



PRODUCTION EXECUTION VIEWER

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USER MANUAL

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Production Execution Viewer

Production Execution Viewer of PharmaSuite is a stand-alone, graphical workbench for viewing orders and workflows. With its functions, it allows to oversee completed, running, and upcoming processing steps executed in PharmaSuite for Production Execution.

Typographical Conventions

This documentation uses typographical conventions to enhance the readability of the information it presents. The following kinds of formatting indicate specific information:

Bold typeface	Designates user interface texts, such as <ul style="list-style-type: none">■ window and dialog titles■ menu functions■ panel, tab, and button names■ box labels■ object properties and their values (e.g., status).
<i>Italic typeface</i>	Designates technical background information, such as <ul style="list-style-type: none">■ path, folder, and file names■ methods■ classes.
CAPITALS	Designate keyboard-related information, such as <ul style="list-style-type: none">■ key names■ keyboard shortcuts.
Monospaced typeface	Designates code examples.

Basic Concepts of Production Execution Viewer

Based on the concepts of the S88 and S95 standards, Production Execution Viewer provides a comprehensive framework for viewing control recipes and control workflows, along with their building blocks, components, and structures:

- Building block (page [2](#))
- Procedure (page [2](#))
- Unit procedure (page [2](#))
- Operation (page [3](#))
- Phase (page [3](#))
- SFC graph (page [3](#))
- Confidential objects (page [3](#))

What Is a Building Block?

Building blocks are the individual structural components on any level of a master recipe or master workflow that can be used in building a recipe or workflow structure: procedure, unit procedure, operation, or phase.

What Is a Procedure?

The procedure is the highest level in the (recipe) hierarchy and defines the strategy for carrying out a major processing action such as making a batch. It is defined in terms of an ordered set of unit procedures.

What Is a Unit Procedure?

According to S88, a unit procedure consists of an ordered set of operations that causes a contiguous production sequence to take place within a unit. Only one operation is presumed to be active in a unit at any time. An operation is carried to completion in a single unit. However, multiple unit procedures of one procedure may run concurrently, each in different units.

However, PharmaSuite allows modeling and execution of parallel operations in compliance with general SFC rules.

What Is an Operation?

An operation is an ordered set of phases that defines a major processing sequence that takes the material being processed from one state to another, usually involving a chemical or physical change. It is often desirable to locate operation boundaries at points in the procedure where normal processing can safely be suspended.

What Is a Phase?

The smallest element of procedural control that can accomplish a process-oriented task is a phase.

What Is an SFC Graph?

PharmaSuite uses SFC graphs to model recipes and their structures.

Sequential function chart (SFC) programming offers a graphical method of organizing the program. The three main components of an SFC are steps, actions, and transitions. Steps are merely chunks of logic, i.e., a unit of programming logic that accomplishes a particular control task. Actions are the individual aspects of that task. Transitions are the mechanisms used to move from one task to another.

In PharmaSuite, steps are represented as building blocks.

What Is a Confidential Object?

The concept of confidential objects protects the intellectual property of recipes, workflows, custom building blocks, orders, ERP BOMs, and related data from unauthorized access. The system provides a specific access rights type to define access privileges that allow users to maintain protected recipes, workflows, and orders.

A master recipe or master workflow can be protected by assigning an explicit access privilege or inheriting the access privilege from the used ERP BOM or the selected material (product). Orders and workflows based on a protected master recipe or master workflow inherit the access privilege automatically. A user without the suitable access privilege is not able to

- view a protected master recipe or master workflow,
- start a protected order or workflow for execution,
- log in at a station on which a protected order or workflow runs,
- see a protected order or workflow in PharmaSuite for Production Responses,

- print the batch report, weighing report, or workflow report of a protected order or workflow,
- open a change request that contains a protected object,
- see any transaction history data created by a protected order or workflow.

If several confidential objects are linked with each other (for example, when a confidential building block is used in a recipe or a confidential workflow is assigned to an order), only the access privilege defined for the master object is required to access the linked objects with the master object as starting point. In order to link two confidential objects, they do not need to be protected by the same access privilege. A user, however, needs to have both access privileges to create the link.

Example scenario:

A workflow and an order require different access privileges. A user with access to both can assign the workflow to the order. Afterwards, another user who only has the access privilege of the order can print the batch report and review exceptions of the workflow as long as he starts the review from the order.

Screen Layout

The basic screen layout of Production Execution Viewer holds the following user interface components:

- menus (page 8) and toolbars (page 12) for accessing the functions of Production Execution Viewer
- Graph Window (page 13) with upper and lower tab bar navigation
- two navigation support windows, Map (page 17) and Explorer (page 16)
- Property window (page 18) for displaying the properties of workflow, order, and building block elements, their headers, and source building blocks
- Phase view (page 22) window for displaying how a phase will be rendered during execution
- status bar (page 22) with general information

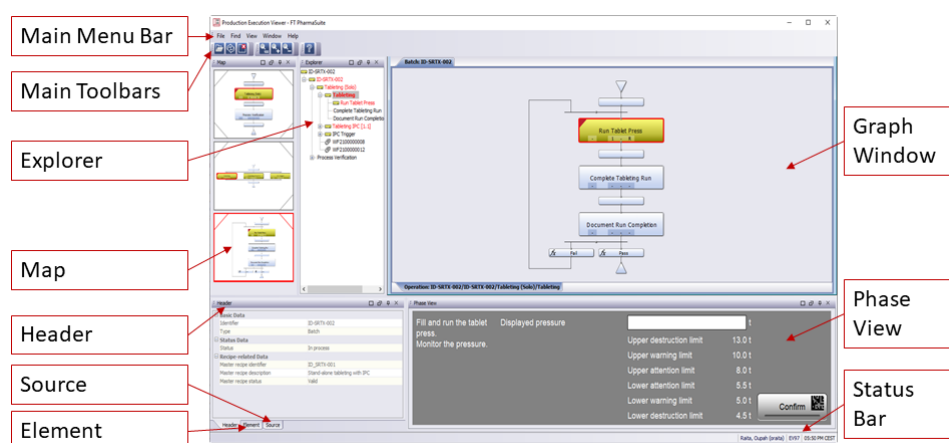


Figure 1: Screen layout of Production Execution Viewer

Panel Management

When you start Production Execution Viewer for the first time, it opens with the default screen layout, which holds the dockable main menu bar and main toolbars at the top, the Graph Window in the center of the screen, two dockable panels for Map and Explorer to the left of the Graph Window, and two dockable panels for the Phase view and the Property window at the bottom. You can, however, rearrange the panels if you prefer a different layout.

When you exit the system, Production Execution Viewer saves the current panel layout and will start your next session with this layout. You can, however, always revert back to the default layout (page 8).

To change the position and size of the panels, click a panel header bar and drag the panel to the desired position on the screen. The system displays the new panel size and position with a gray preview frame. Panels can be

- free floating
- docked horizontally or vertically
- nested into another panel, accessible for switching by tab.

TIP



To move a menu bar or a toolbar you have to use their drag handles, which are located at the left margins of horizontal bars and at the top margins of vertical bars. If you pull a toolbar out as floating panel, you can close the panel.

To reopen it, proceed as follows:



- Right-click anywhere on the menu bar to open a shortcut menu.
- Select the toolbar. The system displays it again at the location where you closed it before.

With the other functions of the shortcut menu, you can configure if the bars are **Rearrangeable**, **Hidable**, or **Floatable**.

Each panel header provides a toolbar for further panel resizing and movements:

  Maximize/restore

Maximizes a panel at its current position or restores it to its original size.

  Toggle floating

Floats or unfloats a panel. An unfloat panel reverts to its original position and size.


  Toggle auto-hide

Auto-hides a docked panel. It can be accessed by tab. If you revoke the auto-hide, the panel reverts to its original position and size.


 Close

Closes a panel. To reopen it, open the **View** menu and select the panel for display.

When the number of open tabs on a tab bar exceeds the available width of the tab bar, the system displays the following buttons to support your navigation:

 Scroll backward

Scrolls the tab bar to the left.

 Scroll forward

Scrolls the tab bar to the right.

 Close

Displays a list of all open tabs from which you can select a tab you wish to close. The currently active tab is indicated by bold font.

To manage your screen layout changes, the system provides the **Window** menu with the following functions:

- Undo layout change

Revokes the last layout change you have performed. You can undo up to 100 actions, thus you can step by step revoke the last 100 layout changes you have performed. Once you have performed a layout change, the menu function changes to a more precise description of the undo action, such as **Undo resizing** or **Undo dragging**.

- Redo layout change

Redoes the last layout change you have revoked with the **Undo layout change** function. You can redo up to 100 actions, thus you can step by step redo the last 100 layout changes you have revoked. Once you have performed a layout change, the menu function changes to a more precise description of the undo action, such as **Redo resizing** or **Redo dragging**.

- **Save user layout**
Saves the current window layout and overwrites the layout that was last saved by you on this computer.
- **Load user layout**
Loads the last layout you have saved on this computer with the **Save user layout** function.
- **Reset layout**
Resets the window layout to the system-defined default layout. This function does not affect the saved user layout, which can be restored with the **Load user layout** function.

Menus and Toolbars

You can access all relevant functions either from the menu bar in the main Production Execution Viewer window, from context-sensitive shortcut menus, or from toolbars provided for quick access to frequently used functions.

Menus

Production Execution Viewer provides a main menu bar (page 8) with all relevant functions as well as context-sensitive shortcut menus (page 11) for quick access to specific functions.

MAIN MENU BAR

The **main menu bar** offers the following menus and functions:

File

- **Open (CTRL+O)**
Opens the **Open** dialog (page 39) to select a component to be loaded into the Graph Window (page 13).
- **Refresh from database (F5)**
Refreshes the main component from the database.
- **Close <component identifier> (CTRL+F4)**
Closes the main component tab that is currently active in the upper tab bar. This action also closes all of its subordinate components tabs that may be open in the lower tab bar.
- **Close all (CTRL+SHIFT+F4)**
Closes all main components tabs that are currently open in the upper tab bar. This action also closes all of their subordinate components tabs that may be open in the lower tab bar.

- **Print report (CTRL+P)**
Opens the **Batch Production Record Report** of the order or the **Workflow Report** of the workflow, respectively, that is currently active in the upper tab bar.
- **Exit (ALT+F4)**
Closes the application window.

Find

- **Find (CTRL+F)**
In an SFC graph tab, opens the **Find Component** dialog to type a sequence of characters to search for in the components of the currently open order or workflow.
- **Find again (F3)**
In an SFC graph tab, finds the next occurrence in a component of the characters you typed in the **Find Component** dialog box.

View

- **Zoom to fit (CTRL+PERIOD)**
Sets the zoom factor of the currently active graph to fit the graph on the available screen space of the Graph Window.
- **Zoom to 100% (CTRL+1)**
Resets the zoom factor of the currently active graph to its default value.
- **Zoom in (CTRL+PLUS)**
Zooms in on the graph in the currently active tab, doubling its display size.
- **Zoom out (CTRL+MINUS)**
Zooms out from the graph in the currently active tab, reducing its size to half of its previous display size.
- **Show/hide grid (CTRL+G)**
Toggles the display of grid lines in the Graph Window.
- **Map (ALT+M)**
Toggles the display of the Map (page 17) for the currently active component.
- **Explorer (ALT+E)**
Toggles the display of the Explorer for the currently active component.
- **Element properties (ALT+R)**
Toggles the display of the **Element** property window of the currently active component.
- **Source properties (ALT+B)**
Toggles the display of the **Source** property window of the currently active component.

