Robostar Robot Controller

N2 Series
UNI-HOST Manual

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Robostar

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Chapter 1 How to Use N2 FILE TRANSFER

1. Prior to Program Execution

This File Transfer Program enables a communication between N2 Robot Controller and PC so that the files or parameters can be transmitted or received.
The communication between N2 Robot Controller and PC is enabled via only serial interface (RS-232C).
Prior to executing the program, it is required to set the same baud rate in both the Controller and a PC by using a teach pendant.
Default communication speed (baud rate) was set to be 115,200bps.

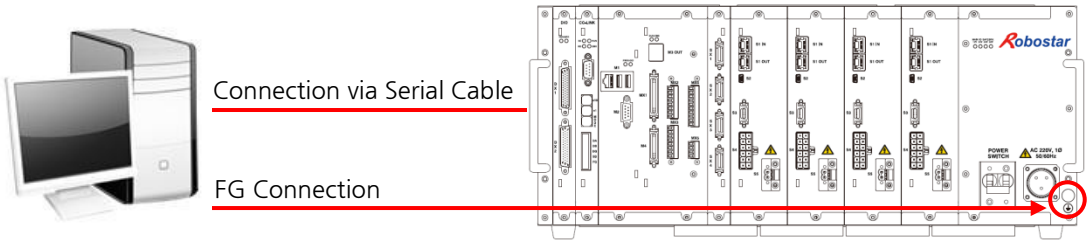


Figure 1-1 Connection Method between Robot Controller and PC

Controller and PC must be connected via a proper cable with pin configurations as below.

■ Pin Map

PC			Controller	
Signal Name	Pin No.		Signal Name	Pin No.
RXD	2	⟷	RXD	2
TXD	3	⟷	TXD	3
GND	5	⟷	GND	5

■ Connection Tips and Physical Specifications

- A shielded cable of over 0.3mm^2 in the min wire thickness must be used.
- A shield in the cable must be connected to connector frames at both ends.
- Each Frame Ground (FG) of both Controller and host PC must be connected together to make the same level.
- The length of a serial cable must be less than 10m.
- Connectors at both ends of the cable must be D-Sub 9s (Socket Type).

2. Default Screen

When double clicking the FileTransfer.exe file to execute the File Transfer Program, you can verify the main screen as shown in Figure 1-2. The main screen of File Transfer Program is composed of two windows; the file list window of Controller and PC, and the trace window showing communication status.

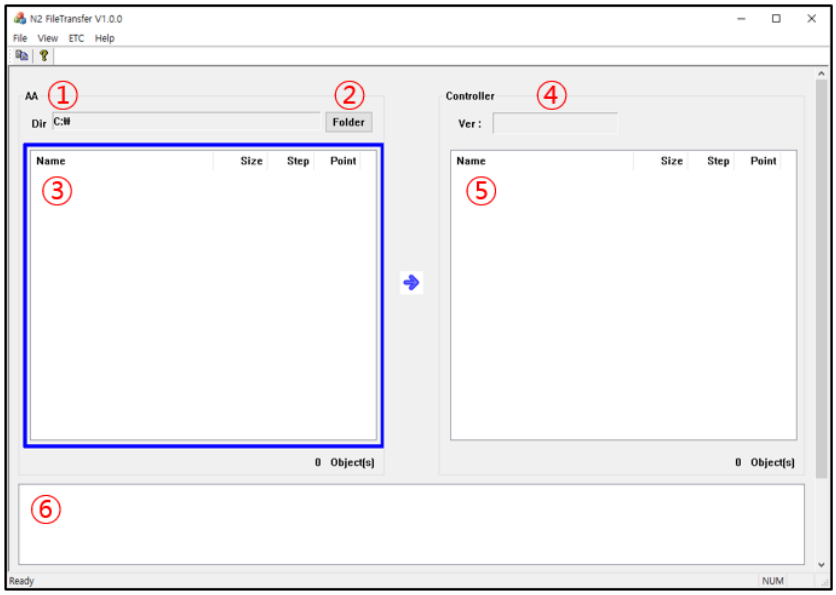


Figure 1-2 Main Screen for File Transfer

①: This indicates a working folder of PC.
②: This activates the window for folder change of PC if required.
③: This shows the files in working folder via a file list window of PC.
The blue border line indicates that a user currently selects the file list window of PC.
④: This indicates the version of Controller.
⑤: This shows the files of Controller that were connected to the file list window of Controller.
⑥: This is a trace window that displays the data in transmitting & receiving or error messages occurred during the communication between Controller and PC.

■ Description of Controller Files

Figure 1-3 shows the list of files in the internal storage of Controller. These include JOB file, Point Variable file, Public Parameters and ROBOT Parameters by channel.

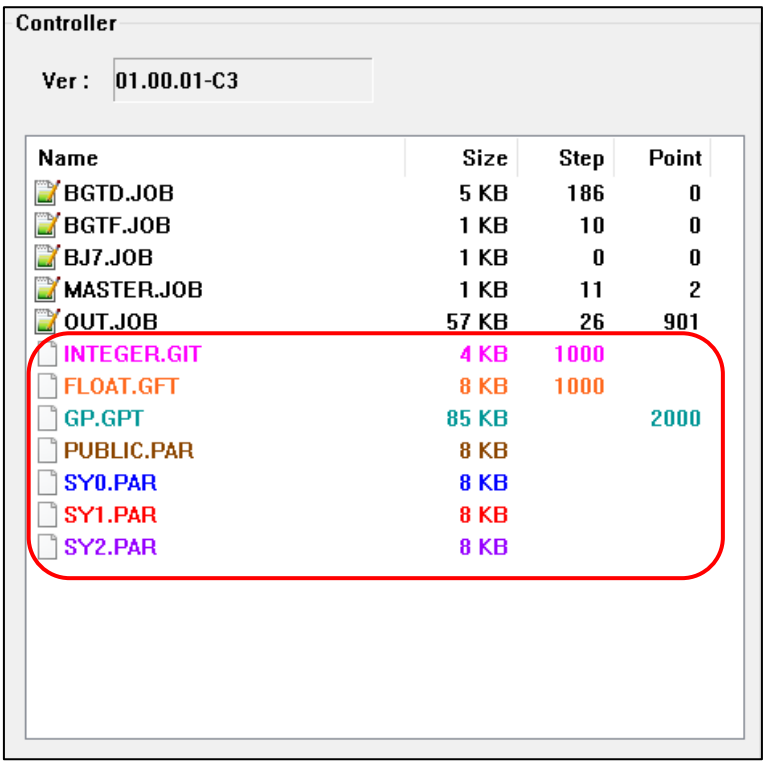


Figure 1-3 File List in Controller

FILE NAME	DESCRIPTION
INTEGER.GIT	Common Integer Variable file of Controller
FLOAT.GFT	Common Real Number Variable file of Controller
GP.GPT	Common Global Point file of Controller
PUBLIC.PAR	Common Parameter Setting file of Controller
SY0.PAR	Robot 1 Parameter Setting file of Controller
SY1.PAR	Robot 2 Parameter Setting file of Controller
SY2.PAR	Robot 3 Parameter Setting file of Controller

3. FILE Menu

3.1 Connect

T/P 파라미터 설정

DEPTH	PUB - HW_CONF(1) - COMM - SERIAL
TP screen	<PUB:SERIAL> SERIAL PORT SETTING PROTOCOL :HOST BAUDRATE :115200 DELIMITER:CRLF
Parameter description	The parameter is to set RS-232C communication standard.
Detail	1) Since there is only one Serial(RS-232C) port, PROTOCOL must be set to HOST to use HOST for normal communication. If not, communication won't be connected. 2) If PROTOCOL parameter is set to STRCOM, move to 3.HOST menu in the main menu without parameter change to enable Communication with PC through Unihost.

When no communication is established between PC and Robot Controller, [Connect] menu is activated as shown in Figure 1-4. Select [File]-[Connect], if a communication is necessary.

Figure 1-4 Selection of [File]-[Connect] in File Transfer Window

Once selecting [Connect] for communication, a popup window for establishing a communication appears as shown in Figure 1-5 below. A communication between PC and Controller is started when pressing the [Connect] button after setting a port number to communicate. Default communication speed (baud rate) was set to be 115,200bps.

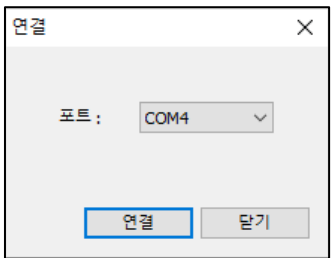


Figure 1-5 Popup Window for File Transfer Program [Connect]

In case of successful connection for communication, Controller version and a file list of internal storage of Controller are displayed as shown in Figure 1-6 and a Log history appears in the trace window.

