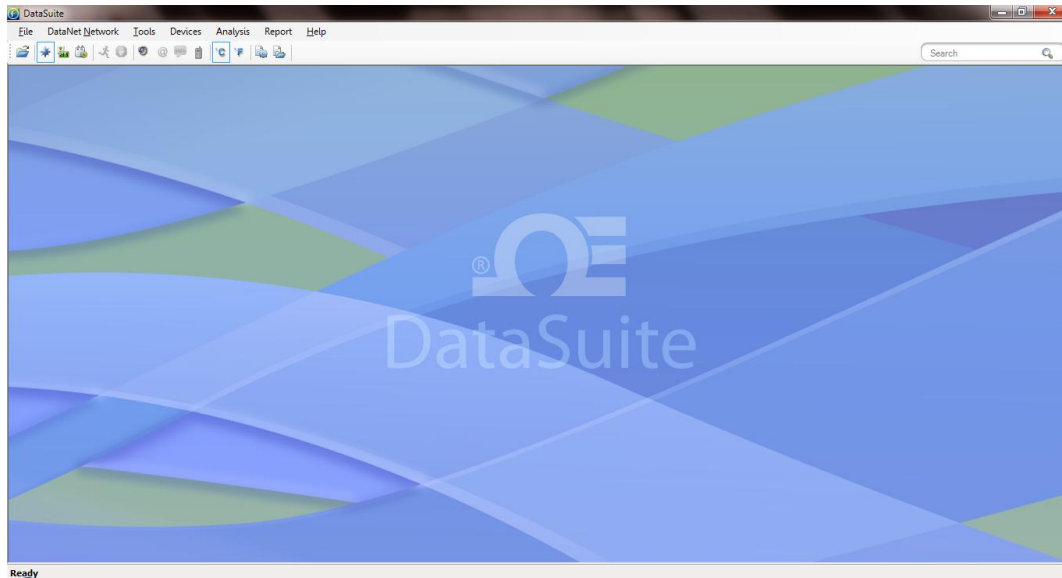


Figure 1: Main DataSuite window

4. Check for DataSuite updates. Go to **Help > Check for Updates** from the DataSuite main menu to check for newer versions of the OM-DAQLINK module software and firmware released since you purchased your system. For more details on the Update feature go to Chapter 6: Updating DataSuite Software and Firmware.

3.3. Connecting the Logger

Note: Multiple OM-DAQLINK loggers may be detected by the PC at a time.

1. Only once the DataSuite software and USB driver have been installed, connect the OM-DAQLINK data logger (OM-DAQLINK-TEMP or OM-DAQLINK-TEMPRH) to the Omega-supplied power adapter.

Note: Only use adapters provided by Omega. Use of the wrong adapter could damage your OM-DAQLINK units.



2. Turn on the unit by pressing the **Scroll** button on the front keypad. The unit will beep when turned on.
3. Connect the mini-USB cable to the computer and to the data logger's mini-USB port.
4. From the DataSuite main menu, go to **Devices > Detect Device**. The data logger icon will appear in the Map View indicating that the logger is detected.

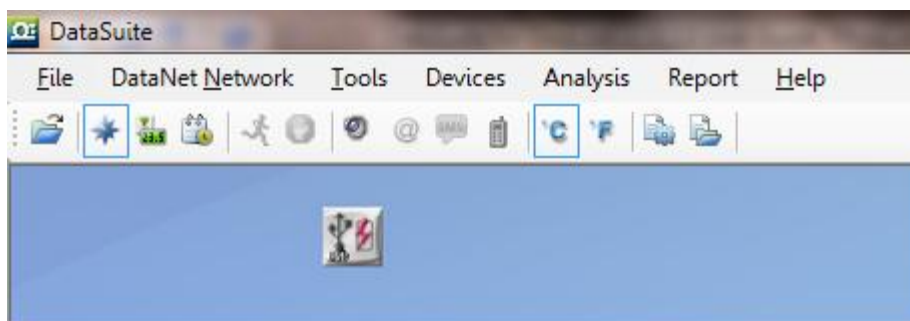



Figure 2: Adding data logger icon to Map View

Note: If the logger is not recognized by the software try connecting the mini-USB cable to another USB port on the PC. Or select **Devices > Detect Device** again in the main menu.

5. Should you disconnect the logger's USB cable or power adapter (and the battery eventually dies), the logger icon will be grayed out: 

Note: You can move the logger icon elsewhere on the screen by going to **Tools > Lock Map View** and unselecting this option.

3.4. Charging OM-DAQLINK Loggers

This section refers to charging the OM-DAQLINK-TEMP or OM-DAQLINK-TEMPRH loggers.

Note: Only use adapters provided by Omega. Use of the wrong adapter could damage your OM-DAQLINK units.

If the loggers will run from the battery supply make sure to first charge each of the loggers for 16 hours before use in order maximize the battery life. A fully charged battery can last several months, depending on your logger configuration.

If the loggers will run from the AC power supply, when first connected to the AC adapter the logger will always initiate the 16 hour charge cycle.

Note: For loggers measuring data with the internal temperature sensor, it is critical to note that during the charge cycle the logger will heat up thereby causing the internal temperature sensor reading to rise up to 10 °C above ambient temperature. Once the charging process is complete, the logger will cool down and the internal temperature sensor readings will return to normal.

For loggers remaining connected to AC power, to prevent the logger from heating up again following the initial charge cycle, the logger will receive a one minute *trickle charge* each day rather than stay continually charged. This is sufficient to ensure the logger doesn't self-discharge and will maintain the logger's full charge status.

3.5. Loading Map View Background

Load an image into the DataSuite software showing a map of your facility in order to place the Logger icons in their relative positions. As you deploy more standalone loggers, this will prove very helpful.

- Double click the Map View background to browse to the image directory and load the image. Remember to unlock the Map View in order to move the icons around.

- Right-click the Map View background and two options will be available: **Load Wallpaper** and **Reset Wallpaper**, which resets to the default Omega wallpaper.

3.6. Configuring the Logger

Once the software has detected the OM-DAQLINK logger, you must configure the unit in order to start acquiring data.

1. Right-click on the Logger icon. Select **Setup** from the context menu.
2. The Setup window will be launched.

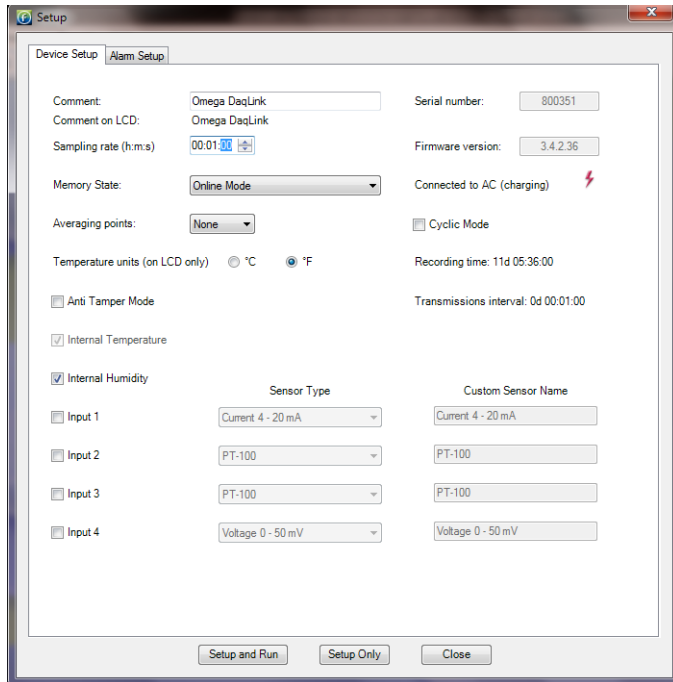




Figure 3: OM-DAQLINK Logger Setup window

This dialog provides non-editable information such as the serial number, battery level, and firmware version of the current unit.

On the **Device Setup** and **Alarm Setup** tabs, the user is able to configure the following parameters:

- Unit's comment
- Sampling rate
- Memory State
- Averaging points
- Temperature units °C/°F (on the logger LCD)
- Anti-tamper mode
- Active sensors
- Custom sensors' names
- Alarm levels
- Alarm duration

- Alarm delay
 - Alarm pre delay
3. Select the Memory State, **Online** or **Optimized Memory Modes**.
 4. Select the sensors you wish to connect to the logger for data acquisition. It doesn't matter which order you select the sensors. You may only have Input 4 selected, for example, and Inputs 1 to 3 left unselected.
 5. Select the sampling rate anywhere from 1 every second to 1 every 18 hours.
 6. Unless you have Alarm levels you wish to edit (see the Alarms Setup tab), click either **Setup and Run** (to send the setup and immediately log data), or **Setup Only** (to send the setup but only log data at your command).
 7. If you selected **Setup Only** in step 5, right-click the Logger icon and select **Run** from the context menu to start logging data or click  in the main tool bar.
 8. The Logger icon will appear as follows when in Run mode: .
 9. To stop the logger, right-click the Logger icon and select **Stop** from the context menu.

Note: Running the logger clears the logger memory. All previously recorded data will be erased when you begin a new logging session.

3.7. Viewing Data

Once you run the logger, you have several ways of viewing the online data that is being acquired.

- Online graph/table/statistics views
- Logger icon tooltip
- Sensor view

3.7.1. Online Data Views

Double clicking the Logger icon or selecting **Display Data** in the Logger icon context menu will open the online graph.

This graph is updated in real-time with the newly recorded data.

You can switch between Graph, Table and Statistics views to view the data in different formats.

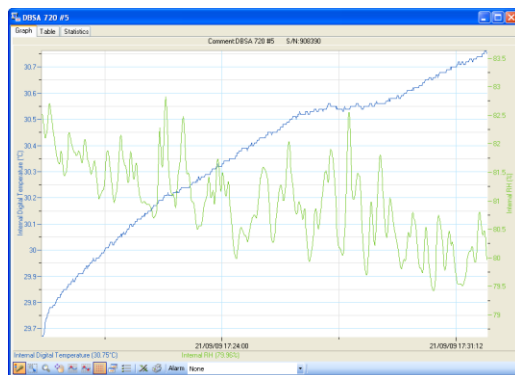


Figure 4: Online data – Graph view

Index	Date and Time	Internal Digital Temperature	Internal RH	Voltage 0 - 1 V	Voltage 0 - 1 V
1	21-09-09 16:50:20	26.36°C	87.22%	0.00V	0.00V
2	21-09-09 16:50:21	26.36°C	87.22%	0.00V	0.00V
3	21-09-09 16:50:22	26.37°C	87.22%	0.00V	0.00V
4	21-09-09 16:50:23	26.36°C	87.22%	0.00V	0.00V
5	21-09-09 16:50:24	26.39°C	87.20%	0.00V	0.00V
6	21-09-09 16:50:25	26.39°C	87.20%	0.00V	0.00V
7	21-09-09 16:50:26	26.40°C	87.20%	0.00V	0.00V
8	21-09-09 16:50:27	26.41°C	87.20%	0.00V	0.00V
9	21-09-09 16:50:28	26.42°C	87.21%	0.00V	0.00V
10	21-09-09 16:50:29	26.42°C	87.21%	0.00V	0.00V
11	21-09-09 16:50:30	26.44°C	87.21%	0.00V	0.00V
12	21-09-09 16:50:31	26.44°C	87.21%	0.00V	0.00V
13	21-09-09 16:50:32	26.45°C	87.21%	0.00V	0.00V
14	21-09-09 16:50:33	26.45°C	87.24%	0.00V	0.00V
15	21-09-09 16:50:34	26.47°C	87.24%	0.00V	0.00V
16	21-09-09 16:50:35	26.48°C	87.27%	0.00V	0.00V
17	21-09-09 16:50:36	26.49°C	87.30%	0.00V	0.00V
18	21-09-09 16:50:37	26.49°C	87.30%	0.00V	0.00V
19	21-09-09 16:50:38	26.50°C	87.32%	0.00V	0.00V
20	21-09-09 16:50:39	26.51°C	87.33%	0.00V	0.00V
21	21-09-09 16:50:40	26.51°C	87.33%	0.00V	0.00V
22	21-09-09 16:50:41	26.52°C	87.30%	0.00V	0.00V
23	21-09-09 16:50:42	26.52°C	87.31%	0.00V	0.00V
24	21-09-09 16:50:43	26.54°C	87.26%	0.00V	0.00V

Figure 5: Online data – Table view

Serial Number	Device	Sensor	Minimum	Maximum	Average	Statistics start	Statistics end	Number of samples
800350	DBSA 720 #5	Internal Digital ...	26.36°C	27.44°C	26.66°C	21-09-09 16:50...	21-09-09 16:50...	77
800350	DBSA 720 #5	Internal RH	86.67%	100.00%	88.43%	21-09-09 16:50...	21-09-09 16:50...	77
800350	DBSA 720 #5	Voltage 0 - 1 V	0.00V	0.00V	0.00V	21-09-09 16:50...	21-09-09 16:50...	77
800350	DBSA 720 #5	Voltage 0 - 1 V	0.00V	0.00V	0.00V	21-09-09 16:50...	21-09-09 16:50...	77

Figure 6: Online data – Statistics view

3.7.2. Logger Tooltip

Close the online data window and return to Map View. Scroll over the Logger icon and you will see a tooltip displaying the relevant logger information, including real-time data.

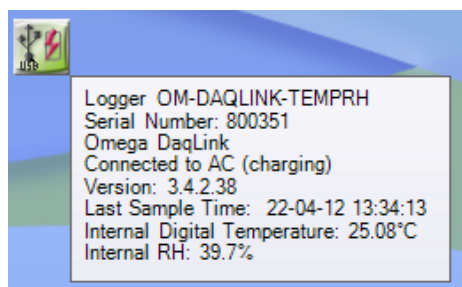



Figure 7: Logger tooltip

This tool-tip is updated with every newly recorded sample.

3.7.3. Sensor View

Click the **Sensor View** icon  in the tool bar to switch to this view. Here, you can monitor the data by viewing data display of each individual sensor, rather than of each logger.

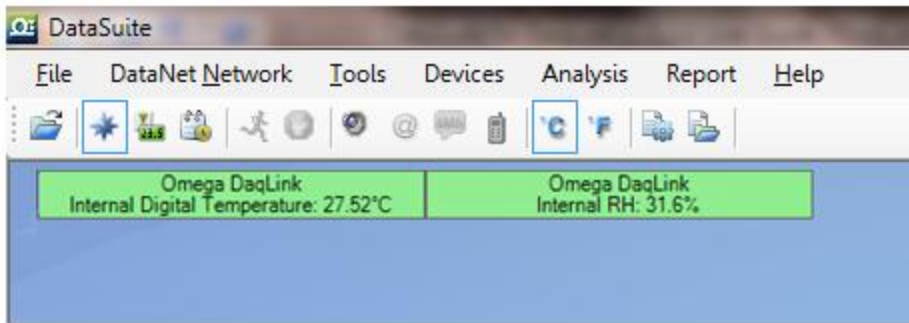


Figure 8: Sensor view

- If the sensor is in alarm, the sensor box will change color from green to red (just as the Logger icon would).
- Double-clicking the individual sensor box will open the data in the online Graph view.

3.8. Downloading Data

If the logger is being used as a standalone device you will have to connect it to the computer via USB cable in order to download the data to the software.

1. Connect logger to PC and go to **Devices > Detect Device** in the main menu.
2. To download data right-click the logger icon and select **Download Data**.
3. View the downloaded data by double-clicking the logger icon.

Chapter 4:

OM-DAQLINK Hardware Overview

This chapter details the hardware features of the OM-DAQLINK data loggers.

4.1. Data Logger Front Panel Layout

4.1.1. OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

Apart from the color scheme, the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH data logger models have the same front panel design.

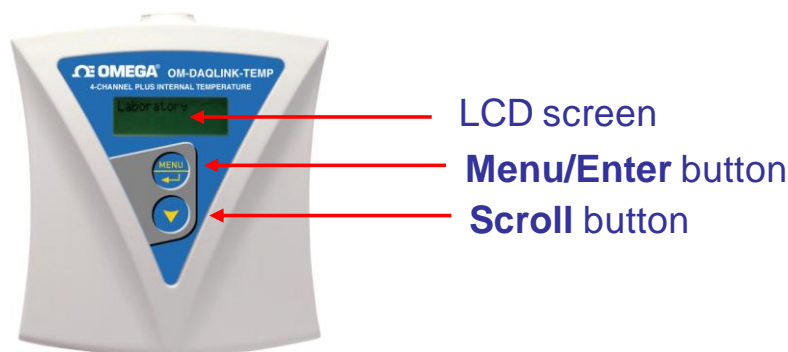


Figure 9: OM-DAQLINK-TEMP data logger front panel

LCD screen

Displays logger status, logger data, and Min/Max values.

Menu/Enter button

Use to enter logger menu options and to execute logger commands.

Scroll button

Use to scroll through menu items and to power on unit.

4.2. Data Logger External Connections

4.2.1. OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

External connections of the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH are exactly the same.

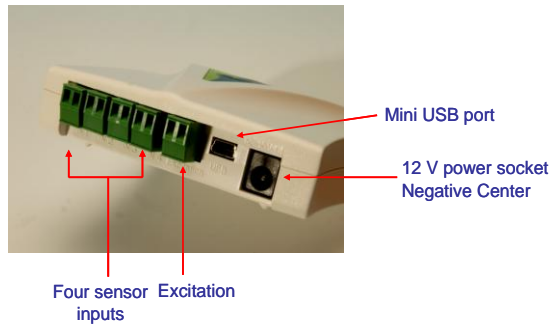


Figure 10: OM-DAQLINK-TEMPRH data logger external connections

Mini USB Port

To enable communication between logger and PC, for configuration and data download.

12 V Power Socket

To connect logger to external power supply (negative center).

Sensor Inputs

Pluggable screw terminal blocks marked In-1 to In-4 (from left to right), to connect wide range of sensor types for data acquisition. All four inputs can be used simultaneously. Sensors can be connected in any order.

To connect a sensor to the OM-DAQLINK data logger, unplug the screw terminal, connect the sensor's wires to the terminals, and then plug the terminal back to the corresponding socket on the input block.

Excitation socket

Output power socket used to power external sensors, power derived directly from the external power supply adaptor.

4.3. Data Logger Sensor Overview

This section provides an overview of the hardware specifications of the OM-DAQLINK data loggers.

4.3.1. Internal Sensor Types

The OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH loggers include internal sensors, depending on the logger model.

Sensor	Measurement Range	Accuracy	Logger Model
Digital Humidity	5% to 95%	$\pm 3\%$ (in DataSuite software) $\pm 4\%$ (on logger LCD)	OM-DAQLINK-TEMPRH

Sensor	Measurement Range	Accuracy	Logger Model
Digital Temperature	-20 °C to 50 °C	±0.5 °C	OM-DAQLINK-TEMPRH
Temperature PT100	-20 °C to 50 °C	±0.3 °C	OM-DAQLINK-TEMP

4.3.2. External Sensor Types

OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

Each of the four input channels of these data logger models are multi-purpose and can be individually configured to any of the following types and ranges.

Sensor	Measurement Range	Accuracy	Available Inputs
Current	4 to 20 mA	± 0.5 %	In-1 to In-4
Contact	Open (0) / Close (1)	N/A	In-1 to In-4
Frequency	20 Hz to 4 KHz	N/A	In-4 only
Pulse Counter	1 to 65,536 pulses 0 to 4 KHz	N/A	In-4 only
Temperature PT100 (2-wire)	-200 to 400 °C	-200 to -60 °C ±0.5 % -60 to 60 °C ±0.3 °C 60 to 400 °C ±0.5 %	In-1 to In-4
Temperature TC-J	-200 °C to 1,000 °C	-200 to -60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 1,000 °C ±0.5 %	In-1 to In-4
Temperature TC-K	-200 °C to 1,000 °C	-200 to -60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 1,000 °C ±0.5 %	In-1 to In-4
Temperature TC-T	-200 °C to 400 °C	-200 to -60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 400 °C ±0.5 %	In-1 to In-4
Voltage	0 to 1 V	± 0.5 %	In-1 to In-4
Voltage	0 to 50 mV	± 0.5 %	In-1 to In-4

4.3.3. Sensor Connection

Connect the sensor/s to the terminal block/s at the top of data logger:

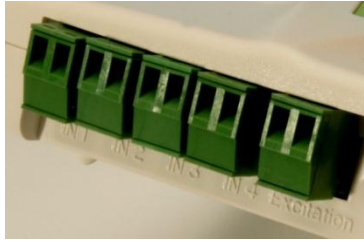


Figure 11: OM-DAQLINK logger sensor inputs

Sensors do not have to be added successively. You may only configure In-4, or configure In-1 and In-3, for example, when setting up the logger via the software.

4.3.4. Programming Limitations for OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

The standard sampling rate for all sensors on all inputs is from a maximum of one sample every second to a minimum of one sample every 18 hours. However, there are certain limitations using a specific combination of sensors, which must be taken into account when programming the OM-DAQLINK data loggers.

Note: The software integrates all programming limitations automatically when configuring the loggers.

Please refer to the table below for OM-DAQLINK programming limitations, where:

PT100, Thermocouple J, K or T = A

Internal Digital Temperature (on OM-DAQLINK-TEMPRH) = B

Sensor Combination	Maximum Sampling Rate	Example Setup
3 x A 4 x A A + B	One sample every three seconds	In-1: PT-100 In-2: TC-J In-3: TC-J
(2 x A) + B (3 x A) + B	One sample every four seconds	Internal: Temp In-1: TC-T In-2: PT-100
(4 x A) + B	One sample every five seconds	Internal: Temp In-1: TC-T In-2: TC-J In-3: PT-100 In-4: PT-100

Table 1: Data Logger programming limitations

4.3.5. External Alarm Output

The OM-DAQLINK system supports connection of an external alarm e.g. siren, audible alarm, to In-1 of the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH data loggers.

When connected to the logger, the external alarm will be activated only when that logger is in alarm status.

Once there is no alarm status, the external alarm will be deactivated.

Data Logger External Alarm

In-1 of the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH serves either as a standard sensor input or as an external alarm output. Ensure the logger is connected to AC power if connected to an external alarm.

Configure In-1 as **Alarm Normally Open** or **Alarm Normally Closed** in the logger Setup window in the DataSuite software.

