

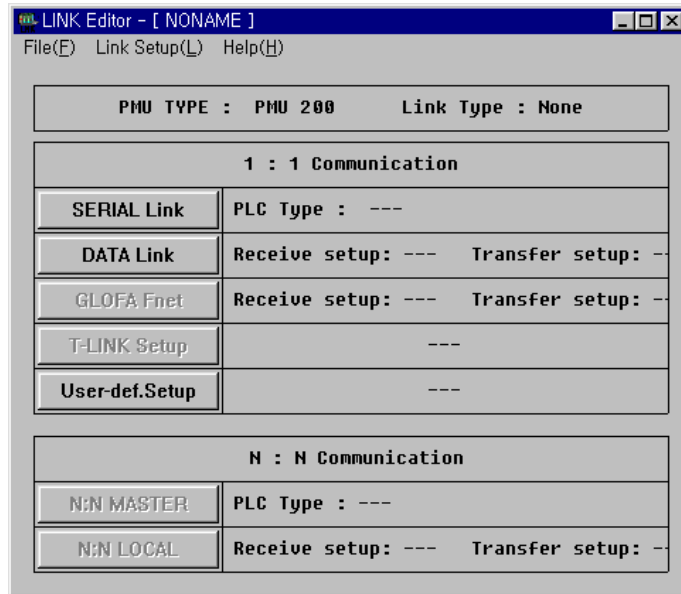
Chapter 8. Link Editor Setup and Functions

The screenshot shows a window titled "LINK Editor - [NONAME]" with a menu bar containing "File(F)", "Link Setup(L)", and "Help(H)". The main area displays the following configuration:

PMU TYPE : PMU 600 Link Type : None	
1 : 1 Communication	
SERIAL Link	PLC Type : ---
DATA Link	Receive setup: --- Transfer setup: --
GLOFA Fnet	Receive setup: --- Transfer setup: --
T-LINK Setup	---
User-def.Setup	---
N : N Communication	
N:N MASTER	PLC Type : ---
N:N LOCAL	Receive setup: --- Transfer setup: --

- For smooth communication with PLC when operating the main machine, the Link Selector allows you to enter and select the communication method, PLC Type, Device, Address in the Link Table.
- To use the selected Link File, Send a Link File from PC to the main machine using Project Manager.
- The extension name for the Link Select File is “.LNK”

PMU-200 Link Editor Screen



This is the main screen for the user's selected Link Table displayed either at the beginning of the program or after selection.

- Serial Select : Displays the selected PLC Type
- Data Link Select : Displays the number of data selected from input and output
- Non-protocol Link Select : Displays the input and output for the serial communication method

• PLC Types for Serial Selection (Direct Link)

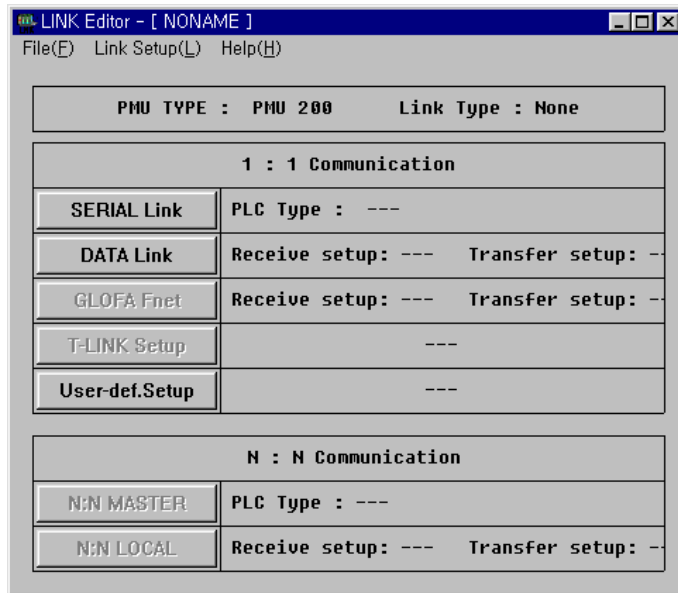
Fuji MICREX-F, Mitsubishi-MELSEC, OMRON-SYSMAC-C, AB-SLC500/PLC5, Modicon-QUANTUM, Matsushita-FARA, LG MASTER-K S series, LG GLOFA-GM, LG GLOFA-GK, LG Inverter

The Link data created this Link Select is sent to PMU-200 using Project Manager.

Note) MELSC → GOLDSEC, MICREX-F → STARCON-MF

For the created Link Table to apply, first download the link file to the main machine, and then select the communication method appropriate to the Link Table from the Menu's Communication Select of the main machine.

PMU-300 Link Editor Screen



This is the main screen for the user's selected Link Table displayed either at the beginning of the program or after selection.

- Serial Select : Displays the selected PLC Type
- Data Link Select : Displays the number of data selected from input and output
- Protocol Link Select : Displays the input and output for the serial communication method

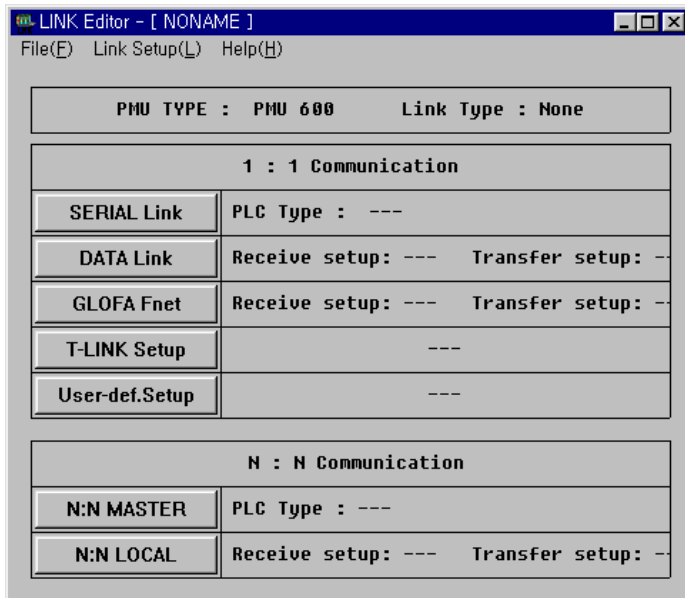
• PLC Types for Serial Selection (Direct Link)

