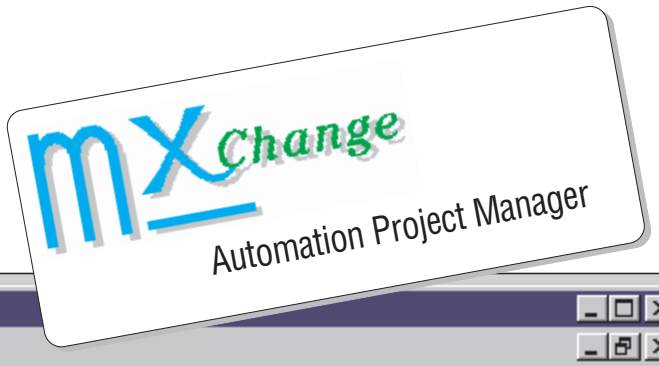
MITSUBISHI ELECTRIC

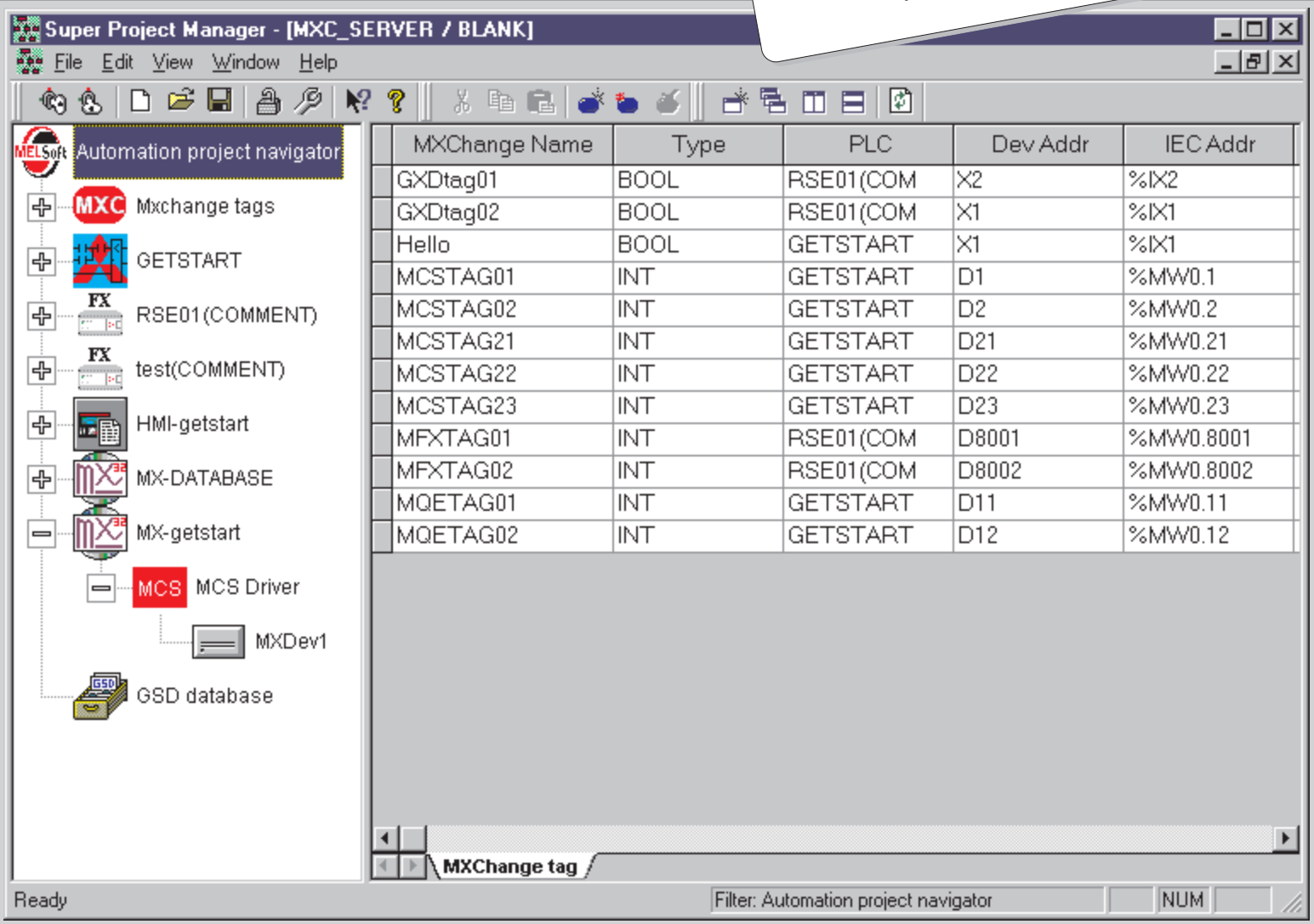
MXChange

Automation Project Manager

MELSOFT

Start-up Manual





MXChange v2.1

Automation Project Manager

Start-up Manual

010905
Version A

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 **MXChange** integration system for automation development tools.
Separate manuals are available for automation development tools like GX IEC Developer, GX Developer, GX Configurator-DP, E-Designer, MX 32 and MX 2000 SCADA.

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 distribution partners.
You can also obtain information and answers to frequently asked questions from our Mitsubishi website under www.mitsubishi-automation.de.

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

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Start-up Manual for
MXChange v2.1

Version	Changes / Additions / Corrections
A 09/2001 pdp	—

Typographic Conventions

Use of notes

Notes containing important information are clearly identified as follows:

NOTE | Note text

Use of examples

Examples containing important information are clearly identified as follows:

Example ▽ Example

△

Numbering in figures and illustrations

Reference numbers in figures and illustrations are shown with white numbers in a black circle and the corresponding explanations shown beneath the illustrations are identified with the same numbers, like this:

❶ ❷ ❸ ❹

Procedures

In some cases the setup, operation, maintenance and other instructions are explained with numbered procedures. The individual steps of these procedures are numbered in ascending order with black numbers in a white circle, and they must be performed in the exact order shown:

① Text

② Text

③ Text

Footnotes in tables

Footnote characters in tables are printed in superscript and the corresponding footnotes shown beneath the table are identified by the same characters, also in superscript.

If a table contains more than one footnote, they are all listed below the table and numbered in ascending order with black numbers in a white circle, like this:

① Text

② Text

③ Text

Character formatting and orientation aids

Menu names, menu commands, submenu commands, and dialog box options are printed in **boldface** type. Examples: The menu item **New** in the menu **Project** or the options **PLC interface** and **Computer Link** in the dialog box **Transfer-Setup**.

Please keep this manual in a place where it is always available for the users.

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1 Introduction

1.1 Software purpose

MXChange is designed to integrate MITSUBISHI ELECTRIC automation development tools into a single environment which harmonises programming, supervision, network configuration, and simulation components.

Examples:

- **GX IEC Developer**
  IEC 61131-3 programming and documentation system providing the user with facilities for structured programming for MELSEC PLC including function blocks
- **GX Developer**
  Easy to use programming software for MELSEC PLC providing extended import/export functions
- **GX Configurator-DP**
  Visual configuration software package for open networks such as PROFIBUS DP
- **MX32 and MX2000 SCADA**
  Process visualisation and supervisory system
- **E-Designer**
  Visual programming tool for operator terminals

1.2 General features

MXChange provides the following features:

- Simultaneous definition of I/O references in multiple packages and projects
- Automatic transfer of changes of I/O references to other parts of the automation project
- Automatic transfer of GX Configurator-DP POU blocks to the corresponding GX IEC Developer projects
- Save GX IEC Developer project to MXChange
- Import and export of parts of the MXChange configuration for use with other MXChange servers
- Import and export in Microsoft Excel compatible format (CSV)
- Simultaneous generation of multiple tags for all projects based on a supplied pattern
- Synchronisation mechanism
- Security mechanism with log in and password

1.3 This manual is a compact guide...

... to use **MXChange** suitable for experienced users and factory automation programmers. The manual explains the terms and structural concepts of the software and describes how to use MXChange including sample projects.

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

... please read the Windows Fundamentals section in the Windows User's Guide or work through the Windows Tutorial accessible via the **Help** function in the Windows **Start** menu.

1.5 If you encounter any problems...

... or if you have questions concerning MXChange or the automation development tools to be integrated, please first refer to the manuals. Many answers and solutions can also be found directly in the MXChange context-sensitive online help system, which can always be accessed by pressing F1. Make use of the **Index** command in the **Help** menu as well, as this will often locate the information you need. If you do not find any answers, contact your local MITSUBISHI ELECTRIC representative or call our European headquarters in Ratingen directly.

2 Installation

2.1 System requirements

To install the MXChange software package, your computer has to meet the following requirements.

2.1.1 Minimum hardware configuration

- Pentium class PC
- 64 MB RAM
- Hard disk with at least 40 MB free space
- CD-ROM drive
- SVGA compatible graphics adapter
- Mouse

2.1.2 Software requirements

The software runs on the following graphical operating systems:

- MS Windows 95 or 98
- MS Windows NT v4.0 with Service Pack 4 or higher
- Installed TCP/IP network protocol (included in MS Windows)
  Refer to the MS Windows manuals or online help for the installation of the TCP/IP network protocol.

2.2 Copyright

NOTE

MXChange is protected by copyright. By operating the distribution disks package you automatically accept terms and conditions of the Licence Agreement. You are permitted to make only one single copy of the original distribution disks for your own backup and archiving purposes

2.3 Software installation

2.3.1 MXChange software setup

The MXChange software package includes the following programs:

- 32-bit **MXChange server** for MS Windows 95/98 and NT
- 32-bit **MXChange tools** including the **Super Project Manager** with integrated **Tag Editor** for MS Windows 95/98 and NT
- 32-bit **MX Interface** for MS Windows 95/98 and NT

To install the MXChange software from CD-ROM under MS Windows 95/98, MS Windows must have been installed properly. To install MXChange under Windows NT you must be logged in with administrator privileges.

Please close all other running software and installation programs before installing MXChange.

NOTES

To install or run MXChange, the following configuration must be installed on your computer, even if you use the single computer configuration.

- A network card
- TCP/IP Protocol
- MS internet Explorer 3.0 (or higher) for the help files

If your computer does not have a network card, select either the MS Loopback Adapter (MS Windows NT 4.0) or the Dial-Up Adapter (MS Windows 95/98) in the network configuration of MS Windows. From the MS Windows Control Panel, select Network Configuration, add Adapter, select Microsoft, and select Dial-Up Adapter or MS Loopback Adapter.
In very rare cases you must specify an IP address (e.g. 192.168.000.001) for the Dial-Up Adapter of the computer even if it is not connected to a network. You can specify the IP address of your computer in the Network Configuration of MS Windows.

In MS Windows 98 in some cases message boxes do not pop-up into the foreground, but remain hidden behind other opened program windows. This effect is especially uncomfortable when saving a database by means of the database builder of MX 32 SCADA. In this case you will not see the pop-up window where you can select Tags for export or deletion. To get access to the MX 32 SCADA dialog minimize all other program windows.

When many applications are running, it may be that there are not enough system resources left to start a 16-bit application (like Melsec Medoc plus 2.40a). In this case close any application which you do not need and try again.

If you change any network setting or install a new network adapter, you have to reboot your computer before installing or using MXChange.

MXChange will not run reliably on MS Windows NT v4.0 without Service Pack 4 or higher. The MXChange installation will check for the required Service Pack and return a respective message box automatically, if the Service Pack is not installed.

2.3.2 Button functions

Next > You will leave the current menu and enter the next menu.

< Back You will go to the previous menu.

Cancel You will abort the installation procedure.

2.3.3 Installing MXChange on your hard disk

The **MXChange server**, the **MXChange tools**, and the **MX Interface** are delivered on one CD-ROM and are installed by one combined installer. You can select three different setup types: **Typical**, **compact**, and **custom**.

To start the installation, proceed as follows:

① Start Windows.

② Insert the CD-ROM into your CD-ROM drive.

③ Execute the **Setup.exe** file from the CD-ROM. The Setup.exe file is located in:

MyCDROM:\MXChange\Disk1\Setup.exe

Double-click on the **setup.exe** file within the **Explorer**

or

select the **Run** command from the **Windows Start** menu and enter the desired path where "MyCDROM" is the drive letter:

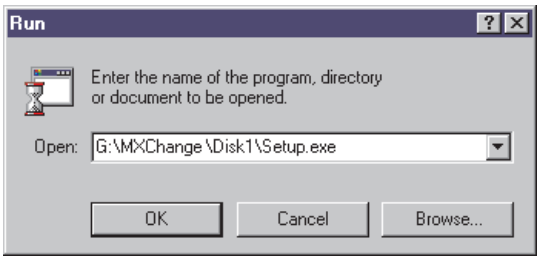


Fig. 2-1:
Starting the setup

④ Follow the instructions guiding you through the installation:

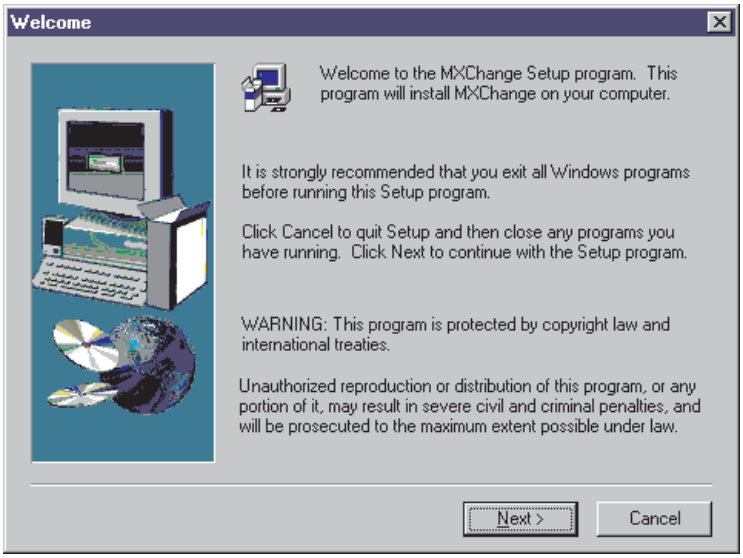


Fig. 2-2:
Installation instructions

⑤ Read the license agreement carefully and follow the instructions given:

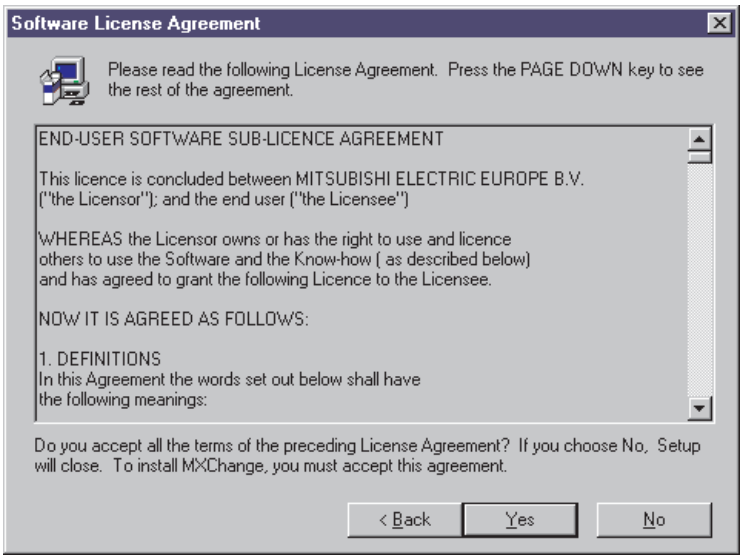


Fig. 2-3:
License agreement

⑥ Select the desired installation type. The default setting is **Typical**. If you choose **Typical** or **Compact**, you will proceed with step ⑧. If you select the **Custom** setup, you can choose individually the components to be installed.

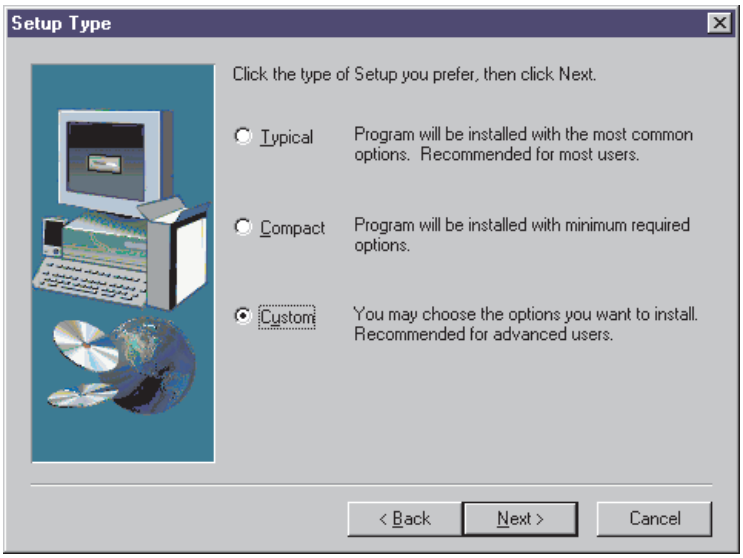


Fig. 2-4:
Setup type

⑦ Click on the checkboxes to deselect or select individual items:

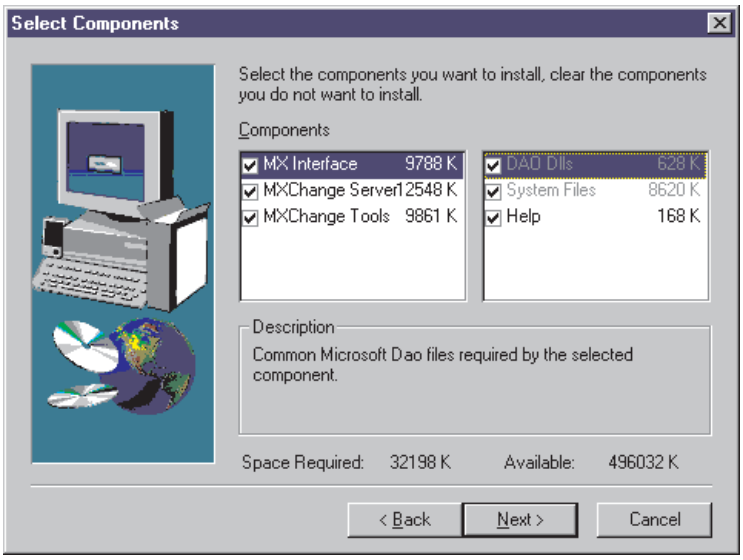


Fig. 2-5:
Select components

A. Install the MXChange server only

At least one MXChange server installation is compulsory across your TCP/IP network or on your local computer. The MXChange server provides the connectivity between your automation development tools.

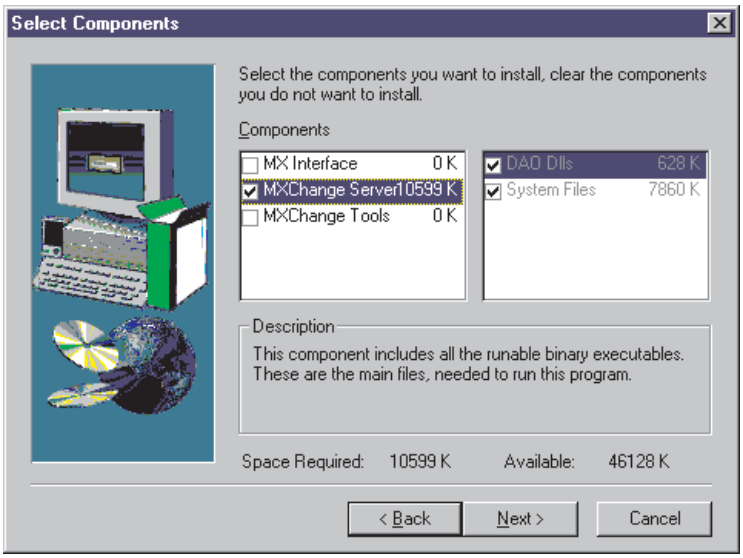


Fig. 2-6:
Select MXChange server only

B. Install the MXChange tools only

The MXChange tools include the Super Project Manager. By means of the Super Project Manager you can maintain your common databases.

