05/2021 M005767-01

GALILEO 10.5
Release Notes

Galileo

EATON
Powering Business Worldwide

Imprint

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Original instructions
English

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Important:
Please contact our support (Automation@Eaton.com) if you find any errors, malfunctions, missing functions or other problems with the software. Your cooperation is greatly appreciated.

System Requirements

- Windows 7 SP1 / Windows 8.1 / Windows 10
- 1GHz or faster processor
- 1GB of RAM
- Minimum available hard disk space: 300MB (application only)
  Recommended available hard disk space: 1GB (application, help system, sample projects)
- 1024x768 or higher display resolution
- Browser (only needed for help system)
- .NET Framework 4.6.2 (included in setup)

System Requirements Galileo Open Runtime

- Windows 7 SP1 / Windows 8.1 / Windows 10
- 800MHz or faster processor
- 512MB of RAM
- Graphics card supporting OpenGL 1.5
- Minimum available hard disk space depends on project (at least 20MB needed for application only)

System Requirements XV-300

- OS version 3.6.0 or above

System Requirements XV-100/400

- OS version 2.28.0 or above

Imprint

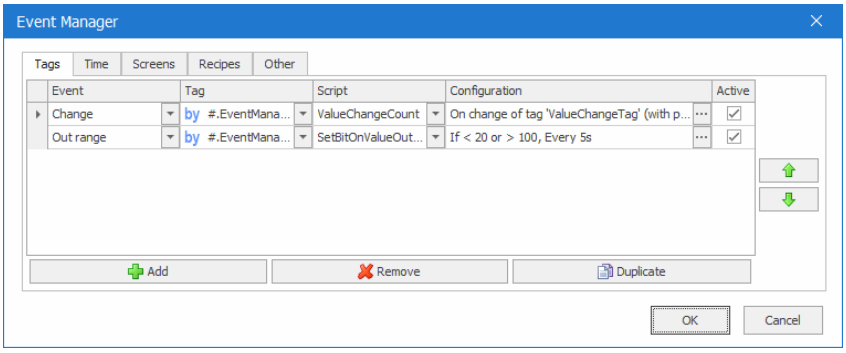
1 New Features

1.1 Event Manager

The formerly known concept of "Loop" scripts is replaced by the much more flexible approach offered by the "Event Manager".

With the "Loop" scripts it was not possible to achieve a performance-optimized application configuration because all the loop scripts (with all the used tags) were always executed on every cycle of the Galileo Runtime System. This meant, even in a scenario where most of the tags were not really required because they were used just under a special condition (e.g. an if-clause checking for a specific screen to be active), all the tags always needed to be synchronized at the start of the cycle.

The new "Event Manager" offers a much more flexible approach. You can find the "Event Manager" on the "Home" ribbon:



The "Event Manager" allows the configuration of different events. If the configured event happens, the referenced script will be executed. Following events are currently supported:

- Time
  - Interval (an interval set to "fast" is the equivalent replacement for former "Loop" scripts, see also chapter xxx) (Interval can be a static value or a tag)
  - Hourly, Daily, Weekly, Monthly, Yearly (data can be static or tag)
  - Specific point in time
- Tag:
  - On any value change of a defined tag
  - Tag value check (operators: =, ≠, >, >=, <, <=) (comparison value can also be another tag)
  - If a tag value is between or out of a specified threshold (threshold values can also be other tag values)

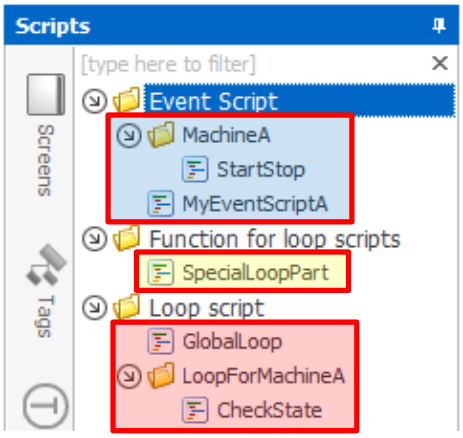
- Screen:
  - While on a specific screen
- Recipe:
  - On recipe load
- Others:
  - On application startup
  - After successful first synchronization of all the tag values from the PLC(s)

Please refer to the "Online Help" of Galileo for detailed information about the configuration possibilities.

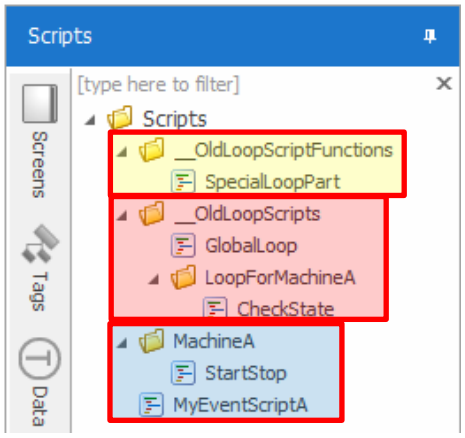
1.1.1 Conversion of existing projects

The Script Tree no longer contains sections for "Event", "Loop" and "Loop Functions". All the scripts within the former "Event" section will be placed directly in the "Scripts" section. All former "Loop" and "Loop Functions" scripts will be placed within sub folders named "__OldLoopScripts" and "__OldLoopScriptFunctions". Folder hierarchies will remain:

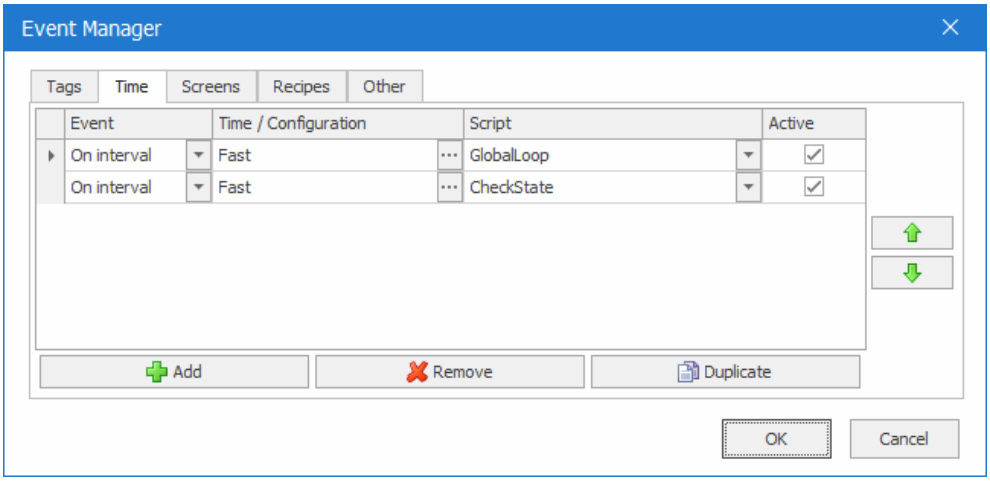
Tree view in 10.4.x:



Tree view in 10.5.x:



For every "Loop" script, an entry will be automatically created in the "Event Manager". The event is of type "Time (Interval fast)":


Event Manager
Tags
Time
Screens
Recipes
Other
Event
Time / Configuration
Script
Active
On interval
Fast
GlobalLoop
On interval
Fast
CheckState
Add
Remove
Duplicate
OK
Cancel

1.2 OPC UA Client

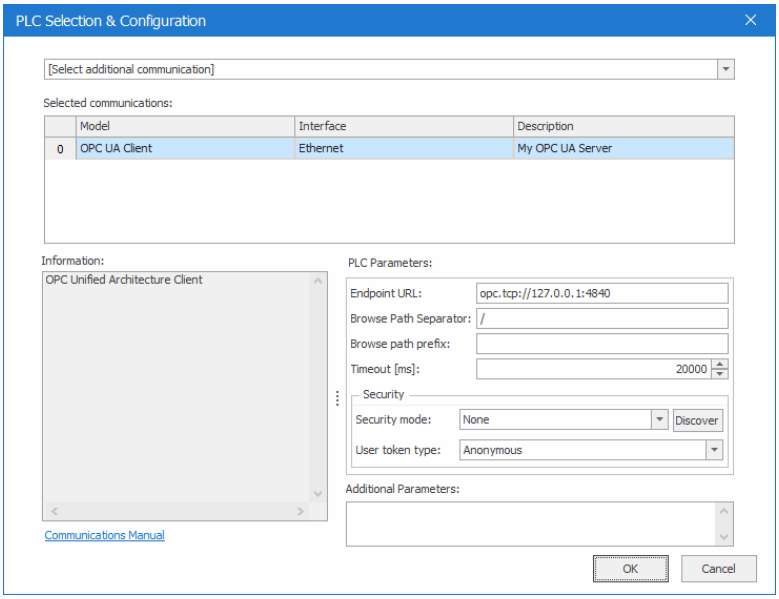
An OPC UA Client communication is now available to exchange data with OPC UA servers.

The OPC UA Client communication supports following:

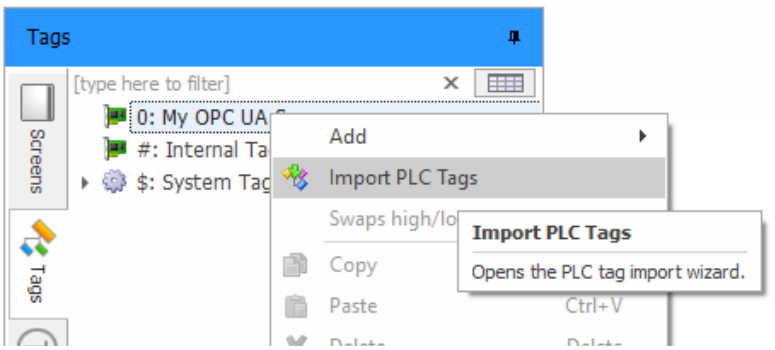
- Reading and writing of following data types: Boolean, Byte, SByte, Int16, UInt16, Int32, UInt32, String, Float
  (All other types are not supported and tags of these types will not appear on the import.)
- Security Modes: None, Sign, Sign & Encrypt
- User token types: Anonymous, Username (with Password)
- Security Policies: Basic256Sha256, Basic256, Basic128Rsa15

The import of tags/nodes from an OPC UA Server happens directly by communicating with the OPC UA Server.

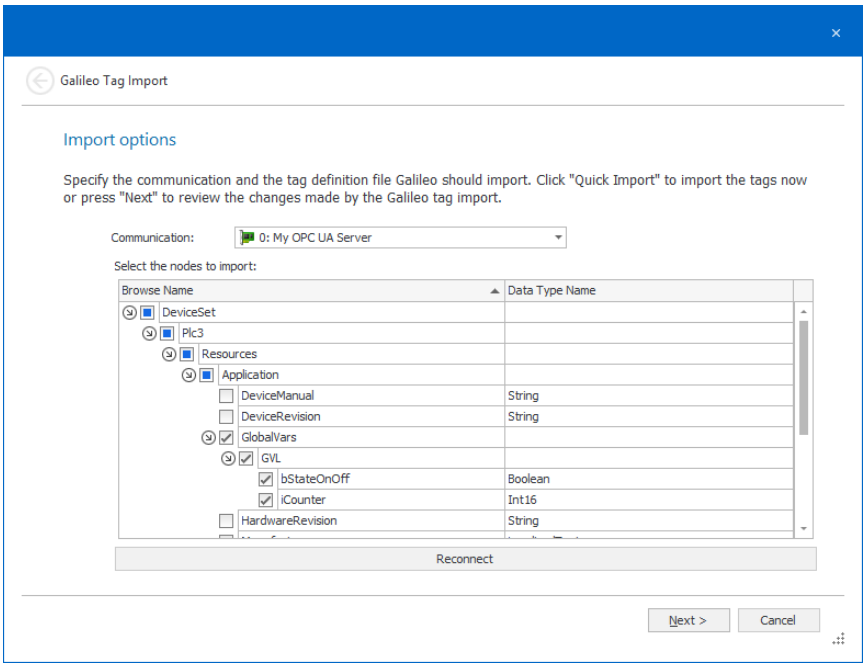
1. Add an OPC UA Client communication to the project and configure it properly



