User's Guide

QLIB
(Quancom Library)

QUANCOM
INFORMATIONSSYSTEME

Industrial Measurement and Automation

Table of contents

1 Overview

1.1 Introduction

Congratulations! You've bought a QUANCOM high quality measurement and auto-mation board, which shows the newest update of technology and whose attributes and functions are able to compete with every other instrument and even beats them. The following special attributes are included:

Features of the board

- Easy programming
- Various sample applications in different programming languages
- Driver support by Windows XP, 2000, NT and Me/98/95 with the **QLIB (QUAN-COM Driver Library)**

1.2 Our experience is your profit

We from QUANCOM are specialists for the development of hard- and software. QUANCOM has grown to become one of the leading suppliers of measuring and automation technology to industry. At its design centres QUANCOM has developed an impressive range of products.

1.3 Customer Communication

QUANCOM wants to receive your comments on our products and manuals. We are interested in the applications you develop with our products, and we want to help if you have problems with them. To make it easy for you to contact us, this manual contains comment and configuration forms for you to complete. These forms are in chapter 6.2 "*Customer Communcatio*n *and Help*" at the end of this manual.

1.4 Changes in this manual and software updates

QUANCOM - products are marked out by their constant further development. You can watch all the actual information of the changes in the README-file on the installation disk or CD. You can always get more information and free software updates on our internet website.

(**WWW.QUANCOM.DE**)

1.5 Scope of supply

- Measuring and automation board
- User's manual
- QUANCOM CD

If a component is missing please contact your dealer. QUANCOM reserves the right to change the extent of delivery without a preliminary announcement.

2 Softwareprogramming with the QLIB

2.1 QLIB (QUANCOM Driver Library)

The **QLIB**, which stands for **QUANCOM Driver LIBrary**, was developed with the target to allow the simple programming of all our data acquisition products under various operating systems. So it is easy to write an application that runs under the operating systems Windows Me/98/95 and Windows XP/2000/NT4.0. This driver interface is not limited to PC boards or other I/O adapters but is also targeted towards supporting the next product generations currently being developed. The used functions and parameters are the same for all operating systems.

Supported operating systems:
• Microsoft Windows XP/2000/NT4.x
• Microsoft Windows ME/98/95

Supported compilers:

C / C++
• Borland C++ 3.1, 4.x, 5.x, 6.x
• Microsoft® Visual C++ 1.x, 2.x, 4.x, 5.x, 6.x

Pascal
• Borland Turbo Pascal

Delphi
• Borland Delphi

Basic
• Microsoft® Visual Basic 3.x, 4.x, 5.x; 6.x

Graphical Programming Language
• HP VEE von Hewlett-Packard
• LabView® von National Instruments

2.2 Installation and general programming with the QLIB

For further information about the installation process and the general programming with the QLIB (i.e. setting up the system, linking libraries, adding header files, etc.) please see the „QLIB" manual or the windows help file (qlib.hlp) which is included on the installation CD.

The following chapters describe the installation of the drivers depending on the operating system (Windows 95 / 98 or Windows XP / 2000 / NT) and bus type (PCI, ISA). The installation procedure differs for every operating system and bus type.

```
┌──────────────────────────────────────────┐
│              Applikation                 │
└──────────────────────────────────────────┘
                    ↕

┌──────────────────────────────────────────┐
│                 QLIB                     │
└──────────────────────────────────────────┘
          ↕                      ↕

┌──────────────────┐    ┌──────────────────┐
│     Windows      │    │     Windows      │
│    Me/98/95      │    │   XP/2000/NT     │
└──────────────────┘    └──────────────────┘
          ↕                      ↕

┌──────────────────────────────────────────┐
│               Hardware                   │
└──────────────────────────────────────────┘
```
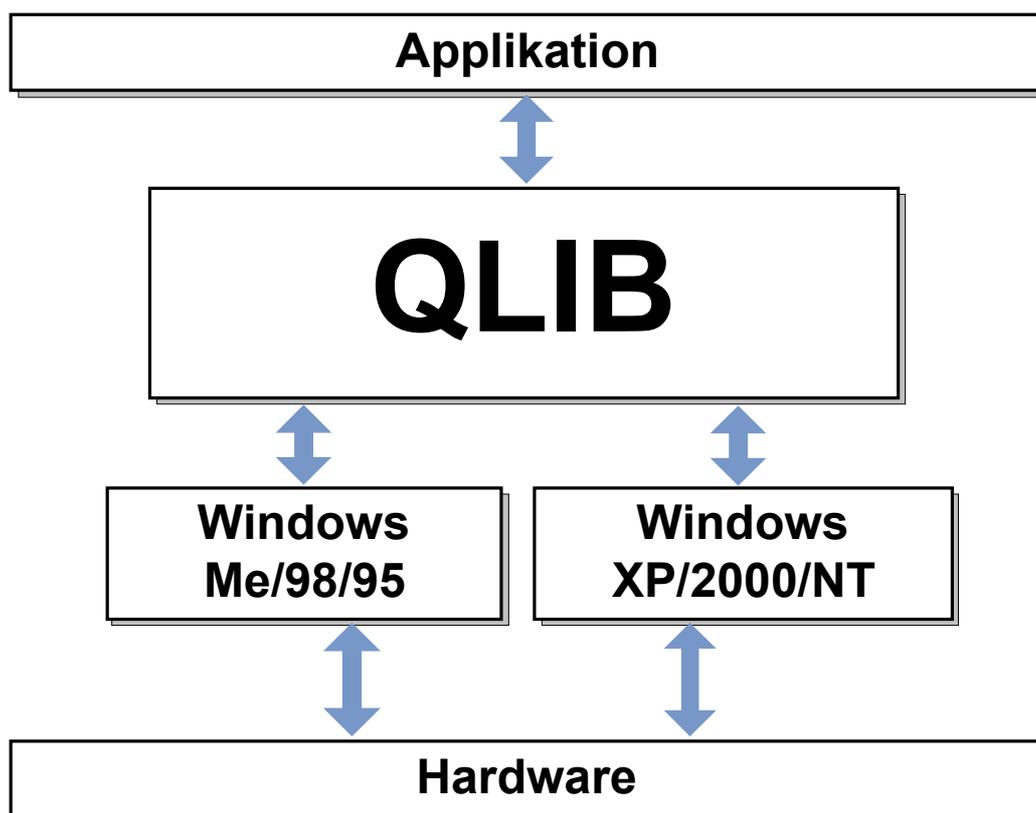
2.2.1 Installing the QLIB and drivers for your QUANCOM PCI board (Windows Me/98/95)

If you have downloaded the QLIB Software from our website please read the note below before installing any drivers.

