User's Guide

OME-SERIES DATA ACQUISITION CARDS

Calling DLLs User Manual

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1. Introduction

The driver for the OME data acquisition products includes one or more DLL files (and VXD/SYS files) to be used by higher-level computer languages.

The DLL files are written in Visual C++ and provide many functions to perform a variety of Analog input/output, Digital input/output, and Counter/Timer tasks with the OME hardware. The DLL files are in standard Win32 DLL format, and can be used with Windows 95/98/NT/2000/XP. With these functions, the user does not need to program the lower-level hardware controls. The DLL files can easily be integrated into programs written in higher-level computer languages. A large variety of demo programs written in Visual C++, Delphi, Borland C++ Builder and Visual Basic are provided.

The DLL files provide powerful, easy-to-use subroutines for users to develop their data acquisition applications, Analog input/output, Digital input/output and RS-232/RS-485 Communication applications.

This manual describes how to call the DLL functions with Visual C++ 5.0, Visual Basic 5.0, Delphi 3.0 and Borland C++ Builder 3.0. The OME-PCI-TMC12 DAQ Card is used as an example.

Before the using the DLL, the user must first install the software/driver. Please note the folder into which software is installed. This folder will contain all the drivers, demo programs and manuals.

In addition, the DLL, VXD and SYS files will be copied into the following folders automatically when the user installs the software.

DLL files ➔ C:\Windows\System\ (for Windows 95/98 user)
Vxd files ➔ C:\Windows\System\ (for Windows 95/98 user)
DLL files ➔ C:\WinNT\System32\ (for Windows NT/2000 user)
Sys files ➔ C:\WinNT\System32\Drivers\ (for Windows NT/2000 user)

The .SYS files need to be registered under Windows NT, thus if the user copies these files manually, they must refer to the file README.TXT for the software/driver to create the registry values.

2. Declaration Files

In order to use the DLL functions, the declaration files for the programming language are required. The user can find these declaration files under the "driver" "folder. The DLL and declaration files for Windows 95/98, Windows NT and Windows 2000 are all different, so please exercise caution when choosing the files to incorporate into your program.

For example:

```
|--\TMC12 Win95
    |--\Driver
        |--\BCB3
        |     |--\TMC12.H       → Header file
        |     |--\TMC12.LIB     → Import Library
        |
        |--\Delphi3
        |     |--\TMC12.PAS     → Declaration file
        |
        |--\VB5
        |     |--\TMC12.BAS     → Declaration file
        |
        |--\VC5
              |--\TMC12.H       → Header file
              |--\TMC12.LIB     → Import Library
```

Note: The .LIB file is different between the BCB and VC.

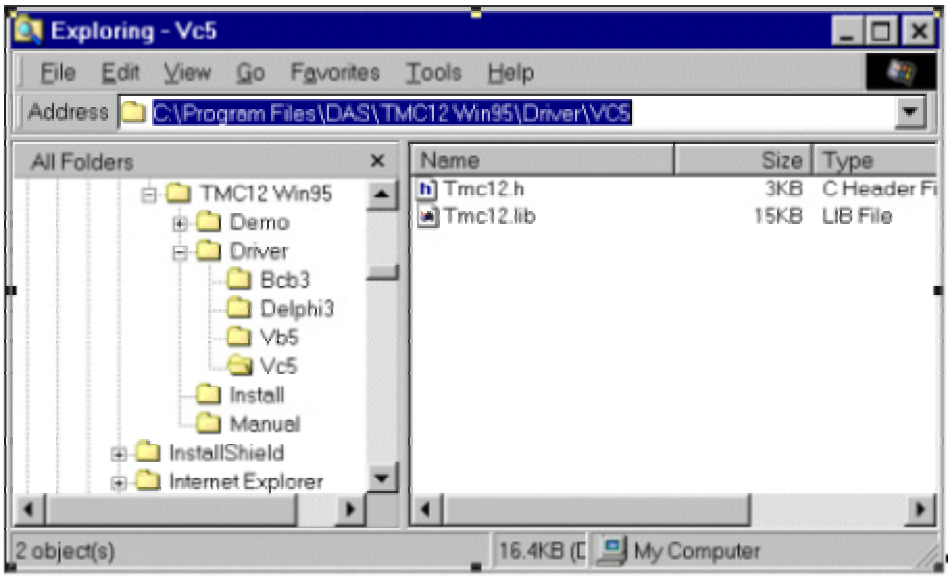

Figure 2-1. The declaration file for Visual C++ 5.0.

