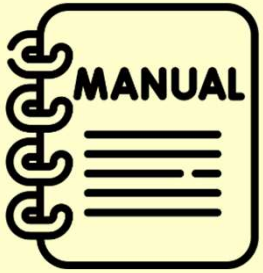
INNO-X Ex



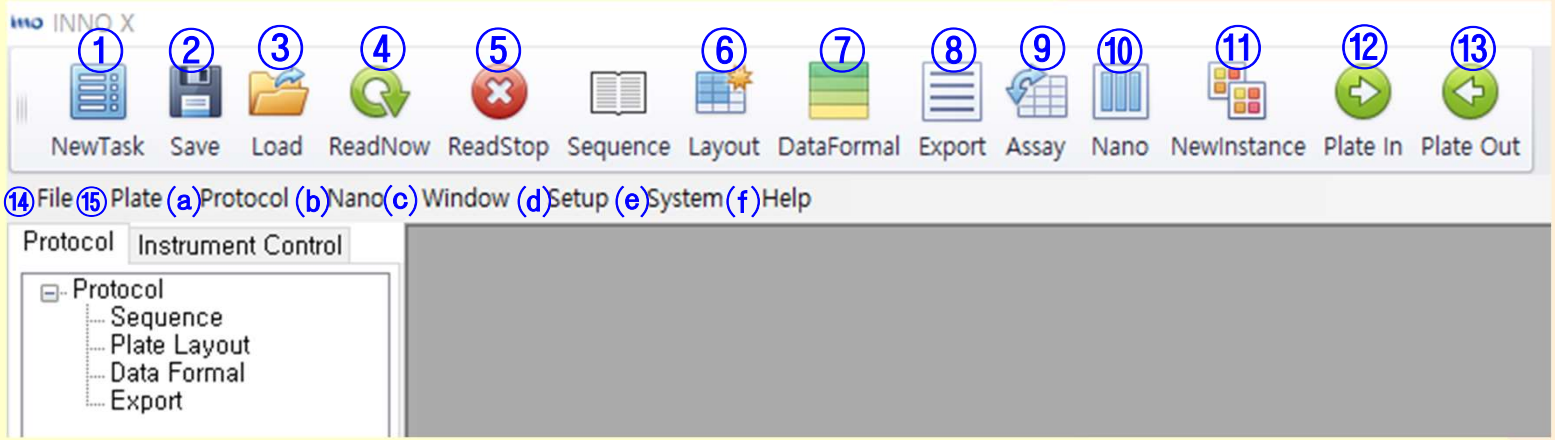
Software Manual

Rev 2.0
October 4th, 2022

CONFIDENTIAL

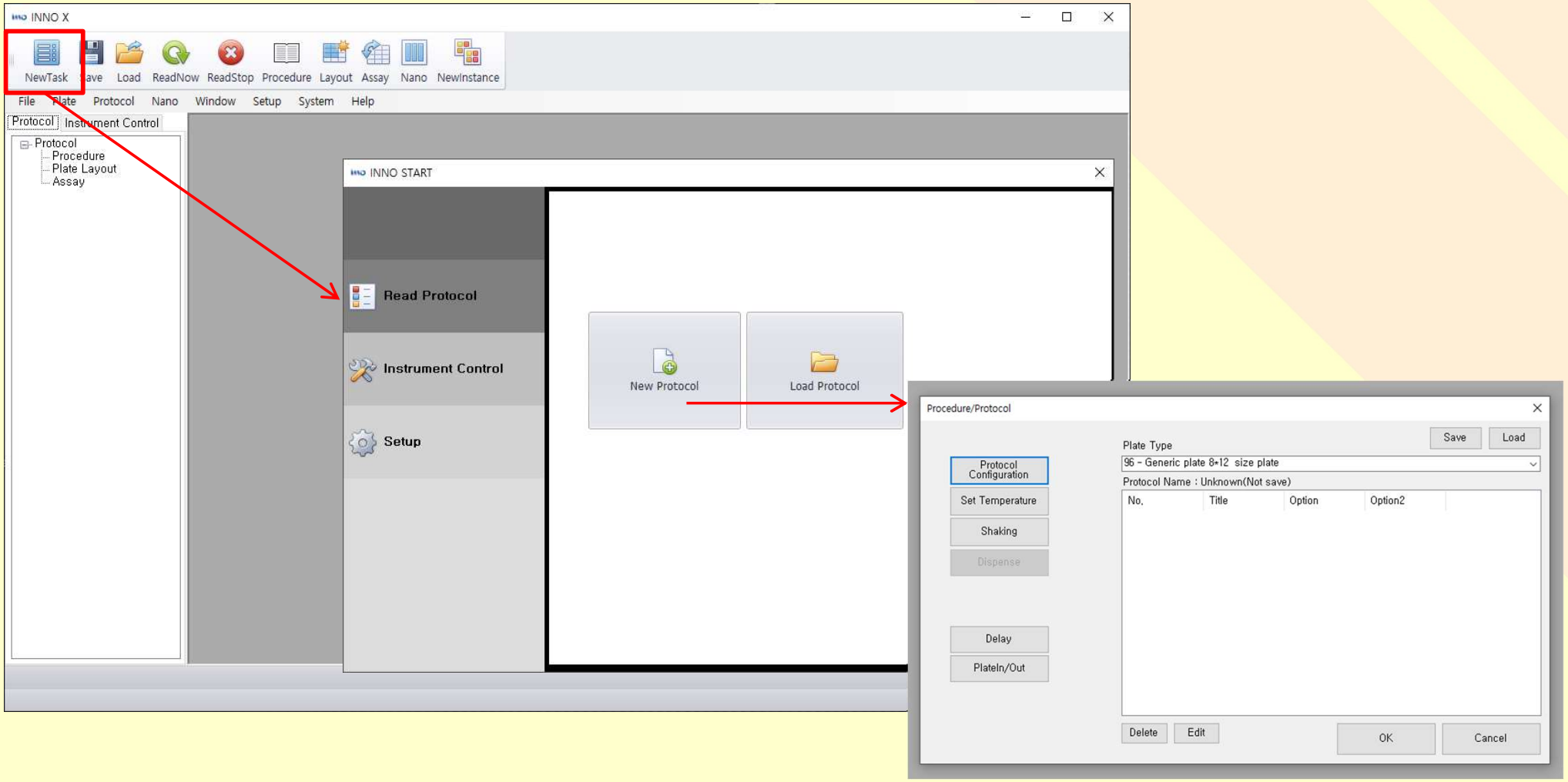
Contents

Main Menu



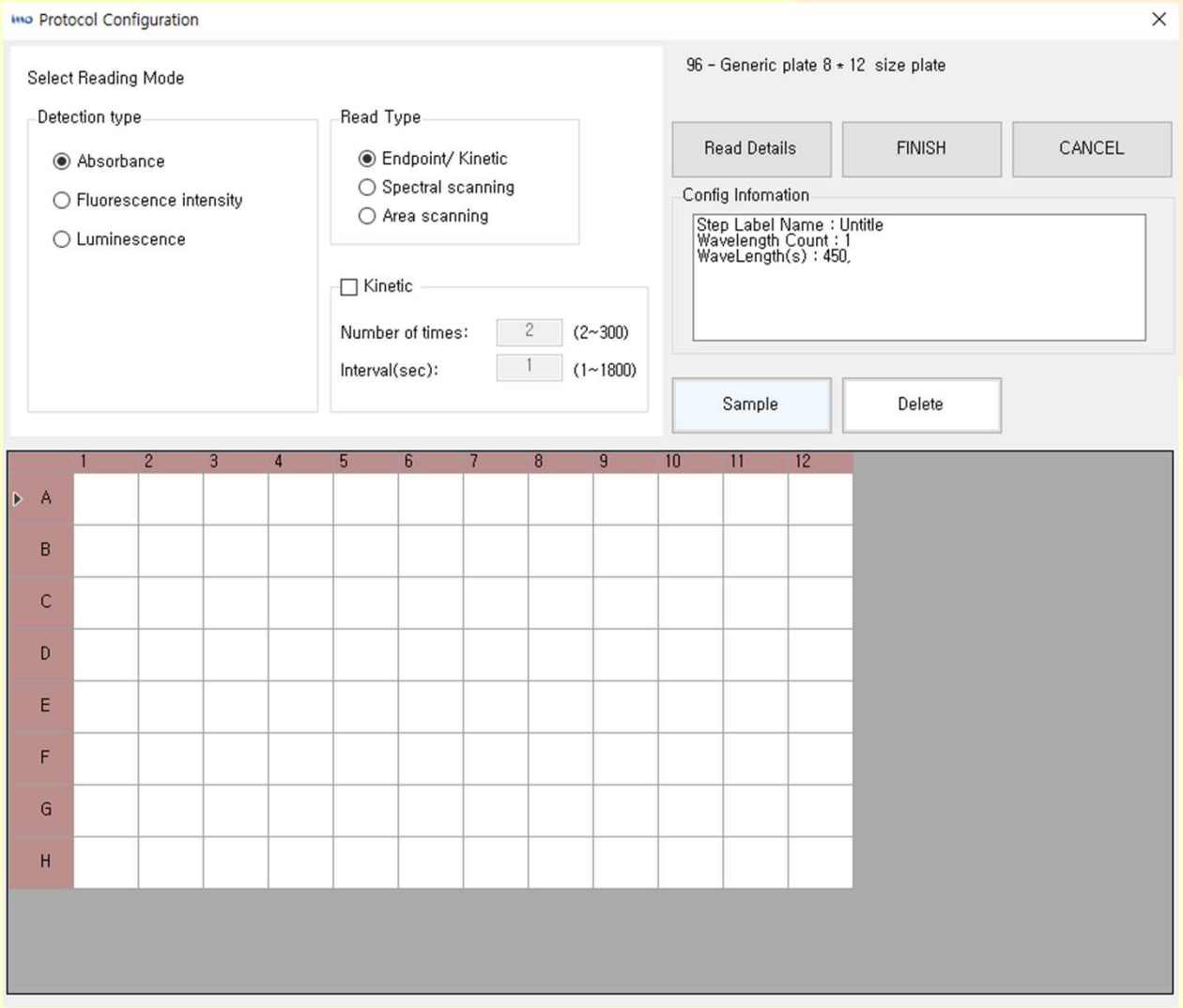
- New Task ① allows you to create protocols and instrument controlling.
- Save ② allows you to save the current created protocol from the main menu.
- Load ③ allows you to load up the saved protocol from the main menu.
- ReadNow ④ execute the protocol that is currently selected.
- ReadStop ⑤ Terminate the currently processing protocol(s).
- Layout ⑥ provide data analysis function with using standard curve and regressions.
- DataFormal ⑦ provide analyzation and use certain formulas such as Blank, Normalize, Ratio, And Delta with read data and Blank.
- Export ⑧ Export the data formal data into Microsoft excel.
- Assay ⑨ data analysis with different regressions and shows result in graph format.
- NANO ⑩ NANO-V menu.
- New Instance ⑪ Reconnect the instrument and the INNO-X operating PC.
- Plate In ⑫ takes the plate carrier inside.
- Plate Out ⑬ discard the plate carrier.
- File ⑭ basic protocol control menu.
- Plate ⑮ plate in & out
- Protocol (a) basic protocol setup menu.
- Nano (b) NANO menu.
- Window (c) resets the connection.
- Setup (d) Manufacturer' s menu.
- System (e) Port setting.
- Help (f) INNO-X version info.

New Task



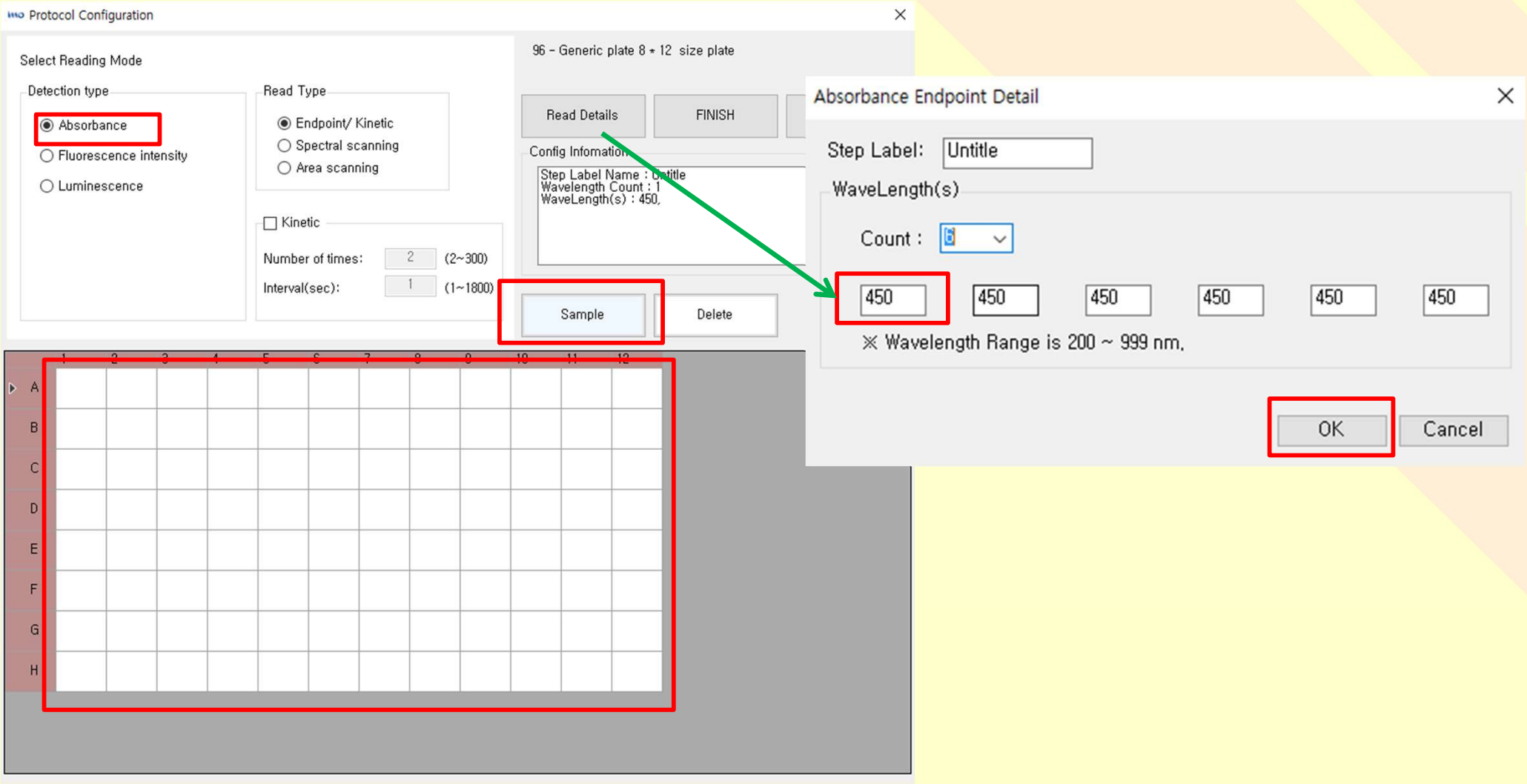
- From the main window click "New Task" button. Selecting "Read Protocol" will load up the "Procedure/Protocol" window.
- In this window select plate types and click Protocol Configuration to go onto the next window.

