

Manuale di zenon

Process Recorder

v.7.60





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1. Benvenuti nell'help di COPA-DATA

VIDEO TUTORIAL DI ZENON

Nel nostro canale YouTube (https://www.copadata.com/tutorial_menu) si trovano esempi pratici di progettazione con zenon. I tutorial sono raggruppati per tema e forniscono una panoramica di come si lavora con i diversi moduli di zenon. Tutti i tutorial sono disponibili in lingua inglese.

GUIDA GENERALE

Se non avete trovato le informazioni che cercavate o se avete dei consigli relativi al completamento di questo capitolo dell'help, potete scrivere una E-Mail all'indirizzo documentation@copadata.com (<mailto:documentation@copadata.com>).

SUPPORTO ALLA PROGETTAZIONE

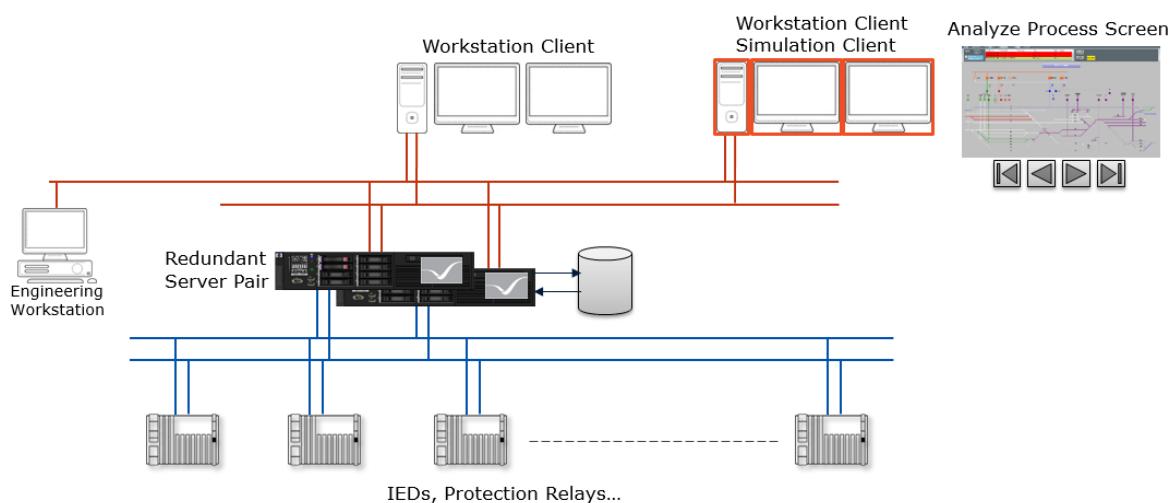
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LICENZE E MODULI

Se avete bisogno di nuovi moduli o licenze, potete rivolgervi ai nostri collaboratori all'indirizzo sales@copadata.com (<mailto:sales@copadata.com>).

2. Process Recorder

The **Process Recorder** module offers you the possibility to record process data in the productive Runtime. At a later point in time, this recorded data can be visualized in Runtime in a project simulation client.



Generally:

- ▶ Selected variables are recorded during the course of the productive process.
- ▶ Recording is carried out in the event of value changes.
- ▶ These recordings can be played back in zenon Runtime in simulation mode.
- ▶ Time and time period of this playback can be freely selected.
- ▶ Existing zenon screens can be used.
- ▶ If playback is not started in a Runtime with several projects, all recorded values from all projects are loaded, correctly sorted in chronological order and played back.
- ▶ The module is integrated into the zenon network and also supports redundancy.



Informazioni sulla licenza

Nell'Editor e nel Runtime (standalone, server, standby e client) è necessaria una licenza.

*The **Process Recorder** module requires a license for the server (Server, Standby, and Editor). The client is automatically licensed via the server.*

*The **project simulation** is included in the license of the process recorder.*

3. Introduction

The module **Process Recorder** consists of two parts:

1. When configuring a project in zenon, variables for logging are activated.
These variables are logged in Runtime during the course of the productive process.
2. The recorded data is played back again in Runtime by means of project simulation.
 - This recorded data can be called up at any time and played back. This playback is carried out in simulation mode of Runtime outside of the productive process.
 - With this playback, recorded processes can be visualized or analyzed.
 - Existing zenon screens can be used for this playback. Because each desired zenon screen is used for playback, processes from the past can be traced in the working environment.
 - Screens that have only been configured by the person configuring the project for playback can also be used for the analysis.

3.1 Recording

Data from the ongoing process is continually recorded and saved.

Recording is activated for each configured variable by means of the **Attivazione registrazione** variable property.

3.2 Replay

Recorded data from the productive environment can be played back at a later time:

- The recorded data can be played back for each recorded point in time.
- This playback is carried out in simulation mode of Runtime outside of the productive process.
- With this playback, recorded processes can be visualized or analyzed.
- Existing zenon screens can be used for this playback. Because each desired zenon screen is used for playback, processes from the past can be traced in the working environment.
- Playback is controlled with a zenon **Process Recorder** screen.
- Screens that have only been configured by the person configuring the project for playback can also be used for the analysis.

The following is applicable for playback:

- ▶ Display in playback is carried out solely on the basis of the recorded values. Current process data is not visualized during playback.
- ▶ Only screens with recorded values are supplied. All other zenon modules do not receive any data.

EXCEPTIONS

▶ **Internal driver**

The values of the internal values that have not been activated for recording in the process recorder are (in addition to the recorded values) supplied with current values, even in playback.

▶ **System driver**

The values of the system driver variables that have not been activated for recording in the Process Recorder are also supplied with current values during playback.

This is applicable for variables of the following themes:

- Batch Control
- Command Processing
- User-defined
- User Administration
- Printer
- Folder
- Project information
- Command Sequencer
- System information

REQUIREMENT

The appropriate file for the given start time is selected on starting. A corresponding LOG message is created and can be displayed in the Diagnosis Viewer tool.

The appropriate file:

- ▶ Ends with *.rec
- ▶ Is in the simulation directory in the computer data directory in the ProcessRecorder folder
- ▶ Is the file whose time stamp corresponds most closely to the selected start time of playback.
- ▶ and whose time stamp + 5 minutes still contains the selected point in time.

If no file meets these criteria, no file is loaded and a LOG message is also written.

4. Engineering in the Editor

Configuration steps for the **Process Recorder** module:

1. Activate the **Attiva Process Recorder** project property to activate the module.
 - a) In zenon, activate the project in the tree view of the **Workspace**.
 - b) Activate, in the **Process Recorder** project properties group, the **Attiva Process Recorder** property.
 2. Activate the **Attivazione registrazione** property for the variables that you want to record.
 - a) Highlight the variable(s) that you want to record.
Note: Multiple selection is possible.
 - b) Activate, in the **Process Recorder** properties group, the **Attivazione registrazione**.
Note: This property can also be configured for data types. This setting can be passed on to all variables of this data type.
- You can find further information on this in the Variables and data types (A pagina: 8) chapter.
3. Configure a zenon Process Recorder screen.
You can find further information on this in the Process Recorder screen (A pagina: 11) chapter.
 4. Configure a screen switch function (A pagina: 23) or the **Attiva/Disattiva progetto di simulazione** functions.
You can find further information on this in the **Activate/deactivate project simulation** (A pagina: 17) chapter.
You can find additional information in the project simulation manual.

4.1 Variables and data types

To record variables for subsequent playback, this must be activated with the **Attivazione registrazione** property for recording. You can find this property in the **Process Recorder** properties group of the variable or the data type.

Apply variables when creating new parameters for the data type property.

The variables with parameters set as such are advised when Runtime starts. The variables are unadvised again when Runtime is ended.

INHERITANCE

Variables and data types take on an existing parameter setting from the higher-level data type.