For example, the user would find the declaration files "TMC12.h" and "TMC12.Lib" for Visual C++ 5.0 in the folder:

"C:\Program Files\DAS\TMC12 Win95\Driver\VC5"

Note: The .Lib files are different for VC++ and BCB.

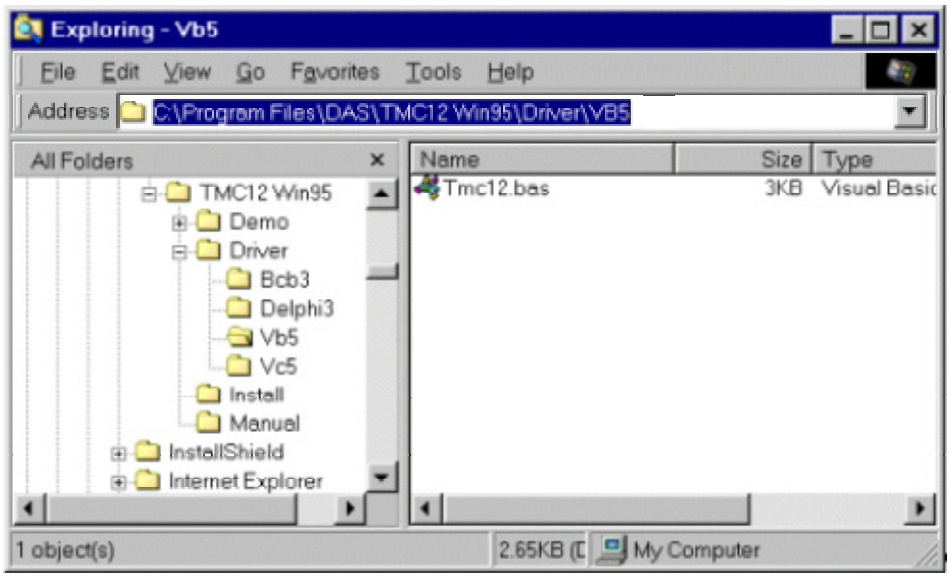

Figure 2-2. The declaration file for Visual Basic 5.0.

For example, the user would find the declaration file "TMC12.BAS" for Visual

Basic 5.0 in the folder:

"C:\Program Files\DAS\TMC12 Win95\Driver\VB5"

