

Chapter 9 LSIS: MASTER-K PLC

9.1 PLC List

InfoU is able to connect to MASTER-K PLC.

PLC	CPU module	Connection method	Comm. method	Connection module	Remarks
MASTE-K	1000S	CPU module direct connection method	RS-232C	CPU module	-
		Link	RS-232C	G3L-CUEA	Cnet
		Link	RS-422/485	G3L-CUEA	Cnet
		Link	Ethernet	G3L-EUTB	Open type FEnet
	300S	CPU module direct connection method	RS-232C	CPU모듈	-
		Link	RS-232C	G4L-CUEA	Cnet
		Link	RS-422/485	G4L-CUEA	Cnet
		Link	Ethernet	G4L-EUTB	Open type FEnet
	20R0S	CPU module direct connection method	RS-232C	CPU module	-
		Link	RS-232C	G6L-CUEB	Cnet
		Link	RS-422/485	G6L-CUEC	Cnet
		Link	Ethernet	G6L-EUTB	Open type FEnet
	120S	CPU module direct connection method	RS-232C	CPU모듈	-
		Link	RS-232C	G7L-CUEB	Cnet
		Link	RS-422/485	G7L-CUEC	Cnet
	80S	CPU module direct connection method	RS-232C	CPU module	-
		Link	RS-232C	G7L-CUEB	Cnet
		Link	RS-422/485	G7L-CUEC	Cnet

Notice

1. PLC

- ☞ K10S1 not supported.
- ☞ Ethernet (GxL-EUTC, ERTC) module not supported.

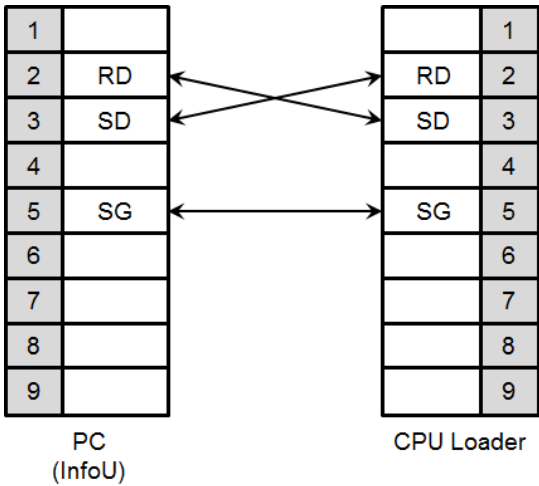
2. Terminology

- ☞ CPU module direct connection: executes serial communication through the loader port of the CPU module.
- ☞ Link: executing serial communication with the communication module of the PLC.

9.2 Wiring Diagram

9.2.1 CPU module direct connection method: Loader

Connecting InfoU and MASTER-K PLC with CPU module direct connection method (RS-232C) is as follows.



Notice

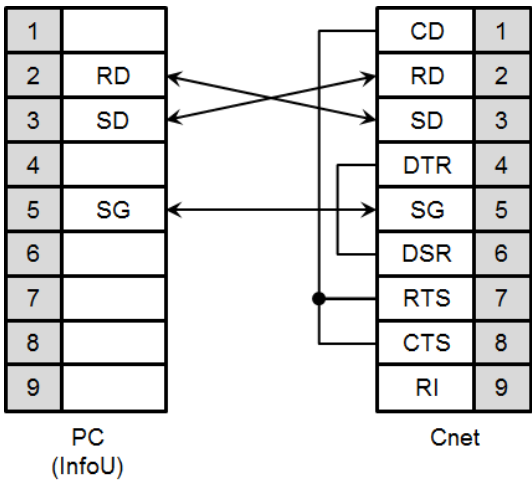
Cautions when wiring cable

- ☞ In the CPU module loader port is a CPU module that provides built-in Cnet. Be careful not to connect to other pins when wiring.
- ☞ CPU module loader port is D-SUB 9P, Female. Use a Male connector when wiring the cable.

9.2.2 Link method: Cnet

Cnet is specified into RS-232C and RS-422/485 type.

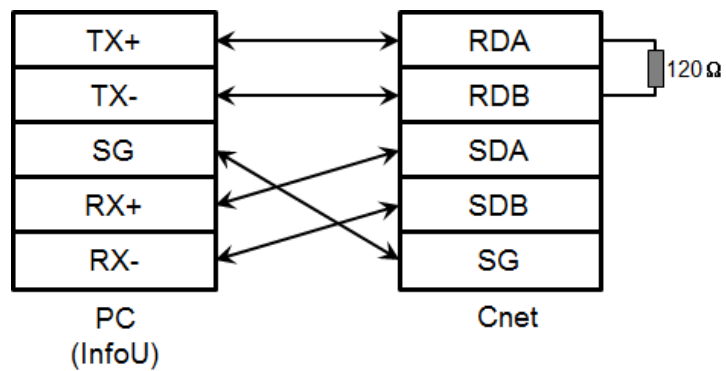
Below is the wiring of RS-232C Cnet.



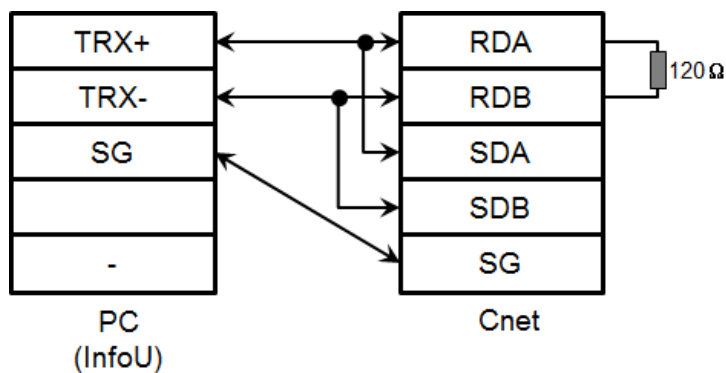
Notice

- ☞ Since MASTER-K Cnet (RS-232C) uses flow control, it will not communicate if it is not wired as above.