Please note:

- ▶ Data types take on the parameters of the property at the time the data type is newly created.
Changes to the original data type are not applied.
- ▶ Variables take on the parameters of the property from the assigned data type.
Changes to the data type are applied for the variable:
 - If the **Attivazione registrazione** property has been applied by the data type and not amended, all changes to the data type are applied for the variable.
 - If the **Attivazione registrazione** property has been amended for the variable, changes to the data type are no longer applied for the corresponding variable.
Attention: This is also applicable if the property corresponds to the parameter settings of the data type again after several changes. A change to the data type is not applied to the variable in this case.
- ▶ If a variable is assigned a new data type, the current parameter setting of the variable remains. This is then independent of the parameter settings of the (newly-assigned) data type.
- ▶ Arrays:
The behavior of arrays is the same as that for variables.
- ▶ Structure data types:
Are supported. The behavior is the same as for data types.



Suggerimento

If the properties of a variable have been amended, the parameter setting can be transferred from the data type again with the Link all properties with data type context menu entry.

APPLY CHANGES FOR THE RECORDING

If the existing configuration of one or more variables is subsequently changed, the recording is amended accordingly after the project is reloaded into Runtime. Newly-activated variables are only available for use in the Process recorder from the time of activation and reloading. The same applies for amendments to a data type.

4.2 Process Recorder data - recording

To have process data available for subsequent playback or evaluation in the **Process Recorder** module, all variables are saved in files with the **Attivazione registrazione** property activated.

Recording occurs:

- ▶ Each time there is a value change
- ▶ Each time the status bit of the variable is changed
- ▶ Each time a time stamp is changed

The respective new value is written to the file. If there is still no value when Runtime is started, no entry is written.

PROCESS RECORDER FILE

Process Recorder files have a `.rec` file suffix.

The following are saved in this file:

- ▶ Current value of the variable
Signal values of the variable are always saved, not the values calculated by the value amendment.
This corresponds to the zenon Editor properties **Campo valori PLC** for the signal value and **Adattamento valore lineare** for the value amendment.
- ▶ Status bits of the variable
- ▶ Time stamp of the variable
The time stamp of the variables are saved as UTC and have a precision of milliseconds.
 - External time stamp
 - Internal internal time stamp
 - Process Recorder time stamp
This time stamp is only used for playback in the **Process Recorder** module. It is issued automatically and cannot be actively configured or modified.

The following is applicable for the REC file:

- ▶ Recording is carried out in an REC file in the data directory of the computer. The file is named automatically. As a name, the time when the file was created is used, with the given name `PRYYMMDDHHMMSS.rec`.
- ▶ Save location of the Process Recorder files:
The data for subsequent playback in the Process Recorder is saved in the data directory of the local computer.
Save location of the logging files: `../[project name]/[computer name]/[project name]/ProcessRecorder/PRJJJ`.
The `PRYYYY` folder is created automatically by zenon and contains all Recorder files from a year.
You can find further information on the save location in the Runtime manual in the File structure chapter.
Note: You can open the local save location of the Runtime files in the zenon Editor with the `Ctrl+Alt+R` keyboard shortcut.
- ▶ A new file is saved automatically every five minutes. This cycle is fixed and cannot be configured.
- ▶ The current recording file is only opened if required and closed again after writing.
As a result, the file sync between server and standby is not blocked, because the file is only blocked for a short time.

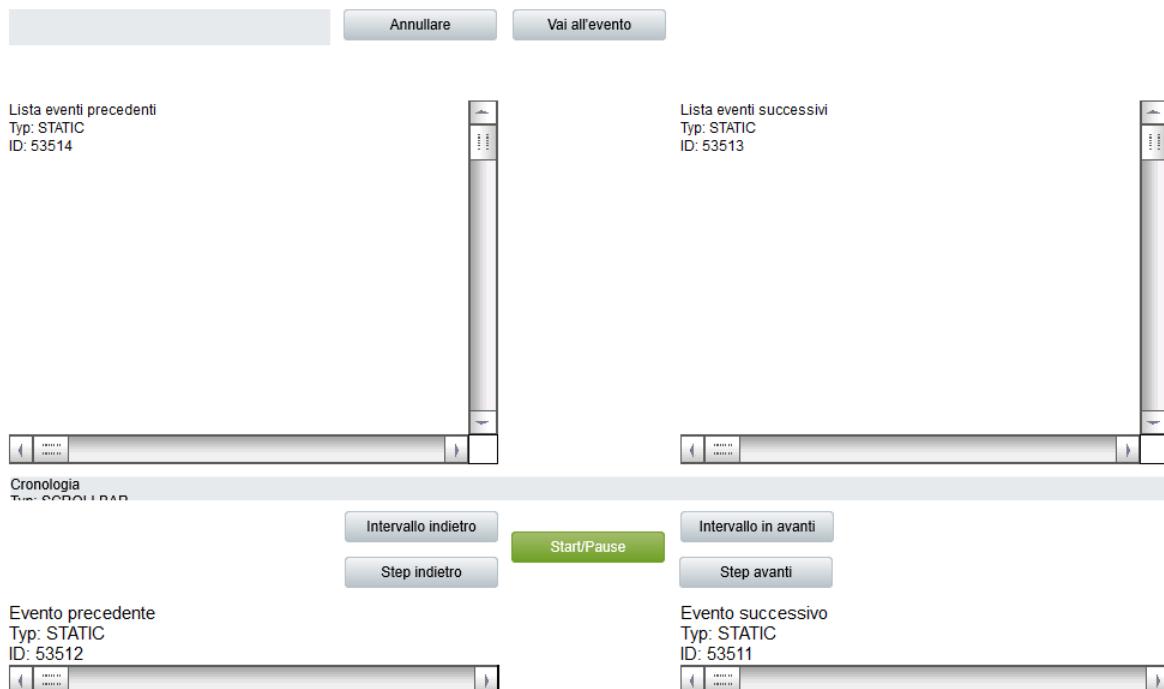
Please note that the requirements for storage space grow. The longer the recording runs, the more memory intensive the required storage space on the drive becomes.

⚠ Attenzione

Ensure that you have sufficient storage space. Also note the quality of the storage location: Removable media or USB sticks are expressly not recommended.

4.3 Process Recorder screen

The Process Recorder screen is for controlling playback of recorded process data in Runtime. The recorded data is played back in zenon in simulation mode.



Suggerimento

Configure the Process Recorder screen in its own template.

4.3.1 Create Process Recorder screen

The Process Recorder screen is for control when playing back recorded process data in zenon Runtime.

PROGETTAZIONE

Operazioni da eseguire per creare un'immagine:

1. Impostate una nuova immagine:

Selezionate nella barra degli strumenti, oppure nel menù contestuale del nodo **Immagini** il comando **Nuova immagine**.

Verrà aperta un'immagine vuota del tipo standard.

2. Modificare le proprietà dell'immagine:

a) Assegnare un nome all'immagine nella proprietà **Nome**.

b) Select Process Recorder in the **Tipo di immagine** property.

c) Select the desired frame in the **Modello** property.

3. Progettare i contenuti dell'immagine:

a) Selezionare nella barra menù il punto **Elementi di controllo**

b) Selezionare la voce Inserisci modello del menù a tendina.

Si apre la finestra di dialogo per selezionare layout predefiniti. In questo modo, determinati elementi di controllo verranno inseriti nell'immagine in posizioni predefinite.

c) Cancellare dall'immagine gli elementi di cui non avete bisogno.

d) Selezionare sulla base delle vostre esigenze ulteriori elementi nel menù a tendina **Elementi**. Piazzarli nella posizione desiderata all'interno dell'immagine.

4. Creare una funzione di cambio immagine.

Configure this screen switching function.

