MITSUBISHI ELECTRIC

GX Configurator-DP 7.08J

Configuration System
for Open Networks

Software Manual

Art.no.: 65778
December 2012
Revision a

MITSUBISHI ELECTRIC INDUSTRIAL AUTOMATION

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).

Revisions

Print Date	Revision	Content
August 2005	-	GXDP 7.00A
August 2006	-	GXDP 7.01B
April 2007	-	GXDP 7.02C
May 2009	-	GXDP 7.03D
December 2009	-	GXDP 7.04E
July 2010	-	GXDP 7.05F
January 2011	-	GXDP 7.06G
April 2011	-	GXDP 7.07H
May 2012	-	GXDP 7.08J
November 2012	a	Description of QnPRH support added

Table of Contents

Index 197

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.

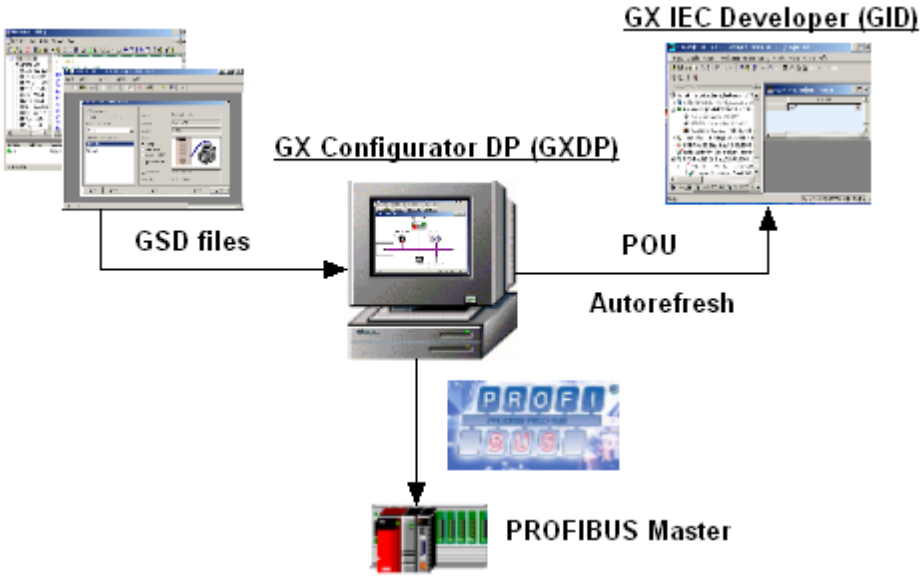
If you get stuck...

... 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.

2 Getting to know GX Configurator-DP

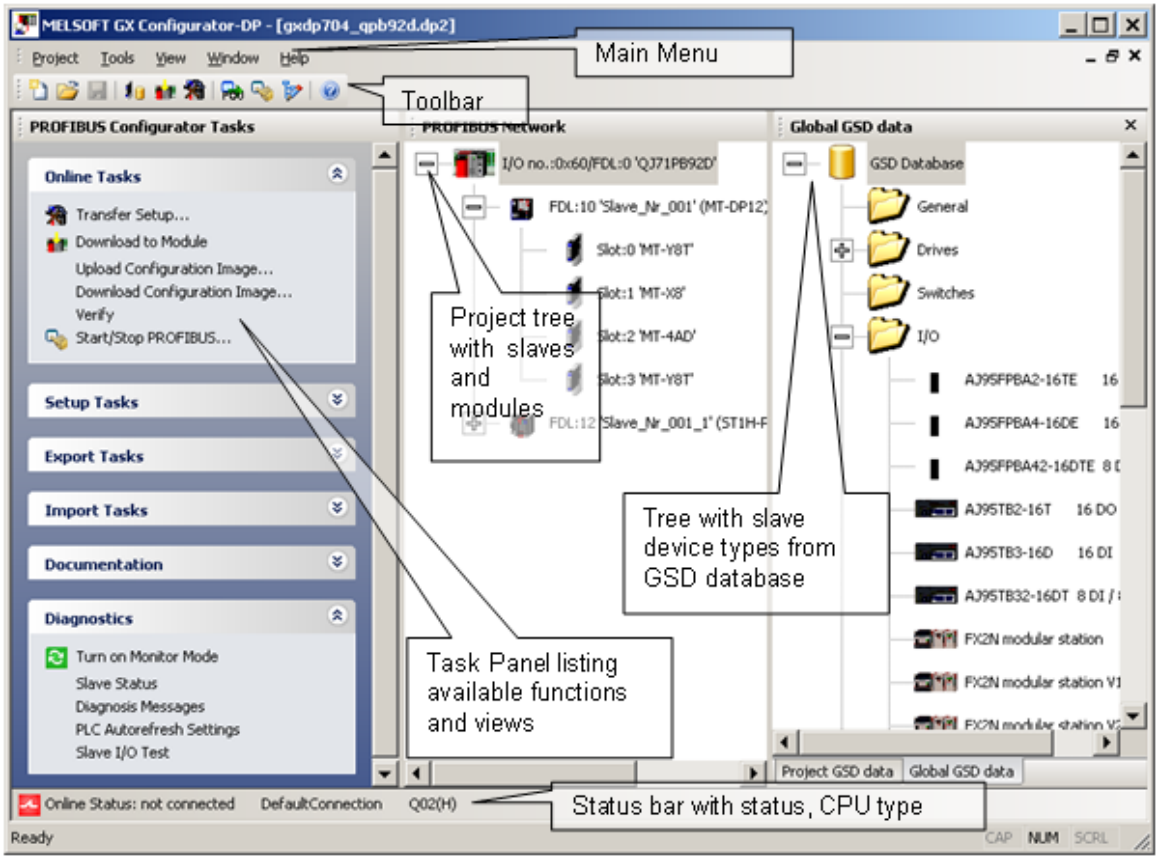
GX Configurator-DP Concept

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.
GX Configurator-DP 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.
GX Configurator-DP 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 Works2 (GXW2) and 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

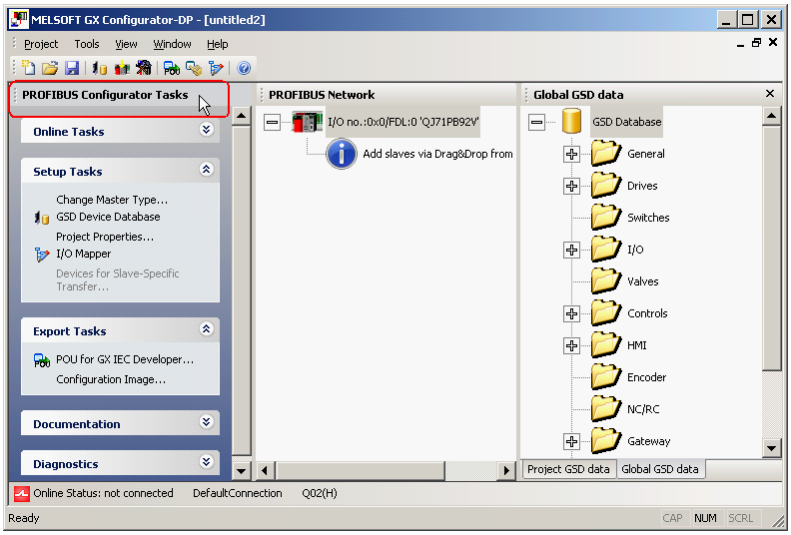
GX Configurator-DP cannot simultaneously be started multiple times on the same computer. Trying to start GX Configurator-DP again, while it is already running, brings the existing instance of GX Configurator-DP in the foreground. The GX Configurator-DP application can however have several projects open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

Modifying the User Interface

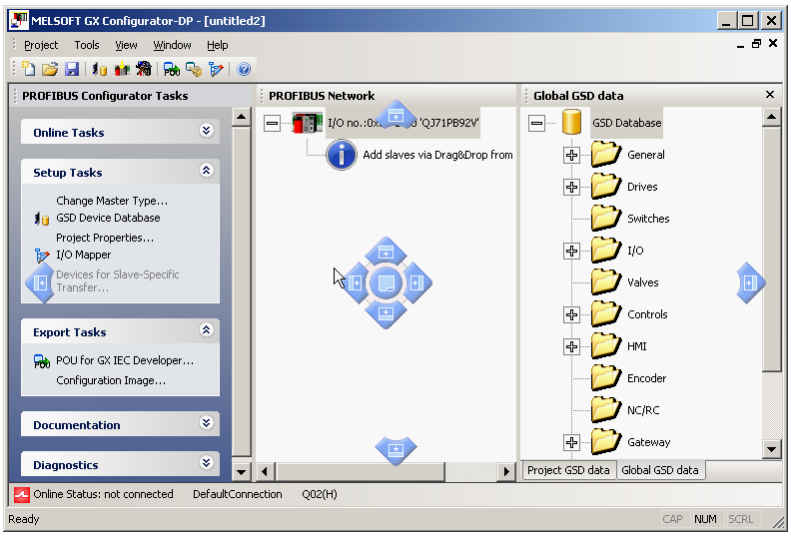
The different views within the GX Configurator-DP application window are ‘dock-able’. This means that they can be moved and placed by the user within the application window. The opens views and their position are stored in the registry specific for the project type and loaded, when GX Configurator-DP is started.

The following steps demonstrate moving the ‘Task Panel’ from its default position and placing it below the project tree.

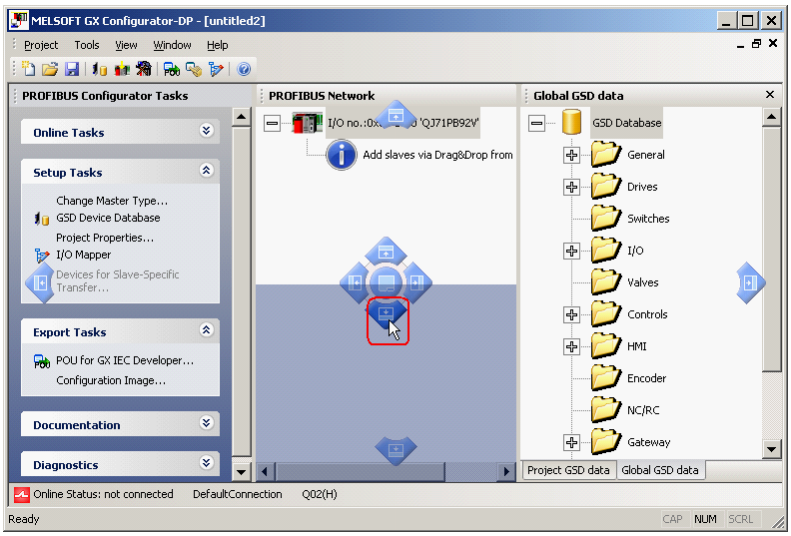
1. place the mouse cursor on the caption of the window, which should be moved, and press the left mouse button



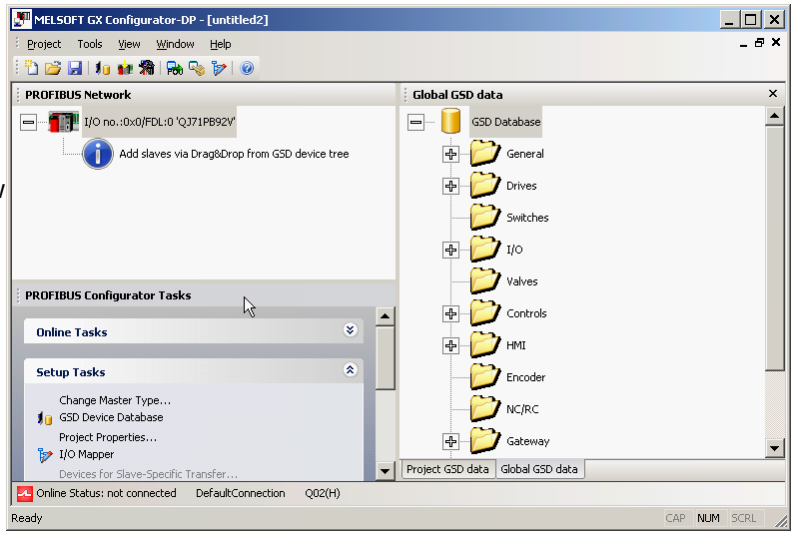
2. move the mouse cursor while keeping the mouse button pressed. This causes the 'docking pane stickers' to be displayed. These blue arrows indicate, where the window could be placed



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

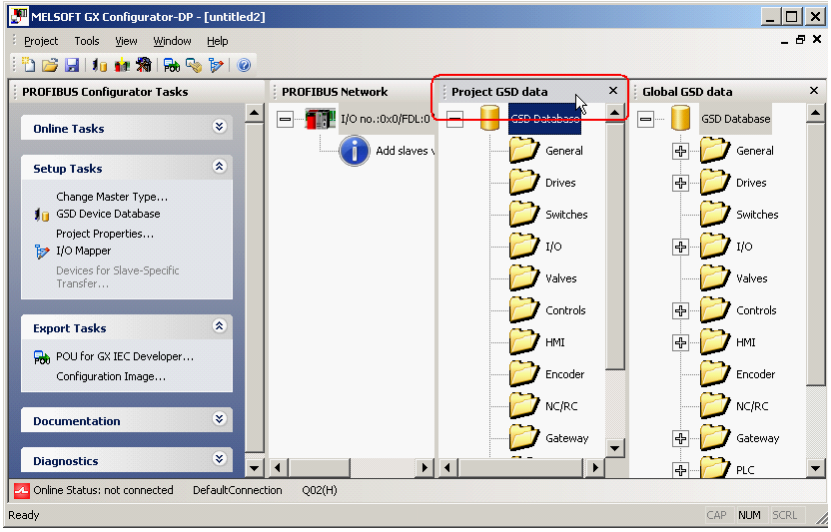


4. the window (here the task panel) is now displayed below the project tree. Both project tree and task panel have been moved to the left edge of the application window, which was previously occupied by the task panel.

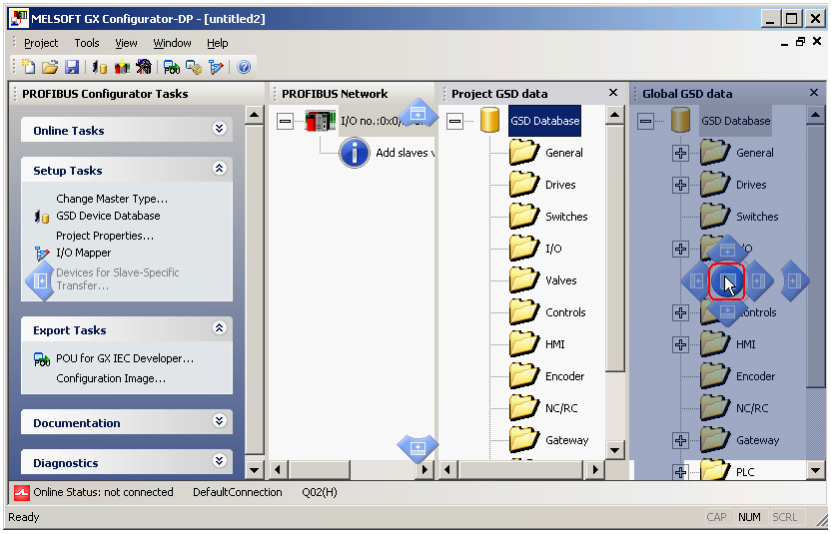


Views can also be combined in a tab window. This saves space in the user interface. The original views are selectable via the tabs. Selecting a tab and moving the mouse cursor allows the separation of tabbed windows.
The following steps demonstrate combining the 'Global GSD data' view with the 'Project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

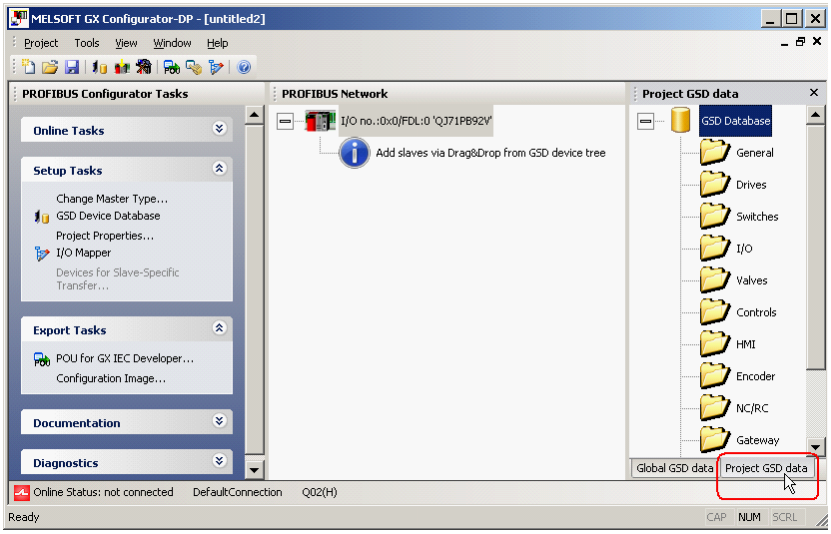
1. place the mouse cursor on the caption of the window, which should be moved, and press the left mouse button



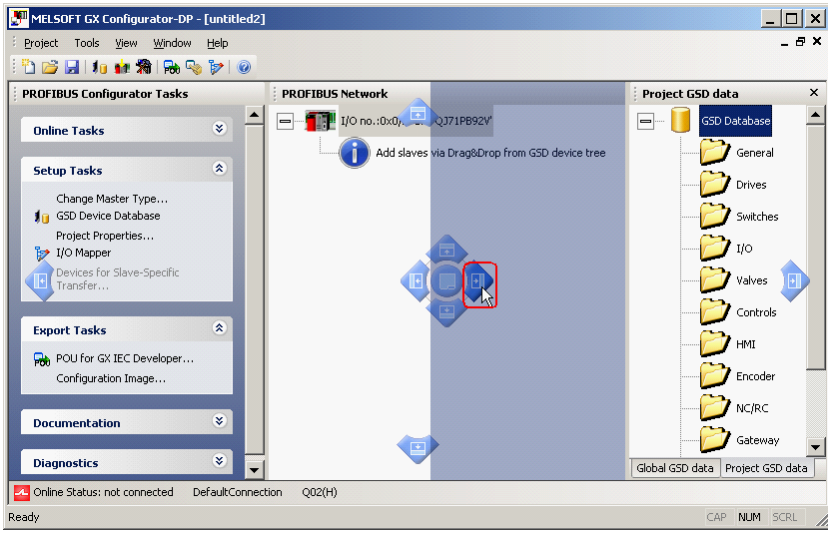
2. move the mouse cursor while keeping the mouse button pressed. This causes the ‘docking pane stickers’ to be displayed. Move the mouse cursor onto the button in the middle, which shows a tabbed window symbol, and release the mouse button



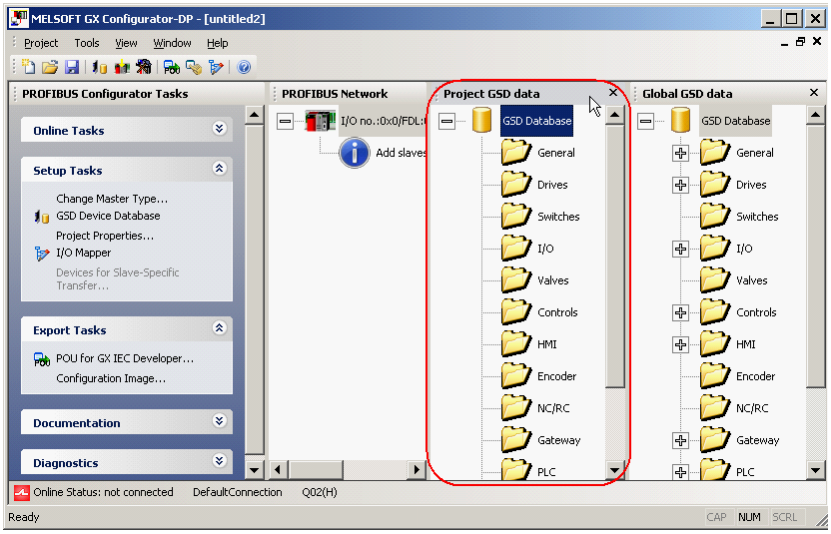
3. an additional tab appears with the caption of the moved window



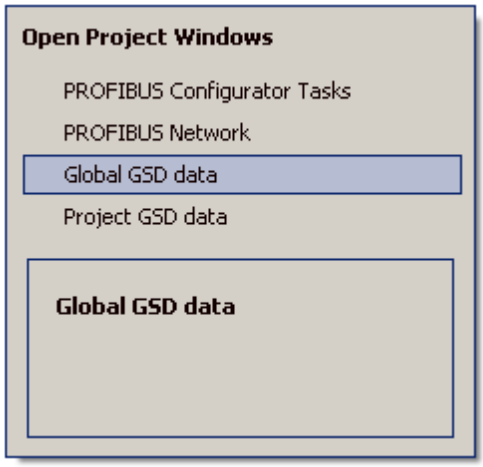
4. to separate the views select the tab and move the mouse cursor while keeping the left mouse button pressed. The area, where the window would be docked, is marked with a blue rectangle.



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 Qn, QnA, A 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

If GX Configurator-DP is used integrated in GX Works2, only the Q-series PROFIBUS master and slave modules are supported.

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/7: 1 GHz processor)
- 128 MB RAM for Microsoft ® Windows 2000
- 256 MB RAM for Microsoft ® Windows XP
- 1 GB RAM for Microsoft ® Windows Vista/7
- 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 (min. SP2)
- Microsoft ® Windows Vista Home (or higher)
- Microsoft ® Windows 7 (32- and 64 bit) Home (or higher)

Related MELSOFT Software

GX Configurator-DP is typically used together with one of the PLC programming packages for MITSUBISHI PLCs

- 'GX Works2' (GXW2)
- 'GX Developer' (GD)
- 'GX IEC Developer' (GID)

Certain functions of GX Configurator-DP are restricted or not available for specific PLC programming packages.

'GX Developer' (GD)

- PLC code generated with 'POU Generation' uses 'IEC Instruction Language' (IL) and cannot be imported in GD

'GX Works2' (GXW2)

The standalone version of GX Configurator-DP faces the following restrictions with regard to GX Works2:

- the path to a GX Works2 project cannot be assigned in 'Project Properties'.
- 'Autorefresh Update' is not supported for a GX Works2 project; autorefresh settings can only be updated in the CPU.
- the standalone version of GX Configurator-DP cannot update autorefresh settings on a Q-series Remote I/O. Therefore either the integrated version of GX Configurator-DP is required or the PROFIBUS modules must be placed in the rack of the control CPU instead of the rack of the Remote I/O.
- import of the PLC code for I/O mapping requires a GX Works2 version with support for the 'IL' programming language. This is only available in the 'European version' of GX Works2 from version 1.87R or newer.

Beginning with version '7.08J' GX Configurator-DP can be started from within the GX Works2 application for Q-series PLC projects. The integrated version of GX Configurator-DP faces the following restrictions when started in GX Works2:

- PLC code generation 'POU Generation' is not possible with a 'simple' GX Works2 project.
- the 'POU Generation' function requires support for the 'IL' programming language, which is only available in 'European' versions of GX Works2.

Note: Integration of GX Configurator-DP in GX Works2 requires GX Works2 version 1.87R or newer.

3.2 Software Installation

Installing for GX Works2 Integration

GX Works2 must be installed before GX Configurator-DP is installed in order to create the correct system settings.

The following list of installation scenarios describes the effects on the use of the integrated GX Configurator-DP within GX Works2.

1. Case

- GX Configurator-DP 7.08J is installed at first
- GX Works2 version 1.87R or newer is installed after GX Configurator-DP

--> The integrated behaviour of GX Configurator-DP is not enabled. The installer cannot add PROFIBUS DP modules to the Intelligent Function Module selection dialog of GX Works2.

2. Case

- GX Works2 version 1.87R or newer is installed
- GX Configurator-DP 7.08J is installed.
- GX Configurator-DP 7.08J is de-installed
- GX Configurator-DP 7.07H is installed

--> If GX Configurator-DP 7.08J is de-installed, the PROFIBUS DP modules are removed from the Intelligent Function Module selection dialog of GX Works2. If GX Configurator-DP 7.07H is installed, the PROFIBUS DP modules in the Intelligent Function Module selection dialog of GX Works2 are not available. The integrated behaviour of GX Configurator-DP is not available.

3. Case

- GX Works2 version 1.87R or newer step is installed
- GX Configurator-DP 7.08J is installed.
- GX Configurator-DP 7.08J is de-installed

--> The integrated behaviour of GX Configurator-DP is not available. All menu items visible for PROFIBUS DP modules have been removed from GX Works2.

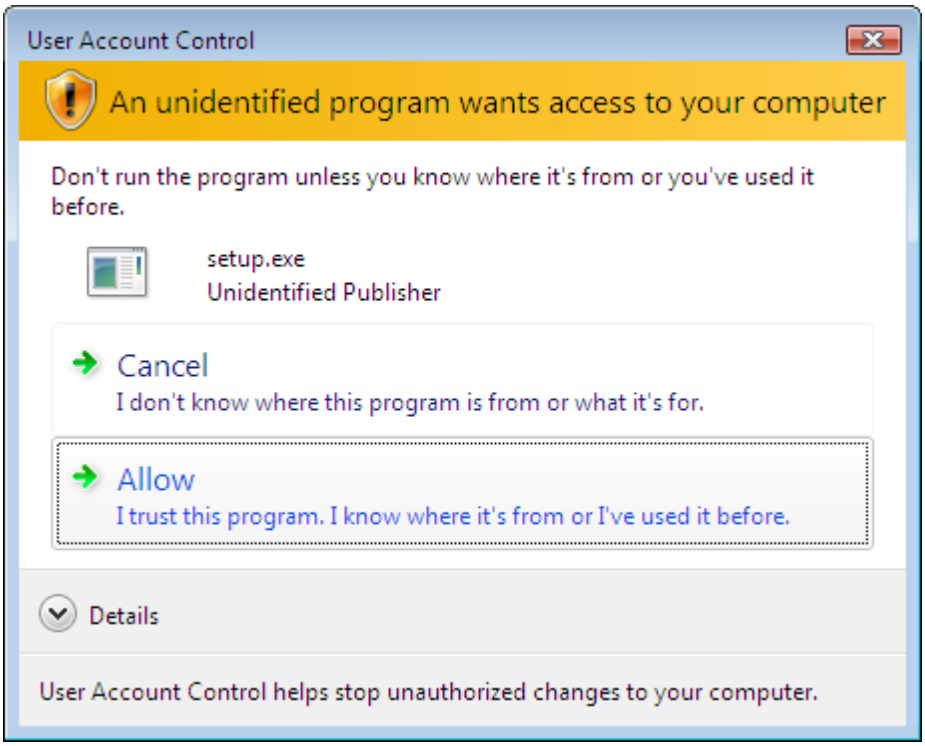
GX Configurator-DP Setup

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.

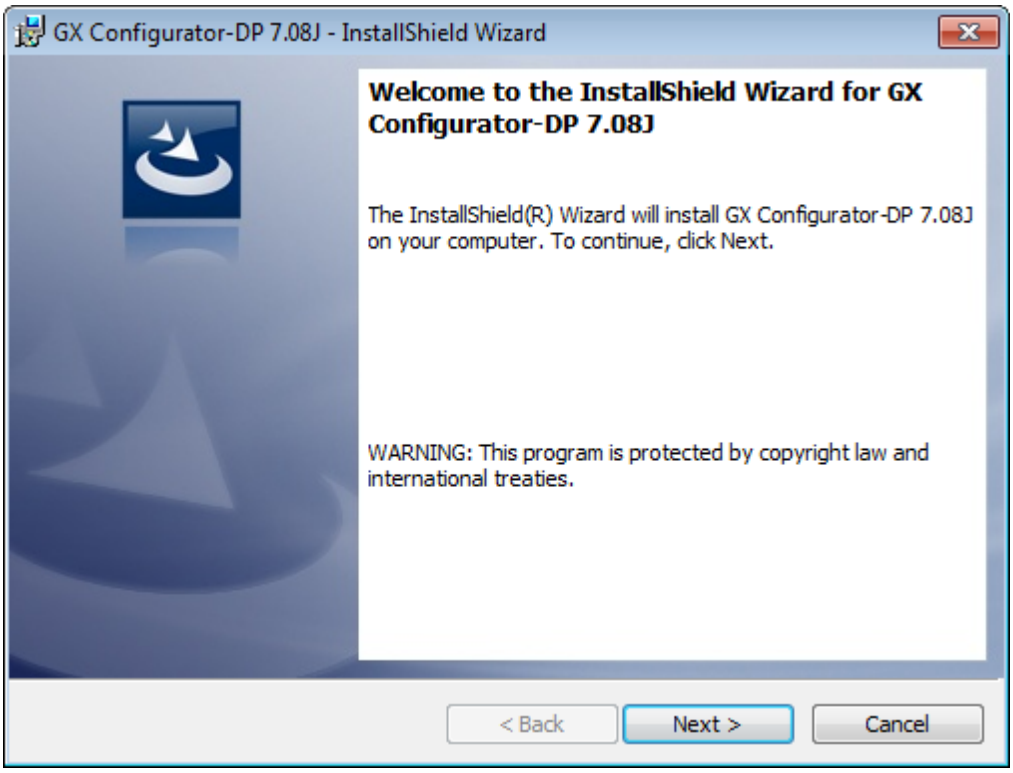
Installing GX Configurator-DP (incl. GX Configurator-ST)

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/Win7 operating system, please select 'Allow'



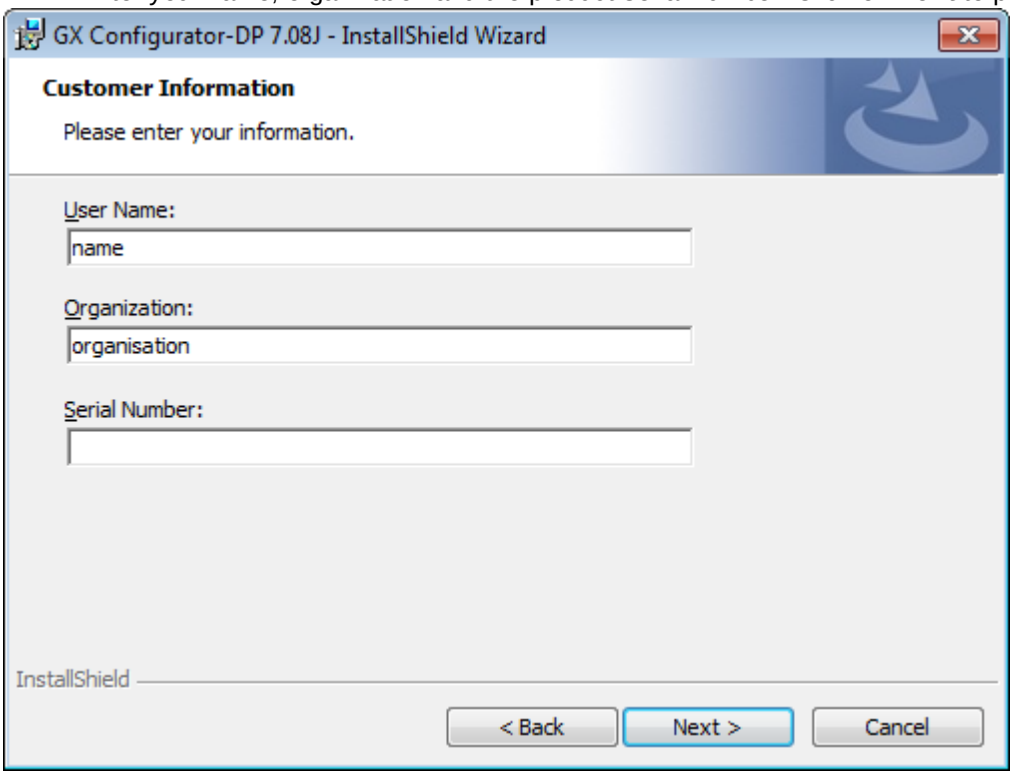
5. Follow the given instructions that guide you through the installation procedure. Continue with **Next**.



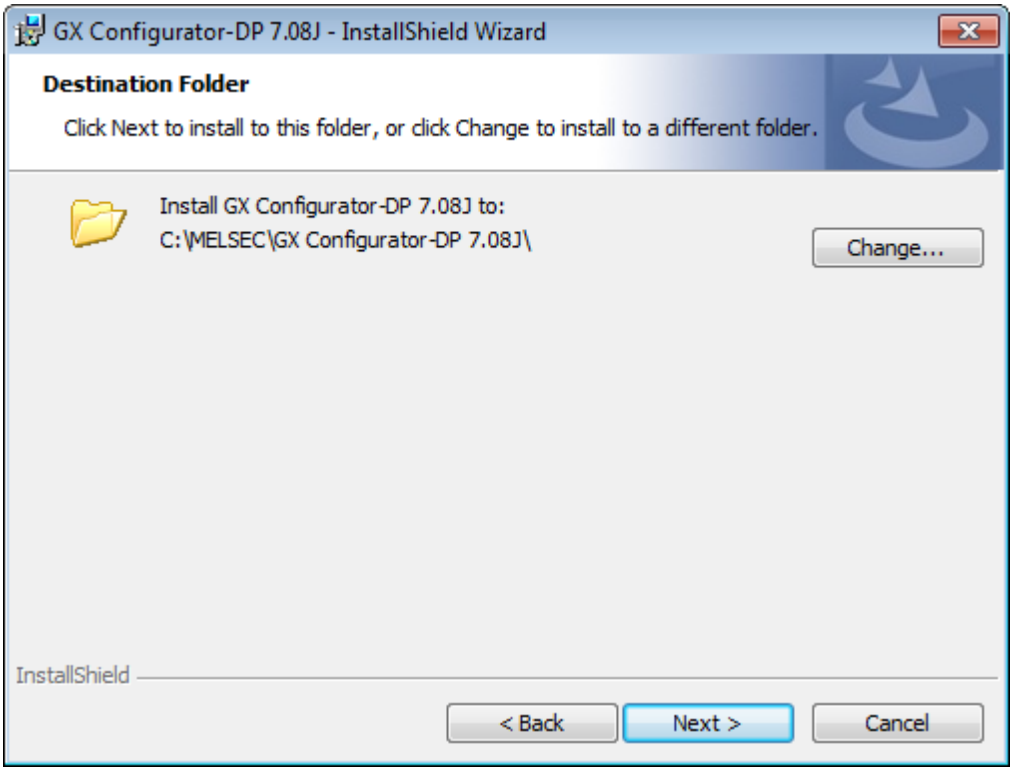
6. The licensing agreement is displayed. Please read these terms carefully. If you accept the license agreement, you can proceed with the installation by clicking **Next**. Otherwise the installation is aborted.

   Note: This dialog is only shown for European product versions.

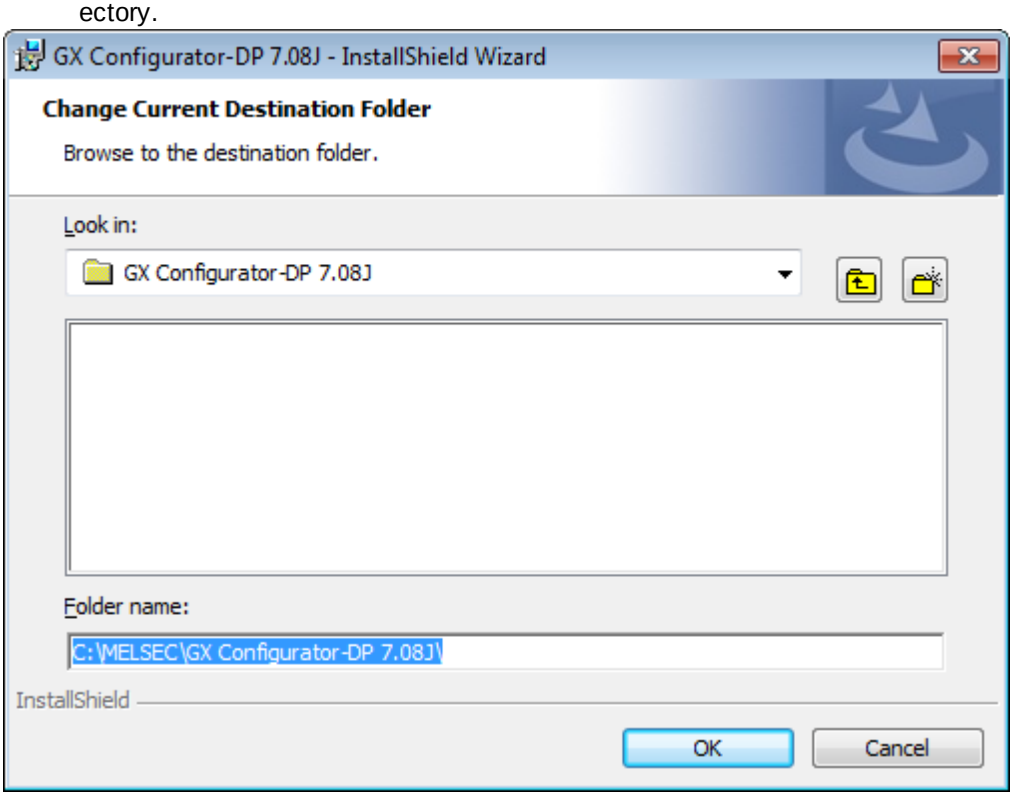
7. Enter your name, organization and the product serial number. Click on **Next** to proceed.



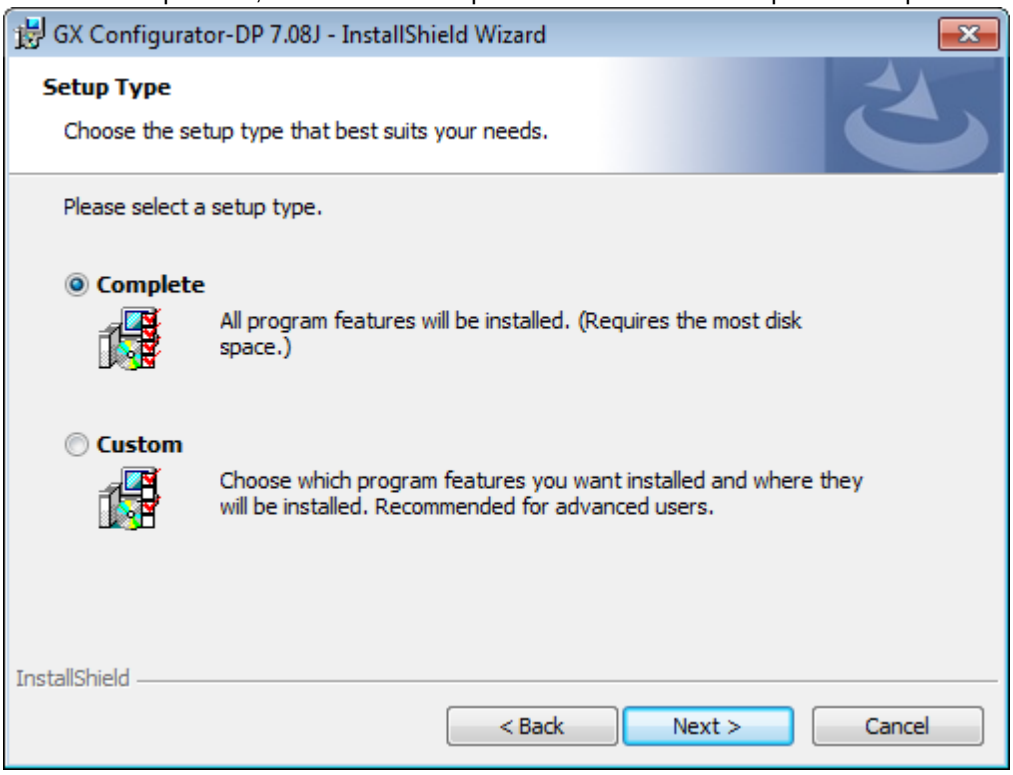
8. Enter the destination folder where you want the GX Configurator-DP software to be installed (default **C:\Melsec\GX Configurator-DP 7.08J**). If you agree with the default setting, just click on **Next**.



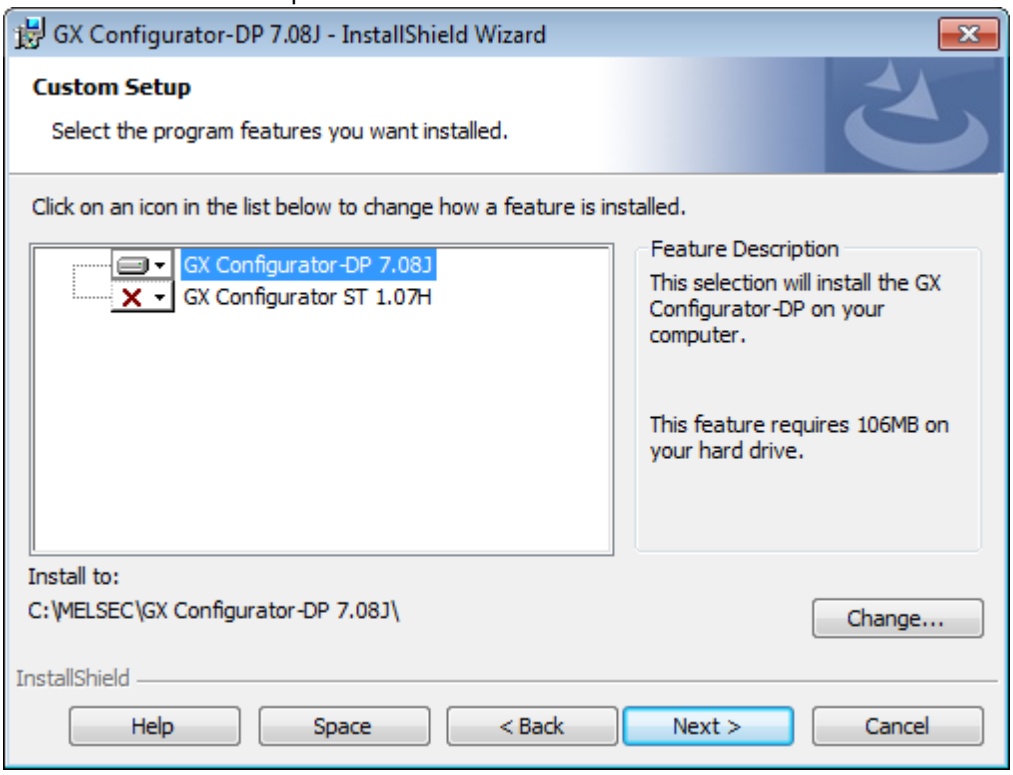
9. If you want to install to a different directory, click on **Change** and select the installation directory.



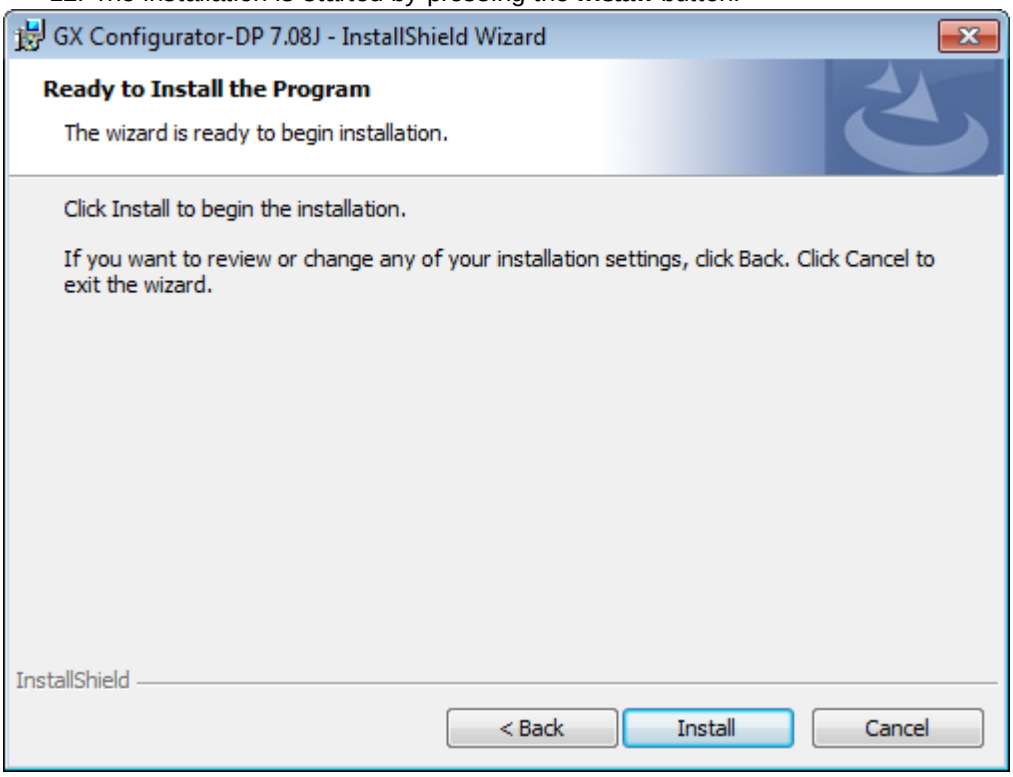
10. You can choose between a 'Complete' and a 'Custom' setup. The 'Complete' setup installs all components, the 'Custom' setup allows the selection of optional components.



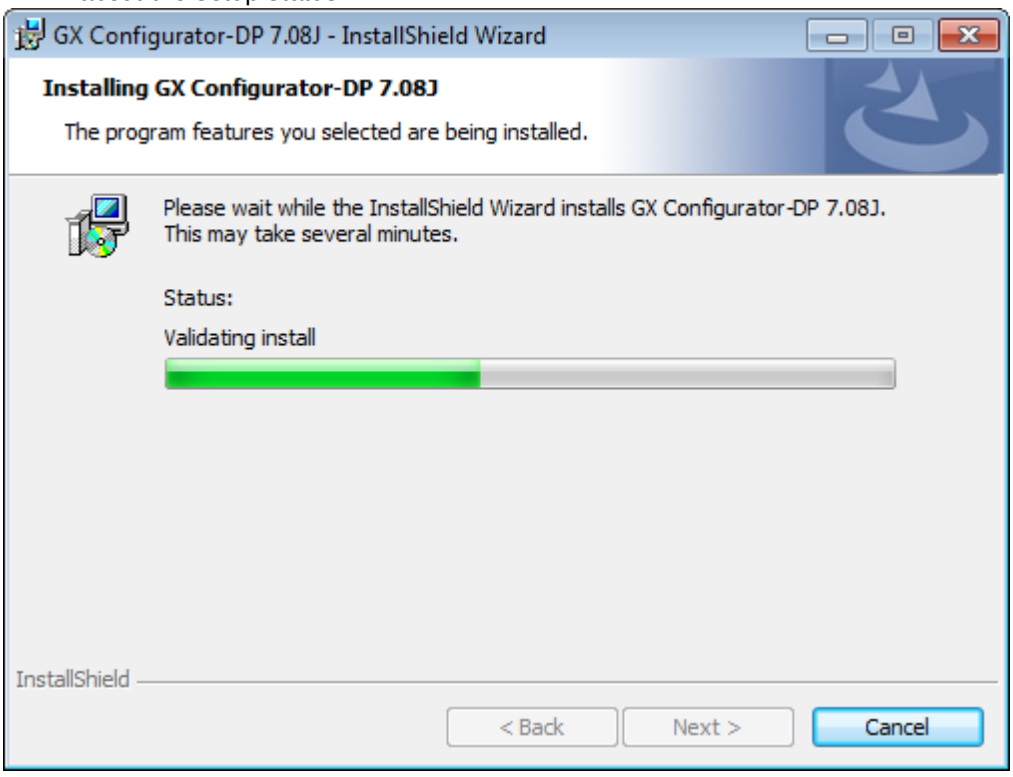
11. If 'Custom' setup has been selected in the previous step, the components are listed. By selecting the icon to the left of a component name, you can select respectively deselect the installation of a component.



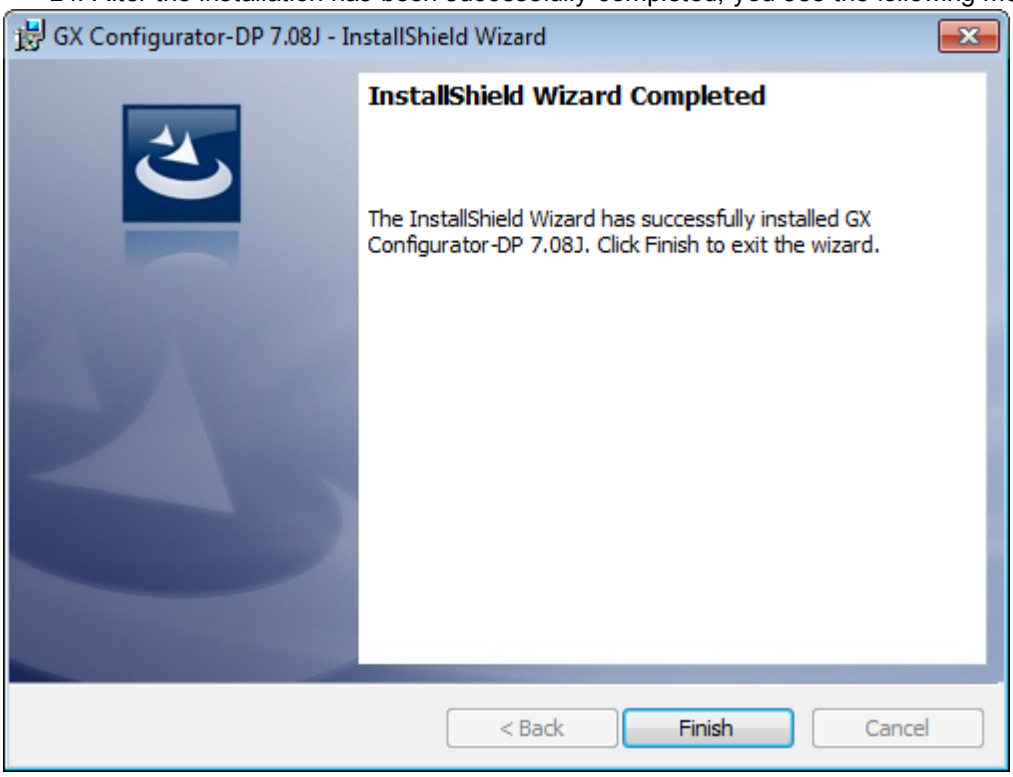
12. The installation is started by pressing the **Install** button.



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



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



Button Functions

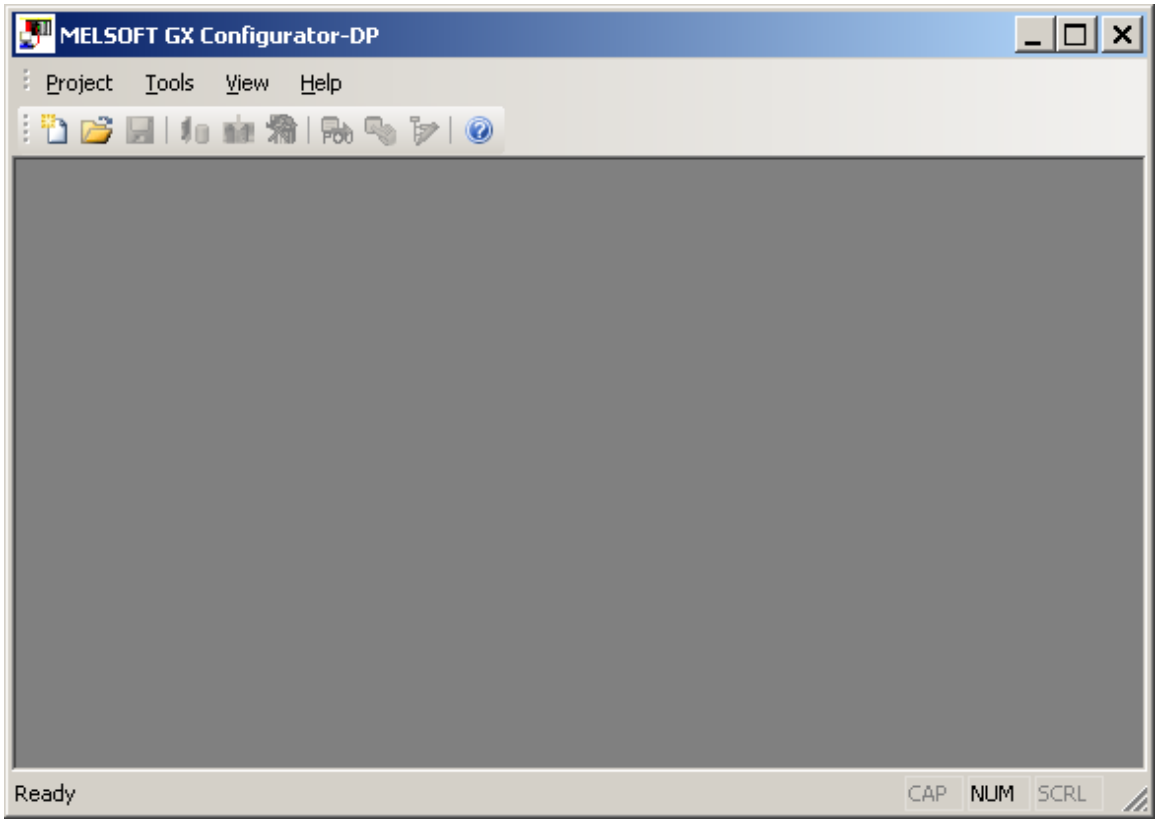
With the **Next** button you will leave the current menu and enter the next menu.
With the **Back** button you go to the previous window.
Cancel button ends the installation procedure.

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.

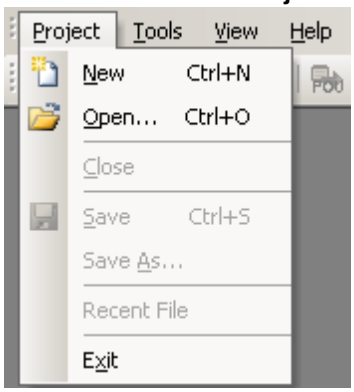
Start GX Configurator-DP

1. Start GX Configurator-DP via the shortcut in the Programs menu. The default is **Programs ➔ MELSOFT Application ➔ GX Configurator-DP 7.08J ➔ GX Configurator-DP 7.08J**.

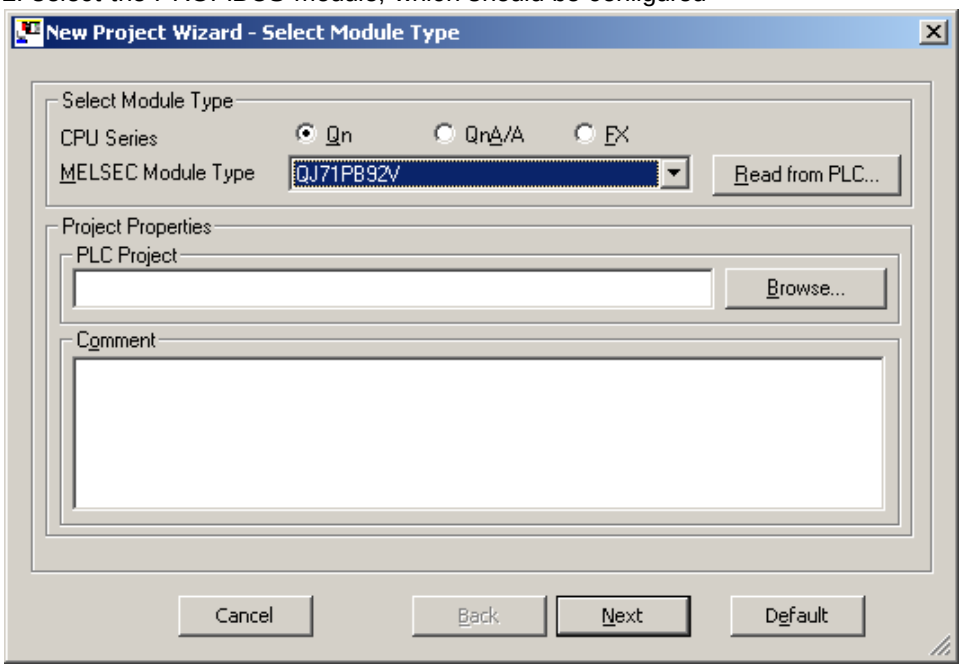


Start a New Project

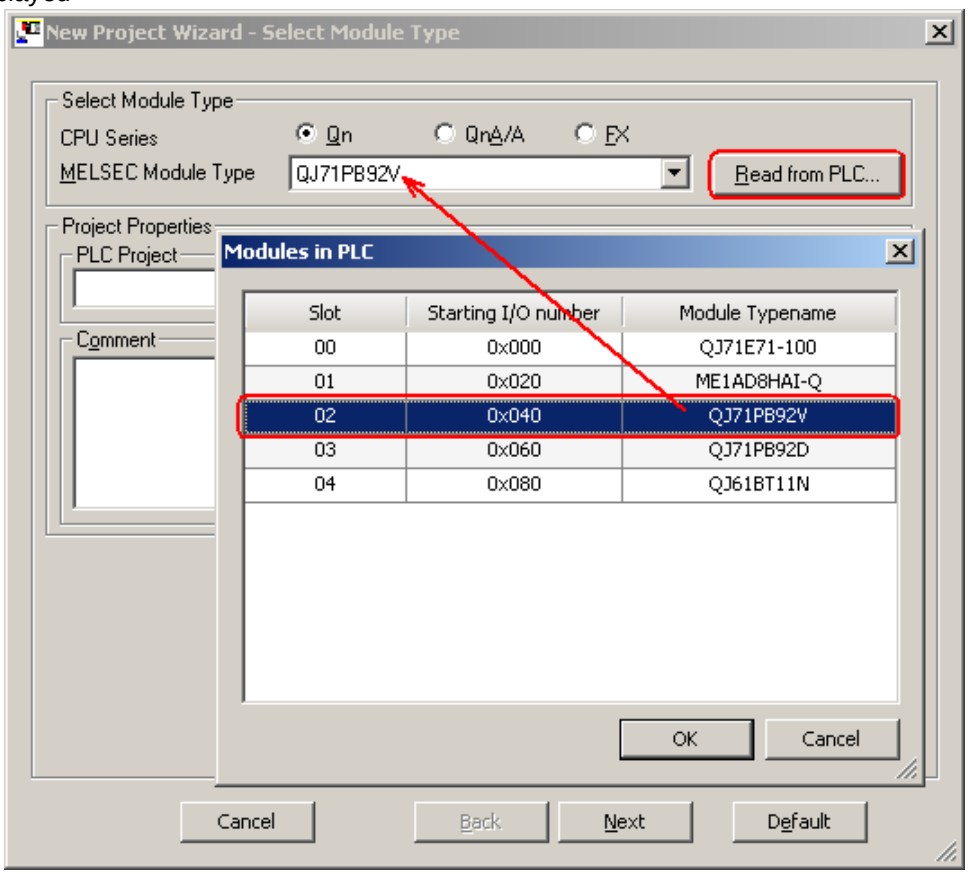
1. in the main menu **Project** select **New** to open a new project file.



