GX Configurator-DP 7.03

Configuration System
for Open Networks

Software Manual

Art.no.: 65778
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About this Manual

The texts, illustrations, diagrams and examples in this manual are only intended as aids to help explain the functioning, operation, use and programming of the open network configuration system MELSOFT GX Configurator-DP.
Separate manuals are available for MITSUBISHI ELECTRIC's various series of MELSEC programmable logic controllers.

This manual is only intended for users with experience in handling automation and communication networks.
For using and usage of this software only the user his own is responsible.
If you have any questions regarding the installation and operation of the software described in this manual, please do not hesitate to contact your sales office or one of your MITSUBISHI ELECTRIC distribution partners.
You can also obtain information and answers to frequently asked questions from our MITSUBISHI ELECTRIC website under www.mitsubishi-automation.com.

The GX Configurator-DP software is supplied under a legal license agreement and may only be used and copied subject to the terms of this License Agreement.

MITSUBISHI ELECTRIC reserves the right to change the specifications of its products and/or the contents of this manual at any time and without prior notice.

The IEC 61131.1 standard cited in this manual is available from the publishers Beuth Verlag in Berlin (Germany).

Table of Contents

1 Introduction

This manual...

...is a compact guide to using GX Configurator-DP software suitable both for beginners and experienced users upgrading from other systems. The manual includes explanations of the terms and structural concepts about the software and the configuration of an open network system. The manual provides a precise step-by-step description of how to use GX Configurator-DP including sample projects. These executable application is used to demonstrate the operation of the program with the help of the examples provided in this manual. The PLC series MELSEC Q Series is referenced as MELSEC system Q in this manual.

If you are not yet familiar with MS Windows...

... please at least read the Windows Fundamentals section in the Windows User's Guide, or work through the Windows Tutorial accessible through the Help menu of the Windows Program Manager. This will teach you what you need to know about using the basic elements of Microsoft ® Windows, and the operating procedures that are identical in all Windows application programs.

If you have problems with parameter settings, ...

... please refer to the user´s manuals of the concerning open network modules.

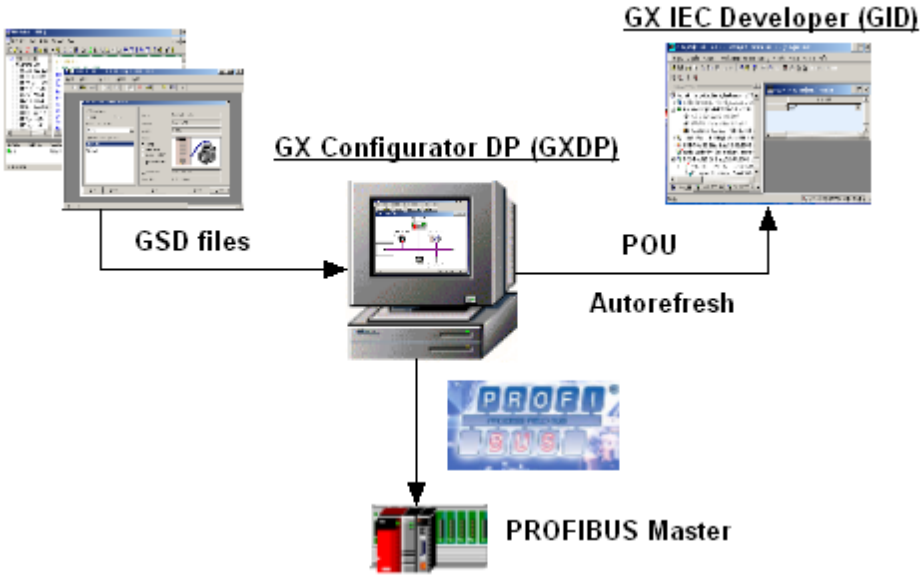
If you get stuck...

... do not despair, help is never far away! If you run up against seemingly insoluble problems, or if you have questions about GX Configurator-DP or the connected programmable logic controller (PLC) configuration, please first refer to the manuals and documentation. Many answers and solutions can also be found directly in the GX Configurator-DP context-sensitive online help system, which can always be accessed by pressing the <F1> key. If you cannot find answers to your questions in any of these places, contact your local MITSUBISHI ELECTRIC representative or call our European headquarters in Ratingen directly. The addresses and phone numbers are provided on the back covers of all our manuals.

2 Getting to know GX Configurator-DP

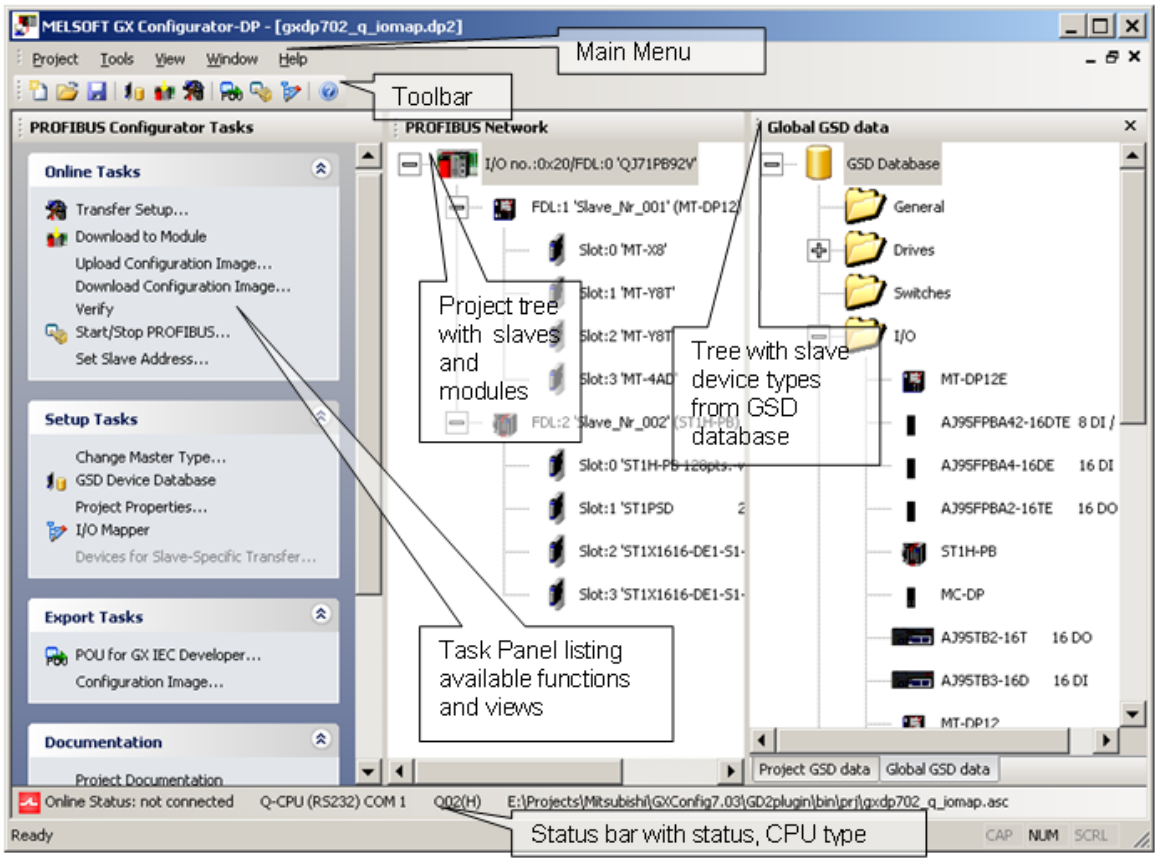
GX Configurator-DP Concept

GX Configurator-DP (GXDP) is the configuration tool for PROFIBUS interfaces in MITSUBISHI PLCs. It provides functions for defining a PROFIBUS network, validating the configuration and downloading it to the respective PLC module via a MITSUBISHI automation network.
GXDP is capable of downloading configuration data to the PROFIBUS module via a variety of different communication types. The module can be located in a PLC rack directly connected to the PC or in a PLC rack, which is connected to other PLCs in a separate network.
GXDP takes information on PROFIBUS DP slaves from GSD files, which are specific to the respective slave and usually provided by the slave hardware vendor. It generates program code for use in GX IEC Developer (GID).



User Interface

The graphical user interface of GX Configurator-DP assists the user by making the most important functions easily accessible. The user can adapt the user interface to his/her personal requirements by arranging the specific function windows within the application. This placement is stored and reloaded, when the application is started. Therefore the following application window is only an example, indicating the most important components of the user interface.



The main items of the user interface are

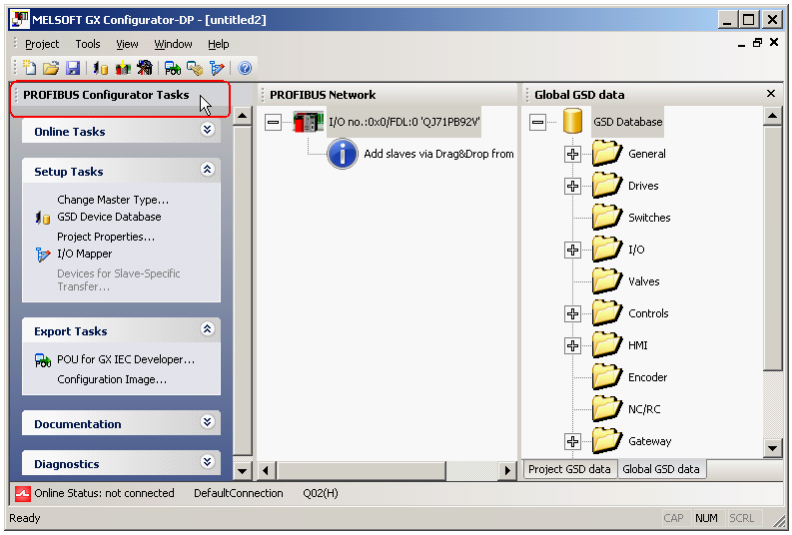
- application window
- main menu
- toolbar
- status bar
- about box

GXDP cannot simultaneously be started multiple times on the same computer. Trying to start GXDP again, while it is already running, brings the existing instance of GXDP in the foreground. The GXDP application can however have several projects open at the same time.

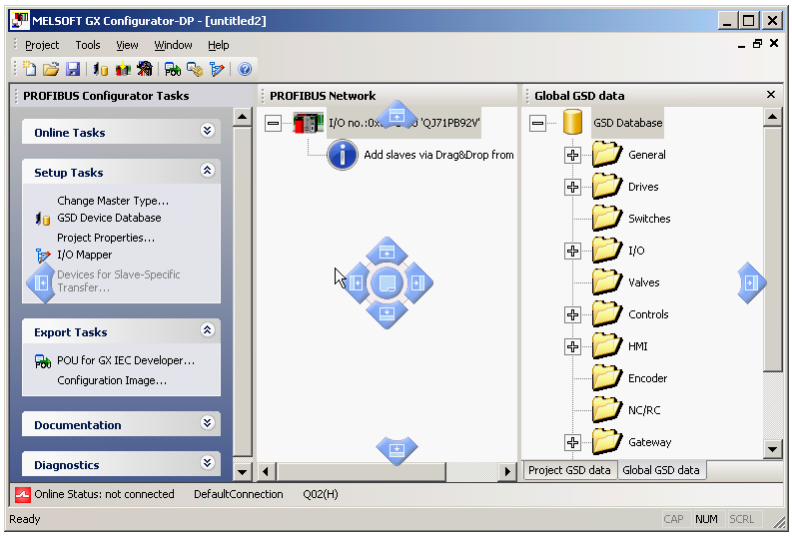
Modifying the User Interface

The different views within the GXDP application window are ‘dock-able’. This means that they can be moved and placed by the user within the application window. The opens views and their position are stored in the registry specific for the project type and loaded, when GXDP is started.
The following steps demonstrate moving the ‘Task Panel’ from its default position and placing it below the project tree.

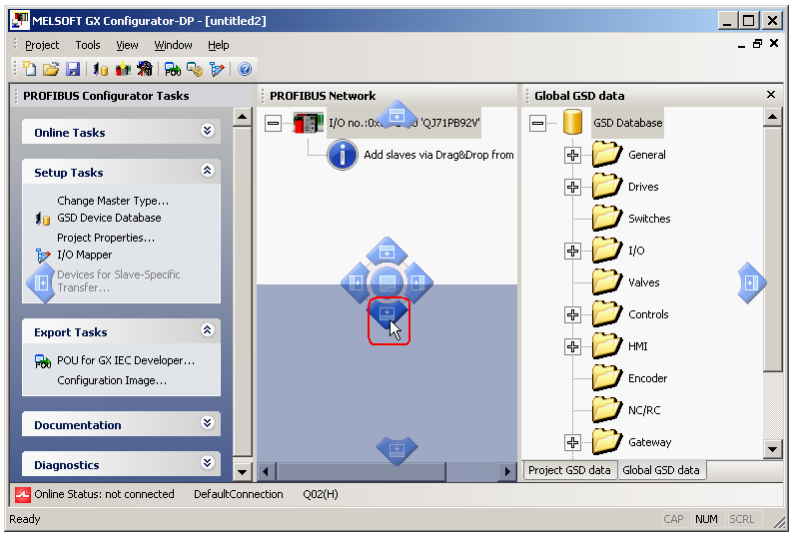
1. place the mouse cursor on the caption of the window, which should be moved, and press the left mouse button



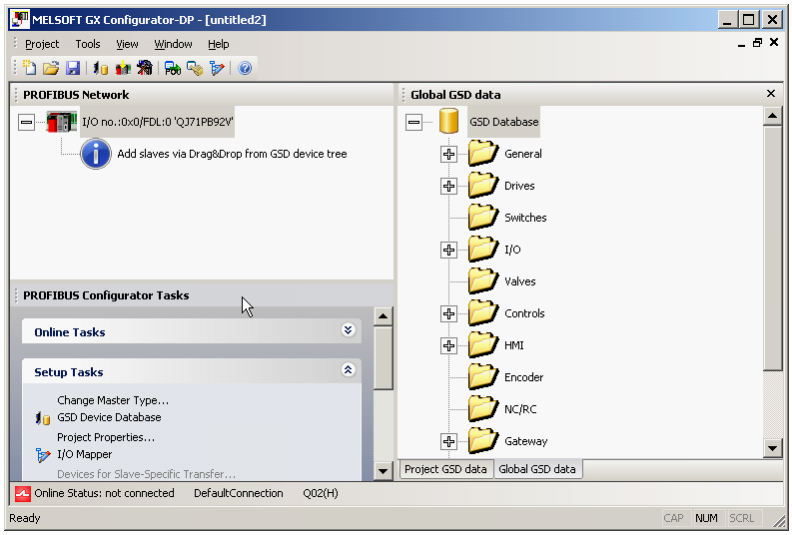
2. move the mouse cursor while keeping the mouse button pressed. This causes the ‘docking pane stickers’ to be displayed. These blue arrows indicate, where the window could be placed



3. move the mouse cursor onto the bottom docking arrow. The area, where the window would be docked, is marked with a blue rectangle. Release the mouse button to place the window at the indicated position

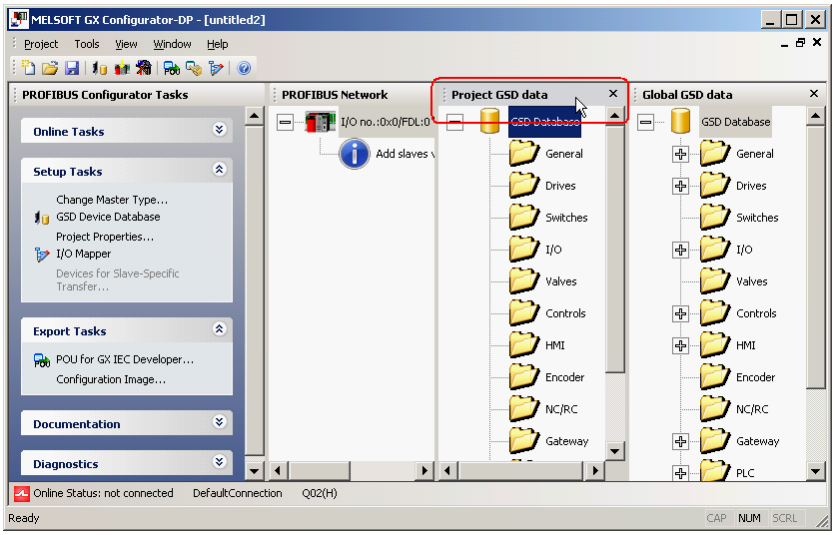


4. the window (here the task panel) is now displayed below the project tree. Both project tree and task panel have been moved to the left edge of the application window, which was previously occupied by the task panel.

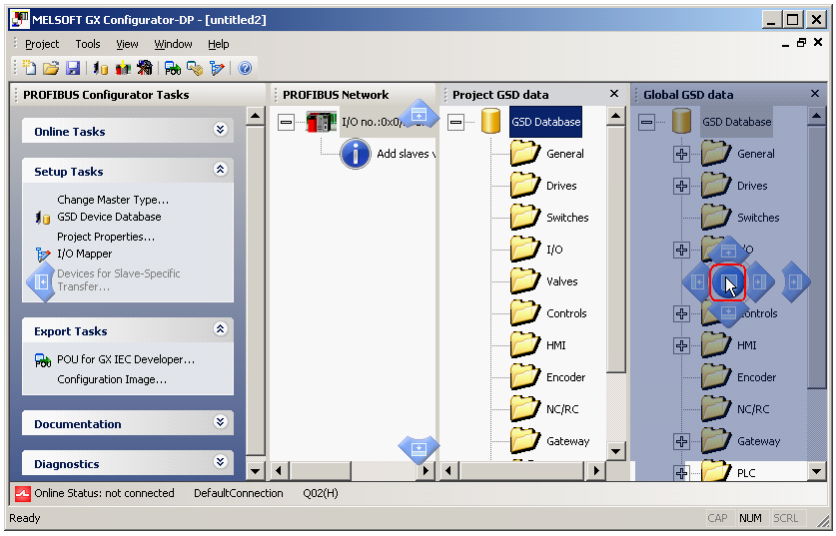


Views can also be combined in a tab window. This saves space in the user interface. The original views are selectable via the tabs. Selecting a tab and moving the mouse cursor allows the separation of tabbed windows.
The following steps demonstrate combining the 'Global GSD data' view with the 'Project GSD data' view and separating the views again.

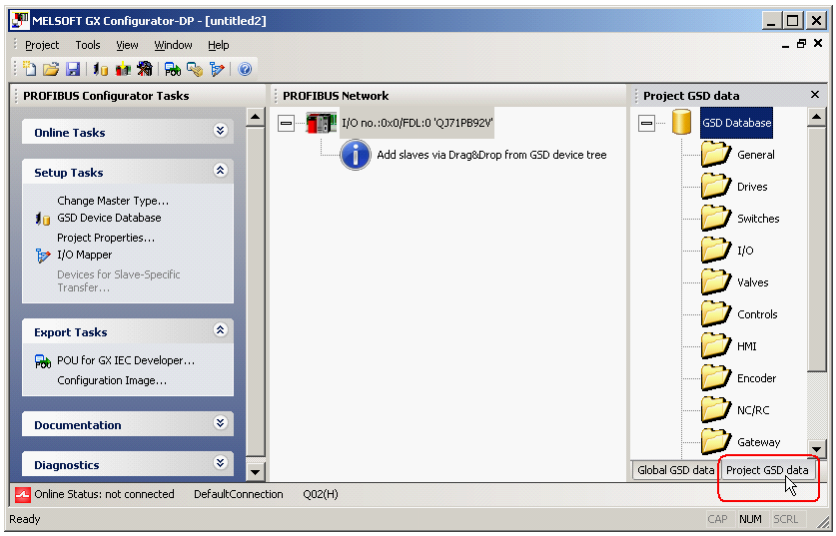
1. place the mouse cursor on the caption of the window, which should be moved, and press the left mouse button



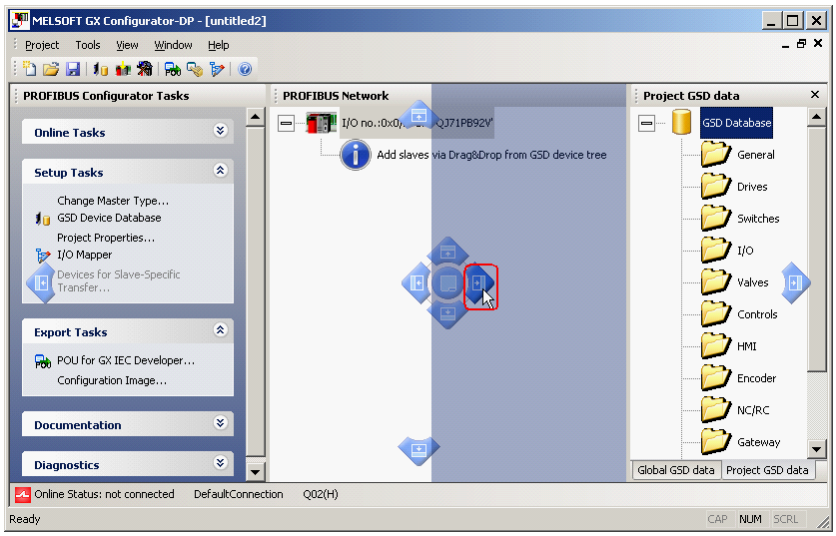
2. move the mouse cursor while keeping the mouse button pressed. This causes the ‘docking pane stickers’ to be displayed. Move the mouse cursor onto the button in the middle, which shows a tabbed window symbol, and release the mouse button



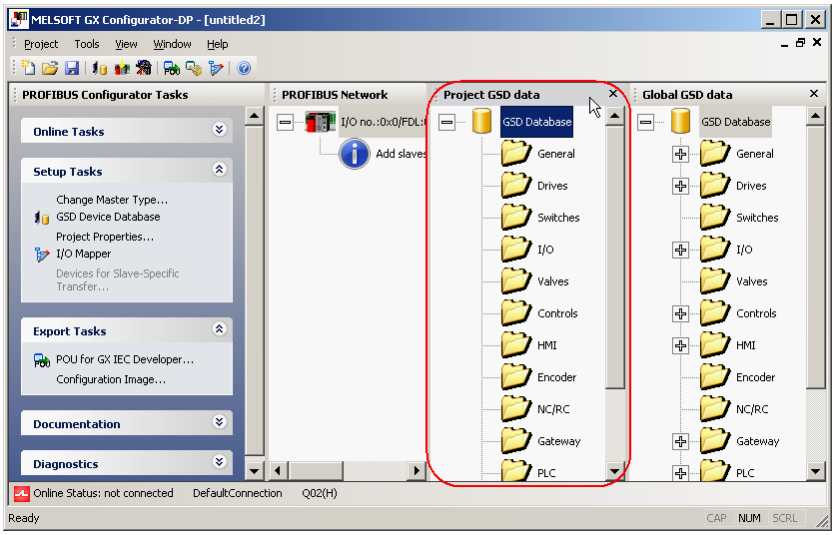
3. an additional tab appears with the caption of the moved window



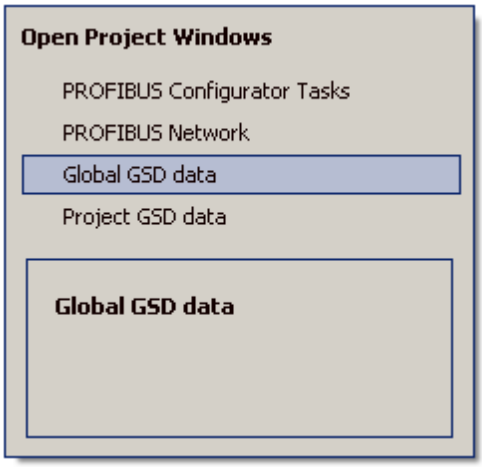
4. to separate the views select the tab and move the mouse cursor while keeping the left mouse button pressed. The area, where the window would be docked, is marked with a blue rectangle.



5. The view is docked at the indicated position, after the mouse button has been released



List of Open Project Windows



The list of open docking windows for the active project can be opened by pressing **Alt+F7**. The user can select a window in this list with the cursor keys while *keeping the **Alt** button pressed*. When the key is released, the window selected in the list gets the focus. This allows to move between the different windows without mouse operations.

3 Installation

Before You Begin

Copyright

Important Notice:

This software is protected by copyright. By opening the distribution disks package you automatically accept terms and conditions of the license agreement.
You are only permitted to make one single copy of the original distribution disks for your own backup and archiving purposes.

Software Purpose

This software is a configuration utility software package which will be used to configure PROFIBUS DP network interface modules of MELSEC System Q, QnA and FX series' PLCs such as:

- PROFIBUS DP master module A(1S)J71PB92D
- PROFIBUS DP master module QJ71PB92D
- PROFIBUS DP V1/V2 master module QJ71PB92V
- PROFIBUS DP V1 master module FX3U-64DP-M
- PROFIBUS DP slave module QJ71PB93D

3.1 System Requirements

To install the GX Configurator-DP software package your computer has to meet the following requirements

Minimum Hardware Requirements

- Pentium II 350 Mhz processor (for Vista: 1 GHz processor)
- 128 MB RAM for Microsoft ® Windows 2000
- 256 MB RAM for Microsoft ® Windows XP
- 1 GB RAM for Microsoft ® Windows Vista
- VGA compatible graphics adapter
- 17"/43 cm diag. VGA monitor
- At least 200 MB free hard disk space
- CD-ROM drive
- interface for communication with the PLC system

Software Requirements

GX Configurator-DP is a 32-bit software that runs on the following operating systems

- Microsoft ® Windows 2000 (Service Pack 2 or later installed)
- Microsoft ® Windows XP Home or Professional Edition
- Microsoft ® Windows Vista Home (or higher)

Note: it is recommended to use Microsoft ® Windows XP

3.2 Software Installation

GX Configurator-DP Setup

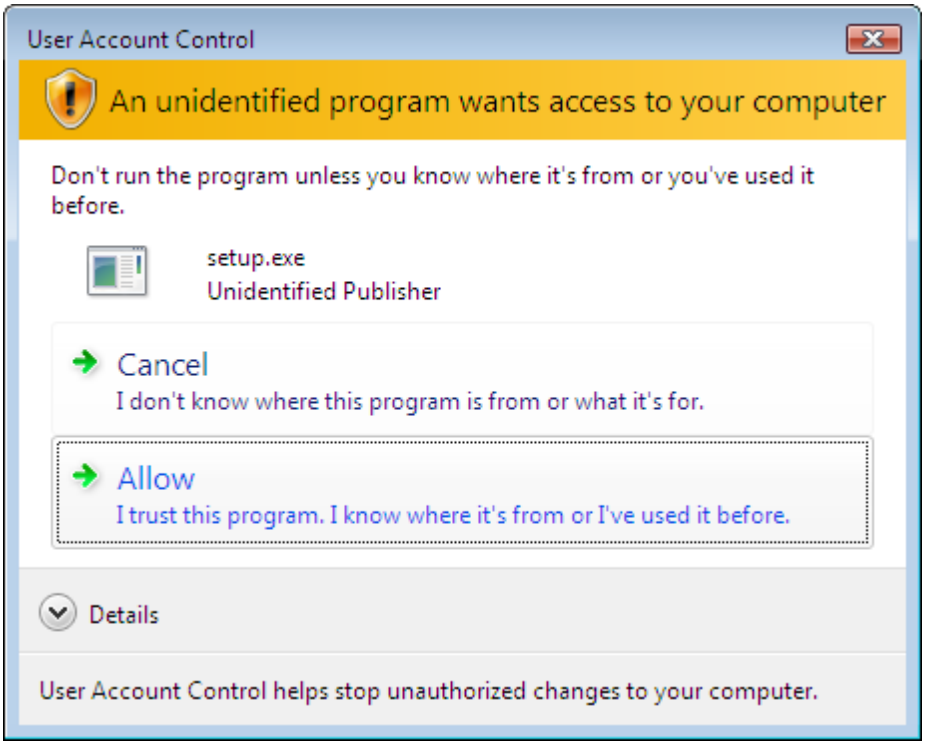
To install the GX Configurator-DP software you need to have Microsoft ® Windows properly installed. You may require administrator privileges when installing the software.
If an older version of GX Configurator-DP is already installed, uninstall it first. After the de-installation

please start the installation of the new version. If you want to keep the older version of GX Configurator-DP, please select a different directory for the new version. A de-installation of the older version, after the newer version has been installed, will also damage the newer version. Therefore please reinstall the new version after uninstalling both the older and the newer GX Configurator-DP versions, if you encounter problems. Please stop all other running software before the installation and do not run other installation programs during the installation of GX Configurator-DP.

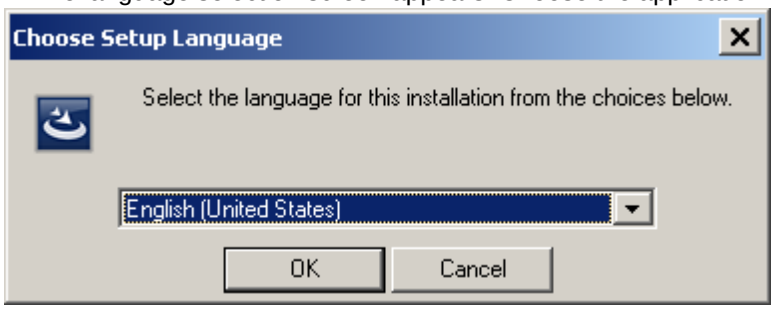
Installing GX Configurator-DP/GX Configurator-ST

To start the installation, proceed as follows:

1. Insert the installation CD-ROM into your CD-ROM drive.
2. If you have 'Autorun' enabled for the drive, the setup should start automatically.
3. If the setup is not started automatically, please locate the 'setup.exe' file and execute it.
4. If you see the following message on a Windows ® Vista operating system, please select 'Allow'

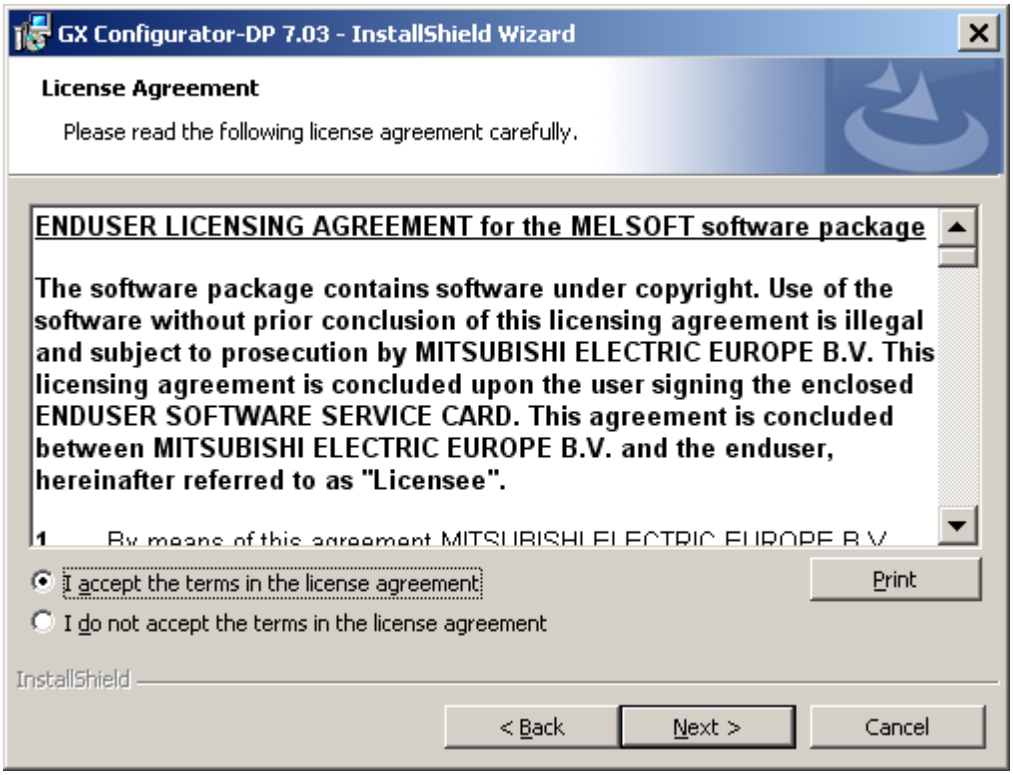


5. The language selection screen appears. Choose the application language.

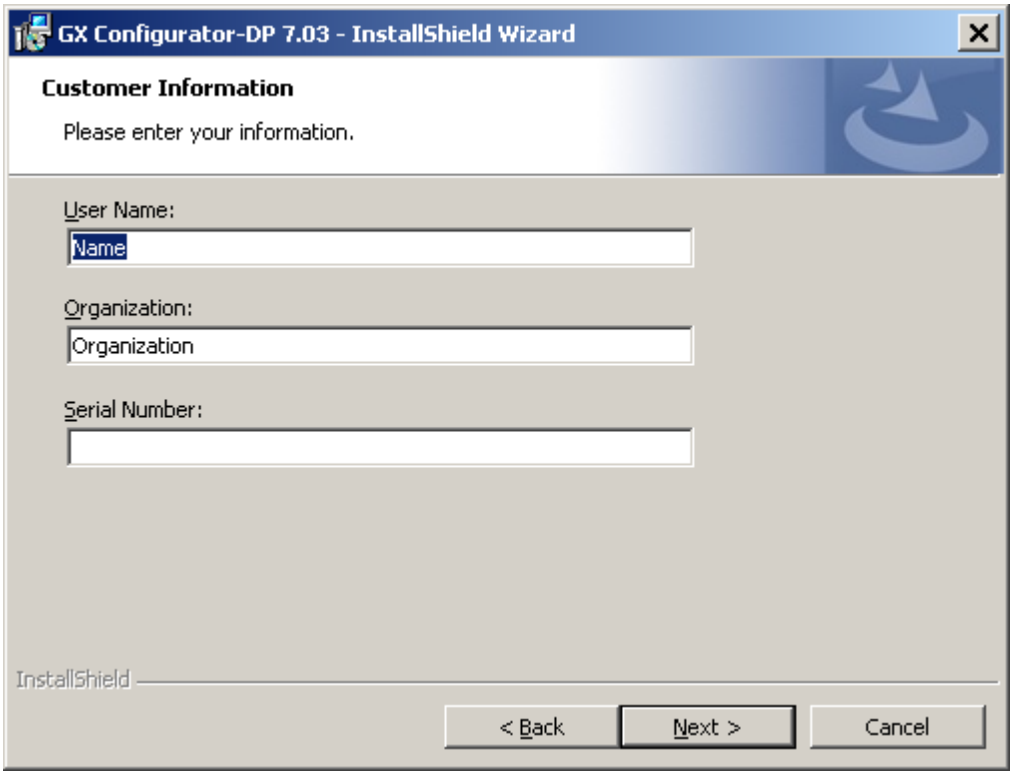


6. Follow the given instructions that guide you through the installation procedure. Continue with **Next**.

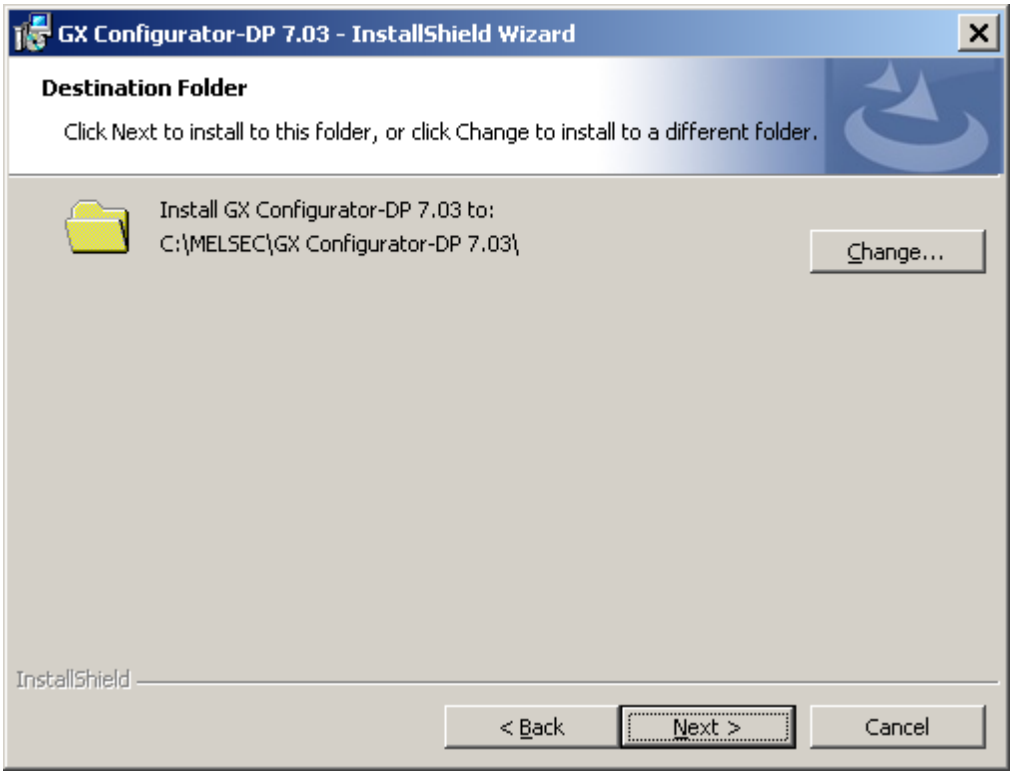
7. The licensing agreement is displayed. Please read these terms carefully. If you accept the license agreement, you can proceed with the installation by clicking **Next**. Otherwise the installation is aborted.



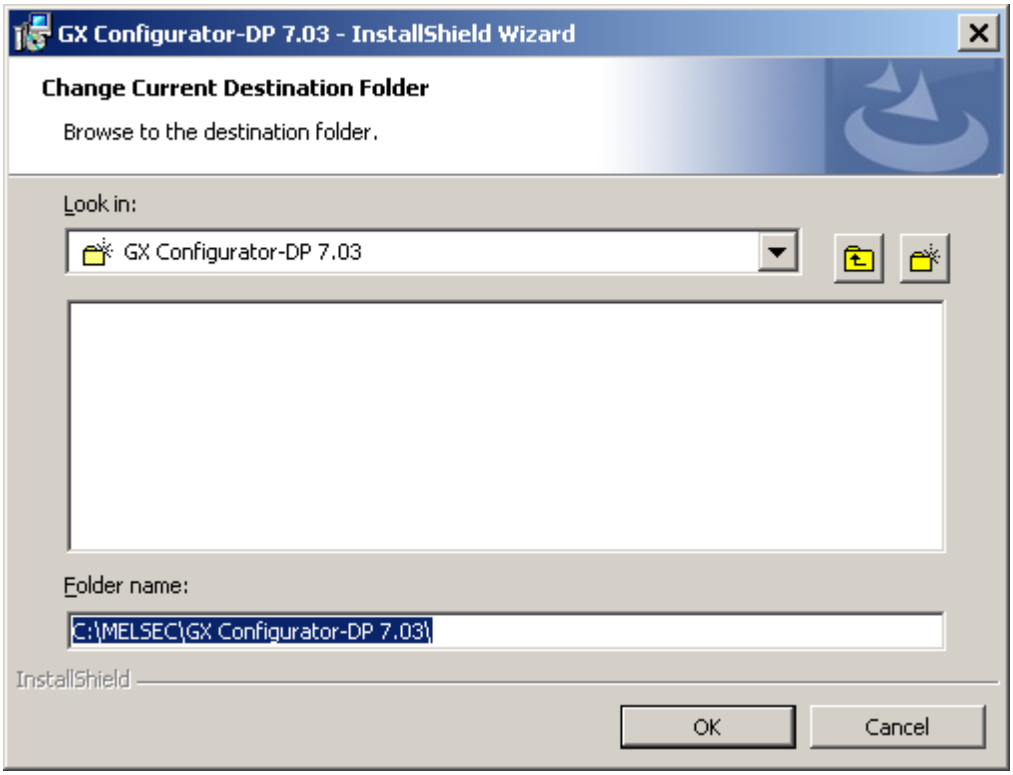
8. Enter your name, organization and the product serial number. Click on **Next** to proceed.



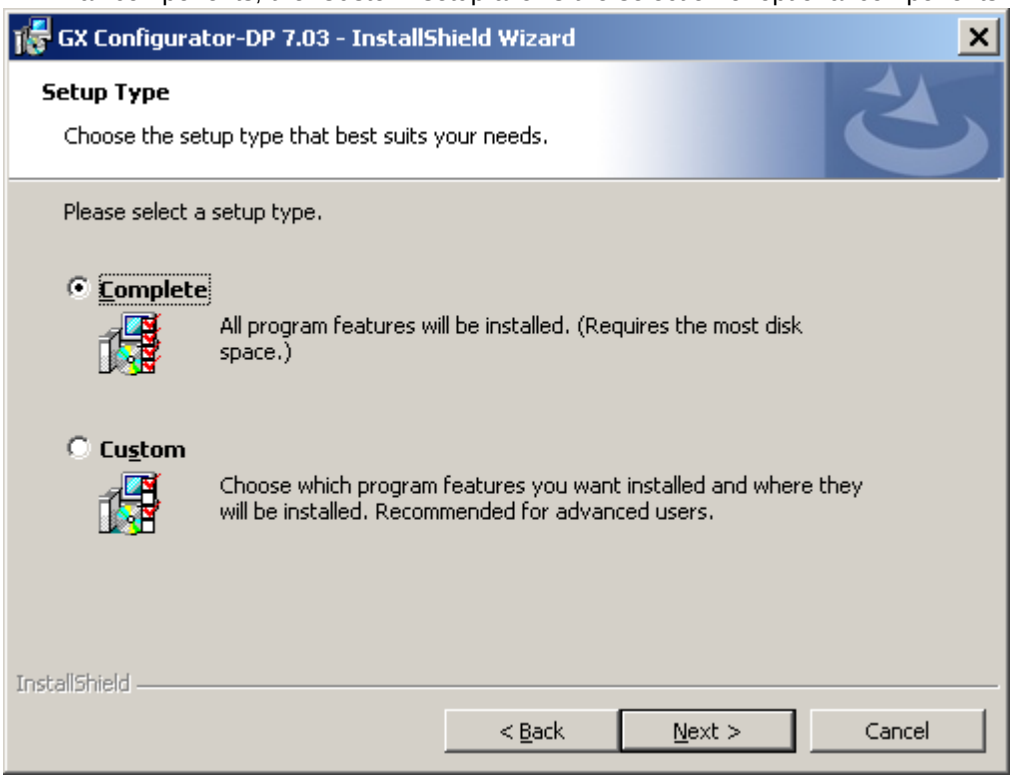
9. Enter the destination folder where you want the GX Configurator-DP software to be installed (default **C:\Melsec\GX Configurator-DP 7.03**). If you agree with the default setting, just click on **Next**.



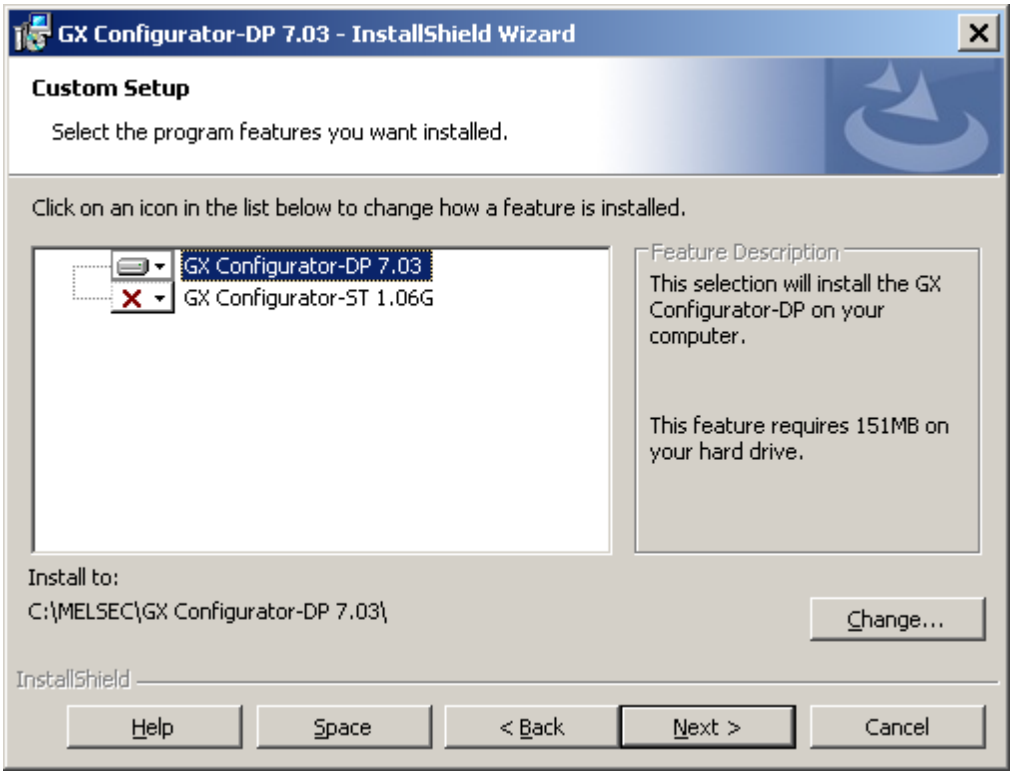
10. If you want to install to a different directory, click on **Change** and select the installation directory.



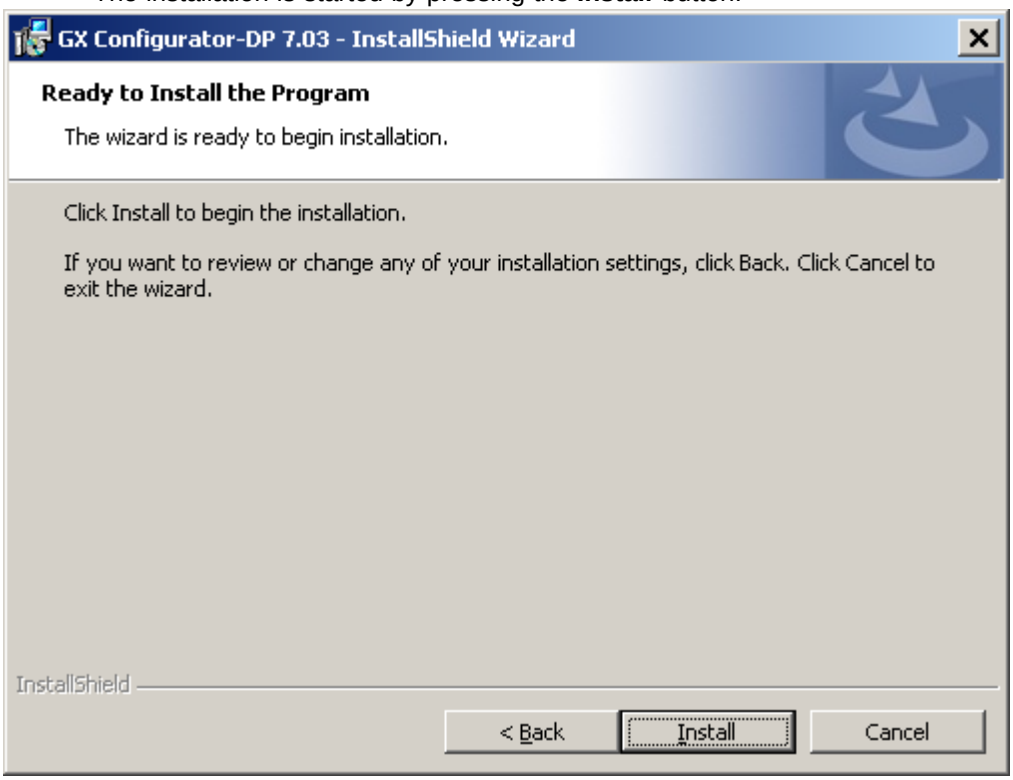
11. You can choose between a 'Complete' and a 'Custom' setup. The 'Complete' setup installs all components, the 'Custom' setup allows the selection of optional components.



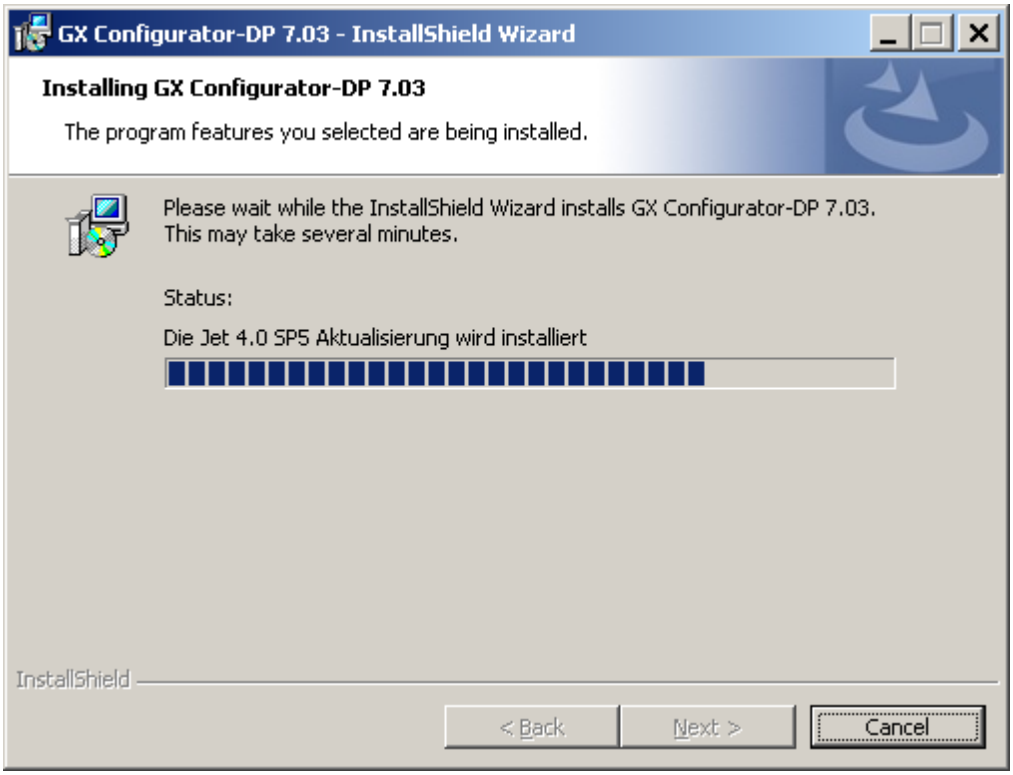
12. If 'Custom' setup has been selected in the previous step, the components are listed. By selecting the icon to the left of a component name, you can select respectively deselect the installation of a component.



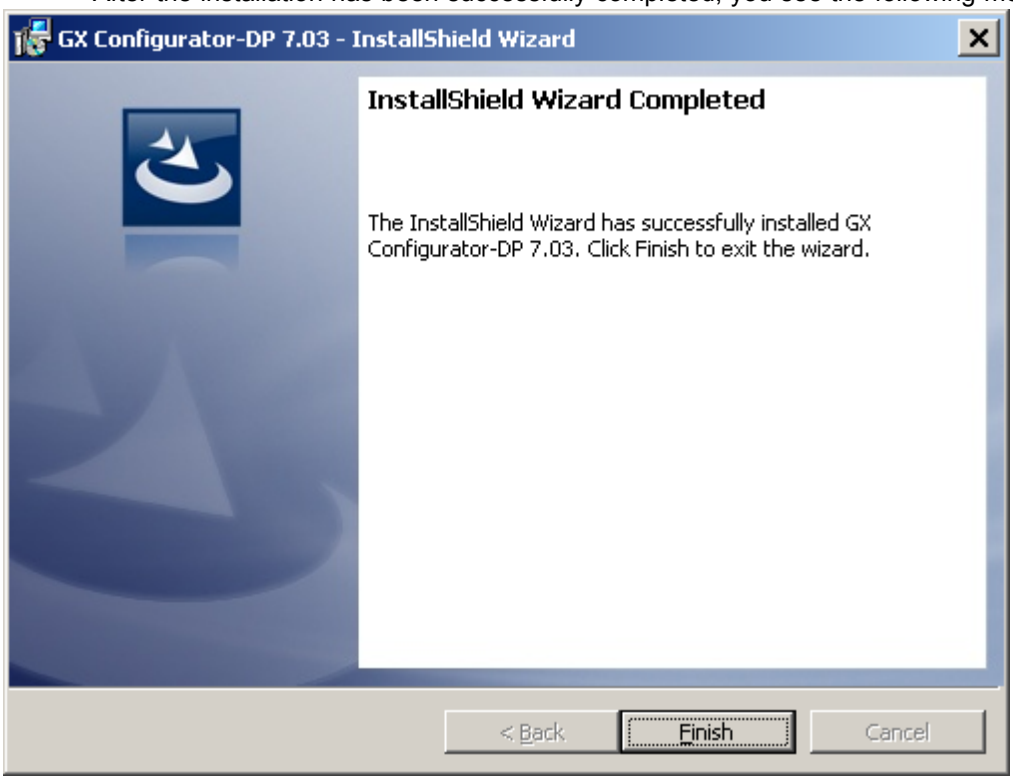
13. The installation is started by pressing the **Install** button.



