

Appendix. Getting Started

1. Edit a Main Screen	A-2
1-1. Create a Main Screen	A-2
1-1-1. Create a Function Key Tag	A-3
1-1-2. Create a Numeric Tag	A-6
1-1-3. Create a Lamp Tag	A-8
1-2. Simulation	A-10
A. GE-Fanuc 90-30[SNP-X] Series	
1. Edit a Link Editor	A-13
2. Edit a Project Manager	A-15
3. Setup a PMU hardware	A-17
4. Edit a Program in PLC	A-20
5. Cable Connection for serial Interface	A-21
B. Allen-Bradley PLC Series	
1. SLC500 PLC CPU Connection	A-22
1-1. System Configuration	A-22
1-2. Cable Connection	A-22
1-3. SLC500 PLC Setup	A-22
1-4. PMU Setup	A-23
2. PLC-5 Connection	A-24
2-1. System Configuration	A-24
2-2. Cable Connection	A-25
2-3. PLC-5 PLC Setup	A-25
2-4. PMU Setup	A-25
3. PLC Address	A-27
C. Modicon PLC Series	
D. Siemens PLC Series	
S5/S7 Series	
E. OMRON PLC Series	

Appendix. Getting Started

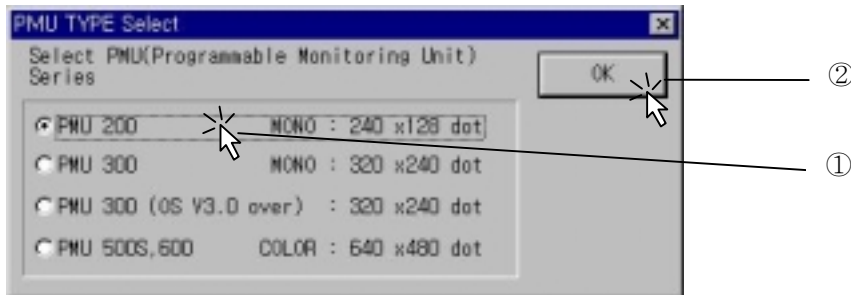
1. Edit a main screen

1-1. Create a main screen

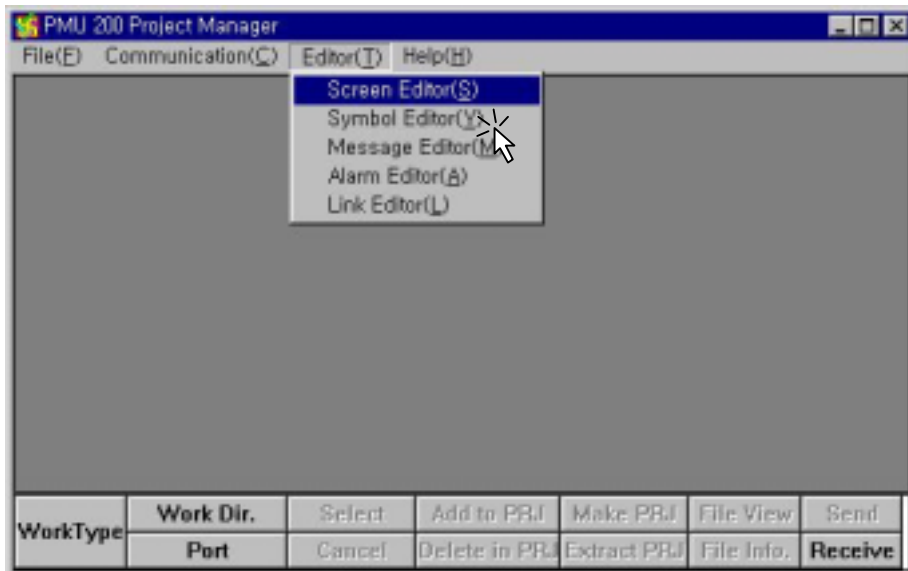
When you install PMU-MASTER software, 6 kinds of file managers will be created in Program group of Start menu.

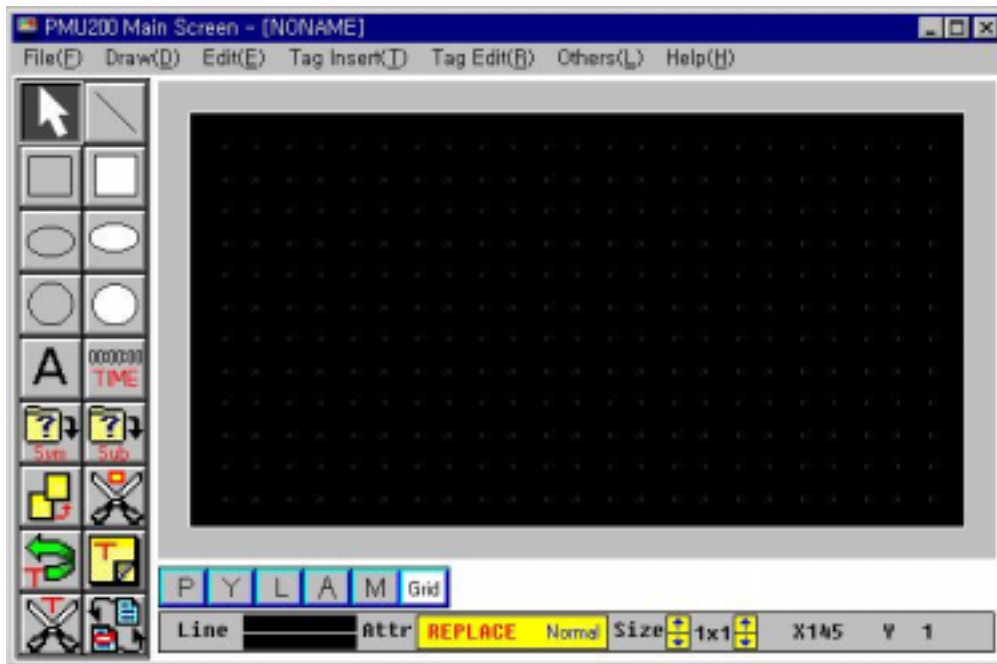


- ◆ Select Project Manager in the PMU-MASTER Program group.
- ◆ Select PMU type and click OK button.
(You can select PMU type later by selecting **File - Change PMU Type** menu in the Project Manager)




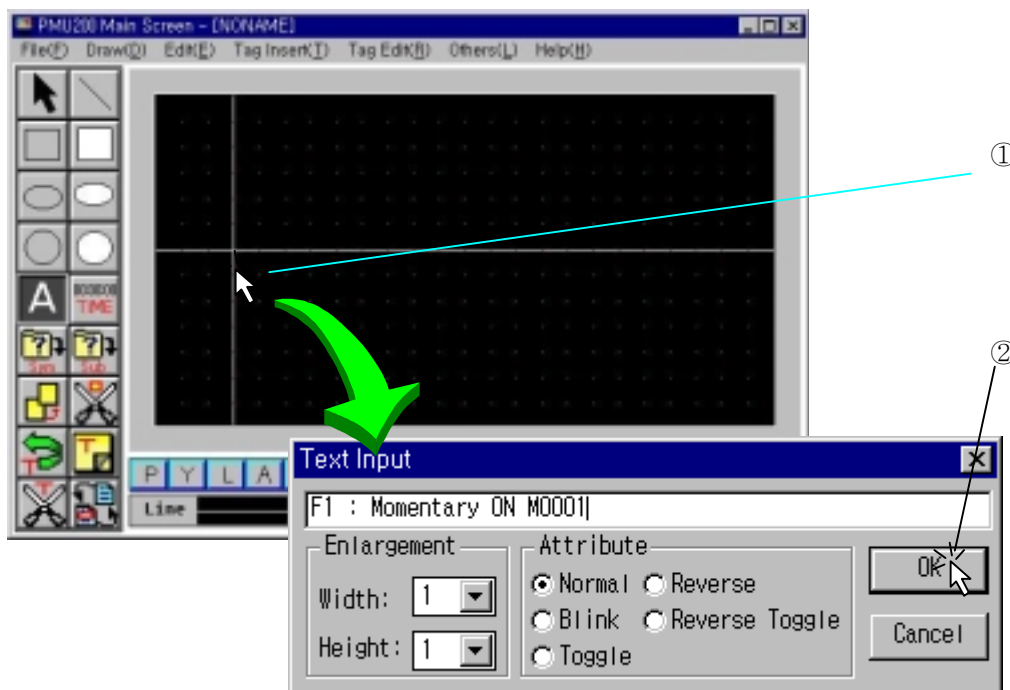
- ◆ Select **Editor-Screen Editor** in the full down menu to create a drawing file.



