

PLC Programming Manual

PLC Models supported by SELPRO VER 5.3

Flexys Panel TX4 (PLC with 4 line X 16 Characters LCD display)

Flexys Rail (Rail Mounting PLC without display)

Introduction to SELPRO Ver 5.3

SELPRO is a user friendly Windows based software which enables a user to draw and simulate ladder diagrams. We can configure HMI for PLCs with built in HMI. Supports Downloading of application in the PLC and Uploading of application from the PLC.

Features of SELPRO Ver 5.3

- User-friendly software based on IEC61131-3
- On-line and Off-line Simulation modes
- Built in interface for configuration of HMI
- Selective 8, 16, 32 bit data type support for variables
- Selective retention of variable
- Auto-Save after preset time
- Auto-Read file at start up
- Selective Print operations for printing ladder diagrams
- Password protection for ladder file
- Facility of uploading project
- Serial Printing facility
- Master communication through Customize protocol

Programming Language supported: Ladder Diagram

Data types supported: BOOL, SINT, INT, DINT, UINT, USINT, UDINT, TIME, DATE, TOD, WORD, DWORD, REAL(FLOAT), LREAL(DOUBLE)

Maximum No. of ladder representations that can be made is 5000 Rungs. It also depends on the product memory capacity.

Platform: Windows XP, Windows VISTA, Windows-7, Windows-8
RAM – 512 MB or above
Processor- Minimum 166 MHz

SELPRO Ver 5.3 software has two parts

1. Ladder Diagram
2. Human Machine Interface(HMI)

To start with SELPRO 5.3 :

There are 2 ways of starting SELPRO 5.3

1. From the Start menu
Start>All programs>Selpro 5.3

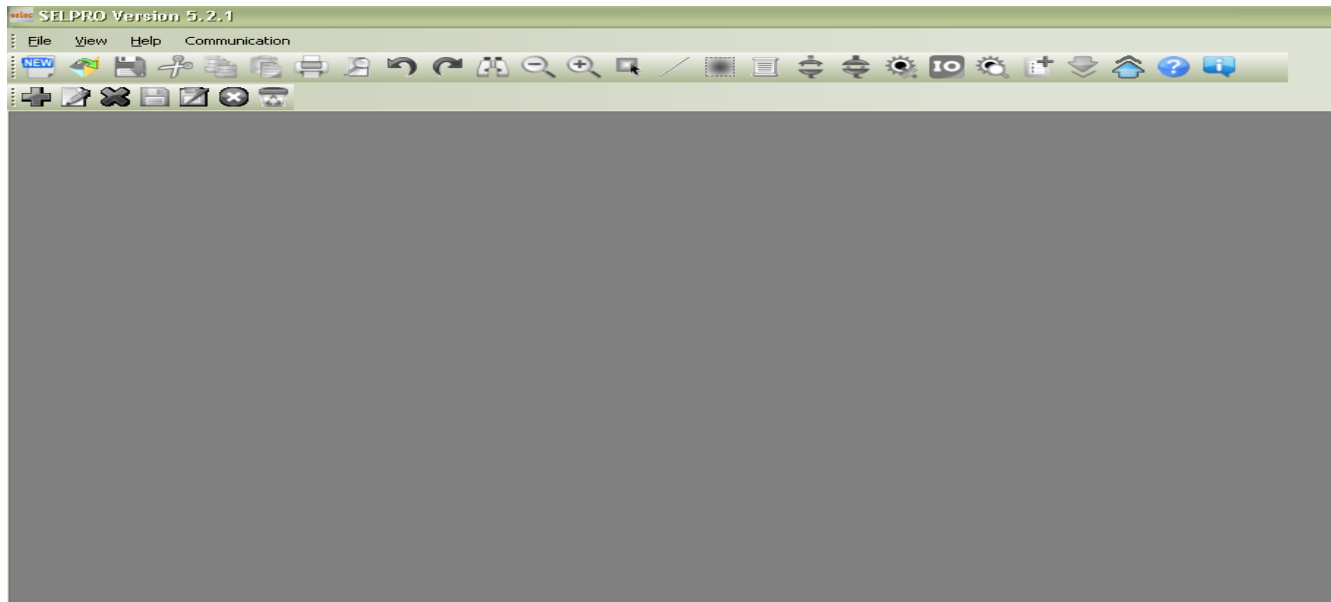
2.



Double Click on Shortcut on Desktop

Ladder Diagram :

As soon as we start SELPRO 5.3 the following screen opens.

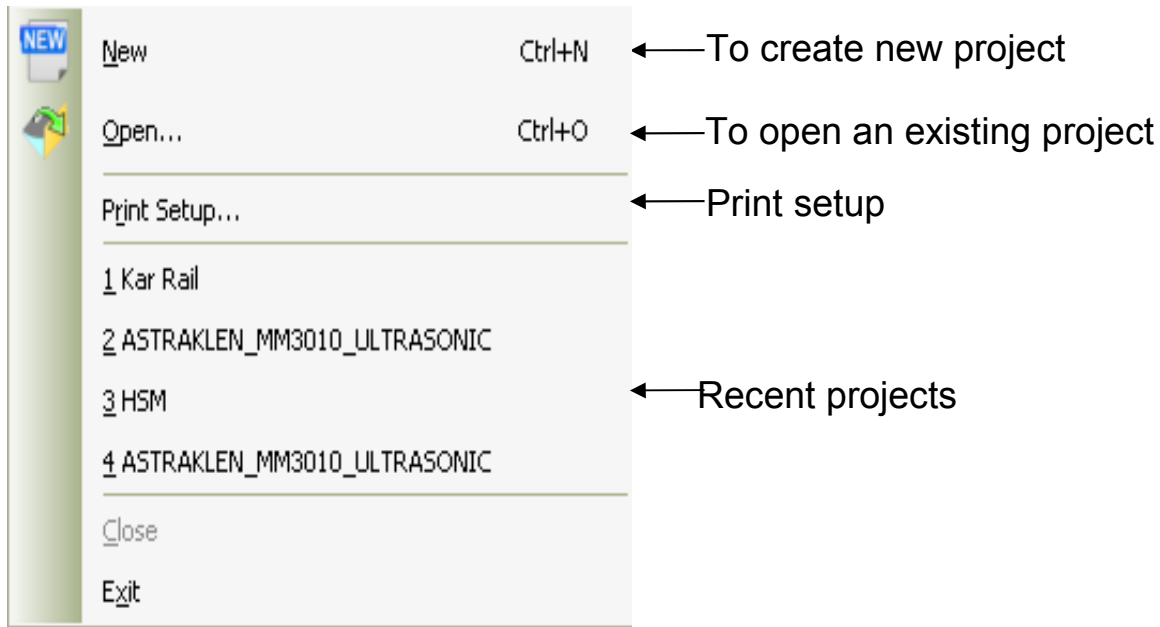


1. Menu Bar contains

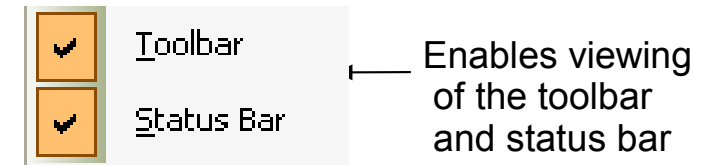
1. File 2. View 3. Help 4. Communication



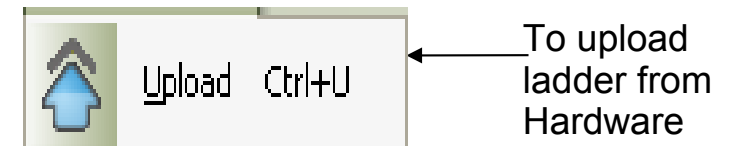
2. File menu contains



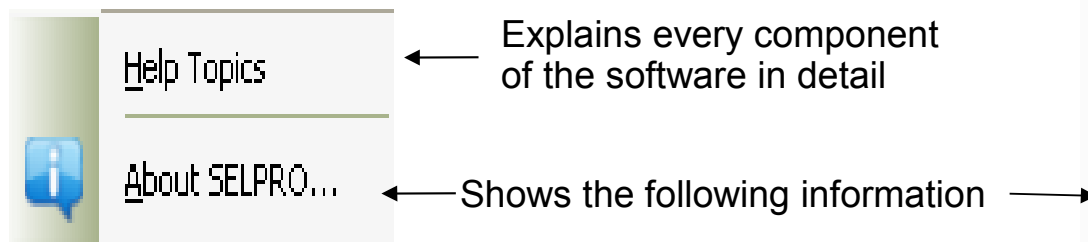
3. View consists of



4. Communication consists of

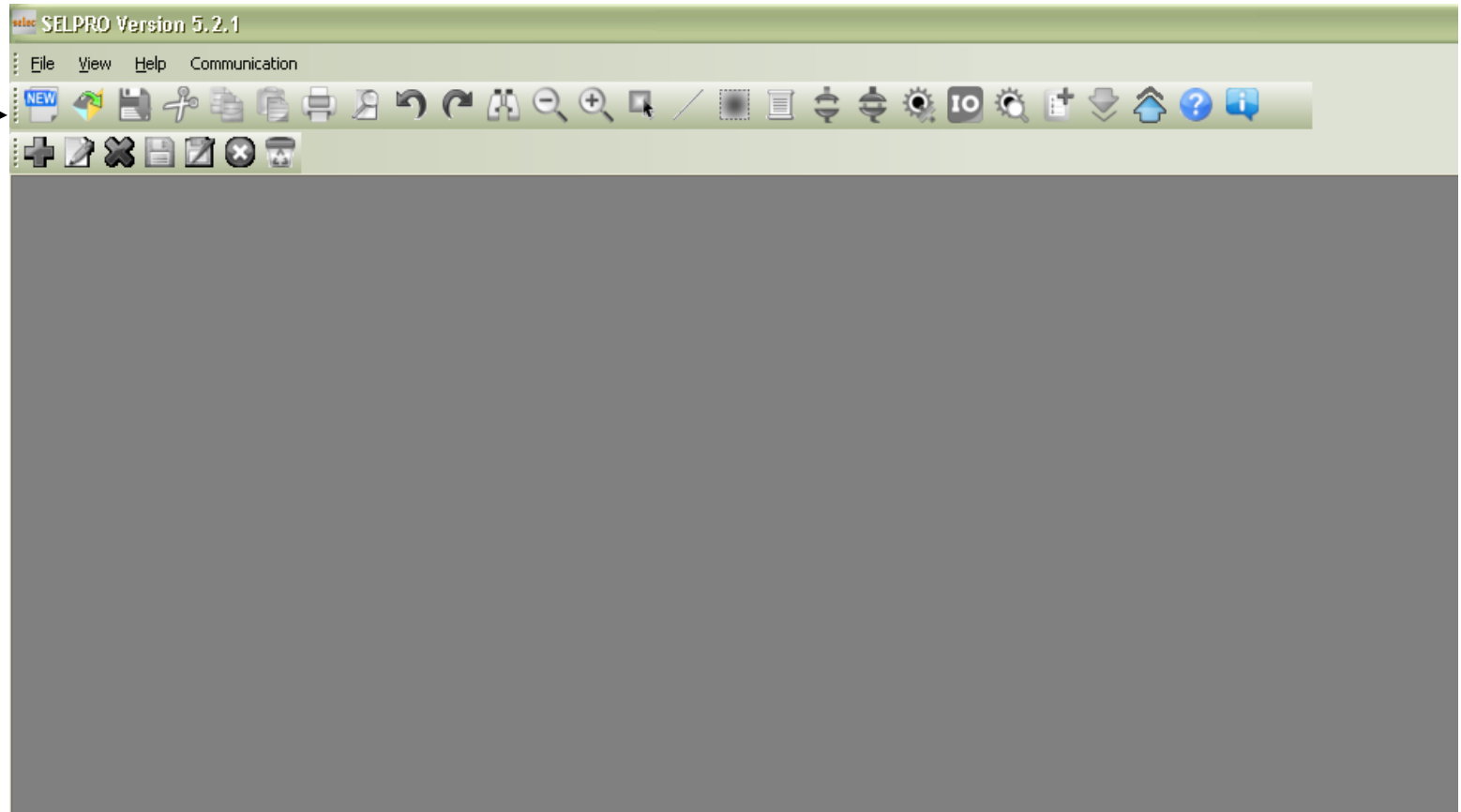


5. Help consists of



Creating new Project

Click on
New Project
Toolbar or press
Ctrl+N



Immediately after this a window for new project settings appears

New Project settings :

PLC model selection

Define new project name

Browse and select path

Click Next >> to proceed...

New Project

Product

- Product
 - FlexysX

FlexysX

SELPRO

Flexys Panel TX4

FlexysRail

Selected Product : [4DI]

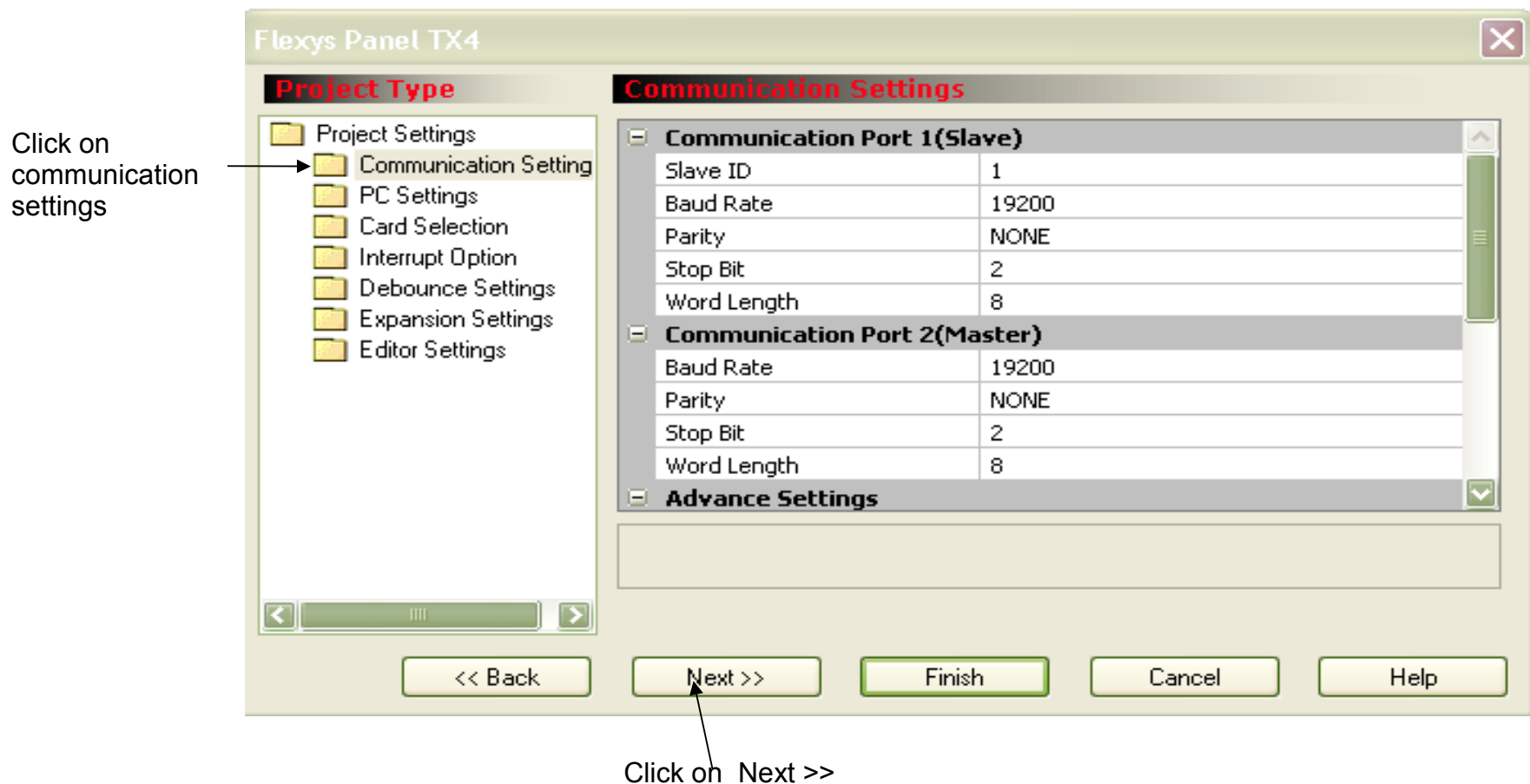
Name: Test

Location: C:\Documents and Settings\COMPAQ\Desktop\ Browse....

Application will be Created at C:\Documents and Settings\COMPAQ\Desktop\Test

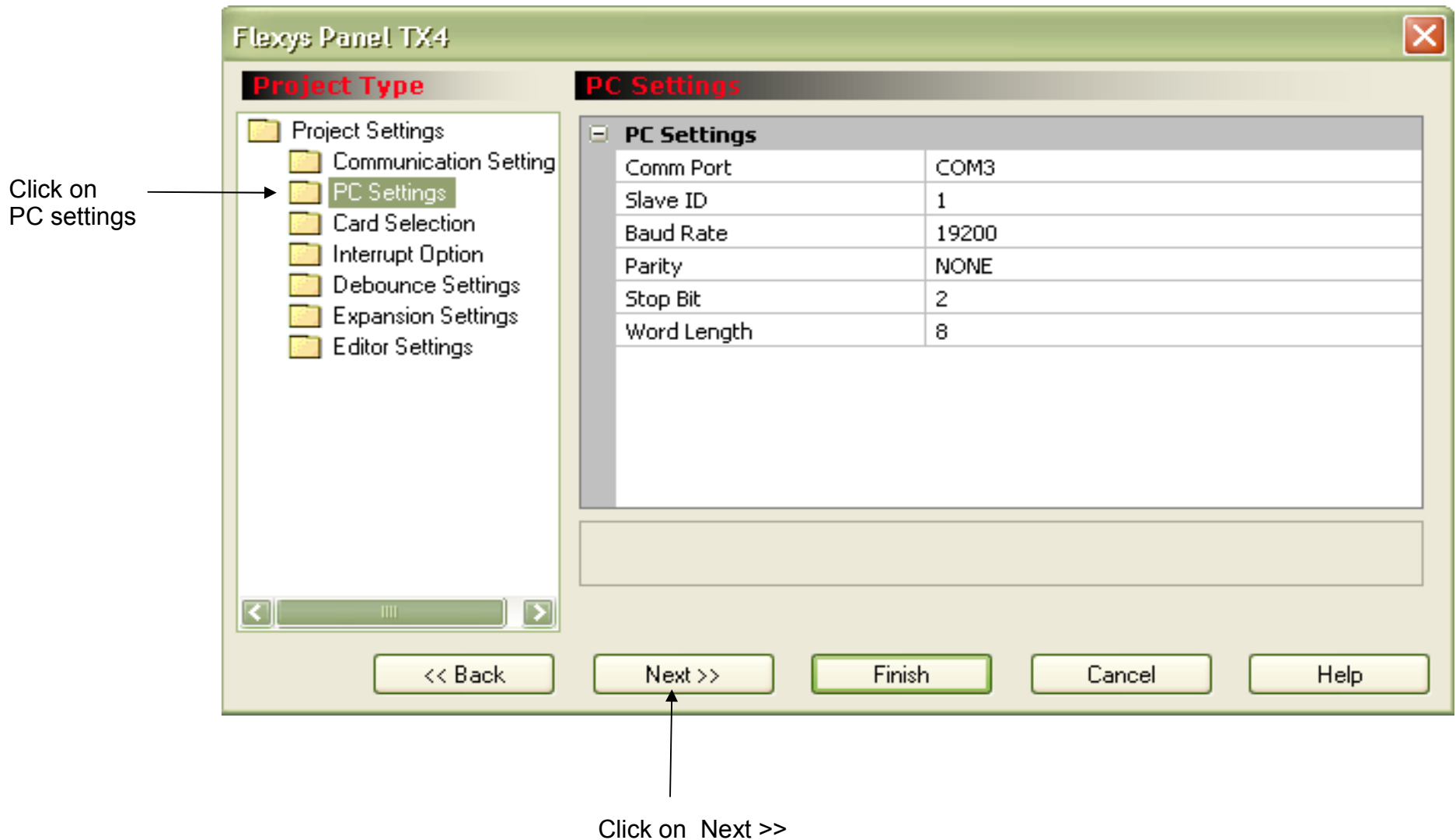
Next >> Cancel Help

1. **Define new project** : We can define (give name) to new projects with this option.
2. **Browse** : This enables the user to select the path in which the project needs to be saved. We can select the path using the drop down in this option.
3. **PLC Model Selection** : Using the drop down in this option, user can select the PLC model that has to be programmed.
4. **COM settings** : This helps to select Communication parameters. The following window appears



5. PC Settings :

This settings basically used for online simulation



6. Card selection :

Flexys Panel TX4

Project Type

- Project Settings
 - Communication Setting
 - PC Settings
 - Card Selection**
 - Interrupt Option
 - Debounce Settings
 - Expansion Settings
 - Editor Settings

Card Selection

Card Selection	
Card 1	10DI
Card 2	8RO
Card 3	5AIV
Card 4	3AIRT
	NONE
	2AI2AO
	3AIRT
	4AITC
	5AIV
	10DI
	8RO

