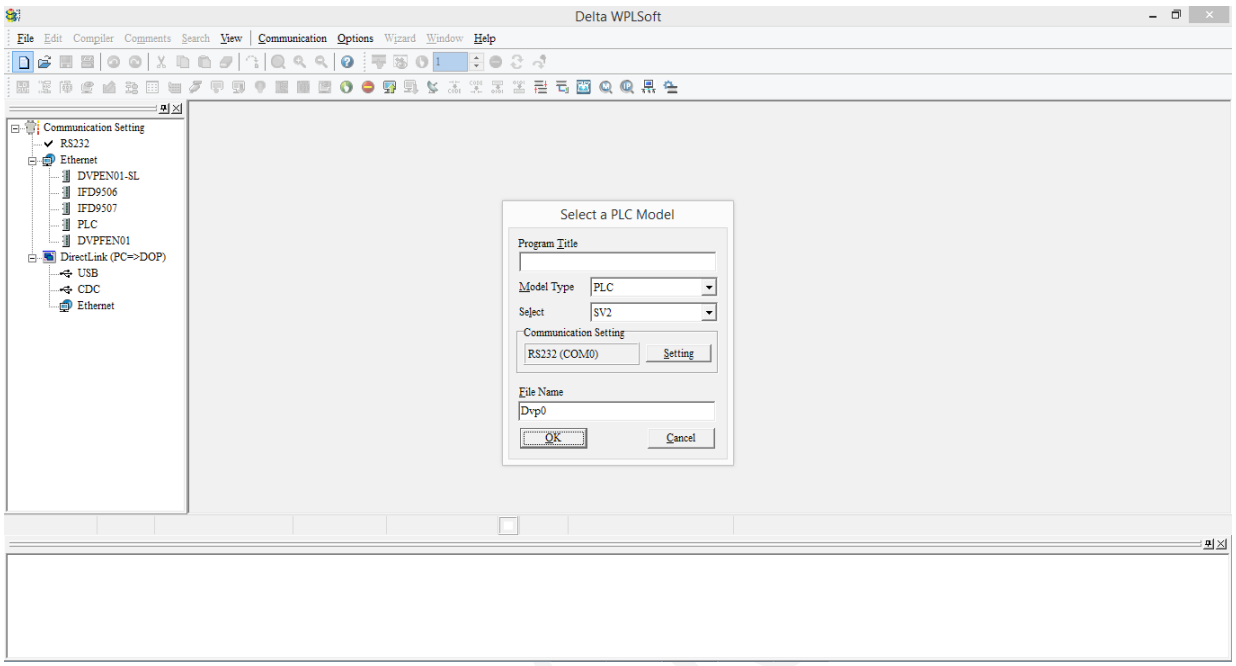
SOP FOR HMI & PLC

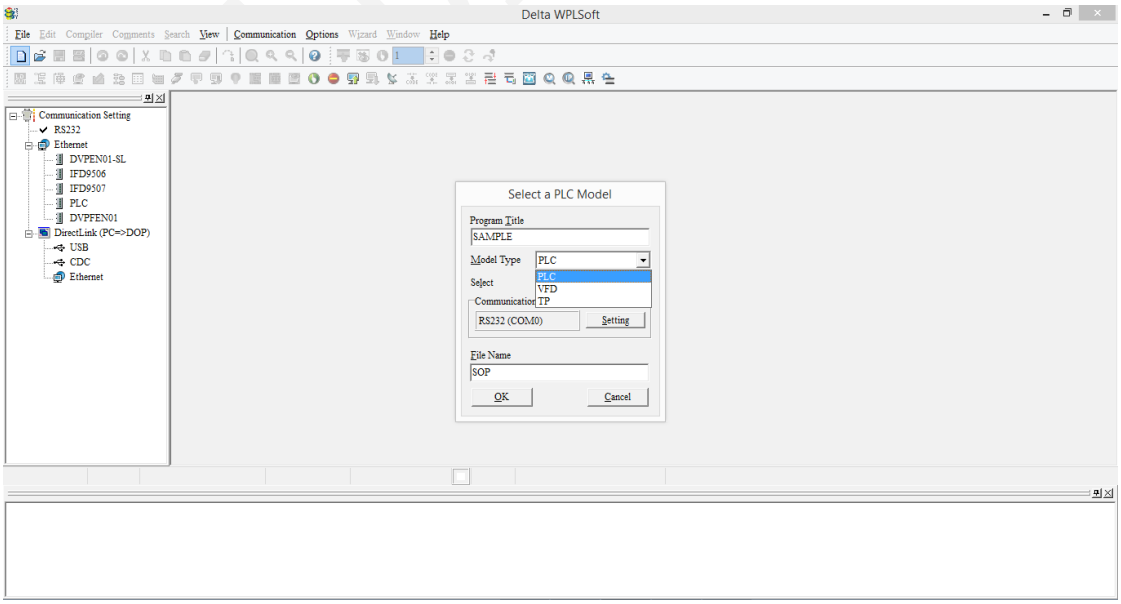
Table of Contents

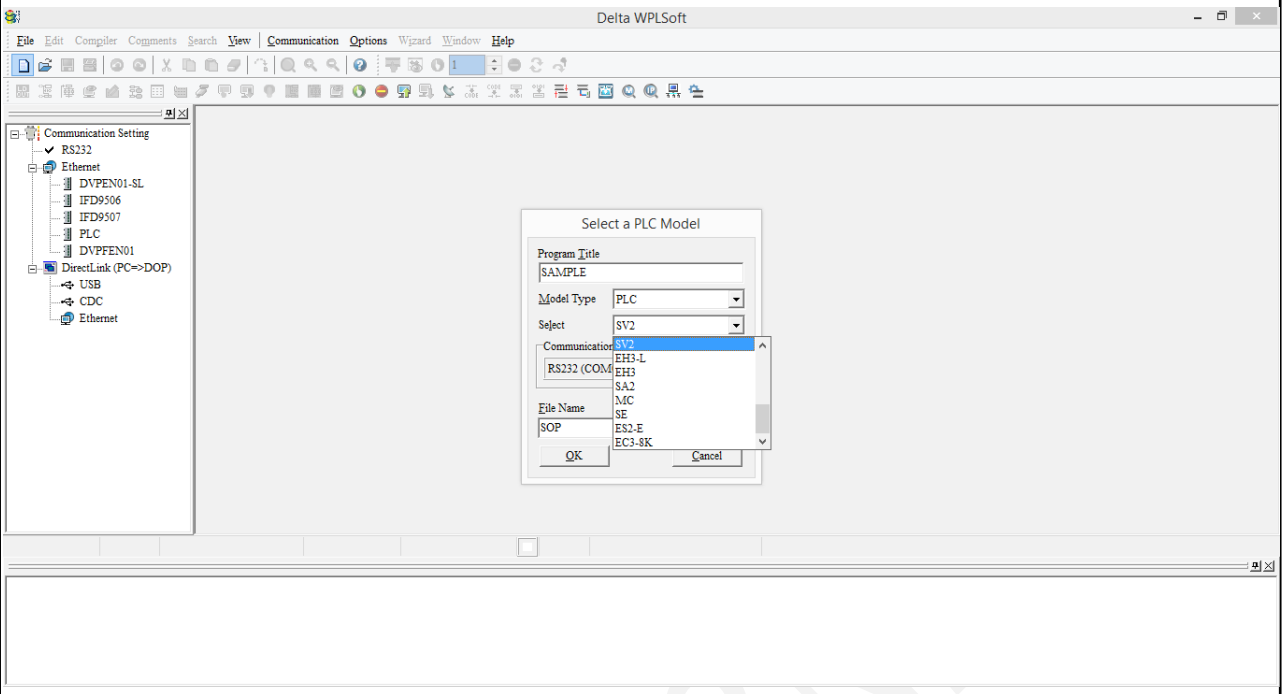
1. CREATING NEW PROGRAM IN WPL SOFT

- Open the WPL soft software and click the new option on the top left. After entering the dialog box is displayed as shown below.

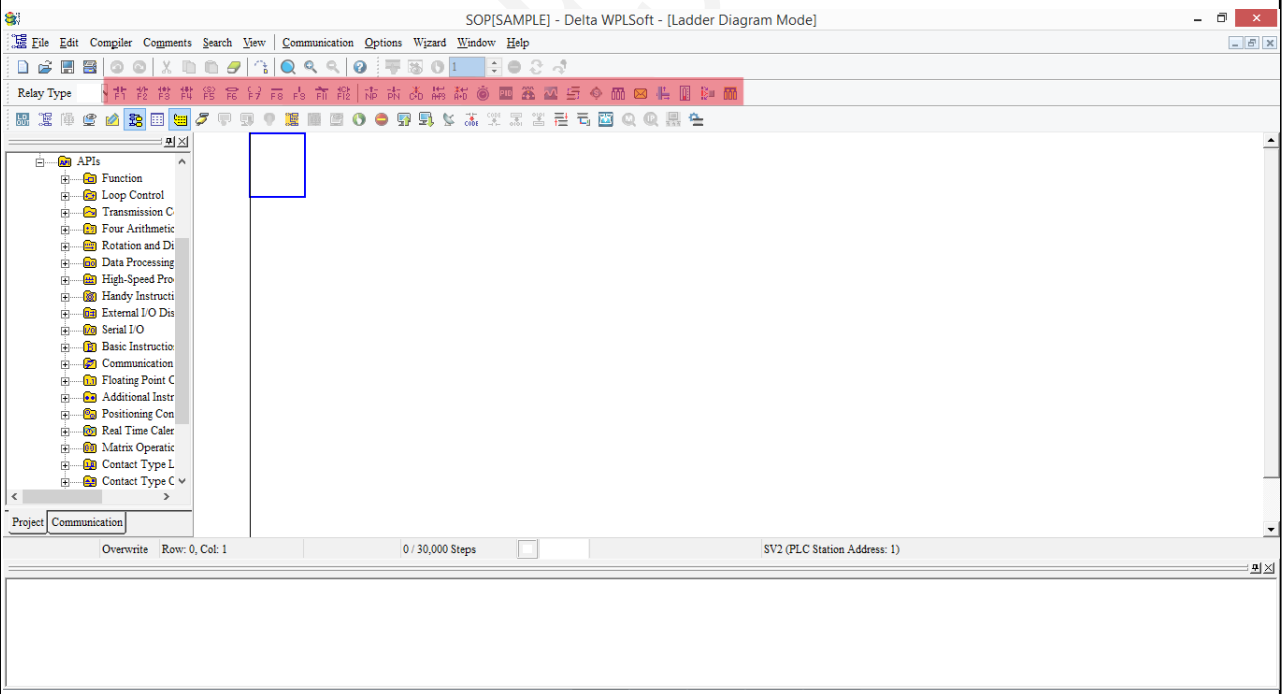


- Enter the program title and also select the model of the plc. A separate file name can also be given here. Click OK after entering it.





