COPADATA
do it your way

# zenon manual

## Release notes zenon 7.50

**v.7.50**

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# 1. Welcome to COPA-DATA help

## GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to documentation@copadata.com (mailto:documentation@copadata.com).

## PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com (mailto:support@copadata.com).

## LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com (mailto:sales@copadata.com).

# 2. General

## 2.1 Converting projects

Before you convert a project, please read back all Runtime changeable files (User Administration, Standard Recipes, Recipegroup Manager, Scheduler/PFS and Message Control) into the Editor. This ensures a complete data conversion and makes sure that none of the changes made in the Runtime are lost. After converting to the new version, create all Runtime files once including RT changeable data.

**Note:** You can find important information for the conversion of certain versions in the zenon help in the Project conversion manual.

### CONVERTING MULTI-USER PROJECTS

Multi-user projects can only be converted if no elements are checked out. This means that all people configuring projects have to **accept** their changes first.

If this is not possible for some reason, you have to create a project backup of the project on the project database server and then immediately restore it. This resets all the **Under construction** information. **Attention:** All changes in the local project versions are lost!

The conversion can only be done on the PC, on which the central project database resides. If there is no Editor on the PC (standalone database server – no longer supported), you must install the Editor first. Only after that can the conversion be done on this PC.

### CONVERSION FROM VERSION 6.01 AND 6.20

*zenon projects in version 6.01 and 6.20 can no longer be directly read back in zenon 7.10 or higher.*

*Background: Versions that are based on the MSDE (SQL Server 2000) are not compatible with the SQL Server 2012 used in zenon.*

*Solution: First convert in zenon 7.0 and then in 7.10 or higher.*

## 2.1.1    Converting Recipegroup Manager database

From version 7.10, the MS Access database is no longer supported in the Recipegroup Manager. When opening an existing project, the data storage is automatically converted to binary data. A project backup is created in the process. This makes it possible for you to open the project with the version in which it was created.

### CONVERSION WITH 64-BIT EDITOR

The 64-bit Editor cannot access the MS Access database. To convert this, open the project in the 32-bit Editor first. There is a mechanism available that with the RGM setting **DataSource**: `MS AccessDB` automatically transfers the data to binary files. The  property **DataSource** is no longer available from version 7.10. If the data storage has already been set to binary files, the database data is rejected. For this, the following applies:

▶    Copying the data from the Access database to binary data storage only occurs with conversion in the 32-bit Editor. The data from the Access database is always rejected with 64-bit.

▶    When converting under 64-bit, a check is made to see if the data storage of the RGM is set to MS Access. In this case, corresponding information with notification of conversion is displayed in the 32-bit Editor.

▶ If, when copying over in the 32-bit Editor, it is established that at the target (binary files) data has already been configured, the user is asked which data is to be kept (MS Access or binary). MS Access and binary data cannot be combined.

After conversion, you can also open and edit the project with the 64-bit Editor.

If you want to convert the project again, use automatically-created backup during the conversion.

**AMENDMENT OF RECIPE GROUP NAMES AND RECIPE NAMES FOR 32-BIT ZENON**

Recipe group names and recipe names that contain invalid characters for "binary data" are automatically renamed when converting a project to the 32-bit version of zenon 7.1x. The renamed elements are shown in the output window. Check the output window for corresponding messages after conversion.

**Attention:** If recipe groups or recipes are renamed, the following elements must be checked and amended manually in the project:

▶ All RGM functions

▶ Variables that could contain recipe group names or recipe names

▶ VBA code that could contain recipe group names or recipe names

## 2.2 ListRecipeInfo - new methods in the RGMRecipeGroup object model (FS 35460)

The (existing) object model group **RGMRecipeGroup** was supplemented with the `ListRecipeInfo` method.

## 2.3 Supported operating systems

Supported operating systems and required service packs:

| Operating system | zenon Editor | zenon Runtime | zenon Web Server | zenon Web Client | zenon HTML Web Engine | zenon Logic Runtime | zenon Analyzer Server |
|---|---|---|---|---|---|---|---|
| **Windows 7** (Professional, Enterprise and Ultimate version, x86 and x64 versions). | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | Cannot run |
| **Windows Embedded Standard 7** (if all necessary operating system components exist). | Cannot run | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | Cannot run |
| **Windows 8 and 8.1** (Standard, Professional, Enterprise version, x86 and x64 versions) | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Only x64 with SP 0 |
| **Windows Embedded 8 Standard** (if all necessary operating system components exist). | Cannot run | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Cannot run |
| **Windows 10** (Home, Pro, Enterprise, Education, IoT Enterprise, version, x86 and x64 versions) | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Only x64 version of Home, Pro and Enterprise with SP 0. |
| **Windows Server 2008 R2** (All editions with the exception of Core) | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | Cannot run |
| **Windows Server 2012 and 2012 R2** (All editions with the exception of Core) | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Only x64 with SP 0 |

## 2.4 Windows CE support discontinued

Windows CE is no longer supported from version 7.50. zenon Runtime CE Version 7.20 and zenon Logic Runtime CE version 7.20 are installed. To use this version of zenon Runtime, the Runtime files for version 7.20 must be created in the zenon Editor. The zenon Logic Workbench allows backwards-compatible creation of the zenon Logic runtime application, without additional settings.

## 2.5 Revised product icons

The graphics of the product icons for zenon Editor and Runtime, as well as other zenon tools, have been revised.

The graphic user interface of the installation wizard has also been adapted. In addition, a quick-start guide with tips for the initial project configuration steps has been incorporated into the installation dialog in zenon.

## 2.6 Installation with Windows 7: Windows Update KB3033929

zenon uses a new Code Signing certificate. For installation, this means:
If zenon 7.50 or 7.20 is installed with Windows 7, `Windows Update KB3033929` must be installed for this. If it is not yet on your system, it must be installed before the installation of zenon.

You can find the update on the installation medium in the **AdditionalSoftware\Microsoft Windows Update KB3033929** section.
Alternatively, you can also get it from the download section of the Microsoft website:
**https://www.microsoft.com/en-us/download/details.aspx?id=46078** (**https://www.microsoft.com/en-us/download/details.aspx?id=46078**).

# 3. zenon Logic

## 3.1 Current zenon Logic Workbench (F 23583)

zenon Logic was, in the current version 9.0 integrated into the Logic workbench in the zenon Editor.

## 3.2    IEC 61850 client (F11633 - S13884 - RQ 5107)

The Edition 2 enhancements of the **IEC850** zenon driver have also been incorporated into the settings of the zenon Logic client.

The IEC 61850 client was enhanced with the following properties:

▶    Integrity Period

▶    Buffer Time

▶    Optional Fields

## 3.3    New function blocks for time and status of bits of variables (S 27620)

New function blocks in zenon Logic:

▶    Reading **GetDate** / **SetDate**
 and setting date stamp of variables, based on symbol names.

▶    Reading **GetTime** / **SetTime**
 and setting time stamp of the variables, based on symbol name.

▶    Reading **GetBit** / **SetBit**
 and setting a status bit of the variables, based on symbol name.

## 3.4    New driver - IEC 61850-90-5 client (F 5756)

The new driver supports IEC 61850-90-5 communication with PDCs and PMUs. It serves as a **Routable Sampled Values** client driver.

The driver is configured with an SCL file of the PDC/PMU.

## 3.5 OPCU-UA server - current stack (F 8938, S 23759)

The **OPC UA Ansi C Stack** was updated to version 1.02-336.1 for zenon drivers, <CD_RODUCTNAME> Process Gateway  and zenon Logic OPCUA Server.

## 3.6 Synchrophasor - communication via UDP (F 5955)

The **IEEE C37.118 Synchrophasor** driver now supports communication via UDP.

## 3.7 zenon Logic Real Time extension fir Windows 8.1 and 10 (S 22096)

The **zenon Logic Real Time Extension** is also available, from zenon version 7.50, for the Windows 8.1 and Windows 10 in a 32-bit version.

# 4. Editor

## 4.1 Size of dialog to select archive variables can be amended (F 4754)

The size of the dialog to select variables and archive variables can now be amended in the Editor and in Runtime. The position and size of the dialog window are saved in the Editor, Runtime and zenon Web Client independently of the project.

## 4.2 New Property "External reference" (F 12606)

For zenon projects The**External reference** property has been added in the **General** properties group. This property serves as unique identification for external project configuration tools and can only be configured with the zenon API. Configuration in the Editor is not possible.

## 4.3    Properties rearranged (F 4760)

Some properties of the elements have been rearranged and logically compiled for the implementation of the styles.
This affects the following groups most of all:

- ▶ **Representation**
- ▶ **Fill** (renamed, previously: Color)
- ▶ **Line** (newly-created)
- ▶ **Text** (newly-created)

## 4.4    Multi-user projects: Performance optimizations (F 5665)

Actions such as `check out, check in and undo check out` are now executed on the SQL server directly. With the use of comprehensive multi-user projects, this leads to a considerable time saving.

