Lambda 365 6-Position Peltier Controlled Cell Changer, Controller 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
- N_2 gas purging available

Figure 1 6-Position Peltier Controlled Cell Changer, Controller (with heated reference) [P/N: N4101029] or Peltier Temp Unit (Multi) w/o Reference Heating [P/N: N4101008]

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

Produced in the USA.

Dimensions and Specifications

Peltier Controller

Physical Characteristic	Specification
Power	100-240 VAC, 50/60 Hz, 300W, Free Voltage
Temperature Range	-5 to 100°C (Maximum Internal Temperature)
Maximum Ambient Operating Temperature	40°C
Dimensions	310 (W) x 410 (D) x 275 (H) mm (12.2 (W) x 16.1 (D) x 10.8 (H) in)
Weight	20.0 kg (44 lb)
Coolant Volume	2 L
N_2 Gas Available	100 psi (6.9 bar)
Liquid Cooling System	
Magnetic Stirrer Control Available	
Emergency Power Off Switch 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	135 (W) x 384 (D) x 143 (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: 3.1 Kg (6.8 lb)
Temperature Accuracy	±0.15°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.

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.

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. Control Unit (Multi)

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

Peltier Controller

Power Cord, 3ea

Interface Cable (RS-232 and USB to RS-232), 1each

Spare Fuse (AC 250V T5AL), 2ea

Temperature Probe, 1ea

Magnetic Stirrer, 6ea

Coolant Hose, 1ea

Coolant, 2ea

Waste Basket for Coolant, 1ea

Waste Hose for Coolant, 1ea

Phillips round head screw with washer, 2ea

Description

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

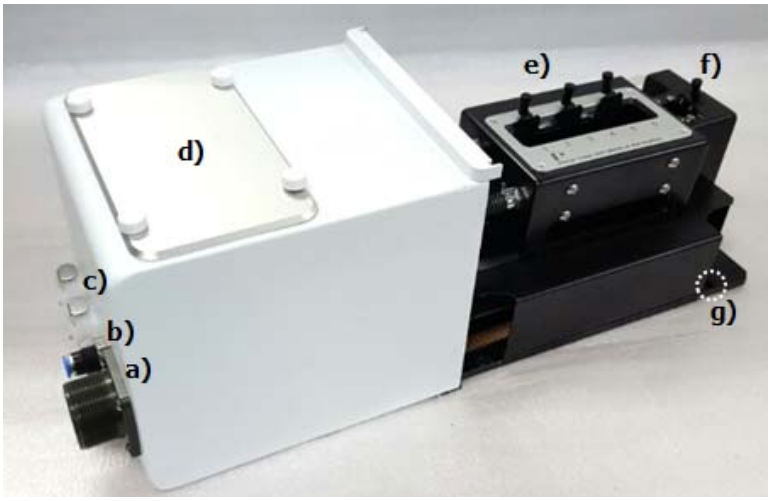


Figure 2-1 Lambda 365 6-Position Peltier Controlled Cell Changer (with heated reference)

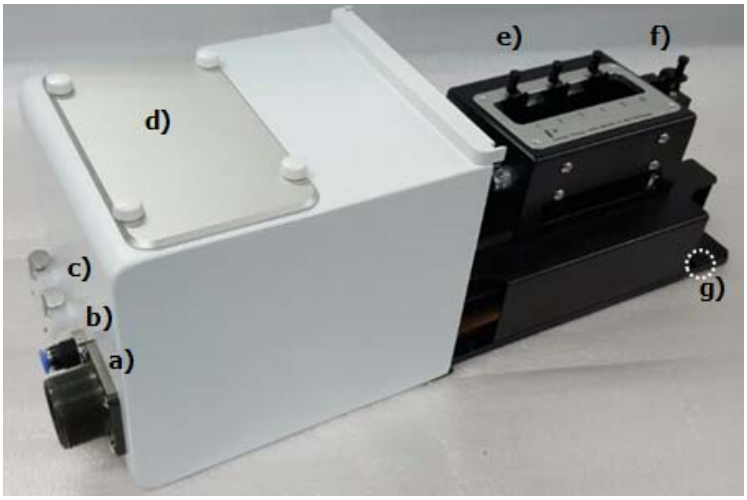


Figure 2-2 Lambda 365 6-Position Peltier Controlled Cell Changer (without heated reference)

a. Interface connector between 6-Position Peltier Controlled Cell Changer and Peltier Controller

b. Coolant Inlet/Outlet Quick Coupler

c. N_2 Gas fitting

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 Lambda 365.

Spare screws (2ea) are enveloped with the accessory.

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

h. Temperature Probe

Figure 4 Temperature probe

Peltier Controller

Front View of Peltier Controller

Figure 5 Front view

a. **Manual touch pad with Display:** Temperature Control Unit (Heating/Cooling Block).

b. **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.).

c. **Manual ON/OFF button:** As the Manual ON/OFF button is ON, the temperature can be controlled manually by a) Manual touch pad with Display.

NOTE: *Manual operation is used only for the manufacturer so it should be turned off during the measurement.*

d. **N_2 gas ON/OFF button:** It is used for using N_2 gas to remove the frost from the heating and cooling.

e. **Stirrer ON/OFF button:** It is used for controlling of the stirring.

f. **Stirrer Speed Controlling Knob:** Control the stirring speed (rpm).

g. **Emergency switch:** Stop all operations in the emergency situation.

NOTE: *During the operation, Emergency switch should be turned off.*

h. **Coolant Inlet**

Rear View of Peltier Controller

Figure 6 Rear view

a. **RS-232 port**

b. **AC Power:** Main Power ON/OFF

c. **Fuse:** AC socket + Fuse Holder

d. **Interface:** Interface cable for connecting with 6-Position Peltier Controlled Cell Changer

e. **Air Vent Manual button:** It is used for removing the air in the coolant hose.

f. **Buzzer:** It makes an alarm sound. If there is any problem before the measurement, Buzzer beeps 6 times at every 10 sec. If the malfunction occurs during the operation, Buzzer beeps twice at every 10 sec.

g. **Quick Coupler of Coolant Inlet/Outlet**

h. **Quick Coupler of Coolant Drain**

i. **N_2 Gas Inlet/Outlet ports**

NOTE: *N_2 gas is not always required [Tube for N_2 gas is not supplied with the accessory].*

j. **Flow Gauge:** Indicator of the flow rate of N_2 gas.

Installation

CAUTION **ATTENTION**	*Make sure the instrument is turned off while installing this accessory.* *Assurez-vous que l'instrument est éteint lors de l'installation de cet accessoire.*

1. Prepare the Lambda 365 and Peltier Controller in a location that is compatible with the required environmental conditions for the operation.

2. Open the lid of the coolant inlet on top of the Peltier Controller.

Figure 7 Lid of coolant inlet

3. Fill up the liquid coolant.

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

NOTE: *Keep the amount of liquid coolant to the level where the indicator is located between the 'L'(low) and 'H'(high) mark in the scale on the left side of the Peltier Controller. When the coolant is running short for the operation, LED of Low Water Level is changed red with alarm sounding.*

4. Connect the power cord and communication cable of the Lambda 365. **DO NOT** turn on the power of the instrument!

5. Remove the two Phillips round head screws with washer (M4*12L) to disassemble the existing cell holder and base plate.