RS-422 wiring is as below.



RS-485 wiring is as below.



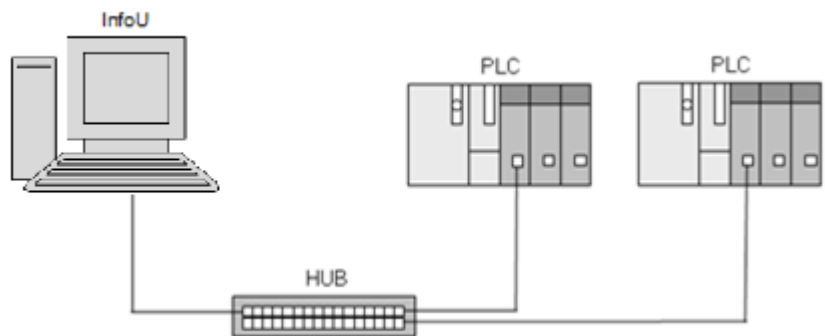
Notice

- PC에서 RS-422/485 결선을 사용하려면 RS232 to RS422/485 컨버터가 필요합니다.
- RS-422/485 port of the PLC does not need an extra connector since it's consisted as a terminal block.

9.2.3 Link method: FEnet

(1) Ethernet specification

Ethernet can be connected in 2 ways as below figure.





Notice

When connecting hub-node, direct cable has to be used and cross cable has to be used when connecting 1:1.

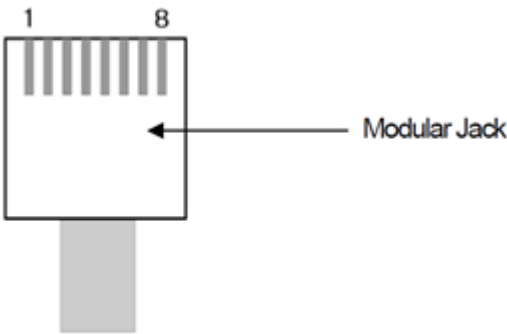
(2) Ethernet cable

Ethernet cable gets specified into 2 cables according to its type.

When communicating through LAN, connected to network equipment like a hub, direct cable is used. (In case of hub-node connection) Direct connection is available among equipments and in this case, cross cable is used.

Method for wiring a direct cable is as follows.

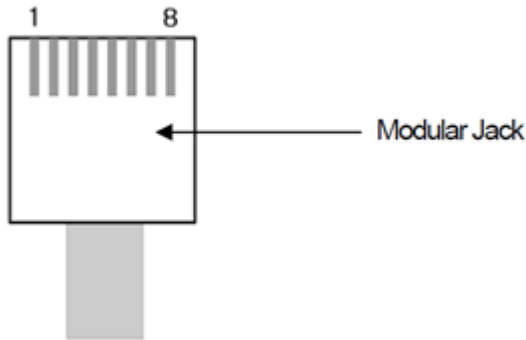
1	White-oragne	↔	White-oragne	1
2	Orange	↔	Orange	2
3	White-green	↔	White-green	3
4	Blue	↔	Blue	4
5	White-blue	↔	White-blue	5
6	Green	↔	Green	6
7	White-brown	↔	White-brown	7
8	Brown	↔	Brown	8



‘White-yellow’, ‘White-green’, ‘White-blue’, ‘White-brown’ from above figure is indicated on the coating of the cable. For example, ‘white-blue’ has blue stripes on white coating.

Method for wiring of cross cable is as follows.

1	White-orange	↔	White-green	1
2	Orange	↔	Green	2
3	White-green	↔	White-orange	3
4	Blue	↔	Blue	4
5	White-blue	↔	White-blue	5
6	Green	↔	Orange	6
7	White-brown	↔	White-brown	7
8	Brown	↔	Brown	8