Protocol Configuration



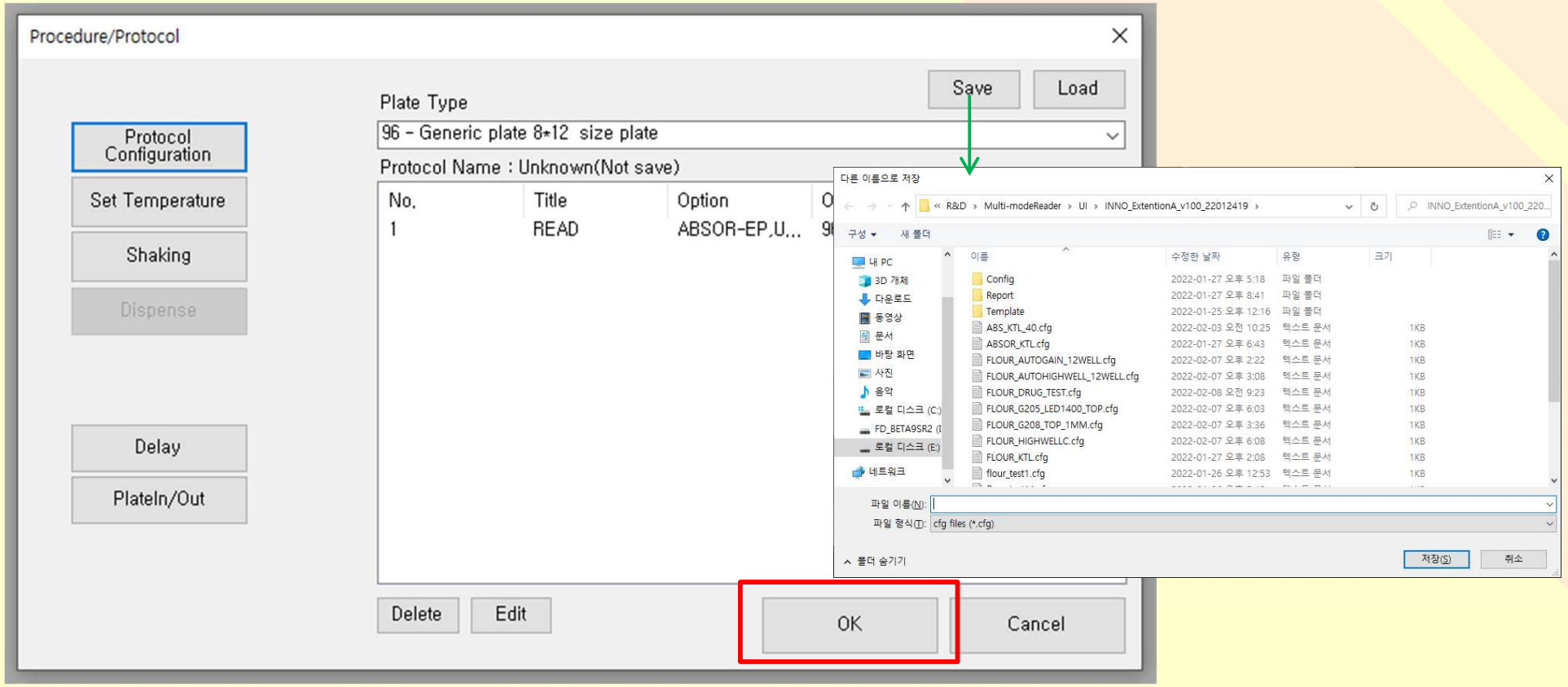
- There are total of three reading modes. Absorbance, luminescence, and fluorescence.
- Reading types are endpoint, spectral scanning, and area scanning for absorbance. And luminescence, fluorescence.

Absorbance (Endpoint)



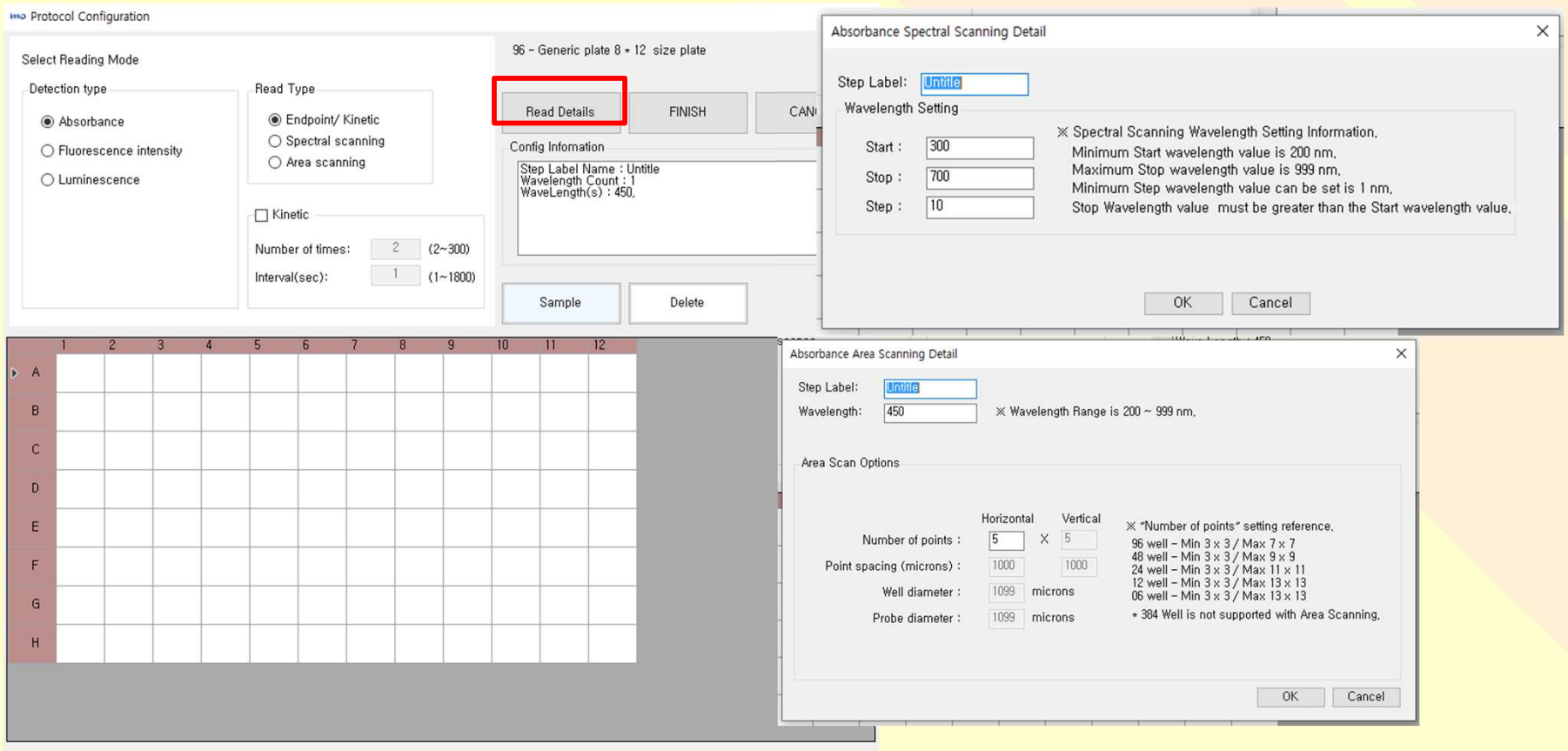
- Select plate type first within the Procedure/Protocol window. Select Absorbance then reading type.
- Click the "Sample button" then click or drag the wells on the well layout area to select wells.
- Click "Read Details" to set up the details of the measurement by selecting wavelength count and wavelength values. Then click "OK" button.

Procedure/Protocol Window



- As above picture there will be a list of protocol(s) that user just created.
- User is able to save the protocol to load the same protocol again in the future.
- Also select the protocols above in the protocol list an you may delete or edit the protocol.
- Now clicking OK button will load up the Protocol Executing window.

Absorbance Spectral scanning / Area scanning



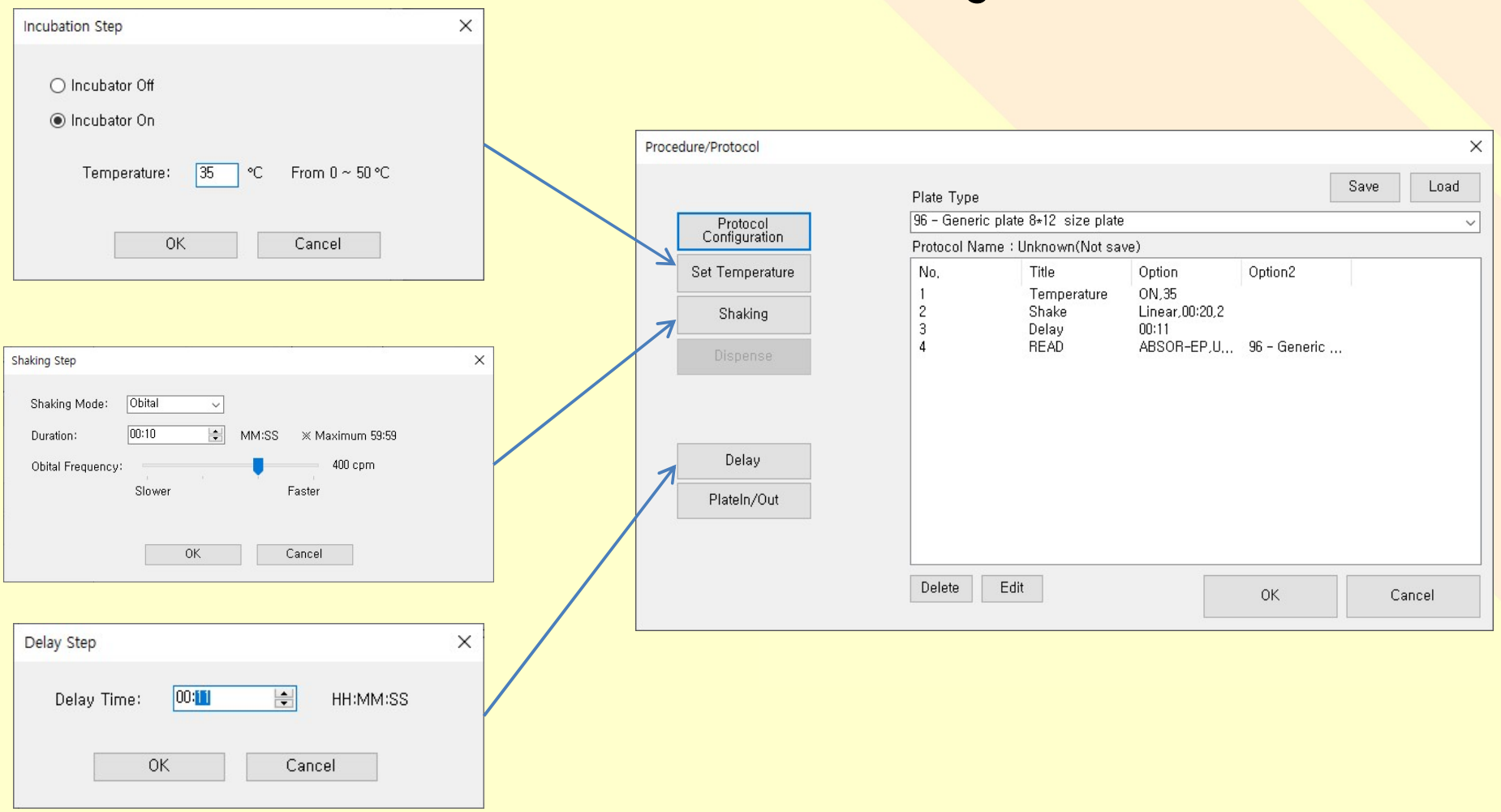
- Clicking "Read Details" after selecting Spectral scanning or Area scanning will bring up the protocol option setting windows.
- With the Spectral scanning type start wavelength, stop wavelength and the step wavelength.

(Measurable range is from 200 nm to 999nm. "Stop wavelength" value must be greater than the "Start Wavelength" Value. Minimum "Step Wavelength" value is 1nm)

- With the Area scanning, type in "Number of points" and the wavelength from 200nm to 999 nm.

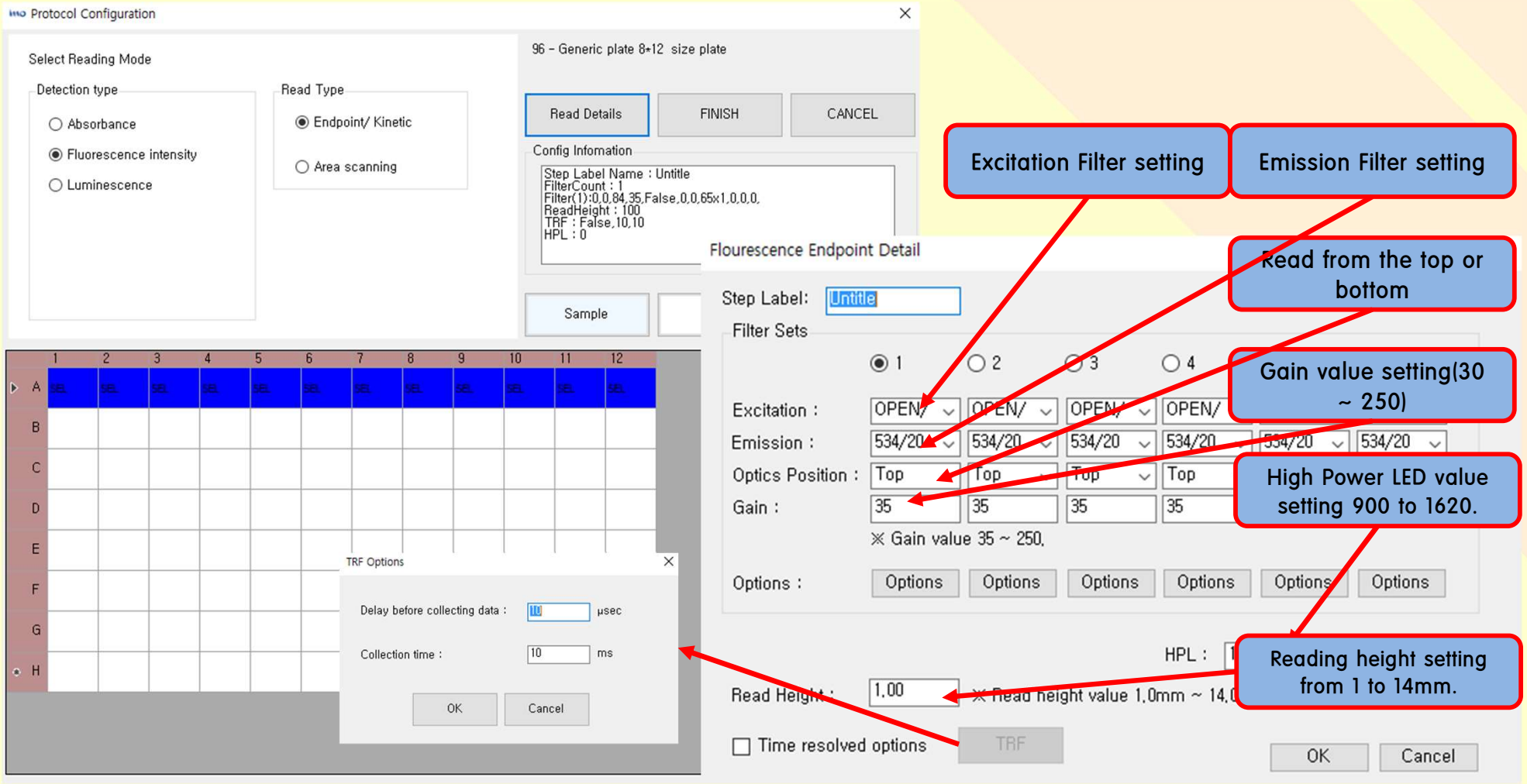
(Only odd number can be typed with number of points)