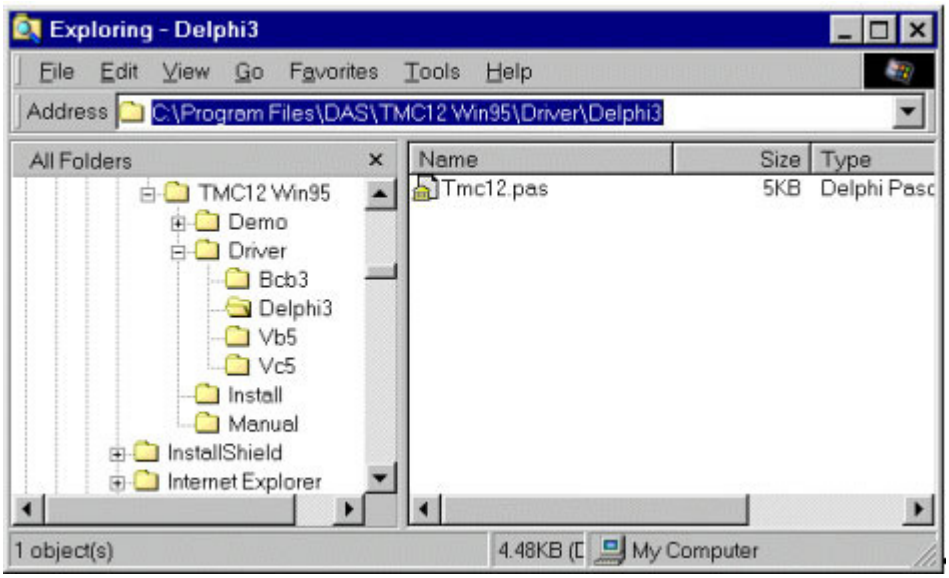

Figure 2-3. The declaration file for Delphi 3.0.

For example, the user can find the declaration file "TMC12.PAS" for Delphi 3.0 in the folder:

"C:\Program Files\DAS\TMC12 Win95\Driver\Delphi3"

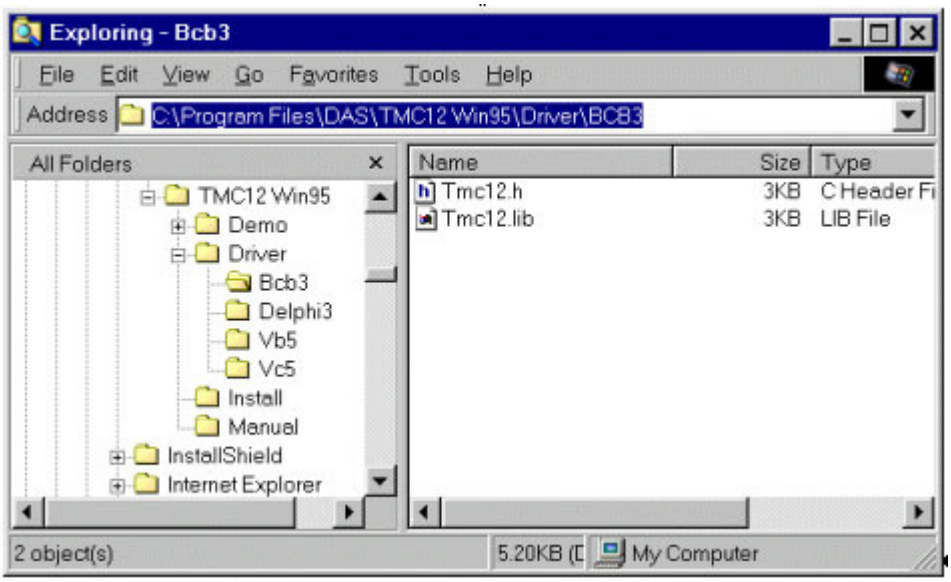

Figure 2-4. The declaration file for Borland C++ Builder 3.0.

For example, the user can find the declaration file “TMC12.H” and “TMC12.Lib” for Borland C++ Builder 3.0 in the folder:

“C:\Program Files\DAS\TMC12 Win95\Driver\BCB3”

Note: The .Lib files are different for VC++ and BCB.

3. Linking

This chapter describes how to uses the declaration files with Visual Basic and Delphi. In addition, using the header file and importing libraries with Visual C++ and Borland C++ builder is also described.

For more information about the DLL functions, please refer to the software manual (included with the Development-Toolkit).

3.1 Using Visual C++

Step 1: Execute the \MSDEV\BIN\VCVARS32.BAT to setup the environment.

Step 2: Copy the declaration files into the user's project folder.
For example, declaration files: "TMC12.H" and "TMC12.Lib".
Note: The .H and .Lib files are different in VC++ and BCB.

Step 3: The source program must include the declaration file. For example:
#include "TMC12.H"

Step 4: Edit the source program. (Refer to demo programs.)

