

Lambda 465 Rapid Mixing Installation Instructions

This instruction sheet describes the installation of this accessory which is used with the Lambda 465 Spectrophotometer.

NOTE: *Read these instructions before you install this accessory.*

Contacting PerkinElmer

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If you are located within the U.S., call toll free 1-800-762-4000, 8 a.m. to 8 p.m. EST. Your order will be shipped promptly, usually within 24 hours.

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Introduction

Stopped-flow is one of a number of techniques used to study the kinetics of reactions in solution. In the simplest form of the technique, two reactant solutions are rapidly mixed by being forced into a mixing chamber, and then through an observation cell.

The stopping mechanism in this example is a stop-syringe. The flow fills the stop-syringe, until the plunger hits the trigger-switch. This simultaneously stops the flow and starts the data acquisition.

The rate constants which define the reaction kinetics can be measured by fitting the data using a suitable model.

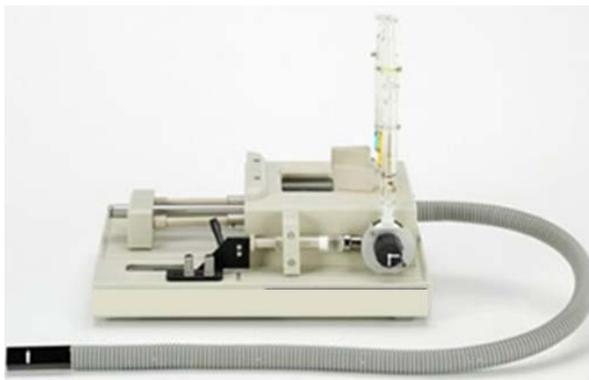


Figure 1 Lambda 465 Rapid Mixing accessory [P/N: N4104014]

Dimensions and Specifications

Physical Characteristic	Specification
Dead Time	8 ms
Optical Pathlength	2 mm and 10 mm for absorbance/fluorescence/circular dichroism
Widow Size	40 mm ² for fluorescence detection
Cell Material	Silica
Beam Height	15 mm from base of cuvette holder
Minimum Vol./Shot	120 µl/Shot for each reactant
Syringe Volume	2.5 ml
Ratio mixing	1:1 as standard, but different ratio is also available by altering syringes (up to 1:10)
Temperature Range	4 to 60°C
Triggering	TTL, open-collector and switch-contact
Flow Circuit	Biocompatible and chemically inert

Description

Configuration of the Rapid Mixing Accessory

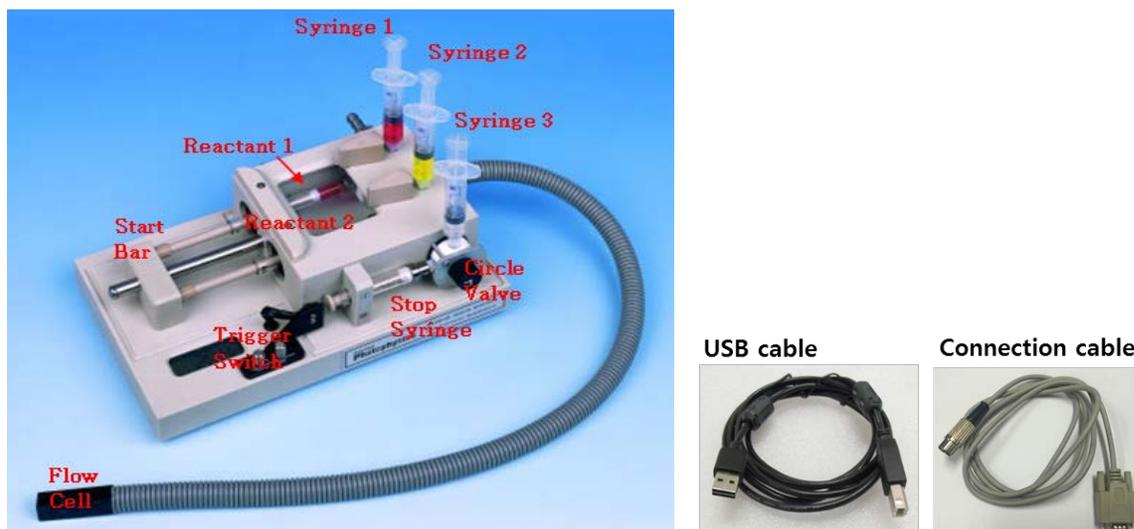


Figure 2 Lambda 465 Rapid Mixing Accessory and interface cables

Installation

1. Connect the connection cable with Rapid Mixing Accessory and Lambda 465 as below.



Figure 3 Connections

2. Place the Micro Cell which is connected with Rapid Mixing Accessory into the cell holder of Lambda 465.
3. Connect the power cord and USB cables between USB (1) & USB (2) and the PC.

* USB1 Port of Lambda 465: Connected to the PC for communication

* USB2 Port of Lambda 465: Connected to the PC which is related to triggering the signal to the Rapid mix accessory.