- **Header properties (ALT+H)**
Toggles the display of the **Header** property window of the currently active component.
- **Phase view (ALT+P)**
Toggles the display of the Phase view for the currently active component in Production Execution Viewer (page [22](#)).

Window

- **Undo layout change**
Revokes the last layout change you have performed. You can undo up to 100 actions, thus you can step by step revoke the last 100 layout changes you have performed. Once you have performed a layout change, the menu function changes to a more precise description of the undo action, such as **Undo resizing** or **Undo dragging**.
- **Redo layout change**
Redoes the last layout change you have revoked with the **Undo layout change** function. You can redo up to 100 actions, thus you can step by step redo the last 100 layout changes you have revoked. Once you have performed a layout change, the menu function changes to a more precise description of the undo action, such as **Redo resizing** or **Redo dragging**.
- **Save user layout**
Saves the current window layout and overwrites the layout that was last saved by you on this computer.
- **Load user layout**
Loads the last layout you have saved on this computer with the **Save user layout** function.
- **Reset layout**
Resets the window layout to the system-defined default layout. This function does not affect the saved user layout, which can be restored with the **Load user layout** function.

Help

- **Production Execution Viewer Help (ALT+F1)**
Opens a web browser to display the start page of the help system (page [42](#)).
- **About PharmaSuite**
Opens the **About PharmaSuite** dialog (page [40](#)).

SHORTCUT MENUS

There are four **shortcut menus** available, which you can access by right-clicking in the following screen locations:

Runs dialog table

- Open <building block identifier with run count>
Opens the selected run in a new tab on the lower tab bar.
- Reset sorting
Resets the columns to their initial positions and the order to sorting by identifier.

SFC graph tab of the Graph Window

- Go back (ALT+LEFT)
Returns to the previously active tab in the lower tab bar within the currently active main component.
- Go up (ALT+UP)
Moves to the next higher structure level.
- Close sub-tab (CTRL+W)
Closes the currently active tab of the lower tab bar.

Upper tab bar of the Graph Window

- Open (CTRL+O)
Opens the Open dialog to select a component to be loaded into the Graph Window. (page 13)
- Refresh <component identifier> from database (F5)
Refreshes the main component tab, that is currently active in the upper tab bar, from the database.
- Close <component identifier> (CTRL+F4)
Closes the main component tab that is currently active in the upper tab bar. This action also closes all of its subordinate components tabs that may be open in the lower tab bar.
- Close all but <component identifier> (CTRL+ALT+F4)
Closes all main component tabs except for the main component tab that is currently active in the upper tab bar.

Lower tab bar of the Graph Window

- Close all but <component identifier> (CTRL+ALT+W)
Closes all tabs that are currently open in the lower tab bar except for the tab that is currently active.

Toolbars

Production Execution Viewer provides several toolbars for context-sensitive quick access to specific functions.

MAIN TOOLBARS

The **main toolbars** (see "Toolbar Buttons" in Vol. 1) offer shortcuts to the more frequently required menu functions:

- File toolbar with
 - Open (page [23](#))
 - Refresh (page [23](#))
 - Close (page [23](#))
- View toolbar with
 - Zoom to 100% (page [24](#))
 - Zoom in (page [23](#))
 - Zoom out (page [24](#))
- Help toolbar with
 - Help (page [23](#))

Graph Window

The Graph Window is the main work area of Production Execution Viewer. It is where you monitor the finished, current, and upcoming steps of workflow or order execution with all their graph components.

When you open a workflow or order, the system opens a new tab in the upper tab bar above the Graph Window. The tab title has a blue background and displays the following information:

- the object type (workflow or batch order)
- the objects' identifier

On the main tab of the workflow or the order, all of its graphs, such as the workflow graph with its single procedure element, or the various graphs on subordinate structure levels are displayed as individual sub-tabs, which are located on the lower tab bar under the Graph Window.

You can have several workflows or orders open simultaneously and switch between them by clicking their respective tabs in the upper tab bar.

When the number of open tabs on a tab bar exceeds the available width of the tab bar, the system displays the following buttons to support your navigation:



Scroll backward

Scrolls the tab bar to the left.



Scroll forward

Scrolls the tab bar to the right.



Close

Displays a list of all open tabs from which you can select a tab you wish to close. The currently active tab is indicated by bold font.

Panning and Zooming the Graph Window

You can navigate any graph view by panning and zooming:

- To pan or move your current graph view, click anywhere on the background of the Graph Window and drag the graph into the desired direction.
- To move your current graph view vertically (up and down), CTRL+scroll your mouse wheel forward or backward, respectively.
- To move your current graph view horizontally (left and right), SHIFT+CTRL+scroll your mouse wheel forward or backward, respectively.
- To zoom in (enlarge) on your graph view, centered on your current mouse cursor position, scroll your mouse wheel forward.

- To zoom in (enlarge) on your graph view, centered on the Graph Window, CTRL+scroll your mouse wheel forward.
- To zoom out from your graph view, centered on your current mouse cursor position, scroll your mouse wheel backward.
- To zoom out from your graph view, centered on the Graph Window, CTRL+scroll your mouse wheel backward.

Selecting Components in the Graph Window

To select one or more components in your graph view you can either select each component individually or marquee-select a group of components by drawing a frame around them.

To select individual components, proceed as follows:

- To select a single component, left-click it.
- To add a single component to an existing selection, SHIFT+left-click it.
- To toggle the selection of a single component on or off, CTRL+left-click it.

To marquee-select a group of components, proceed as follows:

- To draw a marquee around a group of components, SHIFT+left-click on the background of the Graph Window and drag the frame until it fully covers all components you wish to select.

TIP

Please note that the marquee always has a rectangular shape. There is no freehand marquee available.

- To toggle the selection of a group of components, CTRL+left-click on the background of the Graph Window and drag the frame until it fully covers all selected components you wish to unselect.
- To extend an existing selection, CTRL+left-click on the background of the Graph Window and drag the frame until it fully covers all unselected components you wish to add to your current selection.
- To scroll the selection through the entire graph, thus selecting one component after another, from top to bottom and left to right, starting at the currently selected component, ALT+scroll your mouse wheel forward. To reverse the direction ALT+scroll backward.

Components Statuses

In Production Execution Viewer there are four different statuses that are visible for all components shown in the Graph Window, and represent the current status of the components during execution in PharmaSuite for Production Execution:

- Not started
Blue background color indicates that the component has not started processing in PharmaSuite for Production Execution.
- In process
Yellow background color indicates that the component is being processed in PharmaSuite for Production Execution.
If an exception has been recorded for the component, it displays a red exception marker in the upper left corner.
- Finished
Gray background color indicates that the component has completed processing in PharmaSuite for Production Execution.
If an exception has been recorded for the component, it displays a red exception marker in the upper left corner.
- Canceled
Gray background color with a red exception marker in the upper left corner, indicates that processing of the component has been canceled in PharmaSuite for Production Execution.

Navigation Support Windows

Production Execution Viewer provides two dockable windows to support your navigation through your workflows, orders, building blocks, and their components.

Explorer

The Explorer window displays the structure of the currently active workflow, order, or building block in the form of a tree view. The elements are ordered by their location in the graphs, from top to bottom and left to right. In the tree view, the system applies dark blue highlighting and bold white typeface to the structure level displayed in the Graph Window and indicates the current focus by italics.

The status data of the elements is color indicated:

- Finished elements are in red and followed with a grey square icon.
- In process elements are in black and followed with a yellow square icon.

The elements in the tree view of the Explorer, that are located in a loop or event-triggered operations shows:

- In parentheses between the status icon and the identifier:
The number of Runs that have been executed.
- In a square bracket after the identifier:
The count of the currently active Run.

The Explorer tree uses the following marker icons:

- The **Active component** marker (page 24) indicates that the element is currently active.
- The **Appended workflow** marker (page 24) indicates that the element is a workflow appended to the order under whose node it is shown.
- The **Appended workflow (no access right to view)** marker (page 24) indicates that the element is a workflow appended to the order under whose node it is shown, but the currently logged-in user has no access right to view it.
- The **Completed component** marker (page 24) indicates that processing of the element has already been completed.

To use the tree view of the Explorer for navigation within your recipe or building block, proceed as follows:

- Single-click an element in the tree to open the graph that contains the element in the active Graph Window. The element itself is selected in the Graph Window.
- CTRL+single-click an element in the tree to open the graph that contains the element in a new graph tab. The element itself is selected in the Graph Window.
- Double-click an element in the tree to open its graph in the active graph tab.
- CTRL+double-click an element in the tree to open its graph in a new graph tab.

Map

The Map window provides an overview of the graph structure you are working on. It consists of three overview frames, one for each structure level that holds a graph. The structure levels are differentiated by the number of corners that have a line drawn across them:

- the procedure level with the graph of unit procedures, indicated by four crossed corners
- the unit procedure level with the graph of operations, indicated by three crossed corners
- the operation level with the graph of phases, indicated by two crossed corners.

Each frame shows the entire graph on its respective structure level, depending on the hierarchy level of the currently active tab in the Graph Window. So, if you have a procedure tab of a master recipe active in your Graph Window, you only see the graph of unit procedures in the top frame, while the two lower frames remain empty. On the other hand, if you have an operation tab active in your Graph Window, you see the graph of phases in the bottom frame, the graph of operations in the middle frame, and the graph of unit procedures in the top frame.

The frame that displays the active Graph Window tab is indicated by a colored border. In the frames that show a higher level of the hierarchy, a colored border indicates the parent component of the respective lower graph.

A Map frame displays a selection frame that reflects the graph section visible in the Graph Window. If the graph section is large enough, the selection frame only becomes visible when you change the zoom factor or pan the graph section. To use the frames of the Map for panning, zooming, and navigating the graphs of your recipe, proceed as follows:

- SHIFT+click and drag to draw a new selection frame whose content will be displayed in the Graph Window.
- Click and drag to move an existing selection frame, thus panning the graph section.

- Click and drag the side or corner handles of the selection frame to resize it.
- Click anywhere in a frame to set this position as center of the selection frame.
- Double-click a step in the top and center frames to open its graph on the next lower hierarchy level.
- CTRL+double-click a step in the top and center frames to open its graph on the next lower hierarchy level in a new graph tab.
- Click the center or top frame while you have the bottom frame active to update the Graph Window with the higher-level graph of the clicked frame.

Property Windows

You can access the properties of the workflow, order or building block headers (page 18) and elements (page 19), as well as the source (page 21) building blocks on which they are based from their respective property windows.

Header

The **Header** window for workflows and orders lists the specific properties and the status of the object type that is currently displayed in the Graph Window:

- order header (page 18)
- workflow header (page 19)

ORDER

The **Header** window for orders lists the specific properties and the status of the order that is currently displayed in the Graph Window.

TIP

Please note that properties are not editable within Production Execution Viewer

The following properties are available for orders:

- Identifier
Defined during creation of the order.
- Type
Indicates that the currently open object is a batch order.
- Status
Indicates the order's current status.
- Recipe-related data
Shows the identifier, description, and status of the master recipe on which the order is based.

WORKFLOW

The **Header** window for workflows lists the specific properties and the status of the workflow that is currently displayed in the Graph Window.

