

Lambda 365 Peltier Temp Ctrl Unit Multi Installation Instructions

This instruction sheet describes the installation of this accessory which is used with the Lambda 365 Spectrophotometer.

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

Contacting PerkinElmer

Supplies, replacement parts, and accessories can be ordered directly from PerkinElmer, using the part numbers.

See our website:

<http://perkinelmer.com>

PerkinElmer's catalog service offers a full selection of high-quality supplies.

To place an order for supplies and many replacement parts, request a free catalog, or ask for information:

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.

If you are located outside of the U.S., call your local PerkinElmer sales or service office.

Features

- Full software control
- Liquid cooling system
- N₂ gas purging available

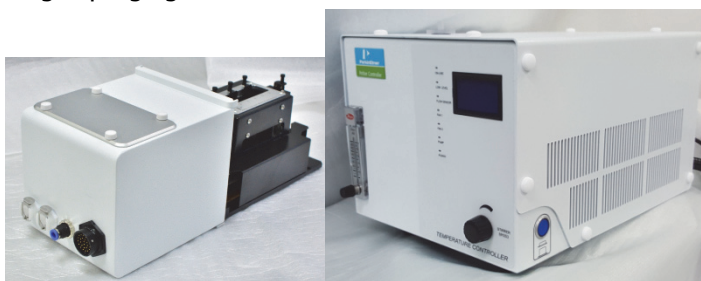


Figure 1 Peltier Temp Ctrl Unit Multi w/Ref Heat [P/N: N4101062] or Peltier Temp Ctrl Unit Multi no Ref Heat [P/N: N4101063]



**PerkinElmer, 710
Bridgeport Avenue,
Shelton, CT 06484-
4794, U.S.A**

Produced in the USA.

Dimensions and Specifications


Peltier Temperature Controller 201

Physical Characteristic	Specification
Power	100-240 VAC, 50/60 Hz, 380W
Temperature Range	-5 to 100°C (Maximum Internal Temperature)
Maximum Ambient Operating Temperature	40°C
Dimensions	295 (W) x 416 (D) x 283 (H) mm (11.6 (W) x 16.4 (D) x 11.1 (H) in)
Weight	16.0 kg (35.2 lb)
Coolant Volume	1 L
Coolant Available	1.5 bar
N ₂ Gas Available	1 bar
Liquid Cooling System	
Magnetic Stirrer Control Available	

6-Position Peltier Controlled Cell Changer (with and without heated reference)


Physical Characteristic	Specification
The number of Sample Cells	6
The number of Reference Cell	1 (with or without heated reference)
Dimensions	134.5 (W) x 384 (D) x 142.5 (H) mm (5.3 (W) x 15.1 (D) x 5.6 (H) in)
Weight	With heated reference: 3.4 Kg (7.5 lb) Without heated reference: 3.0 Kg (6.6lb)
Temperature Accuracy	±0.1°C
Temperature Precision	<0.1°C
Temperature Stability	<0.1°C
Ramping Time (from 0 to 100°C)	5 minutes

Safety Warnings




WARNING

When this label is attached to an instrument it means refer to the manual.




AVERTISSEMENT

Lorsque cette étiquette est attachée à un instrument, il est nécessaire de voir le manuel.



WARNING

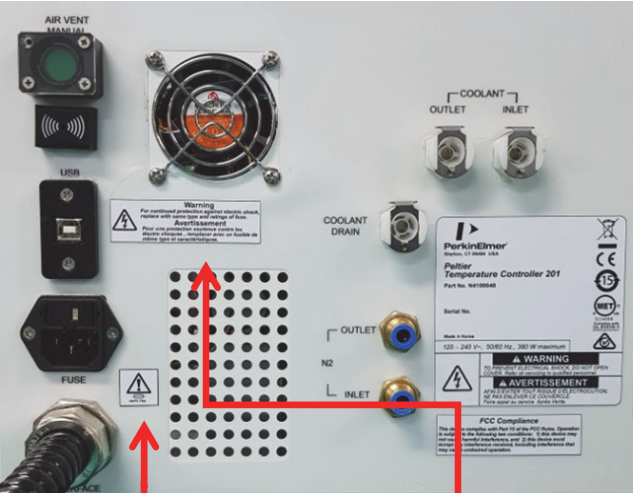
There is risk of receiving a fatal electric shock if the fuses are replaced with the power cord connected.



AVERTISSEMENT

Il y a un risque d'électrocution si les fusibles sont remplacés tandis que le cordon d'alimentation est encore branché.

See the following figure for the location of warning labels on the back of the instrument:



Warning
To prevent electrical shock, do not open cover. Refer all servicing to qualified personnel.

Avertissement
Afin d'éviter tout risque d'électrocution ne pas enlever ce couvercle. Faire appel au service Après-Vente.

Warning
FUSE

Avertissement
FUSE

Warning
For continued protection against electrical shock, replace with same type and ratings of fuse.

Avertissement
Pour assurer la protection contre le risque de choc électrique, remplacez le fusible seulement avec le même type et la même valeur nominale.

Configuration of Peltier Temp. Ctrl Unit Multi

6-Position Peltier Controlled Cell Changer (with heated reference or without heated reference)

Peltier Temperature Controller 201

Power Cord, 3 each

Interface Cable (USB), 1 each

Spare Fuse (AC 250V T5AL), 2 each

Temperature Probe, 1 each

Magnetic Stirrer, 6 each

Coolant Hose, 1 each

Coolant, 2 each

Waste Basket for Coolant, 1 each

Waste Hose for Coolant, 1 each

Hose for Coolant circulation, 1 each

Phillips round h d screw with washer, 2 each

Macro Cell with PTFE Stopper, 2 each

NOTE: *Peltier Temp Ctrl Unit Multi includes two (2) macro cells in the standard configuration. Additionally required macro cells for the 6-Position Peltier Controlled Cell Changer must be purchased separately.*

Description

6-Position Peltier Controlled Cell Changer (with heated reference or without heated reference)

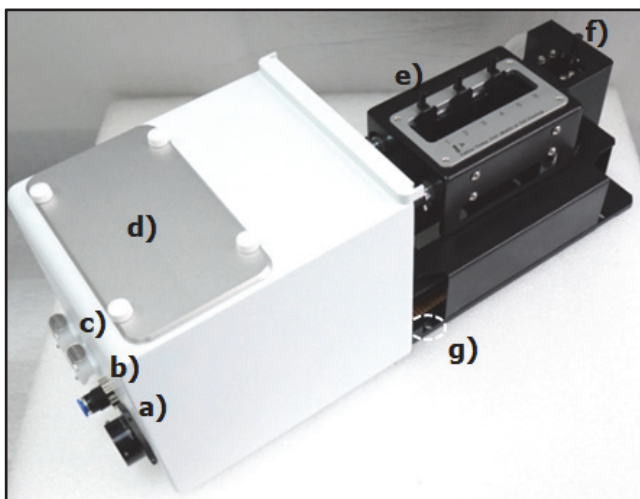


Figure 2-1 Lambda 365 6-Position Peltier Controlled Cell Changer (with heated reference)

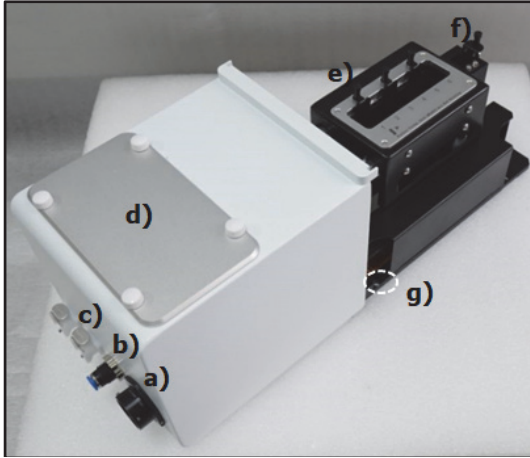


Figure 2-2 Lambda 365 6-Position Peltier Controlled Cell Changer (without heated reference)

- a. Interface connector between 6-Position Peltier Controlled Cell Changer and Peltier Temperature Controller 201
- b. N₂ Gas fitting
- c. Coolant Inlet/Outlet Quick Coupler
- d. Interface slot for Temperature Probe
- e. Cell Lifting knob for sample cells
- f. Cell Lifting knob for reference cell
- g. Phillips round headscrew with washer



Used to fix a cell holder, a base plate or a front plate for the Lambda 365. Spare screws (2each) are enveloped with the accessory.

Figure 3 Phillips round headscrew with washer (M4 *12L)

- h. Macro Cell with PTFE stopper

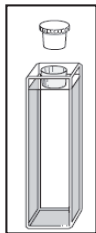


Figure 4 Macro Cell with PTFE stopper

- i. Temperature Probe

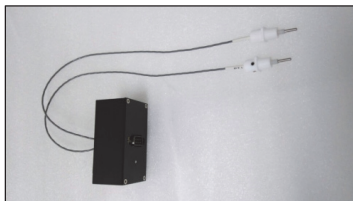


Figure 5 Temperature probe

Peltier Temperature Controller 201



Front View of Peltier Temperature Controller 201



Figure 6 Front view

- a. **Flow Gauge:** Indicator of the flow rate of N2 gas
- b. **Coolant Inlet**
- c. **LED Indicators:** Display the status of the operation of Coolant Circulation, Fan, Pump, etc. (If there is any problem in the components, Red LED will flash with beep alarm.).
- d. **Display pad:** Display temperature of sample and reference block.
- e. **Stirrer ON/OFF button:** It is used for controlling of the stirring.
- f. **AC Power:** Main power ON/OFF

Switch symbol

	IEC 60417-5268 (2002-10)	In position of a bi-stable push control
	IEC 60417-5269 (2002-10)	Out position of a bi-stable push control

Rear View of Peltier Temperature Controller 201



Figure 7 Rear view

- a. **Air Vent Manual button:** It is used to identify the cause of alarm that sounds when the trouble occurs with Peltier. The cause of the alarm is as follows;
- i. When the air occur in the coolant hose.
 - ii. When the liquid coolant does not flow.
 - iii. Lack of liquid coolant

NOTE: *Air Vent Manual button is recommended to be manipulated by service engineer.*

- b. **Buzzer:** It makes an alarm sound. If there is any problem before the measurement or the malfunction occurs during the operation, Buzzer beeps.
- c. **USB port**
- d. **Fuse:** AC socket + Fuse Holder
- e. **Interface:** Interface cable is connected with the 6-Position Peltier Controlled Cell Changer
- f. **Quick Coupler of Coolant Inlet/Outlet**
- g. **Quick Coupler of Coolant Drain**
- h. **N₂ Gas Inlet/Outlet ports**

NOTE: *N₂ gas is not always required [Tube for N₂ gas is not supplied with the accessory].*

How to Fill or Drain the coolant

How to Fill the coolant

NOTE: *When the Peltier Temp Ctrl Unit Sgl is installed for the first time, the enclosed Coolant should be filled as the following procedures.*

1. Prepare the Peltier Temperature Controller 201 in a location that is compatible with the required environmental conditions for the operation.
2. Connect the hose for coolant circulation to the Peltier Temperature Controller 201.