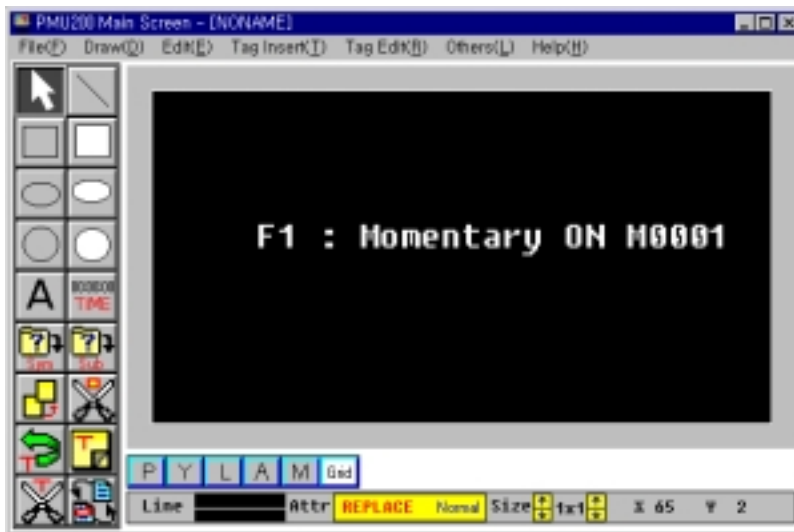


1-1-1. Create a Function Key Tag

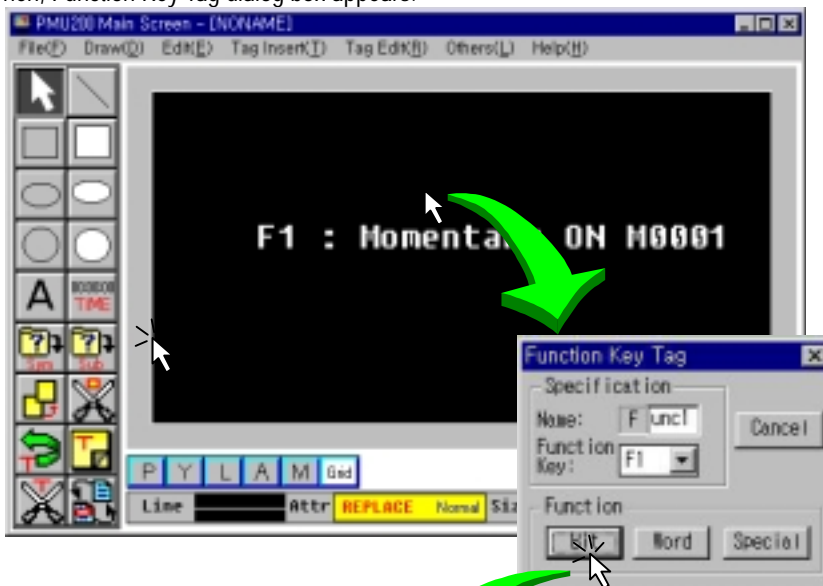
- ◆ Select **Text** menu in **Draw** menu or **Text** tool () to insert text.
- ◆ Insert text after clicking a mouse.



Appendix. Getting Started

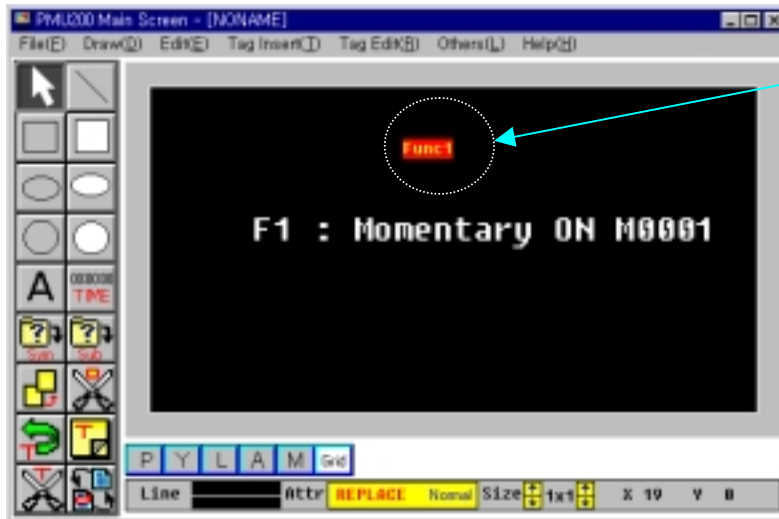


- ◆ Select **Tag Insert-Function Key** in the full down menu.
- ◆ Place the direction icon of the function key tag on the main screen and click a mouse.(Position does not matter) Then, Function Key Tag dialog box appears.



- ◆ After entering a name of the Function Key Tag, select function key.
- ◆ Click **Bit** button(You can select Bit, Word or Special button)

- ※ Tag Name : The initial letter begins as 'F' and you can enter the name up to 5 characters(English, Numeric number) including initial letter.
- ◆ Enter buffer number and bit position of selected buffer. Then select operation method.
 - ※ User defined buffer number begins from 40(to 1024). (Please refer to User's Manual – [Appendix A-3])
This buffer number should be matched with PLC memory address. To communicate with PLC, you need to setup the *Link Editor* in the Project manager.
- ◆ Click OK button.

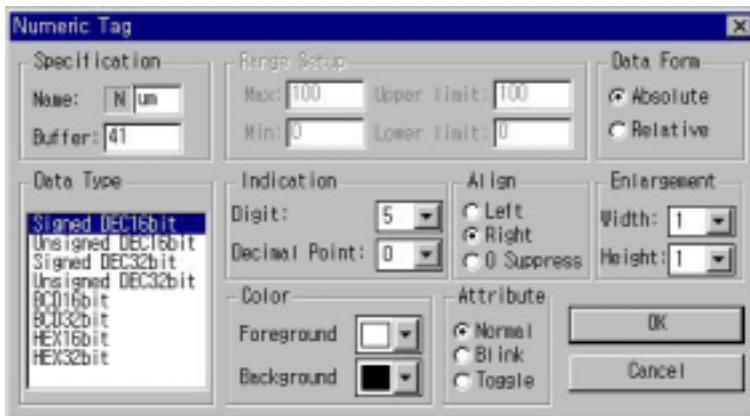


Appendix. Getting Started

1-1-2. Create a Numeric Tag

This tag indicates the value of the system's buffer data at the actual time on the screen of the main machine.

- ◆ Select **Tag Insert-Numeric** in the full down menu.
 - ◆ Move a cursor to the place to be created and click a left mouse button.
 - ◆ Enter the Tag Name and define a buffer address(from 40 to 1024: Be sure not to overwrite the buffer address with other tags)
 - ◆ When it is in Decimal, it indicates a maximum of 10 digits and when it is in BCD or HEX, it indicates a maximum of 8 digits. The two methods of indicating the data are by absolute value and in relative value.
- ① When the indication method is of relative value, and the specified buffer data goes beyond the top inch and bottom inch, it will flicker.
 - ② You can determine the indicated data's decimal point position.



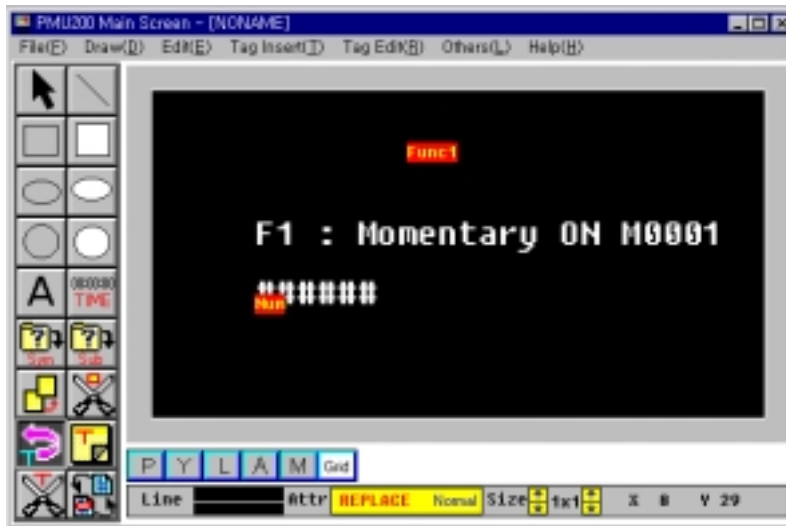
- ◆ Select Data Form as Absolute type, Data Type as Signed DEC16bit, Indication digit as '5' and Decimal point as '0'.
- ◆ After setting up the configuration, click **OK** button.
If you enter the data '-12345' in buffer 41, the numeric tag will be displayed in the simulation or run mode as below.

