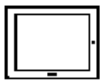
Connecting Rockwell (Allen-Bradley) PLC

SLC500 Series (Ethernet)

Applicable Models

Model 	Products	Option Ethernet	Existence of Internal Ethernet Port
GP	GP-377RT	Yes*1 (GP377R-MLTE41)	No
	GP-477RE	Yes*1 (GP077-MLTE41, GP070-ET41)	No
	GP-577RS	Yes*1 (GP077-MLTE41, GP070-ET41)	No
	GP-577RT	Yes*1 (GP077-MLTE41, GP070-ET41)	No
	GP-2300L	No	Yes
	GP-2300T	No	Yes
	GP-2400T	No	Yes
	GP-2500T	Yes*2*3	Yes
	GP-2501S	Yes*1*2 (GP077-MLTE41, GP070-ET41)	No
	GP-2501T	Yes*1*2 (GP077-MLTE41, GP070-ET41)	No
	GP-2600T	Yes*2*3	Yes
GLC	GLC2300L	No	Yes
	GLC2300T	No	Yes
	GLC2400T	No	Yes
	GLC2600T	Yes*2*3	Yes

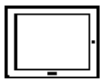
*1 2 Way Driver (Pro-Server, GP-Web) cannot be used.

*2 To use the Option Ethernet I/F Unit, a bus conversion unit (PSL-CONV000) is required separately.

*3 When using the Option Ethernet I/F Unit, it's possible to put the network where applications like 2Way Driver (Pro-Server, GP-Web) can be used and the network that PLC uses into separate classes or net numbers. In this case, the PLC communicates with the Option Ethernet I/F Unit's side.

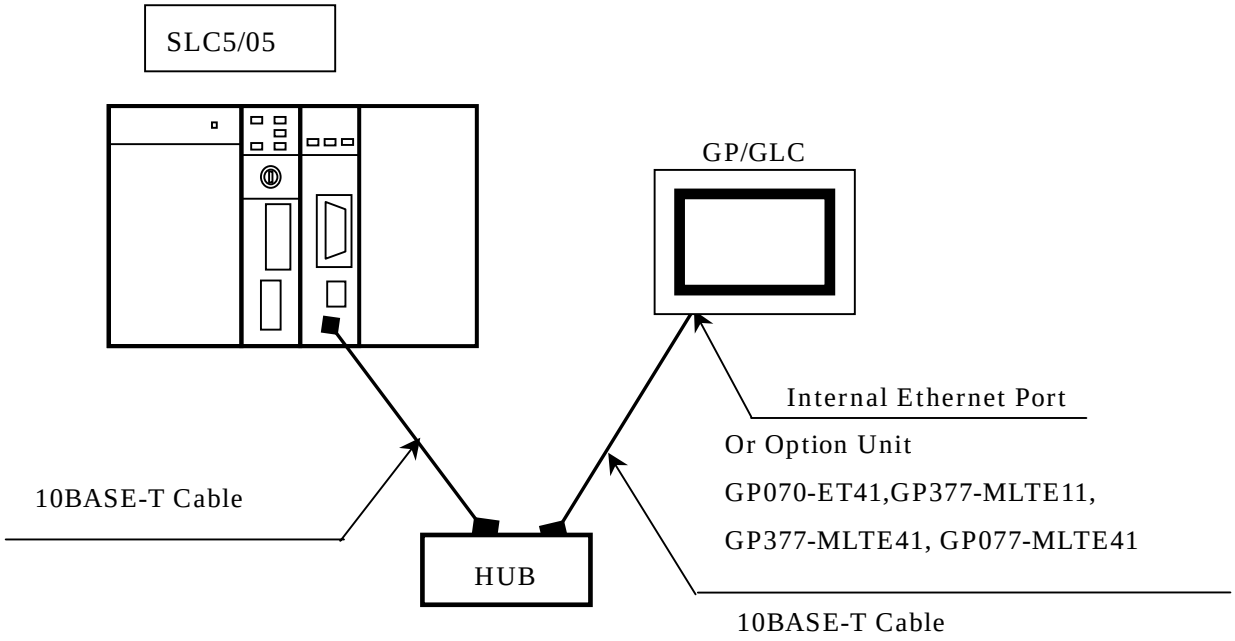
* Information on the case of connection by using Handy Type is not stated.

PLC

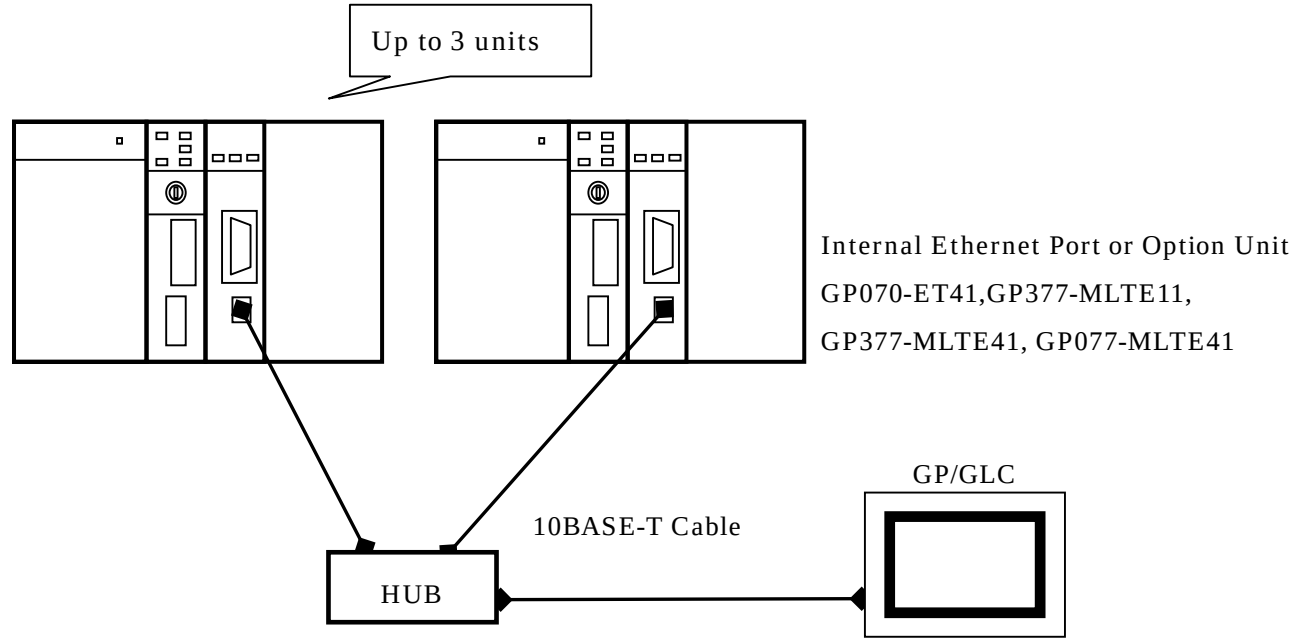
CPU 	Link I/F	Usable Cable	Unit	
SLC05/05	Ethernet I/F on CPU	Ethernet Cable IEEE802.3 compliant	GP070-ET41 GP377-MLTE11 GP377-MLTE41 GP077-MLTE41 Made by Digital	GP

