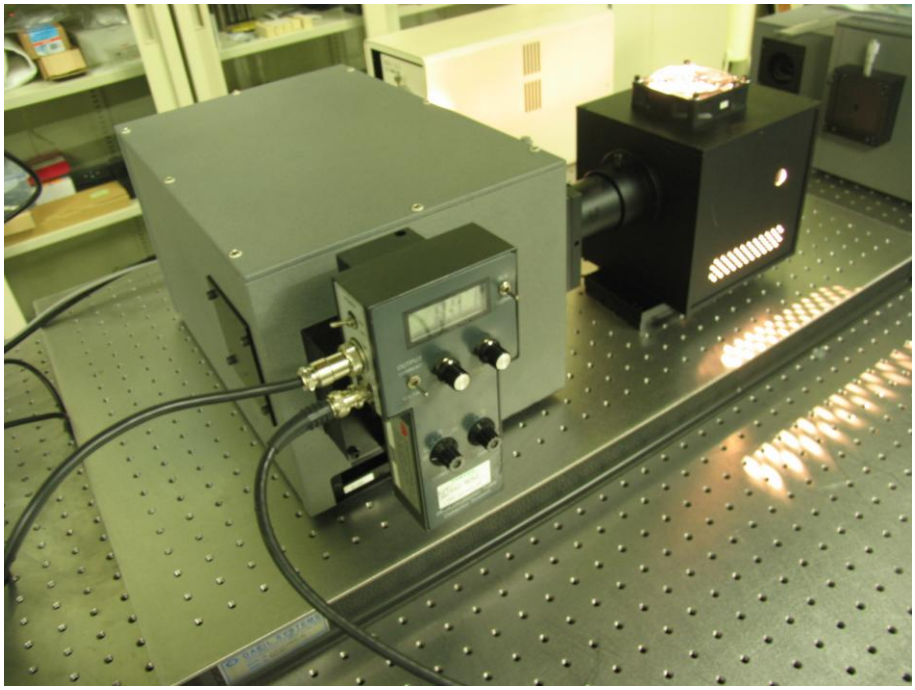
Monochromator operation program manual

Monoscan ver. 4.1.1



DONGWOO OPTRON

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***Note: Any part of this manual may be changed without prior notice.**

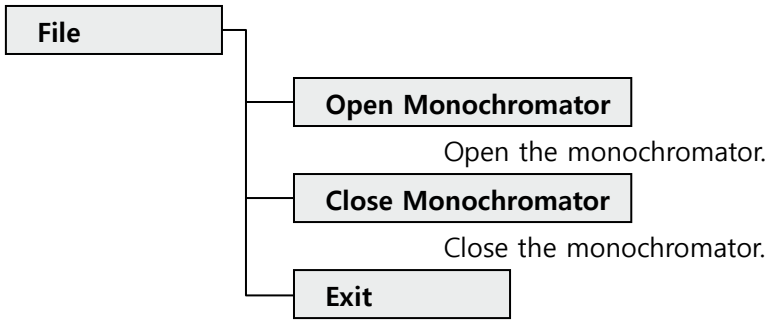
For more information. TEL: (82)-31-7650-300 , URL: http://www.optron.co.kr

