



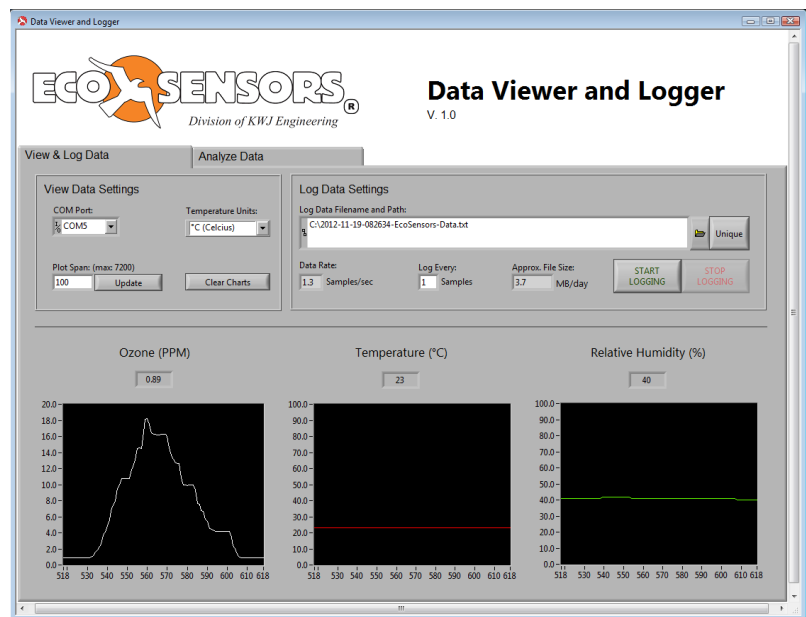
## Data Logging Software and Cable Bundle Model DL-SC3 User Manual

### Overview

Eco Sensors' Digital Products are capable of transmitting data to a computer via an RS-232 serial connection. Eco Sensors' DL-SC3 is a proprietary data logging software and cable bundle that was developed by Eco Sensors to view and chart real-time measurements as well as log data with date and time stamps for easy analysis in Microsoft Excel. Contact us at sales@ecosensors.com or (800) 472-6626 for details.

### DL-SC3: Eco Sensors Data Logging Software and Cable Bundle

- Developed by Eco Sensors, specifically for Eco Sensors' Digital Products: OS-4, OS-6, SM-4, SM-6, A-22, and UV-100.
- View and chart real-time data from Eco Sensors' Digital Products.
- Log real-time measurements to a file with date & time stamps.
- Open saved log files for quick and easy review.
- Logged data is compatible with analysis software such as Microsoft Excel.
- Includes the *DL-C3: RS-232 Communication Cable Bundle* with custom RS-232 Serial Data Cable and USB-to-Serial Adapter for easy connection between the computer and the instrument.
- All software and drivers are included on a multipurpose 2 GB USB drive.
- Compatible with Windows XP and Windows 7.



### **DL-C3: RS-232 Communication Cable Bundle**

The DL-C3: RS-232 Communication Cable Bundle includes all the cables required to transmit data from your Eco Sensors digital instrument to a computer. The bundle includes a custom RS-232 Serial Data Cable and a USB-to-Serial Adapter. A multipurpose 2 GB USB drive includes all the required drivers as well as 3<sup>rd</sup>-party data logging software. Contact us at [sales@ecosensors.com](mailto:sales@ecosensors.com), or (800) 472-6626 for details.



## DL-C3

### RS-232 Communication Cable Bundle

#### Software Setup:

- Connect Eco Sensors USB drive to Windows XP, Windows 7, or Apple OS X computer.
- Install drivers for the 3<sup>rd</sup> Party USB-to-Serial Adapter:
  - Open the USB drive and open the folder “USB-to-Serial Adapter Drivers”.
  - Windows:
    - Open the folder “Windows Drivers”.
    - Double click “PL2303\_Prolific\_DriverInstaller\_v1.7.0” to run the installer.
  - Apple:
    - Open the folder “Apple Drivers”.
    - Double click “PL2303\_1.4.0” to run the installer.
  - Follow the on-screen instructions.

#### Hardware Setup (Shown for OS-6):

- Disconnect power from the instrument.
- Connect the Serial Data Cable to the instrument by attaching the ground wire (black) to the instrument connector labeled GND and the data wire (red) to the instrument connector labeled DATA, as indicated in Fig. 1.
- Connect the serial data cable to the USB-to-Serial adapter.
- Connect the USB-to-Serial adapter to the computer.
- Connect power to the instrument.