Connection Configuration

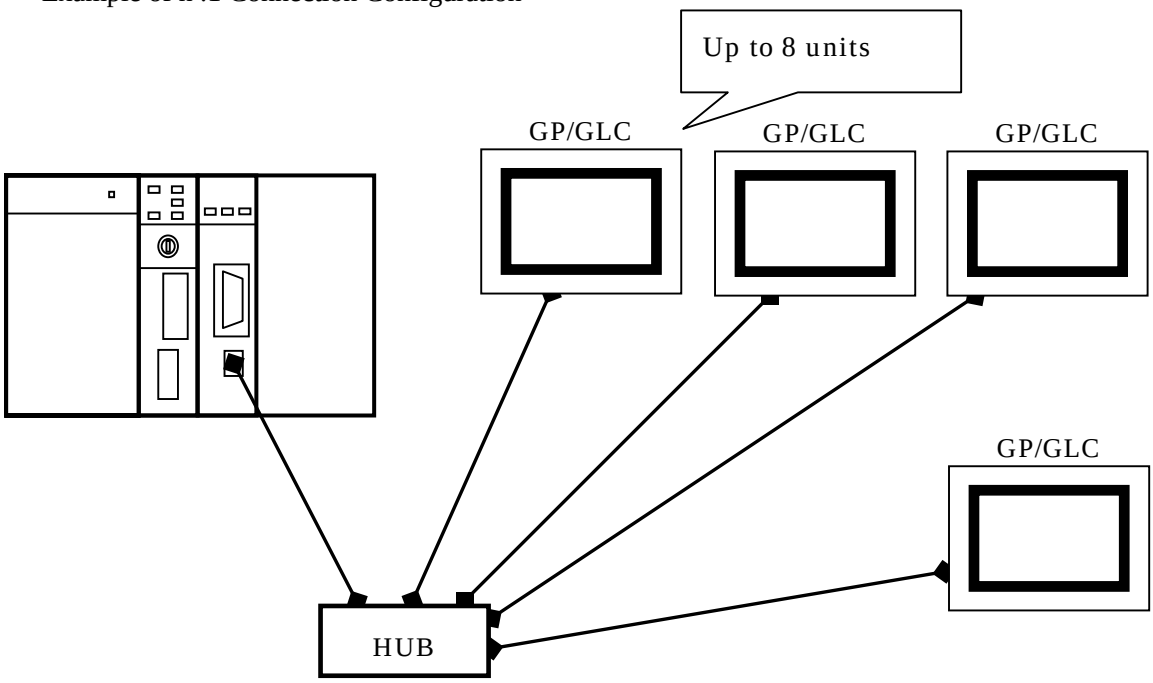
<Example of 1 :1 Connection Configuration>



<Example of 1 :n Connection Configuration>



<Example of n :1 Connection Configuration>



Internal Ethernet Port or Option Unit
GP070-ET41, GP377-MLTE11,
GP377-MLTE41, GP077-MLTE41

* There are two types of "full duplex " and "half duplex" for Ethernet communication. Since GP and GLC have half duplex communication, if PLC is a full-duplex type, their communication may be obstructed. Putting HUB in can solve the problem. Use of HUB is recommended.

Procedure to connect PLC

Set PLC communication settings.

Refer to **Communication Settings [PLC]**

Assign addresses to PLC.

Refer to **Assigning Addresses**

Select PLC type on GP-PRO/PB Ⅲ C-Package.

Refer to **Selecting PLC Type**

Make GP's communication settings.
There are 2 ways for settings. Use either one.
- Settings on GP-PRO/PBⅢ C-Package and Transfer of settings
- Settings on the GP's OFFLINE

Refer to **Communication Settings [GP]**

Designate addresses on GP-Pro/PBIII.

Refer to **Address Set on GP-Pro/PBIII**

Communication Settings [PLC]

In the case of SLC500 PLC, 2 pieces of software are required for communication settings.

1. RSLinx-Software to connect PLC to PC with RSLogix500 installed

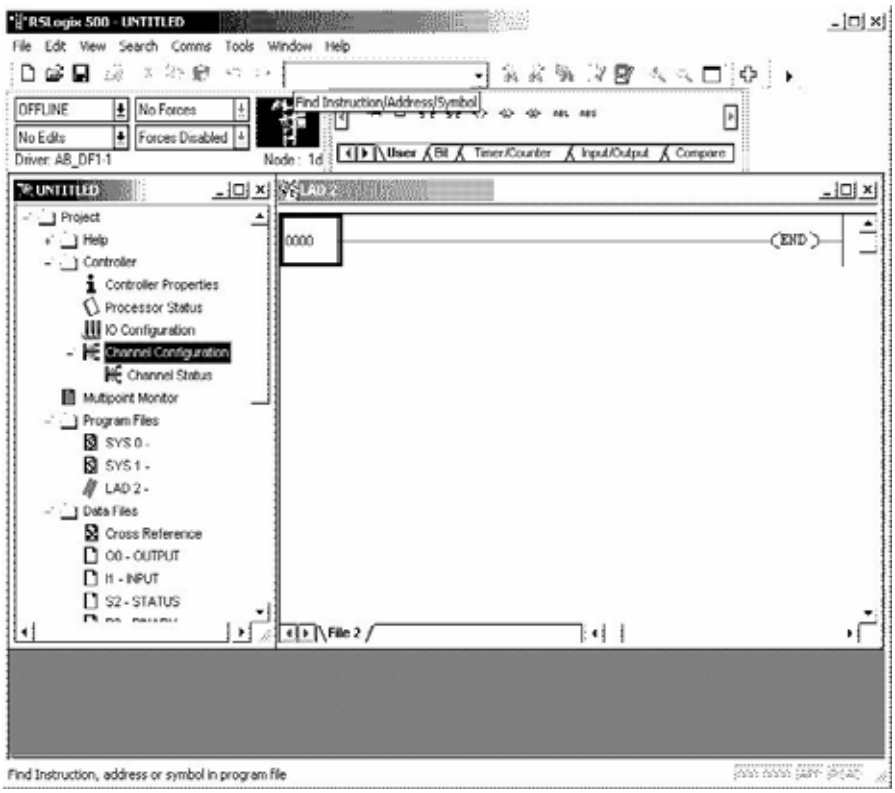
(In this sample, Ver.2.41.00 is used.)