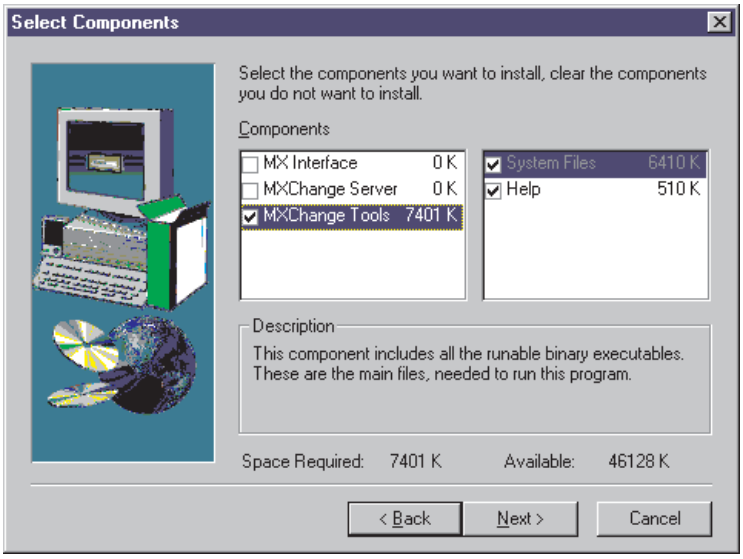


Fig. 2-7:
Select MXChange tools only

C. Install the MX Interface only

The MX Interface is only needed for a connection to MX SCADA.

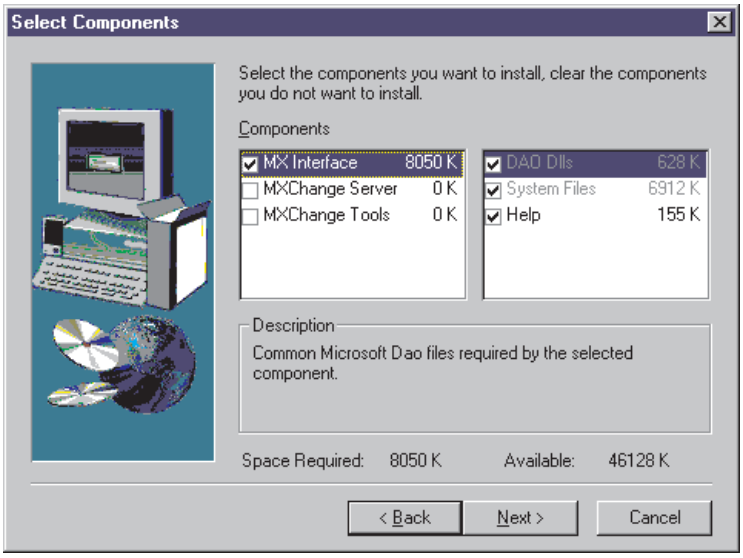


Fig. 2-8:
Select MX Interface only

⑧ The default destination folder is shown below. For the custom setup the destination location can be specified individually for the following MXChange components:

a.) Destination Location for **Tools** (Super Project Manager)

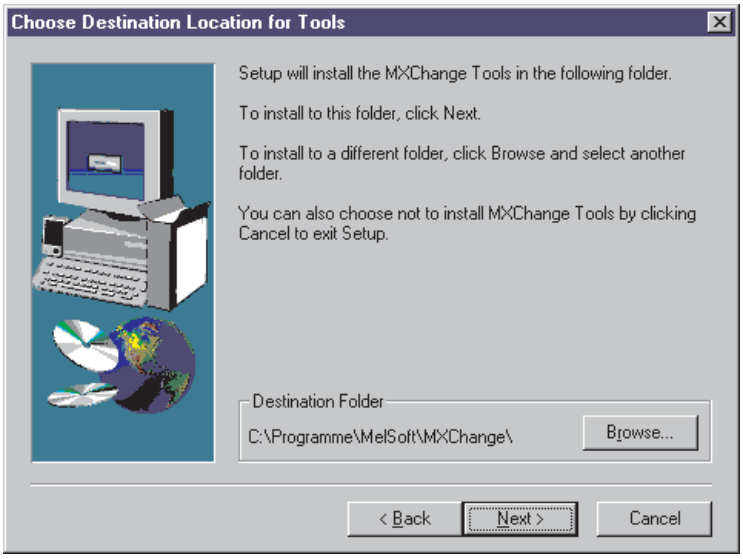


Fig. 2-9:
Destination location for tools

b.) Destination Location for **Server**

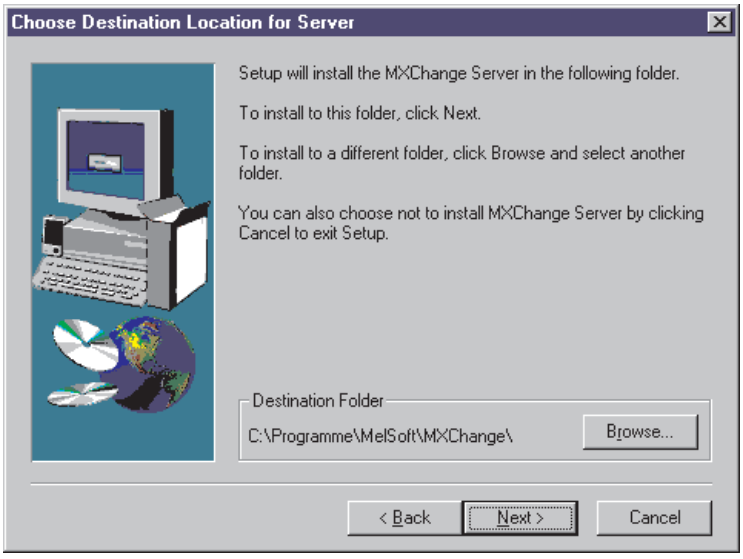


Fig. 2-10:
Destination location for server

c.) Destination Location for **Server Database**

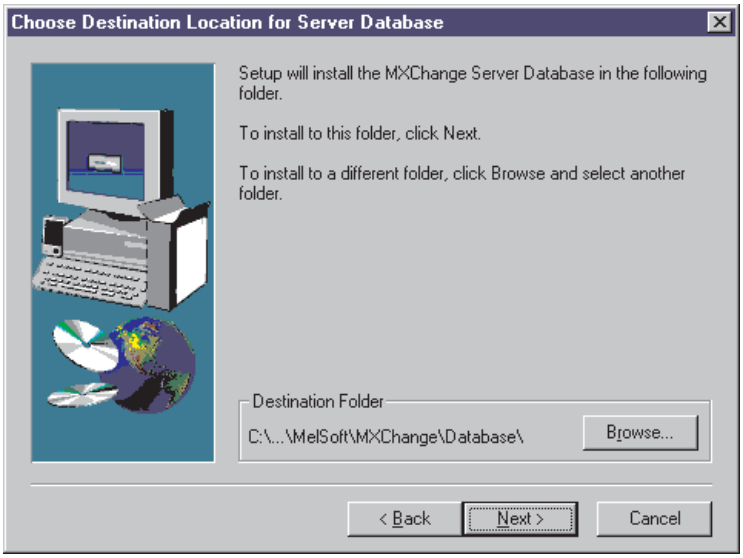


Fig. 2-11:
Destination location for Server Database

d.) Destination Location for **MX Interface**

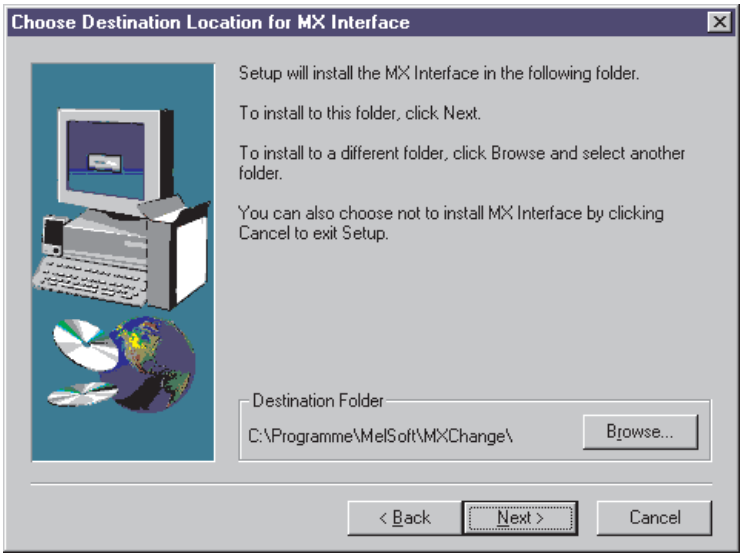


Fig. 2-12:
Destination location for MX Interface

⑨ You can change the destination folder by clicking on the **Browse** button:

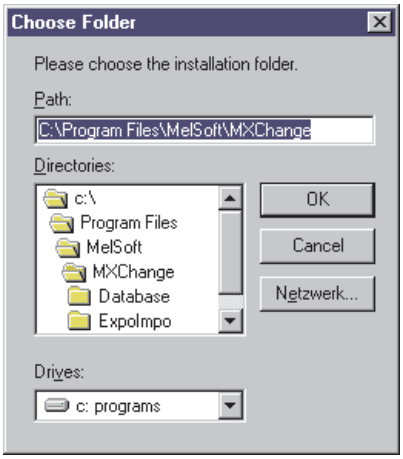


Fig. 2-13:
Choose destination folder

⑩ The default program folders are shown below. You can select another program folder from the listbox or enter a new program folder into the entry field. For the custom setup the program folders can be specified individually for the following MXChange components:

a.) Program Folder for MXChange **Tools** (Super Project Manager)

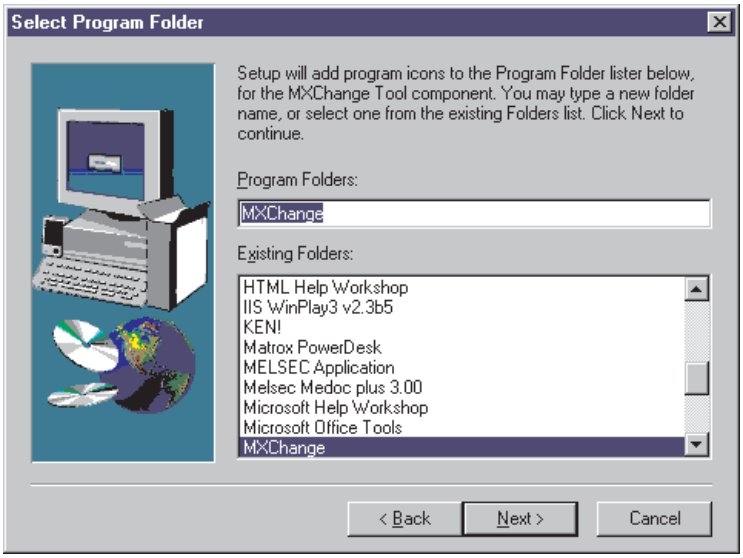


Fig. 2-14:
Program folder for MXChange tools

b.) Program Folder for **MXChange Server**

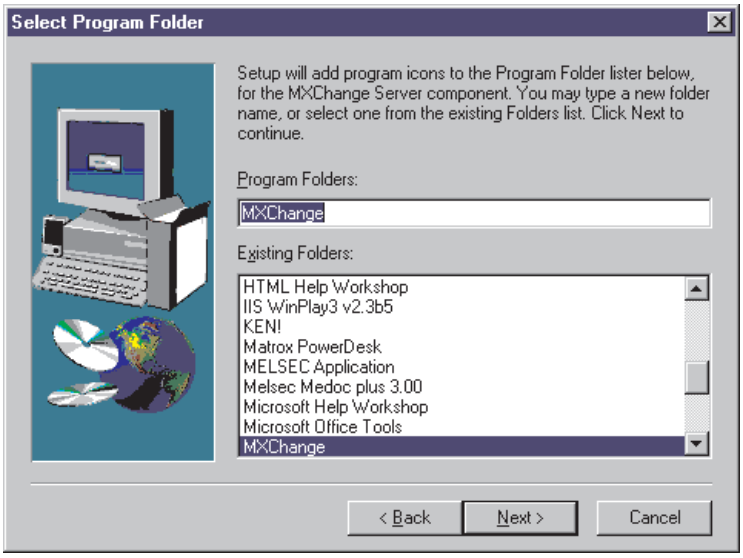


Fig. 2-15:
Program folder for MXChange server

c.) Program Folder for **MX Interface**

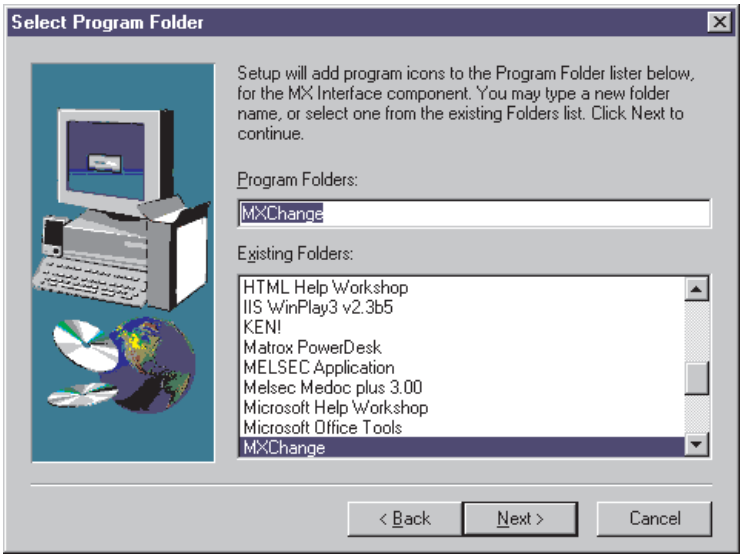


Fig. 2-16:
Program folder for MX Interface

⑪ Now you can read the ReadMe file with the latest information.

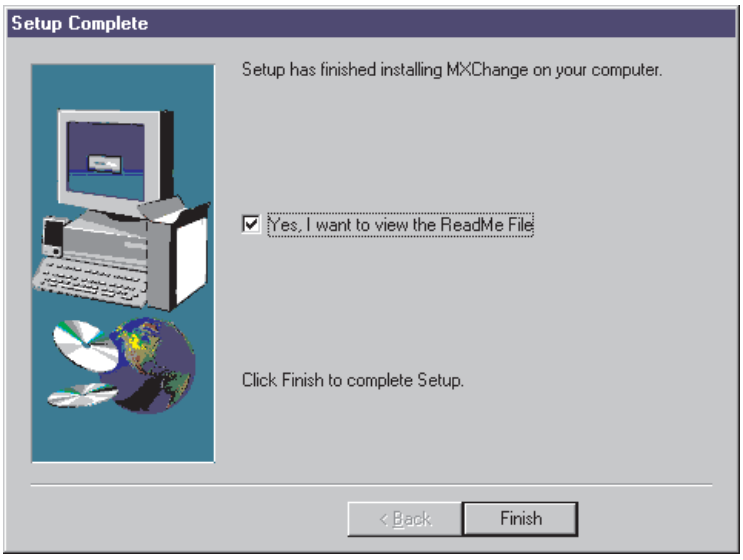


Fig. 2-17:
Setup is complete

⑫ The MXChange installation is complete. Before you use MXChange you have to restart your computer. Activate the respective checkbox to restart your computer automatically.

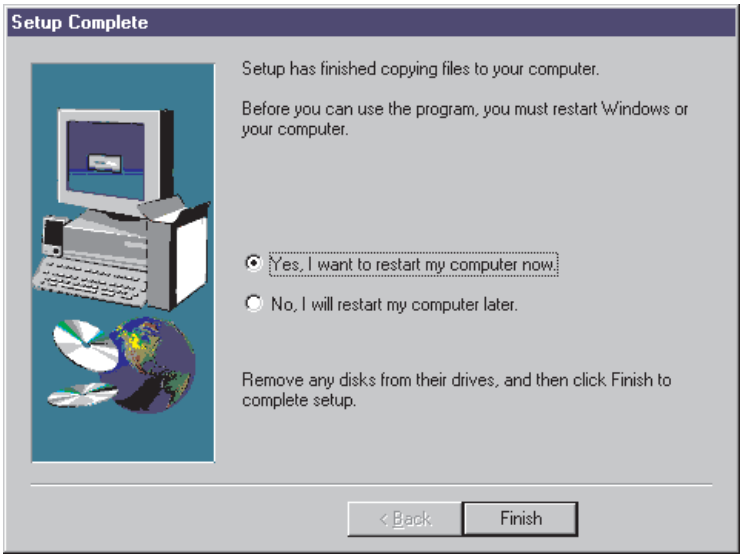


Fig. 2-18:
Restart your computer

2.3.4 Dongle protection

The software is copy protected via a hardware dongle included in the software package. Plug the hardware dongle on the parallel port of your personal computer. The signals of the port are connected through, so you can connect parallel peripherals (e.g. printers) to the dongle.

Without the dongle connected, MXChange will only run in **evaluation mode** with the following restrictions:

- Maximum of 200 tags
- No network capabilities (stand alone system only)
- Only one server instance per computer

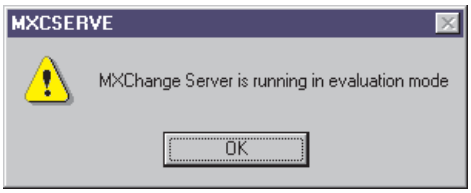


Fig. 2-19:
Evalutation mode without dongle

The dongle will configure your MXChange version to one of the selected versions:

- 500 tags single computer
- 10000 (unlimited) tags single computer
- 10000 (unlimited) tags networked computer

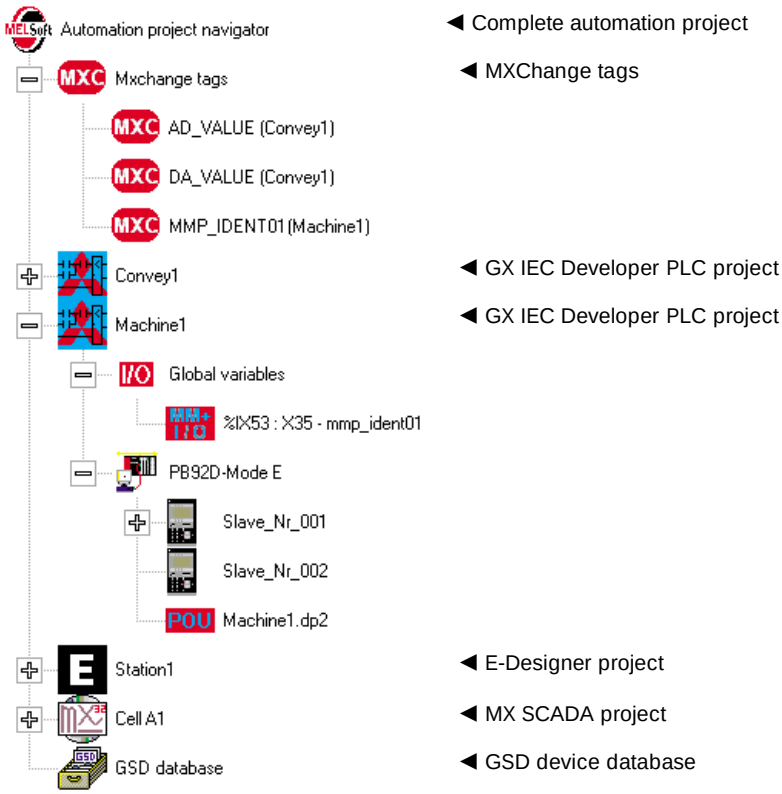
For the installation you do not need the dongle.

3 Super Project Manager

The Super Project Manager is the main interface between the user and the MXChange server. The Super Project Manager is the central tool that lets you manage different automation projects from just one single common interface.

3.1 Hierarchical structure

The Super Project Manager provides an overview of the complete automation project. The Super Project Manager provides a hierarchical structure consisting of nodes:



By means of the hierarchical structure you can copy and paste parts of the configuration to easily generate new MXChange tags from existing tags.

3.2 Starting the MXChange server

The MXChange server is the central interface between the software tools and the common database. When the MXChange server is started, it does not require any further setup or maintenance. The MXChange server must run either on the local personal computer or on a remote computer accessible via TCP/IP network.