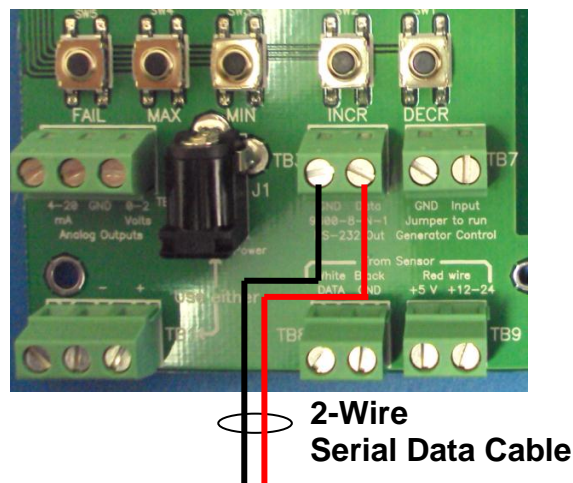


Fig. 1. Connect Serial Data Cable to the instrument

## **DL-SC3**

### **Eco Sensors Data Logging Software and Cable Bundle**

*for Windows XP and Windows 7*

#### **RS-232 Communication Cable Bundle Setup:**

- Follow instructions to install the *DL-C3: RS-232 Communication Cable Bundle*.

#### **Software Setup:**

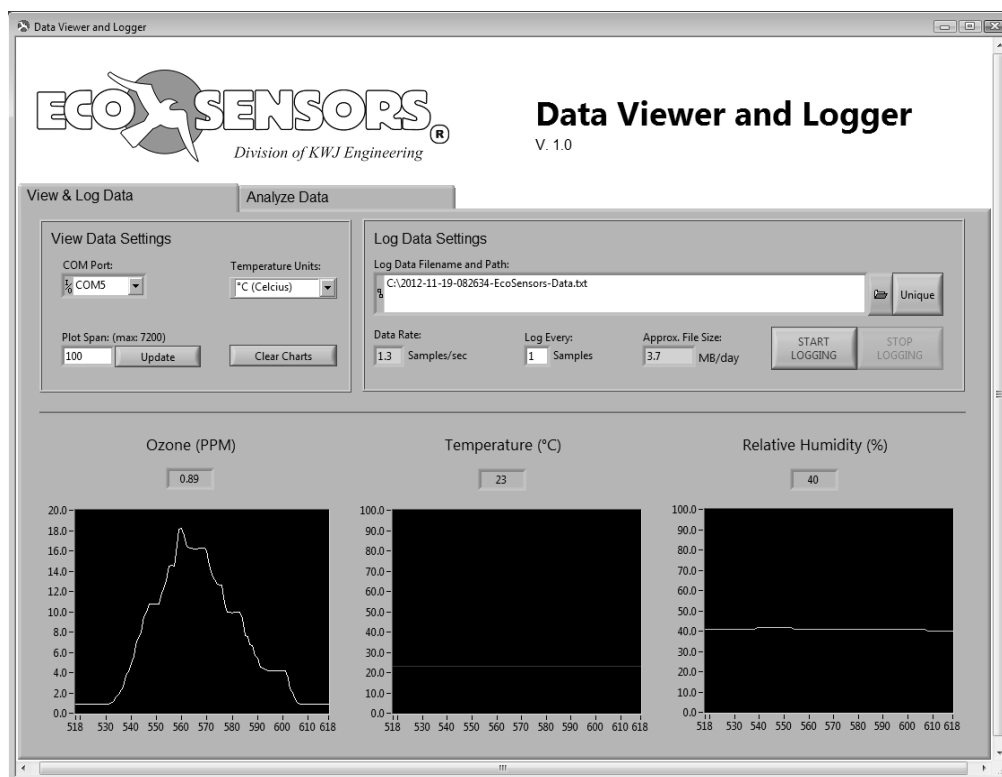
- Connect Eco Sensors USB drive to Windows XP or Windows 7 computer.
- Install the DL-SC3 Data Logging Software
  - Open the USB drive and open the folder “DL-SC3”.
  - Double click “setup” to run the installer.
  - Follow any on-screen instructions and restart the computer when prompted.

