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Short Description



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Bgm.-Dr.-Nebel-Str. 2 • D-97816 Lohr a. Main
Telephone +49 (0)93 52/40-0 • Tx 68 94 21 • Fax +49 (0)93 52/40-48 85
<http://www.boschrexroth.com/>
Dept. BRC/ESP (TrK/SF/TD)

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1 Welcome to WinStudio

1.1 General information

WinStudio is a powerful, integrated tool that exploits key features of Microsoft® Windows® NT/2000/XP and Windows® CE, and enables you to build full featured SCADA (Supervisory Control And Data Acquisition) or HMI (Human Machine Interface) applications for your Industrial Automation business.

1.2 Overview

This *Getting Started Guide* is intended for individuals using WinStudio for the first time. This publication will help you quickly familiarize yourself with the basic functions of WinStudio.

Note: WinStudio assumes you are familiar with the Windows NT/2000/XP operating system. However, if you need assistance as you work, we suggest using the **Help** feature on the Windows desktop **Start** menu.

This Getting Started guide is divided into the following chapters:

- **Chapter 1: Welcome to WinStudio:** This chapter provides a brief overview of the WinStudio product, including its main features and system requirements.
- **Chapter 2: About this publication:** Provides information about this publication; such as conventions used and related publications.
- **Chapter 3: Installing the software:** Explains how to install WinStudio and CView on your system.
- **Chapter 4: Working with the WinStudio:** Describes all the elements of the WinStudio development environment; including menubars, toolbars, dialog boxes, buttons, menus, and so forth.
- **Chapter 5: Creating an WinStudio Application:** Explains how to create and edit applications, objects, screens, and drivers. Also explains the procedure for testing your applications.
- **Chapter 6: Running the Web-Based Application:** Explains how to start and run your Web-based applications.
- **Chapter 7: Running Applications from a Remote Station:** Explains how to run and manage applications remotely.

1.3 About WinStudio

WinStudio applications consist of animated operator-interface screens, communication drivers (for PLCs and I/O protocols such as BUPEP, TCP/IP), tags database, and additional modules such as alarm monitors, logic, trend charts, recipes, schedulers, and security system.

WinStudio applications interface with industrial I/O systems and other Windows applications in the run-time environment using ODBC, DDE, NetDDE, OPC, or TCP/IP protocols. You can also operate the application through a standard Web browser (Internet Explorer or Netscape).

The product consists of two parts:

- The *development system* software, which runs on a desktop, laptop, or industrial PC running Windows NT/2000/XP.
- The *run-time system* software, which runs on any operator interface workstation running Windows NT/2000/XP or Windows CE.

Note: The run-time system software for the Windows CE operating system (CEView) is usually pre-loaded on the HMI. If necessary, you can update the CEView version of the development system software by downloading the current version to the HMI or PDA.

You can run WinStudio applications on your development workstation or download it to a run-time station (through a serial or TCP/IP connection) and run the application using the WinStudio or CEView run-time software. The workstation processes scan data from connected devices according to parameters defined in the application and then react to, display, store, and upload the data.

1.4 Main features

The WinStudio product offers the following features and functions:

- Web interface that allows you to visualize screens in a Web browser (thin client) through the Internet/intranet and exchange data with the server by TCP/IP protocol.
- Platform-independent application that allows you to run applications built with WinStudio to run under any current Microsoft platform (Windows NT/2000/XP and Windows CE)
- Online, remote application management and configuration (download/upload, commands, system and network diagnostics, and debugging)
- An integrated, Microsoft Windows® XP-like development environment with toolbars, dialogs, menus, and customizable toolbars
- A user-friendly screen editor that enables you to build application screens on the fly at runtime
- A library of more than 100 symbols and dynamic objects, such as: Frames, icons, motors, pipes, meters and gauges, LED-style indicators, text and numeric displays, common controls, sliders and switches, pumps and valves, pushbuttons, vehicles.
- Cross-reference tool to locate tags throughout the project

- Active-X object containers
- Full-featured objects and dynamics with customizable object properties such as bar graphs, color, resizing, position, rotation, hide/unhide, commands, hyperlinks, and text input/output
- An open architecture API that exchanges tag values with external software products and is Microsoft.NET architecture-compliant
- Merges modular worksheets and screens into other applications easily
- Screen and object password-protected run-time security (256 levels)
- OPC Client and Server modules with an integrated OPC Browser, DDE Client and Server modules, and TCP/IP Client and Server modules (that exchange tag values and configure redundancy systems)
- Standard protocols such as BUEP, TCP/IP
- Logical expressions and scripting language with more than 200 functions
- Online/historical alarms and trends, and recipe/report builders (text, XML, or RTF format–ASCII or UNICODE)
- Event scheduler (based on date, time, or tag conditions)
- Translation editor to translate applications into different languages; switching between languages during run-time
- Database Spy window (local and remote) to monitor/force tag values and execute functions)
- LogWin module (local and remote) to record DDE, OPC, and TCP/IP transactions, activate modules, trace tags, and so forth
- A powerful and flexible tag database with Boolean, Integer, Real, and String tags, array tags, classes, and indirect tag-pointers
- Integrates fully with PC-based control packages (imports tags database) such as ASAP, ISaGRAF, SteepleChase, and Think&Do
- Dial-up functions to trigger, monitor, and hang up dial-up connections with remote station RAS Servers
- Functions to send email automatically from WinStudio (or CEView)

Note: WinStudio provides different product types (for example Local Interface and Control Room) for each level of application responsibility. However, WinStudio does not support some features in certain product types (such as CEView).

System requirements

To develop and run applications with WinStudio, you must install the following hardware and software:

- IBM-compatible computer with an Intel® Pentium II-compatible processor or higher
- Windows NT/2000/XP operating system for development
- Windows NT/2000/XP or Windows CEv3.00 or Windows CE.NET operating system for runtime
- Minimum of 128MB random-access memory (RAM); 256MB or *higher recommended*
- MS Internet Explorer 4.0 or higher
- Minimum of 150MB free hard disk space (required for the program without any application files); 300MB *is recommended*
- 3.5-inch floppy drive
- CD-ROM drive (This drive can be on a different computer.)
- Standard keyboard with function keys F1 through F12
- Parallel printer port (*optional*)
- 100% IBM-compatible VGA or SVGA display adapter with 32MB Video RAM (VRAM) (*optional for runtime when running Web-based applications*)
- Microsoft-compatible pointing device (such as a mouse, trackball, or touch-screen)
- One or two COM ports and adapters for downloading applications (*optional*)
- Ethernet connection for downloading applications (*optional*)

Note: WinStudio is UNICODE-compliant and will not run on a non-UNICODE-compliant operating system (such as Windows 9x/ME). You can, however, run the Web Thin Clients of WinStudio applications on non-UNICODE operating systems.

2 About this publication

2.1 General information

This chapter provides the following information about this WinStudio Getting Started Guide and other WinStudio publications:

- **Text Conventions:** Describes the text-formatting conventions used in this publication to help you read and assimilate information quickly.
- **Mouse and Selection Conventions:** Describes the conventions used in this publication for using a mouse and selecting objects in a Windows environment
- **Windows Conventions:** Describes conventions used in this publication for working in a Windows environment.
- **Related Publications:** Lists other WinStudio publications (available on the WinStudio installation CD-ROM) you can read for more information about the WinStudio product.

2.2 Text conventions

This publication uses special formatting to help you quickly identify certain items, as follows:

- Titles, labels, and new terms are indicated using *italic* text.
- File names, messages, and screen text are indicated using bold, monospaced text (for example, **D:\Setup.exe**).
- Variables and information you must provide are indicated using bold, italicized monospaced text enclosed in < and > brackets (for example, Run the <driver name>.exe file indicates you must provide a driver name.)
- Buttons, menu options, and keyboard keys are indicated in **bold**.
- Text requiring special emphasis is in **bold italic**.

Some information is segregated into **Tip**, **Note**, and **Caution** boxes as follows:

- **Tips** provide useful information to save development time or to improve application performance.
- **Notes** provide supplemental information related to the surrounding text, usually the text just preceding the note.
- **Cautions** provide information necessary to prevent damage or problems when running the application.

2.3 Mouse and selection conventions

Because most PCs used for application development run a version of Windows with a mouse, this publication assumes you are using a mouse. This publication also assumes that your mouse is configured so that the left button is the primary button and the right button is the secondary button.

This publication uses the following mouse and selection conventions:

- **Double-click** means to quickly click twice on an object with the left mouse button.
- **Right-click** means to click once on an object with the right mouse button.
- **Click** and **Select** both mean to click once on an object with the left mouse button. In general, you *click* on buttons and *select* from lists.
- **Select** also means to use your pointing device to highlight or specify an item on the computer screen. Selecting an object with a touch-screen is usually the same as selecting with a mouse, except that you use your finger to touch (select) a screen object or section.
- You can also use keys on your keyboard to select objects/options. For example, you can use the **Tab** key to move between options, the **Enter** key to open menus, and the **Ctrl** or **Alt** keys in combination with a letter key (for example, **Ctrl+S**) to select a menu option having an underlined letter (**S**ave).
- **Drag** means using your mouse/cursor to move an object to a new location on your computer screen. Position your cursor over the object and press the mouse button. As you move the mouse, you move the object. (Usually an outline of the object will move along with the cursor.) When you have the object positioned where you want it, release the mouse button.

2.4 Windows conventions

This publication uses the following Windows conventions:

- **Dialog boxes** (or *dialogs*) are windows that allow you to enter information.
- **Text boxes** (or *fields*) are areas in dialogs where you can type in text.
- **Radio buttons** are white circles in which a black dot () appears or disappears when you click on the button. Typically, the black dot indicates that the option or function is enabled (active). The absence of a black dot indicates the option or function is disabled (inactive).
- **Check boxes** are white squares in which a check () appears or disappears when you click on it with the cursor. Typically, the check indicates that the option or function is enabled (active). The absence of a check indicates the option or function is disabled (inactive).
- **Buttons** are icons in boxes that appear “pressed” when you click on them.
- **Lists** are panes (white boxes) in windows or dialog boxes containing two or more selectable options.
- **Combo boxes** have arrows that, when clicked, show part or all of an otherwise concealed list.



Fig.2-1: Using a Combo Box

- **Interface** or **Development Environment** refers to the entire WinStudio window.
- **Dockable windows** are windows that you can drag to an edge of the interface and merge with that edge.
- **Toolbars** are dockable windows that contain only buttons and text boxes.

Note: The dialog boxes and procedures described in this publication are valid for Windows 2000. Some terms may vary according to the operating system (type, language, and version) you are using.

3 Installing the software

3.1 General information

This chapter provides instructions for installing, starting, and uninstalling *WinStudio* and *CEView*. The information is organized as follows:

- **Installing WinStudio:** Explains how to install WinStudio on your computer.
- **Starting WinStudio:** Explains how to run WinStudio.
- **Installing CEView Software:** Explains how to install CEView on your computer.
- **Uninstalling WinStudio:** Explains how to uninstall WinStudio and CEView.

3.2 Installing WinStudio

WinStudio provides development tools for all WinStudio applications, and it runs on the Microsoft Windows NT/2000/XP operating systems.

You can install WinStudio from the CD-ROM or download the installation files from the web site at (<http://193.108.217.183/atproducts/plcwebsite/englisch/>). For Windows CE applications, you use WinStudio to download CEView (run-time software) to the Windows CE HMI using a serial or TCP/IP link.

The WinStudio installation program automatically creates necessary directories, copies files to your hard drive, and creates the WinStudio icons in your desktop folder.

Note:

- You must have Administrator privileges on a Windows NT/2000/XP workstation to install WinStudio.
 - You must uninstall all previous versions of WinStudio or install the newer version in a different directory. Also, you cannot install the same version of WinStudio in two different paths of the same computer.
-

Use the following procedure to install WinStudio from the CD-ROM:

1. Turn on the power to your development computer (Windows NT, 2000, or XP) and be sure that no other programs are running.
2. Insert the installation CD-ROM into the CD-ROM driver.

Note: A CD Browser window should display automatically. If not, you can start the program manually from Windows Explorer. Navigate to the `D:\Installation` directory (where D is your CD-ROM drive), and run the `Setup.exe` file.

3. Double-click on the *Installation* folder, and then double-click on the **WinStudio** icon to launch the *InstallShield® Wizard*.
4. Follow the instructions provided by the InstallShield Wizard to proceed with the installation.
5. When prompted to restart Windows, click the **Yes, I want to restart my computer now** radio button, then click **OK**.

3.3 Starting WinStudio

To run WinStudio, double-click the WinStudio shortcut on the desktop or select **Start → Programs → WinStudio Tools → WinStudio**.



Fig.3-1: Starting *WinStudio*

Tip: You can run the WinStudio development environment under any video setting; however, WinStudio recommends using a resolution of 800x600 (or higher) with more than 256 colors for a more pleasing environment. Application resolution (screen size) is independent of the operating system resolution.

3.4 Installing CView software

When installing WinStudio under Windows NT/2000/XP the CView runtime files are stored in the following folder:

```
<WinStudio Folder>\Redist\<WinCE version>\<Processor Type>\
```

where:

- **<WinStudio Folder>** is the installation directory chosen during installation (C:\Program Files\WinStudio is the default installation directory).
- **<Processor Type>** is the processor platform. WinStudio provides a CView runtime for all processor platforms supported by the WinCE operating system (Arm, Mips, MipsFP, Pocket-Arm, Pocket-Mips, Pocket-SH3, PPC, SH3, SH4, Thumb, and x86).
- **<WinCE version>** is the Windows CE version (for example, WinCE300, WinCE400, and so forth).

To install CView, use the following steps:

1. Power-on the Windows CE device, and the Remote Agent dialog should launch automatically. If not, copy the **CESERVER.EXE** file from the `\<WinStudio Folder>\Redist\<WinCE version>\<Processor Type>\BIN` directory of the Windows NT/2000/XP computer where you installed WinStudio.
2. Paste the file into the `\non-volatile` folder of your WinCE device and run it.

Note: There are different ways to copy a file into a WinCE device (for example, you can map a shared folder from the Windows NT/2000/XP computer in the WinCE device or using ActiveSync). If you need assistance copying this file into the WinCE device, contact the hardware manufacturer.

After executing the **CESERVER.EXE** file, the Remote Agent dialog launches in the WinCE device.

3. Click the **Setup** button in the Remote Agent dialog and configure the link (serial or TCP/IP) to connect the WinCE device to the Windows NT/2000/XP computer.

Note: For better performance, WinStudio recommends using a TCP/IP link between the WinCE device and the Windows NT/2000/XP computer to download and upload files.

4. Start WinStudio on the Windows NT/2000/XP computer.
5. Select **Project -> Execution Environment** from the main menu bar.
6. When the *Execution Environment* dialog displays (see following figure), select a connection type (**Network IP** or **Serial Port**) and configure its settings (for example, COM Port or IP Address).

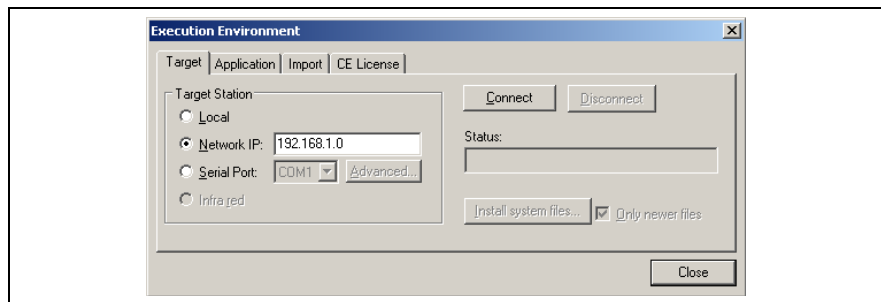


Fig.3-2: Execution Environment dialog box

7. Click the **Connect** button to connect WinStudio to the WinCE device.
8. Click the **Install System Files** button from the *Execution Environment* window (Target tab) to download the CEView files to the WinCE device.

3.5 Uninstalling WinStudio

If you must remove WinStudio from your system, follow these instructions:

Caution: Before uninstalling WinStudio, be sure to back-up any files you might need later into the ...**WinStudio**\ **Projects**\ folder. Also, be sure you have the current (or newest) version of the WinStudio installation CD-ROM or diskettes so you can re-install the software again.
You will lose the product softkey license when you uninstall WinStudio.

1. From the Windows taskbar, select **Start** → **Settings** → **Control Panel** to open the Control Panel.

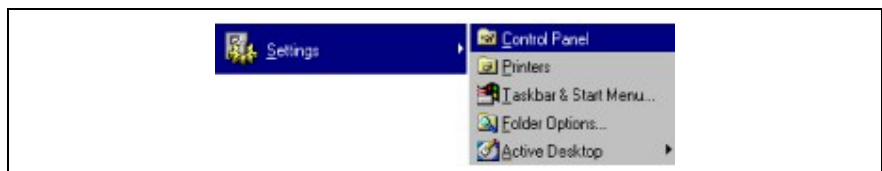



Fig.3-3: Opening the Control Panel

2. Double-click on the **Add/Remove** Programs icon () in the Control Panel window.
3. When the **Add/Remove** Programs Properties dialog displays (see figure), select **WinStudio** from the list and click the **Add/Remove...** button.
4. When the Confirm File *Deletion dialog displays*, click the **Yes** button. *The Uninstall Shield Wizard and the Remove Programs from Your Computer* dialogs display.

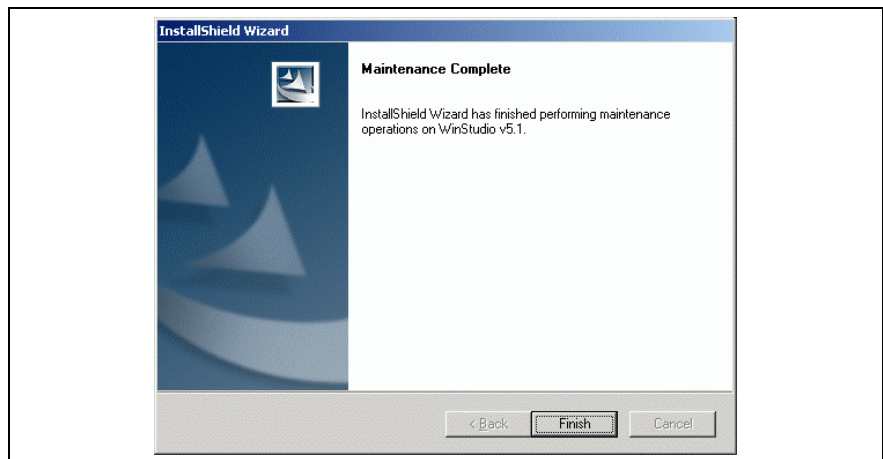



Fig.3-4: Removing the Program

5. When the message *Uninstall successfully completed* displays and the **OK** button becomes active, click **OK**. Verify that WinStudio is no longer listed in the Add/Remove Programs Properties dialog.
6. Click the Cancel button or the close button () to close the Add/Remove Programs Properties dialog, and then close the Control Panel.
7. Open the Windows Explorer and browse to the directory containing the *WinStudio* directory.
8. Verify that all of the WinStudio files and folders were deleted. (You can manually delete any that remain.)

Note: The uninstall tool should not delete any files that you created or modified in the ...\ **WinStudio\Projects**\ folder.

4 Working with the WinStudio

4.1 General information

This chapter describes the WinStudio *development environment* (interface). The information in this chapter is organized as follows:

- **Overview:** Provides a brief description of the tools and interfaces that make up the WinStudio development environment.
- **Title Bar:** Describes the title bar.
- **Status Bar:** Describes the status bar.
- **Menu Bar:** Describes the different menu options that you can access from the WinStudio main menu bar.
- **Toolbars:** Describes the WinStudio toolbars.
- **Workspace:** Describes the WinStudio Workspace.

4.2 Overview

WinStudio uses standard, Windows-like tools and interfaces to make the product user-friendly. WinStudio also provides an integrated, unique development environment (see figure) for easy access to tools and information.

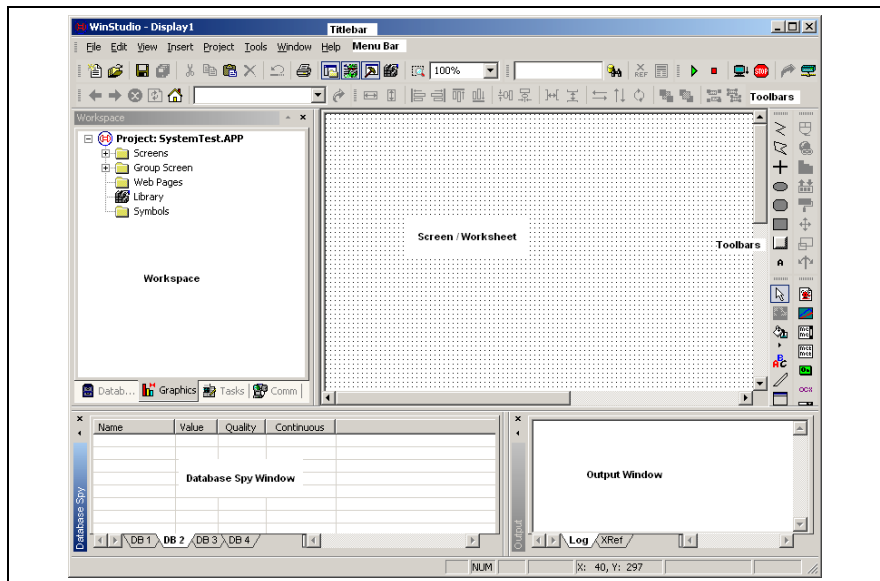


Fig. 4-1: WinStudio Development Environment

The development environment consists of the following basic areas:

- **Title Bar:** Indicates the active screen or worksheet
- **Status Bar:** Provides quick access to actual information.
- **Menu Bar:** Contains the main product options and controls, which you can easily access using the cursor or your keyboard keys.
- **Auxiliary Toolbars:** Provide shortcuts to the main commands used in the development environment.
- **Displays Building Toolbars:** Contain features and tools used to create or edit objects and dynamics in the application screens.
- **Workspace:** Provides tree-view control from which you can access project worksheets and screens.
- **Database Spy Window:** Provides a debugging tool, which you can use to monitor and force tags and to execute functions.
- **Output Window:** Displays debugging messages.
- **Displays/Worksheets:** Provides an area where you can edit screens and worksheets.