You can find further information in relation to this in the Process Recorder screen switching (A pagina: 23) chapter.

4.3.2 Control elements for Process Recorder screens

Elemento di controllo	Descrizione
Inserisci template	<p>Apre la finestra di dialogo che serve a selezionare un modello per un tipo di immagine.</p> <p>I modelli sono forniti con zenon, ma è possibile definirli anche individualmente.</p> <p>I modelli inseriscono elementi di controllo predefiniti a posti predeterminati nell'immagine. Anche dopo essere stati impostati, gli elementi che risultassero non necessari possono essere rimossi anche individualmente. Ulteriori elementi vengono selezionati fra quelli proposti nella lista a cascata e trascinati nell'immagine. Gli elementi possono essere spostati nell'immagine e essere ordinati secondo le esigenze individuali.</p>

REPLAY

Parameter	Description
Playback position	<p>Shows the point in time of playback in local time.</p> <p>Empty if Runtime is not in playback mode.</p> <p>Format: DD.MM.YYYY HH:MM:SS.MMM</p> <p>Note: The value is N/A if no recorder file is loaded.</p>
Cancel	Cancels the reloading of recorded data. Playback is continued at the current point in time.

START/PAUSE

The button is named **Start/Pause**.

The display of this button in Runtime depends on whether playback is currently running or not.

- ▶ **Pause:**
In playback mode, with playback running
- ▶ **Start:**
Playback mode has not been started yet

Parameter	Description
Start	Starts playback mode. Not visible in playback mode.
Pause	Pauses playback mode. Not visible with playback mode paused.

SINGLE STEP

Clicking on the button jumps to playback of the next or previous value change. The next or previous value change is listed in the event preview.

Control element	Description
Step forward	Switches to the next value change for playback. Not active in playback mode.
Step backward	Switches to the previous value change for playback. Not active in playback mode.

INTERVAL STEP

Clicking on the button jumps forwards or backwards by the configured interval.

Note: This interval step is always executed, regardless of whether these value changes are present or not after this interval jump.

Control element	Description
Interval forward	Jumps forward by the configured interval during playback. The interval is configured in the screen switching function (A pagina: 24). Not active in playback mode.
Interval backward	Jumps back by the configured interval during playback. The interval is configured in the screen switching function (A pagina: 24). Not active in playback mode.

LIST OF EVENTS

List of the next or previous value changes of the recording. The events within the current interval are displayed.

Playback jumps to the time of the selected event by selecting an event in the list and clicking on the **Jump to event** button.

Note: With playback active, these lists are blocked and are not updated.

List window in Runtime:

- ▶ The columns can be sorted and filtered in Runtime.
- ▶ Filtering and sorting can be saved in the filter profiles.
- ▶ The column width can be amended by holding down the right mouse button.
- ▶ Columns can be rearranged by means of drag&drop.

Control element	Description
Next event	Display of the next event for playback.
Previous event	Display of the previous event for playback.
List of next events	<p>List of the next value changes in playback. The display of the list is configured in the screen switch function (A pagina: 24).</p> <p>Note: The display of this list is empty in Runtime if the recording file is empty.</p> <p>The entries in this list are filtered for the duration of the interval.</p>
List of previous events	<p>List of the previous value changes of the playback. The display of the list is configured in the screen switching function (A pagina: 24).</p> <p>Note: The display of this list is empty in Runtime if the recording file is empty.</p> <p>The entries in this list are filtered for the duration of the interval.</p>

JUMP TO EVENT

Skips through playback to the time of an event selected in a **preview list**. If there are several events or no event from a preview list is selected, the button is grayed out in Runtime.

TIME LINE

The time list visualizes the time period of playback. Positioning in the zenon screen is possible horizontally or vertically.

The position of playback can be moved forwards and backwards in Runtime with the mouse pointer. To do this, move the slide control in the scroll bar with the mouse button held down. This positioning is possible in each mode of the Process Recorder. Playback is then continued at the position of the time

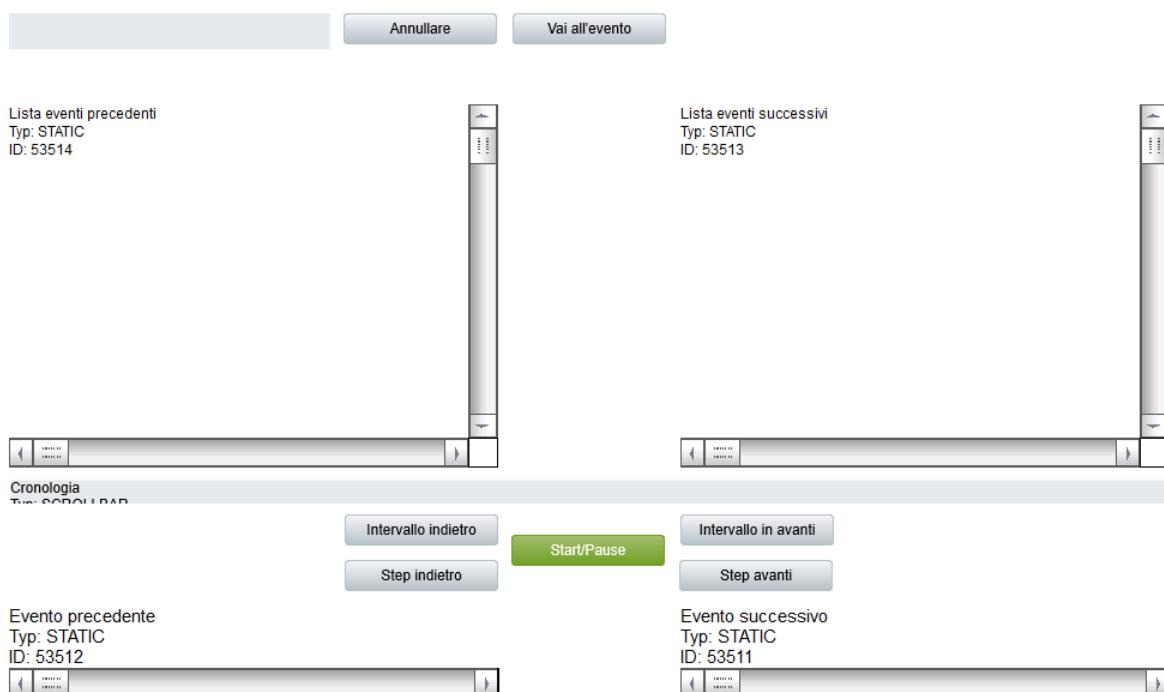
line. To stop moving, move the mouse out to the to the display area. The slide control is then placed in the initial position again.

The following keyboard shortcuts are supported:

Key	Description
End	Jumps to the end of the playback time period.
Pos1	Jumps to the start of the playback time period.
Page Down	Jumps, during playback, forward to the configured time of an interval.
Page Up	Jumps, during playback, backward to the configured time of an interval.

Note: The start and end of a playback period can also be shown in Runtime with the **system driver variables** [Process Recorder] start of playback period and [Process Recorder] end of playback period in Runtime.