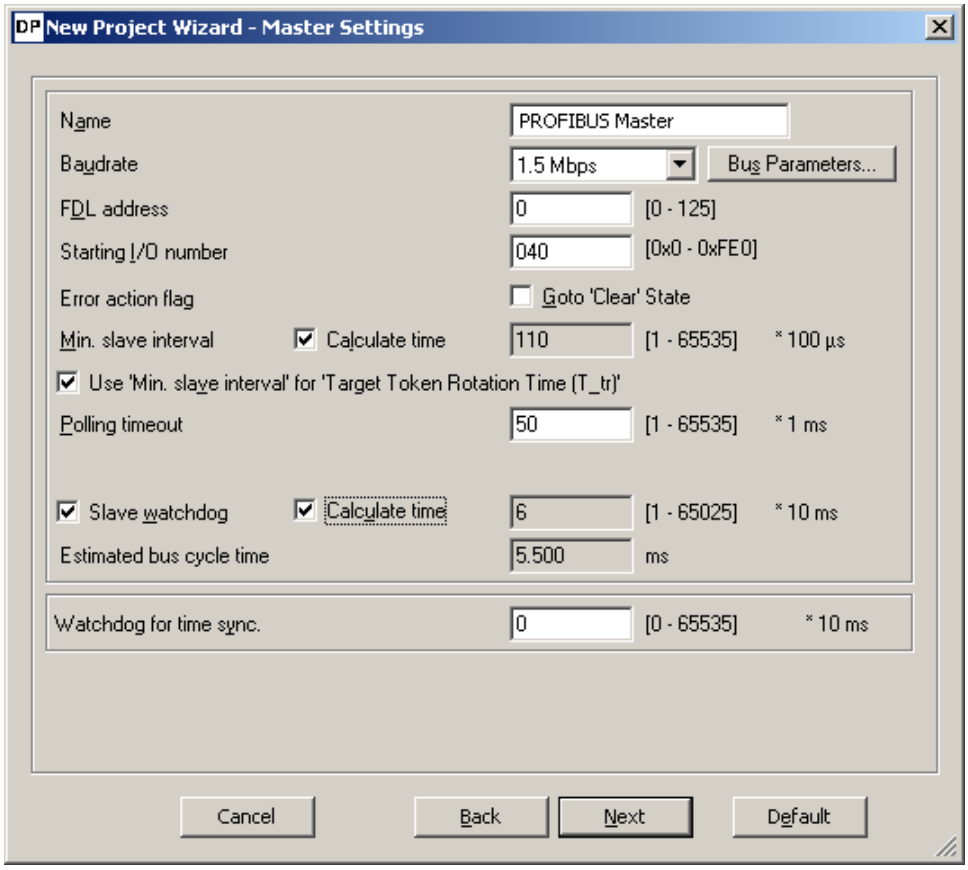
2. select the PROFIBUS module, which should be configured



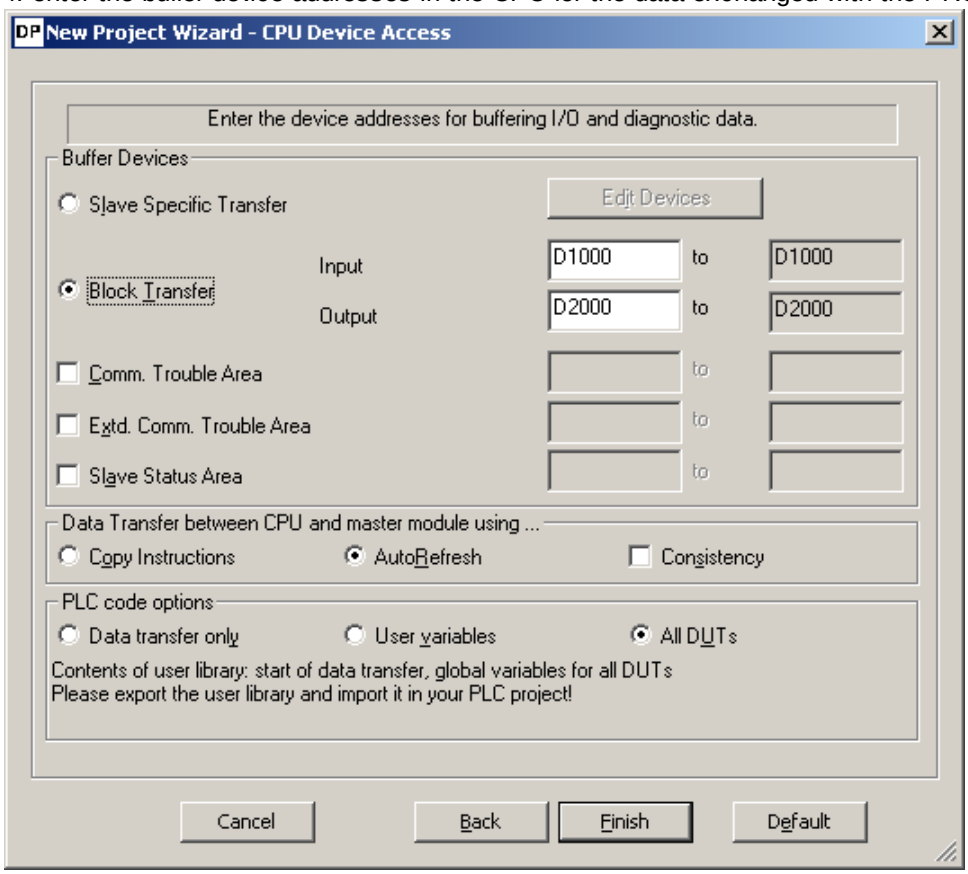
If the module to be configured exists already in a connected PLC, you can select the module online by pressing 'Read from PLC'. After configuring the connection to the PLC, the list of modules is displayed



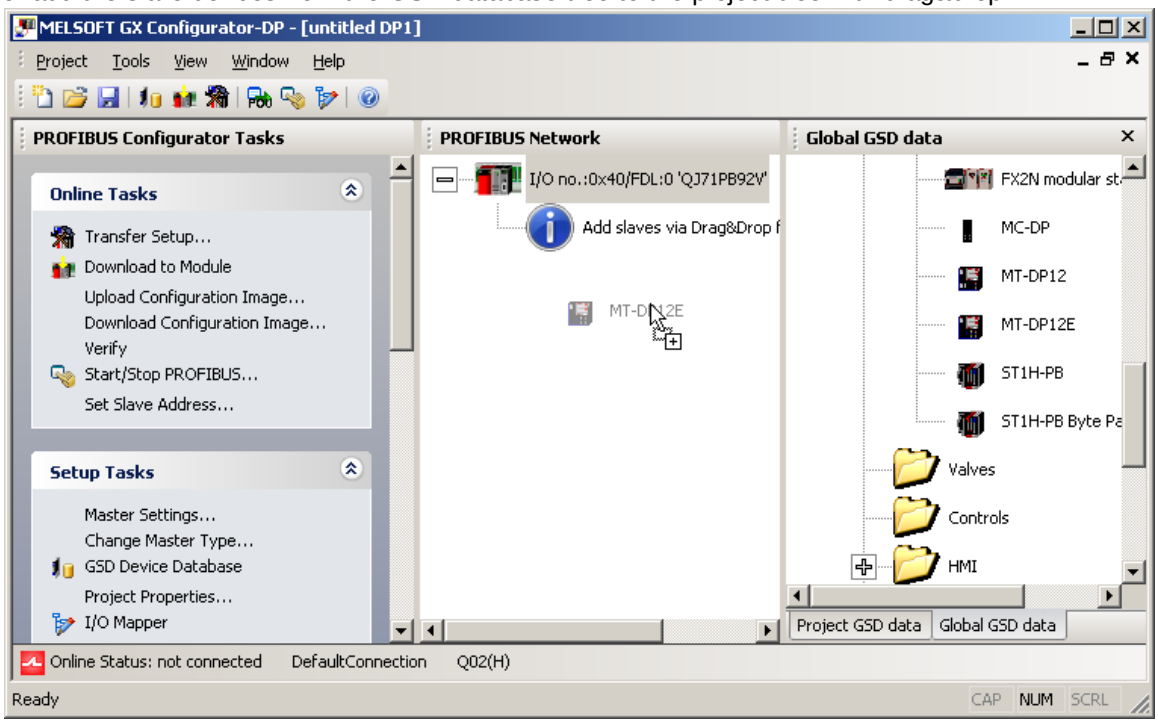
3. enter master settings, e.g. starting I/O number and select the baud rate of the PROFIBUS network



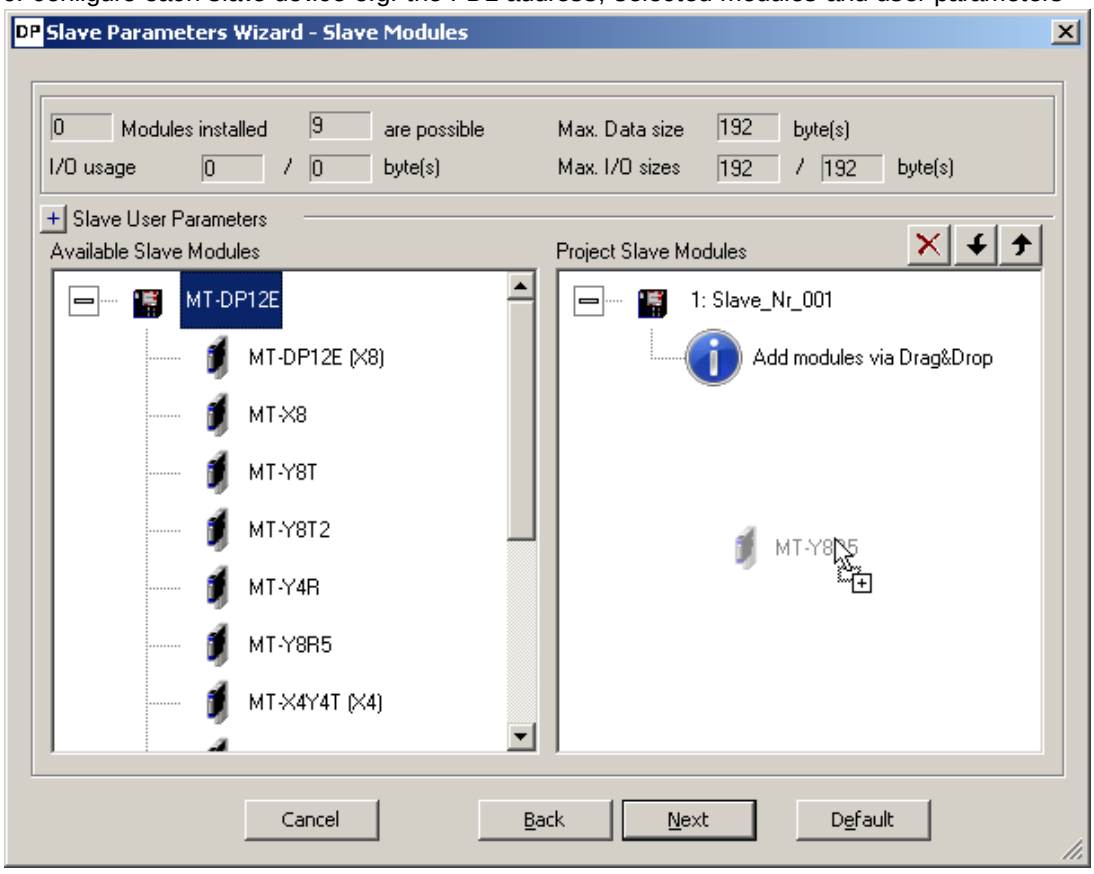
4. enter the buffer device addresses in the CPU for the data exchanged with the PROFIBUS module



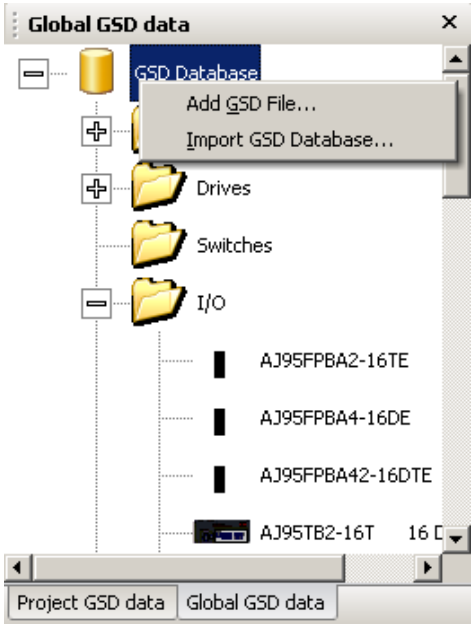
5. add the slave devices from the GSD database tree to the project tree with drag&drop



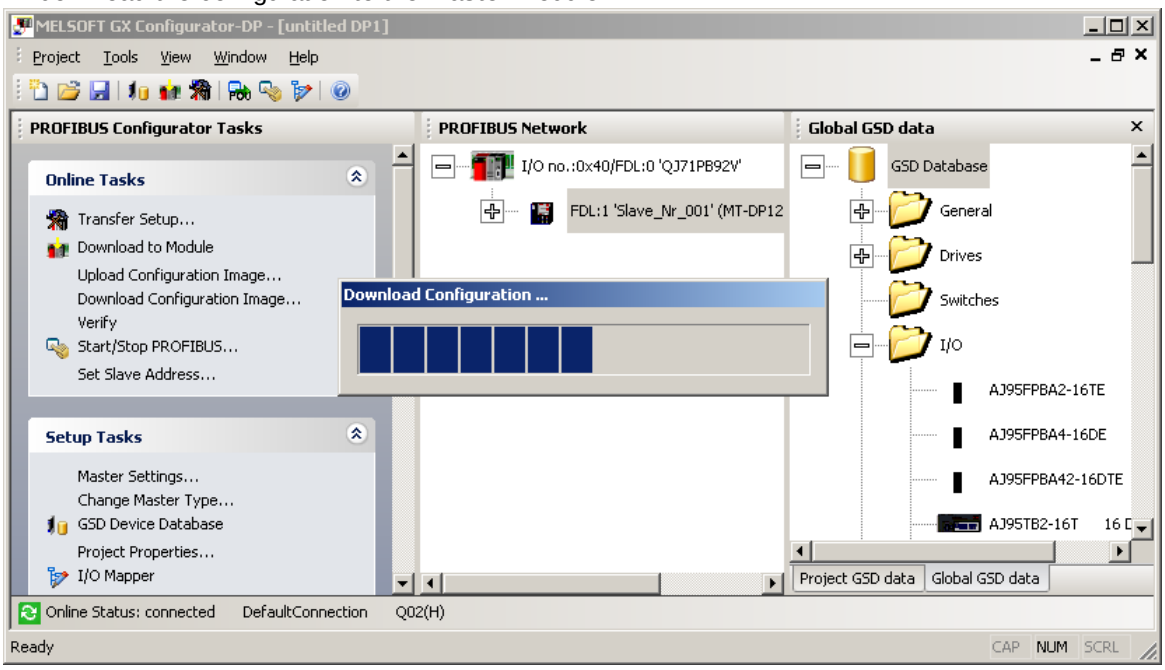
6. configure each slave device e.g. the FDL address, selected modules and user parameters



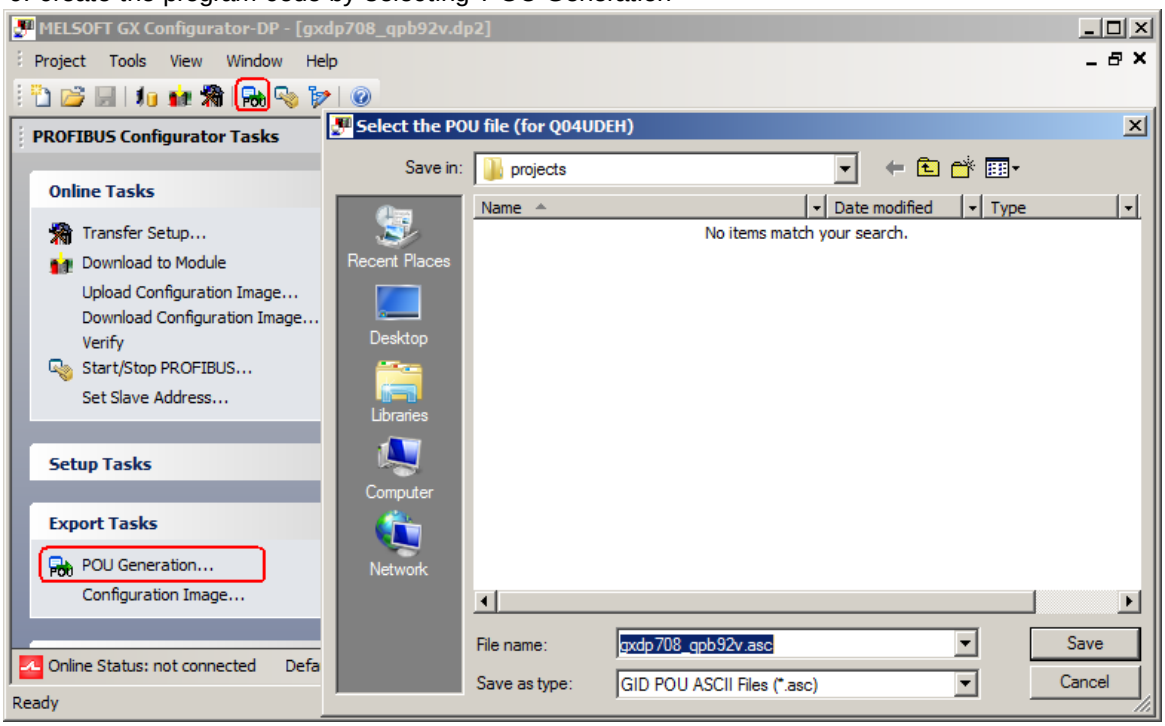
7. if the slave does not yet exist in the GSD database, add the GSD file of the slave to the global GSD database. Select the 'Global GSD data' tree and select the item 'Add Slave' from its context menu. In the file dialog select the GSD file. After the GSD file has been parsed, the slave type is added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



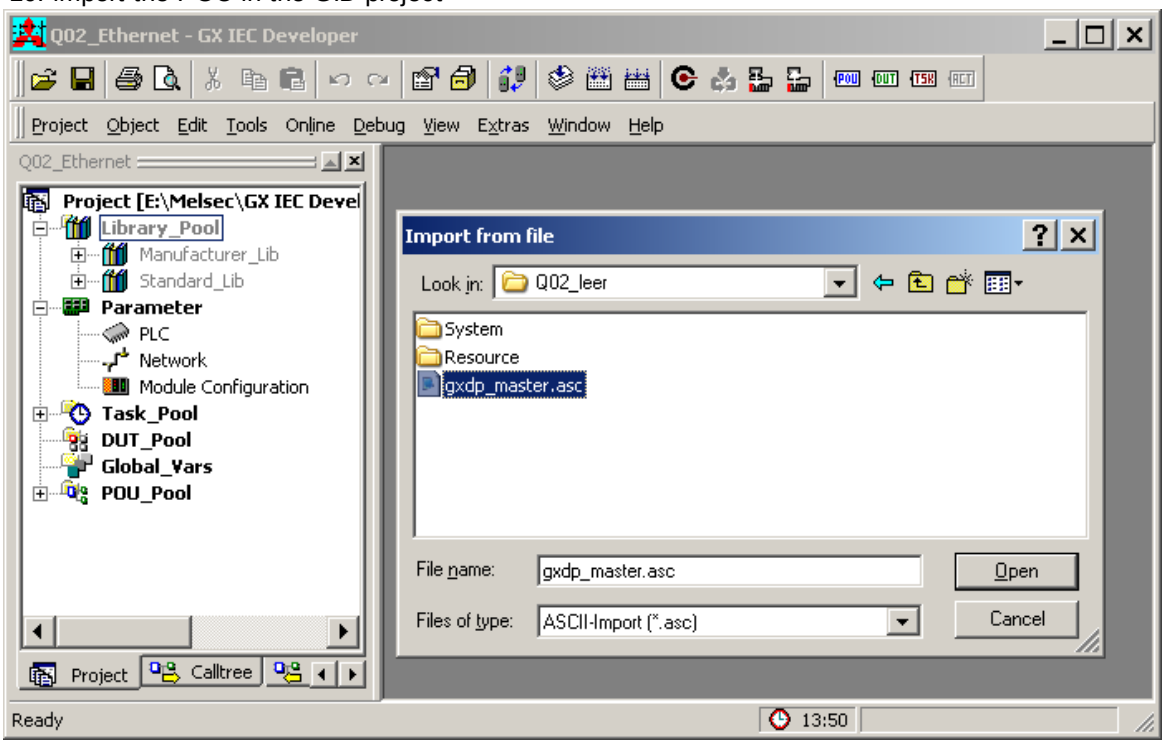
8. select 'Download to module' in the task panel or press the corresponding button in the toolbar to download the configuration to the master module



9. create the program code by selecting 'POU Generation'



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 7.08J -> GX Configurator-DP 7.08J

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 

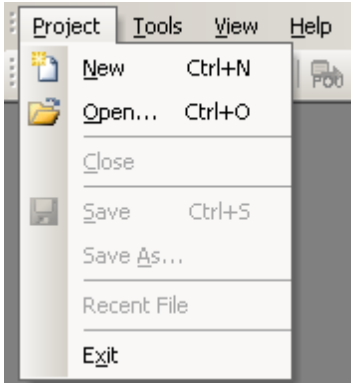
Main Menu Items	Description
Project	menu for creating, opening and saving project files
Tools	menu for external tools
View	menu for configuration of the application
Window	menu for listing the open project windows
Help	menu for help and application information

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

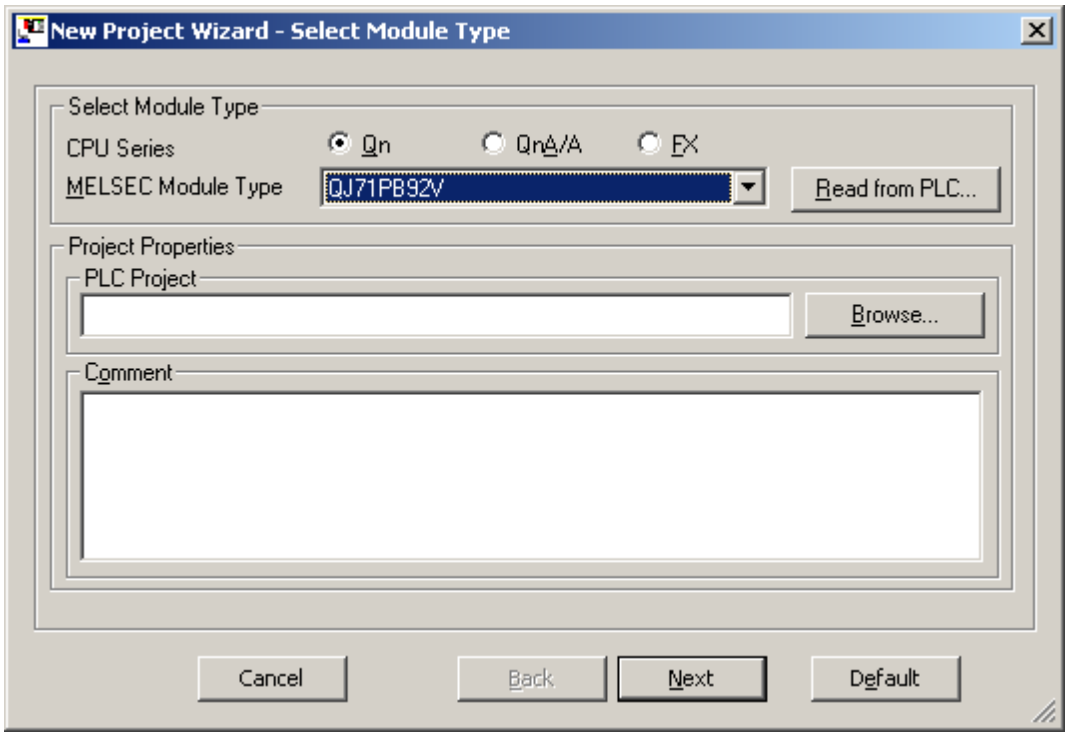


After having started the GX Configurator-DP software, this is the first menu to work with. With the help of this menu you can create a new or load an existing project.
The menu offers the following commands:

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/A, FX	Qn
MELSEC Module Type	module types supported by the selected CPU series	Qn: QJ71PB92V QJ71PB92D QJ71PB93D QnA/A: 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' subdir-		-

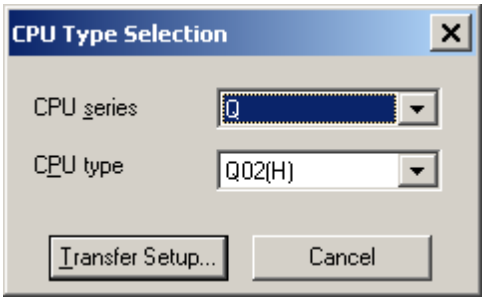
Name	Description	Choices / Setting range	Default
	ectory of the GD/GID project. This file is updated by GXDP, if the 'Autore-fresh'-option has been selected		
Browse	opens the file dialog to select the GD/GID project file	max. 255 characters	-
Comment	an optional comment text of max. 255 characters length, which describes the project	max. 255 characters	-
Cancel	close the 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/A	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

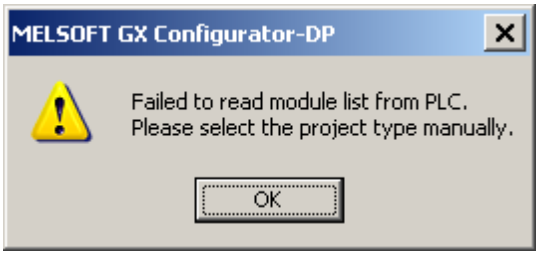
- Qn
- QnPH

- QnPRH
- QnU

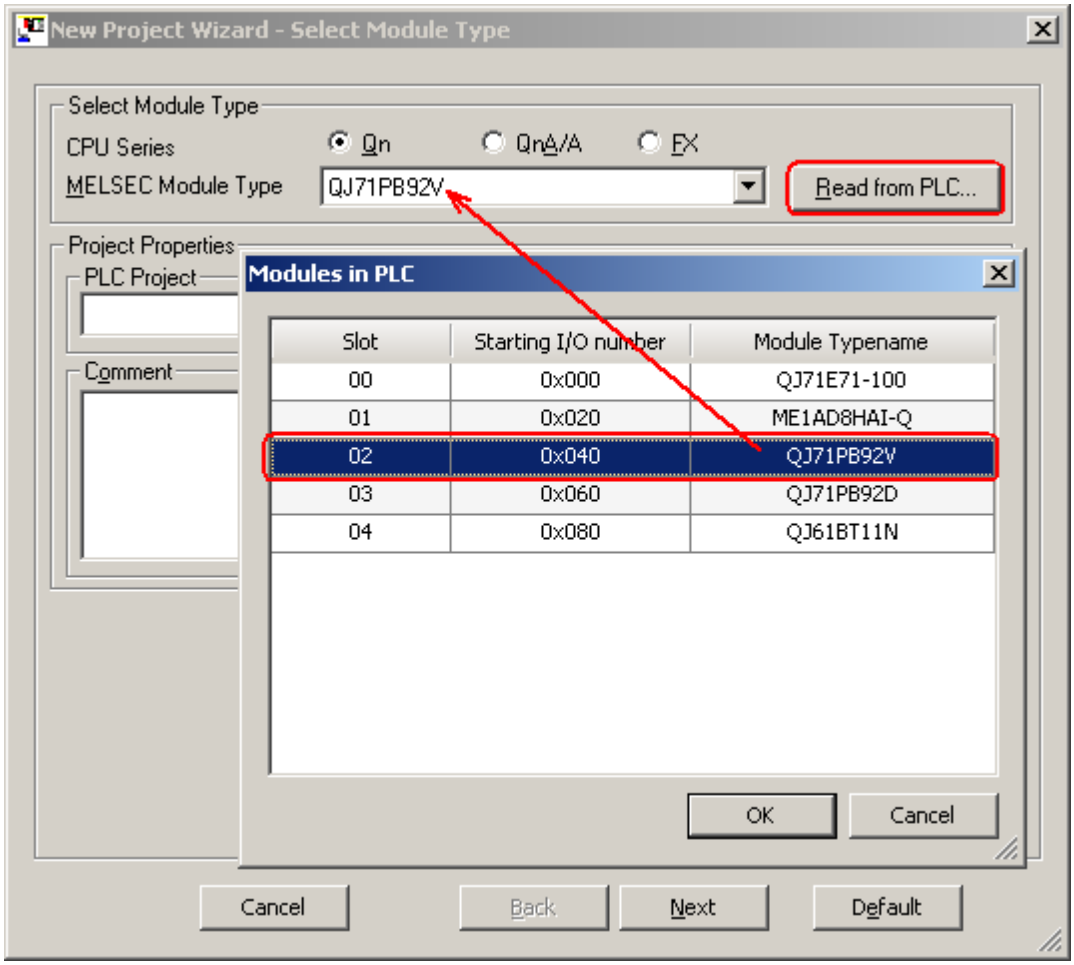
The list ‘CPU type’ contains the CPU types of the selected series. Pressing the button ‘Transfer Setup’ in the dialog ‘CPU Type Selection’ opens the transfer setup dialog. When this dialog is closed by pressing ‘OK’, the latest transfer settings are always stored in the same file in the GX Configurator-DP 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.

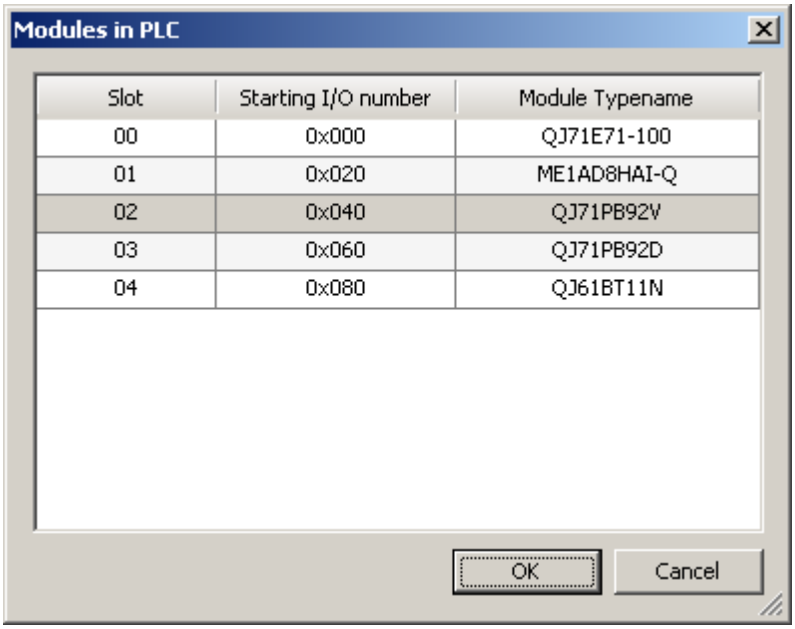
After this the transfer setup editor is opened, so the user can adjust the settings of the PLC connection. For a detailed description of the transfer setup dialogs see the section ‘Transfer Setup’.

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.



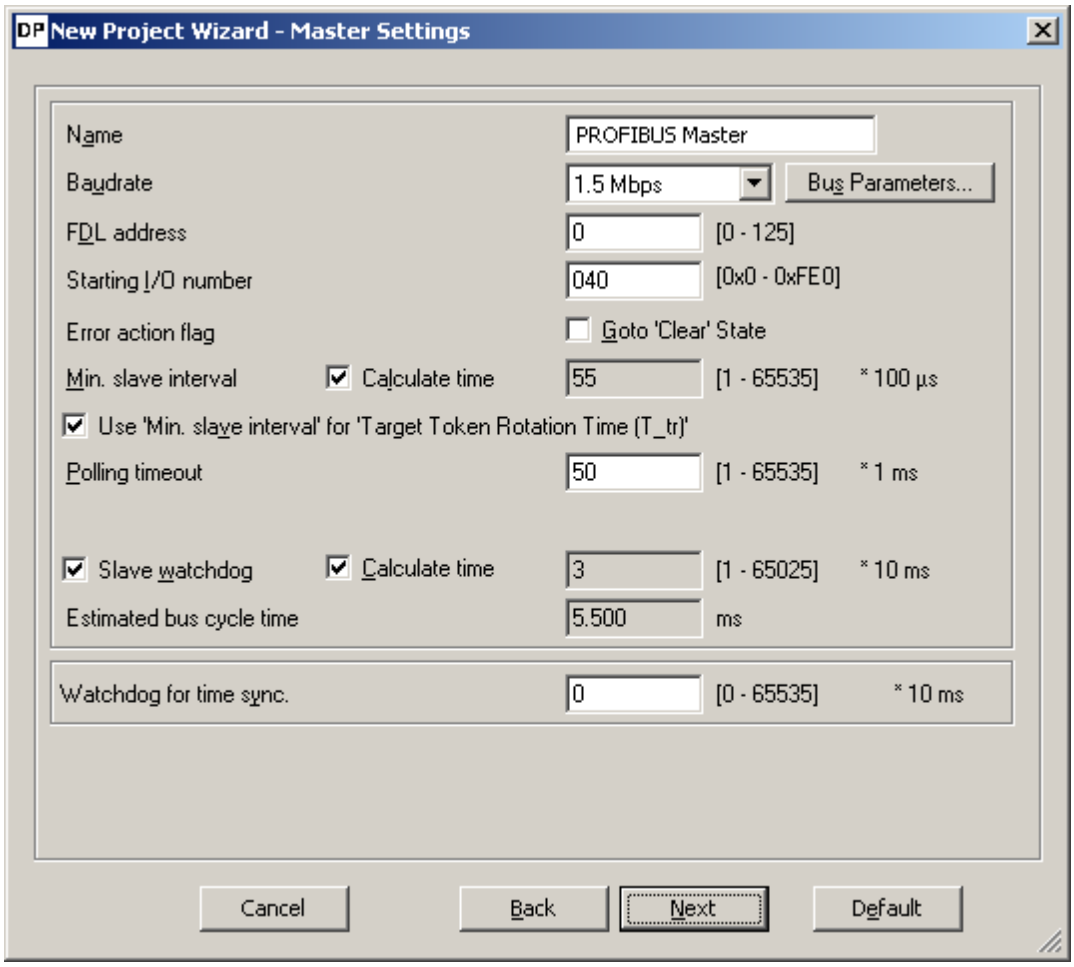


Name	Description	Choices / Setting range	Default
Slot	0-based index of the PLC slot	0 - 63	-
Starting I/O number	offset of the module-specific X/Y devices (empty for FX)	0 - 0xFE0	-
Module Typename	identifier of module type retrieved from GXDP product database	A, QnA, FX: module types found in product database Qn: type name read from PLC	-
OK	Close dialog and save selected module type and starting I/O number		Default button
Cancel	Close dialog and discard selection		-

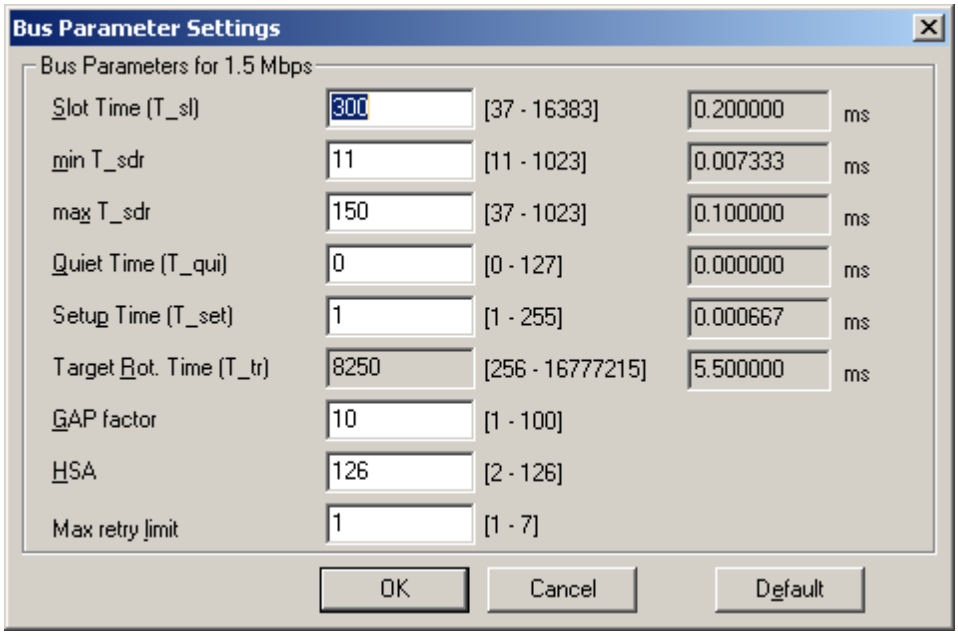
If the user selects a module supported by GXDP, the corresponding module type is set in the combo box. The starting I/O number of the selected module is used as default for the starting I/O number of either master or slave instead of the default I/O number 0x00.

'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'.

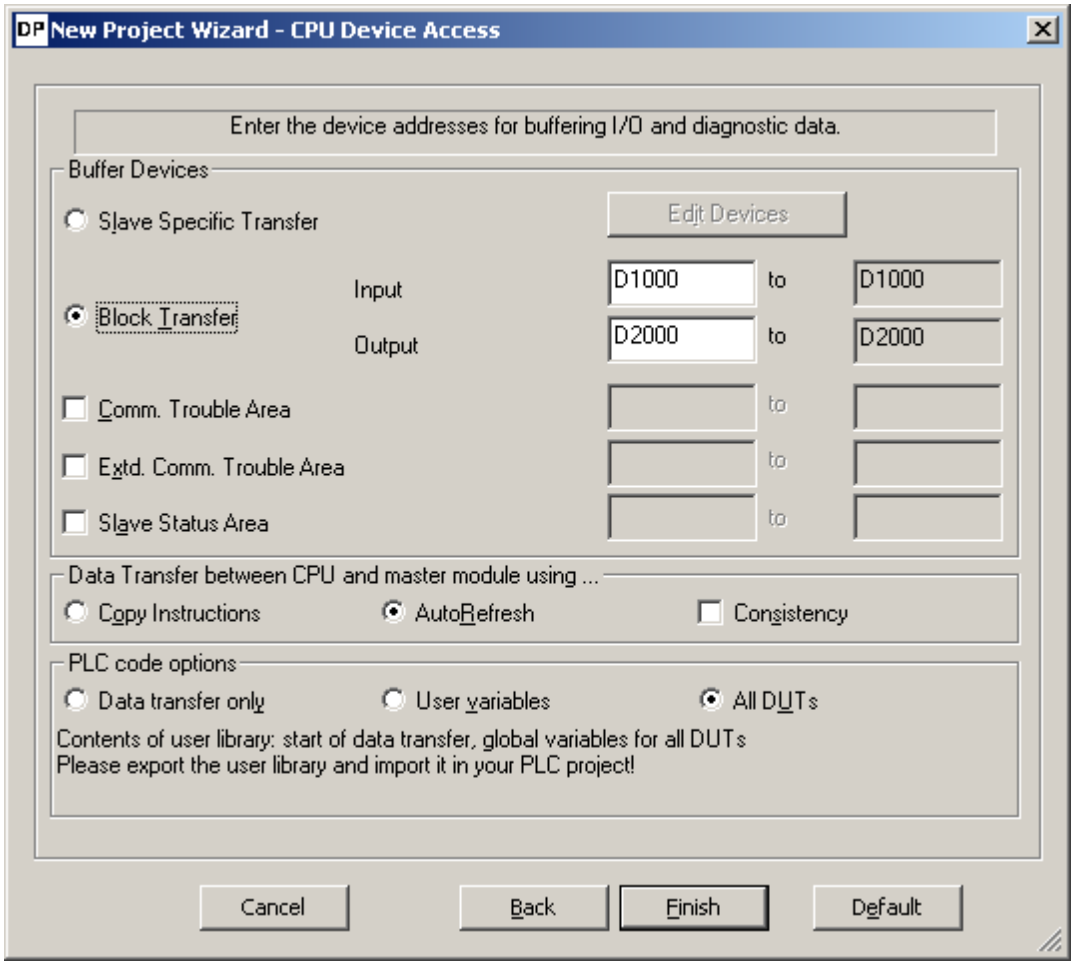


Select the baudrate for the PROFIBUS network and other parameters. For a detailed description see Master Settings



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

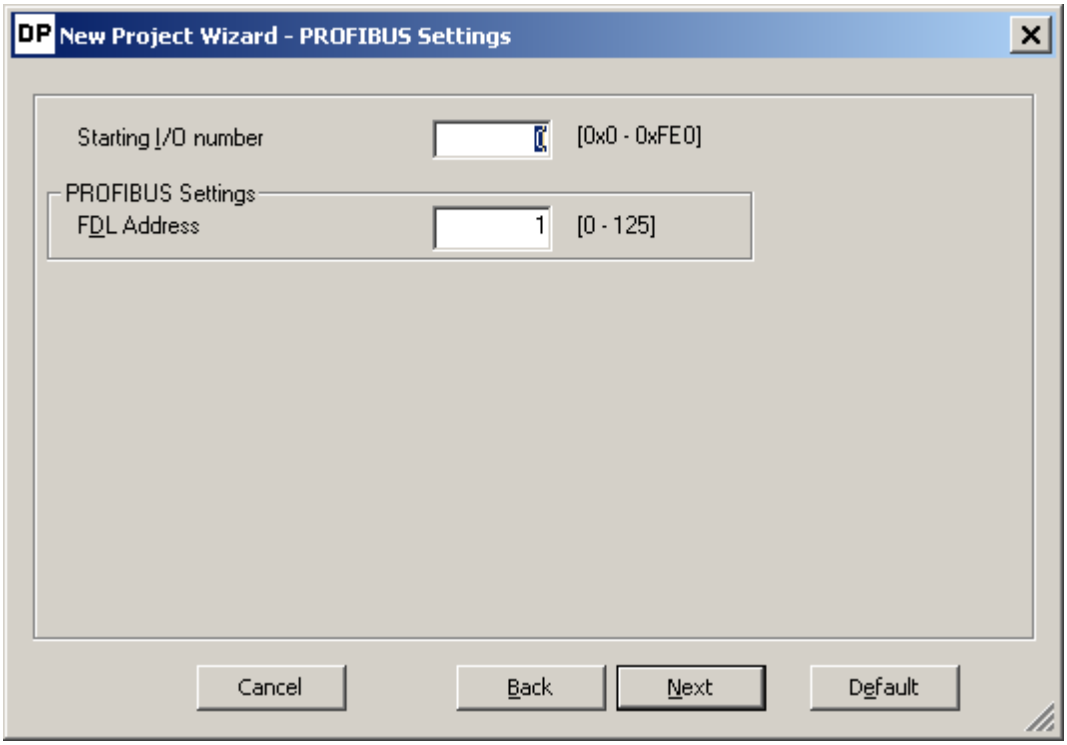
a detailed description see Bus Parameters.



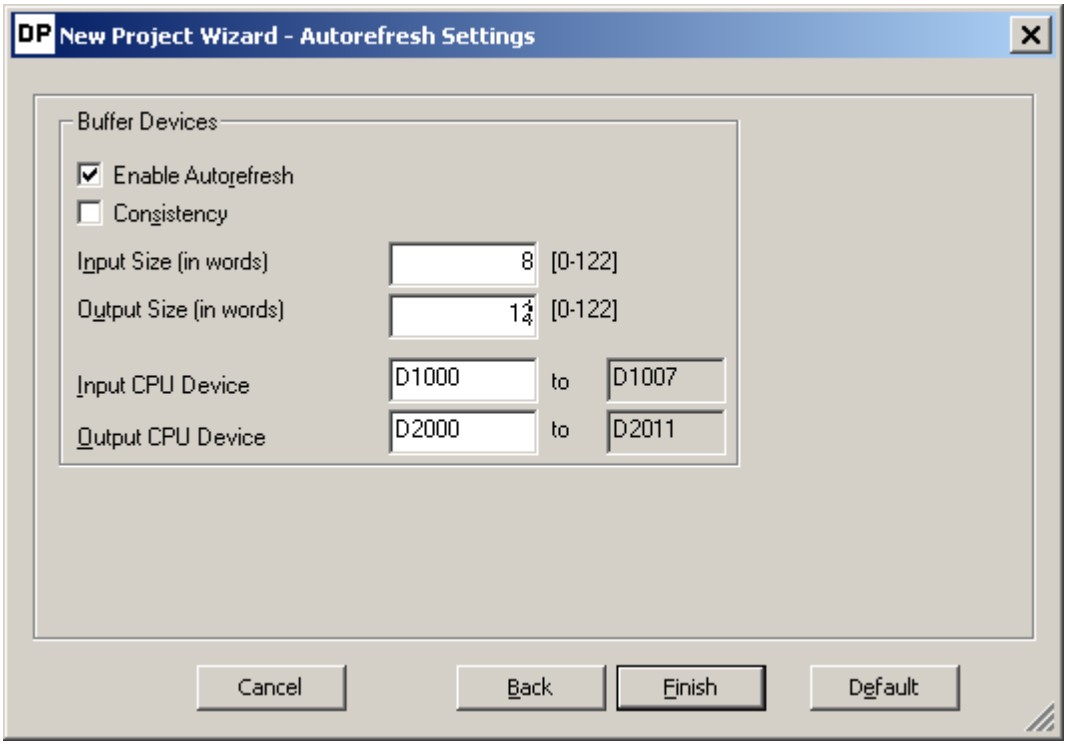
Enter the CPU device addresses of the transfer buffers for exchanging data between CPU and master module. For a detailed description see CPU Device Access

'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'.



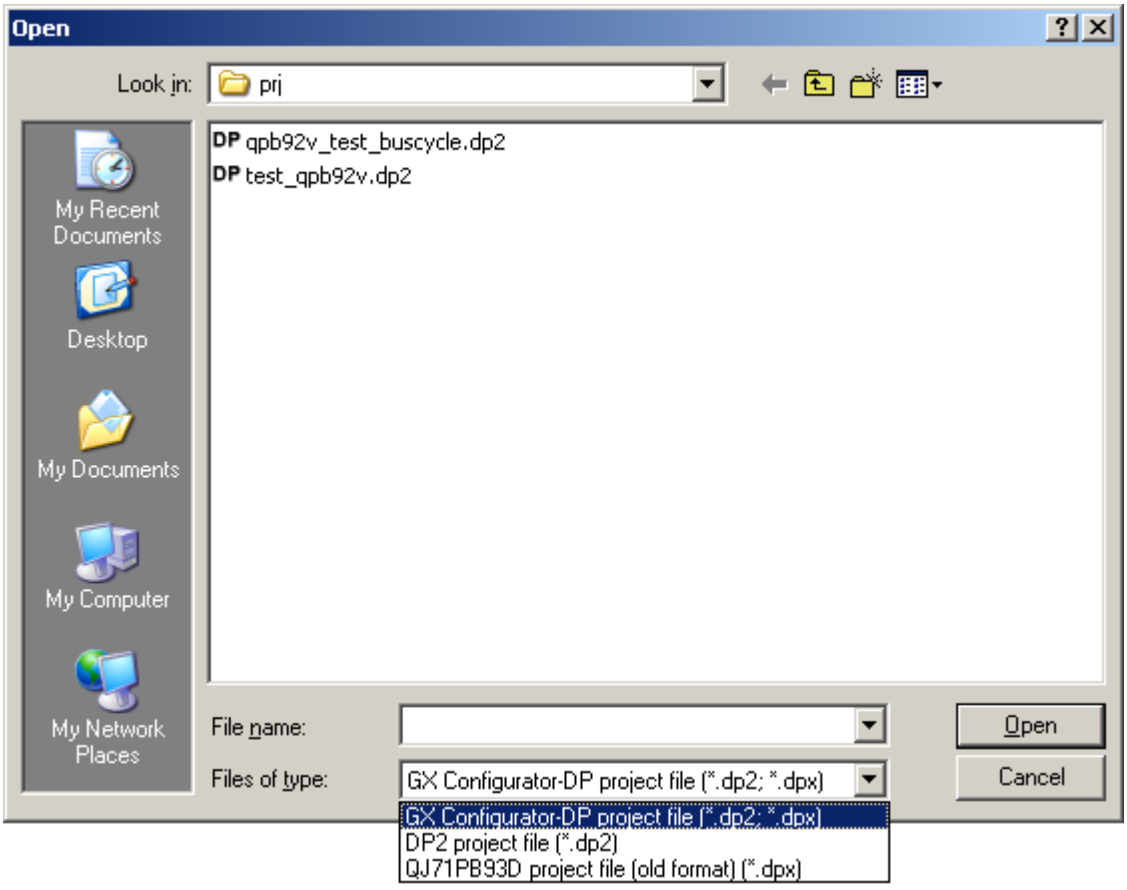
Enter the starting I/O number and the FDL address of the slave module. For a detailed description see Q-Slave PROFIBUS Settings.



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:

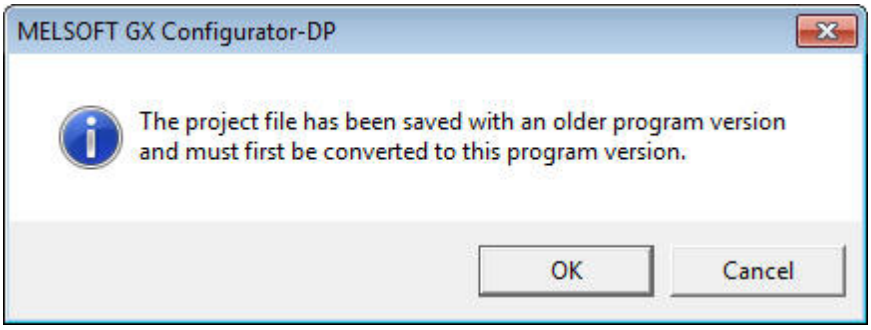
- ***.dp2:** old or current GX Configurator-DP project file format
- ***.dpx**: old GX Configurator-DP project file format for QJ71PB93D slave modules

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 7.08J project databases.

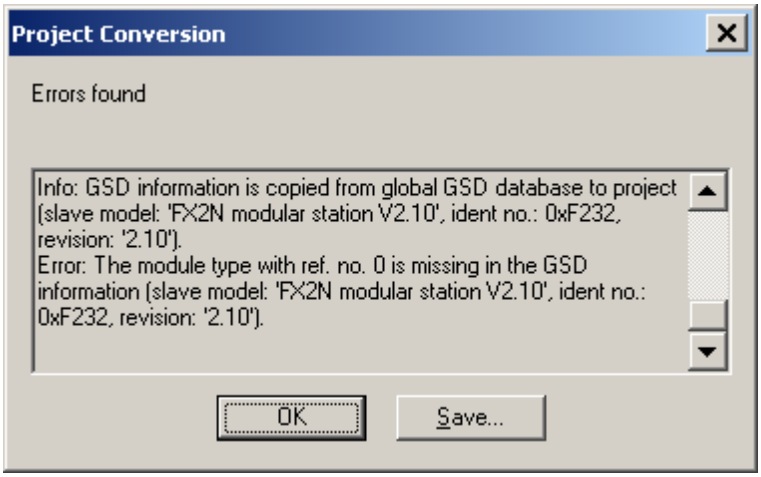
Note: *.DP-projects generated with software versions previous to GX Configurator-DP 4.0 cannot be opened.

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. GX Configurator-DP 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.

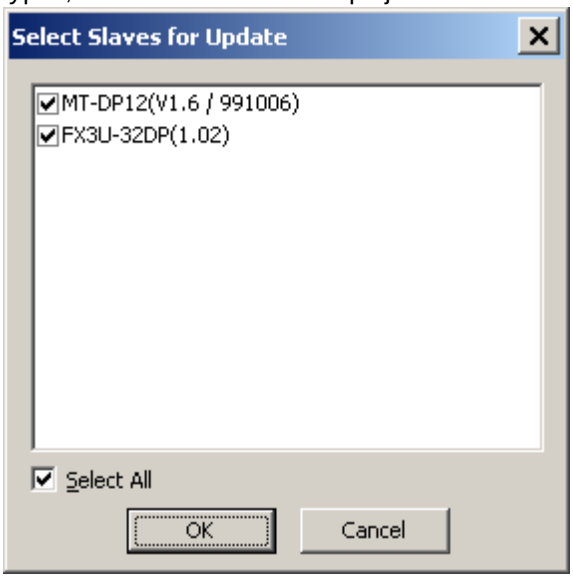
The user should add the corresponding GSD files to the global device database and retry to convert the project file.

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.

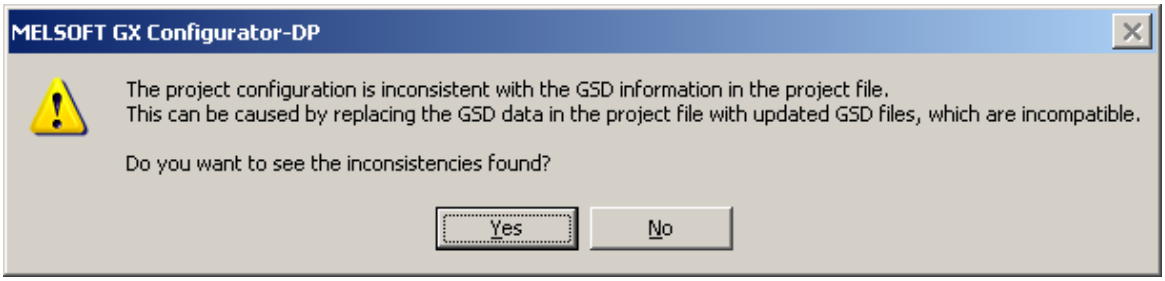


Name	Description	Choices / Setting range	Default
Slave Type List	list of slave types, which exist in both the GSD database and the project file		
Select All	toggles the selection of the slave types		
OK	closes the dialog and replaces the GSD information of the selected slave types in the project		Default button
Cancel	closes the dialog and continues opening the project without replacing GSD information		-

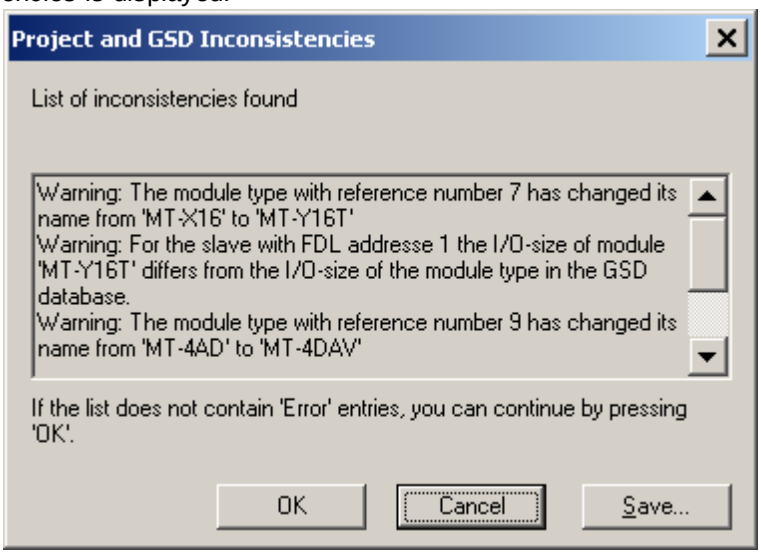
If the user presses **OK**, the GSD information for the selected slave types in the project file is replaced with the corresponding GSD information from the GSD database. If the user presses 'Cancel' or does not select any slave type, no GSD information is updated and the project is opened using the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

Check of GSD Consistency

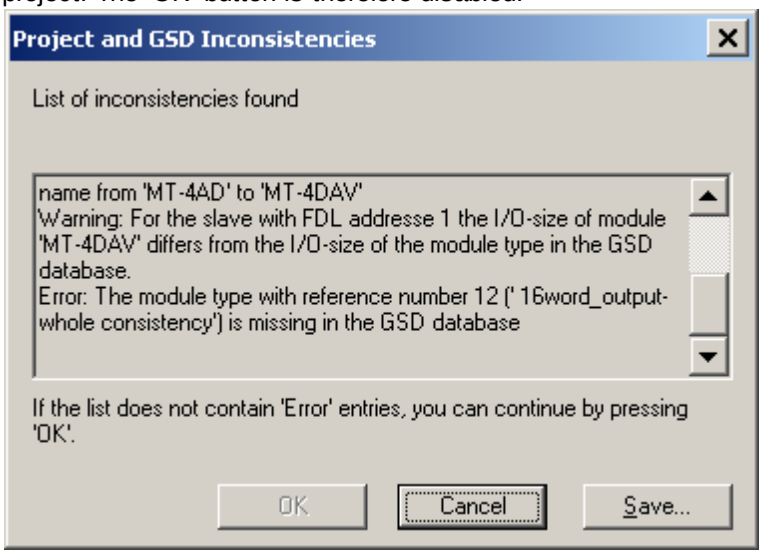
When a project file for a PROFIBUS master is opened, GX Configurator-DP searches the GSD information in the project file for the slave and module types used in the project configuration. If GSD information is missing for a slave or a module type, the following message is displayed.



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.

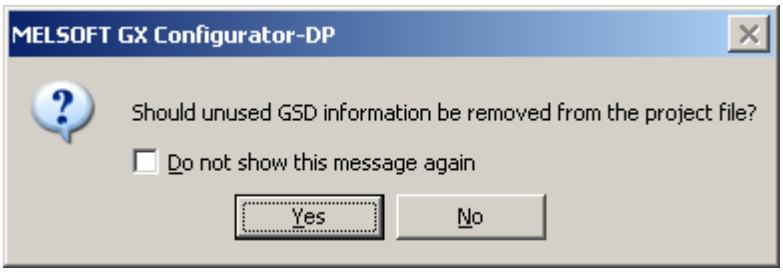
Command Save

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

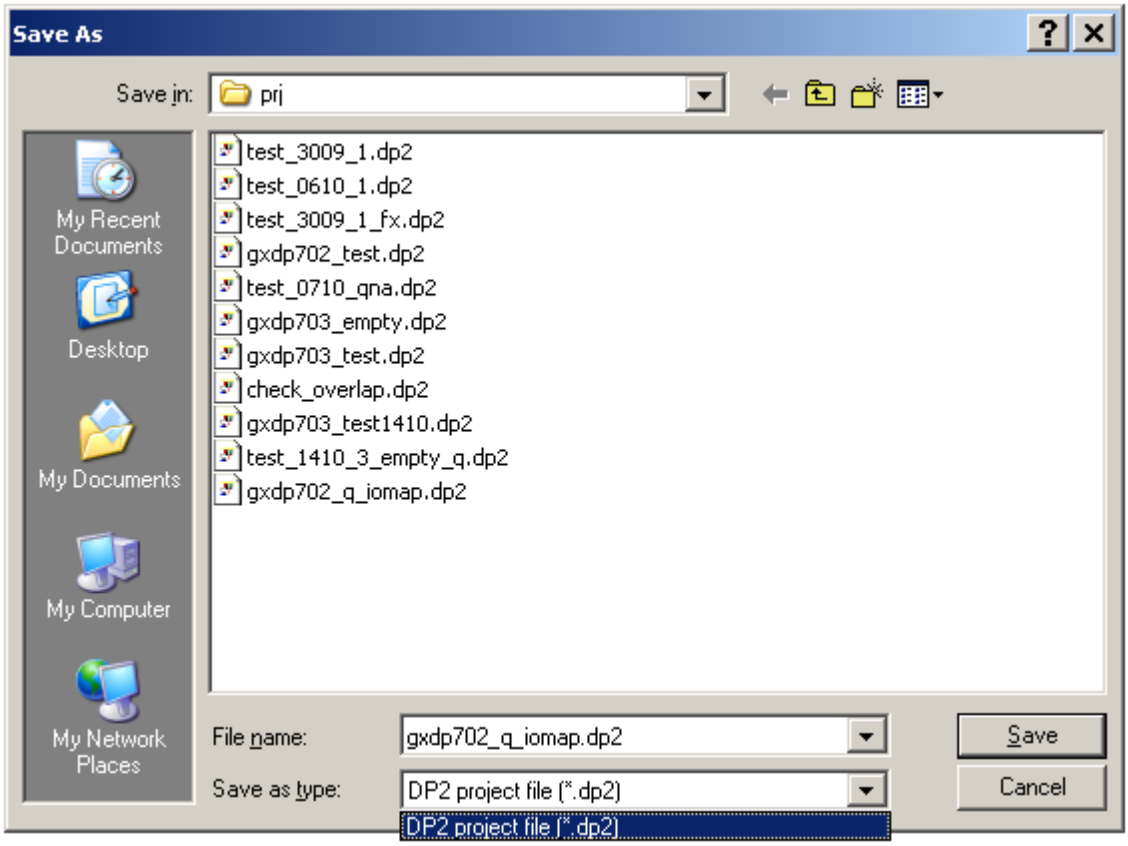
When saving a master project, the user can have all unused GSD information removed from the project file in order to reduce its size.
If the project file contains GSD information for slave types, which are not used in the project, the user is asked, whether to remove the data.



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.

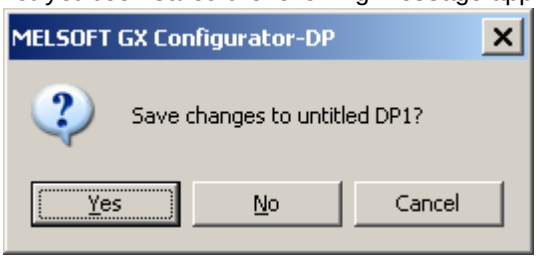
Command Recent Files

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

corresponding entry.

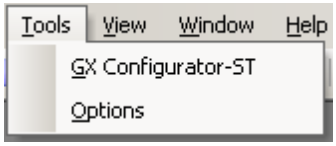
Command Exit

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 GX Configurator-DP 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:

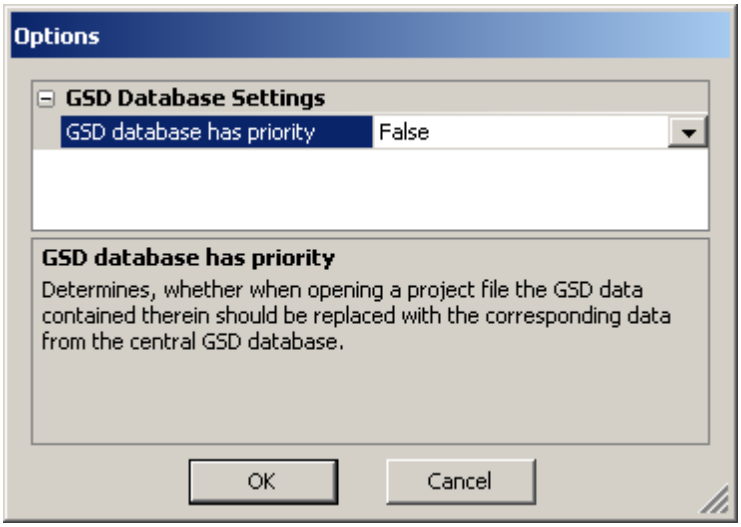
Command	Description
GX Configurator-ST	starts GX Configurator-ST for configuration of ST1H-PB 'Slice I/O' slaves
Options	edit general (i.e. project independent) application settings

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.

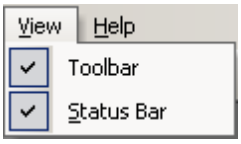
Options

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 

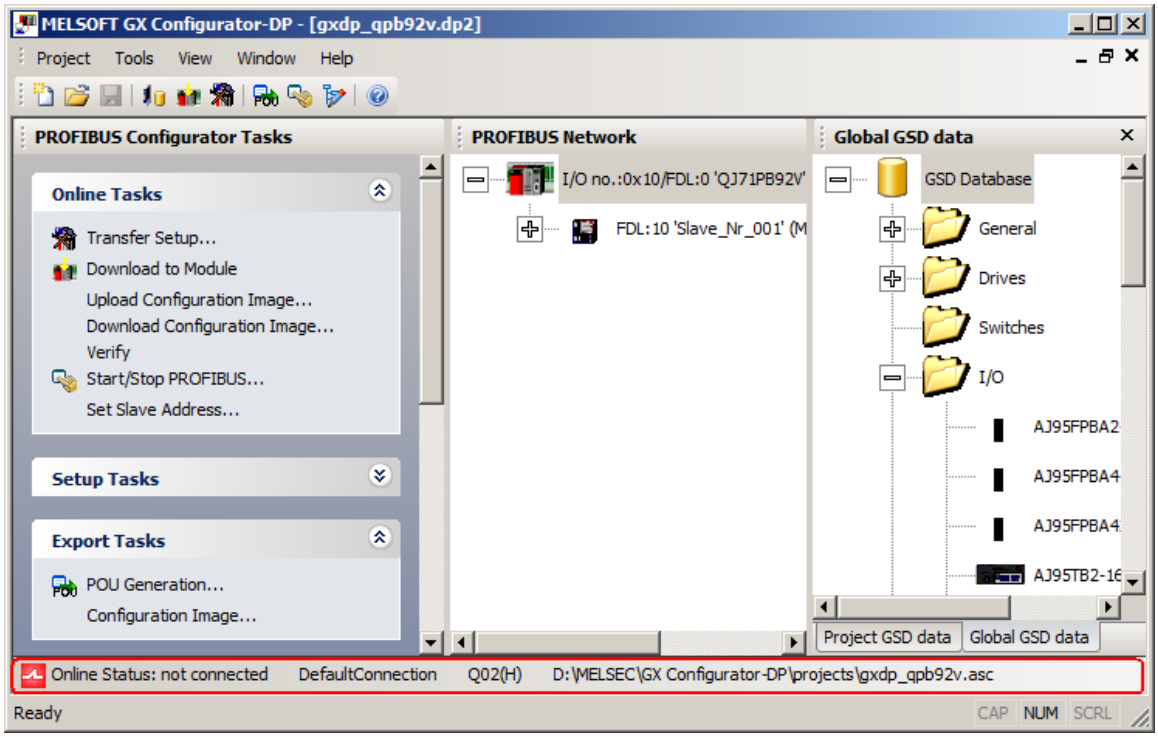
Icon	Function	Available for
1	Project -> New	all
2	Project -> Open	all
3	Project -> Save	all
4	GSD Device Database	master projects
5	Download to Module	all
6	Transfer Setup	all
7	POU Generation	master projects
8	Start/Stop PROFIBUS	all
9	I/O Mapper	master projects
10	Help	all

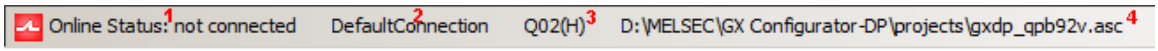
Command Status Bar

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 GX Configurator-DP, which is displayed above the standard Windows status bar. It displays important information, which is specific to the active project.

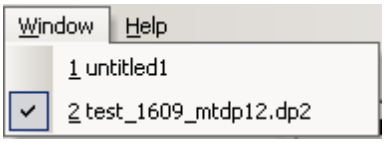




The following information is displayed in the infobar

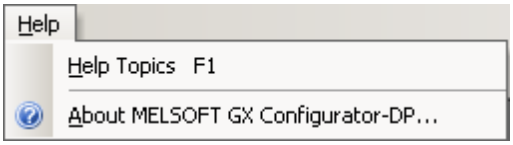
1. the status of the PLC connection ('connected', 'not connected')
2. the name of the currently selected transfer setup
3. the type of the CPU selected in the transfer setup
4. the last path of the exported POU (only if 'POU Generation' has been called since the project has been opened)

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

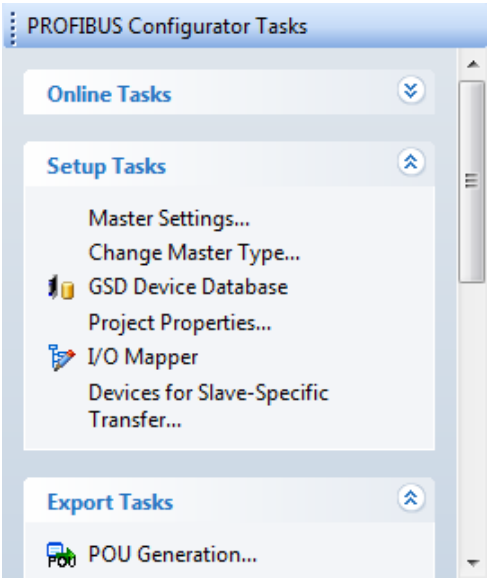
This item opens the online help in a separate window. Additionally the context-specific help is opened by pressing **F1** in a window of the application.

Command 'About MELSOFT GX Configurator-DP ...'

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

5 PROFIBUS Configurator Tasks

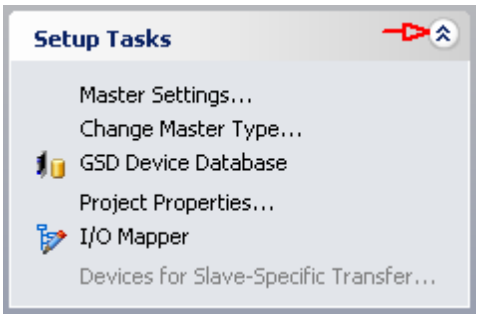
Using the Task Panel



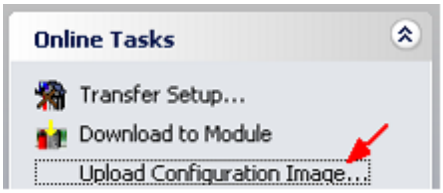
The 'PROFIBUS Configurator Tasks' window offers the user project specific shortcuts to manage a PROFIBUS DP project. The shortcuts are grouped into types of actions. With the button in the group header the task items can be collapsed so that only the header is visible to the user.

'collapsed' task group

'expanded' task group

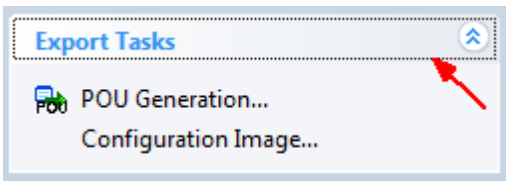


If operated via the keyboard the up/down cursor keys move the focus within the task panel. The focused task item is marked with a dotted frame.



Pressing the space bar triggers the focused item.

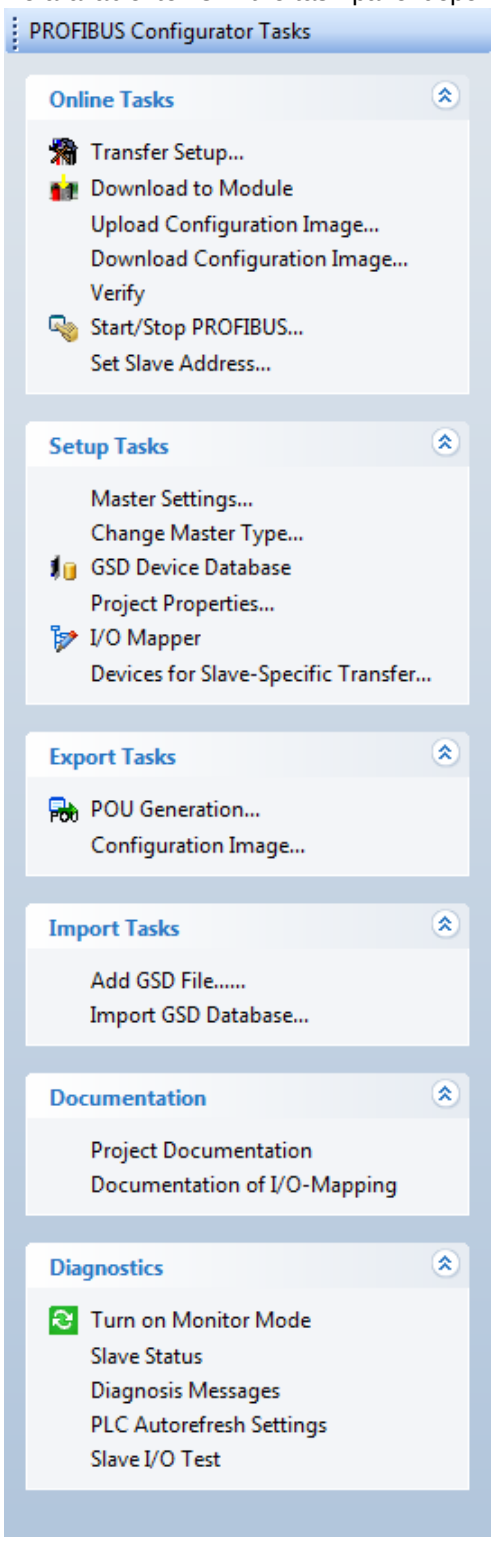
To expand/collapse a task group via the keyboard the caption of the task group must have the focus. The expand/collapse state is then toggled via the spacebar.



Some entries, which are frequently used, show icons before the text. These icons exist in the tool-bar 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.

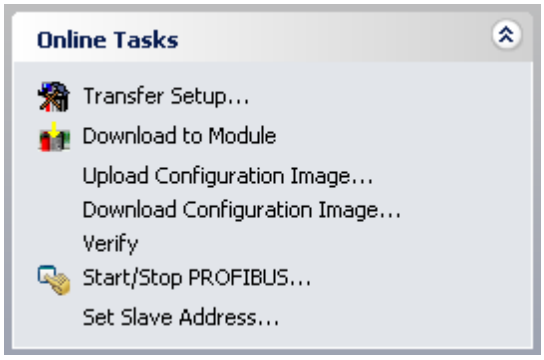


The task panel contains the following groups of items

- Online Tasks

- Setup Tasks
- Export Tasks
- Import Tasks
- Documentation
- Diagnostics

5.1 Online Tasks



Command	Description
Transfer Setup	Define the network connection type (PC to PLC) *In the integrated version of GX Configurator-DP this function is available in the GX Works2 application.*
Download to Module	Download the configuration from the current project to the connected module *In the integrated version this function is available from the GX Works2 'Write To PLC' dialog.*
Upload Configuration Image	Read the binary configuration image from the master and store it in a file *In the integrated version this function is available from the GX Works2 'Tool' menu*
Download Configuration Image	Download the configuration image taken from the specified file to the master module *In the integrated version this function is available from the GX Works2 'Tool' menu*
Verify	Upload the existing configuration from the module and compare it with the current project *In the integrated version this function is available from the GX Works2 'Verify with PLC' dialog.*
Start/Stop PROFIBUS	Start or stop the cyclic DP data transfer *In the integrated version this function is available from the GX Works2 'Tool' menu*
Set Slave Address	Change the FDL address of a slave online

Command	Description
	This function is only available for QJ71PB92V and FX3U64DP-M *In the integrated version this function is available from the GX Works2 'Tool' menu*

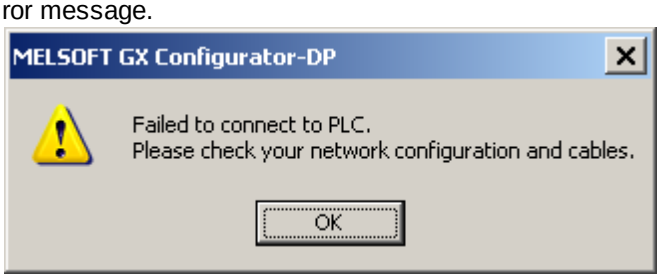
Transfer Setup

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

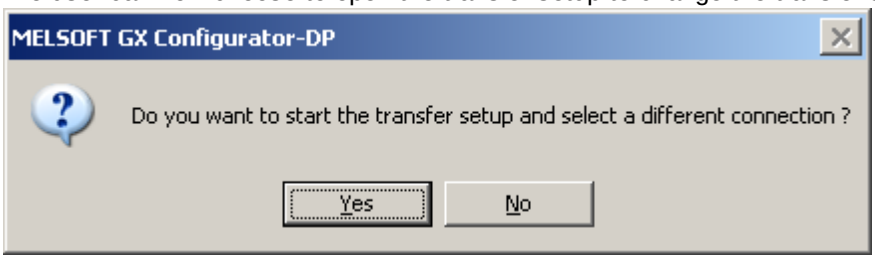
Connection Handling for Online Functions

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.

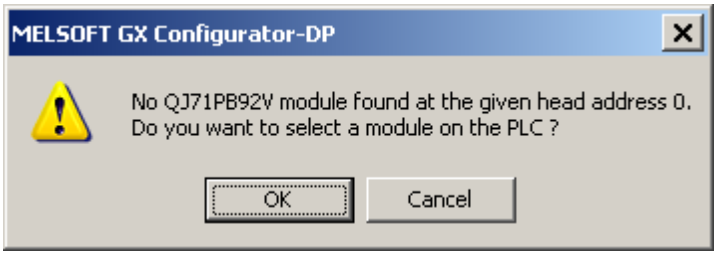


The user can now choose to open the transfer setup to change the transfer settings and try again.

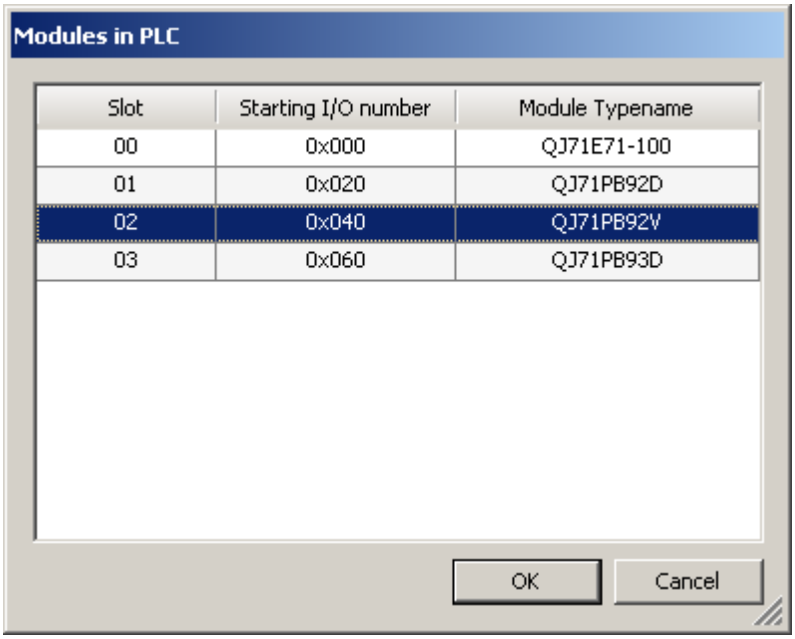


If the user selects ‘Yes’, the transfer setup dialog is opened.