Note: The preceding figure shows the development environment areas and windows in their default position. You can customize this environment as needed by changing the position of the areas.

You can right-click the mouse almost anywhere inside the development environment to display a pop-up menu (similar to the following figure), relating to the context of where you clicked.

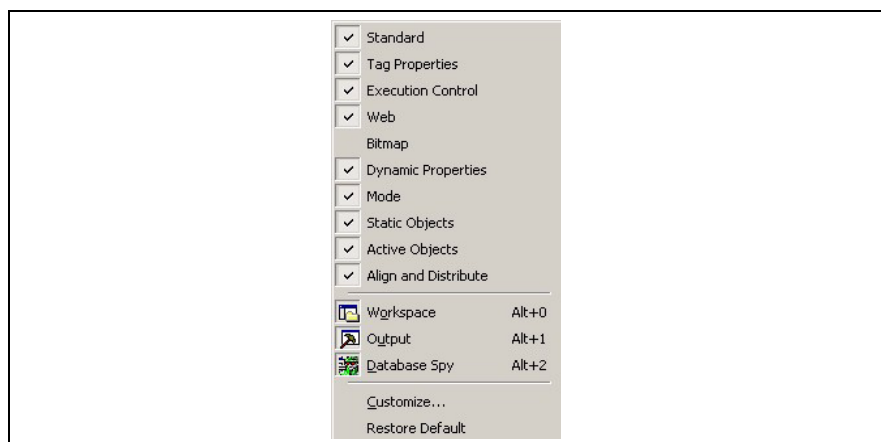


Fig.4-2: Sample WinStudio Pop-Up Menu

4.3 Using the title bar

The title bar (located along the top of the WinStudio window) displays the **WinStudio** icon, the product name, and the name of the active, open screen or worksheet (if any).

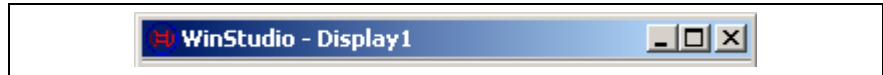


Fig.4-3: Typical WinStudio Title Bar

The title bar also contains the following three buttons (from left to right):

- **Minimize** button (☐): Click this button to minimize the WinStudio window.
- **Resize/Maximize** button (☐/☐): Click the button to toggle between the two options:
 - **Resize** tiles the WinStudio window
 - **Maximize** maximizes the WinStudio window to fill your computer screen
- **Exit** (or **Close**) button (✕): Click this button to automatically save the database then close WinStudio. If you modified any screens or worksheets, WinStudio prompts you to save your work. This button function is similar to the **Exit** command on the **File** menu.

Note: Closing the development environment does not close the WinStudio run-time tasks. To close your run-time tasks, click the **Stop** icon (⏹) on the Execution toolbar or select **Project** → **Stop Application** option from the main menu bar.

4.4 Reading the status bar

The status bar (located along the bottom of the WinStudio window) contains fields used to identify toolbar buttons and provide information about the active screen (if any).



Fig.4-4: Sample Status Bar

The fields are as follows (from left to right):

- **Hint** field: Provides a short description of any toolbar button or display object touched by the cursor.
- **Caps Lock** field: Indicates whether the keyboard Caps Lock key is on (**CAP**) or off (empty).
- **Num Lock** field: Indicates whether the keyboard Num Lock key is on (**NUM**) or off (empty).
- **Scroll Lock** field: Indicates whether the keyboard Scroll Lock key is on (**SCRL**) or off (empty).
- **ID** field: Displays the ID number of a selected screen object.
- **Screen Coordinate** field: Displays the current location of the cursor (or pointer) on the active screen. When you select a screen object, this field displays the object's coordinates in the top-left corner. Where: **X** is the number of pixels from the left edge of the screen and **Y** is the number of pixels from the top of the screen.
- **Object Size** field: Displays the size (in pixels) of a selected object, where **W** is the width and **H** is the height.
- **No DRAG** field: Indicates whether dragging is disabled (**No DRAG**) or enabled (empty) in the active screen.
- You might want to disable dragging to change the object properties of an object without moving it from its current location.

Tip: You can enable/disable dragging by pressing **Ctrl+D**. Also, you can click on any object and use the arrow keys on the keyboard to move objects on the screen, pixel by pixel.

4.5 Using the menu bar

The menu bar contains the following menus:

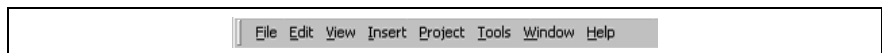


Fig.4-5: Main Menu Bar

- **File:** Contains options that enable you to create, open, close, save, and print application projects and files, and allows you to close the WinStudio development environment.
- **Edit:** Contains options that enable you to edit your displays and worksheets by cutting, copying, pasting, formatting, and setting security levels. You can also undo edits, delete, search and replace elements in these displays/worksheets.
- **View:** Contains options that enable you to manage which tools and toolbars are visible in the development environment. This menu also provides shortcuts to the dialog boxes you open most frequently, enables you to customize your toolbars, restore defaults, open the libraries, zoom/unzoom, and set screen attributes.
- **Insert:** Contains options that enable you to create and configure a variety of application tags, tag classes, documents, drivers, users, security settings, screens, and ActiveX objects.
- **Project:** Contains options to execute applications locally and remotely, and provides links used to configure general application settings.
- **Tools:** Contains options that provide links to auxiliary tools.
- **Window:** Contains options that enable you to manage open displays and worksheets.
- **Help:** Contains options that link to information about WinStudio.

Note:

- The menu bar is dockable.
 - If you right-click on the menu bar, a pop-up menu displays. From this pop-up, you can restore the default location of the menu bar and toolbars.
 - You also can use this pop-up to hide toolbars and windows and to customize the development environment.
-

4.6 Using the toolbars

WinStudio provides several toolbars containing icons (shortcuts) that enable you to perform different actions within the program. This section describes the function and default location of each toolbar.

Note: All toolbars are dockable screen objects. You can move a toolbar to a different screen location by clicking on its title bar and dragging it to a new location.

The following toolbars contain general-purpose tools, and they are located across the top of the workspace, just below the menu bar by default:

- **Standard** toolbar: Allows you to perform general actions, such as file management and printing functions.



Fig.4-6: **Standard** toolbar

- **Tag Properties** toolbar: Allows you to create, locate, and access different tags and their properties.



Fig.4-7: **Tag Properties** toolbar

- **Execution Control** toolbar: Allows you to execute and manage an application locally or from a remote location.



Fig.4-8: **Execution Control** toolbar

- **Web** toolbar: Allows you to open HTML files.



Fig.4-9: **Web** toolbar

- **Align and Distribute** toolbar: Allows you to edit screen objects.



Fig.4-10: **Align and Distribute** toolbar

The following toolbars contain screen-editing tools. These toolbars are located along the right side of the interface window by default and they are enabled only while you are editing graphic screens:

- **Mode** toolbar: Allows you to edit your screens.

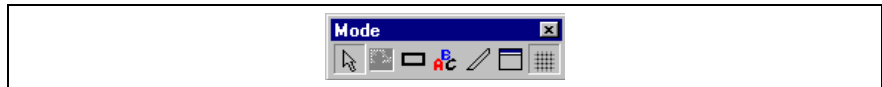


Fig.4-11: **Mode** toolbar

- **Bitmap** toolbar: Allows you to access the bitmap screen editor tools. (This toolbar is available only when the Background Picture layer is active. You enable the Background Picture layer in the Screen Attributes dialog box.)



Fig.4-12: **Bitmap** toolbar

Note: The *Bitmap* toolbar is hidden by default.

- **Static Objects** toolbar: Allows you to create polygons, rectangles, lines, and other objects for your screen.



Fig.4-13: **Static Objects** toolbar

- **Dynamic Properties** toolbar: Allows you to apply dynamics to objects or a group of objects. Dynamics enable you to modify object properties on the fly (during runtime) according to tag values. Some dynamics also enable you to execute commands or insert values (set points) to the tags.



Fig.4-14: **Dynamic Properties** toolbar

- **Active Objects** toolbar: Allows you to create dynamic objects. Active objects typically require more parameters than static objects and provide embedded dynamics.



Fig.4-15: **Active Objects** toolbar

4.7 Using the workspace

The WinStudio Workspace window is a user-friendly interface that enables you to quickly find and/or create any application component (tags, screens, worksheets, and so forth). Application components are organized in a tree-view with each one having its own icon and customized description. You can move, resize, or hide the Workspace window.

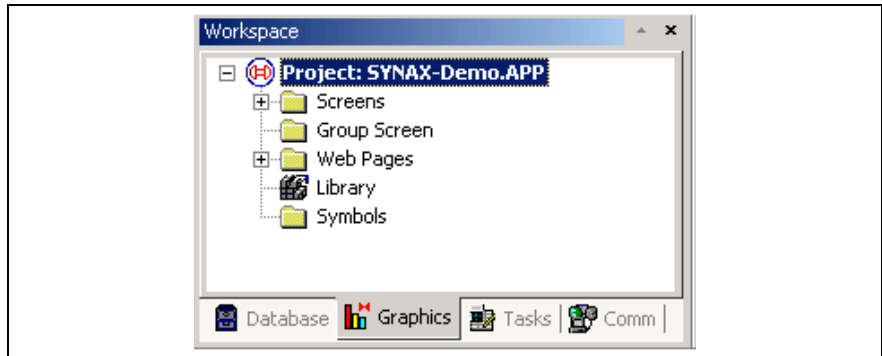


Fig.4-16: The WinStudio workspace

The Workspace window is divided into four tabs, as follows:

- **Database** tab: Provides access to all tags in the application and security system components. This tab includes the following folders:
 - *Application Tags*
 - *Classes*
 - *Shared Database*
 - *Internal Tags*
 - *Security*
- **Graphics** tab: Provides access to all screens and symbols in the application. This tab includes the following folders and icons:
 - *Screens*
 - *Group Screen*
 - *Web Pages*
 - *Library*
 - *Symbols*
- **Tasks** tab: Provides access to all task worksheets in the application. This tab includes the following folders:
 - *Alarms*
 - *Trend*
 - *Recipes*
 - *Report*
 - *ODBC*
 - *Math*
 - *Scheduler*

- **Comm** tab: Provides access to all worksheets configured to establish communication with another device or software using available protocols. This tab includes the following folders:
 - *Drivers*
 - *OPC*
 - *TCP/IP*
 - *DDE*

Note: You can right-click on all folders and components to open a menu relating to that folder or component.

4.8 Working with tags

This chapter provides information needed to create and edit tags, including:

- **Naming Tags and Tag Fields:** Explains the required syntax for naming tags and tag fields.
- **Working with Tag Folders:** Explains the purpose of tag folders.
- **Understanding the Tag Types:** Describes the different tag types.
- **Using Array Tags:** Explains how to use array tags.
- **Using Indirect Tags:** Explains how to use indirect tags.

4.9 Naming tags and tag fields

This section provides guidelines for naming tags (database location identifiers) and *tag fields* (a set of parameters inherent to each tag in the database). Applications use tag fields during runtime.


Tag Syntax

You must observe the following syntax guidelines when naming a tag:

- Use letters, numbers, and the underscore (`_`) character.
- Do not use the following characters:
 - `` ~ ! @ # $ % ^ & * () - = \ + \ [] { } < > ?`
- Tag names must begin with a letter.
- Maximum tag length is 32 characters.
Maximum class member length is 16 characters.
- Tag names must be unique—do not specify the same name for two different tags, unless you are creating an array tag and specify a unique index.
- Tag names are not case-sensitive (for readability however, we recommend using uppercase and lowercase characters. For example, use *TankLevel* instead of *tanklevel*).
- Tag names must be different from internal tag names and math functions.

- Some valid tag names include:
 - *Temperature*
 - *Pressure1*
 - *count*
 - *x*

Tag field Syntax

You can use the *Tag Properties* dialog (click the **Tag Properties** icon  located on the Tag Properties toolbar) to specify tag field parameters. To access a tag field you must use the following syntax:

<TagName>-><TagField> (for example, **second->Max**)

You can access the following tag fields during runtime:

Tag field name	Description of value associated with each field	Tag type associated with field				R=Read only RW=Read/ Write
		Boolean	Integer	Real	String	
Description	Description of tag configured in Tags database.	√	√	√	√	RW
Max	Maximum value that can be written to the tag at runtime.	x	√	√	x	RW
Min	Minimum value that can be written to the tag at runtime	x	√	√	x	RW
Quality	Tag quality (192=GOOD; 0=BAD). Updates every time tag receives the result of an expression or a value from a communication task (Driver or OPC). Invalid expressions (such as division by 0) or reading communication errors associated with tag, sets quality to BAD.	√	√	√	√	R
Size	Array Size. If the tag is not an array tag, returns the value 0.	√	√	√	√	R
TimeStamp	Records time and date when a tag changes value.	√	√	√	√	R
Unit	Brief description (up to 9 characters) of an engineering unit (such as Kg) for a tag value	√	√	√	√	RW
AlrStatus	Status (integer value) of any currently active alarms associated with a tag. Each bit of the integer value indicates a specific status: Bit 0 (LSB): HiHi Alarm active Bit 1: Hi Alarm active Bit 2: Lo Alarm active Bit 3: LoLo Alarm active Bit 4: Rate Alarm active Bit 5: Deviation+ Alarm active Bit 6: Deviation- Alarm active For example: If Tag->AlrStatus = 2, "Hi" alarm is active. If Tag->AlrStatus = 3, "HiHi" and "Hi" alarms are active simultaneously. If Tag->AlrStatus = 0, there are no active alarms For Boolean tags, only 1 (bit 1), 4 (bit 2) or 16 (bit 4) values are returned.	√	√	√	x	R

B0 ... B31	Value (0 or 1) of any of the 32 bits (b0, b1, b2, ... b31) of an integer tag. (B0: LSB B31: MSB).	x	✓	x	x	RW
Ack	Specifies whether alarms associated with the tag require acknowledgement. This field has only two possible values: - 0 : Alarms do not require acknowledgement - 1 : At least one alarm requires acknowledgement	✓	✓	✓	x	RW
AlrDisable	Specifies whether alarms associated with a tag will become active. This field has only two possible values: - 0 : Enables alarm and when an alarm condition occurs, the alarm becomes active. - 1 : Disables alarm so that even if an alarm condition occurs, the alarm will not become active.	✓	✓	✓	x	RW
HiHi	If 0 , HiHi alarm is inactive. If 1 , HiHi alarm is active.	x	✓	✓	x	R
Hi	If 0 , Hi alarm is inactive. If 1 , Hi alarm is active.	✓	✓	✓	x	R
Lo	If 0 , Lo alarm is inactive. If 1 , the Lo alarm is active.	✓	✓	✓	x	R
LoLo	If 0 , LoLo alarm is inactive. If 1 , the LoLo alarm is active.	x	✓	✓	x	R
Rate	If 0 , Rate alarm is inactive. If 1 , the Rate alarm is active.	✓	✓	✓	x	R
Devp	If 0 , Dev+ alarm is inactive. If 1 , the Dev+ alarm is active.	x	✓	✓	x	R
Devm	If 0 , Dev- alarm is inactive. If 1 , Dev- alarm is active.	x	✓	✓	x	R
HiHiLimit	Limit value for HiHi alarm.	x	✓	✓	x	RW
HiLimit	Limit value for Hi alarm.	x	✓	✓	x	RW
LoLimit	Limit value for Lo alarm.	x	✓	✓	x	RW
LoLoLimit	Limit value for LoLo alarm.	x	✓	✓	x	RW
RateLimit	Limit value for Rate alarm.	x	✓	✓	x	RW
DevSetpoint	Set point value for Deviation alarms.	x	✓	✓	x	RW
DevpLimit	Limit value for Deviation+ alarm.	x	✓	✓	x	RW
DevmLimit	Limit value for Deviation- alarm.	x	✓	✓	x	RW

Fig.4-17: Tag fields

Note: If the application tries writing a value outside the range specified in the Min and Max fields, the Tags Database will not accept the new value and writes a warning message in the *LogWin*. If you configure both **Min** and **Max** properties with the value 0 (zero), any value applied to the tag type can be written to the tag.

Caution: You cannot use tag fields (such as Bit fields) to configure Alarm or Trend worksheets.

4.10 Working with tag folders

You can use tags as communication points with field equipment, results of calculations, alarm points, and so forth. In WinStudio, all tags are organized into folders on the Database tab according to their origin (application, internal, or shared). WinStudio also provides a folder for compound-tags, named classes.

The following is a description of the different WinStudio tag folders:

- **Application Tags:** User-defined tags created for screens, to read from and write to field equipment, for control, auxiliary tags to perform mathematical calculations, and so forth.
- **Internal Tags:** Tags predefined by WinStudio. Internal tags have predetermined functions (such as time, date, acknowledge alarms, storage of the logged-on user name and so forth). You cannot delete or modify these tags, but you can access their values from any WinStudio task.
- **Shared Tags:** Tags created in PC-based control software and imported into the WinStudio environment. You cannot edit shared tags in the WinStudio environment, but you can modify these tags using PC-based control software and then re-import the modified tags to update the WinStudio database. Consequently, you can configure shared tags for any WinStudio task just as any other tag.
- **Classes:** Structures that allow for high-level encapsulation in the application database. When you create a class-type tag, the tag contains a whole set of values rather than a single value. You create classes by grouping elements, called members. The maximum number of members for any class depends on the product specification.

4.11 Understanding the tag types

A tag can be one of the following types:






	Boolean: Boolean or digital variable (0 or 1).
	Integer: Integer number (positive, negative, or zero), equivalent to C-type long integer (4 bytes). For example: 0, 5, -200.
	Real: Real number (float) internally stored as a double word, equivalent to C-type double (8 bytes, for example: 2.12, -10.5).
	String: Character string up to 256 characters that contains letters, numbers, or special characters. For example: Recipe product X123, 01/01/90, *** On ***.
	Class: User-defined, compound tag.

Fig.4-18: Types of tags

The preceding icons (and their respective tag types) are located in folders on the *Database* tab.

4.12 Using array tags

WinStudio tags can consist of a single value or an array of values.

An *array tag* is a set of tags that all have the same name, but use unique indexes to differentiate between each tag (a matrix of n lines and 1 column). The maximum array size permitted will depend on the product specification.

You can use the following syntax to access an array tag:

```
<ArrayTagName> [ArrayIndex]
```

For example: `tank[1]`, `tank[2]`, `tank[3]`, and `tank[500]`.

Caution: You can specify the maximum index for each array tag in the **Size** column of any datasheet. Specify size n to indicate that the array tag has positions from 0 to n .

For example, if the size of TagA is 3, the tag positions could be:

```
TagA[0], TagA[1], TagA[2], and TagA[3].
```

In many cases, using array tags will simplify the configuration task. For example, if you want a display to monitor each tank, you could use array tags to configure a single display containing tags linked to any tank (using the `tk` tag as an index containing the tank number). For example,

```
pressure[tk], temperature[tk], and temperature[tk +1].
```

An array index can be a tag, a numeric value, or an expression with the arithmetic operator `+`.

Note: When referring to an array having an index with the arithmetic operation `+`, you must use the following syntax:

```
<ArrayTagName> [<NumValue1> + <NumValue2>]
```

Where `<NumValue1>` and `<NumValue2>` can be integer tags or numerical constants.

For example:

```
temperature[tk+2], temperature[tk+6], or
temperature[TagA+ TagB]
```

Using array tags in a WinStudio task can save a significant amount of application development time. For example, if you wanted tag points related to the temperature of four tanks, the conventional configuration method is:

- `temperature1` high temperature on tank 1
- `temperature2` high temperature on tank 2
- `temperature3` high temperature on tank 3
- `temperature4` high temperature on tank 4

Using array tags simplifies this task, as follows:

```
temperature[j]      high temperature on tank {j}
```

Note: When you create an n position array tag, the system creates $n+1$ positions (from 0 to n). For example: `tag_example[4]` with `Array Size=4` has five elements, (`start position=0`, `end position=4`).

4.13 Using indirect tags

WinStudio supports indirect access to tags in the database. For example, consider a tag X of the string type. This tag can hold the name of any other tag in the database (in other words, this tag can provide a pointer to any other tag type, including the class type). The syntax for an indirect tag is straightforward:

`@<IndirectTagName>`

For example, assume that the **x** tag holds the **TEMP** string. Reading and/or writing to **@x** provides access to the value of the **TEMP** tag.

Note: Any tag created as a string type is a potential indirect tag (pointer).

5 Creating an WinStudio application

5.1 General information

This section describes the connection of a visualization on a IndraControl VPP device to the IndraLogic PLC of the SYNAX motion control.

The communication connection of the visualization (named HMI in the following) is realized via OPC and SCP. A direct connection of the HMI to the SCP server is not available at the moment.

With SCP three different communication paths are available:

- serial
- Ethernet
- PCI (only with PPC-P)

In this example the communication is established via a serial connection (RS232).

Prerequisite for this section is

- the PLC program from documentation "Rexroth SYNAX 200 Version 11 System installation - First steps" (DOK-SYNAX*-SY*-11VRS**-IB01-EN-P), section 3 "IndraLogic example program",
- and the knowledge from documentation "Rexroth SYNAX 200 Version 11 System installation - First steps" (DOK-SYNAX*-SY*-11VRS**-IB01-EN-P), section 2 "Communication configuration for IndraLogic".