TIP

Please note that properties are not editable within Production Execution Viewer

The following properties are available for master recipes:

- Identifier
Defined or generated during creation of the workflow.
- Type
Indicates that the currently open object is a workflow.
- Status
Indicates the workflow's current status.
- Workflow-related data
Shows the identifier, description, and status of the master workflow on which the workflow is based.

Element Property Window

The **Element** window lists the specific properties of the component selected in the Graph Window.

TIP

Please note that there are no element properties available for transitions, start and end steps, or branches.

- Identifier
Usually defined during recipe or workflow creation in Recipe and Workflow Designer.
- Unit procedure
Only available for operations and phases.
Identifier of the component's unit procedure.
- Operation
Only available for phases
Identifier of the phase's operation.
- Status
Not available for phases.
Indicates the component's current status.

- Created at
Indicates the component's creation date and time.
- Completion time
Indicates the component's completion date and time, once its status is Completed.
- Basic attributes
Not available for procedures.
Station and work center the component is being processed in PharmaSuite for Production Execution.
For phases, the device is indicated as well.
- Recipe-related data
Only available for orders.
Lists the identifier and description of the selected component.
- Workflow-related data
Only available for workflows.
Lists the identifier and description of the selected component.

Source Property Window

The **Source** window lists the properties of the building block on which the element (page 19) is based. The building block properties can only be viewed.

TIP

Please note that there are no source properties available for transitions, start and end steps, or branches.

The Custom Source properties of a building block are only available if the building block is a stand-alone element and based on a custom building block.

It lists the basic data of the source system building block and relevant usage information:

- Identifier
Defined during building block creation.
- Revision
Indicates the number of revisions performed on the component.
- Copied on
Indicates the date and time when the custom building block was drawn into the graph.
- Status at copy
Indicates the status the custom building block had when it was drawn into the graph.

The System Source properties of a phase indicate important characteristics that are relevant to where and how the phase can be used.

- Identifier
- Short description

Phase View

The **Phase view** window displays how a phase is rendered in PharmaSuite for Production Execution when the recipe is processed on the shop floor:

- For phases that have not been started yet or are currently running, it shows the phase preview.
- For phases that have been completed, it shows the completed view of the phase.
- For phases that do not have a user interface, such as server-run phases, the system displays a corresponding message instead.
- For phases for which an exception was recorded, it shows the completed view of the phase with an exception marker in the upper left corner.

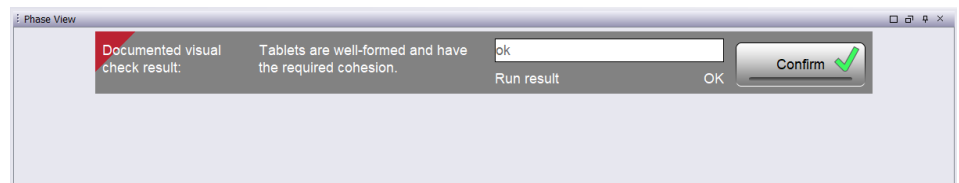


Figure 2: Phase view with exception marker

TIPS

Please note that not all phase data may already be available for preview. If missing data prevents the display of a phase's completed view, the system shows only the preview for all statuses of the phase.

Status Bar

The status bar provides general information such as the logged-in user with his full name, the database name, and the local time and time zone information.

Graphical Elements

The following lists contain all buttons, marker icons, and cursors used in Production Execution Viewer.

Toolbar Buttons

Action buttons available in the toolbars:



Close

Located on the File toolbar, it closes the main component tab that is currently active in the upper tab bar. This action also closes all of its subordinate component tabs that may be open in the lower tab bar.



Help

Located on the Help toolbar as well as on some dialogs, it opens a web browser to display the context-sensitive help of Production Execution Viewer (page [42](#)).



Open

Located on the File toolbar, it opens the **Open** dialog of Production Execution Viewer (page [39](#)) to select a component for opening it in the Graph Window.



Refresh from database

Located on the File toolbar, it synchronizes the database snapshot of all the open components in the upper tab bar, with the central database.



Zoom in

Located on the View toolbar, it zooms in on the graph in the currently active tab, doubling its display size.



Zoom out

Located on the View toolbar, it zooms out from the graph in the currently active tab, reducing its size to half of its previous display size.



Zoom to 100%

Located on the View toolbar, it resets the zoom factor of the currently active graph to its default value.

Dialog Buttons

Action buttons available on the dialogs of Production Execution Viewer:



Help

Located on the **Search** panel of the data tools (page 37), it opens a web browser to display the context-sensitive help of Production Execution Viewer (page 42).



Refresh from database

Located on the **Search** panel of the data tools (page 37), it synchronizes the database snapshot taken at the beginning of the search and filter operation with the central database.

Marker Icons

Marker icons displayed in Production Execution Viewer:



Active component

Displayed in the explorer panel of Production Execution Viewer, it indicates a component that is currently active.



Appended workflow

Displayed in the explorer panel of Production Execution Viewer, it indicates a workflow that is appended to a batch order. The workflow can be viewed by double-clicking the icon.



Appended workflow (no access right to view)

Displayed in the explorer panel of Production Execution Viewer, it indicates a workflow that is appended to the batch order where the user has no access right to view it.



Completed component

Displayed in the explorer panel of Production Execution Viewer, it indicates a component that has been completed.

Detachable

Displayed on operation or unit procedure building block images in the Graph Window, it indicates that the operation holds the **Detachable** capability.

Has condition

Displayed on the individual transition images in the Graph Window, it indicates that a specific condition has been defined for the transition.

Cursors

Cursors displayed while working in the Graph Window:

Pan

Indicates that you can click and drag to pan the Graph Window.

Select

Indicates that you can

- click to select the component over which the cursor hovers
- SHIFT-click and drag to draw a marquee for selecting a group of components.

Wait

Indicates that the system is currently busy.

-
-
- FT PharmaSuite® - Production Execution Viewer
-
-

Keyboard Operation

Control by keyboard is primarily necessary for navigation and editing purposes.

Screen Area Shortcuts

Use the following keys and keyboard shortcuts to navigate the screen areas of Production Execution Viewer:

Explorer Tree:

- ENTER/SPACEBAR
Triggers a single-click action that updates connected screen area of the Graph Window for the Explorer tree.
- CTRL+LEFT ARROW
Collapses the selected tree node or, if the node is collapsed, moves the focus to its next parent object.
- CTRL+RIGHT ARROW
Expands the selected tree node or, if the node is expanded, moves the focus to its first child object.
- UP/DOWN ARROW
Navigates between the tree nodes.

Graph Window:

- ALT+LEFT ARROW
Opens or moves to the previously active tab within the currently active workflow or order. Step by step, you can backtrack up to the first tab you have opened.
- ALT+RIGHT ARROW
Becomes active after you have used the ALT+LEFT ARROW shortcut. Step by step, it revokes the action of backtracking to the previously active tab, thus opening or moving to the respective tabs. Once you have reached the tab from which you started the initial backtracking, the shortcut becomes inactive.
- ALT+UP ARROW
Opens or moves to the tab that is one hierarchy level up from the active tab.

- CTRL+I
Resets the zoom factor of the currently active graph to its default value.
- CTRL+MINUS
Zooms out from the graph in the currently active tab, reducing its size to half of its previous display size.
- CTRL+PERIOD
Sets the zoom factor of the currently active graph to fit the graph on the available screen space of the Graph Window.
- CTRL+PLUS
Zooms in on the graph in the currently active tab, doubling its display size.

Framework Navigation Shortcuts

Use the following keyboard shortcuts to navigate the general framework of Production Execution Viewer:

- ALT+B
Toggles the display of the **Source** property window (page 21) of the currently active component.
- ALT+E
Toggles the display of the Explorer (page 16) for the currently active component.
- ALT+F1
Opens the start page of the help system (page 42) of Production Execution Viewer.
- ALT+F4
Closes the application window.
- ALT+H
Toggles the display of the **Header** property window (page 18) of the currently active component.
- ALT+M
Toggles the display of the Map (page 17) for the currently active component.

- ALT+P
Toggles the display of the Phase view (page 22) for the currently active component.
- ALT+R
Toggles the display of the **Element** property window (page 19) of the currently active component.

Action Shortcuts

Use the following keyboard shortcuts to handle the actions available for objects in Production Execution Viewer:

- CTRL+A
In a dialog table, selects all rows of the table.
- CTRL+ALT+W
Closes all tabs that are currently open in the lower tab bar except for the tab that is currently active.
- CTRL+F
In an SFC graph tab, opens the **Find Component** dialog to type a sequence of characters to search for in the components of the currently open graph.
- CTRL+F4
Closes the main component tab that is currently active in the upper tab bar. This action also closes all of its subordinate components tabs that may be open in the lower tab bar.
- CTRL+G
Toggles the display of grid lines in the Graph Window.
- CTRL+J
In the **Runs** dialog, opens all selected runs in new tabs in the lower tab bar and closes the **Runs** dialog.

- CTRL+P
 - For workflows, opens the **Workflow Report** of the workflow that is currently active in the upper tab bar.
 - For batch orders, opens the **Batch Production Record Report** of the batch order that is currently active in the upper tab bar.
- CTRL+SHIFT+F4

Closes all main components tabs that are currently open in the upper tab bar. This action also closes all of their subordinate components tabs that may be open in the lower tab bar.

Dialog Boxes

The system displays information messages, warnings, error messages, and some types of signature requests as modal dialog boxes on top of the application. The following keys are available for navigating and operating dialog boxes:

- ENTER

For buttons, triggers a single-click action on the default button.
- ESC

Cancels the dialog and closes the dialog box.
- SPACEBAR

For buttons, triggers a single-click action on the focused button.
- TAB

Navigates along the defined navigation path, moving the focus between input boxes and buttons.

Basic Operations

The following sections describe basic and recurring operations and functions in Production Execution Viewer.

Start, Login, Logout, and Password Change

Before you can start working with PharmaSuite your system administrator must have created a user account for you. The PharmaSuite administrator will inform you of your login name and initial password.

Depending on your company policy you may be forced to change your password when you log in for the first time. In this case, the system will display a message that indicates that your password has expired. Then the system will prompt you to change it (page 35).

Start PharmaSuite

To start PharmaSuite double-click the respective icon on the user interface or select it from the start menu. The system displays the webstart page in a browser window, from which you can select to start an application or view either the help system or the documentation.

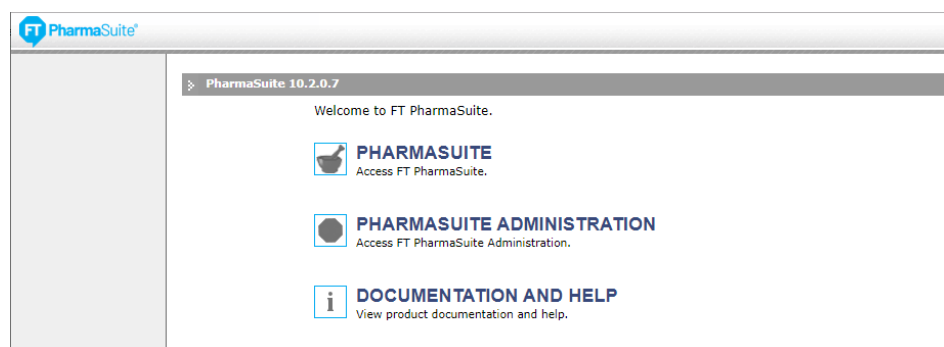


Figure 3: PharmaSuite webstart page

Login

When you select to start PharmaSuite it runs through an initialization phase in the course of which you will also see the splash screen of Shop Operations, which is the internal platform of PharmaSuite. As soon as the initialization phase has been completed, the login form for user login appears.