- The ladder diagram editor is opened here. To start programming, use the contacts available in the ribbon or press the shortcut keys to enter the contact.

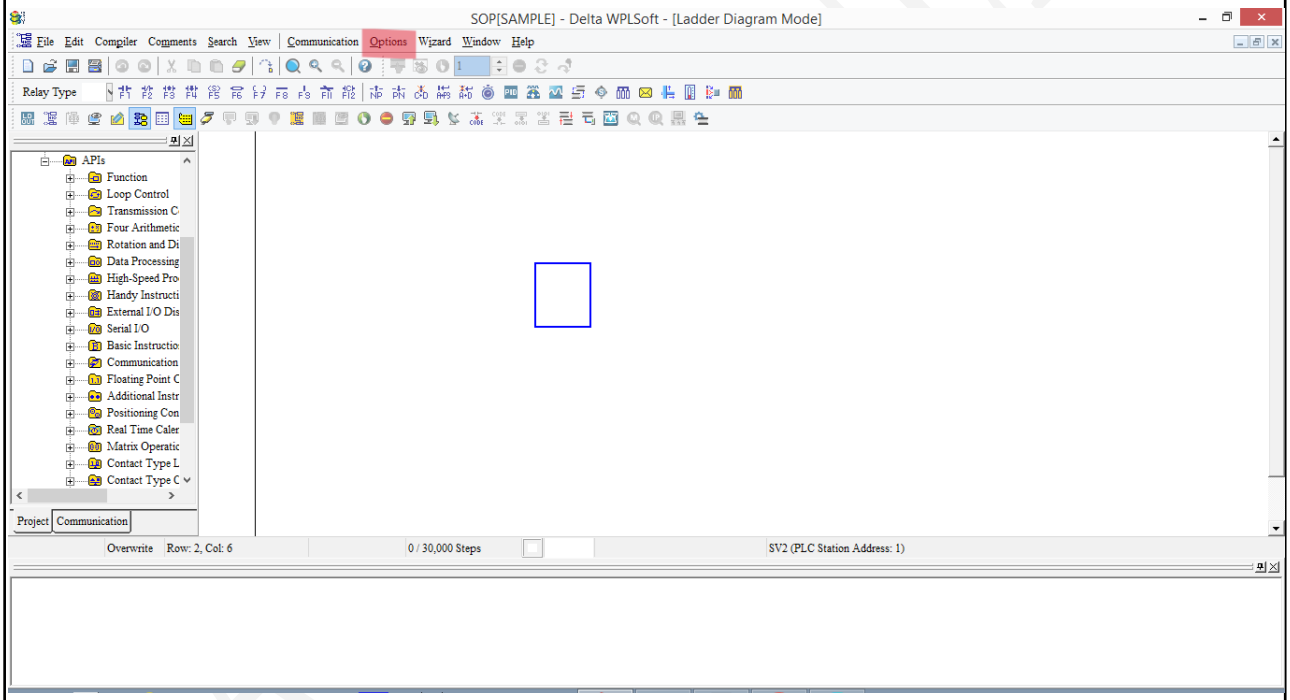


2. COMMUNICATION SETTINGS

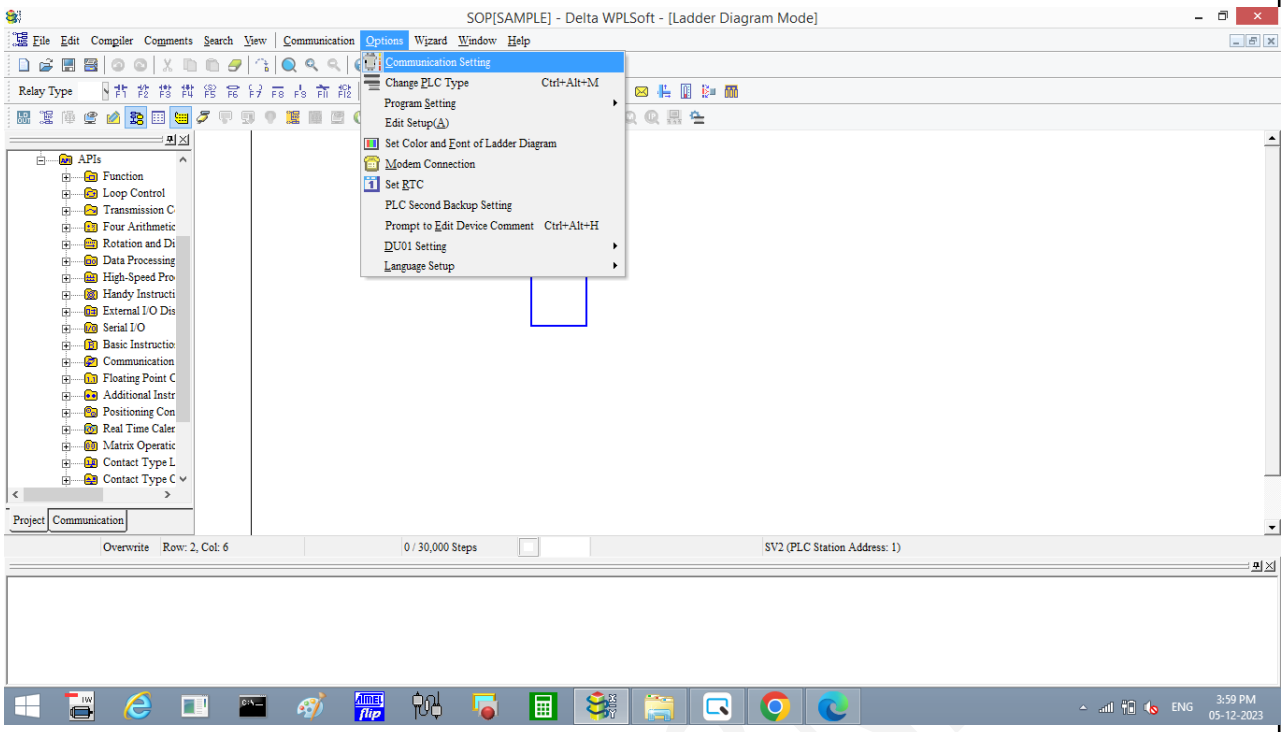
2.1 Communication between PC=>HMI=>PLC

To set the communication settings for the transfer of programs, refer to the steps below:

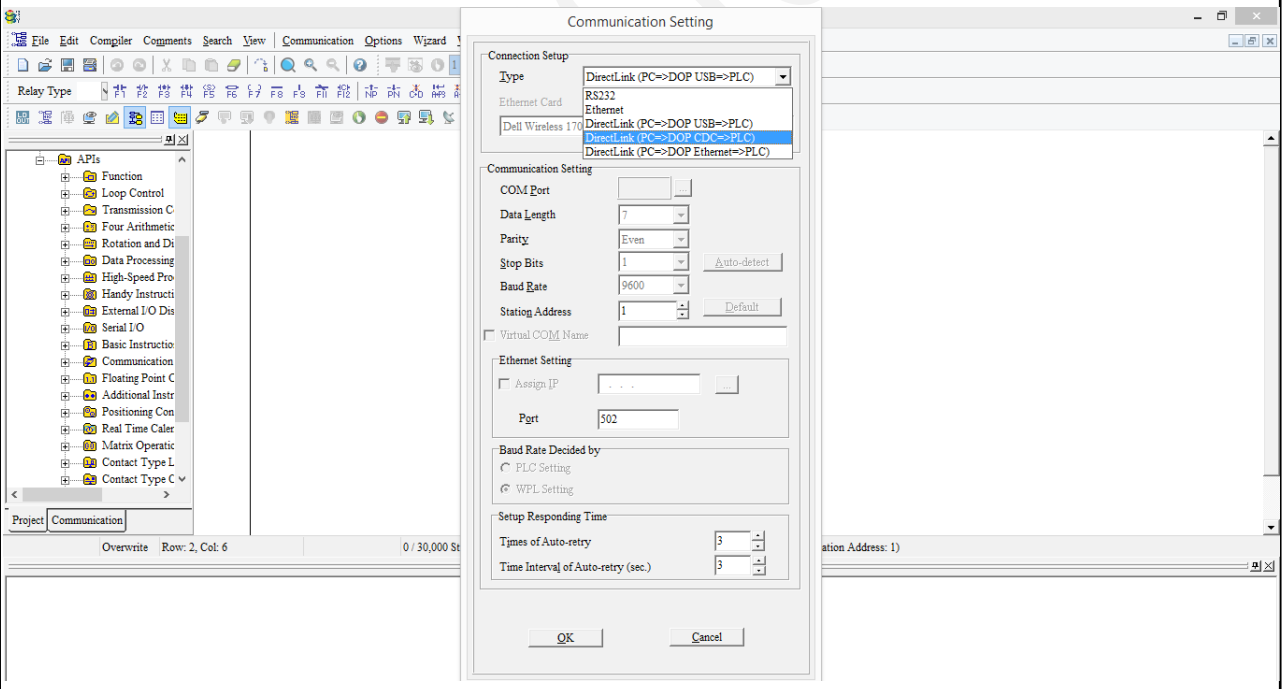
1. Click on the options menu on the topmost ribbon.