■ Trace window

```
Request Controller Info
OK
Request Controller File List
OK
```

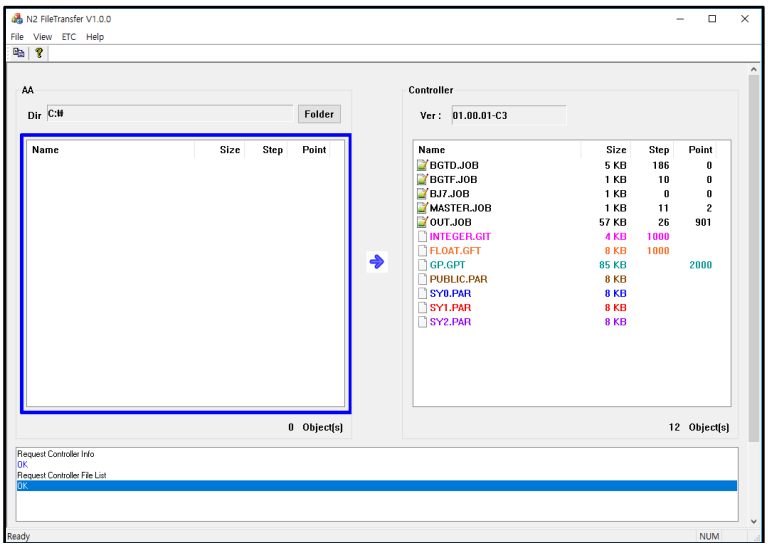


Figure 1-6 Screen in case of successful Connect

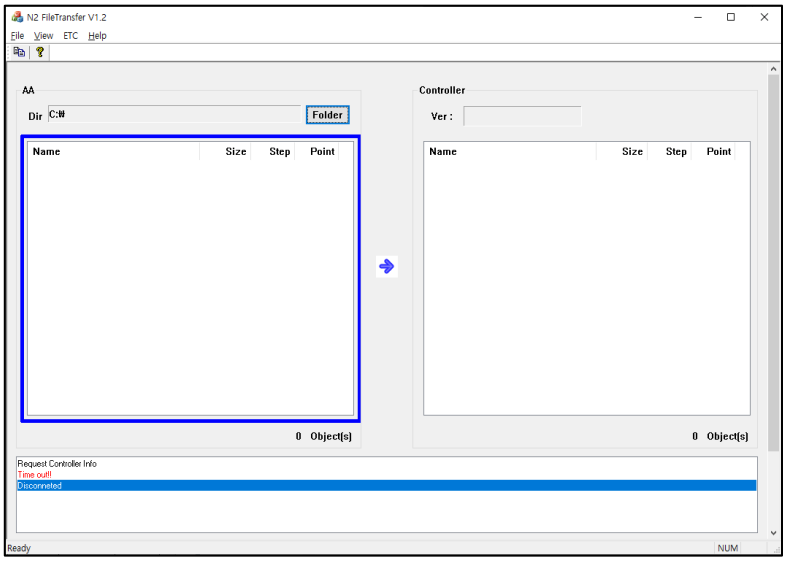


Figure 1-7 Screen in case of fail Connect

1) In case of connection failure for communication, check as described below.
   - Check the Com Port Number.
   - Check the Serial Cable between PC and Controller.

3.2 Disconnect

It is activate as shown in Figure 1-8 only when a communication between PC and Controller was established. Selecting [File]-[Disconnect] terminates the communication.

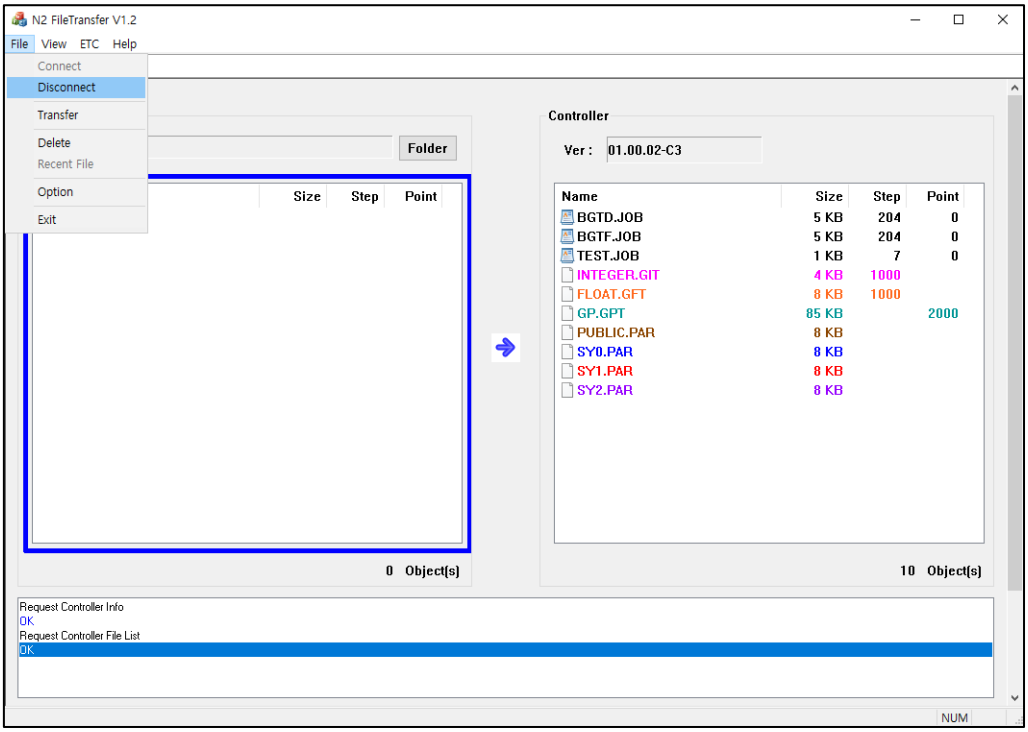


Figure 1-8 Selection of [File]-[Disconnect] in File Transfer Window

■ Trace Window

Disconnect

3.3 Transfer

Figure 1-11 depicts a screen that transfers the files (INTEGER, FLOAT) within Controller to a PC. As shown in Figure 1-9 and Figure 1-10, after selecting the files that you want to transfer, then click [File]-[Transfer] in the menu tab on the top of screen, or click the right button of your mouse to select [Transfer] menu and drag them into the PC file list. The same procedure applies when transferring the files from PC to Controller.

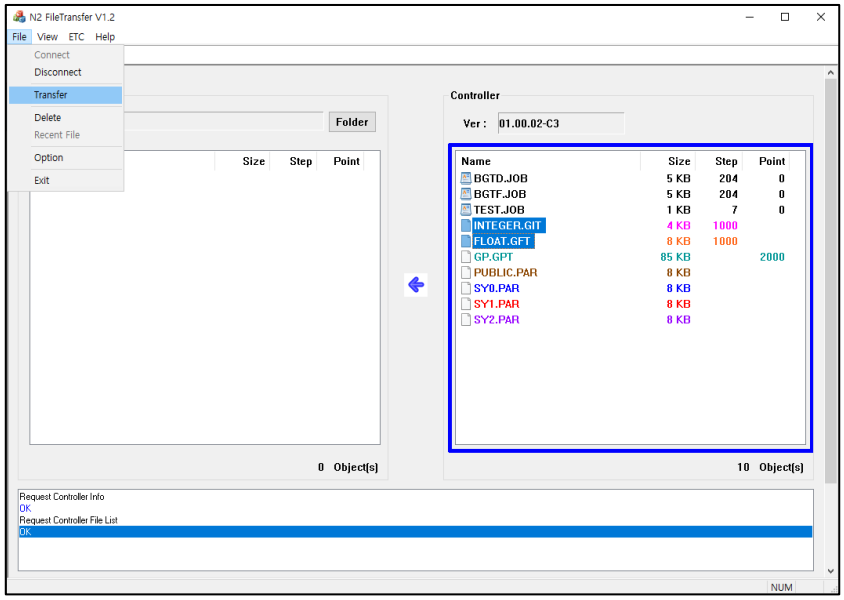


Figure 1-9 File Transfer Method 1 in File Transfer Window

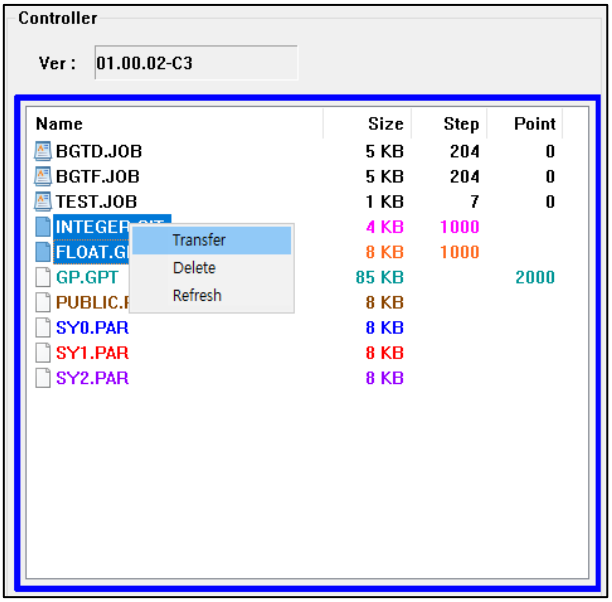


Figure 1-10 File Transfer Method 2 in File Transfer Window

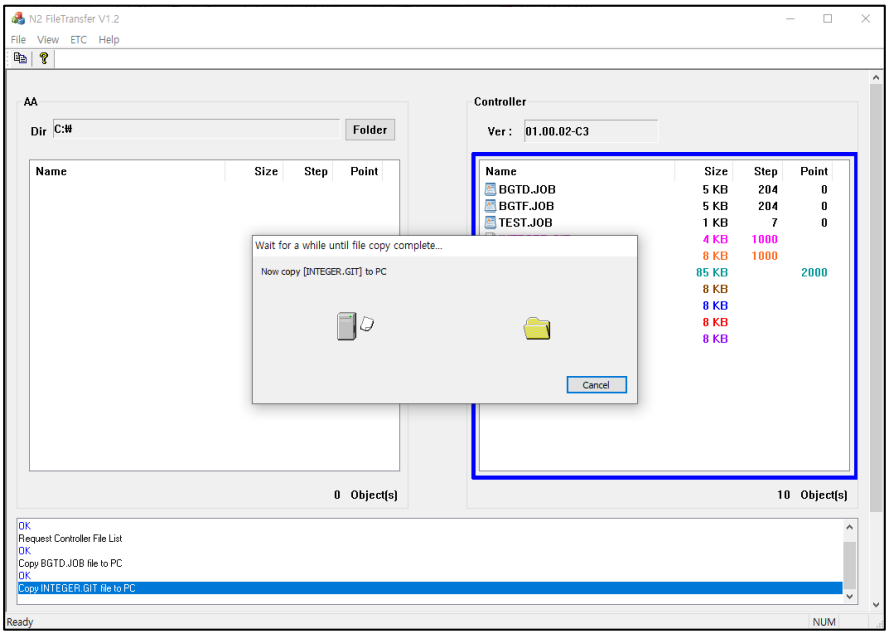


Figure 1-11 A Screen under File Transfer Execution in File Transfer Window

Log history as below occurs in the Trace window in case of a successful file transfer.