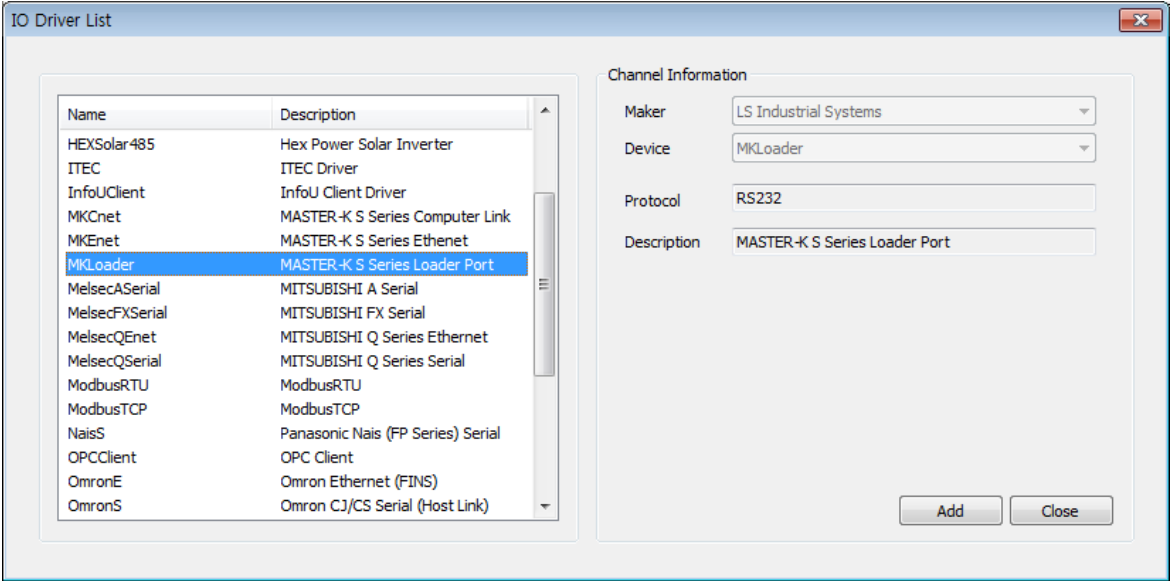
Notice

- ☞ Use according to the connection method.
- ☞ Wire the cable by using a modular tool. Bad connection may occur.
- ☞ If the lock part of the modular jack gets damaged, it may not get fixed to the RJ45 connector (Ethernet connector) and bad connection may occur.
- ☞ The UTP cable is made out of solid wire material. Therefore, it may break when heavily bent or shaken.
- ☞ It is advisory to use a plug cover when wiring cables.

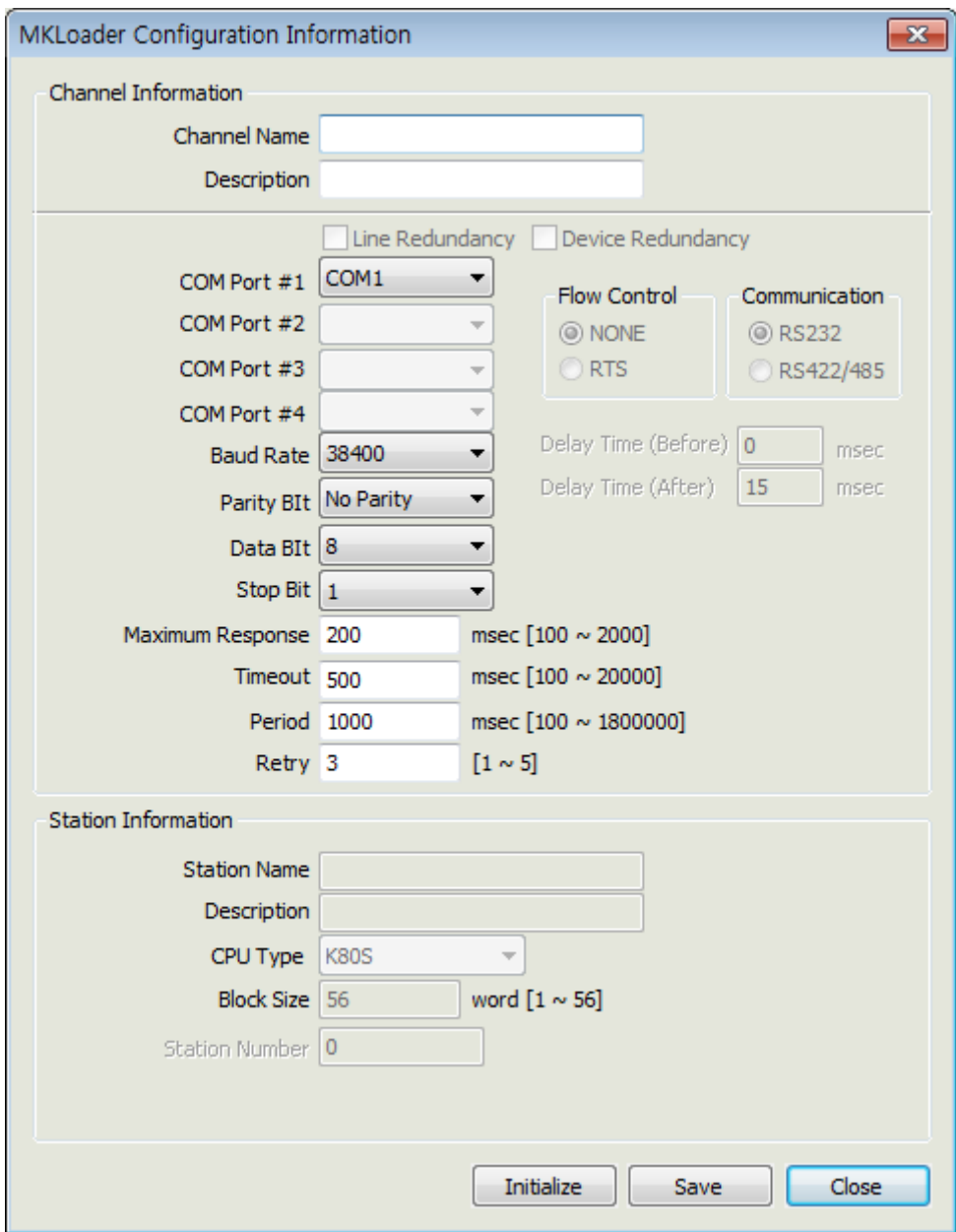
9.3 I/O Driver Setting

9.3.1 CPU module direct connection method: Loader

- (1) PLC Setting
PLC Loader 통신 설정은 KGL-WIN 프로그램을 사용하여 설정합니다.
- (2) InfoU Setting: MKLoader
 - 1) Add Channel



Select “MKLoade” from the I/O Driver list and press “Add”.



