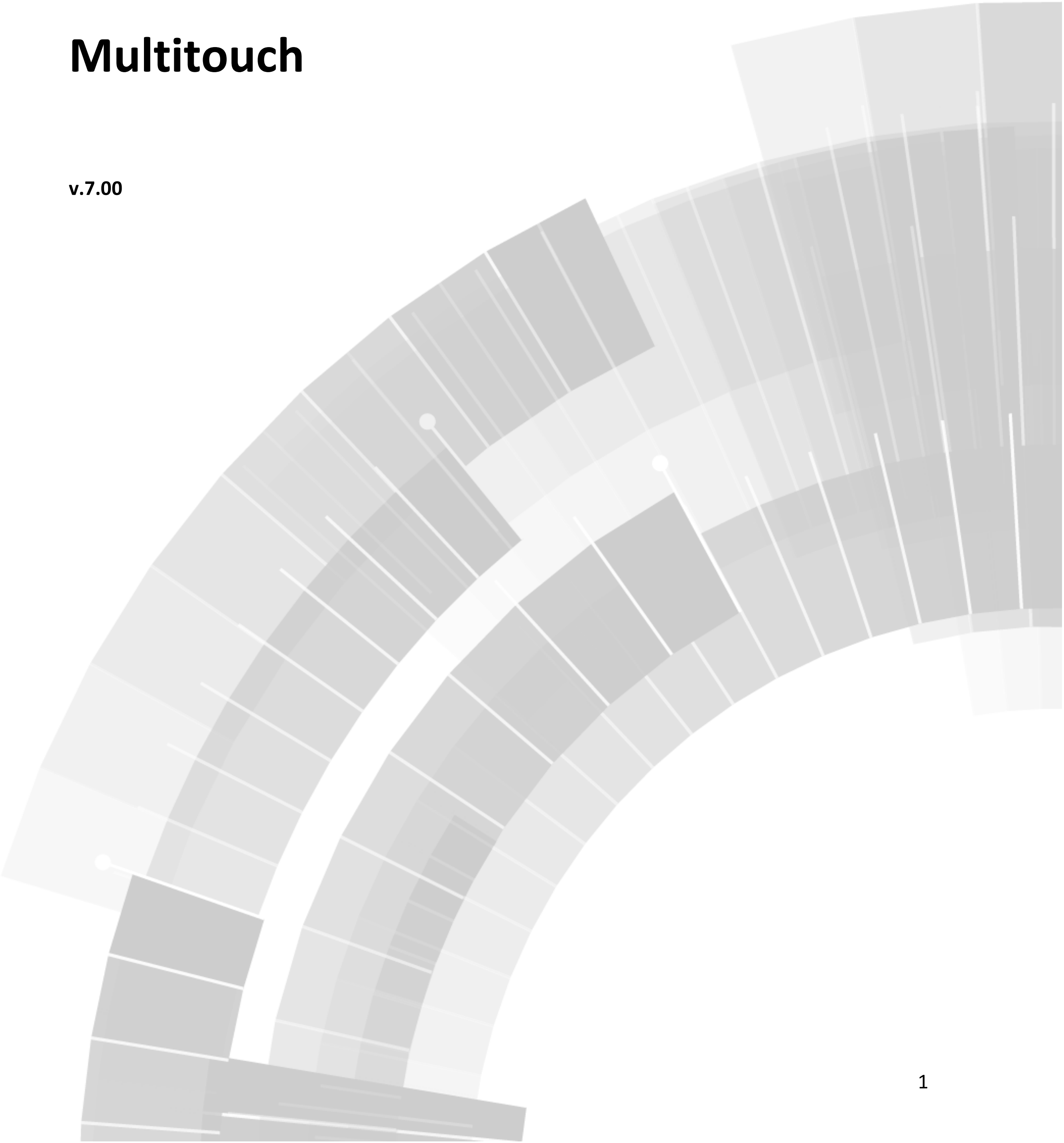
zenon manual

Multitouch

v.7.00



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1. Welcome to COPA-DATA help

GENERAL HELP

If you miss any information in this help chapter or have any suggestions for additions, please feel free to contact us via e-mail: documentation@copadata.com (mailto:documentation@copadata.com).

