Kollmorgen Visualization Builder™
User Manual
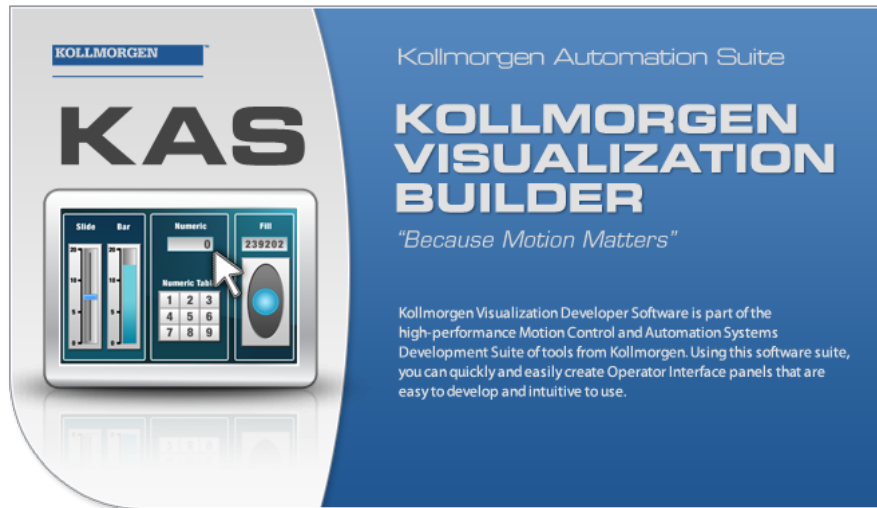
Edition May 2012

KOLLMORGEN

Because Motion Matters™

Record of Document Revisions

Revision	Remarks
7/30/2010	Preliminary edition
5/2/2012	Added additional information about importing tags from KAS IDE

Preface

The Kollmorgen Visualization Builder (KVB) software is used to configure HMI panels and PC operated control applications, including applications for PACs (Programmable Automation Controller) from Kollmorgen.

The Kollmorgen Visualization Builder makes it easy to create logical, flexible and effective HMI applications that provide the right information on the right occasion to operators and to other systems.

This User Manual provides detailed information regarding the features of Kollmorgen Visualization Builder.

For information that describes a step-by-step design of a project for Kollmorgen Visualization Builder, please refer to the Kollmorgen Visualization Builder Quick Start Guide.

IMPORTANT NOTICE

May 2012

1   THE CONFIGURATION TOOL

The Kollmorgen Visualization Builder software is used to configure Advanced Kollmorgen Interface (AKI) and PC operated control applications, including applications for Industrial PCs from Kollmorgen.

Kollmorgen Visualization Builder contains all basic functions needed in an application. The functions are tested and developed with customer needs and preferences in focus.

Pre-defined objects in Kollmorgen Visualization Builder can be used to create complete process images, providing an overview of a complex application. You can customize the pre-defined objects or create objects of your own.

Communication drivers for a large number of controllers and automation equipment are available.

1.1   Controller

Operator panels can be connected to many types of automation equipment, such as PLCs, servos, and drives. Further on, the expression controller is used as a general term for the connected equipment.

1.2   Tags

Data values in a controller are referred to as tags. A tag has a symbolic name and can be of different data types.

Objects connected to tags can change values in the controller, and tag values can be reflected by changing object appearance in various ways. Objects in a screen will remain static until connected to a tag.

1.3   Kollmorgen Visualization Builder System Requirements

The following table provides the recommended system requirements for Visualization Builder.

Visualization Builder System Requirements	
RAM	2 GB
Processor	2 GHz or higher
Operating system	Microsoft Windows XP
Media player	Microsoft Media Player version 10 or later

1.3.1   Updates

Software, drivers and protocols may have been updated since the USB stick was produced. Therefore, it is recommended that you use the built-in update function in Kollmorgen Visualization Builder before creating a project.

1.4   Kollmorgen Visualizer RT System Requirements

The following table provides the recommended system requirements for the Visualizer RT.

Visualizer RT System Requirements	
RAM	1 GB
Processor	1.3 GHz or higher
Operating system	Microsoft Windows XP
Media player	Microsoft Media Player version 10 or later

Note: When user interface applications are running on a Kollmorgen panel-based PAC, ensure the USB hardware key, AKC-HMI-RK-xxx, is installed.

1.5   Getting Started

Kollmorgen Visualization Builder is installed on a development PC, where projects are developed, designed and compiled. The project is then transferred to an operator panel, EPC or PC to observe and control a controller (or a group of controllers).

1.5.1   Target

Kollmorgen Visualization Builder projects can be targeted for

- An Advanced Kollmorgen Interface (AKI) from Kollmorgen

- An Industrial PC from Kollmorgen

- A standard PC with Microsoft Windows XP Service Pack 2 or Microsoft Windows Vista

To enhance readability, only operator panel will be mentioned sometimes, when all different targets actually could be included.

The functions in the configuration tool depend on the model of operator panel used.

1.5.2   License

A project for an Advanced Kollmorgen Interface (AKI) can be used without any restrictions imposed by licensing.

A limited number of controller tags are available for a standard PC project. The number of tags is controlled by a USB hardware dongle.

The industrial PCs from Kollmorgen have a fixed limit of tags.

The number of used controller tags (including DEMO controller tags) is shown in the lower right of the desktop. The figures will turn red if the number of used tags becomes larger than the number of available tags.

There are no license restrictions for internal tags.

1.5.3 Product Registration

The first time Kollmorgen Visualization Builder is started, a registration dialog is displayed, in order to supply you with a registration key. Entering the registration key provides unlimited access to all program functionality and software updates.

Alternatively, select to continue using a trial version of the software. You may evaluate Kollmorgen Visualization Builder with full functionality for 30 days. When the evaluation period has expired, it will still be possible to use the software, but with reduced functionality.

1.5.4 Project Size

The project size is shown in the lower right of the desktop area when designing an operator panel project. The size was calculated at the latest validation.

1.6 Installation

The Kollmorgen Visualization Builder software is supplied on a USB stick. When connecting the USB stick to the USB port, the installation will start automatically. Follow the instructions to install the configuration tool. If the installation does not start, run the setup.exe file.

The installation creates an icon for the configuration tool in the group named Kollmorgen Visualization Builder.

Click on Start/All Programs/Kollmorgen Visualization Builder/Kollmorgen Visualization Builder to start the configuration tool.

1.7 File Structure

The top folder for a specific application designed with Kollmorgen Visualization Builder is referred to as the project folder.

During runtime, project database files can be updated, for example with new recipes. This means that to completely reproduce a project that has been in operation, it may be necessary to combine source files with files retrieved from the operator panel.

A project contains a set of files related to the functional and graphical design and a set of files related to the runtime operation of the project, where the latter is compiled from the design files.

1.7.1 Project Folder

When a new project is created, a folder with the project name is created as the top-level container, the Project folder. The files that define the functional and graphical design reside in the top level of the project folder. Other folders are created as a result of validation and build.

1.7.2   Symbols

Images that are used in projects are converted to .png files when the project is validated.

Images are resized to the largest static usage in any of the project screens, in order to save memory space in the panel. If an image is enlarged in runtime using dynamics, the enlarged image will have a lower effective resolution.

Project images are stored in the Symbols folder as a compressed folder named Symbols.zip.

1.7.3   Output

The Output folder contains all files needed to run the project in the operator panel. These files will be copied to the target with the transfer command.

1.7.4   Temp

The Temp folder contains intermediate build files from project compilation. This folder is removed when closing the project.

Moving Design Files

To move the project files needed for the design:

1.   Create a new folder for the project design files.

2.   Copy all files not included in any folders in the project folder.

3.   Copy the Symbols folder and the Project Files folder.

4.   Paste the files in the new folder.

Moving Application Project

The runtime project can be downloaded to the operator panel using the transfer or export commands, but can also be moved manually:

1.   Create the new folder for the project files.

2.   Copy the Output folder.

3.   Paste it in the new folder.

Database

The database used for Kollmorgen Visualization Builder projects is of SQL Server Compact Edition type. The contents of the database can be managed with third-party database management tools.

The database is initially transferred to the operator panel using the transfer command. The database will only be updated if there are changes made in the project that affects the database contents, for example:

- Changed or added recipes

- Changed or added data loggers

- Changes to alarm handling

- Changed or added trends

A copy of the database can be made with the backup command.

2   WORKING WITH PROJECTS

This section describes the configuration tool and explains how to work with a project for an operator panel.

In Kollmorgen Visualization Builder, ribbons tabs are used instead of menu commands. This reduces the number of steps needed to design complex components, and also supplies an attractive user interface.

Ribbon tabs are located in the top section of the tool window. Each ribbon tab holds one or several control groups. Each group contains a set of related controls. Controls are made to design screens, and to make settings for objects and controls in the project.

2.1   Creating a Project

A project can be created according to the following sections, but the work process can be adapted and rearranged if needed.

2.1.1   Connecting to a Controller

Establishing communication between an operator panel and controller is necessary to allow operator observation and control. The larger the project is, the more important it is to ensure that there is a suitable communication design.

There is a built-in DEMO controller in the configuration tool. It can be used for test and simulation purposes.

2.1.2   Designing a Screen Set

It is important to organize the application well and to consider which functions are necessary. Start with an overall view and then work down to a detailed level.

A project contains a number of screens with objects that can exchange data with the controller. Screens can be arranged in hierarchies to achieve a structured application, or organized as sequence controls. When deciding which structure to use, consider how to best describe the process at hand and how to simplify procedures for the machine operator.

The complete application, or parts of it, can be tested in the development environment before downloading it to the operator panel.

2.1.3   Designing Additional Functions

This section describes the additional functions of the Visualization Builder.

Alarms

Alarms are used to make the operator aware of events that require immediate action. An alarm is set when a certain condition is met. An alarm condition is designed as a logical evaluation of a tag value. Alarms can be divided into groups to create an order of priority.

Function Keys

Function keys can be used to perform actions and execute scripts. This allows operator control of data and screen functionality independent of which screen is active.

Multiple Languages

Translation of texts and system texts can be performed directly in the application, or via export to a text file to be translated in other software. The file is imported to the application after translation. The application language can be changed in runtime, for example based on a tag value.

Security

Access to objects and actions in the project can be limited using security groups and user passwords.

Text Library

With the text library function, text tables can be created, where values are linked to texts.

Audit Trail

The Audit Trail function allows tracking of operator actions.

Data Logger

Data can be logged and saved to file. Bit, 16-bit, 32-bit and Real (Float) values can be logged. Be aware that logging of data consumes system resources and memory.

Scheduler

Setting and resetting digital tags in relation to the real-time clock can be performed using a scheduler, in order to control events in the process at special calendar times.

Recipes

Recipes are used to set or save a predefined group of tags in one operation.

Values can be predefined or collected from the controller, and then saved to a recipe in the operator panel. The operator can download the recipe at any time to the controller, which will start working with the recipe values. Recipe handling makes it possible to reuse large parameter sets, to improve efficiency of time critical production where a change of products must be made quickly. Recipe files can be created in the development project or with the operator panel.

2.2   Efficient Communication

The following section describes how tags are read and how the reading can be optimized to make the communication between the operator panel and the controller fast and efficient.

2.2.1   Tags Affecting Communication Performance

Only tags connected to objects in the current screen are read continuously. This includes tags for object dynamics, but the number of screens does not affect the communication time.

Additionally, the operator panel reads the following items continuously:

- Alarm tags

- Trend registers

- Data logger registers

- Multiple languages registers

- Controller tags with value change events

2.2.2 Tags Not Affecting the Communication Performance

The communication time is not affected by the following:

- Alarm messages

- Schedulers

- Tags linked to function keys

2.2.3 Group Tags Consecutively

Define controller tags consecutively, for example M0.0-M11.7. If the tags are spread (e.g. I0.4, Q30.0, M45.3 etc.) a complete update will take longer time.

2.2.4 Efficient Screen Changes

Screen changes are carried out most efficiently through a show screen action, either on a function key or an object.

2.2.5 Tag Packages

Tags to be transferred are not all transferred at the same time, but are grouped into packages. The number of tags in each package depends on the driver for the controller.

To make communication as fast as possible the number of packages should be minimized. Consecutive tags require a minimum number of packages, but it is perhaps not always possible to program it this way. In such cases there is a "waste" between two tags.

Tag	1	2	3	4	5	6	7	8	9	10
Used	X	X					X	X	X	

Waste

This gap is the maximum distance between two tags that can be kept in the same package. The size of the gap depends on the driver used.

2.3   Operator Panel Performance

It is important to understand that due to the complex nature of a running system, there are several things that affects the overall performance. The following list gives some examples of things to consider, when it is necessary improve the performance of the operator panel:

- Number of tags

- Number of sampled tags in trends and data logger

- Number of alarms

- Driver performance

- Multiple drivers

- Type of panel

- Alarm list size

- Trend sample interval

- Size of images

2.4   Moving Objects with the Touch Screen

Operator panels with touch screens do not have a built-in keyboard. All maneuvering is done with the touch screen by pressing distinctly with a finger. Because of the resistive touch technology, the screen can only apprehend pressing on one place on the panel at the time. Pressing two points at the same time is interpreted by the panel as a point midway between the two pressed points.

2.4.1   Operate Objects

For an object to react, it is necessary to specify the behavior, typically by assigning a tag and defining an action. All objects can have actions linked to mouse down, mouse up, mouse enter and mouse leave events. Some objects have a predefined behavior, like sliders setting values, but can also have actions linked to mouse down and mouse up events.

2.4.2   Button

Pressing a button triggers a click- and mouse button event.

2.4.3   Text Box

Pressing on a text box object displays a virtual alpha-numeric keyboard on the panel screen. Type a text using this keyboard and finish by pressing [ENTER].

2.4.4 Analog Numeric

Pressing on an analog numeric object displays a virtual numeric keyboard on the panel screen. Enter a value using this keyboard and finish by pressing [ENTER].

In runtime a validation of the value is done. If the value entered is out of bounds, the corresponding limit value for the object will be shown.

2.4.5 Slider

Pressing on the desired value position of a slider object sets it to the pressed position.

2.5 Peripherals

This section describes using peripherals with KVB.

2.5.1 USB

External devices such as a USB hub, flash drive, mouse, or keyboard can be connected to the USB host port.

2.5.2 Ethernet

The operator panel has a built-in Ethernet port for connection to controllers via TCP/IP.

2.5.3 Compact Flash Card

An internal Compact Flash memory card can be used to increase project memory in some Advanced Kollmorgen Interfaces (AKI).

3 DEVELOPMENT ENVIRONMENT

This section describes how to work with Kollmorgen Visualization Builder.

Clicking the Options button in the File menu allows adapting the tool behavior.

3.1 Starting Kollmorgen Visualization Builder

Kollmorgen Visualization Builder is launched from within the KAS IDE. New KVB projects are contained inside their respective KAS archive. This allows KAS projects to be copied or transferred while retaining all of the KVB data.

Open an existing project in the KAS IDE, or create a new one and add a PAC or HMI device for your Visualization Builder project.

1. From the KAS IDE Project Explorer, right-click on a Controller or HMI device and select Add KVB Panel.

2. Double-click on Panel (KVB) from the Project Explorer.

3. Select Yes to open with Kollmorgen Visualization Builder.

Kollmorgen Visualization Builder application launches and the KVB panel is now ready for design. Projects can also be created or opened later from the File menu, but this is not recommended because variable mapping will not be available.

The ribbon tabs (e.g. Home, System and Insert) are located in the top of the window when the configuration tool is started. The control groups (e.g. Clipboard, Screen, Objects on the Home ribbon tab) are available in the ribbon area.
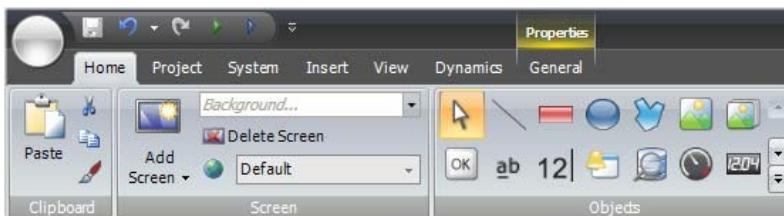
The Project Explorer contains a folder area, and is managed as a docked window.

The desktop area is where screens are drawn and where tags and functions are handled.
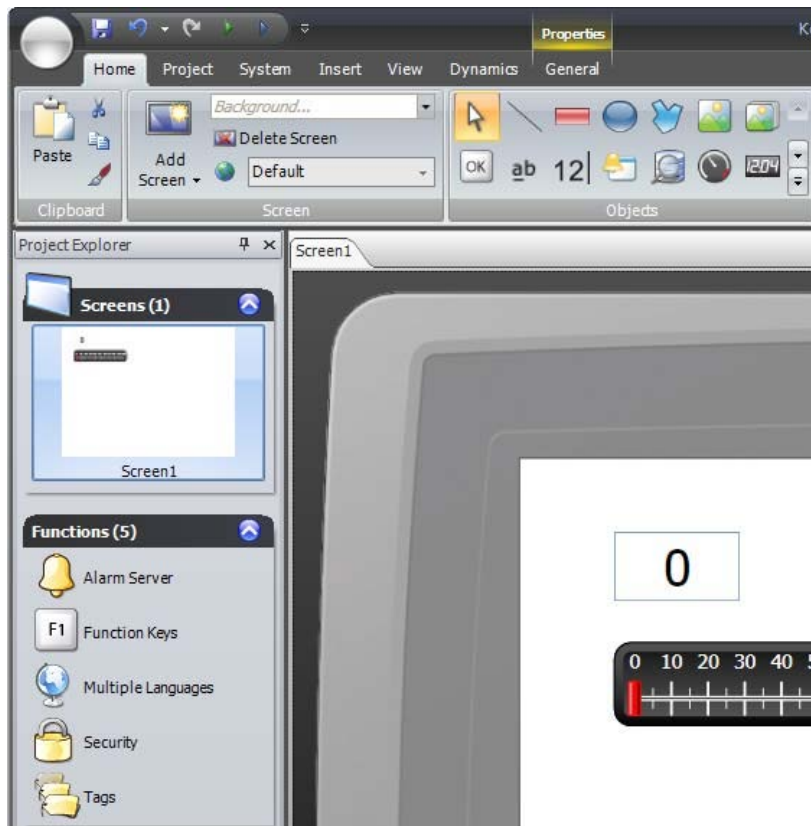
Configuration of objects on a screen is mainly performed using the controls in the Home and General tabs. Several common commands are also available by right-clicking on an object in a screen.

Related Information

Keyboard Navigation

Pressing Alt on the keyboard displays which keyboard shortcut commands can be used to execute a command or to enter a control group, e.g. Alt + F opens the File menu, and Alt + I displays the Insert ribbon tab control groups.

3.1.2   File Menu

The File menu contains commands for creating, opening, saving, and closing projects, and to update drivers via Internet or from file. The File menu is accessed by clicking on the top left icon.
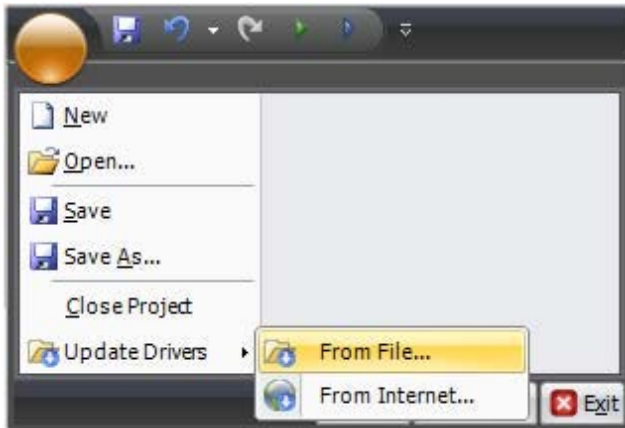
New Project

It is recommended that you open new projects from within the KAS IDE as described in section 3.1. Doing so utilizes the built-in variable mapping functionality.

Select Operator Panel

Select the appropriate target from the presented set of operator panels/PC. The target can be changed later, from the Settings group on the Project ribbon tab.

When working with a project for a standard PC, it is possible to select resolution from the drop-down lists.

Select Controller

Select the appropriate controller for the project.

The demo controller, including regular tags (data containers) and counters, is used to design and test a project directly on the development PC without connection to an external controller.

Internal tags that work like controller tags, but are independent of an external controller, can be defined.

Note: Internal tags values will not be saved in the operator panel when the project is restarted.

It is also possible to connect to an external OPC server.

The controller can be changed later by clicking the Controller button on the Controllers tab of the tags configuration page.

A project can connect to more than one controller. To set up multiple controllers:

1. Click on Tags in the Project Explorer and click Add on the Controllers tab.

2. Choose the appropriate controller driver.

Select Location

The Select Location dialog controls naming of the project and where project files are saved in the computer environment.

1. Change the project name, if desired.

2. Select where to store the project files by clicking Browse, or accept the suggested location.

3. Click Finish to create the new project.

Open

Selecting Open displays a dialog that allows selection of an existing project file by browsing.

Save

Selecting Save saves the project to the current project folder. If Kollmorgen Visualization Builder was opened from within KAS IDE then the KVB project will be saved in its associated KAS archive.

Save As

Selecting Save As allows saving the project with a different name and/or in a different location. This should only be used to export the project. By doing so, it will no longer be synced with its associated KAS project.

Close Project

Selecting Close Project closes the current project and activates the start wizard.

Update Drivers

Drivers can be updated via Internet or from file.

About

Clicking the About button displays information about the current version of Kollmorgen Visualization Builder.

Options

Clicking the Options button allows making settings that control the behavior and appearance of the configuration tool.

Language Options

Select in which language to run Kollmorgen Visualization Builder. A restart of the application is required for the new language selection to have an effect.

Ribbon Options

The Ribbon options include:

- **GoToDefaultRibbonStrategy** — This option changes the active ribbon based on the context of the selection in the desktop. When an object is created or selected, the General tab tabs becomes active in the ribbon area. This is valid for any object except for button. A button object will activate the Actions tab, as this is considered to be more common as a next choice.

- **SimpleRibbonStrategy** — This is the default setting, and does not swap the active ribbon when the context of the current desktop selection changes. Clicking on an object opens the Home ribbon, and double-clicking opens the General ribbon for most objects, but for buttons the Actions ribbon is activated.

Screen Editor Options

The Screen Editor options include:

- **EnableInPlaceEditing** — This option allows editing an object directly when selecting it on the screen without having to access its properties on e.g. the General ribbon tab.

- **ShowPanelAround** — This option displays an outline of the selected panel model around the desktop area.

- **ShowSizeAndDistanceInformation** — The size of an object is displayed while resizing it. Distance to the edges of the desktop area is displayed when moving an object. The indication can be turned off, if desired, by setting this option to False.

- **ShowToolTips** — Useful tool tips are automatically displayed in the configuration tool. These can be turned off, if desired, by setting this option to False.

The screen editor options can also be modified using buttons in the lower part of the desktop area.

Mini Toolbar Options

The mini toolbar is a context menu addition with a subset of common controls from the Format, Tag/Security and Name groups.

- **ShowMinitoolbarAutomatic** — When this option is set to True the mini toolbar part of the context menu is displayed already when an object is selected. The mini toolbar will always show in combination with the context menu. The mini toolbar will remain active for a selected object, also after it has disappeared, until the selection or the pointer moves away. To show the mini toolbar again move the mouse pointer to the upper right of the object. With the default setting, False, the mini toolbar will only show in combination with the context menu for an object.

Exit

Clicking the Exit button closes the application. If there are unsaved changes, you are asked if you want to save them before exiting.

3.1.3 Quick Access Toolbar

The Quick Access Toolbar contain controls, expected to be used frequently. The toolbar can be customized to include other buttons.

Save

Saves the current project to the location specified when the project was created.

Undo

Executed commands can be undone using the Undo button. Clicking the small arrow at the right of the Undo button lists recently made changes for selection of the undo operation.
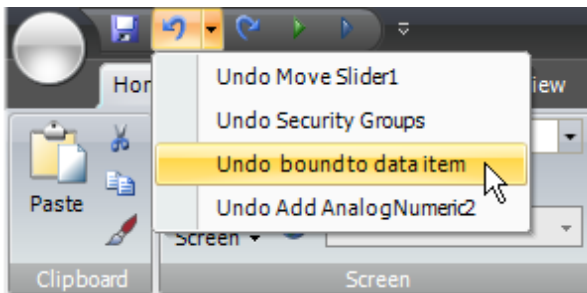
The keyboard shortcut for Undo is Ctrl + Z.

Redo

A command that has been undone with Undo can be redone with Redo. The keyboard shortcut for Redo is Ctrl + Y.

Run

Performs a validation of script code and compiles the project. If the project is valid, a simulation is started on the development PC with connection to the selected controller. Also available from the Transfer/Test group on the Project ribbon tab.

Simulate

Performs a validation of script code and compiles the project. If the project is valid, a simulation is started on the development PC without connection to the selected controller. Also available from the Transfer/Test group on the Project ribbon tab.

Customizing Quick Access Toolbar

Most of the ribbon controls can be added to the Quick Access Toolbar. Click on Customize Quick Access Toolbar (at the very right of the Quick Access Toolbar) to add or remove buttons. Alternatively, right-click on the desired control and select Add to Quick Access Toolbar or Remove from Quick Access Toolbar.

3.1.4 Ribbon Tabs

The ribbon tabs contain grouped controls for editing and maintaining a project, screens and objects. Click on any ribbon tab to display the ribbon.

Use Minimize the Ribbon and Maximize the Ribbon to collapse and expand the ribbon control tabs, or double-click on a ribbon tab. This can also be done from the Quick Access toolbar.

3.1.5 Additional Properties

Some ribbon groups include additional properties that can be configured by clicking the small arrow in the lower right corner of the current group.
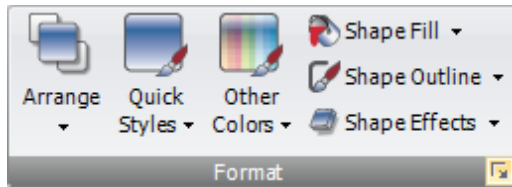
The properties window displays available property groups available for selection at the left.
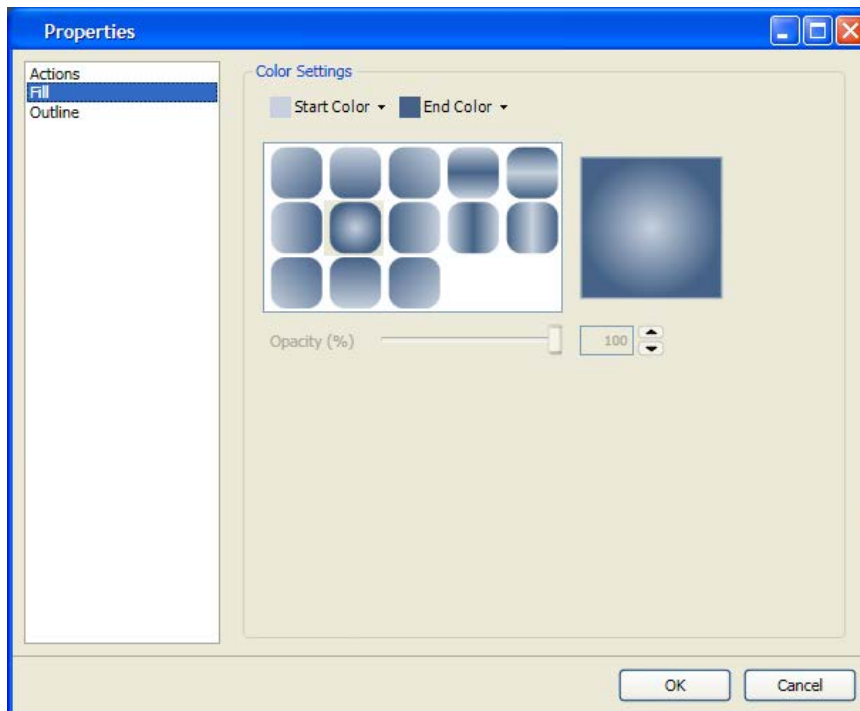
3.2   Desktop Area

The desktop area displays screens and configuration pages for project components such as controllers and functions. The desktop area shows only one screen or component at a time. When multiple screens or components are opened a row of tabs are shown in the upper part of the desktop area. Clicking on a tab activates its contents for editing.

If there are more tabs open than can be displayed, navigation arrows in the upper part of the desktop area can be used to scroll between them.

3.2.1   Screen View in Desktop Area

Object appearance as well as size and appearance of the current screen can be managed by controls in the lower part of the desktop area. It is also possible to turn on and off the in-place editing function that allows editing text in an object directly when selecting it on the screen.

Show/Hide Size and Distance Information

The size of an object is displayed while resizing it. Distance to the edges of the desktop area is displayed when moving an object.

Show/Hide Info

It is possible to show information about which tag each object is connected to, and if dynamics or actions are configured for the object, by clicking on the Show/Hide Info button.
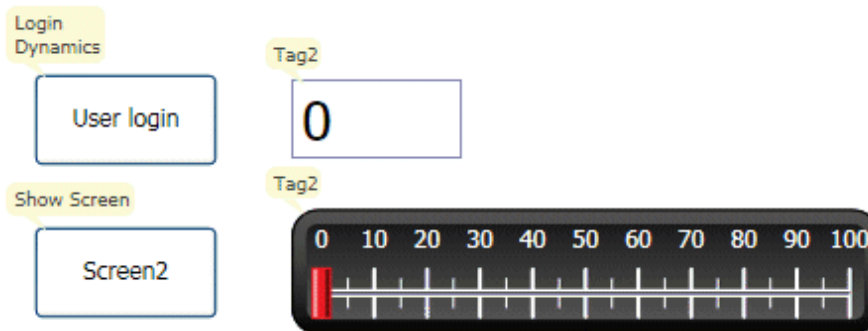
Show/Hide Screen Tooltips

A semi-transparent tooltip is displayed for each object when the cursor is rested on it, if Show Screen Tooltips is selected. Tooltips for e.g. menu commands are not affected by this setting; only tooltips for objects on the screen.
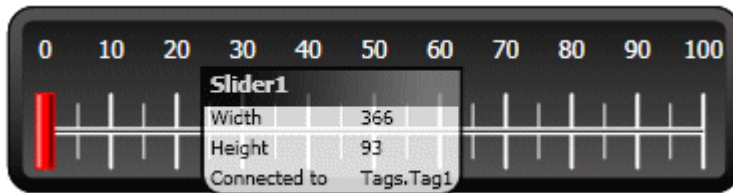
Enable/Disable In-Place Editing

This option allows editing an object directly when selecting it on the screen without having to access its properties on e.g. the General ribbon tab.

Show/Hide Panel Frame

Show/Hide Panel Frame displays or hides a virtual panel frame surrounding the screen, when an operator panel is selected as target.

Fit to Screen

Click on Fit to Screen to make the screen the maximum size that will fit in the desktop area.

Zoom

The following methods can be used to zoom in to or out from the desktop area:

- Selecting a set zoom value from the Zoom drop-down list.

- Setting the Zoom Slider to a desired zoom level.

- Clicking the Zoom In and Zoom Out buttons.

- Placing the mouse pointer anywhere in the screen and using the scroll wheel.

Pan

Panning of the current screen is possible in Layout mode, if the screen is larger than the desktop area.

- Press and hold [Spacebar] (the mouse pointer will change its appearance from an arrow shape to an open hand).

- Drag to pan the screen (the mouse pointer hand closes in panning mode).

3.2.2   Desktop View Modes

Screens and functions have different view modes. The default setting is Layout view mode, but screens and functions can be partly viewed and edited directly in code. The desired mode is selected from the lower left part of the desktop area. The code for screens is in xaml and in C# for script.
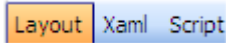
Note: Incorrect code entered in text mode (Xaml and Script) may result in errors that are not possible to recognize during analysis and build. Erroneous code may result in unpredictable behavior and loss of data.

Layout

Screens and objects are usually edited in Layout view mode.

XAML

A screen layout is defined in XAML (Extensible Application Markup Language) code. The .xaml files are stored in the project folder.

Xaml code can be added and changed in the Xaml view mode. Any changes done in the Xaml code will affect the screen layout.

Script

In Script view mode scripted actions can be configured for screens, objects, tags, function keys etc.

Note: To display a script guide that describes Kollmorgen Visualization Builder scripting possibilities in detail, select Script view mode, click anywhere in the code, and press F1.

Objects that can trigger events will show with expandable nodes in the Script view. Clicking the [+] of such a node expands it and shows the trigger events for the object. Double-clicking on an event inserts its method heading with an empty code body. Scripts are written in C# syntax.
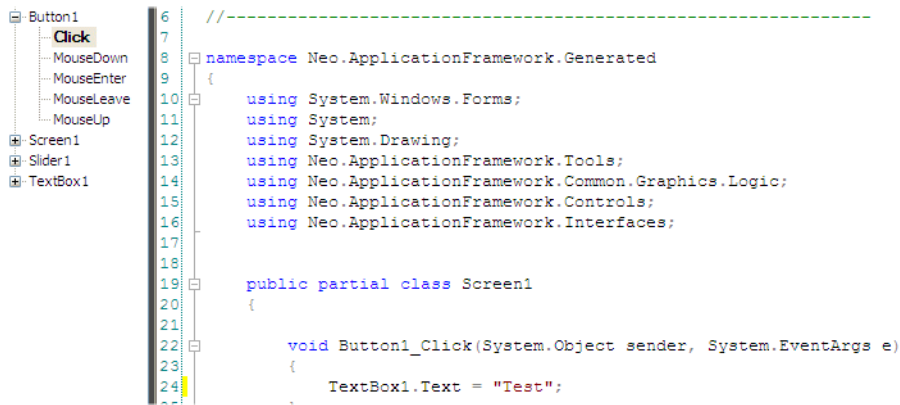
When actions are defined for an object, this will have precedence over script code.

Note: Avoid using multiple trigger methods as this may lead to undesired behavior. Use either a script or define actions with the controls on the Actions tab. Avoid using Click Action Trigger actions in combination with Mouse Button Action Triggers.

Complex behavior can be created using script code.

Selections made in Layout view mode are kept when switching to Script view mode and vice versa.

Nodes with edited script code are highlighted in the expanded tree view.

It is possible to disable a script without deleting it, by right-clicking on a node with script, and selecting Unhook event handler. This excludes the script from being run, even though there is code, and the node will no longer be highlighted.
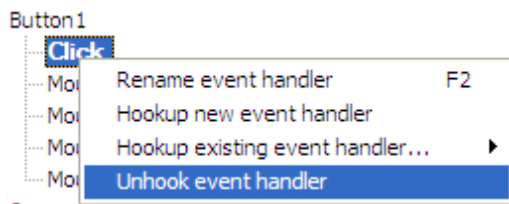
Some objects, such as text boxes, list boxes and combo boxes, rely on script code for advanced behavior.

Name Completion

A context sensitive name completion feature (IntelliSense) can be activated during typing with [Ctrl] + [Spacebar] and it triggers automatically when a period ('.') is typed after a code element. Using items outside the current scope is defined with the keyword Globals, but it is not possible to script to other screens than the currently selected.

Methods are completed without argument lists. Add parenthesis and arguments to complete a selection.

Note: Incorrect script code may result in errors that are not possible to recognize during analysis and build. Erroneous code may result in unpredictable behavior and loss of data.

If there are errors in script code during validation of a project, it is possible to navigate to the erroneous position by double-clicking the error in the error list.

Press [Ctrl] + [Shift] + [Spacebar] while editing to get a tool tip with the allowed variants of an overloaded method. Use [Up arrow] or [Down arrow] to scroll. Make a new selection or press [Esc] to close the tool tip.