Fuji MICREX-F, Mitsubishi-MELSEC, OMRON-SYMAC-C, AB-SLC500/PLC5, Modicon-QUANTUM, Matsushita-FARA, LG MASTER-K S series, LG GLOFA-GM, LG GLOFA-GK, LG Inverter

The Link data created in this Link Select is sent to PMU-300 using Project Manager.

For the created Link Table to apply, first download the link file to the main machine, and then select the communication method appropriate to the Link Table from the Menu's Communication Select of the main machine.

PMU-600 Link Editor Screen



This is the main screen for the user's selected Link Table displayed either at the beginning of the program or after selection.

- 1:1 Communication Method

Serial Select : Displays the selected PLC Type

Data Link Select : Displays the number of data selected from input and output

Field bus Select : Displays the number of selected data sent and received

T-Link, Protocol Select

- N:N Communication Method

Local Select : Displays the number of selected data sent and received

Master Select : Displays the selected PLC Type

- PLC Types for Serial Selection (Direct Link)

Fuji MICREX-F, Mitsubishi-MELSEC, OMRON-SYSMAC-C, AB-SLC500/PLC5, Modicon-QUANTUM,

Matsushita-FARA, LG MASTER-K S series, LG GLOFA-GM, LG GLOFA-GK, LG Inverter

- Select and enter one of the above seven communication methods using the menu or button. If all 7 are entered and sent to the main machine, the main machine will decide on the method selected in PMU-600.

- 1:1 Field bus and N:N Local is the same Fnet communication and thus the specified value changes to become identical.

The Link data created in this Link Select is sent to PMU-600 using Project Manager.

For the created Link Table to apply, first download the link file to the main machine, and then select the communication method appropriate to the Link Table from the Menu's Communication Select of the main machine.

8-1. PMU and PLC Communication Method

PMU-200/300 Communication

The main machine only supports either the Serial Communication Method, or the Data Link Method.

- Datalink Communication Standard
 - Baud rate (1 M bps)
 - No. of Possible Connections and Station Number.
(No. of possible Connections: 32) (Station No.: 1-125)
 - No. of Possible Link (per 1 line)
 1. Remote I/O : Send 32, Receive 32 words
 2. Remote Input: Receive 64 words
 3. Remote Output: Send 64 words

- Serial Communication
 - Baud rate (300,600,1200,2400,4700,9600,19200)
 - Data Length (7 bits, 8 bits)
Note: Master-K1000 is set to 8 Bit Data
 - Stop Bit Length (1 Stop Bit, 2 Stop Bit)
Note: Master-K1000 is set to 1 Stop Bit
 - Parity Bit (None, Odd, Even Parity)
Note: Master-K1000 is set to None Parity
 - Serial Communication (RS-232C, RS-422)
 - Main Machine Tel. No. (No.: 0-31)
Note: Master-K1000 selects numbers from 0-15.
 - Check Sum (Check Sum set to "Yes")
Note: Fuji MICREX-F's Check Sum is set to "No"

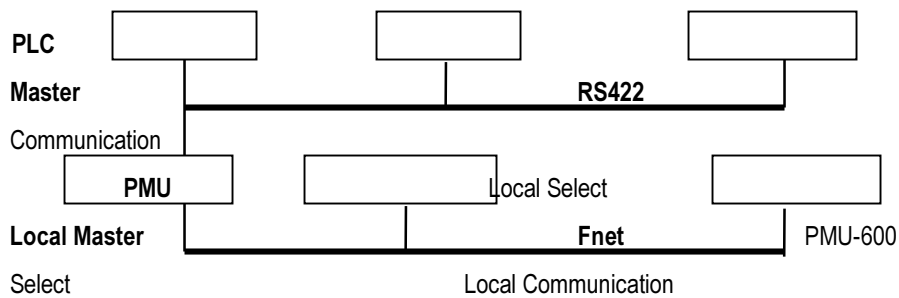
PMU-600 Communication

Communication method is largely divided into 1:1 and N:N method.

- 1:1 Method Communication Method - Serial Communication (RS-232C)
 - Data Link
 - Fnet
 - T-Link
 - Non-Protocol Select has 5 types

- N:N Method One PMU is connected to several PLCs (RS-422), or several PMUs are used as block communications each through the Fnet communication method.

- Master: Communication method between PMU and PLC is to connect with RS-422.
- Local: Communication method between PMU and PMU is to connect with Fnet.



Note: Local Select
 Only when another PMU is connected to PMU should Block Communication be selected through selecting Fnet.

Local-Master Select

When PMU communicates with PLCs and other PMU like the above picture, then Link Table for both Master for communication with PLC and Local for communication with PMU must be configured.

8-2. File



This menu allows you manage the Link Select Files by creating new files, saving and opening files, printing and exiting Link Select.

Open Open the desired Link File(*.LNK) from the desired directory. If selected when creating a link file, a window appears inquiring whether you wish to save the current screen.