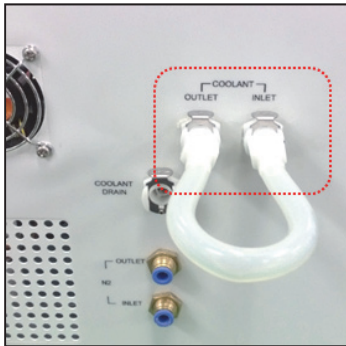


Figure 8 Connect the hose for coolant circulation

3. Connect the power cord to the Peltier Temperature Controller 201.



Figure 9 Connect the power cord

4. Remove the Phillips screws (4 each) on the Air Vent Manual cover using Phillips screwdriver.



Figure 10 Removing Phillips screws

5. Push the Air Vent Manual Button on.



Figure 11 Push the button

6. Turn on the AC power switch of the Peltier Temperature Controller 201.



Figure 12 Turn on the AC power switch

7. Check if the LEDs of LOW LEVEL and FLOW SENSOR are lit on.



Figure 13 LEDs of LOW LEVEL and FLOW SENSOR

8. Open the lid of the coolant inlet on top of the Peltier Temperature Controller 201 and fill up the liquid coolant using the funnel.



Figure 14 Lid of coolant inlet

9. Keep the amount of liquid coolant to level where the indicator is located between the 'L' (low) and 'H' (high) mark in the scale on the left side of the Peltier Temperature Controller 201.

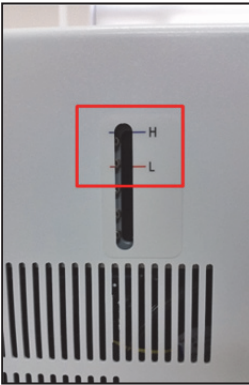


Figure 15 Coolant level

CAUTION

*Liquid coolant should be used as refrigerant. Do **not** use any water (tap water, DI, etc.). If water is used as refrigerant, the Peltier Temperature Controller 201's components might be corroded and its performance may be deteriorated.*

ATTENTION

Use any kind of liquid coolant of normal grade that is available. (e.g. liquid coolant including Distilled Water 70 wt%, Propylene Glycol 27 wt%, Additives 3 wt%).

*Le liquide de refroidissement doit être utilisé comme réfrigérant. N'utilisez **jamais** d'eau (eau du robinet, eau déminéralisée, etc.) L'eau risque en effet de corroder les composants du contrôleur Peltier et de réduire les performances de ce dernier.*

Utilisez un liquide de refroidissement du commerce de qualité normale (par exemple, un liquide de refroidissement à base d'eau distillée à 70 % M/V, de propylène glycol à 27 % M/V et d'additifs à 3 % M/V).

10. After filling up the coolant, check the 'LOW LEVEL' LED is not lit on.



Figure 16 Coolant level

11. Close the lid of the coolant inlet.
12. Turn off the AC power switch of the Peltier Temperature Controller 201.
13. Push the Air Vent Manual button off.
14. Fasten Phillips screws (4 each) on the Air Vent Manual button cover using Phillips screwdriver.
15. Install the 6-Position Peltier Controlled Cell Changer referring to the **Installation** section (page 13).

How to Drain the Coolant

1. Turn off the Peltier Temperature Controller 201.
2. Remove the Phillips screws (4 each) on the Air Vent Manual cover using Phillips screwdriver.



Figure 17 Removing Phillips screws

3. Push the Air Vent Manual button on.



Figure 18 Push the button

4. Prepare a waste basket.



Figure 19 Waste basket

5. Turn on the AC power switch of the Peltier Temperature Controller 201.



Figure 20 Turn on the AC power switch

6. Connect the waste hose to the Coolant Drain port on the rear panel.



Figure 21 Connect the waste hose

NOTE: *The Coolant flows out as soon as the waste hose is connected, so the other side of the waste hose should be placed into the waste basket before connected.*

7. The coolant will be drained automatically.

8. If the coolant falls below 'L' (Low level), the LEDs of LOW LEVEL and FLOW SENSOR are lit on.



Figure 22 LEDs of LOW LEVEL and FLOW SENSOR

9. When drain is completed, disconnect the waste hose.
10. Turn off the AC power switch of the Peltier Temperature Controller 201.
11. Push the Air Vent Manual button off.
12. Fasten Phillips screws (4 each) on the Air Vent Manual button cover using Phillips screwdriver.

Installation

CAUTION *Make sure the instrument is turned off while installing this accessory.*

ATTENTION *Assurez-vous que l'instrument est éteint lors de l'installation de cet accessoire.*

1. Prepare the Lambda 365 and Peltier Temperature Controller 201 in a location that is compatible with the required environmental conditions for the operation.
2. Connect the power cord and communication cable of the Lambda 365. **DO NOT** turn on the power of the instrument!
3. Remove the two Phillips round head screws with washer (M4*12L) to disassemble the existing cell holder and base plate.



Figure 23 Location of Phillips round head screws with washer

4. Pull out the cell holder and base plate by hand.



Figure 24 Pulling out the cell holder and base plate

5. Insert the 6-Position Peltier Controlled Cell Changer in the sample compartment.

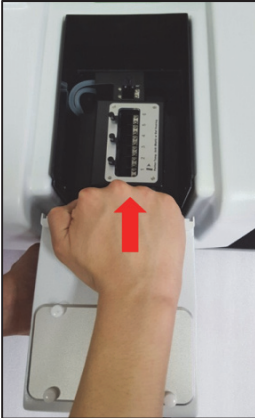


Figure 25 Inserting the 6-Position Peltier Controlled Cell Changer

6. Gently press the 6-Position Peltier Controlled Cell Changer to connect the communication port (male) under the bottom of the 6-Position Peltier Controlled Cell Changer to the port (female) in the sample compartment.

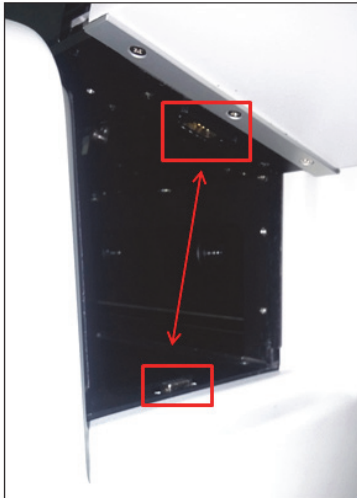


Figure 26 Connecting the communication ports

7. Fix and tighten the 6-Position Peltier Controlled Cell Changer with the Phillips round head screws.

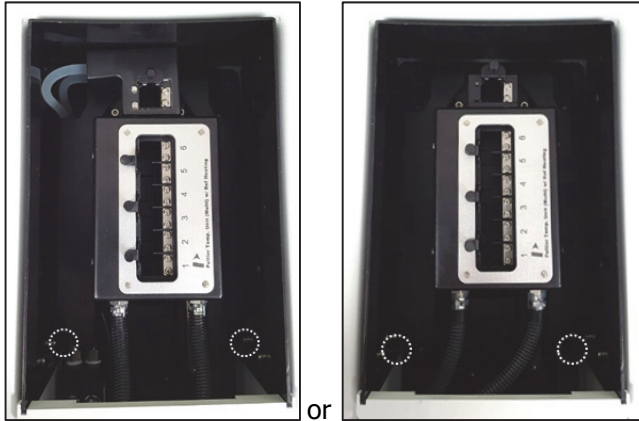


Figure 27 Location of screws (with heated reference or without heated reference)

8. Connect the accessory interface cable of the Peltier Temperature Controller 201 to the interface connector of the 6-Position Peltier Controlled Cell Changer.

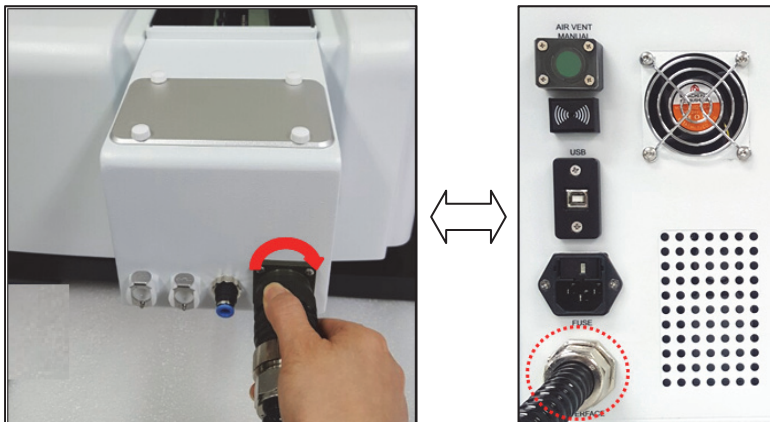


Figure 28 Connecting the accessory interface cable

9. Disconnect the hose for coolant circulation.

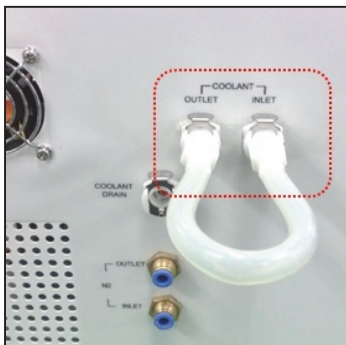


Figure 29 Disconnecting the hose for coolant circulation

NOTE: If you disconnect the hose, the remaining coolant in the hose may flow out of the hose. Be careful not to touch the coolant with your bare hands.