# 5.  Energy Edition

## 5.1    Amendments to the IEC 61850 standard, edition 2 (RQ 5105, F 11944)

The IEC 61850 client driver has been amended to edition 2 of the standard:

- ▶ The driver function was, in the **Client configuration** dialog, enhanced with the **ClientLN.iedName** property. It is envisaged to be filled from an SCD file with the entry `RCB.RptEnabled.ClientLN`, for example with the **IEC850 Driver configuration Wizard**.

- ▶ The driver can be use the full length of the Editor property **Symbolic address** (= 1024 characters) for variable addressing. Variable names that are too long are amended accordingly on import.

- ▶ The driver has been enhanced and now also accepts reports with DataSets with FCDA references. In order to avoid the resultant risk of inconsistent data, a **Data consistency scan** was introduced as a new configurable property in the driver dialog.

- ▶ New `Settings` driver object type for `TimeQuality` and `TimeAccuracy` that the driver sends in the commands `SBOw`, `Oper` and `Cancel`.

- ▶ The driver function was, in the **Server** dialog, enhanced with the **Automatic watchdog** property. This ensures that the driver automatically carries out a read process cyclically in order to detect

a connection failure.
**Compatibility notice**: When a new connection to the server is created from zenon 7.50, this checkbox is automatically active. The property is deactivated for existing connections before zenon 7.50.

▸ With the enabling of BRCB, the driver sets the data attribute `ResvTms` if this is present and no **ClientLN.iedName** has been configured.

▸ The IEC850 drivers maps the 'OutofRange' bit in Quality to the new `OR_DRV` status bit (bit 52).

## 5.2 Property for "Only executable if set <> actual" (F 8765)

The new _DynPropFullTemplate property deactivates an action button in the command screen if the value of the response variable already corresponds to the set value.

The same also applies for context menu entries. The corresponding command action is not displayed in the menu here.

The new property is only available for switching or pulse commands and only if the **Nominal/current value comparison** property has been activated.

## 5.3 Amendment of the interlocking conditions for "disconnectors under load" (S 20566, Def. 35502)

The interlocking conditions for the "disconnector under load" topological interlocking have been enhanced.

From zenon version 7.50, the complete line from the source to the consuming device is taken into account for the evaluation of the "not under load" status.

In previous versions, only the respective directly-connected line segments are checked for equipotentiality.

## 5.4 Load Management: Gas grid removed (F5052, F16154)

The **Load Management** module only supports electricity grids from zenon 7.50.

The gas grid functionality has been removed. When importing, converting and compiling zenon projects from earlier versions, a corresponding message is shown in the output window of the zenon Editor if there is still some project configuration content for gas grids.

A corresponding CEL entry is created when starting it in zenon Runtime.

## 5.5 Substitution of variables in the command screen (F 19848)

Variables in a command screen can be substituted.

To do this, the new **Replace in screen** property was added in the zenon Editor configuration. Substitution rules for command groups and command actions can thus be configured.

## 5.6 Command Sequencer

The **Command Sequencer** module has been further developed and enhanced with further functions.

### 5.6.1 Action name of command input (F 2585)

For improved visualization of the command input actions in Runtime, a freely-definable name can now be entered in the **command input** for each action:

▶ With the new **Action name** property, a user-defined name can be issued for each command action.

▶ In the command input field, it is also possible to enter the new field for the action name under **Control elements** => **Information** =>.

▶ The **$NAME$** macro can be used for the formation of menus and provides the action name, the language of which can also be switched in Runtime.

### 5.6.2 CEL entries of the Command Sequencer module (F2585, S 20377)

Processes of the **Command Sequencer** module are supported and visualized by entries in the Chronological Event List in zenon.

### 5.6.3 Property "Skip action for identical set value and actual value"

The new **Skip action for identical set value and actual value** property for the command action command (`pulse` or `switching command`) offers the possibility to skip a step in the process of the command sequence, if the value of the response variable and the value of the write set value are identical.

### 5.6.4 License for Project Simulation module (F 2585, S 20887)

The **Project Simulation** module, which requires a license, is included with the license for command sequences.

### 5.6.5 Command Sequencer module supports function authorizations (F 2585)

The Command Sequencer module now also supports Runtime function authorizations:

- ▶ Function authorizations for XML import and export
- ▶ Function authorizations to control the process of a command sequence

The assignment is configured - as usual for function authorizations - in the **user administration** module.

### 5.6.6 Module Command Sequencer - new functions (F 2133, F 2585, F 8237)

For the **Commend Sequencer** module, a new separate **Command Sequences** function group has been created.

The following functions are included in it:

- ▶ **Export command sequences**:
  exports command sequences as an XML file.

- ▶ **Import command sequences**
  Imports command sequences from a XML file

- ▶ **Execute command sequences command/mode switching**
  Sends control commands for execution

- ▶ **Teach command sequences**
  Starts or stops the teaching process

### 5.6.7 Command Sequencer module - system driver variables (F 2585)

A new group for the **Command Sequencer** module has been created in the system driver. For better identification, the short name **[command sequences]** has been placed in front of all system driver variables.

### 5.6.8 Command Sequencer module supports redundancy (F 4042)

The **Command Sequencer** module now supports zenon network redundancy.

The following are supported redundancy types:

- ▶ Non-dominant network
- ▶ Dominant network
- ▶ Rated network

### 5.6.9 Command Sequencer and Simulation mode (F 8530)

Command sequences can now be configured in Runtime in simulation mode and transferred in runtime.

- ▶ Command sequences are configured in simulation mode.
- ▶ This configuration is saved in a simulation image.
- ▶ Command sequences from one or more command sequences can then be imported and transferred into the current runtime environment.

### 5.6.10 Step name for command sequences in the Command Sequencer grid can be configured (F 2585)

For the Command Sequencer module, configured command input actions in the command sequence grid can now be visualized as standard text or with the configured action name in zenon.

To do this, the **Step name in the command sequence grid** property was added to the **Command Sequencer** properties group.

### 5.6.11 Teaching (F 8237)

Configured command processes can be recorded in the zenon Runtime simulation with the help of teaching. As a result of this process, corresponding command sequences are configured in the simulation image in Runtime during the teaching process.

The command sequence configuration created this way can still be changed manually and imported in real time by importing the simulation image created as a result.

All steps are carried out in zenon Runtime. Additional configuration in for teaching in the zenon Editor is not necessary.

### 5.6.12 Value of the write set value command action available in the Command Sequencer module (F 2133, S 3523)

The configured **Set value** of the **write setpoint value** command action is now available for the **Command Sequencer** module in Runtime.

### 5.6.13 XML-Import and export (F 2585, S 6671)

Command sequences that have already been configured can now be exported as an XML file or imported as an XML file.

In addition, separate system driver variables and corresponding function authorizations have been implemented.

### 5.6.14 Execution of two-stage command input as one-stage (F2585 - S5581)

The **Ignoriere zweistufig** property was added to the command actions in the properties. If this property has been activated, command actions configured as two-stage are executed as one stage in the **Command Sequencer** module. This means that the opening of a command input window is suppressed in the **Command Sequencer** module.

## 5.7 Wizards

A separate **Energy** group has been created for the wizards in the Energy Edition. This group contains the following wizards:

- ▶ Driver Simulation Wizard

- ▶ IEC 61850 SSD Import Wizard (new)

- ▶ IEC850 Driver Configuration (extended)

### 5.7.1 IEC 61850 SSD Import Wizard (F 7894 - RQ 5047)

The new IEC 61850 SSD import wizard draws a standards-compliant IEC 61850 zenon screen including ALC-compliant project configuration on the basis of an SSD file.

In doing so, an SSD file is read and analyzed.

Elements of the standard that have been found are visualized with symbols of a zenon project configuration and transferred to a zenon screen in line with ALC. The size of the symbols can be configured.

### 5.7.2 IEC850 Driver Configuration Wizard (F 11944)

The **IEC850 Driver Configuration Wizard** was completely revised and amended to the IEC 61850 Edition 2 enhancements for the **IEC850 driver**.

The wizard supports you when configuring reporting. The correct RCBs can be selected in a graphic user interface and assigned to the **IEC850 driver** using drag&drop.

The abilities of the wizard for automatic project configuration have been further enhanced:

- ▶ Import of variables from the Datasets of the selected RCBs.

- ▶ Creating a variable of type Connection State.

- ▶ Creation of reaction matrices for 850-Quality and Connection State.

- ▶ Improved usability thanks to enhanced display of information from the SCL file.

## 5.8 COPA-DATA PRP - PRP standards-compliant network protocol (F 8778)

zenon now supports the Parallel Redundancy Protocol (PRP) for hardware-redundant communication in a network in accordance with the IEC 62439-3 Edition 2 standard.

PRP communication is carried out at at protocol level directly, regardless of the zenon Editor and zenon Runtime. Special configurations in zenon are not required. The Windows hardware driver must be installed manually to use the protocol. The required files are only copied from the setup, not installed.

The COPA-DATA PRP system driver requires a valid zenon Energy Edition license.

# 6.  zenon Science Package

The zenon Science Package was enhanced with the LEGO MINDSTORMS EV3 version.