- If "Yes(Y)" is selected, then the save dialogue box screen appears. Once the name is inserted (*.lnk) , the created screen is saved.
- If "No(N)" is selected, please note that the created data is deleted.
- If "Cancel" is selected, the New File menu is canceled.

Save This menu allows you to save the edited screen.
When "New File" is selected and created, "Save as a Different Name" Menu appears and is saved under a specified name.

- If a file name is already specified, it will save immediately upon selecting the "Save" function.

Save As ... This menu allows you to change and save the file name, directory and file description.

Exit Exits the Link Select menu
When selected while creating a link file, a window appears inquiring whether you wish to save the created file.

- If "Yes(Y)" is selected, then the save dialogue box screen appears. Once the name is inserted (*.lnk) , the created screen is saved.
- If "No(N)" is selected, please note that the created data is deleted.
- If "Cancel" is selected, the New File menu is canceled.

8-3. Link Editor

- Select Communication Method and Enter the communication selection (device, address)
- Select and enter the communication method according the PMU-200/300/500/600 type

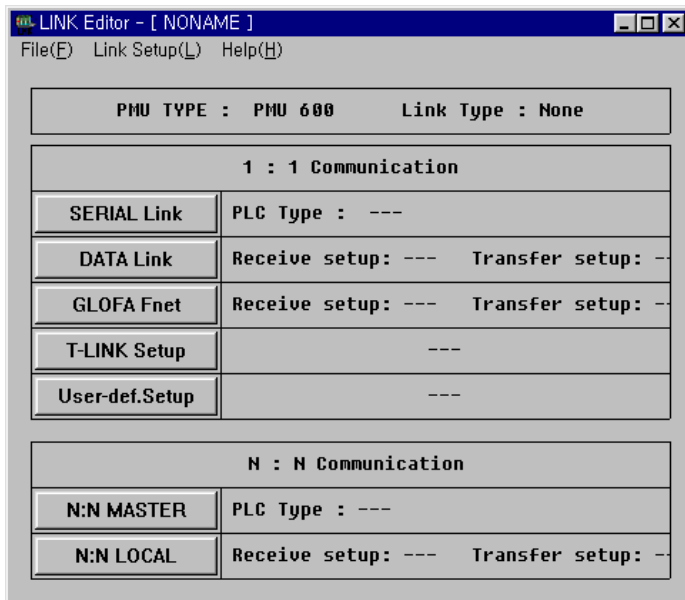
PMU-200 Link Screen

PMU TYPE : PMU 200		Link Type : None	
1 : 1 Communication			
SERIAL Link	PLC Type : ---		
DATA Link	Receive setup: ---	Transfer setup: ---	
GLOFA Fnct	Receive setup: ---	Transfer setup: ---	
T-LINK Setup	---		
User-def.Setup	---		
N : N Communication			
N:N MASTER	PLC Type : ---		
N:N LOCAL	Receive setup: ---	Transfer setup: ---	

PMU-300 Link Screen

PMU TYPE : PMU 200		Link Type : None	
1 : 1 Communication			
SERIAL Link	PLC Type : ---		
DATA Link	Receive setup: ---	Transfer setup: ---	
GLOFA Fnct	Receive setup: ---	Transfer setup: ---	
T-LINK Setup	---		
User-def.Setup	---		
N : N Communication			
N:N MASTER	PLC Type : ---		
N:N LOCAL	Receive setup: ---	Transfer setup: ---	

PMU-600 Link Screen

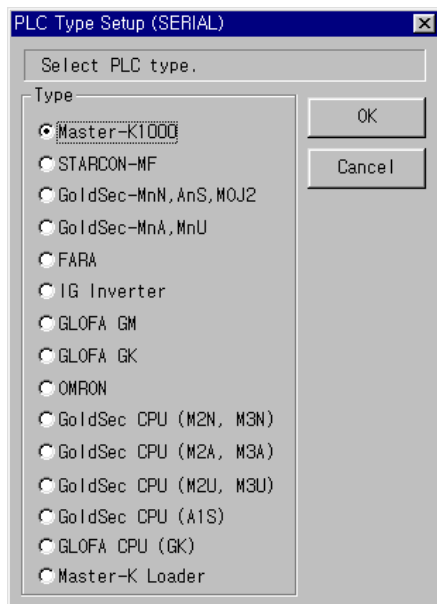


PLC Type Setup(Serial)

- This is the link selected when one PLC and PMU communicates through serial.

1. Select the PLC type that will be communicated first.

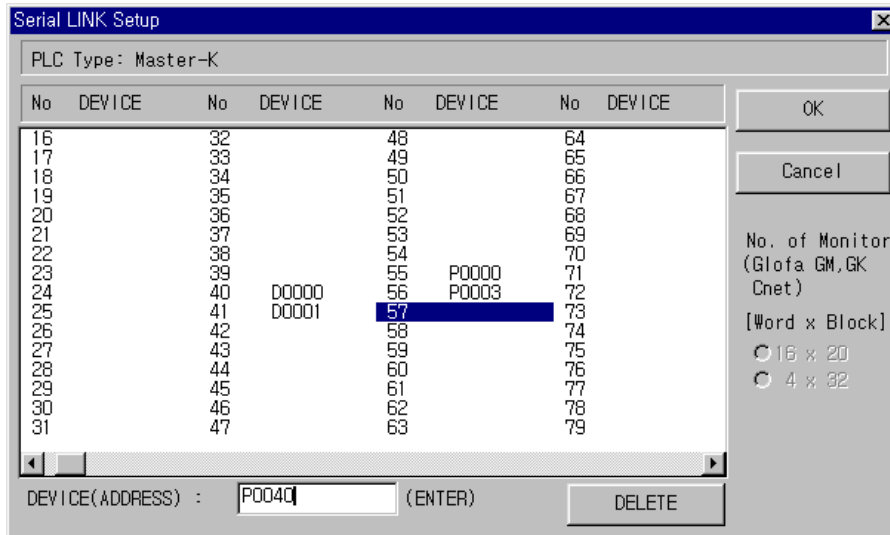
PMU-200 PLC Type Screen



PMU-300/600 PLC Type Screen



2. After the selection of PLC type, the Serial Link Setup screen below appears.



Screen Display Description

- PLC Type: Displays the currently selected PLC type.
- Device, Address Input: Edit the number of the Device, Address or newly input

Note: With the mouse, select and input the appropriate PLC device address and press Enter.