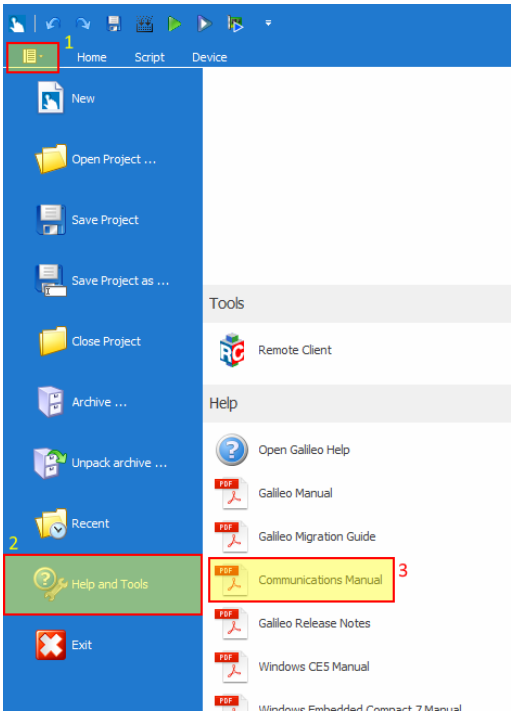
2. In the tag tree, execute "Import PLC Tags" from the context menu:



3. If the connection to the OPC UA Server could be established, the available tags/nodes will be displayed. Select the ones to import into Galileo and continue with the import wizard:



Please refer to the separate "Communications" manual of Galileo for more detailed information. The "Communications" manual is part of every Galileo installation and can be called from within Galileo ("Menu" on ribbon bar, "Help and Tools", "Communications Manual"):

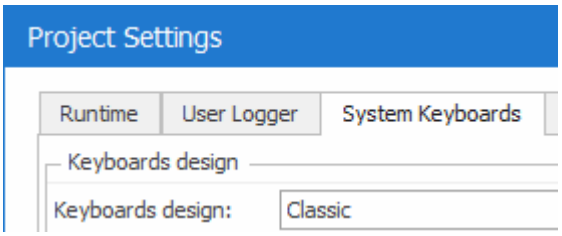


1.3 Modernized Keyboards

Galileo 10.5 offers some modernized keyboard sets to be used. The keyboards are not only graphically revised but also offers some nice new features like:

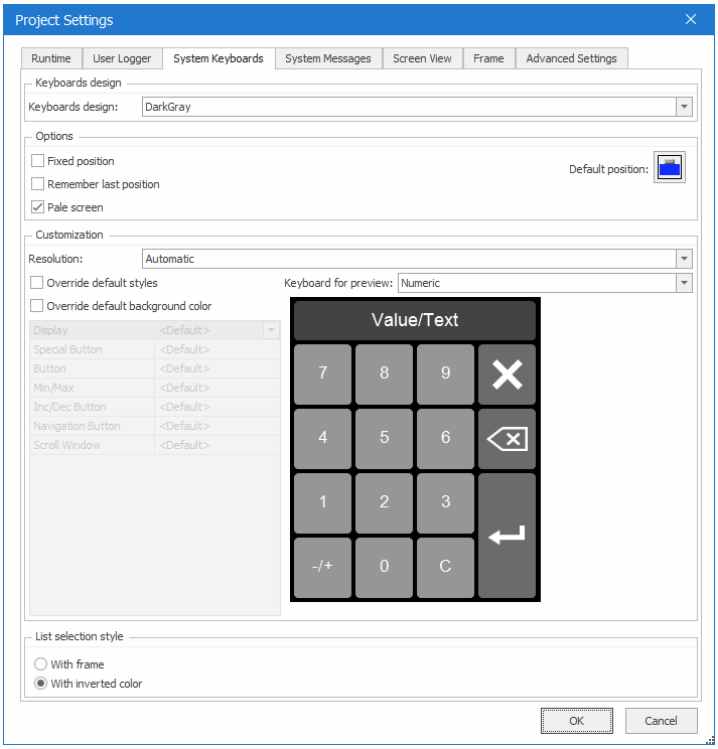
- Cursor support on runtime (by touch as well with dedicated cursor keys)
- Password functionality to switch to clear text ("Eye" function)
- Easier possibility for styling different group of buttons

The keyboard design can be changed in the "Project Settings":



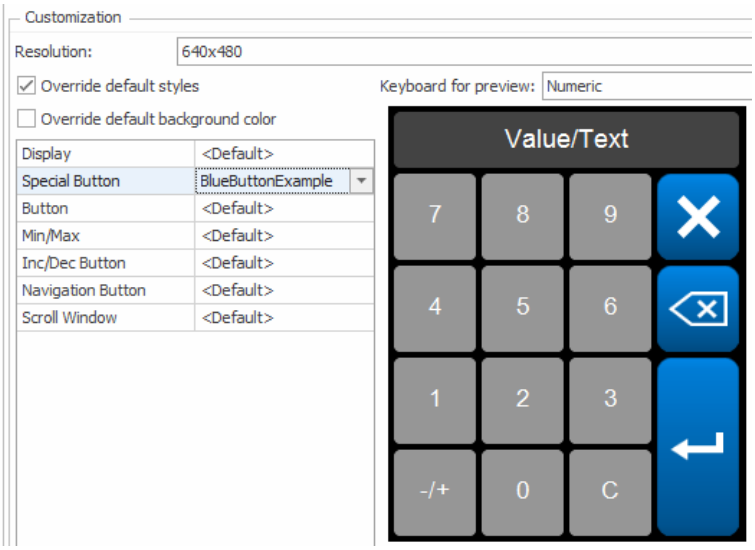
- "Classic" represents the keyboard known from Galileo 10.4.x
- All other designs represent the new keyboards with additional functionalities

When choosing a modern keyboard design, the settings dialog offers some more options:

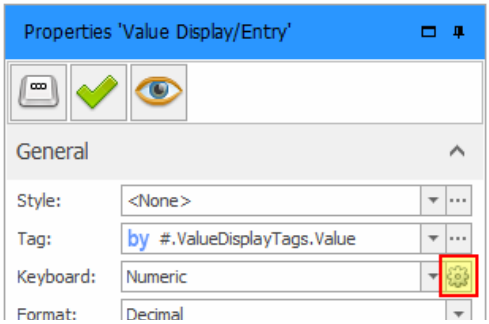


- Some default options can be configured ("Fixed position", "Pale Screen", …) which will be applied if not defined otherwise at the used place.

