

FATEK Automation Corporation

Operation Manual for Ladder Program Simulation of Winproladder

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Operation manual for ladder program simulation

1. Features

- Can simulate the FATEK PLC ladder program execution without PLC connection.
- With providing single/multiple/continuous scan mode, the execution result at each scan end can be easily checked.
- With providing program address breakpoint and data breakpoint, it is convenient to check any intermediate execution result and to identify any data changed.
- Provides communication interface allows external program or device (For example, graphic panel or HMI) to modify or monitor the variable value during the simulation.
- With run time editing feature, during the simulation process the program can be modified without stop the execution.

2. Limitation of program simulation

Besides the I/O operation, most of the instructions can be simulated. When the ladder program contains the unsupported instruction, the operation of unsupported instruction will be ignored and will be shown with yellow background color as follows.



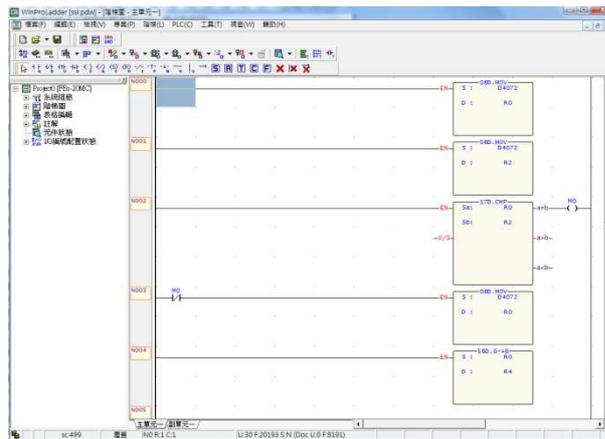
3. Operation of program simulation

The following is an example of “ssi.pdw” project. With this project to explain the related operations for program simulation.

3.1 Open ladder program

Follow the following main menu operation to open the “ ssi.pdw” project file.
File > Open project > Open file > select ssi.pdw. After select the project,

the screen will display as follows:



3.2 Enter simulation mode

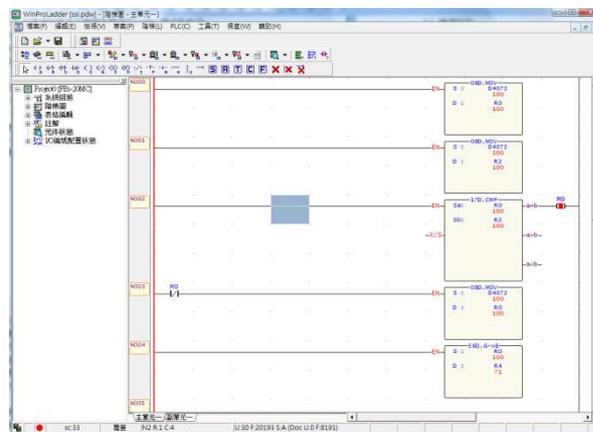
Main Menu: **PLC > Simulation**

It will enter into the simulation mode after execution.

3.3 Start execution of program simulation

Main Menu: **PLC > Run**

After execution, the color of power line of ladder program will become to red color as the screen shown below:



During the execution, there is a blinking red dot at the left side of status bar. On the right of the red dot has SC:xx, xx means the number of time have been scanned. During simulation, can use the status page to monitor or modify the value of register or discrete point.

3.4 Pause of program simulation

Main Menu: **PLC > Pause Simulation** or the easiest way is to click the space bar

At this point, the blinking red dot stop blinking and it will become pink color.

3.5 Proceed to program simulation

Main Menu: **PLC > Resume Simulation** or the easiest way is to click the space bar

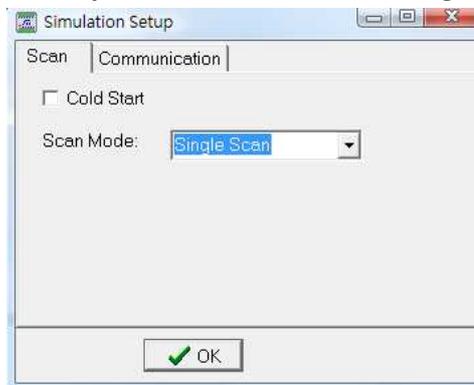
At this point, the dot becomes blinking again and the program continues the operation.