This will change the Device(Address) and will proceed to the next item.

- Delete: Delete the selection of the appropriate item
- OK: After all selections, pressing the “OK” button saves the Link Table and exits the Link Editor
- “NO” is the system buffer number for PMU-200/300/600
- “PLC” is the PLC device address for PLC to communicate with the main machine’s system buffer.
- The PLC point of contact can be entered in the input line at the bottom left of the screen.

- Depending on the selected PLC type from the prior PLC device address, there is a restriction on the name of the device that can be entered.

Please refer to the PLC Communication section for the range of device names and contact numbers for each type of PLC.

- For serial communication, the data sent from the main machine to PLC is scanned and entered into the specified system buffer.

Data can be sent to PLC from the main machine only through Buffer Write Tag, Function key Tag, Precision Adjust Tag.

- Note:

The system buffer's following field should be left empty in the case of PLC standard "Fuji-MICREX-F (STARCON-MF)," or when the contact point of 32 bits and styles of T, TS, TR, CR, CS, BD is compatible with the main machine's system buffer, because these continuously fill two fields of the main machine's system buffer.

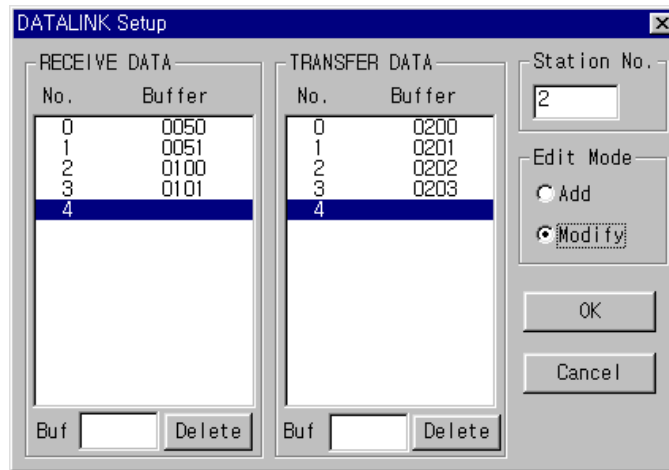
Furthermore, Bit 001 is the lowest within each word for the system buffer of the main machine, while Bit F is the lowest for Fuji-MICREX-F (STARCON-MF).

Therefore, to connect Bit No. 0 of the main machine to Bit NO. 0 of Fuji-MICREX-F (STARCON-MF), press Ctrl + Shift + F2 key in Screen Editor and Select Fuji-MICREX-F (STARCON-MF) as the PLC Type. This internally assigns the Bit No. 0 of the main machine to Bit F of Fuji-MICREX-F (STARCON-MF).

Data Link Setup

This link is selected when communication is done through data link.

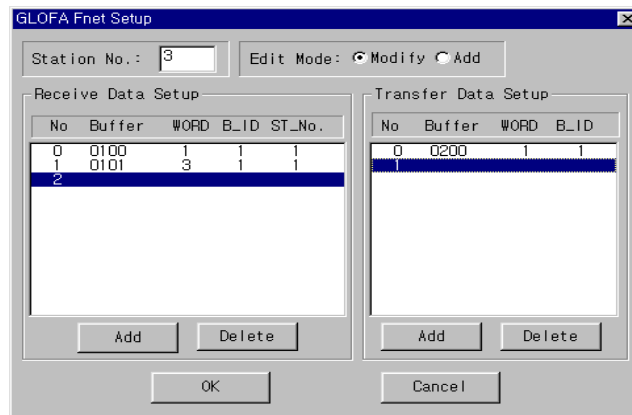
The following dialogue box appears when this menu is selected.



- Station No. Select: Station number of the PMU main machine.
- Edit Mode: Add mode and Modify Mode
- Add Mode: Add a new buffer number in the current entered number.
- Modify Mode: Modify the buffer number in the current entered number.
- Buffer: After the buffer number appropriate for input or output is entered, pressing Enter newly selects according to the Edit mode.
- Delete: Deletes the appropriate items.

Fnet Setup This link is selected when communication is done through Fnet link.

The following dialogue box appears when this menu is selected.



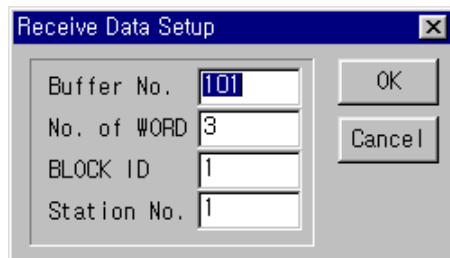
Screen Display Description

- STATION No. Select: Select the STATION No. of PMU main machine

- Edit Mode:

1. Add Mode: Add a new buffer number in the current entered number.
2. Modify Mode: Modify the buffer number in the current entered number.