10. Connect the coolant inlet/outlet and N₂ gas tube between the Peltier Temperature Controller 201 and the 6-Position Peltier Controlled Cell Changer.

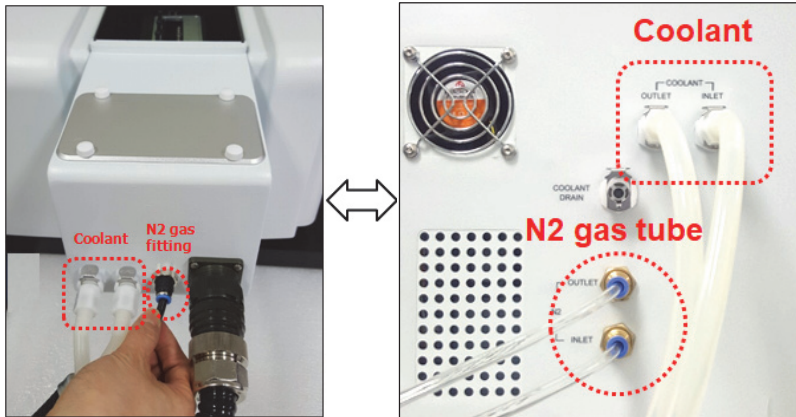


Figure 30 Connecting the coolant inlet/outlet and N₂ gas fitting

NOTE: *N₂ gas is not always required. If no gas is applied, user does not have to connect N₂ gas tube.*

11. Open the lid of Interface slot for Temperature Probe by hand.



Figure 31 Opening the lid of Interface slot

12. Connect the temperature probe to the Interface slot for temperature probe.

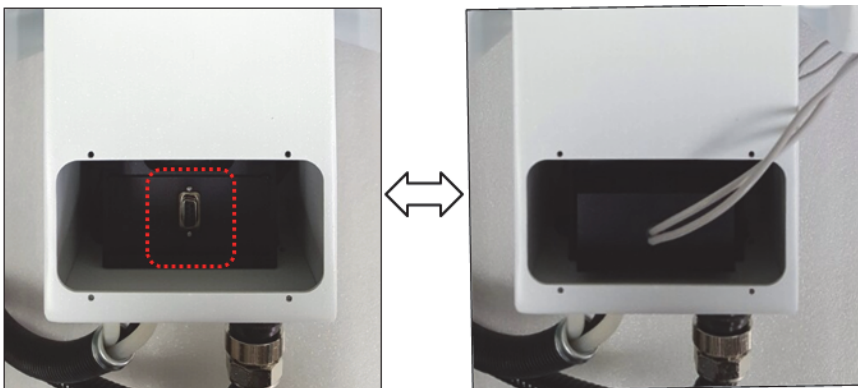


Figure 32 Connecting the temperature probe

13. Stuff the probe line into the cell compartment and close the lid of the Interface slot for temperature probe.

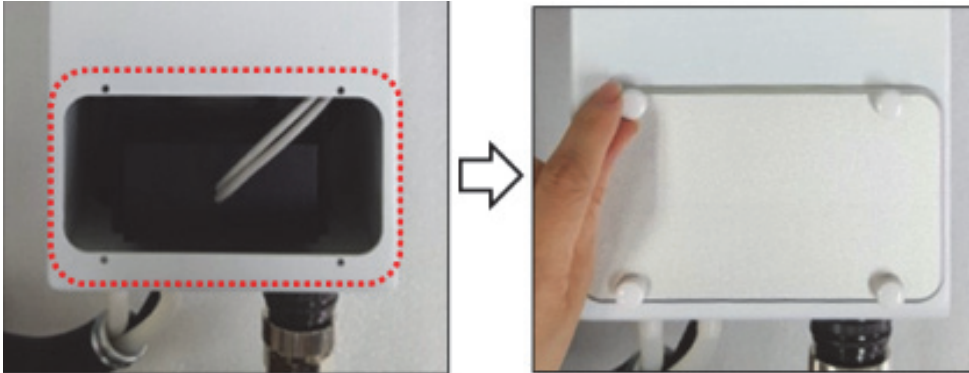


Figure 33 Stuffing the probe line into the cell compartment

14. Connect the Peltier Temperature Controller 201 with the PC via the USB cable.



Figure 34 Connecting the Peltier Temperature Controller 201 with the PC

15. Connect the power cord to the Peltier Temperature Controller 201.



Figure 35 Connecting the power cord

16. Turn on the AC power switch of the Lambda 365 and the Peltier Temperature Controller 201.

CAUTION *The air vent manual button should be off before turning on the main power of the Peltier Temperature Controller 201 and also during the operation since it could make a trouble for the communication between Lambda 365 and Peltier Temperature Controller 201.*

ATTENTION *Le bouton d'actionnement manuel de la ventilation doit être désactivé avant que le contrôleur Peltier ne soit mis sous tension et pendant le fonctionnement de ce dernier afin d'éviter qu'une erreur de communication entre le Lambda 365 et le contrôleur Peltier ne se produise*



Figure 36 Turn on the AC power switch

17. Check that the Power LED is on as a blue light.



Figure 37 Location of Power LED

NOTE: *Peltier Temperature controller 201 can be compatible with various peltier cell holders (single or Multi). Whenever you exchange the existing peltier cell holder to another one, you should perform the "Auto Tuning" setup in section **Peltier Controlled Auto Tuning Setup** (page 36).*

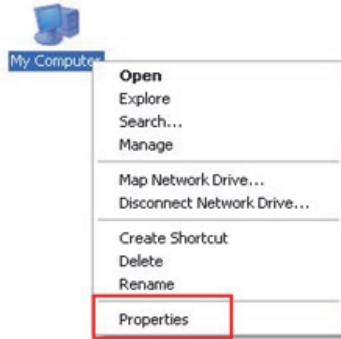
18. Turn off the power after the experiment.

Setting USB Serial Port

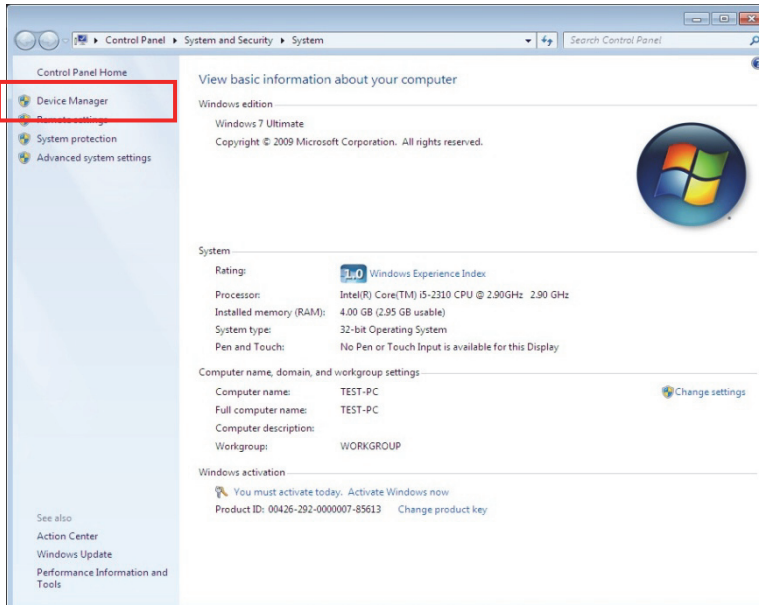
NOTE: When using the USB cable, USB Driver has already been installed when installing the Lambda 365 and UV Express software, user does not need to install it again.

When the communication by the USB is not established, change the port setting as follows;

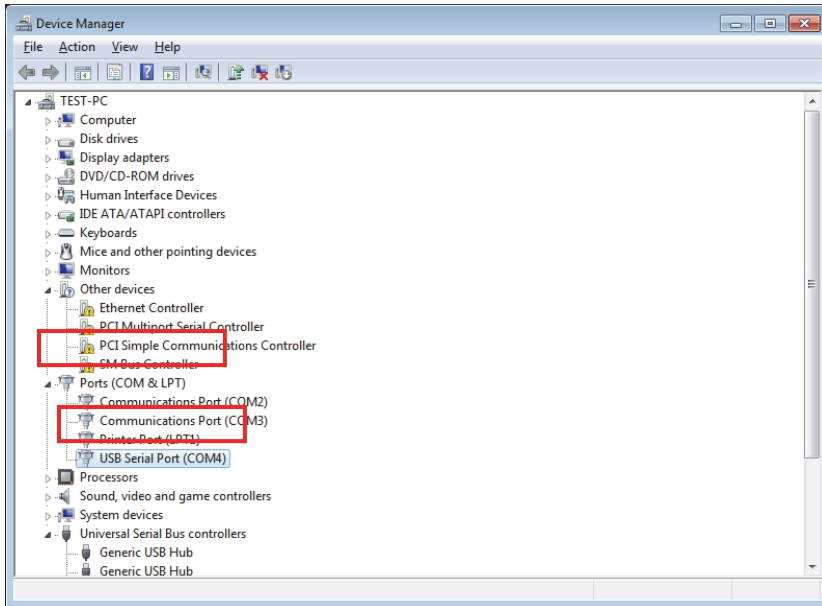
1. In Windows 7, select **My Computer** → **Properties**. In Windows 10, press **Windows**  **+Pause/Break** on the keyboard.