Start the MXChange server from the MS Windows Start/Programs menu (or from where you installed it):

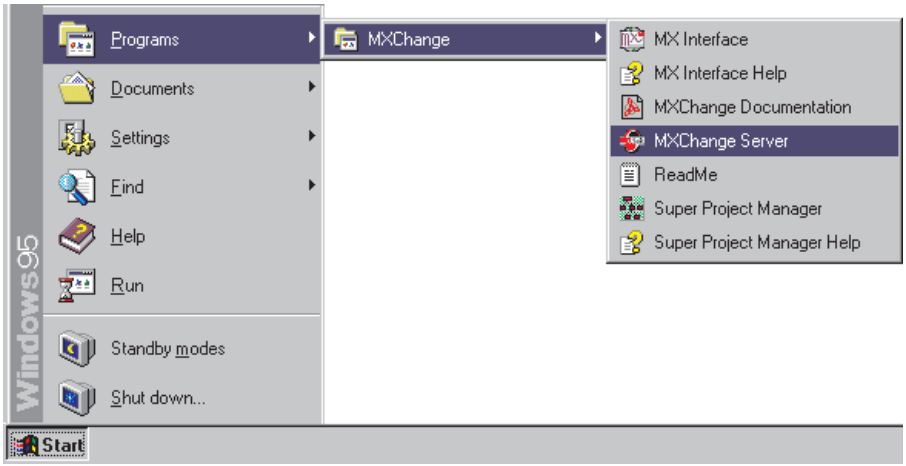


Fig. 3-1: *Starting the MXChange server*

You can start more than one MXChange server on one single personal computer. Each MXChange server handles an individual database. The additional MXChange servers are numbered successively (Server:1, Server:2, ...).

Three MXChange servers running on one single computer:

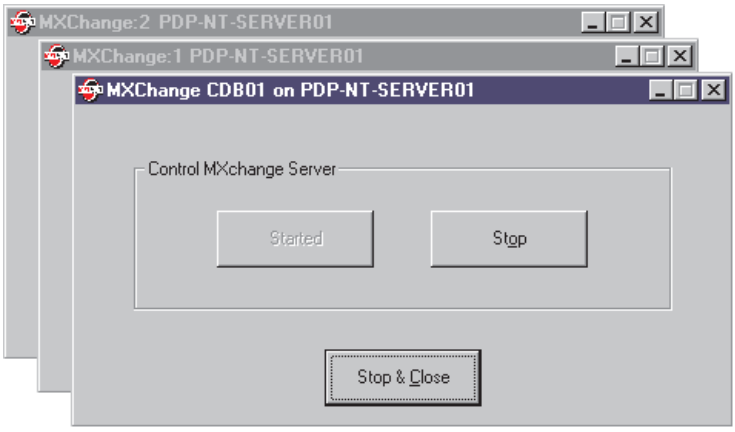


Fig. 3-2:
Multiple MXChange servers

Click on **Stop** to suspend the service temporarily and restart it with **Start**.
Click on **Stop & Close** to exit the server.

3.3 Starting the Super Project Manager

Start the Super Project Manager from the MS Windows Start/Programs menu (or from where you installed it):

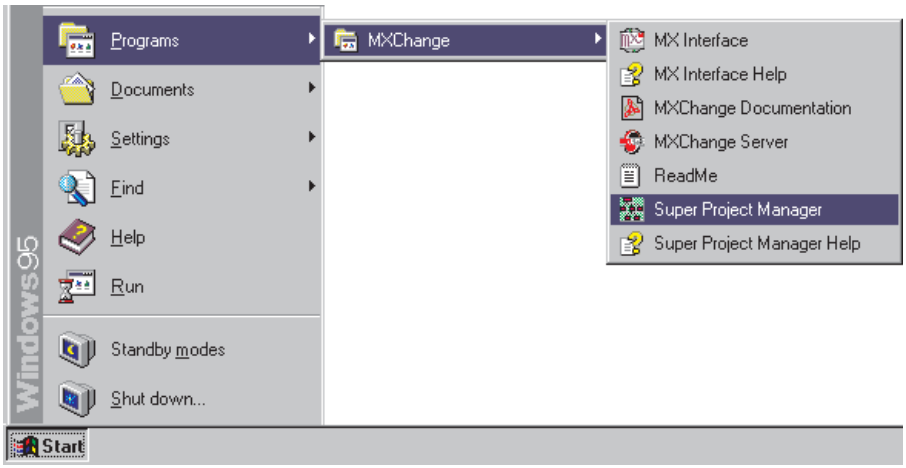


Fig. 3-3: *Starting the Super Project Manager*

3.3.1 Logging in

When starting up or on selecting **Log in** from the **File** menu, a dialog box appears requesting the server name with which to connect, a user name, and password.

The **User Name** currently cannot be changed and is fixed to **Admin**.
The default **Password** is "" (leave it blank).

NOTE

The server distinguishes upper-case and lower-case characters within the user name and password

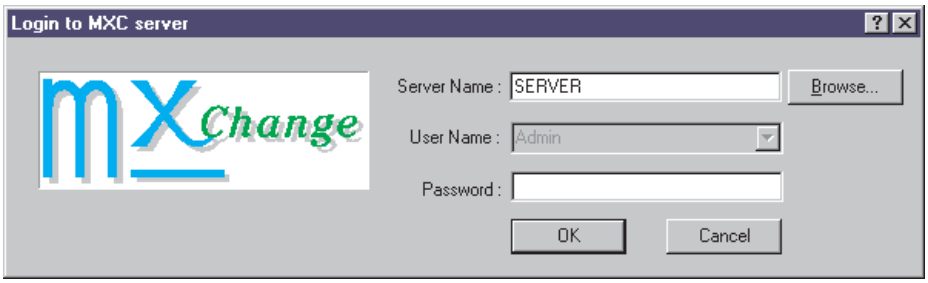


Fig. 3-4: *Login dialog*

Browse launches the server browser window. After OK is selected, the main project window will be opened with a connection to the given server.

3.3.2 Server browser

The server browser lists all MXChange servers selectable across the current TCP/IP network or environment. Select one of these and click OK.

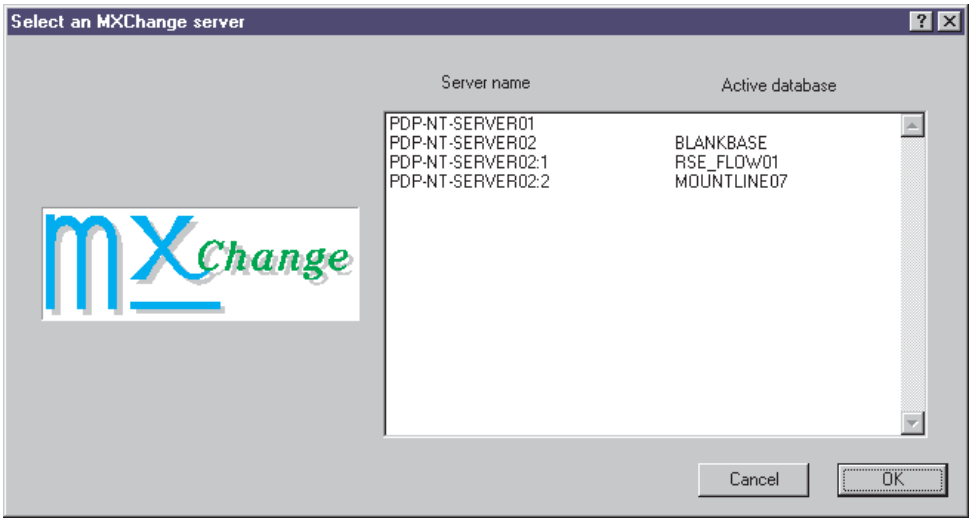


Fig. 3-5: *Server browser*

If there is more than one MXChange server running on one single personal computer, the additional MXChange servers are numbered successively (Server:1, Server:2, ...).

If there is no MXChange server available, the browser window remains blank. If you have already entered a server name, user name, and password in the login window, an error message appears:

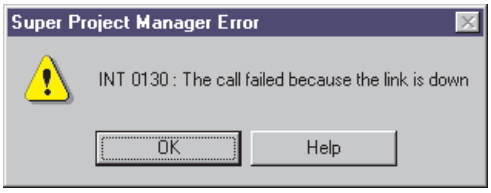


Fig. 3-6:
No running MXChange server found across the network

In this case start the MXChange server with the required database on your local personal computer or on a remote one accessible across the TCP/IP network.

3.4 Using the Super Project Manager

3.4.1 Main project window

When a connection to the server has been established, the main project window is displayed.

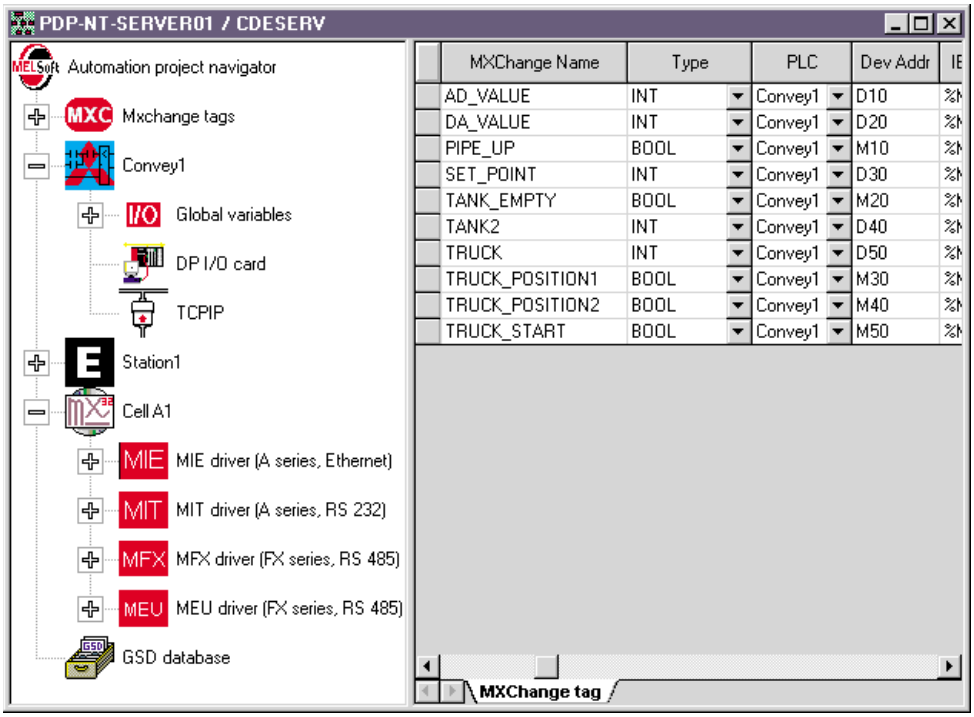


Fig. 3-7: Super Project Manager main project window

The title bar of the window displays "SERVER NAME / COMMON DATABASE NAME".

Click on ⊞ to expand and on ⊟ to collapse nodes in the Project Navigator window.

The Tag Editor window is part of the **MXChange Tag Editor**, which is integrated into the Super Project Manager. The Tag Editor window displays the MXChange tags and data.

There are separate I/O lists for tags of each base I/O reference type - they are too different to display in the same list. The separate lists will be selected with “Tab” windows under the list.

When new tags are added, their base type will be that of the currently selected tab.

3.4.2 Refreshing the project window

To update the tree in the main project window, select **Refresh** from the **View** menu or from the toolbar. The tree will also be updated if it is changed by **Add node**, **Delete node**, **Modify node**, **Cut**, or **Paste**.

3.4.3 Logging out

To shut down the connection to the server and to close the main project window for the connection, select **Log out** from the **File** menu.

3.4.4 Closing the application

To close all windows and to shut down the application, select **Exit** from the **File** menu.

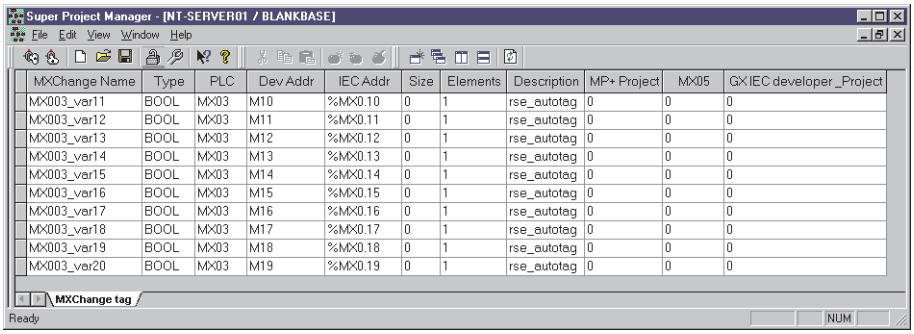
3.5 Integrated Tag Editor

The Tag Editor is a table of all tags included in the MXChange database. The tags can be added, edited, or deleted via the Tag Editor. Additionally, the tags can be added to other projects or deleted from them.

A tag can be added with several attributes set automatically and with values increasing or decreasing by different amounts each time it is added.

3.5.1 Main Tag Editor window

The main Tag Editor window lists all tags included in the MXChange database. Each row contains one tag and the respective MXChange data. Additionally, the row includes a list of projects to which the tags belong.



MXChange Name	Type	PLC	Dev Addr	IEC Addr	Size	Elements	Description	MP+ Project	MX05	GX IEC developer _Project
MX003_var11	BOOL	MX03	M10	%MX0.10	0	1	rse_autotag	0	0	0
MX003_var12	BOOL	MX03	M11	%MX0.11	0	1	rse_autotag	0	0	0
MX003_var13	BOOL	MX03	M12	%MX0.12	0	1	rse_autotag	0	0	0
MX003_var14	BOOL	MX03	M13	%MX0.13	0	1	rse_autotag	0	0	0
MX003_var15	BOOL	MX03	M14	%MX0.14	0	1	rse_autotag	0	0	0
MX003_var16	BOOL	MX03	M15	%MX0.15	0	1	rse_autotag	0	0	0
MX003_var17	BOOL	MX03	M16	%MX0.16	0	1	rse_autotag	0	0	0
MX003_var18	BOOL	MX03	M17	%MX0.17	0	1	rse_autotag	0	0	0
MX003_var19	BOOL	MX03	M18	%MX0.18	0	1	rse_autotag	0	0	0
MX003_var20	BOOL	MX03	M19	%MX0.19	0	1	rse_autotag	0	0	0

Fig. 3-8: *Main Tag Editor window*

3.6 Help

3.6.1 Getting help

Selecting **Contents** from the **Help** menu will bring up a browser including online help.

3.6.2 Getting context sensitive help

To get the context sensitive help, press F1 or select an item via the context sensitive help cursor. This will bring up a browser including online help. The browser will display the relevant topic for the item. If no specific help exists for the item, the first online help topic will be displayed.

3.6.3 About Super Project Manager

To get information on the current version of the Super Project Manager, select **About**.

4 Connecting GX IEC Developer

4.1 Integrating a project in MXChange

This chapter describes how to link an existing GX IEC Developer project into the common database of MXChange.

1. Start the MXChange server

Click on Start to open the Windows **Start** menu and select the menu item **Programs/ MXChange/MXChange Server**.

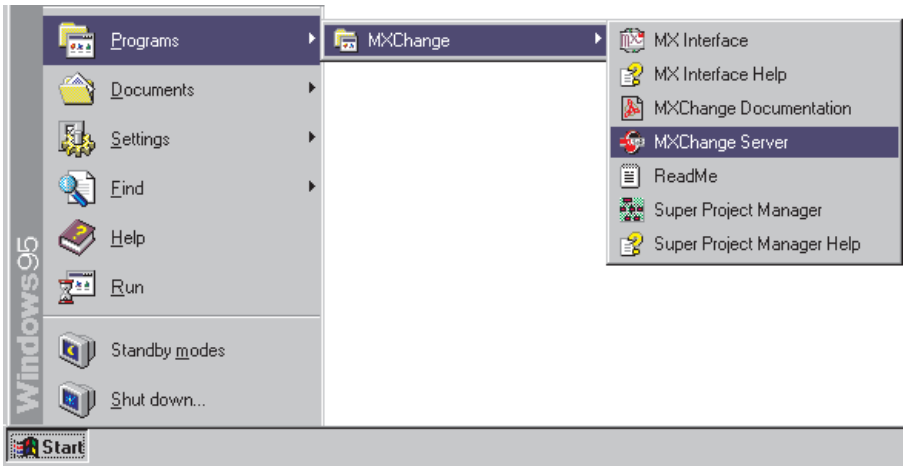


Fig. 4-1: *Starting the MXChange server*

Start the MXChange server either on your local personal computer or on a different one you are connected to via the TCP/IP protocol.

Once the MXChange server is running, it does not need any further setup or maintenance. Therefore, you can minimise it but let it run in the background.

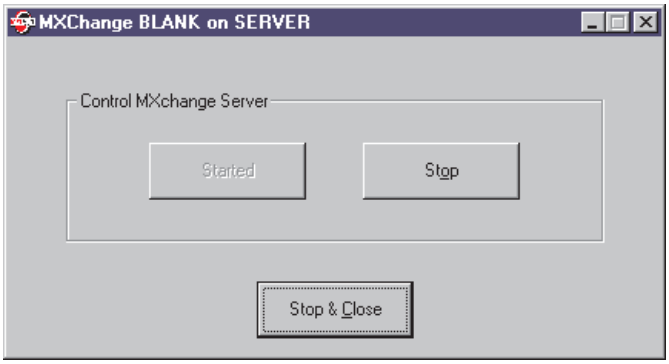


Fig. 4-2:
MXChange server

2. Start the Super Project Manager and login

Click on Start to open the Windows **Start** menu and select the menu item **Programs/ MXChange/Super Project Manager**.

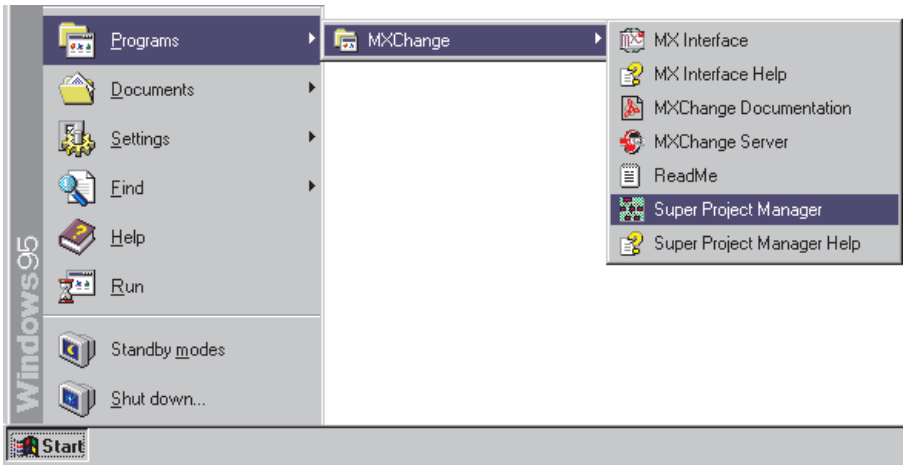


Fig. 4-3: *Starting the Super Project Manager*

The **Login to MXChange server** dialog appears automatically:

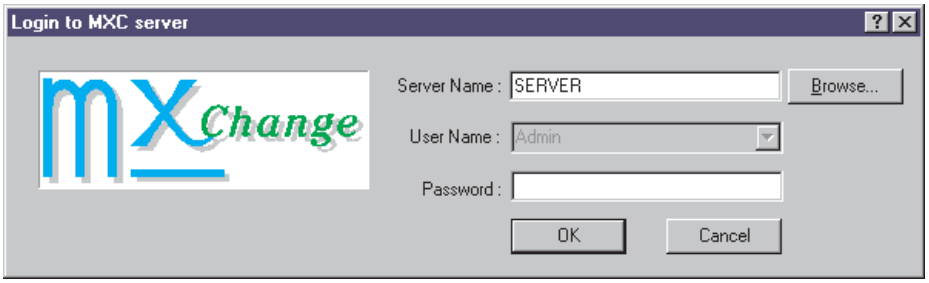


Fig. 4-4: *Login dialog*

The **User Name** cannot be changed and is fixed to **Admin**.

The default **Password** is "" (leave it blank).

Confirm by clicking OK.

NOTE | Upper-case and lower-case characters are distinguished by the MXChange server.

The Super Project Manager establishes the connection to the server.