14. After pressing the 'Install' button the installation is started. Progress bars will inform you about the setup status.



15. After the installation has been successfully completed, you see the following message



Button Functions

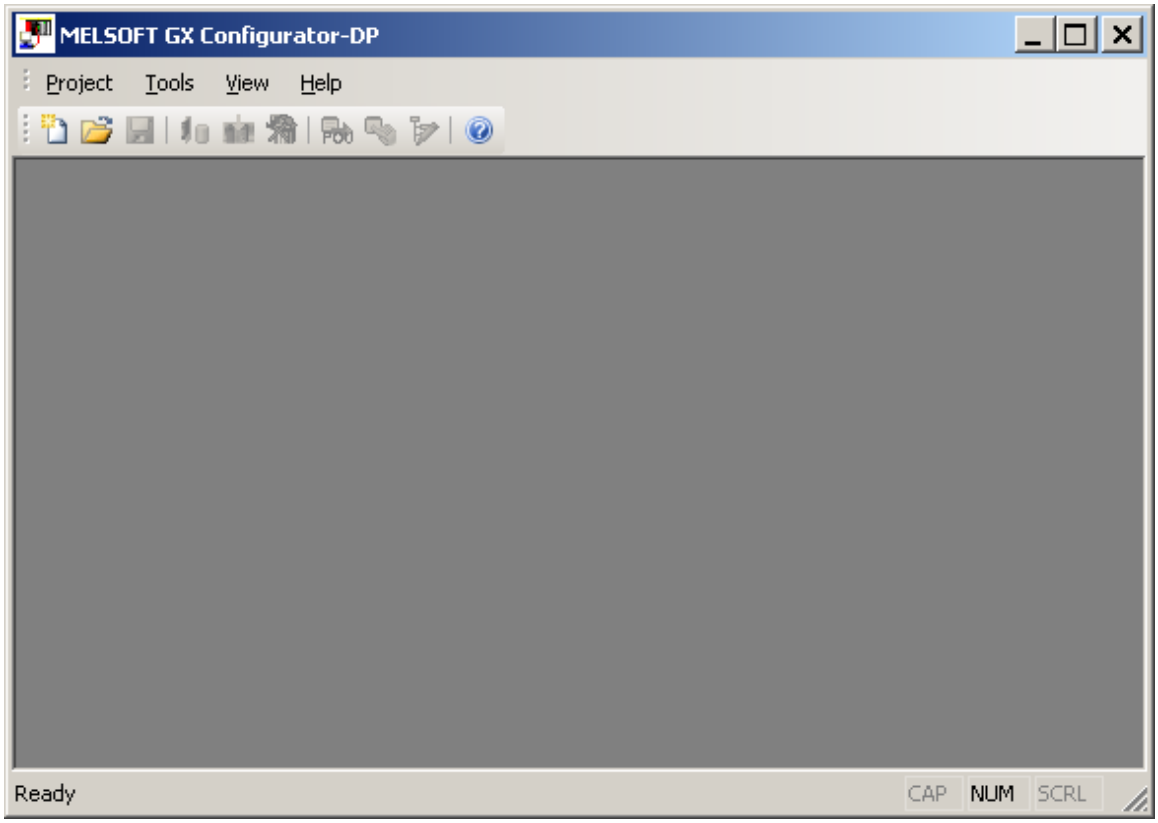
With the **Next** button you will leave the current menu and enter the next menu.
With the **Back** button you go to the previous window.
Cancel button ends the installation procedure.

3.2.1 Getting Started

Below are the main steps, which are required to configure a PROFIBUS DP master module. The QJ71PB92V module is used as an example.

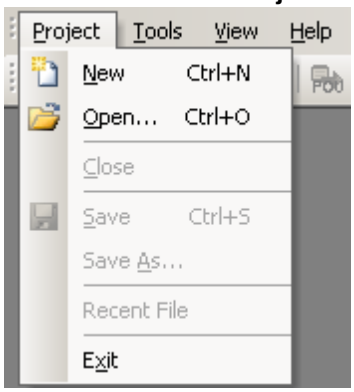
Start GX Configurator DP

1. Start GX Configurator-DP via the shortcut in the Programs menu. The default is **Programs -> MELSOFT Application -> GX Configurator-DP 7.03 -> GX Configurator DP 7.03**.

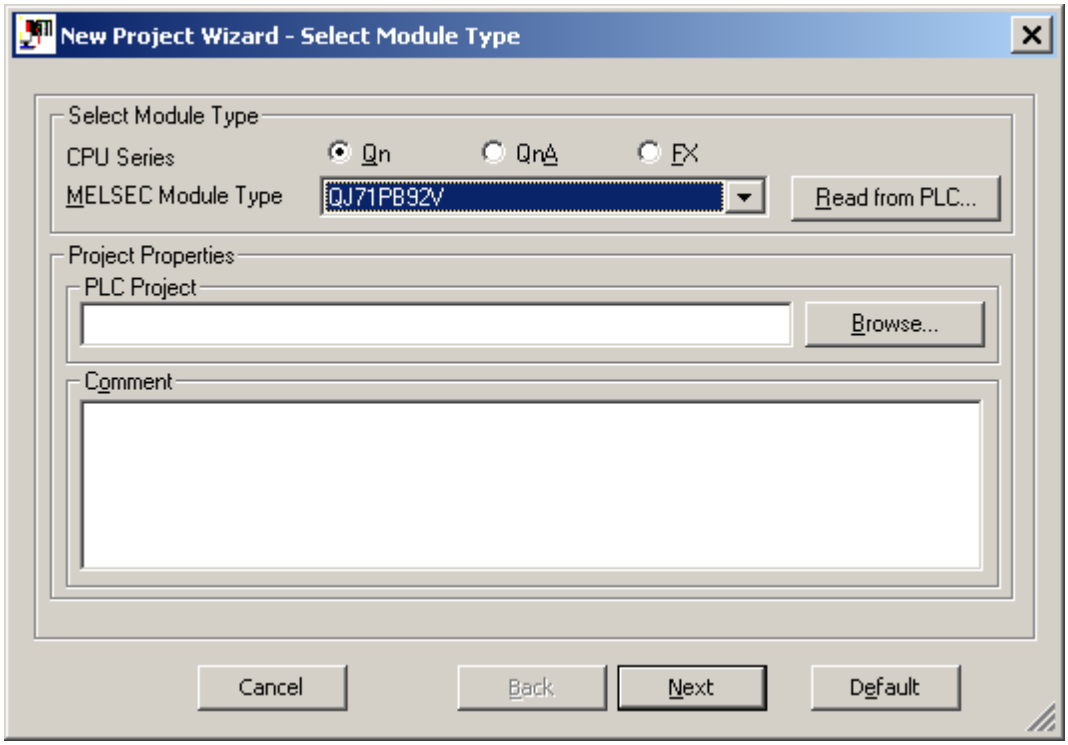


Start a New Project

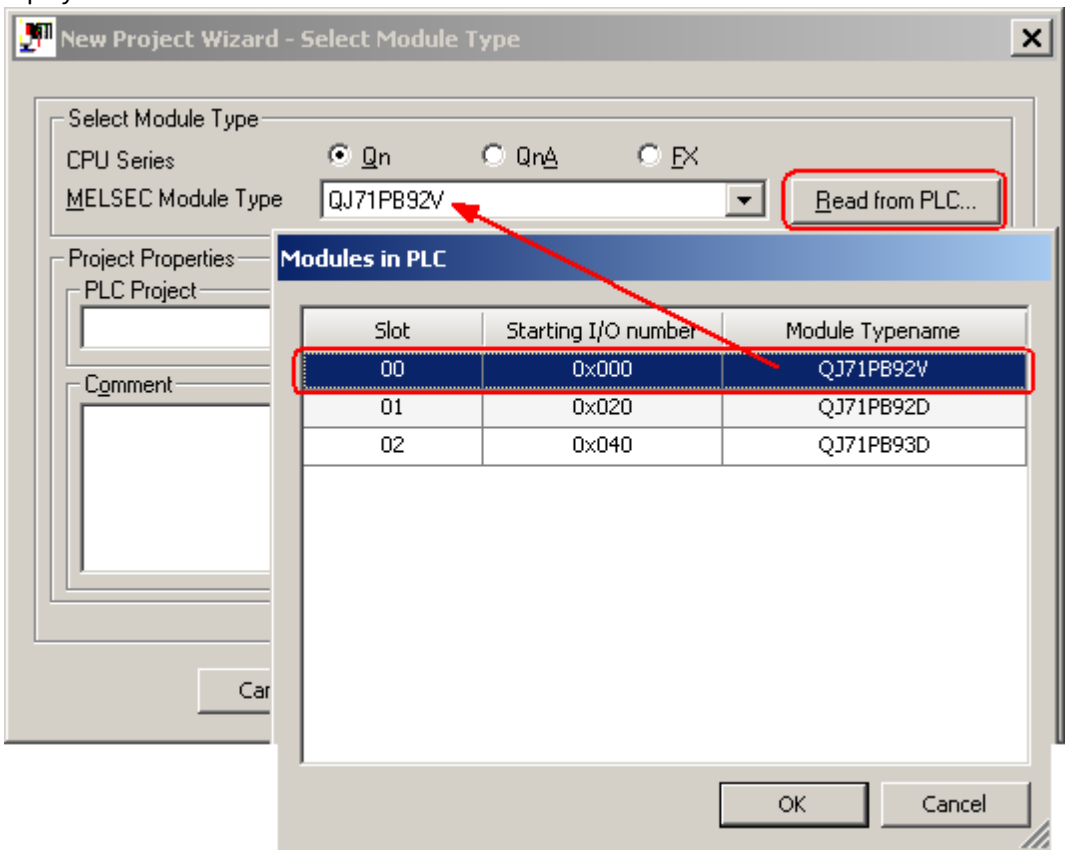
1. In the main menu **Project** select **New** to open a new project file.



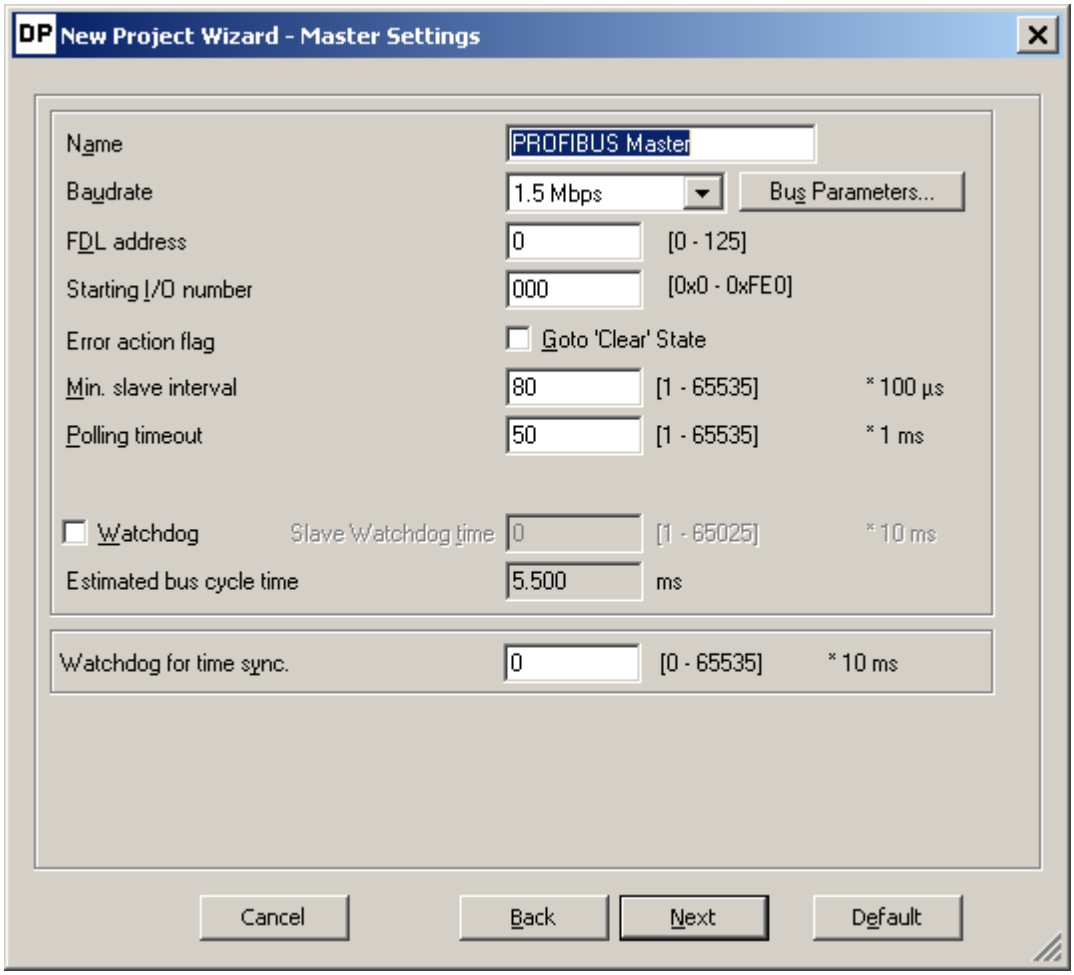
2. select the PROFIBUS module, which should be configured



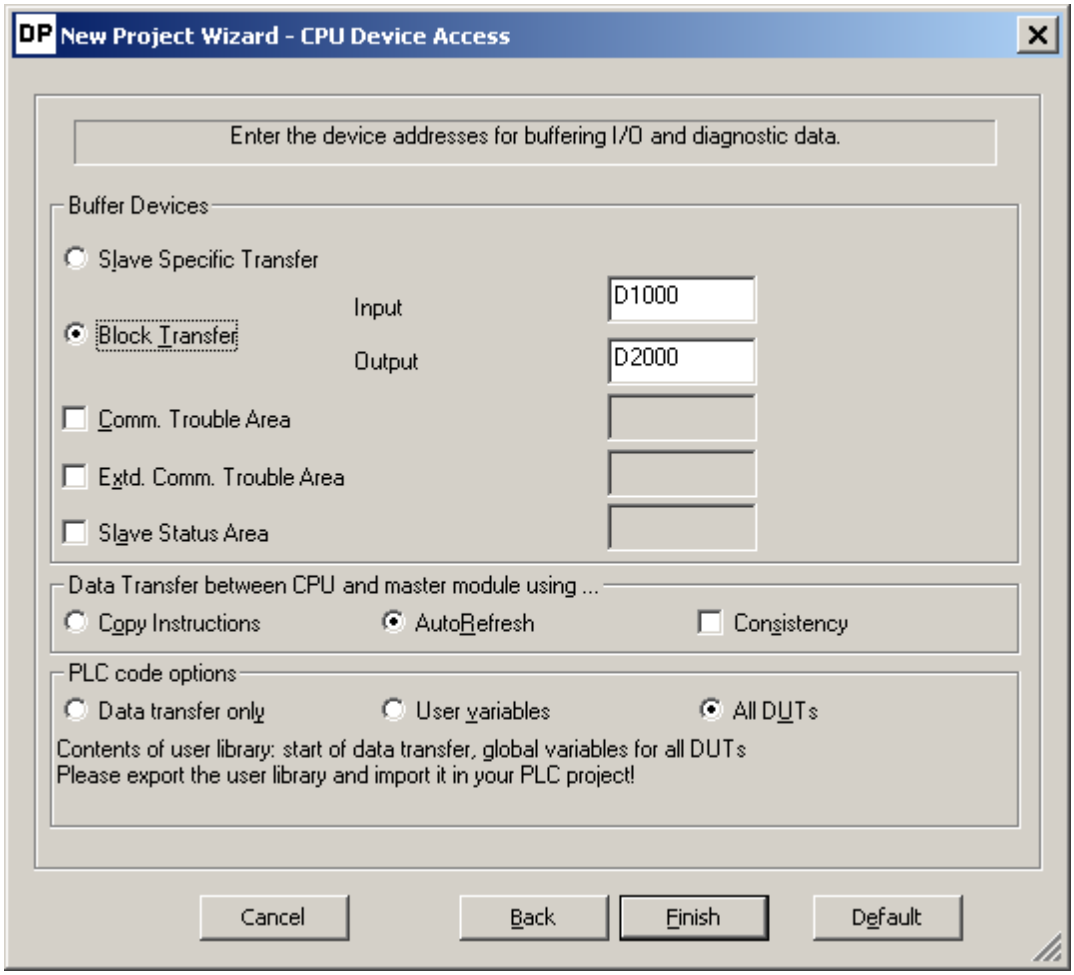
If the module to be configured exists already in a connected PLC, you can select the module online by pressing 'Read from PLC'. After configuring the connection to the PLC, the list of modules is displayed



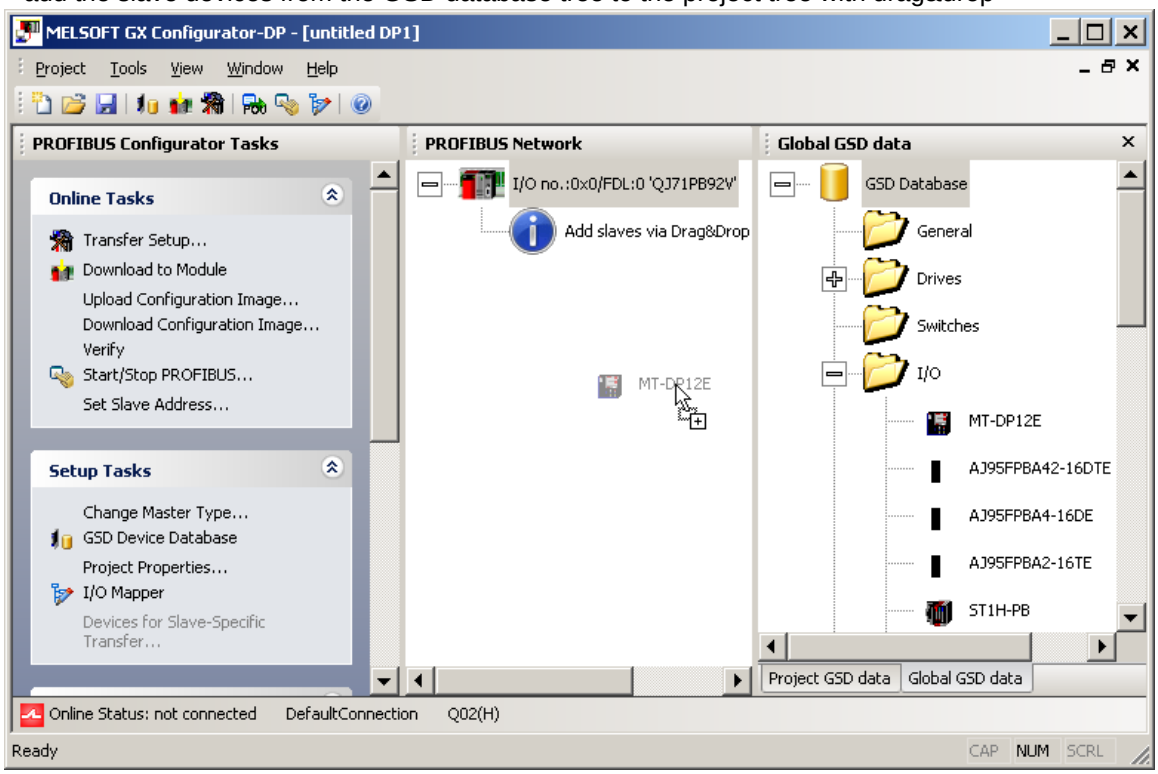
3. enter master settings, e.g. starting I/O number and select the baud rate of the PROFIBUS network



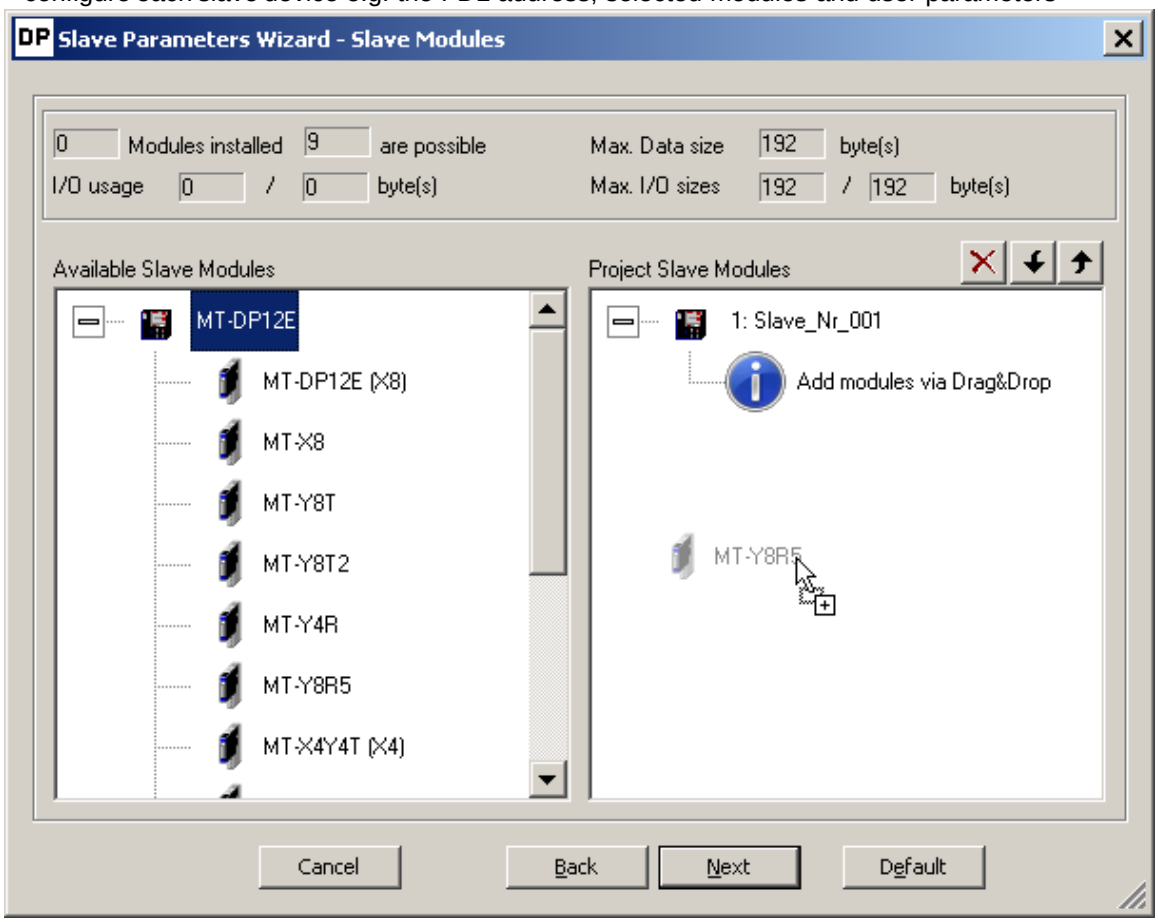
4. enter the buffer device addresses in the CPU for the data exchanged with the PROFIBUS module



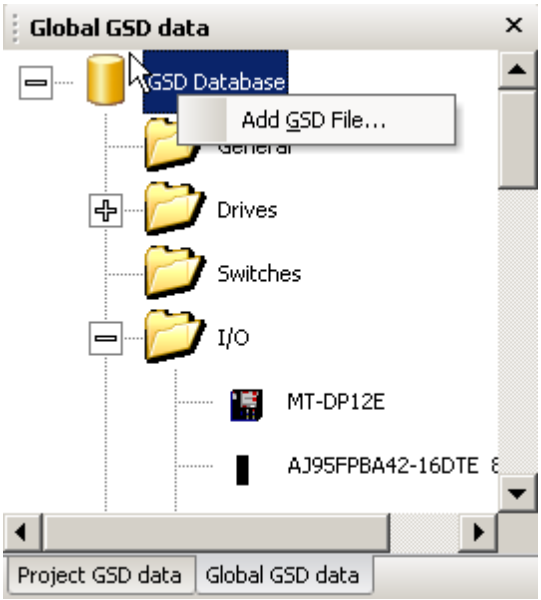
5. add the slave devices from the GSD database tree to the project tree with drag&drop



6. configure each slave device e.g. the FDL address, selected modules and user parameters

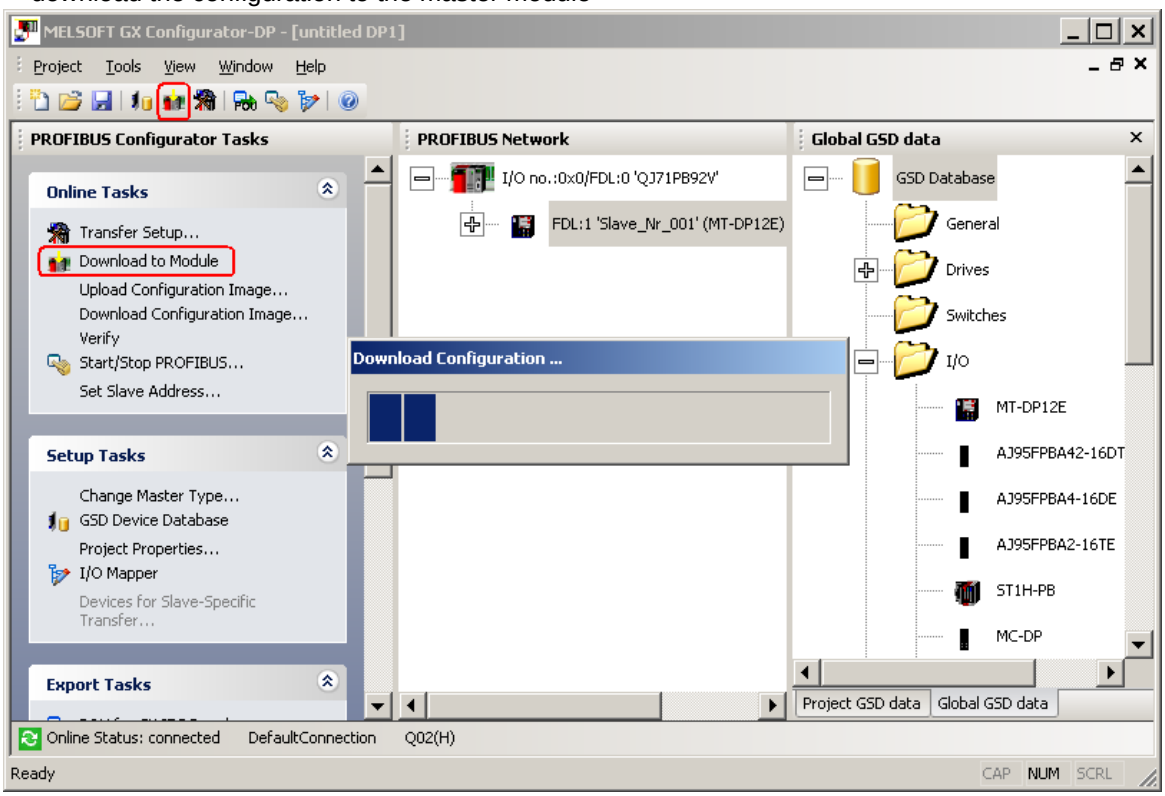


7. if the slave does not yet exist in the GSD database, add the GSD file of the slave to the global GSD database. Select the 'Global GSD data' tree and select the item 'Add Slave' from its context menu. In the file dialog select the GSD file. After the GSD file has been parsed, the slave type is added to the database and a new node is added to the tree.

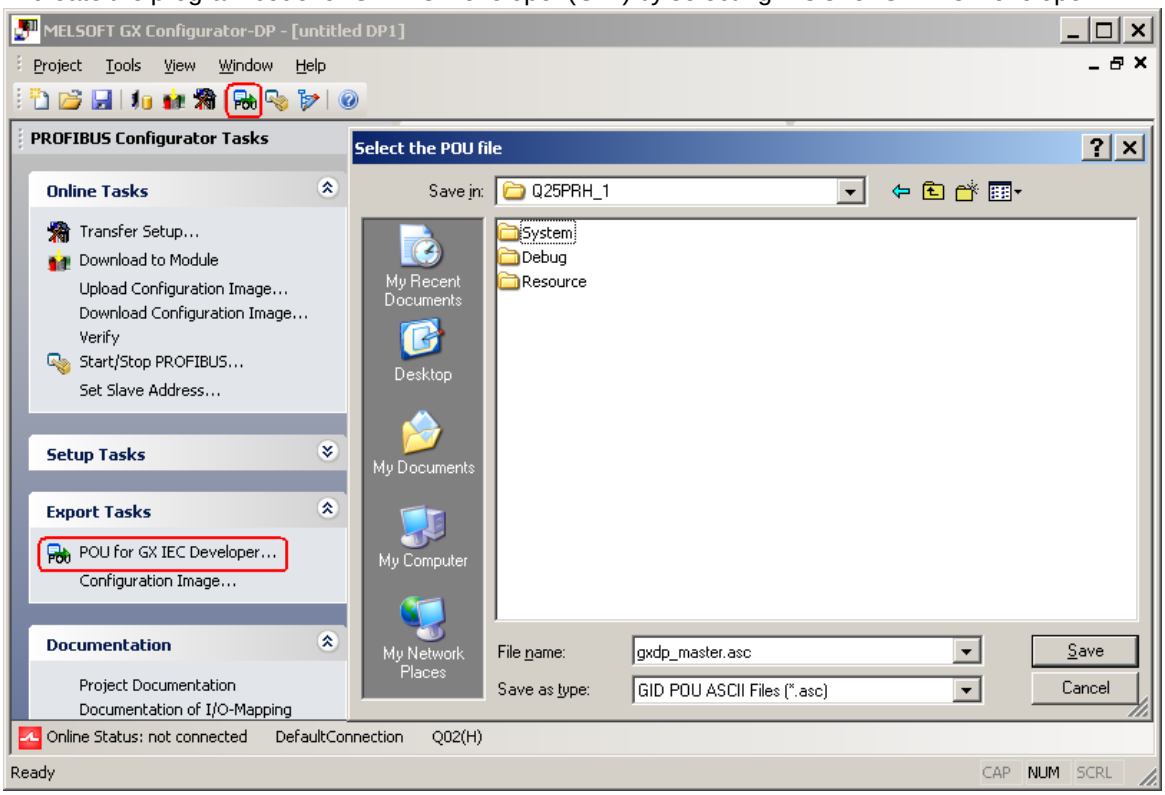


8. select 'Download to module' in the task panel or press the corresponding button in the toolbar to

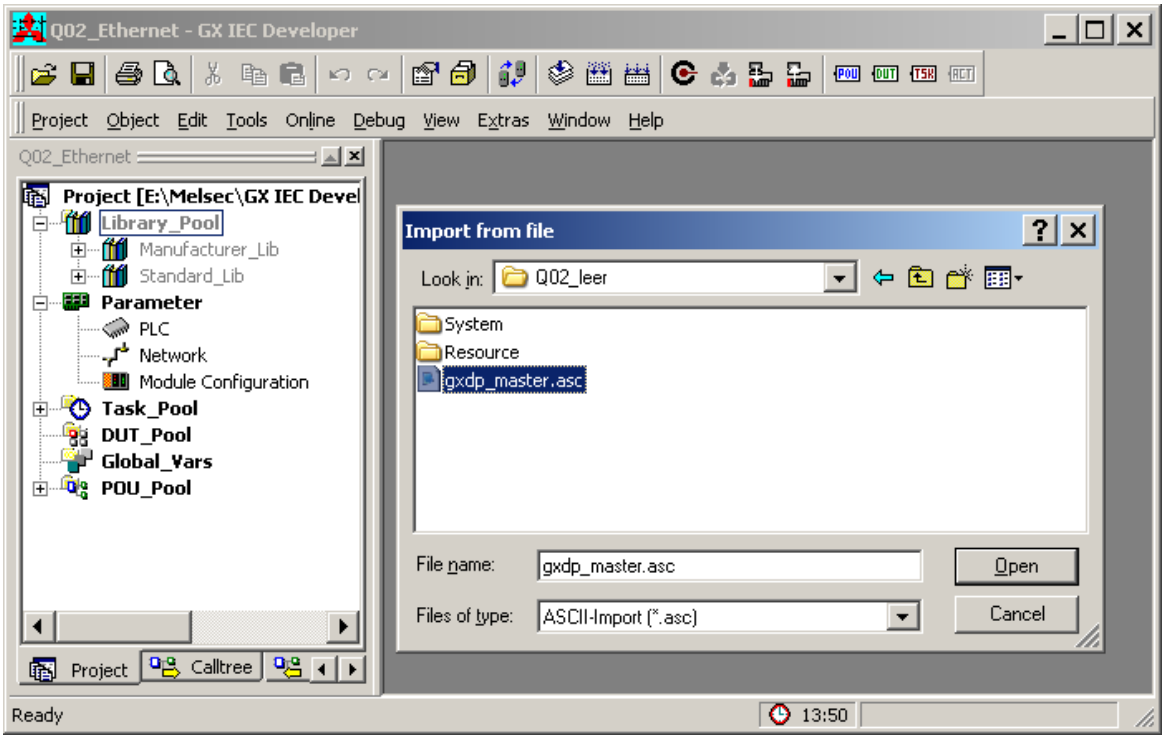
download the configuration to the master module



9. create the program code for GX IEC Developer (GID) by selecting 'POU for GX IEC Developer'



10. import the POU in the GID project



4 Main Menu

Starting GX Configurator-DP

Select GX Configurator-DP from the Windows Start menu. The default shortcut is

Start -> Programme -> MELSOFT Anwendungen -> GX Configurator-DP 7.03 -> GX Configurator-DP 7.03

Main menu

The main menu offers the following pull-down menus. The menu item **Window** is only available, if a project is open.

if no project is open 

if a project is open 

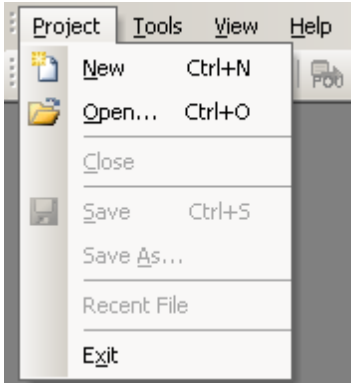
Main Menu Items	Description
Project	menu for creating, opening and saving project files
Tools	menu for external tools
View	menu for configuration of the application
Window	menu for listing the open project windows
Help	menu for help and application information

The items in the open pull-down menus can be reached via mouse or keyboard. The underlined character will start the function. In addition there are some menu items which may be started using predefined hot keys.

Shortcuts

Shortcut	Function
Ctrl + 'N'	create new project
Ctrl + 'O'	open existing project
Ctrl + 'S'	save modified projects
Alt + F7	show list of open project windows

4.1 Project Menu

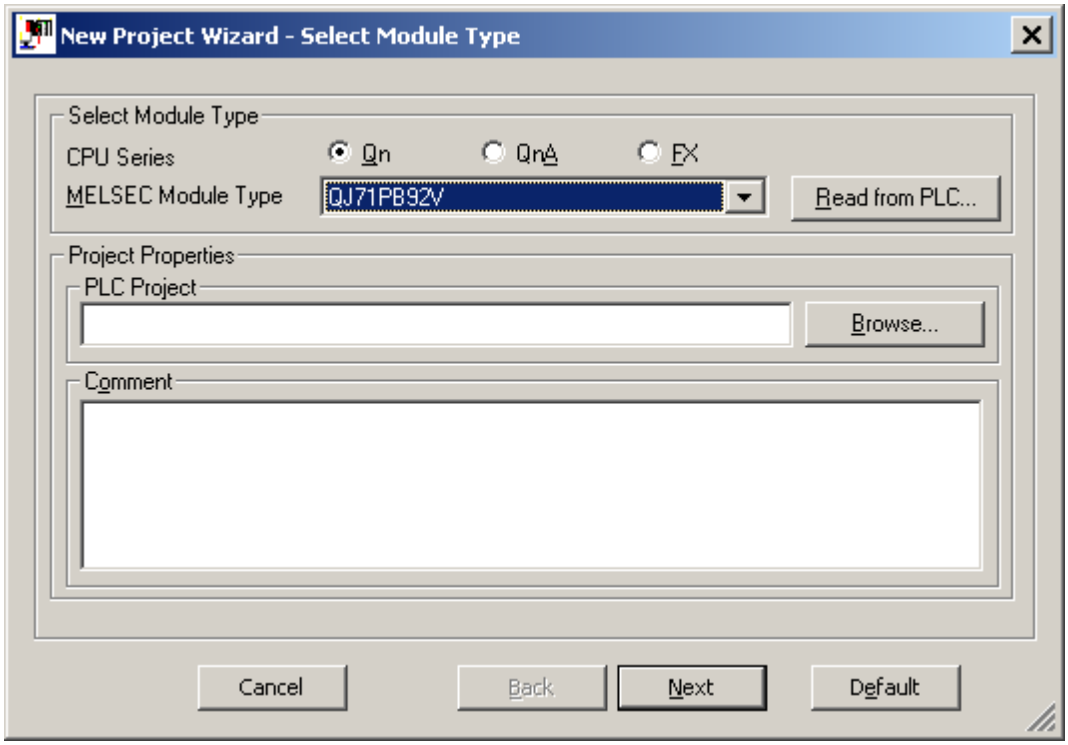


After having started the GX Configurator-DP software, this is the first menu to work with. With the help of this menu you can create a new or load an existing project.
The menu offers the following commands:

Command	Description
New	Starts a new project
Open	Opens an existing project
Close	Closes the active project
Save	Saves the active modified project
Save As	Saves the active project under a new name
Recent Files	Opens one of the latest used projects
Exit	Ends the application

Command New

The menu command **New** is used to create a new project.



Name	Description	Choices / Setting range	Default
CPU Series	selection of CPU series, in which the PROFIBUS module is used	Qn, QnA, FX	Qn
MELSEC Module Type	module types supported by the selected CPU series	Qn: QJ71PB92V QJ71PB92D QJ71PB93D QnA: A(1S)J71B92D FX: FX3U-64DP-M	QJ71PB92V
Read from PLC	reads the list of modules from the connected PLC and displays them in a list, so the user can select module type and head address		-
PLC Project	select the project file of the corresponding GD/GID project. The project directory is used to locate the image file for autorefresh parameter settings (iparam.wpa) in the 'Resource' subdirectory of the GD/GID project. This file is updated by GXDP, if the 'Autorefresh'-option has been		-

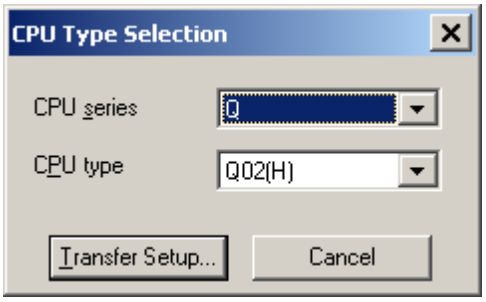
Name	Description	Choices / Setting range	Default
	selected		
Browse	opens the file dialog to select the GD/ GID project file	max. 255 characters	-
Comment	an optional comment text of max. 255 characters length, which describes the project	max. 255 characters	-
Cancel	Close dialog and discard changes		-
Next	proceeds to next wizard page		Default button
Default	sets CPU series and module type to their default settings, clears PLC project path and comment field		

MELSEC Module Type: select the type of module for the project

The following table shows the supported project types and marks the types included in the selection list depending on the type of PLC, which has been selected.

Module Type	Qn	QnA	FX
A(1S)J71PB92D (PROFIBUS DP V0 Master)		x	
QJ71PB92D (PROFIBUS DP V0 Master)	x		
QJ71PB92V (PROFIBUS DP V1/V2 Master)	x		
FX3U-64DP-M (PROFIBUS DP V1 Master)			x
QJ71PB93D	x		

Read from PLC: when this button is pressed, the user must first select the type of the PLC CPU, in which the PROFIBUS module is located.



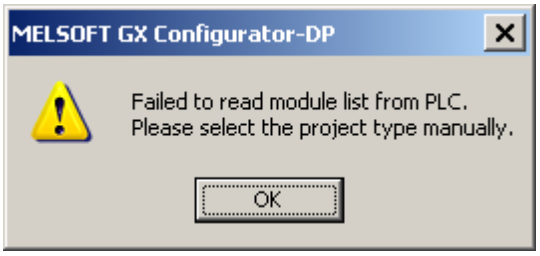
The entries in the ‘CPU series’ list depend on the CPU series selected in the ‘Select Module Type’ dialog, e.g. if ‘Qn’ has been selected, the ‘CPU Series’ list contains the entries

- Qn
- QnPH
- QnPRH

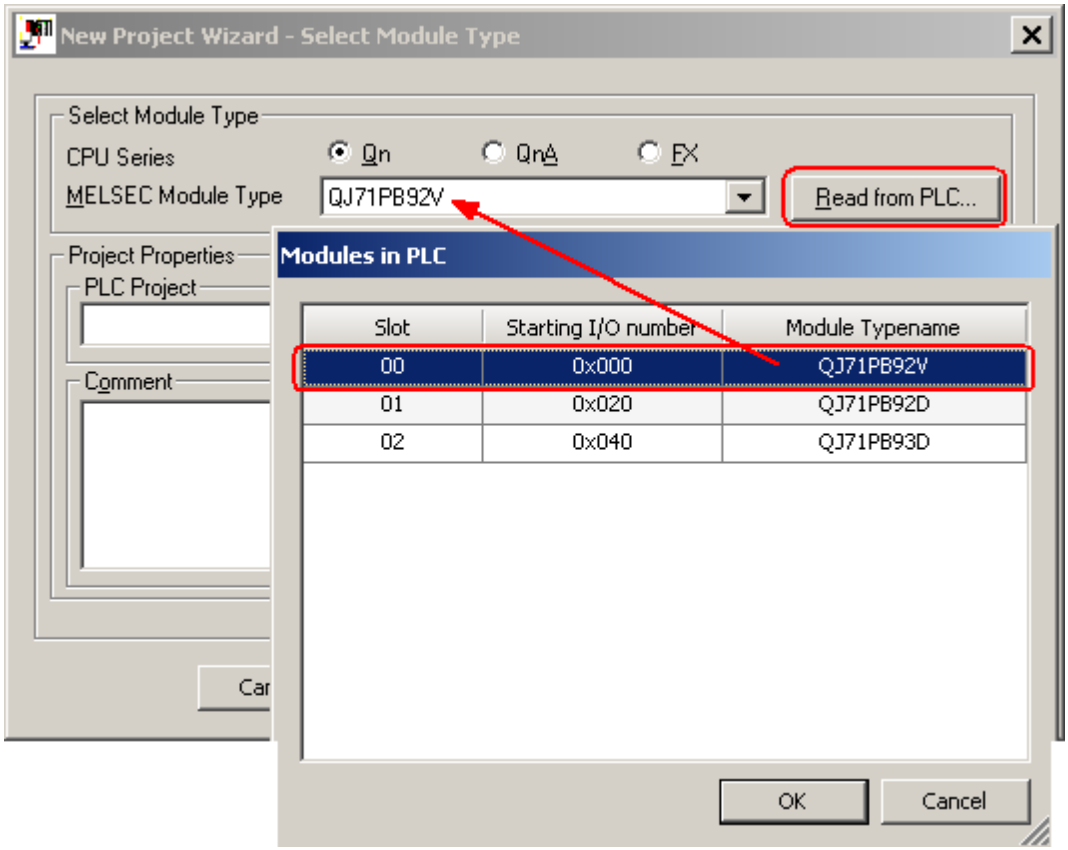
The list ‘CPU type’ contains the CPU types of the selected series. Pressing the button ‘Transfer Setup’ in the dialog ‘CPU Type Selection’ opens the transfer setup dialog. When this dialog is closed by pressing ‘OK’, the latest transfer settings are always stored in the same file in the GXDP installation directory. These settings are used as default for the next new project, if the CPU series stays the same. If the CPU series is changed, e.g. by first creating a QJ71PB92V project and then a project for the FX3U-64DP-M, the transfer setup is converted to match the new CPU series.

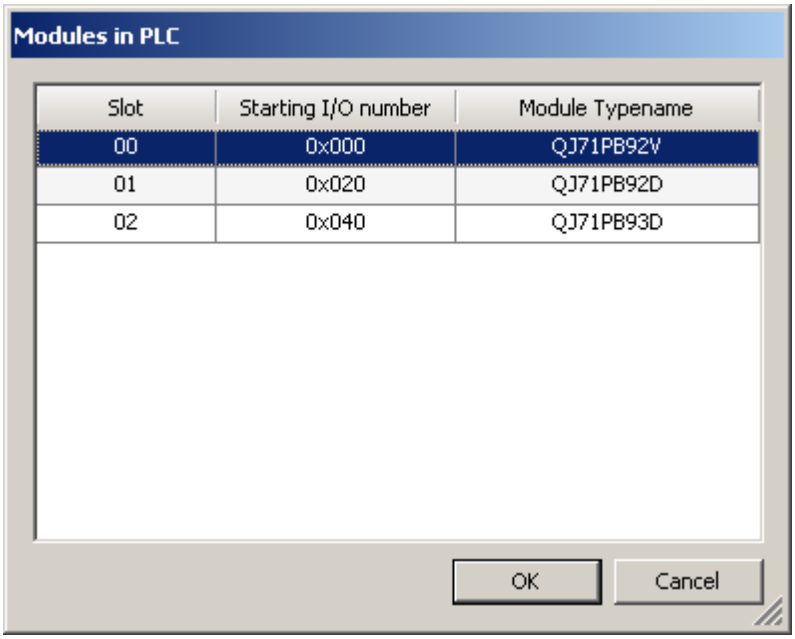
After this the transfer setup editor is opened, so the user can adjust the settings of the PLC connection. For a detailed description of the transfer setup dialogs see the section ‘Transfer Setup’.

After leaving the transfer setup editor, a connection to the PLC is attempted. If the connection fails, an error message is displayed.



If the connection can be established, the list of modules in the PLC rack is displayed.



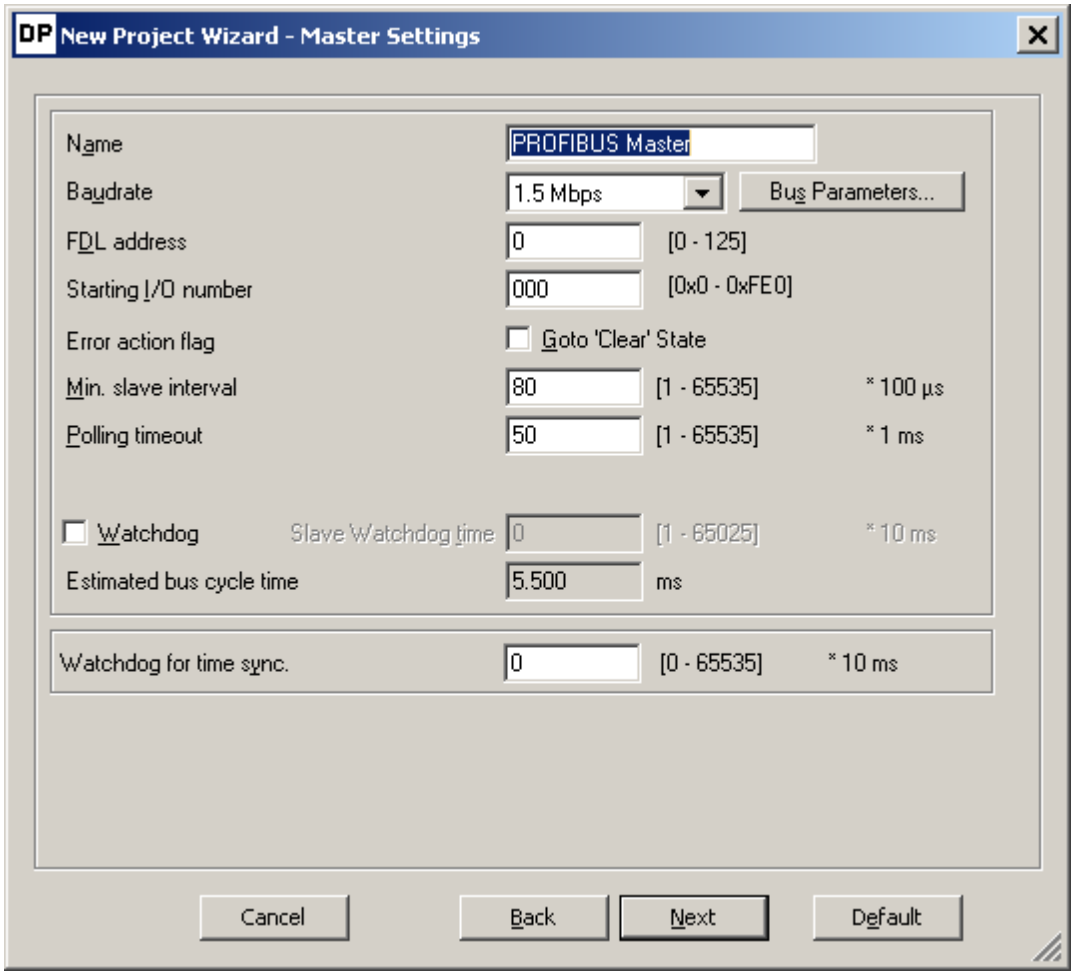


Name	Description	Choices / Setting range	Default
PLC Rack	**Column** / **Contents** Slot: 0-based index of the PLC slot Starting I/O number: offset of the module-specific X/Y devices (empty for FX) Module Type name: identifier of module type retrieved from GXDP product database		
OK	Close dialog and save selected module type and starting I/O number		Default button
Cancel	Close dialog and discard selection		-

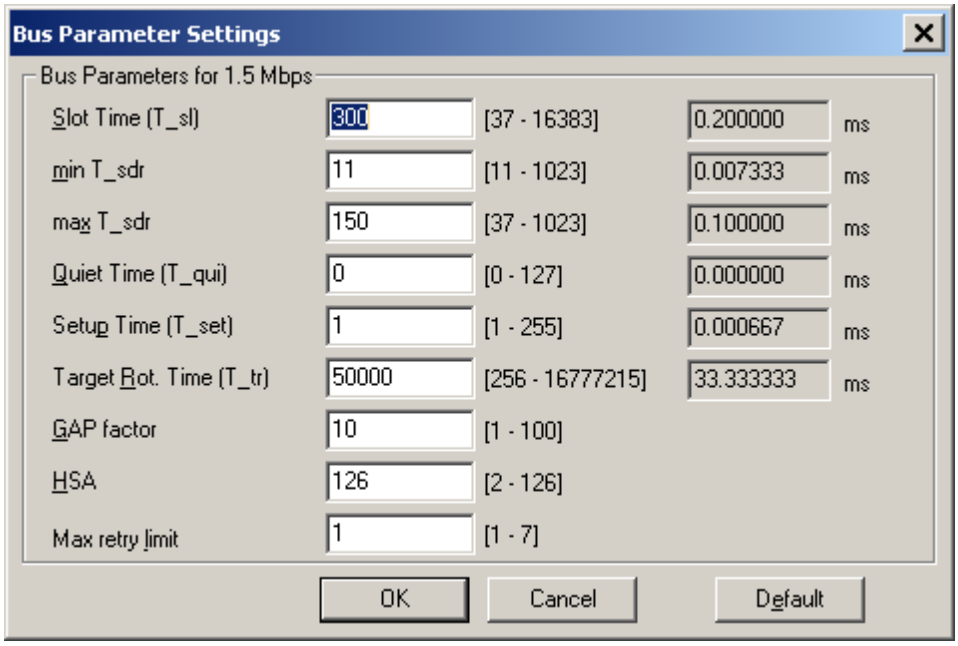
If the user selects a module supported by GXDP, the corresponding module type is set in the combo box. The starting I/O number of the selected module is used as default for the starting I/O number of either master or slave instead of the default I/O number 0x00.

