Thermo Scientific Orion

AquaMate Spectrophotometer External Device Interfacing and
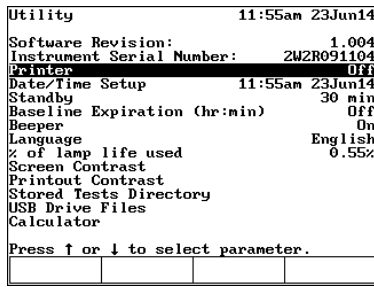Data Transfer Guide

The following instructions describe how to interface a Thermo Scientific™ Orion™ AquaMate™ spectrophotometer with an external device, transfer the data and save the data as a Microsoft® Excel®, Word® or Notepad file. The operator must set the AquaMate spectrophotometer settings to allow data to be sent to an external device, install the AquaMate USB driver on the computer, and install a computer program for a data collection program such as Realterm or HyperTerminal.

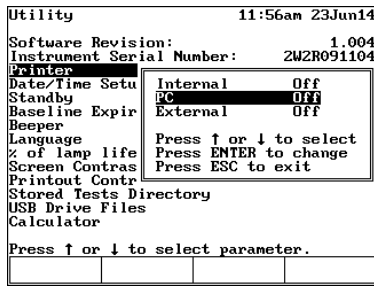## AquaMate Spectrophotometer Setup for Computer Interfacing

1. Power on the Orion AquaMate spectrophotometer.
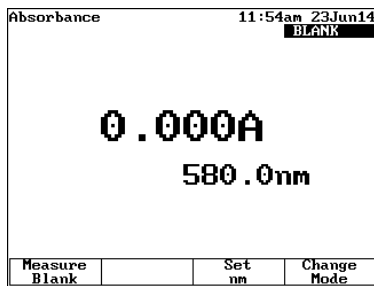2. Press the *utility* key to acess the instrument utility menu.

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3. Press the ▲ or ▼ key to highlight the **Printer** option and press the *enter* key to open the printer menu.

```
Utility                    11:55am 23Jun14

Software Revision:                    1.004
Instrument Serial Number:       2W2R091104
Printer                                 Off
Date/Time Setup             11:55am 23Jun14
Standby                              30 min
Baseline Expiration (hr:min)            Off
Beeper                                   On
Language                            English
% of lamp life used                   0.55%
Screen Contrast
Printout Contrast
Stored Tests Directory
USB Drive Files
Calculator

Press ↑ or ↓ to select parameter.
```

4. Press the ▲ or ▼ key to highlight the **PC** option and press the *enter* key to set the PC option to **On**.

```
Utility                    11:56am 23Jun14

Software Revision:                    1.004
Instrument Serial Number:       2W2R091104
Printer
Date/Time Setu  Internal       Off
Standby         PC             Off
Baseline Expir  External       Off
Beeper
Language        Press ↑ or ↓ to select
% of lamp life  Press ENTER to change
Screen Contras  Press ESC to exit
Printout Contr
Stored Tests Directory
USB Drive Files
Calculator

Press ↑ or ↓ to select parameter.
```

5. Press the *esc* key until the instrument returns to the main measurement screen.

```
Absorbance                 11:54am 23Jun14
                                    BLANK


            0.000A

              580.0nm


Measure              Set      Change
 Blank               nm        Mode
```

# USB Computer Cable Interfacing and USB Driver Installation
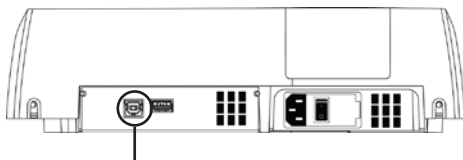

USB communication port

1. Connect the USB computer cable to the USB communication port on the back of the AquaMate spectrophotometer.
2. Insert the Orion AquaMate Documentation DVD into the computer CD/DVD drive.
3. Connect the USB computer cable to a USB port on the computer.
4. Open the computer Device Manager.
   a. Click the Start icon.
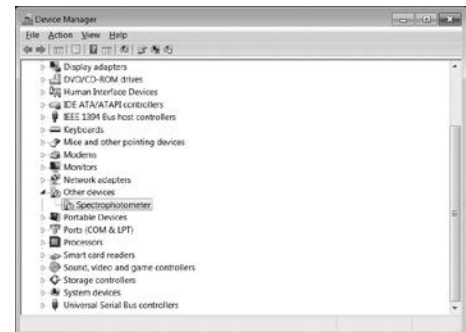