If the connection to the PLC is established, GX Configurator-DP 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.



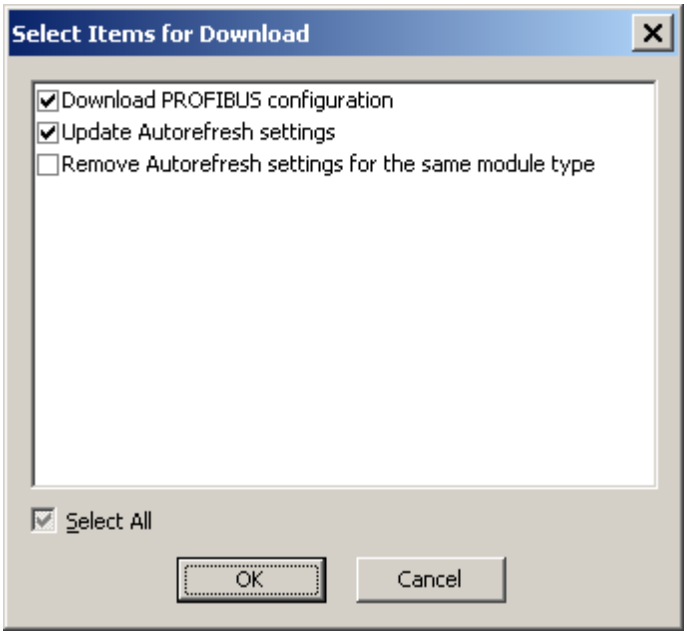
If the user presses 'OK', the list of modules is read from the PLC and displayed in a list.



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

Name	Description	Choices / Setting range	Default
	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.

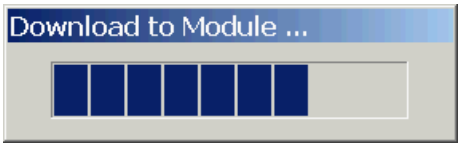
1. Download PROFIBUS configuration
Download the PROFIBUS settings to the connected module.

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.

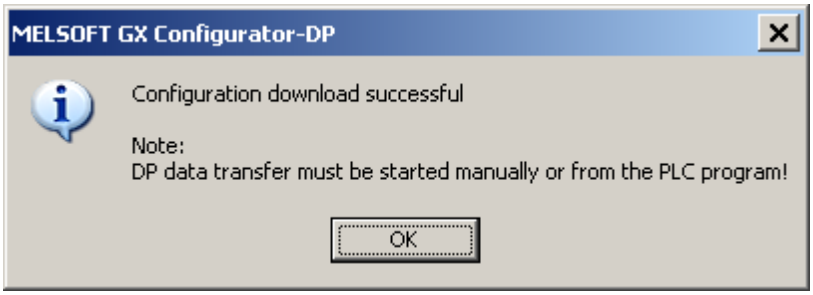
The effects of this option depend on the state of the option 'Update Autorefresh settings'.
option 'Update Autorefresh settings' is selected: autorefresh settings for modules of the same type as used in the project, but with different starting I/O numbers, are removed
option 'Update Autorefresh settings' 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.

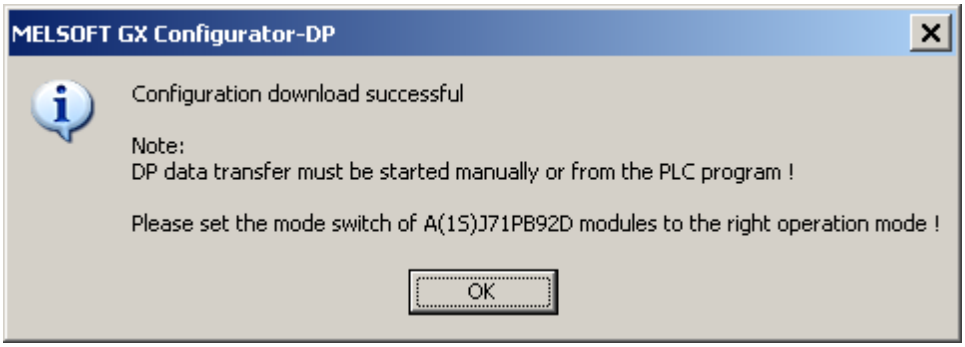


A download to FX master modules can only be performed, if the CPU is in 'STOP' state.

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.

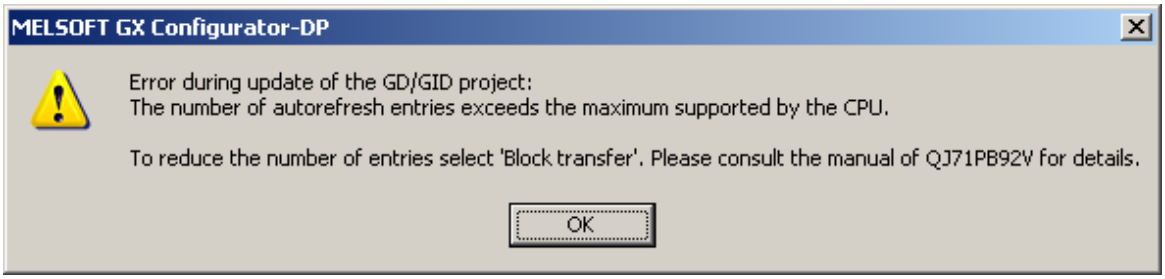
Download to project module type only

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.

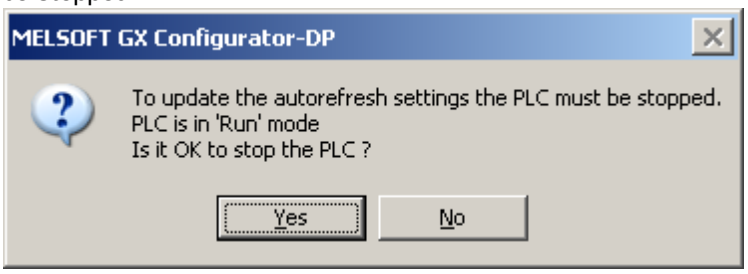
Autorefresh Update

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. Before updating the autorefresh settings GX Configurator-DP checks the total number of autorefresh entries, which the CPU would have after the update. The total number of autorefresh entries per CPU is limited and this limit depends on the CPU type.
If the maximum number of supported entries would be exceeded, the user is informed and the settings are not updated. In most cases this problem can be avoided by using 'Block Transfer' (see 'CPU Device Access').
The check is done when updating the CPU

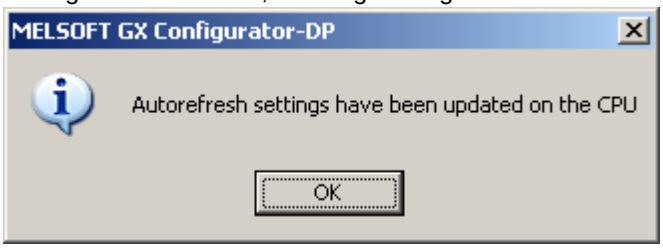
as well as when updating the GD/GID-project, in case this has been assigned.



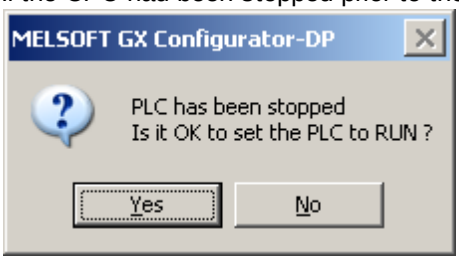
The (online) update of the autorefresh settings on the CPU is only possible, if the CPU is stopped. The CPU status is checked and, if the status is not 'STOP', the user is asked, whether the CPU can be stopped.



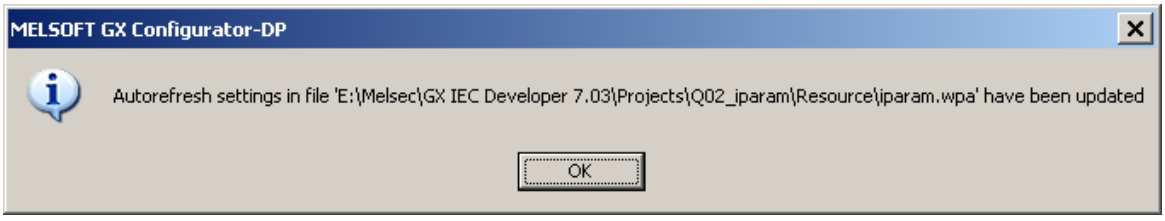
After stopping the CPU the autorefresh settings on the CPU are updated. Existing autorefresh settings on the CPU for the same head address as the current master module are overwritten with the settings for the master, existing settings for other modules remain unchanged.



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



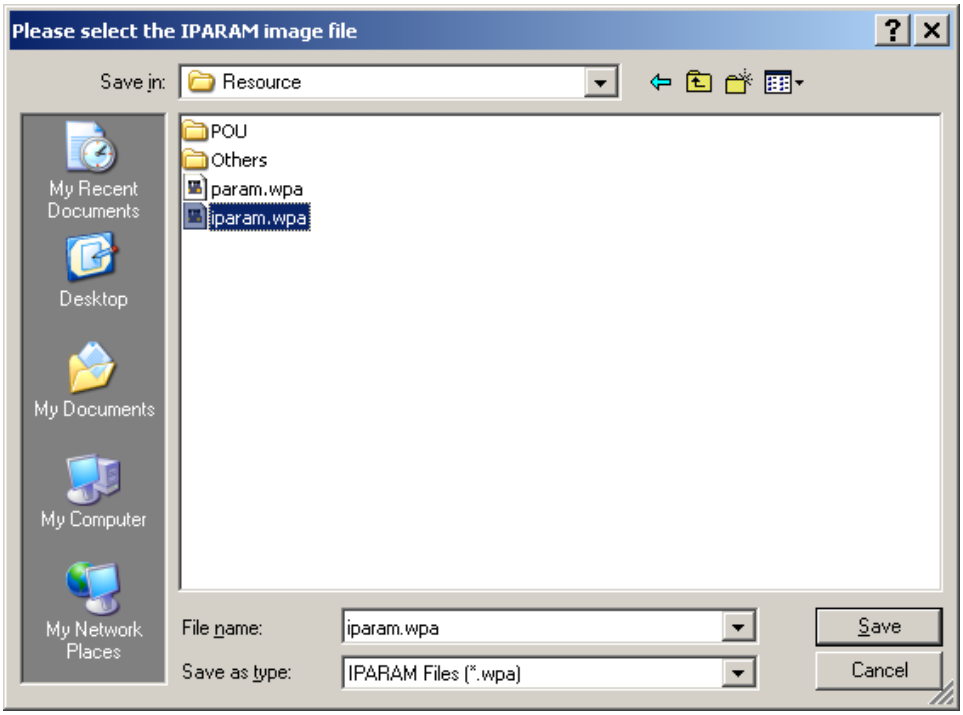
The autorefresh settings in the parameter file of the corresponding GID/GD project are also automatically updated, if the path to an existing GID/GD project has been set (see 'Project Properties'). After the GID/GD project has been updated, the path of the updated IParam file is displayed.



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 up-

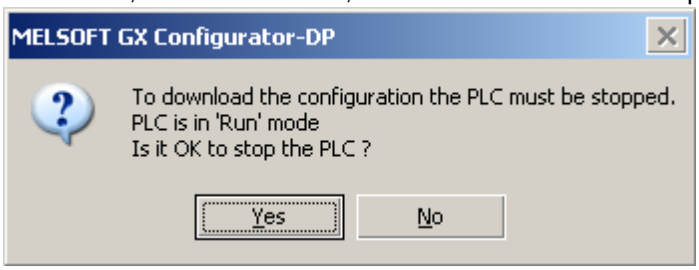
dated in the Remote I/O itself with GID/GD. If the user downloads to a Remote I/O and no GID/GD project path has been set, the user is prompted to enter the path to the IParam image file, which should be updated.



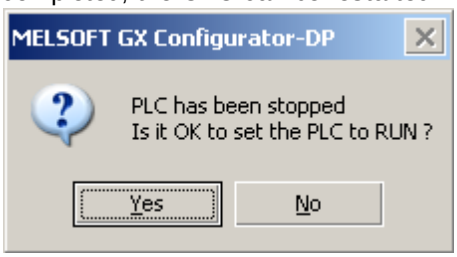
In GID/GD projects the IParam image file is named 'iparam.wpa' and located in the subdirectory 'Resource' of the project directory.

Download to FX

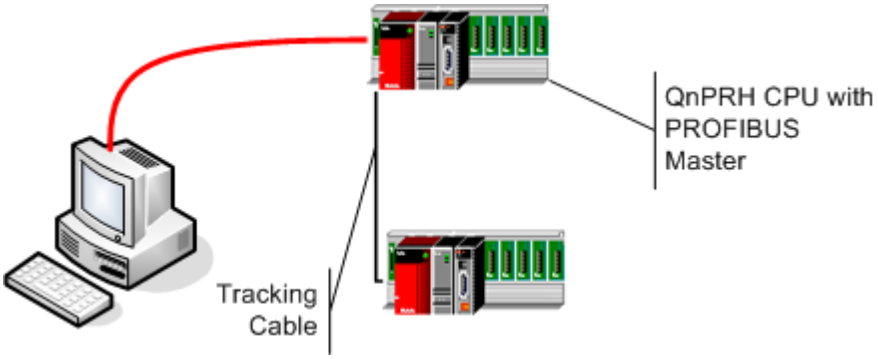
The FX3U-64DP-M PROFIBUS master can only be updated, if the CPU is stopped. If the CPU is in 'RUN' state, the user is asked, whether the CPU can be stopped.



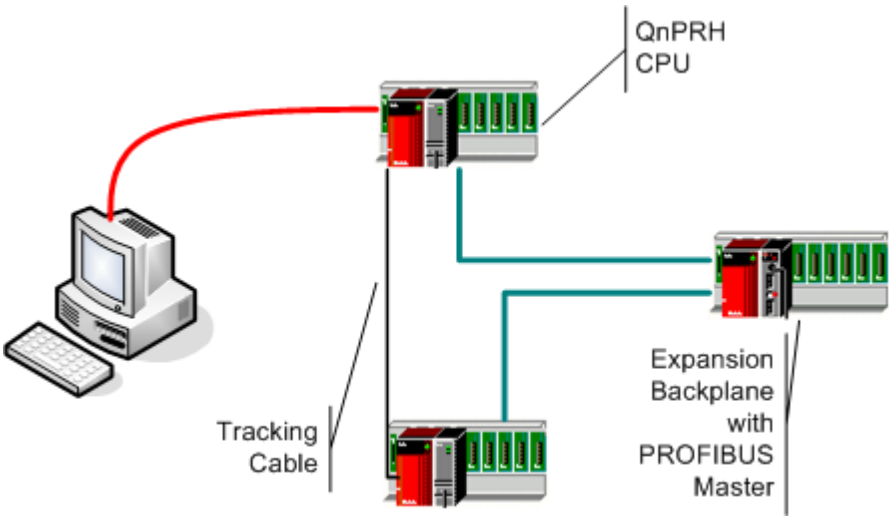
If the user agrees, the CPU is stopped and the configuration is downloaded. After the download has completed, the CPU can be restarted.



Download to QnPRH Redundant System



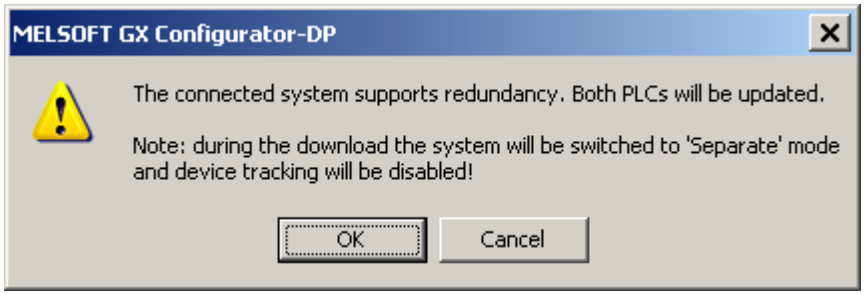
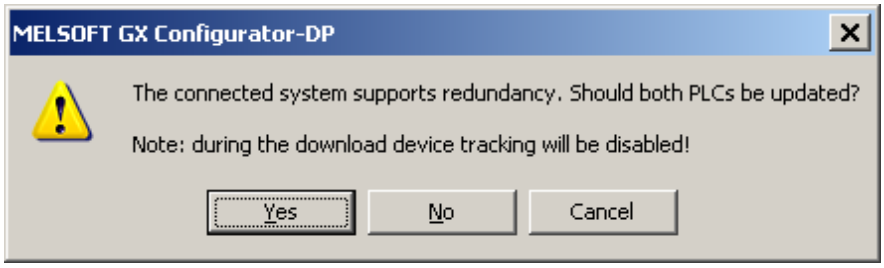
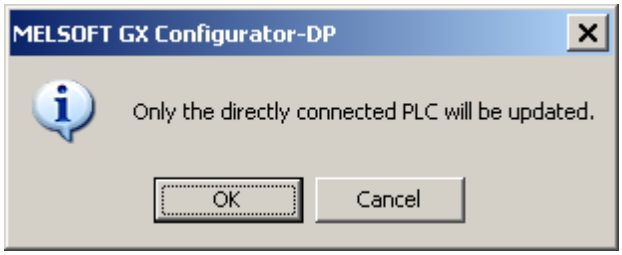
Type 1: QnPRH system with redundant PROFIBUS masters



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. GX Configurator-DP 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, GX Configurator-DP 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.

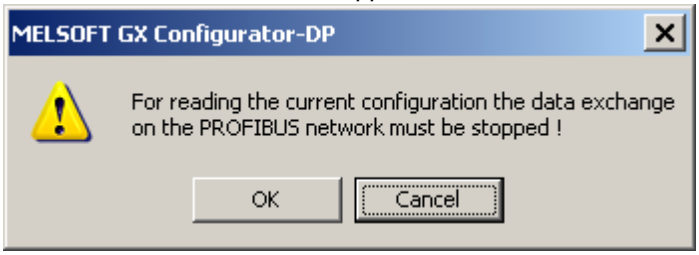
Mode	GXDP Handling
Backup	The PROFIBUS configuration is downloaded to both PROFIBUS modules (redundant network setup) or the single PROFIBUS module (expansion rack

<table>
<tr><th>Mode</th><th>GXDP Handling</th></tr>
<tr><td></td><td>setup). The autorefresh settings are updated in both PLCs. Therefore the system must be temporarily switched to 'Separate' mode.
 
</td></tr>
<tr><td>Separate</td><td>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.
 
</td></tr>
<tr><td>Debug</td><td>In Debug mode only the PLC selected in the transfer setup is updated.
 
</td></tr>
</table>

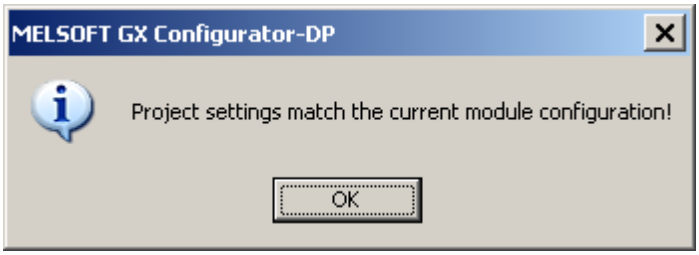
Note: if device tracking is disabled, this applies only to the default tracking block controlled by SM1520. If the user has specifically configured device tracking and included the X/Y devices of the intelligent function modules, the communication may fail.

Verify

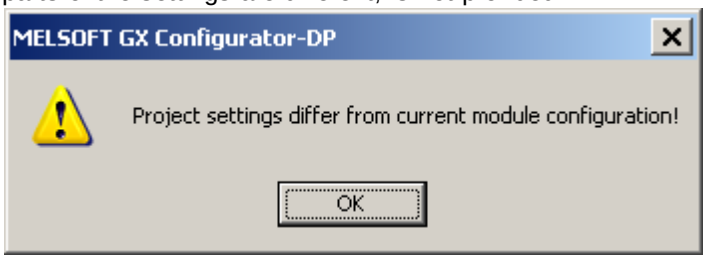
This function verifies the settings of the selected project with the current configuration of the module. For PB92D masters a warning is displayed to inform the user that the data exchange on the PROFIBUS network will be stopped.



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.

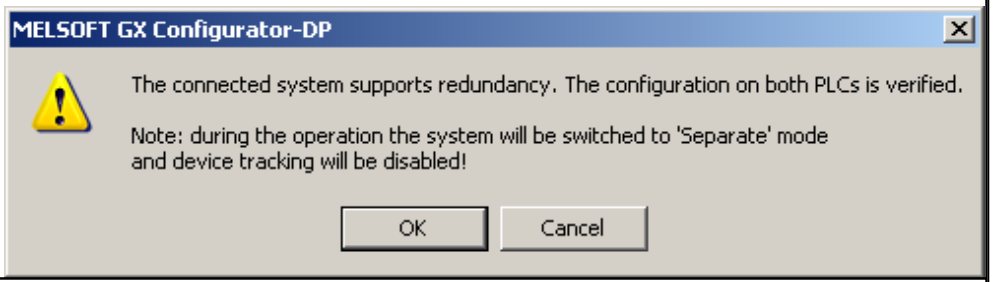


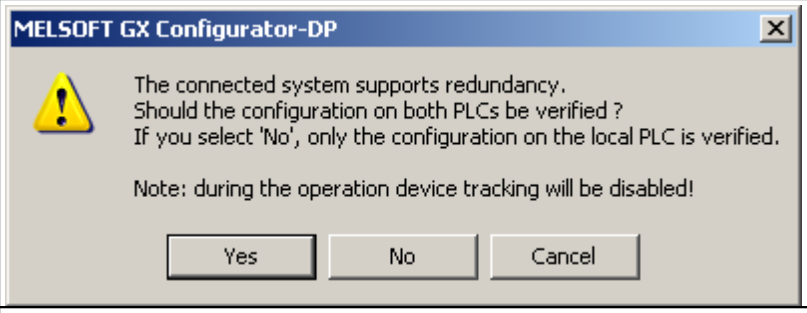
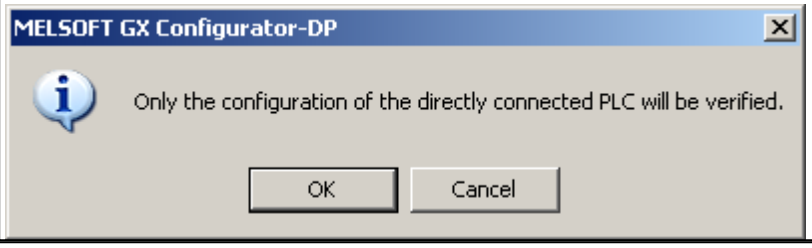
In case any problems occur, for example when reading the configuration from the module, a general error message is shown.

Note: the autorefresh settings and POU code are not compared. Therefore device addresses used for transfer buffer or assigned in the I/O mapper, which are not part of the master configuration, are not verified. The verify may report a match, although device addresses differ.

Verify on QnPRH Redundant System

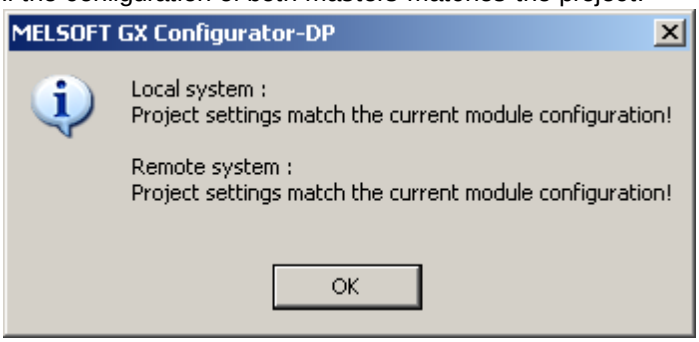
Before uploading the configuration from the PROFIBUS master module(s) and comparing it with the project, the user is asked whether to proceed. The query depends on the redundancy mode, however it does not depend on whether there are one or two master modules.

Mode	GX Configurator-DP 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.

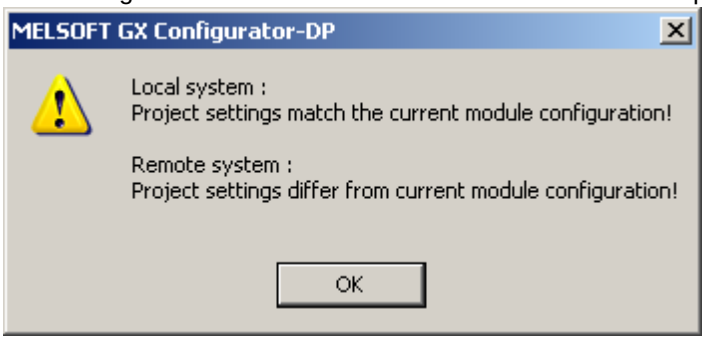
Mode	GX Configurator-DP Handling
	
Debug	In this mode only the configuration of the master in the connected PLC is verified. 

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.

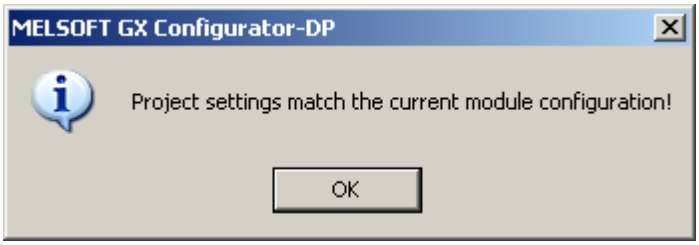
If the configuration of both masters matches the project:



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

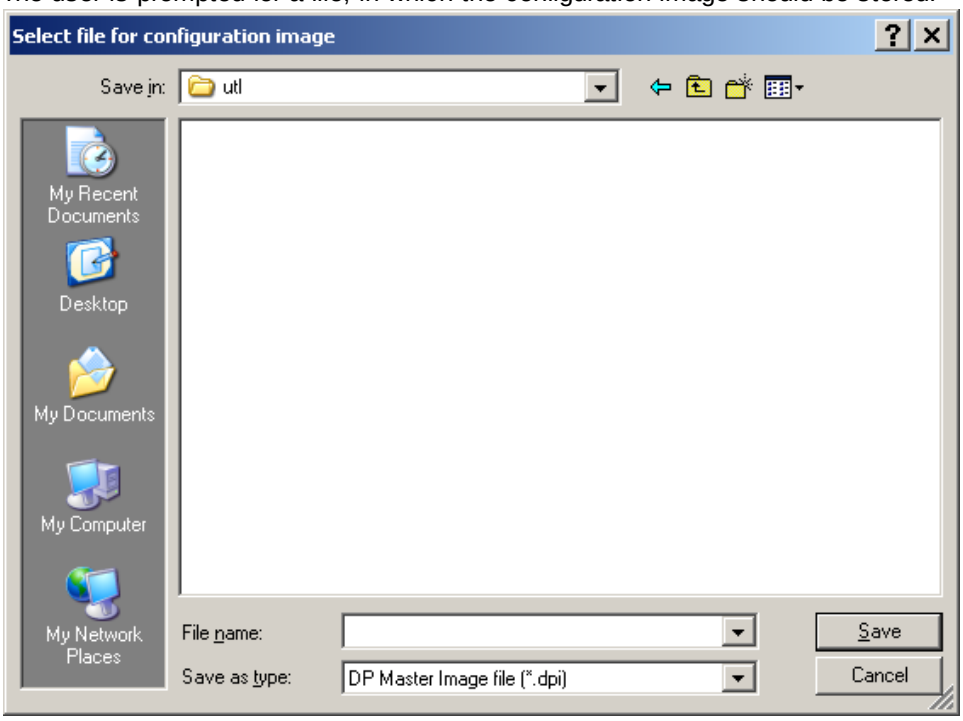


If there is only one master module in the redundant system as in a QnPRH (2nd) with a single expansion backplane, only the configuration of this master is compared with the project.

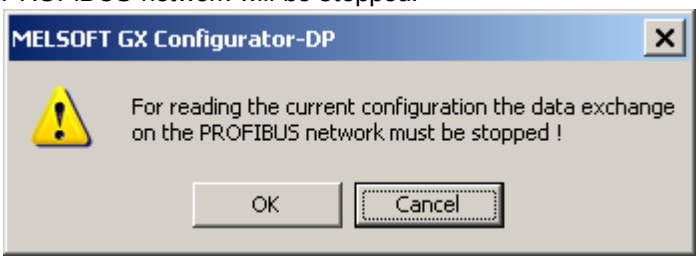


Upload Config. Image

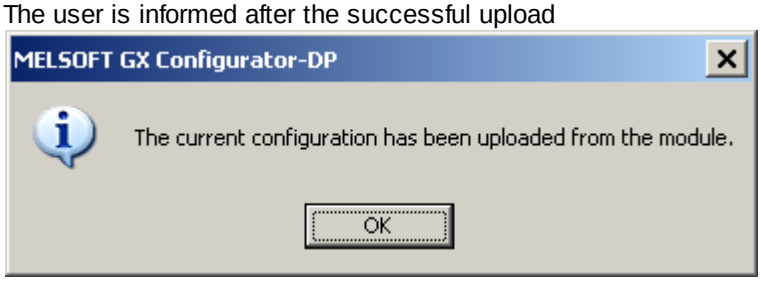
The user is prompted for a file, in which the configuration image should be stored.



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



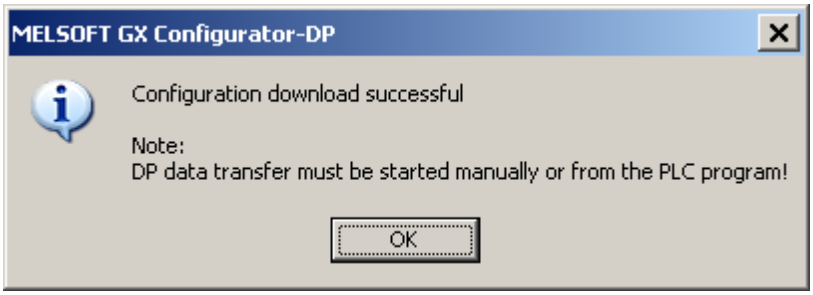
or gets an error message, if it fails.

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

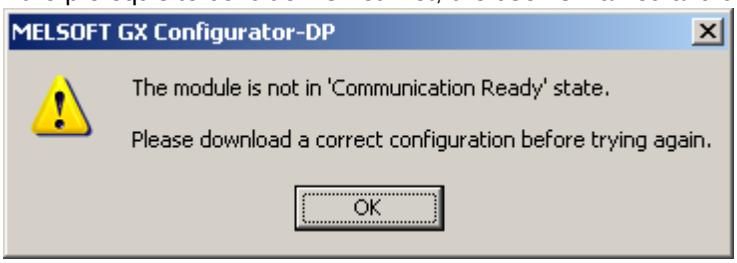
The user must first select a file with a configuration image created by a previous upload (see **'Upload Config. Image'**) or the corresponding export function of GX Configurator-DP(see **'Export -> Config. Image'**). This configuration must be compatible to the module type set in the current project.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



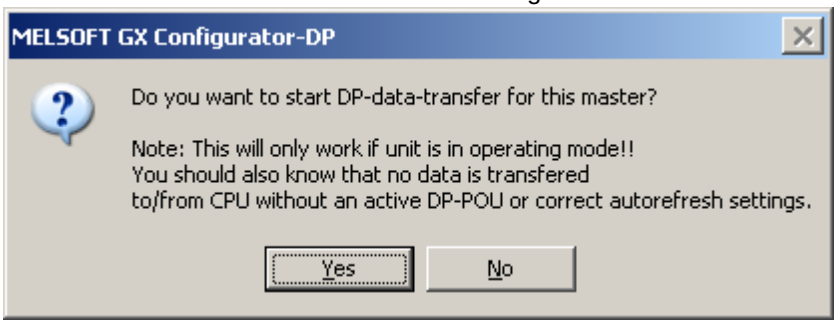
or gets an error message, if it fails.

Start/Stop PROFIBUS

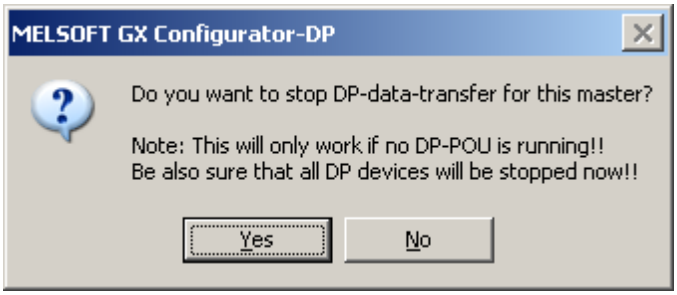
This item is used to manually start or stop the PROFIBUS DP cyclic data transfer of DPV0. The current status of the connected PROFIBUS master is checked. If there is no active data transfer, GX Configurator-DP checks, whether the master is configured and data transfer could be started. For A(1S)J71PB92D, QJ71PB92D and QJ71PB92V the device X1B of the master must be true, for FX3U-64DP-M address 5 in the buffer memory must be non-zero.
If the prerequisite condition is not met, the user is warned and data transfer cannot be started.



Otherwise 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

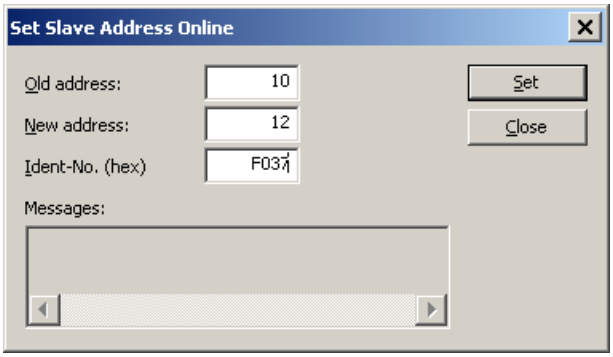
This function is provided to change the FDL address of a slave device online.

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

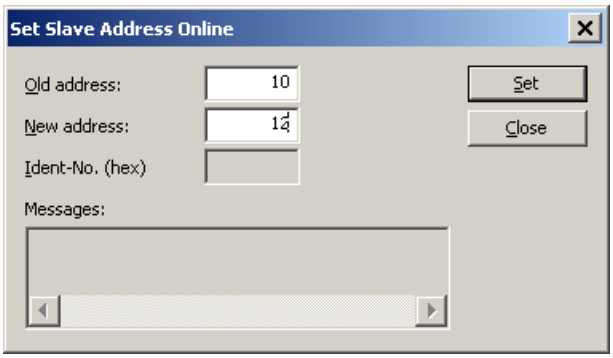
The appearance of the dialog, which is opened when selecting the 'Set Slave Address' item, depends on the master type and the node, which is selected in the project tree.

Master is selected

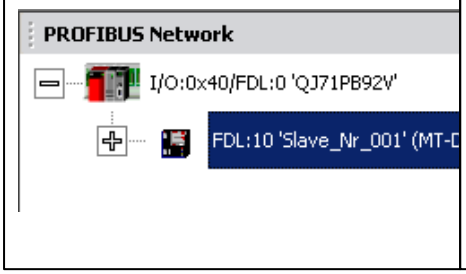
for QJ71PB92V (Ident-No. must be entered)

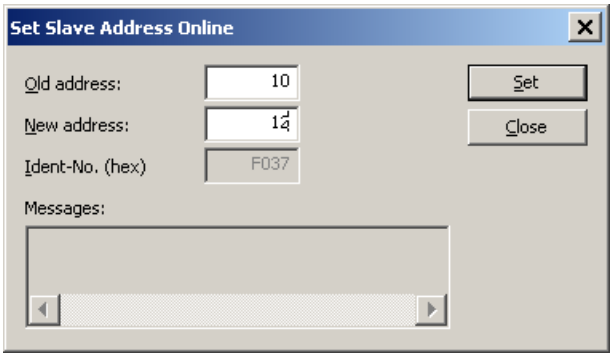


for FX3U-64DP-M (Ident-No. not required)



Slave is selected



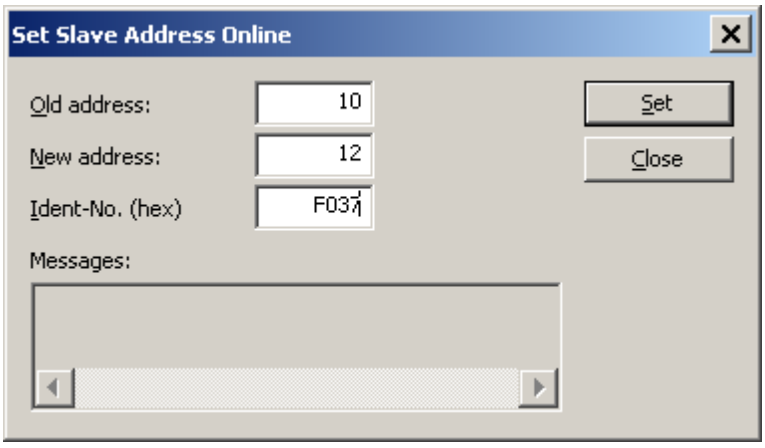


If the master is selected, the user must enter the current address of the slave. For QJ71PB92V also the ident number must be entered. If a slave is selected, the current slave address and the ident number are taken from the project settings and both fields are read-only.

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.

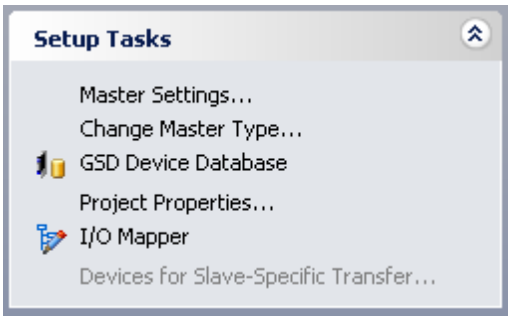
Request to change FDL address has been sent. Note: A positive response does not imply that the slave has actually changed its address. This must be verified by the user with other means (e.g. using the 'Live List' function of FX3U-64DP-M).	**QJ71PB92V** FDL address change request has been sent. **FX3U-64DP-M** 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	0 -126	

Name	Description	Choices / Setting range	Default
	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		
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

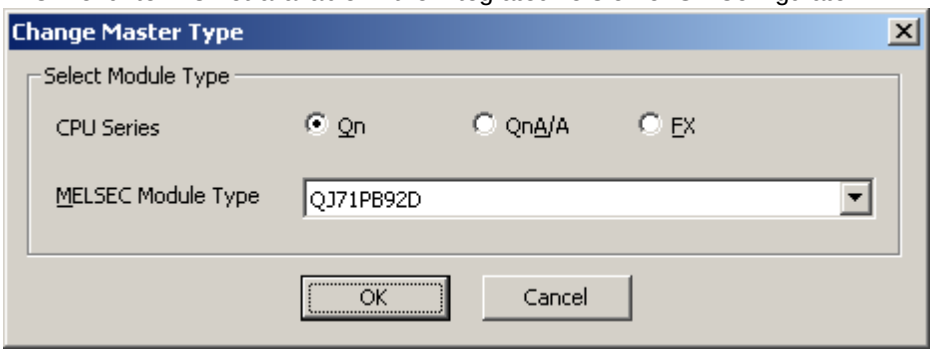


Command	Description
Master Settings	Open the 'Master Settings' wizard
Change Master Type	Convert the project to a different type of master module *Not available in the integrated version of GX Configurator-DP*
GSD Device Database	Open the trees with the device types in the global device database and in the project file

Command	Description
Project Properties	Open a dialog to select the GID/GD project and to set the comment *Not available in the integrated version of GX Configurator-DP*
I/O Mapper	Open the editor for defining the structures for access to slave inputs/ outputs
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'.

Change Master Type

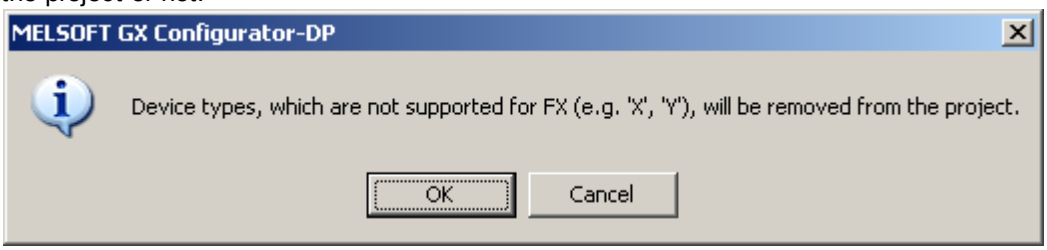
With this menu item the user can change the current project to a different type of master module. This menu item is not available in the integrated version of GX Configurator-DP.



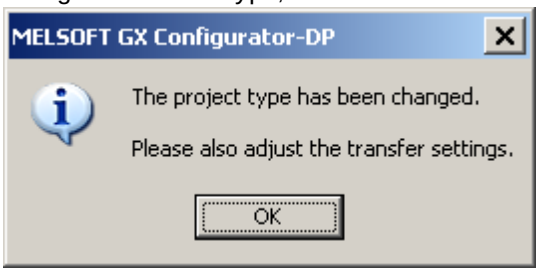
Name	Description	Choices / Setting range	Default
CPU Series	selection of CPU series, in which the PROFIBUS module is used	Qn, QnA/A, FX	Qn
MELSEC Module Type	module types supported by the selected CPU series Note: the current module type of the project is not listed	Qn: QJ71PB92V QJ71PB92D QnA/A: A(1S)J71B92D 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 type of the master is changed to a FX3U-64DP-M, the user is warned that device addresses, which are not supported for FX3U-64DP-M projects, will be removed from the current project. This warning is displayed independently of whether unsupported device addresses are actually used in

the project or not.



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.



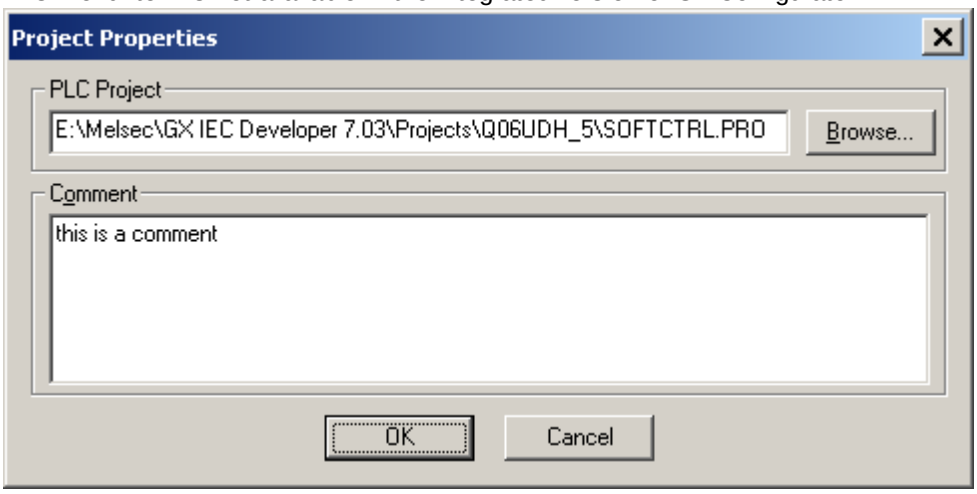
The project conversion may fail, if the current configuration is not supported by the new master, for example because of the number of slaves when converting a project from QJ71PB92V to QJ71PB92D.

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
This menu item is not available in the integrated version of GX Configurator-DP.



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		-

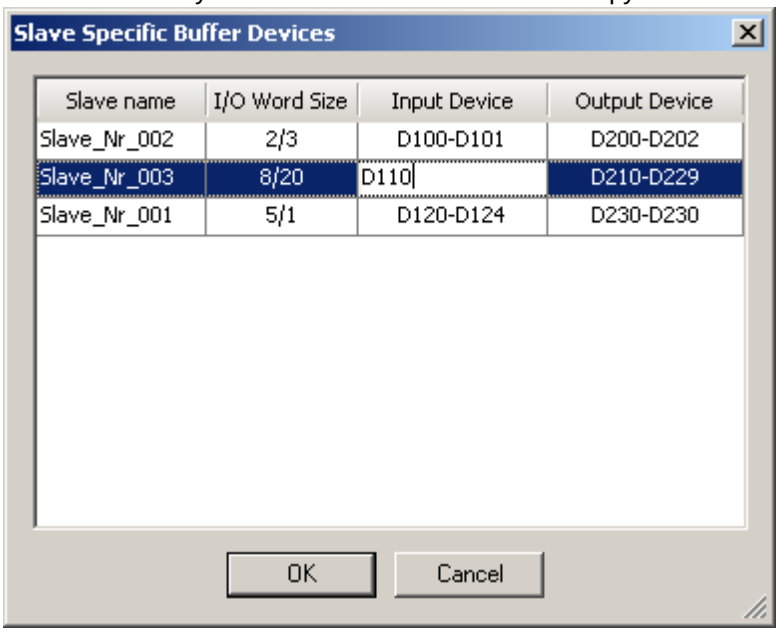
Name	Description	Choices / Setting range	Default
	updated by GXDP, if the 'Autorefresh'-option has been selected		
Browse	opens file dialog to select the GD/GID project file	max. 255 characters	-
Comment	an optional comment text of max. 255 characters length, which describes the project	max. 255 characters	-
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 or copy instructions.



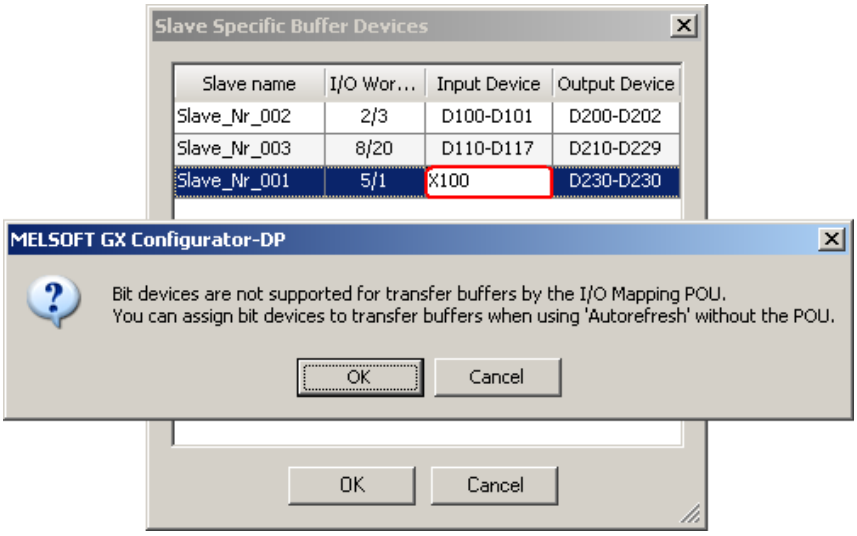
Name	Description	Choices / Setting range	Default
Slave name	user-assigned name of the slave	read-only	
I/O Word Size	input and output size of the slave in words (odd byte sizes are rounded up to the next word boundary)	read-only	

Name	Description	Choices / Setting range	Default
Input Device	start address of device area to transfer inputs to **Note**: if a device address has been assigned to a buffer area, the occupied device range is displayed with the addresses of the first and the last device used. When the user begins editing a cell, only the start address is displayed. When the user has left the cell, the updated range is displayed again.	for use with the I/O mapper (POU) word devices must be assigned; for use with autorefresh the devices must be supported by the autorefresh function if the slave has no inputs or outputs, the corresponding device address input field is disabled	empty
Output Device	start address of device area to transfer outputs from **Note**: see above		
OK	Close dialog and saves entered device addresses		Default button
Cancel	Close dialog and discard changes		-

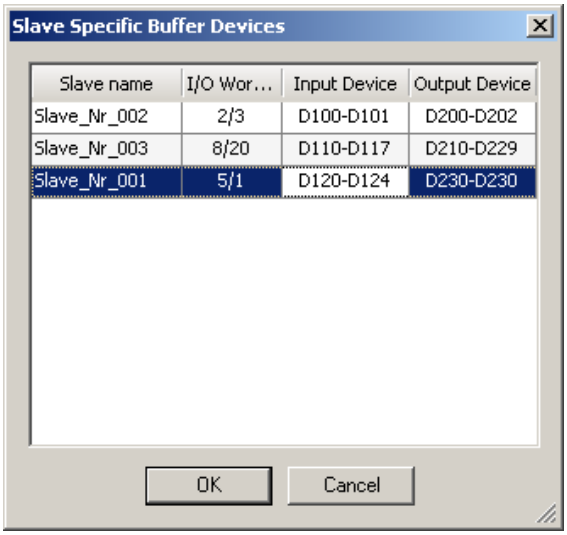
Slave Specific Transfer in Combination with 'Copy Instructions'

If 'Slave Specific Transfer' and 'Copy Instructions' is selected, the assignment of bit devices to slave I/O buffers is equivalent to not assigning a device address.

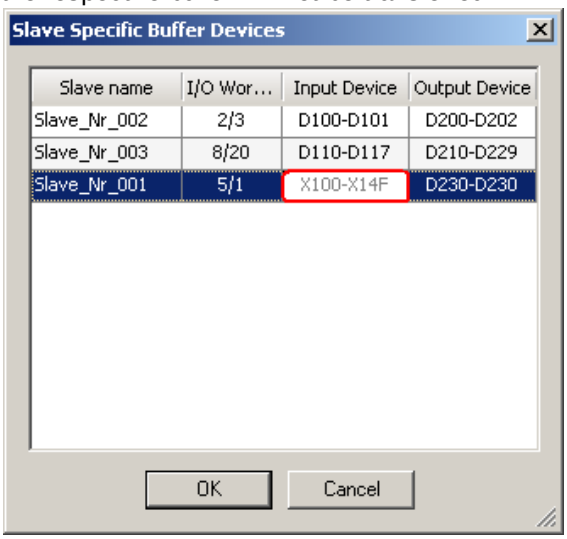
The user is warned when entering a bit device for a slave buffer, if 'Copy Instructions' has been selected.



When pressing **Cancel** the entered address is ignored and the value for the buffer device remains unchanged.



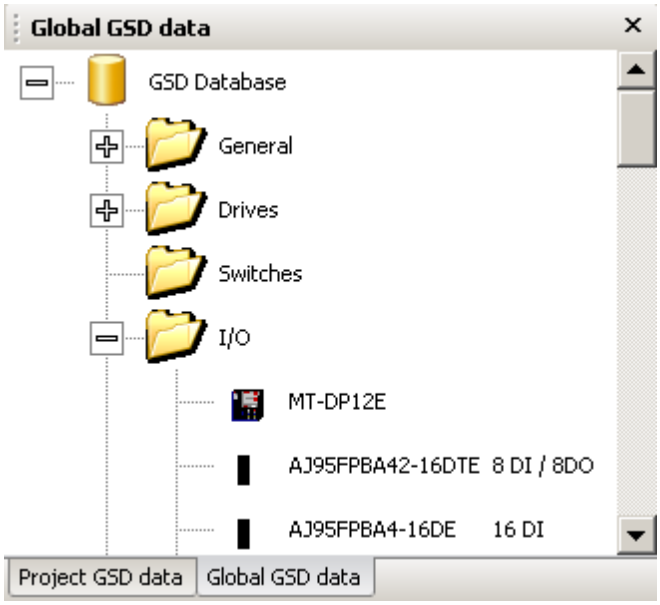
When pressing **OK** the bit device address is accepted, but displayed in gray to inform the user that the respective buffer will not be transferred.



5.2.1 GSD Device Database

The device database contains information about PROFIBUS DP slave device types. New device types are added to the database by parsing the GSD file of 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 GX Configurator-DP and the project file.

GSD Database Device Tree



A device database is accessed via a tree-like user interface. The GX Configurator-DP 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.

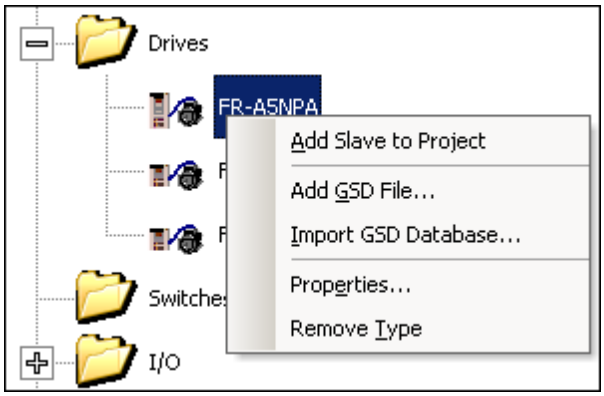
Global GSD data	Caption	
	Tab	
Project GSD data	Caption	
	Tab	

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'



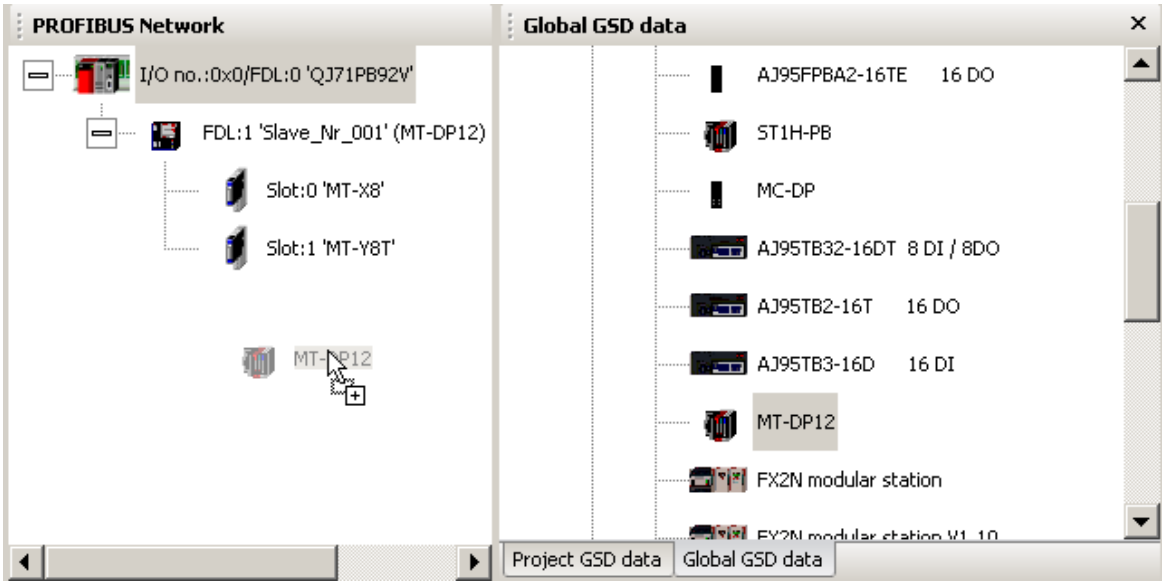
Group selected in 'Global GSD data'

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 or a double-click on the node
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, double-click the node in 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 GX Configurator-DP is running. When GX Configurator-DP is restarted, this mark is cleared and the message is displayed again.

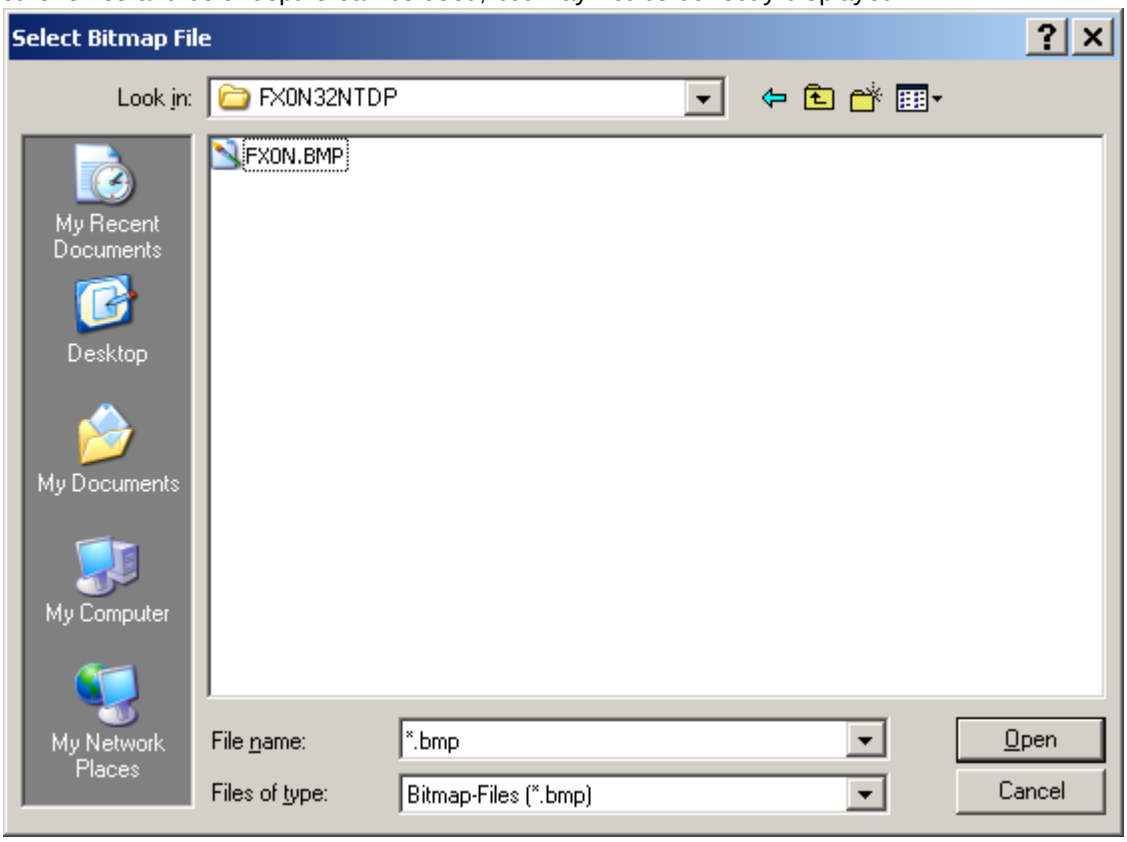
Add GSD File

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:

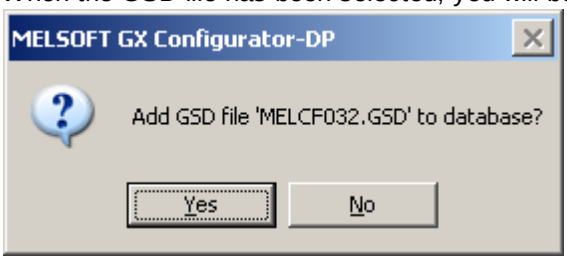
Width	70 pixels
Height	40 pixels

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.

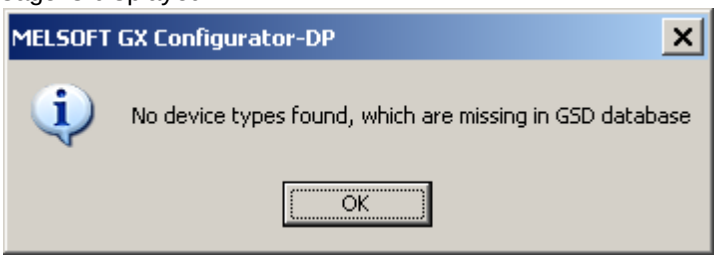
Please ask the manufacturer of the slave device for the matching GSD file.

Import GSD Database

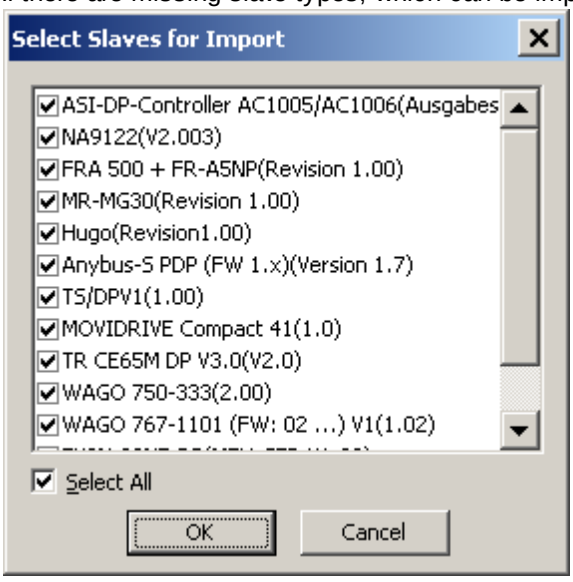
The GSD information for device types, which are missing in the GSD database, can be imported from an old GSD database (gsd_db.mdb), a GSD export file (*.ext) or a GXDP project file (.dp2).

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



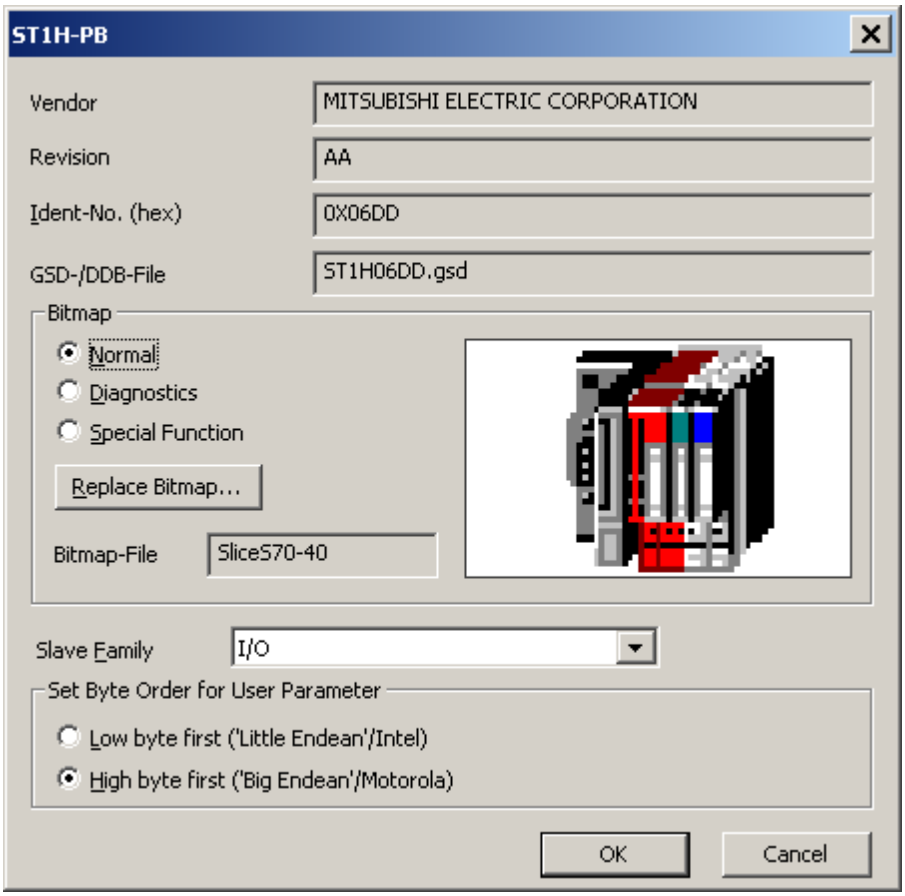
If there are missing slave types, which can be imported, these types are displayed in a list.



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 fol-		

Name	Description	Choices / Setting range	Default
	lowing states: • Normal • Diagnostics • Special Function GXDP only uses the 'Normal' bitmap for 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.

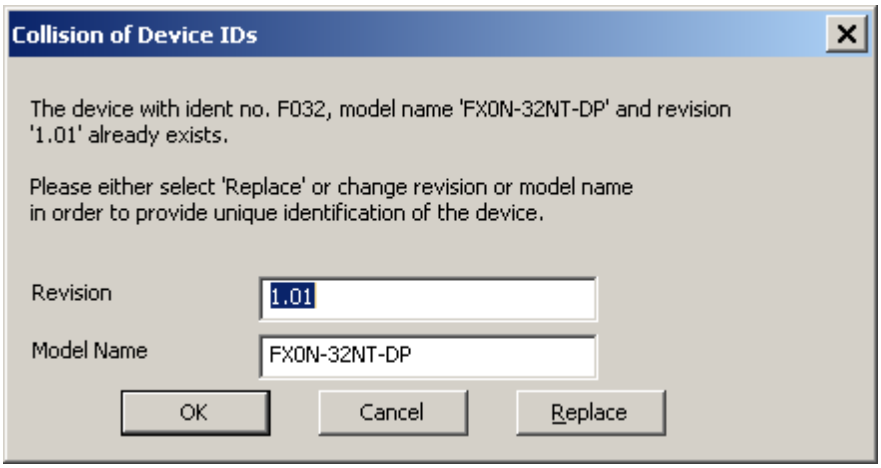
GSD Update

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')

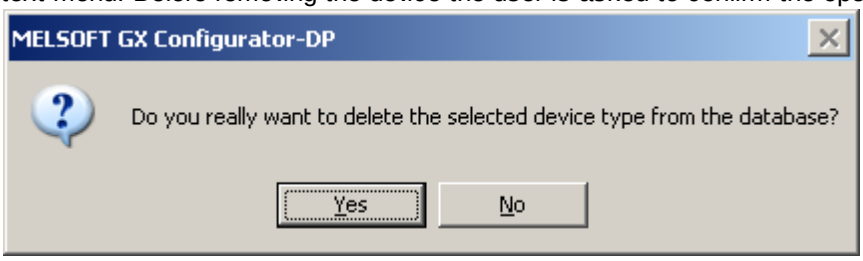
to uniquely identify a device. Two GSD files must differ in at least one of these three items in order to both be added to the GSD database.



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 GX Configurator-DP 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

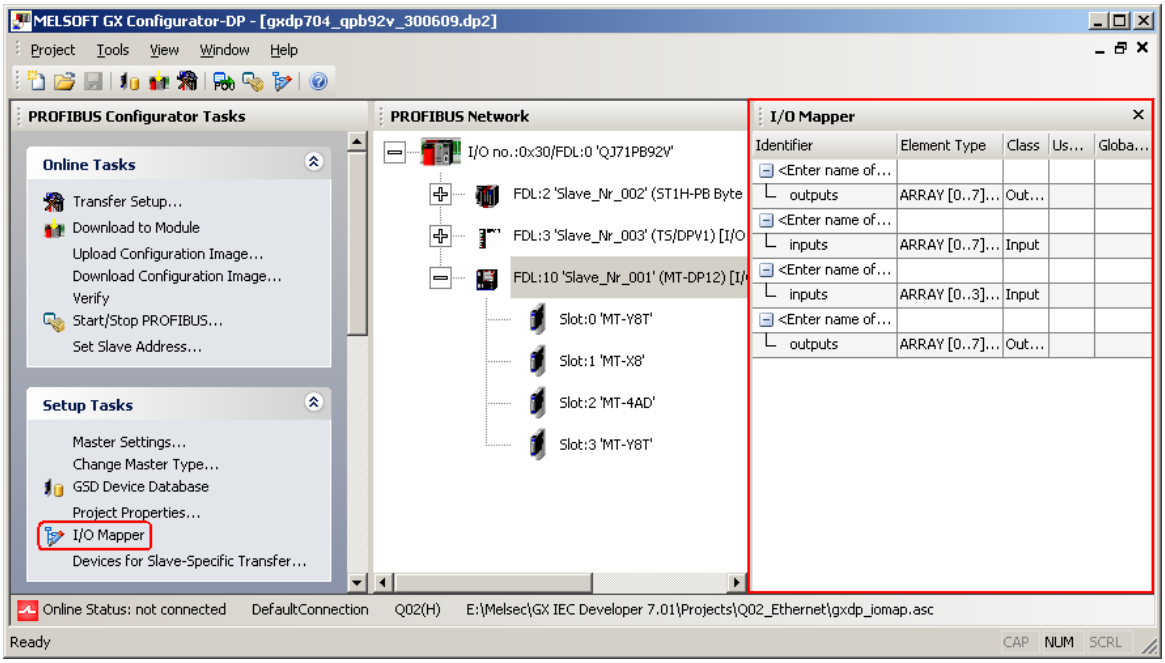
Instead of calculating the I/O data offsets of the slave modules within the I/O buffer of the master, the PLC program can read or write the respective global variables. These are part of the user library, which is generated via the menu item POU Generation.
I/O mapping program code is only available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

- A(1S)J71PB92D (only for mode E and QnA-CPUs !)
- QJ71PB92D (only for mode E !)
- QJ71PB92V
- FX3U-64DP-M

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

I/O Mapping Editor

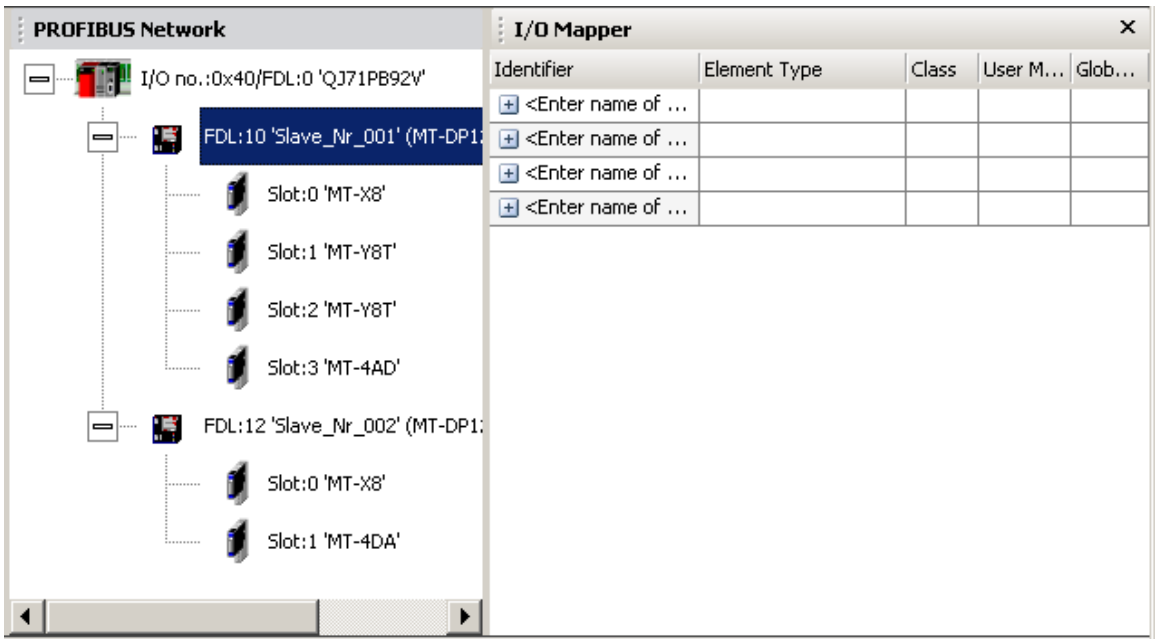
To open the editor for I/O Mapping select the corresponding item in the task panel.