Operation in Runtime



The following is applicable for display in Runtime:

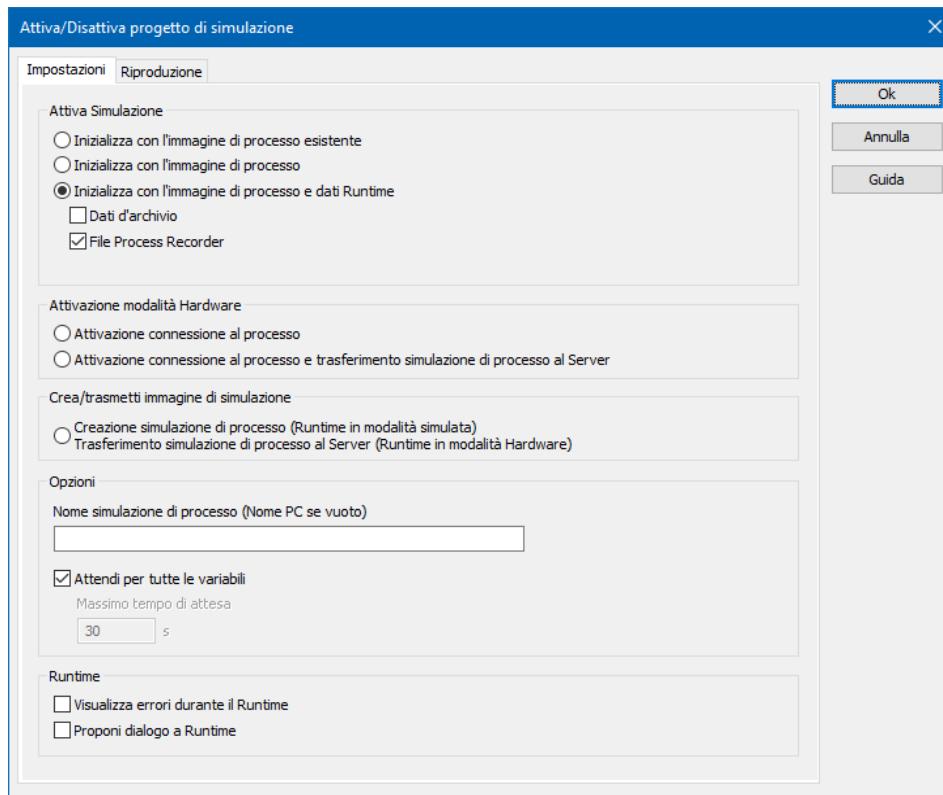
- ▶ If zenon Runtime is not running in Process Recorder playback mode, all screen elements of the **Process Recorder** screen type are grayed out or empty.
- ▶ The lists of the **event preview** are updated dynamically.
- ▶ The recorded values of all loaded projects are taken into account for playback. These values are shown compiled in the lists.
- ▶ When calling up a screen in playback mode, the recorded values are loaded from the Recorder files into the memory and buffered. The Process Recorder module detects if a further Recorder file needs to be loaded and loads this into the buffer in the background.
 - It is thus ensured that in Runtime, jumping forwards or backwards to events or by an interval (by means of buttons on Process Recorder screens) is possible without delay.
 - However, if the loading of a Recorder file takes longer, this is visualized in Runtime by a dialog. The updating of the values is delayed briefly as a result.
- ▶ If, during ongoing playback, the **Attiva/disattiva riproduzione Process-Recorder** function is called up with a new point in time, playback is paused.
- ▶ If a step is executed, a corresponding LOG entry (A pagina: 36) is created.

4.4 zenon functions

4.4.1 Activate/deactivate project simulation

You start the project simulation with the **Attiva/Disattiva progetto di simulazione** function. In this chapter, you get information about this function that is relevant for the **Process Recorder** module.

You can find further information on this function in the project simulation manual, in the Activate/deactivate project simulation chapter.



INITIALIZE WITH PROCESS IMAGE AND RUNTIME FILES

Parameter	Description
Process Recorder files	When starting the project simulation, the pre-existing logging files are used for the simulation. Note: Not active if Initialize with process image and Runtime files is not active.
Start the Process Recorder in playback mode	The project simulation starts in the playback mode of the Process Recorder. Existing recordings can thus be visualized in Runtime. Note: Only available if Process Recorder files is active. As an alternative to this property, the Process Recorder: activate/deactivate playback (A pagina: 32) function can also be used at the start of playback.

Note: The current playback mode is also shown in the **system driver** variable [Process Recorder] Recorder mode.

FOR VISUALIZATION

ENGINEERING

Procedura di creazione della funzione:

1. Creare una nuova funzione:

Nella barra degli strumenti, oppure nel menù contestuale del nodo "Funzioni", selezionare il comando **Nuova funzione**.

Si apre la finestra di dialogo che consente di selezionare una funzione.

2. Navigate to the node **Applicazione**.

3. Select the **Attiva/Disattiva progetto di simulazione** function.

The dialog to set parameters for project simulation is opened.

4. Select:

- a) **Initialize with process image and Runtime files**

- b) **Activate the Process Recorder files**

- c) Optional: To start the simulation in Runtime directly after calling up the function in playback mode, configure the settings in the Playback tab.

5. In addition, you can configure the **Options** and **Runtime** properties.

6. Assegnare un nome alla funzione nella proprietà **Nome**.



Info

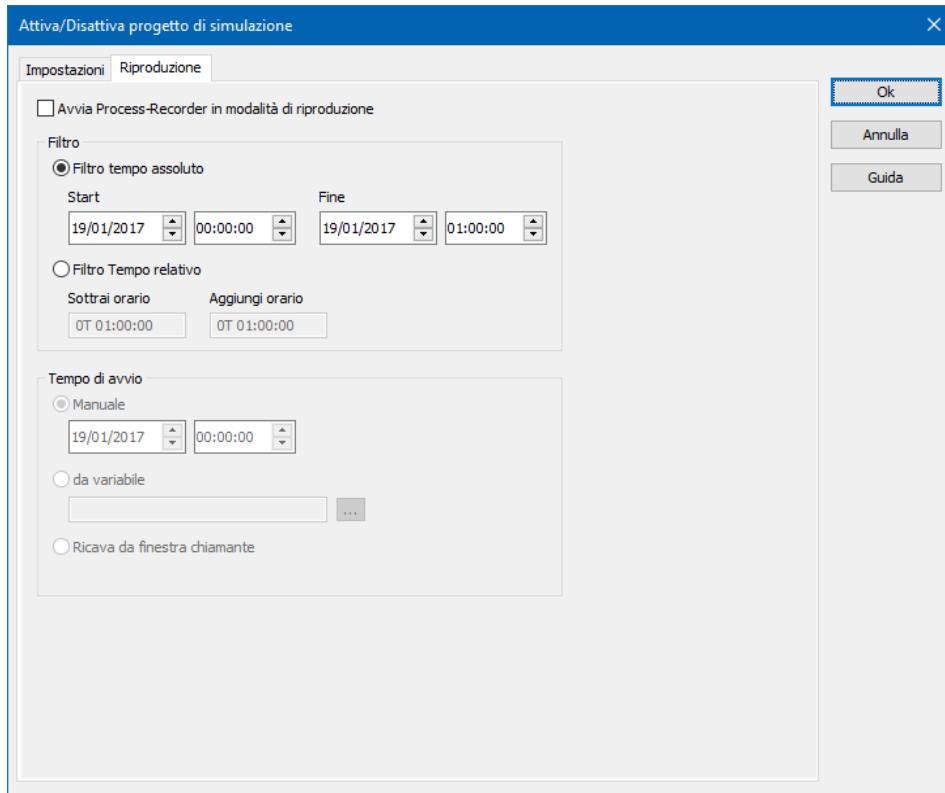
In simulation, the **Process Recorder** does not record any further data.

Riproduzione

Nella cartella **Riproduzione** del dialogo di configurazione della funzione "Attiva/Disattiva progetto di simulazione" si configurano i parametri per la modalità di riproduzione del modulo **Process Recorder**. Se questa finestra di dialogo viene visualizzata a Runtime, si possono modificare solamente le impostazioni relative al tempo.

Le impostazioni di questa scheda sono facoltative.

Ha senso configurarle solamente se si vuole passare direttamente da un ambiente Runtime produttivo alla modalità di riproduzione per processi registrati.