-12345

If the data type is Signed Decimal 16bit or Signed Decimal 32bit, the total indication place is actually one place more than the Digit number.

Example) Data type: Signed DEC 16bit, Digit Number: 8

-12345678



- ◆ By double clicking the tag to edit on the editor screen, you can edit the already created tag.

[Note]



To move a tag, select this icon.



To copy a tag, select this icon.



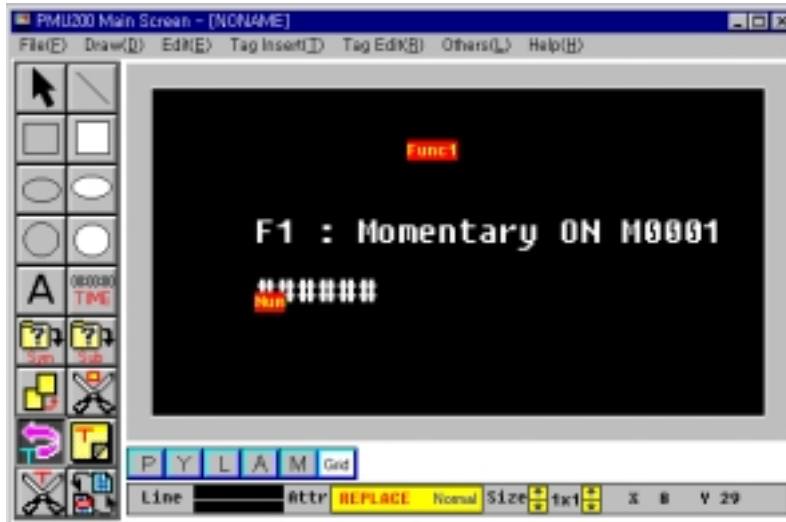
To cut(delete) a tag, select this icon.

Appendix. Getting Started

1-1-3. Create a Lamp Tag

According to the condition of the specified bit in the specified buffer, the specified color changes by the lamp.

- ◆ Select Circle icon on the toolbox to draw a circle.



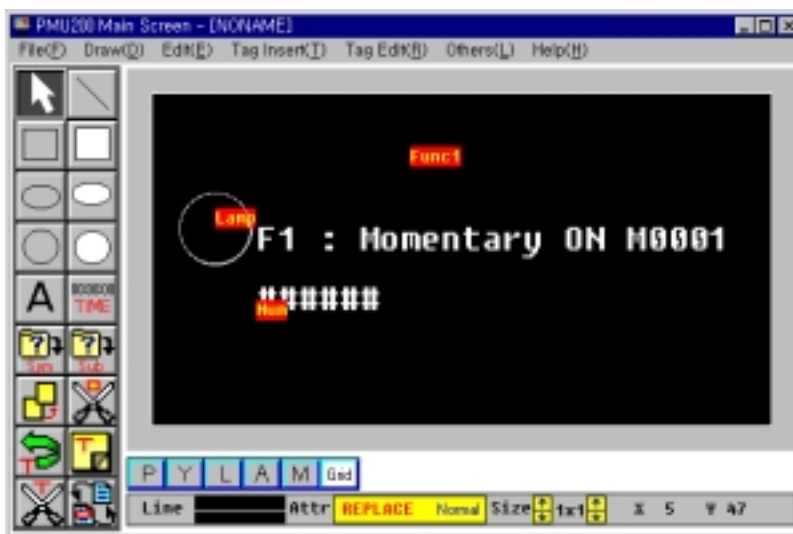
- ◆ Draw a circle by dragging a mouse with pressing a left button.
- ◆ After selecting the territory to be drawn, drop the mouse button.



- ◆ Select *Tag Insert-Lamp* in the full down menu.
- ◆ Move a mouse on the circle(center of circle) and click the left button.



- ◆ Select Lamp Type(Select 'Painted Circle'), Condition.
- ◆ Click OK button.
- ◆ Draw the lamp area the same size as circle.



Appendix. Getting Started

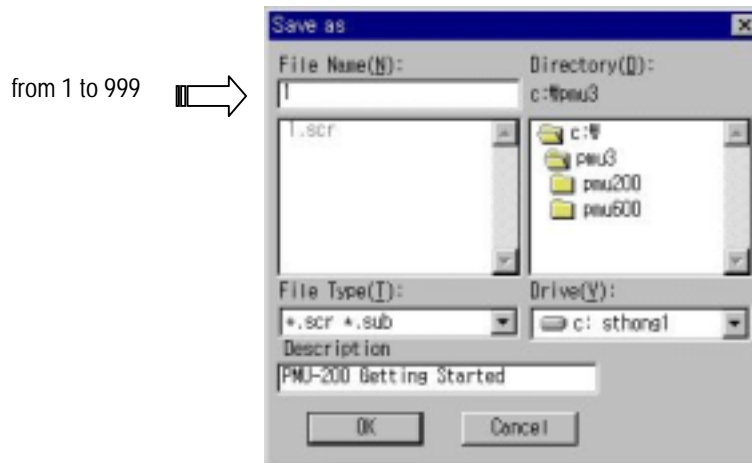
1-2. Simulation

You can simulate the edited screen in the computer before you download this file to PMU main machine. You should save the created screen as a file before the simulation.

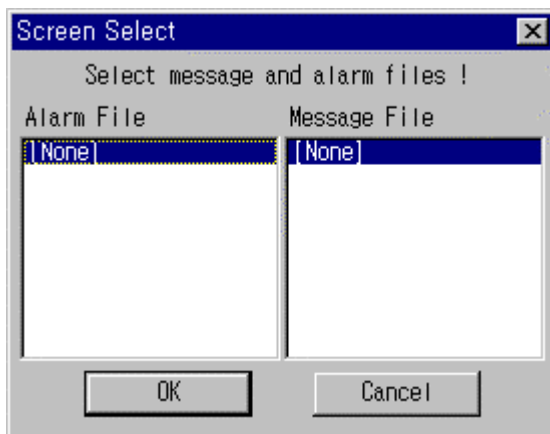
The name of the main screen should be saved as **number from 1 to 999**.

To confirm the contents of file, It's better to describe the contents in the description box.

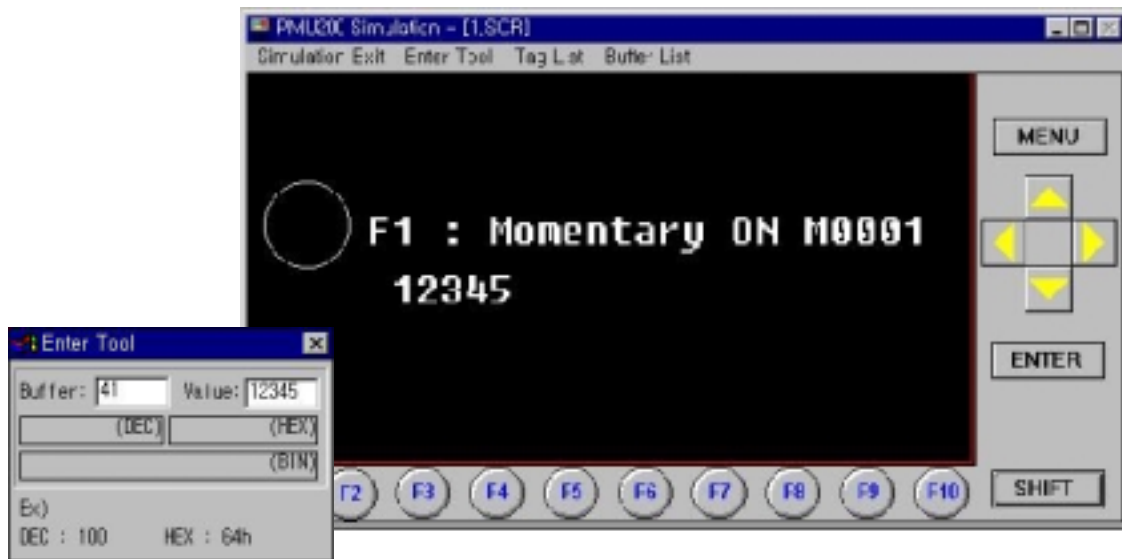
* For the main screen, the file type should be saved as *.scr.



- ◆ Select **Others-Simulation** in the full down menu.
- ◆ If you want to insert an alarm file or message file, select the files in the list box.



- ◆ Click **OK** button.
- ◆ You can simulate the main screen by using the simulation tool kit (Enter Tool) or Function Keys.