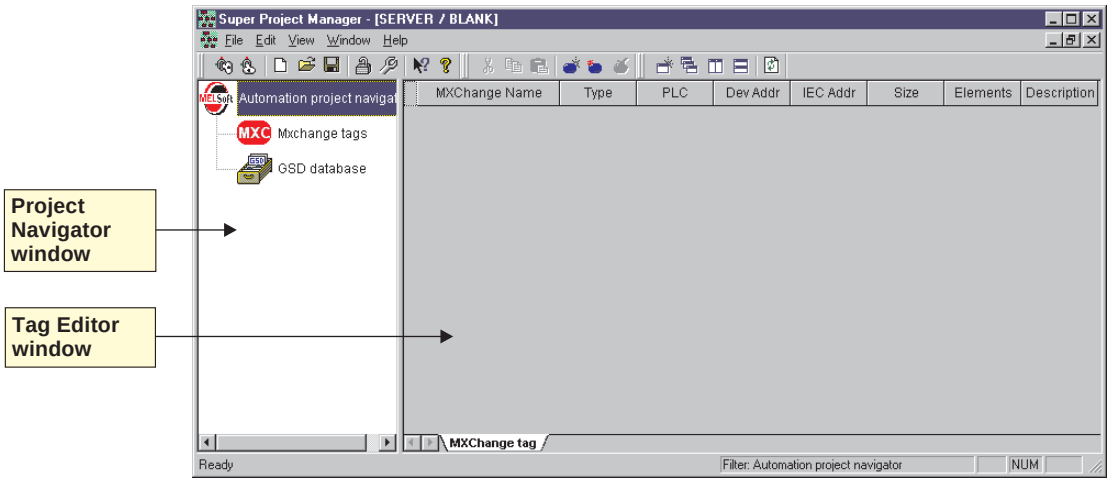


Fig. 4-5: *Super Project Manager main project window*

The **Project Navigator** window on the left shows all projects connected to MXChange as a tree of hierarchical nodes.

The **Tag Editor** window on the right (here still blank) lists all tags of different projects to be used with MXChange.

3. Open GX IEC Developer project and log on

To connect a GX IEC Developer project to MXChange for the first time, create a GX IEC Developer project called **GETSTART**. Refer to the GX IEC Developer manual for details. Open this project and enable the MXChange support:

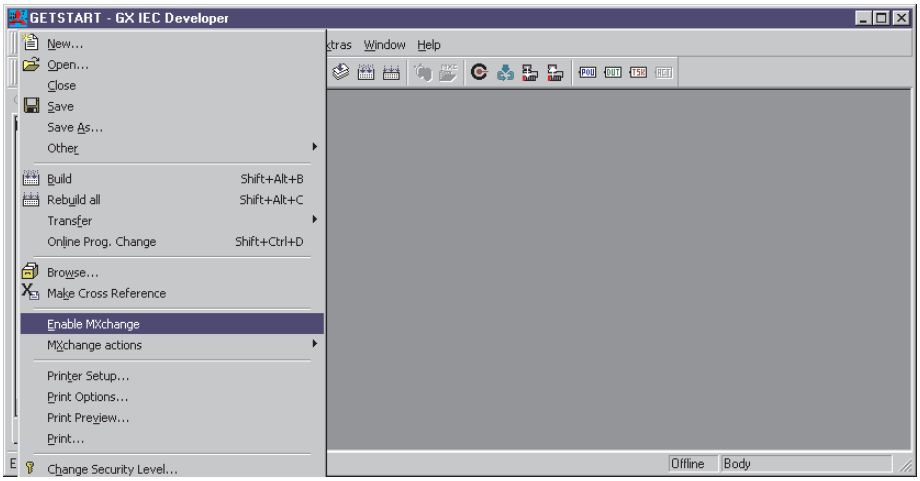


Fig. 4-6: *Enabling MXChange*

For activating the MXChange feature, refer to the manual of your automation software.

The **MXChange server - Log On** dialog appears automatically:

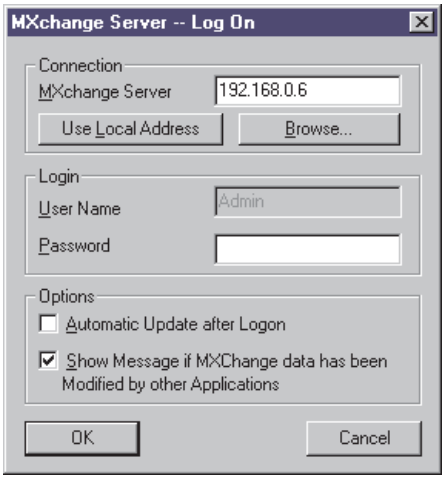


Fig. 4-7:
Log on dialog

Enter **MXChange Server**, **User Name**, and **Password**:

MXChange Server: The TCP/IP address of the personal computer where the MXChange server is running.
If the server is running locally, click on **Use Local Address** for the TCP/IP address of your local personal computer.

The defaults for the user name and password are:

User Name: **Admin**
Password: **""** (leave it blank).

NOTE Upper-case and lower-case characters are distinguished by the MXChange server.

4. Add the GX IEC Developer project to MXChange

As your GX IEC Developer project is connected to the server, MXChange notes that this project does not exist in the common database and asks whether you want to add it:

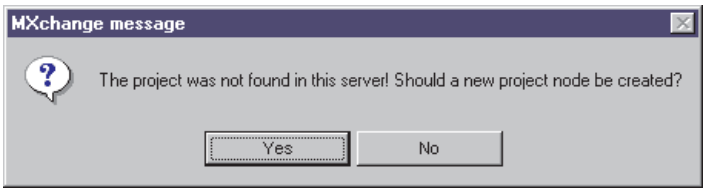


Fig. 4-8:
Creating a new project node

confirm by clicking Yes and the GX IEC Developer project will be added to the Project Navigator of the Super Project Manager:

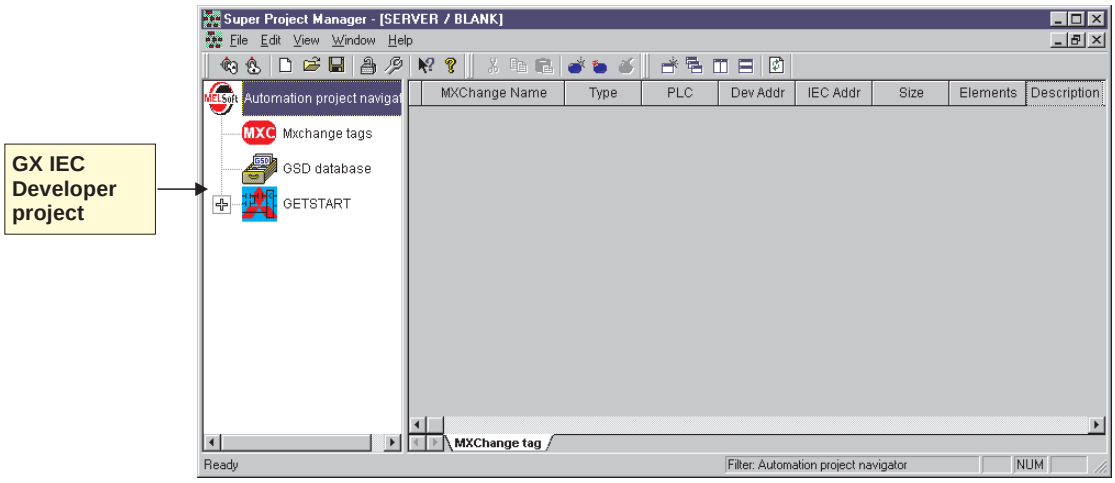


Fig. 4-9: *New project node*

5. Tag GX IEC Developer variables for MXChange

Now specify the variable **Hello** to be included in the common database of MXChange. Open the GX IEC Developer **Global Variable List** and click on the **MXChange checkbox** of the variable **Hello**:

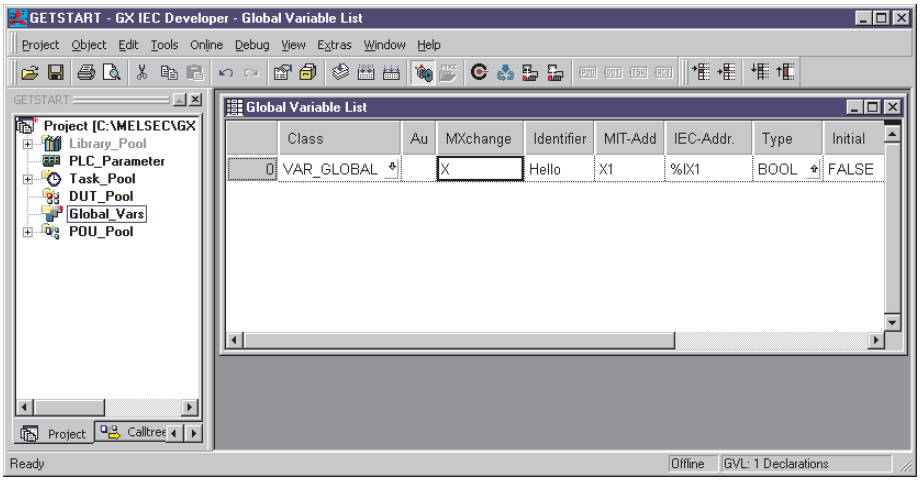


Fig. 4-10: *Specifying a variable in the Global Variable List*

6. Tags are added to MXChange

After the GX IEC Developer variable **HELLO** has been tagged, save your GX IEC Developer project to transfer the changes to MXChange. The GX IEC Developer project automatically inserts an **MXChange tag** and a **GX IEC Developer tag**. The view is refreshed by clicking on in the Super Project Manager.

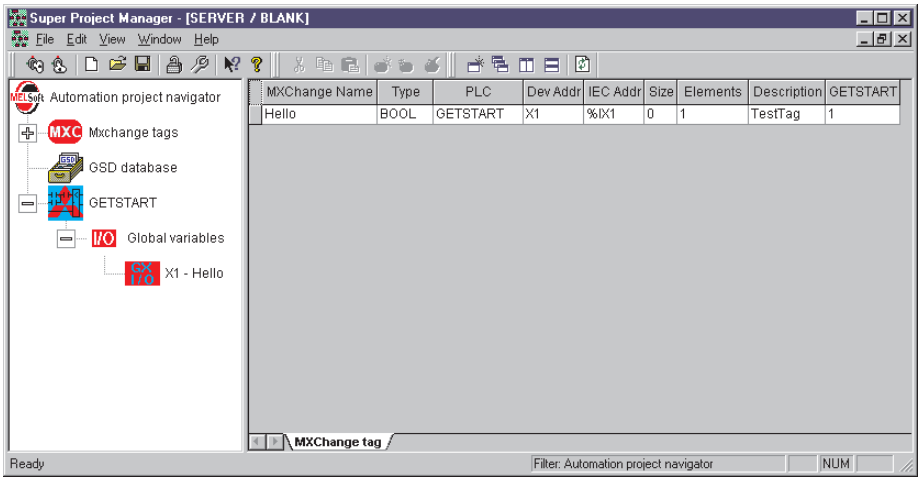


Fig. 4-11: *New MXChange tag*

The first variable name **HELLO** is included in both, the GX IEC Developer project and the MXChange tags in the Super Project Manager.

NOTE

Any changes you have made in the PLC project within GX IEC Developer are transferred to MXChange only if you **save** the PLC project.

4.2 Open a project from MXChange

GX IEC Developer projects that are included in the MXChange database can be opened in GX IEC Developer on any Personal Computer connected to MXChange. This way complete GX IEC Developer projects can be exchanged and backed up easily via a network.

4.2.1 Procedure

1. Log on to MXChange

Start GX IEC Developer and log on to the MXChange server including the project.
In GX IEC Developer either select the menu item **Project/MXChange actions/Log on**

or

click on the **Log on** button (for details refer to section 4.1).

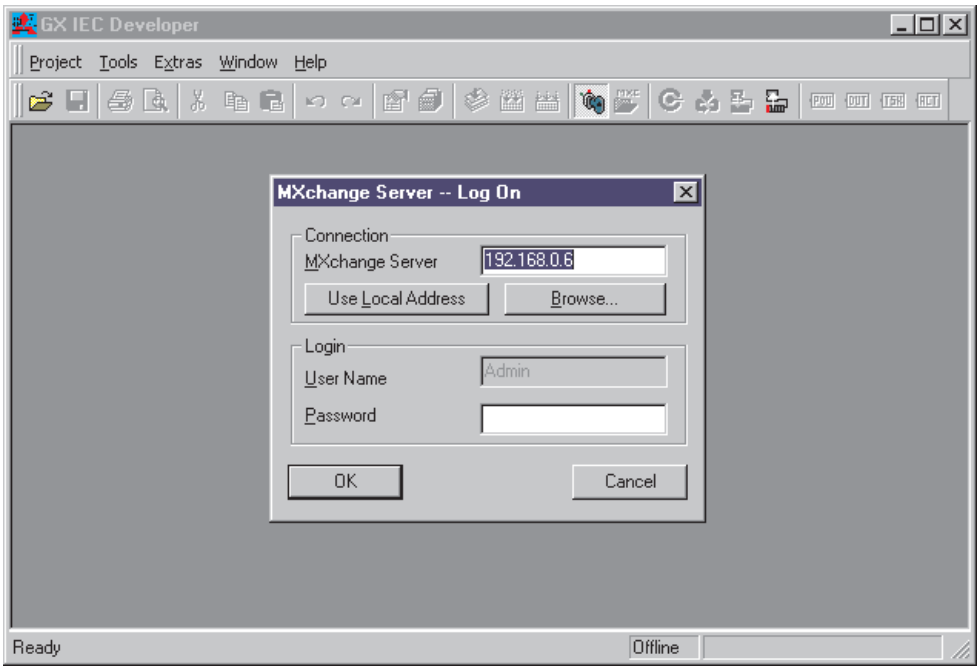


Fig. 4-12: *Log on dialog*

2. Open project from MXChange

In GX IEC Developer either select the menu item **Project/MXChange actions/Open Project from MXChange** or click on the according button . These items are available only, if **no** project is open.

The following dialog appears listing the appropriate projects.

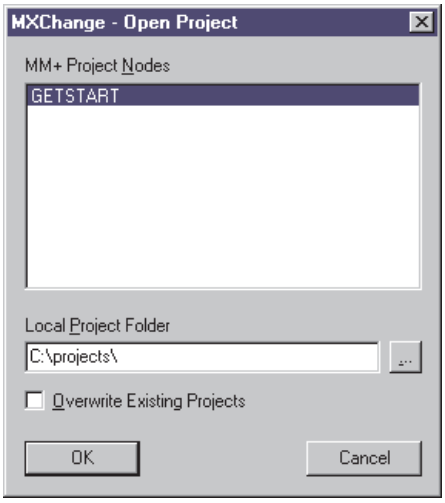


Fig. 4-13:
Open project from MXChange

Select the project to be opened and specify a **Local Project Folder** where the project will be stored.

3. Project is opened

The complete project is stored in the specified path and opened in GX IEC Developer.

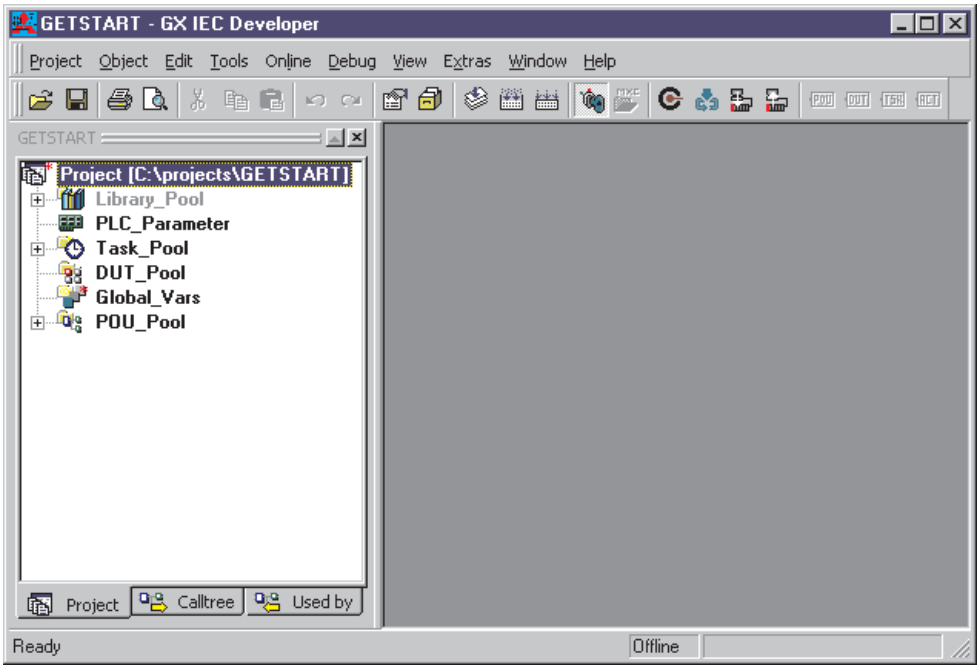


Fig. 4-14: *Opened project in GX IEC Developer*

5 Connecting GX Developer

5.1 Installation

When installing GX Developer you must have enabled the **MXChange Actions** to make the required MXChange functions available in the GX Developer menus.

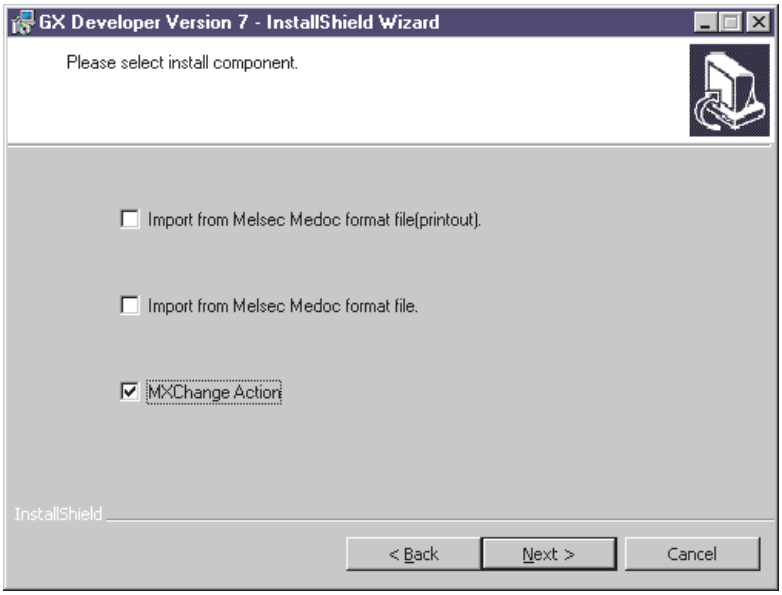


Fig. 5-1: *Enabling MXChange when installing GX Developer*

5.2 Log in

GX Developer exchanges data with other automation development tools via the MXChange server. From the menu select **Tools/MXChange actions/Log in** to log in to the MXChange server.

The menu selection can only be made, if you have a project opened.

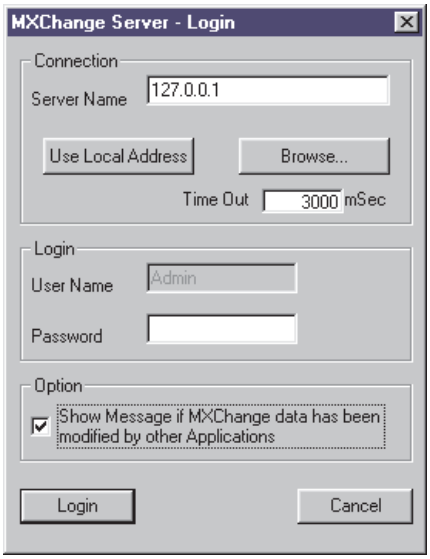


Fig. 5-2:
Log in dialog

MXChange Server - Login

Item	Meaning
Connection	
Server Name	Name or IP address of the computer where the MXChange server is started. Enter it manually, use your local address or select it via the **Browse** button.
Use Local Address	Sets the local computer as the server name (if GGP/WIN and the MXChange server are executed on the same computer).
Browse	Browses the network for connectable MXChange servers. The desired MXChange server can be selected from a list.
TIme Out	Limits the time period for establishing a connection to the MXChange server. Default:value: 3000 ms; Setting range: 0 to 200000 ms.
Login	
User Name	Currently cannot be changed. Default: Admin.
Password	Password for the MXChange server (1024 characters max.). Default: “” (leave it blank).
Option	
Show Message...	Enables/disables an MXChange message box when the GX Developer project data has been changed in the MXChange database.

Tab. 5-1: *Log in dialog items*

Make the desired settings and click on the **Login** button to log in to the MXChange server.

If the log in has been established succesfully, a message box confirms “**Login Complete**”.

5.3 MXChange database conversion

The GX Developer project data and the MXChange database exchange information as described below.