#### **Software Operation:**

- Ensure the Eco Sensors instrument is powered on and connected to the computer via the Serial Data Cable and the USB-to-Serial Adapter.
- Launch the Eco Sensors DL-SC3 software from the desktop shortcut or from Start > Programs > Eco Sensors > DL-SC3.
- The software will open, automatically detect your connected Eco Sensors instrument, and begin plotting data.
- The data rate is determined by the SM-module and is fixed at 1-second intervals.

## View & Log Data Tab

The settings and charts under the View & Log Data tab allow you to view and log real-time data from your Eco Sensors instrument. When the software starts, it automatically detects the connected Eco Sensors instrument and begins displaying real-time data. To log data, click **START LOGGING**.



- View Data Settings

- COM Port:

- Automatically populated at startup with the COM port of the detected Eco Sensors instrument.

- Temperature Units:

- Select temperature units: °C (Celsius), °F (Fahrenheit), or K (Kelvin).

- Plot Span:

- The number of data points displayed on the plots. To change the value, type a new number in the box and click Update. The maximum length is 7200 points. NOTE: This setting does not affect the number of points that are saved when logging data, only the number of points that are displayed on the charts on this tab.

- Clear Charts

- Clears the charts of all data. This cannot be undone.

NOTE: This does not clear the points that are saved when logging data, only the points that are displayed on the charts on this tab.

- Log Data Settings

- Log Data Filename and Path

Filename and folder where logged data is saved. The software automatically creates a unique filename based on the date and time. To change the name:

Click the folder icon to the right of the box to select a filename and location from a dialog box.

Click the Unique button to the right of the box to generate a new unique filename based on the data and time.

Type the full path and filename in the box.

- Data Rate

The rate (Samples/second) at which data is being transmitted from the Eco Sensors instrument. This value cannot be changed.

- Log Every

Increase this value to log less data than is available from the Eco Sensors instrument. The default is *Log Every: 1 Sample(s)*. To log 1 out of every 10 data points, change the value to *Log Every: 10 Sample(s)*. This may be important to managing the size of the file when logging data for extended periods of time.

- Approx. File Size

Indicates the approximate size of the file containing logged data based on the *Data Rate* and *Log Every* setting.

- START LOGGING

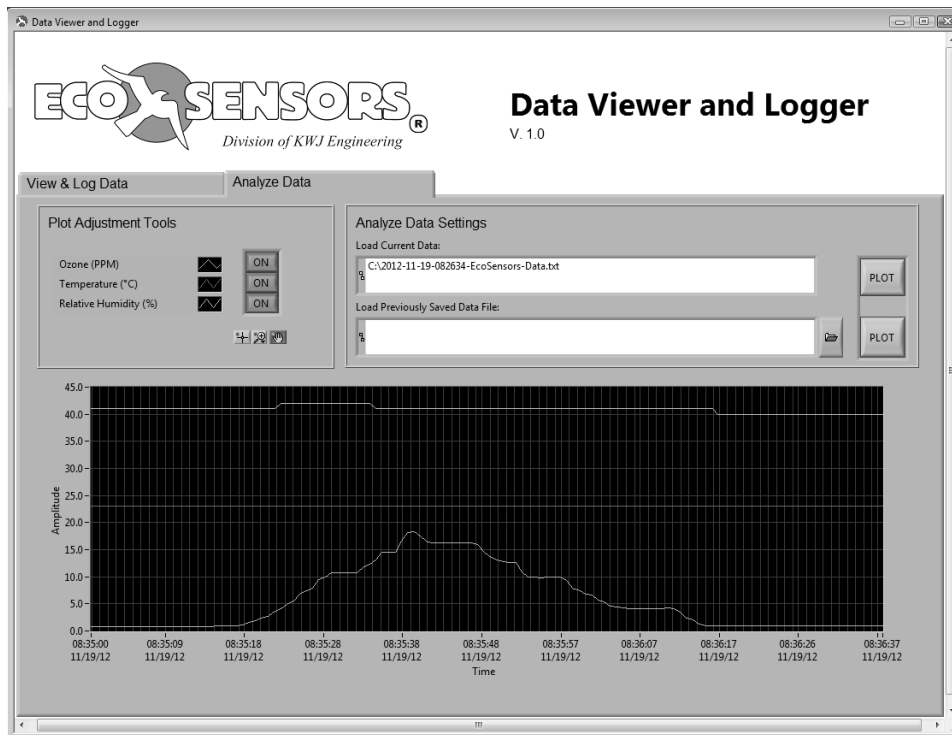
Click to start logging data. Some settings will then become unavailable.

