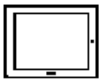
Connecting Rockwell (Allen-Bradley) PLC

MicroLogix 1200/1500 Series –Serial

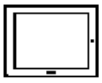
System Structure

GP

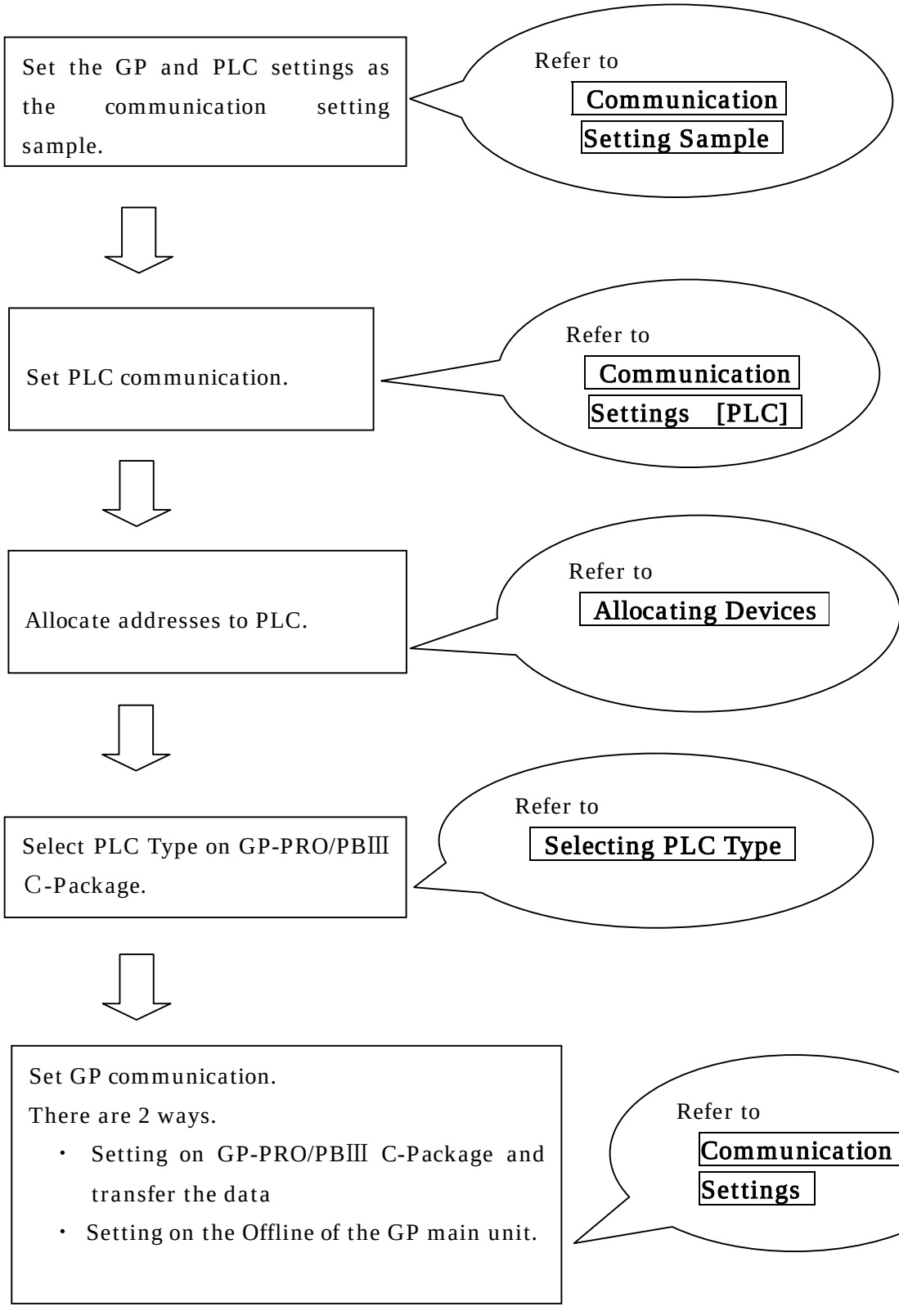
Model 	Product	Remark
GP	GP70 Series GP77 / 77R Series GP2000 Series	
GLC	GLC2000 Series	

* Information for connecting Handy Type is not on this instruction.

PLC

CPU 	232C Port	Communication Method	Connection Cable 	
1200 Series 1762-L24AWA 1762-L24BWA 1762-L24BXB 1762-L40AWA 1762-L40BWA 1762-L40BXB	RS-232C Port on the CPU Unit	RS-232C	**Connection Method**	GP 
1500 Series 1764-LSP	RS-232C Port on the BASE Unit			

Procedure to Connect PLC



Specify the addresses on the GP-PRO PBIII Screen Creation Software.

Refer to
Specifying Addresses on GP-PRO PBIII

Connect PLC to GP.
Please check the connection method according to the connection type, or distance.

Refer to
Communication Method & **Recommended Products**

Communication Setting Sample

MicroLogix 1200/1500 Series

GP Settings		PLC Settings	
Speed	19200bps	Baud Rate	19200bps
Data Length	8bits	—	—
Stop Bit	1bit	—	—
Parity	Even	Parity	Even
Flow Control	ER (DTR/CTS)	—	—
SIO Type	RS-232C	—	—
DH Address GP DH Address PLC*1	0 to 254	Node Address	0 to 254
SIO Type	RS-232C	—	—
—	—	Driver	DF1 Half Duplex Slave
—	—	Control Line	No Handshaking
—	—	Error Detection	BCC
—	—	EOT Suppression	Not Checked
—	—	Duplicate Packed Detect	Not Checked
—	—	Poll Timeout	3000
—	—	Message Retries	3
—	—	Pre Transmit Delay	0

*1 Set with same address for [DH Address GP] and [DH Address PLC]

Communication Settings [PLC]

Two programs are required for MicroLogix PLC communication settings.