GX Developer

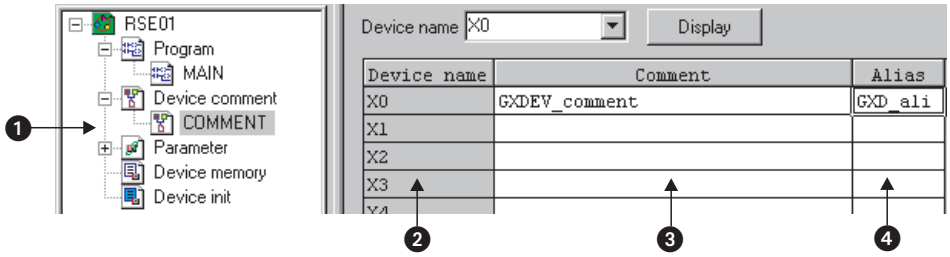


Fig. 5-3: *GX Developer project view*

MXChange (Super Project Manager)

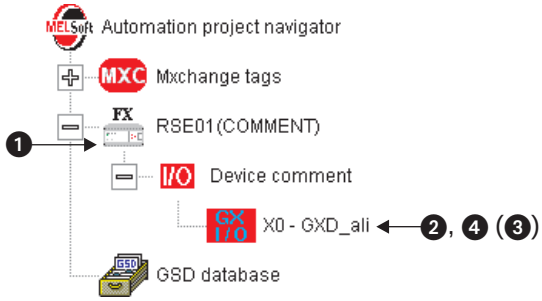


Fig. 5-4:
MXChange project view

Item	Project data	MXChange database
❶	Device comment type (COMMENT)	GX Developer project node
❷	Device name	Device
❸	Comment	Tag description
❹	Alias	Tag name

Tab. 5-2: *Project view items*

In the MXChange database, the device comment types of GX Developer correspond to the respective GX Developer project nodes (FX project (COMMENT), Q project (MAIN), etc.).

NOTE

For the alias name created on GX Developer exported to the MXChange database, only the following characters are allowed: “A–Z”, “0–9”, “_”.
The alias name must begin with a letter “A–Z”.
The maximum allowed alias name length is 8 characters.

If nothing has been set to the alias of GX Developer at the time of export, the device changes to tag name.

5.4 Export to MXChange tags

The export function writes the device comments and device names created on GX Developer to the MXChange database.

Export setting

From the menu select **Project/Export file/Export to MXChange tags**... to open the **Export Setting**.

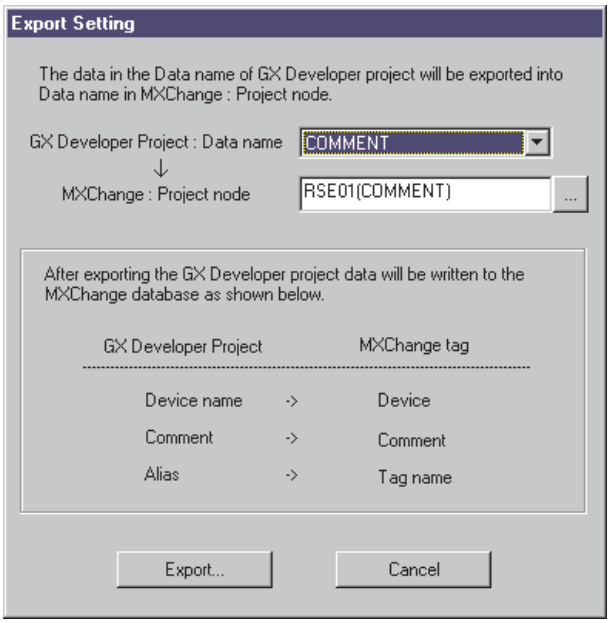


Fig. 5-5: *Export setting dialog*

Item	P project data
GX Developer Project: Data name	Data name of the project name currently edited appears. Select the data name to be written to the MXChange database from the drop down list.
MXChange: Project node	Enter a name for the GX Developer project node to be created in the MXChange database or select an existing GX Developer project node via the browse button.

Tab. 5-3: *Export setting dialog items*

5.4.1 Export procedure

Click on the **Export**... button to start the export procedure.

If the GX Developer project node specified in the **Export Setting** does not exist in the MXChange database, the following dialog box appears.

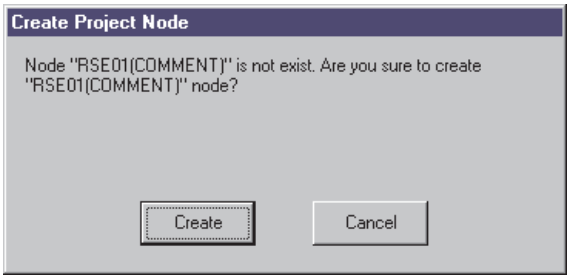


Fig. 5-6:
Creating a project node

Click on the **Create** button to create a GX Developer project node with the specified name in the MXChange database.

During the export a dialog box appears indicating the progress of the procedure.

When the export is completed a dialog box appears for confirmation.

NOTE

For the alias name created on GX Developer exported to the MXChange database, only the following characters are allowed: “A–Z”, “0–9”, “_”.
The alias name must begin with a letter “A–Z”.
The maximum allowed alias name length is 8 characters.

If nothing has been set to the alias of GX Developer at the time of export, the device changes to tag name.

5.5 Import from MXChange tags

The import function reads GX Developer project data from the MXChange database into the GX Developer project.

Import setting

From the menu select **Project/Import file/Import from MXChange tags**... to open the **Import from MXChange tags** dialog box.

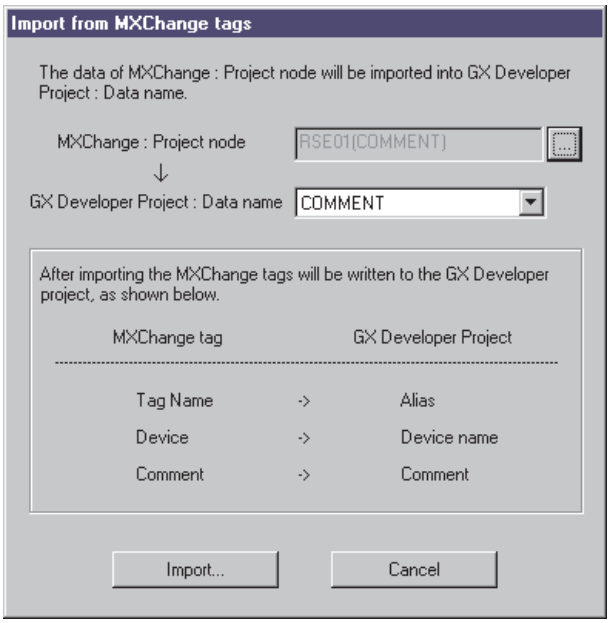


Fig. 5-7: *Import setting dialog*

Item	Meaning
MXChange: Project node	Select an existing GX Developer project node to be imported via the browse button.
GX Developer Project: Data name	From the drop down list select the data name in the currently opened GX Developer project to be imported to.

Tab. 5-4: *Import setting dialog items*

5.5.1 Import procedure

Click on the **Import**... button to start the import procedure.

The import deletes all existing comment data in the GX Developer project and reads all comment data of the specified project node from the MXChange database.

If the PLC type set for the selected GX Developer project node differs from the PLC type of the GX Developer project to be imported to, only the data within the PLC type range of the GX Developer project is imported.

During the import a dialog box appears indicating the progress of the procedure.

When the import is completed a dialog box appears for confirmation.

NOTE

When importing an MXChange tag into the GX Developer project, only the first 8 characters of the tag name (64 characters max.) are read into the GX Developer alias (8 characters max.).

When importing an MXChange tag into the GX Developer project, only the first 32 characters of the tag description (64 characters max.) are read into the GX Developer comment (32 characters max.).

6 Connecting MX32

Via MXChange MX tags can be exchanged with other automation software packages.

6.1 Starting MXChange

Start the MXChange server on your local personal computer or on a different personal computer you can connect to via TCP/IP (for details refer to section 3.2).

Start the Super Project Manager and login to the MXChange server (for details refer to section 3.3).

Here the automation project starts showing two PLC projects, *GETSTART* from GX IEC Developer (for details refer to section 4) and *RSE01* from GX Developer (for details refer to section 5).

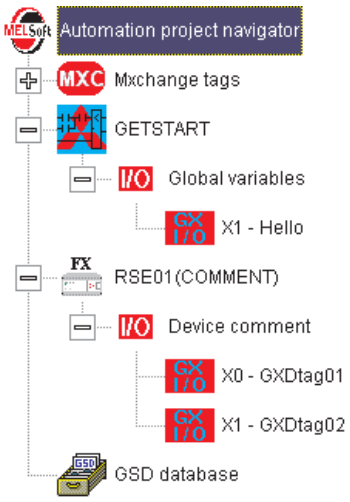


Fig. 6-1:
Initial automation project

6.2 Starting MX32

Start MX32 from the MS Windows Start menu:
Start/Programs/Mitsubishi MX/Startup.

Start MX Interface from the MS Windows Start menu:
Start/Programs/MXChange/MX Interface and login to the MXChange server:

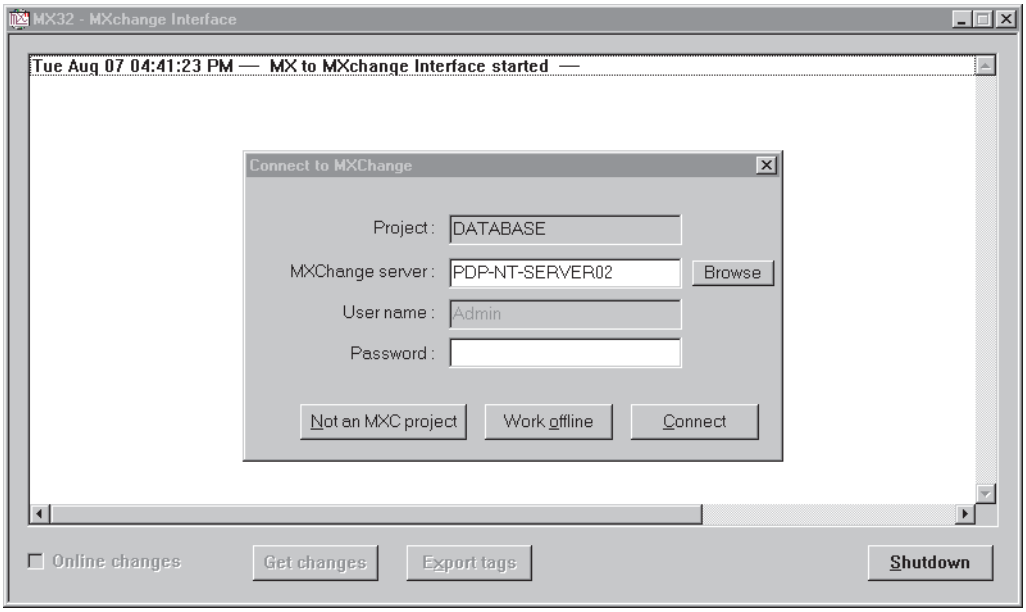


Fig. 6-2: *Log in dialog*

Select the personal computer the MXChange server is running on via the **Browse** button. The **User Name** is fixed to *Admin*. Either leave the **Password** entry blank or enter the valid password for the MXChange database, if you have specified one.

As you connect your MX32 project to MXChange for the first time it can not be found on the MXChange server. The following dialog appears:

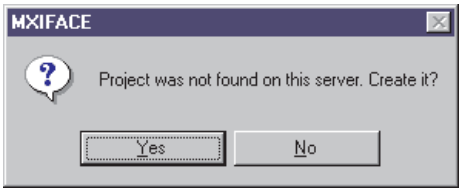


Fig. 6-3:
Creating a new project node in MXChange

Click **Yes** to create an MX32 project node in the MXChange database.

The following dialog appears:

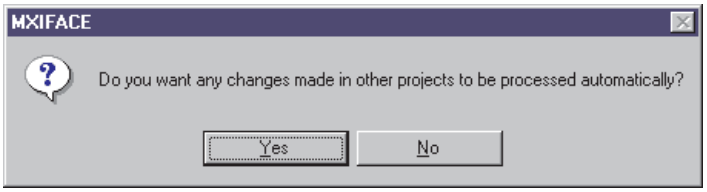


Fig. 6-4:
Enabling online changes

Click **Yes** to activate online changes.

The MXChange Interface main window appears listing all events:

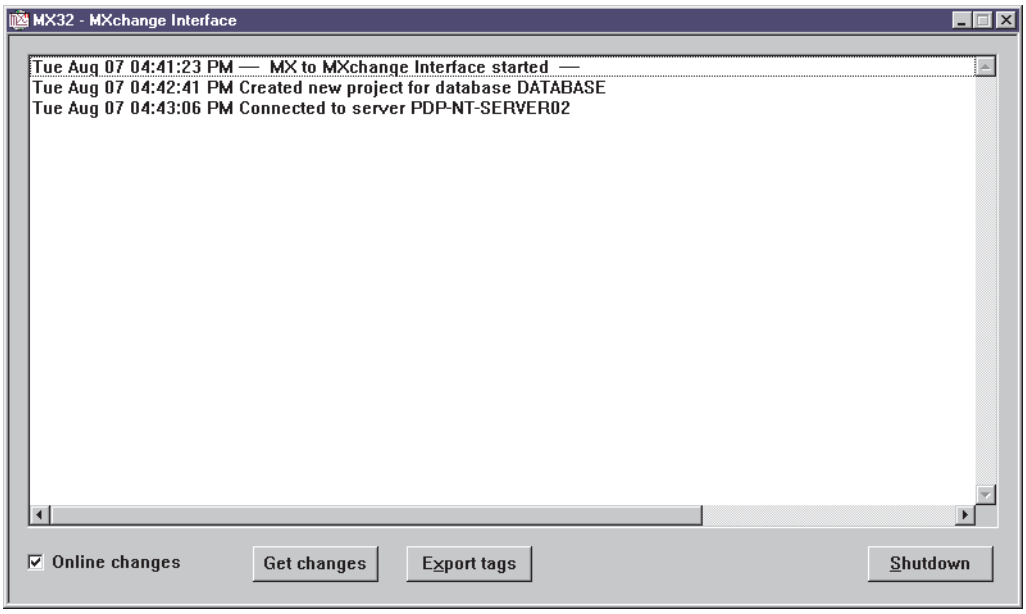


Fig. 6-5: *MXChange Interface main window*

Now MX32 is connected to the MXChange server.

Your MX32 project has automatically been added to the MXChange database. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

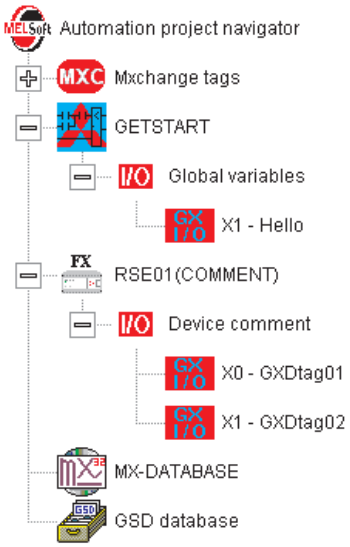


Fig. 6-6:
New MX project node in MXChange

6.3 Specifying the I/O drivers in MXChange

You have to specify the communications path between MX32, an assigned PLC project, and MXChange.

NOTE

If you intend to connect a PLC project and an MX SCADA project, ensure that the I/O card of the PLC project corresponds to the MX driver and the respective channel and device of the MX32 project. The driver, channel, and device of the MX32 project node must be added manually to MXChange.

6.3.1 MX32 project node

MCS driver

For e. g. Ethernet communications via the MX32 MCS driver you need to add the following nodes to MXChange:

1. A driver node and a device node to the MX32 project node.

2. A TCP/IP card node to the assigned PLC project node.

The settings of these nodes must match with the settings of the MX32 MCS driver.

The MCS driver in MX32 has to be already installed and configured correctly (for details refer to the MX32 documentation). Open the MX32 **System Configuration** and check the MCS driver settings.

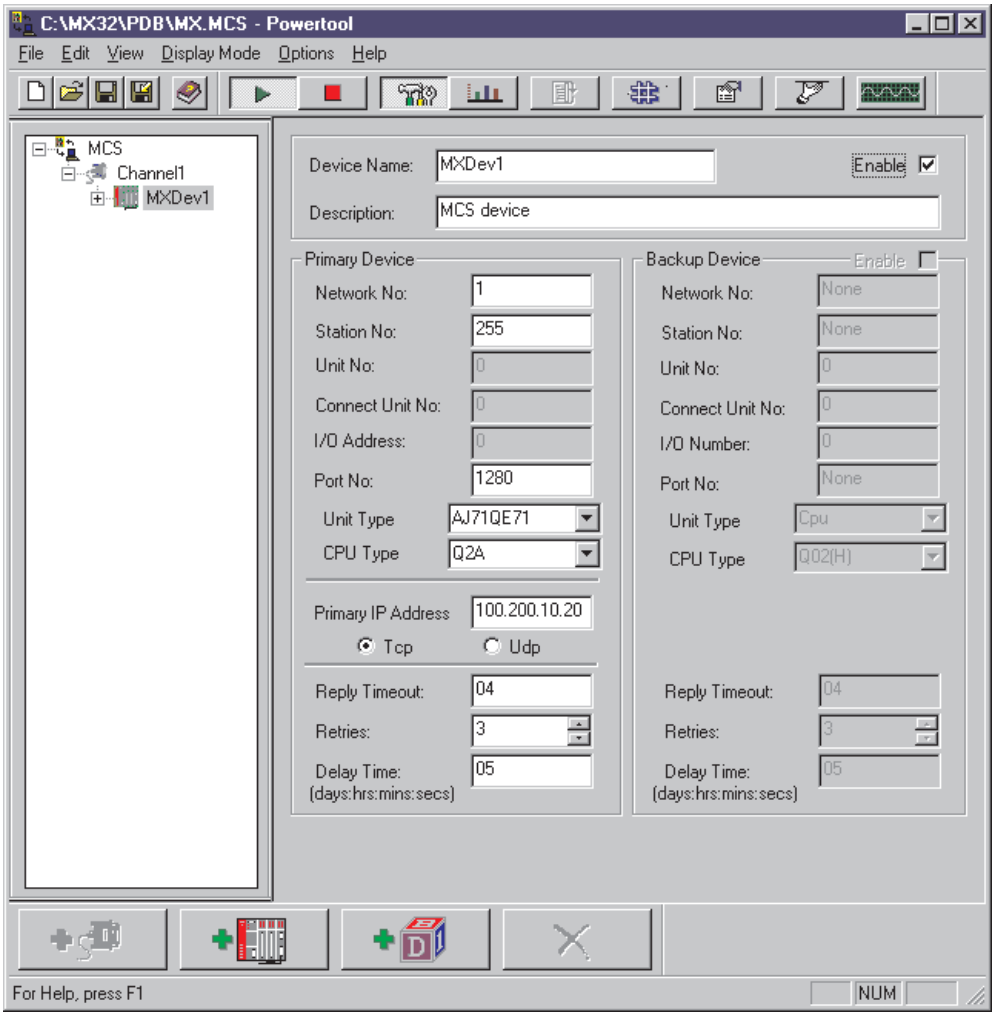


Fig. 6-7: *MCS driver configuration*

① Add a new MCS driver node to the MX32 project node

To add a new MCS driver node to the MX32 project node:

- Right-click on the MX32 project node.
  The context menu opens.
- Select **Add Node**.
  The **Select node type** dialog appears.

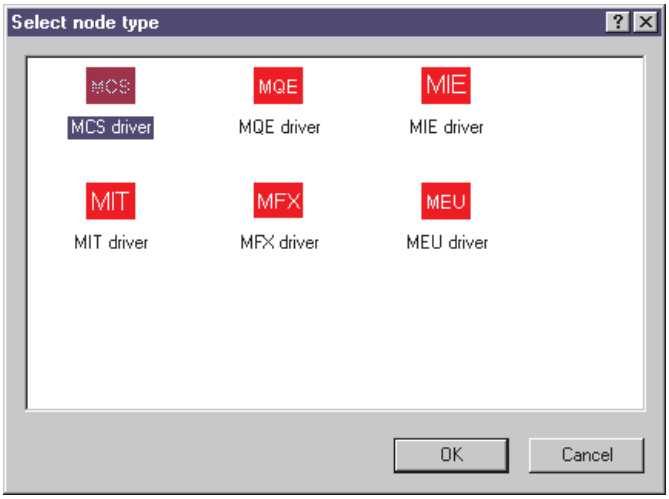


Fig. 6-9:
Node type selection

Select the MCS driver and confirm by clicking OK :

Enter node specific information

The following dialog box appears:

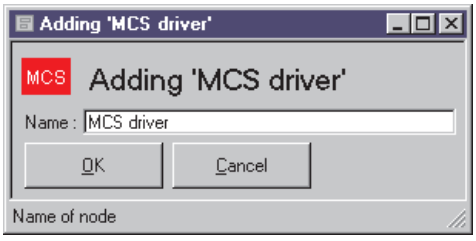


Fig. 6-8:
Entering a driver node name

Enter a driver name and confirm by clicking OK.