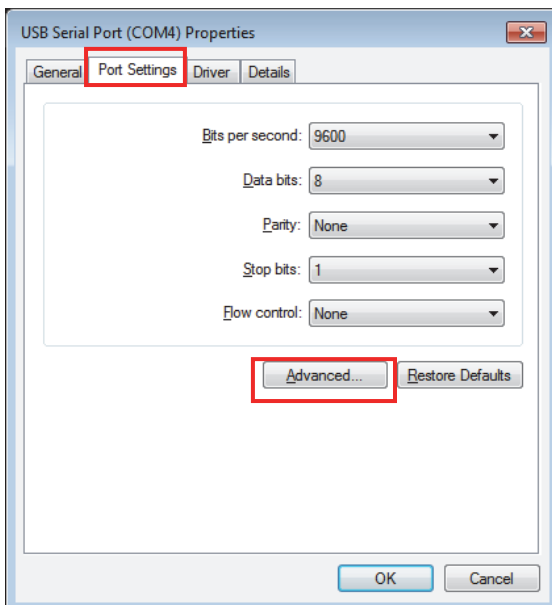
2. Select **Device Manager**.



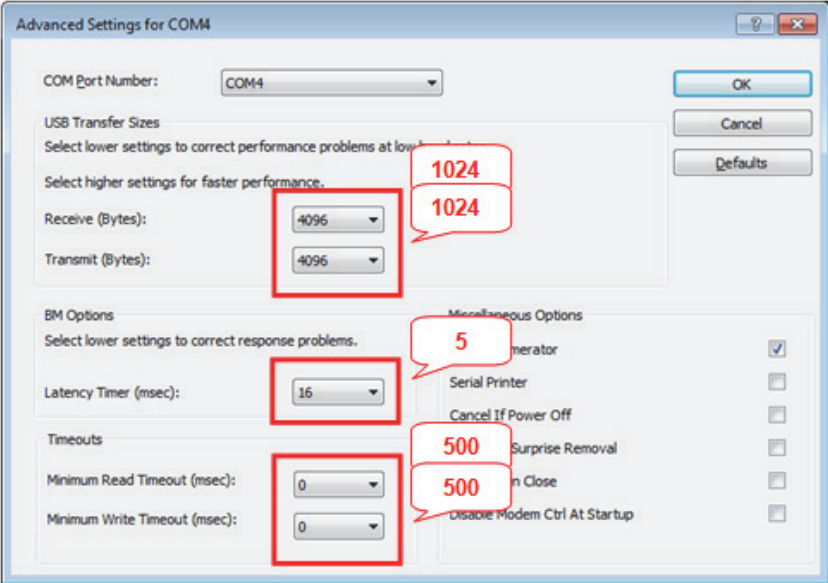
3. Select **Ports (COM & LPT)** to expand the listing. These are the devices currently connected to the COM ports. **USB Serial Port (COMx)** is listed when the driver installation is completed successfully.



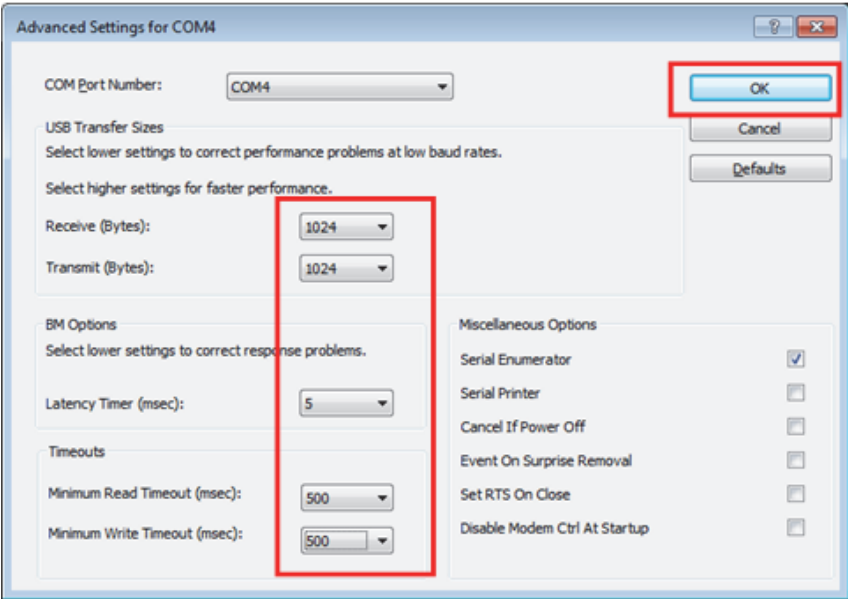
4. Double click on the **USB Serial Port (COMx)** of the **Ports (COM & LPT)**.
5. Select the **Port Settings** tab and select the **Advanced...** button.



6. Change the parameter values as shown below.



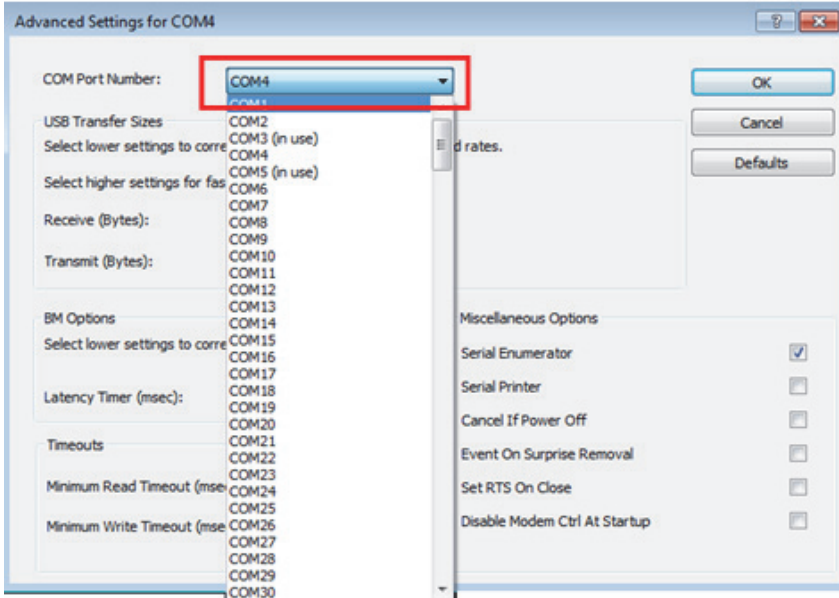
7. Select **OK** after checking the changed parameter values.



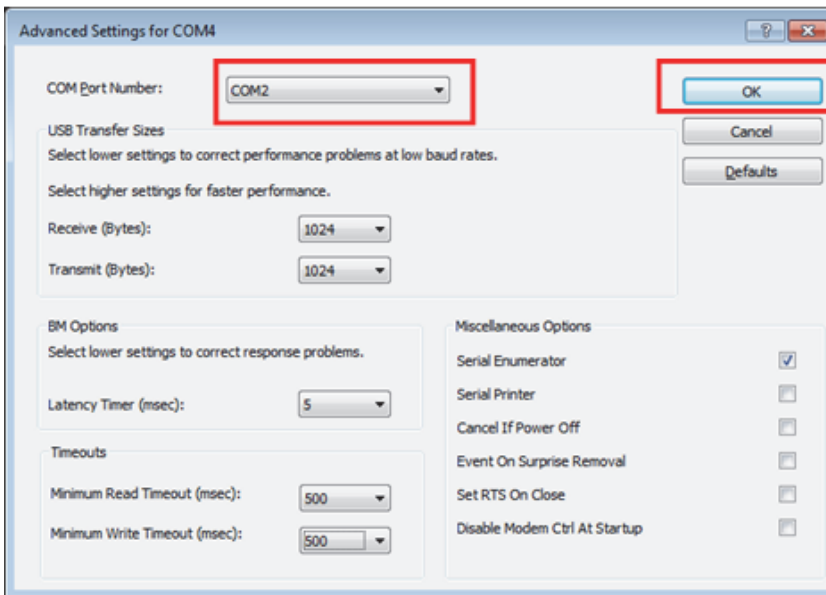
8. If the Peltier Temperature Controller 201 fails to communicate with the PC, change the COM Port Number by the following steps.

9. Open **Advanced Setting for COMx** window again by repeating the steps 1 to 6.

10. Select the **COM Port number list** to expand it and change the COM port number to another one which is not in use from COM 1 to COM 10.



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



12. After the port setting is changed, restart the computer.

Measurement

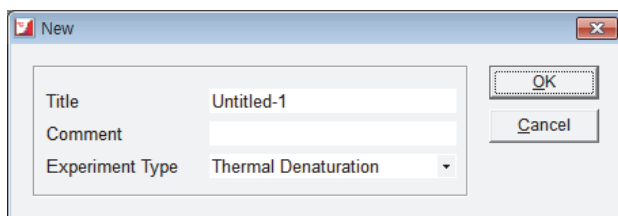
Thermal Denaturation Mode

1. Install the 6-Position Peltier Controlled Cell Changer referring to section **Installation** (page 13).
2. Close the sample compartment cover and turn on the instrument.

NOTE: Before System Self Test is performed, the 6-Position Peltier Controlled Cell Changer should be installed. Otherwise, the instrument can be damaged electrically and do not operate properly.

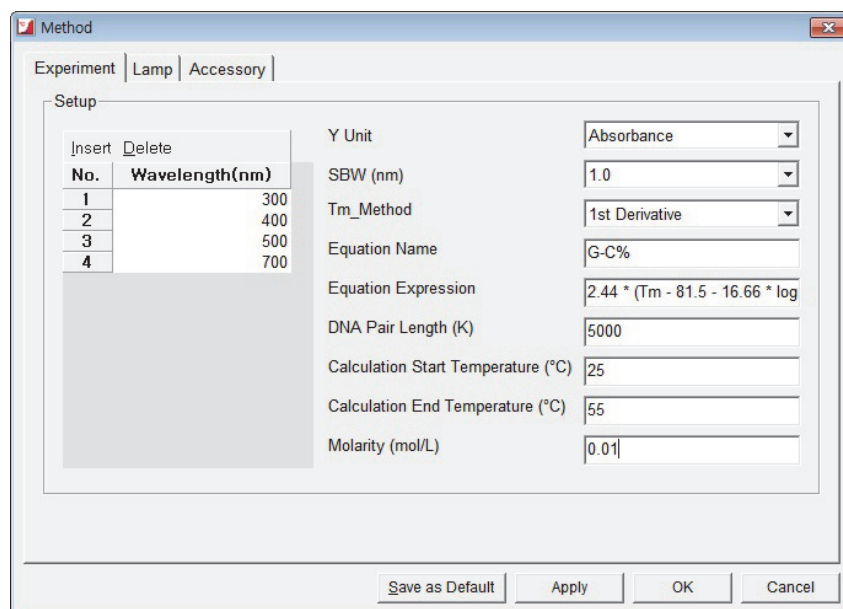
NOTE: Start the System Self Test after warming up the system for at least 20 minutes.