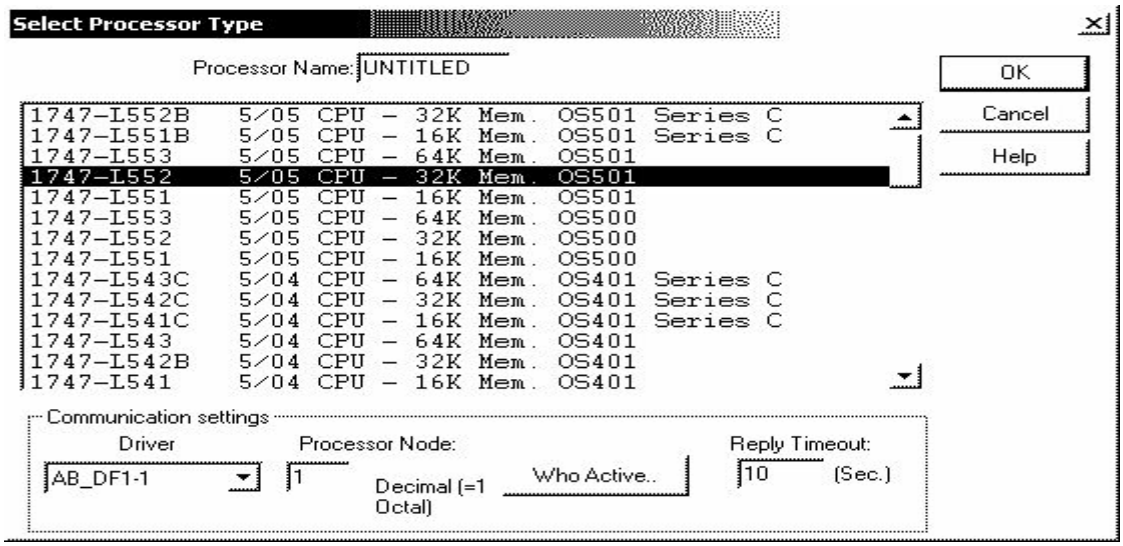
1. RSLinx – Software to connect PLC and PC with RSLogix500 installed
   (Ver.2.41.00 is used in this sample.)
2. RSLogix500 – Ladder Software
   (Ver.5.20.00 is used in this sample.)

* Communication Settings on RSLogix500

Please connect PLC and PC with RSLinx before creating a ladder.
(Contact Rockwell Automation, Inc. for more details.)

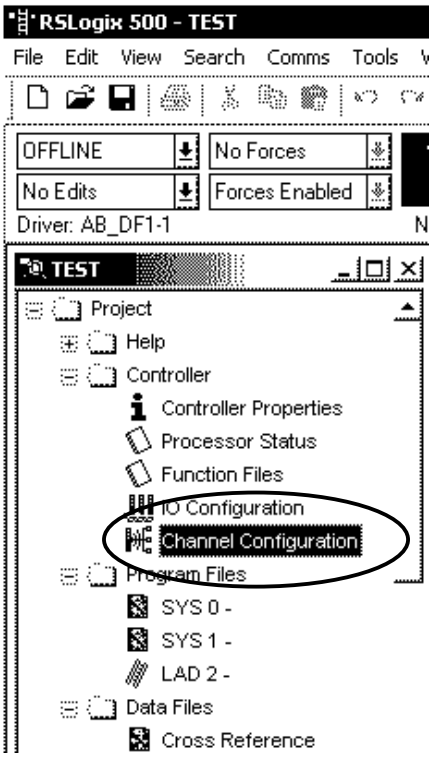
1) Start up RSLogix500.

2) Select the CPU type

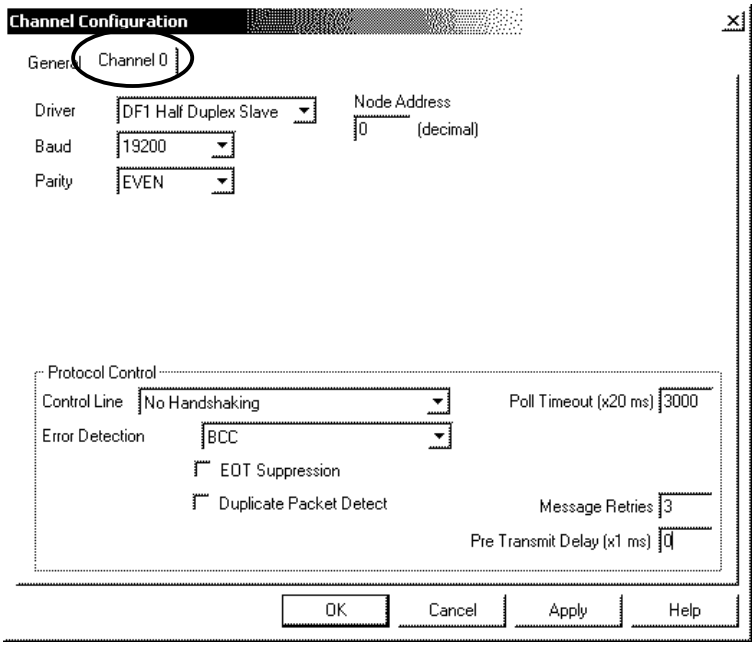


Communication Settings can be left by default.

3) Click［Channel Configuration］.



4) A dialog box will appear. Then double-click the [Channel 0] tab and set the channel.