■ Trace Window

```
Copy INTEGER.GIT file to PC
OK
Copy FLOAT.GFT file to PC
OK
```

Log history as below occurs in the Trace window in case of a file transfer failure.

■ Trace Window

```
Error : Write file[1314]
```

The Error Message above occurs when no execution file (REditor.exe) exists in Execute Path. Therefore, Execute Path setting in [File]-[Option] menu must be checked.

3.4 Delete

Figure 1-12 indicates a screen for deleting the file (INTEGER) in PC. As shown in Figure 1-12 and Figure 1-13, you can delete files by selecting [File]-[Delete] menu after clicking the files, or by using the right button of your mouse.
The same method applies when deleting files from Controller.

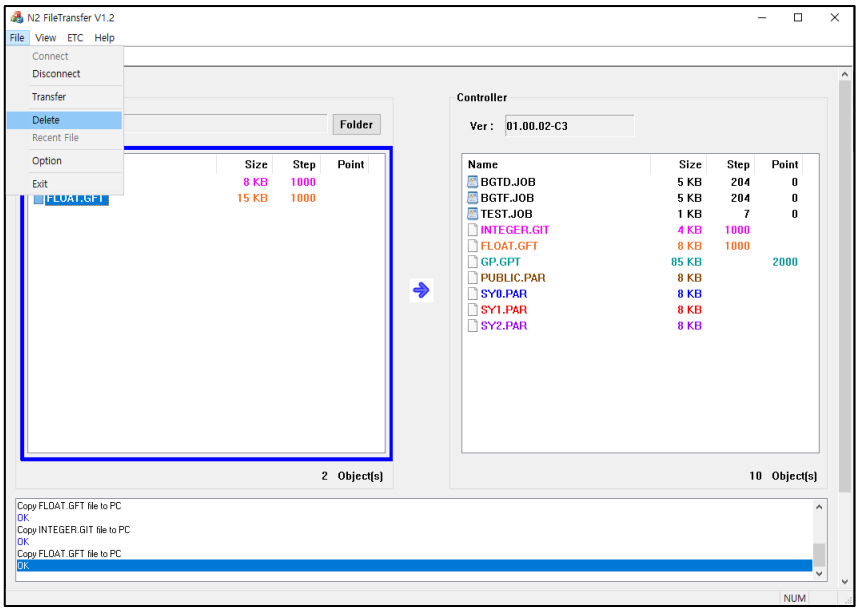


Figure 1-12 File Delete Method 1 in File Transfer Window

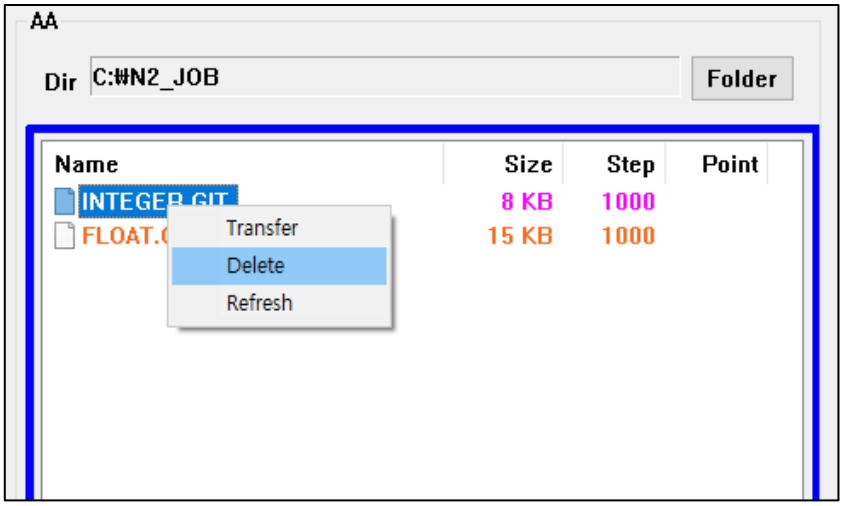


Figure 1-13 File Delete Method 2 in File Transfer Window

3.5 Recent File

※ This function is not currently supported.

3.6 Option

You can select the [File]-[Option] menu as shown in Figure 1-14 when setting the communication timeout value, execution file path and firmware path of the Program.

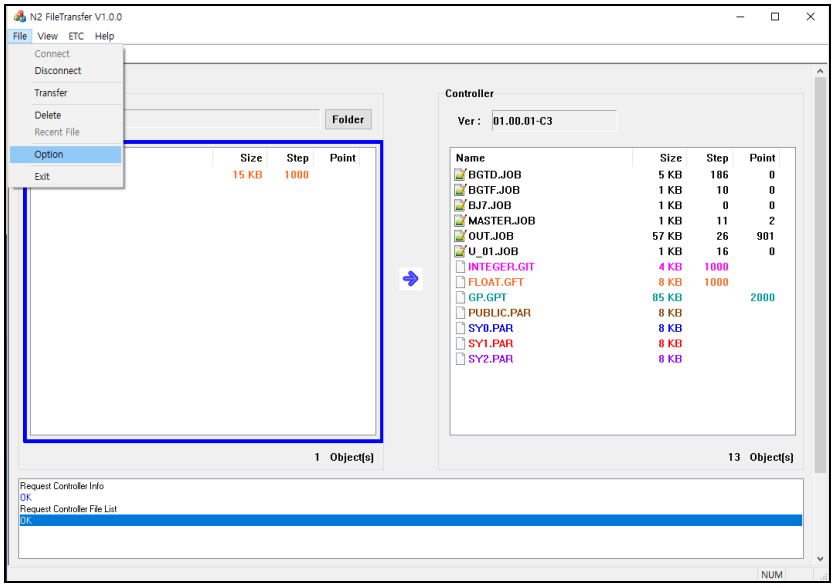


Figure 1-14 Selection of [File]-[Option] Menu in File Transfer Window

In the Option window, each parameter has a meaning as described below.

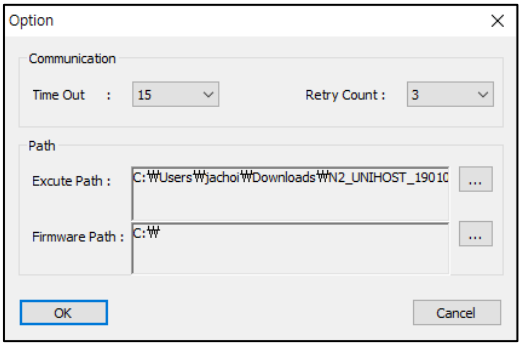


Figure 1-15 Popup Window for File Transfer Program [Option]

OPTION NAME	DESCRIPTION	UNIT
Time Out	Reference of Timeout	sec
Retry Count	Retry Count in Timeout	turn
Execute Path	Folder Location of Execution File	-
Firmware Path	Folder Location of Firmware File	-

1. Execute Path setting must be the folder that FileTransfer.exe exists.

4. VIEW Menu

4.1 Toolbar

When selecting and activating the [View]-[Toolbar] menu, the Toolbar is expanded as shown in Figure 1-16.

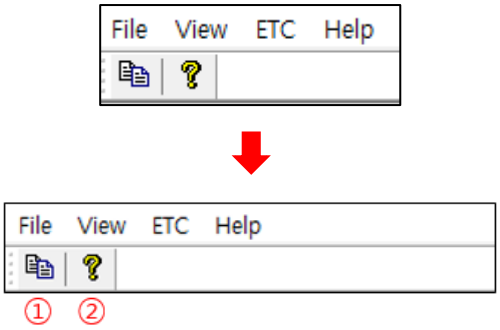


Figure 1-16 Lower Status bar of File Transfer Program

①	Refresh	Refresh the selected File List Window
②	Version	Version Check of File Transfer Program

4.2 Status bar

When selecting and activating the [View]-[Toolbar] menu, current Keyboard status (Caps Lock, Num Lock, Scroll Lock) can be verified as shown in the right lower part of Figure 1-17.

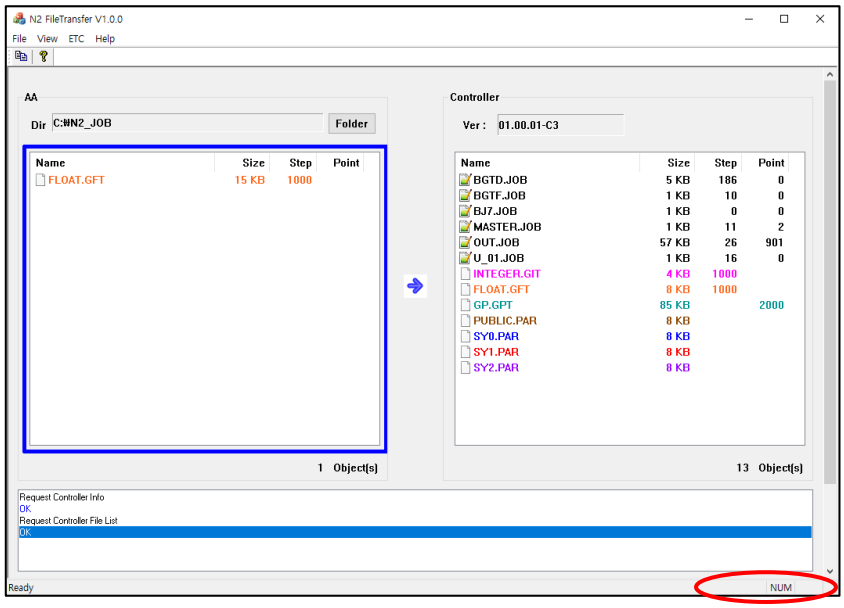


Figure 1-17 Lower Status bar of File Transfer Program

4.3 Refresh

This enables to refresh the file list in the file list window that was selected by a user. When refreshing the file list window of Controller, a failure can occur. This occurs in case of no communication due to disconnection or error data due to poor communication between PC and Controller. Measures for error are same.