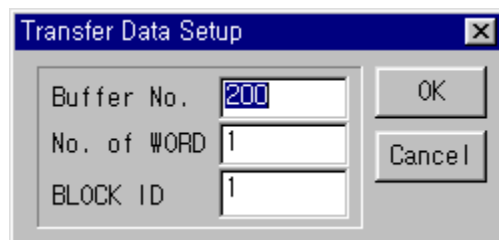
- Receive Data Setup



Buffer No.	101
No. of WORD	3
BLOCK ID	1
Station No.	1

1. Add: Enter Data according to the Edit Mode. the above screen appears to specify Buffer number, No. of Word, Block ID, and Station number.
2. Delete: Delete the appropriate items
Buffer number is the system buffer number within the PMU main machine.
3. No. of Word identifies the block size by the number of words when communicated. Block ID and Station number is selected according with the communication desired PLC.

- Transfer Data Setup



Buffer No.	200
No. of WORD	1
BLOCK ID	1

1. Add: Enter items according to the Edit Mode and specify Buffer number, No. of Word, Block ID, and the STATION No..
2. Delete: Delete the appropriate items.
3. "Transfer Data Setup" has Buffer No., No. of Word, Block ID.
Buffer No. is the system buffer within the main machine and specifies the buffer to receive the data.
No. of Word indicates the block size by the number of words communicated.
Block ID is selected according to the PLC communication is desired. Selection of the STATION number is not

necessary, even if the user does not enter the number, the main machine will send to your STATION number.

Select N:N Local - For N:N Communication, it is the communication method between PMUs in which case uses Fnet communication.

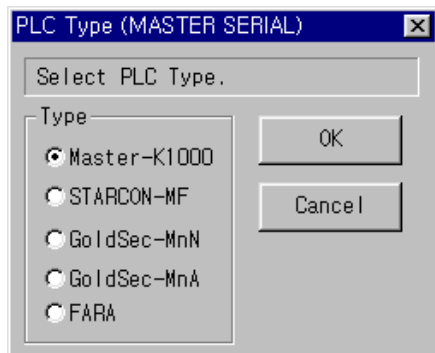
This is the same as selecting 1:1 communication Fnet.

Please refer Fnet for the selection method.

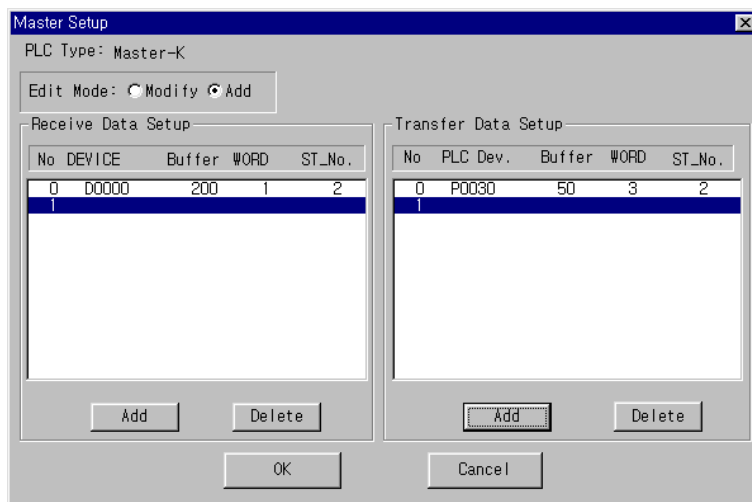
Select N:N Master - For N:N Communication, it is the communication method between one PMU and one or more PLC.

The communication method is serial communication using RS-422, and RS-422Communication Link is selected in the Select Master of the main machine.

1. First select PLC (Same as selecting Serial)



2. Master Setup



Screen Description

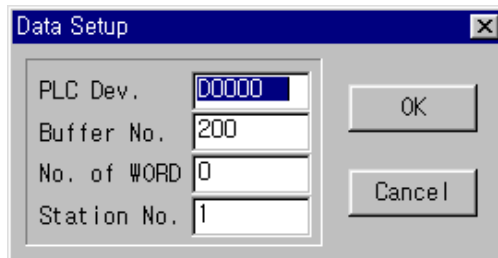
PLC Type - Shows the currently selected PLC type

Edit Mode:

1. Add Mode: Add a new buffer number in the current entered number.
2. Modify Mode: Modify the buffer number in the current entered number.

Select Data Received/Transfer

1. Enter: Items can be entered or edited according to the Edit Mode and the buffer number, Word, Block ID, and STATION no must be specified.
2. Delete: Deletes the appropriate Data.



3. Buffer No. is the system buffer number in the PMU main machine
No. of Word indicates the block size by the number of words communicated.
Block id and Station No. is selected according with the communication desired PLC.
PLC Device has restrictions as to the contact points selected for each PLC, please refer to the Communication Manual.
The selected PLC Device receives and sends data to the selected PMU buffer.
Station No. specifies the Station number of the communication desired PLC.

User defined Protocol

- The user defined Protocol is used when PMU-200/300/600 series communicates with external machines, and the external communication protocol is set to the PMU-200/300/600 series.

What is Communication Protocol?

It is the communication method to read/write data between machines.