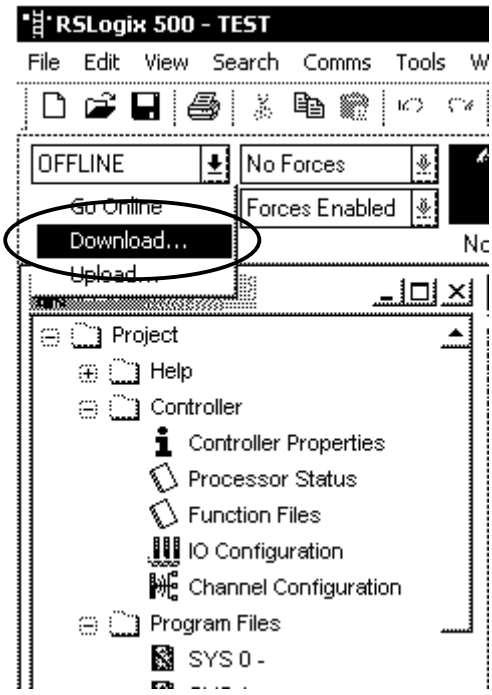


Setting Item	Setting Detail	Remark
Baud Rate	19200bps	
Parity	Even	
Communication Driver	DF1 Half-Duplex	
Duplicate Packet Detection	Disable	System cannot be operated with other settings.
Error Detection	BCC	System cannot be operated with other settings.
Control Line	No Hand shaking	System cannot be operated with other settings.
Station Address	0 to 255	Set with the same address as DH GP Address of GP.

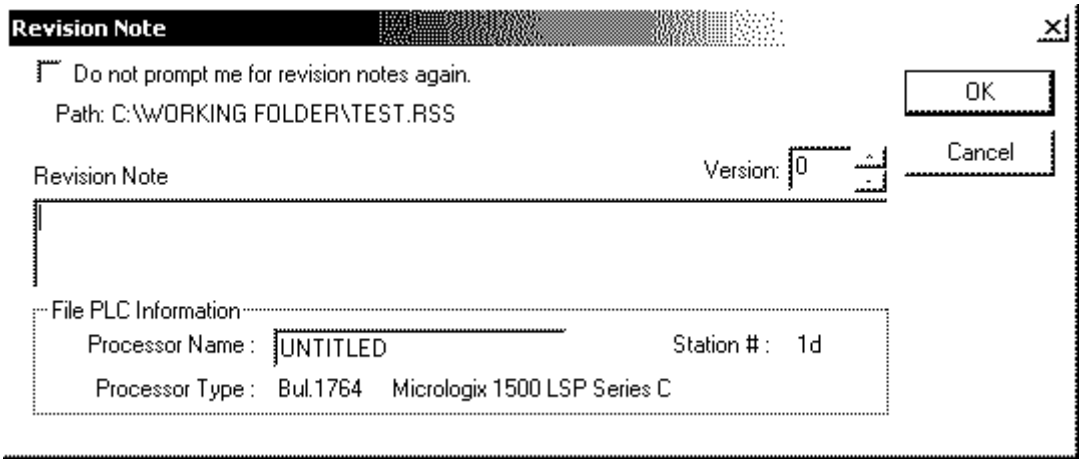
* Other settings can be left by default.

⑤ Click the [OK] button after complete the settings.

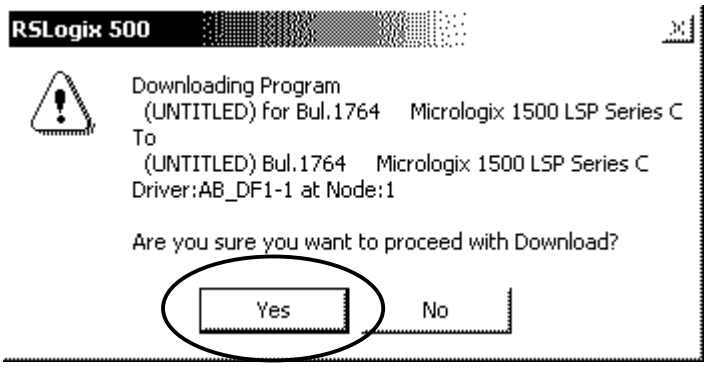
⑥ Download the driver settings. Click [OFFLINE] and select [Download...].



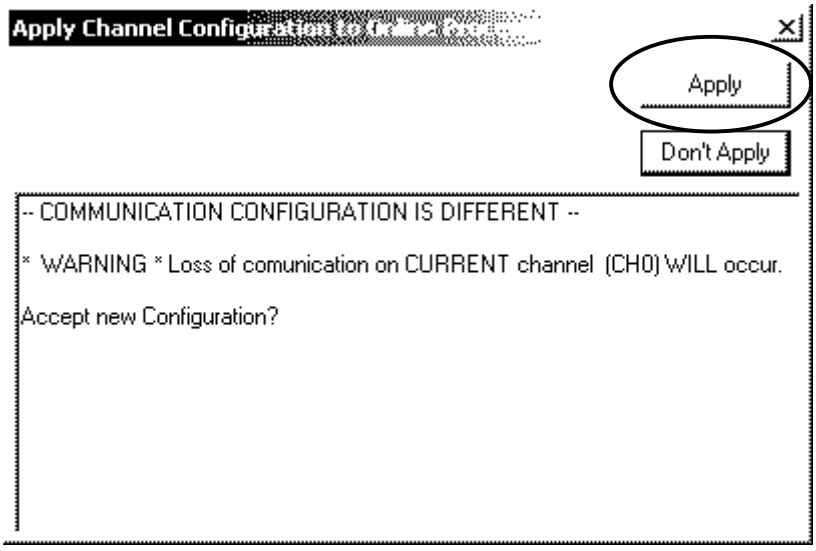
⑦ The dialog box as below will be displayed, and then click the [OK] button.



⑧ The following alert dialog box will appear, and then click [Yes].



⑨ The below dialog box warning "Loss of communication on CURRENT channel (CH0) will occur." will be displayed, and then click [Apply].