Normally Open will result in the alarm being activated during alarm status (the circuit will be closed).

Normally Closed will result in the alarm being activated when logger is not in alarm and therefore deactivated when there is an alarm (the circuit will be opened).

Connect In-1 to your external alarm device and connect the logger to AC power.

Use the **Alarm Setup** tab in the Setup dialog to define the logger alarm settings. If these settings are breached then the alarm will be activated.

External Alarm Schematic

See the schematic below explaining how to hook up an external alarm to the OM-DAQLINK unit.

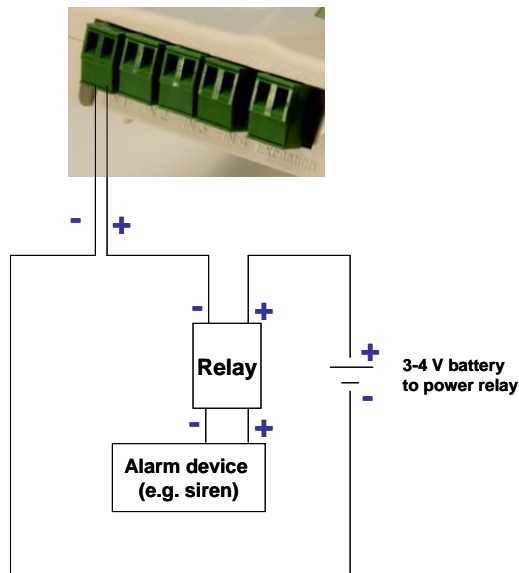


Figure 12: External alarm schematic

- + from OM-DAQLINK unit goes to – of the Relay inputs
- + of Relay input goes to battery that powers the Relay

- Load inputs of the Relay go to the Alarm device e.g. siren, lights, etc.
- - of the battery goes to – of OM-DAQLINK unit.

Note: Maximum load of the Relay is 50 mA, 3 V.

Refer to Appendix A: OM-DAQLINK Specifications for the full external alarm output specification.

4.3.6. Polarity

Current, voltage, thermocouples and user defined sensors have distinct polarity. Be careful to connect them in the right polarity.

4.3.7. Frequency/Pulse Counter

Connect the signal wires to In-4 terminal blocks, and select **Frequency** or **Pulse counter** for **Input 4** from the logger Setup window in the DataSuite software. Inputs 1 to 3 are still available for other sensors.

The Frequency/Pulse counter is optically isolated from the internal circuitry and can simultaneously measure a signal source, together with another input.

4.3.8. User Defined Sensors

OM-DAQLINK provides a simple and straightforward tool for defining a limited number of custom sensors. Almost any sensor or transducer with 0 – 1 V or 4 – 20 mA output is accepted by the OM-DAQLINK logger and its electrical units are automatically scaled to meaningful user-defined engineering units.

The sensor definitions are stored in the logger's memory and are added to the sensors list. The sensor's readings are displayed in the user defined units only in the DataSuite software. Future versions will also support displaying the user defined engineering units on the logger LCD.

Refer to section 5.6.1 for more details.

4.3.9. Sensor Alarms

Via the software, users can define minimum and maximum alarm levels for each input individually. Users can define pre-low and pre-high alarm levels, for an additional level of safety in case the logger is approaching an actual breach of alarm.

The OM-DAQLINK logger display indicates when the sensor reading is in alarm of any type. The symbols AL-H, AL-L, AL-P-H or AL-P-L are visible next to the corresponding input readings.

Refer to section 5.16 for more details.

4.3.10. Sensor Calibration

The OM-DAQLINK data logger is shipped fully calibrated. However, further calibration can be applied via the DataSuite software. The calibration parameters are sent to the data loggers via USB connection and stored in the logger's memory.

Users may calibrate individual inputs as well as all inputs at once. Calibration settings may be saved and then loaded into the logger at a later date if the calibration settings have changed. Refer to section 5.16.4 for more details.

4.4. Unit Serial Number and Comment

Every OM-DAQLINK data logger unit is embedded with a unique serial number.

The data logger only can be loaded with a descriptive comment to identify its task and location. You may add or edit the logger comment via the DataSuite software.

Every time data is transferred to the computer it is labeled both with the logger's serial number and comment and is displayed in the graph or data table view.

The unit serial number is also marked on a sticker on the back of the product.

4.5. Power Supply

4.5.1. OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH Data Loggers

The OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH data loggers run from an internal NiMh rechargeable battery as well as from external AC power supply. Depending on the logger configuration, from a fully charged battery, the data logger can run for up to several months. Refer to section 4.5.3 for more details on battery life.

Note: Charge the data logger units for 16 hours before using them for the first time.
--

When connected to external power supply, the data logger battery will not be charged when the unit is turned off. This will allow the system to protect the battery from overheating.

First Time Charging

From a fully drained battery, you must charge the battery for **16 hours** to bring it to a full charge. Once the charge cycle is complete, the logger will run from the external power supply, without draining (or charging) the internal battery. In order to maintain a fully charged battery and ensure the battery doesn't self-discharge, the battery charger will daily charge the unit for one minute to maintain the battery capacity.

Note: Before storing the OM-DAQLINK units make sure you have unplugged all the sensors and turned the units off via the keypad.
--

Standard Charging

Whenever a logger is reconnected to the charger it will begin the 16-hour charge cycle, no matter what the status of the battery. Once the charging cycle is complete the logger will run from external power supply.

Effect of Charging Battery on Temperature Sensor

For loggers measuring data with the internal temperature sensor, it is critical to note that during the charge cycle the logger will heat up thereby causing the internal temperature sensor reading to rise by up to 10 °C above ambient temperature. Once the charging process is complete, the logger will cool down and the internal temperature sensor readings will return to normal.

For loggers remaining connected to AC power, to prevent the logger from heating up again following the initial charge cycle, the logger will receive a one minute *trickle charge* each day

rather than stay continually charged. This is sufficient to ensure the logger doesn't self-discharge and will maintain the logger's full charge status.

4.5.2. Power Adapter

The OM-DAQLINK power adapter is used to power the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH units. The mains adaptor (AC/DC adaptor) converts mains power (from a wall outlet) to a voltage suitable to the OM-DAQLINK hardware unit.

- Output: Capacitor filtered 9 to 12 VDC, 300 mA
- Female plug, center negative



Note: Only use Omega-supplied power adapters to avoid damaging the units with incorrect power supply.

4.5.3. Data Logger Battery Life

Battery life depends on the logger sampling rate, type of sensor, and number of measured sensors.

OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH can last up to six months on a charged battery depending on logger configuration.

4.6. USB Communication Cable

A mini USB communication cable is supplied as part of the DataSuite software kit. This cable connects the OM-DAQLINK data logger to the OM-DAQLINK PC workstation. When connected to the PC the logger can communicate with the software for configuration and data download purposes, for example.

The USB cable also powers the logger when connected to the PC but it does not charge the internal battery.

Note: The USB driver is installed as part of the software installation process. Without this driver the PC won't detect the logger. To avoid compatibility problems do not connect the logger to the PC before installing the USB driver.

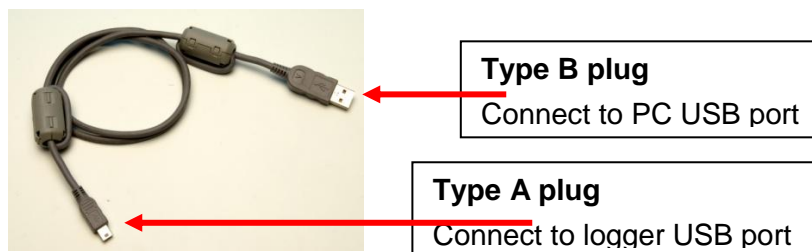


Figure 13: USB communication cable

4.7. OM-DAQLINK Keypad Overview

4.7.1. OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH Keypad

The OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH units each have two buttons on the keypad, which are used to navigate through the LCD menu options, as well as turn on the units. Refer to section 4.8 to learn how to operate the data loggers.



The **Menu** button  has two functionalities:

Navigate to the main menu.

When pressed from within a submenu, the display will take you back to the main menu.

Selecting an option from one of the menus. When pressed on one of the main menu items, it will take you to the sub menu options.

The **Scroll** button  has two functionalities:


When the unit is off, pressing this button will power the unit on.

Scrolls through the menu options.

4.8. Operating the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

This section explains how to operate the OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH loggers and provides an overview of the menu options on the units' LCD screen.

4.8.1. Turning on the Unit

In order to view the logger menu options, the unit must be powered on by pressing the **Scroll** button  on the keypad. Ensure the logger is charged or connected to the AC adapter.

Once the unit is switched on it will emit a short beep and the screen will display a welcome message:

Omega DAQLINK
Ready

4.8.2. Display Shutdown


If the logger screen is inactive for thirty seconds it will turn off. However the logger will continue to operate in the background. Press the **Scroll** button to enable the LCD screen again. The screen will not turn off during firmware upgrade.

4.8.3. Main Menu Options

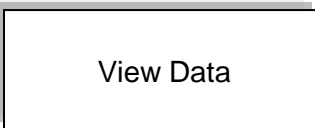
There are three menu categories on the data logger:

- View Data
- Status
- Min/Max Values

Note: If the unit is not in Run mode only the Status menu options will be available.

Press the **Menu**  button to reach the main menu display. Scroll through the main menu options (View Data, Status and Min/Max Values) using the **Scroll** button. Once you reach the main menu option you need, press **Enter** to select that option and enter the sub menus.

View Data Menu



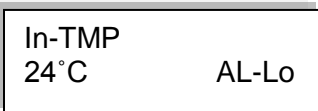
Note: **View Data** is the default page *when the unit is running*.

If there is more than one sensor running, the screen will auto scroll between the sensors showing the sensor name and sensor value. These are real-time displays.

The display will switch back to the View Data screen after five minutes if none of logger buttons have been pressed.

If the sensor breached any of the predefined alarm levels, then the alarm symbol will be displayed alongside the data reading.

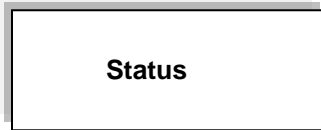
For example:



The logger display alarm symbols are:

- **AL-HI** : Alarm High
- **AL-Lo** : Alarm Low
- **AL-P-H** : Pre Alarm High
- **AL-P-L** : Pre Alarm Low

Status Menu

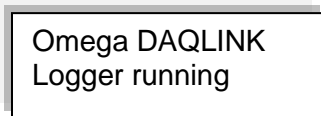


The Status menu contains the following sub menus, all reachable by using the **Scroll** button. The sub menus are outlined below in the order in which they appear on the logger display.

Name and Status

As explained previously, the unit name (or Comment) is displayed on the first row and the second row indicates the logger status.

If the logger is running, then the following screen is displayed.



Batt Level (battery level)

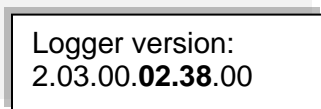
If the power adapter is not connected the battery percentage will be displayed.

If the power adapter is connected **External power** will be displayed.



Logger Version

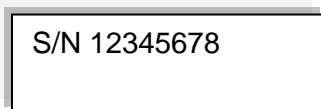
This menu informs the user of the logger firmware version. This is helpful when you need to upgrade the system firmware, to check the current version. Or when contacting Omega technical support, with any technical issues.



The firmware version is commonly referred to by the numbers in bold in the screen above.

S/N

This menu displays the unit's eight digit SN.



Memory Mode

There are two possible device modes:

- Stop when full – when the logger memory is full the logger will stop logging.

- Cyclic mode – for continuous logging. The logger will continue to log once the memory is full by writing over the first recorded samples.

The memory mode is toggled in the Setup dialog, using the Cyclic Mode checkbox.

When the logger memory is full, the LCD will display **Memory Full**.

Press Menu to pause logger (when logger is in Run mode)

By pressing the Menu button, the logger will cease to log data until the Menu button is pressed again from the same screen.

When in *Paused* mode, the user can still scroll through the logger menu screens and use other features. The user must scroll back to the Pause Logger menu in order to resume the logger operation.

Reset Unit

When the unit is reset, upon start up it will automatically reconnect to the DataSuite software if a USB connection is established. In addition, if the logger will continue to operate according to its last set up instruction. For example, if the logger was in Run mode, then after reset it will continue to run and record data.

Turn Off Unit / Stop and turn off

Selecting this option will shut the unit down. You can turn the unit on again by pressing the **Scroll** button.

If the logger is in Run mode, selecting this option will first stop the logger, and then turn it off. It is recommended to turn off the unit when it is not in use.

Min/Max Values Menu

Each sensor's minimum/maximum readings (taken from the current logging session) will be displayed on two rows.

The first row indicates the sensor type, along with the measurement units e.g. V, and the alarm indication if there is an active alarm on this sensor.

The second row indicates the minimum and maximum measured value and the units. H and L represent High and Low values, respectively.

In-TMP °C		
26.06H	25.61L	

4.8.4. Additional Logger Screens

Loading Firmware

When updating the firmware of the data logger via the software's Firmware Update Center, the logger screen will display the update progress. When complete the main logger status screen will be displayed.

Also refer to Chapter 6: Updating DataSuite Software and Firmware.

Loading firmware
Progress: 55%

Note: Logger must be in Stop mode before firmware can be updated.

Chapter 5:

Using the DataSuite Software

This chapter provides a detailed description of the DataSuite software features, allowing you to configure and monitor your Omega data loggers in a unified application. DataSuite supports a range of Omega loggers, utilizing core functionality of the DataSuite platform, such as setup, calibration, defining new sensors, managing Email and SMS notifications, configuring reports, firmware updates and so on. This chapter deals specifically with DataSuite support for the OM-DAQLINK Series data loggers.

5.1. Installing DataSuite Software

Part of your product package includes a DataSuite software CD. Follow the software installation instructions provided below.

5.1.1. System Requirements

To work with DataSuite your system should be configured according to the following specifications:

Software

- Windows XP SP3, Windows Server 2003 SP2, Windows Vista or Windows 7 (32-bit or 64-bit)
- Minimum screen resolution: 1024 x 768 (800 x 600 not supported)

Hardware

- Pentium 4, 2.0 GHz or better
- 512 MB RAM
- 250 MB available disk space for the DataSuite application

5.1.2. Language Support

DataSuite currently supports English interface only with additional languages to be added in future DataSuite versions.

To toggle the software language, go to **Help > Language**. You must then exit DataSuite for the changes to take effect.

5.1.3. Installation Procedure

Note: If you are planning to use more than one Omega system e.g. OM-DAQLINK and OM-DATANET, only one DataSuite software installation is required. Each product is managed by a specific product module within the DataSuite modular application.

Please read these instructions before proceeding with the installation process.

1. Insert the DataSuite software CD into your computer's CD drive. The DataSuite Installation Wizard automatically starts running.
2. The Wizard first downloads and installs **Microsoft .NET Framework 2.0**, if not already detected on the computer. The DataSuite software requires this platform in order to run. Follow the installation instructions to install the .NET Framework on your PC. This step can take up to two minutes to complete. Click **Finish** once installation is complete.

Note: If .NET Framework is already installed on your computer this step is skipped.

3. The main DataSuite Installation Wizard now resumes. Follow the installation instructions to install DataSuite on your computer.
4. Following DataSuite software installation is the Silicon Laboratories USB driver installation. The driver is necessary for the computer to detect the OM-DAQLINK hardware.
5. Follow the on-screen instructions to continue the installation process. The default installation location is **C:\SiLabs**.

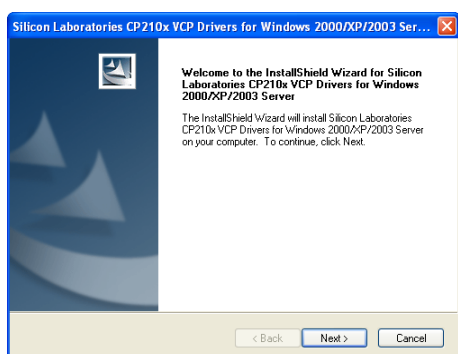


Figure 14: Installing Silicon Labs USB driver – Step 1

6. During the driver installation, the following window will pop up. Make sure to select the checkbox to launch the driver installer, and click **Finish**.

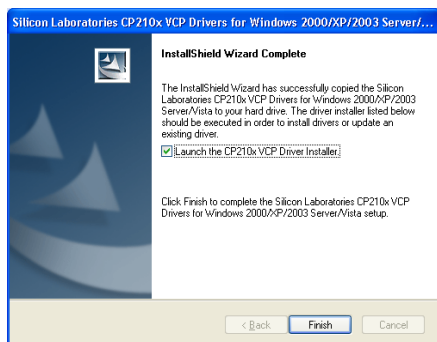


Figure 15: Installing Silicon Labs USB driver – Step 2

7. In the subsequent window, click **Install** to install the driver.

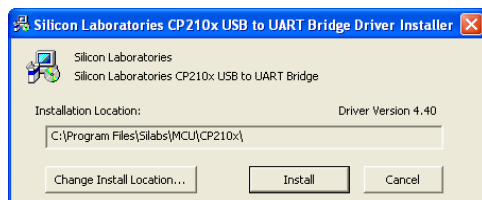


Figure 16: Installing Silicon Labs USB driver – Step 3

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

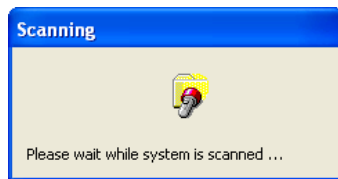
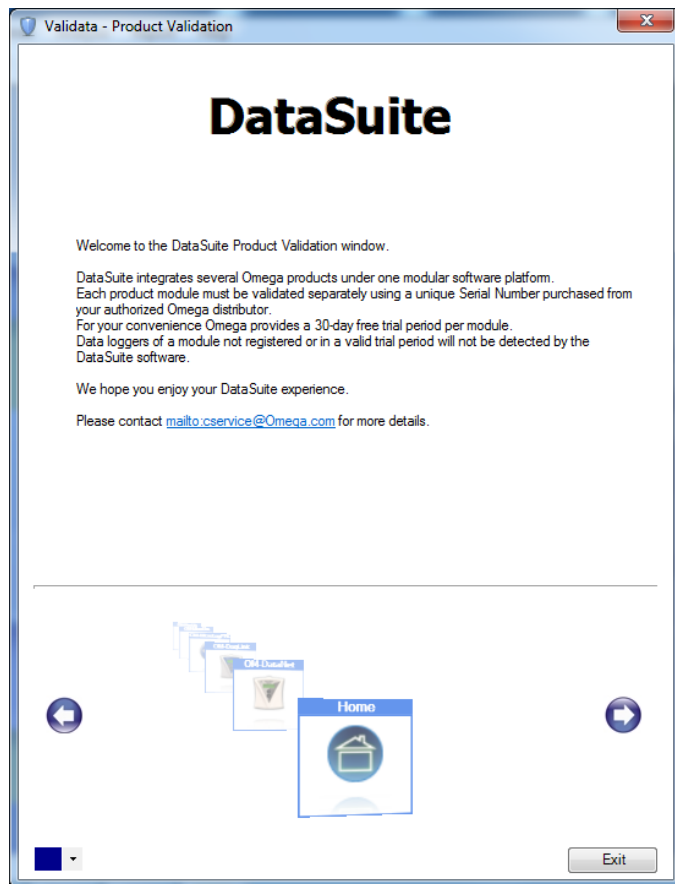


Figure 17: Installing Silicon Labs USB driver – Step 4

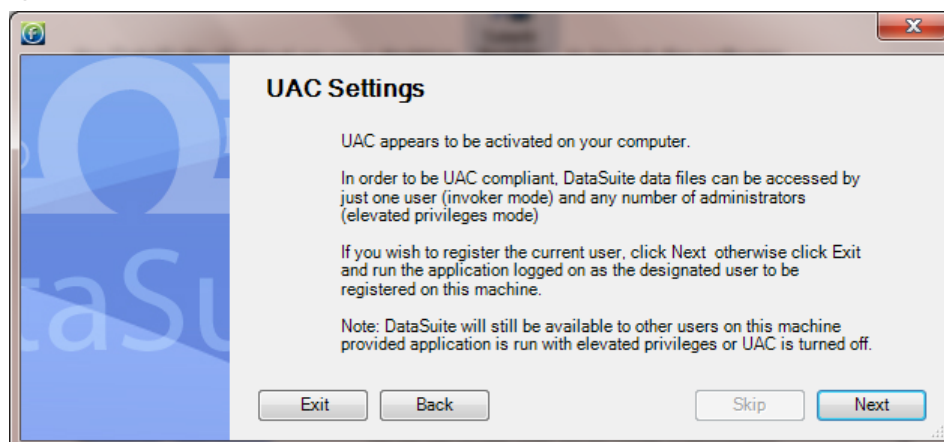
8. Once installed click **Finish** to close the USB driver Install Wizard dialog.
9. The DataSuite software and components have now been installed. Double click the DataSuite shortcut on your desktop to launch the software.
10. The DataSuite Welcome window will open, prompting the user to configure the application before use. This must be done only once when first running the software. Click **Next** to continue.
11. You are then given the choice to activate the DataSuite software now or to do so later. To activate now click **Next**, to activate later click **Skip**. Even if the software is not activated using the license Serial Number, you still need to commence the Trial period in order to use the hardware.



12. When choosing to activate the software, the DataSuite software registration window will open. Select the relevant module button e.g. OM-DAQLINK.



13. Select **Start trial** to commence the free 30-day trial and click **Next**. The module registration can be completed at a later stage. For more details refer to section 5.2.
14. Once the Trial period has started, DataSuite will detect the connected loggers. To detect more than one product module at the same time, you must ensure that each module is either in Trial mode or activated using the unique software Serial Number.
15. When completing the necessary tasks in the Validation window, click **Exit**. You will return to the window from step 11. Click **Skip**.
16. In specific versions of Windows, the user may have User Account Control (UAC) settings activated. If so, the user will be prompted the following instructions. Select the relevant option.



17. You have reached the end of the configuration process. Click **Finish** to launch the application.
18. Once the module is launched, connect the device to a USB port on your computer. It will automatically detect the logger as new hardware and the device will appear as a new icon in the DataSuite Map View.