The login form contains two mandatory fields, one for the login name and one for the password. Your login name and your password are unique for all PharmaSuite applications and are linked to your role and user privileges.

Type your login name and password in the respective boxes. Please note that your password is masked by asterisks (*). Click the **OK** button to complete the login procedure. If your login attempt is not successful, a message appears, and you have to repeat the procedure.

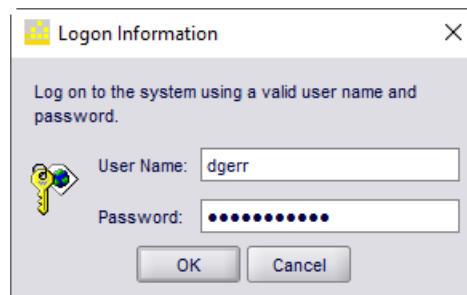


Figure 4: Login form

After you have successfully logged in, the system displays the PharmaSuite welcome page. From here you can start the Production Execution, Production Execution Viewer, Production Management, Data Manager, Recipe and Workflow Designer, and Production Responses applications, change your password and work station, or access the system documentation and help.



Figure 5: PharmaSuite welcome page

TIP

Please note that logins can be linked to access rights, which means that you can only start an application if your system administrator has assigned the suitable access privileges to you.
Some logins, especially in the production execution environment, are directly connected to an application and work station. This means that the welcome page will be skipped, and the application will start directly after you have successfully logged in.

Logout

In Production Execution Viewer, from the **File** menu, select the **Exit** function or use the ALT+F4 keyboard shortcut to quit the application.

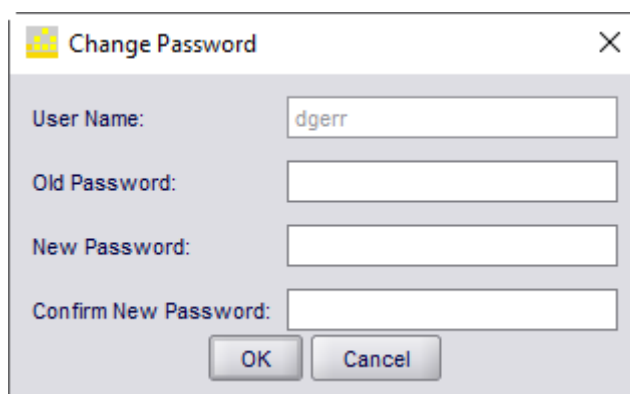
On the PharmaSuite welcome page, the **Logout** button is also located in the top right corner. Click it to return to the webstart page.

If you decide to log out from a running application, the system will request you to confirm the decision and also warn you if there is any unsaved data you may want to save before you log out.

Password Change

You can access the function for changing your password from the PharmaSuite welcome page.

1. Click the **Change Password** link to open the **Change Password** form.
When your password expires the system will open the form automatically. This can also happen when you log in for the first time to force you to change the initial password, which your system administrator defined for you.
2. On the **Change Password** form, the **User Name** box is output-only and contains your login name.
3. Type your current password in the **Old Password** box.
4. Type your new password first in the **New Password** box and then in the **Confirm New Password** box.
For security reasons, passwords are masked by asterisks (*).
5. Click the **OK** button to close the form.
From now on, use the new password to log in.



The screenshot shows a 'Change Password' dialog box. The title bar includes a yellow icon and the text 'Change Password'. The dialog contains four input fields: 'User Name' (pre-filled with 'dgerr'), 'Old Password', 'New Password', and 'Confirm New Password'. At the bottom are 'OK' and 'Cancel' buttons.

Figure 6: Change password

REQUIRED SERVERS

For providing its full functional scope, PharmaSuite relies on the following servers that are responsible for communication to external systems or between its applications.

- **Electronic Batch Recording (EBR) server**
It controls the execution of EBR recipes and workflows and can process incoming messages from a Distributed Control System.
- **Triggered Operation Management (TOM) server**
It manages event-triggered operations.
- **Operation Execution (OE) server**
It controls the execution of server-run operations.
- **Automation Integration (AI) server**
It controls the communication with automation-related systems.
- **Transition server**
It performs automatic, system-triggered status changes on objects, such as master recipes, master workflows, batches, orders, workflows, or equipment entities and can process incoming messages from external systems, such as a Quality Management System or Warehouse Management.

PharmaSuite runs a heartbeat check on the servers to monitor their availability. To see if there are any issues, open the **About PharmaSuite** dialog (page 40), which shows the status of the EBR server. For information on the other servers, open the **Details** dialog (page 41) and refer to the section that indicates servers with heartbeat issues.

Data Tools

When you view workflows and orders in Production Execution Viewer, you are working on individual data records that are stored in the database, which you need to access. For these situations, Production Execution Viewer supports you with tools for searching (page 38) and filtering (page 37) lists of data objects it has retrieved from the database and provides sorting (page 38) functions you can apply to all tabular displays of data objects.

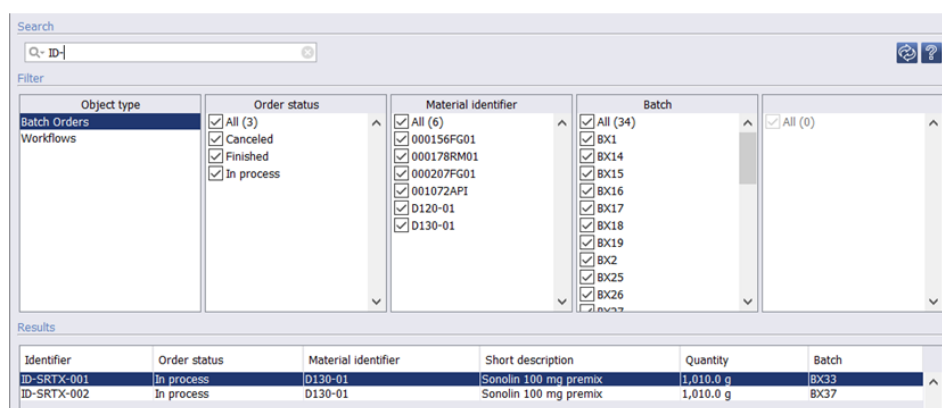


Figure 7: Search and filter tools

Filtering

The **Filter** tool is hierarchically organized into search categories that make refining your search fast and easy.

1. In the first column, select the type of the database objects you are searching. The system displays all database objects of this type in the **Results** list.

TIP

If the **Object type** is defined by the context from which you have opened the form, the column only provides corresponding values.

2. Depending on the selected object type, the system provides further search categories. Select or unselect one, several, or all of the options available in the first column to the right of the **Object type** to reduce the number of objects displayed in the **Results** list.
3. To further refine your search result, move to the next category column and select or unselect its options as required. The system applies your choices as additional filter and displays the subset of remaining objects in the **Results** list.

TIP

Please note that Production Execution Viewer takes a snapshot of the database when you access an object type. This means that the filter tool will remain unaware of changes made to database objects or new objects added by other users while you browse through the data of this object type. To synchronize the snapshot with the central database, click the **Refresh from database** button.

Searching

The **Search** tool provides you with a fast and efficient way to locate items with specific content in the pre-filtered **Results** list:

- In the input box, type the string of characters that will be applied to the **Results** list. The search becomes effective with the second character.
- To clear the input box, click the **Cancel** icon that appears when you have typed the first character in the box.

TIP

By default, the search is not case-sensitive and runs over all columns of the **Results** list. Click the magnifying glass icon to restrict the search to specific columns, set the search criteria to be case-sensitive, or allow the use of wildcards.

Sorting

By default, the sort order of a data table depends on the type of data objects it displays. It is, however, possible to change the sort order, sort by another column, and sort by two or more columns as primary, secondary, and further levels. Additionally, you can reorder the table columns themselves.

- To adjust the sorting, proceed as follows:
 1. Click any column header to sort the table by this column in ascending order. The system indicates the sort order with a triangle pointing up.
 2. Re-click the same column header to switch the sort order to descending. The system indicates the sort order with a triangle pointing down.
 3. CTRL-click a yet unmarked column header to add this column as further sort level in ascending sort order, indicated by the triangle pointing up and the count number indicating the sort level.
 4. Re-CTRL-click the same column header to switch the sort order to descending without changing its sort level.
- To reorder the table columns, click a column header and drag it to the desired position in the table.

Working with Production Execution Viewer

Based on the concepts of the S88 and S95 standards, Production Execution Viewer provides the functions for viewing recipes and workflows with their component building blocks as they are being executed with PharmaSuite for Production Execution. It includes information on individual component runs, exceptions, phase outputs, and reports.

Dialogs

Production Execution Viewer uses dialogs or pop-up windows on top of its basic screen areas to cover a variety of functions:

- Open (page 39) dialog for quick access to database objects to be used in Production Execution Viewer
- Dialogs of the print functions (page 46)
- Context-sensitive Help system (page 42)
- About dialog (page 40) for further information on PharmaSuite and its system environment.

Open Dialog

The **Open** dialog supports you with choosing the workflow or order you wish to open in the Graph Window.

Use the and tools to restrict the number of items shown in the **Results** list.

The **Results** list displays all search and filter results and is updated along with each change to the search or filter criteria.

By default, the list is sorted alphabetically with respect to the **Identifier** column of the object, but you can adjust both the sort and the column order (page 38)

- Locate and double-click the data object you wish to open for use in Production Execution Viewer.

The system closes the dialog and displays the opened object in the Graph Window.

About PharmaSuite

The **About PharmaSuite** function opens the **About PharmaSuite** dialog to display system-related information, such as the current system version and build, the logged-in user, work center, and database-related information.

TIP

Please note that the dialog also indicates the **EBR server state**. Only when the EBR server is available can orders or workflows be processed in PharmaSuite for Production Execution.

Click the **Details** button to view more specific technical information on the system and its environment.

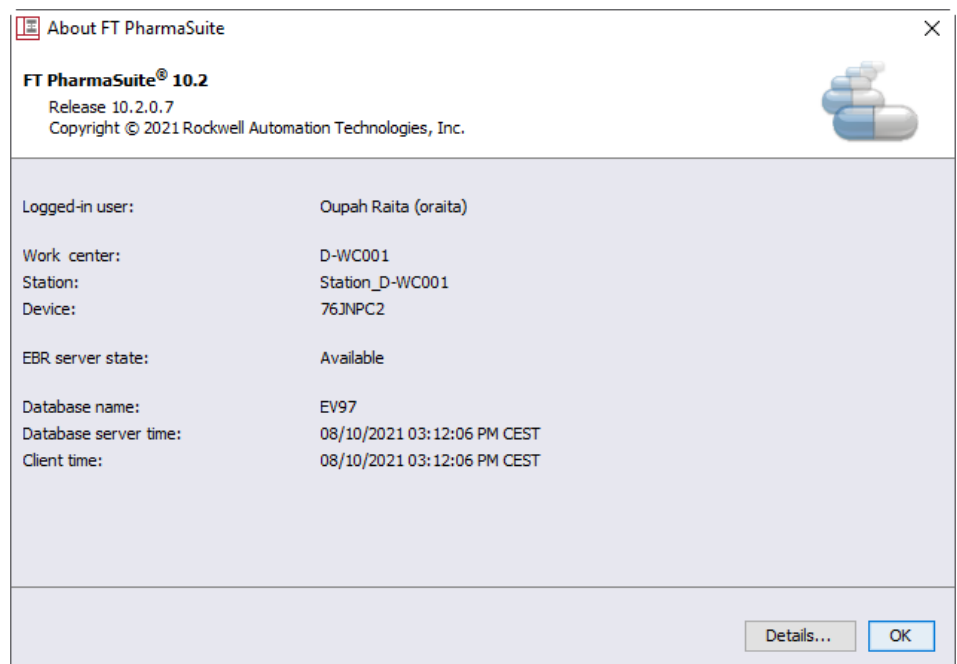


Figure 8: About dialog

DETAILS

From the **PharmaSuite Installation Details** dialog, you can copy the listed detail data to the clipboard.