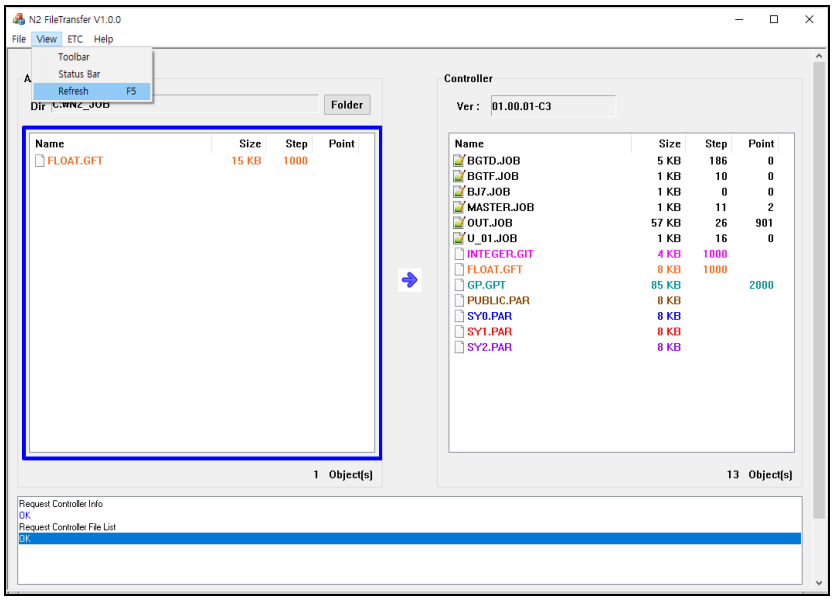


Figure 1-18 Selection of [View]-[Refresh] in File Transfer Window

5. ETC Menu

5.1 Download Log

※ This function is not currently support.

5.2 Upload Firmware

When the firmware of N2 Controller was modified, it must be updated with the newest firmware version. This menu allows to alter the firmware of Controller. Firmware upload is a very critical work that can affects the operation of Controller and you need to ask our customer support team prior to conducting the firmware upload.

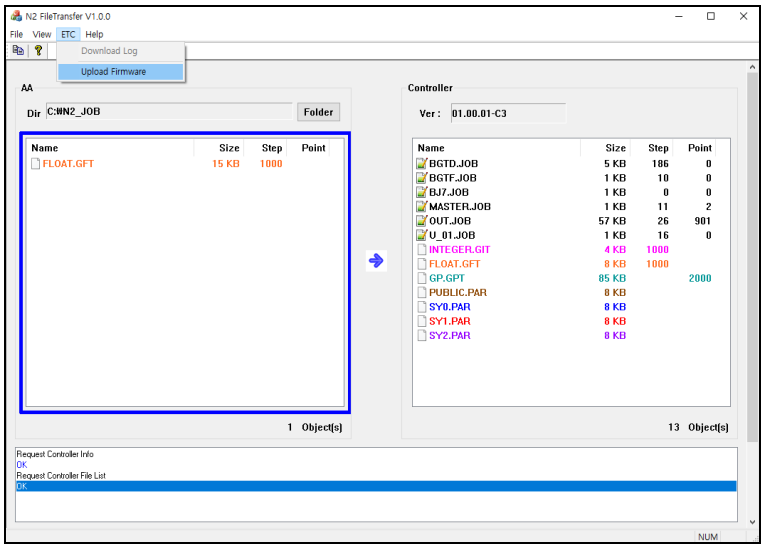


Figure 1-19 Selection of [ETC]-[Upload Firmware] in File Transfer Window

Figure 1-20 shows a screen in the firmware uploading progress.

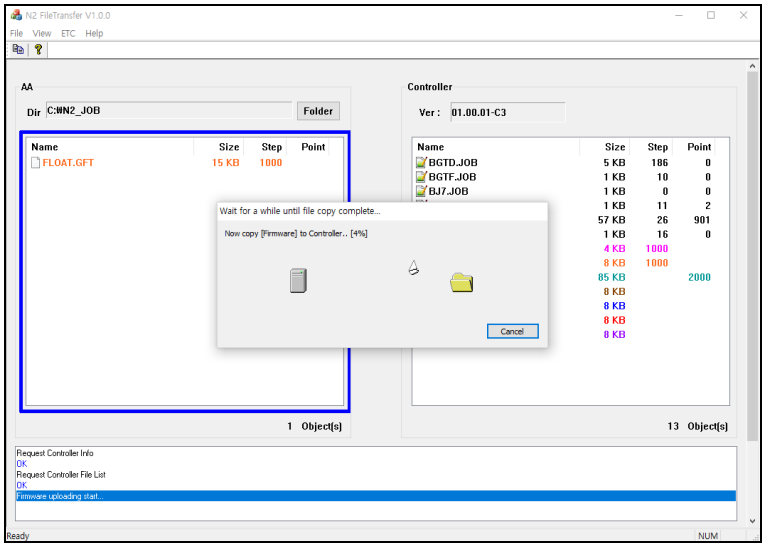


Figure 1-20 Screen in Upload Firmware Progress

Firmware upload is completed if the execution rate of firmware update reaches 100%. When successful firmware update, Log history occurs in the Trace window as below.

■ Trace window

```
Firmware uploading start...
Firmware upload complete!
```

When a failure in firmware update, Log history occurs in the Trace window.

■ Trace window

```
Unable to open firmware file[C:₩₩ecat]
```

Error Message as above appears in case that no firmware file (ecat) exists in the defined Firmware Path. Therefore, you need to check Firmware Path setting in [File]-[Option] menu.

6. Help Menu

In selecting [Help]-[About FileTransfer...] menu, you can check the program version as shown in Figure 1-21.

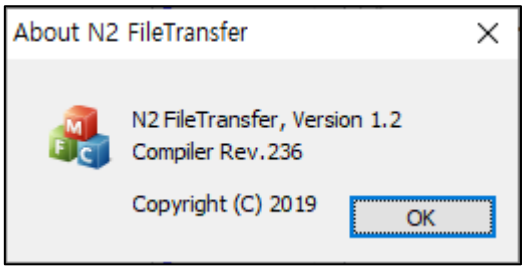


Figure 1-21 Version Information of File Transfer Program

1) In case of the first firmware upload, you need to ask out customer support team prior to perform the upload.
2) Wrong upload of the firmware may cause a booting failure of Controller.
3) Carefully proceed the upload as the procedure.

Chapter 2 How to Use N2 ROBOSTAR EDITOR

This Robostar Editor allows to create or alter JOB file, POINT variable file and Parameters of N2 Robot Controller.

1. JOB File Editing Screen

Figure 2-1 depicts a screen for JOB Editor and enables to create and edit the JOB files. In addition, it has a built-in compiler so that any Syntax error can be known after completing the JOB program creation.

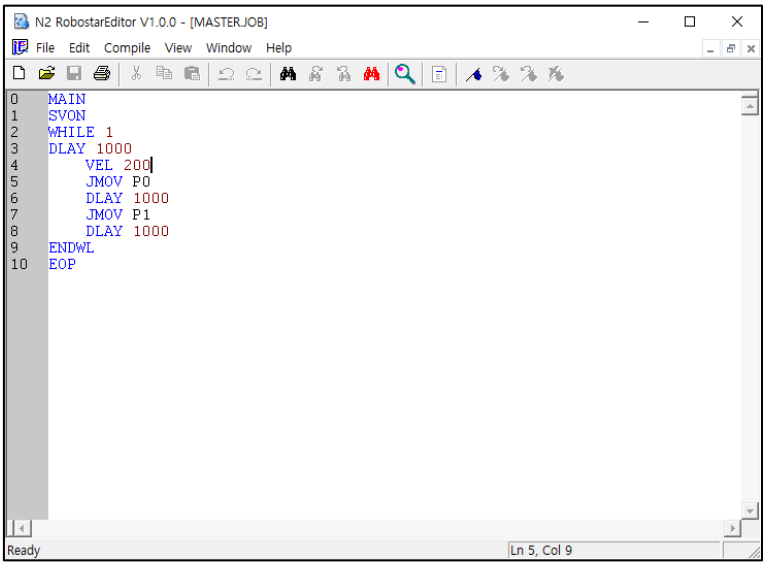


Figure 2-1 Robostar JOB Editor Screen

1		**New**	New File Creation	2		**Open**	JOB File Open
3		**Save**	JOB File Store	4		**Print**	JOB File Print
5		**Cut**	Cut of Certain Part	6		**Copy**	Copy of Certain Part
7		**Paste**	Paste of Copied Part	8		**Undo**	Restore to Former State
9		**Redo**	Execute Again	10		**Find**	Search Specific Characters
11		**Repeat**	Search downward from current position	12		**Find Previous**	Search upward from current position
13		**Replace**	Alter Character String	14		**Find ALL**	Search for all JOB files
15		**Syntax**	Syntax error check	16		**Bookmark**	Bookmark creation
17		Moving between Bookmarks (before, after)		18		Delete all Bookmarks	

1.1 New

A new JOB file is created when pressing the [New] button or selecting [File]-[New] menu. The current Editor version allows only a creation of new JOB file.

1.2 Open

The existing file can be loaded on the Editor as shown in Figure 2-2 when pressing the [Open] button or selecting [File]-[Open] menu.