The aim of this section is the controlling and visualization of the virtual master axis 1 of the SYNAX motion control, as well as the use of the project planning interface WinStudio for the creation of the visualization for the VEP and VPP devices.

The data of the PLC variable for

- the enabling of the virtual master axis (LA structure element ".VMA_ENABLE"),
- the acknowledge of the enabling for the virtual master axis (LA structure element ".VMA_ENABLE_ACK"),
- the speed command value (parameter "C-0-0006") and
- the actual speed (parameter "C-0-0067")

are read or written by the application of the IndraControl-VPP device.

The figure "Fig.5-1: Physical communication connection BTV <=> PPC" shows the physical structure of the communication connection.

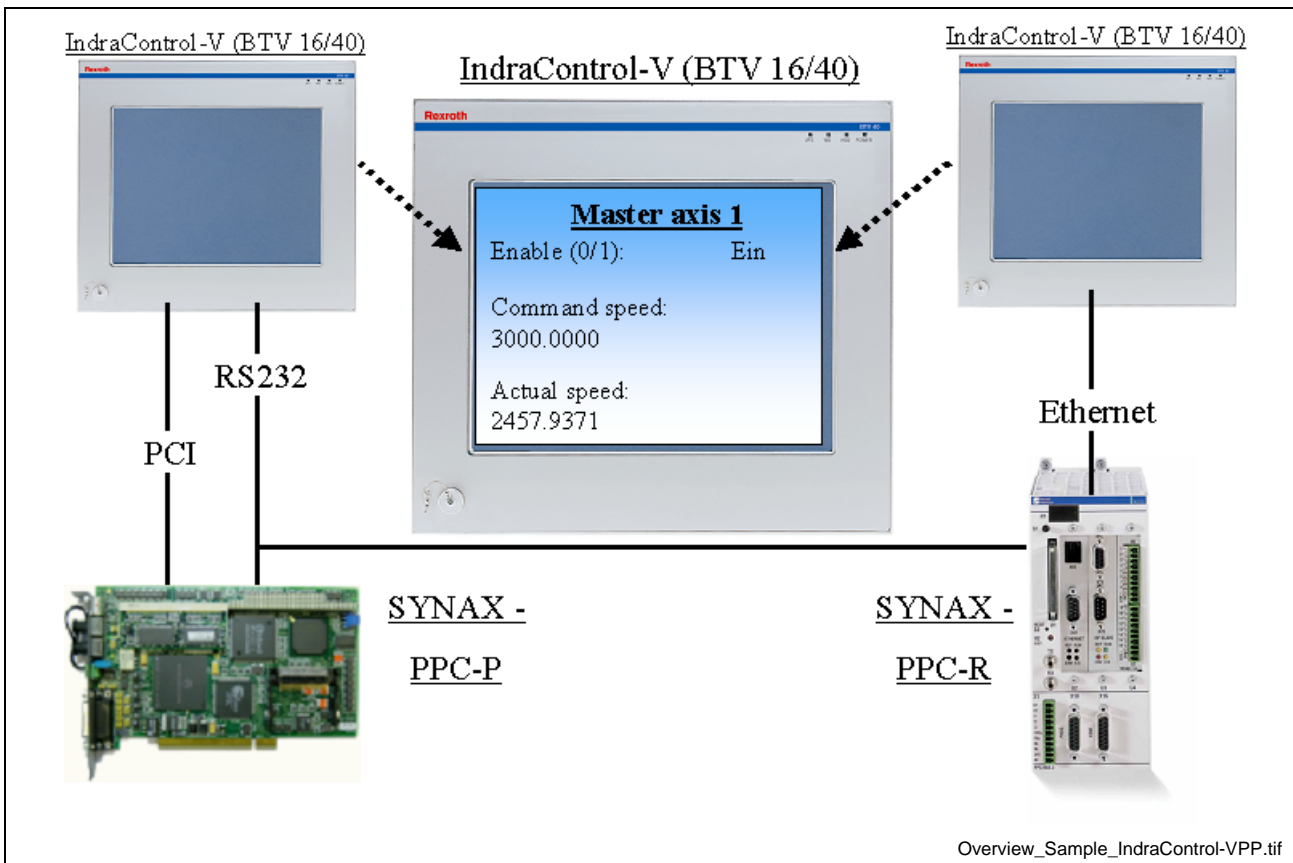



Fig.5-1: Physical communication connection BTU <=> PPC

5.2 Creating a project

Creating a new WinStudio project

The project planning software "WinStudio" is started with the link that was created at the installation in start menu **Programs** or on the Desktop.

To create a new project, select entry **New** from menu **File**. A new project can also be created in addition with a click on the symbol  in the tool bar or with shortcut **[Strg] + [N]**.

Dialog New

In the following dialog **New** you have to

- select tab **Project**,
- enter the project name in **Application name**,
- select project path in **Location**
- and select the target system where the application should be started.

See "Fig.5-2: Creating a new project".

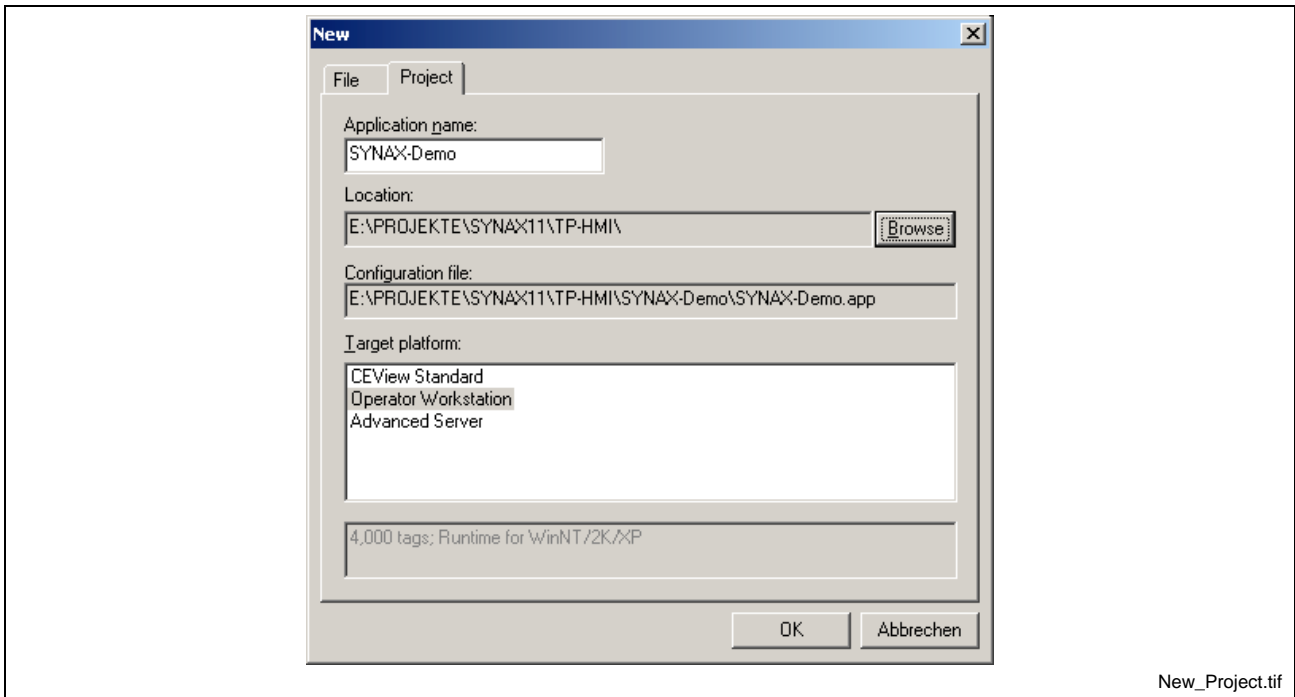


Fig.5-2: Creating a new project

After the dialog **New** was confirmed with a click on the **OK** button the *Project Wizard* is started.

Dialog "Project Wizard"

The desired screen resolution the application is displayed must be set in the **Project Wizard**. Afterwards confirm the dialog with **OK**. Further settings are not necessary.

See: "Fig.5-3: Project-Wizard"

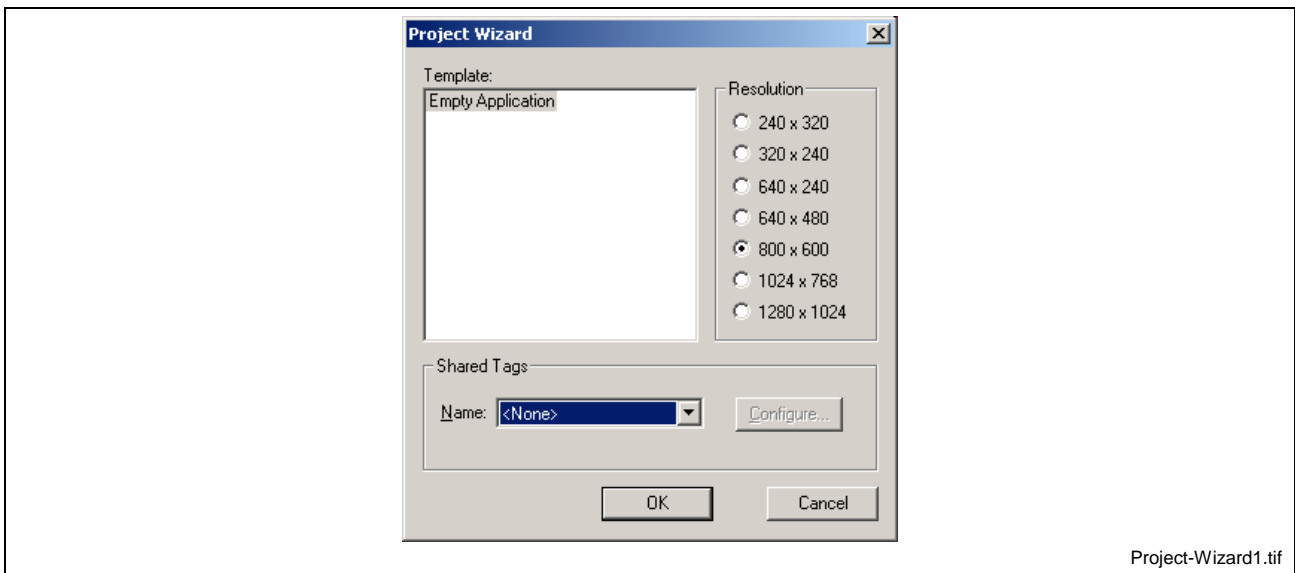


Fig.5-3: Project-Wizard

Note: If an application for different visualization devices is created, the project planning should be created with the highest possible resolution. Otherwise the “zooming larger“ has a negative effect on the display quality.

Project - settings

OPC-Client

To start the communication server automatically at the start of the runtime the following configurations must be executed.

- Dialog "Project Status"**
1. Select entry from menu **Project** -> dialog **Project Status** is opened.
 2. Select entry **OPC Client Runtime** in tab **Execution Tasks**, click button **Startup**, activate the type selection **Automatic** in dialog **Startup** and confirm with **OK**.
 3. Start the **OPC Client Runtime** with a click on button **Start**. See Fig.5-4: Dialog Project Status

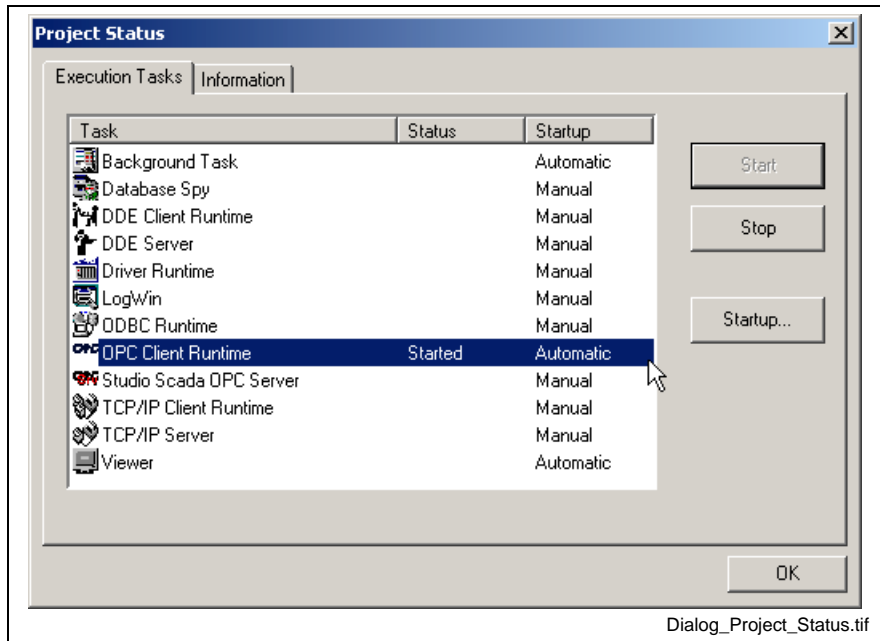


Fig.5-4: Dialog **Project Status**

Now the motion control variables from the IndraLogic example program are available in the OPC browser.

Start-Screen

- Dialog Project Settings**
- To determine the screen that should be displayed at first after starting the runtime proceed as follows.
1. Select entry **Settings** in menu **Project**.
 2. Enter the name of the screen in the appearing dialog **Project Settings** that should be displayed at the start of the application.
- See "Fig.5-5: Project settings of the runtime desktop"

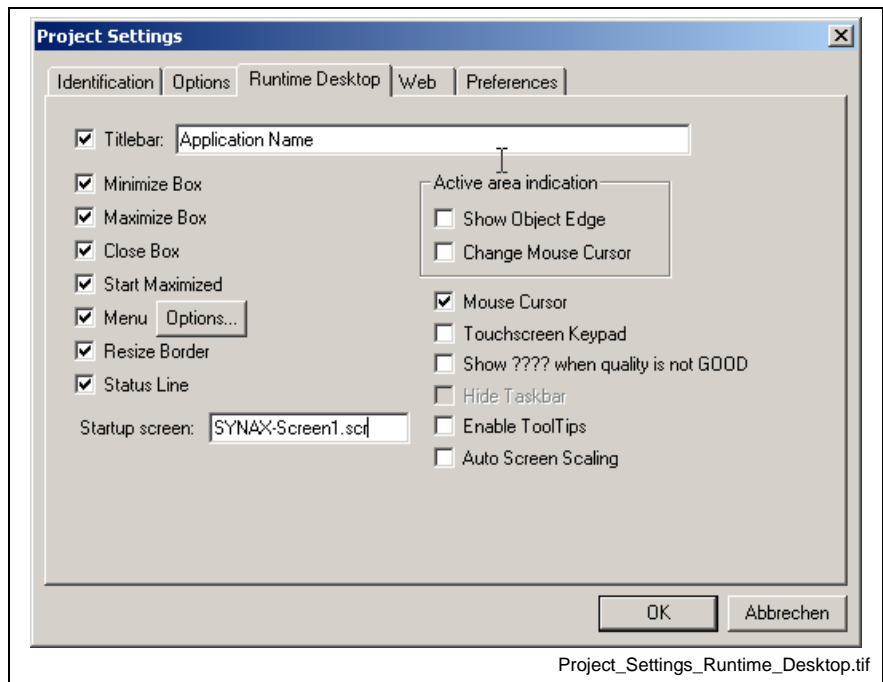


Fig.5-5: Project settings of the runtime desktop

5.3 Creating a visualization graphic

Creating a screen

To create a new the following steps must be executed.

- Open the menu **Insert** and select entry **Screen** to create a new screen. See Fig.5-6: Creating a new screen 1.

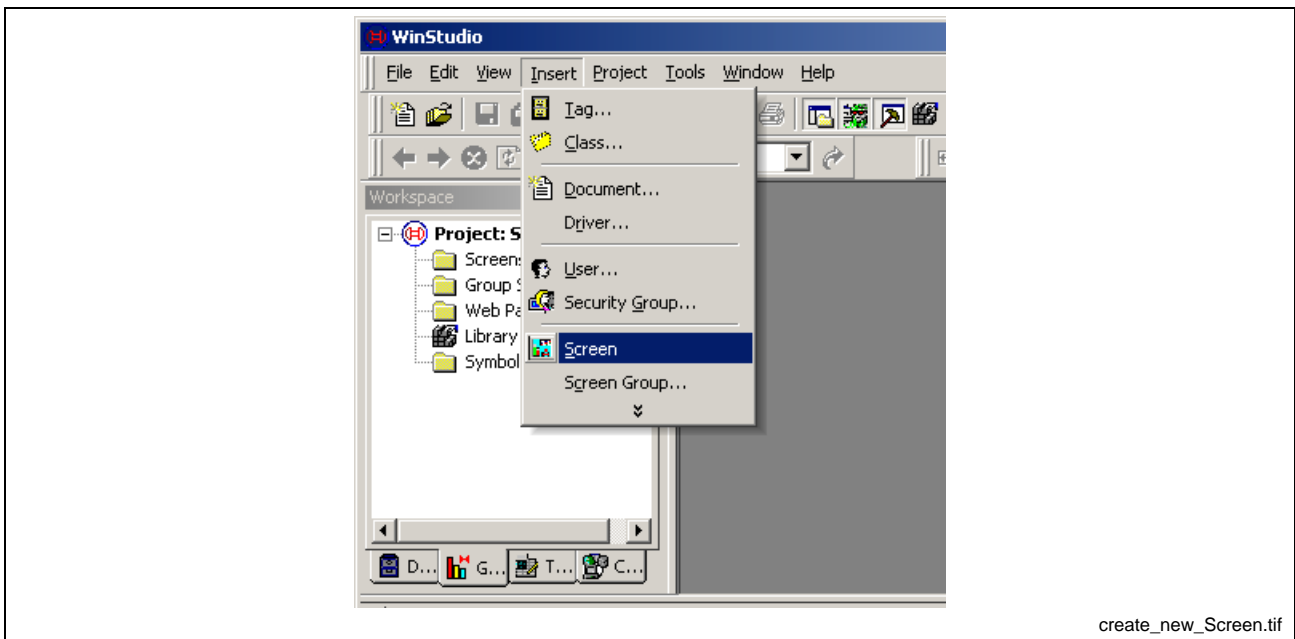
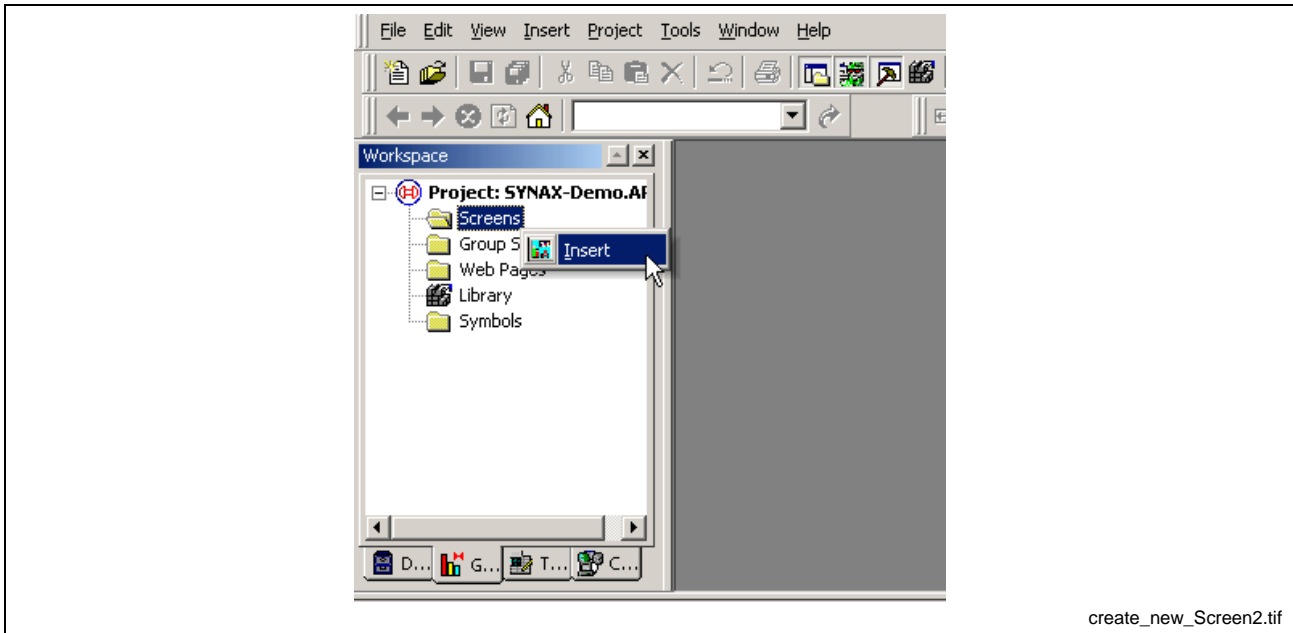


Fig.5-6: Creating a new screen 1

- Alternative it is also possible to create a new screen with a click on the right mouse button on folder **Screens** in the window **Workspace** and selecting the entry **Insert** from the context menu. See Fig.5-7: Creating a new screen 2.