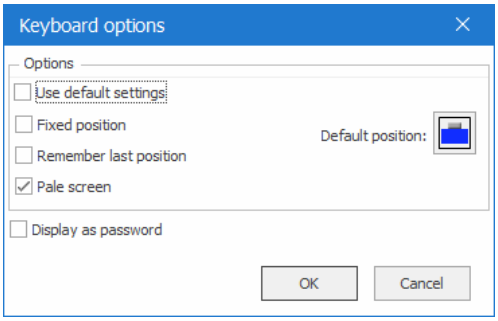
- In the "Customization" section a preview of all the keyboard types ("Numeric", "Alphanumeric", ...) is available for different resolutions.
- It's possible to override the default styles with styles from the project, e.g.:



Whenever a keyboard can be assigned to a control, there is the possibility to override the default settings by clicking on the "Gear" icon:



By deactivating "Use default settings", all the options are available:



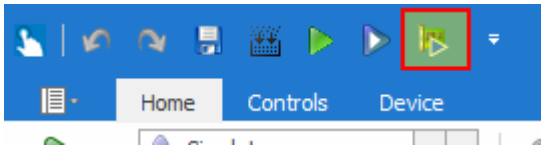
The "Display as password" option offers following features:

- Never: The value is always shown as "***". There is no option to show the value in plain text. (The "Eye" icon will not appear at all.)
- On touch: While pressing the "Eye" icon the value is shown in plain text
- Toggle: Pressing the "Eye" icon shows the value in plain text, pressing again the "Eye" icon switches back to password mode

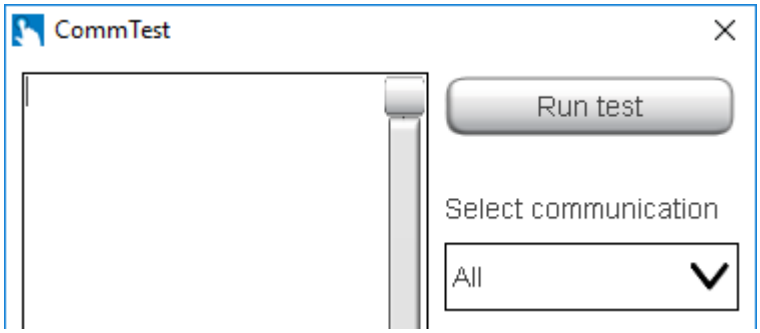
1.4 Communication Test Tool

The "Communication Test Tool" offers the possibility to easily test the communication to all defined and used tags in the project and get a list of failed tags. It makes it therefore easier to identify wrong/outdated tag definitions in the project.

In the Design Tool, there is following icon now available in the application title bar:

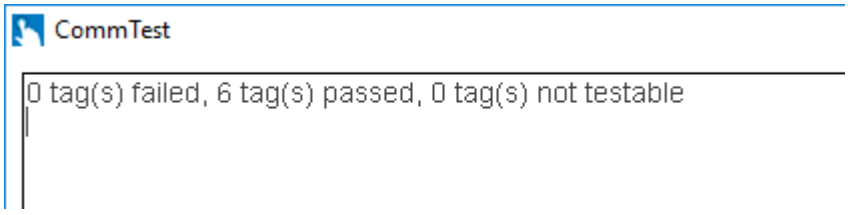


By clicking on it (and after a possible needed compiling of the project) the "Communication Test Tool" starts up:

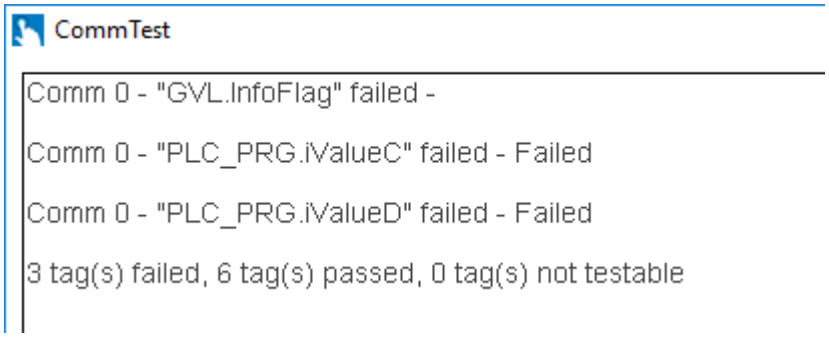


On the right side of the tool, the communication to test can be selected (if there are more than one available). After clicking on "Run test", all the used tags of the selected communication get tested for availability on the PLC.

If all the tags could be found and accessed on the PLC, a message like following will appear:



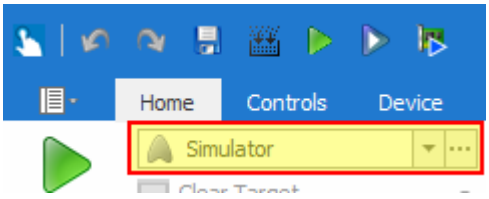
If there were some errors, every tag which raised an error get listed:



By clicking on "Save output" the output will be saved into a simple text file.

Hints:

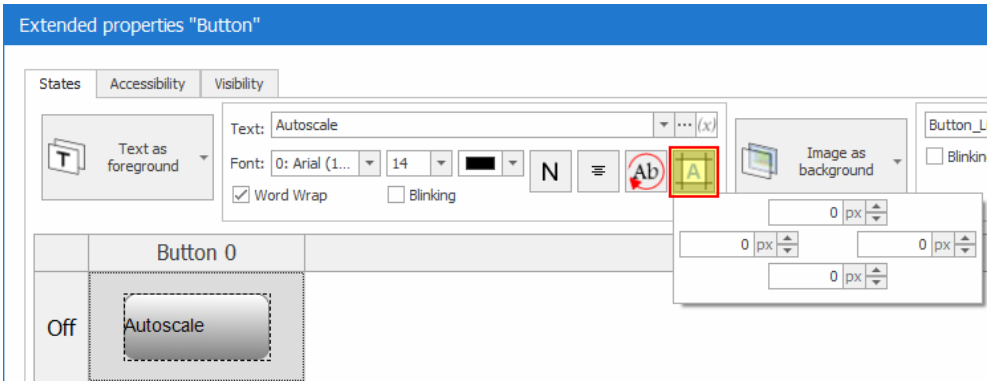
- Only tags which are really used at some place in the project are tested
- The "Communication Test Tool" execution depends on the current "Deploy Target" selection:



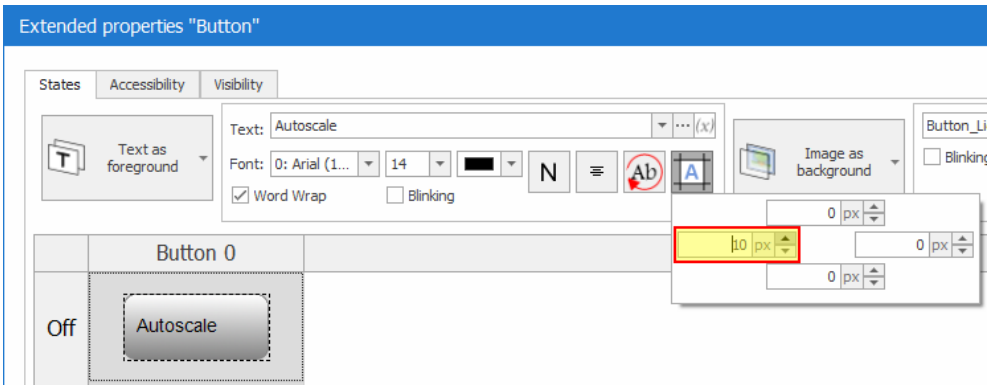
If "Simulator" is chosen, the "Communication Test Tool" win run on the PC. If a target is selected, the "Communication Test Tool" (with the compiled project) will get transferred to the target device and executed there.

1.5 Image and Text Margins

For controls allowing an Image or Text to be defined as the (foreground) content, it is now possible to define margins.



In this way it is possible to e.g. define a text left-aligned but leave some space to make it look nicer:



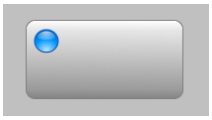
The margins can be set either in absolute pixels or relative in percentage (switch by right-click in the margins value box).

The margin settings can be especially helpful in the case of images, which cover itself the full defined drawing area. By defining a margin of 5px at the top and bottom, the following icon button looks much prettier.

Without margins (Galileo 10.4.x mode):

With margins:

It is also possible to align images (if no "stretch" option is set):

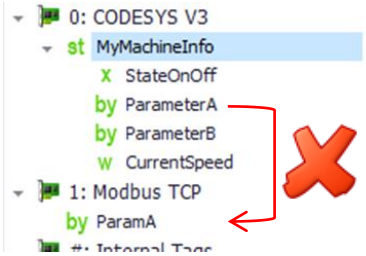


1.6 Various

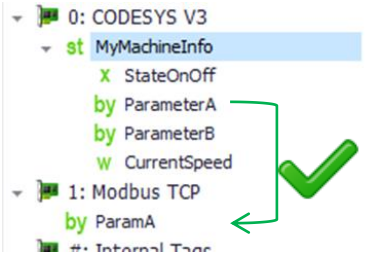
1.6.1 Gateway changes

Until Galileo 10.4.x it was only possible to define a gateway for a whole addressed structure. It was not possible to just define a gateway with single elements from the addressed structure. This limitation is now repealed.

Galileo 10.4.x:



Galileo 10.5.x:

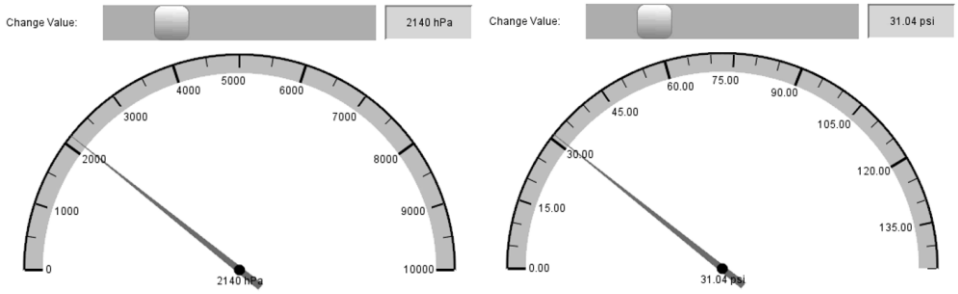


This offers much more flexibility and eliminates the need to create "dummy" structures on PLCs just to be able to define a gateway successfully.

Also from a performance point of view this approach is much better: instead of communicating maybe a huge amount of data (think about a structure of 100 tags where only 5 tags are required to be part of the gateway), only the really required tags (here: 5) will be communicated with this approach.

1.6.2 Conversions support for Gauge

The Gauge control supports now also proper conversion switching not just for the value display but also for the arc drawing.



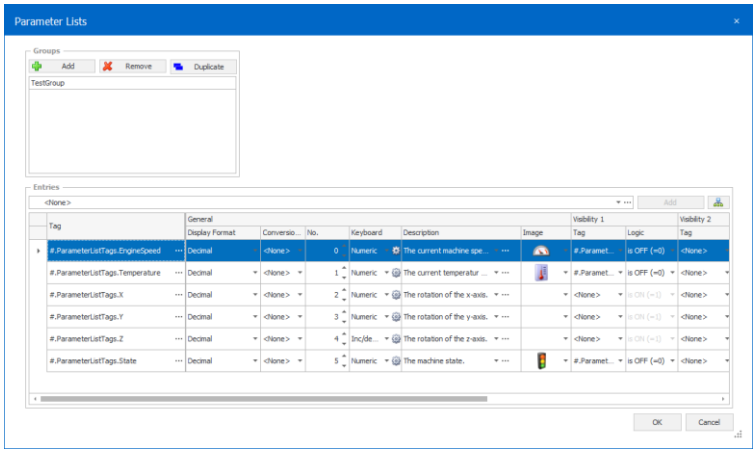
1.6.3 Cross-Project copy/paste support

Copy/Paste of information between different projects can be a very important task to save effort and time during creation of new projects.