PROJECT SUPPORT

If you have concrete questions relating to your project, please feel free to contact the support team via e-mail: support@copadata.com (mailto:support@copadata.com)

LICENSES AND MODULES

If you realize that you need additional licenses or modules, please feel free to contact the sales team via e-mail: sales@copadata.com (mailto:sales@copadata.com)

2. Multitouch

With zenon touch screens can also be operated with multitouch gestures. Multitouch must be activated in the project settings. To do this:

1. go to group `Touch operation`
2. Activate the `Multitouch active` property

Projects must be adapted for the use with multitouch. You can obtain an example project (on page 5) from your zenon consultant.

3. Example project

This example project is designed for resolution 1920x1080. It contains:

- Start page
- Navigation
- Alarm Line
- Screen of type `Login`

START PAGE

The start page displays an overview of the complete production line. Several pieces of equipment-Icons are visible at the same time. You can scroll to the other pieces of equipment you can scroll via gestures. Tap on a Icon changes to the selected equipment. The following is also available in the screen:

- Alarm line at the top edge: Displays the last alarm of the complete production line. You can drag out the alarm line. This will display the whole Alarm Message List.
- Login button: Makes it possible to log in different users.
- Exit button: Closes the Runtime and can only be operated by users with administrator rights.

NAVIGATION

In the lower screen area the navigation depicts the whole production line with the help of Icons in a horizontal scroll area. In addition an energy worldview is available. It is selected via the button located at the lower center. The selection of a piece of equipment via Tap on a visible Icon. In this project only the equipment **`Filler`** can be selected. If you press and hold the equipment Icon **`Filler`** long enough, a Glow effect is displayed. The list can be scrolled via a Swipe gestures; Tap on the scrolling list to stop it.

The scroll speed is determined via the acceleration of the Drag movement:

- slow: follows the finger
- faster: rushes behind

At calling up the start screen the navigation is centered on Icon **`Filler`**.

ALARM LINE

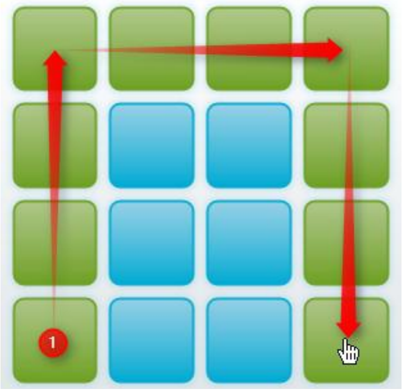
At the top edge of the screen an alarm line is located. It displays the last alarm of the complete production line. You can open it to display the Alarm Message List.
Operation:

- Open:
  - A Tap on the line opens the AML up to the half of the screen.
  - Via gestures the AML can be customized to an individual size.
- Close:
  - A Tap outside of the frame closes the opened AML.
  - You can also move up the AML manually.

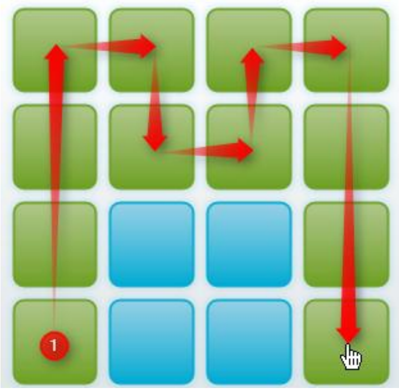
LOGIN SCREEN

The Login screen offers a gesture-based login in the style of Windows 8. Before you enter a password, you must select a user via Tap. After that you can start entering the password for the selected user via **Hovering**. For example:

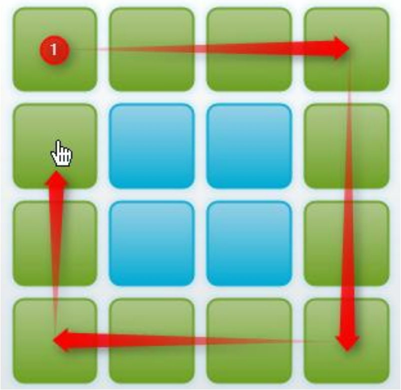
Administrator:



Maintenance:



Operator:



In addition there is a logout button which logs out the currently logged in user and opens the login screen. The login screen is a modal dialog which dims the background.