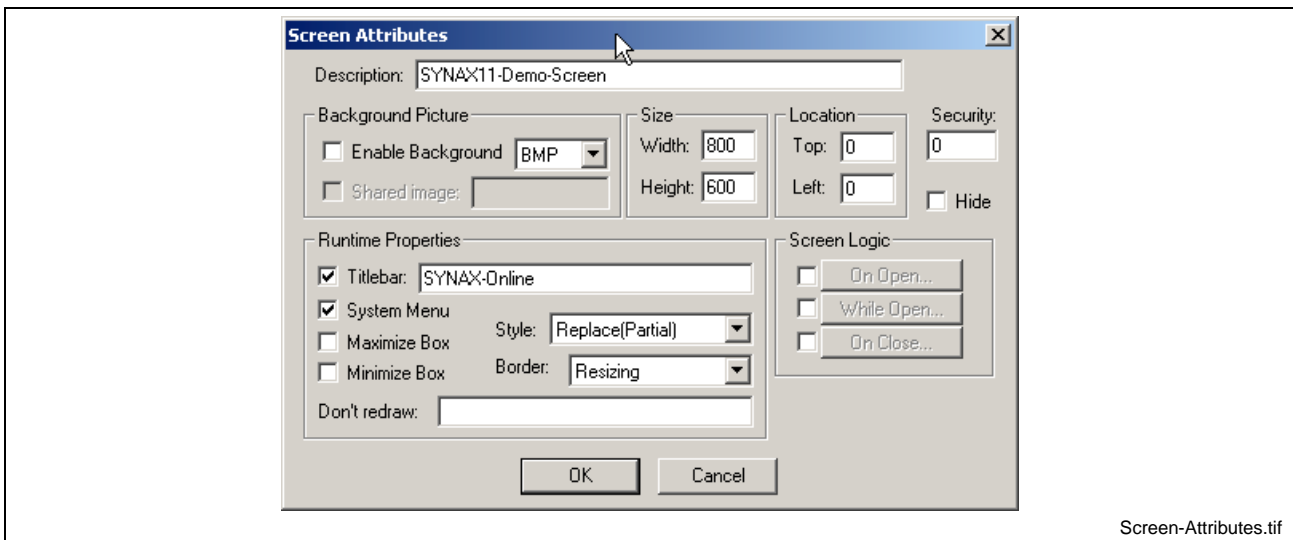


create_new_Screen2.tif

Fig.5-7: Creating a new screen 2

Dialog Screen Attributes In the appearing dialog **Screen Attributes** different attributes of the screens can be set.

In our example enter a description of the screen and a text that should be displayed in the title bar of the application. Confirm the inputs with **OK** now. See Fig.5-8: Screen attributes.



Screen-Attributes.tif

Fig.5-8: Screen attributes

Now the created screen must be saved.

Therefore select entry **Save** from menu **File** and enter a name in the following dialog where the screen should be saved. See "Fig.5-10: Save screen as".

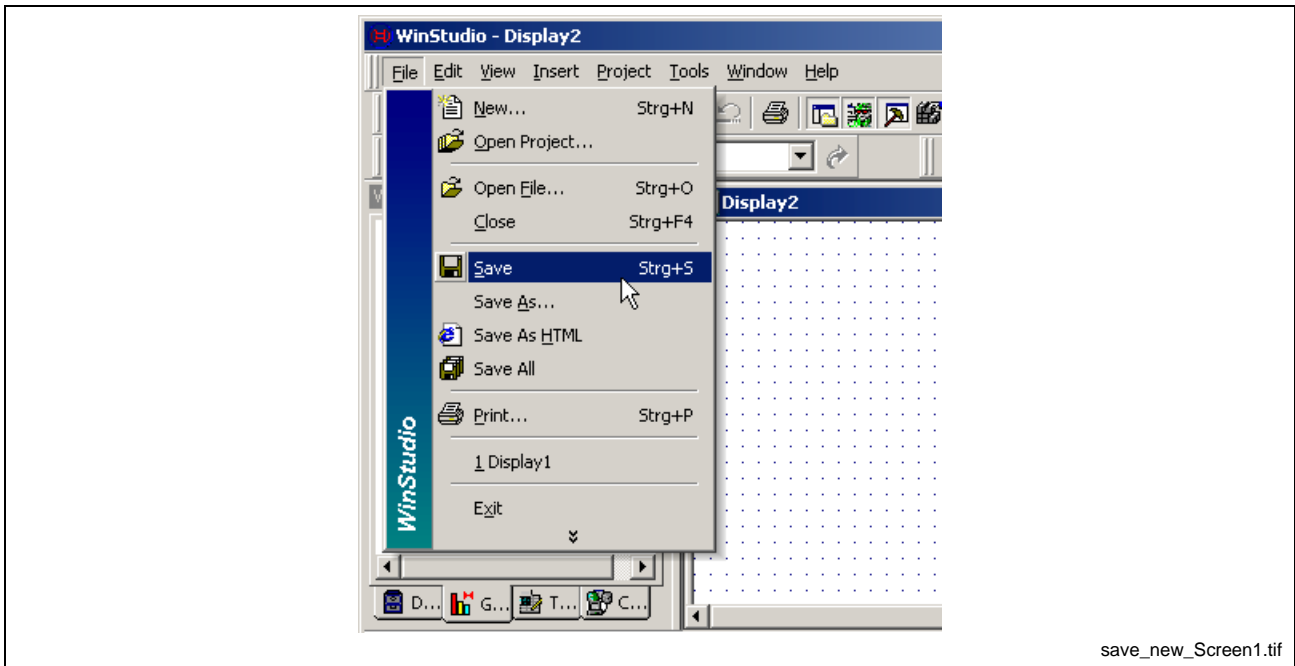



Fig.5-9: Save screen

Alternative you can save the screen with a click on symbol  in the tool bar or with the input of shortcut **[Strg]+[S]**.

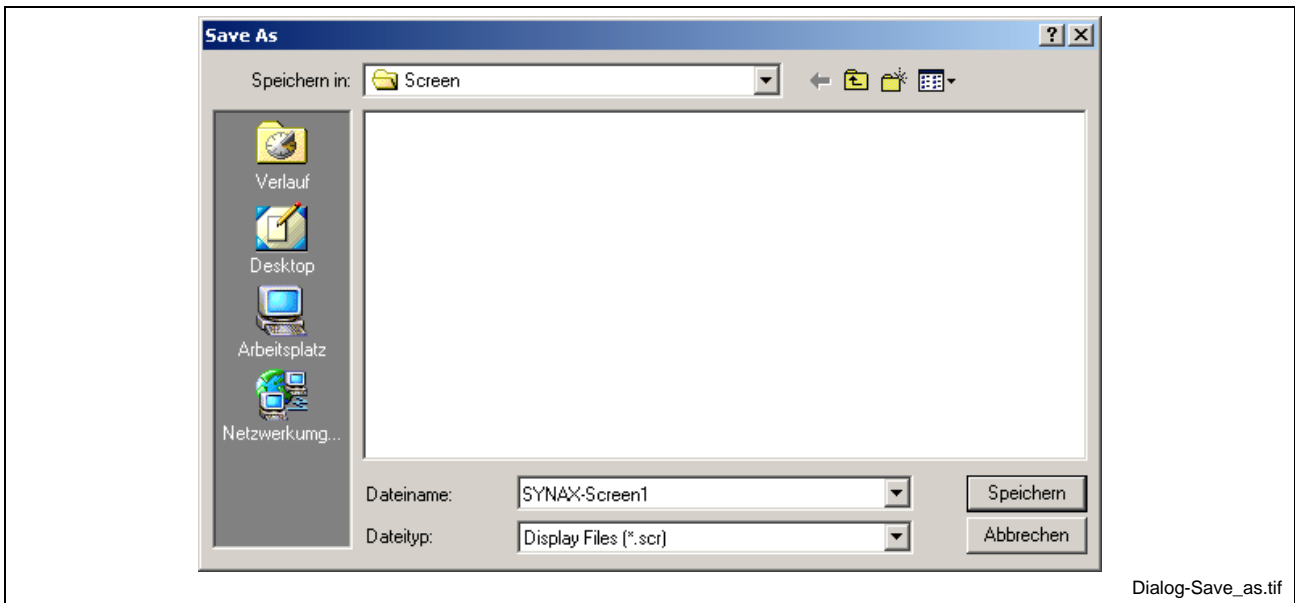



Fig.5-10: Save screen as

Insert graphic elements

Static text field

To insert a static text field proceed as follows:

1. Select symbol  for text from tool bar **Static Objects**. Now the cursor is displayed as reticle.
2. Move the cursor to the desired place in the screen and click the left mouse button. Now the input cursor in the screen is visible.
3. Enter the desired static text.

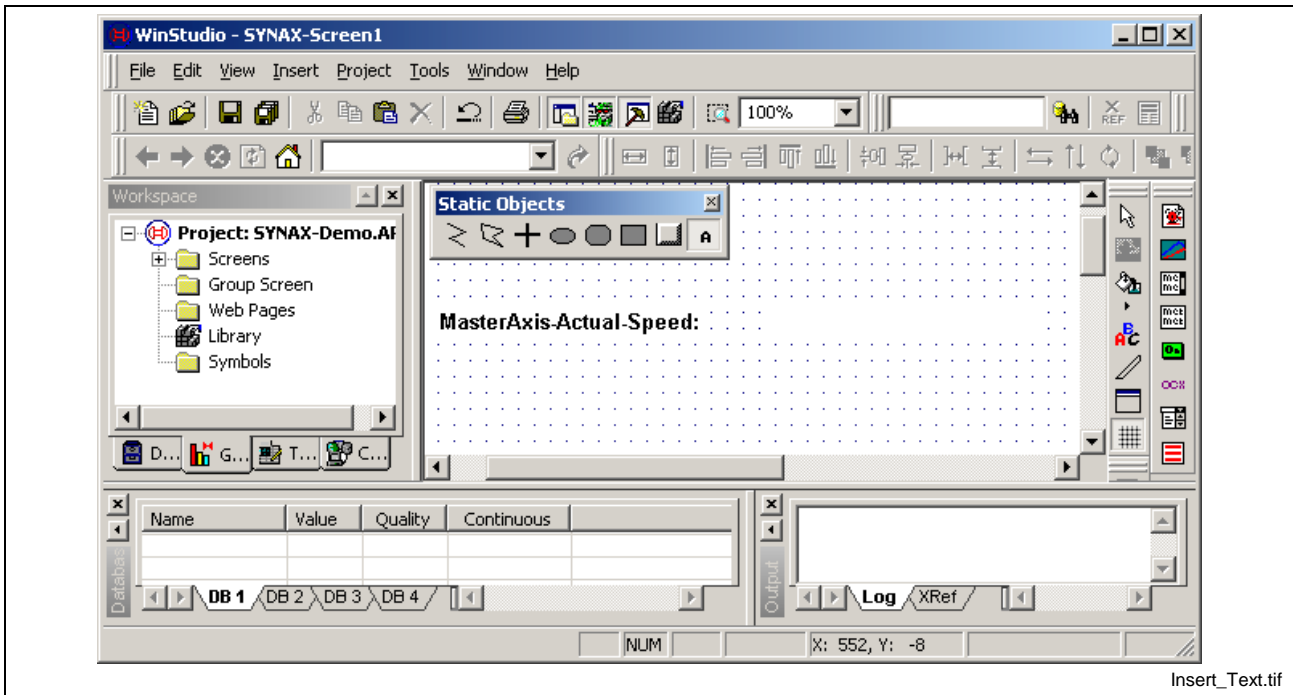




Fig.5-11: Insert text field

Dynamic text field

Display text field To insert a dynamic text field proceed as follows:

1. Select symbol  for text from toolbar **Static Objects**. Now the cursor is displayed as reticle.
2. Move the cursor to the desired place in the screen and click the left mouse button. Now the input cursor in the screen is visible.
3. Enter as much "#" as place holder so that the maximum number of the characters to display is reached.

Note: But there can only be displayed as many characters as place holders "#" are available. Place holders that are not required are not displayed at runtime.

- Text Output**
1. Select symbol  for text I/O from toolbar **Dynamic Properties** at selected text field.

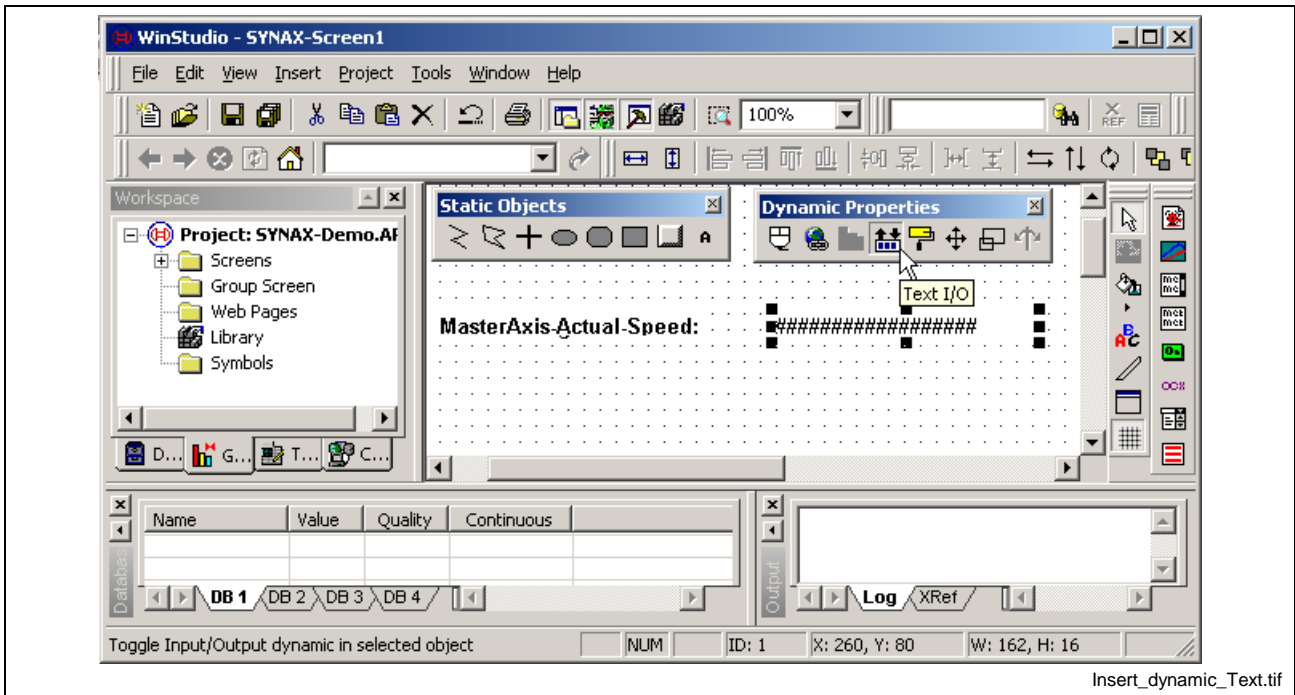


Fig.5-12: Insert dynamic text field

2. Execute a double-click on the just created text field. Now dialog **Object Properties** is opened.
3. Enter the name of the tag variable that should be displayed.

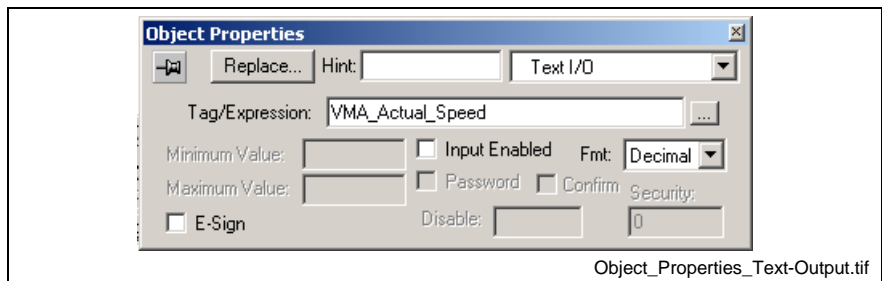


Fig.5-13: Dialog **Object Properties** text output

Creating a tag variable

- If the tag variable does not exist yet you are asked, if you want to create this variable. Confirm with "Yes".
- Now the dialog **New Tag** appears. Select type **REAL**. See "Fig.5-14: Dialog New Tag"

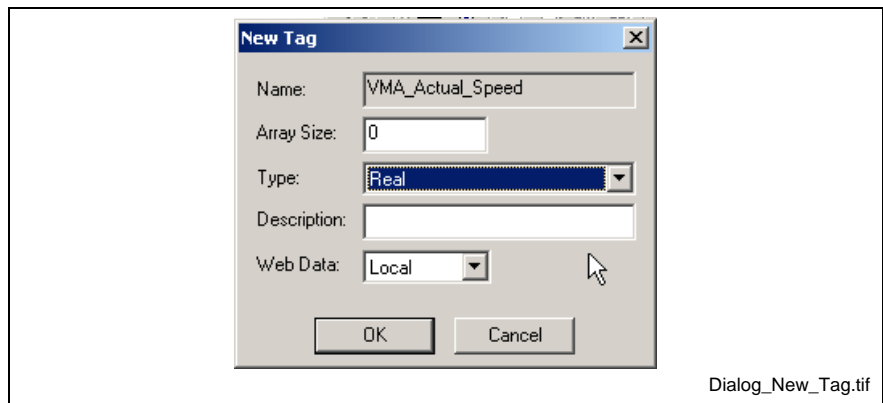


Fig.5-14: Dialog New Tag

Repeat this procedure to create a static and a dynamic text field for the speed command of the master axis. Now the screen should look like follows:

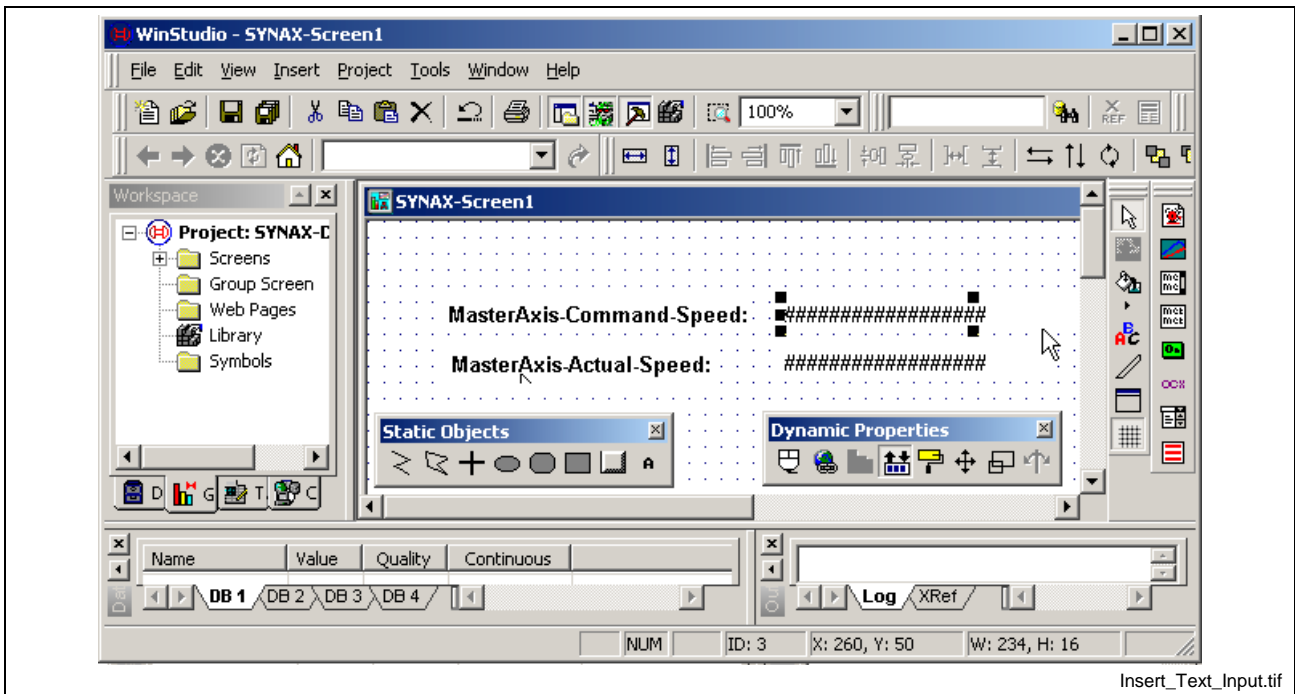


Fig.5-15: Insert input field

Input text field To create a input field proceed as follows:

1. Open the dialog **Object properties** with a double-click or with a click of the right mouse button on the created dynamic text field and with the selection of context menu entry **Properties**.

Text Input

2. Select entry **Text I/O** from the combo box top right,
3. Activate option **Input Enabled**
4. and enter the name of the tag variable the input should be saved in.

5. Enter the input limits in Minimum Value and Maximum Value. See "Fig.5-16: Dialog Object Properties - input field".

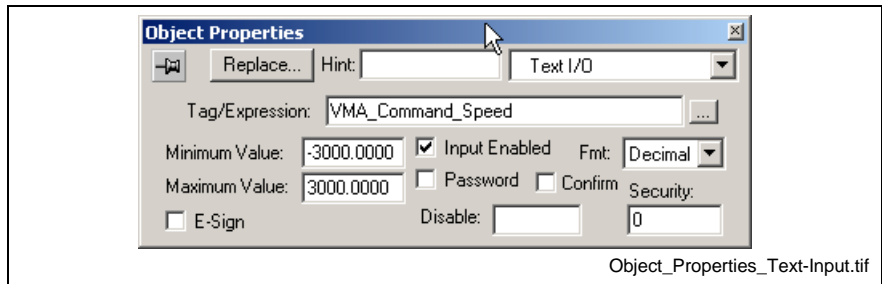



Fig.5-16: Dialog **Object Properties** - input field

Because the tag variable does not exist yet, it must be created. You have to proceed as described in section "Dynamic text field".

Button

Button To insert a button attend the following orders.

1. Select the symbol  from the toolbar **Static Objects** and click on the screen at the desired position, keep hold of the mouse button and move the mouse until the button has the desired size.
2. Open the dialog **Object Properties** with a double-click on the object.
3. Select entry **Button** in the combo box top right and enter the desired button description in **Caption** (we use "VMA enable/disable" for our example).