5.1.4. Working with Multiple User Accounts

Each specific user account that accesses the DataSuite software module can commence trial period for that specific account. However, as soon as a user with Administrator privileges activates the module with a Serial Number, then all user accounts which had previously been in Trial mode, will now be fully activated.

All users will have full access to the DataSuite module's settings and data files.

5.1.5. Installation Troubleshooting

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

Ensure that the USB driver was installed properly.

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



If not, you should run the Silicon Labs setup file to install the USB driver: CP210x_VCP_Win2K_XP_S2K3.exe 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 device.

If you didn't select the **Launch CP210x VCP Driver Installer** checkbox during step 2 of the driver installation wizard (see section 5.1.2), then the driver wasn't installed. Run the wizard again and be sure to select the checkbox.

5.2. DataSuite Software Registration

DataSuite requires the OM-DAQLINK modules to be registered within 30 days of installation, using a serial number provided with purchase of the DataSuite OM-DAQLINK module (OM-DAQLINK-SOFT).

When the initial 30 day Trial period is over, the user will not be able to operate the OM-DAQLINK via the software until a valid serial number is registered.

Note: The software activation feature protects Omega's intellectual property for both its software and hardware.

Please note that:

- Each serial number is good for unlimited installations on a single computer. You cannot install the software using the same serial number on another computer.

If you have replaced your computer and must reinstall DataSuite using the same serial number, contact Omega Customer Support for assistance.

- Registration can be performed from the computer with DataSuite installed, or if there is no Internet connection from that computer, then via another computer with Internet connectivity.

5.2.1. Software Registration Process

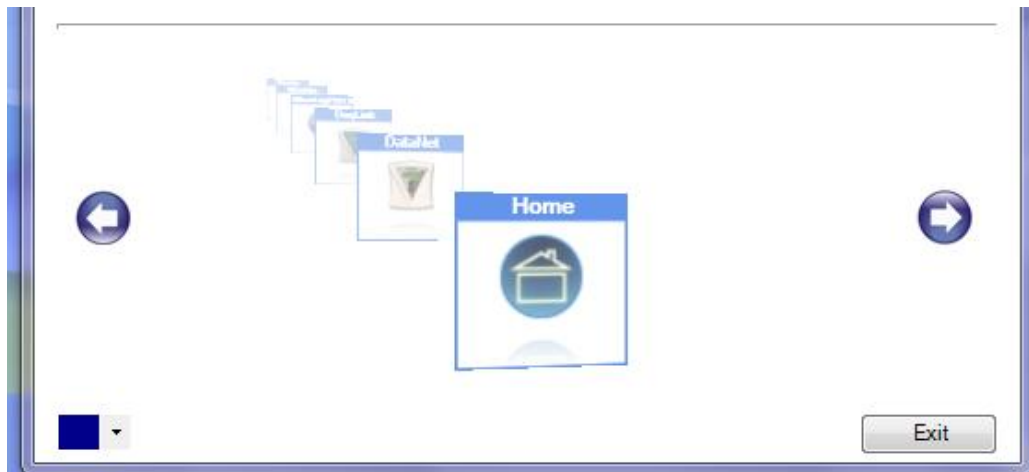
Note: The software registration forms are all case sensitive. Incorrect entry will result in invalid registration.

To register any one of the DataSuite modules, follow the instructions below:

1. Locate the DataSuite module serial number (SN). The SN label is found on the DataSuite box as well as on the software CD case.

Note: If you cannot locate your serial number, contact Omega Customer Support directly.

2. Launch DataSuite. The registration wizard will open.
3. To open the registration wizard from within DataSuite go to **Help > Register**.
4. From the bottom of the wizard Home screen, select one of the module buttons to proceed to the registration screen for that module.



5. Three choices are presented. Select the relevant option and click **Next** to proceed:



- **Activation via the Internet**

Select to proceed with registration on the same computer on which DataSuite is running, ensuring it has a live Internet connection.

- **Activation via an Internet connection on another computer**

Select if the computer on which DataSuite is running does not currently have Internet connectivity.

- **Start trial**

Select to commence the 30 day free trial period and continue working in DataSuite.

6. After selecting one of the two available options for continuing with the registration process, and after clicking **Next** in step 4 above, you will be prompted to enter the software SN. Enter the SN and click **Next**.

Note: Each serial number provides a single user license for the specific module. You cannot use a serial number already registered on another computer.

7. The registration process now differs, depending on which option was selected in step 4 above. Read the relevant section below for further registration instructions.

Activation via the Internet


1. After entering the software serial number, click **Next**.
2. DataSuite will now establish communication with the Omega server to complete the registration process. If successful, a confirmation message will appear. In the event of any problem in the registration process, please contact your Omega Customer Support.
3. Click **Close** to return to the DataSuite software.

Activation via Internet Connection on another Computer

1. After entering the software serial number, a window providing additional registration instructions will open.



2. Follow the steps as outlined in the window.

Note: It is recommended to generate a text file containing both the Application Key and the Web registration form URL. Press the  icon. Transfer this file to the computer with Internet connection, as the registration process must be continued from there.

3. Record the License Key obtained from the Web registration form. Enter it into the License Key field in Step 3 and click **Unlock**.
4. DataSuite will now establish communication with the Omega server to complete the registration process. If successful, a confirmation message will appear. In the event of any problem in the registration process, please contact Omega Customer Support.
5. Click **Close** to return to the DataSuite software.

5.3. System Password

Throughout the software you will be required to enter a password to perform certain functions such as calibration or firmware update.

Note: The default password is 1234.

To change the password:

1. In the **Password** dialog box, click **Change Password** to open the **Change Password** dialog box.
2. Enter the current password in the **Current Password** text box.
3. Enter the new password in the **New Password** text box.
4. Enter the new password a second time in the **Confirm New Password** text box to confirm your new password.
5. Click **OK**.

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

5.4. DataSuite Software Layout

This section provides an overview of the default DataSuite window view as well as a guide to all of the icons available throughout the software.

The most commonly used tools and commands are displayed on two toolbars. Tools that relate to all aspects of the program are located in the main (upper) toolbar. Tools specific to the graphs are located on the graph (lower) toolbar.


Refer to section 5.4.5 for a description of these toolbars.

As the DataSuite platform supports several Omega products, the interface is common for most of their functionality. There are several areas such as logger configuration, where the interface differs. These differences will be detailed throughout the chapter.

5.4.1. Map View

When DataSuite is first launched and the device detection window closes, the default window that is opened is the Map View (see screenshot below).

This view is used to monitor the status and data of all OM-DAQLINK devices currently detected by the software.

You can also switch to Map View at any time by clicking the **Map View** button  in the main toolbar. In addition, the Map View can be printed.

Icons are used to represent each of the Omega devices, and using the mouse the user can select specific actions to be performed on the unit.

Name tags can also be displayed for each OM-DAQLINK icon on the Map View.

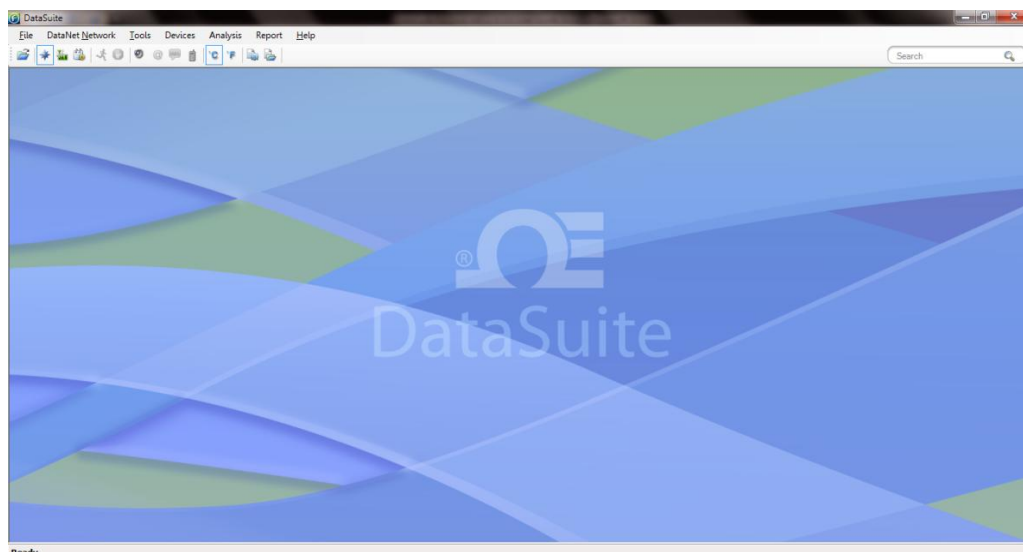



Figure 18: Main window - Map View desktop

Refer to section 5.14 for more details on working in Map View.

5.4.2. Sensor View

Clicking the **Sensor View** button  in the main toolbar switches the main DataSuite window to a display where sensor data is represented in individual windows. All sensors which are currently online will be displayed in this view. If a logger is currently offline then its data will not be visible.

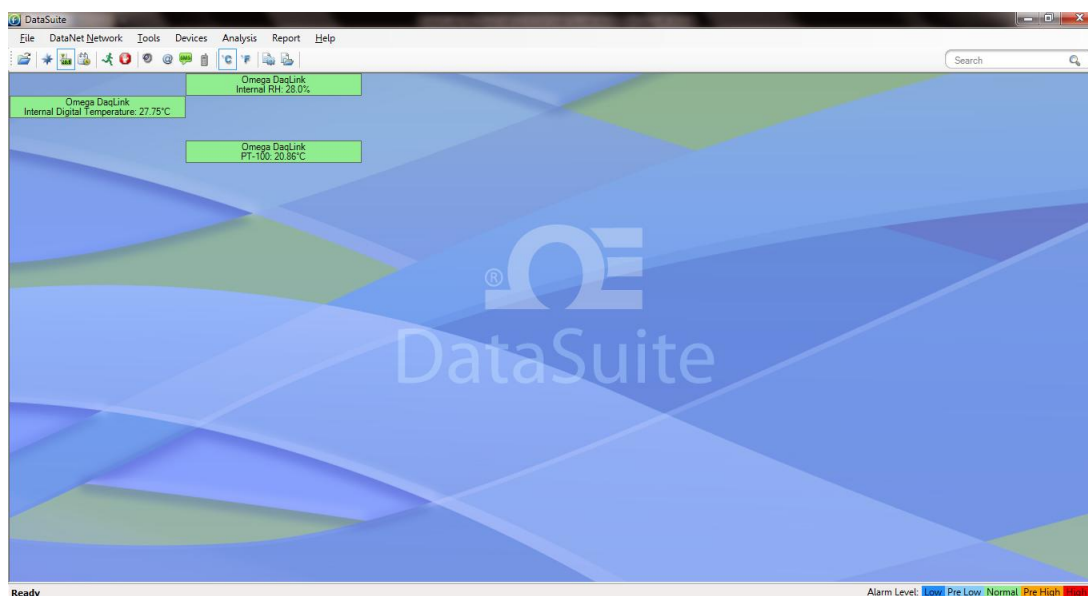
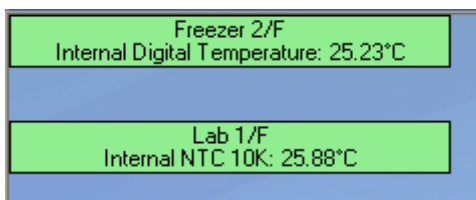


Figure 19: Main window – Sensor View

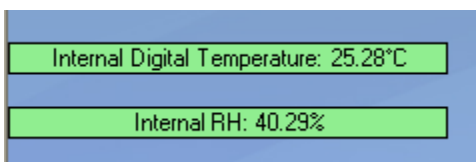
There are two modes for viewing the sensor data, which may be toggled by going to **Tools > Switch Sensor View Mode** in the main menu.

- **Expanded view**



In this view, the logger comment, sensor type and sensor data is displayed.

- **Slim view**



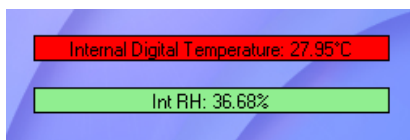
In this view, only the sensor type and sensor data is displayed.

Sensor in Alarm

When the sensor data is in alarm, the color of the sensor window will change according to the alarm type. There is a legend in the lower right corner of the main window:



For example:




This screenshot indicates that the Internal Digital Temperature reading is in High alarm, while the Internal Relative Humidity reading is at normal levels.

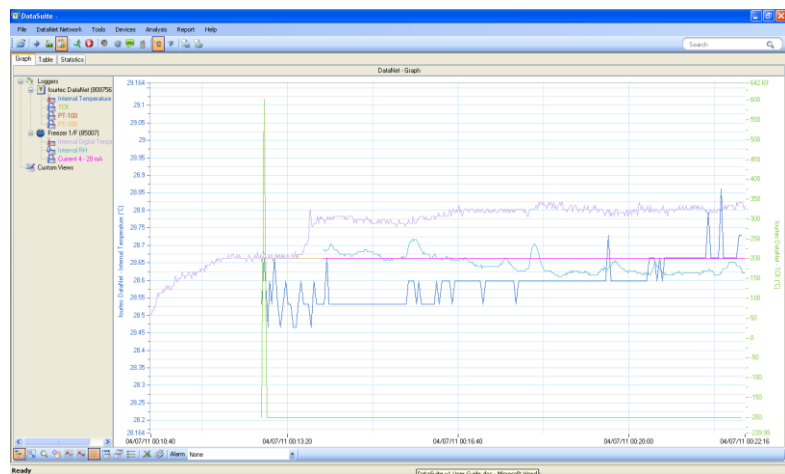
Additional Features

- The sensor windows may be dragged and placed anywhere on the screen.
- Double clicking the sensor window will open the Data Display window, where the real-time sensor data is displayed in graph or table view.
- When the logger is downloading data, a message in the sensor window will be displayed.

- Omega DaqLink
PT-100: 21.48°C
- Serial Number: 800351
Omega DaqLink
Connected to AC (charging)
Last sample time: 20-02-12 13:34:34
PT-100: (21.48°C)

Note: In History View you can view data from multiple Omega products in the same view. For example, compare data from OM-DATANET loggers side-by-side with OM-DAQLINK loggers.

You must first open the archived data file by clicking **Open File**  on the main toolbar. When you open the data file it will be displayed in the History View, otherwise, the History View window will be blank.



In History View, the user may view the data in graph or table format by clicking the relevant tabs, as well as view a number of Statistics taken from the data set.

To learn the functionality of the lower graph toolbar, refer to section 5.4.5 below.


Note: Users of Windows 7 using right to left language settings e.g. Hebrew, may have problems viewing the Date/Time in the DataSuite graph. This is a known Microsoft ® bug. Until a bug fix is released, change the Regional Settings to English.


5.4.4. Data Map

The History View window also includes the Data Map pane, on the left of the window.

The Data Map displays all data sets opened in History View, saved in the current project file, and includes nodes for each sensor in the data set.

Clicking the sensor label removes the data from the graph. When the label is black, the data is not displayed on the graph. The sensor data plot color is matched to the color of the sensor label in the Data Map.

Each data set is preceded by a **Logger** icon , which can be expanded or collapsed to display the associated sensor data.

Clicking the **Tree** icon  in the lower graph toolbar removes the Data Map pane altogether allowing a full screen graph view.

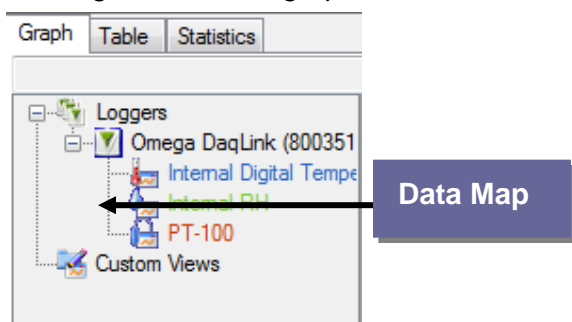


Figure 21: Data Map

5.4.5. DataSuite Toolbar Icons

This section outlines all of the toolbar icons available in the software.


Main (Upper) Toolbar Icons



Figure 22: Main toolbar icons

The main toolbar is always available at the top of the DataSuite application, no matter what window view the user is in.

This toolbar cannot be moved or hidden.

-  **Open file** - Opens archived logger data file stored on the PC














-  **Map view** - Switches main window to Map view, where the units connected to the computer are represented
-  **Sensor view** - Switches main window to Sensor view, where data from each running sensor is displayed in a simple view
-  **History view** - Switches main window to History view, where archived logger data can be viewed and analyzed
-   **Alarm mute/unmute** - Mutes or unmutes an audible alarm in the system when a sensor reading has breached the user-defined alarm level
-  **Email Alarm Notifications** - Configuration window for Email alarm notifications
-  **SMS Alarm Notifications** - Configuration window for SMS alarm notifications
-   **GSM Modem** - Indicates if GSM modem is connected (green icon) or disconnected (grey icon)
-  **Temperature unit toggle** - Display all data in Celsius
-  **Temperature unit toggle** - Display all data in Fahrenheit
-  **Reports Profile Manager** – Opens Reports module
-  **Report Browser** – Opens window for browsing saved Reports









Table 2: Main toolbar icon list

5.4.6. Map View Icons

The following icons representing the various statuses of the devices are viewed in Map View. Using these icons the user is aware of the status of each unit e.g. offline/online, alarm, power, etc.

Alarm status is also indicated: **Green** = Normal ; **Red** = Alarm

OM-DAQLINK Icons

- 
 Logger which has received its Setup but is in Stop mode.
 Running from internal battery supply.
- 
 Logger which has received its Setup but is in Stop mode.
 Running from external power supply.
- 
 Logger in Run mode and running on battery supply.
 Green indicates there are no alarms.
- 
 Logger in Run mode and running on external power supply.
 Green indicates there are no alarms.
- 
 Logger in Run mode with an alarm alert.
 Running from internal battery supply.
- 
 Logger in Run mode with an alarm alert.
 Running from external power supply.
- 
 Logger is offline and is no longer detected by the computer. Its power supply may have failed or the USB cable was disconnected.
- 
 Logger is processing a command sent from the software.
- 
 Logger is downloading data.

5.4.7. Graph (Lower) Toolbar Icons




The graph toolbar is located at the bottom of the open graph view, when the user is either in Online Data Display:



Or History View:



The toolbar cannot be moved or hidden.

- 
Data Map (in History View only) – Hides or shows the Data Map pane in the History View window.
- 
Plot Legend (in Display Data View only) – Hides or shows the sensor labels from the bottom of the graph.
- 
Autoscale - Returns the data to its default scale.





















-  **Zoom in** – Zooms in on the graph data.
-  **Pan graph** – Pans the graph along the x or y axis.
-  **Select first cursor** – Adds a cursor to the designated plot on the graph
-  **Select second cursor** – Adds a second cursor to the designated plot on the graph.
-  **Grid** – Adds a grid to the graph background
-  **Show/Hide Time Stamp** – Shows or hides the time stamp markers on the graph
-  **Add Custom View** (in History View only) – adds the open, customized graph view to the Data Map
-  **Copy graph** – Copies the graph to your clipboard, to be copied to a document or spreadsheet, for example.
-  **Graph properties** – Opens the Graph Properties window.
-  **Export to Excel** – Export the open data sets to Excel format.
-  **Print** – Opens the Print dialog. Available for graph, table and statistics views.

Table 3: Lower graph toolbar icon list

5.4.8. Data Map Icons

-  Displayed internal Temperature sensor data set
-  Hidden internal Temperature sensor data set
-  Displayed internal Humidity sensor data set
-  Hidden internal Humidity sensor data set
-  Displayed external sensor data set
-  Hidden internal sensor data set
-  Displayed graph function
-  Hidden graph function
-  Parent node for all logger data sets. Click to expand or collapse all child nodes.




-  Logger data set. Click to expand or collapse the data set containing all measured inputs of the specific logger.
-  Parent node for all custom graph views. Click to expand or collapse all child nodes.
-  Displayed custom graph view. When hidden the icon is grayed out.

Table 4: Data Map icons

5.5. File Menu Items

5.5.1. Open

Select **Open** to access archived data files for each logger in your network.

Shortcuts: You can also click the **Open** icon  or press **Ctrl+O** to open archived files.

5.5.2. Open Project File

Opens project files of offline data, containing data from one or more loggers, as opposed to standard data files containing data from only one logger.

5.5.3. Save Project

Saves multiple data sets and custom graph views into a single Project File. Only available in History View.

5.5.4. Save Project As

Saves an existing Project file under a different name.

5.5.5. Backup System Files

This feature allows the user to backup system data and configuration files for all DataSuite modules to a defined path on the local computer, network or USB memory stick.

Backing up these files to a secure location will ensure that in the event of damage to the computer hard disk, for example, you will be able to restore the critical files containing all the device data and configurations of the DataSuite itself. It will also enable you to setup mirror installations using the same devices.

5.5.6. Restore System Files

Once the system files have been backed up, use this feature to restore them to the DataSuite workstation or to another computer.

5.5.7. Print Map View

Prints the current Map View with all unit icons, including their network paths and name tags.

5.5.8. Exit

Exits the DataSuite application.

5.6. Tools Menu Items

5.6.1. Define Sensor

DataSuite enables the user to define custom sensors. This is a useful tool for when the data logger is communicating with many sensor types from different vendors.

Any additional sensor that you would like to connect to the logger must comply with the following restrictions:

The sensor's output must be either voltage in the range of 0 to 1 V, 0 to 50 mV, current in the range of 4 to 20 mA or Pulse in the range of 0 to 65535 pulses.