- ◆ Enter the buffer number to be simulated and the value in the Enter Tool dialog box.
- ◆ Press Enter Key to enter the data.
- ◆ If you press the function key 'F1' with the mouse, the key will be activated. The value of the buffer will be changed into '1'.

The Status
→ 'ON',
Momentary
Operation

Enter Tool

Buffer: 40 Value:

1	1H
(DEC)	(HEX)
0000-0000-0000-0001	
(BIN)	

ex)
DEC : 100 HEX : 64h

The status of the designated bit
(If you setup the bit number as
'3' the data of the buffer(40) will be
0000-0000-0000-1000)
If you select the type of the touch tag as
Word, these 16 bits will be displayed as
Data value.

Appendix. Getting Started

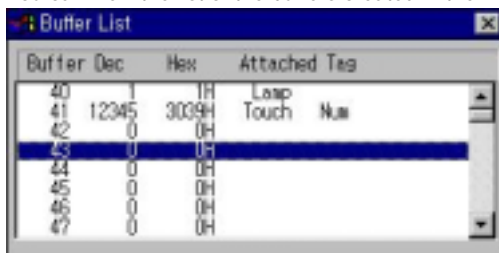
- ◆ You can find that the lamp is 'ON' when you press function key 'F1' button.



[Note]

Please notice the types of the tags. In the above simulation, the data of the Lamp Tag or the Numeric Tag except Touch Tag should be sent from PLC(that is, Reading data from PLC). While, the data of the Touch Tag should be sent from PMU(that is, Writing data to PLC). This notice is very important to setup the link editor for the communication between PLC and PMU.

- ◆ You can view the list of the buffers created in the main screen.



Buffer	Dec	Hex	Attached Tag
40	1	01H	Lamp
41	12345	3039H	Touch Num
42	0	0H	
43	0	0H	
44	0	0H	
45	0	0H	
46	0	0H	
47	0	0H	

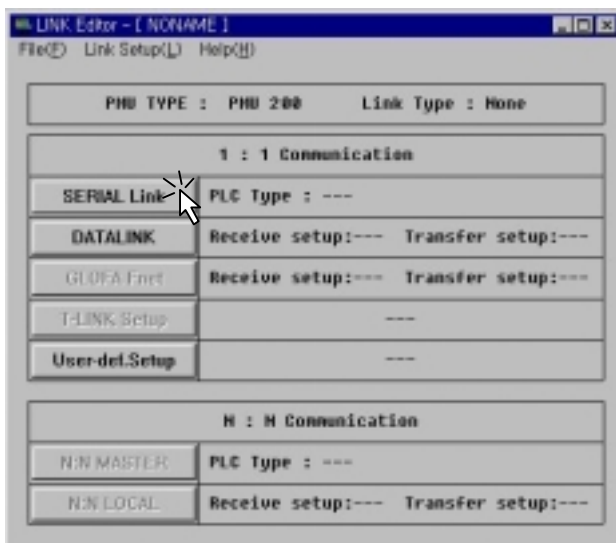
- ◆ To finish the simulation, select the *Simulation Exit* in the full down menu.

A. GE-Fanuc 90-30[SNP-X] series

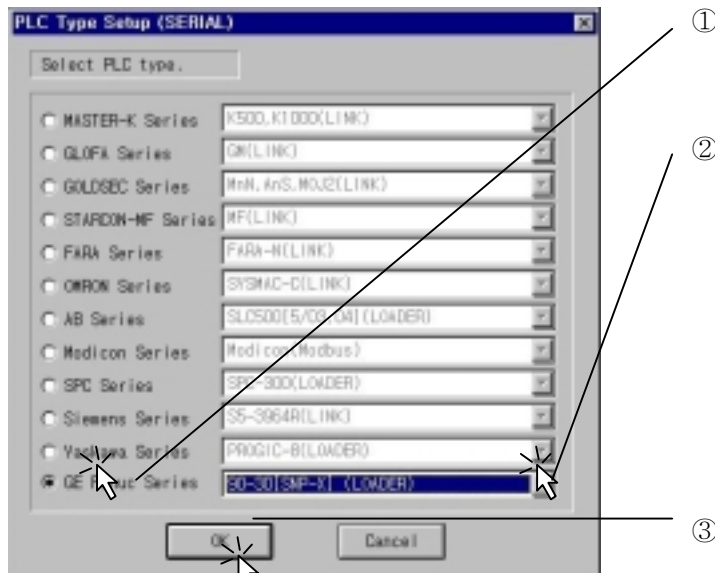
1. Edit a Link Editor

For the communication with PLC when operating the main machine (PMU), the Link Editor allows you to enter and select the communication method, PLC Type, Device, Address and others in the Link Table.
To use the selected Link File, Send a Link File from PC to the main machine (PMU) using Project Manager.
The extension name for the Link Select File is ".LNK".

- ◆ Select **Others-Link Editor** in the Screen Editor or **Editor-Link Editor** in the Project Manager.



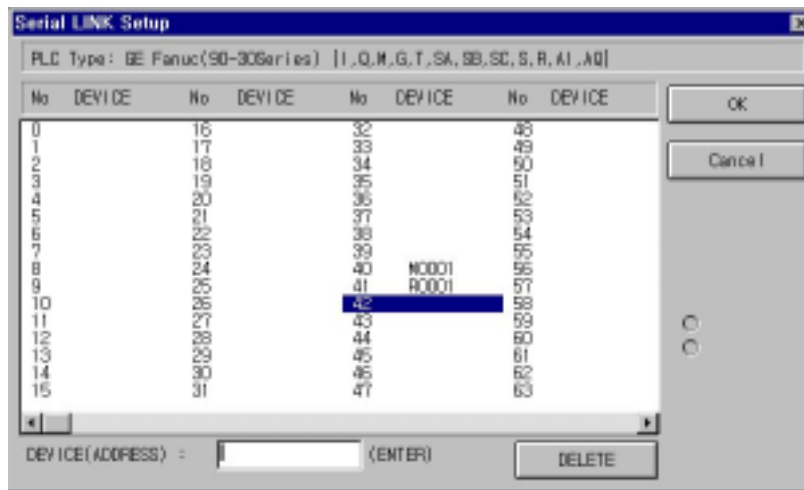
- ◆ Select **SERIAL Link** button to setup the serial communication.



- ◆ Select PLC Series and Link type, then click **OK** button.

Appendix. Getting Started

- ◆ Enter the PLC address for the communication.

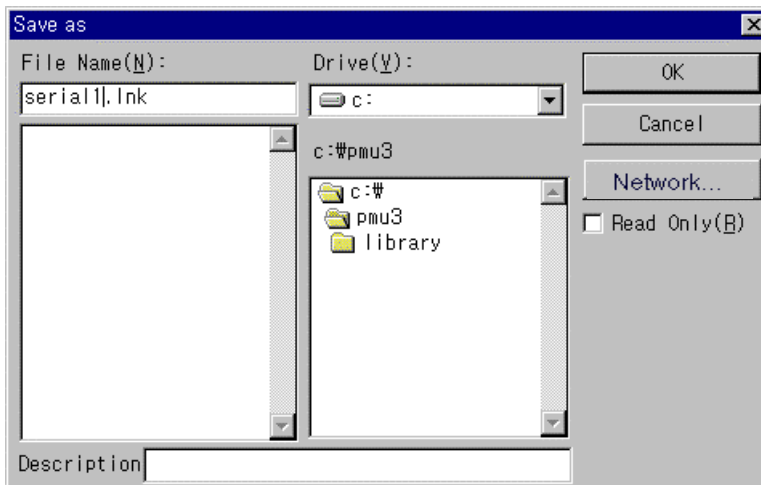


When you set a PLC address on the buffer memory area, be sure that the buffer memory is a word data.
So, M0001, R0001 are word data.

Buffer no. 40 : Function Key Tag and Lamp Tag(Writing data to PLC) – Bit data(ex. M0001 card)

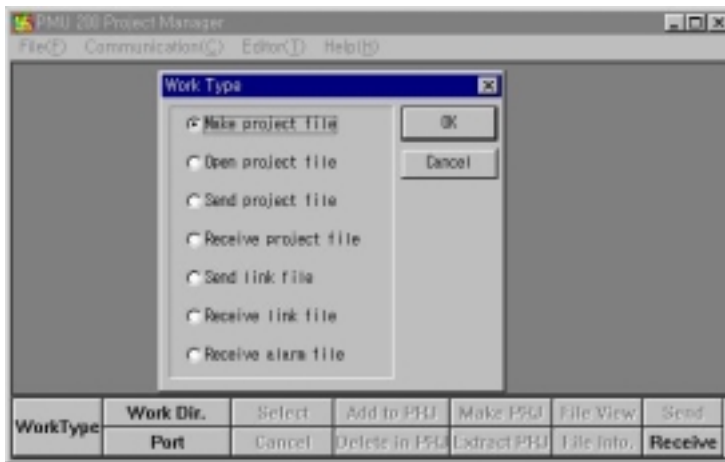
Buffer no. 41 : Numeric Tag(Reading from PLC) - Word data(ex. R001 card)

- ◆ Click **OK** button.
- ◆ Select **File – Save** menu
- ◆ Select folder to be saved and enter file name, then click **OK** button.