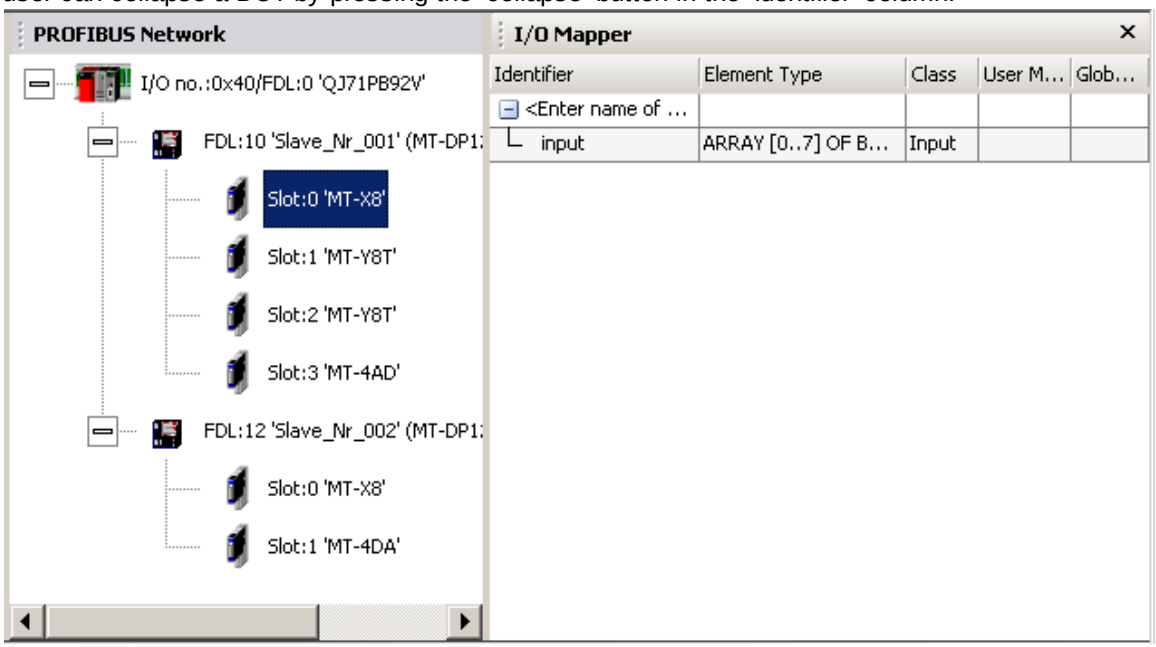
The navigation in the I/O mapping editor is done via the 'PROFIBUS Network' tree. The contents of the I/O mapping table depend on the node type, which is selected in the project tree.

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

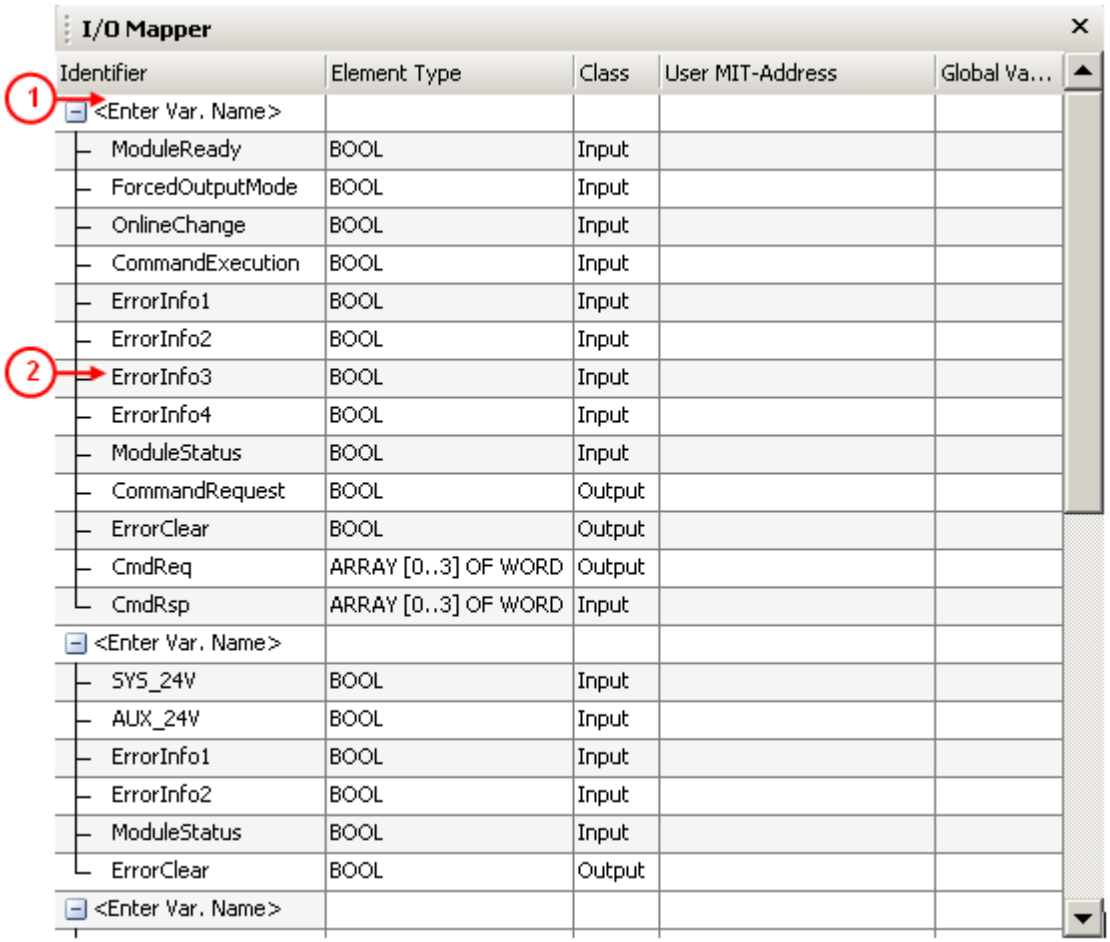
If a **slave is selected**, the DUTs of all modules of that slave are displayed in 'collapsed' state as default. The user can expand a DUT to view the DUT elements by pressing the 'expand' button in the 'Identifier' column.



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	'inputs' or 'outputs' 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

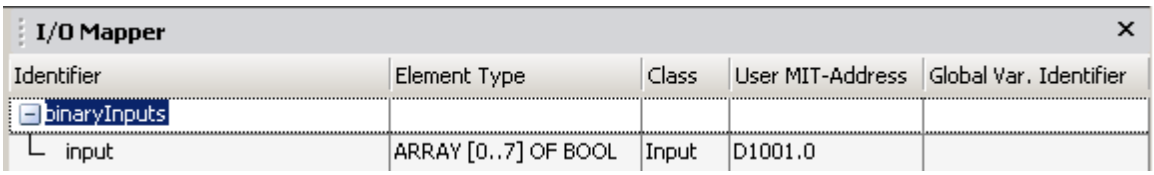
Note: the type name of a DUT cannot be set by the user, but is always automatically constructed, when the PLC code is exported. To ensure that the type name is unique the starting I/O number of the master, the FDL address of the slave and the index of the module are composed in the type name: ***tHA<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

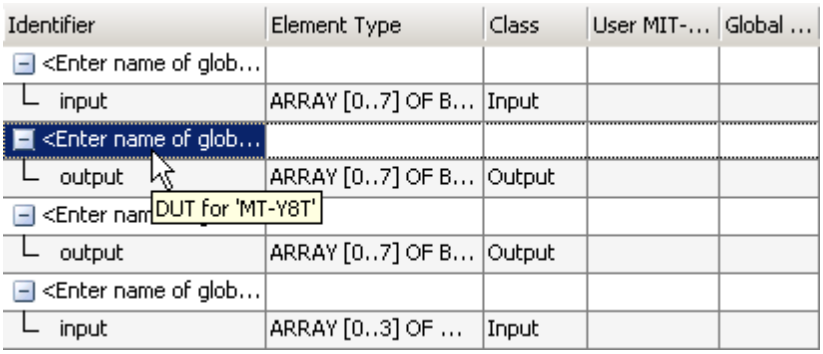
the DUT of the first module (index 0 in the slave) has the variable name 'vHA**0**SLV**2**MOD**0**.

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

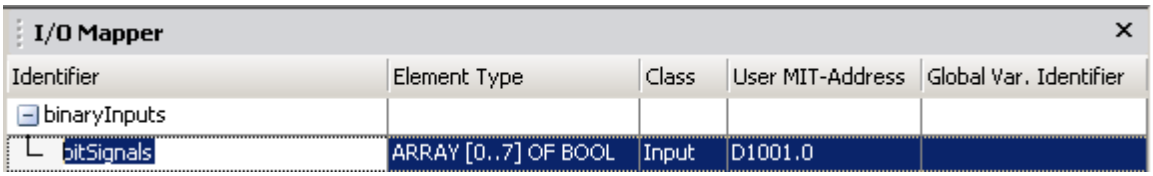
```
…
VAR_GLOBAL
     binaryInputs: tHA4SLV10MOD01;
END_VAR

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.

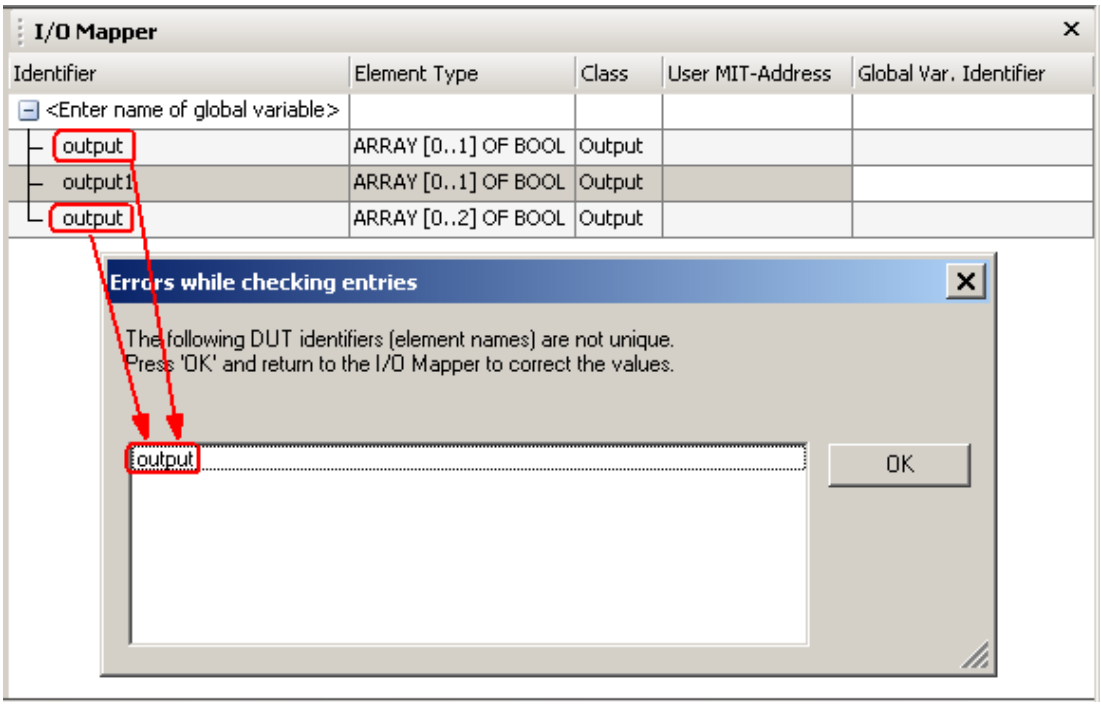
Note: the DUT elements of predefined DUTs (e.g. for ST1H-PB) cannot be changed. For these DUTs the element identifier, type and class are read-only.

Program code with declaration of DUT with entered element identifier:

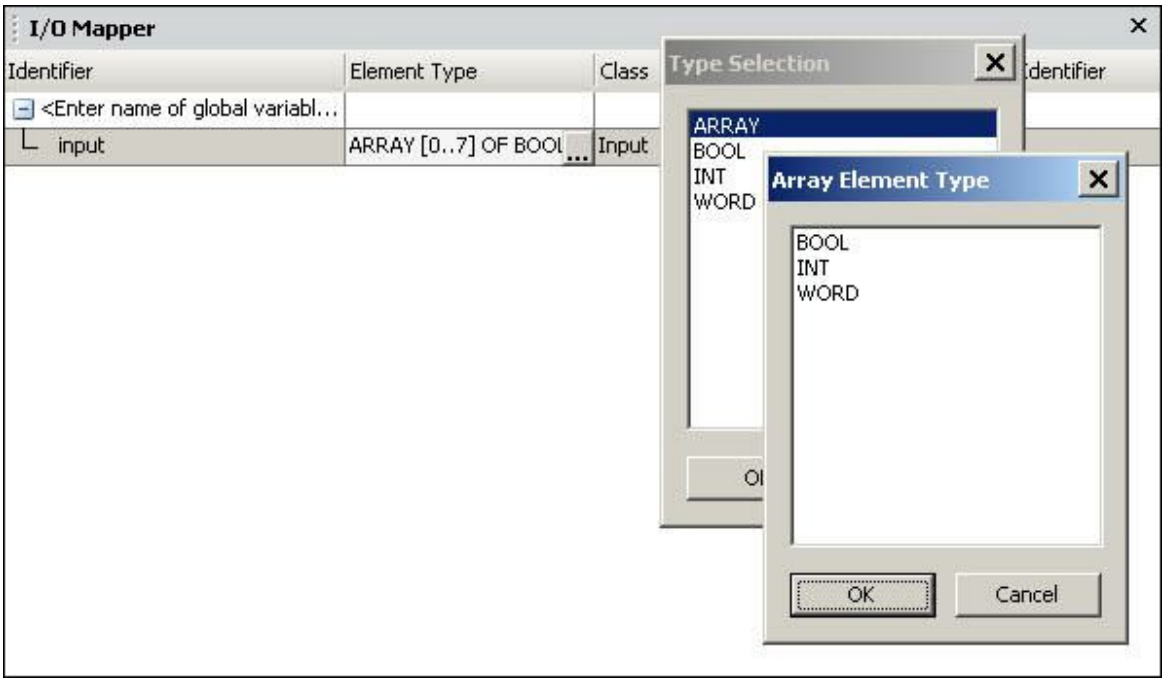
```
TYPE
```

```
    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, GX Configurator-DP gener-

ates 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.

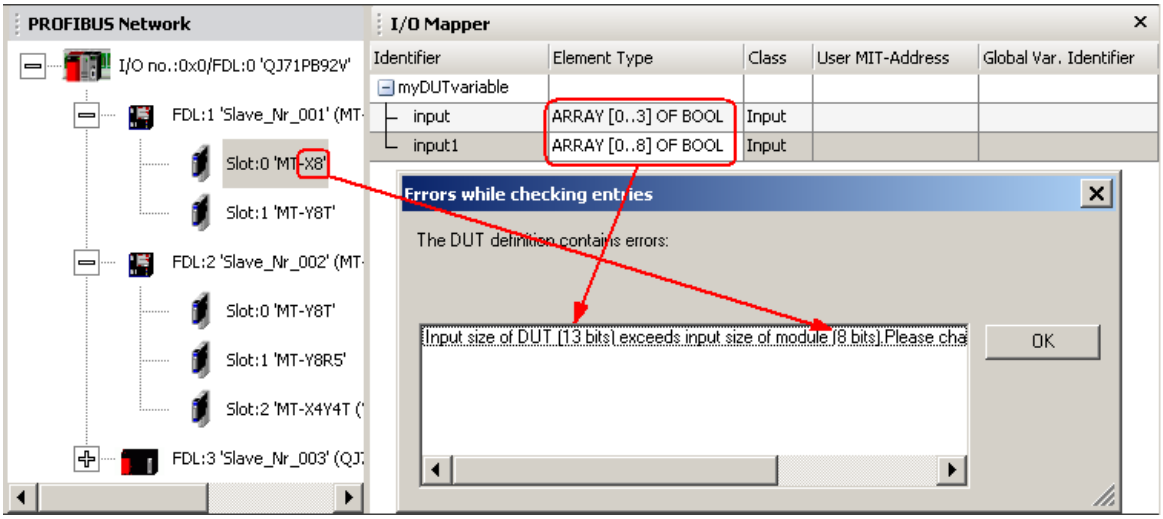
If the user selects the type ‘ARRAY’ in the first dialog, a second dialog is displayed to select the data type of the array elements. After the type selection dialog has been closed by pressing the OK button, the type text in the cell is updated. This text can be manually edited, e.g. to adjust the array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



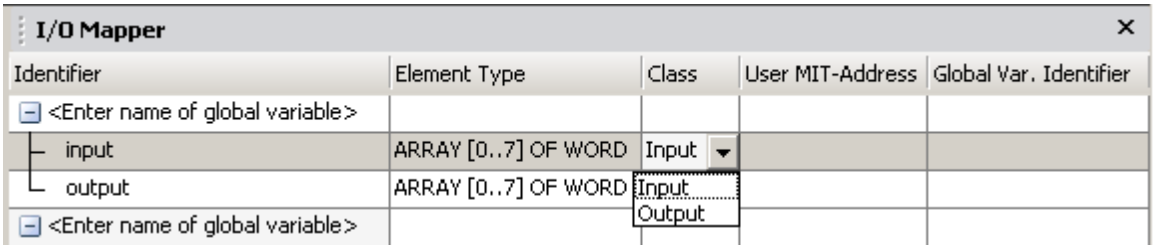
DUT elements, which are not of BOOL or ARRAY OF BOOL type, are automatically byte aligned. If for example a BOOL input element is followed by a WORD input element, the WORD element will be byte-aligned by inserting seven padding bits between the BOOL and the WORD element. The padding bits do not show up in the type definition, but are accounted for when assigning the device addresses in the global variable declaration.

```
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



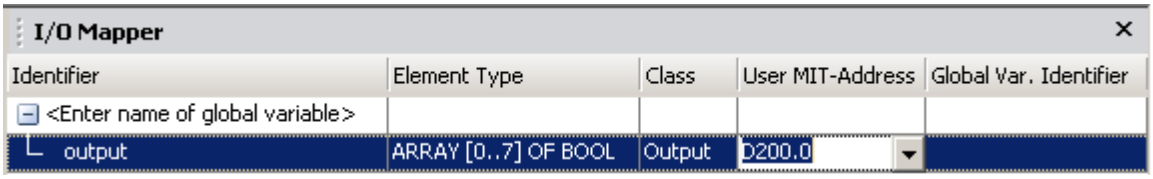
The class of a DUT element specifies the direction of the data transfer

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

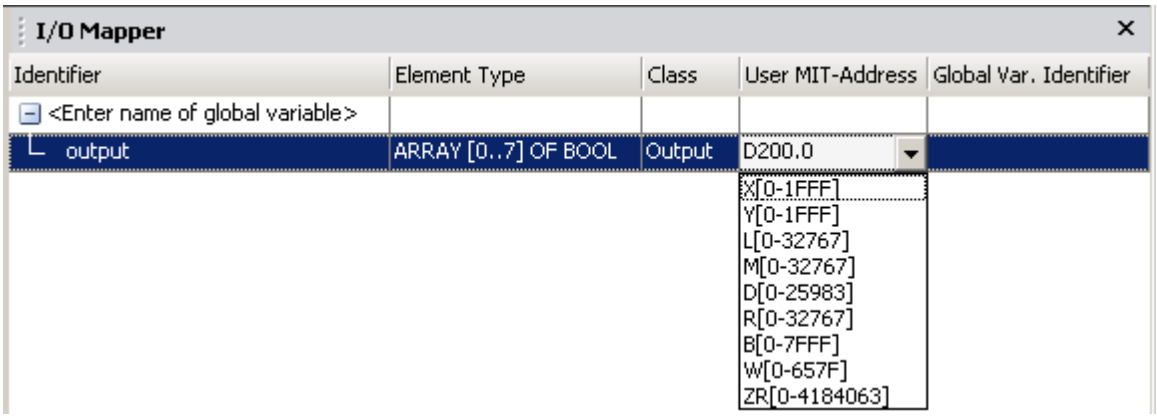
has both inputs and outputs, the user selects with the class property, whether the respective DUT element is located in the input or output area of the module.
To see the selection list click into the cell and click onto the button, which appears, or press **<F2>** to open the selection list.

User MIT-Address

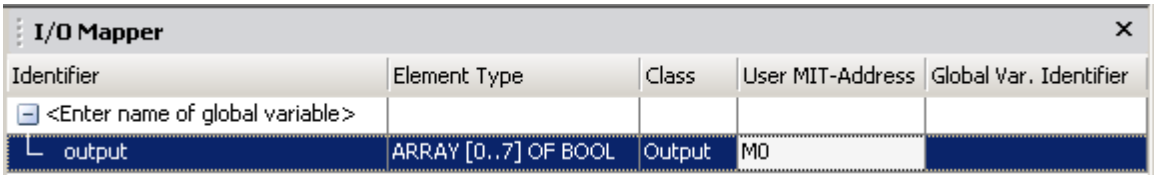


The user can assign an optional fixed device address to a DUT element. This device address will contain a copy of the respective DUT element. This feature benefits users, which always use the same device address for a certain function and do not want to use the symbolic access via a global variable name.

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.

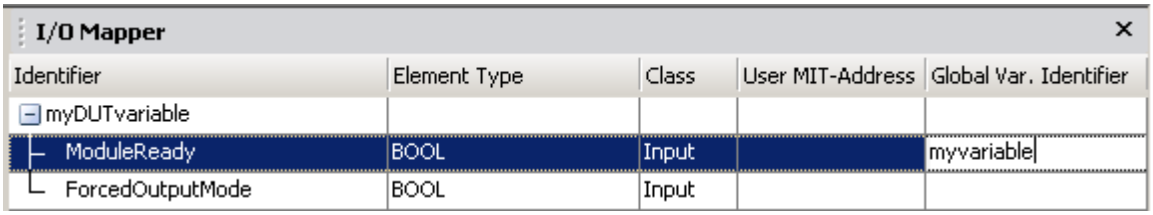


For BOOL elements the device must be a bit type or a word type with bit index.

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

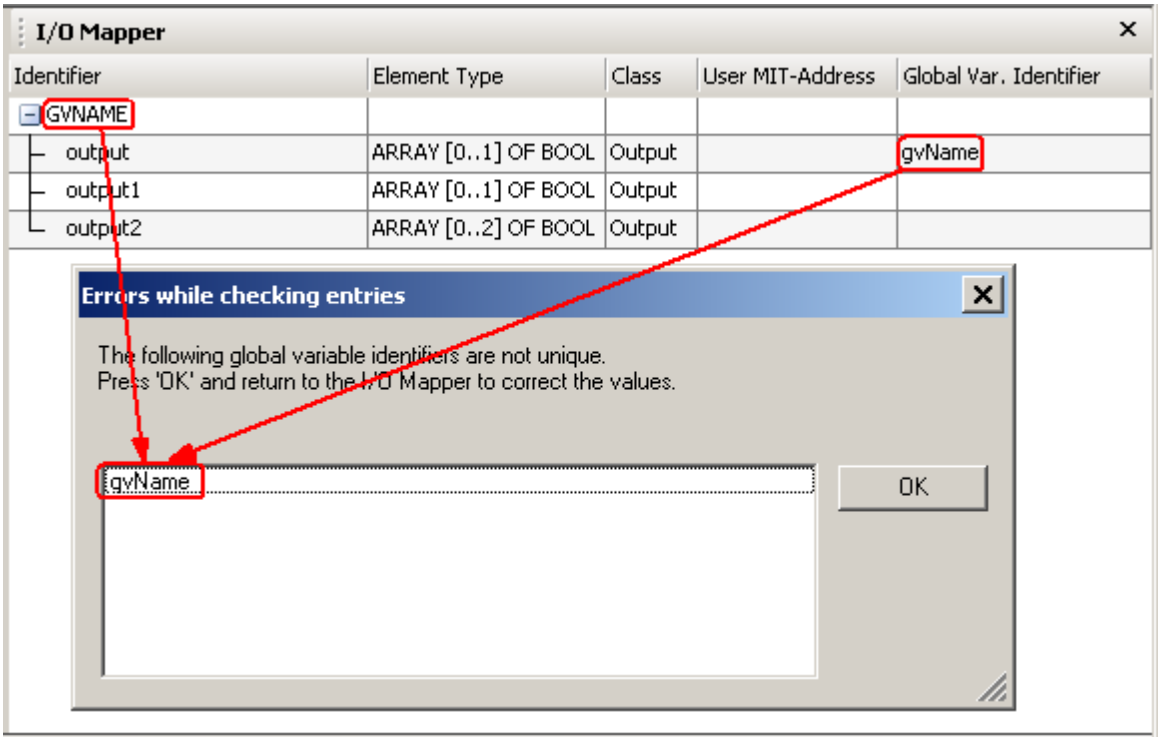
```
TYPE
     tHA4SLV12MOD2:
            STRUCT
                  ModuleReady: BOOL:=FALSE;
                  ForcedOutputMode: BOOL:=FALSE;
            END_STRUCT;
END_TYPE

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).

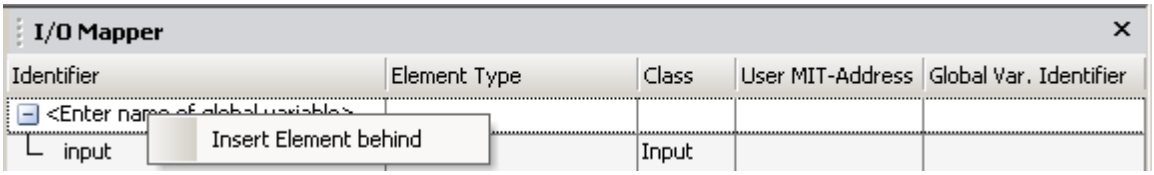


Note: the I/O mapping editor checks only the global variable names in the editor. A check of all variable names used in the project is done, when the POU is exported (see 'Check of Global Variable Identifiers').

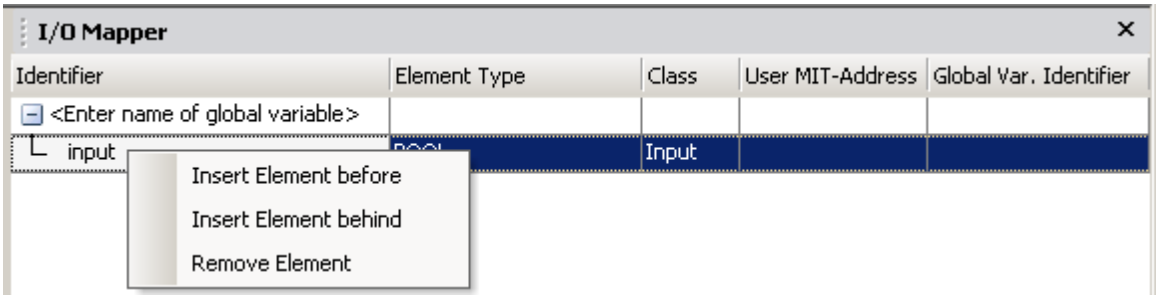
Insert/Remove DUT Elements

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

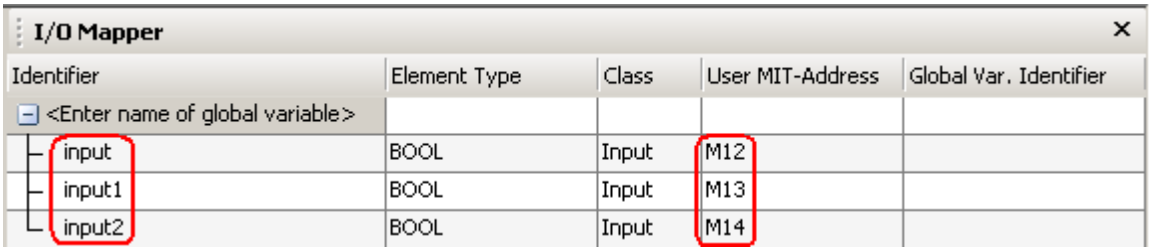


The user can change the structure of a DUT by adding or removing elements. The context menu in the DUT table contains the items

Menu Item	Function
Insert Element before	adds a new DUT element above the currently selected one

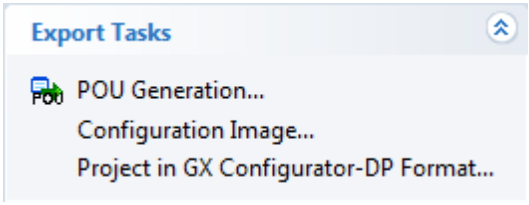
	If the new element is not the first one, its default settings are copied from the previous DUT element, identifier and MIT-address are incremented.
Insert Element behind	adds a new DUT element below the currently selected one The default settings of the new element are copied from the previous DUT element, 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 Generation	Generates import file and user library for import in GX Works2 and GX IEC Developer *For availability and restrictions please see the following section 'POU Generation'.*
Configuration Image	Generates the binary download configuration image and writes it to a file
Project in GX Configurator-DP Format	Exports project file in GX Configurator-DP file format. *This function is only available when GX Configurator-DP is integrated in* GX Works2.

POU Generation

This GX Configurator-DP function is not available in the following circumstances:

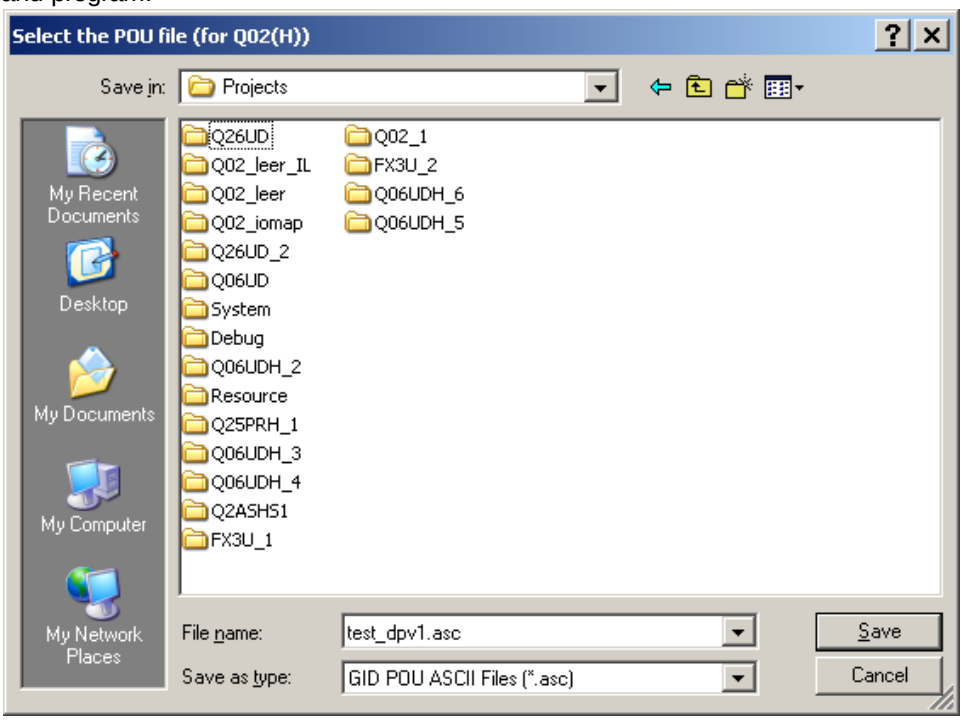
- for A-series CPUs
- for A(1S)J71PB92D
- for QJ71PB92D in operation mode '0'
- when using GX Configurator-DP integrated in GX Works2 in any other than the European version
- when using GX Configurator-DP integrated in the GX Works2 European version with GXW2 'simple'

projects except for Q-series Remote I/O

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.

This function generates PLC program code for GX Works2 (GXW2) and 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**. 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.

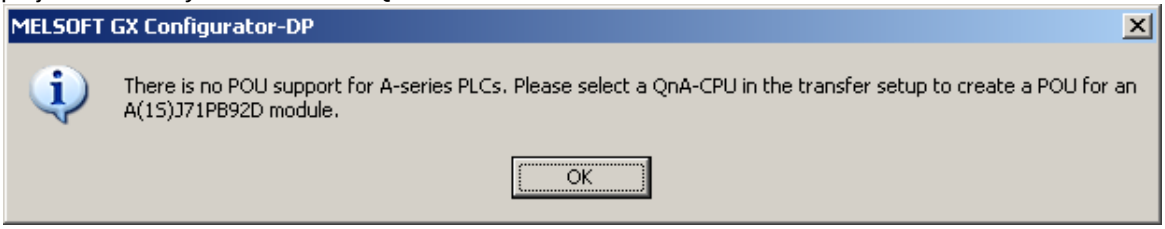
The user can select the directory and the name of the POU ASCII file. The file name must start with a letter and not have more than 24 characters. The file name is also used as name for user library and program.



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.

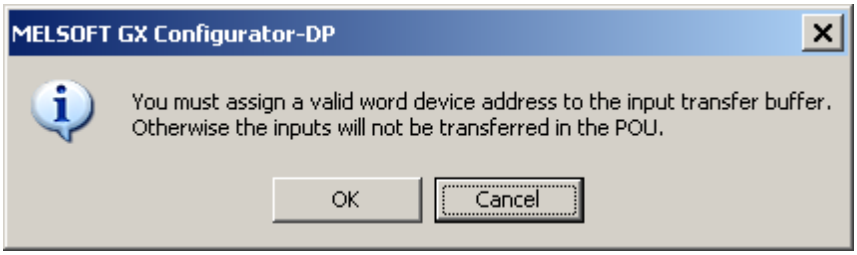
If in a A(1S)J71PB92D project the selected transfer setup references an A-series connection, no POU is exported. A message is displayed instead to inform the user that POUs for A(1S)J71PB92D projects can only be created for QnA CPUs.



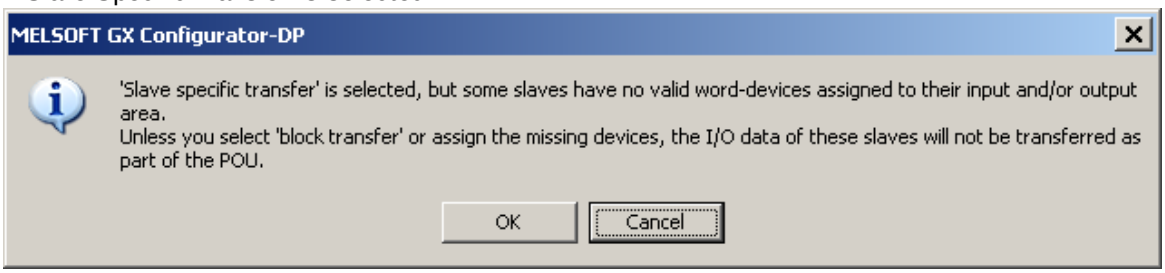
Check of Buffer Device Addresses

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.

If 'Block Transfer' is selected:

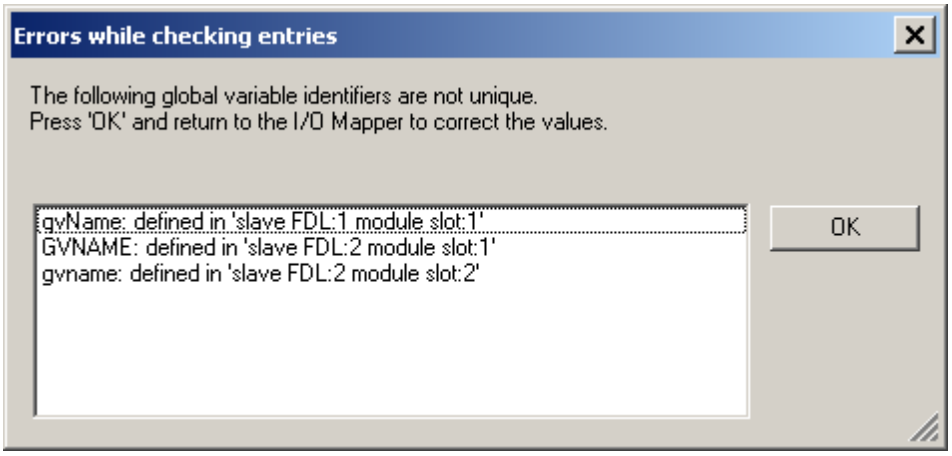


If 'Slave Specific Transfer' is selected:



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



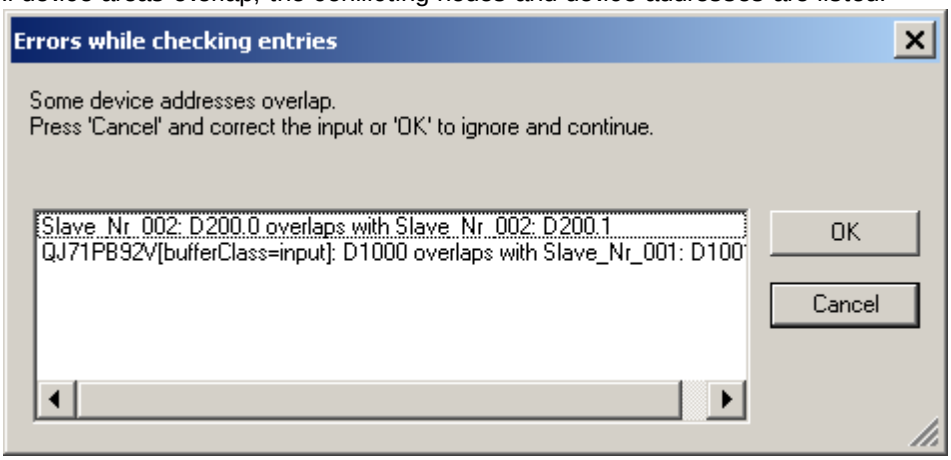
The variable names must be changed in the I/O Mapper, before POU and user library can be exported.

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

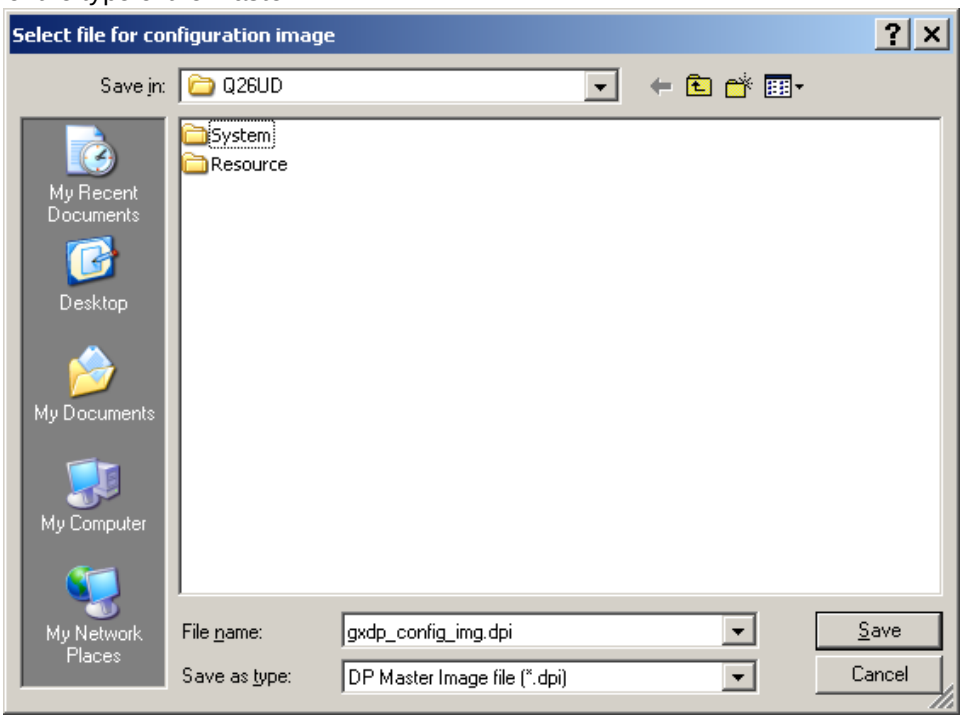
areas (see 'CPU Device Access'), are checked for conflicts.
If device areas overlap, the conflicting nodes and device addresses are listed.



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.

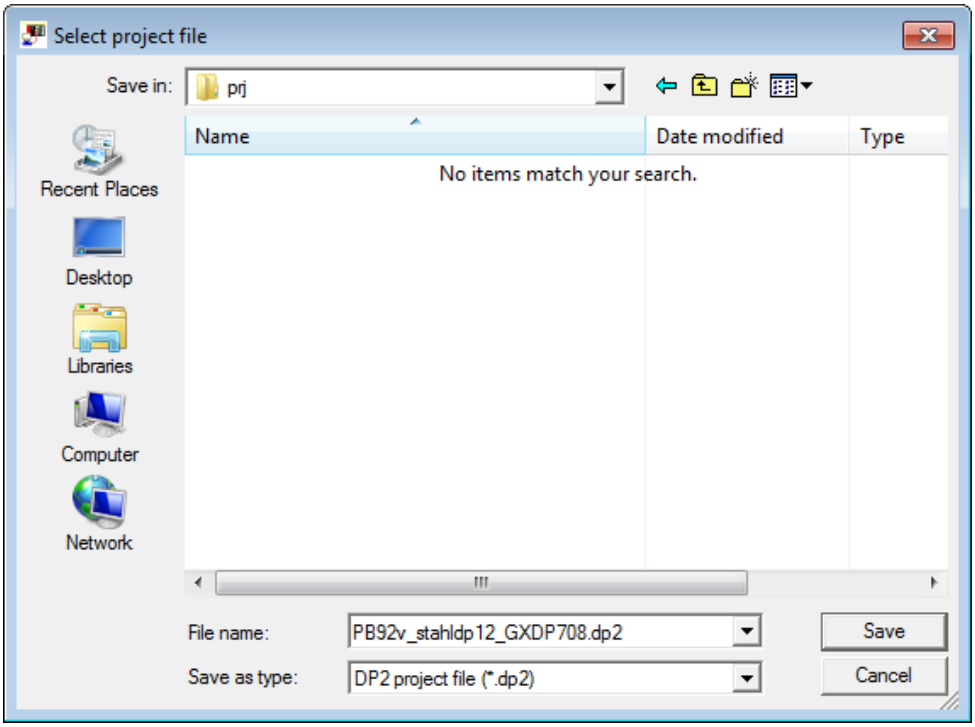
Configuration Image

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.

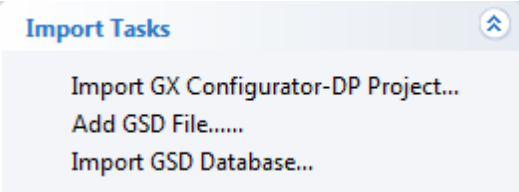


Project in GX Configurator-DP Format

This task item is anly available in the integrated version of GX Configurator-DP.
The user is prompted for a file path to store the current project into.



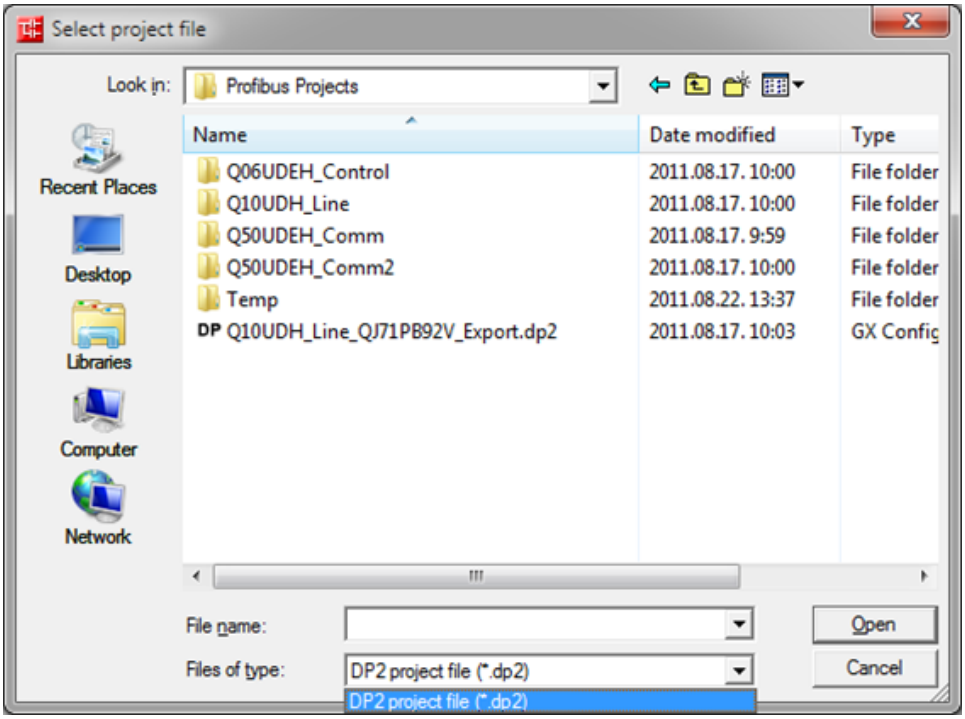
5.4 Import Tasks



Command	Description
Import GX Configurator-DP Project	Imports GX Configurator-DP project file (*.dp2, *.dpx). The behaviour is similar to the 'Open Project' menu item. *Only available in the integrated version of GX Configurator-DP*
Add GSD File	adds the contents of a GSD file to the device database
Import GSD Database	import device types from a GSD database or a project file

Import GX Configurator-DP Project

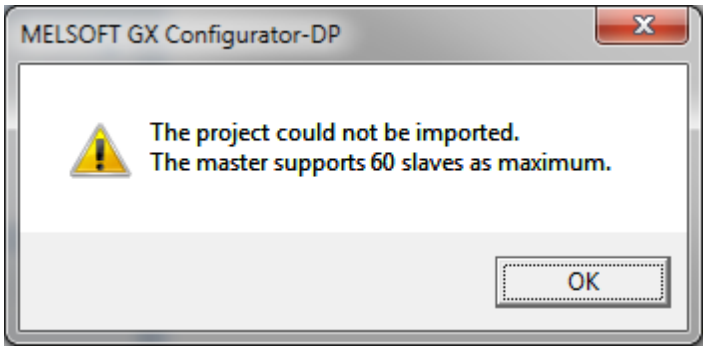
This task item is only available in the integrated version of GX Configurator-DP.



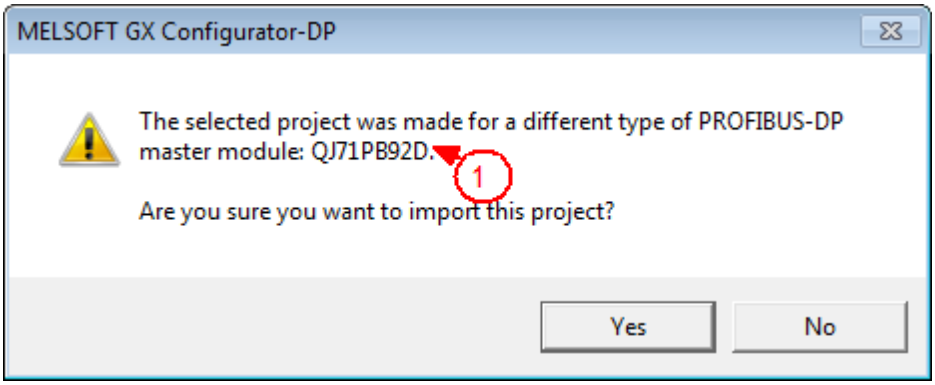
The starting I/O address stored in the GX Configurator-DP project will be ignored during import, and the starting I/O address of the module already set will be kept.

In case of master modules, importing a project created for another type of Q-series master will be possible with the following conditions:

- Settings which exist for both the source and the target module type will be imported without change.
- Settings which exist for the source module type but not for the target module type will not be imported.
- Settings which exist for the target module type but not for the source module type will be set to default.
- If the settings cannot be imported due to a hardware limitation, an error message will be displayed and the project will not be imported. For example, QJ71PB92D modules can have maximum 60 slaves, but in a QJ71PB92V project there may be more than 60, because QJ71PB92V modules support 125 slaves. In that case import will fail with this error message:

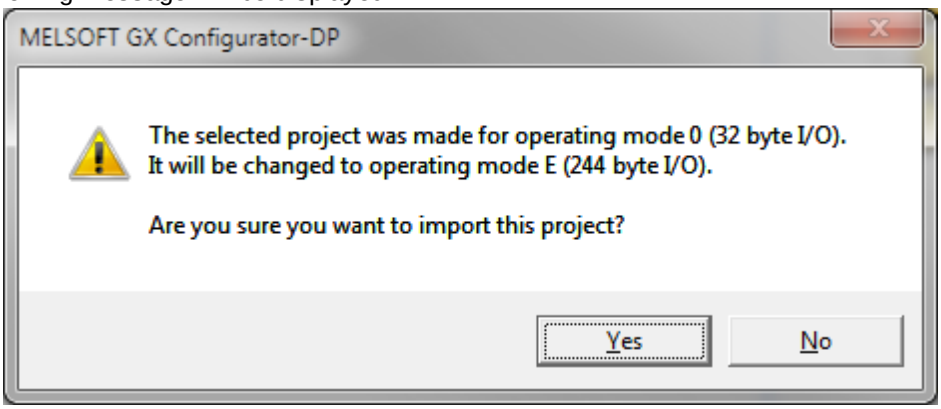


In case of master modules the following message will be displayed if the opened project has a different Q-series master module type than the current module:

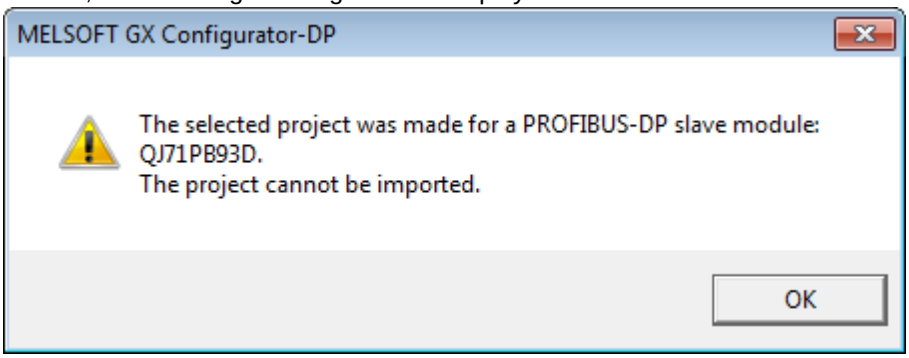


	Name	Description	Choices / Setting range	Default
1	-	Actual module type of project	QJ71PB92D, QJ71PB92V	-

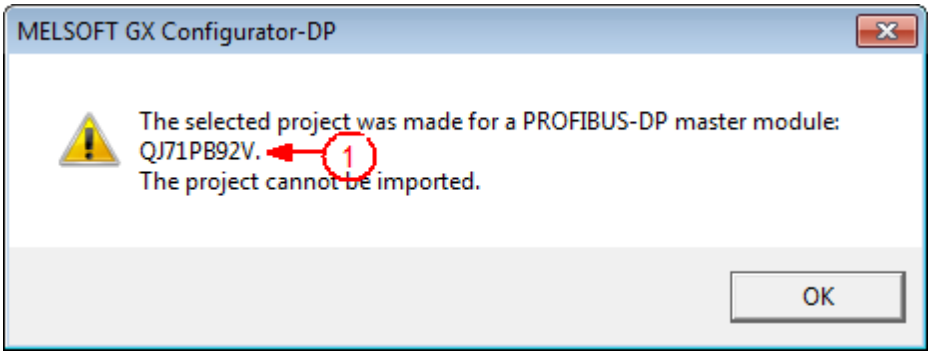
In addition, if a QJ71PB92D Mode 0 project is selected to be imported to a master module, the following message will be displayed:



In case a Q slave QJ71PB93D project is attempted to be import to the configuration of a master module, the following message will be displayed:

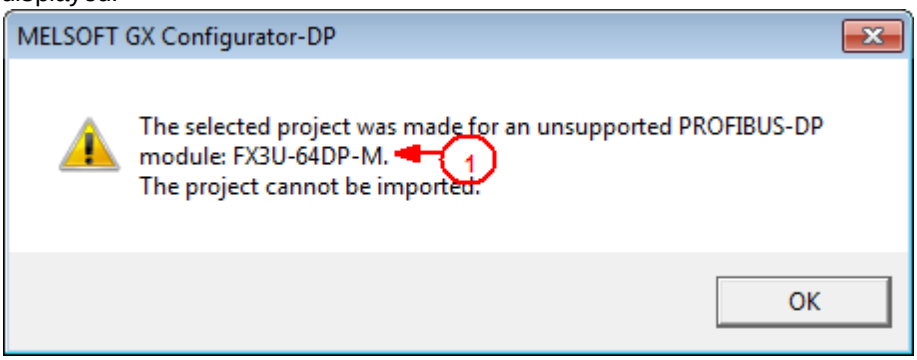


In case a Q-series master module project is attempted to be imported to a QJ71PB93D configuration, the following message will be displayed:



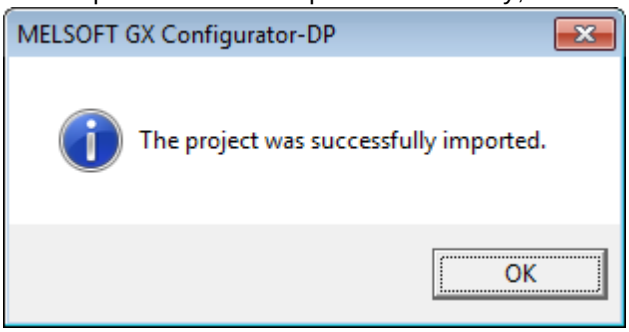
	Name	Description	Choices / Setting range	Default
1	-	Actual module type of project	QJ71PB92D, QJ71PB92V	-

In case an unsupported module's project is attempted to be imported, the following message will be displayed:

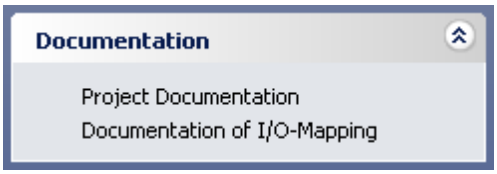


	Name	Description	Choices / Setting range	Default
1	-	Actual module type of project	-	-

If the Import has been completed succesfully, the following message is displayed:



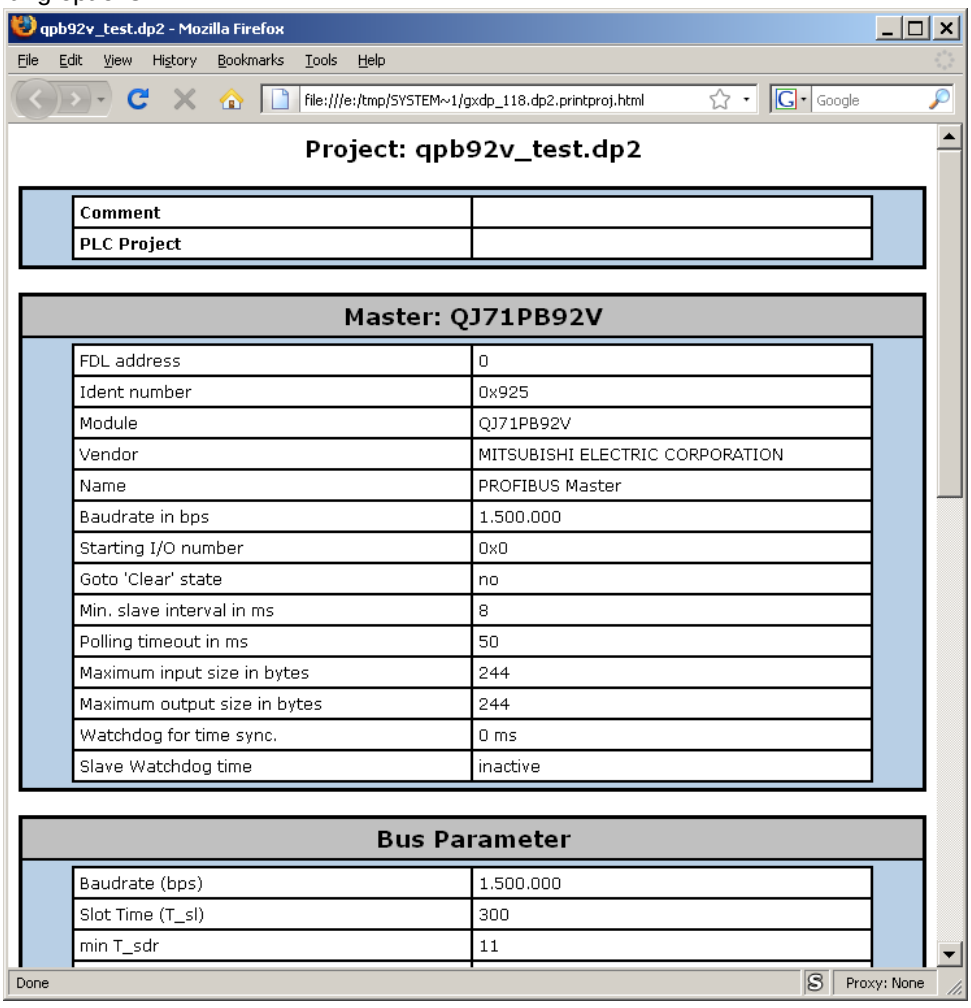
5.5 Documentation Tasks



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.



Note: the project documentation lists the selected modules of each slave. The 'slot index' is the sequential index of the module. It is not necessarily identical with its physical slot, as it is displayed for example by the configuration tool of the slave. At the end of the project document a note describes the slot index.

Input length (in bytes)	9
Output length (in bytes)	2

Slot index	Modul name	User parameter	Configuration data
0	MT-Y8T	00	20
1	MT-X8	00	10
2	MT-4AD	00000000	50505050
3	MT-Y8T	00	20

Slot index	The 'Slot index' table is the sequential index of the module. It is not necessarily identical with its physical slot, as it is displayed for example by the configuration tool of the slave.

Documentation of I/O-Mapping

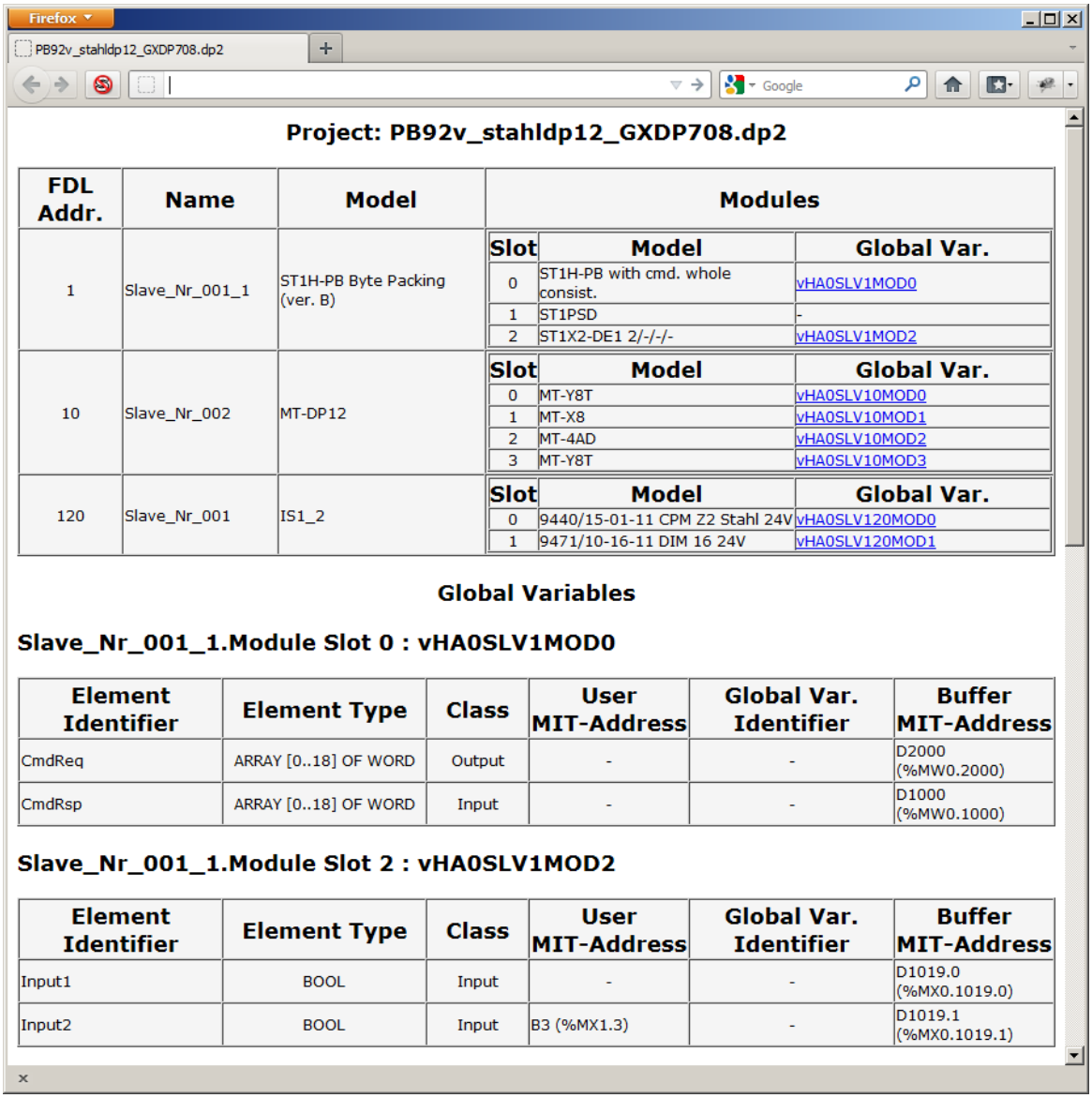
The I/O mapping information can be exported into a separate HTML document. This document lists the global variables for the DP slave modules. It also contains the definition of all exported DUT variables along with the buffer device addresses of each DUT element.

The device addresses are entered in MIT format in the GX Configurator-DP dialogs, but exported with the POU in IEC format. Therefore both formats are displayed in the columns for user and buffer MIT address. The IEC address is displayed in brackets next to the corresponding MIT address.

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.



Project: PB92v_stahldp12_GXDP708.dp2

FDL Addr.	Name	Model	Modules

Slot	Model	Global Var.
0	ST1H-PB with cmd. whole consist.	vHA0SLV1MOD0
1	ST1PSD	-
2	ST1X2-DE1 2/-/-/-	vHA0SLV1MOD2

FDL Addr.	Name	Model
10	Slave_Nr_002	MT-DP12

Slot	Model	Global Var.
0	MT-Y8T	vHA0SLV10MOD0
1	MT-X8	vHA0SLV10MOD1
2	MT-4AD	vHA0SLV10MOD2
3	MT-Y8T	vHA0SLV10MOD3

FDL Addr.	Name	Model
120	Slave_Nr_001	IS1_2

Slot	Model	Global Var.
0	9440/15-01-11 CPM Z2 Stahl 24V	vHA0SLV120MOD0
1	9471/10-16-11 DIM 16 24V	vHA0SLV120MOD1

Global Variables

Slave_Nr_001_1.Module Slot 0 : vHA0SLV1MOD0

Element Identifier	Element Type	Class	User MIT-Address	Global Var. Identifier	Buffer MIT-Address
CmdReq	ARRAY [0..18] OF WORD	Output	-	-	D2000 (%MW0.2000)
CmdRsp	ARRAY [0..18] OF WORD	Input	-	-	D1000 (%MW0.1000)

Slave_Nr_001_1.Module Slot 2 : vHA0SLV1MOD2

Element Identifier	Element Type	Class	User MIT-Address	Global Var. Identifier	Buffer MIT-Address
Input1	BOOL	Input	-	-	D1019.0 (%MX0.1019.0)
Input2	BOOL	Input	B3 (%MX1.3)	-	D1019.1 (%MX0.1019.1)

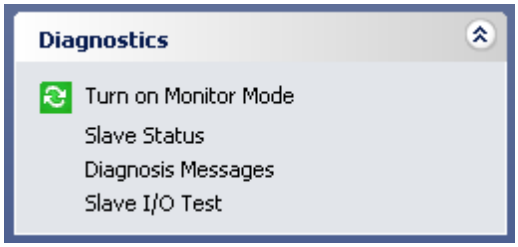
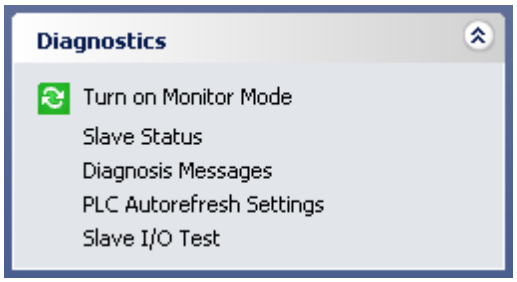
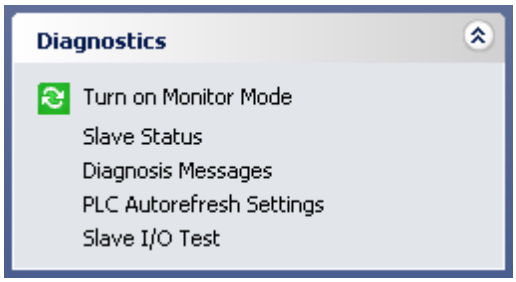
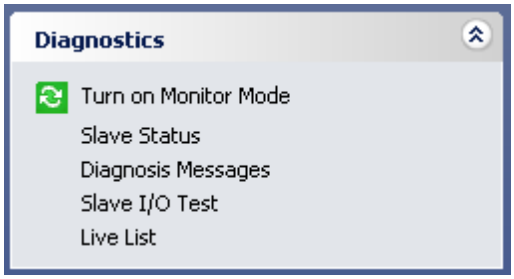
The I/O mapping documentation is also very useful for users of GX Developer (GD). Because GX Configurator-DP only generates code for GX IEC Developer (GID), GD users cannot import the PLC code exported from GXDP. They can however lookup the device addresses of PROFIBUS I/O points in the documentation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

Note: bit devices, which have been assigned to the transfer buffers, are not supported by I/O mapping. They are equivalent to having no device address assigned. Therefore the 'Buffer MIT Address' column remains empty for bit devices.

5.6 Diagnostics Tasks

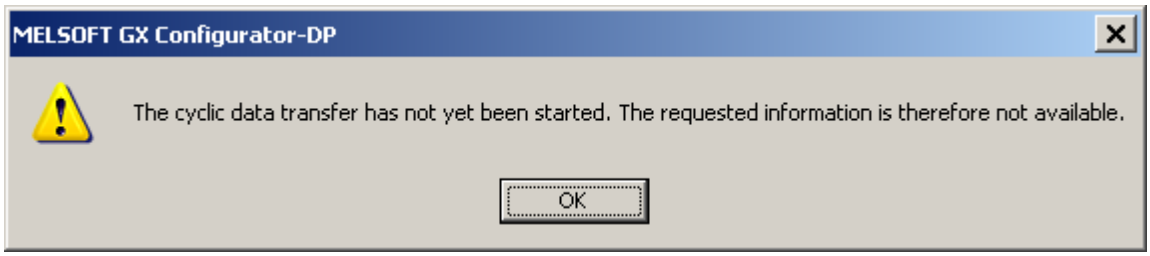
The available diagnostic functions depend on the type of master module selected in the current project.