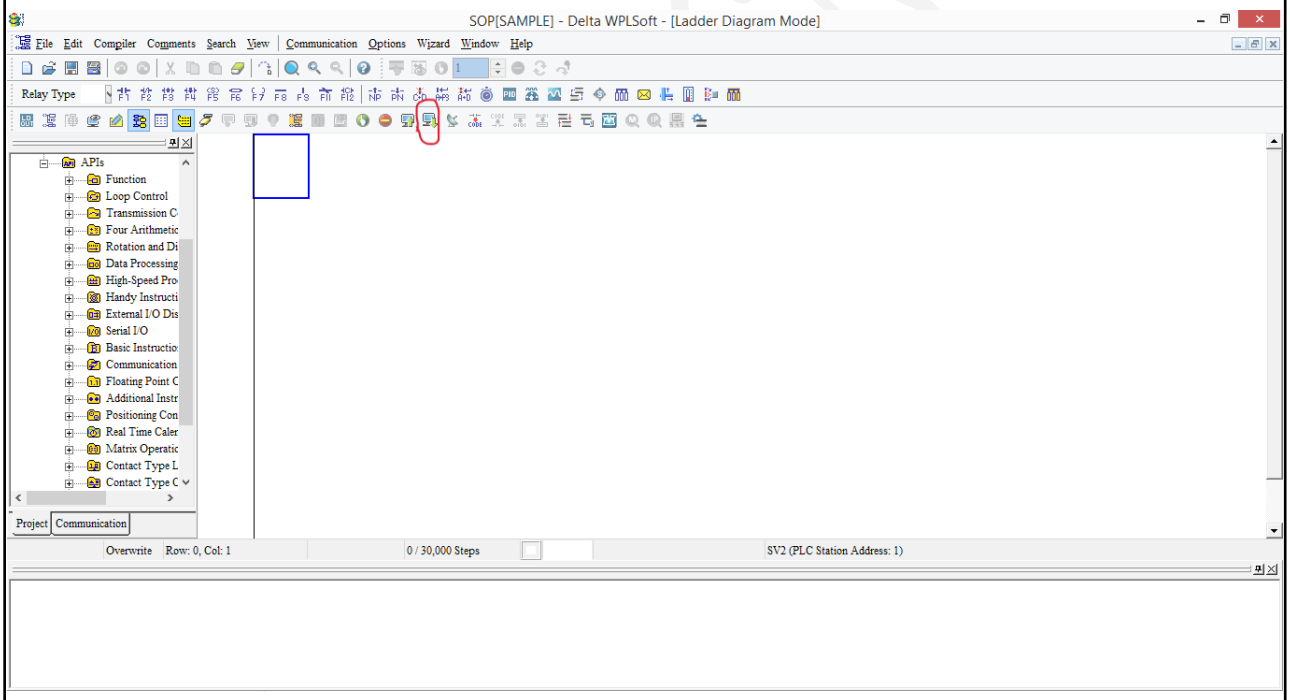
2. In the drop down box, select the communication setting.



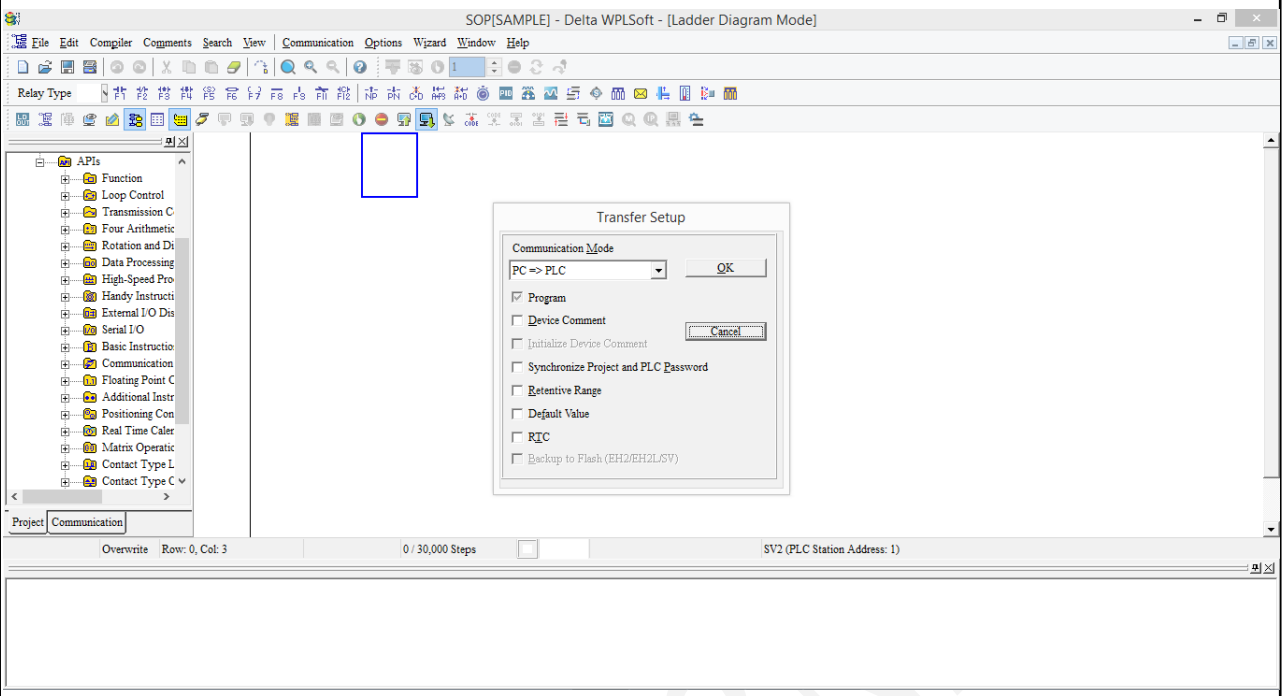
3. A pop up window opens as shown below.



4. On the top, select the type of communication to be done such as RS232, Direct link or Ethernet. The default settings to be used when the printer port cable (PC=>HMI=>PLC) is used is Direct link(PC=>DOP CDC=>PLC). When the round pin RS232 port is used to transfer the programs, select RS232 (PC=>PLC).
5. In the communication setting section, the settings are enabled only when the type is set to RS232.
6. Set the data length and other parameters as required to transfer programs through RS232. Default COM port is detected as per the drivers in the PC. Data length is 7 and parity is even. Stop bits – 1, baud rate – 9600 and station -1.
7. For downloading the program to the PLC select the option Write to PLC in the ribbon.