1. Click **Tools > Define New Sensor** and the Define New Sensor dialog will open.

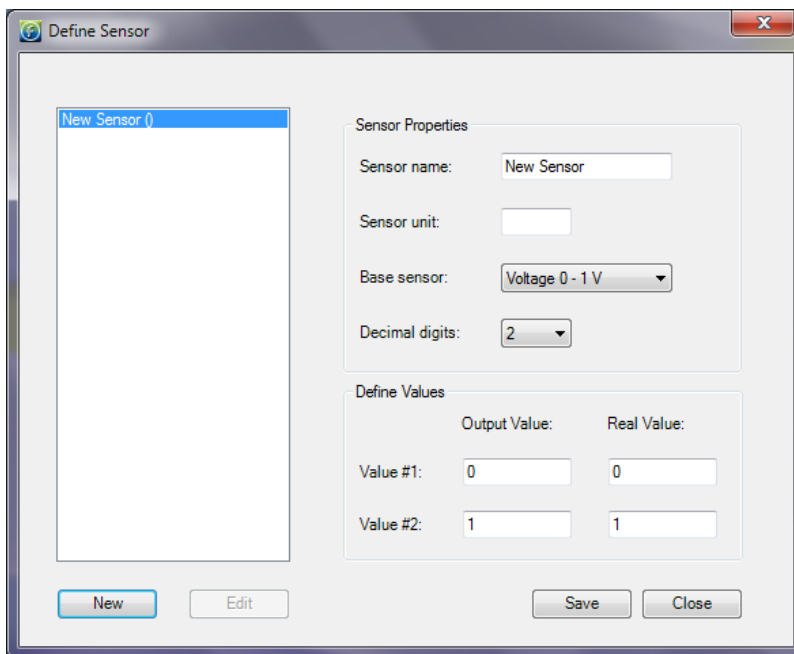


Figure 23: Define New Sensor dialog

2. Click **New** to enable the fields.
3. Select the **Base sensor** from the drop-down menu (depending on whether your sensor's output is 0 to 1 V, 0 to 50 mV, 4 to 20mA, or measuring pulses).
4. Enter the sensor name and sensor unit.

5. Enter two calibration values (two real values and the corresponding output values of the sensor).
6. Click **Save**.
7. To make any changes to the existing sensor definitions, stand on the sensor name and click **Edit**. Otherwise, click **New** to define additional sensors or click **Close** to exit the dialog.

To use the custom defined sensor:

1. Enter the Setup dialog for the data logger you want to configure.
2. Select the Input you wish to use and from the **Sensor Type** drop-down menu, select the custom sensor, which now appears in this list.
3. Proceed with the setup as you would normally do.

5.6.2. Switch Sensor View Mode

While in Sensor View, selecting this option will switch the sensor view between large and small window sizes. By reducing the size of the sensor window you display only the sensor type and sensor data. Enlarging the size of the sensor window will display sensor type, sensor data and logger name.

5.6.3. Lock Map View

While in Map View, with Lock Map View selected the Map View icons are in a fixed position and can't be moved. You must unselect this option in order to freely move the icons anywhere on the screen. This is essential if working with a custom background image.

5.6.4. Options Menu

Refer to section 5.7 for more details.

5.6.5. Manage Contacts

The Manage Contacts dialog is where the user can add, edit and remove all contacts and groups to which DataSuite Reports and Email/SMS notifications are sent.

Refer to section 5.16.1 for more details regarding managing Contacts, and to section 5.16.2 for more details regarding managing Groups.

5.6.6. Email Alarm Notifications

The Email Alarm Notifications dialog is where the user can configure all notifications to be sent via Email to a predefined contact list. Refer to section 5.16 for details.

5.6.7. SMS Alarm Notifications

The SMS Alarm Notifications dialog is where the user can configure all notifications to be sent via SMS to a predefined contact list. Refer to section 5.16 for details.

5.6.8. Firmware Update Center

The Firmware Update Center is where the logger firmware updates are managed. Please refer to section 6.2 for more details.

5.7. Tools > Options Menu Items

The Options dialog is divided into four main tabs:

- Preferences
- Device Settings
- Email Settings
- SMS Settings

5.7.1. Preferences Tab

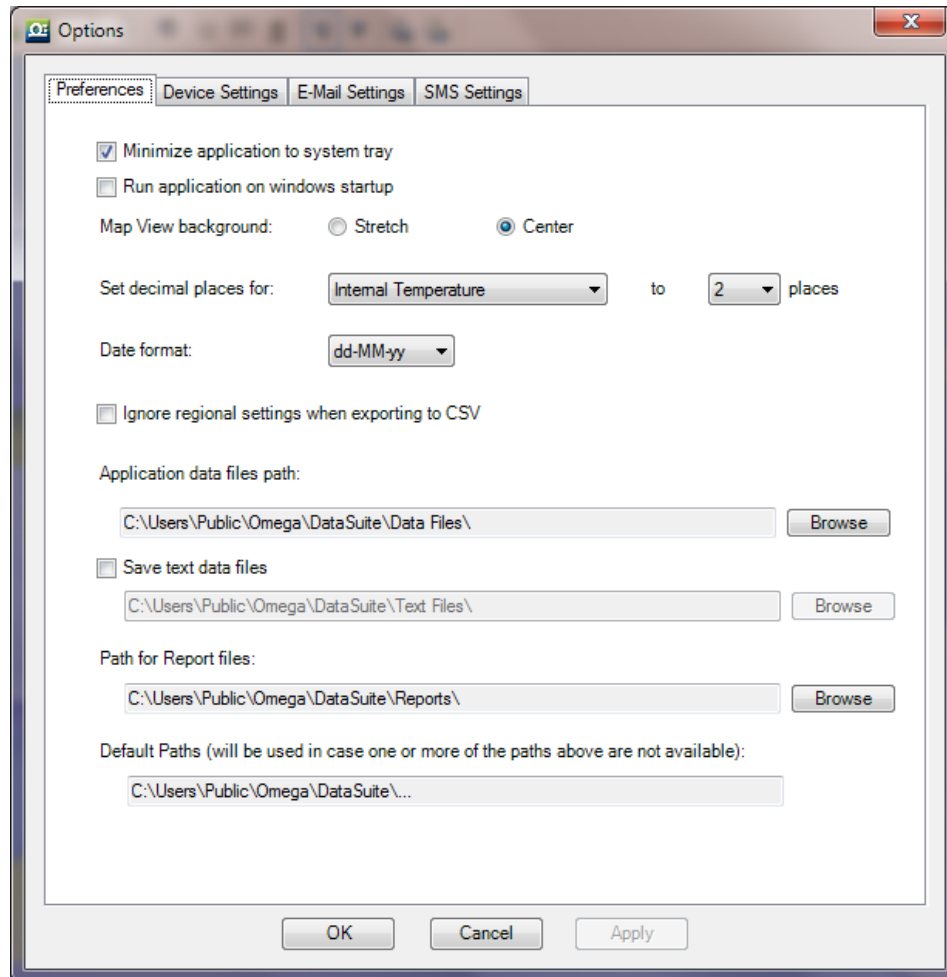



Figure 24: Options > Preferences tab

The Preferences tab includes the following options:

Minimize application to system tray

When this checkbox is selected, the DataSuite icon  will appear in the computer's system tray in the lower right of the screen when the application is minimized. Simply double-click the icon to maximize the application to full screen.

Run Application on Windows Startup

When this option is selected DataSuite will automatically launch upon Windows startup. This feature is useful in the event where the computer unexpectedly resets and when it restarts, DataSuite will launch and online monitoring of the connected devices will be able to continue.

Note: If running Windows Vista, User Account Control (UAC) must be turned off for this feature to work. If UAC is off then DataSuite will not launch on Windows startup.

Map View background

Use this option to toggle between Stretch and Center views for the background image used in Map View.

Set decimal places for...

For each logger sensor, internal or external, you may select between 0 and 6 decimal places to be used when displaying the data in the software.

Date format

Choose between four date formats to be used throughout the software when displaying data e.g. in the Graph display.

Ignore regional settings when exporting to CSV

Selecting this option will ensure that data will be corrected exported to a CSV file and will not use any custom regional settings in the Windows OS which might adversely affect the layout of the data in the CSV file.

Application data files path

The default path for saving all data recorded by the data loggers is:

Default path on WinXP: C:\Documents and Settings\All Users\Application Data\Omega\DataSuite\Data Files\

Default path on Windows 7: C:\Users\Public\Omega\DataSuite\Data Files\

Click **Browse** to change this path e.g. to a network path.

Save text data files

Select this checkbox if you would like DataSuite to also save the logger data to a text file. This will allow you to export the data, in csv format, to another application that can display the logger data.

Default path on WinXP: C:\Documents and Settings\All Users\Application Data\Omega\DataSuite\Text Files.

Default path on Windows 7: C:\Users\Public\Omega\DataSuite\Text Files

Click **Browse** to change this path e.g. to a network path.

Note: The text file cannot be updated with logger data as long as it is open. Make sure to close the file when you finish inspecting the data, or copy the file to another location and view it from there. Alternatively, open the file in *Read-only* mode.

Path for Report files

The default path where Report files are stored is:

Default path on WinXP: C:\Documents and Settings\All Users\Application Data\Omega\DataSuite\Reports.

Default Path on Windows 7: C:\Users\Public\Omega\DataSuite\Reports\

Click **Browse** to change this path e.g. to a network path.

Default Paths

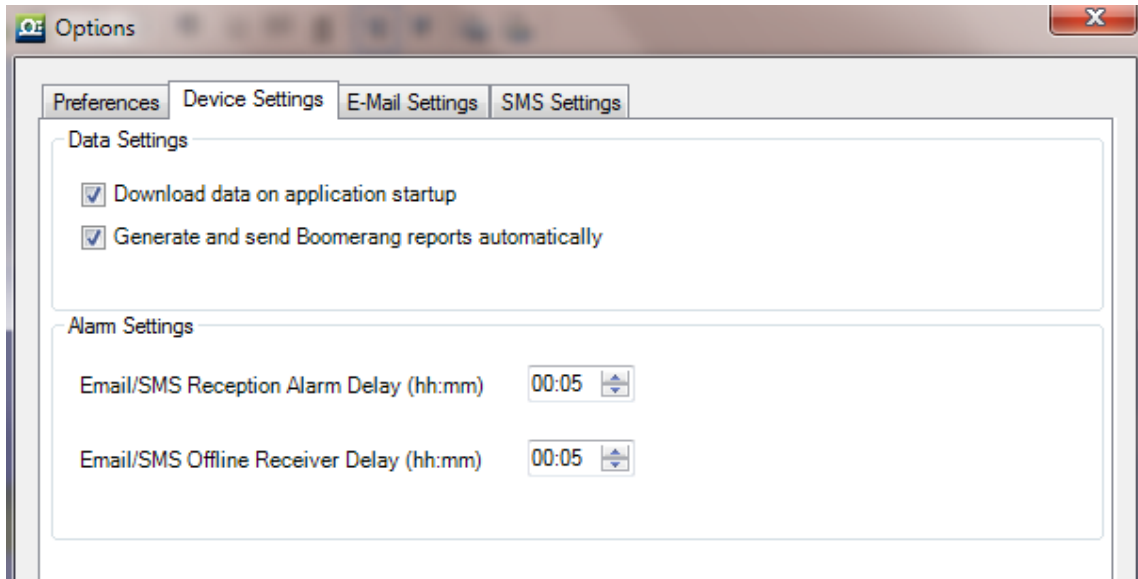
If the user has modified any of the default data file or report paths e.g. to a network path, and should this path become available for any reason, then the DataSuite application will automatically refer to the default path as shown under the Default Paths heading.

This precaution is necessary as otherwise DataSuite cannot download any data from the data loggers if the data file path is not available. Data can therefore be lost.

Default path on WinXP: C:\Documents and Settings\All Users\Application Data\Omega\DataSuite\...

Default path on Windows 7: C:\Users\Public\Omega\DataSuite\...

5.7.2. Device Settings Tab



Download data on application startup

Select this checkbox if you want to have automatic download of data when the DataSuite software is launched. If there are many loggers in the system with fast sampling rates, then the download could burden the network. Therefore in some cases disabled this feature is advised.

Generate and send Boomerang reports automatically

Select this checkbox to enable the Boomerang feature to run automatically when a Boomerang-enabled logger is connected to the computer. By default, this option is enabled, so that the PDF data report is generated and Emailed as soon as the logger is detected by the DataSuite software.

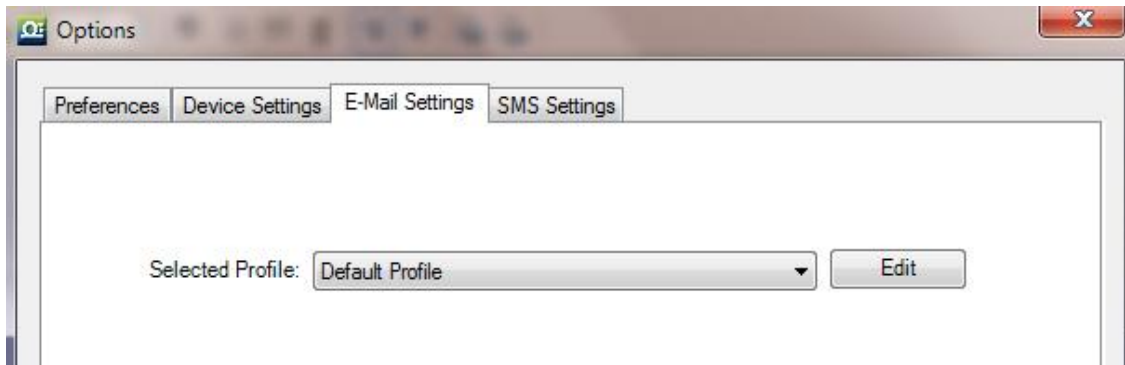
Alarm Settings

Not relevant for OM-DAQLINK system.

5.7.3. Email Settings Tab

DataSuite's alarm notification feature enables sending of Emails to notify the user of any alarm in the system.

Clicking the Emails Settings tab will show the following window:



DataSuite includes a Default Profile – this is a Omega-configured email account, embedded into the software. This means that even if you don't configure any email account, you are still able to send Email alarm notifications and Boomerang data reports using Omega's own email account.

1. To edit existing Email profiles or add a new one, click Edit.

The following window is opened:

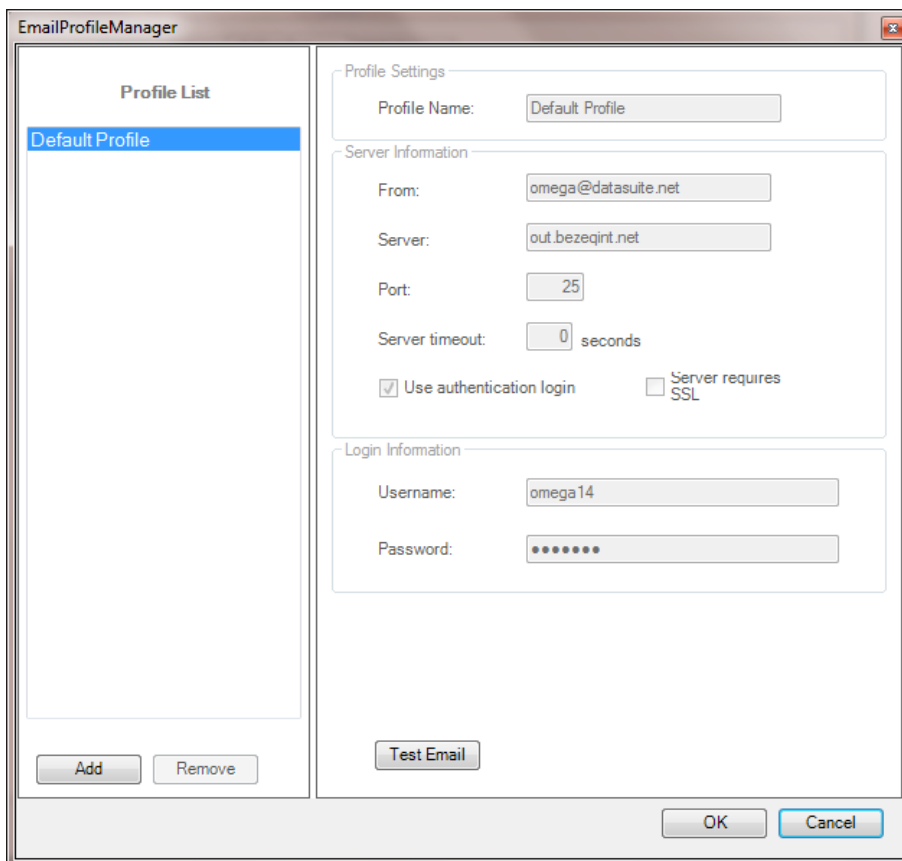


Figure 25: Options > Email Settings tab

You can view the Profile settings here. Note that the Default profile is un-editable.

2. To add a new custom profile, click **Add**. A new entry named New Profile is created. Click on this entry to edit the settings, server information, etc. Make sure to enter the fields correctly e.g. with no extra spaces or typos.

3. When finished, click **OK** to return to the main Email Settings window, displaying the list of profiles.
4. To remove a profile from the Profile List, click **Remove** from the Email Profile Manager window. Note that the default profile cannot be removed.

Note: DataSuite supports SMTP and MIME encoding, and POP3 mail protocols.

Sending a Test Email

To send a test Email to verify the Email configuration is correct:

1. Once the Email profile configuration is complete click **Test Email** to open the Contact Information dialog.
2. Select a contact from the DataSuite contact list or enter an Email address. Click **OK** to send the test Email.
3. The test Email will contain the following content:

Subject: Test message sent from the DataSuite software

Body: This is a test message sent from the DataSuite software. Sent on the dd/mm/yy mm:hh

5.7.4. SMS Settings Tab

DataSuite's alarm notification feature enables sending of SMS's to notify the user of any alarm in the system. First select the **Send SMS notifications** check box. Using the SMS feature requires connection of a GSM modem and SIM card to the DataSuite PC, or even just a cellular phone with an active SIM card.

You must select the COM port which the GSM modem/cellular phone is connected to in order for the software to detect it.

Note: When using a cellular phone as a modem, ensure that the PC software suite is disabled before connecting the phone to the PC com port. Otherwise the com port will not be available for the DataSuite software.

Once the configuration is complete, DataSuite will be able to send SMS's to predefined SMS contacts when your loggers have breached certain alarm levels.

Refer to section 5.15.1 for setting Alarm levels on the logger and to section 5.16 for managing the SMS alarm notifications.

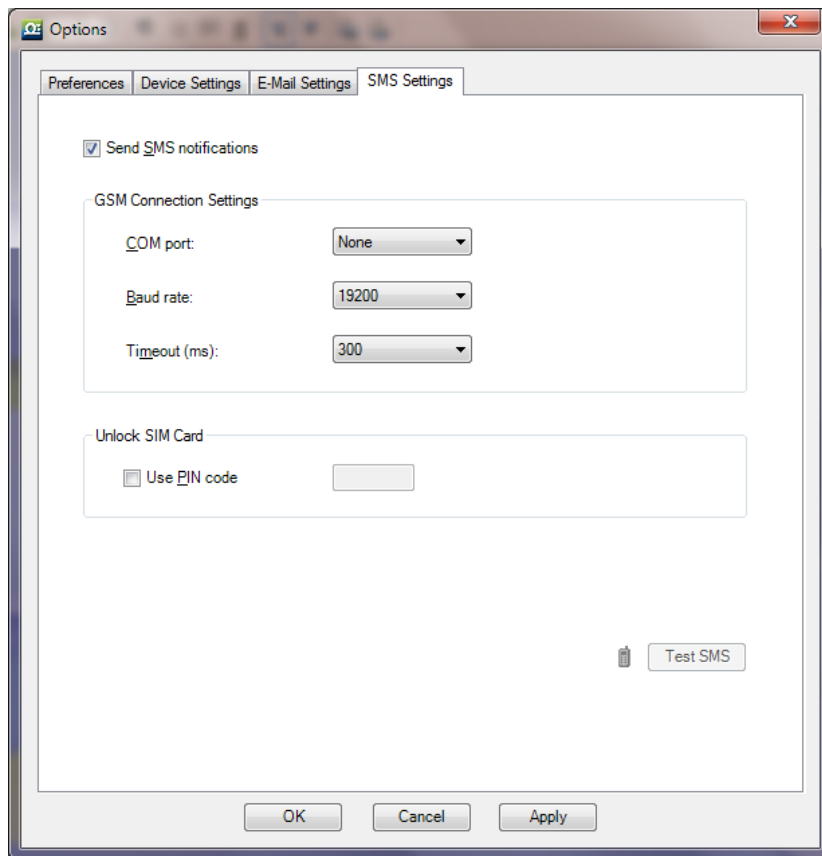



Figure 26: Options > SMS Settings tab

Note: Once the GSM modem is online you will see the green GSM icon  appear in the DataSuite upper toolbar.

Sending a Test SMS

To send a test SMS to verify the SMS configuration is correct:

1. Once the SMS configuration is complete and the GSM modem has been detected by the software, the **Test SMS** button will be enabled.
2. Click **Test SMS** to open the Contact Information dialog.
3. Select a contact from the DataSuite contact list or enter a telephone number. Click **OK** to send the test SMS.
4. The test Email will contain the following content:

Subject: Test message sent from the DataSuite software

Body: This is a test message sent from the DataSuite software. Sent on the dd/mm/yy mm:hh

5.7.5. Analysis Menu Items

The Analysis menu items are enabled when viewing offline data in History View.

The Analysis options available are:

- Functions Parameters
- Dew Point
- FO Pasteurization
- Histogram
- MKT
- Export to Excel
- Export to CSV

MKT (Mean Kinetic Temperature)

Mean Kinetic Temperature or MKT is used for calculating temperature stress of perishable stock goods such as medicines or food, during storage and distribution cycles. The MKT is calculated on a temperature graph opened from an offline DataSuite data file, in History View.

To use the MKT feature:

1. Go to **File > Open** and open the data file containing the relevant temperature measurements.
2. In History View, with the graph tab in view, go to **Analysis > MKT** in the main menu. The MKT dialog is opened.

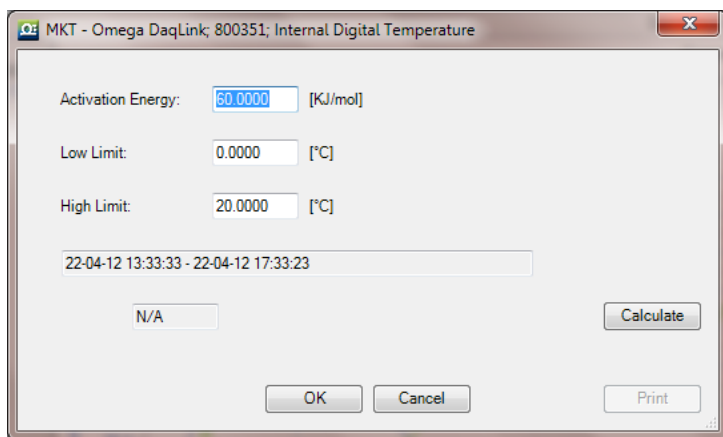



Figure 27: MKT dialog

3. Use the cursors to select the data set, or leave the graph as is to perform the MKT calculation on the entire data set.
4. Enter the relevant Activation Energy, and the Low and High Limits of the data set to be calculated (in °C), into the MKT dialog.
5. Click **Calculate**. A Pass or Fail indication will be displayed and in the event of a Pass, the MKT value will also be displayed.
6. Click **Print** to print the MKT dialog with the results.