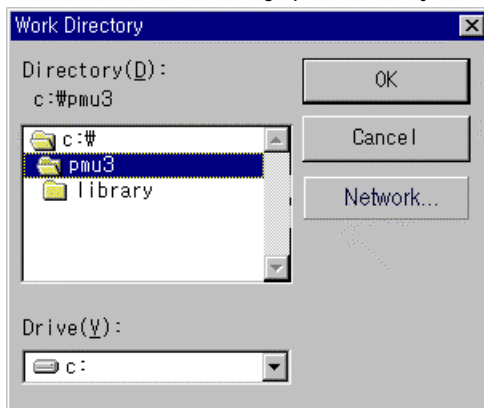


2. Edit a Project Manager

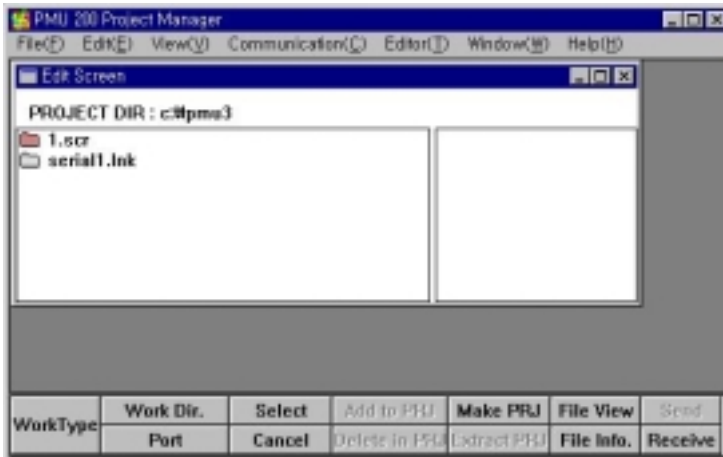
- ◆ Select *Others-Project Manager* in the Screen Editor or Open the *Project Manager* in PMU-MASTER.



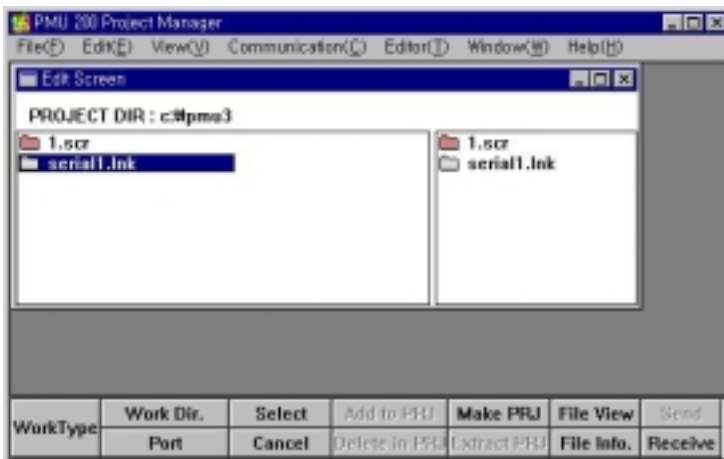
- ◆ Select **Make project file** button and click **OK** button.
- ◆ Click **OK** button after setting up the directory.



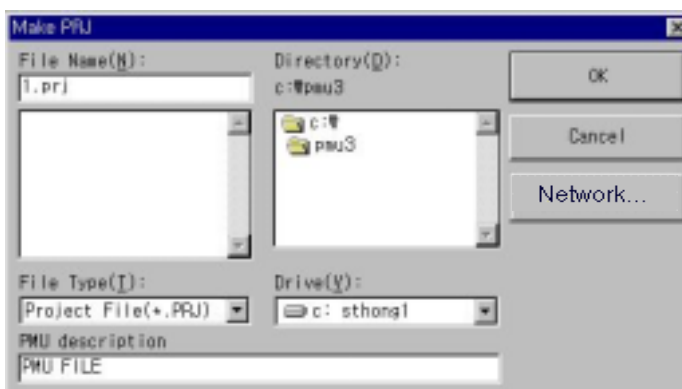
Appendix. Getting Started



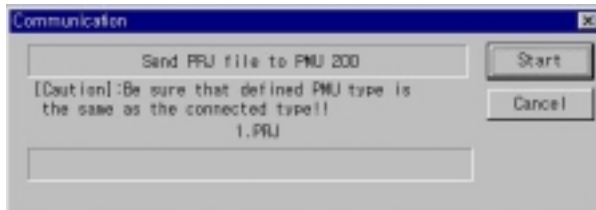
- ◆ Double click on the file to insert the file into a project file to be created.
- ◆ Then the selected file will be moved to the right box as the above.



- ◆ Select **Make PRJ** button.
- ◆ Enter file name of the project file, then click **OK** button.



- ◆ Select **Communication-Send Project File** in the Project Manager.



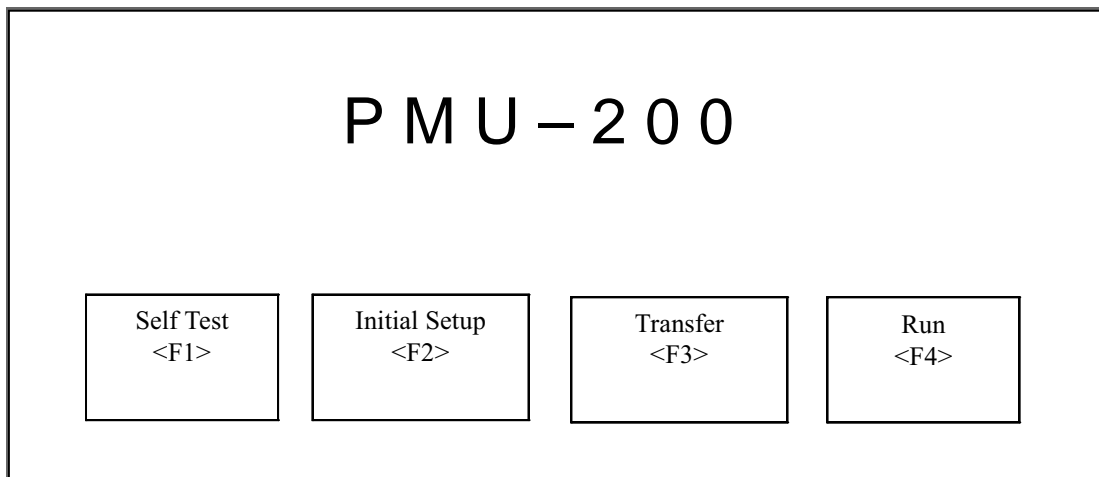
- ◆ Press **Start** button to send PRJ file to PMU hardware after setting up the PMU hardware for the communication.

3. Setup a PMU hardware

To communicate with PLC, you should download the Project file[* .scr, *.sub, *.alm, *.lnk, *.msg and etc.] created in the PMU-MASTER to the PMU hardware.

To setup the PMU hardware(main unit),

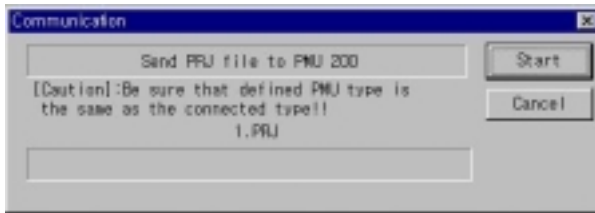
- ◆ Turn the power On[the power supply for the PMU-200 is DC24V].
- ◆ Press a function key '**F3**' in the Main Menu of the main unit.



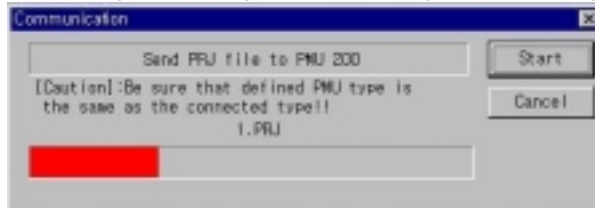
- ◆ Press function key '**F1**' to be ready.

