

# Chapter 10 Library

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# Chapter 10. Library

By saving Function or Function Blocks as files, they can be used in other programs saving time. It is possible to create your own library file containing your own custom Function Blocks .

## 10.1. Type of Library File

Library File consists of Function or Function Block.

Library File	Extension	Example
Function Library	. <b>*FU</b>	stdlib.6fu: standard function library for G6
Function Block Library	. <b>*FB</b>	special.6fb: standard function block library for G6

### Note

\* in **\*FU** or **\*FB** indicates the type of appropriate PLC in. (In case of G6, the type is .6FU)

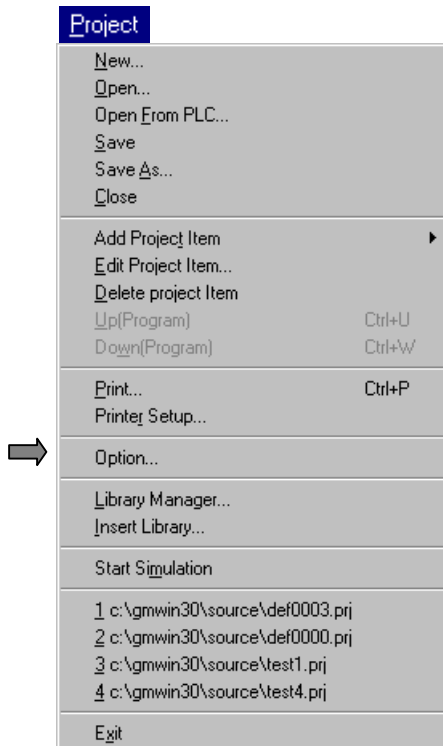
Library Type	Comment	Example
Standard Library	It is the files that collect basic functions/function blocks.	stdlib.*fu, stdlib.*fb
Exclusive Library	It is the files that collect the function blocks used in special/communication module (for A/D, D/A, Link ..), etc.	special.*fb, communi.*fb
Extensible Library	It is the files that supplied by manufacturer for the user using other LG PLC.(To add this libraries, select 'Project - Insert Library' menu)	mkstdlib.*fu (for MASTER-K)
User defined Library	It is a library that user make personally. (It is added by 'Project - Insert Library' menu)	(User defined name).*fb

## 10.2. Load a Library

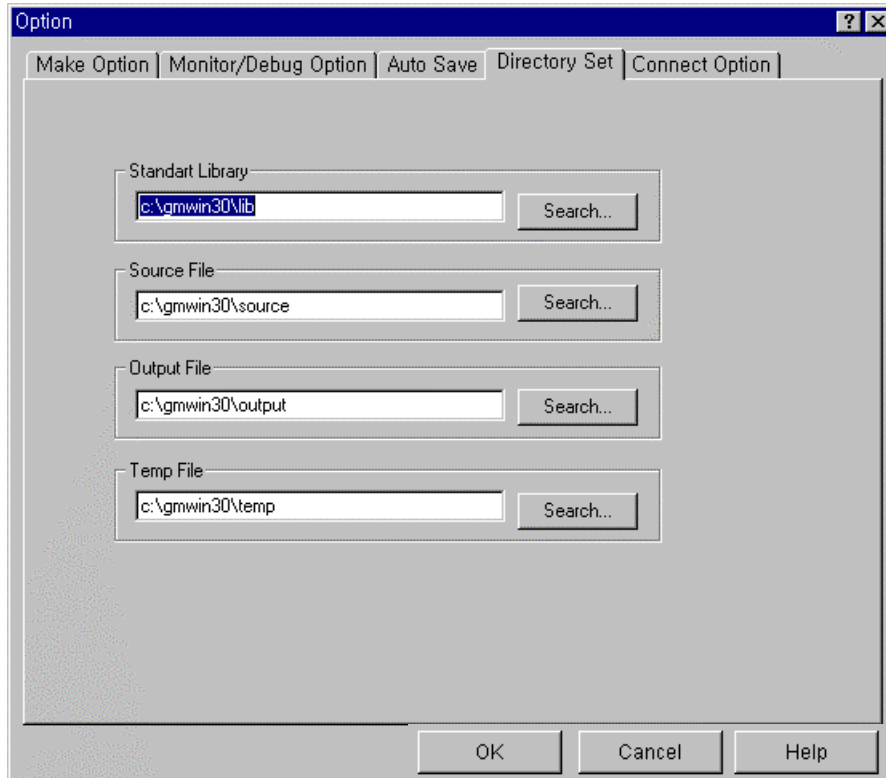
### 1) Load Standard Library

If you execute GMWIN program in the designated directory, the standard library is loaded automatically.

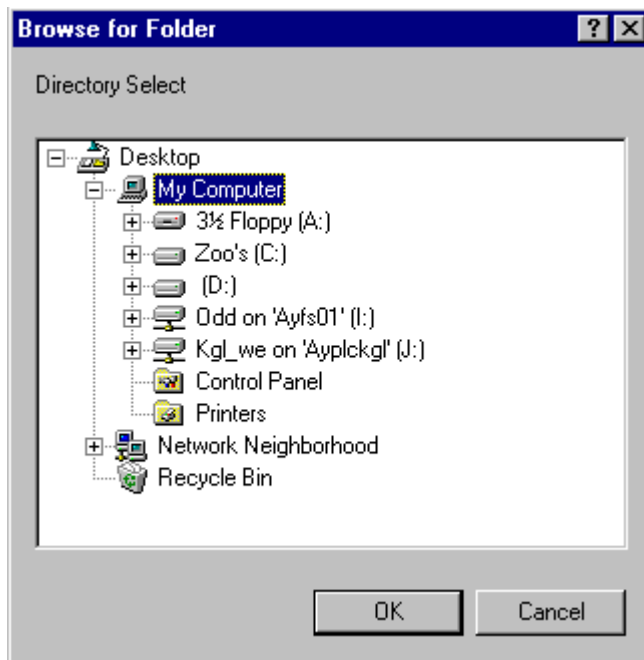
- Select option item in **Project** menu.



- Select folders in **Option** dialog box.



- Enter the path of library in **Standard Library** input text box of **Directory Set** menu.  
If you can't remember the path, select **Search** button where the library is in.



- In case that the library is not in the selected directory, the error message appear as below

**Note**

If there are no "stdlib.\*fu and stdlib.\*fb" (\* is the type of PLC. The type is stdlib.6fu for G6) in the selected folder, an error message that cannot open appears when open a project. In this case, enter the folder correctly in **Project - Option – Directory Set** menu. Or copy the standard library to the selected folder.

**2) Load an Exclusive, Extensible Library and the User defined Library**

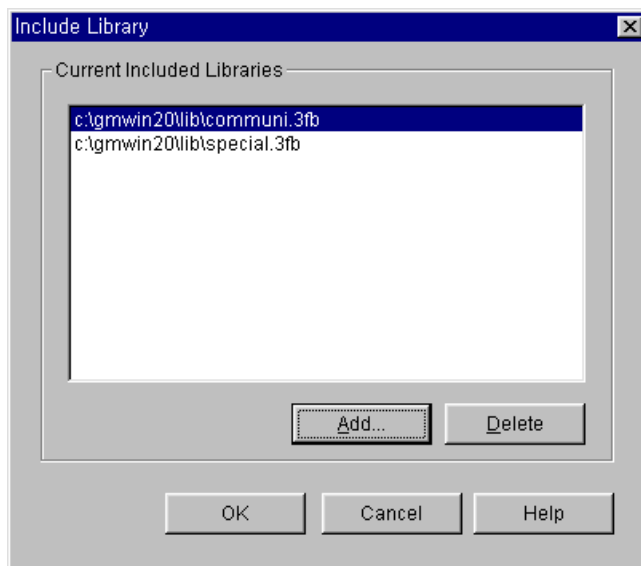
You can load selectively exclusive, extensible library and user defined library.

In the state that project file is opened, call **Include Library** dialog box by selecting **Project – insert Library**.

**Note**

You can also call **Include Library** dialog box by double-clicking on the appropriate library in library file list.