Figure 8 Location of Phillips round head screws with washer

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

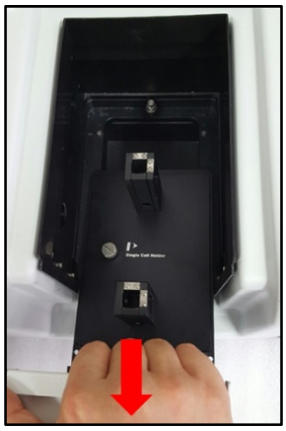


Figure 9 Pulling out the cell holder and base plate

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

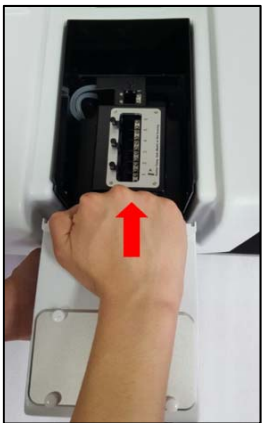


Figure 10 Inserting the 6-Position Peltier Controlled Cell Changer

8. 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 11. Connecting the communication ports

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

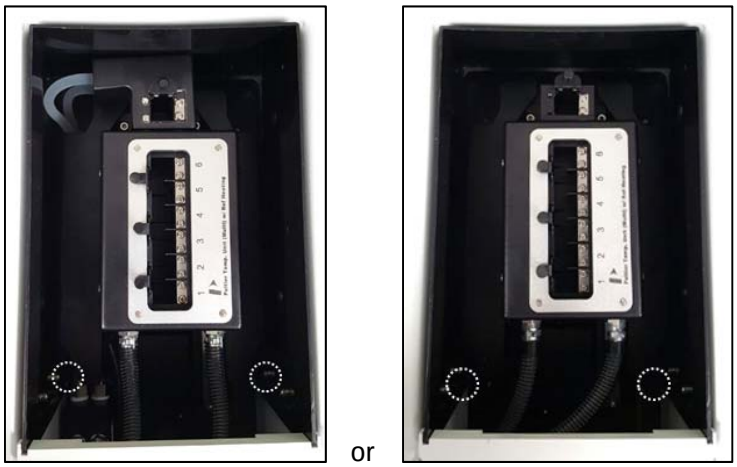


Figure 12 Location of screws (with heated reference or without heated reference)

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

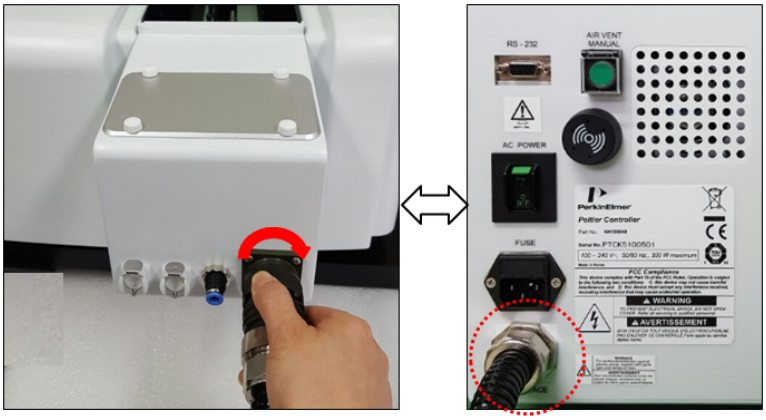


Figure 13 Connecting the accessory interface cable of the Peltier Controller

11. Connect the coolant inlet/outlet and N_2 gas tube between the Peltier Controller and the 6-Position Peltier Controlled Cell Changer.

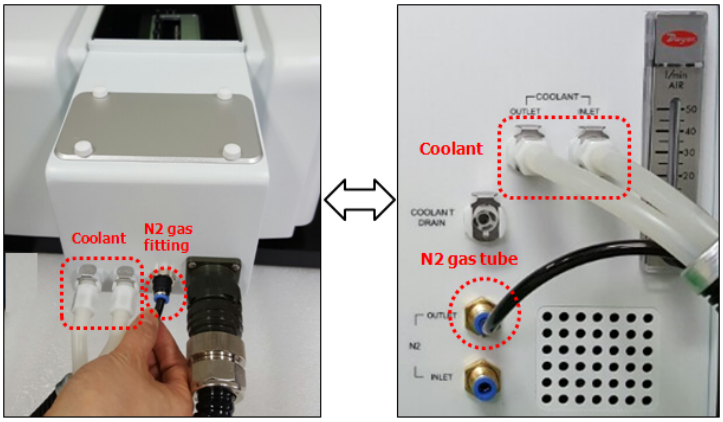


Figure 14 Connecting the coolant inlet/outlet and N_2 gas fitting

NOTE: *N_2 gas is not always required. If no gas is applied, user does not have to connect N_2 gas tube.*

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

Figure 15 Opening the lid of Interface slot

13. Connect the Temperature Probe to the Interface slot for Temperature Probe.

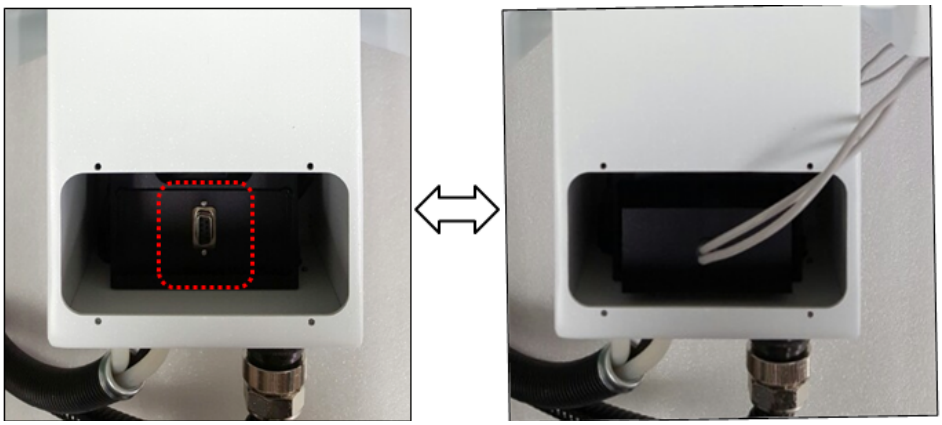


Figure 16 Connecting the temperature probe

14. Stuff the probe line into the cell compartment and close the lid of the Interface slot for Temperature Probe.

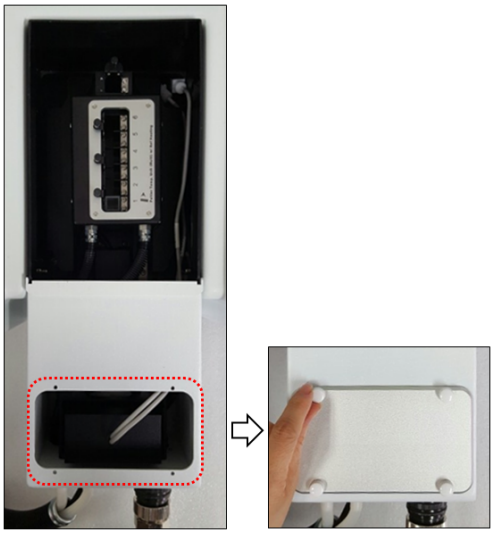


Figure 17 Stuffing the probe line into the cell compartment

15. Connect the Peltier Controller with the PC via the RS-232 or USB to RS-232 cable.

Figure 18 Connecting the Peltier Controller with the PC

16. Connect the power cord to the Peltier Controller.

Figure 19 Connecting the power cord

17. Turn on the AC power switch of the Lambda 365 and the Peltier Controller.

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

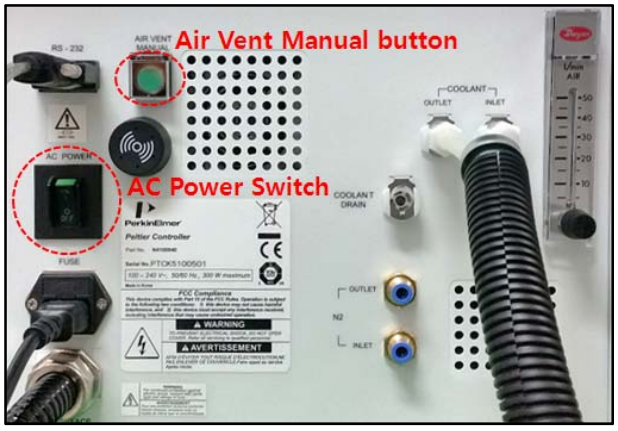


Figure 20 Turn on the AC power switch

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

Figure 21 Location of Power LED

CAUTION	*If you hear the alarm sound during the operation, push the emergency switch to stop all functions immediately and check the status of Peltier Controller carefully. Then, turn the switch to the right again when everything is solved properly and the functions will be on again.*
ATTENTION	*Si l'alarme se déclenche en cours de fonctionnement, appuyez sur l'interrupteur d'urgence pour arrêter immédiatement toutes les fonctions et contrôlez soigneusement l'état du contrôleur Peltier. Ensuite, tournez à nouveau l'interrupteur vers la droite une fois la situation rétablie afin de restaurer les fonctions*