Step1: Driver installation for PCI boards:

After you installed the QUANCOM PCI board in your system the board will be recognised automatically by Windows 95/98 during system restart. If you are restarting the system the system detects the new board and opens a dialog box „New hardware detected". Press the button „Have disk" and insert the **QLIB installation Disk 1** in drive „A". To properly recognise the board you have to select the file **A:\WIN95\QUANCOM.INF** or **A:\WIN98\QUANCOM.INF** depending of the operating system you are using. After the file was loaded a list of the PCI boards is shown. Please select the right board from the list.

Step 2: Software installation for PCI boards:

Put the **QLIB installation Disk 1** in drive A: and click on **Start | Run**. Select the program **a:\setup.exe** and click on **OK** to continue. The installation program will be started now and will guide you through the rest of the installation process. SETUP.EXE will install the QLIB software library.

NOTE: This section tells you what to do if you downloaded the QLIB from the web (QUANCOM Library)
If you have downloaded the QLIB from our website **„http://www.quancom.de/QLIBENG"** you received a program like „qlib32_v160.exe". Create a directory **„i.e. C:\QLIBINST"** on you harddrive. Copy the program to this directory. Change on the DOS commandline to this directory and run the program. **„qlib32_v160.exe"**. This will extract the archived files to your harddisk. If you are asked in the following steps to select the i.e. **A:\WIN95\QUANCOM.INF** or **A:\SETUP.EXE** don't switch to drive „A:" but rather to **„i.e. C:\QLIBINST\DISK1\WIN95\QUANCOM.INF"** or **„C:\QLIBINST\DISK1\SETUP.EXE"**.

2.2.2 Installing the QLIB and drivers for your QUANCOM ISA board (Windows Me/98/95)

If you have downloaded the QLIB Software from our website please read the note below before installing any drivers.

Step 1: Software installation for ISA boards:
Put the QLIB installation Disk 1 in drive A: and click on **Start | Run**. Select the program a:\setup.exe and click on OK to continue. The installation program will be started now and will guide you through the rest of the installation process. SET-UP.EXE will install the first part of QLIB.

Step2: Driver installation for ISA boards:
Step 2 installs the generic driver for the QUANCOM ISA boards. The driver must be installed with the „Control panel". To open the „Control panel" click on **Start | Settings | Control panel**.

• Double click on the „Hardware" icon.
• Click on "continue"
• Choose "no" ("Should the new hardware be searched ?") and click on "continue"
• Click on "other components" and then on "continue"
Click on "disk" and choose the file "A:\WIN95\QUANCOM.INF" on QLIB-disk 1.
Choose the item **QUANCOM ISA-Karten** or **QUANCOM ISA board** in the list of available boards and the click on "continue"
The driver for all ISA boards will be installed now.

Step3: Select your board in the QLIB Control panel:

Step 3 is to let QLIB know which type of boards are installed. For step 3 please open the „Control panel" again. To open the „Control panel" click on **Start | Settings | Control panel**.

• Double click on the QLIB icon
• Click on „Add" and select the QUANCOM board you want to install.
• Select the QUANCOM board from the list of installed boards and click on the button „Properties". Check that the selected I/O address is the same as the one configured with the jumpers on the board (see chapter "Jumpers").

The board will be installed now. QLIB supports multiple boards in the same system. If you have more than one board Step 3 has to be repeated for every board.

NOTE: This section tells you what to do if you downloaded the QLIB from the web (QUANCOM Library)
If you have downloaded the QLIB from our website **„http://www.quancom.de/QLIBENG"** you received a program like „qlib32_v160.exe". Create a directory **„i.e. C:\QLIBINST"** on you harddrive. Copy the program to this directory. Change on the DOS commandline to this directory and run the program. **„qlib32_v160.exe"**. This will extract the archived files to your harddisk. If you are asked in the following steps to select the i.e. **A:\WIN95\QUANCOM.INF** or **A:\SETUP.EXE** don't switch to drive „A:" but rather to **„i.e. C:\QLIBINST\DISK1\WIN95\QUANCOM.INF"** or
„C:\QLIBINST\DISK1\SETUP.EXE".

2.2.3 Installing the QLIB and drivers for your QUANCOM PCI board (Windows XP/2000/NT)

If you have downloaded the QLIB Software from our website please read the note below before installing any drivers.

NOTE: Windows 2000 Plug & Play
If Windows 2000 shows the dialog box „New hardware found" on system start press the button „CANCEL". Don't use „Have disk" button. The required drivers will be installed with the QLIB in Step 1.

Step1: Software and Driver installation for PCI boards:
Put the QLIB installation Disk 1 in drive A: and click on **Start | Run**. Select the program **a:\setup.exe** and click on **OK** to continue. The installation program will be started now and will guide you through the rest of the installation process. SETUP.EXE will install the QLIB and the needed drivers.

NOTE: This section tells you what to do if you downloaded the QLIB from the web (QUANCOM Library)
If you have downloaded the QLIB from our website **„http://www.quancom.de/QLIBENG"** you received a program like „qlib32_v160.exe". Create a directory **„i.e. C:\QLIBINST"** on you harddrive. Copy the program to this directory. Change on the DOS commandline to this directory and run the program. **„qlib32_v160.exe"**. This will extract the archived files to your harddisk. If you are asked in the following steps to select the i.e. **A:\WIN95\QUANCOM.INF** or **A:\SETUP.EXE** don't switch to drive „A:" but rather to **„i.e. C:\QLIBINST\DISK1\WIN95\QUANCOM.INF"** or **„C:\QLIBINST\DISK1\SETUP.EXE"**.

2.2.4 Installing the QLIB and drivers for your QUANCOM ISA board (Windows XP/2000/NT)

If you have downloaded the QLIB Software from our website please read the note below before installing any drivers.

Step1: Software and Driver installation for ISA boards:
Put the QLIB installation Disk 1 in drive A: and click on **Start | Run**. Select the program **a:\setup.exe** and click on **OK** to continue. The installation program will be started now and will guide you through the rest of the installation process. SETUP.EXE will install the QLIB and the needed drivers.

Step 2: Select your board in the QLIB Control panel
Step 2 is to let QLIB know which type of boards are installed. For step 2 please open the „Control panel" again. To open the „Control panel" click on **Start | Settings | Control panel**.