The image shows the 'MKLoader Configuration Information' dialog box. It is divided into two main sections: 'Channel Information' and 'Station Information'. The 'Channel Information' section includes fields for 'Channel Name' and 'Description'. Below these are checkboxes for 'Line Redundancy' and 'Device Redundancy'. There are four 'COM Port' dropdown menus, with 'COM1' selected in the first. To the right of the COM ports are 'Flow Control' (radio buttons for 'NONE' and 'RTS', with 'NONE' selected) and 'Communication' (radio buttons for 'RS232' and 'RS422/485', with 'RS232' selected). Below these are 'Delay Time (Before)' and 'Delay Time (After)' input fields with 'msec' units. The 'Station Information' section includes fields for 'Station Name', 'Description', 'CPU Type' (dropdown menu with 'K80S' selected), 'Block Size' (input field with '56' and a range '[1 ~ 56]'), and 'Station Number' (input field with '0'). At the bottom of the dialog are three buttons: 'Initialize', 'Save', and 'Close'.

- Channel Name: Input a channel name.
- Description: Input some information on the channel.
- Line Redundancy: Check ☒ in the box to use Line Redundancy.
- COM Port #1: Select a communication port.
- COM Port #2: Select a communication port.
- COM Port #3: Select a communication port.
- COM Port #4: Select a communication port.
- Baud Rate: Select a communication speed.
- Parity Bit: Select a parity bit.
- Data Bit: Select a data bit.
- Stop Bit: Select a stop bit.

- Maximum Response: It refers to a certain time period that will take to receive a response after requesting data.
- Time Out : It refers to a certain time period during which any response to the request for data is not made and after passing such a time period, the system will declare timeout to move on to the next process. The time period to be set will be a base to judge communication errors.
- Period: It refers to an interval to request data.
- Retry: Set up the number of times to retry when communication fails.

2) Add Station

MKLoader Configuration Information

Channel Information

Channel Name

MKLoader

Description

☐ Line Redundancy

☐ Device Redundancy

COM Port #1

COM1

COM Port #2

COM Port #3

COM Port #4

Baud Rate

38400

Parity Bit

No Parity

Data Bit

8

Stop Bit

1

Maximum Response

200

msec [100 ~ 2000]

Timeout

500

msec [100 ~ 20000]

Period

1000

msec [100 ~ 1800000]

Retry

3

[1 ~ 5]

Flow Control

☒ NONE

☐ RTS

Communication

☒ RS232

☐ RS422/485

Delay Time (Before)

0

msec

Delay Time (After)

15

msec

Station Information

Station Name

Description

CPU Type

K80S

Block Size

56

word [1 ~ 56]

Station Number

0

Initialize

Save

Close

- Station Name: Input a station name.
- Description: Input some information on the station.

- CPU Type: Select a CPU type.
- Block Size: Input a block size of PLC communication.

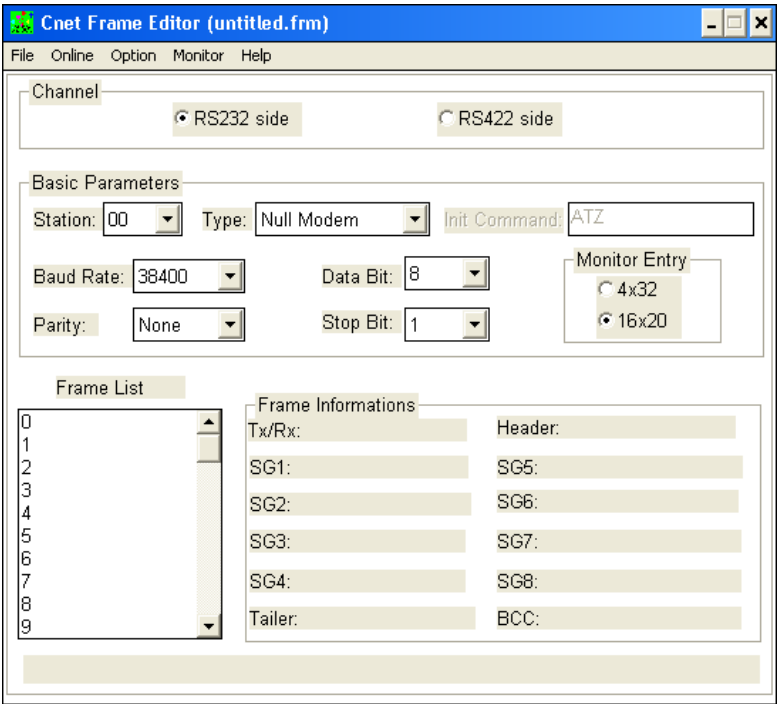
3) I/O Address

- Devices to be supported
: P, M, K, F, L, D (Device T and C are not supported.)
- I/O Address Type
: P000 (Analog Tag: The last three digits are reserved to show the word area), P00F (Digital tag: The last one digit shows the bit area.) The remaining area is for the word area.

9.3.2 Link method: Cnet

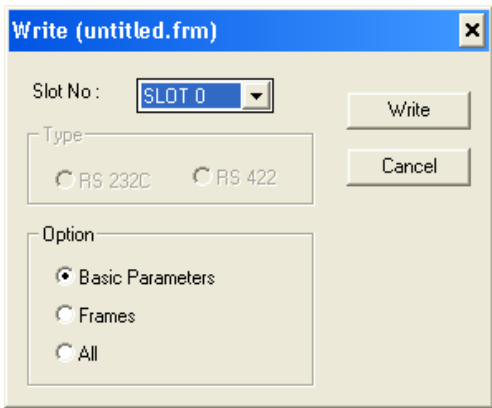
(1) PLC Setting

Set Cnet communication parameter of the PLC (except K80S/K120S) through frame editor. (Refer to Cnet I/F Module instruction manual) Set Cnet as below.



Set communication channel to 'RS232 side' and set communication parameter. When setting RS-422/485, set 'RS422 side'. Be sure to select '16 x 20' for monitor registration size.

In order to set parameter value to the PLC, select slot number in which the Cnet module is installed as below.



When write is done, start operation as below.