The MCS driver is created under the MX32 project node . It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

② Add a new MCS device node to the MCS driver node

To add a new MCS device node to MCS driver node:

- Right-click on the MCS driver node.
  The context menu opens.
- Select **Add Node**.
  The dialog **Adding "MCS device"** appears:

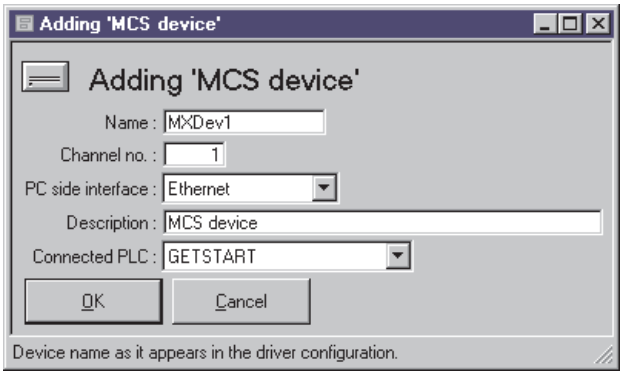


Fig. 6-10:
MCS device specification

Item	Meaning
Name ①	Device name (included in the I/O record)
Channel no. ①	Number of the used channel
PC side interface ①	Connection of the personal computer running MX32 to the PLC
Description	User definable description for the device
Connected PLC	Connected PLC project from the MXChange database

Tab. 6-1: *MCS device specification items*

① Look up the settings of the MX32 MCS driver in the MX32 **System Configuration**.

Enter the node specific information. Confirm by clicking OK .

The MCS device is created under the MCS driver node . It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

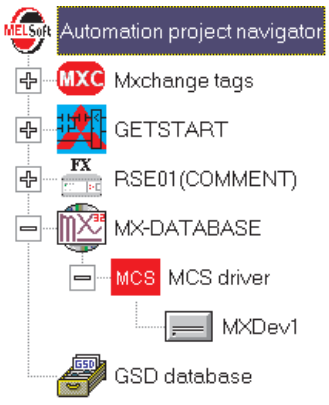


Fig. 6-11:
New driver and device node in MXChange

MQE driver

For Ethernet communications via the MX32 MQE driver you need to add the following nodes to MXChange:

1. A driver node, a channel node, and a device node to the MX32 project node.

2. A TCP/IP card node to the assigned PLC project node.

The settings of these nodes must match with the settings of the MX32 MQE driver.

The MQE driver in MX32 has to be already installed and configured correctly (for details refer to the MX32 documentation). Open the MX32 **System Configuration** and check the MQE driver settings.

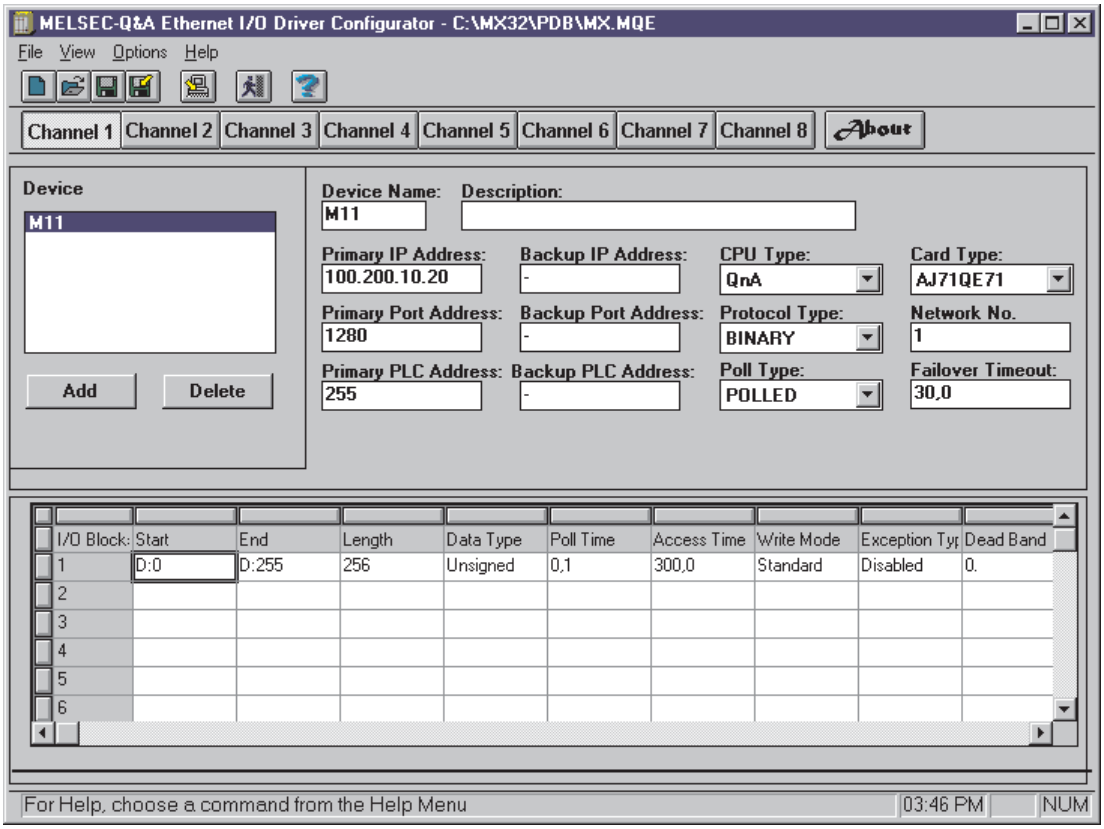


Fig. 6-12: *MQE driver configuration*

① Add a new MQE driver node to the MX32 project node

To add a new MQE driver node to the MX32 project node:

- Right-click on the MX32 project node.
  The context menu opens.
- Select **Add Node**.
  The **Select node type** dialog appears.

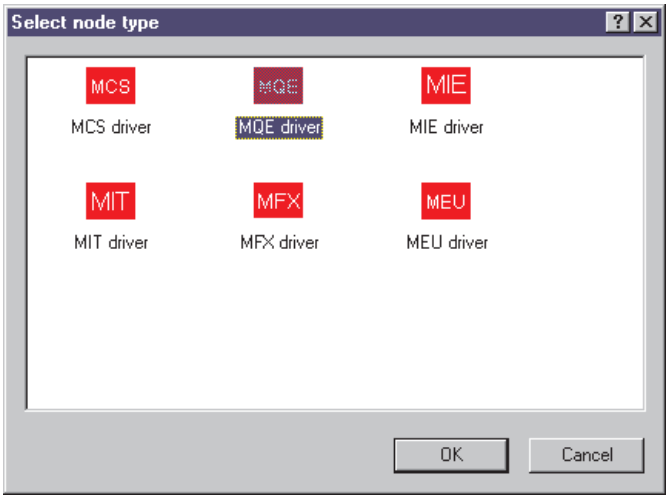


Fig. 6-13:
Node type selection

Select the MQE driver and confirm by clicking OK :

Enter node specific information

The following dialog box appears:

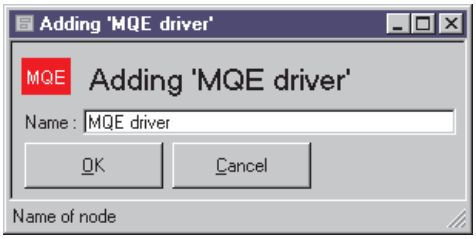


Fig. 6-14:
Entering an MQE driver node name

Enter a driver name and confirm by clicking OK.

The MQE driver is created under the MX32 project node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

② Add a new MQE channel node to the MQE driver node

To add a new MQE channel node to the MQE driver node:

- Right-click on the MQE driver node.
  The context menu opens.
- Select **Add Node**.
  The dialog **Adding "MQE channel"** appears.

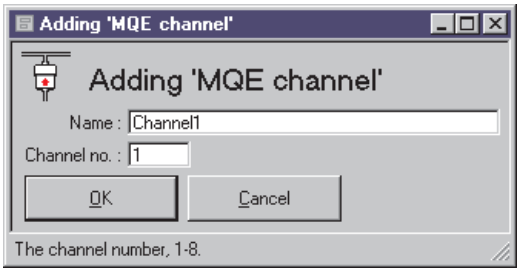


Fig. 6-15:
Entering an MQE channel node name

Enter the node specific information and confirm by clicking OK .

The MQE channel is created under the MQE driver node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

③ Add a new MQE device node to the MQE channel node

To add a new MQE device node to the MQE channel node:

- Right-click on the MQE channel node.
  The context menu opens.
- Select **Add Node**.
  The dialog **Adding "MQE device"** appears.

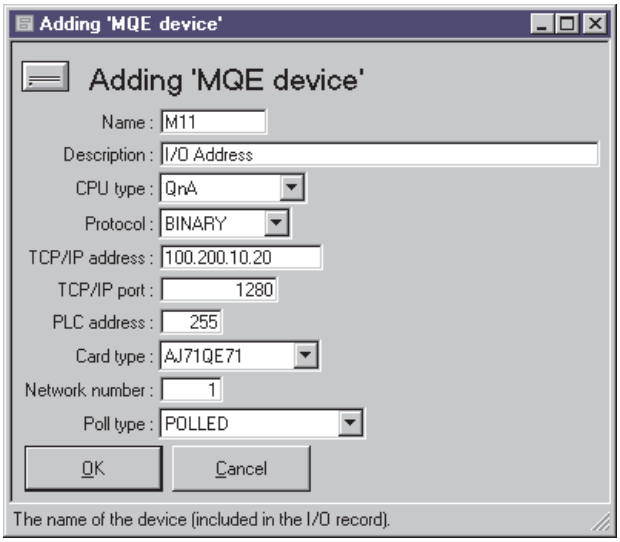


Fig. 6-16:
Adding an MQE device

Item	Meaning
Name	Device name (included in the I/O record)
Description	Device description
CPU type	Type of CPU to which the device is connected
Protocol	Protocol to use
TCP/IP address	Primary TCP/IP address to which the driver is connected
TCP/IP port	TCP/IP port at the primary address
PLC address	PLC address to which the driver is connected (0-64: slave, 255: master)
Card type	I/O card type in the PLC
Network number	Network number (0-239)
Poll type	Poll type (polled or unsolicited)

Tab. 6-2: *Adding MQE device dialog items*

All settings must match with the according I/O driver configuration in MX32. Look up the settings of the MX32 MCS driver in the MX32 **System Configuration**.

Enter the node specific information. The CPU type, protocol, card type, network number, and poll type can be selected from drop-down lists. Confirm by clicking OK.

The MQE device is created under the MQE channel node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

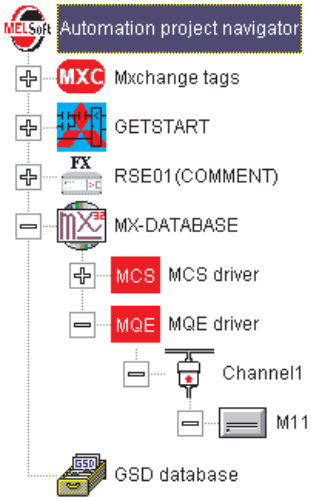


Fig. 6-17:
New MQE driver, channel, and device in MXChange

MFX driver

For serial communications via the MX32 MFX driver you need to add the following nodes to MXChange:

1. A driver node, a channel node, and a device node to the MX32 project node.

2. A serial card node to the assigned PLC project node.

The settings of these nodes must match with the settings of the MX32 MFX driver.

The MFX driver in MX32 has to be already installed and configured correctly (for details refer to the MX32 documentation). Open the MX32 **System Configuration** and check the MFX driver settings.

Fig. 6-18: *MFX driver configuration*

① Add a new MFX driver node to the MX32 project node

To add a new MFX driver node to the MX32 project node:

- Right-click on the MX32 project node.
  The context menu opens.
- Select **Add Node**.
  The **Select node type** dialog appears

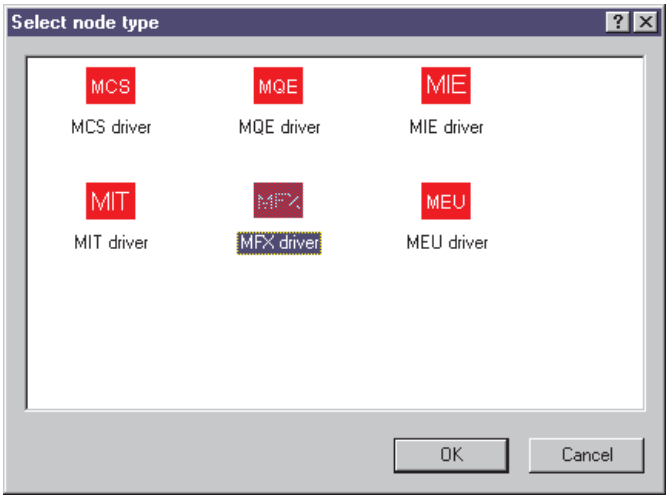


Fig. 6-19:
Node type selection

Select the MFX driver and confirm by clicking OK :

Enter node specific information

The following dialog box appears:

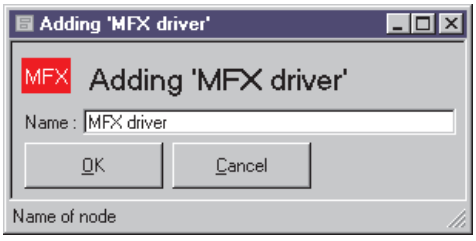


Fig. 6-20:
Entering an MFX driver node name

Enter a driver name and confirm by clicking OK.

The MFX driver is created under the MX32 project node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

② Add a new MFX channel node to the MFX driver node

To add a new MFX channel node to the MFX driver node:

- Right-click on the MFX driver node.
  The context menu opens.
- Select **Add Node**.
  The dialog **Adding "MFX channel"** appears.

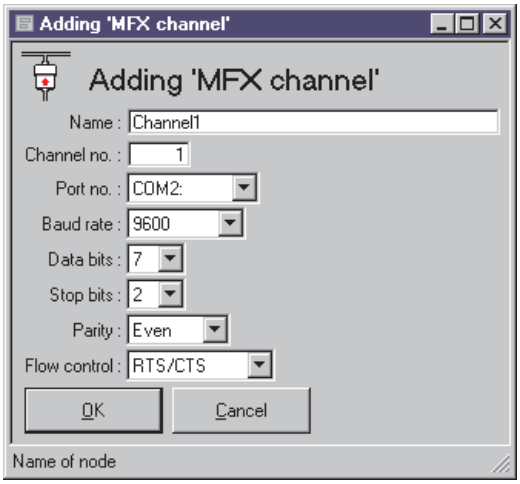


Fig. 6-21:
Adding an MFX channel

All settings must match with the according I/O driver configuration in MX32. Look up the settings of the MX32 MCS driver in the MX32 **System Configuration**.

Enter the node specific information and confirm by clicking OK .

The MFX channel is created under the MFX driver node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

③ Add a new MFX device node to the MFX channel node

To add a new MFX device node to the MFX channel node:

- Right-click on the MFX channel node.
  The context menu opens.
- Select **Add Node**.
  The dialog **Adding "MFX device"** appears.

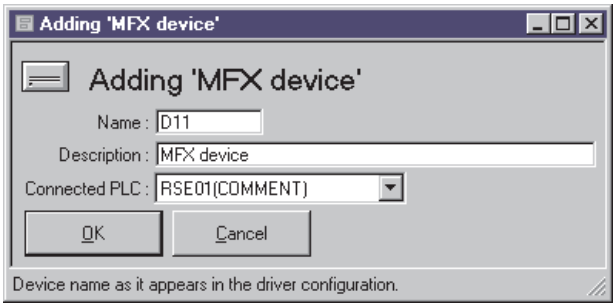


Fig. 6-22:
Adding an MFX device

Item	Meaning
Name ①	Device name (included in the I/O record)
Description	Device description
Connected PLC	PLC project to which the device is connected

Tab. 6-3: *Adding an MFX device dialog items*

② Look up the settings of the MX32 MFX driver in the MX32 **System Configuration**.

Enter the node specific information and confirm by clicking OK .

The MFX device is created under the MFX channel node. It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

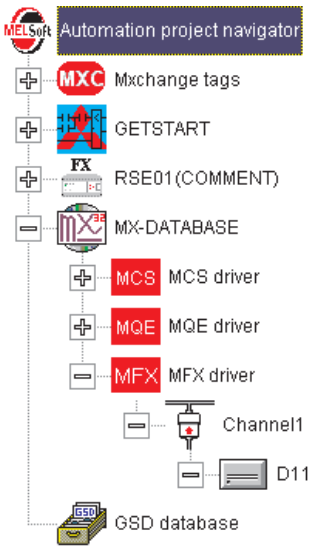


Fig. 6-23:
New MFX driver, channel, and device in MXChange

6.3.2 PLC project node

TCP/IP card

For Ethernet communications via the MX32 MCS and MQE drivers you need to add a TCP/IP card node to the PLC project node MX32 is assigned to.

The settings of the TCP/IP card node must match with the settings of the MX32 drivers specified in the MX32 **System Configuration**.

① Add a new TCP/IP card node to the PLC project node

To add a new TCP/IP card node to the PLC project node (*GETSTART*):

- Right-click on the PLC project.
  The context menu opens.
- Select **Add Node**.
  The **Select node type** dialog appears.

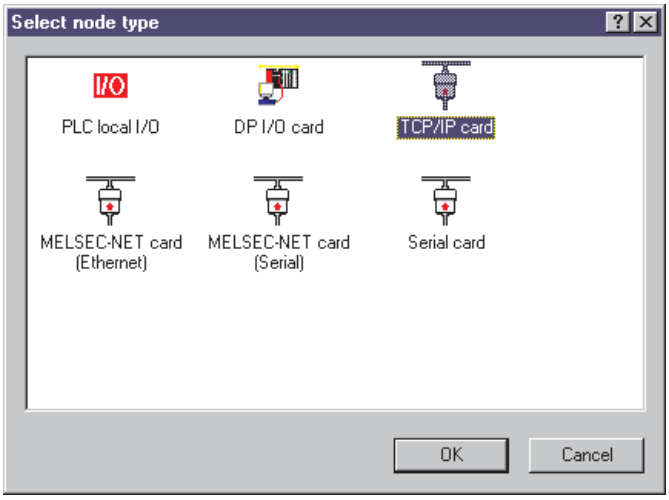


Fig. 6-24:
Node type selection

Select the TCP/IP card and confirm by clicking OK :

② Enter node specific information

The following dialog box appears:

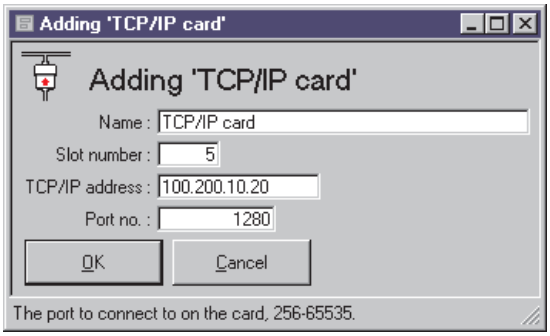


Fig. 6-25:
Adding a TCP/IP card

Enter the node specific information and confirm by clicking OK .

The **TCP/IP address** and the **Port no.** must match with the according I/O driver configuration in MX32. Look up the settings of the MX32 driver in the MX32 **System Configuration**.

The TCP/IP card is created under the PLC project node (*GETSTART*). It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

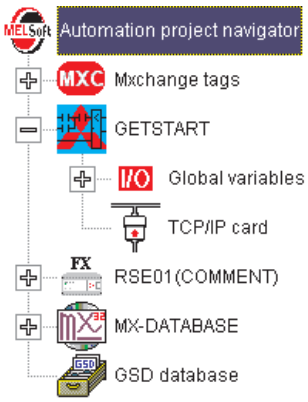


Fig. 6-26:
New TCP/IP card node in MXChange

Serial card

For serial communications via the MX32 MFX driver you need to add a serial card node to the PLC project node MX32 is assigned to.