Figure 22 Location of Emergency Switch

NOTE: *Peltier controller can be compatible with various peltier cell holders (single or Multi). Wwhenever you exchange the existing peltier cell holder to another one, you should perform the "Auto Tuning" setup referring to chapter* ***Peltier Controlled Auto Tuning Setup*** *(p33).*

19. Turn off the power after the experiment.

How to Drain the Coolant From the Peltier Controller

a. Push the **Air Vent Manual** button to be switched on the rear panel of Peltier Controller before operation.
b. Connect the waste hose to the Coolant Drain port on the rear panel and prepare a waste bucket.
c. Turn on the power of Peltier Controller, and then coolant will be drained automatically.

d. Once draining is complete, turn off the power of Peltier Controller.

Setting USB to RS-232 Cable

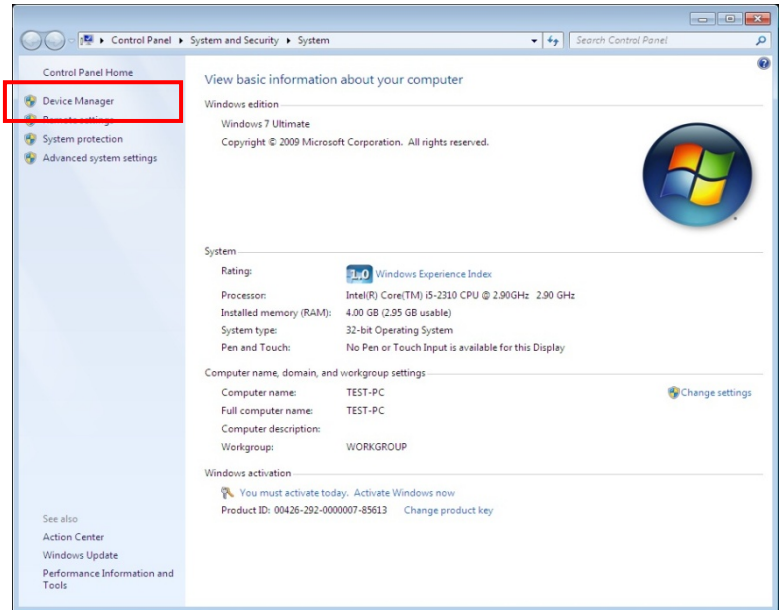
NOTE: *When using the RS-232 cable, the COM Port is set automatically.*

When using the USB to RS-232 cable, USB to RS-232 Driver has already been installed when installing the Lambda 365 and UV Express software, user does not need to install it again.

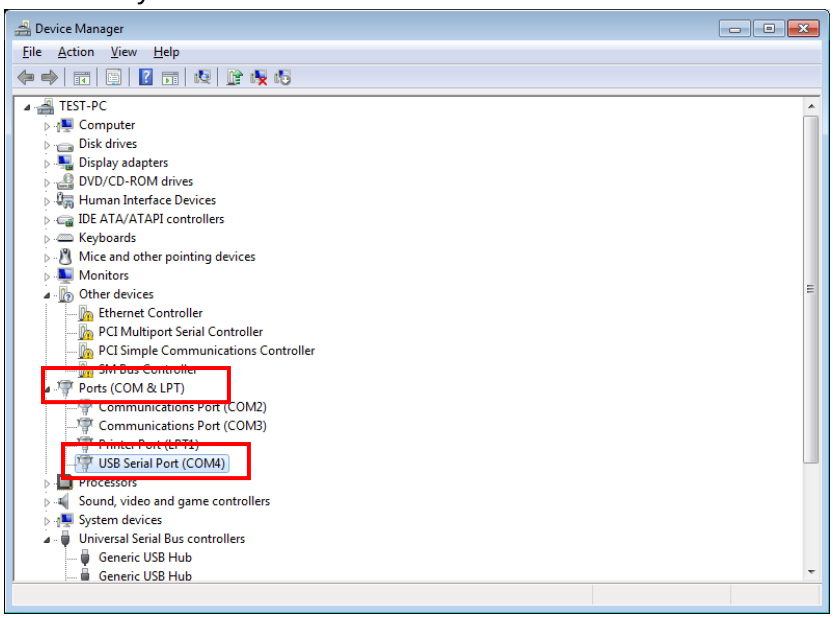
When the communication by the USB to RS-232 converter is not established, change the port setting as follows;

1. Select **My Computer →Properties.**

2. Select **Device Manager**.

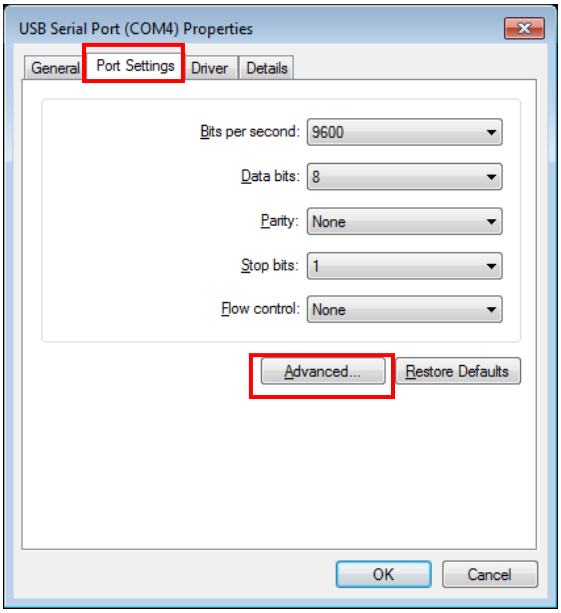


3. Select **Ports (COM & LPT)** to expand the listing. These are the devices currently connected to the COM ports. **USB Serial Port (COMx)** is listed when the driver installation is completed successfully.