Note: In the integrated version of GX Configurator-DP the diagnostic function are accessible via the 'Tool' menu of the GX Works2 application.

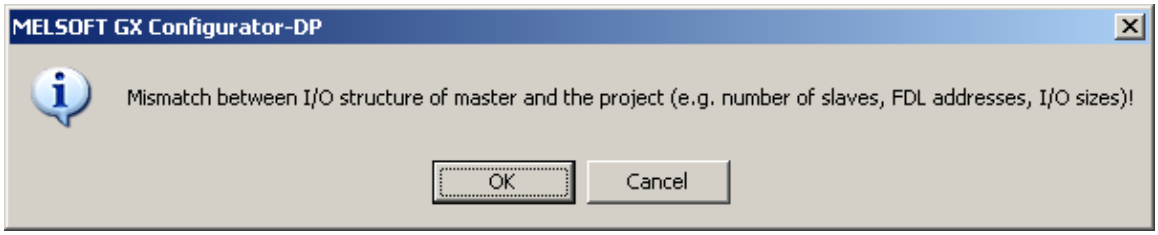
A(1S)J71PB92D		not available in the integrated version of GX Configurator-DP
QJ71PB92D		available from the 'Tool' menu in the integrated version of GX Configurator-DP
QJ71PB92V		available from the 'Tool' menu in the integrated version of GX Configurator-DP
FX3U-64DP-M		not available in the integrated version of GX Configurator-DP

Diagnostic functions, which access the configuration of the master, can only be executed, if cyclic data transfer has been started. Extended information like slave-specific error messages require additionally that 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 cyclic data transfer is stopped, an error message is displayed.

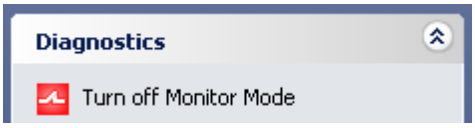


If the I/O structure of the master (i.e. number of slaves, their FDL addresses and I/O sizes) differs from the project:

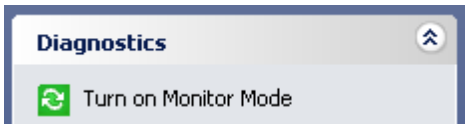


Turn on/off Monitor Mode

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



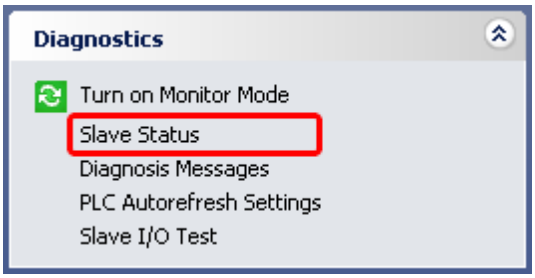
Selecting the item 'Turn off Monitor Mode' stops the monitoring and changes the application to ‘edit’ mode. The icon and the text of the task item change together with the change from ‘Monitor’ to ‘Editor’ mode.

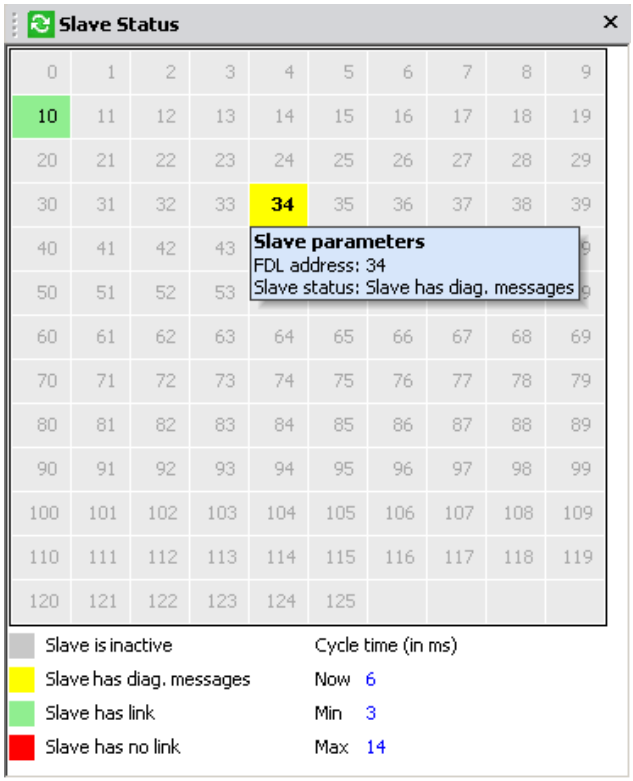


If diagnostic views with monitoring function (‘Slave Status’, ‘Diagnostic Messages’) are open, selecting ‘Turn on Monitor Mode’ activates the monitoring in these views. The monitoring in the ‘Slave I/O Test’ view must be started manually within the view.

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

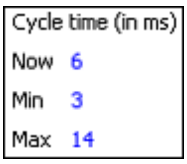




The purpose of the 'Slave Status Matrix' is to provide a fast overview of the communication situation within the PROFIBUS network. A two-dimensional matrix of rectangles shows all possible device addresses within a PROFIBUS network. The state of a slave with a certain FDL address is signaled by the color 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 (restriction for A(1S)J71PB92D and QJ71PB92D see note below)
yellow	slave has sent diagnostic information
green	slave is included in the cyclic data transfer (has a link) (restriction for A(1S)J71PB92D and QJ71PB92D see note below)
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) (restriction for A(1S)J71PB92D and QJ71PB92D see note below)

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.



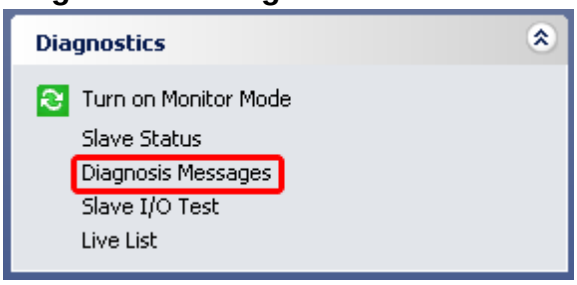
Below the grid with the slave states the view shows the current actual bus cycle time, which is continuously measured by the master. Additionally the minimum and the maximum of the bus cycle time, since the data transfer has been started, are displayed (values only provided by QJ71PB92V

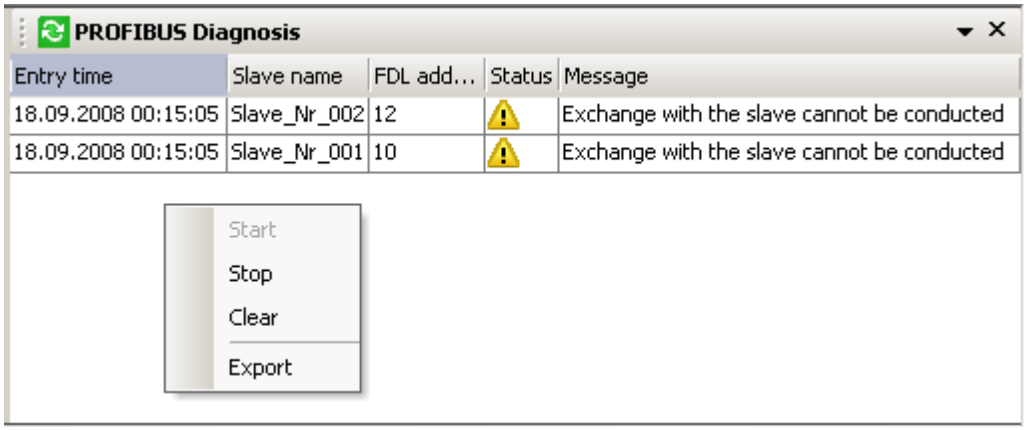
and FX3U-64DP-M).

Note: the older PROFIBUS master modules AJ71PB92D and QJ71PB92D do not provide the states 'active/ inactive' and 'link/no link' online. This information is obtained by:

1. *active/inactive*: the 'active'state of the slave in the current project, which has the same FDL address, is displayed, if the I/O structure of the master matches the one of the active project
2. *link/no link*: if the slave is active and the 'has diag. messages' flag is not set, the slave state is 'link' (i.e. green). The state 'no link' (i.e. red) is never displayed.

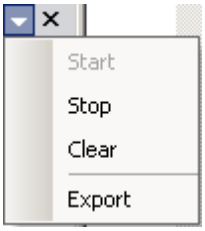
Diagnosis Messages





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)



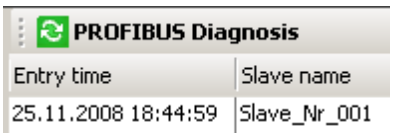
A popup menu can be opened from the caption, which provides the functions

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

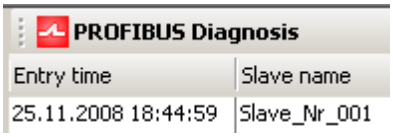
The same popup menu is also opened as context menu, when the right-mouse button or the 'context-menu'-key on the keyboard are clicked.

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

Online

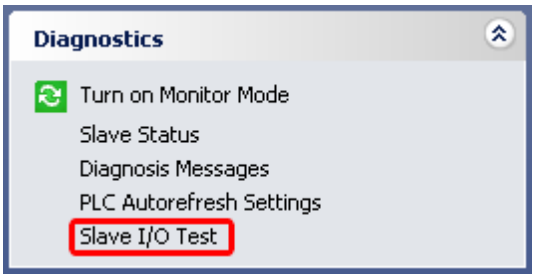


Offline

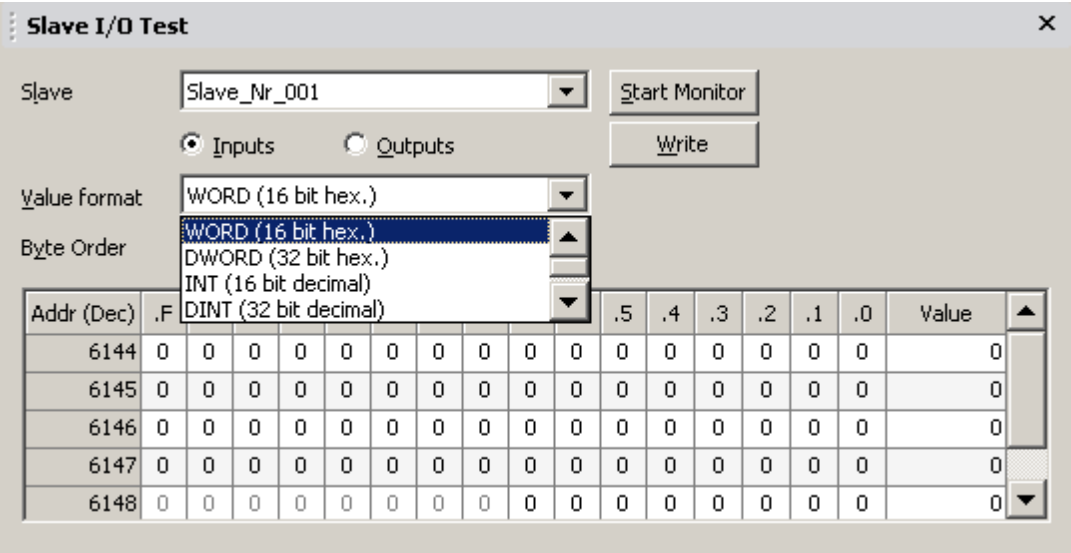


Note: the master modules AJ71PB92D and QJ71PB92D have a limited storage capacity for diagnostic messages. They can only store eight standard messages and extended diagnostic information only for one event. This can result in diagnostic messages not being stored and thus not displayed.

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		

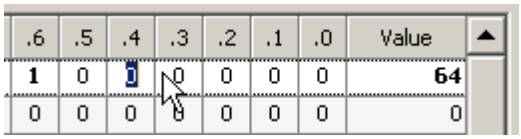
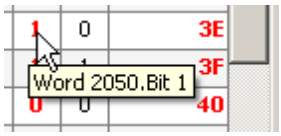
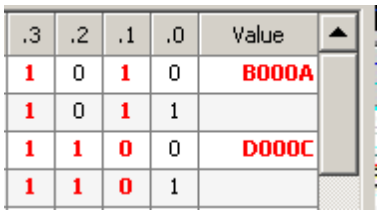
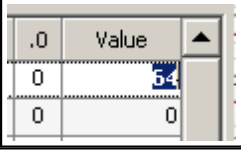
Value formats

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

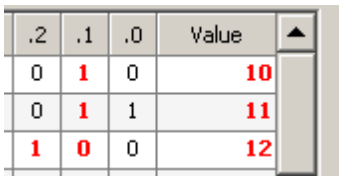
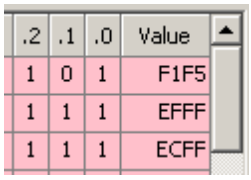
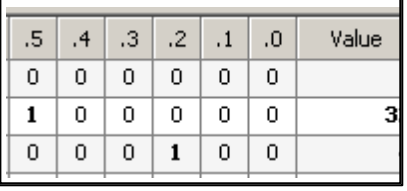
Byte order

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.  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.	
	If there is a communication break during monitoring between PC and PLC, the background of the table is colored in light red to indicate to the user that the values are not updated. While monitoring is active, GX Configurator-DP checks the connection and reconnects, if the PLC is online. The background then changes back to the standard color.	
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.	

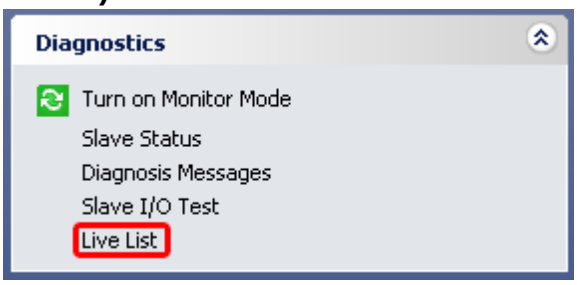
.2	.1	.0	Value
0	1	0	10
0	1	1	11
1	0	0	12

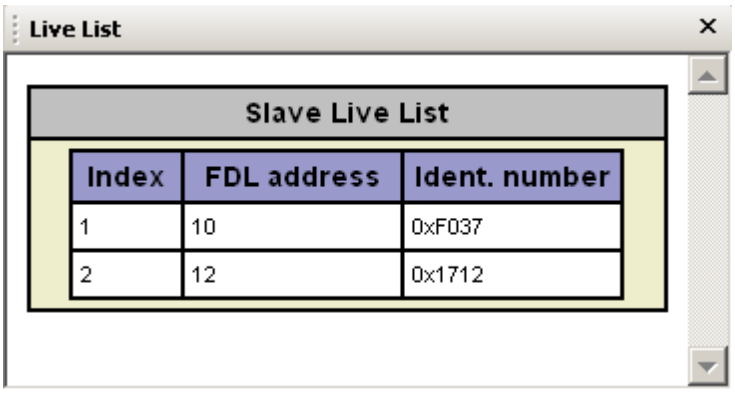
.2	.1	.0	Value
1	0	1	F1F5
1	1	1	EFFF
1	1	1	ECFF

.5	.4	.3	.2	.1	.0	Value
0	0	0	0	0	0	
1	0	0	0	0	0	3
0	0	0	1	0	0	

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 in stand alone version of GX Configurator-DP)

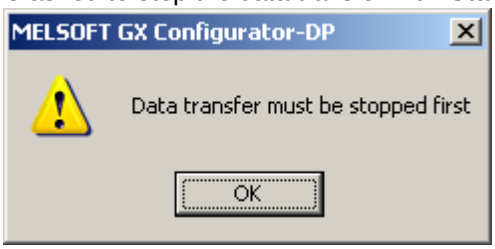




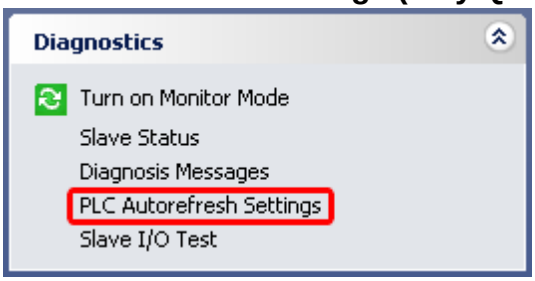
This function is very useful for detecting the network address and the ID of slave devices in a PROFIBUS network. The master scans the PROFIBUS address range and returns the FDL address and the ident number of each slave, which is connected to the network (slave must be powered on to

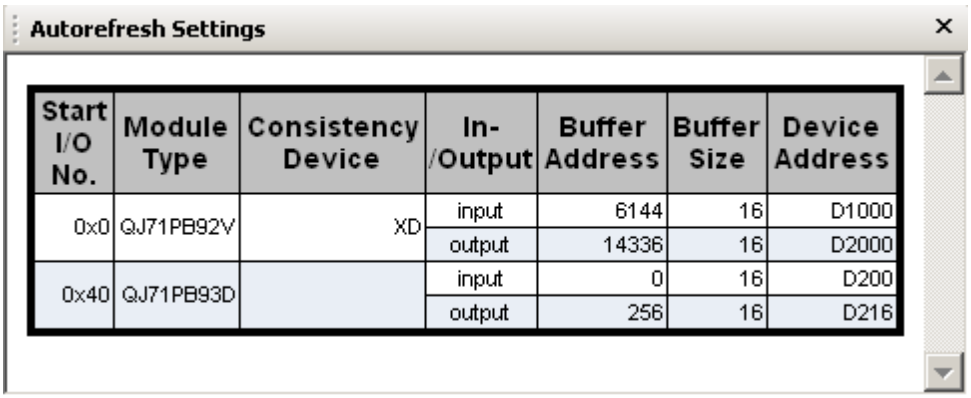
be recognized). The slaves found are displayed in a list.

Note: the 'Live List' cannot be accessed during data transfer. This condition is checked and the user is asked to stop the data transfer with 'Start/Stop PROFIBUS'.



PLC Autorefresh Settings (only Q-series)





Start I/O No.	Module Type	Consistency Device	In-/Output	Buffer Address	Buffer Size	Device Address
0x0	QJ71PB92V	XD	input	6144	16	D1000
			output	14336	16	D2000
0x40	QJ71PB93D		input	0	16	D200
			output	256	16	D216

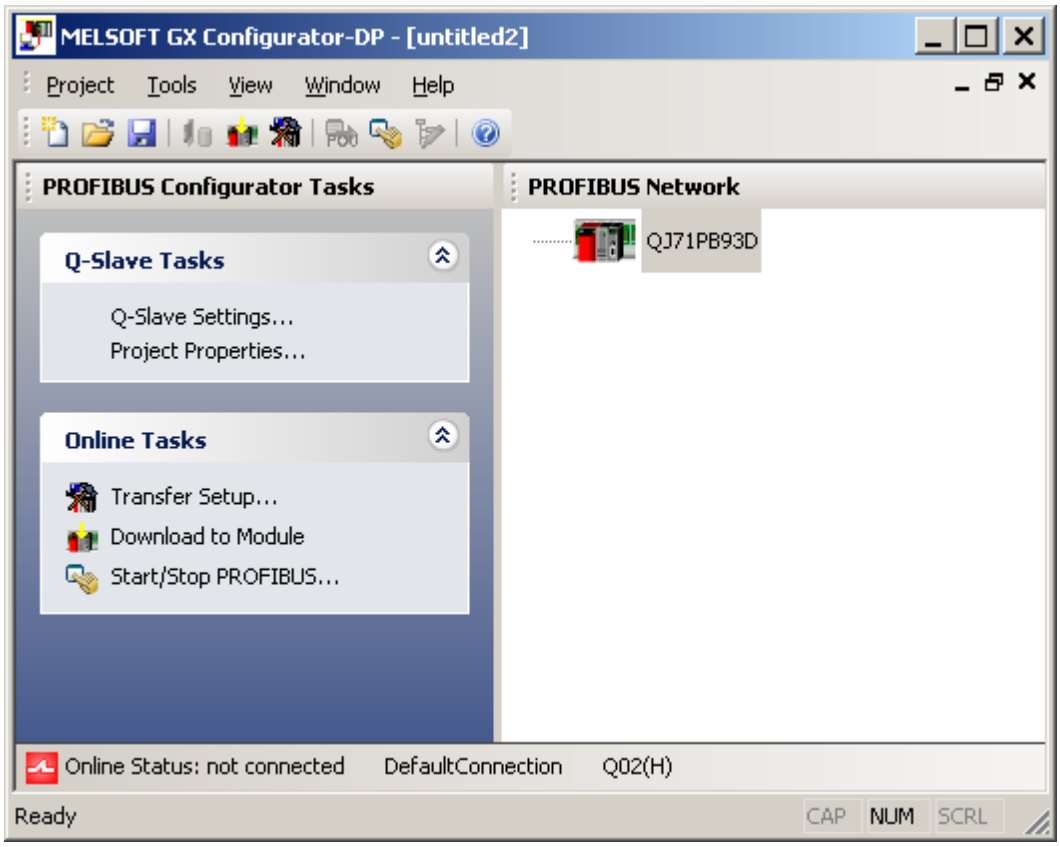
This function reads the IPARAM.QPA file from the CPU, decodes it and displays the settings sorted by starting I/O number.
The table contains the following columns:

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

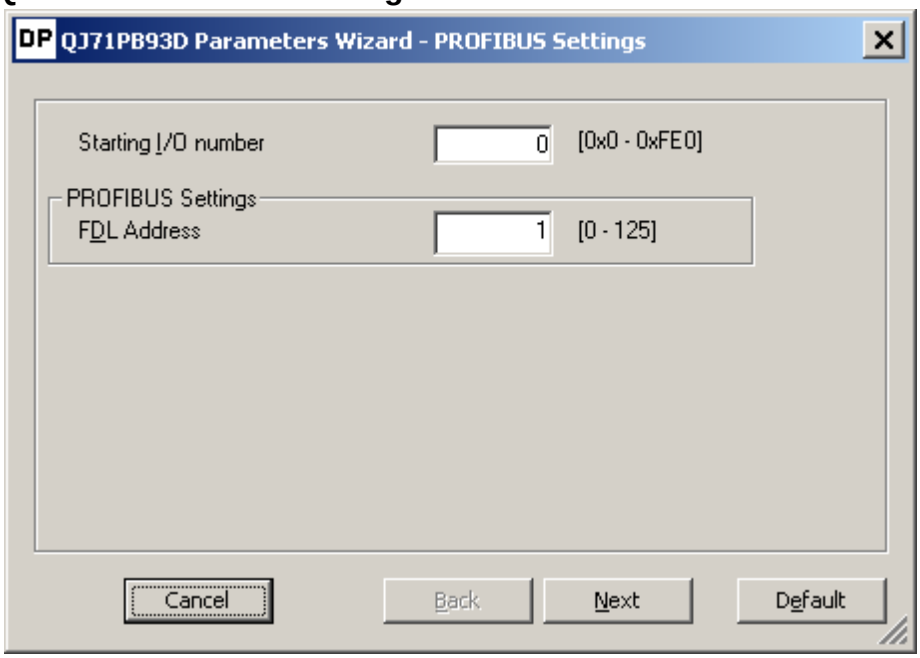
Note: this function cannot read autorefresh settings from a Q-series Remote I/O.

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 GX Configurator-DP.



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 *is read only in the integrated version of GX Configurator-DP*	[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	max size of output area	0 – 122 words	0

Name	Description	Choices / Setting range	Default
words)			
Input CPU Device	start address of the device area, the inputs are copied to	device types supported by autorefresh	D1000 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

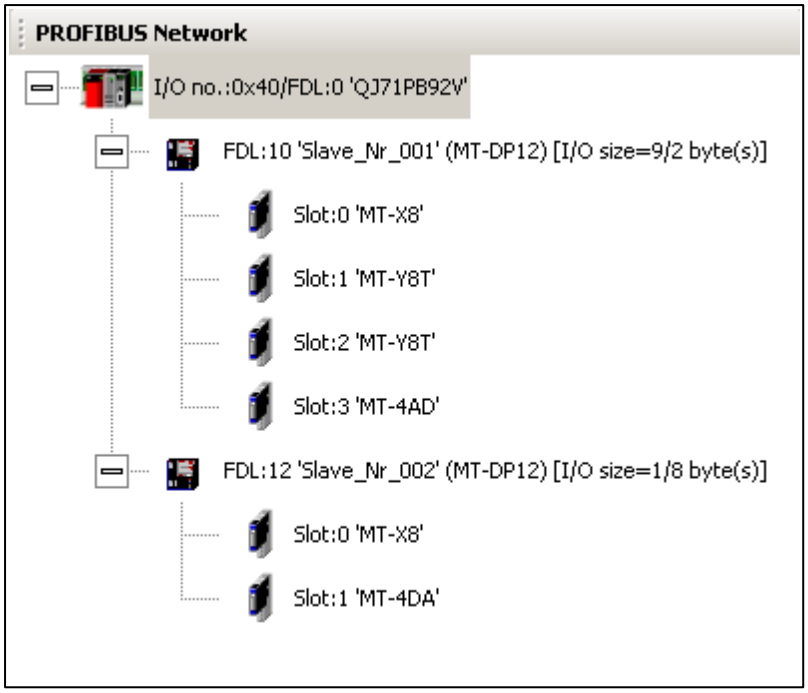
The consistency function can be activated for System Q CPUs from OS version B (Sep. 2000). The consistency function interlocks simultaneous access to the buffer memory by the CPU and the DP slave. This way, data consistency especially required for high-speed applications is automatically ensured.

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.

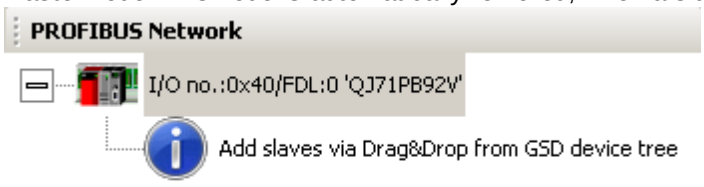
7 PROFIBUS Network Tree



The following nodes construct the project tree

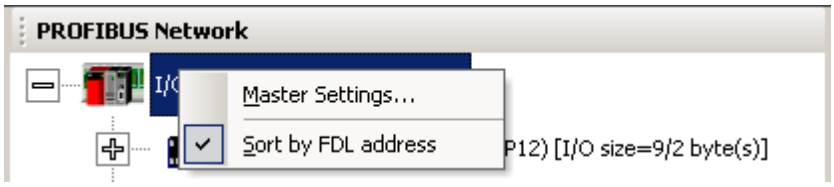
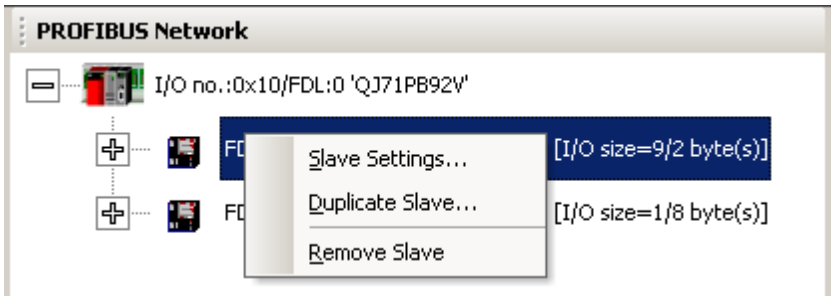
Level	Type	Icon	Display
1	Master	one icon for AJ71PB92D, QJ71PB92D and QJ71PB92V one icon for FX3U-64DP-M	I/O:<starting I/O no.>/FDL: <FDL address> '<type name>'
2	Slave	slave type specific icon from device database	FDL:<FDL address> '<user name>' (<type name>) [I/O size=<nr input bytes>/<nr output bytes> byte(s)]
3	Module	same fixed icon for all module types	Slot:<slot (sequential index)> '<type name>' **Note**: the slot number is the sequential index of the module. It is not necessarily identical with its physical slot, as it is displayed for example by the configuration tool of the slave.

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.

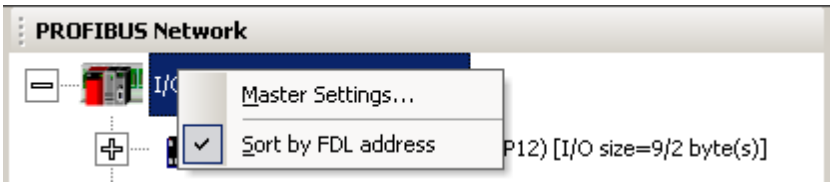
Remove Slave

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.

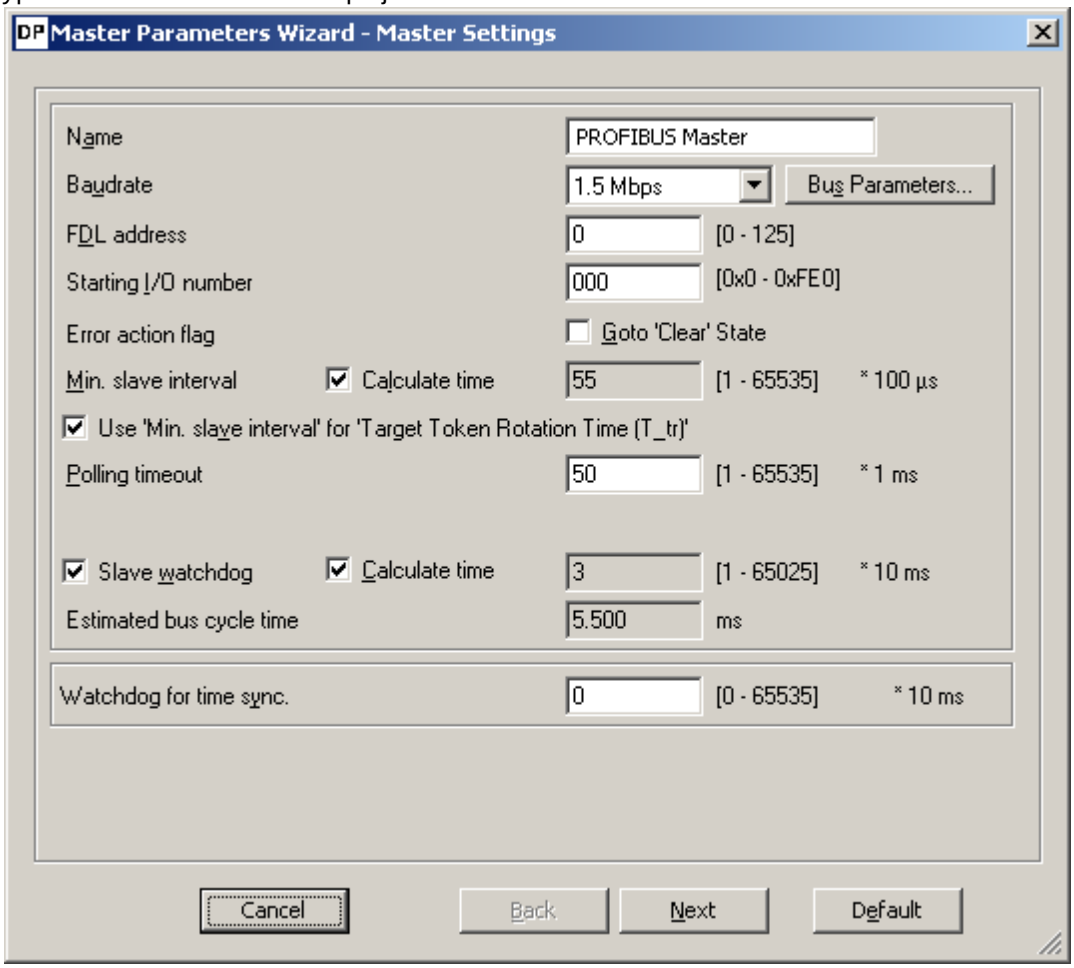
7.1 Master Parameters Wizard

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



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 communica-	9.6 kBd – 12	1.5 MBd

Name	Description	Choices / Setting range	Default
	tion. The selected baud rate must be supported by all slaves.	MBd	
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 *If integrated this address will be set in the intelligent function module properties dialog or in the I/O assignment page of the PLC parameter dialog*	0 - 0xFE0 (Qn,QnA/A) 0 – 7 (FX) *in the integrated version of GX Configurator-DP this edit field is disabled*	0 *disabled when integrated in GX Works2*
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.) For the PLC application this means: when a network error occurs, all outputs of the network are turned OFF and no diagnostic information from the slaves is returned.	selected / not selected	not selected
Calculate time	if selected, the min slave interval is calculated from the estimated bus cycle time	selected / not selected	selected for new projects
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 applied to all configured slaves.	1 – 65535	= estd. bus cycle time
Use 'Min. slave interval' for 'Target Token Rotation Time (T_tr)'	if selected, the target token rotation time in the bus parameters is set to the value of min. slave interval. This option should not be selected, if the PROFIBUS network contains multiple masters. In that case T_tr must be set to the sum of the min slave intervals of all masters.	selected / not selected	selected for new projects
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	This parameter defines the period of time during which the master module notifies the slaves of its operation status. This time must	T_wd * 6 – 65535	100

Name	Description	Choices / Setting range	Default
(only AJ71PB92D and QJ71PB92D)	be at least six times the watchdog time for all slaves		
Slave watchdog	This checkbox enables the watchdog checking in all slaves.	selected / not selected	selected for new projects
Calculate time	If selected, the WD time is automatically set to five times the maximum of the estimated bus cycle time and the minimum slave interval. The edit field for the slave watchdog time is readonly. If not selected, the user must manually enter an appropriate watchdog time.	selected / not selected	selected for new projects
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 * target token rotation time (T_tr)
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		-
Next	Proceed to next wizard page		Default button
Default	Set parameters back to their default values		

Calculation of Watchdog and Other Timing Parameters

The watchdog function of PROFIBUS ensures that the slaves detect a loss of the communication with the master. The time interval without requests from the master before detecting a disconnect must exceed the maximum duration of bus cycles. The actual bus cycle time depends on the I/O size to be transferred, the response times from the slaves, the baudrate and acyclic messages. The parameter 'min slave interval' defines the poll cycle and must not be less than the theoretically possible cycle time, which is displayed as 'estimated bus cycle time'.
The 'target token rotation time' (T_tr) specifies, when a master will regain the token to exchange I/O data with its slaves. For a single master its min slave interval determines the token rotation time.
In a multi-master PROFIBUS network the 'target token rotation time' (T_tr) is at least the sum of the min slave intervals of all masters.For the current master configuration GX Configurator-DP calculates an estimated bus cycle time, which is displayed in the 'Master Settings'. This time can be used as base for setting the min slave interval and the target rotation time.
If the option 'Calculate time' for the 'min slave interval' parameter and the option 'Use min slave interval for T_tr' are set (default for new projects), the timings are set as

T_min_slave_interval = T_estd_bus_cycle

and

T_tr = T_min_slave_interval

If the watchdog function is enabled (default for new projects), selecting the ‘Calculate time’ option automatically adjusts the watchdog time T_wd to five times the target token rotation time T_tr.

T_wd = 5 * T_tr

The estimated bus cycle time is adjusted, when relevant parts of the PROFIBUS configuration are changed, e.g. the baudrate or the selected slaves and/or slave modules.

If the proposed watchdog time does not suit the particular application, deselect the option ‘Calculate time’. The field with the watchdog time is enabled and a watchdog time within the limits imposed by PROFIBUS can be entered. This time will not automatically be modified, but must be adjusted by the user.

Calculation of the Estimated Bus Cycle Time

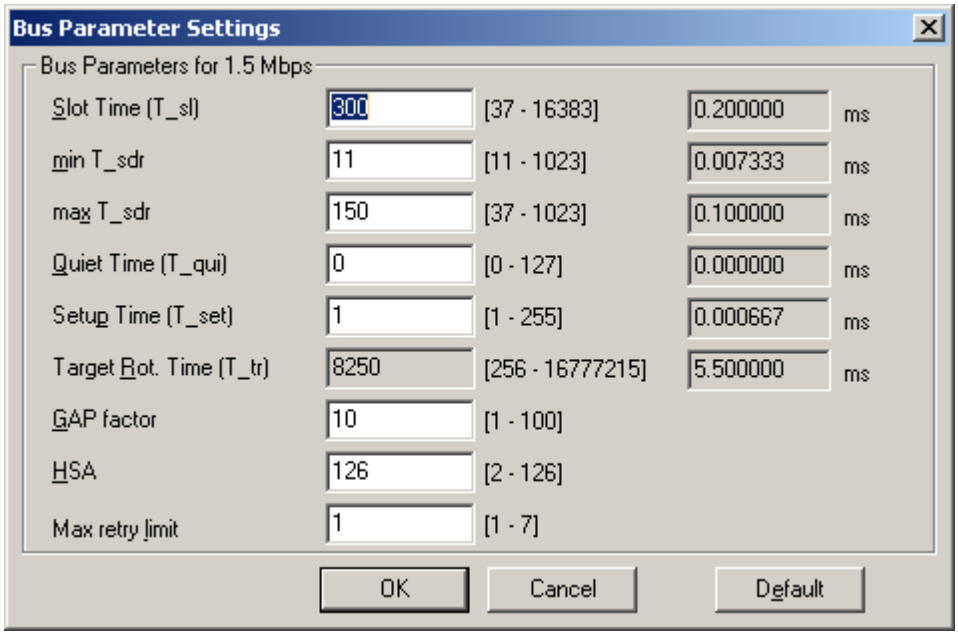
for A(1S)J71PB92D, QJ71PB92D and QJ71PB92V: the calculation of the cycle time is described in the ‘QJ71PB92V User’s Manual’ in the section ‘3.5.1 Bus cycle time’.

for FX3U-64DP-M: the calculation of the cycle time is described in the ‘FX3U-64DP-M User’s Manual’ in the section ‘1.4.2 PROFIBUS (Bus) Cycle Time’.

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

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
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 token rotation time (see note below)	256 - 16777215	value of 'Min slave interval' in T_bit
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		

Note: if the option 'Use 'Min. Slave Interval' for T_tr' has been selected in the Master Settings, the 'Target Token Rotation Time' is automatically set to the 'Min Slave Interval' of the 'Master Settings'

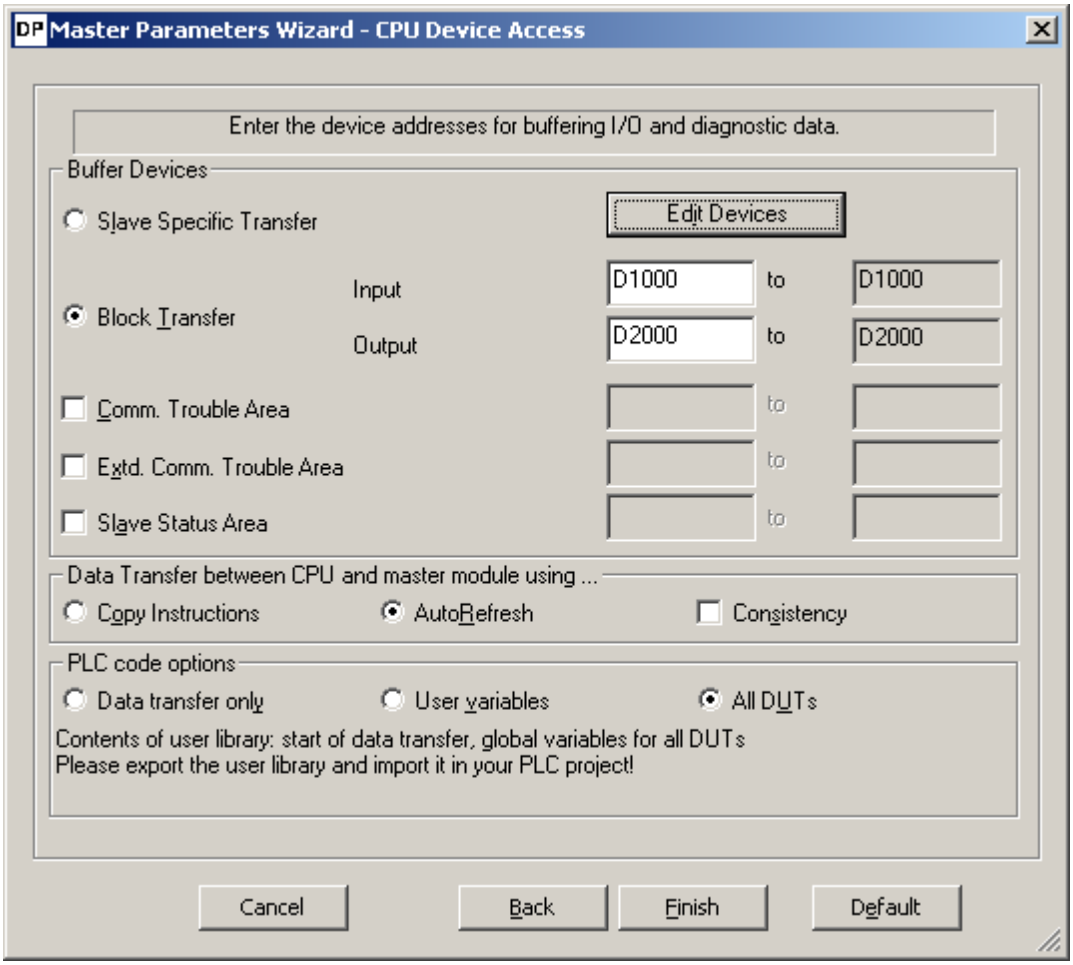
dialog. The input field for T_tr becomes read-only. If the option is not set, the T_tr must be entered manually.
For the correct parameter setting of the target rotation time (T_tr) please refer to the PROFIBUS standard. However, it is important that the target rotation time is large enough to enable the master module to poll each connected slave once per token cycle.

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

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.

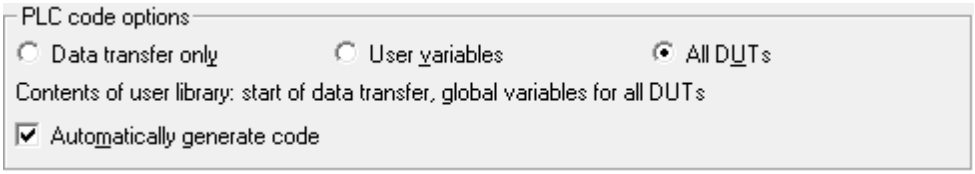


Name	Description	Choices / Setting range	Default
Slave Specific Transfer	User can assign individual buffer device addresses to each input and output area of a slave. The device addresses are entered in a		

Name	Description	Choices / Setting range	Default
	separate dialog, which is opened when pressing the 'Edit Devices' button		
Edit Devices	opens the 'Slave Specific Buffer Devices' dialog (see 'Device Addresses for Slave Specific Transfer')		
Block Transfer	User assigns one buffer device address to the inputs and one to the outputs of all slaves		
Input **(only for Block Transfer)**	Device address, where the slave input data is copied to from the buffer memory	see 'Device Types' table **Note**: for transfer buffers only word devices can be used	D1000
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	Qn only, if autorefresh selected	

Name	Description	Choices / Setting range	Default
	For a detailed description of consistent data transfer see 'Consistency Handling'.		
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		-
Finish	Save changes and close wizard		Default button
Default	Set parameters to their default values		

In the integrated version of GX Configurator-DP the PLC code options additionally contain a check box to enable/disable generating automatically code for the POU.

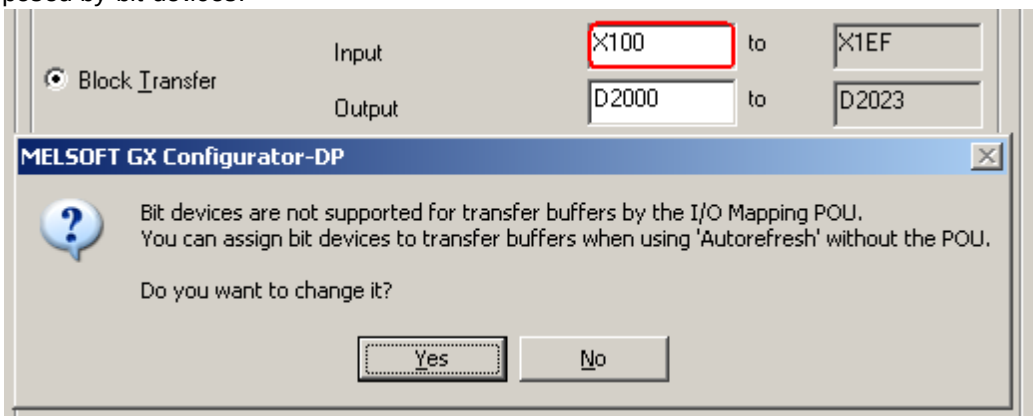


Name	Description	Choices / Setting range	default
PLC code options	Select the contents of the generated user library (see 'PLC Code Options') 1. Data transfer only 2. 2.User variables 3. All DUTs	see left	All DUT's
Automatically generate code	if checked the code for the POU is generated automatically on saving *only available if the current project in GX Works2 is a structured project*	checked / unchecked	checked

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

Device Type	Address Range	Available for			Supported as Buffer for POU
		Qn	QnA/A	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	x
R	0 – 32767	x	x	x	x
B	0x0 – 0x7FFF	x	x		
W	0x0 – 0x657F	x	x		x
ZR	0 – 4184063	x	x		x

If a bit device address has been entered for a transfer buffer, the user is warned of the restrictions imposed by bit devices.



Pressing **Yes** sets the input focus back to the edit field, which caused the error; pressing **No** stores the bit device address.

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

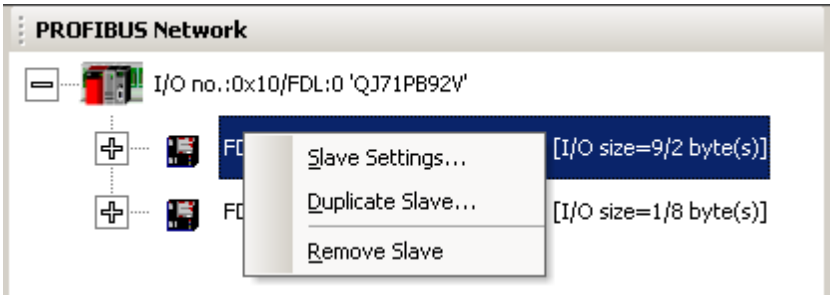
Additionally to the code of option 3 all remaining DUTs are exported and instantiated with default global variable names.

Check box: Automatically generate code

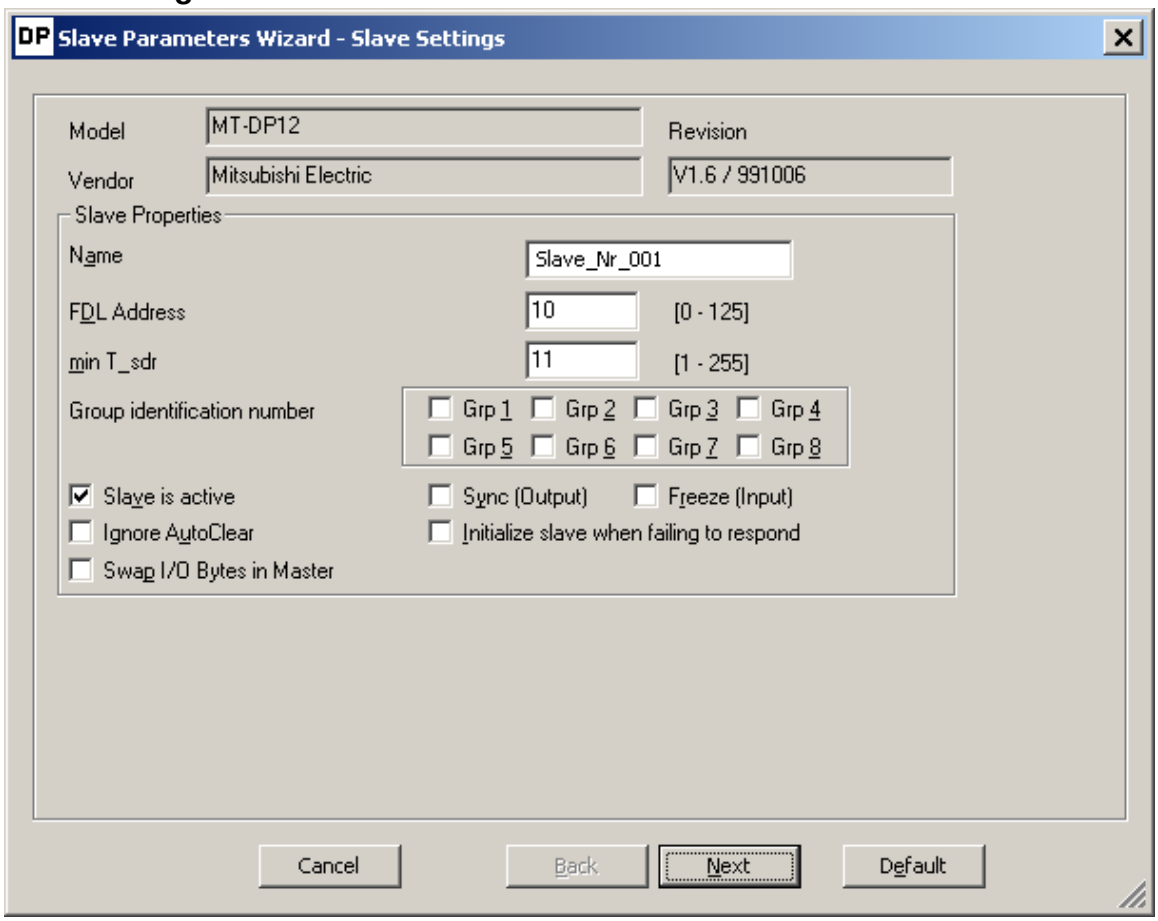
In the integrated version of GX Configurator-DP this check box enables or disables generating automatically code for the POU. It is only available if the current project in GX Works2 is a structured project. If disabled generating a POU is available from the task item 'POU Generation' only, but only if a structured project is currently active in GX Works2.

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



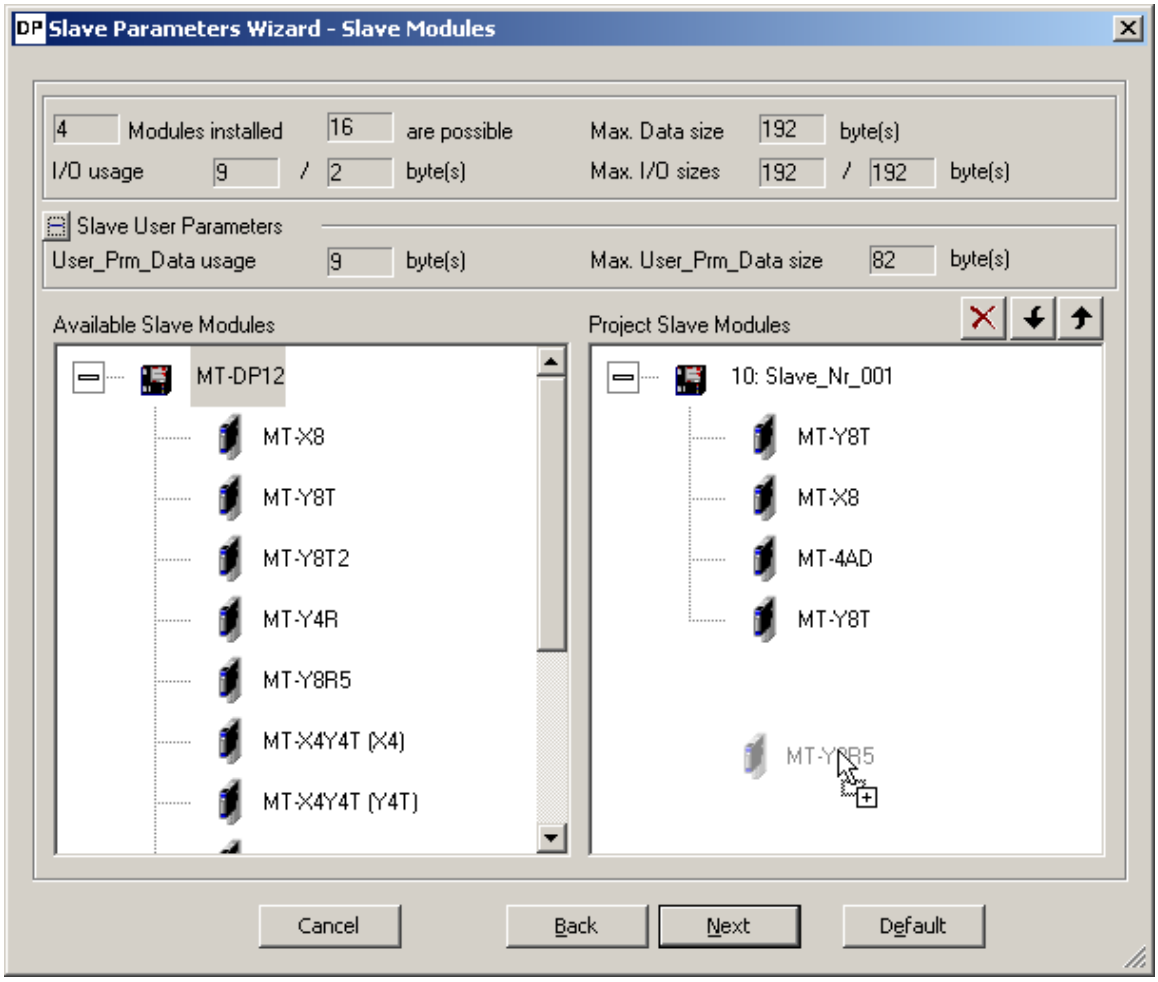
Name	Description	Choices / Setting range	Default
Model	type name of the slave (usually the value of the keyword 'Model_Name' in the GSD file)	read-only	-
Vendor	company name of the vendor (usually the value of the keyword 'Ven-dor_Name' in the GSD file)	read-only	-
Revision	the version of the device 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,	1 – 255	11

Name	Description	Choices / Setting range	Default
	until it is allowed to send response frames to the DP master. Do not 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	The master initializes a slave, if com-	selected	not selected

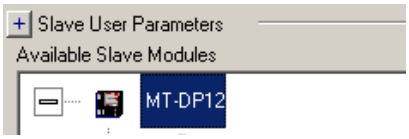
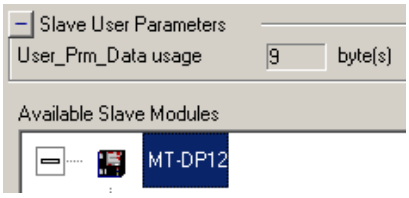
Name	Description	Choices / Setting range	Default
when failing to respond ***(only QJ71PB92V and FX3U-64DP-M)***	munication fails.	/ not selected	
Swap I/O Bytes in Master ***(not AJ71PB92D)***	When selected, the order of each pair of bytes is reversed by the PROFIBUS master.	selected / not selected	not 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 (out-	max. length of outputs in bytes,	readonly	from GSD file

Name	Description	Choices / Setting range	Default
puts)	which slave supports		
Slave User Parameters	button to show respectively hide the information on the use of the user parameters buffer collapsed:  expanded: 	expanded / collapsed	collapsed
User_Prm_Data usage	number of occupied bytes in slave-specific user parameters buffer		-
Max. User-_Prm_Data size	maximum number of slave-specific user parameters supported by the slave	from GSD file	-
Available Slave Modules	lists the module types, which are available for the slave.	from GSD file	from GSD file
Project Slave 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**.

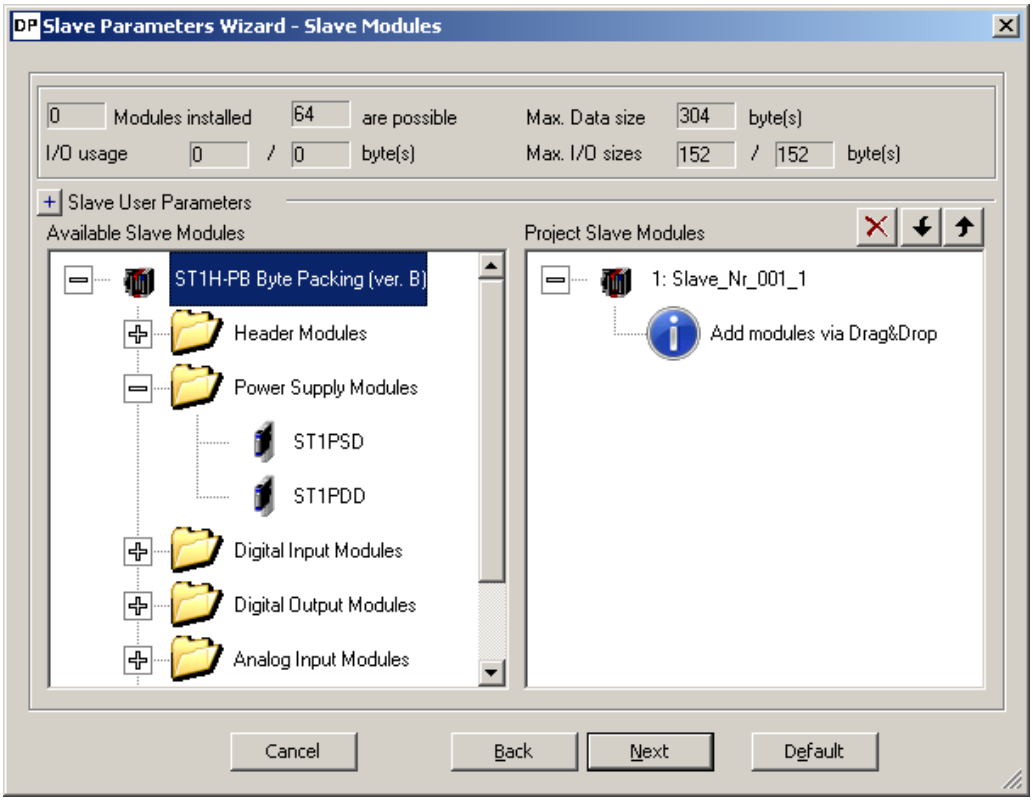
If no module has been selected, an information icon indicates the required action to the user.

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.
GX Configurator-DP 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
- Reserved (only version B!)

Check of Selected ST Slave Modules (All ST Versions)

The module list of ST slaves 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 X1616 module must be configured by selecting –F module first and a –L module second

Specific Check of Selected ST Slave Modules (Version A)

The module list of a version 'A' ST slave is especially checked for the following conditions

1. the I/Os of all selected modules must fit into the selected head module size

Specific Check of Selected ST Slave Modules (Version B)

The module list of a version 'B' ST slave is especially checked for the following conditions

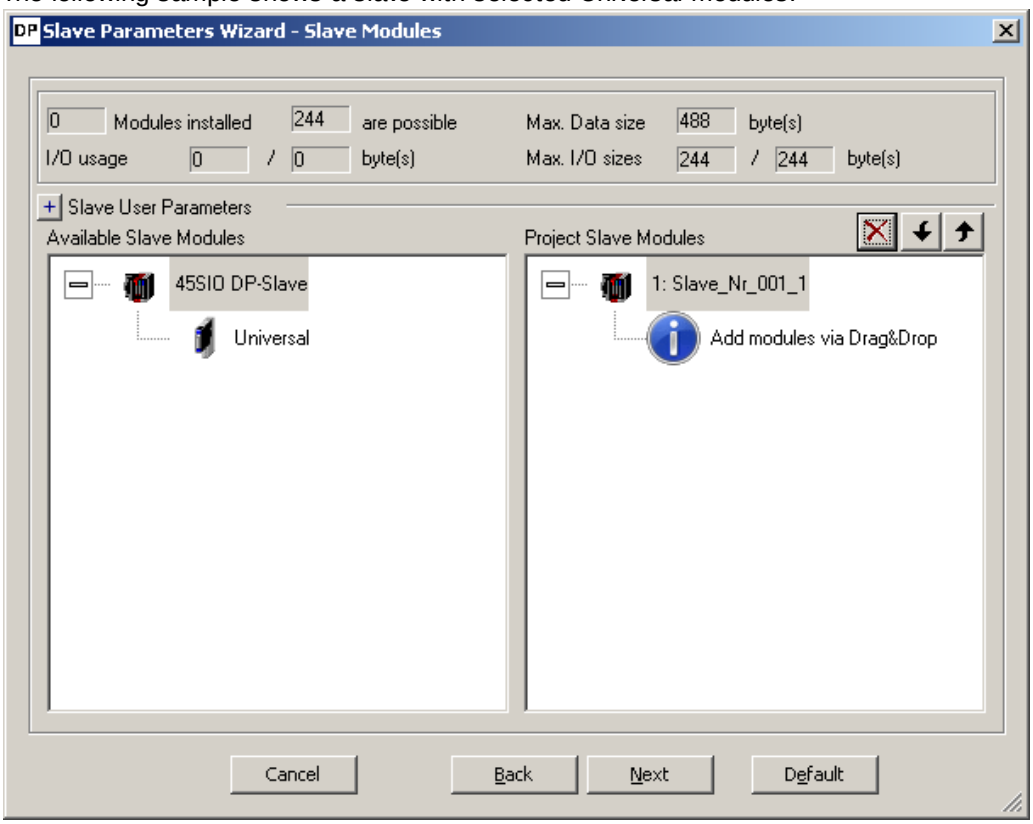
1. the I/Os of empty binary I/O modules marked by a module name starting with '.....' must fit into the preceding regular module. If an analog module follows a binary module, a regular binary module must be inserted first, before empty binary modules can be added again

Universal Slave Module Type

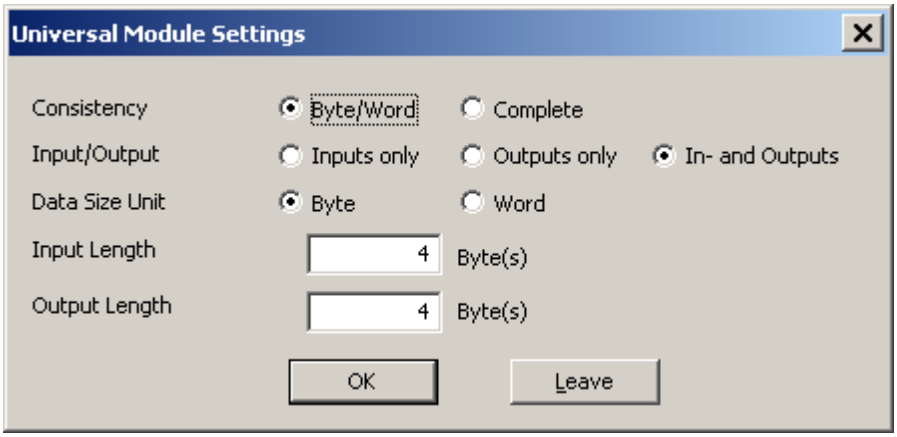
Some slave GSD files do not contain module descriptions, but require the module configuration data ('cfg_data') to be constructed in the configuration tool via a so-called 'Universal Module'. If a slave GSD file does not contain module definitions, GXDP displays the entry **Universal** in the **Slave 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.

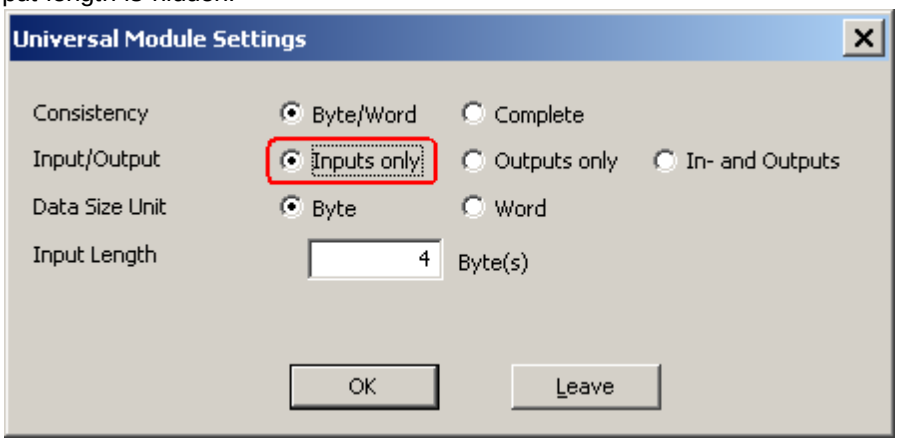
The following sample shows a slave with selected Universal modules.



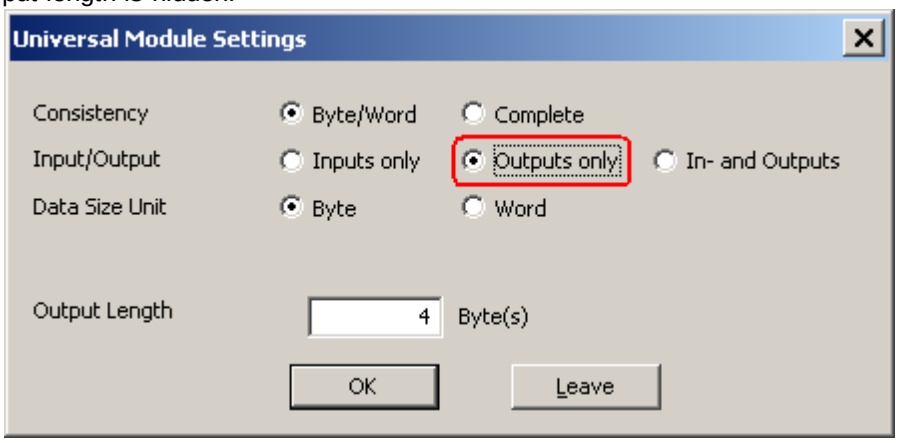
When an Universal module entry in the **Project Slave Modules** list is double-clicked, the **Universal Module Settings** dialog is opened and the properties of the selected universal module, i.e. consistency, input and output size, can be changed.



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

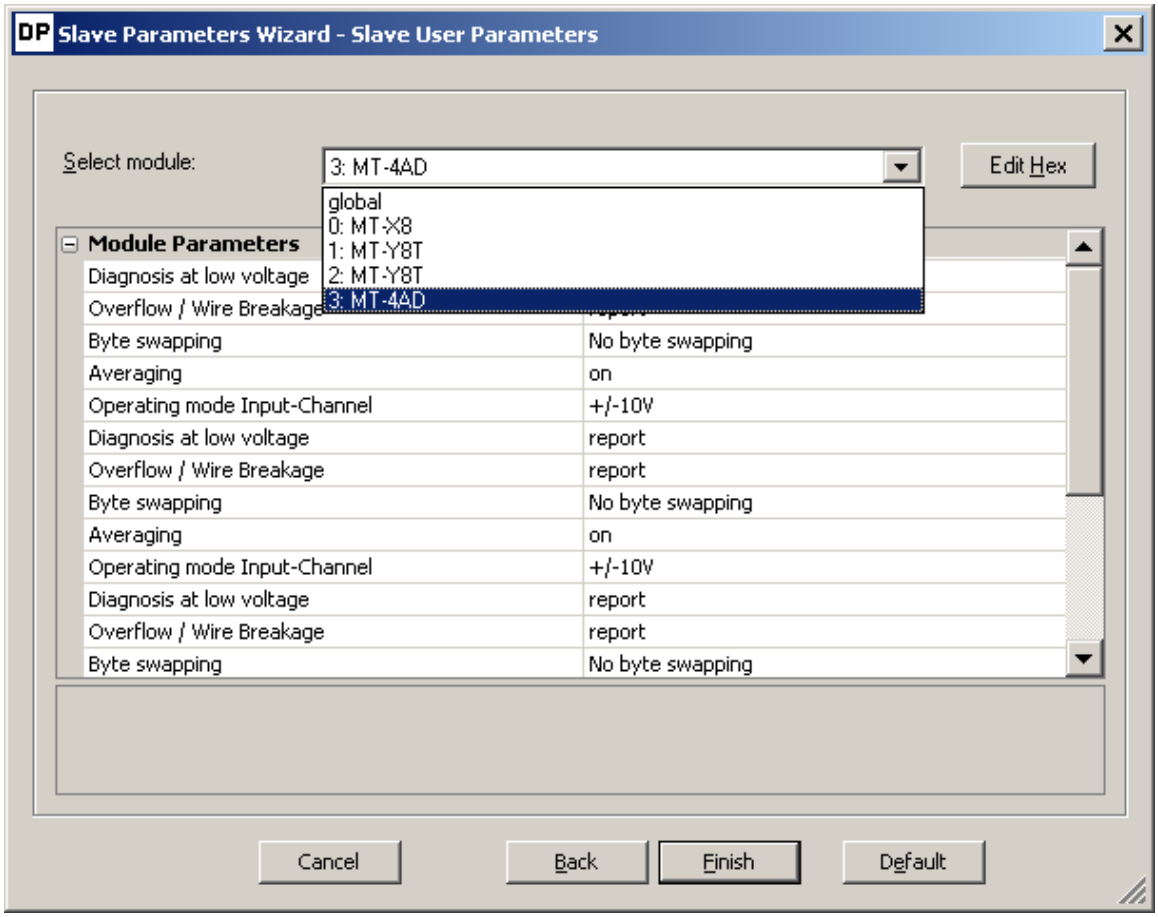


If the module should only have an output area, select the option **Outputs only** and the field for the input length is hidden.