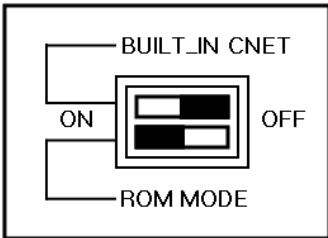


Be sure to set operation mode from the Cnet module.
Because operation mode setting differs according to each Cnet, refer to Cnet I/F Module instruction manual.

Notice

- 1. Communication state check
 - ☞ Frame editor has a monitoring function. Communication data may be checked using this function.
 - ☞ There are RX, TX LEDs on the Cnet module. These LEDs blink rapidly when communicating normally.
- 2. Cautions when setting PLC
 - ☞ Be sure to reset the PLC after setting the communication parameter of the frame editor. (Refer to instruction manual for specific details)
 - ☞ This manual only explains briefly. Be sure to refer to the Cnet I/F Module instruction manual when setting.

To use Cnet to K80S/K120S, set the 'BUILT_IN CNET' switch to 'OFF' as below.



Set communication parameter from KGL-WIN.

Basic

Interrupt

CommCh0

CommCh1

PIDC

Communication :

Enable

Communication Method

Station Number :

0

Baud Rate :

38400

Data Bit :

8

Parity Bit :

None

Stop Bit :

1

Communication Channel

☒ RS232C Null Modem or RS422/485

☐ RS232C Modem(Dedicated Line)

☐ RS232C Dial-up Modem

Init Command :

ATZ

알아두기

1. Cautions when setting PLC
- This manual only explains briefly. Be sure to refer to the KGL-WIN instruction manual when setting.
2. Cautions when setting InfoU
- When configuring RS-422/485 1:N, set transmission stand-by time.

Flow Control

☐ NONE

☒ RTS

Communication

☒ RS232

☐ RS422/485

Delay Time (Before)

0

msec

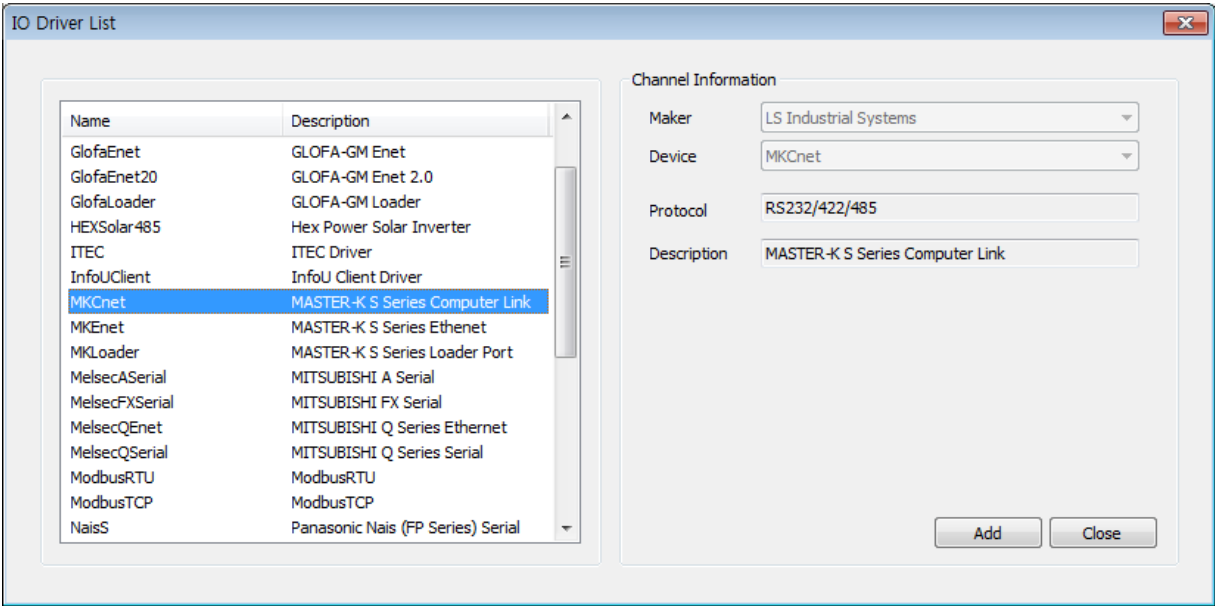
Delay Time (After)