Card 4
This card has

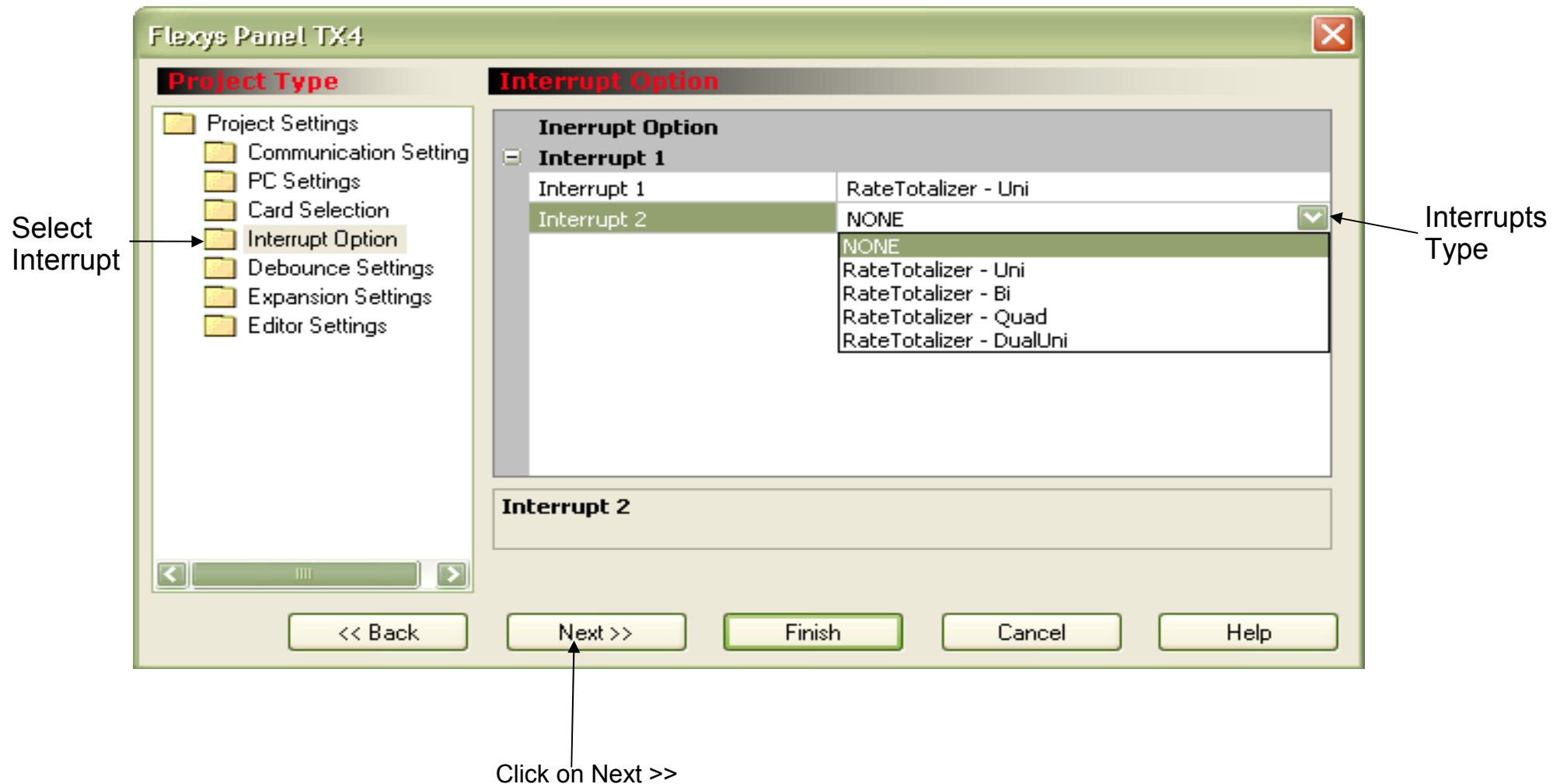
Navigation buttons: << Back, Next >>, Finish, Cancel, Help

Annotations:

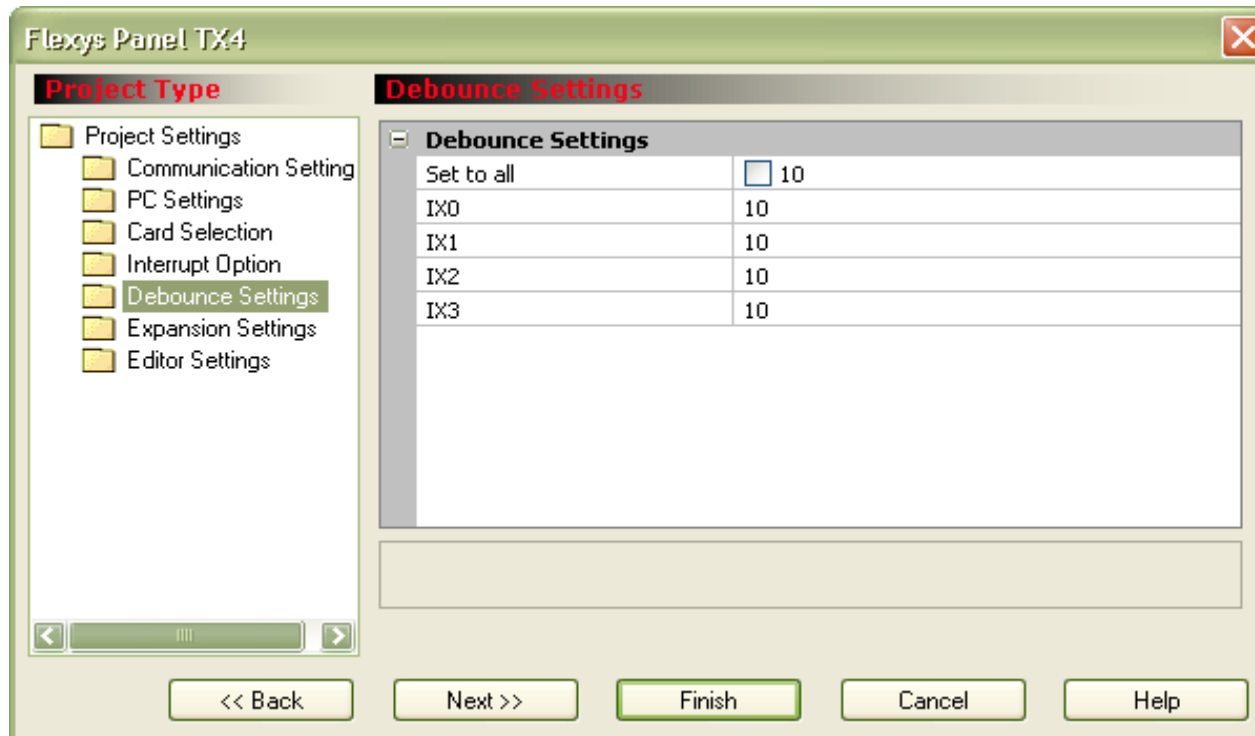
- Select card → (points to Card Selection in the tree)
- cards can be selected for each slot as per hardware I/O configuration → (points to the dropdown menu for Card 4)
- Click on Next >> → (points to the Next >> button)

7. Interrupt Option :

Here we can select the Interrupts type



8. Debounce Settings : It is the filter time of the digital inputs. i.e. PLC will not accept the pulses shorter than the time defined below



It consists of the following

Individual settings: The Debounce settings will be defined for individual Digital Input.

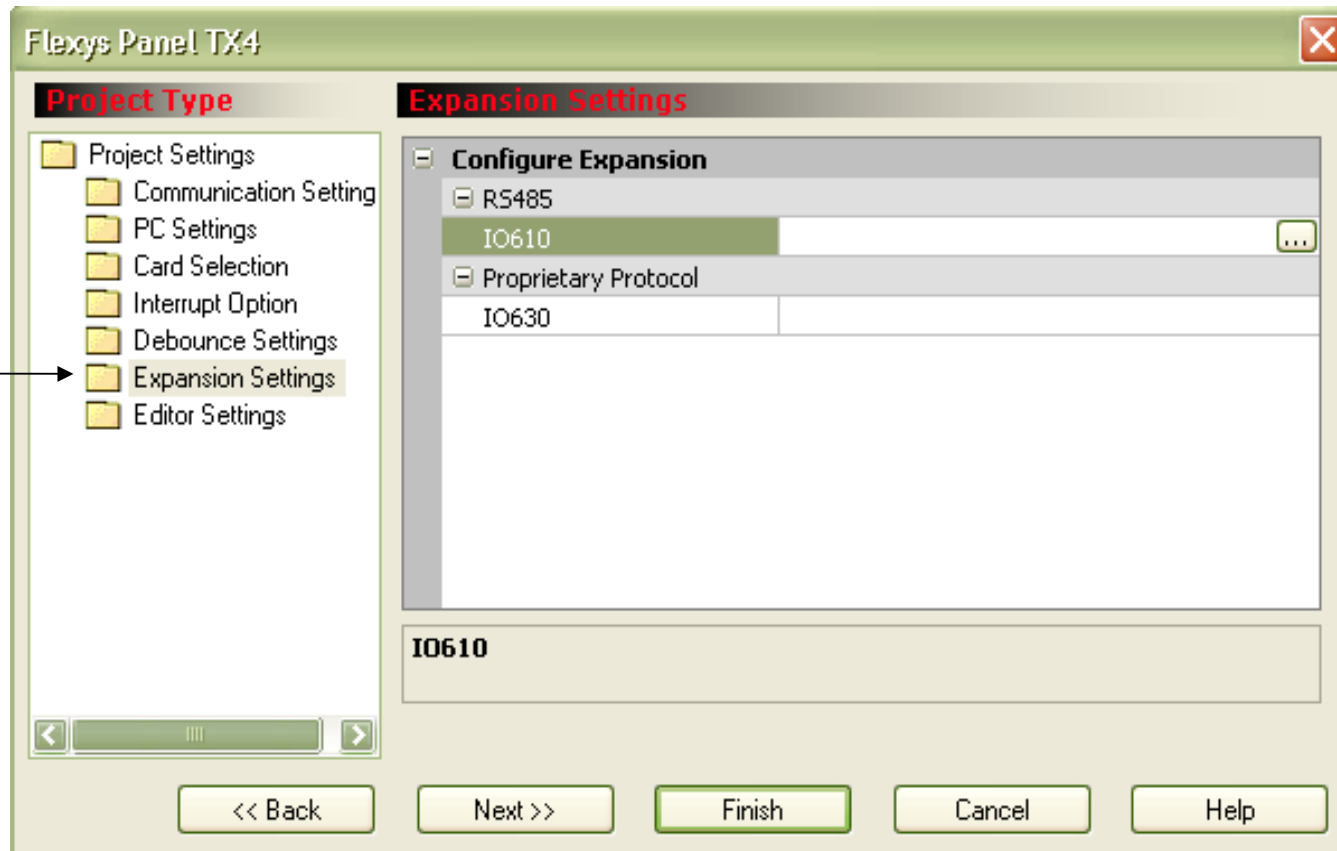
Set for all : The debounce settings will be set for all the Digital Inputs

A debounce time of 1 to 255 mSec can be assigned to selected or all digital inputs.

9. Configuration of Expansion :

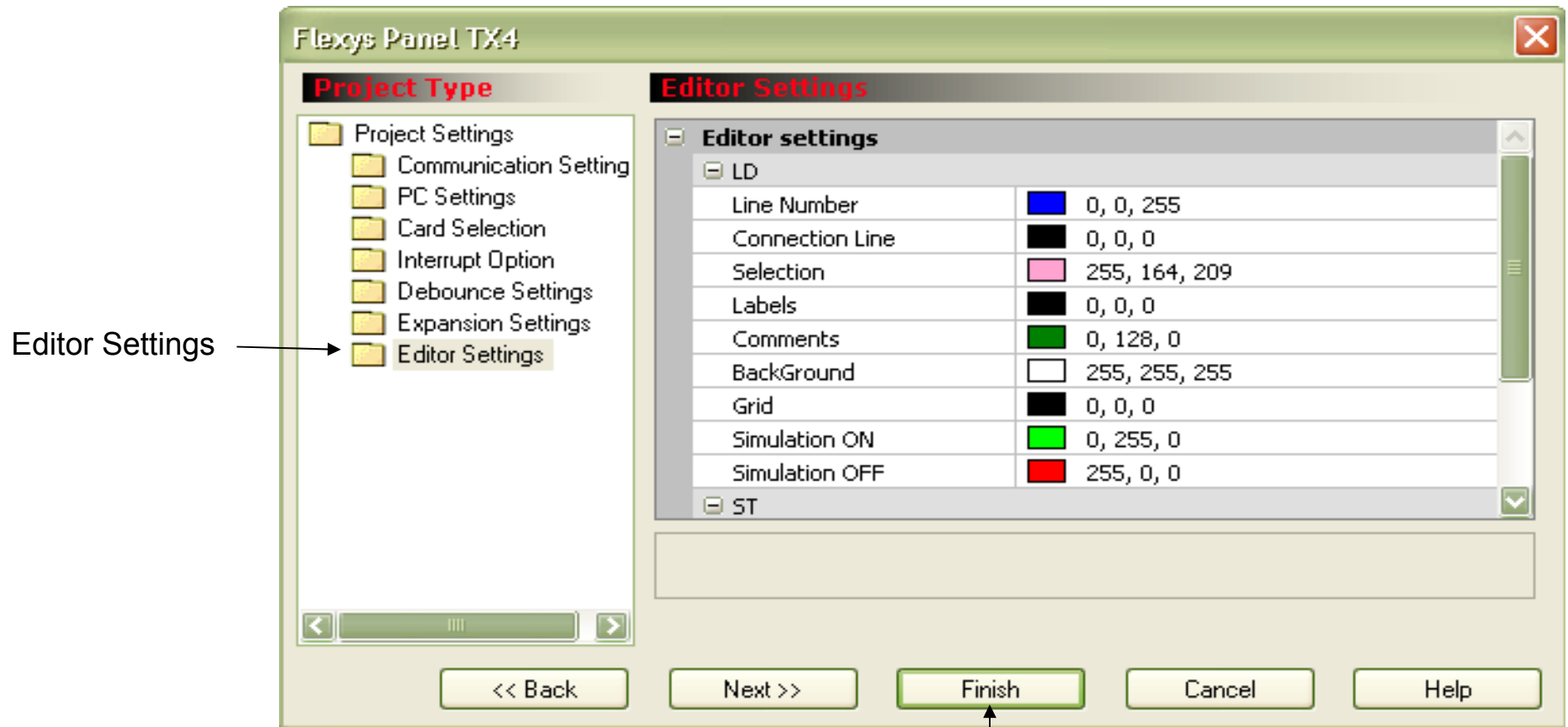
If you click on Expansion settings below window will appear

Expansion
Settings →



10 : Editor settings :

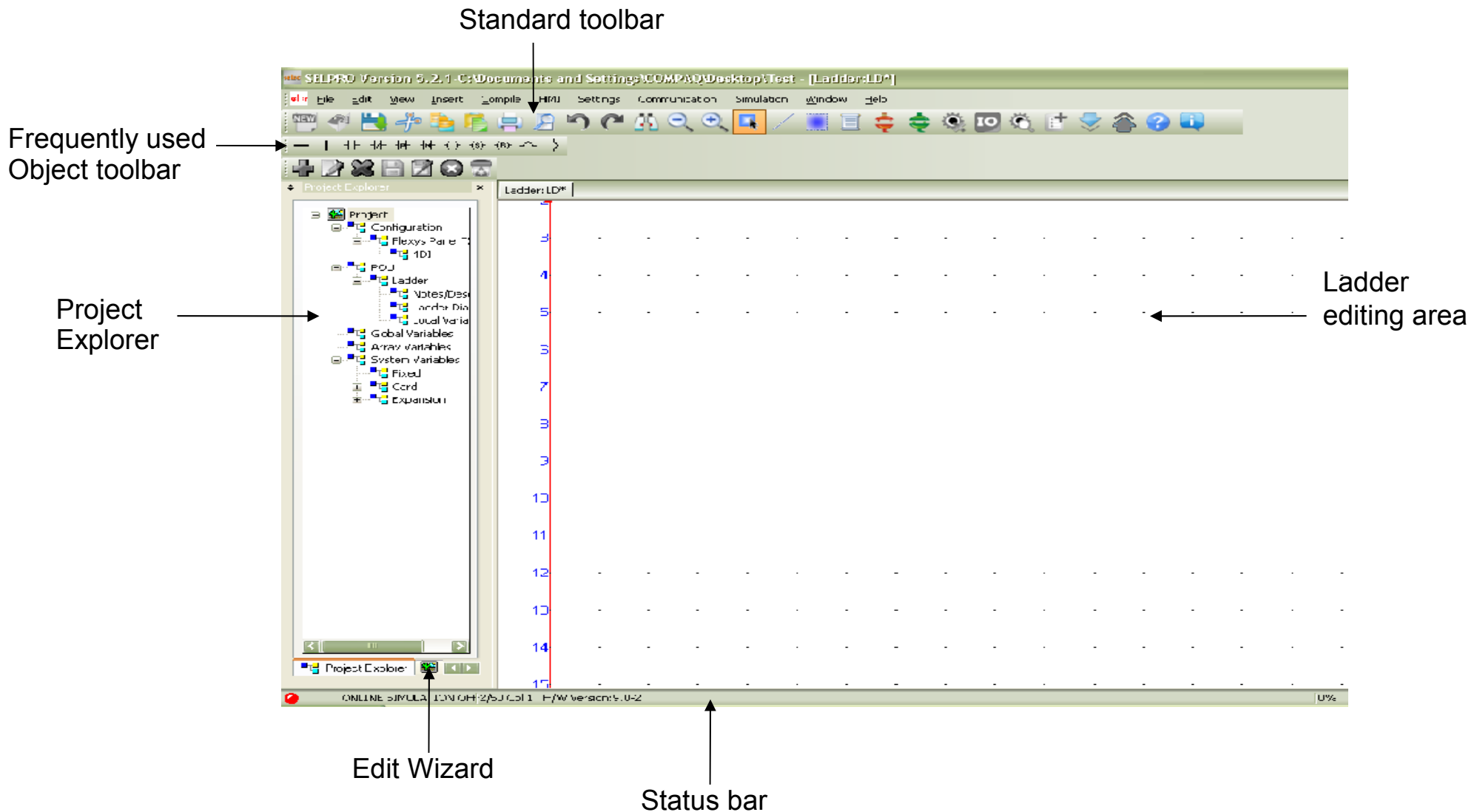
To change in the look of the user interface we can use Editor settings.



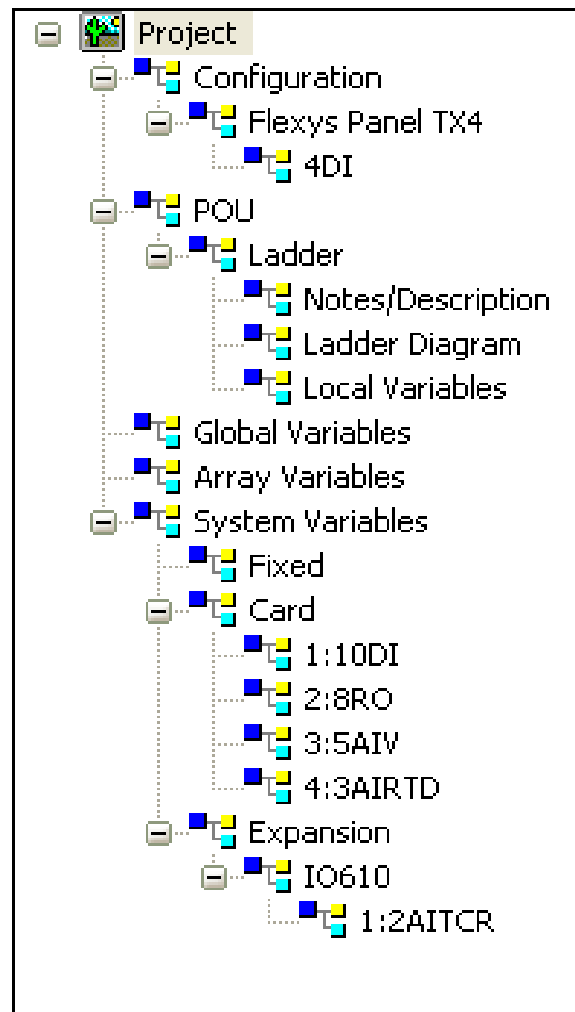
Click on Finish

Creating Ladder Diagram

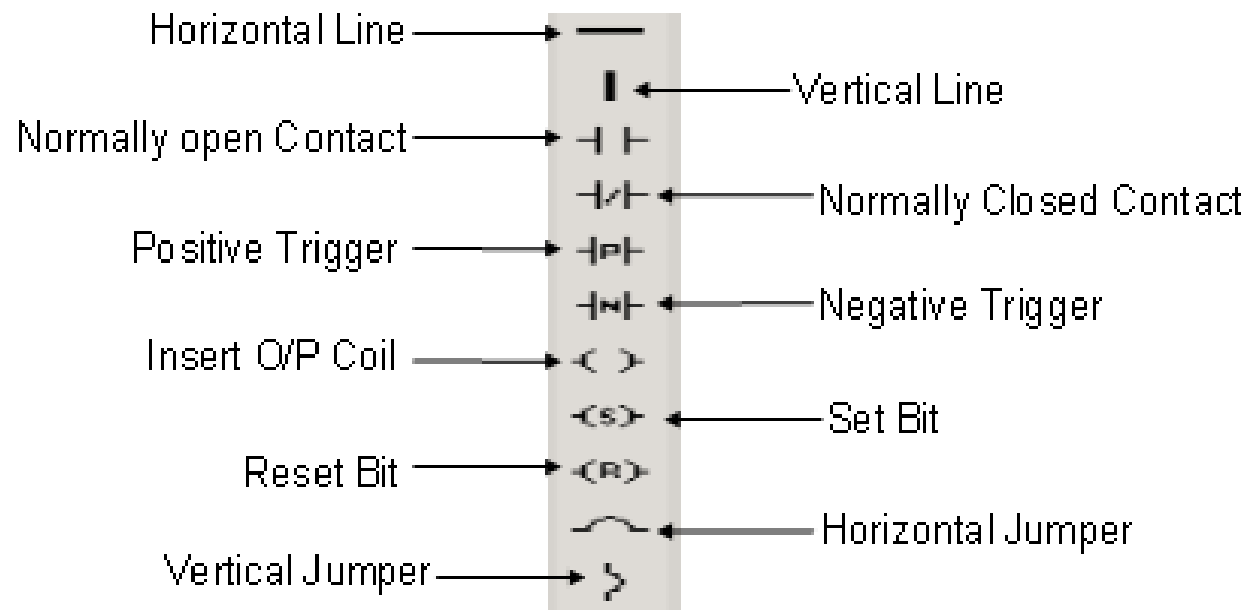
The graphic editor page opens where we can Configure Ladder.