The port settings for MicroLogix 1200/1500 are completed.

Note)

When redownloading a project, please be noted that you may not be able to download it because 0 Channel of PLC has been changed to the port settings to communicate to GP.

In case to redownload it, open the cover on MicroLogix 1200/1500 and press the communication toggle push button. After pressing the button, the communication settings of the RS-232C port on the Base Unit will be the default settings.

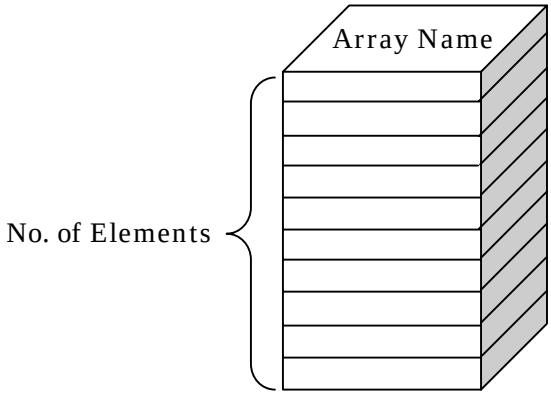
Confirm that PLC is recognized on RSLINX before redownloading.

Default Communication Settings of RS-232C Port on Base Unit

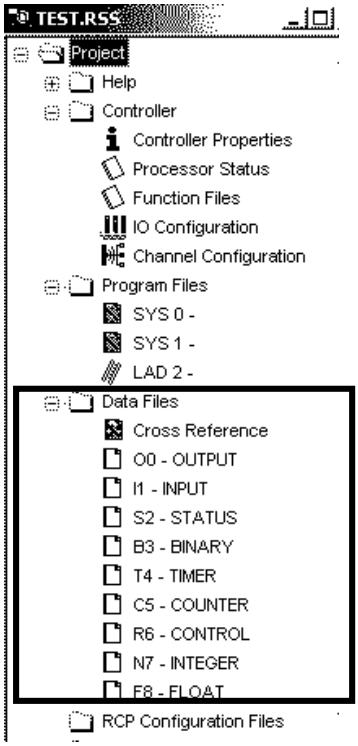
Setting Item	Setting Detail
Protocol	DF1 Full-Duplex
Baud Rate	19,200 bps
Parity	none
Stop Bits	1bit
Node Address	1
Control Line	No Hand shaking
Error Detection	CRC
Embedded Responses	auto detect
Duplicate Packet Detect	enable
ACK Timeout	50 Counts
NAK Retries	3 retries
ENQ Retries	3 retries

Assigning Devices

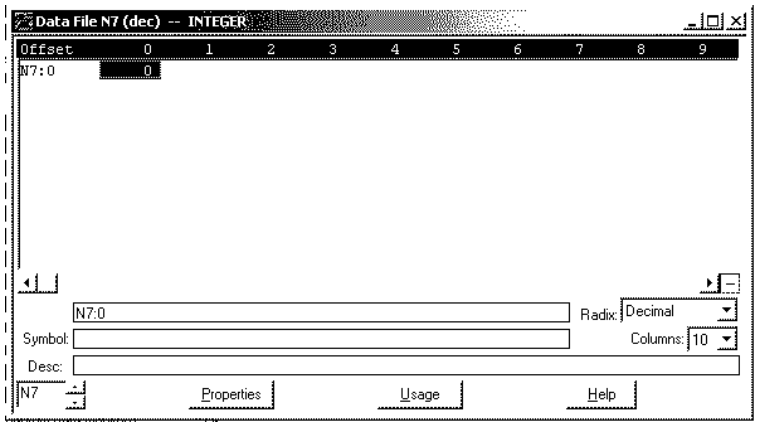
With Rockwell PLC, the required arrays and number of elements are assigned on RSLogix500. If you connect it to GP/GLC without assigning here, a host communication error will occur.



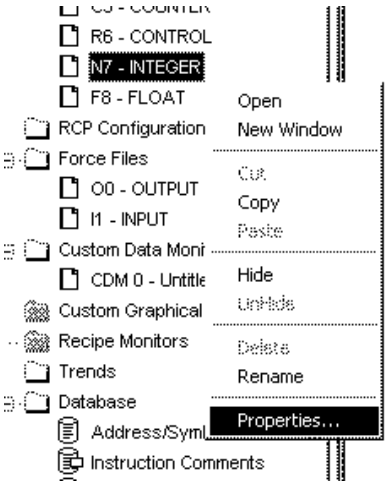
[File Type]



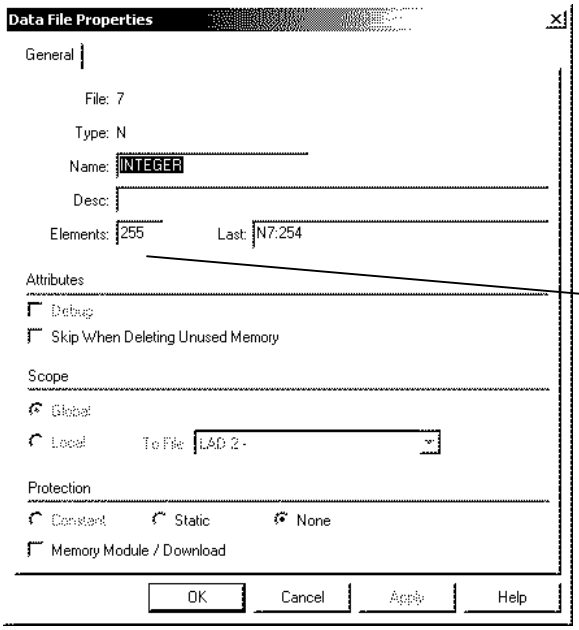
The project file has array types and array numbers as left.