Parametro	Descrizione
Avvia Process-Recorder in modalità di riproduzione	<p>Checkbox che consente di selezionare il comportamento del Runtime dopo l'esecuzione della funzione.</p> <ul style="list-style-type: none"> ▶ Attiva: Il Runtime si avvia in modalità di riproduzione. ▶ Non attiva: Il Runtime viene avviato in modalità di simulazione. <p>Default: non attiva.</p>

FILTRO

In questa area della scheda si configura il punto di avvio della riproduzione a Runtime.

Parametro	Descrizione
Filtro tempo assoluto	<p>Inizio e fine dell'intervallo di tempo di riproduzione vengono inseriti manualmente.</p> <p>Inserimento di tempo di inizio e di fine negli appositi campi di inserimento.</p> <p>Formato:</p> <ul style="list-style-type: none"> ▶ Data: GG.MM.AAAA Default: data odierna. ▶ Tempo: hh:mm:ss Default: 00:00:00 <p>Default: attiva.</p> <p>Nota: la checkbox non è attiva se il tipo di filtro impostato è Filtro tempo relativo.</p>
Filtro Tempo relativo	<p>Inizio dell'intervallo di riproduzione, relativo al tempo di avvio. al punto di avvio. Quest'ultimo viene configurato nell'area Tempo di avvio.</p> <p>Si indica la differenza negli appositi campi di inserimento.</p> <ul style="list-style-type: none"> ▶ Sotrai orario: G hh:mm:ss ▶ Aggiungi orario: G hh:mm:ss <p>Default: non attiva.</p> <p>Nota: la checkbox non è attiva se il tipo di filtro impostato è Filtro tempo assoluto.</p>

TEMPO DI AVVIO

Le opzioni di questa proprietà sono disponibili solamente se il tipo di filtro configurato è **Filtro tempo relativo**. In caso contrario, queste opzioni saranno visualizzate in color grigio e non potranno essere configurate. Il tempo di avvio si seleziona utilizzando gli appositi campi di inserimento.

Parametro	Descrizione
Manuale	<p>Il tempo di avvio della riproduzione per il modulo Process Recorder viene inserito manualmente.</p> <p>Configurazione del tempo di avvio tramite inserimento nei campi per data e ora.</p> <p>Default: data odierna/ ore 00:00:00.</p>
Da variabile	<p>Il tempo di avvio della riproduzione per il modulo Process Recorder viene acquisito dal valore della variabile configurata.</p> <p>Quando si clicca sul pulsante ... si apre la finestra di dialogo che consente di selezionare una variabile.</p> <p>Si consiglia di selezionare e collegare una variabile con il tipo di dato DINT.</p> <p>Se la variabile collegata non ha un valore valido, oppure se il suo valore è 0, la funzione non verrà eseguita! In questo caso, viene generato un inserimento corrispondente nei LOG.</p>
Ricava da finestra chiamante	<p>Il tempo di avvio della riproduzione a Runtime per il modulo Process Recorder viene acquisito dall'immagine chiamante.</p> <p>Si prega di tenere presente quanto segue:</p> <ul style="list-style-type: none"> ▶ La funzione Attiva/Disattiva progetto di simulazione può essere attivata solamente da un'immagine di zenon di tipo Lista di informazione allarmi, oppure di tipo Lista Eventi Cronologica. ▶ Quando si attiva la funzione, deve essere selezionato solamente un inserimento (allarme o evento) delle liste allarmi o eventi. <p>Come tempo di avvio della riproduzione nel modulo "Process recorder" si utilizza il tempo di entrata.</p> <p>Se la chiamata della funzione via Ricava da finestra chiamante non riesce, un corrispondente inserimento viene scritto nei LOG.</p>

CHIUDI FINESTRA DI DIALOGO.

Opzione	Descrizione
Ok	Accetta le modifiche in tutte le schede e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche in tutte le schede e chiude la finestra di dialogo.

Guida

Apre la guida online.

4.4.2 Screen switch Process Recorder

To open a Process Recorder screen in Runtime:

1. Configure a Process Recorder screen.
2. Create a function Screen switch for this screen.
3. Define the desired filter properties

CREATE A SCREEN SWITCH FUNCTION

A screen switching function is for calling up screens in Runtime. For screen switching to a Process Recorder screen, you can also configure the step size of the interval as well as the graphical appearance of the lists in the event preview.

ENGINEERING

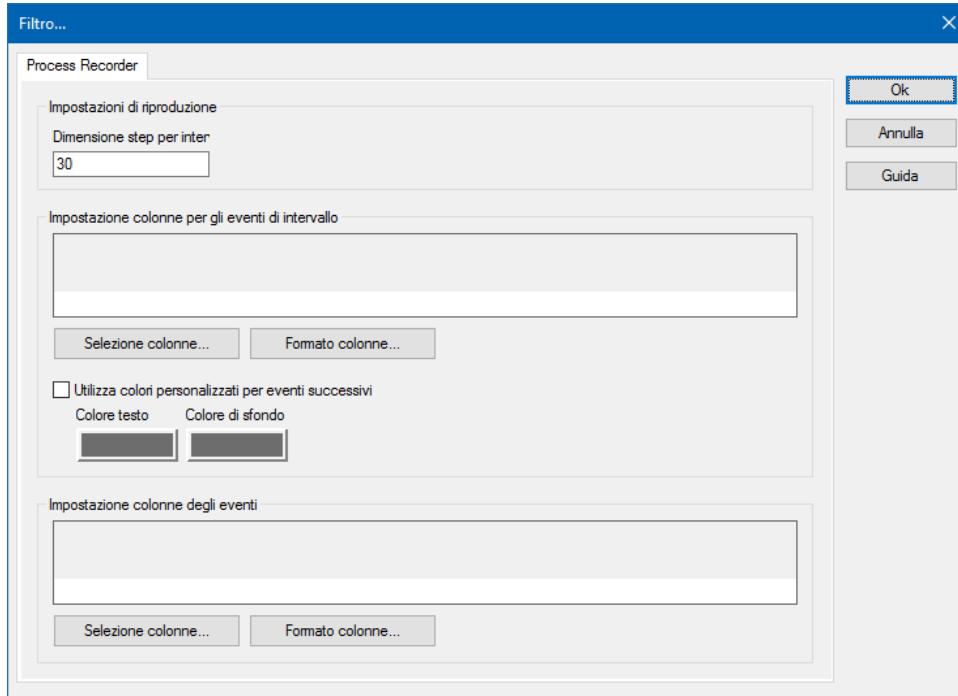
Procedura di creazione della funzione:

1. Creare una nuova funzione:
Nella barra degli strumenti, oppure nel menù contestuale del nodo "Funzioni", selezionare il comando **Nuova funzione**.
Si apre la finestra di dialogo che consente di selezionare una funzione.
2. Navigate to node **Screens**
3. Select the Screen switching function
The dialog for selecting a screen is opened.
4. Select the desired screen.
Note: If you select a screen from another project, ensure that the project is running in Runtime.
5. Confirm your selection by clicking on the **OK** button.
The **Filter** (A pagina: 24) dialog to configure the playback settings and for the graphical appearance of the interval and event list is opened.
6. Assegnare un nome alla funzione nella proprietà **Nome**.

Process Recorder screen switching filter

In this dialog, you configure:

- ▶ The step size (in seconds) of an interval step
- ▶ The graphical appearance of the list in the event preview



REPLAY SETTINGS

Parameter	Description
Interval size	Entry of the interval size. Entry in seconds. Default: 30

COLUMN SETTINGS INTERVAL EVENTS

Configuration of the display in Runtime for **event list forwards** and **event list backwards**.