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.



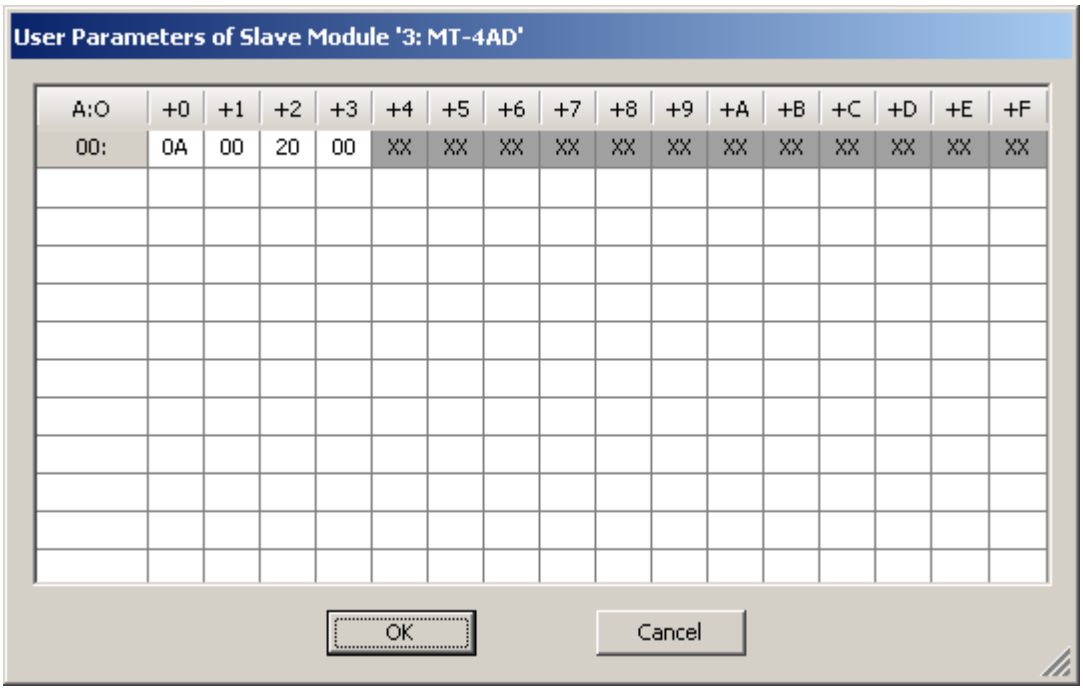
Name	Description	Choices / Setting range	Default
Select module	select either 'global' for general parameters or the module specified by its slot number and type name		
Edit Hex	opens the hex editor for editing the user parameters of the selected slave module		
User Param. Table	each row represents a 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.

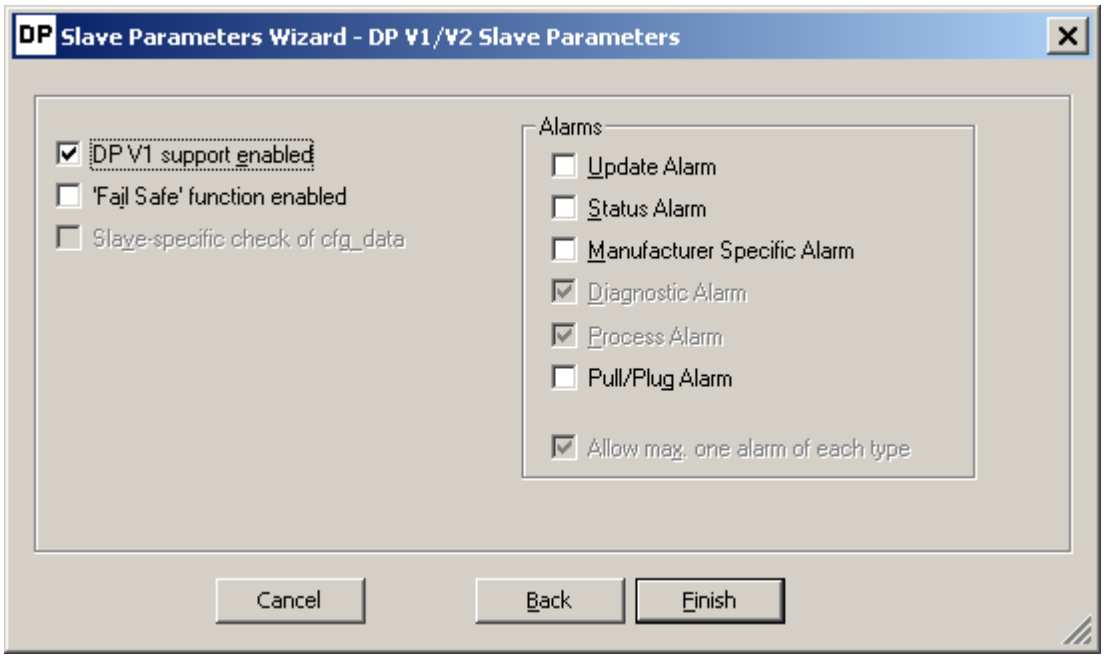


Name	Description	Choices / Setting range	Default
User Parameter Grid	shows the contents of the user parameter buffer for the selected slave module	0x00 – 0xFF	from GSD file
OK	Close dialog and save changes		Default button
Cancel	Close dialog and discard changes		-

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.



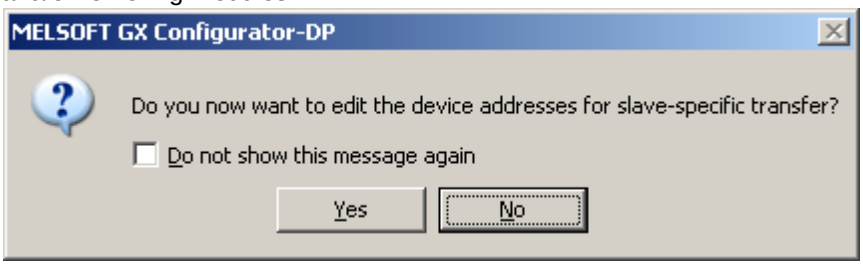
Name	Description	Choices / Setting range	Default
DP V1 support enabled	if selected, DPV1 specific services are supported. Beside for acyclic read/write this option must also be set for DPV1 alarm handling	selected / not selected	not selected
'Fail Safe' function enabled	enabled, if GSD file contains 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	selected / not selected	not selected

Name	Description	Choices / Setting range	Default
	entry 'Update_Alarm_required=1'		
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')	selected / not selected	not selected

Name	Description	Choices / Setting range	Default
	fixed to 'selected', if at least one alarm 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

Edit Buffer Devices for Slave-Specific Transfer

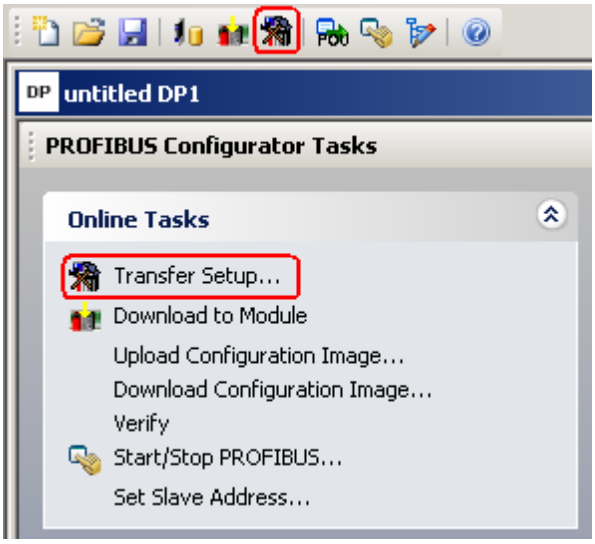
If slave-specific transfer is selected, the user is prompted whether to edit the corresponding buffer devices, when the ‘Slave Parameter Wizard’ is closed and the I/O structure has changed by adding and/or removing modules.



If the user selects ‘Yes’, the ‘Slave Specific Buffer Devices’dialog is displayed. To avoid a display of the message box each time a slave is added or modified, the user can select the ‘Do not show this message again’ option.

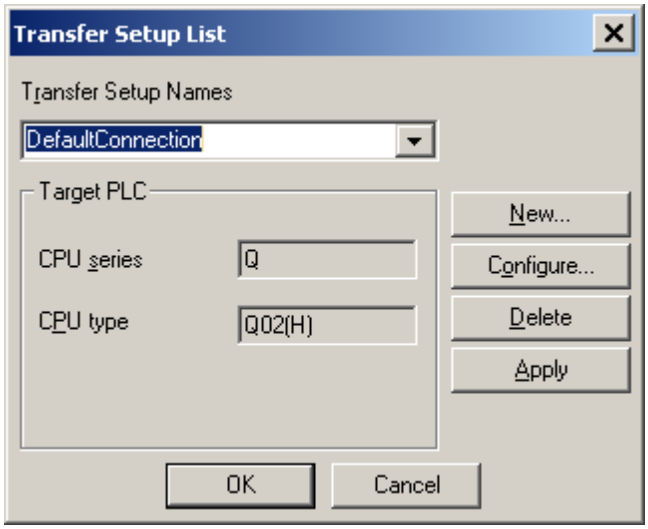
8 Transfer Setup

Note: in the integrated version of GX Configurator-DP the transfer setup dialog of GX Works2 is used instead.



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	

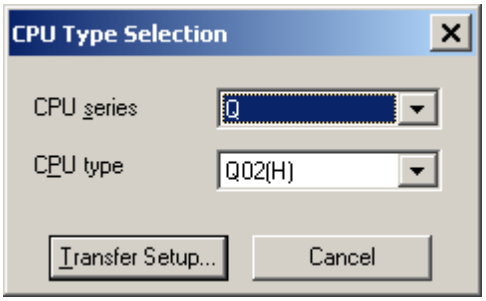
Name	Description	Choices / Setting range	Default
CPU type	show the CPU type, set in the selected transfer setup	read-only	
New	define a new transfer setup		
Configure	edit the selected transfer setup		
Delete	delete the selected transfer setup		
Apply	save changes in the transfer setup name		
OK	Close 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 the **OK**		

Name	Description	Choices / Setting range	De-fault
	button to accept it.		
CPU type	Contains the list of CPU types, which belong to the selected PLC family		
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		-

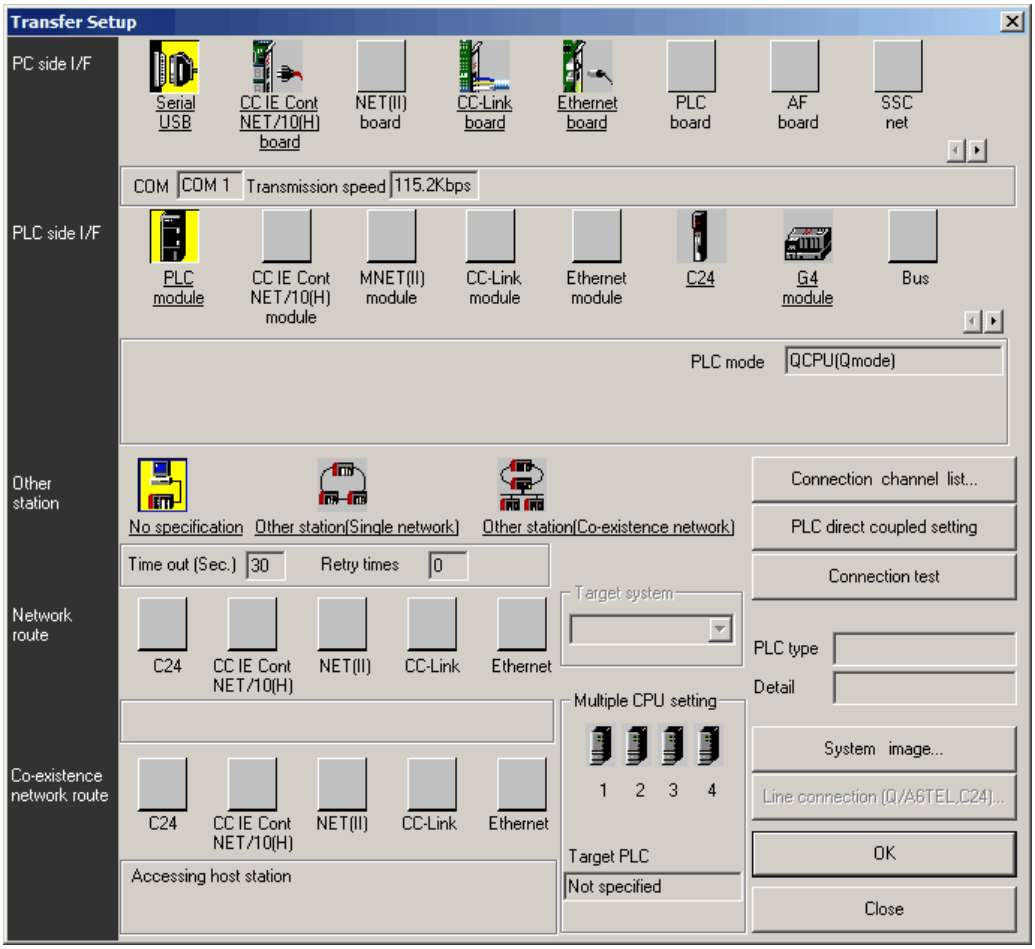
The CPU types are grouped in 'series' (FX, QnA, A, Q, QnPH, QnPRH and QnU). The available PLC families depend on the type of the master module according to the table below

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

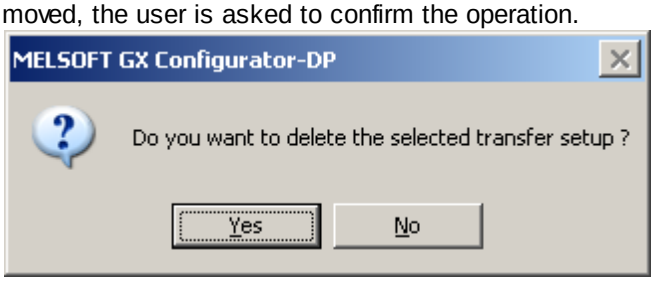
The new transfer setup automatically becomes the selected one.

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.

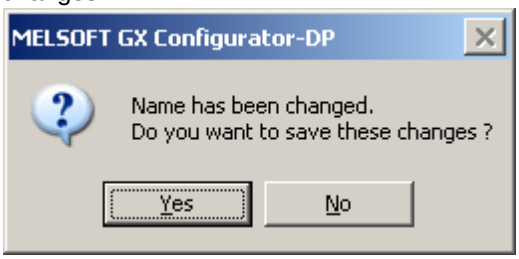
Delete

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

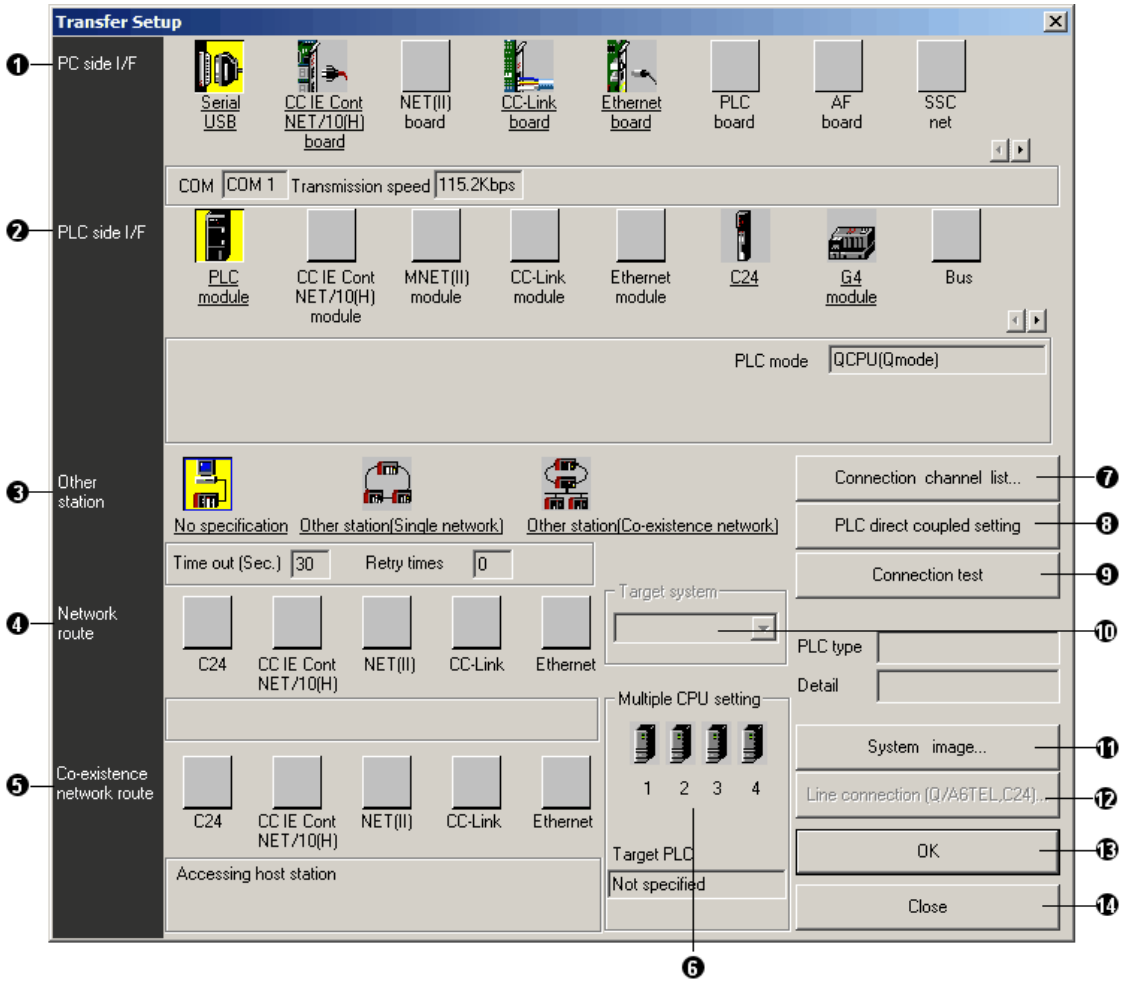
Changes of the transfer setup name are saved. You can change the symbolic name of any network connection. Select the network connection you want to change. Enter the new name in the **Transfer Setup Names** drop-down list and confirm with the **Apply** button.
If you do not press the **Apply** button 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.



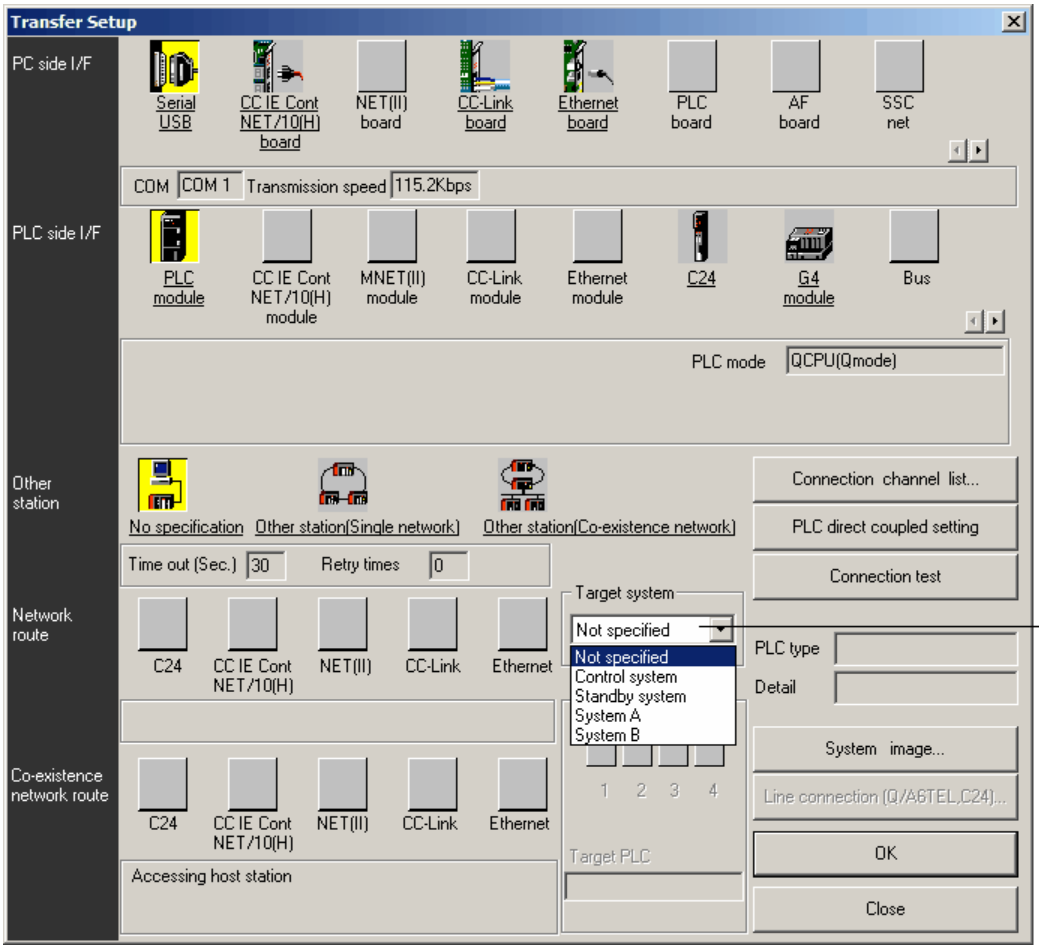
The symbolic name of the transfer setup is changed and can be selected from the **Transfer Setup Names** drop-down list.

8.1 Editing the Transfer Settings

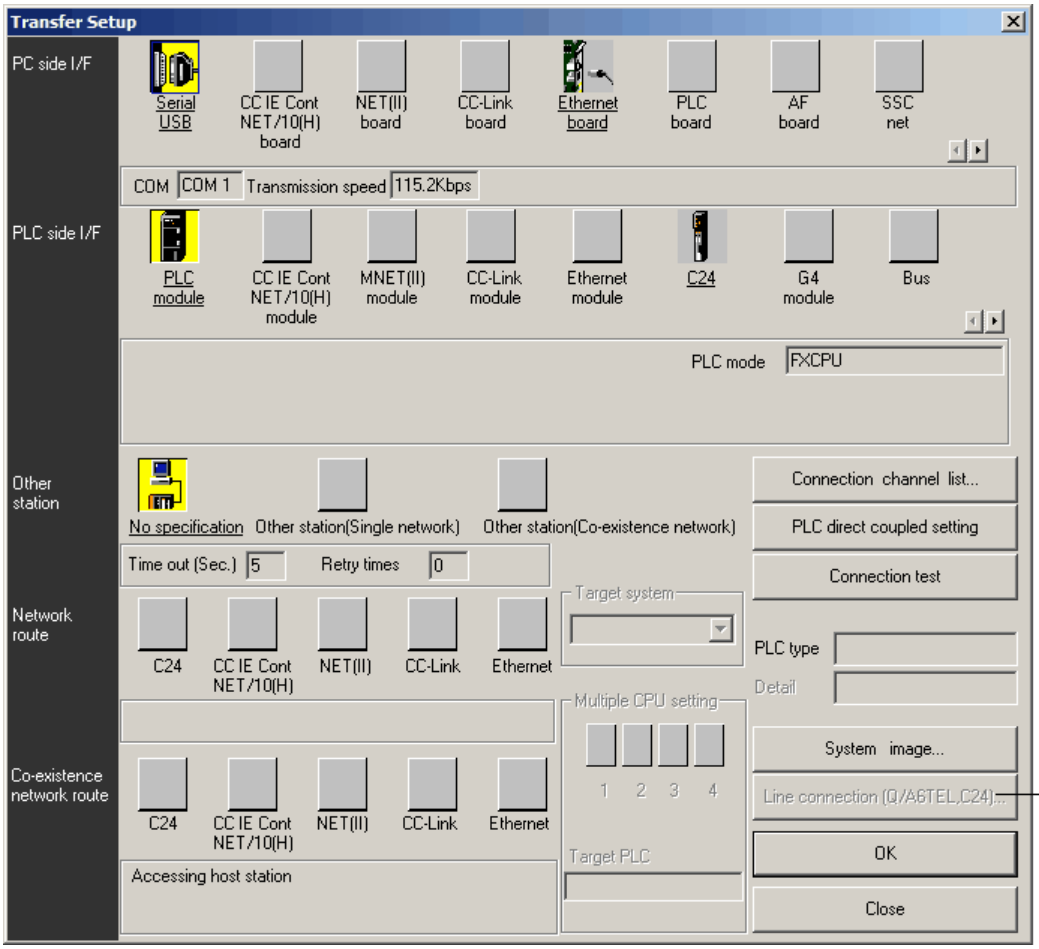
The dialog for setting the connection parameters of a transfer setup is also used by other MELSOFT products like GX IEC Developer (GID) and GX Developer (GD).



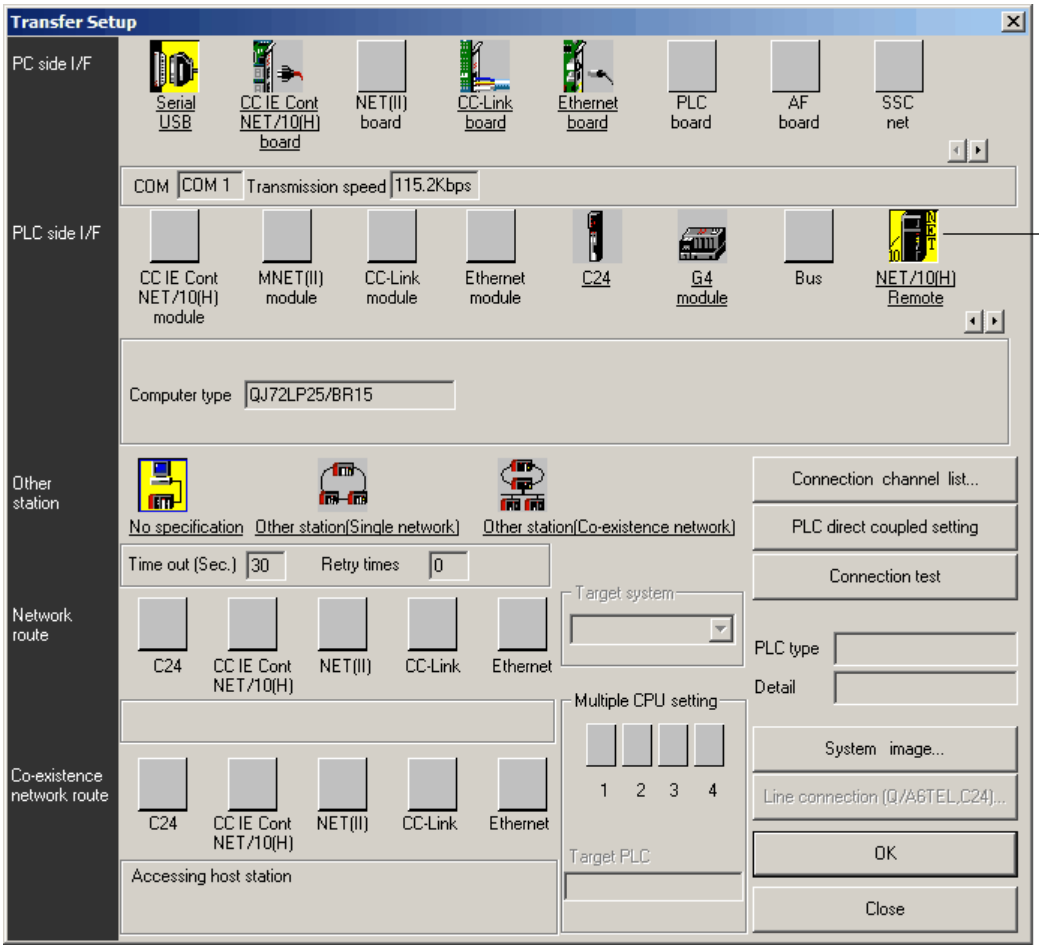
Transfer Setup (1)



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

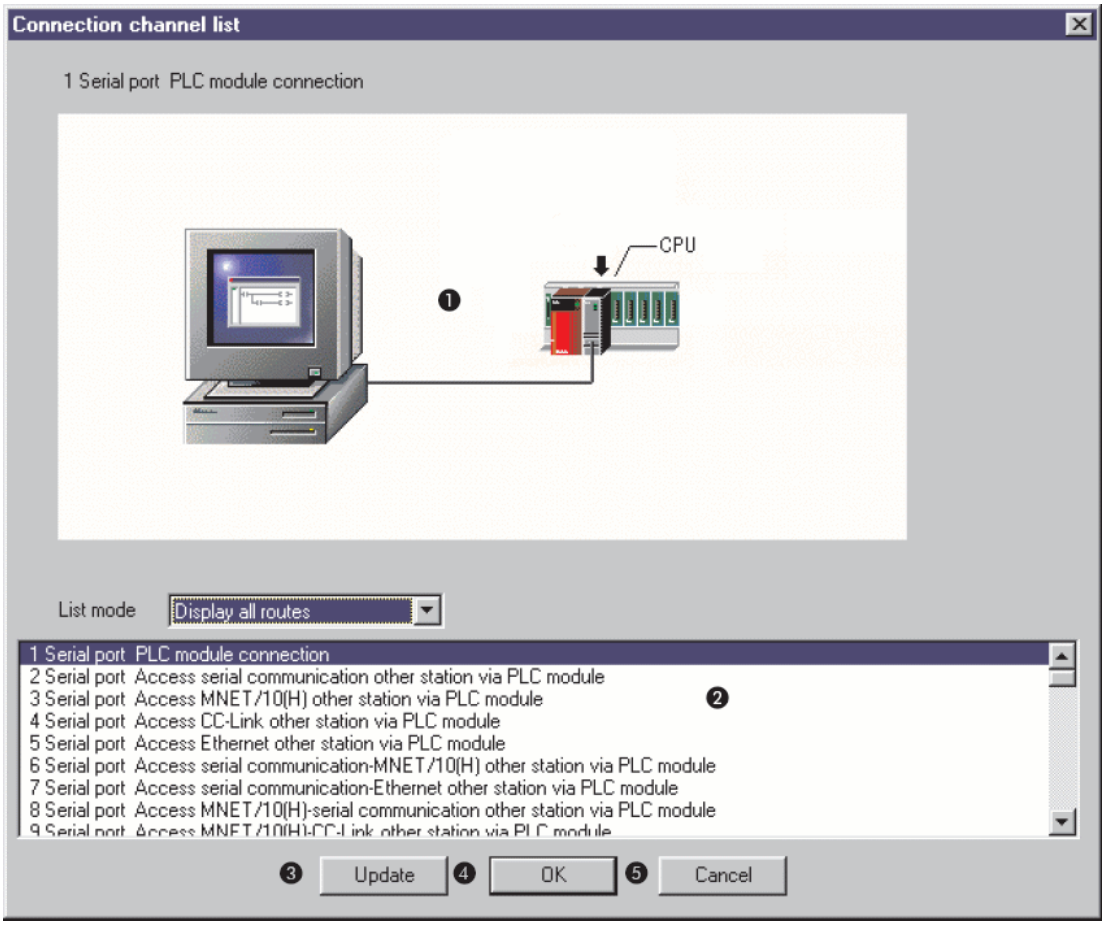
No.	Description
	while looking at the Connection channel list.
❽	**PLC direct coupled setting** By clicking this button you change from Other station to the own station.
❾	**Connection test** Tests whether proper access can be made to the PLC set as the access target on the Connection Setup screen. If 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)...** 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.

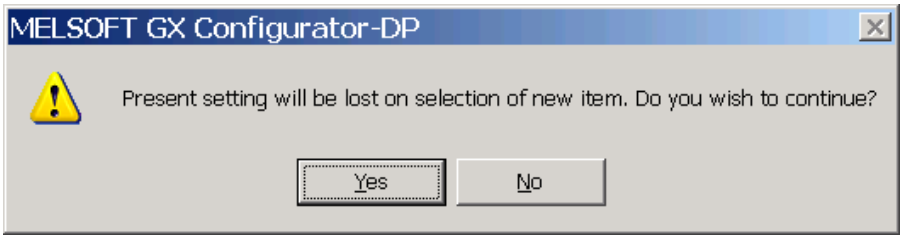
To select a network type you can also click on the button **Connection channel list**. The following dialog window is opened.



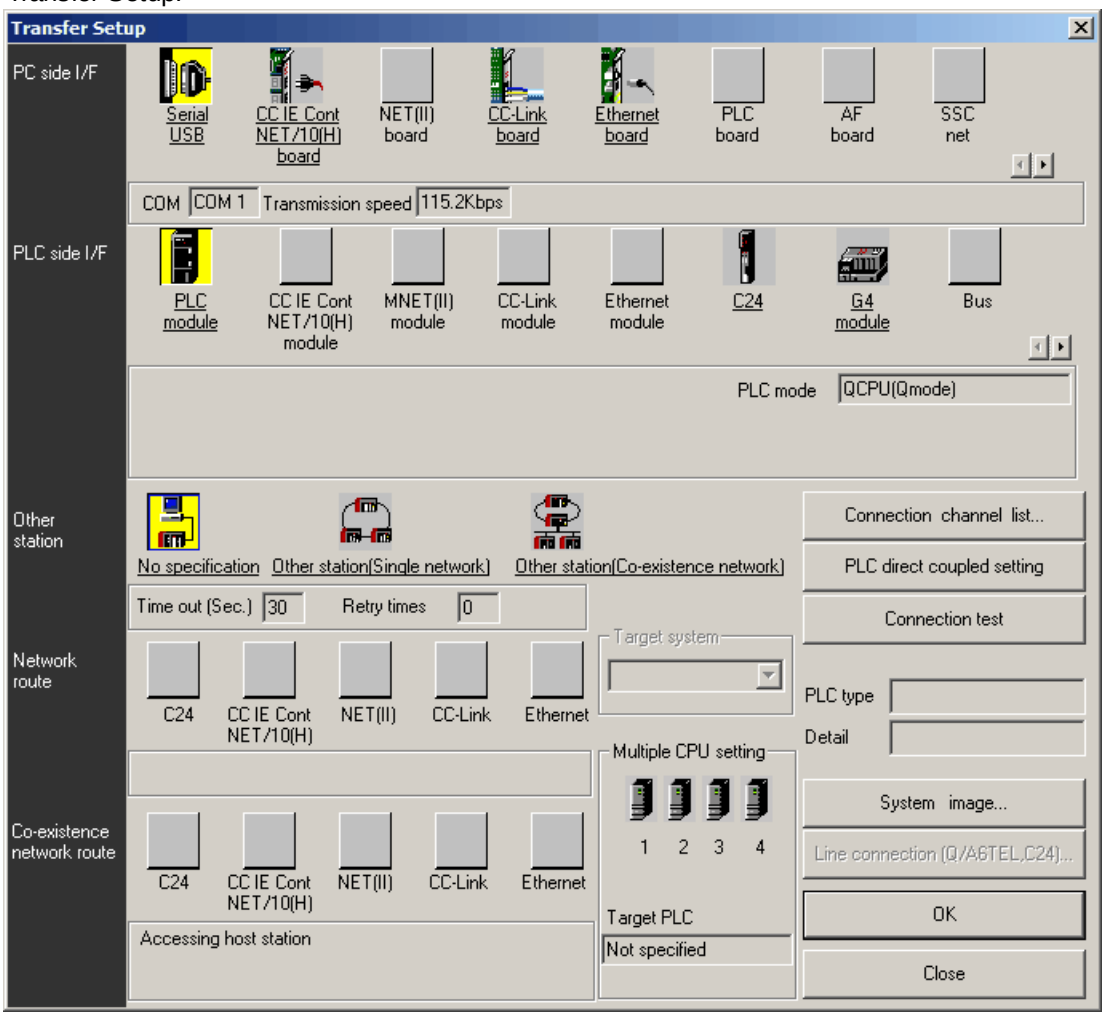
Dialog Connection channel list

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.

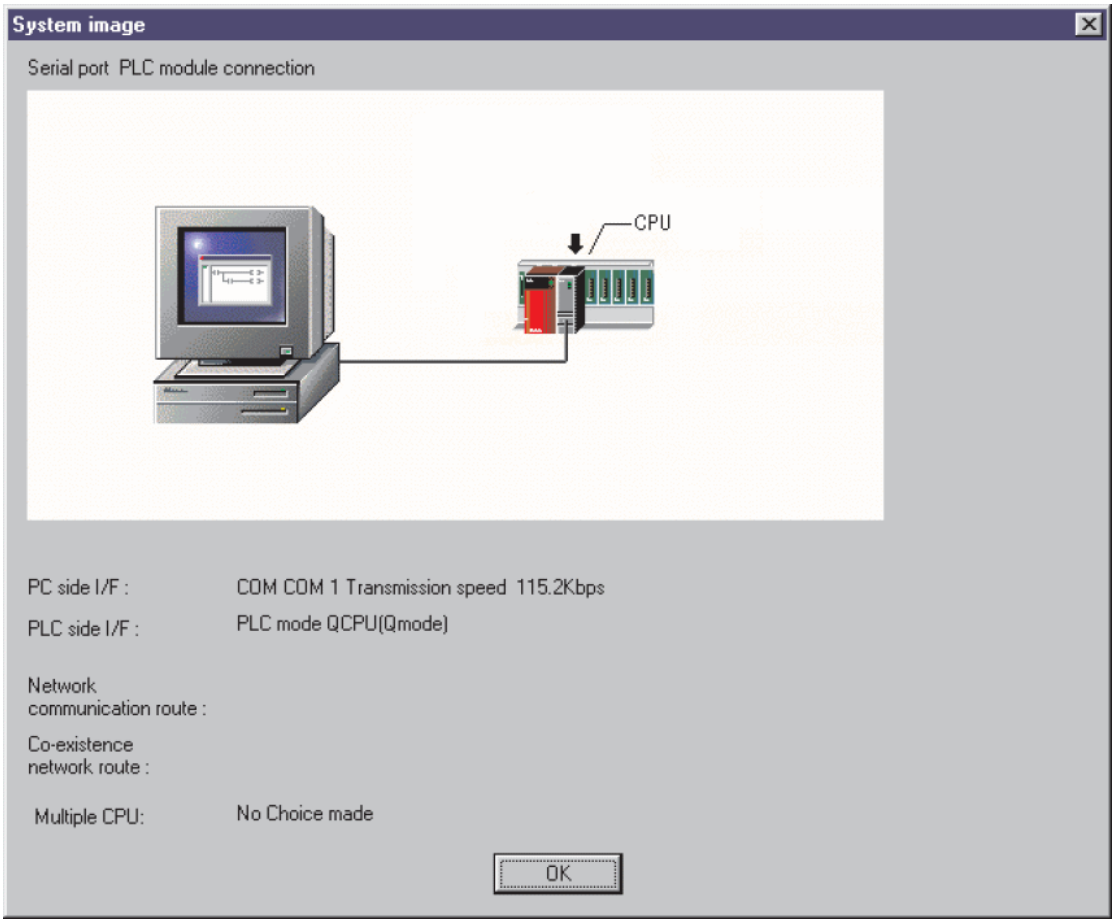


Test the selected network configuration by clicking on the button Connection test. If the connection between the PC and the network is possible a positive note will be shown on the screen. If no connection is possible an error message is shown. In this case you have to check the cabling as well as the 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 Using 'GX Configurator-DP' with 'GX Works2'

GX Works2 supports an integrated version of GX Configurator-DP, which is embedded in GX Works2. The integrated version can be used in parallel with the standalone version.

Note: The CPU type QnUDV is not supported in GX Configurator-DP 7.08J.

9.1 Integrated Version

The integrated version of GX Configurator-DP improves the handling of PROFIBUS-DP network modules by embedding their configuration into the GX Works2 PLC programming environment. Integrating the data storage of PROFIBUS-DP configurations into the PLC programming project ensures data consistency and eases your work by not having to maintain a group of project files of different software.

Starting from GX Configurator-DP 7.08J the software is integrated in GX Works2 as an “Intelligent Function Module” component.

The following main features are available for intelligent function modules in GX Works2 starting from version 1.87R:

- Intelligent function modules can be added to the project tree under the “Intelligent Function Module” group.
- In the project tree each module node has one or more sub-nodes to set their parameters, auto-refresh settings and switch settings in dedicated windows.
- The settings can be written to, read from or deleted from the PLC, and they can be verified against the PLC.
- The list of parameters included in the online operations can be selected on a per module basis.
- Module configurations can be copied within the project or to another project.
- The auto-refresh settings can be checked to discover overlapping address ranges.
- The inputs, outputs and buffer memories of each module can be monitored in watch windows.
- Sample comments can be used for the buffer memories in the Device Comment functionality.
- Dedicated instructions/functions can be used during programming.

This manual covers the functionalities that are new or different in case of PROFIBUS-DP modules compared to other intelligent function modules in GX Works2. For a general description of the GX Works2 intelligent function module functionalities please refer to the following manual:
GX Works2 Version 1 Operating Manual (Intelligent Function Module) – SW1DNC-GXW2-E

Supported CPU types in the Integrated Version

The supported CPU types between the Integrated and the Standalone Version are different. Please see the following table for the supported CPU types in the Integrated Version:

Basic model QCPU	High performance model QCPU	Universal model QCPU	Process QCPU	Redundant model QCPU	LCPU	FXCPU
O	O	Δ *1	O	Δ *2	X	X

O = supported X = not supported
Δ *1 = QnUDV CPU is not supported in GX Configurator-DP 7.08J
Δ *2 = QnPRH CPU can be used with GX Works2 1.95Z

Functional Differences between the Integrated and the Standalone Version

The following tables contain a comparison of the functionality of the standalone and the integrated versions of GX Configurator-DP. The functionality of the standalone and the integrated version is the same except the following:

Menu

Functionality in standalone version		Integrated version
Project	New	Δ*1
	Open	Δ*1
	Close	Δ*1
	Save	Δ*1
	Save As	Δ*1
	Recent File	Δ*1
	Exit	Δ*1
Tools	GX Configurator-ST	X
	Options	Δ*2
View	Toolbar	X*3
	Status Bar	X*3
Window	<window name n>	Δ*4
Help	Help Topics	Δ*5
	About MELSOFT GX Configurator-DP	Δ*5

O: same as in standalone version Δ : changed X: not supported

*1: PROFIBUS-DP module configuration is stored in the GX Works2 project. Project handling commands do not exist in the Parameter window.
*2: Item is moved to Tool menu of GX Works2.
*3: A separate toolbar and status bar are not supported.
*4: The window handling of different PROFIBUS-DP configurations is handled in GX Works2 as tabbed windows.
*5: Item is moved to the task panel.

Task Panel

Master Modules

Functionality in standalone version		Integrated version
Online Tasks	Transfer Setup	Δ*1
	Download to Module	Δ*6

Functionality in standalone version		Integrated version
	Upload Configuration Image	Δ*2
	Download Configuration Image	Δ*2
	Verify	Δ*2
	Start/Stop PROFIBUS	Δ*2
	Set Slave Address*	Δ*2
Setup Tasks	Master Settings	O
	Change Master Type	X*3
	GSD Device Database	O
	Project Properties	X*4
	I/O Mapper	O
	Devices for Slave-Specific Transfer	O
Export Tasks	POU Generation	Δ*5
	Configuration Image	O
	Project in GX Configurator-DP Format	Δ*7
	Project in XML Format	O
Import Tasks	Import GX Configurator-DP Project	Δ*7
	Add GSD File	O
	Import GSD Database	O
Documentation	Project Documentation	O
	Documentation of I/O Mapping	O
Diagnostics	Turn on Monitor Mode	Δ*2
	Slave Status	Δ*2
	Diagnosis Messages	Δ*2
	PLC Autorefresh Settings	Δ*2
	Slave I/O Test	Δ*2
Help	Help Topics	Δ*7
	About GX Configurator-DP	Δ*7

O: same as in standalone version Δ : changed X: not supported

*: Available only for QJ71PB92V
*1: The actual connection destination of GX Works2 is used instead
*2: Item is moved to the Tool menu
*3: The master type can only be selected when the user adds an Intelligent Function Module (PROFIBUS-DP). An existing master type cannot be changed afterwards. The user has to add a new Intelligent Function Module and copy the settings from the old module to the new module.
*4: Project Properties are not necessary anymore because the PROFIBUS-DP module is directly connected to a project by the GX Works2 project itself.
*5: POU generation is performed within the GX Works2 project without having to import files to the project.
*6: The "Download to module" functionality is available via the Online→Write to PLC menu command of GX Works2
*7: The task exists only in the integrated version.

Slave Module

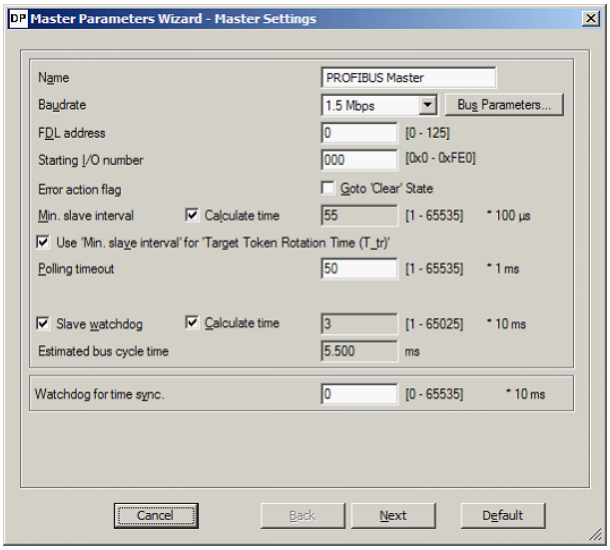
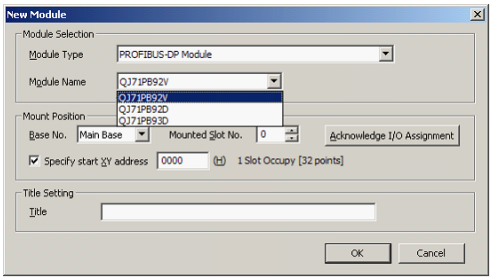
Functionality in standalone version		Integrated version
Q-Slave Tasks	Q-Slave Settings	O
	Project Properties	X*1
Online Tasks	Transfer Setup	Δ*2
	Download to Module	Δ*4
	Start/Stop PROFIBUS	Δ*3
Export Tasks	Project in GX Configurator-DP Format	Δ*5
Import Tasks	Import GX Configurator-DP Project	Δ*5
Help	Help Topics	Δ*5
	About GX Configurator-DP	Δ*5

O: same as in standalone version Δ : changed X: not supported

*1: Project Properties are not necessary anymore because the PROFIBUS-DP module is directly connected to a project by the GX Works2 project itself
*2: The actual connection destination of GX Works2 is used instead
*3: Item is moved to the Tool menu
*4: The "Download to module" functionality is available via the Online→Write to PLC menu command of GX Works2
*5: The task exists only in the integrated version.

Other Functionalities

Functionality in standalone version	Integrated version
The starting I/O address is specified in the master/ slave module settings dialog of GX Configurator-DP.	Δ

Functionality in standalone version	Integrated version
	The starting I/O address of the module is specified in GX Works2: in the intelligent function module properties or in the I/O Assignment page of the PLC parameter.  The setting specified in GX Works2 is then used by the configurator window, but it does not allow modifying it in the master/slave module settings dialog.
The user can define DUTs and global variables to map the I/O data of PROFIBUS-DP modules. They can be used in GX IEC Developer to access the I/O data using data structures instead of direct addresses. If the user selects the “POU Generation…” command, GX Configurator-DP generates POUs for managing the I/O data and writes the DUTs, global variables and POUs to a user library. Additionally an ASC file is created with a program task to call the POUs. The user can install the user library and import the ASC file to the related GX IEC Developer project to use the declarations.	Δ DUTs, global variables, etc. can be transferred or updated in the GX Works2 project from the configurator window via the import mechanism directly.
The GX Configurator-DP project can be associated with a GX IEC Developer or GX Developer project, and GX Configurator-DP can update the auto-refresh settings in the IPARAM.WPA files in that project.	Δ GX Configurator-DP will directly store the auto-refresh settings of the module in the GX Works2 project.

Functionality in standalone version	Integrated version
PROFIBUS-DP module configuration is stored in a GX Configurator-DP project file. Project handling commands exist in the main menu: New project Open project Close project Save project Save project as…	Δ PROFIBUS-DP module configuration is stored in the GX Works2 project. Project handling commands do not exist in the configurator window.
FX-series PROFIBUS-DP modules are supported.	X FX-series PROFIBUS-DP modules are not supported, because intelligent function modules of FX-series are not supported by GX Works2.
QnPRH PLCs are supported.	O
The layout of the configurator window is saved per module type.	Δ The layout of the configurator window is not saved. It always has the default layout after opening.

O: same as GX Configurator-DP Δ : changed X: not supported

Functional Differences between PROFIBUS-DP and Other Modules

The main difference between PROFIBUS-DP and other intelligent function modules is that:

- The parameters – in other words, initial settings – of PROFIBUS-DP modules are written to the module, while in case of other intelligent function modules the parameters are written to the CPU. Only the auto-refresh settings of PROFIBUS-DP modules are written to the CPU.
- Once written to the module, the parameters cannot be read from the module to the project, because an editable configuration cannot be reconstructed in the project from the settings stored in the module. In case of other intelligent function modules it is possible to read the parameters from the CPU to the project. Only the auto-refresh settings of PROFIBUS-DP modules can be read from the CPU.
- The parameters of PROFIBUS-DP modules cannot be stored in GX Developer projects, while the parameters of other intelligent function modules can be written to or read from GX Developer projects. Only the auto-refresh settings of PROFIBUS-DP modules can be stored in GX Developer projects.

These differences affect the following functionalities of GX Works2.

Write to PLC / Read from PLC

The Write to PLC functionality is used to write the auto-refresh settings to the CPU and the parameters to the module. The Read from PLC functionality can be used to read the auto-refresh settings from the CPU, but the parameters cannot be read from the module. The parameters of the module are not written to the symbolic information stored in the CPU either, therefore it cannot be read from there as well.

After reading the auto-refresh settings from the CPU, it is attempted to be applied to the PROFIBUS-DP module parameters in the project. There are certain conditions when the auto-refresh settings can be applied. For a detailed description please refer to the Reading from the PLC chapter.

IC Card Operations

The Write IC Card and Write Image Data functionalities are used to write the auto-refresh settings to the IPARAM file in the card/image. The Read IC Card / Read Image Data functionalities can be used to read the auto-refresh settings from the IPARAM file in the card/image, but the parameters cannot be read.

After reading the auto-refresh settings from the card / image, it is attempted to be applied to the PROFIBUS-DP module parameters in the project. There are certain conditions when the auto-refresh settings can be applied. For a detailed description please refer to the IC Card Operations chapter.

Export to GX Developer Format File / Open GX Developer Format File

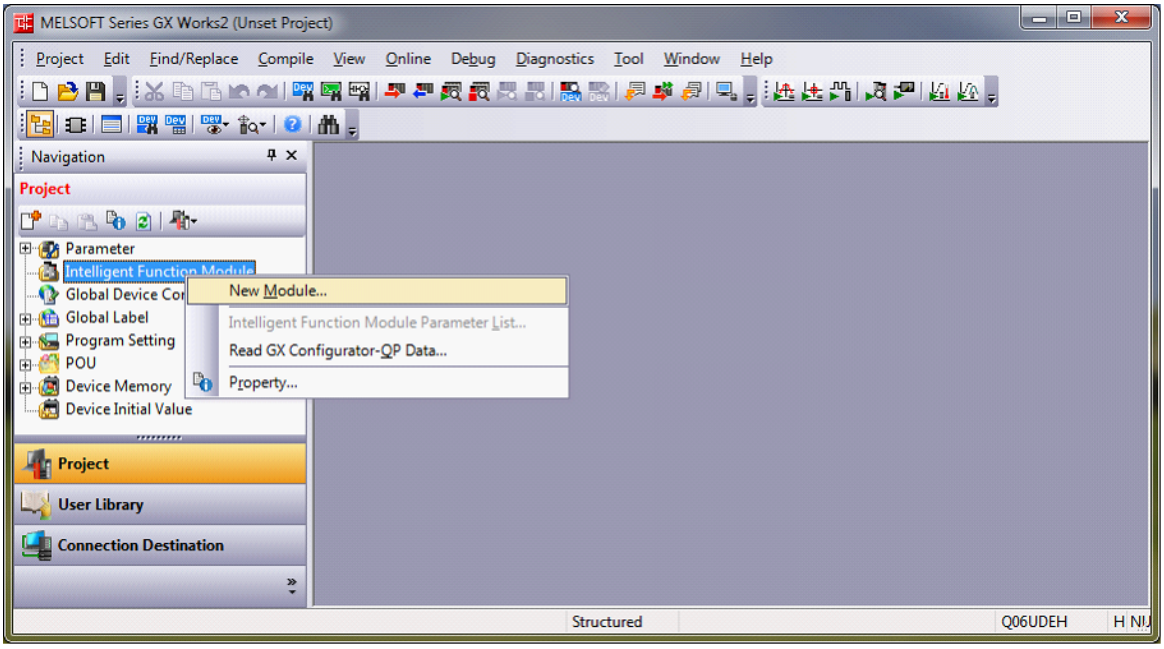
GX Developer projects can store only the parameters that are written to the CPU, therefore in case of PROFIBUS-DP modules only the auto-refresh settings can be stored in the GX Developer project. After exporting a GX Works2 project to a GX Developer format project, the parameters of PROFIBUS-DP modules will be deleted, unless you export each module's parameters in GX Configurator-DP format.

When opening a GX Developer project – either one that was saved with GX Developer or exported from GX Works2 – only the auto-refresh settings of PROFIBUS-DP modules will be available. After opening he auto-refresh settings can be written to the CPU, but they will not be editable in the Parameter window of the module, because the module's parameters will be set to default in the project. If you edit the module's parameters, then the auto-refresh settings will be updated to the settings you specify in the parameters. It is recommended to import the module parameters from the corresponding GX Configurator-DP project (if available) directly after opening the GX Developer format file.

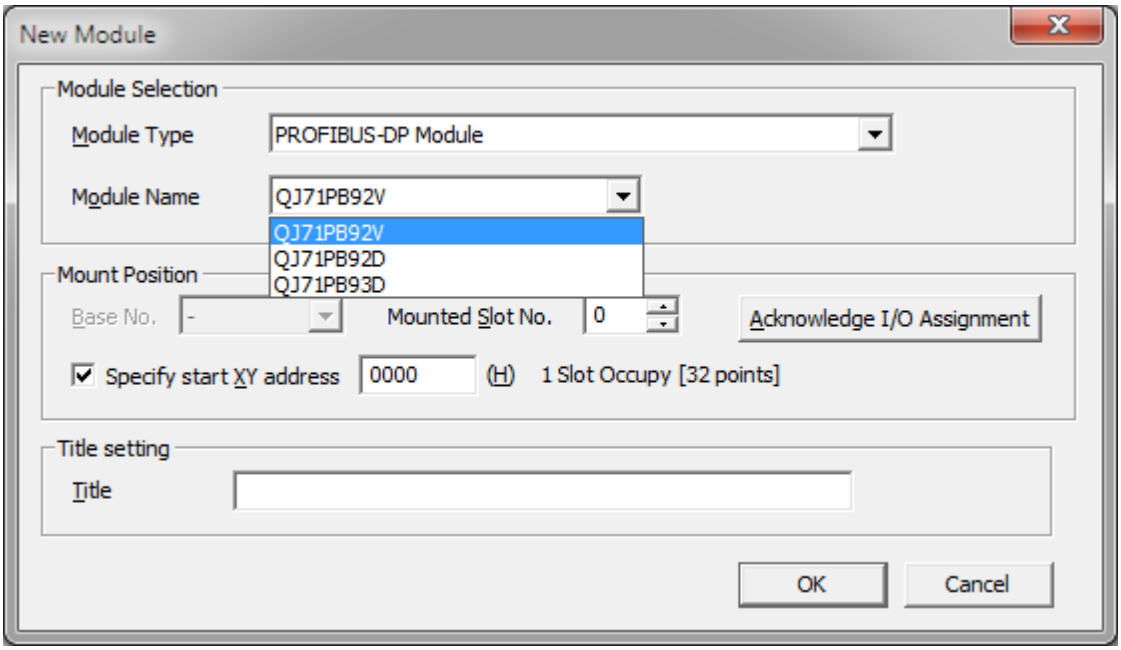
For details on the GX Developer format project related functionalities please refer to the Other Format Files chapter.

Adding a PROFIBUS-DP Module

A PROFIBUS-DP module can be added to the “Intelligent Function Module” group of the project by calling the Project→Intelligent Function Module→New Module… menu command or by right-clicking the “Intelligent Function Module” node in the project navigator and calling the New Module… context-menu command.

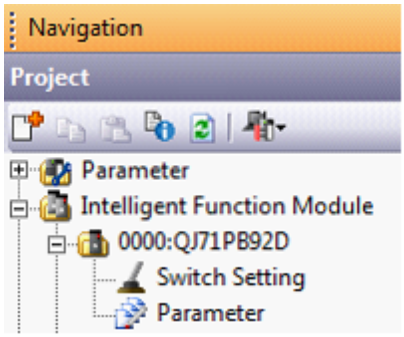


The “New Module” dialog is opened. Select the module type (PROFIBUS-DP Module) and the module name, enter the base no., slot no. and start I/O address, and optionally assign a title to the new module.
The number of occupied slots is 1, and the number of occupied I/O points is 32 in case of all three module types.



Name	Description
Module Type	Type of intelligent function module
Module Name	Exact model of intelligent function module
Base No.	Number of base where the module is mounted
Mounted Slot No.	Number of slot where the module is mounted
Specify start XY address	If checked, the automatically assigned start I/O address can be overridden
Title	Title associated to the module for identification

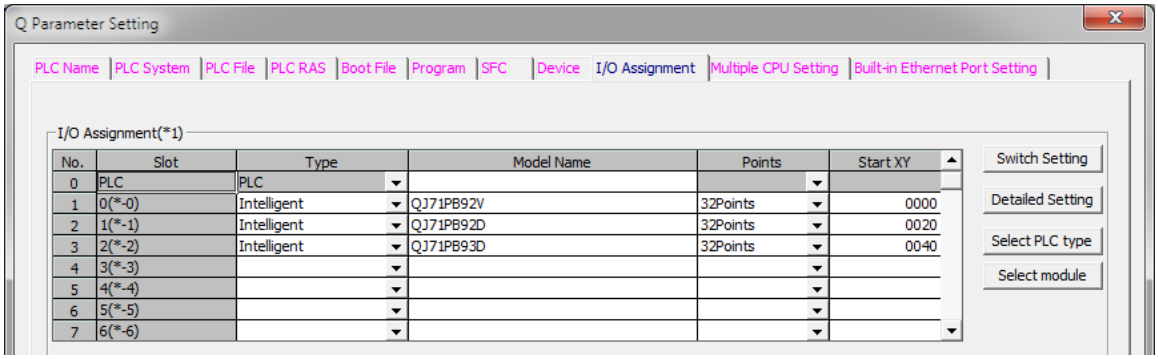
After entering the data and pressing OK, the module node is appended to the project tree. Under the module node additional nodes represent specific configuration tasks.



The following sub-nodes will be added:

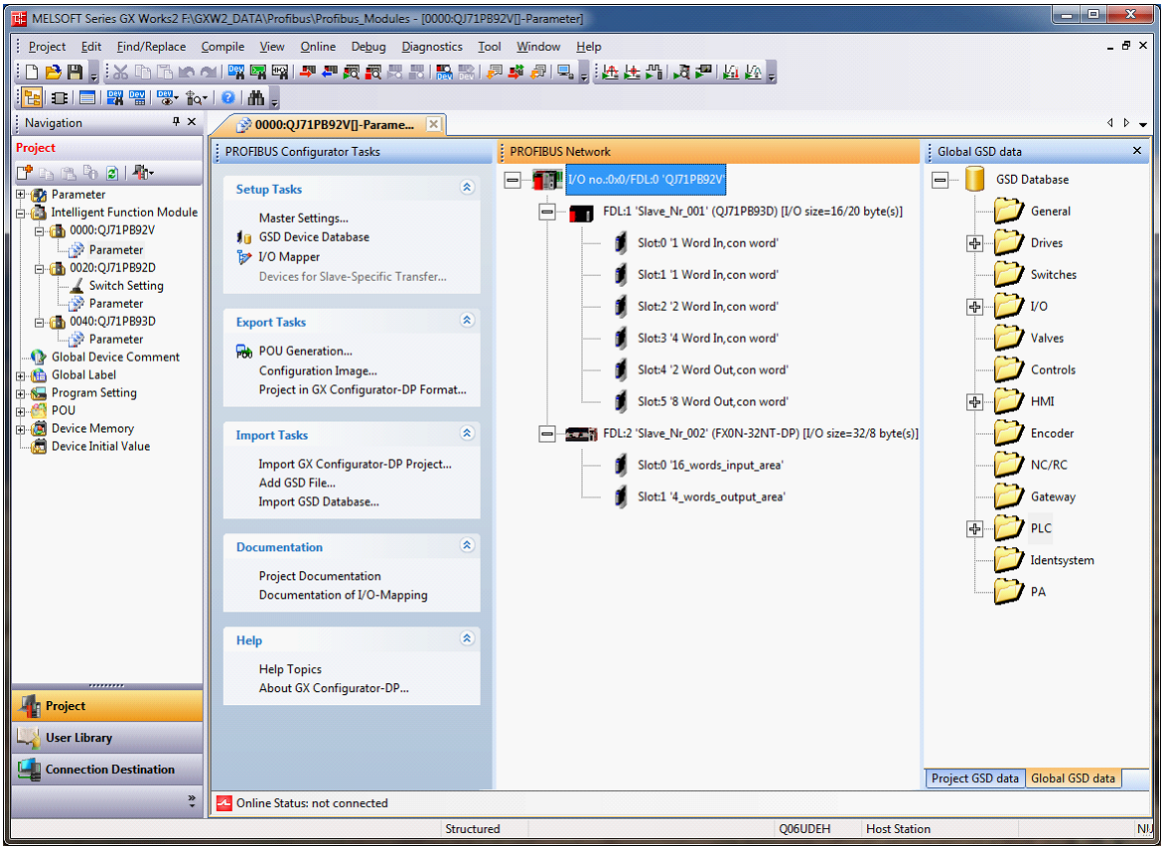
QJ71PB92V	QJ71PB92D	QJ71PB93D
Parameter	Switch Setting	Parameter
	Parameter	

In addition, the I/O assignment information of the added PROFIBUS-DP module is reflected to the I/O assignment setting of the PLC parameter.



Parameter Window

When the “Parameter” sub-node of a module is double-clicked in the project tree of GX Works2, a new child window is opened in the GX Works2 main window, in which the GX Configurator-DP project window is mapped.

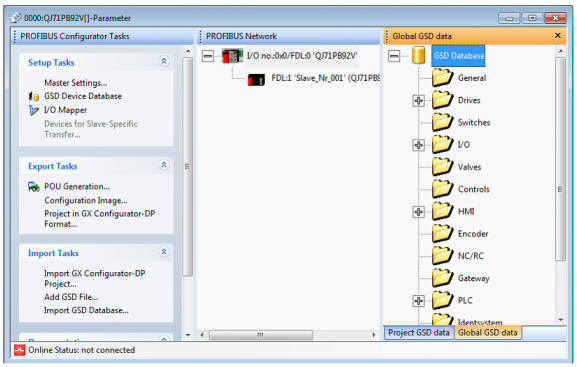


The contents of the window are organized the same way as in the standalone version. However, there are a number of differences in the behavior and the available functions compared to the standalone version. Throughout this chapter the common functions will be described on an outline level, and the differences will be specified in detail. The detailed description of the common functions can be found in the earlier parts of this manual.

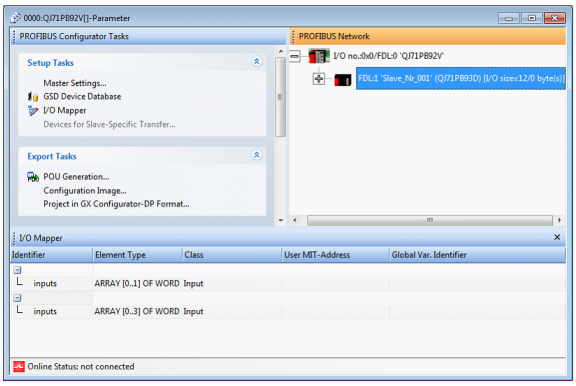
Structure of the Window

The Parameter window serves as a container for the different views in it. The views are implemented as docking windows and can be arranged within the window. This structure is the same in the integrated version as in the standalone version.
The layout of the window is not saved when closing the window. When closing and re-opening a window the default layout will be applied.

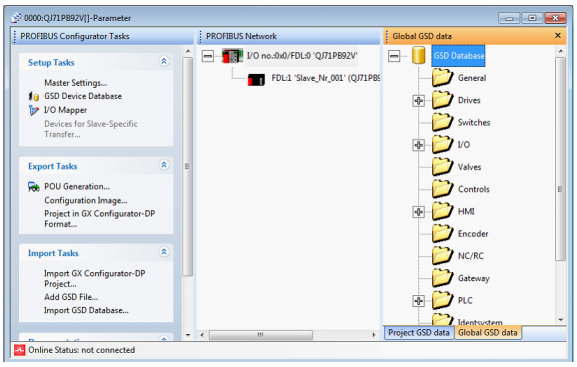
Open window



Change layout

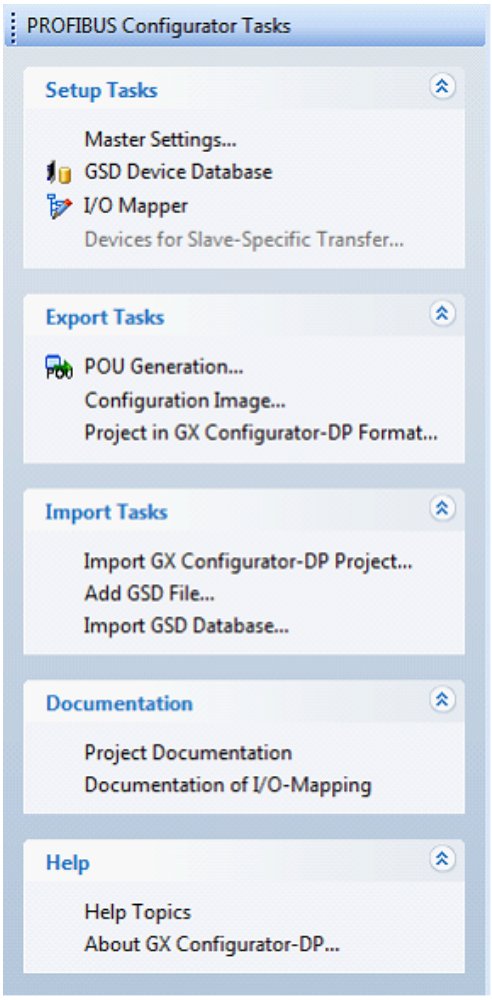
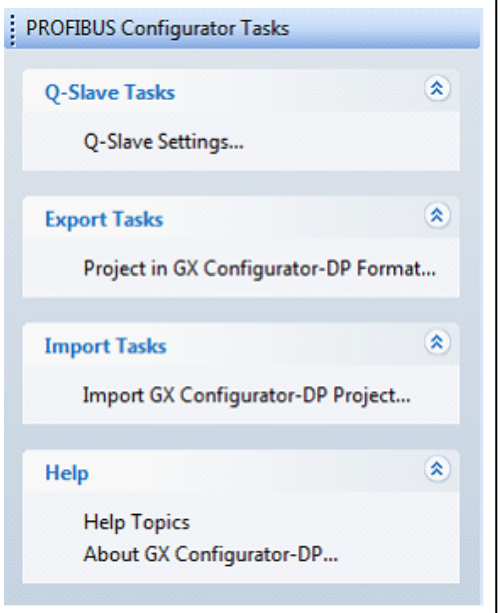


Close and re-open window



Task Panel

The task panel offers project specific shortcuts to fully manage a PROFIBUS-DP project. The following figure shows the task panel available for master and slave modules in the integrated version. The list of tasks in the integrated version is mostly a subset of that of the standalone version, and there are a few tasks which are available only in the integrated version.