Menu & Toolbar

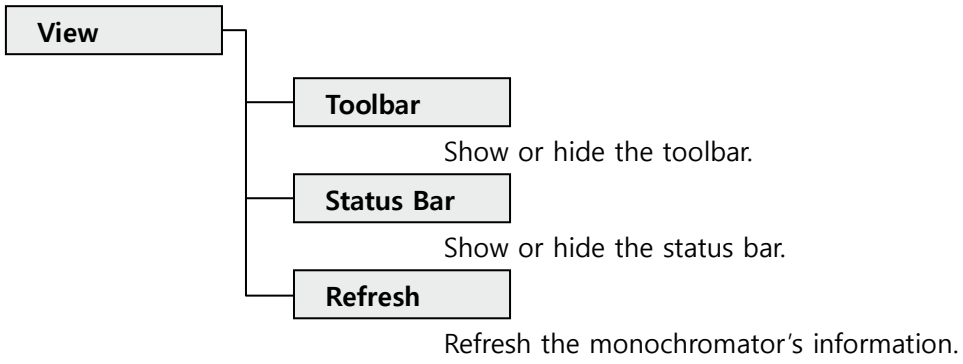
1. Menu

There are **File, View, Tools, Help** in **Menu.**

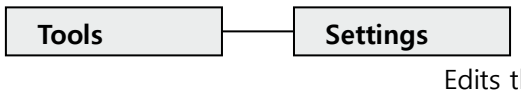
1.1 File Menu



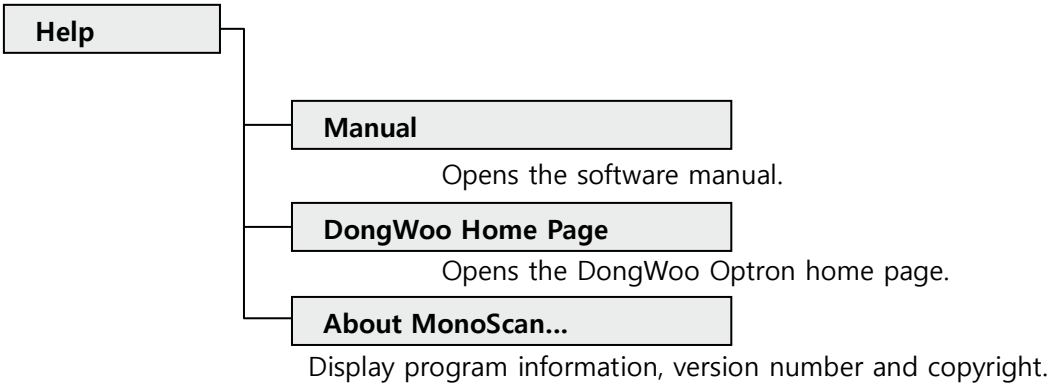
1.2 View Menu



1.3 Tools Menu



1.4 Help Menu



2. Toolbar

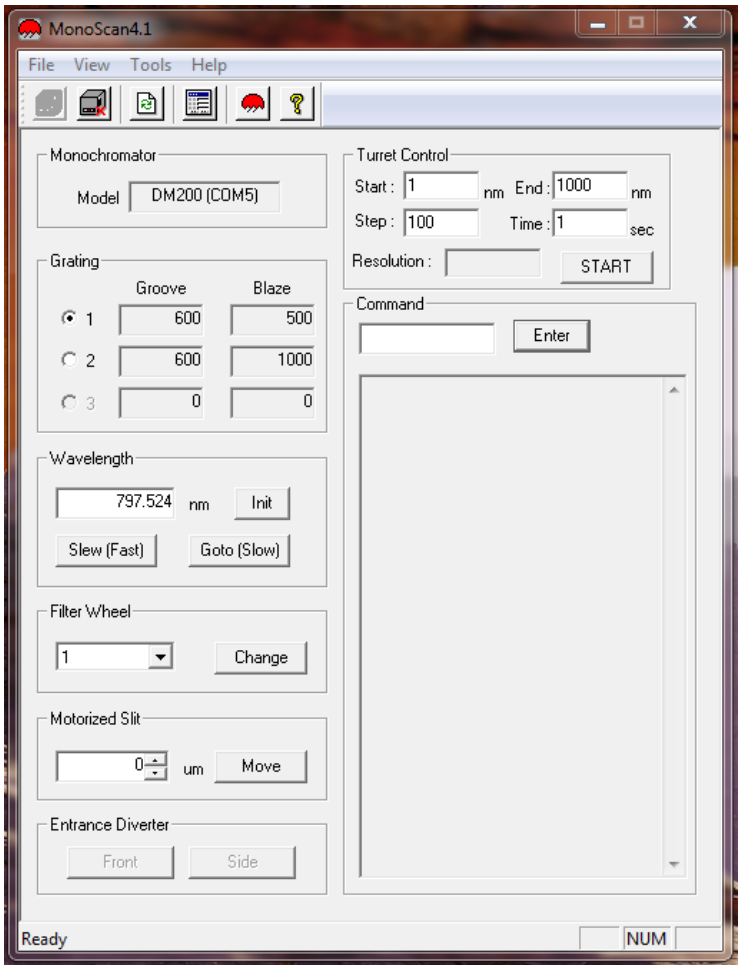
Open Monochromator(F2): Open the monochromator.
Close Monochromator(F3): Close the monochromator.