Note: It is necessary to do an explicit type casting of the tag format for operands of an overloaded method.

Script code can be used to format objects. If an object attribute is selected a tool tip with allowed methods will appear. Methods not part of the default C# API is either addressed with the full path or the library can be included.

Example:

Filling a rectangle object using a color gradient from one color to another color.

```
void Screen1_Opened(System.Object sender, System.EventArgs
{
    Rectangle1.
}
```
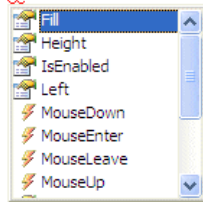
The following code implements a gradient from red to purple in the rectangle. The library with the "BrushCF()" method is added with "using" in the beginning of the example, together with the default libraries.

```
namespace Neo.ApplicationFramework.Generated
{
    using System.Windows.Forms;
    using System;
    using System.Drawing;
    using Neo.ApplicationFramework.Tools;
    using Neo.ApplicationFramework.Common.Graphics.Logic;
    using Neo.ApplicationFramework.Controls;
    using Neo.ApplicationFramework.Interfaces;


    public partial class Screen1
    {

        void Screen1_Opened(System.Object sender, System.EventArgs e)
        {
            Rectangle1.Fill = new BrushCF(System.Drawing.Color.Red,
                System.Drawing.Color.Purple,
                FillDirection.Center);
        }
    }
}
```

Note: When a timer is used in script code, it is important to close the timer in the code.

Referenced Assemblies

Third-part components and objects that are added to the project via Referenced Assemblies will be made available when scripting. Their methods and properties will be included by the name completion function, in the same way as for built-in components.

3.2.3   Positioning Windows

The behavior of many windows can be adapted in order to suit the user; for example shown or hidden, or moved to another position on the desktop.

Docked windows representing control tools can be converted to floating windows. Control tools can be docked separately or be managed as a tabbed group in a window. A docked tool window supports auto-hide.

When a window is dockable, a guide diamond appears when the window is moved on the desktop. Extended position arrows appear at the desktop edges. The guide diamond makes it possible to dock a tool window to one of the four sides of the desktop area. When a tool window is undocked, it floats on top of the desktop. Dropping a tool at the center of a guide diamond creates a tabbed group of the tools inside the window that the guide diamond belongs to.

Docking a Tool

Drag the window heading to any position on the screen. If the tool is not docked it will become floating.

To re-dock a tool:

1.   If the tool is docked already, double-click on its heading to change to floating.

2.   Drag the tool to the center of the desktop. A guide diamond appears, pointing towards the four edges of the desktop. Release the window to the desired direction. When the mouse pointer is in position, an outline of the window appears in the designated area.

Docking to a Tabbed Group

It is possible to dock a tool to an existing group of tools, creating a grouped window with tabs:

1.   If the tool is docked already, double-click on its heading to change to floating.

2.   Drag the tool to the center of the existing group. A guide diamond appears.

3.   Drop the tool at the guide diamond center.
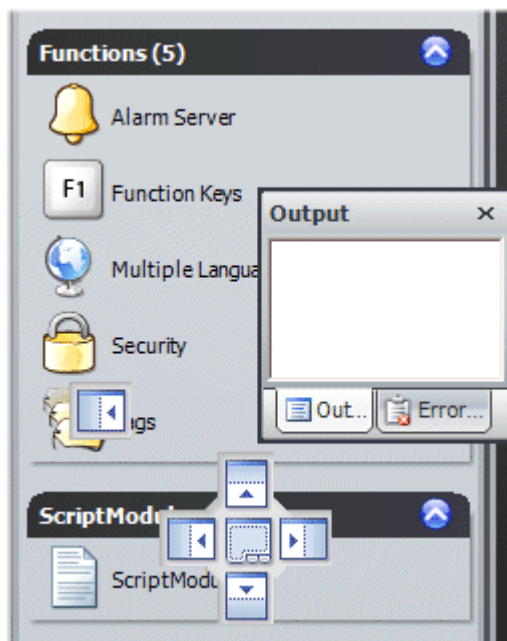
Releasing a Tool from a Tabbed Group

When a window contains multiple tools, they will appear as tabs in the lower part of the window. To release a tool that resides in a tabbed group, drag the tab for the tool and drop it on the desktop.

Auto-Hide

Auto-Hide enables a maximized view of the desktop area e by minimizing tool windows along the edges of the desktop area when not in use. Auto-Hide is turned on and off by clicking the Auto-Hide pushpin icon on the window title bar.

Tool windows will expand to original size when the pointer hovers over them. When a hidden tool window looses focus, it slides back to its tab on the edge of the desktop area. While a tool window is hidden, its name and icon are visible on a tab at the edge of the desktop area.

Note: The Auto-Hide function has to be turned off before a tool can be moved.

3.2.4   Configuration Pages

Many functions, such as Alarm Server and Data Logger, are configured via table style configuration pages.

Related Information

In some cases there are multiple configuration pages for a feature. When applicable, the configuration page for a feature can be opened to allow direct access. For example, it is possible not only to select a tag, but also to declare new tags, directly through the Select Tag field for an object.

Home

In a configuration page, the Home tab is used to add and remove items in a function or controller.

Edit Table Cells

Use the Add button to append a new item in the table view of the configuration page.

Use the Delete button in the Home tab or the Delete button on the keyboard to remove the active row in the table.

Keyboard Navigation

Navigation in configuration pages can be made using arrow keys or with [Tab]. Pressing F4 inside a table cell will in some cases open selection list.

Pressing [Enter] acknowledges a selection, and pressing [Esc] cancels a selection.

Press [Delete] to remove a value when editing in a field. If a row is selected when pressing [Delete], the entire row will be removed from the table.

Use [Spacebar] to toggle a value in a check box.

Press [Ctrl] + [Tab] to shift focus from the table.

Navigation in Layered Pages

A layered configuration page (for example the alarm items page) has some specific navigation functions.

Keyboard navigation down is made by pressing [Ctrl] + [Down Arrow]. This will navigate into an expanded group, and out again when at the last of the expanded rows.

Keyboard navigation up and out of a group is done by pressing [Up Arrow].

Expand a group with [Ctrl] + [+], collapse with [Ctrl] + [-].

Keyboard navigation between fields inside a group is made with [Right Arrow] or [Left Arrow].

Pressing [Enter] acknowledges a selection, and pressing [Esc] cancels a selection.

Auto Fill

Fields in the configuration tables are when possible automatically filled in when [Down Arrow] is pressed when at the last table row. When needed, names and tag identifiers are incremented to avoid exact copies of symbolic names and tag identifiers. Incrementing is done if the last part of the string is an integer number. A "1" will be appended to the string if no numeral character ends the string. This is useful when there are consecutive tags of the same type in the controller data.

Filtering Items

Items in configuration pages can be filtered by selecting Show Selection from the Show Selection/Show All button.
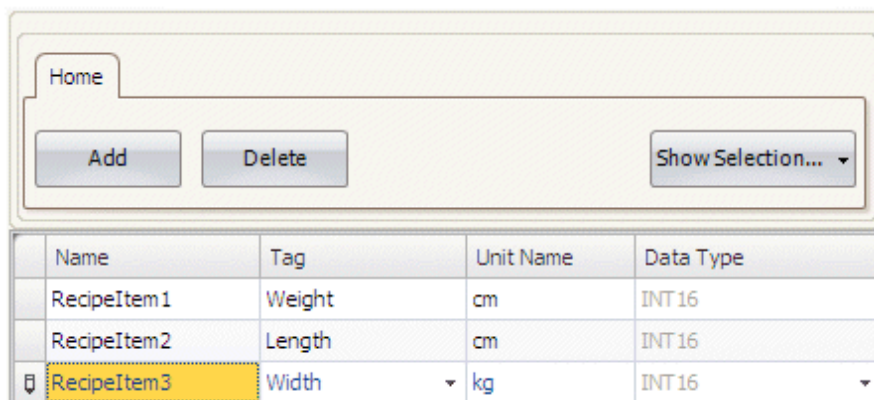
Clicking the button opens the Filter Builder.
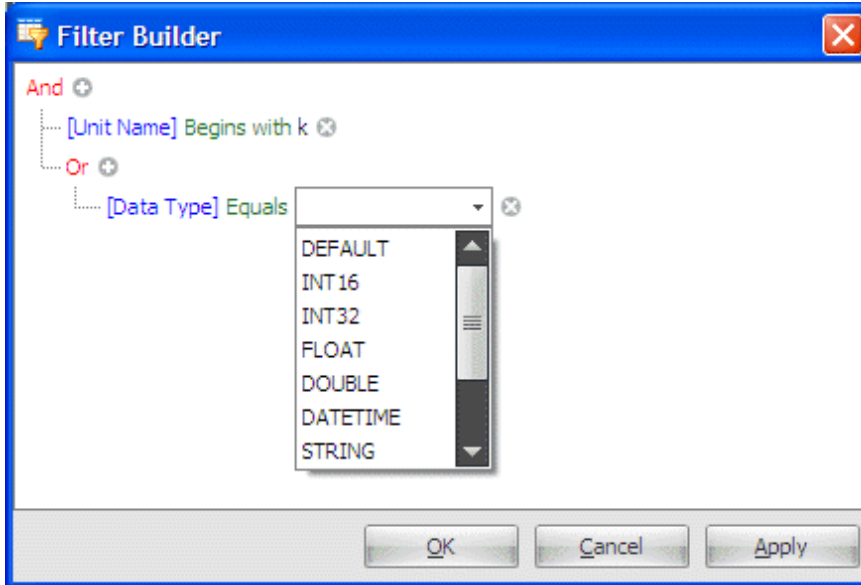
Several conditions can be used, and the different values/operators that can be used for making conditions are displayed when clicking on the condition building blocks.

Operands and operator nodes are context sensitive. Name strings are not case sensitive. Values in the filter builder are saved individually for each function during an edit session. A filter is built as a logical expression tree. A filter typically has operations on individual column values as leaf nodes and logical operators serve as main nodes.

The following color scheme is used:

Color	Function
Red	Logical operator
Blue	Column operand
Green	Value operator
Grey	Value operand

An indication that a filter is used is displayed at the lower part of the configuration page.
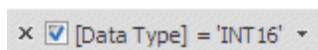
Selecting Show All from the Show Selection/Show All button in the configuration page displays the complete, unfiltered list.

3.3   Screens

Screens contain objects that can be displayed for the operator in runtime. A screen can contain predefined objects, such as buttons or an alarm list. Images of physical objects, such a pump, connected to controller data, can also be included to be used for control and monitoring of the physical object.

All screens have unique names, visible e.g. in the Project Explorer and the Navigation Manager. Names of all open screens are shown as tabs in the desktop area. The name of the current screen is displayed and can be changed in the Name group of the Home tab.

Properties are defined for each screen.

Screens are edited in the desktop area and can be managed from:

Location	Used For
The Navigation Manager	Adding new screens, managing links between screens, deleting screens
The Screens list in the Project Explorer	Adding new screens, importing screens from other projects, renaming screens, setting screen as startup screen, deleting screens, editing screen scripts
The Screen group of the Home ribbon tab	Adding new screens, selection of screen template and background screen, deleting screens, language selection
The Screen group of the General ribbon tab	Managing popup screen properties

3.3.1 Background Screen

It is possible to use another screen as background screen, to, for example, show the same background in several screens.

3.3.2 Startup Screen

The startup screen is the first screen that opens when a project is executed. By default, Screen1 is set as startup screen.

Another startup screen can be set at any time by right-clicking on the screen on the desktop or in the Project Explorer and selecting Set as Startup Screen.

The selected startup screen is easily distinguished from the other screens in the Project Explorer by a blue outline when in focus.

3.3.3 Screen Template

The installation of Kollmorgen Visualization Builder includes a number of screen templates with basic functionality. It is also possible to save your own screens as screen templates, by right-clicking on the current screen and selecting Save Screen as Template.

Note: Saving a screen as a screen template will not include scripts from the original screen.

The screen template can be used in the current or other Kollmorgen Visualization Builder projects.

If a selected screen template contains tag names that were not previously included in the project, you can select to automatically add these to the Tags list. Objects in the template screen will always keep their tag connections, regardless if you select to import the tag names.

To use a template screen, click the lower part of the Add Screen button in the Screen group of the Home ribbon tab. A preview of screen templates is displayed

User-created as well as predefined screen templates may be deleted by right-clicking on the template in the preview and selecting Delete Screen Template. The folder of the selected screen is then permanently deleted from disk.

3.3.4 Popup Screen

Normally, only one screen is visible in the operator panel in runtime. Sometimes, a popup screen that behaves like as a floating window may be useful. Any screen can be configured as a popup screen:

1. Check Popup screen in the Screen group of the General tab.

2. Set the start position coordinates (X, Y) to determine where the screen will open.

    The position (0,0) corresponds to the upper left corner of the screen.

3. Set the desired width and height in pixels of the screen resolution.

The popup screen can be moved by clicking Modify Screen Size/Position.

Modal Popup Screen

Checking the Modal option makes the selected popup screen modal, which means that the user cannot interact with other screens while this screen is visible. All other screens will still be updated.

Style

Different styles can be selected for popup screens for PC targets.

Note: When using a web browser or pdf viewer object in a popup screen, only the default style for the popup screen is supported.

Open Popup Screen

A popup screen is opened in runtime by a Show Screen action on an object.

Close Popup Screen

A popup screen is closed in runtime by a Close Screen action on an object.

3.3.5 Importing Screens

Screens from other projects can be imported, by right-clicking in Screens area of the Project Explorer and selecting Import.

If the selected screen has a name identical to one of the existing screens, a new screen name is proposed.

If the imported screen includes tag names that do not already exist in projects, you are asked if you want to add these names.

Note: No tag information, other than tag names, will be added by the import function.

3.3.6 Grid

There are different methods to align objects in screens; Snap objects to other objects and Snap objects to grid. Grid properties are managed by right-clicking on the current screen and selecting Grid from the context menu. It is also possible to select not to snap objects. Individual grid settings are made for each screen.
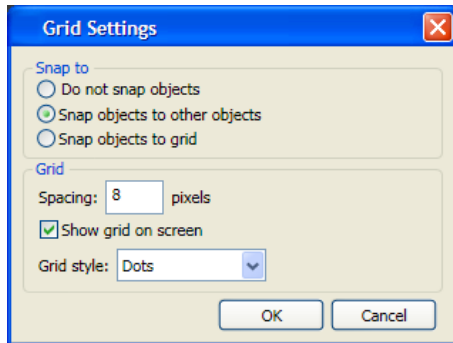
Snap Objects to Other Objects

To help position objects in a screen snap lines will appear when an object is moved across the screen. The snap lines are used to align the dragged object with other objects on the screen.

Blue snap lines appear whenever the right, left, top, or bottom boundaries coincide with other object boundaries. A horizontal red snap line indicates that the center of the object is aligned with the center of another object. For vertical center alignment, select the objects and use Align Center in the Arrange control of the Format group.

Snap Objects to Grid

Use the context menu and select Snap to Grid to enable binding to grid points for a moved object. Snap to Grid mode disables Snap Lines for dragged objects.

Grid

The different grid styles can be used as a help pattern when doing the layout of the objects on the screen.

Grid Setting	Description
Spacing	Number of pixels between grid lines
Show grid on screen	Displays the grid on the screen
Grid style	Selection between dots and lines as grid style

3.4   Objects

Objects that can be created in a screen are available from the Objects group and the Component Library.

Related Information

3.4.1   Show Info

It is possible to show tag connections for objects and shapes in a screen. Right-click on an empty area of the current screen and select Show Info from the context menu to show the tags.

The shortcut command for Show Info is Ctrl + D.

3.4.2   Snap Lines

Snap lines are used to position objects in a screen and align a moved object with other objects.

3.4.3   Select

The Select tool is available at top left in the Objects group when the group is not expanded. Use this to, for example, inhibit an unwanted control selection.

The Select tool is the default tool when editing screens. After applying any other object control, the mouse pointer will return to the Select tool.

When the Select tool hovers over a selected object the mouse pointer changes to a cross with arrowheads.

3.4.4   Move

The position of an object is part of the properties for the object. The position of an object can be changed in different ways:

- Click and drag an object to move it to the desired position.

- Open the property grid and edit the Left and Top coordinates.

To change the position of an object to a precise value:

1. Select the object.

2. Open the property grid and edit the Left and Top values.

To change the position of an object with the arrow keys:

1. Select the object.

2. Use the arrow keys on the keyboard to move the selected object to the desired position.

To move the selected object one pixel at the time:

1. Use [Ctrl] + drag to make a copy and move it to the desired position.

2. The size of an object is part of the properties for the object. To change the size of an object:

3.4.5   Copy and Move

Use [Ctrl] + drag to make a copy and move it to the desired position.

3.4.6   Resize

The size of an object is part of the properties for the object. To change the size of an object:

1. Point to an object to select it. When an object is selected a red frame with handles is shown around the object.

2. When the Select tool hovers over any of the resize handles on the selection frame the mouse pointer changes to an arrow. Resize the object to the desired size.

To change the size of an object to a precise value:

1. Select the object.

2. Open the property grid and edit the Height and Width values.

To change the position of an object with the arrow keys:

1. Select the object.

2. Use the arrow keys on the keyboard to move the selected object to the desired position.

To move the selected object one pixel at the time:

1. Select the object.

2. Press [Shift] and use the arrow keys on the keyboard to move the selected
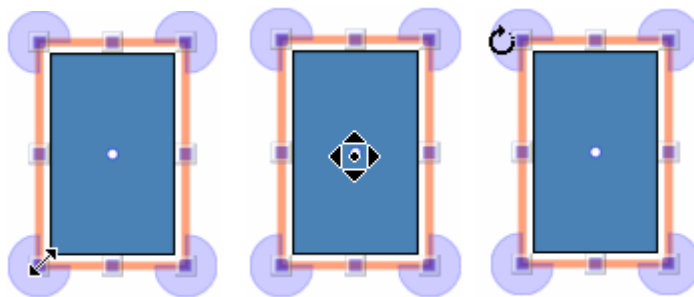
Note: Rotate is only supported for projects designed for PC targets, and not for all objects.

Angle and rotation center is part of the properties for an object. The rotation center for an object is shown as a small white circle which by default is located in the center of the selected object.

When the Select tool hovers over the rotation center of a selected object the mouse pointer changes to a circle inside a square with arrow sides. This indicates that it is possible to move the rotation center.

To change the rotation center of an object:

1. Point to an object to select it. When an object is selected a red frame with handles is shown around the object.

2. Drag-and-drop the rotation center circle to the position that is to be the center of the rotation.

When the Select tool hovers next to a corner of the selection frame for a selected object the mouse pointer changes to a circular arrow. This indicates that the object is possible to rotate by the frame handle around the rotation center.

To change the rotation angle of an object:

1. Drag to rotate the object around its center position.

2. Use [Ctrl] + drag to rotate in steps of 15 degrees.

3.4.7   Selecting Multiple Objects

Multiple objects on the current screen can be selected at the same time, with the use of the mouse pointer to draw a frame that touches the objects. Alternatively, select one object and then use [Shift] + click to select or de-select other objects.

A multiple selection can be used to arrange objects where the object with the primary selection is used as guide object.

When multiple objects are selected, the primary selection is shown with a red frame, while all other objects in the group have blue frames. Click on any object in the group to change this to the primary selection.

A click or double-click on any object will make it the primary selection, and, if applicable, change the ribbon focus according to the selected ribbon behavior.

Related Info

The groups shown in the General and the Actions tabs are dependant on the selection. When multiple objects are selected the tabs will show only the properties that are common for the objects in the selection. Property changes will affect all selected objects.

3.5   Navigation Manager

The Navigation Manager is used to manage screens and their relations with respect to project navigation in runtime. It can be activated/deactivated from the View tab, and appears as a tab in the desktop area. It provides an overview of all screens in the current project.
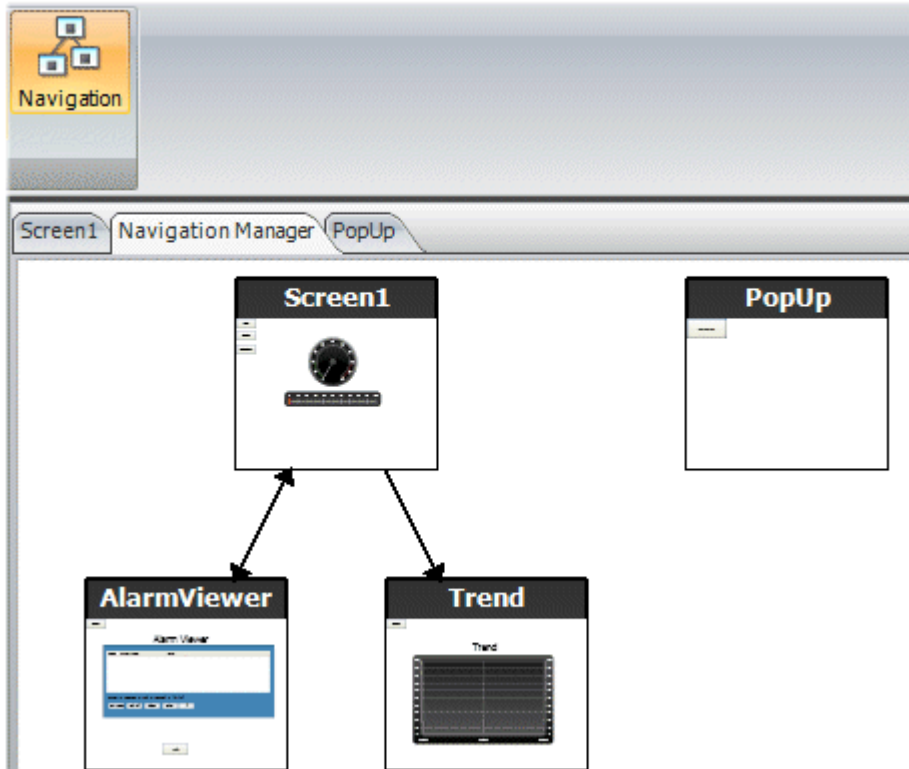
3.5.1 Screen Relations

The Navigation Manager is used to create relationships between screens.

Dragging the mouse pointer from one screen to another screen creates a relation. A button with a Click action is defined in the first screen. This Show Screen action has the second screen as target, and when clicking it in runtime, the second screen is opened.

Double-click on a screen will open the screen for editing in the desktop area.

3.5.2 Add Screen

New screens can be added directly in the Navigation Manager.

Dragging the mouse pointer to an empty location in the Navigation Manager area creates a new screen, with a relation to the original screen. A button with a Click action is defined in the first screen. This Show Screen action has the second screen as target, and when clicking it in runtime, the second screen is opened. The button must be removed or changed manually if the new screen is deleted later.

3.5.3 Links in the Navigation Manager

A structure of screens and their relations to other screens will be imposed and shown in the Navigation Manager. The Navigation Manager will provide an overview to help add screens and manage the link relations between project screens

Right-click anywhere in the Navigation Manager to change link appearance.

Link Setting	Description
Show Same Level References	Filters out links to screens on the same hierarchical level.
Show Back Reference	Shows navigation links to higher hierarchical levels. When not selected, only links to screens on lower levels and links between screens on the same level are shown.
Directed Links	Draws straight link lines between screens, using the shortest way.
Orthogonal Links	Draws link lines in an orthogonal pattern (with right angles).

Changing the setting or the type affects the appearance in the Navigation Manager only.

3.6   Project Explorer

The Project Explorer shows all screens and components included in the application. It can be activated/deactivated from the View tab.
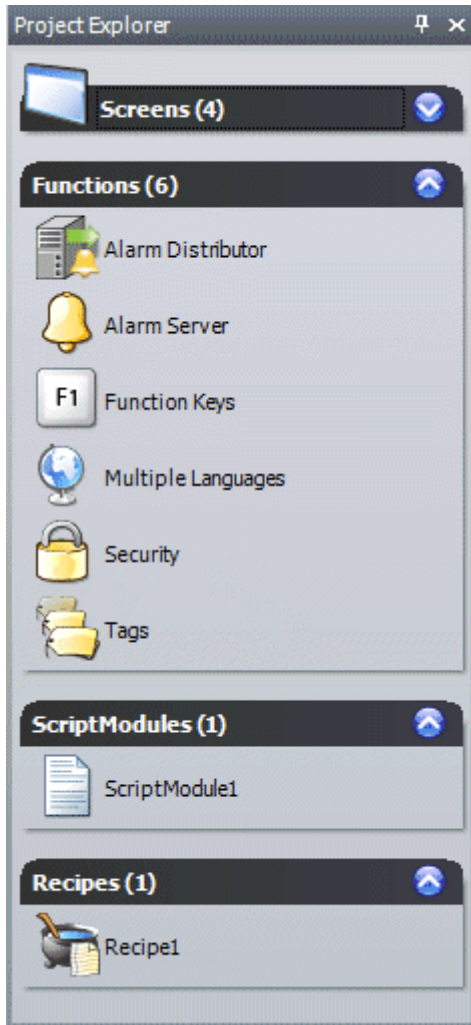
3.6.1   Folder Area

Click on the folder heading to expand/collapse the folders. Right-clicking on the folders opens a subset of the commands from the File and Insert tabs.

Right-clicking on the components in the Project Explorer folders opens a context menu with a selection of common operations. Not all commands are available for all components.

Context Menu Command	Description
Show	Opens the selected project component for editing in the desktop area
Rename	Renames the selected project component

Context Menu Command	Description
Add	Adds a new project component to the project
Import	Imports a project component via browsing the hard disk; e.g. a screen from another project
Delete	Deletes the selected component from the project
Edit Script	Opens the script tab for the selected screen or function

Screens

The Screens folder lists the screens included in the application. Clicking on a screen opens it for editing in the desktop area. Right-clicking on a screen makes it possible to set it to startup screen of the project.

Tags

Clicking on Tags in the Functions folder displays the tags configuration page in the desktop with all the tags that are used in the application. Tags are added by clicking on the Add Tag/Add System Tag button.

Tags can belong to a connected controller, or be internal. Internal tags can be used and selected in the same way as a regular controller tags.

System tags are used to monitor or access variables from the system, for example Used RAM or DateTime. System tags are indicated by blue color in the tag list.

Functions

The Alarm Server, Function Keys, Multiple Languages and Security functions are predefined, as well as Tags, and cannot be deleted from the Functions folder. The other functions can be added from the Insert menu. Most functions will be available from the Functions folder after having added them to the project, but some functions are assigned folders of their own.

Clicking on the function in the Functions folder opens its configuration pages for editing in the desktop area.

Alarm Distributor

Alarms can be distributed between operator panels, with notification via printer, SMS or e-mail using the alarm distributor.

Alarm Server

The Alarm Server handles alarm groups and alarm items.

Audit Trail

The Audit Trail function enables tracking of operator actions.

Data Logger

Data can be logged and saved to a database on time intervals or depending on changed values.

Function Keys

Function keys for operator panels as well as for the regular PC keyboard can be configured.

Multiple Languages

Configuring multiple languages for user texts and system texts are supported.

Recipe

Several recipes can be inserted in the project. Each recipe function handles a pre-defined set of recipe items.

Scheduler

A scheduler can be used to control events in the process at special times.

Script Module

Clicking on a script module in the ScriptModules folder opens the script editor in the desktop area. A script module can be included to program features not covered by included functions and actions, or to be used to share functionality among functions.

Security

Users and groups of users can be set up for security purposes.

Text Library

With the text library function, text tables can be created, where values are linked to texts.

3.7 Component Library

The Component Library contains reusable components for a project.

3.7.1 Components

The Component Library includes a large number of predefined graphical objects, categorized into groups. User-defined graphical objects and other files may also be saved in the component library. All components in a sub folder must have unique names.

Examples of components that may be included in the library:

- Predefined components

- Objects

- Text objects configured with multiple texts

- Symbol objects configured with multiple symbols

- Grouped objects

- External images

- Text

- Folders (file folders)

- htm/html files

- Media files

- PDF files

Since plain text can be saved as a component, it is possible to save reusable script components by dragging a section of script code from the Script view into the Component Library.

A component is displayed with its name and a thumbnail representation in the Component Library window.

Grouped objects are displayed as a thumbnail representing the primary selection of the object. Text files and folders are represented by operating system thumbnails.

3.7.2 Project Images

The Project Images folder is project specific, and contains images that are used in the current project. The components in Project Images are stored in the project's Symbols folder.

3.7.3 Project Files

The Project Files folder is project specific, and contains files that have been added when creating the project.

3.7.4 Add and Use Components

Drag-and-drop any component from the library to the current screen, or use copy [Ctrl + C] and paste [Ctrl + V] commands.

Objects can be copied or moved to the Component Library.

A text from any compatible source, e.g. a text file, that is saved in the Component Library will be converted to a text box object when pasted into a screen.

A component (symbol or group) that is originally copied from an object with a tag connection will keep its tag connection and any dynamic properties when used from the Component Library.

Note: If a component with a tag association is reused in another project then all referenced tags must be present in the new project.

3.7.5   Component Library Window

The component library is available as a tab at the right-hand side of the desktop. The window is configured with autohide functions, and can also be activated/deactivated from the View ribbon tab. Its appearance can be managed just as other tools; as docked or floating windows.

3.7.6   Expand and Collapse Folders

The top area is a contents frame that is used to navigate through the folders of the Component Library. The contents heading displays the name of the currently selected folder. The folder view can be expanded and collapsed with the control to the left of the displayed folder name.

3.7.8   Search

The Search feature provides a case-insensitive and alphabetical search, based on the component label, in the current folder and in all subfolders..

3.7.9   Zoom

The Zoom slider at the bottom area of the tool window can be used to change the size of the displayed components. Resting the mouse pointer over a component displays a full-size image of the component.
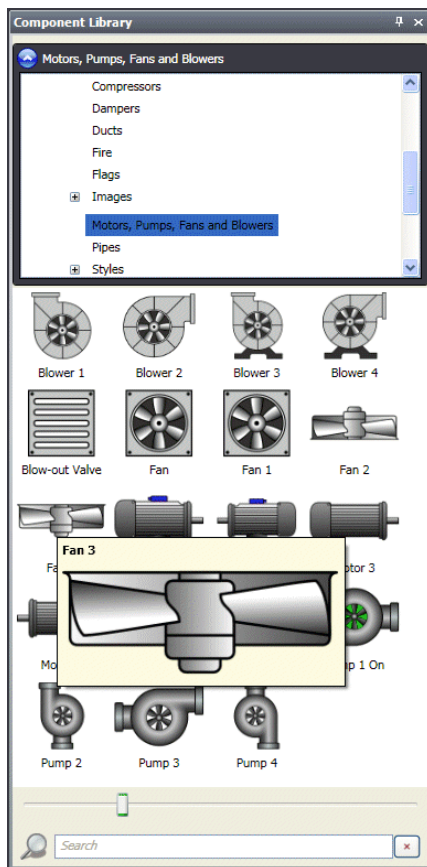
3.8   Property Grid

Most properties and settings for an object or screen are defined from its General and Home tabs.

A detailed overview of object properties is available by selecting Property Grid from the View ribbon tab or by selecting Properties from the context menu.

The property grid includes more properties and settings than the ribbon tabs, for example size and position of objects, and delay of mouse and touch screen input in runtime.
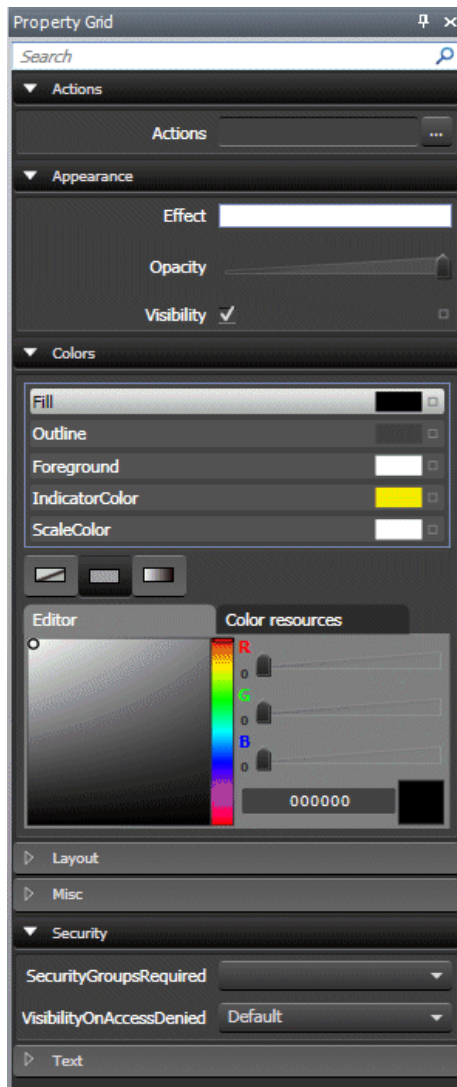
Property groups can be collapsed/expanded.

The window is configured with autohide functions. Its appearance can be managed just as other tools; as docked or floating windows. Related information

3.8.1 Search

The Search feature provides a case-insensitive and alphabetical search, that makes it easy to reduce the number of displayed properties.

3.9 Object Browser

An overview of all objects included in a screen can be displayed in the Object Browser.
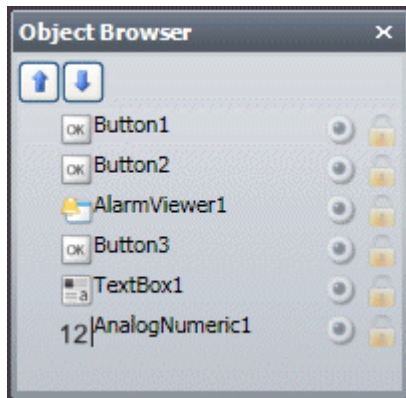
It is easy to bring objects that may have been obscured by other objects up front, by using the arrows at the top left.

Clicking the buttons at the right side of each object enables simply hiding/showing and locking/unlocking objects.

3.10 Output

The Output window contains messages concerning the project validation and build. Created project files with folder paths and any found errors will be listed in Output.

Note: Incorrect code entered in text mode (Xaml and Script) may result in errors that are not possible to recognize during analysis and build.

3.11 Error List

The Error List contains information about problems and errors detected in the configuration tool for the current project. Build errors are reported in the Output window.

3.12 Help

The Help file for Kollmorgen Visualization Builder can be opened by pressing F1 on the keyboard or using the Help button in the ribbon tab heading.

4   TAGS

Objects connected to tags can change values in a controller, and controller values can be reflected by changing object appearance in various ways. Objects in a screen will remain static until connected to a tag.

A tag has a symbolic name and can be of different data types.

Tags can belong to a connected controller, be internal or belong to the system. Internal tags are used to handle local data values, and can be viewed and treated in screens just like regular controller tags.

The global tag list provides an overview of all used tags, regardless of controller. This makes it easy to develop projects that can be used with a variety of controllers. It is also possible to connect a tag to more than one controller simultaneously.

4.1   Adding Tags

Tags can be created from within the KVB application or imported from the KAS IDE.