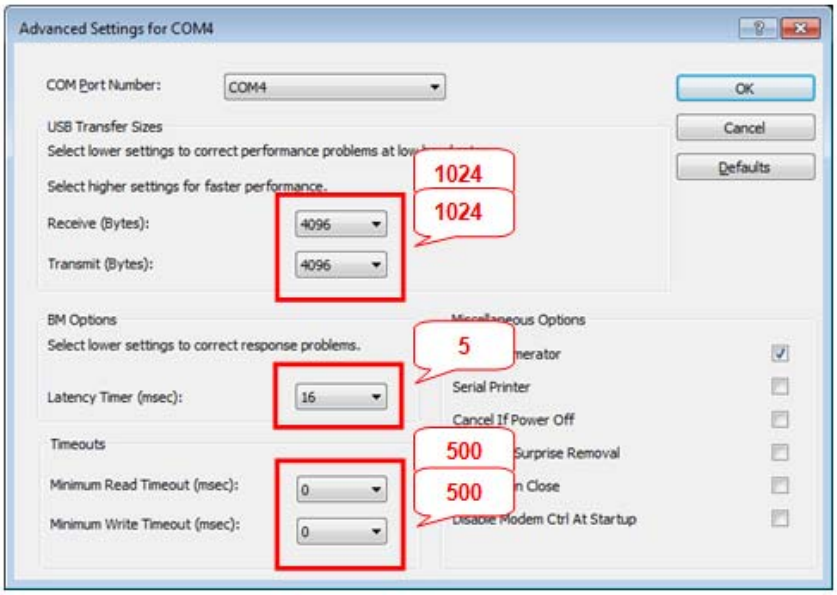


4. Double click on the **USB Serial Port (COMx)** of the **Ports (COM & LPT)**.

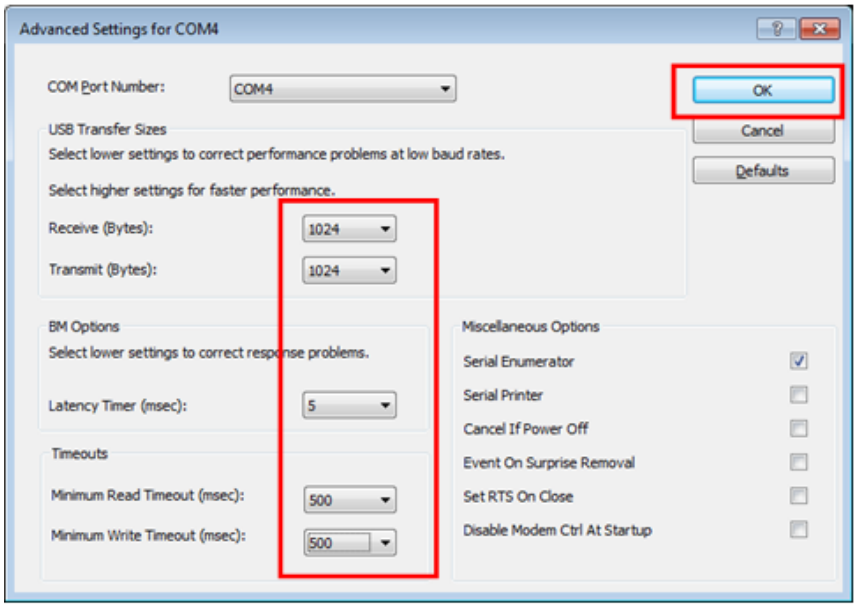
5. Select the **Port Settings** tab and select the **Advanced...** button.



6. Change the parameter values as shown below.



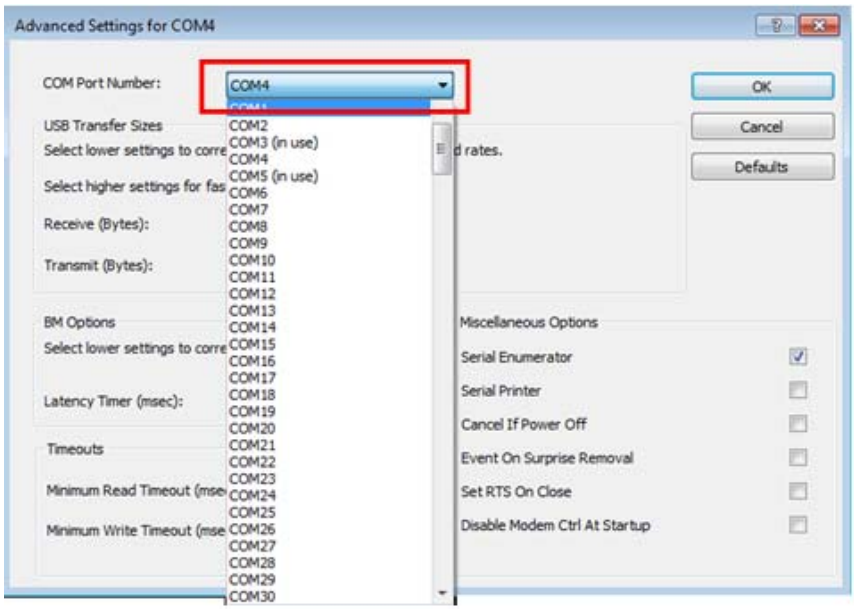
7. Select **OK** after checking the changed parameter values.



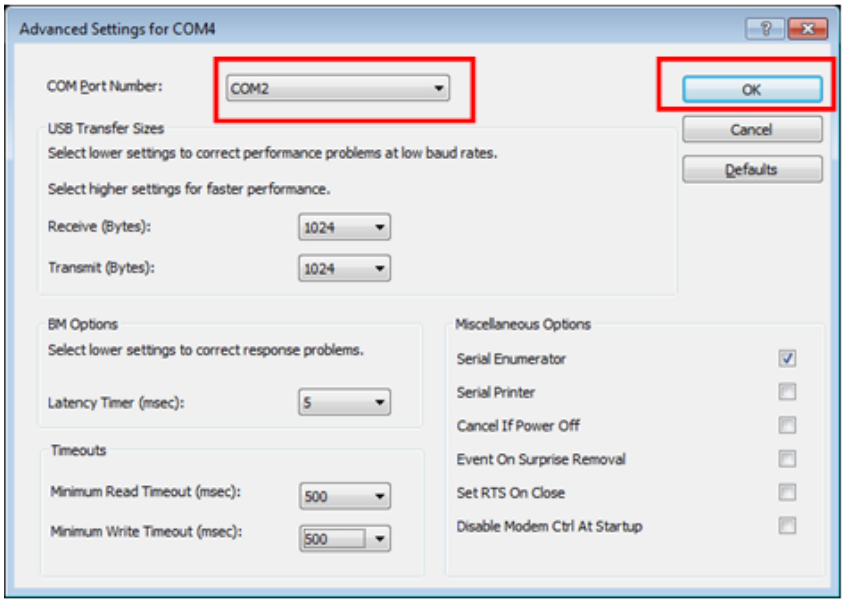
8. If the Peltier controller fails to communicate with the PC, change the COM Port Number by the following steps.

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 the chapter **Installation**.

2. Close the sample compartment cover and turn on the instrument.

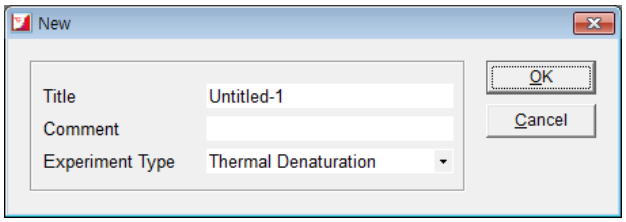
NOTE: *Before System Self Test is performed, the 6-Position Peltier Controlled Cell Changer should be installed. Otherwise, the instrument can be damaged electrically and do not operate properly.*

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.

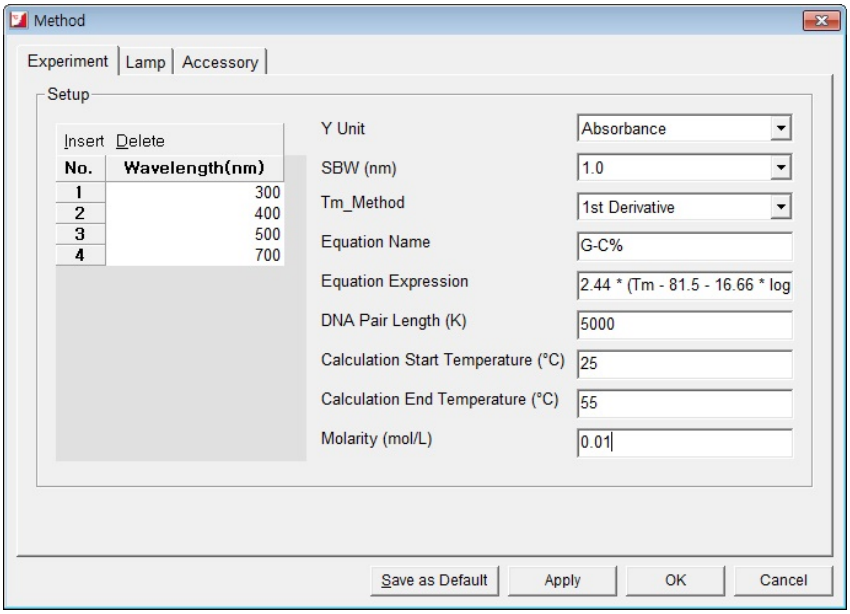
4. Select **OK** after finishing the **System Self Test**.