3. Double-click on the **UV Express** folder and select **Thermal Denaturation** mode.
4. Select **OK** after finishing the **System Self Test**.
5. Select **New** to open a new window and select **OK**.



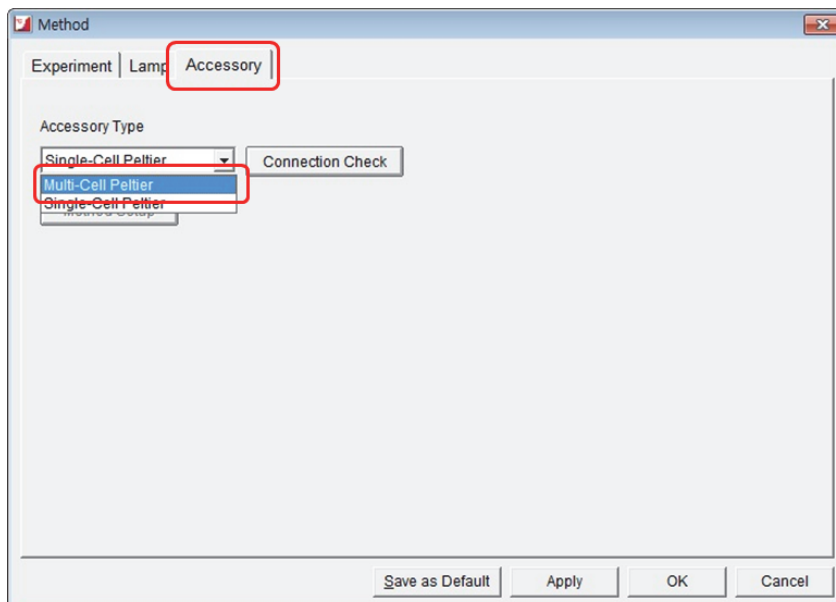
NOTE: When the 6-Position Peltier Controlled Cell Changer is connected for the first time, you need to correct the cell position. Calibrate the beam position of the 6-Position Peltier Controlled Cell Changer, see section **Calibration of Multi-Cell Position** (page 33).

6. Open the method in main menu or mode icon on the left side of the main window. Set parameters for **Experiment**.

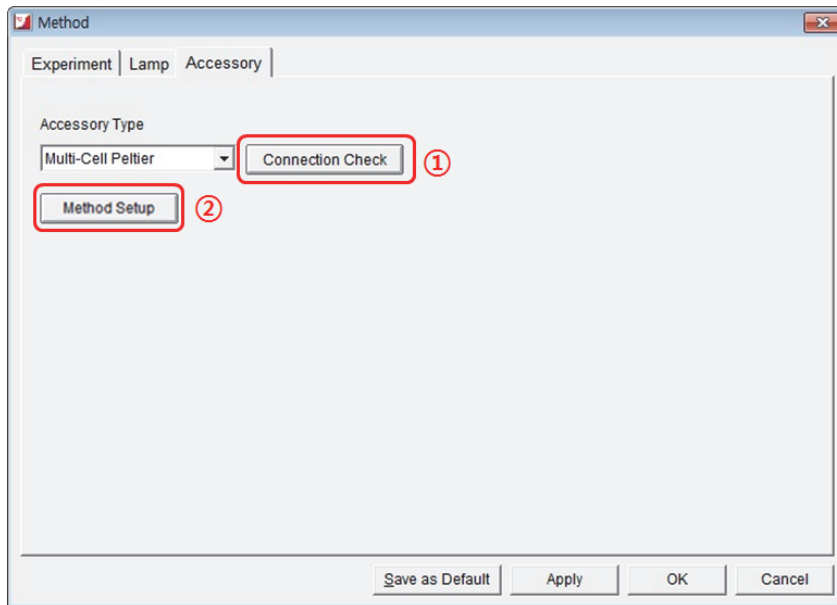


- a. **Y Unit:** Select one of the display unit : Absorbance, Transmittance, Reflectance or Energy.
 - b. **SBW (nm):** Select bandwidth. There are five bandwidths selectable: 0.5, 1, 2, 5 or 20 nm.
 - c. **Tm Method:** Select a method for determining melting temperature. Options include: 1st derivative and Average.
 - d. **Equation Name:** Enter the name of the formula. %G-C is entered as default, of which equation is formulated in **Equation Expression**.
 - e. **Equation Expression:** The default equation for the calculation of %G-C base pairs is:

$$\%G-C = 2.44 * (T_m - 81.5 - 16.66 * \log(M) + 500/K)$$
 Where M is the molarities of salt in mol/L, K is the DNA base pair length. %G-C will be calculated with estimated T_m and input values, Molarities (M) and length of DNA (K).
 - f. **DNA Pair Length(K)**
 Enter the DNA base pair length. This value will be used calculating %G-C.
 - g. **Calculation Start Temperature (°C):** Enter the start temperature for calculating the T_m value.
 - h. **Calculation End Temperature (°C):** Enter the end temperature for calculating the T_m value.
 - i. **Molarity (mol/L):** Enter the salt molarities of the solution [mol/L]. This value will be used in calculating %G-C.
7. After setting parameters for **Experiment** and **Lamp**, click the **Accessory** tab. And select **Multi-Cell Peltier**.

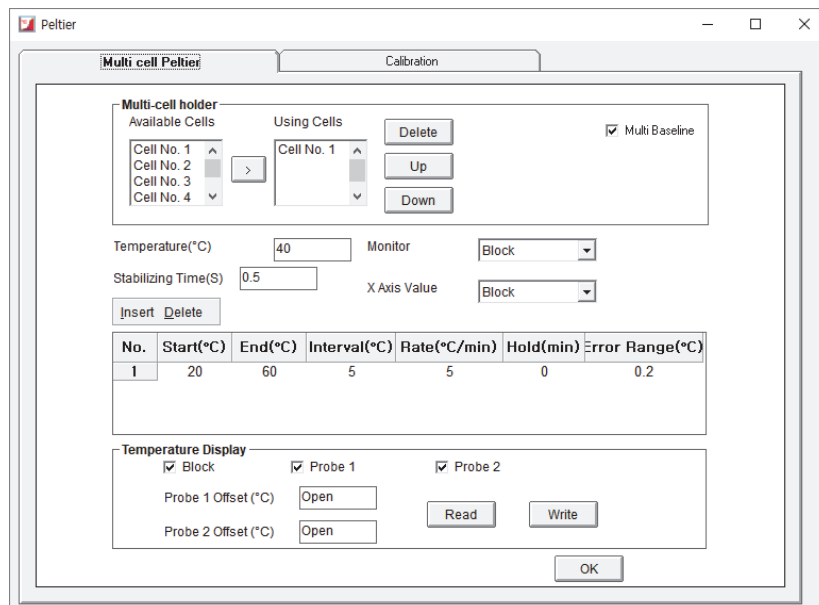


8. Select **Connection Check**, then **Method Setup** will be activated. Select **Method Setup**.



NOTE: Check the communication between Computer and Peltier Temperature Controller 201, see section **Setting USB Serial Port** (page 19) if the Method Setup is not activated.

9. The **Peltier** window will be shown. Select the **Multi Cell Peltier** tab and set parameters according to the experiment conditions.



► Multi-Cell holder

- a. **Available Cells:** Indicate cells that are available for measurement. In the case of 6-Position Peltier Controlled Cell Changer, six cells are available.

- b. **Using Cells:** Show the cell positions which are selected for measurement. Remove the cells by and switch positions by and keys.
- c. **Multi Zero:** If checked, zero will be measured all the selected positions. If not, zero will be only measured at the 1st cell position among the using cells.

NOTE: *To prevent inadequate baseline (zero) measurement because of the difference in transmittance among cuvettes or any other reasons, Multi Baseline (Multi Zero) measurement is recommended.*

- d. **Temperature (°C):** Enter the returning temperature after the experiment is finished.
- e. **Monitor:** Select temperature that used to monitor during measurement. Options include: Block, Probe1 or Probe2.
- f. **Stabilizing Time (S):** Set the stabilization time after reaching the set temperature.
- g. **X Axis Value:** Select the displayed x-axis value of the graph; probe temperature or block temperature.
- h. **Start (°C):** Enter the start temperature for the measurement.
- i. **End (°C):** Enter the end temperature for the measurement.
- j. **Interval (°C):** Enter the measurement interval temperature. For instance, if you enter 5°C, the sample will be measured from start temperature to end temperature every 5°C.
- k. **Rate (°C/min):** Enter the heating (or cooling) temperature rate in each temperature range.

NOTE: *The rate has to be set under or equal to interval value.*

l. **Hold (min)**

Enter the holding time. For example, if you set 1 min, measurement will start one minute after temperature reaches at the set point and the set stabilizing time has elapsed.