4.1.1   Adding Tags using the KVB application

Tags are handled by clicking on Tags in the Functions folder in the Project Explorer.
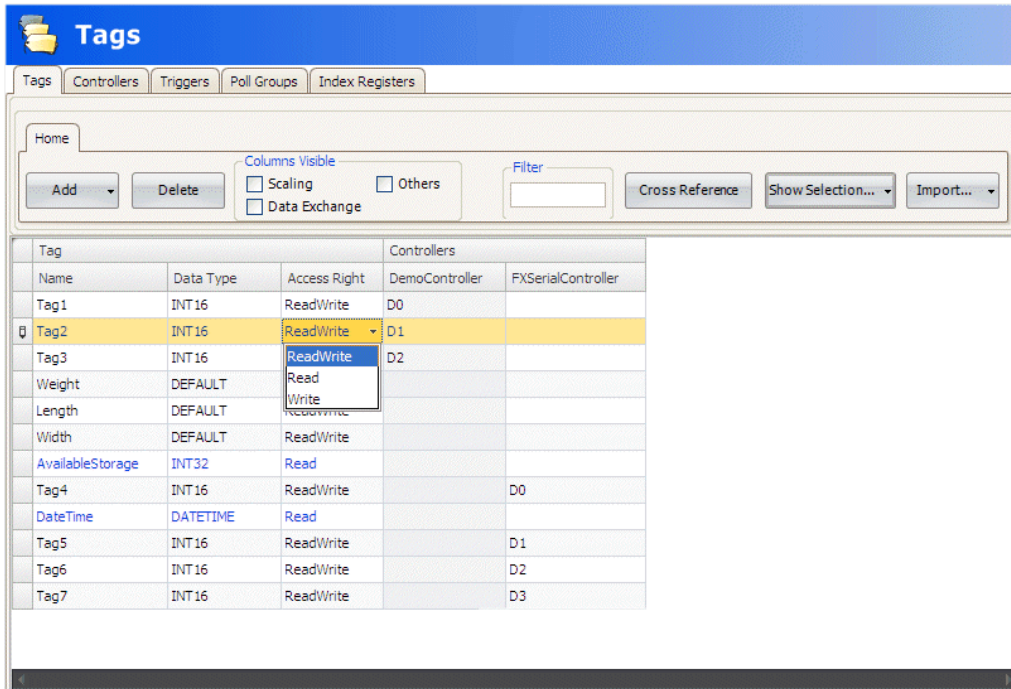
Clicking the Add Tag/Add System Tag button adds a new tag to the list. Make settings for each added tag. When predefined values are available, these can be selected by clicking the arrow at the right of the table cell.

4.1.2 Importing Tags from the KAS IDE

When the KVB is launched through the KAS IDE, all the PLC variables exported for HMI are automatically imported to the KVB.

Use the HMI checkbox in the dictionary to select which variables should be exported to the KVB.
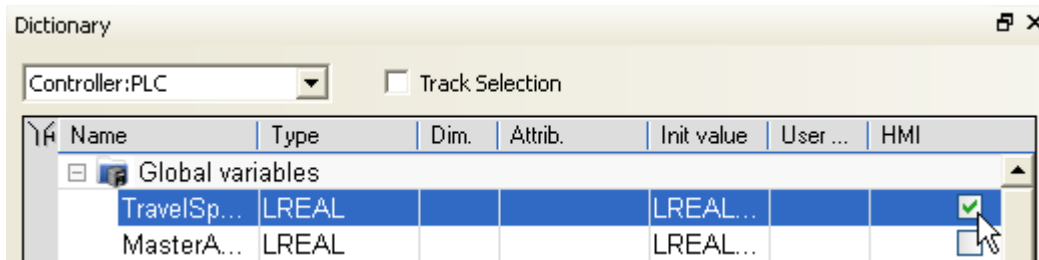
Note: Strings are not supported over Modbus for the KVB.

Note: Arrays and structs can be exported and will be available as a collection of tags inside KVB.

Note: Variables exported from the KAS IDE are refreshed each time you open the KVB. If you export a variable while KVB is already running it will not be visible. Close the KVB and re-open it from within the KAS IDE in order for the variable to be visible.

4.1.3 Basic Settings

To reduce complexity in the tags configuration page, some columns can be made hidden/visible. The basic settings are always displayed.

Enter name, data type and access rights for the tag. Select if the tag is to belong to a controller entered on the Controllers tab. If no controller tag address is entered, the tag will be treated as an internal tag.

Parameter	Description
Name	Symbolic name. The name can be any alphanumeric string, beginning with a letter (a-z, A-Z).
Data Type	Selection of data type.
Access Rights	Defines access rights to the tag
Controller	Controller address

4.1.4 Scaling

Scaling affects only tags connected to a controller.

Checking the Scaling box displays the Offset and Gain columns. These parameters are used to change the scale of the controller value to a value shown in accordance with the following equation:

When the value for an object is changed from the operator panel, the scale is changed to the value shown in accordance with the following equation:

Scaling does not affect the defined maximum and minimum values, or the number of decimals.

4.1.5   Data Exchange

Checking the Data Exchange box displays the Direction and When columns. Data exchange supports real time data exchange between different controllers; also of different brands. The data exchange can be performed when a digital tag is set or at a certain interval, set up on the Triggers tab. Data exchange can be selected for individual tags or for the complete range of tags.

4.1.6   Others

Checking the Others box displays the Description, Poll Group, Always Active, Index Registers, Action, Log to Audit Trail and Audit Trail Description columns.

Parameter	Description
Description	An optional description of the tag. Description of system tags is added automatically.
Poll Group	Makes it possible to poll groups of tags at different intervals.
Always Active	Prevents the tag from becoming inactive. This may be useful for actions and scripting purposes. **Note:** The Active setting for the controller on the Controllers tab is predominant over the Always Active setting for a particular tag.
Index Register	Makes it possible to select a register from which an object is to collect the shown value.
Action	Makes it possible to configure actions based on a condition of a tag.
Log to Audit Trail	Logs operator actions on the tag. Only available if the Audit Trail function is activated in the project.
Audit Trail Description	Optional static or dynamic descriptions for operator tag actions, that are saved in the Audit Trail database and visible in the Audit Trail Viewer. If Dynamic Description is selected, value before change can be included in the description by using {0}; value after change by using {1}. Only available if the Audit Trail function is activated in the project.
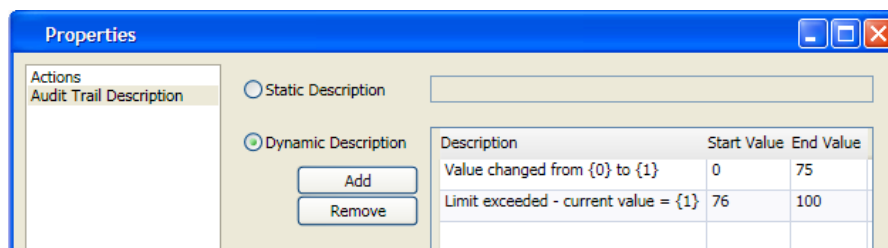
4.1.7   Adding Tags during Editing
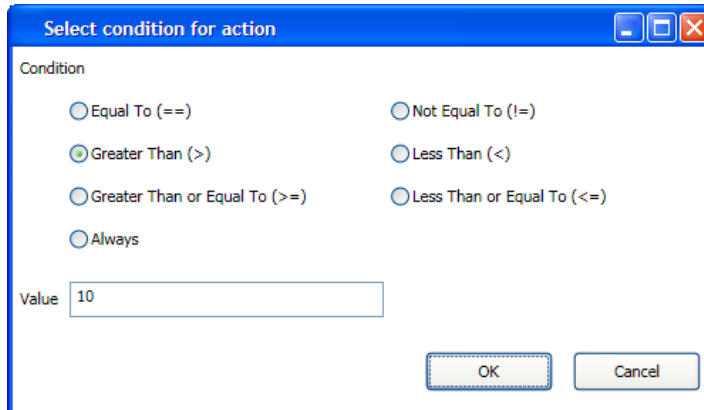
Tags can be added directly when editing objects. When an object is selected, the tag association can be managed from the Tag/Security group in the Home or General ribbon tabs, or by right-clicking on the object and using the Mini Toolbar. In both cases, tags are added by clicking the Add button.

Note: Tags added during editing will stay internal until connected to a controller on the tags configuration page.

4.2   Tag Actions

One or multiple actions can be configured depending on a changed value of a tag. The Action column is displayed when the Others box is checked in the Tags configuration page.

Clicking ... in the Actions column for the selected tag brings up the Action properties window. First, a condition is configured by clicking Add under Condition. Select a condition, enter a value and click OK.

Then, configure actions to be executed when the condition is met.
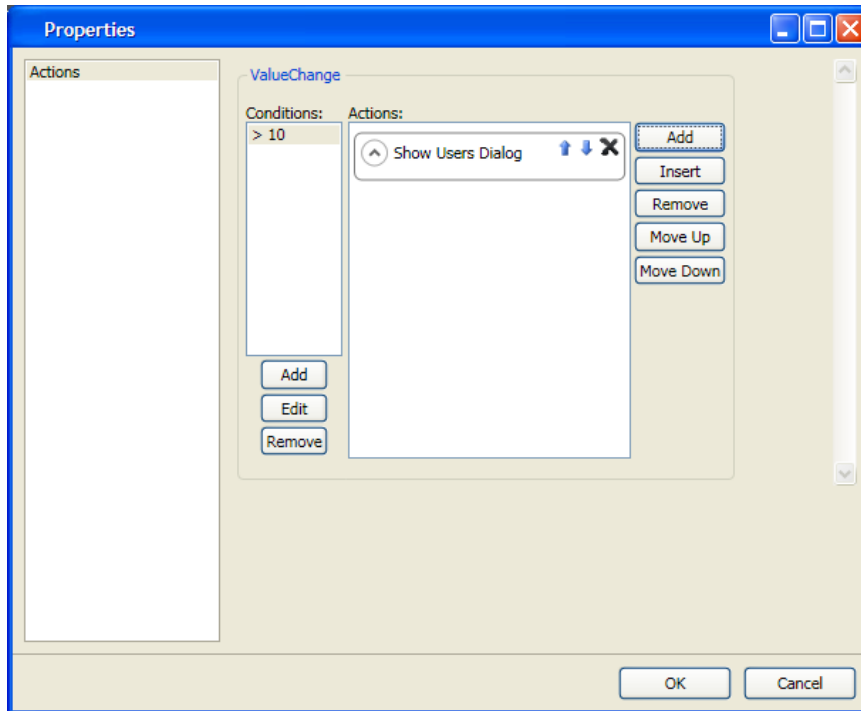
4.3   Internal Tags

Internal tags can be used to calculate values that need not be represented in the controller, for example information only for the operator. Internal tags are selected in the same way as an external controller driver tags. Any number of volatile (values are not saved when an application is restarted in the operator panel) user defined tags can be created.

Unlike the regular drivers, it does not matter if internal tags are used in consecutive order or not.

4.4   System Tags

System tags are used to monitor or access variables from the system. System tags are handled as regular controller tags, i.e. can be used in screens, logged, included in scripts etc. The Date and Time system tags can be used when you want to use the controller clock in the panel project. The following system tags are available:

System Tag Group	System Tag	Description
Communication	Communication Error Message	Latest communication error message
	Communication Errors	Number of active communication errors on all controllers
Date and Time	Date Time	Current date and time
	Day	Day component of current date
	Day of Week	Day of current week (1-7 where 1 is

System Tag Group	System Tag	Description
		Sunday
	Hour	Hour component of current time
	Minute	Minute component of current time
	Month	Month component of current date
	Second	Second component of current time
	Year	Year component of current date
Project	Current Screen Name	Name of the current screen
	Latest Loaded Recipe	Name of the latest loaded recipe
	Project Name	Name of the current project
	Runtime Version	Runtime version of framework
	Screen Update Time	Screen update time (in ms)
System	Available RAM	Amount of available RAM memory (in kB)
	Available Storage	Amount of available storage memory (in MB)
	Backlight Brightness Level	Backlight brightness level (in percent)
	CPU Load	Amount of used CPU capacity (in percent)
	Internet Temperature	Internal panel temperature (in °C)
	Physical RAM	RAM memory installed in computer (in kB)
	Storage Memory	Storage memory installed in computer (in MB)
	Used RAM	Amount of used RAM memory (in kB)
	Used RAM Percent	Amount of used RAM memory (in percent of physical
	Used Storage	Amount of used storage memory (in MB)
	Used Storage Percent	Amount of used storage memory (in percent of all storage)
	Window CE Image Version	Windows CE Image Version

System tags are indicated by blue color in the tag list.

System tags are added by clicking the Add Tag/Add System Tag button in the tags configuration page.

4.5   Cross Reference

The Cross Reference tool provides an overview of where a specific tag is used in the current project.
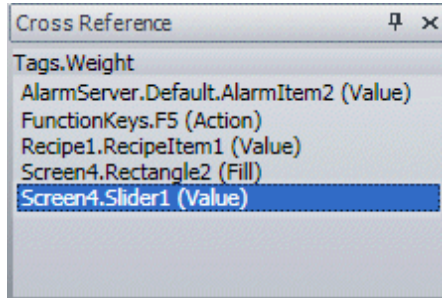
All occurrences of the tag in the current project are listed. Double-clicking on an occurrence in the list automatically brings you to the object or function where the tag is used.

The cross reference tool can be displayed by clicking the button on the Tags tab, by right-clicking on a tag in the tags list, or from the View ribbon.

4.6   Triggers

Triggers are used to determine when data exchange is to be performed; based on when a digital tag is set or at a certain interval.
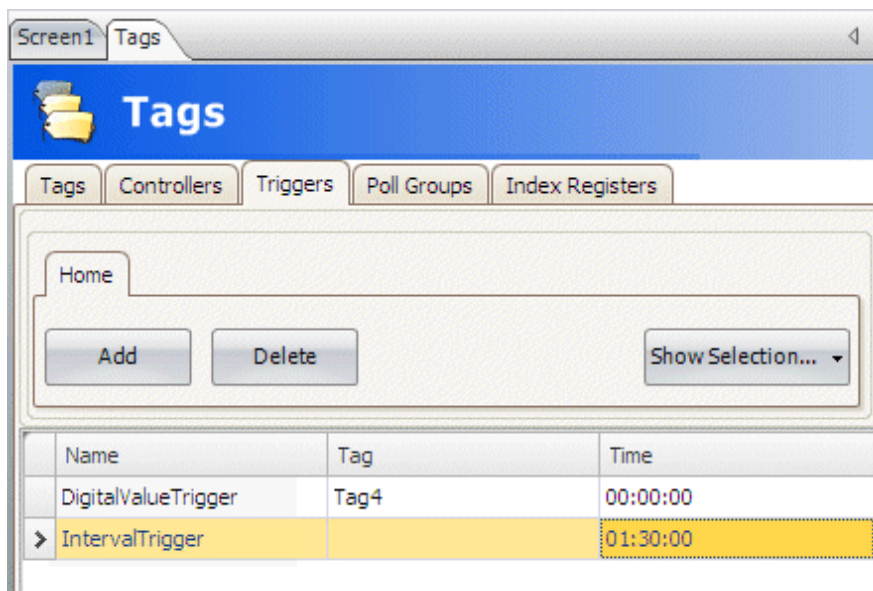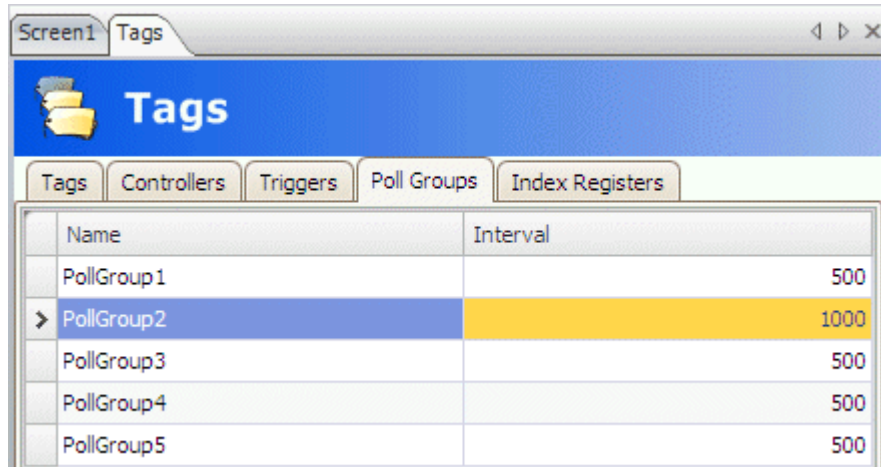
Parameter	Description
Name	Symbolic name. The name can be any alphanumeric string, beginning with a letter (a-z, A-Z).

Tag	Selection of a tag, which when greater than 0, triggers data exchange
Time	Time interval between data exchange operations in the format HH:MM:SS

4.7   Poll Groups

Poll groups allow grouping tags for polling at 5 different intervals. The groups defined on the Poll Groups tab are available for selection from the Tags tab after checking the Others box.

4.8   Index Registers

With index addressing, it is possible for the operator to select from which register an object is to collect the shown value. Without index addressing an object is always connected to the same register, and only the value in this register can be shown in the object.
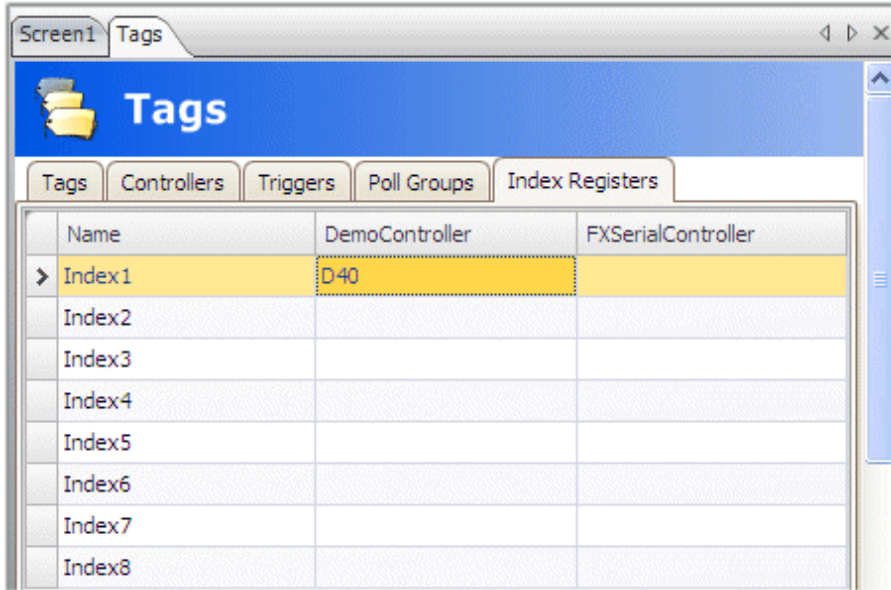
Which registers to use as index registers are defined on the Index Registers tab of the tags configuration page. Up to eight different index registers can be used for each controller, and each index register can be used for more than one object.

Tags are connected to index registers on the Tags tab.

In general index addressing can be formulated as:

If the content in the index register is 2, and the address of the register specified in the object is 100, the value shown in the object will be collected from address 102. If the value in the index register is changed to 3, the value in the object will be collected from address 103 instead.

Note: Index registers are not supported for internal tags, system tags or tags connected to an external OPC server.

4.9   Data Exchange

Data exchange between different controllers is supported; also between controllers of different brands. The data exchange can be performed when a digital tag is set, or at a certain interval. Data exchange can be selected for individual tags or for the complete range of tags.

Note: The data exchange function is isolated from general tag/controller settings. For example, a tag assigned read access only for the operator, may still be read and written by the data exchange function.

Follow the steps below to set up data exchange with three different controllers involved:

1.   Select the Controllers tab of the tags configuration page and enter short names for the controllers in the ID column, and make sure that all controllers are active.
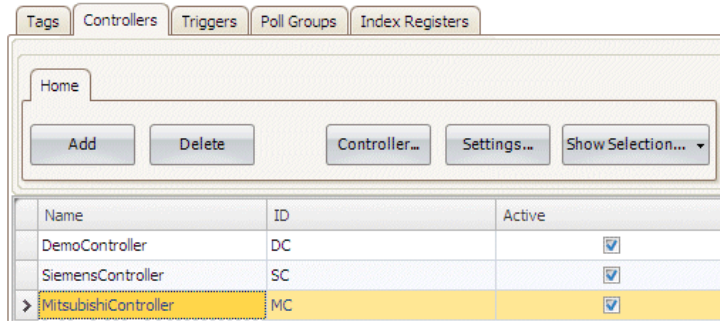
2. Select the Tags tab and check Data Exchange to display the Direction and When columns.

3. Select an address that is represented in all of the controllers.
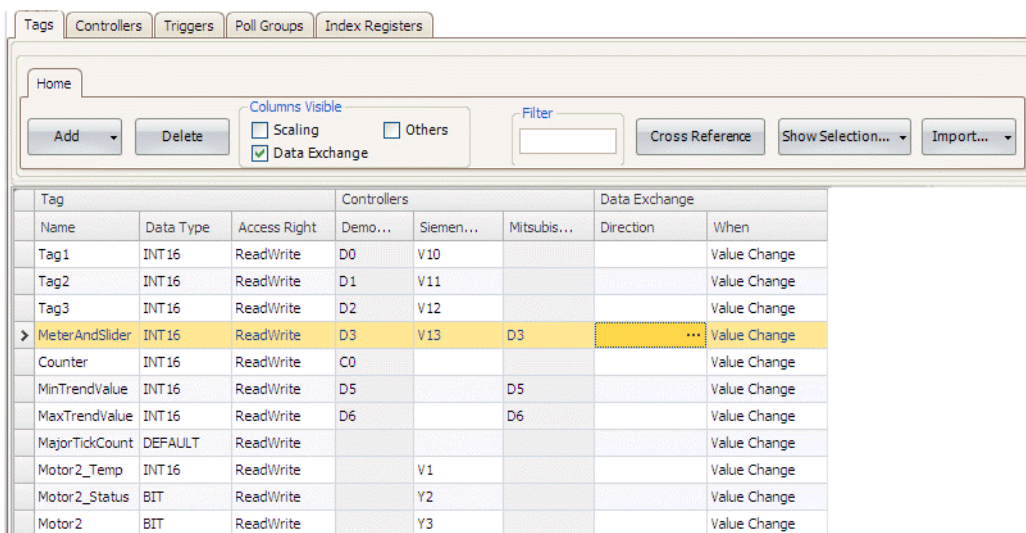
4. Click ... in the Direction column to set up the direction of the data exchange.
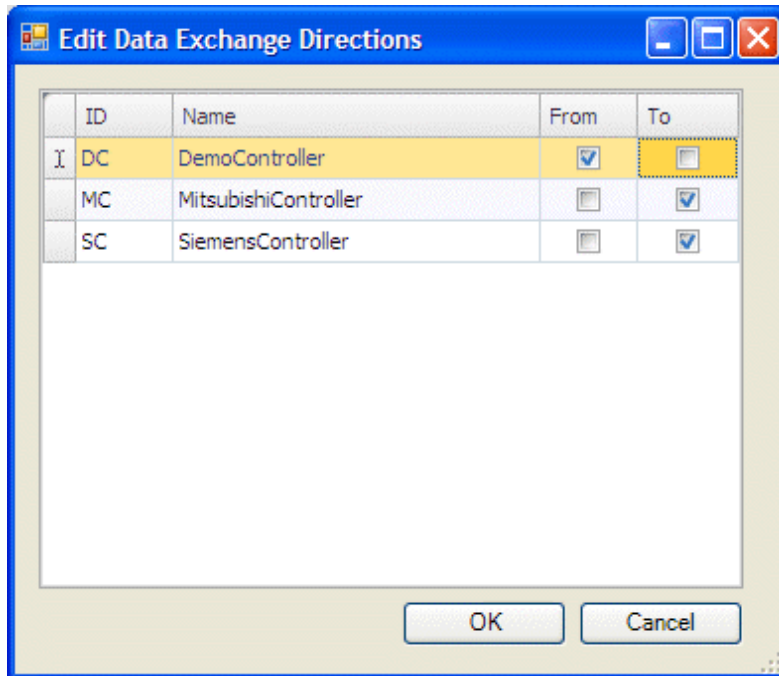
Note: One controller (the "From" controller) can write values to two other controllers (the "To" controllers), but not the opposite. Only one "From" controller can be active in runtime.

5. Add a trigger tag on the Triggers tab with time interval for data exchange or use a tag, which when greater than 0, will trigger the data exchange. Alternatively, set up a trigger that includes both value change and a time interval.
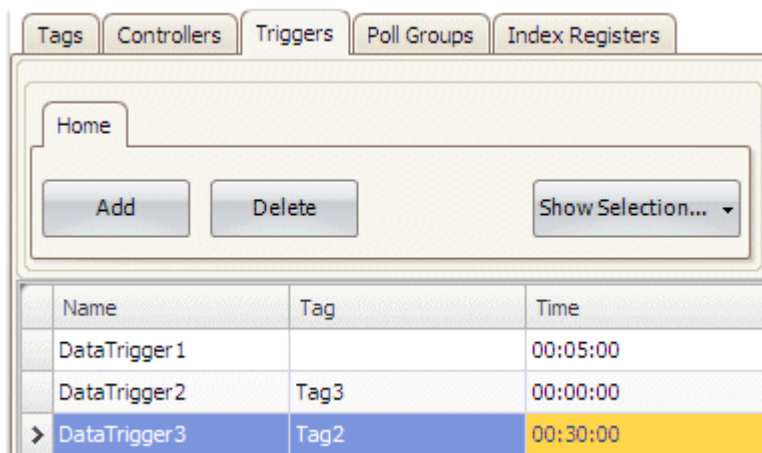
6. Return to the Tags tab and select which trigger to use.

Tag			Controllers			Data Exchange	
Name	Data Type	Access Right	Demo...	Siemen...	Mitsubis...	Direction	When
Tag1	INT16	ReadWrite	D0	V10			Value Change
Tag2	INT16	ReadWrite	D1	V11			Value Change
Tag3	INT16	ReadWrite	D2	V12			Value Change
MeterAndSlider	INT16	ReadWrite	D3	V13	D3	DC -> MC, SC	DataTrigger2
Counter	INT16	ReadWrite	C0				Value Change
MinTrendValue	INT16	ReadWrite	D5		D5		Value Change
MaxTrendValue	INT16	ReadWrite	D6		D6		Value Change
MajorTickCount	DEFAULT	ReadWrite					Value Change
Motor2_Temp	INT16	ReadWrite		V1			Value Change
Motor2_Status	BIT	ReadWrite		Y2			Value Change
Motor2	BIT	ReadWrite		Y3			Value Change

4.10 Import and Exporting

If the controller in the project is changed to a system with other names for the tags used, these must be changed:

1. Click on Tags in the Project Explorer.

2. Click on the arrow to the right of the Import/Export button to display the available options of import and export operations.
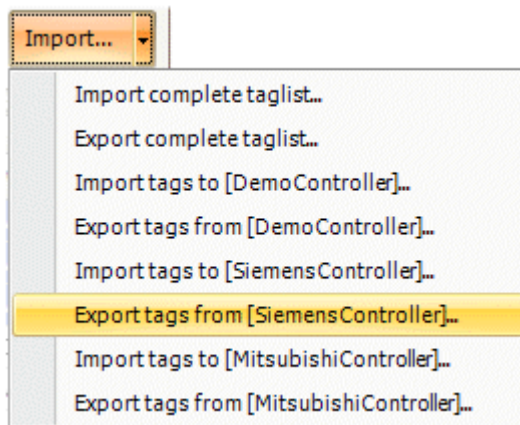
3. Select Export from the desired controller to export the list to a text file. Enter a file name. Use the controls in the Export Dialog to define how the text file is to be separated and which columns to export. Click Export.

4. Open the text file in a text editor or a spread sheet application.

5. Change all current tags to corresponding tags used in the new controller, and save the file as a text file.

6. Select Import to the desired controller and browse to the updated file. Click Import.

4.10.1 Importing Tags from the Command Line

Tags can also be added to the current Kollmorgen Visualization Builder project using the command line switch /ImportTags. In this case, no application window is displayed, as long as the import is successful.

Example

To open the project named Test1 with the tag file VarFile.txt in the directory C:\MyProjects, run Kollmorgen Visualization Builder from the command line with the following arguments:

NeoIDE.exe "C:\MyProjects\Test1\Test1.kmsproj" /ImportTags="C:\MyProjects\VarFile.txt"

4.11 Filtering Tags

A selection of tags can be displayed using the Filter Builder. Several conditions can be used, and the different values/operators that can be used for making conditions are displayed when clicking on the condition building blocks.

Operands and operator nodes are context sensitive. Name strings are not case sensitive. Values in the filter builder are saved individually for each function during an edit session. A filter is built as a logical expression tree. A filter typically has operations on individual column values as leaf nodes and logical operators serve as main nodes.

Perform the following steps to create a filter:

1. Click on Tags in the Project Explorer.

    The tag list is displayed in the desktop area. 2. Select Show Selection from the Show Selection/Show All button to build a filter.

2. The tag list is displayed in the desktop area.
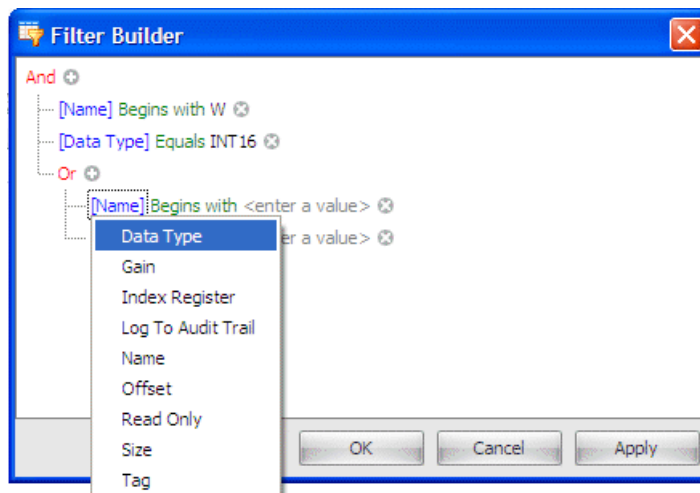
3. Select Show All from the Show Selection/Show All button to display the complete, unfiltered tag list.

An indication that a filter is used is displayed at the lower part of the configuration page.
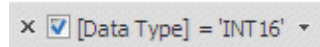
It is also possible to filter tags depending on tag name by typing in the Filter box. The filtering affects the tags list directly as letters are entered in the box.
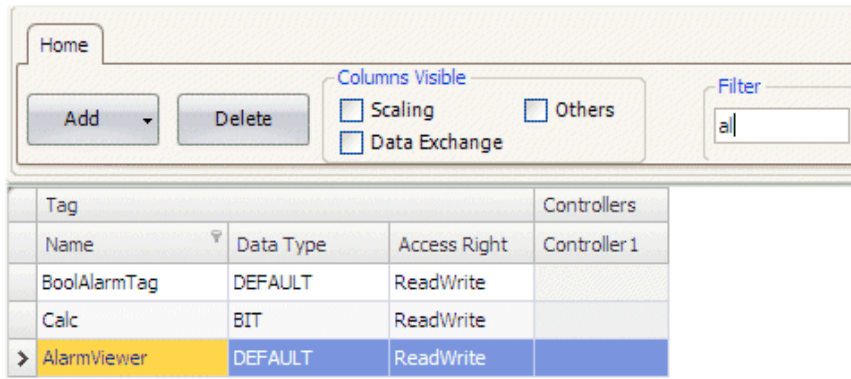
4.12 Tag Format

The following tag formats (data types) are available in the dialog for a tag, provided that the selected driver or OPC server supports the tag format.

Format	Data Type	Range
	DEFAULT	Treated as INT16
Bit	BIT	0 and 1
Bit	BOOL	Values can be "false" (0) or "true" (1)[1]
Signed 16-bit	INT16	-32,768 – +32,767
Unsigned 16-bit	UINT16	0 – +65,535
Signed 32-bit	INT32	-2,147,483,648 – +2,147,483,647[2]
Unsigned 32-bit	UINT32	0 – +4,294,967,295[2]
Float with exponent, 64-bit	DOUBLE	1.7E308[1]
Float with exponent, 32-bit	FLOAT	±3.4E38[1]
7 x Signed 16-bit	DATETIME	An Analog Numeric object can present the time format[1]. Syntax[3]: <yyyy-MM-dd hh:mm:ss> 7 consecutive registers are used to store a time: Dx, seconds, 0-59 Dx+1, minutes, 0-59 Dx+2, hours, 0-23 Dx+3, day, 1-31

		Dx+4, month, 1-12
		Dx+5, year, 100-9999
		Dx+6, weekday, 1-7
String	STRING	Storing character strings in tags

1. Controller representation for this type is dependant on the driver software.

2. Regarding resolution of values in 32-bit format: both the configuration tool and the operator panel can handle up to six decimal digits of an integer 32- bit value. Remaining digits will be truncated or changed into zeros.

3. yyyy=year, MM=month, dd=date, hh=hour, mm=minute, ss=second.

For use in script code, the following table shows the type representation in C#. This is used when there is a need to do a type casting, for example in calculations that are using overloaded operators.

C# Type	Data Type	Description
	DEFAULT	Treated as INT16
unit	BIT	C# does not have a "bit" type. In the controller this is a bit.
bool	BOOL	C# bool type that can have the values "false" (0) and "true" (1).
int	INT16	16 bit, -32,768 – +32,767
uint	UINT16	16 bit, 0 – +65,535
int	INT32	32 bit, -2,147,483,648 – +2,147,483,647
uint	UINT32	32 bit, 0 – +4,294,967,295
float	FLOAT	32 bit, ±3.4E38
double	DOUBLE	64 bit, ±1.7E308
DateTime	DATETIME	7 elements are used to store a time.
string	STRING	Storing character strings in tags

5   CONTROLLER

Operator panels can be connected to many types of automation equipment, such as PLCs, servos, and drives. The expression controller is used as a general term for the connected equipment.

It is possible to connect a tag to more than one controller simultaneously. This makes it possible to use the same application with different controllers. The operator can switch between which controller is to be active in runtime.

A project can contain multiple controller connections. A project can also be connected to an external OPC server.

5.1   Adding a Controller

When a new project is created, one of the steps is to choose which controller brand and model to connect to. Clicking on Tags in the Project Explorer, selecting the Controller tab displays the Controller configuration page.

Parameter	Description
Name	Symbolic name. The name can be any alphanumeric string, beginning with a letter (a-z, A-Z).
ID	Optional short name for controller; displayed in functions such as Data exchange.
Active	Selection of which controller is to be active in runtime. Only one controller can be active at a time, unless the data exchange function is enabled. Change of active controller can also be performed in runtime through an action.

Controllers are added and deleted using the Add and Delete buttons. Clicking Controller allows selecting another brand for the selected controller, and Settings displays settings for the selected driver. Clicking Help in the driver settings dialog opens the help file for the driver. The controller and driver settings are also available from the Settings group of the General ribbon tab.

5.1.1   Notify Window

If a communication error between the application and the controller is detected in runtime, this will result in a communication error, and a Notify Window will be displayed in the operator panel . The Notify Window is a floating window that starts in the upper left corner of the screen. It is also used to display the alarm indicator.

The Notify Window can be moved to any position on the current screen.

5.2   DEMO Controller

The DEMO controller is used and selected in the same way as a regular controller driver, to design and test a project directly on the development PC without connection to an external controller.

A number of predefined tags can be selected:

Data Type	Tag ID	Description
BIT, BOOL	M0 - M99	Digital tags
INT16, UINT16	D0 - D99	Analog tags

The DEMO controller also includes counters and digital tags with predefined functions:

Data Type	Tag ID	Description
BIT	M100-M104	Toggles OFF and ON every 1,000 ms
INT16	C0-C4	Counts from 0 to 100 with 1,000 ms interval by default; min/max values can be defined

5.3   External OPC Server

OPC (OLE for Process Control) is an industrial standard created in a collaboration of automation hardware and software suppliers. The standard defines methods for exchanging real-time automation data between PC-based clients using Microsoft operating systems.

An OPC server acts as a controller towards Kollmorgen Visualization Builder.

Enter the settings for the OPC server in the Choose Controller dialog.

Select Localhost when accessing an OPC server running in your local PC.