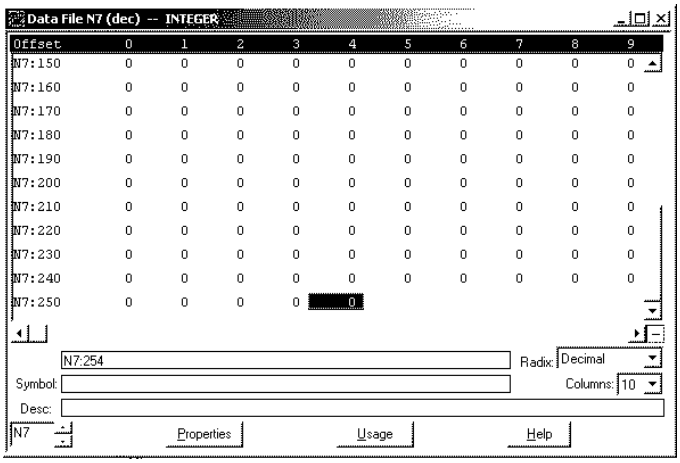
Only one element exists by default. Because N array to which the system start address is assigned needs 20 elements, it is necessary to increase elements.



To increase these elements, start setting as left.



Enter the number of required elements.
* N7 needs at least 20 elements to allocate the system start address.

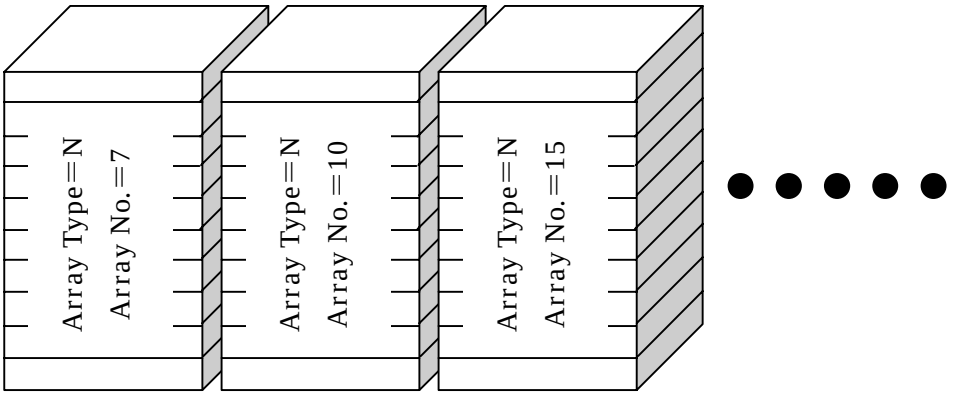


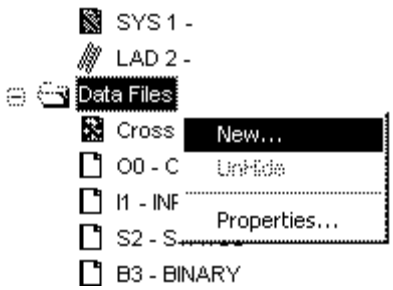
As you can see left, 255 elements have been created in N7.

[Creating New Array]

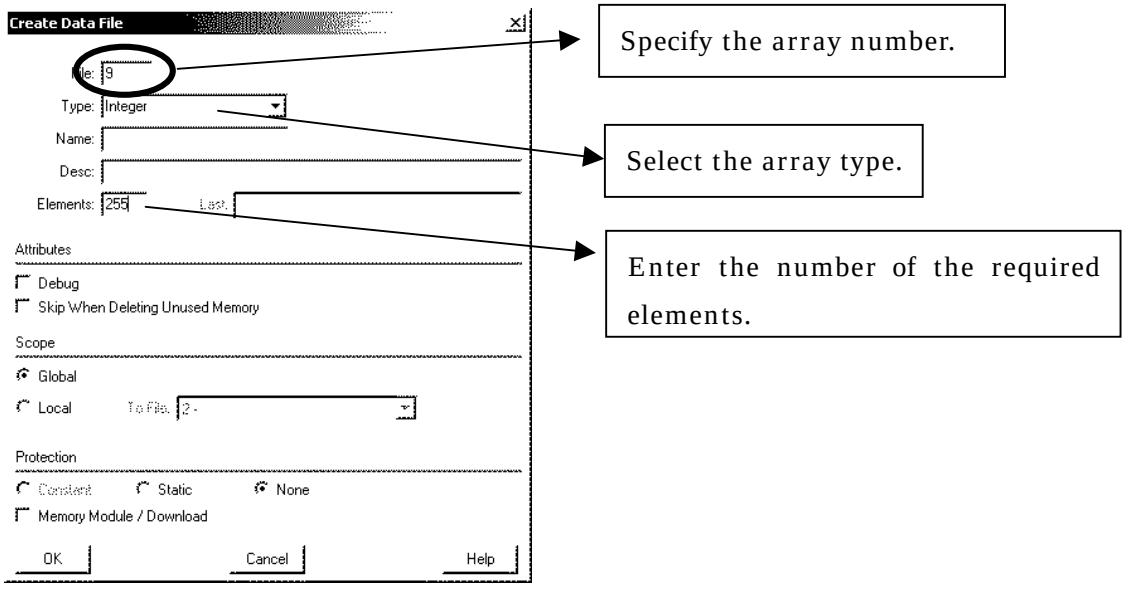
It is possible to create multiple arrays with Rockwell PLC.

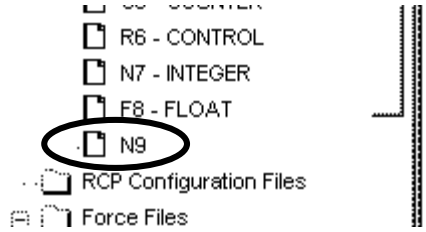
e.g.)