• Double click on the QLIB icon
• Click on „Add" and select the QUANCOM board you want to install.
• Select the QUANCOM board from the list of installed boards and click on the button „Properties". Check that the selected I/O address is the same as the one configured wit the jumpers on the board (see chapter „Jumpers").

The board will be installed now. QLIB supports multiple boards in the same system. If have more than one board Step 3 has to be repeated for every board.

NOTE: This section tells you what to do if you downloaded the QLIB from the web (QUANCOM Library)
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2.3 Filestructure after the installation of the QLIB

```
Config                          Configurationtool QLIBCNFG for ISA Cards
+----DLL
      +----BCPP                 DLL's for Compiler Borland / Inprise
      +----MSDEV                DLL's for Compiler Microsoft
+----Driver                     NT Driver
+----Help                       API Documentation
+----Include                    Include files for C, Delpi and Visual Basic
+----Lib
      +----BCPP                 Libraries for Compiler Borland / Inprise
      +----MSDEV                Libraries for Compiler Microsoft
+----Samples
      +----C
            +----ADI12     Example for AD1 and AD2
            +----POPTOLCA  Example for POPTOLCA
            +----PTTL24IO  Example for PTTL24IO
            +----PWDOG_B   Example for PWDOG1 and PWDOG2 unter C++
            +----REL8UM    Example for Rel8UM
            +----WDOGTEST  Example for ISA- and PCI Watchdogcard
      +----Delphi
            +----WATCHDOG  Example for ISA- and PCI Watchdogcard
            +----HPVEE     Example for PAD12
            +----MSOffice
                  +----Excel    Example for PAD12
                  +----Pwrpoint Example for 220V switching board
            +-----VB
      +-----SDK                 Example for Installation of QLIB
                                Components with InstallShield
+-----Tools                     Useful tools for our boards
                                ( e.g. PCIINFO for MS-DOS and Windows )
```

3 Configuration of the boards to be consulted

For the configuration of cards you have to distinguish between ISA- and PCI-cards.

3.1 Configuration of ISA-cards

For ISA-cards the parameters for the I/O-basis adress and the interrupt channels (so far as excisting) must be adjusted program QLIBCNFG. This tool is used under all Windows-types and is contained after the installation in the file Verzeichnis CONFIG.

After the start of QLIBCNFG a dialogue-box is shown, which consists two attributes. Direct vsisible is the side **Common** with a Copyright-advice.

If you Click on the register **card-manager**, all QUANCOM-PCI-cards and all configurated ISA-cards are shown.

Aftre you choosed a card you can delete it from the list of the configurated cards with a Click on **Delete**. To avoid a unintentional delete of a card the following dialogue appears for confirmation.
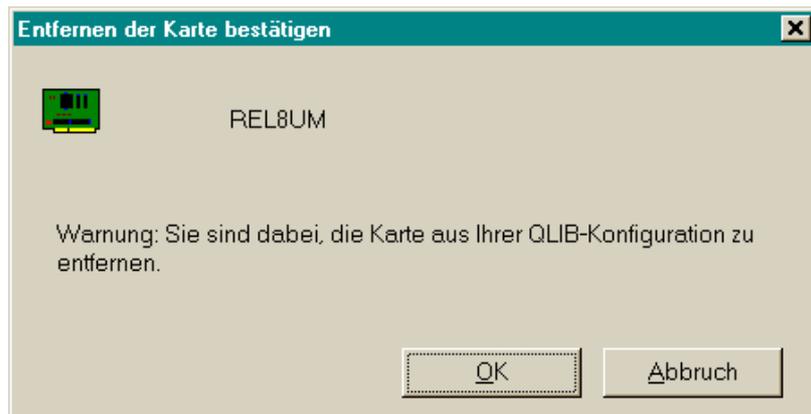
If a new ISA-card is diposed for the QLIB, the button **Add** at card-manager must be Clicked on. Then a dialogue-box appears with a list of all QLIB supported cards.
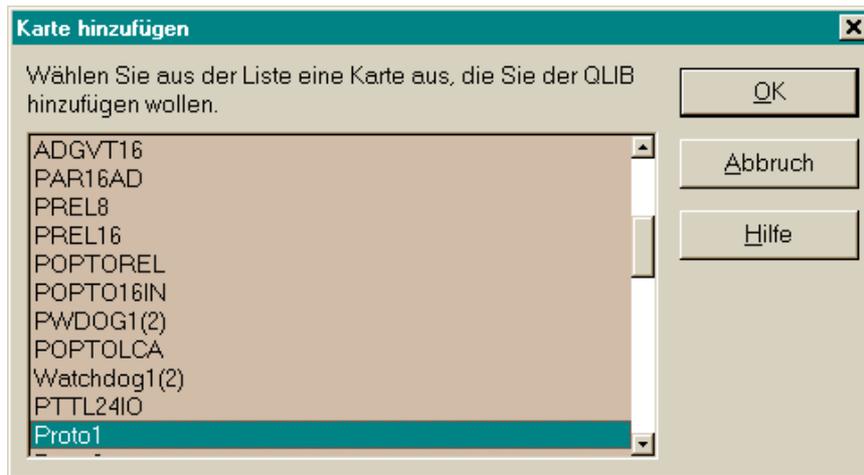
After the card was choosen the dialogue will be closed with **Ok**. Now the card is available for the QLIB. At the same time the feature dialogue will be opened and the cardparameter will be declared.
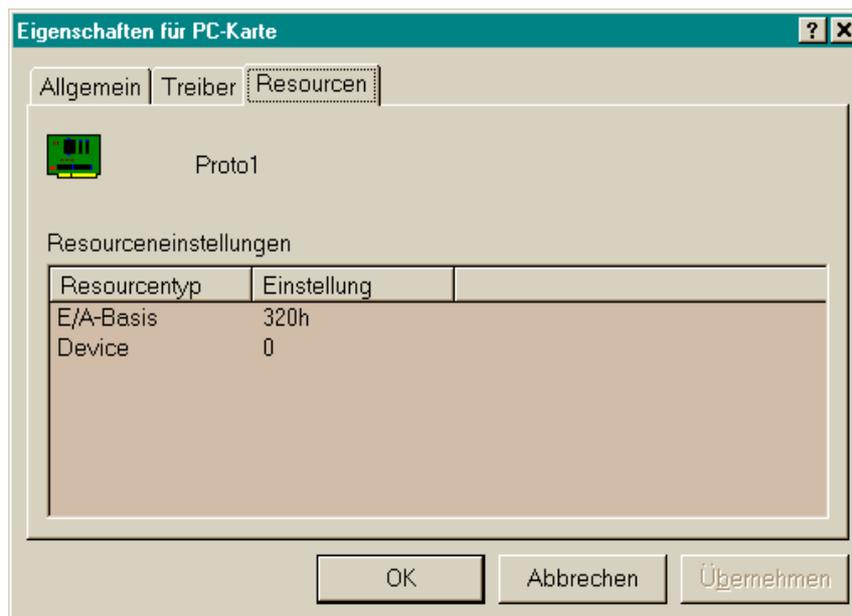
In the column **resource types** the types of cardparameters is shown. In the column **settings** befinden the values of the card parameters are contained. With a double Click on one of the resourcetypes a window will be opened, with which the value can be changed.