The zenon Science Package for LEGO MINDSTORMS EV3 enables the programming of LEGO Mindstorms EV3 objects. The zenon Science Package for LEGO MINDSTORMS 2.0, for the programming of LEGO Mindstorms NXT 2.0 objects, remains part of the package.

You can find the files for the Science Package in the installation medium in the `Additional Software` folder.

# 7.  Runtime

## 7.1  Double-clicking in configurable lists available in Runtime (F 4754)

In `Configurable list` type lists, cells can be opened for editing in Runtime by double clicking.

The previous method is still available: Click in the cell, followed by a second click (slow double click).

## 7.2  External authentication (F 7158)

If there is an incorrect external authentication, the system and/or the user can be blocked. There are the following two new properties in the editor for this:

▶  **System lock for wrong external authentication** and

▶  **User lock for wrong external authentication**.

## 7.3  Graphic display when screen switching (RQ 5024)

When switching, closing or calling up a screen, the behavior in Runtime has changed.

DirectX:

▶ With a screen switch when a frame has been called up, the frame is only visible if the screen to be called up is ready for the display.

DirectX and Windows Basic:

▶ If the frame is open, the screen that has already been called up is displayed until the new screen to be called up is ready for the display.

## 7.4 Block Windows key using Startup Tool

The blocking of the Windows key using the application **Keyblock Runtime Start** was able to be deactivated by means of the **Windows** key + *L* keyboard shortcut. The **Windows** key can now be deactivated completely in the **Startup Tool** under **Application -> Options -> General**. It is necessary to restart the system to do this.

# 8. Screens

## 8.1 Screen elements removed (F 4081)

The following screen elements are no longer available from version 7.50:

▶ **Message element**

▶ **Multibin**

▶ **Status element**

The following is applicable for elements that are no longer supported:

▶ The following is applicable in the current version after conversion:

- Existing elements are displayed in the Editor and in Runtime.

- Existing elements can be configured in the Editor.

- New elements cannot be created in the Editor.

▶ If the **Create RT files for** property is installed on a version earlier than 7.50, the elements can be displayed, configured and recreated. You can then find these elements at the bottom of the **elements** drop-down list.

Note: The functionality of the **Multibin** element and the **status element** can also be configured using the **combined element**.

## 8.2 Dynamic text: Display text integrated into the preview (F 9027)

The **Display text** property is available for the `dynamic text` element. The selection made there is now displayed in the preview of the element in the main window below the linked variables.

## 8.3 Dynamic text: Hidden entry of text (F 19886)

There are two new properties available for the `dynamic text` element:

- ▸ **Hidden input**
- ▸ **Masking character**

If the element is used to design sensitive elements such as passwords, input can be masked this way. To do this, activate the **Hidden input** property. If you want, you can define any desired character using the **Masking character** property, which is used for masking.

Text is replaced with the defined character in Runtime. The replacement is already carried out during entry. The input field always the character 8 times, regardless of the actual length of the text. If the **Hidden input** property is deactivated, the text that was entered originally is displayed.

## 8.4 Transparency property amended for static text (F 9027)

The Transparency property was amended for the **Static text** screen element. Previously it was only possible to select between `transparent` and `opaque`. With the **Transparency of the fill color [%]** property, it is now possible to select the transparency in percentage points between `0%` (opaque) and `100%` (transparent).

When converting the project, the value `100%` is set if `transparent` was selected in the initial project. In all other cases, the value is set to `0%`.

## 8.5 Element Static text Embedding of fonts was removed (F 9027)

No fonts can be embedded in the static text element. Like other elements, fonts can only be linked using the **Font** property.

**PROJECT CONVERSION**

When converting projects, all screens are checked for static text with embedded font.
If embedded fonts are discovered, these are replaced:

1. The embedded font is replaced by the `Arial font (10)`.

2. A notice is displayed.
   Double clicking on the notice opens the screen with the element and the static text whose font has been amended is highlighted.


**STATIC TEXT FONT CONVERSION WIZARD**

In order to continue to be able to use project configurations that use this property in earlier versions, the **Static Text Font Conversion Wizard** carries out the necessary amendments in the zenon 7.20 project.

The **Static Text Font Conversion Wizard**:

- ▶ Searches all screens and symbols of a project.
  Can be optionally configured:

  - Searches all symbols of a global project

  - Searches all symbols of the general symbol library.

- ▶ Converts the project configurations of embedded fonts into linked fonts:

  - Creation of a new font.
    Font name: `Conversion_[existing font name]`

  - Link this new font to the element.

  Can be optionally configured:

  - Creation and linking are created in the global project

  > ⚠ **Attention**
  >
  > Please ensure that your existing zenon projects are first prepared in version 7.20 with the **Static Text Font Conversion Wizard** accordingly, before you convert your project to a higher zenon version.
  >
  > The wizard is only included in current builds of version 7.20.


**XML: IMPORT AND EXPORT**

When importing an XML file for a project before version 7.50, embedded text is replaced by the standard font.

No **Font** property is included any more when exporting the converted screens. This is replaced by **LinkedFont**.

**API**

Two properties are available in the API:

`Font`: was used previously

`LinkedFont`: from version 7.50

For reasons of compatibility, **Get/Set** is possible for the font using both properties.

Previous behavior:

- ▶ It was possible to use the external name `Font` to set a **Get** or **Set** for a `LOGFONT` object.

- ▶ If all attributes of the `LOGFONT` structure have been set to `0`, with the exception of the font thickness (2nd argument), then the font is treated as linked. The value of the font thickness corresponded to the font in the **font list** module.

- ▶ If the first argument was also set for the `LOGFONT` structure and further values were also set (not zero), the font is treated as embedded.

Behavior from version 7.50 on:

- ▶ **Get**: Works as before.

- ▶ **Set**: Depends on values.

  - If the font is set to linked (all values `0` except 2nd argument), then the process works as before.

  - If the font is set to embedded, it is also replaced by the standard font.

## 8.6 New "Write on lost focus" property

The dynamic text element has the new **Write on lost focus** property in the **Write set value** group.

You use this to define how the element acts in Runtime.

Property:

- ▶ `Active`: The value is written as soon as the control element loses the focus.
  Input is canceled by pressing the `Esc` key and the value is not written.

- ▶ `Inactive`: The value is written after pressing the `Input` key.
  Input is canceled by pressing the `Esc` key and the value is not set.

The default value depends on whether the element from the tool bar can be inserted into the screen or whether it was inserted as editable **dynamic text** from the **control elements** menu:

▶ As an element in the screen: `inactive`

▶ From the **control elements** menu: `active`

## 8.7 New Property "External reference" (F 12606)

For zenon screens The**External reference** property has been added in the **General** properties group. This property serves as unique identification for external project configuration tools and can only be configured with the zenon API. Configuration in the Editor is not possible.

## 8.8 WPF element

### 8.8.1 New WPF element: Energy class diagram (S 12930)

The energy classes diagram is available to download as a new WPF element in the COPA-DATA Partner Portal.

The element also reads reaction matrices that are used for the energy classes in zenon Analyzer and shows the classes correctly.

### 8.8.2 New WPF element: COMTRADE viewer (F 20280)

The **COMTRADE Viewer** WPF element visualizes interruptions and event data recordings in accordance with the COMTRADE file standard.

The following are visualized in Runtime:

▶ Amperage

▶ Voltage

▶ Digital channels

### 8.8.3    zenon WPF element as a new manual

The information for the zenon WPF element was taken from the Screens manual and compiled in a separate manual.

The guidelines for developers in this have been revised.

## 8.9    Response variables for configurable lists (F 16910)

Configurable lists can be linked to a `BOOL` response variable. These signalize if something has been selected in the list in Runtime.

To do this, the new properties group **Response variables** and the new **Selection active** have been implemented for **configurable lists**.

## 8.10    Highlight frame enhanced (F 4754)

Modal templates can be visually highlighted to signalize that this screen has the focus and no other one can be operated. The background of the frame is darkened to do this. However further screens can be started from this screen, such as a keyboard for example.

Up to now, this second screen (the keyboard) has also been darkened and was not operable. Now, screens that are started from a highlighted frame are also shown as darkened. The darkening is only turned off if the screen itself and all screens that have been started in this mode have been closed.

## 8.11    Static Win32 control elements replaced (F 2559)

Some static Win32 control elements for entries have been replaced by a `dynamic text` element, some checkboxes have been replaced by a `switch` element. These elements are assigned the respective function using the **Screen type specific action** property. However, if these elements have been deactivated or there are not the necessary user rights for operation, the project setting from the **Locked/Interlocked elements** group is used.

Note: In addition, the use of the **Write set value via** property has been amended. For details, see the Keyboards manual.

**REPLACED ELEMENTS**

The following elements have been replaced in the following screens.