2. RSLogix500-Ladder Software (In this sample, Ver.5.20.00 is used.)

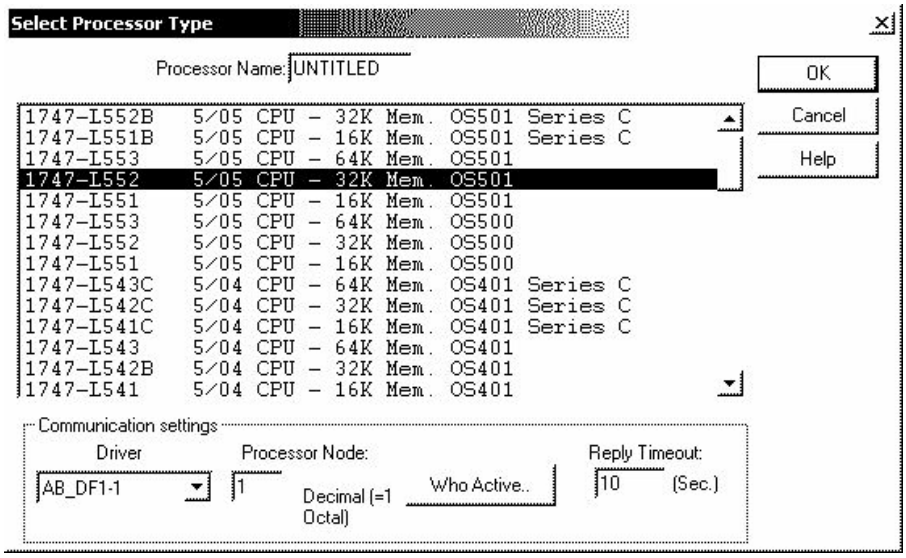
* Before making communicate settings and creating a ladder program on RSLogix500, be sure to connect PC to PLC via RSLinx. (For details, ask Rockwell).

(1) Start RSLogix500.

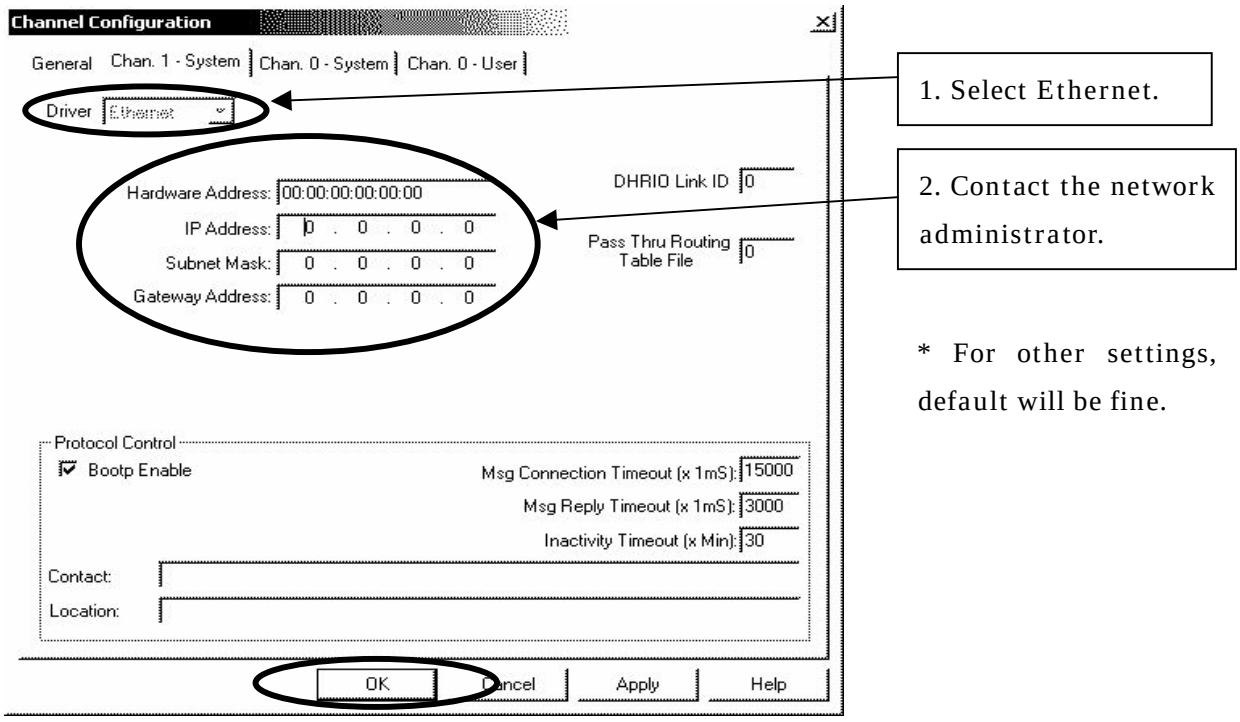
(2) Click [Channel Configuration]



(3) Select CPU Type.



(4) The dialog box will appear. Click [Channel1] and make channel settings.

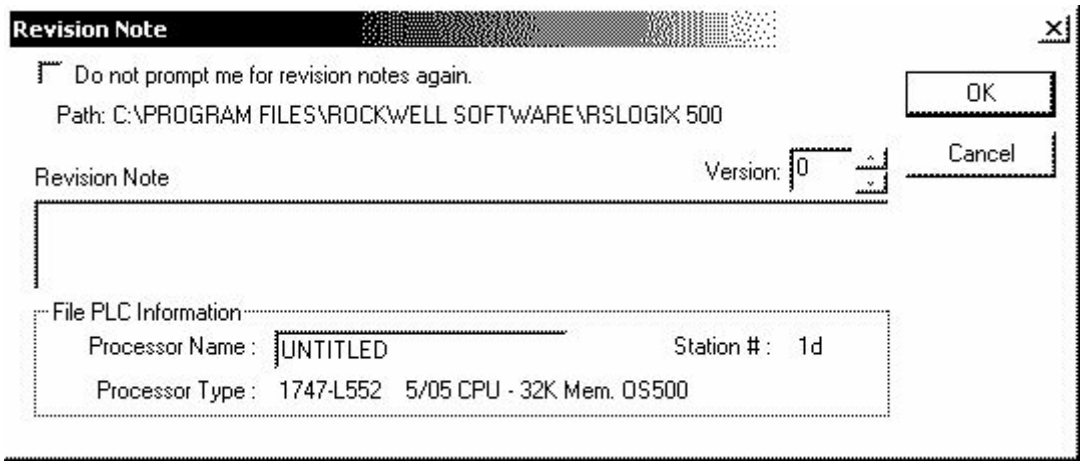


(5) After completing the settings, click the [OK] button.