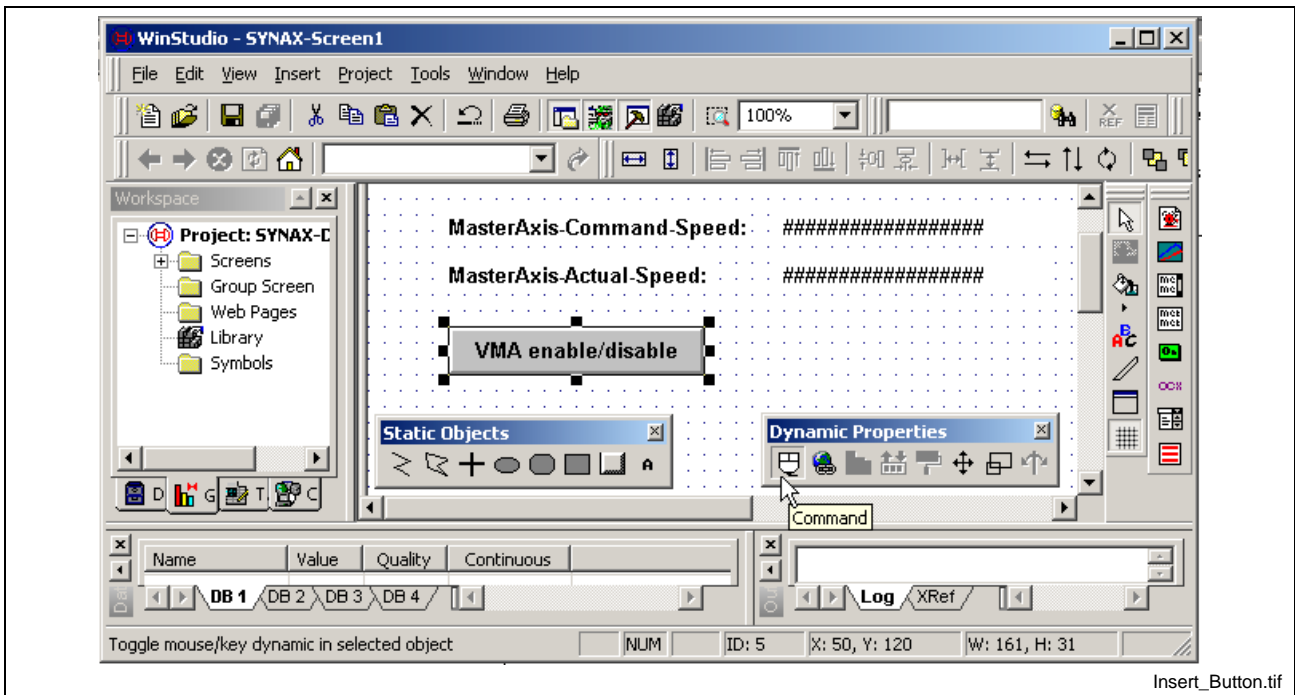

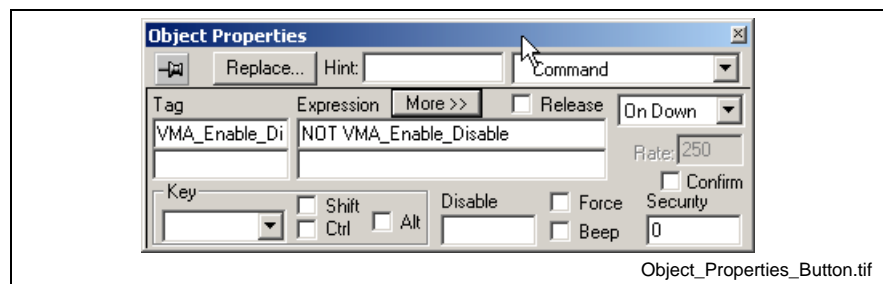



Fig.5-17: Insert button

- Command**
4. Select symbol  from the tool bar **Dynamic Properties** at selected button to insert a **Command**.
 5. Open the dialog **Object Properties** with a double-click on the object.
 6. Select entry **Command** in the combo box top right and enter the name of the tag variable "VMA_Enable_Disable" in **Tag**. Afterwards a dialog appears that points out that the tag variable "VMA_Enable_Disable" does not exist yet. Confirm this dialog with **Yes** and select entry **Boolean** from the following dialog in the combo box **Type** to determine the data type for the tag variable.
 7. Enter the "Expression" "NOT VMA_Enable_Disable" in dialog **Object Properties** at the just entered tag variable. (This has the effect that the status of the variable is inverted with a click on the button.) See "Fig.5-18: Dialog Object Properties - button"

Fig.5-18: Dialog **Object Properties** - button

Smart Message

Smart Message To visualize the current status of the master axis enabling we use a "Smart Message" – object, because different states can be displayed with an object in the simplest way. Therefore proceed as follows.

1. Select symbol  for "Smart Message" from toolbar **Active Objects** and click on the desired position in the screen, keep hold of the mouse button and move the mouse until the object has the desired size.

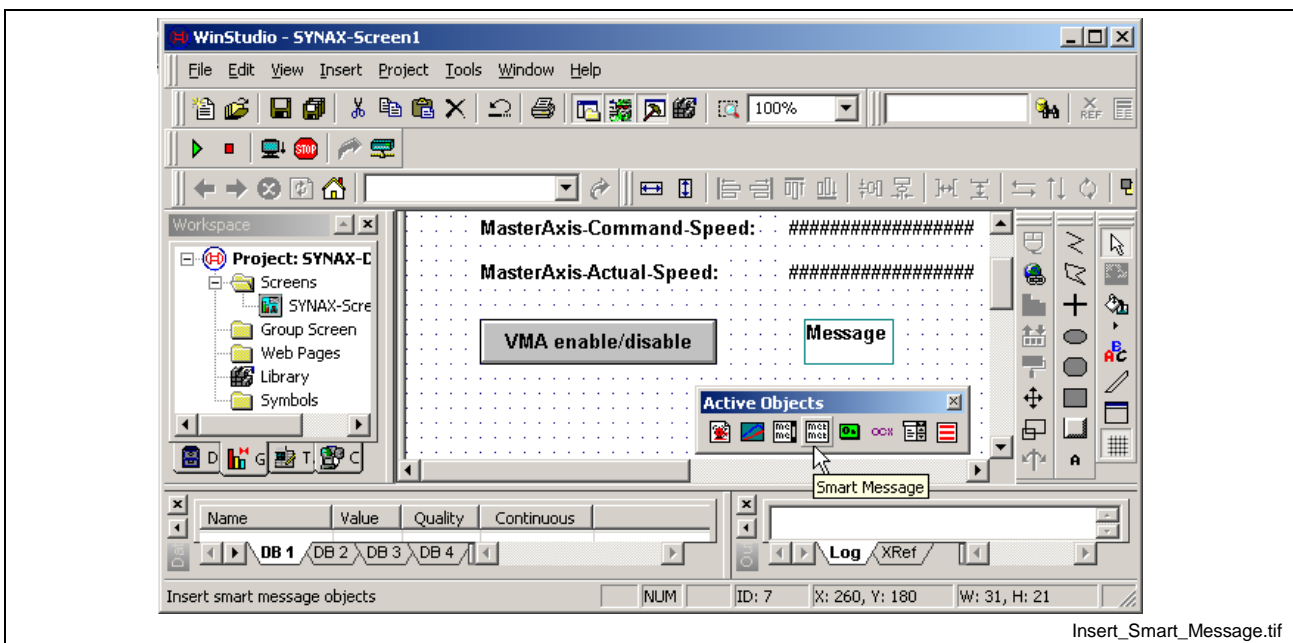


Fig.5-19: Insert Smart Message

2. Open the dialog **Object Properties** with a double-click on the object.
3. Enter the name of the tag variable "VMA_Enable_Acknowledge" in **Read Tag** that influences the display of the object. In the following dialog create the tag variable as Boolean.

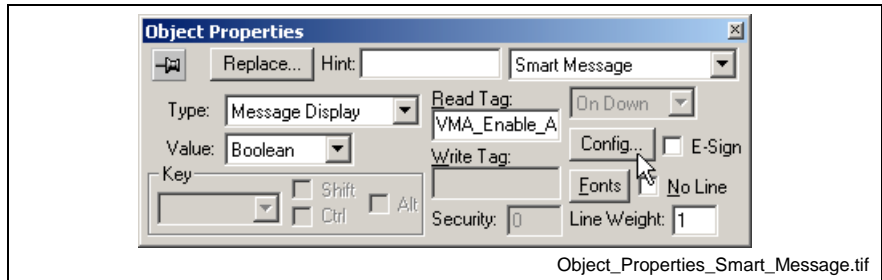


Fig.5-20: Dialog "Object Properties" – Smart Message

4. Click button "**Config...**" in dialog **Object Properties** and do the following settings in dialog **Configuration**. See "Fig.5-21: Configuration of the Smart Message".

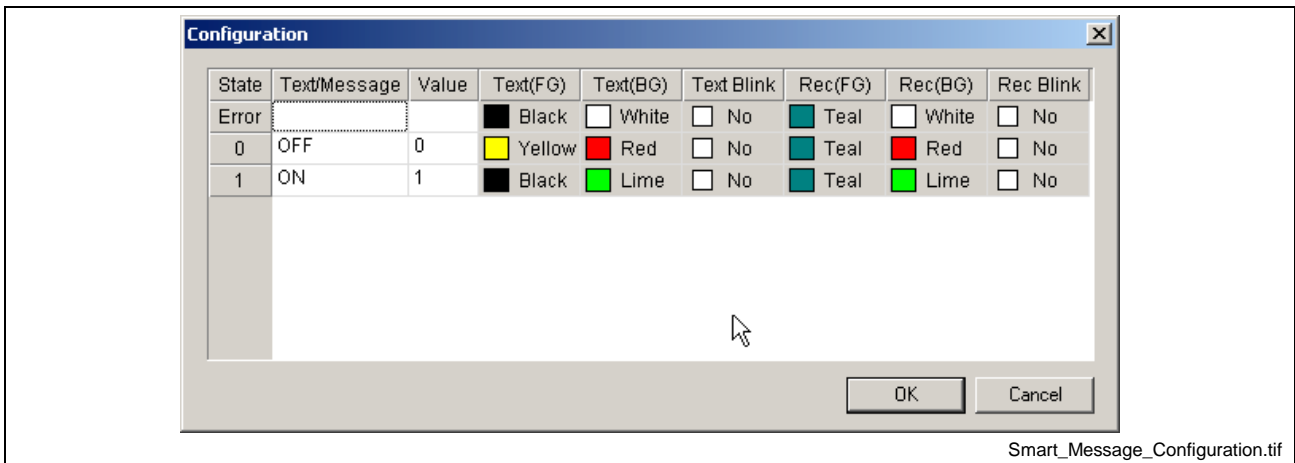



Fig.5-21: Configuration of the Smart Message object

Key word	Meaning
State	state of the tag variable
Text/Message	text is output with the value tag variable
Value	value of the tag variable
Text(FG)	foreground color of the text
Text(BG)	background color of the text
Text Blink	if this object is selected, the text flashes at corresponding variable value.
Rec(FG)	framework color of the Smart-Message object
Rec(BG)	background color of the Smart-Message object
Rec Blink	if this option is selected, the framework and the background of the Smart-Message object flashes at corresponding variable value.

Fig.5-22: Explanation of Fig.5-21: Configuration of the Smart Message

Framework + labelling Finally a framework and an area labelling is insert.

1. Here you have to select the symbol  for rectangle from toolbar **Static Objects**, click on the position of the screen where the left upper corner should be, keep hold of the mouse button and move the mouse to the position where the bottom right corner of the framework should be.
2. Open dialog **Object Properties** with a double-click on the rectangle and activate property **No Fill**. See "Fig.5-23: Dialog Object Properties – Rectangle".

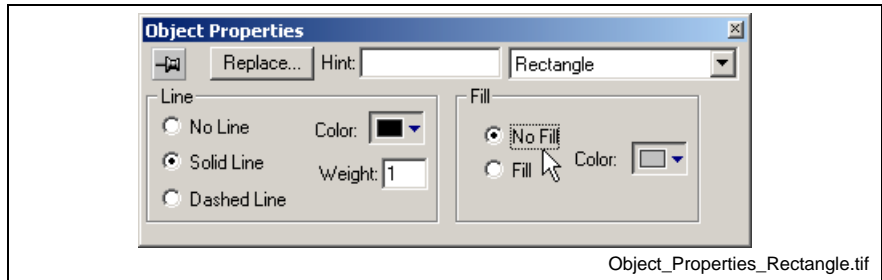




Fig.5-23: Dialog **Object Properties** – Rectangle

3. Select the rectangle and move it to the background with a click on symbol  for **Move to back**.
9. To insert an area headline use a static text field with the following content: "**Master Axis 1**".
Configuration see "Static text field".

Configuration - overview

The configuration of the graphical interface is terminated now.

Save the screen now with a click on symbol  in the tool bar or with the selection of entry **Save** in menu **File**.

The figures

- "Fig.5-24: Screen - overview",
- "Fig.5-25: Static graphic elements" and
- "Fig.5-26: Dynamic graphic elements"

show the different objects and their configurations.

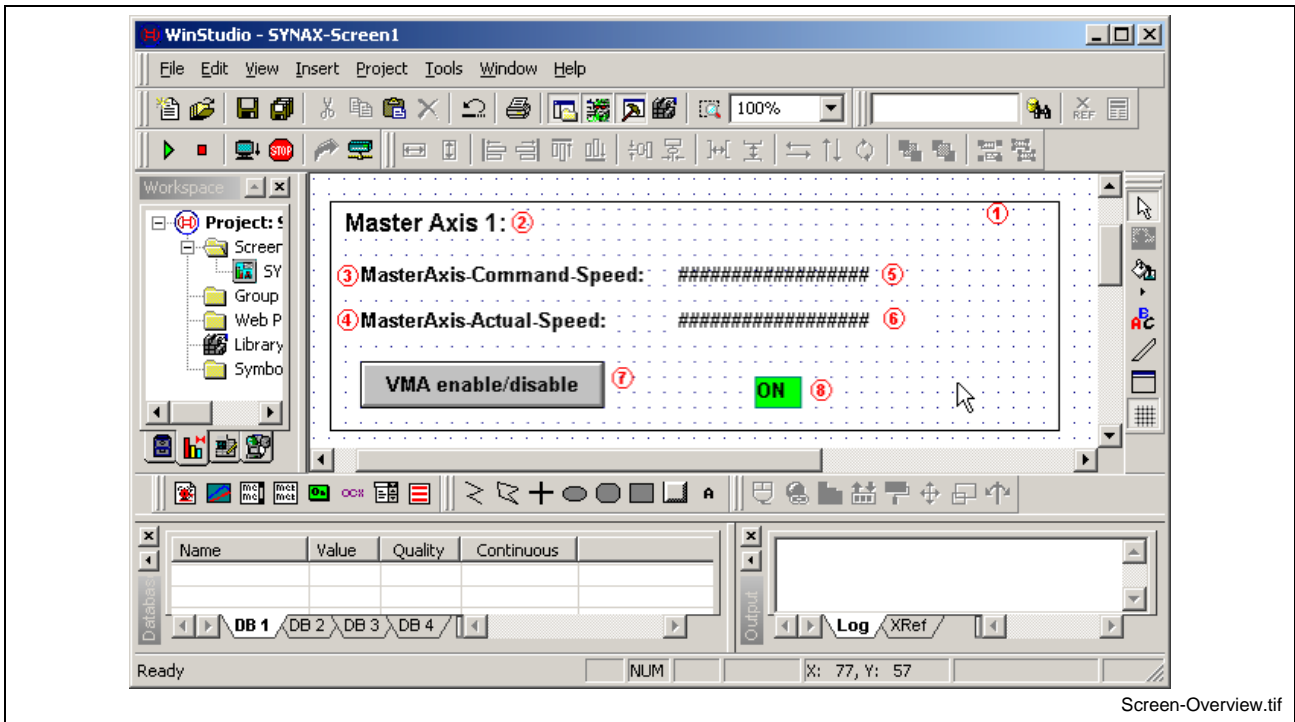


Fig.5-24: Screen - overview

Object no.	Object type	Content
1	Rectangle (framework)	----
2	Text (headline)	Master Axis 1:
3	Text	MasterAxis-Command-Speed:
4	Text	MasterAxis-Actual-Speed:

Fig.5-25: Static graphic elements

Object no.	Object type	Tag variable	Data type	Limits
5	Text (input field)	VMA_Command_Speed	Real	
6	Text (dynamic text field)	VMA_Actual_Speed	Real	Lower: -3000.0000 Upper: 3000.0000
7	Button	VMA_Enable_Disable	Boolean	
8	Smart Message	VMA_Enable_Acknowledge	Boolean	

Fig.5-26: Dynamic graphic elements

5.4 Communication - configuration - OPC

General information

The communication between motion control and HMI takes place with OPC via SCP.

OPC server - configuration

For this example the same OPC server configuration is used as described in documentation "Rexroth SYNAX 200 Version 11 System installation - First steps" (DOK-SYNAX*-SY*-11VRS**-IB01-EN-P), section 2 "Communication configuration for IndraLogic".

Communication configuration

OPC connection For the communication connection of the visualization to the motion control the tag variables must be linked with the motion control variables now.

You have to proceed as follows:

- Change to tab **Comm** in window **Workspace**
- Click with the right mouse button on folder **OPC**
- Select the context menu entry **Insert**

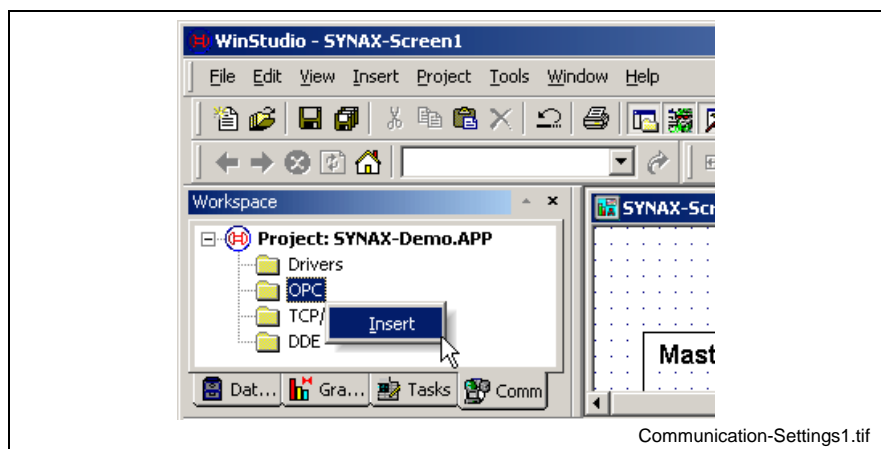


Fig.5-27: OPC – communication configuration 1

OPC communication sheet Here the communication sheet is created that is divided into 2 areas. In the upper area general settings are made as

- the description of the communication sheet,
- the OPC server,
- the deactivation of the communication of this communication sheet,
- the updating rate,
- the "Percent Deadband" (minimum change at analog items),
- the status of connection and
- the remote server (OPC server to another computer).

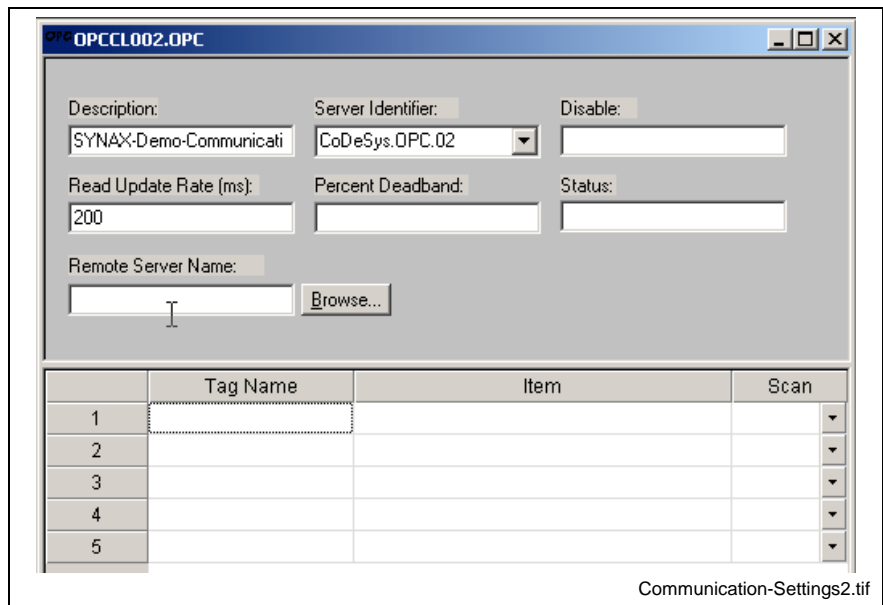


Fig.5-28: OPC – communication configuration 2

For our example we use the following settings:

Input field	Input
Description	SYNAX-Demo-Communication
Server Identifier	CoDeSys.OPC.02
Read Update Rate	200

Fig.5-29: General OPC - communication settings

The tag variables are entered in the lower part and they are linked with the respective motion control variable.

The following settings have to be made in the lower area of the communication sheet.