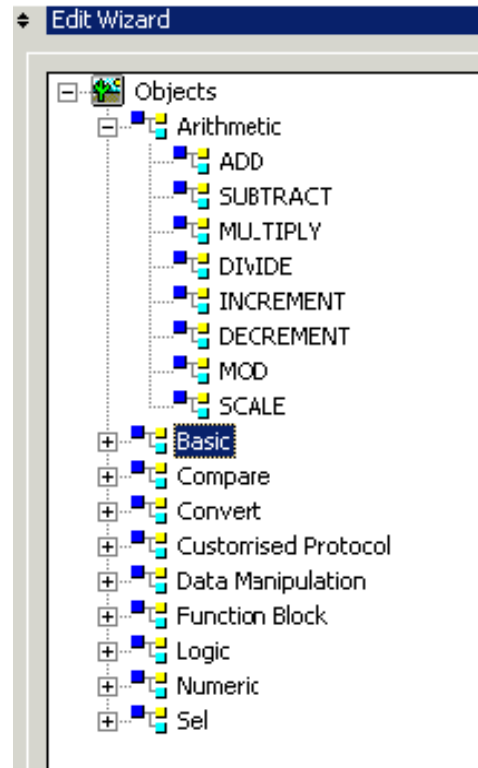
- 1. Project Explorer :** It includes PLC I/O configuration, Ladder diagram, its note and description, Global variables, Array variables, Expansion modules information



2. Frequently used Object Toolbar : It consists of the basic components like Line, NO, NC, Coil etc which are frequently used in Ladder Diagrams.



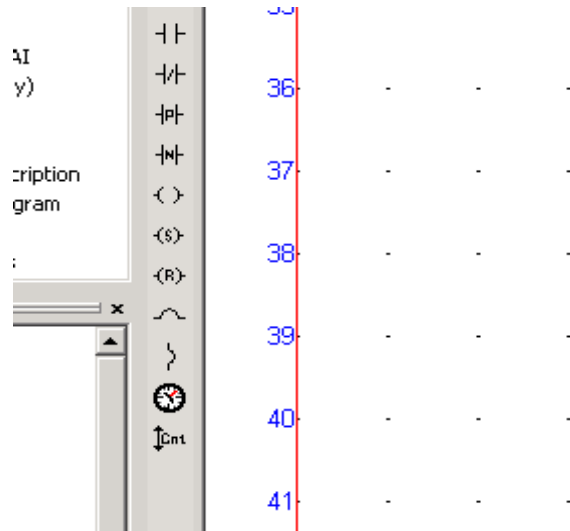
3. Edit Wizard : It basically consists of the instruction blocks that are available for the selected PLC.



4. Status Bar : It shows the compilation status, communication status between the hardware and software and also the No. of the Rung that is in use

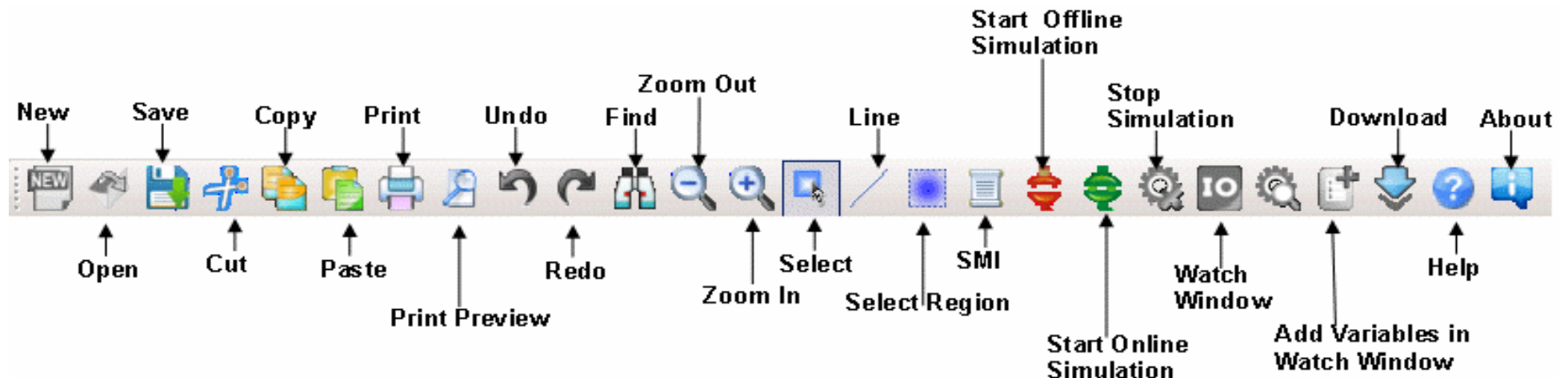


5.Ladder editing area :Here we do the actual ladder programming .



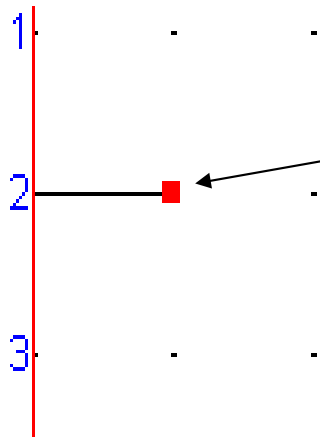
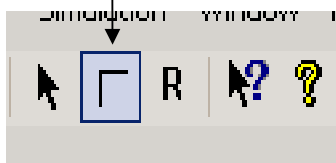
6.Toolbar :

It consists of the standard tools of windows like Cut, Copy, Paste, Download option, Online and Offline simulation option .



Creating Ladder

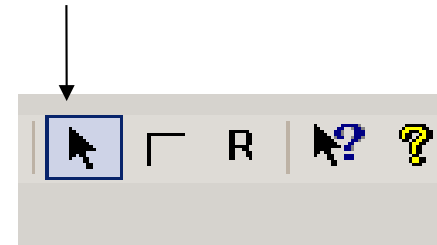
Select Draw option from the Toolbar



Place the cursor at the interface where function block is to be inserted and drag.

Inserting Objects

1. Choose the select option from the toolbar



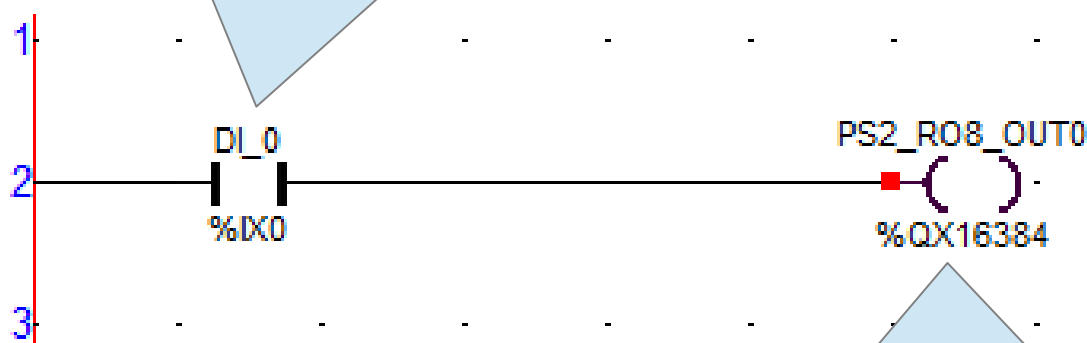
2. We can insert Objects From the Edit Wizard or

Double click on the object to be selected



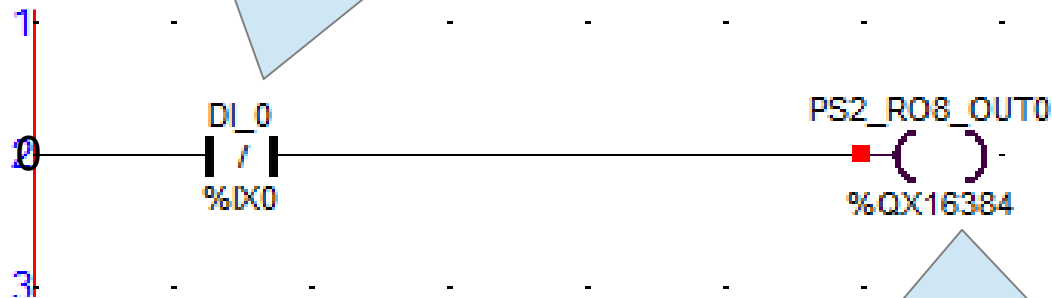
Configuration Object

NO : This instruction(Normally Opened) functions as an input or storage bit.
If the corressponding memory bit (IX/MX) is a “1”(ON), this instruction will allow rung continuity and outputs will be energized



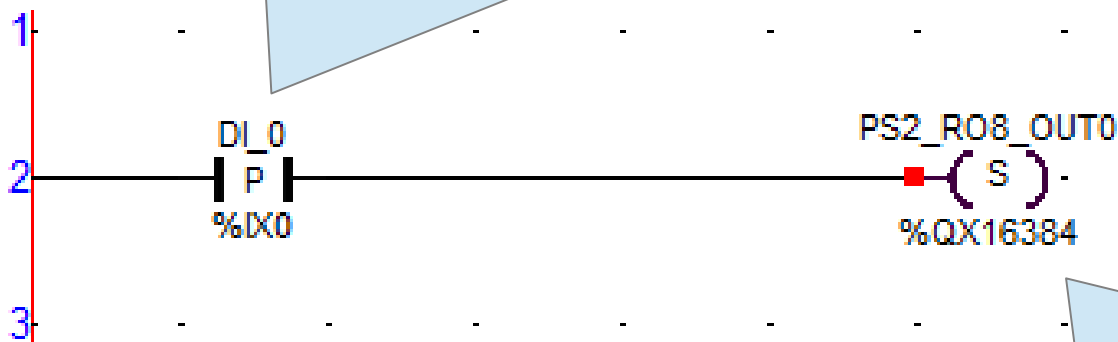
ST : This instruction sets the specified output or storage bit (QX/MX) when rung continuity is acheived (Rung goes true)

NC : This instruction(Normally Closed) functions as an input or storage bit.If the corressponding memory bit (IX/MX) is a “0”(OFF), this instruction will allow rung continuity and outputs will be energized.



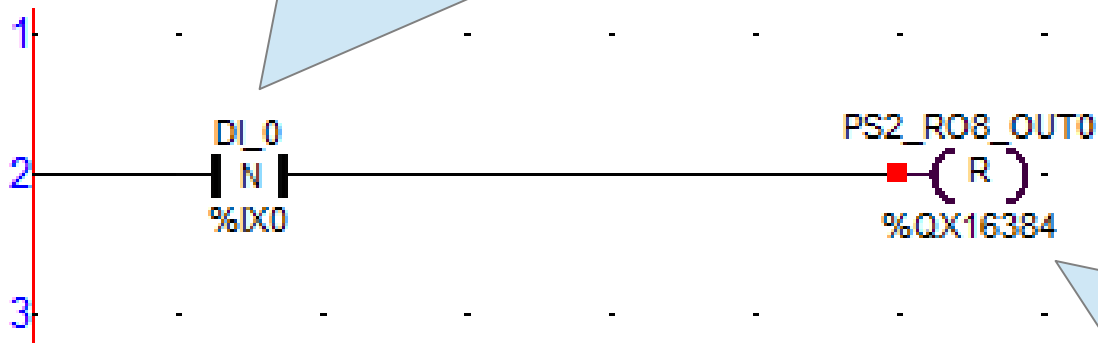
ST : This instruction sets the specified output or storage bit (QX/MX) when rung continuity is acheived (Rung goes true)

PT : This is a conditional input instruction that triggers an event to occur one time. It is used when an event must start based on the change of state of the rung from false to true, same as Triggered by a push button



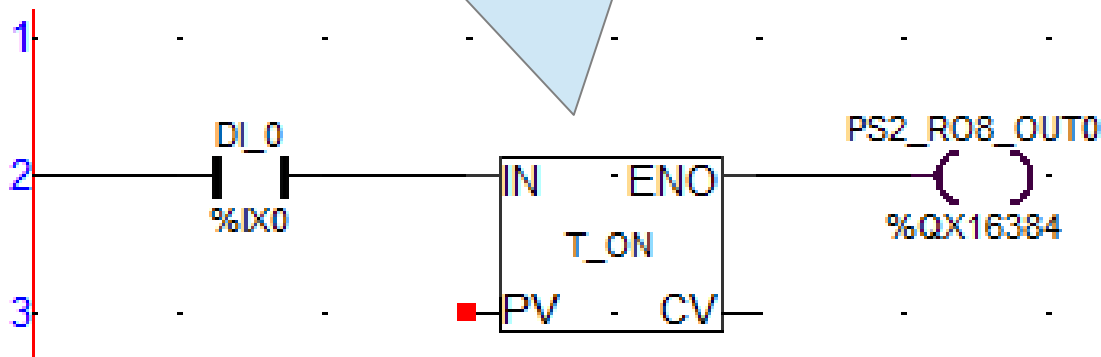
SB : This instruction works much the same as the ST with the exception that once this bit is set, It is latched ON It will remain ON even if the rung condition goes false.

NT : This is a conditional input instruction that triggers an event to occur one time. It is used when an event must start based on the change of state of the rung from True to False, same as Triggered by a push button

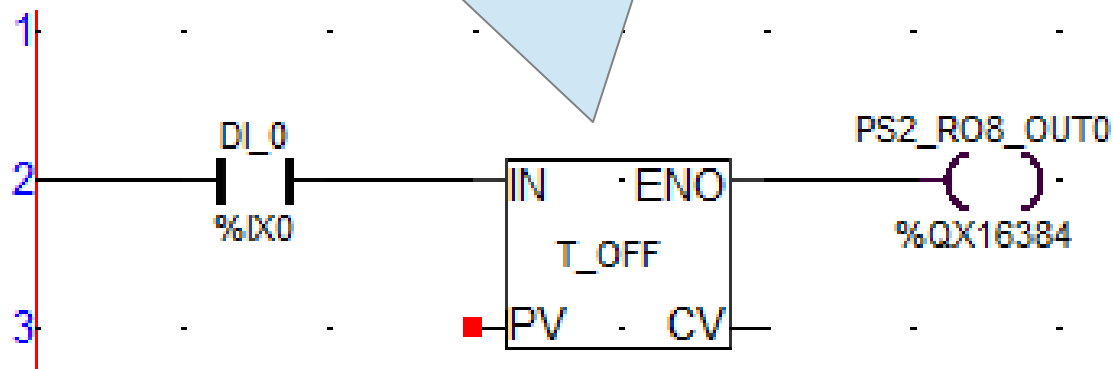


RSB : This instruction is used to unlatch (RESET) a latched (SET) bit. Its address must be identical to the **SB** address.

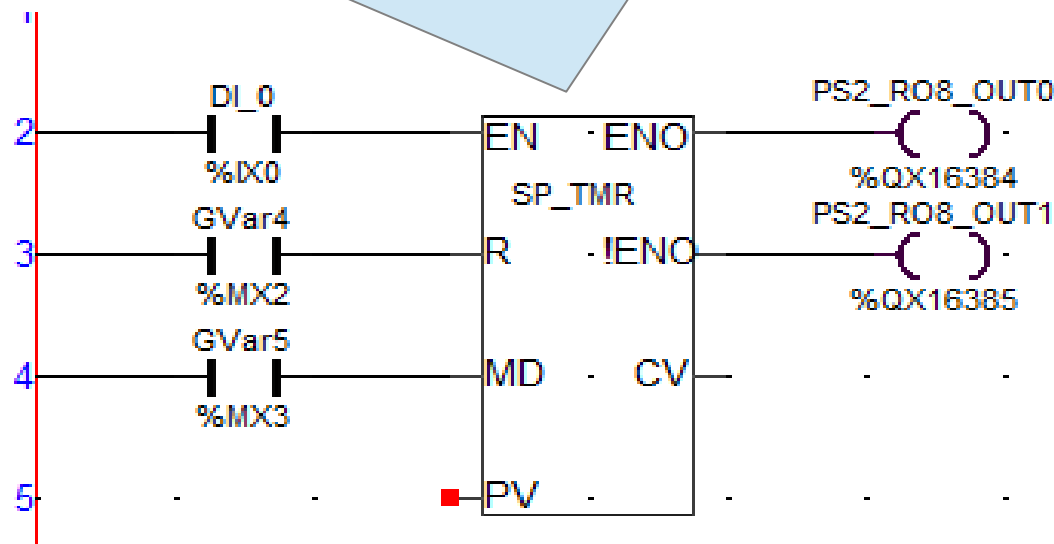
Timer ON delay : This instruction is used to turn an output **ON** after timer has finished its “CV”. time count defined in “PV” Preset time



Timer OFF delay : This instruction is used to turn an output **OFF** after timer has finished its “CV”. time count defined in “PV” Preset time. But unlike “T_ON” , this timer starts counting CV time after its input turns from ON to OFF.

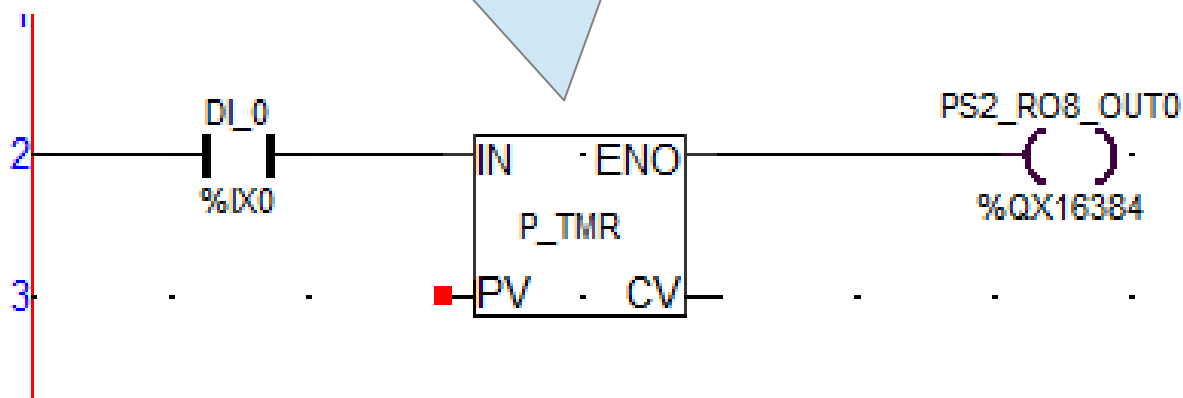


Special timer : This timer is a combination of a Timer ON delay and an interval timer*. Also it can count upside and down side



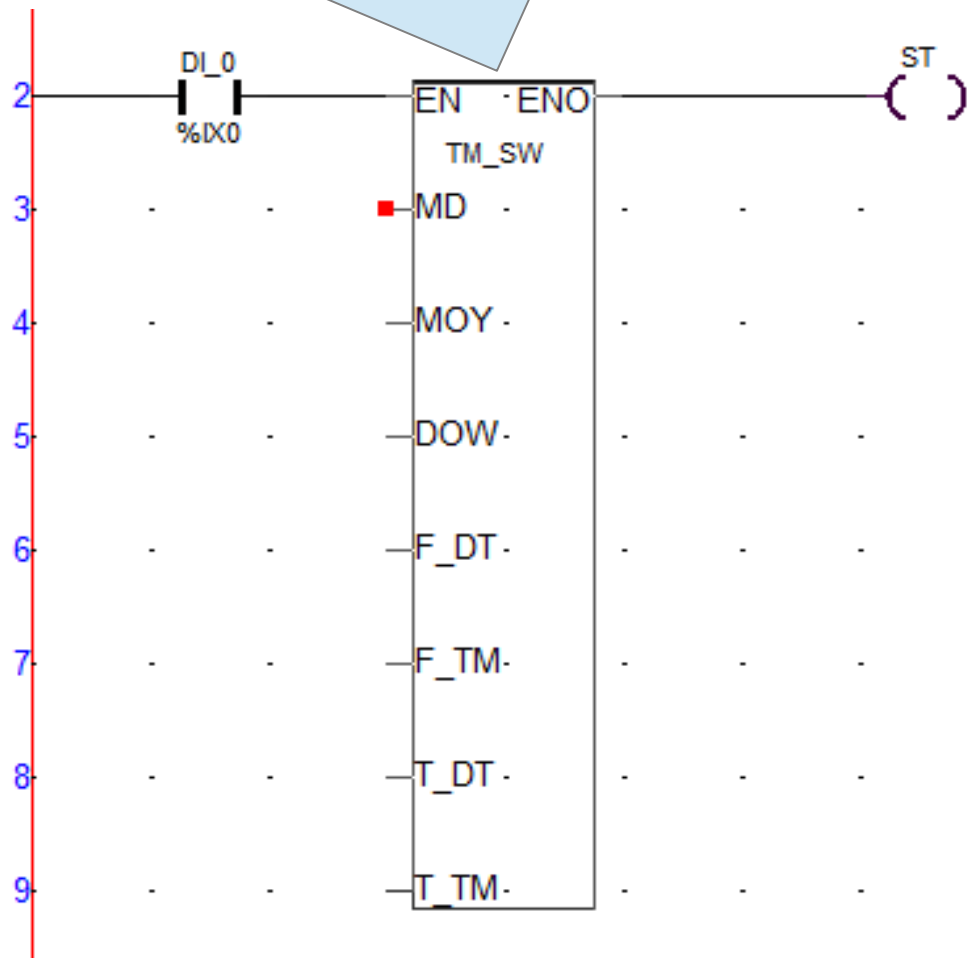
*An interval timer turns an output **OFF** after it has finished its “CV”.
time count defined in “PV” Preset time