To start creating new arrays, follow as left.





N9 has been newly created with 255 elements.

Following this way, create arrays and elements towards each array type.

Duplication of array numbers following array type is not allowed. For example, you cannot create such as N15, B15.

Selecting PLC Type

Start up GP-PRO /PBIII.

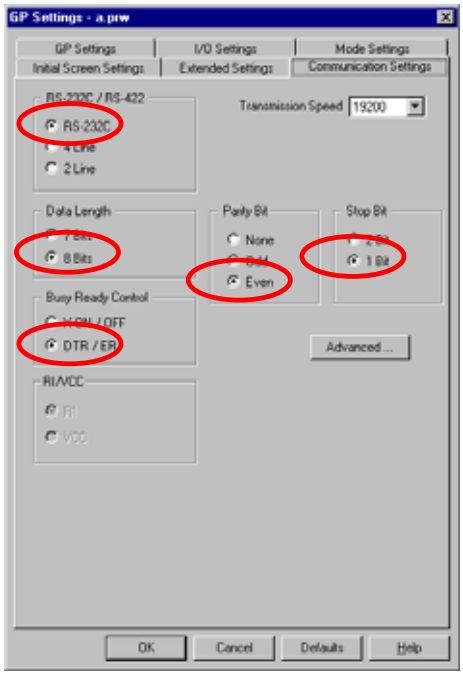
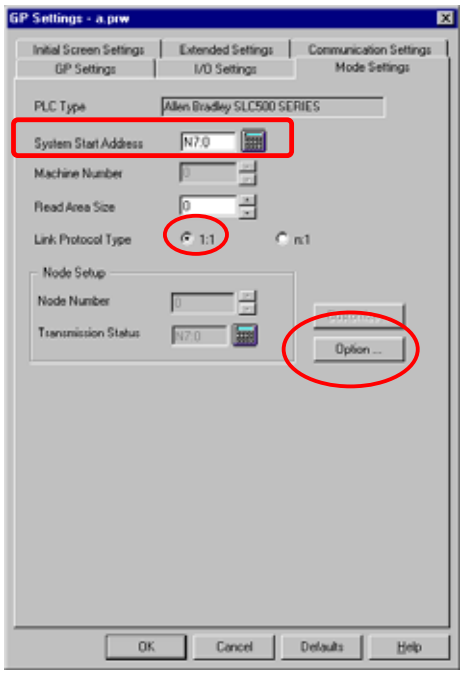
Select the following PLC Type when creating the project file.

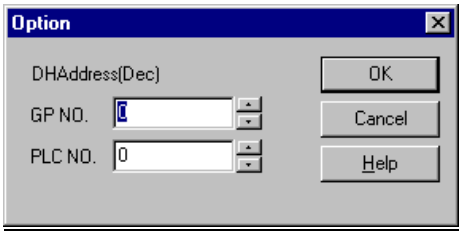
Allen Bradley SLC500 SERIES

Communication Settings [GP]

1 [GP-PRO/PBIII C-Package Setting]

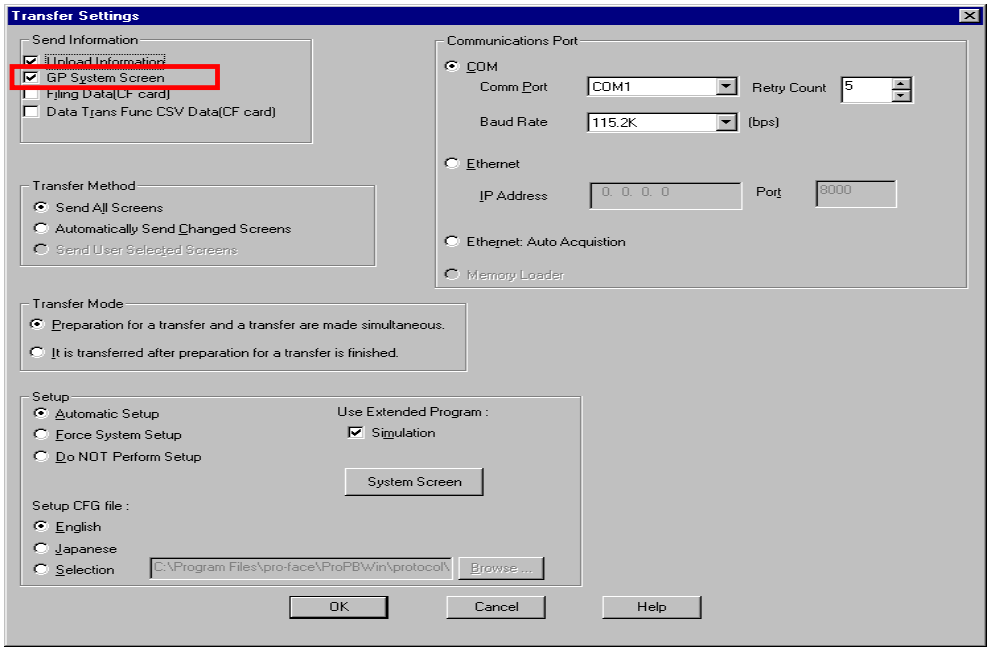
Select [GP Setup] on Project Manager.

1) Communication Settings 	1) Communication Settings Transmission Speed : 19200bps Data Length : 8 Bits Stop Bit : 1 Bit Parity Bit : Even Busy Ready Control : DTR / ER RS-232C/ RS-422 : RS-232C
2) Mode Settings 	2) Mode Settings System Start Address: The N device is fixed. Array No. and Element No. are set arbitrarily. Link Protocol Type : 1:1

3) Mode Settings（DH Address Settings）	3) Mode Settings（DH Address Settings）
	Click [Option] to set DH Address. DH Address GP NO.: Arbitrary Address（0 - 255） PLC NO.: Arbitrary Address（0 - 255） * GP No. and PLC No. must be same address.