The following dialogue box serves for the settings of the I/O-base adress (short E/A-base) of the card. After **Value** you can choose the value from a list of possible base adresses the. This value is setted by jumpers on the card. If an adress setting should cause conflikt with another card inside the QLIB it is shown in the field **conflikt informations**. Ther you will get information about with which card/gearnumber (Device) this setting collides. In this case you must take an unused adress on the card.
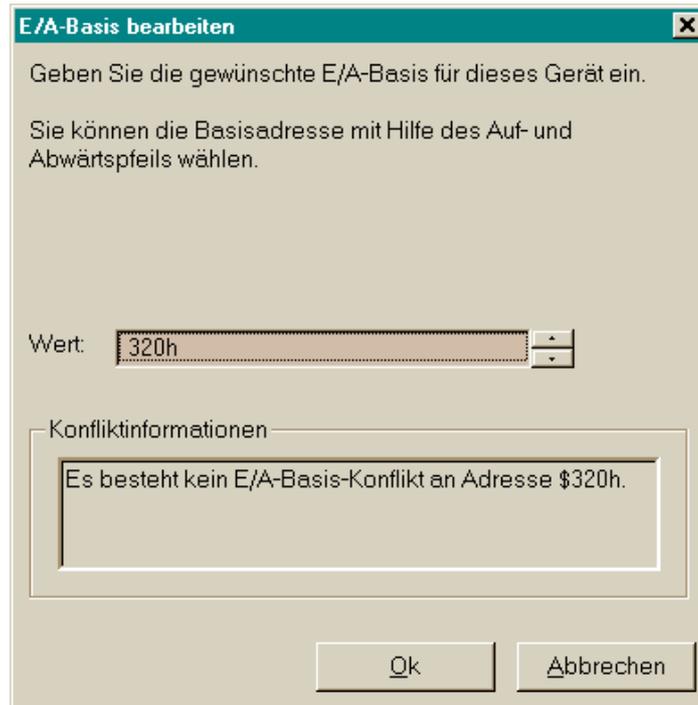
The cardparameters gearnumber (Device) and IRQ are setted with a similar dialogue box.

Now the cardparameters can always be called and changed with the button **Features** in card-manager.

To safe the settings now you must Click on **Ok** in the card-manager.

3.2 Configuration of PCI-cards

PCI-cards are cinfigurated automaticallyby the operating system. That means, that the I/O-adress and interrupt channels (so far as excisting) are automatically known for the QLIB. This causes that the program QLIBCNFG can only be used with PCI-cards to establish, if the PCI-card is detected by the computer. A configuration of the cardparameters is not possible.

3.3 Setting of a projekt with the QLIB under Microsoft Visual C++ 4.x

With a small example we can now show you, how you

1. can invent a project

2. the neccesary QLIB-files can be integrated into the project

3. the neccesary compiler-settings can be taken

4. can provide a small QLIB-application

5. can compile the project and how to start the application

As an example you can see the connection to the PCI-Watchdog-Karte PWDOG1. Here the testapplication has the name PWDOG and should be a 32-Bit console-program.

3.3.1   Building of a project

The building of the project happens in the following steps:

-       Start the compiler

-       Click on **File | New**. Now you can see the dialogue **New**.

-       Choose **Project Workspace** and Click on **OK**. Now you can see the dialogue **New Project Workspace**.

-       Choose under type the item Console Application. Under **Plat- forms** before Win32   there   must   be   a   hooklet.   Behind   **Location** **c:\programme\quancom\qlib32\beispiel** and under **Name** the file-name pdwdog must be declared.

-       Finish the dialogue with **Create**.

After this settings the compiler now creates the project. Therewith the compiler can find the components of the QLIB during the later compilating- and Link-proceedings the following steps must be performed:

-       Choose menupoint **File | New** and Click in the dialogue **New** on the item **Text File** and finish the dialogue with **OK**. Now an empty quell-code-window will be built. Now this quell-code must be safed by **File | Save as** under filename **c:\programme\quancom\ qlib32\ beispiel\pdwog.c**.

-       Choose in the projekt-window the registertype **FileView**.

- Click on the menupoint **Insert | Files into Project**. Now you can see the dialogue **Insert Files into Project**. Now choose the file **c:\programme\ quancom\qlib32\beispiel\pdwog.c** and finish the dialogue with **Add**. Now the file will be added to the project.

- Click on menupoint **Insert | Files into Project**. Now you can see the dialogue **Insert Files into Project**. Now choose the file **c:\programme\ quancom\qlib32\lib\msdev\qlib32.lib** und and finish the dialogue with **Add**. Now the file will be added to the project.

Therewith , after the compile process, all necessary DLLs can be founded by the programm example, the following files, for example with the Explorer, must be copied into the project register **c:\programme\quancom\qlib32\beispiel**:

    c:\programme\quancom\qlib32\dll\msdev\qlib32.dll
    c:\programme\quancom\qlib32\dll\msdev\qmulti32.dll

3.3.2   Settings of the Compiler-options

The options must be setted in the following way:

- Click on the menupoint **Tools | Options**. Now you can see the dialogue **Options**.

- Click on register type **Directories**, add the new Include-register **c:\programme\quancom\qlib32** and finnish the dialogue with **OK**.