3.1 Equipment screen

The equipment screen offers the alarm line with the same functionality as on the start page. filtered for the piece of equipment.

In addition there is the Workspace concept with freely positionable windows which are stored in a Dock when they are not used. The Workspace spans several screens to which you can change via Swipe gesture, Tab navigation or navigation button. In the lower area there is a activation area for two-hand operation and a home button. At the right top edge there is an operable display for the Workspace.

DOCK

Icons can be dragged from the Dock to the Workspace where they are then displayed as Faceplate in a defined base size. If a Faceplate is placed on the Workspace , its Icon is displayed as deactivated. If a Faceplate is closed, its Icon is activated again. Tap & hold on a deactivated Icon pinpoints an open Faceplate and jumps to the Workspace used by it.

WORKSPACE

On every of the four personalized Workspaces you can place and scale any number of personalized Faceplates.

- Move Faceplate to the vertical screen edge: After a delay of 2 seconds, a change to the next Workspace is carried out and the Faceplate can be positioned freely.
- Fire Faceplate to the vertical screen edge (Swipe gesture): The Faceplate is moved to the next Workspace, the current Workspace remains open.
- Remove/close Faceplate: Move Faceplate to the dock or down via a Swipe gesture.
  As an option each Faceplate can be closed via the **x** button which is located at the top right corner.

The called up Faceplates, their position, size, etc. are saved in the user profile. A Faceplate can be resized (larger/smaller) via a Zoom/Pinch gesture. Each Faceplate can also be moved. A selected Faceplate is moved to the foreground via Z-Order-Manipulation but always remains behind the alarm line. At the next login the position and size data of the individual Faceplates are read and they are positioned accordingly.

TWO-HAND OPERATION

In the bottom left corner there is an activation area for two-hand operation. If a locked element is actuated, the activation area flashes and a locked element can be unlocked via this area.

Possibilities for two-hand operation:

- Button: e.g. Home
- Input set value: Keyboard is called up and set value can be entered,
- Jog operation

A consideration of the activation order (activation before action) is engineered in the demo project. At jog operation (Faceplate operation) the active activation is constantly checked.

CIRCLE MENU

For faster navigation between Workspaces the circle menu was implemented. It is activated via Tap&Hold anywhere on the Workspace and is displayed around the finger touching the screen. The selection of the workspace is done via Draggen the finger in one of the areas. The switch is carried out when the finger leaves the screen. The action can be canceled via Draggen outside or inside the menu area.

HOME BUTTON

In the right bottom corner there is a Home button. With the help of the home button you can switch to the start screen. The Home button can only be activated with two-hand operation.

3.2 VSTA Code

CLASS DESCRIPTION

MULTITOUCHMANAGEMENT

Complete handling of the whole multitouch application. At creating the `MultitouchManagement` class, the classes `LoginWindow`, `NavigationsWindow` and `WindowManagement` are instanced.

LOGINWINDOW

In this class the important component of the user login and the password pattern recognition are included.

NAVIGATIONWINDOW

Treats the faceplate positioning screen "`Icon`" and manages the whole opening process of the Faceplates which are called up.

WINDOWMANAGEMENT

Is responsible for processing all touch events of all faceplates (move, scale, etc.). In addition this class takes care of saving and reading all needed Faceplate information in the Runtime.

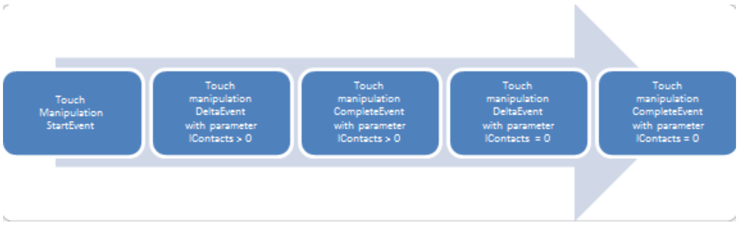
WINDOWPROPERTIES

For each Faceplate an own instance is instanced which provides all necessary data of the Faceplates . In terms of data conservation all instances are saved in an XML file when the Runtime is closed and can therefore provide the last valid settings of the Faceplates at the start of the Runtime.