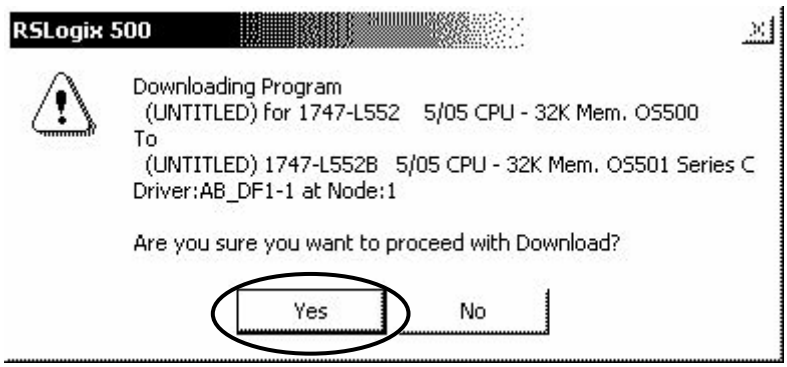
(6) Download the driver settings.

Click [OFFLINE] and select [Download…].

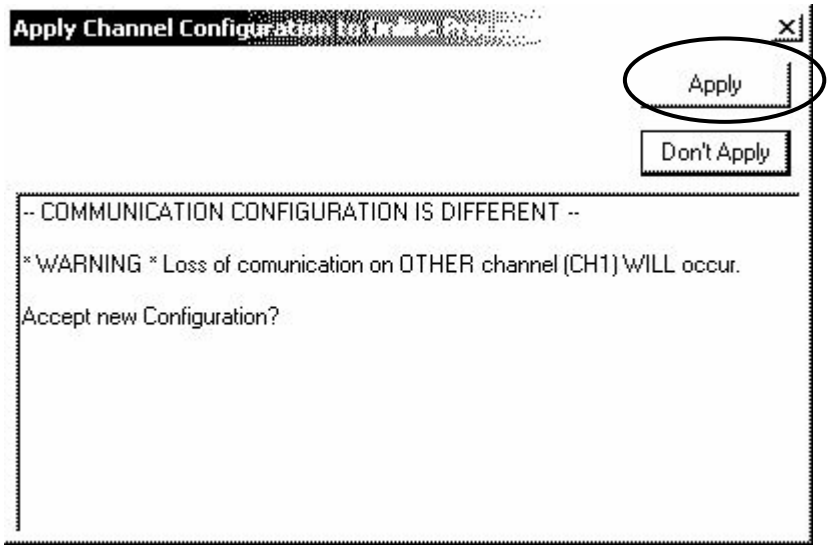
(7) The dialog box shown below will appear. Click the [OK] button.



(8) The warning dialog shown below will appear. Click the [Yes] button.

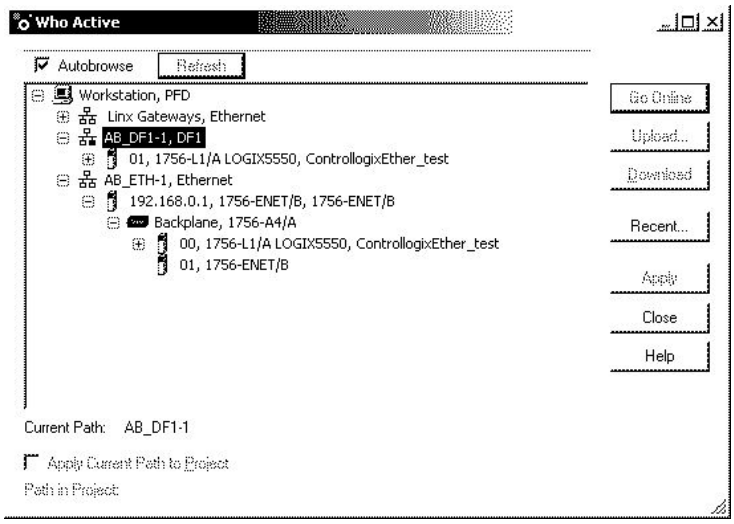


(9) The warning dialog, "Loss of communication on OTHER channel [CH1] WILL occur." as shown below will appear. Click [Apply].



The settings of SLC500 Port are now completed.

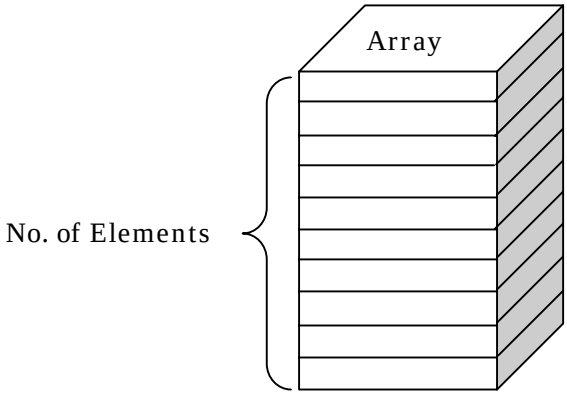
At the time of download, make sure that CPU is recognized on the RSLinx and then send the project.



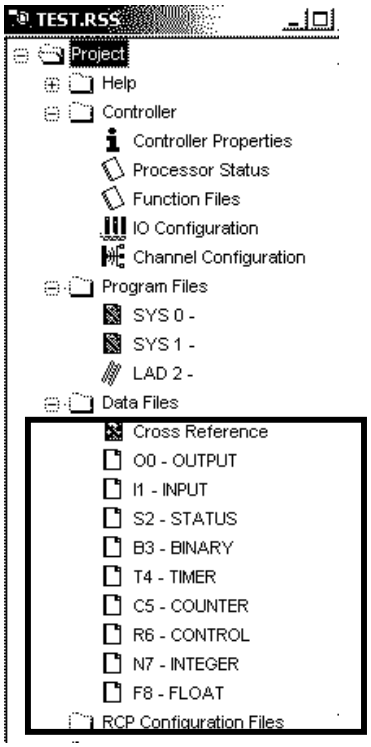
（RSLinx / Who Active Screen）

Assigning addresses

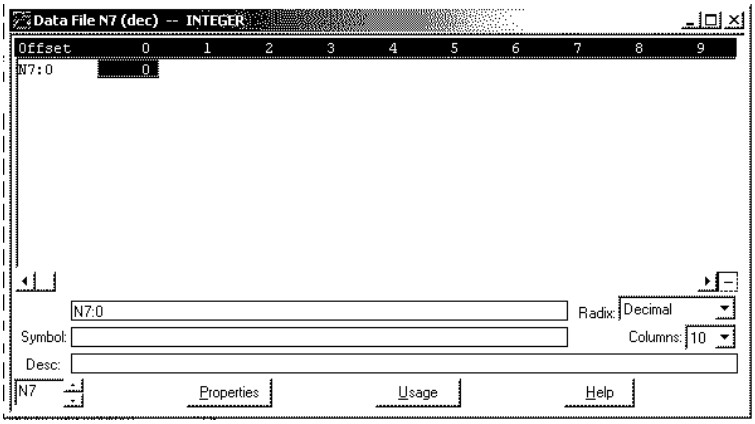
For Rockwell PLC, required number of elements should be assigned on RSLogix500. If the PLC is connected to GP/GLC without assigning them, the host communication error, "02:10 Out of Address Range Error" will occur.