3.3.3　Building of a small QLIB-application

Now the application of the quellcode can begin. Therefore Click in the project-window on the line pwdog.c and write down in the opened window the following lines:

```
#include "windows.h"
#include "conio.h"
#include "stdio.h"

#include "include\qlib.h"


void main (void)
{
QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

QAPIWatchdogEnable();
printf("PWDOG aktiviert ... Taste druecken\n");
getch();

QAPIWatchdogRetrigger();
printf("PWDOG retriggert ... Taste druecken\n");
getch();

QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

printf("Ende\n");
}
```

3.3.4　Compile and start a program example

To built the EXE-file now the compiler about **Build | Build pwdog.exe**. If everything is setted correct, the first own QLIB-Applikation will be built after asfew seconds. This can now be started with **Build | Execute pwdog.exe**.

3.4 Setting of a project with the QLIB under Borland Delphi 2.x

Not like in the other programming languages C/C++ we only show you in this example, what is important for the QLIB-integration:

- Choose the menupoint **Project | Options ...**. Now you can see the dialogue **Project Options**.

- Click on the register type **Directories/Conditionals**. Behind **Search b Path** now add the path **c:\programme\quancom\qlib32\include**. Tehen finish the dialogue with **OK**.

- In evrey unit, which is adressed in the QLIB, the line {$INCLUDE QLIB.pas} must be added. This line should be before the first procedure/function in the Unit.

3.5 Setting of a project with the QLIB under Borland C++ 5.0x (US-Version)

With a small example we can now show you, how you

1. can invent a project
2. the neccesary QLIB-files can be integrated into the project
3. the neccesary compiler-settings can be taken
4. can provide a small QLIB-application
5. can compile the project and how to start the application

As an example you can see the connection to the PCI-Watchdog-Karte PWDOG1. Here the testapplication has the name PWDOG and should be a 32-Bit console-program.

3.5.1 Building of the project

The building of the project happens in the following steps:

- Start the compiler

- Click on **File | New | Project...**. Now you can see the dialogue **NewTarget**.

- Click on **Browse** and open the project **c:\programme\quancom\qlib32\beispiel\pwdog.ide**
- with **Target Type** now do the following settings:
  Application [.exe]
  Platform: **Win32**
  Target Model: **Console**

- dechoose everything with **Frameworks**
- dechoose everything with **Controls**

- dechoose evrything with **Libraries**

- choose **Static**
- dechoose **Multithread**

- Click on button **Advanced** then choose in the following dialogue the option **.c Node** and cancel the options **.rc** and **.def** . Thenfinish the dialogue with **OK.**

- Finish the dialogue **New Target** with **OK**

- Now after this settings the compiler builts the project. Terewith the compiler can find the components of the QLIB during the later compiling- and link-proceedings, you now have to add the following file to the project

click on the first line (pwdog.exe) in the project window. Now the line will become conspicious.

Push button **Insert** resp. **Einf**. Now you can see the dialogue **Add to Project List**. Give in **c:\programme\quancom\qlib32\lib\bcpp\qlib32.lib** with the filename and finish the dialogue with **OK**. This file will now be added to the project.

- Therewith , after the compile process, all necessary DLLs can be founded by the programm example, the following files, for example with the Explorer, must be copied into the project register **c:\programme\quancom\qlib32\lib\bcpp\qlib32.lib**:
:

      c:\programme\quancom\qlib32\dll\bcpp\qlib32.dll
      c:\programme\quancom\qlib32\dll\bcpp\qmulti32.dll

3.5.2   Settings the compiler-options

The options must be stted in the following way:

-        Click on menupoint **Options | Project**. Now you can see the dialogue **Project Options**.

-        Click on point **32-bit Compiler** under **Topics**. Now other compiler- topics are shown. Choose point **Calling Convention**. Now you can see the options for the calling conventions on the right side of the dialogue.

-        Click on **Standard call**. Therewith the settings for the compiler are finished.

-        Click on point **Directories** under **Topics**. On the right side you can see the settings of the register. Add the path **c:\programme\ quancom\ qlib32** behind **Include** under **Source Directories** with a placed in front semicolon.

-        Finish the dialogue **Project Options** with **OK**. All necessary options are setted now.

3.5.3   Building of a small QLIB-Application

Now the application of the quellcode can begin. Therefore Click in the project-window on the line pwdog.c and write down in the opened window the following lines:

```
#include "windows.h"
#include "conio.h"
#include "stdio.h"

#include "include\qlib.h"


void main (void)
{
QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

QAPIWatchdogEnable();
printf("PWDOG aktiviert ... Taste druecken\n");
getch();

QAPIWatchdogRetrigger();
printf("PWDOG retriggert ... Taste druecken\n");
getch();

QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

printf("Ende\n");
}
```

3.5.4   Compile and start a program example

For the building of the EXE-file go to **Project | Make all** or with the button **F9.** If all is exact adjust, then the first QLIB application is build. This can with **Debug | Run** or with the buttons **Ctrl** + **F9** or **Strg** + **F9** get startet.

3.6 Project building with the QLIB under Borland C++ 5.0x (german version)

The following example shows how to

1. build a project
2. get the necessary QLIB files into the project
3. get the necessary compile adjustments
4. build a little QLIB application
5. compile a project and run the application

As an example should be the communication of the PCI watchdog card PWDOG1.
The test application has the name PWDOG and should be a 32-Bit Console program.

3.6.1 Build a project

The building of a project happens in the following steps :

- Start the compiler

- **File | New | Project** must be clicked. It appears the dialog **New Target**.

- **Search** has to be clicked and the project **c:\programme\quancom\qlib32\beispiel\pwdog.ide** must be opened

- Under **target type** must be the adjustments as the following :
  application [.exe]
  environment: **Win32**
  target model: **Konsole**

- Under **Plot** everything must be choosen off
- Under **elements** everything must be choosen off
- Under libary everything must be choosen off
- static must be choosen
- M**ulti-Thread** be choosen off
- Click button **Further** and it appears a Dialog with the option to click **.c knot** and the options **.rc** and **.def** must be choosen off and the dialog could be closed with **ok**.
- Dialog **New target** with **ok** to close

The compiler builds after these adjustments the project. Therewith the compiler at a later compile- and Link proceeding find to components of the QLIB, the following file must be taken in the project :

- First Line (pwdog.exe) in the project window must be clicked. The line will be stand out.

- Button **Insert** or **Einf** muct be clicked. It appears a Dialog **add to project list**. The file name **c:\programme\quancom\qlib32\lib\bcpp\qlib32.lib** must be choosen and close the dialog with **OK**. The file will be add to the project.