Step 5: Edit the MAKE file. (Refer to file *XXX.mak* for demo programs.)
For example:

```
demo1.exe : demo1.obj  TMC12.lib
    link -SUBSYSTEM:windows -OUT:demo1.exe demo1.obj TMC12.lib
     -DEFAULTLIB:user32.lib gdi32.lib winmm.lib comdlg32.lib
    comctl32.lib

Demo1.obj : demo1.c   TMC12.h
    cl -c -DSTRICT -G3 -Ow -W3 -Zp -Tp demo1.c
```

Step 6: Uses NMAKE to make the user's project. For example:

NMAKE /f demo1.mak

Step 7: End.

NOTE: The Lib file is used at linking time and the DLL and Vxd are used at run time for Windows 95/98 (The DLL and Sys files for Windows NT).

3.2 Using MFC

The key points are given below:

Step 1: Use MFC wizard to create source code.

Step 2: Copy the declaration files into the user's project folder.

For example, declaration files: "TMC12.H" and "TMC12.Lib".

Note: The .H and .Lib files are different in VC++ and BCB.

Step 3: The source program must include the declaration file. For example:

#include "TMC12.H"

Step 4: Select the menu items "Project" / "Add To Project" / "Files…".

Refer to Figure 2-2-1.

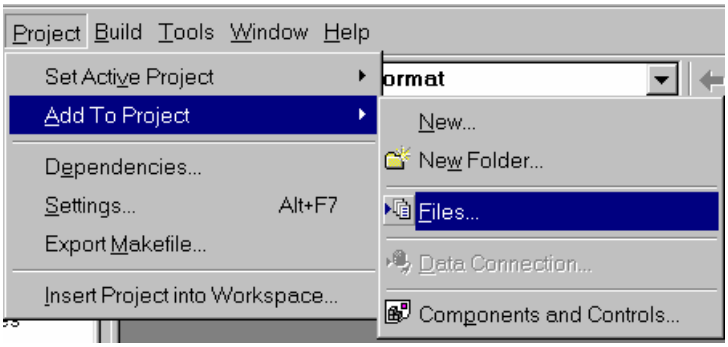

Figure 2-2-1. Select the menu items "Project" / "Add To Project" / "Files…".

Step 5: Select the declaration file to include.

For example, "TMC12.h". Refer to Figure 2-2-2.

Step 6: Click the button "OK". Refer to Figure 2-2-2.

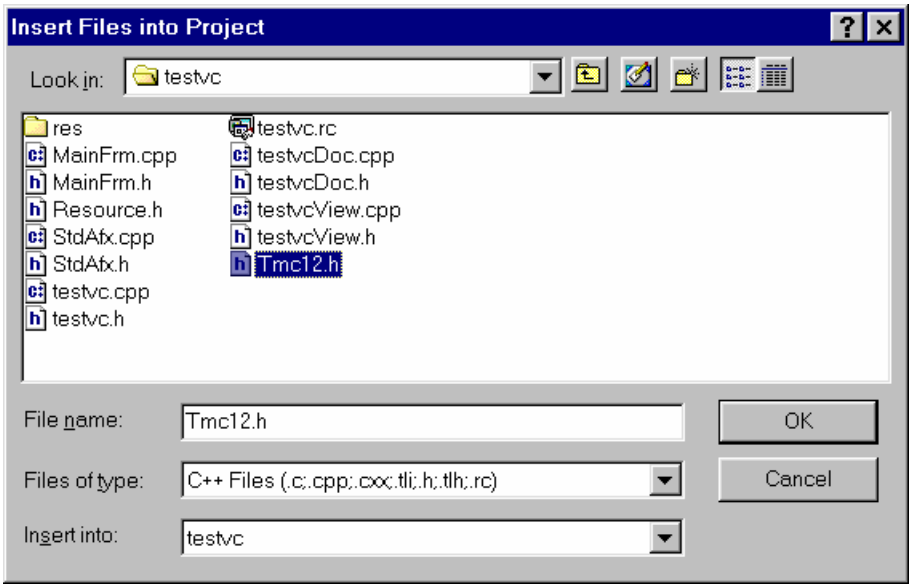

Figure 2-2-2. Select the declaration file to include.