Pulse Timer : This instruction is used to turn an output OFF after timer has finished its “CV”. time count defined in “PV” Preset time



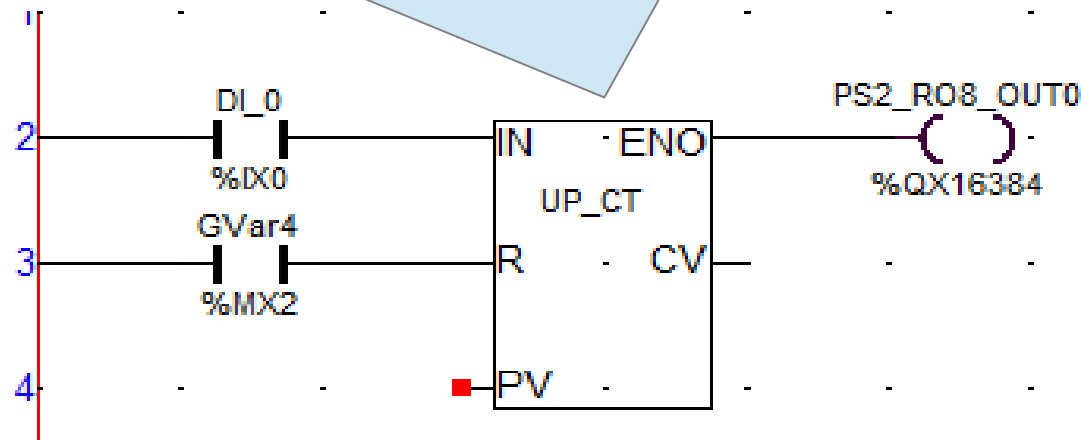
Note : This timer requires a pulse only to operate. Once operated it can not be stopped till its time is running

Time Switch : This instruction is used to turn an output ON for a predefined real time period w.r.t. The real time clock available in the PLC

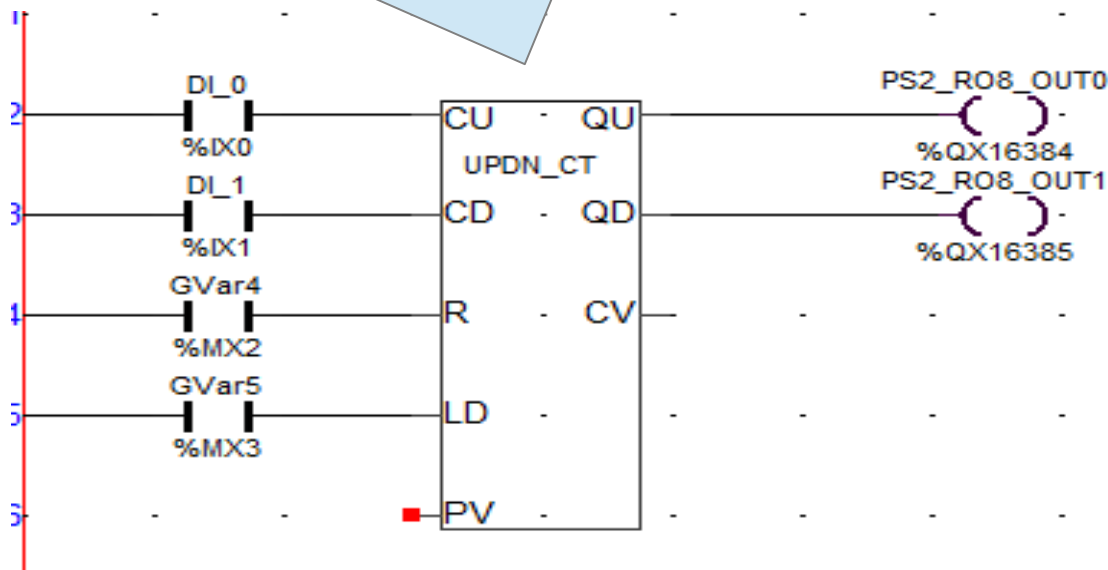


How to Assign

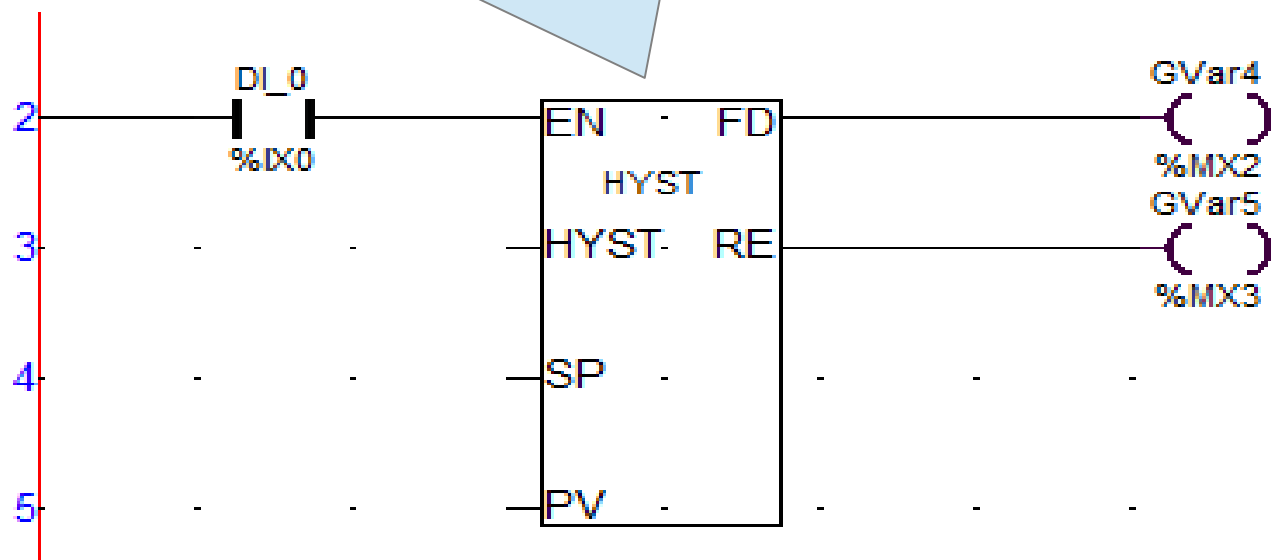
UP Counter : This instruction is used to turn an output **ON** after Counter has finished its “CV”. counts defined in “PV” Preset Count.



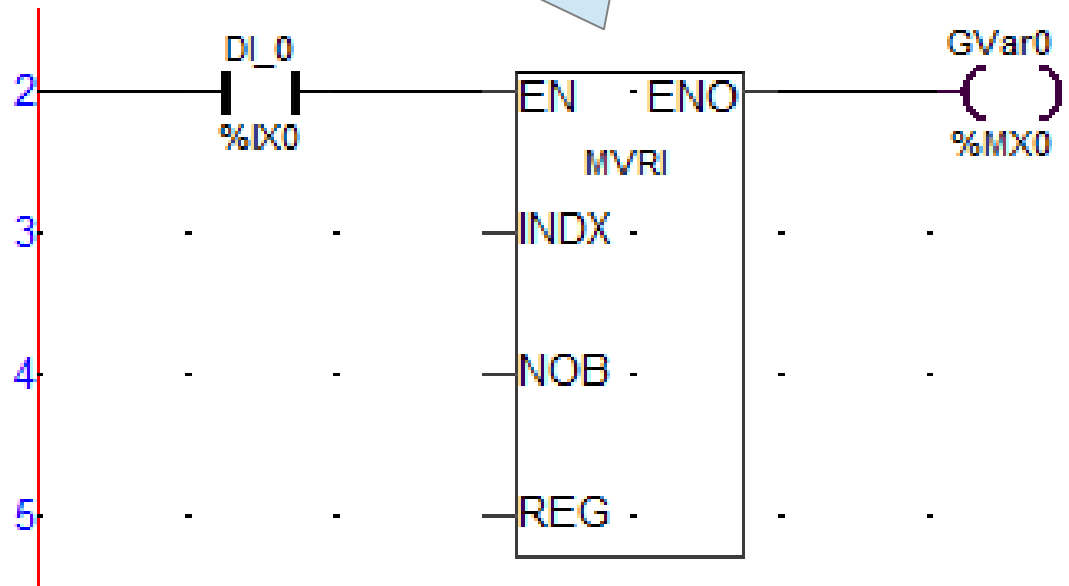
UP DOWN Counter : This instruction is used to turn an output **ON** after Counter has finished its “CV”. Counts defined in “PV” Preset Count.



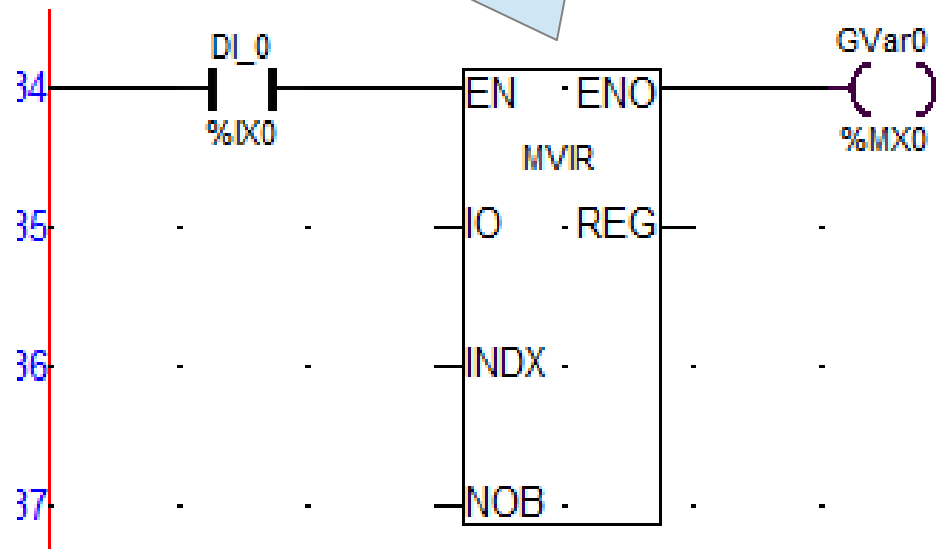
Hysteresis : This instruction is used to apply a hysteresis value to the set-point in an ON-OFF control application.



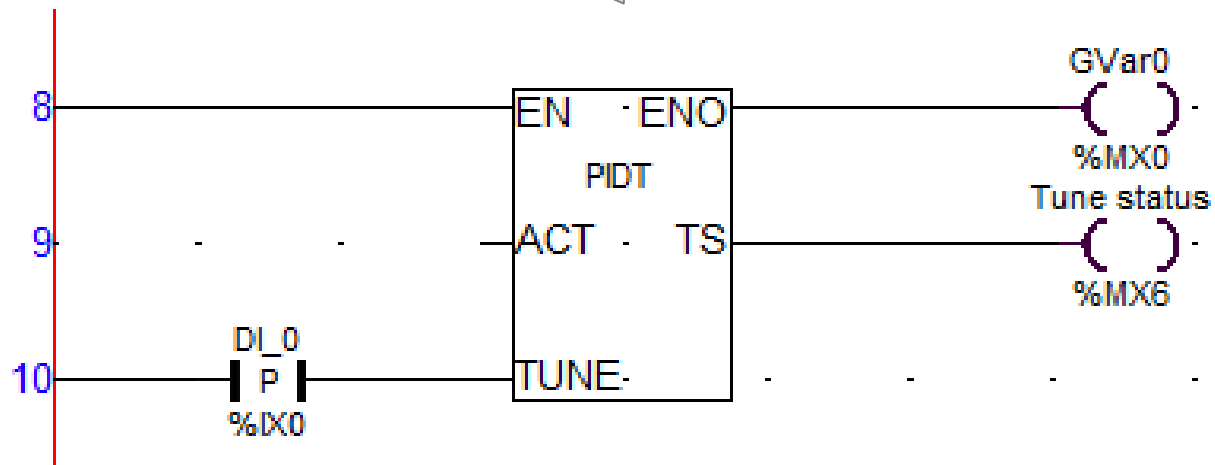
MVRI : Loads contents of register into specified I/O coil



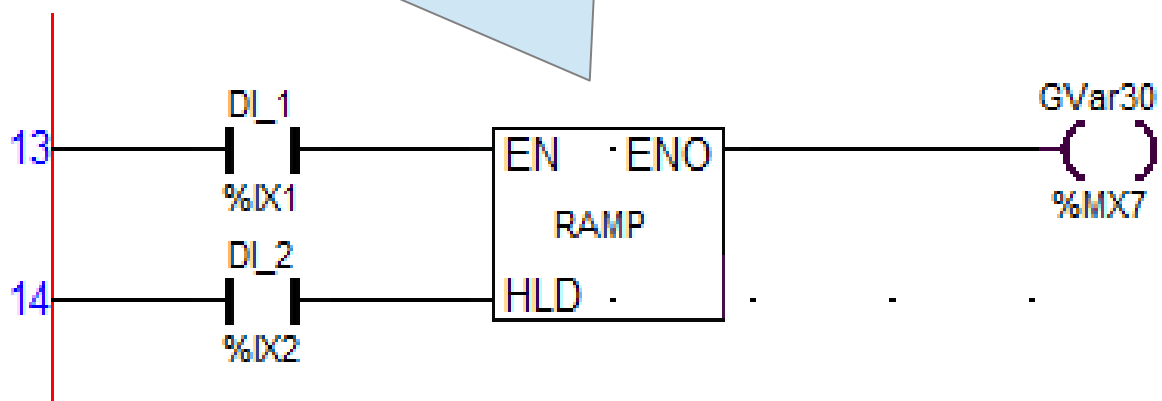
MVIR : Loads contents of I/O coil into specified register



PIDT : This instruction has a PID control with auto tune features.

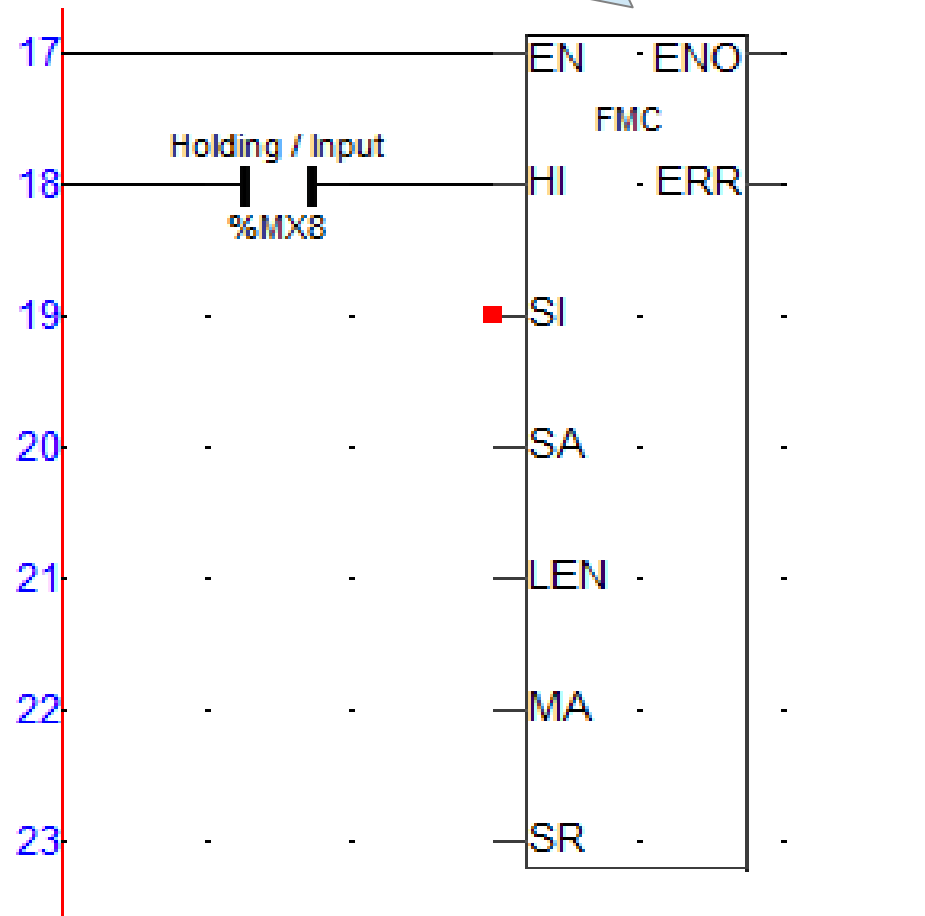


RAMPSOAK : This instruction is used to reduced the process at a controlled rate and The soak feature can be used to hold the process at a controlled rate.



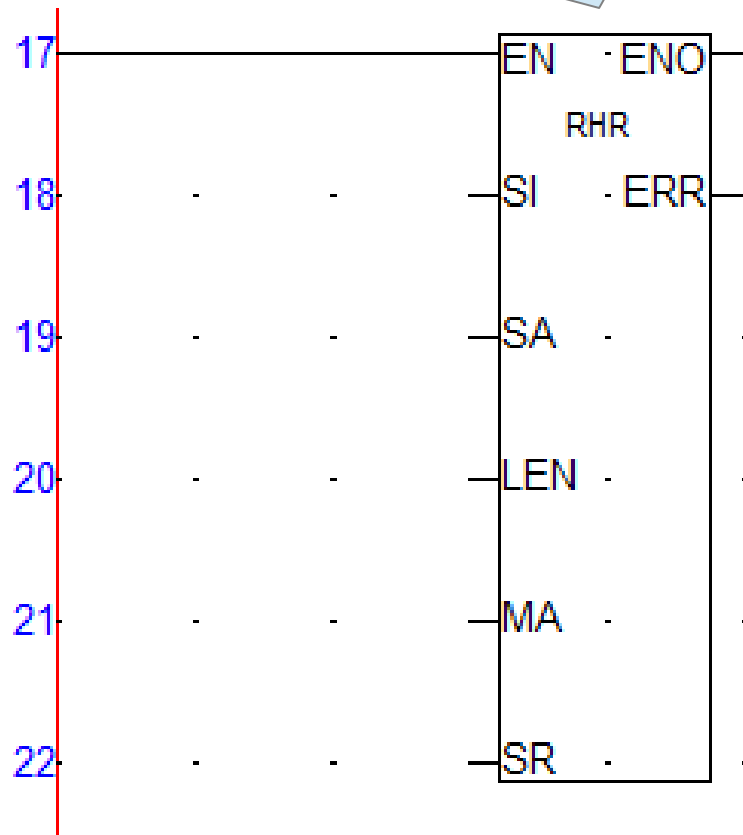
Communication Instruction :

FORCE MULTIPLE COIL : Forces coil(s) to either ON or OFF status



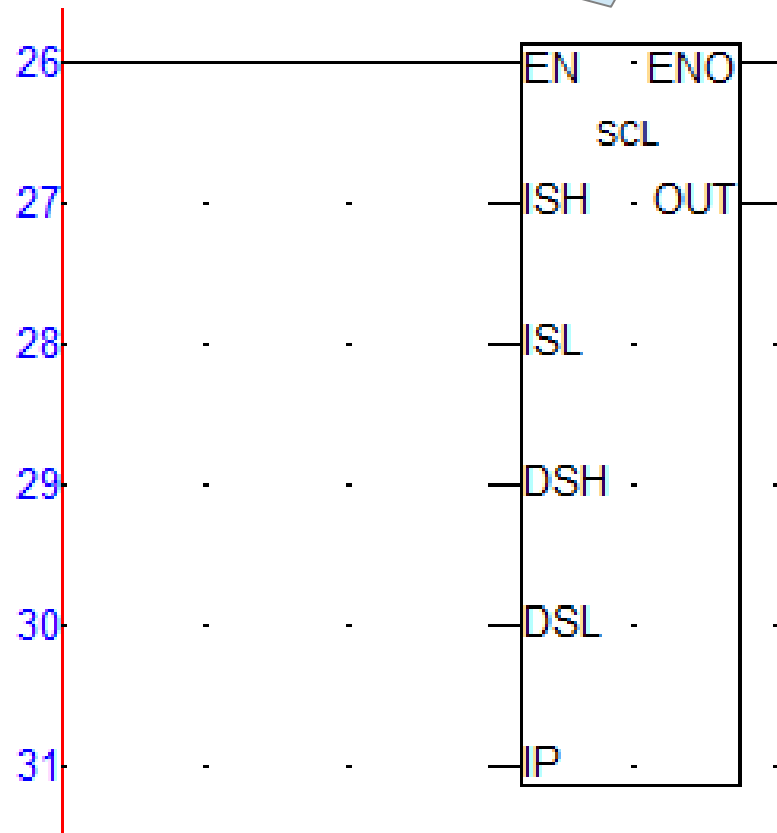
Communication Instruction :

READ HOLDING REGISTER: Reads the contents of holding register(s) in the slave



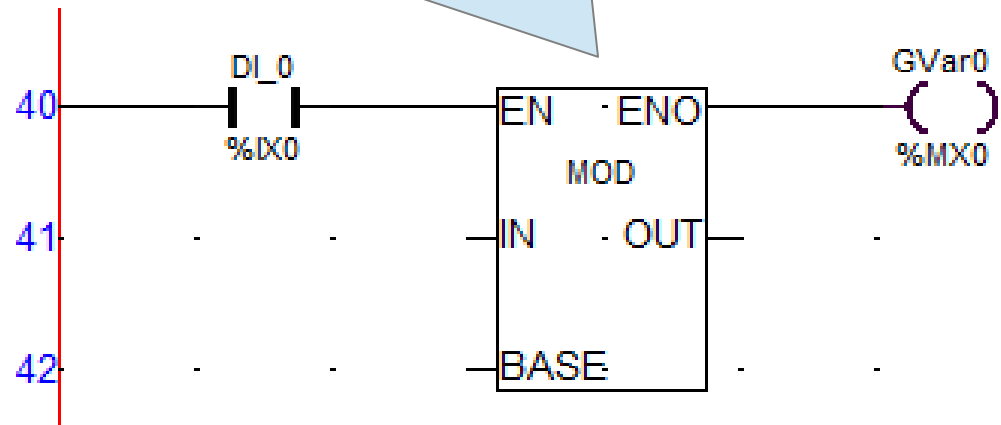
Arithmetic Instruction :

SCALE : Scales the input value to specified limit



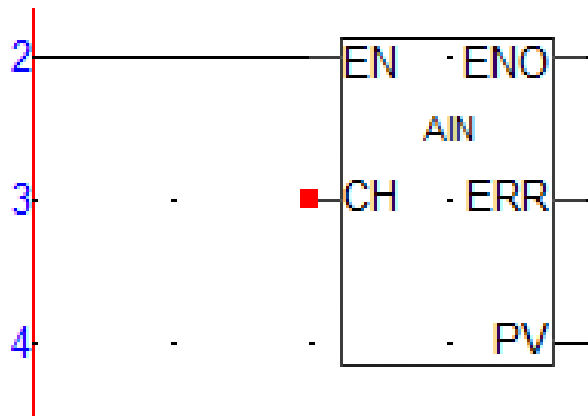
Arithmetic Instruction :

MOD : Calculates the modulo of an integer value.