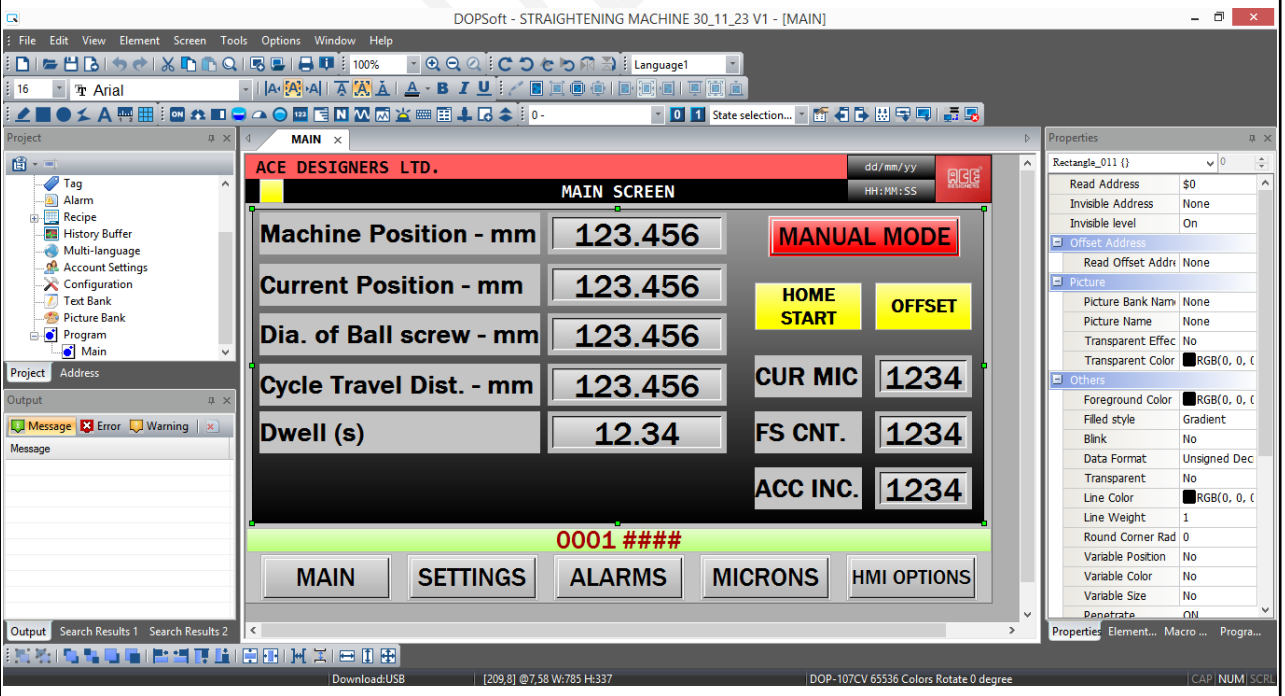


8. In the next dialog box, select PC=>PLC and select ‘ok’ to start the transfer of the program.

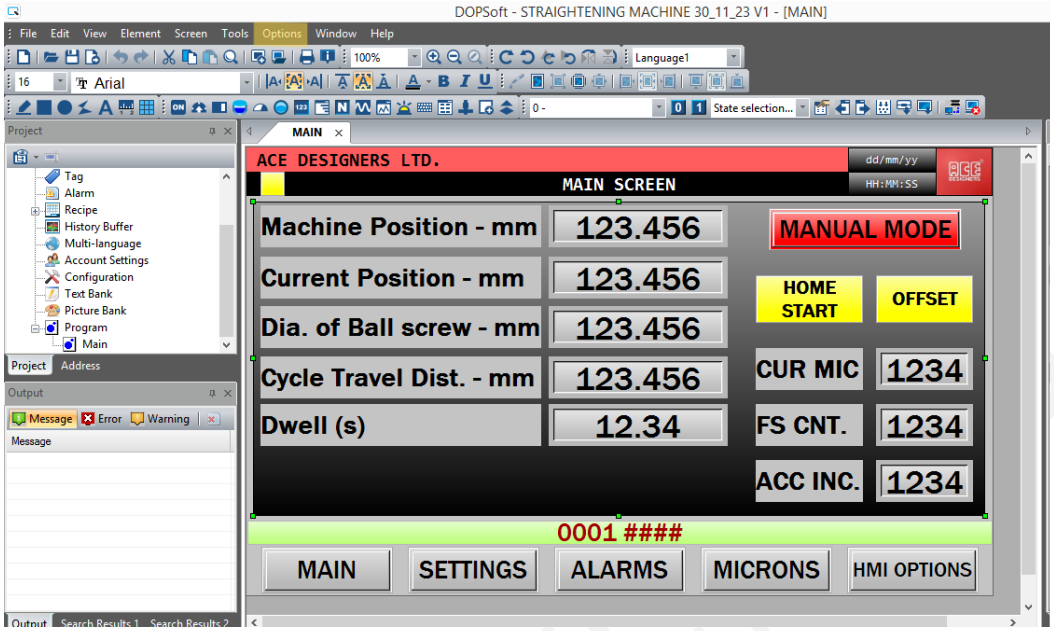


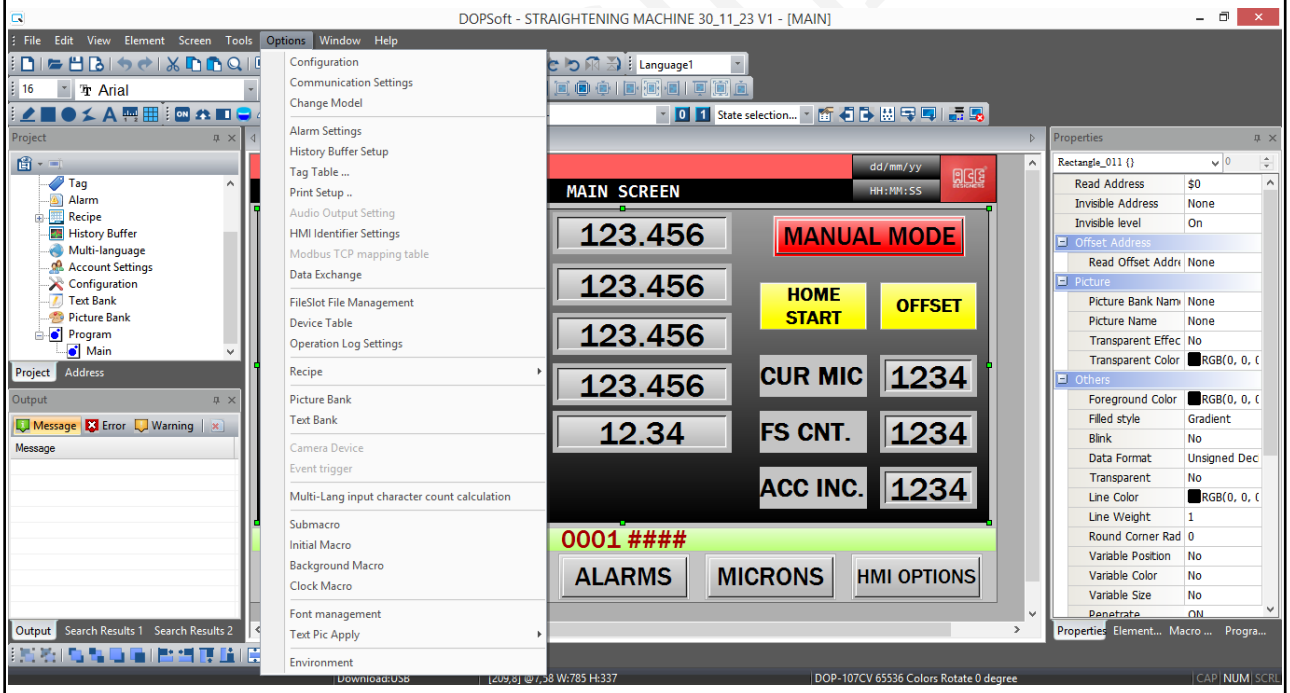
2.2 Communication between PC=>HMI

1. In the DOP soft software, open the project, the screen is displayed as shown below.

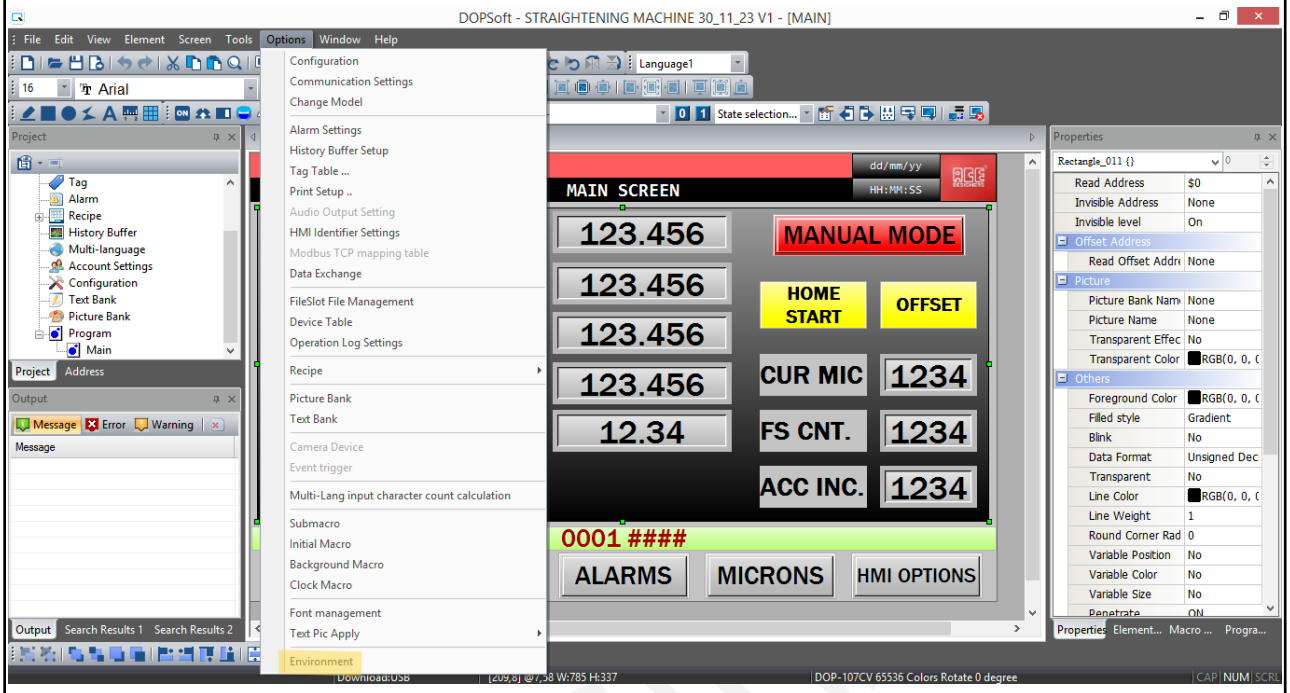


2. Click on options menu in the topmost ribbon. A drop down list is shown as below.

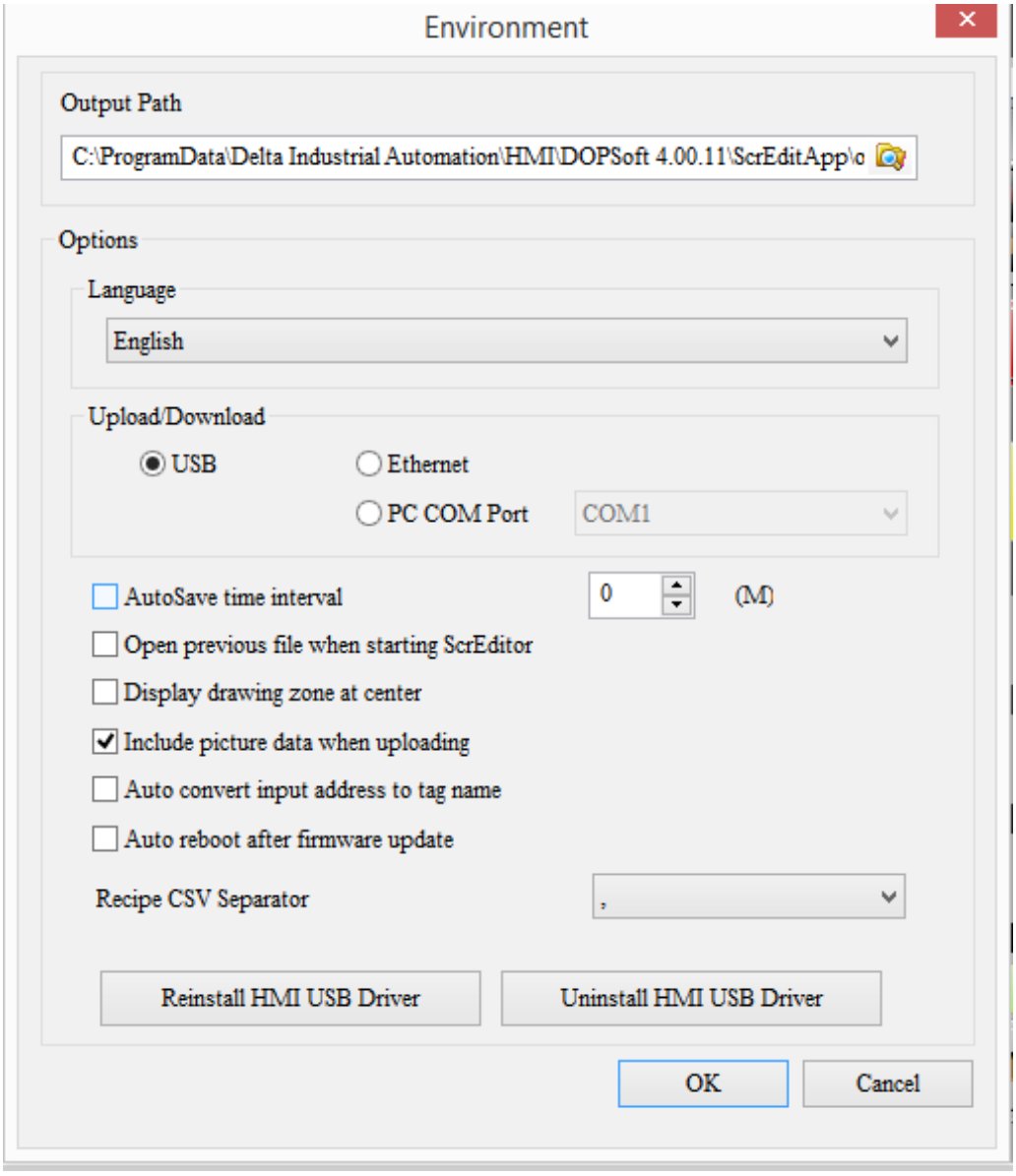




3. Click on the environment option to set the communication parameters between the PC and HMI.

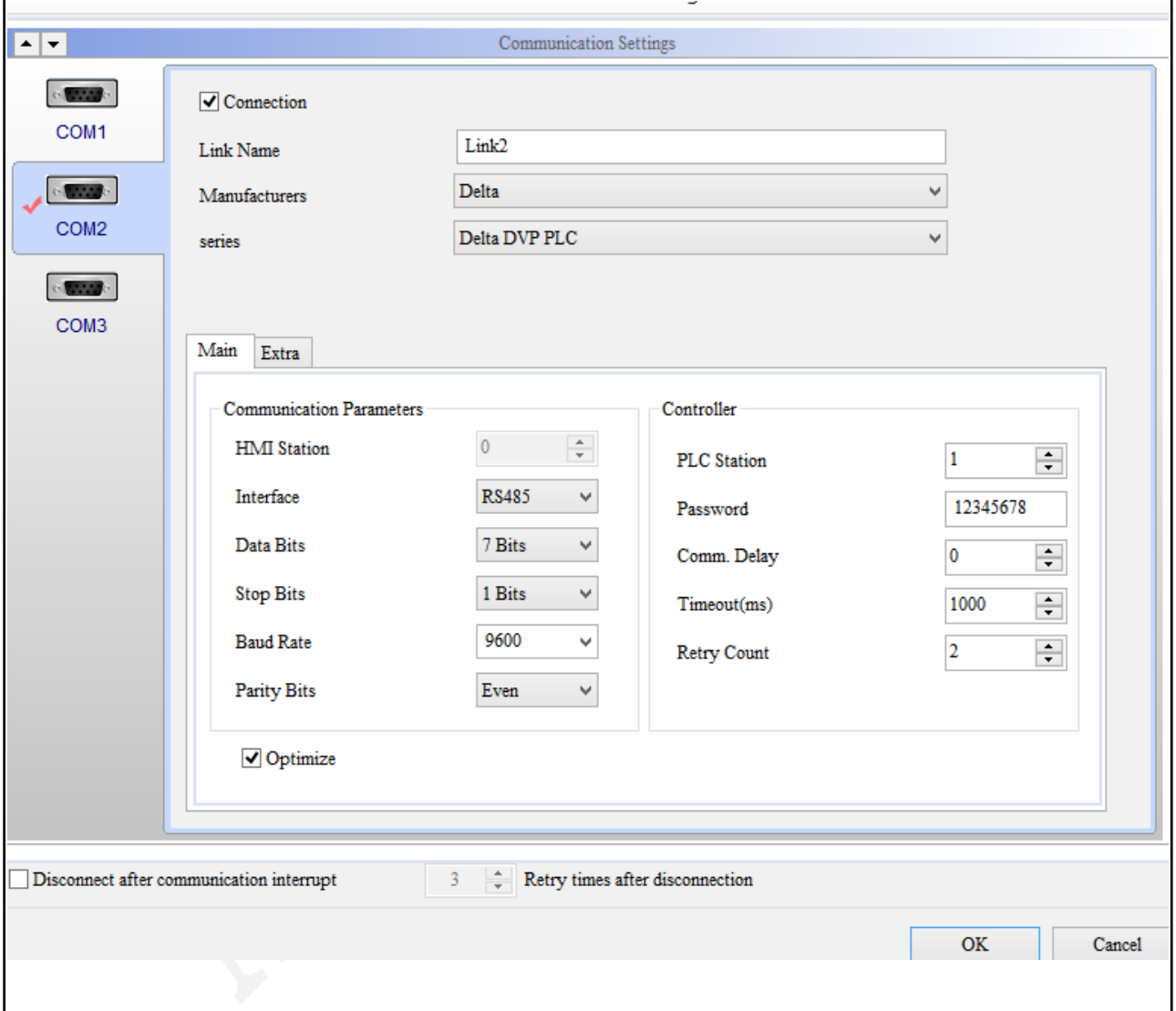


4. A new pop up window is opened. Under the upload / download section, select USB if the connection is made with the printer port cable. Select PC COM port if the communication is made through the COM ports of the HMI. Once the COM port is connected to the PC,. The COM port number is selected automatically according to the drivers. Select ethernet if LAN cable is used.


Environment
Output Path
C:\ProgramData\Delta Industrial Automation\HMI\DOPSoft 4.00.11\ScrEditApp\o
Options
Language
English
Upload/Download
USB
Ethernet
PC COM Port
COM1
AutoSave time interval
0
(M)
Open previous file when starting ScrEditor
Display drawing zone at center
Include picture data when uploading
Auto convert input address to tag name
Auto reboot after firmware update
Recipe CSV Separator
,
Reinstall HMI USB Driver