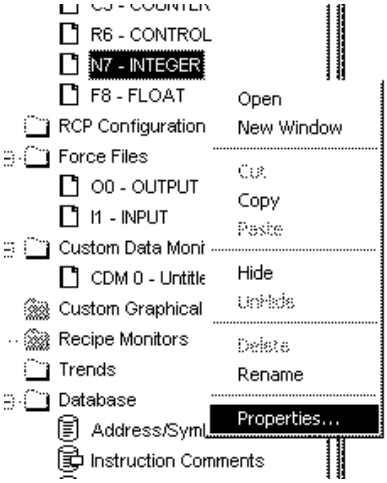
[File Type with settings completed]



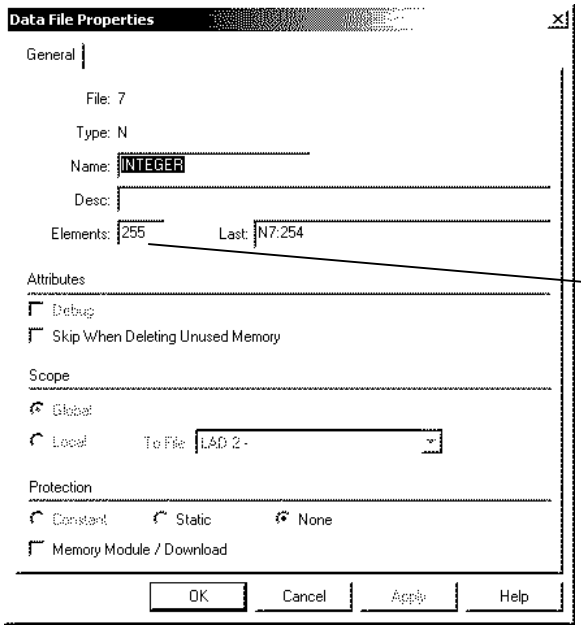
As shown left, the array type and number are available for projects.



At default, only one element exists. Especially for N array where system start addresses are assigned, 20 elements are required. It's necessary to increase the number of elements.

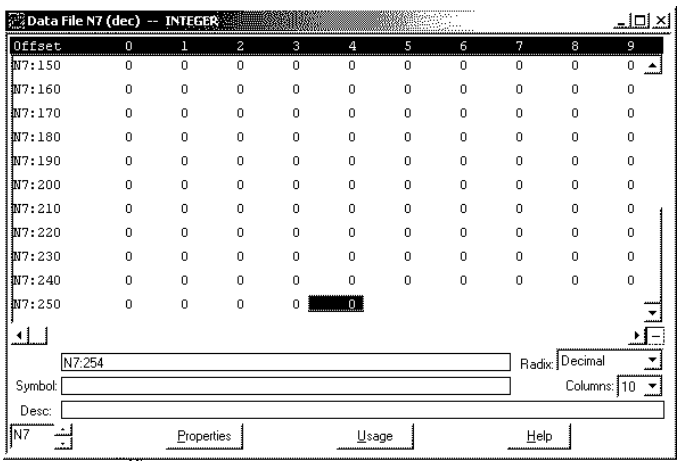


To increase it, start settings from the place shown on the left.



Enter the number of required elements.

*For N7, as system start addresses are assigned, get at least 20 elements available.

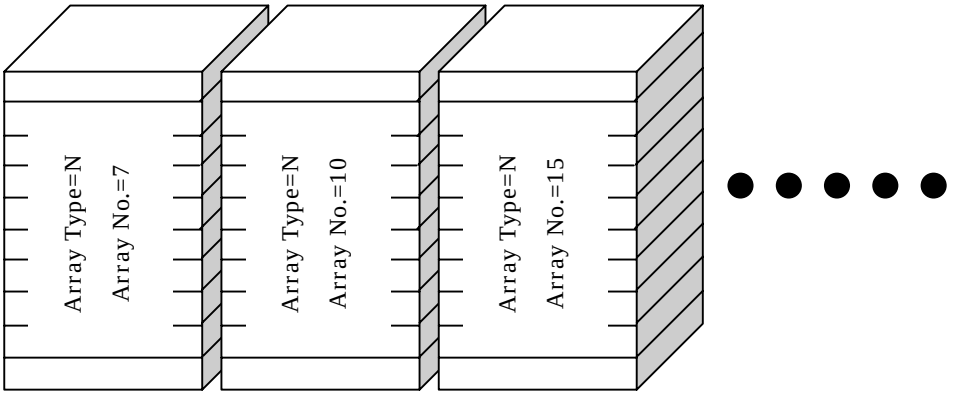


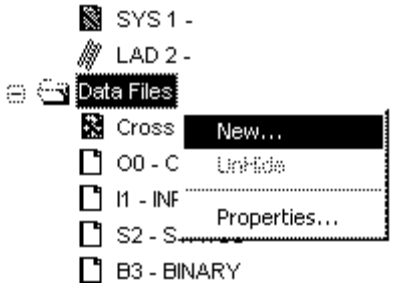
As you see, 255 elements have been created in N7.

[Creating a new array]

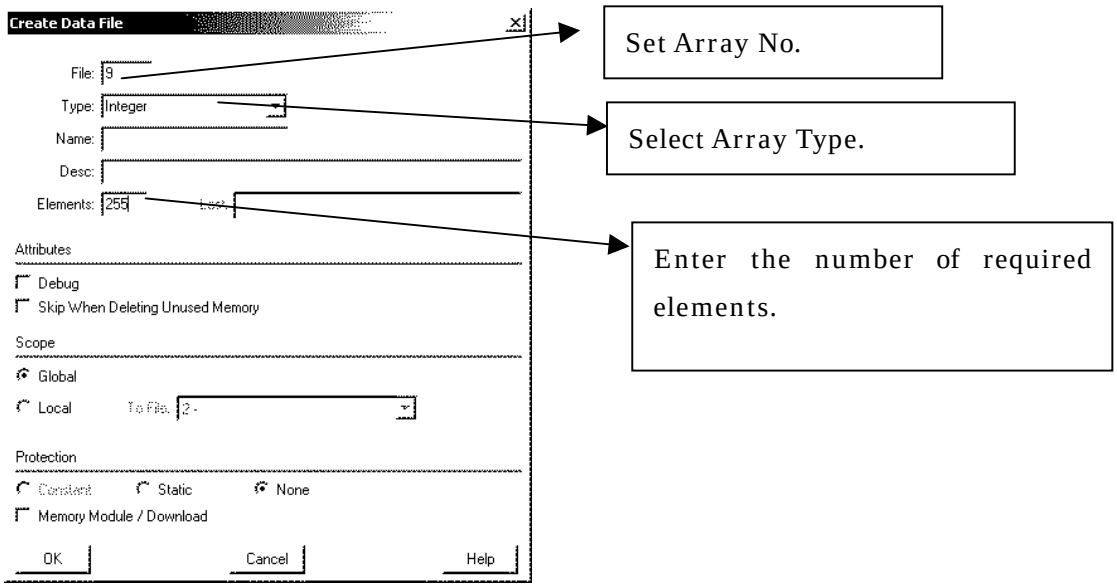
For Rockwell PLC, it's possible to create multiple arrays.