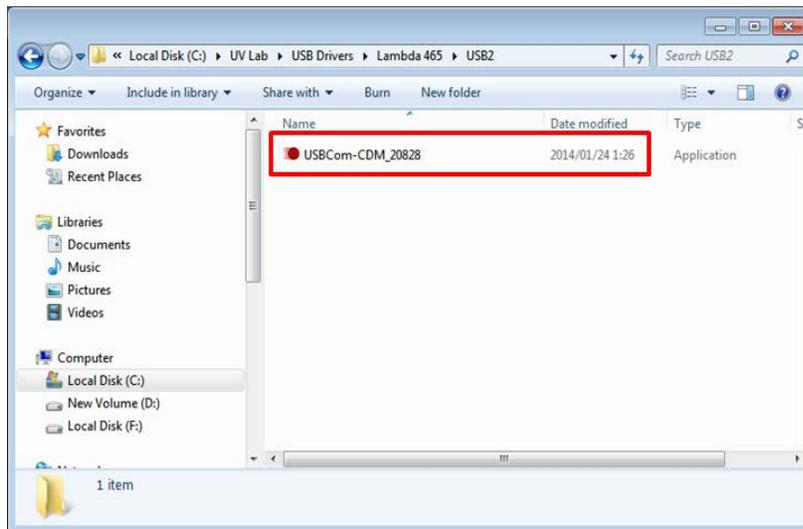
Figure 4 Connections

4. Turn on the power of the Lambda 465.

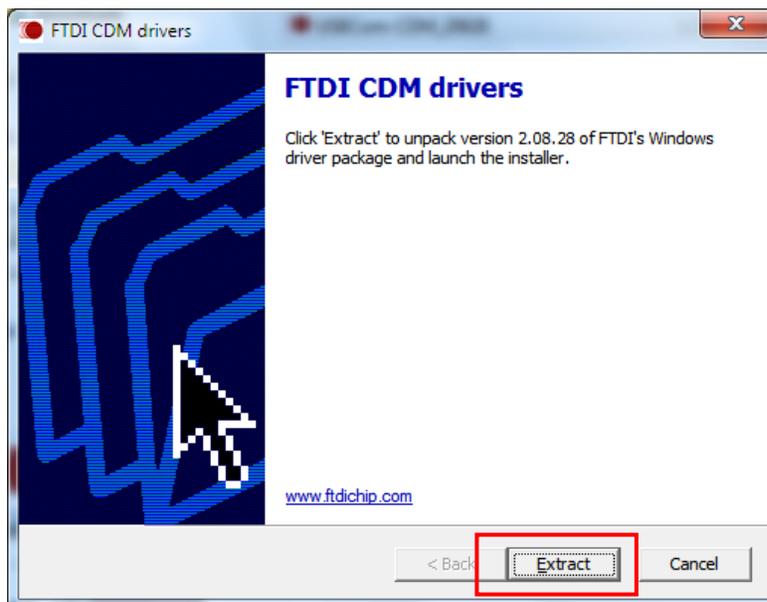
Installing the Driver

When using the Rapid mix accessory, install the COM port drive properly according to the following procedure.

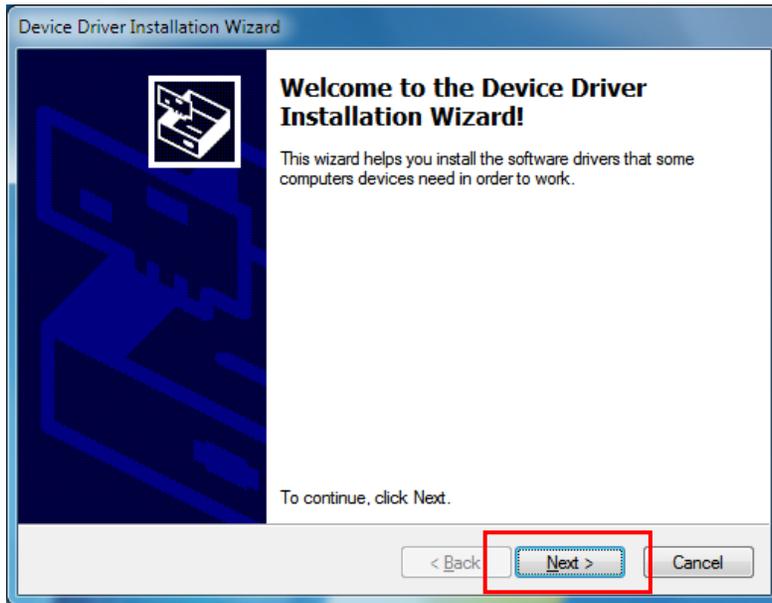
1. Turn on the computer and the Lambda 465.
2. Connect the two USB Cables between the computer and the Lambda 465.
3. Select **C>UV Lab> USB Drivers> Lambda 465> USB2** folder.
4. Double click **USBCom-CDM_20828**.



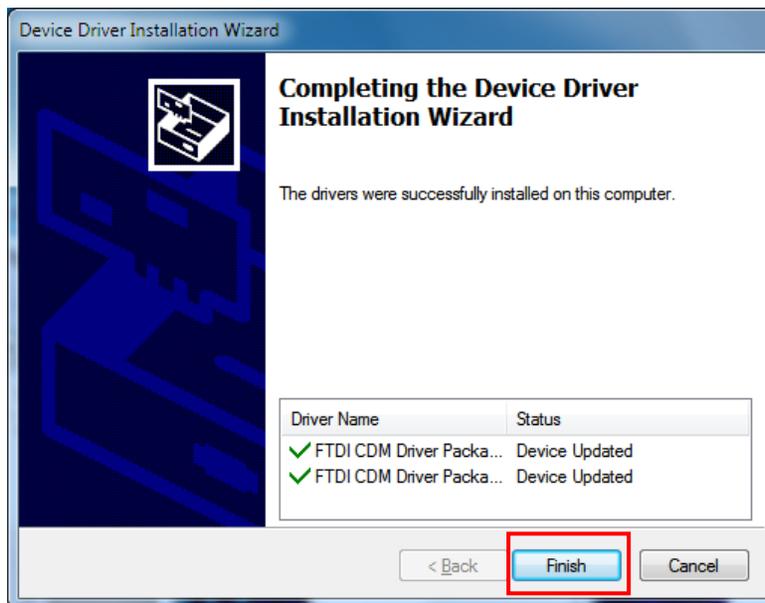
5. Click **Extract**.