Appendix. Getting Started

- ◆ Transfer the files from the Project Manager of the PMU-MASTER. to the Main Unit.
- ◆ Press **Start** button.



- ◆ The message "Receiving..." appears during the downloading in the Main Unit.



- ◆ 'Completed! <KEY>' message is shown to the main unit after execution.
- ◆ To interrupt transfer, press ESC key. (Function key 'MENU' in the machine)
- ◆ Before the communication, you should set the Initial Setup in the Main Menu.
- ◆ Press **Initial Setup** key and select **Serial Setup** key.
- ◆ Setup value is :
 - Baud rate : 19200bps
 - Data bits : 8bits
 - Stop bit : 1bit
 - Parity bit : odd
 - Interface : RS-422(4line)
 - Station number : 0

Baud rate	:	[19200]
Data bits	:	7bits 8bits
Stop bits	:	1bit 2bits
Parity bit	:	None Even Odd
Station Number	:	[0]
Interface	:	RS232 RS422
Save<ENTER>		Cancel<MENU>

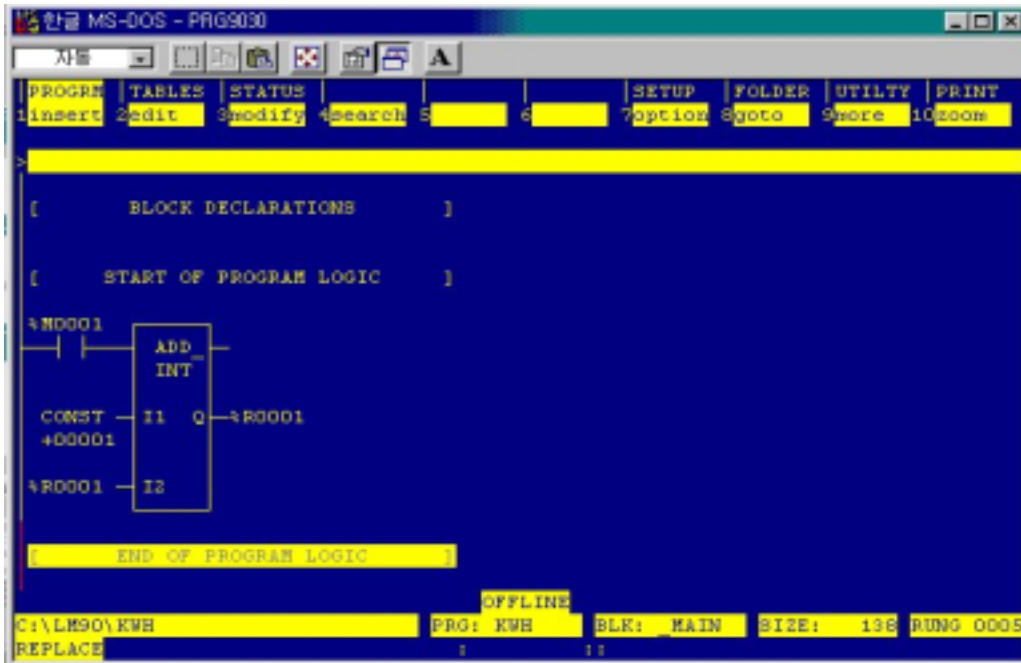
- ◆ To select the left menu bar(Items) : Use Function key '^' and 'v'.
- ◆ To select the parameter : Use Function key '<' and '>'.
- ◆ To escape the current screen, press **Cancel** button.
- ◆ Press **Enter** button.

Appendix. Getting Started

4. Edit a Program in PLC

To communicate with PMU and PLC, you should download a program to PLC using Programming Tool(LOGICMASTER 90 Software)

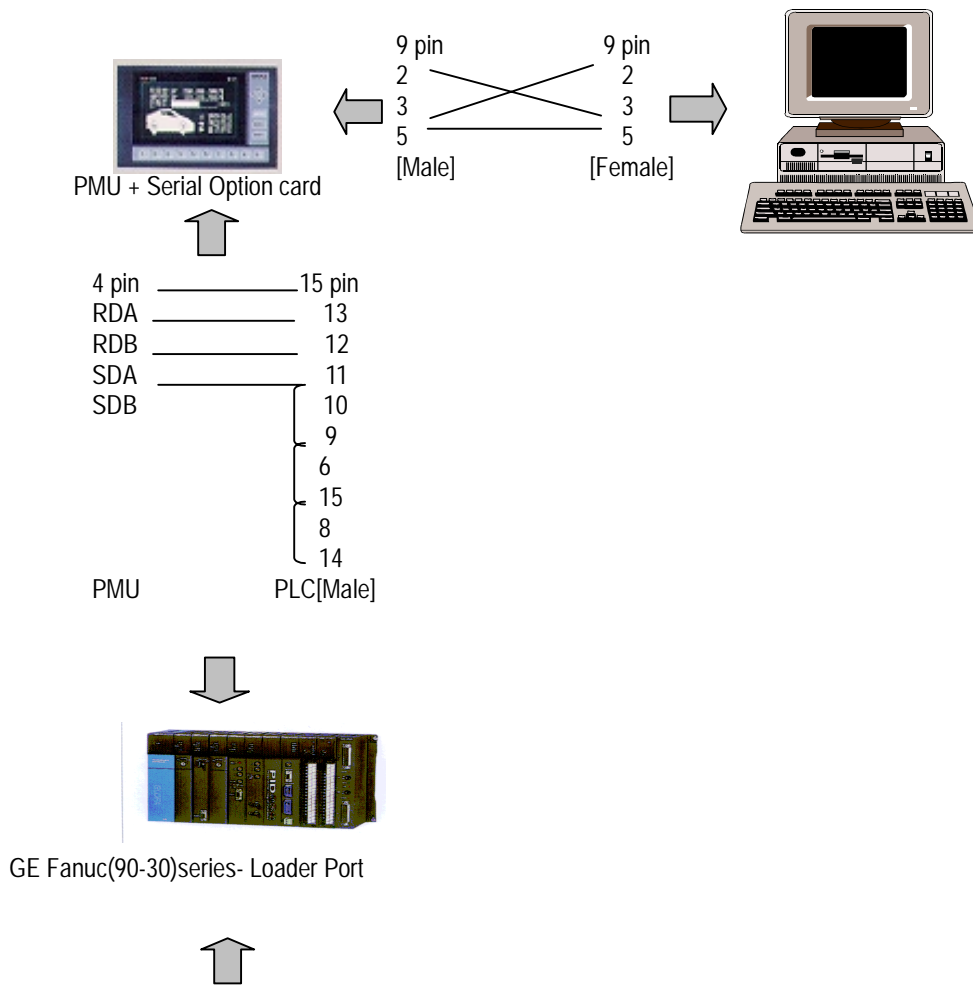
- ◆ Create a Program for the communication.



M0001 : Bit address for Touch Tag and Lamp Tag(Buffer : 40, Bit number : 0)
R0001 : Word address for Numeric Tag(Buffer : 41. Word data)

- ◆ For the detail information of editing a program in the programming tool, please refer to the User's Manual.

5. Cable Connection for serial Interface




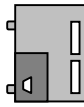
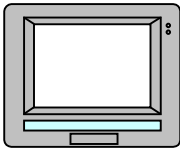
B. Allen-Bradley PLC series

1. SLC500 PLC CPU Connection

- Allen-Bradley : SLC500 PLC – PMU RS-232C interface using Loader port

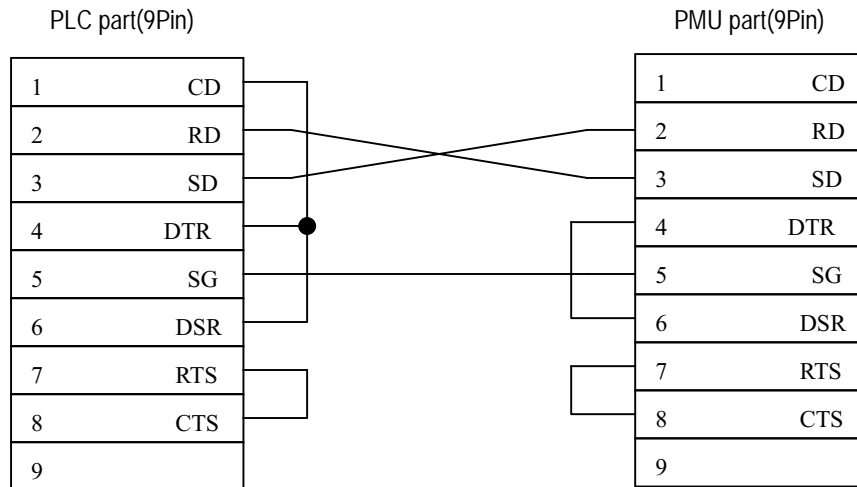
1-1 System configuration

SLC500 PLC – PMU hardware

PLC	Interface module	Cable	Option unit	PMU
	←			
SLC5/03 SLC5/04	None	Below drawing (RS-232C)	PMO-600S PMO-300S PMO-200S	PMU-600 PMU-300 PMU-200

