



# **Veronte Ops**

**Release 8.2/1.0**

Embention Sistemas Inteligentes, S.A.

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# Scope of Changes

- Version 1.0
  - Added:
    - First version issued

# Quick Start

**Veronte Ops** is an application for the operation and monitoring of the vehicle during the mission.

**Veronte Ops** includes:

- **Telecommand:** Support for all synchronous operator control commands that can be sent to the flight segment, e.g. operational mode switch, mission management, payload control.
- **Mission design:** Configuration of user-defined, pre-defined mapping and launch missions, as well as in-flight mission editing.
- **Operation parameters:** Configuration of operation parameters, such as their values, positions and directions, which may vary depending on the mission and during the mission.
- **Workspace:** User can get feedback on autopilot variables and status through widgets.
- **Multiple users:** One or more operators can work simultaneously.

## System requirements

Before executing this software, users should check the following sections with the minimum and recommended PC hardware requirements.

### Minimum

- **CPU:** Intel Core i5-8365UE
- **RAM:** 8 GB DDR4
- **STO:** 256 GB SSD

### Recommended

- **CPU:** Intel Core i5-1235U (10C/DecaCore 1.3 / 4.4GHz, 10MB)
- **RAM:** 8 GB DDR4
- **STO:** 512 GB SSD M.2 NVMe PCIe

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# Software Requirements

## Compatible browsers

The following are the functional, optional and unsupported browsers for use with **Veronte Ops** software:

- **Functional:** Chrome
- **Optional:** Firefox, Edge

## Window Size

In order for the application and all its features to display correctly, check the following minimum and maximum sizes for the application window:

- **Minimum:** 1024x768
- **Maximum:** No limit

## Operating System

- **Recommended:** Windows 11
- **Supported:** Windows 10

### **Important**

Some of the latest features of this application may not be compatible with Windows 10.

## Download and Installation

There are 2 ways to work with this application: as a **website app** or installing it through an **executable**.

 **Hint**

The executable version might be useful for some users because:

- No internet connection is required, i.e. for users who need to work offline.
- No automatic updates are carried out.
- Users do not need to have a browser installed.
- The application does not depend on the browser.

## Executable

If users wish to work with the executable app, **Veronte Ops** software is available on the **Veronte Toolbox** platform for download and installation. For more information, please refer to the [Veronte Toolbox](#) user manual.

A personal account is required to access **Veronte Toolbox**; create a [Ticket](#) in the user's **Joint Collaboration Framework** and the support team will create it for you.

## Firewall Configuration

Users must enable **UDP ports 51017 and 51018** (default ports) in the firewall to ensure the correct operation of the connection between **Veronte Ops** and **Veronte Link**.

 **Note**

This configuration might need to be performed by the cybersecurity manager of your company.

# Additional apps

## Veronte Terrain Provider



### Veronte Terrain Provider

Veronte Terrain Provider is an additional application that provides SRTM terrain data to **Veronte Ops**.

Thanks to this, **Veronte Ops** allows the user to visualize terrain heights on the created route. This makes it possible to foresee possible collisions of the aircraft with the terrain along the route.

### Download and Installation

**Veronte Terrain Provider** software is available in the **Veronte Toolbox** platform. From there, users can download and install the application. For more information, please refer to the [Veronte Toolbox](#) user manual.

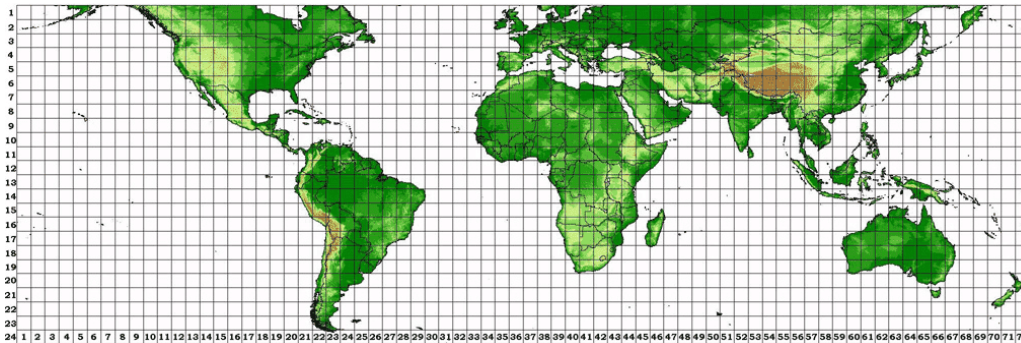
A personal account is required to access **Veronte Toolbox**; create a [Ticket](#) in the user's **Joint Collaboration Framework** and the support team will create it for you.

### Configuration

It is possible to import external hgt files, which contain terrain information, and use them for mission preparations. These files follow the SRTM ([Shuttle Radar Topography Mission](#)) standard, with 3 arc-seconds (approximately 90 meters) of resolution. To import one of them, simply copy it into the directory:

```
C:\Users\user\AppData\Roaming\VeronteTerrainProvider\terrainprovider
```

Each hgt contains terrain information about one area of the world. The following image shows how these areas are distributed, so each cell corresponds to one hgt:



## Terrain information distribution

### Operation

Once installed, users just need to run it. When it runs, it will always remain open in the background, which users can check in the PC's Windows taskbar.



### Veronte Terrain Provider in task bar

It is **only necessary to run it the first time it is used**, then it should **always remain open** so that when the computer is switched on, it starts up as well.

#### **Note**

If users close it, i.e. remove it from the taskbar, just run it again to start it.

## Web Converter



### Web Converter

Web Converter is a tool able to receive video in RTSP and serve it in webRTC and/or receive udp messages and send them via websocket.

**Veronte Ops** needs this application to **visualize video** and to work with **udp content** after it has been converted to websocket.

Therefore, it must be used when working with **gimbals** to visualize their video and click on them to send the **tracking command** to an object.

### Download

Once a **Veronte Autopilot** has been purchased, a GitHub release should be created for the customer with the application.

To access to the release and download the software, read the [Releases](#) section of the **Joint Collaboration Framework** user manual.

### Installation

To install **Web Converter** on Windows just execute "WebConverter.msi" and follow the indications of the setup wizard.

### Configuration

Once the **Web Converter** software is downloaded and installed, configure it.

The configuration of this application is simply a `config.json` file with parameters for video display and command that need to be modified:

```
{
  "server": {
    "http_port": ":8083",
    "ice_servers": ["stun:stun.l.google.com:19302"]
  },
  "streams": {
    "veronte_Gimbal_Camera": {
      "on_demand": false,
      "url": "rtsp://192.168.8.94/net0"
    }
  },
  "udp_config": {
    "ip": "192.168.8.94",
    "port": 14003,
    "websocket_url": "localhost",
    "websocket_port": "1997"
  }
}
```

- **server** Users can modified the localhost port (http\_port).  
The generated URL will look like this: `http://localhost"http_port"`
- **streams** Parameters to modify to **view the video recording** of the desired camera in **Veronte Ops**
  - **"camera name"**: Is to identify the gimbal camera. By default veronte\_Gimbal\_Camera is set.  
As the user can enter as many cameras to display the video as desired, each gimbal camera is configured here:
    - **url**: URL of the gimbal video. This is just an example, the URL (rtsp) depends on the user's gimbal.
- **udp\_config** To **command** from **Veronte Ops** to the gimbal. Set the following parameters:
  - **ip: IP address** configured as the udp connection of the camera.
  - **port: Port** configured as the udp connection of the camera.
  - **websocket\_url**: Websocket URL to which users want to send the converted udp messages.

- **websocket\_port**: WebSocket port to which users want to send the converted udp messages.

### **Note**

Even if users only want to view the video recording in **Veronte Ops**, they can leave the default configuration parameters of **upd\_config**, as they do not affect the video configuration.

However, they can also remove these lines from the configuration if they wish.

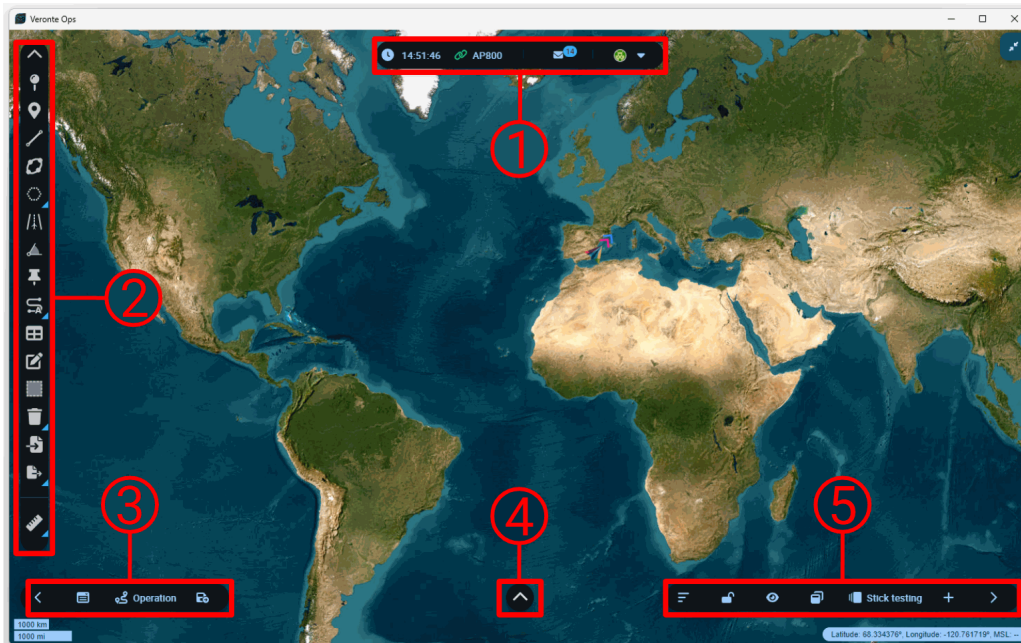
## Operation

Once the **Web Converter** application has been configured according to the user's needs, follow the steps below to work with:

1. Just run the application and **always keep it open**.
2. Copy the link generated by the tool into the corresponding **Veronte Ops** configuration:
  - For **video recording**, copy the URL generated into the [iframe widget](#). For example, with the default **http\_port**, the URL generated will be: `http://localhost:8083`.
  - For **command**, the user must copy the **websocket\_url** and **websocket\_port** previously configured into the **URL** and **Port** fields, respectively, of the **WebSocket** connection configuration of the [Gimbal panel](#).

# Panels

Panels on **Veronte Ops** are distributed as shown in the following figure:



## Veronte Ops panels

1. **Veronte Ops configuration**: Edit **Veronte Ops** settings.
2. **Mission**: Create and edit **missions**.
3. **Operation**: Edit **operations** defined in **1x PDI Builder** and perform **calibrations**.
4. **Platform**: Veronte Autopilot information.
5. **Workspace**: Customize everything related to the **Veronte Ops** workspace, such as telemetry (widgets), map and workspace settings.

These panels are described in detail in the following sections.

In case of having any question about this **Joint Collaboration Framework**, please read its [user manual](#).

## 1. Veronte Ops configuration

This section describes all the menus, options and actions that allow the user to **modify the configuration and appearance** of this application. These are:

- **Status bar**

- [Feedback menu](#)
- [Platform icon](#)

## Status bar

In the status bar, the user can view mission and operation relevant information, as well as modify general **Veronte Ops** settings.



### Status bar

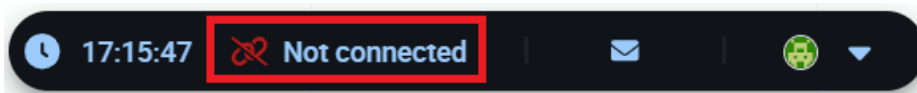
This bar is divided into 3 'parts':

- Status bar items: **Clock** and **Platform selected** information items are grouped here.

The user can choose to show/hide each of these elements from the [Status bar settings](#). By default, they are displayed as shown in the image above.

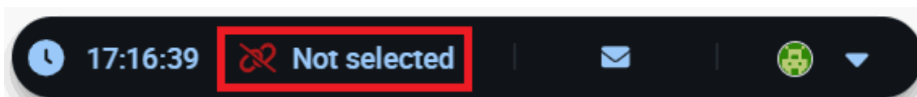
The figures below show all **Autopilot 1x** states:

- **Not connected:**



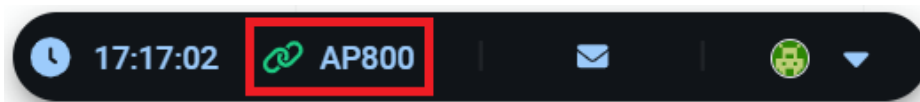
**Platform selected - Autopilot not connected**

- **Not selected:**



**Platform selected - Autopilot not selected**

- **Connected:**



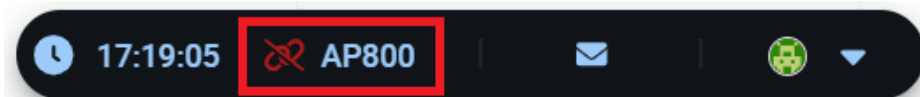
**Platform selected - Autopilot connected**

◦ **Maintenance mode:**



**Platform selected - Autopilot in maintenance mode**

◦ **Disconnected:**

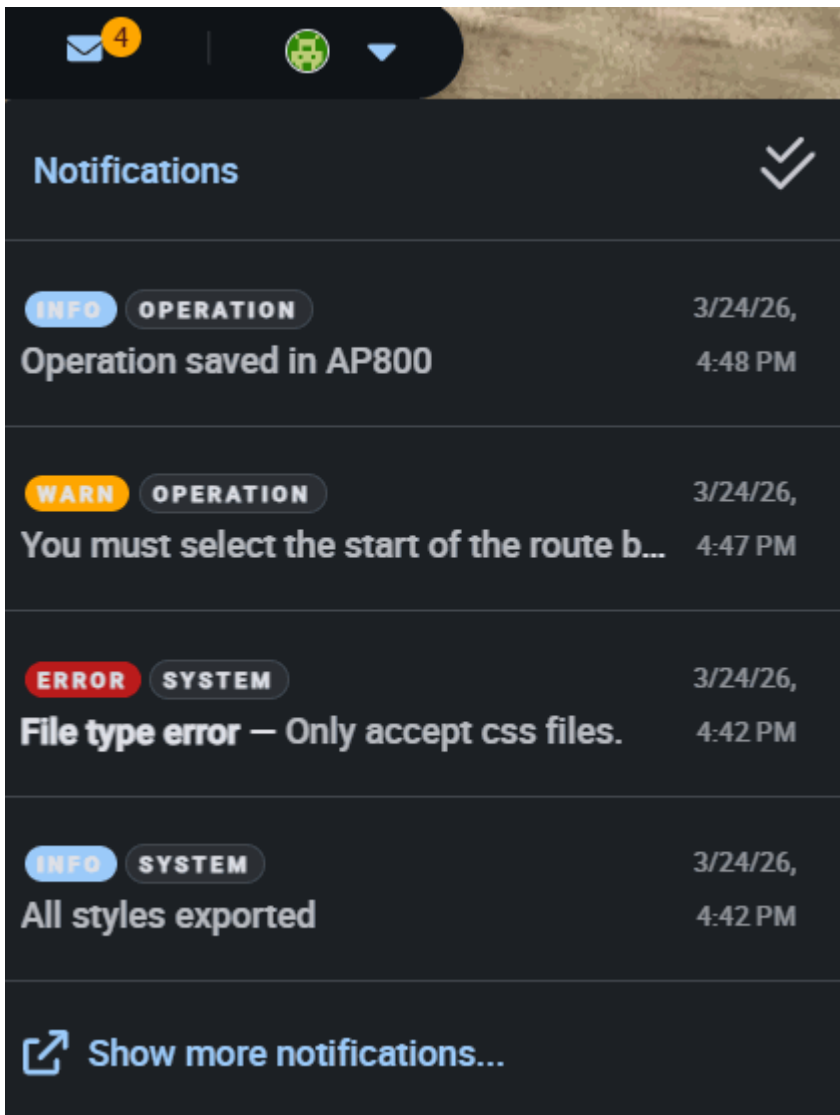


**Platform selected - Autopilot disconnected**

- **Notifications:** **Veronte Ops** notifications for users. This is always displayed in the status bar.
- **More options:** By clicking on this drop-down menu, users will find options for configuring this application and its appearance.

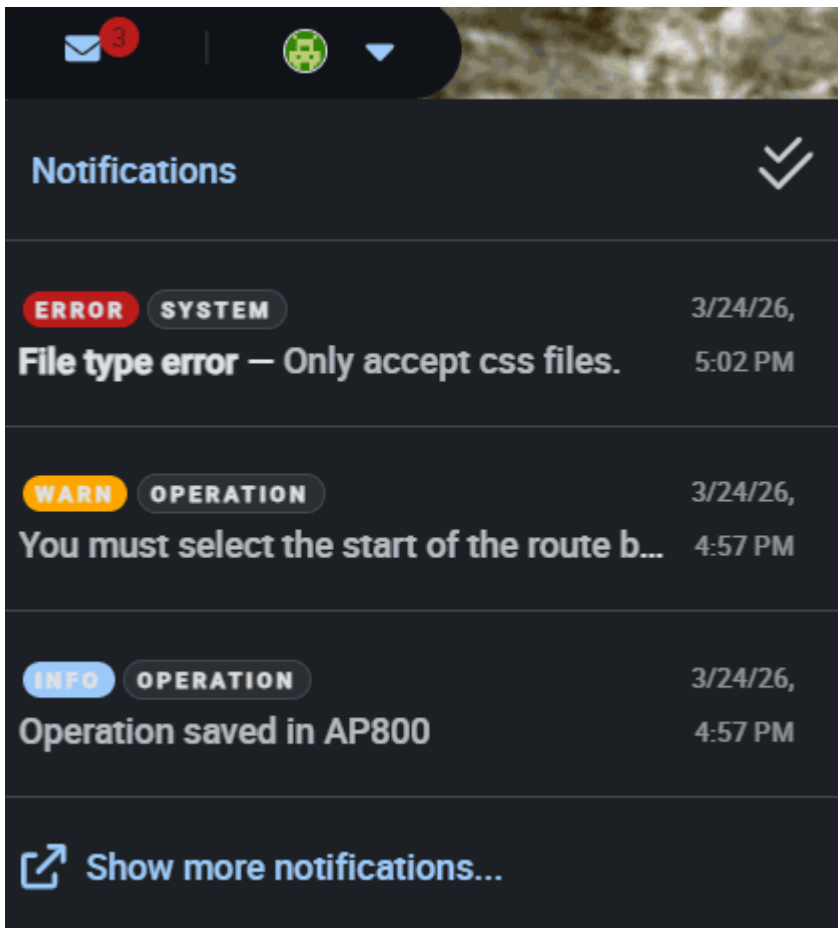
## Notification

**Veronte Ops** will notify the user of any changes made with notifications (visual and audible, the latter is optional), as shown in the figure below:




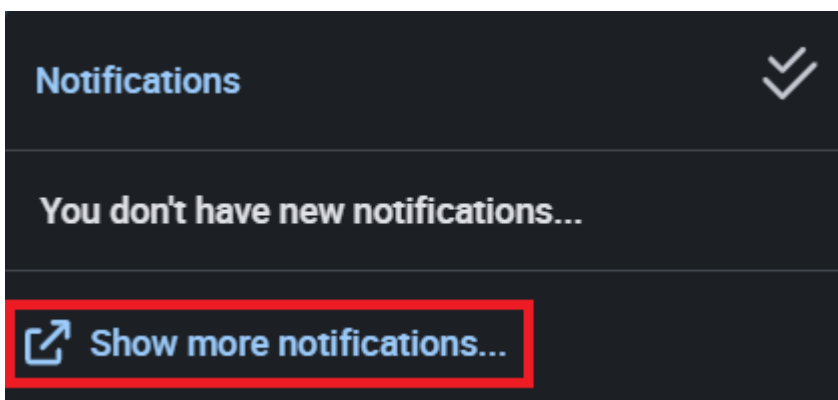
### Notifications menu

In addition, notifications are classified into 3 groups (**Information**, **Warning** and **Error**) with a color code (**blue**, **orange** and **red** respectively):



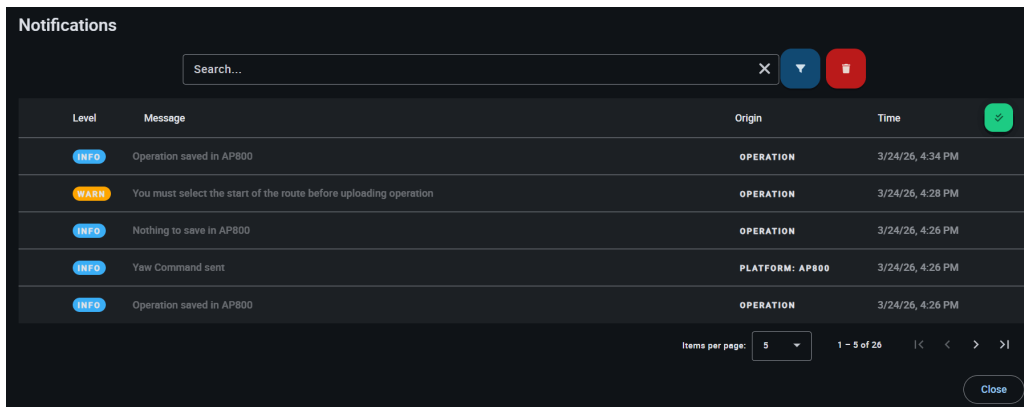
### Notifications menu - Classification

These notifications can be **marked as read** by clicking on the  icon at the top of this menu. So, they will no longer be displayed in this menu.



### Notifications readed

However, if the user wishes to consult them, simply click on '**Show more notification...**' and a new window will appear with the entire history of notifications. Here the user can search for notifications or delete them:



Level	Message	Origin	Time
INFO	Operation saved in AP800	OPERATION	3/24/26, 4:34 PM
WARN	You must select the start of the route before uploading operation	OPERATION	3/24/26, 4:28 PM
INFO	Nothing to save in AP800	OPERATION	3/24/26, 4:26 PM
INFO	Yaw Command sent	PLATFORM: AP800	3/24/26, 4:26 PM
INFO	Operation saved in AP800	OPERATION	3/24/26, 4:26 PM

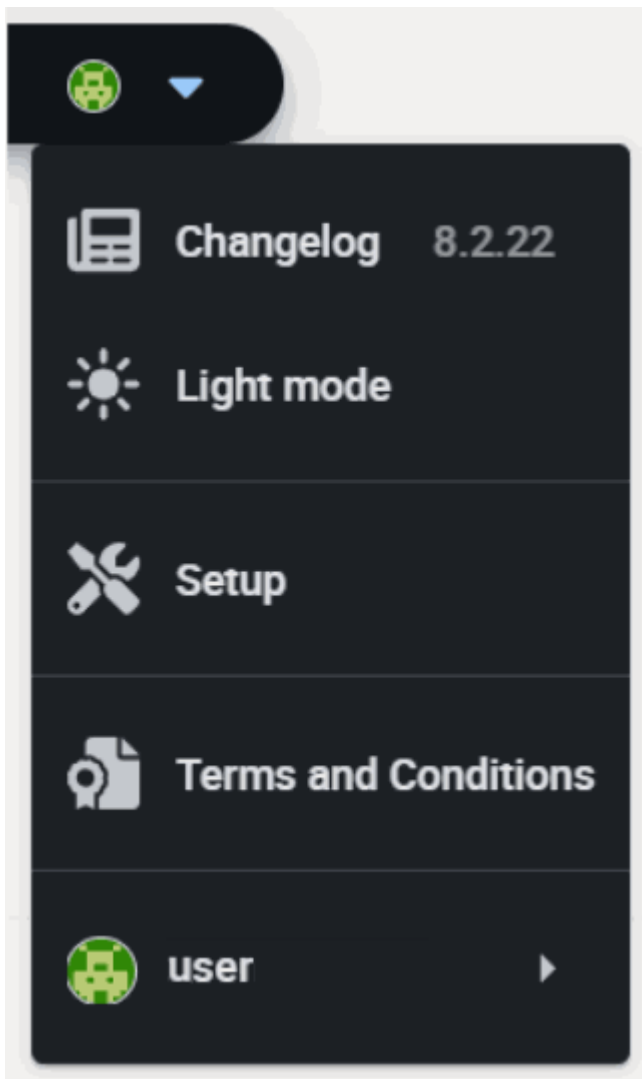
## History of notifications

Besides, in the notification configuration users can choose, to some degree, which groups of notifications are shown or not. This is to a certain degree because, as the classification described above has been defined according to importance, **error notifications will always be shown** (as they are the most important ones) but warning and information notifications can be chosen to be seen/heard or not.

### More options

Moreover, by clicking on the drop-down menu on the right, users will find more options, such as:

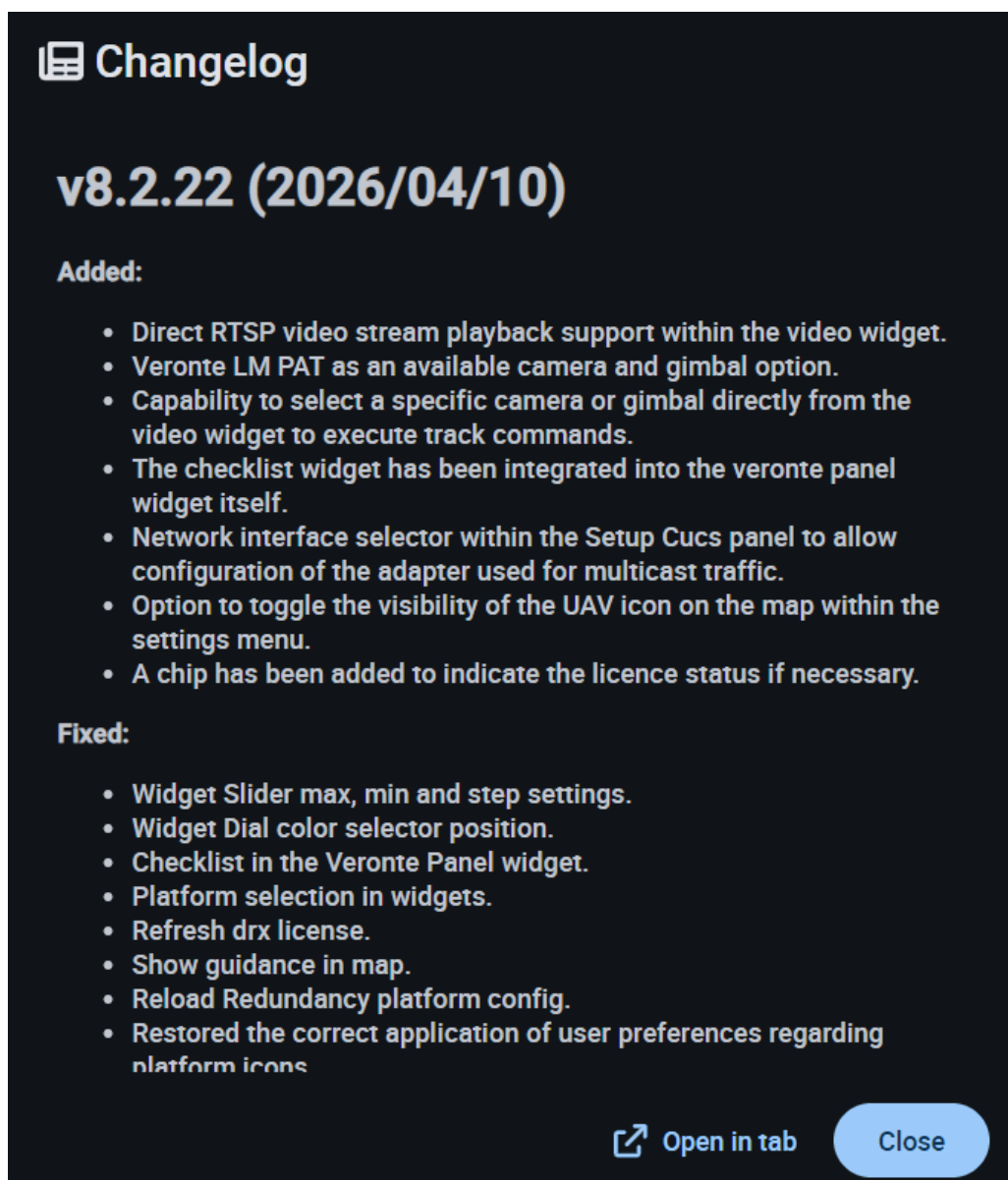
- [Changelog](#)
- [Light/Dark mode](#)
- [Status bar settings](#)
- [Setup](#)
- [Terms and Conditions](#)
- [Log in](#)



### Drop-down menu

#### Changelog

Users can consult the changelog, which shows all updates made to the application.

A screenshot of a dark-themed changelog window. At the top left is a list icon followed by the word "Changelog". Below that is the version and date "v8.2.22 (2026/04/10)". The content is divided into "Added:" and "Fixed:" sections, each with a bulleted list of changes. At the bottom right, there are two buttons: "Open in tab" with an external link icon and "Close" in a light blue rounded rectangle.

## Changelog

### v8.2.22 (2026/04/10)

**Added:**

- Direct RTSP video stream playback support within the video widget.
- Veronte LM PAT as an available camera and gimbal option.
- Capability to select a specific camera or gimbal directly from the video widget to execute track commands.
- The checklist widget has been integrated into the veronte panel widget itself.
- Network interface selector within the Setup Cucs panel to allow configuration of the adapter used for multicast traffic.
- Option to toggle the visibility of the UAV icon on the map within the settings menu.
- A chip has been added to indicate the licence status if necessary.

**Fixed:**

- Widget Slider max, min and step settings.
- Widget Dial color selector position.
- Checklist in the Veronte Panel widget.
- Platform selection in widgets.
- Refresh drx license.
- Show guidance in map.
- Reload Redundancy platform config.
- Restored the correct application of user preferences regarding platform icons.

[Open in tab](#) [Close](#)

## Changelog

### Light/Dark mode

Change the interface display mode: Light/Dark mode.

### Light/Dark mode

#### Status bar settings

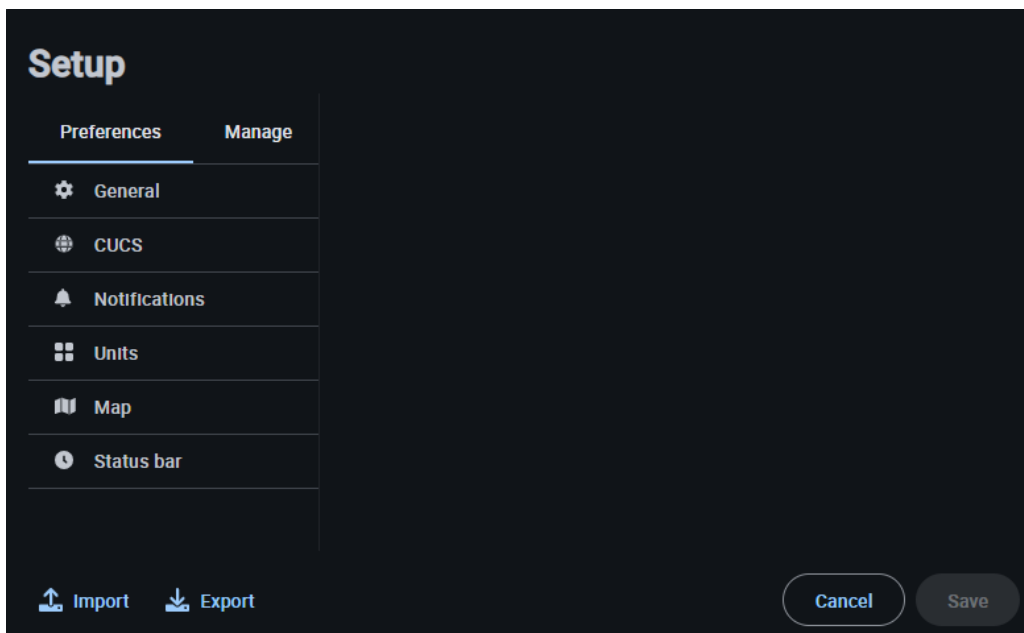
This menu allows the user to **enable/disable** the information items in the status bar.

**Note**

To save any changes, click the "Save" button in the bottom right corner of the menu.

## Setup

This menu allows to edit the general settings of **Veronte Ops**:



### Status bar - Setup

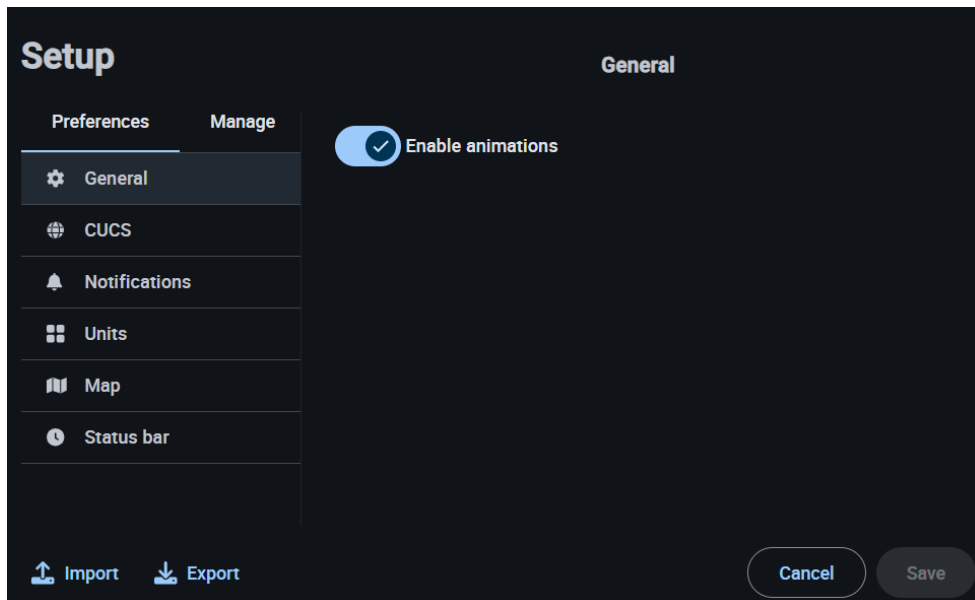
**Note**

Clicking the '**Close**' button, in the bottom right corner of the menu, will **close** this window **and save** any changes made.

## Preferences

- **General:**

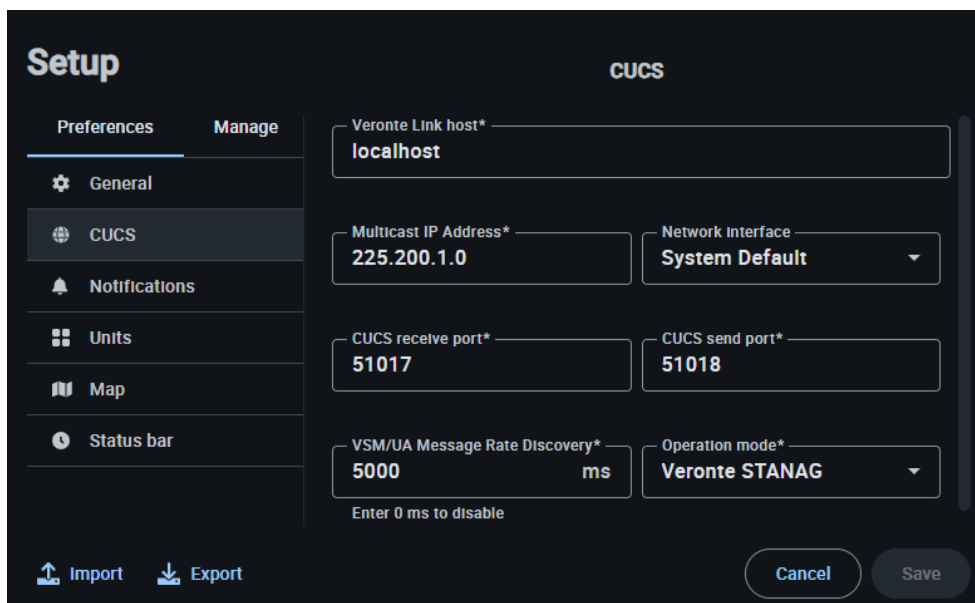
This section allows users to enable or disable application animations to optimize visual fluidity.



### Status bar - General

- **CUCS:**

The CUCS allows the integration of the STANAG 4586 protocol, that enables different control stations to interact with the same UAV.



### Status bar - CUCS

- **Veronte Link Host:**

As Veronte Link is the Embention application that stores, reads and manages all the configurables of the products, the user can choose which Veronte Link to use to access the data, to access certain products.

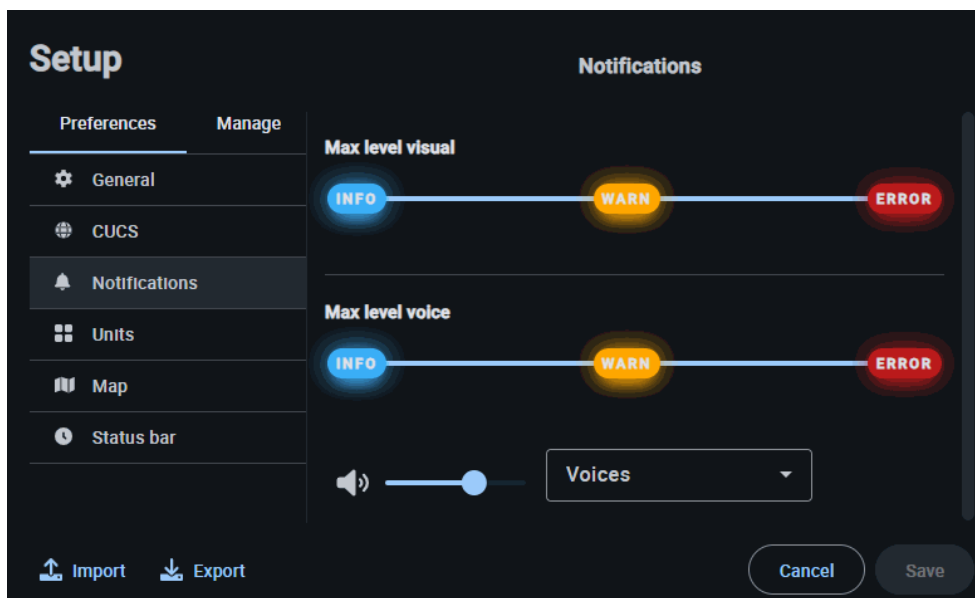
By default, the IP address 'localhost' is set, which is the Veronte Link on the same PC as **Veronte Ops**.

However, it is also possible to connect **Veronte Ops** to a Veronte Link running on a different computer, simply by entering the IP address of that computer, so **Veronte Ops** will be able to access the devices connected to it.

- **Multicast IP Address:** Specifies the IP address used for multicast data distribution within the network.
- **Network Interface:** Allows the selection of the physical or virtual interface (Ethernet, Wi-Fi, or Loopback).
- **CUCS Receive/Send Port:** UDP ports dedicated respectively to the reception and sending of data.
- **VSM/UA Message Rate Discovery:** Frequency with which the system scans the network in search of new VSM modules.
- **Operation Mode:** Determines the communication standard, allowing a choice between the Veronte STANAG protocol or compliance with the international STANAG 4586 standard.