Step 7: Select the menu items “Project” / “Add To Project” / “Files…” again.
Refer to Figure 2-2-3.

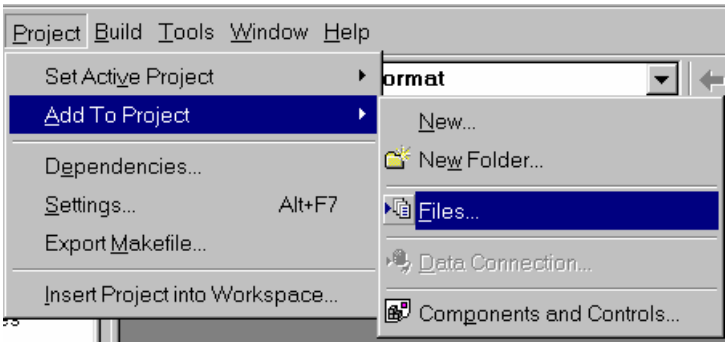

Figure 2-2-3. Select the menu items “Project” / “Add To Project” / “Files…”.

Step 8: Change the field “Files of type:” to “Library Files (.lib)”.
Refer to Figure 2-2-4.
Step 9: Select the library file to include.
For example, “TMC12.lib”. Refer to Figure 2-2-4.
Step 10: Click the button “OK”. Refer to Figure 2-2-4.

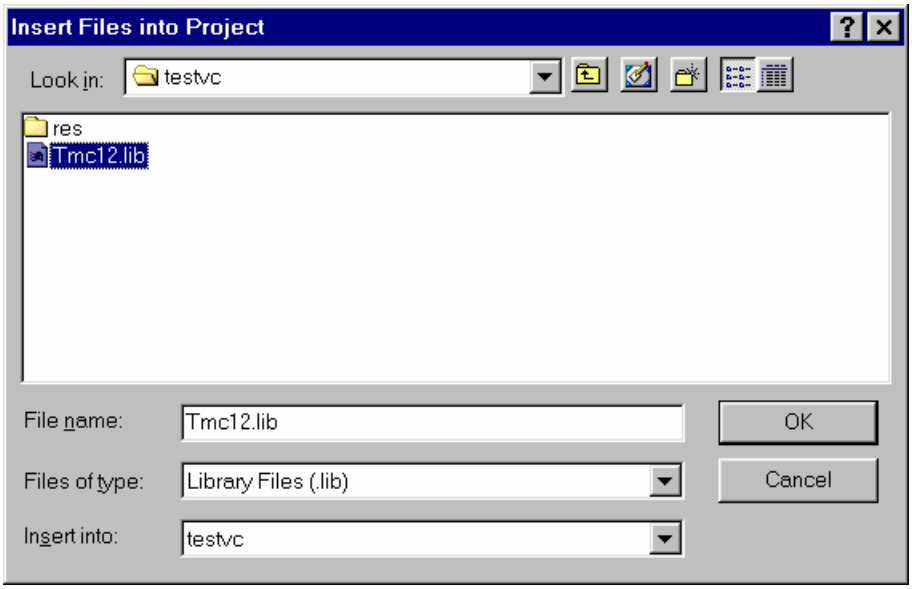

Figure 2-2-4. Change the field “Files of type:” to “Library Files (.lib)”.

Step 11: End.

NOTE: The Lib file is used in linking time and the DLL and Vxd is used in run time for Windows 95/98 (The DLL and SYS files for Windows NT/2000).

3.3 Using Visual Basic

Step 1: Copy the declaration file into the user's project folder.
For example, "TMC12.BAS".

Step 2: Select the menu items "Project" / "Add Module". Refer to Figure 2-3-1.

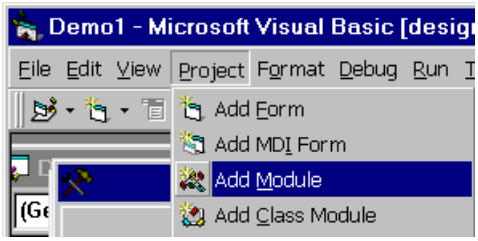

Figure 2-3-1. Select the menu items "Project" / "Add Module".