Select Remote Server when accessing an OPC server in the network environment, and type the IP address of the OPC server, or click Browse to select the OPC server. Clicking Refresh makes it possible to select the OPC server from the OPC Server drop-down list next time.

Add OPC server tags by clicking the small arrow at the right-hand side of the Add Tag button on the Tags tab:
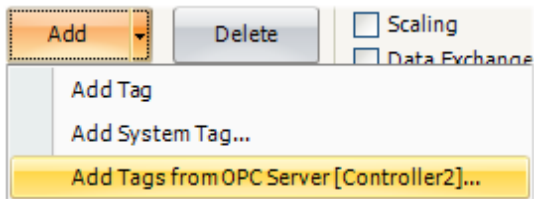
To validate tags from a remote OPC server in the Kollmorgen Visualization Builder project, return to the Controllers tab and select the remote OPC server once more, and click OK.

This procedure is necessary as the tags in the remote OPC server may have been changed since they were selected on the Tags tab.

5.4   Updating Drivers

Drivers can be updated via Internet or from file. Each driver takes up approximately 500 kB. To use the downloaded drivers, the configuration tool must be restarted.

5.4.1   Updating Drivers from Internet

A web browser is not required to update drivers via an Internet connection. A list of drivers that can be downloaded via Internet is displayed when the connection is established.

1. Select File/Update Drivers /From Internet to update available drivers to the latest version, or to install new drivers.
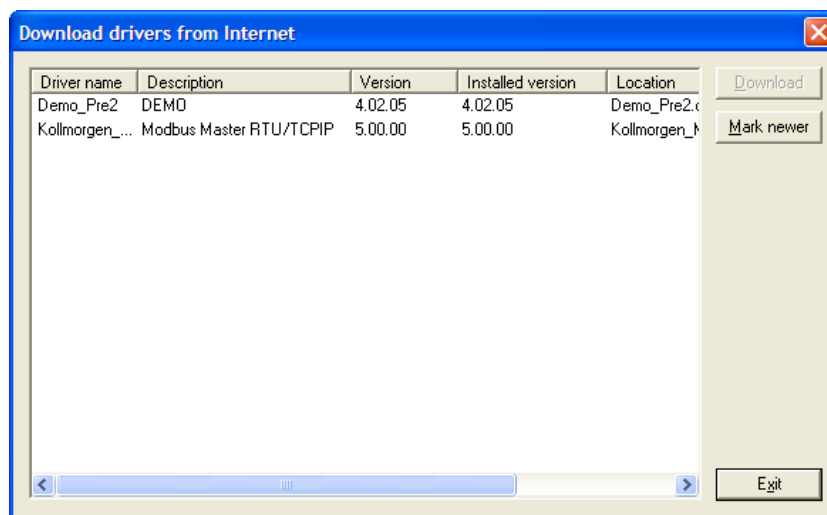
The list shows the version number for the available drivers and the version number for the installed drivers.

2. Select the driver(s) to install in the configuration tool.

3. The command Mark Newer selects all drivers available in newer versions than the ones installed, including all drivers that are not installed.

4. Click Download.

5.5   Updating Drivers from File

When updating drivers from file only one driver at the time is updated. This can for example be used to revert to an older driver.

To install a new driver from file:

1. Select File/Update Drivers/From File to update available drivers to the latest version.

2. Browse to the folder where the driver files are is located.

   A list of all drivers that can be installed is now shown.

3. Select the driver to install in the configuration tool.

4. Mark newer selects the driver when there is a newer version than the currently installed.

5. Click Download.

6 RIBBON TABS

Each of the ribbon tabs holds a set of one or more groups. Each group holds a set of one or more controls that are used to manage screens and functions in a project.
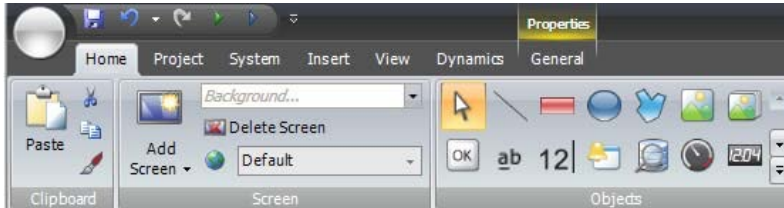
The behavior of the ribbon tabs can be configured to be context dependent using the Options button in the File menu.

Double-click on any of the ribbon tab headings to collapse the ribbon area. A double-click on a ribbon tab, when the ribbon is collapsed, brings back the original style. This can also be changed from the context menu of the Quick Access toolbar.

Tooltips are displayed for all controls on the ribbon tabs. The tooltip offers a brief description of the selected control.

6.1 Home Ribbon Tab

The Home ribbon tab contains groups of controls for editing screens in the project:

6.1.1 Clipboard Group

The Clipboard group contains the paste, cut, copy and format painter controls.

Cuts

Cuts the selection to the clipboard. Also available from the keyboard with [Ctrl] + X or from the context menu.

Copy

Copies the selection to the clipboard. Also available from the keyboard with [Ctrl] + C or from the context menu.

Paste

Copies the clipboard to the current screen. Also available from the keyboard with [Ctrl] + V or from the context menu.

Note: Text from a compatible source, e.g. clipboard text, will be converted to a Text Box object when pasted into a screen.

Format Painter

The Format Painter control is used to copy formatting from one object to another. This is useful when creating a uniform appearance for objects.

To apply formatting to another object:

1. Click on an object with the desired format and font properties. Click on the Format Painter control. The mouse pointer changes to a paintbrush.

2. Click on the object to format.

The format properties from the first object is applied to the selected object.

Format and font properties can be copied between objects of different types, for example from a rectangle to a HMI control.

6.1.2   Screen Group

The Screen control group contains the add screen, background screen, delete screen and current language commands. Screens can also be added and deleted from other controls, such as the Navigation Manager and the context menu of the Project Explorer.
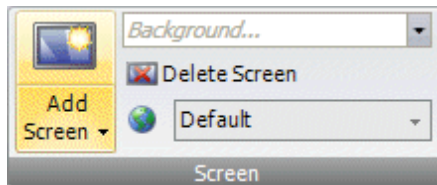
Add Screen

The Add Screen command creates a new empty screen that opens for editing. Clicking the lower part of the Add Screen button shows a selection of screen templates are available for selection.

Background Screen

Any screen can be used as background to the current screen.

All objects in a background screen will work as designed in the project application. Objects in a background screen must be edited in the screen that they reside in. Objects in a background screen will be dimmed in the current screen in the development environment.

Delete

The Delete command removes the current screen from the project, and also disconnects any associations from other screens to the removed screen.

Note: A deleted screen cannot be restored with the Undo command.

Current Language

Current language is the language that is being used at the particular moment that the project is designed. If multiple languages are not used in the project, only Default is available.

6.1.3   Objects Group

The Objects control group contains static and dynamic objects that can be added to a screen.

Not all objects are visible in the normal view, but are made available by scrolling. Clicking the expand button displays all the objects, categorized into groups.
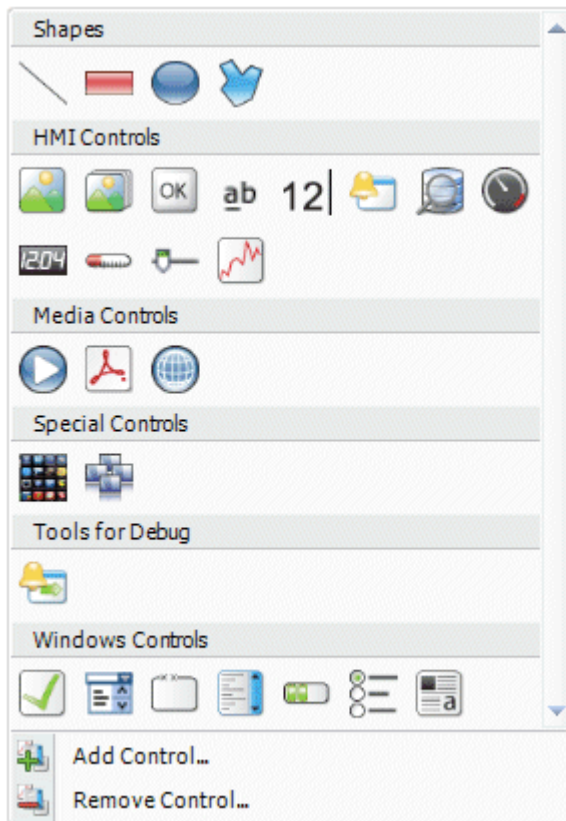
An object can be created by clicking on it in the Objects group and then clicking on the screen, or by dragging it from the Objects group and dropping it on the screen. This creates the object with default size and appearance. It is possible to set a default style of your own preference, by right-clicking on the object and selecting Save Default.

Dragging the object handles resizes it. Object appearance can be modified using the commands in the Format and Font control groups, but also by the controls on the Dynamics ribbon tab.

Settings for a selected object can be managed with the control groups on the General ribbon tab, and actions can be configured from the Actions ribbon tab.

Shapes

Static shapes such as Line, Rectangle and Poly Line are used to draw background graphics. Tags can be linked to shapes under Dynamics, to change their appearance (e.g. color and position) depending on value changes of controller tags.

Points for an existing Poly Line object can be adjusted by selecting Edit Points from the context menu.

Note: Bevel for Poly Line and Ellipse is only supported for projects designed for PC targets.

6.1.4 Debug Tools

Alarm Distributor Viewer Object

The Alarm Distributor Viewer is a debug tool, used to display information from the Alarm Distributor function.

6.1.5 HMI Controls

Dynamic objects such as buttons, analog numerics, sliders, meters and trends are linked to tags in order to create control and monitoring functions.

The tag associated with an object can be selected and changed from the Tag/Security group on the Home or General ribbon tabs, or from the context menu. Links to tags or internal variables are selected in the Tag drop-down list.

Objects containing text can be edited directly from the keyboard, either when just created, or when a single selection is done on the text area of the object.

It is also possible to use script code to control the text contents of buttons, texts or text boxes.

The following HMI and media controls are described:

6.1.6 Alarm Viewer Object

The Alarm Viewer is used to display and manage alarm items, for example indication of out-of-bounds tag values. The viewer consists of a list area and a button area.

6.1.7 Analog Numeric Object

The Analog Numeric object displays a box with a numeric value. The value can be connected to a tag.

Settings for the analog numeric object are available from the General ribbon tab while the object is selected:

Display Format Group

Parameter	Description
Type	Selection of the display format
Number of Decimals	Maximum number of decimals to display in the object. Only available when Type = Decimal.
Limit Characters to	
Zero Fill	Fills empty character positions with zeros, to let the maximum number of characters always be displayed

Makes it possible to maximize the number of displayed characters

Prefix/Suffix Group

Parameter	Description
Prefix/Suffix	Text value that will precede/follow the object value

Tag/Security Group

Parameter	Description
Select Tag	Connection to a tag from the tags configuration page
Select Security Groups	Allows limiting access of the object based on security groups. If left empty, the object can be accessed by anyone.
Select Visibility	Configuration of visibility: **Default:** The visibility specified on the General tab of the Security Manager is used. **Disabled:** The object is disabled for users with insufficient access rights **Hidden:** The object is invisible for users with insufficient access rights **Normal:** The object looks normal also for users with insufficient access rights

Text Group

Parameter	Description
Auto Stretch Font	Resizes the font to fit the height of the object. Default setting for the analog numeric object.
Read Only	Disables input in runtime

Text Alignment Group

Parameter	Description
Horizontal/Vertical	Adjusts the object horizontally or vertically

Validation Group

Parameter	Description
On Input	Input values are validated, based on Lower Limit and Upper Limit, when the box is checked
On Display	Background color changes according to Other Colors on the Format tab if upper or lower limit are violated, when the box is checked
Lower Limit/ Upper Limit	Minimum/maximum value that can be entered in runtime when On Input is checked, or that will change the background color of the object when On Display is checked

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent, i.e. makes the frame and background color invisible

Note: The font size of the analog numeric object is auto-sized when resizing the object frame by default, and is not adjusted in the Font control of the Home ribbon tab. Uncheck Auto Stretch Font in the Text group first, and then change the font size on the Home ribbon tab.

6.1.8   Audit Trail Viewer Object

The Audit Trail Viewer displays information about operator changes that have been logged with the audit trail function.

6.1.9   Button Object

The Button tool draws a button with a text and/or symbol. The button can be configured up to perform a specific task in runtime via the Actions ribbon tab or using script. The text on the button object can also be set to depend directly on a tag value using the General control on the Dynamics ribbon tab. A used symbol file is added to the Project Images folder in the Component Library.

Settings for the button object are available from the General ribbon tab while the object is selected:

Parameter	Description
Text	Text displayed on the button
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the button
Read-only	Disables input in runtime

Image Group

Parameter	Description
Symbol	Selects an image to display on the button, by browsing the PC environment or from the Project Images folder. Select No Symbol to remove a previously selected symbol.
Vertical Alignment/ Horizontal Alignment	Sets alignment for the image
Transparent	Makes the color of the pixel in the upper left corner of the image transparent, as well as all other pixels of the same color

Clicking the small arrow in the lower right corner of the Image group displays the button properties with a number of additional image settings.

Note: The Image Alignment setting is superior to the Text Alignment setting.

Text Group

Parameter	Description
Text	Text displayed on the button
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the button
Read-only	Disables input in runtime

Text Alignment Group

Parameter	Description
Horizontal/ Vertical	Adjusts the text on the button horizontally or vertically

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent, i.e. makes the frame and background color invisible

6.1.10 Circular Meter Object

The Circular Meter represents a numeric value, and displays the value of a connected tag.

Different styles can be used to change the graphical profile of the meter, and also if the meter is to be full, half or quarter.

Settings for the meter object are available from the General ribbon tab while the object is selected:

Angular Settings Group

Parameter	Description
Start Angle/ End Angle	The angular value is based on a start (0 degrees) at three o'clock

Settings Group

Parameter	Description
Min Value/Max Value	Start/end value of scale
Major Ticks	Number of labeled scale marks on the meter
Minor Ticks	Number of scale ticks between two adjacent major ticks

Style Group

Parameter	Description
Black/Classic/Chrome/ Eclipse/Vintage	Predefined graphical styles for the meter
Full/Half/Quarter	The appearance of the meter

Tag/Security Group

Parameter	Description
Select Tag	Connection to a tag from the tags configuration page
Select Security Groups	Allows limiting access of the object based on security groups. If left empty, the object can be accessed by anyone.
Select Visibility	Configuration of visibility: **Default**: The visibility specified on the General tab of the Security Manager is used **Disabled**: The object is disabled for users with insufficient access rights **Hidden**: The object is invisible for users with insufficient access rights **Normal**: The object looks normal also for users with insufficient access rights

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent
Scale	When unchecked, the scale color of the meter is made transparent. Scale color is set from Other Colors on the Format tab.

6.1.11 Digital Clock Object

The digital clock displays date, time and/or day of week.

Display Format Group

Parameter	Description
DateAndTime/ Date/Time	Selection of display format
Show Day of Week	When checked, day of week is displayed
Show Seconds	When checked, seconds are displayed

Note: The display format is based on the region set in the operating system. For an operator panel project this can be changed on the System ribbon tab, and the region will be set at project startup in the operator panel.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.12 Linear Meter Object

The Linear Meter represents a numeric value, and displays the value of a connected tag.

Different styles can be used to change the graphical profile of the meter, and also if the meter is to be horizontal or vertical.

Settings for the meter object are available from the General ribbon tab while the object is selected:

Settings Group

Parameter	Description
Min Value/Max Value	Start/end value of scale
Major Ticks	Number of labeled scale marks on the meter
Minor Ticks	Number of scale ticks between two adjacent major ticks

Style Group

Parameter	Description
Black/Classic/Chrome/ Eclipse/Vintage	Predefined graphical styles for the meter
Horizontal/Vertical	The appearance of the meter

Tag/Security Group

Parameter	Description
Select Tag	Connection to a tag from the tags configuration page
Select Security Groups	Allows limiting access of the object based on security groups. If left empty, the object can be accessed by anyone.
Select Visibility	Configuration of visibility: **Default**: The visibility specified on the General tab of the Security Manager is used **Disabled**: The object is disabled for users with insufficient access rights **Hidden**: The object is invisible for users with insufficient access rights **Normal**: The object looks normal also for users with insufficient access rights

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent
Scale	When unchecked, the scale color of the meter is made transparent. Scale color is set from Other Colors on the Format tab.

6.1.13 Media Player Object

Media files can be added to the media player object, which allows selecting, starting and stopping the files in runtime. For operator panels, files in .mpeg1 and .wmv format are supported. The added files are added to the Component Library.

Note: Microsoft Media Player of version 10 or later is required.

File Folders Group

Parameter	Description
Project Files	Default option for browsing. The project files are listed in the Component Library. At least one of the folders has to be chosen..
External CF Card	Select this option for browsing if project files are placed on an external Compact Flash memory card. At least one of the folders has to be chosen.

Media Group

Parameter	Description
Media Source	Select a media file to add to the media player, from the project files folder or by browsing the PC.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

Note: The object is supported only for PC, AKI-CDT-MOD-10T, and AKI-CDT-MOD-15T targets.

Scripting to the Media Player Object

When scripting to the Media Player object, the name of the current media file has to be stated, for example:

```
MediaPlayer1.Source = "Bear.wmv";
```

Prior to running the script, the media file has to be added manually to the Project Files folder. When the script is executed, the file will be copied to the output directory.

Events for the media player can be used, for example:

```
MediaPlayer1.Play();
```

6.1.14 MultiPicture Object

The MultiPicture object allows using a set of images as an object. The images change in runtime depending on intervals of a tag value.

Pictures can be imported to the project by browsing the hard disk for graphic files. Imported pictures are added to the Project Images folder in the Component Library.

Settings for the MultiPicture object are available from the General ribbon tab while the object is selected:

Settings Group

Parameter	Description
Configure Pictures	Configuration of start/end values of intervals and selection of images for each interval. Images can be selected from the Project Images folder or from the hard disk. Transparency can also be set. Original image size is displayed. The Add/Delete buttons are used to add and remove items to/from the object.
Configure Pictures	Restores original height and width to image
Stretch	Adapts height and width to the selection frame when resizing the image
Lock Aspect Ratio	Maintains the height/width ration of the object.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.15 Navigation List Box Object

The Navigation List Box object is used to create attractive navigation possibilities in runtime. Screen navigation is performed via thumbnails, and scripting can be used for advanced functionality.

Note: The object is supported only for PC targets.

General Group

Parameter	Description
Orientation	Select horizontal or vertical orientation for runtime scrolling.
Scroll Tolerance	Defines tolerance of pressing the touch screen (or scrolling with the cursor) slightly outside of a navigation list box item in runtime before the navigation is actually carried out.

Internal Group

Parameter	Description
Configure Items	Definition of items included in the navigation list box object; see below.
Height/Width	Size of the items in the navigation list box.
Margin	Margin between navigation list box items.
Border Width	Width of navigation list box item borders.
Corner Radius	Corner radius of navigation list box items.
Show Text	Selection of whether to show text below navigation list box items.

The individual items in the navigation list box object are handled by clicking Configure Items. Use the Add and Delete buttons to add and remove items to/from the navigation list box.

Parameter	Description
Image	Selection of image by browsing the PC environment or among the project files.
Screen	Selection of screen to navigate to.
Script Info	Optional text to serve as a reminder if scripts are used.
Text	Text displayed under each navigation list box item. Only visible if Show Text is checked under Item Settings.

Use the up and down arrows to facilitate reorganizing of navigation list box items.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.16 PDF Viewer Object

Pdf files can be displayed in runtime using the PDF viewer object. The added files are added to the Component Library.

Note: Adobe Reader of version 9 or later is required.

File Folders Group

Parameter	Description
Project Files	Default option for browsing. The project files are listed in the Component Library. At least one of the folders has to be chosen..
External CF Card	Select this option for browsing if project files are placed on an external Compact Flash memory card. At least one of the folders has to be chosen.

PDF Viewer Group

Parameter	Description
PDF File	Select a PDF file to add to the PDF viewer, from the project files folder or by browsing the PC
Buttons	Select which buttons to make available in runtime

In an operator panel, all PDF files in the project files folder will be available for selection in runtime, if the Open button is checked.

Note: When using a PDF viewer object in a popup screen, only the default style for the popup screen is supported.

Note: The object is supported only for PC and AKI-CDT-MOD-10T - AKI-CDT-MOD-15T targets.

6.1.17 Picture Object

The Picture object allows using an image as an object. Pictures can be imported to the project by browsing the hard disk for graphic files. Imported pictures are added to the Project Images folder in the Component Library.

The displayed image can also be dynamic; depending of a set of images that have been linked to intervals in a tag value.

Settings for the picture object are available from the General ribbon tab while the object is selected:

Settings Group

Parameter	Description
Change Picture	Opens a browse dialog for selection of image
Reset Picture	Restores original height and width to image
Stretch	Adapts height and width to the selection frame when resizing the image
Transparent	Makes the object transparent, i.e. makes the frame and background color invisible

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.18 Screen Carousel Object

The Screen Carousel object is used to create attractive navigation possibilities in run-time. Screen navigation is performed via thumbnails in a 3D view. The screen carousel can be configured to rotate automatically, or actions can be configured to control screen carousel behavior.

Note: The object is supported only for PC targets.

General Group

Parameter	Description
Number of Visible Items	Maximum number of visible items.
Scroll Duration (ms)	Time used for an item to move to the next position in the carousel.
Use Reflection	Adds a reflecting layout to the object.
Auto Scroll	Makes the object rotate automatically.

Item Settings Group

Parameter	Description
Configure Items	Definition of items included in the screen carousel object; see below.
Height/Width	Size of the items in the screen carousel.
Margin	Margin between screen carousel items.
Border Width	Width of screen carousel item borders.
Corner Radius	Corner radius of screen carousel items.
Show Text	Selection of whether to show text below screen carousel items.

The individual items in the screen carousel object are handled by clicking Configure Items. Use the Add and Delete buttons to add and remove items to/from the screen carousel.

Parameter	Description
Image	Selection of image by browsing the PC environment or among the project files.
Screen	Selection of screen to navigate to.
Script Info	Optional text to serve as a reminder if scripts are used.
Text	Text displayed under each navigation list box item. Only visible if Show Text is checked under Item Settings.

Use the up and down arrows to facilitate reorganizing of navigation list box items.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

Use the up and down arrows to facilitate reorganizing of screen carousel items.

6.1.19 Slider Object

The Slider can be used to adjust a numeric value. The slider sets a value to a connected tag. If the tag value changes for other reasons, the slider control handle will show the actual value in runtime.
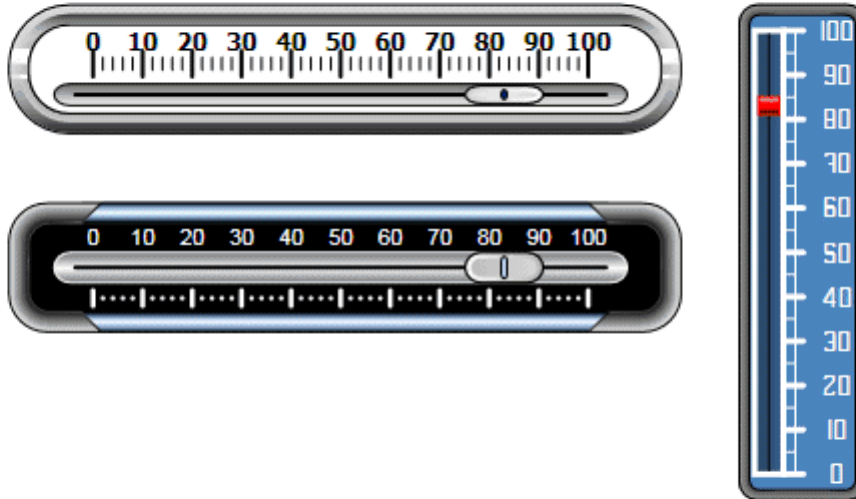
Sliders in Chrome and Eclipse Horizontal styles, and Vintage Vertical style

Settings for the slider object are available from the General ribbon tab while the object is selected:

Settings Group

Parameter	Description
Min Value/Max Value	Start/end value of scale
Major Ticks	Number of labeled scale marks on the slider
Minor Ticks	Number of scale ticks between two adjacent major ticks

Style Group

Parameter	Description
Black/Classic/Chrome/ Eclipse/Vintage	Predefined graphical styles for the slider
Horizontal/Vertical	Appearance of the slider

Tag/Security Group

Parameter	Description
Select Tag	Connection to a tag from the tags configuration page
Select Security Groups	Allows limiting access of the object based on security groups. If left empty, the object can be accessed by anyone
Select Visibility	Configuration of visibility: Default: The visibility specified on the General tab of the Security Manager is used Disabled: The object is disabled for users with insufficient access rights Hidden: The object is invisible for users with insufficient access rights Normal: The object looks normal also for users with insufficient access rights

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent; only scale and handle will be displayed
Scale	When unchecked, the scale color of the slider is made transparent. Scale color and indicator color (color of the handle) are set from Other Colors on the Format tab.

6.1.20 Text Object

The Text object is used to display read-only information for the operator. The displayed text can be static, or linked to intervals in a tag value that contain different strings. The text object can also be set to depend directly on a tag value using the General control on the Dynamics ribbon tab.

Settings for the text object are available from the General ribbon tab while the object is selected:

Text Group

Parameter	Description
Text	Text that the object displays
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the object. Not available if Autosize is selected.
Configure Texts	Links the displayed text to a tag. The Text field value is shown if the selected tag is not within the set limits.
Auto Stretch Font	Resizes the font to fit the height of the object. Not available if Autosize is selected.
Auto Size	Resizes the object according to the size of the default text string length and font size. Default setting for the text object.

Text Alignment Group

Parameter	Description
Horizontal/ Vertical	Adjusts the text in the object horizontally or vertically. Not available if Autosize is selected.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.21 Trend Object

Trends are used to display values of connected tags. Trend curves represent tag values over time. A trend object can show any number of trend curves.

Note: A large number of trend pens and short sampling intervals may affect communication performance.

6.1.22 Web Browser Object

Web pages can be displayed using the web browser. It is possible to set up the web browser with regular web browsing functionality, with selection of web addresses in a list or input via the on screen keyboard. It is also possible to allow showing certain defined web pages only, or a local htm/html file.

Web Browser Group

Parameter	Description
Address	The default web page of the web browser object.
Home	The web page that will be displayed when the Home button is pressed.
Favorites	Addition of web pages that will be available for selection from the drop-down address field in runtime.
Address Read Only	Checking the box disables entering text in the address field
Address Field	Unchecking the box removes the address field in runtime
Go Button	Unchecking the box removes the Go button in runtime
Home Button	Unchecking the box removes the Home button in runtime
Back Button/Forward Buttons	Unchecking the box removes the navigation buttons in runtime

Referring to a local htm/html file can be useful for example when the operator panel is not connected to Internet. The local file has to be located in the Project Files folder of the current project, and is addressed in the following format: "File://filename.htm/html" where "filename.htm/html" represents the actual file", e.g. File://ReadMe.htm.

Note: When using a web browser object in a popup screen, only the default style for the pop-up screen is supported.

Note: Some web pages may not be supported when running the web browser in an Advanced Kollmorgen Interface (AKI). If the web browser does not behave as expected, it is recommended to use the standard Internet Explorer, available in the Advanced Kollmorgen Interface (AKI), instead. The standard Internet Explorer can be started using the Run action and executing the iesample.exe file.

Note: The object is supported only for PC and AKI-CDT-MOD-10T - AKI-CDT-MOD-15T targets.

6.1.23 Windows Controls

The following Windows controls are described:

6.1.24 Check Box Object

The Check Box object controls a digital tag value. The connected tag gets the value 1 when the box is checked and the value 0 when the box is unchecked.

The appearance of the text can be adjusted in the Font group of the Home ribbon tab.

Note: Changing font family is only supported for projects designed for PC targets.

Settings for the check box are available from the General ribbon tab while the object is selected:

Text Group

Parameter	Description
Text	Text that the object displays
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the object. Not available if Autosize is selected.
Auto Stretch Font	Resizes the font to fit the height of the object. Not available if Autosize is selected.
Autosize	Resizes the object according to the size of the default text string length and font size.

Text Alignment Group

Parameter	Description
Horizontal/Vertical	Adjusts the text in the text box horizontally or vertically. Not available if Autosize is selected.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.25 Combo Box Object

A Combo Box can be used to create selections from a drop-down list. When a keyboard is connected to the operator panel it is also possible to make selections from the list by typing.

Settings for the combo box are available from the General ribbon tab while the object is selected:

Text Group

Click Configure Texts to enter texts for different values.
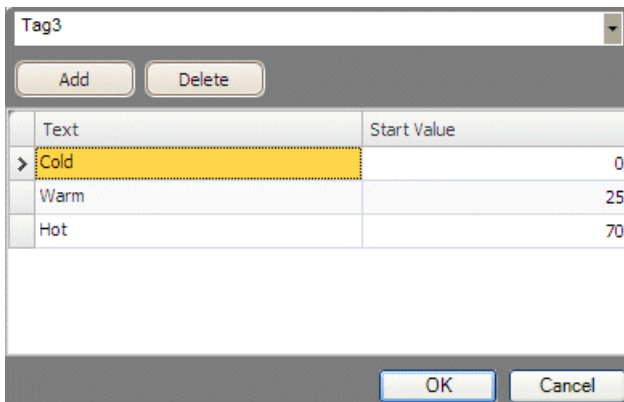
Select a tag, and then click Add until there are enough rows in the table. Enter texts and start values.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

It is also possible to use script code to control the contents of a combo box.

Example:

The following script code relies on the existence of a combo box (ComboBox1) and a set of predefined recipes ("Book" and "TV").

```
void Screen1_Opened(System.Object sender, System.EventArgs e)
{
        ComboBox1.Items.Clear( ) ;
        ComboBox1.Items.Add("Book") ;
        ComboBox1.Items.Add("TV") ;
}

Void ComboBox1_SelectionChanged(System.Object sender, System.EventArgs e)
{
        String selectedItem = ComboBox1.SelectedItem as string;
        Globals.Recipe1.LoadRecipe (selectedItem);

}
```

When the screen opens, the script clears the box and writes the recipe name strings in the box. Selection from the combo box triggers loading of a recipe.

6.1.26 Group Box Object

The Group Box is used to draw a labeled frame around a group of objects.

Settings for the group box are available from the General ribbon tab while the object is selected:

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.27 List Box Object

The List Box handles a list of predefined texts.

Text Group

Click Configure Texts to enter texts for different values.

Select a tag, and then click Add until there are enough rows in the table. Enter texts and start values.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

It is also possible to use script code to control the contents of a list box.

Example:

The following script code includes two objects on Screen1, a button (Button1) and a list box (ListBox1).

```
Public partial class Screen1
{
        Int count=0
        Void Button1_Click(System.Object sender, System.EventArgs e)
        {
                ListBox1.Items.Add("Count " + count.ToString{});
                Count++;
        }
}
```

When the button is clicked, the script is triggered and a string is written to the list box and the value of an internal counter (count) is incremented.

6.1.28 Progress Bar Object

The Progress Bar displays a meter without numeric scaling, representing an analog value. The value can be connected to a tag.

Settings for the progress bar are available from the General ribbon tab while the object is selected:

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

The other properties, such as orientation, minimum and maximum values, and meter color (foreground property) are set in the Property grid.

6.1.29 Radio Button Object

Each Radio Button controls the value of a connected digital tag. The group of radio buttons enables the combined control of the tag values where exactly one of the values is active (set to 1) at any one time.

The appearance of the text can be adjusted in the Font group of the Home ribbon tab.

Settings for the radio button are available from the General ribbon tab while the object is selected:

Text Group

Parameter	Description
Text	Text displayed on the button
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the button
Auto Stretch Font	Resizes the font to fit the height of the object. Not available if Autosize is selected.
Autosize	Resizes the object according to the size of the default text string length and font size.

Text Alignment Group

Parameter	Description
Horizontal/Vertical	Adjusts the radio button text horizontally or vertically. Not available if Autosize is selected.

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

6.1.30 Text Box Object

The Text Box is used to include a box with multiple rows of text.

By default, the text can be modified when the clicking on the box in runtime. The entered text is not saved in runtime; when the screen changes the value will be reset. The text box can also be configured as read-only.

Settings for the text box object are available from the General ribbon tab while the object is selected:

Text Group

Parameter	Description
Text	Text displayed on the button
Multiple Lines	Lets the text run over more than one line, using [Enter]
Word Wrap	Wraps the text to fit the width of the object
Read-only	Disables input in runtime

Text Alignment Group

Parameter	Description
Horizontal/Vertical	Adjusts the text in the text box horizontally or vertically

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent, i.e. everything but the text will be invisible

6.1.31 Other Controls

Add Control

It is possible to add external controls written in .NET compact framework that are compatible for use on the Windows CE platform. The Add Control command will open a browse dialog where a dll (Dynamic Linked Library) file for an external control can be selected. The added controls will be available among Additional Controls in the Objects group of the Home ribbon tab.

Remove Control

Controls written in .NET compact framework can be removed using the Remove Control command. Select the controls that are to be removed from the dialog and click OK.

Scripting to Other Controls

The Referenced Assemblies command makes it possible to refer to your own or third-party .Net assemblies (.dll). Their methods and properties will be made available when scripting and will be included by the name completion function, in the same way as for built-in components.

6.1.32 Format Group

The Format group controls the color and position of a selected object. Predefined quick styles offer selection of uniform appearance for different objects. Selection of multiple objects makes it possible to easily affect more than one object at the same time.
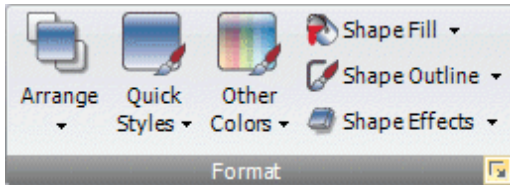
Clicking the small arrow in the lower right corner of the Format group displays the shadow, fill and outline properties with a number of additional format settings.

Note: It is possible to use the Format Painter (in the Clipboard group) to copy color and font properties from one object and paste it to another object.

Default Appearance

It is possible to select a style to be used as the default style next time the same kind of object is added.