   b. Right-click the **Computer** button.
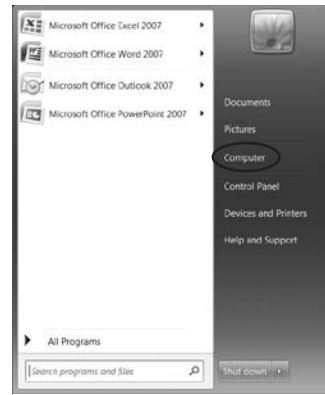
c. Click the **Properties** button.
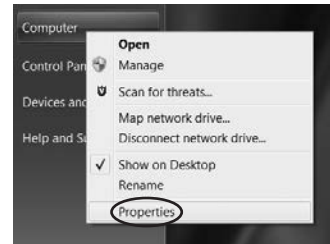
d. Click the **Device Manager** button.

5. Double-click the **Spectrophotometer** button on the Device Manager window.

6. Click the **Update Driver** button on the Spectrophotometer Properties window.

7. Click the **Browse my computer for driver software** button.


8. Click the **Browse** button.

9. Select the appropriate USB driver folder from the Orion AquaMate Documentation DVD in the computer CD/DVD drive and click the OK button.
   a. Select the **Vista32** folder when using a computer with 32-bit Microsoft 7 or Vista operating system.
   b. Select the **Vista64** folder when using a computer with 64-bit Microsoft 7 or Vista operating system.
   c. Select the **XP32** folder when using a computer with Microsoft XP operating system.
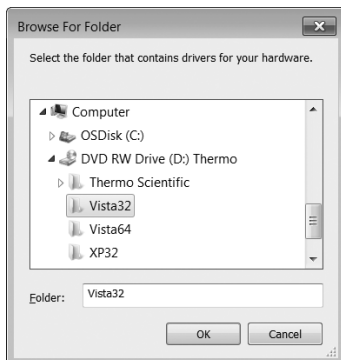
10. Click the **Next** button.

11. Wait while the USB driver software is located and installed.
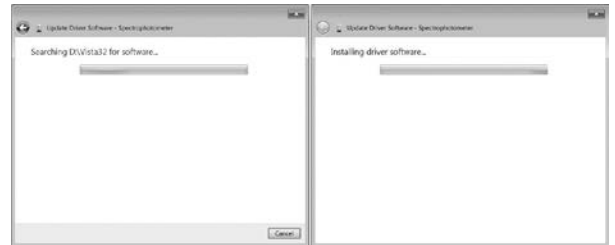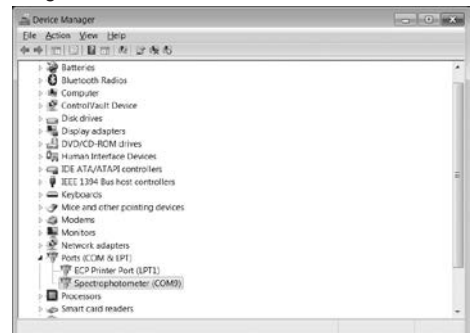

12. Approve any security messages by clicking the **Install** button.

13. Once the installation of the USB driver software is complete, click the **Close** button.
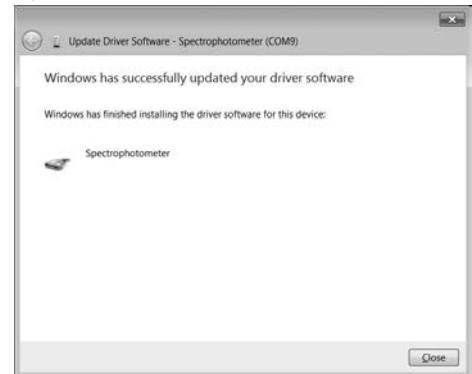
14. Record the COM port number of the Spectrophotometer USB connection in the Device Manager window.