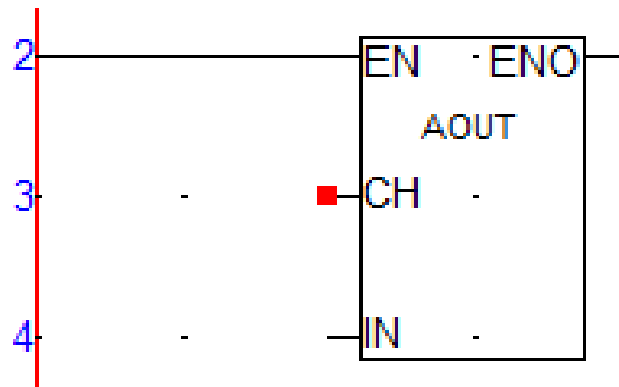
Analog

Analog Input : Analog input is given through particular channel as per sensor selection

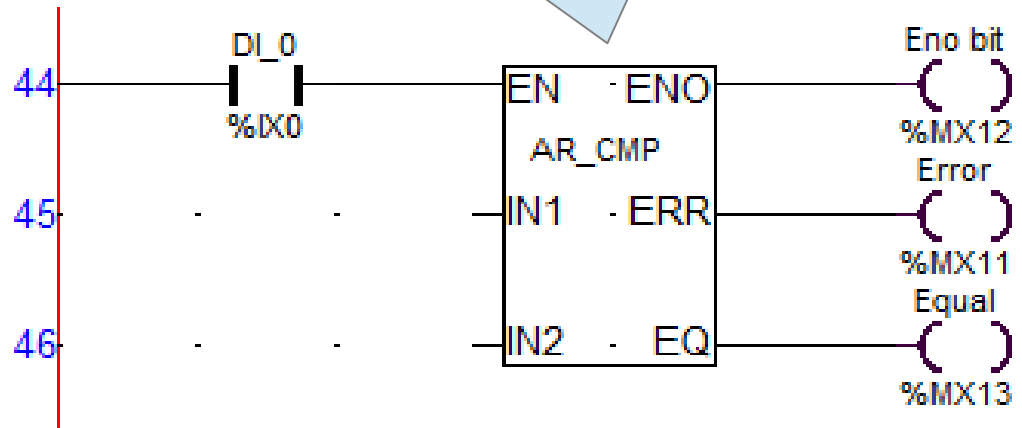


Analog

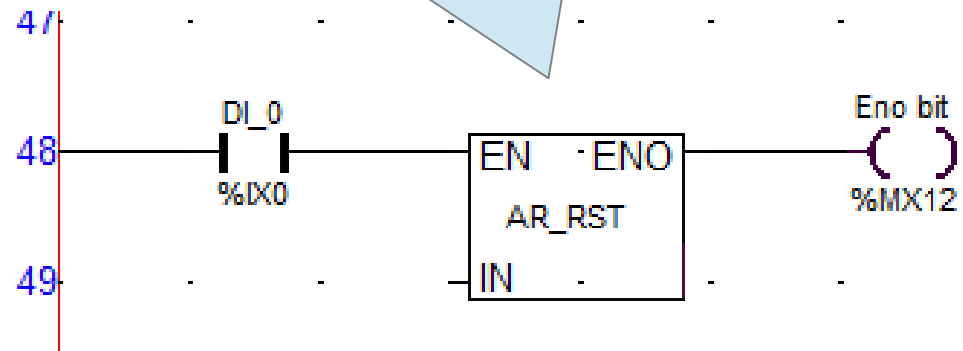
Analog Output : The analog output can be measured across the selected channel in terms of voltage or current



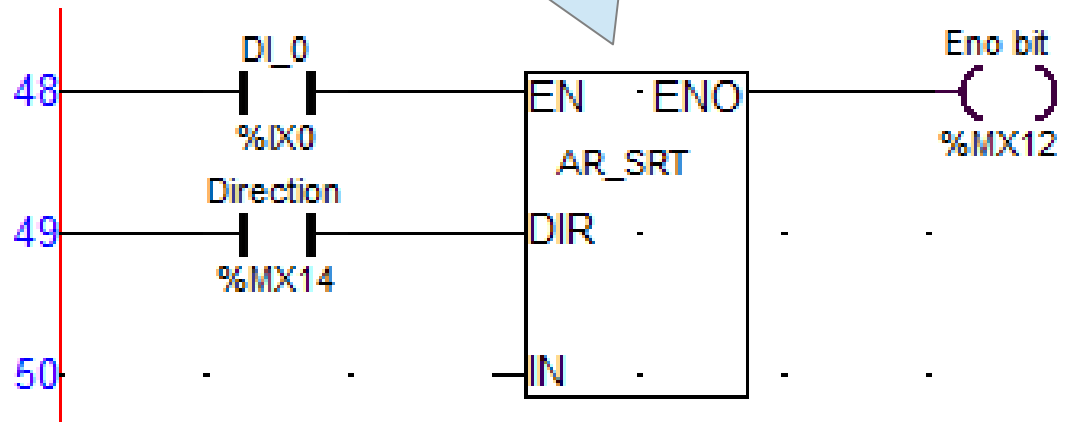
Array Compare : The ArrayCompare verifies if two arrays are equal .If equals thwn It returns the true



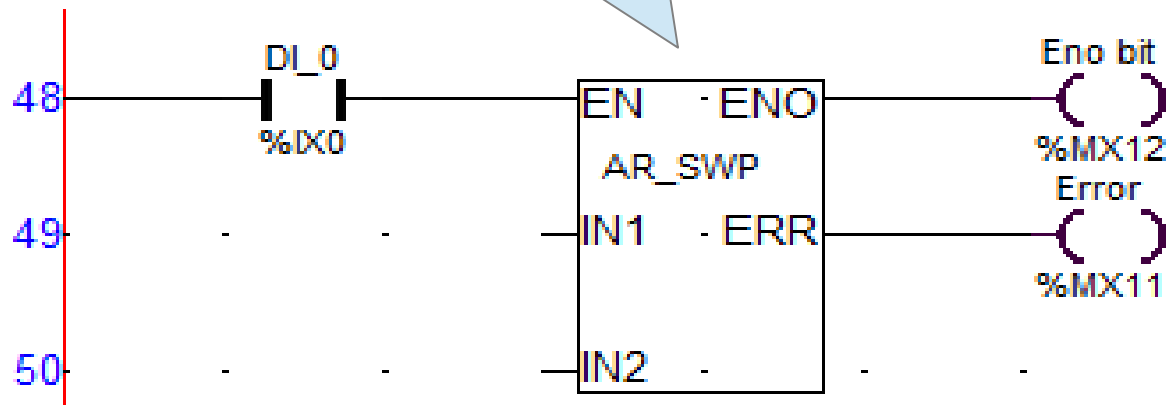
Array Reset : The **ArrayReset** resets the contents of array to zero.



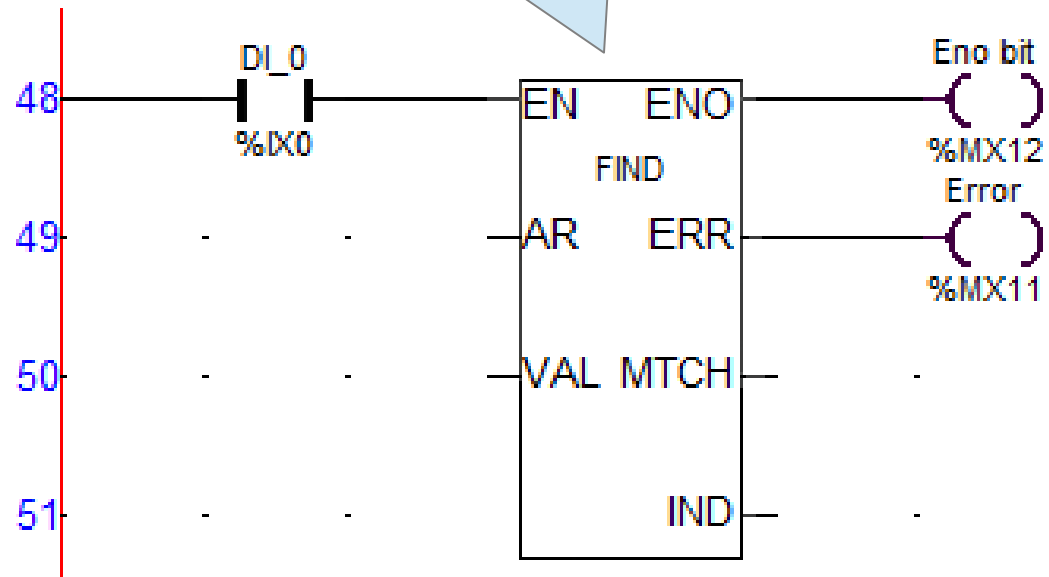
Array Sort : The **ArraySort** sorts the array contents in the selected order.
If Order is 0 then it sorts in ascending order and if Order is 1 then it sorts in descending order



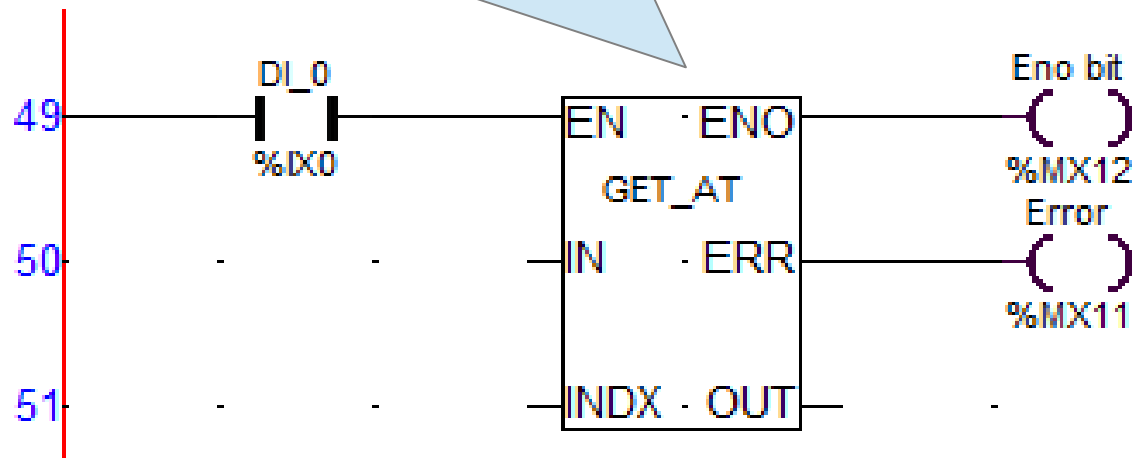
Array Swap : The **ArraySwap** swaps the contents of two arrays.



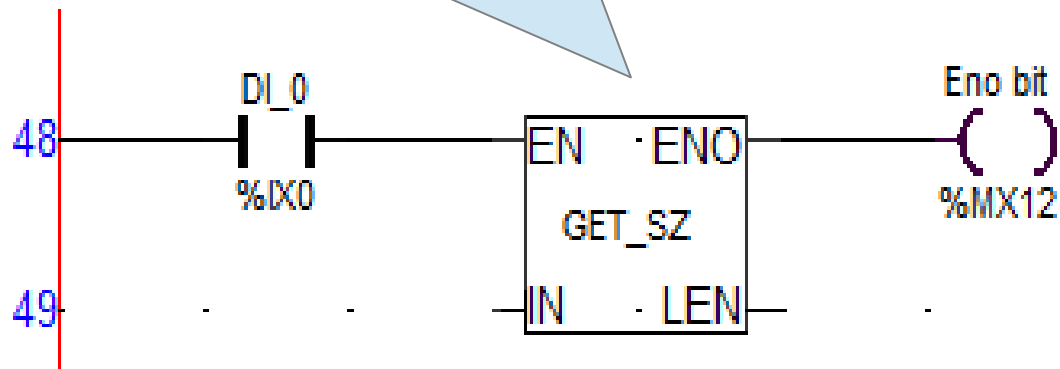
Find : The Find function searches an array for the first match of a value. If the Find method is successful, it returns the zero-based index of the first value in this Array that matches the requested value..



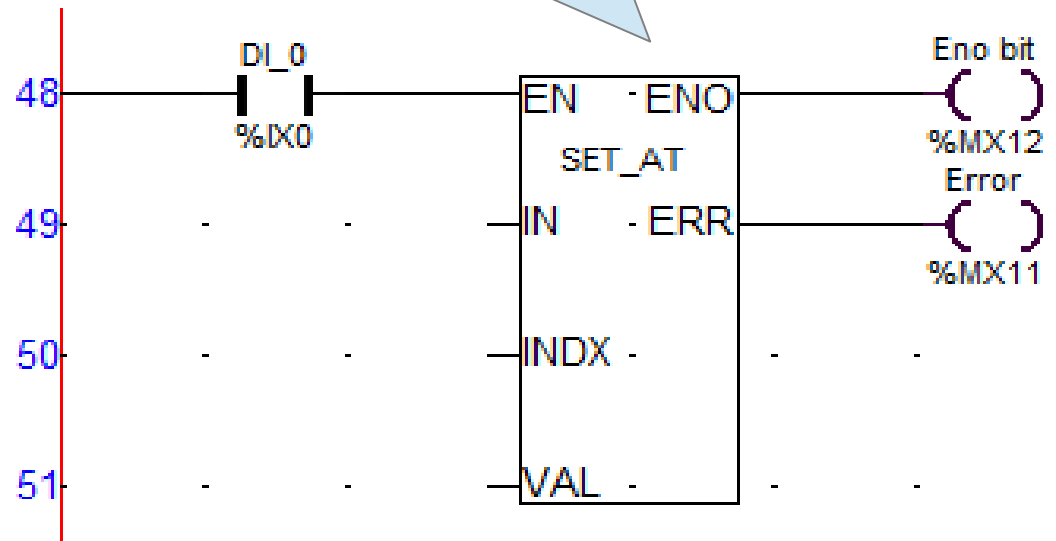
Get At: This instruction is used to return the value of the Array variable at the user specified index



Get Size : The Get Size function returns the number of elements in the array

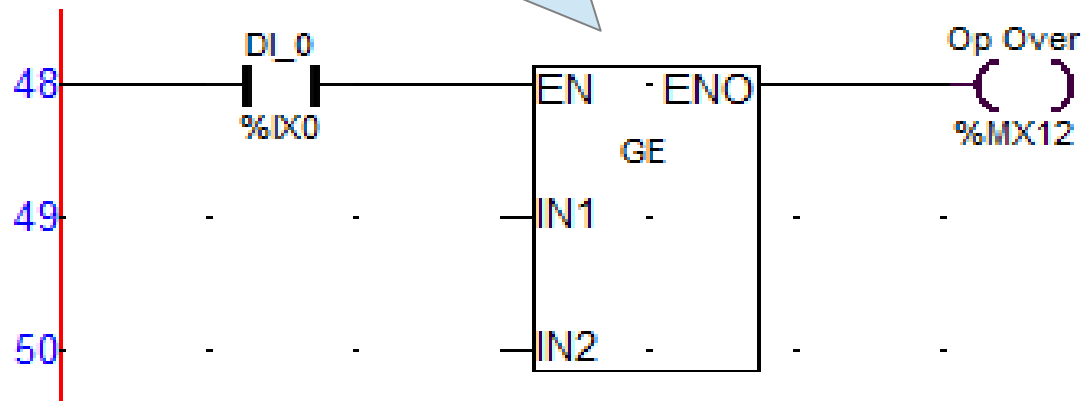


SET AT : This instruction sets a specified value at specified array location



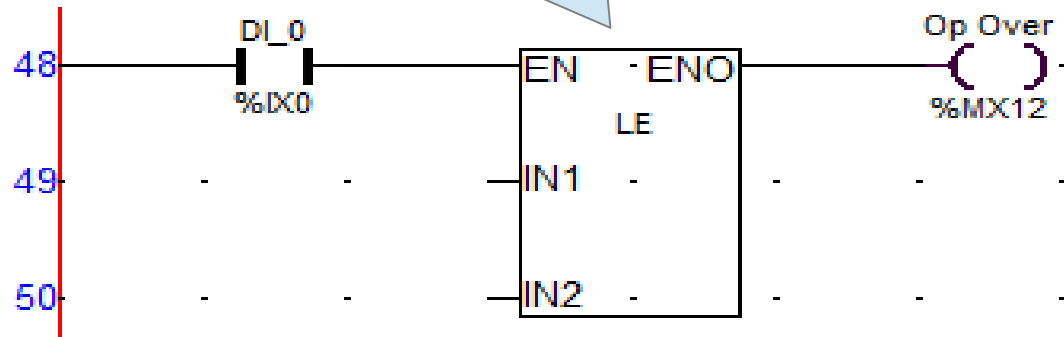
Comparison Functions

GE : Checks if the values of Input variable 1 is greater than or equal to Input variable 2

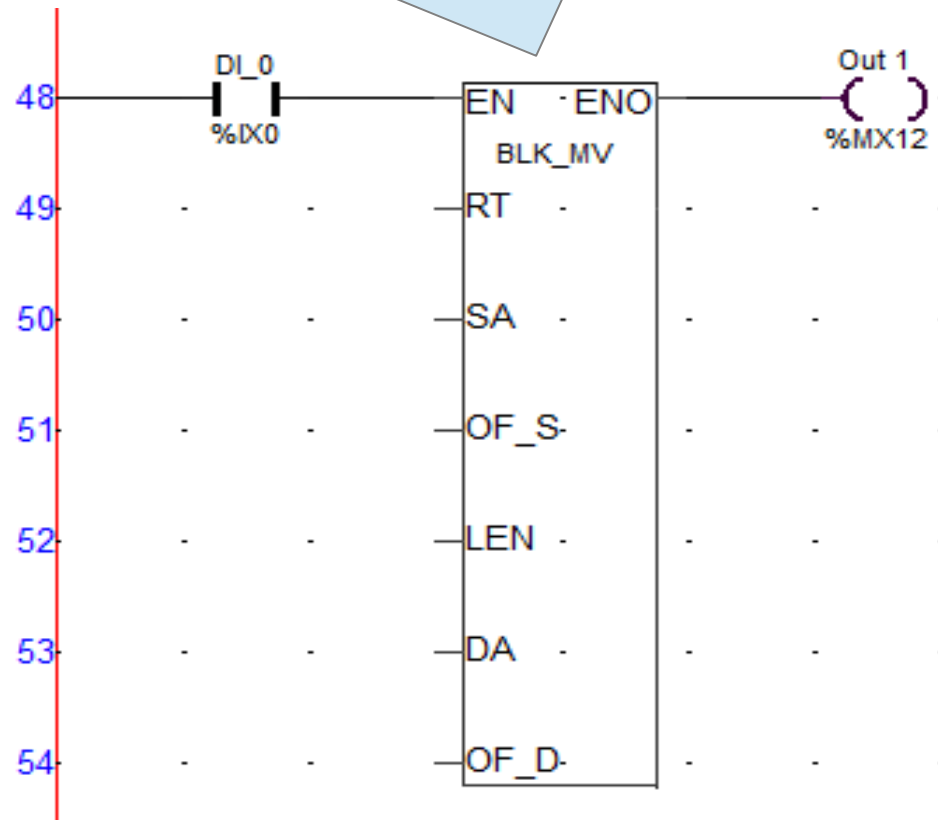


Comparison Functions

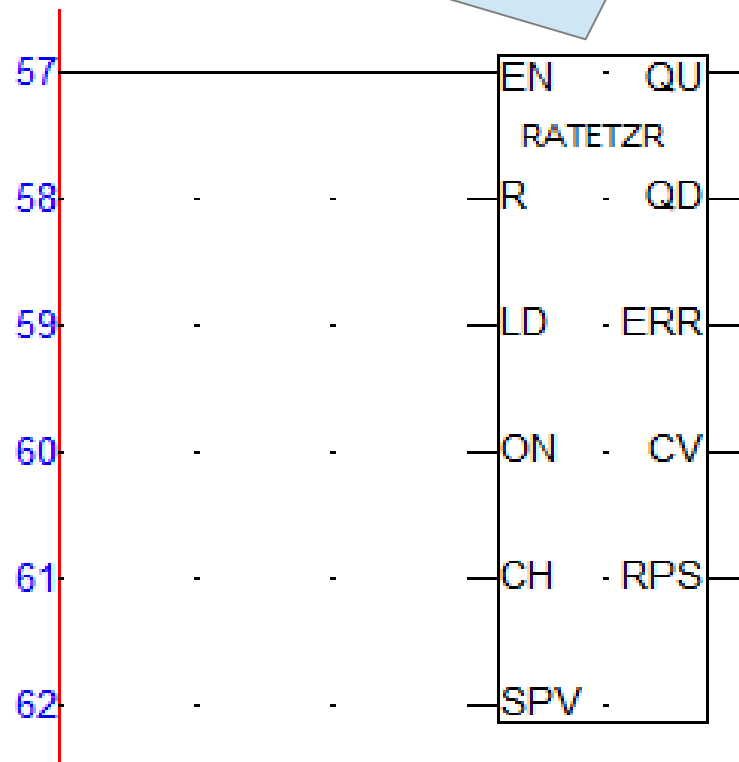
LE : Checks if the values of Input variable 1 is less than or equal to Input variable 2