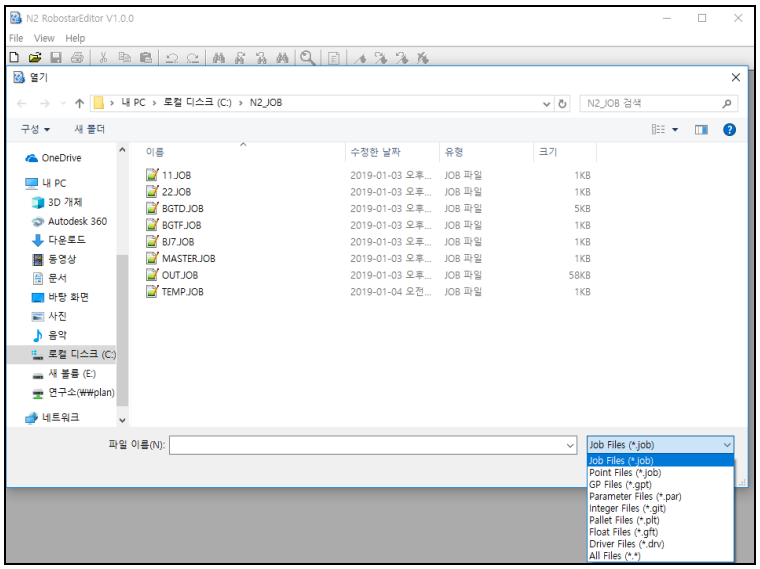


Figure 2-2 Robostar Editor File Open

1.3 Save

Pressing the [Save] button enables to save the created file. In case of a newly created JOB file, the POINT INFO setting popup window appears as shown in Figure 2-3.
Set proper Robot ID(channel) and Robot DOF and enter JOB file name.

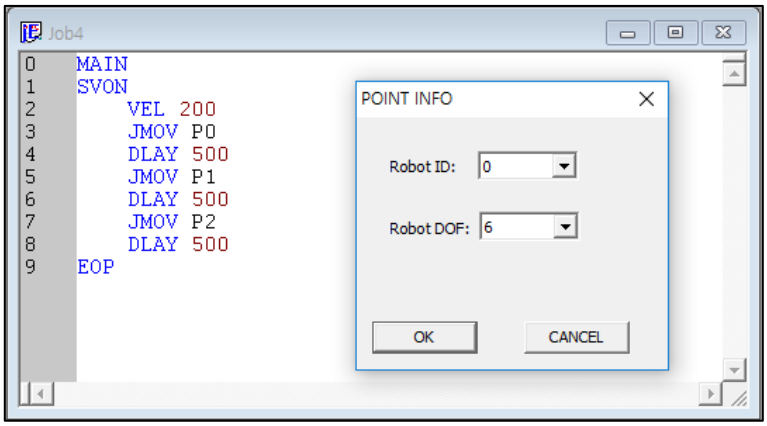


Figure 2-3 Robostar Editor File Store

1.4 Print

Pressing the [Print] button enables to print the currently active file. For example, in the activation of PUBLIC.PAR file as shown in Figure 2-4, only PUBLIC.PAR file is printed once pressing the [Print] button.

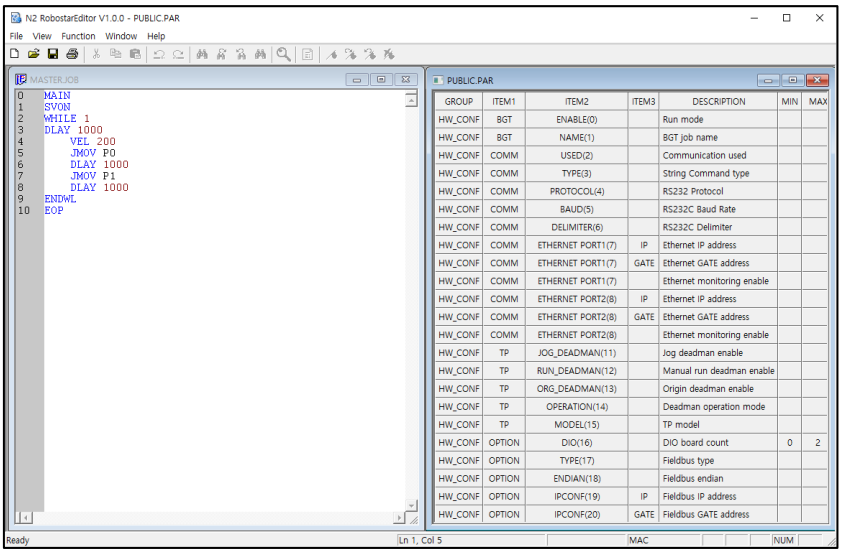


Figure 2-4 Example of Robostar Editor File Print

1.5 Cut / Copy / Paste

Selecting the [Cut] button can cut a certain text string.
Selecting the [Copy] button can copy a certain text string.
Selecting the [Paste] button can paste the text string that was cut or copied.

1.6 Undo / Redo

The [Undo] button restores to the former state.
The [Redo] button executes again.

1.7 Find / Repeat / Find Previous

The [Find] button allows to find out the specific text string desired from the current file. Enter “JMOV” as a text string that needs to be found and press [Find Next] button as shown in Figure 2-5.

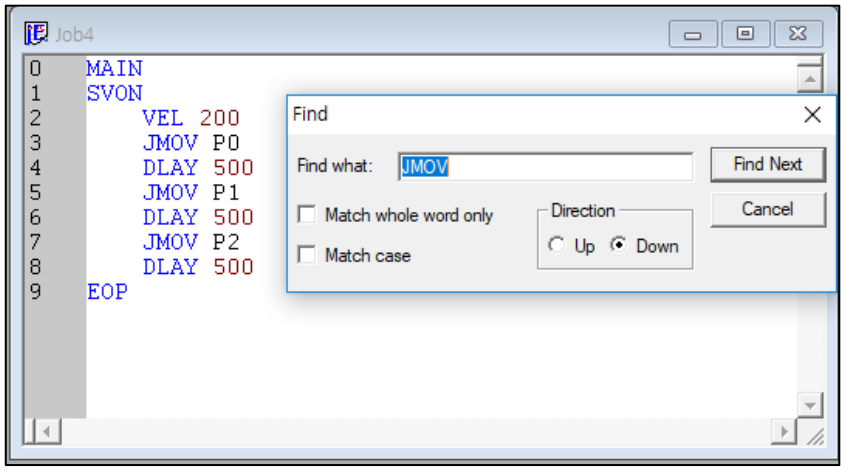


Figure 2-5 Finding a Text String from Current File

You can check that the several “JMOV”s identified became a block-setting as shown in Figure 2-6. Then, you can find the desired text string by pressing the [Repeat] or [Find Previous] buttons.

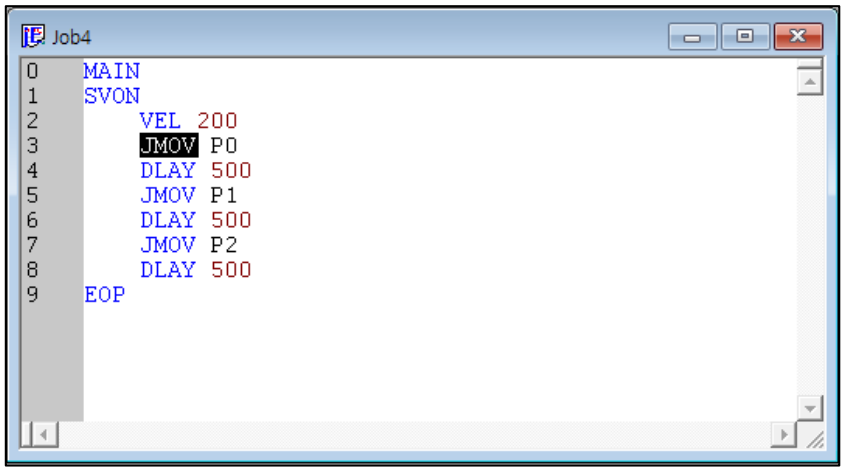


Figure 2-6 Text String Find Result from Current File

1.8 Replace

Selecting the [Replace] button allows to replace the text string to find in current file with the text string to be replaced as shown in Figure 2-7.

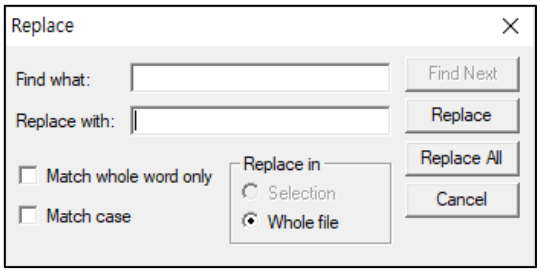


Figure 2-7 Text String Find in all JOB files

1.9 Find ALL

The [Find ALL] button enables to find a desired specific text string from all JOB files that are in the defined path. As shown in Figure 2-8, enter “DLAY” as a desired text string and press [FIND] button.

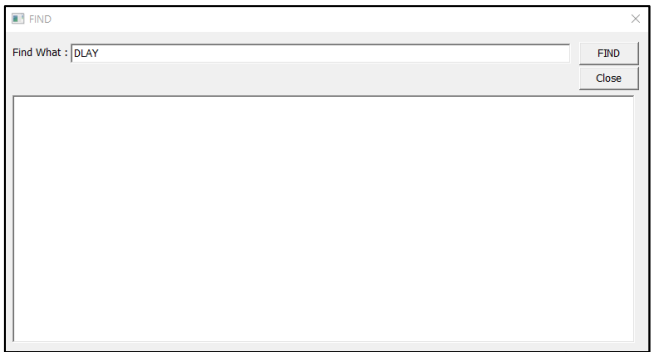


Figure 2-8 Text String Find in all JOB files

As shown in Figure 2-9, you can verify the position of the specific text string in all JOB files through the output list and can open the JOB file by double clicking the list.

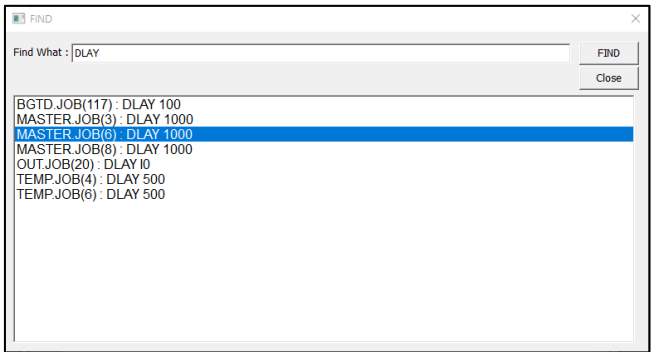


Figure 2-9 Text String Find Result in all JOB files

1.10 Syntax

After creating a JOB file, you can perform a compile by selecting the [Syntax] button or clicking the [F5] button. Once a compile is succeeded, the popup window with “Compile succeed!” appears as shown in Figure 2-10.