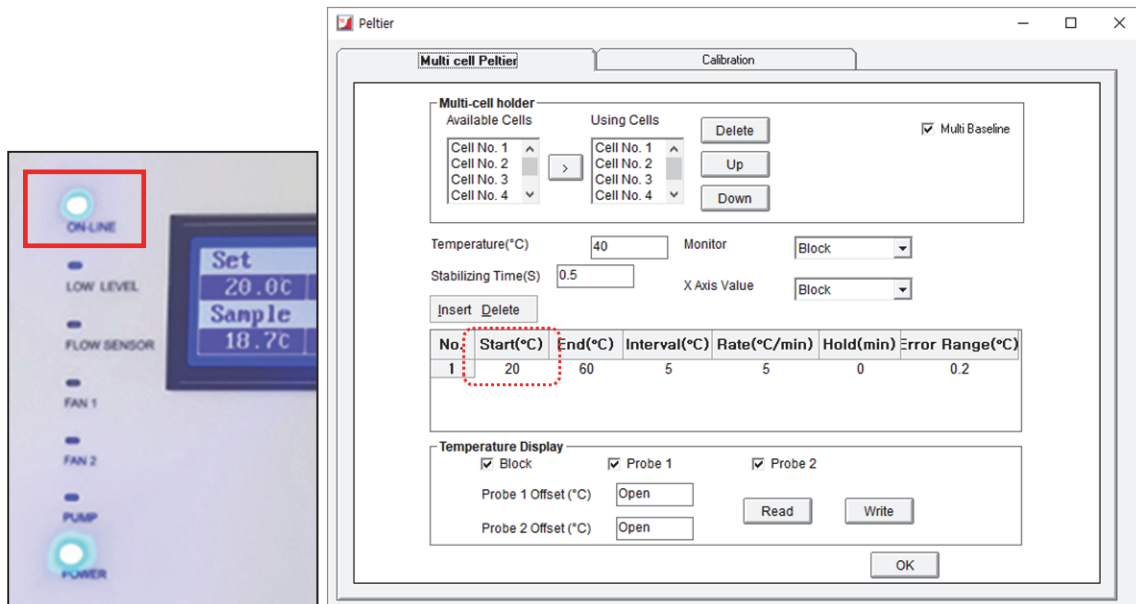
m. **Error Range (°C/min)**

It shows the temperature tolerance between the sampling and monitored temperature. The measurement will start when the temperature tolerance reaches within the set Error Range. Example: Set the starting temperature at 20°C and error range with 1°C then, the measurement will start when the temperature reaches between 19°C and 21°C.

► **Temperature Display**

- n. Select which temperature will be displayed on the panel: Block, Probe 1 or Probe 2. The selected temperature is only displayed in real time.
- o. **Offset:**
This function is used to adjust temperature. **It is only used for manufacturing process, so do not modify the values.**

10. After completing the parameter setup, select **Apply** and **OK**. Then the LED for ON-LINE is turned on, and it will start heating up or cooling down to the Start temperature in the **Multicell Peltier** tab.



11. Insert blank solutions into the both reference and sample cell holder. Select **Baseline** and then baseline will be measured when it reaches the set **Start Temperature**.

NOTE: To monitor the probe temperature, the probes should be immersed in the sample, or to use the block temperature for monitoring, the cell lid should be closed tightly.

Start Temp(°C) : 20	Monitor : Block
SP Temp(°C) : 20	Error Range(°C) : 0.2
Block Temp(°C) : 19.7	Hold Time :
Probe1 Temp(°C) : Open	Elapsed Time : 0 : 4(s)
Probe2 Temp(°C) : Open	Status :

- a. **Start Temp (°C)**: The starting temperature of experiment.
- b. **SP Temp (°C)**: The set temperature to go to the next measurement temp.
- c. **Block Temp (°C)**: The temperature of Cell Block.
- d. **Probe 1 Temp (°C)**: The temperature of Probe 1.
- e. **Probe 2 Temp (°C)**: The temperature of Probe 2.
- f. **Monitor**: Selected temperature is being monitored.

- g. **Error Range (°C):** It shows the temperature tolerance between the sampling and monitored temperature. The measurement will start when the temperature tolerance reaches within the set Error Range.
 - h. **Hold Time:** It shows the set holding time.
 - i. **Elapsed time (s):** It shows the elapsed time to reach the sampling temperature.
 - j. **Status:** It shows the status of experimental progress.
12. Remove blank solution from sample cell holder and insert sample solution into the sample cell holder. Select **Sample**, then the measurement will be started after the temperature reaches the target temperature.

NOTE: *To pull out the cell easily, use the cell lifting knob.*



13. After the measurement is finished, the results are displayed in the result window. Save or print the results as required.

Other Measurement Modes

NOTE: *Peltier Temperature Control Unit is available in all methods, however, unlike Thermal Denaturation, the measurement is only performed with isothermal state.*

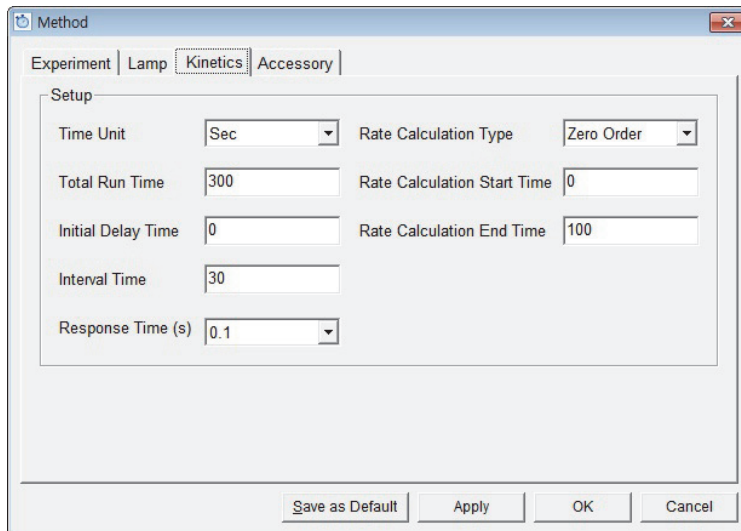
1. Install the 6-Position Peliter Controlled Cell Changer referring to section **Installation** (page 13).
2. Close the sample compartment cover and turn on the instrument.

NOTE: *When executing System Self Test, the 6-Position Peltier Controlled Cell Changer has to be installed. Otherwise, the instrument can be damaged electrically and does not operate properly.*

3. Double-click on the **UV Express folder** and select one of the modes except Thermal Denaturation. In this case, open kinetics mode as example.
4. Select **OK** after finishing the **System Self Test**.
5. Select **New** to open a new window and select **OK**.

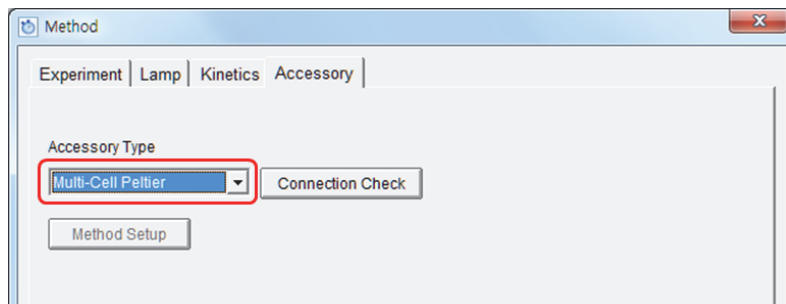
NOTE: When the 6-Position Peltier Controlled Cell Changer is connected for the first time, you need to correct the cell position. Calibrate the beam position of the 6-Position Peltier Controlled Cell Changer, referring to the see section **Calibration of Multi-Cell Position** (page 33).

- Open the method in main menu or click the mode icon on the left side of the main window. Set parameters for Experiment.

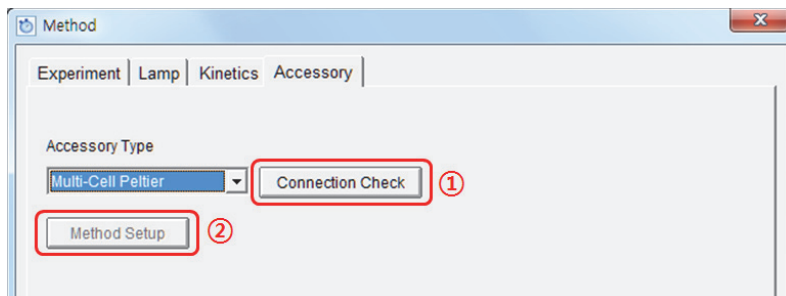


NOTE: If you want to know about the meaning of each parameter of method tabs and other modes more detail, please refer to X. Measurement Modes of the UV Express Software User Guide.

- After setting parameters for Experiment, Lamp and Kinetics, click **Accessory** tab. Select **Multi-Cell Peltier**.

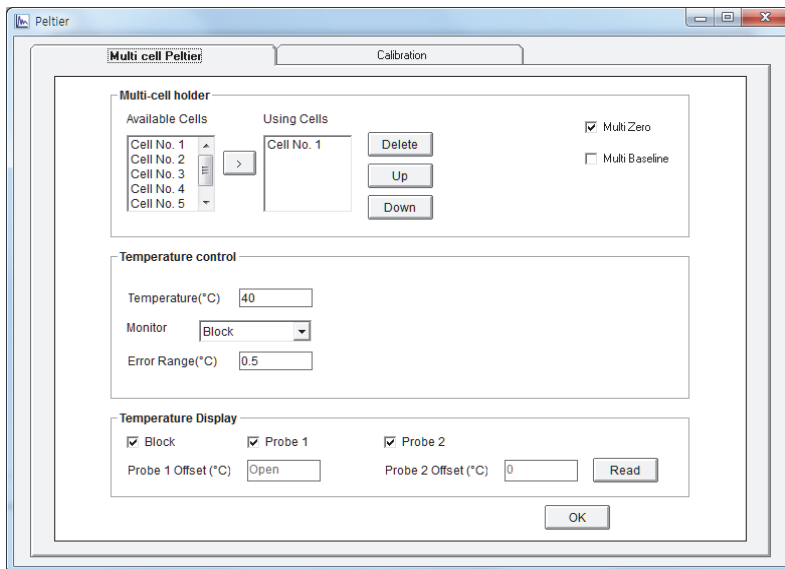


- Select **Connection check**, the Method Setup will be activated. Select **Method Setup**.