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 referring to the chapter* ***Calibration of Multi-Cell Position*** *(p30).*

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 * (Tm - 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.

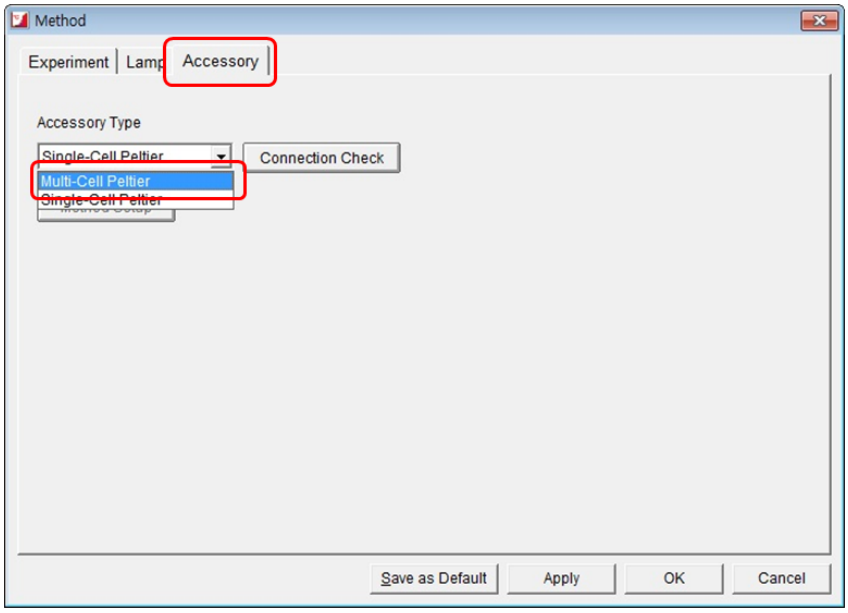
h. **Calculation End Temperature (°C)**

Enter the end temperature for calculating the T_m value.

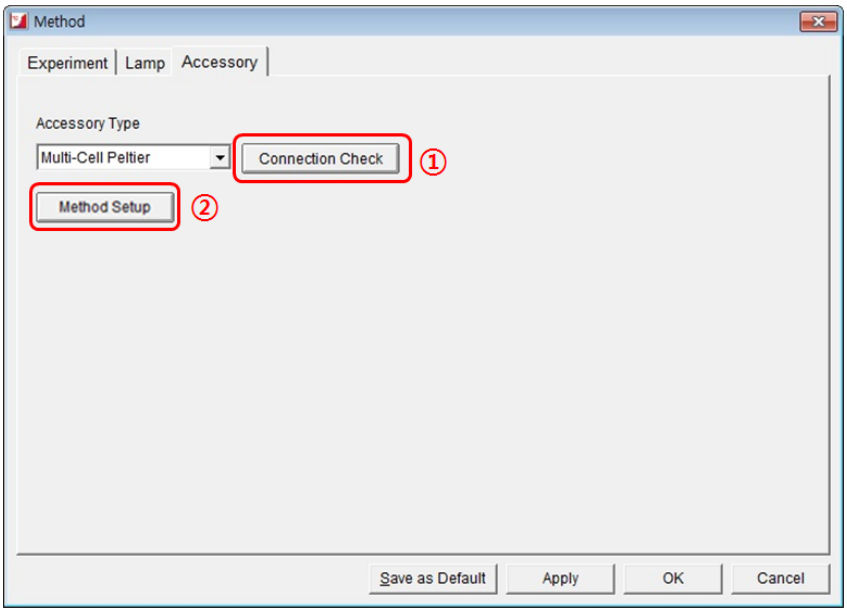
i. **Molarity (mol/L)**

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**.

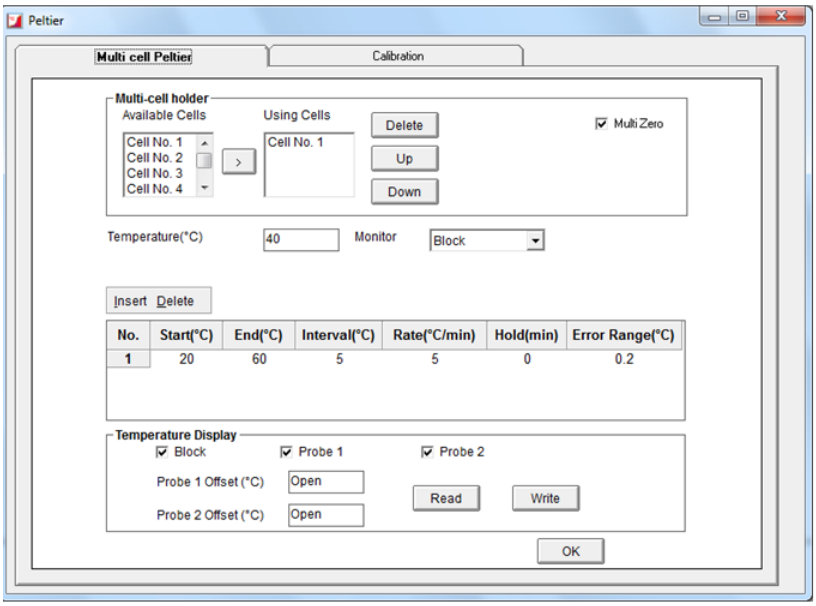


8. Select **Connection Check**, then **Method Setup** will be activated. Select **Method Setup**.



NOTE: *Check the communication between Computer and Peltier Controller referring to the chapter* ***Setting USB to RS-232 Cable*** *(p15) 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 Delete and switch positions by Up and Down 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. **Start (°C)**: Enter the start temperature for the measurement.

g. **End (°C)**: Enter the end temperature for the measurement.

h. **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.

i. **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.*

j. **Hold (min)**

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

k. **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.

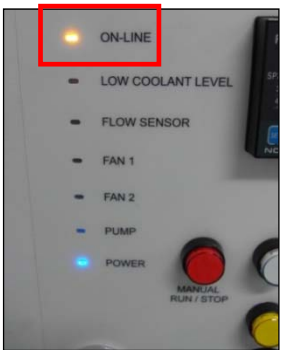
▶ **Temperature Display**

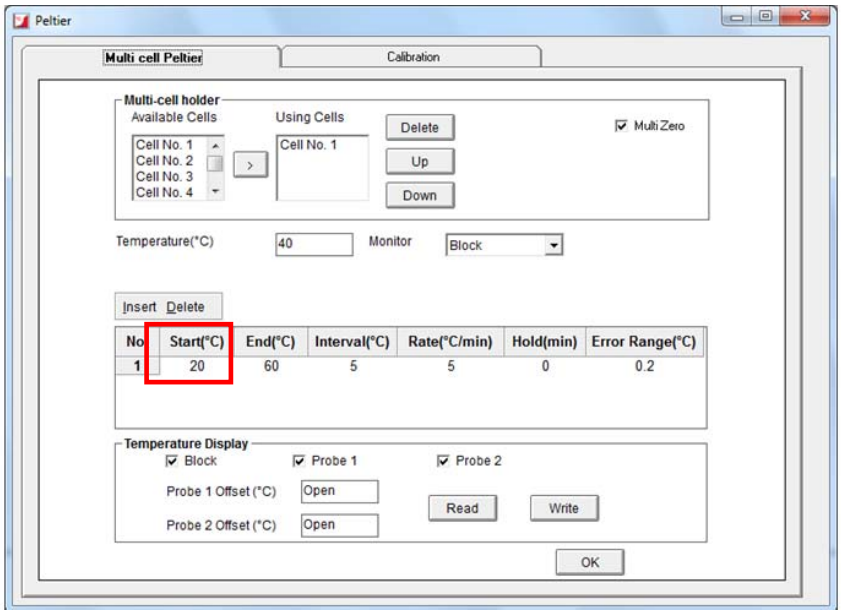
l. Select which temperature will be displayed on the panel:Block, Probe 1 or Probe 2. The selected temperature is only displayed in real time.