- STOP LOGGING

Click to stop logging data. Access to unavailable settings will be restored.

## Analyze Data Tab

The settings and charts under the Analyze Data tab allow you to view the current and previous log files in more detail.



- Analyze Data Settings

- Load Current Data

- Filename and folder where the current data set is logged. Click PLOT to the right to plot the data on the chart below.

- Load Previously Saved Data File

- Filename and folder of a previously logged data set. Click the folder icon to the right of the text box to choose a file. Click PLOT to the right to plot the data.

- Plot Adjustment Tools

- Legend

- Identifies the plots. Corresponding buttons toggle individual plots ON and OFF.

- Zoom Options

- Magnifying Glass: Click to choose a zoom option

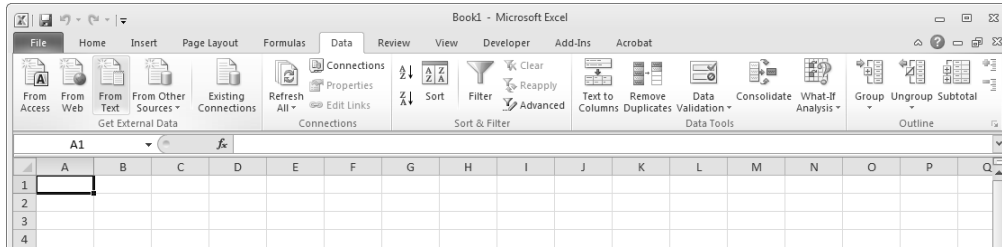
- Hand: Click to use the cursor to drag and pan the plot

- Cross Hair: Functionality not implemented

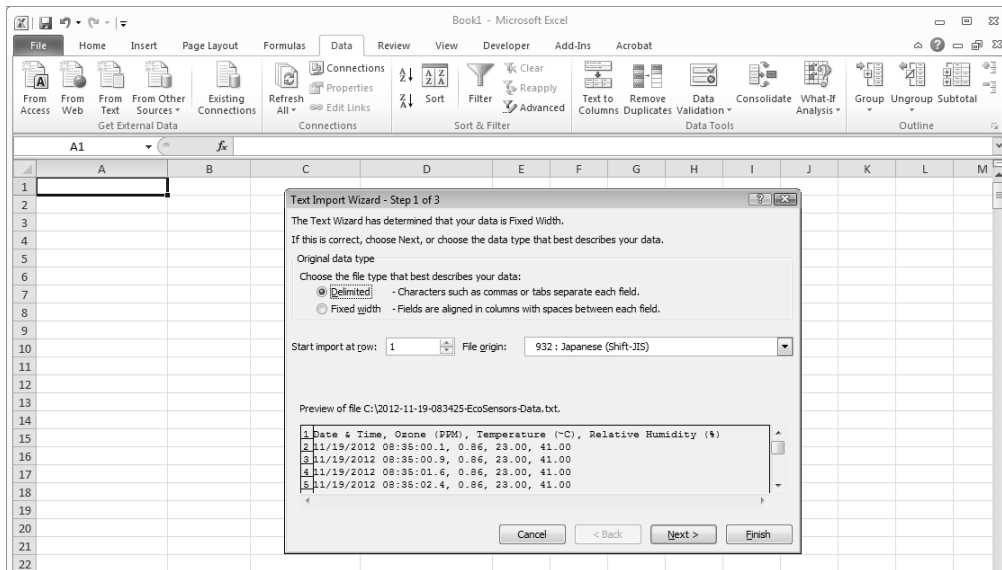
## Import Data from Eco Sensors' DL-SC3 Data Logging Software into Microsoft Excel

The logged data files can be imported into data analysis software, such as Microsoft Excel for more detailed analysis. These instructions are written for importing data into Microsoft Excel 2010 but the same functionality exists in most versions of Microsoft Excel.

- Open Microsoft Excel and start a new worksheet.
- Choose the “Data” tab from the ribbon menu and then select “From Text”.