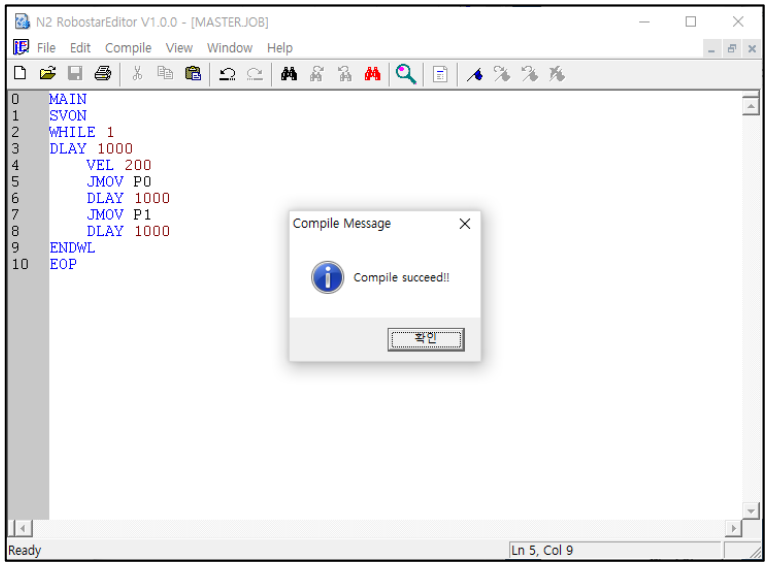


Figure 2-10 Succeeded Compile Screen in JOB file

Figure 2-11 shows a failure in compile. Compile output screen includes the JOB file name and line position that error occurred, Error Message information.

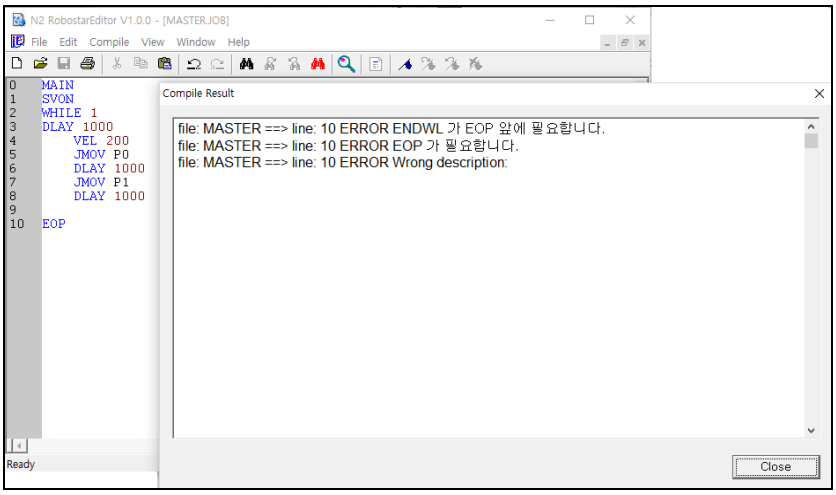


Figure 2-11 Compile Failure Screen in JOB file

1) Prior to conducting a compile, the JOB file must be stored in advance.
2) Prior to conducting a compile, the JOB file must be stored if there is a change in the JOB file.

1.11 Bookmark

Selecting the [Bookmark] button allows to use Bookmark functions within a JOB file.

Pressing the button creates a Bookmark based on the current cursor position.

Figure 2-12 and Figure 2-13 show the Bookmark creation when pressing the button.

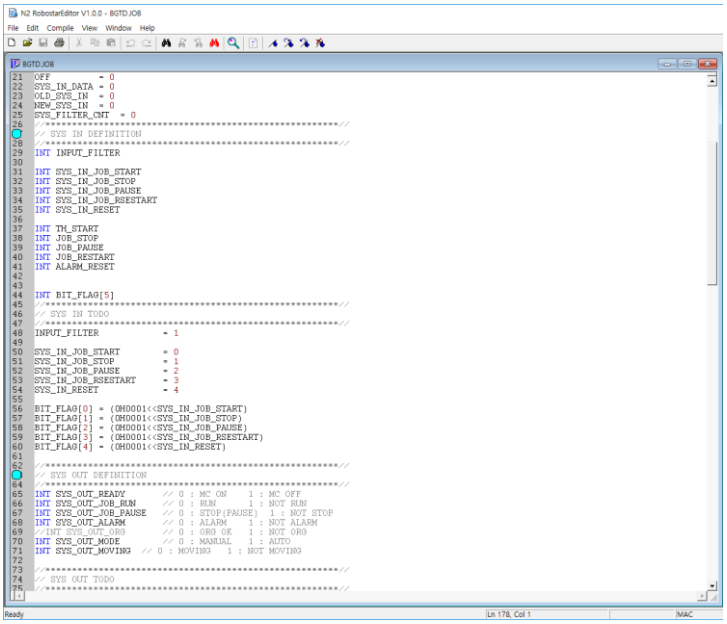


Figure 2-12 Bookmark Creation 1 in JOB file

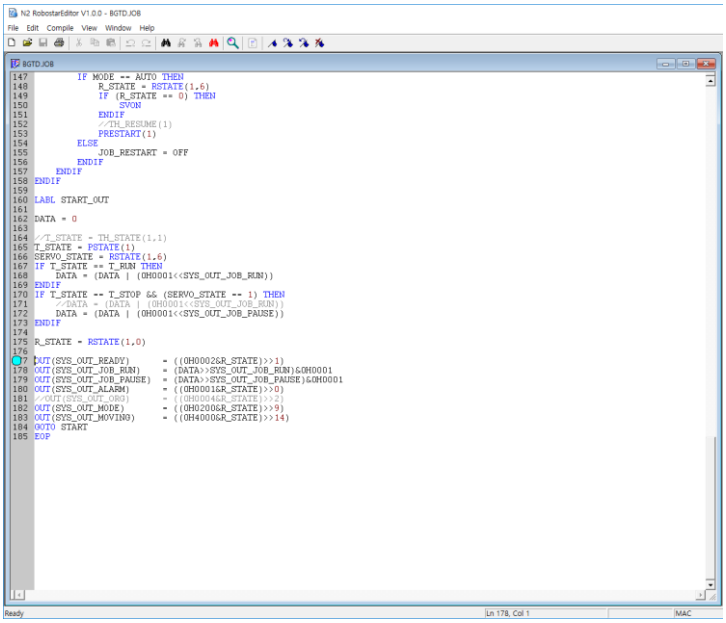
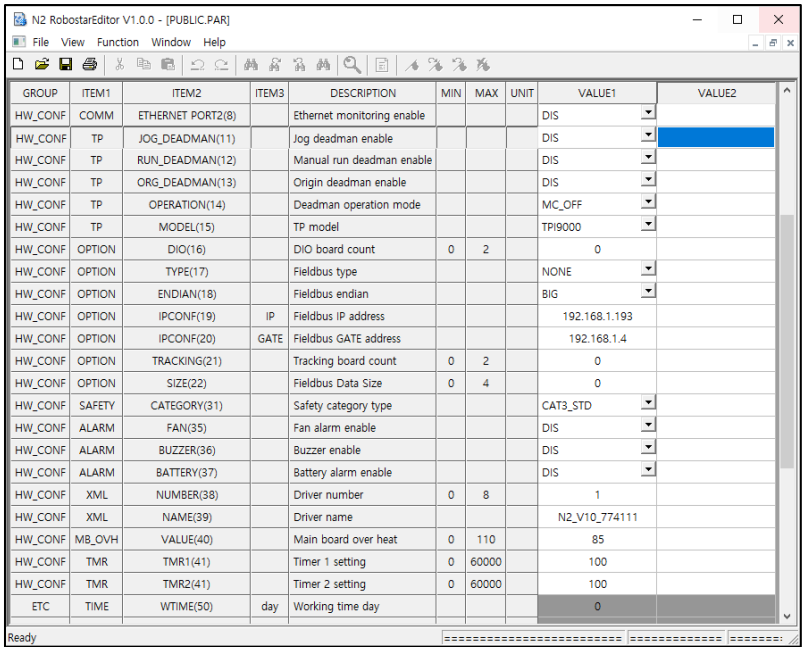


Figure 2-13 Bookmark Creation 2 in JOB file

In addition, when pressing button, cursor position moves to upper or lower Bookmark position based on the present cursor position and, when pressing button, all Bookmarks created are deleted.

2. Editing Screen for Common Parameter Setting File

Figure 2-14 indicates a screen for the Common Parameter Setting and enables to edit the Common Parameter used within Controller. Refer to the N2-OM (Operating Manual) for details on the parameters.