Refresh(F5): Refresh the monochromator's information.

Settings(F9): Edits the settings.

DongWoo Home Page: Opens the DongWoo Optron home page.
Manual(F1): Opens the software manual.

Functions



<Program window>

1. Function Explanation

Monochromator : This will show the model name and communication port of monochromator connected. If you use 'RS232C', this will show 'Com port'. If you use 'USB', this will show 'USB'.

Grating : Grating groove and blaze wavelength are displayed and please select one of the available gratings. To select a grating, click on appropriate radio button.

Wavelength : This shows the current wavelength. If you type particular wavelength and click 'Slew' or 'Goto', the wavelength will be changed. To initialize the monochromator, click 'Init'.

Command : After doing command and value input, click the 'Enter' button or

press 'Enter' key on the keyboard.

***Filter Wheel** : To select a specific filter and click.

***Motorized Slit** : Move slit automatically.

***Entrace Diverter** : Change the diverter to front or side.

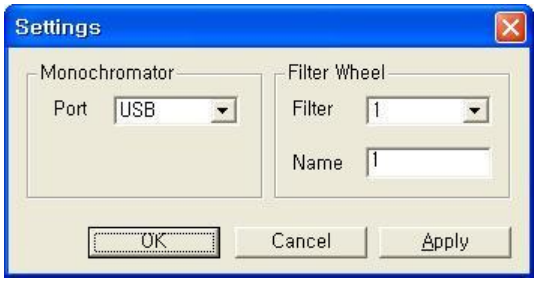
(*this functions need to install the devices.)

2. Connection Error

If communication setting is not proper, the dialogue box above will not appeared and error message dialogue box will be displayed.

The causes are four. You can solve this problem with following instructions.

1. When the monochromator is powered-off.
   Power-on the monochromator and run the software after initializing.
2. When the monochromator is powered-on, but initializing is not proper.
   Powered-off the monochromator and powered-on again.
   Run the software after initializing is finished completely.
3. When RS232C or USB cable is not connected properly.
   Check the connection of cable.
4. When monochromator's port and program's port is not set identically.
   Select 'Settings' in 'Tools' menu.



Select same com port with monochromator's port, and click 'OK' or 'Apply'.

3. Grating Rotation

In terminal mode

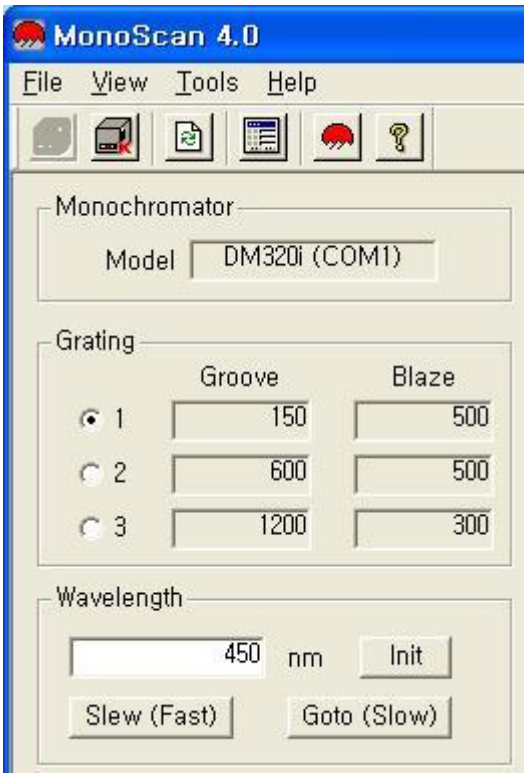
Type the command

.1. mz enter

Then you can confirm grating information

Ex) Grating=1/GROOVE=600/BLAZE=300nm/STP-NM=500nm/0nm=234500

You can confirm the groove and blaze wavelength of grating



1. Select grating in Grating menu using a mouse
2. Type the wavelength in scan menu and Press 'Goto'
3. If you want to rotate slowly then after type the wavelength in scan menu, Press 'Slew'.

After grating rotate,

You will see '*' in terminal mode.

*: completed

!: incompleted

4. Modulation of wavelength accuracy

Reference peak of Mercury lamp (Pl refer to oriel website.)