Procedure/Protocol setting



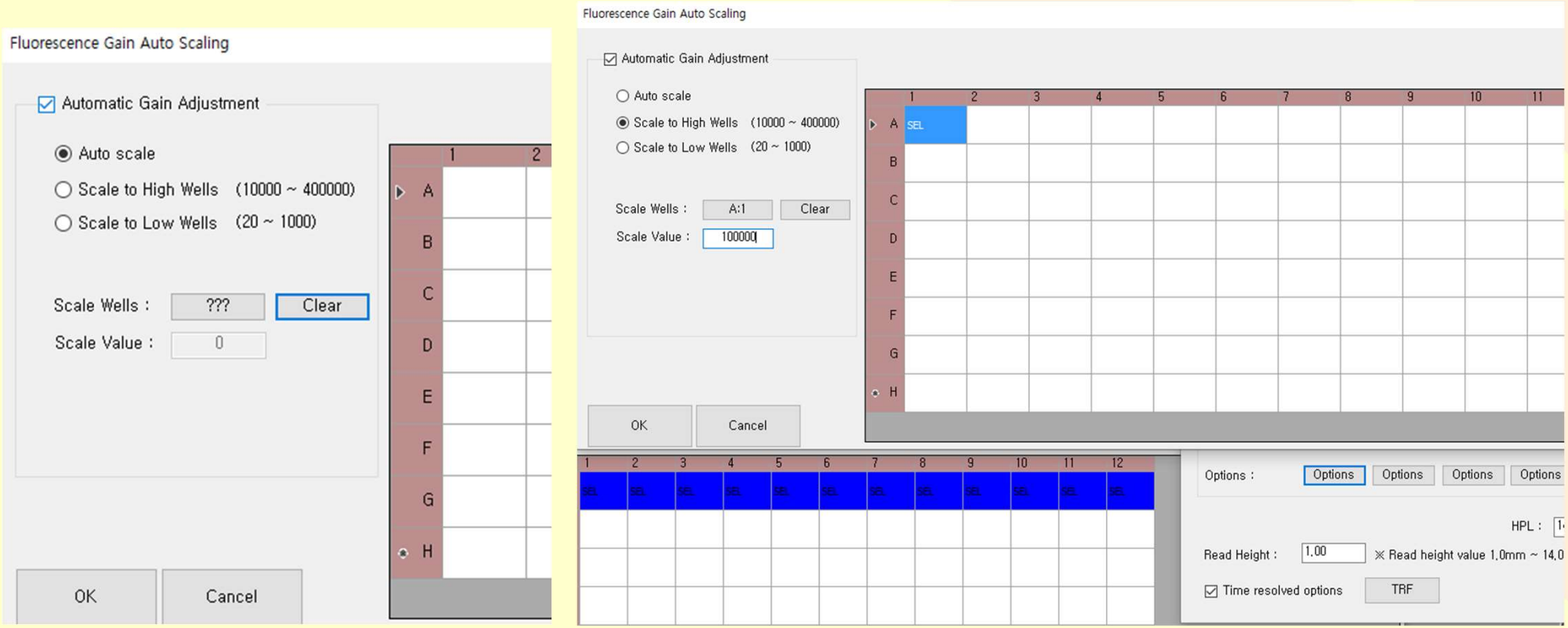
- In the Procedure/Protocol setting window, user can set up the incubation setting. Incubation temperature setting is possible to be set up to 50 degree Celsius.
- With the shaking mode, user may select either liner or orbital shaking with 4 different types of shaking speed.
- Delay Setting will allow the users to pause the plate carrier inside of the instrument before executing the next protocol.

Fluorescence – Endpoint



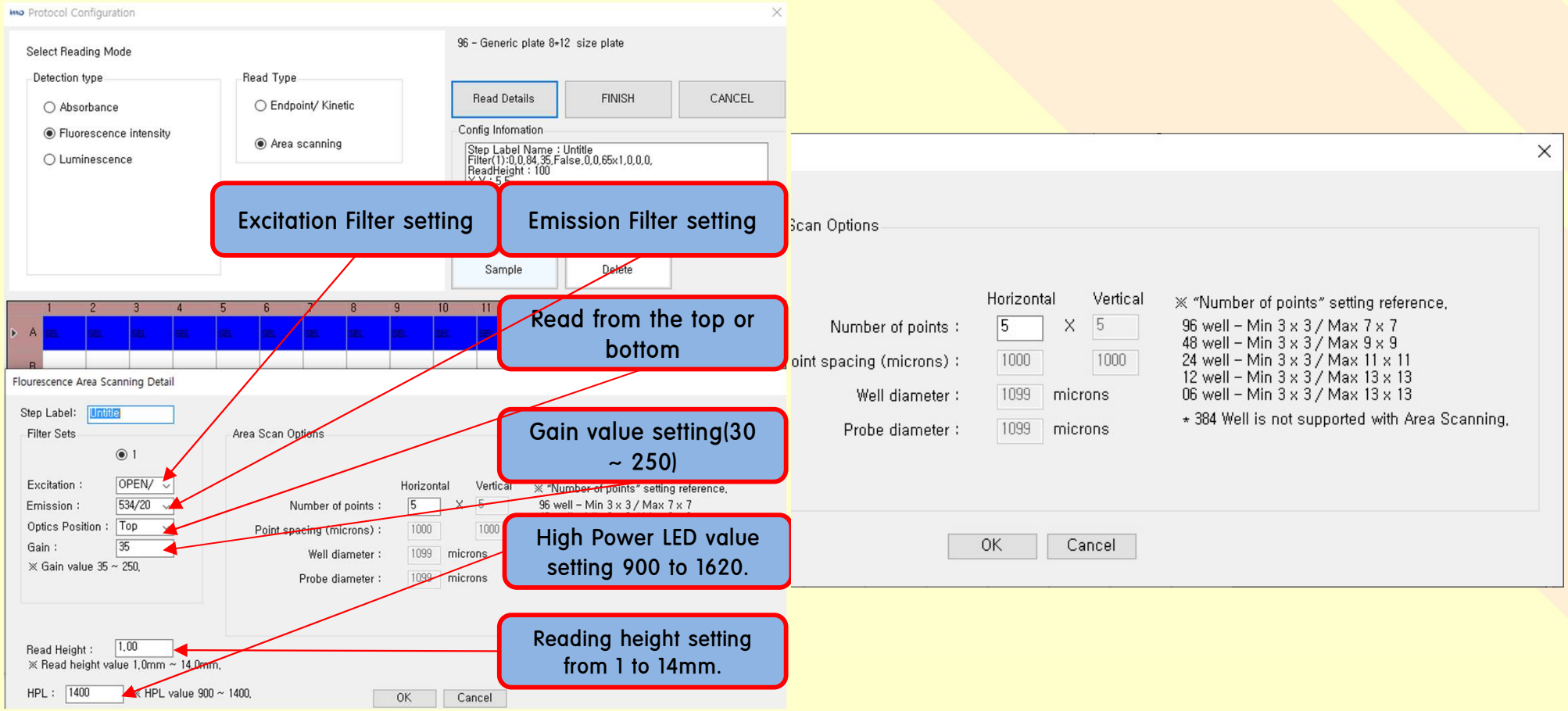
- Click Fluorescence intensity and sample button to select the wells you would like to measure on the well layout.
- Click Read details to set up the protocol details. If you click Options you may use Automatic Gain Adjustment feature.
- HPL standard setting value is 1500, you may select from 900 to 1620. (Lower the HPL value it is the power of the light Increase)

Fluorescence – Gain Adjustment



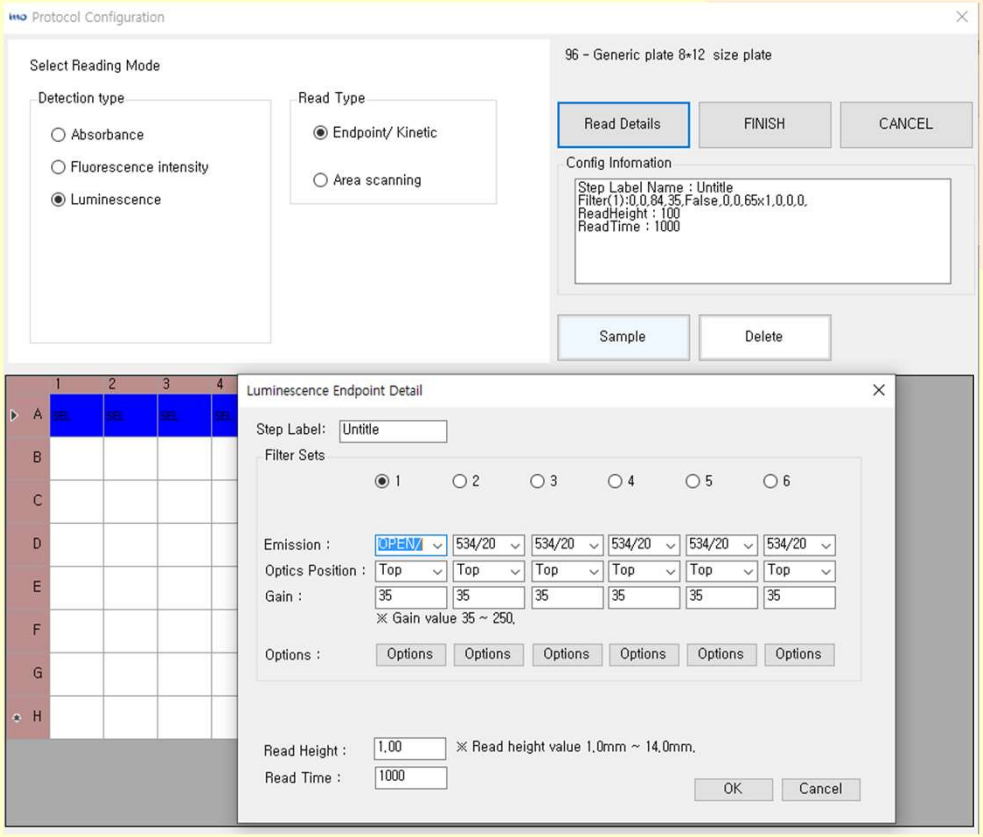
- In order to use the Automatic Gain Adjustment feature, you must check the box.
- If you select Auto scale, instrument will scan the previously selected wells from the Protocol Configuration window and set the gain value automatically before the fluorescence reading.
- "Scale to High Wells" – User must select the highest value well from the previously selected wells from the Protocol Configuration window. And type in the Scale value. Then instrument will set the selected well as a standard well and measure with controlled gain value.
- "Scale to Low Wells" – User must select the lowest value well from the previously selected wells from the Protocol Configuration window. And type in the Scale value. Then instrument will set the selected well as a standard well and measure with controlled gain value.

Fluorescence – Area Scanning



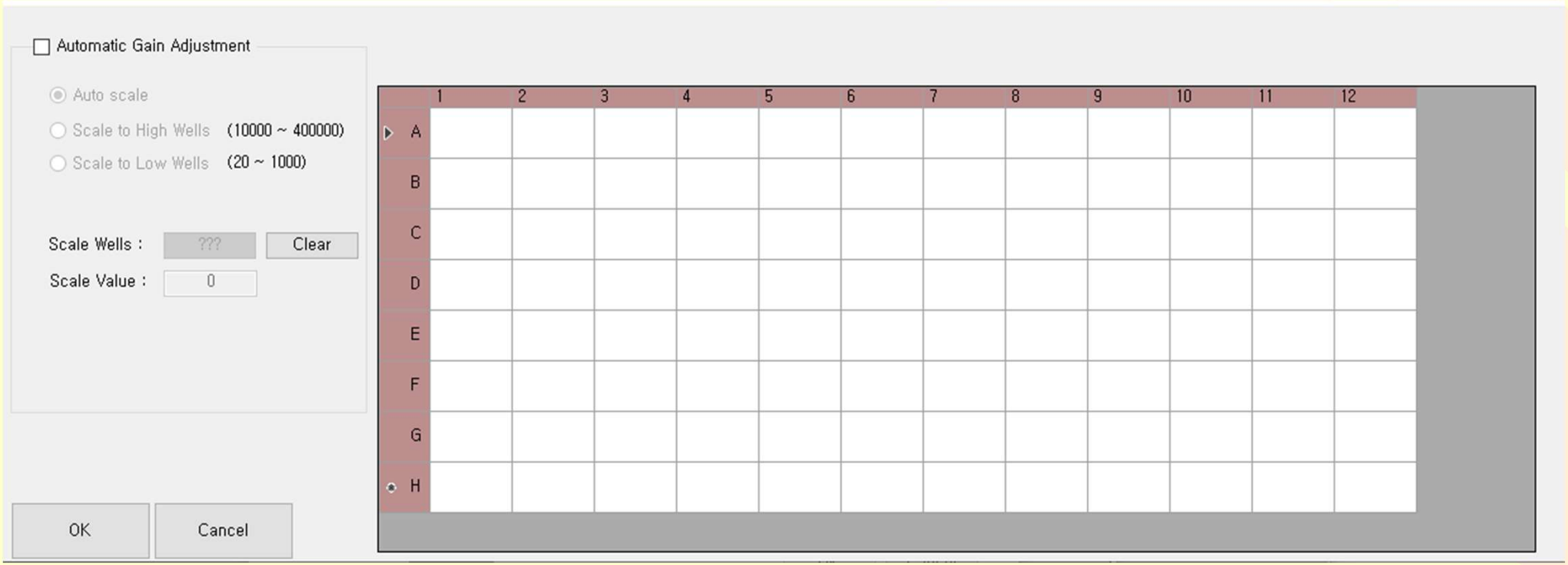
- Select the Fluorescence with Area scanning Read type.
- Select the wells you would like to measure on the well layout then click Read details.
- Type in the number of points X and Y. Refer to the Number of points setting reference.