QJ71PB92V / QJ71PB92D	QJ71PB93D
	

Refer to the PROFIBUS Configurator Tasks chapter for details of each task.

Main Menu

Some of the task panel commands of the standalone version can be found in the Tool menu of GX Works2.
Most of these menu items are online and diagnostics commands, and the GX Configurator-DP Options dialog is also available via the Tool menu.

The following table shows the menu items added to the end of the Tool menu in case of the various PROFIBUS-DP modules:

Menu item
Upload Configuration Image…
Download Configuration Image…
Verify
Start/Stop PROFIBUS…
Set Slave Address…

Menu item	
Diagnostics	Toggle Monitor Mode
	Slave Status
	Diagnosis Messages
	Slave I/O Test
	PLC Autorefresh Settings
PROFIBUS-DP Options…	

Read-Only Mode

When write-access is not granted to a PROFIBUS-DP module in the GX Works2 project for the current user, the Parameter window will be opened in read-only mode. It is possible to view the configuration, but all functionalities that change the configuration are disabled.

The following tasks of the task panel are disabled in read-only mode:
- I/O Mapper
- Import GX Configurator-DP Project

The following functionalities have modified behavior in read-only mode.

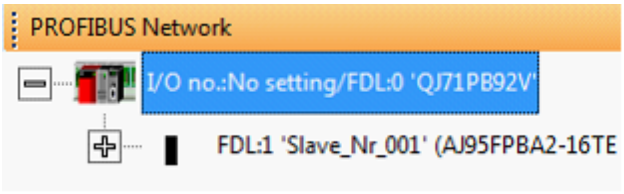
Master Settings, Slave Settings and Q-Slave Settings dialogs
- All editing in the controls of these dialogs and their sub-dialogs are disabled.
- Controls show the actual setting values.
- Addition of slave modules is disabled.

PROFIBUS Network view
- The context menu is not shown on right-click.

Global/Project GSD Data view
- Drag & drop will be ineffective.
- The “Add Slave to Project” item in the context menu of slaves is ineffective.
- Double-clicking a slave has no effect.

Operation when the Start I/O No. is not set

If the start I/O address becomes unset (e.g. because another module is added to the same position), the Parameter window will display “No setting” for the start I/O address.



Additionally, the following functionality will not be available:

- Master Settings
- Q-Slave Settings
- Devices for Slave-Specific Transfer
- POU Generation
- Export Configuration Image
- Export Project
- Import GX Configurator-DP Project

- Project Documentation
- Documentation of I/O-Mapping
- Upload Configuration Image
- Download Configuration Image
- Verify
- Start/Stop PROFIBUS
- Set Slave Address
- All Diagnostics functionalities

Switch Setting Dialog

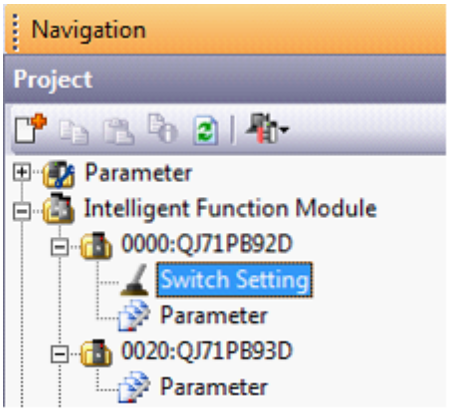
QJ71PB92V	QJ71PB92D	QJ71PB93D
O*	O	X

* The Switch Setting dialog is only available in case of a QnPRH PLC project.

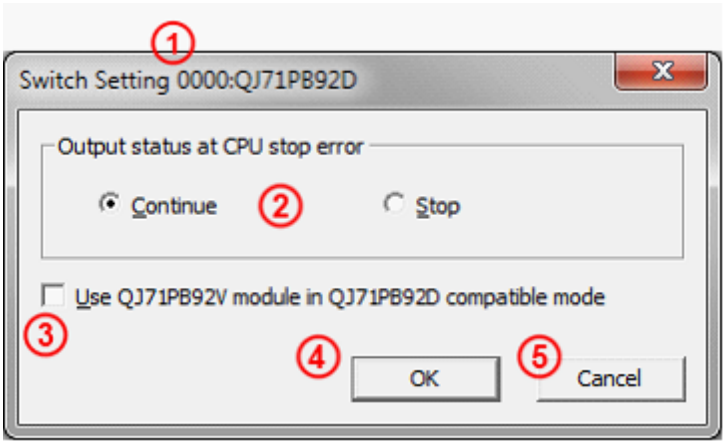
The Switch Setting dialog can be used to specify the switch settings of a module in a convenient way instead of writing hexadecimal values directly in the I/O Assignment page of the PLC Parameter dialog.

Switch settings for QJ71PB92D modules

The dialog can be opened via the “Switch Setting” sub-node of the module in the project tree of GX Works2.



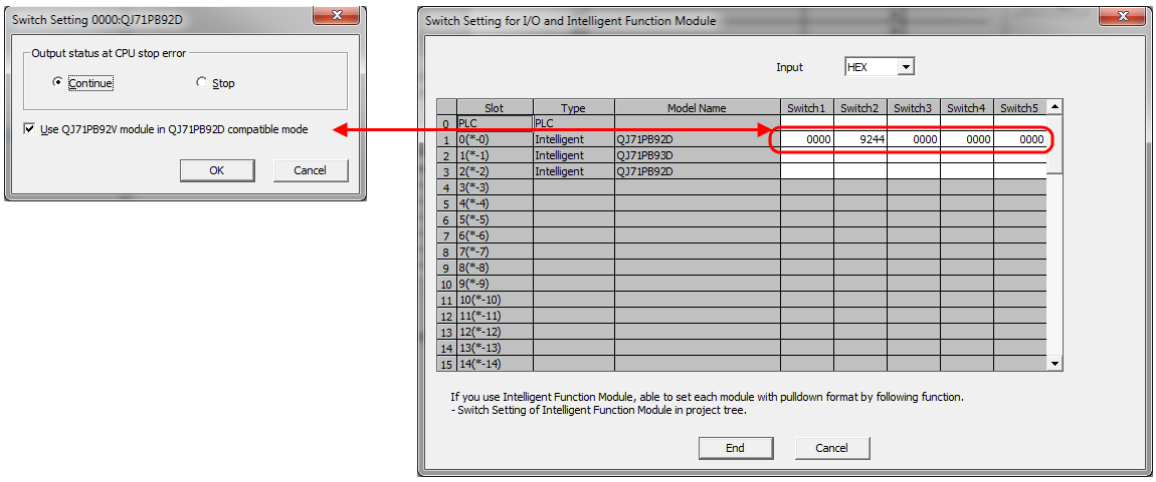
QJ71PB92D modules have a Switch Setting dialog. The Switch Setting dialog can be opened only if the start I/O address of the module is set and there is no conflict.



	Name	Description	Choices / setting range	Default
1	—	Starting I/O address of the module	0000 to 0FE0	—
2	Output status at CPU stop error	Set whether communication with the slave modules should be continued or stopped if the CPU stops with error	• Continue • Stop	Continue
3	Use QJ71PB92V module in QJ71PB92D compatible mode	If checked, a QJ71PB92V module in this position will operate identically to a QJ71PB92D module	• Checked • Unchecked	Unchecked
4	OK	Save settings and close dialog	—	Default button
5	Cancel	Discard changes and close dialog	—	—

When the Switch Setting dialog is opened, its controls are initialized to the actual values of the switches stored in the project (in the switch setting of the PLC parameter).
When the Switch Setting dialog is closed, the switch values representing the settings are written to the project (the switch setting of the PLC parameter).

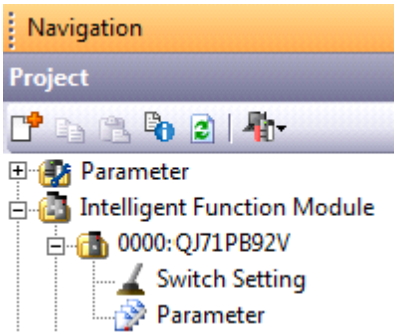
For example:



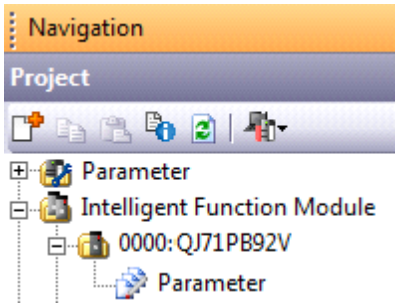
When write-access is not granted to the switch settings for the current user, the dialog will be opened in read-only mode. It will be possible to view the configuration, and the controls will be enabled, but the OK button will be disabled, so changes will not be saved.

Switch settings for QJ71PB92V modules

In a QnPRH project QJ71PB92V modules will have a Switch Setting Dialog. In projects for other Q-series PLCs there will be no Switch Setting dialog for QJ71PB92V modules.

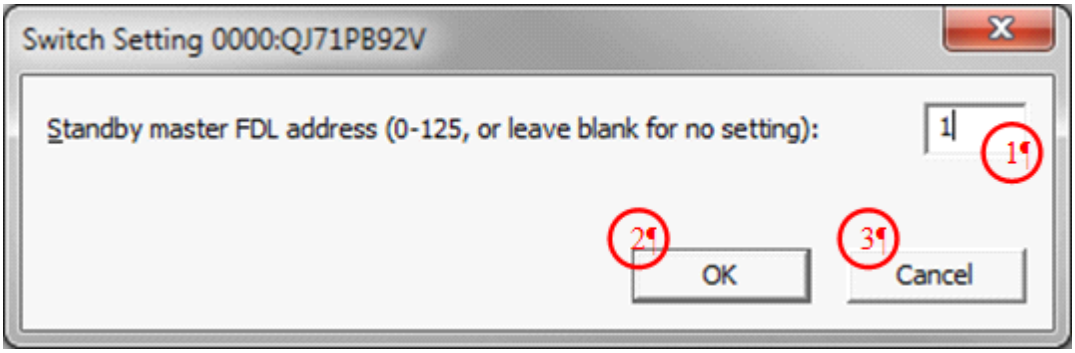


QJ71PB92V module in QnPRH project



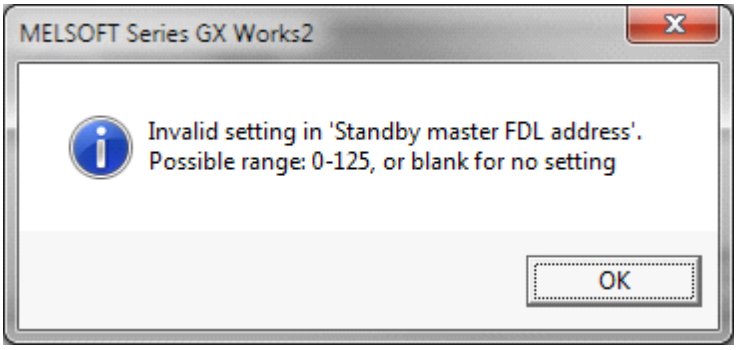
QJ92PB92V module in non-QnPRH project

The dialog is specified as follows:



	Name	Description	Choices / setting range	Default
1	Standby master FDL address (0-125, or leave blank for no setting)	FDL address of the QJ71PB92V module on the standby system	- 0..125 - Empty for 'no setting'	Empty
2	OK	Validate and save settings, then close the dialog	_	Default button
3	Cancel	Close the dialog without saving settings	_	_

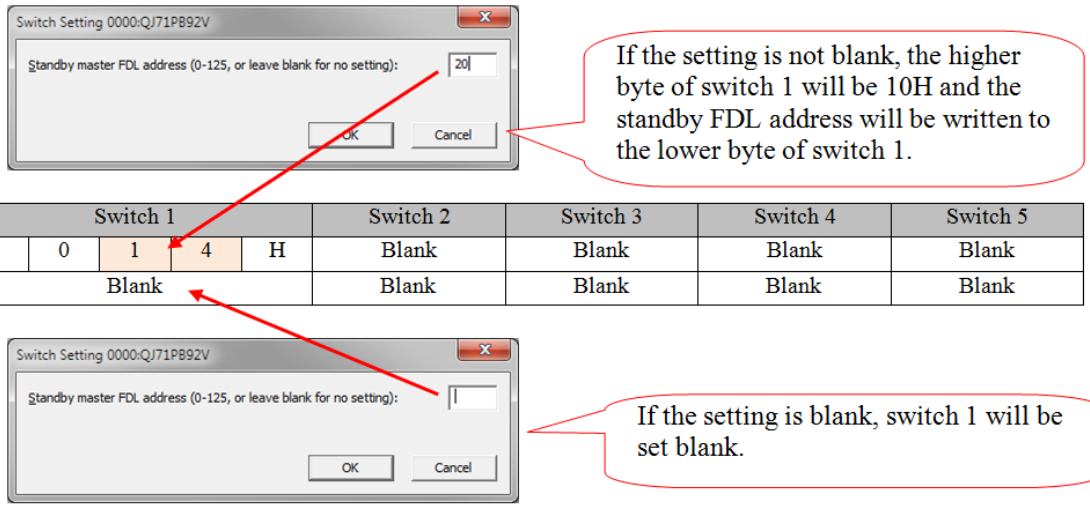
After pressing the OK button, the setting will be validated. In case of error the following message will be displayed and the dialog will be kept open:



The following figures show the relation between the "Standby master FDL address" setting in the

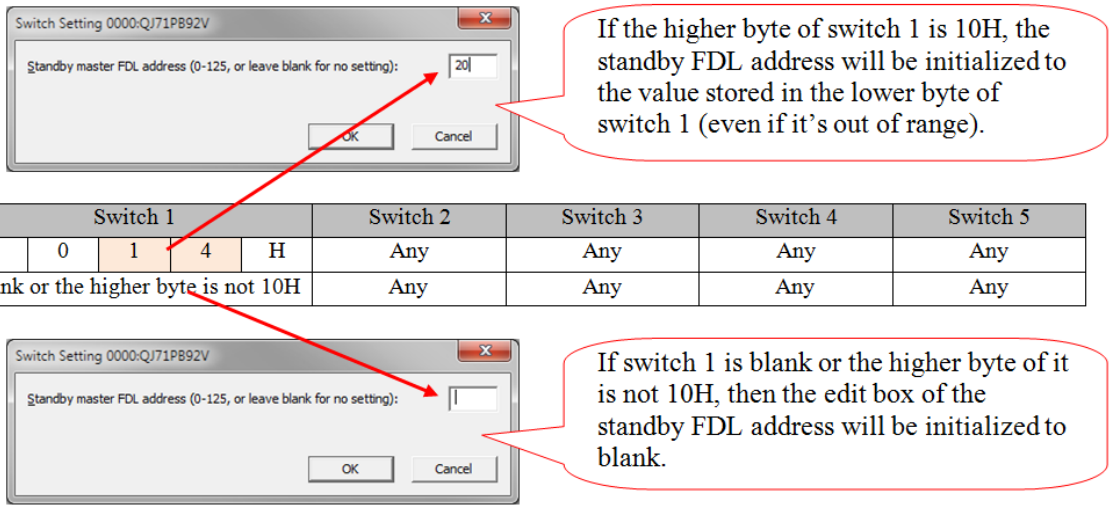
Switch Setting dialog and the corresponding PLCs switch value (which can be seen in the Switch Setting page of the PLC Parameter).

When closing the dialog with OK button:



Switch 1					Switch 2	Switch 3	Switch 4	Switch 5
1	0	1	4	H	Blank	Blank	Blank	Blank
Blank					Blank	Blank	Blank	Blank

When opening the Switch Setting dialog:



Switch 1					Switch 2	Switch 3	Switch 4	Switch 5
1	0	1	4	H	Any	Any	Any	Any
Blank or the higher byte is not 10H					Any	Any	Any	Any

QJ71PB92D Compatible Mode for QJ71PB92V

QJ71PB92V modules can be used in QJ71PB92D compatibility mode. In this mode the QJ71PB92V module identifies itself as a QJ71PB92D module and operates identically to one. This mode is useful when a QJ71PB92D module has to be replaced in a system. The existing configuration can be kept.

Steps to enable QJ71PB92D mode of a module in a new project:

1. Add a QJ71PB92D module at the appropriate module position and start I/O address.
2. Open the Switch Settings dialog of the module, check the "Use QJ71PB92V module in QJ71PB92D compatible mode" checkbox and click OK.
3. Open the Parameter window of the module; set up or import the module's configuration.
4. Call Online→Write to PLC and write the Parameter, Switch settings and Intelligent Function Module Parameters to the PLC. Close the dialog.
5. Reset the PLC. Now the QJ71PB92V module operates as a QJ71PB92D.
6. Call Online→Write to PLC, switch to the Intelligent Function Module tab and write the

PROFIBUS-DP configuration to the module.

Steps to enable QJ71PB92D mode for an existing module in the project:
1. Open the Switch Settings dialog of the QJ71PB92D module, check the “Use QJ71PB92V module in QJ71PB92D compatible mode” checkbox and click OK.
2. Call Online→Write to PLC and write the Parameter and Switch settings to the PLC. Close the dialog.
3. Reset the PLC. Now the QJ71PB92V module operates as a QJ71PB92D.
4. Call Online→Write to PLC, switch to the Intelligent Function Module tab and write the PROFIBUS-DP configuration to the module.

Deleting a PROFIBUS-DP Module

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

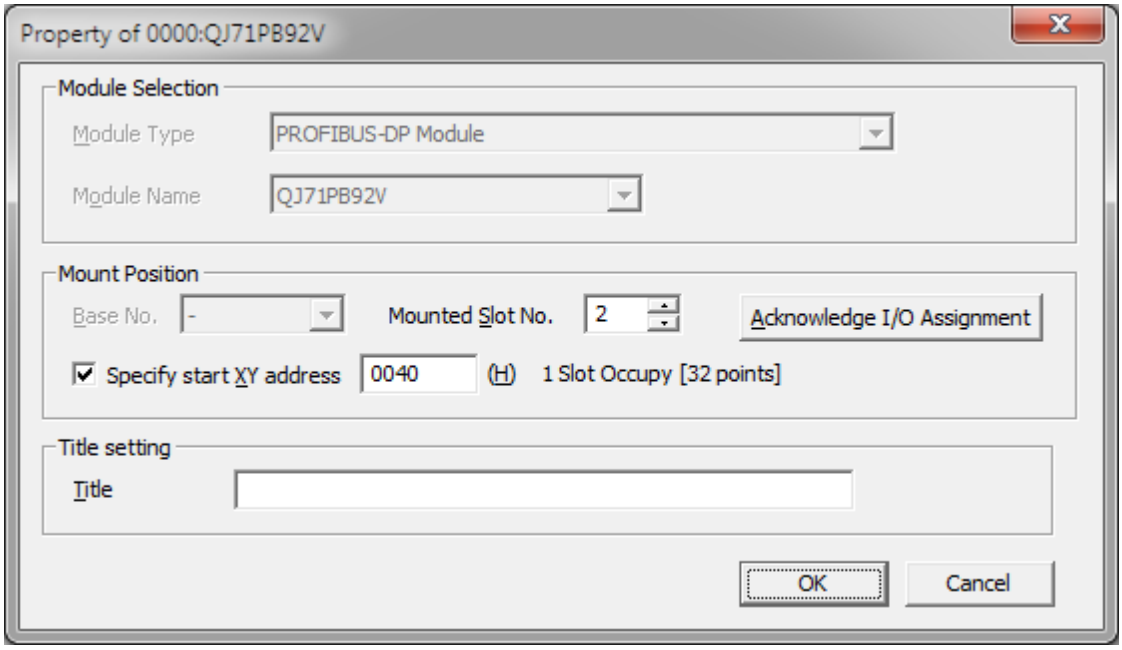
When a PROFIBUS-DP module is deleted from the GX Works2 project, the corresponding user library and program task will be deleted as well, if they exist. See the POU Generation chapter for details on the PROFIBUS-DP related user library and program task handling.

Changing the Start I/O Address of a PROFIBUS-DP Module

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

The start I/O address of the module can be changed using:
- The Property dialog of the module
- The I/O Assignment page of the PLC Parameter dialog

The Property dialog can be invoked via the context menu of the module in the project navigator. It opens a dialog, which is essentially the same as the one displayed when adding a new module, but the module type and model name cannot be changed.



If there is a generated program task and user library associated with the module, they will be updated to contain the modified addresses after changing the start I/O address. Refer to the POU Gen-

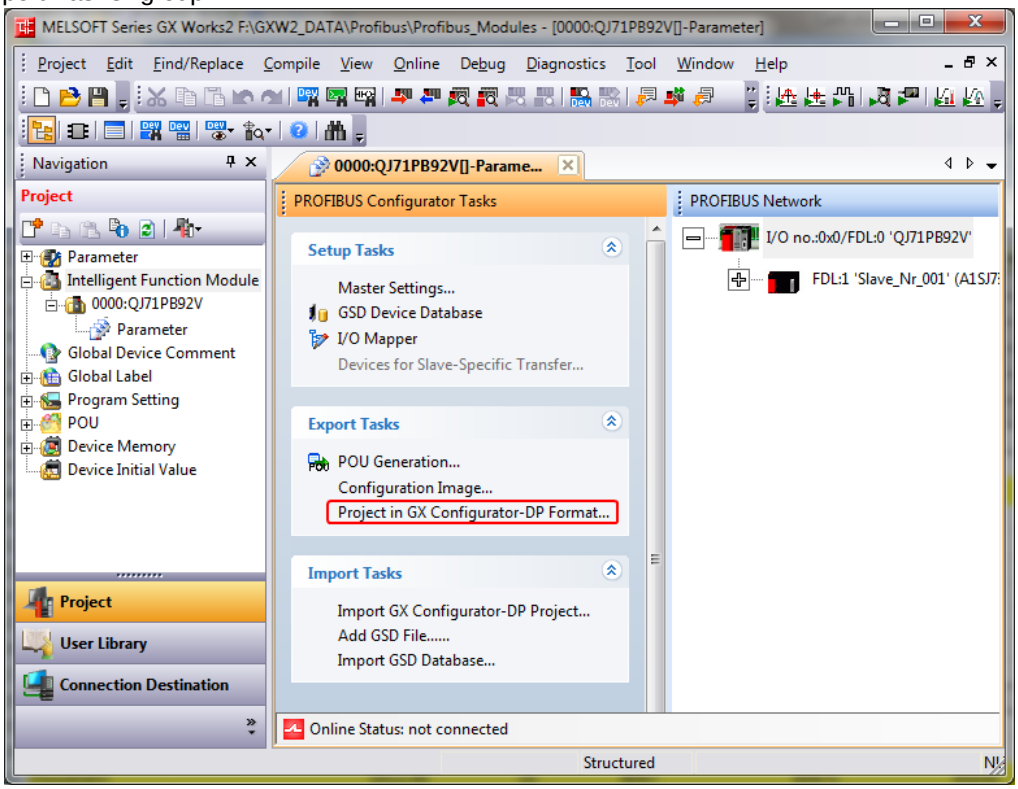
eration chapter for details on the PROFIBUS-DP related user library and program task handling.
If the Parameter window is in monitor mode, and the start I/O address is changed, monitoring will be stopped.

Type Change of Intelligent Function Module

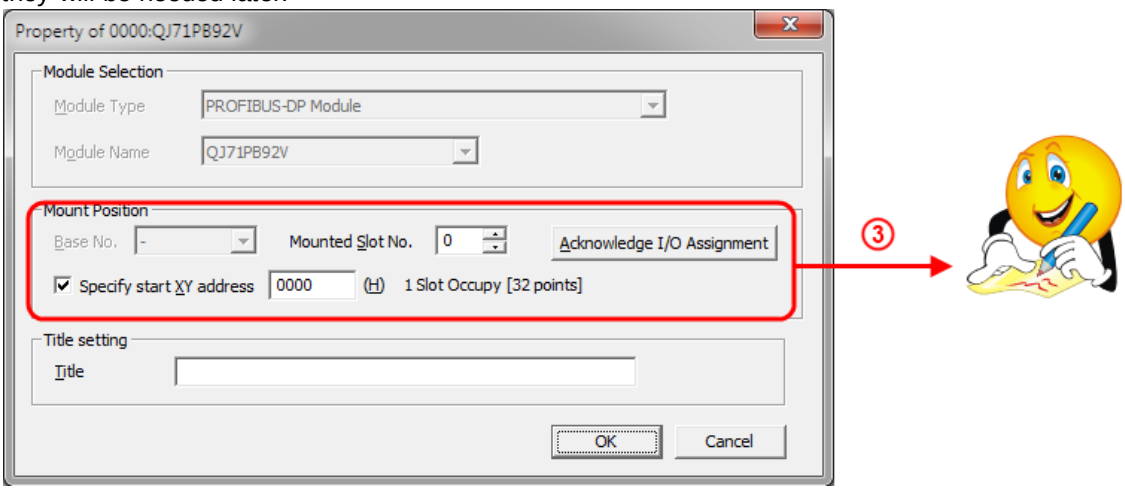
QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	X

Using the following process the type of a master module can be changed from QJ71PB92V to QJ71PB92D or vice versa:

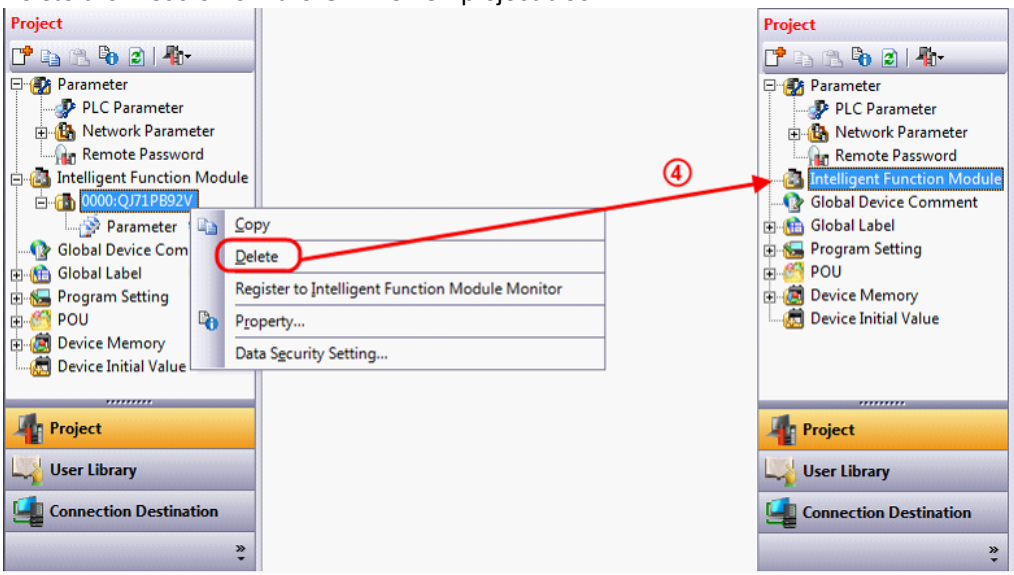
1. Open the Parameter window of the module.
2. Export the project to file using the “Project in GX Configurator-DP Format” command from the “Export Tasks” group.



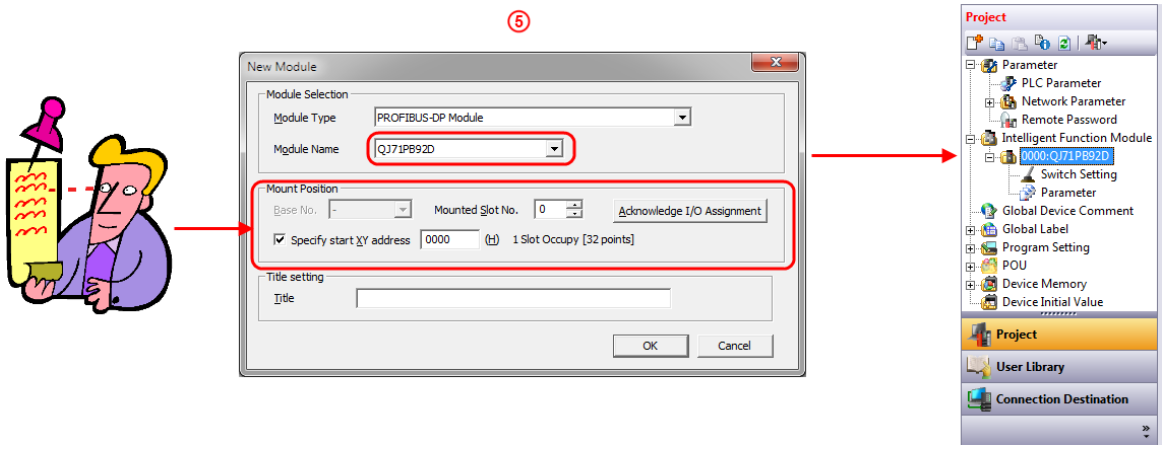
3. Take notes of the base number, slot number and starting I/O address of the module, because they will be needed later.



4. Delete the module from the GX Works2 project tree.

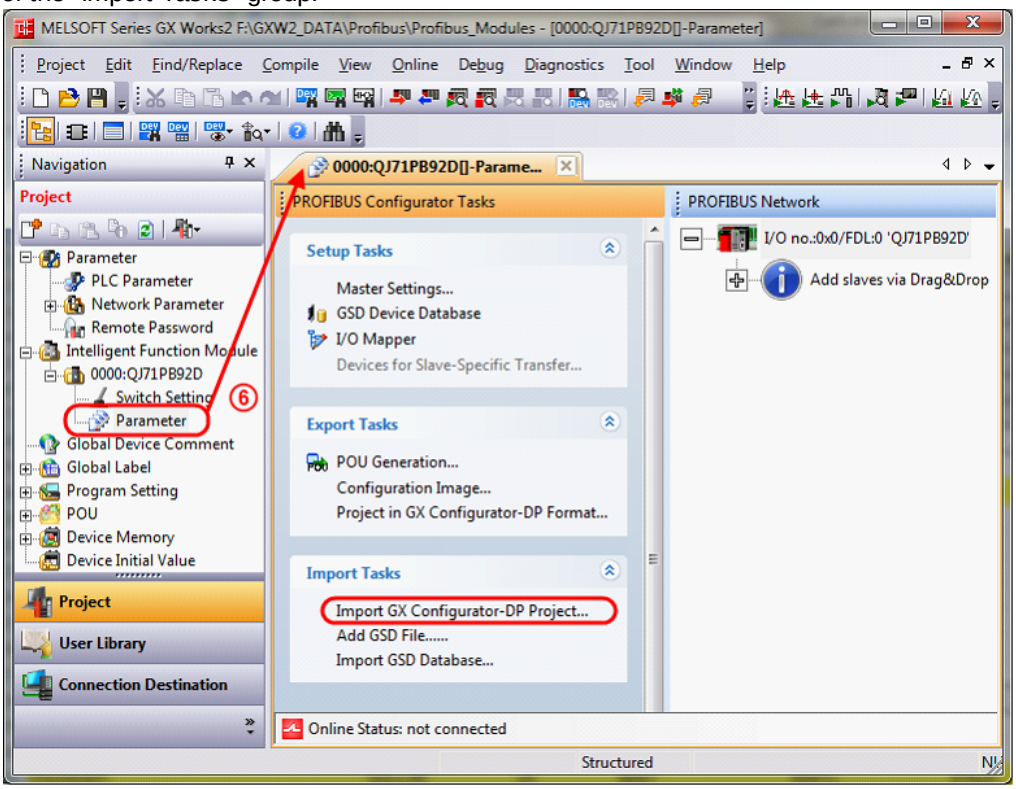


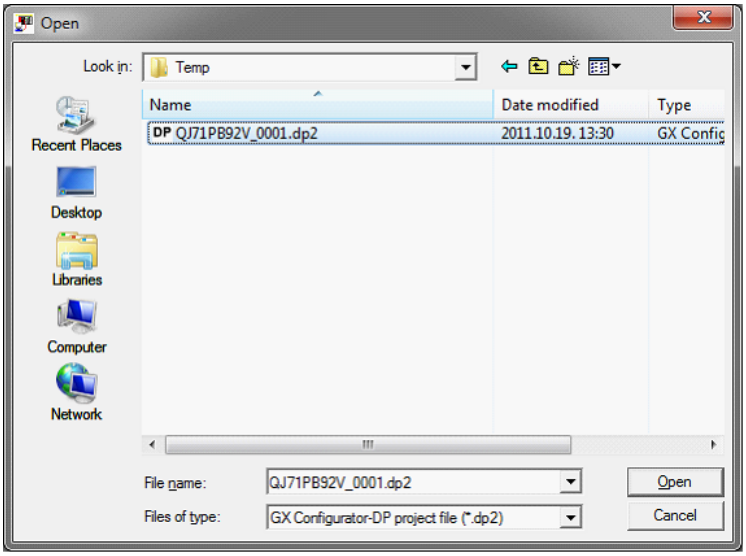
5. Create a new module in the GX Works2 project tree with the new module type and the previously retained base number, slot number and starting I/O address.



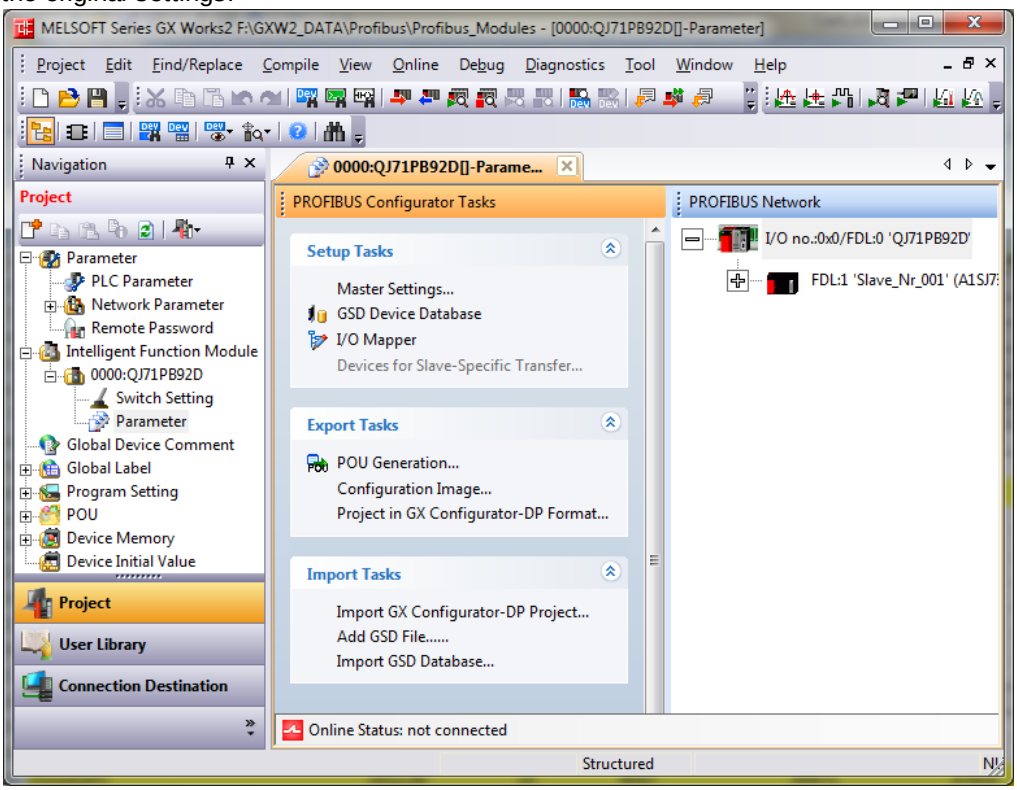
6. Open the Parameter window of the module.

7. Import the previously exported project file using the “Import GX Configurator-DP Project” command of the “Import Tasks” group.





8. At the end of the process the project will contain the changed type of PROFIBUS-DP module with the original settings.



The following table shows the possible source and destination types where the above process is applicable:

Source / Destination	QJ71PB92V	QJ71PB92D	QJ71PB93D
QJ71PB92V	X	O	X
QJ71PB92D	O	X	X
QJ71PB93D	X	X	X

O: applicable X: not applicable

Other Format Files

Opening a GX Developer Format File

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

When opening a GX Developer project, PROFIBUS-DP modules will be added to the GX Works2 project for each PROFIBUS-DP module existing in the IPARAM file of the converted project. This is the same specification as with other intelligent function modules.

Difference from other intelligent function modules
GX Developer projects contain only the auto-refresh settings of PROFIBUS-DP modules. In case of master modules (QJ71PB92V and QJ71PB92D) it is not possible to re-create the PROFIBUS network based on only the auto-refresh settings, because there is no information about master settings, used slaves, etc. in the GX Developer project. Therefore a default configuration will be added for each master module included in the opened GX Developer project.

The result of this limitation for master modules is that after opening a GX Developer project:
- The auto-refresh settings will not be visible in the Parameter window, but the auto-refresh settings related functionalities (e.g. Write to PLC, Intelligent Function Module Parameter List, etc.) will be able to use them.
- After changing the PROFIBUS-DP configuration of a module in the Parameter window, the auto-refresh settings will be updated in the GX Works2 project to those set in the Parameter window. After this point the auto-refresh settings related functionalities (e.g. Write to PLC, Intelligent Function Module Parameter List, etc.) will use the updated settings.

The effects of this limitation can be avoided if the original GX Configurator-DP projects used for the modules included in the GX Developer project's IPARAM file are available. The following process can be applied to import a GX Developer project containing PROFIBUS-DP modules:
1. Open GX Developer project using the Project→Open Other Data→Open Other Project… menu command.
2. Open the Parameter window of each PROFIBUS-DP master module and use the Import Tasks→Import GX Configurator-DP Project… command to import the configuration of each module.

Export to GX Developer Format File

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

When exporting the project to GX Developer format, the auto-refresh settings of PROFIBUS-DP modules having will be included in the IPARAM file of the exported project. This is basically the same specification as with other intelligent function modules, except for the fact that since the initial settings of PROFIBUS-DP modules are not stored in the IPARAM file, PROFIBUS-DP modules having no auto-refresh settings will not be part of the IPARAM file.

Apart from the auto-refresh settings, other parameters of PROFIBUS-DP modules will not be part of the GX Developer project. It is recommended to export the settings of each PROFIBUS-DP module in the project using the Export Tasks→Project in GX Configurator-DP Format… command of the Parameter window. Afterwards the exported project can be opened in the standalone version of GX Configurator-DP.

POU Generation

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	X

Availability

POU generation can be performed only in the European version of GX Works2 and only in structured projects, therefore:
- The "POU Generation" task of the PROFIBUS-DP Parameter window will be available only in structured projects of the European version of GX Works2.
  Exception: in case of Q Remote I/O CPU the "POU Generation" task will be enabled in simple projects, because in case of this CPU the objects are not written to the project, but written to file that is imported to the controlling PLC's project.

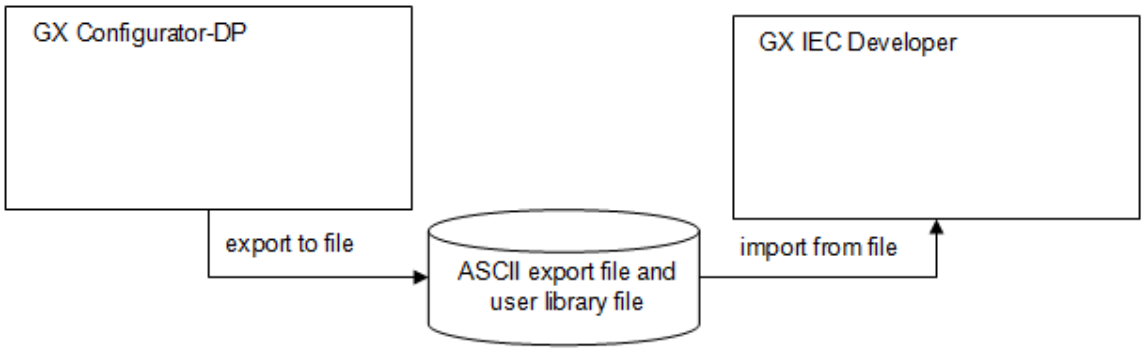
- Automatic POU generation will be performed only in structured projects of the European version of GX Works2.

POU generation will not be performed if the start I/O no. of the module is not set.

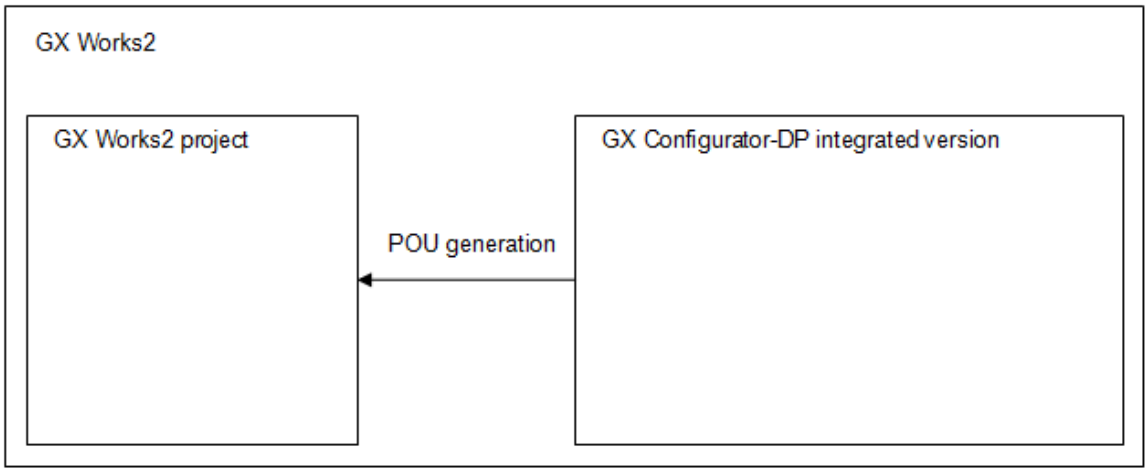
Overview

GXDP has a function that creates PLC program code based on the parameter settings and the I/O mapping information of the module. The generated program parts assist the application programmer in accessing slave input and output using symbolic variables and also perform the data transfer between the CPU and the master module in case copy instructions are used for this purpose instead of auto-refresh.

In the stand-alone version it can be used to create a user library and an ASCII export file with the necessary program objects, which can be imported to a GX IEC Developer project for use.



In the integrated version there is no need for export/import, because the necessary objects will be directly added to the GX Works2 project that contains the PROFIBUS-DP module.



The update of the program code must be performed every time the PROFIBUS-DP configuration is changed in a way that affects the program code. For example, if a new I/O module is added to a slave, or a variable definition is changed in the I/O Mapper, POU generation must be called to update the program code in the project. However, in the integrated version it will be possible to automate this update process: whenever the PROFIBUS-DP configuration is saved, it will be checked whether there has been any change in the configuration for which POU generation is necessary, and in such a case it will be performed. Automatic POU generation can be turned on in the Master Settings dialog of the module (see the Master Settings chapter for details).

The following table shows the advantages of the integrated version over the stand-alone version in

terms of the POU generation feature:

In the integrated version the same objects are created as in the standalone version:
- User library
  - o Structured Data Types
  - o Global Variables
  - o Two POUs
- Program Task

The following table shows the purpose and naming of the generated objects:

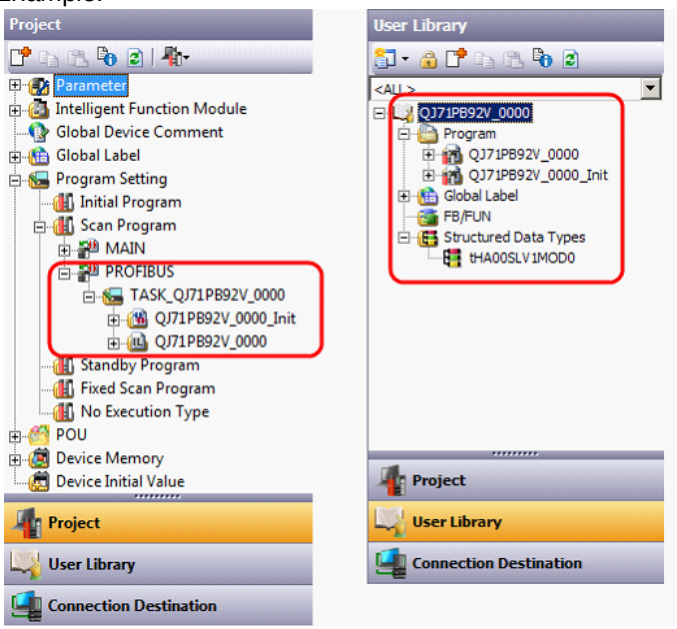
Object	Purpose	Name format	Name example
User library	Container for SDTs, global variables and POUs	<ModuleType>_<StartingIO>	QJ71PB92V_0000
SDTs	Data types for I/O mapping	tHA<starting I/O no.>SLV<FDL address>MOD<module index (slot)>	tHA0SLV10MOD1
Global variables	Individual variables for I/O mapping	user-defined	-
POU	POU for application specific initialization	<ModuleType>_<StartingIO>_Init	QJ71PB92V_0000_Init
POU	POU for I/O data access	<ModuleType>_<StartingIO>	QJ71PB92V_0000
Task	A program task in the program resource named “PROFIBUS” or “MAIN” (depending on PLC type*), containing calls to the previously described POUs	TASK_<ModuleType>_<StartingIO>	TASK_QJ71PB92V_0000

*The task will be added to the program resource “MAIN” in case of basic model QCPU. For all other CPUs the task will be added to the program resource “PROFIBUS”.

PLC type	Target program
Q00, Q00J, Q01	MAIN
Other	PROFIBUS

If POU generation is used in a project for basic model QCPU, Ladder POUs should not be used in the project, because it would result in mixed use of structured and non-structured languages in the MAIN program, which is not allowed by the compiler.

Example:



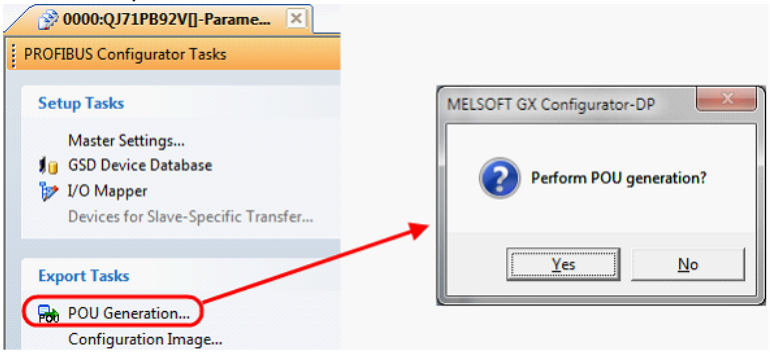
The user library and the program task will be created at the following events:

- Manual POU Generation
  - o When the “POU Generation” command from the task panel of the Parameter window is clicked.
- Automatic POU Generation
  - o When the Parameter window is saved and there have been changes in the settings that affect the user library, or the user library doesn’t exist. The Parameter window is saved in the following cases if its contents have been modified:
    - when the window is closed
    - when the project is saved
    - when some function requests the saving of the window (e.g. before build)
  - o When the starting I/O address of the module is changed:
    - in the Property dialog of the module
    - in the I/O Assignment page of the PLC Parameter

Manual POU Generation

All supported CPUs except Q Remote I/O

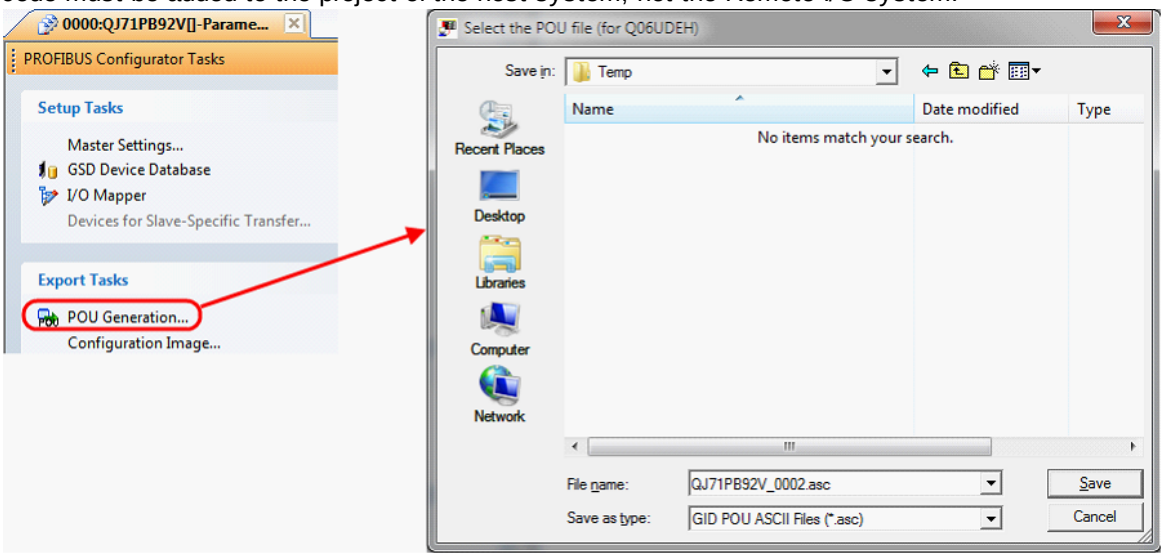
The following confirmation message will be displayed when clicking the “POU Generation” command in the task panel of the Parameter window.



The operation will be performed only if the you answer Yes. Afterwards, the handling specified in the Common Operation chapter will apply.

Q Remote I/O

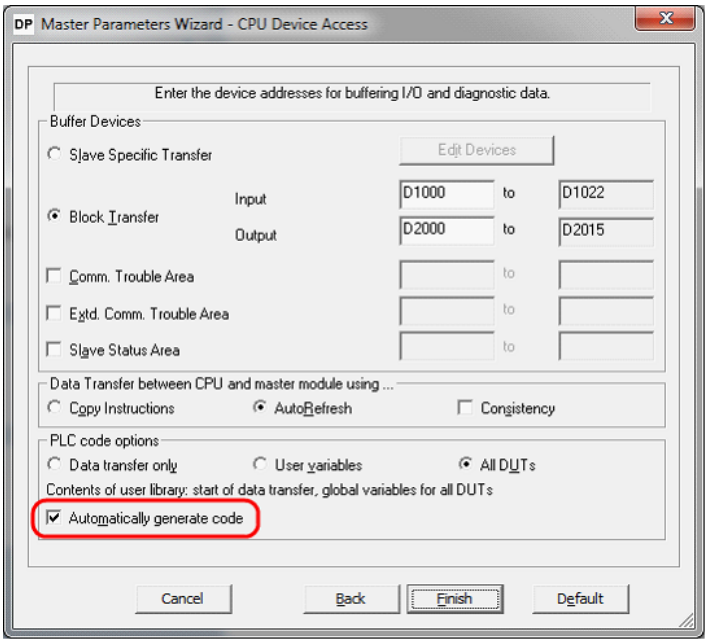
In Q Remote I/O projects this task will perform the same action as in the standalone version: the user library and task will be exported to file, because in case of the Q Remote I/O CPU the program code must be added to the project of the host system, not the Remote I/O system.



The behavior is the same as in the standalone version.

Automatic POU Generation

Automatic POU Generation can be enabled for each module in the Master Settings dialog of the PROFIBUS-DP Parameter window:



The user library and the program task will be created automatically at the following events:

- When the Parameter window is saved and there have been changes in the settings that affect the user library, or the user library doesn't exist. The Parameter window is saved in the following cases:
  - o when the window is closed
  - o when the project is saved
  - o when some function requests the saving of the window (e.g. before build)
- When the starting I/O address of the module is changed:
  - o in the Property dialog of the module

o in the I/O Assignment page of the PLC Parameter

Operation when the Parameter Is Saved

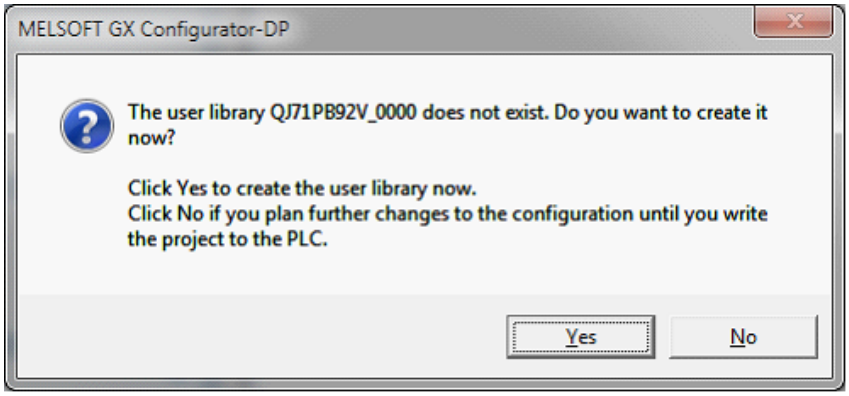
When the Parameter window of a PROFIBUS-DP master module is saved, it will be checked whether the user library and task must be created, updated or deleted. The performed actions depend on whether these objects already exist in the project.

If neither the user library nor the task exists

If the corresponding user library and task don't exist, they will be automatically created. The handling specified in the Common Operation chapter will apply.

If the user library doesn't exist, but the task exists

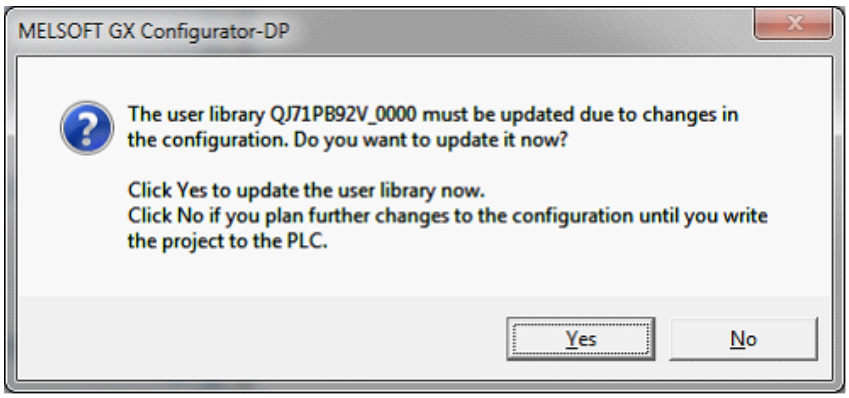
If only the corresponding user library doesn't exist, but the task does, it is assumed that the user library has been deleted earlier due to changes in the configuration. You will be asked whether to create the user library.



If you answer Yes, the handling specified in the Common Operation chapter will apply.
If you answer No, no action will be taken. You can re-create the user library later by calling the "POU Generation" command or you will be automatically asked this question again next time the Parameter window is saved.

If the user library exists

If the corresponding user library already exists, it will be checked whether the configuration has been changed since the last opening/saving of the parameter window in any way that affects the content of the user library. In such a case the following message will be displayed:



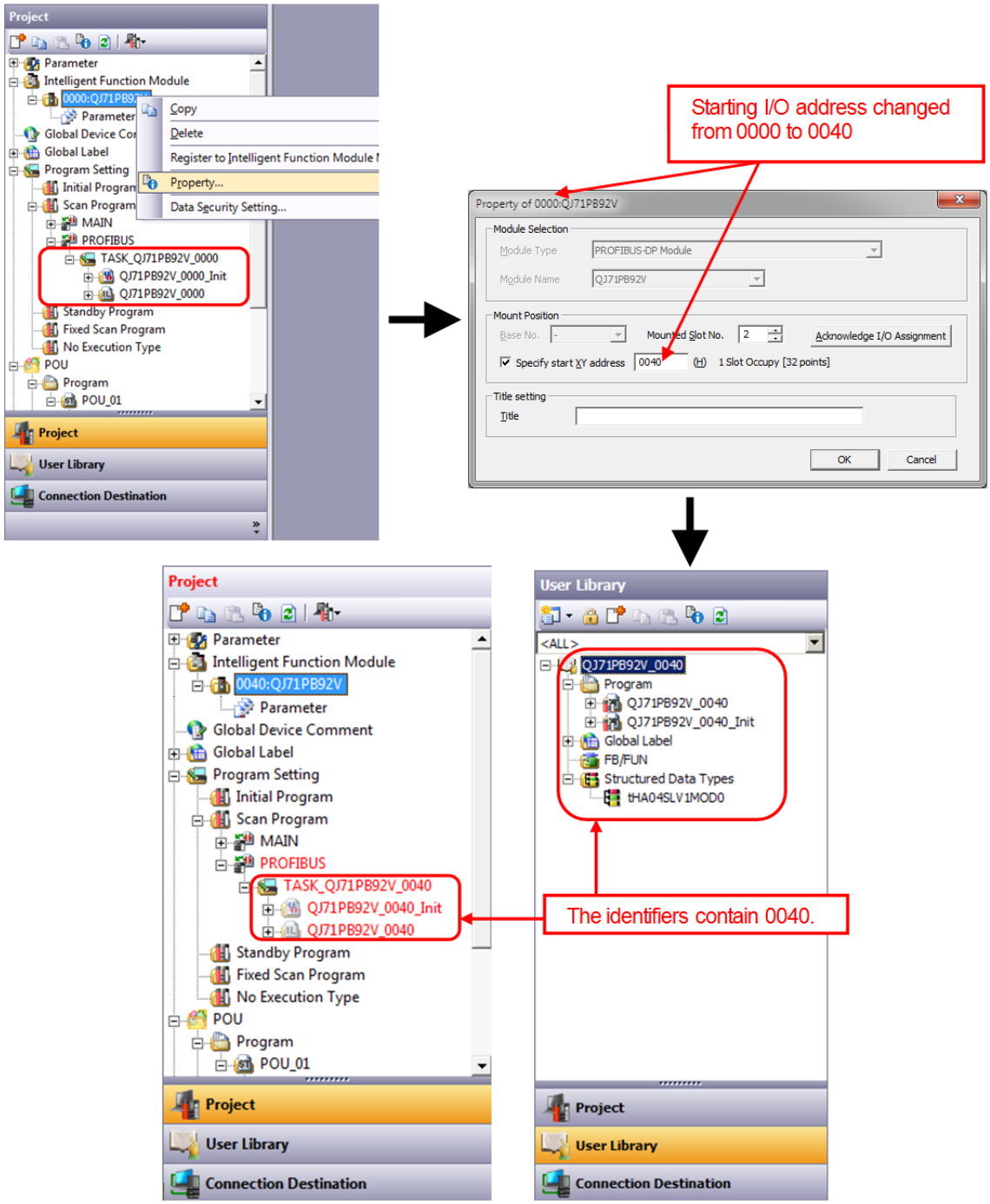
If you answer Yes, the handling specified in the Common Operation chapter will apply.
If you answer No, the user library will be uninstalled. You can re-create the user library later by calling the "POU Generation" command or you will be automatically asked again next time the Para-

meter window is saved.

Operation when the Starting I/O Address Is Changed

When the starting I/O address of the module is changed in the Property dialog or in the PLC Parameter dialog, the task and the user library will be automatically updated in the GX Works2 project.

The old task and user library will be deleted from the project, and new ones will be added having names that reflect the changed starting I/O address. The identifiers and addresses used in the user library will be changed to be based on the new starting I/O. The handling specified in the Common Operation chapter will apply.



Common Operation

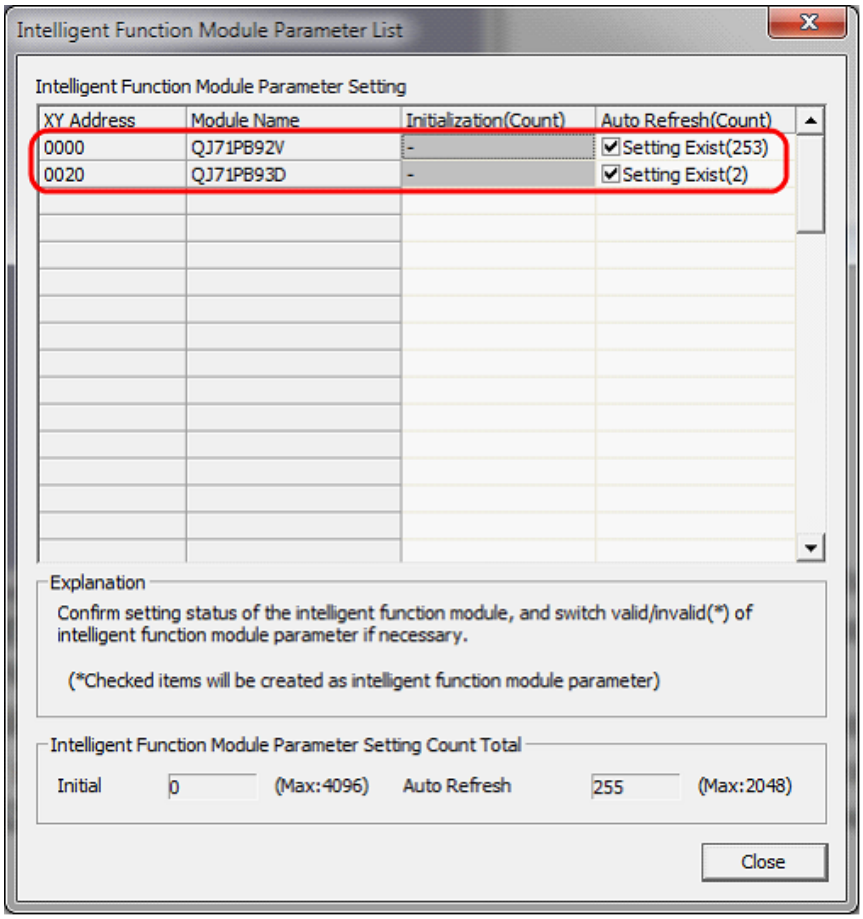
In this sub-chapter the task and user library creation/update will be specified, which is performed in

all of the previously described cases when it is necessary.
If the program task exists, it will be automatically deleted and created again.
If the user library exists, it will be automatically deinstalled. Afterwards GXDP will perform the same checks on the configuration as in the standalone version (device addresses, overlaps, global variable identifiers, etc.), and display possible error and/or warning messages. In case of error or user break the user library will not be created, otherwise the user library will be added to the project without further interaction.

Intelligent Function Module Parameter List Dialog

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

The Intelligent Function Module Parameter List dialog can be used to check the number of parameters of each module and specify which modules will be included in the intelligent function module parameter download.
Two types of parameters exist: initial settings and auto-refresh settings, but in case of PROFIBUS-DP modules only the auto-refresh settings are regarded by the intelligent function parameter download, because the initialization settings are downloaded directly to the module in the Intelligent Function Module tab of the Write to PLC dialog.



In the “Initialization” column the cell will always contain “-“, and it will be grayed, while the “Auto Refresh” column will contain either “No Setting” or “Setting Exist (n)”, where n is the number of auto-refresh settings. In the latter case there will be a checkbox to specify whether the settings should be downloaded to the PLC.

Online Data Operation

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

The following functionalities of GX Works2 can be used to read, write, verify and delete PROFIBUS-DP module related data:

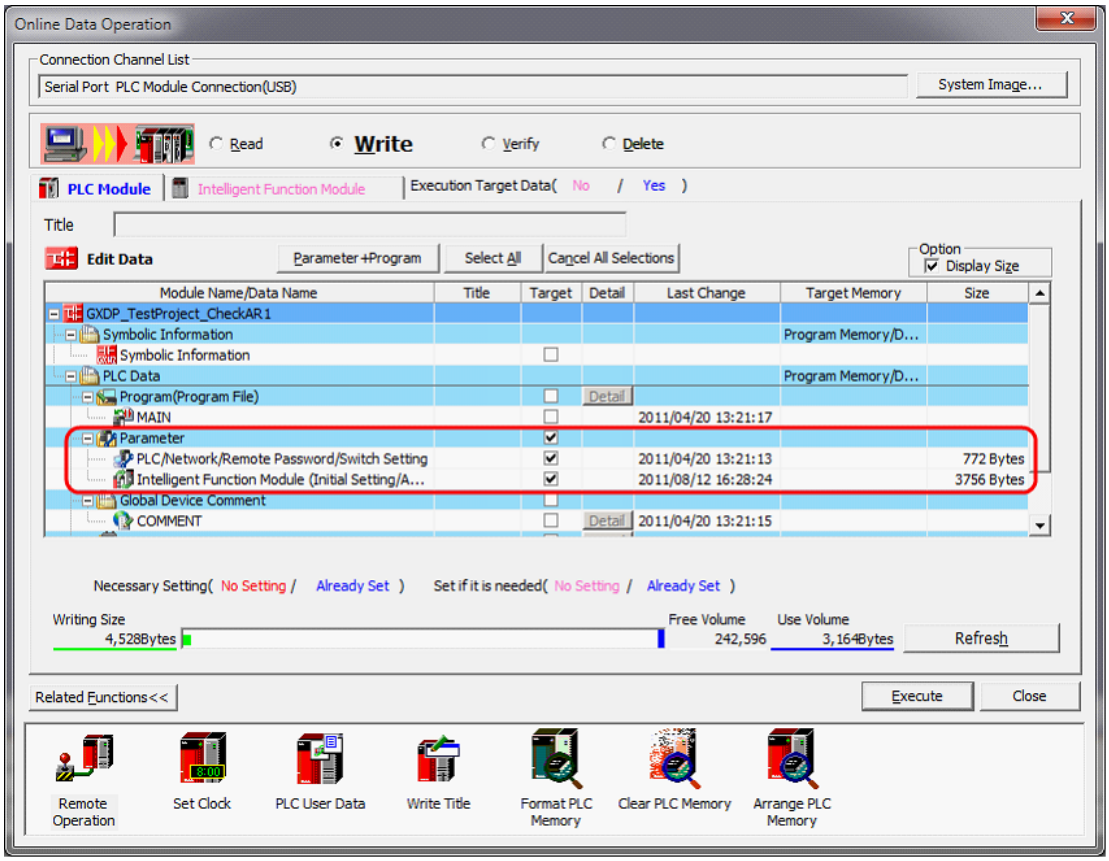
- Write to PLC
- Read from PLC
- Verify with PLC
- Delete from PLC

The auto-refresh and switch settings are transferred to the CPU and the PROFIBUS-DP parameters are transferred to the module's flash-ROM.
The auto-refresh and switch settings can be managed in the PLC Module tab of the corresponding dialogs.
The parameters can be written to the module in the Intelligent Function Module tab of the Write to PLC dialog, but the parameters cannot be read from the module to the project. The Tool→Verify command of the Parameter window can be used to verify the parameters of the project with the PLC.

Operation	Auto-refresh settings Switch settings	Parameters
Write	Write to PLC / PLC Module	Write to PLC / Intelligent Function Module
Read	Read from PLC / PLC Module	-
Verify	Verify with PLC / PLC Module	PROFIBUS-DP Parameter Window
Delete	Delete PLC Data	-

Writing to the PLC

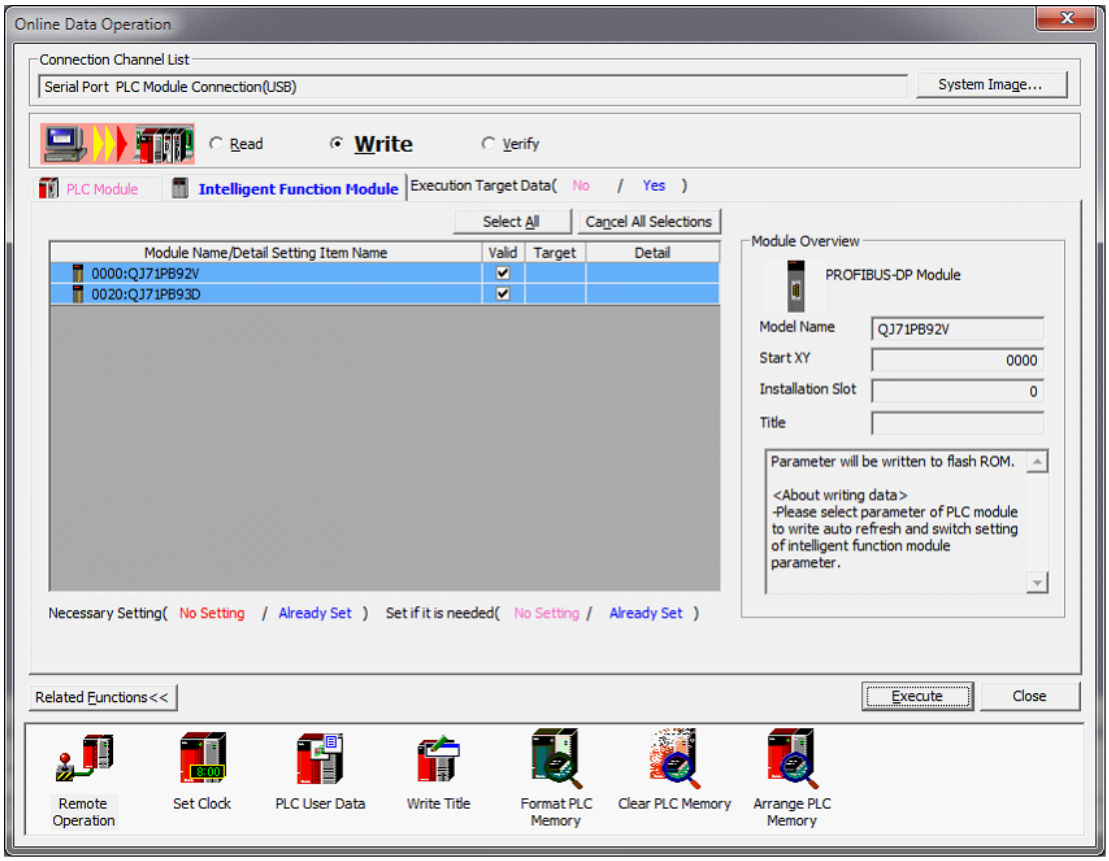
PLC Module Tab



The switch settings of PROFIBUS-DP modules will be written to the PLC if the “PLC/Network/Remote Password/Switch Setting” item is checked.