Uninstall HMI USB Driver
OK
Cancel

2.3 Communication between PLC<=>HMI

1. For setting the communication parameters between the PLC and the HMI, Navigate to Options > Communication settings. The following screen is displayed.



2. On the left side, there are three options available, COM1, COM2, COM3. Select the appropriate COM port which is connected to the PLC from HMI. After selecting the com port, tick the connection box in the top left to enable this com port.

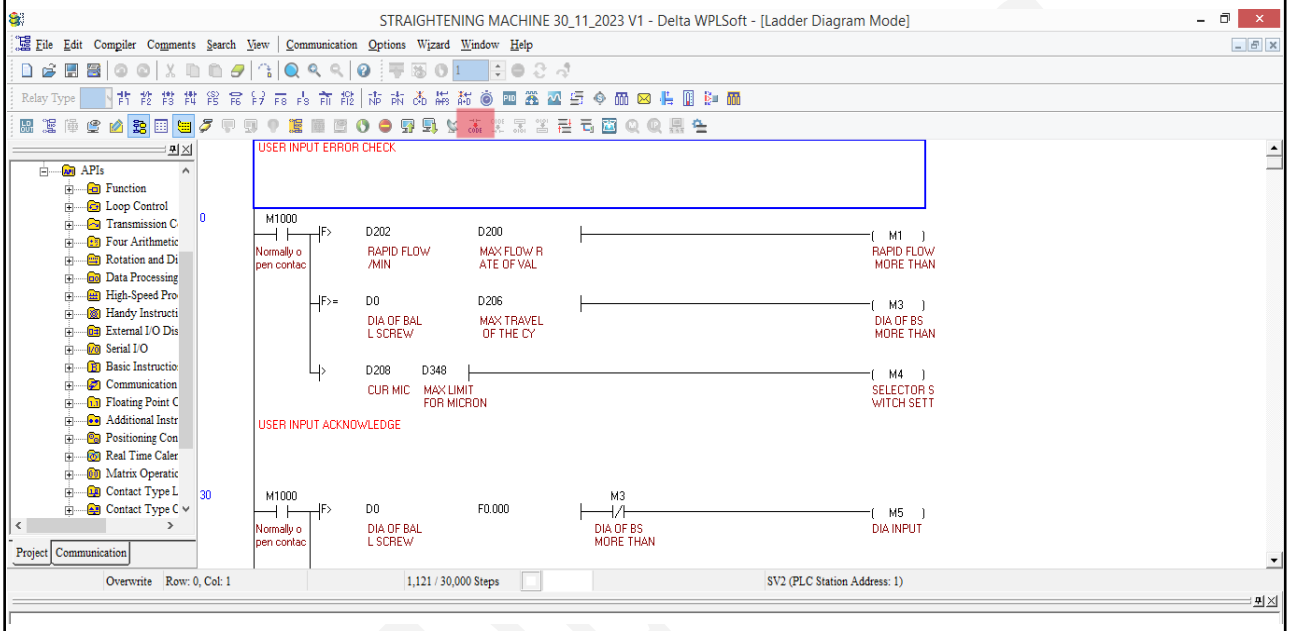
3. Users can configure a link name for this connection. Else the default name can also be used.
4. Select the manufacturer name of the PLC from the manufacturers section.
5. Select the model of the PLC used from the series section.
6. Under the 'main' tab, following settings are done for our project:
    - Interface – Select the interface done between the HMI to PLC, select whether RS232 or RS485 is used.
    - Data bits – The default data bits is 7 bits. Any changes required can be set here.
    - Stop bits – The default is 1 bit. Any changes can be done.
    - Baud rate – The default rate is 9600.
    - Parity bit – The parity bit is set to even.
    - Plc station is set to 1. More number of PLC'S used, then the corresponding COM port has to be enabled and the respective PLC station number has to be entered.
    - Password is left untouched. The default value is 12345678.
    - Comm. Delay – Default value is 0.
    - Timeout – 1000 ms.
    - Retry count – 2.