Luminescence - Endpoint



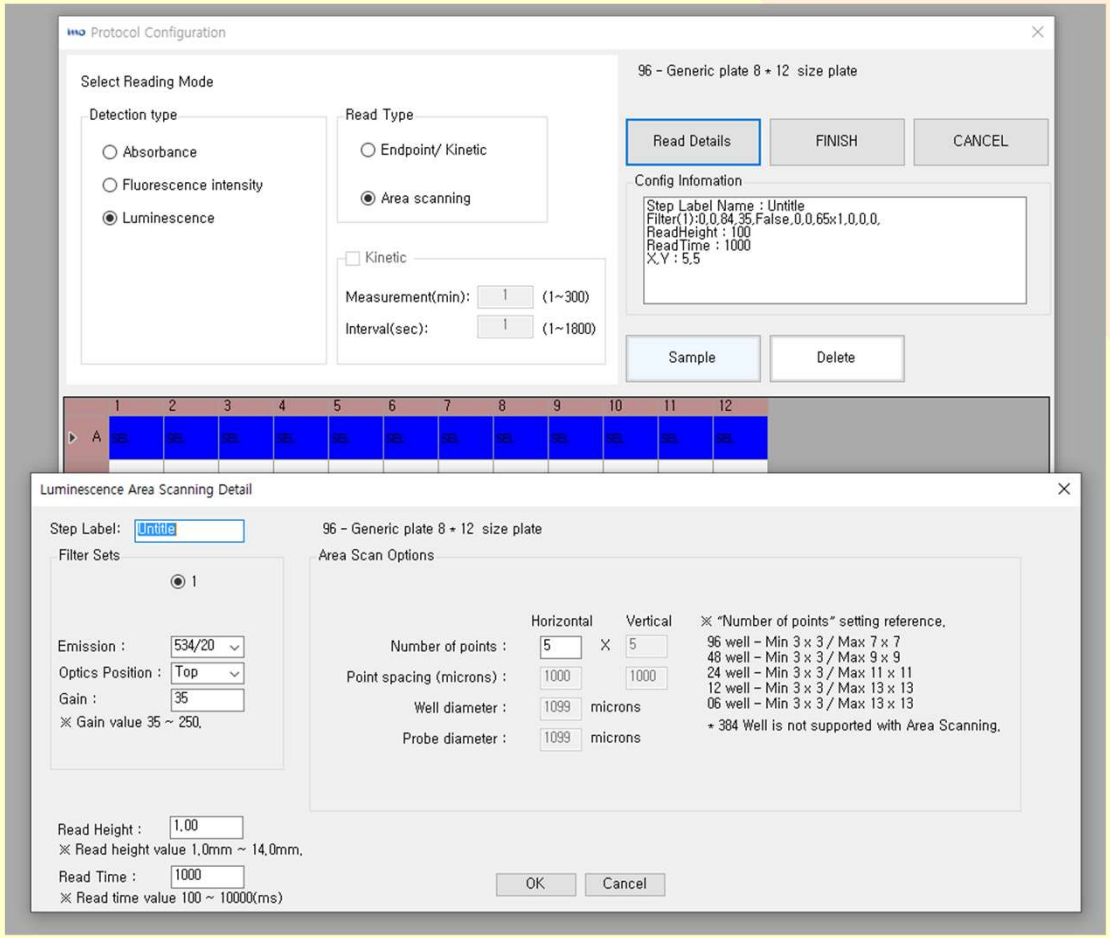
- Select the Luminescence and Endpoint read type then select the wells that you would like to measure.
- Select the Emission filter, "OPEN" option is the basic luminescence setting. If you select filter you may check out the value at certain wavelength.
- Same as fluorescence, type in the gain value or you may use the Automatic Gain Adjustment feature by clicking Option button.
- Reading Height you may type in 1mm to 14mm. And Reading time from 100 to 10000 millisecond.
- You may measure total up to 6 luminescence readings.

Luminescence – Gain Adjustment



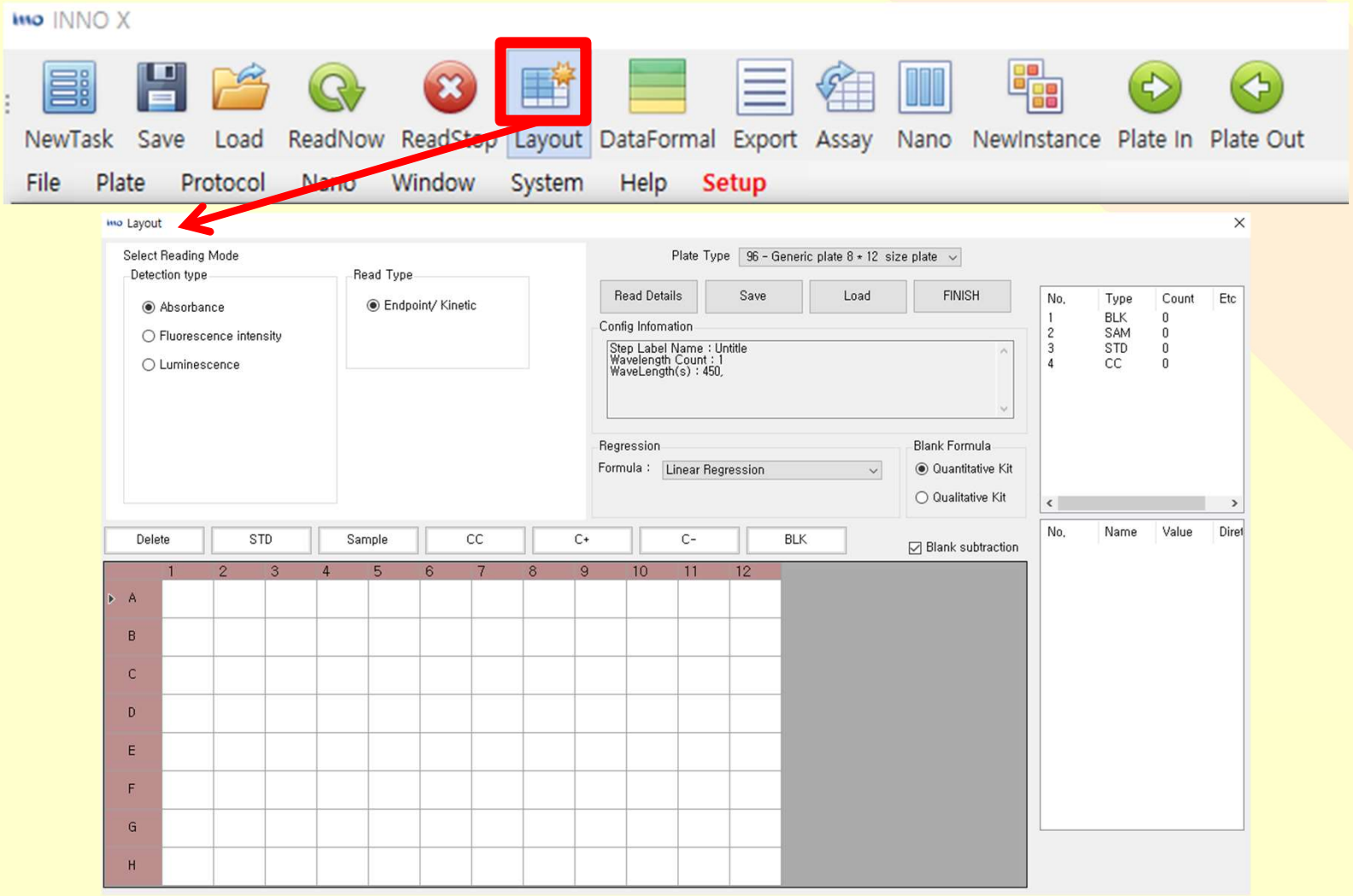
- In order to use the Automatic Gain Adjustment feature, you must check the box.
- If you select Auto scale, instrument will scan the previously selected wells from the Protocol Configuration window and set the gain value automatically before the luminescence reading.
- "Scale to High Wells" – User must select the highest value well from the previously selected wells from the Protocol Configuration window. And type in the Scale value. Then instrument will set the selected well as a standard well and measure with controlled gain value.
- "Scale to Low Wells" – User must select the lowest value well from the previously selected wells from the Protocol Configuration window. And type in the Scale value. Then instrument will set the selected well as a standard well and measure with controlled gain value.

Luminescence – Area Scanning



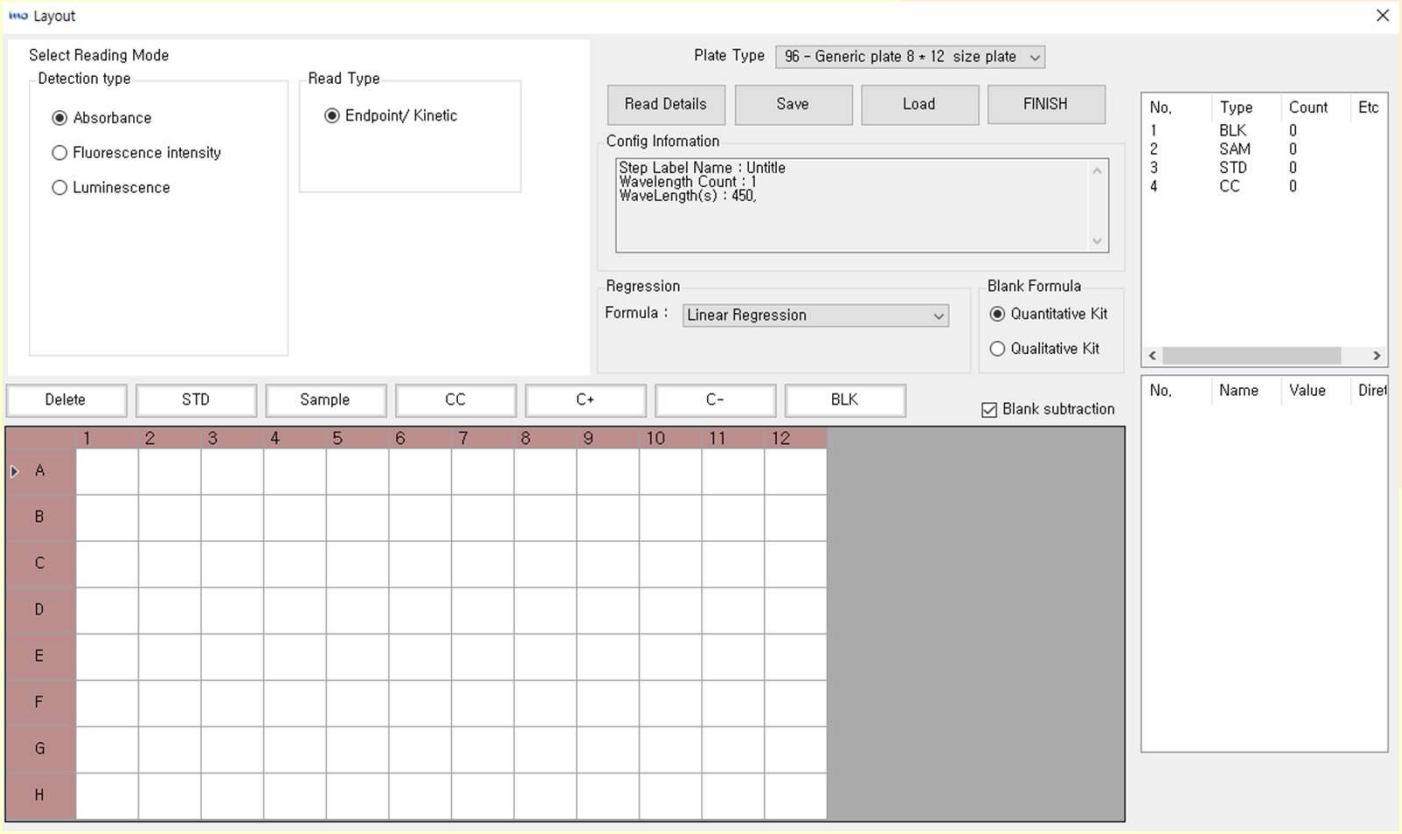
- Select the Luminescence with Area scanning Read type.
- Select the wells you would like to measure on the well layout then click Read details.
- Type in the number of points "X" and "Y" . Refer to the Number of points setting reference.
- Set the Gain value, Read height, and Read time.

Layout



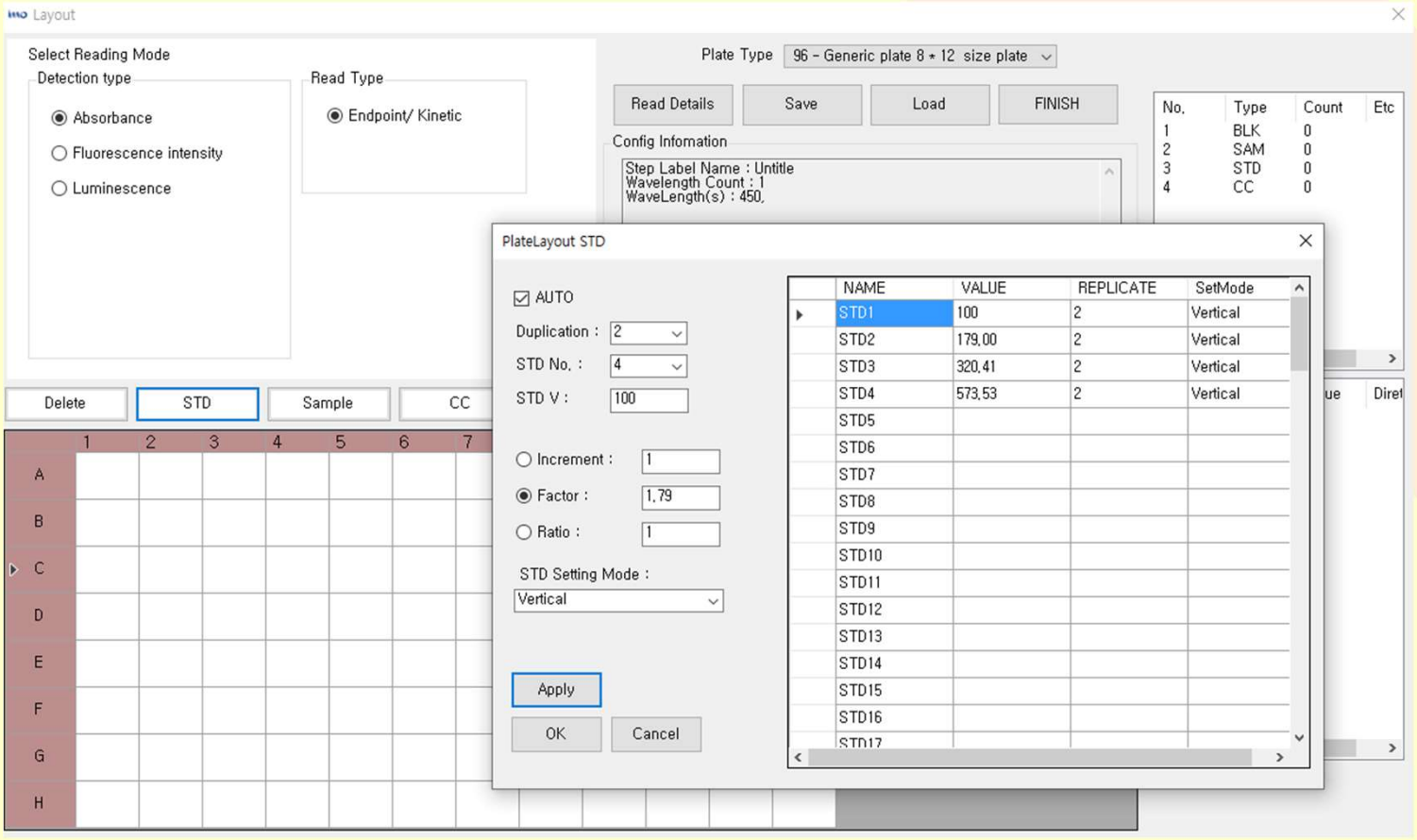
- Plate layout from the main menu provide a the data analysis function with using standard curve and regressions.
- In the Plate Layout menu, you may set up the Blank, STD, SAMPLE based on the wells that you selected.