15

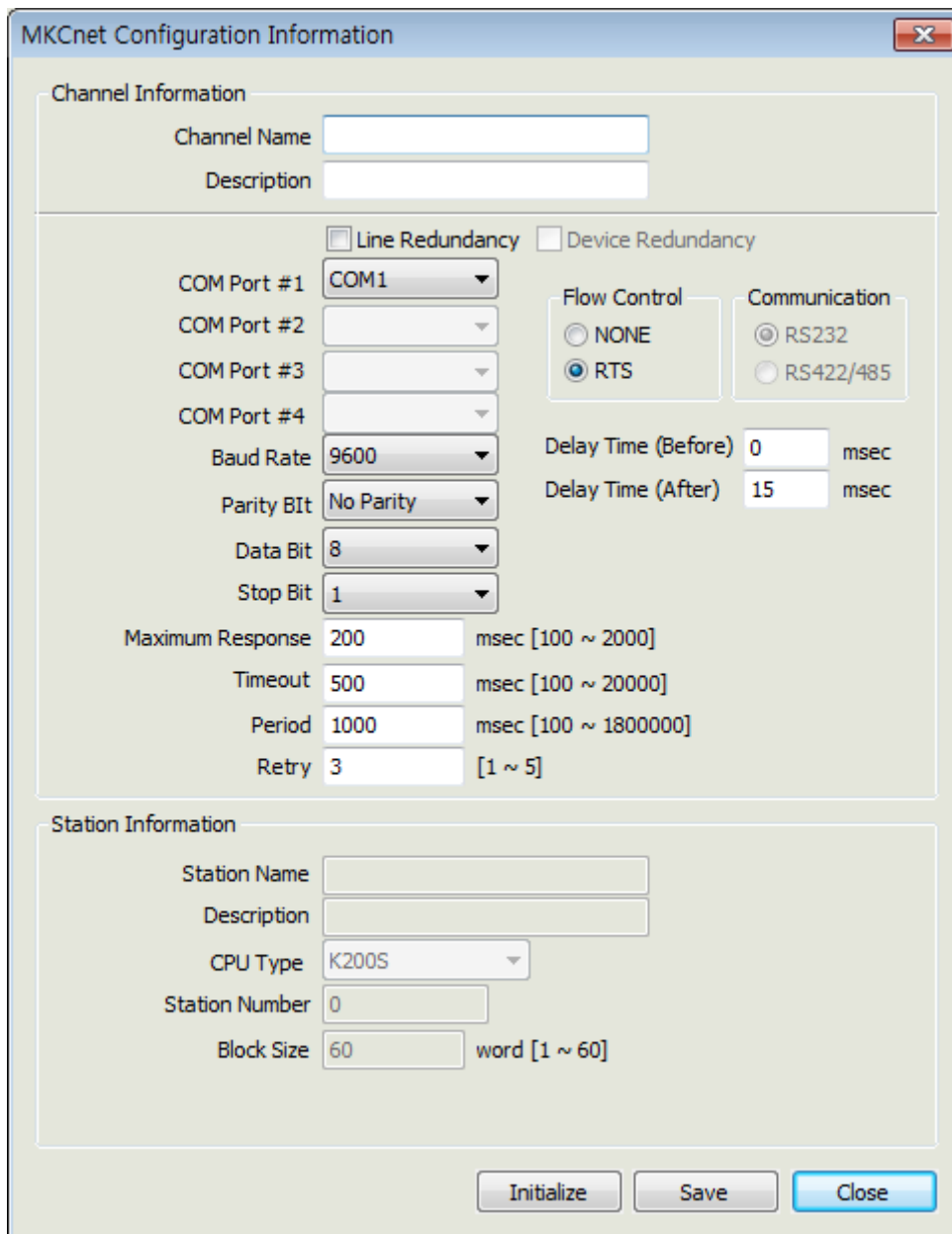
msec

(2) InfoU Setting: MKCnet

1) Add Channel



Select “MKCnet” from the I/O driver list and press “Add”.



The image shows a software dialog box titled "MKCnet Configuration Information". It is divided into two main sections: "Channel Information" and "Station Information".

Channel Information:

- Channel Name: [Text input field]
- Description: [Text input field]
- ☐ Line Redundancy ☐ Device Redundancy
- COM Port #1: [COM1 (dropdown)]
- COM Port #2: [Empty (dropdown)]
- COM Port #3: [Empty (dropdown)]
- COM Port #4: [Empty (dropdown)]
- Baud Rate: [9600 (dropdown)]
- Parity Bit: [No Parity (dropdown)]
- Data Bit: [8 (dropdown)]
- Stop Bit: [1 (dropdown)]
- Flow Control: ☐ NONE ☒ RTS
- Communication: ☒ RS232 ☐ RS422/485
- Delay Time (Before): [0] msec
- Delay Time (After): [15] msec
- Maximum Response: [200] msec [100 ~ 2000]
- Timeout: [500] msec [100 ~ 20000]
- Period: [1000] msec [100 ~ 1800000]
- Retry: [3] [1 ~ 5]

Station Information:

- Station Name: [Text input field]
- Description: [Text input field]
- CPU Type: [K200S (dropdown)]
- Station Number: [0]
- Block Size: [60] word [1 ~ 60]

At the bottom right, there are three buttons: "Initialize", "Save", and "Close".

- Channel Name: Input a channel name.
- Description: Input some information on the channel.
- Line Redundancy: Check ☒ in the box to use Line Redundancy.
- COM Port #1: Select a communication port.
- COM Port #2: Select a communication port.
- COM Port #3: Select a communication port.
- COM Port #4: Select a communication port.
- Baud Rate: Select a communication speed.
- Parity Bit: Select a parity bit.
- Data Bit: Select a data bit.
- Stop Bit: Select a stop bit.

- Maximum Response: It refers to a certain time period that will take to receive a response after requesting data.
- Time Out : It refers to a certain time period during which any response to the request for data is not made and after passing such a time period, the system will declare timeout to move on to the next process. The time period to be set will be a base to judge communication errors.
- Period: It refers to an interval to request data.
- Retry: Set up the number of times to retry when communication fails.
- 흐름제어 : NONE 과 RTS제어 중 하나를 선택합니다.
- Delay Time (Before) : 통신 Delay Time을 설정합니다. RTS 제어를 사용할 때에만 설정합니다.
- Delay Time (After) : 통신 Delay Time을 설정합니다. RTS 제어를 사용할 때에만 설정합니다.