After setting all the parameters, select OK and then download the screen to the HMI. The communication between the PLC and HMI is set successfully.

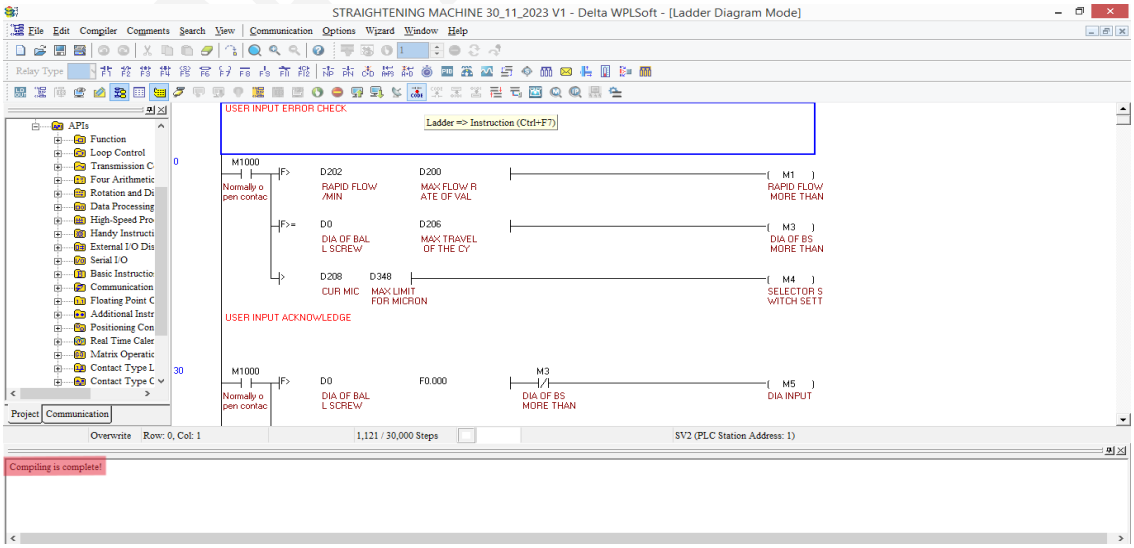
3. SIMULATION OF LADDER DIAGRAMS

For simulating the programs in the PC before testing it in the PLC, follow the steps below.

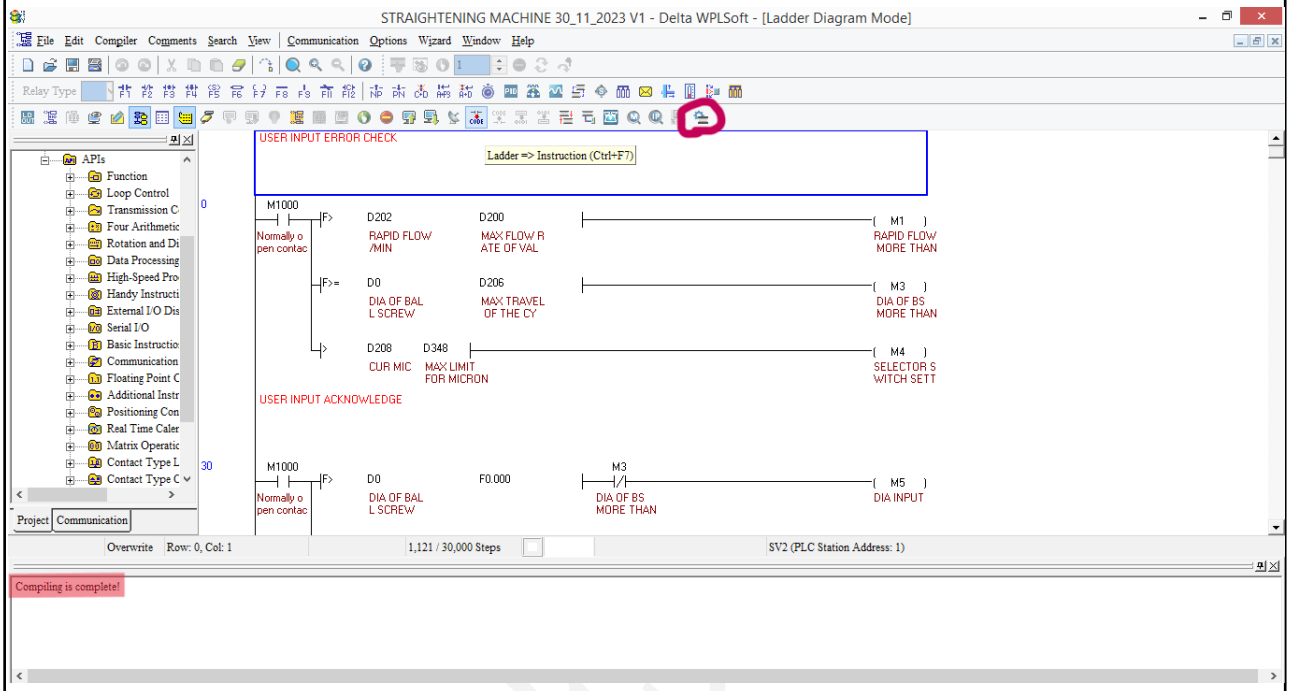
1. Click the ladder => instruction button on the ribbon. This will compile the program and check for any errors.

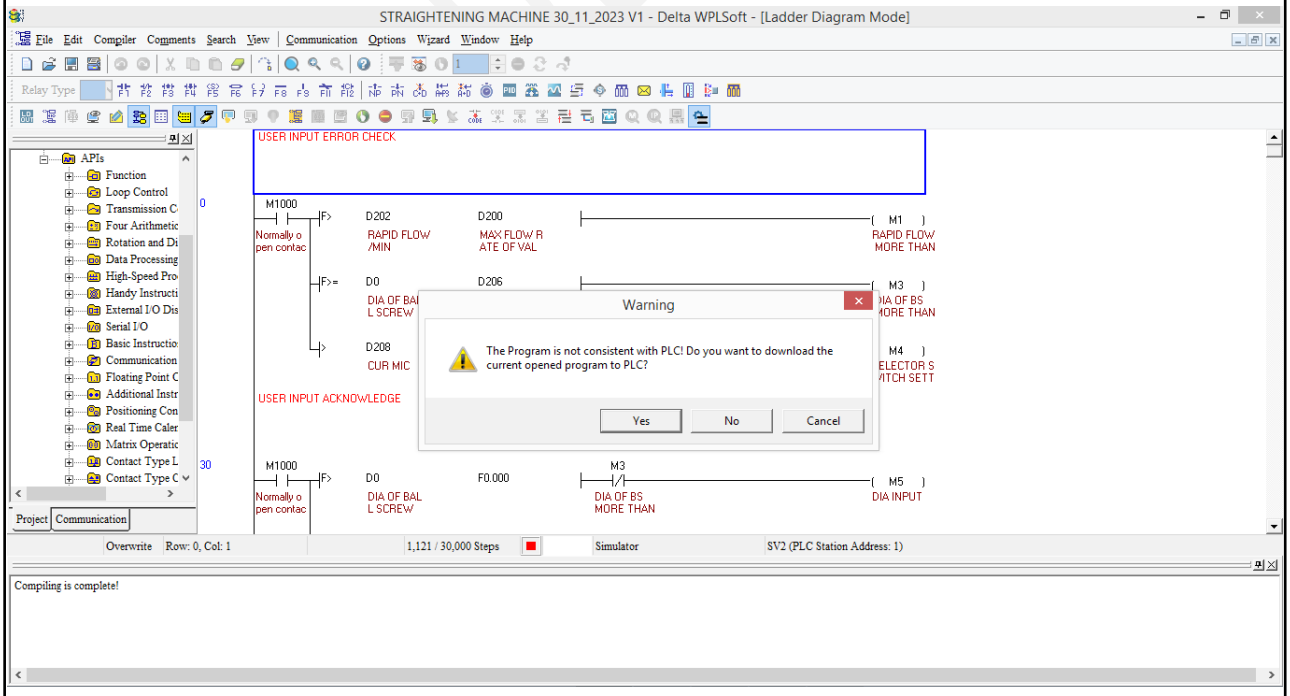


2. The status bar in the bottom of the window will display any errors in the program. If no errors, compiling is complete will be displayed.

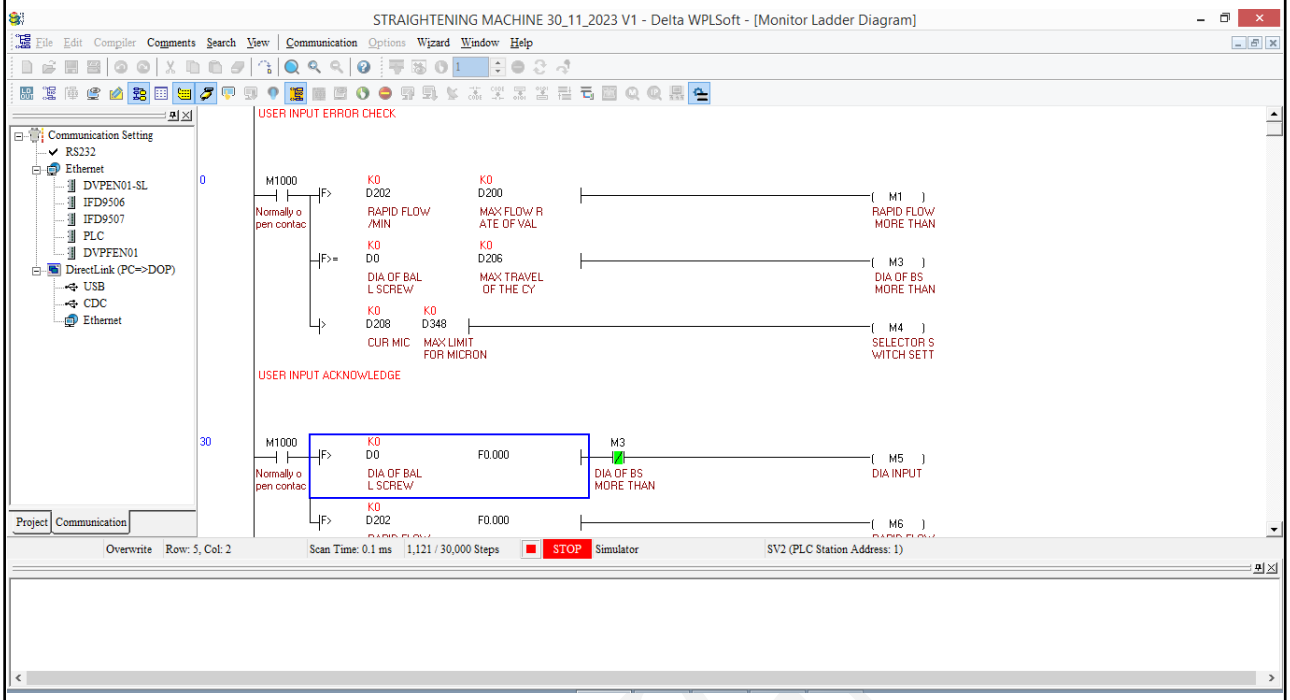


3. Now select the simulator option in the ribbon. You can see that the simulator mode has been turned on in the bar above the status box. Select the online mode to start online monitoring of the ladder. After selecting, a pop up opens stating to download the program to the PLC, click Yes and proceed further.