#### • Notification

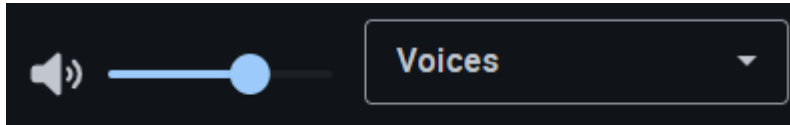
The Notifications section allows for the management and filtering of system feedback through the following parameters:



#### Notifications menu - Configuration

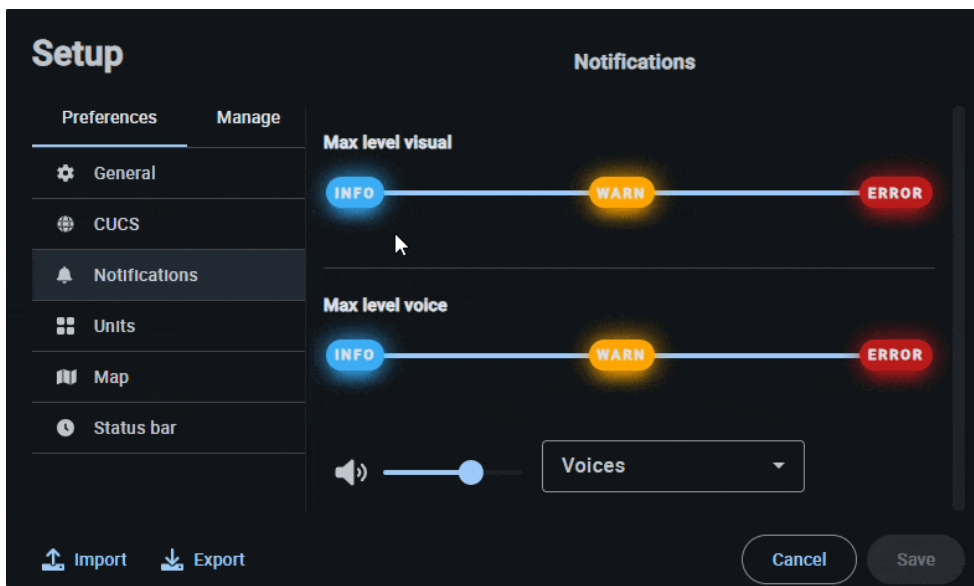
- **Max level visual:** Sets the threshold for on-screen message display. The user can select the maximum level of importance (INFO, WARN, or ERROR) to be shown visually.

- **Max level voice:** Defines the criticality level above which alerts are played via voice. This allows the operator to receive audible warnings only for the most relevant events.



### Sound notifications language

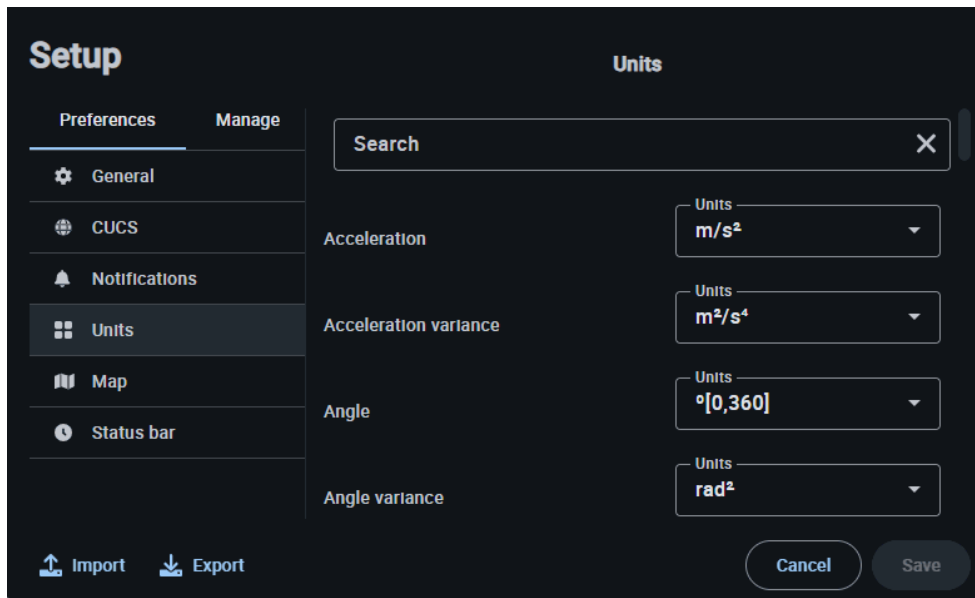
- **Volume and Voices:** Includes a slider to adjust the audio volume and a dropdown menu to select the preferred voice pack for system alerts. Below is an example of how to customize the notification settings:



### Modified notifications

- **Units**

This panel shows all the system units available for the system variables. They are sorted by variable type in alphabetical order: acceleration, temperature, velocity, etc.



### Units settings panel

The following table shows all the units available in **Veronte Ops**:

Variable Type	Units
Acceleration	[m/s <sup>2</sup> ] [ft/s <sup>2</sup> ] [in/s <sup>2</sup> ] [g]
Acceleration variance	[m <sup>2</sup> /s <sup>4</sup> ]
Angle	[rad] rad[-π;π] rad[0;2π] [°] °[-180;180] °[0;360] [° ' " ] °'''(N/S) °'''(E/W)
Angle Variance	[rad <sup>2</sup> ]
Angular Acceleration	[rad/s <sup>2</sup> ] [rad/m <sup>2</sup> ] [rad/h <sup>2</sup> ] [°/s <sup>2</sup> ] [°/m <sup>2</sup> ] [°/h <sup>2</sup> ]
Angular Velocity	[rad/s] [°/s] [rad/m] [rad/h] [rps] [rpm] [rph] [°/s]
	[rad <sup>2</sup> /s <sup>2</sup> ]

<b>Variable Type</b>	<b>Units</b>
Angular Velocity Variance	
Area	[m <sup>2</sup> ] [cm <sup>2</sup> ] [mm <sup>2</sup> ] [km <sup>2</sup> ] [mile <sup>2</sup> ] [ft <sup>2</sup> ] [yd <sup>2</sup> ]
Baudrate	[Bd] [kBd] [MBd]
Centimeters/ Pixels	[cm/pixel]
Current	[A] [mA]
Data	[bit] [byte] [KB] [GB] [bytes/s]
Decibel	[db]
Density	[kg/m <sup>3</sup> ]
Flow Rate	[m <sup>3</sup> /s] [gal/s] [gal/h] [l/s] [l/h]
Force	[N] [kN] [lbf] [pdl]
Frequency	[Hz] [MHz] [kHz]
Jerk	[m/s <sup>3</sup> ]
Length	[m] [km] [mm] [cm] [mi] [NM] [yd] [ft] [in]
Magfield Variance	[T <sup>2</sup> ]

<b>Variable Type</b>	<b>Units</b>
Magnetic Flux Density	[T] [nT] [gauss] [mG]
Mass	[kg] [g] [tonnes] [lbs] [oz]
Numeral System	[bin] [octal] [dec] [hex]
Percentage	[x1] [%]
Power	[W] [kW] [Kgm/s] [erg/s] [CV]
Pressure	[Pa] [kPa] [bar] [mbar] [psi] [mmHg] [inHg] [ft] [at] [atm]
Pressure Square Error Rate	[Pa <sup>2</sup> /s]
Pressure Variance	[Pa <sup>2</sup> ]
Resistance	[Ω]
Temperature	[K] [°C] [°F]
Time	[s] [Time] [min] [h] [μs] [ms]
Transfer	[pkts/s]
Velocity	

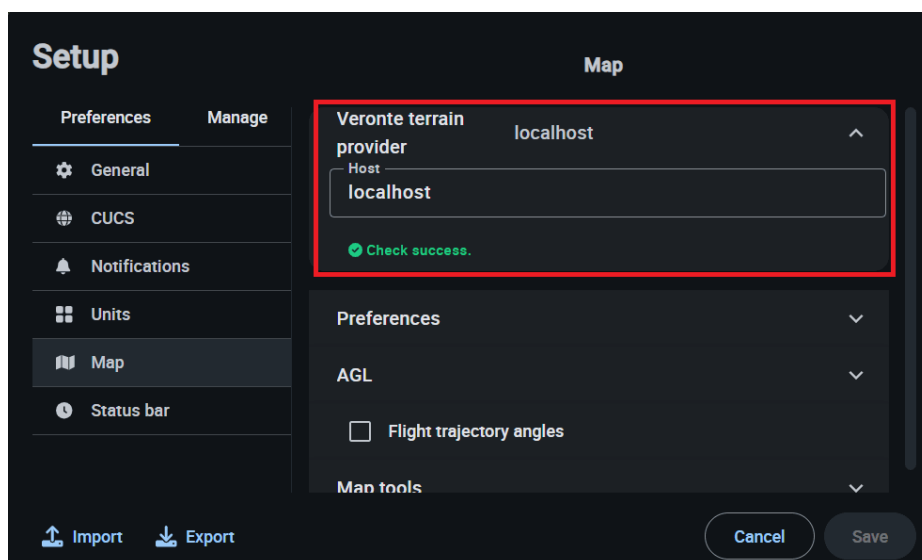
Variable Type	Units
	[m/s] [kt] [km/h] [mph] [ft/s] [ft/m] [mm/s]
Velocity Variance	[(m/s) <sup>2</sup> ] [(cm/s) <sup>2</sup> ] [(mm/s) <sup>2</sup> ]
Voltage	[V] [mV]
Volume	[m <sup>3</sup> ] [dm <sup>3</sup> ] [mm <sup>3</sup> ] [L] [mL]

- **Map**

In this menu, it is possible to edit the terrain data settings, such as:

- **Veronte Ops SRTM data provider:**

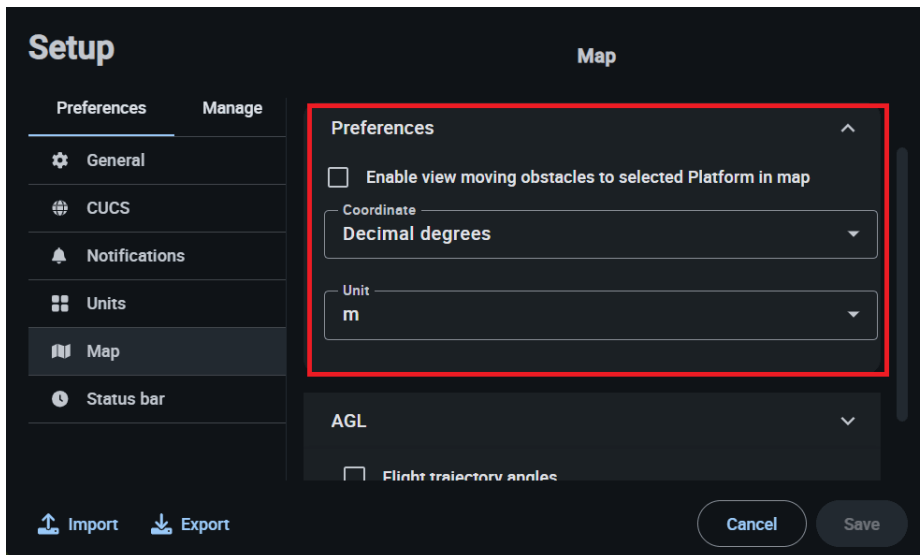
- **Host:** The default SRTM data provider configured is the [Veronte Terrain Provider](#) application (i.e., localhost ), but users can enter another SRTM data provider that is located on the PC.



### Map settings panel - Veronte Terrain Provider

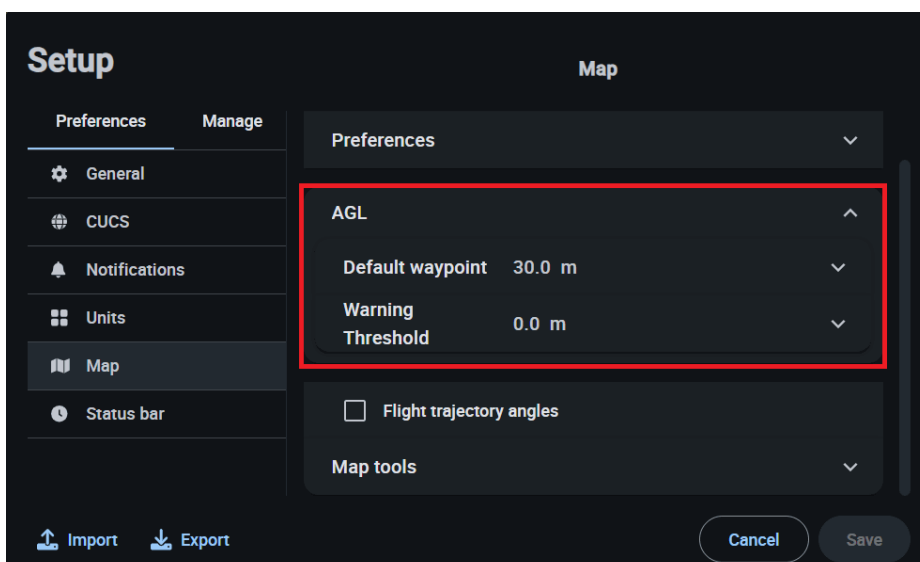
- **Preferences**

Users can customize the coordinates and height units of the map.



### Map settings panel - Preferences

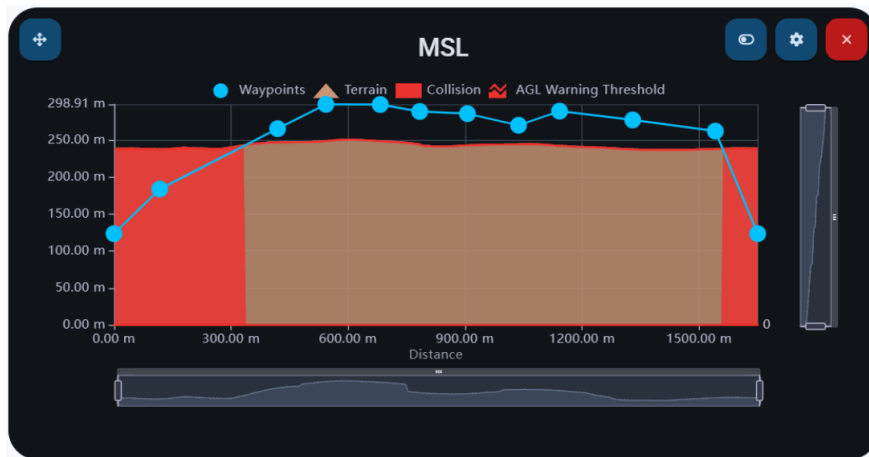
- **Enable view moving obstacles to selected Platform in map:** When enabled, this function displays moving obstacles (such as other aircraft or tracked targets) on the map relative to the selected platform's position.
  - **Coordinate:** Select the units of the coordinates. The available options are **Decimal degree**, **Degrees**, **UTM** and **MGRS**.
  - **Unit:** It is possible to select the units of the height from the drop-down menu.
- **AGL**



### Map settings panel - AGL

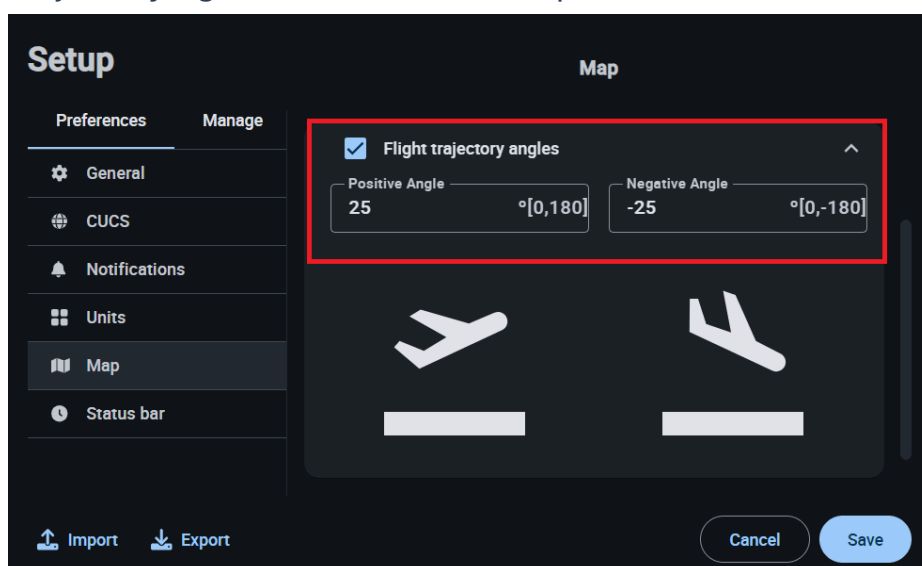
- **Default waypoints:** Enter the default altitude, in AGL, of the waypoints created.

- Warning Threshold:** It is possible to add a warning threshold to **avoid collision with terrain**. This will appear as a line when users open the '**elevations**' option in the created route. For example, if the warning threshold is set to 0 metres, a **red warning line** will be drawn in the 'elevations' menu **0 metres above each terrain point**. Also, if the **mission path intersects this line**, **Veronte Ops** will interpret this as the route **colliding with the terrain**:



**Map settings panel - Warning**

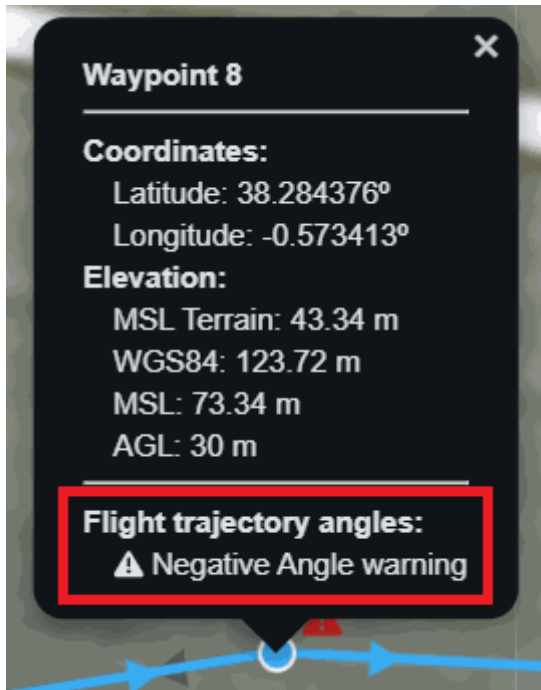
- Flight trajectory angles:** Defines the angle between the aircraft's velocity vector and the horizontal plane. A positive angle indicates a climb, while a negative angle indicates a descent. Enabling this option allows the user to set the operational limits for these angles, which Veronte Ops uses to visually validate the mission trajectory against the aircraft's capabilities.



**Map panel - Flight trajectory angles**

- **Positive Angle:** Sets the maximum angle for climbing in degrees.
- **Negative Angle:** Sets the maximum angle for descending in degrees.

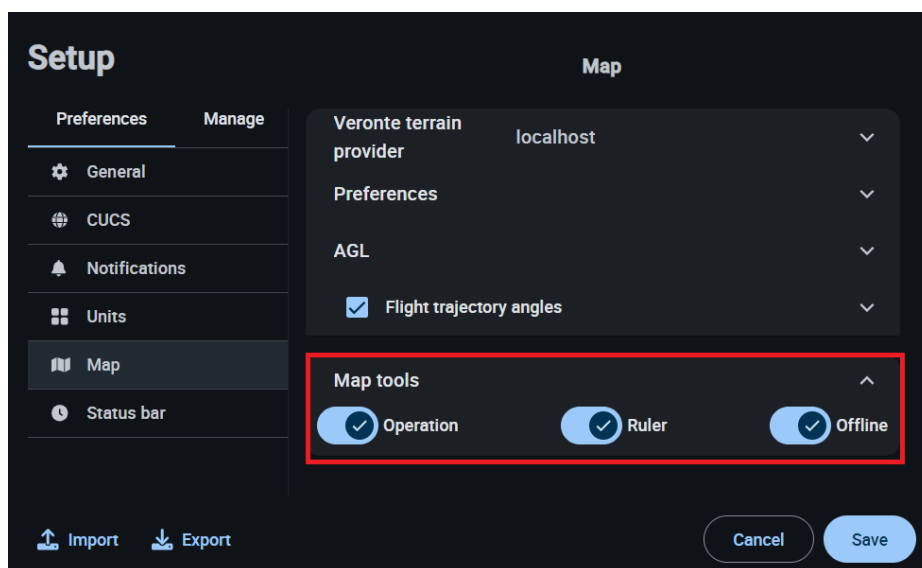
If the configured Positive/Negative Angles result in a climb or descent capability that is insufficient to meet the target altitude, a Warning will be triggered.



**Map panel - Flight trajectory angles warning**

#### ◦ **Map tools**

Here, the user can choose, by enabling or disabling them, the group of functionalities to be displayed in the mission toolbar.



**Map panel - Map tools**

To save the changes made, click on the '**Save**' button.

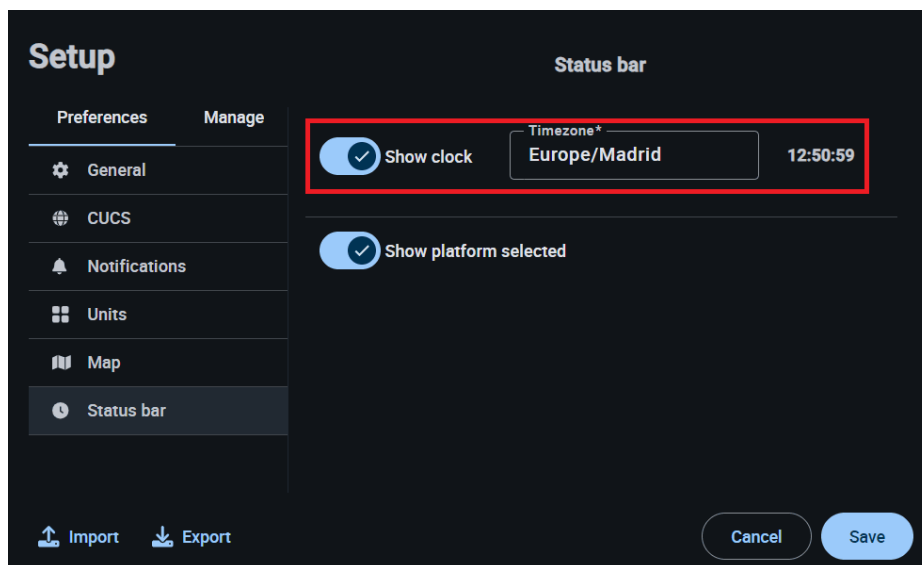
Each group of functionalities has been described in the previous sections.

- [Operation](#)
- [Ruler](#)
- [Offline](#)

- **Status bar**

- **Show Clock**

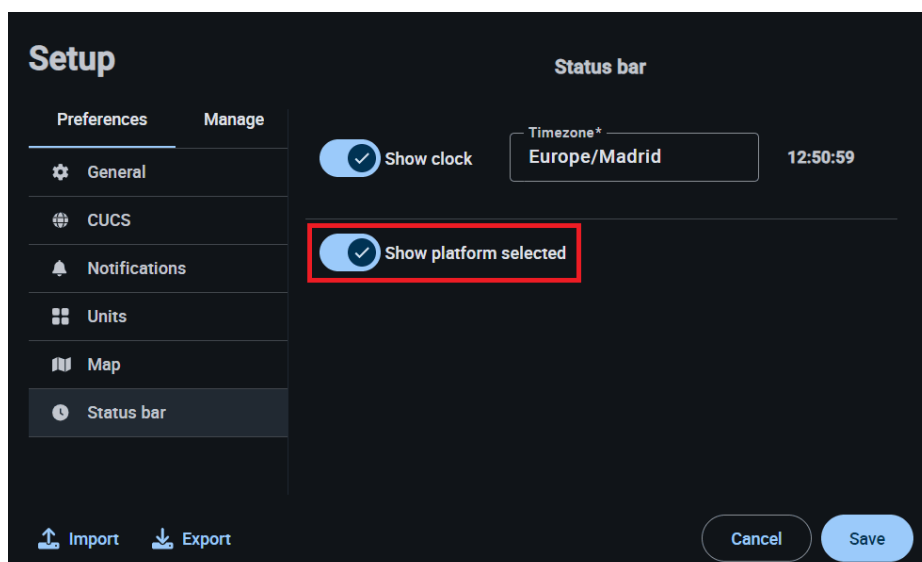
It is possible to customize the timezone where users are working.



### Clock panel

- **Show platform selected**

This element informs the user whether a **Veronte Autopilot 1x** is **not connected**, **not selected**, **connected**, **disconnected** or **in maintenance mode**, and the name of this device.



## Platform selected panel

### Manage

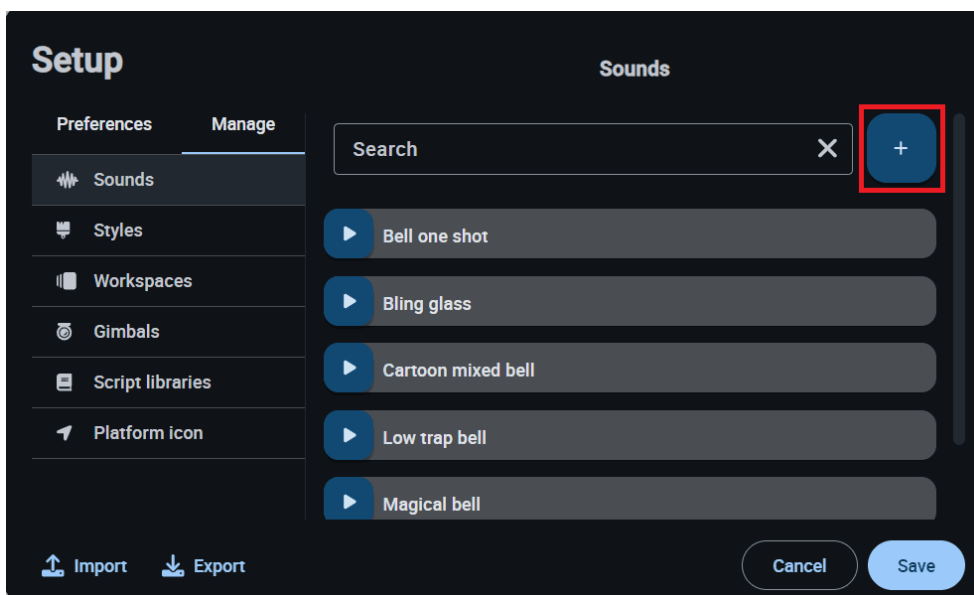
- **Sounds**

This section lists the available sounds that can be selected through the editing/configuration of the mission.

In addition, users can also add their own audio files from local storage. For this, click **Add** and select the desired audio file.

Supported formats

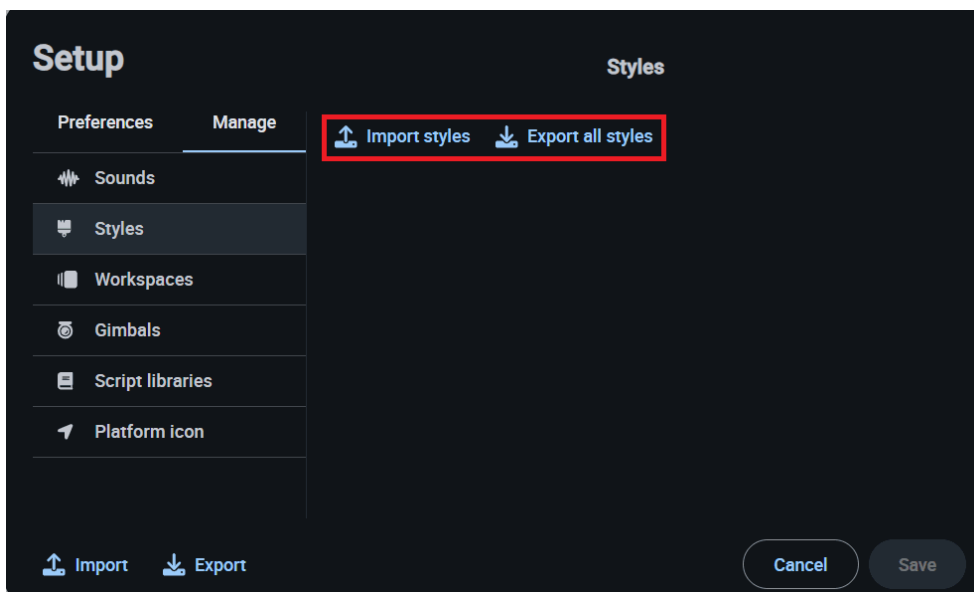
are .opus, .flac, .webm, .weba, .wav, .ogg, .m4a, .oga, .mid, .mp3, .aiff, .wma, .au.



### Sound panel

- **Styles**

This section allows the user to import and export **custom widget styles**.



## Style manager panel

- **Import styles:** By clicking here, users can import custom styles as a **zip folder** or by directly selecting all desired custom styles `.css` files. When the styles are imported, a notification will appear:



### Style manager panel - Import notification

- **Export all styles:** By clicking here, all **custom** styles will be exported as a zip folder:

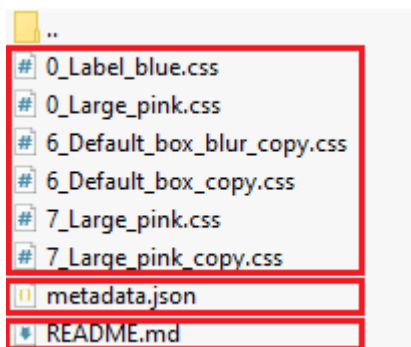


### Style manager panel - Export

#### **Note**

**Default** widget styles will **not** be **exported**.

The zip folder will contain all the `.css` files with custom styles for the different widgets, a `metadata.json` file and a `README` file:



### Style manager panel - Exported files

- **metadata.json** file: This file contains the IDs of the styles that are assigned to the workspaces.

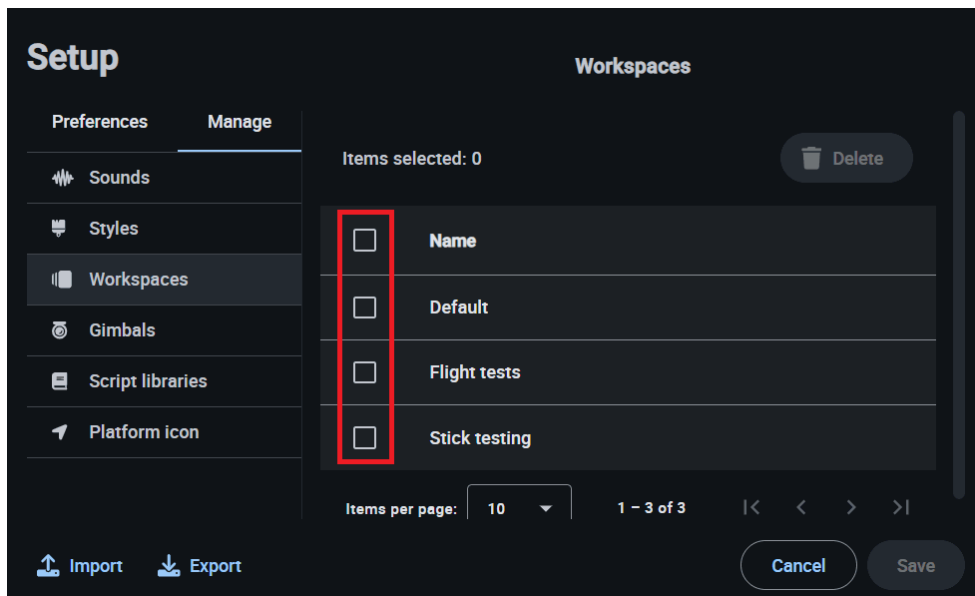
#### **Danger**

It is advisable **not to modify** this file.

- **README** file: Pay special attention to this file to find out how to create or modify a style.

- **Workspaces**

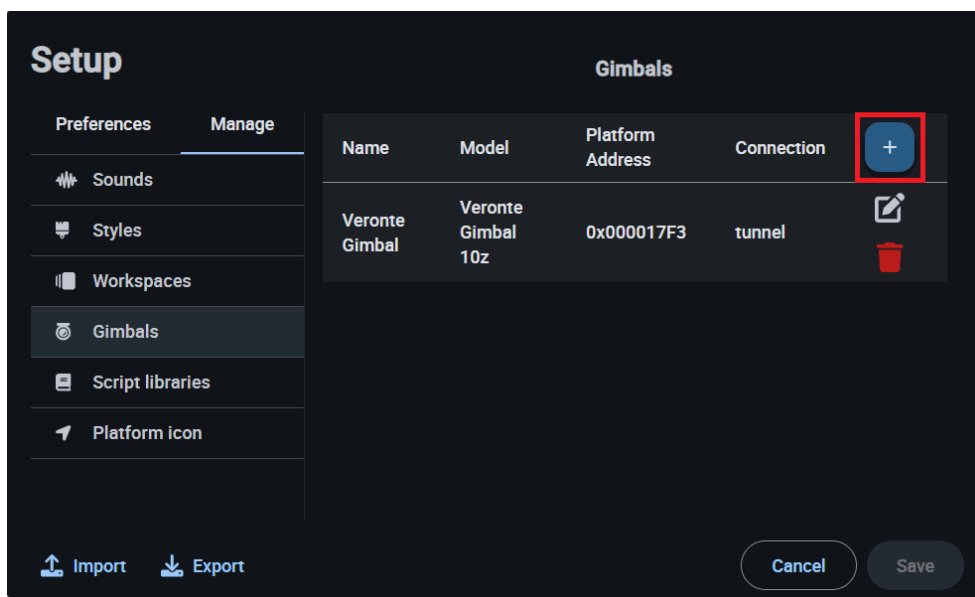
From this panel users can **delete** one, several or all **workspaces** created. To do this, simply **select** the **workspaces** to be deleted and then click on the '**Delete**' button.




**Workspace manager panel**

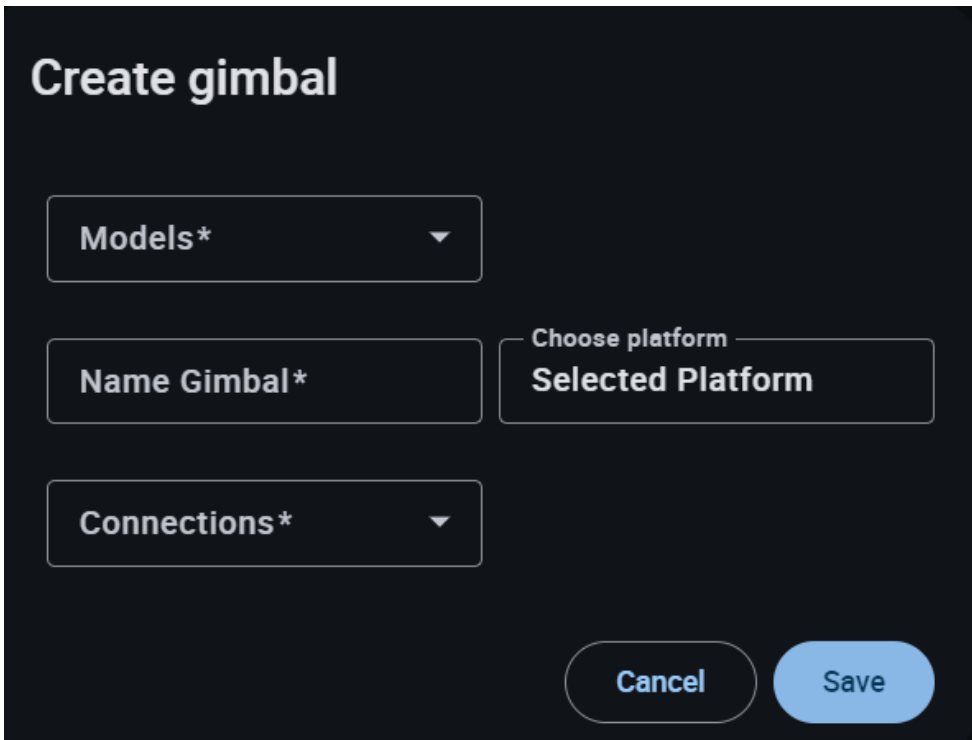
- **Gimbals**

Users can add a predefined gimbal from this panel:



**Gimbal panel**

Clicking the  icon displays the following configuration panel to add a new gimbal:



### Gimbal panel - Create gimbal

- **Models:** Select a gimbal model from the list. The available options are **NextVision Trip2/Trip5**, **Veronte Gimbal 10z** and **Veronte Gimbal 30z**.
- **Name Gimbal:** Enter the desired name for the gimbal to be added.
- **Choose Platform:** Users must select the platform for which the gimbal is configured.

The available options will always be the IDs of the connected Autopilots 1x and '**Selected platform**', i.e. the platform that is selected.

- **Connections:** The type of connection through which **Veronte Ops** sends commands to the gimbal must be selected:
  - **Veronte Tunnel:** When choosing this connection type, **Veronte Autopilot 1x** tunnel is used to send commands to the gimbal. Users must also specify the **Veronte tunnel port** used: 1, 2 or 3.

#### **Warning**

Be careful! This port must match the [Tunnel](#) port configured in the **1x PDI Builder** software.

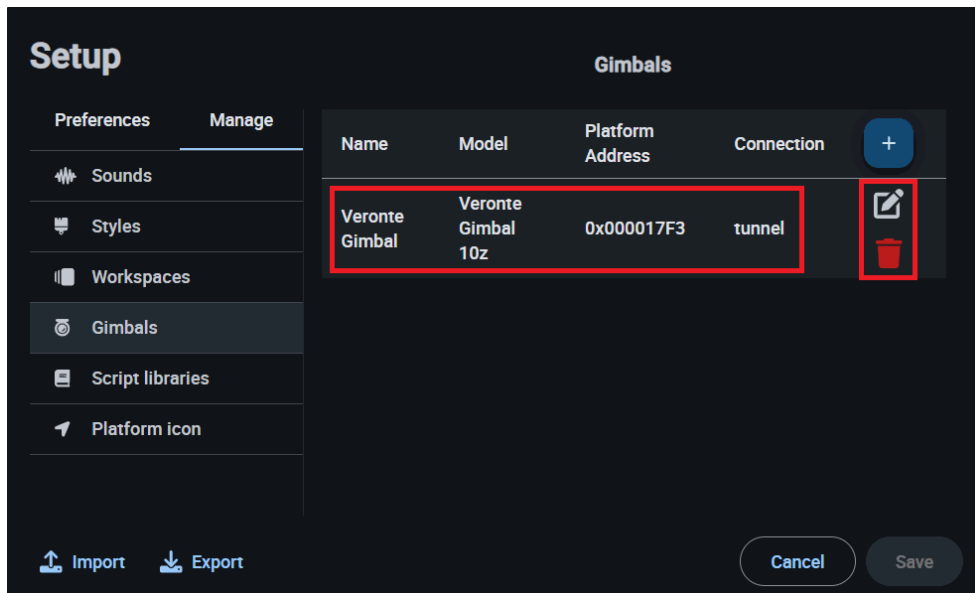
- **UDP:** When choosing this connection type, a standard network protocol is used to communicate with the gimbal. Users must provide the following network details:
  - **Host IP:** Enter the IP address of the gimbal or the device acting as the communication interface.
  - **Port:** Specify the UDP port configured for the gimbal's control commands.
- **WebSocket:** In order to send commands via the [Web Converter application](#), it is required to enter the **websocket\_url** configured in that tool in the **URL** field and copy the **websocket\_port** configured as the camera's udp connection in the **port** field.
- **Advanced:** Depending on the gimbal model chosen, some additional options can be configured which are characteristic of each gimbal.

 **Note**



This option will only appear after the selection of the gimbal model.

- NextVision Trip2/Trip5 model: It is possible to enable/disable the sending of some specific messages.
- Veronte Gimbal 10z/30z models: The **Id** of the **gimbal block** that has been configured in the **Veronte Autopilot 1x** setup can be entered. For more information on this, please refer to the [Gimbal - Devices blocks](#) of the **Block Programs** section in the **1x PDI Builder** user manual.