3.3 Basic Multitouch

EVENTS

If you activate project setting `Multitouch active`, you get the events for **`TouchManipulationStartEvent`**, **`TouchManipulationDeltaEvent`**, and **`TouchManipulationCompleteEvent`** for corresponding event handler declaration in the Runtime. Via method **`SetupTouchInertia`** you can define the inertial parameter for each screen. The following display shows a schematic process of the fired events:


Touch Manipulation StartEvent
Touch manipulation DeltaEvent with parameter IContacts > 0
Touch manipulation CompleteEvent with parameter IContacts > 0
Touch manipulation DeltaEvent with parameter IContacts = 0
Touch manipulation CompleteEvent with parameter IContacts = 0

Generally a **`TouchManipulationStartEvent`** is fired first. As long as you execute the gesture, **`TouchManipulationDeltaEvents`** and at the end of the gesture a concluding **`TouchManipulationCompleteEvent`** is fired. The handed over parameter `IContacts` gives back the number of the fingers currently on the screen.

After finishing the touch gesture the inertia values are calculated by the inertia processor via the values handed over by method **`SetupTouchInertia`** and finished via **`TouchManipulationDeltaEvents`** and the calculated inertia values with a singular **`TouchManipulationCompleteEvent`**.

As no finger is on the screen during the calculation of the inertia values, the handed over IContacts parameter is `0`. The number of the **`TouchManipulationDeltaEvents`** needed by the inertia processor depends on the handed over parameters by method **`SetupTouchInertia`**. Depending on the inertia the inertia processor needs more or less events to finish the gesture.

If during the firing of the calculated inertia events another gesture is started, no additional **`TouchManipulationDeltaEvents`** come from the old gesture. After a concluding **`TouchManipulationCompleteEvents`**, the events for the new gesture are started immediately via a **`TouchManipulationStartEvents`**.

In addition events **TouchEvent**, **ElementMouseOver**, **ElementLeftButtonDown** and **ElementLeftButtonUp** are fired at a gesture.

NATIVE MULTITOUCH IN THE WORLDVIEW

To implement zooming and scrolling via VBA/VSTA Events, property `Multi-touch for zoom and scroll` must not be active. If you activate this property, zenon take care about the zoom and scroll gestures in the engineered worldview. For more information see chapter: Navigation with multitouch in the worldview (on page 14).

3.4 FAQs

Frequently asked questions and pratical answers.

Note: The properties `Name for object list` and `Help chapter` can be used in zenon as freely definable property.

HOW DO I ADD A NEW FACEPLATE?

The example project consists of 13 Faceplates which are displayed as Icons in navigation screen **Navigation_Bottom**. To generate a context between the individual icons and the Faceplates, you must adhere to the name convention. The name of the respective Icons must be a perfect match with the corresponding screen and its frame. A connection between the screens can only be accomplished when this chain (Icon - frame - screen) is observed.

To call up the respective screens, you also must engineer a screen switch function. The name of the screen switch function consists of the prefix "**scr**" and the name of the Faceplates. If this name convention is observed, the complete handling is then managed by the Multitouch Management.

HOW TO CREATE FEEDBACK IF THE PRESSED BUTTON OR THE VALUE DISPLAY ELEMENT NEEDS TWO-HAND OPERATION?

To ensure two-hand operation, both pressure points must be provided each on an own screen and frame. In the example project the screen is called `Enabler`.

At engineering the interlocking must be linked with **enableArea** for two-hand operable elements. This engineering makes sure that a feedback is automatically generated as soon as Enabler (two-hand operation) is not pressed. This element is only operable if the Enabler is pressed.

HOW TO CREATE A JOG MODE BUTTON?

To create a button with a jog operation functionality:

- make sure that the name of the button contains the part name "HOLD"
- navigate to the Runtime node in the element properties
- enter a reference according to the following pattern in property Name for object list: **Variable name|value change**
  (You can find an example in screen Faceplate_Operation at button ^^^.)

HOW TO CREATE A BUTTON FOR CHANGING THE WORKSPACE?

For this you can use prefab symbol **Tab**. Variable **demoCurrentWorkspace** depicts the value of the currently active Workspace in the whole project. The following settings manipulate the variable and newly adjust all opened screens:

Group **tab_inactive**:

property Help chapter must contain entry WorkspaceSwitch.

property Name for object list must contain an entry according to the following pattern: **demoCurrentWorkspace|PAGE** (for example: **demoCurrentWorkspace|3**)

HOW TO CREATE A NEW USER?