1-2 Cable connection

(1) RS-232C connection(SLC500 series ↔ PMU series)



1-3 SLC500 PLC setup

recommend: 19200 bps, data: 8 bit, stop bit:1 bit, parity: Even

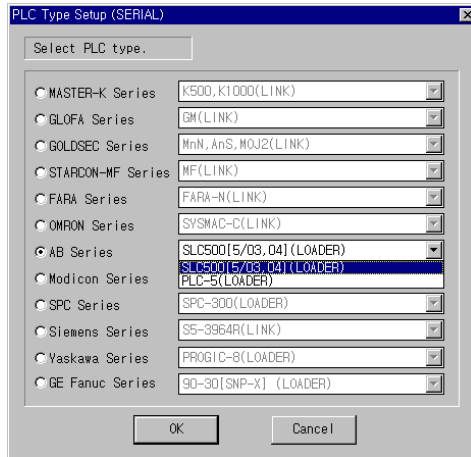
Setup of PLC part	
Baud rate	19200 bps
Data length	8 bit
Stop bit	1 bit
Parity bit	EVEN
Communication Driver	DF1 Half Duplex Slave
Duplicate Packet Detection	Disable
Error Detection	BCC
Control Line	No Handshaking
Station Address	0

Please remember station Address of PLC and the station number of PMU should be identified.

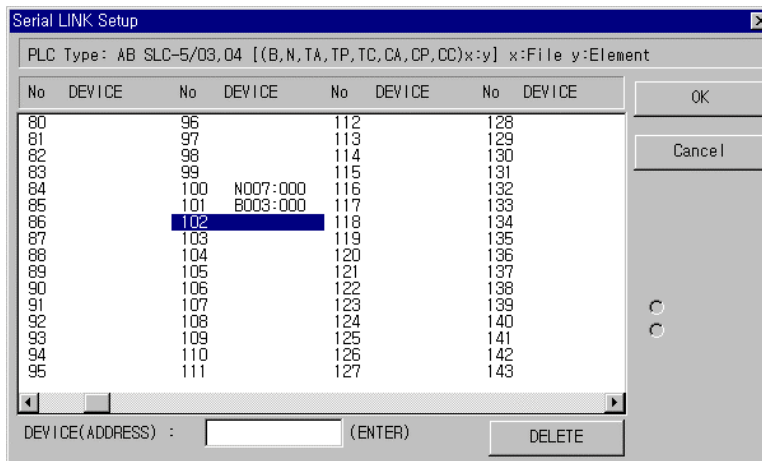
1-4 PMU setup

(1) Link setup

① select serial link in link editor and select "SLC500[5/03,04](LOADER)" in AB series.



② setup the buffer no. of PMU with device of PLC (PLC address : please refer to the address table)



③ Transfer the link file to PMU with other files.

(2) Serial setup


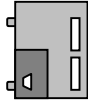
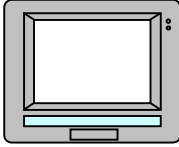
It should be identified with PLC data.

Appendix. Getting Started

2. PLC-5 PLC CPU connection

Allen-Bradley :SLC5 PLC - RS-232C interface using Loader port

2-1. System configuration

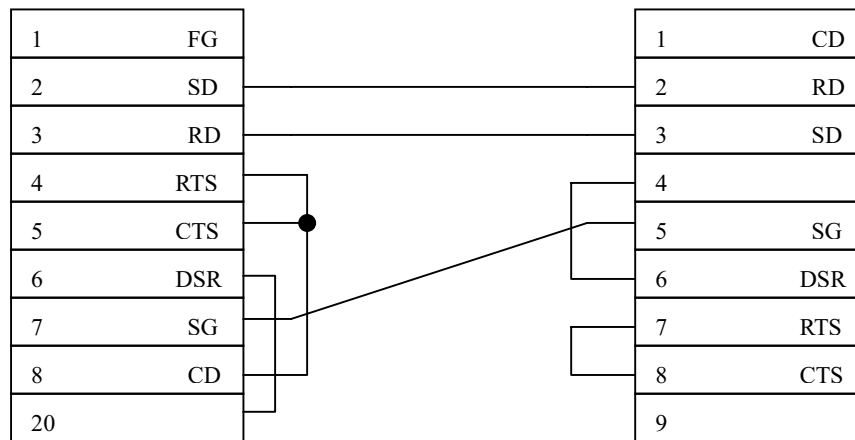
PLC	Interface module	cable	Option card	PMU
				
PLC-5/11 PLC-5/20 PLC-5/30 PLC-5/40 PLC-5/40L PLC-5/60 PLC-5/60L	None	Below drawing (RS-232C, RS-422)	PMO-600S PMO-300S PMO-200S	PMU-600 PMU-300 PMU-200

2-2. Cable connection

(1)RS-232C connection (PLC-5 series ↔ PMU series)

PLC part(25Pin)

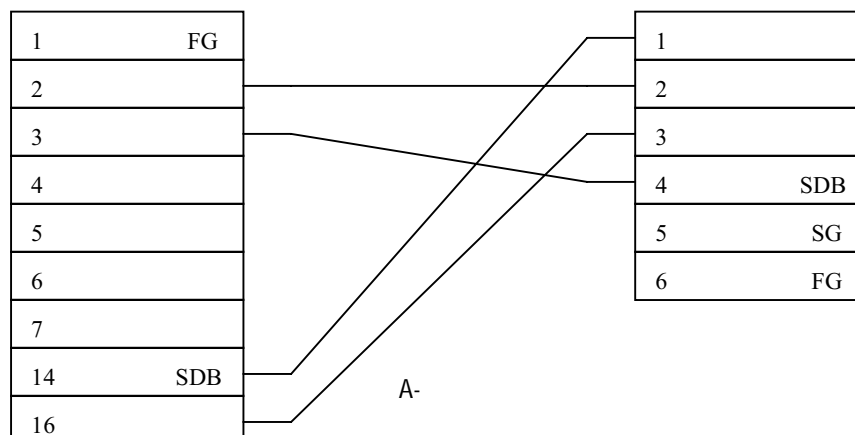
PMU part(9Pin)



(2)RS-422 connection (PLC-5 series ↔ PMU series)

PLC part(25Pin)

PMU part(6Pin or 5Pin Terminal Block)



2-3 PLC-5 PLC setup

recommend: 19200 bps, data: 8 bit, stop bit:1 bit, parity bit: Even.

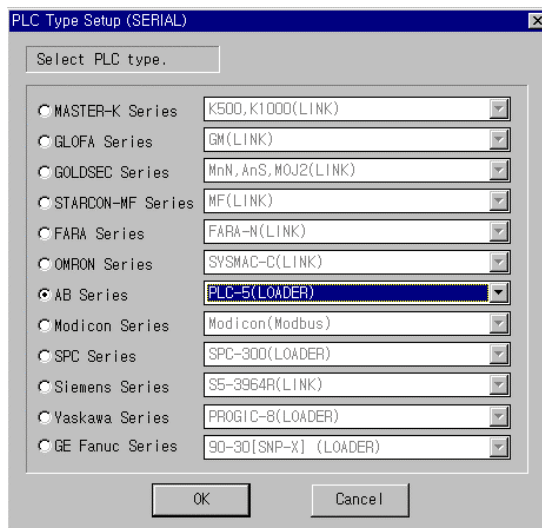
PLC part	
Baud rate	19200 bps
Data length	8 bit
Stop bit	1 bit
Parity bit	EVEN
Communication Driver	DF1 Half Duplex Slave
Duplicate Packet Detection	Disable
Error Detection	BCC
Control Line	No Handshaking
Station Address	0

Please remember station address of PLC and the station number of PMU should be identified.