Then, the created gimbal will appear on the panel:

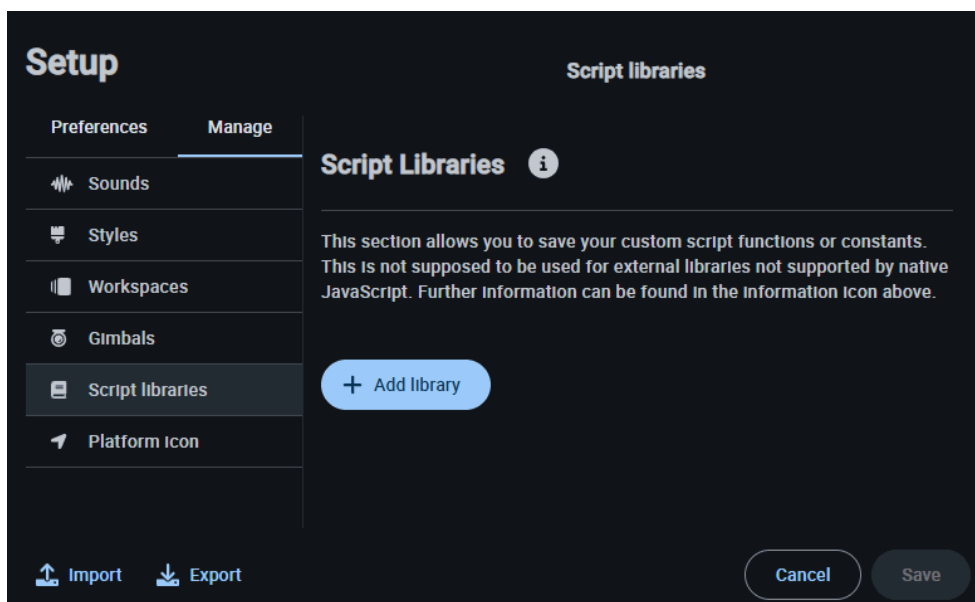


### Gimbal panel - Gimbal added

-  **Edit gimbal:** Allows the user to access again to the configuration menu described above.
-  **Remove Gimbal:** Removes this gimbal.

### • Script Libraries

The Script Libraries section allows you to create and manage custom libraries in native JavaScript directly within Veronte Ops. It is used to define reusable custom functions or constants to automate processes or perform complex calculations not provided by default.




### Script Libraries

Click on  to insert custom code.

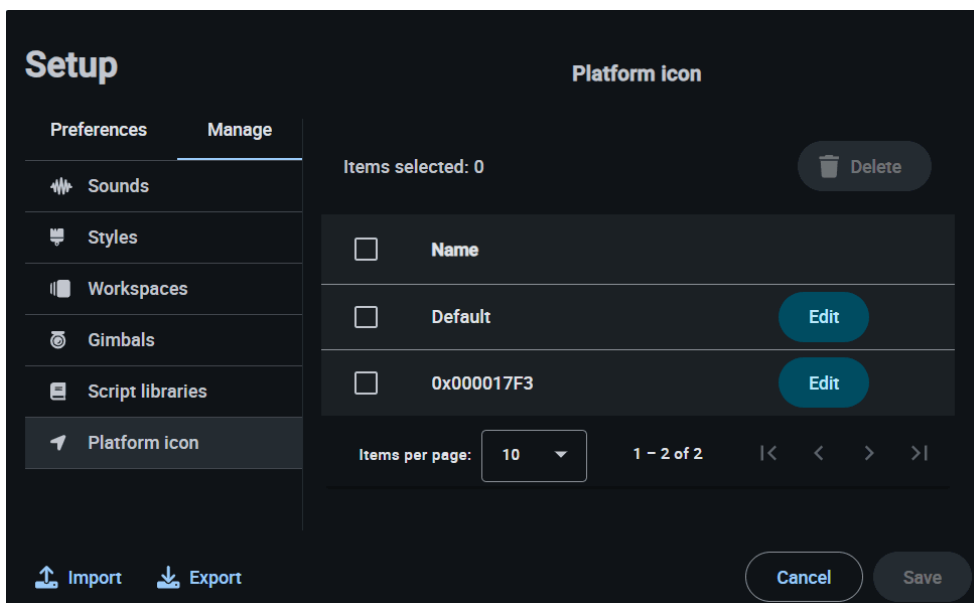
### **Warning**

It does not support loading external libraries that are incompatible with native JavaScript.

Further technical details are available by clicking the  information icon.

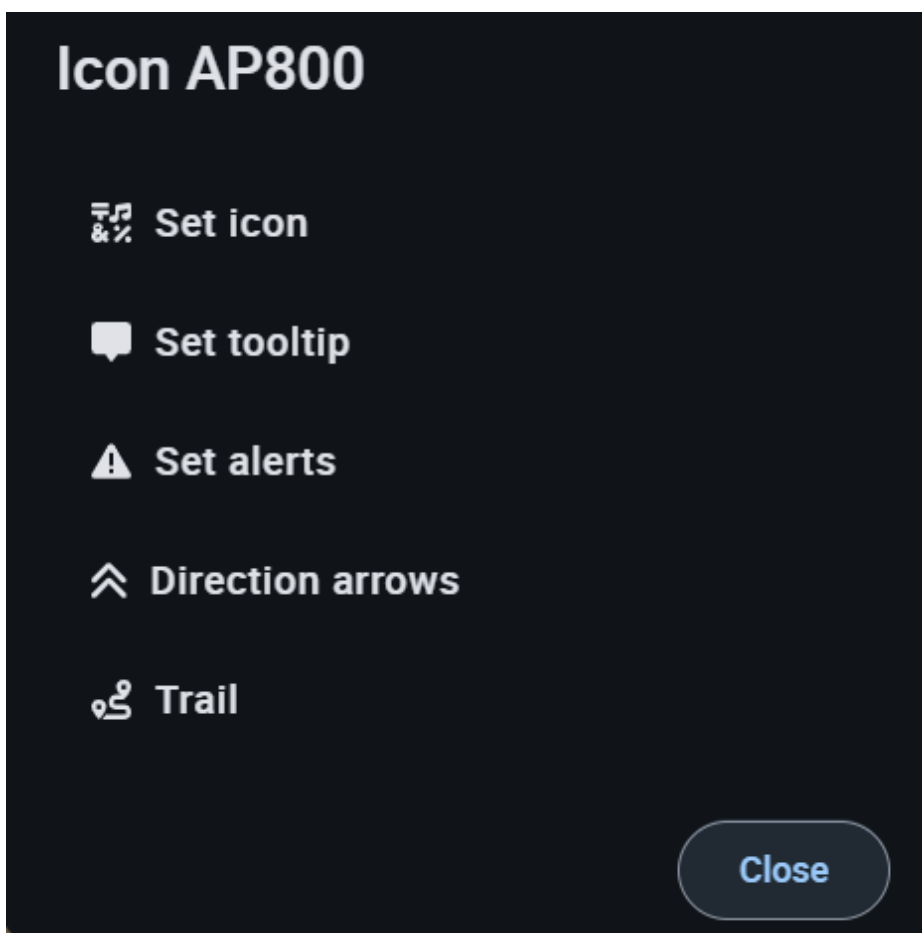
## • **Platform icon**

This icon allows the user to locate and follow the position of the platform at any time during the operation.



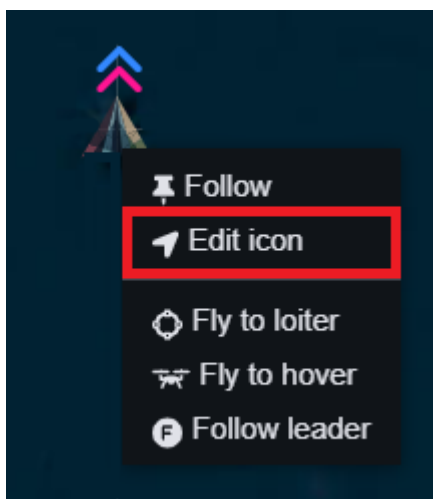
## **Platform icon**

- **Follow:** Keeps the platform always centered on the map during operation.
- **Edit icon:** Users will access to the settings menu:



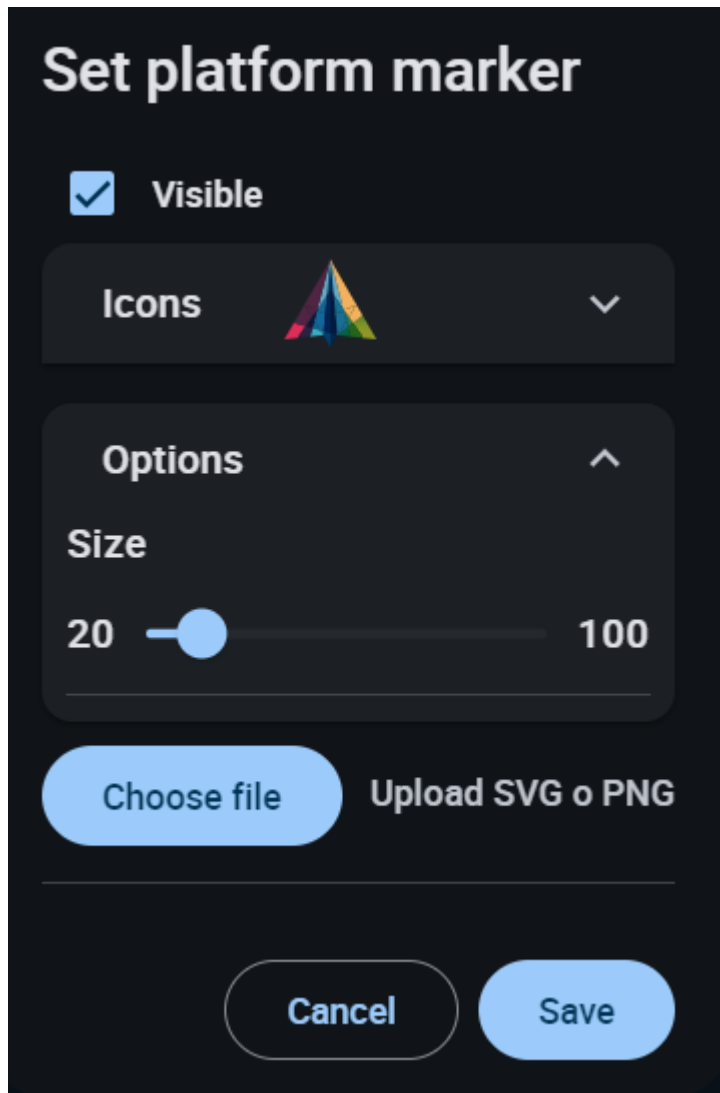
### Platform icon settings

These settings can be accessed by right-clicking on the icon.



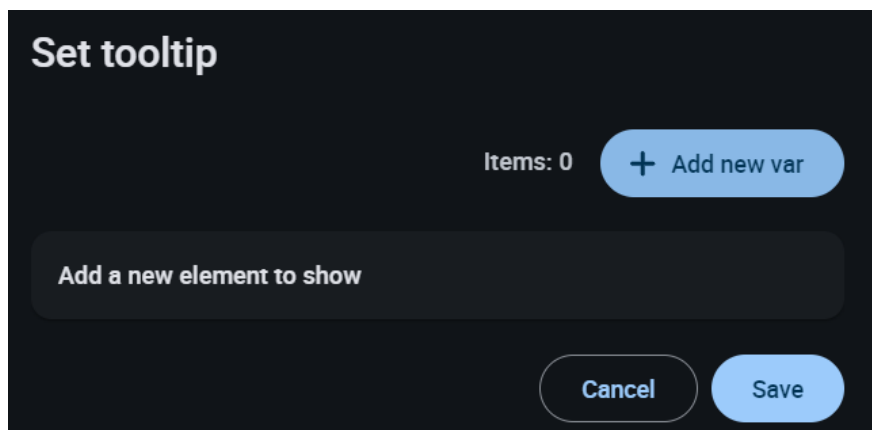
### Platform icon options

- **Set icon:** Users can customize the icon that will be used to represent the position of this unit on the map. They can choose one of the default icons or upload one from the laptop, as well as set the icon size.



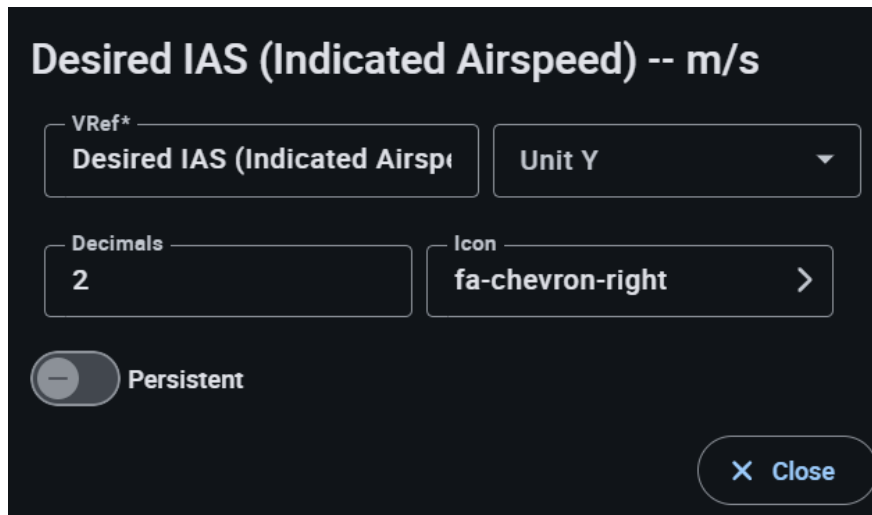
### Platform icon settings - Set icon

- **Set tooltip:** Allows the user to display a variable next to the platform icon.



### Platform icon settings - Set tooltip

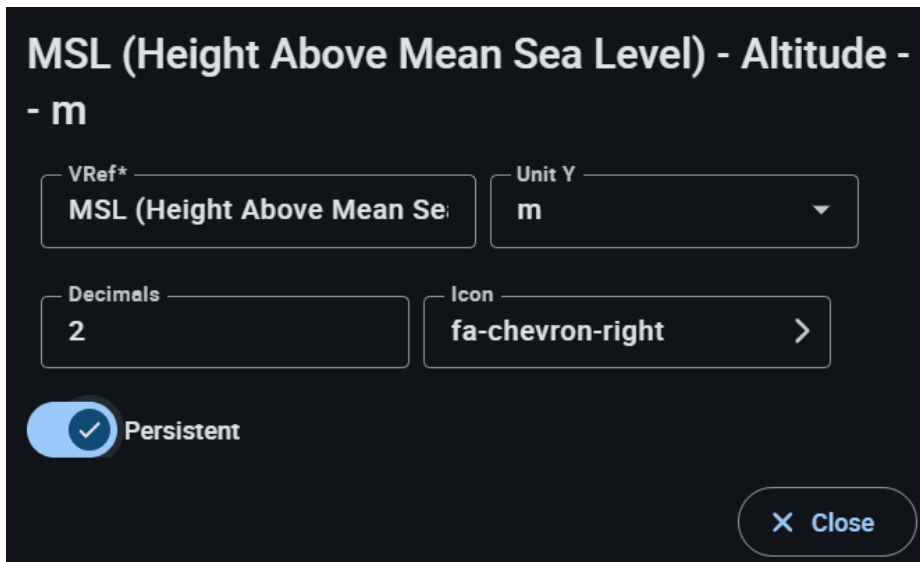
The following parameters must be configure by clicking on '**Add new var**':



### Platform icon settings - Set tooltip configuration</figcaption>

- **VRef:** Select the desired variable to be displayed.
- **Unit** and **Decimals:** The units and decimals can also be modified. These parameters will appear depending on the variable chosen.
- **Icon:** Choose the icon to be shown next to the variable.
- **Persistent:** When **enabled**, this tooltip will **remain displayed during the operation**. **Otherwise**, it will **only** appear **when clicking** on the icon.

An example is shown here:

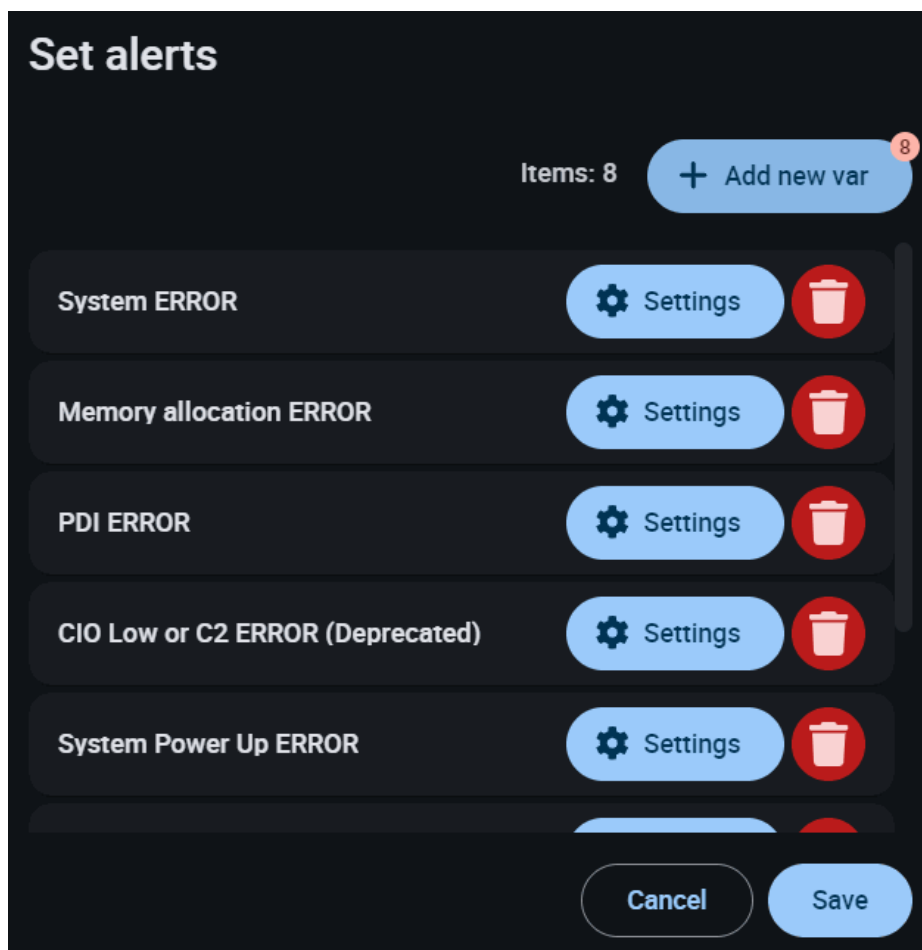


### Platform icon settings - Set tooltip example



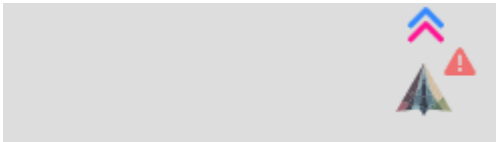
### Platform icon settings - Set tooltip example

- **Set alerts:** These alerts are **bit** variables that appear next to the platform icon when in 'error mode'.  
By default, some bits that are sent in the autopilot '[Extended Status Message](#)' are configured as alerts. The user can add as many alerts as desired.



### Platform icon settings - Set alerts

They are displayed with the **icon**, which has been configured with them, **flashing red** when in 'error mode'. When the platform icon is clicked on, the name of the variable that has triggered this alert will be displayed. An example is shown below:



### Platform icon settings - Set alerts

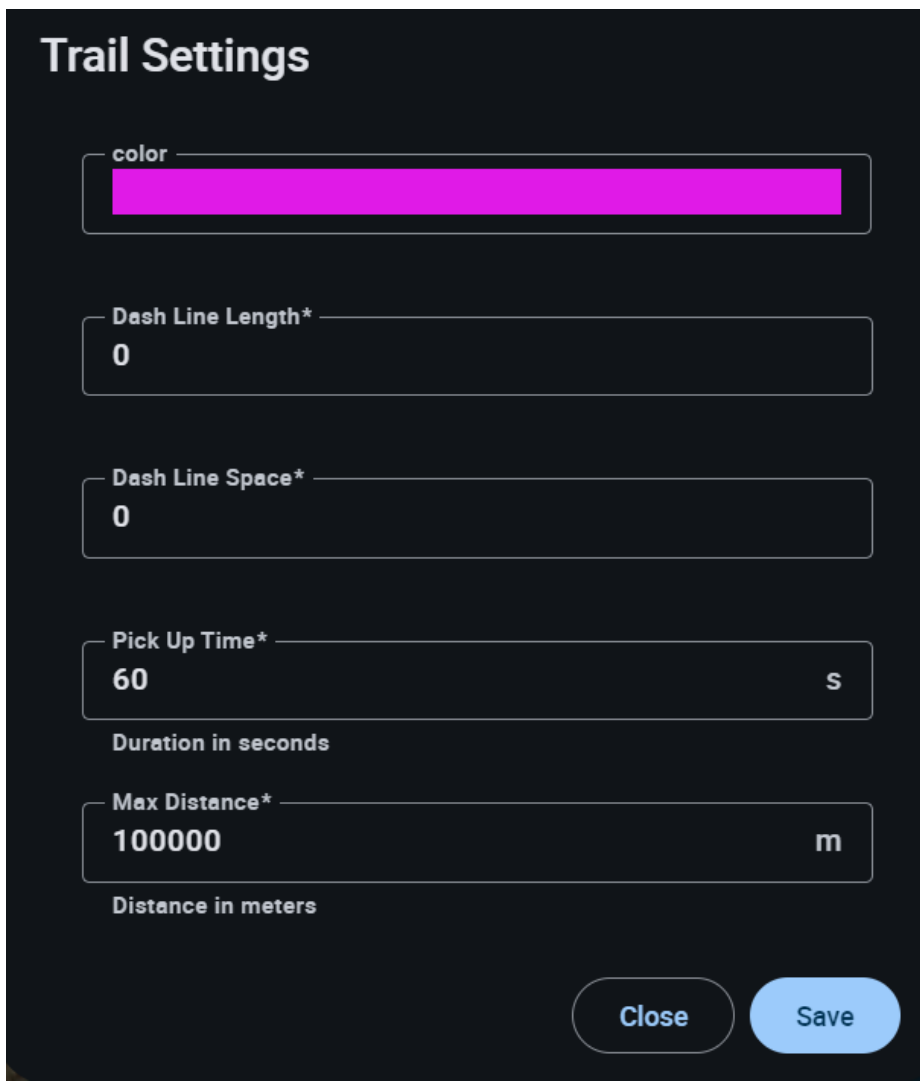
- **Direction arrows:** Users can choose variables from the **real angular variables** of the system to be displayed as the **yaw** and **heading arrows**.

By default, the variables displayed are Yaw and Heading respectively. In addition, users can change the color of each arrow as desired.

A screenshot of the 'Arrows' configuration screen. The screen has a dark background. At the top, the title 'Arrows' is displayed. Below it, there are two sections: 'Yaw' and 'Heading'. Each section has a 'VRef\*' label and a dropdown menu. The 'Yaw' dropdown is set to 'Yaw' and has a blue color selection bar next to it. The 'Heading' dropdown is set to 'Heading' and has a pink color selection bar next to it. At the bottom right, there are two buttons: 'Close' and 'Save'.

### Platform icon settings - Direction arrows

- **Trail:** The trail path of the platform can be customized.



### Trail Settings

color

Dash Line Length\*

0

Dash Line Space\*

0

Pick Up Time\*

60 s

Duration in seconds

Max Distance\*

100000 m

Distance in meters

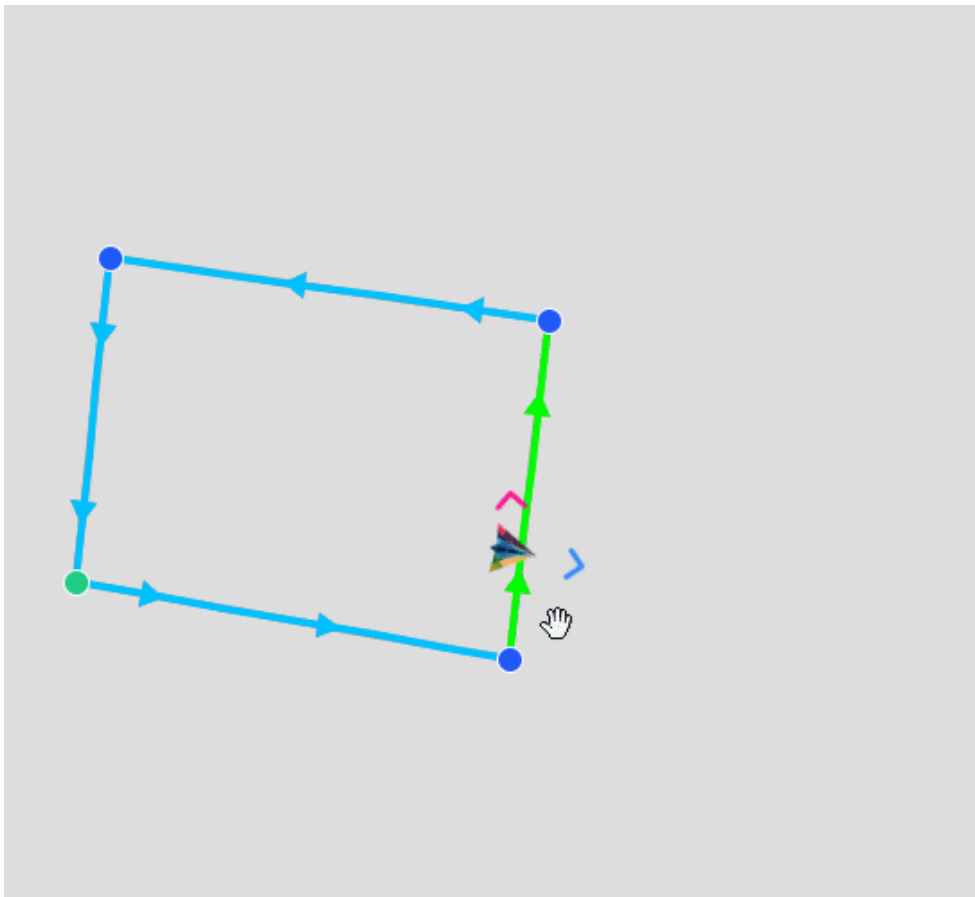
Close Save

#### Platform icon settings - Trail

- **Color:** Set the color trail.
- **Dash line length:** Sets the length of the dash line. This change is **visualized** when a **number other than of 0 is set**.
- **Dash line space:** Sets the space between dash lines. This change is **visualized** when a **number other than of 0 and greater than dash line length** is set.
- **Pick Up Time:** Sets the time for the first point of the trail to be removed. This change is **visualized** when the time is **other than 0 s**.
- **Max distance:** Sets the maximum length of the path to be drawn.
- **Fly to loiter:** Create a volatile loiter and change the current route.

#### Note

The platform will remain the altitude it had before this command.

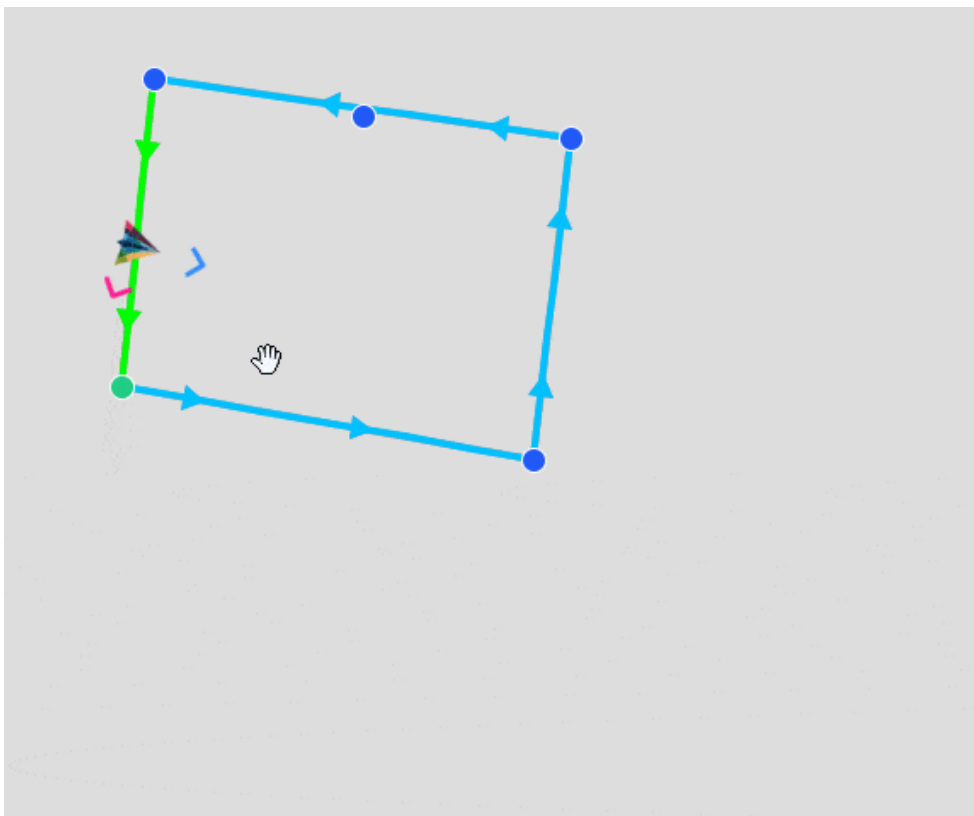


### Platform icon - Fly to loiter

- **Fly to hover:** Create a volatile waypoint and change the current route.

#### **Note**

The platform will remain the altitude it had before this command.



### Platform icon - Fly to hover

- **Follow leader:** With this action the platform will follow a moving object (it can be another platform). For more information on this, see [Follow Leader automation](#) of the **1x PDI Builder** manual.

The platform icon changes its appearance depending on the situation:

- **Platform disconnected:**
  - When **Autopilot 1x** is not connected, the platform icon is '**translucent grey**'
  - By default, it is placed in the world coordinates (0,0).



### Platform icon - Translucent grey

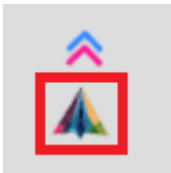
- **Platform connected:**
  - **During operation/configuration creation:**
    - The platform icon is '**translucent colored**', indicating that GPS data is not being received, i.e. **Position not fixed** status.

- It is placed in the **Initial position UAV** defined in the **Operation Panel**.



**Platform icon - Translucent colored**

- **During operation/simulation:**
  - The platform icon is '**colored**', indicating that GPS data is being received/simulated.
  - It is placed in the actual position/simulation position.

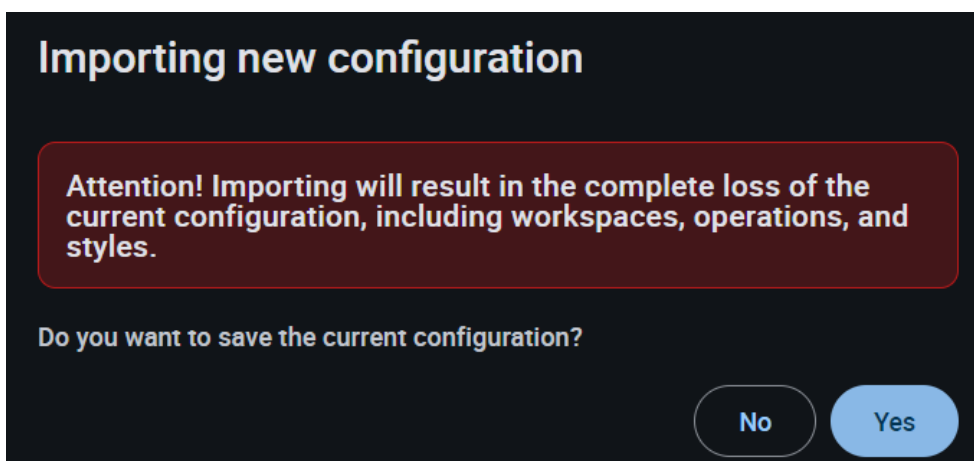


**Platform icon - Colored**

- **Import/Export**

Furthermore, all these settings can be **exported and imported** from one **Veronte Ops** to another, for example to move them from one PC to another.

When the user tries to import a new **Veronte Ops** configuration, the following confirmation message will appear:



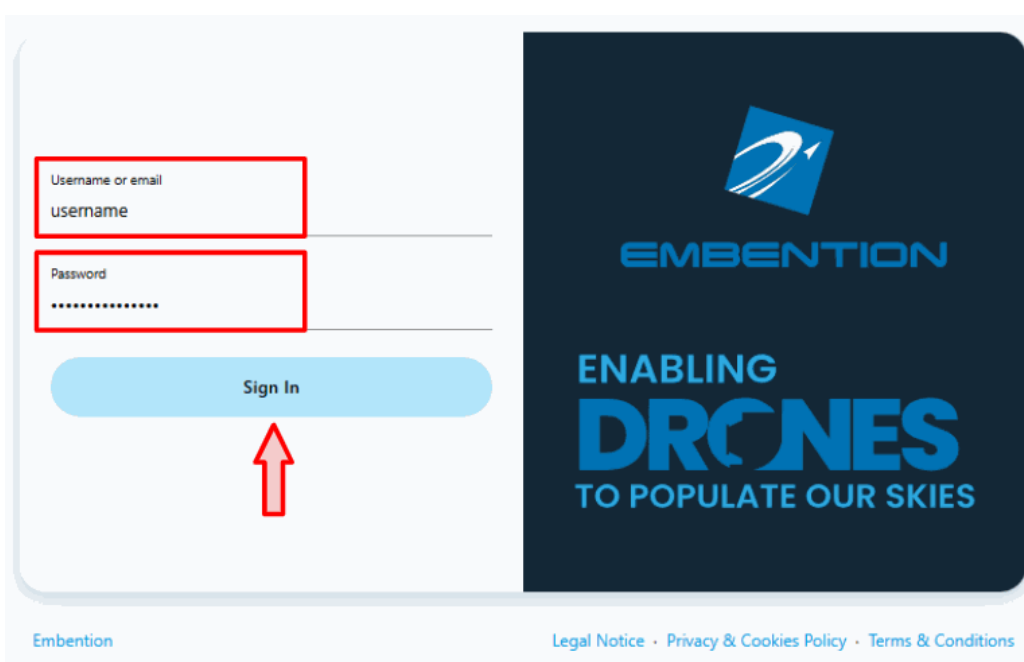
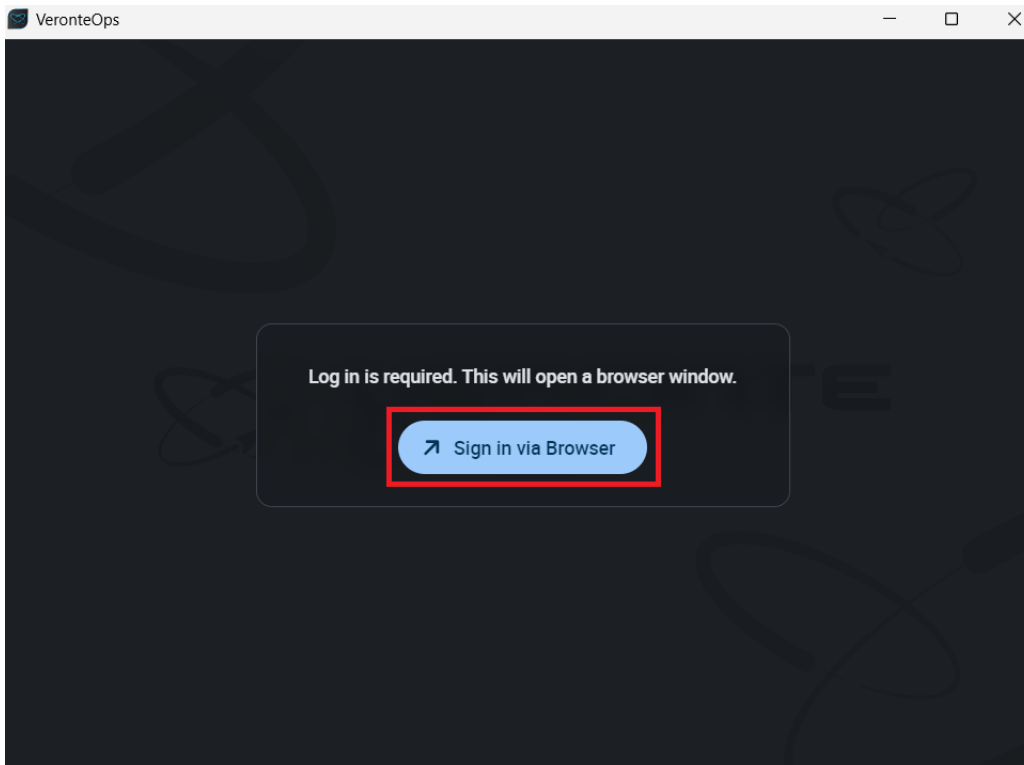
**Import Veronte Ops configuration**

## Terms and Conditions

Users can consult the 'End User License Agreement (**EULA**)' by simply clicking on this button.

## Log in

Authentication is required before any operation.



## Login

After clicking **Sign in**, a new window will open for users to enter their credentials. If users do not have credentials, do not know what they are or have any problems logging in with them, please contact the support team via the

Joint Collaboration Framework opening a [Ticket](#) or contact [sales@embention.com](mailto:sales@embention.com).

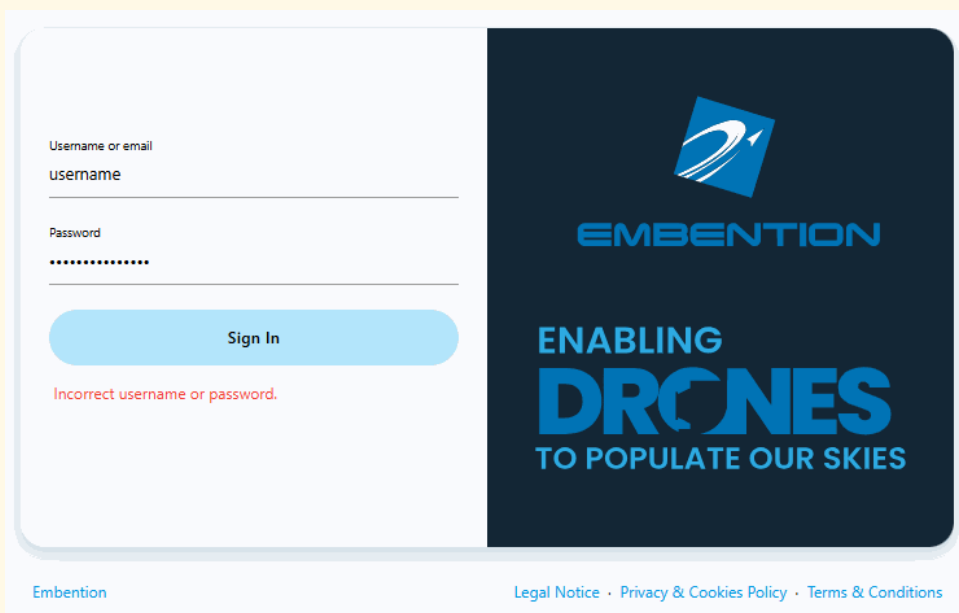
If the login is successful, the screen will change as shown below:



### Login successful

#### Warning

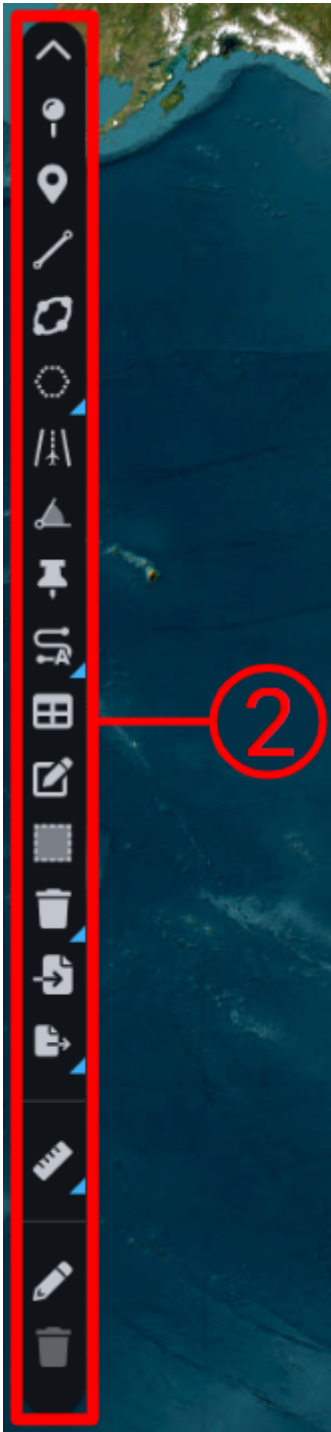
If incorrect credentials are entered, the system will display the error message Incorrect username or password.