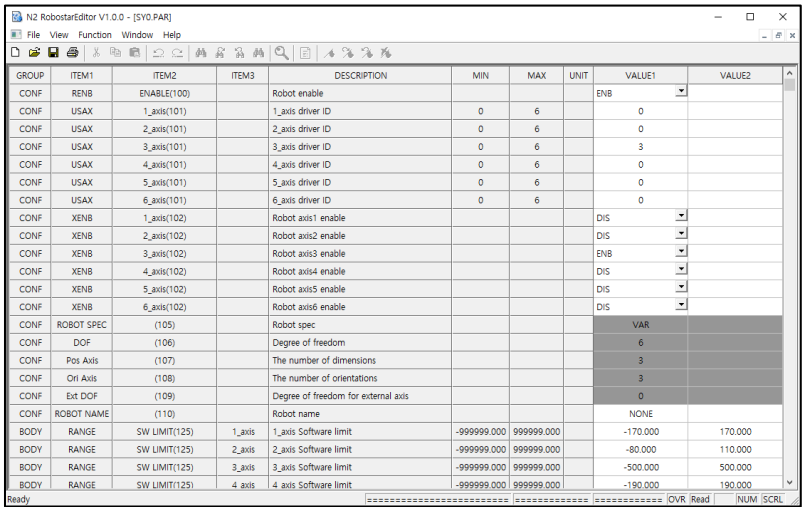


GROUP	ITEM1	ITEM2	ITEM3	DESCRIPTION	MIN	MAX	UNIT	VALUE1	VALUE2
HW_CONF	COMM	ETHERNET PORT2(8)		Ethernet monitoring enable				DIS	
HW_CONF	TP	JOG_DEADMAN(11)		Jog deadman enable				DIS	
HW_CONF	TP	RUN_DEADMAN(12)		Manual run deadman enable				DIS	
HW_CONF	TP	ORG_DEADMAN(13)		Origin deadman enable				DIS	
HW_CONF	TP	OPERATION(14)		Deadman operation mode				MC_OFF	
HW_CONF	TP	MODEL(15)		TP model				TPI9000	
HW_CONF	OPTION	DIO(16)		DIO board count	0	2		0	
HW_CONF	OPTION	TYPE(17)		Fieldbus type				NONE	
HW_CONF	OPTION	ENDIAN(18)		Fieldbus endian				BIG	
HW_CONF	OPTION	IPCONF(19)	IP	Fieldbus IP address				192.168.1.193	
HW_CONF	OPTION	IPCONF(20)	GATE	Fieldbus GATE address				192.168.1.4	
HW_CONF	OPTION	TRACKING(21)		Tracking board count	0	2		0	
HW_CONF	OPTION	SIZE(22)		Fieldbus Data Size	0	4		0	
HW_CONF	SAFETY	CATEGORY(31)		Safety category type				CAT3_STD	
HW_CONF	ALARM	FAN(35)		Fan alarm enable				DIS	
HW_CONF	ALARM	BUZZER(36)		Buzzer enable				DIS	
HW_CONF	ALARM	BATTERY(37)		Battery alarm enable				DIS	
HW_CONF	XML	NUMBER(38)		Driver number	0	8		1	
HW_CONF	XML	NAME(39)		Driver name				N2_V10_774111	
HW_CONF	MB_OVH	VALUE(40)		Main board over heat	0	110		85	
HW_CONF	TMR	TMR1(41)		Timer 1 setting	0	60000		100	
HW_CONF	TMR	TMR2(41)		Timer 2 setting	0	60000		100	
ETC	TIME	WTIME(50)	day	Working time day				0	

Figure 2-14 Editing Screen for Common Parameter Setting File

3. Editing Screen for Robot Parameter Setting File

Figure 2-15 indicates a screen for the Robot Parameter Setting and enables to edit the Robot Parameter used within Controller. Refer to the N2-OM (Operating Manual) for details on the parameters.



GROUP	ITEM1	ITEM2	ITEM3	DESCRIPTION	MIN	MAX	UNIT	VALUE1	VALUE2
CONF	RENB	ENABLE(100)		Robot enable				ENB	
CONF	USAX	1_axis(101)		1_axis driver ID	0	6		0	
CONF	USAX	2_axis(101)		2_axis driver ID	0	6		0	
CONF	USAX	3_axis(101)		3_axis driver ID	0	6		3	
CONF	USAX	4_axis(101)		4_axis driver ID	0	6		0	
CONF	USAX	5_axis(101)		5_axis driver ID	0	6		0	
CONF	USAX	6_axis(101)		6_axis driver ID	0	6		0	
CONF	XENB	1_axis(102)		Robot axis1 enable				DIS	
CONF	XENB	2_axis(102)		Robot axis2 enable				DIS	
CONF	XENB	3_axis(102)		Robot axis3 enable				ENB	
CONF	XENB	4_axis(102)		Robot axis4 enable				DIS	
CONF	XENB	5_axis(102)		Robot axis5 enable				DIS	
CONF	XENB	6_axis(102)		Robot axis6 enable				DIS	
CONF	ROBOT SPEC	(105)		Robot spec				VAR	
CONF	DOF	(106)		Degree of freedom				6	
CONF	Pos Axis	(107)		The number of dimensions				3	
CONF	Ori Axis	(108)		The number of orientations				3	
CONF	Ext DOF	(109)		Degree of freedom for external axis				0	
CONF	ROBOT NAME	(110)		Robot name				NONE	
BODY	RANGE	SW LIMIT(125)	1_axis	1_axis Software limit	-999999.000	999999.000		-170.000	170.000
BODY	RANGE	SW LIMIT(125)	2_axis	2_axis Software limit	-999999.000	999999.000		-80.000	110.000
BODY	RANGE	SW LIMIT(125)	3_axis	3_axis Software limit	-999999.000	999999.000		-500.000	500.000
BODY	RANGE	SW LIMIT(125)	4_axis	4_axis Software limit	-999999.000	999999.000		-190.000	190.000

Figure 2-15 Editing Screen for Robot Parameter Setting File

4. Editing Screen for POINT File

Figure 2-16 is Point Editor screen and it enables to create and edit the Global Point file that is used within Controller. Each Point can define 8 axes with Robot postures (R_CONF) and it is possible to set a tool attached to Robot, corresponding coordinate system (TOOL) and user coordinate system (USER).

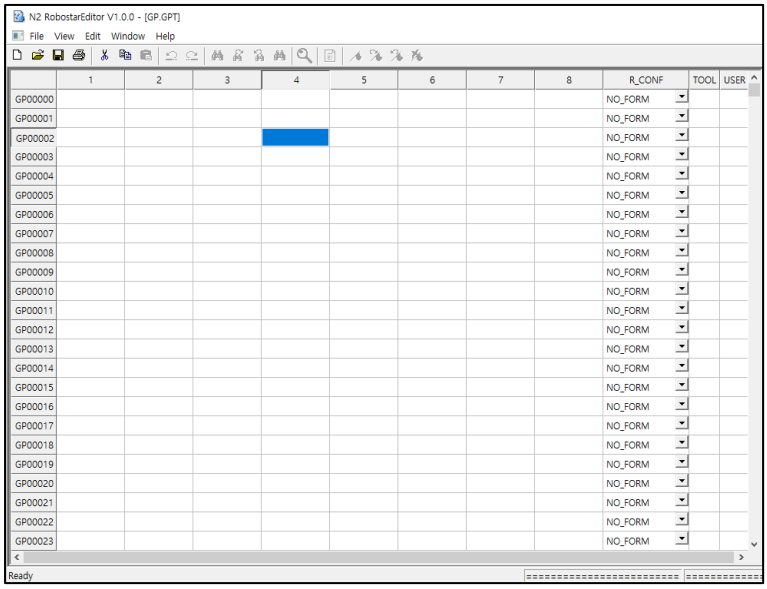


Figure 2-16 POINT File Editing Screen

4.1 Initialize

Figure 2-17 indicates a tab that can perform an initialization on the using Point in the beginning of Point editing. Point range is set via Start Point and End Point. An initialization setting is available for individual axis and entire axes.

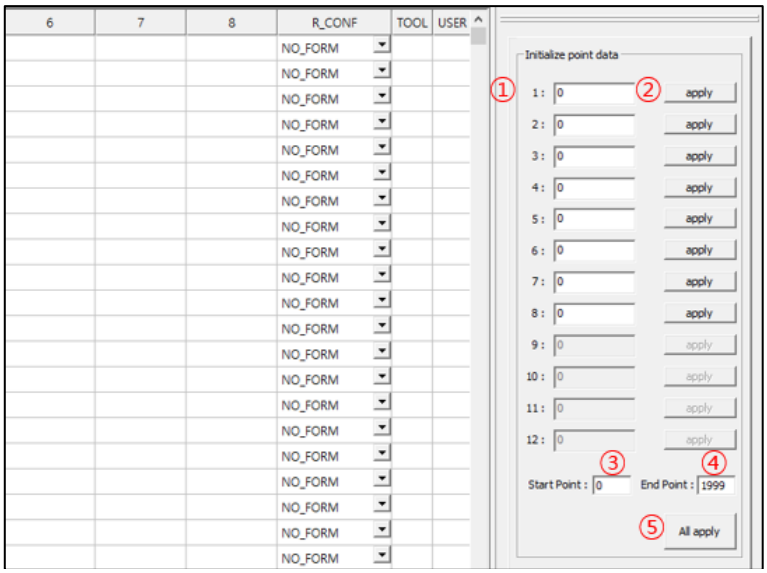


Figure 2-17 Initialize Tab in POINT File Editing Screen

■ Detail Description on Initialize Setting Tab

①	Initial Position Setting(Angle) for Axis 1	②	Separately applying Initial Position value of Axis 1
③	Start Point Setting value	④	End Point Setting value
⑤	Entirely applying Initial Position value of Axis 1~8		

When pressing “All Apply” button, a user is asked once more on proceeding the initialization via Message Box as shown in Figure 2-18.

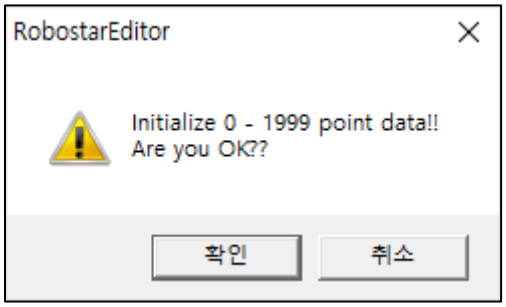


Figure 2-18 Popup Window for verifying “All Apply” Initialization

Figure 2-19 is a screen that the initialization was completed.