Step 3: Select the page "Existing". Refer to Figure 2-3-2.

Step 4: Select the declaration file to include.
For example, the declaration file: "TMC12.BAS". Refer to Figure 2-3-2.

Step 5: Click the button "Open". Refer to Figure 2-3-2.

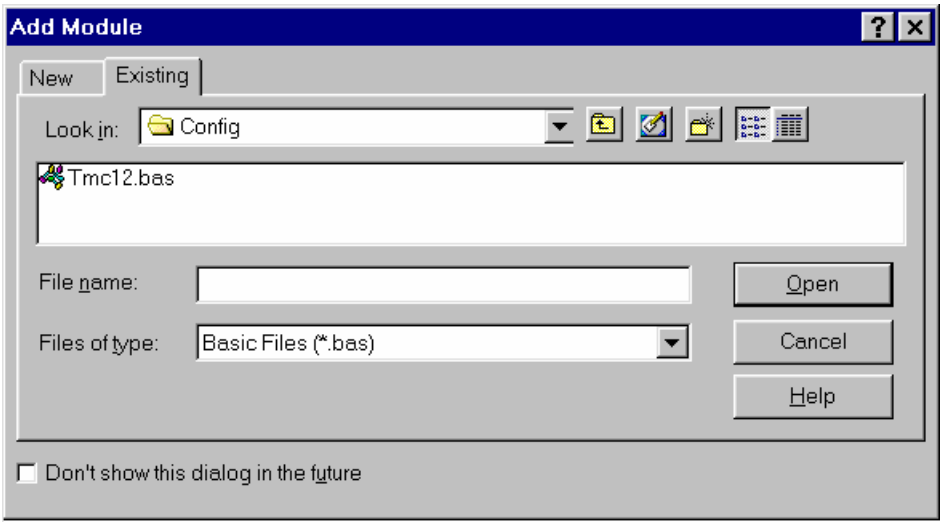

Figure 2-3-2. Select the declaration file to include.

Step 6: Check the project manager to verify that the module has been added successfully.

Refer to Figure 2-3-3.

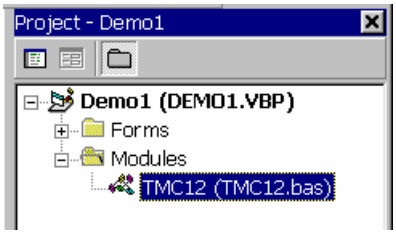

Figure 2-3-3. Check if the module has been added into the project?

Step 7: End.

3.4 Using Delphi

Step 1: Copy the declaration file into the user's project folder.

For example, "TMC12.PAS".

Step 2: Include code in the user's source program to use the declaration file.

For example:

Uses TMC12;

Refer to Figure 2-4-1.