NOTE: Check the communication between Computer and Peltier Temperature Controller 201, see section **Setting USB Serial Port** (page19) if the Method Setup is not activated.

9. The Peltier window will be shown. Select the **Multi Cell Peltier** tab and set parameters according to the experiment conditions.



► Multi-Cell holder

- Available Cells:** Indicate cells that are available for measurement. In the case of 6-Position Peltier Controlled Cell Changer, six cells are available.
- Using Cells:** Show the cell positions which are selected for measurement. Remove the cells by  and switch positions by  and  keys.
- Multi Zero, Multi Baseline:** If checked, zero (baseline) will be measured all the selected positions. If not, zero (baseline) will be only measured at the 1st cell position among the using cells. Multi Baseline is only available at the Scan and Scanning Kinetics mode.

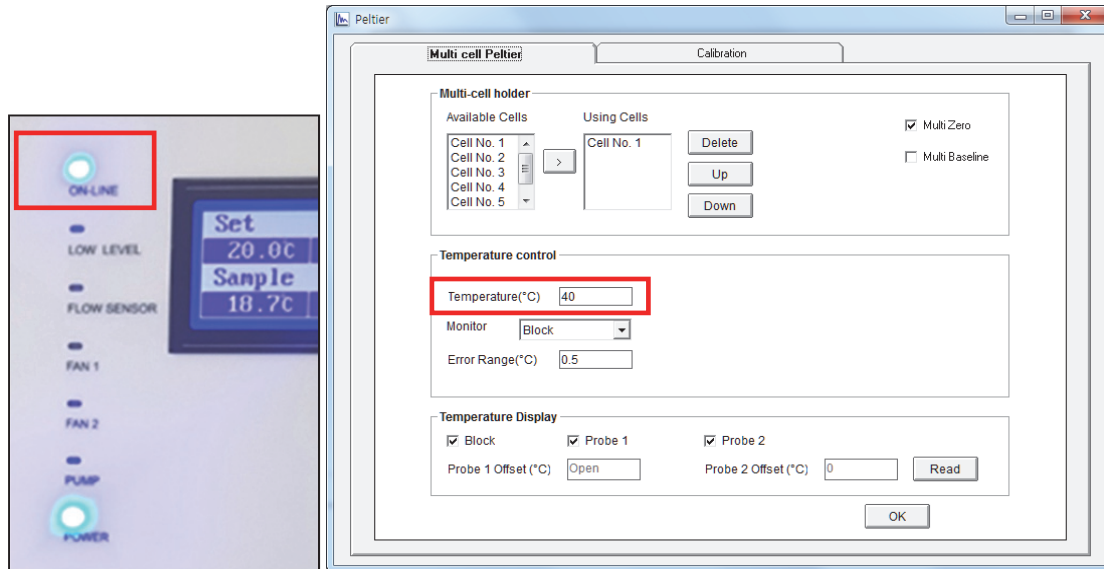
NOTE: To prevent inadequate baseline (zero) measurement because of the difference in transmittance among cuvettes or any other reasons, Multi Baseline (Multi Zero) measurement is recommended.

- Temperature (°C):** Enter the returning temperature for the experiment.
- Monitor:** Select temperature that used to monitor during measurement. Options include: Block, Probe1 or Probe2.
- Error Range (°C/min):** It shows the temperature tolerance between the sampling and monitored temperature. The measurement will start when the temperature tolerance reaches within the set Error Range.

Example: Set the starting temperature at 20°C and error range with 1°C then, the measurement will start when the temperature is reached between 19°C and 21°C.

► Temperature Display


- g. Select which temperature will be displayed on the panel: Block, Probe 1 or Probe 2. The only selected temperature is displayed in real time.
- h. **Offset:** This function is used to adjust temperature. **It is only used for manufacturing process, so do not modify the values.**
10. After completing the parameter setup, select **Apply** and **OK**. Then the LED of ON-LINE is turned on, it will start heating up or cooling down to the set temperature in the Setup Multi Cell Peltier tab.



11. Insert blank solutions into the both reference and sample cell holder. Select **Baseline (or Zero)** and then baseline (or zero) will be measured when it reaches the set Temperature.

NOTE: To monitor the probe temperature, the probes should be immersed in the sample, or to use the block temperature for monitoring, the cell lid should be closed tightly.

Start Temp(°C) :	20	Monitor :	Block
SP Temp(°C) :	20	Error Range(°C) :	0.2
Block Temp(°C) :	19.7	Hold Time :	
Probe1 Temp(°C) :	Open	Elapsed Time :	0 : 4(s)
Probe2 Temp(°C) :	Open	Status :	



- a. **Start Temp (°C):** The starting temperature of experiment.
 - b. **SP Temp (°C):** The set temperature to go to the next measurement temp.
 - c. **Block Temp (°C):** The temperature of Cell Block.
 - d. **Probe 1 Temp (°C):** The temperature of Probe 1.
 - e. **Probe 2 Temp (°C):** The temperature of Probe 2.
 - f. **Monitor:** Selected temperature is being monitored.
 - g. **Error Range (°C):**
It shows the temperature tolerance between the sampling and monitored temperature. The measurement will start when the temperature tolerance reaches within the set Error Range.
 - h. **Hold Time:** It shows the set holding time.
 - i. **Elapsed Time (s):** It shows the elapsed time to reach the sampling temperature.
 - j. **Status:** It shows the status of experimental progress.
12. Remove blank solution from sample cell holder and insert sample solution into the sample cell holder. Select **Sample**, then the measurement will be started after the temperature reached the target temperature.

NOTE: *To pull out the cell easily, use the cell lifting knob.*

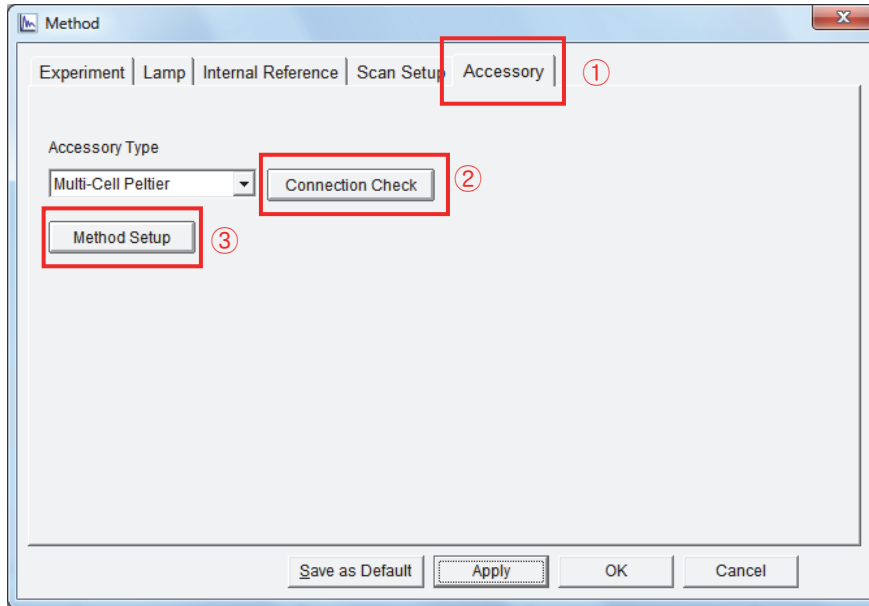


13. After the measurement is finished, the results are displayed in the result window. Save or print results as required.

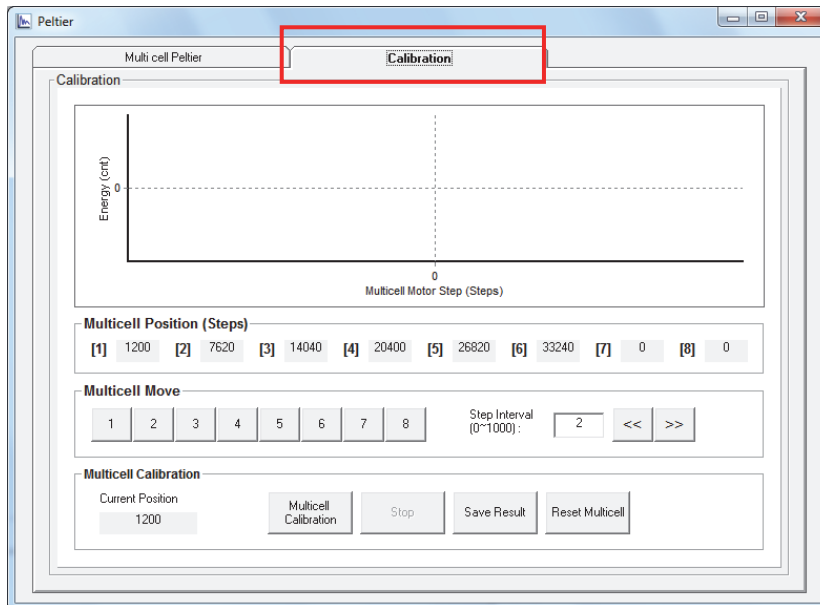
Calibration of Multi-Cell Position

NOTE: Calibrate the beam position of the 6-Position Peltier Controlled Cell Changer when the Multi-Cell is installed for the first time or beam position is incorrect.



1. Execute one measurement mode of UV Express software (Scan, for example) and open the **Method Setup of the Multi-Cell Peltier.**



2. Select the **Calibration** tab in the Peltier setup. The following dialog box will appear.

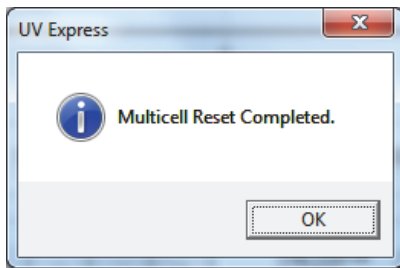


3. The Functions of the Multi-Cell Calibration are shown as follows.

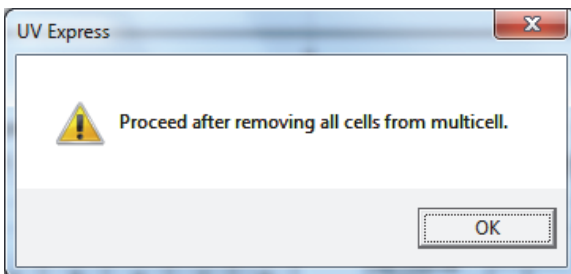
Command	Function
MultiCell Position	It shows saved steps of each cell position of the Multi-Cell.
Multicell Move	It is used for moving Multi-Cell position as clicking buttons  It is used for moving Multi-Cell position using  buttons by entered step.
Multicell Calibration	Perform the Multi-Cell calibration.
Stop	Stop operation during Multi-Cell calibration.
Save Result	It is used to save the calibrated result.
Reset Multicell	Move to '0' step of Multi-Cell position.