The settings of the serial card node must match with the settings of the MX32 drivers specified in the MX32 **System Configuration**.

① Add a new serial card node to the PLC project node

To add a new serial card node to the PLC project node (*RSE01(COMMENT)*):

- Right-click on the PLC project.
  The context menu opens.
- Select **Add Node**.
  The **Select node type** dialog appears.

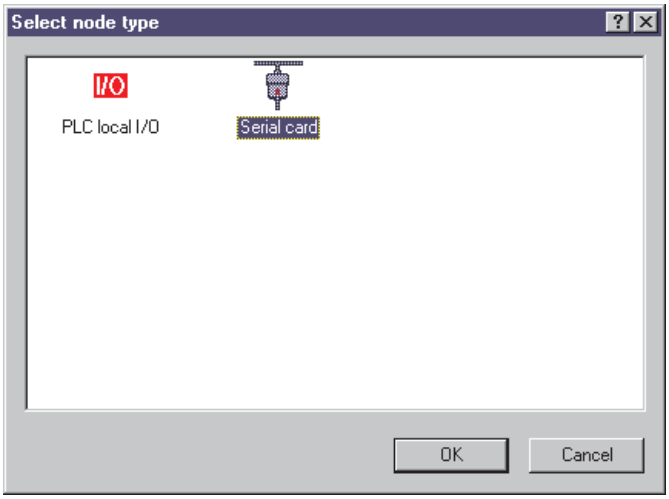


Fig. 6-27:
Node type selection

Select the serial card and confirm by clicking OK :

② Enter node specific information

The following dialog box appears:

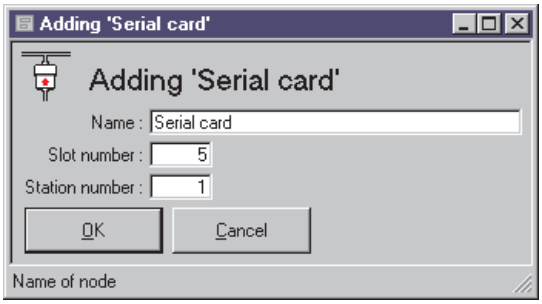


Fig. 6-28:
Adding a serial card node

Enter the node specific information and confirm by clicking OK .

The serial card is created under the PLC project node (*RSE01(COMMENT)*). It is represented as node in the **Automation project navigator** of the **Super Project Manager**.

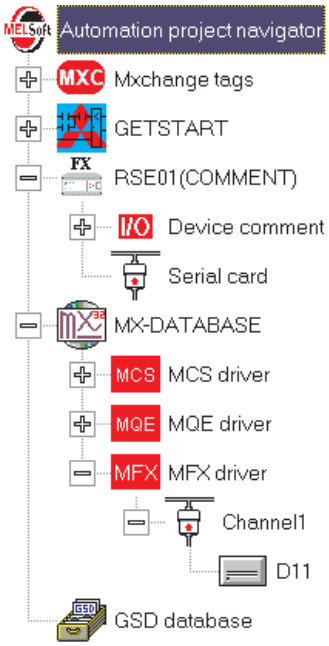
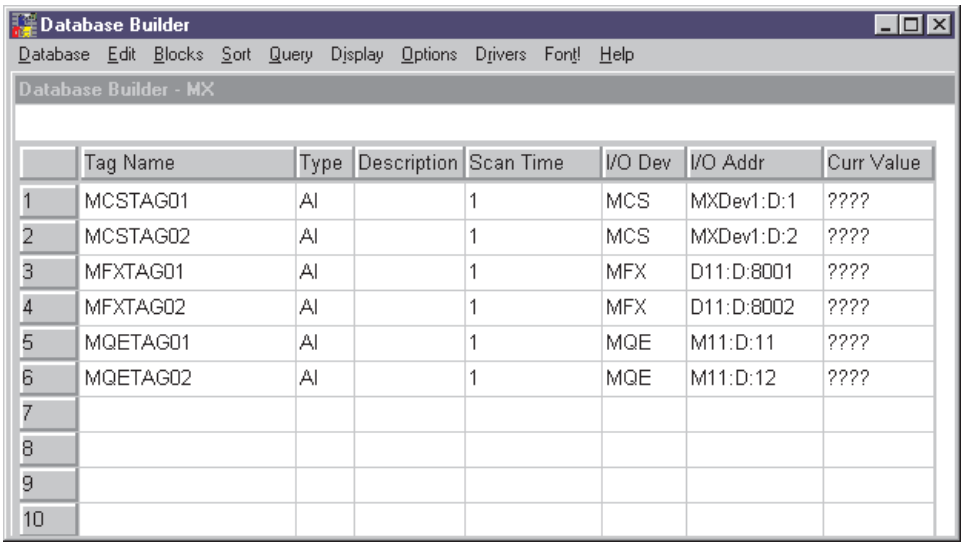


Fig. 6-29:
New TCP/IP card node in MXChange

6.4 Adding tags to MXChange

Tags that are included in the MX database can be exported to MXChange. Open the MX32 **Database Builder** and open the database. In our example six tags are already included. Note, that the I/O device (MCS, MFX, MQE) and the I/O address (MXdev1..., D11..., M11...) of the tags must match with the MXChange settings.



	Tag Name	Type	Description	Scan Time	I/O Dev	I/O Addr	Curr Value
1	MCSTAG01	AI		1	MCS	MXDev1:D:1	????
2	MCSTAG02	AI		1	MCS	MXDev1:D:2	????
3	MFXTAG01	AI		1	MFX	D11:D:8001	????
4	MFXTAG02	AI		1	MFX	D11:D:8002	????
5	MQETAG01	AI		1	MQE	M11:D:11	????
6	MQETAG02	AI		1	MQE	M11:D:12	????
7							
8							
9							
10							

Fig. 6-30: *MX32 database builder*

In the **MXChange Interface** window click **Export tags**.

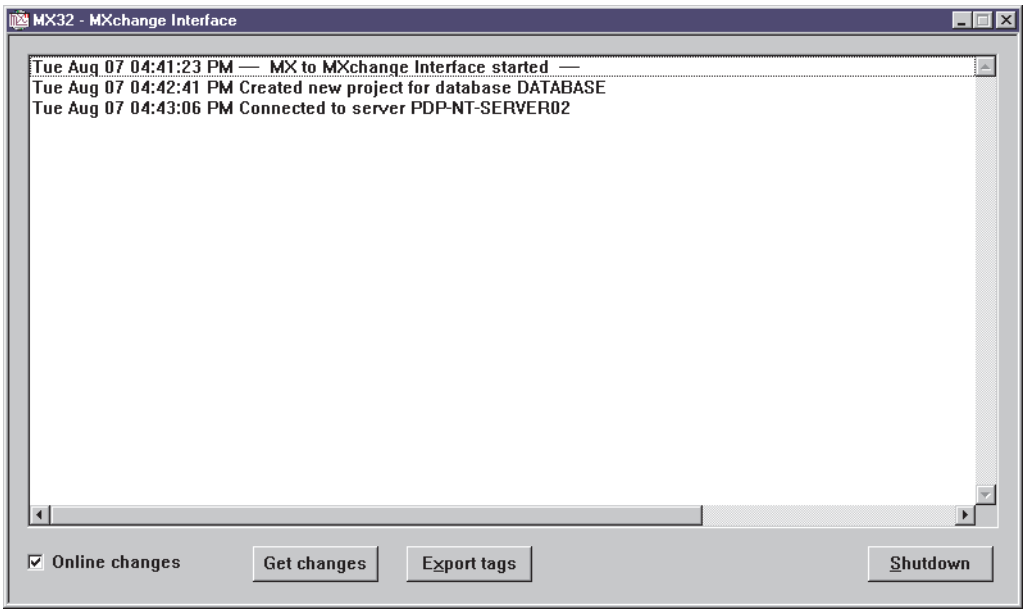


Fig. 6-31: *MXChange Interface*

The following dialog box appears:

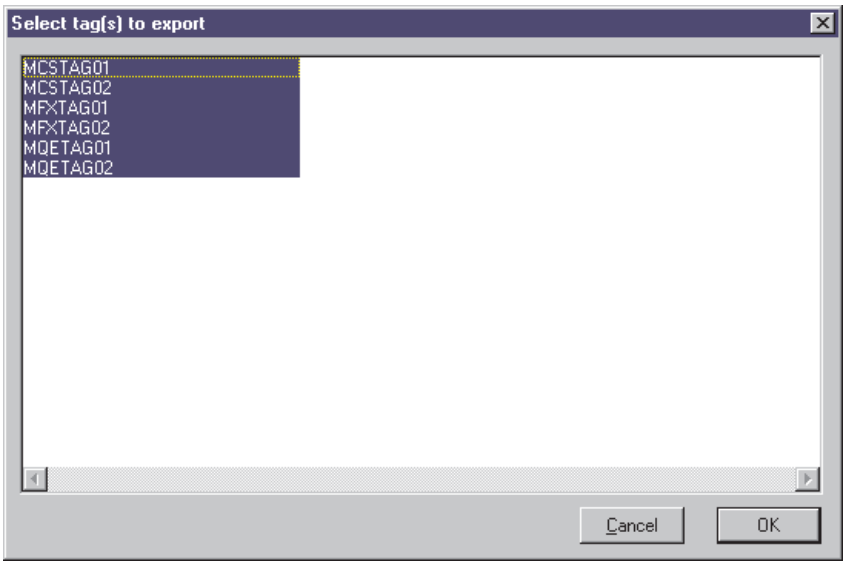


Fig. 6-32: *Tag selection for export*

Select the tags to be exported to MXChange. Several tags can be selected individually by clicking them in combination with the **[CTRL]** or **[SHIFT]** keys.

Confirm your selection with **OK**.

The following message box appears:

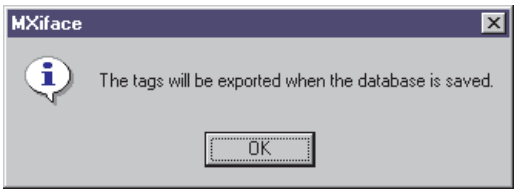


Fig. 6-33:
Export message

Only when you save the database in the MX32 **Database Builder** the tags are exported and updated in MXChange.

Confirm with **OK**.

In the Database Builder save the database.

The following dialog appears:

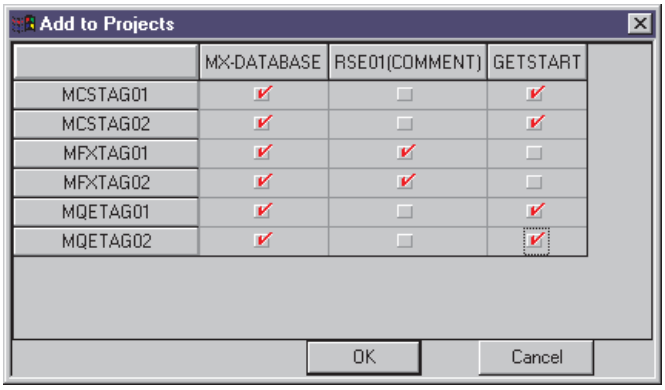


Fig. 6-34: *Project selection for export*

Select to which project nodes in MXChange each tag is to be added.

Note, that each tag can be added to only one **PLC** project. Note, that tags can be added only to PLC projects you specified the communication path for. Adding tags to other PLC projects would fail.

Confirm your selection with **OK**.

The MXChange Interface lists all events and confirms adding the selected tags.

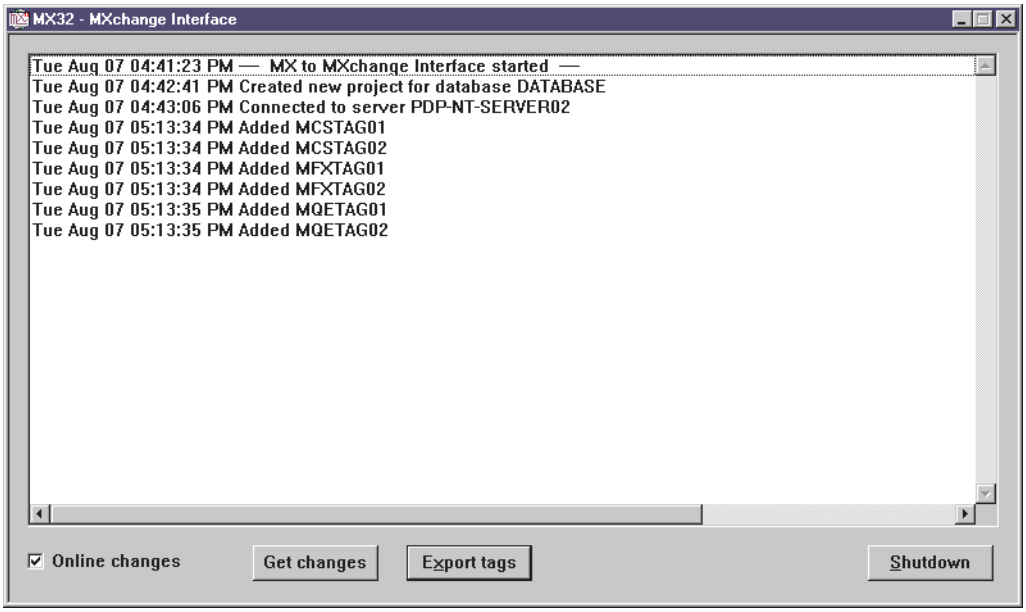


Fig. 6-35: *MXChange Interface*

The tags being added to MXChange are listed in the **Super Project Mananger**:

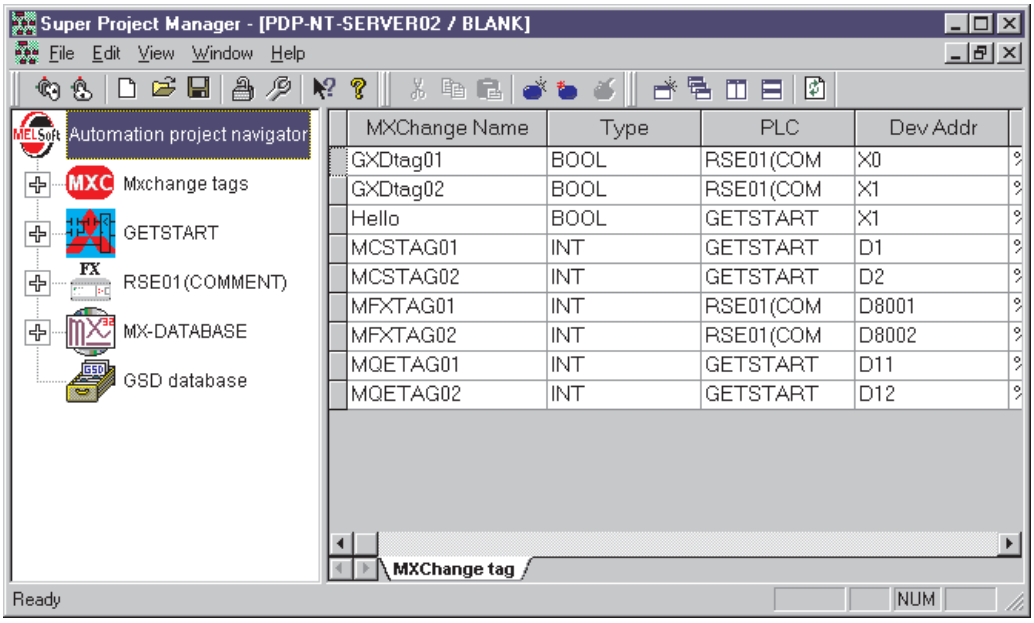


Fig. 6-36: *New tags in Super Project Manager*

If the tags are changed in MX32, they are also updated in MXChange whenever the MX32 database is saved.

7 Connecting MX2000

The principles of connecting MX2000 are exactly the same as for MX32. For details refer to section 6.

① Start the MXChange server on your local personal computer or on a different personal computer you can connect to via TCP/IP (for details refer to section 3.2).

② Start the Super Project Manager and login to the MXChange server (for details refer to section 3.3).

③ Start MX2000 from the MS Windows Start menu:
Start/Programs/Mitsubishi MX/Startup.

④ Start MX Interface from the MS Windows Start menu:
Start/Programs/MXChange/MX Interface and login to the MXChange server.

⑤ As you connect your MX2000 project to MXChange for the first time it can not be found on the MXChange server. Confirm all following dialogs to to create an MX2000 project node in the MXChange database.

⑥ Specify the I/O drivers in MXChange. You have to specify the communications path between MX2000, an assigned PLC project, and MXChange.

For e. g. Ethernet communications via the MX2000 MCS driver you need to add the following nodes to MXChange:

1. A driver node and a device node to the MX2000 project node.

2. A TCP/IP card node to the assigned PLC project node.

The settings of these nodes must match with the settings of the MX2000 MCS driver.

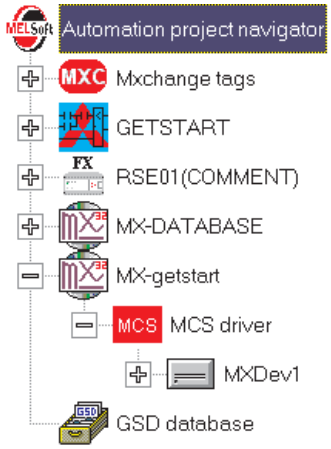


Fig. 7-1:
MCS driver and device node

7.1 Adding tags to MXChange

Tags that are included in the MX database can be exported to MXChange. Open the MX2000 **Database Manager** and open the database. In our example three tags are already included. Note, that the I/O device (MCS) and the I/O address (MXdev1) of the tags must match with the MXChange settings.

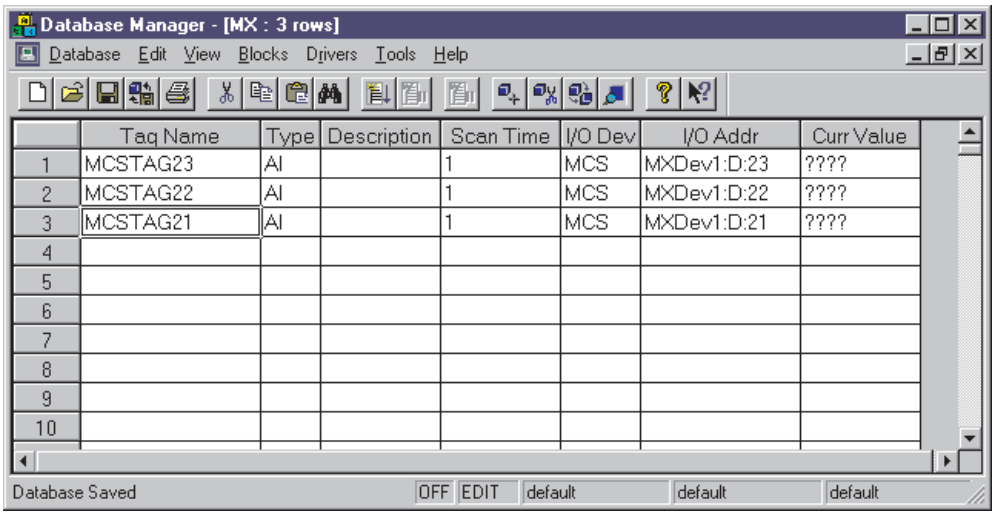


Fig. 7-2: *MX2000 Database Manager*

① In the **MXChange Interface** window click **Export tags**.

② Select the tags to be exported to MXChange.

③ In the Database Builder save the database.

④ Select to which project nodes in MXChange each tag is to be added.

⑤ The MXChange Interface lists all events and confirms adding the selected tags.