TIP

Please note that the path to the PharmaSuite log files is given in the last section of the listed detail data.

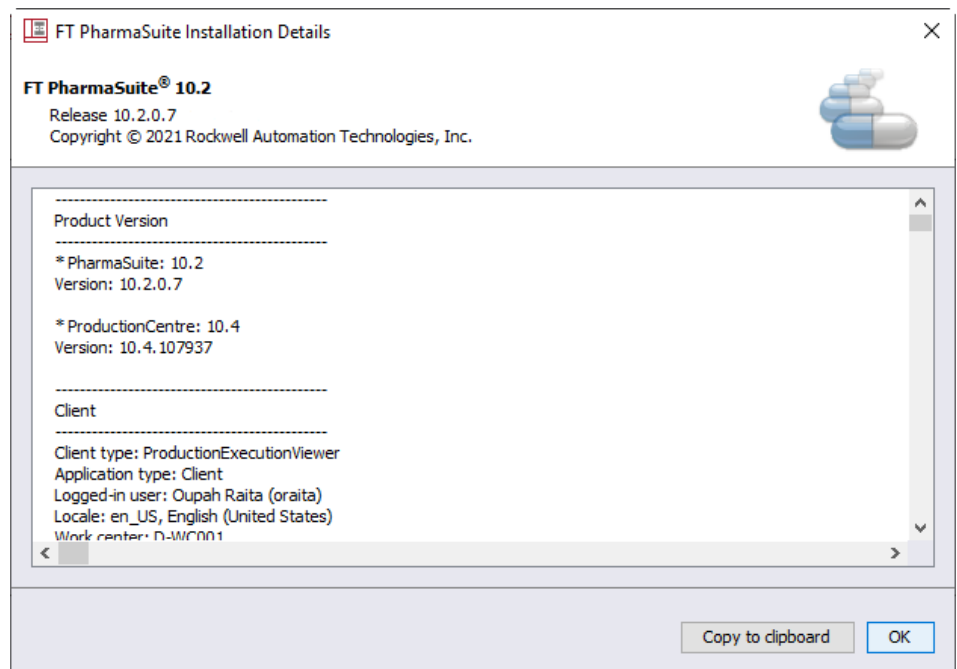


Figure 9: PharmaSuite Installation Details

Help Access

The help system of Production Execution Viewer is context-sensitive on panel and window level and, in the Graph Window, on component level. This means that clicking the help button or pressing the F1 key opens a help window that displays information relevant to the panel or graph component you have currently focused. The help window is non-modal and resizable.

In order to access other topics than the one directly related to the current context, use the navigation arrows located at the top of the help page, or related topic links located at the bottom of the page, if available.

The following additional features support your use of the help system:

- To access an overview of all available topics, open the **Contents** tab in the **Contents and Index** frame. The system additionally provides **Expand all** and **Collapse all** buttons to facilitate easier navigation in the contents tree.
- To access the index, open the **Index** tab in the **Contents and Index** frame.
- To use the **Search** function
 1. type the term you are looking for in the **Search** box and
 2. click the **Search** button or press the ENTER key.The system will display all occurrences of the search term in a third tab in the **Content and Index** frame.
- To print the page that is currently displayed in the help window, click the **Print this page** button. The system displays a print preview of the page along with the default Windows **Print** dialog.

TIP

Please note that printing is only available from the stand-alone format of the help system and not from within the application.

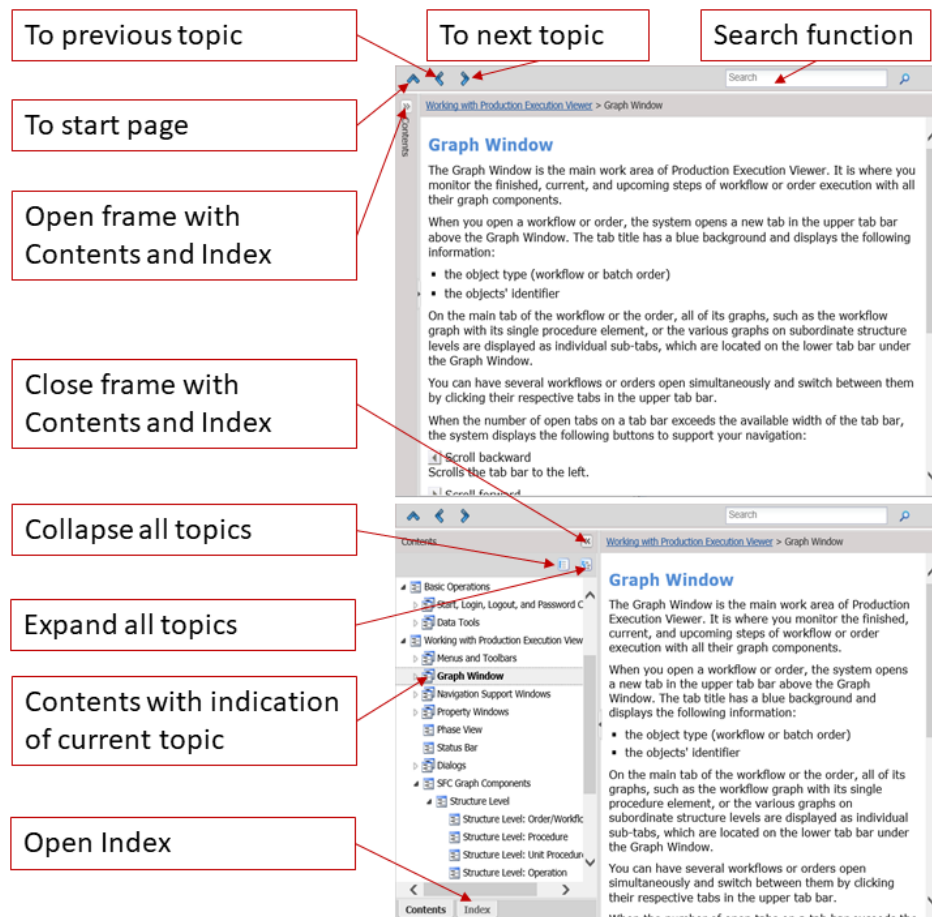


Figure 10: Help window navigation

Exceptions Dialog

The **Exceptions** dialog displays all exceptions that have been recorded for the selected component including all components on lower structure levels.

Exceptions are listed with the following information:

- **Mark**
Displays the bookmark icon if it is assigned to the exception.
- **Identifier**
System-generated identifier of an exception. As the identifiers are generated per unit procedure, the same number can appear twice, once for an order's unit procedure and once for an assigned workflow.
- **Exception/comment**
Description text recorded with the exception/comment.
- **Status**
Review status of the exception (**Open**, **In review**, **To be closed**, **Closed**, **N/A** (read-only), and **---** for comments).

- **Category**
Creation type of the exception (**System-triggered**, **User-triggered**, **Post-completion**, **User-defined**, and --- for comments).
- **Risk**
Result of the risk assessment performed for the exception (**High**, **Medium**, **Low**, **None**).
- **Classification**
Classification for the exception, such as **Information only** or **Machine error**.
- **Reference**
Path to the specific recipe or workflow component for which the exception was recorded. To access context information of an exception recorded in the corresponding batch or workflow report, double-click the blue link.
For comments, the column always shows ---.
- **Signatures**
The signature (first name, last name (login name)) is displayed with its meaning and the timestamp taken when an exception is recorded. For double signatures, both signatures are displayed.

Exceptions								
Mark	Identifier	Exception / comment	Status	Category	Risk	Classific...	Reference	Signatures
	001	Run due for processing. Reminder time for current run: 03:19 PM	Open	System-trigge red	None	---	WF2100000110/Ambient Conditions Check/Data Collection [1.2]	--- (System) N/A 08/05/2021 03:19:19 PM CEST
	002	Run overdue for processing. Overdue time for current run: 03:20 PM	Open	System-trigge red	None	---	WF2100000110/Ambient Conditions Check/Data Collection [1.2]	--- (System) N/A 08/05/2021 03:20:19 PM CEST
	003	Run due for processing. Reminder time for current run: 03:21 PM	Open	System-trigge red	None	---	WF2100000110/Ambient Conditions Check/Data Collection [1.3]	--- (System) N/A 08/05/2021 03:21:19 PM CEST
	004	Run expired. Expiry time for current run: 03:21 PM	Open	System-trigge red	High	---	WF2100000110/Ambient Conditions Check/Data Collection [1.2]	--- (System) N/A 08/05/2021 03:21:19 PM CEST
	005	Run due for processing. Reminder time for current run: 03:23 PM	Open	System-trigge red	None	---	WF2100000110/Ambient Conditions Check/Data Collection [1.4]	--- (System) N/A 08/05/2021 03:23:19 PM CEST
	006	Check to be performed elsewhere. Operation (Data Collection) was detached.	Open	User-triggere d	High	---	WF2100000110/Ambient Conditions Check/Data Collection [1.4]/Analyze Sensor Readings	Cupah Raita (oraita) Tester 08/05/2021 03:24:45 PM CEST
	007	Check to be performed elsewhere. Operation (Data Collection) was detached.	Open	User-triggere d	High	---	WF2100000110/Ambient Conditions Check/Data Collection [1.5]/Record Sensor Readings	Cupah Raita (oraita) Tester 08/05/2021 03:25:39 PM CEST
	009	Run due for completion. Finish due reminder time for current run: 03:26 PM	Open	System-trigge red	High	---	WF2100000110/Ambient Conditions Check/Data Collection [1.4]	--- (System) N/A 08/05/2021 03:26:19 PM CEST
	010	Run overdue for completion. Finish Overdue time for current run: 03:27 PM	Open	System-trigge red	High	---	WF2100000110/Ambient Conditions Check/Data Collection [1.4]	--- (System) N/A 08/05/2021 03:27:19 PM CEST

Figure 11: Exceptions dialog

Phase Outputs Dialog

The **Phase Outputs** dialog provides all phase-specific outputs that have been recorded for the selected phase. Phase outputs are only available for completed phases.

TIP

Please note that the generic output variables that are available for all phases (**Identifier**, **Instance count**, **Start time**, **Completion time**) are not included in the list of phase outputs.

The data of the output variables is presented as **Name** and **Value** pair.

- The output variables are listed in alphabetical order.
- If the system has not recorded a value for an output variable, its value is shown empty.
- The value of an output of the IMESS88Equipment data type contains the identifier of the equipment.
- An output variable of the PhaseDataReference data type is not displayed.
- The name of a bundle output variable is a concatenation of the bundle identifier and the output variable display name.

TIP

Please note that the Phase Outputs dialog for all displayed data types allows you to copy the variable values.