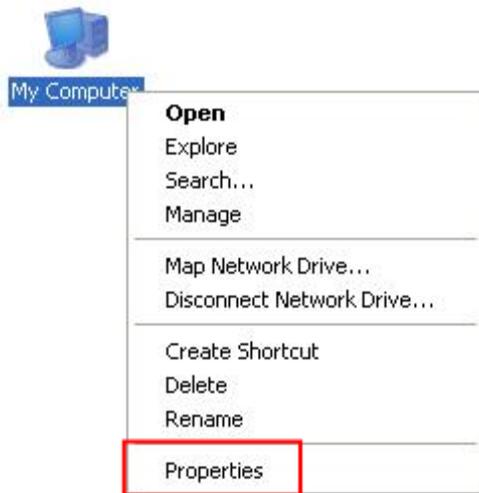
6. Click **Next**.



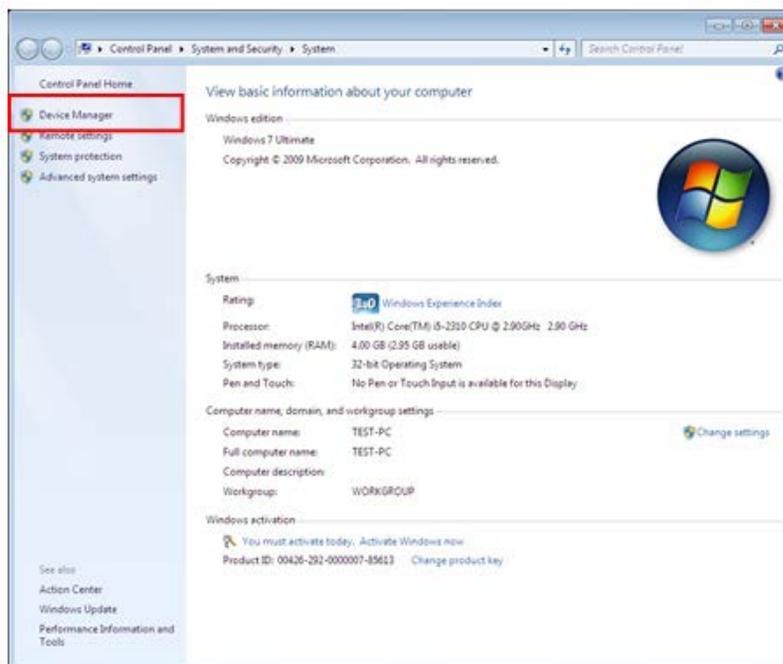
7. The following dialog box will appear. After installation is completed successfully, click **Finish**.



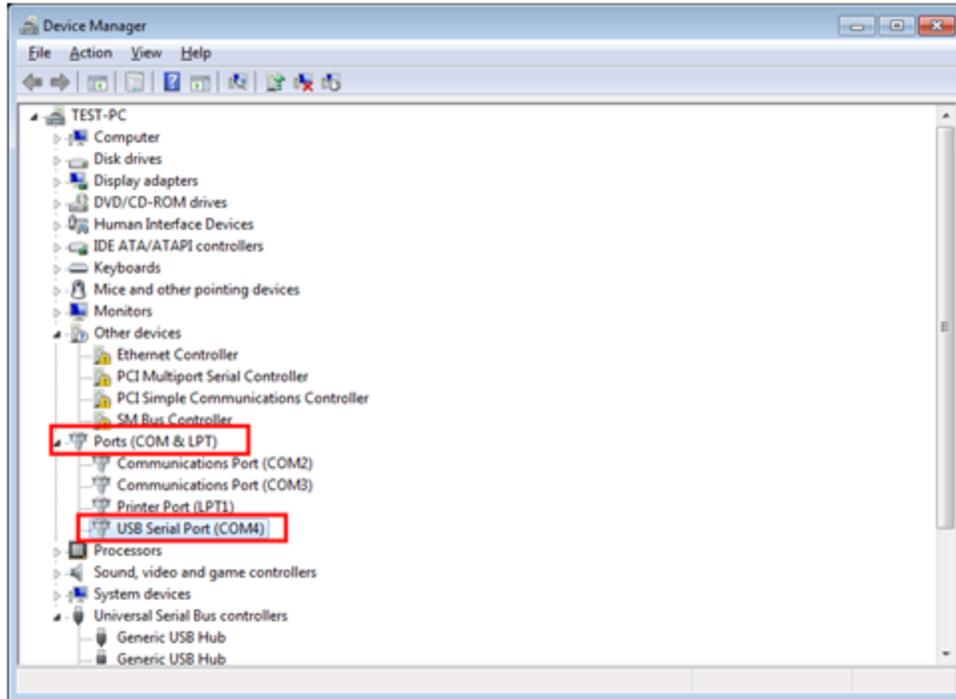
8. Select **My Computer** → **Properties**.