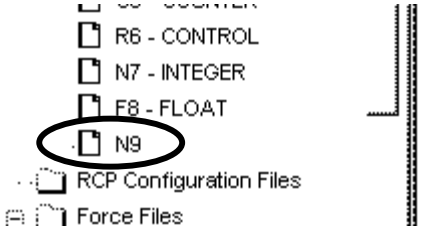
Ex.)





Start to create a new array from the place shown on the left.





The array called N9 which has 255 elements has been newly created.

Following this method, create required multiple arrays and numbers of elements for each array type.

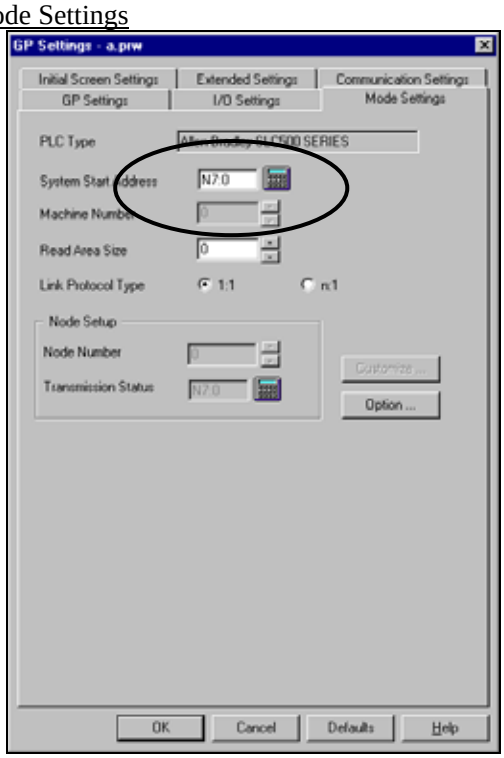
The array number following the array type must not be duplicated. For example, creating arrays like N15, B15.. is not allowed.

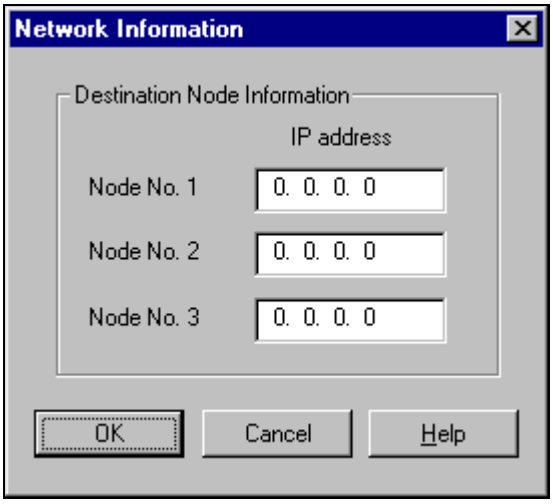
Selecting PLC Type

Start GP-Pro/PBIII.

When creating a project file, select the PLC type shown below.

Example of Communication Settings

1. Communication settings  	1. Communication Settings **Source IP Address (0 to 255)** Contact the network administrator about the IP address to be input. **Source IP Port No. (1024 to 65535)** Set GP's Port No.. *1 **Destination IP Address (0 to 255)** This setting is not used. Even if set, it'll be disabled. **Destination Port No. (1024 to 65535)** This setting is not used. Even if set, it'll be disabled. *1 **Protocol Type** This setting is not used. Even if set, it'll be disabled. *1- As the numbers, 8000 to 8999, are used for Pro-Server, do not use them.
2. Mode Settings  	2. Mode Settings System Start Address The INT Device is fixed. Array No. and Element No. are set arbitrarily. The system start address is assigned to the designated node of PLC.

3. Network Information Settings  	3. Network Information Settings **Designation Node No. Setting** Set the IP address of the designation PLC to each node number. Up to 3 nodes are possible for settings.

GP Settings		PLC Settings	
Source IP Address	GP' IP address *1	———————	———————
Source IP Port No.	GP's port No. *2	———————	———————
Network Information Setting	PLC's IP address *1	IP Address	PLC's IP address

*1 Contact your network administrator about the setting values. If the Source IP Address is 0.0.0.0, the IP address set on the 2WAY Driver's side will be effective.

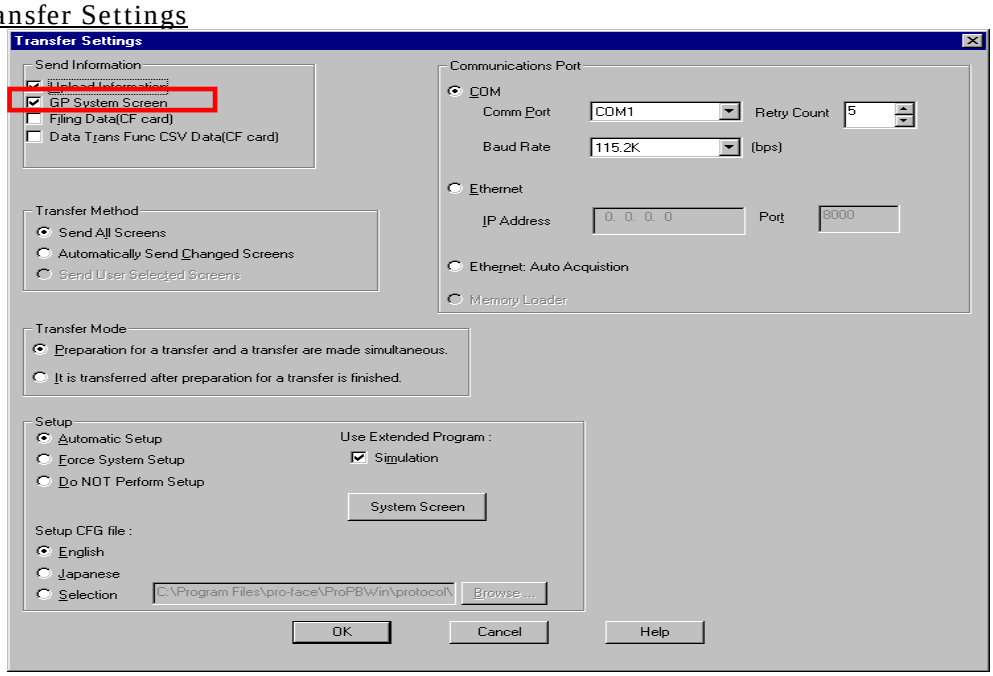
*2 With GP2000 series, if Internal Ethernet Port is used, set the target port No. that does not overlap with the 2WAY Driver's port No. Check the 2WAY Driver's port number setting via the following menu:

[INITIALIZE]-->[SETUP OPERATION SURROUNDINGS]-->[EXTENDED SETTINGS]-->[SETUP ETHERNET INFORMATION]. The default value is 8000. The 2WAY Driver uses this port and the following nine ports for a total of 10 (8000 to 8009).

Important! PLC's Port No. is 2222(fixed). Protocol Type is TCP/IP Connection.

Select [Transfer] --> [Setup] --> [Transfer Settings].

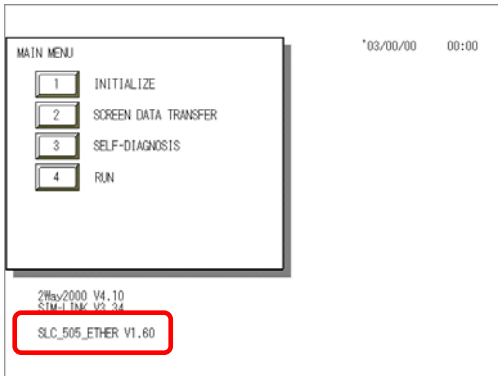
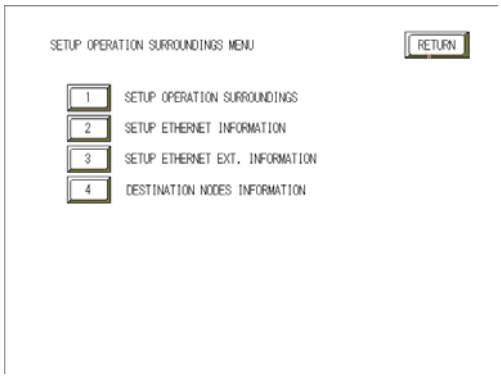
4) Transfer Settings



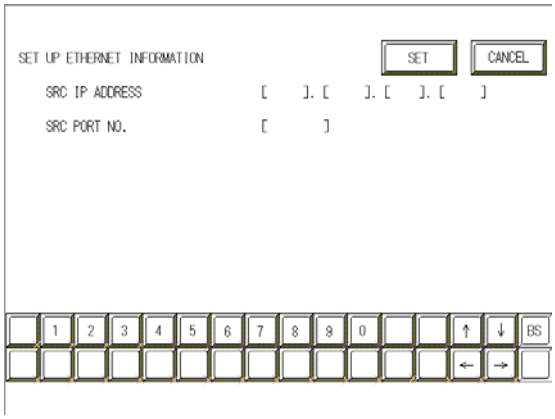
4) Transfer Settings GP System Settings: Checked

Transfer to GP after settings completed.

2 [Settings on the GP unit]

1.Checking GP Type 	1. Checking GP Type If Allen Bradley SLC5/05(ETHER) is selected, the following display will appear. [SLC505_ETHER]
2. Settings on GP 	2. Communication Settings SETUP OPERATION SURROUNDINGS [MAIN MENU] ↓ [INITIALIZE] ↓ [PLC SETUP] ↓ [PLC SETUP] ↓ [SETUP OPERATION SURROUNDINGS]

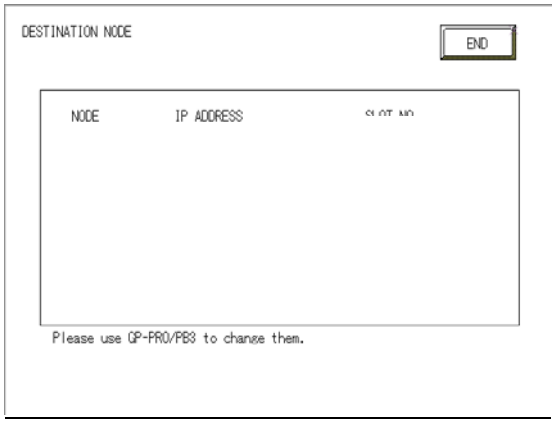
3. Setup Operation Surroundings



Source IP Address (0 to 255)
Set GP's IP Address.
Contact your network administrator about the IP address to be set.
Source Port No. (1024 to 65535)
Set GP's Port No. (from 1024 to 65535).

Important

With GP2000 series, if Internal Ethernet Port is used, the source port number that does not overlap with the 2Way Driver's port number must be set. The 2Way Driver's port number can be checked with [INITIALIZE]-->[SETUP OPERATION SURROUNDINGS]-->[EXTENDED SETUP]-->[ETHERNET SETUP]. The numbers from 8000 to 8999 cannot be used because they are used for Pro-Server. If the source IP address is 0.0.0.0., the IP address set on the 2Way side is effective.



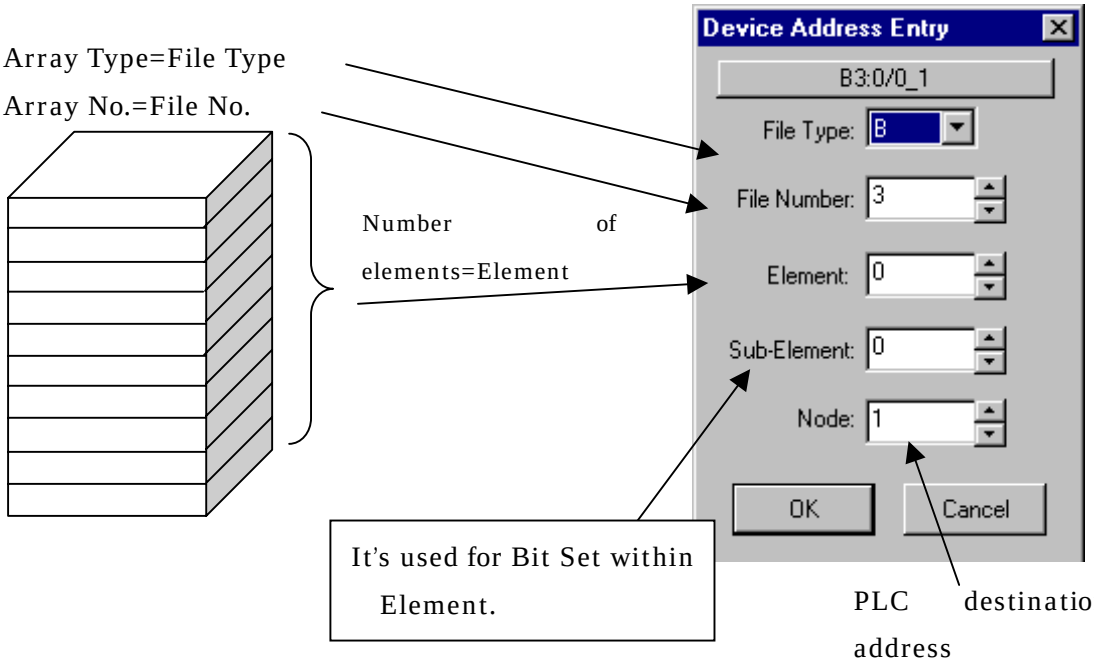
Caution!