Therewith after the compiled proceeding all necessary DLLs of the example program are found, the following files must be copied into the project directory: **c:\programme\quancom\qlib32\beispiel**

c:\programme\quancom\qlib32\dll\bcpp\qlib32.dll
c:\programme\quancom\qlib32\dll\bcpp\qmulti32.dll

3.6.2 Adjustment of the compiler option

The options must be adjust as the following:

-        Menu button **Options | Project...** must be clicked. It appears the dialog **project options**.

-        Under **topic** the point **32-bit Compiler** must be clicked. There will be shown more topics. The option call konvention must be choosen. On the right in the dialog appears the **call konventionen** options.

-        **Standard** must be choosen. Then the adjustments concerning the compiler are finished.

Under **topic** the point **directory** must be clicked. On the right appears the adjustments of the single directories. Under **source code directories** must be add after clicked **Include** the path ; ;**c:\programme\quancom\qlib32**

The dialog **project options** can be finished with **OK**. All necessary options are saved.

3.6.3 Building of a little QLIB application

Now, you can start to enter the source code. Therfore must be clicked in the project window the line **pwdog.c** and in the opened window must be entered the following lines:

```
#include "windows.h"
#include "conio.h"
#include "stdio.h"

#include "include\qlib.h"


void main (void)
{
QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

QAPIWatchdogEnable();
printf("PWDOG aktiviert ... Taste druecken\n");
getch();

QAPIWatchdogRetrigger();
printf("PWDOG retriggert ... Taste druecken\n");
getch();

QAPIWatchdogDisable();
printf("PWDOG deaktiviert ... Taste druecken\n");
getch();

printf("Ende\n");
}
```

3.6.4 Programing example of compiling and start

For building an EXE File the compiler must be refreshed over **project | project | refresh** or with the **F9** button. If all adjustments are correct the first QLIB application will be build in few seconds. The application can be started with **debug | run** or over **Ctrl** + **F9** or **Strg** + **F9**.

4 QLIB Commands

Make sure that the QLIB (QUANCOM Driver Library) is properly installed. For programming the UNITIMER board you need at minimum the QLIB release v1.70. For further information about the installation and how to include the necessary files in your application see the „QLIB" documentation. This chapter describes the special commands that are required to use the UNITIMER board with the QLIB. These samples assume that the board is installed and properly set-up for use with the QLIB (QUANCOM Driver Library).

4.1 General functions

QAPIExtOpenCard

ULONG QAPIExtOpenCard (ULONG cardid, ULONG devnum);

Use the function QAPIExtOpenCard to open a board and retrieve the board handle

QAPIExtCloseCard

void QAPIExtCloseCard(ULONG cardhandle);

With the function QAPIExtCloseCard the board is closed

QAPINumOfCards

ULONG QAPINumOfCards (void);

With the function QAPINumOfCards it is possible to ask , which used cards are supported by the QLIB

QAPIExtNumOfCards

ULONG QAPIExtNumOfCards (void);

With the function QAPIExtNumOfCards it is possible to ask , which used cards are supported by the QLIB

4.2 Watchdog functions

QAPIWatchdogEnable

void QAPIWatchdogEnable (void);

The QAPIWatchdogEnable function enables the watchdog board

QAPIWatchdogDisable

void QAPIWatchdogDisable (void);

The QAPIWatchdogDisable function disables the watchdog board

QAPIWatchdogRetrigger

void QAPIWatchdogRetrigger (void);

With the function QAPIWatchdogRetrigger it is possible to retigger an active watchdog card

QAPIExtWatchdog

void QAPIExtWatchdog (ULONG cardhandle ULONG jobcode);

With the function QAPIExtWatchdog it is possible to respond the Watchdog card

4.3 Digital write functions

QAPIExtWriteDO1

void QAPIExtWriteDO1 (ULONG cardhandle ULONG channel ULONG value ULONG mode);

With the function QAPIExtWriteDO1 it is possible to give out a 1 Bit width digital value on a channel of the DO card

QAPIExtWriteDO8

void QAPIExtWriteDO8 (ULONG cardhandle ULONG channel ULONG value ULONG mode);

With the function QAPIExtWriteDO8 it is possible to give out a 8 Bit width digital value on a channel of the DO card

QAPIExtWriteDO16

void QAPIExtWriteDO16 (ULONG cardhandle ULONG channel ULONG value ULONG mode);

With the function QAPIExtWriteDO16 it is possible to give out a 16 Bit width digital value on a channel of the DO card

QAPIExtWriteDO32

void QAPIExtWriteDO32 (ULONG cardhandle ULONG channel ULONG value ULONG mode);

With the function QAPIExtWriteDO32 it is possible to give out a 32 Bit width digital value on a channel of the DO card

QAPIPutDO

ULONG QAPIGetDI (ULONG cardid ULONG channel ULONG value);

With the function QAPIExtWriteDO32 it is possible to give out a 32 Bit width digital value on a channel of the DO card

4.4 Digital read functions

QAPIExtReadDI1

ULONG QAPIExtReadDI1 (ULONG cardhandle ULONG channel ULONG mode);

With the function QAPIExtReadDI1 the condition of a 1 Bit width digital channel could be read by a DI card

QAPIExtReadDI8

ULONG QAPIExtReadDI8 (ULONG cardhandle ULONG channel ULONG mode);

With the function QAPIExtReadDI8 the condition of a 8 Bit width digital channel could be read by a DI card

QAPIExtReadDI16

ULONG QAPIExtReadDI16 (ULONG cardhandle ULONG channel ULONG mode);

With the function QAPIExtReadDI16 the condition of a 16 Bit width digital channel could be read by a DI card

QAPIExtReadDI32

ULONG QAPIExtReadDI32 (ULONG cardhandle ULONG channel ULONG mode);

With the function QAPIExtReadDI32 the condition of a 32 Bit width digital channel could be read by a DI card

QAPIGetDI

ULONG QAPIGetDI (ULONG cardid ULONG channel);

With the function QAPIGetDI the condition of a 32 Bit width digital channel could be read by a DI card

4.5 A/D and D/A functions

QAPIGetAD

ULONG QAPIGetAD (ULONG cardid ULONG channel);

With the function QAPIGetAD it is possible to read a digital value from an input channel of a A/D card

QAPIPutDA

ULONG QAPIPutDA (ULONG cardid ULONG channel ULONG value);

With the function QAPIPutDA it is possible to give out a digital value on the channel of an A/D card

QAPIExtReadAD

ULONG QAPIExtReadAD(ULONG cardhandle ULONG channel ULONG mode);