2-4 PMU setup

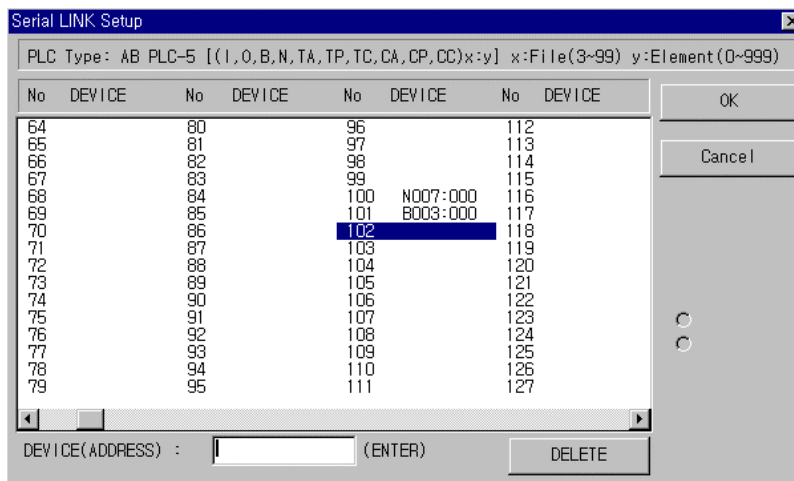
(1)Link setup

①select serial link in link editor and select "SLC5(LOADER)" in AB series.



② setup the buffer no. of PMU with device of PLC
(PLC address : please refer to the address table)

Appendix. Getting Started



③ Transfer the link file to PMU with other files.

(2) Serial Setup

It should be identified with PLC data.

3. PLC Address

(1) SLC500 series

Device	Address
Bit	B003000 ~ B003255 , B010000 ~ B255255
Timer (Timing bit) ^{*1}	TC004000 ~ TC004255 , TC010000 ~ TC255255
Timer (complete bit) ^{*1}	TC004000 ~ TC004255 , TC010000 ~ TC255255
Timer (setting value)	TP004000 ~ TP004255 , TP010000 ~ TP255255
Timer (current value)	TA004000 ~ TA004255 , TA010000 ~ TA255255
Counter (Up counter) ^{*2}	CC005000 ~ CC005255 , CC010000 ~ CC255255
Counter (down counter) ^{*2}	CC005000 ~ CC005255 , CC010000 ~ CC255255
Counter (complete bit) ^{*2}	CC005000 ~ CC005255 , CC010000 ~ CC255255
Counter (setting value)	CP005000 ~ CP005255 , CP010000 ~ CP255255
Counter (current value)	CA005000 ~ CA005255 , CA010000 ~ CA255255
Integer	N007000 ~ N007255 , N010000 ~ N255255



Note

*1 : Timing bit : bit 14
 complete bit : bit 13
 *2 : Up counter Enable bit : bit 15
 Down counter timing bit : bit 14
 Complete bit : bit 13

(2) PLC-5 series

Device	Address
Input relay	I001000 ~ I001999
Output relay	O000000 ~ O000999
Internal relay	B003000 ~ B099999
Timer (Timing bit) ^{*1}	TC003000 ~ TC099999
Timer (Complete bit) ^{*1}	TC003000 ~ TC099999
Timer (Setting value)	TP003000 ~ TP099999
Timer (current value)	TA003000 ~ TA099999
Counter (Up counter) ^{*2}	CC003000 ~ CC099999
Counter (down counter) ^{*2}	CC003000 ~ CC099999
Counter (complete bit) ^{*2}	CC003000 ~ CC099999
Counter (setting value)	CP003000 ~ CP099999
Counter (current value)	CA003000 ~ CA099999
Integer	N003000 ~ N099999



Note


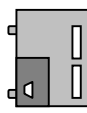
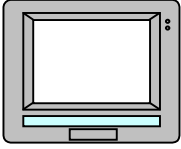
*1 : Timing bit : bit 14
 Complete bit : bit 13
 *2 : Up counter Enable bit : bit 15
 complete bit : bit 13

C. Modicon PLC series – Modbus Protocol (RTU or ASCII Mode)

1. Modicon Modbus –Serial Interface

- Communication with Modicon (Modbus) PLC and PMU hardware using RS-232C interface.

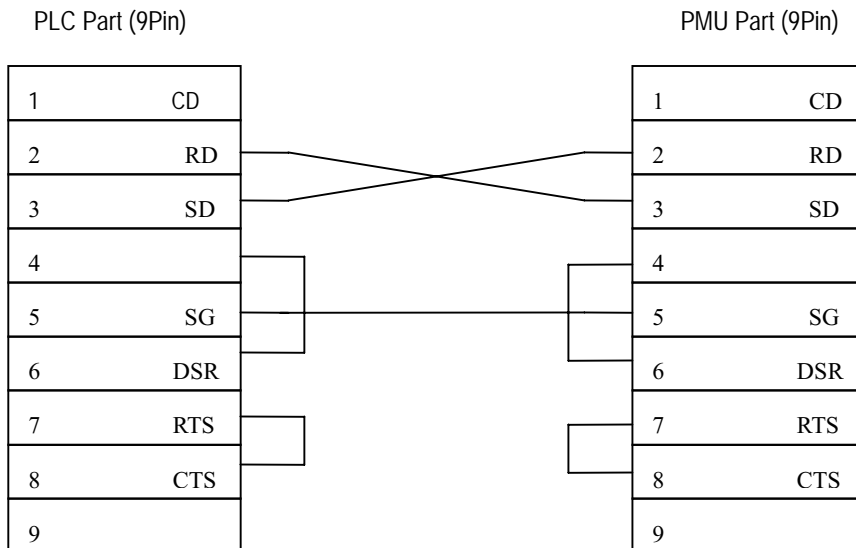
1-1 System Configuration

PLC	Interface module	Cable	Option Card	PMU
				
884 984A 984B 984X Slot Mount- 984	None	Below drawing (RS-232C)	PMO-600S PMO-300S PMO-200S	PMU-600 PMU-300 PMU-200

- Modbus : You can use Link interface port in Modicon PLC- CPU module

1-2 Cable connection

(1)RS-232C connection(Modicon PLC ↔PMU series)



Appendix. Getting Started

1-3 Modicon PLC setup

1-3-1 RTU Mode

PLC Interface mode : select RTU Mode

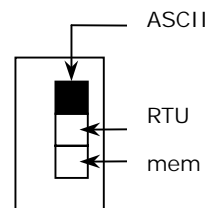
PLC part setup	
Baud rate	9600 bps
Data length	8 bit
Stop bit	1 bit
Parity bit	Even
Station No.	By rotary switch

- Station address of PLC is set by the rotary switch behind CPU module.
- This station number should be same as the one of PMU station.

1-3-2 ASCII Mode

PLC Interface mode : select ASCII Mode

PLC part setup	
Baud rate	2400 bps
Data length	7 bit
Stop bit	1 bit
Parity bit	Even
Station No.	By rotary switch



1-3-3 Memory(mem) Mode

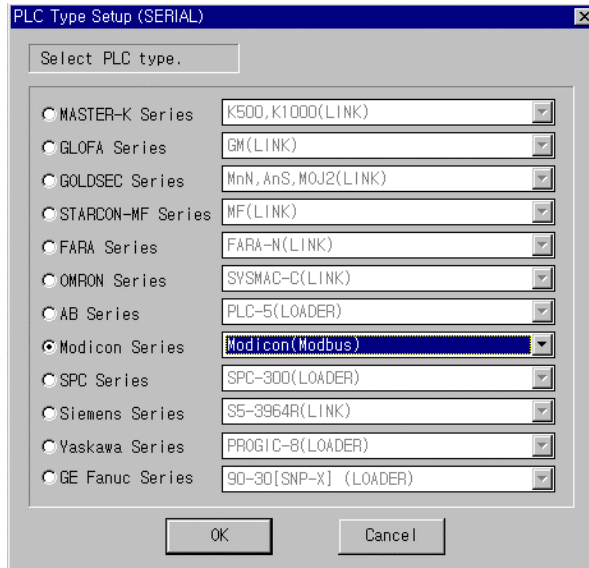
You can setup the parameter in the programming software of Modicon PLC.

PLC part setup	
Baud rate	50~19200 bps
Data length	7/8 bit
Stop bit	1/2 bit
Parity bit	Even/Odd
Station No.	By rotary switch

1-4 PMU Setup

(1) Link setup

- ① select serial link in link editor and select "Modicon(Modbus)" in Modicon series.



- ② setup the buffer no. of PMU with device of PLC
(PLC address : please refer to the address table)
- ③ Transfer the link file to PMU with other files.

(2) Serial parameter Setup

It should be identified with PLC data.

2. PLC address

Device	Address
Input bit	10001 ~ 18192
Output bit	00001 ~ 08192
Input register (Word)	30001 ~ 39999
Output register (Word)	40001 ~ 49999



Note

- Input bit and Input register can not be permitted to write data.