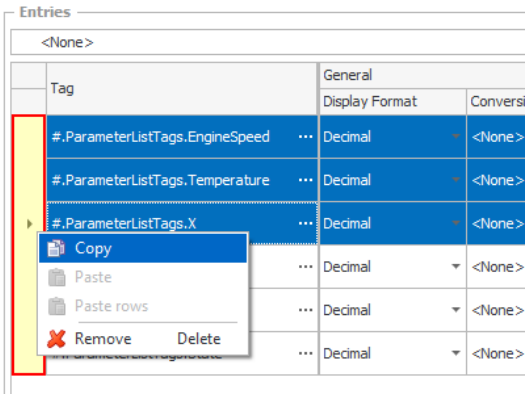
The so called "Cross-Project" copy/paste is now supported at even more places. It's now also possible to copy data from within a table to another project. Following tables are supported:

- Conversions
- Alarms
- Tag help
- Parameter lists
- Screen table
- Tag table
- Project texts

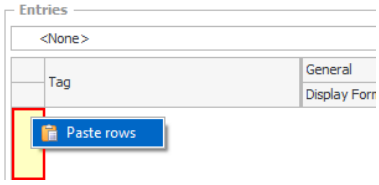
For example, having a project with following defined Parameter List entries:



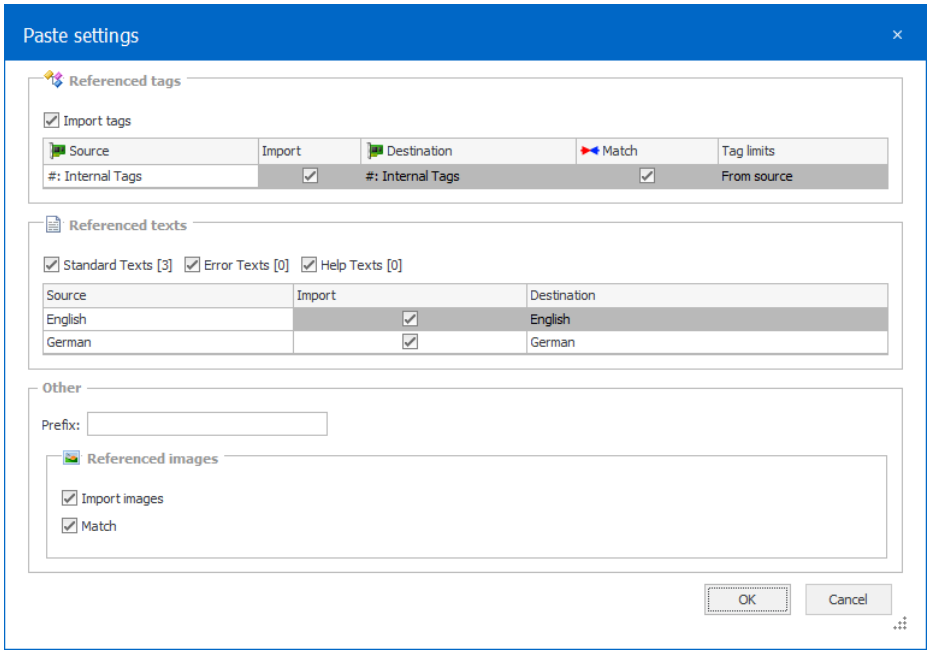
By marking the rows to copy on the first (empty) column (here marked yellow) and calling the context menu, gives the option to "Copy":



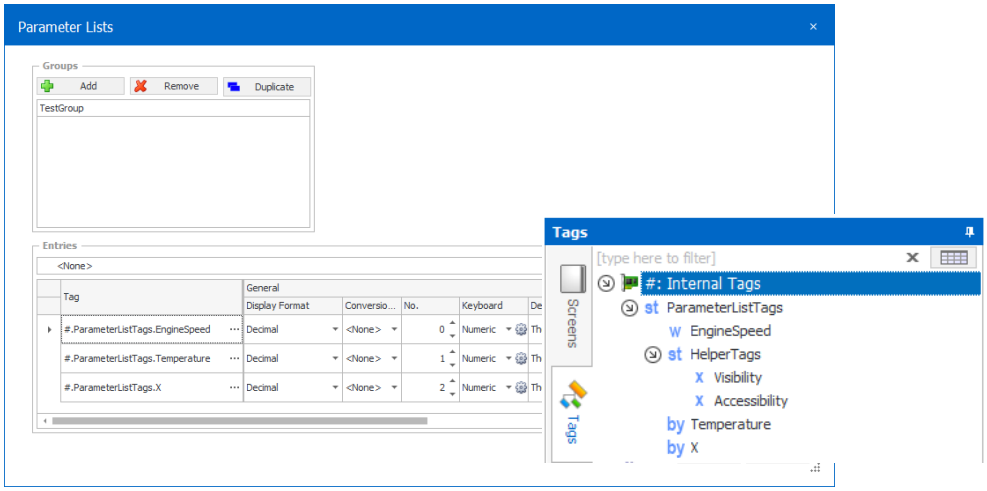
In another project, calling the Parameter List Manager and right-clicking on the same area as above gives the option to "Paste rows":



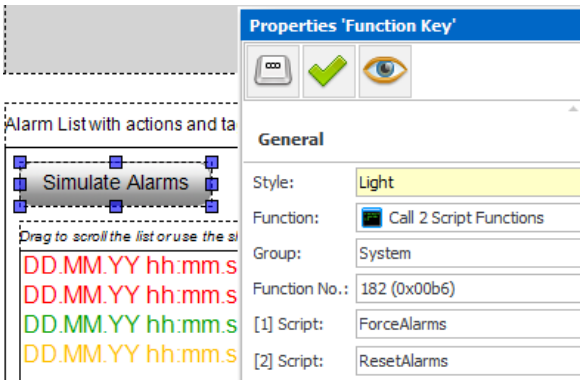
When executing this action, the common "Paste settings" dialog appears where you can select, what to import into the project:



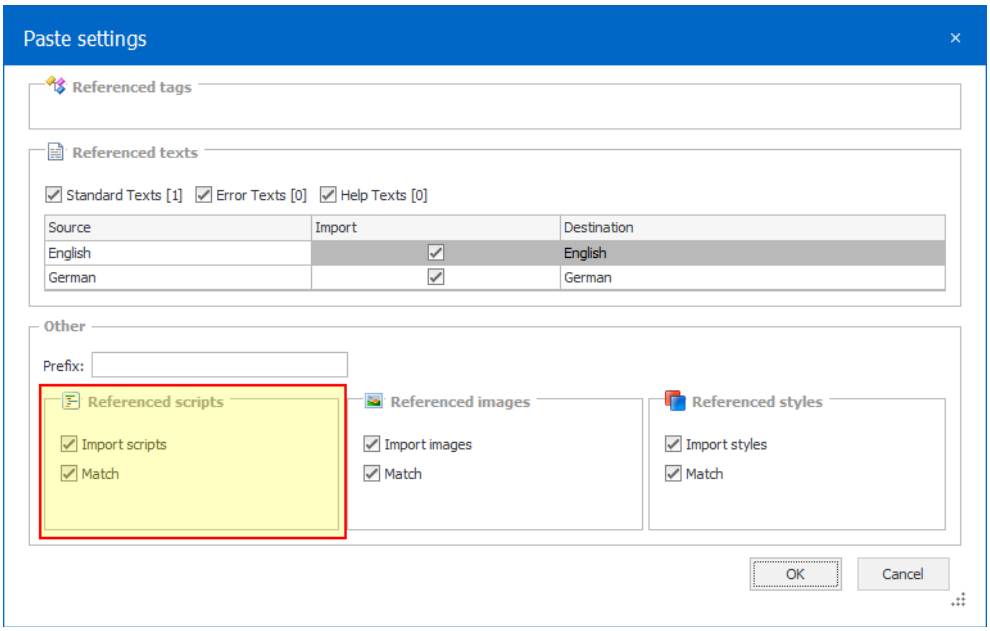
After that, you will have the content available incl. additional data like e.g. reference tags and appropriate texts:



Cross-Project copy/paste now also supports the copying of referenced scripts in case of a function key which has script(s) assigned:



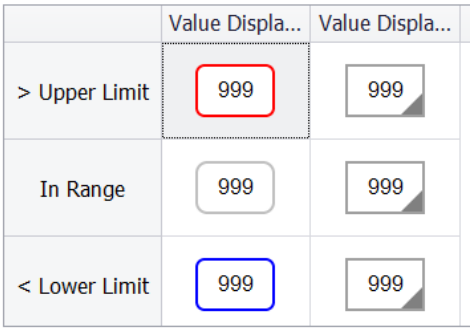
When copying the button "Simulate Alarms" (which has two scripts assigned) and pasting it into another project, the "Paste settings" dialog offers the functionality to import referenced scripts:



1.6.4 Value Display

1.6.4.1 Image as background

Until Galileo 10.5.x only a colored background could be configured for Value Displays. Now, also images are supported. There is no longer the need to work around this missing feature by using transparent controls and so on.



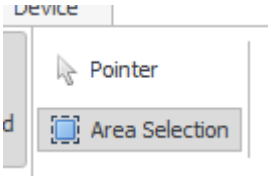
1.6.4.2 Unit on "Left" and "Bottom"

The unit can now be also displayed on the "Left" and "Bottom" (in addition to the already available options "Right" and "Top").

1.6.5 Screen Designer

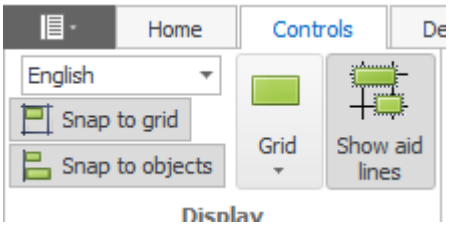
1.6.5.1 Area selection tool

In addition to the "Pointer" selection tool, there is now also the "Area Selection" tool available.



This selection tool is especially helpful in cases where the complete screen is covered by controls or a large background image is used in the back of some controls. Because in these cases no "empty" area is available, it was hard to select multiple controls by using the standard "Pointer" tool.

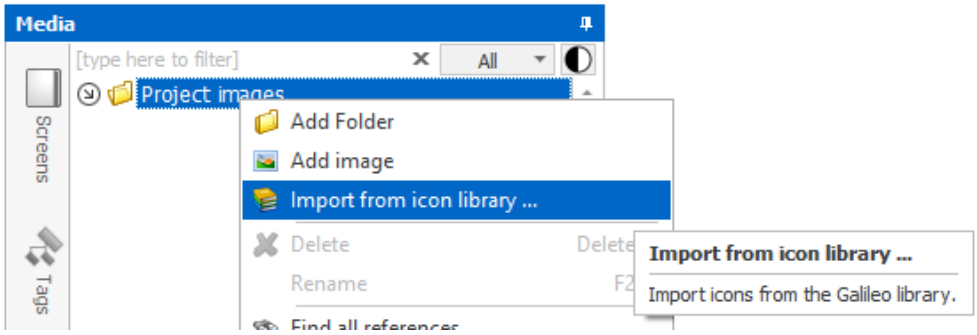
1.6.5.2 "Snap to objects" available in ribbon

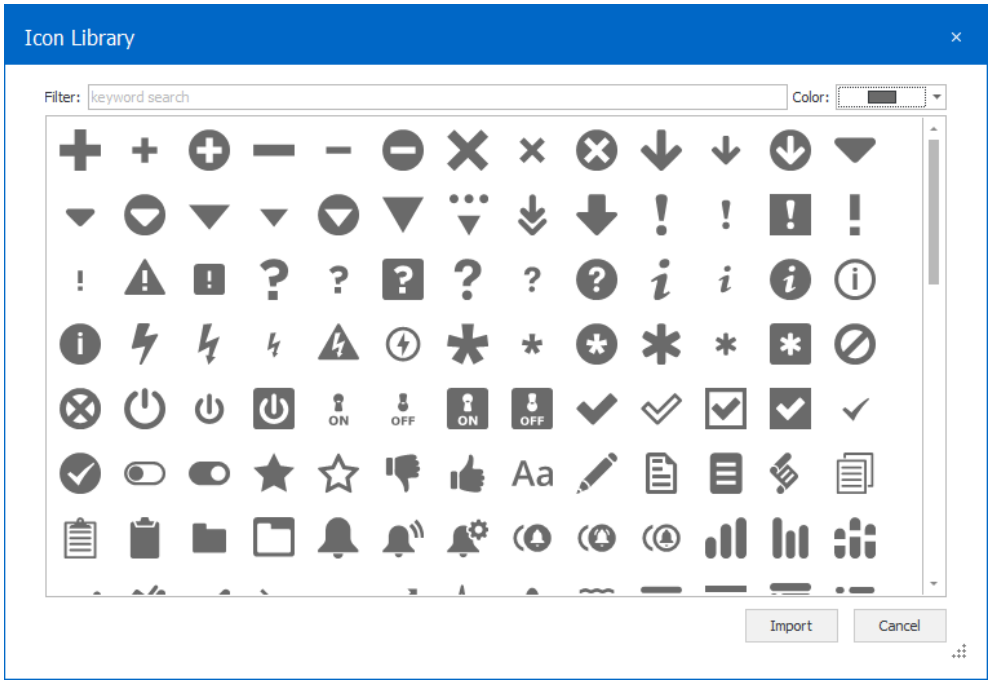


The section "Display" on the ribbon "Controls" is enhanced with the option to directly enable/disable "Snap to objects" without having first to enter the "Project Settings.