## INPUT FIELD WITH DYNAMIC TEXT

Replacement of the previous static Win32 control element with a `dynamic text` element for:

AML and CEL

- ▶ **Comment field**
- ▶ **Set filter**
- ▶ **Status**
- ▶ **Total number**
- ▶ **Number of unacknowledged**
- ▶ **Linked function (display)**

CEL

- ▶ **Set filter**
- ▶ **Total number**
- ▶ **Status of Chronological Event List**

User Administration

- ▶ **Current user (display)**
- ▶ **Old password**
- ▶ **User name**
- ▶ **Email**
- ▶ **Substitute person**
- ▶ **Group name**
- ▶ **Cell phone**
- ▶ **NA code**
- ▶ **New password**
- ▶ **Password**
- ▶ **Confirm password**
- ▶ **Signature**
- ▶ **Lock code for Command Processing**
- ▶ **Telephone**
- ▶ **PIN code**
- ▶ **Complete name**

*Note for Web Client:* The following **dynamic text** elements in the "User Administration" screen can also be used for **zenon Web Server Pro** on the **zenon Web Client**: **User name, password, signature**.

RGM

- ▶ **User name**

- ▶ **Last modify time**
- ▶ **% (Input field)**
- ▶ **Formula (input field)**
- ▶ **Comment 1 - 8**
- ▶ **Recipe number**

Note: If the element is used in Runtime to replace a static Win32 control element and it is deactivated, the background color and text color is set to gray values.

**CHECKBOX WITH SWITCH**

Replacement of the previous static Win32 control element with a `switch` element for:

User Administration

- ▶ **Administrator**
- ▶ **Active**
- ▶ **Locked**
- ▶ **Message Control user**

## 8.12 Transformation sequence of the screen elements (S 18281)

There is a new property in the editor that defines the **transformation sequence** for the graphic elements.

The `Zoom -> Rotation -> Translation` sequence was previously the default setting.

It is now possible to select between two options for this newly-incorporated property:

- ▶ `Rotation -> Zoom -> Translation`: Rotates the element and influences the size.
- ▶ `Zoom -> Rotation -> Translation`: Rotates the element and retains the size.

Default: `Rotation -> Zoom -> Translation`

## 8.13 WPF elements available in zenon Web Client (S 12931)

The following WPF diagrams are also available for visualization in zenon Web Client from zenon 7.50:

- ▶ Energy class diagram
- ▶ Sankey diagram
- ▶ Waterfall diagram

The steps necessary for this have been incorporated into the documentation.

## 8.14    Polyobjects: Moving points (F 4754)

Support points of polylines, polygons and pipelines can be moved and placed with the cursor keys on the keyboard.

To move end points (support points):

- ▶    move the mouse pointer over the desired point of the polyobject.

- ▶    Place the point over the arrow keys at the desired place.

Note:

- ▶    Pressing on the cursor key moses the position by 1 pixel. If the `Shift` key is held at the same time, a press of the button moves the point by 10 pixels.

- ▶    The options  **Use grid**, **Horizontal distance** and **Vertical distance** in the Editor **settings** are ignored.

# 9.    Functions and scripts

## 9.1    New Property "External reference" (F 12606)

For zenon functions The**External reference** property has been added in the **General** properties group. This property serves as unique identification for external project configuration tools and can only be configured with the zenon API. Configuration in the Editor is not possible.

Note: This external reference is only available for functions. This property does not exist for scripts.

## 9.2    New Batch Control functions (F 5931)

The following new functions are available for the **Batch Control** module from zenon 7.50:

- ▶    **Export Batch recipes**
  Exports Batch Control recipes as an XML file.

- ▶    **Import Batch recipes**
  Imports Batch Control recipes from an XML file.

- ▶    Export and import of aggregates and basic functions.

## 9.3 New functions for the Command Sequencer module (F 2585, 8237)

The following new functions are available for the **Schaltfolgen** module from zenon 7.50:

- ▶ **Export command sequences**
  Exports configured command sequences as an XML file

- ▶ **Import command sequences**
  Imports configured command sequences from an XML file.

- ▶ **Execute command sequences command/mode switching**
  You can send control commands to the command sequence execution with this function.

- ▶ **Teach command sequences**
  Start or stop the teaching process in Runtime using this button.
  This function is particularly suitable for starting teaching in Runtime in a process screen, without having to switch to the command sequence editor.

# 10. HTML Web Engine (F 7158)

The HTML web engine provides zenon visualization content in the HTML5 web standard. Selected functionalities can be applied.

# 11. Modules

## 11.1 Alarms administration

### 11.1.1 Alarm causes - Text lists (F 13096)

Alarm causes can now be displayed in a separate column in Runtime.

Alarm causes are assigned to the alarm entry by means of a **Guid**. In the **TexlistManager**, a search is carried out to see whether an entry appropriate to the **Guid** has been found. This can then be displayed. The **TextlistManager** contains all text lists. These can be created using the API.

Note: There is currently no GUI available. Text lists, control elements and selection dialogs must be configured especially.

## 11.1.2 Hierarchical alarming of equipment group (F 19759)

With the new **Use hierarchical alarming of the Equipment Model** property in the **Alarm handling** variable property group, the equipment model can be used for the configuration of hierarchical alarm administration.

If this property has been activated, any configuration of the alarm areas 1 - 4 that has been carried out is canceled for the variables or data types. In this case, a variable is assigned to an alarm area or the equipment model.

# 11.2 Historian

## 11.2.1 Data storage in CRATE IO database system

Archives can now be stored by means of the SQL evacuation or SQL export in a **CRATE.IO** database system.

## 11.2.2 "Old" status on archive export by means of function (FS 35924)

With the **Export archives** function, the status for export into a CSV file is supported from zenon 7.50 as it was before zenon 6.50.

To do this the **[STATUS]** entry in the `project.ini` is to be amended accordingly.

> 💡 **Information**
>
> The "old" status should only be used for compatibility reasons. The use of this status is not recommended.

## 11.3    User Administration

### 11.3.1    Command Sequencer module supports function authorizations (F 2585)

The Command Sequencer module now also supports Runtime function authorizations:

- ▶    Function authorizations for XML import and export
- ▶    Function authorizations to control the process of a command sequence

The assignment is configured - as usual for function authorizations - in the **user administration** module.

## 11.4    Batch Control

### 11.4.1    XML export and import (F5931, F5123)

The following new functions are available for the **Batch Control** module from zenon 7.50:

- ▶    Export and import batch recipes in Runtime. This function can be instigated using both zenon functions and by means of the API. The result can be checked with the help of system driver variables.
- ▶    Export and import of aggregates and phases in the Editor. This functionality can be instigated both by means of the user interface in the Editor or by means of the API.

## 11.4.2    Amended external names for properties of the mater recipe

| External name old | External name new |
|---|---|
| BatchMrId | MrId |
| BatchMrName | MrName |
| BatchMrDescription | MrDescription |
| BatchMrVersion | MrVersion |
| BatchMrVersionSource | MrSourceVersion |
| BatchMrStatus | MrStatus |
| BatchRecipeView | RecipeType |
| BatchReeStatus | ReeStatus |
| BatchReeModus | ReeModus |
| BatchApprovedTime | ApprovalTime |
| BatchApprovedUserName | ApprovalUserName |
| BatchApprovedUserId | ApprovalUserID |
| BatchOutdatedTime | OutdatedTime |
| BatchOutdatedUserName | OutdatedUserName |
| BatchOutdatedUserId | OutdatedUserID |

# 11.5    Chronological Event List

## 11.5.1    Comments for amendments

The log entry to comment on amendments has been adapted.

It now shows the following information:
**[Time stamp - old value:]  ["Old Value"] -  [time stamp - new value:]  ["New value"];**

The entries must be activated in the project settings using the **CEL comments** property.

## 11.6    Message Control

The Message Control module has been modified.

### 11.6.1    VoIP addition enhanced and optimized (F 4858, F 5408, F 5409, F 7664)

The Message Control module was enhanced and optimized with the Voice over IP dispatch method. The following was carried out for this:

- ▶ Properties were supplemented and regrouped
- ▶ The **Send a Message** function was amended
- ▶ The user administration was optimized
- ▶ Error messages for the **Diagnosis Viewer** were added

**PROPERTIES**

For Message Control, the properties to configure the dispatch method have been reorganized. These are, as usual, in the **Message Control** properties group in the workspace. All previous subfolders were removed and their properties were arranged in subgroups.

Properties for the dispatch of voice messages via Voice over IP (VoIP) as an audio file or as Text-to-Speech were added. These methods of dispatch are thus also available in the **Send a Message** function.

The following further properties were modified:

- ▶ The **Repeat welcome text** and **Timeout [min]** properties are now in the **Voice message** group.
- ▶ The **General voice message** has been removed.
- ▶ The **waiting time between attempts** property has been renamed to **Waiting period between trials and timeout**.
- ▶ Properties to configure the ports necessary for VoIP have been added.

Note: There is no encryption available for `VoIP`. This type of dispatch should therefore not be used if there is a need for security.

**FUNCTIONS**

Changes for functions:

- ▶ In the dialog of the **Send a Message** function, the labels for the following options were amended in the **Message** tab:
  - • Greeting -> **Description**

- Message -> **Positive confirmation**

▶ In the dialog of the **Send a Message**, the entries are no longer validated when the tab is changed, but by clicking on **OK**.
If errors are discovered during validation, the user is notified of this by means of a dialog.