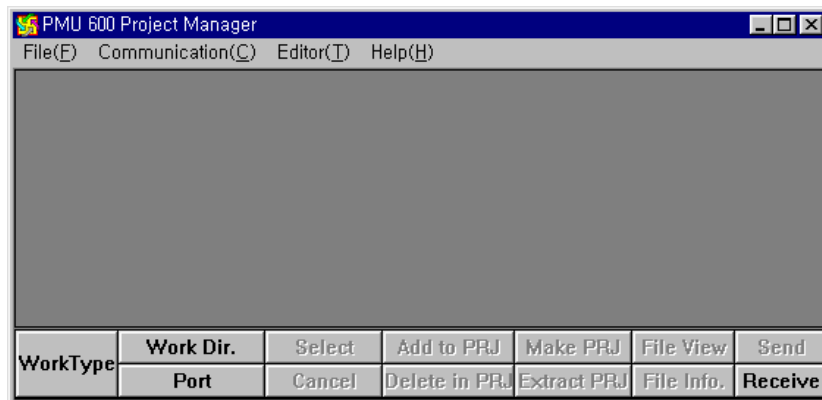
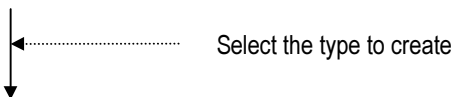
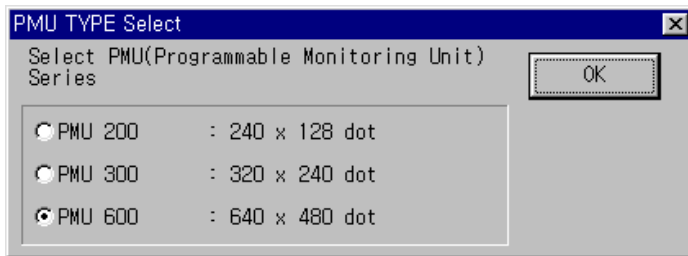
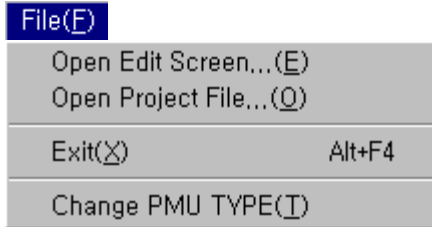
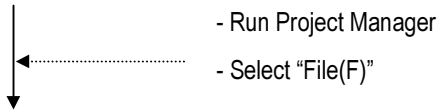
Item	Standards
Interface	RS232C/RS-485
Communication Method	Half-Duplex system, Asynchronous method
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200 bps
Data Types	Parity Bit: Even, Odd, None Data Bit: 7, 8 Bit Stop Bit: 1, 2 Bit Maximum Frame Size: 128 Byte
Configuration	- Maximum 8 Multi Drop Connections - Connection possible with other communication machine with RS-232C, RS-422 communication port. - Communication possible 1:1, 1:N (only for RS-422) - Communication possible 1:1, 1:N between PMU-300, PMU-200 (Master/Slave Method)
Creation Method	By using the PMU Master Protocol Editor, select the PMU-200/300/600 series external communication protocol. - Created Frame File --> Transfer to PMU Series

Item	Standards
Frame Editor	<ul style="list-style-type: none"> - All frames can be formed by asynchronous ASCII CODE communication method - One Frame configuration <ul style="list-style-type: none"> • Divide into Maximum 8 segments • User Data Maximum 4 segments <ul style="list-style-type: none"> i.e.) SD1: Station No. 2 byte SD2: max. 20 byte Device SD3: 2 byte Word Count SD4: 128 byte Data (Data Sent in WRITE) RD1: Station NO. 2 byte RD2: Data (Data Received in READ) • Variable BCC Check Method (SUM, MUL, XOR, Basic Method) • Maximum 128 byte size - <u>Create 4 frames per channel</u> <ul style="list-style-type: none"> • READ ENQ • READ ACK • WRITE ENQ • WRITE ACJK
Select Serial Link	<ul style="list-style-type: none"> - Selection of 8 blocks possible for each receive/send - Station No: Select station number of Master machine between 0-31 for transfer/receive - Device: Select the internal device name for the PLC - Buffer No.: Select the internal buffer number of PMU - No. of Word : Maximum 32 words possible per word unit

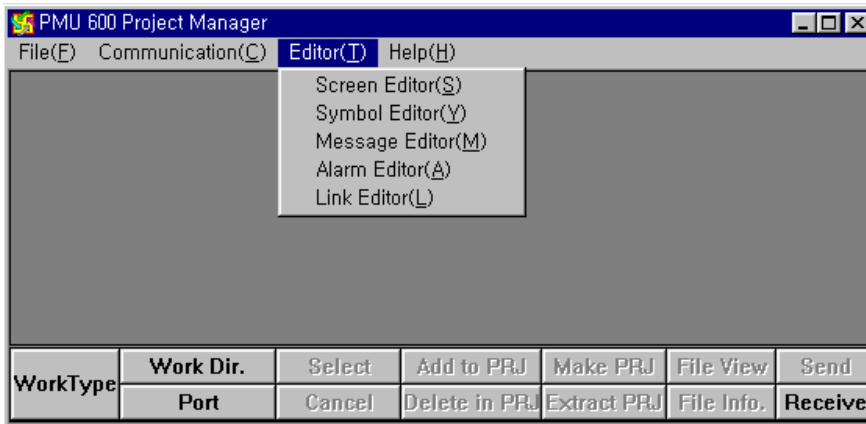
- User defined Protocol Communication Installation Method

This explains the installation method of communicating with external machines through the Protocol Communication Method using Frame Editor in PMU Master Software.