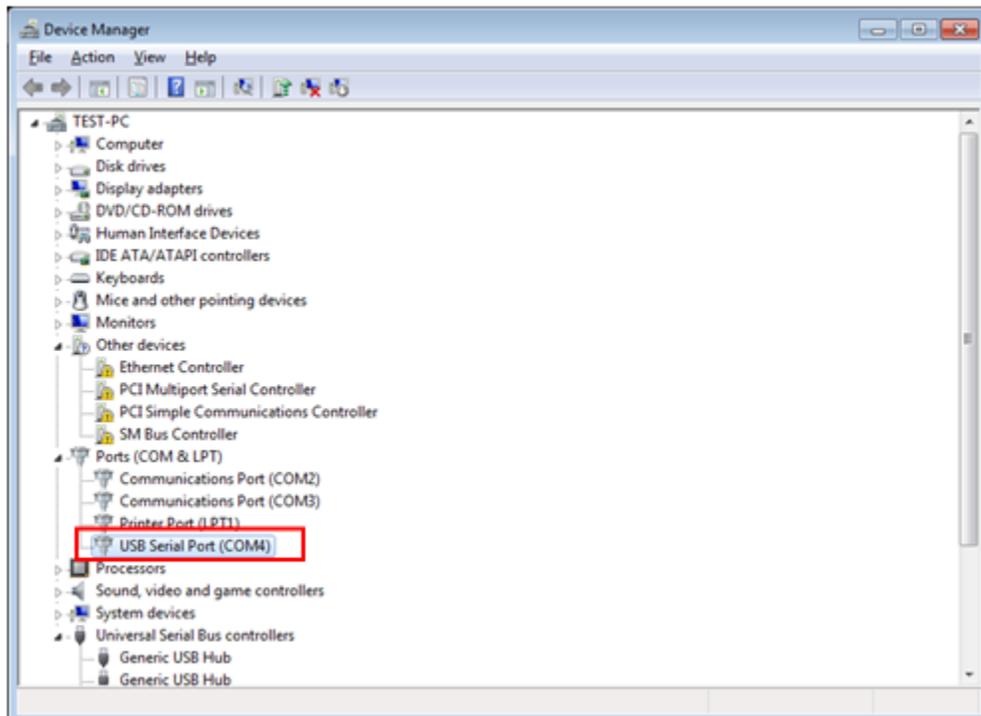
9. Select **Device Manager**.



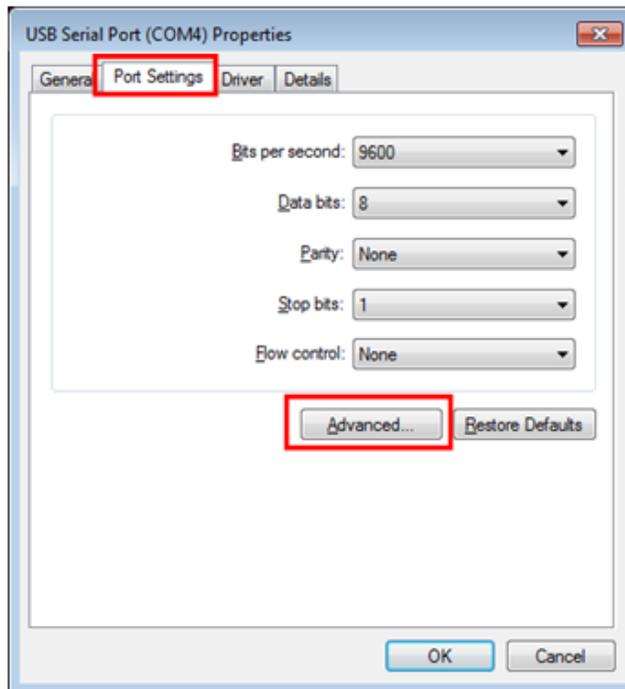
10. Select the **Ports (COM & LPT)** to expand the listing. These are the devices currently connected to the COM ports. The **USB Serial Port (COMx)** is visible when the driver installation is completed successfully.



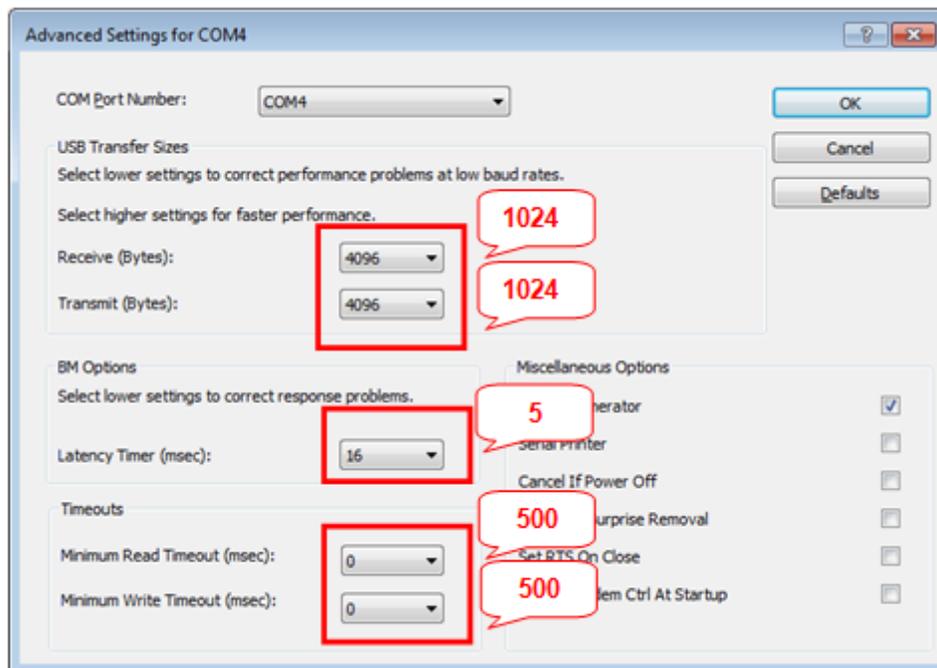
11. Double click on **USB Serial Port (COMx)** of the Ports (COM & LPT) section.