Right-click on an object to display the context menu, and select Save Default, to use the current appearance of the object as the default style. To make existing objects adopt the default style, select Load Default. To return to normal mode, select Clear Default.
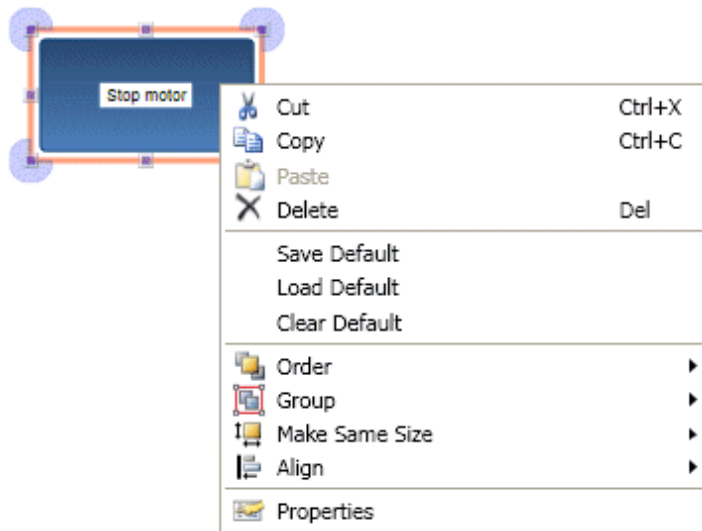
Arrange

The Arrange control can be used to order, group, resize, align and distribute screen objects.
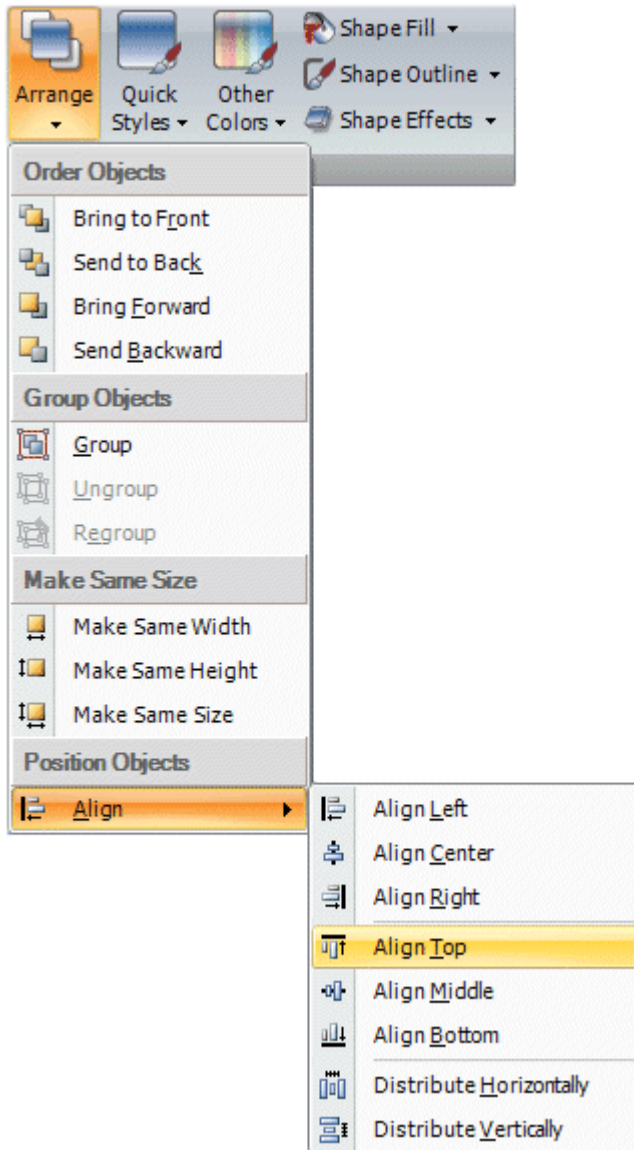
Order Objects

The commands in the Order Objects group are used to send objects to the front or back of each other.

Parameter	Description
Bring to Front	Positions the selected object on top of any overlapping objects
Send to Back	Positions the selected object behind any overlapping objects
Bring Forward	Makes the selected object swap place with the nearest overlapping object
Send Backward	Makes the selected object swap place with the nearest obscured object

Group Objects

The Group Objects commands are used to manage selections of multiple objects. A grouped object is moved and treated as one object with respect to formatting and resizing, and can also be stored in the Component Library for reuse.

Any selection of objects on the screen can be grouped.

When multiple objects are selected, one object is the primary selection. This is shown with an orange frame, while other objects in the group have blue frames. Click on any object in the group to change this to the primary selection.

A grouped object can be resolved into individual objects using the Ungroup command. A property that was given to the group will be kept by each of the object, provided that the property is applicable.

Make Same Size

The Make Same Size commands are used to adjust the size of a group of selected objects. The size will be determined by the primary selection (the guide object).

Position Objects

The Position Objects commands can be used to align and distribute multiple objects neatly. Objects can be aligned vertically and horizontally using the primary selection for the group as guide object. Objects can be aligned with respect to their center (center/ middle) or their edges (top/bottom/right/left).

Quick Styles

The Quick Styles control contains a number of preset visual object color schemes that can be applied to screen objects.

The predefined graphical styles make it possible to achieve a uniform appearance on items like meters and trends. An object that has a style applied can be further customized, for example with font settings.

It is also possible to modify the predefined styles to styles of your own preference. The quick styles are not specific to the current project. They will be available for all Kollmorgen Visualization Builder projects.

Note: Controls in the Style group on the General tab can be used to reshape objects such as meter, slider and trend to predefined styles. These styles are not the same as the quick styles.

Other Colors

Color settings for special properties of an object, for example scale color for a meter or out-of-range validation of an analog numeric object, are available from the Other Colors control.

Shape Fill

The Shape Fill control is used to alter the fill color and gradient of the selected shape. A preview of the colors in the Shape Fill selection window is displayed directly on the object on the screen as the pointer hovers over the different colors.

Shape Outline

The Shape Outline control is used to alter the outline color and outline width of the selected shape.

Shape Effects

Shape Effects makes it possible to add bevel style and shadow effects.

6.1.33 Font Group

The Font group is used to change text style. The text style is defined for the currently selected object.
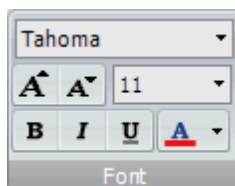
Font and Font Size

Select font from the drop-down list. Use the increase/decrease font size buttons or set a specific font size.

Note: Objects, for which Auto Stretch Font is selected, will not be affected by these settings. The font size will be autosized when resizing the object height.

Style and Color

An italic, underlined or bold style can be selected for the text. The style stays regular if all the boxes are left unchecked. Use the Font Color drop-down list to set the color of the text.

6.1.34 Name Group

All objects and screens are automatically named when they are created. The name is displayed and can be edited in the Name group. Screen names can also be edited in the Project Explorer.

The name of an object is a symbolic identifier and is an alphanumeric string, beginning with a letter. Name strings can contain letters (a-z, A-Z), numbers (0-9), and underscore ('_') characters.

6.1.35 Tag/Security Group

Connection to controller tags as well as object access and visibility of objects are configured from the Tag/Security group.
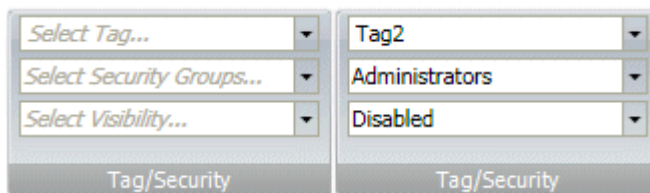

Tag/Security group without and with selections

Parameter	Description
Select Tag	Connection to a tag from the tags configuration page
Select Security Groups	Allows limiting access of the object based on security groups. If left empty, the object can be accessed by anyone.
Select Visibility	Configuration of visibility: **Default:** The visibility specified on the General tab of the Security Manager is used. **Disabled:** The object is disabled for users with insufficient access rights **Hidden:** The object is invisible for users with insufficient access rights **Normal:** The object looks normal also for users with insufficient access rights

Note: When access rights are not fulfilled, showing an access denied message or opening a login dialog can be configured using the security function.

The Tag/Security group is also available on the General ribbon tab.

6.2 Project Ribbon Tab

The Project ribbon tab contains a number of project related functions:

6.2.1 Transfer/Test Group

The Transfer/Test group enables validation, simulation, transfer to operator panel, backup and transfer to folder functions as well as registration of third-party assemblies.

Validate

The Validate control builds and checks the current project.

Run

A test of the project can be executed directly on the PC. Clicking Run will perform a validation and start a simulation, if the project can be built. If errors are found during validation, an error message will be displayed.

A new window is opened, with the simulated project. Click the "x" in the upper right corner of the simulation window to exit simulation.

During simulation, the project will communicate directly with the configured controllers, provided that the controllers are correctly connected to the development environment.

Simulate

It is also possible to test and run the application on the development PC without connection to the selected controller, by clicking Simulate. If the project is valid, the simulation is started.

Transfer

The Transfer control sends the project to an operator panel in the network environment.

Transferring a Project to an Operator Panel

1. Connect the operator panel to the PC via an Ethernet connection.

2. Click Transfer.

3. The transfer dialog opens and all panels connected in the network are listed with information about IP address and panel type. Select the panel to transfer to in the list.

4. Check that the IP address is correct and click Transfer. The IP address can be changed by clicking Edit, if needed.

The panel will respond to a transfer request by stopping any current project. The panel will display that it is ready for project download. When the transfer is completed, the new project will automatically start running.

Note: The panel settings can be controlled from the panel's Service menu.

The panel will respond to a transfer request by stopping any current project. The panel will display that it is ready for project download. When the transfer is completed, the new project will automatically start running.

Backup

The Backup command will collect the database from an operator panel in the network environment to a file on the development PC. The panel will pause during the backup, and will be started automatically afterwards.

Collecting a Database from an Operator Panel

1. Connect the operator panel via an Ethernet connection.

2. Click Backup.

3. The Backup dialog opens and all panels connected in the network are listed with information about IP address and panel type. Select the panel to collect from in the list.

4. Check that the IP address is correct and click Backup.

5. Select location of the saved database.

Transfer to Folder

Exports the project to a folder. The export dialog allows creating a new folder.

Transferring a Project to a PC with Kollmorgen Visualization RT Installation

A project can be transferred to a PC with an Kollmorgen Visualization RT installation via the Transfer to folder command. The project can be transferred to a USB stick or, on the condition that a network connection is configured, directly to a folder in the runtime PC.

The project in the runtime PC is started by running the .exe file located in the project folder.

Referenced Assemblies

The Referenced Assemblies command makes it possible to refer to your own or third-party .Net assemblies (.dll). Their methods and properties will be made available when scripting and will be included by the name completion function, in the same way as for built-in components.

1. Click on Referenced Assemblies.

2. Click Add.

3. Browse to the desired dll file in your PC environment and click Open.
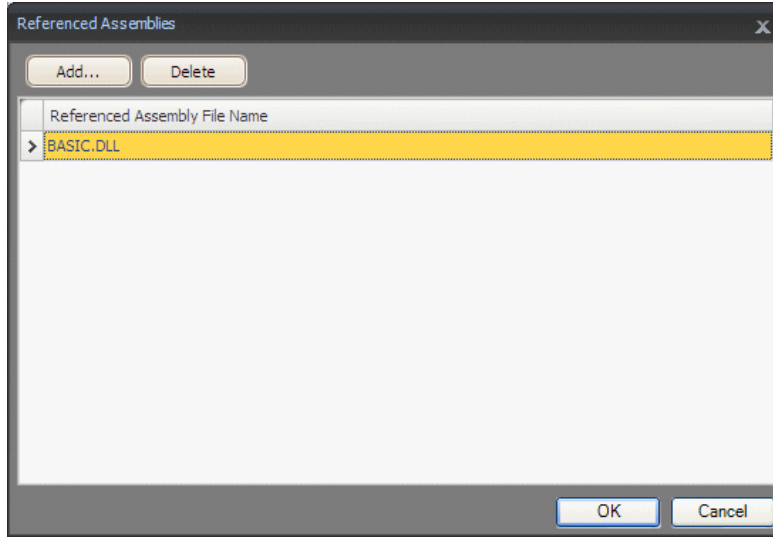
The methods and properties of the added dll file are now available for scripting.

6.2.2   Project Group

Properties such as application behavior in runtime, system font and settings for mouse and keyboard can be edited by clicking Settings in the Project group. The project target as well as name and title are also available for editing.
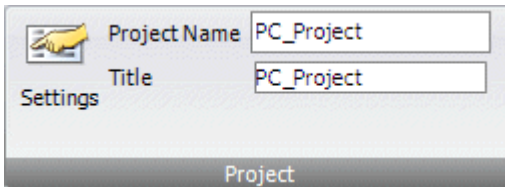
Display/Panel

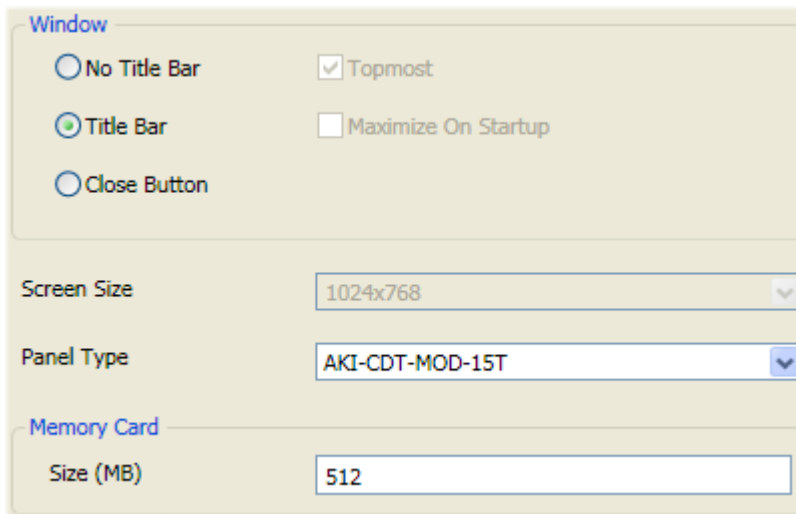| Parameter	Description
No Title Bar	Displays the project without title bar in runtime.
Title Bar	Displays the project with its title and a set of minimize, maximize and close buttons in the title bar.
Close Button	Displays the project with its title and a close button in the title bar.
Topmost	Makes the project the topmost application in runtime. Only available for PC targets.
Maximize On Startup	Makes the project maximized in runtime. Only available for PC targets.
Screen Size	Screen resolution. Only available for standard PC targets.
Panel Type	Displays selected target. It is possible to select another target.
Memory Card	State the size of the internal memory card, to save project data on it. Only available for AKI-CDT-MOD-10T - AKI-CDT-MOD-15T targets.

Changing Project Target

When changing to another target, you can select to automatically resize objects to the new target size. Different scale factors are used horizontally and vertically, to optimize conversion to and from wide screen targets. In this case, the aspect ratio of objects will change.

The following items are resized with the same factor when having selected automatic resizing:

Item
Graphical objects
Popup screens
Font: A minimum scaled font of 10 pixels ensures readability in the smaller operator panels
Dynamics size and move

Not all objects and styles are supported for all project targets. When changing to another project target, objects and styles that are not supported in the new target will be deleted and will not possible to restore. Removed objects are logged, and displayed in a window after the transformation. The log may be saved to file. Build files are always cleaned and project saved after transformation.

Note: Changing back to the previous target will not restore removed objects.

Examples of objects and styles that are not supported for all targets:

Object/Style	Not Supported
Navigation List Box object	Operator panels
Screen Carousel object	
Media Player object	AKI-CDT-MOD-04T and AKI-CDT-MOD-06T
PDF Viewer object	
Web Browser object	
Bevel style for poly line and ellipse	Operator panels
Corner radius for rectangle	
Opacity style	
Shadow style	

Memory Card

The available project memory is displayed in the lower right corner of the application window, when the target is an operator panel. The project memory size is updated when the project is validated.

If the size of the memory card is not stated, project data will be saved in the internal operator panel memory.

For panels with a pre-installed Compact Flash memory card, the size of the memory card is added automatically.

System Font
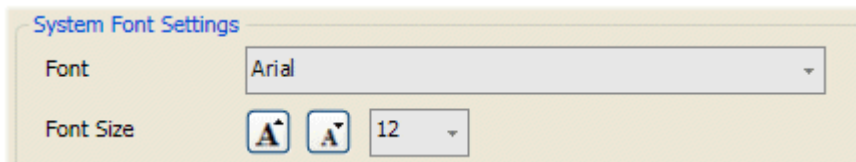
Parameter	Description
Font	Select a system font that will be used as the default font.
Font Size	Use the increase/decrease font size buttons or set a specific default font size.

Virtual Keyboard
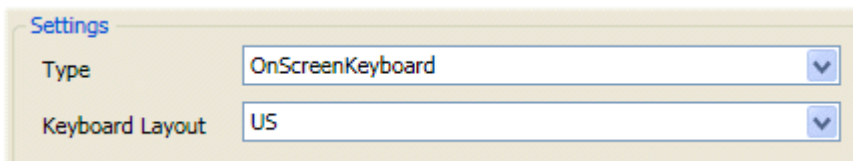
Parameter	Description
Type	Select whether a virtual keyboard is to be displayed when alphanumerical input is needed, or to disable the virtual keyboard.
Keyboard Layout	The layout of the virtual keyboard.

Mouse/Touch Input Delay

It is possible to configure a delay of mouse and touch screen input in runtime. This setting is global and will affect all objects for which Delay Mouse/Touch Input has been selected. The Property grid is used to enable delay of mouse and touch screen input for individual objects.

6.3   System Ribbon Tab

The System ribbon tab controls system settings:
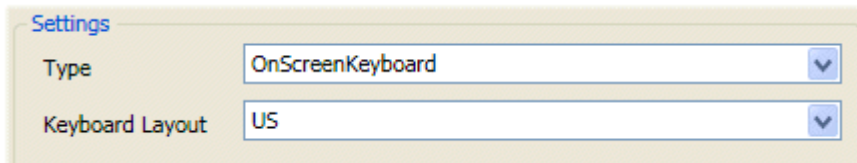
6.3.1   Time Zone and Region Group

National settings are made in the Time Zone and Region group.
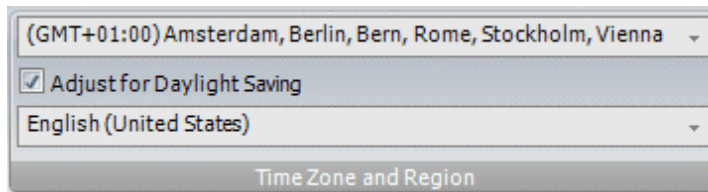
6.3.2   Buzzer Group

Select time zone, whether to adjust for daylight saving, and region. If no time zone is selected, the time zone that has been selected for the panel or PC will be retained.
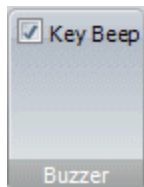
Select whether to let a key beep sound when making keyboard input in runtime. Only available when an operator panel is selected as target.

6.3.3 Backlight Group
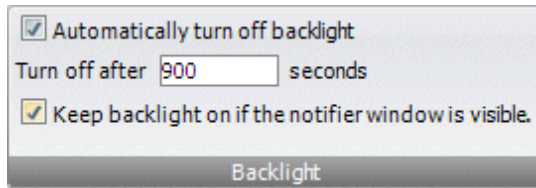
Select to automatically turn off the backlight after a certain number of seconds, and whether to keep the backlight on if a notifier window (e.g. alarm indicator or communication error message) is visible. Only available when an operator panel is selected as target.

6.3.4 Serial Port Group

Select if COM1 of the operator panel is to be configured as an RS422 or an RS485 port. Only available when an operator panel is selected as target.

6.3.5 Servers Group

The Servers group contains the FTP command. Only available when an operator panel is selected as target.

FTP

When enabled, it is possible to upload/download files to/from the operator panel provided that there is an FTP client program in the PC, e.g. Internet Explorer, Windows Commander or some other standard FTP program.

6.4 Insert Ribbon Tab

Functions and screens can be added to the project from the Insert ribbon tab.

6.4.1   Functions Group
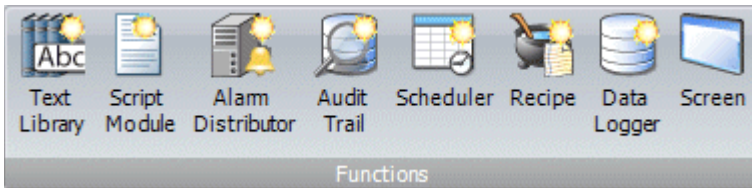
All added components are available from Project Explorer folders.

The Project Explorer already includes alarm server, function keys, multiple languages and security functions.

All functions are managed through their configuration pages.

Text Library

With the text library function, text tables can be created, where values are linked to texts.

Script Module

A script module can be included to program features not covered by included functions and actions, or to be used to share functionality among functions.

Alarm Distributor

Alarms can be distributed between operator panels, with notification via printer, SMS or e-mail using the alarm distributor.

Audit Trail

The Audit Trail function enables tracking of operator actions.

Scheduler

A scheduler can be used to control events in the process at special times.

Recipe

Several recipes can be inserted in the project. Each recipe function handles a pre-defined set of recipe items.

Data Logger

Data can be logged and saved to a database on time intervals or depending on changed values.

Screen

The Screen control adds new screens to the current project.

6.5   View Ribbon Tab

Tool windows can be viewed or hidden using the controls in the View tab.
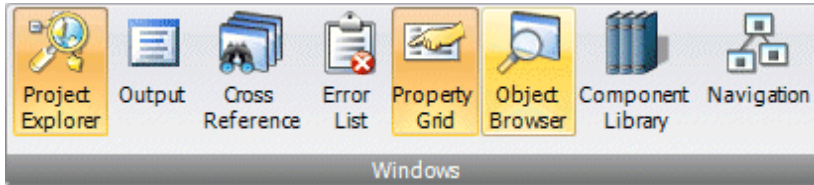
6.5.1   Windows Group

The tool controls in the Windows group are highlighted when active.

Tool Window	Description	Default Position
Project Explorer	Shows all screens and components included in the application	Docked to the left part of the application window
Output	Displays detailed information concerning the project validation and build	Tab in Project Explorer area
Cross Reference	Provides an overview of where a specific tag is used	Docks to the right part of the application window
Error List	Displays information about problems and errors detected during build	Tab in Project Explorer area
Property Grid	Shows detailed properties of a selected screen or object	Docks to the right part of the application window as a tab
Object Browser	Displays an overview of all objects in the current screen and enables setting visibility and locking objects easily, as well as placing objects in front or back of each other.	Floating window
Component Library	Contains predefined as well as user-defined graphical components	Docks to the right part of the application window as a tab
Navigation Manager	Manages screens and screen navigation	Desktop area

6.6   Dynamics Ribbon Tab

The controls on the Dynamics tab are used to change the properties of an object depending on a changed tag value.

A lock icon resembling a chain indicates that a specific dynamic setting is made for the selected object.

If, for example, dynamic fill settings are made, it is not possible to make fill settings for the object from the Format group on the Home tab.

Note: Scripting to a property for which Dynamics has been configured disables the dynamic settings.

To release an object from a dynamic control, select the control with the lock icon and click Clear Dynamics.
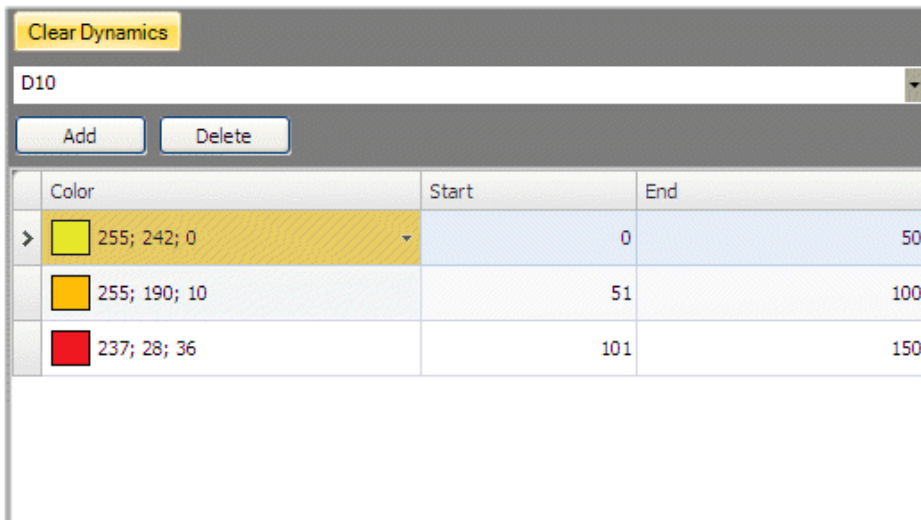
The Dynamics ribbon tab includes the following groups:

6.6.1   Position Group

The Move control in the Position group changes an object's position, based on a tag value.

Position coordinates on the screen are given in pixels of the screen resolution. The position 0,0 corresponds to the upper left corner of the screen.

To move an object vertically when a tag value changes:

1.   Draw and position the object at the start position. Keep the object selected.

2.   Click on Move on the Dynamics tab to open the Move Dynamics Editor.

3.   Select the tag to control the movement.

4.   Enter a start and end value for the tag.

     Start and end positions are suggested based on the current start position. A "ghost object" will appear at the suggested finish position. A guide line that connects the center of the original object with the ghost object appears.

5.   Move the ghost object in the screen to its final position.

     The coordinates for the object is updated. An animation of the move appears on the screen. Coordinate values can also be updated directly in the numerical fields (End Top, End Left). The coordinates for start and finish will limit the movement of the object irrespective if the tag value is outside its start and end value.

6.   Click OK to save and close the Move Dynamics Editor.
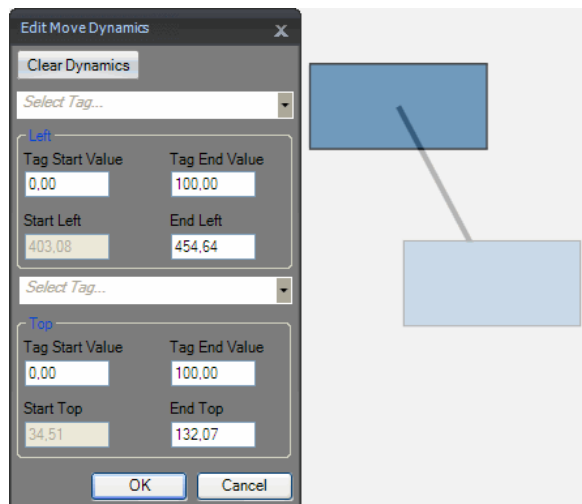
Note: When Position or Size dynamics is applied, moving or resizing of the object will be disabled. A lock icon resembling a chain in the upper left corner of the object (when selected) indicates that the object has a dynamic control applied and that it cannot be moved or resized.

6.6.2   Size Group

The Size control in the Size group changes an object's size, based on a tag value.

Dynamic resizing of symbols from external image files may result in a resolution loss if the symbol is enlarged to a size larger than what is used elsewhere in the current project.

Width and height of an object are given in pixels of the screen resolution.

To resize the width of an object when a tag value changes:

1. Draw and size the object at its start size. Keep the object selected.

2. Click on Size on the Dynamics tab to open the Resize Dynamics Editor.

3. Select the tag to control the resizing.

4. Fill in the values that for start and finish. Size is given in screen resolution pixels.

    Start size is suggested based on the current start size. A finish size is suggested as a fixed increase of the start size horizontally and vertically. A "ghost object" will appear with the finish size.

    Note: The object can only be resized from left to right and top to bottom.

5. Resize the ghost object in the screen to its final size.

    The coordinates for the object is updated. An animation of the resizing appears on the screen. Coordinate values can also be updated directly in the numerical fields (End Width, End Height). The coordinates for start and finish will limit the size of the object irrespective if the tag value is outside its start and end value.

6. Click OK to save and close the Resize Dynamics Editor.

    Note: When Position or Size dynamics is applied, moving or resizing of the object will be disabled. A lock icon resembling a chain in the upper left corner of the object (when selected) indicates that the object has a dynamic control applied and that it cannot be moved or resized.

6.6.3   Color Group

The Fill and Outline controls in the Color group change an object's fill color or outline (border) color, based on a tag value.

To alter the fill color of an object when a tag value changes:

1. Draw the object. Keep the object selected.

2. Click on Fill on the Dynamics tab to open the Color Dynamics Editor.

3. Select the tag that is to control the color.

4. Fill in values to trigger color change.

5. Select color and gradient from the color menu.

6. Click OK to save and close the Color Dynamics Editor.
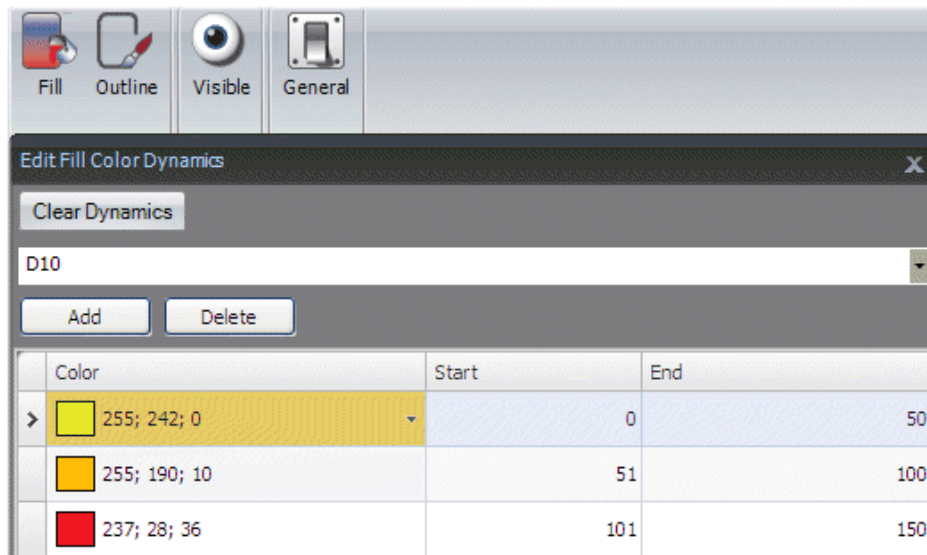
6.6.4 Visibility Group

The Visible control in the Visibility group determines if an object is to be displayed in the screen or not, based on a tag value.

To hide an object when a tag value changes:

1. Draw the object. Keep the object selected.

2. Click on Visible on the Dynamics tab.

3. Select the tag that is to control visibility. The object will be visible on the screen at a certain tag value.

Note: The selected value will be treated as True (visible). All other values will be treated as False (invisible).

6.6.5 General Group

The General dynamics control allows conversion of tags when used in the selected object.

Prefix

The Raw Converter is used to convert the prefix value to a new value that matches the target type, and the Text Library Group Converter converts the prefix to a text in a text library message group.

Suffix

The Raw Converter is used to convert the suffix value to a new value that matches the target type, and the TextLibrary Group Converter converts the suffix to a text in a text library message group.

Min Value

The Linear Converter converts the minimum value according to a linear equation, and the Raw Converter is used to convert the minimum value to a new value that matches the target type.

Max Value

The Linear Converter converts the maximum value according to a linear equation, and the Raw Converter is used to convert the maximum value to a new value that matches the target type.

Text

Text, in e.g. button and objects, can be converted to reflect tag values. The Raw Converter is used to convert the value to a new value that matches the target type, and the Text Library Group Converter converts a value to a text in a text library message group.

Font Color

An object's font color can be based on tag values. A Color Interval Converter is used to convert value intervals to specified colors.

IsEnabled

Sometimes it is needed to convert tag values to either true or false. A Bool Converter is used to convert a tag value to two states, where 0 is false and all other values are true.

6.7   General Ribbon Tab

The General ribbon tab contains different property groups and controls for different objects. Appearance can be modified for graphical shapes and objects. Scale settings can be made for meters and trends. Additional settings can be made for some objects.

The Tag/Security group is available also on the Home ribbon tab.

The general properties are described separately for each object.

6.8   Actions Ribbon Tab

Actions can be triggered in various ways, for example by clicking a button. The Actions tab controls are used to define actions for objects. Alternatively, a script can be used to trigger an action.

An action is something that is performed, for example closing a screen. An action trigger is the act that generates an action, for example clicking a button.

The Actions ribbon tab contains different control groups for different objects.

A Click action configured for a button

Note: It is not recommended to use multiple trigger methods, as this may lead to undesired behavior. It is recommended either to use a script or to program actions with the controls in the Actions tab. For example, avoid using Click Action Trigger in combination with Mouse Button Action Triggers.

6.8.1 Click Action Trigger

Most objects can be assigned click actions, that will be executed when the object is clicked in runtime.

6.8.2 Mouse Button Action Triggers

The Mouse Down and Mouse Up action triggers can be used to create two-step actions when clicking with the left mouse button on an object.

Mouse Down

A Mouse Down action will be performed when the left mouse button is pressed down on the object in runtime.

Mouse Up

A Mouse Up action will be performed when the left mouse button is released from the object in runtime.

Mouse Enter

A Mouse Enter action will be performed when the cursor enters the boundaries of an object in runtime.

Mouse Leave

A Mouse Leave action will be performed when the cursor leaves the boundaries of an object in runtime.

6.8.3 Value Changed Action Triggers

Input Value Changed

The Input Value Changed action will be performed when a value is entered by the operator.

Value Changed

The Value Changed action will be performed when the value of the object has changed.

6.8.4 Focus Action Triggers

Got Focus

The Got Focus action will be performed when the object is selected.

Lost Focus

The Lost Focus action will be performed when the object is no longer selected.

6.8.5 Navigation Action Triggers

Navigated

The Navigated action will be performed when having navigated to the address entered in the address field of the Web browser object.

Navigating

The Navigating action will be performed when having entered, but not reached, an address in the address field of the Web browser object.

6.8.6 Data Logger Action Triggers

The LogItemValueChanged and LogValuesUpdated are available for the Data Logger.

6.8.7 Alarm Action Triggers

Alarm server actions can be configured for the entire alarm server, for alarm groups or for individual alarm items. The actions will be activated upon alarm status changes.

6.8.8 Action Groups

Actions are divided into action groups.

Action Group	Action	Description
Screen	Close Screen	Closes the current screen
	Show Next Screen	Shows next screen
	Show Previous Screen	Returns to previous screen
	Show Screen	Shows the specified screen
	Show Start Screen	Shows the screen set to Startup screen
Address Book	Open AddressBook	Opens the address book for editing (for distribution of alarms)

Alarm Distributor	Open Routes Configuration	Modifies routes for the distributed alarm server
Audit Trail	Export Audit Trail Database	Exports the database with operator actions
Controller	Change Active Controllers	Defines which controllers are to be active after having restarted the project
	Decrement Analog	Decrements tag value
	Increment Analog	Increments tag value
	Increments tag value	Resets tag to 0
	Set Analog	Sets tag to the specified value
	Set Analog Forced	Sets tag to specified value, regardless of current value
	Set String	Sets tag to the specified string
	Set Tag	Sets tag to 1
	Toggle Tag	Toggles tag between 0 and 1
Database	Backup Database	Performs a backup of the project database
Output Devices	Email Configuration	Shows the e-mail configuration page (for distribution of alarms)
	Printer Configuration	Shows the printer configuration page (for distribution of alarms)
	SMS Configuration	Shows the SMS configuration page (for distribution of alarms)
Recipe	Delete Recipe	Deletes recipe
	Load Recipe	Loads recipe
	Save Recipe	Saves recipe
	Start offline recipe editing	Sets the tags in the specified recipe in offline mode.
	End offline recipe editing	Sets the tags in the specified recipe in online mode.
Security	Export User Accounts	Exports user data to a location that the operator states
	Import User Accounts	Imports user data from a location that the user states
	Login	Displays a login dialog
	Logout	Logs out the current user
	Show Users Dialog	Displays a dialog where users can be added, edited or removed
Trend	End History Mode	Returns to showing real-time trend

	Show Trend History	Displays a dialog where the operator can set an interval to shows trend history from
	Log Once	Makes the specified data logger run once
Other	Run	Starts an external application
	Scroll Left	Scrolls the screen carousel object left
	Scroll Right	Scrolls the screen carousel object right

6.8.9   Multiple Actions

Multiple actions can be configured by clicking small arrow in the lower right corner of any action group.
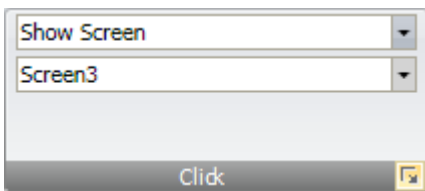
Note the small arrow in the lower right corner

The properties window allows configuring and sorting additional actions. The actions available depend of which object is selected in the screen prior to selecting the Actions ribbon tab.
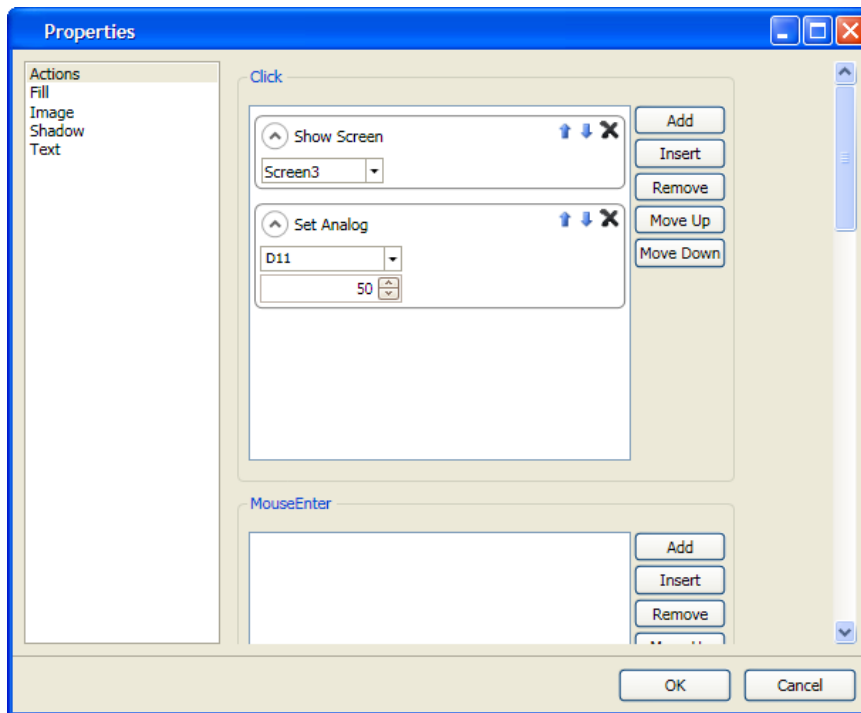
After configuring multiple actions, this is indicated for the action group on the Actions tab.