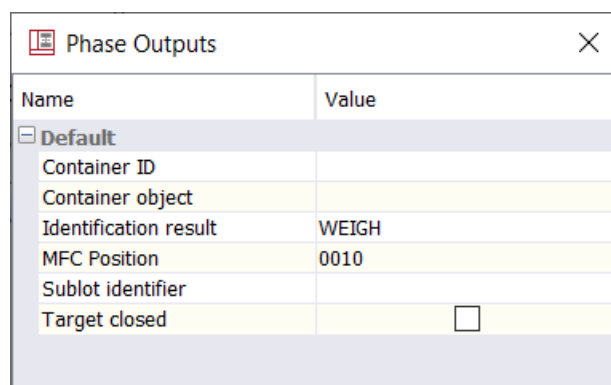


Figure 12: Phase Outputs dialog

Print Dialogs

Production Execution Viewer provides functions to preview, save, and print several types of reports

- Batch or workflow report (page 46), depending on whether you are viewing an order or a workflow
- Structure level-specific sub-report (page 49) of a selected component.

BATCH/WORKFLOW REPORT

Production Execution Viewer provides a main function to support you with printing and saving a workflow or order report:

From the **File** menu (page 8), select the **Print report** function to open the print preview of the Batch Production Record Report or the Workflow Report.

The title of the **Batch Report** dialog shows the batch identifier, process order identifier, and material identifier. It provides standard print preview functions that allow you to print to a connected printer, page through the report, or resize and zoom the displayed pages.

Batch Report for ID-SRTX-002

67.54%

BATCH PRODUCTION RECORD REPORT

 Batch BX37
Process order ID-SRTX-002
Material D130-01 / Sonolin 100 mg premix

Batch Production Record Report

Batch	BX37	
Order status	In process	
Planned quantity	1,010.0 g	
Actual start	05/28/2021 01:59 PM CEST	
Actual finish	N/A	
Reviewed by		
Review comment		

 Printed by: orata (Raita, Oupah) Database: EV97
Printed from: Station_D-WC100 / D-WC100 Printed on: 06/11/2021 07:42:18 AM CEST Page 1 of 7
06/11/2021 07:42:18 AM CEST

Figure 13: Batch Report

The title of the **Workflow Report** dialog shows the master workflow identifier and a workflow identifier. It provides standard print preview functions that allow you to print to a connected printer, page through the report, or resize and zoom the displayed pages.

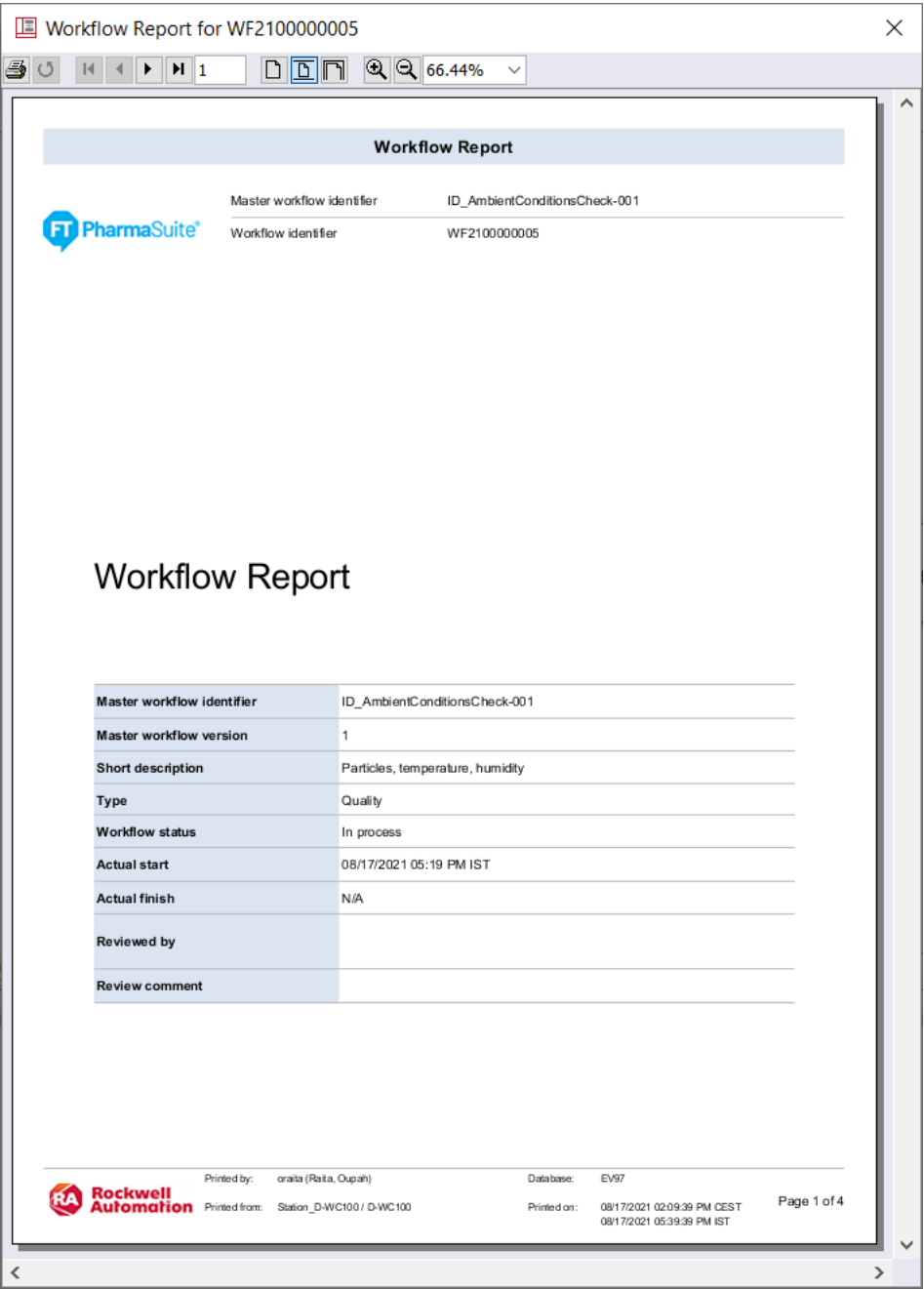


Figure 14: Workflow Report

LEVEL-SPECIFIC SUB-REPORT

For every procedural level, Production Execution Viewer provides access to printing a level-specific sub-report.

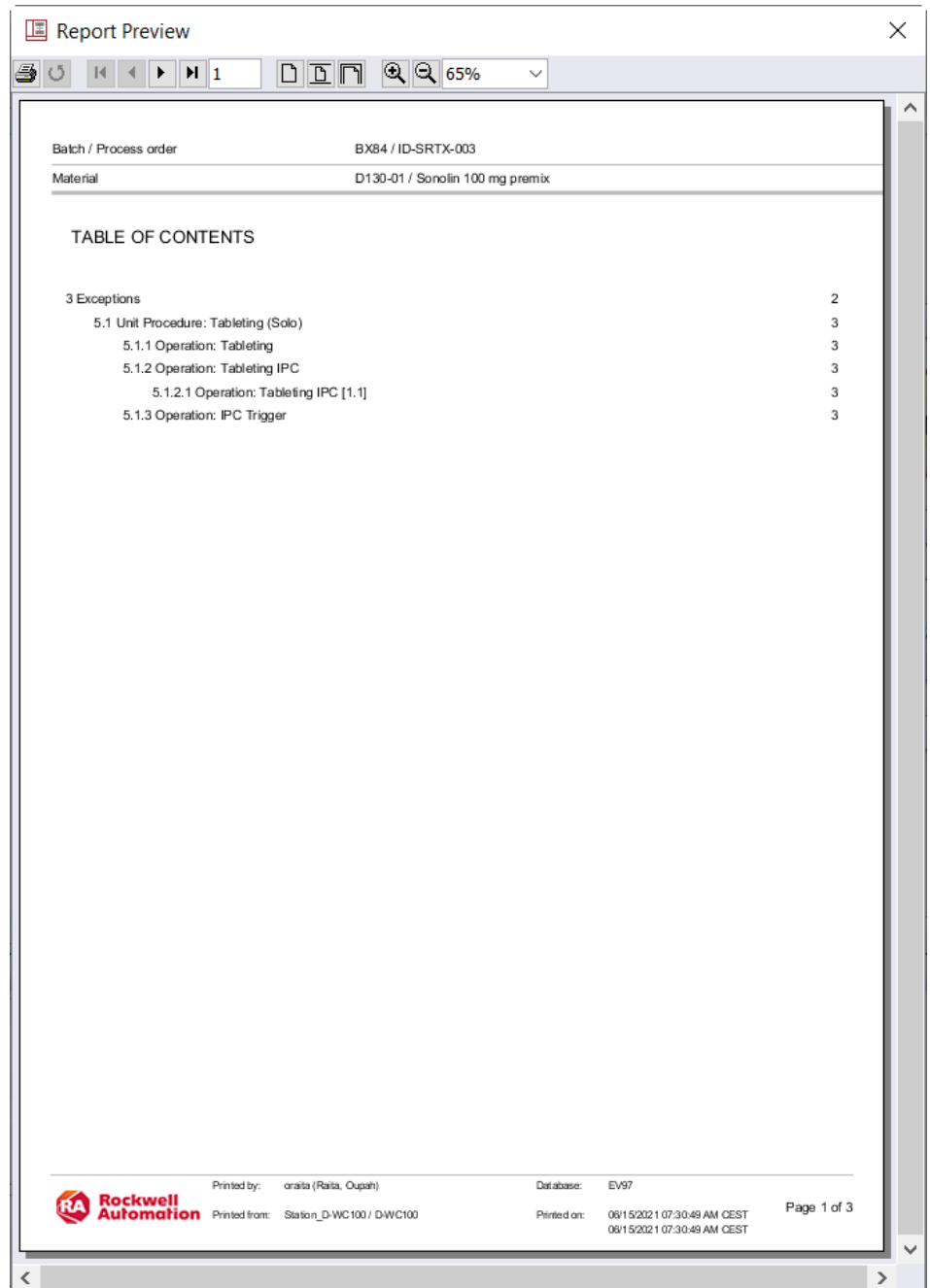


Figure 15: Level-specific sub-report

The title of the **Report Preview** dialog shows the relevant data of the selected component from which it is called. It provides standard print preview functions that allow you to print to a connected printer, page through the report, or resize and zoom the displayed pages.

Runs Dialog

The **Runs** dialog supports you with choosing and opening any count of selected runs.