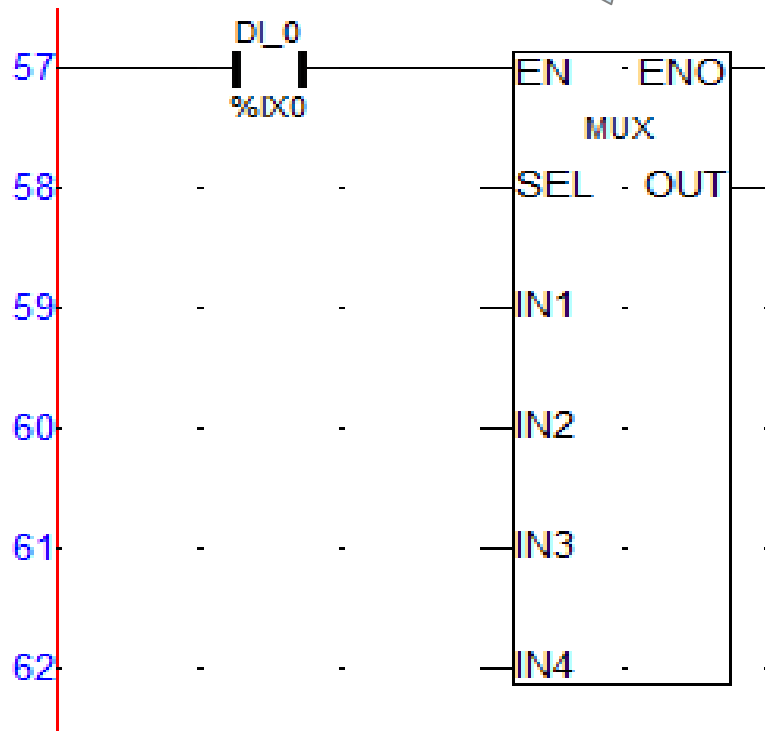
Block Move : This instruction moves the values from a group of registers to another group of registers of the same length



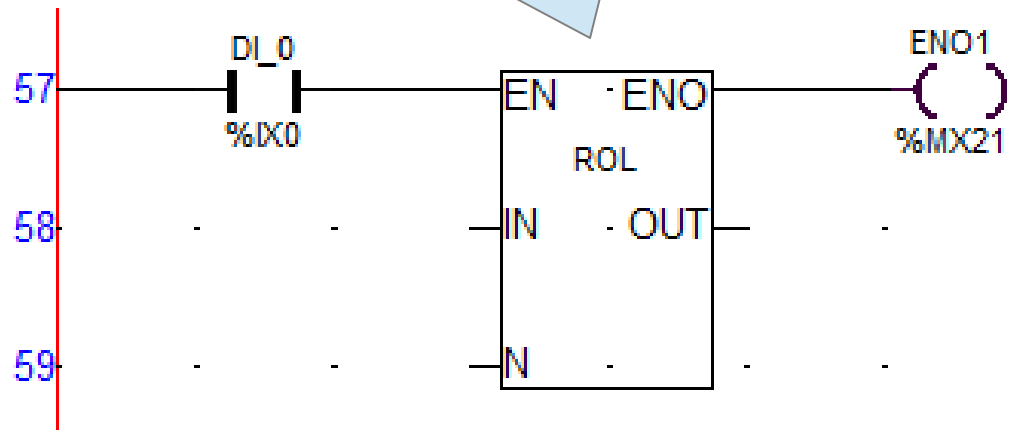
Rate Totalizer : This instruction takes the pulses at the assigned channel input and counts them in the variable assigned at CV pin and generates RPS (pulses per seconds) with 0.01Hz resolution in the variable assigned at RPS pin. Rest of the functions act as a Conventional UP/DOWN counter



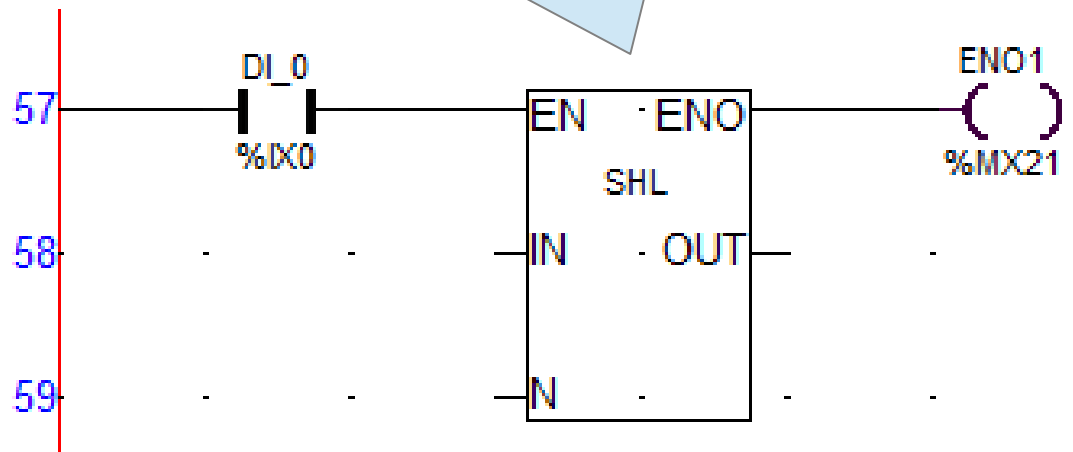
MUX : This Instruction used to selects one of the four values depending on the value of variable at SEL pin



ROL : Rotates the value of input variable by N positions to the left



SHL : Shifts the value of input variable by 'N' positions to the left and the 'N' vacant positions are filled with zeros



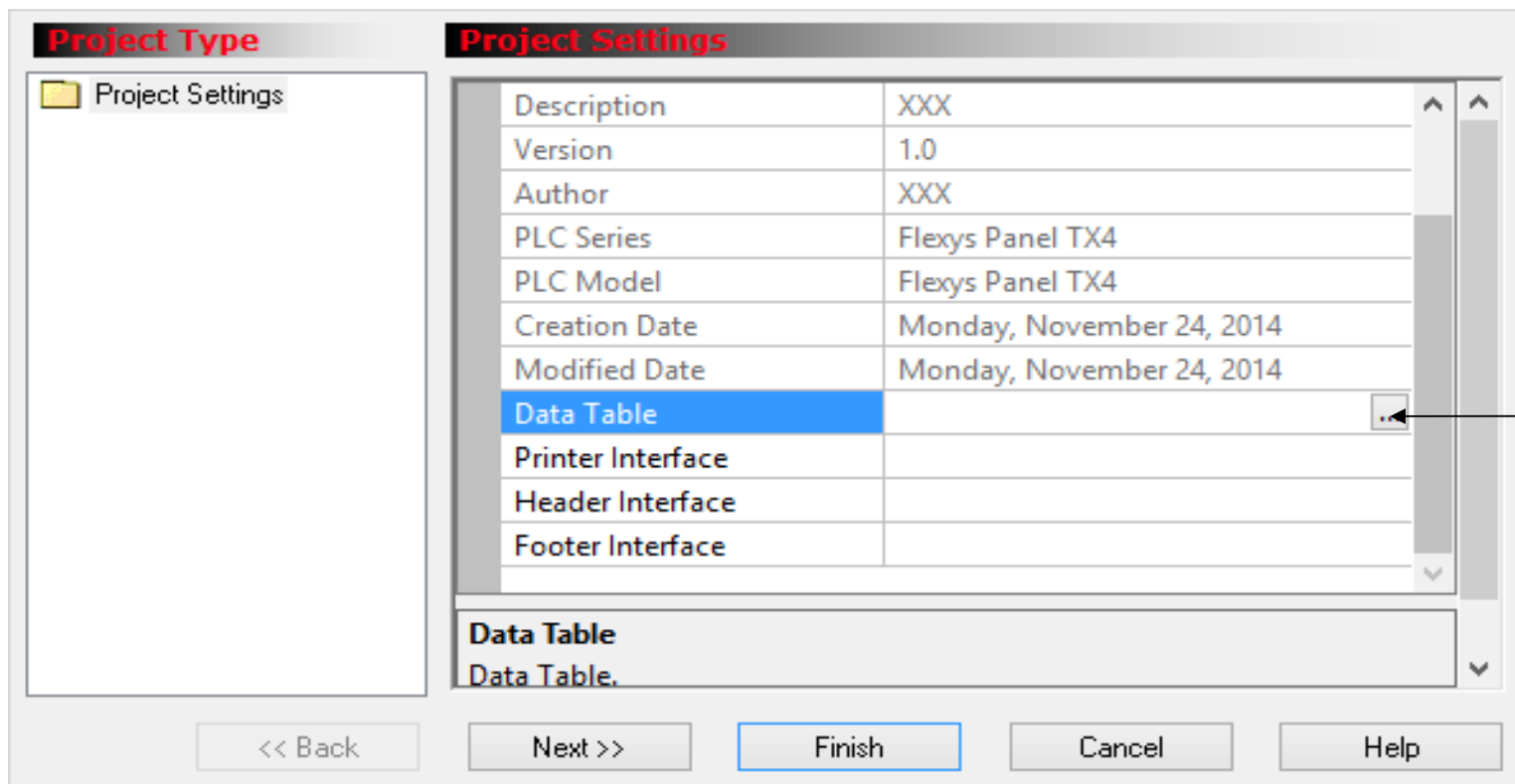
Configuration of serial printer :

1. For configuration of serial printer user must have to define a Data Table first.
2. For defining Data Table go to the HMI Section.



Open HMI

3. Now go to the Settings >> project settings below window will appear. In that select Data Table.



Click on this fig 2.1 will appear

Click ADD →

Enter Table Id →

Click here Fig 2.2 will appear →

TABLE ID	TABLE INFO
1	

OK Cancel Help

Fig 2.1

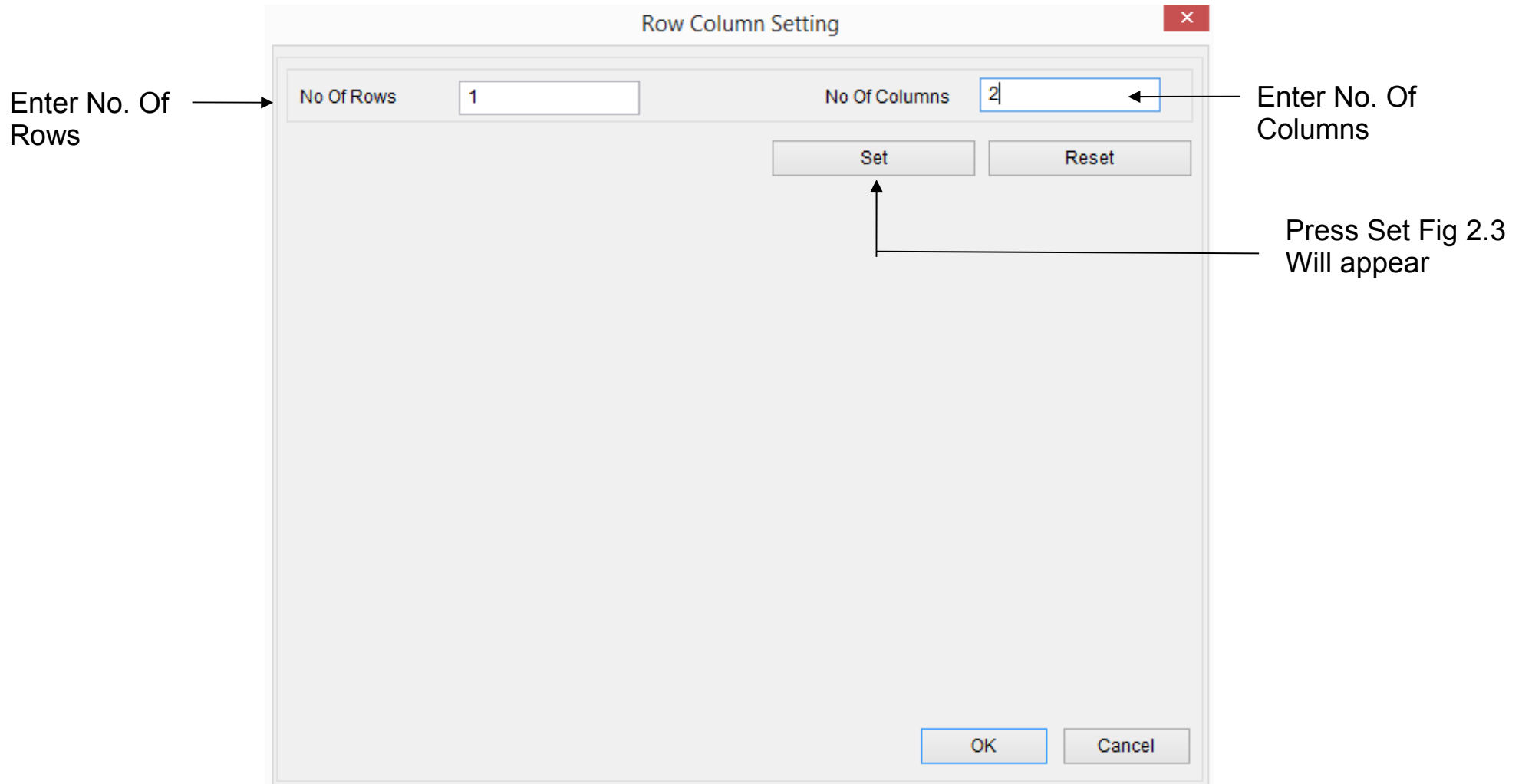


Fig 2.2

No Of Rows No Of Columns

	C1	C2
Column Header		
Column Width	39	39
R1	Sr. No	None

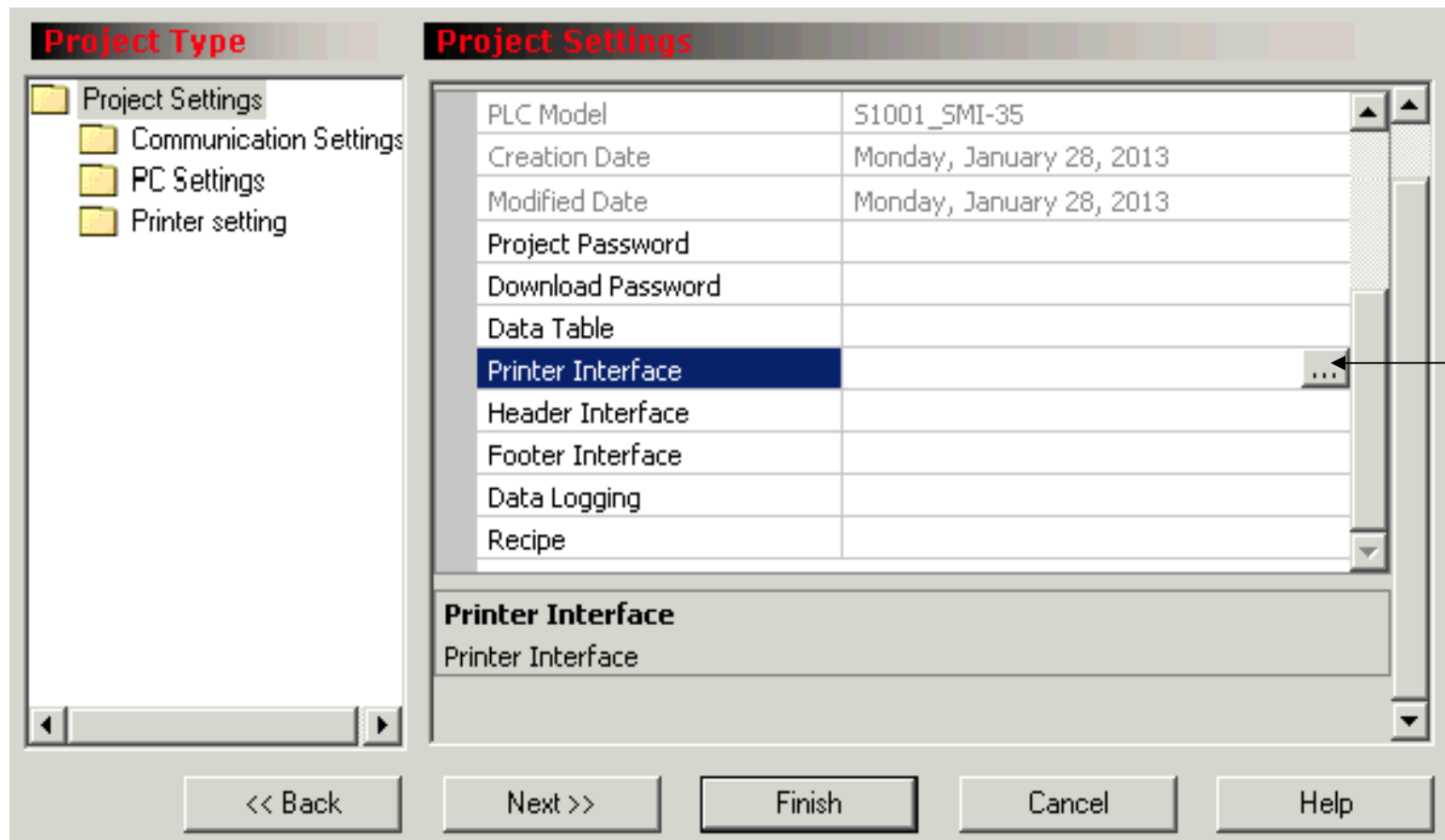
Define Header →

→ Select as per Requirement

OK Click OK

Fig 2.3

4. Now Select Printer Interface option from menu & select serial printer.



The screenshot shows a software window titled "Project Settings" with a "Project Type" pane on the left and a "Project Settings" table on the right. The "Project Settings" table has the following rows:

PLC Model	S1001_SMI-35
Creation Date	Monday, January 28, 2013
Modified Date	Monday, January 28, 2013
Project Password	
Download Password	
Data Table	
Printer Interface	
Header Interface	
Footer Interface	
Data Logging	
Recipe	

Below the table, there is a section titled "Printer Interface" with a sub-label "Printer Interface". At the bottom of the window are five buttons: "<< Back", "Next >>", "Finish", "Cancel", and "Help".