7   TRENDS

This section describes real-time trends and historical trends. Trends are used to store chronological data samples from controller tags. There is no limitation regarding the number of trends in a project; it is only limited by the total memory in the operator panel.

Trend data samples are stored in the project database. Internal database names reflect the trend object labels.

7.1   Defining Trend Objects

Trend objects are defined as dynamic objects on a screen. The object can be linked to any number of analog tags.

Trend curves show a chronological sequence of tag values.

It is possible to define several independent trend objects, in the same screen or in or different screens. The number of trend curves is limited only by the available amount of memory in the panel.

Note: A large number of trend pens and short sampling intervals may affect communication performance.

7.1.1   Adding a Trend Object

A trend object is added to a screen from the Objects group on the Home ribbon tab.

Settings for the trend object are available from the General ribbon tab while the object is selected:

Curves Group

Trend curves are defined using the Edit Curves control.

Parameter	Description
Add	Adds a new curve to the trend object
Remove	Removes the selected curve from the trend object
Name	The symbolic name of the curve
Tag	The tag to collect and present values for
Color	The color of each curve

Parameter	Description
Thickness	Line thickness
Minimum Value Tag	The tag that sets the minimum value of the curve (optional)
Maximum Value Tag	The tag that sets the maximum value of the curve (optional)

Log Settings Group

Parameter	Description
History	Checking the box saves logged values in the database.
Max Number of Logged Rows	The maximum number of items to save in the database. When the number of collected items becomes larger than the set value, the oldest item will be deleted. The value must be within the size of the available amount of memory in the operator panel in runtime.
Logger Name	Name of the database component that contains the logged values

Settings Group

The Settings group controls the vertical scale (y-axis). If dynamic settings are made in the General group of the Dynamics tab, the settings made in the Settings group will be ignored.

Parameter	Description
Min Value/Max Value	Start/end value of scale
Major Ticks	Number of labeled scale marks on the scale
Minor Ticks	Number of scale ticks between two adjacent major ticks

Style Group

Parameter	Description
Black/Classic/Chrome/Eclipse/Vintage	Predefined graphical styles for the trend

Time Scale Group

The Time Scale group controls the horizontal scale (x-axis).

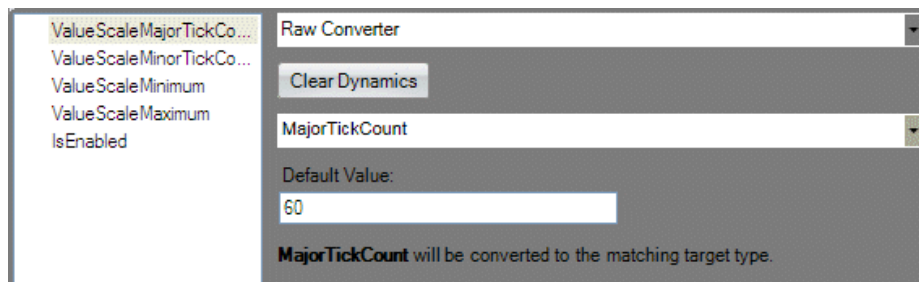| Parameter	Description
Time Range	Visible time for trend in Hour:Minute:Second format
Sampling Interval	Time between two data samples in Hour:Minute:Second format
Major Ticks	Number of labeled time marks

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.
Transparent	Makes the object transparent
Scale	When unchecked, the scale color of the trend is made transparent. Scale color is set from Other Colors on the Format tab.
Grid	When unchecked, the grid color of the trend is made transparent. Grid color is set from Other Colors on the Format tab.

7.1.2   Dynamic Trend Properties

The vertical scale (y-axis) and its tick count can be made dynamic by connecting its properties to controller tags. This may be useful, for example, when wanting to present trend values of different formats in the same trend object.

If dynamic trend properties are used, the settings made in the Settings group for the trend object are ignored.

The dynamic trend properties are available by clicking on the General group of the Dynamics tab while the trend object is selected.

Parameter	Description
ValueScaleMajorTick CountNumber of labeled scale marks on the scale	Number of labeled scale marks on the scale
ValueScaleMinorTick Count	Number of scale ticks between two adjacent major ticks
ValueScaleMinimum	Start value of scale
ValueScaleMaximum	End value of scale
IsEnabled	Enables the trend object when the connected tag is other than 0

7.1.3   Historical Trend

Tag values shown in a trend are collected and kept in the project database. This makes it possible for a trend object to be programmed to show a trend based on a historical set of values from the database.

To show trend history, it is necessary to define actions (e.g. Show Trend History, End History Mode) to show and close the historical trend. These actions can for example be programmed as button click actions. When starting to show a historical trend a dialog will open to let the user select a time period.

View Range	Description
Latest hour	Displays trend values for the last hour
Latest	Displays trend values for the last 24 hours
Custom	Allows the user to set start and stop time

8   DATA LOGGER

Data can be logged and saved in the configuration tool database, similar to trend data (but without presentation in the operator panel). Logging of data can be made at time intervals or by changed tag values.

When installing Kollmorgen Visualization Builder, a Database Viewer is automatically installed and available from Windows Start menu. The Database Viewer makes it possible to open the database file and inspect logged data, and to export the file to Excel.

8.1   Data Logger Set Up

Any number of tags can be connected to a data logger, and data values irrespective of type can be logged. A project can have multiple data loggers with different sampling alternatives.

Note: Logging of data consumes system resources and memory.

8.1.1   Adding a Data Logger

A data logger can be added to the project from the Insert ribbon tab. The data logger configuration pages are used to set up which values to log.
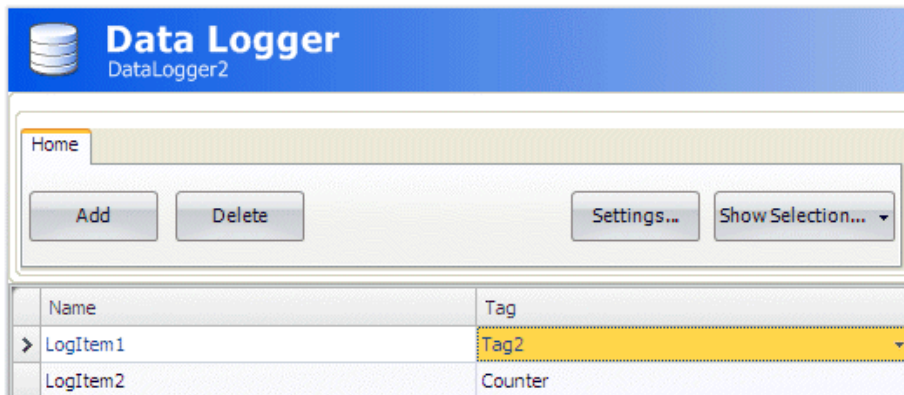
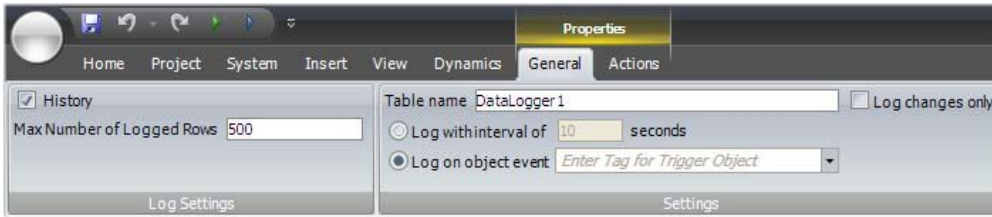| Parameter	Description
Name	Symbolic name for the logged tag
Tag	Tag to log

Clicking the Settings button accesses the settings that are also available from the General and Actions ribbons when the Data Logger is selected.

8.1.2   Sampling Alternatives

Select the data logger in the Project Explorer and then click on the General ribbon tab to make data logger settings.

Log Settings Group

Parameter	Description
History	Checking the box saves logged values in the database.
Max Number of Logged Rows	The maximum number of tag values to save in the database. When the number of collected items becomes larger than the set value, the oldest item will be deleted. The value must be within the size of the available amount of memory in the operator panel in runtime.

Settings Group

Description	Parameter
Table Name	The name of the data logger table.
Log With Interval	To collect data that changes frequently, use the Log with interval of option, and define time interval in seconds.
Log on Object Event	To control sampling of data by other means than regular time interval, select the Log on object event option, and select the tag to use as trigger. Data will be sampled when the tag value changes from 0 to another value.
Log Changes Only	Logging of data can be made either by collecting all samples at every log event, or by collecting only changed values. The Log changes only option controls logging method. Collecting only changed values saves memory.

8.1.3   Actions

Data Logger Actions are available from the Actions ribbon tab.

Event	Description
LogItemValueChanged	When a value of an particular log item has changed
LogValuesUpdated	When any log value is updated

9 SCHEDULER

A scheduler is used to control tags in relation to the real-time clock. This function is used to control events in the process, for example starting and stopping motors, at specific predefined calendar times.
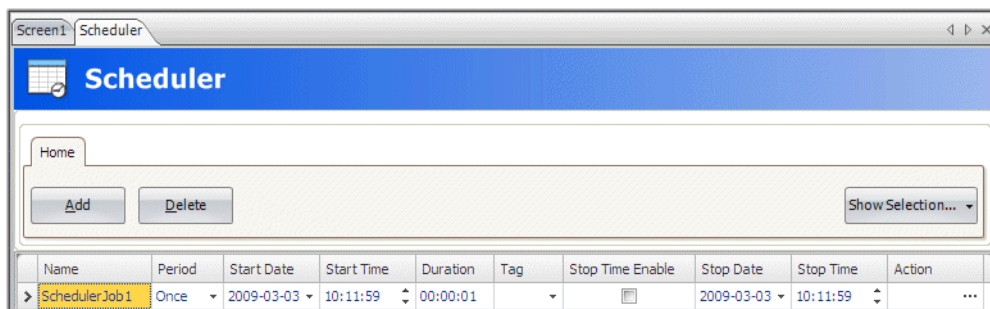
9.1 Scheduler Set Up

The scheduler configuration pages are used to set up scheduler jobs, which can include a set of tags with associated start and stop times.

9.1.1 Adding a Scheduler

A scheduler can be added to the project from the Insert ribbon tab.

The scheduler configuration page will open in the desktop when a scheduler function is created or selected.

Parameter	Description
Name	A symbolic name for the scheduled event.
Period	Set to Once (default) or to a regular interval (every minute, hour, day, week, month or year).
Start Date/Start Time	The date and time for the first scheduled event.
Duration	The length of the event.
Tag	A digital tag, which is set to 1 during the specified interval.
Stop Time Enable	When checked, Stop Date and Stop Time, instead of Duration, can be used to determine the end of the event.
Stop Date/Stop Time	The end date and time of the event. Also resets the defined Tag to 0. Used when Stop Time Enable is checked.
Action	Click the button to configure an action to be performed when the scheduled event is activated/deactivated.

Note: Make sure not to use the same trigger tag for two different schedulers. When the first scheduler is finished, its trigger tag is reset, and the second scheduler will not be triggered.

10   RECIPE MANAGEMENT

Recipes make it possible for a set of tags to be saved in the operator panel to be downloaded at later time. The operator can download a saved recipe to the controller, which will start working with the new values. Recipe libraries consisting of recipes with different sets of parameters can be created, allowing reuse of large sets of parameters.

Recipes can be created during the design of the project or from the operator panel.

Recipe data is stored in the operator panel database. Recipe handling functions such as loading, storing, copying and deleting recipes are handled with actions.

10.1   Recipe Setup

Recipes consist of a set of recipe tags and of recipe data (values).

Adding a Recipe Manager

The recipe function is be added to the project from the Insert ribbon tab. The recipe configuration pages are used to manage tag sets and values via the Tag Configuration tab and the Runtime Data tab.

Tag Configuration Tab

First add tags to be used by the recipe function from the tags configuration page. Then define a set of recipe items on the Tag Configuration tab of the Recipe function, and connect them to the tags you defined. The data type is already set in the configuration of the tags.
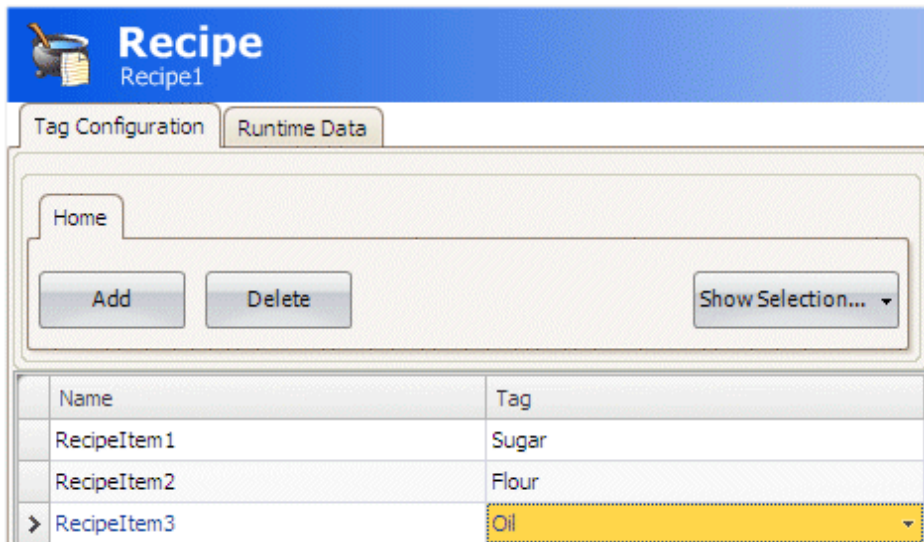
Runtime Data Tab

The actual recipes are created under the Runtime Data tab. Give the recipe a title, and type a value for each recipe item. A recipe can include a maximum of 256 items.
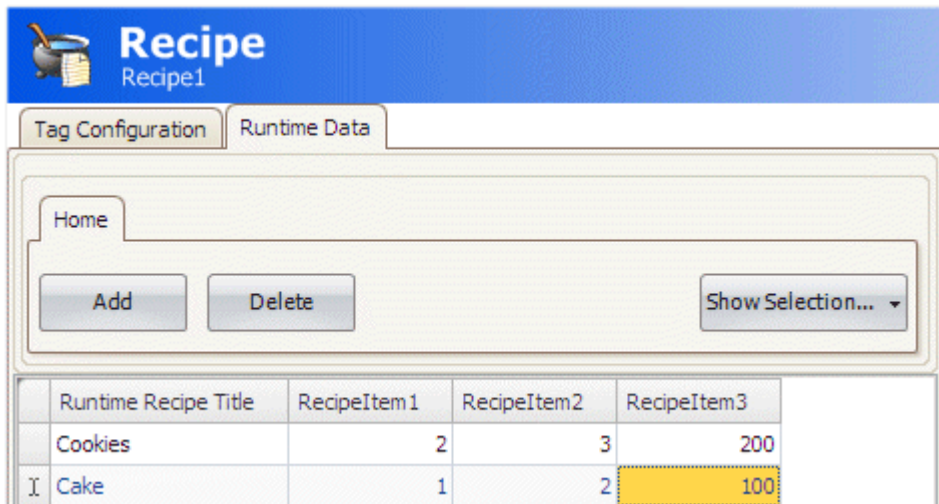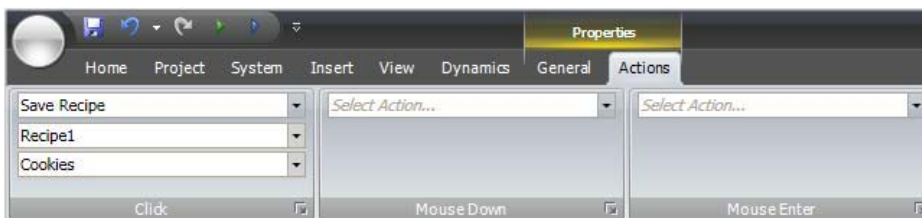

10.2   Recipes in the Operator Panel

Loading Recipes

Recipes can be transferred to the controller using a Load recipe action when the operator panel is running. This means that the recipe values are transferred to the controller. A list of available recipes is displayed when the Load recipe action is activated. Select a recipe in the list and press [Enter] to make the controller run with the downloaded values.

Saving Recipes

The Save recipe action can be used when the operator panel is running. Tags defined on the Tag Configuration tab are included in the recipe. Corresponding tag values are stored in the selected recipe file when Save recipe is performed. It is possible to define an explicit recipe, that will be overwritten if it already exists when performing the Save Recipe action.

Creating Recipes in Operator Panel

The Save recipe action is also used to create recipes in runtime. Instead of defining an explicit recipe to overwrite, the recipe data field is left open. In this case, the operator will be prompted to save the recipe with any name, or to overwrite an existing recipe.

Editing Recipes Offline

It is possible to edit existing recipes in the panel without transferring values to the controller, by setting the recipe tags in offline mode. Recipe tags in offline mode will not receive any data from the controller, and no values will be written to the controller.

In offline mode, the Load recipe and Save recipe actions will not affect values in the controller.

Note: Internal tags may be used for recipes, but will not be affected by offline mode.

Actions are used to start and end offline mode:

Action	Description
Start offline recipe editing	Sets the tags in the specified recipe in offline mode. A notification message is shown.
End offline recipe editing	Sets the tags in the specified recipe in online mode, and the tags are updated from the controller.

A notification message is displayed during offline mode.

Example:

1. Click Recipe on the Insert ribbon tab.

   The Recipe configuration page opens in the desktop area.

2. Add recipe tags on the Tag Configuration tab of the Recipe configuration page and connect them to controller tags.

3. Add a recipe on the Runtime Data tab.

4. Create a screen with four buttons.

5. Connect two of the buttons to the Load Recipe and Save Recipe actions. Select the recipe title from the Runtime Data tab for Recipe Data.

6. Connect the other two buttons to the Start offline recipe editing and End offline recipe editing actions.

7. Run the project and test the functionality:

   Click Start offline recipe editing - the tags are set in offline mode

   Click Load Recipe - the tags are filled with data from the recipe

Change the data.

Click Save Recipe - the data in the tags is written to recipe

Click End offline recipe editing - the tags are set in online mode and the values are updated with data from the controller

11 FUNCTION KEYS

Function keys can be configured to control actions or to run a script.

11.1 Definitions

A standard PC keyboard has 12 function keys, F1 - F12.

Note: Function keys are global, and programmed actions will be performed identically for all screens. Function keys cannot be assigned variable actions for individual screens.

Note: It is not possible to restrict use of function keys based on security groups/login.

The Function keys function is predefined in the Project Explorer, and allows configuration of up to 24 function keys.
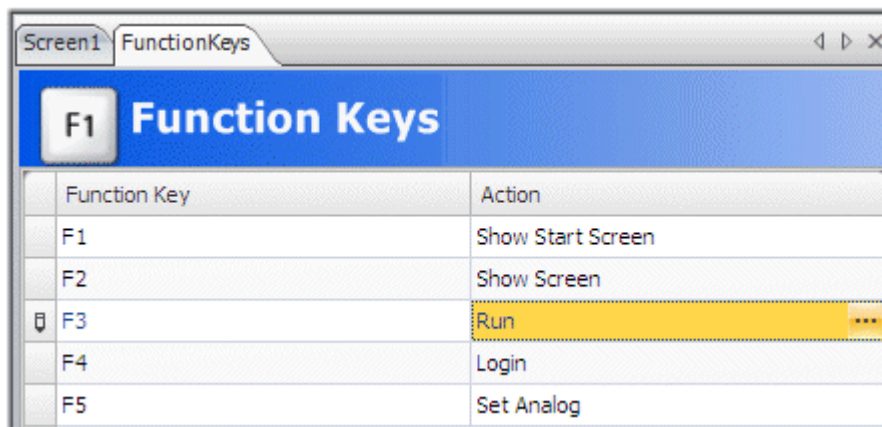
11.2 Configuring Function Keys

This section provides information about how to define function key actions.
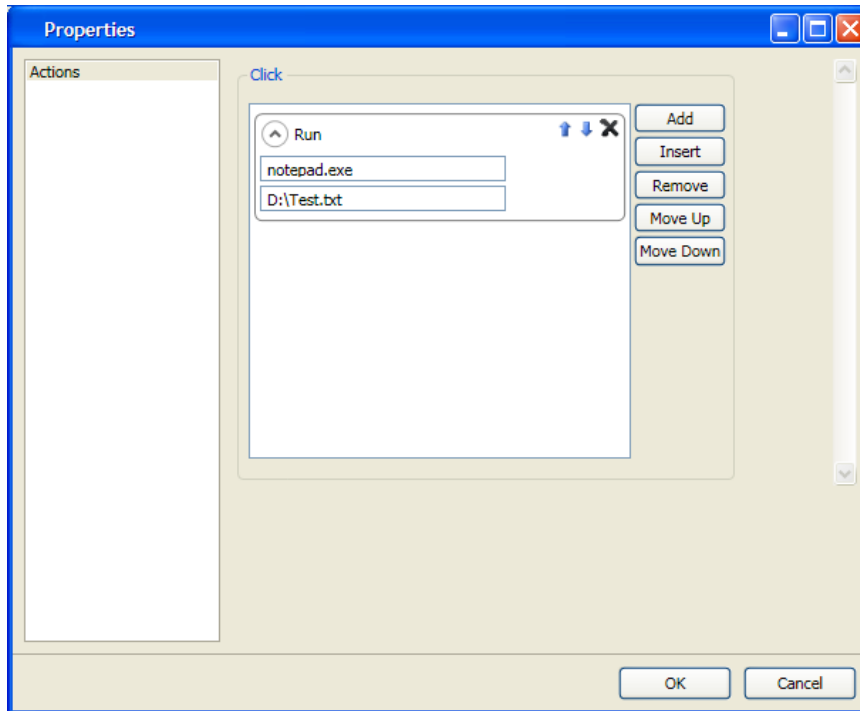
11.2.1 Function Key Actions

To define function key actions:

1. Click on Function Keys in the Project Explorer to open the function keys configuration page.

2. Select the function key to be defined.

3. Click on the button next to the action to display the actions editor. Define the action to be performed when the function key is pressed.

Multiple actions can be configured for a function key.

11.2.2 Function Key Scripts

To define a script for a function key:

1. Click on Function Keys in the Project Explorer to open the function keys configuration page.

2. Select the function key to be defined.

3. Select script view mode by clicking Script in the lower part of the desktop area.

4. Click on the desired button node. Double-click on the Click node. Edit the script code to be performed.

Example:

The following C# code sets up function key F12 to perform an acknowledge of all alarms:

```
Public partial class FunctionKeys
{
        Void F12_Click(System.Object sender, System.EventArgs e)
        {
                Globals.AlarmServer.Acknowledge();
        }
}
```

12   ALARM MANAGEMENT

An alarm is used to call attention to an event that requires immediate action. An alarm is set when a certain condition is met. An alarm condition is designed as a logical evaluation of a tag value. Alarms can be divided into groups to create an order of priority.

Alarm notification can be made in the following ways:

Alarm Conditions

Alarms can assume the following conditions:

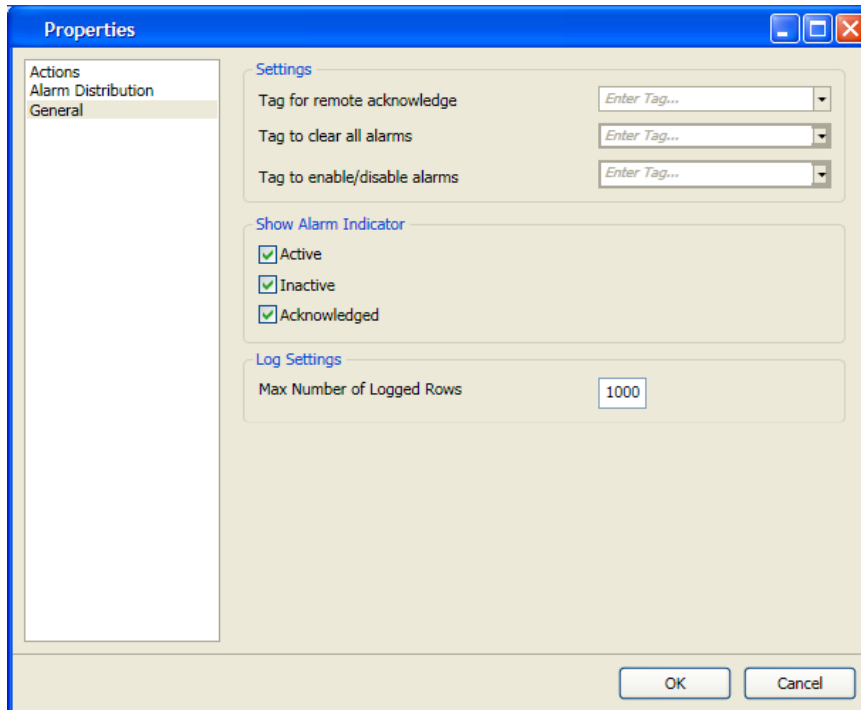| Alarm Condition	Description
Active	The alarm condition is met, and the alarm is not acknowledged
Inactive	The alarm has returned to normal condition, but has not been acknowledged
Acknowledged	The alarm condition is met, and the alarm is acknowledged
Normal	The alarm has returned to normal condition, and has not been acknowledged

12.1   Alarm Server

The alarm server function is predefined in the Project Explorer. Clicking on it opens the alarm server configuration pages in the desktop.

General alarm server properties are available by clicking the Settings button.

The Properties window is divided into General, Alarm Distribution and Actions.

12.1.1 General Settings

Settings

Some alarm server functions are based on changed tag values:

Alarm Function	Description
Remote acknowledge	Performs remote acknowledge of all current alarms when the tag value is 1
Clear alarms	Removes all alarms from the alarm server when the tag value is 1
Enable/disable alarms	Enables the alarm server when the tag value is 1

Show Alarm Indicator

Select for which alarm statuses the alarm indicator is to be displayed.

Parameter	Description
Max Number of Logged Rows	The maximum number of alarms to save in the database. If the number of collected items becomes larger than the set value, the oldest item will be deleted. The value must be within the size of the available amount of memory in the operator panel in runtime.

12.1.2 Alarm Server Events and Actions

Actions can be configured for the entire alarm server. One or multiple actions can be configured when a particular alarm server event occurs.

Select Actions in the Alarm Server properties page to configure actions for the alarm server.

Actions for the following alarm server events can be configured:

Alarm Acknowledge

The specified actions will be triggered when a general acknowledge of alarms is done.

Alarm Active

The specified actions will be triggered when an alarm becomes active.

Alarm Deleted

The specified actions will be triggered when an alarm is deleted.

Alarm Event Info Requested

The specified actions will be triggered when the Info button in the alarm viewer is pressed.

These actions will be applied for the individual alarm first. If no action is specified for the alarm, the actions will be applied for the group. If no action is specified for the group, the actions will be applied for the alarm server.

Alarm Normal

The specified actions will be triggered when there have been alarms in runtime, and all alarms have been acknowledged and all alarm have returned to normal status.

Alarm Inactive

The specified actions will be triggered when there have been alarms in runtime, and all alarms have returned to normal status, but all alarms have not been acknowledged.

Any Alarm Acknowledge

The specified actions will be triggered the first time an alarm in the current alarm list is acknowledged.\

Any Alarm Active

The specified actions will be triggered the first time an alarm in the current alarm list becomes active.

Any Alarm Inactive

The specified actions will be triggered the first time an alarm in the current alarm list becomes inactive.

12.1.3 Alarm Distribution Settings

To enable sending alarms to printer, or via SMS or e-mail, the Alarm Distributor is used. In addition to the settings below, the Enable Distribution option for the alarm groups or alarm items also has to be checked.
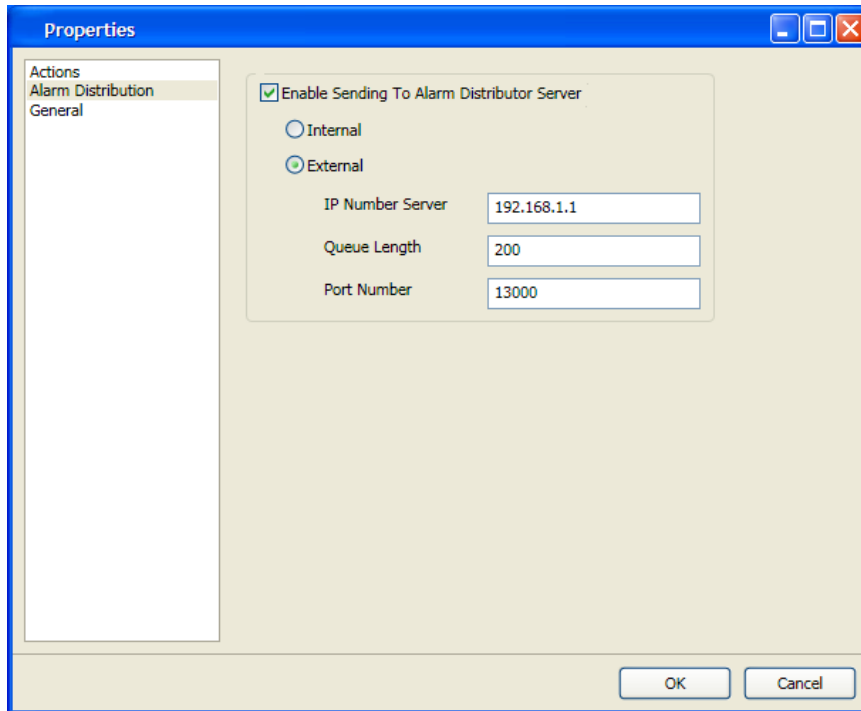
Parameter	Description
Internal/External	Selection of internal or external alarm distributor
IP Number Server	The IP address of the external alarm distributor
Queue Length	The number of alarms to be kept in queue for the external alarm distributor. When the queue is full, no more alarms will be added to the queue.
Port Number	The port number of the external alarm distributor

12.2 Alarm Indicator

As long as there are active alarms in the alarm server, the alarm indicator notify window will be displayed, regardless of which screen is active. The color shows the current alarm status, and can be configured for each of the alarm groups. The indicator starts in the upper left corner of the screen in runtime, but can be moved to any position on the monitor in runtime.

The appearance of the alarm indicator depends on the current alarm status. It will show the most severe status of the alarms in the list. The Alarm Indicator disappears when all alarms have been acknowledged, and all alarms have returned to inactive status.

Select General settings in alarm server properties page to decide for which alarm statuses to show the alarm indicator.

Alarm Condition	Description	Default Alarm Indication
Active	The alarm condition is met, and the alarm is not acknowledged	Flashing red
Inactive	The alarm has returned to normal condition, but has not been acknowledged	Flashing green
Acknowledged	The alarm condition is met, and the alarm is acknowledged	Flashing green
Normal	The alarm has returned to normal condition, and has not been acknowledged	

12.3 Alarm Items

Alarm items are added from the Alarm Items tab of the alarm server configuration pages.

Click Add to define a new alarm.
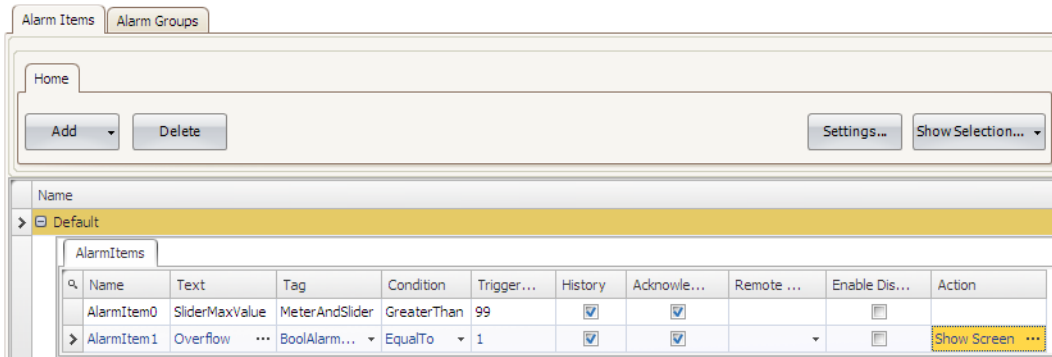
When there are consecutive tags defined in the controller data, it is possible to use [Tab] to auto-copy the fields of the previous alarm row with an increment of the tag identification properties (name and tag).

Parameter	Description
Name	Symbolic name for the alarm item that will show in an alarm viewer.
Text	An optional alarm text that will be shown in the alarm viewer.
Tag	The tag (digital or analog), which generates the alarm when it assumes the specified status.
Condition	Equal to/Not equal to - The alarm is set when the value of the tag is equal/not equal to the value specified in the Trigger Value field.Greater than/Less than - The alarm is set when the value of the tag is greater/less than the value specified in the Trigger Value field.Equal to greater than/Equal to less than - The alarm is set when the value of the tag is equal to or greater/less than the value specified in the Trigger Value field.Rising/Falling Edge: The alarm is set when the specified tag goes to one/zero.
Trigger Value	Numeric value to trigger alarm with when: <tag value> <condition> <trigger value> = true.
History	Specifies when the alarm is to be removed from the alarm list. Checking this box means that the alarm will remain in the list until the list is full. Leaving it unchecked means that the alarm will be removed from the list when it is acknowledged and no longer active. If Acknowledge Required is not checked, the alarm will be removed from the list as soon as it is no longer active.
Acknowledge Required	Indicates whether the alarm is to be acknowledged or not. Checking the box means that the alarm must be acknowledged, leaving it unchecked means that the alarm returns to normal directly when the alarm status becomes inactive.
Remote Acknowledge	A digital tag that acknowledges all the alarm when set to 1
Enable Distribution	Enables distribution of the alarm via printer/SMS/e-mail. Only available if alarm distribution is enabled for the alarm server. If the Enable Distribution option for the alarm group is checked, distribution of individual alarms in the group are automatically enabled.
Action	Makes it possible to configure one or multiple actions when a particular alarm event occurs for the current alarm.

Note: An alarm condition is triggered by a fixed value. The trigger value defined for an analog alarm tag cannot be controlled from a register. It is not supported to trigger alarms on intervals.