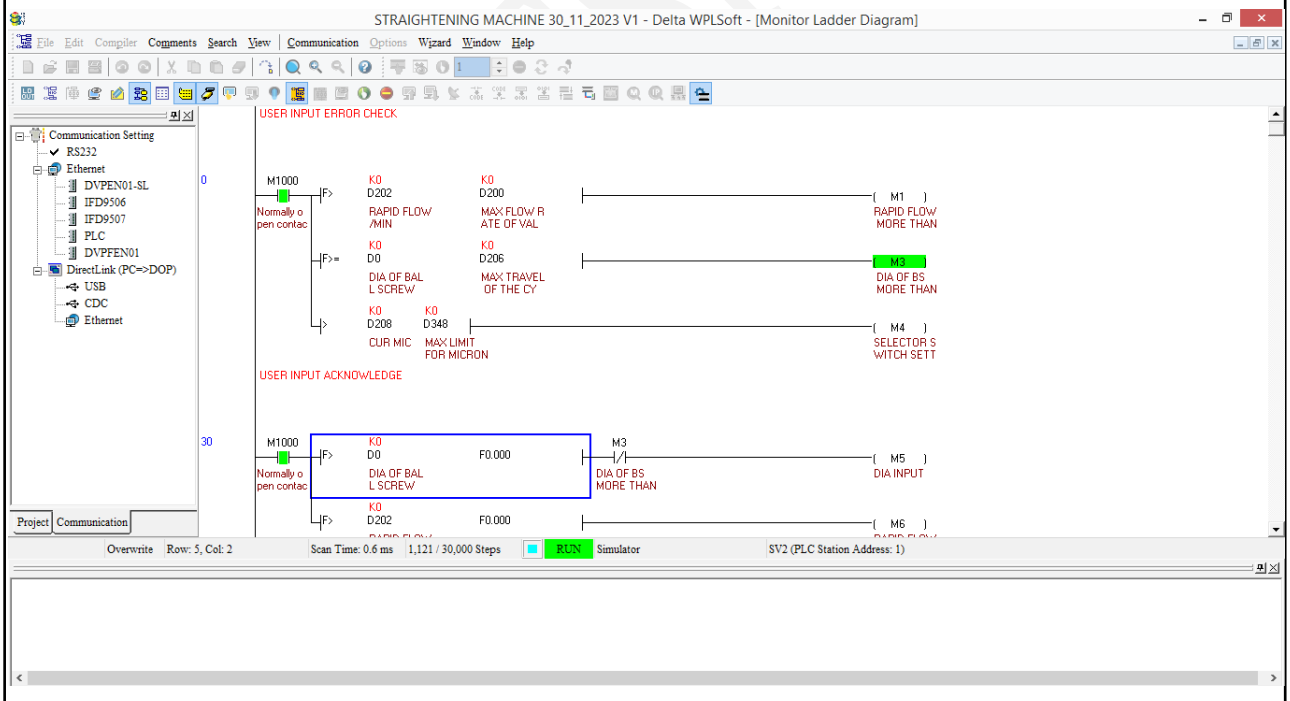




4. The status of the PLC is shown now. Click on Run to start running the PLC.

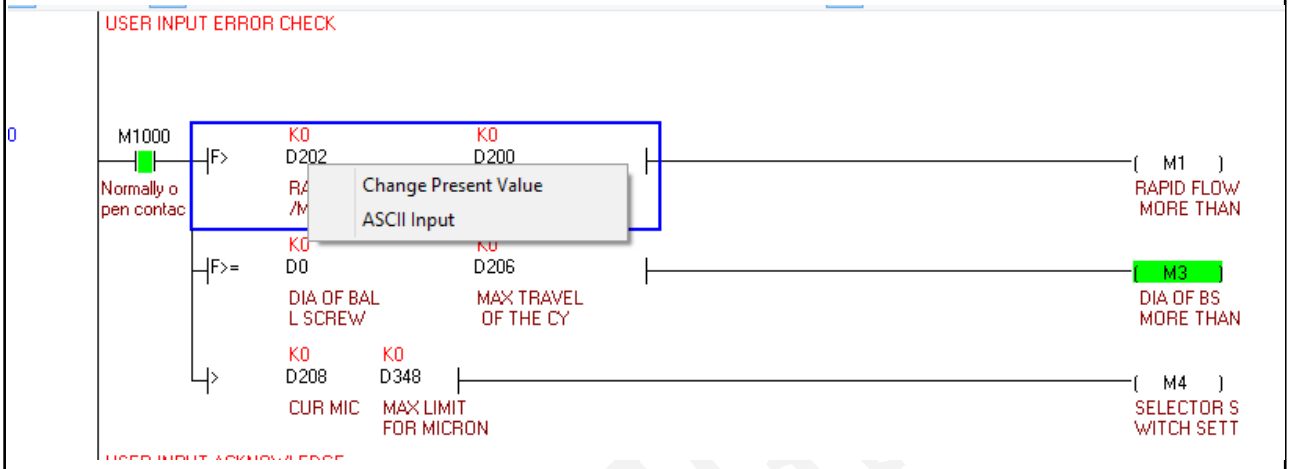


5. After running the PLC, the program is started to run.



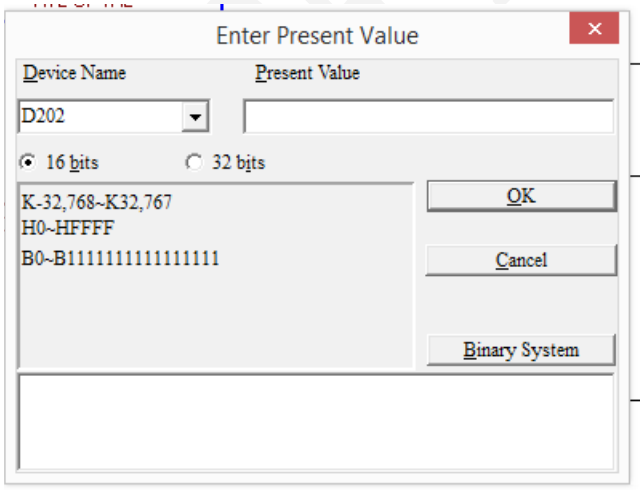
3.2 Manually entering data for data registers

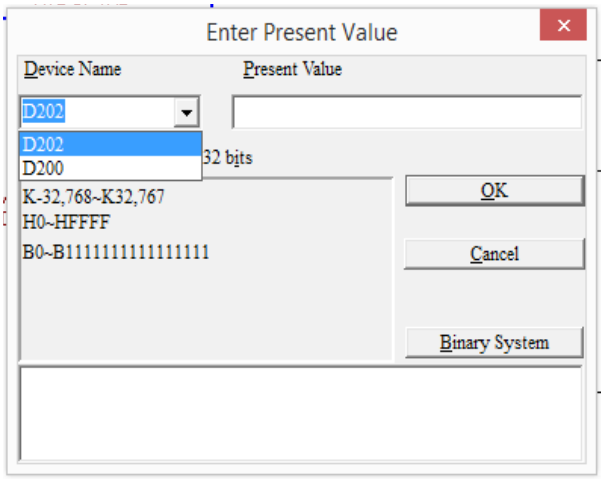
For manually entering values for the data registers, Run the PLC program in the simulator mode and then right click on the data register for which the data has to be entered. Select Change present value. The following pop up will be displayed.



Select whether the data is of 32 bit or 16 bit, i.e. 32 bit refers to the floating point values whereas 16 bit refers to the integer values. Integers can also be entered in the 32 bit but the range of values will be varied. Please check the pop up for the detailed range values.

Prefix the data with ‘K’ for integers and ‘F’ for floating point values.