'New Project Wizard' for Master Projects

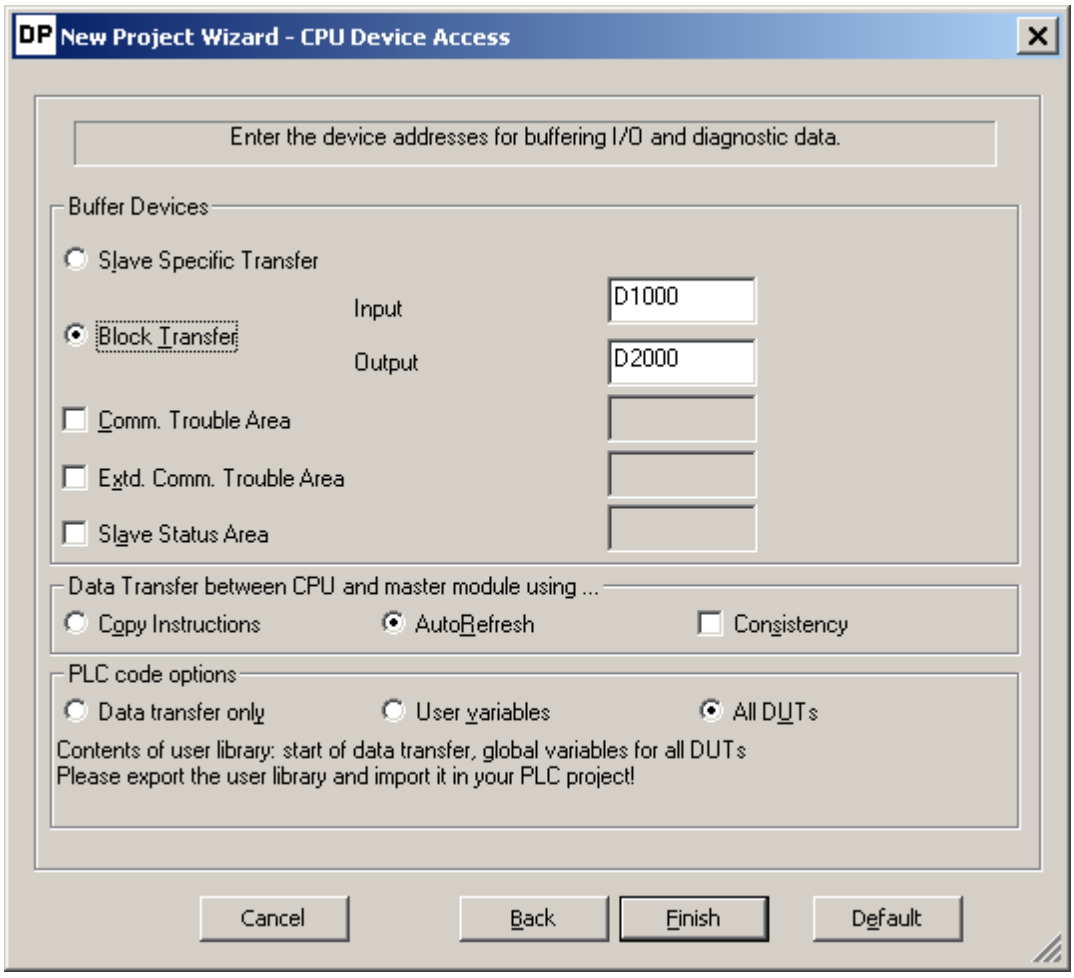
If a master module has been selected in the previous wizard page, the next pages provide access to the master configuration and are identical to the 'Master Parameters Wizard'.



Select the baudrate for the PROFIBUS network and other parameters. For a detailed description see Master Settings.



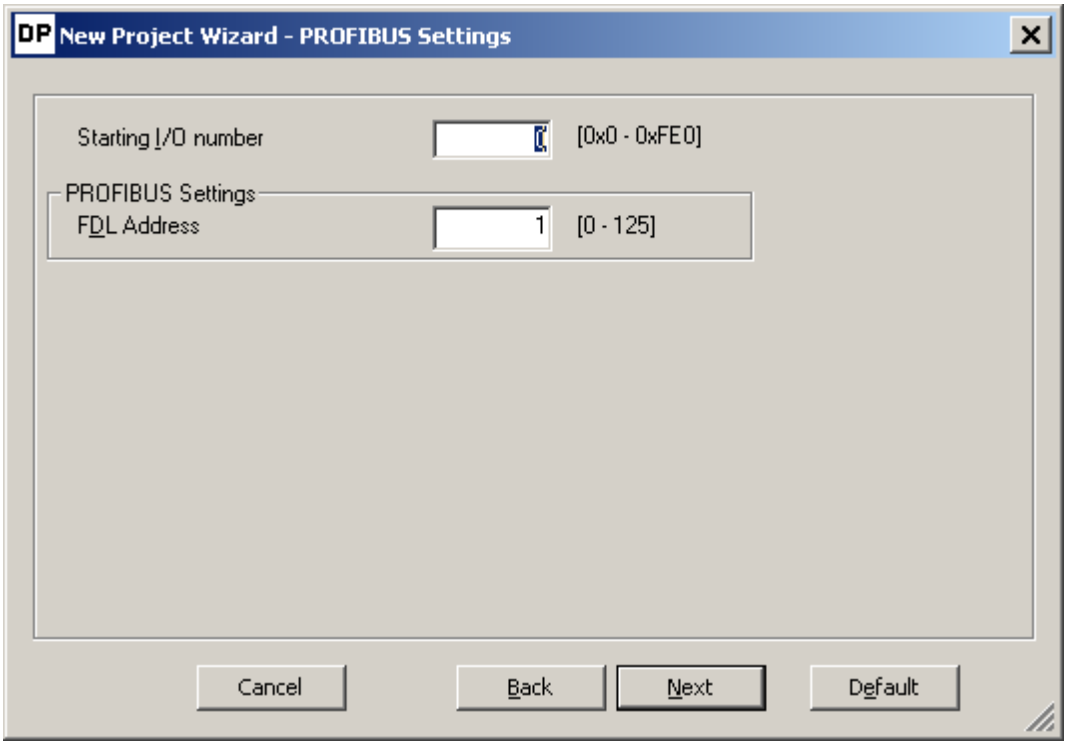
This dialog is opened by pressing the button ‘Bus Parameters…’ in the ‘Master Settings’ dialog. For a detailed description see Bus Parameters.



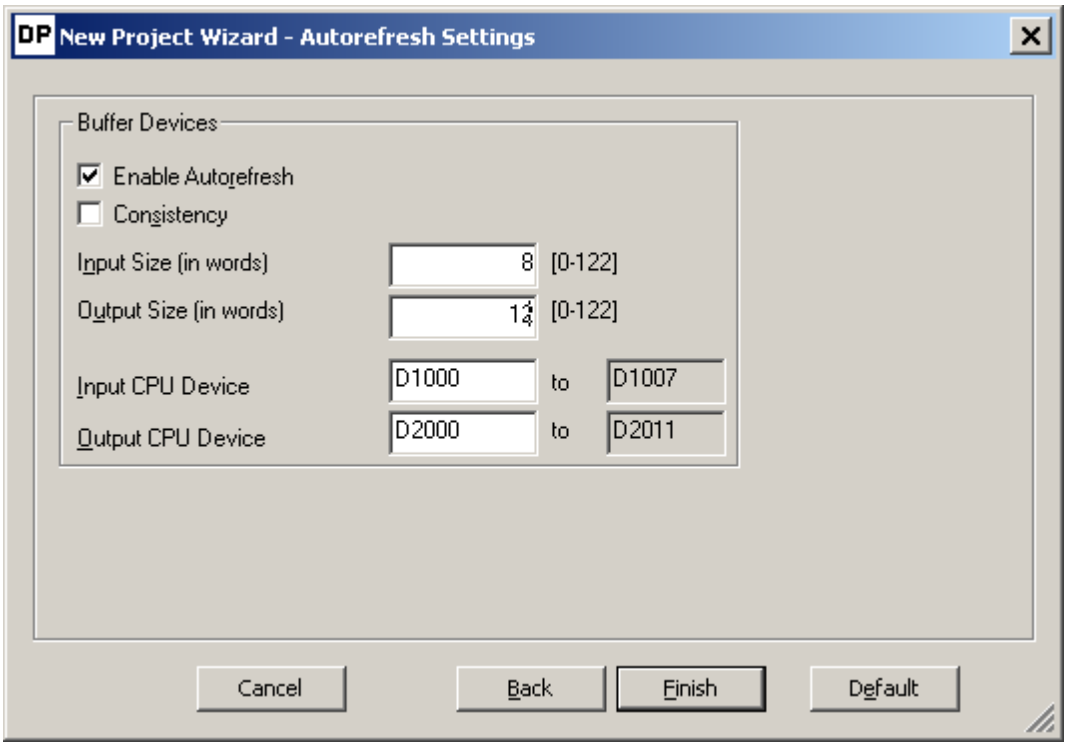
Enter the CPU device addresses of the transfer buffers for exchanging data between CPU and master module. For a detailed description see CPU Device Access.

'New Project Wizard' for QJ71PB93D Projects

If a QJ71PB93D module has been selected in the previous wizard page, the next pages provide access to the Q-slave configuration and are identical to the 'Slave Parameters Wizard'.



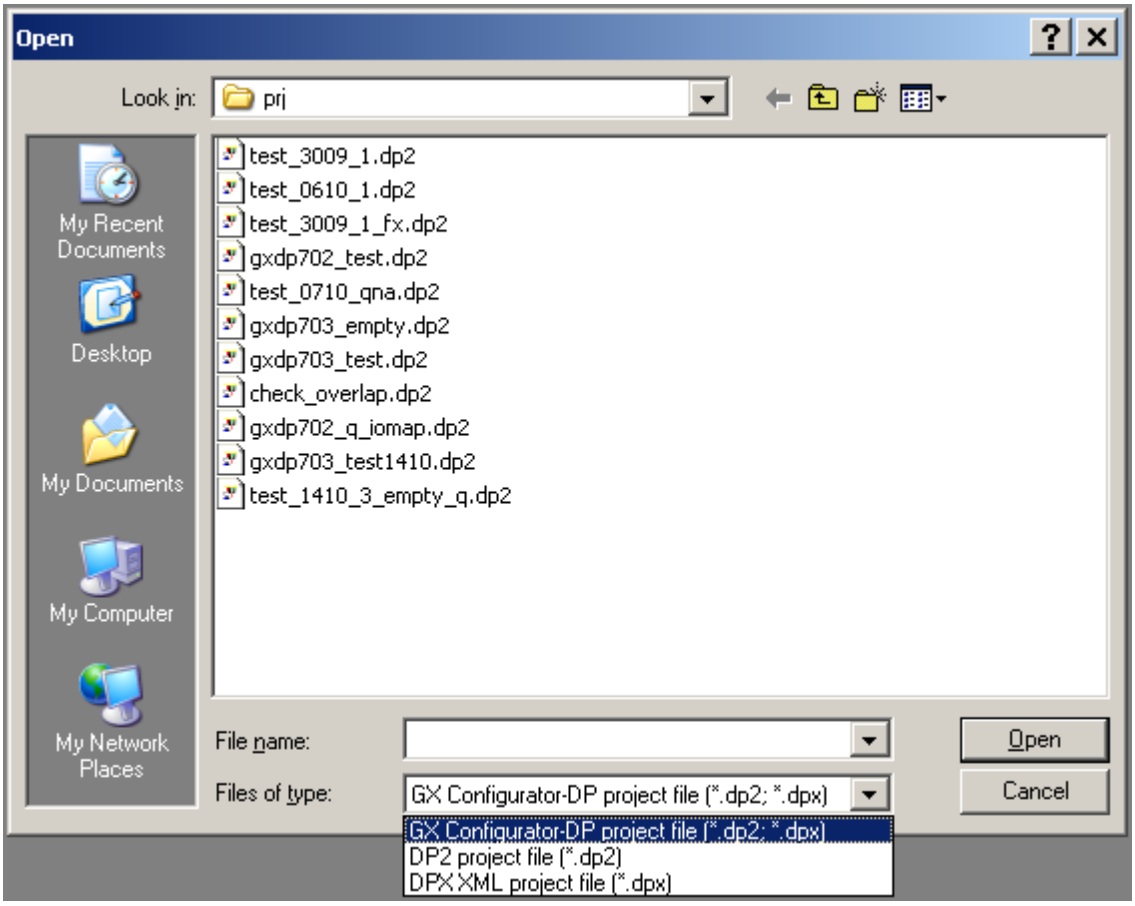
Enter the starting I/O number and the FDL address of the slave module. For a detailed description see Q-Slave PROFIBUS Settings.



Enter the CPU device addresses of the transfer buffers for exchanging data between CPU and slave module. For a detailed description see Q-Slave Autorefresh Settings.

Command Open

The menu command **Open** allows to open a project, which has previously been saved.



The **Open** dialog box lists only files of the following type:

- ***.dp2:** old or current GXDP project file format
- ***.dpx**: old GXDP project file format for QJ71PB93D slave modules

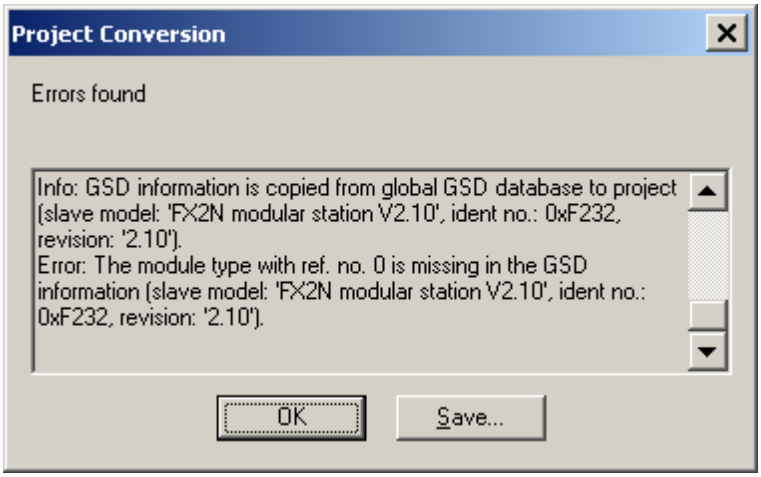
The current version can open project files created with previous versions 4.0 or newer of GX Configurator-DP. Previous versions cannot open GX Configurator-DP 7.03 project databases.

Note: *.DP-projects generated with software versions previous to GX Configurator-DP 4.0 cannot be opened.

Conversion of Old Projects

If a project file created with an older version of GX Configurator-DP is opened, the user is informed that the file must be converted.

If the project file cannot be converted, a list of more detailed error messages is displayed.



The error messages can be saved in an ASCII file by selecting the 'Save' button.

If the conversion of a PROFIBUS master project fails, missing GSD information is in most cases the reason. GXDP searches the following files for GSD information in the following order:

1. project file
2. global GSD device database
3. GSD export file (same file name as the project, but extension '.ext')

If the option 'GSD database has priority' is enabled, the global GSD device database is searched first:

1. global GSD device database
2. project file
3. GSD export file (same file name as the project, but extension '.ext')

The second sequence may be helpful in rare situations, where the GSD information in the project is inconsistent with the project configuration.

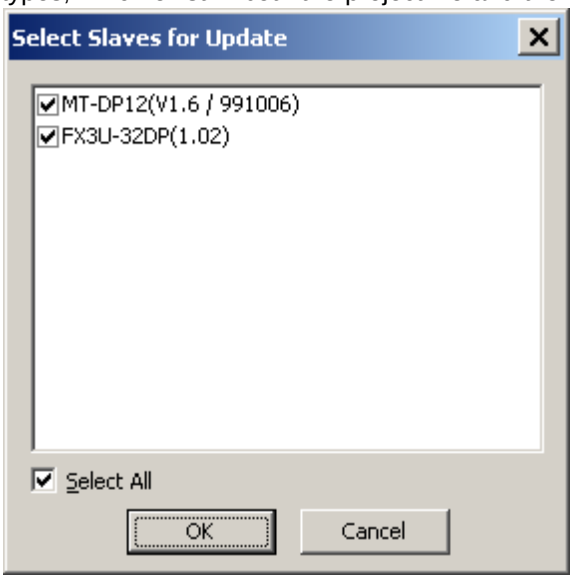
If a slave type, specified by a combination of the GSD entries 'Model_Name', 'Ident_Number' and 'Revision', cannot be found in any of the three files, the conversion stops and the error message lists the missing slave types.
The user should add the corresponding GSD files to the global device database and retry to convert the project file.

If the project file could be converted, but settings had to be changed, the user can review the actions taken during the conversion in a list.

Note: the converted project overwrites the old project file, when it is saved. To preserve the original file, a copy of the file with the extension '.backup' is created.

Update GSD Information in Project

If the option 'GSD database has priority' has been selected in 'Options', the user can select slave types, which exist in both the project file and the GSD database.



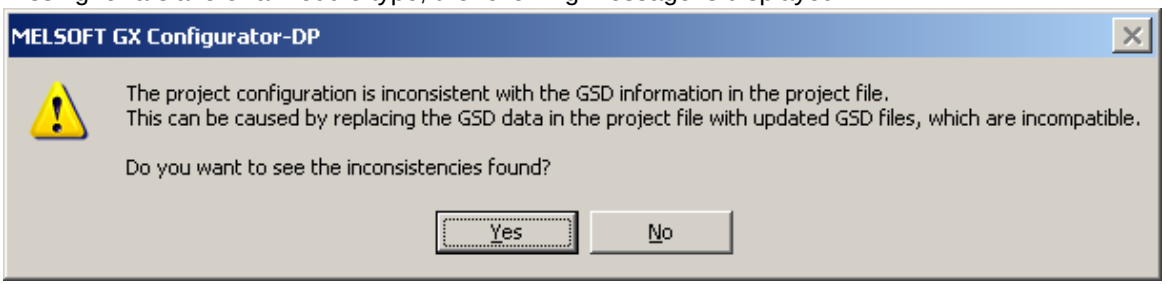
Name	Description	Choices / Setting range	Default
Slave Type List	list of slave types, which exist in both the GSD database and the project file		
Select All	toggles the selection of the slave types		
OK	closes the dialog and replaces the GSD information of the selected slave types in the project		Default button

Name	Description	Choices / Setting range	Default
Cancel	closes the dialog and continues opening the project without replacing GSD information		-

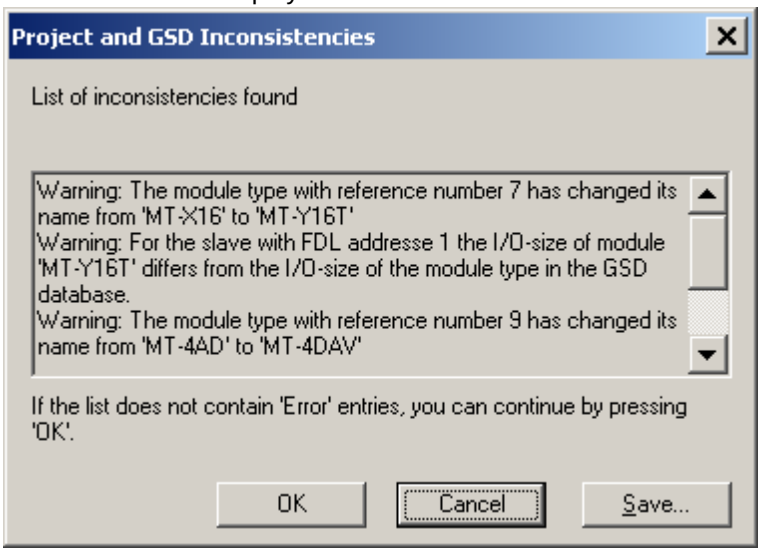
If the user presses 'OK', the GSD information for the selected slave types in the project file is replaced with the corresponding GSD information from the GSD database. If the user presses 'Cancel' or does not select any slave type, no GSD information is updated and the project is opened using the GSD information already contained in the project file.

Check of GSD Consistency

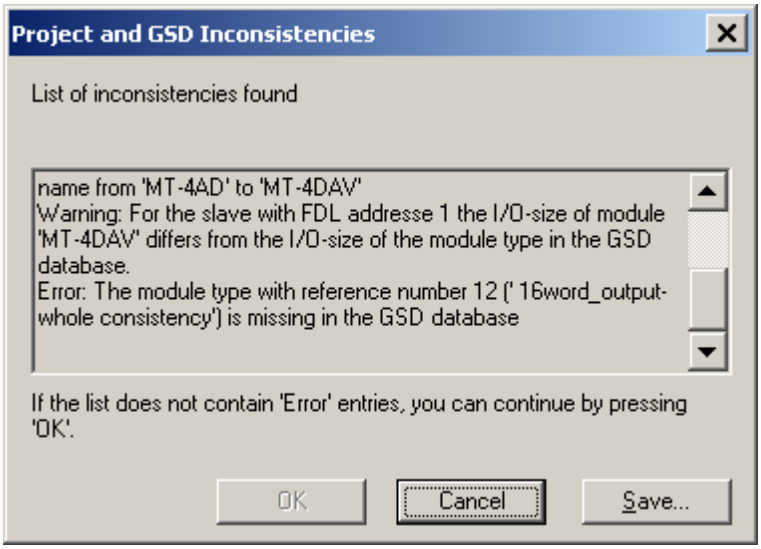
When a project file for a PROFIBUS master is opened, GXDP searches the GSD information in the project file for the slave and module types used in the project configuration. If GSD information is missing for a slave or a module type, the following message is displayed.



If the user selects ‘No’, the project cannot be opened. If the user selects ‘Yes’, the list of inconsistencies is displayed.



If errors have been found, the user can only view the messages, but cannot proceed with opening the project. The ‘OK’ button is therefore disabled.



The reason for such inconsistencies can be an import of incompatible GSD information from the central GSD database (see ‘GSD Update’) when opening the project. In this case the project should be opened again without importing the GSD information from the central database.

Command Close

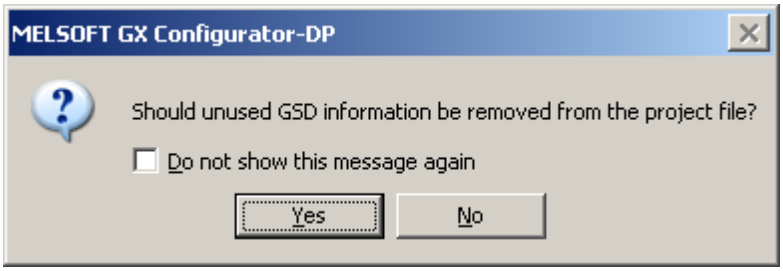
This menu command closes the active project.

Command Save

This menu command is used to save a modified project. The project will be saved to the assigned file name. If no file name exists (e.g. new project) the standard dialog box for **Save As** will be opened.

Remove GSD Information

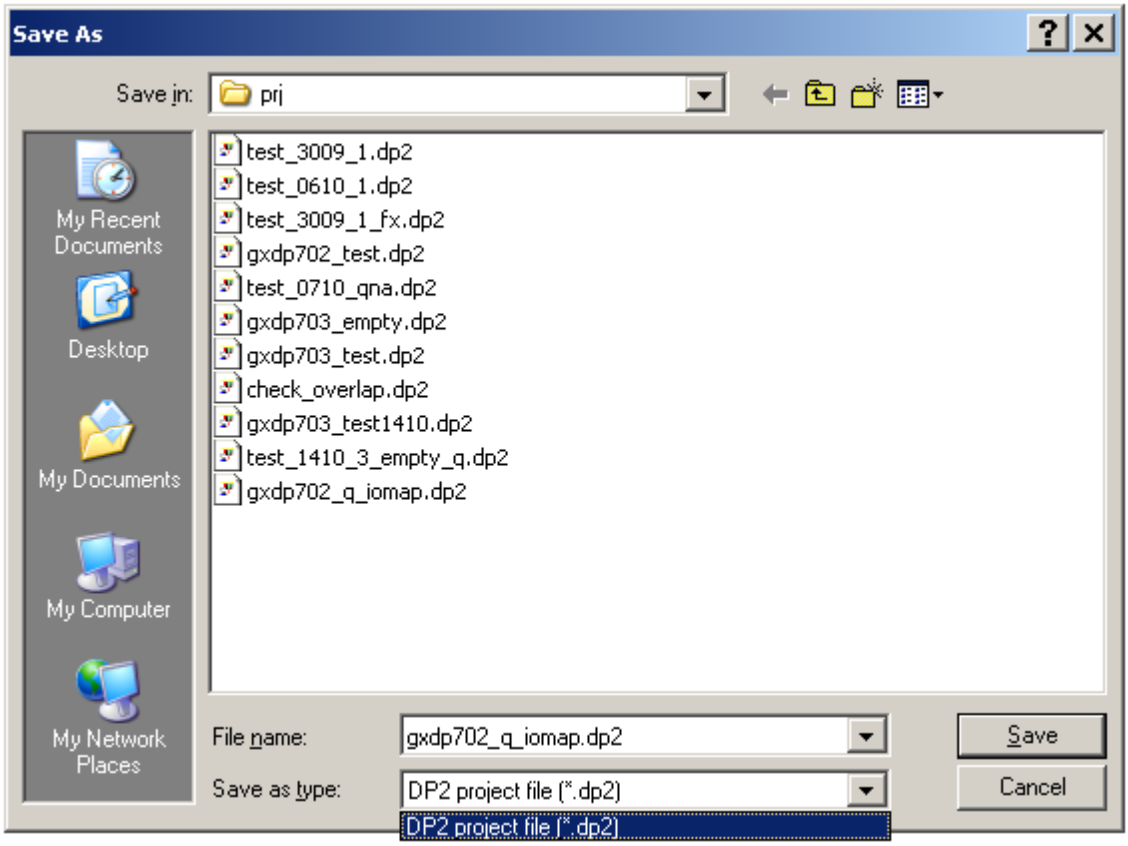
When saving a master project, the user can have all unused GSD information removed from the project file in order to reduce its size.
If the project file contains GSD information for slave types, which are not used in the project, the user is asked, whether to remove the data.



If the user agrees, the GSD information is removed from the project file. If the user does not want to be asked each time a project is saved, the checkbox 'Do not show this message again' in the message box can be set. In this case the same action (removing or keeping unused GSD information) is performed each time, until the application is restarted.

Command Save As

This menu command is used to save a project with a new assigned file name. This command uses the dialog box for file saving.



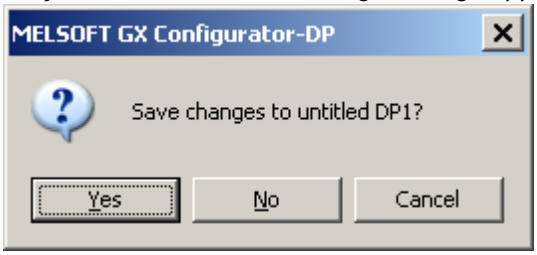
Files can only be saved in the 'dp2' format.

Command Recent Files

The pull-down menu shows you the last used projects. You can open a project file by selecting the corresponding entry.

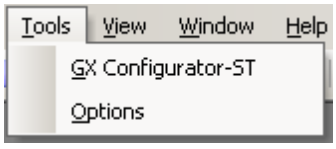
Command Exit

You can use this menu command to quit the software. If an open project has been modified and has not yet been saved the following message appears:



If you want to save the last changes before leaving and ending the GX Configurator-DP software choose <Yes>. If you choose <No>, all modifications to the respective project are lost.

4.2 Tools Menu



The Tools menu offers the following commands:

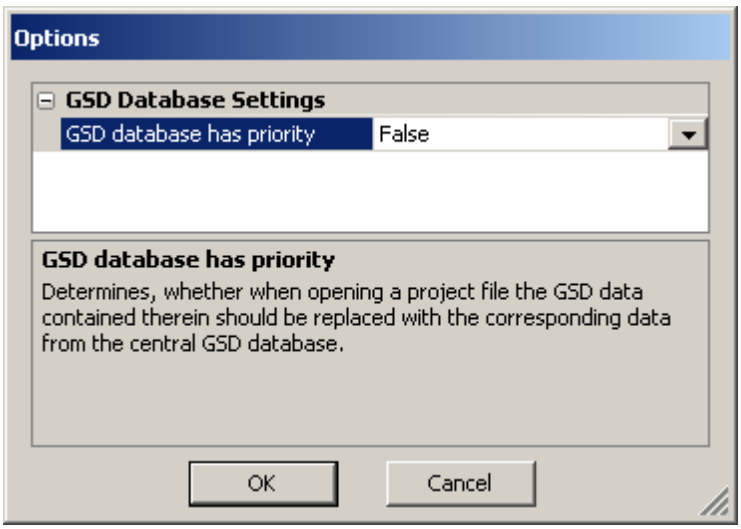
Command	Description
GX Configurator-ST	starts GX Configurator-ST for configuration of ST1H-PB 'Slice I/O' slaves
Options	edit general (i.e. project independent) application settings

GX Configurator-ST

This item starts GX Configurator-ST (GXST), the configuration tool for the ST1H-PB slave devices. This menu command is enabled, if GXST is installed, i.e. the corresponding executable file can be found.
With GXST you can operate settings and graphically monitor ST1H-PB. GXST shows status and error information for the ST slave and its modules. It provides test functions and an user interface for changing parameters of the device.
The GX Configurator-ST runs as a separate application with its own entry in the task list and must be closed separately. However, when GX Configurator-DP is closed, it displays a warning message in case GX Configurator-ST is still running.

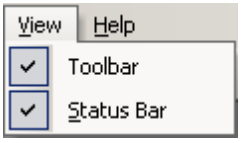
Options

The menu item ‘Options’ provides access to general (i.e. project independent) application settings. It opens the ‘Options’ dialog, which lists the application settings in a ‘property grid’.



Name	Description	Choices / Setting range	Default
GSD database has priority	when set to ‘True’, the user can replace existing GSD data in the project file. Each time a project file is opened, a list of the slave types, which exist in both the project file and the central GSD database, is displayed. The user can select the slave types, of which the information should be replaced.	true, false	false
OK	Close dialog and save settings to become effective after next change		Default button
Cancel	Close dialog and discard changes		-

4.3 View Menu



In the **View** menu you can select the following menu commands:

Command	Description
Toolbar	Shows or hides the application's toolbar.
Status Bar	Shows or hides the application's status bar.

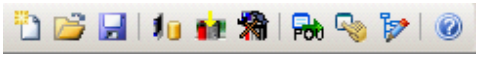
These menu commands toggle the display of the toolbar and the status bar. A check mark in front of the command indicates that the corresponding bar is activated.

Command Toolbar

The toolbar is a collection of buttons, which provide direct access to the most frequently used functions. Its appearance depends on the type of the open project.

Toolbar, if no project is open

Toolbar, if project is open and all functions are supported by master



Icon	Function	Available for
1	Project -> New	all
2	Project -> Open	all
3	Project -> Save	all
4	GSD Device Database	master projects
5	Download to Module	all
6	Transfer Setup	all
7	POU for GX IEC Developer	master projects
8	Start/Stop PROFIBUS	all
9	I/O Mapper	master projects
10	Help	all

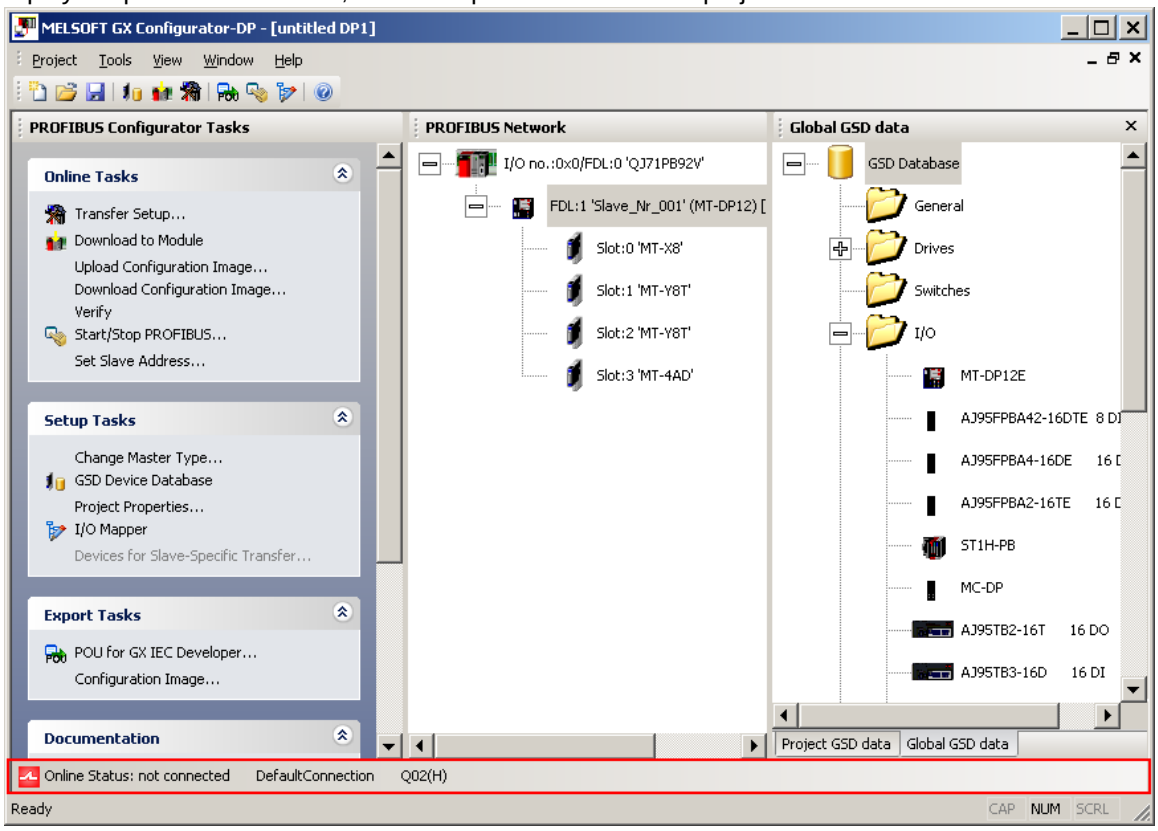
Command Status Bar

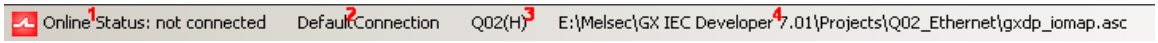
If this command is marked, the standard Windows status bar is displayed at the bottom of the application window. The status bar shows a short message of the menu item under the mouse

cursor and the status of certain keyboard keys.

Project Infobar

The infobar is a window of GXDP, which is displayed above the standard Windows status bar. It displays important information, which is specific to the active project.

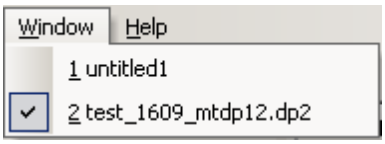




The following information is displayed in the infobar

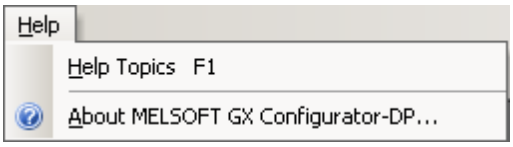
1. the status of the PLC connection ('connected', 'not connected')
2. the name of the currently selected transfer setup
3. the type of the CPU selected in the transfer setup
4. the last path of the exported POU (only if 'POU for GX IEC Developer' has been called since the project has been opened)

4.4 Window Menu



The 'Window' pull-down menu lists the names of the open projects. Selecting an entry activates the corresponding project window.

4.5 Help Menu



The 'Help' pull-down menu provides access to the online-help and version information of the application.

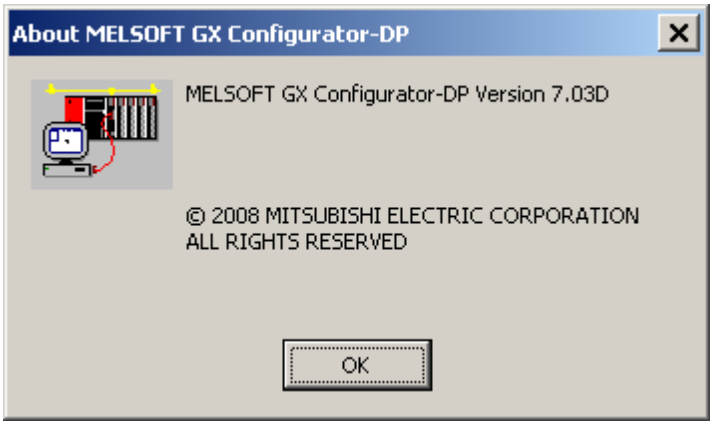
Command	Purpose
Help Topics	Opens the online help
About	Displays version information of the application

Command Help Topics

This item opens the online help in a separate window. Additionally the context-specific help is opened by pressing **F1** in a window of the application.

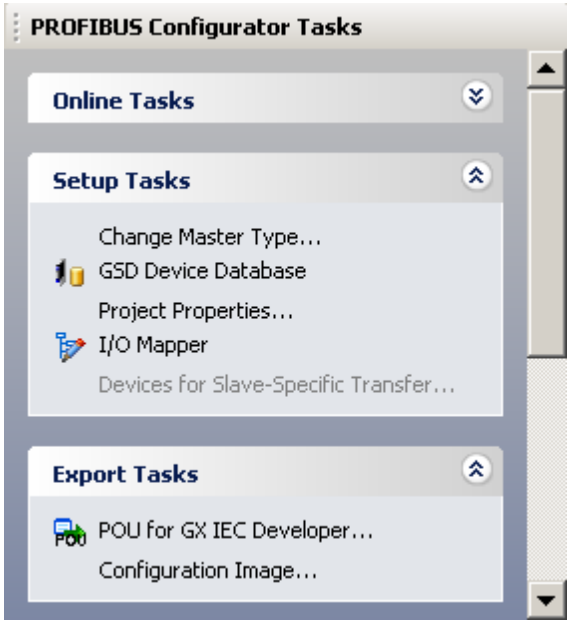
Command About...

The about box show the software name and version as well as the copyright notice.



5 PROFIBUS Configurator Tasks

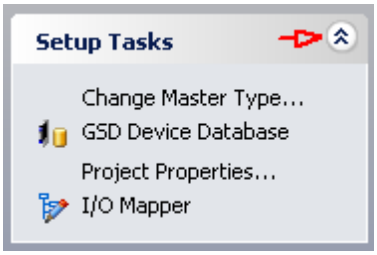
Using the Task Panel



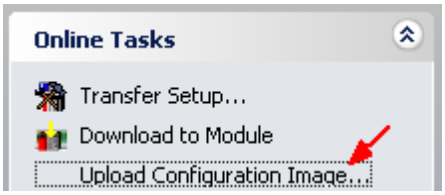
The ‘PROFIBUS Configurator Tasks’ window offers the user project specific shortcuts to manage a PROFIBUS DP project. The shortcuts are grouped into types of actions. With the button in the group header the task items can be collapsed so that only the header is visible to the user.

‘collapsed’ task group

‘expanded’ task group



If operated via the keyboard the up/down cursor keys move the focus within the task panel. The focused task item is marked with a dotted frame.



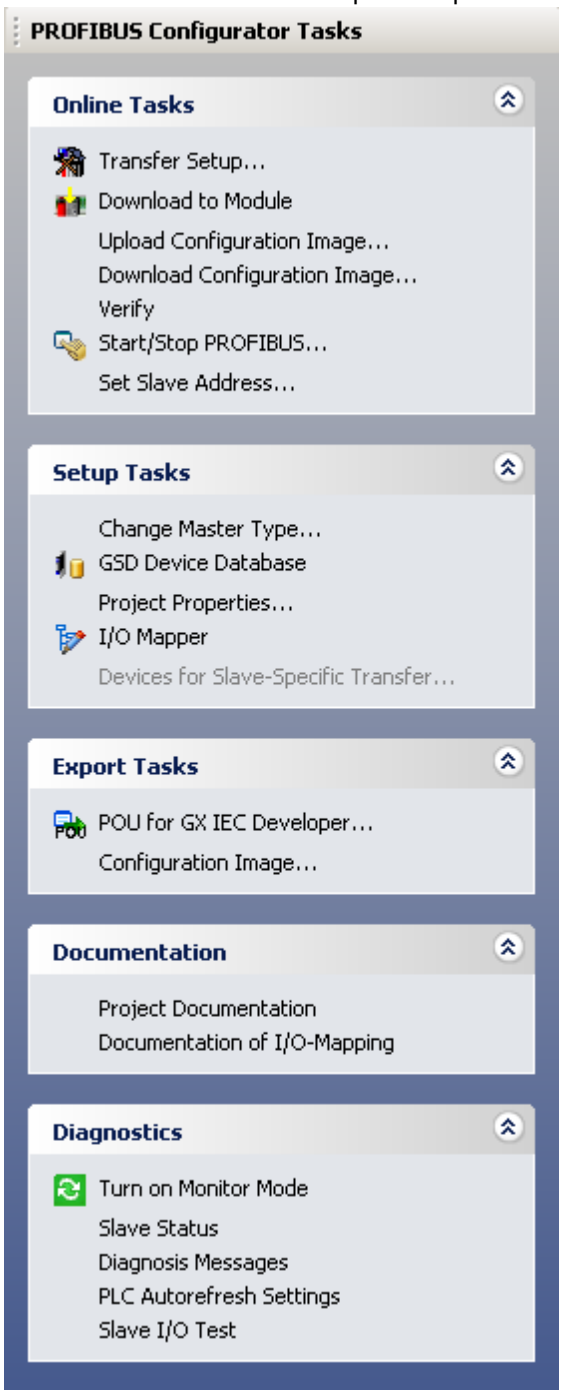
Pressing the space bar triggers the focused item.

To expand/collapse a task group via the keyboard the caption of the task group must have the focus. The expand/collapse state is then toggled via the spacebar.

Some entries, which are frequently used, show icons before the text. These icons exist in the toolbar as well. Clicking the icon in the toolbar has the same effect as selecting the corresponding entry in the task panel.

Tasks for Master Projects

The available items in the task panel depend on the project type and application state.

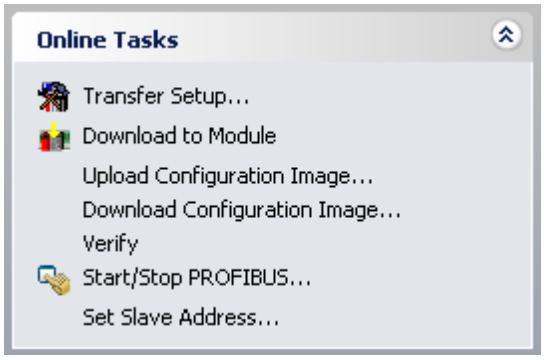


The task panel contains the following groups of items

- Online Tasks

- Setup Tasks
- Export Tasks
- Documentation
- Diagnostics

5.1 Online Tasks



Command	Description
Transfer Setup	Define the network connection type (PC to PLC)
Download to Module	Download the configuration from the current project to the connected module
Upload Configuration Image	Read the binary configuration image from the master and store it in a file
Download Configuration Image	Download the configuration image taken from the specified file to the master module
Verify	Upload the existing configuration from the module and compare it with the current project
Start/Stop PROFIBUS	Start or stop the cyclic DP data transfer
Set Slave Address	Change the FDL address of a slave online *This function is only available for QJ71PB92V and FX3U64DP-M*

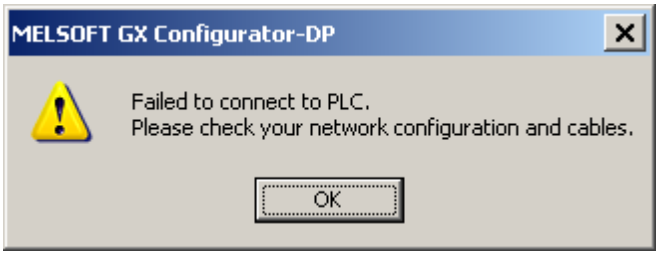
Transfer Setup

This item opens the dialog for managing the communication settings of the PLC connections. For a detailed description see Transfer Setup.

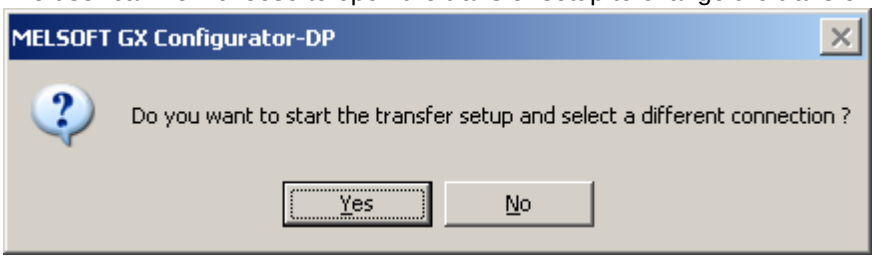
Connection Handling for Online Functions

If any of the functions listed in 'Online Tasks' is started, the settings of the currently selected transfer setup are used to connect to the target PLC and the PROFIBUS module within the PLC.

If the connection to the target PLC fails for any of the 'Online Tasks', the user is informed with an error message.

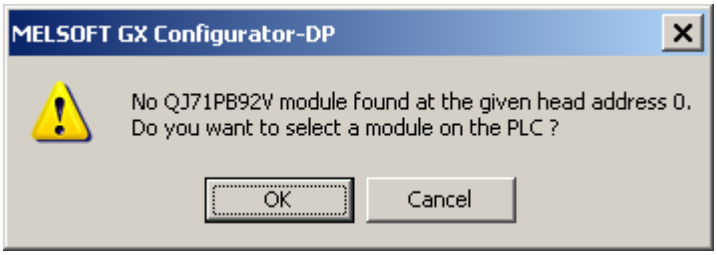


The user can now choose to open the transfer setup to change the transfer settings and try again.

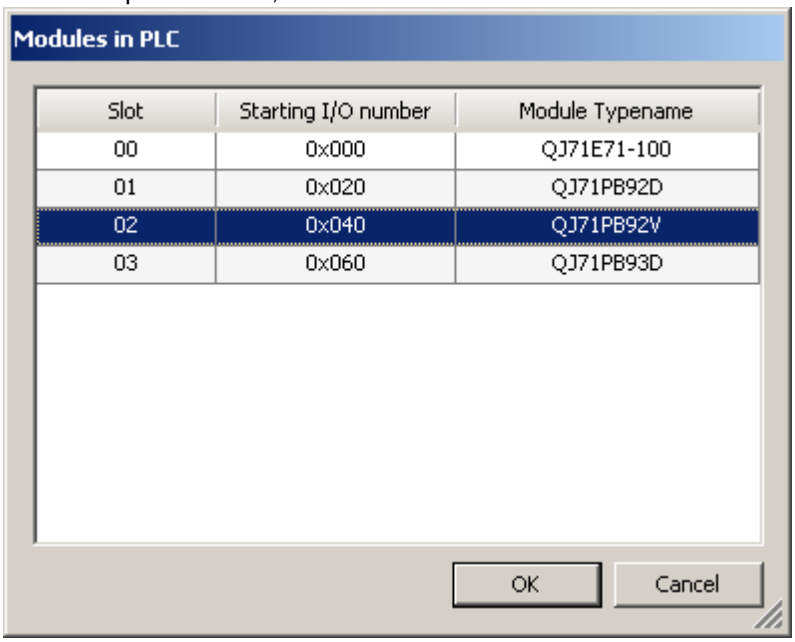


If the user selects ‘Yes’, the transfer setup dialog is opened.

If the connection to the PLC is established, GXDP tries to locate the module at the specified starting I/O number. If there is no module at the given starting I/O number or if the module found does not match the current module type of the project, the user is informed and asked, whether he wants to select the module online.



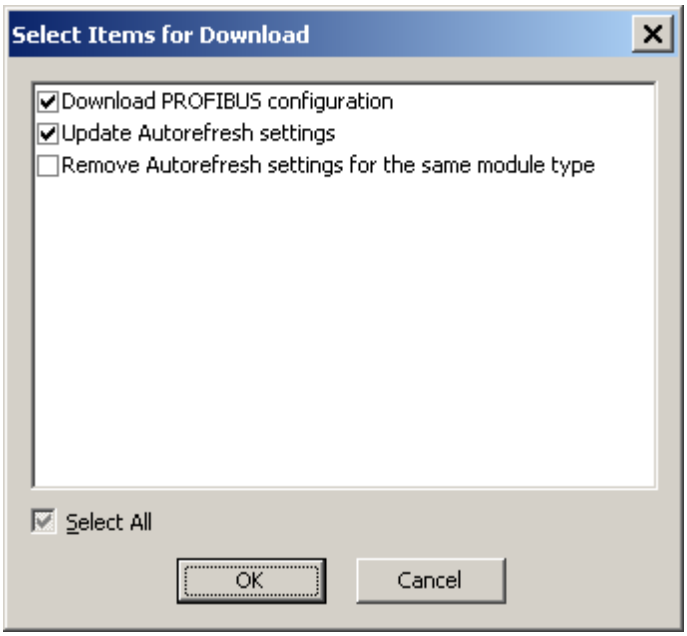
If the user presses 'OK', the list of modules is read from the PLC and displayed in a list.



If the user selects a module matching the project type and presses OK, the respective online function is executed.

Download to Module…

When the user selects the 'Download to Module' task item or toolbar button, the user is asked to select the items for download.



Name	Description	Choices / Setting range	Default
Items List	Download PROFIBUS configuration	selected / not selected	selected
	Update Autorefresh settings **available only for Q-series projects, if Autorefresh has been selected in 'CPU Device Access'**	selected / not selected	selected
	Remove Autorefresh settings for the same module type **available only for Q-series projects**	selected / not selected	not selected
Select All	selects / deselects all items	selected / not selected / indeterminate	selected
OK	close dialog and start update of the selected items.		Default button
Cancel	close dialog and do not download anything (same as pressing OK with no item selected)		-

The selectable items, which are listed in the dialog, depend on the project type and settings.

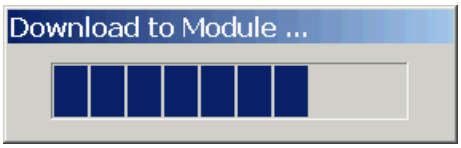
1. Download PROFIBUS configuration
Download the PROFIBUS settings to the connected module.

2. Update Autorefresh settings
Add or update the autorefresh settings for the module with the configured head address.

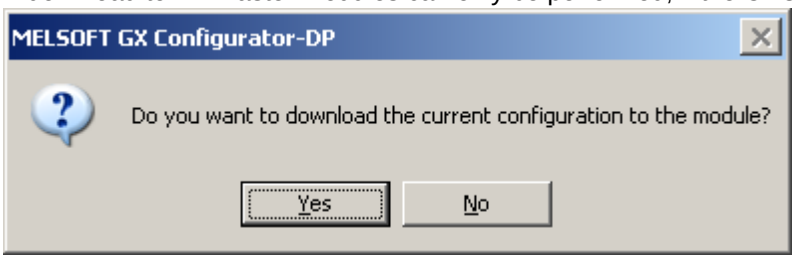
3. Remove Autorefresh settings for the same module type
Delete existing autorefresh settings for the same module type. This option should be set, if for example a PROFIBUS module has been moved to a different slot or the I/O assignment has been changed. When the CPU cannot find the specified module type at the specified head address, its signals an error. GXDP only updates the autorefresh settings for the head address specified in the 'Master Settings'. Existing autorefresh settings for other head addresses remain unchanged.

The effects of this option depend on the state of the option 'Update Autorefresh settings'.
option 'Update Autorefresh settings' is selected: autorefresh settings for modules of the same type as used in the project, but with different starting I/O numbers, are removed
option 'Update Autorefresh settings' is NOT selected or not available: all autorefresh settings for modules of the same type as used in the project are removed, including settings for the starting I/O number currently configured

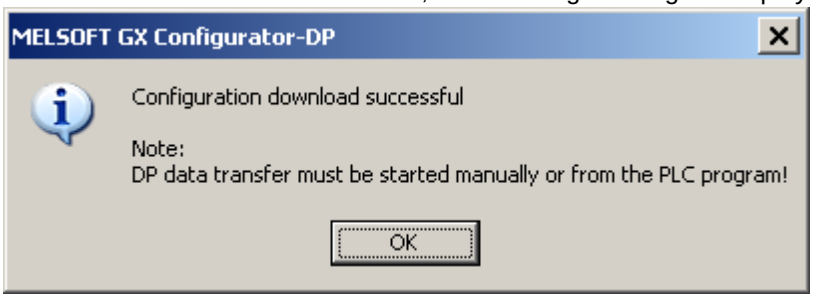
If the user presses **OK**, the selected items are downloaded respectively updated. If the option 'Download PROFIBUS configuration' has been selected, the autorefresh settings are only updated, if the previous configuration download has been successful. While the configuration image is written to the module, a progress bar is displayed. This operation cannot be interrupted by the user to ensure a consistent download.



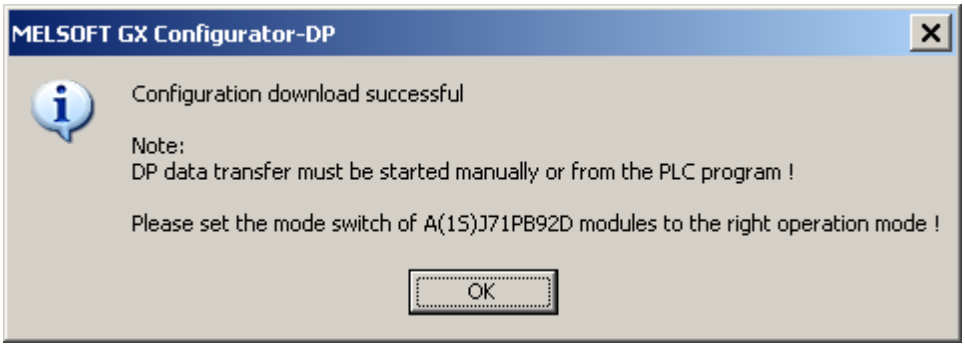
A download to FX master modules can only be performed, if the CPU is in 'STOP' state.



If the download has been successful, the following message is displayed.



For A(1S)J71PB92D modules the message contains an additional remark about the mode hardware switch.



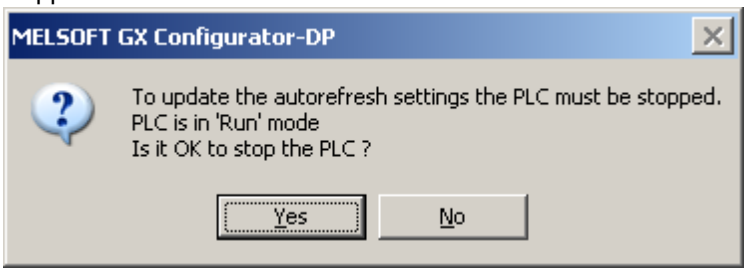
Note: for A(1S)J71PB92D modules the user must set the correct operation mode (0 or E) with the switch on the front of the module. The module will take over the setting of the mode switch after a CPU reset.