Export to Excel

You may export offline data to Excel by selecting this menu item or by clicking the **Export to Excel** icon  in the lower graph toolbar in History View. The data is opened in an Excel worksheet and includes pertinent information such as logger name, SN, sensor names, alarm levels as well as the actual data readings.

Refer to section 5.19 for more information.

Export to CSV

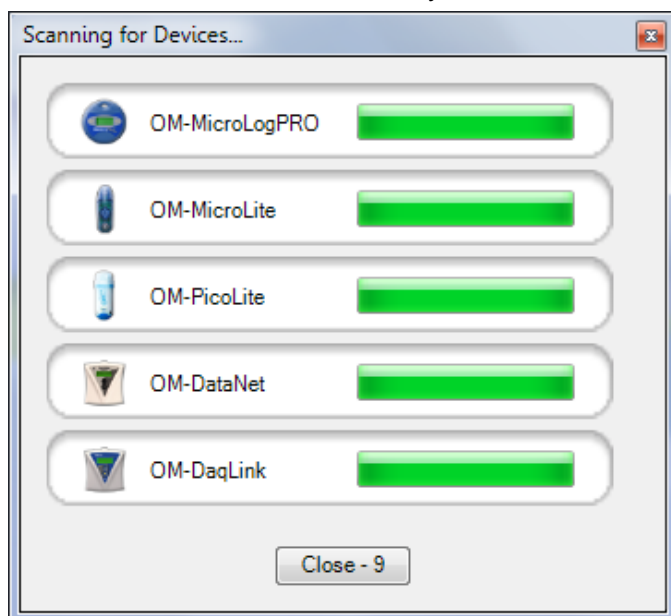
You may export offline data to CSV file format by selecting this menu item. Upon selecting this option, you will be prompted to save the file either in the default DataSuite directory or in directory of your choosing. The data is opened in CSV file format and includes pertinent information such as logger name, SN, sensor names, alarm levels as well as the actual data readings.

Refer to section 5.19 for more information.

5.8. Devices Menu Items

5.8.1. Detect Device

When DataSuite is launched it automatically scans all ports for DataSuite supported devices. Select this menu item to manually detect devices.



All devices are automatically detected by the software when connected to the computer. If you connect a device when it is switched off, and then switch the device on, the software won't detect the unit. You will have to use the Detect Devices feature.

The device may also lose power and go offline while connected to the USB, in which case you will also need to detect it manually.

The Devices menu also supports Stop All and Run All commands for all connected devices.

5.8.2. Stop All

To stop all the online loggers in the Map View simultaneously, go to the **Devices > Stop All** menu item. Prior to stopping the loggers, DataSuite will first download and data not already transmitted to the computer.

This feature is password-enabled.

5.8.3. Run All

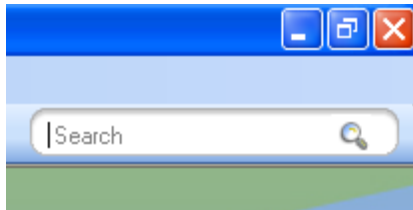
To run all the online loggers in the Map View simultaneously, go to the **Devices > Run All** menu item. Prior to running the loggers, DataSuite will first clear the logger menu. This command will not apply to any devices currently in Timer Run or Push to Run modes.

This feature is password-enabled.

5.9. Search Devices

If you have many device icons situated in the Map View and have trouble locating the specific device to configure, the Search feature can be very helpful.

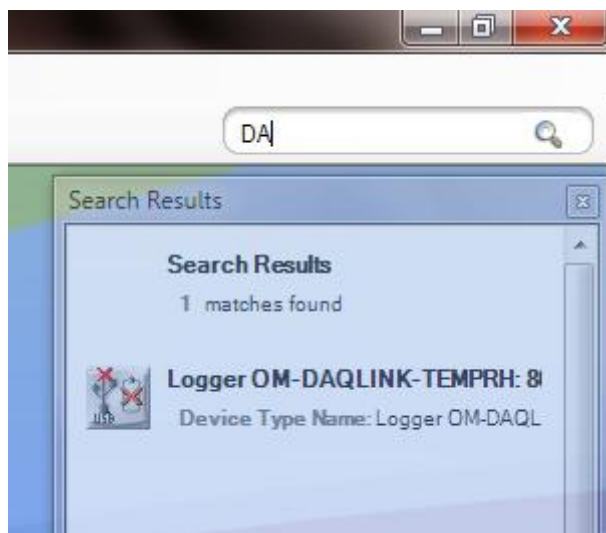
In the top right corner of the main window you will find the Search window:



The search criteria are:

- Device Serial Number e.g. 7002354
- Device Comment e.g. Lab 1/F
- Device Type e.g. OM-DAQLINK-TEMP

Enter the relevant search criteria in the text window and all relevant matching devices will appear in the Search Results box.



The Search Results box will filter the results as the search criteria more closely match the devices in the Map View.

Once you have located the relevant device you may configure it directly from the Search Results box by right-clicking on the device icon to open the context menu.

To locate the device on the Map View itself, simply click on the device row in the Search Results box and the icon will flash three times with a red outline:

5.10. Data Recovery

When OM-DAQLINK units are connected to the computer and detected by the DataSuite software, they will automatically begin downloading data.

If they were already connected and streaming online data, and the DataSuite software or computer was shutdown, the units will continue to collect data. Upon re-detection by DataSuite, data will again be downloaded ensuring full data recovery to the DataSuite database.

5.11. Saving Data

As soon as a logger starts to record data the software creates a data file to which it writes the logger data.

In Windows XP, for example, logger data files are stored in the following default location:

C:\Documents and Settings\All Users\Application Data\Omega\DataSuite\Data Files

In Windows 7, the data files are stored here:

C:\Users\Public\Omega\DataSuite

A folder is created for each data logger and is named according to the logger Serial Number. In this folder is stored the data files. A file is created for each day that the logger is recording data. The file name format is the date followed by the file extension e.g. 2007-12-30.dat.

The data is saved automatically by the software. There is no need for the user to save the data manually.

For applications where the data is being streamed online, directly to the software the data file is saved as follows:

- Every 15 minutes
- When the software is closed
- When the user opens an archived data file, the file is updated with all data not saved to that point

You can also save the data in a text file format. Refer to section 5.7.1 for more details.

5.12. Viewing Archived (Offline) Data

The user can view the logger data online or can choose to open archived data of one or more loggers, including loggers of different models. Archived data is all data that was logged by a specific logger and recorded by the software into the DataSuite directory on the PC.

Follow the instructions below to open archived data.

1. Click the **Open** icon to launch the **Open Data Files** dialog.
2. Select the logger from the list of loggers in the dialog. The loggers can be listed in ascending or descending order according to logger serial number or comment by clicking the relevant header.
3. Using the calendar define the date and time period for which you wish to view your data and click **OK**.

Note: The DataSuite data file path is displayed at the top of the Open Data Files dialog.
--

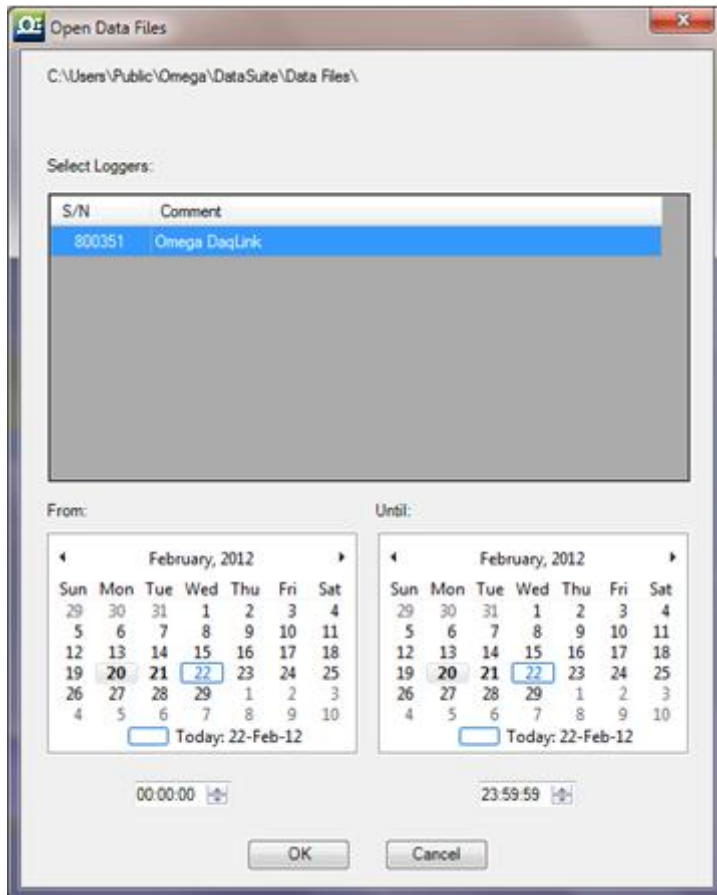


Figure 28: Open Data Files dialog

4. In the **Sync Data** dialog, you can select the sampling rate at which you wish to display the data. The default option is the original rate. Click **OK**.

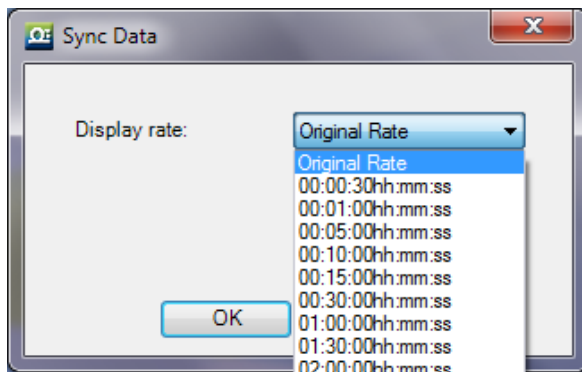


Figure 29: Sync Data dialog

The data is opened in History View. Refer to section 5.4.3 for an explanation of the History View.

You may display data sets from more than one logger and display them all in History View, using the Data Map to navigate through the data. Refer to section 5.4.4 for more details regarding the Data Map.

5.13. Viewing Online Data

You can view the data from any of your loggers in real-time, as the data is being recorded and transmitted to the PC. OM-DAQLINK loggers must be connected via USB cable to the DataSuite software to enable online data view.

- While the logger is running double click the Logger icon in the Map View.
- While the logger is running open the logger context menu and select **Display Data**.

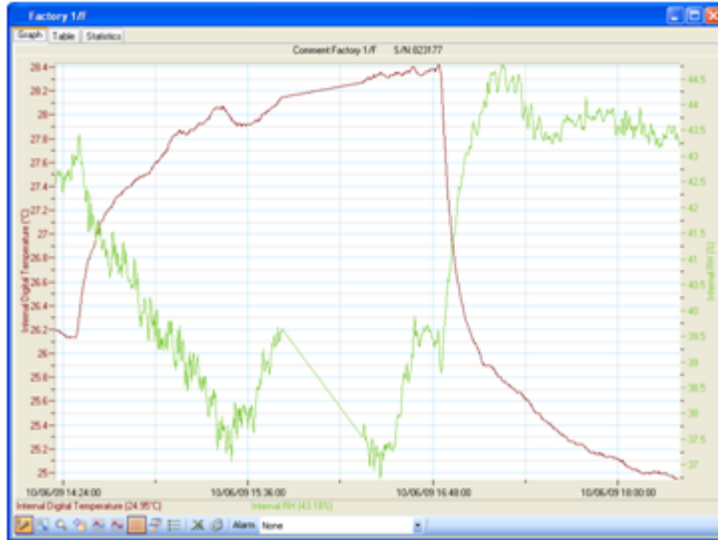


Figure 30: Online data window

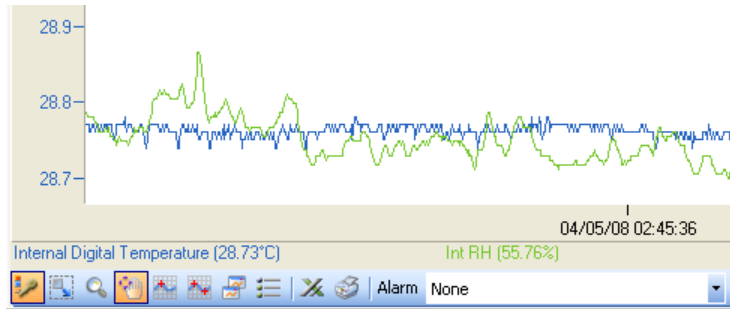
The data displayed in this window is the data that was transmitted by the logger in the current software session. Data transmitted during a previous session of the software being open will not be displayed. For example, when you setup the logger it creates a new online session. This data can be viewed by opening archived data. Refer to section 5.12.

You may view the data in a graph or table by clicking the relevant tabs in the online data window. While in either of these views, the data is constantly being updated in real-time in the respective view according to the transmission rate of the logger.

Note: Users of Windows 7 using right to left language settings e.g. Hebrew, may have problems viewing the Date/Time in the DataSuite graph. This is a known Microsoft® bug. Until a bug fix is released, change the Regional Settings to English.

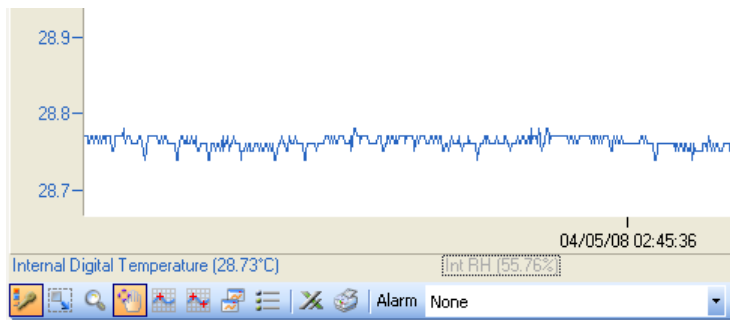
5.13.1. Showing/Hiding the Data Sets


In the online graph display, where you have data from only one logger displayed, you can show or hide the individual sensor data by using the sensor labels at the bottom of the graph.



In the screenshot above you can see two labels, *Internal Digital Temperature* and *Int RH*. At present, each label is active meaning the sensor data corresponding to the label is shown on the graph.

By clicking any of the sensor labels, you can hide the data from the graph. The label will then be grayed out. See the screenshot below:



Note: You can hide all of the sensor labels (not plots) from the graph by clicking the **Plot Legend** icon .

5.14. Working in Map View

The Map View is the main view from which you monitor your connected devices. It is in this view that you can see all the icons representing the units in your system.

Refer to section 5.4.1 for a quick overview of the Map View and section 5.4.5 for a list of all the Map View icons.

5.14.1. Loading Map View Wallpaper

You can load an image file representing a map of your facility in which the network is operating. You can then move the unit icons into their actual positions on the map.

- Double-click on the Map View background to go straight into the **Open** dialog and locate the image file.
- Right-click on the Map View background to open the context menu and select the option to either Load or Reset the wallpaper.

Note: When deploying the system for the first time it is highly recommended to use a map of the facility to make the deployment work efficiently.

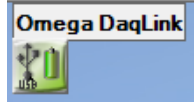
5.14.2. Printing the Map View

To print the Map View go to **File > Print Map View**. This will also print the icon name tags and network paths, if enabled.

The Map View maintains its aspect ratio when printed.

5.14.3. Displaying Icon Name Tags

You can display a name tag for each device on the Map View. The name tag consists of the unit



Comment, as defined in the unit Setup:

To toggle this feature, right-click on the Map View background and select **Display All Units' Name**.

When this feature is enabled, clicking the unit icon will also highlight the name tag in red.

5.14.4. Moving Icons around the Screen

Go to **Tools > Lock Map View** and ensure this menu item is not selected in order to freely move the unit icons around the screen. When you have finished placing the icons into position you may then lock the Map View so as not to mistakenly place an icon out of position.

5.14.5. OM-DAQLINK Logger Icon Connection Options

Right-clicking the OM-DAQLINK logger icon will give the following options:

Display Data

Displays the logger's data in Graph view. The graph displays the data in real-time. There is also the option to display the data in Table view or to view the data statistics.

Download Data

Downloads all data in the logger memory to the DataSuite software. When logger is downloading the data, the Logger icon in Map View will appear as follows:



Cancel Download

When logger is downloading data you may cancel the download per logger by selecting this menu item.

Note: This feature works only if there are no other commands in the queue following the Download process.

Reset Alarm

When the logger is in a state of alarm, this option will reset the alarm state to normal on both the logger and the software. The visual and audible alarms will return to normal. If after reset the logger is still in alarm conditions, then the visible and audible alarms will return.

Calibration

Refer to section 5.17 for an overview of the Calibration feature.

Note: A logger can't be calibrated while it is in **Run** mode. The option will be grayed out. You must **Stop** the logger first.

Cancel Firmware Update

When a firmware update is in progress, select this option to cancel the update and continue using the previous firmware version.

Setup

Refer to section 5.15 for an overview of how to setup the logger.

Stop

Sends a command to the logger to stop logging data.

Run

Sends a command to the logger to start logging data. This command will also clear the existing logger memory.

Turn Off

This option will turn the unit off and is password enabled. As a precaution to avoid any data loss all data not yet transmitted will first be downloaded to the computer prior to turning the unit off.

5.15. Configuring the Logger

DataSuite software allows you to configure each OM-DAQLINK logger, via direct USB connection.

To configure the logger once it's detected by the DataSuite software, right-click the Logger icon in the Map View and select **Setup**. The Setup window is described below.

5.15.1. OM-DAQLINK Setup Window – Device Setup Tab

The OM-DAQLINK Setup window has two tabs, **Device Setup** and **Alarm Setup**.

The main logger configuration is performed on the Device Setup tab. Any alarm levels you wish to configure is performed on the Alarm Setup tab.

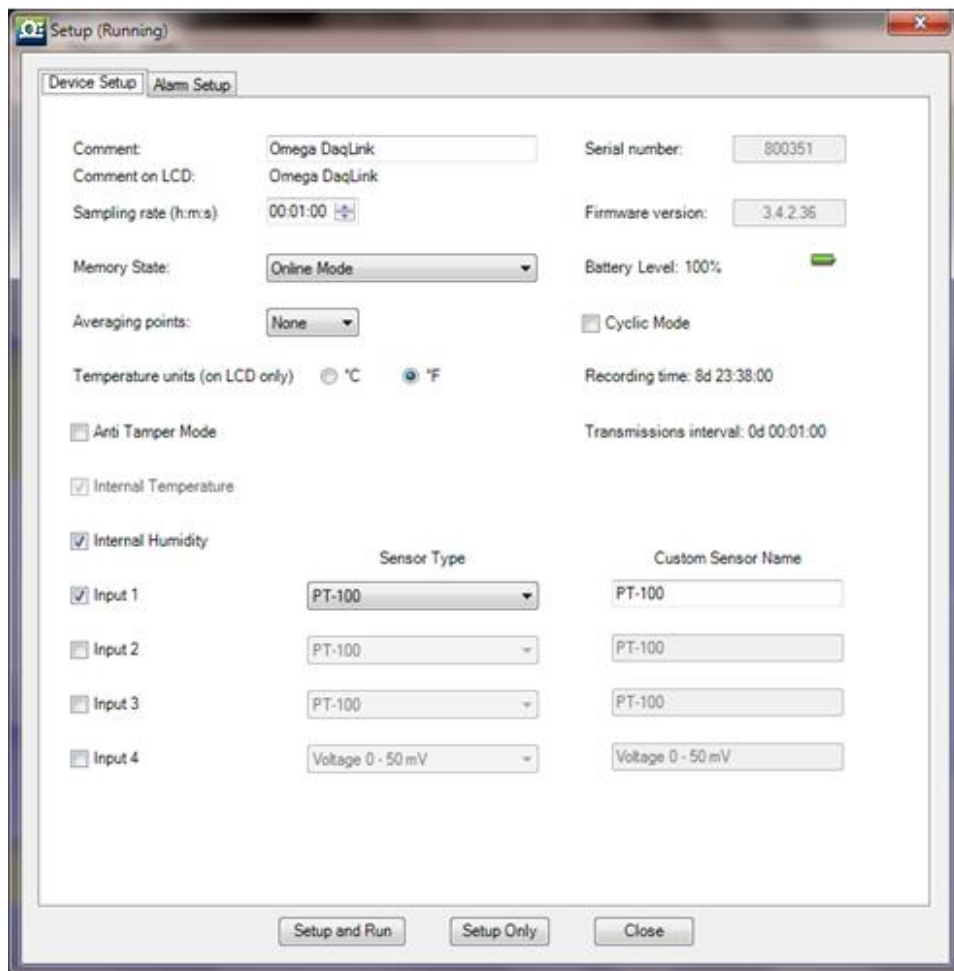


Figure 31: OM-DAQLINK Device Setup tab

Comment

This is the name of the logger. It is advisable to name the logger according to the location in the facility.

Note: The Comment field in the software and on the logger display supports all standard alphanumeric characters except for the following: ', ", ~, &, \

Sampling Rate

Sampling rate is one sample per second to one sample per 18 hours. However, there are programming limitations you must be aware of when configuring the loggers. The sampling rate will vary depending on the number and type of sensors you setup. Refer to section 4.3.4 on page 15.

Memory State

From the drop-down menu you have the following options:

- **Online Mode:** For working with logger connected to PC. Data will be transmitted in real-time i.e. at the same time as the sampling rate.
- **Optimized Memory Mode:** For working with the logger as a standalone device, not connected to the PC. In this mode, the memory is more efficiently managed as the data does not need to be transmitted together with the sampling rate. Use the **Transmissions interval** parameter in the Setup window to see the rate at which the data will be displayed on the logger or in the software.

Note: If used when connected to the PC, the data will not be transmitted in real-time.