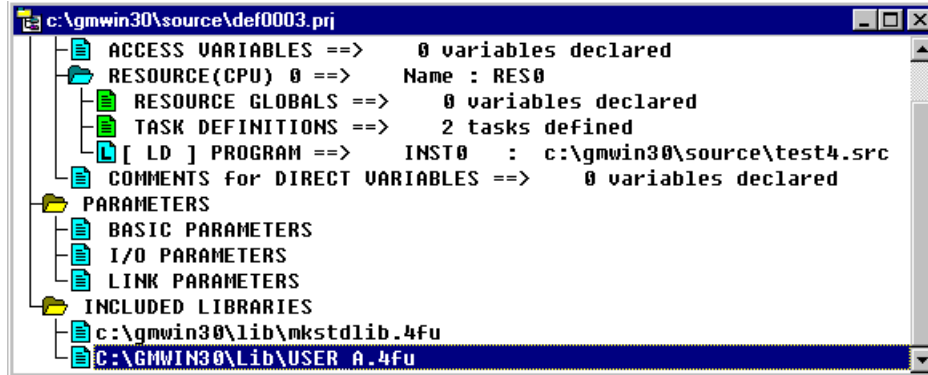
- Add a desired library in **Include Library** dialog box, and click **OK** button.



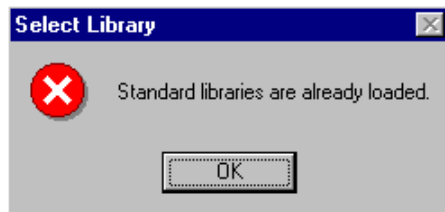
If you select a desired library and click **OK** button, then added libraries appear **Current Included Libraries**.

- ◆ communi.3fb : Function blocks for the communication in GM3 (Cnet, Fnet, Mnet)
- ◆ mkstdlib.3fu : Functions for MASTER-K series
- ◆ remote3.3fb : Function blocks for special modules in GM3 (for REMOTE communication)

□ If you finish to add the libraries, added libraries appear on Project window.

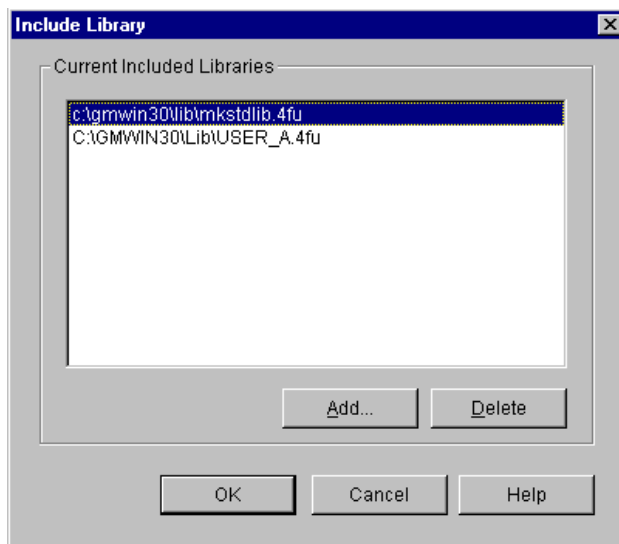


□ When you add a library, If the item that selected in **Library List** is a standard library, the following error message appears.

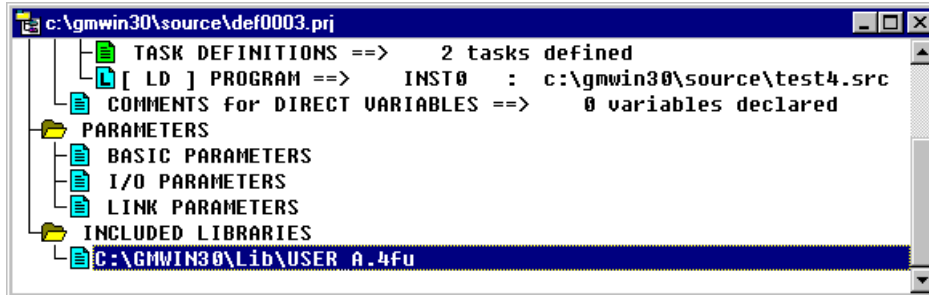


To delete the inserted library,

□ In **Current Included Libraries** list box, select a desired library and click **Delete** button.



- Click **OK** button.
- You can confirm whether the library is deleted on project screen or not.



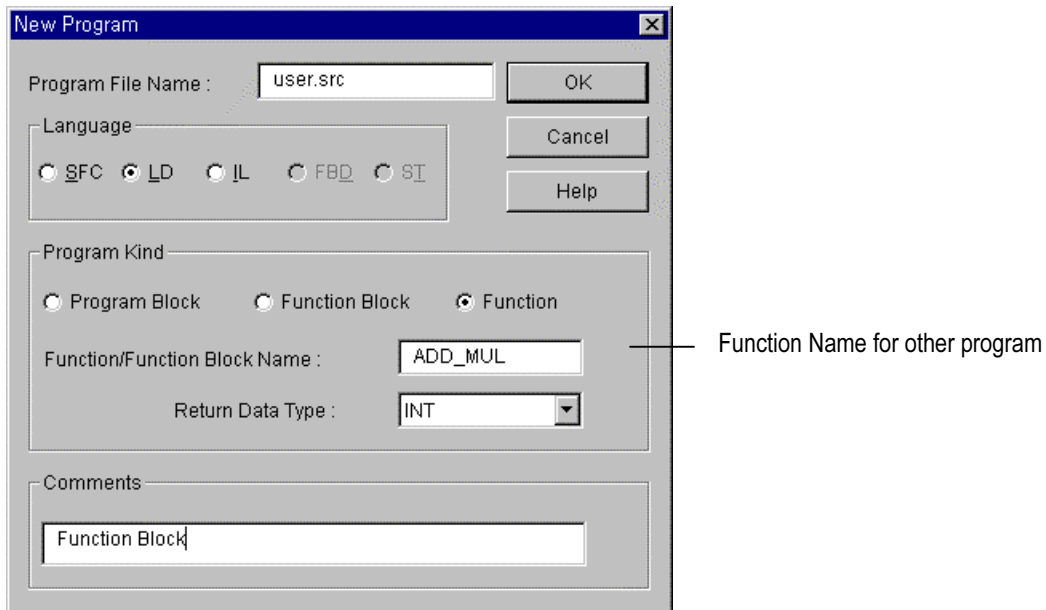
### 10.3. Create User Defined Library File

Besides the standard library or extensible library, a custom can program can be converted into, a Function / Function block and stored in a user defined library for reuse.

#### 10.3.1. Create User Defined Function

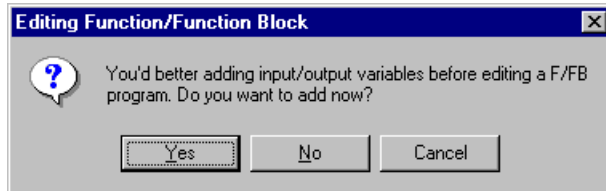
##### 10.3.1.1. Create a new Function Program

- Select **Program - New program** (  ) in the pull-down menu.

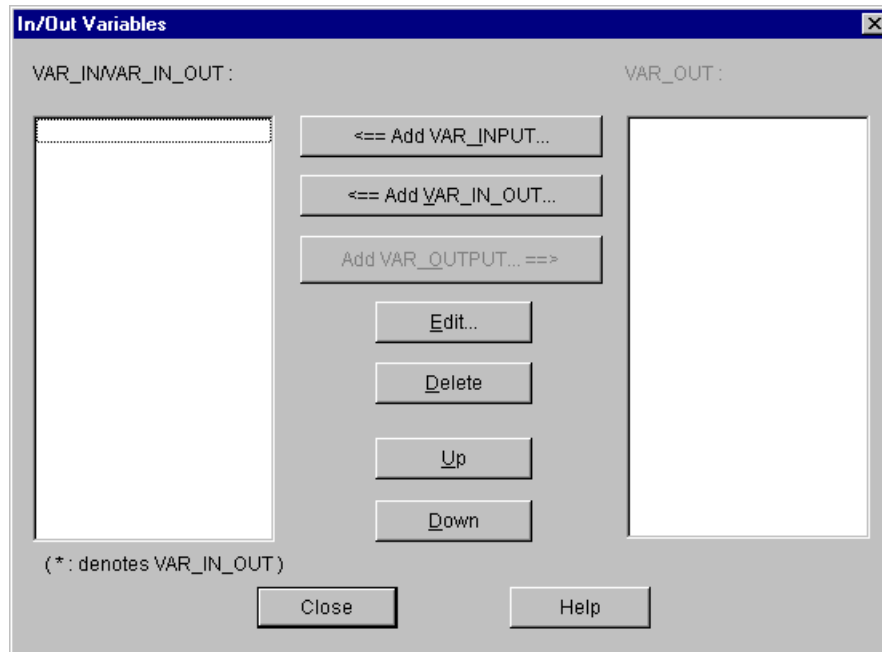


- Enter the name of function program with '\*.src'.
- In **Language** option radio button, select language type to use in editing the function.
- Select **Function** in **Program kind** option button.