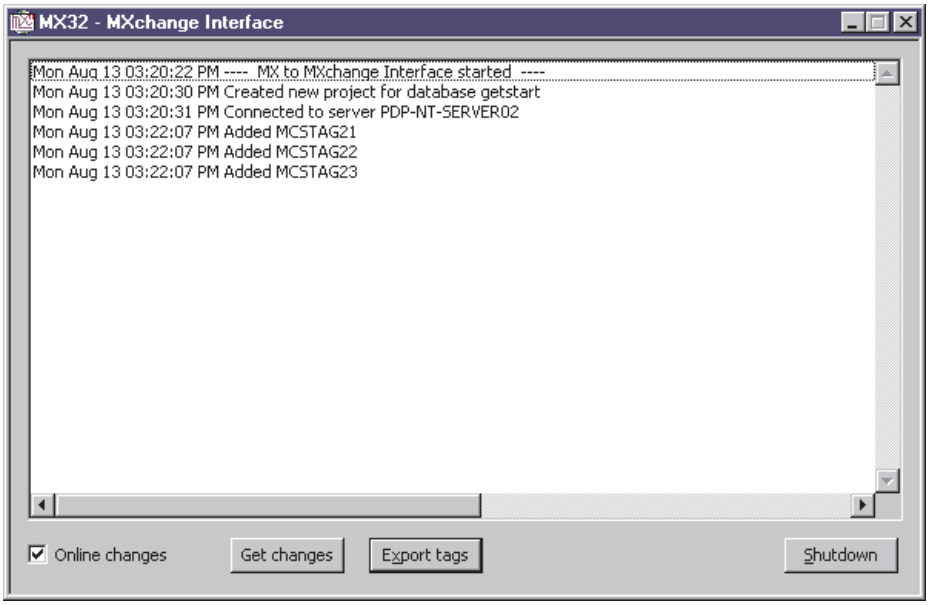


Fig. 7-3: *MXChange Interface*

⑥ The tags being added to MXChange are listed in the in the **Super Project Mananger**:

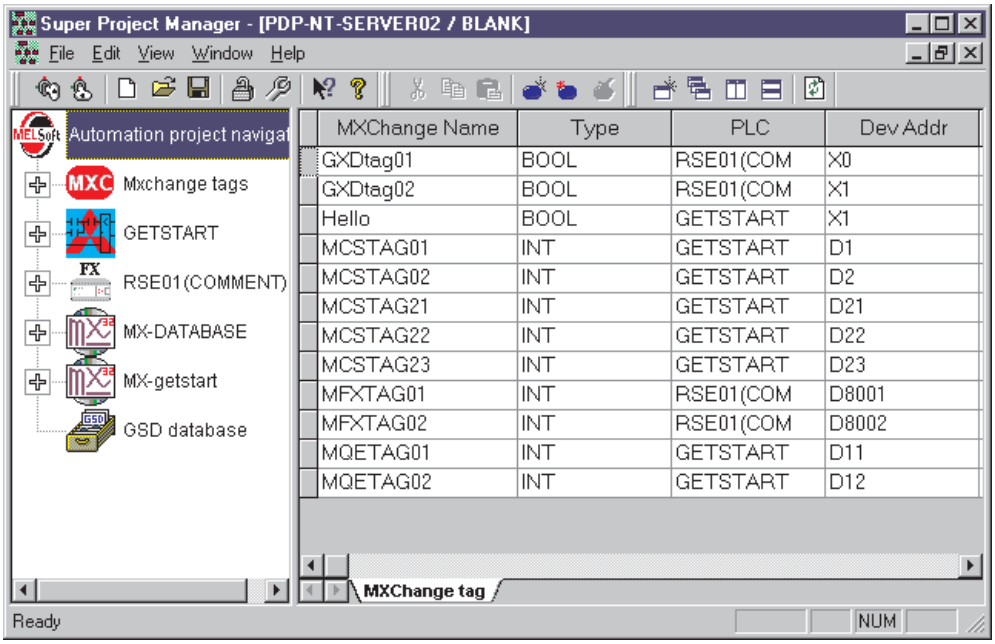


Fig. 7-4: *New tags in Super Project Manager*

If the tags are changed in MX2000 they are also updated in MXChange whenever the MX2000 database is saved.

8 Connecting E-Designer

Via MXChange I/O references of other automation software packages can be used in the I/O browser of E-Designer.

8.1 Starting MXChange

Start the MXChange server on your local personal computer or on a different personal computer you can connect to via TCP/IP (for details refer to section 3.2).

Start the Super Project Manager and login to the MXChange server (for details refer to section 3.3).

Here the automation project starts showing two PLC projects, GX IEC Developer (for details refer to section 4) and GX Developer (for details refer to section 5). Two MX projects assigned to the PLC projects are included either.

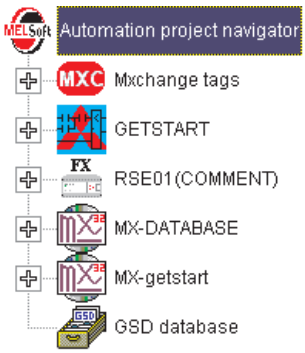


Fig. 8-1:
Initial automation project

8.2 Configuring E-Designer

1. Start E-Designer

Start E-Designer from the MS Windows Start menu:
Start/Programs/E-Designer/E-Designer.

2. Open Project

Open the E-Designer project you want to connect to MXChange.

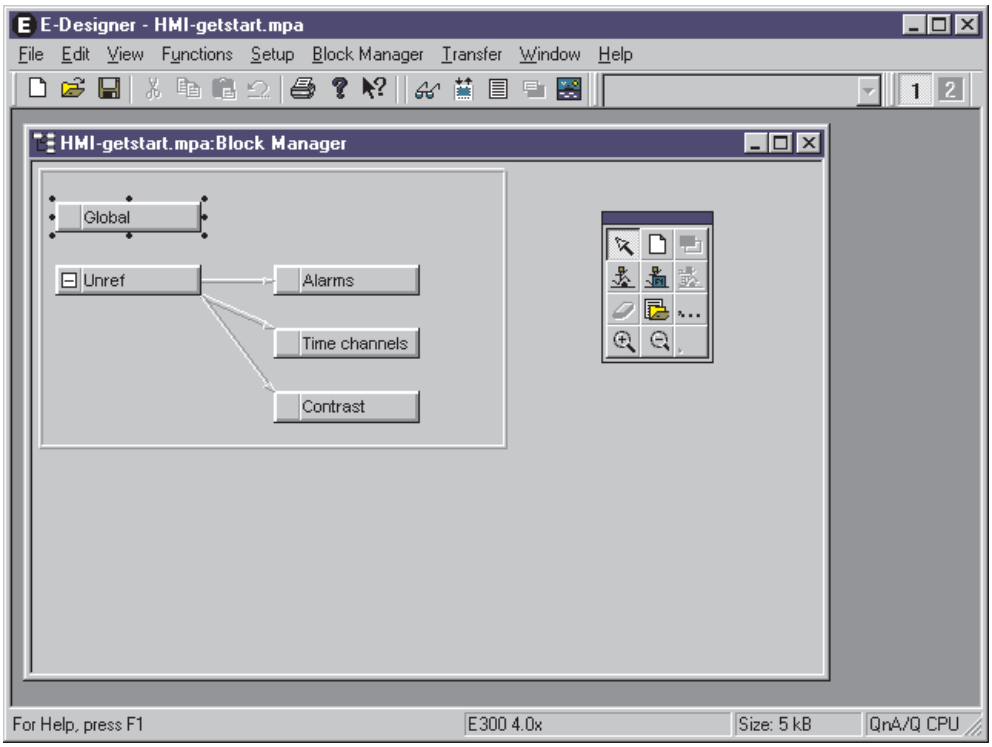


Fig. 8-2: *Opened E-Designer project*

3. Select MELSEC I/O naming

From the main menu select **File/MELSEC I/O Naming**. The following dialog appears where you select the source for the I/O naming in the I/O browser.

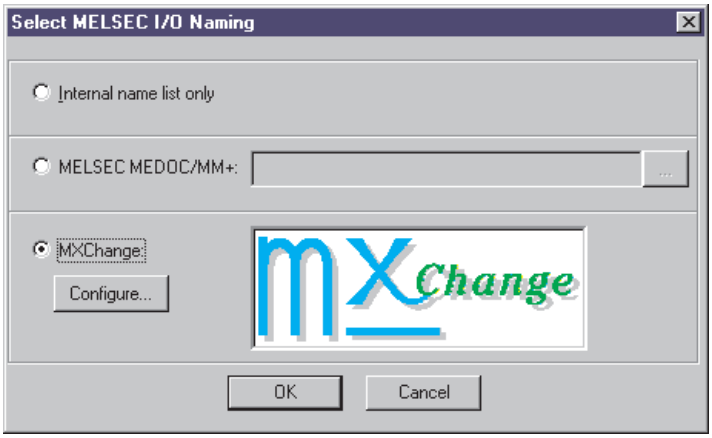


Fig. 8-3:
MELSEC I/O naming

Select **MXChange** and click the **Configure** button.

4. Configure MXChange connection

The following dialog appears where you specify the connection to the MXChange server.

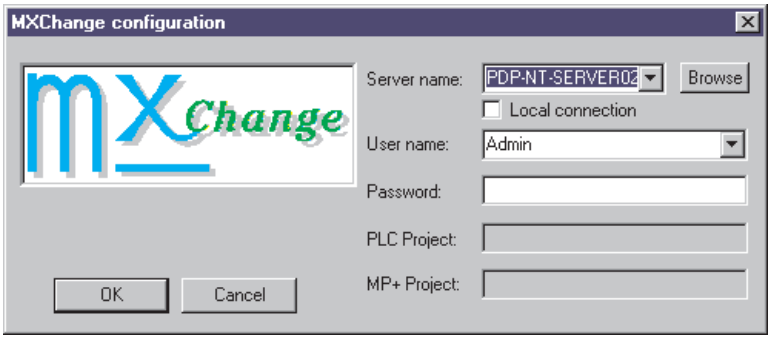


Fig. 8-4: *MXChange configuration*

Specify the **Server name** of the personal computer the MXChange server is running on. Either click the **Browse** button to browse for it across the network or select **Local connection** for your local personal computer.

Enter "**Admin**" for the user name. Leave the **Password** blank. These entries are fixed and will be implemented in future versions.

Confirm by clicking **OK**.

5. Select project

The following dialog appears where you would select the MXChange project node to connect to. For this first connection there is no project included yet.

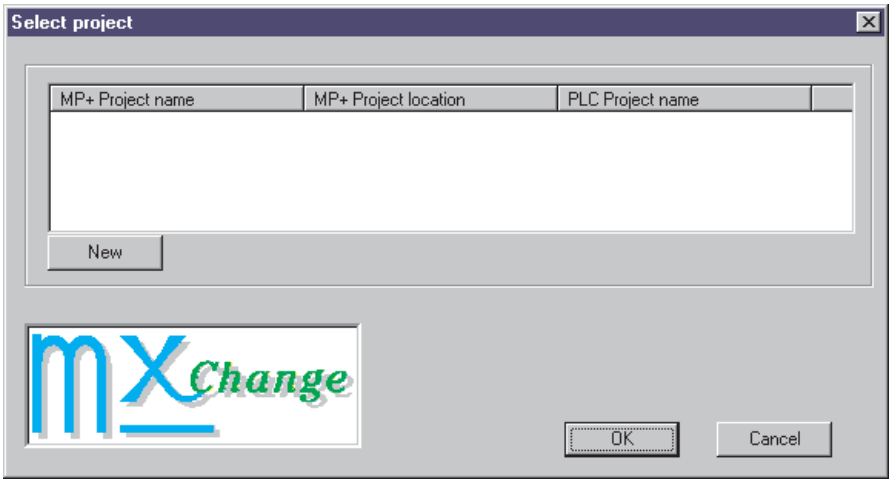


Fig. 8-5: *Project selection*

Click the **New** button to create a new project node to MXChange.

6. Create new project node

The following dialog appears where you specify the new project node.

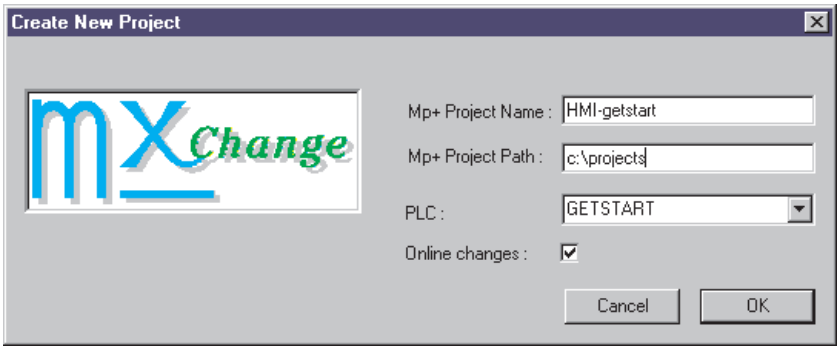


Fig. 8-6: *Project creation*

Enter the project name and the project path of your E-Designer project.

Select a PLC project node from the drop down list. The PLC project node already must have been created by GX IEC Developer (refer to section 4) or GX Developer (refer to section 5).

Confirm by clicking **OK**.

7. Select project

The following dialog appears now including the new E-Designer project node in MXChange.

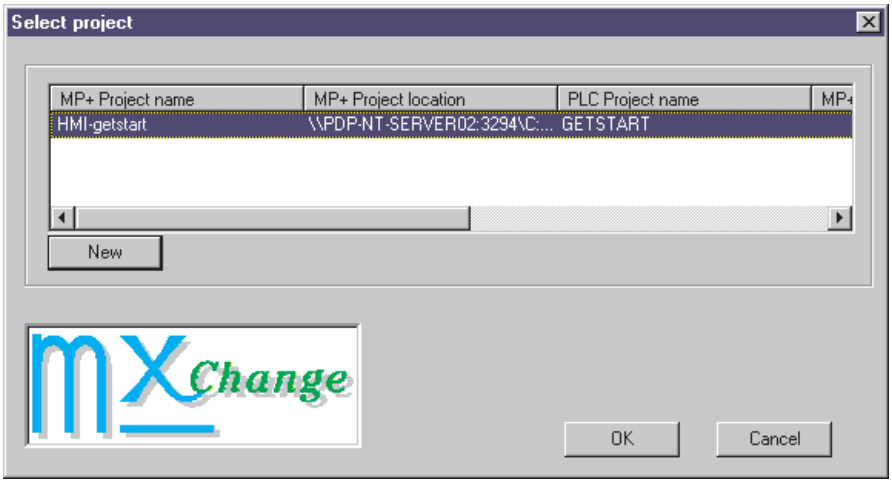


Fig. 8-7: *Project selection*

Confirm by clicking **OK** to leave the configuration of the connection.

8. Select MELSEC I/O Naming

The following dialog appears where you connect to MXChange.

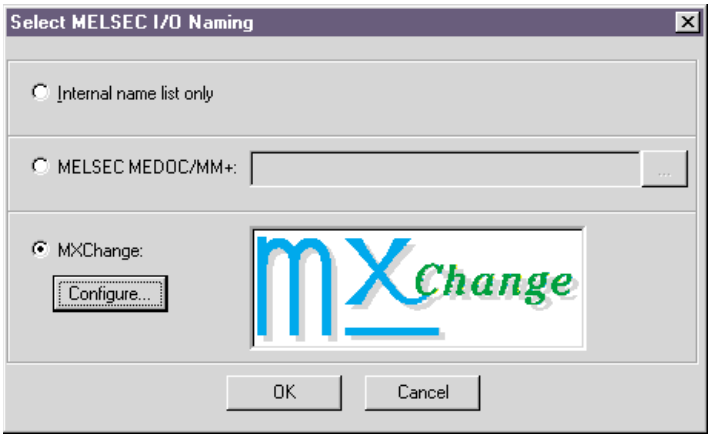


Fig. 8-8:
MELSEC I/O naming

Confirm by clicking **OK**.

9. Project node created

In the **Automation project navigator** of the **MXChange Super Project Manager** your E-Designer project node (HMI-getstart) has been created together with a **PLC connection** to the PLC project (GETSTART).

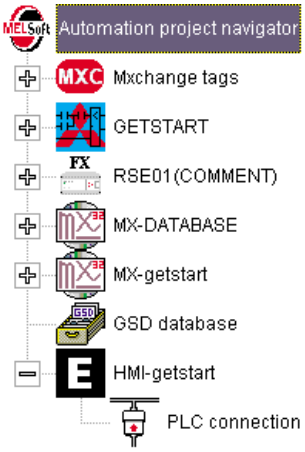


Fig. 8-9:
New E-Designer project node in MXChange

8.2.1 Adding tags to the E-Designer project node

There are several ways to add tags to a project node.

a) Adding tags in the Tag Editor

One easy way is to right-click on the tag in the **Tag Editor** of the **MXChange Super Project Manager** to open the context menu. Select **Add MXChange Tag to Project** and in the sub menu the desired E-Designer project to add the tag.

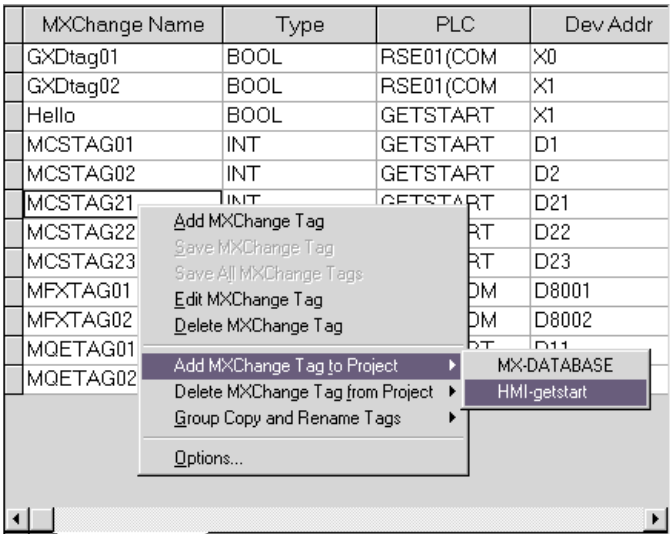


Fig. 8-10:
Adding tags to project

b) Adding tags in the Automation project navigator

In the **Automation project navigator** of the **MXChange Super Project Manager** the tags can also be dragged from the expanded PLC project node (GETSTART) and dropped on the PLC Connection of the E-Designer project node.

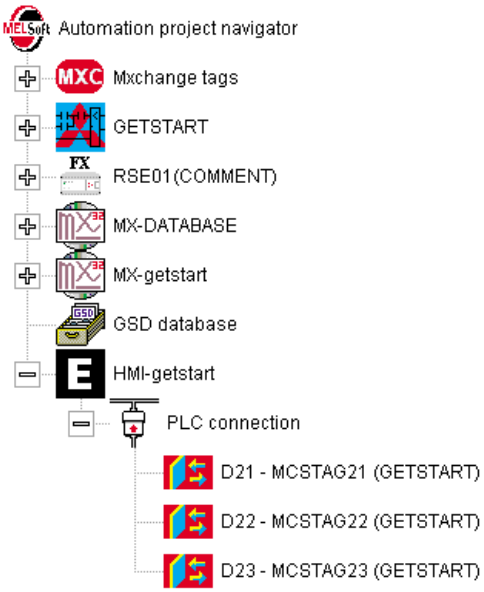


Fig. 8-11:
Adding tags to project

c) Adding tags by automation software

The tags can also be added to the E-Designer project node by the other automation software packages, e. g. MX 32 (refer to section 6.4).

8.2.2 Tags available in I/O Browser

All tags that are added to the E-Designer project node can be selected within E-Designer from the I/O browser. The I/O browser is available from many menus via the **I/O** button.

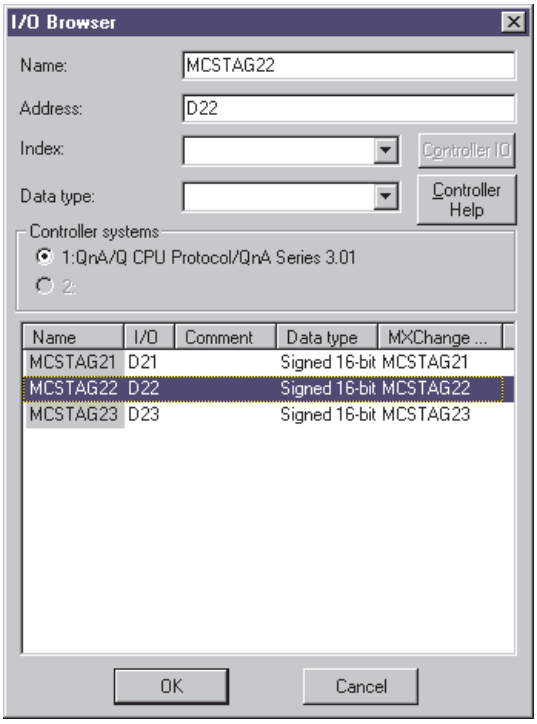


Fig. 8-12:
I/O browser including MXChange tags

A Appendix

A.1 Toolbar items

Item	Description
	Login
	Logout
	New database
	Open database
	Save database as
	Change password
	Change preferences
	Add node
	Refresh view
	New window
	Cascade windows
	Tile windows vertically
	Tile windows horizontally
	Context sensitive help
	About box

Tab. A-1: *Toolbar items*

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Specifications subject to change without notice