1.6.6 Updated icon image library

Some additional icons were added to the icon library which can be opened via the context menu on the "Media" tree:





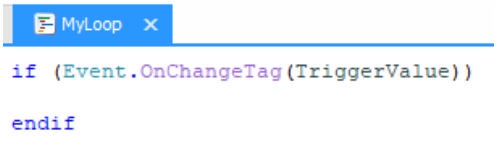
2 Major Changes

2.1 Event and Loop Scripts

There is no longer a differentiation between "Event" and "Loop" scripts existing in the script tree. See chapter 1.1 Event Manager for more information.

2.2 Tags used in script at function/condition OnChangeTag

Scripts support the function "OnChangeTag" (in 10.4.x: "Loop scripts") to react on tag changes and execute actions.



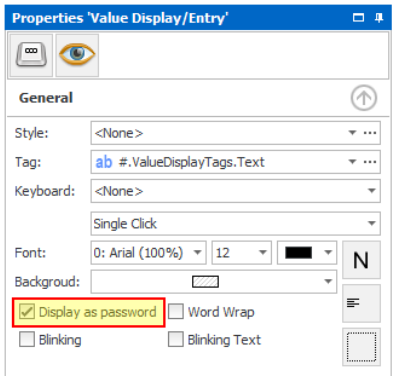
Up to Galileo 10.5.0 these tags were just considered and observed if they were used on the current screen as well or were part of a globally watched system (like used in a "Graph Block" or part of the "Alarm Management"). Using the example from above this means: The script "MyLoop" run all the time. But the tag "TriggerValue" was only observed if it was used actively right at the moment. If the tag was not used in a "Graph Block", in the "Alarm Management" or within the currently displayed screen, changes to the tag were not recognized.

Starting with Galileo 10.5.0 it's anyway recommended to replace such "OnChangeTag" conditions with an appropriate event of the "Event Manager" (see chapter 1.1 Event Manager for more information). If you continue to use scripts with this condition in it, Galileo 10.5.0 recognizes now changes to the tag always.

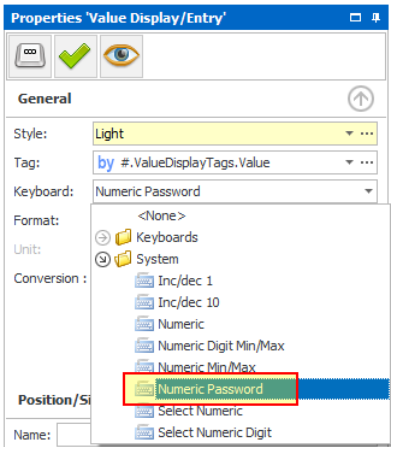
2.3 Unification of the "Display as password" functionality on "Value Display/Entry"

In Galileo 10.4 the option to display and/or enter a value as password was set differently, depending whether the tag was a numeric tag or a string tag.

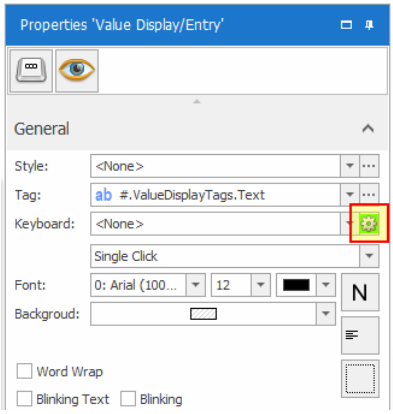
For string tags, the functionality was activated by checking this option:



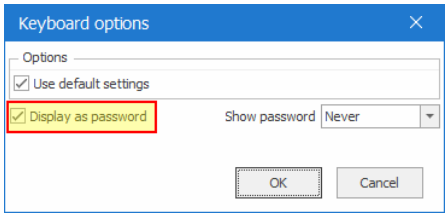
For numeric tags, the functionality was activated implicitly by choosing the "Numeric Password" keyboard:



As part of the "Modernized Keyboards" (see chapter 1.3), this configuration was cleaned up and unified in general. All the options for a keyboard as well as the "Password" functionality are now available by clicking on the "gear" icon next to the keyboard selection:



And then checking the option in the new "Keyboard options" dialog:



2.4 CODESYS-3 Communication Drivers

There is a performance optimized CODESYS-3 communication driver available. Until Galileo 10.5.0 this driver was called "CODESYS V3 Opt".

Starting with Galileo 10.5.0 this performance optimized driver becomes the new "standard" for CODESYS-3 communications and is therefore renamed to "CODESYS V3".

The formerly "CODESYS V3" communication driver is renamed to "CODESYS V3 (Legacy)". Existing Galileo 10 projects (version < 10.5.0) and Galileo 8 projects containing a "CODESYS V3" communication will continue using the (now called) "CODESYS V3 (Legacy)" communication. On opening such a project, the first time a hint message box appears for this purpose.

Remark: Online changes on the CODESYS-3, especially when it comes to changing string sizes, is not recommended and should be avoided. This could end up in problems.

2.4.1 Low level changes

The underlying system for both CODESYS-3 communication drivers was changed. There should be no impact or differences for existing applications. The adjustments should result in an improved memory management.

3 Improvements and bug fixes in 10.5

Galileo 10.5.0 includes all the improvements and bug fixes of Galileo 10.4.x up to the release date.

3.1 10.5.0

Design Tool

- **Change**: Centralized certificate management for all purposes (web visualization(s), OPC UA)
- Function "Find all references" improved so also usages as parameters on nested User Controls are considered
- Screen Designer: Improved preview drawing in case of parameter usage at nested User Controls

Runtime

- Recipe: Performance improvement for recipe data file checking and conversion
- Alarm Window: Calculation of date/time column width rectified
- Graph: Override of the number of samples for graphs with data array rectified
- Support for special characters in the project path

Communication

- Invalid UTF8 strings from PLC are automatically adapted by replacing the invalid character sequence by a sentinel character and therefore avoid data corruption and/or crashes