Download to project module type only

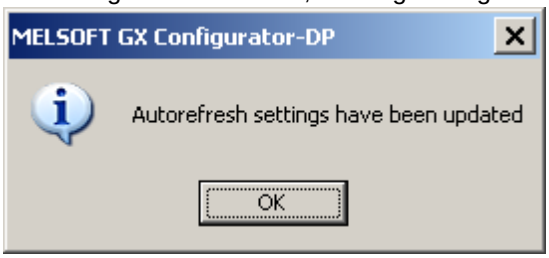
Note: a download is only possible, if the type of the connected module matches that of the project. If the user wants to download the project to a different module type, the project must first be converted to the type of the connected module. This is done by selecting the **Change Master Type** menu item.

Autorefresh Update

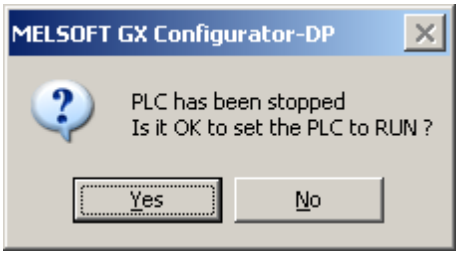
If the user has selected the 'AutoRefresh' option, the autorefresh settings are updated, after the configuration has successfully been downloaded to the PROFIBUS master module. The (online) update of the autorefresh settings on the CPU is only possible, if the CPU is stopped. The CPU status is checked and, if the status is not 'STOP', the user is asked, whether the CPU can be stopped.



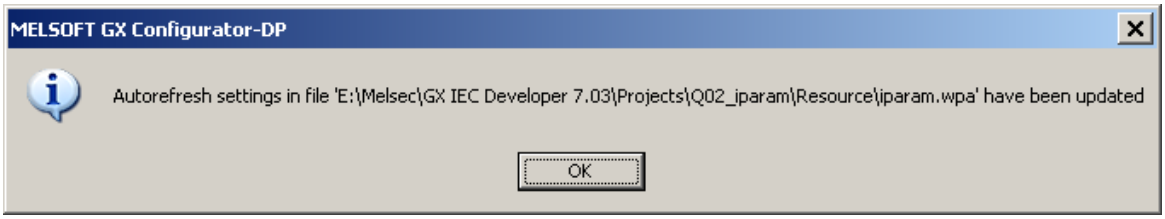
After stopping the CPU the autorefresh settings on the CPU are updated. Existing autorefresh settings on the CPU for the same head address as the current master module are overwritten with the settings for the master, existing settings for other modules remain unchanged.



If the CPU had been stopped prior to the update, the user is asked whether to start the CPU again.

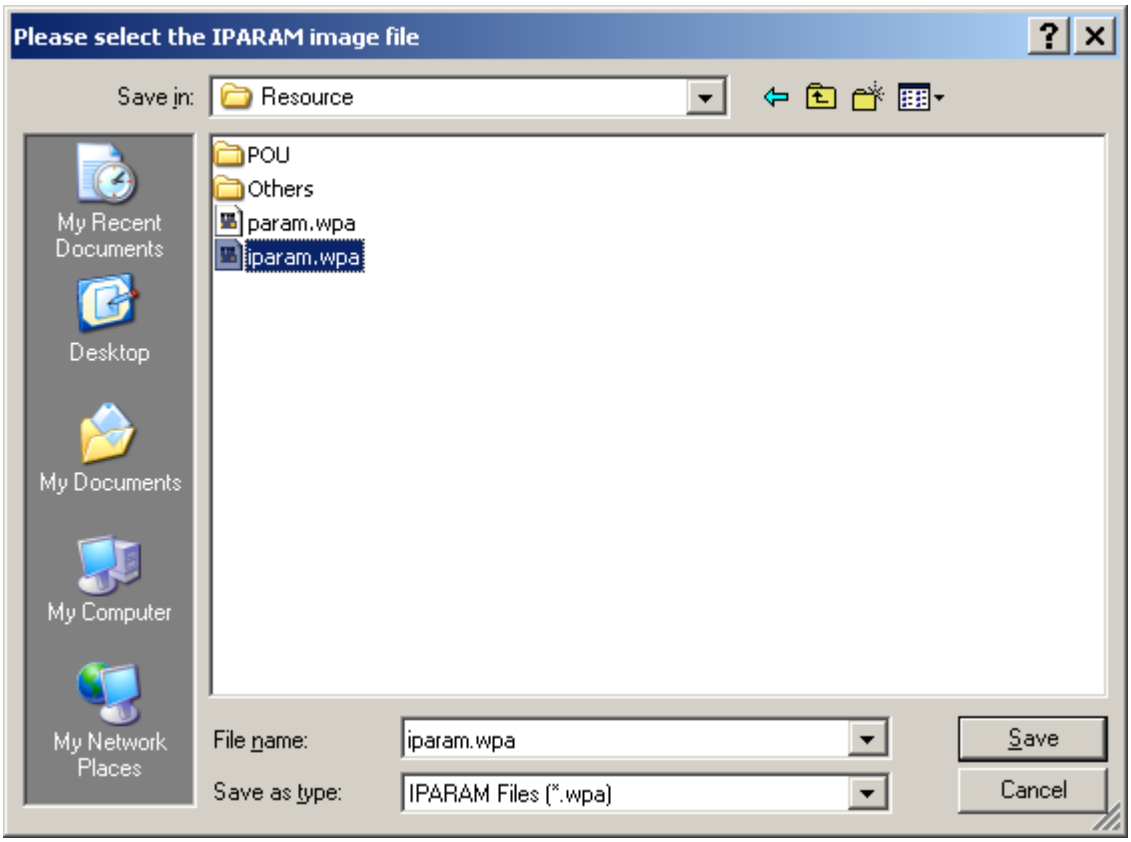


The autorefresh settings in the parameter file of the corresponding GID/GD project are also automatically updated, if the path to an existing GID/GD project has been set (see 'Project Properties'). After the GID/GD project has been updated, the path of the updated IParam file is displayed.



Autorefresh Settings on Remote I/O

GX Configurator-DP cannot online update the autorefresh settings in Q-series Remote I/Os. For Remote I/Os the settings must be updated in the corresponding GID/GD project file and then be updated in the Remote I/O itself with GID/GD. If the user downloads to a Remote I/O and no GID/GD project path has been set, the user is prompted to enter the path to the IParam image file, which should be updated.

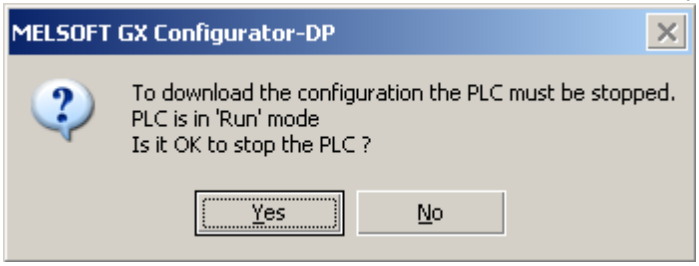


In GID/GD projects the IParam image file is named 'iparam.wpa' and located in the subdirectory

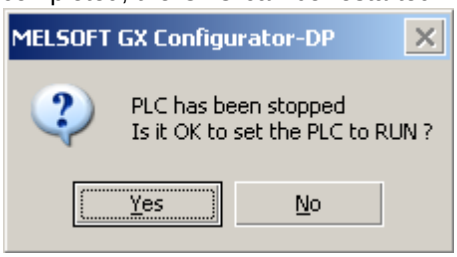
'Resource' of the project directory.

Download to FX

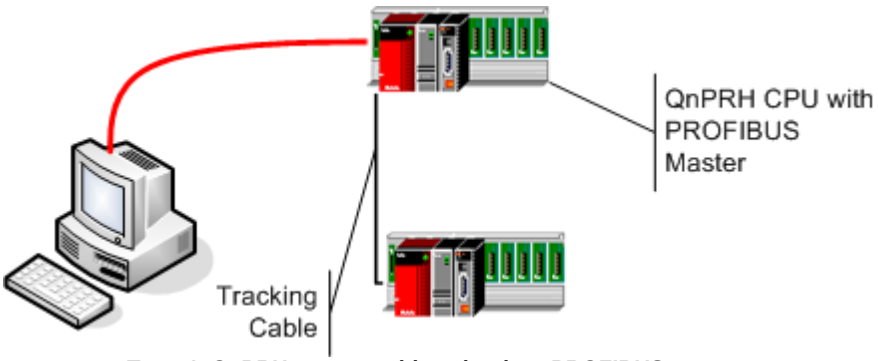
The FX3U-64DP-M PROFIBUS master can only be updated, if the CPU is stopped. If the CPU is in 'RUN' state, the user is asked, whether the CPU can be stopped.



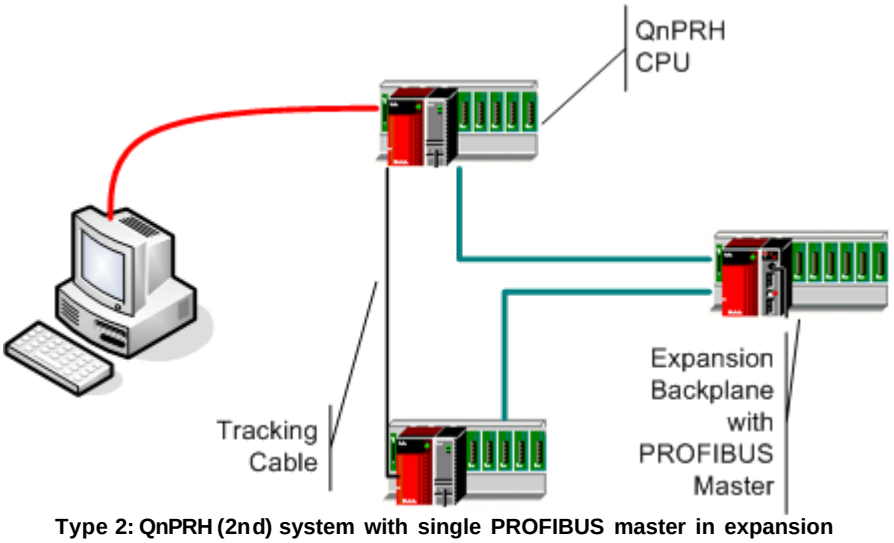
If the user agrees, the CPU is stopped and the configuration is downloaded. After the download has completed, the CPU can be restarted.



Download to QnPRH Redundant System

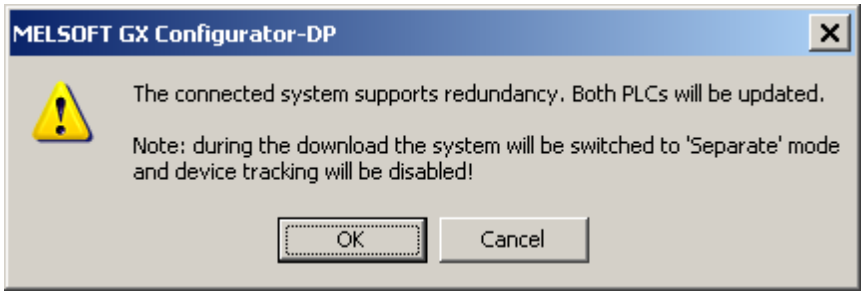


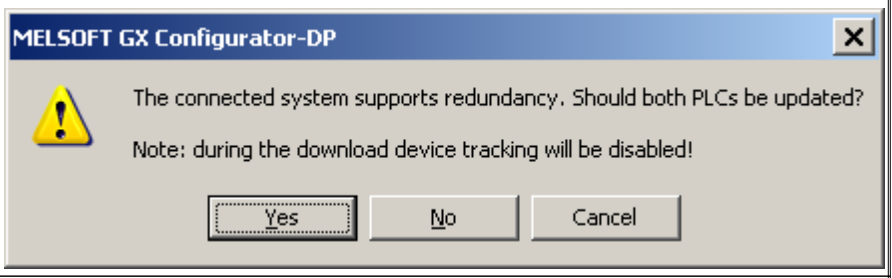
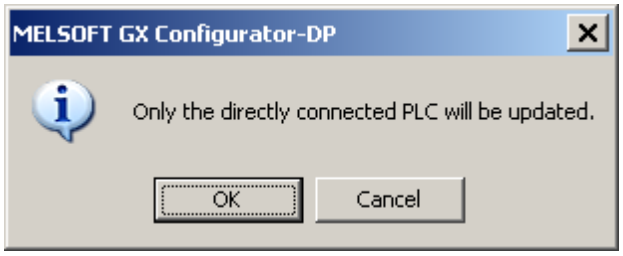
Type 1: QnPRH system with redundant PROFIBUS masters



Type 2: QnPRH (2nd) system with single PROFIBUS master in expansion backplane

The QnPRH redundant PLC system can be operated with a dual (redundant) PROFIBUS network. The control CPU provides access to the active PROFIBUS master module, while the standby CPU has a second master, which becomes active, when the standby system takes over the task of the control system. Besides in a redundant configuration a QnPRH CPU can also be used as a single standalone PLC or combined with another QnPRH PLC as a dual PLC system with both CPUs connected via a special communication link ('tracking cable').
To update both masters in a QnPRH system as well as the autorefresh settings in both CPUs, the redundant system must be in 'Separate' mode and device tracking for the X/Y devices must be disabled. GXDP therefore switches the redundant system to 'Separate' mode, if it is in 'Backup' mode. It also disables device tracking, if the system is in 'Backup' or 'Separate' mode. After completing the download to both masters and having updated the autorefresh settings, GXDP sets the system back into its original state.
The new QnPRH 2nd generation PLC supports a new type of expansion backplane, which is directly connected to the backplanes of both QnPRH CPUs. The expansion backplane is mapped into the I/O range of the respective control system. The modules in the expansion board are not visible to the standby CPU. The QnPRH expansion board allows to operate a redundant PLC without having each network module twice.

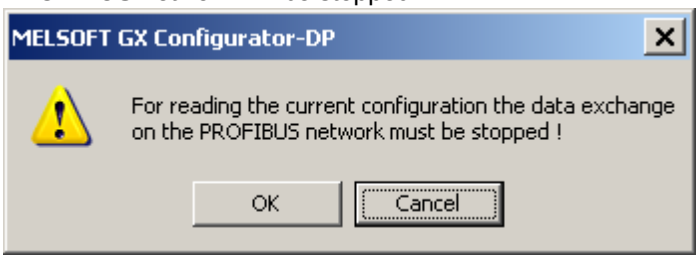
Mode	GXDP Handling
Backup	The PROFIBUS configuration is downloaded to both PROFIBUS modules (redundant network setup) or the single PROFIBUS module (expansion rack setup). The autorefresh settings are updated in both PLCs. Therefore the system must be temporarily switched to 'Separate' mode. 
Separate	User must choose whether to update both systems (pressing 'Yes') or only the directly connected system (as selected in transfer setup) (pressing 'No'). If 'Cancel' is pressed, nothing is updated.

Mode	GXDP Handling
	
Debug	In Debug mode only the PLC selected in the transfer setup is updated. 

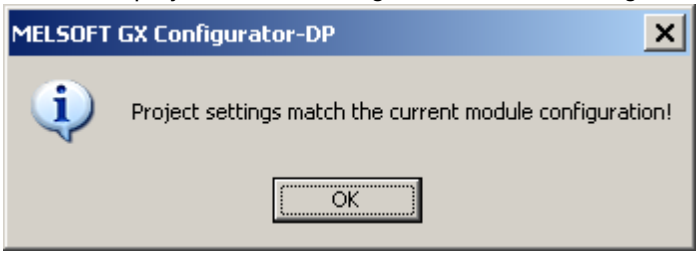
Note: if device tracking is disabled, this applies only to the default tracking block controlled by SM1520. If the user has specifically configured device tracking and included the X/Y devices of the intelligent function modules, the communication may fail.

Verify

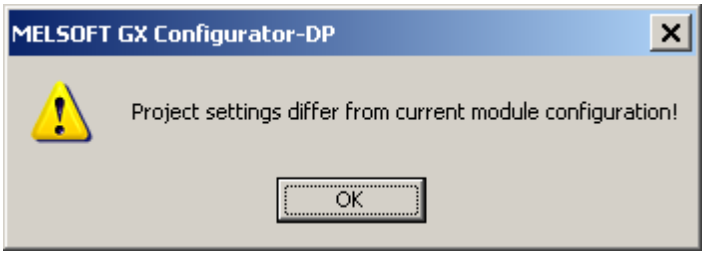
This function verifies the settings of the selected project with the current configuration of the module. For PB92D masters a warning is displayed to inform the user that the data exchange on the PROFIBUS network will be stopped.



The current configuration is read from the module and compared with the configuration created from the current project. If both settings match, the following message box is displayed.



If the settings differ, the following message box is displayed. More detailed information on which parts of the settings are different, is not provided.

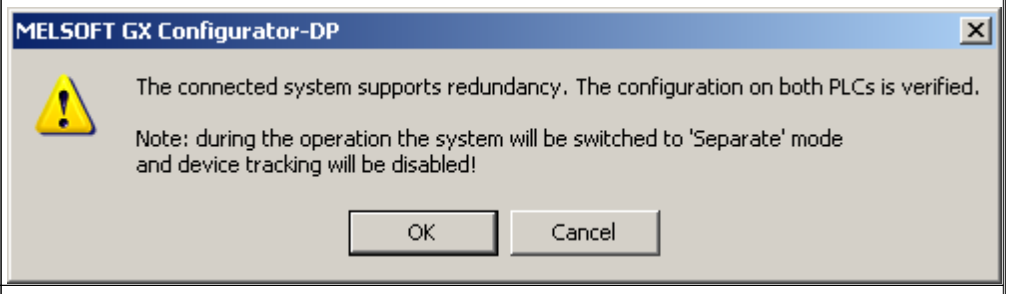
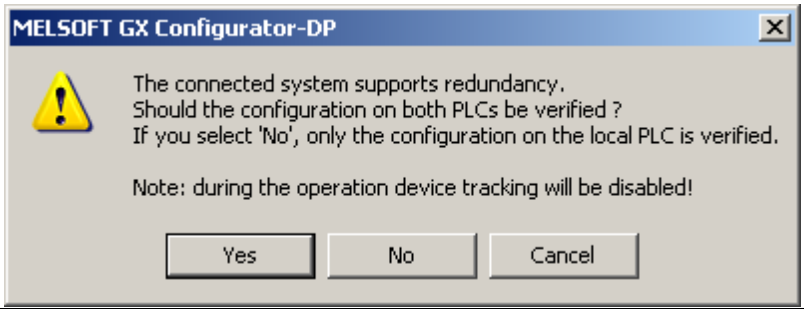
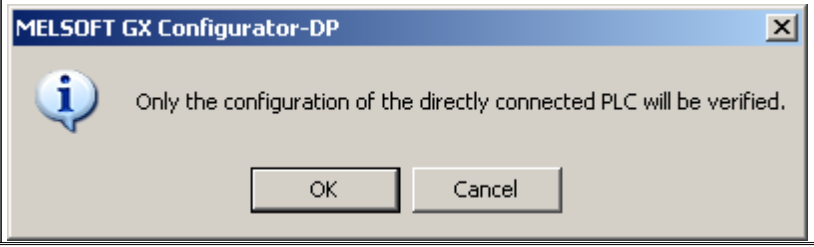


In case any problems occur, for example when reading the configuration from the module, a general error message is shown.

Note: for Q-series master modules the autorefresh settings are not compared.

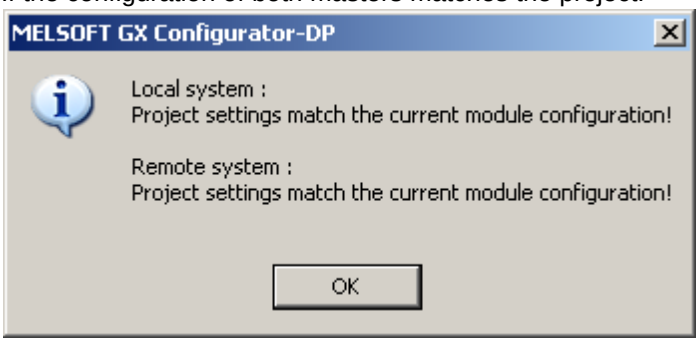
Verify on QnPRH Redundant System

Before uploading the configuration from the PROFIBUS master module(s) and comparing it with the project, the user is asked whether to proceed. The query depends on the redundancy mode, however it does not depend on whether there are one or two master modules.

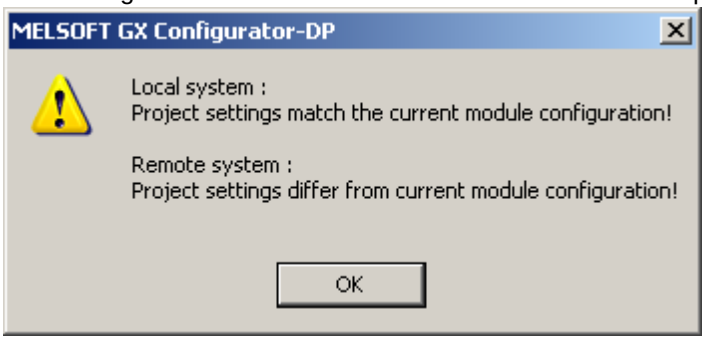
Mode	GXDP Handling
Backup	If there are two masters, the configuration of both masters is uploaded and compared. If there is only one master, the configuration of that master is uploaded and compared. 
Separate	If there are two masters, the configuration of both masters can be uploaded and compared. The user can also decide to verify only the configuration of the master in the directly connected PLC rack. If there is only one master, the user's choice has no effect. 
Debug	In this mode only the configuration of the master in the connected PLC is verified. 

If the configuration of two master modules in a redundant PLC system is verified, the result shows for each of the two master modules, whether its configuration matches the current project or differs from it.

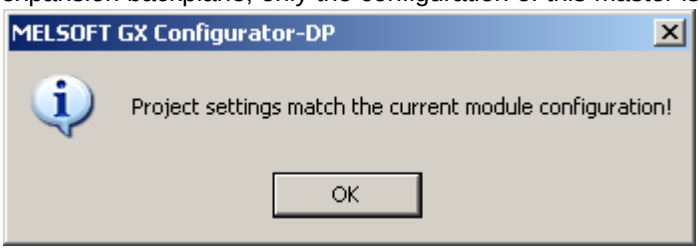
If the configuration of both masters matches the project:



If the configuration of one or of both masters differs from the project:

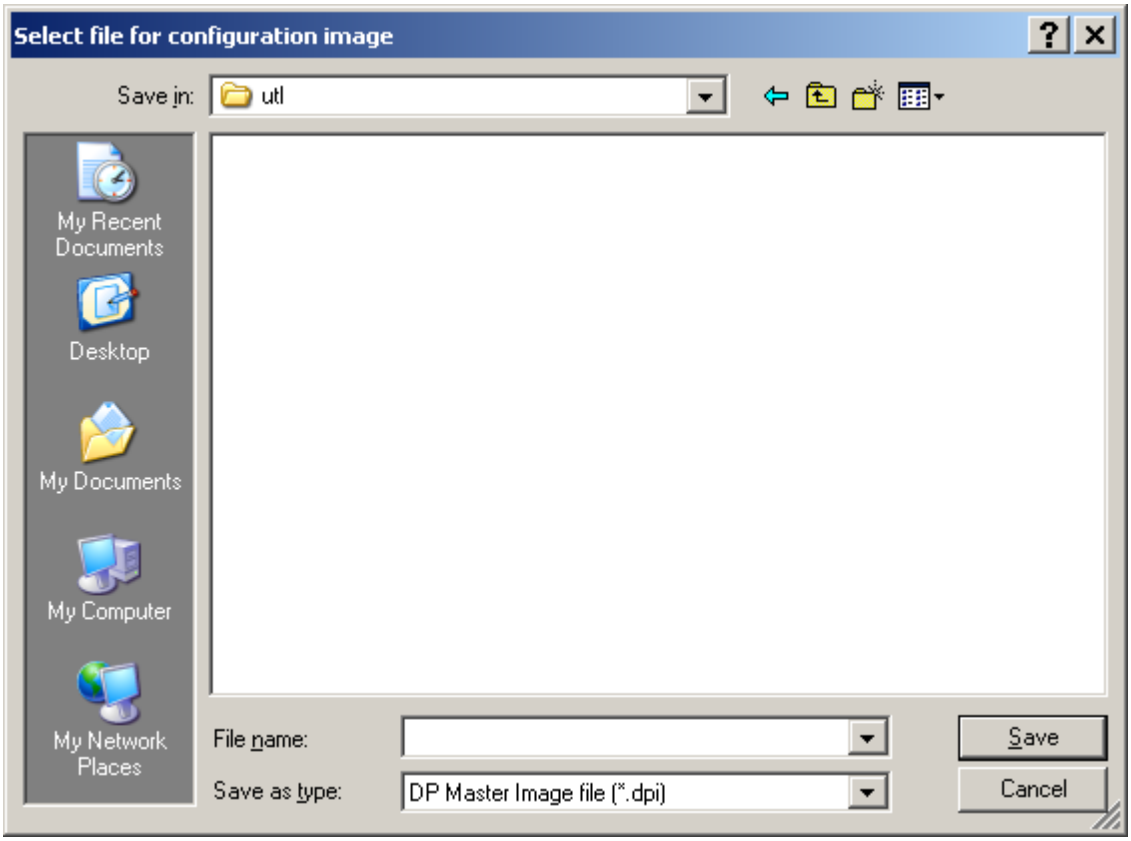


If there is only one master module in the redundant system as in a QnPRH (2nd) with a single expansion backplane, only the configuration of this master is compared with the project.

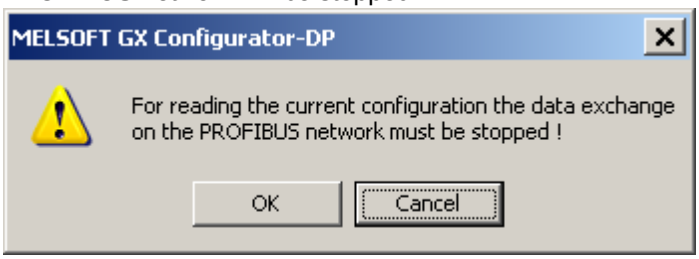


Upload Config. Image

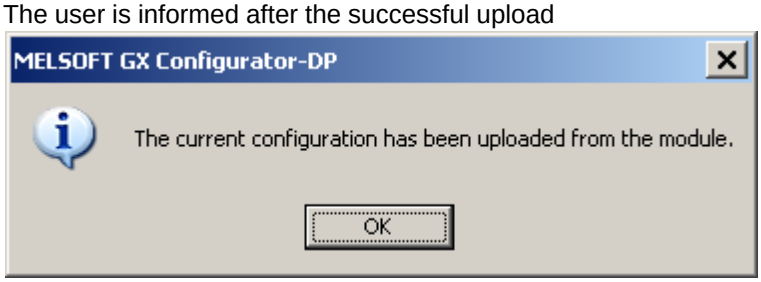
The user is prompted for a file, in which the configuration image should be stored.



For PB92D masters a warning is displayed to inform the user that the data exchange on the PROFIBUS network will be stopped.



The current configuration is read from the master module and stored in binary format in the file, which the user has selected. Information stored in the PLC CPU like autorefresh settings or POU code is not retrieved.
The user is informed after the successful upload



or gets an error message, if it fails.

The configuration image can be used to configure another master module, if the original GXDP project file is not available. The configuration image is downloaded to a master with the **'Download Config. Image'** function.

Note: the information read from the master module cannot be used to create a GXDP project file.

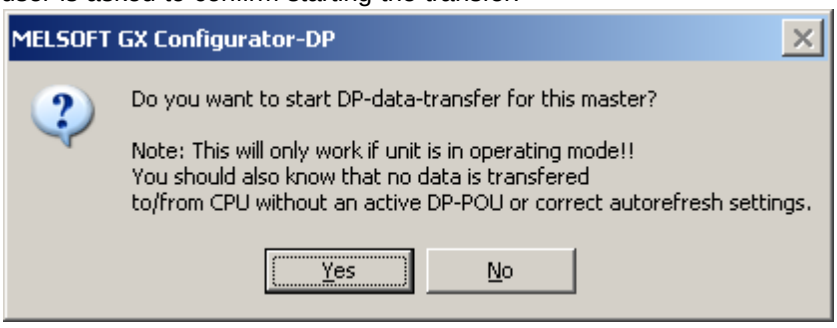
Download Config. Image

The user must first select a file with a configuration image created by a previous upload (see **'Upload Config. Image'**) or the corresponding export function of GXDP (see **'Export -> Config. Image'**). This configuration must be compatible to the module type set in the current project. GXDP reads the configuration image from the file and downloads it to the master module.
The user is informed after the successful download

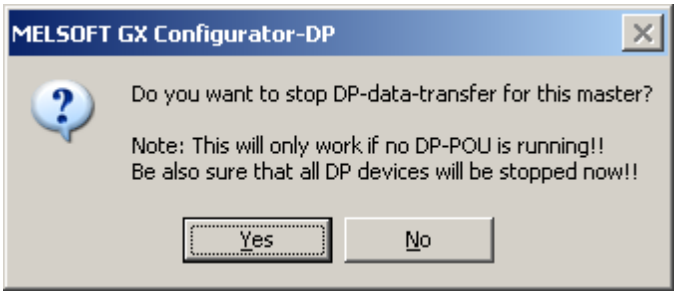
or gets an error message, if it fails.

Start/Stop PROFIBUS

This item is used to manually start or stop the PROFIBUS DP cyclic data transfer of DPV0. The current status of the connected PROFIBUS master is checked. If there is no active data transfer, the user is asked to confirm starting the transfer.



If the data transfer is active, the user is asked to confirm stopping the transfer.



The cyclic data transfer is started respectively stopped. If a PLC program is running, which starts the data transfer, while the user tries to stop the data transfer, the operation fails. An error message is displayed and the user is informed of the possible access conflict between PC and PLC program.

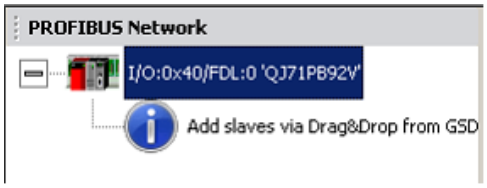
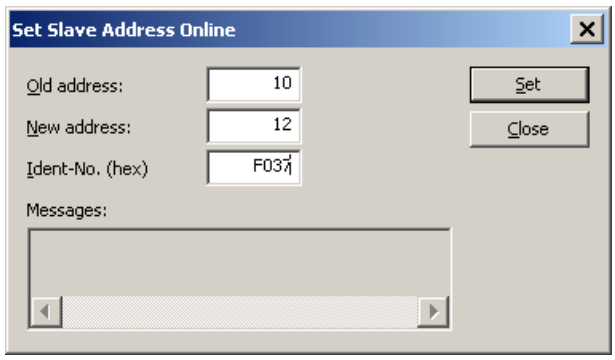
Set Slave Address

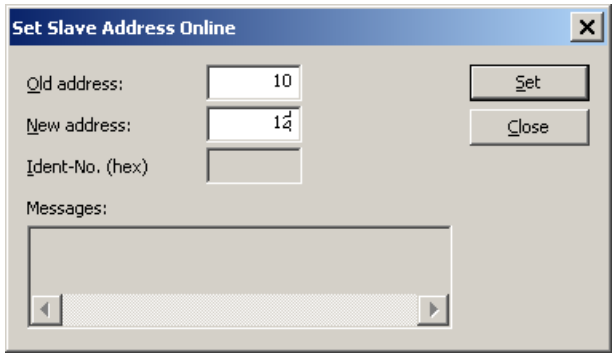
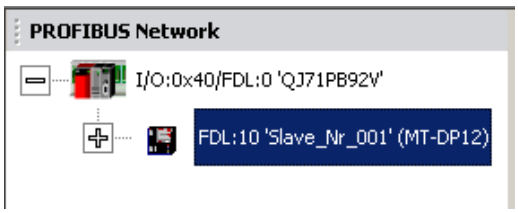
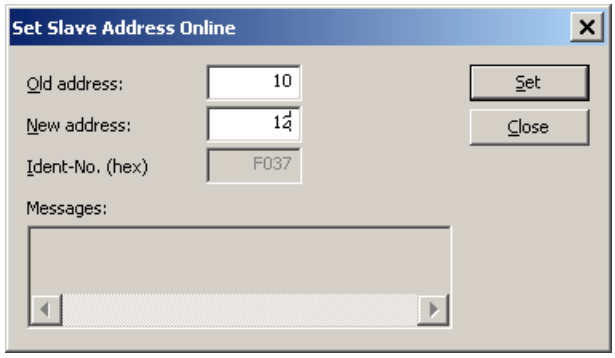
This function is provided to change the FDL address of a slave device online.

Note: this function is only available for QJ71PB92V and FX3U-64DP-M and must be supported by the slave.

The appearance of the dialog, which is opened when selecting the ‘Set Slave Address’ item,

depends on the master type and the node, which is selected in the project tree.

<table>
<tr>
<td>Master is selected
 
</td>
<td>for QJ71PB92V (Ident-No. must be entered)
 

for FX3U-64DP-M (Ident-No. not required)
 
</td>
</tr>
<tr>
<td>Slave is selected
 
</td>
<td> 
</td>
</tr>
</table>

If the master is selected, the user must enter the current address of the slave. For QJ71PB92V also the ident number must be entered. If a slave is selected, the current slave address and the ident number are taken from the project settings and both fields are read-only.

The service requires the current and the new FDL address as parameters, together with the ident number of the slave, which is checked to ensure that the correct slave is accessed. The current address and the ident number are taken from the slave, which has been selected in the project tree.

By pressing ‘Set’ the request is sent to the slave. The response (success or failure) from the slave is displayed in the ‘Messages’ field.

Request to change FDL address has been sent.

Note:

A positive response does not imply that the slave has actually changed its address. This must be verified by the user with other means (e.g. using the 'Live List' function of FX3U-64DP-M).

QJ71PB92V

FDL address change request has been sent.

FX3U-64DP-M

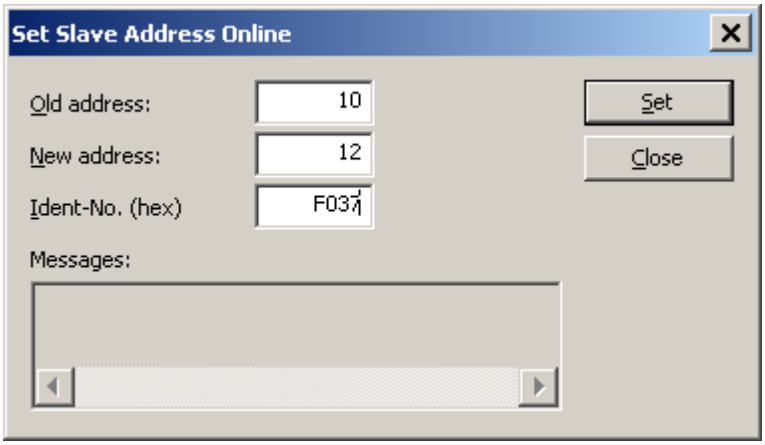
FDL address change request has been sent.
Please check with the 'Life List' function, whether the FDL address has actually been changed.

Failure

Failed to change FDL address

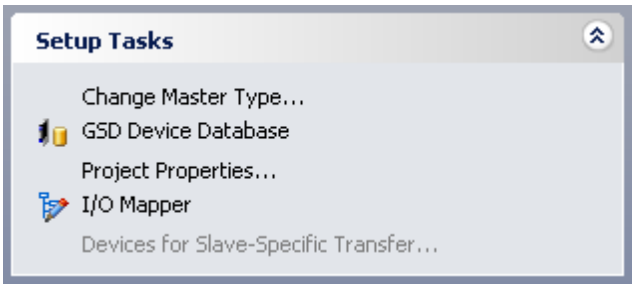
Note that FDL address cannot be changed, if data transfer is active

For setting the slave address the data exchange on the PROFIBUS network must be stopped!



Name	Description	Choices / Setting range	Default
Old address	current FDL address of the slave If a slave is been selected in the project tree, the address of that slave is set as default, if the master is selected, the user can enter any valid address	0 -126	
New address	the new FDL address to be set in the slave	0 – 125	
Ident.-No. (hex)	the identification number is used to verify that the correct slave is addressed. This parameter is only required for QJ71PB92V. If a slave has been selected in the project tree, the ident no. of that slave is inserted, if the master is selected, the user must enter the correct ident number (for QJ71PB92V only) in hex format. The FX3U-64DP-M will internally determine the ident number for the specified 'old address' and insert it into the PROFIBUS request.	the ident number (range 0x0000 – 0xFFFF)	
Messages	the result of the operation (success or error message)		
Set	sends the 'SetSlaveAddress' request		Default button
Close	Close dialog		-

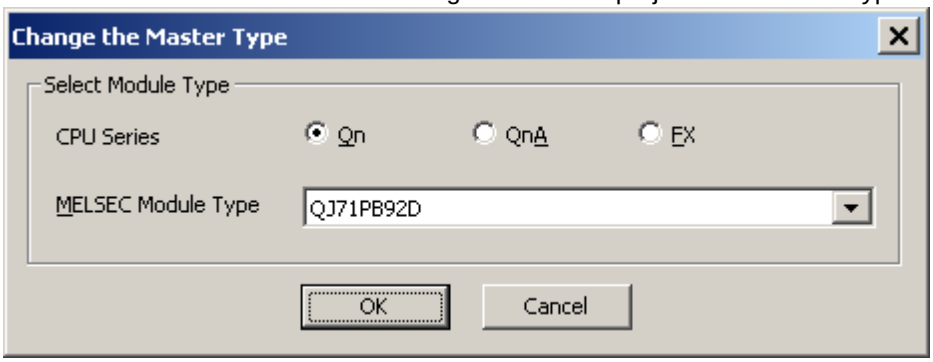
5.2 Setup Tasks



Command	Description
Change Master Type	Convert the project to a different type of master module
GSD Device Database	Open the trees with the device types in the global device database and in the project file
Project Properties	Open a dialog to select the GID/GD project and to set the comment
I/O Mapper	Open the editor for defining the structures for access to slave inputs/ outputs **Note**: this entry is disabled, if 'slave specific' transfer has been selected in 'CPU Device Access'
Devices for Slave-Specific Transfer	Edit the device addresses for slave-specific data transfer **Note**: this entry is only enabled, if 'slave specific' transfer has been selected in 'CPU Device Access'. Slave-specific transfer is only supported for Q-series PROFIBUS master modules in combination with autorefresh.

Change Master Type

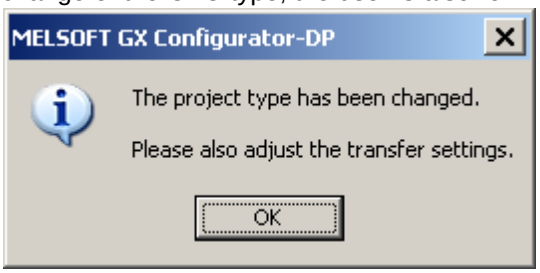
With this menu item the user can change the current project to a different type of master module.



Name	Description	Choices / Setting range	Default
CPU Series	selection of CPU series, in which the PROFIBUS module is used	Qn, QnA, FX	Qn

Name	Description	Choices / Setting range	Default
MELSEC Module Type	module types supported by the selected CPU series Note: the current module type of the project is not listed	Qn: QJ71PB92V QJ71PB92D QnA: A(1S)J71B92D FX: FX3U-64DP-M	QJ71PB92V
OK	convert the project to the selected type and close the dialog		Default button
Cancel	discard changes and close the dialog		

If the project can be converted, a message is displayed. If the change of the master type implies a change of the CPU type, the user is also reminded to adjust the transfer settings.



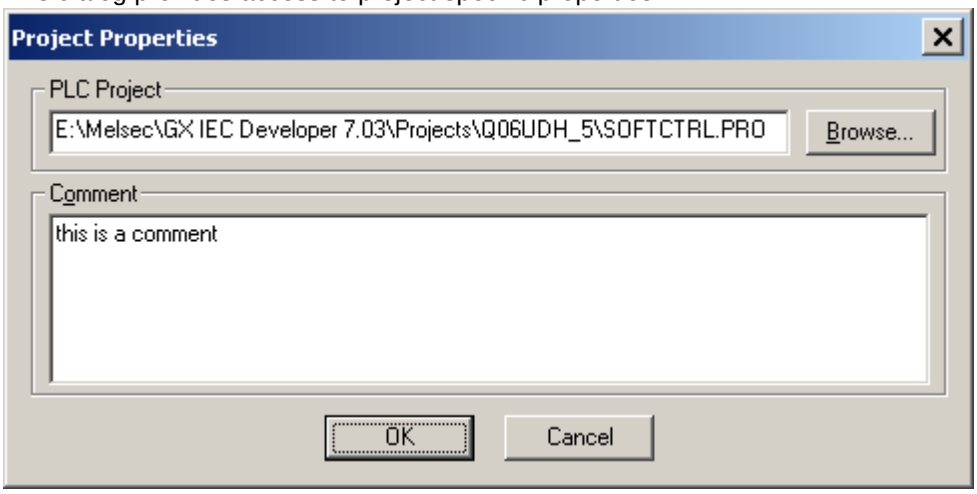
The project conversion may fail, if the current configuration is not supported by the new master, for example because of the number of slaves when converting a project from QJ71PB92V to QJ71PB92D.

GSD Device Database

Opens the tree views for the device types stored in the global device database and in the project file. For a detailed description see 'GSD Device Database'.

Project Properties

This dialog provides access to project specific properties



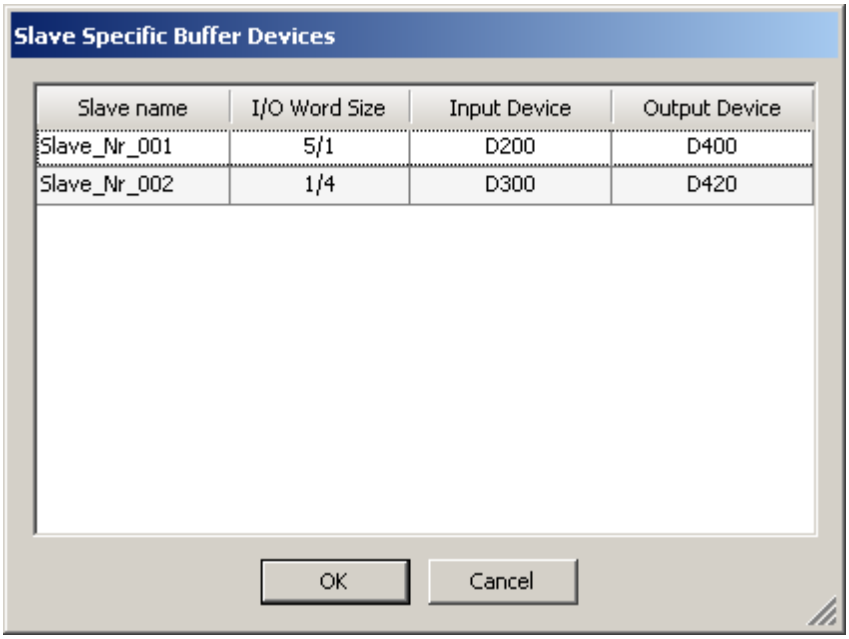
Name	Description	Choices / Setting range	Default
PLC Project	select the project file of the corresponding GD/GID project. The project directory is used to locate the image file for autorefresh parameter settings (iparam.wpa) in the 'Resource' subdirectory of the GD/GID project. This file is updated by GXDP, if the 'Autorefresh'-option has been selected		-
Browse	opens file dialog to select the GD/GID project file	max. 255 characters	-
Comment	an optional comment text of max. 255 characters length, which describes the project	max. 255 characters	-
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-

I/O Mapper

Opens the table for defining 'Data Unit Types' (DUTs) and global variables for access to slave input and output data. For a detailed description see 'I/O Mapping'.

Devices for Slave-Specific Transfer

The item is only accessible, if slave-specific transfer has been selected in 'CPU Device Access'. It opens a modal dialog, which lists the slaves configured in the project sorted by FDL address along with their respective input and output size. The user can assign a device address to each input and output area of slave. The contents of these devices are exchanged with the input and output areas in the buffer memory of the master via autorefresh.



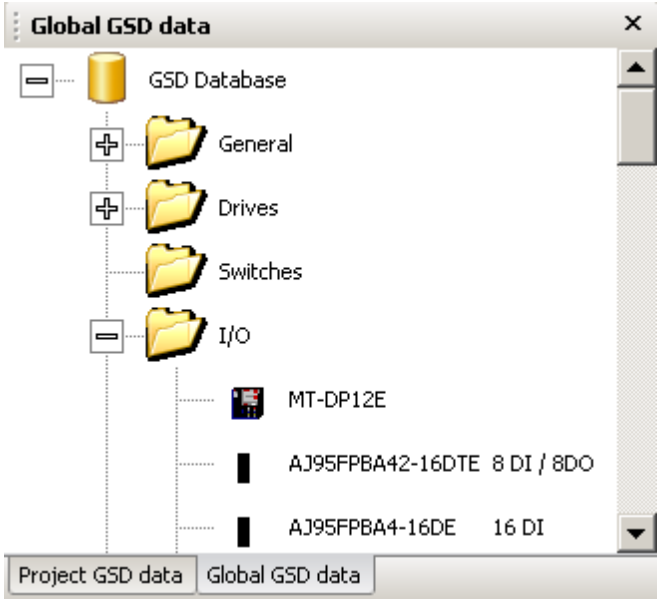
<table>
<tr><th>Name</th><th>Description</th><th>Choices / Setting range</th><th>Default</th></tr>
<tr><td>Slave List</td><td>
<table>
<tr><th>Column</th><th>Contents</th></tr>
<tr><td>Slave name</td><td>user-assigned name of the slave</td></tr>
<tr><td>I/O Word Size</td><td>input and output size of the slave in words (odd byte sizes are rounded up to the next word boundary)</td></tr>
<tr><td>Input Device</td><td>device address to transfer inputs to</td></tr>
<tr><td>Output Device</td><td>device address to transfer outputs from</td></tr>
</table>
</td><td>input and output devices must be word devices and must be supported by autorefresh
if the slave has no inputs or outputs, the corresponding device address input field is disabled</td><td></td></tr>
<tr><td>OK</td><td>Close dialog and saves entered device addresses</td><td></td><td>Default button</td></tr>
<tr><td>Cancel</td><td>Close dialog and discard changes</td><td></td><td>-</td></tr>
</table>

Note: slave-specific transfer is only available in combination with autorefresh and not together with I/O mapping. This means that no POU/user library is generated for slave-specific transfer.

5.2.1 GSD Device Database

The device database contains information about PROFIBUS DP slave device types from MITSUBISHI ELECTRIC or 3rd party manufacturers. New device types are added to the database by parsing the GSD file, which accompanies the device.
When a slave is added to a PROFIBUS master configuration project, the GSD information for the slave is copied from the global GSD database to the project file. This enables the user to edit a project file on a different system, without having to add the device types to the respective global database again. Due to these procedure there are actually two databases with GSD device information, the global database under the installation directory of GXDP and the project file.

GSD Database Device Tree



A device database is accessed via a tree-like user interface. The GXDP user interface contains two

device tree windows, one for the global GSD database, one for the GSD information in the project file. You can switch between the two GSD data trees by selecting the corresponding tab.

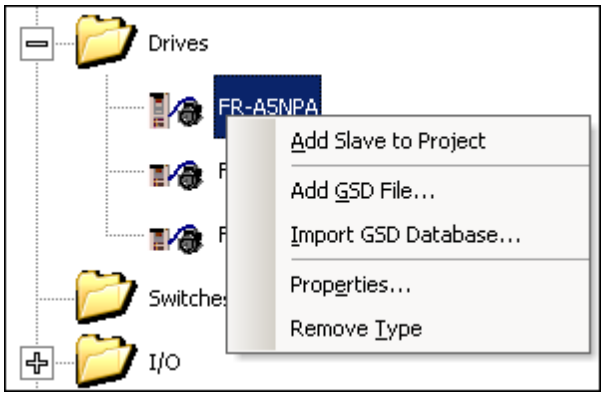
Global GSD data	Caption	
	Tab	
Project GSD data	Caption	
	Tab	

If a slave type from the 'Global GSD data' tree is added to the project and the GSD information for that type is missing in the project, the GSD information is added to the project and a node for the type is inserted in the 'Project GSD data' tree.

The device groups are represented by folders, with the device types of the group as child nodes. The tree node of a device type shows the bitmap of the device and its type name. If no specific bitmap has been assigned to the device, the default bitmap is displayed.

The device tree for the global GSD database provides a context menu with functions to modify the database.

Slave selected in 'Global GSD data'



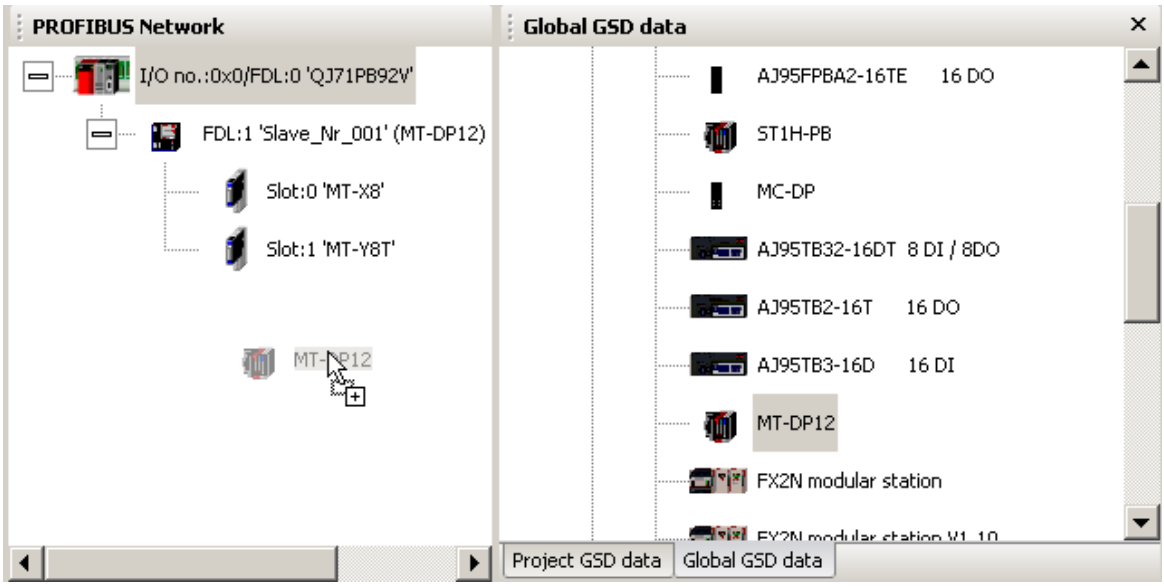
Group selected in 'Global GSD data'

Slave selected in 'Project GSD data'

Menu Item	Description
Add Slave to Project	add the selected slave to the project Note: this menu item has the same effect as adding a slave via drag&drop
Add GSD File	opens a file dialog to select a GSD file, which is to be parsed and added to the database
Import GSD Database	import device types from a GSD database (.mdb), GSD export file (. ext) or GXDP project file (.dp2)
Properties	opens a dialog to view properties of the selected slave type. In the 'Global GSD data' tree some of the properties can be changed, e.g. the bitmap, in the 'Project GSD data' tree the properties are read-only
Remove Type	removes the slave from the database

Add Slave to Project

To add a slave of the selected type to the project, the user can either select the corresponding menu item from the context menu of the GSD tree or move the mouse pointer to the project tree while keeping the left mouse button pressed.



A slave can be added from the ‘Project GSD data’ and the ‘Global GSD data’ tree. If a slave type is added from the ‘Global GSD’ tree and GSD information for the selected type is missing in the project file, the GSD information is transferred from the global GSD database to the project file. If the slave type is already in the project file, the information in the project file is not changed. When the project is edited, the GSD information is always taken from the project to ensure data consistency. Changes made to ‘Global GSD data’ will only have an effect on an existing project, if the GSD information is updated, when the project is opened. Please see 'Update GSD Information in Project'. To make the user aware of the potential conflict of the same slave type existing in both GSD databases, a message box is displayed, if the user adds a slave from ‘Global GSD data’ to the project, while GSD information of the same slave type already exists in the project.