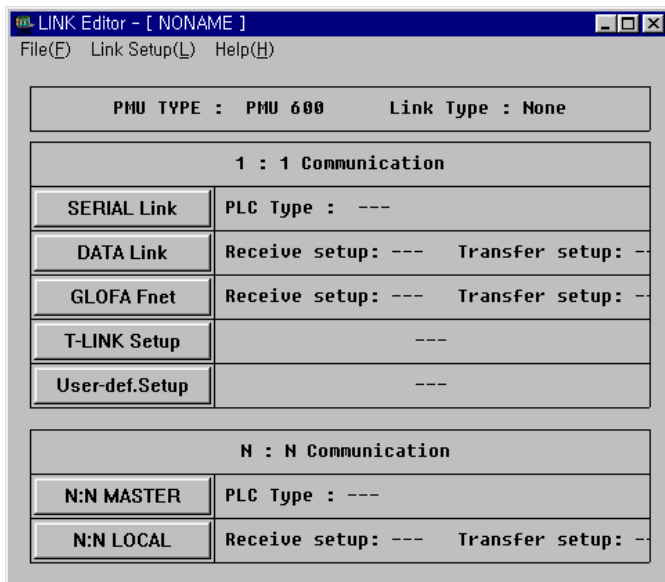
The following explanation is based on PMU-600 Series.



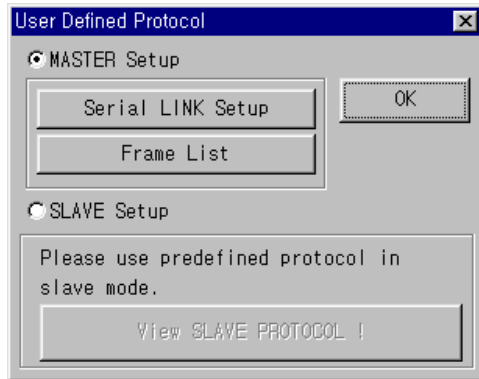
Run "Project Manager"
Select "Editor(T)"



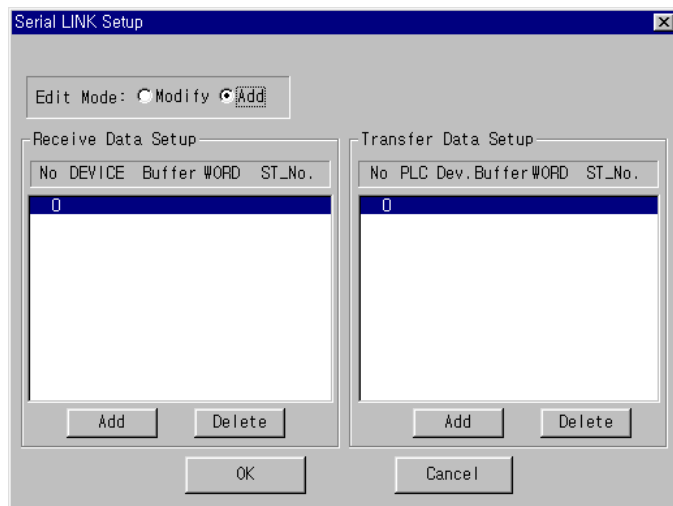
Select "Editor(T) → Link Editor(L)"



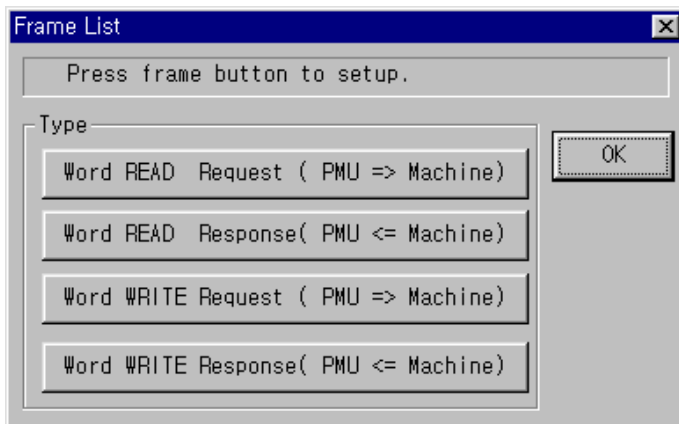
Select "Link Setup " (User defined Protocol)



- The Screen below appears when "Serial LINK Setup" is selected.



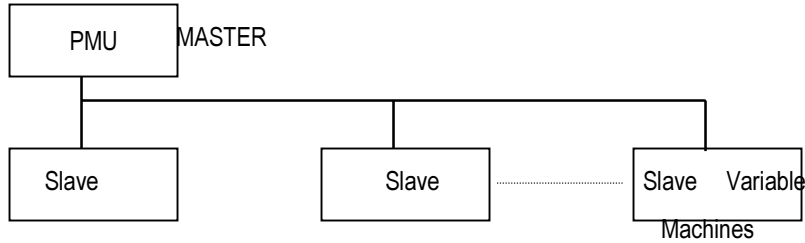
- The screen below appears when "Frame List" is selected.



Frame List:

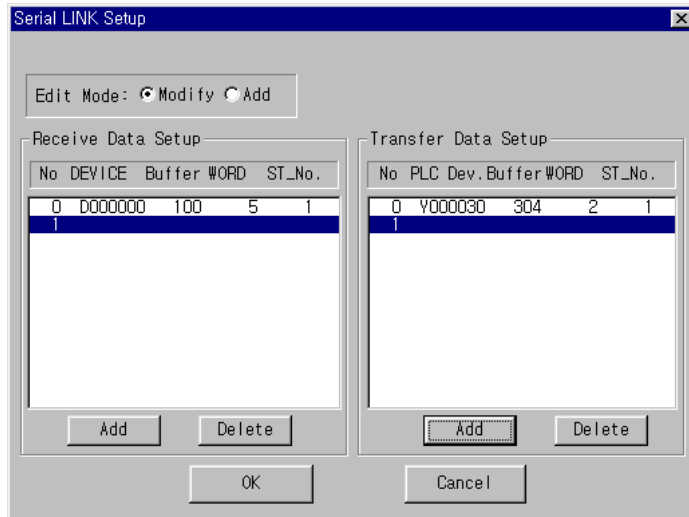
This is the section to select the Protocol to transmit the specified contents of the Serial Link Setup.