m. **Offset**:

This function is used to adjust temperature. **It is only used for manufacturing process, so do not modify the values.**

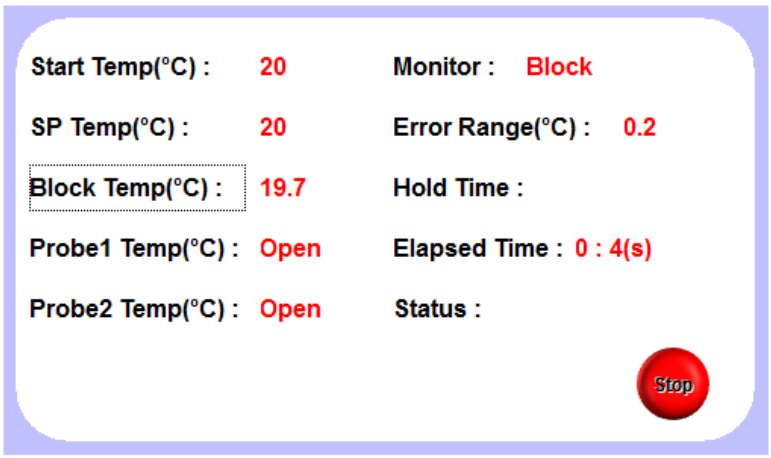
10. After completing the parameter setup, select **Apply** and **OK**. Then the LED for ON-LINE is turned on, and it will start heating up or cooling down to the Start temperature in the **Multicell Peltier** tab.





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.*



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.*

Figure 23 Pull out the cell

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 the chapter **Installation**.

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.*

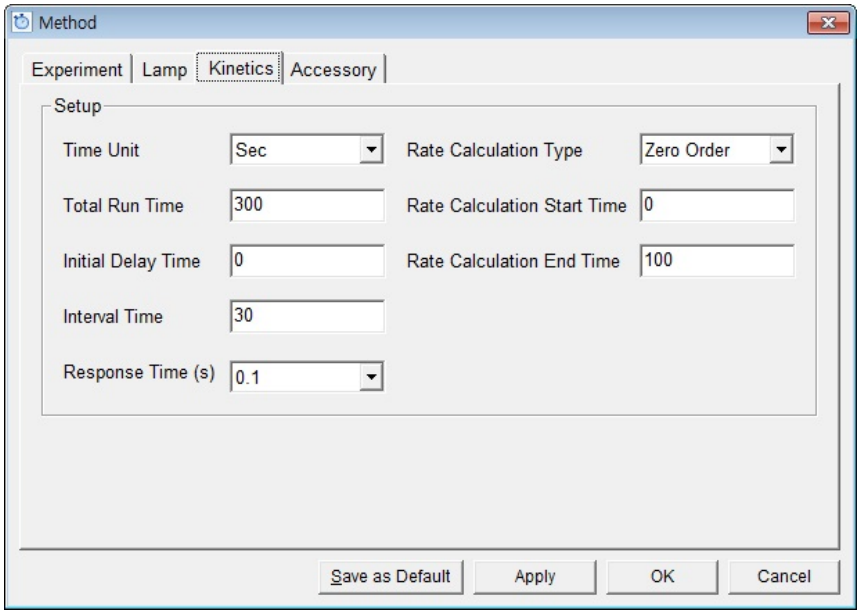
3. Double-click on the **UV Express folder** and select one of the modes except Thermal Denaturation. In this case, open kinetics mode as example.

4. Select **OK** after finishing the **System Self Test**.

5. Select **New** to open a new window and select **OK**.

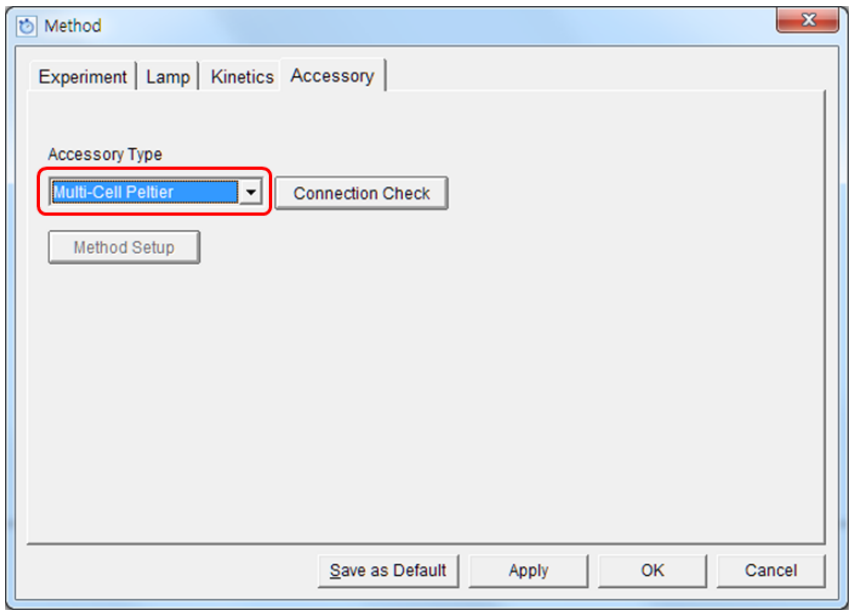
NOTE: *When the 6-Position Peltier Controlled Cell Changer is connected for the first time, you need to correct the cell position. Calibrate the beam position of the 6-Position Peltier Controlled Cell Changer referring to the chapter* ***Calibration of Multi-Cell Position*** *(p30).*

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

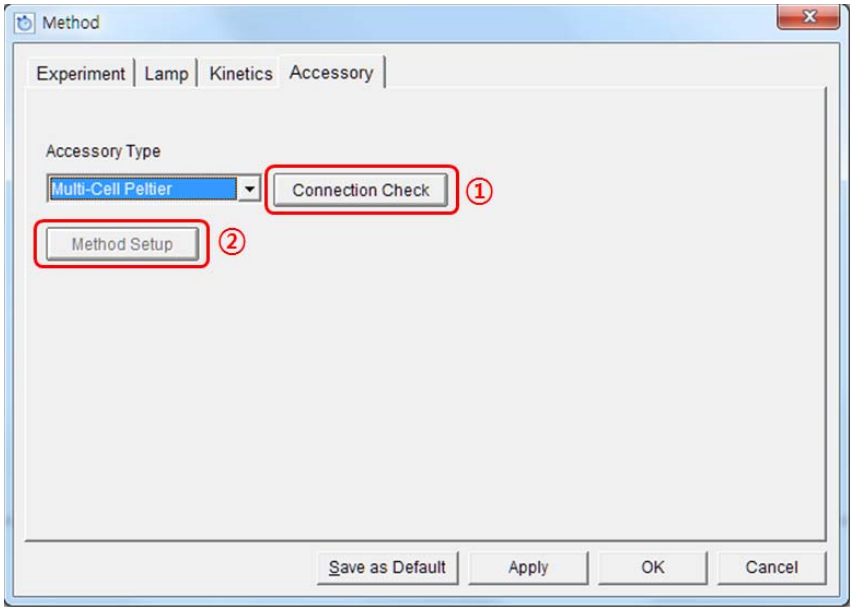


NOTE: *If you want to know about the meaning of each parameter of method tabs and other modes more detail, please refer to X. Measurement Modes of the UV Express Software User Guide.*