- In **Function / Function Block Name** input text box, enter the function name to use
- In Return Data Type list box, select the type of variable.
- If there is an additional comment for the function, enter the comments in **Comments** window.
- Click **OK** button and the following message appear.



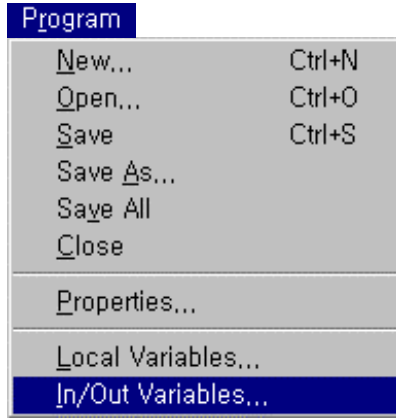
- If you click **Yes** button, **In/Out Variables List** dialog box appears.



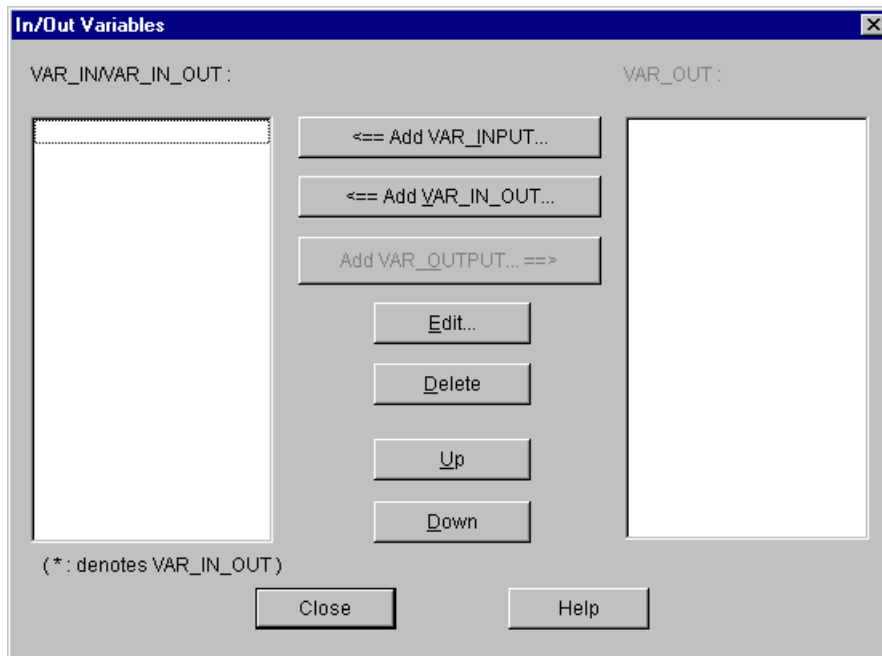
- If you click **No** button, **In/Out Variables** window for the selected language appears.

### 10.3.1.2. Create Input Variable

- Differently from editing a Program Block, select **Program - In/Out Variables** to create variables.



- Add a variable in I/O variable input text box of **In/Out Variables** dialog box.



#### Note

VAR\_IN\_OUT is distinguished from VAR\_IN by \* mark.

Differently from VAR\_IN, VAR\_IN\_OUT means that you can change the value of parameter taken from the side that call function / function block in that function / function block.

## 1) Add an Input/Output Variable

- Click **Add VAR\_INPUT**, **Add VAR\_OUTPUT**, or **Add VAR\_IN\_OUT** button.
- Add a desired input/output variable name in **Variable Name** input text box.  
( Maximum size of name is 8 characters)

- Select a variable type in **Data Type** list box.
- If you need a comment about input/output variable, enter the comment in **Comment** window and click **OK** button.

**Note**

If you fix an array number as -1, it means that the array number of input variable is fixed when call the function / function block.

## 2) Edit an Input/Output Variable

- Select the item that you want to edit in **In/Out Variables** list.
- Click **Edit** button.
- Edit the content that you want to correct in dialog box and click **OK** button.

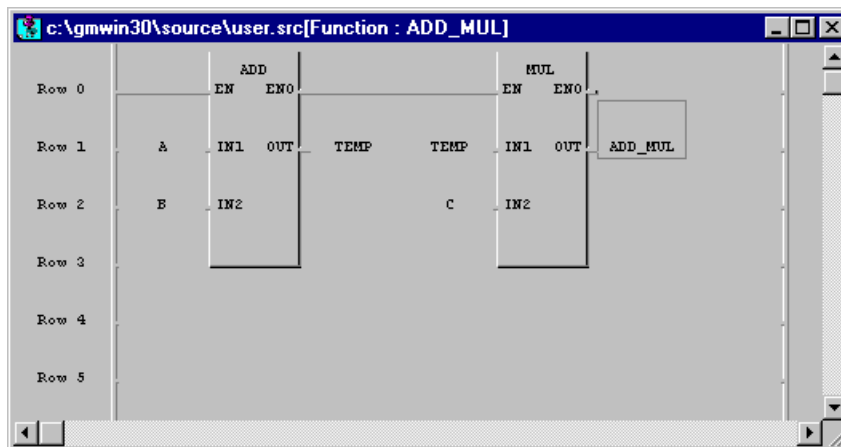
## 3) Delete an Input/Output variable

- Select the item that you want to delete in **In/Out Variables** list.
- Click **Delete** button.

- 4) Change the order of Input/Output variable
  - Select the item that you want to change the order in *In/Out Variables* list.
  - Move the position of list by clicking *Upward(▲)* or *Downward(▼)* button as many as you want to move.

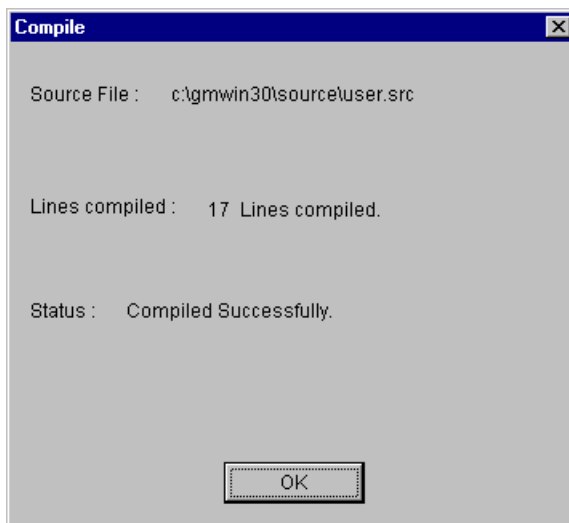
### 10.3.1.3. Create a Function Program

- You can create a program with the same way of other program.



### 10.3.1.4. Compile a Function Program

- If you finish creating a program, make an execution file by selecting **Compile – Compile** in menu. The object file is created after compiling a program. It has the extension of .OB\*,



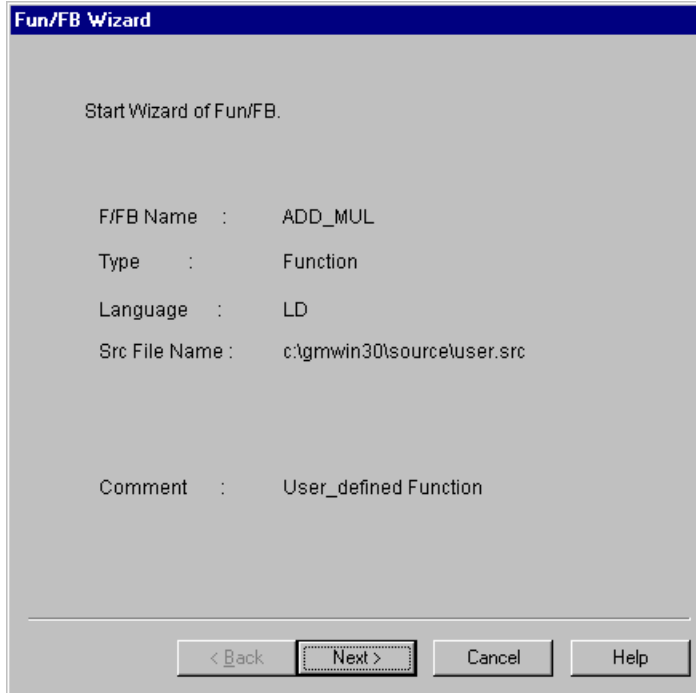
**Note**

Each PLC has a different object file. If you created a object file for G6, it can only be used with G6.