253.65nm
312.57nm (there are 2 peaks, left peak is 312.57nm)
365.02nm
404.66nm
435.84nm
546.07nm
625.14nm (second order beam of 321.57nm)
809.32nm (second order beam of 404.66nm)
937.71nm (third order beam of 321.57nm)
1092.14nm (second order beam of 546.07nm)
1213.98nm (third order beam of 404.66nm)
1460.08nm (fourth order beam of 435.84nm)
1638.21nm (third order beam of 546.07nm)

- Grating Position modulation parameter -

Monora320i & 500i

454.66/2 (unit: step/nm) for 600gv (grating)
454.66 (unit: step/nm) for 1200gv (grating)
454.66*(3/2) (unit: step/nm) for 1800gv (grating)

Monora150i & 200

307.33/2 (unit: step/nm) for 600gv (grating)
307.33 (unit: step/nm) for 1200gv (grating)
307.33*(3/2) (unit: step/nm) for 1800gv (grating)

In case of Monora320i, If the Measured peak position is 365.6nm
Calculation for 1200gv grating
365.6 (measured) - 365.02 (reference) = 0.58nm shifted
-> 0.58nm X 454.66 (step/nm) ~ 263.7 step

Run the monoscan4.0
mz enter

DM500…./gf1=1200gv/0nm=yyyy/gf2=600gv/0nm=qqq/ …

-> xxx step = qqq step+ 263 step (calculate)

* Input only integer

gf1 enter (it means number1 grating)

zw**xxx** enter

mz

DM500…./gf1=1200gv/0nm=**xxx**/gf2=600gv/0nm=nnn/ …

sl**vvv** enter (vvv is any wavelength)

If you measure the peak position of mercury spectra. And the peak position is **364.3nm**

364.3 (measured) - 365.02 (reference) = -0.72nm shifted

-> - 0.72nm X 454.66(step/nm) ~ -328 step

Run the monoscan4.0

mz enter

DM500…./gf1=1200gv/0nm=**qqq**/gf2=600gv/0nm=qqq/ …

sl**vvv** enter (vvv is any wavelength

xxx step = **qqq** step- 328 step (calculate)

gf1 enter (it means number1 grating)

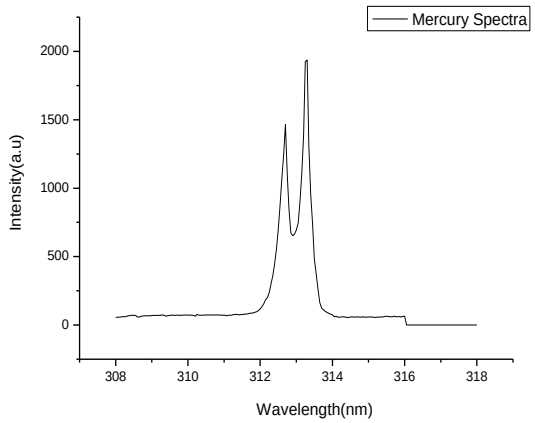
zw**xxx** enter

mz (confirm the '0nm')

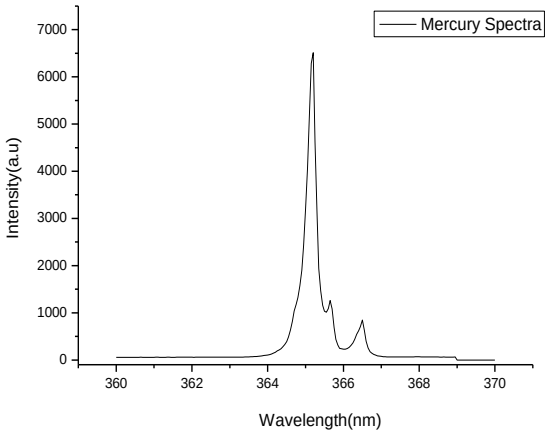
DM500…./gf1=1200gv/0nm=**xxx**/gf2=600gv/0nm=nnn/ …

sl**vvv** enter (vvv is any wavelength)