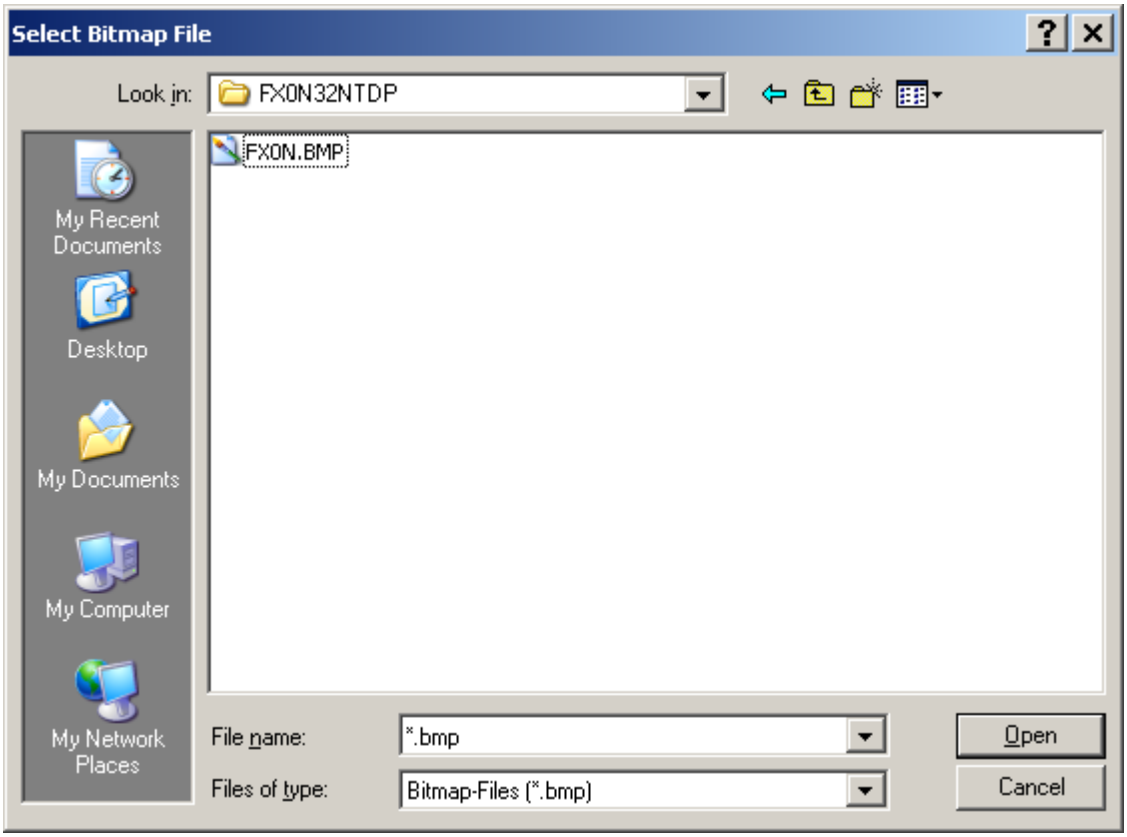
By marking the ‘Do not show this message again’ checkbox, further display of this message is avoided as long as GXDP is running. When GXDP is restarted, this mark is cleared and the message is displayed again.

Add GSD File

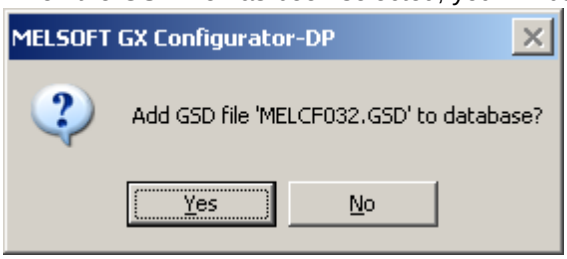
A GSD file can be added to the database by selecting the item 'Add GSD File...' from the context menu. A file dialog appears to select the GSD file. When leaving the dialog with <OK>, the GSD file is parsed and its contents stored in the GSD database. The GSD file itself is no longer required. If the GSD file references a bitmap file for the slave device, GX Configurator-DP automatically tries to load the respective bitmap file and store it in the GSD database. In case the file is not found a default bitmap is used instead. The bitmap can be replaced with a device specific bitmap later on. The PROFIBUS standard specifies the following format for the bitmap file:

Width	70 pixels
Height	40 pixels
Colors	16
File Extension	dib, bmp

Only bitmaps that match the requirements in the table above should be used. Other bitmaps with other sizes and color depths can be used, but may not be correctly displayed.



When the GSD file has been selected, you will be asked to confirm the operation.



If you confirm, the contents of the GSD file are parsed and added to the GSD database.

Please ask the manufacturer of the slave device for the matching GSD file.

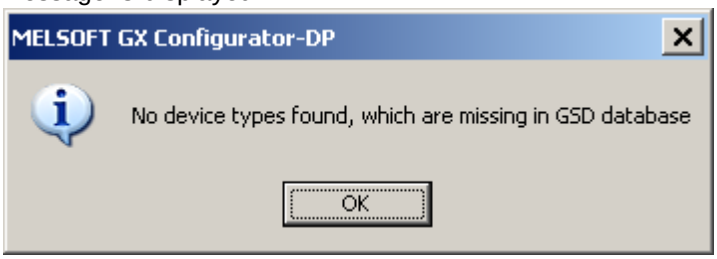
Import GSD Database

The GSD information for device types, which are missing in the GSD database, can be imported from an old GSD database (gsd_db.mdb), a GSD export file (*.ext) or a GXDP project file (.dp2).

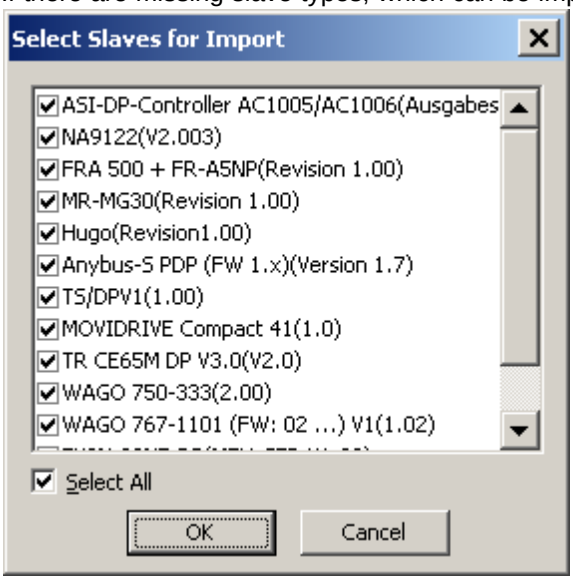
Note: it is strongly recommended to parse the GSD files for the slave devices using the 'Add GSD File' function instead of importing the parsed GSD information from older databases. This ensures that all GSD information supported by this version of GXDP is extracted from the GSD file.

Selecting the 'Import GSD Database' item in the context menu opens a file dialog to select the file

containing the GSD information to be imported.
If all device types found in the selected file already exist in the GSD database, the following message is displayed



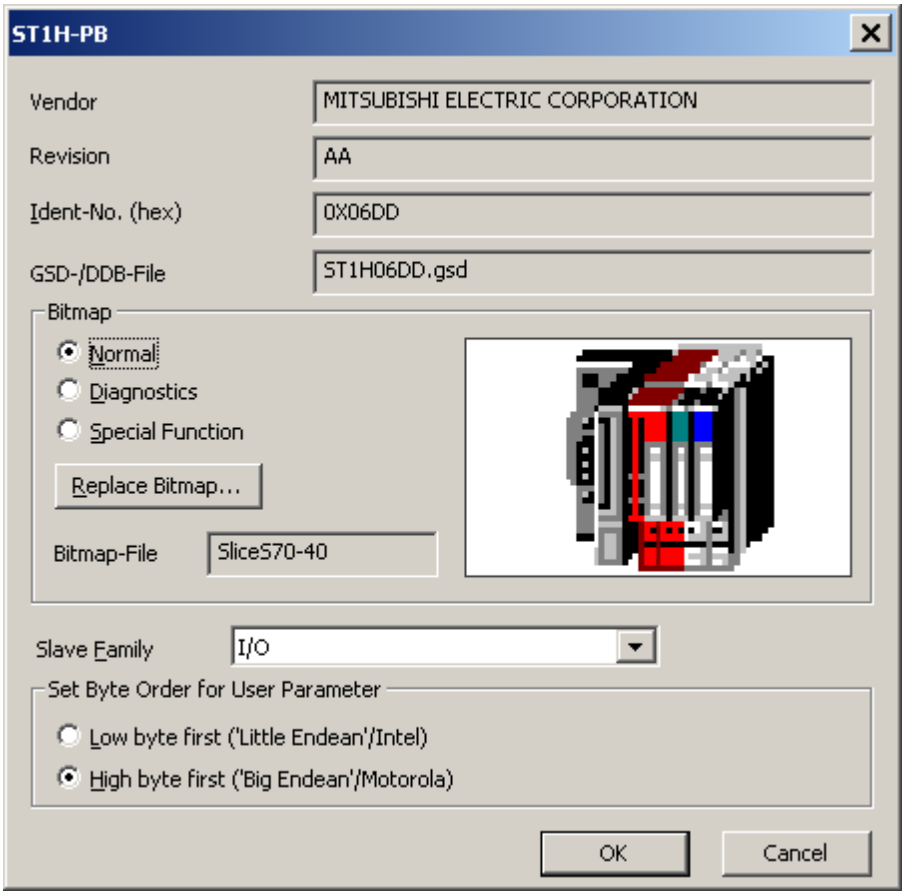
If there are missing slave types, which can be imported, these types are displayed in a list.



Name	Description	Choices / Setting range	Default
Slave Type List	list of slave types, which exist in the file selected for import, but not in the GSD database		
Select All	toggles the selection of the slave types		
OK	closes the dialog and adds the GSD information of the selected slave types to the GSD database		Default button
Cancel	closes the dialog		-

Device Type Properties

When the item 'Properties...' is selected in the context menu, the 'Device Type Properties' dialog is displayed.
If opened in 'Project GSD data', the device settings cannot be changed and the corresponding controls in the dialog are disabled.



Name	Description	Choices / Setting range	Default
Vendor	company name of the vendor (usually the value of the keyword 'Vendor_Name' in the GSD file)	read-only	-
Revision	the version of the device respectively GSD file (usually the value of the keyword 'Revision' in the GSD file)	read-only	-
Ident-No.	a number assigned by the PNO for unique device type identification. The value is taken from the entry 'Ident_Number' in the GSD file.	read-only	-
GSD-/DDB-File	name of the GSD file	read-only	
Bitmap	shows the slave-specific bitmap for the selected state, which has been stored in the database. Different bitmaps can be assigned to the following states: • Normal • Diagnostics • Special Function GXDP only uses the 'Normal' bitmap for		

Name	Description	Choices / Setting range	Default
	display.		
Replace Bitmap	opens a file dialog for selecting the bitmap file to be assigned to the selected state	in 'Global GSD data': enabled in 'Project GSD data': disabled	
Bitmap-File	name of the bitmap file	read-only	
Slave Family	allows to alter the slave family set by the GSD file, under which the slave is located in the tree	in 'Global GSD data': enabled in 'Project GSD data': disabled	
Set Byte Order for User Parameter	selects the byte order for user parameters of types short and long (signed and unsigned). This setting should normally never be changed, because PROFIBUS specifies big Endean, which is the default	Low byte first / High byte first in 'Global GSD data': enabled in 'Project GSD data': disabled	High byte first
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-

Replace Device Bitmap

The user can replace the existing bitmap of the slave by pressing the button 'Replace Bitmap'. This opens a file dialog, in which a file with a new bitmap can be selected. The device database can store three different bitmaps for a device type, used for different states of the device. Via the group of radio buttons the state, in which the bitmap is used, is selected.
The GSD standard specifies bitmaps for:

- normal operation (this is used in the GX Configurator-DP editor)
- diagnostic status
- special operations mode

When a bitmap is replaced, this applies only to the selected state.

Change Slave Family / Group

When a slave device is added to the GSD database, it is placed in the slave family, which is specified in the GSD file. If no slave family has been specified, the slave is placed in the 'General' group. The user can move the slave to a different group by selecting a group in the 'Slave Family' list and pressing <OK>.

Change the Byte Order of User Parameters

The default setting for the byte order is ‘High byte first’ and should normally never be changed from its default setting, because incorrect user parameter settings may have unforeseeable effects on the slave. To make the user aware of this a message box is displayed, whenever the user changes the byte order in the dialog

If the user confirms, the byte order is changed, but will only effect new projects. Because existing GXDP project files contain a copy of the GSD information, the change of the byte-order in the GSD database has no effect on the existing project. The byte order of user parameters must not be confused with the byte-order of the slave I/O data.

Warning:
Please consult the vendor of the slave before changing the byte order as incorrectly encoded user parameters can have unforeseeable effects and may cause malfunctioning or damage.

DPV1 Support

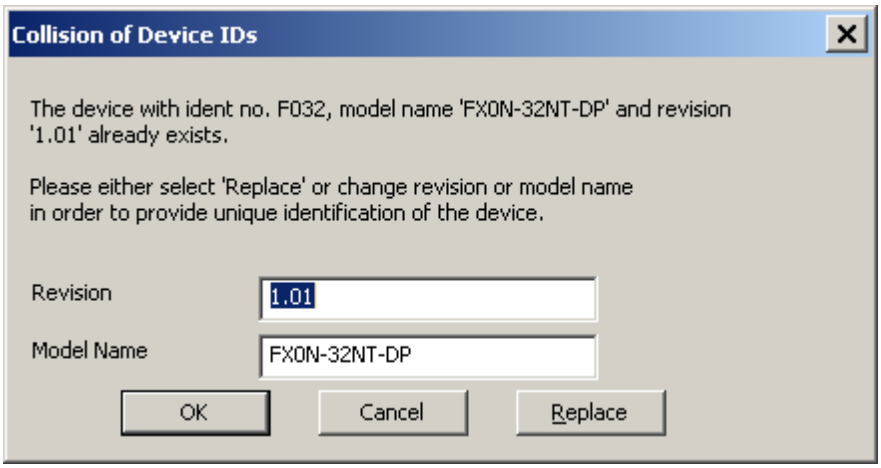
With DPV1 the meaning of the first three bytes of the slave user parameters is specified. Some slaves, especially older models, have placed slave-specific parameters in this range of the user parameters. If a slave supports the standard DPV1 user parameter format, the GSD file should contain an entry **'DPV1_Slave=1'**. With some slaves this entry is missing in their GSD file, although the slave require DPV1 support to be activated in the master. In these cases the entry **'DPV1_Slave=1'** must be inserted in the GSD file using a standard text editor (e.g. 'notepad'). After saving the modified file it must be added again to the GSD database.

GSD Update

If you try to add a GSD file to the device database for a device, which already exists, a warning is shown. You can either choose to add the device information with a device revision or type name different to that of the existing device or choose to replace the existing entry.

Note: please be aware that GXDP uses the combination of
- ident number (GSD keyword 'Ident_Number')
- model name (GSD keyword 'Model_Name')
- revision (GSD keyword 'Revision')

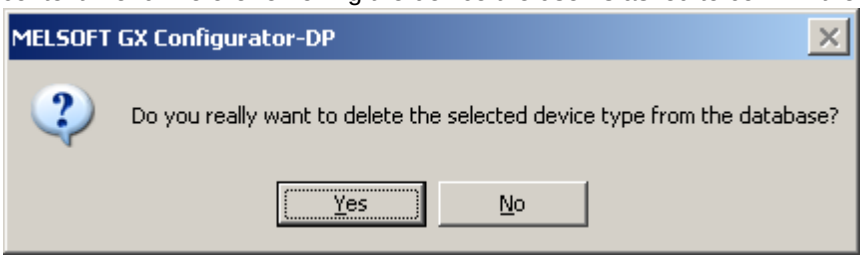
to uniquely identify a device. Two GSD files must differ in at least one of these three items in order to both be added to the GSD database.



If you choose to replace the GSD file, internally the existing entry is deleted first and then the new GSD file is parsed. This will however not effect existing projects, which already use the device type and where the GSD information is part of the project file.

Removing Type

A device type can be removed from the database by selecting the 'Remove Type' item from the context menu. Before removing the device the user is asked to confirm the operation.



This deletes only the entry in the GSD database. It does not delete the GSD and bitmap files for that device. These files have to be removed manually.

5.2.2 I/O Mapping

The purpose of I/O mapping is an easier access to the input and output data cyclically exchanged between the PROFIBUS master and the connected slaves. In I/O mapping GXDP generates PLC program code, which will

- transfer output data from buffer devices to the buffer memory of the master
- transfer input data from the buffer memory of the master to the buffer devices
- generate 'Data Unit Types' (DUTs) for each slave module
- exchange data with devices selected by the user
- start the cyclic data exchange
- copy contents of diagnostic buffers to assigned devices
- reference I/O data via global variables

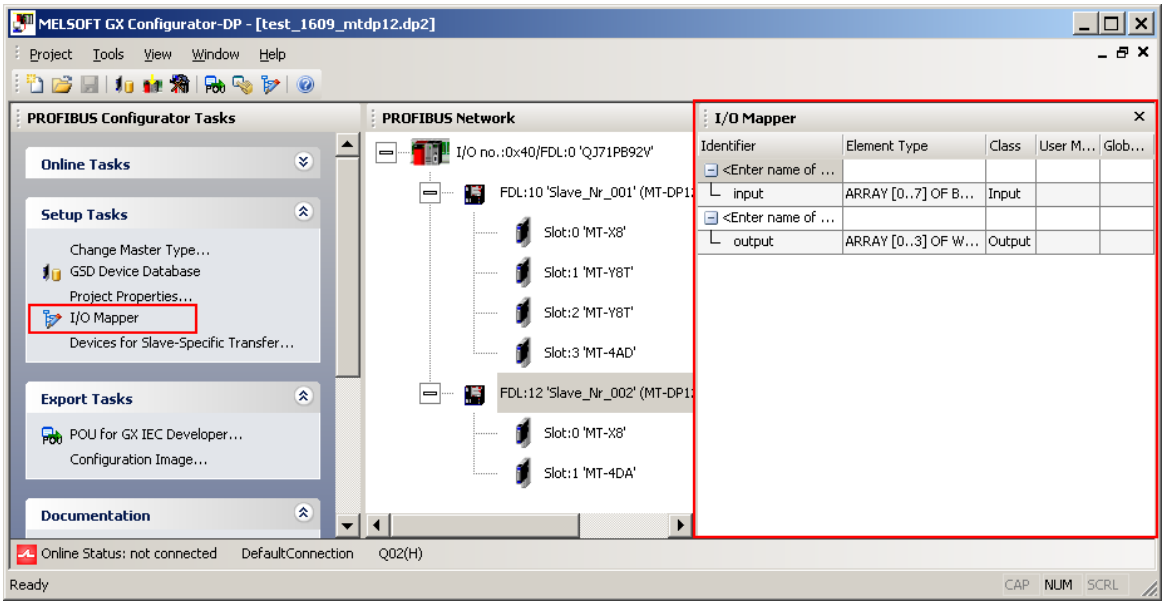
Instead of calculating the I/O data offsets of the slave modules within the I/O buffer of the master, the PLC program can read or write the respective global variables. These are part of the user library, which is generated via the menu item **POU for GX IEC Developer**.
I/O mapping program code is only available for the following master modules and operating modes

- A(1S)J71PB92D (Mode E only !)
- QJ71PB92D (Mode E only!)
- QJ71PB92V
- FX3U-64DP-M

Note: there is no I/O mapping and/or POU support for A(1S)J71PB92D and QJ71PB92D in mode 0.

I/O Mapping Editor

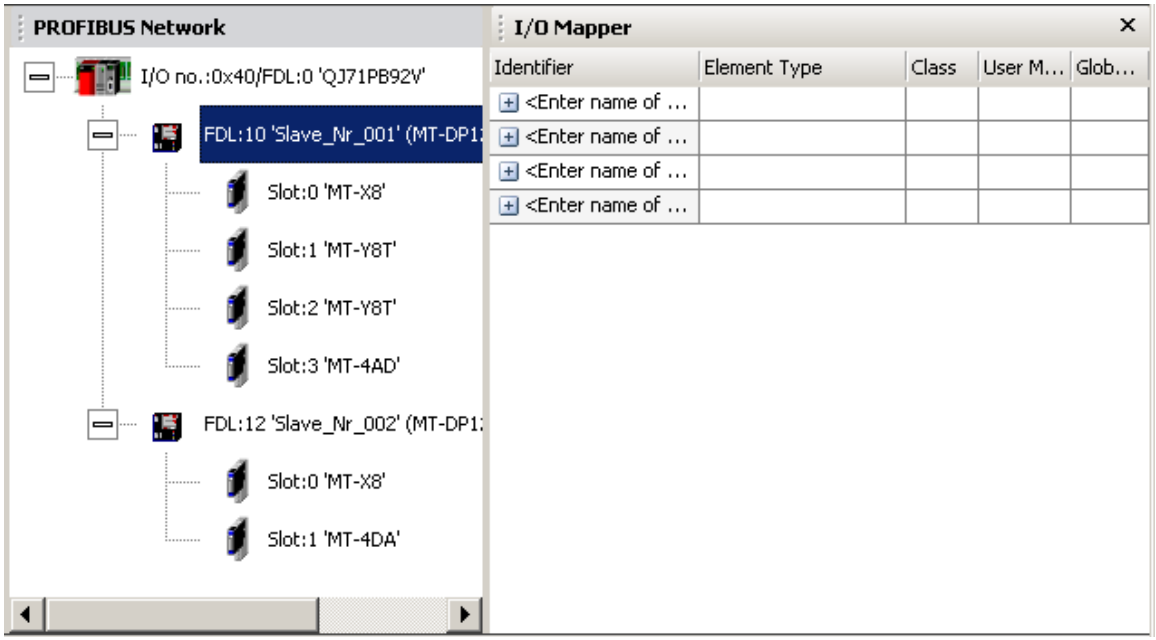
To open the editor for I/O Mapping select the corresponding item in the task panel.



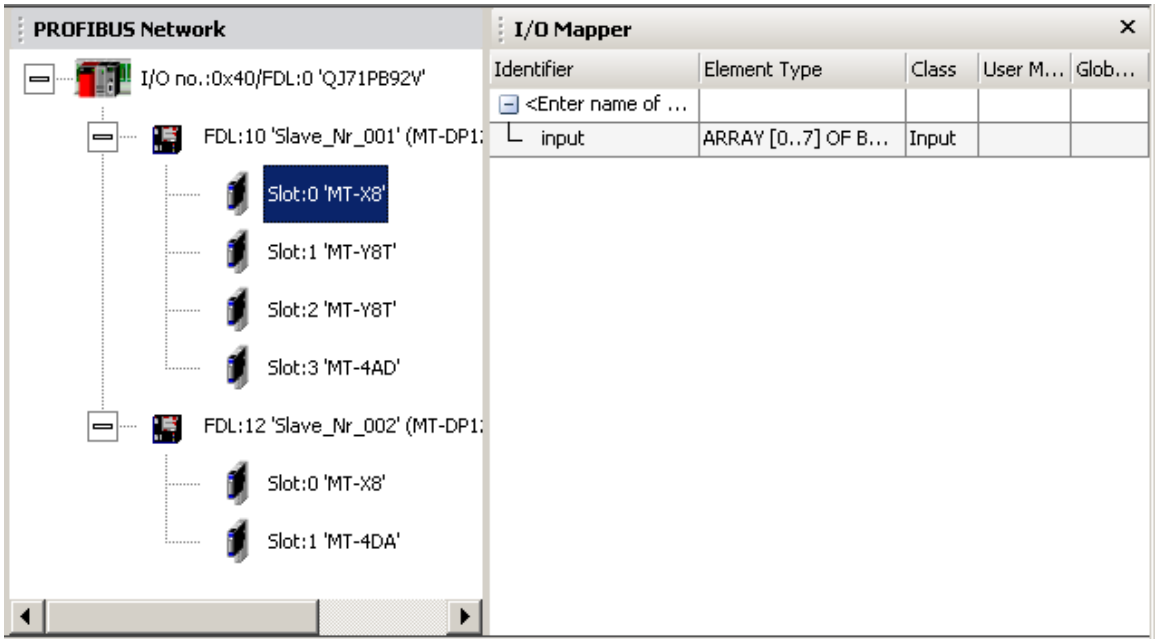
The navigation in the I/O mapping editor is done via the 'PROFIBUS Network' tree. The contents of the I/O mapping table depend on the node type, which is selected in the project tree.

Selected Node Type	I/O Mapper Table Contents
Master	-
Slave	only the DUTs for the modules of the selected slave
Slave Module	only the DUT of the selected module

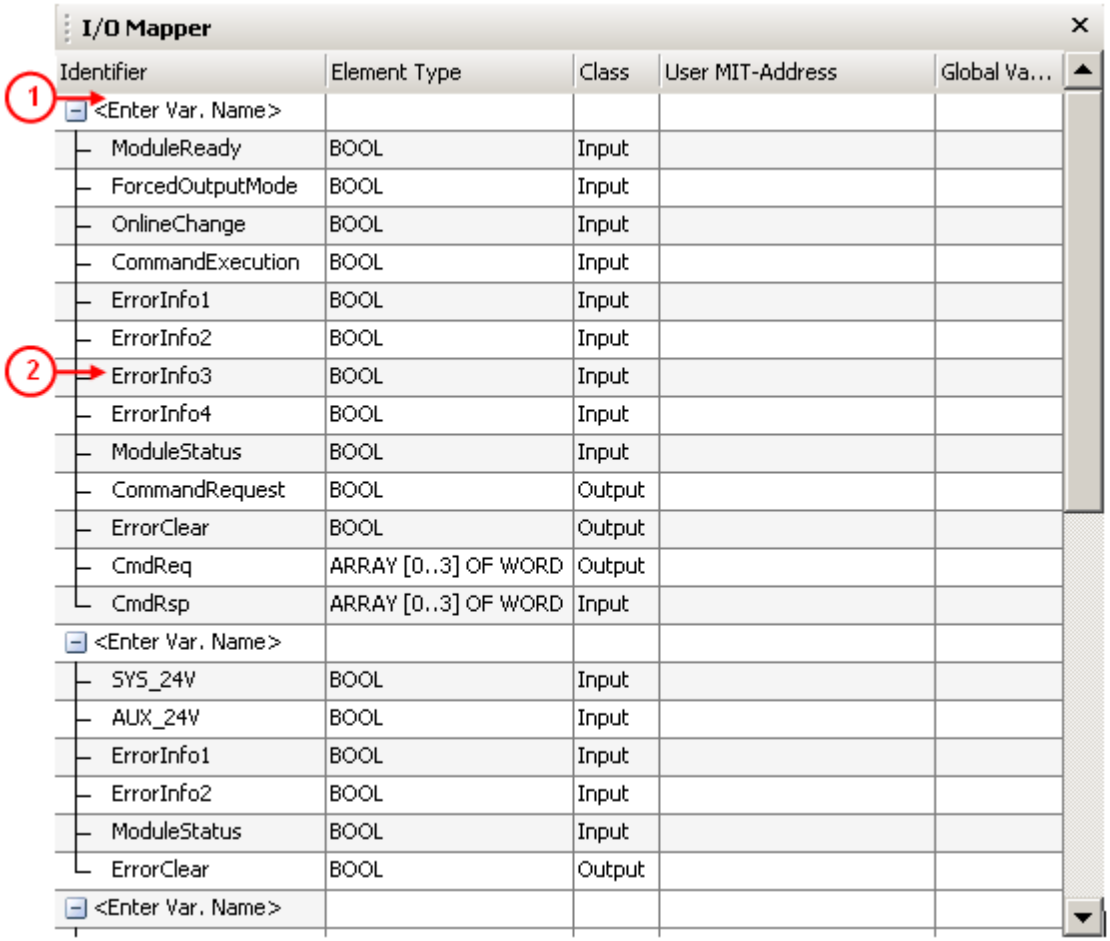
If a **slave is selected**, the DUTs of all modules of that slave are displayed in ‘collapsed’ state as default. The user can expand a DUT to view the DUT elements by pressing the ‘expand’ button in the ‘Identifier’ column.



If a **module is selected**, the DUT of the module is displayed in ‘expanded’ state as default. The user can collapse a DUT by pressing the ‘collapse’ button in the ‘Identifier’ column.



I/O Mapping Table



The I/O mapper table contains two types of rows

(1) a row for each DUT global variable showing the editable variable name

Column	Range	Description	Default
Identifier	1-32 chars	name of global variable	

(2) a row for each element of a DUT

Column	Range	Description	Default
Identifier	1-32 chars	name of DUT element	'input' or 'output' depending on buffer
Element Type	ARRAY, BOOL, INT, WORD	data type	BOOL, ARRAY OF BOOL, WORD or ARRAY OF WORD depending on buffer
Class	Input or Output	'Input' (data from PROFIBUS slave to PLC CPU) or 'Output' (data from PLC CPU to PROFIBUS slave)	depending on buffer
User MIT-Address		optional fixed device address, which contains a copy of the corresponding I/O point	empty
Global Var. Identifier	0-32 chars	optional fixed global variable, which contains a copy of the corresponding I/O point	empty

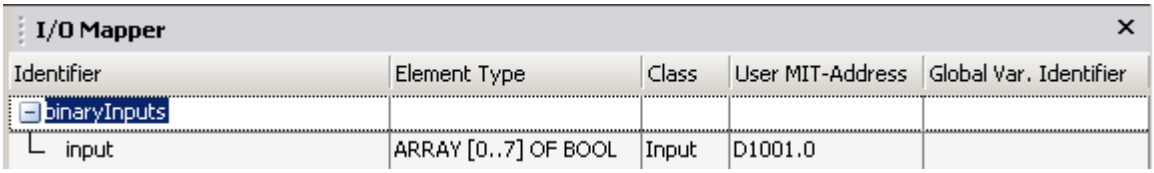
Note: the type name of a DUT cannot be set by the user, but is always automatically constructed, when the PLC code is exported. To ensure that the type name is unique the starting I/O number of the master, the FDL address of the slave and the index of the module are composed in the type name: ***tHA<starting I/O no.>SLV<FDL address>MOD<module index (slot)>***

Warning:
The buffer devices should not be directly accessed. If a 'Copy POU' with DUTs is used, the contents of the DUT variables, which are generated for all modules, are copied to the buffer devices. Data, which has directly been written by the application to these devices, is overwritten.

Note: the 'Global Variable List' (GVL) in GX IEC Developer (GID) will report overlapping addresses, because the addresses in the transfer buffer are referenced by
1. the automatically generated variables for the I/O transfer buffer
2. the global variables for DUTs
3. the global variables, which the user assigned to individual DUT elements

These warnings can be ignored.

DUT Variable Name



DUTs have no global variable names assigned as default. The cell for the DUT variable name contains the prompt '<Enter Var. Name>'. The user can select the cell and enter a unique variable

name. The variable name may not be a PLC device address.

DUTs are exported and instantiated, if…

1. the user has selected the PLC code option 'All DUTs'
2. the user has selected the PLC code option 'User variables' and
   ...has assigned a variable name to the DUT
   ...has assigned a device as 'User MIT-Address' (see 'User MIT-Address')
   ...has assigned a global variable name in 'Global Var. Identifier' (see 'Global Var. Identifier')

In these three situations a default name for the DUT global variable is constructed with the following scheme:

'vHA<starting I/O no.>SLV<FDL address>MOD<module index (slot)>'

For example with

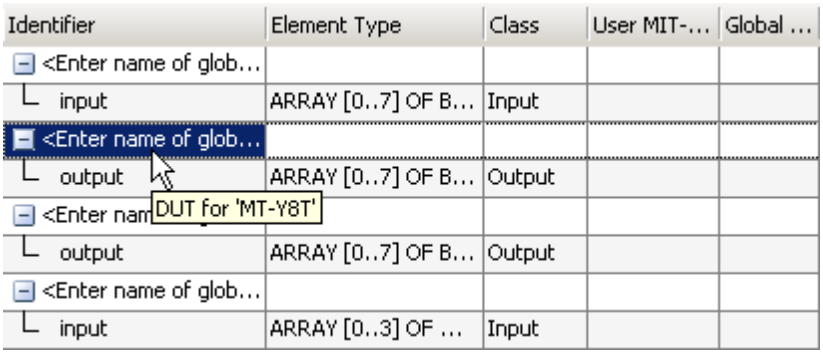
1. PROFIBUS master in the first slot (starting I/O number 0x00)
2. slave with FDL address 2

the DUT of the first module (index 0 in the slave) has the variable name 'vHA**0**SLV**2**MOD**0**.

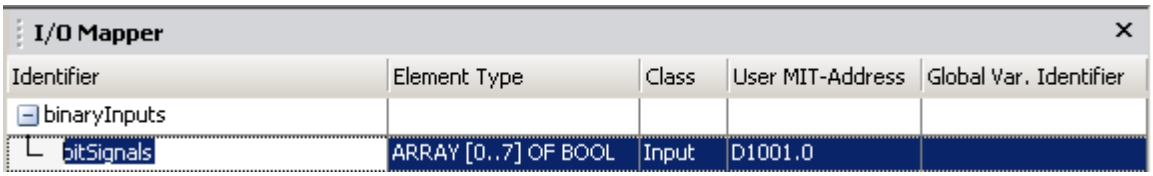
Program code with declaration of DUT variable with entered variable name:

```
…
VAR_GLOBAL
  binaryInputs: tHA4SLV10MOD01;
END_VAR

PROGRAM  MAIN_PRG_LD
(**)
…
```

The tooltip of the 'DUT Variable Name' cell shows the type name of the module, which is represented by the DUT.



DUT Element Identifier



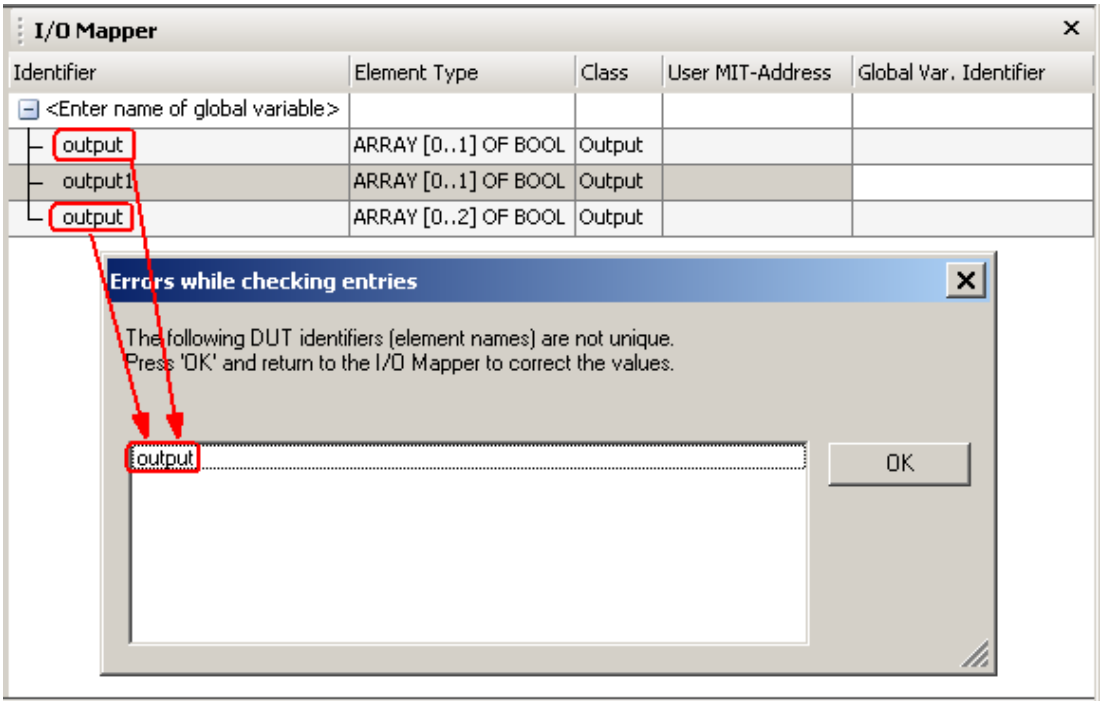
The default DUT elements are either taken from the configuration file, which contains the predefined DUTs for ST1H-PB slave modules, or constructed from the buffer class, i.e. 'input' or 'output'. The user can change the identifier by clicking in the corresponding cell and editing the name. The identifier must be unique within the DUT.

Note: the DUT elements of predefined DUTs (e.g. for ST1H-PB) cannot be changed. For these DUTs the element identifier, type and class are read-only.

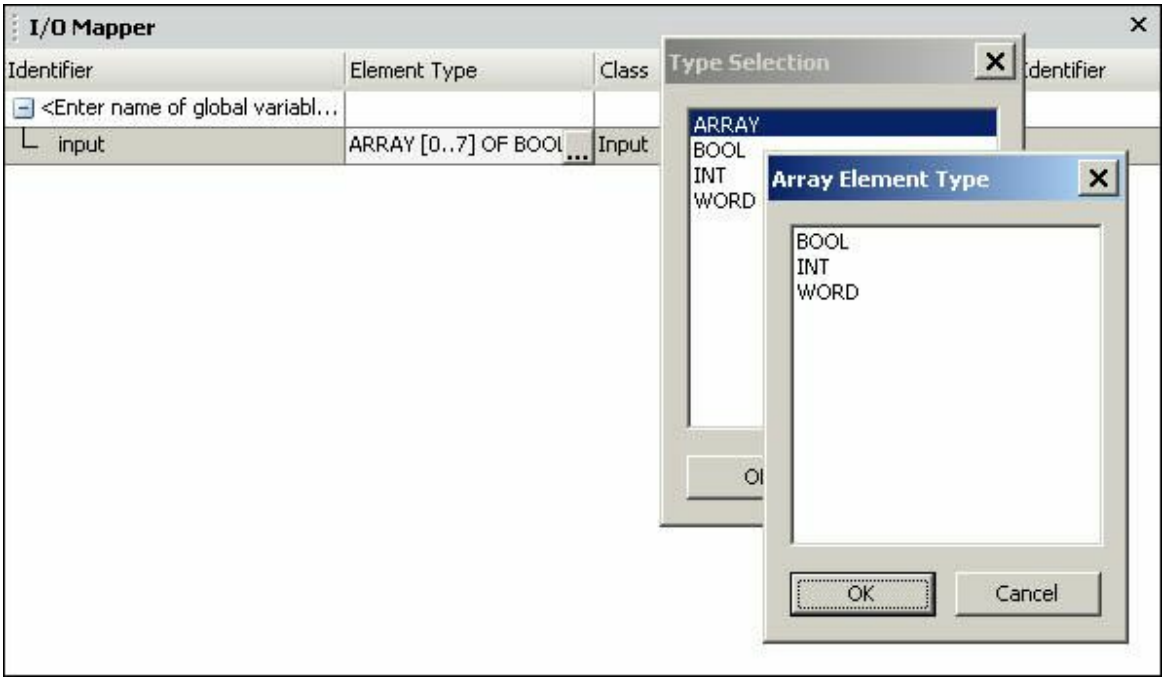
Program code with declaration of DUT with entered element identifier:

```
TYPE
  tHA4SLV10MOD01:
     STRUCT
        bitSignals: ARRAY  [0..7]  OF  BOOL:=[8(FALSE)];
     END_STRUCT;
END_TYPE
…
```

When the DUT is validated and multiple element identifiers are detected, an error message with a list of identifiers is displayed.



Type of DUT Element



For each slave module, which is added to the PROFIBUS configuration, GXDP generates a default DUT structure. It consists of an element for the module inputs and one for the module outputs. The default elements have the type 'ARRAY OF BOOL' with the size of module's input respectively output area, if the I/O-size of the module is an odd number of bytes. If the I/O-size is an even number of bytes, the default type is WORD or ARRAY OF WORD.

The user can change the data type of a DUT element by selecting the corresponding cell in the column 'Element Type' and either click into the cell or press **<F2>**. A button appears in that cell, which opens the 'Type Selection' dialog(s), offering the following data types

Data Type	Size in I/O Buffer
BOOL	1 bit
INT	16 bit (signed)
WORD	16 bit (unsigned)
ARRAY OF <Type>	number of array elements multiplied with size of data type

Instead of clicking into the button in the cell, you can press **<F4>** to open the 'Type Selection' dialog.

If the user selects the type 'ARRAY' in the first dialog, a second dialog is displayed to select the data type of the array elements. After the type selection dialog has been closed by pressing the OK button, the type text in the cell is updated. This text can be manually edited, e.g. to adjust the array size.

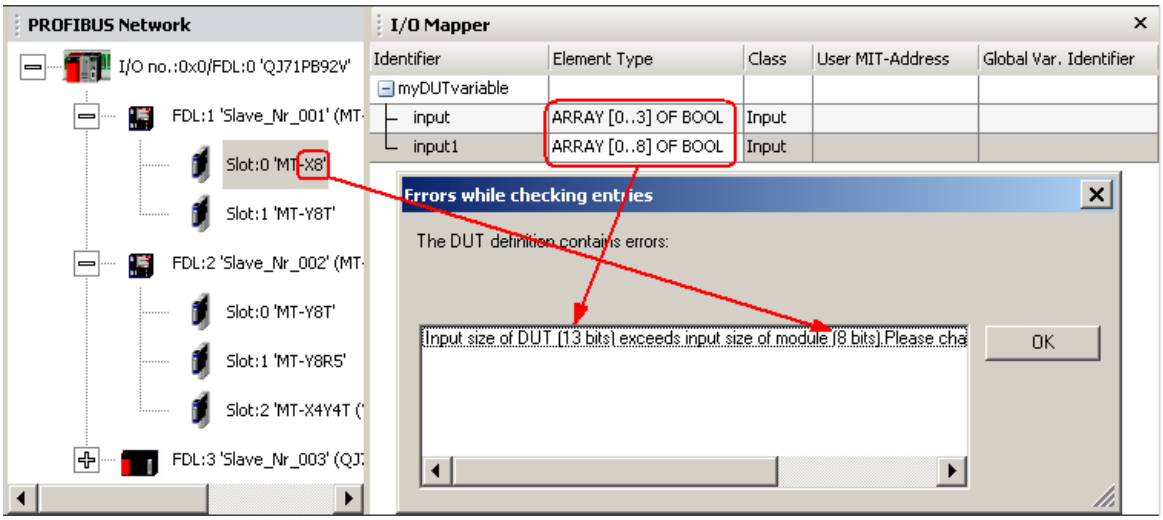
Note: the start index is always 0. If any other index has been entered, it is automatically changed back to 0 and the last index is set to the array size minus 1.

Program code with declaration of DUT with entered element type:

```
TYPE
  tHA4SLV10MOD01:
     STRUCT
        bitSignals: ARRAY [0..7] OF BOOL:=[8(FALSE)];
```

```
    END_STRUCT;
END_TYPE
…
```

When the DUT is validated, the total size of all input and of all output elements is compared with the input/output size of the module. If the DUT size exceeds the size of the module, an error message is displayed.



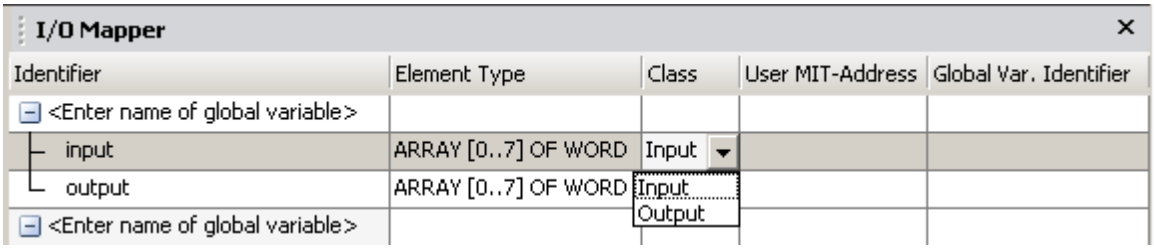
DUT elements, which are not of BOOL or ARRAY OF BOOL type, are automatically byte aligned. If for example a BOOL input element is followed by a WORD input element, the WORD element will be byte-aligned by inserting seven padding bits between the BOOL and the WORD element.

```
TYPE
  tHA4SLV10MOD01:
     STRUCT
        bitSignal: BOOL:=FALSE;
        wordData: WORD:=0;
     END_STRUCT;
END_TYPE
…
```

This results in a total I/O size of 24 bits (i.e. three bytes), instead of the 17 bits occupied by the defined DUT elements.

Note: WORD and INT variables can only reference device addresses, which are word-aligned. If a WORD/INT element in a DUT refers to a position in the transfer buffer, which is not on a word boundary, the corresponding DUT element must therefore be copied. This results in additional program instructions and increased memory use. For more efficient code the user should therefore pay attention to the sequence of PROFIBUS slave modules within a slave and of the type and order of DUT elements for each slave module.

Class of DUT Element

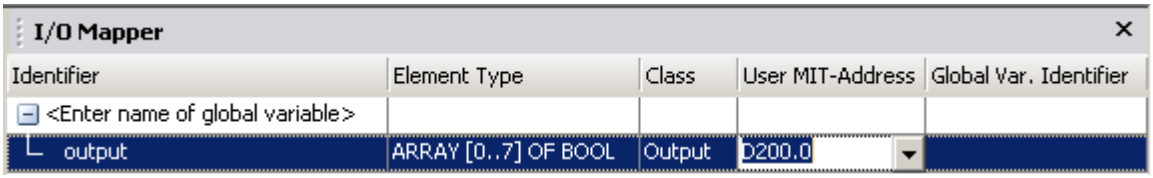


The class of a DUT element specifies the direction of the data transfer

Class	Direction of Data Transfer
Input	data from PROFIBUS slave to PLC CPU
Output	data from PLC CPU to PROFIBUS slave

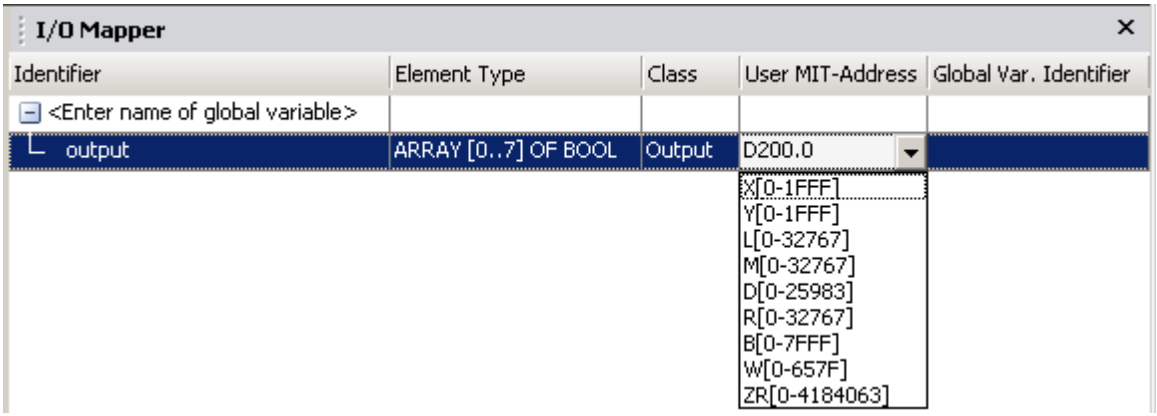
If the corresponding module has only inputs or outputs, the ‘Class’ property is fixed.If the module has both inputs and outputs, the user selects with the class property, whether the respective DUT element is located in the input or output area of the module.
To see the selection list click into the cell and click onto the button, which appears, or press **<F2>** to open the selection list.

User MIT-Address

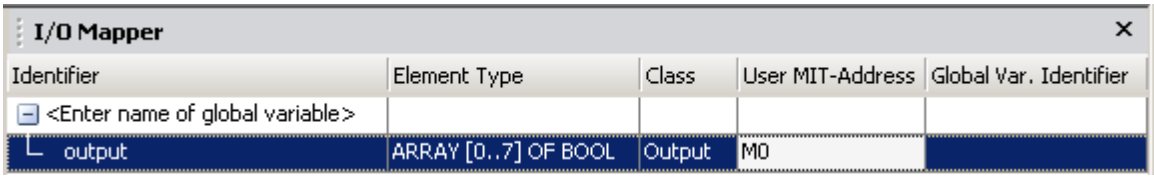


The user can assign an optional fixed device address to a DUT element. This device address will contain a copy of the respective DUT element. This feature benefits users, which always use the same device address for a certain function and do not want to use the symbolic access via a global variable name.

If the user clicks in the cell for the ‘User MIT-Address’ or presses **<F2>**, a button appears in the cell. Pressing the **<F4>** button opens a list of supported device types and address ranges. When a device type in this list is selected, the selected device type with address 0 is copied to the cell.



For example if the entry ‘M[0-8191]’ has been selected in the list, the device ‘M0’ is copied to the cell. This default device address must then be edited by the user.

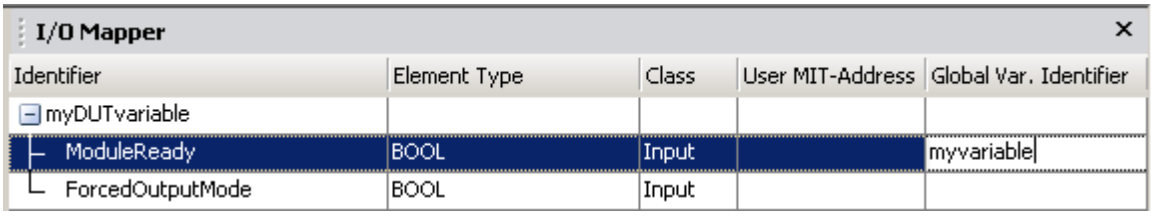


For BOOL elements the device must be a bit type or a word type with bit index.

If the user specifies a global variable name together with the device address, the global variable is placed at the specified device address. Only a single 'LD/ST' pair is used to transfer data from/to the user device and global variable element (except for ARRAY OF BOOL elements).

If the user does not specify a global variable name, but just a user device address, a temporary variable name is generated. This allows to create the same structure of POU code independently of whether a variable name has been specified or not.

Global Var. Identifier



The user can assign an optional additional global variable (GV) identifier to each DUT element. This adds the definition of a variable with the same type as the corresponding DUT element and the name entered by the user. This global variable contains a copy of the data of the corresponding DUT element. The identifier must be unique and may not be a device address.

The user defined global variable allows to use a simple fixed variable name instead of accessing the data via the DUT global variable. For the example in the previous figure the data can be accessed

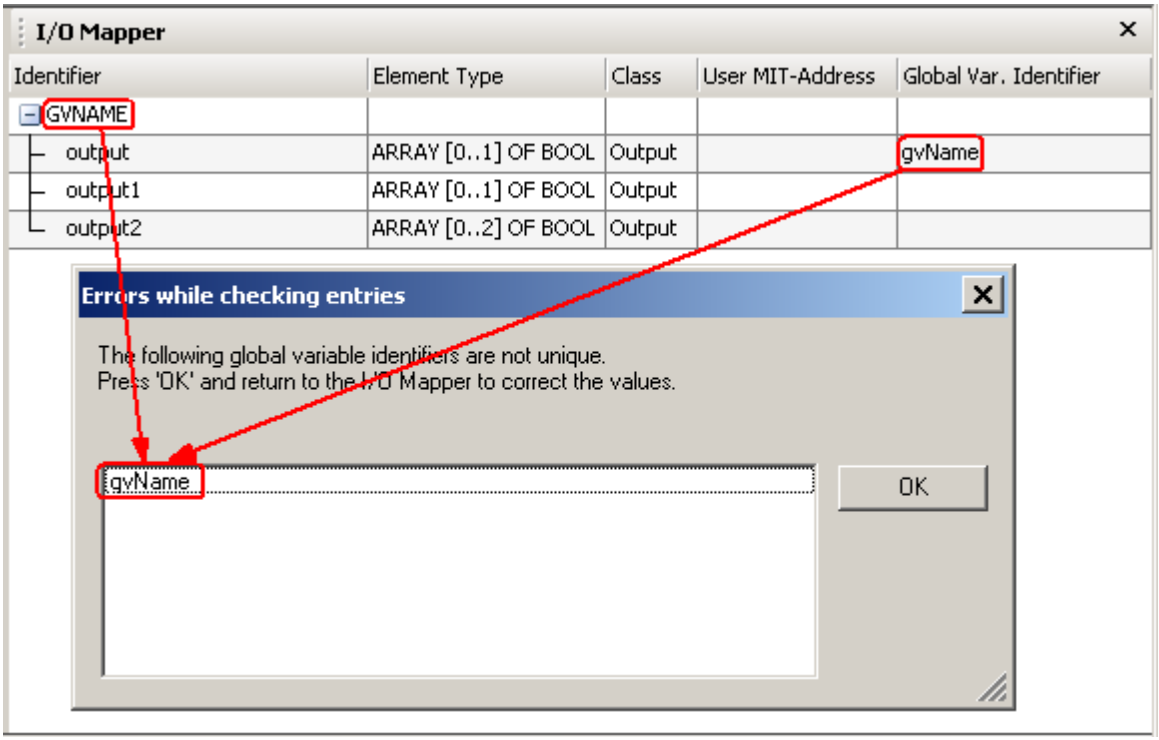
1. via the simple global variable ‘myvariable’ or
2. via the DUT element ‘ModuleReady’ of the DUT GV ‘myDUTvariable’, i.e. ‘myDUTvariable. ModuleReady’

Program code with

1. declaration of DUT
2. declaration of DUT variable with device addresses for DUT elements
3. declaration of user variable mapped to same device address as corresponding DUT element

```
TYPE
  tHA4SLV12MOD2:
     STRUCT
        ModuleReady: BOOL:=FALSE;
        ForcedOutputMode:   BOOL:=FALSE;
     END_STRUCT;
END_TYPE

VAR_GLOBAL
  myDUTvariable  AT  @'%MX0.100.8,%MX0.200.4':   tHA4SLV12MOD2;
END_VAR

CONFIGURATION   scConfiguration
  RESOURCE  scResource  ON  scResourceType

     VAR_GLOBAL
        myvariable AT %MX0.100.8: BOOL:=FALSE;
     END_VAR

  END_RESOURCE
END_CONFIGURATION
```

When the DUT is validated and global variable names are used several times, an error message with a list of global variable names is displayed (please notice that global variable identifiers are case-sensitive).