Tag name	Item	Scan
VMA_Enable_Disable	.VxP_EnableMA1	Screen
VMA_Enable_Acknowledge	.VxP_EnableMA1Ack	Screen
VMA_Command_Speed	.VxP_CmdSpeedMA1	Screen
VMA_Actual_Speed	.VxP_SpeedMA1.ActualSpeedFmt	Screen

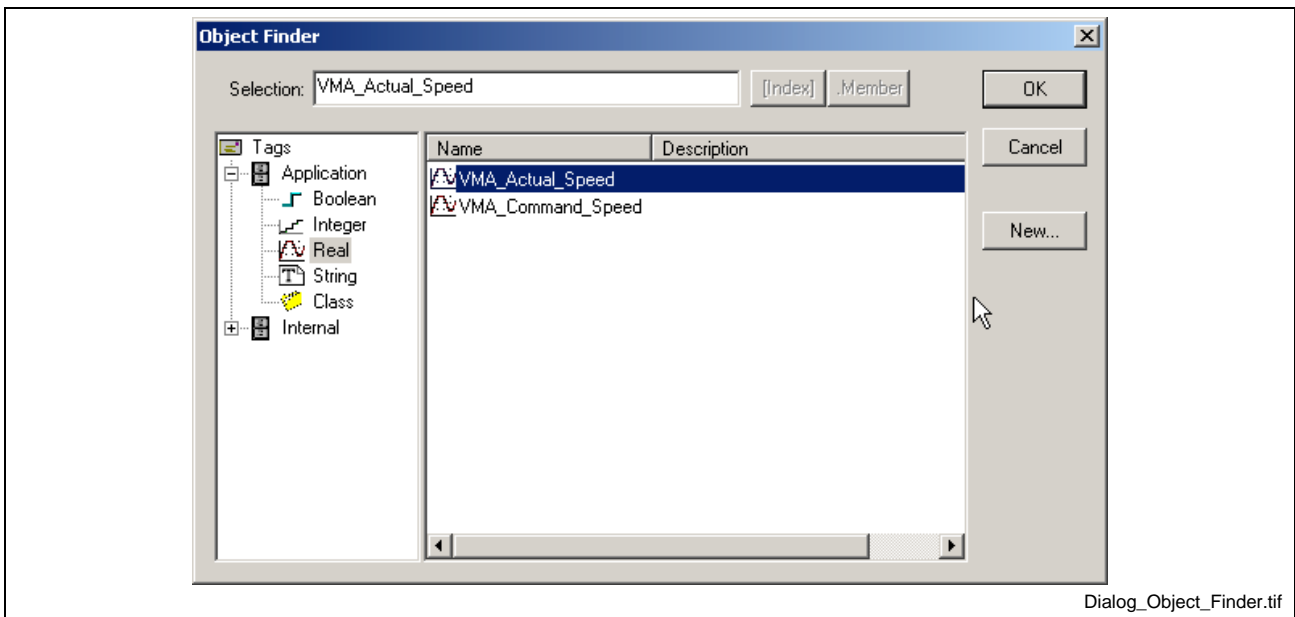
Fig.5-30: Allocation of the tag variables to the control variables

To enter the tag variables proceed as follows:

Dialog "Object Finder"

- With a double-click on a field in column **Tag Name** the **Object-Finder** is opened.
- Here you have to select the tag variable created before from the "Application-Tag data base".

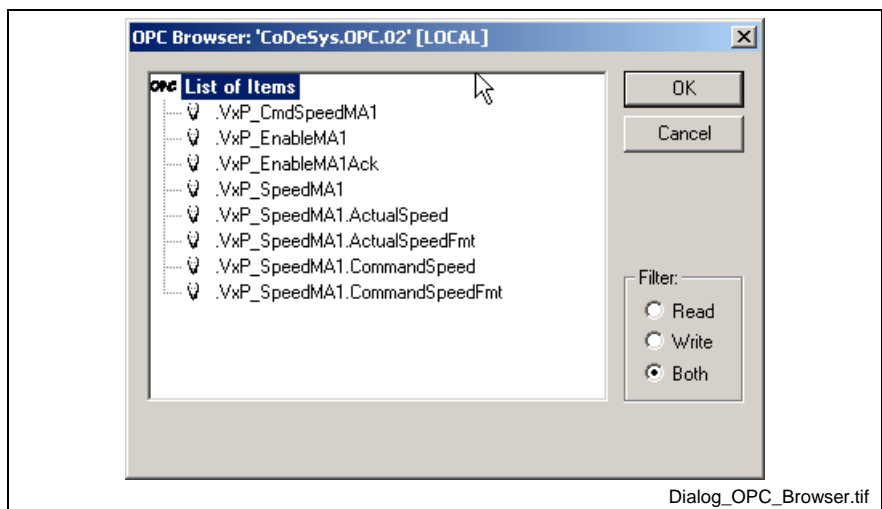
See "Fig.5-31: Dialog Object Finder"

Fig.5-31: Dialog **Object Finder**

To enter the OPC item in the communication sheet proceed as follows:

Dialog OPC Browser

- Click with the right mouse button on a field in column **Item** and select entry **OPC Browser** from the context menu.

Fig.5-32: Dialog **OPC Browser**

- Select the OPC item appendant to the tag variable in dialog **OPC browser** and confirm with **OK**.
- Repeat this procedure for all tag variables until the configuration of "Fig.5-30: Allocation of the tag variables to the control variables" is established.

To discharge the communication select setting **Screen** for all tag variables in column **Scan**.

Now the OPC communication sheet should look as follows:

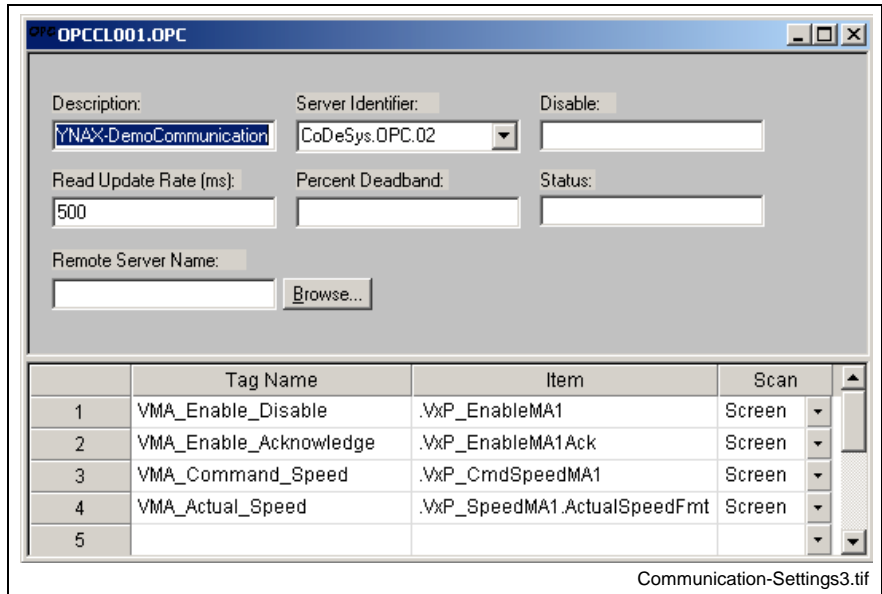





Fig.5-33: OPC communication sheet

The configuration of the example project is completed now.

Save the complete project with a click on the symbol  for **Save All** or with a click on entry **Save All** in menu **File**.

5.5 Starting an application

You have two possibilities to start the application:

1. Directly in WinStudio with a click on symbol  for **Run Application** or with the selection of entry **Run Application** in menu **Project**.
2. With the selection of the start menu entry  **StartUp** in program group **RexrothWinStudio Tools**.

The application should look as follows:

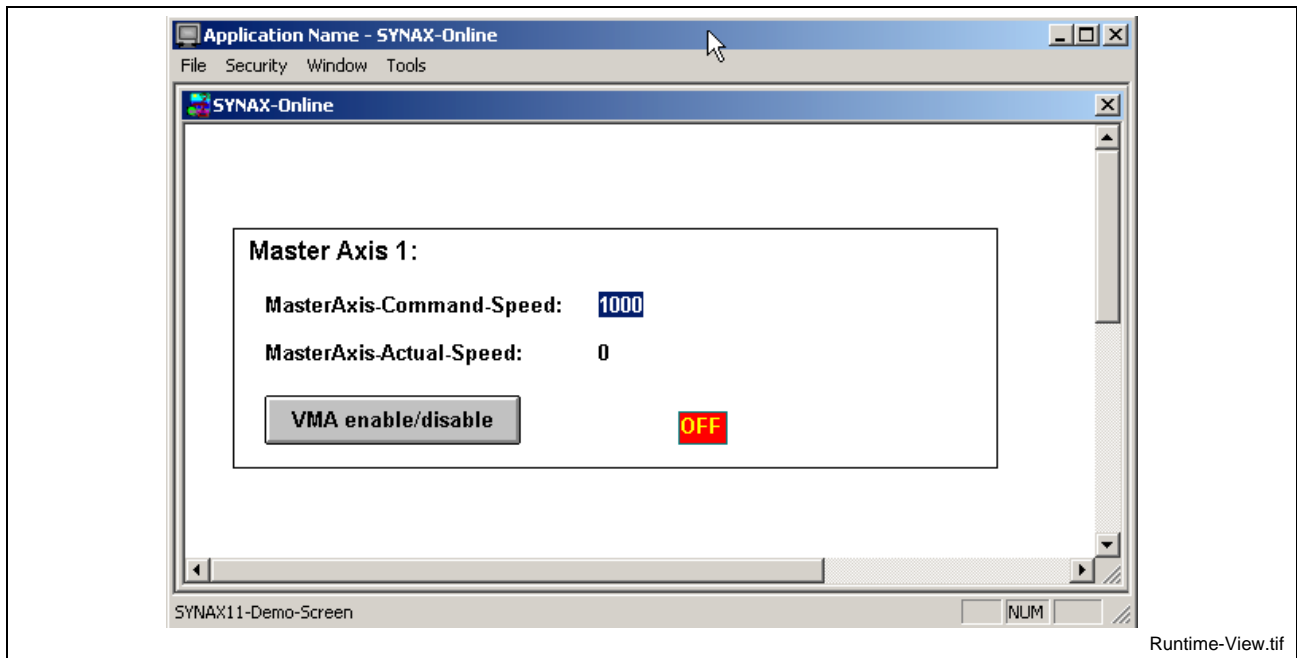
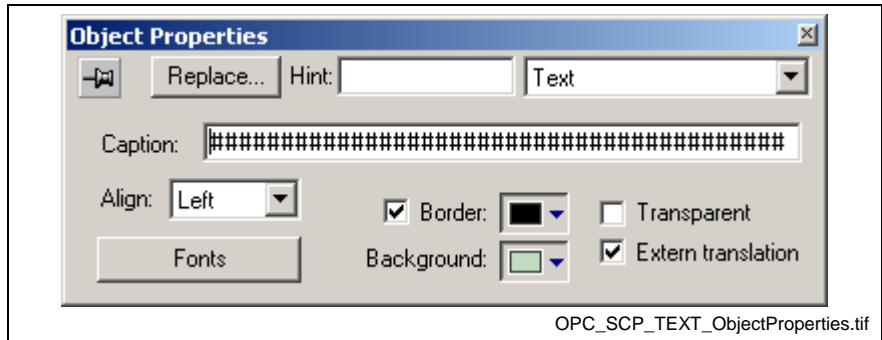


Fig.5-34: Display of the visualization

5.6 Direct access to SYNAX parameters

In addition to the access via IndraLogic variables it is also possible to directly access these parameters of the SYNAX motion control. The SYNAX parameters are not accessed via the CoDeSys-OPC server but directly via the SCP-OPC server.

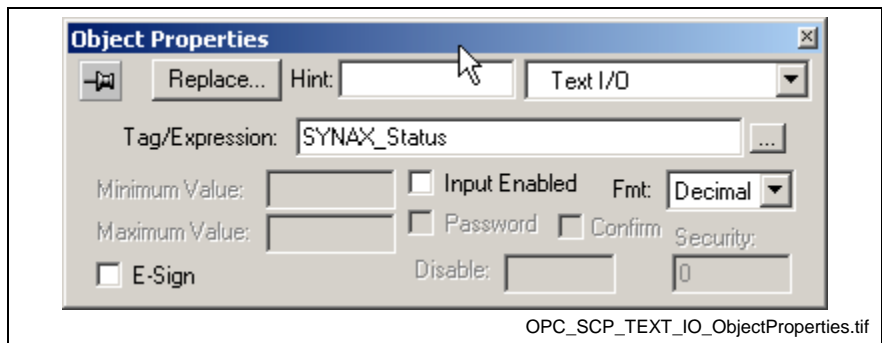
To caption this, the example application is expanded by a dynamical text field. To display the list parameter “Y-0-0047 SYNAX diagnostic text“ with a maximum length of 60 characters you have to enter 60 “#“ as place holders in dialog **Object-Properties** in **Caption**.



OPC_SCP_TEXT_ObjectProperties.tif

Fig.5-35: Dialog **Object Properties - Text**

Enter the tag variable “SYNAX_status“ in Text I/O and store it as string variable.



OPC_SCP_TEXT_IO_ObjectProperties.tif

Fig.5-36: Dialog **Object Properties - Text I/O**

OPC-SCP configuration

To link the tag variables created before with SYNAX parameter "Y-0-0047", you have to create a new communication data sheet and connect it with the OPC server "OPC.SCP.1".

Enter the following configuration:

Tag Name	Item	Scan
SYNTAX_Status	!BSTR,%SCP-Device-Name%,SPA1,00, Y-0-0047,40	Screen

Fig.5-37: OPC-SCP item configuration

Note: Instead of %SCP-Device-Name% enter the device name from your SCP configuration. (see "Fig.5-38: OPC-SCP communication setting")

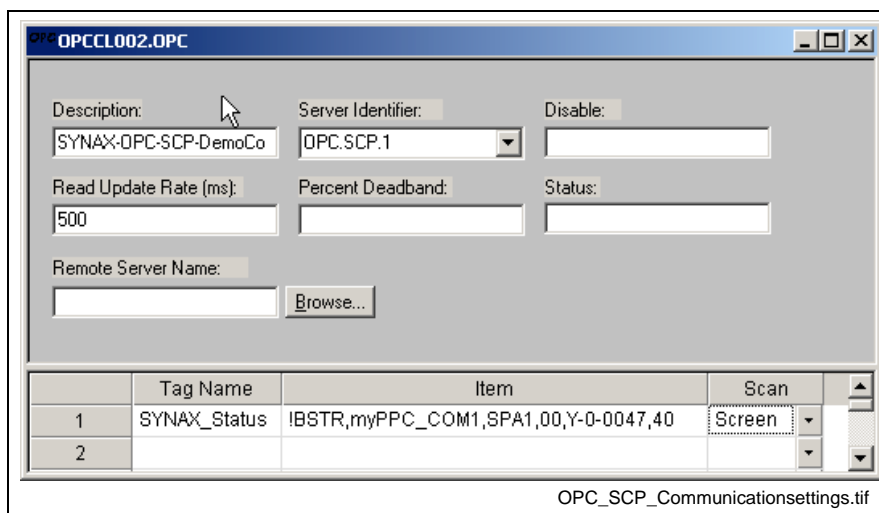


Fig.5-38: OPC-SCP communication setting

OPC-SCP item string

The item string consists of different parts that are separated with a comma and that are explained by means of the items from "Fig.5-38: OPC-SCP communication setting".

Item part of string-	Meaning
!BSTR	data type = string
myPPC_COM1	device name from SCP configuration
SPA1	identification for SERCOS parameter
00	drive address
Y-0-0047	SYNTAX parameter
40	identification for the operating data of the parameter

Fig.5-39: Explanation of the item string

Note: The specification of the data type is obligatory, because at data request without specification of the data type the OPC-SCP server sends the data as variant (array) and the OPC client of the WinStudio can not process it.

Data type identification Available data types:

Item part of string (data type)	COM data type	Description
!I1	VT_I1	Signed short Integer (1 byte)
!I2	VT_I2	Signed Integer (2 bytes)
!I4	VT_I4	Signed double Integer (4 bytes)
!I8	VT_I8	Signed long Integer (8 bytes)
!INT	VT_INT	Signed Integer
!R4	VT_R4	Real (4 bytes)
!R8	VT_R8	Long Real (8 bytes)
!UI1	VT_UI1	Unsigned short Integer (1 byte)
!UI2	VT_UI2	Unsigned Integer (2 bytes)
!UI4	VT_UI4	Unsigned Double Integer (4 bytes)
!UI8	VT_UI8	Unsigned Long Integer (8 bytes)
!UINT	VT_UINT	Unsigned Integer
!BOOL	VT_BOOL	Boolean (1 bit)
!BSTR	VT_BSTR	String
!DATE	VT_DATE	not relevant for SYNAX
!CY	VT_CY	not relevant for SYNAX

Fig.5-40: Available data types

List parameter

The display of list parameters is only possible when specifying the data type string (!BSTR), because at list parameters the actual length in byte is output first, then the maximum length in byte and the operating data afterwards.

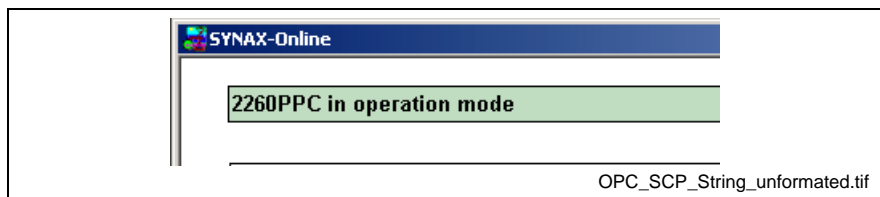


Fig.5-41: List parameter "Y-0-0047" unformatted

Formatting

To display an operating data of the list parameter an additional formatting is required that removes the values for the actual and maximum length. For this we read the actual length of the list parameter and use it for formatting the string variable. The procedure is as follows:

1. Enter a new tag variable with the name `SYNAX_Status_Length` in the communication sheet for OPC-SCP communication and create it as integer variable.

2. Enter the following item string in **Item**.

	Tag Name	Item	Scan
1	SYNAX_Status	IBSTR,myPPC_COM1,SPA1,00,Y-0-0047,40	Screen
2	SYNAX_Status_Length	IINT,myPPC_COM1,SPA1,00,Y-0-0047,40	Screen
3			

OPC_SCP_Communicationsettings2.tif

Fig.5-42: List parameter – Formatting - Data length

3. To format the display use the **StrRight** function. For this change the entry in **Tag/Expression** in dialog **Object Properties** (for Text I/O) from "SYNAX_Status" to "StrRight(SYNAX_Status,(SYNAX_Status_Length))"

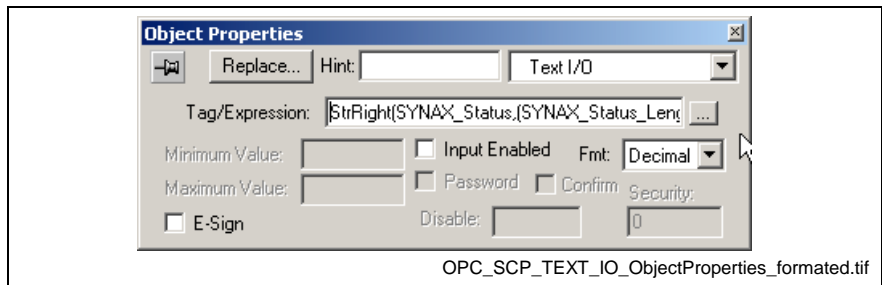


Fig.5-43: Expression for formatting

If the application is started now only the valid content of the list parameters is displayed (without actual and maximum length).

See "Fig.5-44: List parameter "Y-0-0047" format".

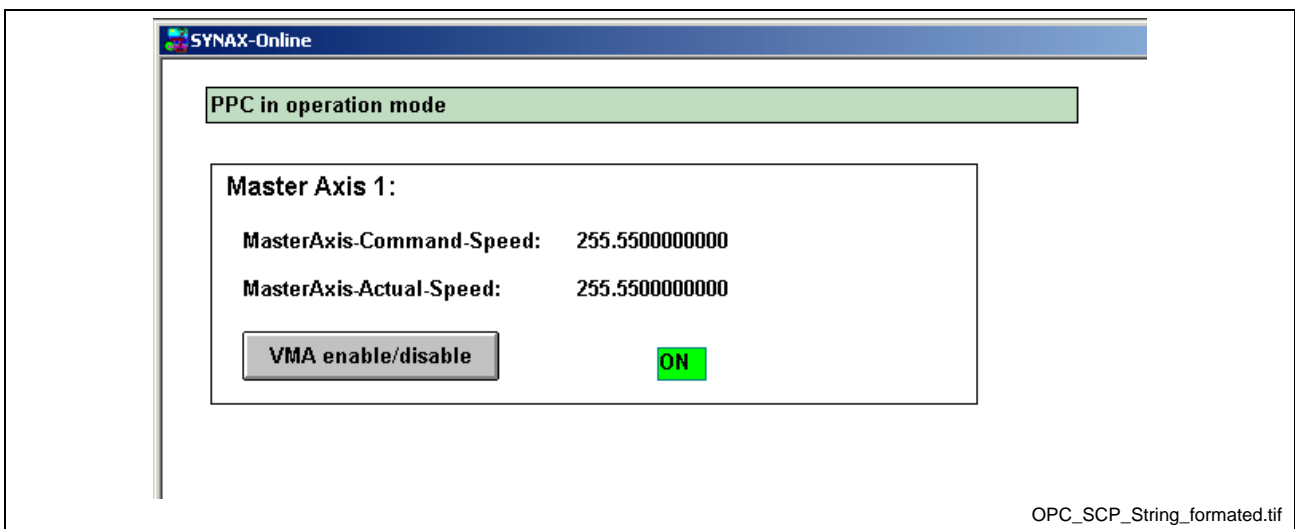


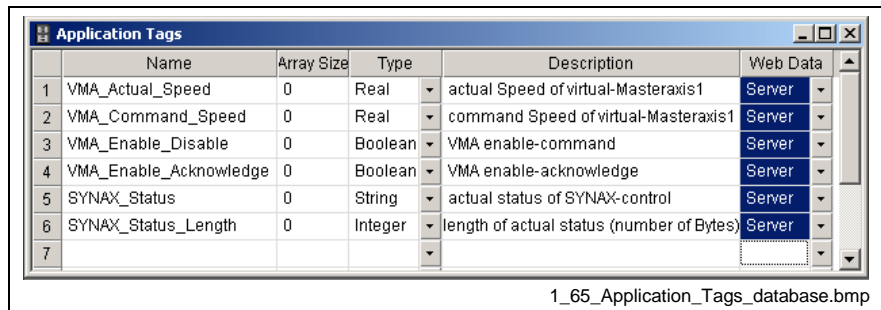
Fig.5-44: List parameter "Y-0-0047" formatted

6 Running the web-based application

This chapter explains how to prepare your application to run on the Web.