Parameter	Description
Preview	<p>Preview of the configured display.</p> <p>Note: Configuration by means of mouse click, context menu or the Column selection... and Column format... buttons</p>
Column selection...	<p>Opens the dialog for selecting the columns which should be displayed (A pagina: 26).</p>
Column format...	<p>Opens the dialog for configuring the column formats (A pagina: 27).</p>
Use user-defined colors for next event	<p>For the next and previous result in the event preview list and in the interval list, text and background color can - in contrast to configuration for the complete list - be configured separately.</p> <p>If this option is activated, only specially-configured appearances configured are used for the next or previous entry in the list. All other entries in the list use the settings as configured in Column format (A pagina: 27).</p> <p>Activation by means of checkbox.</p>
Textfarbe	<p>Color for the text display for the next event in the event preview list. Clicking on the color opens the color palette to select a color.</p> <p>Note: not active if Use user-defined colors for next event is inactive.</p>
Hintergrundfarbe	<p>Color for the background color of the next event in the preview list.</p> <p>Note: not active if Use user-defined colors for next event is inactive.</p>

COLUMN SETTINGS EVENTS

Configuration of the display in Runtime for **previous event list** and **next event**.

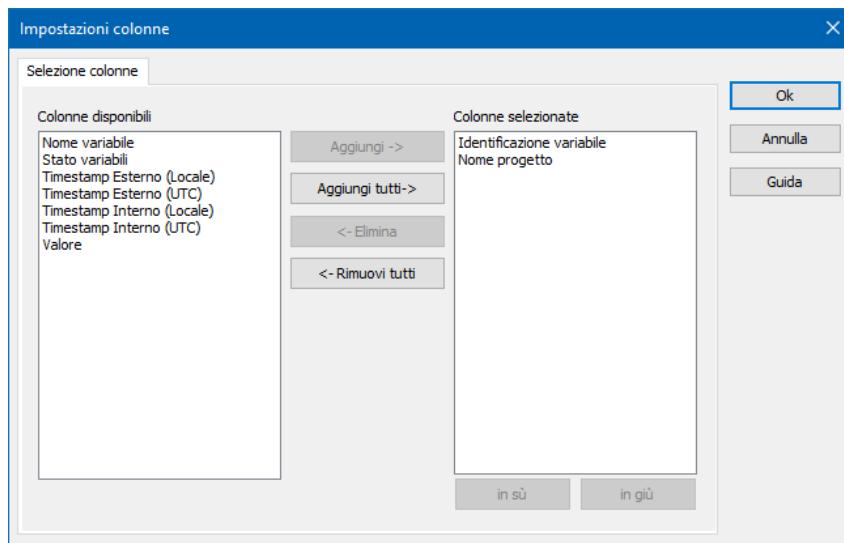
Parameter	Description
Preview	Note: initial amendments can already be configured in this preview by clicking the mouse or by means of the context menu.
Column selection...	Opens the dialog for selecting the columns which should be displayed.
Column format...	Opens the dialog for configuring the column display.

CLOSE DIALOG

Option	Description
OK	Aplica le impostazioni e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche e chiude la finestra di dialogo.
Guida	Apre la guida online.

Column selection

You configure the columns to be displayed in Runtime here.



Opzione	Funzione
Colonne disponibili	Lista delle colonne che possono essere visualizzate nella tabella.
Colonne selezionate	Colonne che vengono visualizzate nella tabella.
Aggiungi ->	Sposta le colonne selezionate dalla finestra delle colonne disponibili (sinistra) a quella delle colonne selezionate (destra). Dopo aver confermato il dialogo cliccando su OK, le colonne aggiunte verranno visualizzate nella visualizzazione dettagli.
Aggiungi tutti ->	Sposta tutte le colonne disponibili nella finestra delle colonne selezionate.
<- Elimina	Elimina le colonne selezionate nella finestra delle colonne selezionate e le sposta nella lista di quelle disponibili. Dopo aver confermato il dialogo cliccando su OK, queste colonne verranno eliminate dalla visualizzazione dettagli.
<- Rimuovi tutti	Cancella tutte le colonne dalla lista delle colonne selezionate.
In alto	Sposta l'inserimento selezionato verso l'alto. Questa funzione è sempre disponibile per i singoli inserimenti; non è possibile però una selezione multipla.
In basso	Sposta l'inserimento selezionato verso il basso. Questa funzione è sempre disponibile per i singoli inserimenti; non è possibile però una selezione multipla.

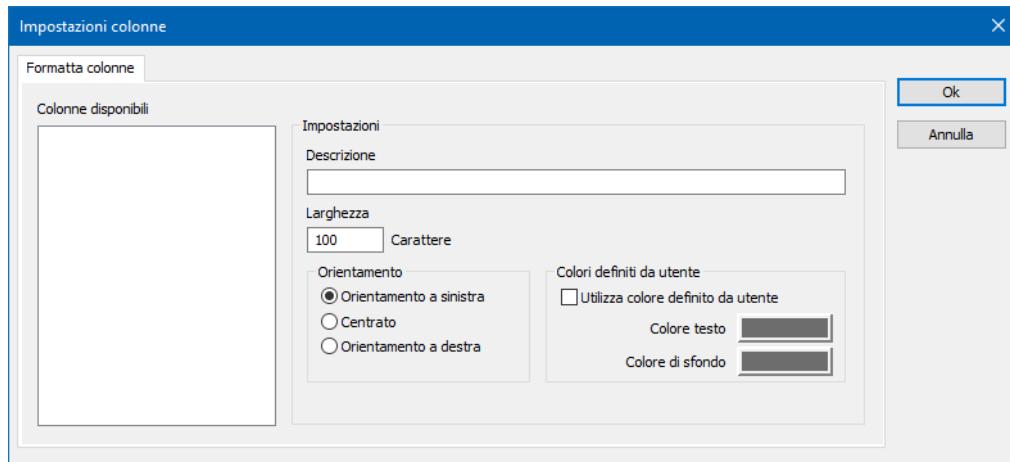
CHIUDERE LA FINESTRA DI DIALOGO.

Opzione	Descrizione
OK	Applica le impostazioni e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche e chiude la finestra di dialogo.
Guida	Apre la guida online.

Column format

Graphical appearance of the selected columns.

Configurazione delle proprietà delle colonne per le liste configurabili. Queste impostazioni hanno effetto sulla lista corrispondente nell'Editor, oppure (in caso di configurazione della funzione di cambio immagine) a Runtime.



COLONNE DISPONIBILI

Opzione	Descrizione
Colonne disponibili	Lista delle colonne rese disponibili tramite la scheda Selezione colonne . La colonna selezionata viene configurata usando le opzioni della sezione Impostazioni .