## 2. Mission

The common way to work with **Veronte Autopilot** is to create missions.

Missions can be created and managed through the 'mission toolbar' (left side of the menu (2)).



**Mission toolbar**

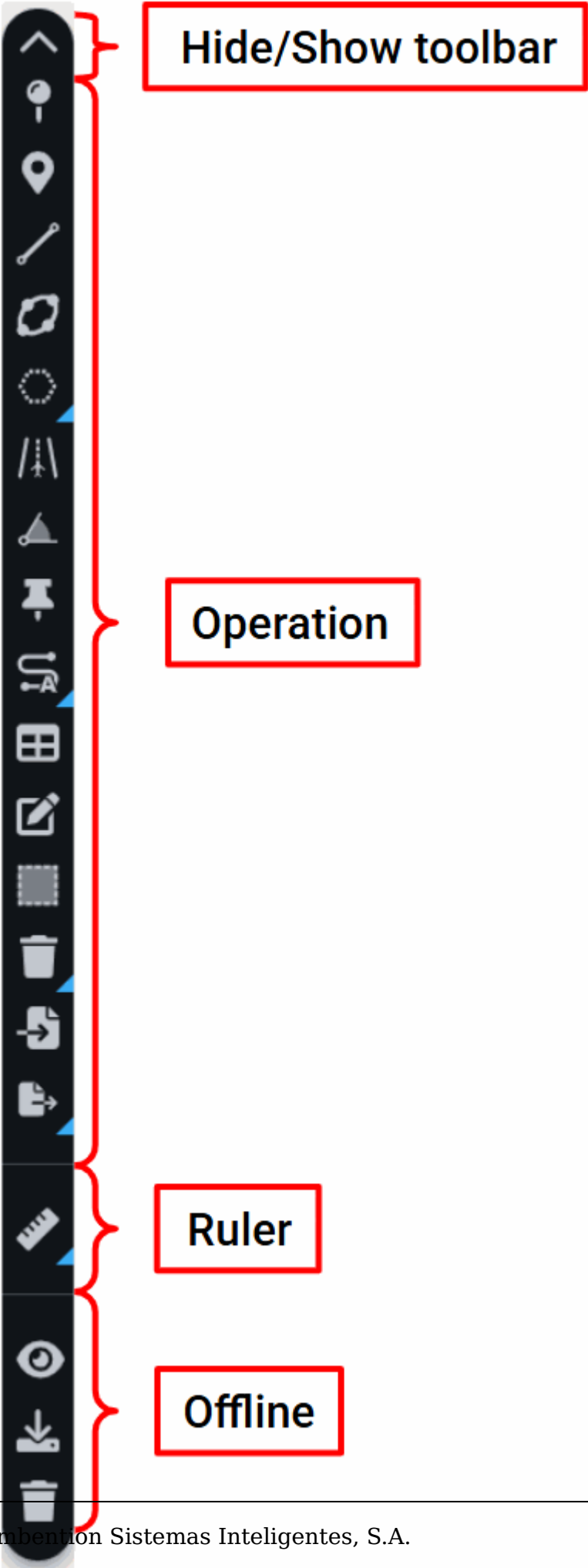
The mission toolbar provides graphical tools to create the path that the aircraft follows while it is in cruise phase.

Multiple missions can be created for different purposes. The missions generated are stored in the **Operation folder of the PDI configuration files** when the user saves the changes. For more information on the folders containing the PDI files, see the [initial menu of the Configuration](#) section of the **1x PDI Builder** user manual.

**Note**

First, make sure the **Autopilot 1x** unit where the mission has to be uploaded is selected ([Platform connection status - Platform](#) section of this manual).

Next, a detailed description of the toolbar is given. It is divided into different functionalities:





## Mission toolbar functionalities

### Operation

All the tools in this 'section' allow the user to design the mission, such as waypoints, segments, marks, runways, etc.

#### ⚠ Important


Whenever any of these elements are created/modified, it is necessary to **Save**  and **Upload**  them into the Autopilot 1x configuration.

For more information about these actions, refer to the [Operation actions - Operation](#) section of this manual.

### Mission Point

Mission Points are points with absolute position to which a relative route can be associated.

Use the Mission Point tool and click (left-click) on the map to create new Mission Points. Then, when users have created all the desired Mission Points, **right-click on the map** to close/finish the 'creation event'.

To move Mission Points, it is first necessary to activate mission editing by clicking on the  icon. Then, simply drag it to the desired position.

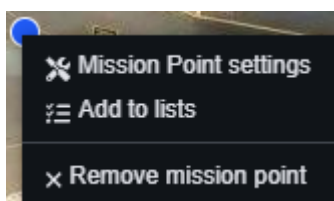
In relation to Mission Points, the following actions can be performed with the mouse:

- **Clicking once** on the Mission Point will display a summary of the **Mission Point information**: Mission Point ID, coordinates and elevation:



### Mission Point information

- **Right-clicking** on the Mission Point, users will access its **options**:





### Mission Point options

- **Mission Point Settings:** The user can change the configuration of the Mission Point (coordinates and elevation) in the menu displayed here:

### Mission Point configuration

There are 3 ways of defining the position of an Mission Point manually:

1. **Matching it to the platform position.** By selecting the  icon, the Mission Point coordinates and elevation will be automatically updated with those of the actual platform's actual position.
2. **Selecting a position in the map.** Simply click on this icon , then click on the desired point on the map and the Mission Point coordinates and elevation will be updated automatically.


### 3. Entering the exact coordinates and elevation here:

- **Set coordinate:** The coordinates can be set in:
  - Decimal Degrees → Latitude (DD) and Longitude (DD)
  - Degrees → Latitude (DMS) and Longitude (DMS)
  - UTM → x (Easting), y (Northing), Zone and Hemisphere
  - MGRS (Military Grid Reference System)
- **Set elevation:** Whichever way the user defines the **altitude** (WGS84, MSL and AGL), **Veronte Ops** will calculate the other 2 ways.

That is, if the user defines a waypoint at X m in AGL, **Veronte Ops** will automatically calculate what that value is in WGS84 and MSL.
- **Remove Mission Point:** Deletes the Mission Point.

### Waypoint

Use the Waypoint tool and click (left-click) on the map to create new waypoints. Then, when users have created all the desired waypoint, **right-click on the map** to close/finish the 'creation event'.

To move waypoints, it is first necessary to activate mission editing by clicking on the  icon. Then, simply drag it to the desired position.

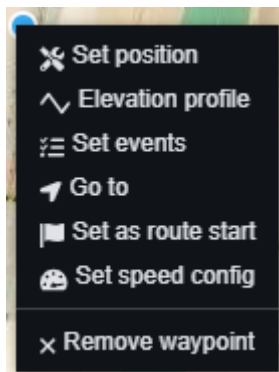
In relation to waypoints, the following actions can be performed with the mouse:

- **Clicking once** on the waypoint will display a summary of the **waypoint information:** Waypoint ID, coordinates and elevation:



### Waypoint information

- **Right-clicking** on the waypoint, users will access to its **options**:



### Waypoint options

- **Set position:** The user can change the configuration of the waypoint (coordinates and elevation) in the menu displayed here:

**Waypoint 0**

Absolute  Relative

**Set coordinate**

Type  
Decimal degrees

Latitude (DD)\*  
38,284191

Longitude (DD)\*  
-0,572486

**Set elevation**

▲ MSL terrain: 36.08

WGS84  
116,46 m

MSL  
66,08 m

AGL  
30 m

Cancel Confirm

### Waypoint configuration

There are 3 ways of defining the position of a waypoint manually:

1. Entering the exact coordinates and elevation here:
  - **Absolute:**

**Waypoint 0**

✓ Absolute Relative

**Set coordinate**

Type  
Decimal degrees

Latitude (DD)\*  
38,284191

Longitude (DD)\*  
-0,572486

**Set elevation**

▲ MSL terrain: 36.08

WGS84  
116,46 m

MSL  
66,08 m

AGL  
30 m

Cancel Confirm

### Absolute waypoint position

- Set coordinate:** The coordinates can be set in:
  - Decimal Degrees → Latitude (DD) and Longitude (DD)
  - Degrees → Latitude (DMS) and Longitude (DMS)
  - UTM → x (Easting), y (Northing), Zone and Hemisphere
  - MGRS (Military Grid Reference System)
- Set elevation:** Whichever way the user defines the **altitude** (WGS84, MSL and AGL), **Veronte Ops** will calculate the other 2 ways.  
 That is, if the user defines a waypoint at X m in AGL, **Veronte Ops** will automatically calculate what that value is in WGS84 and MSL.

- **Relative:** In this case, the position of the waypoint is relative to another point.

That point could be the **UAV position**, a **Desired position**, a **Track position** or an **Mission Point**. They are indicated through North, East and Down.

### **Relative waypoint position**

2. **Selecting a position in the map.** Simply click on this icon



, then click on the desired point on the map and the waypoint coordinates and elevation will be updated automatically.

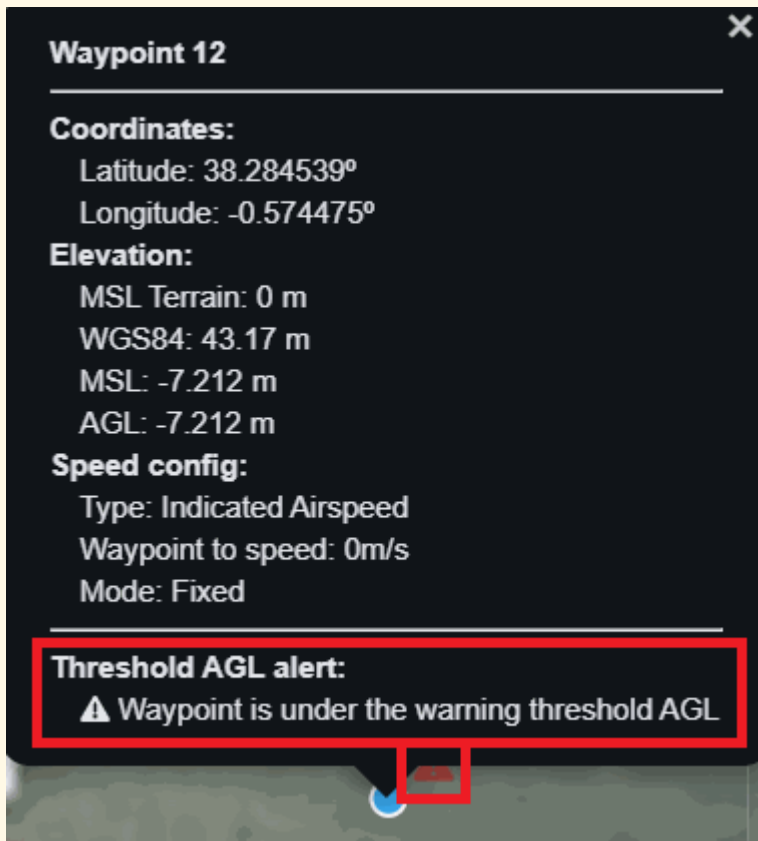
2. **Matching it to the platform position.** By selecting the



icon, the waypoint coordinates and elevation will be automatically updated with those of the actual platform's actual position.

**⚠ Warning**

If the elevation of a waypoint is set below the terrain altitude, the user will be able to detect it quickly as a warning symbol will appear next to the waypoint. In addition, it will also be indicated in the waypoint information as "Threshold AGL alert":

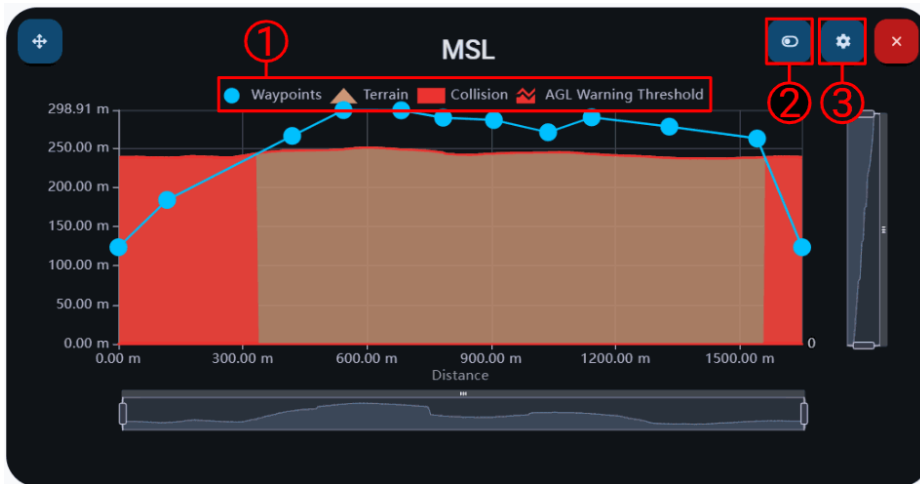
**Waypoint - Warning below terrain**

- **Elevation profile:** To be able to consult the elevation of the route, it is required to have installed the **Veronte Terrain Provider** application (for more information about this, see [Additional apps](#) section of this manual).

Here users can see an estimate of the height of the terrain and the height of the route to be taken as well as the collisions that could occur.

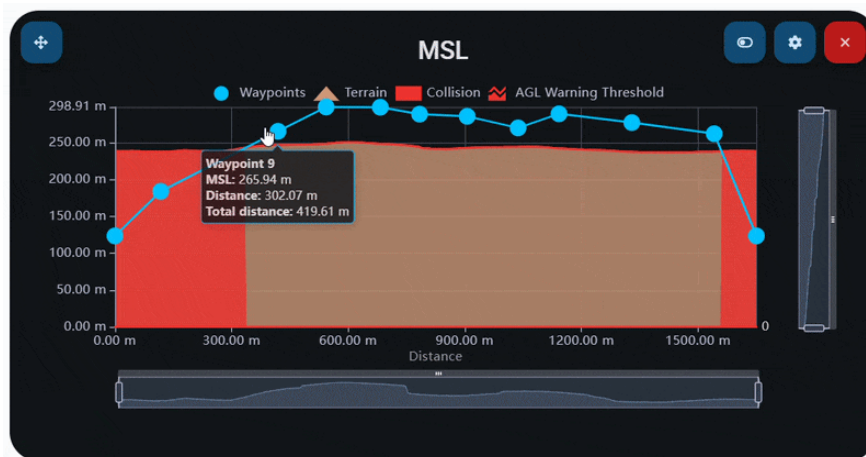
In addition, users can set up a **Warning Threshold**, which will be represented as a red warning line over the terrain. For more information, see [Map settings - Veronte Ops configuration](#) section of this manual.

By clicking on it, the following menu will appear:





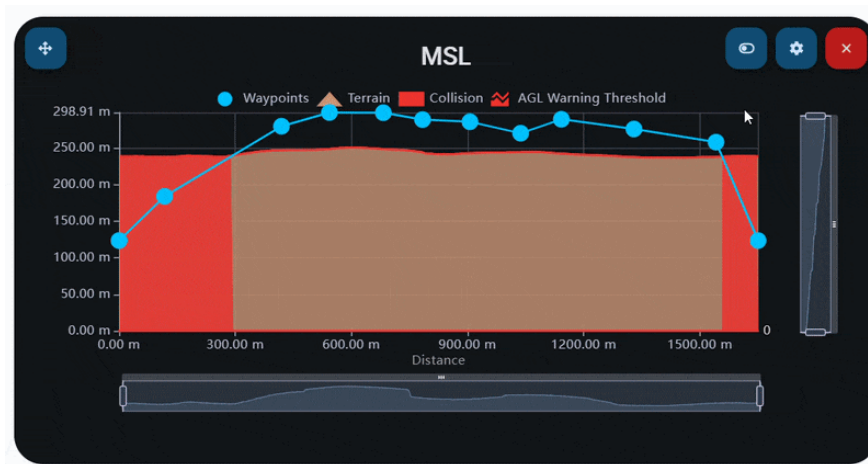
**Elevation (MSL) menu**

1. This legend showing waypoints, terrain, collision and warning threshold is an 'interactive' legend, i.e. users can choose which of these elements are displayed or not by simply clicking on them:



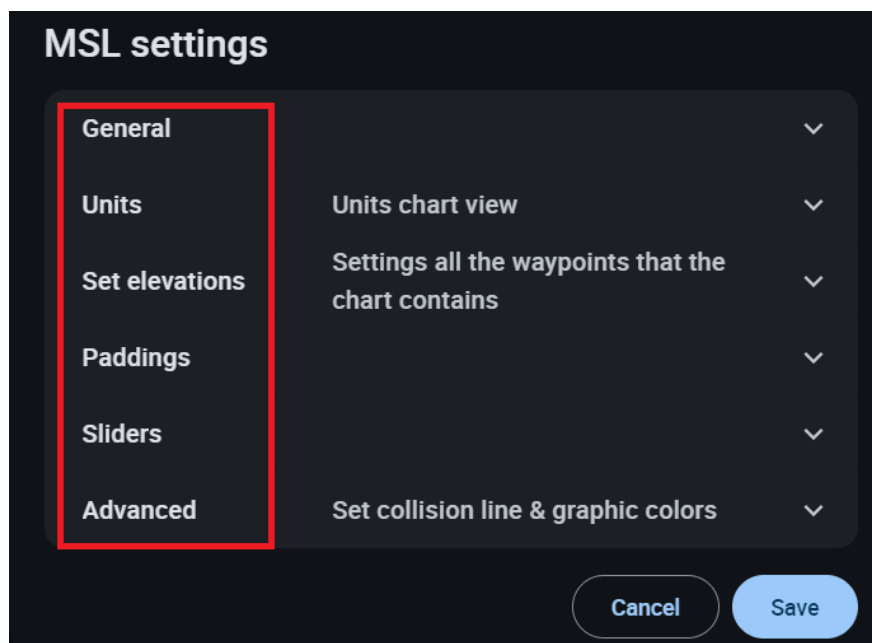
**Elevation (MSL) menu - Legend**

2. **Drag** button: When enabled (  ), users can modify the altitude of the waypoints by simply clicking and dragging them. If it is disabled (  ), it is not possible to move them:



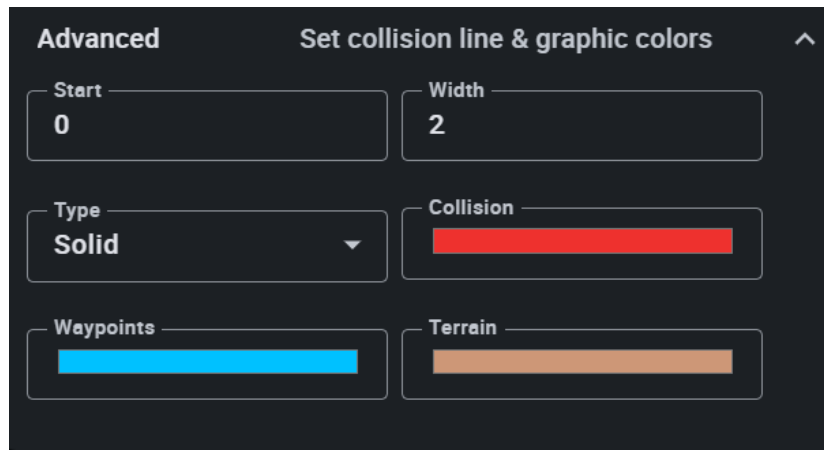
**Elevation (MSL) menu - Dragging waypoints**

3. **Settings** button: Displays a new window with some parameters that can be customized:



**Open elevation menu - Settings**

- **General:** An offset can be set for Y axis.
- **Units:** Units of the elevation and distance of the chart view can be set.
- **Set elevations:** The altitude of all waypoints on the route can be modified.
- **Paddings:** The size of the grid can be adjusted as desired.
- **Sliders:** X and Y axes sliders can be hidden by disabling them.
- **Advanced:** The collision line and chart colors can be modified:



**Elevation (MSL) menu - Advanced settings**

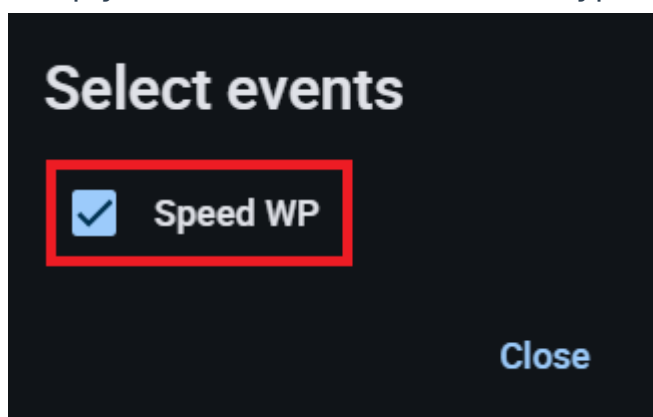
- **Set Events:** This option allows to associate this waypoint to a specific event.

This works as follows, in this panel the user links this waypoint to an "Event Waypoint". This Event Waypoint is the one that has to be linked to the desired event in the [Automations menu](#) of the **1x PDI Builder software**.

**Important**

To do this, it is first necessary to have defined (renamed) an Event Waypoint in the **UI menu of the 1x PDI Builder software**, as described and explained in the corresponding section of the **1x PDI Builder manual**, click [here](#) to access it.

Simply check the desired Event Waypoint to be associated:

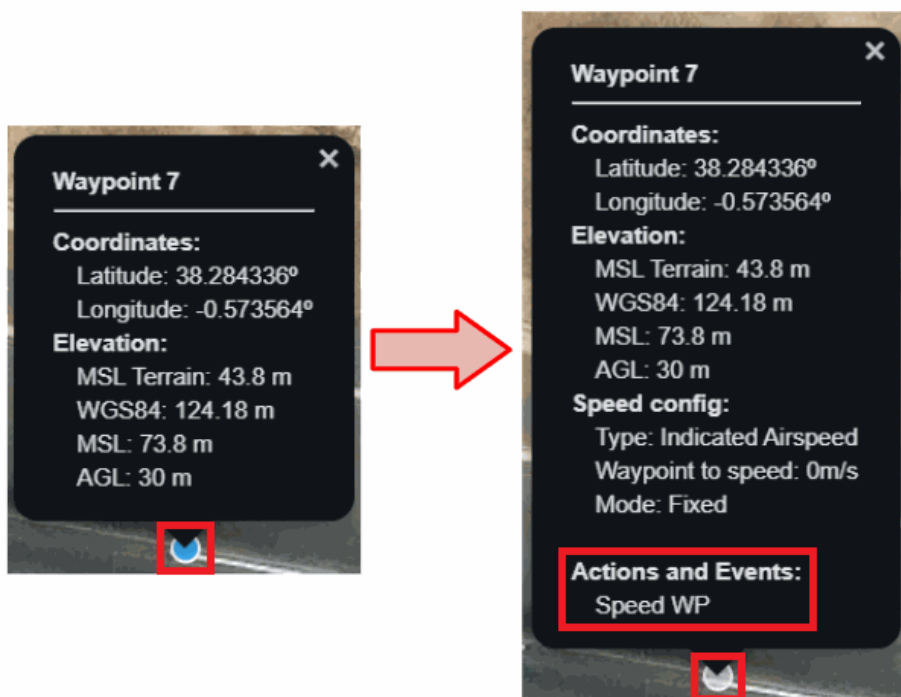


**Waypoint options - Set Events**

**Note**

- Users can associate a waypoint to as many Event Waypoints as there are created (a maximum of 16 Event Waypoints can be defined in the system).
- Different waypoints can be linked to the same Event Waypoint.

Moreover, if the Event Waypoint that is linked to the waypoint has an associated icon, the icon will appear at this waypoint. In addition, when clicking on it, the name of the Event Waypoint defined by the user will appear in its description. An example is shown below:



### Waypoint information - Set Events

- **Go to:** By clicking here, the platform will fly to this waypoint. If the waypoint belongs to a mission, the platform will continue that mission after reaching it.


**Note**

This option only appears when a Veronte Autopilot 1x is connected and the operation, which the user is working on, is stored in the autopilot.

- **Set as Start Route:** Users must define where they want the cruise route to start by defining the waypoint as such with this option. The waypoint will turn of green color.

 **Warning**

If users do not define any waypoint as the 'Start Route', the operation will not be uploaded to the autopilot configuration and the following warning notification will be displayed:

 You must select the start of the route before uploading operation

**Set start route - Warning notification**

- **Set speed configuration:** Set Speed function defines the velocity parameters that the UAV must adopt when reaching or passing a specific waypoint.



**Waypoint information - Set speed configuration**

- **Speed Type:** Defines the physical reference for the velocity.
- **Waypoint to speed:** Numerical value of the target speed.
- **Mode:** Determines how the command is applied to the flight profile.

- **Remove Waypoint:** Deletes the waypoint.

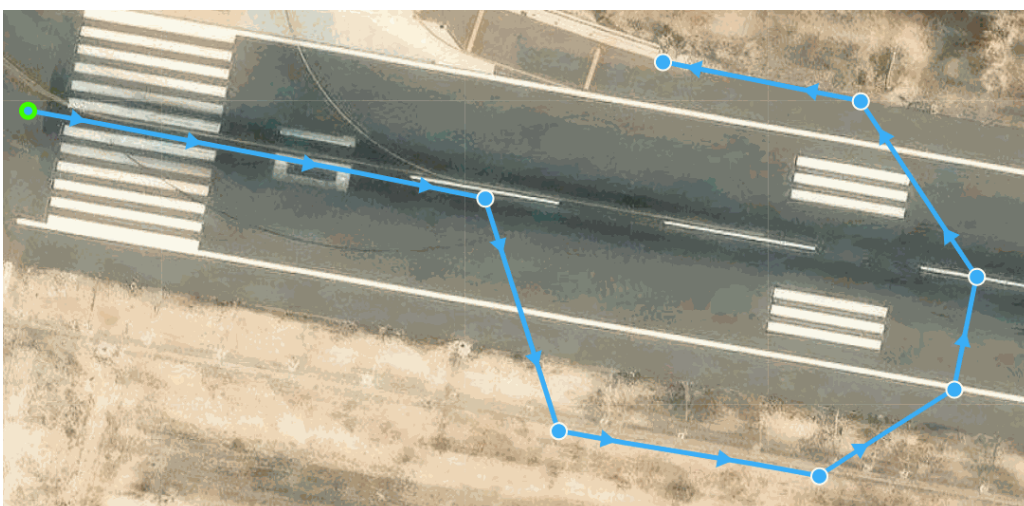
## Segment

To create a new segment, click on the segment icon and then select on the map the point where the segment will start. To end the track, users have to **double click** directly with the **left mouse button** to create the last waypoint of the segment. Then, after creating the last waypoint, **right-click on the map** to close/finish the 'creation event'.



## Segment

In addition, users can **concatenate two or more segments** by clicking on various points on the map with the **left button**, as shown in the figure below:




## Route

Besides, to create a closed route, users must match the last waypoint of the segment with the first one:



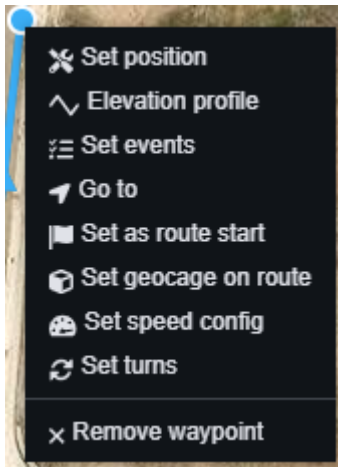
### Closed route

It is also possible to curve a segment. To do so, users must create the segment, edit the mission by clicking on the  icon, and then move the **translucent orange waypoint** (●) in the center of the segment. The distance moved will correspond to the radius of the curve:



### Curved segment

There is an extra option in the options for a waypoint that corresponds to the start of a curved segment:



### Curved segment options

- **Set Turns:** This option allows the user to set a desired number of turns. After these turns the platform will continue with the defined mission. An example is shown below:



**Curved segment - Turns**

### ⚠ Warning

When a segment is created, be careful with the height of the waypoints.

Users can **check for collisions** between route waypoints and terrain **directly on the map** or **using the 'Open elevations' functionality** described above.

To check directly on the map, if some of the waypoints are below the terrain altitude indicated by the meshes, a warning symbol will appear next to them and the affected segment will change its color to red. In addition, it will also be indicated in the waypoint information as "Threshold AGL alert".

To solve this, change the altitude of the waypoints. An example is shown below:



**Segment under the ground altitude**

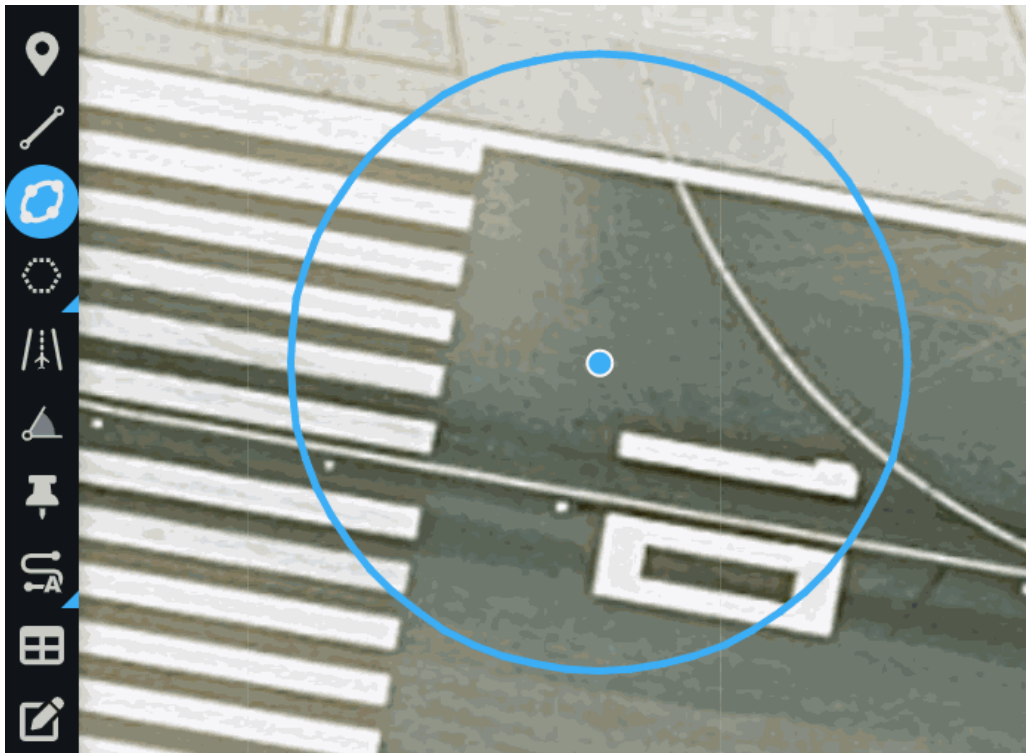
- **Set geocage on route**

Allows configuring a geocaging zone around the segment. For more information, consult [Geocaging area](#).


### Orbit

This tool allows the user to create a new orbit on the map.

First, select a point on the map which will be the center of the new orbit. Then, when users have created all the desired orbits, **right-click on the map** to close/finish the 'creation event'.



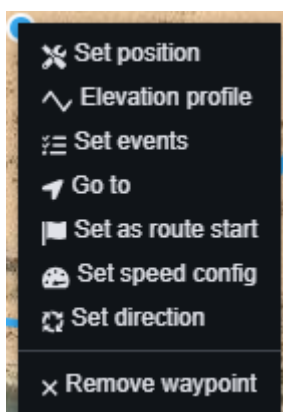
### Orbit

In addition, the initial circular orbit can be converted into an ellipse by modifying the length of the axes and can also be rotated. To do this, edit the mission by clicking on the  icon, then move the **4 translucent orange waypoints** (●) as desired to turn them into an ellipse and to rotate it, click and rotate the small blue circle (●):



### Ellipse orbit

Besides, there is an extra option in orbits regarding waypoints and segments:



### Orbit options

- **Set Direction:** It is possible to select the direction of the loiter: **Auto**, **Clockwise** and **Anticlockwise**.

### ⚠ Warning

When creating an orbit, be careful with its altitude and the ground level (all the points of the orbit will be at the same altitude).

Users can **check for collisions** between orbit and terrain **directly on the map** or **using the 'Open elevations' functionality** described above.

To check this directly on the map, if any part of the orbit is below the terrain altitude indicated by the meshes, a warning symbol will appear next to the waypoint and the affected segment will change its color to red. In addition, it will also be indicated in the waypoint information as "Threshold AGL alert".

To solve this, change the altitude of the waypoint. An example is shown below:

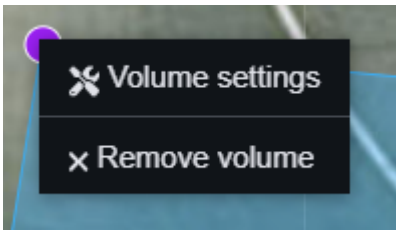


**Orbit partially below ground level**

### Shape

Within this option areas/volumes with different shapes can be created: [prisms](#), [spheres](#), [cylinders](#) and [geocaging areas](#).

The vertices (waypoints) that compose these volumes are all configured in the same way. **Right-click** on them to access their options:



### Volume vertex options

- **Volume Settings:** The user can change the configuration of the volume vertex (coordinates and elevation) in the menu shown here. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).

#### **Note**

The **geocaging area** does not have this option.

- **Remove Volume:** Deletes this volume.

Furthermore, these volumes have a shared configuration option, "Set Events". This option allows to associate this volume to a specific event.



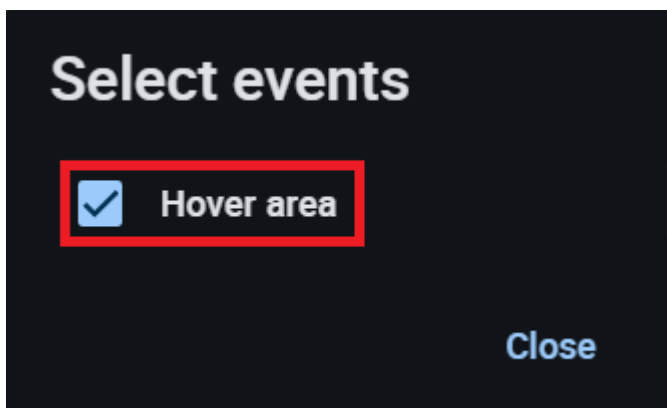
### Volume options

This works as follows, in this panel the user links this volume to an "Event Volume". This Event Volume is the one that has to be linked to the desired event in the [Automations menu](#) of the **1x PDI Builder software**.

### ⚠ Important

To do this, it is first necessary to have defined (renamed) an Event Volume in the **UI menu of the 1x PDI Builder software**, as described and explained in the corresponding section of the **1x PDI Builder** manual, click [here](#) to access it.

Simply check the desired Event Volume to be associated:

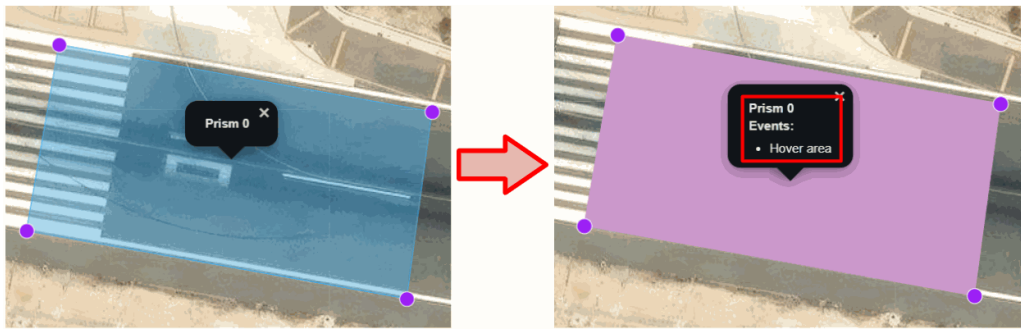


### Volume options - Set Events

### ⓘ Note

- Users can associate a volume to as many Event Volumes as there are created (a maximum of 60 Event Volumes can be defined in the system).
- Different volumes can be linked to the same Event Volume.

Moreover, if the Event Volume that is linked to the volume has a custom color, the volume will turn that color. In addition, when clicking on it, the name of the Event Volume defined by the user will appear in its description. An example is shown below:

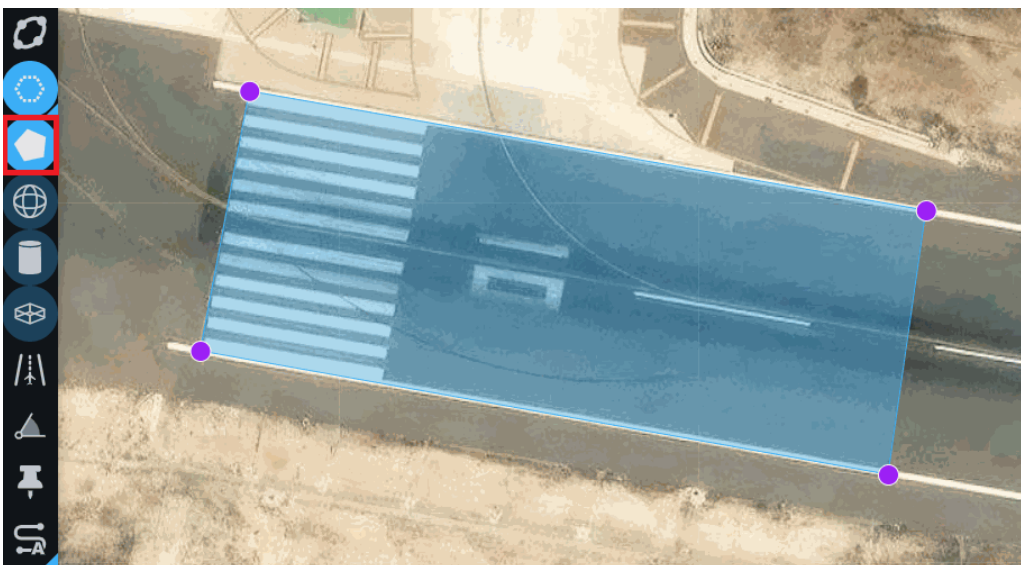


## Volume information - Set Events


### Prism

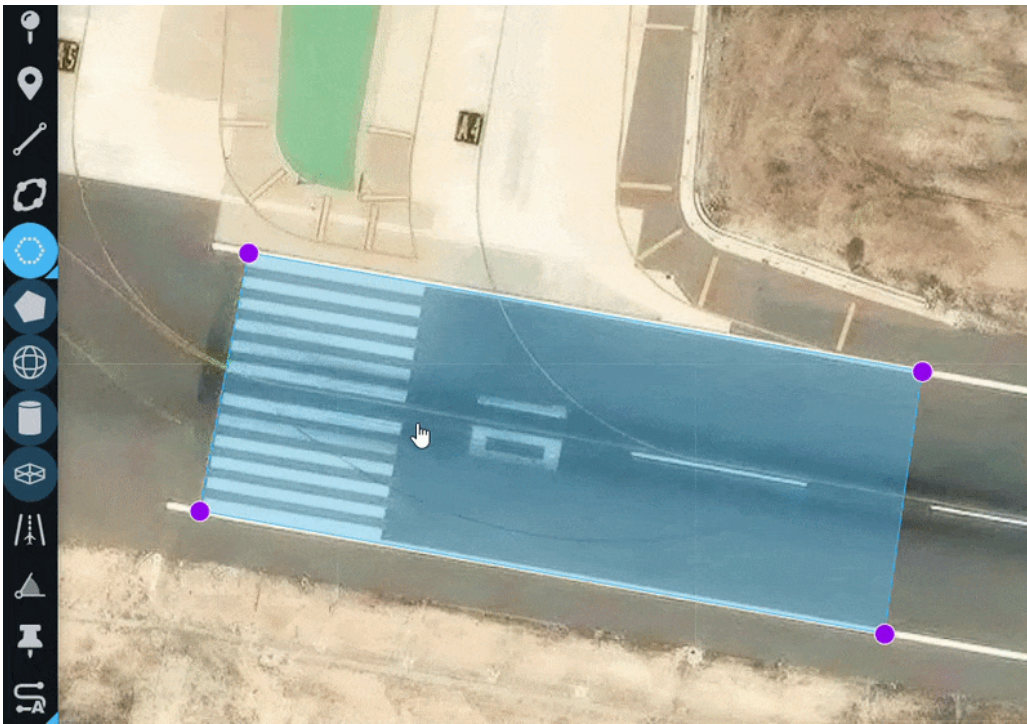
This tool is used to determinate an area in which an action is wanted to be performed. When the aircraft enters or leaves the prism an event may be triggered and it can be used to start an automation.