With the function QAPIExtReadAD it is possible to read a digital value from an input channel of an A/D card

QAPIExtWriteDA

void QAPIExtWriteDA(ULONG cardhandle ULONG channel ULONG value ULONG mode);

With the function QAPIExtReadAD it is possible to give out a digital value from an input channel of an A/D card

QAPIExtLatchDA

void QAPIExtLatchDA (ULONG cardhandle);

With the function QAPIExtLatchDA are all digital values put out of the channels

QAPIConvertDWToVoltage

float QAPIConvertDWToVoltage (ULONG cardid ULONG value);

With the function QAPIExtConvertDWToVoltage a digital value will be calculated into an analog value

QAPIExtConvertDWToVoltage

float QAPIExtConvertDWToVoltage (ULONG cardhandle ULONG value ULONG mode);

With the function QAPIConvertDWToVoltage a digital value will be calculated into an analog value

4.6 8255/8253 PIA functions

QAPIRead8253

ULONG QAPIExtRead8253 (ULONG cardid ULONG reg);

With the function QAPIRead8253 the 8 Bit value will be read from the Register 8253

QAPIWrite8253

void QAPIExtWrite8253 (ULONG cardid ULONG chipnum ULONG value);

With the function QAPIWrite8253 the 8 Bit value will be written from the Register 8253

QAPIRead8255

ULONG QAPIRead8255 (ULONG cardid ULONG reg);

With the function QAPIRead8255 the 8 Bit value will be read from the Register 8255

QAPIWrite8255

void QAPIExtRead8255 (ULONG cardid ULONG reg ULONG value);

With the function QAPIWrite8255 a 8 Bit value will be written from the register 8255

QAPIExtRead8253

ULONG QAPIExtRead8253 (ULONG cardhandle ULONG chipnum ULONG reg);

With the function QAPIExtRead8253 the 8 Bit value will be read from the Register 8253

QAPIExtWrite8253

void QAPIExtWrite8253 (ULONG cardhandle ULONG chipnum ULONG reg ULONG value);

With the function QAPIExtWrite8253 the 8 Bit value will be written from the Register 8253

QAPIExtRead8255

ULONG QAPIExtRead8255 (ULONG cardhandle ULONG chipnum ULONG reg);

With the function QAPIExtRead8255 the 8 Bit value will be read from the Register 8255

QAPIExtWrite8255

void QAPIExtWrite8255 (ULONG cardhandle ULONG chipnum ULONG reg ULONG value);

With the function QAPIExtWrite8255 the 8 Bit value will be written from the Register 8255

4.7 Special functions

QAPIGetCardInfo

LPCARDDATAS QAPIGetCardInfo (ULONG cardid);

With the function QAPIGetCardInfo it is possible to get some information about the card

QAPIGetCardInfoEx

ULONG QAPIGetCardInfoEx(ULONG cardid LPCARDDATAS lpcd);

With the function QAPIGetCardInfoEx it is possible to get some information about the card. These will be written into the applications memory

QAPISpecial

ULONG QAPISpecial (ULONG cardid ULONG jobcode ULONG para1 ULONG para2);

With this function QAPISpecial it is possible to run card specific functions

QAPIExtSpecial

ULONG QAPIExtSpecial (ULONG cardhandle ULONG jobcode ULONG para1 ULONG para2);

With this function QAPIExtSpecial it is possible to run card specific functions

QAPIExtGetCardInfo

LPCARDDATAS QAPIExtGetCardInfo(ULONG cardid);

With the function QAPIExtGetCardInfo it is possible to get some information about the card

QAPIExtGetCardInfoEx

ULONG QAPIExtGetCardInfoEx(ULONG cardid LPCARDDATAS lpcd);

With the function QAPIExtGetCardInfoEx it is possible to get some information about the card. These will be written into the applications memory

QAPIExtReleaseCardInfo

void QAPIExtReleaseCardInfo(LPCARDDATAS carddatas);

With the function QAPIExtReleaseCardInfo it is possible with QAPIExtGetCardInfo to get out the asked card information

QAPIExtEnableIRQ

void QAPIExtEnableIRQ (ULONG cardhandle ULONG mode);

With the function QAPIExtEnableIRQ it is possible to activate an IRQ an the card

QAPIExtSetDebugLevel

void QAPIExtSetDebugLevel(ULONG dbgval);

With the function QAPIExtSetDebugLevel it is possible to set an intern debug level

5 Annex

5.1 Frequently asked questions (FAQ)

5.1.1   Genaral informations

Can I have any problems with network boards, sound cards, system components or other expansion boards?

Yes, according to how you have set the I/O address of your QUANCOM and the other component. You may encounter a resource conflict if the QUANCOM board and another component are using the same I/O address. Either change the I/O address of the QUANCOM or the I/O address of the other component.

What is the purpose of the PCIInfo program ?

The program PCIINFO dumps the I/O addresses of all QUANCOM PCI-cards used in the system.

What is the program PCISETIO for?

The program PCISETIO allows the manual change of the base I/O address of a QUANCOM PCI-card.

What is the program PCIGETIO for?

The program PCIGETIO reads the base IO address from the PNP-Bios for the QUANCOM PCI board.

5.1.2 What kind of problems may occur if the board is running under DOS

Can I use the card with a memory manager? (QEMM 386,EMM386)

Yes, but the use of a memory manager can make your computer or the software running slower.

PCIINFO does not correctly identify the PCI-card, is that right?

The message "PCI-card unknown" shows that the device is no QUANCOM board. PCIINFO has been developed only for QUANCOM boards. Other components are listed as "unknown" (i.e. graphic cards, disk controllers, PCI bridges or other components).

5.1.3 Problems with boards running under Windows 98/95 and Windows XP/2000/NT

Why is the "Control Panel" board configuration dialog "QLIB" empty?
• There is no QUANCOM PCI board in the system.
• There are no drivers installed for a QUANCOM ISA board.

After installation I get the message "QLIBNDRV.SYS not found" or "QLIBNDRV.VXD not found" . What can I do?
• Check that the QLIB is installed properly. For further information about the installation process and the general programming with the QLIB please see the „QLIB" manual which is included on the installation CD.
• If you use a QUANCOM ISA board check if the drivers for the QUANCOM board are installed.

What is the program PCISETIO for?
The program PCISETIO allows the manual change of the base I/O address of a QUANCOM PCI-card.

What is the program PCIGETIO for?