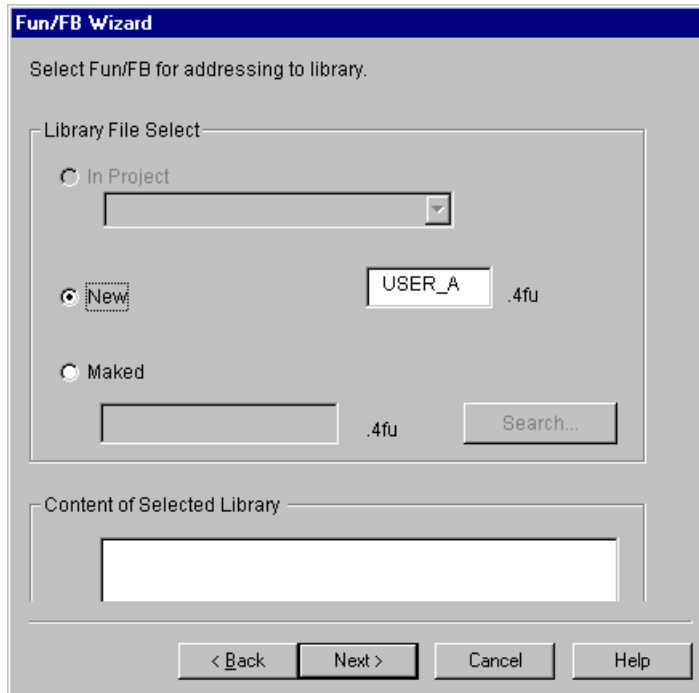
### 10.3.1.5. Function Wizard

- If compiling is finished without an error and warning, **Wizard** dialog box appears automatically to insert the compiled function into the library.

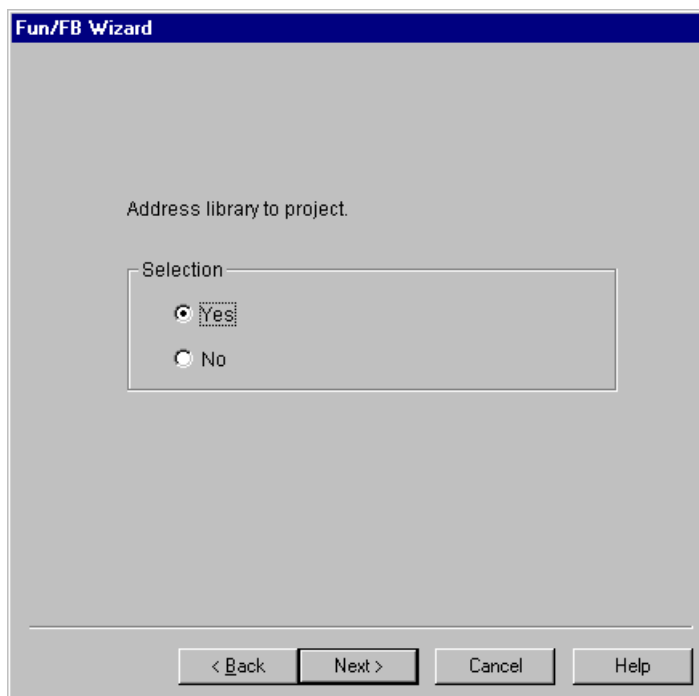
**Fun / FB Wizard** dialog box shows the various information for function / function block.



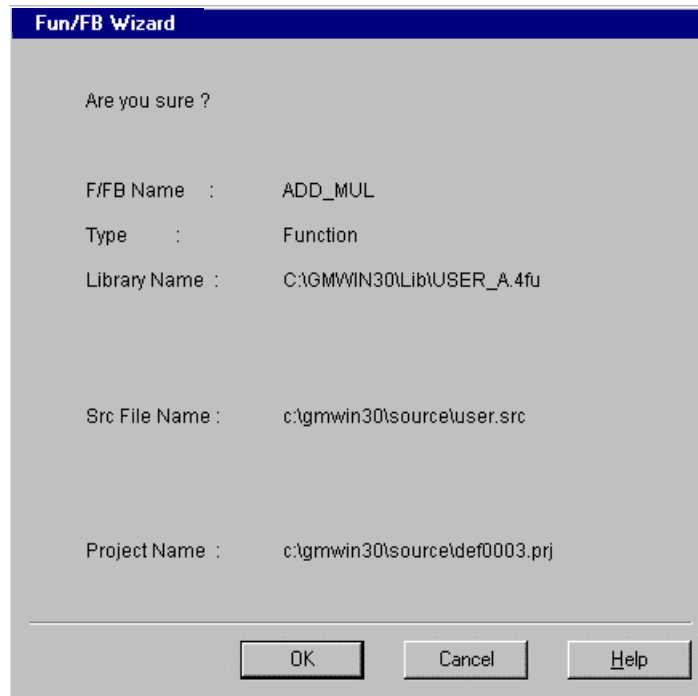
- If you select **Cancel** button, it stops inserting the compiled function into the library and project.  
If necessary, you can create a **User Defined Library** for the compiled function by selecting **Project - Library Manager**.  
Similarly, you can also insert the compiled function into a project by selecting **Project - Insert Library** in menu.
- Click **Next** button in **Fun / FB Wizard** dialog box.



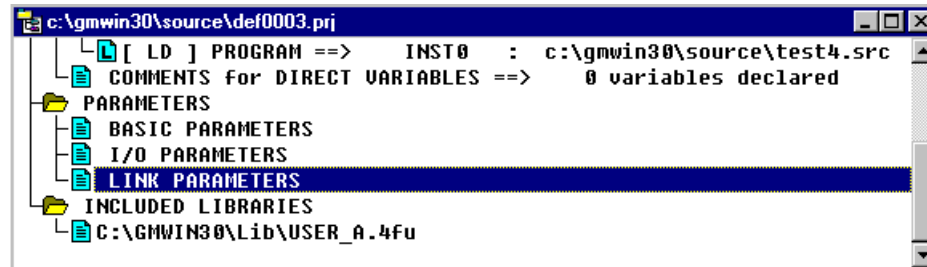
- In **Library file Select**, enter new created library name in **New** input text box.
- If you want to insert new created library from the user defined library that exists already in the project, click **In Project** button and select a desired library file.
- If you want to insert the library from the user defined library that does not exist in the project, click **Maked** button.
- Click **Next** button.



- In this **Fun / FB Wizard** dialog box, it determines whether you insert the library into a current project.  
If the library selected in the previous dialog box exists in the project, the project updates the file automatically.



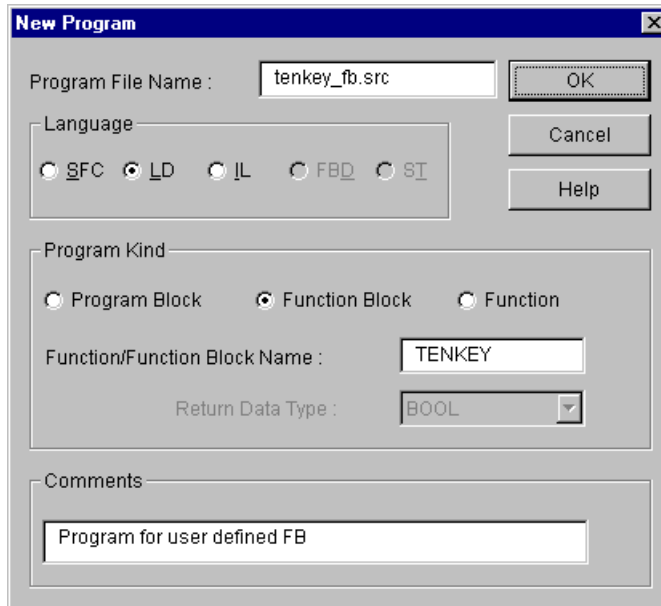
- Click **OK** button and **Next** button.
- The new library is added on the project window.