Runs									
Identifier	Unit procedure	Status	Created at	Completion time	Station	Work center	Operation name	Description	
Tableting IPC [1.1]	Tableting (Solo)	Idle	07/05/2021 07:35:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.2]	Tableting (Solo)	Idle	07/05/2021 07:37:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.3]	Tableting (Solo)	Idle	07/05/2021 07:39:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.4]	Tableting (Solo)	Idle	07/05/2021 07:41:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.5]	Tableting (Solo)	Idle	07/05/2021 07:43:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.6]	Tableting (Solo)	Idle	07/05/2021 07:45:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.7]	Tableting (Solo)	Idle	07/05/2021 07:47:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.8]	Tableting (Solo)	Idle	07/05/2021 07:49:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.9]	Tableting (Solo)	Idle	07/05/2021 07:51:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.10]	Tableting (Solo)	Idle	07/05/2021 07:53:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.11]	Tableting (Solo)	Idle	07/05/2021 07:55:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.12]	Tableting (Solo)	Idle	07/05/2021 07:57:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.13]	Tableting (Solo)	Idle	07/05/2021 07:59:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.14]	Tableting (Solo)	Idle	07/05/2021 08:01:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.15]	Tableting (Solo)	Idle	07/05/2021 08:03:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.16]	Tableting (Solo)	Idle	07/05/2021 08:05:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.17]	Tableting (Solo)	Idle	07/05/2021 08:07:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.18]	Tableting (Solo)	Idle	07/05/2021 08:09:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.19]	Tableting (Solo)	Idle	07/05/2021 08:11:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.20]	Tableting (Solo)	Idle	07/05/2021 08:13:26 PM IST				Tableting IPC	Every 10 minutes	
Tableting IPC [1.21]	Tableting (Solo)	Idle	07/05/2021 08:15:26 PM IST				Tableting IPC	Every 10 minutes	

Figure 16: Runs dialog

By default, the list is sorted alphabetically with respect to the **Identifier** column of the object, but you can adjust both the sort and the column order (page 38)

Right-click a row in the **Runs** dialog to display a shortcut menu with the following functions:

- To open the selected run in a new tab on the lower tab bar, select **Open <building block identifier with run count>**.

A tab of a run on the lower tab bar is identified in its title by its structure level, identifier, and count.

TIP

Please note that you can close all open tabs on the lower tab bar except the currently active one by right-clicking the tab and opening its shortcut menu (page 11).

- To reset the columns in the **Runs** dialog to their initial positions and the order to sorting by identifier, select the **Reset sorting** option.

TIP

Please note that when you open a selected run in a new tab, the **Runs** dialog remains open to allow you to open further runs.

Runs									
Identifier	Unit procedure	Status	Created at	Completion time	Station	Work center	Operation name	Description	
Tableting IPC (1.1)	Tableting (Solo)	Idle	07/15/2021 10:42:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.2)	Tableting (Solo)	Idle	07/15/2021 10:44:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.3)	Tableting (Solo)	Idle	07/15/2021 10:46:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.4)	Tableting (Solo)	Idle	07/15/2021 10:48:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.5)	Tableting (Solo)	Idle	07/15/2021 10:50:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.6)	Tableting (Solo)	Idle	07/15/2021 10:52:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.7)	Tableting (Solo)	Idle	07/15/2021 10:54:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.8)	Tableting (Solo)	Idle	07/15/2021 10:56:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.9)	Tableting (Solo)	Idle	07/15/2021 10:58:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.10)	Tableting (Solo)	Idle	07/15/2021 11:00:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.11)	Tableting (Solo)	Idle	07/15/2021 11:02:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.12)	Tableting (Solo)	Idle	07/15/2021 11:04:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.13)	Tableting (Solo)	Idle	07/15/2021 11:06:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.14)	Tableting (Solo)	Idle	07/15/2021 11:08:49 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.15)	Tableting (Solo)	Idle	07/15/2021 11:20:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.16)	Tableting (Solo)	Idle	07/15/2021 11:22:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.17)	Tableting (Solo)	Idle	07/15/2021 11:24:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.18)	Tableting (Solo)	Idle	07/15/2021 11:26:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.19)	Tableting (Solo)	Idle	07/15/2021 11:28:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.20)	Tableting (Solo)	Idle	07/15/2021 11:30:24 AM IST				Tableting IPC	Every 10 minutes	
Tableting IPC (1.21)	Tableting (Solo)	Idle	07/15/2021 11:32:24 AM IST				Tableting IPC	Every 10 minutes	

Figure 17: Runs dialog with shortcut menu

SFC Graph Components

Production Execution Viewer displays all SFC graph components on all levels of the graph hierarchy that are relevant to processing an order or workflow

Structure Level

The hierarchical structure of an order or a workflow is reflected in Production Execution Viewer by separate tabs for each level.

STRUCTURE LEVEL: ORDER/WORKFLOW

An order or workflow tab contain exactly one procedure step that is enclosed by a start and an end step.

Right-click anywhere on the background to open a shortcut menu with the following functions:

TIP

Which of the functions are enabled also depends on the graph components you have selected.

- Go back (ALT+LEFT)
Returns to the previously active tab in the lower tab bar within the currently active main component if you have navigated to your current tab from another one.
- Go up (ALT+UP)
Moves to the next higher structure level.
- Close sub-tab (CTRL+W)
Closes the currently active tab of the lower tab bar.

STRUCTURE LEVEL: PROCEDURE

A procedure (page 2) tab contains a graph that consists of unit procedures, their transitions, and links, enclosed by a start and an end step.

Right-click anywhere on the background to open a shortcut menu with the following functions:

TIP

Which of the functions are enabled also depends on the graph components you have selected.

- Go back (ALT+LEFT)
Returns to the previously active tab in the lower tab bar within the currently active main component if you have navigated to your current tab from another one.
- Go up (ALT+UP)
Moves to the next higher structure level.
- Close sub-tab (CTRL+W)
Closes the currently active tab of the lower tab bar.

STRUCTURE LEVEL: UNIT PROCEDURE

A unit procedure (page 2) tab contains a graph that consists of operations, their transitions, and links, enclosed by a start and an end step.

Right-click anywhere on the background to open a shortcut menu with the following functions:

TIP

Which of the functions are enabled also depends on the graph components you have selected.

- Go back (ALT+LEFT)
Returns to the previously active tab in the lower tab bar within the currently active main component if you have navigated to your current tab from another one.
- Go up (ALT+UP)
Moves to the next higher structure level.
- Close sub-tab (CTRL+W)
Closes the currently active tab of the lower tab bar.

STRUCTURE LEVEL: OPERATION

An operation (page 3) tab contains a graph that consists of phases, their transitions, and links, enclosed by a start and an end step.

Right-click anywhere on the background to open a shortcut menu with the following functions:

TIP

Which of the functions are enabled also depends on the graph components you have selected.

- Go back (ALT+LEFT)
Returns to the previously active tab in the lower tab bar within the currently active main component if you have navigated to your current tab from another one.
- Go up (ALT+UP)
Moves to the next higher structure level.
- Close sub-tab (CTRL+W)
Closes the currently active tab of the lower tab bar.

Step

Depending on their level within the graph structure, graph steps need to be handled differently and can provide various additional functions.

STEP: START

A start step represents the first component of a graph on each structure level. It can be moved and selected for inserting components below it, but it cannot be deleted.

The start step allows you to begin a graph with parallel building blocks and to create a loop that includes the first building block of your graph.

When you hover over a start step, the system displays its meaning in a tooltip.

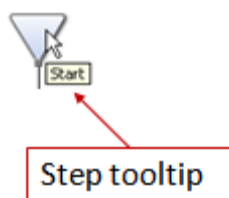


Figure 18: Start step

STEP: END

An end step represents the final component of a graph on each structure level. The end step allows you to create a loop in the Recipe and Workflow Designer that includes the final building block of your graph.

When you hover over an end step, the system displays its meaning in a tooltip.

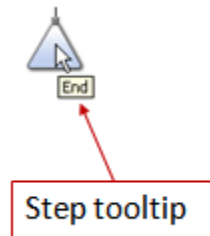


Figure 19: End step

STEP: PROCEDURE

The element image of a procedure shows the identifier of the procedure in the center. If exceptions were recorded for any of the components of the procedure, the image displays an exception marker in its top left corner.

Below the identifier the image provides access to additional execution-related information.

In the center left, it shows the number of exceptions recorded during execution.

When you hover over each icon, the system displays its meaning in a tooltip.

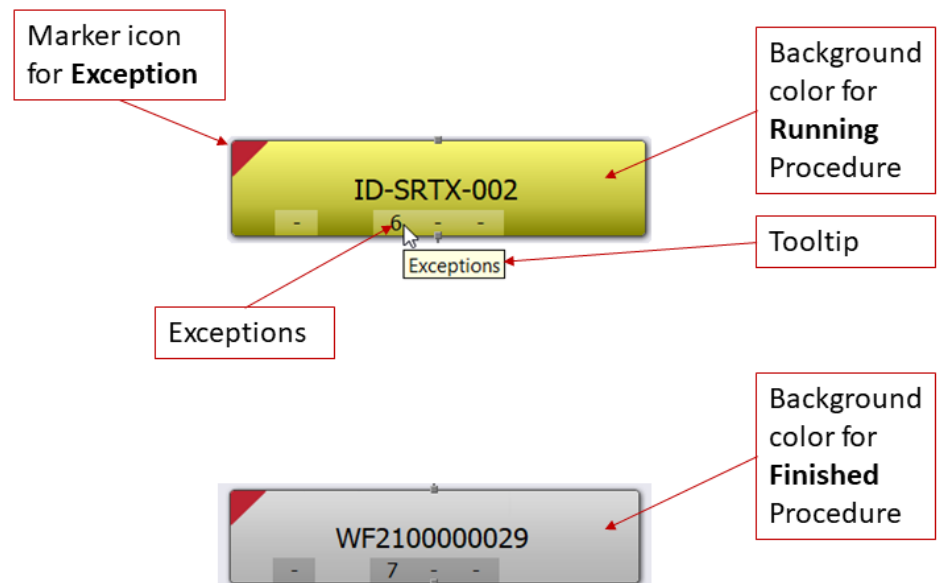


Figure 20: Procedure element

The system provides the following functions for procedure (page 2) steps:

- To open the procedure graph and display its unit procedures in the same tab, double-click the procedure.
- To open the procedure graph and display its unit procedures in a new tab, ctrl+double-click the procedure.

STEP: UNIT PROCEDURE

The building block image of a unit procedure shows the identifier of the unit procedure in the center.

If exceptions were recorded for any of the components of the unit procedure, the image displays an exception marker in its top left corner.

Below the identifier the image provides access to additional execution-related information.

In the center left, it shows the number of exceptions recorded during execution.

If the unit procedure is part of a loop, the lower left corner displays the number of runs of the loop. In the center left, the image shows the number of exceptions recorded during execution. The **R** button allows to open the report of the unit procedure.

If there are capabilities assigned to the unit procedure, the element image may reflect that by displaying an indicator icon in the lower right corner or changing its image background to a different color or pattern. Most capabilities, however, do not have a specific graphical marker.

When you hover over each icon, the system displays its meaning in a tooltip.