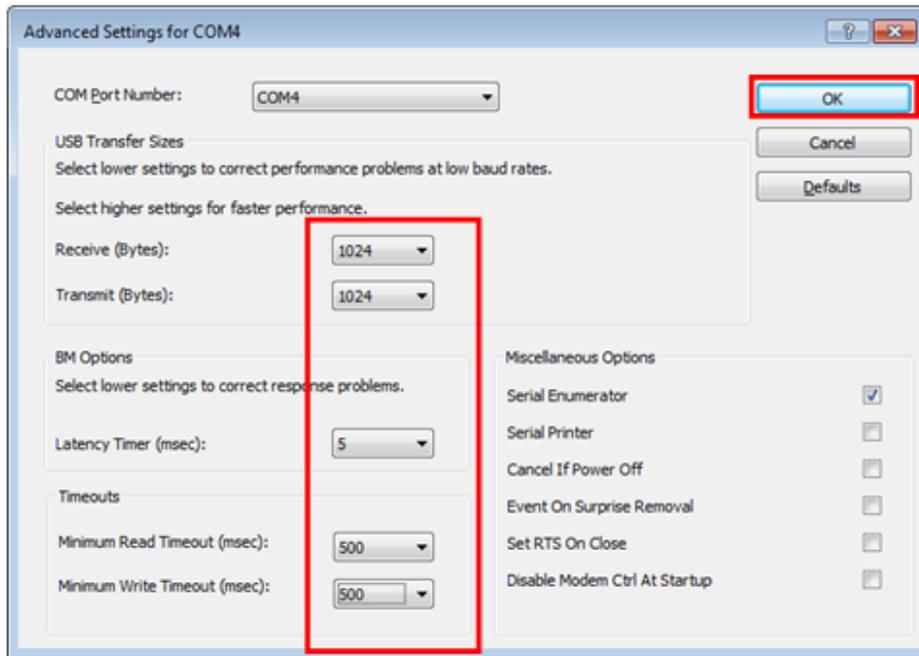
12. Select the **Port Settings** tab and click on the **Advanced...** button.



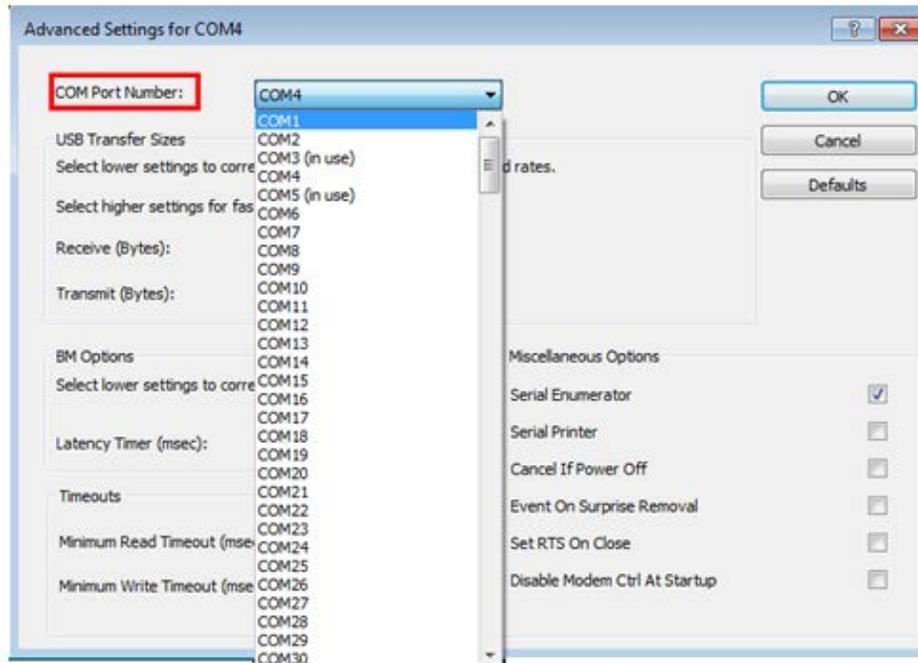
13. Change the parameter values as shown below.



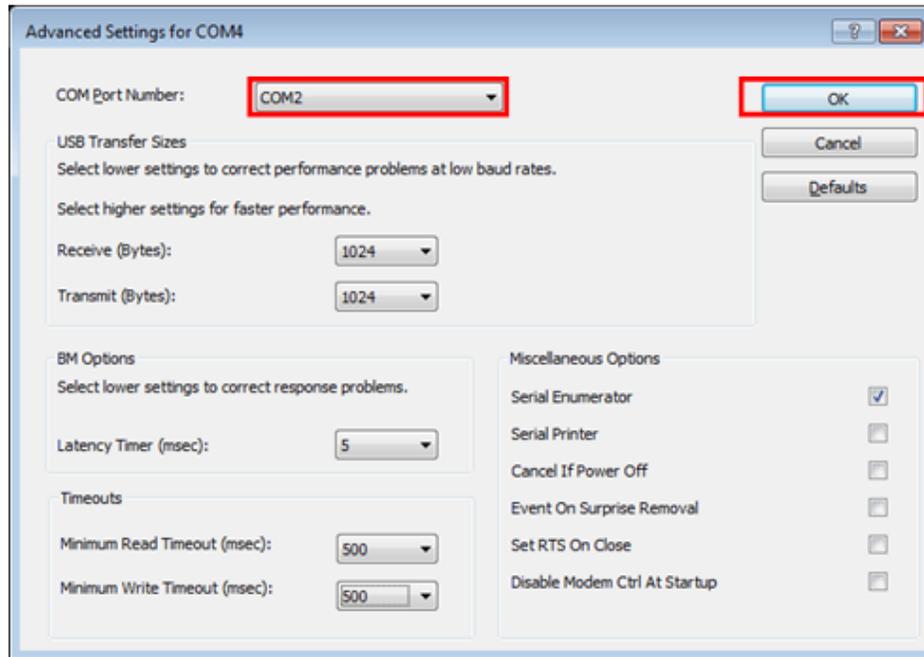
14. Select **OK** after checking the changed parameter values.