12.4 Alarm Groups

Alarms can be divided into groups, for example to indicate the priority of the alarms. One alarm group is defined by default.

Color attributes can be individually set for each alarm group. Alarms can be sorted by group in the alarm viewer.

12.4.1 Defining Alarm Groups

Alarm groups are added from the Alarm Groups tab of the alarm server configuration pages.

Parameter	Description
Name	An optional name for the alarm group.
Colors	Select foreground and background color for each alarm status
Remote Acknowledge	A digital tag that acknowledges all the alarms in the group when set to 1
Enable Distribution	Enables distribution of the alarms in the group via printer/SMS/e-mail. Only available if alarm distribution is enabled for the alarm server.
Action	Makes it possible to configure one or multiple actions when a particular alarm event occurs for the current alarm group.

12.5 Actions and Events for Alarm Items and Alarm Groups

Actions can be configured for individual alarms or for alarm groups. One or multiple actions can be configured when a particular alarm event occurs for the current alarm or alarm group.

Actions for individual alarms are configured from the Action column for the alarm on the Alarm Items tab.

Actions for alarm groups are configured from the Action column for the alarm group on the Alarm Groups tab.

Actions for the following alarm events and alarm group events can be configured:

Alarm Acknowledge

The specified actions will be triggered when the selected alarm/an alarm in the selected alarm group is acknowledged.

Alarm Active

The specified actions will be triggered when the selected alarm/an alarm in the selected alarm group becomes active.

Alarm Inactive

The specified actions will be triggered when the alarm/an alarm in the selected alarm group becomes inactive.

Alarm Event Info Requested

The specified actions will be triggered when the Info button in the alarm viewer is pressed.

These actions will be applied for the individual alarm first. If no action is specified for the alarm, the actions will be applied for the group. If no action is specified for the group, the actions will be applied for the alarm server.

Example:

The following picture shows two actions configured for when the current alarm goes active, and another action for when the operator presses the Info button in runtime.
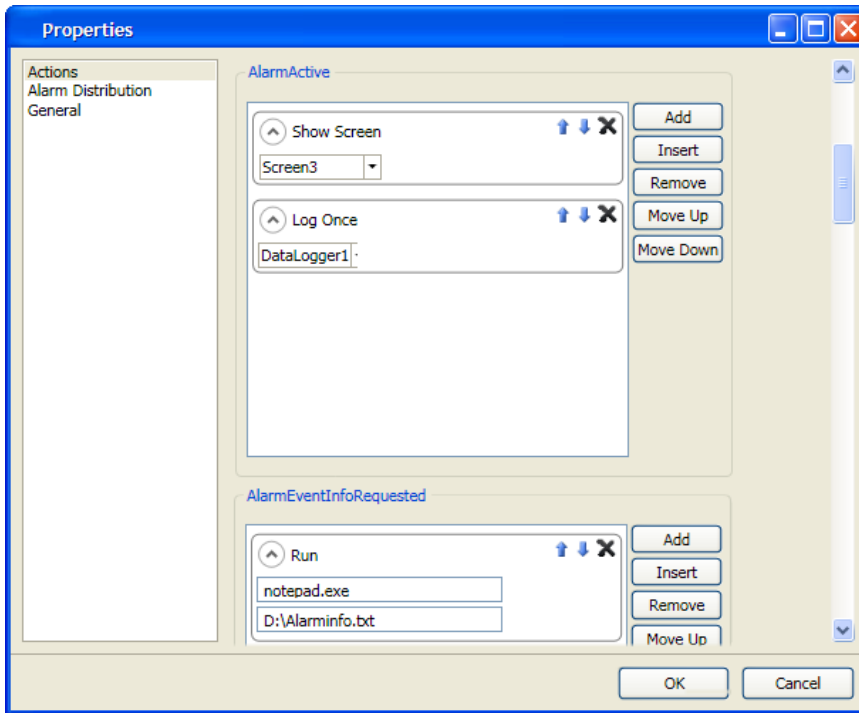
12.6 Alarm Distributor

The Alarm Distributor makes it possible to send alarm notification via printer, SMS or e-mail. The function can be enabled internally in a project, or in another operator panel that acts as a server towards several connected clients. Regardless of acting as server or client, distributed alarms are saved temporary in the local project database to ensure that information is not lost in case of e.g. interrupted power. After receiving alarms from a client, the server will send a confirmation to the client. The alarms will then be removed from the client's database.

Using Internal Alarm Distribution Server Functions (Acting as Client and Server)

The following actions are required for using distributed alarm functions in the current project:

Action	Component	Location
Activating distribution of alarms in the project	Alarm Distribution Server	Insert ribbon tab
Enabling internal distribution of alarms	Alarm Server	Settings button/Alarm Distribution properties
Enabling distribution of alarm groups or individual alarms	Alarm Server	Alarm Groups or Alarm Items tab
Configuration of alarm distribution routes	Alarm Distribution Server	Receivers, Alarm Filter and Scheduler tabs

Action	Component	Location
Configuration of alarm distribution devices	Alarm Distribution Server	Configure Distribution Devices button (e-mail, printer and/or SMS)

Using External Alarm Distribution Server Functions (Acting as Client)

The following actions are required for using distributed alarm functions in another operator panel/PC project:

Action	Component	Location
Activating distribution of alarms in the project	Alarm Distribution Server	Insert ribbon tab
Enabling external distribution of alarms	Alarm Server	Settings button/Alarm Distribution properties
Enabling distribution of alarm groups or individual alarms	Alarm Server	Alarm Groups or Alarm Items tab

Collecting Alarms for Distribution (Acting as Server)

The following actions are required for using distributed alarm functions in another operator panel/PC project:

Action	Component	Location
Activating distribution of alarms in the project	Alarm Distribution Server	Insert ribbon tab
Configuration of alarm distribution routes	Alarm Distribution Server	Receivers, Alarm Filter and Scheduler tabs
Configuration of alarm distribution devices	Alarm Distribution Server	Configure Distribution Devices button (e-mail, TCP server, printer and/or SMS)

12.6.1 Adding an Alarm Distributor

The Alarm Distributor can be added to the project from the Insert ribbon tab. The configuration pages are opened in the desktop area.

Route

A route defines a number of filtering rules for distribution of alarms. Multiple routes makes it possible to send different kinds of notifications to various receivers.
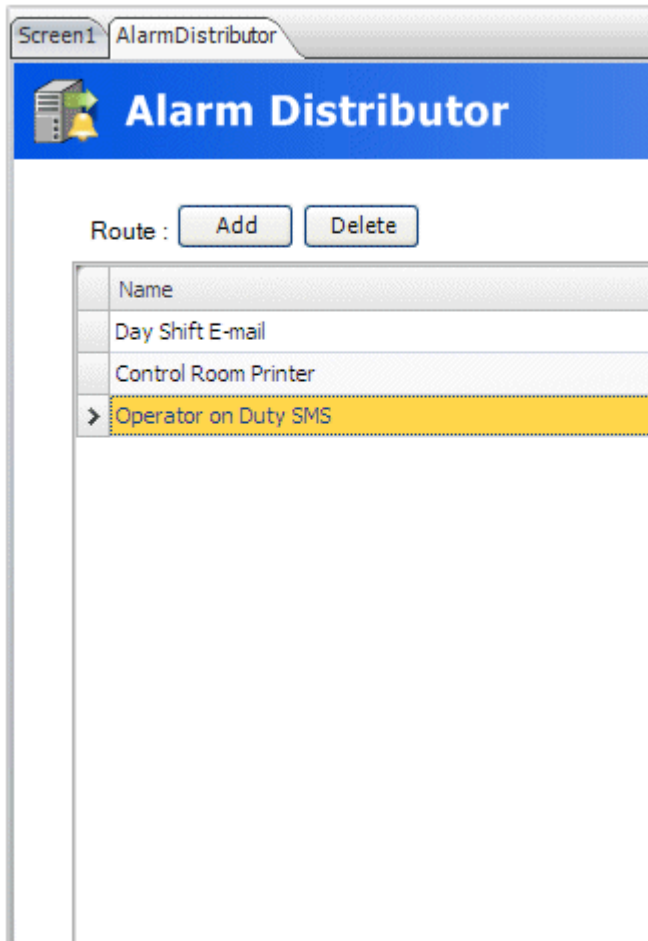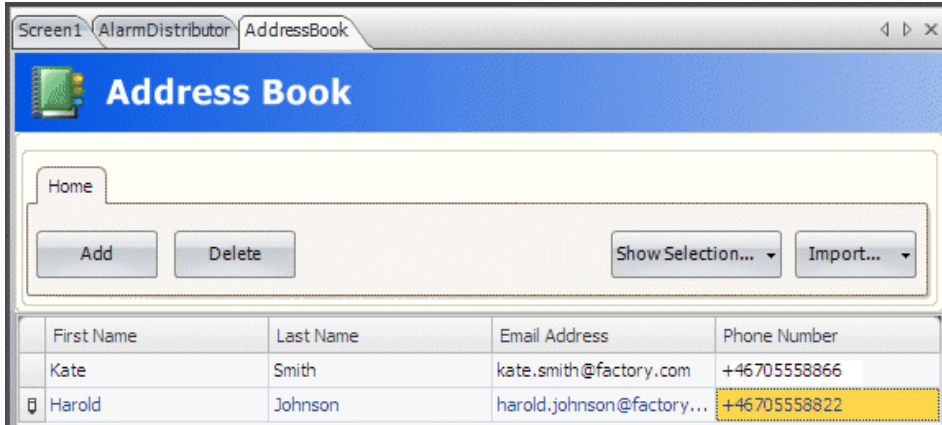

Receivers Tab

The receivers of distributed alarms for each route are set up on the Receivers tab.

Address Book

Click on the Address Book button to enter names, e-mail addresses and/or phone numbers of the persons that are to be available for selection for distributed alarm messages.
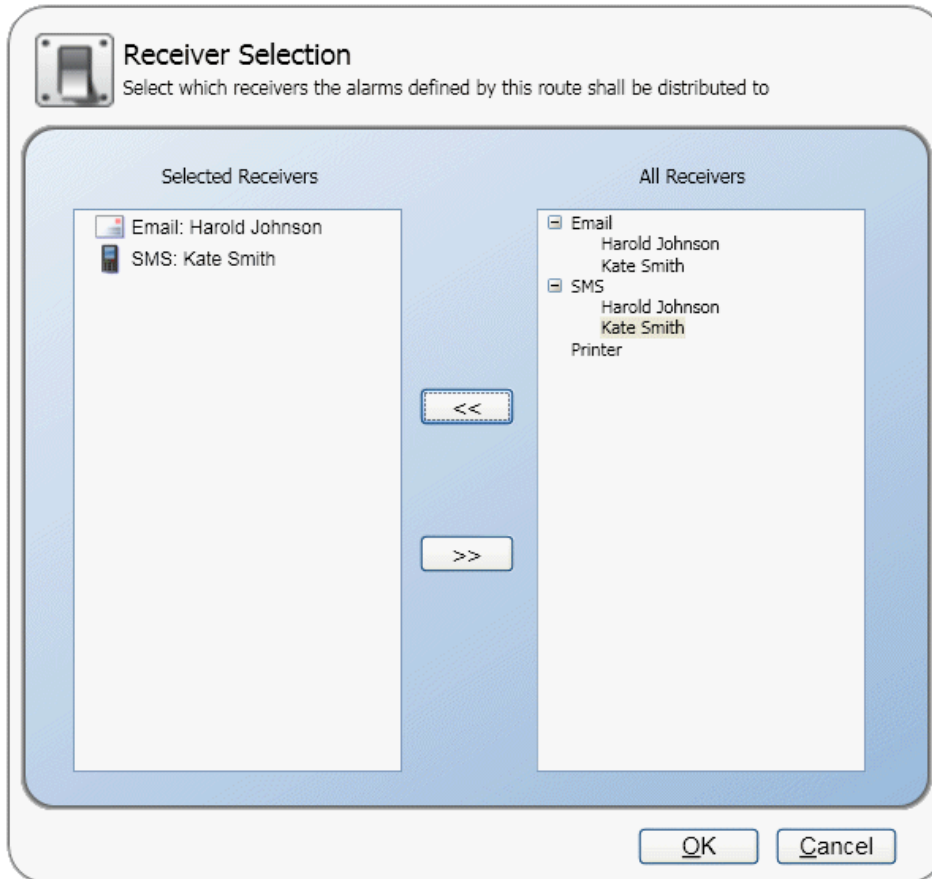
The Show Selection/Show All button can be used to set up a filter of displayed items.
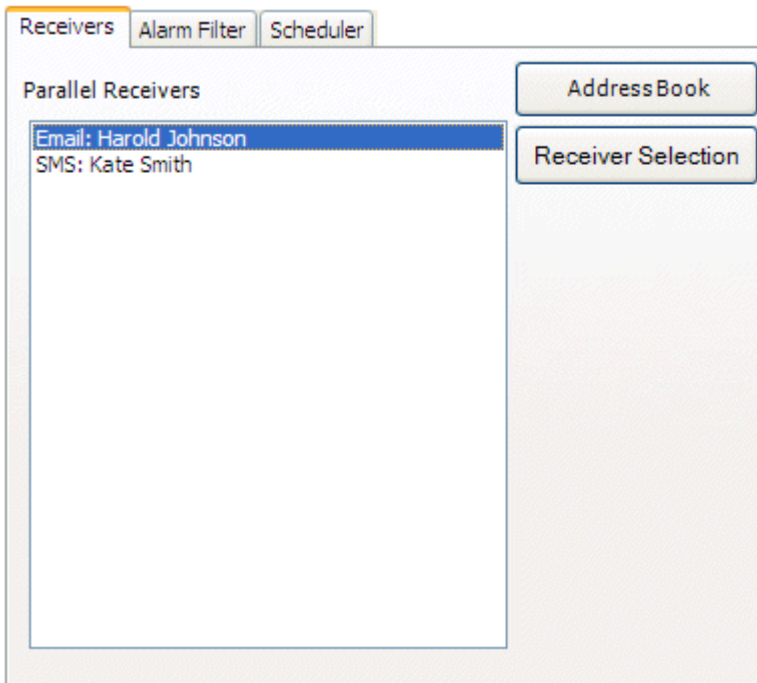
The contents of the address book can be exported as a .csv file, and then be imported again after modification using the Import/Export button.

Receiver Selection

Click on the Receiver Selection button to set up receivers of each alarm distribution route; via e-mail, SMS and/or printer.
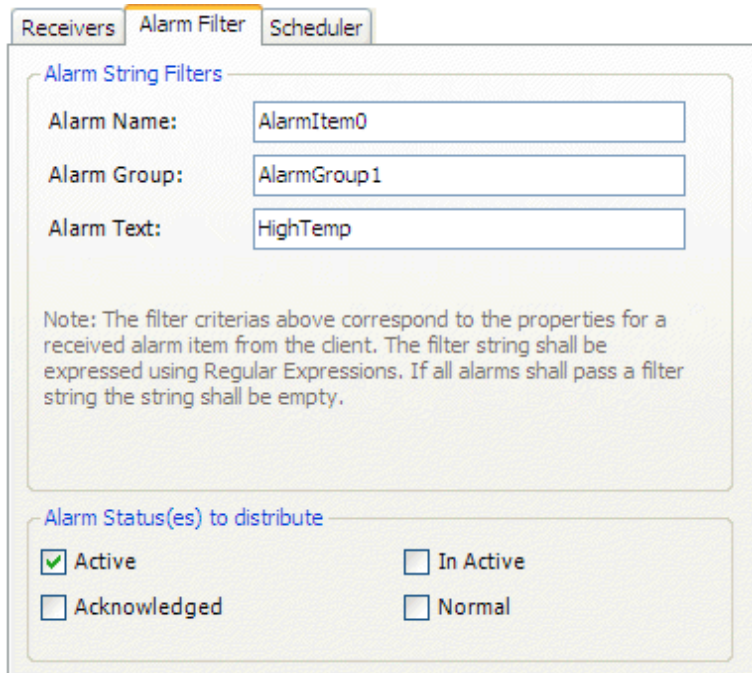
The selected receivers are displayed under Parallel Receivers.

Alarm Filter Tab

Filtering of each alarm distribution route can be configured on the Alarm Filter tab. The filtering operates using "and" logic, i.e. the alarm will only be distributed if all conditions are fulfilled. An empty string does not generate a filter condition (acts as a "wild card").

Parameter	Description
Alarm Name	The alarm item to distribute.
Alarm Group	The alarm group of which alarm items are to be distributed.
Alarm Text	All alarms including this text will be distributed.
Alarm Status(es) to distribute	Selection of alarm to be distributed, based on alarm status. At least one status must be selected.

Scheduler Tab

Scheduling of each alarm distribution route can be configured on the Scheduler tab. Only alarms that occur between the start and stop times will be distributed.

Parameter	Description
Name	The name is automatically filled in based on start and stop time, and cannot be edited
Period	Select daily or weekly alarm distribution
Day	Select weekday, if Weekly was selected for Period
Start Time/Stop Time	Select start and stop time of the alarm distribution

12.6.2 Configure Distribution Devices

Click the Configure Distribution Devices button to set up the different devices.

Alarm Variables

Variables collected from the alarm server definitions can be included in distributed alarm information. Variables are enclosed by curly brackets; for example "Alarm text: {3}". The following variables can be used:

Number	Variable	Description
0	State	The current state of the alarm
1	StateTime	The time the alarm entered the current state
2	AlarmId	A unique alarm ID
3	AlarmText	Alarm item text
4	AlarmItemDisplayName	Alarm item name
5	Count	The number of times the alarm has occurred
6	ActiveTime	The time the alarm became active
7	InactiveTime	The time the alarm became inactive
8	NormalTime	The time the alarm became normal
9	AcknowledgeTime	The time the alarm was acknowledged

E-mail Device

Parameter	Description
From Name	The name of the sender of the e-mail
From E-mail Address	The e-mail address of the sender of the e-mail
SMTP Server Name/IP	The name or IP address of the SMTP server for sending e-mail
Port	The port number of the e-mail server
Authentication Mode	Select None or Authenticated Login
User Name/Password	User name and password if Authenticated Login was selected
Retry Sending	Number of retries if the e-mail cannot be delivered
Time Interval	Number of seconds between retries
Subject	The e-mail subject; Alarm Variables can be used
Body	The e-mail body; Alarm Variables can be used

Printer Device
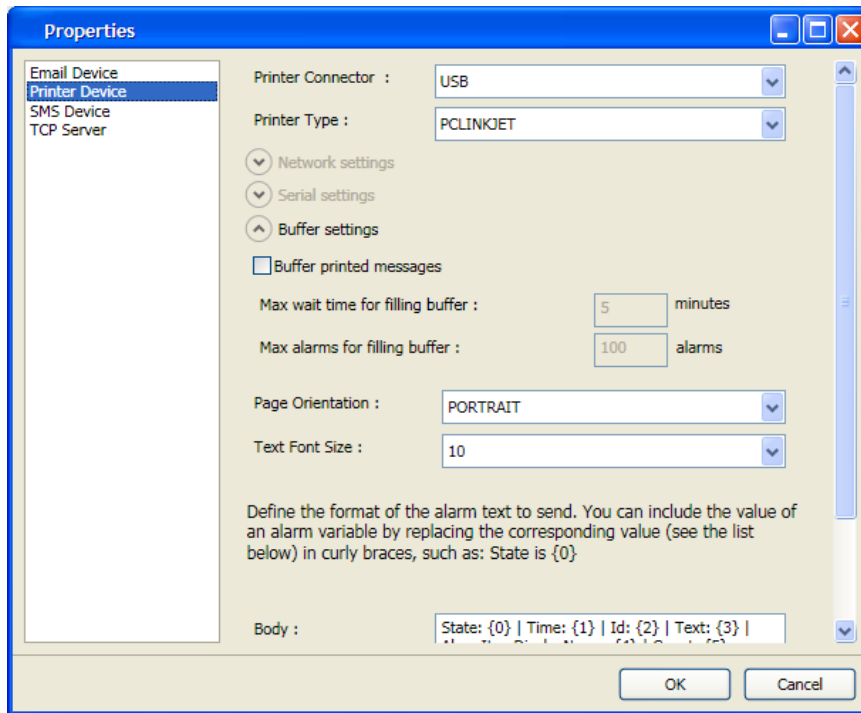
Parameter	Description
Printer Connector	Select USB, Ethernet or serial printer connection
Printer Type	Select printer type
Network settings	Network settings (if Ethernet printer connection was selected)
Serial settings	Serial settings (if serial printer connection was selected)
Buffer settings	Buffer settings (if USB printer connection was selected)

Parameter	Description
Page Orientation	Portrait or landscape orientation of the printout
Text Font Size	The font size of the text to be printed
Body	The body of the printout; Alarm Variables can be used

Printouts via Operator Pane

When printing to a serial printer from an operator panel, the printer must support IBM character set (850).

When printing to a USB printer from an operator panel, the printer must support the printer classes according to the table below:

Printer Type	Printer Class Requirement	Recommended Printer Model
Color laser printer	USB + PCL 5c	HP LaserJet 2700
Monochrome laser printer	USB + PCL 5e	HP LaserJet 1320
Color ink-jet printer	USB + PCL 3e	HP Deskjet 5652

When printing via Ethernet from an operator panel, the network printer must be a shared resource in the Windows network.

Note: Connecting a printer via Ethernet requires that a PC is connected between the operator panel and the printer.

Note: Printing to a color laser printer via Ethernet is not supported for operator panels.

Note: The printer class PCL 6 is not supported at all for connection to operator panels.

SMS Device

To be able to send alarms via SMS, you have to purchase an SMS Gateway Service.
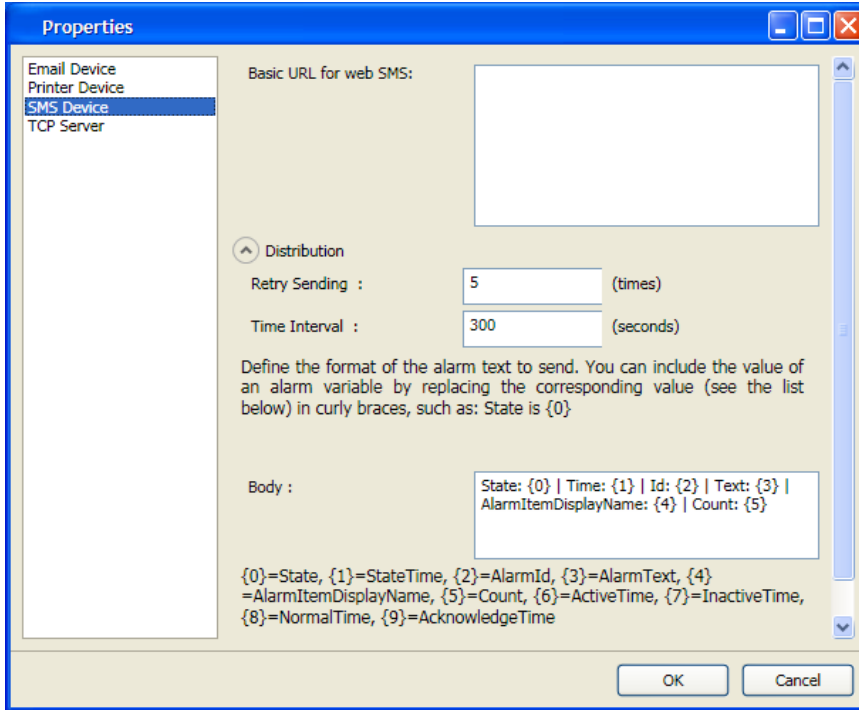
| Parameter	Description
Basic URL for web SMS	The URL configuration string according to the SMS Gateway Service supplier that must include two variables: {0} for telephone number and {1} for SMS body
Retry Sending	Number of retries if the SMS cannot be delivered
Time Interval	Number of seconds between retries
Body	The SMS body; Alarm Variables can be used

TCP Server

Define the TCP server port. This must correspond to the port defined for the Alarm Distribution settings for the alarm server.

Note: Opening the TCP server port in a PC project, may activate a firewall security warning when simulating or running the project.

12.7 Alarm Distributor Viewer

The Alarm Distributor Viewer is a debug tool, used for test and verification of the alarm distribution setup.

Clicking the Settings button in runtime makes it possible to edit the address book and make settings for alarm distribution.
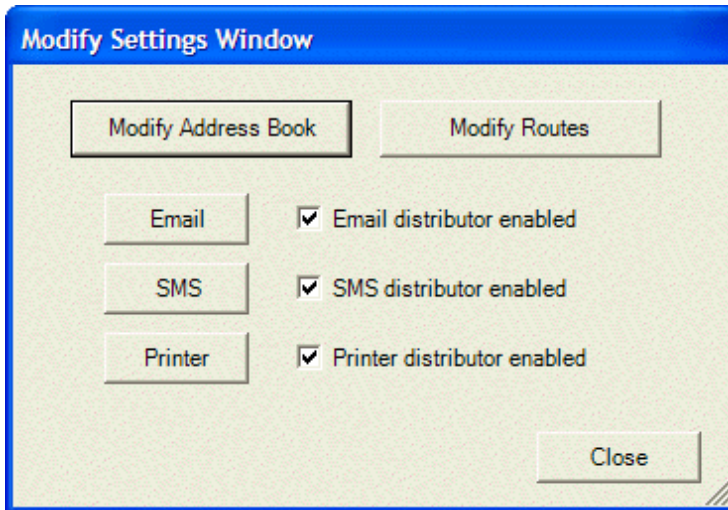
12.8 Alarm Viewer

The alarm viewer can be used to show more detailed alarm information than the alarm indicator. Alarms presented in the Alarm Viewer presents alarm texts from the alarm server. The alarm list shows the latest alarms. It is arranged in alarm group order.
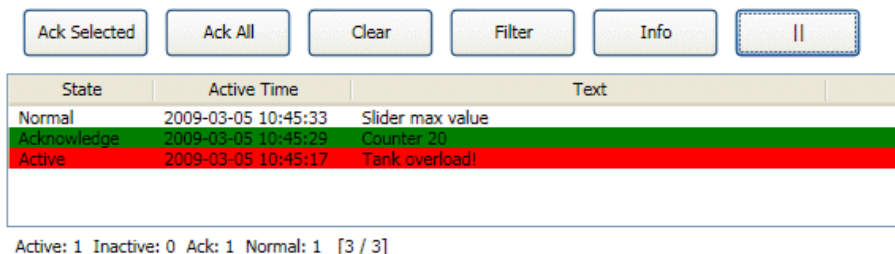
Settings for the alarm viewer are available from the General ribbon tab while the object is selected:

Buttons Group

Parameter	Description
Position	Controls to which of the borders the buttons will line up
Acknowledge Selected	Acknowledges currently selected alarms in the alarm viewer
Acknowledge All	General acknowledge of all current alarms in the alarm viewer
Clear	Removes all alarms in the viewer
Filter	Allows filtering of alarms in the viewer
Info	Performs the action set by the AlarmEventInfoRequested action
Play/Pause	Starts and pauses the alarm viewer
Enable Context Menu	Show alarm viewer commands in context menu in runtime

General Group

Parameter	Description
Alarm Server	Name of the database component that contains the values
Max Number of Alarm Viewer Rows	The maximum number of alarms to display. If the number of alarms does not fit in the object in runtime, scroll bars will be made available. If the number of alarms exceeds the maximum number, the oldest item will be deleted.

Settings Group

Parameter	Description
Show Columns	Selection and configuration of columns to display in runtime
Filter Settings	Filtering of alarm statuses to display in runtime
Sort Column	Select which column to sort by, using Sort Order
Show Column Headers	Shows/hides alarm viewer column headings
Show Summary	Shows status information in the bottom of the alarm viewer
Sort Order	Select sort order, ascending or descending, for the Sort Column

Visibility Group

Parameter	Description
Opacity	Sets opacity for the object via slider. Only supported for PC targets.

12.8.1 Alarm Viewer Commands

In addition to using the alarm viewer buttons, the same functions are available using script.

12.9   Alarm Management in Runtime

Alarm notification can be made in the following ways:

12.9.1 Alarm Acknowledgement

An alarm can be acknowledged in the following ways:

- right-clicking on the alarm line and selecting Acknowledge

- selecting the alarm line and pressing on the Acknowledge Selected button

- pressing the Acknowledge All button to acknowledge all current alarms

- script actions

Inactive alarms that have been acknowledged can be removed from the list by pressing the Clear button.

12.9.2 Sorting

Pressing on the column heading in runtime will sort the alarm list by that column. This will pause the alarm viewer.

12.9.3 Filtering

Pressing the Filter button in the alarm viewer opens a dialog that allows the user to enter a filtering profile to control which alarms to display in the alarm list.

Filtering can be made based on any combination of the following conditions:

- Alarm group: The first column in the filter window shows the alarm group name. Check the Enable box to show alarms from the group.

- Alarm status: Displays alarms with the status corresponding to the checked status values.

12.9.4 Play/Pause Button

The alarm viewer window can be paused from being updated with incoming alarms using the Play/Pause button. This allows the operator to inspect and sort the list without interference from any incoming alarms. The list will also pause when an alarm is selected.

The alarm list will start updating again when:

- the Play button is pressed

- the operator changes screen and returns to the same screen (or goes to another screen showing the alarm viewer)

- after a 5 minute timeout

12.9.5 Info Button

Pressing the Info button in the alarm viewer will trigger the action specified in the AlarmEventInfoRequested group on the Actions tab, when an item in the alarm server is selected.

This action will be applied for the individual alarm first. If no action is specified for the alarm, the action will be applied for the group. If no action is specified for the group, the action will be applied for the alarm server.

12.9.6 Modifying Alarm Distribution Settings in Run-time

It is possible to configure actions, or to use the Alarm Distribution Viewer to modify the address book and alarm distribution settings in runtime.

Note: If the Alarm Distribution Viewer or alarm distribution actions are used in runtime, it is possible that alarm distribution settings have been modified. Next time you download a project to the operator panel, you will get a notification, and selection to overwrite panel settings or not.

13   SECURITY MANAGEMENT

Using security groups and passwords in the operator panel makes it possible to create a security system for the project. Operators can easily be assigned different authorizations in the project to restrict access to objects and functions. Security group information and passwords are stored in the project database.

It is not necessary to use this function if unrestricted access is acceptable.

The security function is a predefined component of the Project Explorer.

13.1   General Security Settings

General settings for the security function are available by clicking on Security in the Project Explorer, selecting the Users tab and clicking the Settings button.
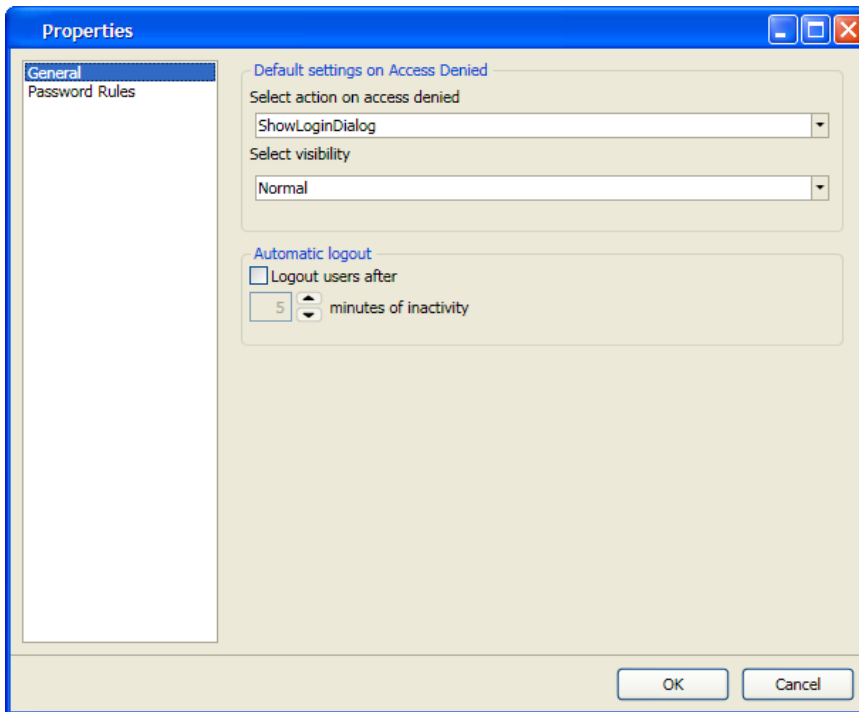
General Properties

Parameter	Description
Select action on access denied	When a users access rights are not sufficient to e.g. modify an object or carry out an action, it is possible to display an access denied message or opening a login dialog. Selecting None performs no action.

Parameter	Description
Select visibility	When a user with insufficient access rights tries to affect an object, it is possible to specify visibility for those objects:Disabled: Only users with sufficient access rights can affect the object. The object is visible, but disabled, for users with insufficient access rights. Hidden: Only users with sufficient access rights can see the object. The object is invisible for users with insufficient access rightsNormal: Only users with sufficient access rights can affect the object. The object looks normal for users with insufficient access rights
Automatic logout	Checking the box makes it possible to log out users automatically after a certain number of minutes of inactivity

Password Rules Properties

Allows setting a minimum number of characters for passwords.

13.2 Security Groups

Security groups are defined on the Groups tab of the security configuration page. When objects and screens have been set up with restricted access, the current user must belong to a specific security group in order to control or see the object or screen.

Creating Security Groups

A new security group in a project is defined by clicking on Security in the Project Explorer, selecting the Groups tab and clicking Add.

Parameter	Description
Name	Any alphanumeric string, beginning with a letter (a-z, A-Z)
Users	Selection of users defined on the Users tab to be included in the group
Users Invisible in Runtime	When the box is checked, the users in the current group will not be available for selection from the Login dialog in runtime. It will still be possible to type in the user name and password to login.

13.3 Users

Users and passwords for login are defined on the Users tab of the security configuration page.
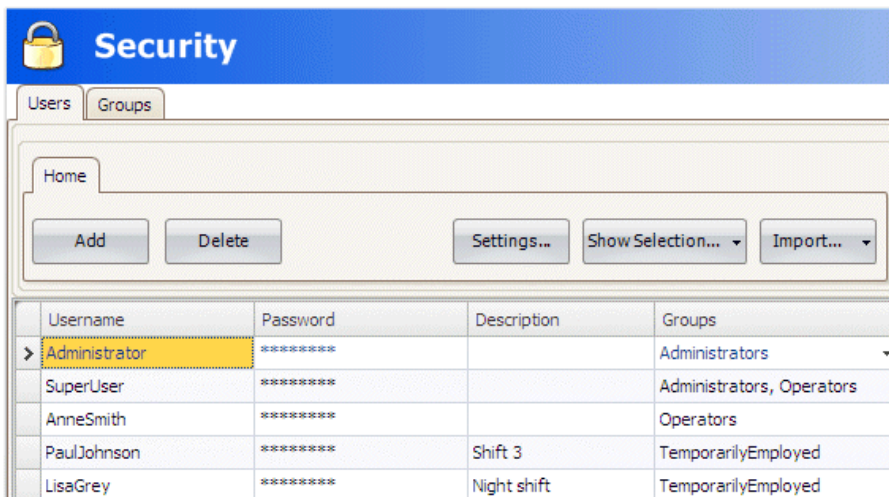
Parameter	Description
Name	Any alphanumeric string, beginning with a letter (a-z, A-Z)
Password	Any alphanumeric string; minimum length according to Password Rules properties. The password is converted to asterisks as you leave the password input cell.
Description	An optional description of the user
Groups	Selection of security groups for the user

It is also possible to add users and change passwords directly in a running project, using the Show Users Dialog action.