Layout



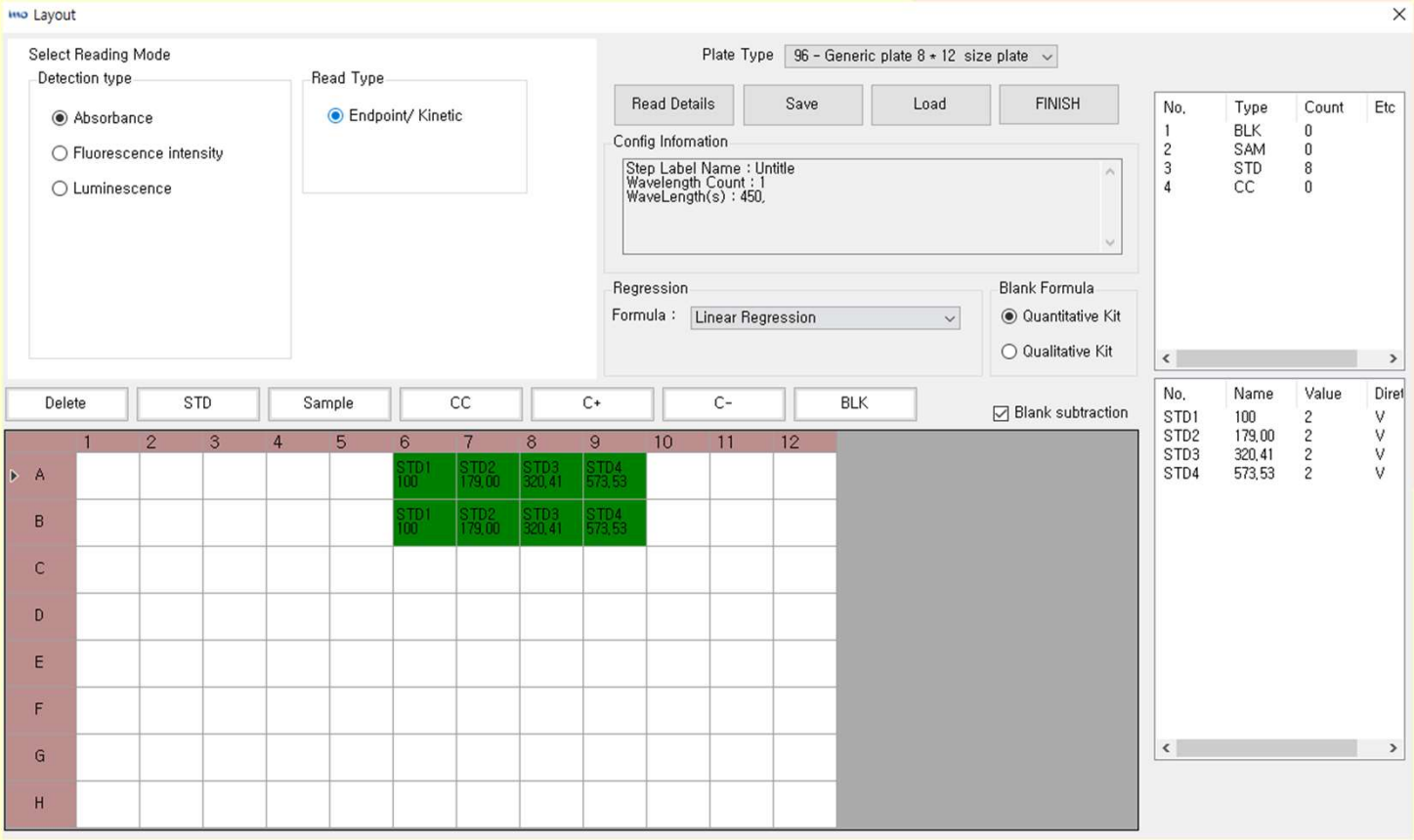
- You may select Absorbance, luminescence, and fluorescence for the detection type.
- Read details allow you to set up the protocol details.
- Save button allows you to save the currently created protocol.
- Load button allows you to load up the previously saved protocols.
- Finish button allows you to be able to finish creating the protocol and then move on to the next step.

Layout



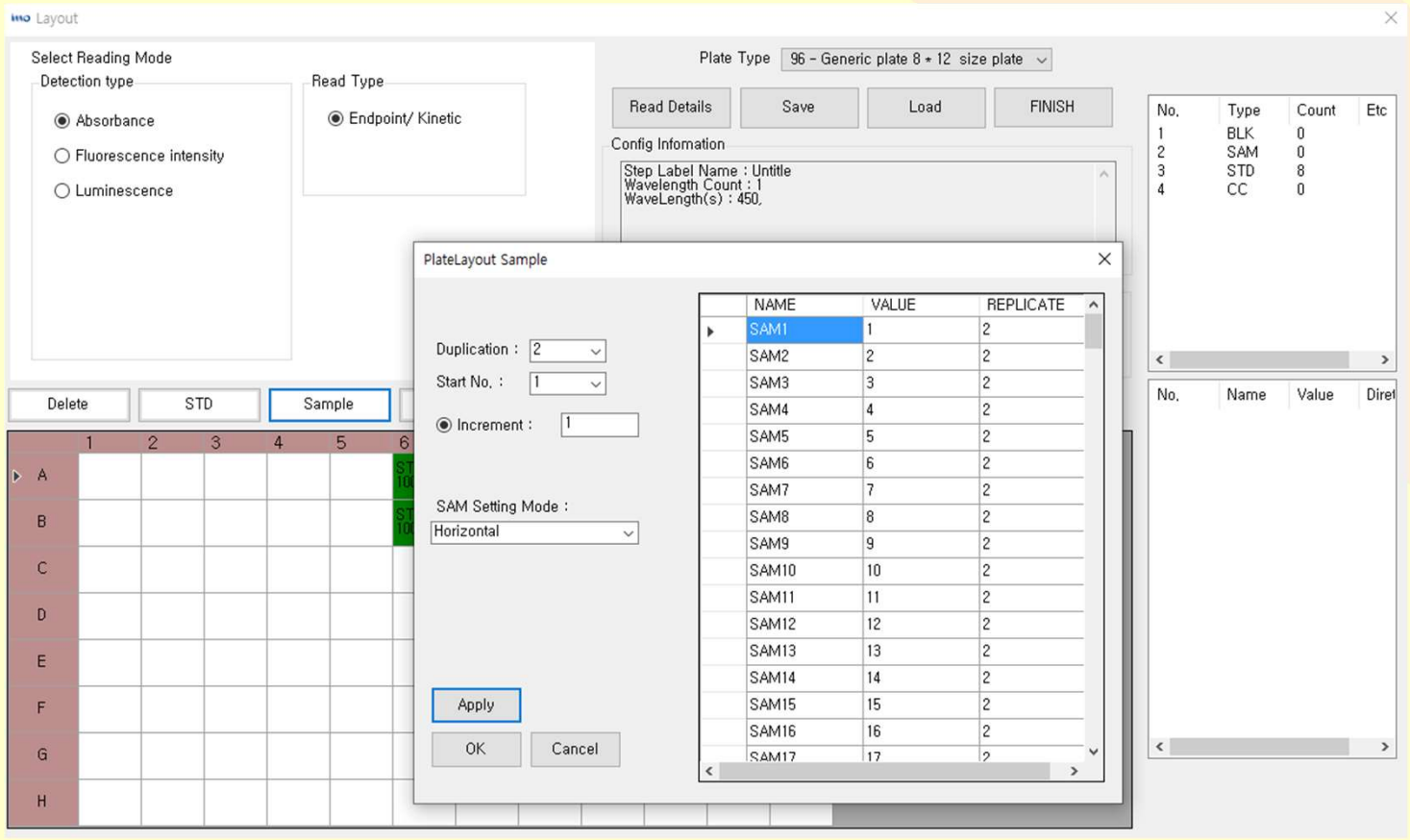
- If you select the "STD" button Plate Layout STD window will open.
  - "Duplication" means how many STD wells do you want to replicate.
  - "STD No" means how many STD wells do you want to select(from the lowest value to the highest value).
  - "STD V" means Starting value.
  - "Increment" means how much of a value you wish to be add on to the next STD well values.
  - "Factor" means multiplier of STD values on to the next STD values.
  - "Ratio" means dividing from the higher STD value to the lowest.
  - "STD Vertical" & "STD Horizontal" means either you wish to select lay the STD wells(more than 2) vertically or horizontally.
- then press "Apply" to apply the STD layout setting.

Layout



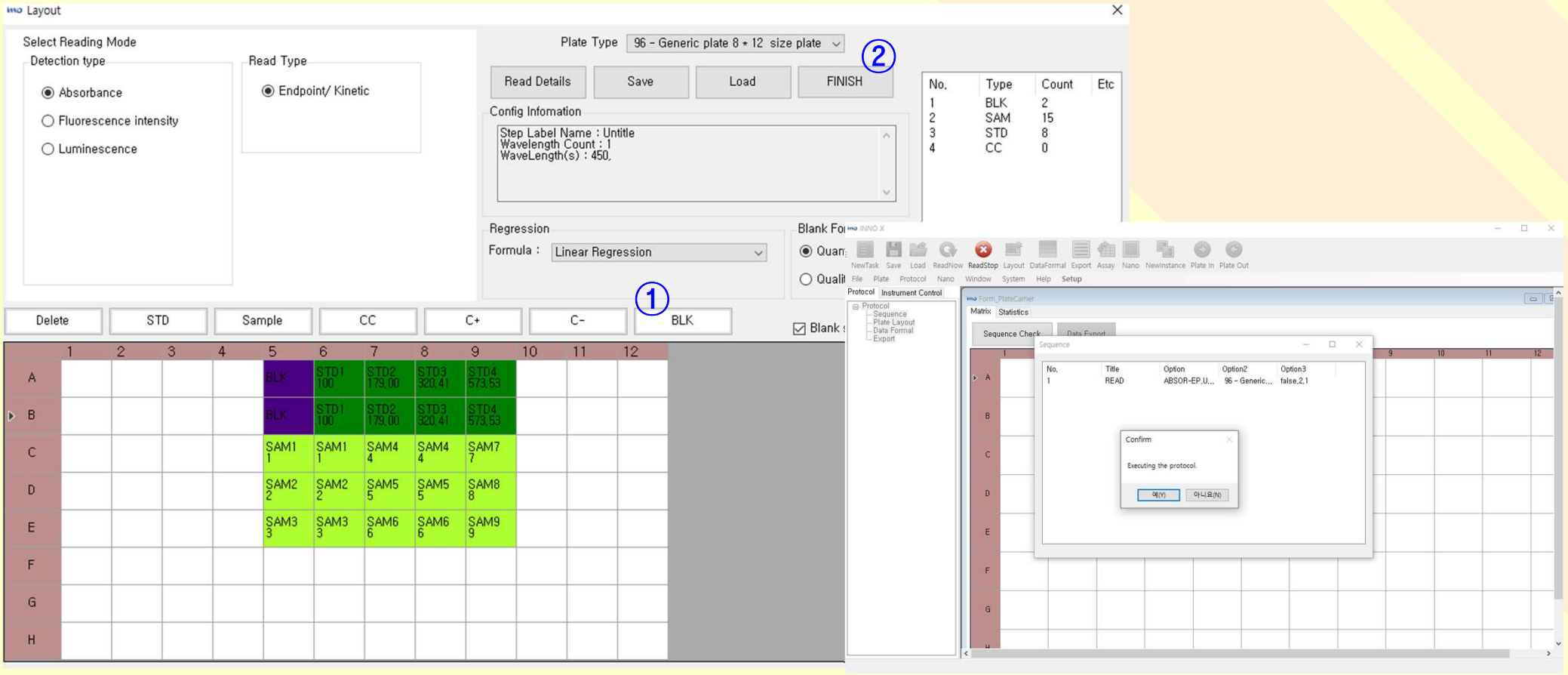
- As you can see above, select the standard wells on the well layout.

Layout



- Select "Sample" to select the Sample wells on the well layout.
- If you select the "Sample" button Plate Layout Sample window will open.
  - "Duplication" means how many Samples wells do you want to replicate.
  - "Start No" means from which number you wish to start the sample.
  - "Increment" means how much of a value you wish to add on to the next selected Sample well.
  - "SAM Setting Mode" means either you wish to select lay the Sample wells(more than 2) vertically or horizontally
- then press "Apply" to apply the Sample layout setting.

Layout



- As you can see above, select the Sample wells on the well layout.
- By clicking "BLK" ① you may select the Blank wells on the well layout.
- After finishing the protocol setting, you may click Finish button ② to execute the protocol.

Layout (Assay)

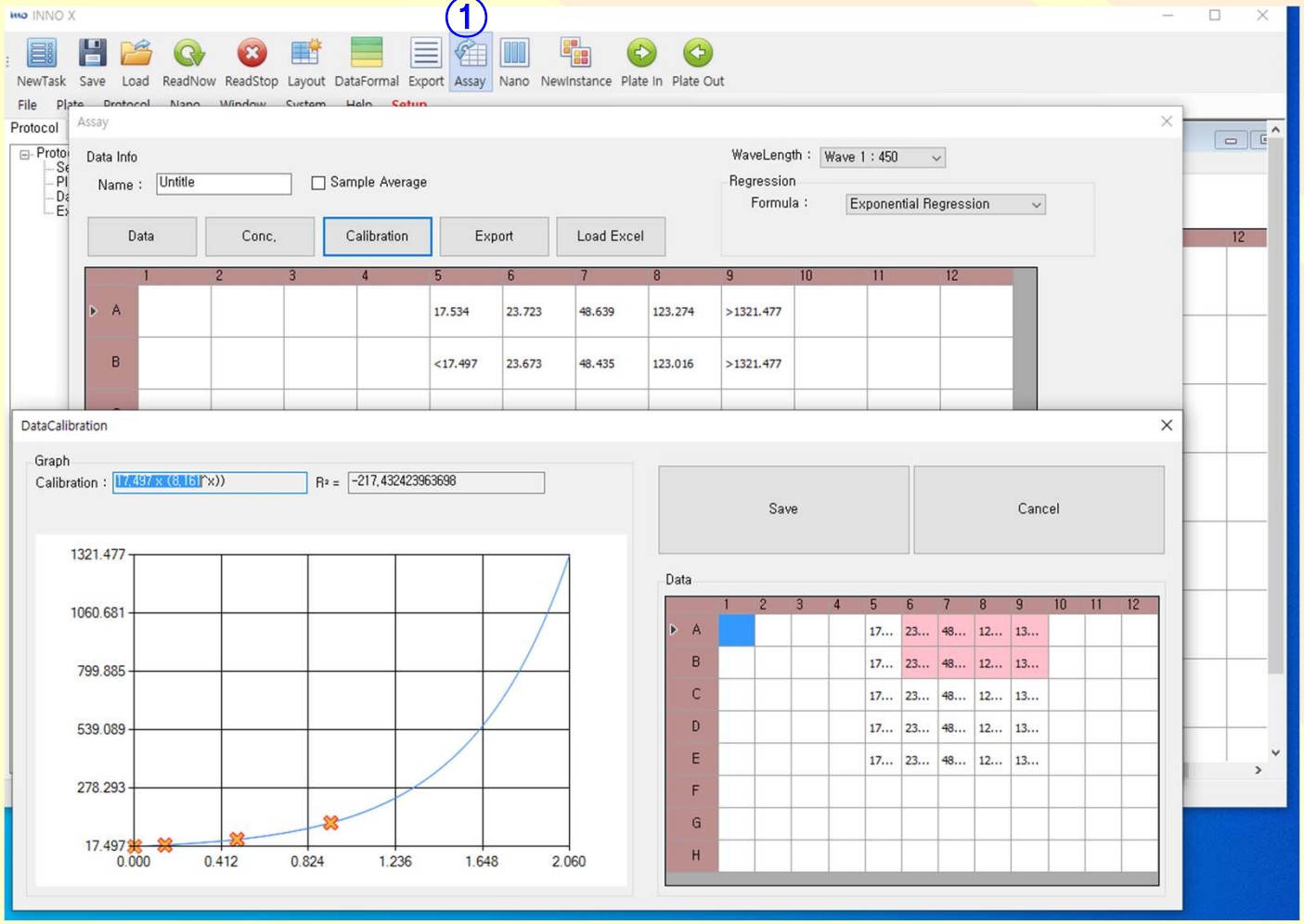
INNO-X Measurement Data

Date: 12/12/2022 11:59

Protocol Name	Untitle
Plate Type	96 - Generic plate 8 * 12 size plate
Read Type	Absorbance Endpoint
WavelengthCut	1