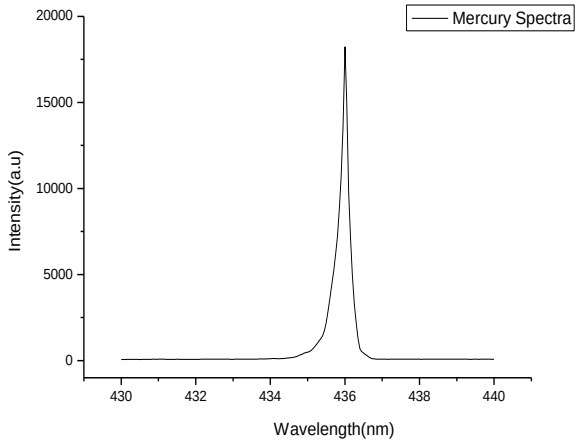
5. Mercury Spectra



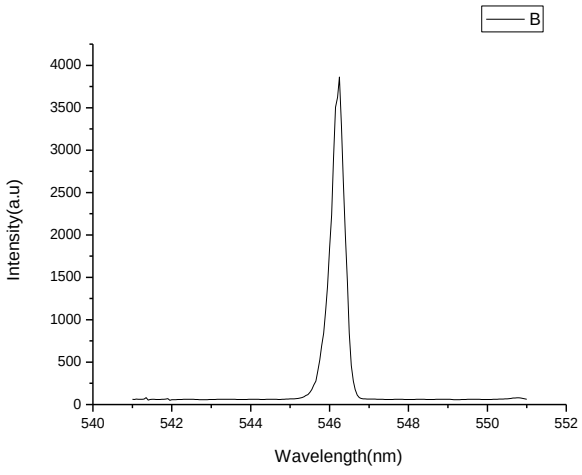
Peak position : 312.57nm 313.15 nm



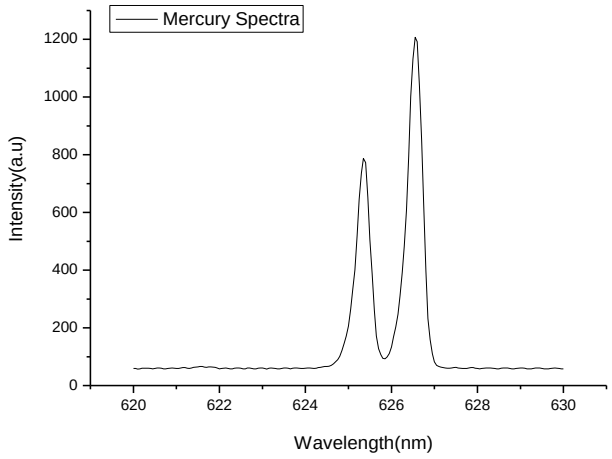
Peak position: 365.02nm



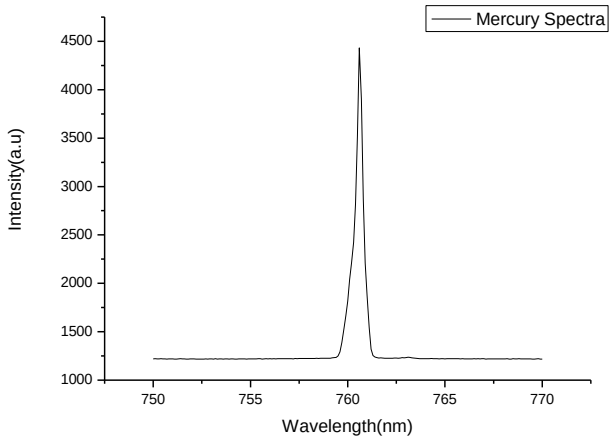
Peak position: 435.84nm



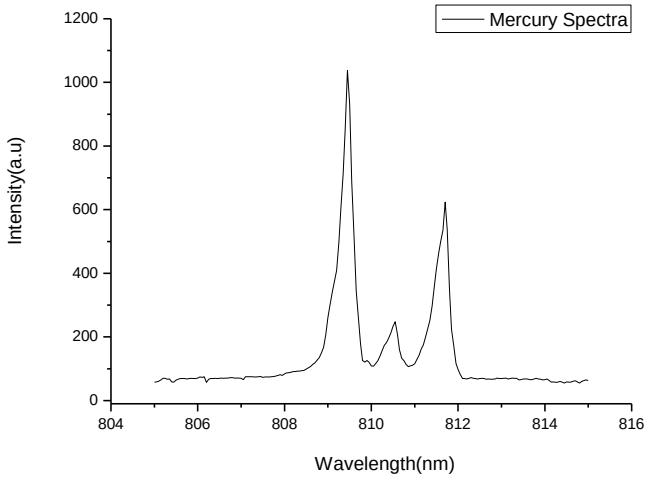
Peak position: 546.07nm



Peak position : 625.14nm 626.30nm



Peak position: 760.95nm



Peak position : 809.32nm (Left First peak)