Cyclic Mode

If this checkbox is not selected, the logger will stop recording data when the memory capacity is filled.

Enabling Cyclic mode will result in the oldest samples in the memory being overwritten by new samples once the memory is full. This allows continuous data logging.

Averaging Points

You can choose to have online averaging of up to 10 points around the real value in order to smooth the data readings, if they are exhibiting interference. The recommended averaging is 4 samples.

Note: If configuring Alarm duration with averaging points selected, the alarm will be counted from the time of the last sampling point used to calculate the average.

Temperature Units

Toggle between °C and °F. This applies to the readings displayed on the logger LCD as well as in the software.

Anti Tamper Mode

To prevent tampering with the OM-DAQLINK logger, selecting this option will disable the following features on the logger menu:

- Pause
- Reset
- Stop and turn off unit

Active Sensors

Depending on the logger model, you can activate up to two internal sensors and four external sensors. Simply select the inputs you want to use and then select the sensor types from the adjacent drop-down menu. You don't have to select the external sensor input in any order. You may select only Input 4 if you desire.

Note: On the OM-DAQLINK-TEMPRH you cannot run the humidity sensor without running the temperature sensor in parallel.

This is because when using the OM-DAQLINK-TEMPRH data logger and selecting the internal humidity sensor in the Device Setup dialog, the internal digital temperature sensor will automatically be selected as well. This sensor provides the temperature compensation necessary for the humidity sensor to reach the 3% accuracy as stated in the sensor specifications. It is not used for recording temperature. The internal digital sensor is used to record temperature on the OM-DAQLINK-TEMPRH.

Custom Sensor Names

You can also give the sensor a custom name, which will appear in the software when viewing the data. This is convenient when using several of the same type of sensors and you wish to differentiate between them in terms of their environment or material it is measuring.

Recording Time

This field displays the length of time the logger memory will be able to record for depending upon the number of sensors used and sampling rate.

Setup and Run

Clicking **Setup and Run** will send the setup to the logger and immediately start logging data.

Setup Only

Clicking **Setup Only** will send the setup to the logger but it will not actually start logging data. You will need to select **Run** from the Logger context menu or go back into the Setup dialog.

Close

Clicking **Close** will close the Setup dialog without saving any of your configurations.

Note: Running the logger clears the logger memory. All previously recorded data will be erased when you begin a new logging session

5.15.2. OM-DAQLINK Alarm Setup Tab

A major feature of the OM-DAQLINK system is the ability to configure alarm levels into the loggers so any breach of these levels as recorded on the data logger is monitored by the software, and the user is notified via Email/SMS/audible and visual indicators.

The Alarm Setup tab lets you configure each sensor for the following alarms:

- Low
- Pre-Low
- Pre-High
- High
- Contact Open / Contact Close (when the Contact sensor is selected)

Using the Pre Alarms gives the user ample warning of a possible breach of real alarm levels, so necessary measures can be taken to prevent such a breach.

Simply select the check box for the type of alarm you wish to be notified. You can select all alarms too. Enter the alarm value in the text box.

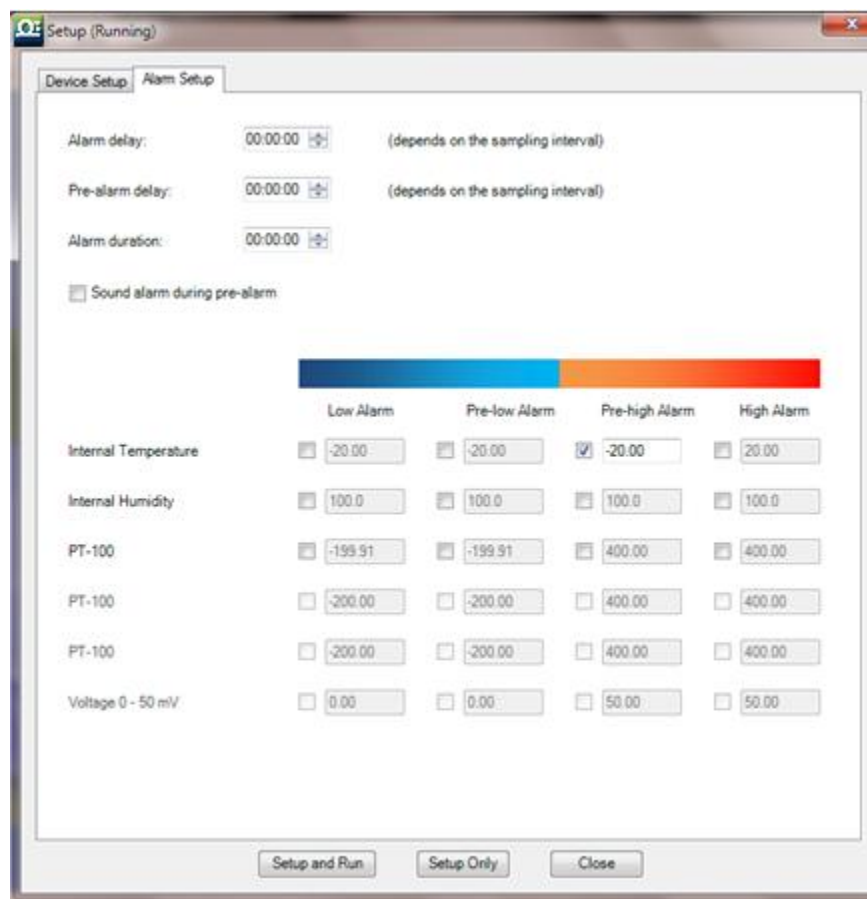


Figure 32: OM-DAQLINK Alarm Setup tab

Alarm Delay and Pre-alarm Delay

The time until the alarm (or pre-alarm) is activated. You may not want to have the alarm sound immediately after the alarm level is breached as you are only interested in a condition where the alarm level lasted a certain amount of time.

For example, if monitoring change of temperature in a freezer, you would only be interested in a High alarm which lasted more than one minute as anything else could just be caused by the freezer door opening for a few seconds, as opposed to a power failure leading to rise in temperature.

Alarm Duration

The duration of the alarm that is set off by one or more sensors breaching the alarm level.

Sound Alarm during Pre-alarm

You also have the option to sound the alarm in the software during a pre-alarm scenario, not just for a standard alarm.


Once you have configured your alarms, you may return to the **Device Setup** tab or click one of the **Setup** buttons at the bottom of the tab.

5.16. Alarm Notifications Setup

Once you have completed the logger alarm setup, you can configure DataSuite to send alarm notifications via Email or SMS.

From the **Tools** menu select one of the following options, depending on the type of notifications required:

- Email Alarm Notification
- SMS Alarm Notification

Or click the Email  or SMS  icons located in the upper toolbar in order to launch the notification dialog.

Note: To enable sending of Email or SMS first define the Email and SMS settings in the **Tools > Options** dialog. Connect a GSM modem to the PC if sending SMS's. Refer to section 5.7 on page 44 for more details.

You may manage your contact list of alarm notification recipients from either the **Manage Contacts** menu item in the Tools menu, or from within the Alarm Notification dialog itself.

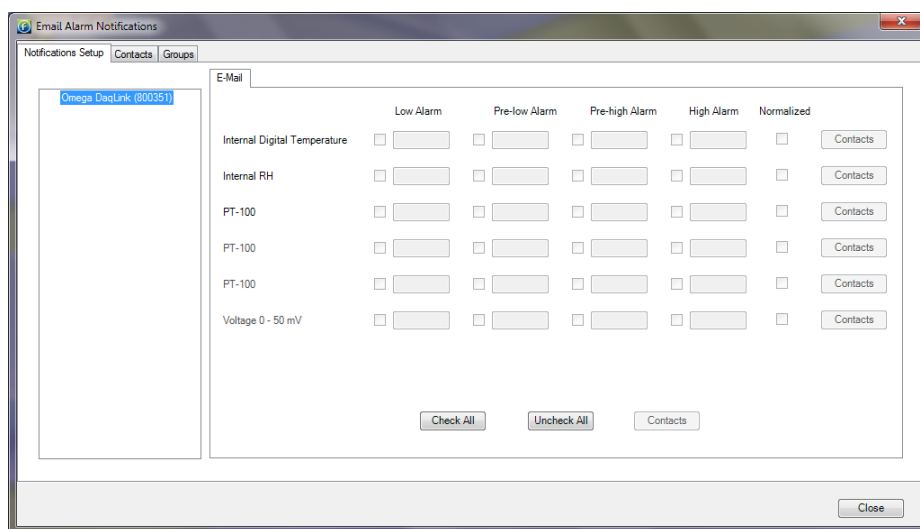


Figure 33: Alarm Notifications Setup dialog

As the Email and SMS Alarm Notifications must be defined separately, they each have separate dialogs. However the interface is identical and the contacts are stored in the same database.

The Email/SMS Notifications dialog is divided into the following tabs:

- Notifications Setup
- Contacts tab
- Groups tab

5.16.1. Contacts Tab

The first step is to create the contacts who shall be receiving the notifications. The ability to manage contacts is possible from both the Email and SMS Notifications dialogs.

1. Click the **Contacts** tab and then click **Add Contact**.

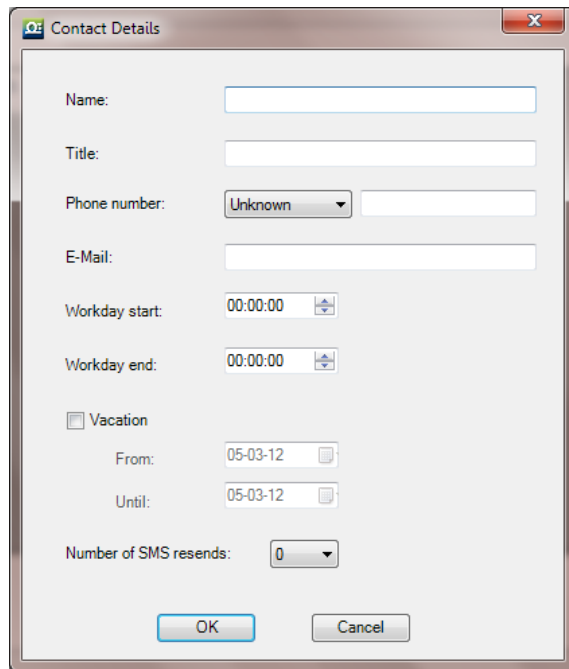


Figure 34: Adding a contact

2. In this dialog you must first enter the contact name in the **Name** field. That is the only mandatory field but if you don't enter at least the phone number or Email then they won't receive any alarm notifications.

The other fields in the dialog are as follows:

- **Title:** Corporate position
- **Phone number:** The number the DataSuite software will use to send the SMS notification.
- **Note:** The phone number field supports the following characters: 0-9, #, *, -, (), +
- **Email:** The address the DataSuite software will use to send the Email notification.
- **Workday Start and End:** You can define the hours in which the contact will be eligible to receive the notifications i.e. so they don't receive SMS or Email while in the office, or vice versa.
- **Vacation:** You can define when the contact is on vacation so they won't receive any notifications over this period.
- **Number of SMS resends:** The number of times DataSuite will send follow-up SMS's with the alarm notification. The maximum is nine resends per alarm. *The gap between each resend is five minutes.*

Note: In order to stop receiving SMS resends, you can simply send an SMS with 'OK' in the message body to the GSM SIM card's phone number.

3. When the contact details have been entered, click **OK**.
4. The contact will be added to the **Contacts** tab. You may choose to add another contact, edit an existing contact or remove a contact from the list.

5.16.2. Groups Tab

1. Click the **Groups** tab and then click **Add Group**. The **Group Details** dialog will open.

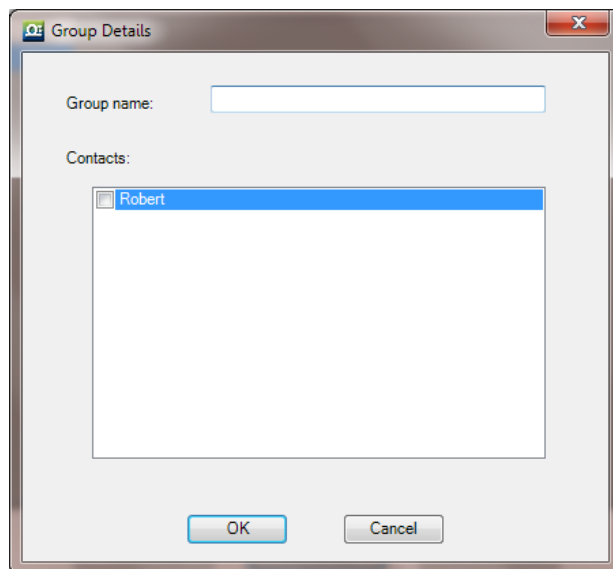


Figure 35: Adding a group

2. Enter a Group name and add your existing contacts to the group by selecting the checkbox next to the Contact name.
3. Click **OK** to create the Group. In the Groups tab you may choose to add a group, edit an existing group or remove a group from the list.

5.16.3. Notifications Setup Tab

1. Once the contacts have been created you may start defining which contacts should receive the alarm notifications.
2. The pane on the left-hand side of the **Notifications Setup** tab displays all of the units and their serial numbers. You must define the alarm notifications for each unit in turn. Select the first unit you wish to define.
3. The **Email** or **SMS** tab is now active for the unit selected in step 1 above. In this tab, select the type of alarm for which the notification should be sent in the event that the predefined alarm level is breached.
4. Only the sensors which were configured in the logger Setup, with alarms levels, are enabled in this tab.
5. Select the checkboxes according to the type of sensor alarm for which notifications should be sent.

You may also select the following alarms:

- a. **Battery alarm:** Notification will be sent for low battery alarm when battery level is at or drops below 10%. When the battery level goes above 10% again, when unit is connected to AC power, another email notification is sent stating the battery is charging.
 - b. **Normalized:** Notification will be sent when the logger return to normal levels having been in alarm.
6. Click the **Contact** button adjacent to each of the sensors which have defined alarms. In the **Select Contact** dialog, select the contact and/or group that will receive the notification.
 7. You can also click **Check All** to select all the sensor alarms for notification.

5.16.4. Email and SMS Notification Formats

Email Notification Format

When the Email notification is sent the recipient receives the Email in the following format:

Email Header:

OM-DAQLINK Alarm: Internal Temperature High Alarm, Value Detected: 25.47C

Email Body:

OM-DAQLINK Alarm
Comment: Factory 1/F
S/N: 808932
08-07-09 13:53:41
Internal Temperature Low Alarm,
Value Detected: 25.47 C

The Email header contains the sensor type, last recorded sample, and alarm type.

In addition the Email body contains the logger comment, serial number, time stamp of last sample and value of last sample.

SMS Notification Format

When the SMS notification is sent the recipient receives the SMS in the following format. (The logger comment is displayed in the first row).

S/N 515244, Test 810#2, Int. Temperature 15/1/10 17:25 – High Alarm, Value Detected: 24.24C

5.17. Calibration

All Omega data loggers are shipped fully calibrated either with a calibration certificate or a Declaration of Accuracy certificate. However, DataSuite does provide a simple and efficient process for users wishing to calibrate their data loggers themselves. The process itself is performed with the OM-DAQLINK unit connected via USB cable. As with any data logger calibration a calibrator or other type of calibration instrument is necessary.

The Calibration options are accessible via the Logger context menu in the Map View (right-clicking the Logger icon).

Before performing logger calibration, the logger must be in **Stop** mode. In addition, all of the calibration options are accessible with a password to prevent non-authorized users of the system tampering with the loggers' calibration settings.

Note: The default password is 1234. The password can be changed in the password dialog box.
--

The Calibration option menu options are:

- **Calibration:** Opens the main Calibration dialog
- **Save Calibration:** Saves the logger's current calibration settings
- **Load Calibration:** Loads a logger's previously saved calibration settings.
- **Reset Calibration:** Resets the logger's calibration settings so that the raw hardware data is obtained, without any software calibration applied to these values.
- **Restore Factory Calibration Default:** Restores the logger's calibration settings to the factory calibration i.e. the calibration settings it received prior to shipment from Omega.

5.17.1. Introduction to Calibration

Although the data loggers come fully calibrated, the software enables you to calibrate any of the logger sensors, on any input. The calibration parameters are sent to the data logger and stored in its memory.

DataSuite employs two different calibration methods: Two-point calibration and Offset calibration .

Each sensor can be calibrated using the Two-point calibration method, and then tweaked using offset calibration, except for the Thermocouples. These sensors require offset calibration only.

OM-DAQLINK Sensor Inputs

Sensor	Type	Calibration Method
Current	4 – 20 mA	Two-point calibration
Humidity (Internal)	Digital	Two-point calibration
Temperature (Internal)	Digital	Two-point calibration
Temperature (Internal)	PT-100	Two-point calibration and offset
Temperature	PT-100 2-wire	Two-point calibration and offset
Temperature	Thermocouple J	Offset calibration
Temperature	Thermocouple K	Offset calibration
Temperature	Thermocouple T	Offset calibration
Voltage	0 to 1 V	Two-point calibration
Voltage	0 to 50 mV	Two-point calibration

Calibration Tips

Prior to any two-point calibration it is recommended to restore factory calibration defaults.

Prior to calibrating any of the thermocouple sensor types, calibrate the Voltage 50 mV sensor as this will set the gain (slope) of all thermocouple sensor types.

After calibrating 50 mV, TC-J, TC-K or TC-T sensor types for all inputs you can refine the offset calibration for each input individually.

You may calibrate all thermocouple sensor types at once, or individually.

Prior to calibrating the PT-100 input, you must first perform **Reset Calibration** in the Calibration dialog.

Two-point Calibration

The two-point calibration sets the gain (slope) and offset (intercept) of the sensor's conversion function.

Use the two-point calibration to calibrate all OM-DAQLINK sensors except for the Thermocouples. In some cases you may need to refine your calibration using the fine offset tuning tool.

Offset Calibration

To calibrate the Thermocouple temperature sensors: TC-J, TC-K and TC-T, first calibrate the 50 mV sensor type. That will set the slope for all Thermocouple temperature sensors. Then proceed to adjust the offset using the Offset calibration technique.

5.17.2. Calibrating the Data Logger

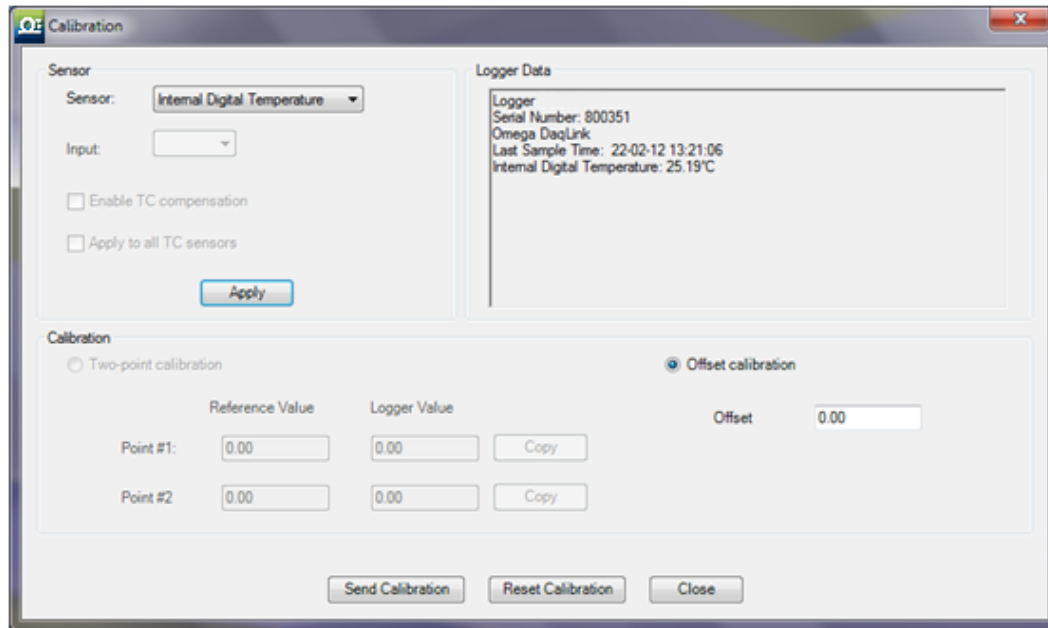


Figure 36: Calibration dialog

1. From the Map View, open the Logger context menu and select **Stop**.
2. Select **Calibration > Calibrate** and enter the password in the **Password** dialog.
3. Select the sensor you wish to calibrate from the **Sensor** drop-down menu.
4. If calibrating an external sensor, select the inputs to calibrate. Select **All** or an individual input, **1 to 4**.
5. Click **Apply** to send the sensor setup to the logger.

Note: The calibration process does not delete the logger's setup prior to calibration. Once Calibration is complete the original logger setup will be restored.

6. If you selected **All** inputs, then by default the logger will be setup to log data on **Input 1** during the calibration process. Otherwise, if you selected a specific input, it will setup the logger to calibrate on that input.

Logger Data Pane

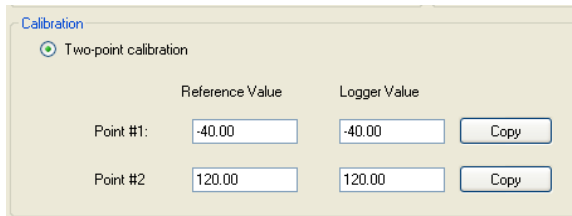
The Logger Data pane displays real-time readings on the logger, at a default sampling rate of one per second. You can also view the logger's general status. Use the Logger Data pane to verify your logger is properly calibrated.

The Calibration dialog will enable either Two-point or Offset calibration, or both, depending on the sensor selected.

Note: The calibrated sensor parameters will be saved both in the logger and in the software memory, so there is no need to calibrate the logger every time you run the software.

5.17.3. Performing a Two-point Calibration

To perform a two-point calibration, you must have two reference points to input against the real logger sensor values.



	Reference Value	Logger Value	
Point #1:	-40.00	-40.00	Copy
Point #2:	120.00	120.00	Copy

Figure 37: Two-point calibration window

1. In the **Point #1** field, enter the first **Reference Value** and the corresponding **Logger Value**.
2. In the **Point #2** field, enter the second **Reference Value** and the corresponding **Logger Value**.