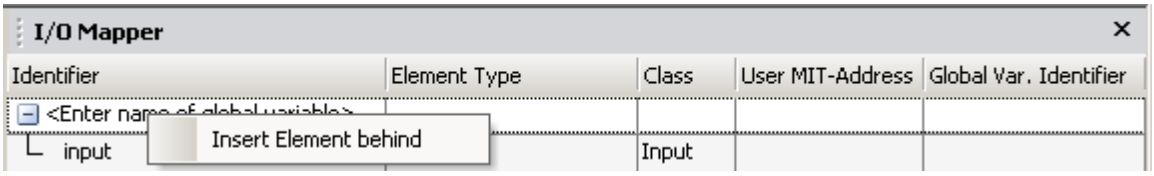


Note: the I/O mapping editor checks only the global variable names in the editor. A check of all variable names used in the project is done, when the POU is exported (see 'Check of Global Variable Identifiers').

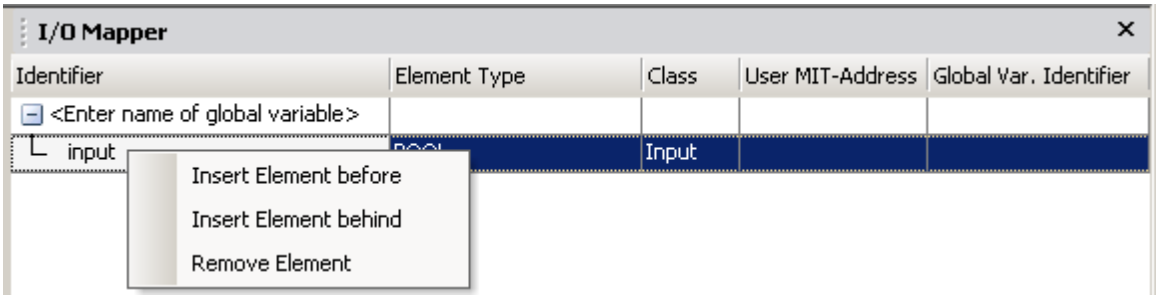
Insert/Remove DUT Elements

Functions for changing the structure of the DUT are called via a context menu. The context menu differs depending on the type of row, which is selected in the table.

The context menu, if the DUT variable row is selected



The context menu, if a DUT element row is selected

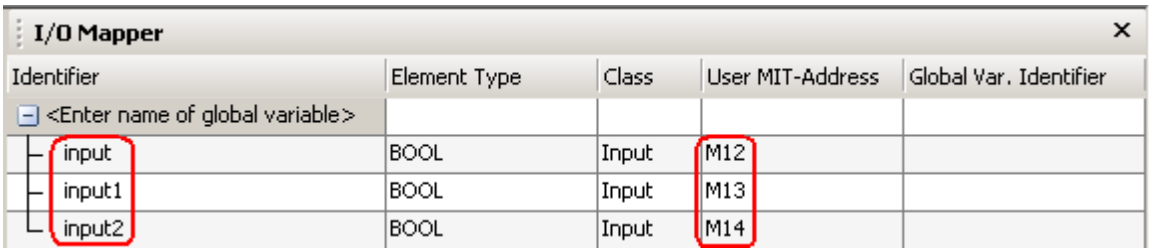


The user can change the structure of a DUT by adding or removing elements. The context menu in the DUT table contains the items

Menu Item	Function
Insert Element before	adds a new DUT element above the currently selected one If the new element is not the first one, its default settings are copied

Menu Item	Function
	from the previous DUT element, identifier and MIT-address are incremented.
Insert Element behind	adds a new DUT element below the currently selected one The default settings of the new element are copied from the previous DUT element, identifier and MIT-address are incremented.
Remove Element	removes the selected DUT element

The following screenshot shows the incremented identifiers and user MIT-addresses.



Note: the DUT elements of predefined DUTs (e.g. for ST1H-PB) cannot be changed. For these DUTs the element identifier, type and class are read-only.

5.3 Export Tasks

Command	Description
POU for GX IEC Developer	Generates import file and user library for import in GID
Configuration Image	Generates the binary download configuration image and writes it to a file

POU for GX IEC Developer

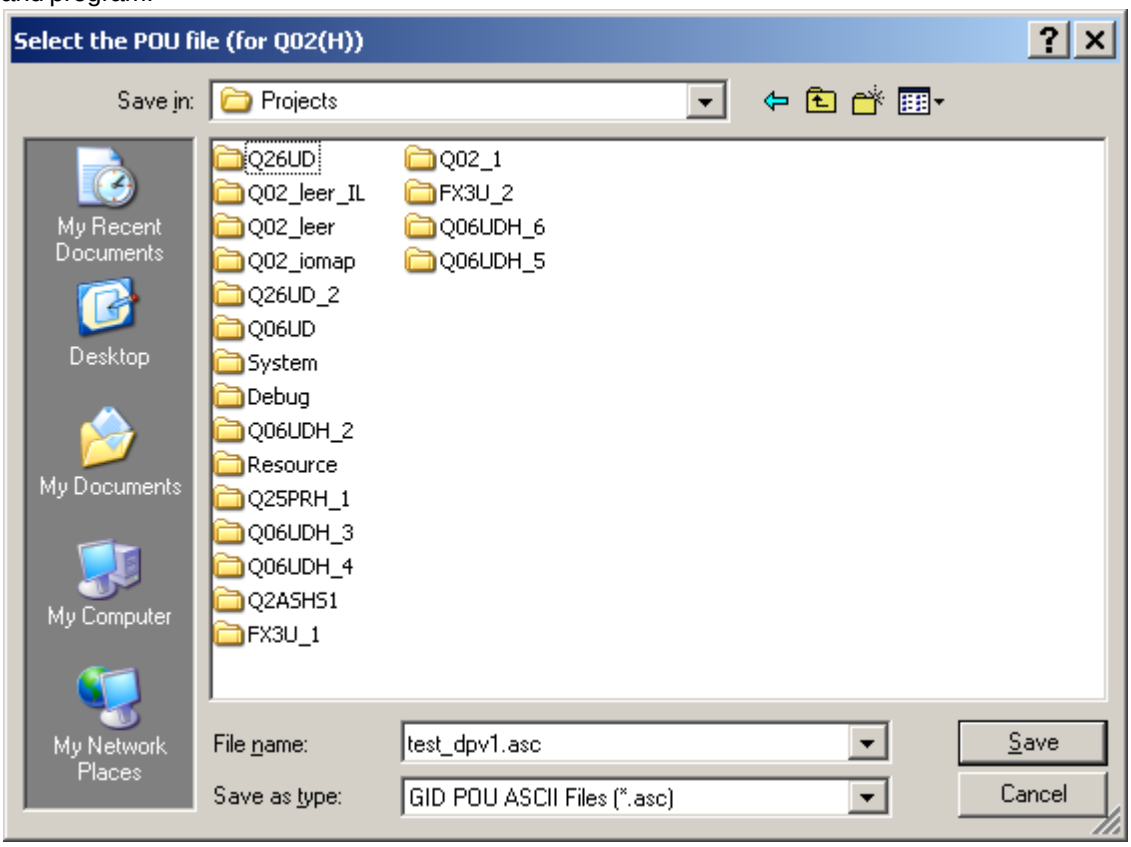
(not available for A(1S)J71PB92D and QJ71PB92D in operation mode '0')

This function generates PLC program code for GX IEC Developer (GID), which assists the application programmer in accessing slave input and output.
GX Configurator-DP generates an ASCII file (.asc) and a user library (.sul). The ASCII file contains the task definition and the reference to the user library. The user library contains the DUT definitions, global variable declarations and program instructions for **I/O mapping**.

Note: the ASCII file must be imported in GX IEC Developer. The user library referenced therein is automatically imported as well. Because the ASCII file contains the absolute path of the user library, the user library must not be moved to a different directory.

The user can select the directory and the name of the POU ASCII file. The file name must start with a letter and not have more than 24 characters. The file name is also used as name for user library

and program.



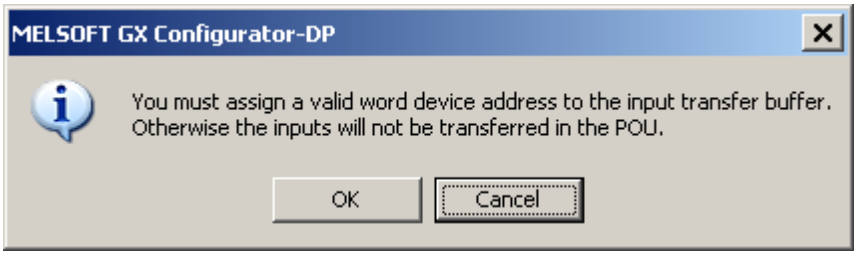
The user library is located in the same directory, but with the extension '.sul' instead of '.asc'.

Note: if the PROFIBUS master is located in a Q-series 'Remote I/O' rack, the POU must be imported in the GID project for the controlling PLC, not the project of the 'Remote I/O' rack.

Note: any changes in the master configuration, which change the I/O structure (i.e add/remove slaves or modules), require to generate the I/O Mapping-POU again and to repeat the import.

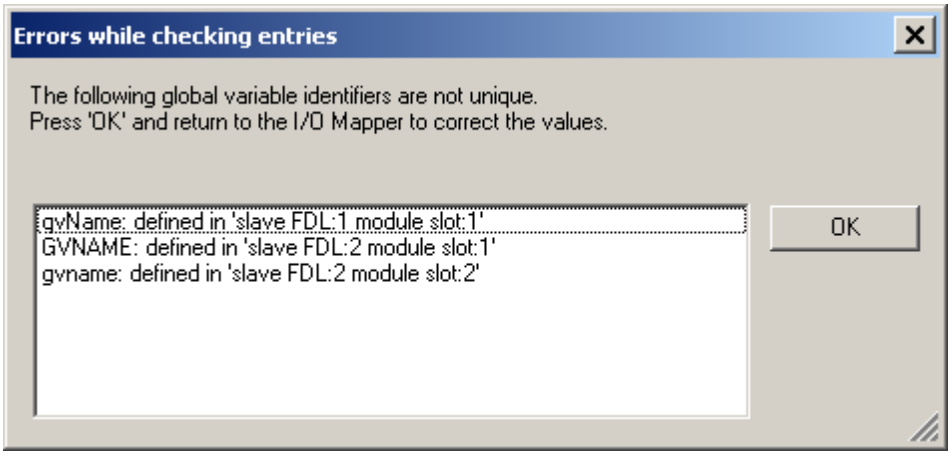
Check of Buffer Device Addresses

The POU does only support word devices for transfer buffers. If a bit device has been assigned to the input or output transfer buffer or even no device address has been assigned to inputs and/or outputs, the user is informed that the inputs and/or outputs will not be included in the POU code.



Check of Global Variable Identifiers

Global variable identifiers must be unique. This restriction is checked for all global variable names used within the PROFIBUS master user library.
Global variable identifiers are not case-sensitive. Therefore the use of 'gvname' with different forms of capitalization results in following error messages

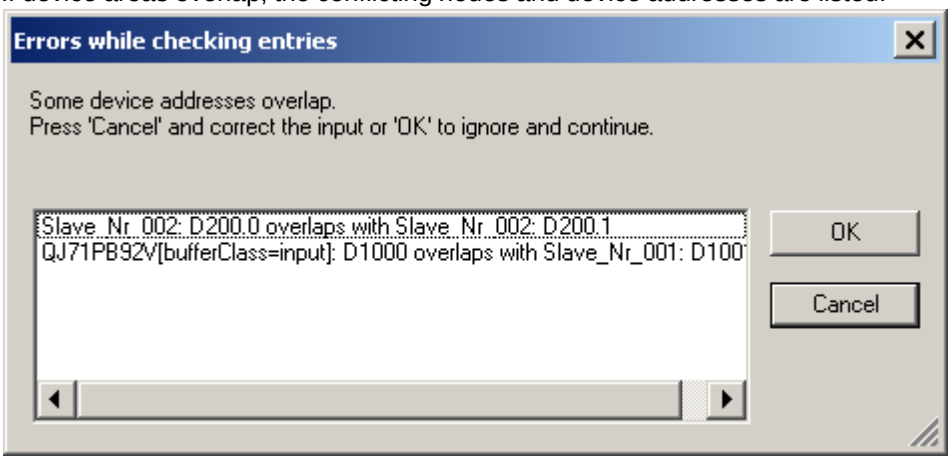


The variable names must be changed in the I/O Mapper, before POU and user library can be exported.

Note: because only the current master configuration can be checked, variable identifiers may conflict with the variable identifiers used in other master configurations, if multiple master modules are used within the same PLC rack.

Check Overlapping Device Addresses

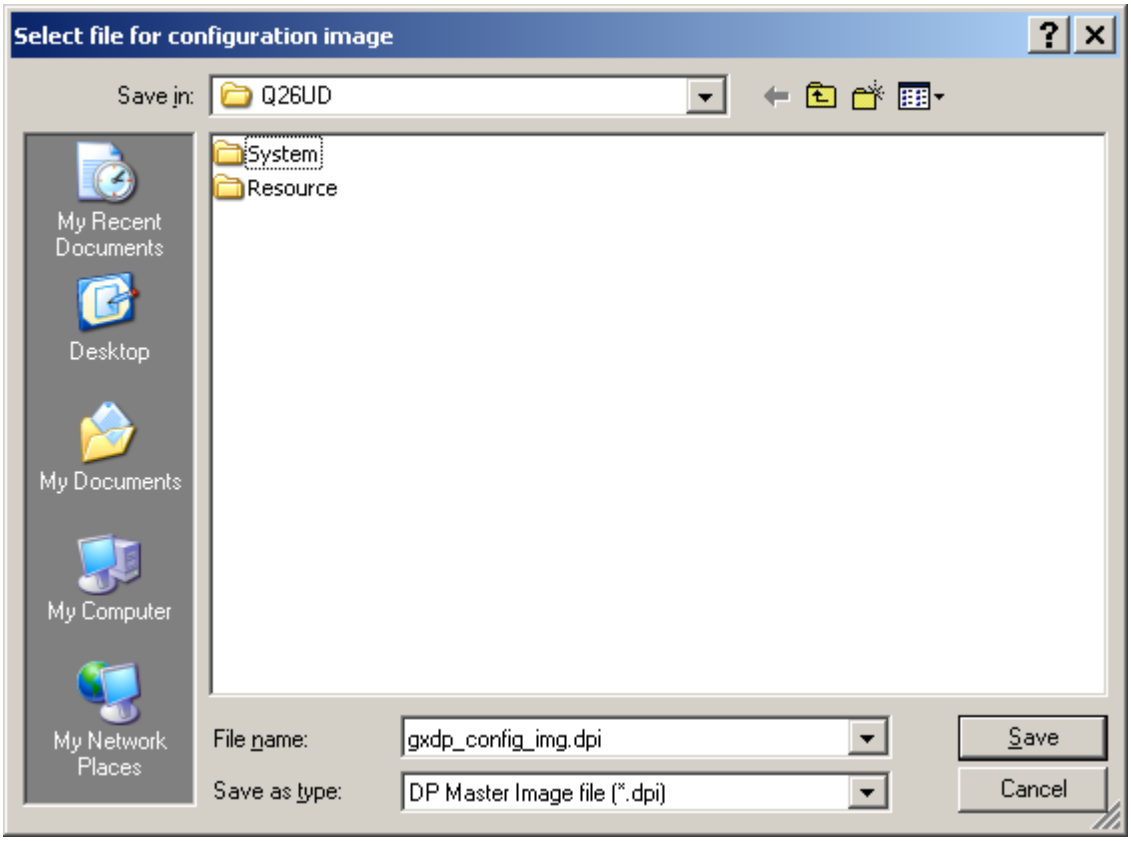
Device addresses, which have been assigned to DUT elements (see 'User MIT-Address') or to buffer areas (see 'CPU Device Access'), are checked for conflicts.
If device areas overlap, the conflicting nodes and device addresses are listed.



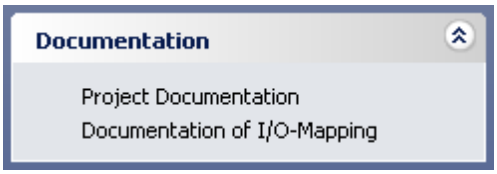
The user can either ignore the conflicts and proceed by pressing 'OK' or press 'Cancel' and open the corresponding input dialog to change the device addresses.

Configuration Image

With this menu command the user is prompted for a file path to store the configuration image, which is generated from the current project. The configuration image contains the binary encoded structure of master and slave parameters as they are stored in the master. Its contents are therefore specific for the type of the master.



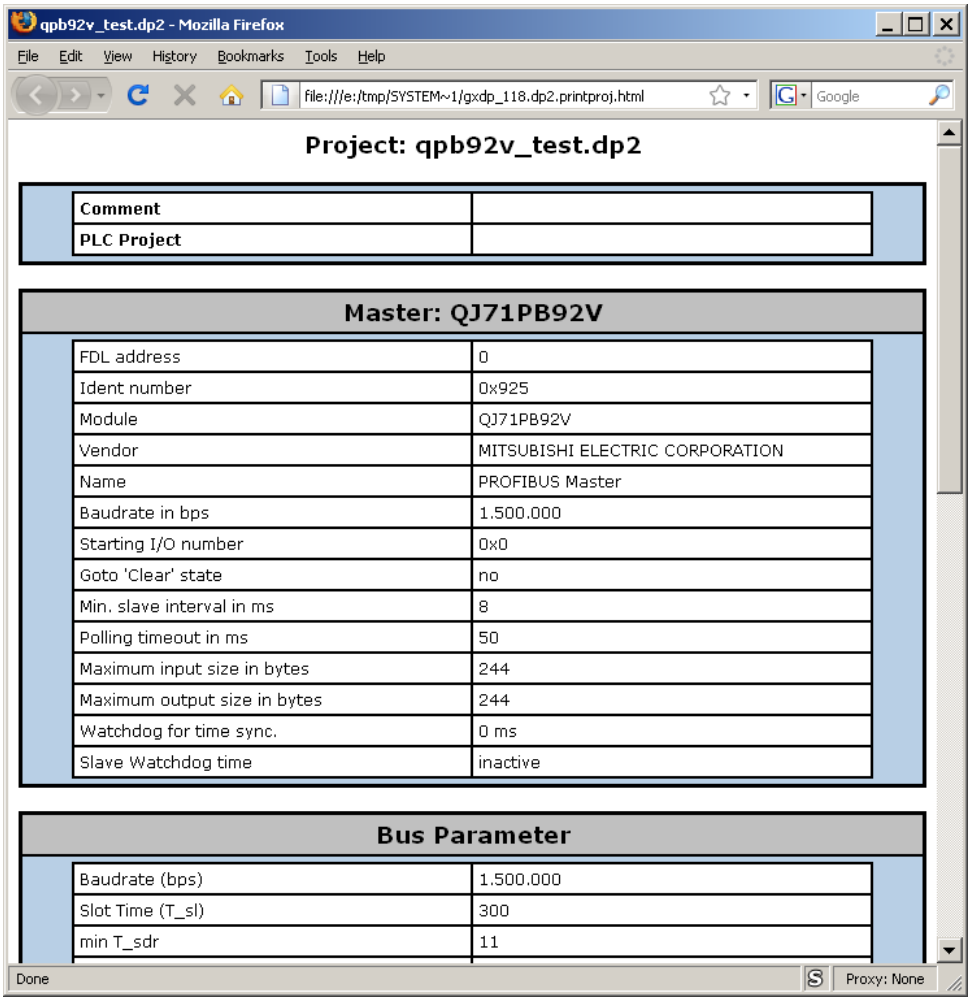
5.4 Documentation Tasks



Command	Description
Project Documentation	Generates an HTML file, which can be printed or stored, with the current configuration settings and displays the file in the default web browser
Documentation of I/O-Mapping	Generates an HTML file, which can be printed or stored, with information on I/O mapping (e.g. buffer devices, data structures, variable names) and displays the file in the default web browser

Project Documentation

Selecting the corresponding task item generates a temporary HTML file with the project settings and opens the default web browser to display the file. The user can either save the file for electronic documentation or print it with the print function of the browser, which provides all necessary formatting options.



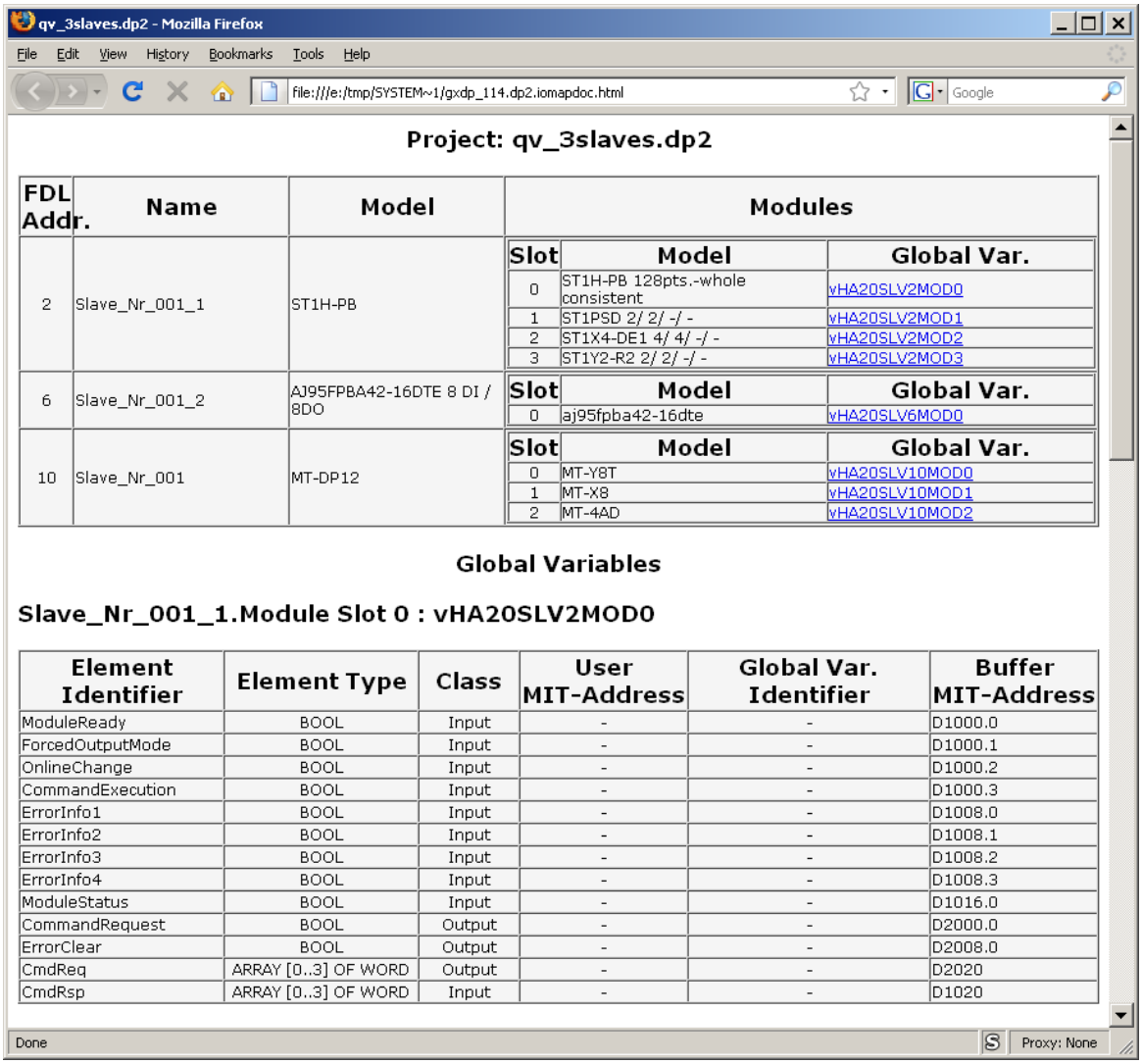
Documentation of I/O-Mapping

The I/O mapping information can be exported into a separate HTML document. This document lists the global variables for the DP slave modules. It also contains the definition of all exported DUT variables along with the buffer device addresses of each DUT element.

If global variable names or user device addresses have been assigned to individual DUT elements, these variable names and device addresses are listed as well.

The HTML document is displayed in the default web browser. Using the print menu of the web browser the document can be printed. The file can also be saved to a different path for electronic documentation.

Links constructed from the DUT variable names allow the user to navigate within the document between the PROFIBUS network structure and the definition of the corresponding DUT variable.

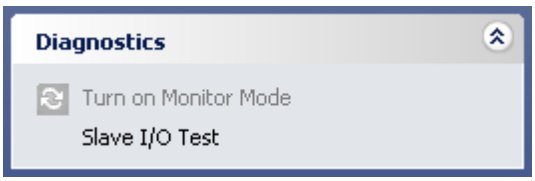


The I/O mapping documentation is also very useful for users of GX Developer (GD). Because GX Configurator-DP only generates code for GID and GX Works 2, GD users cannot import the PLC code exported from GXDP. They can however lookup the device addresses of PROFIBUS I/O points in the documentation and manually add them to their GD program.

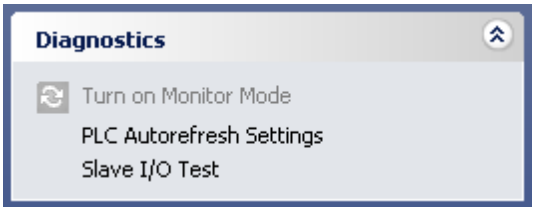
5.5 Diagnostics Tasks

The available diagnostic functions depend on the type of master module selected in the current project.

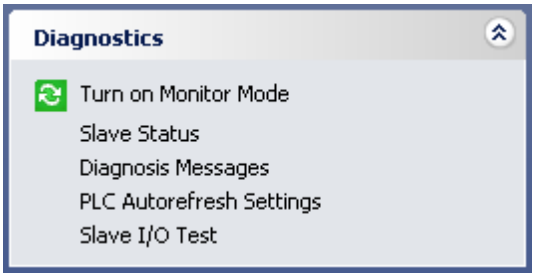
A(1S)J71PB92D



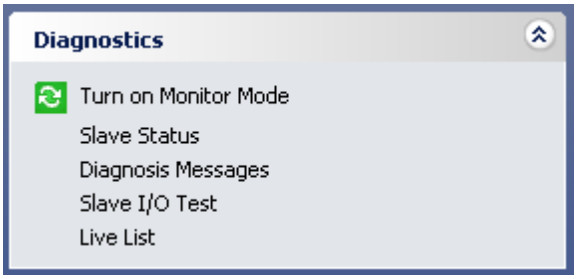
QJ71PB92D



QJ71PB92V

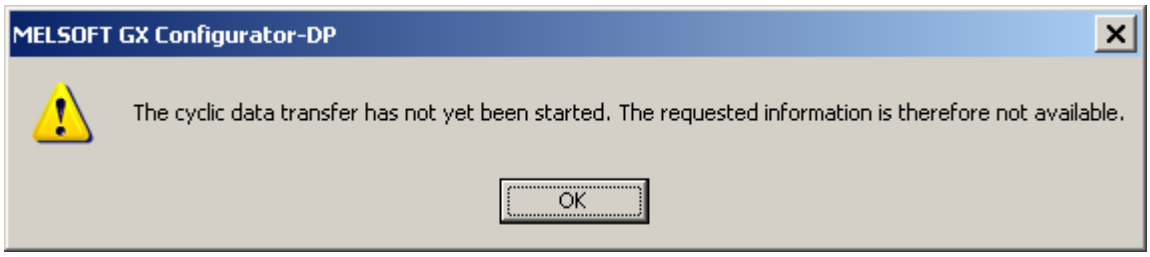


FX3U-64DP-M

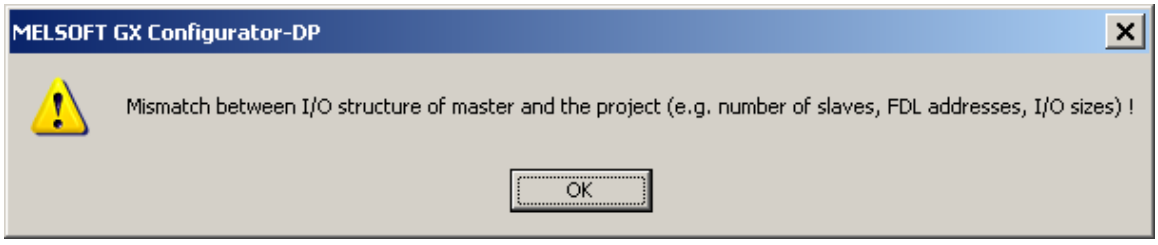


Diagnostic functions, which access information in the project, can only be executed, if cyclic data transfer has been started and the PROFIBUS configuration of the master matches the active project. Both conditions are checked, when one of the functions ‘Slave Status’, ‘Diagnosis Messages’ or ‘Slave I/O Test’ is started. If the conditions are not met, error messages are displayed.

If the cyclic data transfer is stopped:

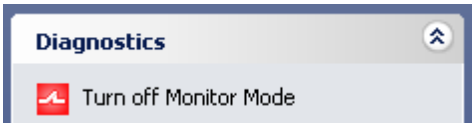


If the I/O structure of the master (i.e. number of slaves, their FDL addresses and I/O sizes) differs from the project:

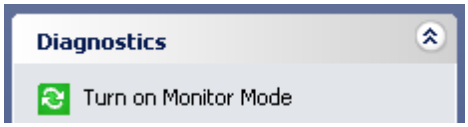


Turn on/off Monitor Mode

While in monitoring mode, the current PROFIBUS configuration cannot be modified.



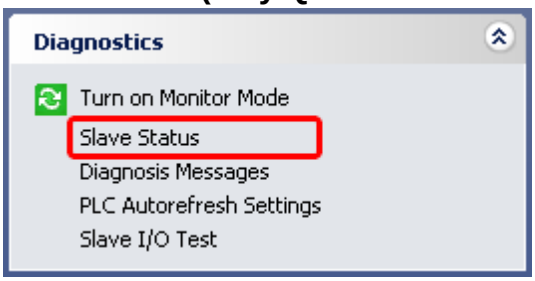
Selecting the item 'Turn off Monitor Mode' stops the monitoring and changes the application to ‘edit’ mode. The icon and the text of the task item change together with the change from ‘Monitor’ to ‘Editor’ mode.

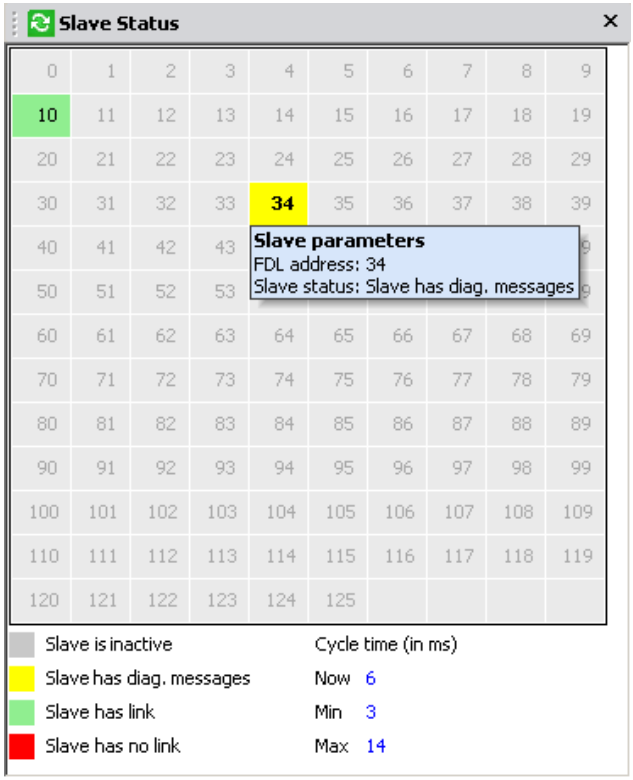


If diagnostic views with monitoring function ('Slave Status', 'Diagnostic Messages') are open, selecting 'Turn on Monitor Mode' activates the monitoring in these views. The monitoring in the 'Slave I/O Test' view must be started manually within the view.

If the item 'Turn on Monitor Mode' is selected, while no view is open, for which monitoring can be activated, the following message is displayed.

Slave Status (only QJ71PB92V and FX3U-64DP-M)





The purpose of the 'Slave Status Matrix' is to provide a fast overview of the communication situation within the PROFIBUS network. A two-dimensional matrix of rectangles shows all possible device

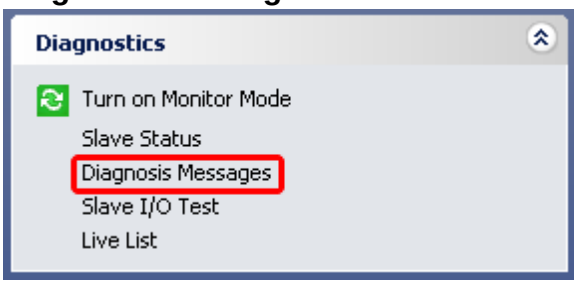
addresses within a PROFIBUS network. The state of a slave with a certain FDL address is signaled by the color of the corresponding rectangle:

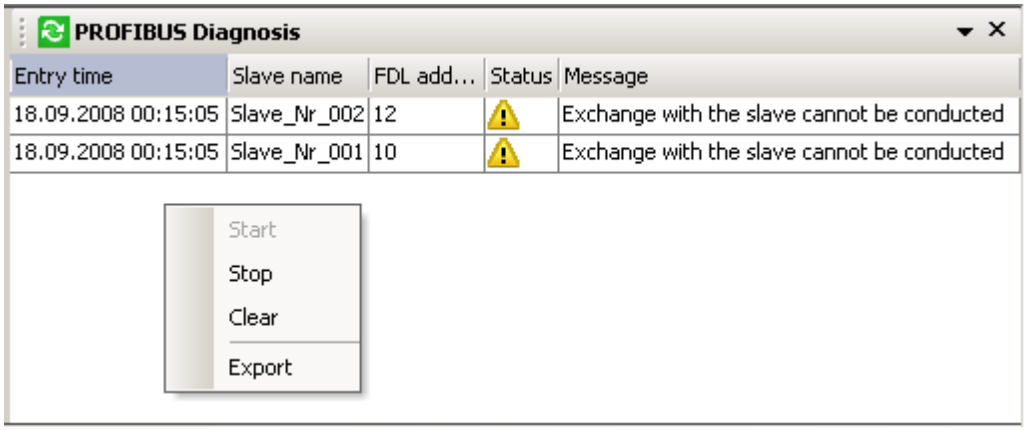
Color	Meaning
light grey	no device with this address included in the configuration
dark grey	slave has not been selected as 'Active' in the slave settings dialog
yellow	slave has sent diagnostic information
green	slave is included in the cyclic data transfer (has a link)
red	communication with slave failed, i.e. no link (the master may have generated a diagnostic message stating the exact reason. This message is added to the 'Diagnostic Messages' table)

Additionally to the color display the user can double-click a rectangle and see in a tooltip-window a more detailed description of the device state.

Below the grid with the slave states the view shows the current actual bus cycle time, which is continuously measured by the master. Additionally the minimum and the maximum of the bus cycle time, since the data transfer has been started, are displayed (values only provided by QJ71PB92V and FX3U-64DP-M).

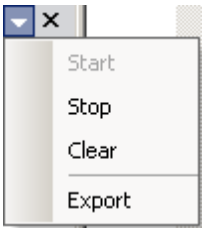
Diagnosis Messages





This view lists messages for PROFIBUS events as well as diagnostic information coming from slave devices. Slave specific error codes are translated to test messages using the entries of the GSD file of the slave type. The number of messages is limited to 1000. If more messages are received, the oldest messages are removed from the list.

Column	Description
Entry time	time, when the message was received in the PC **Note**: the master does not provide a time mark with the message
Slave name	name assigned by the user
FDL address	station address of the device
Status	icon (information, exclamation, stop) Note: at present the table only contains diagnostic messages, which have either been generated by the master or have been sent by a slave. These entries are all marked with the 'exclamation'
Message	diagnostic text (either standardized message or slave specific text from GSD file)



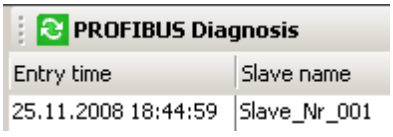
A popup menu can be opened from the caption, which provides the functions

Menu Item	Description
Start	starts the continuous update of the message window
Stop	stops the update
Clear	deletes all messages from the window
Export	exports the messages to a CSV file selected by the user

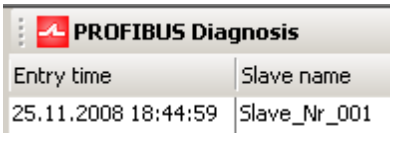
The same popup menu is also opened as context menu, when the right-mouse button or the 'context-menu'-key on the keyboard are clicked.

The current communication status is indicated by an icon in the caption

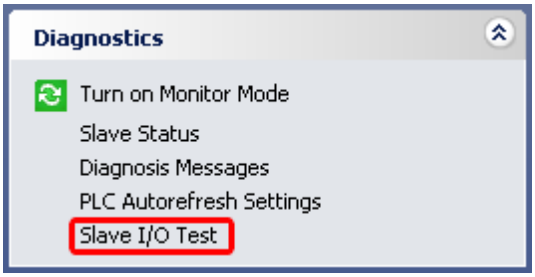
Online



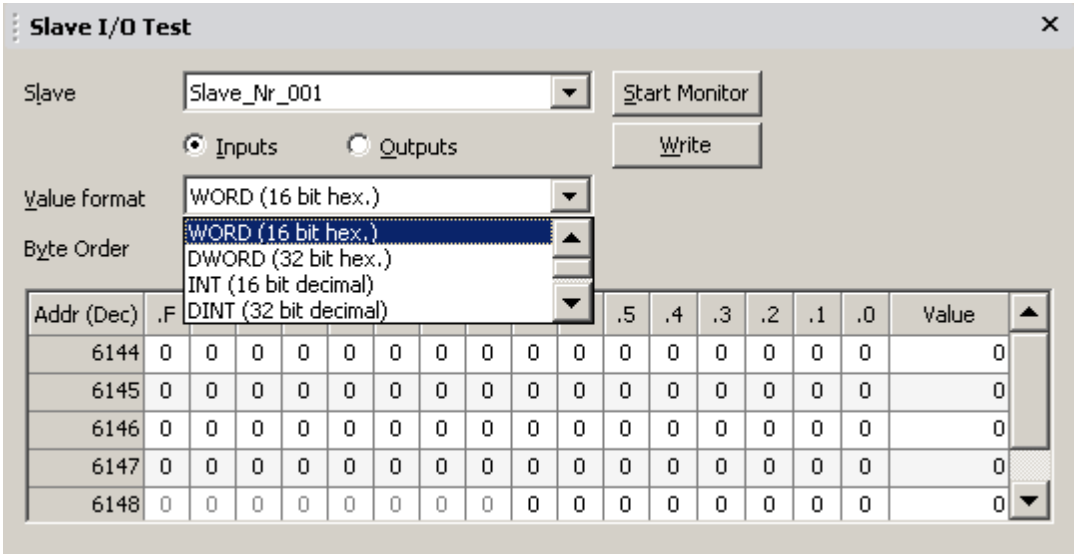
Offline



Slave I/O Test



Selecting the item ‘Slave I/O Test’ in the ‘Diagnostics’ task group opens a view, which provides read/ write access to the slave input/output areas in the buffer memory of the PROFIBUS master.



Control / Command	Description	Range	Default
Slave	select slave from list of slave nodes in project	slaves in project	slave selected in project tree or first slave
Value format	format of item in ‘Value’ column	see list below	16 Bit (decimal)
Byte order	byte order for numerical value formats	Little Endean (Intel) Big Endean (Motorola)	Little Endean
Start/Stop Monitor	starts respectively stops the cyclic update of the table with the buffer contents read from the PROFIBUS module	‘Start Monitor’, if monitoring is stopped; ‘Stop Monitor’, when monitoring is active	‘Start Monitor’
Write	write the buffer contents to the PROFIBUS module	disabled while in monitoring; otherwise enabled	
Buffer table	buffer contents displayed as bits and in the selected value format see detailed description below		

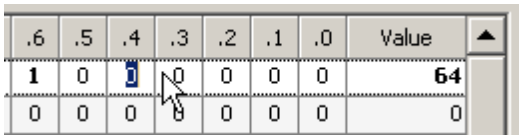
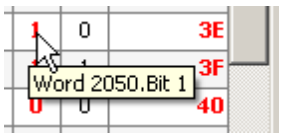
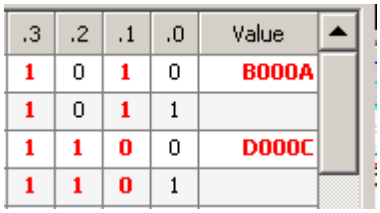
Value formats

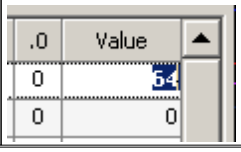
WORD (16 Bit hex.)	one word as unsigned hexadecimal number
DWORD (32 Bit hex.)	two words as unsigned hexadecimal number
INT (16 Bit decimal)	one word as signed decimal number
DINT (32 Bit decimal)	two words as signed decimal number
REAL (float number)	two words as floating point number
STRING (ASCII character)	one word as two ASCII characters

Byte order

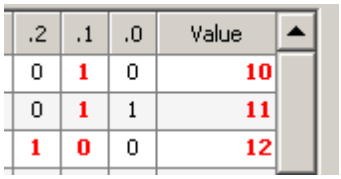
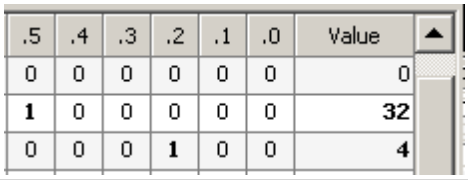
Low byte first (little Endean / Intel)	low byte on lower address, e.g. a WORD value 0x1234 is the byte sequence 0x34, 0x12 a DWORD value 0x12345678 is the byte sequence 0x78, 0x56, 0x34, 0x12
High byte first (big Endean / Motorola)	high byte on lower address, e.g. a WORD value 0x1234 is the byte sequence 0x12, 0x34 a DWORD value 0x12345678 is the byte sequence 0x12, 0x34, 0x56, 0x78

Buffer table

Column	Description
Address	word address in user area of buffer memory
.F - .0	value of bit with the respective index in hex  The bit can be edited by a double-click in the cell.  To help the user in identifying the buffer address, a tooltip shows for each bit cell the buffer address and bit index.
Value	value of buffer contents displayed in the selected value format If the value size is two words, the value is only displayed in the row of the first word; the 'Value' column for the second word remains empty. 

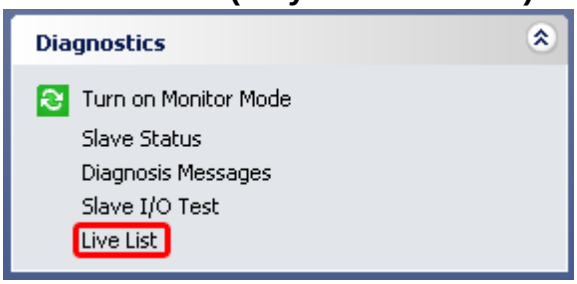
Column	Description
	The value can be edited by a double-click in the cell. 

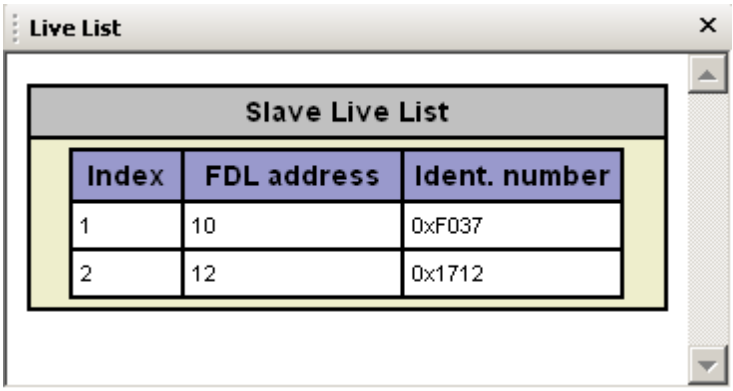
Highlighting of changes

Mode	Description	Display
Monitoring	If a value changes during monitoring compared with the value read in the first update, it is displayed in red bold digits and letters. When monitoring is stopped, the highlighting remains, until monitoring is restarted or the user begins to edit the buffer. In both cases (monitoring and editing) the display begins with no highlighting.	
Editing	If a value is changed during editing, the value is displayed in black bold digits and letters. If the values have been successfully written to the PROFIBUS module, all highlighting is cleared.	

Note: the user must be aware that slave inputs are overwritten in buffer memory, if the PROFIBUS (i. e. the cyclic data transfer) has been started. So the table may not display the actual buffer contents. Correspondingly the outputs could be overwritten by the PLC program or by autorefresh, if the CPU has not been stopped.

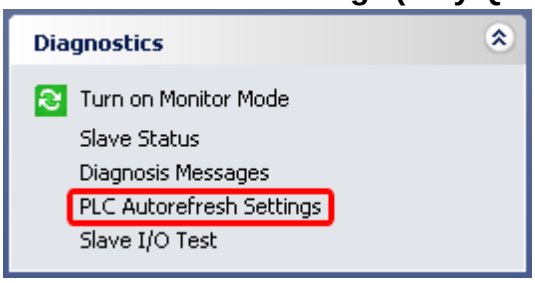
Slave Live List (only FX3U-64DP-M)

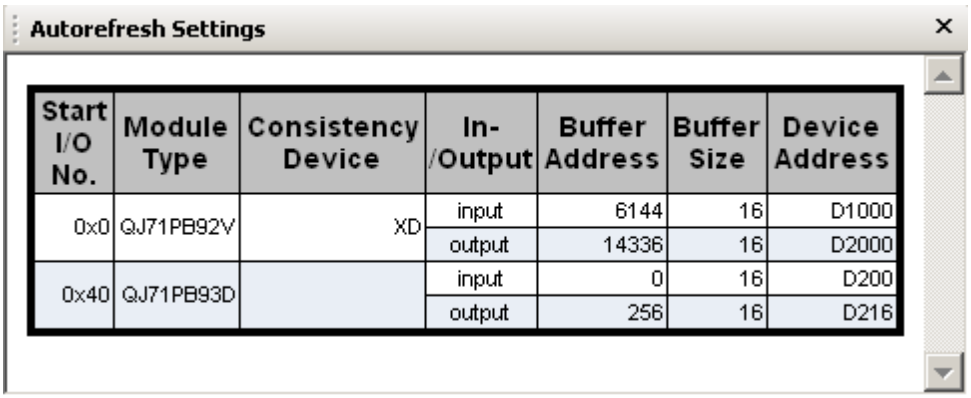




This function is very useful for detecting the network address and the ID of slave devices in a PROFIBUS network. The master scans the PROFIBUS address range and returns the FDL address and the ident number of each slave, which is connected to the network (slave must be powered on to be recognized). The slaves found are displayed in a list.

PLC Autorefresh Settings (only Q-series)





This function reads the IPARAM.QPA file from the CPU, decodes it and displays the settings sorted by starting I/O number.
The table contains the following columns:

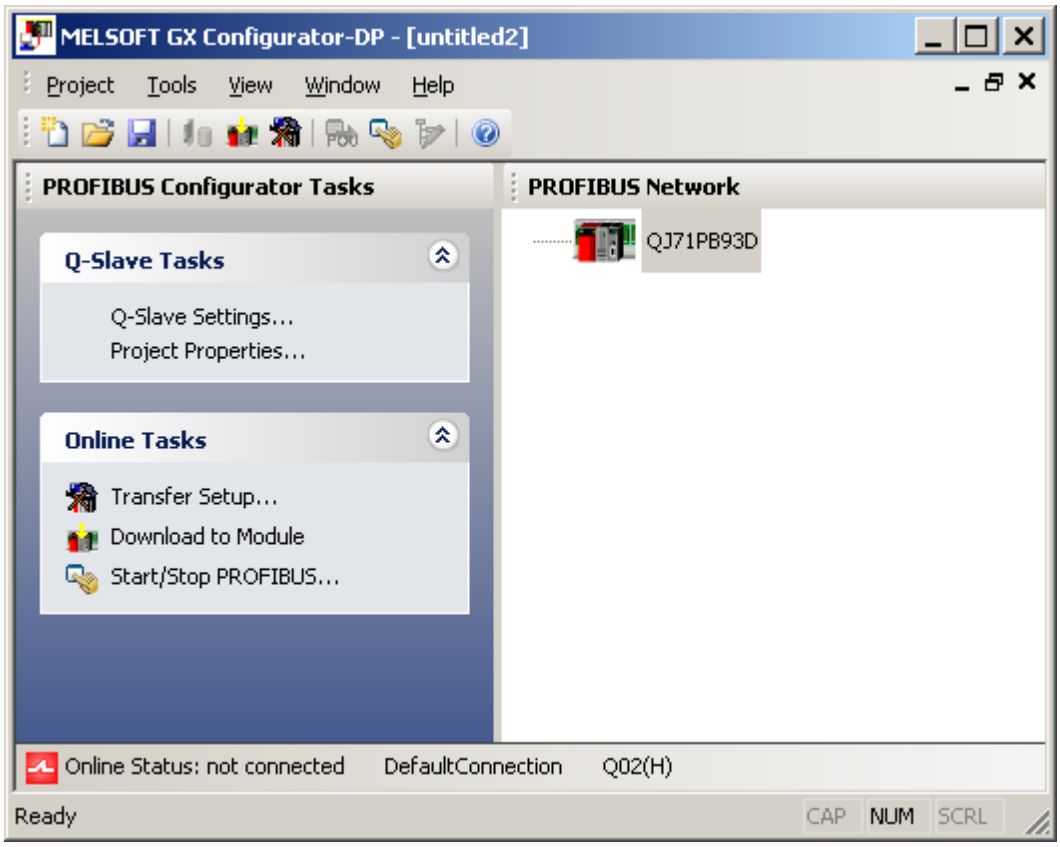
Column	Description
Start I/O No.	starting I/O number of module
Module Type	type name of module
Consistency Device	sequence of devices for consistency checks
In-/Output	input: from buffer memory to device output: from device to buffer memory
Buffer Address	word address in user area

Column	Description
Buffer Size	size of buffer in words
Device Address	start address of device area in CPU

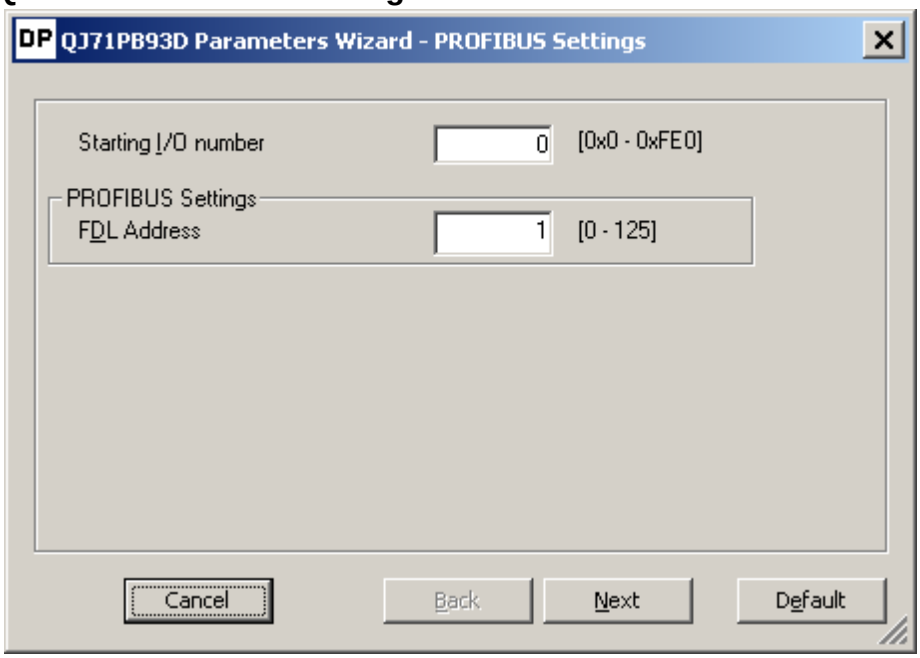
Note:this function cannot read autorefresh settings from a Q-series Remote I/O.