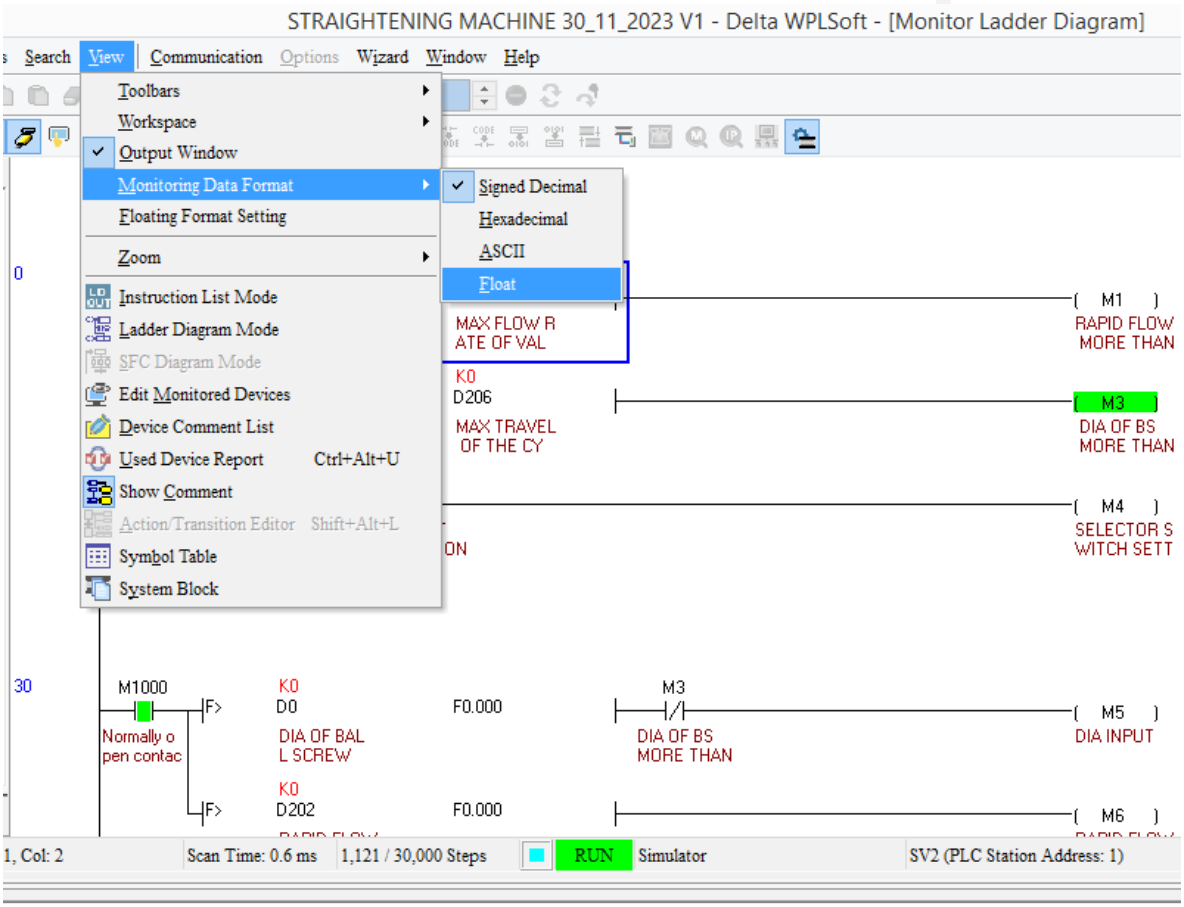




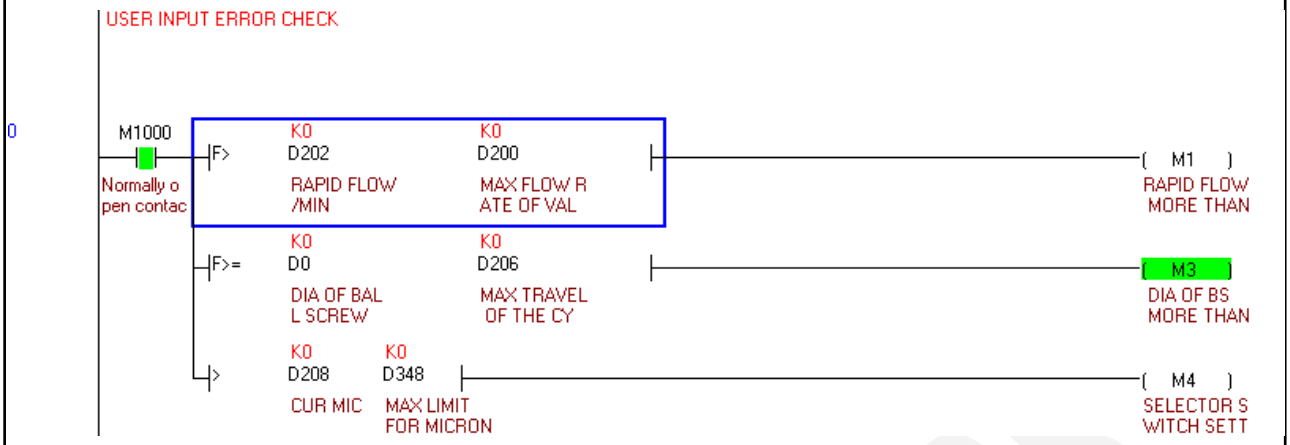
3.3 Changing monitoring data format for display

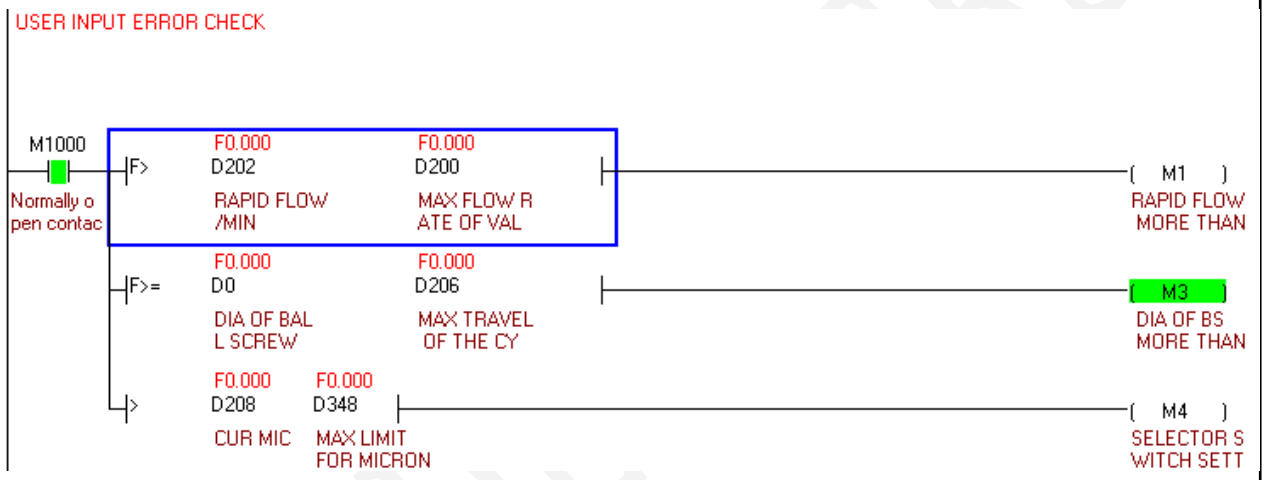
After entering the values in the data register, the monitoring data display format has to be changed so as to obtain the correct result. For example, if the current display was of integer and the value entered was in float, the values wont be able to display properly. Hence to change this setting, please follow the following steps:

1. Click on the View > Monitoring data format.



2. Select the data format to be needed to display from the drop down box.
3. Note the changes in the format display.



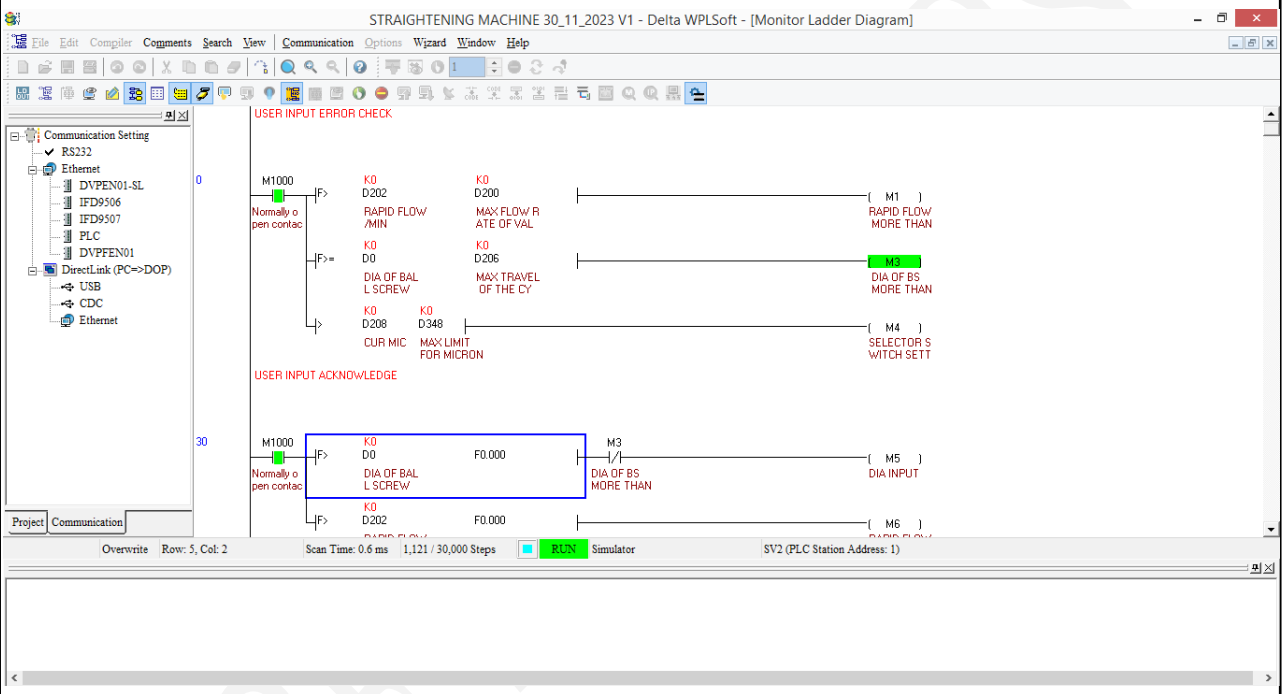


This setting applies for both simulation mode as well as real time monitoring.

4. REAL TIME MONITORING OF LADDER

After downloading the program to the PLC, the real time monitoring can be done using the following steps.

1. After downloading the program, make sure the cable is still connected to the PC.
2. Click the online mode to start monitoring the ladder.



3. The editing cannot be done while the ladder is in monitoring stage.
4. Change the monitoring display value according to the requirement.