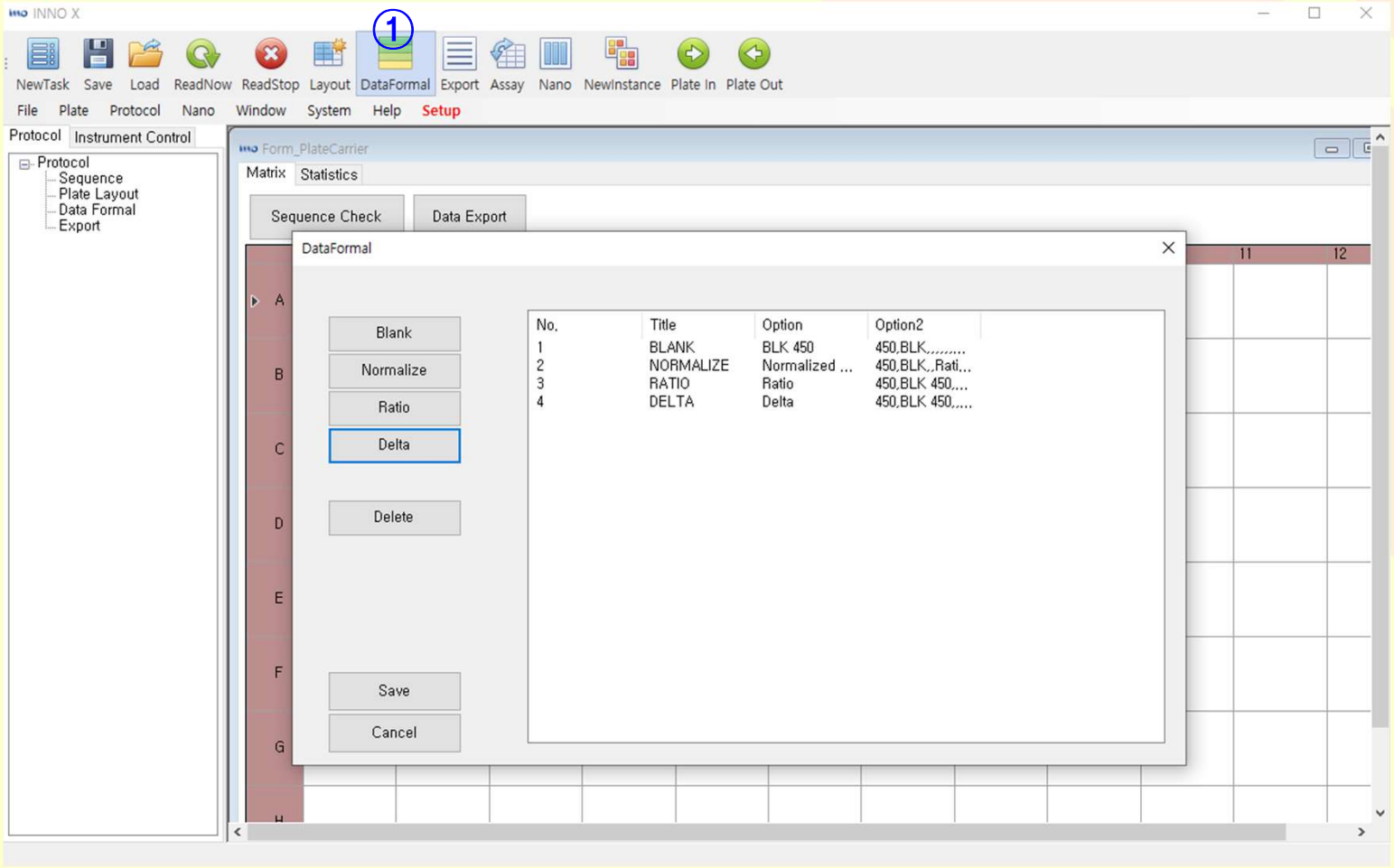
Result

Wavelength :	450										
Well	1	2	3	4	5	6	7	8	9	10	11	12
A					0.175	0.319	0.661	1.104	2.234			
B					0.173	0.318	0.659	1.103	2.237			
C					0.172	0.317	0.659	1.101	2.239			
D					0.171	0.316	0.661	1.101	2.239			
E					0.172	0.318	0.66	1.102	2.244			
F												
G												
H												



- After checking out the Microsoft Excel result window, come back to the software then click "Assay" button ① to view the result data in a various type of formats.
- You can check the measured OD value by "Data." button.
- Concentration value can be confirmed using the selected formula through "Conc." button.
- You can see the graph of OD and concentration value through the "Calibration" button.
- You shall use the Saving feature within the calibration window to save the result data and by clicking "Load Excel" you are able to open up the past result data later without running the measurement again.

Layout (Data Formal)



• After checking out the Microsoft Excel result window, come back to the software then click "DataFormal" button ① to analyze and use certain formulas such as Blank, Normalize, Ratio, and Delta with read data and Blank.

Layout (Data Formal)

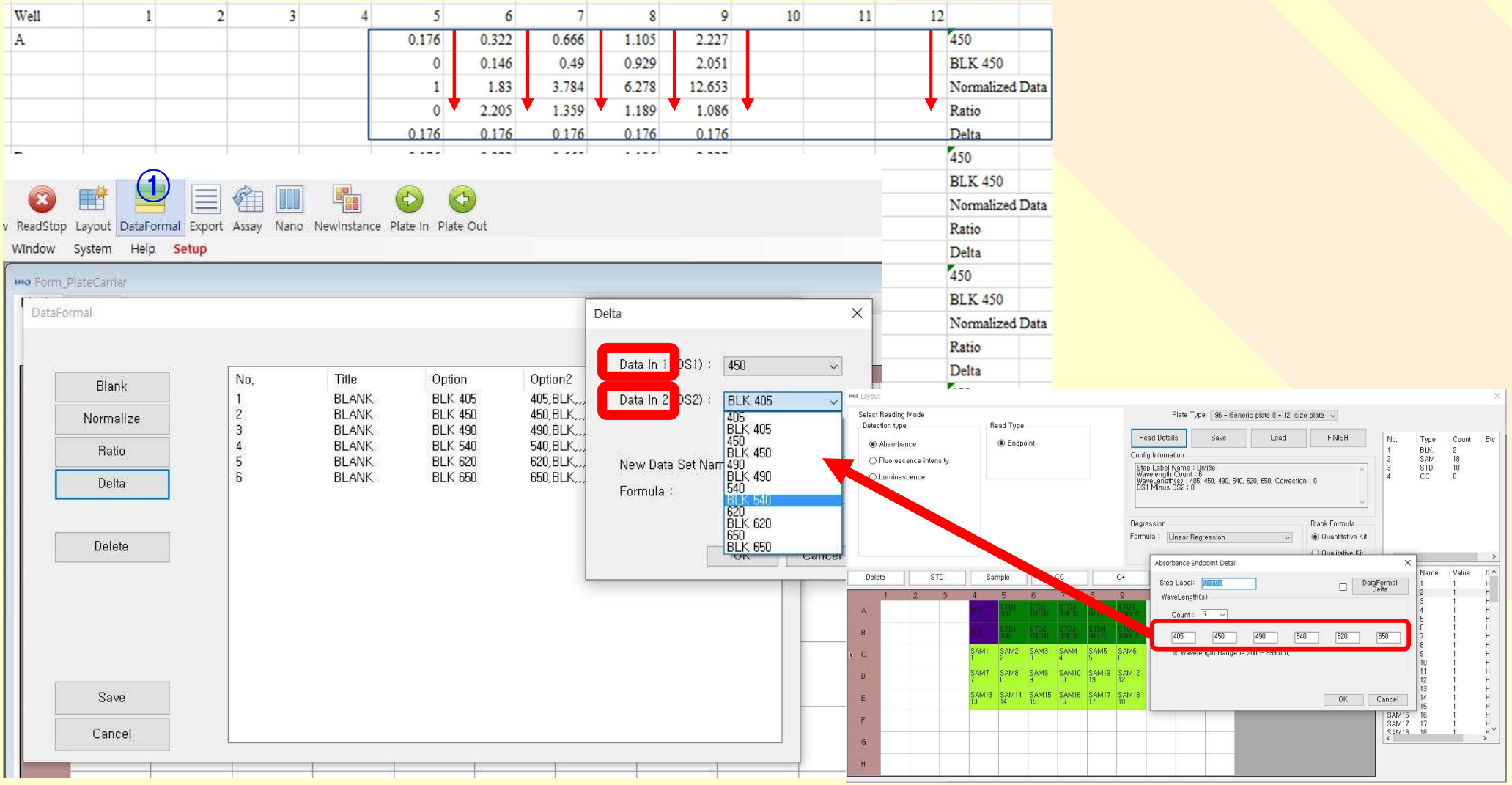
- Blank : Subtract the average Blank value from each read data.
  - Data in : Select the data that you would like apply the formula.
  - Blank wells : Select the sample type that you would like to subtract.
  - New Data Set Name : Name of the regression that will be created.
  - Formula : The selected data that will be used from "Data in" .

- Normalize : Divide Blank or Control value from the each read data.
  - Data in : Select the data that you would like apply the formula.
  - Normalize to: Select the well type that you would like to apply division.
  - New Data Set Name : Name of the regression that will be created.
  - Formula : The selected data that will be used from "Data in" .

- Ratio : Finds the ratio between two read data.
  - Data in : Select the data that you would like apply the formula.
  - Factor : Ratio multiplication number.
  - New Data Set Name : Name of the regression that will be created.
  - Formula : A formula that will find a ratio value from "Data in 1 & 2" multiply by the value of Factor.

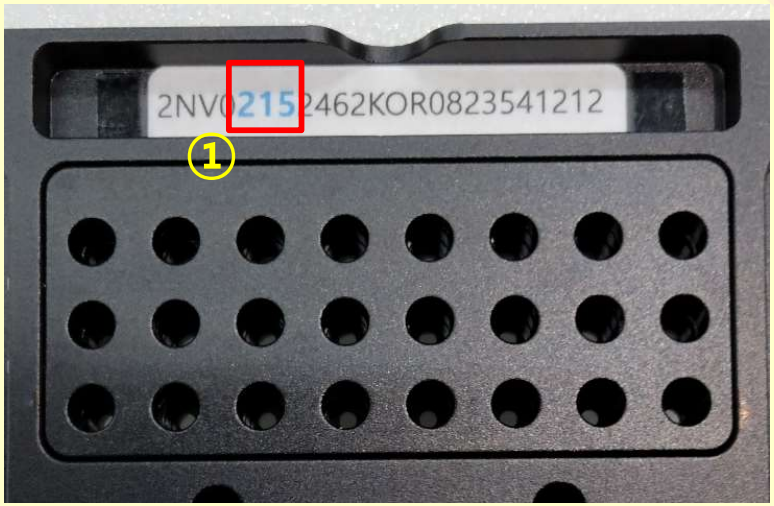
- Delta : Finds the difference between two read data.
  - Data in : Select the data that you would like apply the formula.
  - New Data Set Name : Name of the regression that will be created.
  - Formula : Finds the subtracted value from the Data in 1 to Data in 2.

Layout (Data Formal)



- After finishing setting up the data formal in the DataFormal window, click "Save" button.
- Then click the "Export" Button① to view the result data in the Microsoft Excel.
- If you select DS1 and DS2 with the selected wavelength(s) you previously typed in layout menu, you will be able to view the DS1 minus DS2 data result.

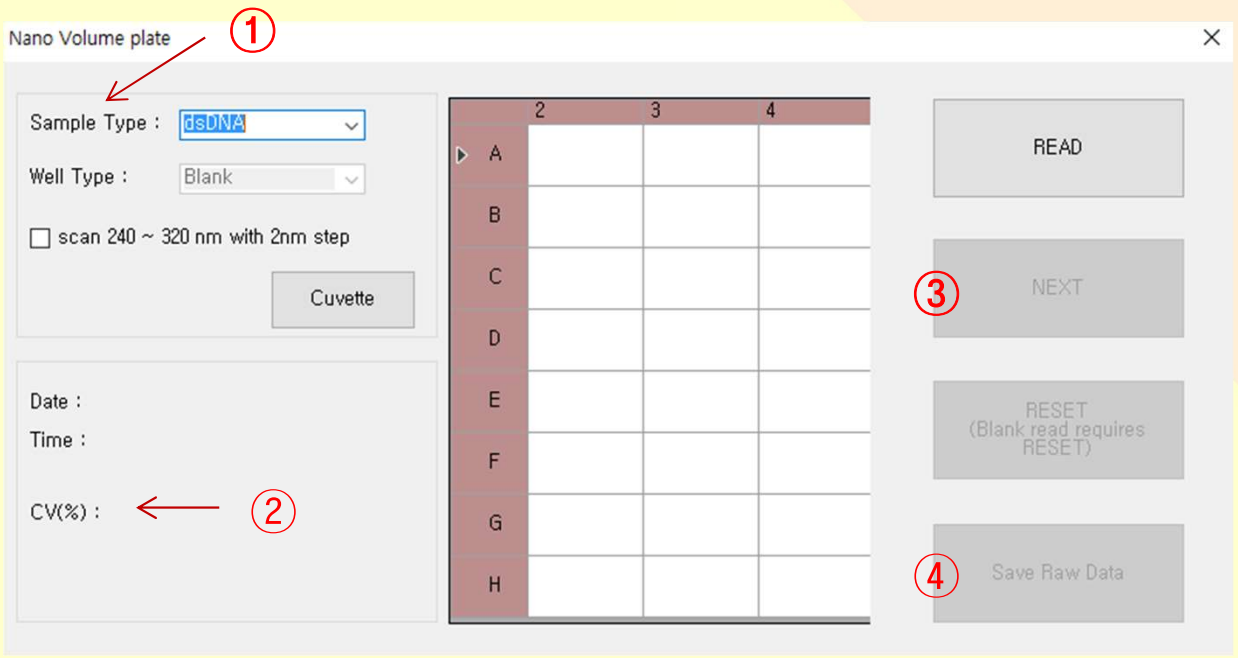
NANO-VC Setting



1. **Check behind of the NANO-VC plate to see the Calibration Value and must set same Calibration value in [INNO_SET.ini] file, which is at file route of the following (c:) → SAMS → INNO_SET.ini. ①Looking at serial number from 6th letter to 8th numbers are the calibration value. If 6th is 2, 7th is 1, and 8th is 0, that means calibration value is 21.0 and make sure to save [INNO_SET.ini] after changing Calibration value. And The software must be closed and reopened in order to be able to apply the new Cal value to the software.**
2. Press Nano Volume icon at the starting menu of INNO-X program.
3. Nano Volume option appears only when the product was purchased with NANO-VC.