6 Configuration of QJ71PB93D Slave Modules

The QJ71PB93D is a module for Q-series PLCs, which provides a PROFIBUS DP V0 communication interface. Most of the configuration is done at startup by the respective PROFIBUS master. Only few parameters e.g. for autorefresh can be set from GXDP.



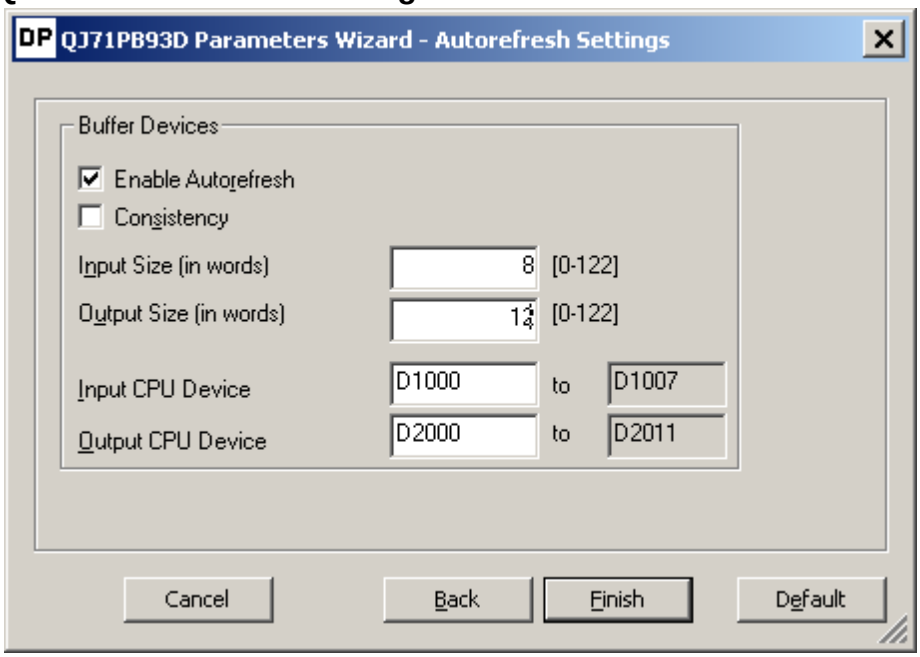
Q-Slave PROFIBUS Settings



Name	Description	Choices / Setting range	Default
Starting I/O number	starting I/O number of the module in the PLC rack	[0x0 – 0xFE0]	0
FDL Address	FDL address (station number)	0 - 125	0
Cancel	close wizard and discard changes		-
Next	proceed to next wizard page		Default button
Default	set parameters back to their default values		

The FDL address of the slave is the only PROFIBUS parameter configured by GXDP. Other settings are made by the respective PROFIBUS master.

Q-Slave Autorefresh Settings



Name	Description	Choices / Setting range	Default
Enable autorefresh	enable autorefresh	selected / not selected	not selected
Consistency	enable consistency check for data transfer	selected / not selected	not selected
Input Size (in words)	max size of input area	0 – 122 words	0
Output Size (in words)	max size of output area	0 – 122 words	0
Input CPU Device	start address of the device area,	device types	D1000

Name	Description	Choices / Setting range	Default
	the inputs are copied to	supported by autorefresh	only enabled, if input size > 0
Output CPU Device	start address of the device area, the outputs are copied from	device types supported by autorefresh	D2000 only enabled, if output size > 0
Cancel	close wizard and discard changes		-
Back	returns to previous wizard page		-
Finish	save changes and close wizard		Default button
Default	set parameters back to their default values		

Automatic Refresh

The automatic refresh function sets the automatic refresh parameters for the PROFIBUS slave QJ71PB93D in the parameter file stored in the System Q CPU. This file manages parameter data for all special function modules of the System Q.

Via automatic refresh the input and output areas of the PROFIBUS slave are transferred to or from a user definable device area in the CPU. This method provides direct and fast access without using FROM/TO instructions.
For details refer to the hardware manual of the QJ71PB93D slave module.

Consistency

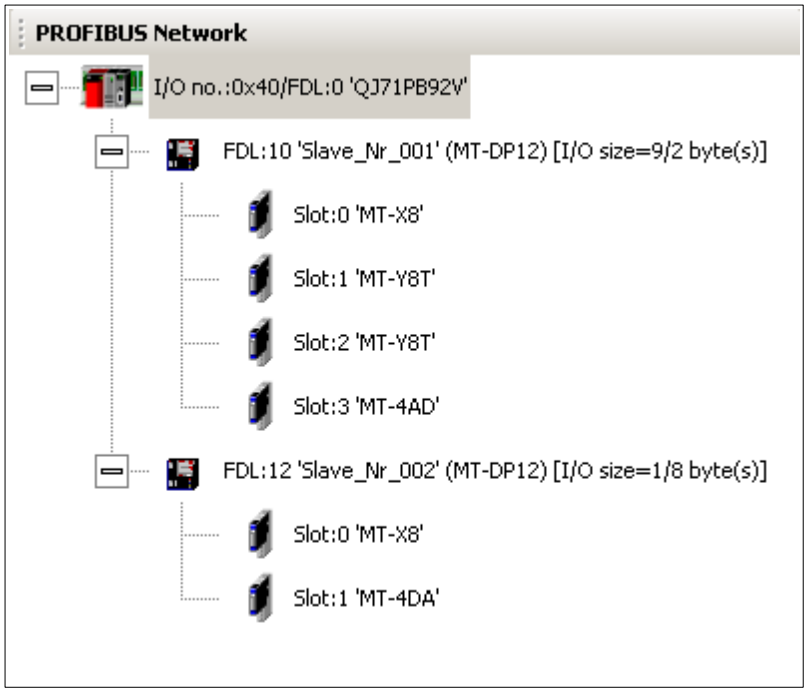
The consistency function can be activated for System Q CPUs from OS version B (Sep. 2000). The consistency function interlocks simultaneous access to the buffer memory by the CPU and the DP slave. This way, data consistency especially required for high-speed applications is automatically ensured.

This interlock mechanism slightly decreases the transfer speed. Therefore, only enable the consistency function, if you require data consistency.

For details refer to the hardware manual of the QJ71PB93D slave module.

Note: only the FDL address, the autorefresh flag, and the consistency flag are transferred to the DP slave. The size settings in the slave parameter settings dialog are relevant only for the data exchange between DP slave and System Q CPU via autorefresh.

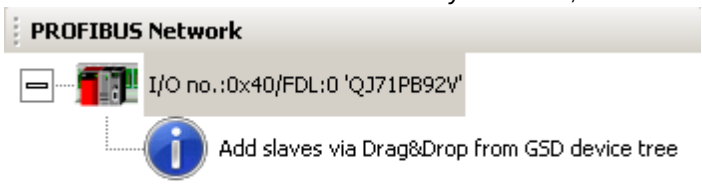
7 PROFIBUS Network Tree



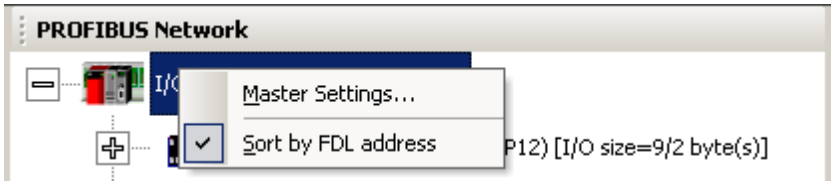
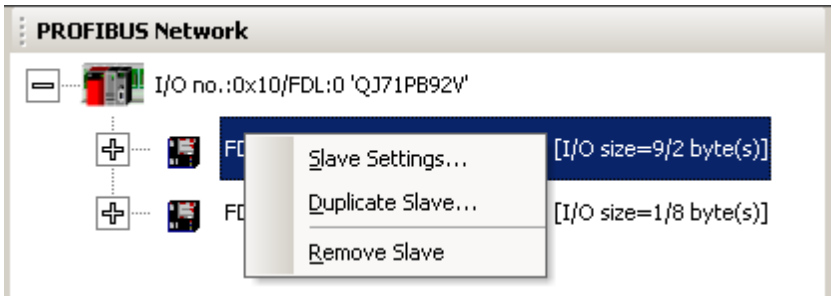
The following nodes construct the project tree

Level	Type	Icon	Display
1	Master	one icon for AJ71PB92D, QJ71PB92D and QJ71PB92V one icon for FX3U-64DP-M	I/O:<starting I/O no.>/FDL: <FDL address> '<type name>'
2	Slave	slave type specific icon from device database	FDL:<FDL address> '<user name>' (<type name>) [I/O size=<nr input bytes>/<nr output bytes> byte(s)]
3	Module	same fixed icon for all module types	Slot:<slot (sequential index)> '<type name>'

When a new project is created, the project tree has only a master node, but no slave nodes. To inform the user of how slaves are added to the project, an 'information' node is displayed under the master node. This node is automatically removed, when a slave is added to the project.



Slaves are added by dragging a slave type from the GSD tree and dropping it in the project tree. The configuration settings of master and slaves are accessed via entries in the context menu.

Selected Node	Context Menu
Master	
Slave	
Module	-

Menu Item	Function
Master Settings	Open the 'Master Parameters Wizard' for master settings and bus parameters. This function can also be started by double-clicking the master node.
Sort by FDL address	Toggles, how the slave nodes are sorted in the tree. If selected, the slaves are sorted by their FDL address, otherwise they are sorted by their user name.
Slave Settings	Open the 'Slave Parameters Wizard' with slave settings, module selection and user parameters. This function can also be started by double-clicking the slave node.
Duplicate Slave	Add a copy of the selected slave to the project.
Remove Slave	Remove the selected slave from the configuration.

Duplicate Slave

The configuration of a modular DP slave like the ST1H-PB involves several steps like selecting the modules and setting the module specific user parameters. If a PROFIBUS network includes several slaves of the same type, this may require to repeat the same actions for each slave again. To simplify the procedure it is possible to add an exact copy of an already existing slave to the project again.
If this menu item is selected, an additional slave with the same configuration (selected modules, user parameters etc.) is inserted into the PROFIBUS network.

Note: adding a slave changes the addresses of the I/O data in the buffer memory of the master. It is therefore necessary to update the PLC program and (if used) the autorefresh settings.

Remove Slave

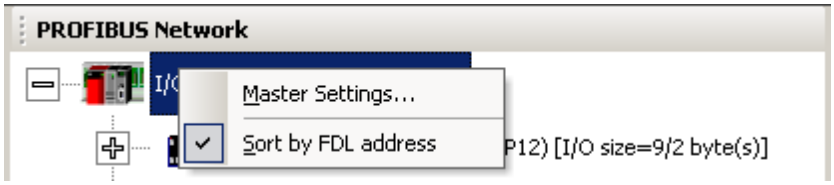
A slave can be deleted from the project by right-clicking on the slave, open the context menu and select '**Remove Slave'**

Note: deleting a slave changes the addresses of the I/O data in the buffer memory of the master. It

is therefore necessary to update the PLC program and (if used) the autorefresh settings.

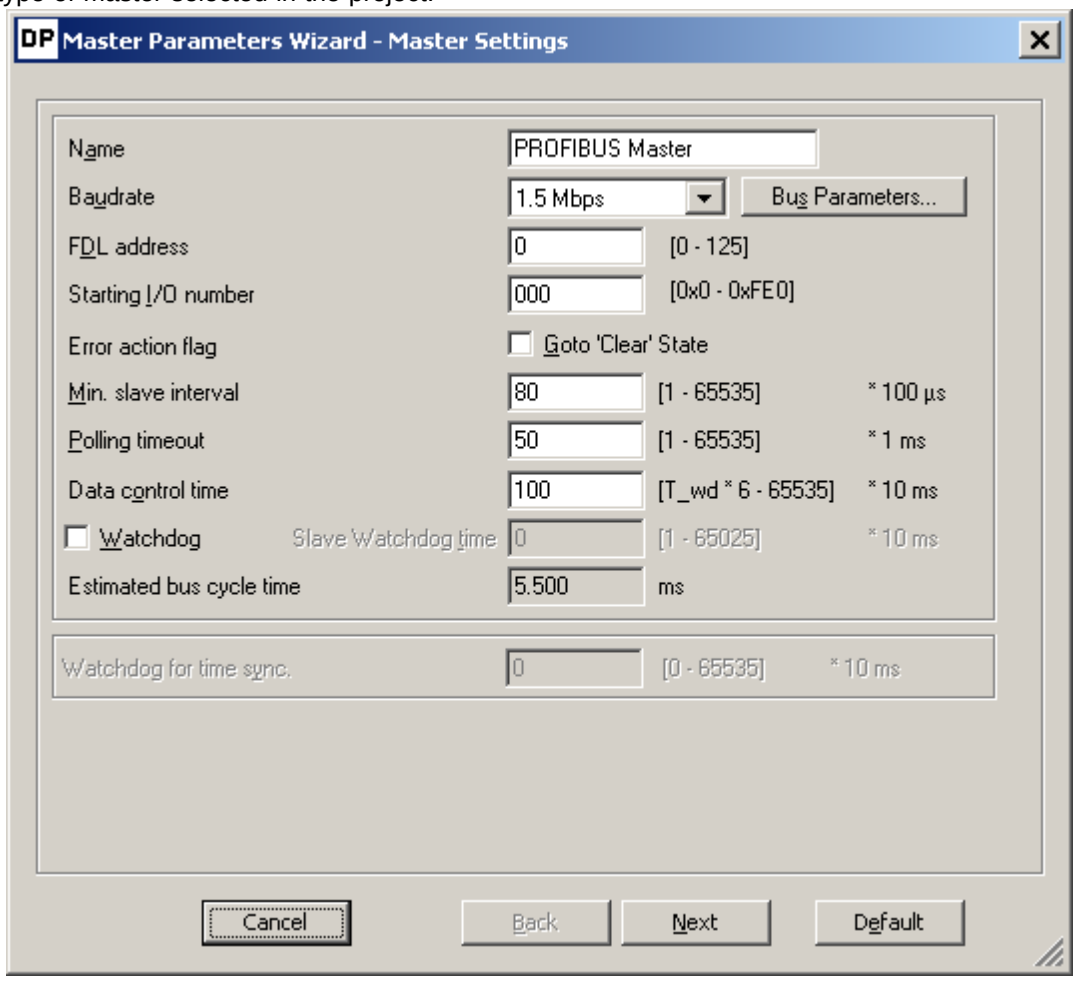
7.1 Master Parameters Wizard

The 'Master Parameters' wizard is opened by either double-clicking the master node in the project tree or by selecting the corresponding menu item from the context menu.



Master Settings

This page provides access to general master parameters. The available parameters depend on the type of master selected in the project.



Name	Description	Choices / Setting range	Default
Name	Project specific name of the master	1 - 16 chars	empty
Baudrate	Transfer rate for the PROFIBUS communication. The selected baud rate must be supported by all slaves.	9.6 kBd – 12 MBd	1.5 MBd

Name	Description	Choices / Setting range	Default
Bus Parameters…	opens the 'Bus Parameters' dialog to edit the bus parameters for the selected baudrate		
FDL address	FDL address (station number)	0 - 125	0
Starting I/O number or **Module Slot** (FX)	Module head address respectively slot/index on the base unit	0 - 0xFE0 (Qn, QnA) 0 – 7 (FX)	0
Error action flag / Goto 'Clear' State	Output processing after failure. If this option is selected, the outputs are cleared in case of an error (recommended for drives, inverters etc.)	selected / not selected	not selected
Min. slave interval	Smallest allowed period of time between two slave poll cycles. This ensures that all requests from the DP master can be handled by the DP slave. This value is applies to all configured slaves.	1 – 65535	80
Polling timeout	In case of master-master communication this parameter specifies the max. amount of time it may take the requesting station to receive the response.	1 – 65535	50
Data control time ***(only AJ71PB92D and QJ71PB92D)***	This parameter defines the period of time during which the master module notifies the slaves of its operation status. This time must be at least six times the watchdog time for all slaves	T_wd * 6 – 65535	100
Watchdog	This checkbox enables the watchdog checking in all slaves.	selected / not selected	not selected
Slave watchdog time	If 'Watchdog' is selected (ON), this value specifies the maximum time without communication, after which the slave will regard the connection to the master as 'broken'. All slaves must use the default time base of '10 ms'. The optional time base of 1 ms for DPV1 slaves is not supported.	1 – 65025	5
Estimated bus cycle time	Calculated cycle time	no input	
Watchdog for time sync. ***(QJ71PB92V only)***	This parameter specifies the time interval, in which the master broadcasts the current system time.	0 – 65535	0
Cancel	Close wizard and discard changes		-

Name	Description	Choices / Setting range	Default
Next	Proceed to next wizard page		Default button
Default	Set parameters back to their default values		

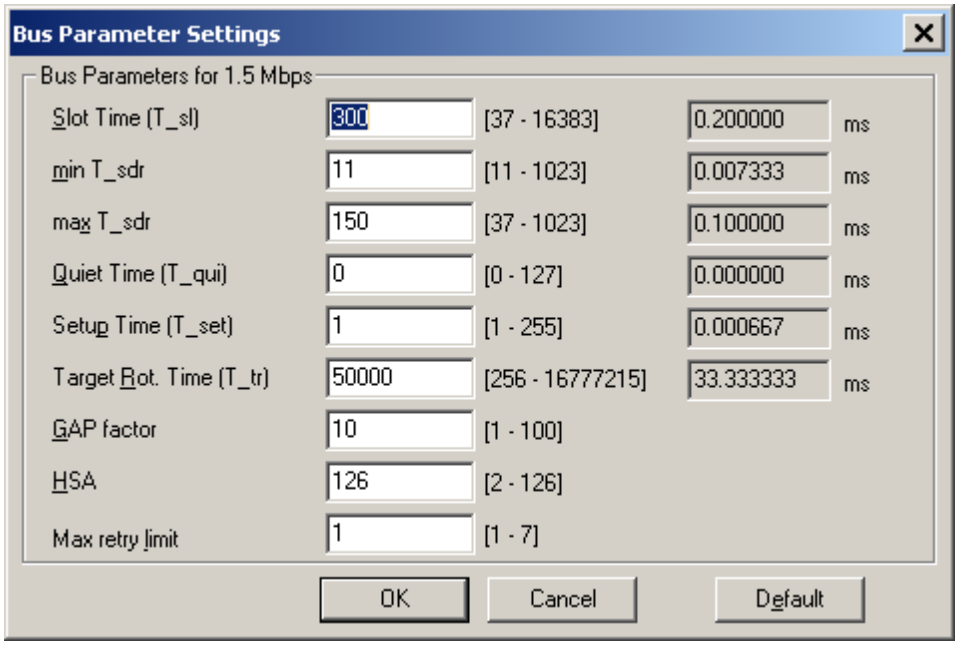
The field **'Estimated bus cycle time'** shows the expected minimum interval between two I/O data exchanges with a slave. The cycle time depends mostly on the following factors:

- baud rate
- number of slaves configured in the master
- I/O size of the configured slaves
- max response time of each slave (max T_sdr)
- number of acyclic requests, diagnostic telegrams and retries
- other master stations sharing the same PROFIBUS network

Note: the cycle time must be observed when setting the minimum slave interval and the watchdog time. If the actual cycle time exceeds the settings for these parameters, the communication cannot be started.
When using the estimated cycle time for adjusting min. slave interval and watchdog time add sufficient time for communication of other masters and for acyclic data exchange (DPV1 and diagnostic messages).

Bus Parameters

This dialog provides access to baud rate related parameters like timeouts. The default settings should only be changed, if really necessary and with a good background on PROFIBUS communication.



Name	Description	Choices / Setting range	Default
Slot Time (T_sl)	Slot time (max interval to wait for response)	37 – 16383	300

Name	Description	Choices / Setting range	Default
min T_sdr	min station delay of responder	11 – 1023	11
max T_sdr	max station delay of responder	37 – 1023	150
Quiet Time (T_qui)	Quiet time	0 – 127	0
Setup Time (T_set)	Setup time	1 – 255	1
Target Rot. Time (T_tr)	Target rotation time	256 - 16777215	50000
GAP factor	controls the GAP update timer	1 – 100	10
HSA	highest station address	2 – 126	126
Max retry limit	max. number of retries	1 – 7	1
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-
Default	sets parameters to their default values		

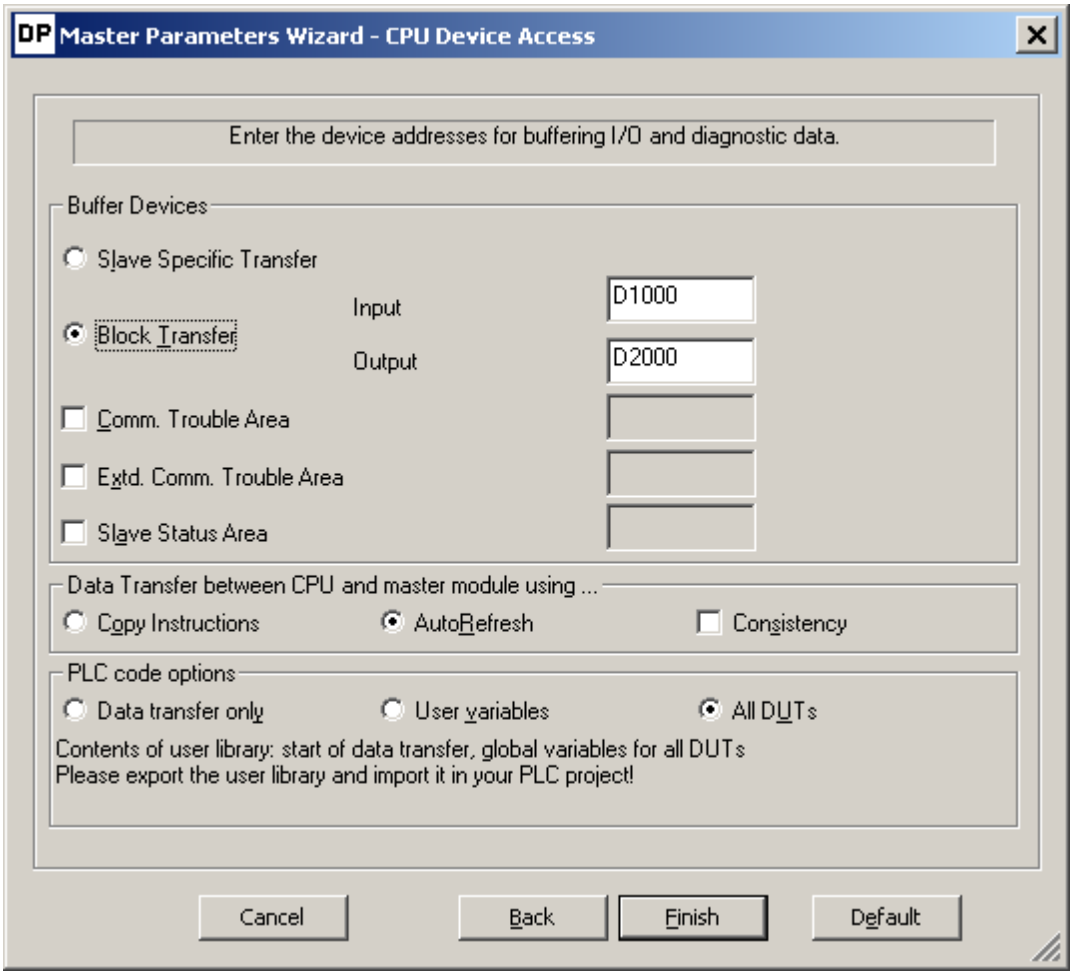
The inputs are checked against the input limits when leaving the dialog with the <OK> button. Additionally the following consistency checks are performed:

- min T_sdr < max T_sdr
- T_qui < min T_sdr
- max T_sdr < T_sl
- T_sl < T_tr

For the correct parameter setting of the target rotation time (T_tr) please refer to the PROFIBUS standard. However, it is important that the target rotation time is large enough to enable the master module to poll each connected slave once per token cycle.

CPU Device Access

This page provides access to options for the data transfer between the buffer memory of the master module and the PLC device memory.



Name	Description	Choices / Setting range	Default
Slave Specific Transfer	User can assign individual buffer device addresses to each input and output area of a slave. The device addresses are entered in a separate dialog started from the task panel (see 'Device Addresses for Slave Specific Transfer') This function is only available in combination with autorefresh, but not together with I/O mapping and the POU/ user library export.		
Block Transfer	User assigns one buffer device address to the inputs and one to the outputs of all slaves This option must be set, if 'I/O Mapping' will be used.		
Input	Device address, where the slave input data	see 'Device	D1000

Name	Description	Choices / Setting range	Default
(only for Block Transfer)	is copied to from the buffer memory	Types' table **Note**: for transfer buffers only word devices can be used	
Output **(only for Block Transfer)**	Device address, where the slave output data is copied from to the buffer memory		D2000
Comm. Trouble Area	Device address, where the so-called 'communication trouble area' is copied to from the buffer memory		-
Extd. Comm. Trouble Area	Device address, where the so-called 'extended communication trouble area' is copied to from the buffer memory		-
Slave Status Area	Device address, where the so-called 'slave status area' is copied to from the buffer memory		-
Data Transfer Using…	Selects, whether TO/FROM instructions or autorefresh is used for exchanging the data between PLC device memory and the buffer memory of the master module		
Copy Instructions	Use TO/FROM instructions	Qn, QnA, FX	QnA, FX: default
Autorefresh **(only for QJ71PB92D/V)**	Use automatic refresh to transfer data between CPU devices and master buffer memory This option is selected as default for new projects, if supported.	Qn only	Qn: default
Consistency	When selected, the consistency check is activated in the master. Consistency requires to use autorefresh for data transfer For a detailed description of consistent data transfer see 'Consistency Handling'.	Qn only, if autorefresh selected	
PLC code options	Select the contents of the generated user library (see 'PLC Code Options') 1. Data transfer only 2. User variables 3. All DUTs	see left	All DUTs
Cancel	Close wizard and discard changes		-
Back	Return to previous wizard page		-

Name	Description	Choices / Setting range	Default
Finish	Save changes and close wizard		Default button
Default	Set parameters to their default values		

The following table lists the supported device types and their respective address ranges

Device Type	Address Range	Available for		
		Qn	QnA	FX
X	0x0 – 0x1FFF	x	x	
Y	0x0 – 0x1FFF	x	x	
L	0 – 32767	x	x	
M	0 – 32767	x	x	x
D	0 – 25983	x	x	x
R	0 – 32767	x	x	x
B	0x0 – 0x7FFF	x	x	
W	0x0 – 0x657F	x	x	
ZR	0 – 4184063	x	x	

Automatic Refresh (Q-series master only)

If selected, the data transfer between the master buffer memory and the CPU devices uses automatic refresh. This ensures a fast and consistent data transfer without using a FROM/TO instruction and extending the cycle time.
After a PROFIBUS configuration has been downloaded to the master, autorefresh settings are updated online in the CPU and, if a GID/GD project path has been set, in the GID/GD project as well.

Consistency Handling

In Q- and FX-series PLCs the consistent transfer of I/O data requires specific handshake procedures. Whether a PROFIBUS configuration requires consistent I/O data transfer, can be detected by parsing the configuration bytes ('cfg_data') of the slave modules. Consistency must be especially ensured, if a module

a) requires consistency over three bytes or more or
b) requires consistency over one word, but the word is not word-aligned in buffer memory

The second situation is due to the fact that the I/O data of modules within a slave is byte-aligned within the buffer memory. The order of modules within a slave can therefore effect the consistency handling.

Example: an MT-DP12 with an X8 module with one byte and a 4AD module with consistency over one word would require consistency handling, because the inputs of the 4AD start in the high-byte of

the first word. If the modules are selected in the opposite order (4AD and then X8), no consistency is required, because the 4AD module is now word-aligned).

If one module of a slave requires consistency, consistency handling must be activated for the corresponding slave (in case of FX3U-64DP-M) or for the complete master (in case of QJ71PB92D and QJ71PB92V). For the FX-master the consistency is maintained by using special bits in buffer memory to control access to I/O data. The PLC program code for this handshake is included in the generated user library. For Q-series masters consistency requires the use of autorefresh for data transfer between CPU and buffer memory.

GXDP checks a slave for consistency, whenever it is modified or added. If consistency is required for the slave and 'Copy Instructions' is selected for data exchange, the user is informed with a message, that the data transfer option has automatically been changed from ‘Copy Instructions’ to ‘AutoRefresh’ and the consistency flag in the master settings has been selected.

PLC Code Options

Option 1: Data transfer only

The user library only contains the PLC code for copying the inputs from and the outputs to buffer memory and the code for starting the data transfer. DUTs and global variables are not exported. If ‘Autorefresh’ has been selected for data transfer (Q-series only), the transfer of the input/output data is not part of the user library.

Option 2: User variables (default)

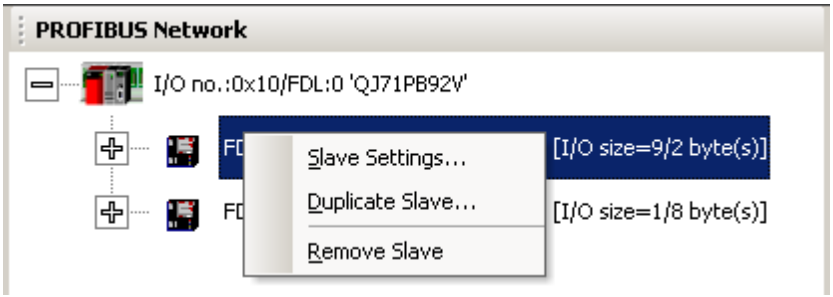
Additionally to the code from option 1 the generated PLC code contains the variables named by the user and explicit device addresses entered by the user in the column ‘User MIT-Address’ (see Assign User MIT-Address). DUTs, for which the user has not entered a variable name, are not exported. One exception are DUTs, where the user has assigned a global variable name or a device address to an element of the DUT. These DUTs are exported and instantiated with default global variable names, because they are required for extracting the data of the DUT elements, the user is interested in.

Option 3: All DUTs

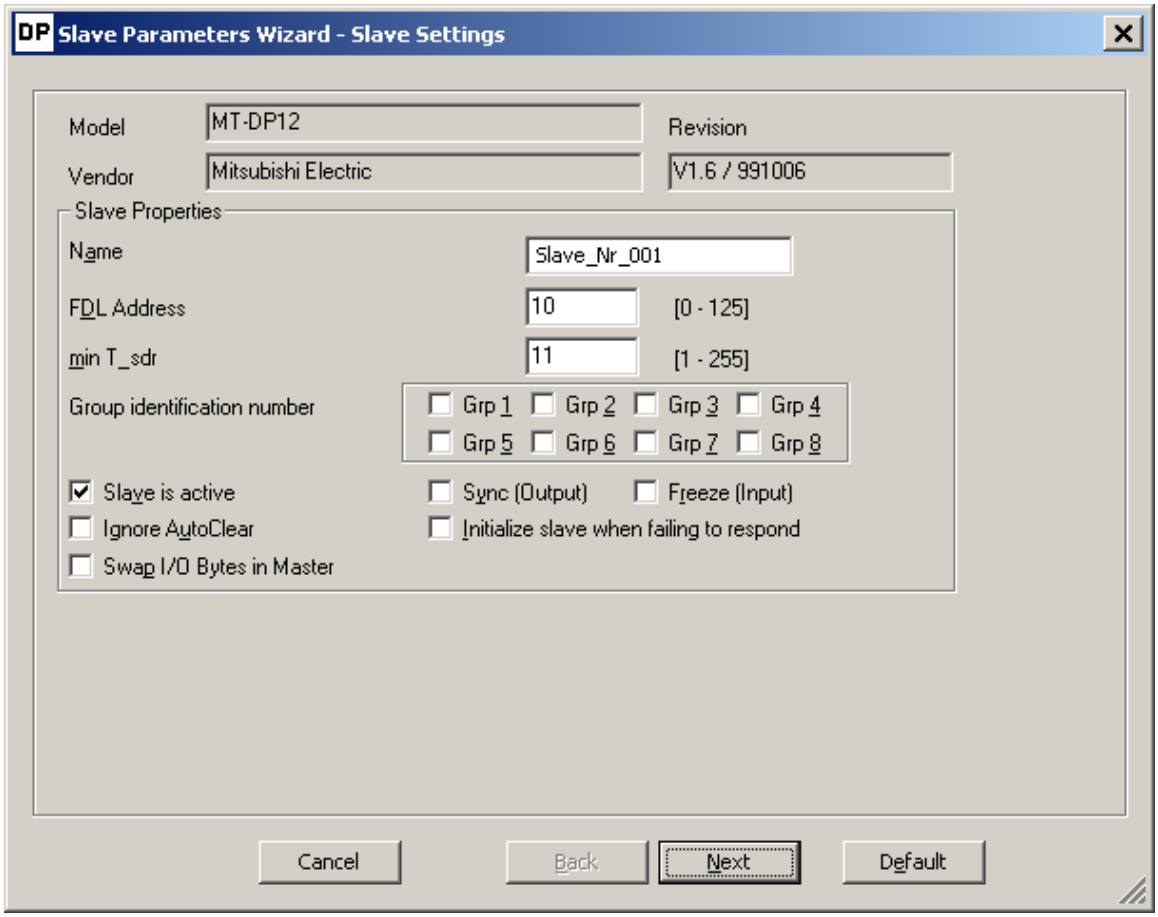
Additionally to the code of option 3 all remaining DUTs are exported and instantiated with default global variable names.

7.2 Slave Parameters Wizard

The screens for changing the settings of a slave are combined in a wizard-like dialog in sequential order. The ‘Slave Settings’ wizard is opened by either double-clicking a slave node in the project tree or by selecting the corresponding menu item from the context menu.



Slave Settings



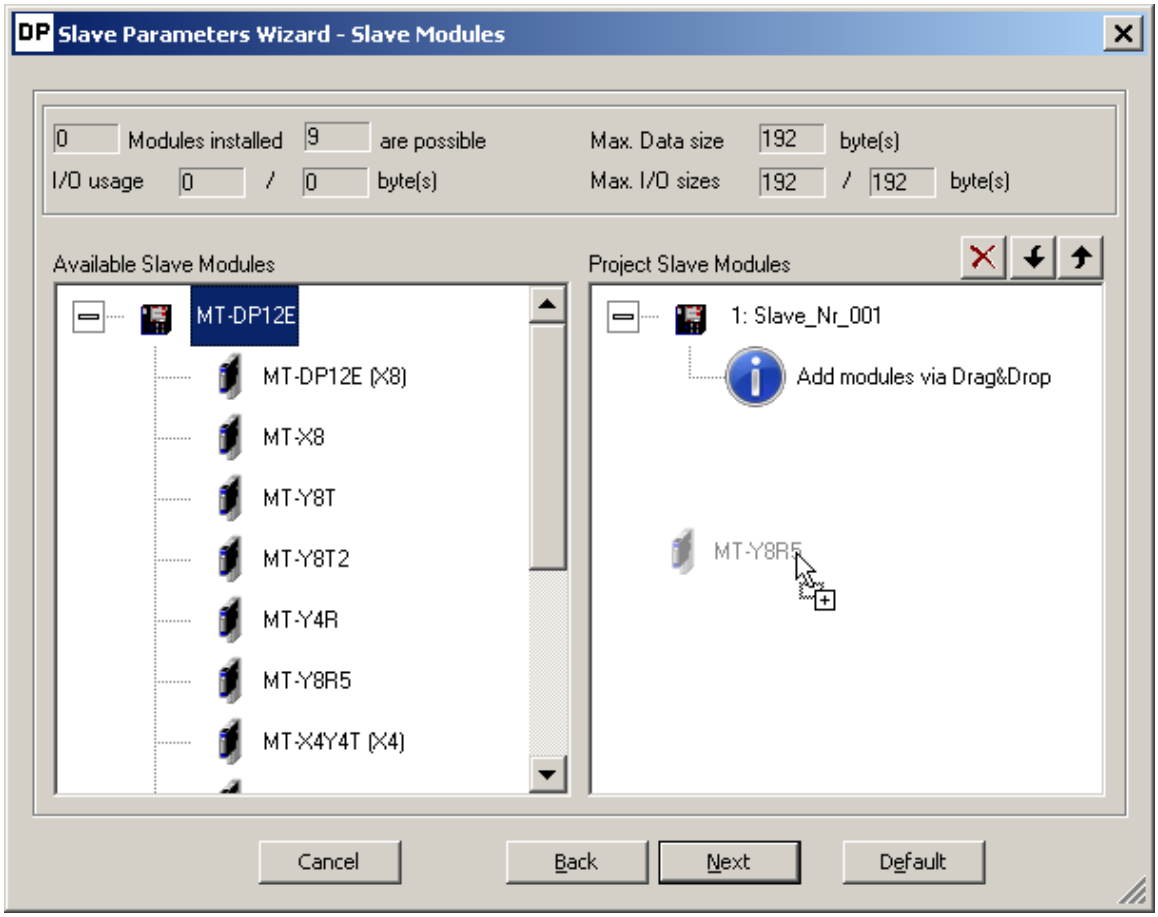
Name	Description	Choices / Setting range	Default
Model	type name of the slave (usually the value of the keyword 'Model_Name' in the GSD file)	read-only	-
Vendor	company name of the vendor (usually the value of the keyword 'Vendor_Name' in the GSD file)	read-only	-
Revision	the version of the device respectively GSD file (usually the value of the keyword 'Revision' in the GSD file)	read-only	-
Name	name of the slave can be defined. This is for documentation purpose only.	1 – 16 chars	Slave_Nr_<FDL address>
FDL Address	Station address of the slave	0 – 125	1
min T_sdr	Minimum waiting time for a DP slave, until it is allowed to send response frames to the DP master. Do not	1 – 255	11

Name	Description	Choices / Setting range	Default
	change this value. The time is entered as multiple of the bit duration on the PROFIBUS. The corresponding absolute time depends therefore on the selected PROFIBUS baud rate.		
Group identification number	PROFIBUS DP allows transmitting control commands (such as sync or freeze) from the master to one slave, a group of slaves or all slaves at the same time. The control commands are based on multicast function. This means that slaves with the same group number operate in a synchronized way with each other. A slave can belong to several groups. You can use the boxes to assign the slave to any of the groups.	0,1,2,3,4,5,6,7, 8	0
Slave is active	If selected, the slave is included in the cyclic data transfer. Otherwise the slave is not accessed and a connection failure with that slave will not cause a response error in the master.	selected / not selected	selected
Sync (Output)	If this option is activated, a synchronous switching of all slave outputs is possible. (only available for slaves where this function is supported, stated by the entry 'Sync_Mode_supp' in the GSD file)	selected / not selected	not selected
Freeze (Input)	If this option is activated, a synchronous switching of all slave inputs is possible. (only available for slaves where this function is supported, stated by the entry 'Freeze_Mode_supp' in the GSD file)	selected / not selected	not selected
Ignore AutoClear ***(only QJ71PB92V and FX3U-64DP-M)***	The slave should ignore a 'Clear' telegram from the master.	selected / not selected	not selected
Initialize slave when failing to	The master initializes a slave, if communication fails.	selected / not selected	not selected

Name	Description	Choices / Setting range	Default
respond ***(only QJ71PB92V and FX3U-64DP-M)***			
Swap I/O Bytes in Master ***(not AJ71PB92D)***	When selected, the order of each pair of bytes is reversed by the PROFIBUS master.	selected / not selected	not selected
Cancel	close wizard and discard changes		
Back	return to previous wizard page		disabled
Next	proceed to next wizard page		Default button
Default	set parameters back to their default values		

Slave Modules

This page allows the user to select modules for the slave, which is currently configured. In the upper part of the dialog the I/O size occupied by the selected modules is shown along with the maximum supported by both slave and master.



Name	Description	Choices / Setting range	Default
nr. modules installed	number of modules installed	readonly	0
max. nr. modules	max number of installed modules supported by slave (from GSD file)	readonly	from GSD file
I/O usage (inputs)	current length of slave inputs in bytes	readonly	0
I/O usage (outputs)	current length of slave outputs in bytes	readonly	0
Max. Data Size	max. total I/O length (sum of inputs and outputs) in bytes, which slave supports	readonly	from GSD file
Max. I/O sizes (inputs)	max. length of inputs in bytes, which slave supports	readonly	from GSD file
Max. I/O sizes (outputs)	max. length of outputs in bytes, which slave supports	readonly	from GSD file
Available Modules	lists the module types, which are available for the slave.	from GSD file	from GSD file
Installed Modules	shows the slave node and the modules, which have been selected		
	removes the selected module		
	moves the selected module one slot down		
	moves the selected module one slot up		
Cancel	close wizard and discard changes		-
Back	return to previous wizard page		-
Next	proceed to next wizard page		Default button
Default	set parameters back to their default values		

The slave device is the summary of all modules installed in the slave. The GSD file includes all selectable modules for the slave device. Mark a module in the left list of **Available Slave Modules** and drag it onto the tree with **Installed Slave Modules** or open the context menu of the module

type and select the 'Add Module to Slave' item. A double-click on a module type in the **Available Slave Modules** list appends the module to the list of **Installed Slave Modules**.

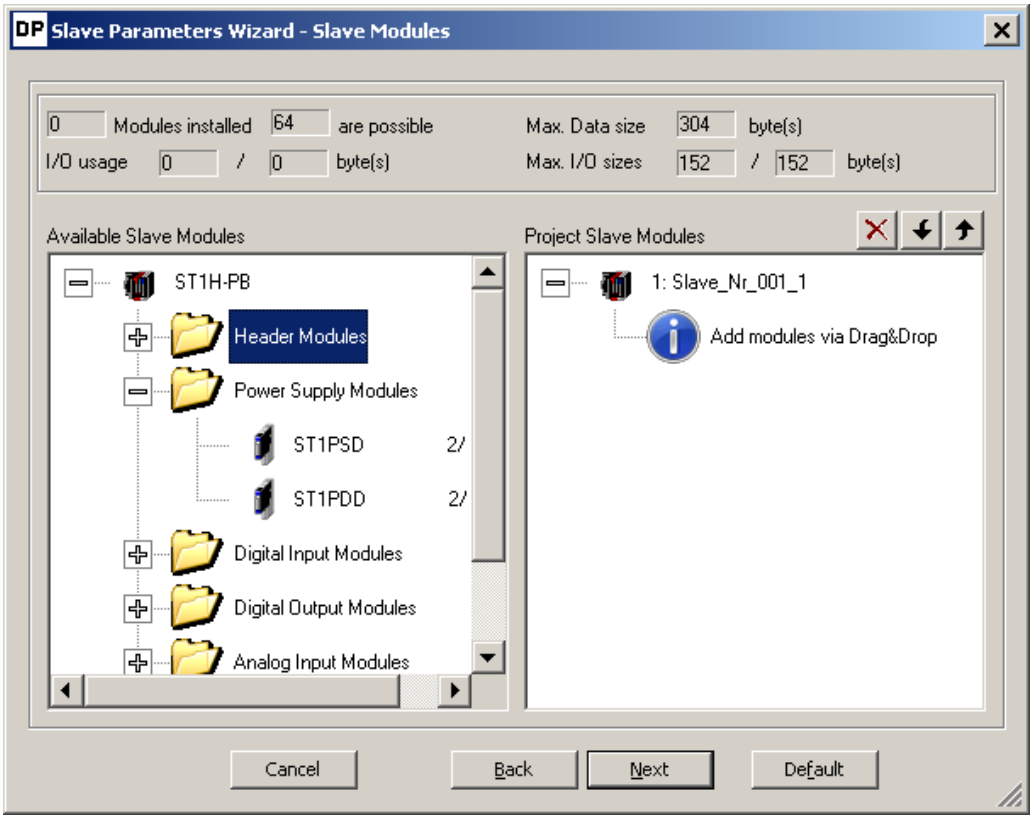
If no module has been selected, an information icon indicates the required action to the user.

To change the position of a selected module use drag&drop or the  and  buttons.
To remove a module from the **Installed Slave Modules** list, select the module and press the <**Delete**> button on the keyboard or the  button.
GXDP automatically determines the maximum possible number of modules per slave, the maximum I/O size and user parameter length. It checks the number of I/O and user parameter bytes used by the installed modules against these limits.

Note: adding or removing slave modules may change the addresses of the I/O data in the buffer memory of the master. It is therefore necessary to update the PLC program and (if used) the autorefresh settings.

Extended Support for ST1H-PB Slaves

Groups of ST Slave Modules



For ST1H-PB slaves the modules are sorted in the following groups according to their type/function:

- Header Modules
- Power Supply Modules
- Digital Input Modules
- Digital Output Modules
- Analog Input Modules
- Analog Output Modules

Check of Selected ST Slave Modules

The module list of an ST slave is especially checked for the following conditions

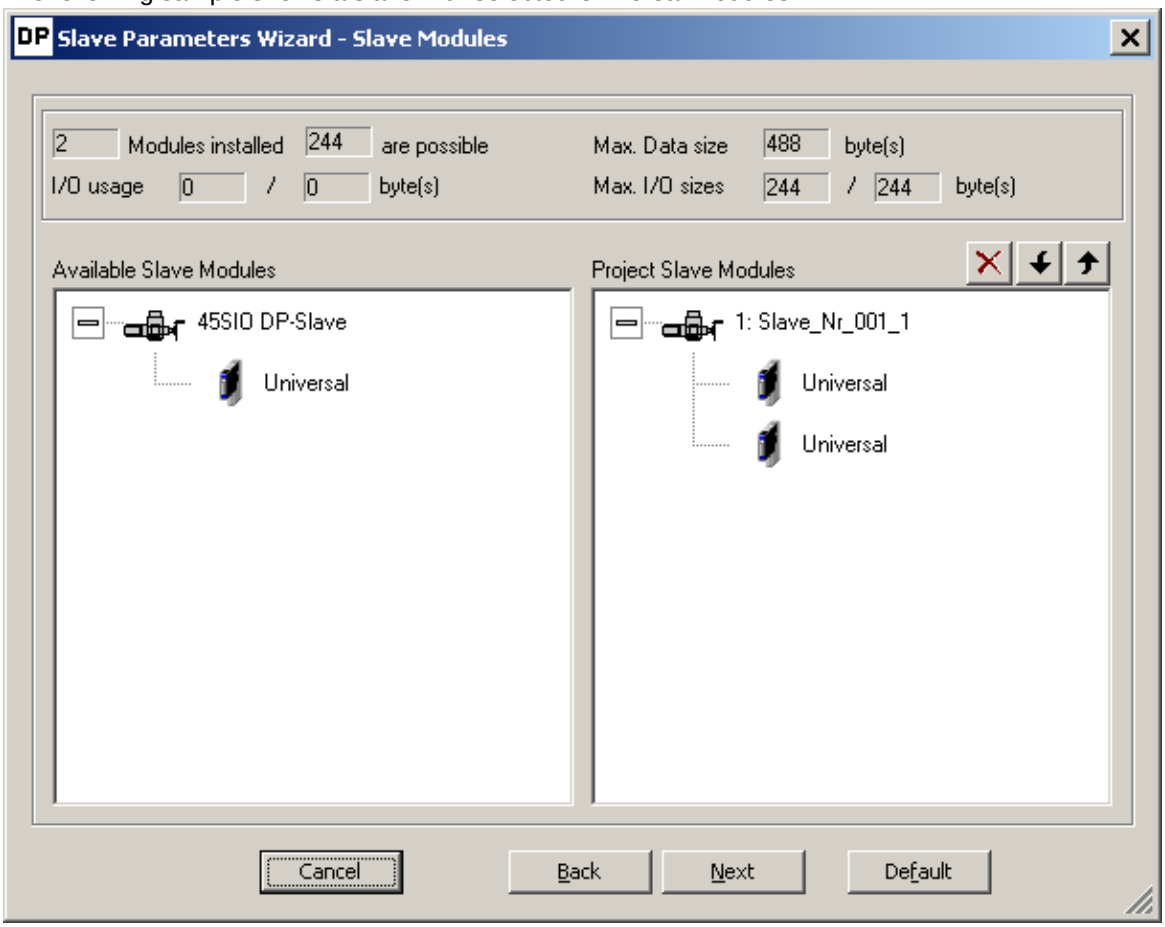
1. first module must be head module
2. second module must be a power supply
3. only one head module allowed
4. the I/Os of all selected modules must fit into the selected head module size
5. the X1616 module must be configured by selecting –F module first and a –L module second

Universal Slave Module Type

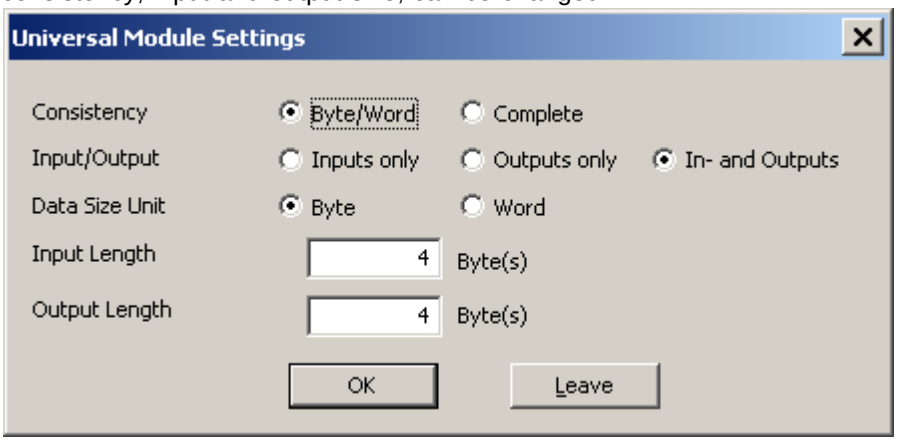
Some slave GSD files do not contain module descriptions, but require the module configuration data ('cfg_data') to be constructed in the configuration tool via a so-called 'Universal Module'. If a slave GSD file does not contain module definitions, GXDP displays the entry **Universal** in the **Slave Modules** dialog. One or more universal modules can be added to the slave. The maximum input/ output size for each module is 16 words or bytes.

Note: ensure that the slave can work with the respective settings.

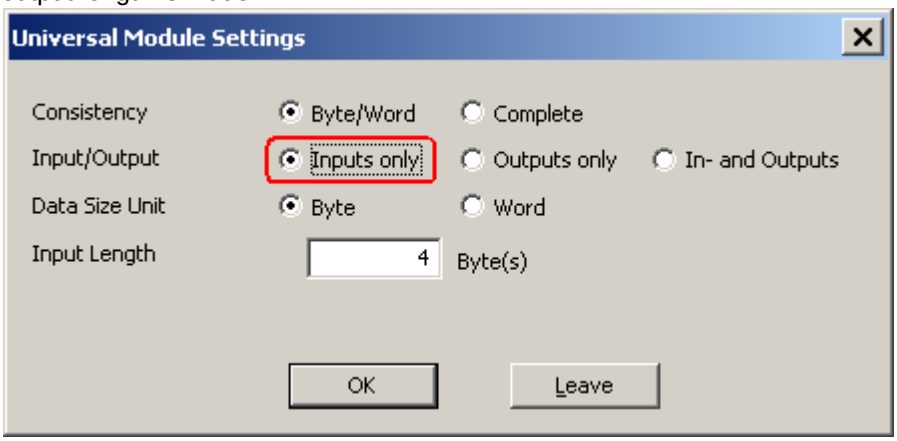
The following sample shows a slave with selected Universal modules.



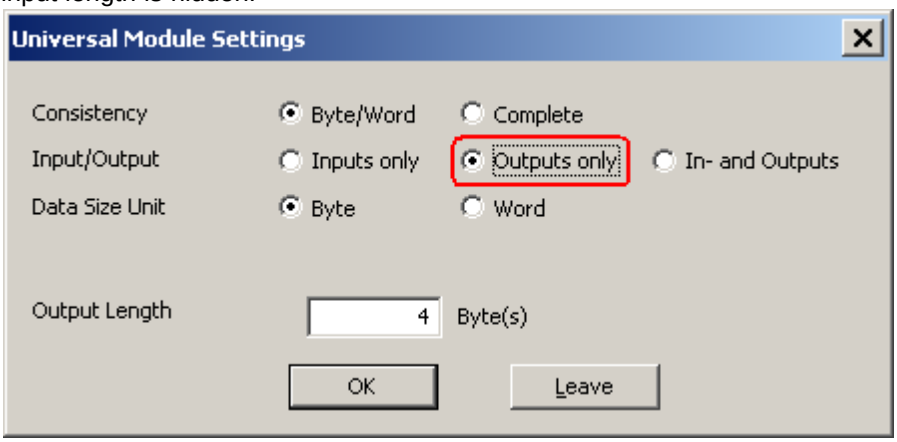
When an Universal module entry in the **Project Slave Modules** list is double-clicked, the **Universal Module Settings** dialog is opened and the properties of the selected universal module, i.e. consistency, input and output size, can be changed.



If the module should only have an input area, select the option **Inputs only** and the field for the output length is hidden.