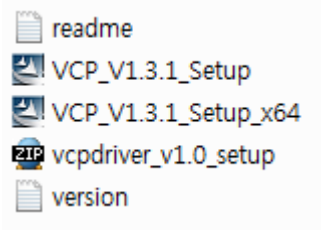
6. Virtual Driver for Monochromator USB communication

- Installation

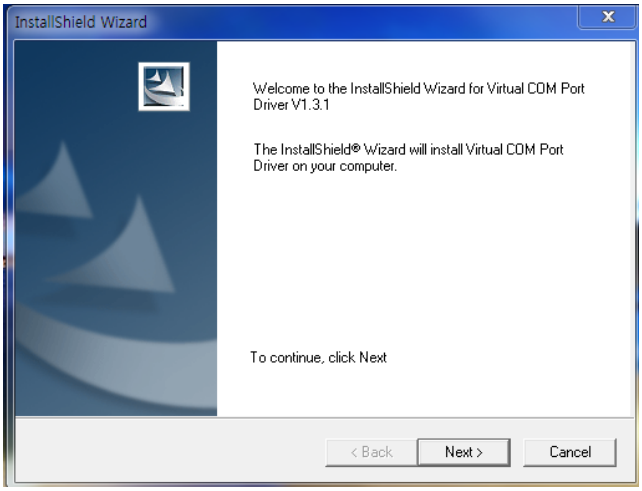
Install the Virtual Driver to communicate by USB port of monochromator

Follow below procedure

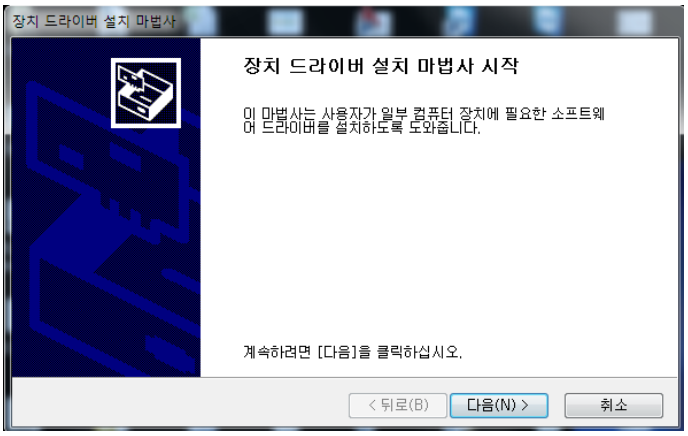
1. Open the folder



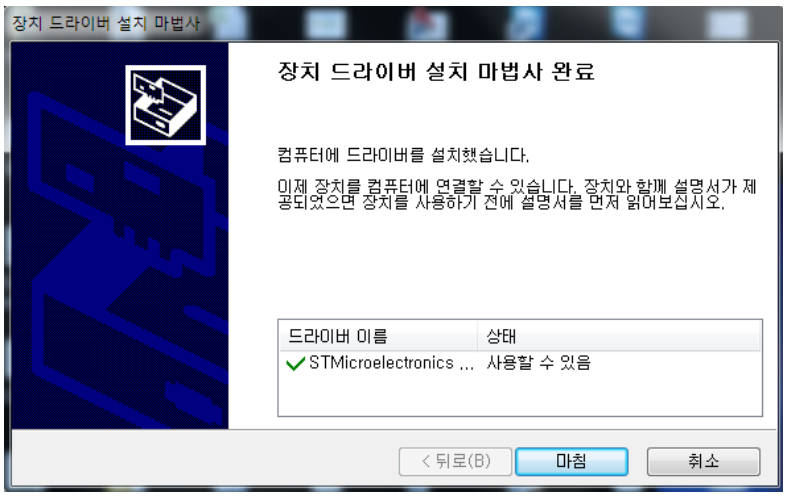
2. Double click the setup file (VCP_V1.3.1_Setup)