Click Here Fig 3.1
Will appear

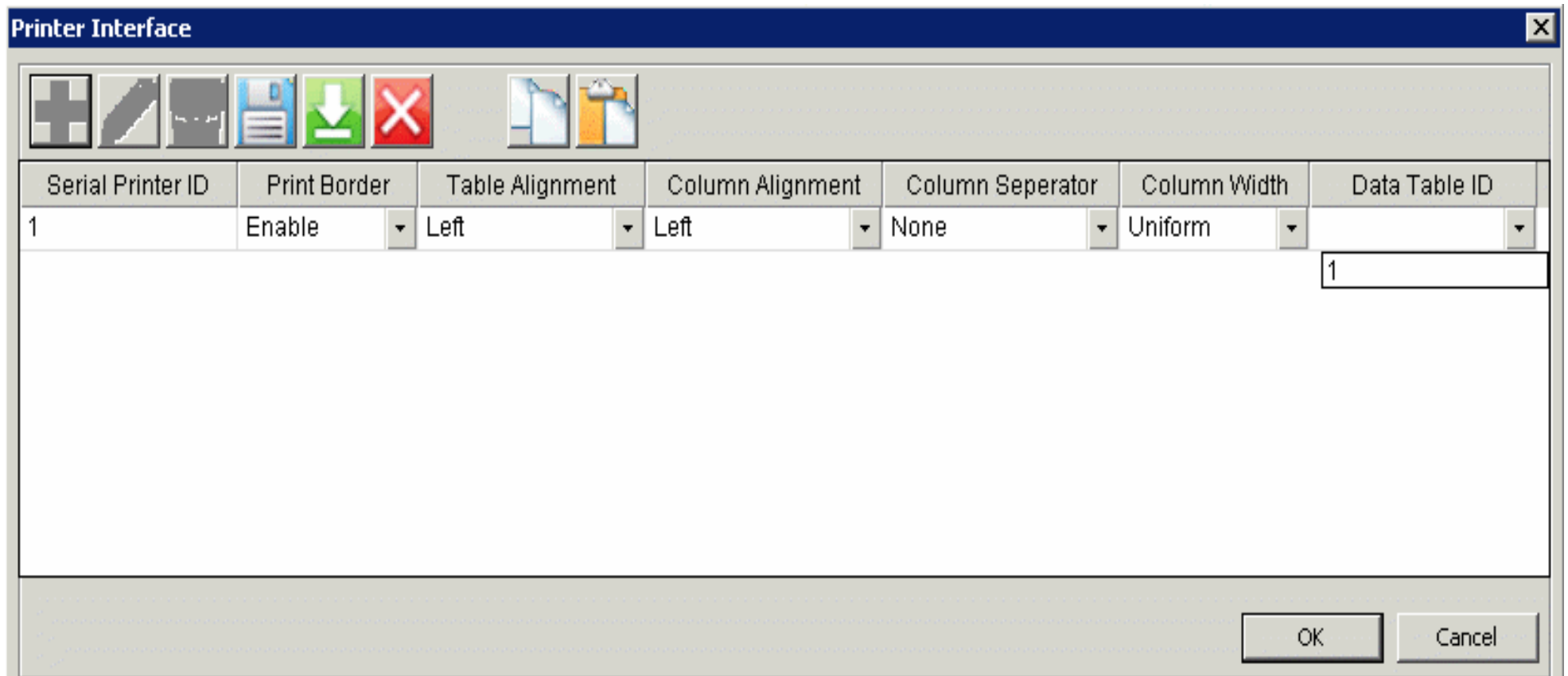


Fig 3.1

1. Select printer ID.
2. Enable or disable print border.
3. Set table alignment of print (Left, Center, Right)
4. Set column alignment of print (Left, Center, Right)
5. Set column separator (Space, Comma, Semicolon or none).
6. Set column width (fixed or variable).
7. Select data table ID that is to be printed.

5. Header Interface

Project Type

- Project Settings
 - Communication Setting
 - PC Settings
 - Card Selection
 - Interrupt Option
 - Debounce Settings
 - Expansion Settings
 - Editor Settings

Project Settings

PLC Model	Flexys Panel TX4
Creation Date	Monday, November 24, 2014
Modified Date	Monday, November 24, 2014
Project Password	
Download Password	
Data Table	
Printer Interface	
Header Interface	
Footer Interface	
Hardware Version	9.0-2
☐ Customize Protocol	☐ YES
Configure Protocol	YES

Header Interface
Header Interface

<< Back
Next >>
Finish
Cancel
Help

Click Here next
window will appear



Header ID	Header Text	Text Alignment	Print Border	Table Alignment	Column Alignment	Column separator	No of Lines	Header Info
1		Left	Enable	Left	Left	None		

+

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OK Cancel Help

1. Select Header ID.
2. Enable or disable print border.
3. Set table alignment of print (Left, Center, Right)
4. Set column alignment of print (Left, Center, Right)
5. Set column separator (Space, Comma, Semicolon or none).

5. Footer Interface

Project Type

- Project Settings
 - Communication Setting
 - PC Settings
 - Card Selection
 - Interrupt Option
 - Debounce Settings
 - Expansion Settings
 - Editor Settings

Project Settings

PLC Model	Flexys Panel TX4
Creation Date	Monday, November 24, 2014
Modified Date	Monday, November 24, 2014
Project Password	
Download Password	
Data Table	
Printer Interface	
Header Interface	
Footer Interface	
Hardware Version	9.0-2
☒ Customize Prototocol	☐ YES
Configure Prototocol	YES

Footer Interface

Footer Interface

<< Back

Next >>

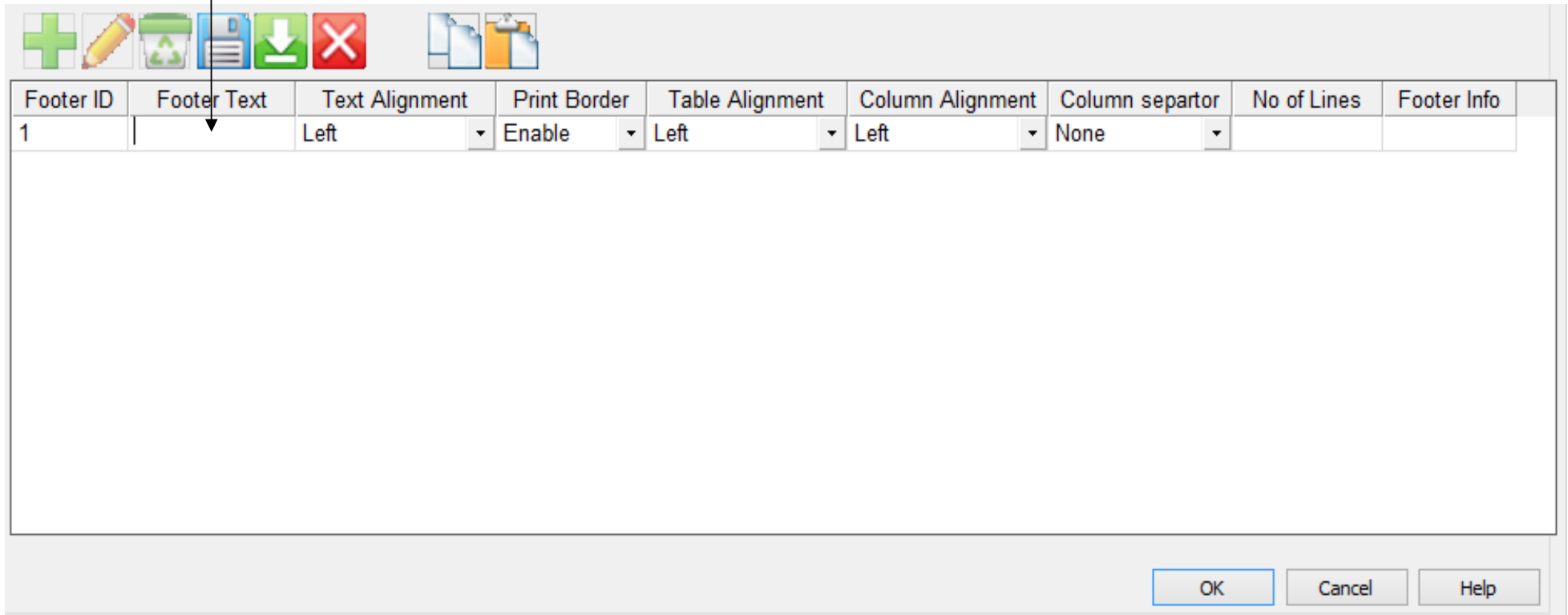
Finish

Cancel

Help

Click Here next
window will appear

Enter your Footer



Footer ID	Footer Text	Text Alignment	Print Border	Table Alignment	Column Alignment	Column separator	No of Lines	Footer Info
1		Left	Enable	Left	Left	None		

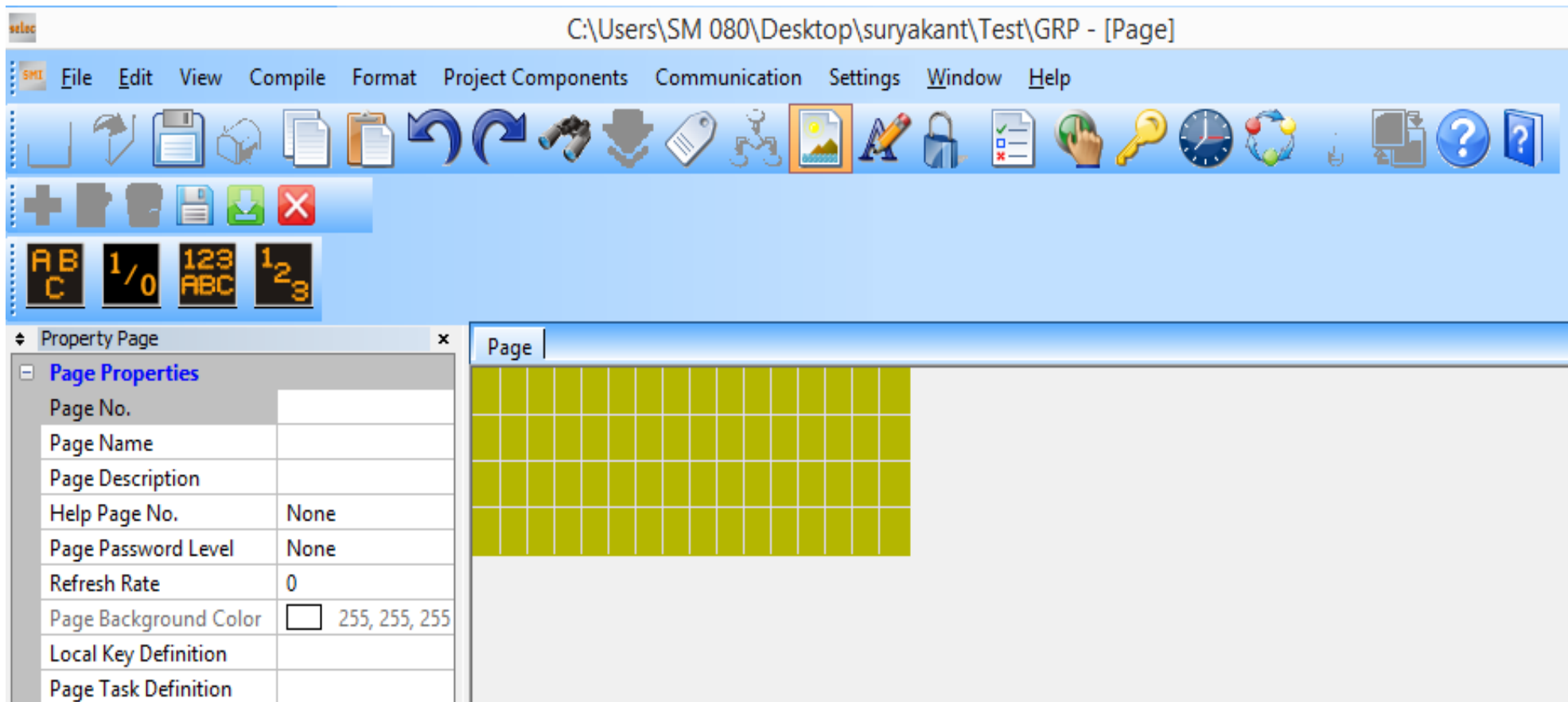
1. Select Footer ID.
2. Enable or disable print border.
3. Set table alignment of print (Left, Center, Right)
4. Set column alignment of print (Left, Center, Right)
5. Set column separator (Space, Comma, Semicolon or none).

Starting HMI :



Click this tab to begin SMI

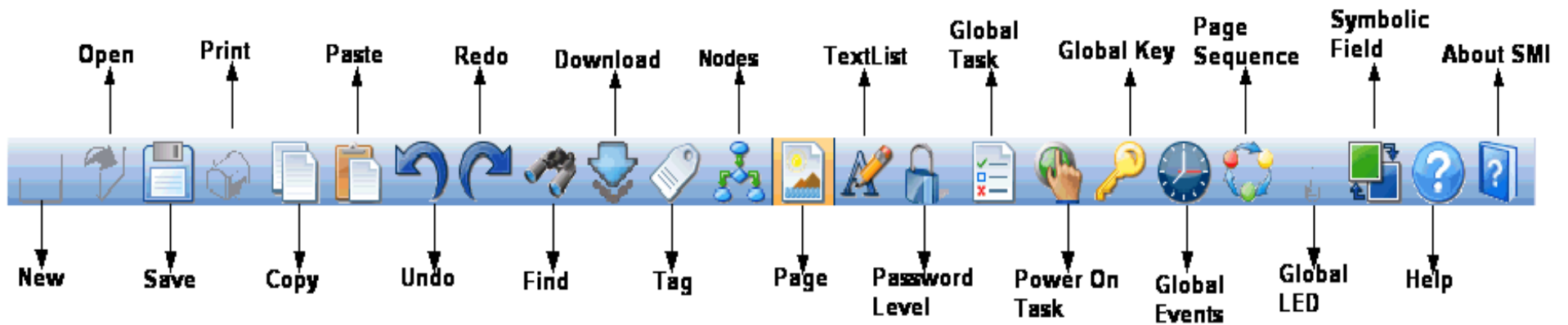
The following screen will appears



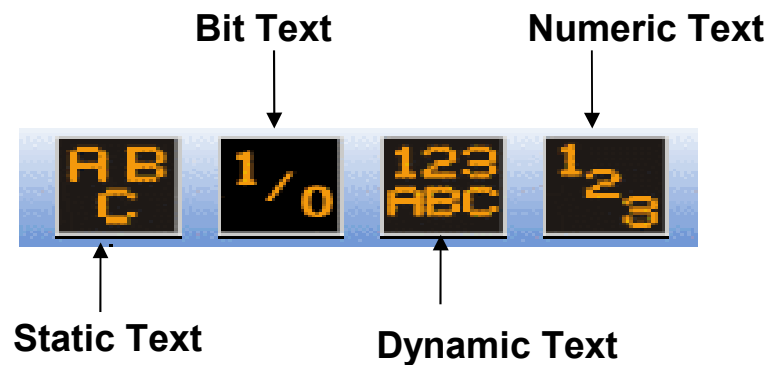
It includes the following :

Toolbars

1. Standard toolbar :

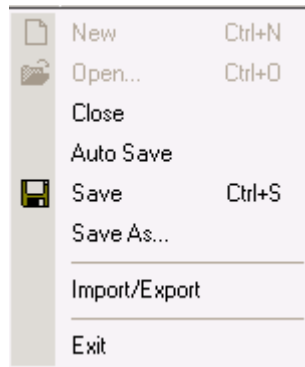


2. Object toolbar :

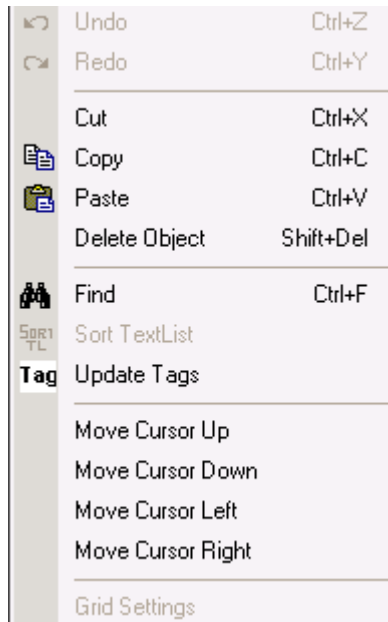


Menu :

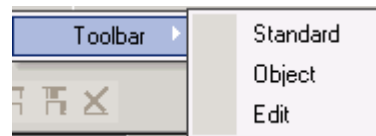
1. File



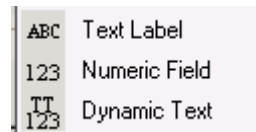
2. Edit



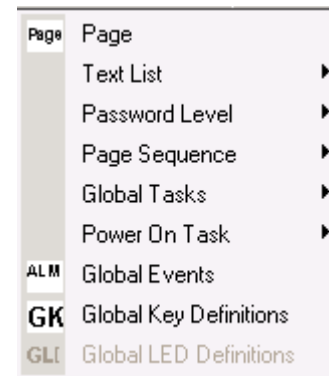
3. View



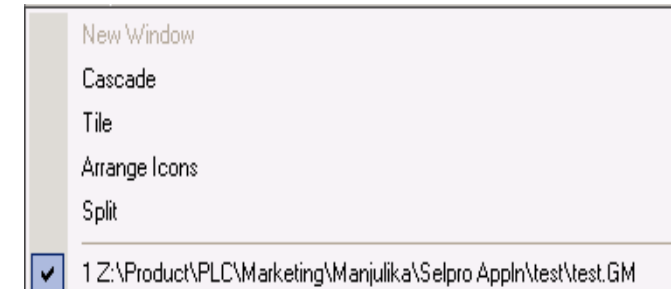
4. Insert



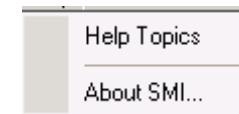
5. Project component



6. Window



7. Help



Defining Page :

1.

Define Page →

Define Name →

Define password →

Property Page	
Page Properties	
Page No.	1
Page Name	
Page Description	
Help Page No.	None
Page Password Level	None
Refresh Rate	0
Page Background Color	<input type="color"/> 255, 255, 255
Local Key Definition	
Page Task Definition	

Page

Display Layout of PLC

Defining Page :

1.

Static Text

Numeric Text

Define Page →

Define Name →

Define password →

Property Page

Page Properties

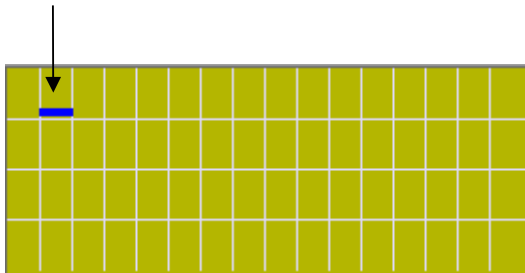
Page No.	1
Page Name	
Page Description	
Help Page No.	None
Page Password Level	None
Refresh Rate	0
Page Background Color	<input type="color"/> 255, 255, 255
Local Key Definition	
Page Task Definition	

Tags

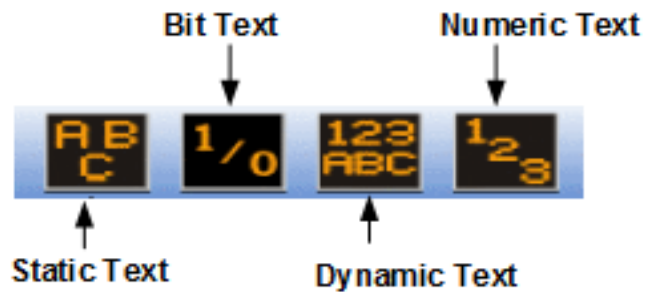
4X16 Character Display

To insert text and Numbers in the SMI layout.

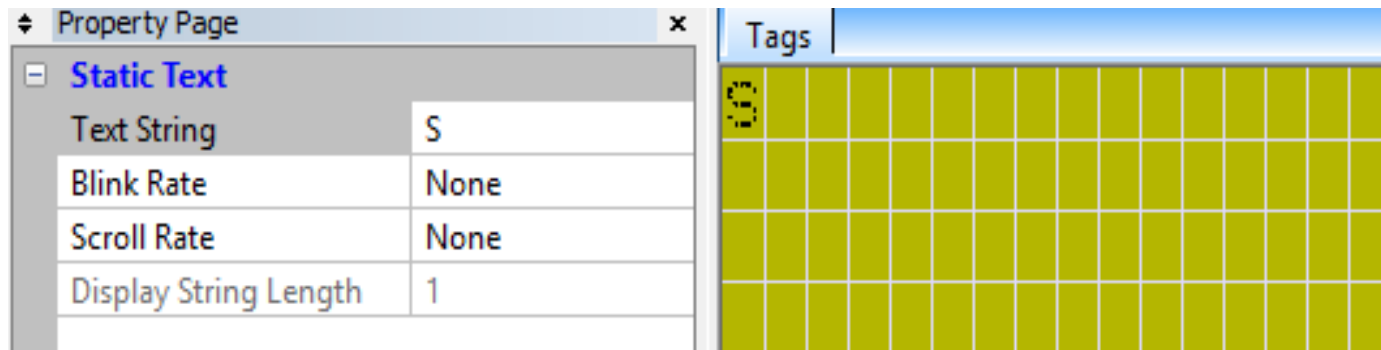
1. Place the Cursor Where Text or No. is to be inserted.



2. To insert text as per requirement select Static text, Bit text, Dynamic text or Numeric text from the object toolbar.



3. Enter text string which u want.



4. Place the Cursor Where numeric text to be inserted.

Select Numeric tag

The screenshot shows the 'Property Page' dialog box for 'Numeric Text' and the 'Tags' panel. The 'Tag' field is set to 'GVar0'. The 'Tags' panel shows a grid of tags with the first five cells containing numeric tags.

Numeric Text	
Tag	GVar0
Leading Zeros	☐ Yes/No
Visible Digits	4
Resolution	1
Minimum Value	-127
Maximum Value	127
Mul/Div Factor	*1
Read/Write	☐ Yes/No
Blink Rate	None
Display Format	Decimal
Rounding	1
String Alignment	Right Align
Array Index	Select Index

The 'Tags' panel shows a grid of tags. The first five cells contain numeric tags, and the remaining cells are empty.