To enable the Application Tags to be used on the Web, follow the instructions below.

1. Open the Application Tags database and specify the **"Server"** option instead of **"Local"** in the **"Web Data"** column for all Tags that must exchange value between the Server station and the Web Thin Client station.



	Name	Array Size	Type	Description	Web Data
1	VMA_Actual_Speed	0	Real	actual Speed of virtual-Masteraxis1	Server
2	VMA_Command_Speed	0	Real	command Speed of virtual-Masteraxis1	Server
3	VMA_Enable_Disable	0	Boolean	VMA enable-command	Server
4	VMA_Enable_Acknowledge	0	Boolean	VMA enable-acknowledge	Server
5	SYNTAX_Status	0	String	actual status of SYNTAX-control	Server
6	SYNTAX_Status_Length	0	Integer	length of actual status (number of Bytes)	Server
7					

1_65_Application_Tags_database.bmp

Fig. 6-1: Application Tags database

Note: WinStudio stores all application screens in the **"Screens"** folder, located on the **"Graphics"** tab in the *Workspace*

To open your application screen, use the following steps:

2. Expand the **"Screens"** folder and double-click on **"synax-screen1.scr"**

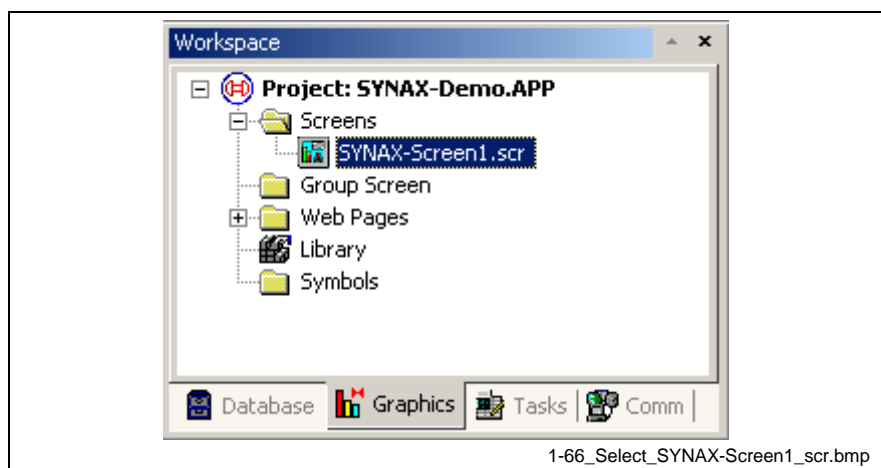


Fig. 6-2: Select `synax-screen1.scr`

3. Select **"File"** & **"Save as HTML"** to save the screen in HTML format.

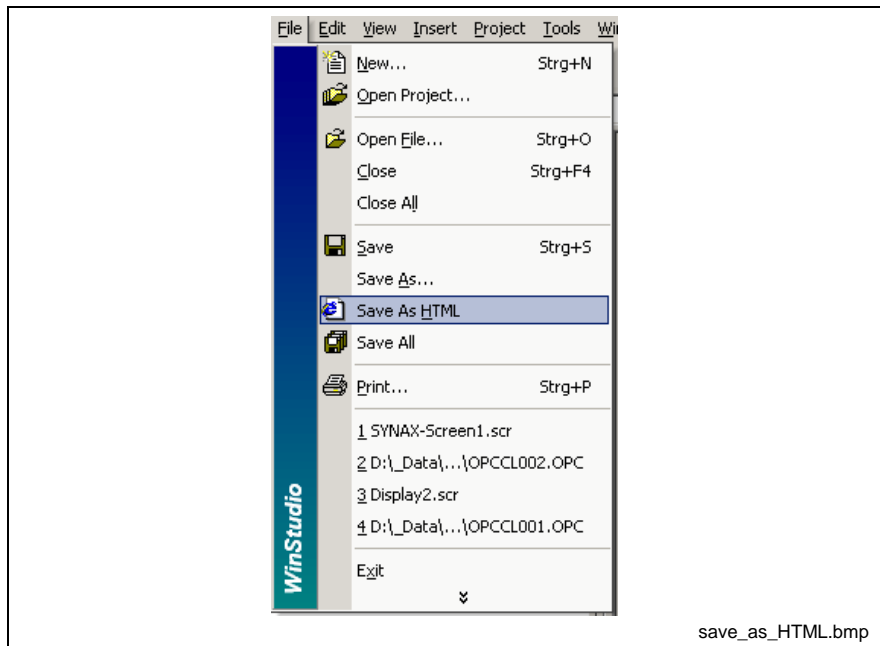


Fig. 6-3: Saving Screens in HTML Format

4. After executing this command, the Web files are stored in the **"Web"** subfolder of the application directory.

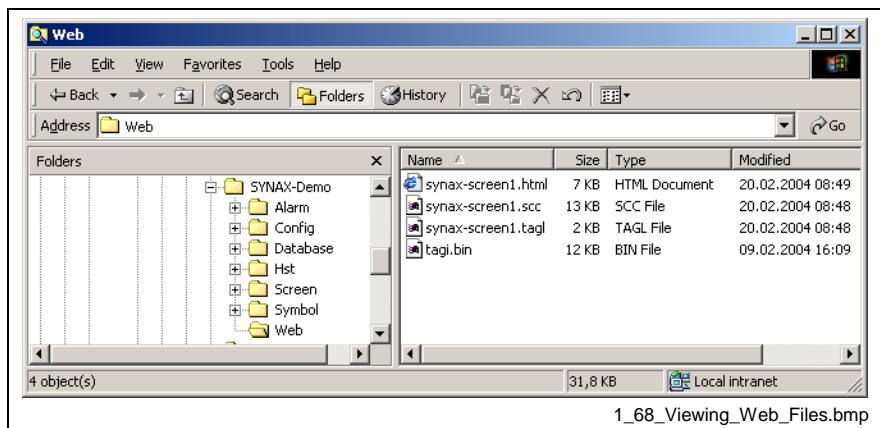


Fig. 6-4: Viewing Web Files

5. Select **"Project"** & **"Status"** from main menu bar and select **"Startup Mode"** **"Automatic"** for **"TCP/IP Server"**
6. Select **"Project"** & **"Settings"** from main menu bar and select the **"Web"** tab.
7. You must specify the Server station IP-address (for the station on which you are running WinStudio or CEView) in the **"Data Server IP Address"** field, during runtime. The Web Thin Client station exchanges on-line data (tag values) with the station specified in this field.

8. You also must specify the URL path to the Web files (files saved in the "**Web**" subfolder) in the "**URL**" field. The URL depends on the Home directory configured for your server station Web Server.

If the application's "**Web**" subfolder is the Home directory, you can configure the Web settings as shown in the following figure to test the Web Thin Client locally.

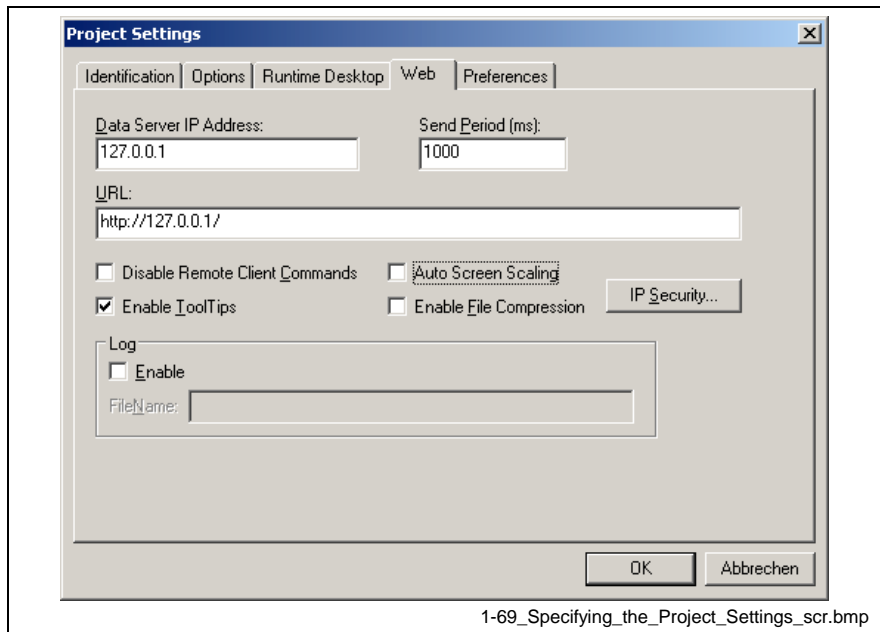



Fig. 6-5: Specifying the Project Settings

Note: Microsoft provides Web servers for any Microsoft operating system. Consult your Microsoft documentation for information about installing and configuring a Web Server.

9. After configuring the Web settings, click "**OK**" to close the "*Project Settings*" dialog.
10. Close all screens in the screen editor ("**File**" \mathbb{E} "**Close All**") and then select "**Tools**" \mathbb{E} "**Verify Application**" to update the Web Settings for the Web pages.

Caution: You must execute "**Tools**" \mathbb{E} "**Verify Application**" after changing any settings in the "**Project Settings**"

To test your Web-based application, use the following steps:

11. Click on Run application icon  (on WinStudio toolbar) to execute the application locally on the Server station.
12. Open an Internet Browser (Microsoft Internet Explorer or Netscape) and type the URL address to open the "**synax-screen1.html**" screen from the Server station (for example: <http://127.0.0.1/synax-screen1.html>)

13. When the "Log On" dialog displays in the Browser (see the following figure), type "guest" in the **User Name** field, then click **OK** to open the "synax-Screen1.html" screen in the Browser.

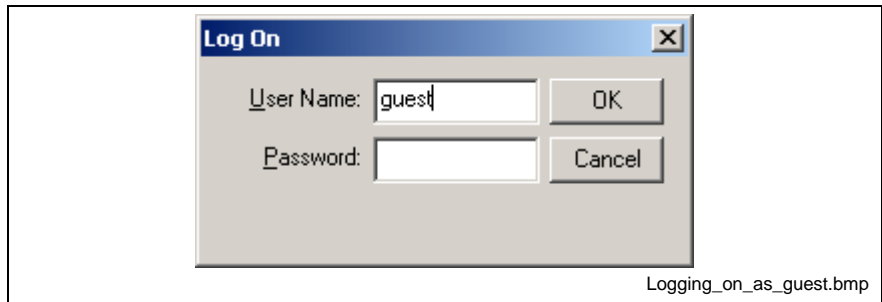


Fig. 6-6: Logging on as guest

Notice that you can modify the speed of SYNAX-virtual master axis locally (Server station) using the Viewer Run-time module or remotely (Web Thin Client) using the Browser.

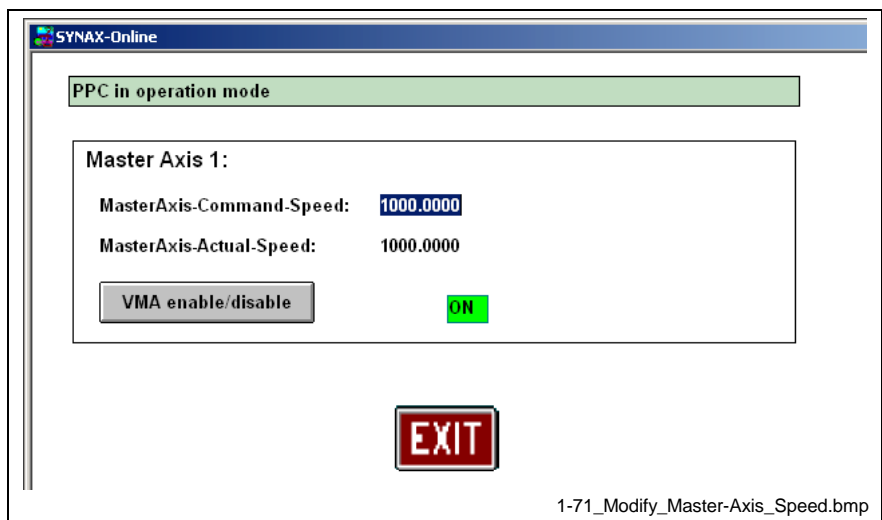


Fig. 6-7: Modifying SYNAX – master axis speed

Note: A Web Thin Client requires an ActiveX component (**ISSymbol.ocx**) to handle screens on the Browser. If you connect the Web Thin Client to the Internet, this component is downloaded and registered automatically.

Otherwise, you must copy the "**ISSymbol.cab**" from WinStudio's "**BIN**" subfolder and past it into the "**%OSPath%\System32**" directory on the Web Thin Client station. Use the WinZip utility to unzip (extract) the files from "**ISSymbol.cab**" into the "**%OSPath%\System32**" directory and register the "**ISSymbol.ocx**" using the "**regsvr32 %OSPath%\ISSymbol.ocx**" command.

7 Running Applications from a remote station

This chapter explains how to run your application from a remote location. After configuring an application and testing it locally (on the development station), you can download it to a remote run-time station that is running WinStudio on Windows NT/2000/XP or CEView on Windows CE.

1. From the remote target station, select **Start** → **WinStudio** → **WinStudio Remote Agent** to verify that the Remote Agent (**CEServer.exe**) is running.
2. When the Remote Agent dialog displays, click the **Setup** button.

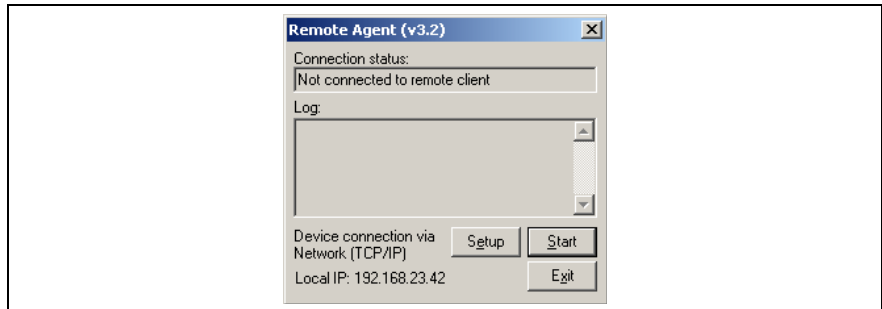


Fig.7-1: Verifying the remote agent

3. When the Setup dialog displays, click **Serial** or **TCP/IP** to specify how the device is connected to the development station.

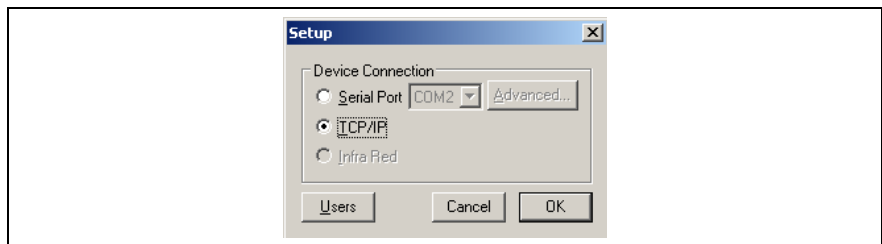


Fig.7-2: Specifying the Device Connection Method

Note: WinStudio recommends using TCP/IP for performance reasons.

4. Click **OK** and leave the Remote Agent running on the remote station.
5. Select **Project** → **Execution Environment** from the main menubar to open the *Execution Environment* dialog.
6. Specify a link type for the Target Station (**Network IP** or **Serial Port**). If you select **Network IP**, type the remote station IP Address into the text box.

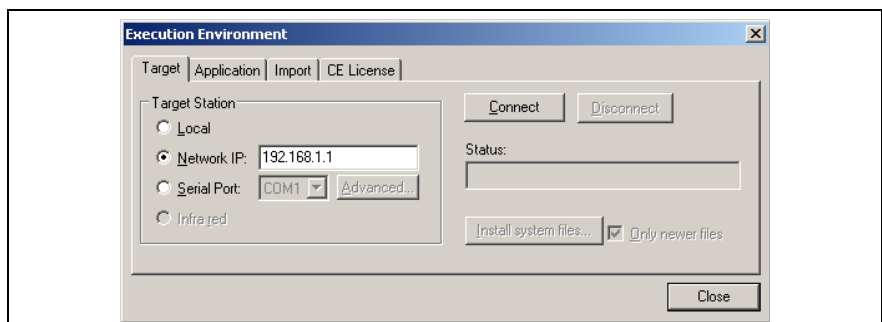


Fig.7-3: Specifying the target station link type

- Click the **Connect** button to connect to the remote station.

Note: If the remote station is a CE device, click the **Install system files** button to download the CEView runtime files to the remote station.

- Return to the *Execution Environment* dialog and select the *Application* tab. Click **Send to Target** to download the application to the remote station.

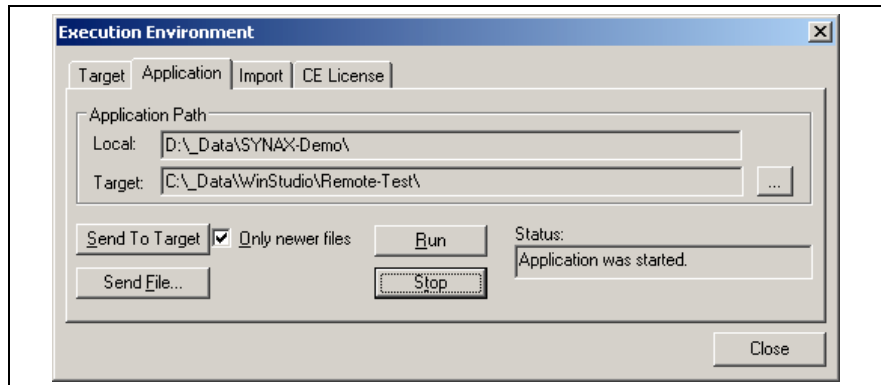


Fig.7-4: Downloading the Application

After all of the application files are downloaded click **Run** to execute the application on the remote target station.

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9 Service & Support

9.1 Helpdesk

Unser Kundendienst-Helpdesk im Hauptwerk Lohr am Main steht Ihnen mit Rat und Tat zur Seite. Sie erreichen uns

Our service helpdesk at our headquarters in Lohr am Main, Germany can assist you in all kinds of inquiries. Contact us

- telefonisch - by phone:
über Service Call Entry Center
- via Service Call Entry Center **49 (0) 9352 40 50 60**
Mo-Fr 07:00-18:00
Mo-Fr 7:00 am - 6:00 pm
- per Fax - by fax: **+49 (0) 9352 40 49 41**
- per e-Mail - by e-mail: service.svc@boschrexroth.de

9.2 Service-Hotline

Außerhalb der Helpdesk-Zeiten ist der Service direkt ansprechbar unter

After helpdesk hours, contact our service department directly at

+49 (0) 171 333 88 26
oder - or **+49 (0) 172 660 04 06**

9.3 Internet

Unter www.boschrexroth.com finden Sie ergänzende Hinweise zu Service, Reparatur und Training sowie die **aktuellen** Adressen *) unserer auf den folgenden Seiten aufgeführten Vertriebs- und Servicebüros.



Verkaufsniederlassungen



Niederlassungen mit Kundendienst

Außerhalb Deutschlands nehmen Sie bitte zuerst Kontakt mit unserem für Sie nächstgelegenen Ansprechpartner auf.

*) Die Angaben in der vorliegenden Dokumentation können seit Drucklegung überholt sein.

At www.boschrexroth.com you may find additional notes about service, repairs and training in the Internet, as well as the **actual** addresses *) of our sales- and service facilities figuring on the following pages.



sales agencies



offices providing service

Please contact our sales / service office in your area first.

*) Data in the present documentation may have become obsolete since printing.

9.4 Vor der Kontaktaufnahme... - Before contacting us...

Wir können Ihnen schnell und effizient helfen wenn Sie folgende Informationen bereithalten:

detaillierte Beschreibung der Störung und der Umstände.

Angaben auf dem Typenschild der betreffenden Produkte, insbesondere Typenschlüssel und Seriennummern.

Tel./Faxnummern und e-Mail-Adresse, unter denen Sie für Rückfragen zu erreichen sind.

For quick and efficient help, please have the following information ready:

1. Detailed description of the failure and circumstances.
2. Information on the type plate of the affected products, especially type codes and serial numbers.
3. Your phone/fax numbers and e-mail address, so we can contact you in case of questions.

9.5 Kundenbetreuungsstellen - Sales & Service Facilities

Deutschland – Germany

vom Ausland:
from abroad:

(0) nach Landeskennziffer weglassen!
don't dial (0) after country code!