## USER ADMINISTRATION

User administration has been optimized. When selecting substitutes for Message Control, only users who have been configured for Message Control are offered.

## DIAGNOSIS VIEWER

For analysis in the **Diagnosis Viewer**, error messages for Voice over IP have been added.

## 11.7 Metering Point Administration (F 5454, 5455, 8633, S 13236 - RQ 5056, 5057)

The Metering Point Administration module was further developed and amended:

▶ Complete integration of metering point administration on the web client
The Metering Point Administration module has been fully integrated into the web client. Additional configuration is not required.

▶ New default value with manual entry of values
With manual entry of values, the last value saved in the archive is displayed as a default value.

▶ Check for an open zenon Logic Workbench
When starting the module, a check is now made to see whether the zenon Logic Workbench is open. If this is the case, the user is informed of this with a warning notice.

▶ Display of the counter replacement values for subsequent editing
For automatic metering points, counter replacement values (absolute values) are now also displayed for subsequent editing. These are displayed as highlighted in color (green) in the chronology. These values can also be used for interpolation.

▶ Metering point administration in the zenon network
If the metering point administration in Runtime is executed on a client and the primary server fails, the module is deactivated. A corresponding message is shown.

▶ Warning message for multi-user projects
The wizard for metering point administration in the editor does not support multi-user projects. If there are multi-user projects in the workspace, this information is shown accordingly when the wizard is started:

## 11.8    Process Gateway

### 11.8.1    MS Azure (D 34361)

The connection to MS Azure was enhanced with the possibility to establish connections using the event hub. In the connection dialog, it is now possible to select between **Service Bus Queue** and **Event Hub**. The following are available as a message format for the Event Hub:

▸  XML

▸  JSON

▸  BOND (compact binary)

## 11.9    Load Management (F5052, 16154)

### 11.9.1    Load Management: Gas grid removed (F5052, F16154)

The **Load Management** module only supports electricity grids from zenon 7.50.

The gas grid functionality has been removed. When importing, converting and compiling zenon projects from earlier versions, a corresponding message is shown in the output window of the zenon Editor if there is still some project configuration content for gas grids.

A corresponding CEL entry is created when starting it in zenon Runtime.

### 11.9.2    Forecast revised (F 5052)

The forecast for electricity grids has been optimized:

▸  Consuming devices and generators that are started or stopped during a calculation period are immediately taken into account in the calculation.
(previously such devices were only taken into account in the subsequent cycle)

▸  All planned switching actions of all consuming devices and generators are taken into account during the ongoing cycle.
(previously: only first and last switching action)

▶ The consumption values of a consumer or generator are calculated in granular form. (previously: only one consumption value per calculation period per calculation period)

## 11.10 Automatic Line Coloring (F 19849)

### 11.10.1 ALC - new "check valve" function type (S 21273)

For **Automatic Line Coloring**, a new "`check valve`" function has been created. With this function type, the ALC information is only forwarded in the direction from input to output.

# 12. Network (F 17386)

The following functions have been revised and amended in zenon 7.50:

▶ Reload delay per network client
With the new **CLIENTx** entry in project.ini, it is possible to state different reload times per client in the network

▶ Switching delay for planned redundancy switching:

- The Historian module takes into account whether variables from a different project have only been loaded before redundancy switching becomes effective.

- With network drivers, it is ensured that the redundancy switching only becomes effective if all process variables of the driver have a valid value.

▶ **Redundancy switch** function
The extended redundancy switching function is now available for all types of software redundancy.

▶ Configuration of Server1 and Server 2
Both a zenon network client and a zenon web client can now download the data from **Server 1** or **Server 2** locally, if there is still no Runtime data of a project present.
Previously it was only possible to download the data from a server locally. This was also only possible if this server was currently in the role of the Primary Server.

## 12.1 COPA-DATA PRP - PRP standards-compliant network protocol (F 8778)

zenon now supports the Parallel Redundancy Protocol (PRP) for hardware-redundant communication in a network in accordance with the IEC 62439-3 Edition 2 standard.

PRP communication is carried out at at protocol level directly, regardless of the zenon Editor and zenon Runtime. Special configurations in zenon are not required. The Windows hardware driver must be installed manually to use the protocol. The required files are only copied from the setup, not installed.

The COPA-DATA PRP system driver requires a valid zenon Energy Edition license.

# 13. Reporting

## 13.1 Report Viewer supports export in an Excel file format (F 8232)

The Report Viewer can now export reports in an Excel file format:

- ▶ The **Report Viewer: export / print** function has been enhanced accordingly.
- ▶ The "**Report Viewer**" screen has been enhanced with the **Create Excel file** button.

## 13.2 Create Analyzer report: Secure connection (F 19351)

There is now a secure connection available for the zenon **Analyzer: Create Report** function. The is activated in the configuration dialog in the General settings tab using the **Secure connection** option. The zenon Analyzer with which the connection is established must support a secure connection (from version 3.00).

# 14. Mobile applications

The free **Everywhere Essentials QR Data App** visualizes real-time data from the productive Runtime to mobile devices. The relevant information is read from a QR code directly.

The QR code can be created for the App with the **Everywhere Essentials QR Code Generator** of an existing configuration.

Note: The App is available for devices with the Android and Apple iOS operating systems.

## 14.1    Notifier App by zenon

The **Notifier App by zenon** makes it possible to acknowledge alarms that are sent by means of **Message Control** as a SMS to a mobile device.

Note: The App is only available for devices with the **Android** operating system.

The **Notifier App by zenon** shows SMSs that:

▶    Have been sent by the **Message Control** module and

▶    Contain certain key words or were sent by certain telephone numbers

After receipt, an alarm is played back on the receiving device for 30 seconds. If the message is opened within this time period, the user can acknowledge, reject or ignore the alarm by means of SMS. Ignored alarms are saved in an alarm list.

If a message is not reacted to in time, the corresponding information is filed to the **Notification-Bar** of the mobile device. If this is activated, a list of the alarms that have not yet been acknowledged and ignored is shown. It is possible to react to unacknowledged alarms; ignored alarms can be deleted.

## 14.2    sha256 algorithm for signatures (FS 35482)

The `Everywhere - Certificate creator` creates signatures with the sha256 hash algorithm.

# 15. Programming interface

## 15.1    API: Data type for ReaAlarm changed (Def 34779)

The data type for **ReaAlarm** has been changed:

▶    previously: `LONG`

▶    from version 7.50 on: `DOUBLE`

This change can lead to errors when compiling existing code.

## 15.2    Alarm causes - Text lists (F 13096)

Alarm causes can now be displayed in a separate column in Runtime.

Alarm causes are assigned to the alarm entry by means of a **Guid**. In the **TexlistManager**, a search is carried out to see whether an entry appropriate to the **Guid** has been found. This can then be displayed. The **TextlistManager** contains all text lists. These can be created using the API.

Note: There is currently no GUI available. Text lists, control elements and selection dialogs must be configured especially.

## 15.3    API: Data type for ReaAlarm changed (Def 34779)

The data type for **ReaAlarm** has been changed:

- ▶ previously: LONG
- ▶ from version 7.50 on: DOUBLE

This change can lead to errors when compiling existing code.

## 15.4    ListRecipeInfo - new methods in the RGMRecipeGroup object model (FS 35460)

The (existing) object model group **RGMRecipeGroup** was supplemented with the ListRecipeInfo method.

## 15.5    API extension for the Scheduler module (F 19597)

The API for the Scheduler module has been enhanced with the following classes:

- ▶ Scheduler
- ▶ Schedules
- ▶ ScheduleStandardDay
- ▶ ScheduleCustomPeriod
- ▶ ScheduleSwitchingPoints
- ▶ ScheduleSwitchingPoint
- ▶ ScheduleSwitchingPeriods

- ▶ ScheduleSwitchingPeriod

- ▶ ScheduleVariables

- ▶ ScheduleVariable

- ▶ ScheduleFunctions

- ▶ ScheduleFunction

# 16. Scheduler (F 18715)

For the **Scheduler** module, there are now the following new functions available from zenon 7.50:

- ▶ New display of the calendar possible. This is offered by default. The `Old calendar display type` is nevertheless still available.

## 16.1 Scheduler API enhanced (F 19597)

The API for the Scheduler module has been enhanced with the following classes:

- ▶ Scheduler

- ▶ Schedules

- ▶ ScheduleStandardDay

- ▶ ScheduleCustomPeriod

- ▶ ScheduleSwitchingPoints

- ▶ ScheduleSwitchingPoint

- ▶ ScheduleSwitchingPeriods

- ▶ ScheduleSwitchingPeriod

- ▶ ScheduleVariables

- ▶ ScheduleVariable

- ▶ ScheduleFunctions

- ▶ ScheduleFunction

# 17. Styles (F 5493, F 12430)

The following possibility of using styles has been implemented in the zenon Editor. Styles make it possible to extract graphics properties from screen elements, to administer these and to apply these to other elements. Consistent visualization is thus supported and the maintenance of projects is simplified.