2. Click ‘Next’



3. Click ‘Next’



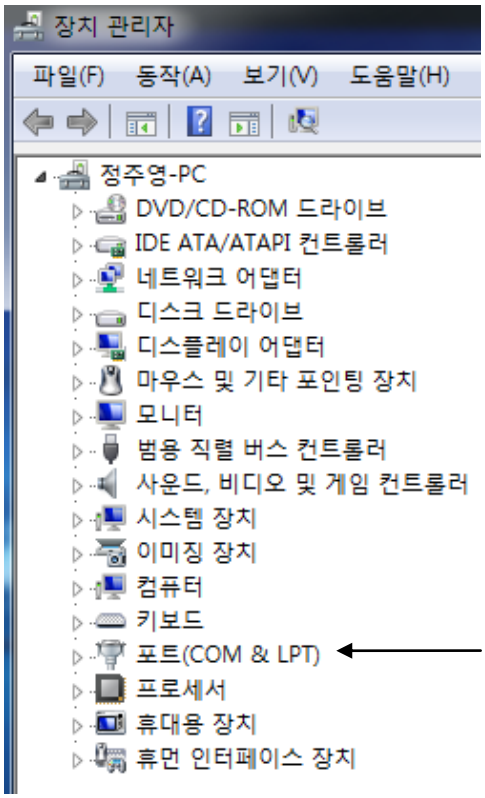
4. Click ‘Finish’

7. Virtual Driver for Monochromator USB communication

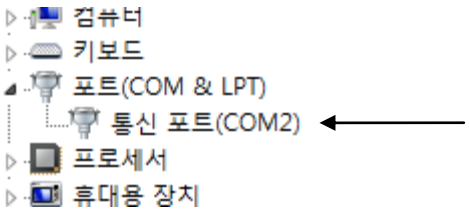
- Communication port selection

1. Open the Device manager

Control panel -> Hardware&sound->Device manager

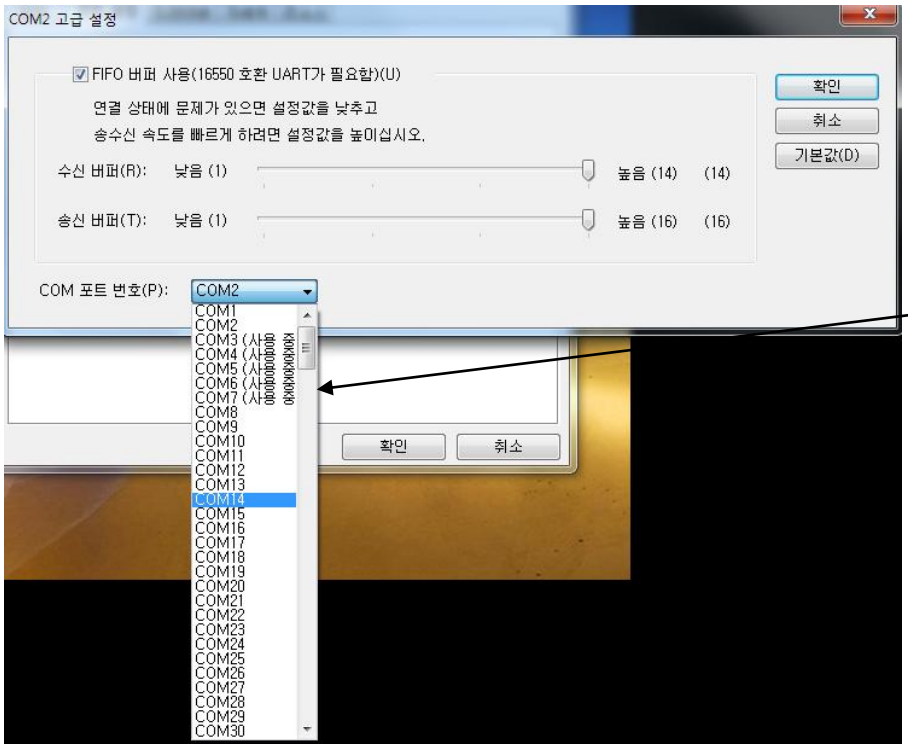


2. Check & double Click



3. Check & double Click

3. Click 고급(Advanced)



4. Select a COM Number & Click ok

* The selected com number must same with the com number of the 'settings' of menu