Example Data Collection Program

The AquaMate communcation settings are as follows:
- Bits per second: 19200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

1. Select a computer program for data collection and make sure the program, including device drivers and plug-ins, is fully installed. Realterm data collection software can be downloaded from their website and is used in the following instructions as an example.
2. Open the data collection software program by clicking the Realterm icon on the computer desktop.
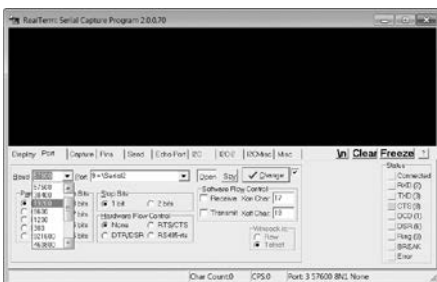

3. Click the **Port** tab on the RealTerm window. Confirm that the RealTerm communication settings match the appropriate AquaMate communcation settings.
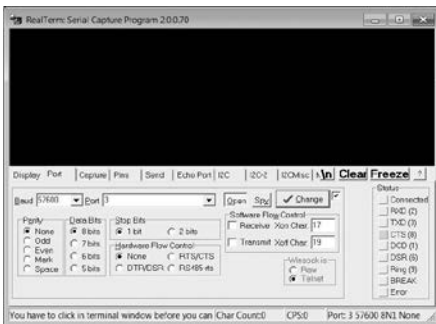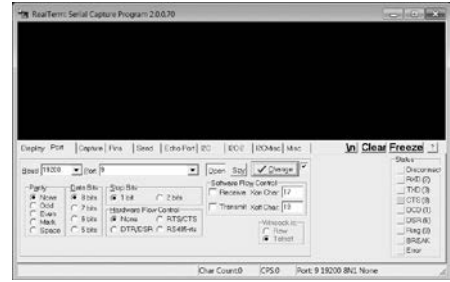

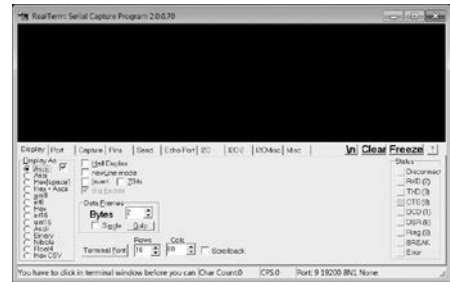4. Click the **Port** dropdown menu and select the COM port number of the Spectrophotometer USB connection.
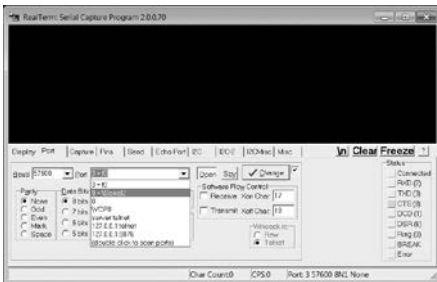
5. Click the **Baud** dropdown menu and select **19200**.

6. Click the **Change** button to save the port settings.

7. Click the **Display** tab on the RealTerm window. Select the **Ascii** option under the **Display As** field.

8. When data from the AquaMate spectrophotometer is ready to be sent to the computer, first test the connection between the spectrophotometer and data collection program.
   a. Press the *print* key on the AquaMate spectrophotometer. The data from the AquaMate spectrophotometer should appear on the program display.