Styles are administered in style groups in the global object and applied to screen elements in projects. If the properties of a style are amended, the corresponding properties of all screen elements that are linked to this style are also amended.

The following static screen elements are supported. For dynamic screen elements, styles are currently only available for effects.

# 18. Drivers

## 18.1    3S_V3

### 18.1.1    Communication with V2.3 software by means of ARTI and Gateway (S 25842)

The 3S_V3 driver also supports communication with version 2.3 software from zenon 7.50.

▶ Communication via ARTI and Gateway with version 2.3 software.

- Online import of version 2.3 variables

- Offline import of variables of an XML symbol file in V2 format.

▶ Support for Big Endian (Motorola) byte sequence.

The driver dialog has been enhanced accordingly.

### 18.1.2    3S_V3 enhanced and amended (F 13481, Def. 33145, Def. 35189)

The **3S_V3** has been enhanced. It also offers:

▶ Selection of origin time stamp:
It is possible to select whether the time stamp is used by the controller or the driver.

▶ Amendable prefix for imported variable names:
When importing variable names, the prefix can be freely selected as an alias. The length is limited to 8 characters. If no alias is set, the node address is used as a prefix.

▶ Exception handling:
Error events can be reported to zenon by the controller with the help of exception handling and assigned to an alarm variable using an ID.
The action on starting and restarting has been amended accordingly.

▶ Support of block arrays:
Block arrays can be read, written and imported. The symbol name without indexes is used. The **#** character is not permitted.

**PLC-HANDLER**

The **PLCHandlerDll.dll** required for the driver is now automatically installed zenon.

💡 **Information**

*Ensure that PLC firmware and PLC-Handler have the same version number. Only this way can correct communication be guaranteed.*

## 18.2    All drivers - new "External reference" property (F 12606)

For all zenon driver The **External reference** property has been added in the **General** properties group. This property serves as unique identification for external project configuration tools and can only be configured with the zenon API. Configuration in the Editor is not possible.

## 18.3    AzureDrv (RQ 4918)

The new **AzureDrv** driver gets evacuations of online data that have been saved by Process Gateway in the MS Azure service bus for processing in zenon or zenon Analyzer.

## 18.4    BACnetNG with configurable object name separator (D 34155)

In the **Settings** tab, the new **Object name separator** option has been added to the configuration of the BACnetNG driver. This makes it possible to freely select the separator between device names and variable names in the variable name or identification. The period remains the default separator.

## 18.5 CAN driver

The **CAN driver** communicates with the serial CAN bus system (**Controller Area Network**).

▶ The connection from the computer is established by means of a USB port and a `Lawicel CAN USB Converter`.

▶ The variables are addressed with numerical addressing.

## 18.6 CTI enhanced (D 33606)

The CTI driver has been enhanced.

It provides a second IP address during configuration. This is used if the first IP address cannot be reached.

The data type `BOOL` is also now available for the following driver objects:

▶ STW

▶ WX

▶ WY

▶ K

▶ Loop Variable Secondary Objects:

• Alarm Acknowledge (LACK)

• Loop Status

• Loop Mode

• Loop V-flags (LVF)

• Control flags - MSW (LCFH)

• Control flags - LSW (LCFL)

• Ramp/Soak status flags (LRSF)

▶ Alarm Variable Secondary Objects:

• Alarm Acknowledge (AACK)

• Alarm V-flags (AVF)

• Alarm Control flags - MSW (ACFH)

• Alarm Control flags - LSW (LCFL)

## 18.7   DNP3_TG

The documentation of the **DNP3_TG driver** has been revised and restructured.

### 18.7.1   Subset level 4 enhancements (F 5503)

The **DNP3_TG** driver was now enhanced with functionalities for the subset level 4 master:

▶   Functions

- freeze (FC8, FC9, FC10) for counters (G20)

- assign class

- cold restart (FC13)

- dely measurement (FC23)

▶   New object types:

- Driver object type Absolute time

- Driver object type  Device attributes

- Driver object type  Analog input reporting deadbands

### 18.7.2   File transfer (6149)

The DNP3_TG driver supports file transfer in accordance with the IEEE1815 standard. The following functions are supported:

▶   Reading file or directory information from the outstation.

▶   Reading directory content from the outstation.

▶   Reading file from the outstation and saving locally.

▶   Removing file from the outstation.

▶   Writing local file to the outstation.

▶   Canceling an ongoing file transfer

### 18.7.3   Start object poll with command (S 19128)

The DNP3_TG driver also supports the starting and stopping of an object poll by means of command.

With the new **CYCLIC_POLL** command, polling can now be activated or deactivated for an outstation.

## 18.8   GE SRTP (F 11815, RQ 5094)

The **GE_SRTP** driver communicates with GE controllers using the SRTP (`Secure Real-Time Transport Protocol`) protocol.

## 18.9   IEC850 (F 11633)

### 18.9.1   Amendments to the IEC 61850 standard, edition 2 (RQ 5105, F 11944)

The IEC 61850 client driver has been amended to edition 2 of the standard:

▶ The driver function was, in the **Client configuration** dialog, enhanced with the **ClientLN.iedName** property. It is envisaged to be filled from an SCD file with the entry `RCB.RptEnabled.ClientLN`, for example with the **IEC850 Driver configuration Wizard**.

▶ The driver can be use the full length of the Editor property **Symbolic address** (= 1024 characters) for variable addressing. Variable names that are too long are amended accordingly on import.

▶ The driver has been enhanced and now also accepts reports with DataSets with FCDA references. In order to avoid the resultant risk of inconsistent data, a **Data consistency scan** was introduced as a new configurable property in the driver dialog.

▶ New `Settings` driver object type for `TimeQuality` and `TimeAccuracy` that the driver sends in the commands `SBOw`, `Oper` and `Cancel`.

▶ The driver function was, in the **Server** dialog, enhanced with the **Automatic watchdog** property. This ensures that the driver automatically carries out a read process cyclically in order to detect a connection failure.
Compatibility notice: When a new connection to the server is created from zenon 7.50, this checkbox is automatically active. The property is deactivated for existing connections before zenon 7.50.

▶ With the enabling of BRCB, the driver sets the data attribute `ResvTms` if this is present and no **ClientLN.iedName** has been configured.

▶ The IEC850 drivers maps the 'OutofRange' bit in Quality to the new `OR_DRV` status bit (bit 52).

## 18.9.2    Configurable orIdent for commands (S 12063)

In the driver configuration, it is possible to set up a separate orIdent in the zenon network. If a command is executed on a computer in the zenon network, the configured orIdent is used in the communication to the 850 server.

# 18.10   IEC870 (F 8941)

## 18.10.1  IEC870 driver - originator (S 8943)

For **IEC870 driver** communication, the **Originator** property has been added to the configuration dialog of the connections. This originator can be used to identify the sender of a command.

## 18.10.2  IEC870 driver supports UTC (S 19799)

The IEC870 driver also supports a time stamp in UTC format. Real-time communication is thus possible with a non-compliant PLC.
The selection of whether the time stamp is interpreted by the controller as UTC time can be activated in the driver configuration dialog with the new **Timestamps are UTC** property.

# 18.11   KDNP1 (F 19118)

The **KDNP1** driver is for communication with Kepco's **KDNP1** protocol, which is based on the DNP3 standard. In doing so, the driver acts as a Master. At protocol level, serial communication and IP communication to several Outstations are supported via TCP.

- ▶ The **KDNP1** driver polls for objects. This polling is cyclical. In addition, this polling can be activated or deactivated with a driver command.

- ▶ In addition, the driver supports communication with Confirmed Data link layer. To do this, the **Data link confirm** property in the **Outstation** driver dialog can be activated. Timeout and the number of attempts can be configured for this property.

## 18.12   Kuka32 (F 20125, Def. 34557)

The **Kuka32** driver has been enhanced with the new **KUKA dynamic communication name** driver object type.

This driver object type is "write only". Dynamic issuing of names is thus possible for variables.

The driver communication has been switched to spontaneous.

## 18.13   Masterbus (Def. 34671)

The **Masterbus32** driver is for communication with components of Mastervolt using the Masterbus. The Modbus RTU protocol is used for communication.

## 18.14   Modbus Energy - "File Record" read and write addition (F23306)

The Modbus energy driver has been enhanced with the "`Read File Record (0x14)`" and "`Write File Record (0x15)`" log functions.

The content of a "`File Record`" is provided by the driver as a hexadecimal string when writing or received as such for writing, i.e.:

▶ If the „`File Record`" contains the string "12345", the driver will forward this to the application as a hexadecimal string "3132333435".

▶ If the „`File Record`" contains the string "abcde", the application must pass the string "6162636465" on to the driver.

## 18.15   NMEA2000 (FS 35147)

The **NMEA2000** driver reads data from an NMEA 2000 bus.

In doing so the data is - in accordance with the NMEA 2000 standard - assigned to a PGN (Parameter Group Number).