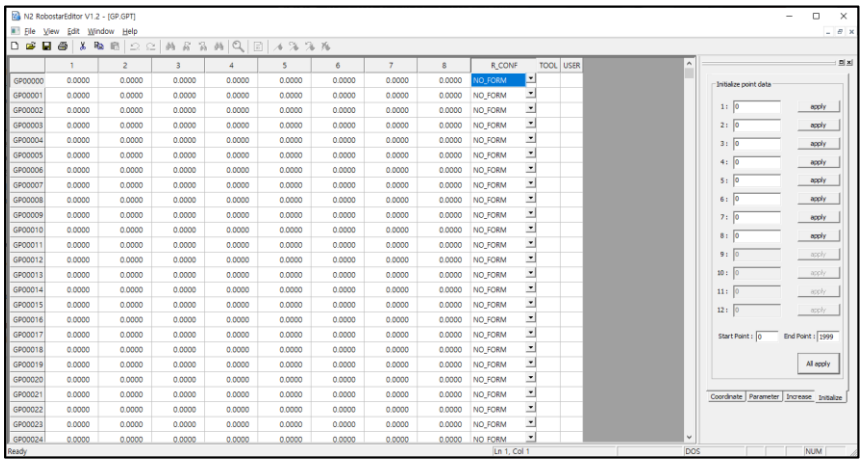


Figure 2-19 POINT File Editing Screen after Initialization

4.2 Increase

Figure 2-20 shows an editing tab that can increase the Point in certain amount as defined by a user within the set range when editing the Point. Point range setting can be set via Start Point and End Point. A certain Point value can be raised for individual axis and entire axes.

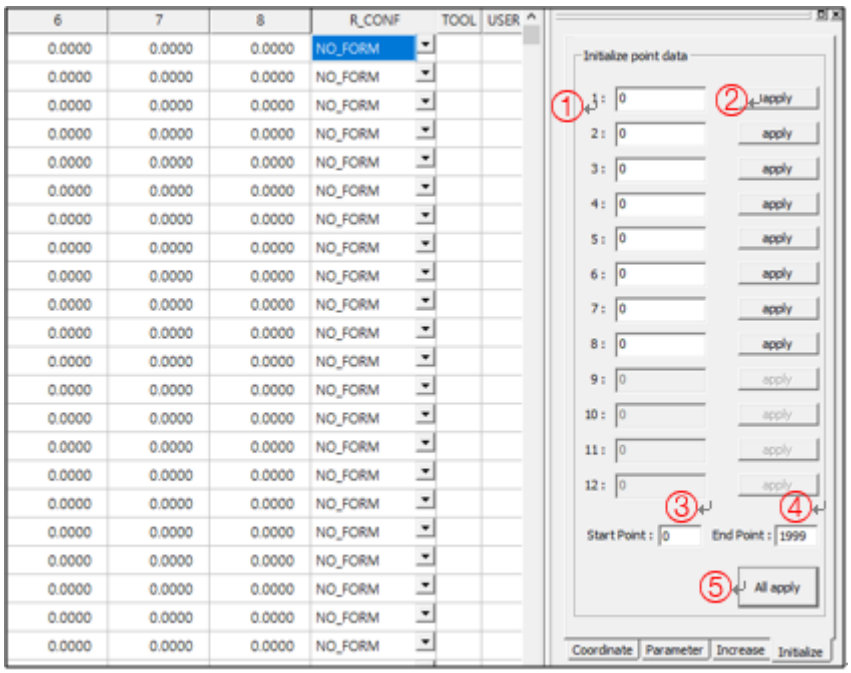


Figure 2-20 Increase Tab in POINT File Editing Screen

■ Detail Description on Increase Setting Tab

①	Increased Position Setting(Angle) for Axis 1	②	Separately applying Increased Position value of Axis 1
③	Start Point Setting value	④	End Point Setting value
⑤	Entirely applying Initial Position value of Axis 1~8		

Figure 2-21 is a screen that shows increased position values for each axis; -2.098 for axis 1, 4.483 for axis 2, 32.687 for axis 3, -91.268 for axis 4, -91.671, 6 for axis 5, 52.813 for axis 6.

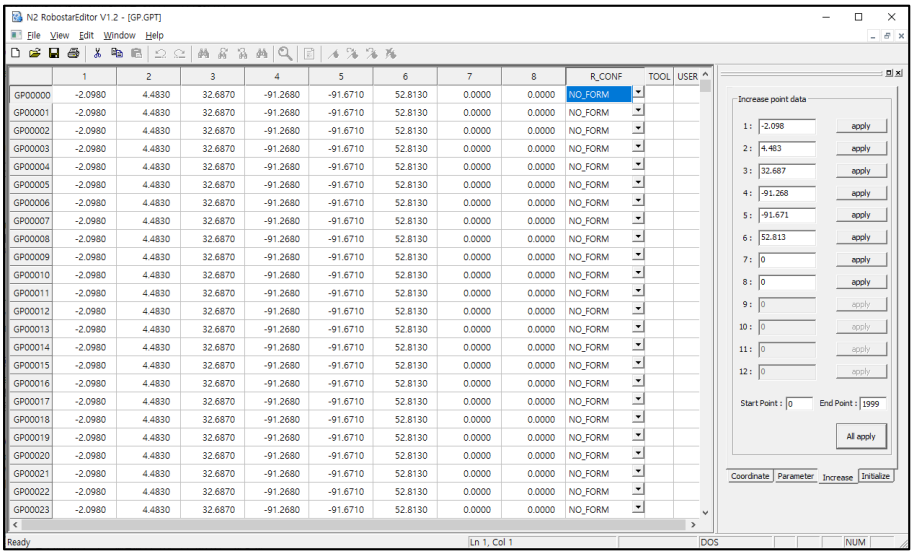


Figure 2-21 POINT File Editing Screen after Proceeding Increase

4.3 Parameter

※ This function is not currently supported.

4.4 Coordinate

※ This function is not currently supported.

5. Editing Screen for Variable File

Figure 2-22 is the Editor screen for Variables and allows to edit the FLOAT and INTEGER variables that are used in Controller.

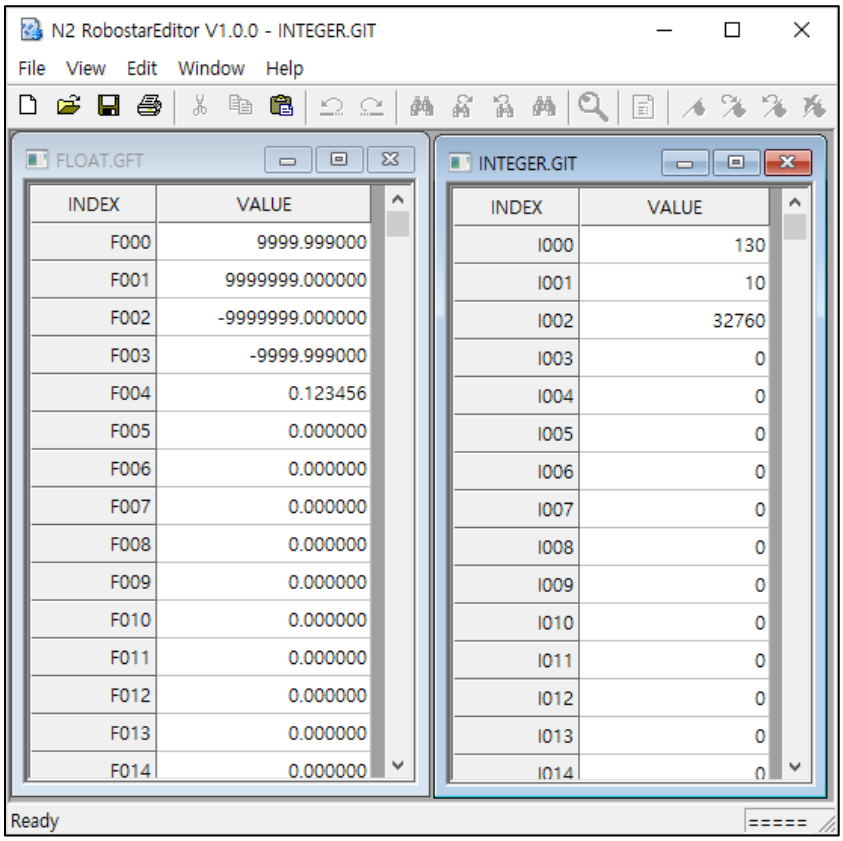


Figure 2-22 Editing Screen for Variable File

Chapter 3 Revision

Revision	Date	Revision Detail
1	2019-01-07	Initial Distribution
2	2020-05-07	Added T/P parameter setting when performing FileTransfer Connect

A. Literature Reference

All the literature, which are required for performing services, repair or installation of all robot system that uses this product, are specified in this chapter.
In the ID of all literature, the very first word indicates the Controller name and the second word means the abbreviation of corresponding literature. The last indicates language and its version.

Language is marked according to the rules below.

- Korean: K
- English: E
- Chinese: C
- Japanese: J
- Vietnam: V

Document ID	Description
N2-IM-E01	**Installation and handling manual** This explains the Controller structure and installation as well as the methods to interface with external devices.
N2-OM-E02	**Operation manual** This explains the method to use the Controller and Teach Pendant, parameter setting, JOB program editing and additional functions.
N2-PM-E04	**Programming manual** This explains the method to create RRL (Robostar robot language) that is the Robostar Robot program and describes the commands.
N2-HM-E02	**Unihost manual** This explains about Unihost that is Robostar on-line PC program.
N2-AM-E02	**Alarm and maintenance manual** This explains the information on problems occurred in the Controller-based Robot system as well as solutions and procedure for the problems.

B. Hazard Stages & Signs

Sign	Designation	Meaning
	DANGER	This warns that deadly and serious injuries or serious product damages can be caused from the accidents unless complying the guidelines.
	WARNING	This warns that accidents may occur unless complying the guidelines and it leads to deadly and serious injuries or serious product damages can be caused from the accidents.
	CAUTION	This warns that accidents may occur unless complying the guidelines and it leads to serious product damages can be caused from the accidents.
	ELECTRICAL SHOCK	This sign indicates a hazard on electric shock which may lead to serious or deadly injuries.
	NOTE	This sign notices important facts and conditions.
	PROHIBITION	This sign notices the prohibitions for normal operation.

N2 Series Controller

UNI-HOST Manual

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ROBOSTAR CO., LTD.
ROBOT R&D CENTER

Robostar