3.6 Control scanning

The above pause/Resume program simulation is operated by manual way of controlling the program execution, which will pause the program execution at the next scan end point right after you issue the command. But if you would like to control the exact times of scan execution after pause, you can use set scan mode to control.

3.6.1 Single scan

Main Menu: **PLC > Setup Simulation** choose "single scan"



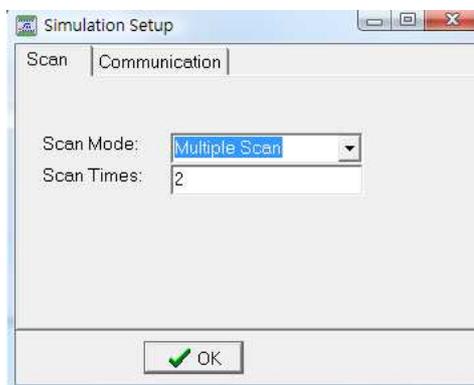
After set this mode, you can use space bar or

Main menu: **PLC > Resume Simulation** to start a new scanning work.

3.6.2 Multiple scan

Main menu: **PLC > Setup Simulation** choose "multiple scan"

After selected the mode, you can set number of scans to be performed in the number of scanning field.



After that, press space bar or

Main menu: **PLC > Resume Simulation** to start up next scanning work.

When the scan has reached the set number, it will pause the scanning.

3.6.3 Continuous scan

Main menu: **PLC > Setup Simulation** choose “continuous scan”

This is the default scan mode after enter the simulation.

3.7 Set address breakpoint of program execution

In addition to the above methods to make the program paused at the scan end point, can also using the following method to pause the program at the point before a specific network number.

Please first select the network to be set break point and then execute the

main menu: **PLC > Add/Remove address breakpoint**

or in the ladder program window, on the “Network Display” region click the right button of the mouse and popup the menu.

Popup Menu: **Add/Remove address breakpoint**

The network with breakpoint set will display a red dot, which is as shown in the picture below:



The above picture indicates N001 has been set to an address breakpoint. When every time right before execution of this network, it will pause the program execution. The user can press space bar for continuing the program execution. The address breakpoint can be set up to 16 points at same time.

3.8 View Address Breakpoint List

When there are many address breakpoints have been set, can use this feature to quickly remove, pause or enable the setting of address breakpoints.

Main menu: **PLC > view address breakpoints**

After execution, it will display the following window:

No.	Program Unit	Net. No.	Enabled
1	main1	N001	✓

This window will show all the existed address breakpoints. The checked mark in the enabled field means corresponding address breakpoints are in effective. You may use right click to call the pop-up menu shown in below:



- Enabled: Activate the breakpoint.
- Disabled: Inactivate the breakpoint. When disabled, the red dot of the corresponding network will become a gray dot.
- Removed: clear the breakpoint.
- Removed all: remove all breakpoints.

If you double click the breakpoint in the list, it will display the corresponding breakpoint in the ladder program window.

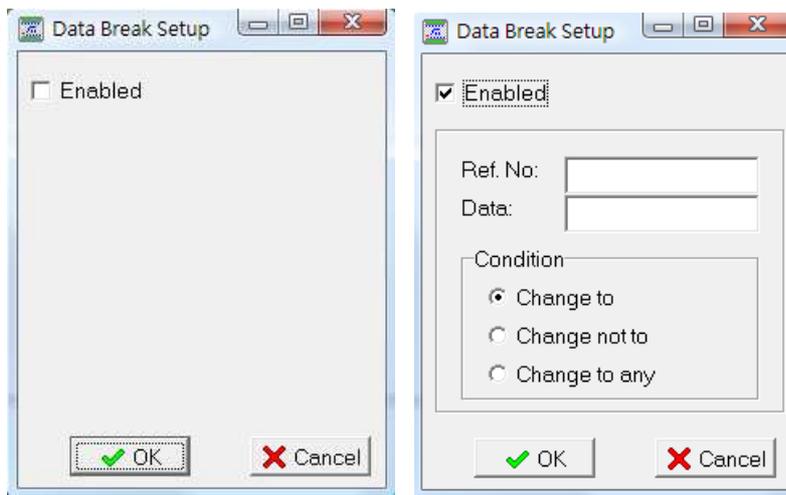
3.9 Setup Data Breakpoint

Use this feature will make the program pause when the value of a specific contact or register changed or change into a certain values.