## 18.16 OPCU-UA server - current stack (F 8938, S 23759)

The **OPC UA Ansi C Stack** was updated to version 1.02-336.1 for zenon drivers, <CD_RODUCTNAME> Process Gateway  and zenon Logic OPCUA Server.

## 18.17 S7 driver for S7-1500/1200 (F 7675)

The **S7 Driver for S7-1500/1200** driver uses enhanced TIA communication via the TCP/IP transport protocol to the S7-1200 and S7-1500. Access is by means of variables or via the symbolic TIA access path. Optimized modules are supported.

Block-wise flat access to the controller memory - similar to with PUT/GET - is not possible with the TIA protocol.

## 18.18 SEL - Fast Meter Protocol driver (F 7859)

The **SEL - Fast Message**-protocol driver communicates by means of a serial interface with controllers from SEL (`Schweitzer Engineering Laboratories`).

They support the following functionality:

▶ Reading regular FastMeters

▶ Setting and deletion of breaker bits and remote bits

▶ The use of standard ASCII commands

## 18.19 SNMP32 and SNMPNG32 - save location MIBS (RQ 4966)

The save location for individually-installed MIBS has been changed.

These must now be in the following path: `%ProgramData%\COPA-DATA\zenon7.50\CommunicationProfiles\SNMP-MIBS`

MIBS can thus also be installed without administrator rights.

## 18.20   System driver

### 18.20.1   System driver variables - naming (Def. 34033)

When naming system driver variables, the module labeling is now prefixed in square brackets. Orientation is thus easier during project configuration.

### 18.20.2   Command Sequencer module - system driver variables (F 2585)

A new group for the **Command Sequencer** module has been created in the system driver. For better identification, the short name **[command sequences]** has been placed in front of all system driver variables.

# 19. Tools

## 19.1   COPA-DATA PRP - PRP standards-compliant network protocol (F 8778)

zenon now supports the Parallel Redundancy Protocol (PRP) for hardware-redundant communication in a network in accordance with the IEC 62439-3 Edition 2 standard.

PRP communication is carried out at at protocol level directly, regardless of the zenon Editor and zenon Runtime. Special configurations in zenon are not required. The Windows hardware driver must be installed manually to use the protocol. The required files are only copied from the setup, not installed.

The COPA-DATA PRP system driver requires a valid zenon Energy Edition license.

# 20. Variables

## 20.1    Naming of the system driver variables (Def. 34044)

When naming system driver variables, the module labeling is now prefixed in square brackets. Orientation is thus easier during project configuration.

## 20.2    Length of the symbolic address (F 10870)

The length of the supported characters of the **Symbolic address** property have been extended from 128 to 1024 characters.

If a project is compiled for a zenon version before 7.50 and more than 128 characters have been configured, this is indicated with a warning message during compilation. The **Symbolic address** that is too long is then cut off. This is marked by a  . . . .

## 20.3    New Property "External reference" (F 12606)

For variables and data types as well as reaction matrices The**External reference** property has been added in the **General** properties group. This property serves as unique identification for external project configuration tools and can only be configured with the zenon API. Configuration in the Editor is not possible.

## 20.4    New reaction matrices dialog with Link variables (F 2557)

The **Reaction matrix** drop-down list to link a reaction matrix has now been supplemented with a variable or a data types was replaced by a dialog.

In this dialog, all existing reaction matrices are displayed with the following information:

- ▶   Name
- ▶   Type
- ▶   Number of configured states
- ▶   Apply in AML

- ▶ Apply in CEL

- ▶ Is a function linked

- ▶ Is flashing active or inactive

In this dialog, a reaction matrix can be selected for linking. In addition, existing reaction matrices can be configured and copied, and new reaction matrices can be created. It is not possible to delete reaction matrices in this dialog.

## 20.5    New status bit OR_DRV (F 11633)

The IEC850 drivers maps the 'OutofRange' bit in Quality to the new OR_DRV status bit (bit 52).

## 20.6    Enhanced Limit value preview (FS 4170)

The **Limit value preview** property has been enhanced.

- ▶ It now shows a preview of the linked reaction matrix. To do this, the **Reaction matrix** property in the **Limit Values** group must contain a linked reaction matrix. If no reaction matrix is linked, information on the configured limit values is displayed.

- ▶ For screen elements, a preview of the limit values defined for a linked variable is displayed in the properties. No preview is is displayed for reaction matrices.

# 21. Wizards

## 21.1    IEC 61850 SSD Import Wizard (F 7894 - RQ 5047)

The new IEC 61850 SSD import wizard draws a standards-compliant IEC 61850 zenon screen including ALC-compliant project configuration on the basis of an SSD file.

In doing so, an SSD file is read and analyzed.

Elements of the standard that have been found are visualized with symbols of a zenon project configuration and transferred to a zenon screen in line with ALC. The size of the symbols can be configured.

## 21.2    FactoryLink Import Wizard (S 23750)

The existing FactoryLink import wizard has been revised and improved:

- ▶ Implementation in VSTA
- ▶ Unicode support
- ▶ Improvements for
  - Positioning of elements
  - Interpretation of templates
  - Performance
  - Support for groups
  - Enhanced element names
  - Logging and usability improvements

## 21.3    Sankey Wizard - delete existing diagrams (Def. 34602)

The **Sankey Wizard** supports the deletion of Sankey diagrams.

## 21.4    Static Text Font Conversion Wizard (S 22927)

From zenon 7.50 onwards, the "**embedded font**" property is no longer available in the "**static text**" element. In order to continue be able to continue to use project configurations that use this property in earlier versions, the **Static Text Font Conversion Wizard** carries out the necessary amendments in the project.

The **Static Text Font Conversion Wizard**:

- ▶ Searches all screens and symbols of a project.
  Can be optionally configured:
  - Searches all symbols of a global project
  - Searches all symbols of the general symbol library.
- ▶ Converts the project configurations of embedded fonts into linked fonts:
  - Creation of a new font.
    Font name: `Conversion_[existing font name]`
  - Link this new font to the element.

Can be optionally configured:

- Creation and linking are created in the global project

> ⚠ **Attention**
>
> Please ensure that your existing zenon projects are first prepared in version 7.20 with the **Static Text Font Conversion Wizard** accordingly, before you convert your project to a higher zenon version.
>
> The wizard is only included in current builds of version 7.20.

## 21.5    IEC850 Driver Configuration Wizard (F 11944)

The **IEC850 Driver Configuration Wizard** was completely revised and amended to the IEC 61850 Edition 2 enhancements for the **IEC850 driver**.

The wizard supports you when configuring reporting. The correct `RCBs` can be selected in a graphic user interface and assigned to the **IEC850 driver** using drag&drop.

The abilities of the wizard for automatic project configuration have been further enhanced:

▶ Import of variables from the `Datasets` of the selected `RCBs`.

▶ Creating a variable of type `Connection State`.

▶ Creation of reaction matrices for `850-Quality` and `Connection State`.

▶ Improved usability thanks to enhanced display of information from the SCL file.

## 21.6    Everywhere Essentials QR Code Generator (F 9051, S 24908)

The **Everywhere Essentials QR Code Generator** wizard is for the creation of a QR code for the visualization of variables in the **Everywhere Essentials QR Data App**.

The QR code can contain the following information:

Possible content of the QR code:

▶ Project name

▶ Variable name

- A certain variable
- Several variables linked to an equipment group

▶ Connection data to the Everywhere Server

# 22. Important information

## 22.1 ActiveX Controls

If special ActiveX controls are developed, the following has to be considered:

If the DISPATCH – which is passed in the **zenonInit** event of zenon – is saved in the ActiveX control, an **AddRef** has to be carried out because this DISPATCH is only valid within the **zenonInit** event. If "**AddRef**" is not called, a crash of the entire Runtime will be the result. Additionally, a release has to be performed in the "**zenonExit**" event.

## 22.2 Alarm status line and Windows application switching under Windows 7

If, on a computer with the operating system Windows 7/Server 2008, applications that are running are switched through several times using the `Windows key + Tab key`, the following behavior can occur when selecting zenon Runtime:

▶ The alarm status line is switched to the background

▶ This can only be brought back to the foreground by the user intervening.

This behavior results from the operating system. Microsoft provides the hotfix **2587473** to rectify this. This can be requested from Microsoft directly: http://support.microsoft.com/kb/2587473/en-us (http://support.microsoft.com/kb/2587473/en-us).

## 22.3 Screen-type specific functions (Def. 31123)

If screen-type specific functions are invalid, for example as a result of copying a button to a screen of a different type, then the invalid linking is pointed out and this can be replaced. Invalid functions are removed during compiling.

When converting projects, these can contain screen-type specific functions that are still invalid in Runtime.

## 22.4    Screen elements with the same ID

*Each element in a screen must have a unique ID. If several elements with the same ID are used in a screen, all duplicates are removed during compilation.*

*Example: If a button is copied and inserted into the same screen, the screen-type-specific function has the same ID. The copy is removed during compilation.*

*Exception: Several containers can be created in a `Faceplate` screen.*

## 22.5    Integration of VBA wizards and VSTA wizards

All VBA wizards are saved in the file "zenWorkspace.vba" by the zenon Editor. All VSTA wizards are saved in workspace AddIn.