2) Add Station

MKCnet Configuration Information

Channel Information

Channel Name

MKCnet

Description

☐ Line Redundancy

☐ Device Redundancy

COM Port #1

COM1

COM Port #2

COM Port #3

COM Port #4

Baud Rate

9600

Parity Bit

No Parity

Data Bit

8

Stop Bit

1

Maximum Response

200

msec [100 ~ 2000]

Timeout

500

msec [100 ~ 20000]

Period

1000

msec [100 ~ 1800000]

Retry

3

[1 ~ 5]

Flow Control

☐ NONE

☒ RTS

Communication

☒ RS232

☐ RS422/485

Delay Time (Before)

0

msec

Delay Time (After)

15

msec

Station Information

Station Name

Description

CPU Type

K200S

Station Number

0

Block Size

60

word [1 ~ 60]

Initialize

Save

Close

- Station Name: Input a station name.
- Description: Input some information on the station.
- CPU Type: Select a CPU type.
- Station Number : Input a station number.
- Block Size: Input a block size of PLC communication

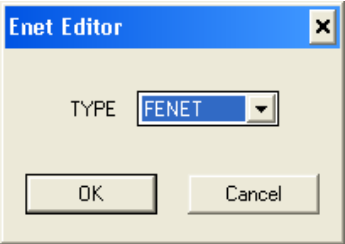
3) I/O Address

- Devices to be supported
: P, M, K, F, L, D (Device T and C are not supported.)
- I/O Address Type
: P000 (Analog Tag: The last three digits are reserved to show the word area), P00F (Digital tag: The last one digit shows the bit area.) The remaining area is for the word area.

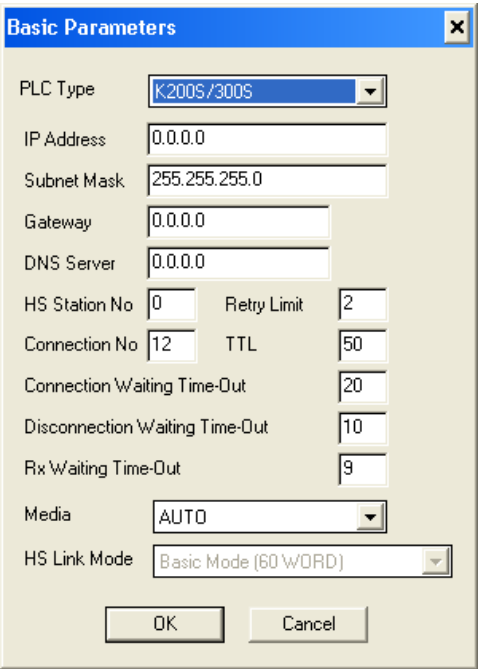
9.3.3 Link method: FEnet

(1) PLC Setting

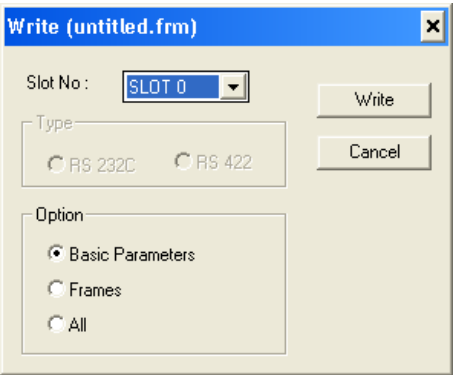
InfoU only supports open type FEnet. (Exclusive FEnet module not supported) Set FEnet communication parameter from high-speed Ethernet frame editor. (Refer to FEnet I/F Module instruction manual)
After running the software, select 'FENET' as below.



Set communication parameter such as IP address and gateway.



In order to set parameter value to the PLC, select slot number in which the Cnet module is installed as below.



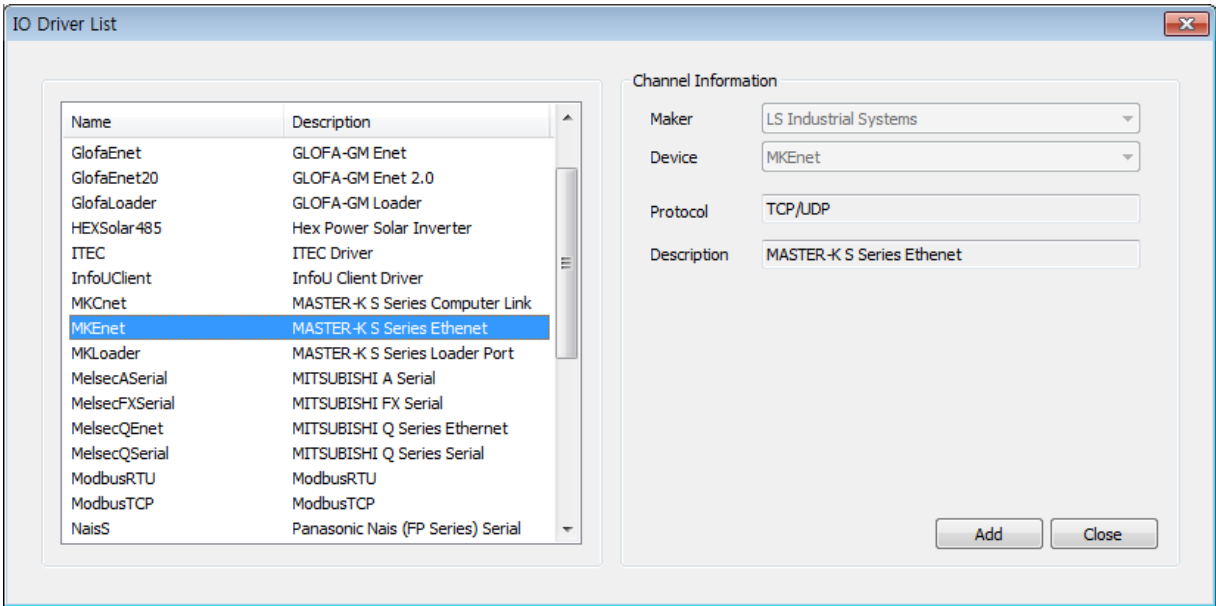
When write is done and PLC is reset, setting is done.

Notice

Communication state check

There are RX, TX LEDs on the Cnet module. These LEDs blink rapidly when communicating normally.