Main menu: **PLC > Setup Data Breakpoint**

After operation, it will display the window as shown in below

The left screen will be shown when the “Enable” field is not checked while the right screen is checked.



When check the “Enabled” checkbox, the setup fields will appear.

Description is as follows:

- Ref. No.: Register (word or Dword) or contact reference number.
- Data: Conditions of match value
- Condition: three options

- Change to – When value of Ref. No. (monitor variable) is changed to the “Data” value, the execution will be paused.
- Change not to –When value of Ref. No. (monitoring variable) is changed to a value not equal to “Data” value, the execution will be paused.
- Changed –Whenever the value of Ref. No. (monitoring variable) is changed , the execution will be paused.

This feature can easily be used to identify the source of any changes of monitored variables.

3.10 Stop Simulation

Simulate the PLC “stop” operation, when next time execution (RUN), it will simulate the initial operation.

Main menu: **PLC > Stop**

3.11 End Simulation

Exit the simulation mode.

Main menu: **PLC > End simulation**

4. Communicate with simulated program

When perform the simulation, besides “Winproladder” software, other devices or software can also monitor or modify the status of variables, though serial port or TCP/IP network interface by using the Fatek communication protocol. The most common practice is to combine the HMI and ladder simulation to perform the integrated test.

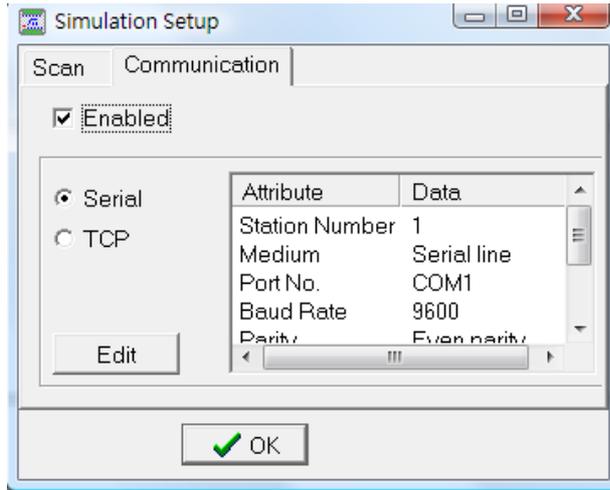
There should be noted that, this feature only provides Fatek PLC slave communication capability. The function block FCN 150, 151 are not supported in simulation.

4.1 Communication function setup

You may choose serial ports or TCP network. The setup method is as follow:

Main menu: **PLC > Setup Simulation** After that please select “communication Setup” tab.

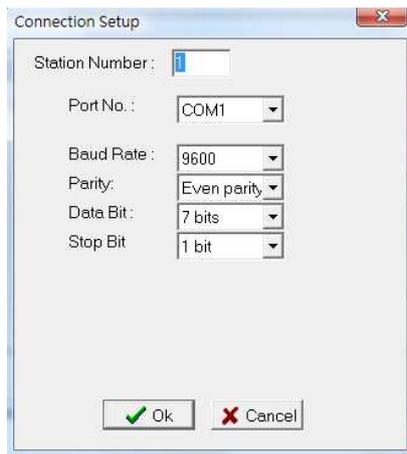
In this page, please check “Enabled” checkbox and then it will display the following window.



4.1.1 Serial port communication setup

After select 232, press “Edit”. Fill in the simulated communication parameters.

In addition, the “Port Number” means the port number on PC.



4.1.2 Internet communication setup

After select TCP, press “Edit”. Fill in the simulated communication parameters as desire.