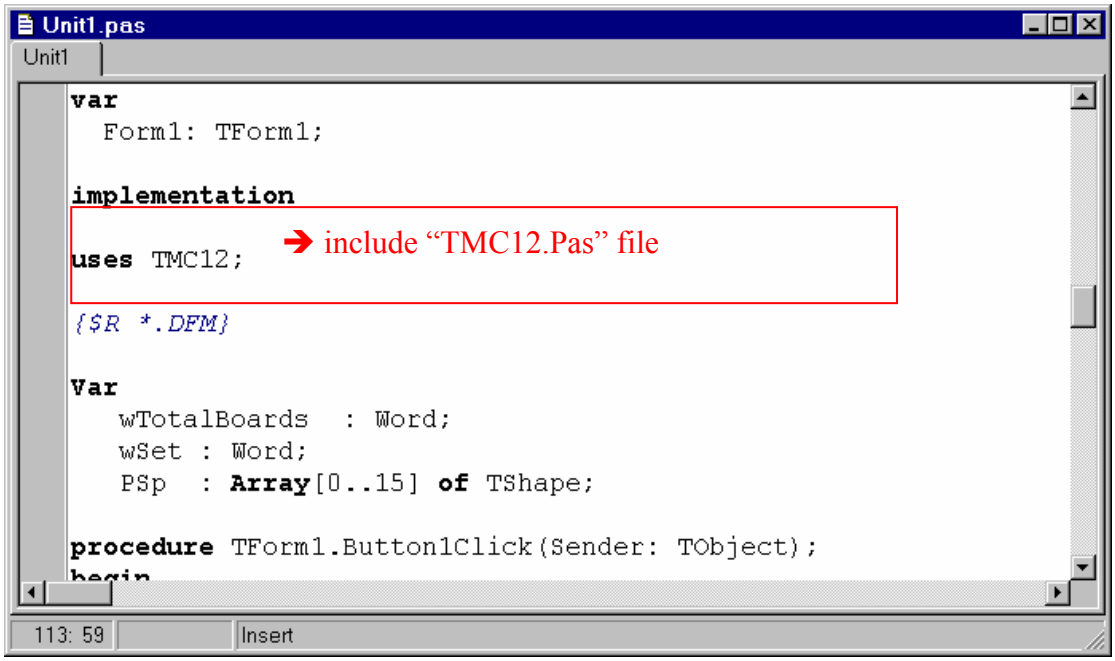

Figure 2-4-1. To use the declaration file.

Step 3: End.

3.5 Using Borland C++ Builder

Step 1: Copy the declaration files into the user's project folder.

For example, declaration files: "TMC12.H" and "TMC12.Lib".

Note: The .H and .Lib files are different in VC++ and BCB.

Step 2: The source program must include the declaration file. For example:

#include "TMC12.H"

Refer to Figure 2-5-1.