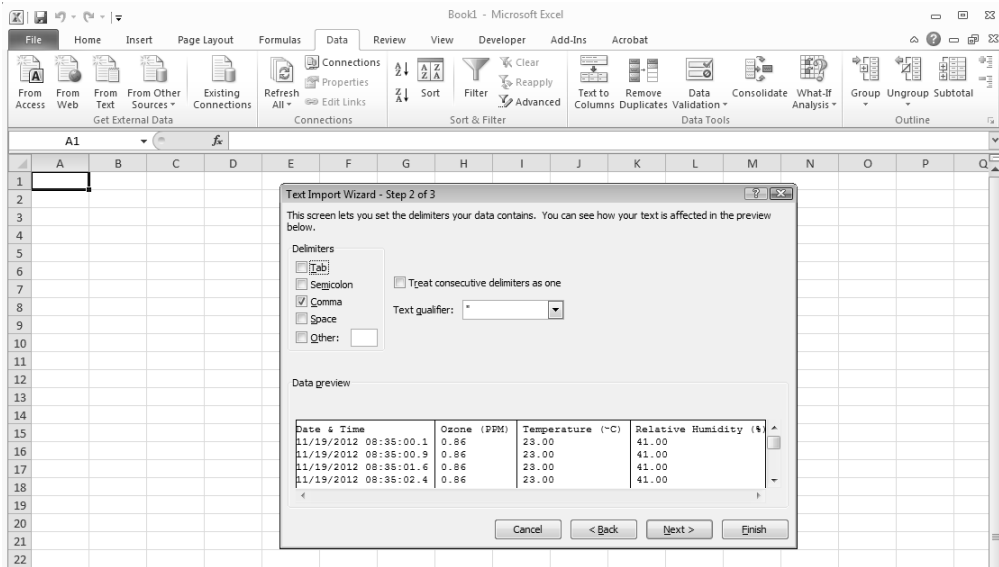


- An Import Text File dialog box will open; choose the file name that was used to log data with the DL-SC3 software; press “Import”.
- A Text Import Wizard dialog box will open; under “Original data type”, select “Delimited”; press “Next”.

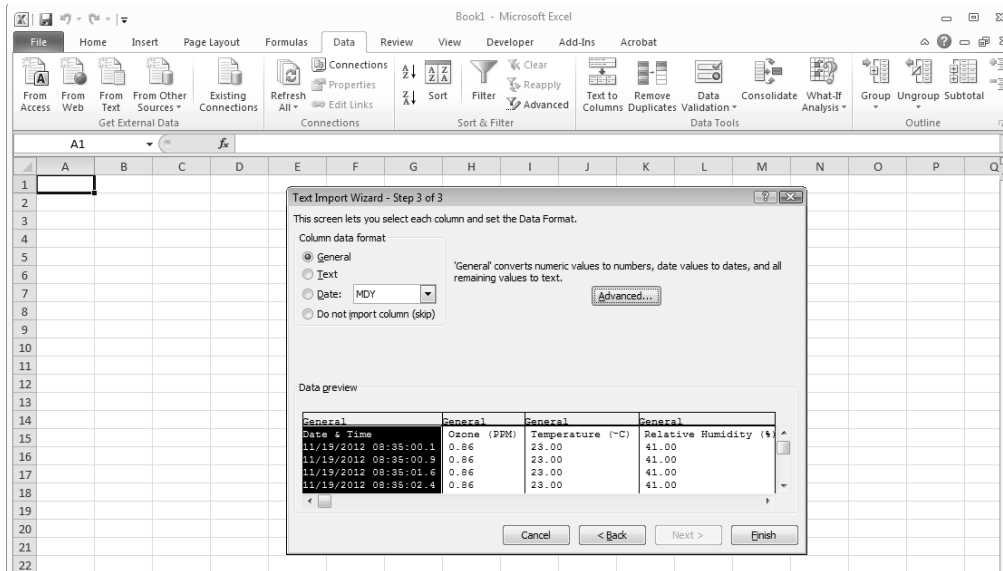




- Under “Delimiters”, select “Comma”; press “Next”.



- No changes need to be made on the 3<sup>rd</sup> page, press “Finish” to import data.



- Adjust the formatting of the Date & Time column
  - Right-click the Column A header, choose “Format Cells...”.
  - Under the “Number” tab, select “Custom” from the “Category” box.
  - In the “Type:” box, enter: “yyyy-mm-dd hh:mm:ss.s”.
  - Press “Ok”.