15. Launch the software.
16. If the instrument fails to communicate with the PC, change the COM Port Number as following procedure.
17. Open **Advanced Setting for COMx** window following steps 8 to 14.
18. Select on the COM Port number list to expand it and change the COM port number another one which is not in use from COM 1 to COM 10.



19. Make sure that the changed COM Port Number is applied and select **OK**.



20. Restart the computer after finishing driver setting.

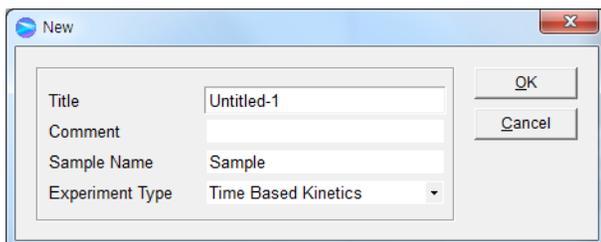
Measurement

NOTE: Start the sample measurement after more than 20 minutes warming-up of system

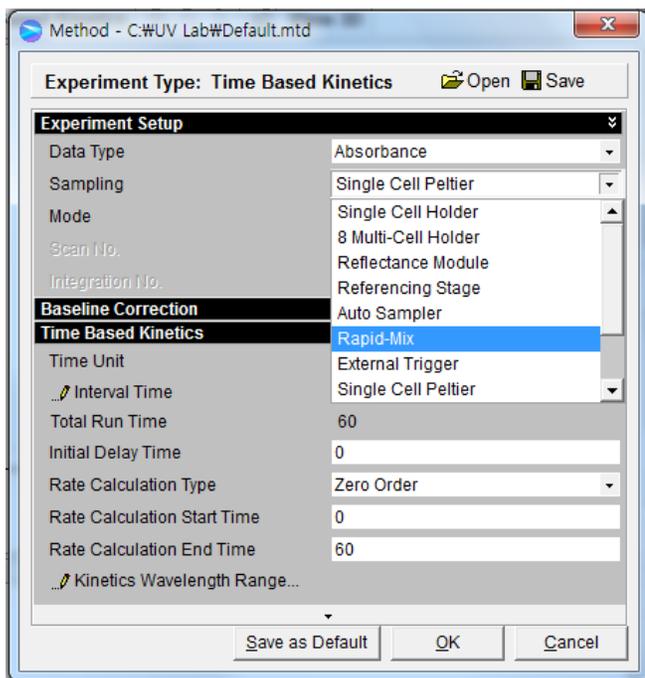
This accessory can be operated in Time Based Kinetics and the Ultra Kinetics functions of Kinetics mode and the Enzyme Activity function in Bio mode.

Blank Measurement

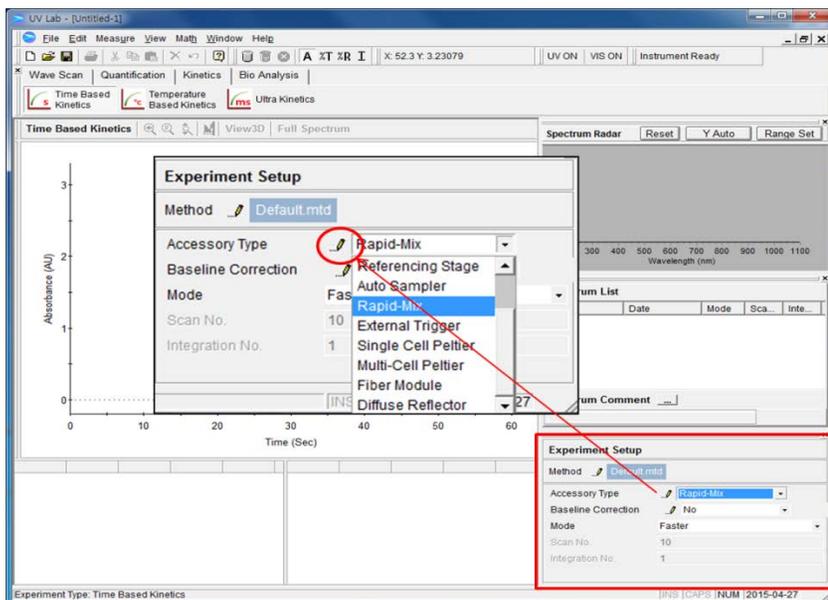
1. Launch the **UV Lab** software. When the window below is appeared, select **Experiment Type** and select **OK**.



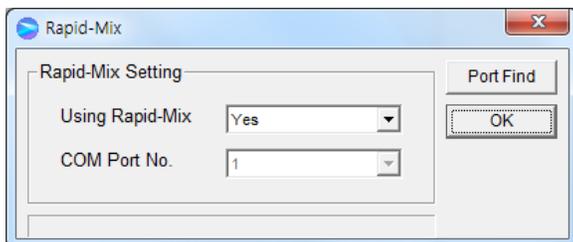
2. The following dialog box will be displayed. Enter each parameter and select **OK**.



- Click the **red-marked icon (pencil icon)** when you want to change any parameters for the Rapid-Mix.



- The following dialog box will appear. Then, choose **Yes** for using Rapid-Mix and enter the COM port number of which the Interface Module is connected to the PC.



- Fill the blank material (solvent, water, etc.) into Syringe 1 and Syringe 2. Syringe 3 is used for draining the mixed blank reagent after blank measurement.
- Place the position of circle valve as shown below.