IMPOSTAZIONI

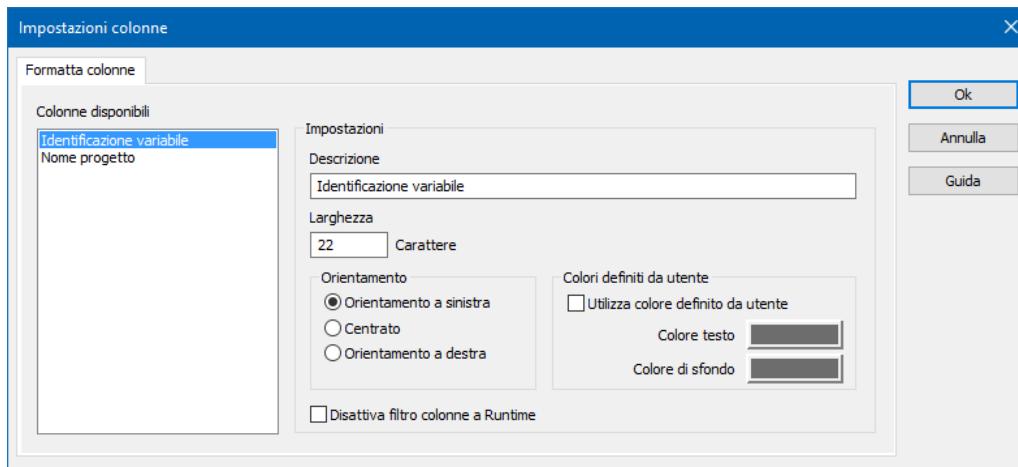
Opzione	Descrizione
Impostazioni	Impostazioni per la colonna selezionata.
Descrizione	Nome del titolo della colonna. Il titolo colonna è traducibile online. Perché venga tradotto, bisogna inserire il carattere @ prima del nome.
Larghezza	Larghezza della colonna in caratteri. Calcolo: numero per la larghezza media del carattere selezionato.
Orientamento	Orientamento. La selezione avviene usando pulsanti di opzione. Possibili impostazioni: <ul style="list-style-type: none"> ▶ Orientamento a sinistra: il testo è allineato sul margine sinistro della colonna. ▶ Centrato: il testo viene visualizzato centrato all'interno della colonna. ▶ Orientamento a destra: il testo è allineato sul margine destro della colonna.
Colori definiti da utente	Proprietà per l'impostazione per ogni colonna di colori definiti dall'utente per testo e sfondo. Le impostazioni hanno effetto sia nell'Editor che a Runtime. Nota: <ul style="list-style-type: none"> ▶ Queste impostazioni sono a disposizione solo per le liste configurabili. ▶ A Runtime, inoltre, si può evidenziare dove si trova il focus in un lista usando diversi colori di testo e di sfondo. La configurazione di questi colori avviene tramite le Proprietà di progetto.
Utilizza colore definito da utente	Attiva: vengono usati i colori definiti dall'utente.
Colore testo	Colore per la visualizzazione del testo. Cliccando sul colore, si apre la tavolozza che consente di selezionare un colore.
Colore di sfondo	Colore usato per lo sfondo delle celle. Cliccando sul colore, si apre la tavolozza che consente di selezionare un colore.

Disattiva filtro colonne a Runtime

- ▶ Attiva: il filtro per questa colonna non potrà essere modificato a Runtime.
- Nota:** disponibile solo per:
- ▶ Batch Control
 - ▶ Trend esteso
 - ▶ Immagini filtro
 - ▶ Message Control
 - ▶ Manager di gruppi ricette
 - ▶ Gestione turni
 - ▶ Lista contestuale

CHIUDI FINESTRA DI DIALOGO.

Opzione	Descrizione
Ok	Accetta le modifiche in tutte le schede e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche in tutte le schede e chiude la finestra di dialogo.
Guida	Apre la guida online.



COLONNE DISPONIBILI

Opzione	Descrizione
Colonne disponibili	Lista delle colonne rese disponibili tramite la scheda Selezione colonne . La colonna selezionata viene configurata usando le opzioni della sezione Impostazioni .

IMPOSTAZIONI

Opzione	Descrizione
Impostazioni	Impostazioni per la colonna selezionata.
Descrizione	Nome del titolo della colonna. Il titolo colonna è traducibile online. Perché venga tradotto, bisogna inserire il carattere @ prima del nome.
Larghezza	Larghezza della colonna in caratteri. Calcolo: numero per la larghezza media del carattere selezionato.
Orientamento	Orientamento. La selezione avviene usando pulsanti di opzione. Possibili impostazioni: <ul style="list-style-type: none"> ▶ Orientamento a sinistra: il testo è allineato sul margine sinistro della colonna. ▶ Centrato: il testo viene visualizzato centrato all'interno della colonna. ▶ Orientamento a destra: il testo è allineato sul margine destro della colonna.
Colori definiti da utente	Proprietà per l'impostazione per ogni colonna di colori definiti dall'utente per testo e sfondo. Le impostazioni hanno effetto sia nell'Editor che a Runtime. Nota: <ul style="list-style-type: none"> ▶ Queste impostazioni sono a disposizione solo per le liste configurabili. ▶ A Runtime, inoltre, si può evidenziare dove si trova il focus in un lista usando diversi colori di testo e di sfondo. La configurazione di questi colori avviene tramite le Proprietà di progetto.
Utilizza colore definito da utente	Attiva: vengono usati i colori definiti dall'utente.
Colore testo	Colore per la visualizzazione del testo. Cliccando sul colore, si apre la tavolozza che consente di selezionare un colore.
Colore di sfondo	Colore usato per lo sfondo delle celle. Cliccando sul colore, si apre la tavolozza che consente di selezionare un colore.

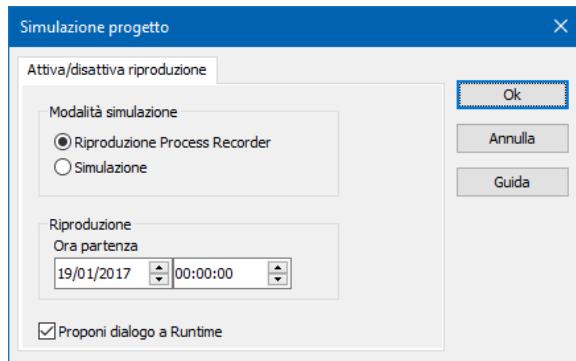
Disattiva filtro colonne a Runtime	<ul style="list-style-type: none"> ▶ Attiva: il filtro per questa colonna non potrà essere modificato a Runtime. <p>Nota: disponibile solo per:</p> <ul style="list-style-type: none"> ▶ Batch Control ▶ Trend esteso ▶ Immagini filtro ▶ Message Control ▶ Manager di gruppi ricette ▶ Gestione turni ▶ Lista contestuale
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CHIUDI FINESTRA DI DIALOGO.

Opzione	Descrizione
Ok	Accetta le modifiche in tutte le schede e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche in tutte le schede e chiude la finestra di dialogo.
Guida	Apre la guida online.

4.4.3 Process Recorder: Activate/deactivate playback

You start or stop the playback of recording in Runtime with the **Attiva/Disattiva progetto di simulazione** function.



Parameter	Description
Simulation mode	<p>Type of simulation in zenon Runtime. Selection of the mode from an option field:</p> <ul style="list-style-type: none"> ▶ Process Recorder playback Starts Runtime in playback mode of the project simulation for the Process Recorder module. ▶ Simulation Switches Runtime from playback mode back to project simulation. <p>Default: Simulation</p>
Playback start	<p>Start time of playback. Entry of the point in time at which playback is started in Runtime.</p> <p>Selection of date and time from a combobox. Display format: DD.MM.YYYY or HH:MM:SS Click on the desired area to highlight this for the change. Change the area with an entry or by clicking on the arrow keys.</p> <p>Default: Date of the call, 00:00:00</p> <p>Note: Not active if simulation mode is simulation.</p>
Show this dialog in the Runtime	<p>Checkbox che consente di stabilire se questa finestra di dialogo debba essere visualizzata a Runtime o meno:</p> <ul style="list-style-type: none"> ▶ Attiva: questa finestra di dialogo verrà aperta a Runtime sul computer attuale. In rete verrà visualizzata sul computer che esegue la funzione. L'utente potrà poi utilizzare questa finestra di dialogo per eseguire delle modifiche alla configurazione. ▶ Non attiva: questa finestra di dialogo non verrà visualizzata a Runtime. La funzione o il comando verranno eseguiti immediatamente, con le impostazioni configurate nell'Editor. <p>Default: Inactive</p>

CHIUDERE LA FINESTRA DI DIALOGO.

Opzione	Descrizione
OK	Applica le impostazioni e chiude la finestra di dialogo.
Annulla	Annulla tutte le modifiche e chiude la finestra di dialogo.

Opzione	Descrizione
Guida	Apre la guida online.