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

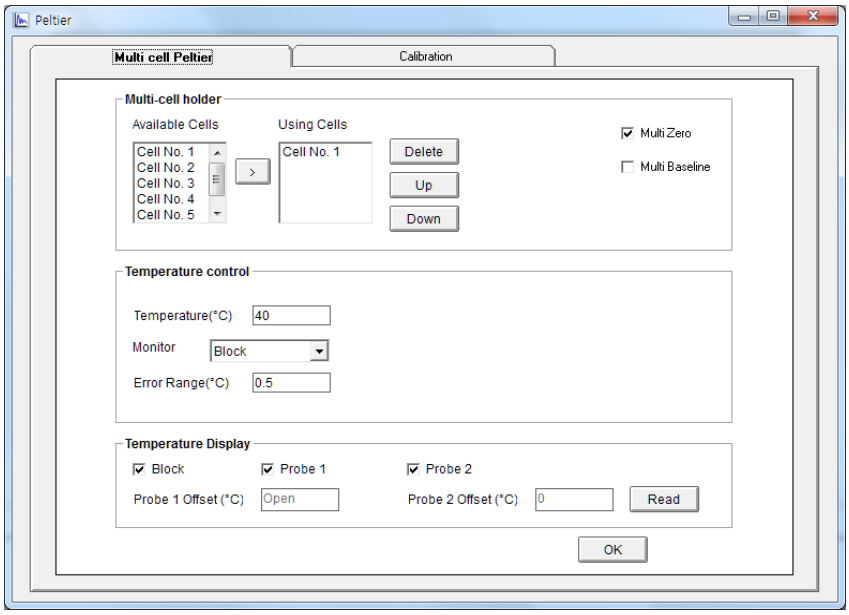


8. Select **Connection check**, the Method Setup will be activated. Select **Method Setup**.



NOTE: *Check the communication between Computer and Peltier Controller referring to the chapter **Setting USB to RS-232 Cable** (p15) 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 Delete and switch positions by Up and Down keys.

c. **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.*

d. **Temperature (°C)**: Enter the returning temperature for the experiment.

e. **Monitor**

Select temperature that used to monitor during measurement. Options include: Block, Probe1 or Probe2.

f. **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.

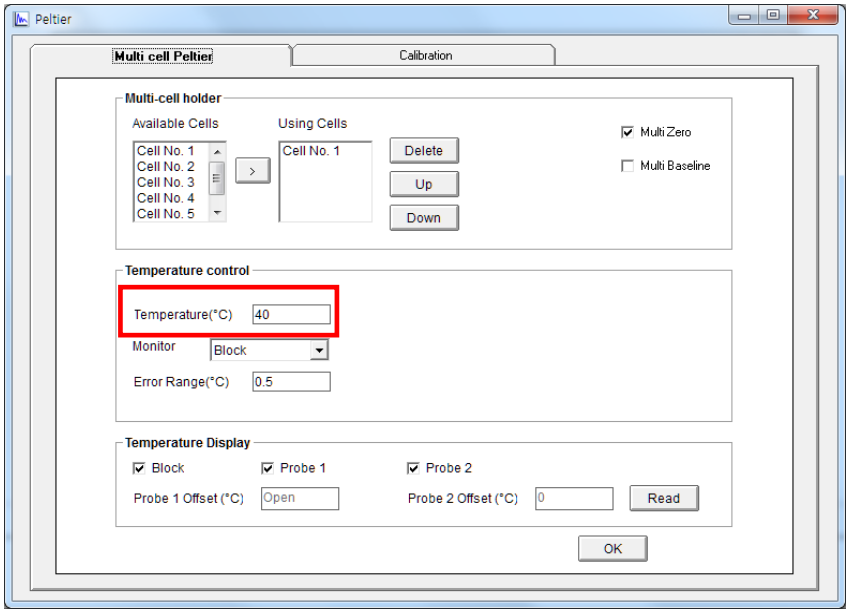
▶ **Temperature Display**

g. Select which temperature will be displayed on the panel:Block, Probe 1 or Probe 2. The only selected temprature is displayed in real time.

h. **Offset**:

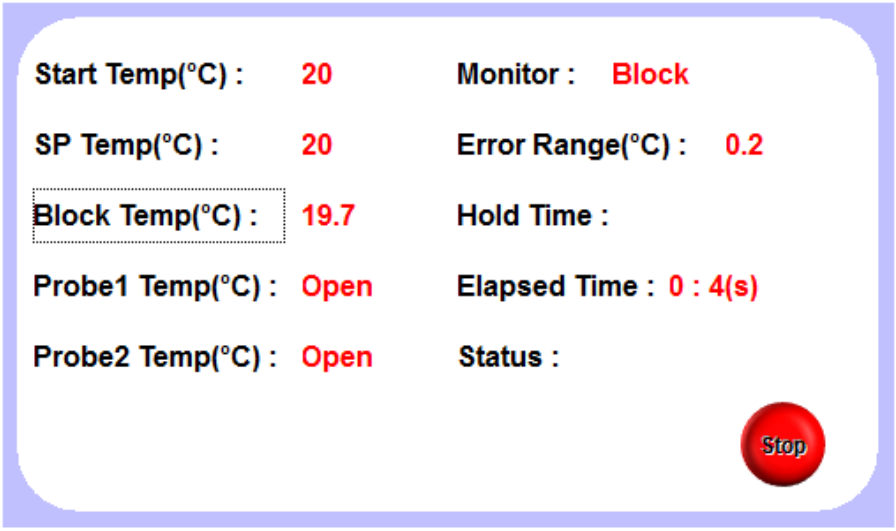
This function is used to adjust temperature. **It is only used for manfacturing process, so do not modify the values.**

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.*



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.*

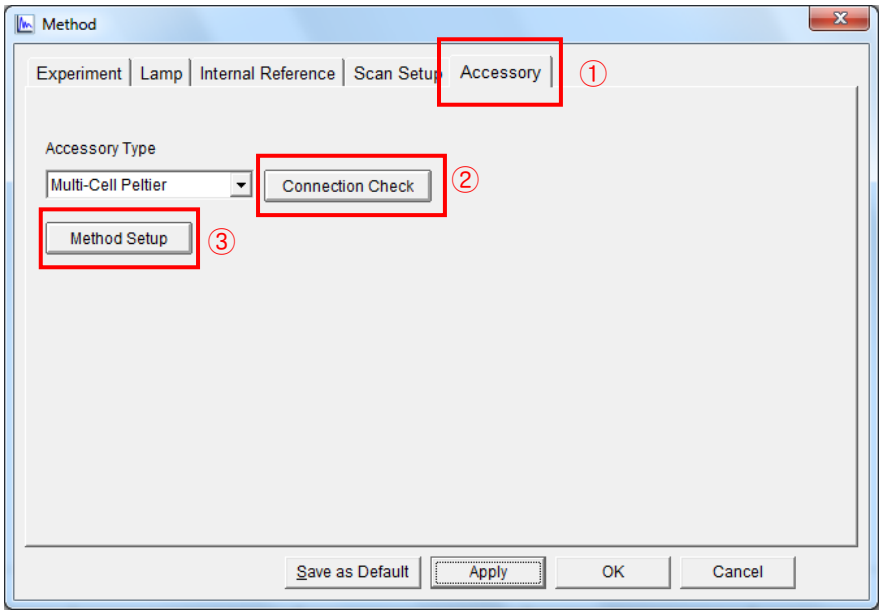
Figure 24 Pull out the cell

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

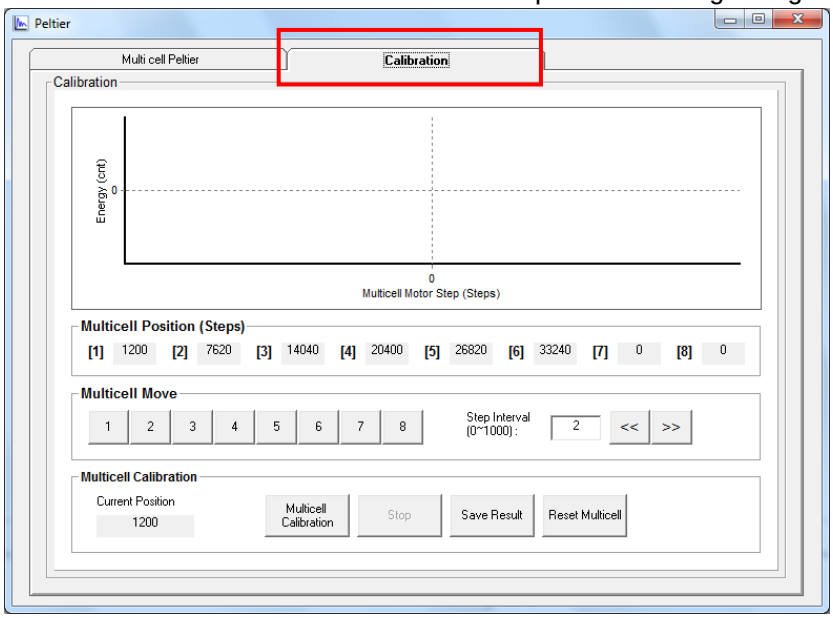
Calibration of Multi-Cell Position

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.