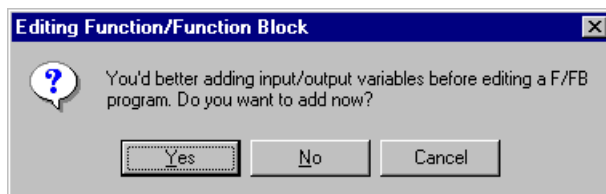
## 10.3.2. Create a User Defined Function Block

### 10.3.2.1. Create a Function Block Program

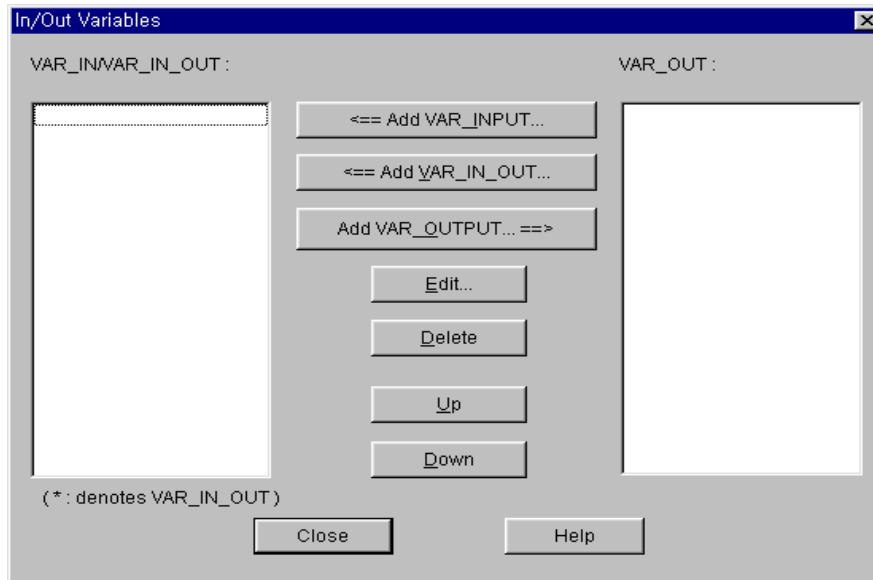
- Select **Program - New Program** in menu.



- Enter Program File Name with \*.src file
- When you create Function Block, select the type of language to use in **Language** option button.
- Select **Function Block** in **Program Kind** option button.
- In **Function / Function Block Name** input text box, enter the function block name to be used in another program .
- Click **OK** button and the following message appears.



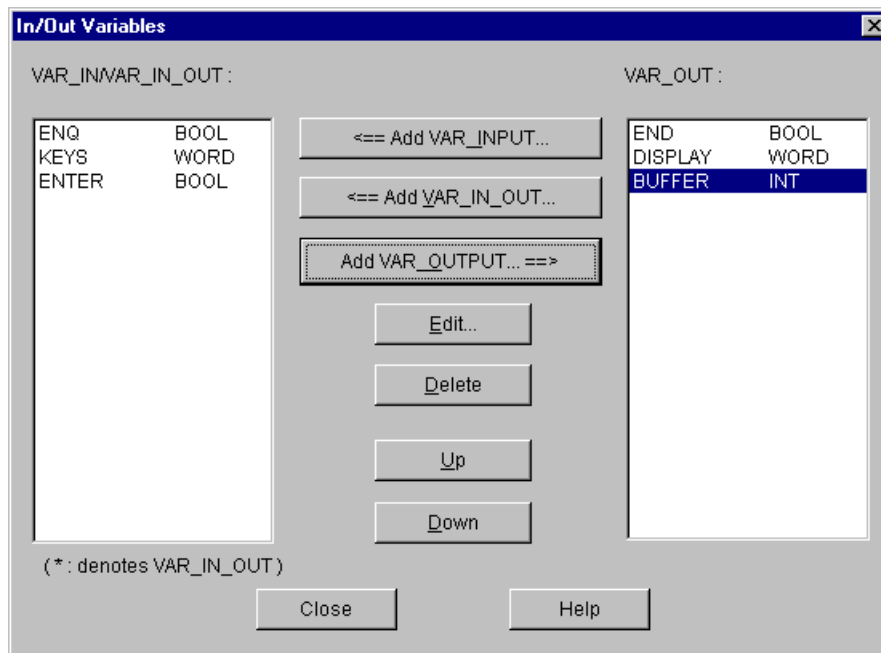
- If you click **Yes** button, **In/Out Variables** dialog box appears.



- If you click **No** button, edit dialog box for the selected language appears.

### 10.3.2.2. Create Input/Output Variable

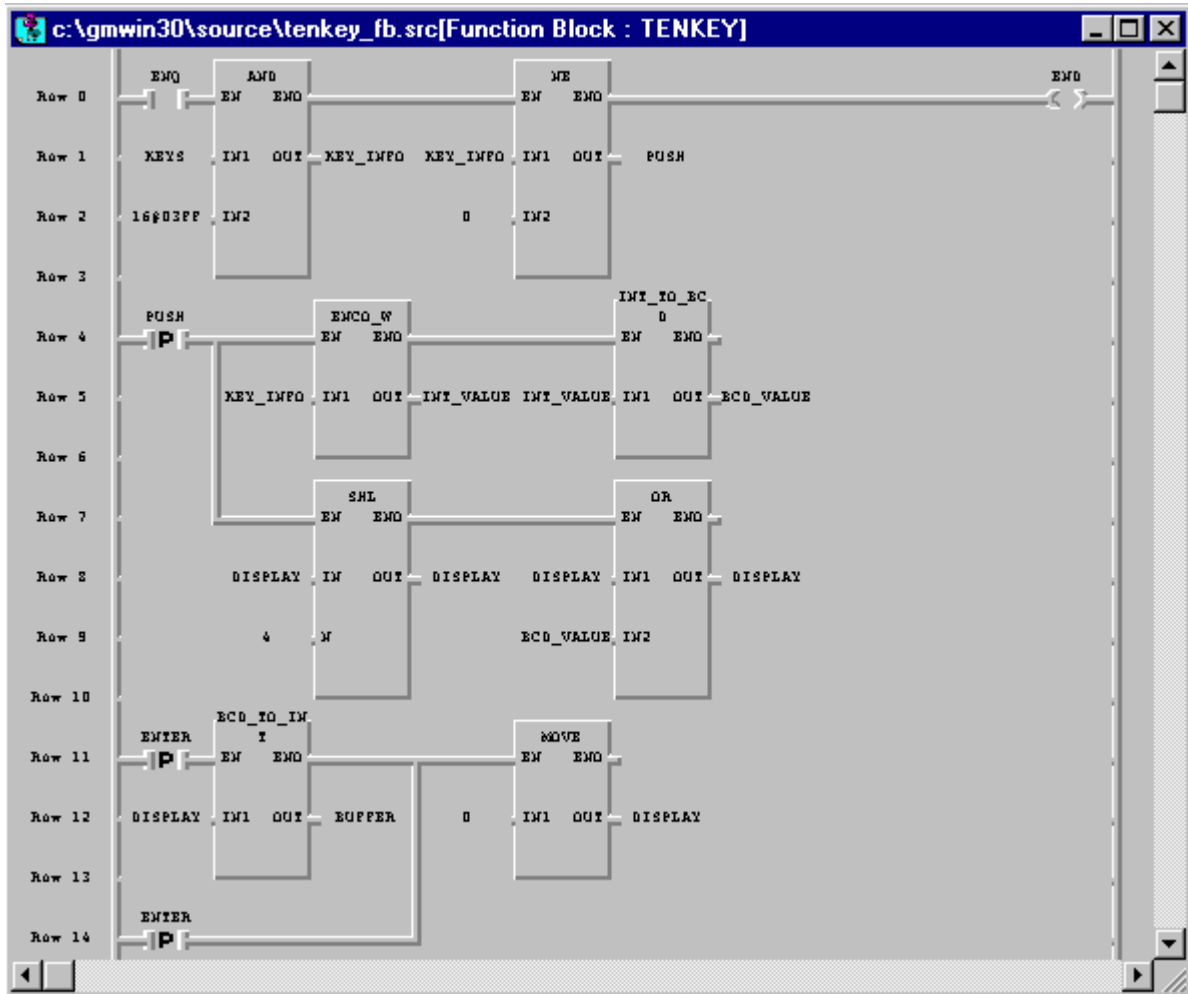
- Creating method is same as the creating of function. However, in function block, there must be more than one input-output variable instead of variable to return.



- To insert input/output variable, use **Add VAR\_IN or\_OUT...** button.
- When you insert input/output variable, the first input/output variable must be Boolean type. If it is not a Boolean type, an error message appears.