It's not impossible to set or change the destination node information via OFFLINE. Select GP-PRO/PB Ⅲ for Windows's [GP SETUP]-->[Mode Settings]-->[Network] to set or change it.

* Refer to the page 6.

Address Set on GP-PRO/PBIII

Since there are multiple arrays, a view point of address setup on GP-ProPB/III differs from other companies' PLC Address Setup.



Address notation is as show below.

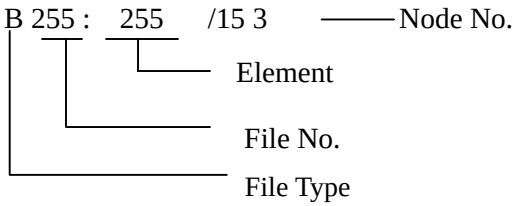


*Table of file numbers and element numbers that can be designated.

Device	Bit Address	Word Address	Remarks	
Bit	B003:000/00～B003:255/00 B009:000/00～B255:255/00	B003:000～B003:255 B009:000～B255:255	*1,*2	H/L
Timer (TT:Timing Bit)	T004000/TT～T004:255/TT T009:000/TT～T255:255/TT	-	*4	
Timer (DN:Complete Bit)	T004:000/TT～T004:255/TT T009:000/TT～T255:255/TT	-	*4	
Timer (EN:Enable)	T004:000/EN～T004:255/EN T009:000/EN～T255:255/EN	-		
Timer (PRE:Setting Value)	-	T004:000.PRE～T004:255.PRE T009:000.PRE～T255:255.PRE	*3	
Timer (ACC:Current Value)	-	004:000.ACC～T004:255.ACC 009:000.ACC～T255:255.ACC	*3	
Counter (CU:Up Count)	C005:000/CU～C005:255/CU C009:000/CU～C255:255/CU	-	*4	
Counter (CD:Down Count)	C005:000/CD～C005:255/CD C009:000/CD～C255:255/CD	-	*4	L/H
Counter (DN:Complete Bit)	C005:000/DN～C005:255/DN C009:000/DN～C255:255/DN	-	*4	
Counter (OV:Overflow)	C005:000/OV～C005:255/OV C009:000/OV～C255:255/OV	-		
Counter (UN:Underflow)	C005:000/UN～C005:255/UN C009:000/UN～C255:255/UN	-		
Counter (UA:Update)	C005:000/UA～C005:255/UA C009:000/UA～C255:255/UA	-		
Counter (PRE:Setting Value)	-	C005:000.PRE～C005:255.PRE C009:000.PRE～C255:255.PRE	*3	
Counter (ACC:Current Value)	-	005:000.ACC～C005:255.ACC 009:000.ACC～C255:255.ACC	*3	

Device	Bit Address	Word Address	Remarks	
Control (DN:Complete Bit)	R006:000/DN～R006:255/DN R009:000/DN～R255:255/DN	-		
Control (EN:Enable)	R006:000/EN～R006:255/EN R009:000/EN～R255:255/EN	-		
Control (ER:Error)	R006:000/ER～R006:255/ER R009:000/ER～R255:255/ER	-		
Control (UL:Unload)	R006:000/UL～R006:255/UL R009:000/UL～R255:255/UL	-		
Control (IN:Inhibit)	R006:000/IN～R006:255/IN R009:000/IN～R255:255/IN	-		
Control (FD:Fund)	R006:000/FD～R006:255/FD R009:000/FD～R255:255/FD	-		**L/H**
Control (EU:Unload Enabled)	R006:000/EU～R006:255/EU R009:000/EU～R255:255/EU	-		
Control (EM:Stuff Empty)	R006:000/EM～R006:255/EM R009:000/EM～R255:255/EM	-		
Control (LEN:Length)	-	R006:000.LEN～R006:255.LEN R009:000.LEN～R255:255.LEN		
Control (POS:Position)	-	R006:000.POS～R006:255.POS R009:000.POS～R255:255.POS		
Integer	-	N007:000～N007:255 N009:000～N255:255	*1,*2,*5	H/L
Floating Point	-	F008:000～F255:255		L/H

Remarks

*1------With GP-Pro/PB3 for Windows, when inputting devices, input them as shown below.

PLC Notation

N 7 : 015
- N: File Type
- 7: File No.
- 015: Element

GP-Pro/PB3 for Windows Input

N 007 015
- N: File Type
- 007: File No.
- 015: Element

*2----With GP-Pro/PB3 for Windows, when inputting devices, input them as shown below.

PLC Notation

B 3 : 021 / 15
- B: File Type
- 3: File No.
- 021: Element
- 15: Bit

GP-Pro/PB3 for Windows Input

B 003 021 F
- B: File Type
- 003: File No.
- 021: Element
- F: Bit

*3----With GP-Pro/PB3 for Windows, when inputting devices, input them as shown below.

PLC Notation

T 4 : 17 . ACC
- T: File Type
- 4: File No.
- 17: Element
- ACC: Word

GP-Pro/PB3 for Windows Input

TA 004 017
- TA: File Type
- 004: File No.
- 017: Element

*4--- With GP-Pro/PB3 for Windows, when inputting devices, input them as shown below.

PLC Notation

T 4 : 17 / TT
- T: File Type
- 4: File No.
- 17: Element
- TT: Bit

GP-Pro/PB3 for Windows Input

TT 004 017 0
- TT: File Type
- 004: File No.
- 017: Element
- 0: Input 0

*5---Bit Set Possible (Bit part: Hexadecimal)

Important notes

(1) The following devices cannot be set in GP: I (Input), O (Output), S (Status), R (Control), ST (Character Strings), L (Long), MG (Message), PD (PID)

(2) File Type is fixed for the file numbers from 0 to 8. Element (Device Points) is changeable.

(3) Users can allocate File Type and Element for the file numbers from 9 to 255 in the range of the processor unit's memory volume.