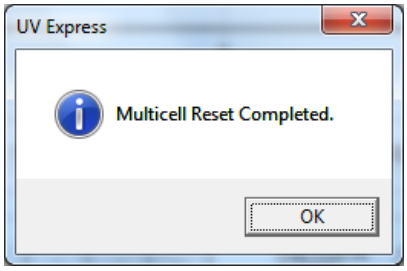


3. The Functions of the Multi-Cell Calibration are shown as follows.

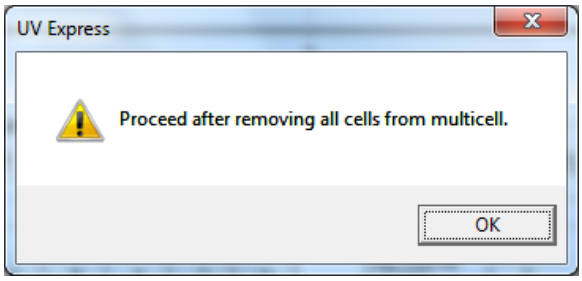
Command	Function
MultiCell Position	It shows saved steps of each cell position of the Multi-Cell.
Multicell Move	It is used for moving Multi-Cell position as clicking buttons 1 2 3 4 5 6. It is used for moving Multi-Cell position using << >> buttons by entered step.
Multicell Calibration	Perform the 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.*

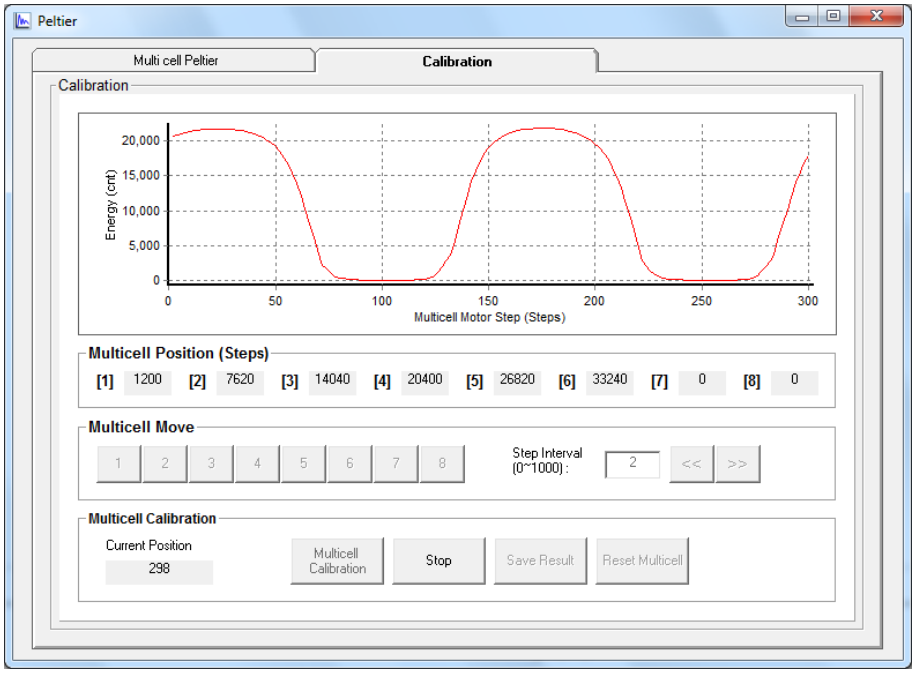
4. Click **Reset Multicell** to format the Multi-Cell steps. Click **OK**.



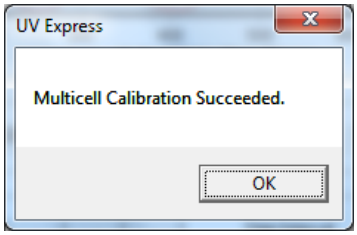
5. Click **MultiCell Calibration**. Then the following dialog box will appear. Remove all samples from the 6-Position Peltier Controlled Cell Changer. [Empty the 6-Position Peltier Controlled Cell Changer]. Click **OK.**



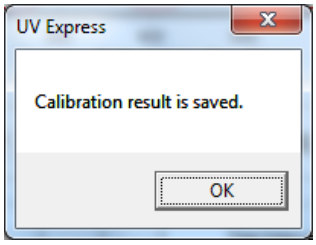
6. Then the Multi-Cell calibration will start. The current process of calibration will be shown in the main window.



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 Controller Auto Tuning Setup

NOTE: *Peltier controller 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. Push the Manual button on the control panel of the peltier controller, and then the button light is on.

2. Set any SP temperature between 30~37°C using the ⩓ ⩔ button.

3. Press and hold the SET/ENT button until "G.AT" is shown.

4. Push the SET/ENT button again.

5. Push the ⩓ button (OFF→ ON).

6. Press the SET/ENT button, and then the MAN LED will blink.

7. The MAN LED will be off after a few minutes.

8. Push the Manual Button (Stop) and then the light is off.

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.

WARNING

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

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

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. Check whether the **Air Vent Manual** button is switched off.
3. Check whether the **emergency switch** is off.
4. When you use the USB to RS-232 cable, change the port setting referring to the chapter ***Setting USB to RS-232 Cable*** *(p15).*

FAN LED is lit on with an alarm sound

1. Fan needs to be replaced.

Low Water Level' LED blinks with an alarm sound

1. Check the coolant level and if it is lower than L (low) mark, add more coolant.

2. Restart the Peltier Controller.

Flow Sensor LED is lit on with an alarm sound

1. Check whether the tubing is bent or whether it is connected correctly, and then restart the Peltier Controller.

2. Push the **Air Vent Manual** button on and check if coolant flows properly for about one minute after the error occurs. If the Flow Sensor LED is continuously on with the alarm sounding, contact your PerkinElmer service representative.

Pump LED is lit on with an alarm sound

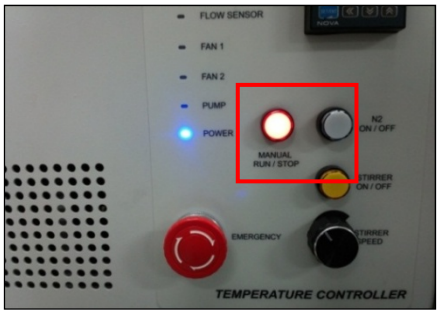
1. Check whether the tubing is bent or whether it is connected correctly, and then restart the Peltier Controller.

2. Push the **Air Vent Manual** button to be switched on and check if coolant flows properly for about one minute after the error occurs. If the Pump LED is continuously on with the alarm sounding, contact your PerkinElmer Service representative.

Connection is failed

1. Check the Interface connector is lined properly.

2. Check whether the **MANUAL RUN / STOP** button is pushed on. If yes, turn off the Manual button.



6-Position Peltier Controlled Cell Changer does not move

1. Check if the 6-Position Peltier Controlled Cell Changerconnector 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 Perkin Elmer or the nearest 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 Changerneeds replacing. Contact Perkin Elmer or the nearest 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.