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

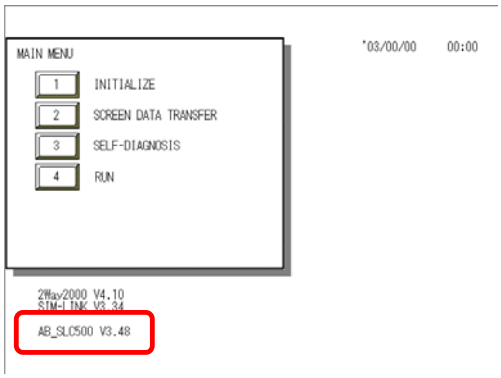
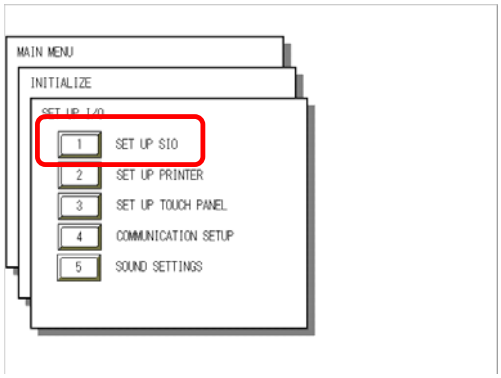
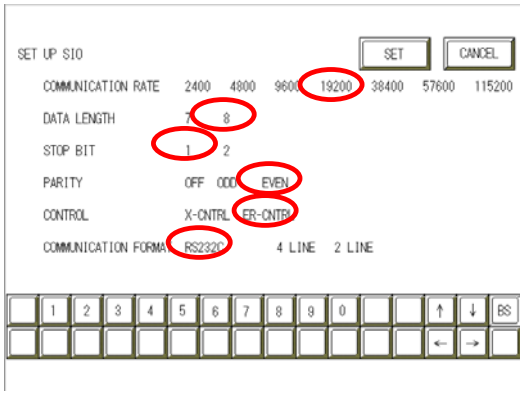
4) Transfer Settings

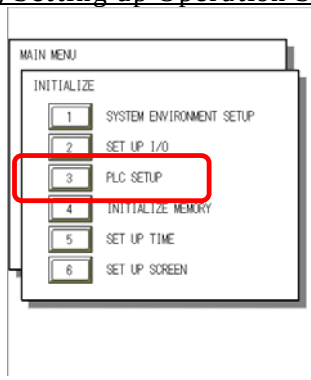
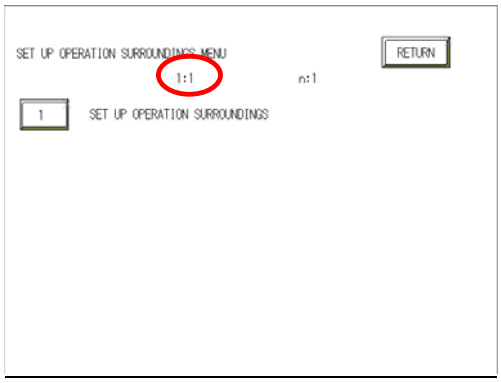
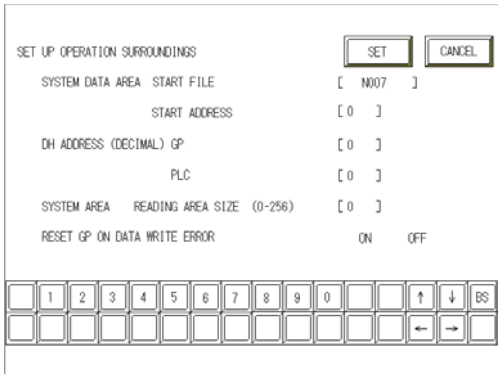


4) Transfer Settings　　GP System Settings: Checked

Transfer to GP after settings completed.

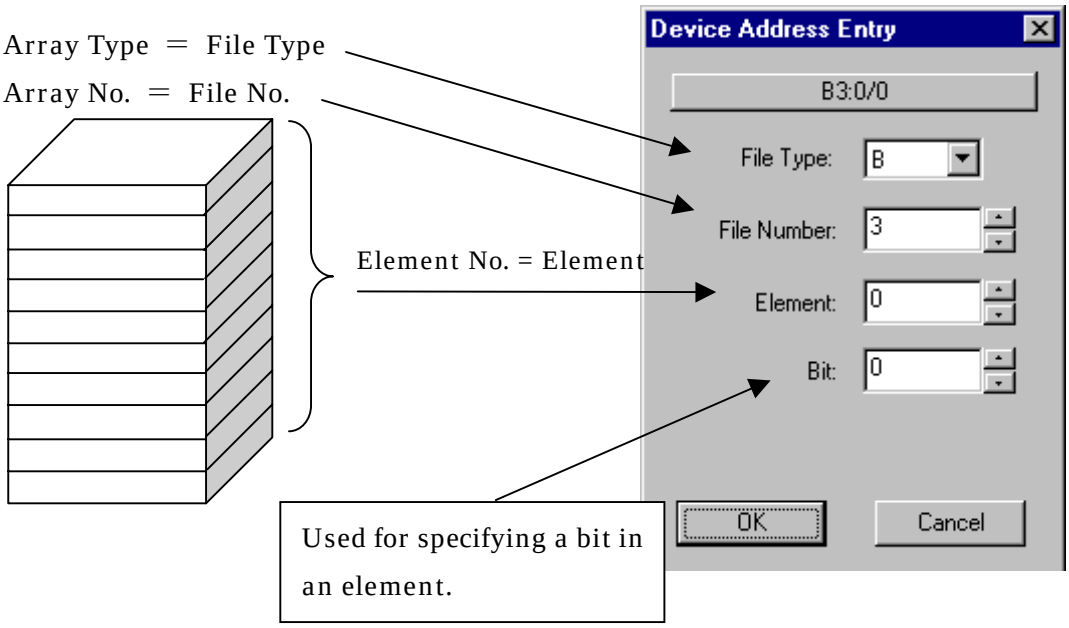
2 [GP Settings]