When performing a new installation, these files will only be copied to your computer if they do not already exist in the installation folder. Existing VBA/VSTA files are not overwritten, because all your changes would be deleted in this case. If you want to use our new wizards or modified ones, you can import them manually via the menu "**File – Update Wizards**" in the Editor. At this you can decide yourself which wizards you want to overwrite.

## 22.6    Erroneous line display if extended graphics mode deactivated

In the extended graphics mode, dashed lines with a line width $> 1$ can be drawn. If you deactivate the extended graphics mode and zoom onto the line, the line will be displayed as solid.

## 22.7    Complex vector graphics

Please note when configuring process screens. When using many or complex vector graphics, loading screens in the Runtime can take a long time.

## 22.8    Converting existing data

If a project is started in Runtime version 7.x for the first time, the Runtime files of the concerned modules are converted. This guarantees that data changed in online operation is not lost. To do this, please read about conversion of projects (on page 60) in the General (on page 9) chapter.

**Attention:** All files have to be created in the Editor for the new version; otherwise the project cannot be started!

## 22.9    Converting projects

Before you convert a project, please read back all Runtime changeable files (User Administration, Standard Recipes, Recipegroup Manager, Scheduler/PFS and Message Control) into the Editor. This ensures a complete data conversion and makes sure that none of the changes made in the Runtime are lost. After converting to the new version, create all Runtime files once including RT changeable data.

Note: You can find important information for the conversion of certain versions in the zenon help in the Project conversion manual.

### CONVERTING MULTI-USER PROJECTS

Multi-user projects can only be converted if no elements are checked out. This means that all people configuring projects have to **accept** their changes first.

If this is not possible for some reason, you have to create a project backup of the project on the project database server and then immediately restore it. This resets all the **Under construction** information. Attention: All changes in the local project versions are lost!

The conversion can only be done on the PC, on which the central project database resides. If there is no Editor on the PC (standalone database server – no longer supported), you must install the Editor first. Only after that can the conversion be done on this PC.

### CONVERTING PROJECTS WITH EMBEDDED FONTS

From zenon 7.50 onwards, the "**embedded font**" property is no longer available in the "**static text**" element.

In order to continue to be able to use project configurations that use this property in earlier versions, carry out the necessary amendments in zenon 7.20 with the **Static Text Font Conversion Wizard**.

> ⚠ **Attention**
>
> Please ensure that your existing zenon projects are first prepared in version 7.20 with the **Static Text Font Conversion Wizard** accordingly, before you convert your project to a higher zenon version.
>
> The wizard is only included in current builds of version 7.20.

### CONVERSION FROM VERSION 6.01 TO 6.20

> *zenon projects in version 6.01 or 6.20 can no longer be directly read back in zenon 7.10 or higher.*
>
> *Background: Versions that are based on the MSDE (SQL Server 2000) are not compatible with the SQL Server 2012 used in zenon.*

*Solution:* *First convert in zenon 7.0 and then in 7.10 or higher.*

## 22.10   MS-ActiveX element DBGrid32.ocx does not work

There a several problems known in context with the use of Microsoft ActiveX element **DBGrid32.ocx** in the Runtime. Therefore please use other ActiveX elements such as **MSDATGRD.ocx**.

## 22.11   Reload of projects with Simulator driver variables

Simulator driver variables, not projected as HD variables, are reset to the value 0 with the function "**Reload**". Only HD simulator driver variables keep their value after reloading.

## 22.12   Network access - Firewalls

Different components of zenon try to access the network and can cause an alarm by firewalls or personal firewalls. If you want to use the network or the zenon Remote Transport, you have to unlock the according TCP/IP ports.

The following zenon components result in network access:

- ▶ Administration service (`zenAdminSrv.exe`)
- ▶ Editor (`zenone32.exe`)
- ▶ Database server (`zendbsrv.exe`)
- ▶ Diagnosis Server (`zenLogSrv.exe`)
- ▶ OPC Server (`zenOPCsrv.exe`)
- ▶ Process Gateway (`zenProcGateway.exe`)
- ▶ Remote Desktop (`zenVncSrv.exe` and `zenVncCli.exe`)
- ▶ Network server (`zennetsrv.exe`)
- ▶ Transport service (`zensyssrv.exe`)
- ▶ Drivers with TCP/IP connections
- ▶ zenon Web Server (`zenWEBsrv.exe`)
- ▶ zenon Logic Workbench
- ▶ zenon Logic Runtime

## 22.13   Process Desk – killing tasks

The Process Desk of zenon now allows you to kill tasks that got stuck.

**Attention:** Some drivers need a certain follow-up time, because they write a process image on closing. Premature closing can result in data loss! Use this option only in case of emergency, when you are really sure, that the task will not close on its own.

## 22.14   Page preview and printing in the Report Generator

In order to use the page preview and the printing of the Report Generator, a printer must be configured.

## 22.15   Saving reports of the Report Generator in the Runtime

Please be aware that on saving reports in the Runtime, all functions are replaced by the current contents of the cells (numbers). The functions in these reports (**.xrs** files) are no longer available. Additionally, these reports can no longer be edited in the Editor. So please use the MDI function "**Save as**" so that the original reports from the Editor are not overwritten. Moreover, we recommend to define the original reports as `read-only`.

## 22.16   The database server service must be entered correctly in the Startup Tool

Beside the versions you can also change the data base server with the Startup Tool. If you use this function, please note:

Between version 6.21 SP0 and 6.22 SP0 the SQL Service was entered incorrectly in the zendb.ini by the setup. This was no problem because the zenDBSrv did not consider the value. As of 6.22 SP1 this is the case again.
If you read the values using functionRead from zenDB.ini, the values are stored wrongly in the Startup Tool. You must check existing entries and change them if necessary.

## 22.17   zenon Logic Intellisense is slow

For large programs the Intellisense function of the zenon Logic Workbench can cause the project to open very slowly. In this case you should deactivate the Intellisense function in the straton Workbench.

## 22.18   String arrays with straton32 driver

Several string arrays with the same sice can be read out correctly with the **straton32** driver only as of version 6.22 SP1 and zenon Logic Workbench SR7-3. If projects of older versions are converted, the string length must be changed for every string array in order for the communication to work.

## 22.19   Transport service Autostart

The transport service (**zensyssrv.exe**) is normally started automatically by the operating system when a user logs in. If the transport service is not started, the computer cannot be reached via the Remote Transport.
At a new installation it is restarted after the computer has rebooted.
If you accidentally delete the entry for the automatic start from the registry, you can restore it with the help of command `Register` in the Startup Tool. At this the transport service is also automatically restarted.

## 22.20   Overwriting Runtime files

When creating Runtime files in the Editor it can happen, that files changed in online operation are overwritten. This occurs with the following modules:

- ▶   Recipegroup Manager
- ▶   Production & Facility Scheduler or Scheduler
- ▶   User administration
- ▶   Standard recipes

In order to guarantee that data created in runtime (recipes, schedules etc.) is not lost when creating Runtime files, there is a new tab in the dialog for project configuration: "**RT changeable data**". For the modules mentioned above you can define here whether the concerned files should be overwritten when Runtime files are created. If the checkboxes are not active, the files are overwritten!

This behavior is also true for the Remote Transport, when the Runtime files are to be transferred to another computer. So these checkboxes also apply here. If you want to transport all files to the remote system, deactivate all checkboxes. Otherwise the corresponding data will not be transported.

When creating Runtime files and when using Remote Transport, a message appears in the output window indicating that the concerned files were not overwritten.

The standard setting is: Runtime Files are not overwritten!

## 22.21   Wibu Key error message „WK1128"

If you get the error message **WK1128** when starting the Editor or Runtime, an obsolete version of **WibuKey** is being run. Install the current version of the **WibuKey** software from the installation medium.

## 22.22   WibuKey software installation removed from setup (Def. 34653)

The additional WibuKey administration software is no longer automatically installed with the setup from zenon version 7.50.
This software is however supplied with zenon. If necessary, install the current version of the **WibuKey** software from your zenon installation medium:

   ▶   `\AdditionalSoftware\WIBU-SYSTEMS WibuKey`

## 22.23   zenon in the Startup folder with dongle licensing

If zenon is started from the Startup folder, it may happen that it starts before the Wibu Key or Codemeter driver. Consequently, no dongle will be found and zenon will start in demo mode.

You can change this behavior by configuring a delayed start of the Runtime. For this, you need to make the following entry in the **zenon6.ini** file:

```
[DEFAULT]
STARTDELAY=[delay of the Runtime start in ms]
```

## 22.24   zenon Web Client: No support for Google Chrome from version 42

From version 42, Google Chrome no longer supports NPAPI plugins. Chrome can thus no longer be used as a zenon web client from version 42. Microsoft Edge does not currently support any extensions. Mozilla Firefox will remove NPAPI support at the end of 2016. The zenon Web Client will thus no longer work with these browsers. Only Internet Explorer will still be supported.