9. Once the connection has been validated, select the type, name and location of the file the data will be saved as.
   a. Click the **Capture** tab on the RealTerm window.
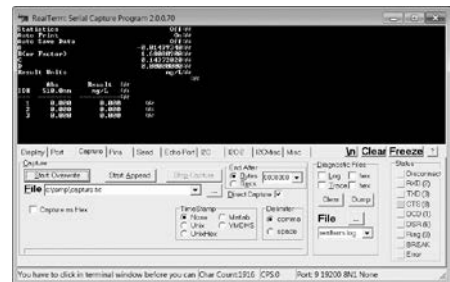
b. Click the **...** button next to the **File** field and set the file type, name and location. For example, use Microsoft Excel (.xls) file type, name the file AQ8000-Data.xls and save the file to the computer desktop.

10. Click the **Start: Overwrite** button on the Capture tab of the RealTerm window. The program is now ready to receive data from the AquaMate spectrophotometer and export the data to the selected file type, name and location.
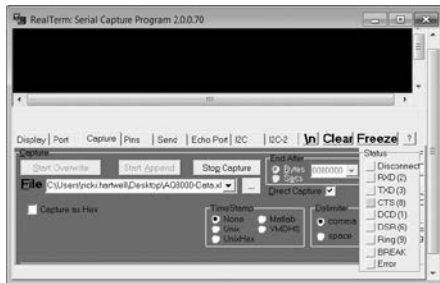
11. Press the *print* key on the AquaMate spectrophotometer to send the data from the instrument to the data collection program.

12. Once all data has been sent from the instrument to the computer and data collection program, click the **Stop Capture** button on the Capture tab of the RealTerm window.

13. Open the data file, for example AQ8000-Data.xls, and format the data as needed.

# AquaMate Spectrophotometer Setup for Printer Interfacing

The AquaMate printer compatibility requirements are as follows:
- Printer must be PCL5 or PCL6
- Printer must be a printer only, not a multi-function printer
- For this example, a PCL5 HP Laser Jet 1300 printer is used
- HP 2055D and Office jet 6000 printers have been used in the past
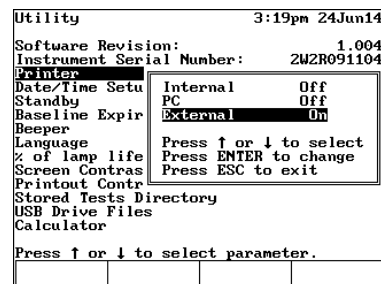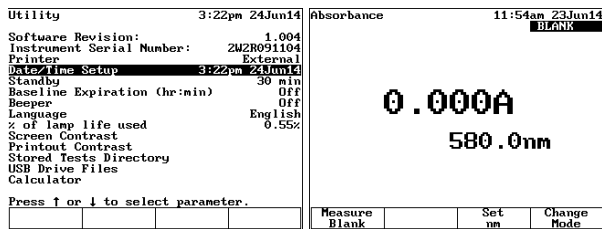
1. Power on the Orion AquaMate spectrophotometer.

2. Press the *utility* key to acess the instrument utility menu.

3. Press the ▲ or ▼ key to highlight the **Printer** option and press the *enter* key to open the printer menu.
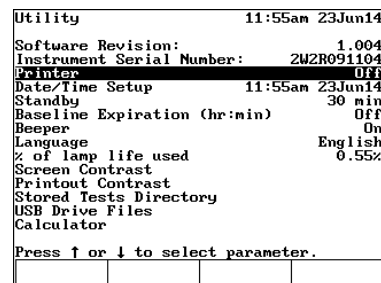
4. Press the ▲ or ▼ key to highlight the **External** option and press the *enter* key to set the External printer option to **On**.
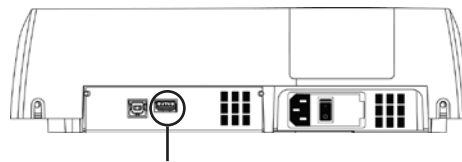
5. Press the *esc* key until the instrument returns to the main measurement screen.

USB Printer Cable Interfacing and Printing Data

1. Connect the USB cable to the USB printer port on the back of the AquaMate spectrophotometer.

USB printer port

2. Connect the USB printer cable to the USB port on the printer.
3. When data from the AquaMate spectrophotometer is ready to be sent to the printer, press the *print* key on the AquaMate spectrophotometer.

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