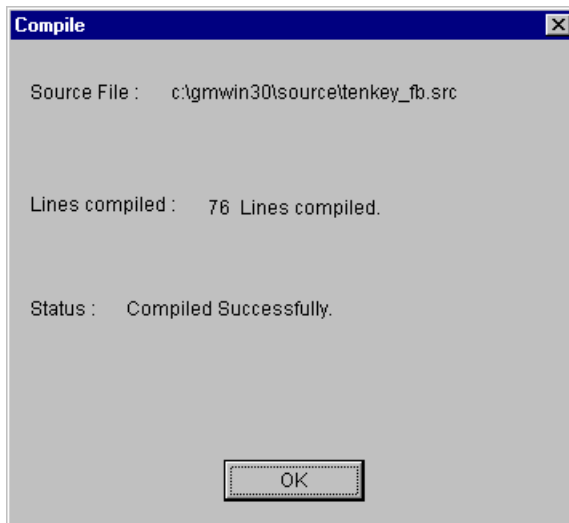
### 10.3.2.3. Create a Function Block Program

- You can create a program with the same way of other program.



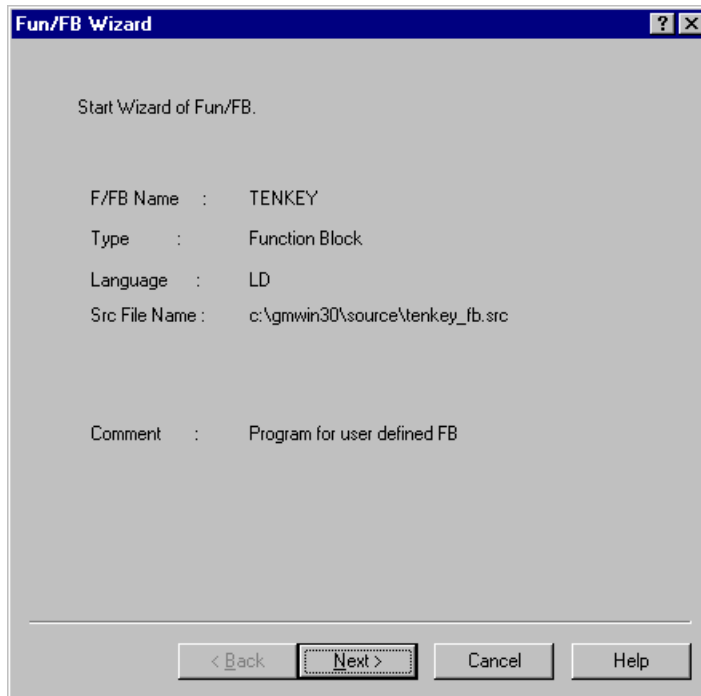
### 10.3.2.4. Compile a Function Block Program

- If you finish creating a program, make an execution file by selecting **Compile – Compile** in menu.

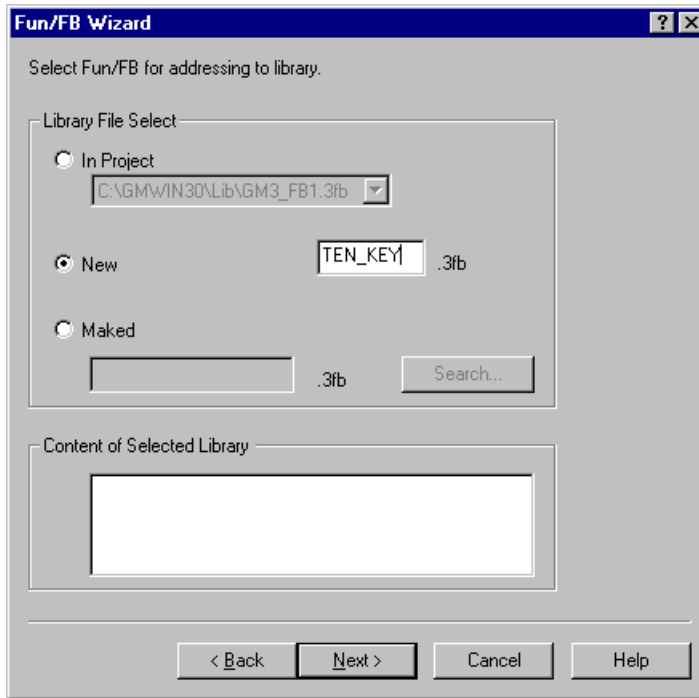


### 10.3.2.5. Function Block Program Wizard

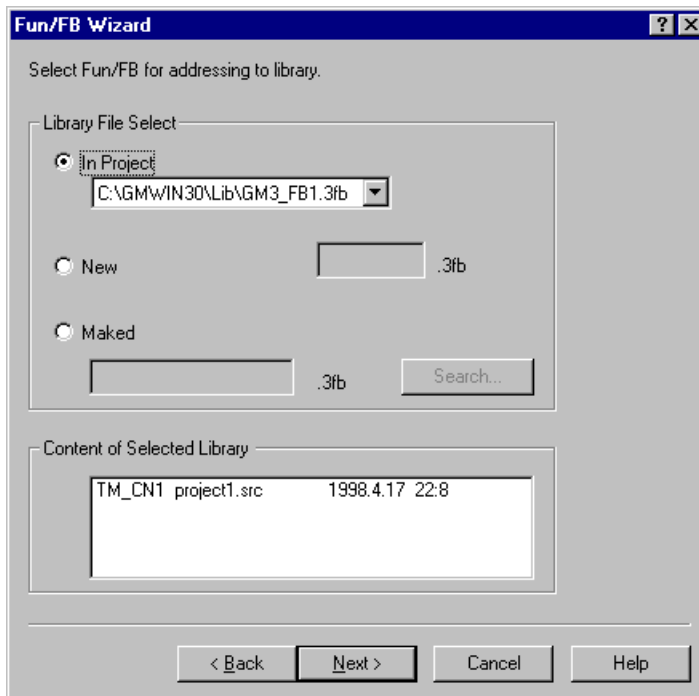
- If the compiling is finished without an error and warning, **Fun/FB Wizard** dialog box appears automatically to insert the compiled function block into the library.



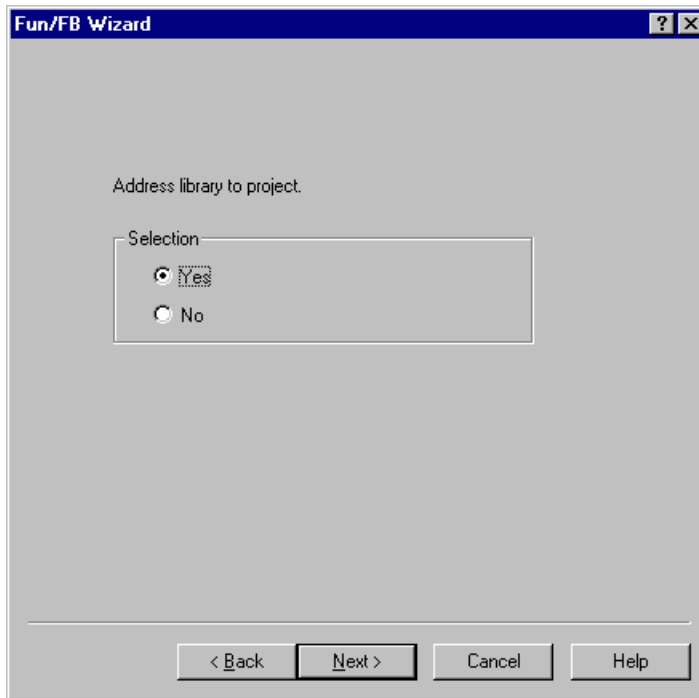
- If you select **Cancel** button in the above dialog box, it stops inserting the compiled function block into a library and project. If necessary, you can make a **User Defined Library** for the compiled function block by selecting **Project - Library Manager**. Similarly, you can also insert the compiled function block into a project with selecting **Project - Insert Library** in menu.
- If the compiling is finished with warning, the following message appears.  
This message asks whether you continue the function program wizard after correcting the warning.
- The first dialog box of function program wizard shows various information.
- Click **Next** button in the first dialog box of the function program wizard.