- (2) InfoU Setting: MKEnet
- 1) Add Channel



Select “MKEnet” from the I/O driver list and press “Add”.

Channel Information

Channel Name

Description

PC IP Address #1 127 . 0 . 0 . 1

PC IP Address #2 0 . 0 . 0 . 0

Maximum Response Time 200 msec [100 ~ 2000]

Timeout 2000 msec [1000 ~ 3000]

Period 500 msec [100 ~ 600000]

Retry 3 [1 ~ 5]

Station Information

Station Name

Description

PLC CPU Type K1000S

☐ Line Redundancy ☐ Device Redundancy

PLC IP Address #1-1 0 . 0 . 0 . 0

PLC IP Address #1-2 0 . 0 . 0 . 0

PLC IP Address #2-1 0 . 0 . 0 . 0

PLC IP Address #2-2 0 . 0 . 0 . 0

Communication Type TCP

Port 2004

Block Size 1400 byte [10 ~ 1400]

Initialize Save Close

- Channel Name: Input a channel name.
- Description: Input some information on the channel.
- Serve IP Address #1: Input PC's IP Address.
- Server IP Address #2: If Line Redundancy will be used, input the second IP Address to be used.
- Maximum Response: It refers to a certain time period that will take to receive a response after requesting data.
- Time Out : It refers to a certain time period during which any response to the request for data is not made and after passing such a time period, the system will declare timeout to move on to the next process. The time period to be set will be a base to judge communication errors.
- Period: It refers to an interval to request data.
- Retry: Set up the number of times to retry when communication fails.

2) Add Station

The image shows the 'MKEnet' configuration window. It is divided into two main sections: 'Channel Information' and 'Station Information'.
Channel Information:
 - Channel Name: MKEnet
 - Description: (empty)
 - PC IP Address #1: 127 . 0 . 0 . 1
 - PC IP Address #2: 0 . 0 . 0 . 0
 - Maximum Response Time: 200 msec [100 ~ 2000]
 - Timeout: 2000 msec [1000 ~ 3000]
 - Period: 500 msec [100 ~ 600000]
 - Retry: 3 [1 ~ 5]
Station Information:
 - Station Name: (empty)
 - Description: (empty)
 - PLC CPU Type: K1000S (dropdown)
 - Line Redundancy: ☐
 - Device Redundancy: ☐
 - PLC IP Address #1-1: 0 . 0 . 0 . 0
 - PLC IP Address #1-2: 0 . 0 . 0 . 0
 - PLC IP Address #2-1: 0 . 0 . 0 . 0
 - PLC IP Address #2-2: 0 . 0 . 0 . 0
 - Communication Type: TCP (dropdown)
 - Port: 2004
 - Block Size: 1400 byte [10 ~ 1400]
 At the bottom are three buttons: 'Initialize', 'Save', and 'Close'.

- Station 이름 : Station 이름을 입력합니다.
- Station 설명 : Station 설명을 입력합니다.
- PLC CPU 종류 : PLC CPU 종류를 선택합니다.
- 라인 이중화 : 라인 이중화를 사용할 경우 체크 합니다.
- 장비 이중화 : 장비 이중화를 사용할 경우 체크 합니다.
- PLC IP Address #1-1 : PLC 의 IP Address를 입력합니다.
- PLC IP Address #1-2 : PLC 의 IP Address를 입력합니다. 라인 이중화를 사용할 때 입력합니다.
- PLC IP Address #2-1 : PLC 의 IP Address를 입력합니다. 장비 이중화를 사용할 때 입력합니다.
- PLC IP Address #2-2 : PLC 의 IP Address를 입력합니다. 라인 이중화와 장비 이중화를 함께 사용할 때 입력합니다.
- 통신 방식 : TCP와 UDP 중의 한가지를 선택합니다.
- 포트 번호 : 통신 방식 선택에 따라 자동으로 입력됩니다.
- 블록 크기 : PLC 통신 블록의 크기를 입력합니다.

- Station Name: Input a station name.
- Description: Input some information on the station.
- PLC CPU Type: Select a PLC CPU type.
- Line Redundancy: Check ☒ in the box to use Line Redundancy.
- Device Redundancy: Check ☒ in the box to use Device Redundancy.
- PLC IP Address #1-1: Input PLC's IP Address.
- PLC IP Address #1-2: Input PLC's IP Address. Input the address when using Line Redundancy.
- PLC IP Address #2-1: Input PLC's IP Address. Input the address when using Device Redundancy.
- PLC IP Address #2-2: Input PLC's IP Address. Input the address when using Line Redundancy along with Device Redundancy.
- Communication Type: Select either TCP or UDP.
- Port: The port number is automatically inputted according to the selected communication type.
- Block Size: Input a block size of PLC communication.

3) I/O Address

- Devices to be supported
: P, M, K, F, L, D (Device T and C are not supported.)
- I/O Address Type
: P000 (Analog Tag: The last three digits are reserved to show the word area), P00F (Digital tag: The last one digit shows the bit area.) The remaining area is for the word area.

9.4 Available Device

Available devices of the InfoU are as follows.

Device Type	Size	Bit Contact point	Word Data	Remarks
P	1024 point	P0000 ~ P063F	P000 ~ P063	
M	3072 point	M0000 ~ M191F	M000 ~ M191	
L	1024 point	L0000 ~ L063F	L000 ~ L063	
K	512 point	K0000 ~ K031F	K000 ~ K031	
F	512 point	F0000 ~ F031F	F000 ~ F031	
D	10000 word	D0000.0 ~ D9999.F	D0000 ~ D9999	

Notice

- ☞ Please make sure to use the device within the range.
- ☞ Device range may differ according to the CPU module. Refer to each CPU module's instruction manual.