<p>Vertriebsgebiet Mitte Germany Centre</p> <p>Rexroth Indramat GmbH Bgm.-Dr.-Nebel-Str. 2 / Postf. 1357 97816 Lohr am Main / 97803 Lohr</p> <p>Kompetenz-Zentrum Europa</p> <p>Tel.: +49 (0)9352 40-0 Fax: +49 (0)9352 40-4885</p>	<p>SERVICE</p> <p>CALL ENTRY CENTER MO – FR von 07:00 - 18:00 Uhr</p> <p>from 7 am – 6 pm</p> <p>Tel. +49 (0) 9352 40 50 60 service.svc@boschrexroth.de</p>	<p>SERVICE</p> <p>HOTLINE MO – FR von 17:00 - 07:00 Uhr from 5 pm - 7 am</p> <p>+ SA / SO</p> <p>Tel.: +49 (0)172 660 04 06 oder / or Tel.: +49 (0)171 333 88 26</p>	<p>SERVICE</p> <p>ERSATZTEILE / SPARES verlängerte Ansprechzeit - extended office time -</p> <p>◆ nur an Werktagen - only on working days -</p> <p>◆ von 07:00 - 18:00 Uhr - from 7 am - 6 pm -</p> <p>Tel. +49 (0) 9352 40 42 22</p>
<p>Vertriebsgebiet Süd Germany South</p> <p>Bosch Rexroth AG Landshuter Allee 8-10 80637 München</p> <p>Tel.: +49 (0)89 127 14-0 Fax: +49 (0)89 127 14-490</p>	<p>Vertriebsgebiet West Germany West</p> <p>Bosch Rexroth AG Regionalzentrum West Borsigstrasse 15 40880 Ratingen</p> <p>Tel.: +49 (0)2102 409-0 Fax: +49 (0)2102 409-406 +49 (0)2102 409-430</p>	<p>Gebiet Südwest Germany South-West</p> <p>Bosch Rexroth AG Service-Regionalzentrum Süd-West Siemensstr.1 70736 Fellbach</p> <p>Tel.: +49 (0)711 51046-0 Fax: +49 (0)711 51046-248</p>	
<p>Vertriebsgebiet Nord Germany North</p> <p>Bosch Rexroth AG Walsroder Str. 93 30853 Langenhagen</p> <p>Tel.: +49 (0) 511 72 66 57-0 Service: +49 (0) 511 72 66 57-256 Fax: +49 (0) 511 72 66 57-93 Service: +49 (0) 511 72 66 57-783</p>	<p>Vertriebsgebiet Mitte Germany Centre</p> <p>Bosch Rexroth AG Regionalzentrum Mitte Waldecker Straße 13 64546 Mörfelden-Walldorf</p> <p>Tel.: +49 (0) 61 05 702-3 Fax: +49 (0) 61 05 702-444</p>	<p>Vertriebsgebiet Ost Germany East</p> <p>Bosch Rexroth AG Beckerstraße 31 09120 Chemnitz</p> <p>Tel.: +49 (0)371 35 55-0 Fax: +49 (0)371 35 55-333</p>	<p>Vertriebsgebiet Ost Germany East</p> <p>Bosch Rexroth AG Regionalzentrum Ost Walter-Köhn-Str. 4d 04356 Leipzig</p> <p>Tel.: +49 (0)341 25 61-0 Fax: +49 (0)341 25 61-111</p>

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from abroad: don't dial (0) after country code, **Italy:** dial 0 after country code

<p>Austria - Österreich</p> <p>Bosch Rexroth GmbH Electric Drives & Controls Stachegasse 13 1120 Wien</p> <p>Tel.: +43 (0)1 985 25 40 Fax: +43 (0)1 985 25 40-93</p>	<p>Austria – Österreich</p> <p>Bosch Rexroth GmbH Electric Drives & Controls Industriepark 18 4061 Pasching</p> <p>Tel.: +43 (0)7221 605-0 Fax: +43 (0)7221 605-21</p>	<p>Belgium - Belgien</p> <p>Bosch Rexroth AG Electric Drives & Controls Industrielaan 8 1740 Ternat</p> <p>Tel.: +32 (0)2 5830719 - service: +32 (0)2 5830717 Fax: +32 (0)2 5830731 service@boschrexroth.be</p>	<p>Denmark - Dänemark</p> <p>BEC A/S Zinkvej 6 8900 Randers</p> <p>Tel.: +45 (0)87 11 90 60 Fax: +45 (0)87 11 90 61</p>
<p>Great Britain – Großbritannien</p> <p>Bosch Rexroth Ltd. Electric Drives & Controls Broadway Lane, South Cerney Cirencester, Glos GL7 5UH</p> <p>Tel.: +44 (0)1285 863000 Fax: +44 (0)1285 863030 sales@boschrexroth.co.uk service@boschrexroth.co.uk</p>	<p>Finland - Finnland</p> <p>Bosch Rexroth Oy Electric Drives & Controls Ansatie 6 017 40 Vantaa</p> <p>Tel.: +358 (0)9 84 91-11 Fax: +358 (0)9 84 91-13 60</p>	<p>France - Frankreich</p> <p>Bosch Rexroth SAS Electric Drives & Controls Avenue de la Trentaine (BP. 74) 77503 Chelles Cedex</p> <p>Tel.: +33 (0)164 72-70 00 Fax: +33 (0)164 72-63 00 Hotline: +33 (0)608 33 43 28</p>	<p>France - Frankreich</p> <p>Bosch Rexroth SAS Electric Drives & Controls ZI de Thibaud, 20 bd. Thibaud (BP. 1751) 31084 Toulouse</p> <p>Tel.: +33 (0)5 61 43 61 87 Fax: +33 (0)5 61 43 94 12</p>
<p>France – Frankreich</p> <p>Bosch Rexroth SAS Electric Drives & Controls 91, Bd. Irène Joliot-Curie 69634 Vénissieux – Cedex</p> <p>Tel.: +33 (0)4 78 78 53 65 Fax: +33 (0)4 78 78 53 62</p>	<p>Italy - Italien</p> <p>Bosch Rexroth S.p.A. Via G. Di Vittoria, 1 20063 Cernusco S/N.MI</p> <p>Tel.: +39 02 92 365 1 +39 02 92 365 326 Fax: +39 02 92 365 500 +39 02 92 365 516378</p>	<p>Italy - Italien</p> <p>Bosch Rexroth S.p.A. Via Paolo Veronesi, 250 10148 Torino</p> <p>Tel.: +39 011 224 88 11 Fax: +39 011 224 88 30</p>	<p>Italy - Italien</p> <p>Bosch Rexroth S.p.A. Via del Progresso, 16 (Zona Ind.) 35020 Padova</p> <p>Tel.: +39 049 8 70 13 70 Fax: +39 049 8 70 13 77</p>
<p>Italy - Italien</p> <p>Bosch Rexroth S.p.A. Via Mascia, 1 80053 Castellammare di Stabia NA</p> <p>Tel.: +39 081 8 71 57 00 Fax: +39 081 8 71 68 85</p>	<p>Italy - Italien</p> <p>Bosch Rexroth S.p.A. Via Isonzo, 61 40033 Casalecchio di Reno (Bo)</p> <p>Tel.: +39 051 29 86 430 Fax: +39 051 29 86 490</p>	<p>Netherlands - Niederlande/Holland</p> <p>Bosch Rexroth Services B.V. Technical Services Kruisbroeksestraat 1 (P.O. Box 32) 5281 RV Boxtel</p> <p>Tel.: +31 (0) 411 65 16 40 +31 (0) 411 65 17 27 Fax: +31 (0) 411 67 78 14 +31 (0) 411 68 28 60 services@boschrexroth.nl</p>	<p>Netherlands – Niederlande/Holland</p> <p>Bosch Rexroth B.V. Kruisbroeksestraat 1 (P.O. Box 32) 5281 RV Boxtel</p> <p>Tel.: +31 (0) 411 65 19 51 Fax: +31 (0) 411 65 14 83 www.boschrexroth.nl</p>
<p>Norway - Norwegen</p> <p>Bosch Rexroth AS Electric Drives & Controls Berghagan 1 or: Box 3007 1405 Ski-Langhus 1402 Ski</p> <p>Tel.: +47 (0)64 86 41 00 Fax: +47 (0)64 86 90 62 jul.ruud@rexroth.no</p>	<p>Spain - Spanien</p> <p>Bosch Rexroth S.A. Electric Drives & Controls Centro Industrial Santiga Obradors s/n 08130 Santa Perpetua de Mogoda Barcelona</p> <p>Tel.: +34 9 37 47 94 00 Fax: +34 9 37 47 94 01</p>	<p>Spain – Spanien</p> <p>Goimendi S.A. Electric Drives & Controls Parque Empresarial Zuatzu C/ Francisco Grandmontagne no.2 20018 San Sebastian</p> <p>Tel.: +34 9 43 31 84 21 - service: +34 9 43 31 84 56 Fax: +34 9 43 31 84 27 - service: +34 9 43 31 84 60 sat.indramat@goimendi.es</p>	<p>Sweden - Schweden</p> <p>Bosch Rexroth AB Electric Drives & Controls - Varuvågen 7 (Service: Konsumentvägen 4, Älfsjö) 125 81 Stockholm</p> <p>Tel.: +46 (0)8 727 92 00 Fax: +46 (0)8 647 32 77</p>
<p>Sweden - Schweden</p> <p>Bosch Rexroth AB Electric Drives & Controls Ekvåndan 7 254 67 Helsingborg</p> <p>Tel.: +46 (0) 42 38 88 -50 Fax: +46 (0) 42 38 88 -74</p>	<p>Switzerland West - Schweiz West</p> <p>Bosch Rexroth Suisse SA Electric Drives & Controls Rue du village 1 1020 Renens</p> <p>Tel.: +41 (0)21 632 84 20 Fax: +41 (0)21 632 84 21</p>	<p>Switzerland East - Schweiz Ost</p> <p>Bosch Rexroth Schweiz AG Electric Drives & Controls Hemrietstrasse 2 8863 Buttikon</p> <p>Tel. +41 (0) 55 46 46 111 Fax +41 (0) 55 46 46 222</p>	

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Poland – Polen Bosch Rexroth Sp.zo.o. Biuro Poznan ul. Dabrowskiego 81/85 60-529 Poznan Tel.: +48 061 847 64 62 /-63 Fax: +48 061 847 64 02	Romania - Rumänien East Electric S.R.L. Bdul Basarabia no.250, sector 3 73429 Bucuresti Tel./Fax.: +40 (0)21 255 35 07 +40 (0)21 255 77 13 Fax: +40 (0)21 725 61 21 eastel@rdsnet.ro	Romania - Rumänien Bosch Rexroth Sp.zo.o. Str. Drobety nr. 4-10, app. 14 70258 Bucuresti, Sector 2 Tel.: +40 (0)1 210 48 25 +40 (0)1 210 29 50 Fax: +40 (0)1 210 29 52	Russia - Russland Bosch Rexroth OOO Wjatskaja ul. 27/15 127015 Moskau Tel.: +7-095-785 74 78 +7-095 785 74 79 Fax: +7 095 785 74 77 laura.kanina@boschrexroth.ru
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<p>Australia - Australien</p> <p>AIMS - Australian Industrial Machinery Services Pty. Ltd. 28 Westside Drive Laverton North Vic 3026 Melbourne</p> <p>Tel.: +61 3 93 59 0228 Fax: +61 3 93 59 0286 Hotline: +61 4 19 369 195 enquires@aimservices.com.au</p>	<p>Australia - Australien</p> <p>Bosch Rexroth Pty. Ltd. No. 7, Endeavour Way Braeside Victoria, 31 95 Melbourne</p> <p>Tel.: +61 3 95 80 39 33 Fax: +61 3 95 80 17 33 mel@rexroth.com.au</p>	<p>China</p> <p>Shanghai Bosch Rexroth Hydraulics & Automation Ltd. Waigaoqiao, Free Trade Zone No.122, Fu Te Dong Yi Road Shanghai 200131 - P.R.China</p> <p>Tel.: +86 21 58 66 30 30 Fax: +86 21 58 66 55 23 richard.yang_sh@boschrexroth.com.cn gf.zhu_sh@boschrexroth.com.cn</p>	<p>China</p> <p>Shanghai Bosch Rexroth Hydraulics & Automation Ltd. 4/f, Marine Tower No.1, Pudong Avenue Shanghai 200120 - P.R.China</p> <p>Tel.: +86 21 68 86 15 88 Fax: +86 21 58 40 65 77</p>
<p>China</p> <p>Bosch Rexroth China Ltd. 15/F China World Trade Center 1, Jianguomenwai Avenue Beijing 100004, P.R.China</p> <p>Tel.: +86 10 65 05 03 80 Fax: +86 10 65 05 03 79</p>	<p>China</p> <p>Bosch Rexroth China Ltd. Guangzhou Repres. Office Room 1014-1016, Metro Plaza, Tian He District, 183 Tian He Bei Rd Guangzhou 510075, P.R.China</p> <p>Tel.: +86 20 8755-0030 +86 20 8755-0011 Fax: +86 20 8755-2387</p>	<p>China</p> <p>Bosch Rexroth (China) Ltd. A-5F., 123 Lian Shan Street Sha He Kou District Dalian 116 023, P.R.China</p> <p>Tel.: +86 411 46 78 930 Fax: +86 411 46 78 932</p>	<p>China</p> <p>Melchers GmbH BRC-SE, Tightening & Press-fit 13 Floor Est Ocean Centre No.588 Yanan Rd. East 65 Yanan Rd. West Shanghai 200001</p> <p>Tel.: +86 21 6352 8848 Fax: +86 21 6351 3138</p>
<p>Hongkong</p> <p>Bosch Rexroth (China) Ltd. 6th Floor, Yeung Yiu Chung No.6 Ind Bldg. 19 Cheung Shun Street Cheung Sha Wan, Kowloon, Hongkong</p> <p>Tel.: +852 22 62 51 00 Fax: +852 27 41 33 44 alexis.siu@boschrexroth.com.hk</p>	<p>India - Indien</p> <p>Bosch Rexroth (India) Ltd. Electric Drives & Controls Plot. No.96, Phase III Peenya Industrial Area Bangalore – 560058</p> <p>Tel.: +91 80 51 17 0-211...-218 Fax: +91 80 83 94 345 +91 80 83 97 374 mohanvelu.t@boschrexroth.co.in</p>	<p>India - Indien</p> <p>Bosch Rexroth (India) Ltd. Electric Drives & Controls Advance House, II Floor Ark Industrial Compound Narol Naka, Makwana Road Andheri (East), Mumbai - 400 059</p> <p>Tel.: +91 22 28 56 32 90 +91 22 28 56 33 18 Fax: +91 22 28 56 32 93 singh.op@boschrexroth.co.in</p>	<p>India - Indien</p> <p>Bosch Rexroth (India) Ltd. S-10, Green Park Extension New Delhi – 110016</p> <p>Tel.: +91 11 26 56 65 25 +91 11 26 56 65 27 Fax: +91 11 26 56 68 87 koul.rp@boschrexroth.co.in</p>
<p>Indonesia - Indonesien</p> <p>PT. Bosch Rexroth Building # 202, Cilandak Commercial Estate Jl. Cilandak KKO, Jakarta 12560</p> <p>Tel.: +62 21 7891169 (5 lines) Fax: +62 21 7891170 - 71</p>	<p>Japan</p> <p>Bosch Rexroth Automation Corp. Service Center Japan Yutakagaoka 1810, Meito-ku, NAGOYA 465-0035, Japan</p> <p>Tel.: +81 52 777 88 41 +81 52 777 88 53 +81 52 777 88 79 Fax: +81 52 777 89 01</p>	<p>Japan</p> <p>Bosch Rexroth Automation Corp. Electric Drives & Controls 1F, I.R. Building Nakamachidai 4-26-44, Tsuzuki-ku YOKOHAMA 224-0041, Japan</p> <p>Tel.: +81 45 942 72 10 Fax: +81 45 942 03 41</p>	<p>Korea</p> <p>Bosch Rexroth-Korea Ltd. Electric Drives and Controls Bongwoo Bldg. 7FL, 31-7, 1Ga Jangchoong-dong, Jung-gu Seoul, 100-391</p> <p>Tel.: +82 234 061 813 Fax: +82 222 641 295</p>
<p>Korea</p> <p>Bosch Rexroth-Korea Ltd. 1515-14 Dadae-Dong, Saha-Ku Electric Drives & Controls Pusan Metropolitan City, 604-050</p> <p>Tel.: +82 51 26 00 741 Fax: +82 51 26 00 747 gyhan@rexrothkorea.co.kr</p>	<p>Malaysia</p> <p>Bosch Rexroth Sdn.Bhd. 11, Jalan U8/82, Seksyen U8 40150 Shah Alam Selangor, Malaysia</p> <p>Tel.: +60 3 78 44 80 00 Fax: +60 3 78 45 48 00 hockhwa@hotmail.com rexroth1@tm.net.my</p>	<p>Singapore - Singapur</p> <p>Bosch Rexroth Pte Ltd 15D Tuas Road Singapore 638520</p> <p>Tel.: +65 68 61 87 33 Fax: +65 68 61 18 25 sanjay.nemade@boschrexroth.com.sg</p>	<p>South Africa - Südafrika</p> <p>TECTRA Automation (Pty) Ltd. 71 Watt Street, Meadowdale Edenvale 1609</p> <p>Tel.: +27 11 971 94 00 Fax: +27 11 971 94 40 Hotline: +27 82 903 29 23 georgv@tectra.co.za</p>
<p>Taiwan</p> <p>Bosch Rexroth Co., Ltd. Taichung Branch 1F., No. 29, Fu-Ann 5th Street, Xi-Tun Area, Taichung City Taiwan, R.O.C.</p> <p>Tel.: +886 - 4 -23580400 Fax: +886 - 4 -23580402 charlie.chen@boschrexroth.com.tw jim.lin@boschrexroth.com.tw david.lai@boschrexroth.com.tw</p>	<p>Thailand</p> <p>NC Advance Technology Co. Ltd. 59/76 Moo 9 Ramintra road 34 Tharang, Bangkhen, Bangkok 10230</p> <p>Tel.: +66 2 943 70 62 +66 2 943 71 21 Fax: +66 2 509 23 62 sonkawin@hotmail.com</p>		

Nordamerika – North America

USA Headquarters - Hauptniederlassung Bosch Rexroth Corporation Electric Drives & Controls 5150 Prairie Stone Parkway Hoffman Estates, IL 60192-3707 Tel.: +1 847 6 45 36 00 Fax: +1 847 6 45 62 01 servicebrc@boschrexroth-us.com repairbrc@boschrexroth-us.com	USA Central Region - Mitte Bosch Rexroth Corporation Electric Drives & Controls Central Region Technical Center 1701 Harmon Road Auburn Hills, MI 48326 Tel.: +1 248 3 93 33 30 Fax: +1 248 3 93 29 06	USA Southeast Region - Südwest Bosch Rexroth Corporation Electric Drives & Controls Southeastern Technical Center 3625 Swiftwater Park Drive Suwanee, Georgia 30124 Tel.: +1 770 9 32 32 00 Fax: +1 770 9 32 19 03	USA SERVICE-HOTLINE - 7 days x 24hrs - +1-800-REX-ROTH +1-800-739-7684
USA East Region – Ost Bosch Rexroth Corporation Electric Drives & Controls Charlotte Regional Sales Office 14001 South Lakes Drive Charlotte, North Carolina 28273 Tel.: +1 704 5 83 97 62 +1 704 5 83 14 86	USA Northeast Region – Nordost Bosch Rexroth Corporation Electric Drives & Controls Northeastern Technical Center 99 Rainbow Road East Granby, Connecticut 06026 Tel.: +1 860 8 44 83 77 Fax: +1 860 8 44 85 95	USA West Region – West Bosch Rexroth Corporation 7901 Stoneridge Drive, Suite 220 Pleasant Hill, California 94588 Tel.: +1 925 227 10 84 Fax: +1 925 227 10 81	
Canada East - Kanada Ost Bosch Rexroth Canada Corporation Burlington Division 3426 Mainway Drive Burlington, Ontario Canada L7M 1A8 Tel.: +1 905 335 55 11 Fax: +1 905 335-41 84 michael.moro@boschrexroth.ca	Canada West - Kanada West Bosch Rexroth Canada Corporation 5345 Goring St. Burnaby, British Columbia Canada V7J 1R1 Tel.: +1 604 205-5777 Fax: +1 604 205-6944 david.gunby@boschrexroth.ca	Mexico Bosch Rexroth Mexico S.A. de C.V. Calle Neptuno 72 Unidad Ind. Vallejo 07700 Mexico, D.F. Tel.: +52 55 57 54 17 11 Fax: +52 55 57 54 50 73 mariofelipe.hernandez@boschrexroth.com.mx	Mexico Bosch Rexroth S.A. de C.V. Calle Argentina No 3913 Fracc. las Torres 64930 Monterrey, N.L. Tel.: +52 81 83 65 22 53 +52 81 83 65 89 11 +52 81 83 49 80 91 Fax: +52 81 83 65 52 80 mario.quiroga@boschrexroth.com.mx

Südamerika – South America

Argentina - Argentinien Bosch Rexroth S.A.I.C. "The Drive & Control Company" Acassuso 48 41/47 1605 Munro Provincia de Buenos Aires Tel.: +54 11 4756 01 40 Fax: +54 11 4756 01 36 victor.jabif@boschrexroth.com.ar	Argentina - Argentinien NAKASE Servicio Tecnico CNC Calle 49, No. 5764/66 B1653AOX Villa Balester Provincia de Buenos Aires Tel.: +54 11 4768 36 43 Fax: +54 11 4768 24 13 nakase@usa.net nakase@nakase.com gerencia@nakase.com (Service)	Brazil - Brasilien Bosch Rexroth Ltda. Av. Tégula, 888 Ponte Alta, Atibaia SP CEP 12942-440 Tel.: +55 11 4414 56 92 +55 11 4414 56 84 Fax sales: +55 11 4414 57 07 Fax serv.: +55 11 4414 56 86 alexandre.wittwer@rexroth.com.br	Brazil - Brasilien Bosch Rexroth Ltda. R. Dr.Humberto Pinheiro Vieira, 100 Distrito Industrial [Caixa Postal 1273] 89220-390 Joinville - SC Tel./Fax: +55 47 473 58 33 Mobil: +55 47 9974 6645 prochnow@zaz.com.br
Columbia - Kolumbien Reflutec de Colombia Ltda. Calle 37 No. 22-31 Santafé de Bogotá, D.C. Colombia Tel.: +57 1 368 82 67 +57 1 368 02 59 Fax: +57 1 268 97 37 reflutec@neutel.com.co reflutec@007mundo.com			

Bosch Rexroth AG
Electric Drives and Controls
P.O. Box 13 57
97803 Lohr, Germany
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr, Germany
Phone +49 93 52-40-50 60
Fax +49 93 52-40-49 41
service.svc@boschrexroth.de
www.boschrexroth.com