To add a prism, click on its icon, click on the desired points on the map and match the last waypoint of the prism with the first one. Then, when users have created all the desired prisms, **right-click on the map** to close/finish the 'creation event'.



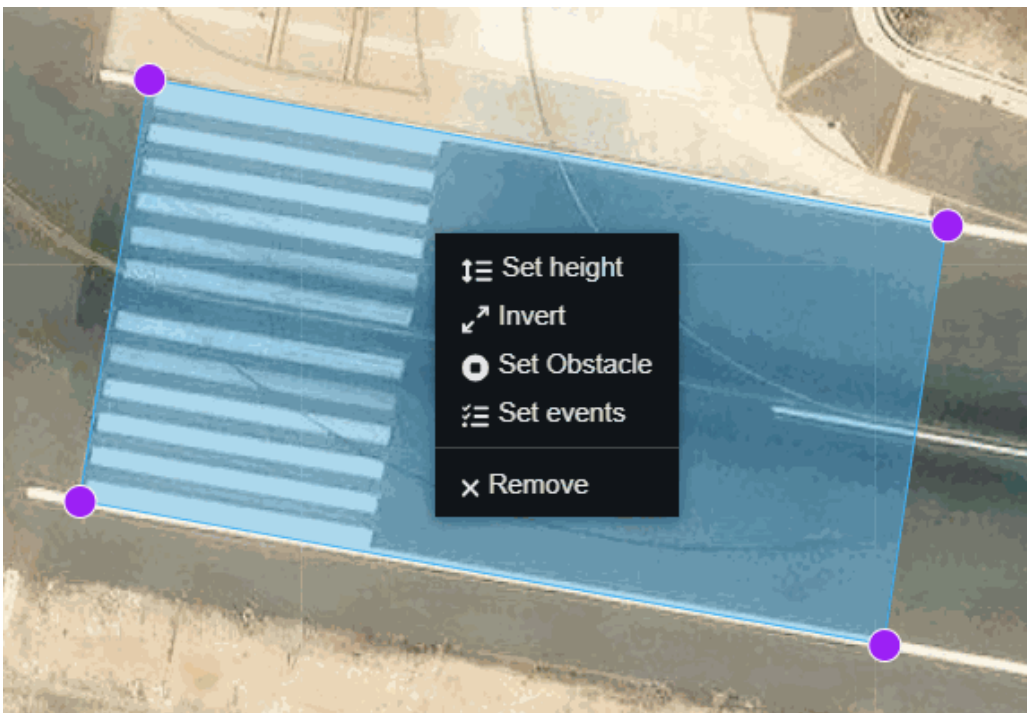
### Prism

Like the other elements, it can be edited to change its shape by moving its vertices. Click on the  icon:



### Prism shape


**Right-clicking** on the prism, users will access to its **options**:



### Prism options

- **Set Height:** Users can set the upper and lower heights of the prism. By default, prisms have infinite lower and upper boundaries.

**Lower**


Value 

Fld

**Upper**

Value  m


100000.000 meters

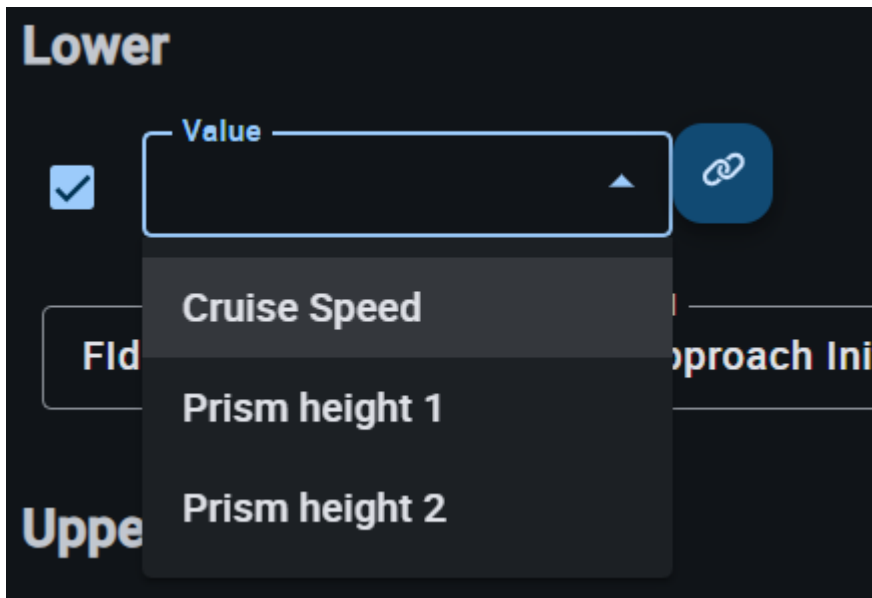
 Fld

Cancel Save

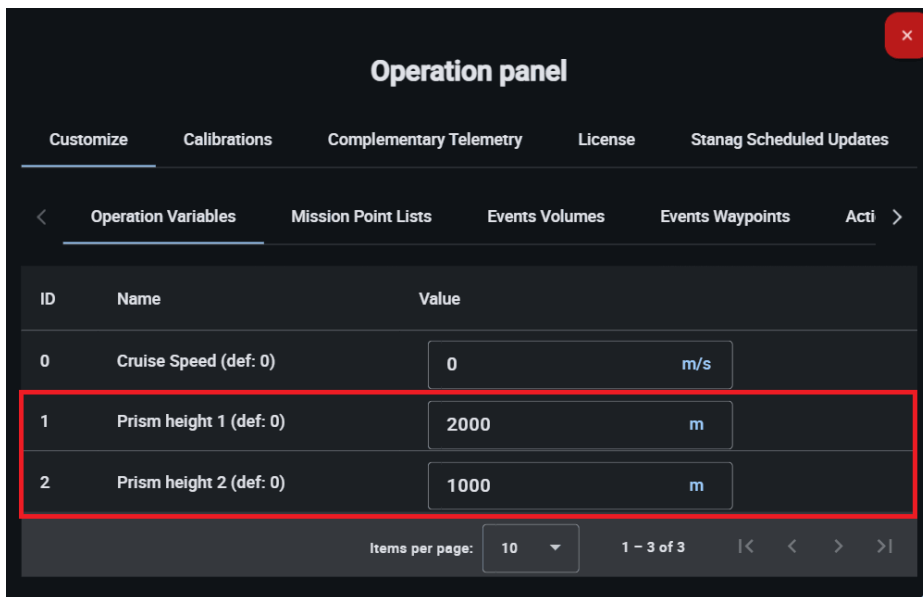
### Prism options - Set Height

As can be seen in the figure above, the lower and upper limits can be set as absolute or relative:


- **Relative**  icon: The altitude is relative to an **Operation Variable**, previously defined in **1x PDI Builder**. But, it is required to set the value of the variable in the [Operation Variables](#) of the **Operation Panel**. In addition, it is necessary to establish whether it is relative to AGL, MSL, WGS84 or to a Fld (feature) that has to be selected.



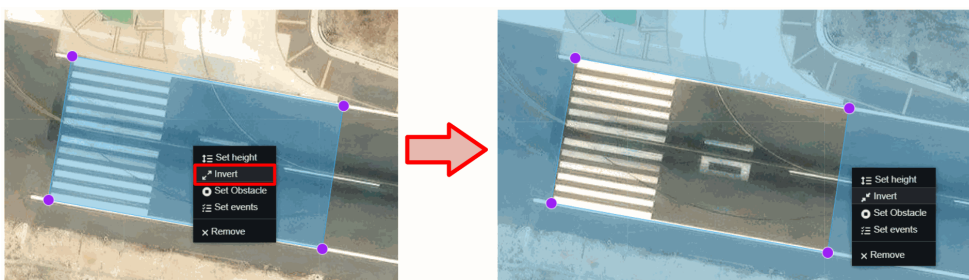
**Prism options - Height relative**



**Prism options - Operation Panel**

◦ **Absolute**  icon: The value must be entered manually and it is also necessary to establish whether it is relative to AGL, MSL, WGS84 or to a Fld (feature) that has to be selected.

• **Invert:** This inverts the defined area.

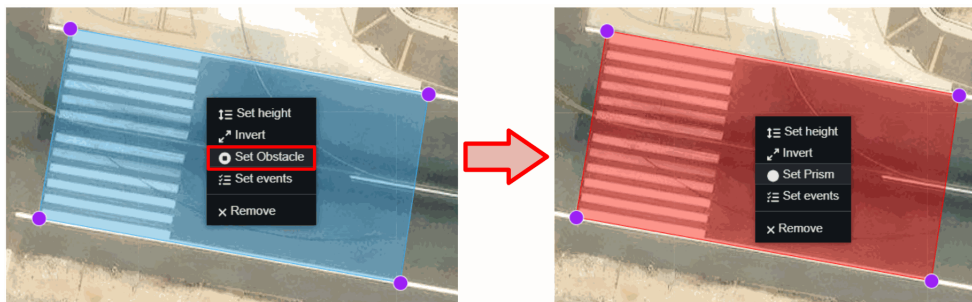


## Prism options - Invert

- **Set Obstacle:** A prism can become an obstacle, an area that is desired to avoid. This option has been implemented to be used as the **geofencing** functionality.

### **Note**

When setting the obstacle, the option "**Set Obstacle**" changes to "**Set Prism**". This option turns the obstacle back into a prism.



## Prism options - Set Obstacle

This tool allows to set an exclusion area on the map that can not be crossed by the RPAS. Main functions of the tool:

- Avoid collisions with obstacles as for example buildings, trees or antenna towers.
- Avoid flying restricted access areas.

## What can happen with high speed aircrafts (Airplanes)?

It is possible that due to its speed, the RPAS will enter the obstacle area, but will immediately apply the corrections to exit the obstacle area and return to the path. The solution to this problem is to configure a bigger obstacle area in order to avoid the physical obstacle.

## What can happen with low speed aircrafts (Multirotor)?

It can happen that a multirotor enter an obstacle area (staying very close to its center), at that moment the Ground Speed Vector and the Field Repulsion Vector have the same direction but opposite sign. This phenomenon causes a conflict and until the directions are different enough to allow the multirotor to move, it will remain in an indecision situation.

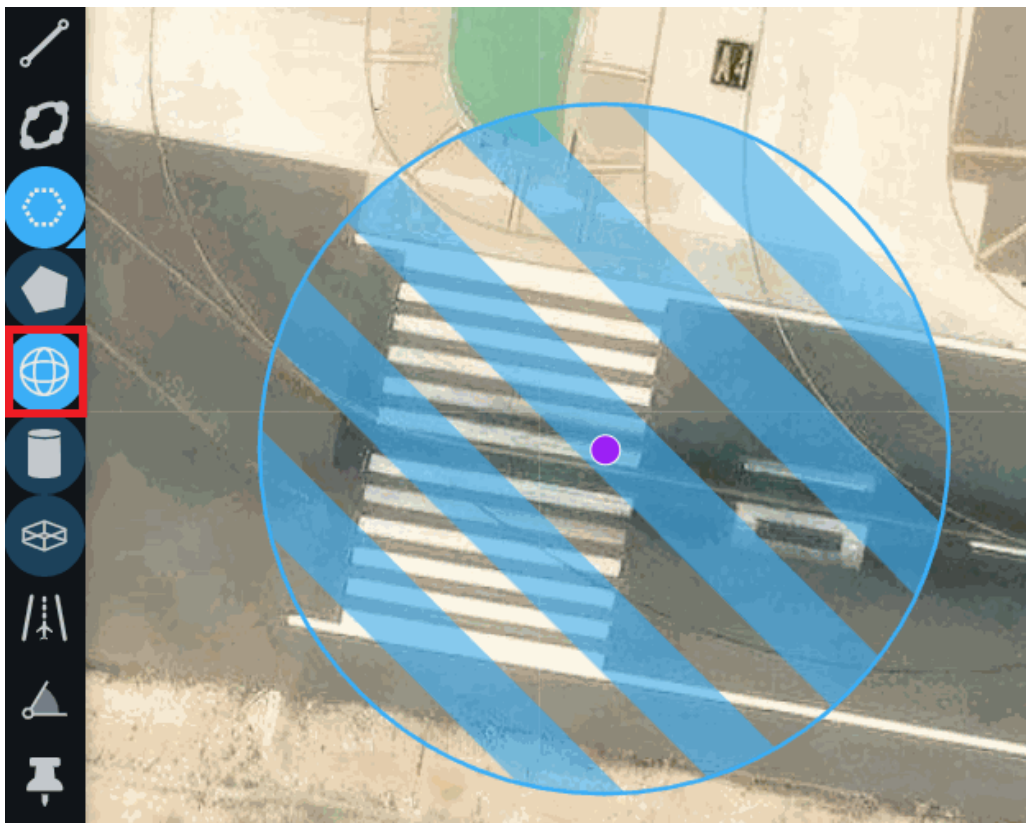
To solve this problem the user can configure the obstacle area by leaving the center of the obstacle away from the path line.

- **Set Events:** Explained previously in the [Shape](#) section.
- **Remove:** Deletes the prism.


## Sphere

This tool is used to determinate a spherical volume (3D) in which an action is wanted to be performed. When the aircraft enters or leaves the sphere an event may be triggered and it can be used to start an automation.

To add a sphere, click on its icon, click on the desired point on the map and drag it to set the radius. Then, when users have created all the desired spheres, **right-click on the map** to close/finish the 'creation event'.



## Sphere

Like all other elements, it can be edited to move it or change its radius by clicking on the  icon:



### Sphere radius

**Right-clicking** on the sphere, users will access to its **options**:

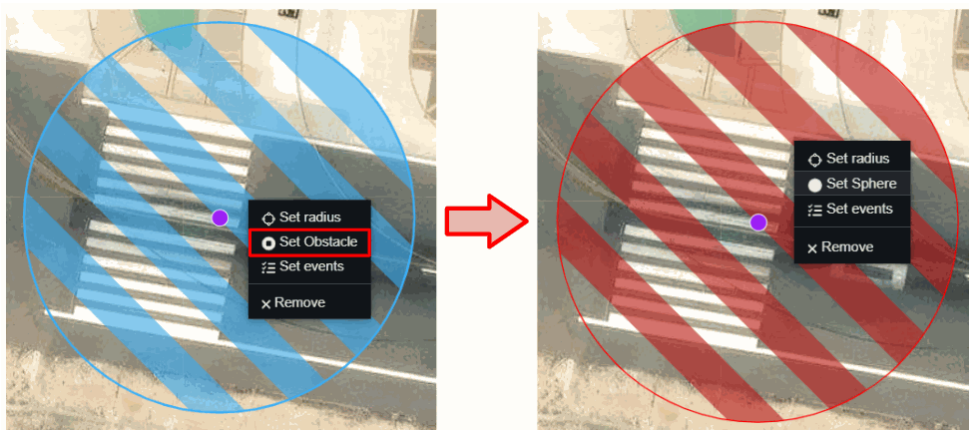


### Sphere options

- **Set Radius:** To accurately set the radius of the sphere, users can enter the value manually.
- **Set Obstacle:** A sphere can become an obstacle, an space that is desired to avoid. As it is a 3D space, it allows the platform to avoid it by passing over it, taking into account the height of the obstacle. This option has been implemented to be used as the **geofencing** functionality.

#### **Note**

When setting the obstacle, the option "**Set Obstacle**" changes to "**Set Sphere**". This option turns the obstacle back into a sphere.



### Sphere options - Set Obstacle

This functionality acts in the same way as when defining a [prism](#) as an obstacle, but taking into account **3 dimensions**. Therefore, the platform will be able to prevent the obstacle from passing over it.

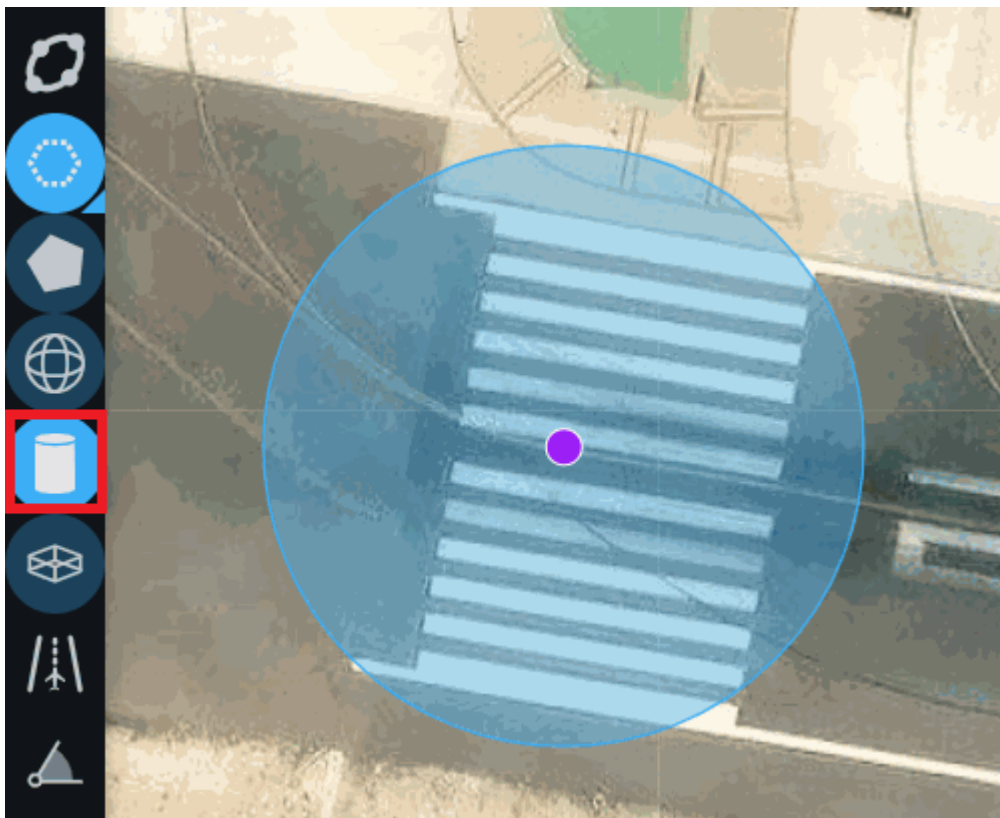
- **Set Events:** Explained previously in the [Shape](#) section.
- **Remove:** Deletes the sphere.

### Cylinder


The way it works is very similar to **Prism**, described above.

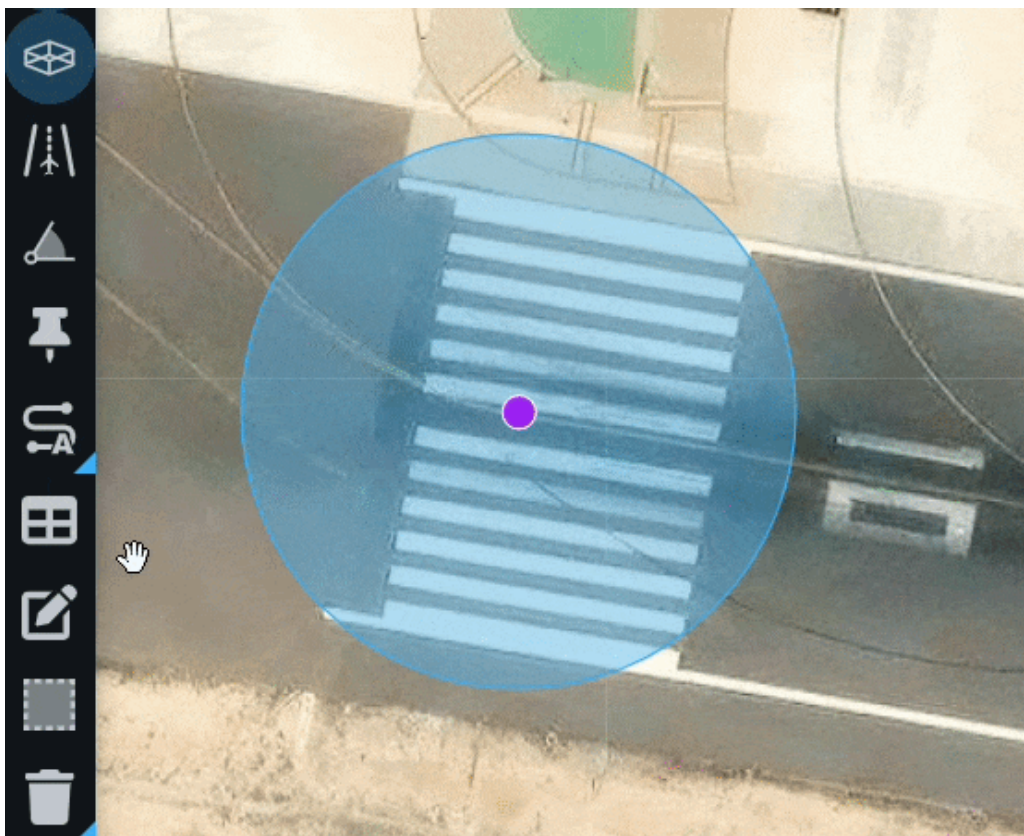
This tool is used to determinate a cylindrical area in which an action is wanted to be performed. When the aircraft enters or leaves the cylinder an event may be triggered and it can be used to start an automation.

To add a cylinder, click on its icon, click on the desired point on the map and drag it to set the radius. Then, when users have created all the desired cylinders, **right-click on the map** to close/finish the 'creation event'.



## Cylinder

Like all other elements, it can be edited to move it or change its radius by clicking on the  icon:



## Cylinder radius

**Right-clicking** on the cylinder, users will access to its **options**:

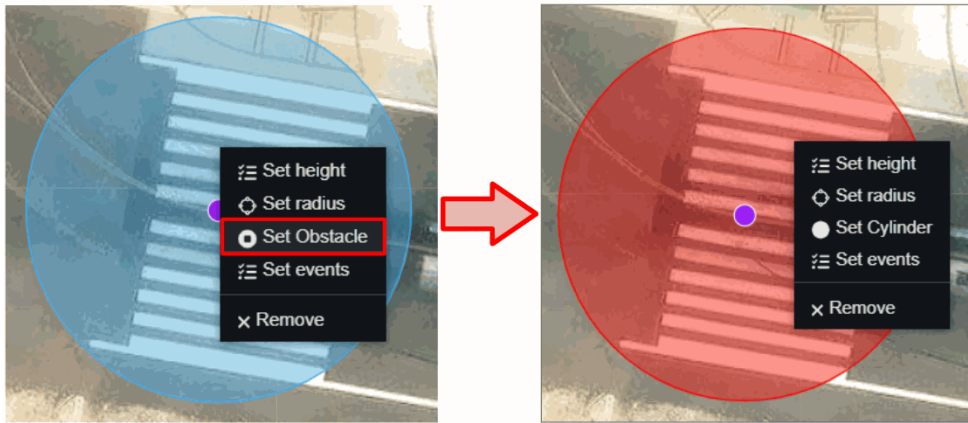


### Cylinder options

- **Set Height:** Users can set the upper and lower heights of the cylindrical area. By default, cylindrical areas have infinite lower and upper boundaries. It works in the same way as in the [prism](#) areas, described above.
- **Set Radius:** To accurately set the radius of the cylinder, users can enter the value manually.
- **Set Obstacle:** A cylinder can become an obstacle, an area that is desired to avoid. This option has been implemented to be used as the **geofencing** functionality.

#### **Note**

When setting the obstacle, the option "**Set Obstacle**" changes to "**Set Cylinder**". This option turns the obstacle back into a cylindrical area.



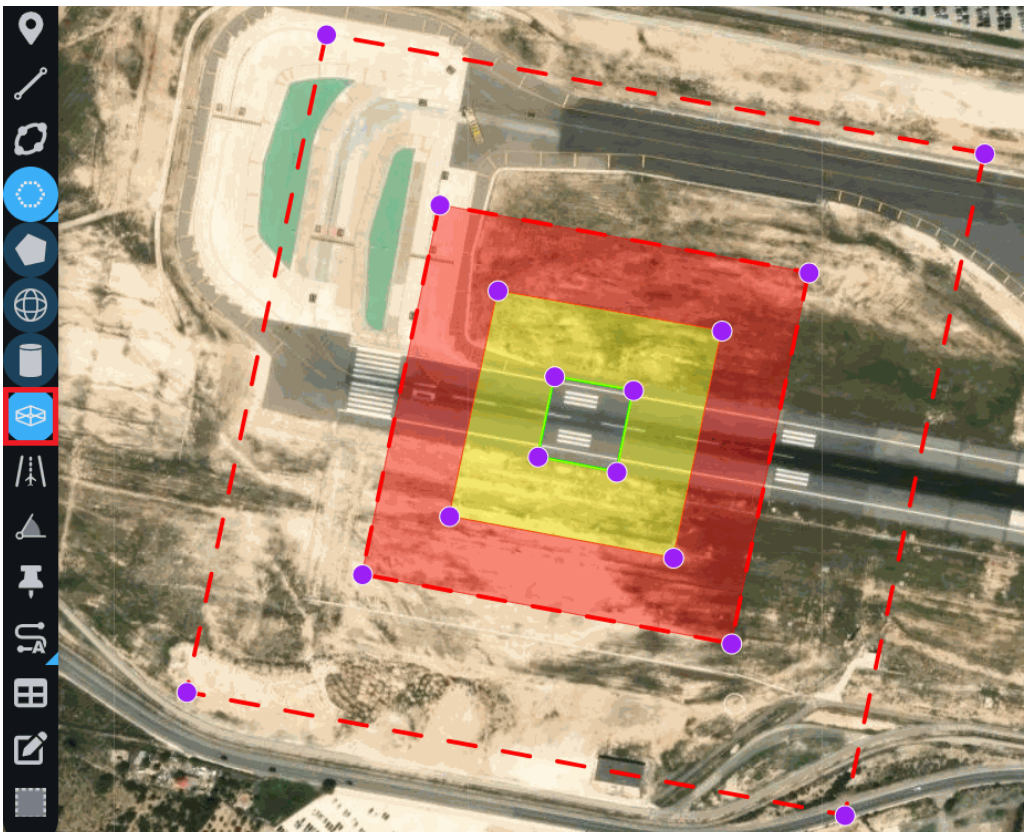
### Cylinder options - Set Obstacle

This functionality acts in the same way as when defining a [prism](#) as an obstacle.

- **Set Events:** Explained previously in the [Shape](#) section.
- **Remove:** Deletes the cylinder.

### Geocaging area

The geocaging function is an UAS function that helps the remote pilot to prevent the platform from exiting out of a volume defined (geocaging area) on purpose for this operation. This function operates in both horizontal plane and vertical axis.



## Geocaging area

There are three grades defined to accommodate different levels of risk in case of exit. This function will provide, depending on the grade, one or several barriers to the exit. These barriers can be alerts to the remote pilot that will perform the adequate actions or, optionally, can be automatic actions.

In addition to the 3 areas to comply with the different risk levels, an additional zone has been defined:

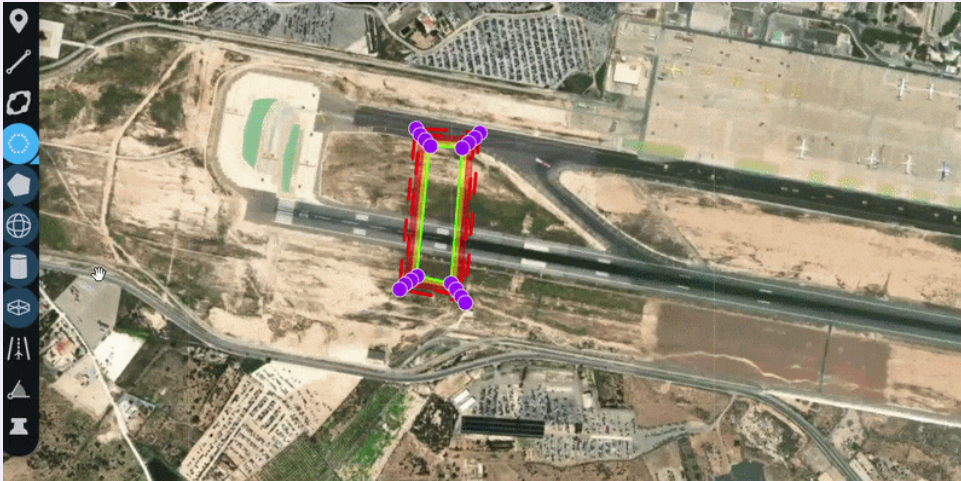
- Flight Geography Area: This area corresponds to the volume intended normally for the flight. It is delimited by green lines.
- Contingency Area: This area is the volume needed to accommodate **contingency alerts or actions**. It is yellow colored area delimited by red lines.
- Emergency Area: Volumen beyond the Contingency Area which is computed to accommodate **emergency warning alerts or actions**. This area is delimited by dashed red lines.
- Additional safety zone: Volume added after the computed Contingency and Emergency Areas, and before the "not to enter" volume. It is delimited by dashed red lines.

These contingency and emergency actions, as well as actions that can be added related to the Additional safety zone, are customizable. They have to be configured as any action associated to a volume from the [Automations menu](#) of the **1x PDI Builder** software.

An example of geocaging corrective actions that can be configured following the standard can be found in the [Geocaging - Integration examples](#) section of the **1x PDI Builder** user manual.

### ⚠ Important

**Only 1** geocaging area can be created. However, if a second geocaging area is created that intersects with the current one, a "merge" of both geocaging areas will be performed generating a single area. For example:



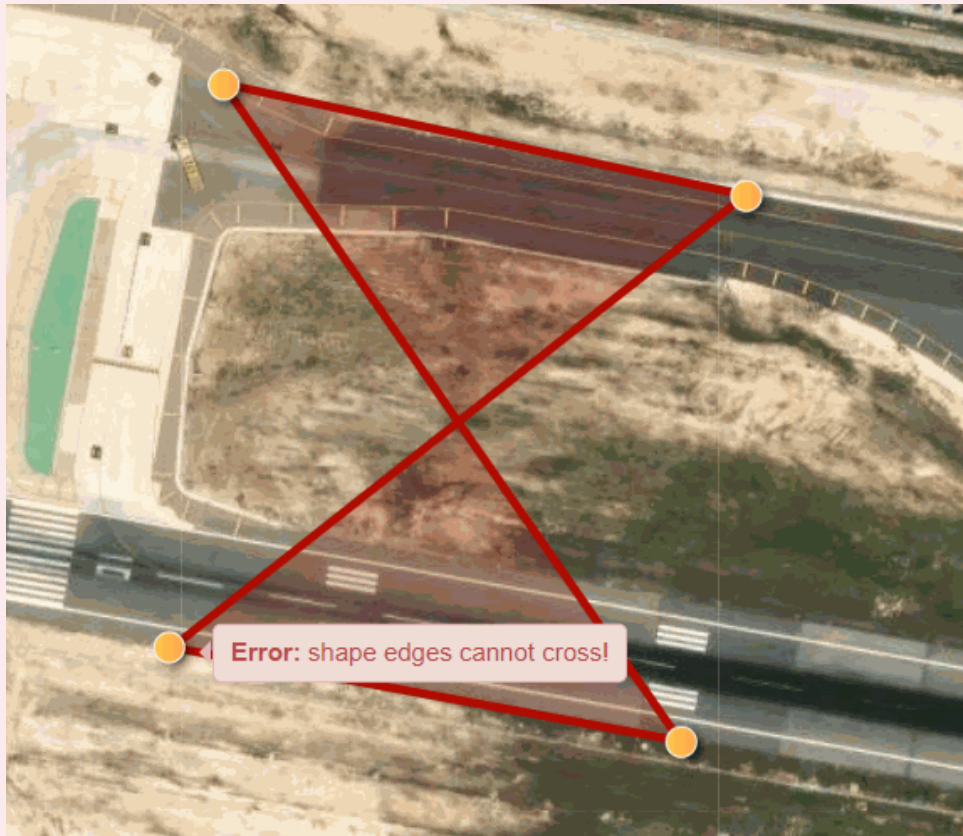
#### **Geocaging area - Intersection of geocaging areas**

If users try to create a second geocaging area that does not "touch" the first one, i.e. there is no intersection between them, the first one will be deleted if the following warning confirmation message is accepted:

#### **Geocaging area - Warning confirmation message**

**Error**

If users try to generate a geocaging area that "crosses" the edges, Veronte Ops will not allow it, neither when creating it from scratch nor when modifying an existing area:



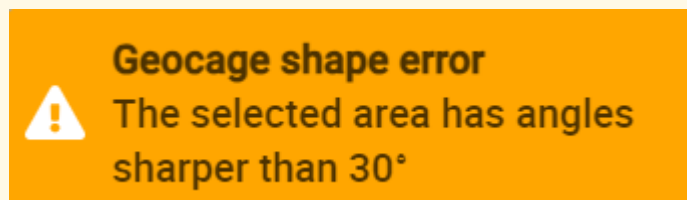
**Geocaging area - Shape error**

 **Warning****Geocaging warnings**

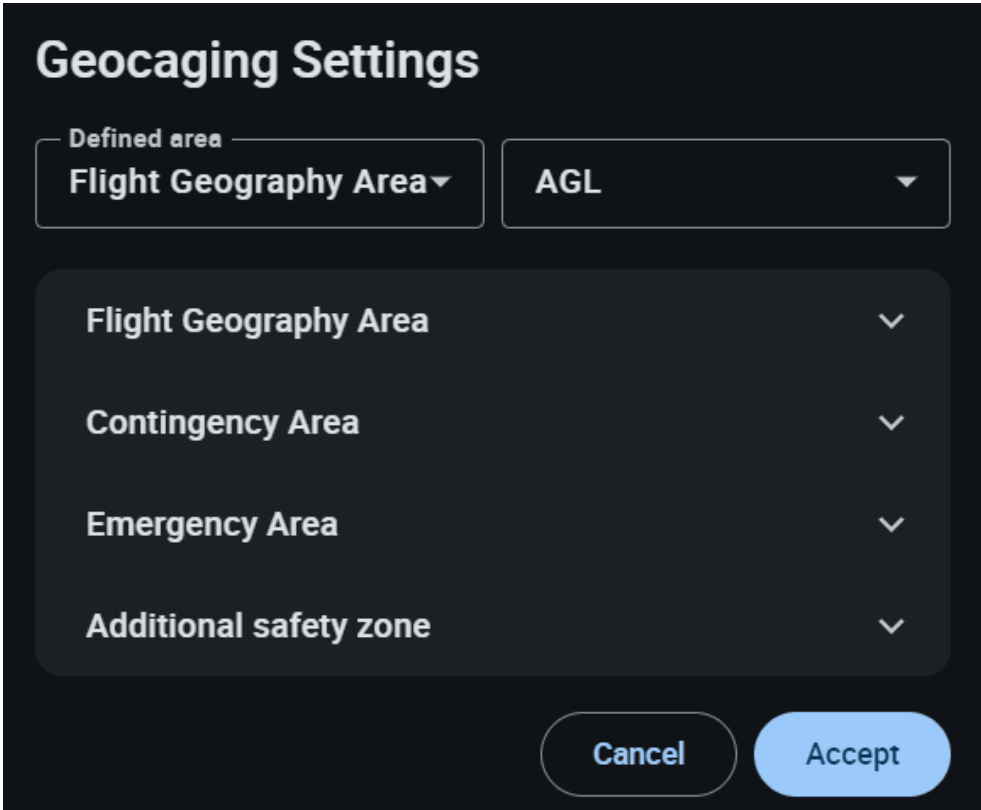
- The generated area must be between 200 m<sup>2</sup> and 100 000 km<sup>2</sup>. The following messages will appear if the area does not respect these limits, neither when creating it from scratch nor when modifying an existing area:

**Geocaging area - Surface error**

- The created area cannot have angles greater than 30°. The following message will appear when the area has angles that exceed this limit, either when it is created from scratch or when an existing area is modified:

**Geocaging area - Edges sharper than 30° error**

- **Geocaging Settings:**

A dark-themed dialog box titled "Geocaging Settings". At the top, it has two dropdown menus: "Defined area" with "Flight Geography Area" selected, and "AGL" with a downward arrow. Below these is a list of four items, each with a downward arrow: "Flight Geography Area", "Contingency Area", "Emergency Area", and "Additional safety zone". At the bottom, there are two buttons: "Cancel" and "Accept".

---

## Geocaging options - Settings

- **Defined area:** Users have to choose to which zone they want the drawn area to correspond, whether Flight Geography Area or Emergency Area, and the rest of the zones will be assigned automatically based on the configured margins.
- **Elevation:** Select between AGL, MSL or WGS84 reference system to define the altitude of the different zones within the geocaging area.
- **Flight Geography Area:**
  - Set height limits: Users must set the desired **upper limit** for this area. In addition, the lower limit can also be defined (optional).
  - Set Events: Users must associate this area to the specific event that must be previously defined in the **1x PDI Builder** software to trigger an alert or a corrective action. This option is explained in detail in the [Shape](#) section above.
- **Contingency Area / Emergency Area / Additional safety zone:**
  - Set Events: Users must associate this area to the specific event that must be previously defined in the **1x PDI Builder** software to trigger an alert or a corrective action. This option is explained in detail in the [Shape](#) section above.
  - Contingency / Emergency / Additional safety zone width: Depending on the Defined area selected when creating the geocaging area, this margin width will act differently in the calculation of the area size.
    - Flight Geography Area selected: The size of these zones is calculated by adding the margin entered here to the width and altitude of the previous area (3D zones).
    - Emergency Area selected: The calculation for the size will be:
      - For the Additional safety zone, adding the margin entered here to the width and altitude of the previous area (3D zone).
      - For the Contingency and Flight Geography Areas, subtracting the margin entered here to the width and altitude of the previous area (3D zones).