Note: If you are using a calibrator and the logger is currently displaying the real value to be calibrated, press the **Copy** button to copy the real value to the **Logger Value** text box.

3. Press **Send Calibration** to send these values to the logger memory.
4. Compare the real value in the Logger Data pane to the reference value. If the values are within an acceptable margin of error you may close the Calibration window, or move on to the next sensor or input.
5. If the values are still not accurate enough, you can perform Offset calibration to tweak with values further.

Note: Omega strongly recommends calibrating using the default Reference values that appear in the two Reference value text boxes for each sensor.

5.17.4. Performing an Offset Calibration

If, after the Two-point calibration procedure, the logger still exhibits some offset value use the Offset calibration tool to correct it.

The offset value is the difference between the value displayed by the logger and the reference value. For example if the calibrator is set to 0 °C and the logger reads 1 °C the offset value is +1, but if the logger reads -1 °C then the offset value is -1.

To perform an Offset calibration, simply select the **Offset calibration** radio button to enable the **Offset** text box. For Thermocouples you will only have the option to perform an Offset calibration.

Enter the offset value in the text box and click **Send Calibration**. Continue to adjust the offset accordingly until satisfied with the readings.

5.17.5. Setting the Offset to a Specific Input

After setting the offset to all inputs simultaneously, you can set the offset of each input separately for even better accuracy.

To set the offset of a specific input:

1. Measure two known reference values making sure to use the input you need to calibrate.
2. Enter the offset value as described in section 5.17.4 above, making sure to select the correct input number instead of **All**.
3. You can repeat the procedure for every input.

5.17.6. Calibrating the Internal Temperature Sensor on the OM-DAQLINK-TEMP

The OM-DAQLINK-TEMP internal temperature sensor is a PT-100 sensor. Calibration of this sensor is performed by calibrating the external PT-100 input i.e. two-point calibration followed by offset calibration.

1. In the Calibration dialog, select **PT-100** in the Sensor drop-down menu and select **All** inputs.
2. Press **Setup** to proceed.
3. Connect a calibrator or an actual PT-100 sensor to Input-1. Calibrate the input using the reference values.

Once this calibration procedure is complete both the logger's internal temperature sensor (PT-100) and external PT-100 inputs will be calibrated.

5.17.7. Calibrating the External PT-100 Sensor Input

OM-DAQLINK PT-100 calibration is a standard 2-point calibration followed by offset calibration. Once the PT-100 sensor has been selected in the **Sensor** drop-down menu, click the **Reset Calibration** button. Then proceed with the 2-point calibration procedure.

Before each calibration this step must be performed otherwise the calibration will not be accurate.

5.17.8. Saving Calibration Settings

At any time you may manually save the logger's calibration settings locally to your PC.

1. Open the logger context menu, select **Calibration > Save Calibration** and enter the password to access this feature.
2. The **Save As** dialog will open. Name the calibration file (with extension .dcf) and save it either in the default Calibration folder in the DataSuite directory or in a folder of your choice.

5.17.9. Loading Calibration Settings

You can load a previously saved DataSuite .dcf calibration file at any time to restore a logger's restore specific calibration settings.

1. Open the logger context menu, select **Calibration > Load Calibration** and enter the password to access this feature.
2. In the **Open** dialog, browse to the calibration file you need and click **Open**. The logger will be updated with the new calibration settings.

5.18. Analyzing the Data


When in offline (History View) or online data displays, you have a number of features for analyzing the on-screen data. The features for analyzing data while in the graph display are practically the same when in offline or online mode.

5.18.1. Using the Graph Features

The following section explains how to use the numerous graph analysis features, including an overview of the graph toolbar options.



Please first refer to section 5.4.5: DataSuite Toolbar Icons for a full overview of the graph toolbar.

Autoscaling


Click **Autoscale**  on the graph toolbar to view the full data display, thereby restoring the axis range to its default settings.


Zooming

To zoom in to a specific area of the graph:

1. Click **Zoom in**  on the graph toolbar.
2. Drag the cursor diagonally to select the area you want to magnify. Release the mouse button to zoom in to the selected area.
3. Click **Zoom in**  a second time to disable the zoom tool.
4. Click **Autoscale** to restore the default display.

Panning

Use the **Pan** tool  to pan along the x or y axis or after zooming in, to see any part of the graph that is outside the zoomed area.

1. Click **Pan**  on the graph toolbar, then click anywhere on the graph and drag the mouse to view another area.
2. Click the **Pan** icon a second time to disable the **Pan** tool.

The Cursor

You can display up to two cursors on the graph simultaneously.

Use the first cursor to display individual data recording values.

Use two cursors to display the difference between two coordinate values, to display the frequency of periodic data or to select a range of data points.

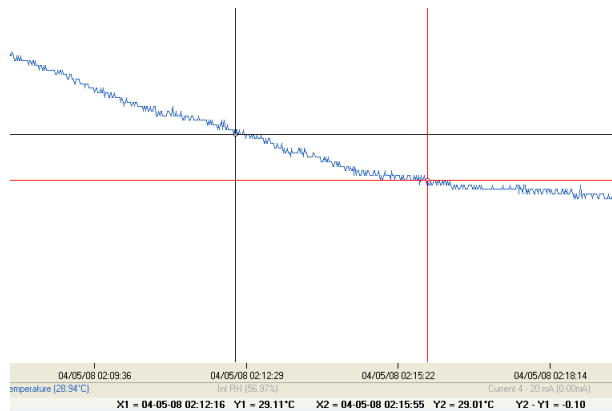



Figure 38: Example of using two cursors


When using two cursors, the Statistics feature will calculate statistics according to the data set between the two cursors.

To display the first cursor:

Click **1st Cursor**  on the graph toolbar. You can drag the cursor with the mouse onto any other point on the plot, or onto a different plot. For finer cursor movements use the forward and backward keys on the keyboard.

The coordinate values of the selected point will appear in the information bar at the bottom of the graph window.


To display the second cursor:

Click **2nd Cursor**  and drag the cursor with the mouse onto any other point on the plot. The information bar will now display the difference between the two coordinate values.

To remove the cursors:

Click the cursor icons a second time.

Grid

Click the **Grid** icon  to add a grid to the background of the graph view. To remove the grid, click the icon again.

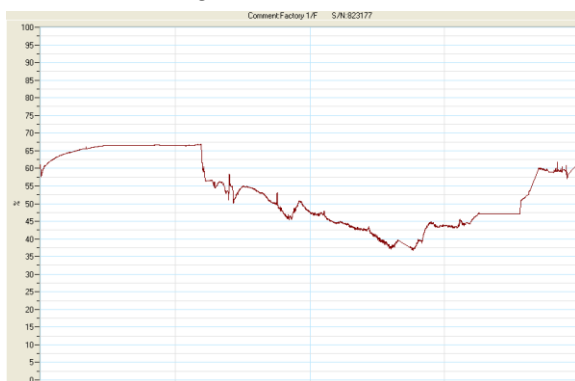



Figure 39: Graph with grid in background

Show/Hide Time Stamps


This feature is not supported by the OM-DAQLINK. By default, the Time Stamp icon  is enabled to display in the online or offline graph, any time stamp marked using the OM-MICROLITE or OM-MICROLOGPRO data loggers.

Add Custom View

Whenever the graph in History View is modified, either by using the Zoom tool, changing the scale, panning the graph, etc. you have the option to add this customer graph view to the Data Map, under the Custom Views node. This will enable you to save projects which include the custom graph view for future reference.

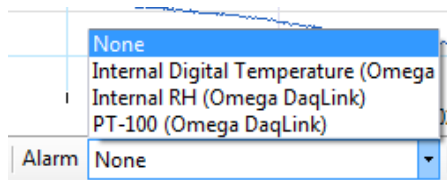
Click the **Add Custom View** icon  to perform this function.

Copying the Graph

Click the **Copy Graph** icon  to copy the graph to the clipboard, and paste it into another application, such as a word processing or spreadsheet application.

Displaying Alarm Levels

Open the Alarm drop-down menu and select the relevant sensor to display its alarm levels.




The Stretch/Compress Axis Tool

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

To select a data set to display on the Y-axis, click on the data set's name in the Y-axis list. To display more than one curve, click on the data sets you want.


Formatting the Graph

You can change the plot line's color and width. The color of the Y-axis matches the corresponding plot's color and will automatically change with any change made to the color of the corresponding plot.

1. Click **Graph properties**  on the graph toolbar.
2. Click the **Style** tab, and unselect the **Use system line properties** checkbox.
3. Select the axis you want to format in the **Axis** drop-down menu.
4. Select the color and line width.
5. Click **OK**.


6. To restore the default formatting, select the **Use system line properties** checkbox again.

Manual Scaling

1. Click **Graph properties**  on the graph toolbar.
2. Select the **Axis Scaling** tab and with the **Group plots by units** checkbox *unselected*, select the axis to manually scale from the drop-down menu e.g. Date & Time axis.
3. Uncheck the **Autoscale** check box and enter the custom values in the text box i.e. a time range, in the case of the Time & Date axis, or a set of values.
4. Click **OK**.
5. To restore auto scaling select the **Autoscale** checkbox.

Manual Scaling - Grouping Plots by Unit

You may choose to group all of the sensors measuring the same unit, to the same scale. For example, if you have several temperature sensors in your data set, all measuring Celsius, you can apply a common scale when displaying the data from these sensors.

1. Click **Graph properties**  on the graph toolbar.
2. Select the **Axis Scaling** tab and select the **Group plots by units** checkbox.
3. In the **Axis** drop-down menu select the unit by which you wish to group the plots.
4. Uncheck the **Autoscale** check box and enter the custom values in the text box.
5. Click **OK**.
6. To restore auto scaling select the **Autoscale** checkbox.

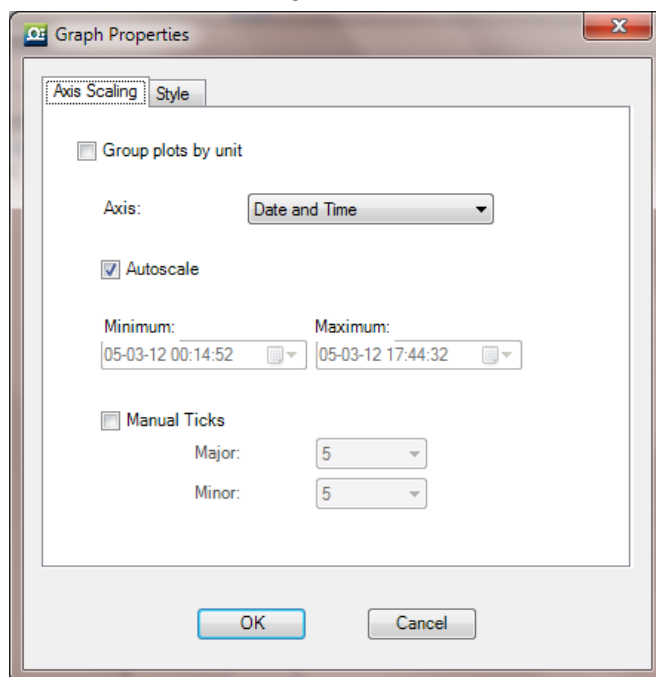


Figure 40: Grouping plots by units


5.18.2. Changing the Graph, Table or Statistics View Header

Each Graph, Table or Statistics tab has a header located above the specific view. The default headers are:

- DataSuite - Graph
- DataSuite - Table
- DataSuite - Statistics

The header will also be included when printing the graph.

To change the header:

1. Click **Graph Properties**  on the graph toolbar.
2. Click the **Style** tab and enter the graph header in the Header field.

5.18.3. Statistical Analysis

DataSuite also provides some basis statistics regarding the open data sets. While in History View or online Data Display view, click the **Statistics** tab.

For each of the sensors in the data set, you will have the following statistics displayed:

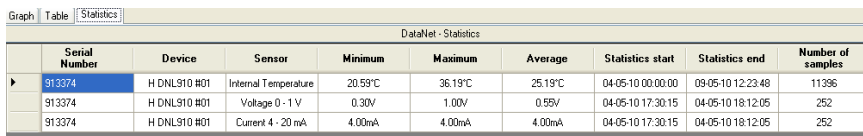
- Minimum / Maximum values
- Average value
- Number of samples

You will also see the Logger name and SN, as well as the start and end time of the statistics data range.

While in online mode these statistics are updated in real-time.

If you zoom onto a section of the graph, the statistics are dynamic and will therefore display statistics of the zoomed graph, not of the whole graph.

If using the cursors, the statistics will be calculated according to the data set between the two cursors.




Serial Number	Device	Sensor	Minimum	Maximum	Average	Statistics start	Statistics end	Number of samples
913374	H DNL910 #01	Internal Temperature	20.59°C	36.19°C	25.19°C	04-05-10 00:00:00	09-05-10 12:23:48	11396
913374	H DNL910 #01	Voltage 0 - 1 V	0.30V	1.00V	0.59V	04-05-10 17:30:15	04-05-10 18:12:05	252
913374	H DNL910 #01	Current 4 - 20 mA	4.00mA	4.00mA	4.00mA	04-05-10 17:30:15	04-05-10 18:12:05	252

Figure 41: Statistics View

5.19. Exporting Data to Excel or CSV Formats

DataSuite supports exporting data to Excel or CSV file formats (CSV stands for *comma separated values*).

To export to Excel, click **Export to Excel**  in the online or offline lower graph toolbar, or go to **Analysis > Export to Excel** (while viewing data in History View). The data currently displayed on the graph is exported. Data from more than one data logger may be exported simultaneously.


DataSuite will then open a new Excel workbook displaying the data as well as other pertinent information such as logger comment, serial number and the alarm level setup. Data that exceeds any of the alarm levels will be indicated.

	A	B	C	D	E
1	Comment		Freezer 1/F		Freezer 1/F
2	S/N		85007		85007
3	Sensor		Internal Digital Temperature		Internal RH
4	Low		-40		
5	Pre-low				
6	Pre-high				
7	High		80		
8					
9	Date	Time	Internal Digital Temperature	Alarm Type	Internal RH
10	3/7/2011	23:41:49	27.95		
11	3/7/2011	23:41:50	27.97		
12	3/7/2011	23:41:51	28		
13	3/7/2011	23:41:52	28.01		
14	3/7/2011	23:41:53	28.01		
15	3/7/2011	23:41:54	28.04		
16	3/7/2011	23:41:55	28.04		
17	3/7/2011	23:41:56	28.05		
18	3/7/2011	23:41:57	28.05		
19	3/7/2011	23:41:58	28.05		

Figure 42: Example of data exported to Excel

Only offline data opened in History View can be exported to CSV and is available under the Analysis menu.

5.20. Printing the Data

You are able to print data by clicking the **Print** icon  from the lower toolbar in Graph, Table or Statistics tabs of the offline or online data displays. Clicking the Print icon will open the **Print Setup** dialog where you will need to select the printer to print to.

When printing a table, you can select the specific data range you wish to print. You are able to adjust the date and time in order to narrow the data range.

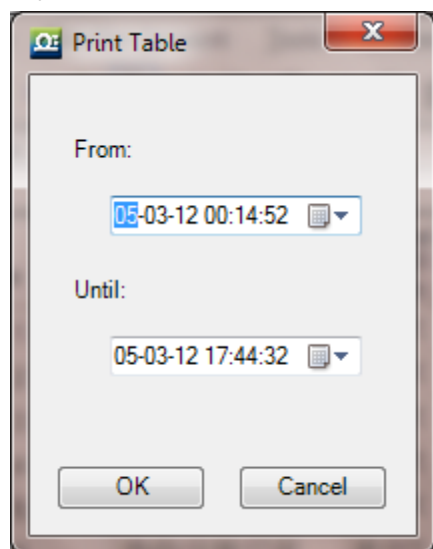


Figure 43: Printing a table

5.21. Reports Module

The Reports module provides an intuitive interface for creating and generating DataSuite reports. Each report contains a wide range of parameters garnered from all units supported by the software. Each report can be sent via e-mail to a selected distribution list, at pre-defined time intervals, in PDF and Excel format.


All reports are saved in the default directory:

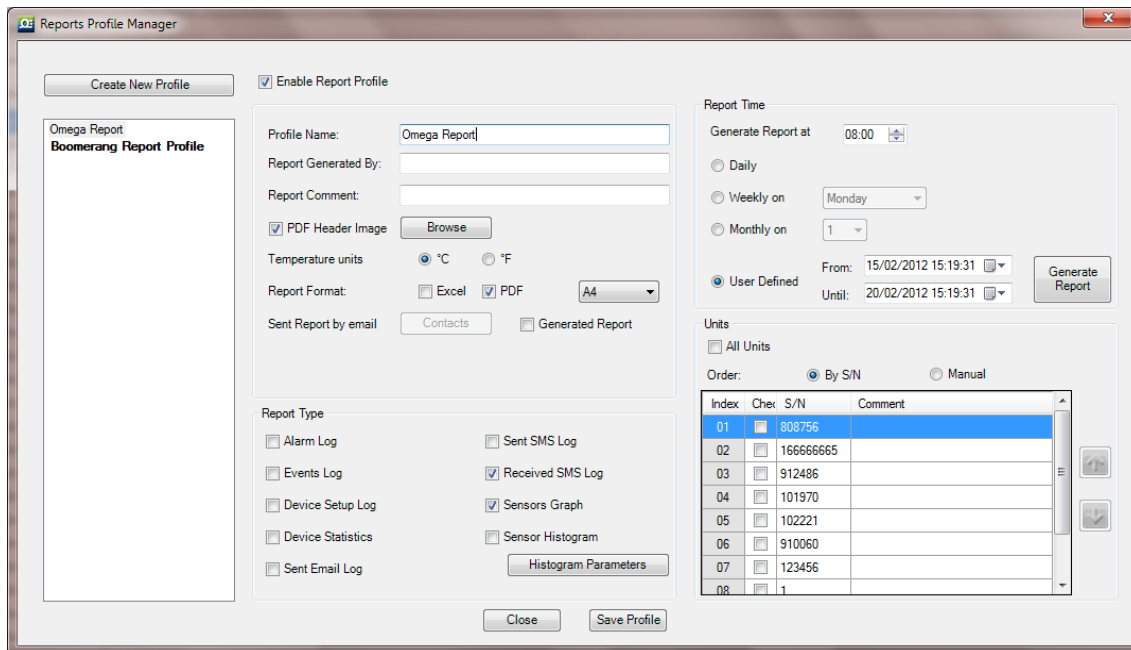
C:\Program Files\Omega\DataSuite\Reports

To change this path go to the Preferences tab in **Tools > Options**.

5.21.1. Creating a Report Profile

The first step when creating a report is to create a new Report Profile. The user can create multiple profiles, each configured with different parameters. To generate a report, at least one profile must be enabled.

1. Go to **Reports > Reports Profile Manager** in the main menu, or click the corresponding icon  in the upper toolbar.
2. Enter the system password. The Reports Profile Manager window will open.
3. Click Create New Profile.



Index	Cher	S/N	Comment
01		808756	
02		166666665	
03		912486	
04		101970	
05		102221	
06		910060	
07		123456	
08		1	

Figure 44: Reports Profile Manager window

4. Select the **Enable Report Profile** checkbox to enable all fields in the window. Each profile that is enabled will have a report generated. If no profiles are enabled, DataSuite will not generate any reports.
5. Enter a suitable profile name in the **Profile Name** field.
6. Enter your name in the **Report Generated By** field.

7. Enter a description of the report in the **Report Comment** field.
8. Each report created in PDF format contains a header. To change the report's header, select the **PDF Header Image** checkbox and click **Browse** to locate the relevant image. The default Omega header is:



Note: The recommended header dimensions are 525 x 50 pixels, 72 dpi. If a header with different dimensions is loaded, then the software will automatically resize the header dimensions.

9. Toggle the temperature unit to appear on the report, if any of the logger's are configured to measure temperature.
10. Next to **Report Format**, select the checkbox next to the required format in which to generate the report. *Excel*, *PDF* or both formats. For PDF format, select the page size, *A4* or *Letter*, from the drop-down menu.
11. Click the **Generated Report** checkbox to send the report via email to a selected distribution list. Click **Contacts** to open your contact list and select the relevant contacts to receive the report via e-mail. If your contact list is empty then the **Select Contacts** window will automatically open when first clicking Generated Report.

Note: To send reports via e-mail, ensure the DataSuite e-mail settings are correctly configured in **Tools > Options > e-mail Settings**.

12. In the **Report Type** pane, select at least one of the report type checkboxes. You will not be able to save the profile unless a report type has been selected.
13. The available types are below. For more details regarding each type, refer to section 5.21.2:
 - Alarm Log
 - Events Log
 - Unit Setup Log
 - Unit Statistics
 - Sent Email Log
 - Sent SMS Log
 - Received SMS Log
 - Sensors Graph
 - Sensor Histogram

14. Once a Report Type has been selected, immediately click **Save Profile** to avoid losing your unsaved profile.
15. Use the **Report Time** pane to select the interval when the report will be generated and emailed to the contact list (if desired):
 - a. Next to **Generate Report at** select the time when the report should be generated.

Note: To allow for data samples recorded in the last minute prior to the defined time, the report will actually be generated 10 minutes after the defined time.

- b. Select the date when the report should be generated. The options are *daily*, *weekly* or *monthly*. Select the specific day for the latter two options.

- c. The user can also select a report according to a specific time period. Select the **User Defined** option, choose the period and click **Generate** to manually generate the report according to the defined parameters.
16. Use the **Units** pane to select which loggers should be included on the report itself.
- a. Select the **All Units** checkbox to include all network units.
 - b. To include a specific selection of units, unselect the **All Units** checkbox and manually select the checkbox for each unit.
 - c. The order in which the units will appear on the report can be defined according to Serial Number by selecting **By S/N** and clicking the S/N header or manually, by selecting **Manual** and clicking the Up and Down arrows.
 - d. The definition of the report is now complete. Click **Save Profile** and then **Close** to exit the Reports Profiles Manager. A report will be generated at the defined time.

5.21.2. Report Types

Each report contains at least one Report Type, with the data displayed in table format. A description of each Report Type parameter in the Reports Profile Manager is provided below.