The program PCIGETIO reads the base IO address from the PNP-Bios for the QUANCOM PCI board.

Why do I get the message "Driver QLIBNDRV.SYS" or "Driver QLIBNDRV.VXD" could not be load?

• Check that the QLIB is installed properly. For further information about the installation process and the general programming with the QLIB please see the „QLIB" manual which is included on the installation CD.

• The driver for the QUANCOM board was not loaded. (Control Panel => System)

Windows XP/2000/NT: Must the QLIB be installed with Administrator-right?

• Yes, always install the QLIB with administration rights.

Windows XP/2000/NT: Why do I get the message "Driver could not be installed" during the installation?

• Installation was made without administration rights.

Windows XP/2000/NT: Why do I get the message "Driver QLIBNDRV.SYS could not be loaded"?

• Installation of drivers has failed, because the QLIB was not installed with administration-rights.

• QLIB-Software was installed on a network drive. Always install the QLIB on your local drive.

Windows XP/2000/NT: How can I install the driver QLIBNDRV.SYS manually?

If the QLIBNDRV.SYS failed to install it may be necessary to install the driver manually.

Please take the following steps to manually install the driver:

• Search on the installation CD in the directory "Tools" for the tool **instdrv.exe**. With this tool you can install and de-install the driver manually.

• Please call this tool with the following command line parameters:

instdrv   qlibndrv   d:\directory\qlibndrv.sys .

Replace **d:\directory** with the drive and the file, where the driver qlibndrv.sys is located.

• Go to "Start -> Settings ->Control panel ->(Administrative Tools / Windows 2000 only) -> Drivers" change the start type to "automatic", then click on the "start" button. For the changes to become active please restart the system.

Why must I restart the driver after every reboot of the computer?

The starting type of the driver is set to "Manual". If you want you can change this setting on „Automatic" to start the driver on every reboot of the system.

5.2 Customer Communication and Help

You need help?

If you don't know how to go on during the installation or operation of your QUANCOM board please first consult this user's guide.

! Tip !

In the chapter „Frequently asked question" a lot of answers to questions for known problems. They may help you to solve the problems. On the QUANCOM installation CD you can find a ASCII – Text – file READ-ME.TXT, which include changes made after printing of this user's manual.

! Important !

If you have further questions please contact our support team. For this case please prepare the following information:

- Exact type of the board.
- Version of the driver
- Version of the QLIB
- Operating system, Hardware equipment and Bus - System
- Name and Version of the program, which reports the failure
- A detailed failure description. To make sure, please try to reproduce the failure, and describe exactly, which steps led to this failure.

Who can you contact?

The QUANCOM internet website

http://www.quancom.de/

Per Fax

+49 22 36 / 89 92 - 49

Per E-Mail:

support@quancom.de

Address:

QUANCOM INFORMATIONSSYSTEME GmbH

In der Flecht 14

50389 Wesseling

If you need urgent help call:

QUANCOM Hotline Germany

0 22 36 / 89 92 - 20

Monday-Thursday
from 9:00 to 18:00
Friday
from 9:00 to 17:00

Actual drivers

You can find the newest Version of QUAN-COM software on our internet website http://www.quancom.de. You can also find a lot of information and „Frequently asked questions (FAQ's)". Before you contact the QUANCOM support, please check if you are using the newest software version of the QUANCOM software.

Repair

If you are not sure whether your QUANCOM board is defective please call the QUANCOM Hotline:

Tel.: **+49 22 36 / 89 92 – 20**

Before you send us the QUANCOM board to be repaired call:

Tel.: **+49 22 36 / 89 92 – 20**

If you send us your QUANCOM board, please use original package or any other suitable package, to protect the contents against transport damage. You also need to send us a copy of the original bill and the RMA number.

You can shorten the repair time by sending us an exact failure description, so that a faster failure search is possible. Send your QUANCOM board directly to the service department of QUANCOM Informationssysteme GmbH.

5.3 Technical support form

If you have internet access please enter the following URL in your browser:
http://www.quancom.de/quancom/qshop.nsf/techniksupport?OpenForm&eng else
photocopy this form and use the copy of this form as a reference for your current
configuration. Complete this form before contacting QUANCOM Informationssysteme
GmbH for technical support help and our applications engineers may answer your
questions more efficiently. If you are using any other QUANCOM hardware or soft-
ware products please add them to this configuration form. Include additional pages if
necessary.

Name   _____

                                                _____

Company   _____

                                                _____

Address   _____

Phone   _____

Fax   _____

Computer brand / Processor: _____

Operating system   _____

Display adapter   _____

Mouse   _____

QUANCOM board   _____

Other adapters installed   _____

Hard disk (capacity, free)   _____

The problem is   _____

List any error messages   _____

                                                _____

                                                _____

                                                _____

                                                _____

The following steps will reproduce the problem

                                                _____

                                                _____

                                                _____

                                                _____

                                                _____

                                                _____

                                                _____

5.4 Hardware and software configuration form

This form allows you to record the settings of your hardware and software. Complete this form each time you revise your software or hardware configuration, and use this form as a reference for your current configuration. Completing this form accurately before contacting QUANCOM Informationssysteme GmbH for technical support helps our applications engineers answer your questions more efficiently.

• QUANCOM Product

Name / Name of board: _____

Interrupt Level: _____

DMA Channel: _____

Base I/O Address: _____

Operating system: _____

• Other information

Computer brand and Model: _____

Processor: _____

Clock Frequency: _____

Type of Video Board Installed: _____

DOS Version: _____

Programming Language: _____

Programming Language Version: _____

• Other Boards in System

Base I/O Address of other Boards: _____

DMA Channels of other Boards: _____

Interrupt Level of other Boards: _____

5.5 Documentation comment form

QUANCOM Informationsysteme GmbH would like you to comment on the documentation supplied with our products. This information helps us to provide you with quality products to meet your needs. Include additional pages if necessary.

Title: **QLIB (Quancom Library)**

Edition date: **10.08.04 16:42**

Name: _____

                 _____

Company: _____

                 _____

Address: _____

                 _____

                 _____

Phone: _____

Fax: _____

Comment: _____

                 _____

                 _____

                 _____

                 _____

                 _____

                 _____

                 _____

Mail to: **support@quancom.de**

Fax to: **+49 2236 89 92 49**

Address: **QUANCOM Informationssysteme GmbH**
                    In der Flecht 14,
                    50389 Wesseling

                    Germany

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of the respective owner.