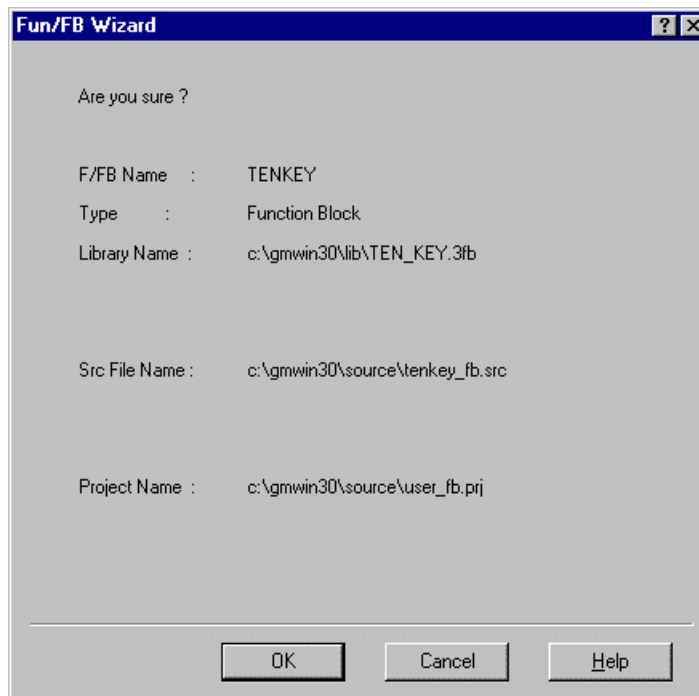
- In **Library File Select** of **Fun/FB Wizard** dialog box (the second dialog box), enter new created library name in **New** input text box. (GM3\_FB1)
- If you want to insert new created library into user defined library that exists already in project, click **In Project** button and select a desired library file.
- If you want to insert the library into user defined library that does not exist in the project, select a desired library file by clicking **Maked** button.



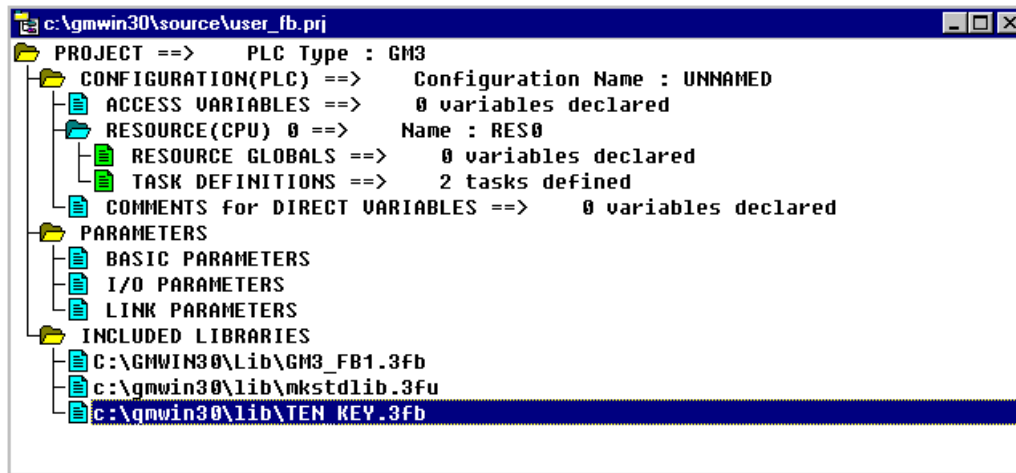
- If you finish selecting a file, click **Next** button.



- In this **Fun/FB Wizard** dialog box, it is determined whether you insert the library, which has function block, into the current project.  
If the library selected in the previous dialog box exists in project, the content of project is automatically updated.
- Select **Yes** button and enter **Next** button.

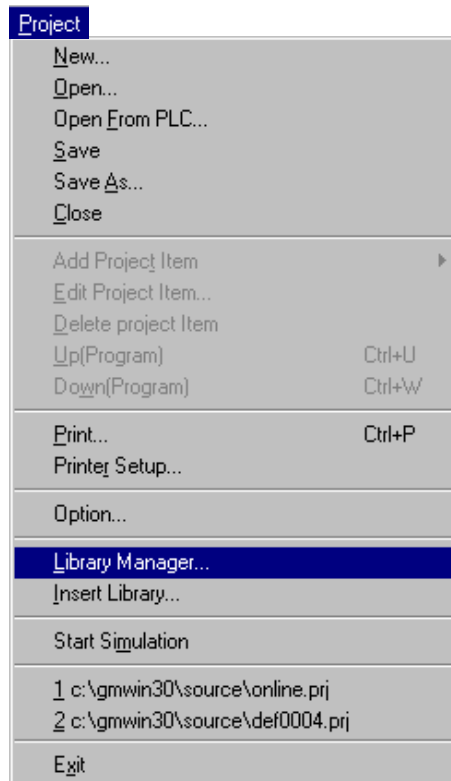


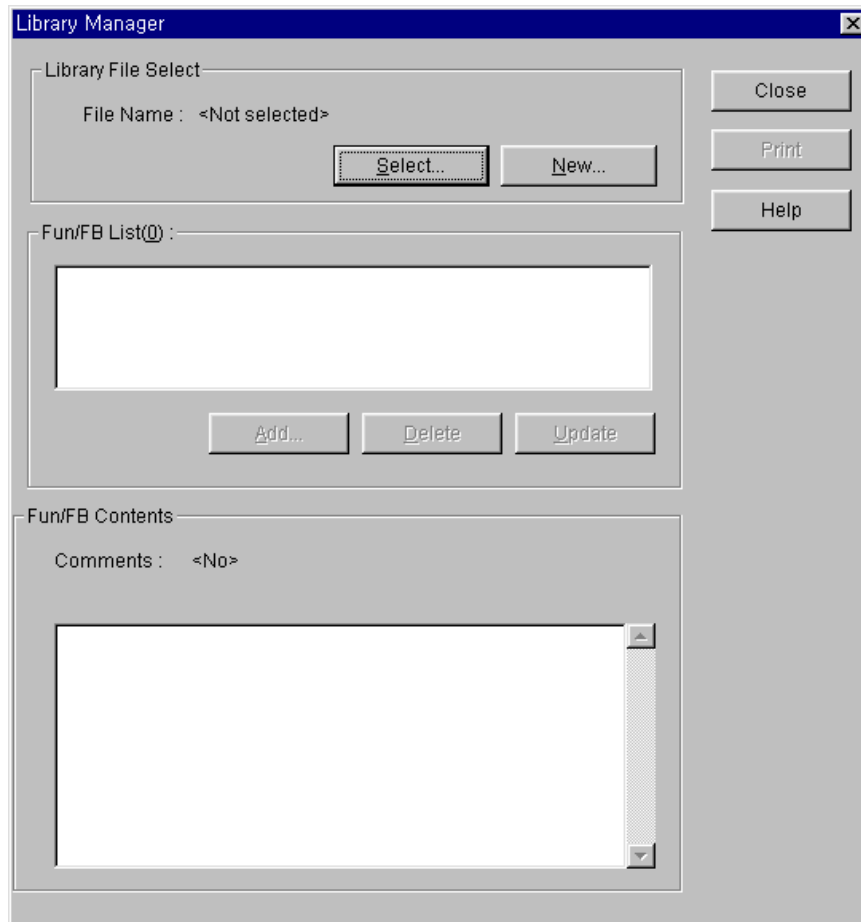
- Click **OK** button.



### 10.3.3. Library Manager

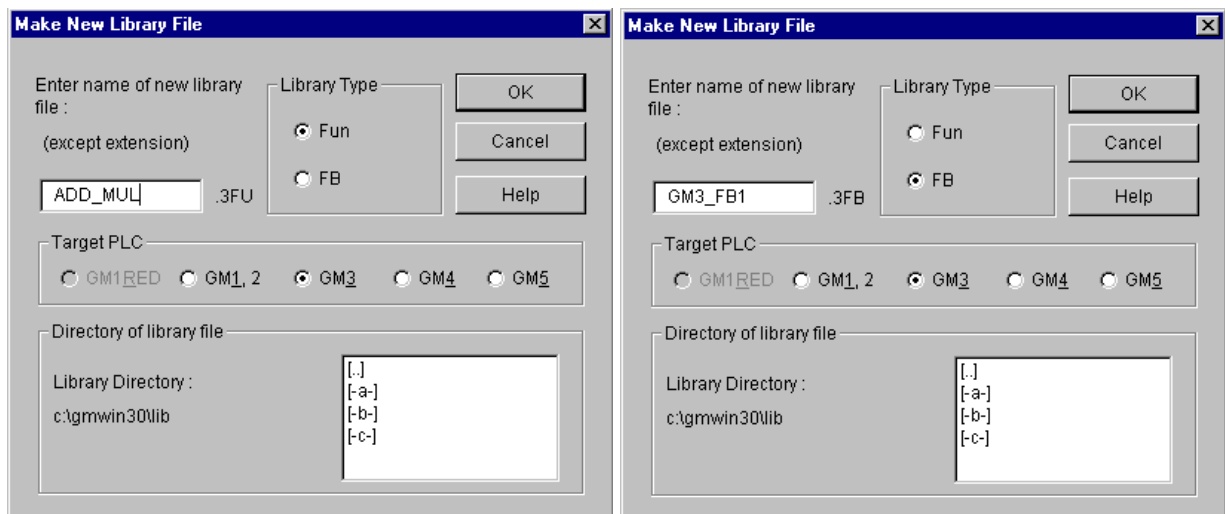
In Library Manager, you can create and edit library file that is not concerned with project.