Alarm Log

- Parameters include sensor name, setup, alarm parameters, and setup time. In addition, each sensor alarm value is listed according to the relevant setup. If there are other setups in the report time frame then additional setup tables and alarm tables will be displayed.
- Battery alarms will be listed after the sensor alarms.
- If no alarms were recorded during the report time frame, a *No Alarm Events* message will be displayed.

Events Log

Logs all events of each logger in the Report, as well as the time of the event. The relevant OM-DAQLINK events are:

- Setup
- Run
- Stop
- Firmware updated, including indication of previous and updated firmware version

Unit Setup Log

- Logs all the setups of the logger during the logging period
- If no setups were performed during the report time frame the a *No New Setup* message will be displayed

Unit Statistics

Displays statistics for each sensor in the report. The calculated parameters are:

- Min

- Max
- Average
- Number of samples

Sent Email Log

Logs all emails that were sent during the report time frame.

The details in the Sent Emails Log are:

- Message that was sent
- Date
- Time
- To whom the message was sent (groups will be displayed as groups)

Sent SMS Log

Logs all SMS's that were sent during the report time frame.

The details in the Sent SMS Log are:

- Message that was sent
- Date
- Time
- To whom the message was sent (groups will be displayed as groups)

Received SMS Log

Logs all SMS's that were sent to the DataSuite software during the report time frame.

The details in the Received SMS Log are:

- Message that was received
- Date
- Time
- From whom the message was sent

Sensor Graph

The Sensor Graph log includes the following parameters:

- Unit comment and S/N indicated as the graph header
- Indication of sensor name, sensor type, start time & date and end time & date under each graph
- A small graph of each sensor that is defined in the logger with its alarm levels displayed according to the alarm colors. The graph will be created according to the last logger setup.
- The graph scaling will be set to autoscale
- The graph will include grid lines


- The alarm levels will be marked according to the alarm color and the alarm limit value will be indicated on the Y- axis
- The graph dimensions will be 7.5 cm x 10.5 cm

Sensor Histogram

- Unit comment and S/N indicated as the graph header
- Under each Histogram there will be indication of the sensor name, sensor type, start time & date and end time & date
- A small histogram of each sensor defined in the logger will be displayed
- The histogram will include an indication of the value of each bin on top of the bin
- The graph dimensions will be 7.5 cm x 10.5 cm

5.21.3. Removing a Report Profile


To remove an existing report profile:

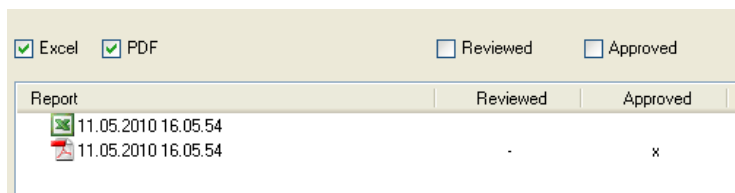
1. Go to **Reports > Reports Profile Manager** in the main menu, or click the corresponding icon  in the upper toolbar.
2. In the Profile list on the left side of the window, right-click the Report name to be removed and select **Remove** from the context menu.
3. Enter the system password and when prompted, confirm the action.

5.21.4. The Report Browser

Use the Report Browser to open or delete generated reports saved in the Reports folder in the default DataSuite directory.

Reports are displayed per Profile.

1. Go to **Reports > Report Browser** in the main menu, or click the corresponding icon  in the upper toolbar. The Report Browser window will open.
1. Select one of the profiles in the **Profiles** pane on the left side of the window. All reports generated under that profile will appear in the main Report pane.
2. Use the **Excel**, **PDF**, **Reviewed** and **Approved** checkboxes to filter the reports to be displayed in the Report pane.



3. To open a report click one of the reports in the list and click **Open**.
4. To delete a report click one of the reports in the list and click **Delete**.
5. Click **Close** to close the Reports Browser window.

Chapter 6:

Updating DataSuite Software and Firmware

DataSuite supports automatic software and firmware update whenever DataSuite is launched, as long as the computer is connected to the Internet. The update process is managed by Omega's **Uptodata** client. This client checks for updated software and firmware files located on the Omega server, and if any have been detected they are downloaded and updated on the user's computer. The user can also have DataSuite automatically update the network units' firmware or can choose to do so manually.

OM-DAQLINK is also supported by an easy USB firmware update process.

In addition to automatic firmware update, the DataSuite user can also manually update the firmware via the Firmware Update Center or from the Logger icon in Map View. Refer to the relevant sections in this chapter for more details.

6.1. Using the Uptodata Client

Use the Uptodata client to perform automatic checks for updated DataSuite software module and firmware versions, including updated versions of this OM-DAQLINK and DataSuite user guide. Once downloaded, DataSuite software and logger firmware is automatically updated. However, you also have the option to manually update firmware rather than automatically.

To use the Uptodata client follow the instructions below.

1. Ensure the computer is connected to the Internet and launch DataSuite.
2. Launch the **Uptodata** update client from the DataSuite main menu: **Help > Check for Updates**.
3. You will be prompted to proceed to check for new updates. Click **Next**. The client will then check for updates on the server, including updates to the Uptodata client itself.

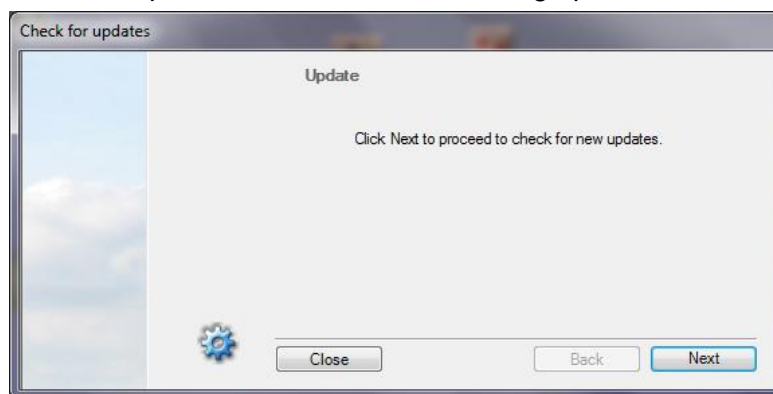
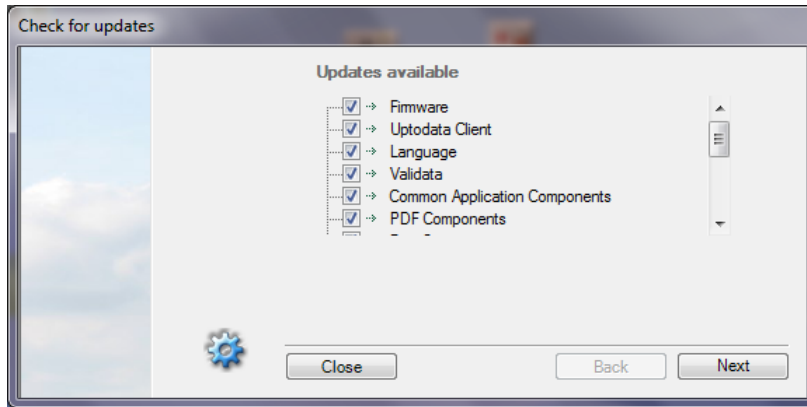
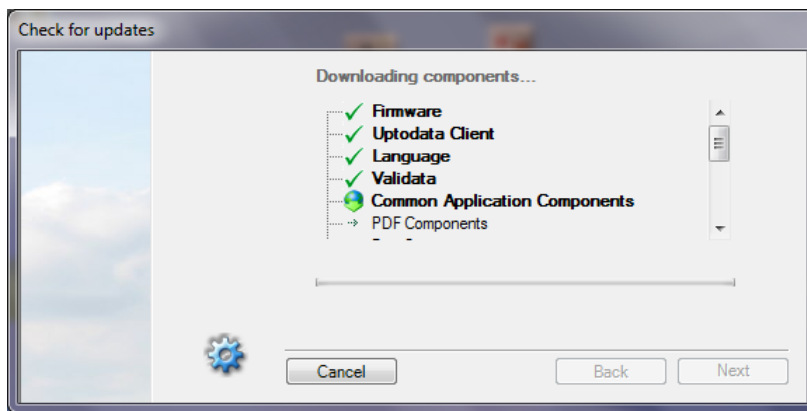



Figure 45: Uptodata dialog

4. Once the check is complete, any new updates will be displayed in the Uptodata dialog. Select the checkbox next to the file you wish to update and click **Next**.



5. The files will be downloaded to your default application directory. Click **Finish** to close the dialog once the download is complete.



6. Click the **Options**  icon in the main Uptodata dialog for further options such as:
- Checking for updates on startup (select **Further Configurations** menu item to modify frequency of update checking)
 - Automatic firmware update on startup

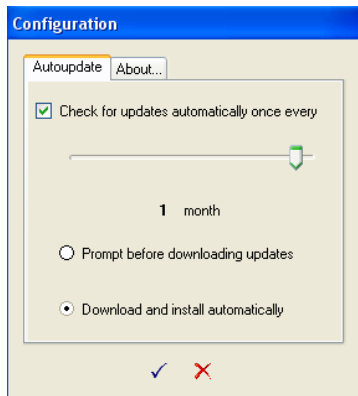


Figure 46: Uptodata configuration dialog

Note: If the update was canceled for any reason and was not completed, none of the previous installation files will be affected.

6.2. Updating Device Firmware

There are several ways to update firmware for your DataSuite supported hardware units.

- Automatically, using the Uptodata client. Refer to section 6.1.
- Manually using the Firmware Update Center. Refer to section 6.2.2.
- Manually, using the context menu on the device icons in Map View.

6.2.1. Downloading the Firmware File

There are two ways to obtain the OM-DAQLINK firmware file.

1. Using the Uptodata client to download from the Omega server. Refer to section 6.1.
2. Downloading the latest firmware version directly from the Omega Download Center at www.omega.com
3. Uptodata downloads the firmware file, named Firmware.dfw, to the DataSuite directory on the computer. The default path is: *C:\Program Files\Omega\DataSuite*.

Note: The firmware file combines firmware for all DataSuite supported hardware units into one file. There is no need to download separate files for each type of unit.

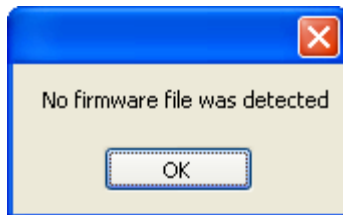
4. If you download the firmware file from the Omega Download Center make sure to copy the file to the same path listed above.

Once the file is downloaded the next step is to update the units.

6.2.2. Using the Firmware Update Center

To launch the Firmware Update Center:

1. Once the downloaded firmware file is in the DataSuite directory, go to **Tools > Firmware Update Center** from the main menu. Enter the password in the **Password** dialog to access the Update Center.
2. If no firmware file is detected in the DataSuite directory, then an error message is displayed and the Firmware Update Center opens with a blank screen.



3. Copy the firmware file to the directory and reopen the Firmware Update Center.

Note: The default password is 1234.

4. The Firmware Update Center dialog lists all units which were detected by the software and displays pertinent information such as available firmware versions, firmware update status, online/offline status and unit info.

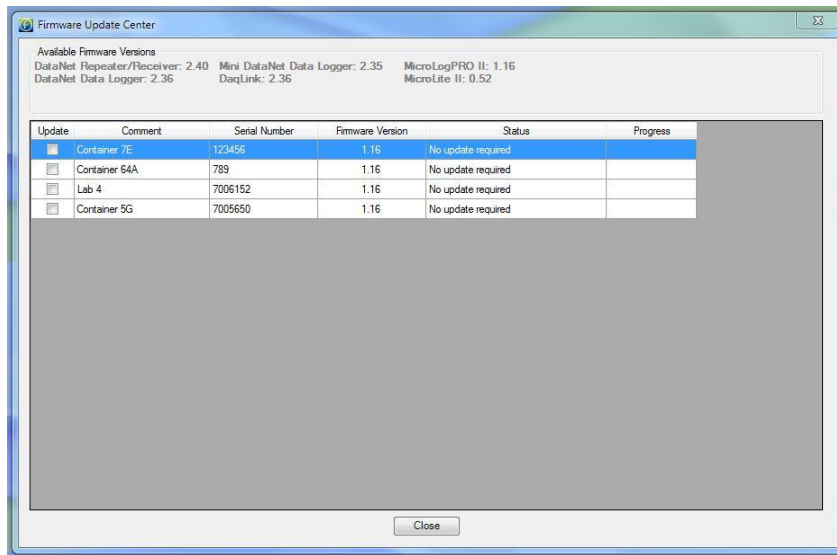


Figure 47: Firmware Update Center dialog

5. If the unit status is **Requires an update**, then select the checkbox in the **Update** column adjacent to the unit you wish to update. You may select as many units as you like to update, but **only two units can be updated at a time**.
6. As soon as you select the **Update** checkbox, the command will be sent to the unit to begin uploading the firmware. The firmware is first uploaded to the unit's memory and then installed. Even if the update is stalled halfway due to the unit shutting down, for example, the unit will not lose its current firmware and so will continue to be operable.
7. When the upload begins the Firmware Update Center status will change to **Uploading firmware file** and the unit display will read **Loading firmware**. The progress will also be displayed on both hardware and software.

Status	Progress
Uploading firmware file	26%
Requires an update	

8. When the upload is complete the unit will reset and the Firmware Update Center will display the status **No update required**. The firmware version will be updated as well.

Note: You can quit the firmware update at any time by unselecting the **Update** checkbox in the Update Center.

9. When the unit resets it will automatically reconnect via USB and will be in **Stop** mode. However the unit configuration will still be saved. For loggers which have completed firmware update, run the logger to start recording data again.

Checking Available Firmware Versions

1. Available firmware versions are displayed at the top of the Firmware Update Center dialog. The information is taken from the firmware file Firmware.dfw stored in the DataSuite directory. The same firmware file is used for all units.

Available Firmware Versions		
DataNet Repeater/Receiver: 2.40	Mini DataNet Data Logger: 2.35	MicroLogPRO II: 1.16
DataNet Data Logger: 2.36	DaqLink: 2.36	MicroLite II: 0.52

Unit Status Options

- **Offline** – unit is offline and firmware status can't be determined.
- **No update required** – Unit has latest firmware installed.
- **Uploading firmware file** – Firmware file is being uploaded to the unit. Progress is displayed in percentages.
- **Updating firmware** – Once firmware file is uploaded then the actual firmware update begins, overwriting the existing firmware on the unit.
- **Downloading** – Logger unit is first downloading all data before beginning the firmware update.
- **Waiting to upload firmware** – Unit is in a queue to upload the firmware, as the network can update two units at a time.

Unit Information

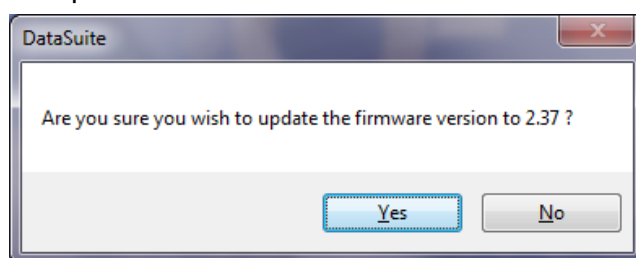
Additional information provided in the Firmware Update Center includes:

- The unit comment/name
- Serial number
- Current firmware version
- Unit status
- Update progress

6.2.3. Manual Firmware Update via Map View Icon

Each DataSuite supported device has the Update Firmware option in its Map View icon context menu.

1. To perform a direct update from a specific unit, open the context menu and select **Update Firmware**.
2. Enter the password in the **Password** dialog box.
3. Depending on the product model, a DataSuite system message may prompt you to confirm the update. Click **Yes**.



4. The firmware will begin updating and you can monitor its progress in the unit's tooltip.



6.2.4. Cancelling Firmware Update

To cancel a firmware update, right-click the unit's icon in the Map View and select the **Cancel Firmware Update** option.

If a data logger was in Run mode prior to the firmware update, when cancelling it the logger will resume operation in Stop mode.

6.2.5. Interrupted Firmware Update

There are several ways an in-progress firmware update may be interrupted:

- Unselecting the checkbox next to the unit name in the Firmware Update Center
- Disconnecting the USB from the device during USB firmware update
- Exiting the DataSuite software

In each case, when the unit is back online the firmware update will automatically resume (from the beginning of the update).

If a data logger's firmware update was interrupted, and it was in Run mode prior to the update, the logger will continue to run even after the interruption.

Appendix A:

OM-DAQLINK Specifications

A.1. Data Logger Input Types

OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

External Inputs

Four external inputs with selectable sensor type for each input:

- 4 to 20 mA
- 0 to 1 V
- 0 to 50 mV
- PT-100 (2-wire)
- Contact (Open/Closed)
- Thermocouple J, K or T
- Pulse counter (Input 4 only)
- Frequency (Input 4 only)
- User-defined sensors

Internal Inputs

OM-DAQLINK-TEMP

- PT-100 Temperature

OM-DAQLINK-TEMPRH

- Digital Temperature
- Digital Relative Humidity

A.2. OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH Outputs

Alarm Output (Output 1)	External Power Excitation (transducers usage)
Open collector Close position resistance: 50 Ω Max. Load: 50 mA, 3 V DC	12 VDC @ 2 A Reset fuse overload protection

A.3. Logger Input Specifications OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH

Internal PT-100 Temperature (OM-DAQLINK-TEMP)	Internal Digital Temperature (OM-DAQLINK-TEMPRH)	Internal Digital Relative Humidity (OM-DAQLINK-TEMPRH)
Type: PT-100 Range: -20 to 50 °C Resolution: 0.1 °C Accuracy: ±0.3 °C	Type: Digital sensor Range: -20 to 50 °C Resolution: 0.1 °C Accuracy: ±0.5 °C	Range: 5 to 95 % Resolution: 0.5% Accuracy: 3% (DataSuite software) 4% (Logger LCD)
Temperature Thermocouple J	Temperature Thermocouple K	Temperature Thermocouple T
Range: -200 to 1,000 °C Resolution: 0.1 °C Accuracy: -200 to – 60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 1,000 °C ±0.5 % Cold junction compensation: ±0.3 °C	Range: -200 to 1,000 °C Resolution: 0.1 °C Accuracy: -200 to – 60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 1,000 °C ±0.5 % Cold junction compensation: ±0.3 °C	Range: -200 to 400 °C Resolution: 0.1 °C Accuracy: -200 to – 60 °C ±0.5 % -60 to 60 °C ±0.5 °C 60 to 400 °C ±0.5 % Cold junction compensation: ±0.3 °C

Temperature PT-100 (2-wire)	Pulse Counter (Input 4 only)	Frequency (Input 4 only)
Range: -200 to 400 °C Resolution: 0.1 °C) Accuracy: -200 to - 60 °C ±0.5 % -60 to 60 °C ±0.3 °C 60 to 400 °C ±0.5 %	Zero crossing detector Range: 1 to 65,536 counts Resolution: 1 count Frequency range: 0 to 4 KHz Input signal: 0 to 5 V Input impedance: 470 Ω	Zero crossing detector Range: 20 Hz to 4 KHz Input signal: 0 to 5 V Input impedance: 470 Ω
4 to 20 mA	0 to 1 V	0 to 50 mV
Range: 4 to 20 mA Resolution: 4.76 µA Accuracy: ±0.5 % Loop impedance: 21 Ω	Range: 0 to 1 V Resolution: 200 µV Accuracy: ±0.5 % Input impedance: 25 MΩ Maximum voltage: 5.2 V	Range: 0 to 50 mV Resolution: 3 µV Accuracy: ±0.5 % Input impedance: 25 MΩ Maximum voltage: 5.2 V
Contact		
Range: Open/Close		

A.4. General Specifications

OM-DAQLINK Logger Sampling Features

- Memory capacity: ~38,000 samples in Online Mode
~59,000 samples in Optimized Memory Mode
- Sampling rate: Once per sec to once every 18 hours
- Sampling resolution: 16-bit
- Channel separation: 80 dB

OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH Hardware Specifications

Display

- 2-row LCD
- 16 character display

Power Supply

- *Battery:*
 - Internal rechargeable 4.8 V, 800 mAh NiMH battery (2 batteries in series)
 - Built-in battery charger
 - Battery Life: Up to six months depending on logger configuration

- *AC Power:*
 - External 12 V DC input @ 300 mA 3.6 VA
 - Center Negative

Operating Temperature Range

- -20 to 50 °C
- Water and dust proof: IP54

Man Machine Interface

Full keyboard operation

Standards Compliance

CE, FCC, IC Canada

A.5. System Requirements

Software	Hardware
<p>OS Platform: Windows XP SP3, Windows Vista and Windows 7 (32 and 64-bit)</p> <p>Screen Resolution: Minimum 1024 x 768</p>	<p>Processor: Pentium 4, 2.0 GHz or better</p> <p>Memory: 512 MB RAM</p> <p>Storage Memory: 250 MB available disk space for the DataSuite application</p>

Appendix B:

Safety Information

The OM-DAQLINK system complies with relevant safety regulations for data processing devices. Please contact Omega with any questions regarding OM-DAQLINK safety issues.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

OM-DAQLINK Battery

The OM-DAQLINK-TEMP and OM-DAQLINK-TEMPRH devices are supplied with internal rechargeable 4.8 V NiMH batteries as well as connection to AC power.

- Do not tamper or drop the battery to avoid leakage of hazardous chemicals contained within.
- Do not puncture, incinerate, disassemble or expose the battery to temperatures above 122 °F (50 °C).
- Keep the battery away from children.
- Dispose of the battery only in accordance with local regulations concerning potentially hazardous waste. Do not throw in the garbage bin.
- Remove the battery when not using the OM-DAQLINK loggers for a significant period of time e.g. when the units are placed in long-term storage.

OM-DAQLINK AC Power Adapter

- Only use the AC adapter provided by Omega.
- Verify that your power outlet is suitable for the voltage of the AC adapter.
- If the AC adapter is connected to an AC outlet, make sure the area around the outlet is accessible and the adapter is not covered while in operation.
- Do not place the AC adapter on heat-sensitive material.
- Do not charge the OM-DAQLINK while situated in a carrying case or without sufficient airflow surrounding the loggers.
- Do not expose the adapter to direct sunlight or water.
- Do not tamper with the adapter components.

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.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

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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- ☑ pH, Conductivity & Dissolved Oxygen Instruments