NOTE: Although eight positions (steps) are displayed, only the first six (6) positions are used for 6-Position Peltier Controlled Cell Changer. The last two positions remain 0 steps.

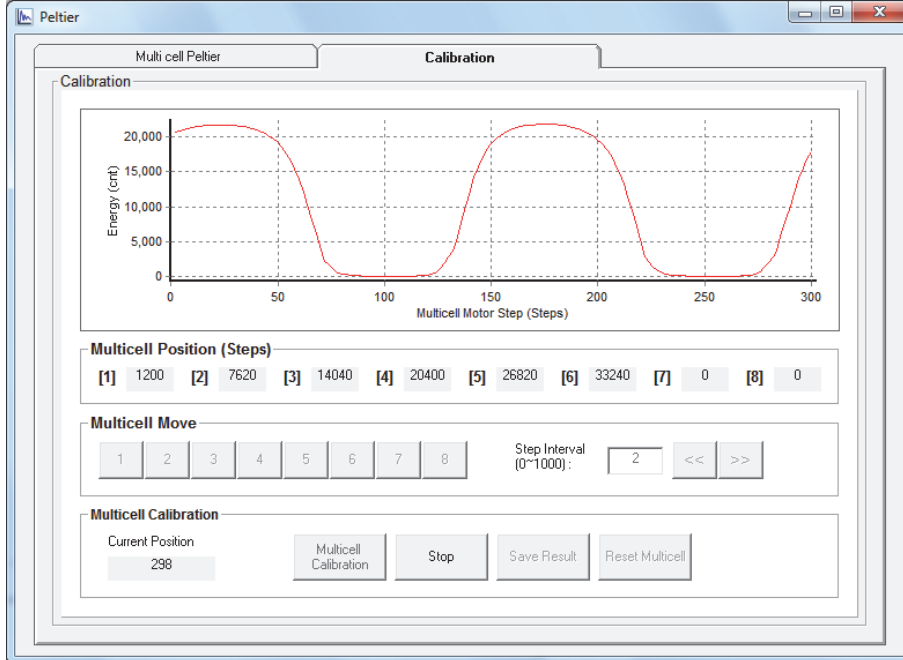
4. Click **Reset Multicell** to format the Multi-Cell steps. Click **OK**.



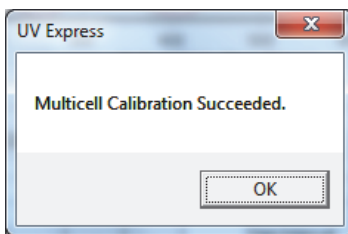
5. Click **MultiCell Calibration**. Then the following dialog box will appear. Remove all samples from the 6-Position Peltier Controlled Cell Changer. [Empty the 6-Position Peltier Controlled Cell Changer]. Click **OK**.



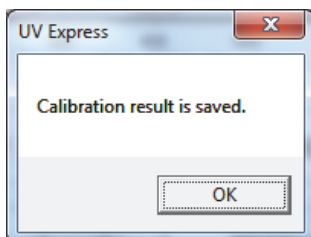
6. Then the Multi-Cell calibration will start. The current process of calibration will be shown in the main window.



7. When calibration is finished, the following box appears. Click **OK**.



8. Click **Save Result** to save the result. If the following message box appears, click **OK**.




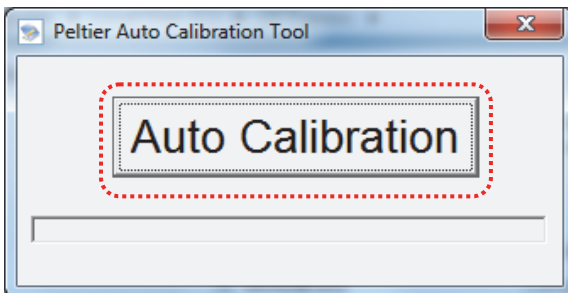
Peltier Temperature Controller 201 Auto Tuning Setup

NOTE: *Peltier Temperature Controller 201 can be compatible with various peltier cell holders (Single or Multi). Whenever you exchange the existing peltier cell holder to another one, you should perform the "AUTO TUNING" set up to minimize the temperature fluctuation at the target temperature.*

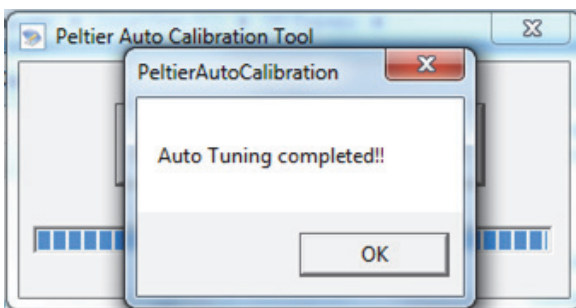
1. Connect the accessory interface cable of the Peltier Temperature Controller 201 to the connector of the peltier cell changer.
2. Turn on the AC power switch of the Lambda 365 and the Peltier Temperature Controller 201.



3. Insert **UV Express** installation CD into the CD-ROM drive. Select **Computer** → **CD Drive**. Double Click on **Peltier Auto Calibration**  **PeltierAutoCalibration**.
4. Click **Auto Calibration**.





5. Click **OK** when the 'Auto Tuning completed!!' message pops up.



Troubleshooting

Power LED is not lit on

1. Check the connection of the power cord or the fuse. The fuse is located at the rear of the instrument.

	<p><i>There is risk of receiving a fatal electric shock if the fuses are replaced with the power cord connected.</i></p>
<p>WARNING</p>	
	<p><i>Il y a un risque d'électrocution si les fusibles sont remplacés tandis que le cordon d'alimentation est encore branché.</i></p>
<p>AVERTISSEMENT</p>	

2. Turn off and unplug the instrument.
3. Locate the fuse cover on the left rear panel of the instrument.
4. Carefully open the compartment latch where the fuse is located.



← Location of latch on the fuse compartment door

5. Disconnect the fuse.
6. Replace with a new T5AL fuse (AC 250V). One spare is contained in the power module.
7. Close the compartment door.
8. Plug in the instrument and turn on.

On-Line LED is not lit on

1. Check whether the communication cable is connected tightly.
2. Change the port setting see section **Setting USB Serial Port** (page 19).

FAN LED is lit on with an alarm sound

1. Fan needs to be replaced.

LED of LOW LEVEL, FLOW SENSOR and PUMP blinks with an alarm sound

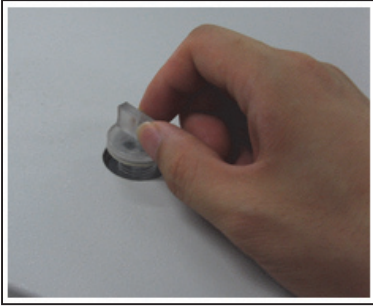
1. Turn off the power of the peltier temperature controller 201.
2. Remove Phillips screws (4 each) on the Air Vent Manual button cover using Phillips screwdriver.



3. Push the Air Vent Manual button on.



4. Restart the Peltier Temperature Controller 201 and check the coolant level and if it is lower the 'L' (low) mark, fill up the coolant more.



5. Check if the LED blinks of LOW LEVEL, FLOW SENSOR and PUMP stop.



6. Close the lid of the coolant inlet.
7. Turn off the AC power switch of the Peltier Temperature Controller 201.
8. Push the Air Vent Manual button off.
9. Fasten Phillips screws (4 each) on the Air Vent Manual button cover using Phillips screwdriver.

FLOW SENSOR and PUMP LED is lit on with an alarm sound



1. Turn off the power of the Peltier Temperature Controller 201.

- Remove Phillips screws (4 each) of Air Vent Manual button cover using Phillips screwdriver.



- Push the Air Vent Manual button on.



- Restart the Peltier Temperature Controller 201.
- Check whether the tubing is bent or it is connected correctly. And check if coolant flows properly for about one minute.
- Check if the LED blinks of FLOW SENSOR and PUMP stop.



- Close the lid of the coolant inlet.
- Turn off the AC power switch of the Peltier Temperature Controller 201.
- Push the Air Vent Manual button off.
- Fasten Phillips screws (4 each) on the Air Vent Manual button cover using Phillips screwdriver.
- If the FLOW SENSOR and PUMP LED is continuously on, contact your PerkinElmer Service representative.

Connection is failed

1. Check the Interface connector is lined properly.

6-Position Peltier Controlled Cell Changer does not move

1. Check if the 6-Position Peltier Controlled Cell Changer connector is connected to the Lambda 365.
2. Turn on and off again the Lambda 365 with installed 6-Position Peltier Controlled Cell Changer.

Intensity is too low

1. Recalibrate if the light beam does not reach the center of the cell holder's hole.
 2. If the intensity value is still low after the recalibration, the lamps of the light source may be deteriorated and need replacing. Contact your PerkinElmer service representative.

When 6-Position Peltier Controlled Cell Changer does not reset

1. If reset is failed, the photo interrupt switch inside the 6-Position Peltier Controlled Cell Changer needs replacing. Contact your PerkinElmer service representative.

When 6-Position Peltier Controlled Cell Changer is not aligned precisely

1. Recalibrate the 6-Position Peliter Controlled Cell Changer if the light beam does not reach the center of the cell holder's hole.