If the defined geocaging area complies with the standard, the "[Geocaging not OK](#)" bit (ID 504) will be **TRUE**, otherwise it will be **FALSE**.

### **Note**

This bit checks the following:

- Regarding **area**, the geocaging area created must be between 200 m<sup>2</sup> and 100 000 km<sup>2</sup>.
- In terms of elevation:
  - Must be defined **absolute**, not relative.
  - All of the heights of the vertical limits shall be in the **same reference system** (MSL, AGL, WGS84).
  - **Upper limit** must **always** be set.
  - **Lower limit** must not be set in any area, except in the Flight Geography area where it is optional.

### **Example**

The following actions are an example of user-configurable corrective actions that comply with the standard:

- An alarm bit is activated when entering the Contingency Area.
- A command is sent to switch to the "**Return to home**" phase when entering the Emergency Area.
- The **FTS** is activated when entering the Additional safety zone.

In the case where the corrective actions are as described above, the principle of operation will be as follows:

If the Flight Geography Area limit is trespassed, the platform enters in the Contingency Area and the defined "Contingency area" bit will turn **FALSE**, causing an alert to appear next to the platform icon (this alert must be configured in the settings of the platform icon, the user can find an explanation of this in the [Platform icon - Veronte Ops configuration](#) section of the present manual). Next, if the platform exits this area and enters the Emergency Area, the current flight phase will switch to **Return to home**. Finally, if the platform

also exits this area and enters the Additional safety zone, the **FTS** will be activated.

## Geocaging Vs Geofencing

**Geocaging** defines an extensive 3D operational flight area by operating in both the horizontal and vertical axes and restricts movement outside of it. In this system, the behavior is that alerts and responses configured in the **1x PDI Builder** software are triggered, depending on the zone in which the platform is located.

**Geofencing** restricts or prevents entry into specific areas by creating virtual boundaries around physical locations. In this system, a repulsion is implemented around the user-defined obstacle to achieve geofencing behavior.

## Runway

This option allows the user to configure a **Runway** which is used during flight phases.

### **Note**


The linking of a runway to an automation is done in the **Operation Panel**, for more information about this, see [Operation Panel - Operation](#) section of this manual.


To add a runway, click on its icon, click on a point on the map to define the start and click on a second point to define the end of the runway.



## Runway

### Note

The loiter position is automatically defined and it is identified by this icon: , as can be seen in the image above.

By accessing the mission edition ( icon) it is possible to modify the position of the start and end points of the runway, as well as the position of the loiter point:



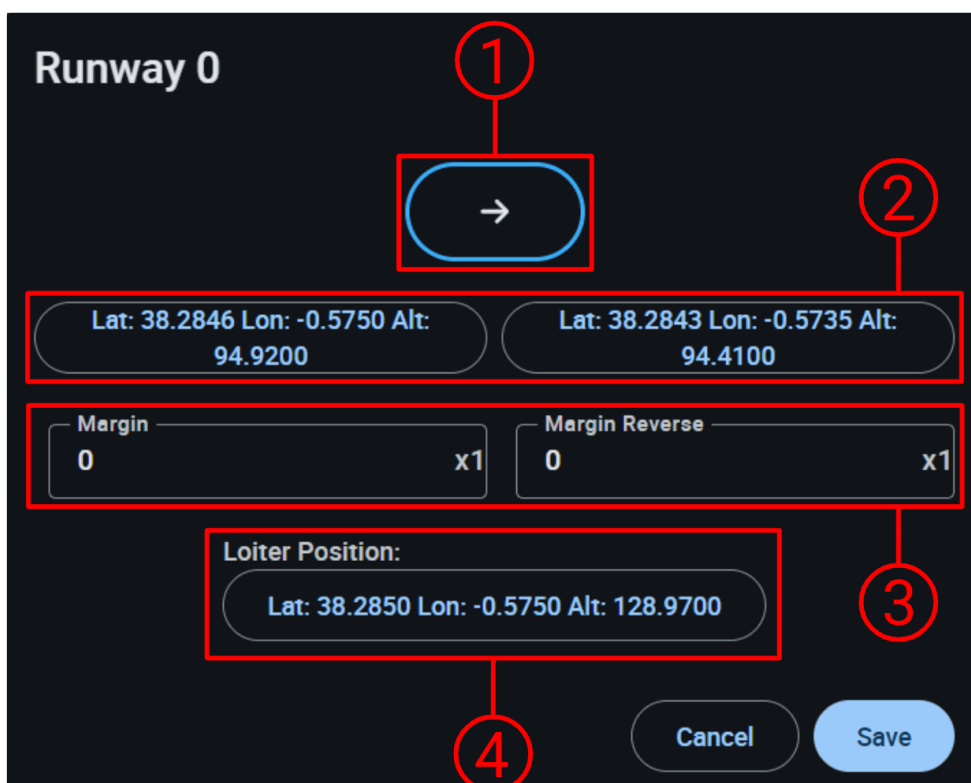
## Runway position

**Right-clicking** on the start, end or loiter point of the runway, users will access to its **options**:



### Runway options

- **Runway Start/End/Loiter Settings:** The coordinates of this runway point can be edited manually. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).
- **Runway Settings:** The following parameters can be configured:



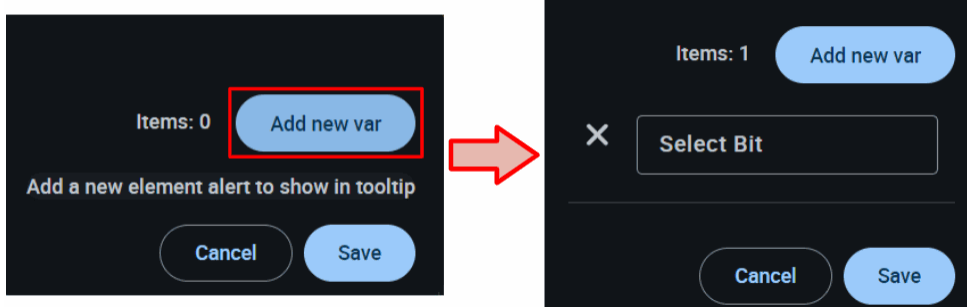
### Runway options - Settings

1. **Runway direction:** The direction of the runway is defined here with an arrow.  
By default it is → , but user can define it as desired clicking on it. The available options are → , ← and **AUTO**.

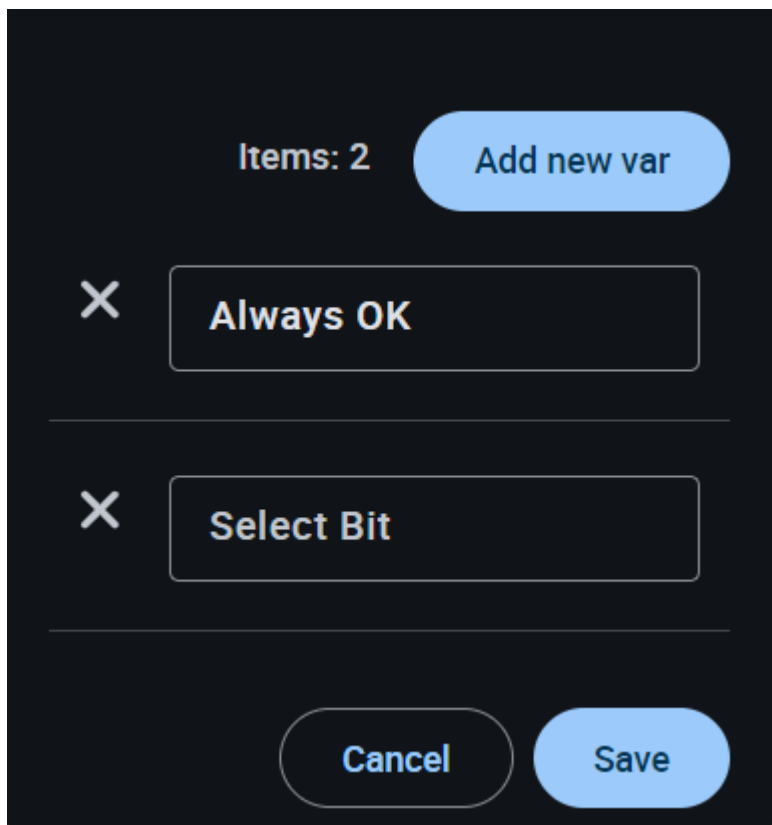
**Note**

When the **AUTO** option is selected, the runway direction will be defined by the **wind direction**.

2. **Runway coordinates:** The user can manually introduce the coordinates of the start and end point of the runway. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).
  3. **Margin/Margin Reverse:** Percentage of the runway distance at which the airplane will try to touch the ground.
  4. **Loiter Position:** To accurately define the loiter point of reference (**Runway Loiter**), its coordinates and the altitude that the aircraft will reach during climb, can be defined in this option. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).
- **Configure Alarms:** When an alarm is selected, the aircraft shall perform the actions associated to that alarm on the selected runway.

**Runway options - Configure Alarms**

Alarms are configured with bit variables, users can select any bit they want.



### Runway options - Alarms

- **Remove Runway:** Deletes the runway.

### Spot

This option allows the user to configure a **Spot** which is used during flight phases. A spot refers to a kind of runway where a initial point and its azimuth is defined. Besides, it is necessary to define a delta angle.


#### **Note**


The linking of a spot to an automation is done in the **Operation Panel**, for more information about this, see [Operation Panel - Operation](#) section of this manual.



## Spot

### Note

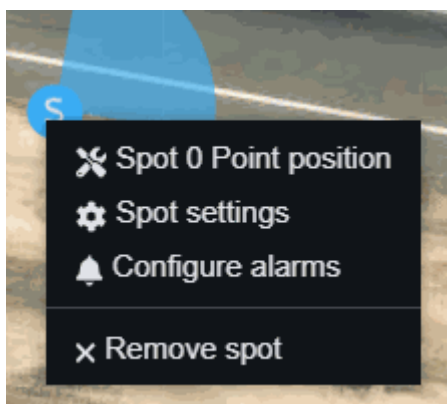
The loiter position is automatically defined and it is identified by this icon: , as can be seen in the image above.

By accessing the mission edition ( icon) it is possible to modify the **position** of the 'spot' and also the position of the loiter point:



### Spot position

**Right-clicking** on the 'spot' or loiter point, users will access to its **options**:




### Spot options

- **Spot Point/Loiter Settings:** The coordinates of this point can be edited manually. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).
- **Spot Settings:** The aircraft will land or take-off using the best orientation computed within the area bounded by the parameters entered here:

## Spot 0 Point

Position: Lat: 38.2841 Lon: -0.5743 Alt: 97.0200


Azimuth: 9,9999997090929 °[0,360]  Delta: 89,9543738355392 °[0,360]

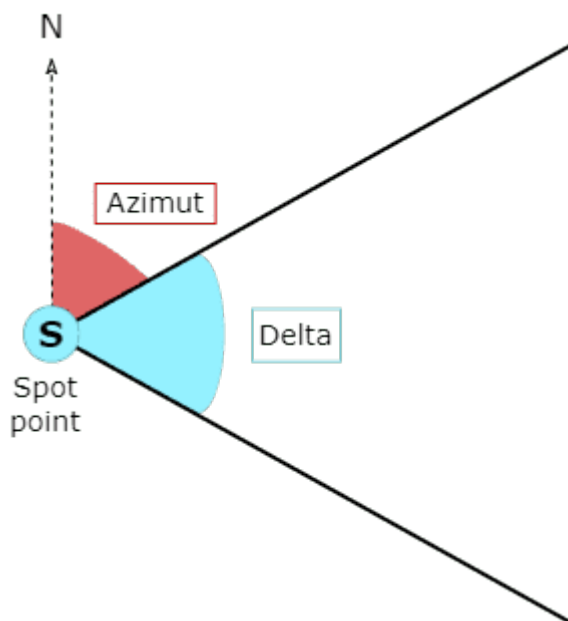
Loiter Position: Lat: 38.2845 Lon: -0.5744 Alt: 119.6800

### Spot options - Settings

- **Position:** The user can manually introduce the coordinates of the 'spot' point. Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).
- **Azimuth and Delta:** Users must configure the desired **azimuth** and **delta** for the spot. The units available for these angular values are °[0, 360], ° ' " , rad, rad[0, 2π], ° , rad[−π, π] and °[−180, 180].

#### Note

Azimuth parameter can also be defined as relative to another point instead of absolute. To do this, click on the  icon.



### Spot parameters

- **Loiter Position:** To accurately define the loiter point of reference (**Spot Loiter**), its coordinates and the altitude can be defined in this option.

Its configuration is the same as for a waypoint (a detailed explanation of this has been described in the [Waypoint](#) section above).

- **Configure Alarms:** When an alarm is selected, the aircraft shall perform the actions associated to that alarm on the selected spot. It is configured in the same way as [runways](#), described above.
- **Remove Spot:** Deletes the spot.


## Marks

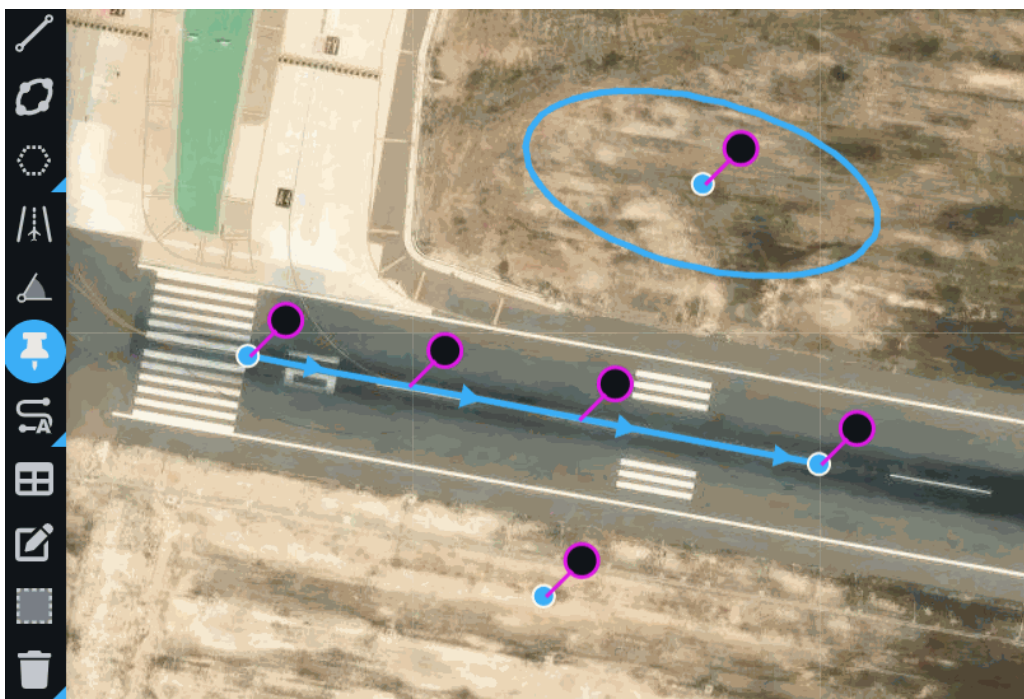
This tool allows to set an event mark on a patch. Marks are useful to initiating automations. When the aircraft flies over it, an event is triggered and can be used as a condition to start a set of actions: add a lap to a counter, payload launch, take a photo, start video recording, etc.

### **Note**

The linking of a mark to an automation is done in the **Operation Panel**, for more information about this, see [Operation Panel - Operation](#) section of this manual.

To place a mark, it is **first required to create a patch**. The elements described above that are patches are **waypoints**, **segments** and **orbits**. To add it, select the tool and click on the desired patch. Then, when users have created all the desired marks, **right-click on the map** to close/finish the 'creation event'.

Initially, new marks appear as a pin (). If the user links an event to one of them, the icon selected for this event will be displayed.

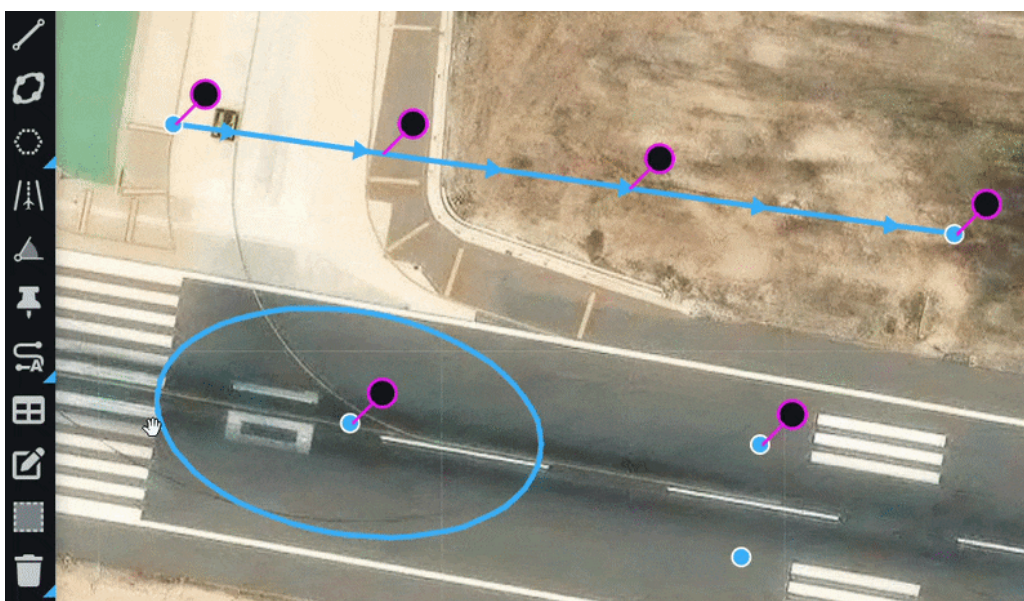


### Mark

Marks can be moved along the patch by clicking on the  icon:

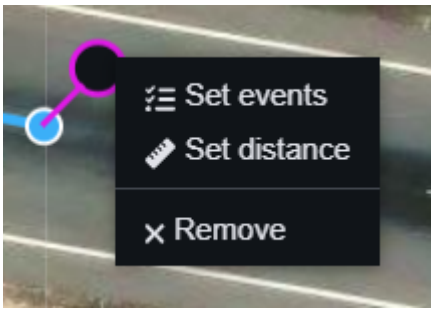
#### Note

A mark can only be displaced if it is in a segment.



### Marks moved

**Right-clicking** on the mark, users will access to its **options**:



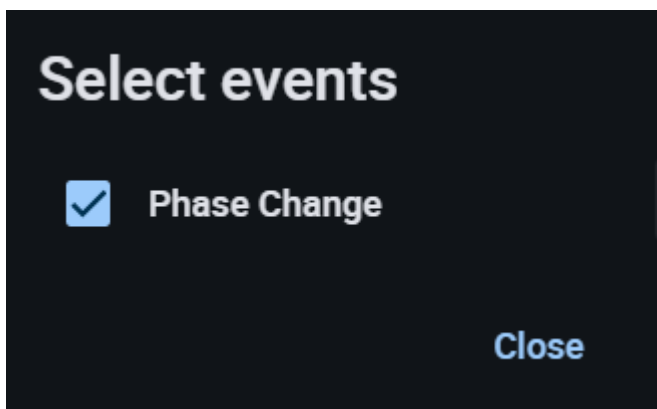
## Mark options

- **Set Events:** This option allows to associate this Mark to a specific event. This works as follows, in this panel the user links this Mark to an "Event Marks".

### ⚠ Important

To do this, it is first necessary to have defined (renamed) an Event Marks in the **UI menu of the 1x PDI Builder software**, as described and explained in the corresponding section of the **1x PDI Builder** manual, click [here](#) to access it.

Simply check the desired Event Mark to be associated:



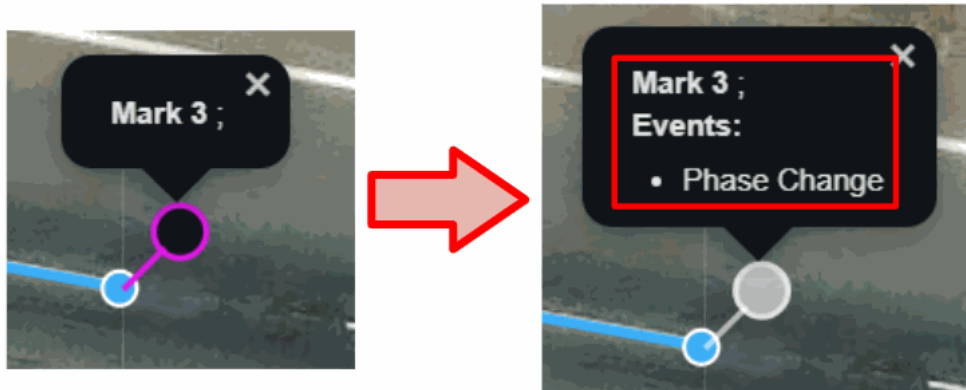
## Mark options - Set Events

### ⓘ Note

- **Users can associate a waypoint to as many Event Mark as there are created (a maximum of 16 Event Mark can be defined in the system).**
- **Different Marks can be linked to the same Event Mark.**

**Moreover, if the Event Mark that is linked to the Mark has an associated icon, the icon will appear at this MARK.**

In addition, when clicking on it, the name of the Event Mark defined by the user will appear in its description. An example is shown below:



### Mark information - Set Events

- **Set distance:** This distance is the horizontal distance along the patch to the starting waypoint. If the mark is attached to a waypoint, distance will be zero.

### Mark - Set distance

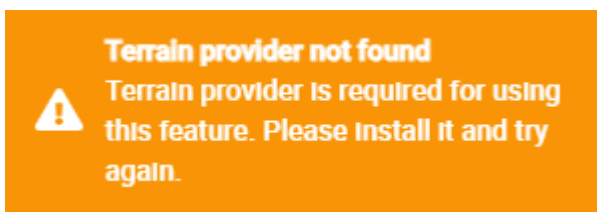
- **Patch type:** Selects the specific flight phase or mode (e.g., Approach, Route, Taxi, etc.) to which the Mark will be applied.

- **Patch Selected:** Indicates the waypoint used as the anchor point for the calculation.
- **Type:** Defines the spatial reference criterion within the selected segment for the positioning of the Mark.
- **Distance:** Numerical value in meters that determines the precise spatial offset along the trajectory.
- **Remove Mark:** Deletes the mark.

## Generate route

To be able to create these elements, it is first necessary to have the application **Veronte Terrain Provider** running.

If this tool is not initialized, the following warning message will appear when trying to use any 'Generate Route' element:



## Generate route warning message

## Spiral

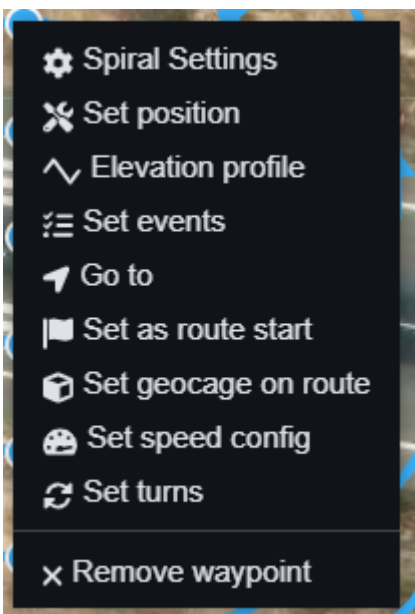


**Spiral tool draws a spiral that can cover a target area.**



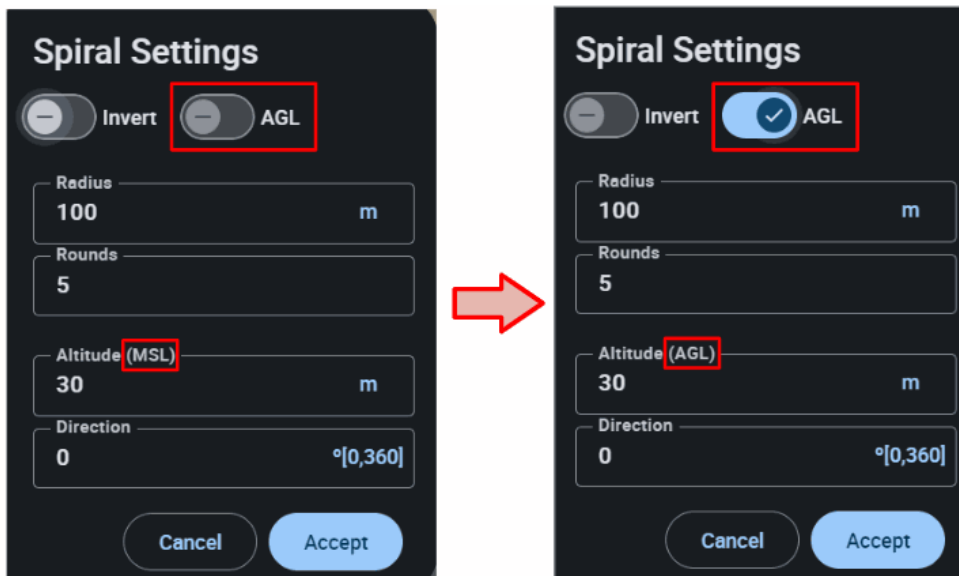
**Generate route - Spiral**

The spiral options are accessed in the same way as for the other elements described above, and are the same as the **Waypoint** options but with the addition of 3 more:



**Generate route - Spiral options**

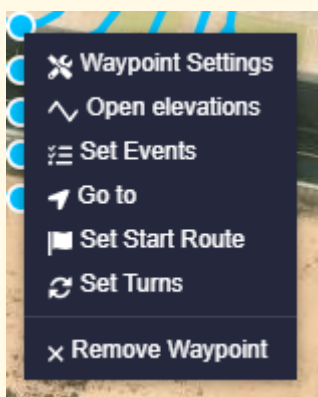
- **Spiral Settings:** The following parameters can be configured:
  - **Invert:** When enabled, the direction of the route will be the opposite to the direction configured below.
  - **AGL:** If enabled, the waypoint altitude is set in AGL, otherwise it is expressed in MSL.
  - **Radius:** Spiral maximum radius.
  - **Rounds:** The number of spiral rounds.
  - **Altitude (MSL/AGL):** Altitude of the waypoints expressed in MSL/AGL (depending on whether the AGL parameter is enabled or disabled).
  - **Direction:** Direction of the spiral axes on the map.



**Generate route - Spiral Settings**

**Warning**

If the user 'refreshes' Veronte Ops, it will no longer be possible to access this configuration menu.



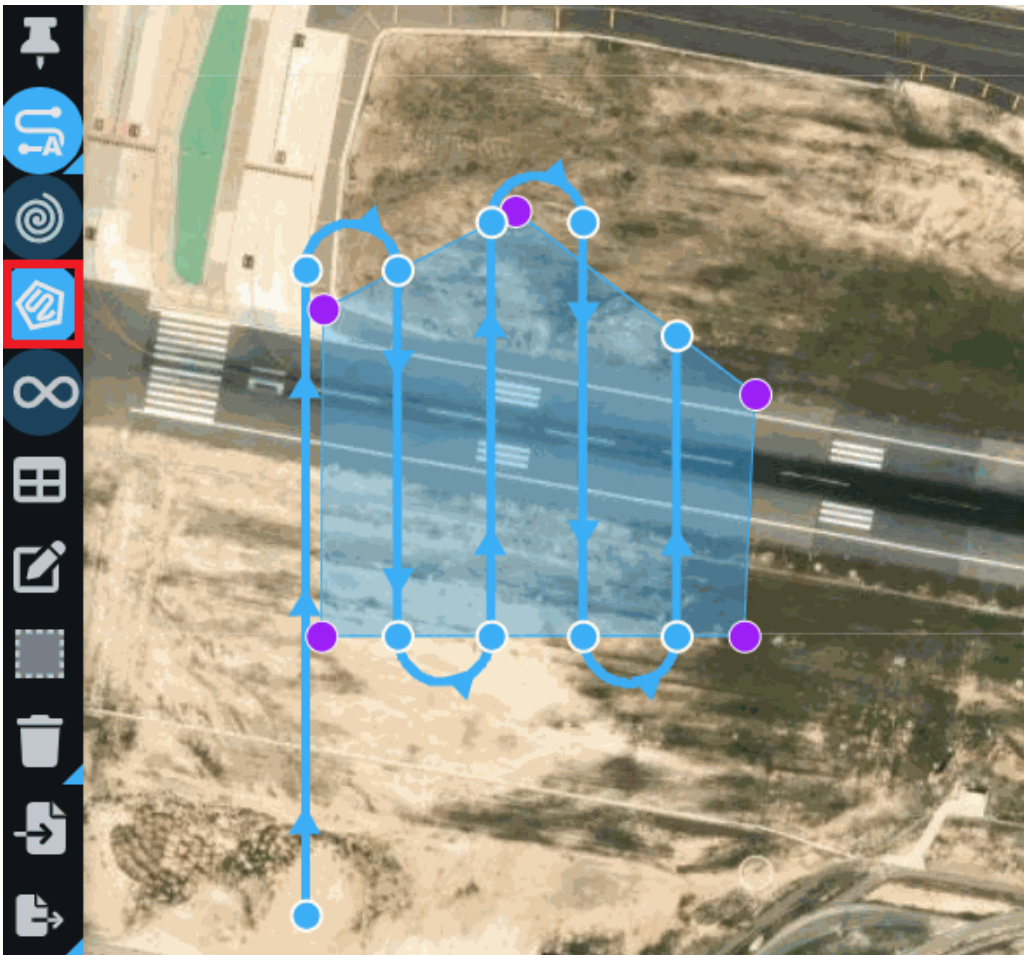
**Generate route - Spiral options after refresh**

- **Set geocage on route:** Allows configuring a geocaging zone around the segment. For more information, consult [Geocaging area](#).
- **Set Turns:** The spiral also acts as a [curved segment](#) so it has the same option as this; a detailed explanation has been described in the [curved segment](#) section above.

## Photogrammetry Mission

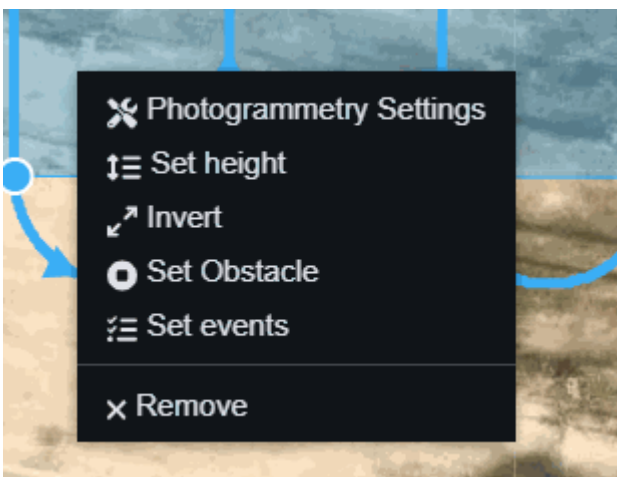


**Photogrammetry Mission tool allows users to draw a prism on the map to automatically generate a mapping mission.**



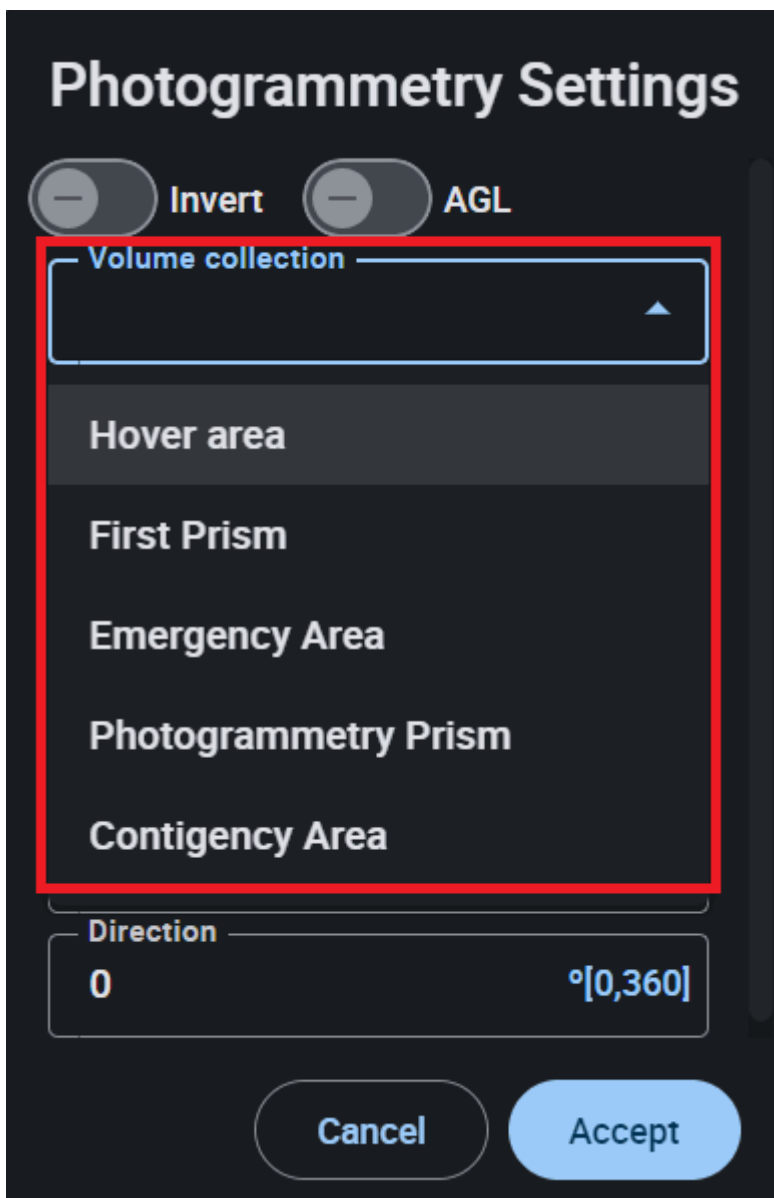
### Generate route - Photogrammetry Mission

The photogrammetry mission options are accessed in the same way as for a prism.



### Generate route - Photogrammetry Mission options

- **Photogrammetry Settings:** The following parameters can be configured:
  - **Invert:** When enabled, the direction of the route will be the opposite to the direction configured below.
  - **AGL:** If enabled, the waypoint altitude is set in AGL, otherwise it is expressed in MSL.
  - **Events Volumes:** As with all volumes, users can link a predefined Event Volume to this photogrammetry mission. This configuration option is the same as the Set Events option.



#### Generate route - Photogrammetry Settings Events Volumes

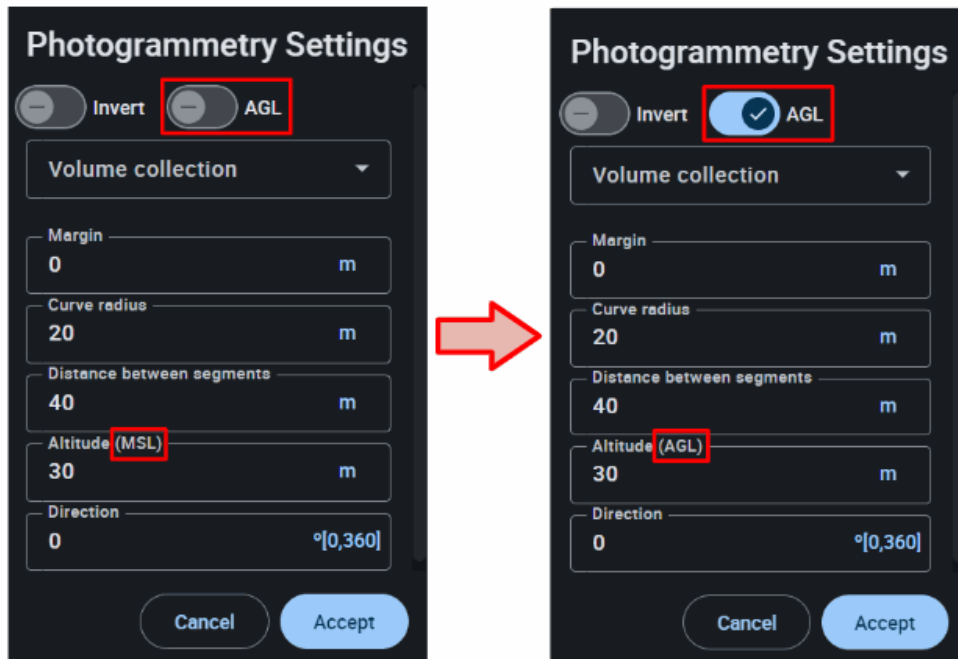
- **Margin:** This option allows the user to add boundary margins for the route to each side of the photogrammetry mission.

- **Curve radius: Radius of the route turns.**
- **Distance between segments: Distance between segments can be modified.**

**Note**

Depending on the curve radius value and the distance between segments, there are three cases for this part of the route (the radius must be set according to the minimum achievable by the platform):

- **Radius 0**  $\Rightarrow$  There are no curves between passes, but straight lines. This option is used with multicopters, which are able to perform this kind of paths.
  - **Radius is smaller than half the distance between segments** ( $R < \frac{d}{2}$ )  $\Rightarrow$  Veronte Ops generates a semicircle with the diameter equal to the distance between parallel segments.
  - **Radius bigger than half the distance between segments** ( $R > \frac{d}{2}$ )  $\Rightarrow$  The path between straight lines is formed by two curves and a straight line.
- **Altitude (MSL/AGL):** Altitude of the waypoints expressed in MSL/AGL (depending on whether the AGL parameter is enabled or disabled).
  - **Direction:** Direction of the route generated on the map.



### Generate route - Photogrammetry Settings

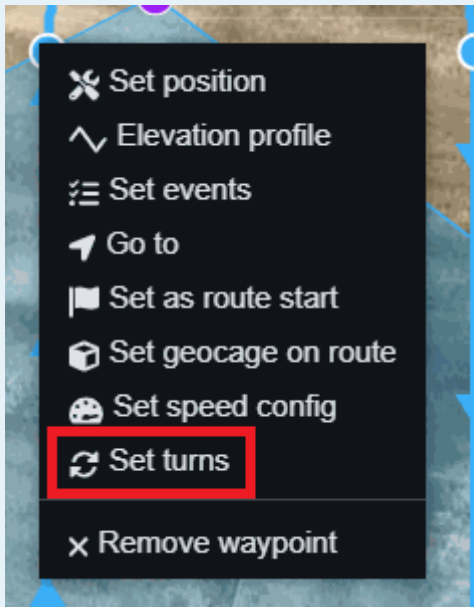
- **Set Height:** This option is configured in the same way as for a prism, refer to [Prism](#) section for a detailed explanation.
- **Invert:** This option is configured in the same way as for a prism, refer to [Prism](#) section for a detailed explanation.
- **Set Obstacle:** This option is configured in the same way as for a prism, refer to [Prism](#) section for a detailed explanation.
- **Set Events:** Explained previously in the [Shape](#) section.

#### **Warning**

If the user 'refreshes' Veronte Ops, the photogrammetry mission will become a mapping route with a "normal" [prism](#), therefore its options will be the same as those of a prism. Consequently, the "Photogrammetry Settings" option will disappear, and it will no longer be possible to access the "Photogrammetry Settings" configuration menu.

**Note**

The options for the waypoints forming the route generated for this photogrammetry mission are the same as for a "normal" waypoint. For more information on waypoint configuration, see [Waypoint](#) section described above.