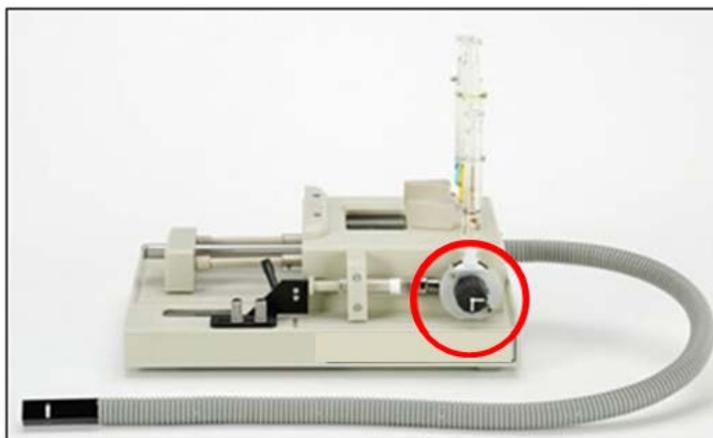


Figure 5 Location of valve

7. After placing reagent control valve of Syringe 1 and Syringe 2 at the LOAD position, push syringes 1 and 2 simultaneously to load the blank reagents. After loading, place the valves to the DRIVE position.

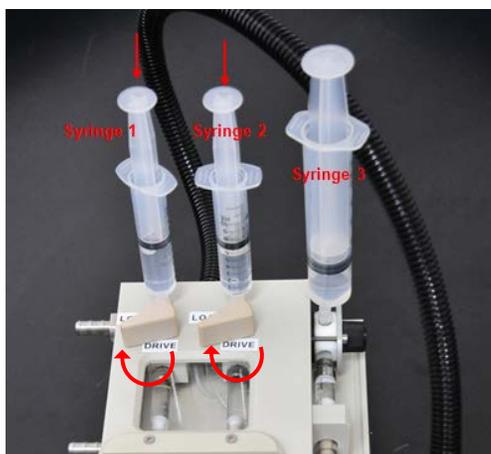


Figure 6 Syringes into reactant

8. Place the position of circle valve as shown below.

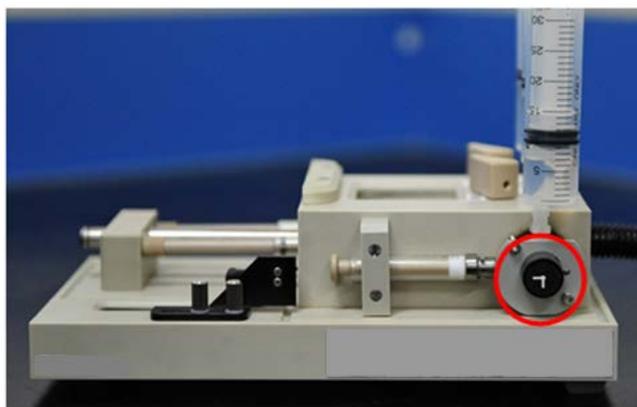


Figure 7 Location of circle valve

9. Push the **Start** bar. When finishes pushing the start bar, the mixed blank reagent is injected to the cuvette cell to measure blank and then the stop syringe will tap the trigger switch.

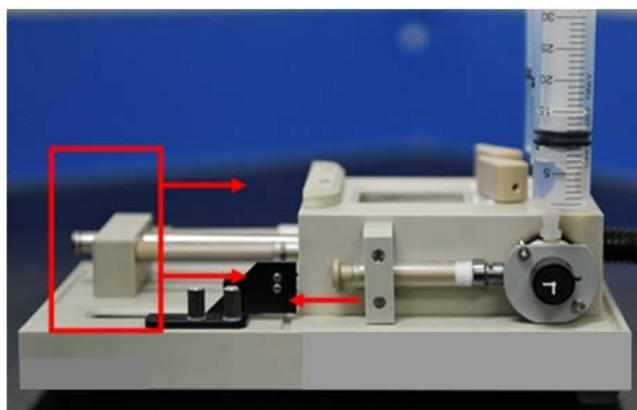


Figure 8 Injection the sample

NOTE 1: In the blank measurement, even the stop syringe will tap the trigger switch, the blank is not measured automatically. You should click measure **Blank** in the software.

NOTE 2: Be careful **not** to activate the trigger switch after the Blank measurement. If the trigger switch is activated, the Rapid Mixing will transfer the sampling signal to the software and automatically the UV Lab software will measure the sample even though the sample is not loaded.

10. Select **Blank** and then the blank will be measured.
11. After the measurement, place the position of the circle valve as shown in the following figure and then drain the mixed blank reagent to the syringe 3.

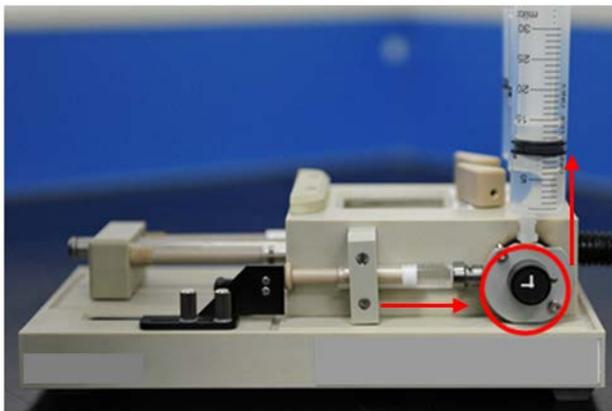


Figure 9 Location of circle valve

Sample Measurement

1. Fill the samples into syringe 1 and syringe 2. Syringe 3 is used for draining the mixed sample solution after sample measurement.

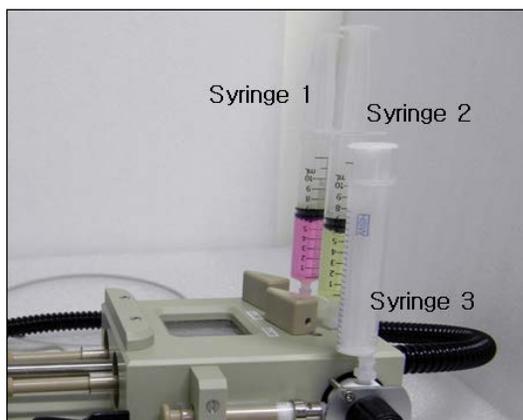


Figure 10 Filling the syringes

- Place the position of circle valve as shown in the following picture.