In screen **Login** you must draw a user-specific pattern on the 16 possible square for logging in a user. As soon as you touch the first square, the password input is triggered. It is closed as soon as the finger leaves the screen. Immediately after the pattern is entered, the password is verified. At positive acknowledgement, the login is carried out automatically.

During the input of the password pattern a typographic password is created in the background which can be compared with the engineered project users via a function. The first square is interpreted as '**A**', the second as '**B**', etc. and put together to a coherent password via line-dependent hovering of the squares.

To add a new user:

- create a new user in the user administration
- create a personal password
- make sure that the user can be selected in screen login and engineer the same properties as for the already engineered buttons of the user selection

HOW TO CALL UP THE CIRCLE MENU?

The circle menu is opened.

- around a finger which touches the workspace
  and
- does not move for more than `800 ms`

In the circle menu you have the possibility to switch from the Workspaces to the desired Workspace via dragging your finger.

HOW TO FILTER THE FREELY PULL-DOWN AML?

The AML always stays called up and the equipment-based filtering is carried out by a simple filter possibility of the screen switch function to screen **`AML`** and **`AML-collapsed`**.

HOW TO CALL UP A PIECE OF EQUIPMENT?

Pieces of equipment are displayed via a fixed order of processes such as customizing the filter, screen switch function, calling up equipment-related navigation areas, positioning the equipment-dependent Faceplates, etc. In this example project the order of the functions which are to be called up is engineered in a zenon script which is called up at triggering the equipment `Icons` in the start screen.

WHERE IS THE INFORMATION OF THE FACEPLATES SAVED?

Size, position, workspace, visibility, and scaling factor are written in a configuration file. Thes are located in a subfolder of folder `%HOMEPATH%\AppData\Local\Ing._Punzenberger_COPA-DA\`.

4. Navigation with Multitouch in the worldview

Multi-touch for zooming and scrolling is suitable for the navigation on touch panels in the worldview. For this a screen of type `Worldview overview` is not necessary. To use Multi-touch in the worldview you must:

- activate them via property `Multi-touch for zoom and scroll`
- or implement them via VBA/VSTA

ZOOM AND SCROLL VIA PROPERTY MULTI-TOUCH FOR ZOOM AND SCROLL

To use Multi-touch without VBA/VSTA:

1. in the project settings activate property `Multitouch active` property in node `Touch operation`
2. deactivate property `Size from frame` in node `Size` at the properties of the screen
3. activate property `Multi-touch for zoom and scroll` in node `General` at the properties of the screen

With this you can scroll and zoom in the screen at touch operation using Multi-touch. With this VBA/VSTA for zooming and scrolling is deactivated.

ZOOM AND SCROLL VIA VBA/VSTA

To implement zooming and scrolling via VBA/VSTA Events, property `Multi-touch for zoom and scroll` must not be active.

The following is available in the **DynPicture**:

- Property

```
int ZoomLevel: Displays the current zoom level in the worldview (valid value only in the Runtime and for a worldview).
```

- Method

```
SetZoomAndPos(float ZoomX, float ZoomY, int ZoomLevel, int CursorX, int CursorY, int PosX, int PosY, int PosMode):
```

```
ZoomX -> New zoom factor X direction; if not used, set to 0
```

ZoomY -> New zoom factor Y direction; if not used, set to 0

ZoomLevel -> Zoom level, if not used, set to -1

CursorX -> Cursorposition X

CursorY -> Cursorposition Y

PosX -> New position X (see PosMode)

PosY -> New position Y (see PosMode)

PosMode -> Coordinates in Pos

-1 = PosX, PosY are ignored

0 = center point , original coordinates

1 = center point, zoomed coordinates

2 = left top, original coordinates

3 = left top, zoomed coordinates

4 = zoomed coordinates of the cursor from the top left
The position of the window is changed in such a way that after the zooming the mouse cursor is still over the position of the screen

Attention: ZoomX, ZoomY and ZoomLevel can never be used simultaneously. Either you enter a ZoomLevel or a zoom factor for x and y axis.