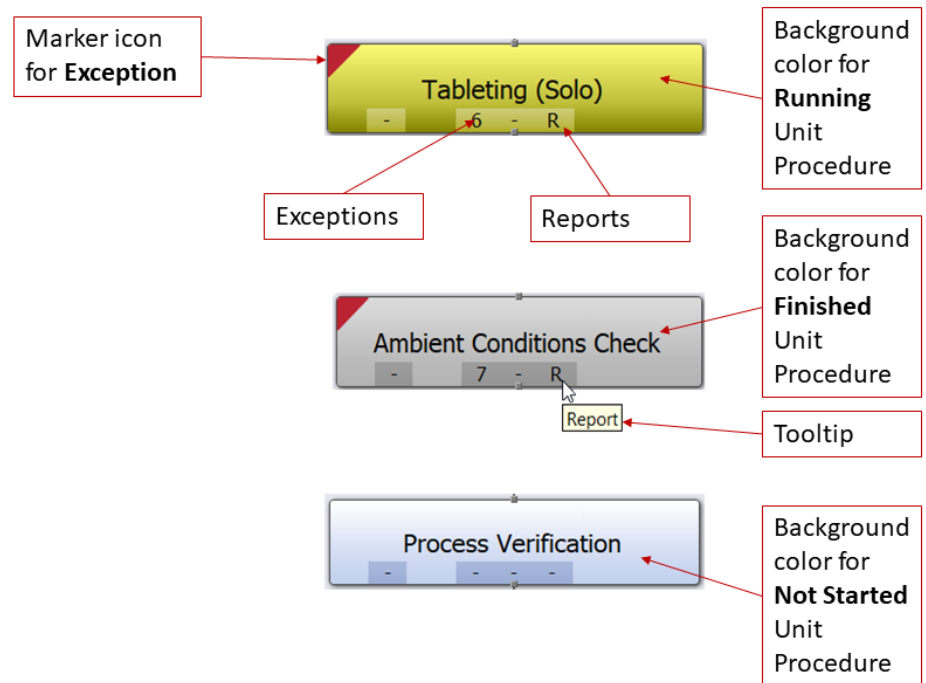


Figure 21: Unit procedure element

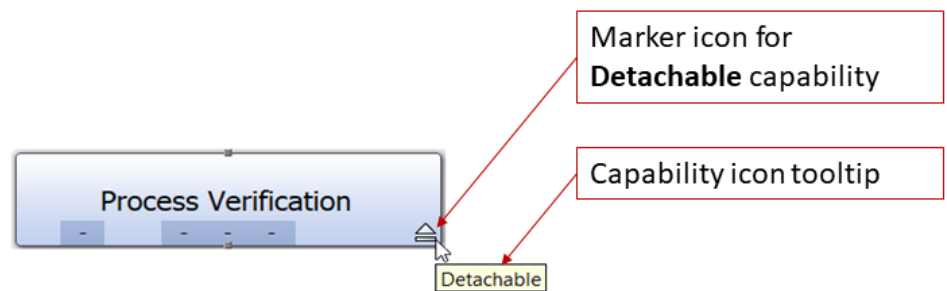


Figure 22: Unit procedure element with capability

The system provides the following functions for unit procedure (page 2) steps:

- To open the unit procedure graph and display its operations in the same tab, double-click the unit procedure.
- To open the unit procedure graph and display its operations in a new tab, ctrl+double-click the unit procedure.

STEP: OPERATION

The building block image of an operation shows the identifier of the operation in the center.

If exceptions were recorded for any of the components of the operation, the image displays an exception marker in its top left corner.

Below the identifier the image provides access to additional execution-related information.

In the center left, it shows the number of exceptions recorded during execution.

If the operation is part of a loop or an event-triggered operation, the lower left corner displays the number of runs of the operation. In the center left, the image shows the number of exceptions recorded during execution. The **R** button allows to open the report of the operation.

If there are capabilities assigned to the operation, the element image may reflect that by displaying an indicator icon in the lower right corner or changing its image background to a different color or pattern. Most capabilities, however, do not have a specific graphical marker.

When you hover over each icon, the system displays its meaning in a tooltip.

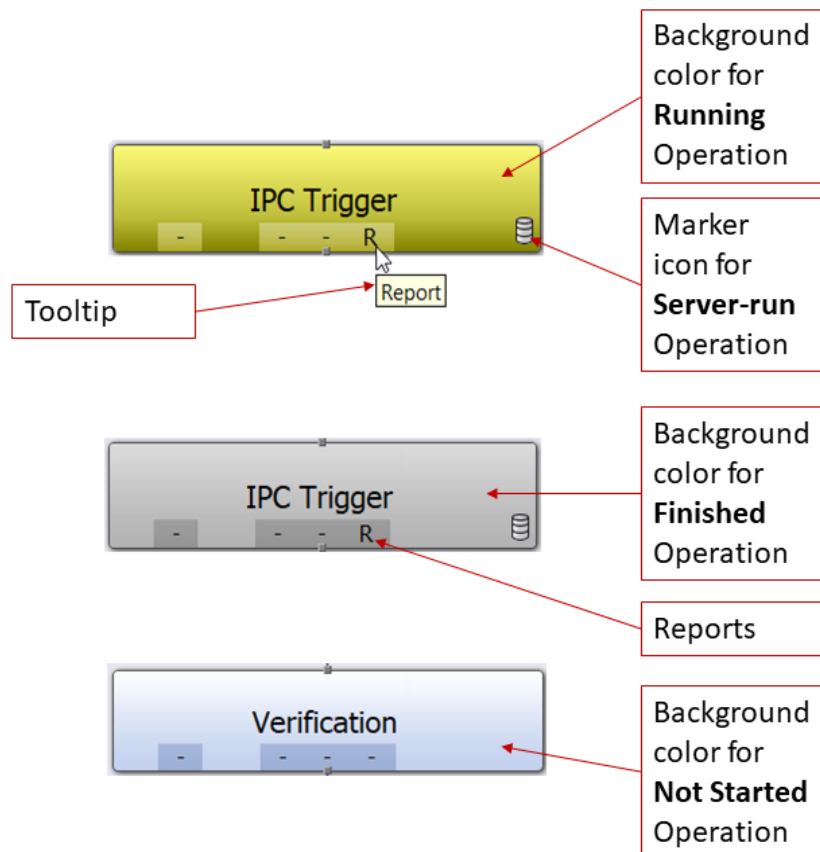


Figure 23: Operation element

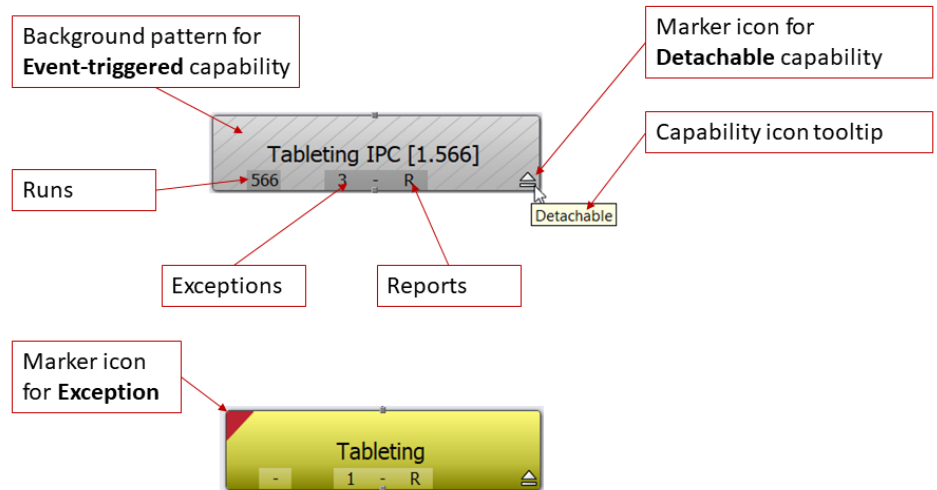


Figure 24: Operation element with capabilities

TIP

Please note that, during the execution of the operation's phases on the shop floor, the system will display the operation identifier as title in the header bar of the Execution Window.

The system provides the following functions for operation (page 3) steps:

- To open the operation graph and display its phases in the same tab, double-click the operation.
- To open the operation graph and display its phases in a new tab, ctrl+double-click the operation.

STEP: PHASE

The building block image of a phase shows the identifier of the phase in the center. If exceptions were recorded for the phase, the image displays an exception marker in its top left corner. Below the identifier the image provides access to additional execution-related information.

If the phase is part of a loop the lower left corner displays the number of runs of the loop. In the center left, the image shows the number of exceptions recorded during execution. Directly in the center, the >> button provides access to all phase specific outputs that were stored during execution. With the **R** button, in the center right it is possible to open the report of the phase.

When you hover over each button, the system displays its meaning in a tooltip.

The numbers displayed for phases are the sum of all local parameters of the phase.

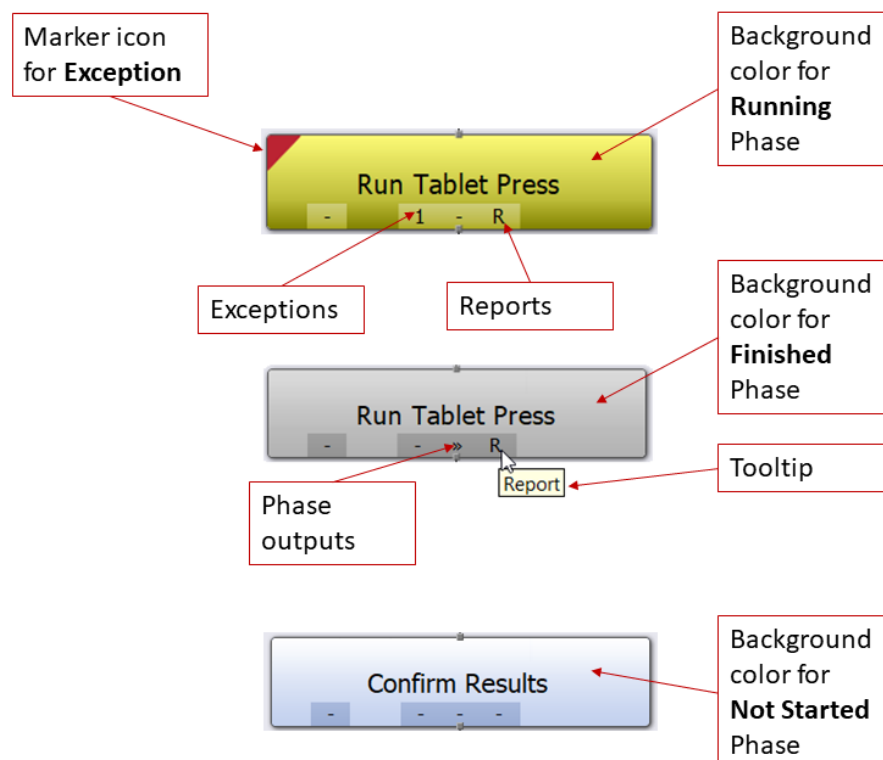


Figure 25: Phase element

Link

A link is a simple connector between two components.

Loop

A loop is a specific type of link that points back to a previous step in the graph. The loop endpoint must be on the same sequence as the loop start point, so you cannot draw a loop out of a branch.

Selection Branch

A selection branch opens and closes two or more exclusive alternative sequences of steps in the graph.

During execution, only one of the sequences must be executed before an operator can proceed with the step that follows after the sequences have been joined again. The result of the transition conditions that precede a branch determines the subsequent step.

Simultaneous Branch

A simultaneous branch opens and closes two or more parallel sequences of steps in the graph. The leftmost sequence in the graph is the first to be displayed during execution according to the default execution order of SFCs (left to right).

During execution, all parallel sequences must be executed before an operator can proceed with the step that follows after the sequences have been joined again.

Transition

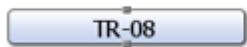
A transition consists of a condition that defines which step is the next to be executed when there is more than one potential successor step. Thus, a transition predetermines which step to choose in a selection branch during execution or whether a loop needs to be executed.

When a transition holds a specific condition, it displays an **fx** marker icon on its transition image.

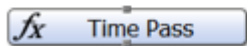
Thus, the component image of a transition can either display as blank square, or show the transition condition marker and an identifier.



Transition with default condition and without identifier



Transition with default condition and optional identifier



Transition with special condition and mandatory identifier

Figure 26: Transition image

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