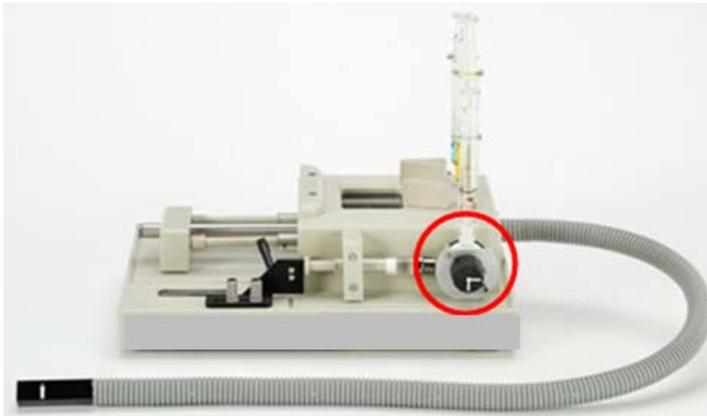


Figure 11 Location of circle valve

- After placing the valve of syringe 1 and syringe 2 at the LOAD, push the syringes 1 and 2 simultaneously to load the sample.

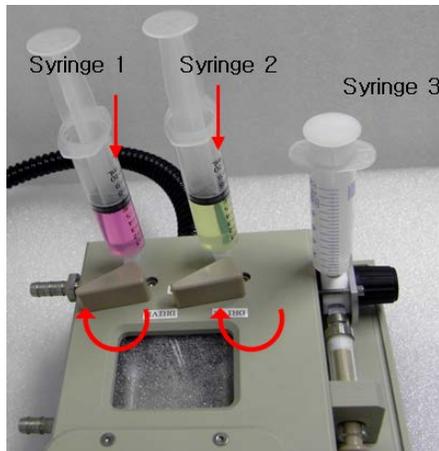


Figure 12 Syringes 1 and 2 into reactant

- Place the valve at the DRIVE after the completion of injection.



Figure 13 Placing valve at the DRIVE

5. Place the position of the circle valve as shown below.

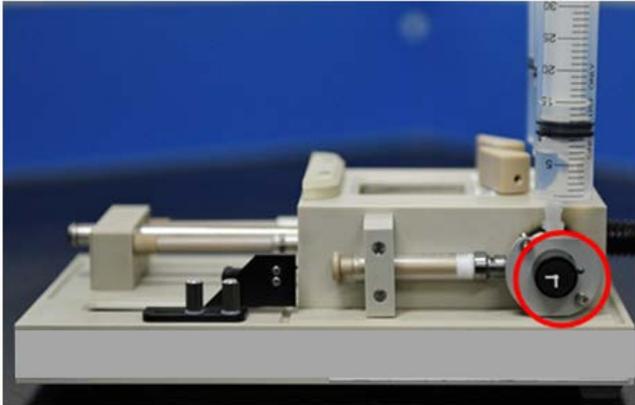


Figure 14 Location of circle valve

6. Push the **Start bar** to inject the samples to the cell.

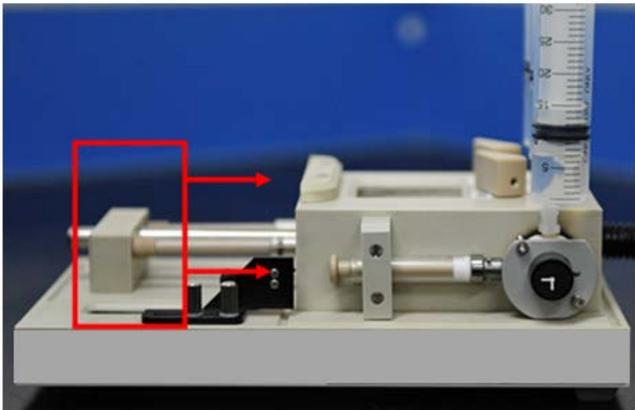


Figure 15 Injecting the samples into cell

7. When it finishes pushing the start bar, the mixed sample solution is injected to the cuvette cell to measure sample and then the stop syringe will tap the trigger switch.
8. After the trigger switch is tapped, the sample will be measured automatically.

9. After the measurement, place the position of circle valve as shown below, and then press the piston of stop syringe to drain the sample solution to syringe 3.

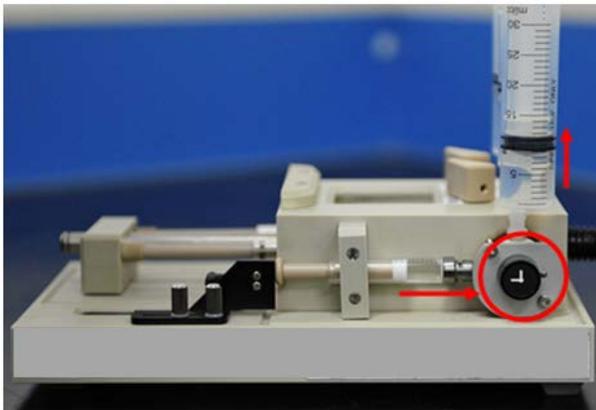


Figure 16 Position of circle valve and waste sample into the stop syringe 3.

Troubleshooting

When sample is not injected from Syringe 1 or 2

1. Check whether the reagent control valve is correctly directed.
2. Check the sample is already fully injected.
3. Make sure that the circle valve direct is rotated correctly.

When sample is not drained to Syringe 3

- Make sure that the circle valve is rotated to the correct direction.