13.3.1 Logging In and Logging Out

The login dialog can be displayed in runtime by, for example, clicking a button, for which the Login action has been specified. It is possible to change password from the login dialog.
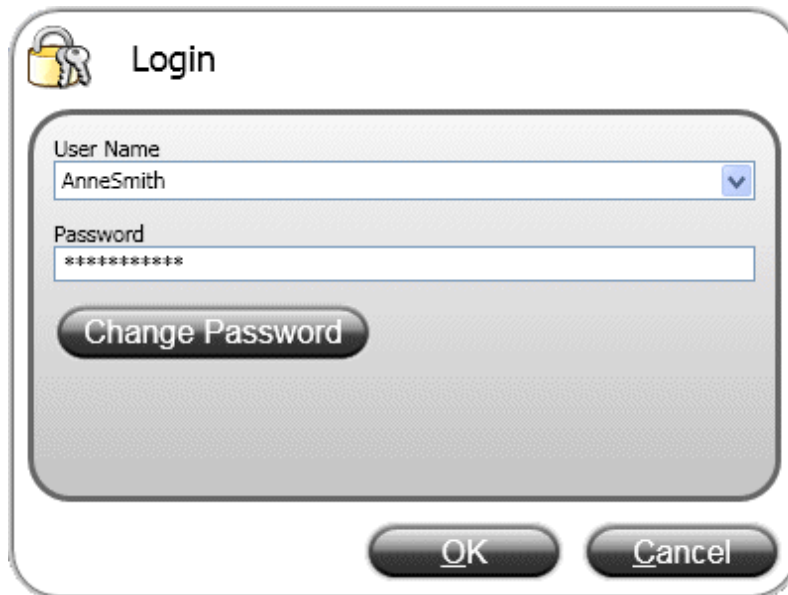
The login dialog lists all users that have been configured for the current project, except for users in groups for which Users Invisible in Runtime was selected.

It is also possible to configure a general behavior that brings up the login dialog any time a user tries to affect an object that is not within the current user's access rights. This behavior is configured from the Properties window for the Security function, and selecting ShowLoginDialog for action on access denied.

The Logout action is used to perform a logout.

Users may also be logged out automatically after a certain number of minutes of inactivity by configuring Automatic logout in the Properties window for the Security function.

Note: After logging out, the function Show Previous Screen for function keys and touch keys will be ignored. This is a security feature to prevent unauthorized persons from accessing screens protected by passwords.

13.4 Object Security and Visibility

Object access can be restricted to a certain security group. Each security group contains a set of users and each user has an individual password. To be able to control an object with a security setting, the user must belong to the defined security group, and has to login.

Object security is controlled by selecting the object, and then opening the Tag/Security group of the Home or General ribbon tabs.

When no security is set for an object, the object will be available to everyone, i.e. login will not be requested.

Note: It is not possible to set security on function keys.

The visibility and behavior settings specified in the security manager will be used when a security group is set but no explicit visibility is specified. The following options can be set:

Parameter	Description
Default	The object looks normal and is visible for anyone.
Disabled	Only users in the selected security groups can affect the object. The object is visible, but disabled, for users with insufficient access rights.
Hidden	Only users in the selected security groups can see the object. The object is invisible for users with insufficient access rights
Normal	Only users in the selected security groups can affect the object. The object looks normal for users with insufficient access rights.

14   LANGUAGE MANAGEMENT

Kollmorgen Visualization Builder supports multilingual applications. Translation of texts and system texts can be performed directly in the application, or via export to a text file to be translated in other software. The file is imported to the application after translation.

The application language can be changed in runtime, for example based on a tag value.

14.1   Setting Up Multiple Languages

The multiple languages function is included in the application by default and is located in the Functions folder in the Project Explorer.

The multiple languages configuration pages consist of the Texts, System Texts and Languages tabs.

14.1.1   Adding Languages

1. Click on the Multiple Languages function to open its configuration pages.

2. Select the Languages tab.

3. Add languages by selecting them from the drop-down list.
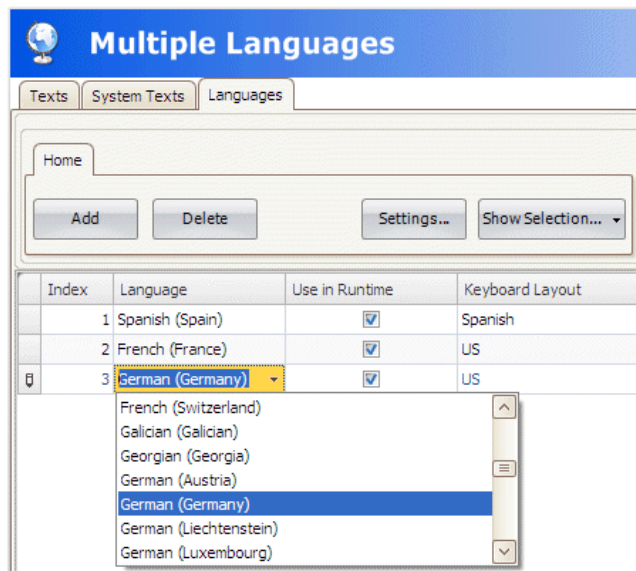
The Use in Runtime setting makes the language available in runtime. Under Keyboard Layout, it is possible to select different layouts for the virtual keyboard, used for alphanumerical input in runtime.

Each added language is assigned an index number. Index number 0 is reserved for the default language (the language that the application was first created in).

The Add and Delete buttons can be used to add and delete languages.

The Settings button allows connecting the language to a tag. This makes it possible to change the project language based on a changed value.

Use the Show Selection/Show All button if you want to filter the languages in the current view.

14.2 System Texts

System texts belong to functions (e.g. alarm server or security), to the system (e.g. time zone) and to objects (e.g. buttons or sliders), excluding text that the developer has entered.

Select the System Texts tab in the Multiple Languages configuration pages to edit system texts.
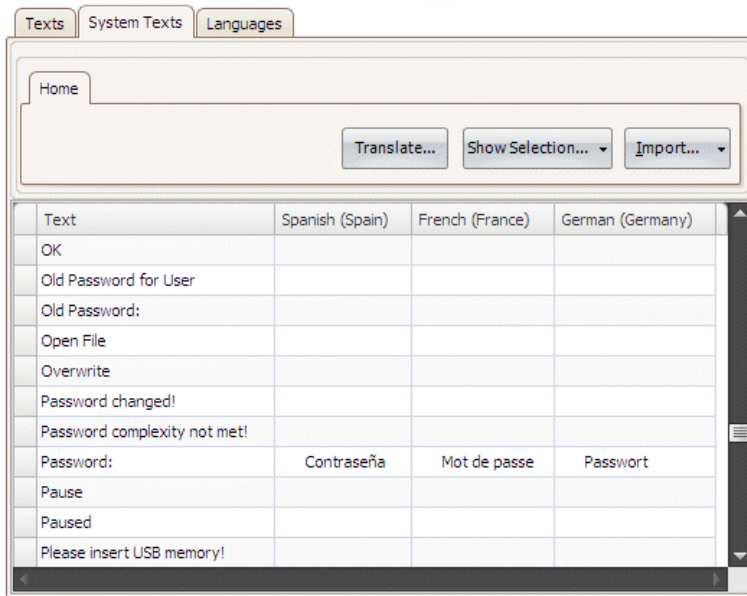
Use the Show Selection/Show All button if you want to filter the current view.

The Import/Export button can be used to export a system language to a text file for translation, and then import the language after translation.

14.3 User Texts

Texts that have been added to objects by the developer are available from the Texts tab in the Multiple Languages configuration pages. The texts in the default language can be edited as well.
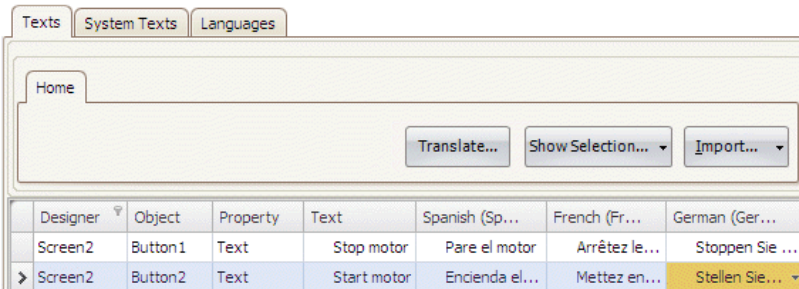
Use the Show Selection/Show All button if you want to filter the current view.

The Import/Export button can be used to export a system language to a text file for translation, and then import the language after translation.

Note: When an object is connected to a text in the Text library, the object's internal denomination (that is not displayed in runtime) will be presented in grey color in the Texts list, to indicate that editing the text will not affect the runtime project.

14.4   Automatic Translations

Kollmorgen Visualization Builder includes a translation tool that uses Google Translate or Microsoft Bing Translator to offer quick translations of user-defined or system texts free of charge.

Note: Automatic translations provide limited functionality; especially combination of words or words with synonyms may be returned as incorrect translations.

The translation tool is available by clicking Translate on the Texts or System Texts tabs of the Multiple Languages configuration pages. Each language is translated separately.
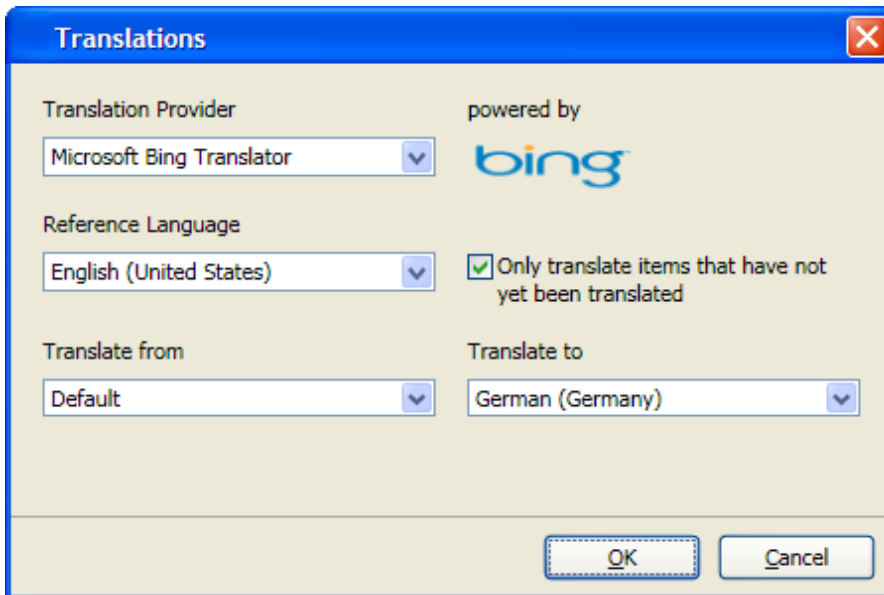
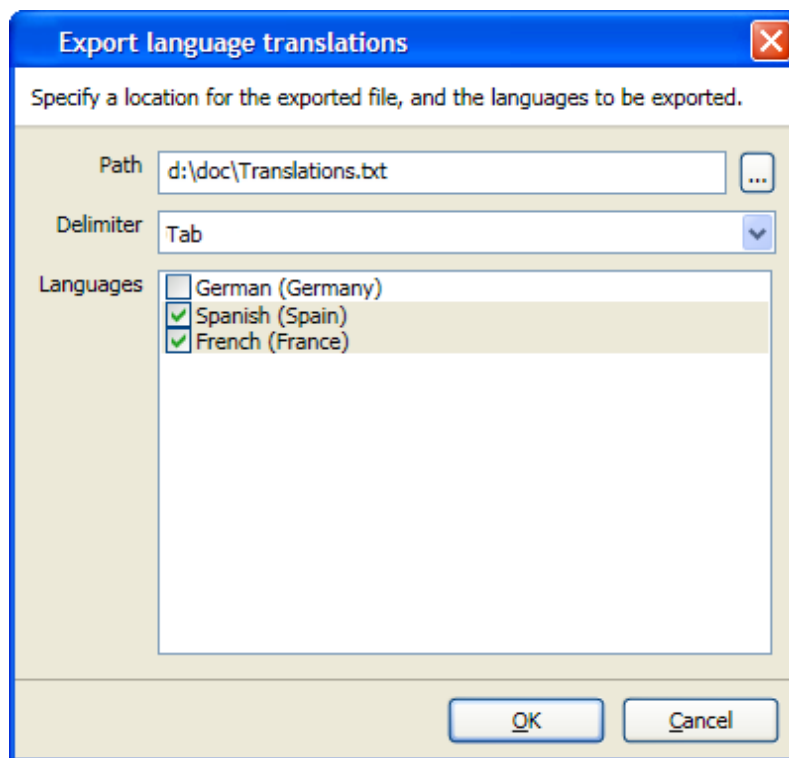| Parameter	Description
Translation Provider	Select translation provider among available providers.
Reference Language	Select reference language; i.e. the language in which the project was created.
Only translate items that have not yet been translated	Unchecking the box replaces also already translated items in the project.

Parameter	Description
Translate from	Selection of source language for the translation operation; the default language (reference language) or one of the languages that have been added to the project.
Translate to	Selection of target language for the translation operation.

Note: Since the translation tool accesses online translation providers, the translation operation may sometimes be paused or delayed due to an excess of online users.

14.5 Exporting Languages

Languages can be exported to a text file for e.g. translation.

1. Select Export from the Import/Export button.

2. Specify location, delimiter and language selection.

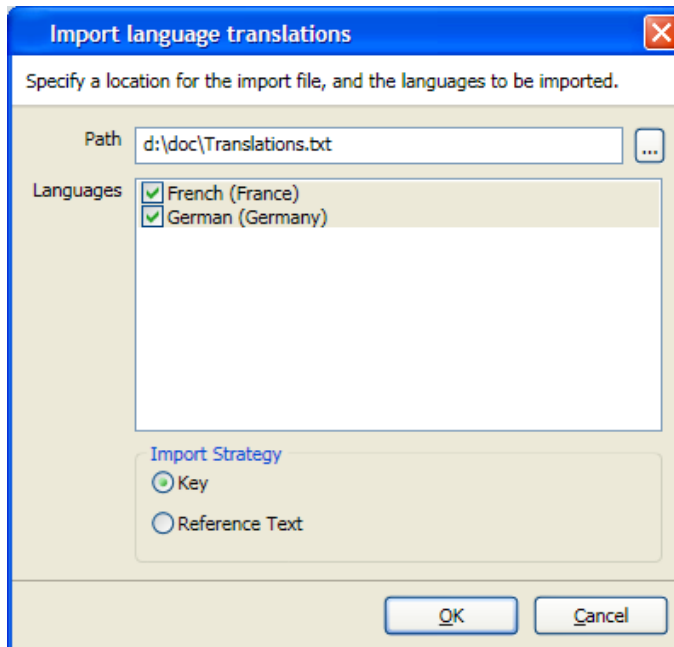| Parameter	Description
Path	Browse to the location for the exported file
Delimiter	Select delimiter from the drop-down list; comma, semicolon, space or tab
Languages	Select which languages to export

3. Click OK.

The exported file will also include the default language.

14.6 Importing Languages

After translation or other editing, the updated language file can be imported to the project again.

1. Select Import from the Import/Export button.

2. Specify location and language selection.

Parameter	Description
Path	Browse to the location for the file to import
Languages	Select which languages to import
Import Strategy	Selecting Key performs the import according to the Designer and Object columns in the multiple languages configuration page. Reference Text performs the import according to the Text column. If you have changed the texts of the default language after

	exporting the languages, it is recommended to select Key.

3. Click OK.

The imported file will also include the default language.

Note: Make sure to make a backup copy of the project before importing languages, in case there are mismatches between the existing and the imported languages.

15 AUDIT TRAIL

The Audit Trail function makes it possible to track operator actions.

Logging Strategies

To meet FDA (Food and Drug Administration) demands, it is possible to log actions in a strict manner. FDA logging implies that no log entries will ever be overwritten. If the size of the audit trail database is close to being exceeded (approximately 80% of the limit), a notification window will be displayed, where the user is warned, and demanded to export the data. Alternatively, the size of the Audit Trail database can be increased. If the limit of the database is exceeded, the logging is terminated and the operator panel will be blocked for any further operator actions. This is indicated by an error message.

With circular buffering, the oldest log entry is overwritten when the database is full. No warning message is displayed when reaching the limit of the database.

The database can be exported using an action, regardless of logging strategy. The log entries are saved in the Audit Trail database, and the information can be displayed using the Audit Trail Viewer.

15.1 Using the Audit Trail Function

The function is enabled by selecting Audit Trail from the Insert ribbon tab. The configuration page opens in the desktop area. All actions available for logging are listed. It is possible to log all or only some actions. It is also possible to log tag changes only (without logging actions).
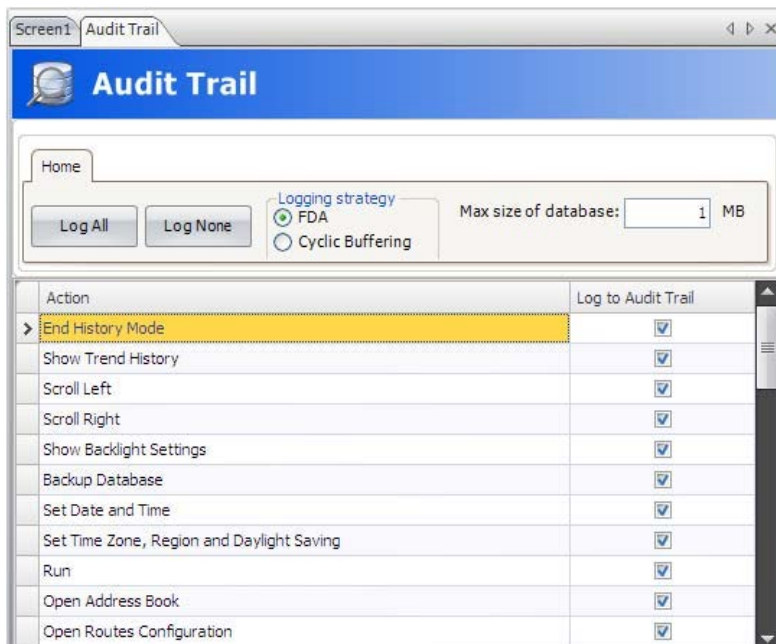
Parameter	Description
Log All/Log None	Click the buttons to quickly select all or no actions from the list.
Logging strategy	Select FDA or Cyclic Buffering.
Max size of database	The maximum size of the Audit Trail database.

Value change on tags, performed by user actions, can be logged by selecting Log to Audit Trail in the tags configuration page. This option is enabled only if the audit trail function is activated in the project.

Audit Trail Description

It is possible to add a description for each object that is logged to the Audit Trail database using the Property Grid.
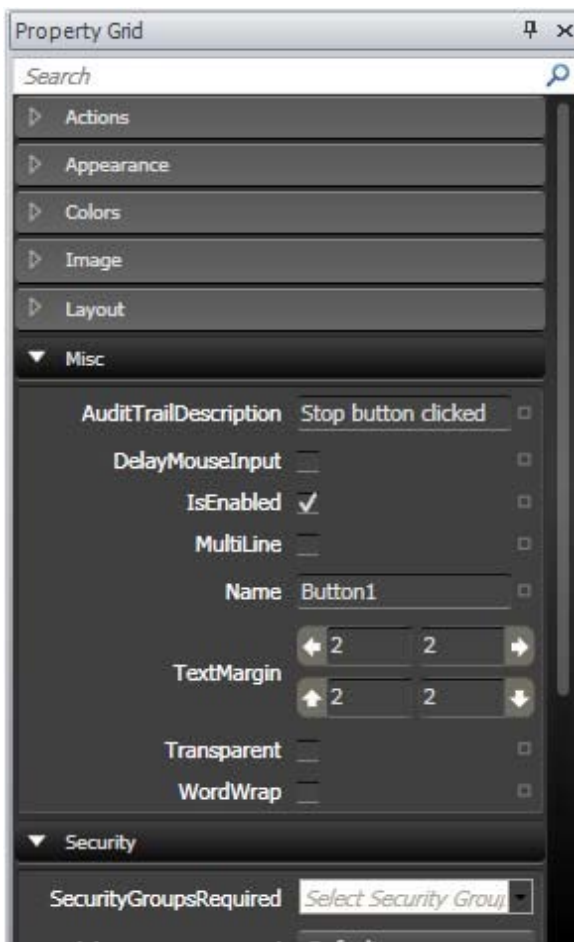

The description will be saved to the description column of the Audit Trail database, and is limited to 255 characters.

15.2 Audit Trail Viewer

The Audit Trail Viewer is selected from the Objects group on the Home ribbon tab. It displays the information from the Audit Trail database.

Selecting Show Columns on the General tab when the Audit Trail Viewer object is selected makes it possible to choose and configure columns to display in runtime.

.
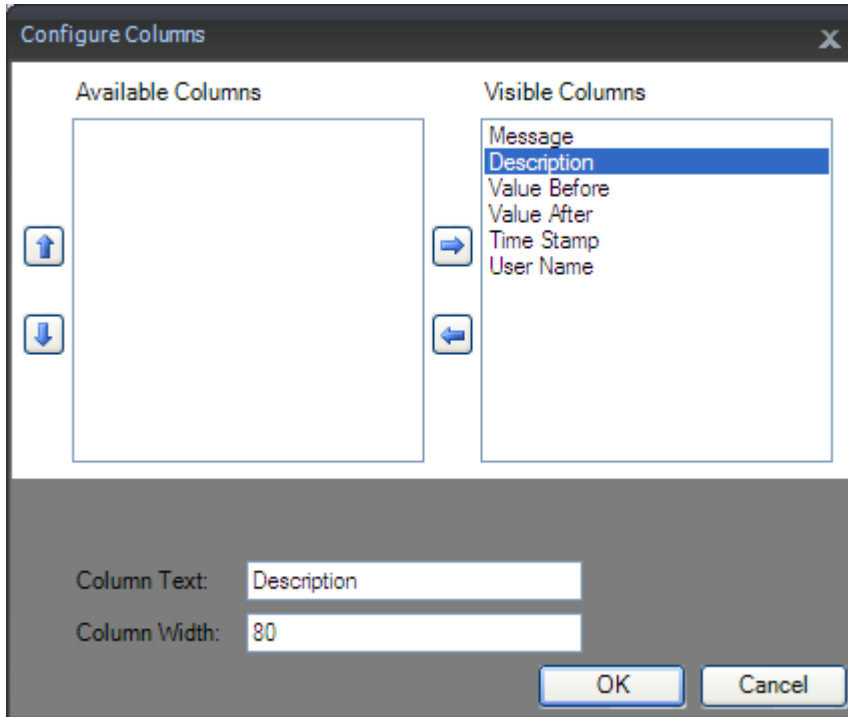
16 TEXT LIBRARY

With the text library function, text tables can be created, where values are linked to texts. The text library function can be used for presentation of each sequence step in sequence control. Another possible application is to present error codes, where an analog signal generates error codes connected to texts in a text library. The function can also be used to give analog values specific values, depending on the selected texts.

The text library function is activated by selecting it from the Insert ribbon tab.
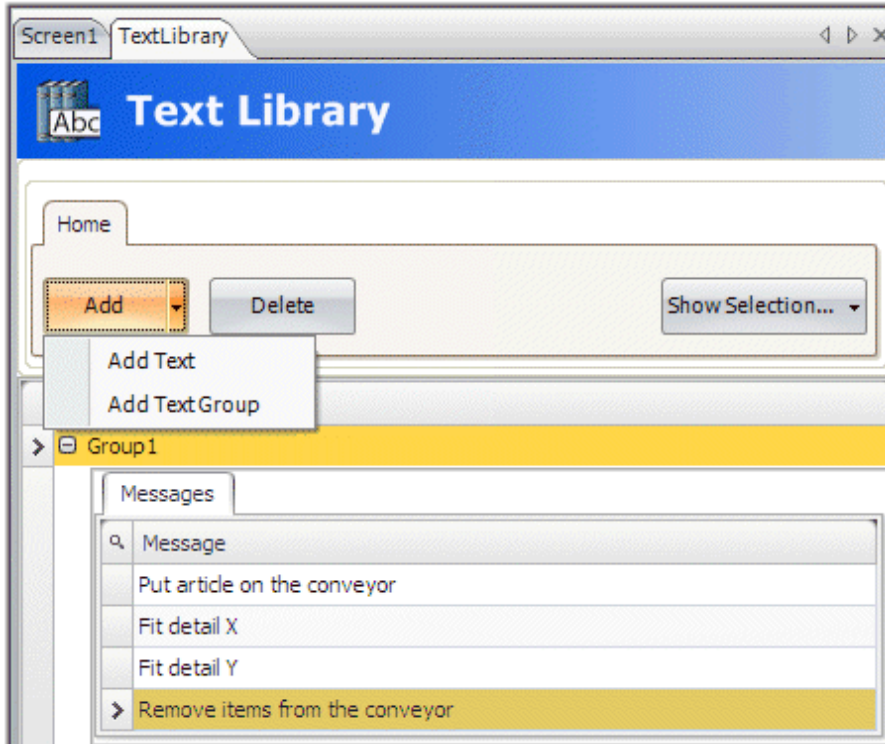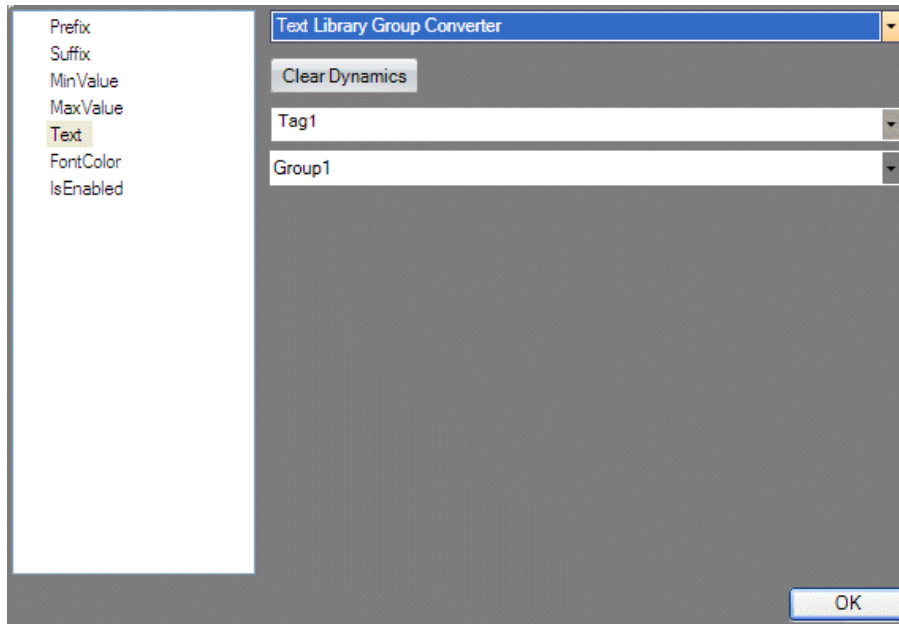

Texts and groups can be added from the Add button.

16.1 Connecting Objects to Text Library Texts

Perform the following steps to connect an object to a text library text:

1. Select the object on the screen.

2. Click on General on the Dynamics tab.

3. Select the Text property, and select Text Library Group Converter.

4. Browse to the tag and select the text library group.

The object will now present the texts from the text library instead of the value.

17   OPERATOR PANEL SYSTEM SOFTWARE

In the operator panel, there is a system program (operating system), which is stored in the operator panel's memory on delivery.

The system program can be replaced, that is, updated to a newer version, either via PC or via external memory card.

An Image Loader is used to download system programs to the operator panel via a PC. The Image Loader is available from the web site.

Note: When updating an operator panel, it is important to ensure that power is not interrupted during the transfer.

Welcome Screen

When the operator panel is started, the welcome screen is displayed. The following items about the operator panel are listed:

- Size of internal memory card, if applicable

- IP address

- Image version

If there is a project in the panel, it will be loaded automatically.

If there is no project in the panel, touching the screen will display the Service menu.

17.1   Service Menu

The service menu for the operator panel can be accessed before a project is downloaded, or by setting the mode switches in mode 1000. The location of the mode switches is described in the installation manual for the operator panel.

17.1.1 Service Menu in an Empty Panel

When no project is loaded in the panel memory, the panel will boot, displaying the Welcome screen.

- Press anywhere on the panel display to enter the service menu.

17.1.2 Service Menu in a Panel with Project

When a project is loaded in the panel memory, the panel will automatically start to execute the project. To display the service menu at boot-up:

- Disconnect the power supply from the panel.

- Set the mode switches in mode 1000 (Service Menu mode).

- Connect the power supply.

When the panel boots up it will suggest to go into the Touch Calibrate mode. This ensures that it will be possible to recover from a bad calibration.

- Press anywhere on the panel display to interrupt the timer and to enter the service menu.

- Make desired settings in the service menu.

- Disconnect the power supply from the panel.

- Set the mode switches in mode 0000 (Run mode).

- Reconnect the power supply.

17.1.3 Service Menu Options

IP Settings

Select to obtain an IP address automatically via DHCP, or specify an IP address. The IP address can also be set during project transfer.

Date/Time

Use the Date/Time Settings dialog to set the time zone, date and time for the panel.

Erase Project

The erase function will detect if the project is located in the panel memory or on a memory card. Pressing Erase Project will completely remove the project and all its components from the panel memory/the memory card.

Format Memory Card

The format memory card function will detect if external and internal memory cards. Select which card to format and, in some cases, formatting alternatives.

Touch Calibrate

Select Touch Calibrate if the touch screen needs to be calibrated. Follow the instructions on the screen to perform a calibration.

Close

Press Close to exit the service menu.

17.2 Operator Panel Upgrade

The operator panel can be upgraded using the Image Loader application, and setting the mode switches in mode 0100. The location of the mode switches is described in the installation manual for the operator panel.

17.2.1 Requirements

Updating of the operator panel system program requires the following:

- A PC with Image Loader application.

- An Ethernet connection between the PC and the operator panel.

- The operator panel IP address.

- The Image file from the web site.

17.2.2 Transfer Image

- Double-click on the executable Image Loader file to start the transfer program.

- Follow the instructions.

Transfer Procedure

The image transfer procedure is completely menu-driven. The operator panel will be ready for transfer directly afterwards, provided that all steps are performed and completed.

The following steps outline the transfer procedure:

- Disconnect the power supply from the panel.

- Set the mode switches in mode 0100 (Image Load mode).

- Reconnect the power supply.

- Select the operator panel to upgrade by entering its IP address.

- Click Upgrade.

- When the upgrade is finished, disconnect power from the operator panel.

- Set the mode switches in mode 0000 (Run mode).

- Reconnect power to the operator panel.

Note: When updating an operator panel, it is important to ensure that power is not interrupted during the transfer.

18 MULTIPLE CONTROLLERS

It is possible to use multiple drivers with one operator panel. This means that the operator panel can communicate with different controllers simultaneously. The controllers can be connected to the serial ports on the operator panel and via the Ethernet port.

Adding a Controller

Click on Tags in the Project Explorer, select the Controller tab and click Add to add a new controller in the current project, and select which controller model and driver that is to be used.

Tags are added and controller is selected on the Tags tab.

18.1 Addressing

Addressing of the tags in the controllers is carried out according to the help file for each driver.

When assigning a tag to an object, all tags, regardless of controller connection, are available for selection.
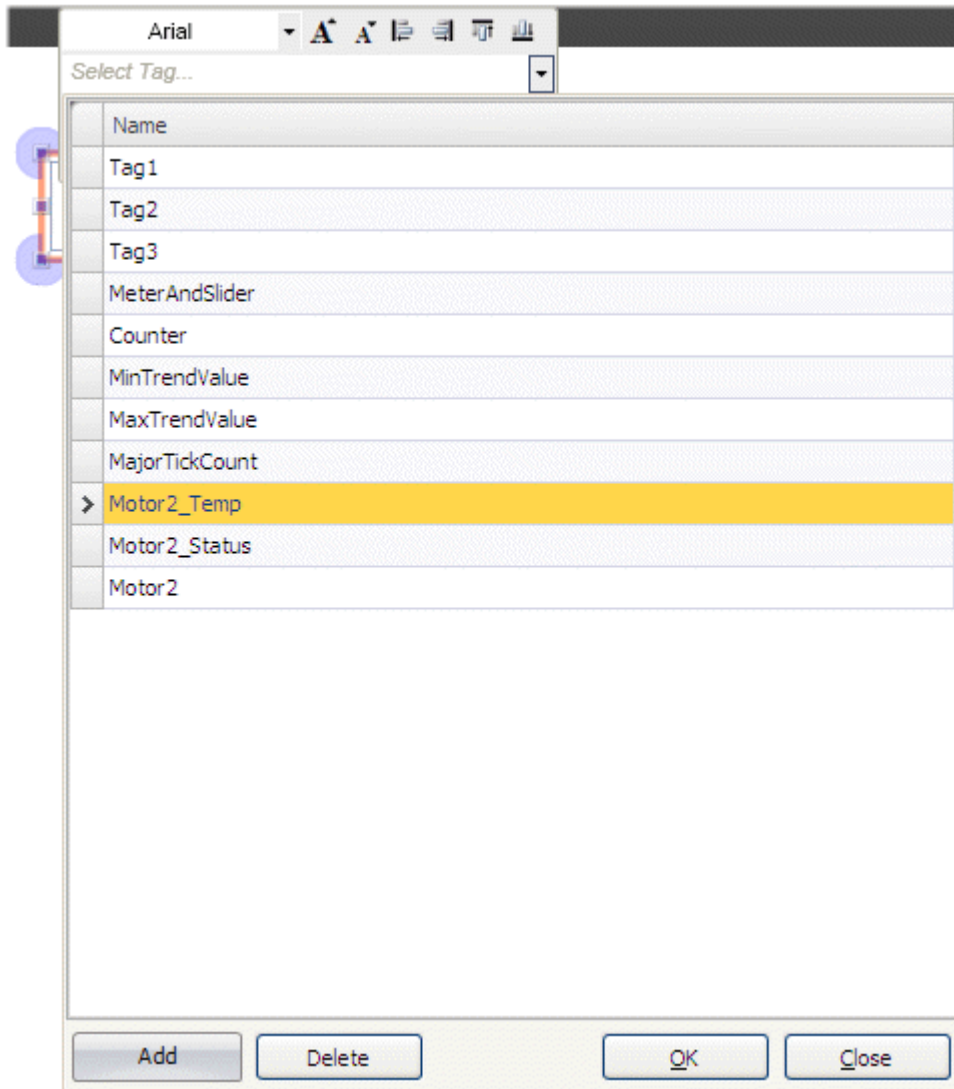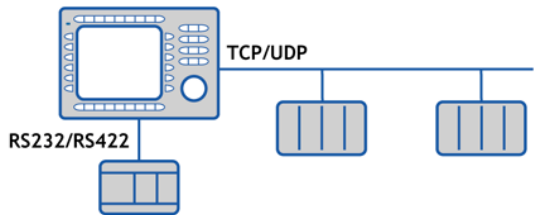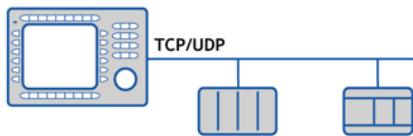

Examples:

The following examples show configurations where multiple drivers are used in the operator panel.
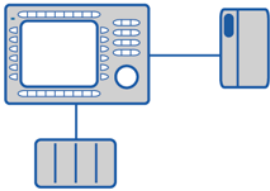
Operator panel communicating with one controller and one frequency converter.

Operator panel communicating in series with one controller via the Ethernet and with controllers of another make.

Operator panel communicating with two controllers of different makes via the Ethernet.

About Kollmorgen

Kollmorgen is a leading provider of motion systems and components for machine builders. Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions that are unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

For assistance with your application needs, contact us at: 540-633-3545, contactus@kollmorgen.com or visit www.kollmorgen.com

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Because Motion Matters™