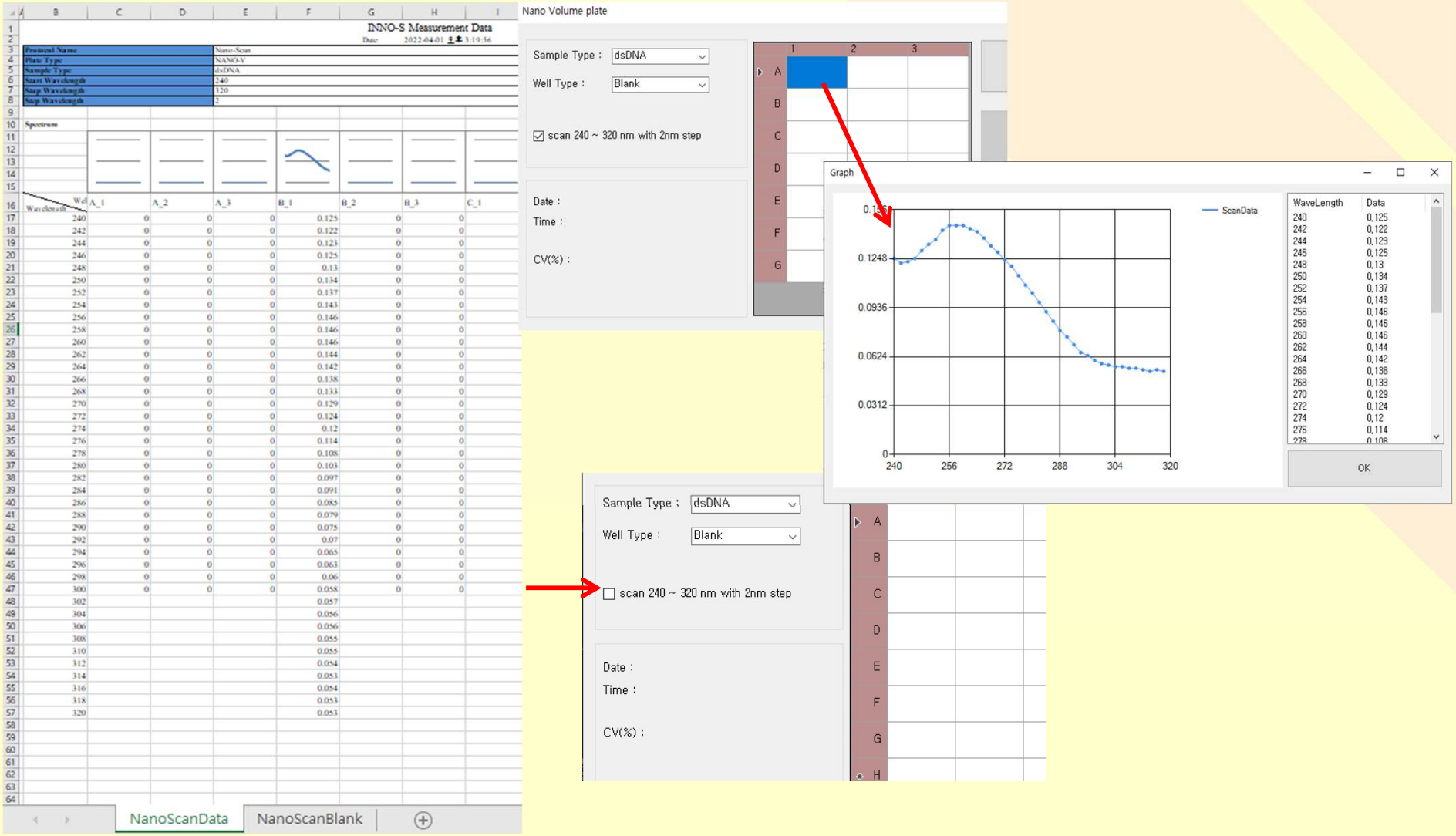
※ Do not keep the NANO-VC plate inside of the instrument when the instrument is on and when the plate is not in use. Place it in the hard case if you purchased and if not try to keep it in dust free area.

NANO-VC



• To read "Blank", first apply 2 μl distilled water on each wells you would like measure on NANO-V plate. Then select the well(s) that you have applied distilled water on well layout screen and select the "Sample Type" ① then press "READ" button.
• The result will show up on the selected well(s) and CV② values of Blank will appear. If CV values goes over 10%, wells that have wrong values will appear in Red color on the well layout.
• You may click the Red color wells to unselect and move onto the next step or click RESET button to pipette blank once more.
• Take out NANO-V plate from the plate carrier and wipe off distilled water using science wipe the wells that you have applied distilled water on.
• Apply samples (2 μl) on the same well(s) as you have applied distilled water for blank read. Don't apply sample(s) on unselected well(s) after blank read.
• After blank read is done, in NANO-V menu the "Next" ③ will be activated. That means "Sample" reading is ready. Click APPROVE and press "READ" to read samples.
• The result will show up after reading. Note down the name and save in Excel saving window to see the result data
Clicking "Save Raw Data" ④ will allow you to be able to see the "Raw" data that was read separately.

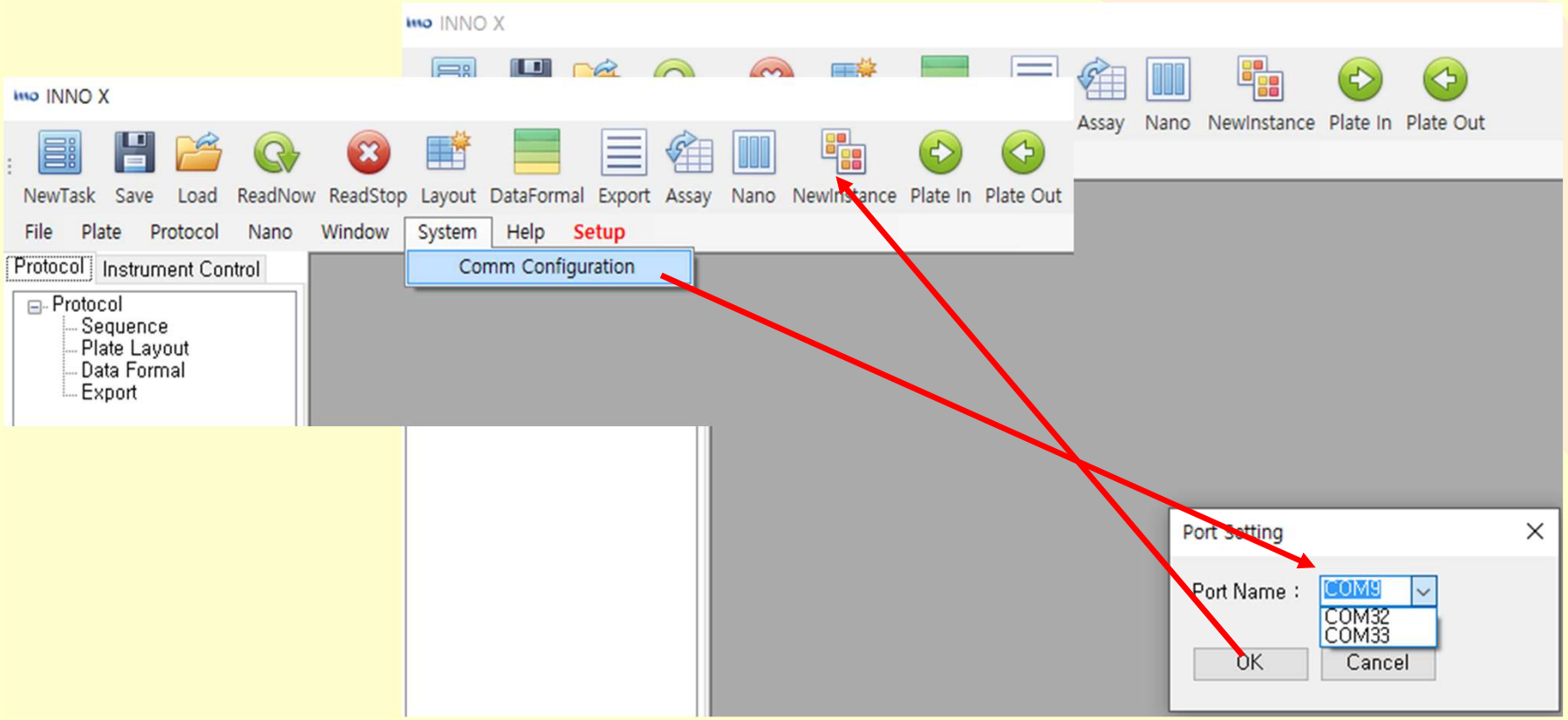
NANO-VC Scan



• Before proceeding with the "Blank read" check the "scan 240 ~ 300nm" box to read as scanning type. This feature will allow you to be able to view the result in graph format.

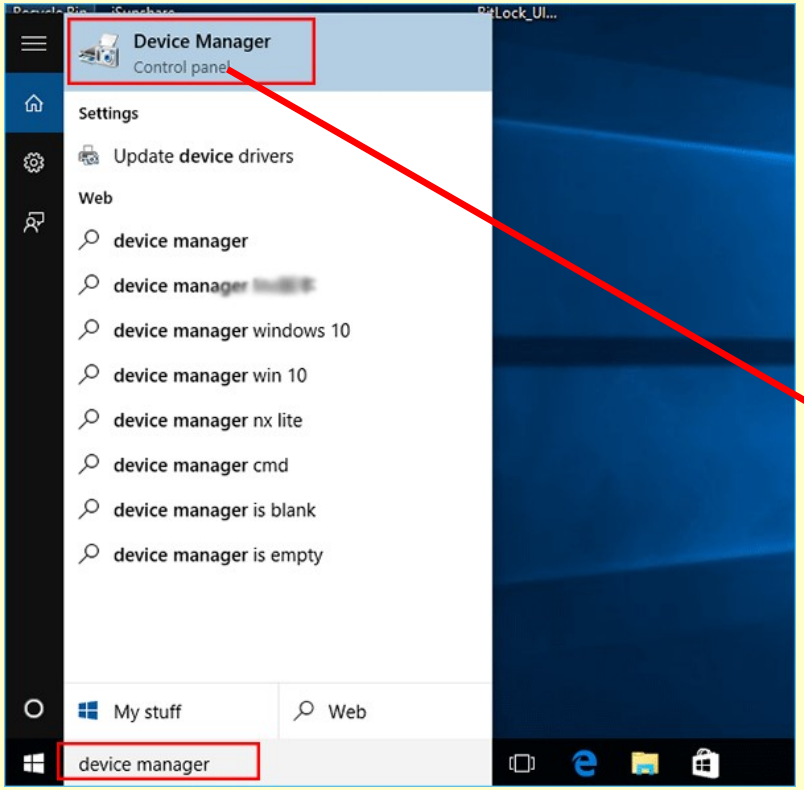
• If you click the well(s) that you have selected to measure, you will be able to check out the graph format result for each well(s).

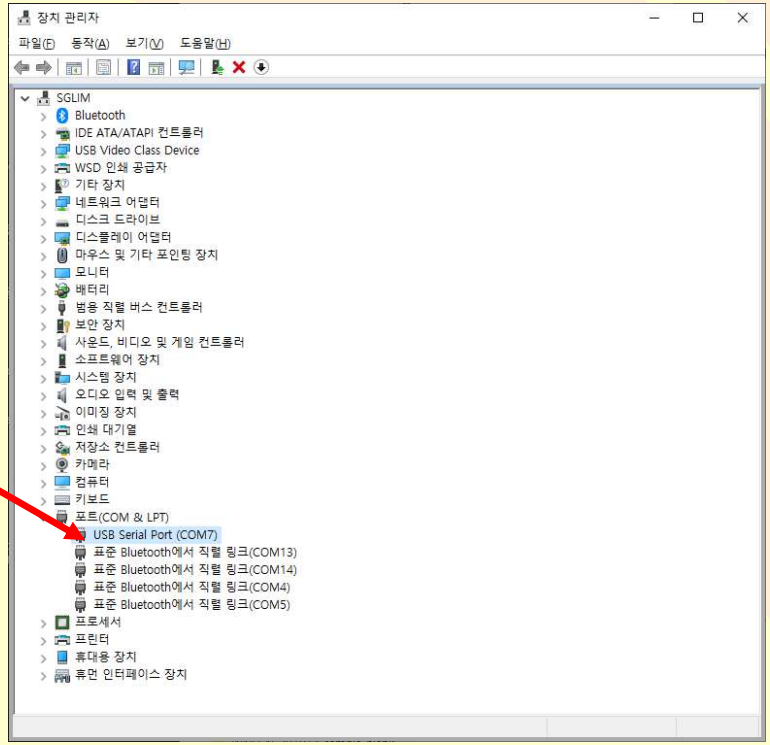
USB drive port setting



- First install the USB software driver file – CDM21228_Setup.exe
- Turn the INNO-S power on and connect the USB cable to the INNO-S operating PC.
- After the first initialization is finished, run the software then click the "System" and "Comm Configuration" .
- Normally selecting the bottom port will most likely get the connection working.