1) Checking GP Type 	1) Checking GP Type If you have selected Allen-Bradley SLC500 Series, the following will be shown. "AB_SLC500"
2) Communication Settings 	2) Communication Settings [MAIN MENU] ↓ [INITIALIZE] ↓ [SET UP I/O] ↓ [SET UP SIO]
	Communication Rate :19200bps Data Length : 8 Bit Stop Bit :1 Bit Parity :Even Control :ER Communication Format:RS-232C

3) Setting up Operation Surroundings 	3) Setting up Operation Surroundings [MAIN MENU] ↓ [INITIALIZE] ↓ [PLC SETUP] ↓ [PLC SETUP]
	SET UP OPERATION SURRORNDINGS MENU:1:1
	SYSTEM DATA AREA START FILE: The INT device is fixed. Array Number (Arbitrary) START ADDRESS: Element Number (Arbitrary) DH ADDRESS GP : Arbitrary Address（0 - 255） DH ADDRESS PLC : Arbitrary Address（0 - 255） * GP No. and PLC No. must be same address.

Specifying Addresses on GP-PRO PBIII

Because two or more arrays exist, the idea of addressing on GP-PRO PB / III is different from the addressing on other companies PLC.



This is how to see the addresses.

B 255 : 255 / 15 — Bit No.

File No.

Element No.

* File Number and Element Number that can be specified.

Device	Bit Address	Word Address	Remark	
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 (PRE:Preset Value)	-	T004:000.PRE-T004:255.PRE T009:000.PRE-T255:255.PRE	*3	
Timer (ACC: Current Value)	-	T004:000.ACC-T004:255.ACC T009:000.ACC-T255:255.ACC	*3	
Counter (CU: Up Count)	C005:000/CU-C005:255/CU C009:000/CU-C255:255/CU	-	*4	L/H
Counter (CD: Down Count)	C005:000/CD-C005:255/CD C009:000/CD-C255:255/CD	-	*4	
Counter (DN: Complete Bit)	C005:000/DN-C005:255/DN C009:000/DN-C255:255/DN	-	*4	
Counter (PRE: Preset Value)	-	C005:000.PRE-C005:255.PRE C009:000.PRE-C255:255.PRE	*3	
Counter (ACC: Current Value)	-	C005:000.ACC-C005:255.ACC C009:000.ACC-C255:255.ACC	*3	
Integer	-	N007:000-N007:255 N009:000-N255:255	*1, *2, *5	H/L
Floating Point	-	F008:000-F255:255		L/H

Remark

＊1 ····· Enter devices as followings with GP-Pro/PB3 for Windows

Description on PLC

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

Entering to GP-Pro/PB3 for Windows

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

＊2 ····· Enter devices as followings with GP-Pro/PB3 for Windows

Description on PLC

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

Entering to GP-Pro/PB3 for Windows

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

＊3･･･････ Enter devices as followings with GP-Pro/PB3 for Windows

Description on PLC	Entering to GP-Pro/PB3 for Windows
T 4 : 17 . ACC File Type: T File No.: 4 Element: 17 Word: ACC	TA 004 017 File Type: TA File No.: 004 Element: 017

＊4･･･････ Enter devices as followings with GP-Pro/PB3 for Windows

Description on PLC	Entering to GP-Pro/PB3 for Windows
T 4 : 17 / TT File Type: T File No.: 4 Element: 17 Bit: TT	TT 004 017 0 File Type: TT File No.: 004 Element: 017 Must be 0

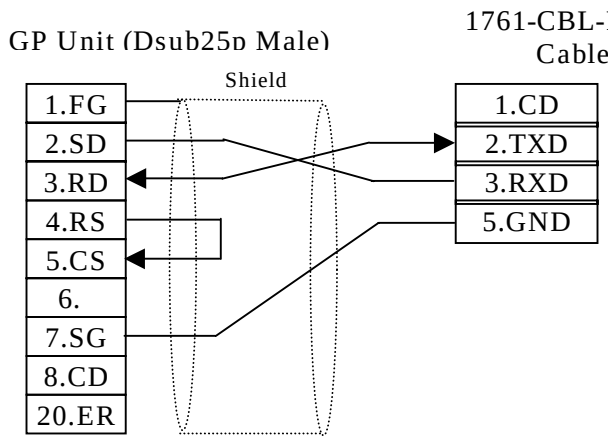
＊5･･･････ possible to specify bits（Bits: hexadecimal）

Notes:

1) I (input), O (output), S (status), R (control), ST (text), L (long), MG (message), and PD (PID) cannot be set on GP.
2) The file type of the file number from 0 to 8 is fixed. The element (device point) can be changed.
3) It is possible to assign the file type and elements of file number from 9 to 255 in the range of the memory capacity of the processor unit, as you like.

Connection Method

RS-232C Connection

Type	Connection Method	Distance
Creating Cable		Within 15m

SG terminal must be connected.

Recommended Product

Connecter/Cover for GP	Dsub25 pin Plug	XM2A-2501 <OMRON Co.>
	Cover for Dsub25 pin	XM2S-2511 <OMRON Co.>
	Jack Screw	XM2Z-0071 <OMRON Co.>
Cable	CO-MA-VV-SB5P × 28AWG <Hitachi Cable Ltd.>	
Setscrew	Metric Coarse Screw Tread : M2.6 × 0.45	