Note 1) What is Master Select?



Note 2) Example of Serial Select:

The screen below shows the case when the contents are selected for PMU communication with external Master machines (PLC, etc.)



Above Picture

PLC → PMU PLC ← PMU
 D0000 ~ D0004(5Words) → 100 Buffer Y00030-31(2Word) ← 304 Buffer

Note 3) Frame List Select Items

- Word READ Request (PMU=> Master Machine)

Select the frame that demands the data to be received from the Master machine to PMU.

- Word READ Response (PMU<= Master Machine)

After demand of the data to be received, select the frame that receives from the Master Machine.

- Word WRITE Request (PMU=> Master Machine)

Select the frame that sends the data from PMU to Master Machine.

- Word WRITE Response (PMU <=Master Machine)

After the data is sent, select the frame that receives from the Master Machine.

Please Refer to the screens below according to type.

- Word READ Request (PMU =>Master Machine)

- Word READ Response (PMU<=Master Machine)

- Word WRITE Request (PMU=>Master Machine)

- Word WRITE Response (PMU<=Master Machine)

Note 4) Frame List Type Description

1) Header, Tail

Select the Frame Header and Tail.

The contents for Header and Tail are as follows.

Select	ACSII Select	Select	ACSII Select	Select	ACSII Select	Select	ACSII Select
STX	0x02	ETX	0x03	EOT	0x04	ACK	0x06
NAK	0x15	SOH	0x01	ENQ	0x05	BEL	0x07
BS	0x08	HT	0x09	LF	0x0A	VT	0x0B
DLE	0x10	DC1	0x11	DC2	0x12	DC3	0x13
DC4	0x14	SYN	0x16	ETB	0x17	:	0x3A
FF	0x0C	CR	0x0D	SO	0x0E	S1	0x0F

To enter, place “[]” parentheses around the content i.e. [ENQ]

For Tail, [BCC] can be entered, this is the value selected appropriate for the content selected for BCC in the next box.

2) BCC Select

This selection applies when BCC is entered in the Tail section.

The basic selection is the SUM of H[1]~T[BCC-1].

Thus, BCC is the sum from after the Header to the point before the BCC of Tail.

Other than the standard selection, BCC can be selected through SUM, MUL, XOR in which case the range of data to be calculated must be specified with h for Header, for Segment, and for Tail.

For instance,

If BCC is three segments after the header, then BCC is specified as h[1]~s[3].

- Example: Non-Protocol Select

The details below explain when the Protocol Communication is selected, and how to define the type READ(Request, Response) WRITE(Request, Response) from the Frame List.

- Master Machine Communication Module: MJ71UC24
- PMU Type: PMU Series (PMU-200/300/600)

Master Machine Communication Module: MJ1UC24 Protocol

1.General Use

- The station No. and number of data is selected with hexadecimal value.
- BCC is the sum of the data from the Station No. to EOT.
- Excluding the Master Code, all data should be changed and set to ASCII.
- Communication Mode Switch for RS232C is 1, and for RS422 is 5.
- Select FF for PC No., and 0 for WAIT.

PMU =>MJ71UC24

ENQ	Station.No	PC No.	Command	WAIT	DATA	BCC
	2	2	2	1	n	2

PMU <=MJ7UC24 (READ: Normal)

STX	Station No.	PC No.	DATA	ETX	BCC
	2	2	n		2

PMU <=MJ71UC24 (WRITE: Normal)

ACK	Station No.	PC No.
	2	2

PMU <= MJ71UC24 (Abnormal)

NAK	Station No.	PC No.	Error Code
	2	2	



- Example for Defining a Frame

- Word READ Request (PMU=>Master Machine)

ENQ	StationNo. 2	FF 1	QR 2	0 1	Device Address 7	No. of Data 2	BCC 2
-----	-----------------	---------	---------	--------	---------------------	------------------	----------

Master: Word READ Request (PMU => Machine)

Header: [ENQ] Tail: [BCC] BCC: Default SUM h[1]~t[bcc-1]

Segment 1: Type: ARRAY, Size: 2, SD1

Segment 2: Type: CONST, Size: , FFQR

Segment 3: Type: ARRAY, Size: 7, SD2

Segment 4: Type: ARRAY, Size: 2, SD3

Segment 5: Type: NONE, Size: ,

Segment 6: Type: NONE, Size: ,

Segment 7: Type: NONE, Size: ,

Segment 8: Type: NONE, Size: ,

OK Cancel

- Word READ Response (PMU<=Master Machine)

STX	ID No. 2	FF 2	Data = 4* Data n	ETX	BCC 2
-----	-------------	---------	---------------------	-----	----------

Master: Word READ Response (PMU <= Machine)

Header: [STX] Tail: [EXT][BCC] BCC: Default SUM h[1]~t[bcc-1]

Segment 1: Type: ARRAY, Size: 2, RD1

Segment 2: Type: CONST, Size: ,

Segment 3: Type: ARRAY, Size: , RD2

Segment 4: Type: NONE, Size: ,

Segment 5: Type: NONE, Size: ,

Segment 6: Type: NONE, Size: ,

Segment 7: Type: NONE, Size: ,

Segment 8: Type: NONE, Size: ,

OK Cancel

- Word WRITE Request (PMU=>Master Machine)

ENQ	ID No.	FF	QW	0	Device Address	No. of Data	:	:	Data	BCC
	2	2	2	1	7	2			4	2

- Word WRITE Response (PMU=> Master Machine)

ACK	ID No.	FF
	2	2