Suggerimento

*In order to have the greatest flexibility during playback in Runtime, configure the function with **Show this dialog in Runtime** activated.*

Link this function to a button in a template that can be reached by the screens used in playback.

As a result, the start time can be selected flexibly during ongoing playback.

5. Process Recorder in the Runtime

The following is applicable for the **Process Recorder** in zenon Runtime:

- ▶ Loading files in playback mode:
Data from the playback runs in its own thread. This allows the continuous playback of the recorded data without time-consuming reload pauses.
- ▶ Record files:
The data recording of the **Process Recorder** module runs in its own thread. This allows continuous data recording without a loss of performance.
- ▶ Display of values:
If a time range during which Runtime was not active is replayed in the playback, no values are shown during the playback. The elements in the process screens remain empty.
- ▶ Cross-project:
Data that overlaps several projects in terms of time is compiled into a time bar and played back after being sorted chronologically.
- ▶ Variables that have not been recorded are marked with the `PR_NR` status bit.
If the status bit is active, this status is shown in a yellow square in a screen element during playback.

PLAYBACK MODE

If Runtime is in playback mode, it continues to act as in project simulation.

Examples:

- ▶ No recording of **Process Recorder** data.
- ▶ Files are created or read in the simulation directory (for example: batch, command sequences).

- ▶ The **AUTOEND_Simul** script also works in playback mode when Runtime is closed.
- ▶ When closing Runtime, the **Variable image remanent** property is taken into account for each driver.
- ▶ Archives cannot be exported.
- ▶ The import of command sequences that have been created during simulation is not carried out.
- ▶ The Shift Management module does not access the database.

No data that is created by the playback is saved during playback. This is applicable for the following modules:

- ▶ CEL
- ▶ Alarm Message List
- ▶ Historian
- ▶ Process Recorder
- ▶ HD saving



Info

*Il processo di teaching per il modulo **Sequenze di comando** è disponibile anche se il Runtime viene eseguito in modalità di riproduzione del modulo **Process Recorder**.*

6. Process Recorder in the zenon network

The following rules are applicable for the behavior of the Process Recorder module in the network:

- ▶ Server and Standby create an initial file on startup.
- ▶ Behavior on the server:
 - A new entry is saved in the file on the server in the event of a value change.
 - The entry is also sent to the Standby Server.
- ▶ Behavior on the standby server:
 - The standby server gets the existing Process Recorder files from the server on starting.
 - After transferring the files:
The standby writes the entry received from the server to the file on the standby.
 - If the file does not exist, the standby writes a corresponding LOG message.
 - To design the file sync as efficiently as possible, it is ensured that the Recorder files on the standby server have the file properties as on the server.

- ▶ For redundancy switching and reloading the project:
 - The current recorder file is closed.
 - A new Recorder file is created.

 **Attenzione**

Please note:

- ▶ On the Standby Server, the values of the primary server are recorded in the Process Recorder. It is not the values that have been received by the standby server's own driver that are used.
- ▶ Seamless redundancy is not supported for the Process Recorder. The variables are advised to the standby server but are not buffered. Recording is thus not guaranteed during redundancy switching.

7. LOG entries

The Process Recorder writes the following LOG entries.

RECORDING

Entry	Level	Description
Unable to Create File: [File name]	ERROR	The new file could not be created.
Unable to Create Filefolder: [Folder name]	ERROR	The target directory could not be created. Possible reasons: <ul style="list-style-type: none"> ▶ Inadequate user rights ▶ Insufficient free storage space ▶ Target directory cannot be reached
Could not write to file !	ERROR	Access to the file failed or the file has not yet been created. This message can occur the first time a variable is advised, because the required file is not yet present and is only now created automatically.
Filehandler not initialized	ERROR	Functionalities for the writing of the Process Recorder file have not been started. This LOG entry can only be made on starting.

NETWORK

Entry	Level	Description
Send Data: Cls:CProcessRecorderMsg StartFile name:<filename> size:<filesize> time:<time>	Debug	LOG entry on the server. Sends a message to the standby that new file <filename> with the size <size> and time <time> has been written.
Receive Data: Cls:CProcessRecorderMsg StartFile name:<filename> size:<filesize> time:<time>	Debug	LOG entry on the standby. Received message that new file <filename> with size <size> and time <time> has been written on the server.
Unable to start new file correctly: <filename>	ERROR	LOG entry on the standby. New file <filename> could not be created.
Data is missing. File is smaller in size on SB<filename>	ERROR	LOG entry on the standby. In the event of a value change if the file <filename> is too small. This is the case if the file on the server has more entries than on the standby.
Receive Data: Cls:CProcessRecorderMsg	DEBUG	LOG entry on the standby.

ValueChange file:<filename> startPos: :<start> modifyTime:<time> length:<length>		Notification from the server that new value changes have been recorded on the server. Value changes from the server to write to the file <filename> from position <start> with time stamp <time> received. Dump has a length of <length>
Send Data: Cls:CProcessRecorderMsg ValueChange file:<filename> startPos: :<start> modifyTime:<time> length:<length>	DEBUG	LOG entry on the server. Send value changes to the standby server to write to the <filename> file from <start> position with time stamp <time>. Dump has a length of <length>
Unable to write value changes to file: <filename>	ERROR	LOG entry on the standby. Value changes could not be written to the file <filename>.
Unable to set modify time correctly: <filename>	ERROR	LOG entry on the standby. Value changes could be written but the time stamp of the <filename> file could not be amended. This is the case if the time stamp of the file is different to the to the time stamp of the file from the server. The file is synchronized during the next file sync.

RUNTIME

Entry	Level	Description
Reload PR with process recorder now enabled / disabled	DEBUG	Reloading in the event of a change of the activation of the Process Recorder: <ul style="list-style-type: none"> ▶ No change to the variable property. ▶ Process Recorder has been activated or deactivated.
Reload <n> variables with process recorder enabled	DEBUG	Reloading of the configuration for Process Recorder: <p>The variable administration (with <n> new or amended values) was reloaded.</p> <p>The Process Recorder is now also used for this variable(s)</p>
Runtime switch to Simulationmode	DEBUG	Runtime switches from playback mode to simulation mode.
Runtime switch to	DEBUG	Runtime switches from simulation mode to

Playbackmode		playback mode.
RT started in playback mode	DEBUG	Runtime was started in playback mode.
RT started in simulation mode	DEBUG	Runtime was started in simulation mode.
Start time for playback from Abs: Rel: %source% is invalid	ERROR	<p>No valid value or no variable for execution of the function found. source:</p> <ul style="list-style-type: none"> ▶ User input ▶ Variable name (with start time from variable) ▶ Screen name (with start time from calling screen)

REPLAY

Entry	Level	Description
No file loaded	DEBUG	When playback was started, no file that contains recorded data for the selected time point could be found.
Load file for replay <filename>	DEBUG	Notification of success on starting playback: The file <filename> was loaded and contains valid recording data for the selected time point.
No replay buffer filled	DEBUG	No values were found in the file.
Filled buffer for replay with <count> variables and <number> entries	DEBUG	<p>Values for variables were found in the file.</p> <ul style="list-style-type: none"> ▶ <count>: Number of variables with entries ▶ <number>: Number of value changes
Intervallstep forward	DEBUG	Successful jump forwards by an interval step during playback.

Intervalstep back	DEBUG	Successful jump backwards by an interval step during playback.
Cancel action	DEBUG	Successful cancellation of a jump command
singlestep forward	DEBUG	Successful switch to the next value change.
singlestep back	DEBUG	Successful switch to the previous value change.
playback status change	DEBUG	Playback was started or paused: Status: ▶ started ▶ paused
replay timer waiting n ms	DEEPDEBUG	Search for value changes during playback.
Unload File: <filename>	DEBUG	The file <filename> is removed from the memory in playback mode.