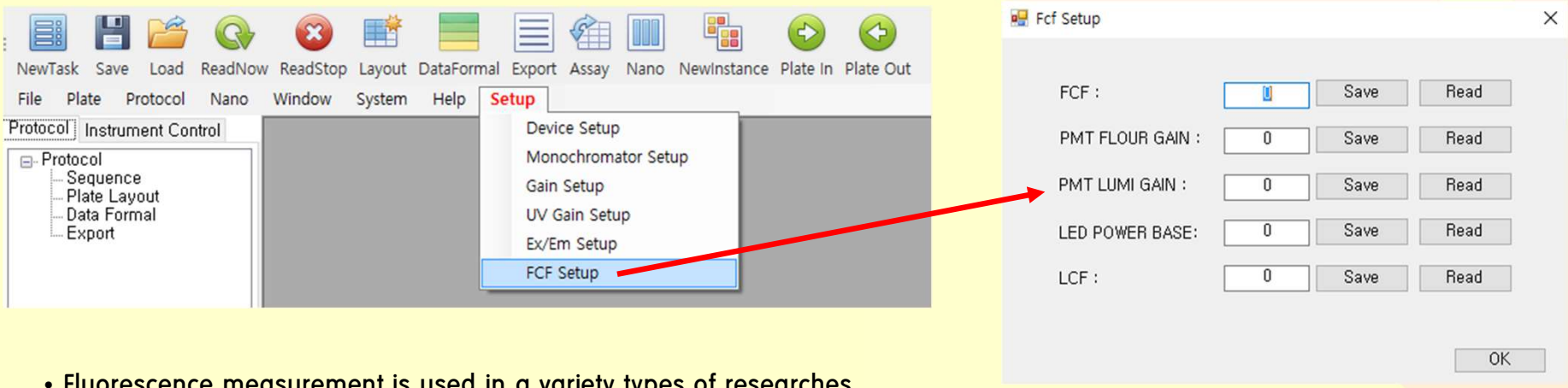
USB drive port trouble shooting





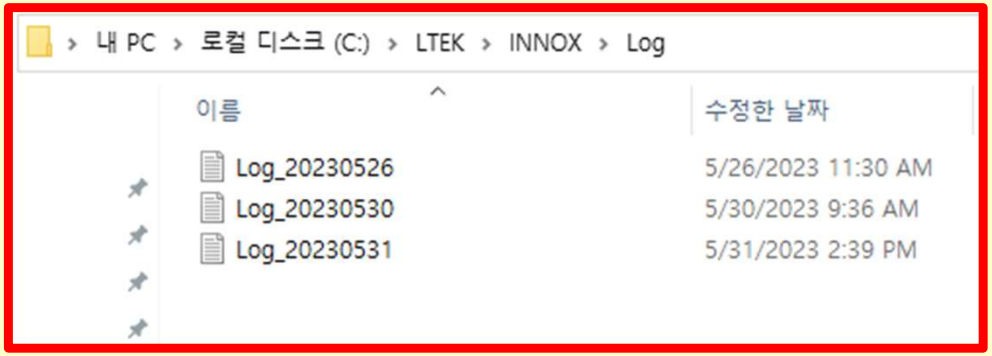
- As you can see above, click the right mouse button on the windows mark at the bottom left then click the "Device manager" .
- Then you will be able to see the right side screen shot.
- As you can see the USB Serial Port (COM7) is recognized by your operating PC.
- In order to confirm if the USB connection is working properly, you shall remove the USB cable from your operating PC and insert the cable back again. Then you will be able to see on the right side screenshot that COM7 USB port disappear and appear again.
- If you do not see any of the USB Serial Port (COM#), try to use the port USB ports on your operating PC and sometimes even there is a connection, instrument and pc can not recognize the connection in this case try to reboot your operating PC.
- And even after this trouble shooting if you do not see the USB port connection, then you will have to use different PC.

Fluorescence Cutoff Setting

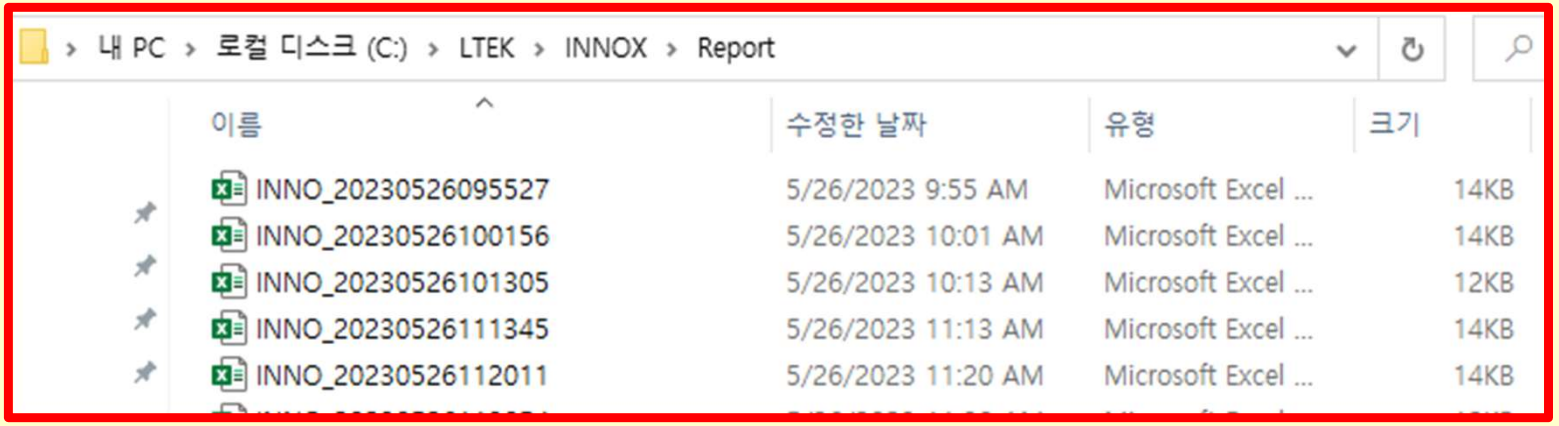


- Fluorescence measurement is used in a variety types of researches.
- Due to this reason LTEK INNO-S allows the users to be able to adjust the wide range of GAIN values and the LED light power strength.
- Here "FCF" (Fluorescence Cutoff) means from where the user wishes to cut off the fluorescence data value from the bottom.
- As you can see the when the product is being manufactured, LTEK' s engineer will set the Standard FCF value of the instrument.
- But in cases, the user may adjust the FCF value to lower or higher than the standard value to run some irregular tests.
- And adjusting the value of FCF may cause some of data failures by setting too low will show too much of the noise values along with the actual data values and by setting it too high could cause the data value analysis capability of the instrument could be blurred.
- Adjusting method is increasing FCF value which will increase the cutoff which is increasing the basic noise field and lowering the base values. The opposite way is decreasing the FCF value will decrease the cutoff and the basic noise field will be lowered and so base values will increase.
- LCF(Luminescence Cutoff) means from where the user wishes to cut off the luminescence data value from the bottom.
- PMT Flour Gain: Standard auto gain adjustment value for the fluorescence measurement. Adjusting this value could cause twisted and irregular linearity of the result data. **Make sure to write down the original value before adjusting.**
- PMT Lumi Gain: Standard auto gain adjustment value for the Luminescence measurement. Adjusting this value could cause twisted and irregular linearity of the result data. **Make sure to write down the original value before adjusting.**
- LED Power Base: Standard LED Power value for the fluorescence measurement when using with the AutoGain control. Adjusting this value is **highly NOT recommended**. But if must then make sure to write down the original value before adjusting.

Audit Trail and Data Result Reports

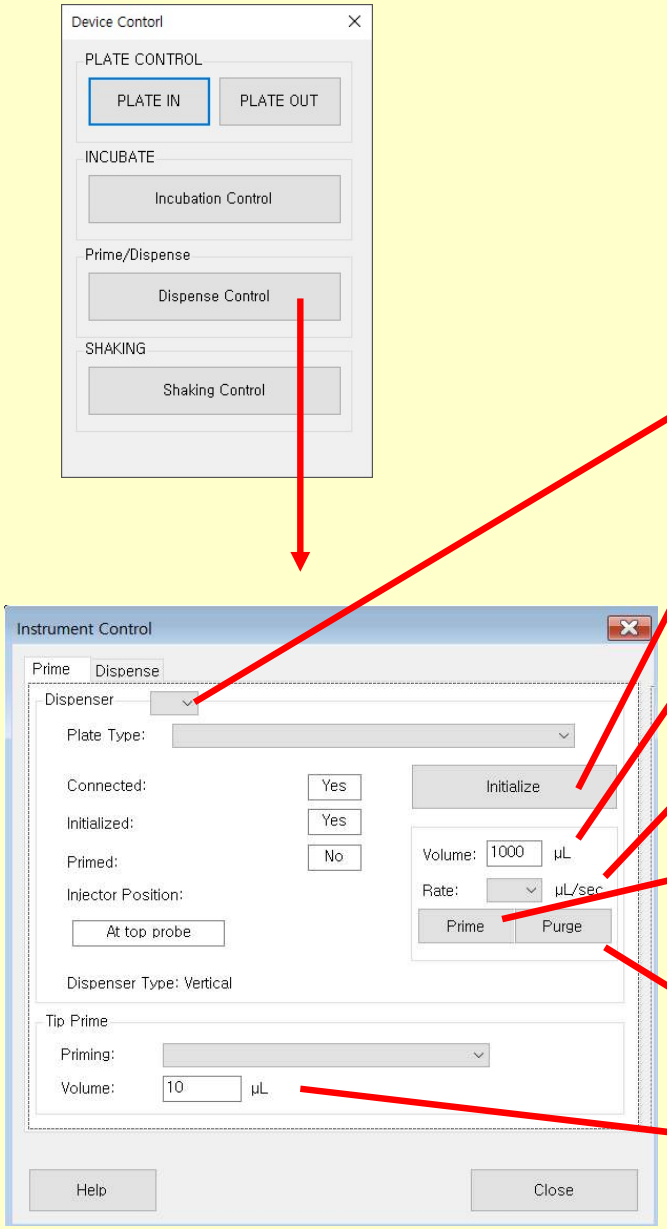


• Audit trails can be found in the following file route as above
MyPC > Local Disk (C:) > LTEK > INNOX > Log



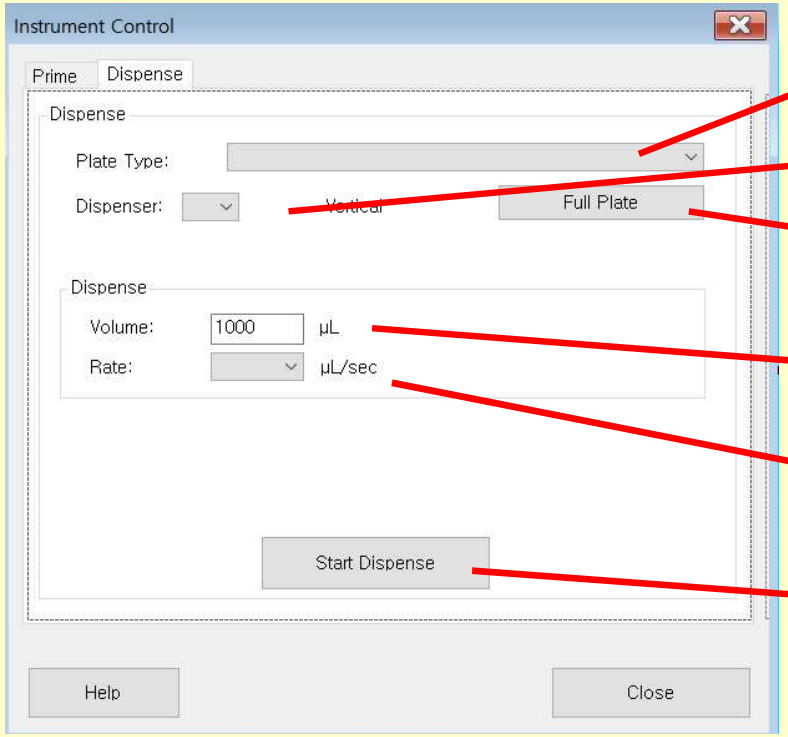
• Data Result Reports can be found in the following file route as above
MyPC > Local Disk (C:) > LTEK > INNOX > Report

Dispense (INNO-D)



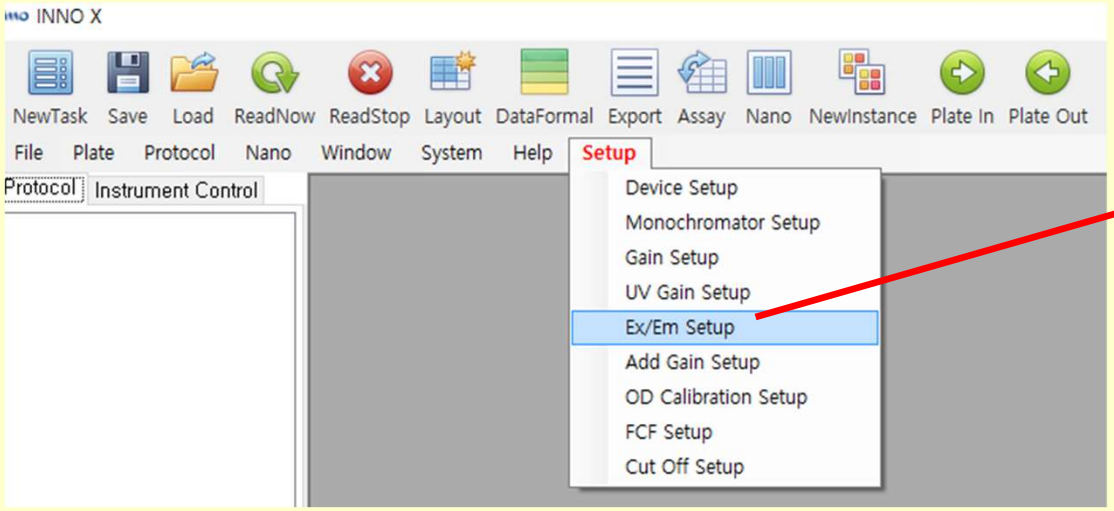
- Select syringe 1 or 2
- INNO-D Rest
- Reagent suction volume
- Reagent suction speed
- Prime : After set volume reagent suction has been done, push the reagents to the end of the needles to start injection.
- Purge : Push out all of the reagents that are in cell line, syringe, and needles.
- Push out set volume of the reagents from the needle before proceeding to the injection.

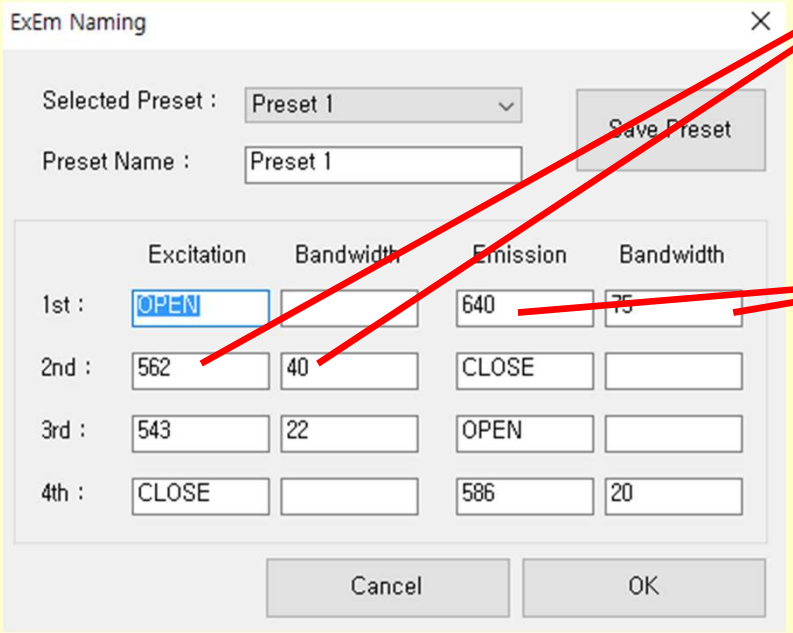
Dispense (INNO-D)



- Set Plate Type
- Syringe number to inject
- Set injection location
- Set injection volume
- Injection speed
- Execute the set protocol

INNO-S Fluorescence filter value setup(Ex&Em Setup)





- Click Ex/Em Setup

- Type in the Excitation Wavelength value, wavelength value can be found in the back of the modules, "Texas Red EX 562 (40) - Hole 2" Within the sticket back of the module "562" is the wavelength value and "(40)" is the bandwidth. Make sure that the values are typed in the correct hole, if it is "Hole 2" then it must be typed in "2nd"

- Same goes for the Emission side.