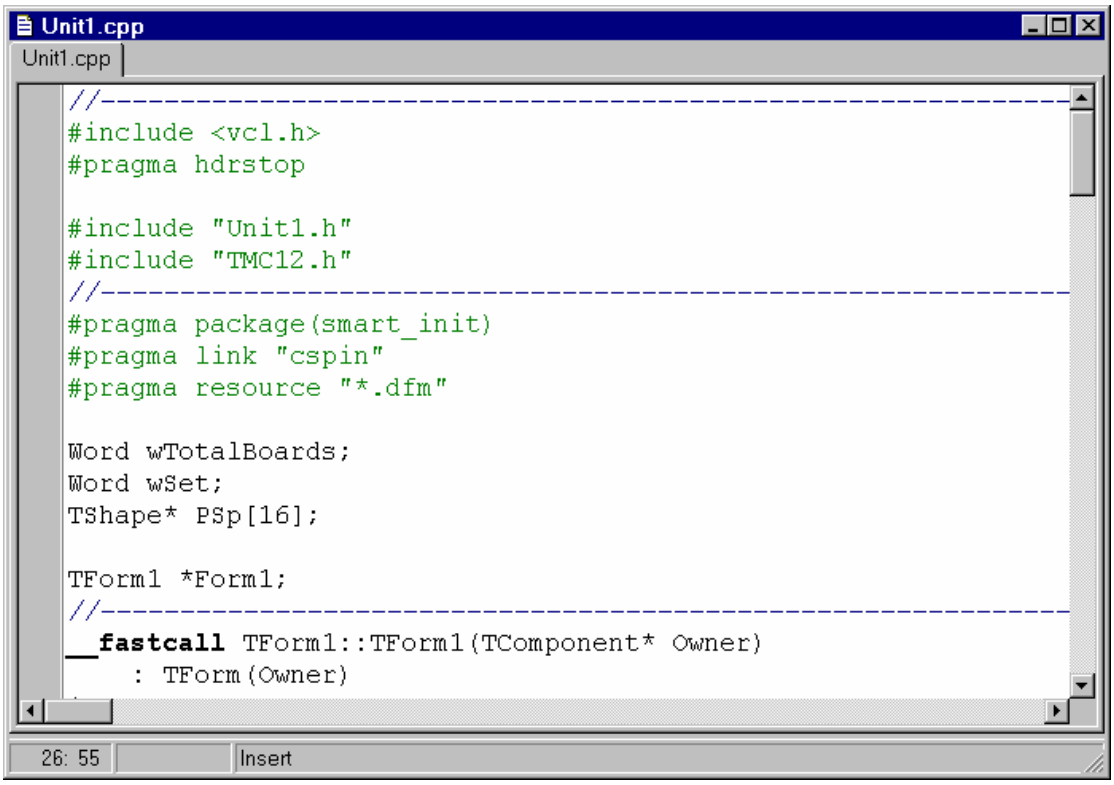

Figure 2-5-1. Include the declaration file.

Step 3: Select the menu items "Project" / "Add to Project…".

Refer to Figure 2-5-2.

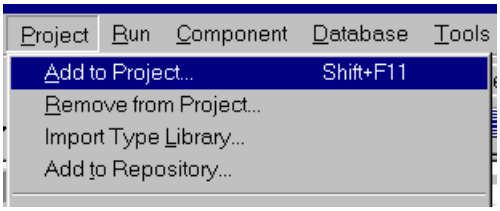

Figure 2-5-2. Select the menu items "Project" / "Add to Project…".

Step 4: Change the field "Files of type:" to "Library file (*.lib)".
Refer to Figure 2-5-3.

Step 5: Select the library to include.
For example: "TMC12.Lib". Refer to Figure 2-5-3.

Step 6: Click the button "Open". Refer to Figure 2-5-3.

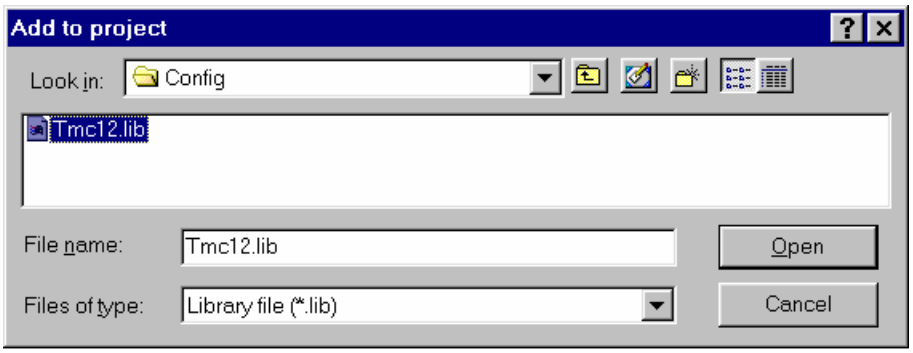

Figure 2-5-3. Select the library to include.

Step 7: Select the menu items "View" / "Project Manager". Refer to Figure 2-5-4.

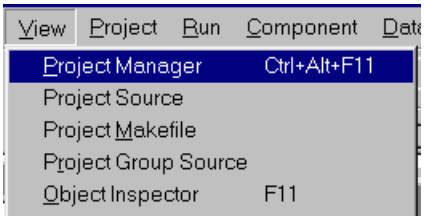

Figure 2-5-4. Select the menu items "View" / "Project Manager".

Step 8: Check the Project Manager to see if the library has been added into this project. Refer to Figure 2-5-5.

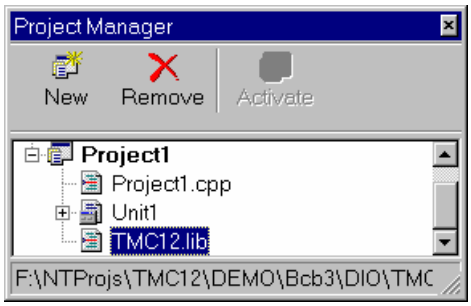

Figure 2-5-5. Check if the library has been added into this project.

Step 9: End.

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