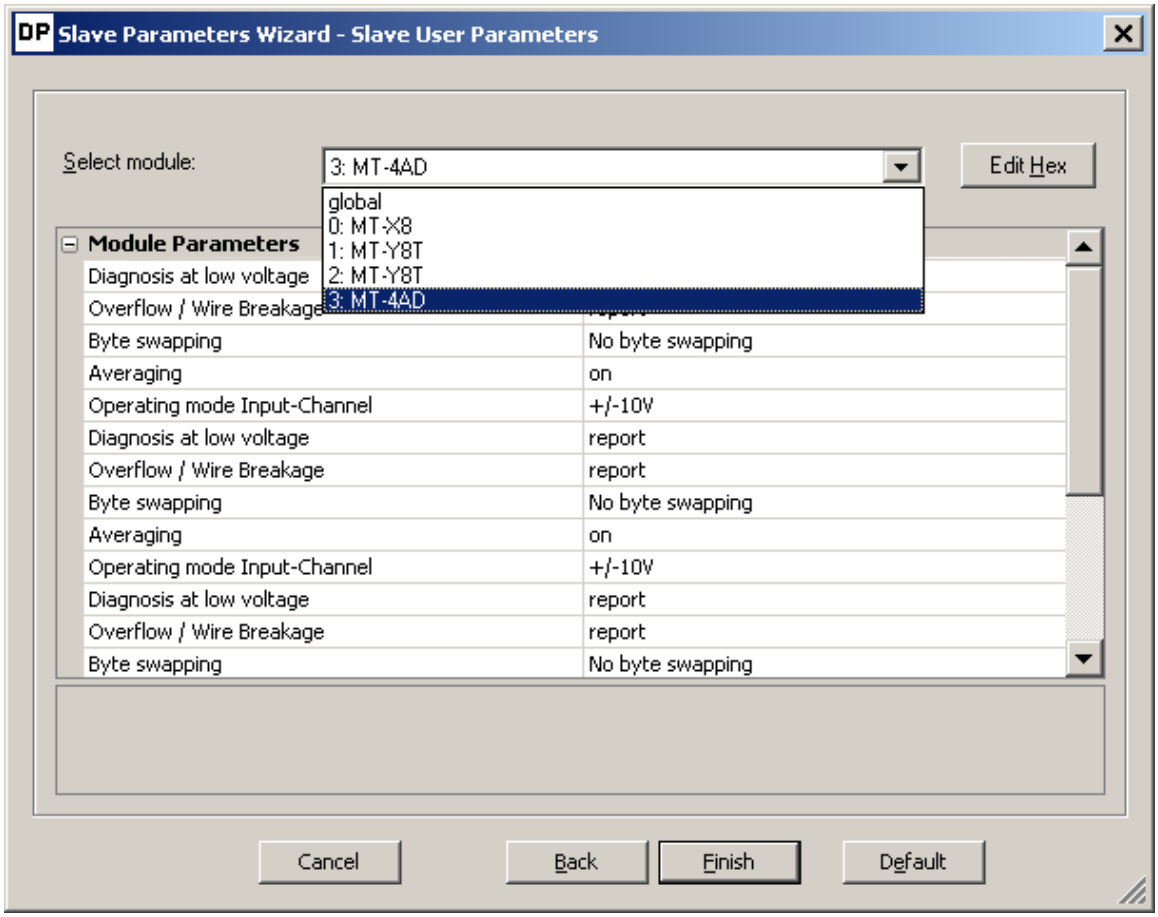


If the module should only have an output area, select the option **Outputs only** and the field for the input length is hidden.



Extended User Parameters

The **Extended User Parameters** are not standardized but depend on the slave. The GSD file can provide descriptive texts for parameters as well as available settings. If these parameter descriptions are missing or incomplete the user parameters can also be changed within a simple hex editor.



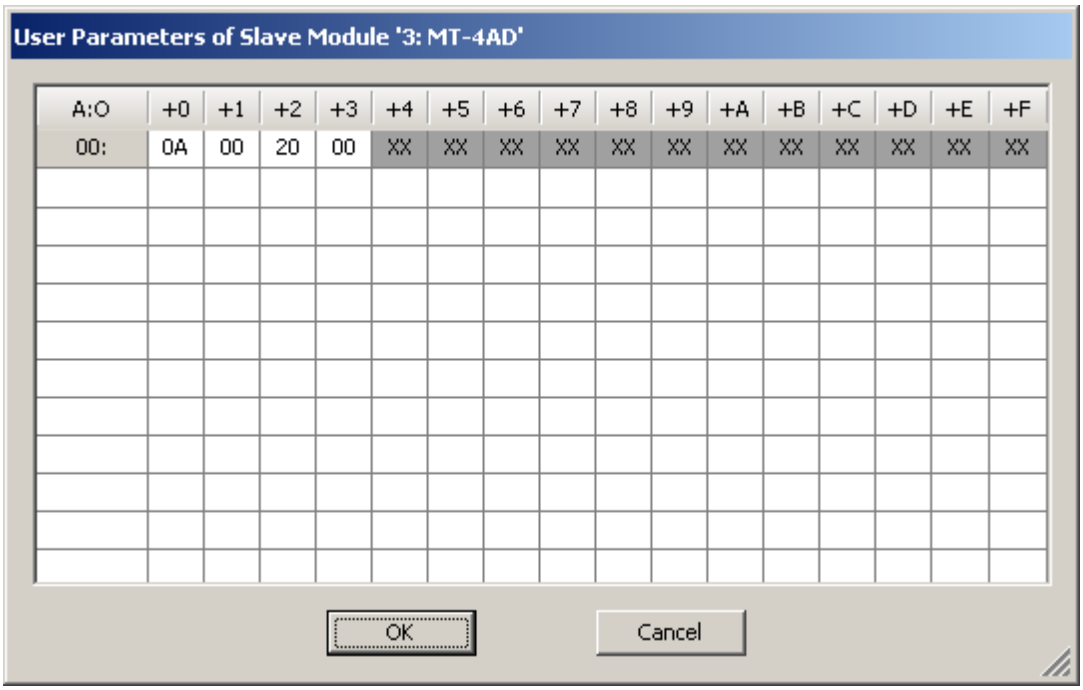
Name	Description	Choices / Setting range	Default
Select module	select either 'global' for general parameters or the module specified by its slot number and type name		
Edit Hex	opens the hex editor for editing the user parameters of the selected slave module		
User Param. Table	each row represents a parameter, showing name and input field		from GSD file
Cancel	close wizard and discard changes		-
Back	return to previous wizard page		-
Next or Finish	if the slave supports DPV1, the button is labeled 'Next', otherwise it is labeled 'Finish' Next: proceed to next wizard page (DP V1/V2 Parameters)		Default button

Name	Description	Choices / Setting range	Default
	Finish: save changes and close wizard		
Default	set parameters back to their default values		

Hex Editor for User Parameters

If such descriptions are missing or incomplete the user can start a hex editor to directly change the user parameters. The hex editor does not perform any range checking. Using the hex editor can have unforeseeable side effects and requires an experienced user.

Note: be careful when changing parameters in the hex editor, because the data entered is not validated by the application, but downloaded to the slave 'as is'. Invalid user parameters could have unforeseeable effects in the slave.

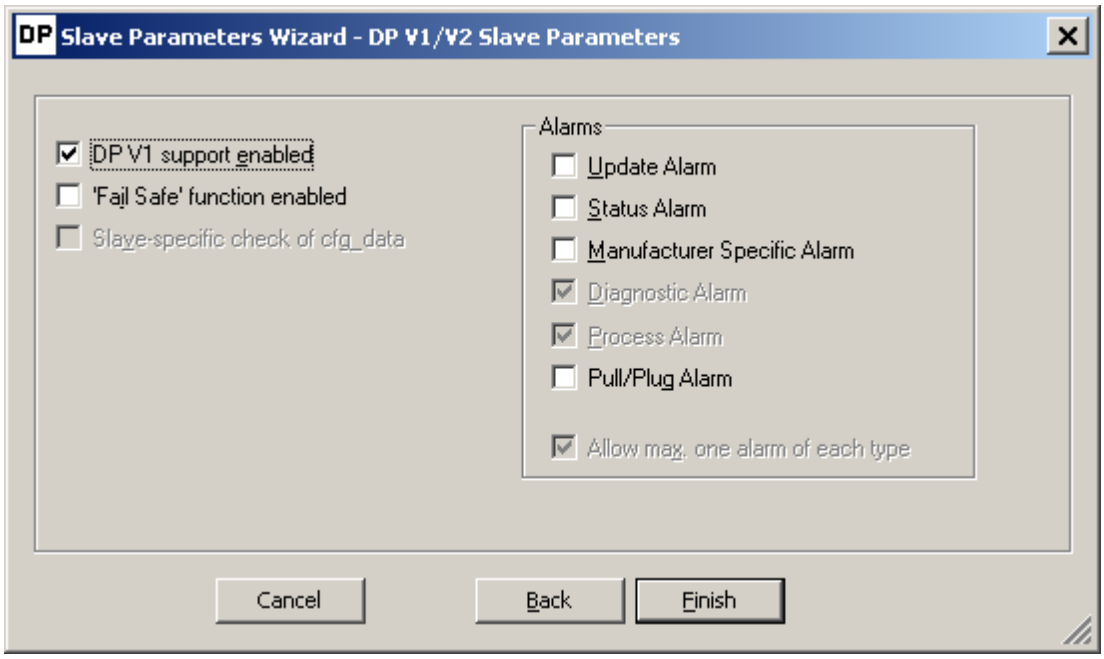


Name	Description	Choices / Setting range	Default
User Parameter Grid	shows the contents of the user parameter buffer for the selected slave module	0x00 – 0xFF	from GSD file
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-

Slave DPV1/V2 Parameters

This page contains options related to DPV1. It is therefore only available in projects for DPV1 capable masters (QJ71PB92V and FX3U-64DP-M), and then only available to slaves, which support DPV1.

Note: the option 'Watchdog time base 1 ms' is not supported, because it conflicts with a single common watchdog time for all slaves.

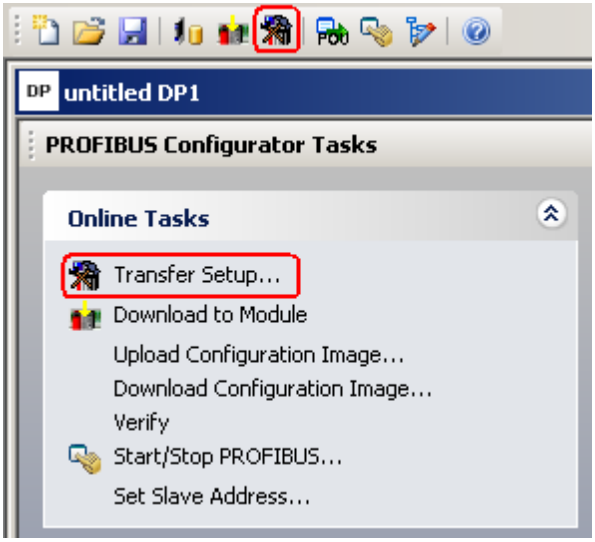


Name	Description	Choices / Setting range	Default
DP V1 support enabled	if selected, DPV1 specific services are supported. Beside for acyclic read/write this option must also be set for DPV1 alarm handling	selected / not selected	not selected
'Fail Safe' function enabled	enabled, if GSD file contains entry 'Fail_Safe=1' fixed to ,selected', if GSD file contains entry 'Fail_Safe_required=1'	selected / not selected	not selected
Slave-specific check of cfg_data	enabled, if GSD file contains entry 'Check_Cfg_Mode=1'	selected / not selected	not selected
Update Alarm	if selected, alarms of type 'Update' are enabled enabled, if GSD file contains entry 'Update_Alarm_supp=1' fixed to ,selected', if GSD file contains entry 'Update_Alarm_required=1'	selected / not selected	not selected

Name	Description	Choices / Setting range	Default
Status Alarm	if selected, alarms of type ‘Status’ are enabled enabled, if GSD file contains entry ‘Status_Alarm_supp=1’ fixed to ‚selected’, if GSD file contains entry ’Status_Alarm_required=1’	selected / not selected	not selected
Manuf. Specific Alarm	if selected, alarms of type ‘Manuf. Specific’ are enabled enabled, if GSD file contains entry ‘Manufacturer_Specific_Alarm_supp=1’ fixed to ‚selected’, if GSD file contains entry ’Manufacturer_Specific_Alarm_required=1’	selected / not selected	not selected
Diagnostic Alarm	if selected, alarms of type ‘Diagnostic’ are enabled enabled, if GSD file contains entry ‘Diagnostic_Alarm_supp=1’ fixed to ‚selected’, if GSD file contains entry ’Diagnostic_Alarm_required=1’	selected / not selected	not selected
Process Alarm	if selected, alarms of type ‘Process’ are enabled enabled, if GSD file contains entry ‘Process_Alarm_supp=1’ fixed to ‚selected’, if GSD file contains entry ’Process_Alarm_required=1’	selected / not selected	not selected
Pull/Plug Alarm	if selected, alarms of type ‘Pull/Plug’ are enabled enabled, if GSD file contains entry ‘Pull_Plug_Alarm_supp=1’ fixed to ‚selected’, if GSD file contains entry ’Pull_Plug_Alarm_required=1’	selected / not selected	not selected
Allow max. one alarm of each type	if selected, only one alarm of each enabled type may be active enabled, if at least one alarm type has been selected and the slave supports more than one open alarm of the same type (GSD entry 'Alarm_Sequence_Mode_Count>0') fixed to 'selected', if at least one alarm	selected / not selected	not selected

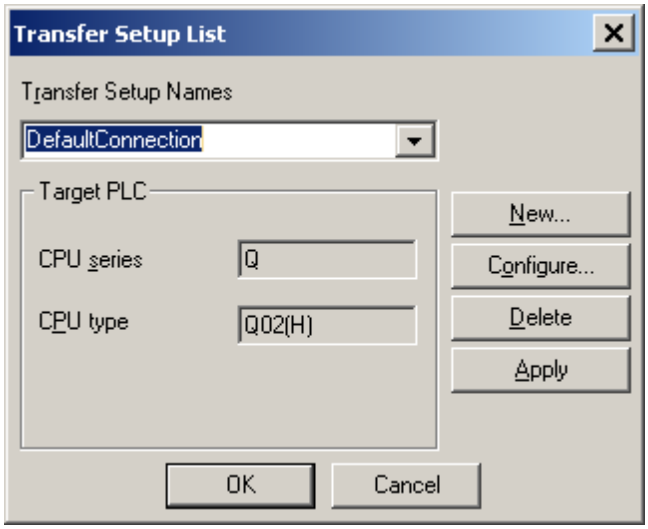
Name	Description	Choices / Setting range	Default
	type has been selected and the slave does not support more than one open alarm of the same type (GSD entry 'Alarm_Sequence_Mode_Count=0')		
Cancel	close wizard and discard changes		-
Back	returns to previous wizard page		-
Finish	save changes and close wizard		Default button

8 Transfer Setup



Click on the Transfer Setup button in the toolbar or select the item 'Transfer Setup' from the 'Online Tasks' group to open the transfer setup. When a new project is created, a default transfer setup is automatically added to the project file.

Note: for successful network settings you should be familiar with the characteristics of MELSEC networks and consult the corresponding manuals.



Name	Description	Choices / Setting range	Default
Transfer Setup Names	allows to select an existing transfer setup and also to change its name		
CPU series	show the family of the CPU type, set in the selected transfer setup	read-only	
CPU type	show the CPU type, set in the selected transfer setup	read-only	
New	define a new transfer setup		

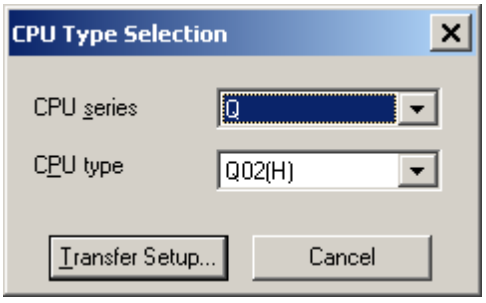
Name	Description	Choices / Setting range	Default
Configure	edit the selected transfer setup		
Delete	delete the selected transfer setup		
Apply	save changes in the transfer setup name		
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-

The transfer setup name may only consist of letters, digits and the following characters '_- (). The first character must be a letter. If the name entered by the user contains other characters, an error message is displayed.

Define New Transfer Setup

When the user presses the <New> button, the user is first asked to select the CPU type.

CPU Type Selection



Name	Description	Choices / Setting range	Default
CPU series	Contains the list of PLC families, which are supported by the master module type selected in the current project. If the user selects a different family, the list of CPU types is updated to match the selected family. The user can change the CPU type or just press <Ok> button to accept it.		
CPU type	Contains the list of CPU types, which belong to the selected PLC family		

Name	Description	Choices / Setting range	Default
Transfer Setup	Start the transfer settings editor to set the connection parameters, e.g. baud rate, COM port etc.		Default button
Cancel	Close dialog and discard changes		-

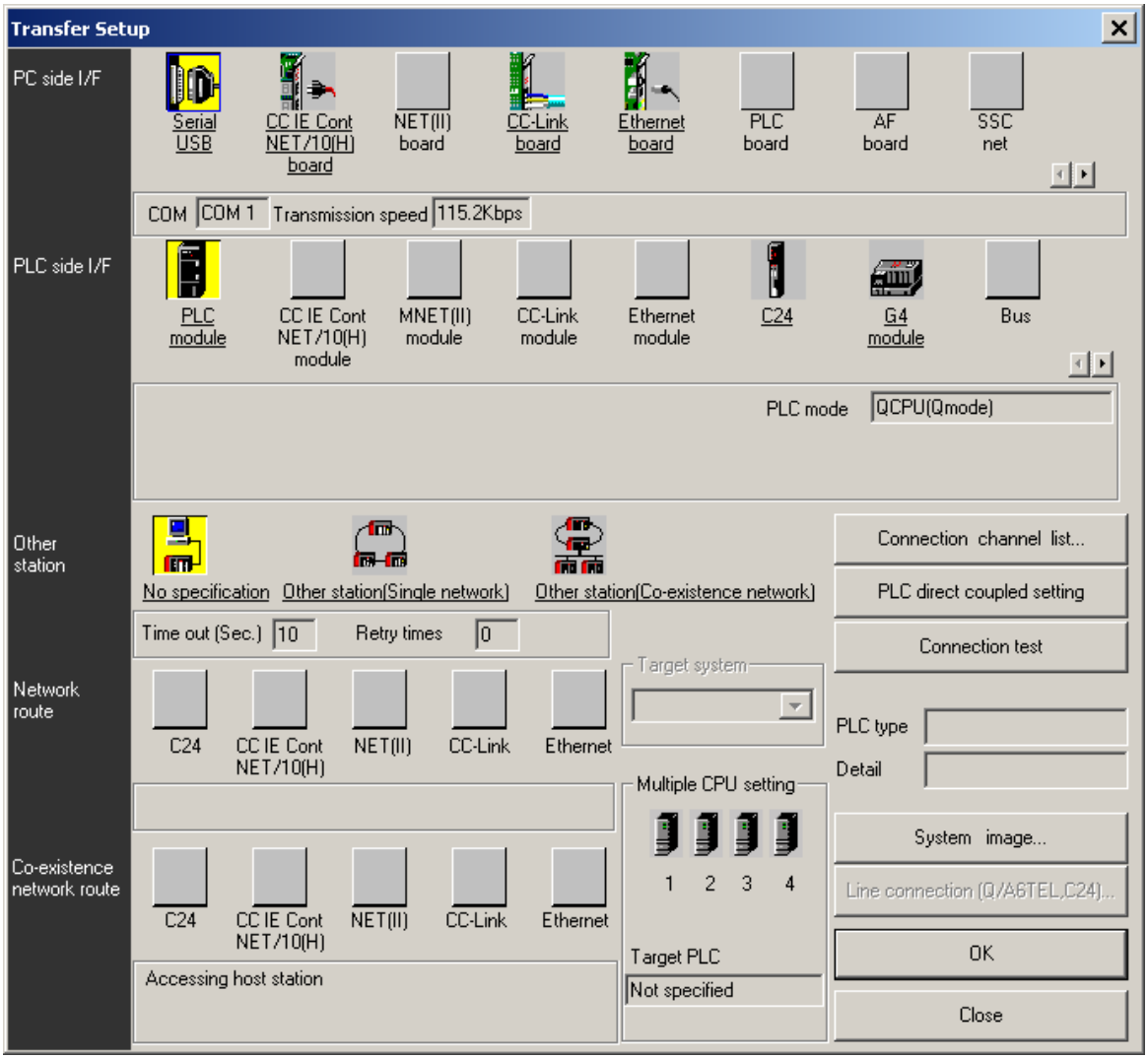
The CPU types are grouped in ‘series’ (FX, QnA, Q, QnPH and QnPRH). The available PLC families depend on the type of the master module according to the table below

Master Module Type	Available CPU Series
A(1S)J71PB92D	QnA-series
QJ71PB92D	Q-, QnPH- and QnPRH series
QJ71PB92V	Q-, QnPH- and QnPRH series
FX3U-64DP-M	FX-series
QJ71PB93D	Q-, QnPH- and QnPRH series

If the user selects a different series, the list of CPU types is updated to match the selected series. The default setting for the CPU type is the one of previously selected setup. The user can change the CPU type or just press the button ‘Transfer Setup’ and accept the default type.
GXDP can detect the type of the connected CPU, if the correct CPU series has been selected. Therefore the user does not have to select the exact CPU type in order to communicate with the target PLC. However the transfer settings, which are available in the following transfer settings dialog, depend on the selected CPU type.
Next the transfer settings editor is opened to specify the parameters of the new connection.

Transfer Settings Editor

Next the transfer settings editor is opened to specify the parameters of the new connection.



After leaving the dialog, the new transfer setup is added with a default name. The default name is constructed as '**TransferSetup<n>**', where <n> is the sequential index of the setup. If this name is already used, <n> is incremented, until the name is unique. Define a network name or just use the default transfer setup name.

Note: the network name is used to identify the settings for one transfer path and must therefore be unique.

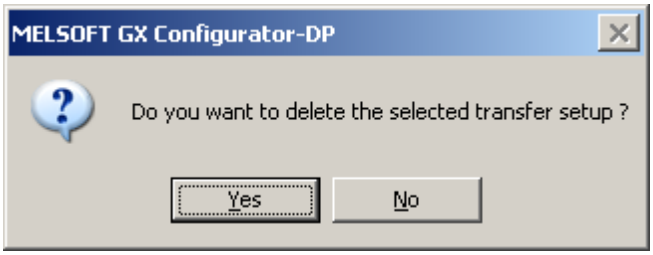
The new transfer setup automatically becomes the selected one.

Configure

The <Configure> button allows the user to change the settings of the selected transfer setup. The procedure is the same as for creating a new path. First the user can either confirm the current CPU type or select a different one. Next the **transfer setup** is opened, showing the existing settings.

Delete

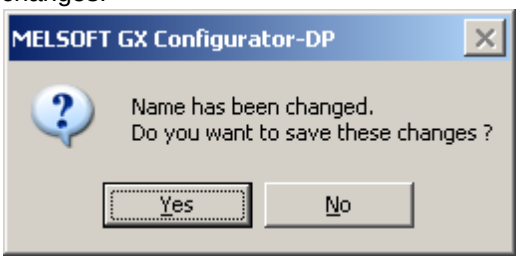
By pressing the <**Delete**> button the selected transfer setup is deleted. Before the setup is actually removed, the user is asked to confirm the operation.



Apply

Changes of the transfer setup name are saved. You can change the symbolic name of any network connection. Select the network connection you want to change. Enter the new name in the **Transfer Setup Names** drop-down list and confirm with the <**Apply**> button.

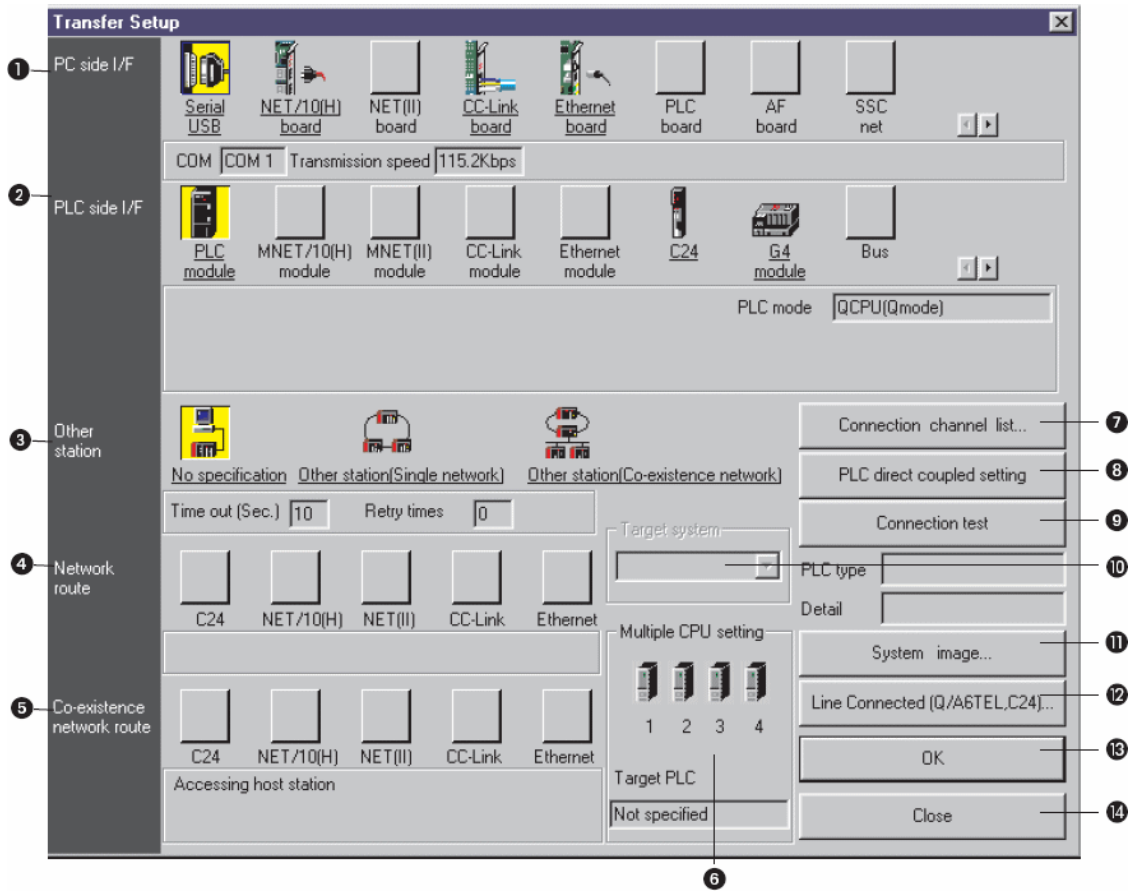
If you do not press the <**Apply**> button after changing the transfer setup name and try to leave the transfer setup or to select a different setup, a message box is displayed that asks you to confirm the changes.



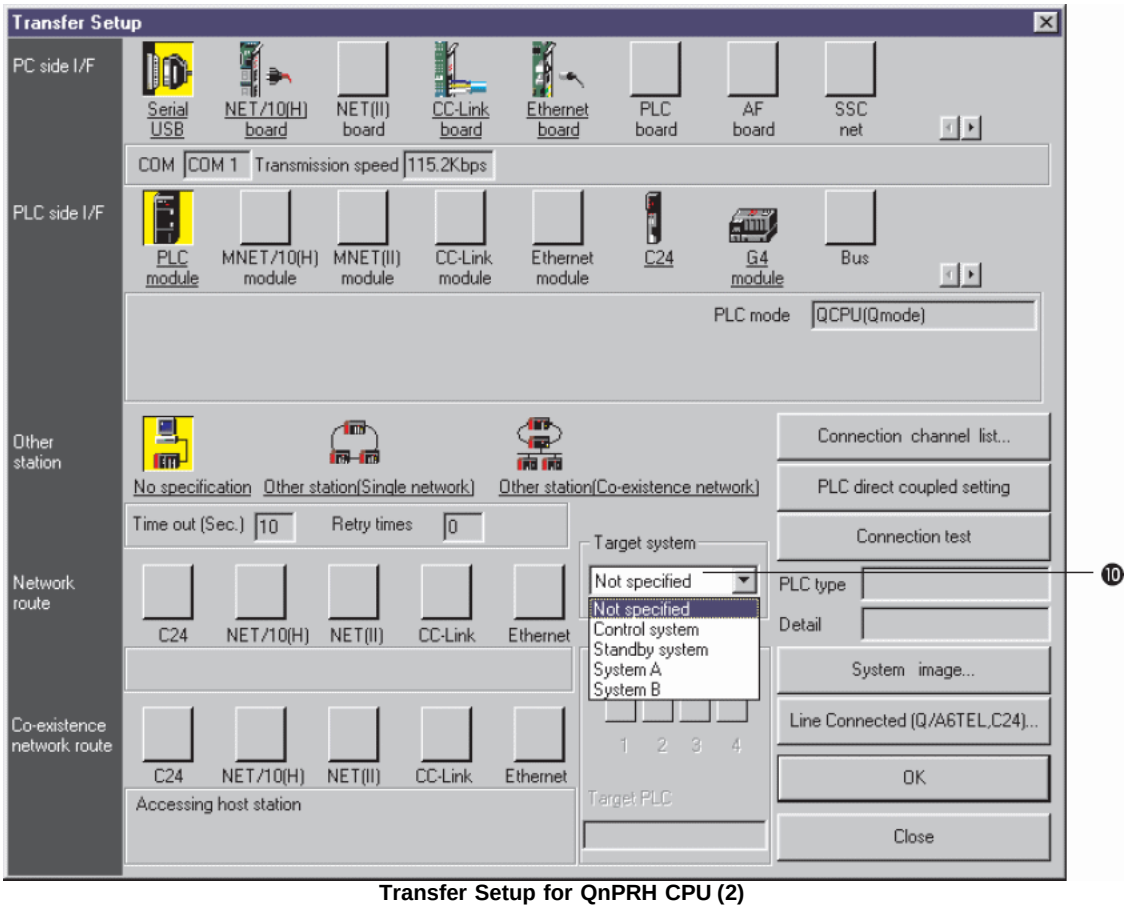
The symbolic name of the transfer setup is changed and can be selected from the **Transfer Setup Names** drop-down list.

8.1 Editing the Transfer Settings

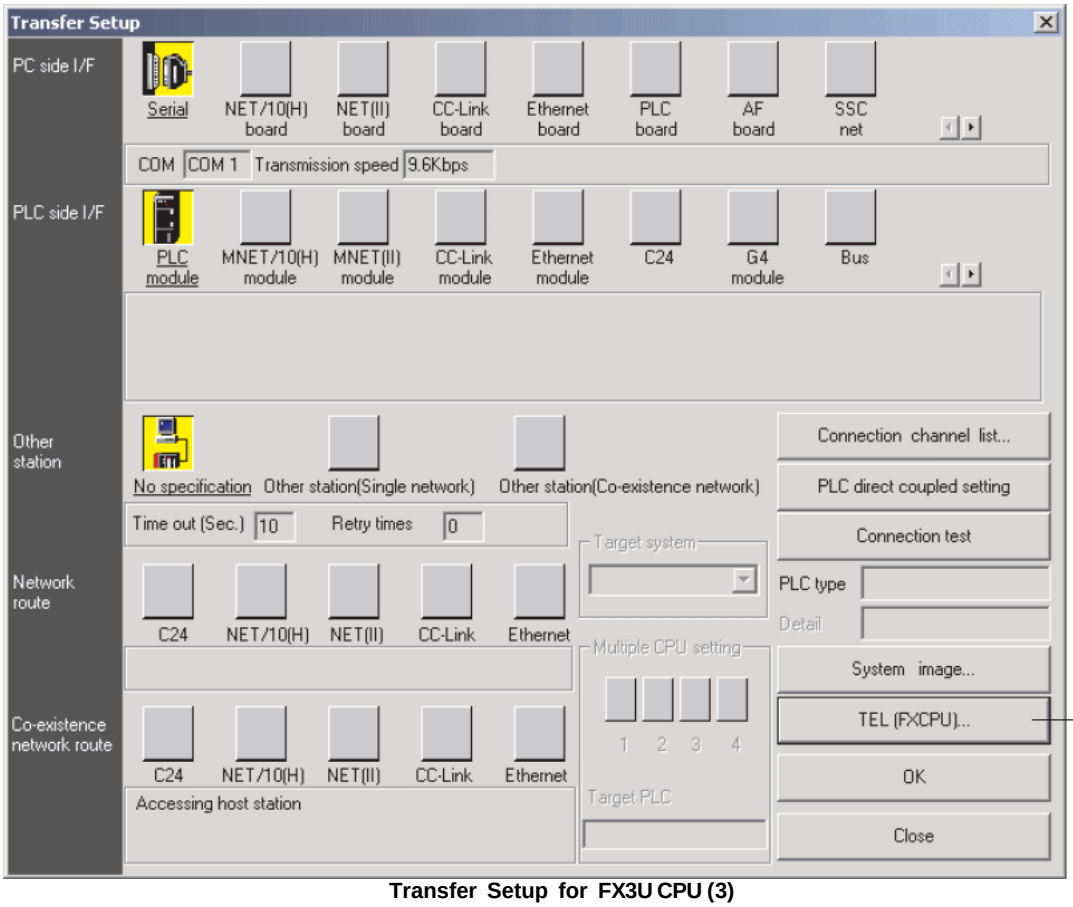
The dialog for setting the connection parameters of a transfer setup is also used by other MELSOFT products like GX IEC Developer (GID) and GX Developer (GD).



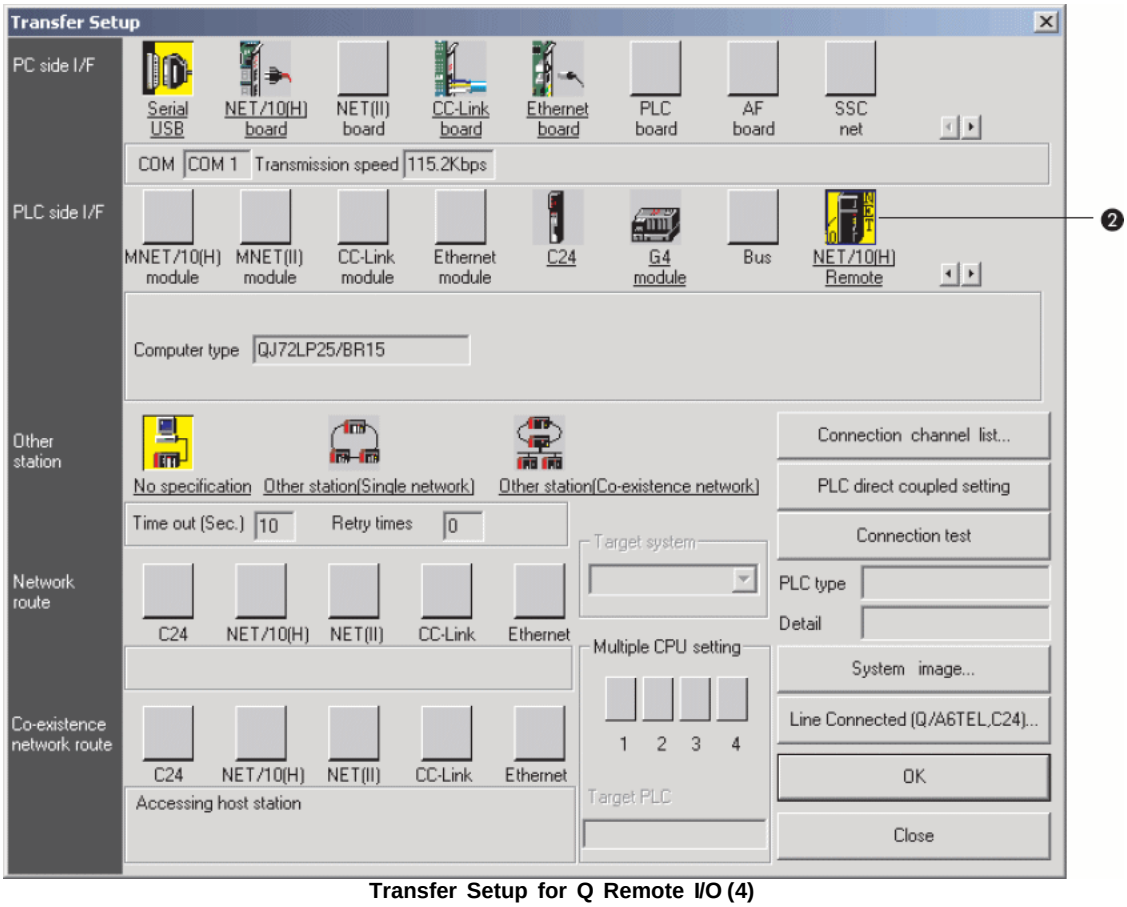
Transfer Setup (1)



Transfer Setup for QnPRH CPU (2)



Transfer Setup for FX3U CPU (3)



Transfer Setup for Q Remote I/O (4)

No.	Description
❶	**PC side I/F** Choose the I/F for the connection of the PC to the PLC.
❷	**PLC side I/F** Choose the unit to be connected with the personal computer.
❸	**Other station** Choose no network or one of the specified network types
❹	**Network route** Choose the network type, network No., station number and first I/O No. to be accessed. The setting items depend on the network type that has been set.
❺	**Coexistence network route** Choose this when making access to the network different from the one where the personal computer is connected. Choose the network type, network No., station number and first I/O No. to be accessed. The setting items depend on the network type that has been set.
❻	**Multiple PLC setting** Specify when the access target is multiple CPUs. You can connect up to four PLC CPUs. In this option you decide which CPU is to be connected.
❼	**Connection channel list...** Lists possible connection modes and their image. You can set the connection target while looking at the Connection channel list.
❽	**PLC direct coupled setting**

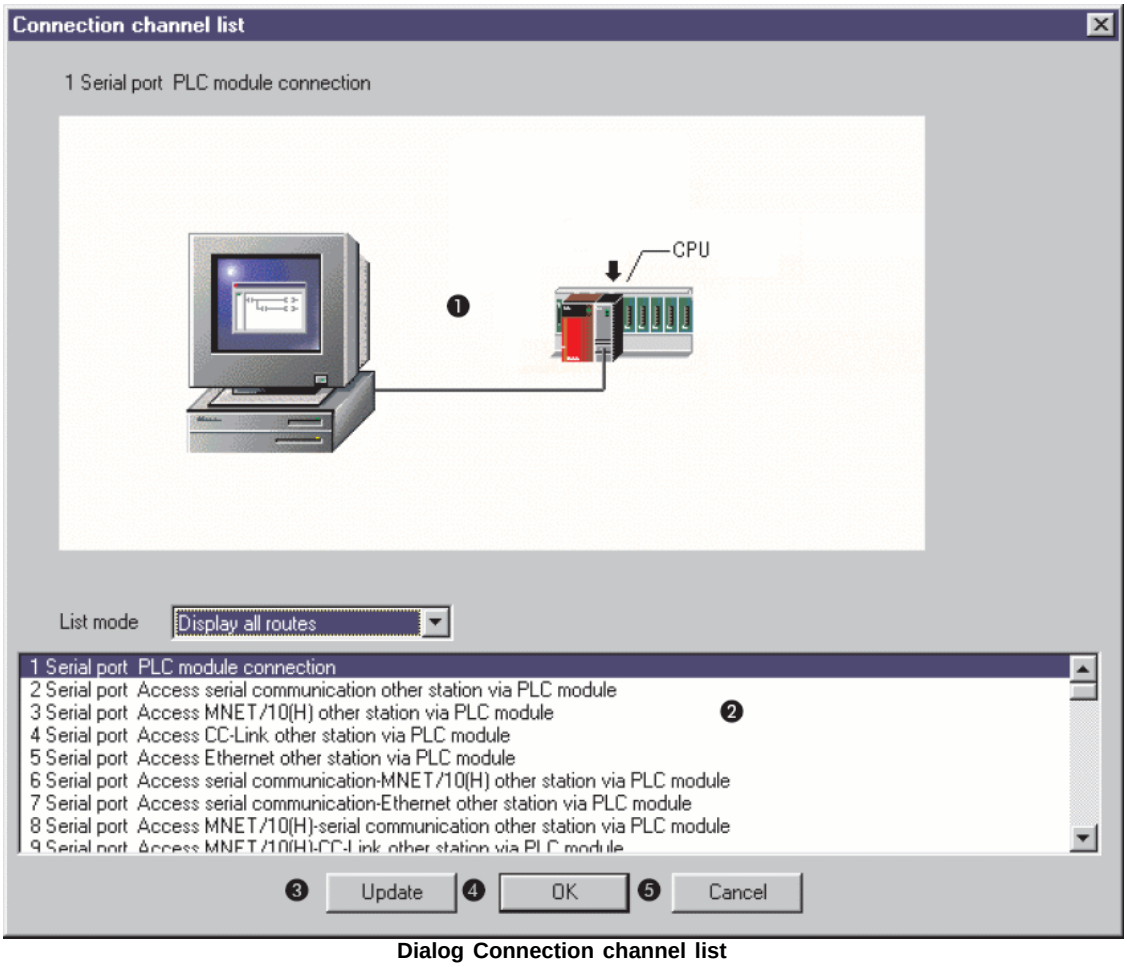
No.	Description
	By clicking this button you change from Other station to the own station.
❾	**Connection test** Tests whether proper access can be made to the PLC set as the access target on the Connection Setup screen. If proper access can be made, the model name of the PLC as the access target appears in the CPU type field
❿	**Target System** Specifies the connection destination for redundant PLC systems: 1. **Not specified:** • **When a PLC is directly connected**: the PLC directly connected to the personal computer • **Via network**: The PLC at the station where the network module of the specified station No. is installed in the network communication path. 2. **Control system**: The PLC whose system type is the control system. 3. **Standby system**: The PLC whose system type is the standby system. 4. **System A**: The PLC connected to the A side connector of the tracking cable. 5. **System B**: The PLC connected to the B side connector of the tracking cable.
⓫	**System image** Here you see an image of the setup system.
⓬	**Line connected(Q/A6TEL,C24).../TEL(FXCPU)...** Clicking on this button opens a dialogue to setup a modem connection. Note: modem connections are not supported by GX Configurator-DP. This button is therefore disabled.
⓭	**OK** Closes the dialogue and saves the settings.
⓮	**Cancel** Closes the dialogue without saving.

Description for Transfer Setup (1 - 4)

Setup of the connection to the PLC

To setup the connection follow the different setup options in *Transfer Setup (1)*. Consult the manuals of the PLC CPU and the network type you are using.

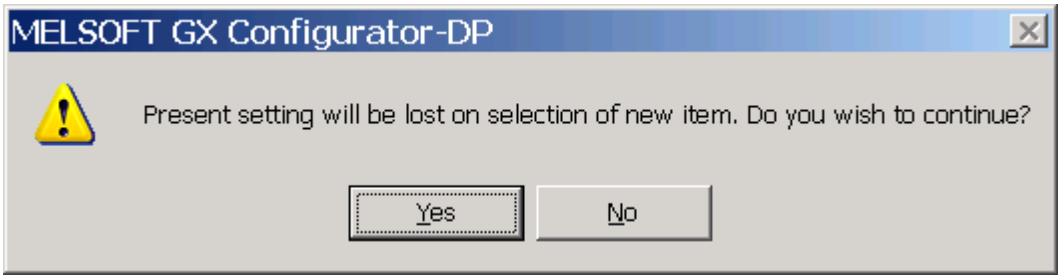
To select a network type you can also click on the button **Connection channel list**. The following dialog window is opened.



Dialog Connection channel list

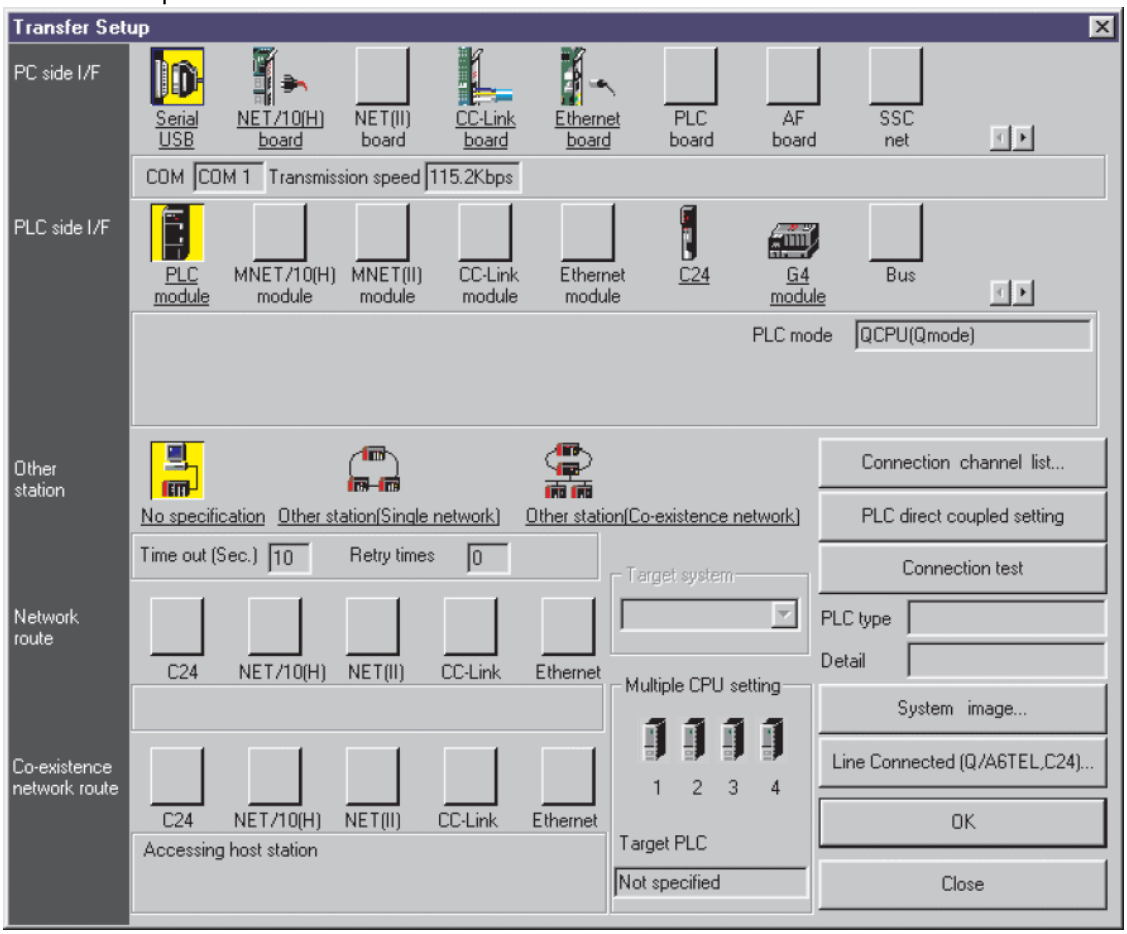
No.	Description
❶	Graphical image of the in ❷ selected network type.
❷	Listing of the possible network configurations for the selected PLC.
❸	**Update** Click this button to confirm the selected network configuration without closing the dialogue
❹	**OK** Confirm the set network configuration and close dialogue.
❺	**Cancel** Closes the dialogue without saving. When the button Update was clicked the dialogue is closed but the network configuration is already saved.

Use the scrollbar to scroll through the network configurations and select a network configuration corresponding to your network type by clicking in the list. Click on the button Update. Confirm the following security note with OK.



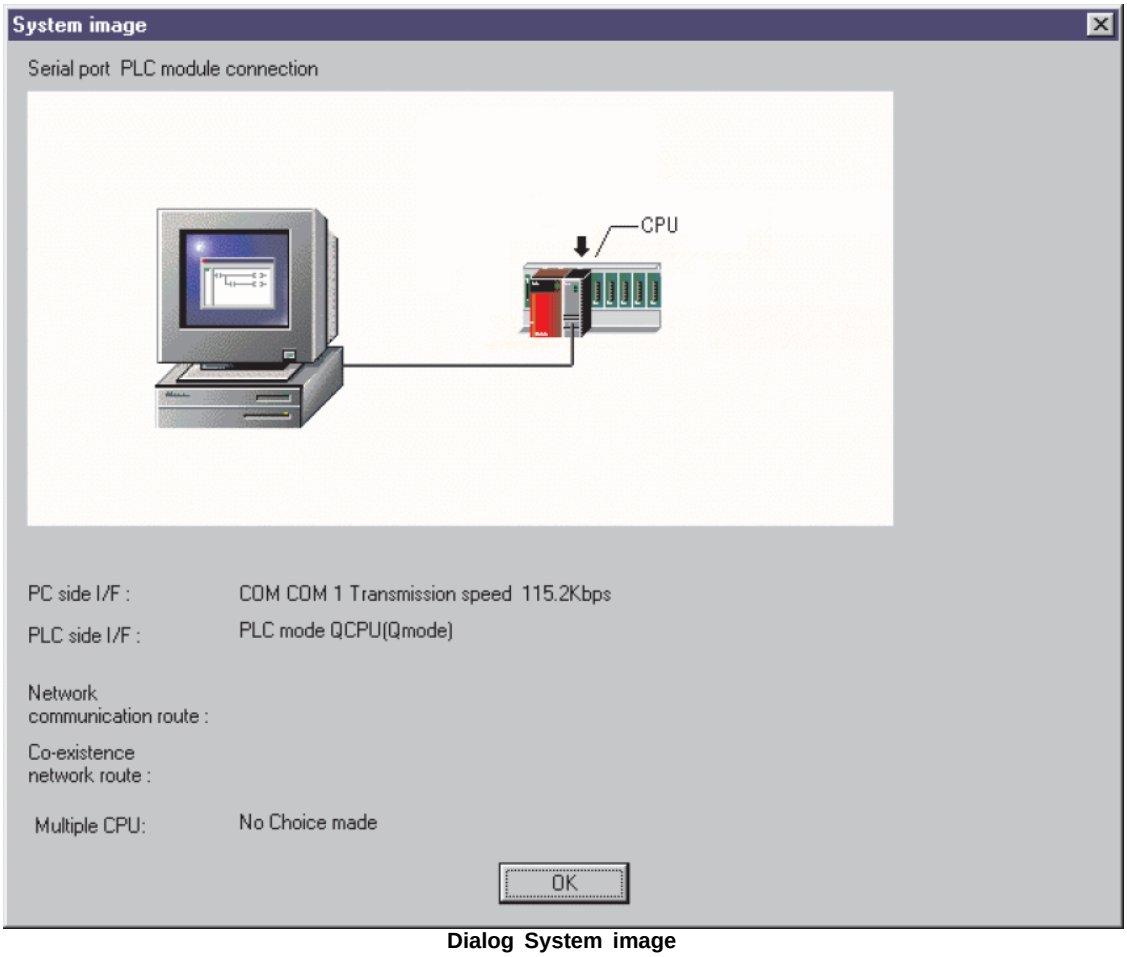
Test the selected network configuration by clicking on the button Connection test. If the connection between the PC and the network is possible a positive note will be shown on the screen. If no connection is possible an error message is shown. In this case you have to check the cabling as well as the connection parameters set in the transfer setup and, if used, the respective PLC network modules.

Close the dialog by clicking on OK. The selected network configuration will be saved and shown in the Transfer Setup.



Dialog Transfer Setup

Now click on System image. An information window is opened in which an image of the setup system is shown.
In comparison to the Connection channel list dialog in this dialog the system parameter are also listed.
So you can change single settings and check the settings by the help of this dialog.



Dialog System image

9 Troubleshooting

GSD Database

Problem 1
GSD information missing for slaves when opening older projects

Solution
Add the corresponding GSD files to the database. The entries 'Model_Name', 'Ident_Number' and 'Revision' in the GSD file must match those of the slaves in the project.
GXDP does not automatically import GSD database export files (*.ext), created by previous GXDP versions along with the project file. In previous versions this file was automatically imported, when a project with unknown slave types was opened. Currently GSD information is exported to the project file itself. When a project file is opened, the GSD information is taken from the project file as default. It is recommended to parse older GSD files into the new database instead of importing an older GSD database or ext-file. Only by parsing the GSD file with the current GSD parser of GXDP it is ensured that all necessary parameters are extracted. An import of the GSD database will only import the parameters stored in the database by the older version of the GSD parser, based on a previous version of the GSD file standard.

Device Access

Problem 1
Down- and Upload of configuration fails, PROFIBUS communication cannot be started.

Solution
Check the use of X- and Y-devices as buffers for I/O and diagnostic data.
GXDP does not detect that slave I/Os are mapped to X and Y devices, which are occupied by modules on the CPU rack. This will lead to unforeseeable results.

Problem 2
Data set in buffer devices is overwritten

Solution
Check the use of buffer devices by the application.
The ‘I/O Mapping POU’ does not directly access the PROFIBUS I/O data in the buffer memory, but in transfer buffer devices. The buffer devices for outputs are overwritten with the contents of the module specific DUT variables before being exchanged with the buffer memory of the PROFIBUS master via FROM/TO instructions or autorefresh settings. The application program should in general not directly access the transfer devices, but use the global variables, which are automatically included in the user library.

ST Slave

Problem 1
No detailed I/O points in 'I/OMapping' dialog for ST1H-PB slaves; missing or wrong data structures for ST slaves in generated POU

Solution
Use the ST slave type included in the default GSD database.
The extended support for ST1H-PB is based on the GSD file, which is shipped with GXDP and already included in the default GSD database.

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