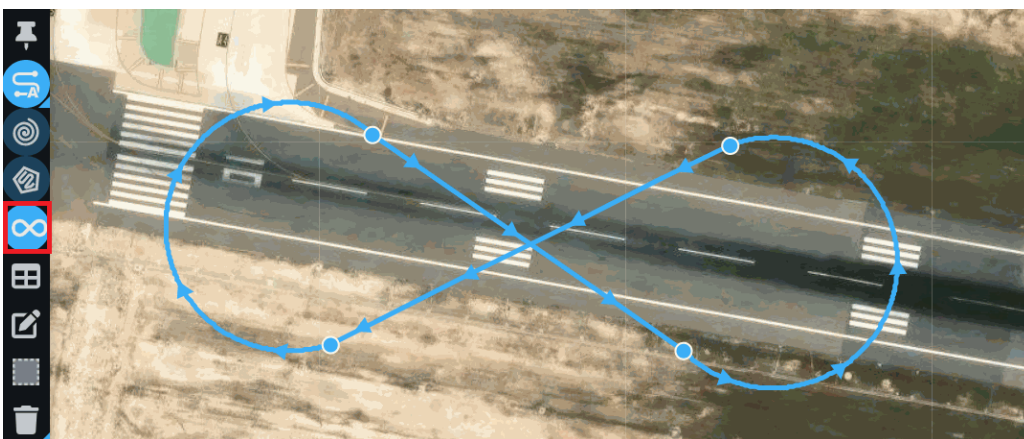


Generate route - Waypoint route options

Figure



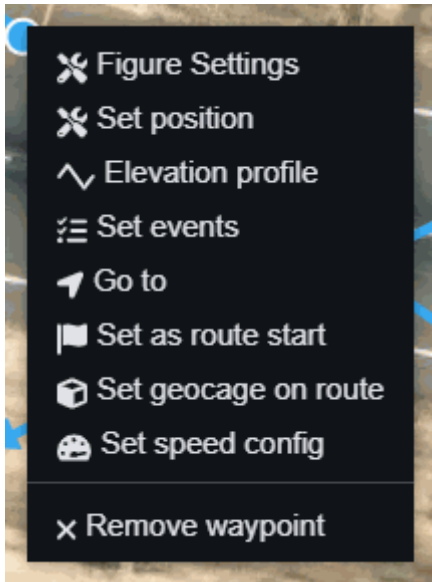
**Figure.** This tool allows users to create their own mission from a pre-designed route. To create it, click and drag to make the figure as big as desired.



Generate route - Figure

The figure options are accessed in the same way as for the other elements described above, and are the same as the **Waypoint** or **curved segment** options, depending on the waypoint in the route. This is because it is basically made up of straight and curved segments.

However, an extra option appears to access the 'Figure Settings':



#### Generate route - Figure options

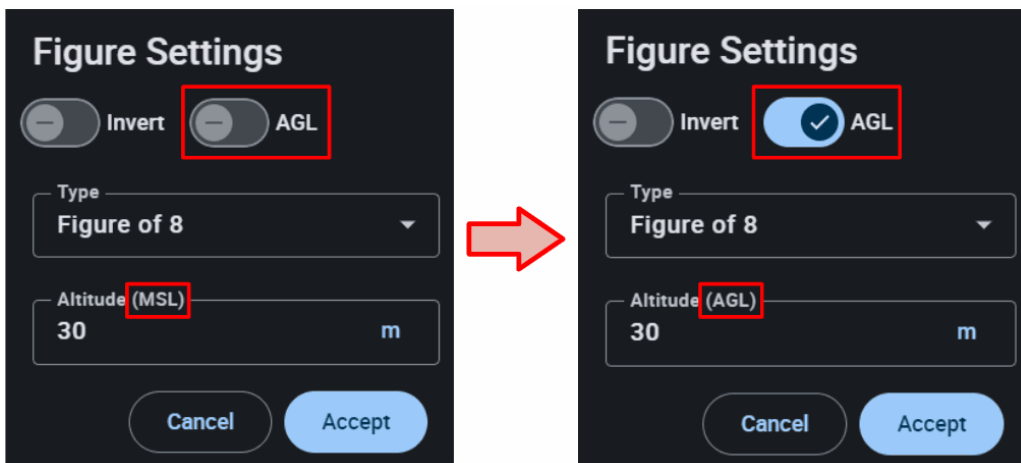
The following parameters can be configured:

- **Invert:** When enabled, the direction of the route will be the opposite to the direction configured below.
- **AGL:** If enabled, the waypoint altitude is set in AGL, otherwise it is expressed in MSL.
- **Type:** The available options are:
  - **Figure of 8:** This is a path in the shape of 8/infinity.
  - **Racetrack:** This route is like a racetrack.



Generate route - Figure racetrack

- **Altitude (MSL/AGL):** Altitude of the waypoints expressed in MSL/AGL (depending on whether the AGL parameter is enabled or disabled).



Generate route - Figure Settings

**Warning**

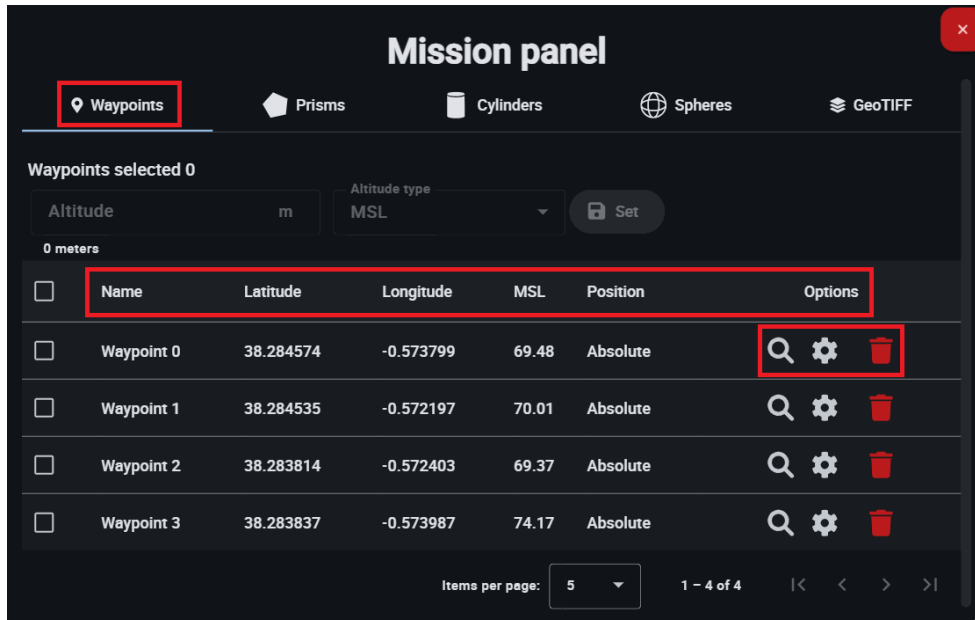
If the user 'refreshes' Veronte Ops, it will no longer be possible to access this configuration menu. Therefore, the figure will act as a "normal segment".

Mission panel




This mission panel allows the user to monitor and manipulate the waypoints, prisms, cylinders and spheres created.

- **Waypoints**

The following fields can be found in this menu:



### Mission panel - Waypoints

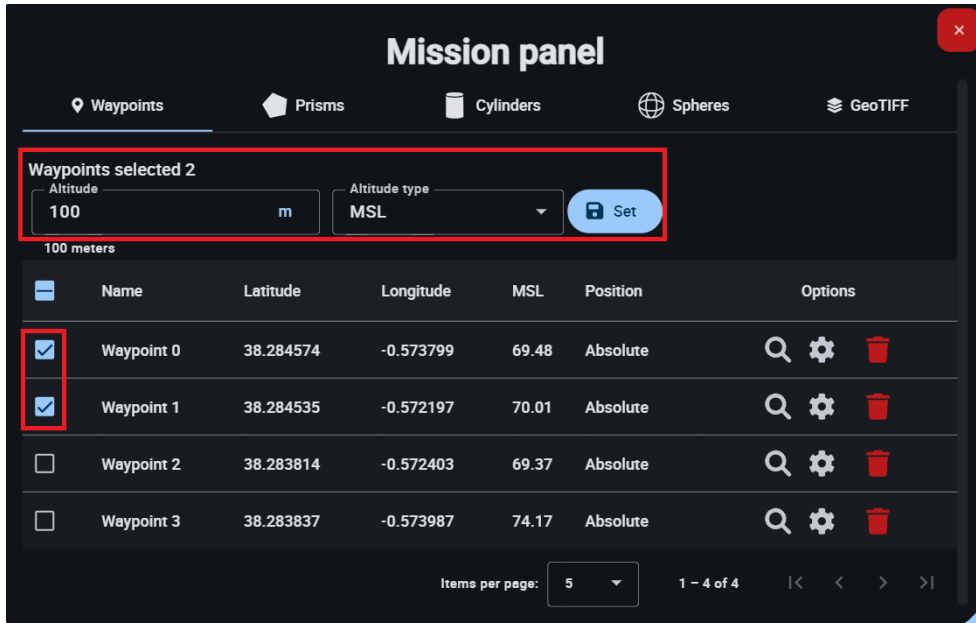
- **Name:** Name of this waypoint.
- **Latitude/Longitude/MSL:** Coordinates of the waypoint.
- **Position:** Absolute or Relative.
  - **Absolute** means that the position of the element is fixed.
  - **Relative** indicates that its position is relative to the position of another element and may change during the operation.
- **Options:**
  -  **Search:** Clicking here will center and zoom the waypoint on the map.
  -  **Edit:** Opens the Waypoint Settings menu. For more information on this configuration menu, click [here](#).
  -  **Delete:** Deletes this waypoint.

It is also possible to modify the altitude of one, several or all the selected waypoints by using the Altitude edit function on the top of the list.

**Note**

Selecting all will select the waypoints on all pages of the panel.

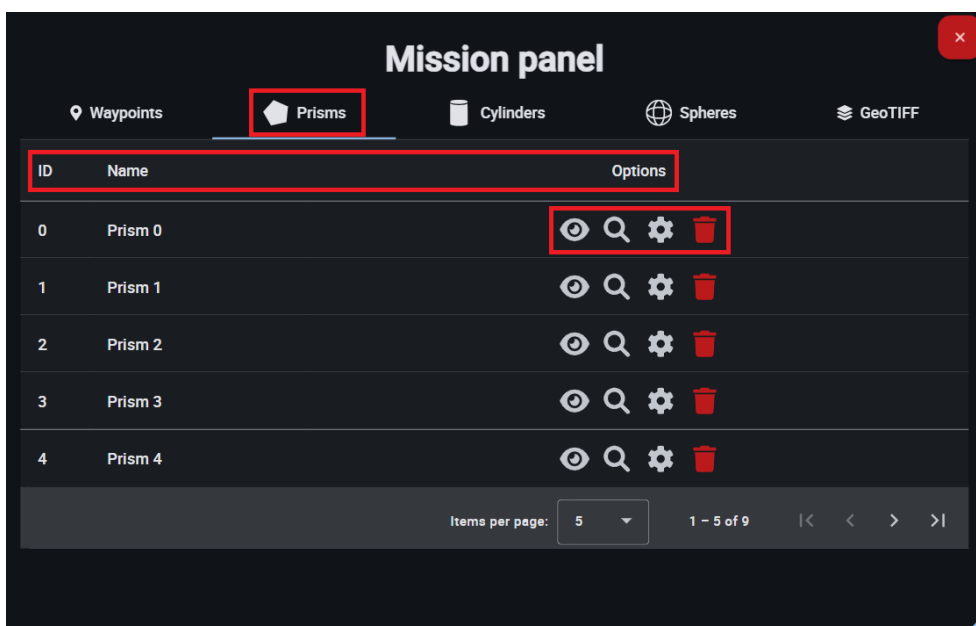
Users must enter the desired altitude value, select the altitude type (WGS84, MSL or AGL) and finally click 'Set'.







Mission panel - Waypoints altitude

- **Prisms**

The following fields can be found in this menu:



Mission panel - Prisms

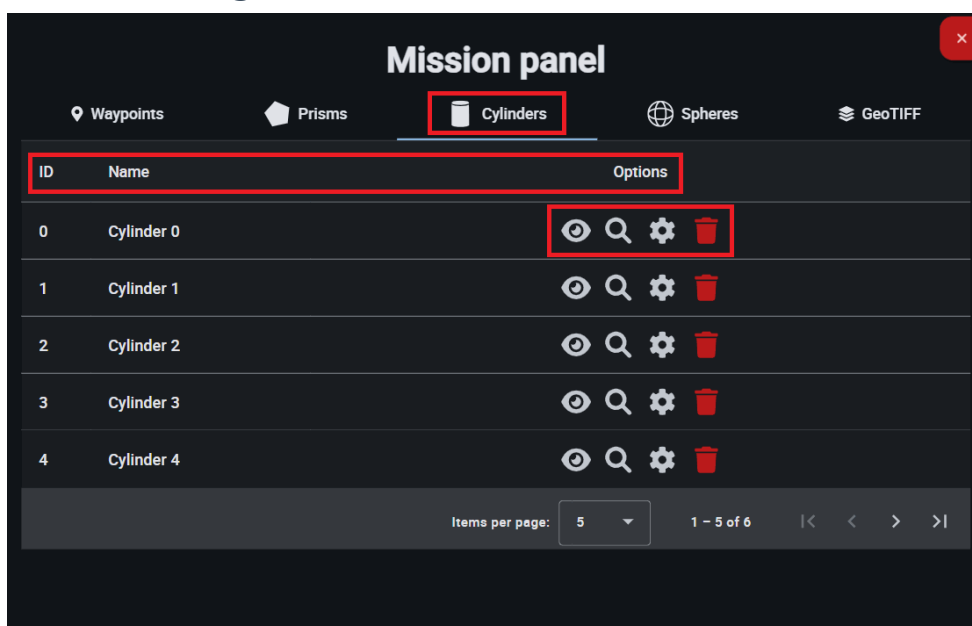
- **ID: Feature Id of this prism.**
- **Name: Name of this prism.**
- **Options:**
  -  **Show/hide:** It is possible to show/hide the prism on the map by clicking here.
  -  **Search:** Clicking here will center and zoom the prism on the map.
  -  **Edit:** Opens the prism height editing menu. For more information on these settings, click [here](#).
  -  **Delete:** Deletes this prism.

### **Important**





When the prism is part of a geocaging area, the Edit option will not appear in this panel. This is why, in the [image above](#) Prisms 0 to 3 do not have this option available.

## • Cylinders

The following fields can be found in this menu:

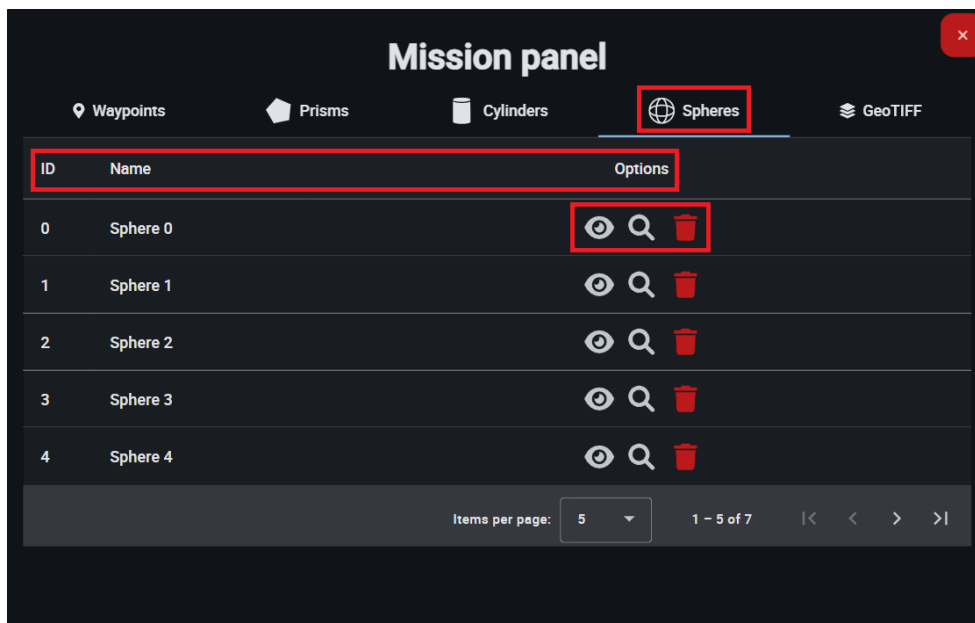


**Mission panel - Cylinders**


- **ID: Feature Id of this cylinder.**
- **Name: Name of this cylinder.**
- **Options:**
  -  **Show/hide: It is possible to show/hide the cylinder on the map by clicking here.**
  -  **Search: Clicking here will center and zoom the cylinder on the map.**
  -  **Edit: Open the cylinder height editing menu. For more information on these settings, click [here](#).**
  -  **Delete: Deletes this cylinder.**



- **Spheres**

The following fields can be found in this menu:



### Mission panel - Spheres

- **ID: Feature Id of this sphere.**
- **Name: Name of this sphere.**
- **Options:**
  -  **Show/hide: It is possible to show/hide the sphere on the map by clicking here.**

-  **Search:** Clicking here will center and zoom the sphere on the map.
-  **Delete:** Deletes this sphere.

- **GeoTIFF**

From this panel users can insert GeoTIFF images into the map. A GeoTIFF image is a standard TIFF image file that contains geographic information embedded directly in the file itself. This "georeferencing" allows the software to place the image in its correct position on the Earth's surface. This type of image differs from a normal image because, in addition to storing pixel data (colors), it also includes additional metadata that describes its spatial context.

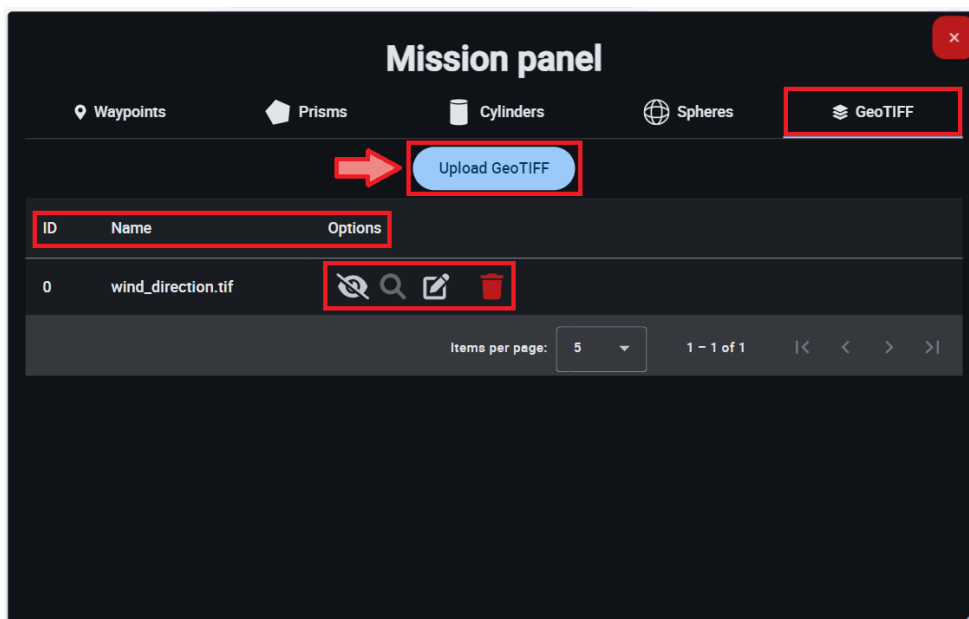
In summary, these images are characterized by integrated georeferencing, detailed metadata, and a raster format.

To insert a GeoTIFF image, click the Upload GeoTIFF button and select the desired raster image from the user's local storage.

The allowed extensions for these images are `.tif`, `.tiff`, and `.geotiff`.




 **Caution**

If the GeoTIFF image contains extensive information (high file size), this can cause the Veronte Ops application to crash.



### Mission panel - GeoTIFF

The following fields can be found in this menu:

- **ID:** Feature Id of this geoTIFF.
- **Name:** Name of this geoTIFF.
- **Options:**
  -  **Show/hide:** It is possible to show/hide the geoTIFF on the map by clicking here.
  -  **Search:** Clicking here will center and zoom the geoTIFF on the map.
  -  **Edit:** Open the geoTIFF editing menu. The following parameters can be configured to control how the data contained in the image is displayed:

**Edit wind\_direction.tif**

If not EPSG:4326, it may not be seen properly.

Name: wind\_direction.tif

Raster color: None

Resolution: 256

Min: 0

Max: 100

Opacity: 1

Precision: 0,1

Invert

Cancel Save

### Mission panel - GeoTIFF edit menu

- **Name:** Users can rename the image as desired. By default, the file name is set.
- **Raster color:** Color palette used to represent pixel values. Users can choose between None, Rainbow, Viridis or Grayscale.
- **Resolution:** Number of colors or discrete steps in the color palette. By default 256.
- **Min / Max:** Range of data represented by the color palette. By default 0/100.
- **Opacity:** This controls the transparency of the image layer. The range of values is from 0 to 1, where 1 is completely opaque and 0 is completely transparent. Default 1.
- **Precision:** Specifies the amount of decimal numbers to be used to display or interpret data values.

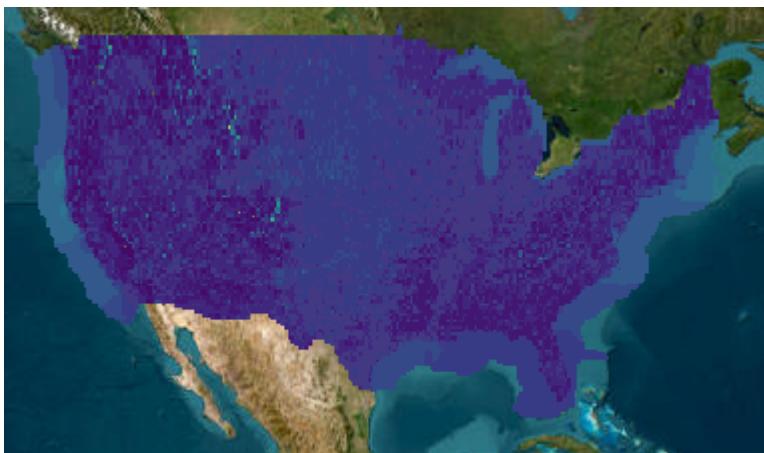
In addition, the colors of the raster image can be inverted by enabling the Invert checkbox.

**⚠ Warning**

**If the image is not in the map projection standard, EPSG:4326, it may not be seen properly.**

-  **Delete: Deletes this geoTIFF.**

**For example:**



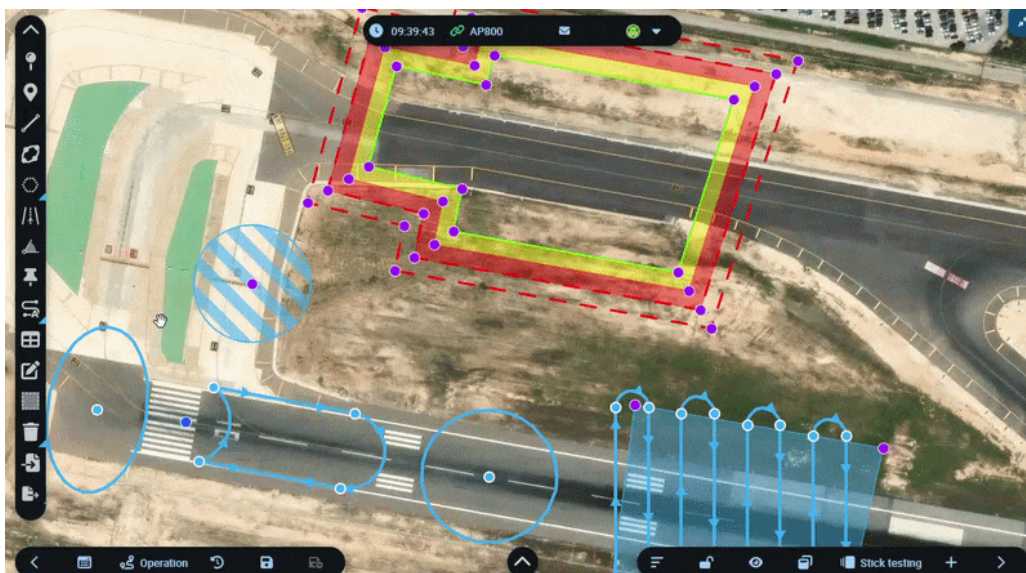
**Mission panel - GeoTIFF example**

Edit mission

**This tool allows the user to move waypoints, marks, areas, etc., as well as to change their shape.**

**A detailed explanation on how to use this tool can be found in each of the elements described above.**

**In addition, when modifying a mission with a Veronte Autopilot 1x connected, the "original operation" loaded in the autopilot will be greyed out and the modified one will be colored. This will be the case until the new changes are saved and uploaded to the autopilot, so the previous operation will be completely removed from the map. An example is shown below:**



## Edit mission

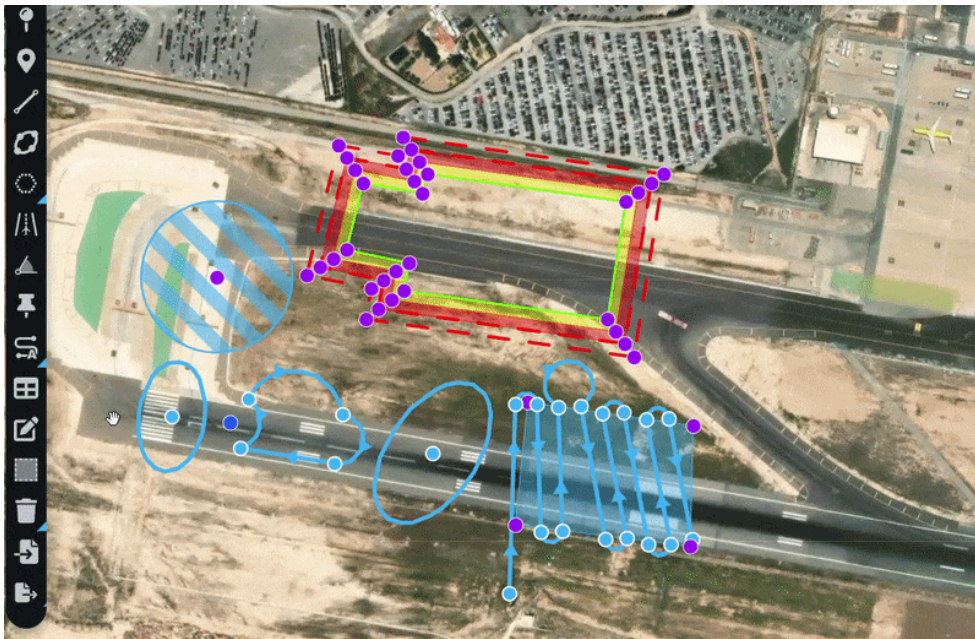
Turn on multiselection

**Multiselection allows to move and rotate mission's path from one place on the map to another.**

- **Select the tool and create a rectangle by clicking and dragging until the elements you want to move fall into it.**
- **With the elements selected, click and drag the rectangle to move it to the desired location. And to rotate it, click on the 'black pin' (📍) and drag it to the desired rotation angle.**
- **After that, click again in the tool's icon to deselect.**

### **Note**

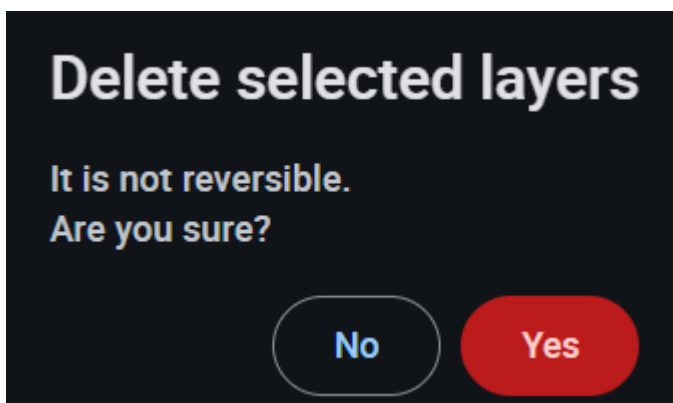
**Runways and spots cannot be moved with this tool.**



### Multiselection tool

In addition, this tool also allows to delete all items selected in two different ways, right-clicking on the selected area or pressing the 'delete' key on the user's keyboard.

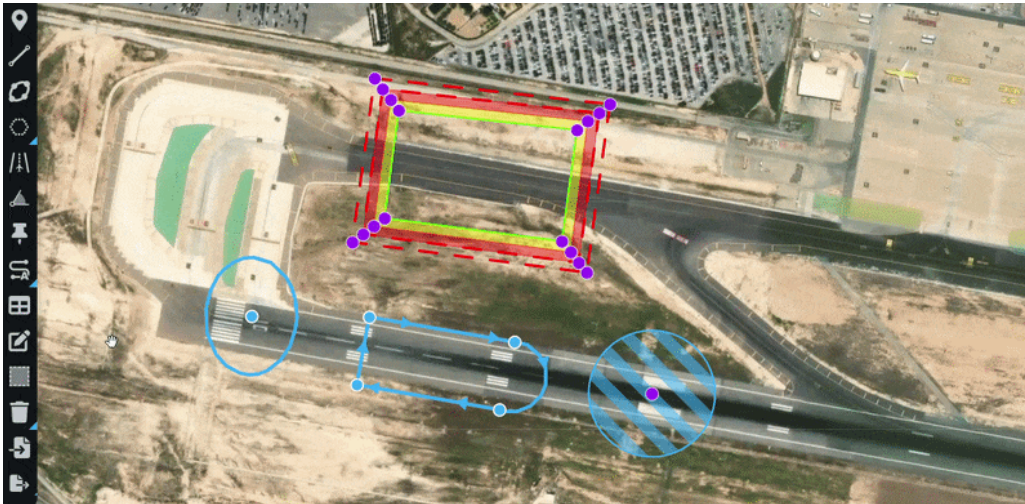
Before deleting the selected items, the following confirmation message appears:



### Multiselection tool - Remove message



#### **Note**

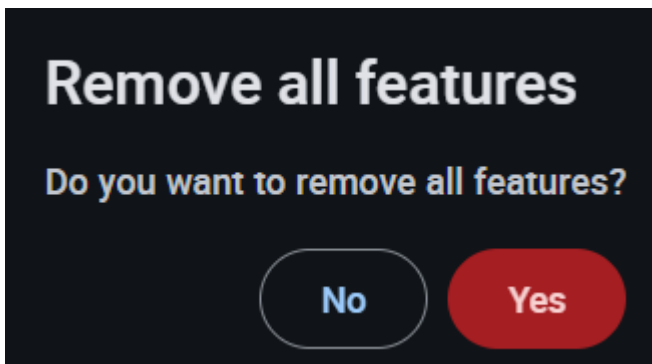
Runways and spots cannot be deleted in this way.



### Multiselection tool - Remove

Remove mission

By clicking on this icon , the user can remove all the elements created by simply clicking on each of them. However, if the user wishes to remove all the missions created, simply click on the second icon that appears: . A confirmation pop-up window will then appear to make sure that all missions wish to be deleted.



### Remove all missions

Import features



Select this option to load mission elements from a **.KML** or **.GeoJSON** file located in the user local storage. The system will interpret the file configuration to match Veronte Ops elements (e.g., mapping KML shapes to Waypoints, Segments, or Obstacles).

**Note**

**When importing polygonal shapes (such as Prisms or Cylinders):**

- **The Upper Limit of the volume is automatically set to the maximum height of the vertices found in the file.**
- **The Lower Limit is restored from the file's extra properties if available.**

**Warning**

**During Import, Veronte Ops analyzes the data to reconstruct the original geometries. If specific parameters are missing, the element will be imported as a standard geometry or ignored if incompatible.**

Export features

**Select this option to save the current mission elements to a `.KML` or `.GeoJSON` file.**

- **Supported Elements: Waypoints, Segments, Orbits, Prisms, Cylinders, Spheres, Spirals, Photogrammetry Mission, and Figure.**
- **Excluded Elements: Mission Points, Marks, Runways, Spots, and Geocages cannot be exported.**

**Note**

When exporting polygonal shapes, the system applies specific logic to handle altitude:

- The height of the exported vertices corresponds to the configured Upper Limit of the volume.
- If no Upper Limit is defined, the vertices are exported at ground level.
- The Lower Limit is saved within the file's extra properties to ensure data integrity upon re-importing.

**Export features****Warning**

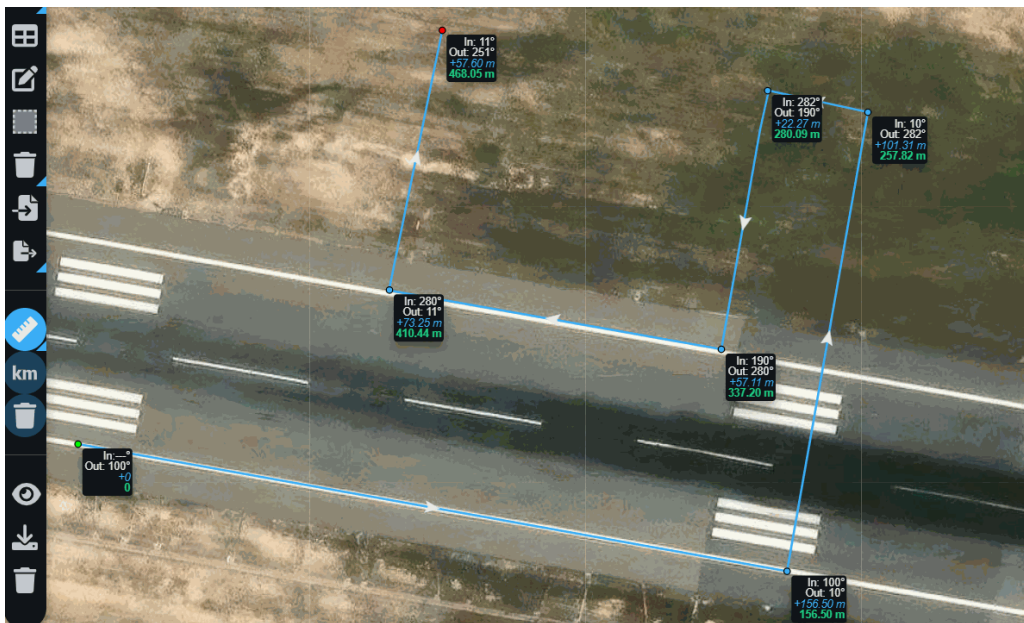
All application elements can be exported in **.KML** format, with the exception of:

- Mission Points
- Marks
- Runways
- Spots
- Geocages

**Ruler**

Turn on ruler

**Using the ruler, the user can measure distances and azimuths.**



## Ruler

The following information can be found in the each point of the figure above:


- **In (°):** Azimuth in degrees of the 'incoming' measure. The azimuth is the angle of the segment with respect to North.
- **Out (°):** Azimuth in degrees of the 'outcoming' measure. The azimuth is the angle of the segment with respect to North.
- **Blue measurement:** Distance from the previous point.
- **Green measurement:** Distance from the first point.

### Note

There 3 different types of points on the ruler segments:


- **Green point:** Indicates the start of the route.
- **Blue point:** Midway point of the route.
- **Red point:** End of the route.

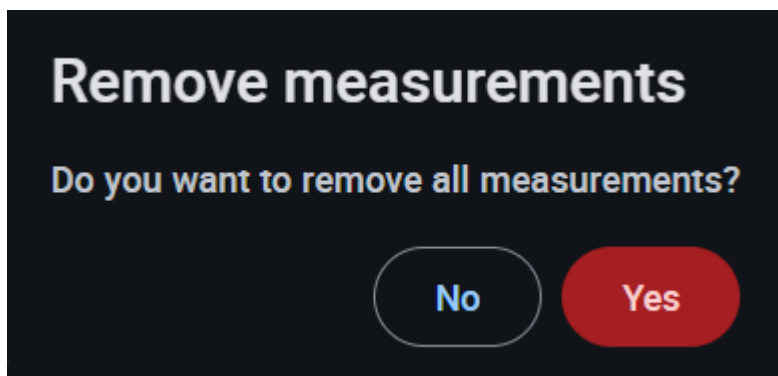
In addition, by clicking on the ruler icon, two more options will appear:

-  **Change units:** The user can change the units of the measurements by clicking on this icon. The available units are: *km* (kilometeres), *mi* (miles) and *nm* (nautical miles).

**Note**

The ruler indicates the measures with 2 decimals in order to have more precision, as can be seen in the figure above.

-  **Clear measurements:** By clicking on it, it is possible to delete all the measurements in the mission. A confirmation pop-up window will then appear to make sure that all measurements wish to be deleted.



**Remove all measurements**

## Offline

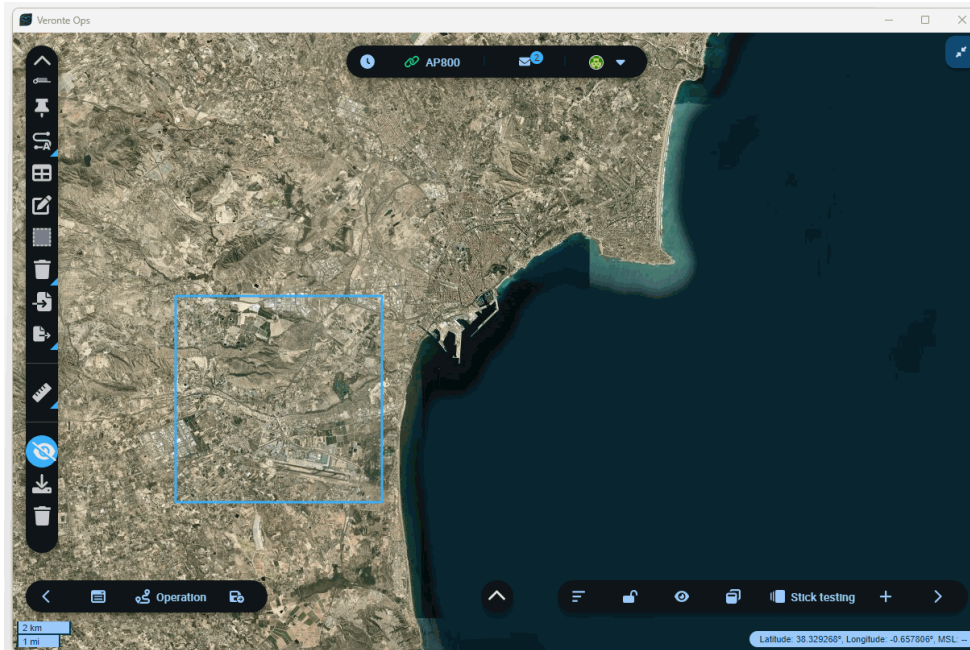
This option is designed for when users operate offline, i.e. they do not have internet access to download map information. For this reason, the map tiles of the area to work on can be pre-downloaded.