The auto-refresh settings of PROFIBUS-DP modules will be written to the PLC if the “Intelligent Function Module (Initial Setting/Auto Refresh) item is checked, and the module is included in the “Intelligent Function Module Parameter List” (refer to the Intelligent Function Module Parameter List Dialog chapter for details).

Intelligent Function Module Tab

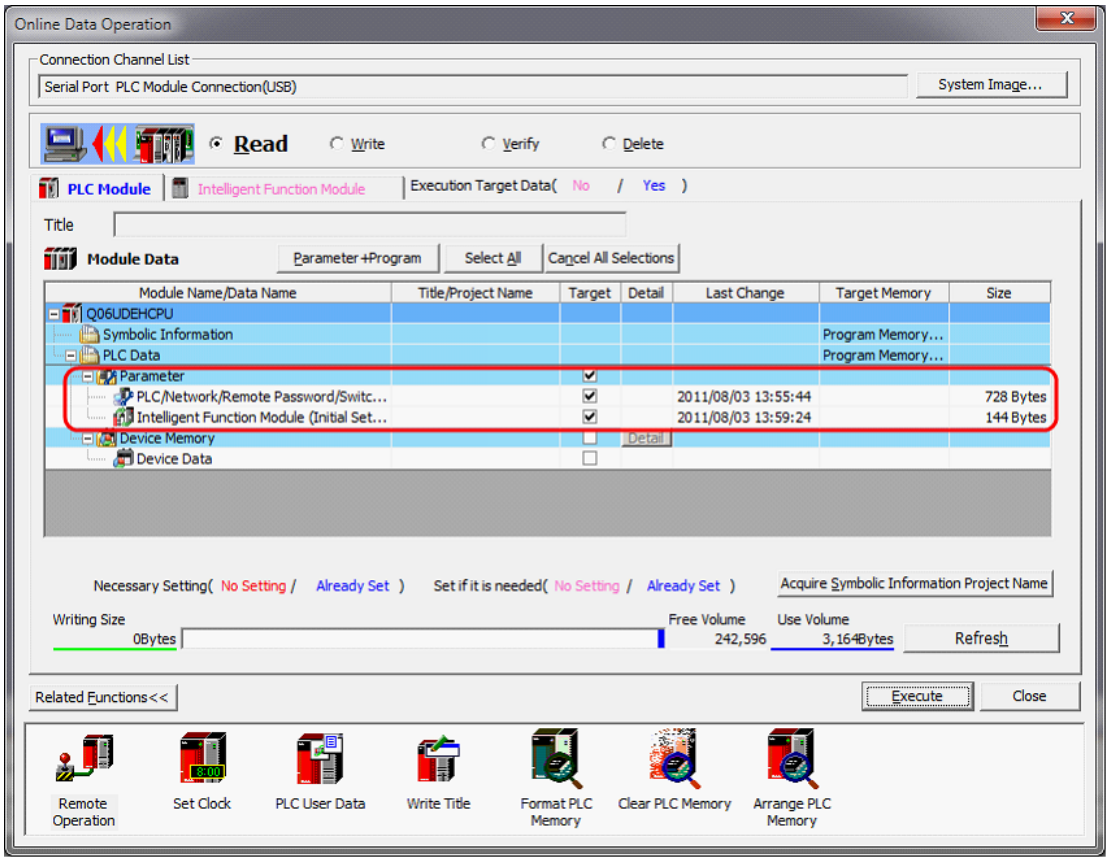


The parameters of the PROFIBUS-DP modules can be written to the module by selecting them in the Intelligent Function Module tab of the dialog.

Reading from the PLC

The initial settings of PROFIBUS-DP modules cannot be read from the PLC, because a PROFIBUS-DP configuration cannot be recreated from the data on the PLC. Only the switch settings and the auto-refresh settings can be read.

PLC Module Tab



The switch settings of PROFIBUS-DP modules will be read from the PLC if the “PLC/Network/Remote Password/Switch Setting” item is checked.

Since the PROFIBUS-DP modules’ initial settings can’t be uploaded using this dialog, they will not be read from the PLC even if the “Intelligent Function Module (Initial Setting/Auto Refresh)” item is checked.

If the “Intelligent Function Module (Initial Setting/Auto Refresh) item is checked:

- A new PROFIBUS-DP module will be added to the project with default configuration for each PROFIBUS-DP module that has auto-refresh settings on the PLC but doesn’t exist in the project.
- For each existing and newly added module the auto-refresh settings will be read from the PLC. The auto-refresh settings will be attempted to be applied to the corresponding module in the project:
  - o Master modules: the auto-refresh settings are applied to the module if they are valid for the actual network configuration in the project, i.e. the number of auto-refresh settings, their buffer memory address and size must match the I/O area of the slaves in the network. In case of mismatch between the network configuration of the project and the PLC, default auto-refresh settings will be applied to the PROFIBUS-DP module in the project.
  - o Slave modules: the auto-refresh settings are applied to the module.

The concept of auto-refresh upload is: if the auto-refresh settings of the uploaded IPARAM are valid for the module configuration in the GX Works2 project, they are applied. If the auto-refresh settings of the uploaded IPARAM are not valid for the module in the GX Works2 project, default auto-refresh settings are applied.
QJ71PB93D modules are simple modules with one auto-refresh setting for input and one auto-refresh setting for output. Therefore the settings are always applicable.
Master modules (QJ71PB92V and QJ71PB92D) are not so simple. The auto-refresh settings can be applied only if the slaves in the network of the master have the same buffer memory address and

data size as the auto-refresh entries.

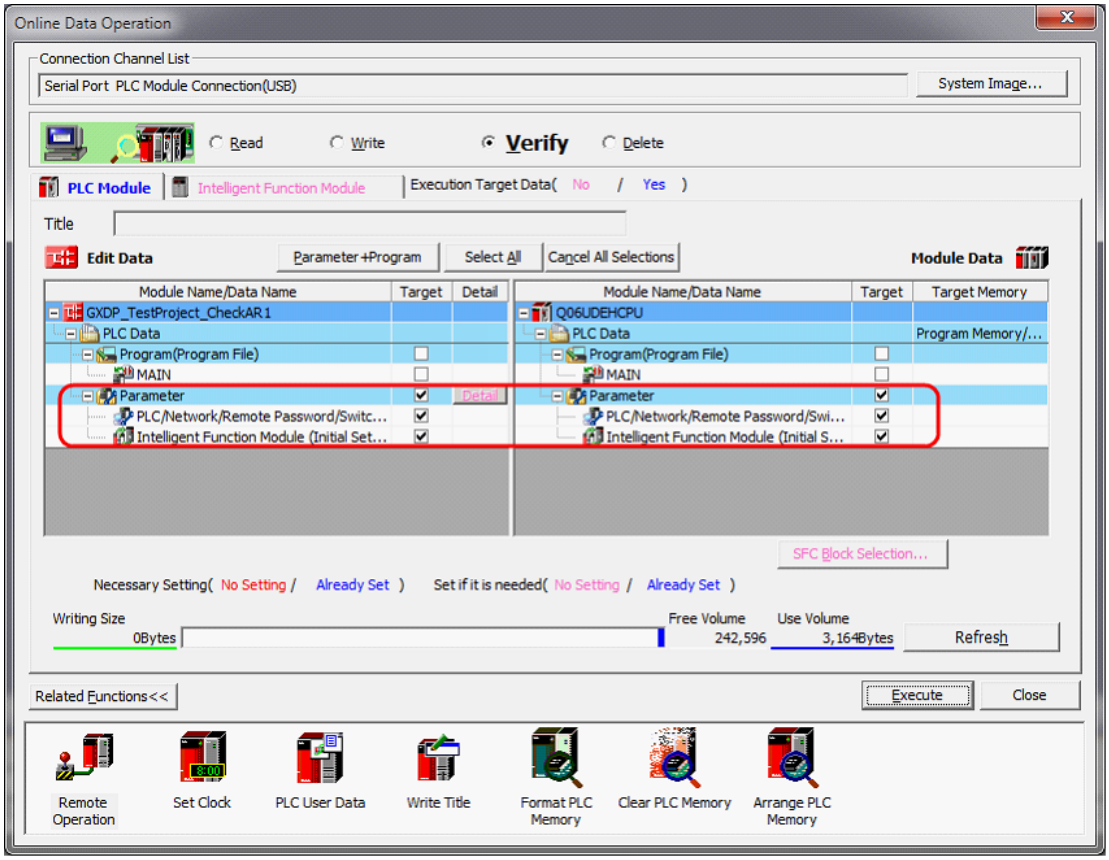
Condition	Result
Module already exists in the project with the same network configuration as the module on the PLC.	Auto-refresh settings are applied.
Module already exists in the project with different network configuration as the module on the PLC.	Auto-refresh settings are set to default.
Module does not exist in the project. It is created during reading.	Auto-refresh settings are set to default.

Intelligent Function Module Tab

PROFIBUS-DP modules will not be shown on the “Intelligent Function Module” tab, because the settings stored in the flash-ROM of the module cannot be read from the PLC, as they are insufficient to recreate the PROFIBUS-DP configuration in the project.

Verifying Data with the PLC

PLC Module Tab



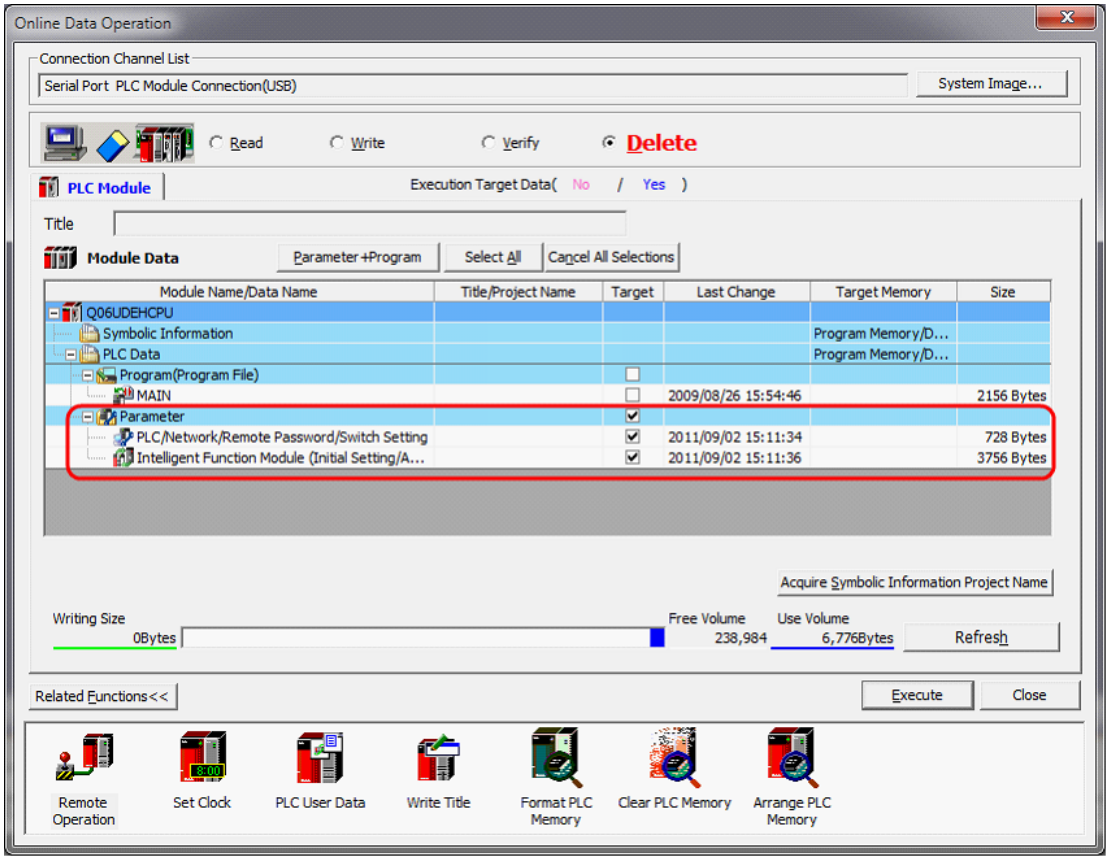
The switch settings of PROFIBUS-DP modules will be verified with the PLC if the “PLC/Network/Remote Password/Switch Setting” item is checked.
The auto-refresh settings of PROFIBUS-DP modules will be verified with the PLC if the “Intelligent Function Module (Initial Setting/Auto Refresh) item is checked.
Since the PROFIBUS-DP modules’ initial settings are not stored in the IPARAM file of the PLC, they will not be verified with the PLC even if the “Intelligent Function Module (Initial Setting/Auto Refresh)”

item is checked. The initial settings can be verified using the Tool→Verify menu item of the corresponding module's Parameter window (see the Verify chapter for details).

Intelligent Function Module Tab

PROFIBUS-DP modules will not be shown on the "Intelligent Function Module" tab, because their settings cannot be verified using this dialog.

Deleting from the PLC



The switch settings of PROFIBUS-DP modules will be deleted from the PLC if the "PLC/Network/Remote Password/Switch Setting" item is checked.
The auto-refresh settings of PROFIBUS-DP modules will be deleted from the PLC if the "Intelligent Function Module (Initial Setting/Auto Refresh) item is checked.
Since the PROFIBUS-DP modules' initial settings are not stored in the IPARAM file of the PLC, they will not be deleted from the PLC even if the "Intelligent Function Module (Initial Setting/Auto Refresh)" item is checked.

Verifying Data with another Project

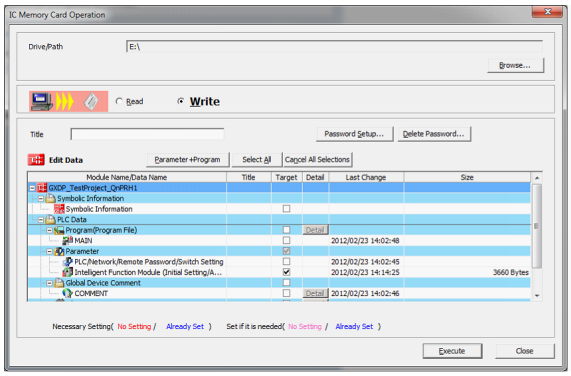
QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

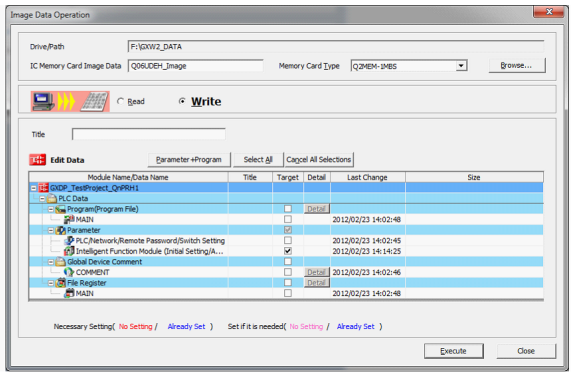
PROFIBUS-DP settings will be supported in the project verify functionality of GX Works2 with limitations. The switch settings and auto-refresh settings can be verified, but other parameters cannot be verified.
The switch settings of PROFIBUS-DP modules are verified if the "PLC/Network" item is checked.
The auto-refresh settings of PROFIBUS-DP modules are verified if the "Intelligent Function Module (Initial Setting/Auto Refresh) item is checked.

IC Card Operations

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

Write IC Card / Image



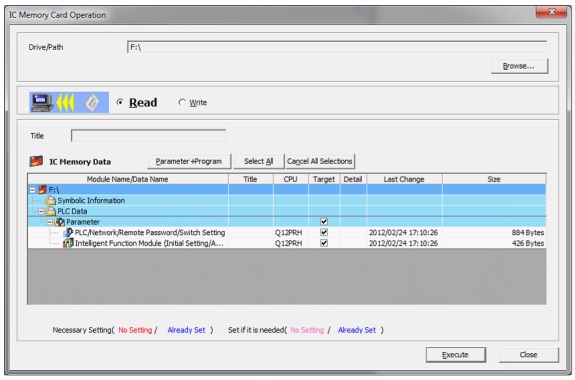


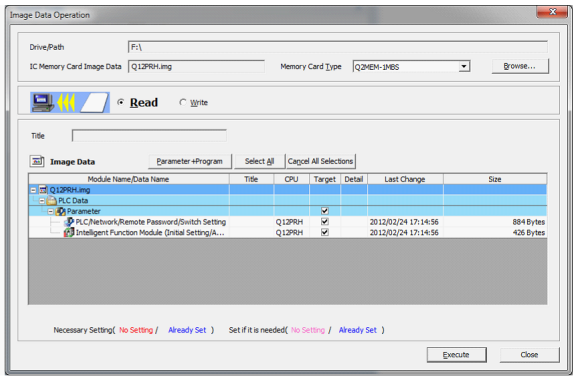
The switch settings of PROFIBUS-DP modules will be written to the IC card / image if the “PLC/Network/Remote Password/Switch Setting” item is checked.

The auto-refresh settings of PROFIBUS-DP modules will be written to the IC card / image if the “Intelligent Function Module (Initial Setting/Auto Refresh) item is checked, and the module is included in the “Intelligent Function Module Parameter List” (refer to the Intelligent Function Module Parameter List Dialog chapter for details).

Since the PROFIBUS-DP modules’ initial settings are not part of the intelligent function module parameters, they will not be written even if the “Intelligent Function Module (Initial Setting/Auto Refresh)” item is checked.

Read IC Card / Image





The switch settings of PROFIBUS-DP modules will be read from the IC card / image if the “PLC/Network/Remote Password/Switch Setting” item is checked.

If the “Intelligent Function Module (Initial Setting/Auto Refresh) item is checked:

- A new PROFIBUS-DP module will be added to the project with default configuration for each PROFIBUS-DP module that has auto-refresh settings in the IC card / image but doesn’t exist in the project.
- For each existing and newly added module the auto-refresh settings will be read from the IC card / image. The auto-refresh settings will be attempted to be applied to the corresponding module in the project:
  - Master modules: the auto-refresh settings are applied to the module if they are valid for the ac-

tual network configuration in the project, i.e. the number of auto-refresh settings, their buffer memory address and size must match the I/O area of the slaves in the network. In case of mismatch between the network configuration of the project and the settings on the IC card / image, default auto-refresh settings will be applied to the PROFIBUS-DP module in the project.

- Slave modules: the auto-refresh settings are applied to the module.

The concept of auto-refresh reading is: if the auto-refresh settings of the read IPARAM are valid for the module configuration in the GX Works2 project, they are applied. If the auto-refresh settings of the read IPARAM are not valid for the module in the GX Works2 project, default auto-refresh settings are applied.

QJ71PB93D modules are simple modules with one auto-refresh setting for input and one auto-refresh setting for output. Therefore the settings are always applicable.

Master modules (QJ71PB92V and QJ71PB92D) are not so simple. The auto-refresh settings can be applied only if the slaves in the network of the master have the same buffer memory address and data size as the auto-refresh entries.

Condition	Result
Module already exists in the project with the same network configuration as in the data of the IC card / image.	Auto-refresh settings are applied.
Module already exists in the project with different network configuration as in the data of the IC card / image.	Auto-refresh settings are set to default.
Module does not exist in the project. It is created during IC card / image reading.	Auto-refresh settings are set to default.

Since the PROFIBUS-DP modules' initial settings are not part of the intelligent function module parameters on the IC card / image, they will not be read even if the "Intelligent Function Module (Initial Setting/Auto Refresh)" item is checked.

Printing

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	X

The PROFIBUS-DP configuration and the I/O-mapping information can be printed using the "Project Documentation" and "Documentation of I/O-Mapping" task panel commands of the Parameter window, respectively. These commands create a HTML document of the corresponding settings and open it in the default browser, which can be used to print the documents.

The Project→Print Window… and Project→Print Window Preview menu items of GX Works2 are disabled when the Parameter window has the focus.

Dedicated Instructions/Functions

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

All three PROFIBUS-DP modules support the G(P).BBLKRD and G(P).BBLKWR instructions in simple languages and in structured languages as well.

Function List
The following instructions/functions can be used in the language editors:

No.	Instruction name (for simple languages)	Function name (for structured languages)
1	G.BBLKRD	G_BBLKRD
2	GP.BBLKRD	GP_BBLKRD
3	G.BBLKWR	G_BBLKWR
4	GP.BBLKWR	GP_BBLKWR

Supported CPU types
The instructions/functions are supported by the following CPU types:

No.	Basic model QCPU	High performance model QCPU	Universal model QCPU	Process QCPU	Redundant model QCPU	LCPU	FXCPU
1/2/3/4	O	O	Δ *1	O	O	X	X

O = supported X = not supported
Δ *1 = for QnUDV CPU these instructions are not supported

Part Selection Window
The functions can be accessed in the following group of the part selection window:

Functions
- Module Dedicated Instruction
  - o PROFIBUS-DP

Function Definition
The functions are defined as follows:

No.	Function name	Use EN/ ENO	Class	Label Name	Data Type
1/2	G_BBLKRD GP_BBLKRD	Yes	VAR_INPUT_CONSTANT	Un	ANY16
			VAR_INPUT	n1	ANY16
			VAR_INPUT	n2	ANY16
			VAR_OUTPUT	d	ANY16
3/4	G_BBLKWR GP_BBLKWR	Yes	VAR_INPUT_CONSTANT	Un	ANY16
			VAR_INPUT	n1	ANY16
			VAR_INPUT	s	ANY16

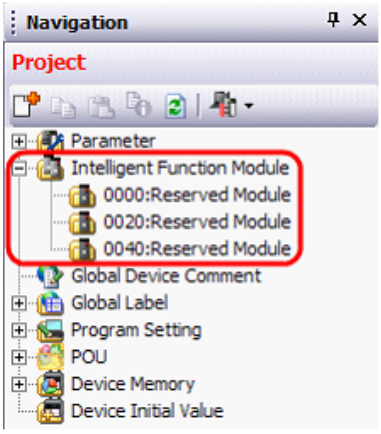
No.	Function name	Use EN/ ENO	Class	Label Name	Data Type
			VAR_INPUT	n2	ANY16

Compatibility

QJ71PB92V	QJ71PB92D	QJ71PB93D
O	O	O

Compatibility with Other Versions of GX Works2

If a GX Works2 project containing one or more PROFIBUS-DP modules is opened on a system that doesn't have GX Configurator-DP installed, PROFIBUS-DP modules will appear as reserved modules in the project tree. The same is true if the installed GX Works2 version is older than 1.87R.



Compatibility with the Standalone Version of GX Configurator-DP

Transferring data from GX Works2 to GX Configurator-DP

The "Export Tasks / Project in GX Configurator-DP Format" command in the task panel of the parameter window can be used to export the configuration to a GX Configurator-DP format project file. The compatibility of the exported project file is the same as if the file were saved in the stand-alone version. The exported file can be opened in the same and newer versions of GX Configurator-DP as the one the file was exported with.

Transferring data from GX Configurator-DP to GX Works2

The "Import Tasks / Import GX Configurator-DP Project" command in the task panel of the Parameter window can be used to import the settings from a GX Configurator-DP format project file into GX Works2.

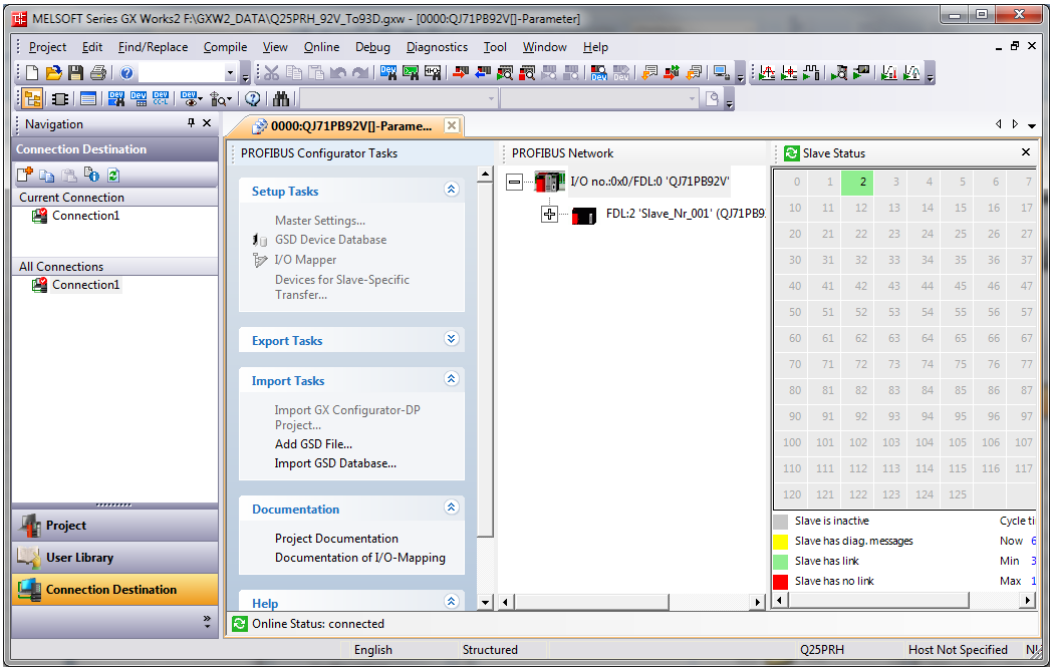
The compatibility of the exported project file is the same as if the file were opened in the stand-alone version. GX Configurator-DP files saved in the currently installed or older versions of GX Configurator-DP can be imported into GX Works2.

Known Issues

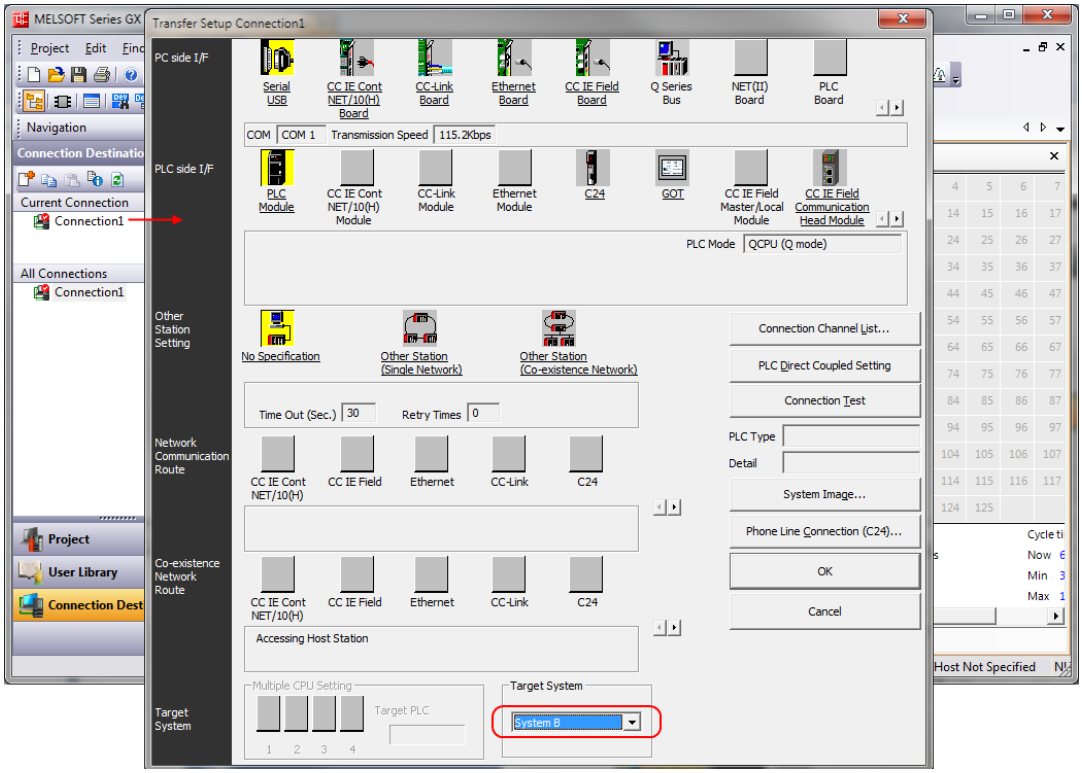
Transfer Setup changed while monitoring in the PROFIBUS-DP Parameter Window

Steps to reproduce:

1. A PROFIBUS-DP master module is being monitored in one or more diagnostic panels of the Parameter window. For example, the Slave Status panel is open and online:

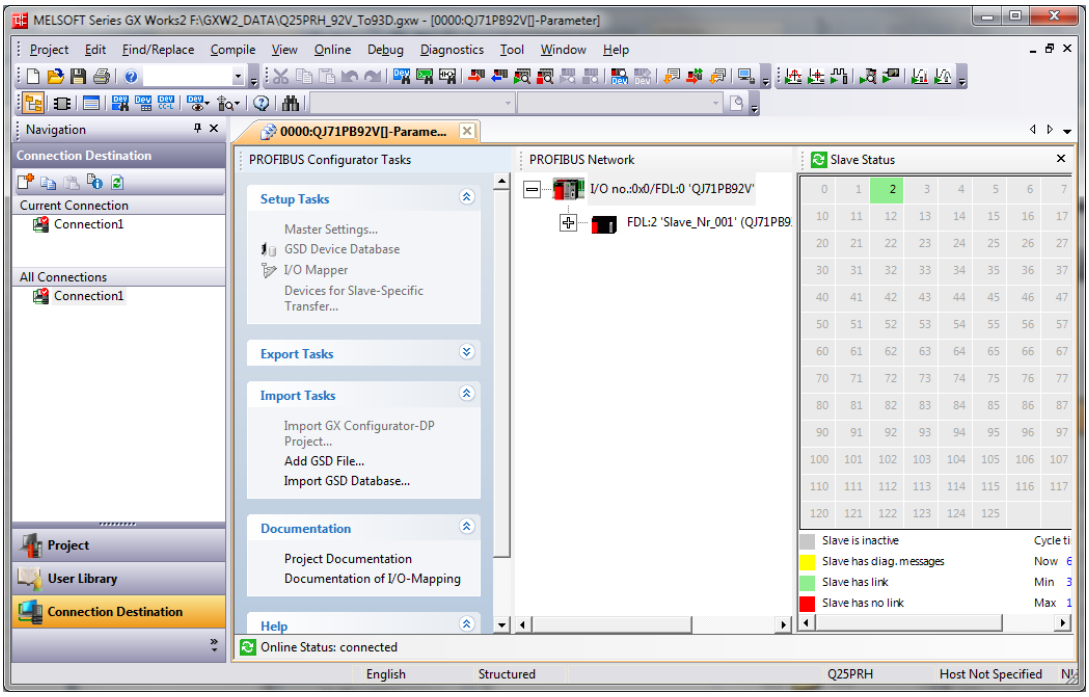


2. The Transfer Setup of the GX Works2 project is changed while monitoring.
For example, the target system of a QnPRH PLC is changed from System A to System B.



Result:

The Parameter window keeps monitoring with the original connection settings. For example, monitoring of System A of the QnPRH PLC is continued, although the transfer setup was changed to System B.



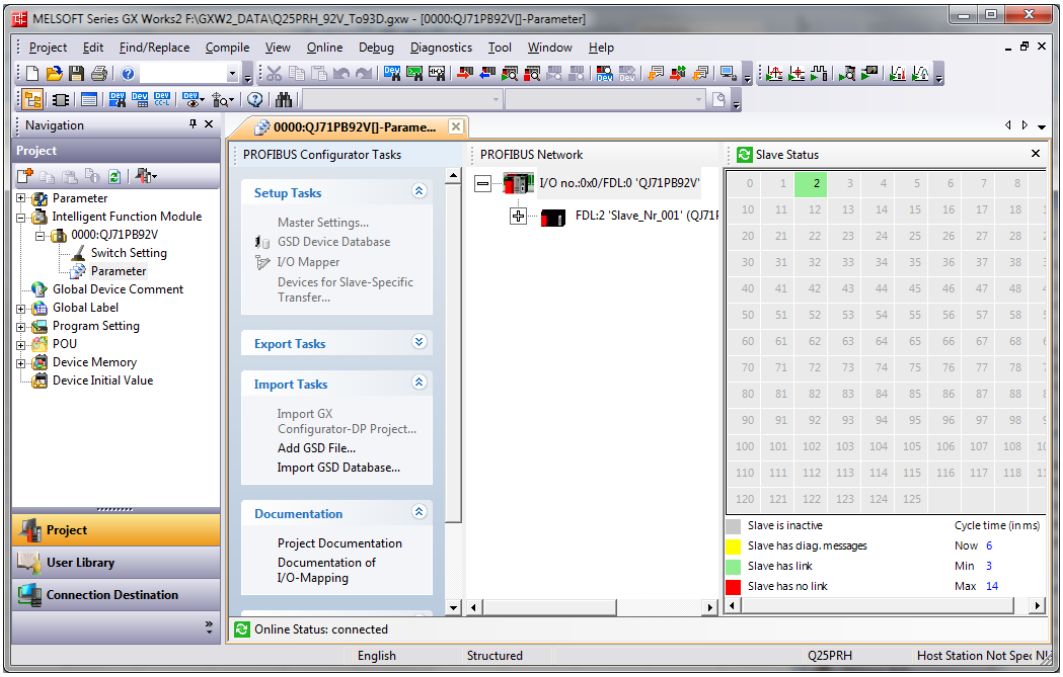
Workaround:

Monitoring in the PROFIBUS-DP Parameter window should be stopped manually before changing the Transfer Setup and re-started afterwards.

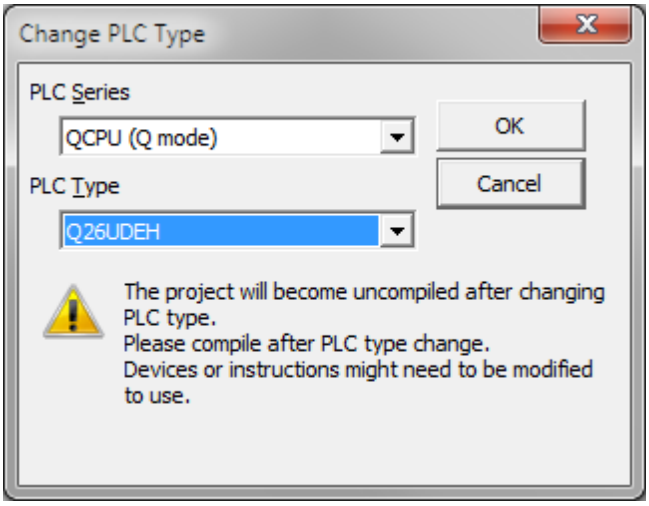
PLC type change while monitoring in the PROFIBUS-DP Parameter Window

Steps to reproduce:

1. A PROFIBUS-DP master module is being monitored in one or more diagnostic panels of the Parameter window. For example, the Slave Status panel is open and online:

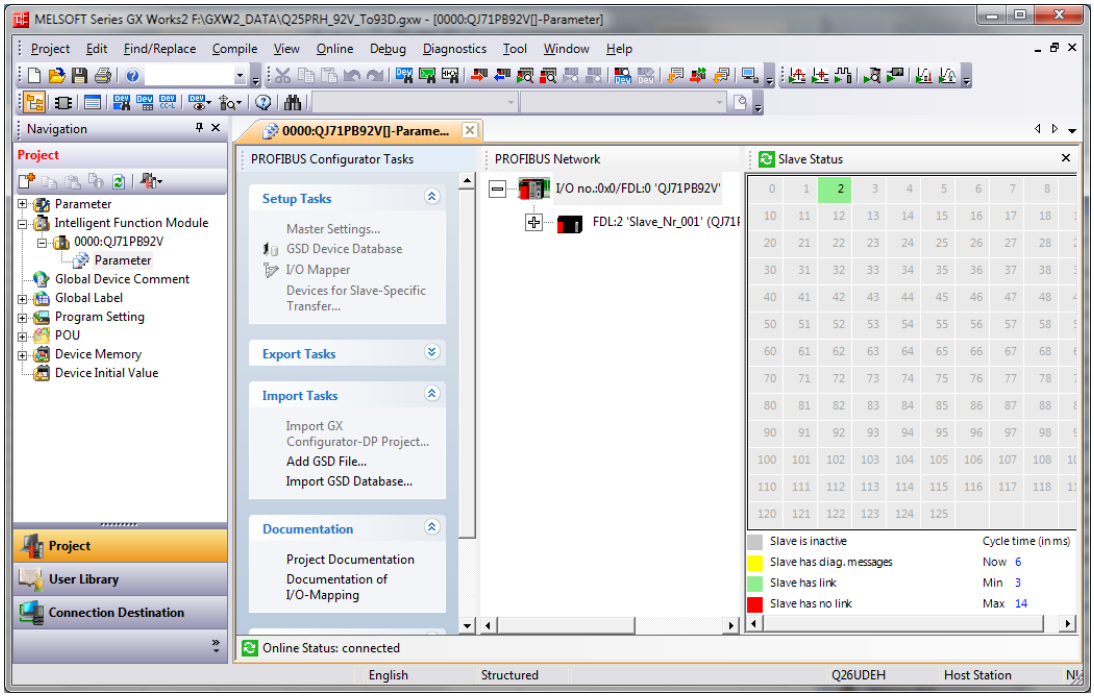


2. The PLC type of the GX Works2 project is changed while monitoring.
   For example, the PLC type of the project is changed from Q25PRH to Q26UDEH.



Result:

The Parameter window keeps monitoring according to the original PLC type and connection settings. For example, monitoring of the Q25PRH PLC is continued, although the PLC type of the project was changed to Q26UDEH.



Workaround:

Monitoring in the PROFIBUS-DP Parameter window should be stopped manually before changing the PLC type and re-started afterwards.

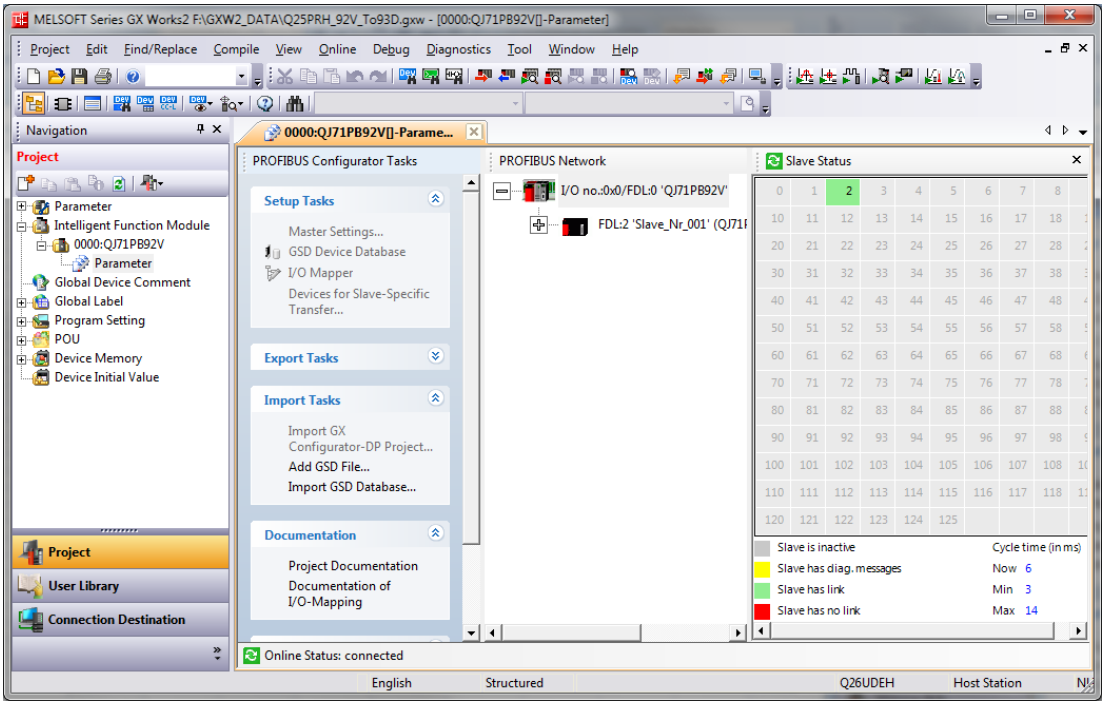
The PROFIBUS-DP Parameter Window does not check the PLC type before monitoring

Steps to reproduce:

1. A Q-series project having a PROFIBUS-DP master module is open in GX Works2.
2. A Q-series PLC with a PROFIBUS-DP master module is set up in accordance with the GX Works2 project, but the PLC type is different.
   For example, the GX Works2 project is for a Q26UDEH CPU, while the connected CPU is a Q50UDEH.
3. One or more diagnostic panels are open in the Parameter window of the module in GX Works2. Monitoring is started.

Result:

Monitoring is started successfully, without an error or warning message, although the PLC types are different.



Workaround:

Check if the type of the connected PLC matches the PLC type of the project by performing a connection test in the Transfer Setup of GX Works2.

9.2 Standalone Version

The following description applies only to the standalone version of GX Configurator-DP started independently of GX Works2.

GX Configurator-DP has the following restrictions with regard to GX Works2

1. no ‘offline’ update of autorefresh settings in GX Works2 project, only ‘online’ update of CPU
2. no import of PLC code, which GX Configurator-DP exports, in GX Works2, newer versions of GX Works2 may support 'IEC Instruction Language' (IL) code

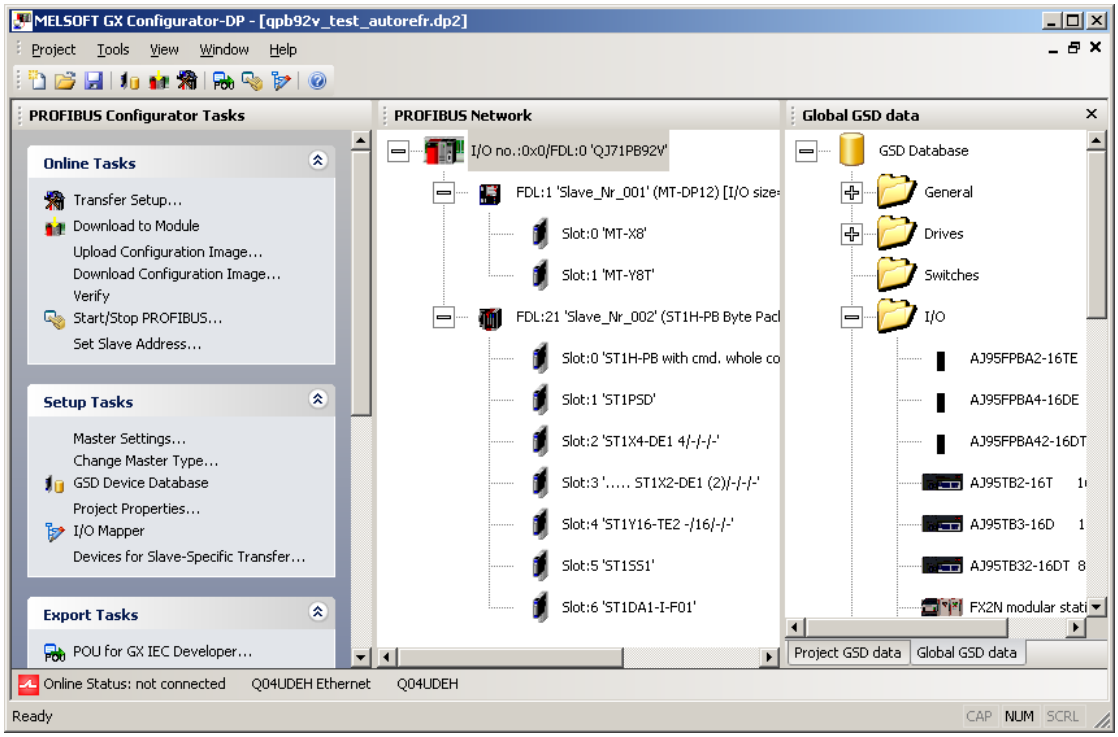
Due to this restrictions the access to the PROFIBUS I/O can only be done

1. by manual programming in GX Works2 for accessing the buffer memory of the PROFIBUS master
2. by autorefresh settings, which GX Configurator-DP stores in the CPU (‘online’ update)

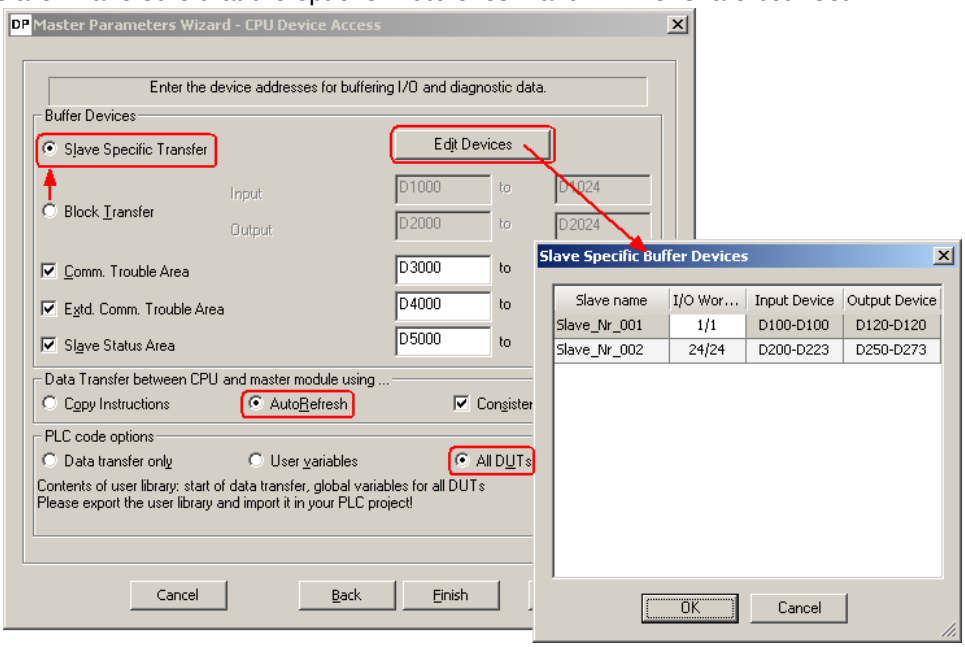
Although the ‘I/O Mapping’ PLC code, which GX Configurator-DP exports, cannot be imported in GX Works2, the ‘Documentation of I/O-Mapping’ function in GX Configurator-DP assists the GX Works2 user in finding the buffer device addresses for specific PROFIBUS I/O signals.

The following steps describe the functions of GX Configurator-DP, which are especially helpful when integrating PROFIBUS into a GX Works2 PLC project. They also include advises on handling data in the GX Works2 project.

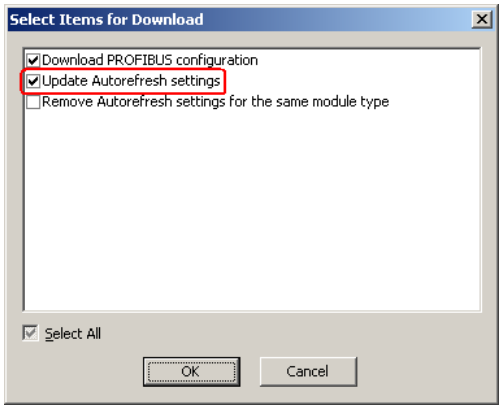
1. create a GXDP project with the configuration of the PROFIBUS network



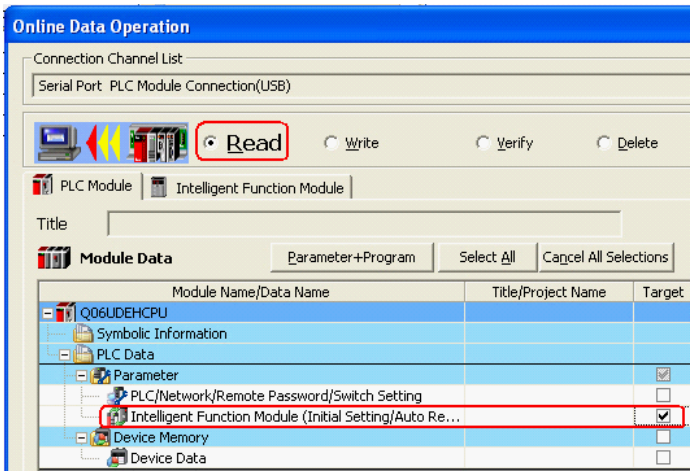
2. if certain PROFIBUS slaves should use different device types as I/O buffer than others, change the default ‘Block transfer’ to ‘Slave-specific transfer’ and assign individual device addresses to each slave. Make sure that the options ‘Autorefresh’ and ‘All DUTs’ are both set.



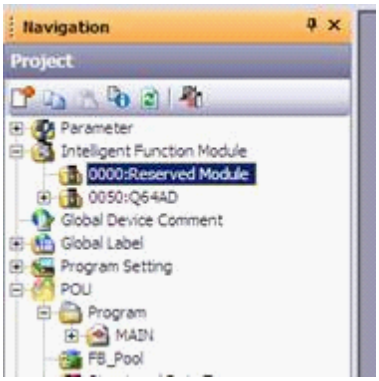
3. download the PROFIBUS configuration to the master and update the autorefresh settings in the PLC



4. in GX Works2 use 'Online Data Operation' function to read the autorefresh settings for PROFIBUS modules from the CPU

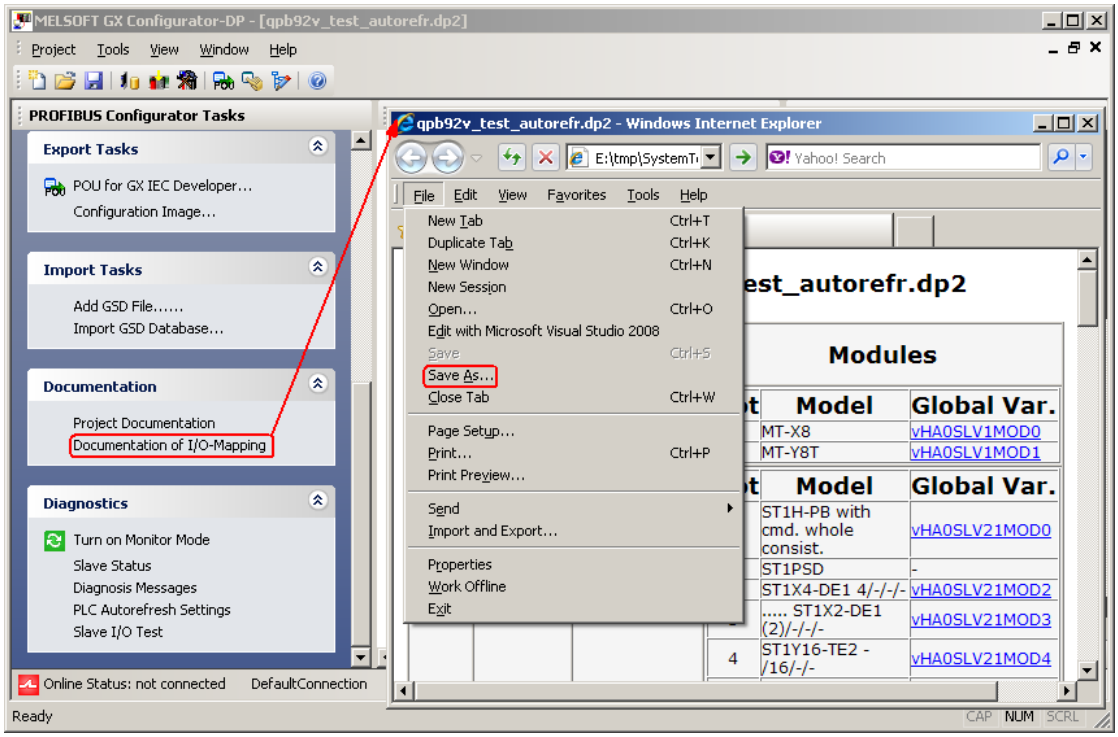


5. check the 'Intelligent Function Module' item in the GX Works2 'Project' tree. For each PROFIBUS module found in the CPU autorefresh settings it should show the starting I/O number and the text 'Reserved Module'



When GX Works2 now updates the autorefresh settings in the CPU, it keeps the settings of the PROFIBUS modules, which have been read before. Without reading the settings in GX Works2 before updating them, the PROFIBUS autorefresh entries would be deleted.

6. in GX Configurator-DP use the menu item 'Documentation of I/O Mapping' and save the displayed document together with the PLC project



7. locate the PROFIBUS slave modules, which should be accessed, in the 'I/O-Mapping ' document and enter the listed buffer devices in the GX Works2 project. The device adddresses in the column 'Buffer MIT-Address' are calculated for each module from the buffer devices, which the user has entered in the 'CPU Device Access' dialog. Therefore the documentation must updated, when
   - a different buffer device address has been entered in GX Configurator-DP
   - the selection of 'block' or 'slave-specific' transfer has been changed
   - slaves or slave modules have been added or removed
   - the slave order has changed e.g. due to assigning different FDL addresses

Global Variables

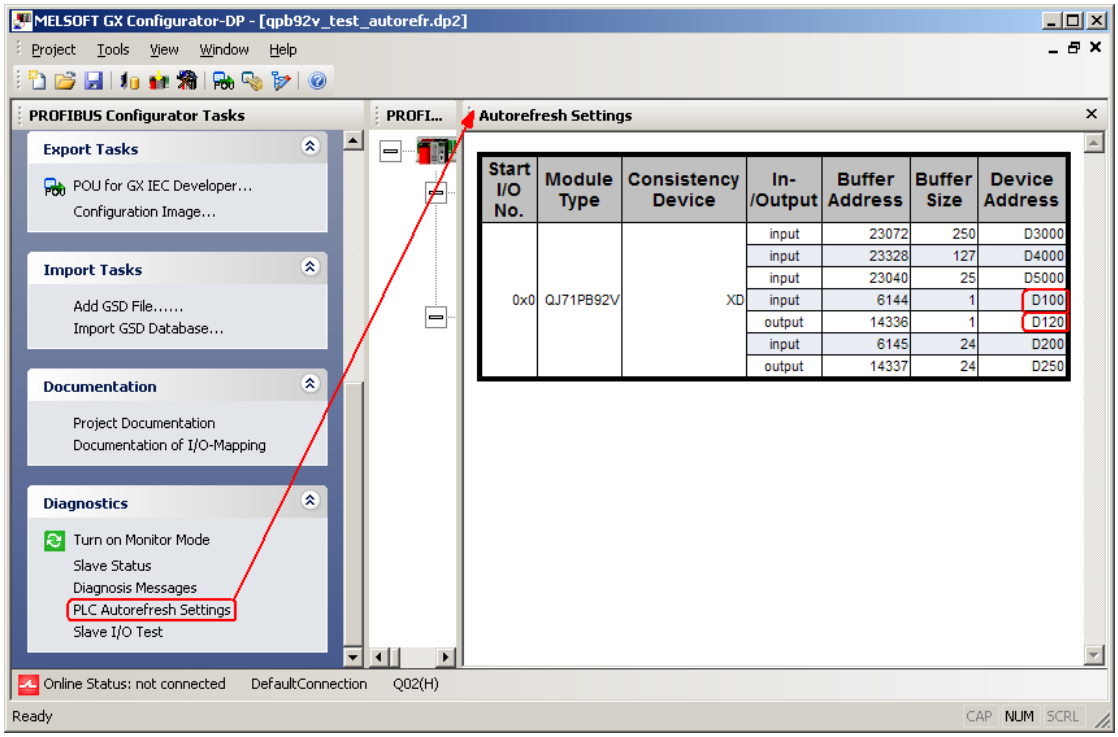
Slave_Nr_001.Module Slot 0 : vHA0SLV1MOD0

Element Identifier	Element Type	Class	User MIT-Address	Global Var. Identifier	Buffer MIT-Address
inputs	ARRAY [0..7] OF BOOL	Input	-	-	D100.0

Slave_Nr_001.Module Slot 1 : vHA0SLV1MOD1

Element Identifier	Element Type	Class	User MIT-Address	Global Var. Identifier	Buffer MIT-Address
outputs	ARRAY [0..7] OF BOOL	Output	-	-	D120.0

8. (optional) after downloading the parameters of the GX Works2 project to the PLC use the 'Diagnostics -> PLC Autorefresh Settings' menu item of GX Configurator-DP to ensure that the correct device addresses are exchanged with the PROFIBUS master. This helps to detect potential errors caused for example by not reading the PROFIBUS autorefresh settings from the CPU into the GX Works2 project before downloading the parameters from GX Works2. The contents of the 'Autorefresh Settings' table depend on the settings in the GX Configurator-DP 'CPU Device Access' dialog, i.e. whether 'block' or 'slave-specific' transfer has been selected, which buffer devices have been assigned etc..



Note: because GX Configurator-DP cannot update autorefresh settings neither on a Remote I/O nor in a GX Works2 project, PROFIBUS modules cannot be placed in the rack of a Remote I/O when using GX Works2. They must be placed in the rack of the control CPU instead. The update of autorefresh settings in a GX Works2 project will be added in a future version of GX Configurator-DP.

10 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.

Table of Contents

HEADQUARTERS

MITSUBISHI ELECTRIC EUROPE B.V. **EUROPE**
German Branch
Gothaer Straße 8
D-40880 Ratingen
Phone: +49 (0)2102 / 486-0
Fax: +49 (0)2102 / 486-1120

MITSUBISHI ELECTRIC EUROPE B.V.-org.sl. **CZECH REP.**
Czech Branch
Avenir Business Park, Radlická 714/113a
CZ-158 00 Praha 5
Phone: +420 - 251 551 470
Fax: +420 - 251-551-471

MITSUBISHI ELECTRIC EUROPE B.V. **FRANCE**
French Branch
25, Boulevard des Bouvets
F-92741 Nanterre Cedex
Phone: +33 (0)1 / 55 68 55 68
Fax: +33 (0)1 / 55 68 57 57

MITSUBISHI ELECTRIC EUROPE B.V. **IRELAND**
Irish Branch
Westgate Business Park, Ballymount
IRL-Dublin 24
Phone: +353 (0)1 4198800
Fax: +353 (0)1 4198890

MITSUBISHI ELECTRIC EUROPE B.V. **ITALY**
Italian Branch
Viale Colleoni 7
I-20041 Agrate Brianza (MB)
Phone: +39 039 / 60 53 1
Fax: +39 039 / 60 53 312

MITSUBISHI ELECTRIC EUROPE B.V. **POLAND**
Poland Branch
Krakowska 50
PL-32-083 Balice
Phone: +48 (0)12 / 630 47 00
Fax: +48 (0)12 / 630 47 01

MITSUBISHI ELECTRIC EUROPE B.V. **RUSSIA**
52, bld. 3 Kosmodamianskaya nab 8 floor
RU-115054 Moscow
Phone: +7 495 721-2070
Fax: +7 495 721-2071

MITSUBISHI ELECTRIC EUROPE B.V. **SPAIN**
Spanish Branch
Carretera de Rubí 76-80
E-08190 Sant Cugat del Vallés (Barcelona)
Phone: 902 131121 // +34 935653131
Fax: +34 935891579

MITSUBISHI ELECTRIC EUROPE B.V. **UK**
UK Branch
Travellers Lane
UK-Hatfield, Herts. AL10 8XB
Phone: +44 (0)1707 / 27 61 00
Fax: +44 (0)1707 / 27 86 95

MITSUBISHI ELECTRIC CORPORATION **JAPAN**
Office Tower "Z" 14 F
8-12,1 chome, Harumi Chuo-Ku
Tokyo 104-6212
Phone: +81 3 622 160 60
Fax: +81 3 622 160 75

MITSUBISHI ELECTRIC AUTOMATION, Inc. **USA**
500 Corporate Woods Parkway
Vernon Hills, IL 60061
Phone: +1 847 478 21 00
Fax: +1 847 478 22 53

EUROPEAN REPRESENTATIVES

GEVA **AUSTRIA**
Wiener Straße 89
AT-2500 Baden
Phone: +43 (0)2252 / 85 55 20
Fax: +43 (0)2252 / 488 60

TECHNIKON **BELARUS**
Oktyabrskaya 19, Off. 705
BY-220030 Minsk
Phone: +375 (0)17 / 210 46 26
Fax: +375 (0)17 / 210 46 26

ESCO DRIVES & AUTOMATION **BELGIUM**
Culliganlaan 3
BE-1831 Diegem
Phone: +32 (0)2 / 717 64 30
Fax: +32 (0)2 / 717 64 31

Koning & Hartman b.v. **BELGIUM**
Woluwelaan 31
BE-1800 Vilvoorde
Phone: +32 (0)2 / 257 02 40
Fax: +32 (0)2 / 257 02 49

INEA RBT d.o.o. **BOSNIA AND HERZEGOVINA**
Aleja Lipa 56
BA-71000 Sarajevo
Phone: +387 (0)33 / 921 164
Fax: +387 (0)33/ 524 539

AKHNATON **BULGARIA**
4, Andrei Ljapchev Blvd., PO Box 21
BG-1756 Sofia
Phone: +359 (0)2 / 817 6000
Fax: +359 (0)2 / 97 44 06 1

INEA RBT d.o.o. **CROATIA**
Losinjska 4 a
HR-10000 Zagreb
Phone: +385 (0)1 / 36 940 - 01/ -02/ -03
Fax: +385 (0)1 / 36 940 - 03

AutoCont C.S. s.r.o. **CZECH REPUBLIC**
Technologická 374/6
CZ-708 00 Ostrava-Pustkovec
Phone: +420 595 691 150
Fax: +420 595 691 199

Beijer Electronics A/S **DENMARK**
Lykkegårdsvej 17
DK-4000 Roskilde
Phone: +45 (0)46/ 75 76 66
Fax: +45 (0)46 / 75 56 26

Beijer Electronics Eesti OÜ **ESTONIA**
Pärnu mnt.160i
EE-11317 Tallinn
Phone: +372 (0)6 / 51 81 40
Fax: +372 (0)6 / 51 81 49

Beijer Electronics OY **FINLAND**
Peltoie 37
FIN-28400 Ulvila
Phone: +358 (0)207 / 463 540
Fax: +358 (0)207 / 463 541

UTECO **GREECE**
5, Mavrogenous Str.
GR-18542 Piraeus
Phone: +30 211 / 1206 900
Fax: +30 211 / 1206 999

MELTRADE Kft. **HUNGARY**
Fertő utca 14.
HU-1107 Budapest
Phone: +36 (0)1 / 431-9726
Fax: +36 (0)1 / 431-9727

Beijer Electronics SIA **LATVIA**
Ritausmas iela 23
LV-1058 Riga
Phone: +371 (0)784 / 2280
Fax: +371 (0)784 / 2281

Beijer Electronics UAB **LITHUANIA**
Savanoriu Pr. 187
LT-02300 Vilnius
Phone: +370 (0)5 / 232 3101
Fax: +370 (0)5 / 232 2980

EUROPEAN REPRESENTATIVES

ALFATRADE Ltd. **MALTA**
99, Paola Hill
Malta- Paola PLA 1702
Phone: +356 (0)21 / 697 816
Fax: +356 (0)21 / 697 817

INTEHSIS srl **MOLDOVA**
bld. Traian 23/1
MD-2060 Kishinev
Phone: +373 (0)22 / 66 4242
Fax: +373 (0)22 / 66 4280

HIFLEX AUTOM.TECHNIEK B.V. **NETHERLANDS**
Wolweverstraat 22
NL-2984 CD Ridderkerk
Phone: +31 (0)180 – 46 60 04
Fax: +31 (0)180 – 44 23 55

Koning & Hartman b.v. **NETHERLANDS**
Haarlerbergweg 21-23
NL-1101 CH Amsterdam
Phone: +31 (0)20 / 587 76 00
Fax: +31 (0)20 / 587 76 05

Beijer Electronics AS **NORWAY**
Postboks 487
NO-3002 Drammen
Phone: +47 (0)32 / 24 30 00
Fax: +47 (0)32 / 84 85 77

Fonseca S.A. **PORTUGAL**
R. João Francisco do Casal 87/89
PT - 3801-997 Aveiro, Esgueira
Phone: +351 (0)234 / 303 900
Fax: +351 (0)234 / 303 910

Sirius Trading & Services srl **ROMANIA**
Aleea Lacul Morii Nr. 3
RO-060841 Bucuresti, Sector 6
Phone: +40 (0)21 / 430 40 06
Fax: +40 (0)21 / 430 40 02

INEA RBT d.o.o. **SERBIA**
Izletnicka 10
SER-113000 Smederevo
Phone: +381 (0)26 / 615 401
Fax: +381 (0)26 / 615 401

SIMAP s.r.o. **SLOVAKIA**
Jána Derku 1671
SK-911 01 Trencín
Phone: +421 (0)32 743 04 72
Fax: +421 (0)32 743 75 20

PROCONT, spol. s r.o. Prešov **SLOVAKIA**
Kúpelná 1/A
SK-080 01 Prešov
Phone: +421 (0)51 7580 611
Fax: +421 (0)51 7580 650

INEA RBT d.o.o. **SLOVENIA**
Stegne 11
SI-1000 Ljubljana
Phone: +386 (0)1 / 513 8116
Fax: +386 (0)1 / 513 8170

Beijer Electronics AB **SWEDEN**
Box 426
SE-20124 Malmö
Phone: +46 (0)40 / 35 86 00
Fax: +46 (0)40 / 93 23 01

Omni Ray AG **SWITZERLAND**
Im Schörli 5
CH-8600 Dübendorf
Phone: +41 (0)44 / 802 28 80
Fax: +41 (0)44 / 802 28 28

GTS **TURKEY**
Bayraktar Bulvari Nutuk Sok. No:5
TR-34775 Yukarı Dudullu-Ümraniye-İSTANBUL
Phone: +90 (0)216 526 39 90
Fax: +90 (0)216 526 3995

CSC Automation Ltd. **UKRAINE**
4-B, M. Raskovoyi St.
UA-02660 Kiev
Phone: +380 (0)44 / 494 33 55
Fax: +380 (0)44 / 494-33-66

Systemgroup **UKRAINE**
2 M. Krivonosa St.
UA-03680 Kiev
Phone: +380 (0)44 / 490 92 29
Fax: +380 (0)44 / 248 88 68

EURASIAN REPRESENTATIVES

TOO Kazpromavtomatika **KAZAKHSTAN**
Ul. Zhambyla 28
KAZ-100017 Karaganda
Phone: +7 7212 / 50 10 00
Fax: +7 7212 / 50 11 50

MIDDLE EAST REPRESENTATIVES

I.C. SYSTEMS LTD. **EGYPT**
23 Al-Saad-Al-Alee St.
EG-Sarayat, Maadi, Cairo
Phone: +20 (0) 2 / 235 98 548
Fax: +20 (0) 2 / 235 96 625

ILAN & GAVISH Ltd. **ISRAEL**
24 Shenkar St., Kiryat Arie
IL-49001 Petah-Tiqva
Phone: +972 (0)3 / 922 18 24
Fax: +972 (0)3 / 924 0761

GIRIT CELADON LTD **ISRAEL**
12 H'aomanut Street
IL-42505 Netanya
Phone: +972 (0)9 / 863 39 80
Fax: +972 (0)9 / 885 24 30

CEG INTERNATIONAL **LEBANON**
Cebaco Center/Block A Autostrade DORA
Lebanon - Beirut
Phone: +961 (0)1 / 240 430
Fax: +961 (0)1 / 240 438

AFRICAN REPRESENTATIVE

CBI Ltd. **SOUTH AFRICA**
Private Bag 2016
ZA-1600 Isando
Phone: + 27 (0)11 / 977 0770
Fax: + 27 (0)11 / 977 0761