Assigning Key Tasks :

Property Page

Page Properties

Page No.	1
Page Name	
Page Description	
Help Page No.	None
Page Password Level	None
Refresh Rate	0
Page Background Color	255, 255, 255
Local Key Definition	...
Page Task Definition	

Tags

Input	=	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$			

Click here fig 4.1 Window will appear

Assigning Key Tasks :

Key selection

Local Key

Key Definition: Single Key

Task: Accept Data Entry

Task Type: Key Press

Key 1: 1

ADD task

Task added successfully

KEY PRESS	KEY PRESSED	KEY RELEASED
Accept Data Entry		

OK Help

Select Task

Select Key

Select Task type

Click Ok

Fig 4.1

Global Key Definition :



Select Global Key Definition Toolbar

After selecting global key Fig 4.2 will be appear

Assigning Key Tasks :

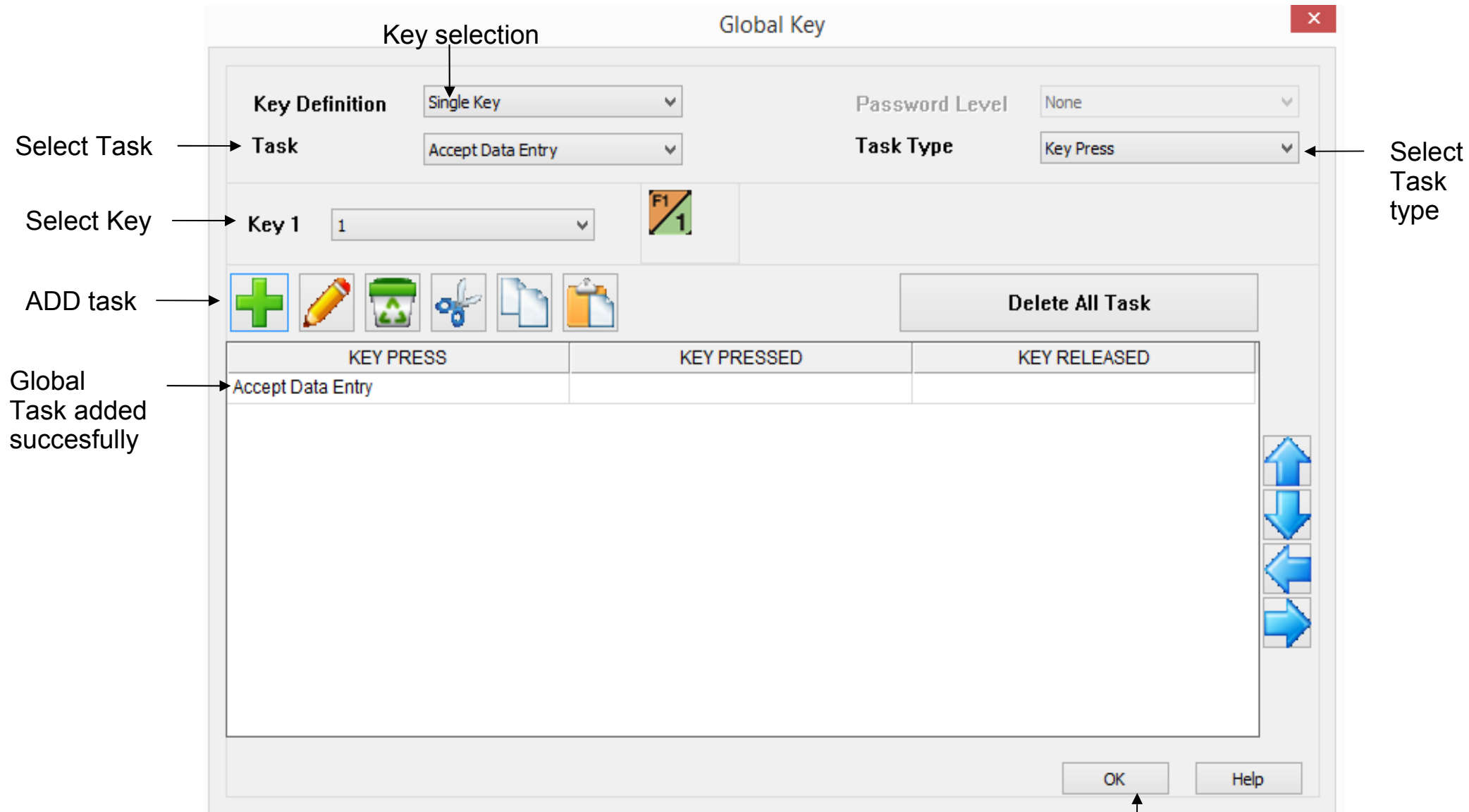


Fig 4.2

Click Ok

Defining Global Task :



← Select Global Task Toolbar



← Press Add Variable Toolbar from Edit Toolbar

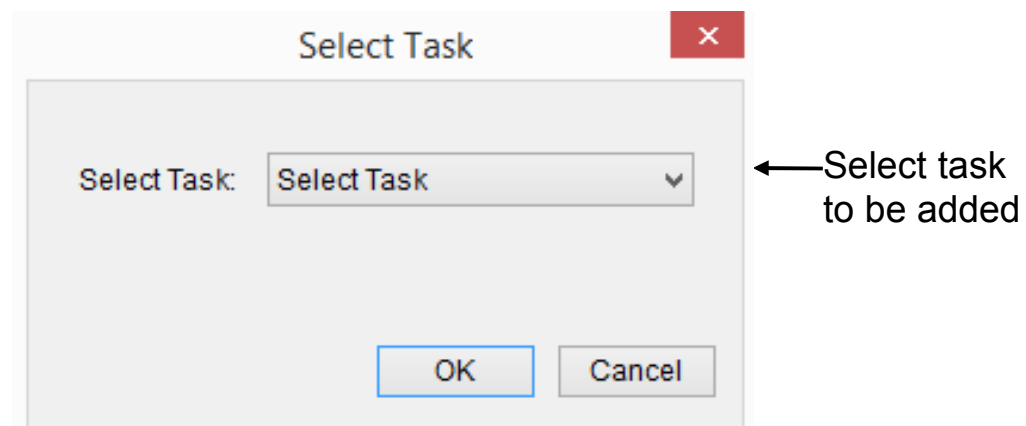
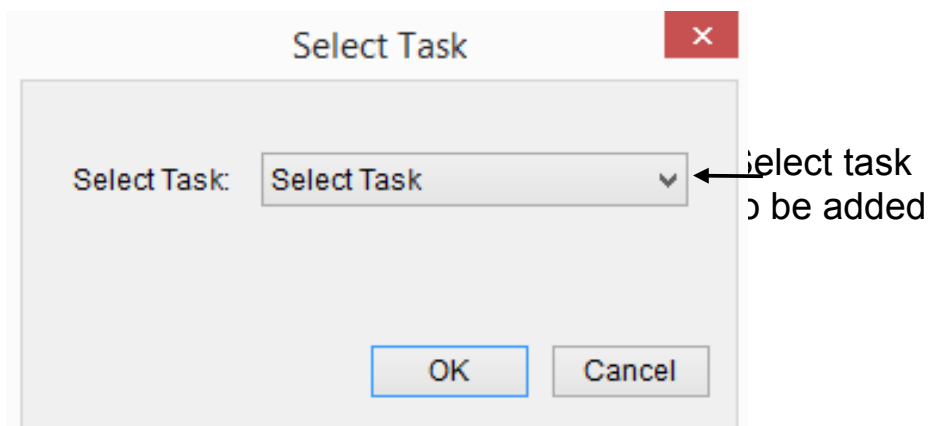
Defining Power On Task :



← Select Power On Task Toolbar



← Press Add Variable Toolbar from Edit Toolbar



Defining Alarms (Global Event) :



← Select alarm toolbar below window will appear

Event Number

Event Type First in First Out

Tag Select Tag

Operation Select

Tag Select Tag

Page To Display Select Pag

Task Type On Event

Task Select Task

Task Configuration

	ON EVENT	ON ACKNOWLEDGE	ON RESET

Help

Save

Save Exit

Cancel

Password levels ;

1. To protect against unwanted access to a page during transition.
Click on



2. After clicked on this below window will appear

ADD password

Sr.No	Password Level	Type	Password	Description
-------	----------------	------	----------	-------------

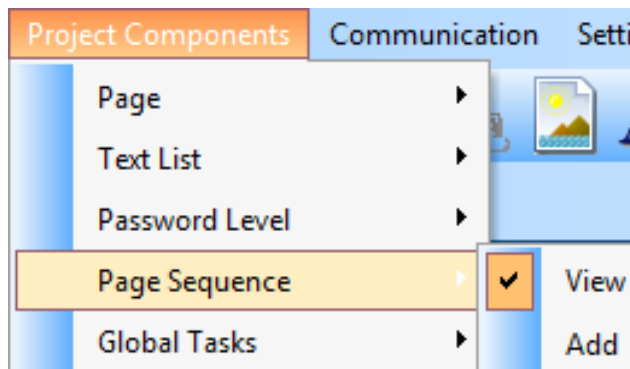
3. After clicked on this below window will appear

Sr.No	Password Level	Type	Password	Description
1	1	Constant		

If password Type is Constant then
Enter your password

Page Sequence :

1. Click on 
2. Or go to project components



3. The following screen appears

Sr.No	PAGE SEQUENCE NAME	SEQUENCE
1	1	

4. Make page sequence settings

Page Sequence Start/Stop ▼

Start Page ▼

Stop Page ▼

OK Cancel

Tag :

This is an option that helps us to update Tags.

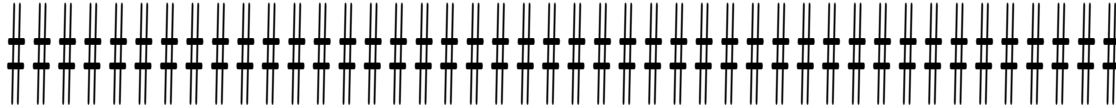
On clicking



All new tags (variables added in the ladder diagram) gets updated

Tasks list which is supported in SMI

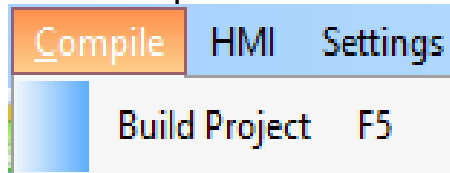
|||||
|||||



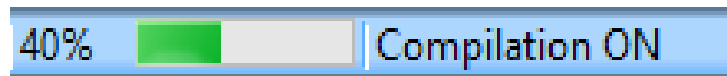
After configuration of the HMI click on Save and Exit and finally save the SMI project
Now go to the SELPRO Ladder diagram and save the entire Project.
Once saving of project is done we have to Compile the project in order to download it in the Hardware

Compilation :

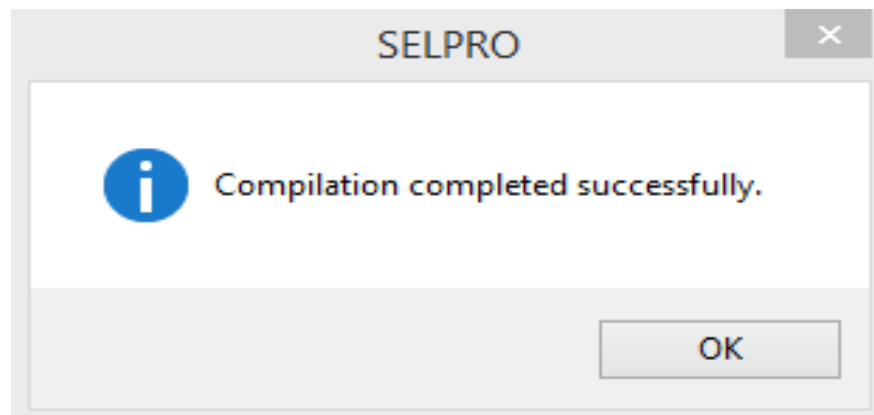
1. Click on Compile and then Build Project



2. The following dialog box appears



3. Click on OK after compilation is complete



Download :

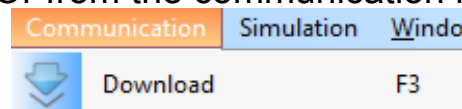
After compilation we download the project in the hardware. Download happens in two ways.

1. From the communication Toolbar



Download

2. Or from the communication menu



3. After clicking on the Download The following dialog box will appears

Unit ID → Slave ID

Communication Settings

Com Port	COM1	Password		☐ Remember Password
Baud Rate	19200	Data bits	8	
Parity	None	Stop Bits	2	

☐ Download source files (For UPLOAD)

Download

Password of the Hardware if applicable

Simulation :

1. Offline Simulation: This helps us to simulate the project without connecting the target Hardware

Click on the Offline simulation button from the Communication toolbar



Offline simulation

For Offline simulation we do not need to download the project, we only have to compile.

2. Online simulation: This is the simulation that takes place with the Hardware connected .

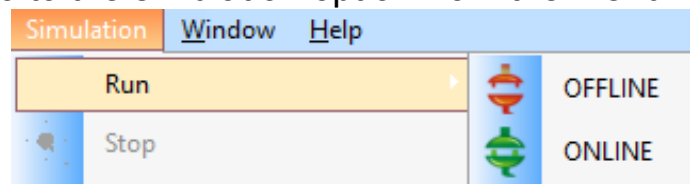
Click on the Online simulation button from the communication toolbar.



Online simulation

Simulation will take place only after compilation and download of the project.

3. We can also go to the simulation option from the menu



To stop Simulation :

1. We can stop simulation by clicking on the STOP button from the communication toolbar.



Stop button

2. To view I/O status



Click to view I/O status →

INPUT	0	1	2	
OUTPUT	0	1	2	

3. To view and add Watch Window



View Add

4. The following window appears

Bit Var		Var	
Bit Variable Name		Current Value	

Frequently asked question :

Q1 How to Install and Download 'Seperate Downloader'?

Ans--

Step 1:Double click on Seperate Downloader



Seperate
Downloader

Step 2:Double click on Downloader



Downloader

Step 3:It will show the window given below

Downloader

Select Product

Select Hardware Version

File to Send

Slave ID

Communication Settings

Com Port Password ☐ Remember Password

Baud Rate Data bits

Parity Stop Bits

Select following Parameters

- Select Product : Select the PLC model in which user want to download
- Selec Hardware Version : Select the version from the list which should match with PLC
- File to Send : User needs to select the path where the program is saved
- Slave ID : Slave ID of the PLC (Typically it is 1)
- Com Port : Select the com port when Downloading cable is connected to the USB /Serial Port of PC or Laptop

To check the Com Port:

Right click-My Computer Short Cut - Manage-Device Manager-com port (select) OR
Start – Control Panel – System/Device Manager - Com Port (select)

Baud rate : 19200

Data bits : 8

stop bits : 2

parity : None

Step 4: Click on Download

Q.2 Whether 'SELEC' PLC has Printer Interface?

Ans--

Yes, It is there in Selpro Software Version 5.3

'SELEC' PLC supports following Printers:

EPSON: LX-300 & LX-300+

NOTE: All SELEC PLC model has printer facility

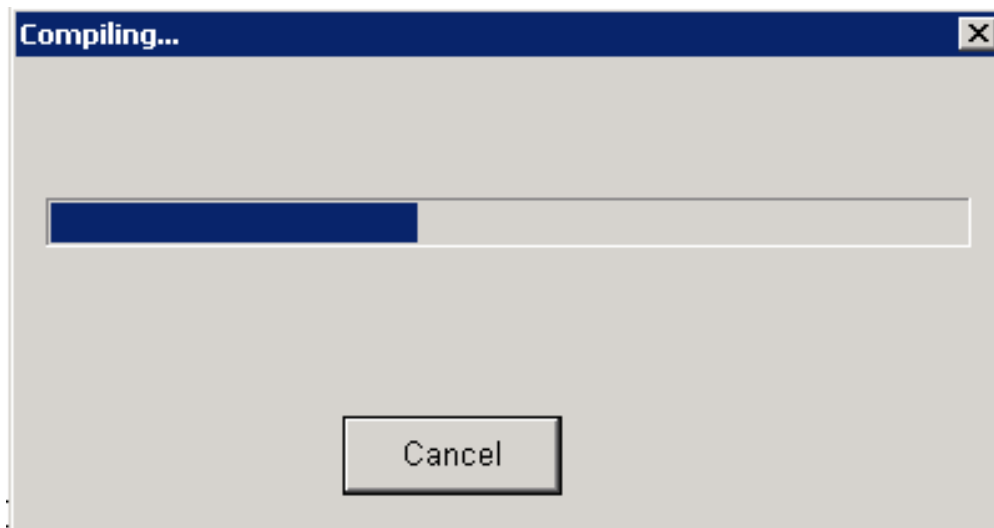
Q.3 How to Download program into the Hardware and its settings?

Ans--

Steps to download the program as follows

If the logic is ready then

1. Check all the connections properly especially the USB to RS232/ RS 485 Cable is properly connected or not.
2. Compile the program to save the changes applied (shortcut key press F5)



3. Click the download symbol (shortcut Key press F3)
the following window will open

Download

Password Slave ID

☐ Remember Password

Communication Settings

Com Port Baud Rate

Word Parity

Stop Bits

Select following Parameters

- Select the com port when Downloading cable is connected to the USB port of PC or Laptop My computer-right clicked-manage-device manager-com port (select)
- Baud rate : 19200
- word : 8
- stop bit : 2
- parity : None

3. Click Download button.

Q.4 Check Points for Bootloader Version Mismatch Error?

Ans-

1. Check whether there is loose connection
2. Check the bootloader version of PC/Laptop and PLC. It should be same.
If it is different, then
In Standard Toolbar, Go to Settings – Click on Project Settings – Hardware Version
Select the required version and click on OK
3. Put the PLC in 'No Ladder' and then download
4. Check ComPort of PC/Laptop
5. Check the Downloading Cable, whether it is working properly or not.
6. Check whether PLC is switched ON or OFF
7. If you are using RS232-RS485 Converter, then check whether it is ON/OFF, It should be ON

Q.5 How to Configure Analog Input in MM303X?

Ans--

In MM303X series, Analog channels are Inbuilt. They are in V/I format. So in Ladder programming Analog Block is not available. i.e. AIN Block, instead of the Block we are using Direct Address **ADC0** and **ADC1**.

At this address we can directly read the Analog value.

Before start of calibration, user has to check for the jumper settings on the PLC, which is at the back panel of the PLC.

Q.6 Method to Download the program in PLC in "No Ladder"?

Ans--

In hardware, sometimes Downloading setting get change therefore downloading process get fails everytime. To restore the default downloading setting we put the PLC in No ladder and carried out the downloading process.

Steps to go PLC in **"NO ladder"**

For MM301X, Flexys and MM303X Series :

- Turn off the PLC.
- press the ESC key and then turn ON the PLC.
- After getting the display **"NO Ladder"** release the ESC key.

For MM101X Series :

- Turn off the PLC.
- press the F2 key and then turn ON the PLC.
- After getting the display **"MM VER"** release the F2 key.

Q.7 How to check the Bootloader Version of PLC?

Ans--

For MM301X series And MM3030:

On PLC hardware,press ESC key.It will show the Internal MMI list.As shown below:

- | | |
|----------|----------|
| 1 – DI | 5 – VAR |
| 2 – DO | 6 – DBG |
| 3 – SYS | 7 – DNLD |
| 4 – COMM | |

Now,

Press 3 to check Bootloader version

This version no. Should match with the Bootloader version of ladder

If not 'Bootloader version mismatch' error will occur,while downloading.

For MM101X series:

On PLC hardware,Press ENT

In Display 2,it will display Bootloader version of PLC

Training to sales :

Date		
Company Name		
Contact Person with contact details		
Application		
Sales Engineer		
Product		
Digital Inputs	Type	Description
I0	Pressure switch	What will happen when input ON? What will happen when input OFF?
I1	Proximity sensor	What will happen when input ON? What will happen when input OFF?
I2	Limit switch	What will happen when input ON? What will happen when input OFF?
I3	Photo sensor	What will happen when input ON? What will happen when input OFF?

Digital Outputs	Type	Description
O0	Contactor	At what condition output will be ON and at what condition OFF
O1	Heater	At what condition output will be ON and at what condition OFF
O2	Pump	At what condition output will be ON and at what condition OFF
O3	Valve	At what condition output will be ON and at what condition OFF

Analog Inputs	Type	Display Range	Description
Channel 0	TC	Actual	Control or indication? If control then in heat mode or cool mode and linked to which output DO or AO
Channel 1	PT100	Actual	Control or indication? If control then in heat mode or cool mode and linked to which output DO or AO
Channel 2	Volt (0-10V)	0 to 500 RPM with resolution	Control or indication? If control then in heat mode or cool mode and linked to which output DO or AO
Channel 3	Current (0-20 ma)	0 to 16 bar with resolution	Control or indication? If control then in heat mode or cool mode and linked to which output DO or AO
Channel 4	Load cell	0 to 1000 Kg with resolution	Control or indication? Linked to which output DO or AO

Note : Heat Mode means Process values increases towards set point and cuts off the output.

Cool Mode means Process Value decreases towards set point and cuts off the output

Please mention hysteresis in case of ON-OFF control mode.

Analog Outputs	Type	Description
Channel 0	0-10V	Control? If yes then against which analog input and in what mode i.e. PID or retransmission
Channel 1	0 – 20 mA or 4 – 20 mA	Control? If yes then against which analog input and in what mode i.e. PID or retransmission

Program sequence example :

Auto Mode :

- when Auto Input is ON then process will be run in Auto Mode.
- In Auto mode when PLC receives Command from Start push button then Main dry gear box chain, Infeed conveyor, Valve 1 & Valve 2 will be ON.
- When Tank 1 & Tank 2 level will be achieved then respective valve will be OFF.
- As soon as Tank 1 level is achieved and Valve 1 is OFF then steam valve will be ON.
- When tank 1 temperature reaches the set point (50 deg C) at that time steam valve will be OFF & Pump 1 will be ON. Here time delay will start (fix 6 min).
- After 6 min of delay, Pump 2 will be ON.
- Here once again delay time (6 min) will start.
- After this delay, Blower will be ON.
- Once Pump 1, Pump 2 & Blower ON then they will remain ON.
- When Level is low then respective Valve will be ON again.
- If temperature reaches 60 deg C then at that time it will by pass the level switch 1. Now Valve 1 will be ON again to bring the temperature down. Valve 1 will cut off when temperature reaches 50 deg C.

Manual Mode :

- when Manual Input is ON then process will be run in Manual Mode.
- Trough HMI Respective Output will be On