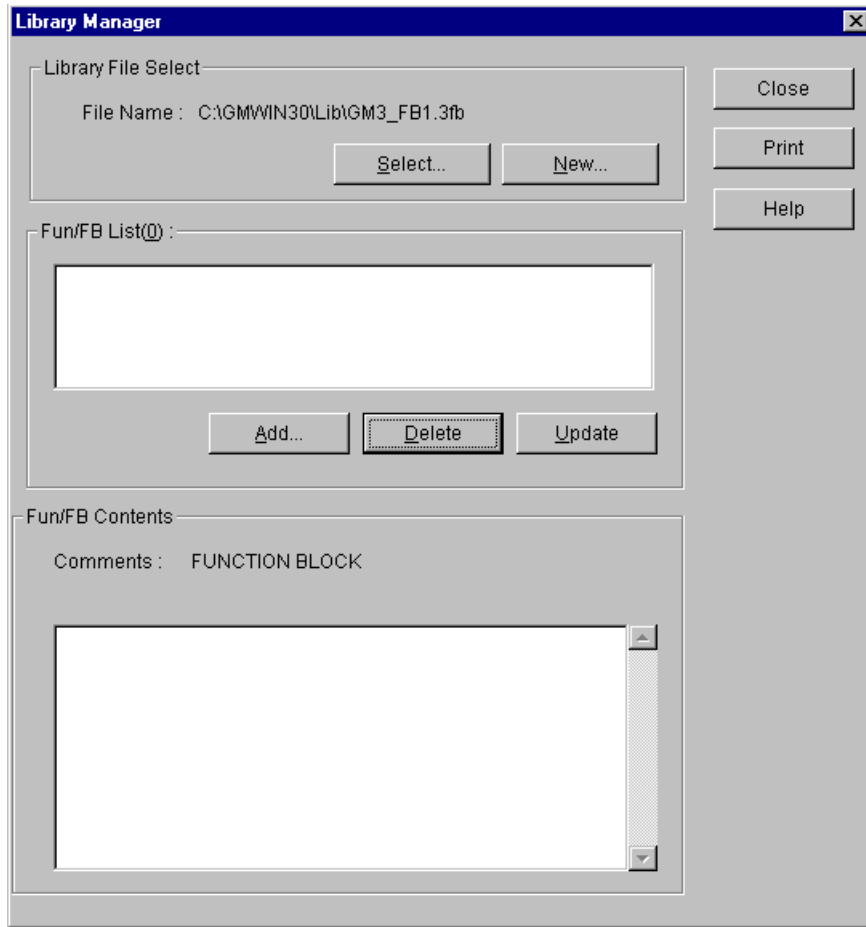


### 10.3.3.1. Create a Library File

- Select **Project - Library Manager** in menu.
- Click **New** button in the library dialog box.
- Enter a library file name. (less than 8 characters)



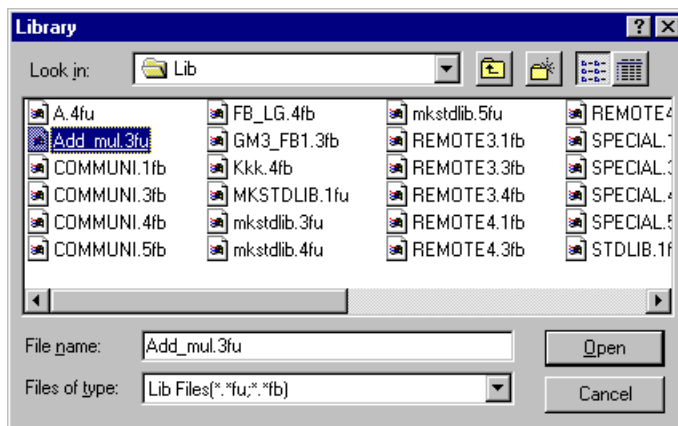
- With library type option button, you can select the type of library to create newly.
- With objective PLC option button, select a PLC to which the library is applied.
- Select a directory in where the library file will be. At this time, it is important to input the same directory that fixed in **Directory of Library file** of option.



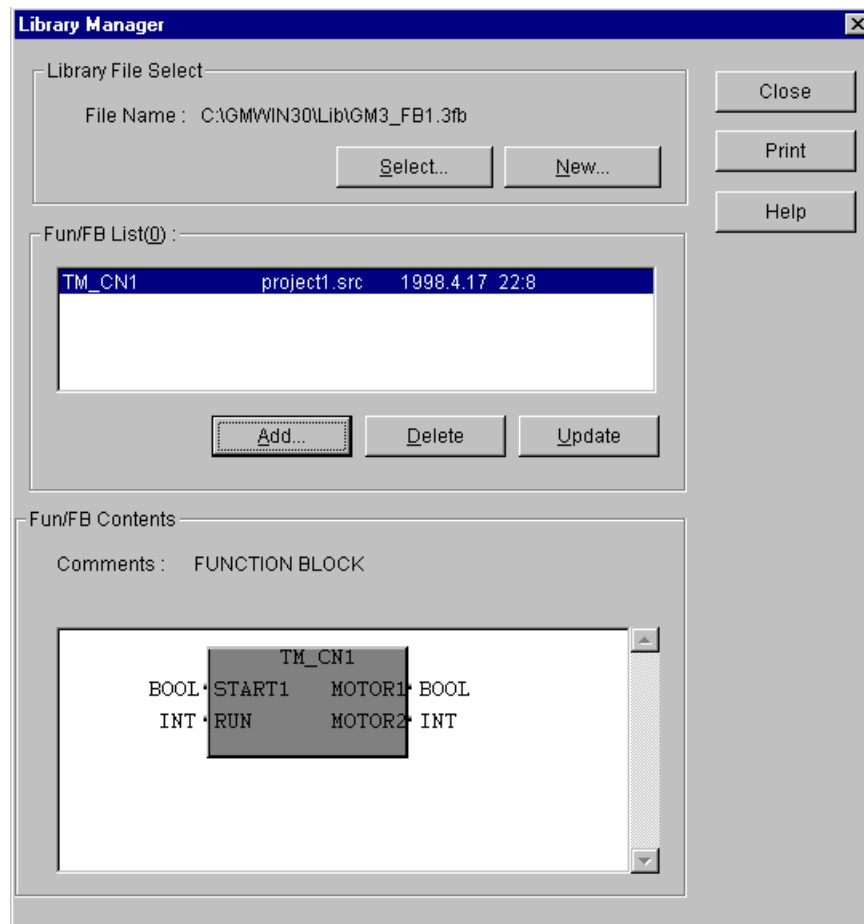
- Click **OK** button and library manager dialog box appears.

### 10.3.3.2. Select a Library File

- Click **Select** button in **Library Manager** dialog box.



- After selecting the library file that you want to edit, click **Open** button.
- Then the entire function / function block in selected library file appears automatically in **Fun / FB List**.



### 10.3.3.3. Add a Function / Function Block Object File

- Enter **Function / Function Block File** to add in **Add Function / Function Block** dialog box and click **OK** button.

### 10.3.3.4. Delete a Function / Function Block Object File

- In **Fun / FB List** in **Library** of **Library Manager** dialog box, select function / function block that you want to delete and click **Delete** button.

### 10.3.3.5. Update a Function / Function Block Object File

- In **Fun/FB List** in **Library** of **Library Manager** dialog box, select function / function block that you want to update and click **Update** button.