The following options are available in this section:

Show downloaded tiles

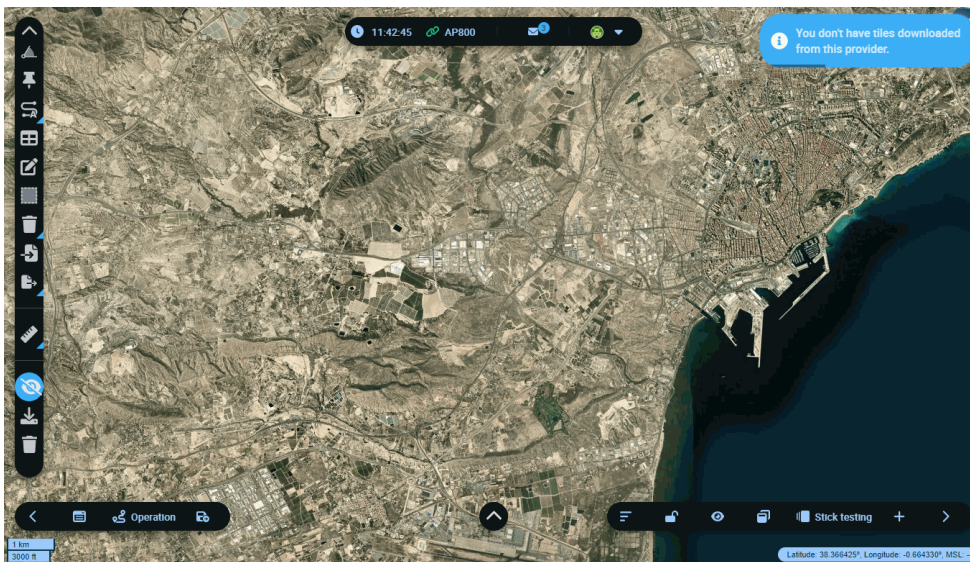
This option works differently when working online and offline:

- **Online:** If the user has already downloaded tiles, when clicking on this icon, the area with the downloaded tiles will be marked with a blue rectangle:



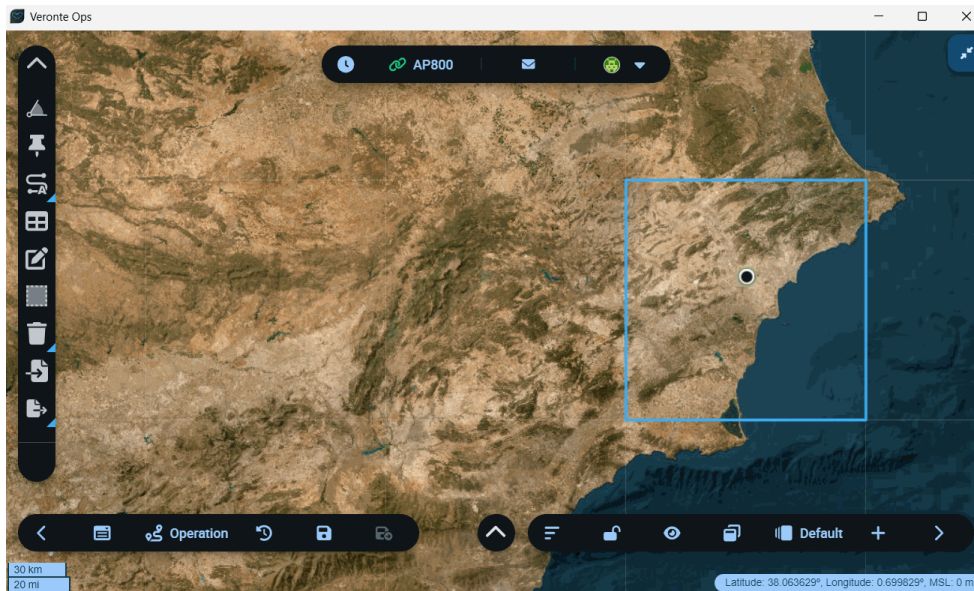
Show tiles

If the user has not downloaded any tiles, the following message will appear when clicking here:



Show tiles - don't have downloaded

- **Offline:** If the user has already downloaded tiles, when clicking on this icon, these tiles will always appear:



## Show tiles

If the user has not downloaded any tiles, they may appear because they are stored in the Veronte Ops cache, however, it is not certain that this will always happen. Therefore, it is recommended to have the map tiles downloaded when working offline.

## Save tiles



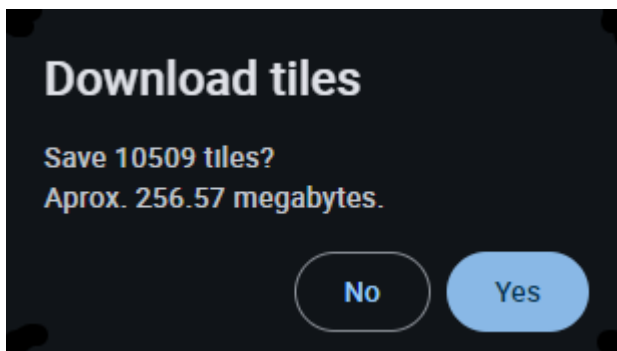
## Save tiles

The tiles that the user is viewing will be downloaded. An example is shown below:

1. Click on this icon when the user is zooming in on the tiles in the desired area to download:

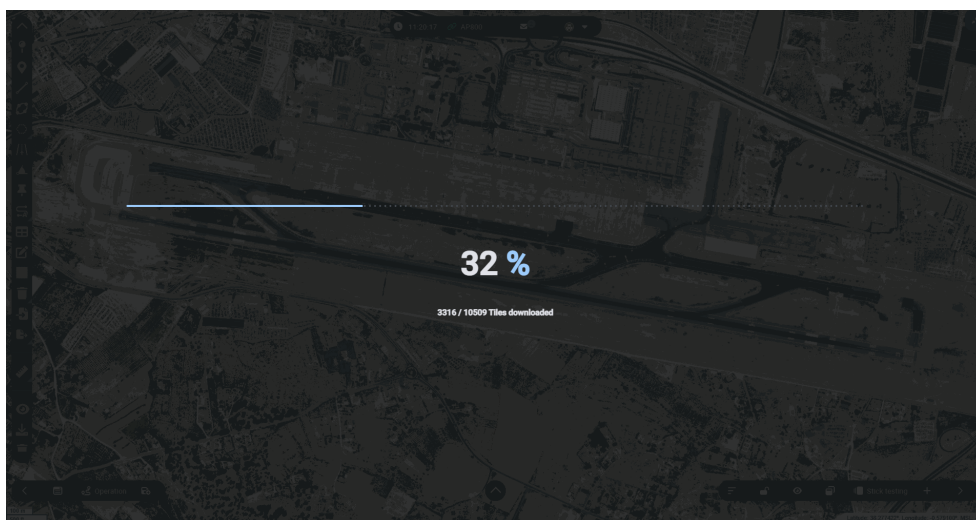
### **Warning**

As each zoom level in Veronte Ops counts as an independent map tile. When downloading map information, make sure that all relevant zoom levels are downloaded.



### Download tiles

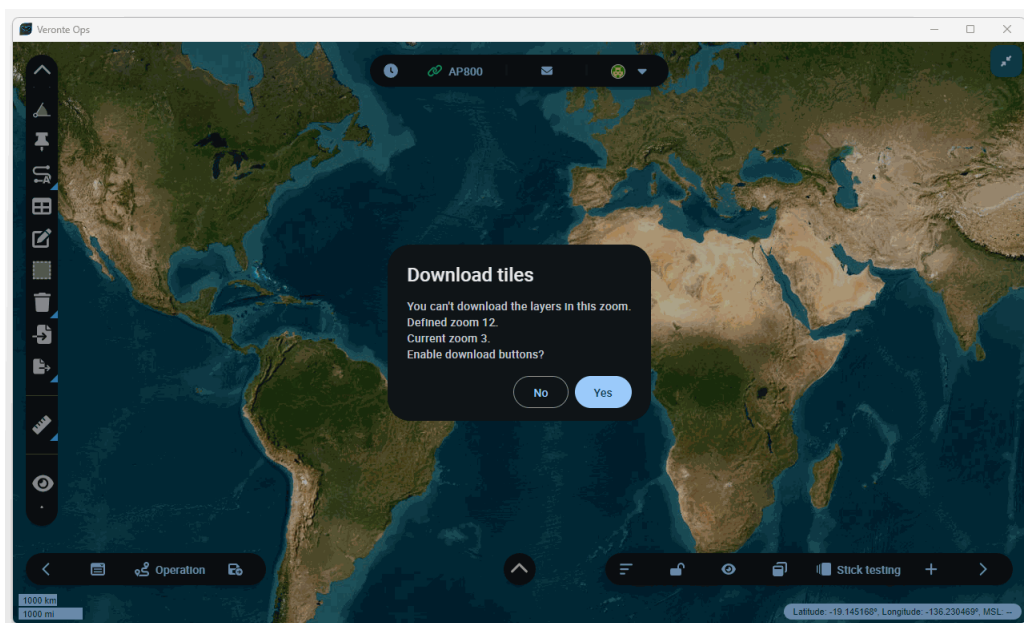
## 2. The tile download process will then begin:



### Downloading tiles

## 3. Finally, by clicking on the above option, users can view the downloaded map tiles of the desired area.

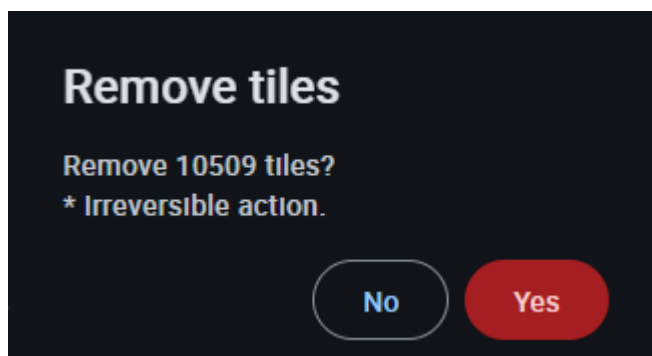
However, if there is no significant zoom, Veronte Ops will not download these files because there are too many of them. The following message will appear:



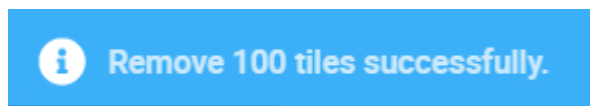
### Not possible to download tiles

Remove tiles

**Clicking on this icon will delete all tiles downloaded tiles. The following messages will appear:**

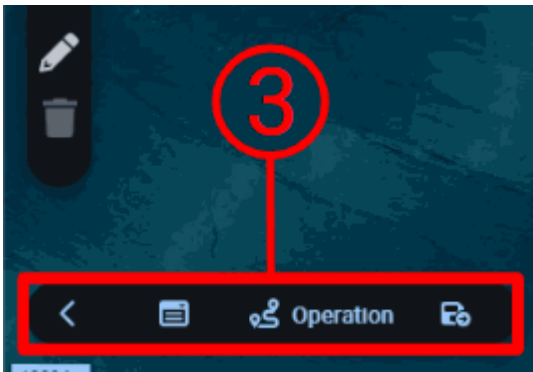


Remove tiles



Remove tiles successfully

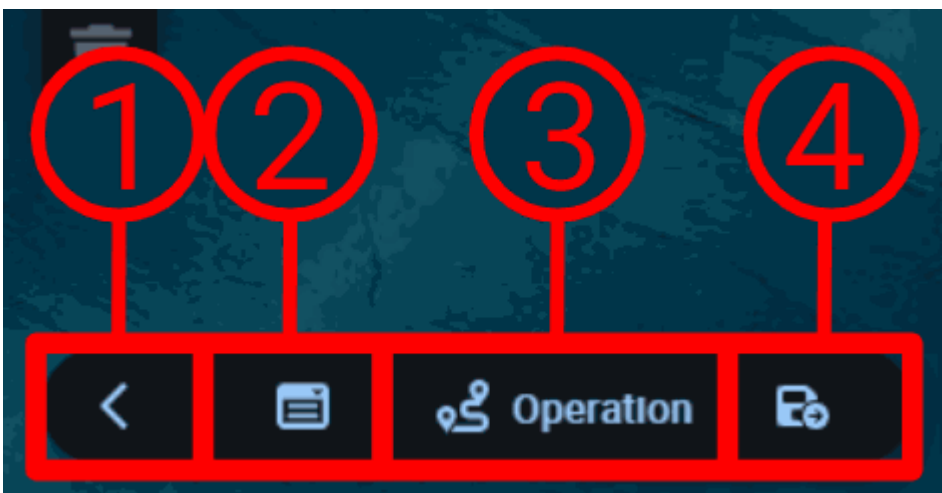
## 3. Operation



Operation toolbar

The Operation toolbar is composed by 3 'parts': Operation Panel, Operations and Operation actions. However, in the figure above there is no Operation actions part because there was no Veronte Autopilot 1x connected.

In the figure below, users can see these 3 'parts' when an Autopilot 1x is connected:



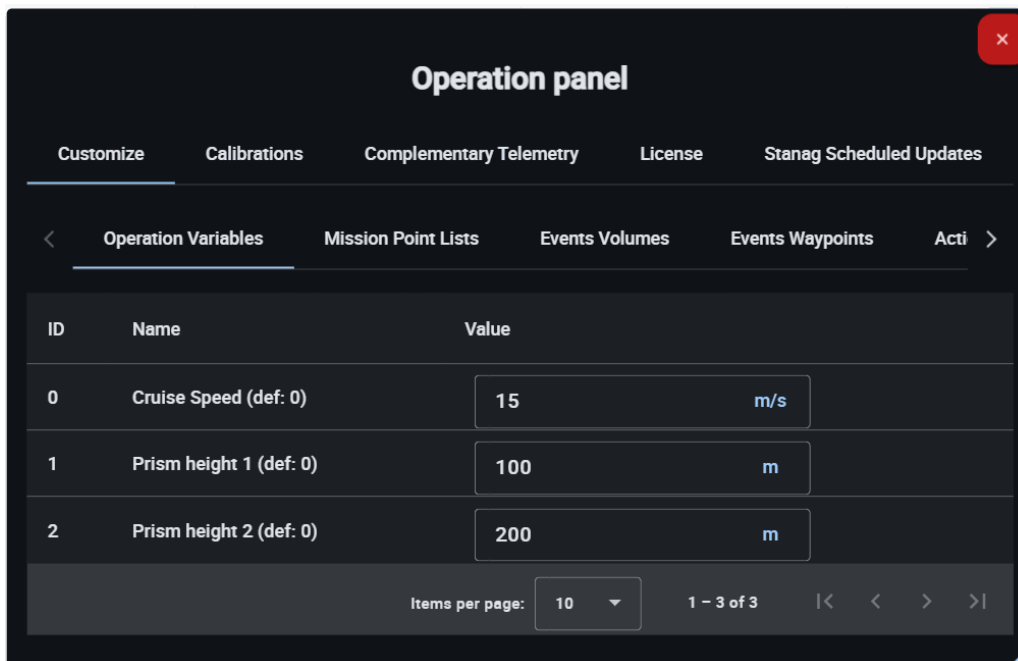
Operation toolbar - Autopilot connected

1. Allows closing Operation bar.
2. **Operation Panel:** Here the user can customize operation elements related to the operation, carry out some simple calibrations such as calibration of atmosphere, wind, DEM, etc., and manage complementary telemetry.
3. **Operations:** Users shall be able to export the operation loaded into the autopilot or import a different one and load it into the autopilot.

- 4. Operation actions:** These are actions related to when changes are applied to the operation/mission, such as Revert, Save, Reload and Upload changes. This 'part' is only available when a Veronte Autopilot 1x is connected. In addition, when a change is made, the other actions (Revert, Save and Reload) appear.

## Operation Panel

This menu is divided into 5 different functionalities: manage operation elements in the Customize tab, simple calibrations in the Calibrations tab, manage complementary parameters in the Complementary Telemetry tab, manage software licensing in the License tab, and handle interoperability updates in the Stanag Scheduled Updates tab.

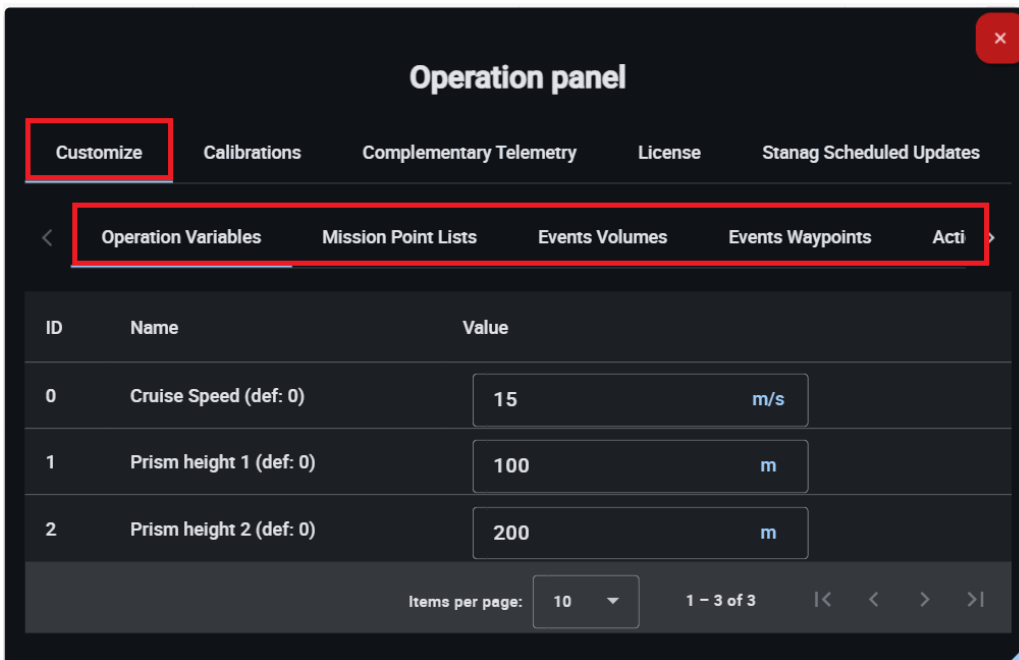


## Operation Panel

All parameters included in this panel are explained in detail in the following sections.

### Customize

In this part of the menu users can find all the operation elements used during the operation and mission: Operation Variables, Mission Points, Events Volumes, Events Waypoint, Action Waypoints, Events Marks, Runways, Spots, Initial position UAV and Operator position.



## Operation Panel - Customize tab

If users wish to link a mark, Mission Point, prism, etc., to one of these variables, it is first necessary to define (rename) them in the UI menu of the 1x PDI Builder software, as described and explained in the corresponding section of the 1x PDI Builder manual, click [here](#) to access it.

### Operation Variables

**Operation Variables are configurable values, positions and directions that can vary depending on the mission.**

#### **Important**

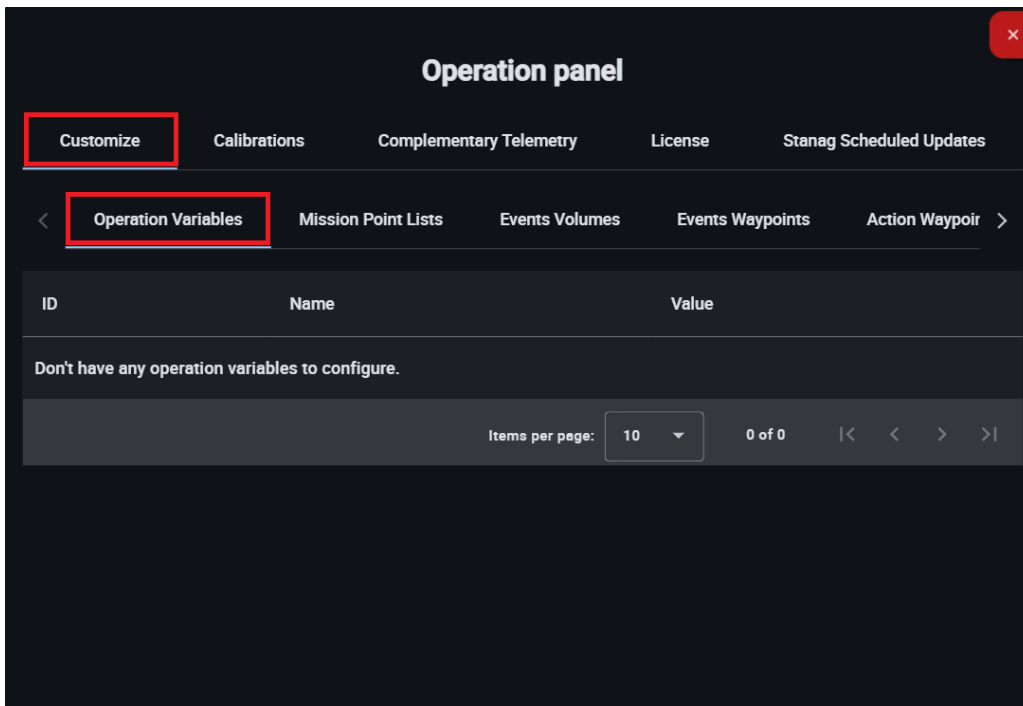
**Not setting the value of an operation variable may raise errors during the operation.**

**Examples of Operation Variables can be:**

- **Mission duration**
- **Cruise speed**
- **Flight level**
- **Takeoff and landing direction**

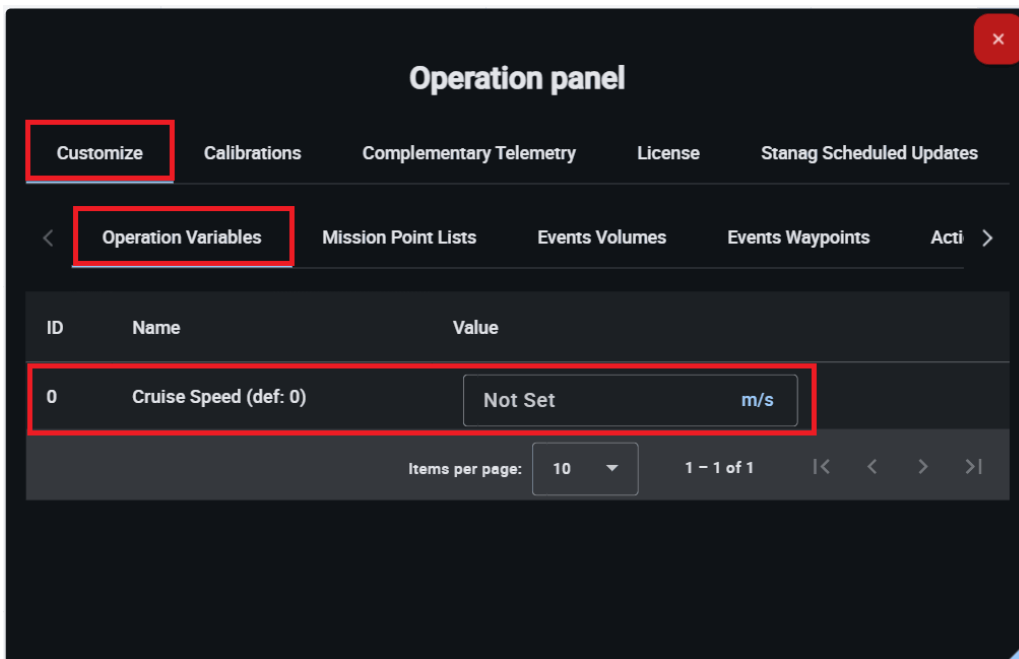
- Home point
- Start of route

Their main advantage is that it is not necessary to access Veronte Autopilot configuration to modify them. In this way, the operator can modify certain parameters without the need of having access to the entire configuration.




## Operation Variables

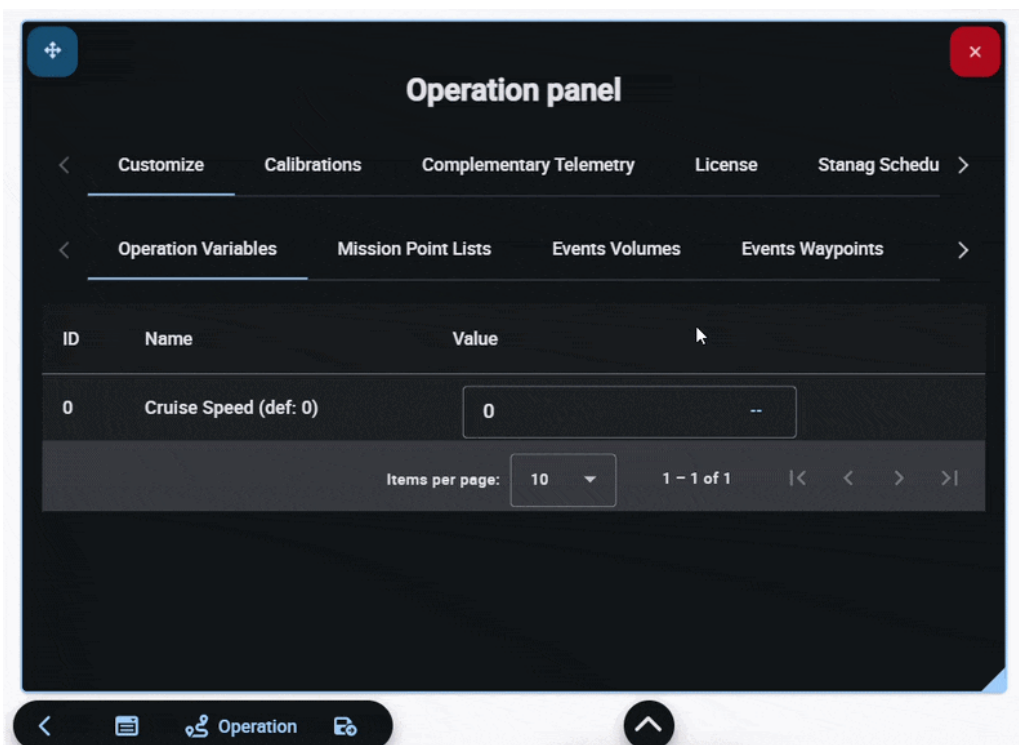
As explained above, operation elements must be created while building a Veronte Autopilot configuration. So, when a new Operation Variable is created, a new field will appear in the operation variables tab:



## New Operation Variable

After this, the value of this variable can be defined using this menu. The user simply clicks on the value cell, enters the desired new value and saves the change (  button, this is explained in the [Save operation](#) section below).

Below is an example of how to save changes locally and then upload them to the device:



## Operations Variables configuration

**Users should note that these Operation Variables can have minimum and maximum ranges defined in their configuration in the 1x PDI Builder software.**

- **When the Operation Variable has a range already configured:**
  - **It is mandatory to set a value in the Operation Panel, i.e. the value cell cannot be empty. If no value is provided, the system will automatically default to the configured minimum value.**
  - **The value that users enter here must be within the defined range, otherwise, they will not be able to save it and the software will automatically convert it to the closest value of the defined range (minimum or maximum value of the range). In addition, an error message will be displayed in the cell indicating the range.**

### **Operation Variable error: Value Not Set**

- **When the Operation Variable does not have a range configured in 1x PDI Builder software, setting a value is an option, not a requirement. If any value is entered, the value cell will display "Not Set".**

**Furthermore, units can be changed in Veronte Ops, if they have been defined 1x PDI Builder software.**

### **⚠ Warning**

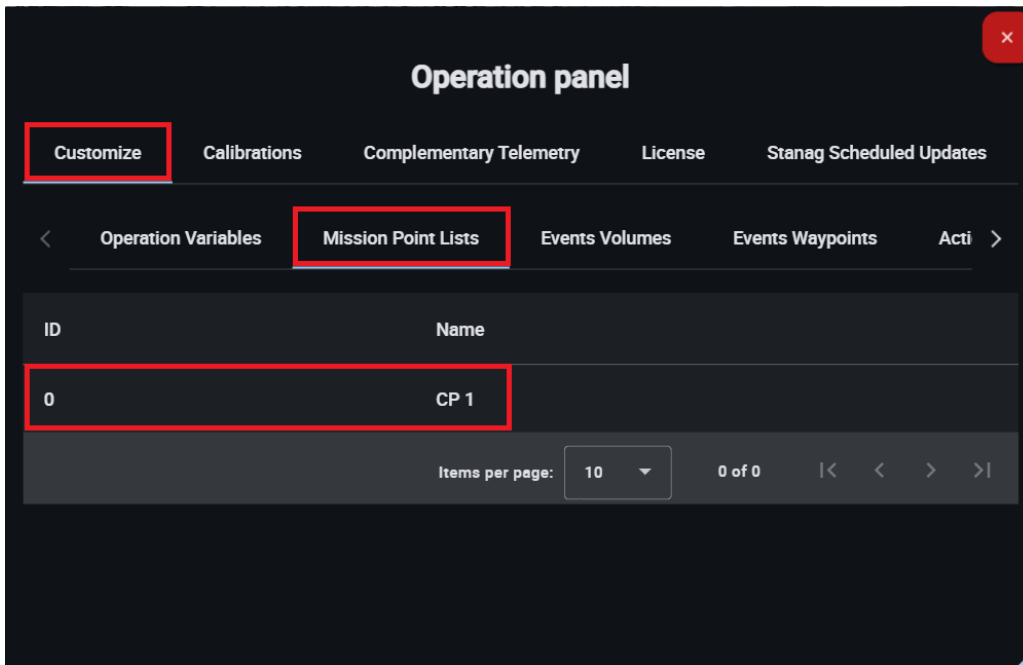
**Although it is possible to modify operation elements during the flight, this practice is not recommended.**

**Whenever changing values during an operation, make sure that no potential risk to flight safety is involved.**

## Mission Points

**A Mission Point is an operation element that can be linked to a waypoint of the configured mission.**

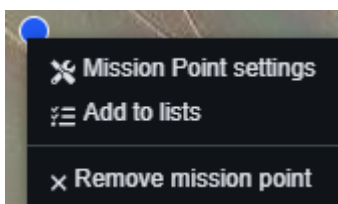
**As explained above, an operation element only appears in this panel when it has been previously defined in the 1x PDI Builder software.**



## Mission Point

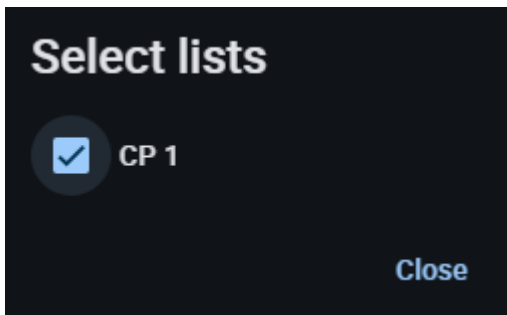
- **ID:** Mission Point identification number.
- **Name:** Name of this Mission Point defined in the 1x PDI Builder software.

**Click on Add to lists To add a waypoint to a list.**



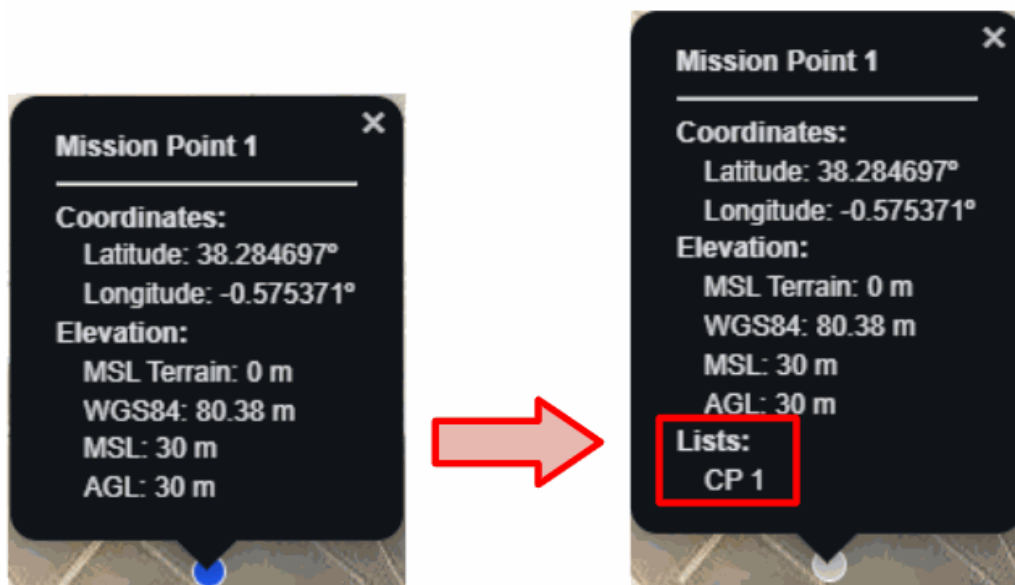
## Mission Point configuration - Select point

**Select the desired list and click Close.**



### Mission Point configuration - Select list

Moreover, by clicking on the linked waypoint, it will appear with the name of the lists:

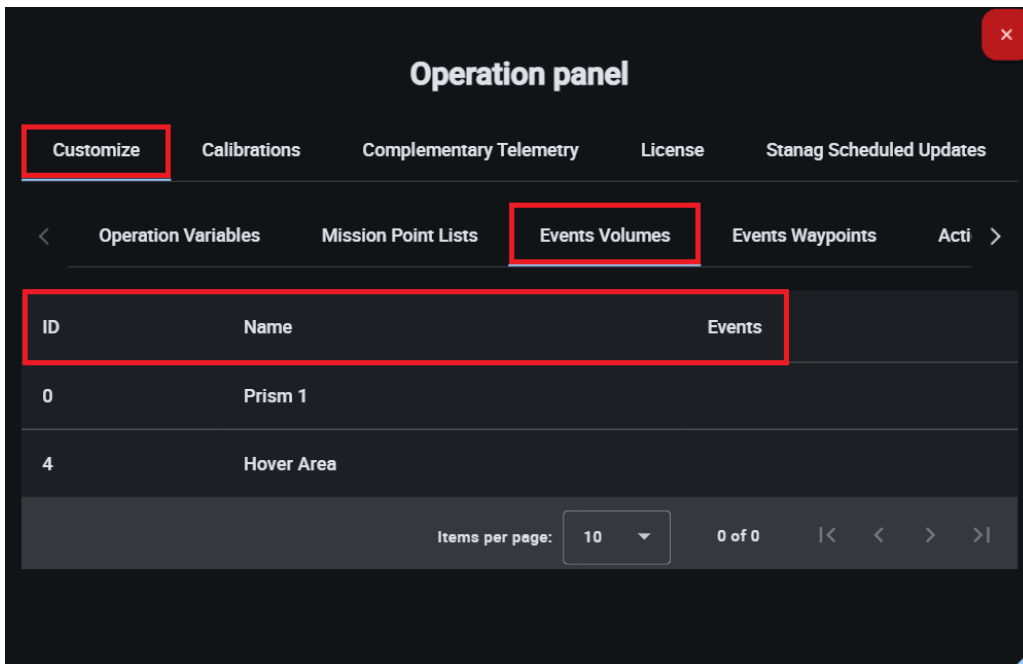


### Mission Point description

#### Events Volumes

**Set of volumes that assign events to Prisms, Cylinders, and Spheres.**

**These operation elements, Prisms, Cylinders and Spheres are detection volumes that can be linked to prisms, cylinders or spheres of the configured mission.**



## Volumes

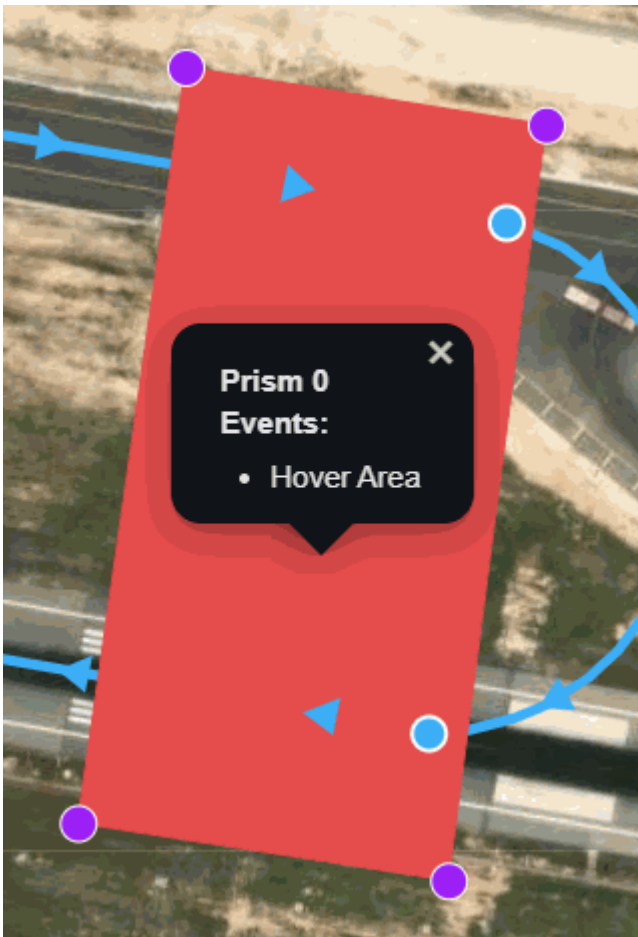
In the image above, the user can identify that there is a prism already defined and associated with an event, a sphere defined but without an associated event, and that there is no cylinder defined or associated to an event.

If the user wants to define cylindrical or spherical volumes, this must be done in the 1x PDI Builder software, as described at the beginning of the [Customize](#) section. Then, to associated an event with a volume, the process to follow is explained in the [Shape - Mission](#) section.

The following information is displayed in the operation panel:

- **ID:** Event volume identification number.
- **Name:** Element identifier, this has been defined in the 1x PDI Builder software.
- **Events:** Here is displayed the list of any events that are linked to this element, such as triggers for automatic actions.

In addition, when clicking on the linked volume, its description will appear with the name defined by the user and the events linked to it will also appear:

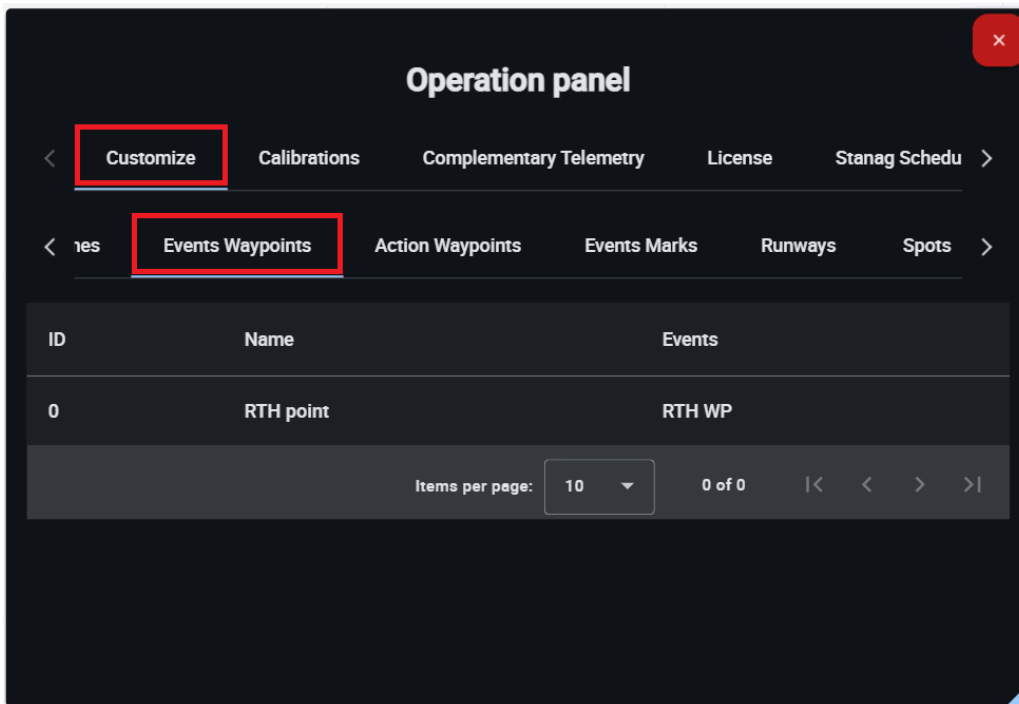


### Volume description

### Events Waypoints

**Events Waypoints** allows for assigning properties and events to all waypoints belonging to this group.

**This tab** has the same options and works exactly the same way as the previous section (**Events Volumes** section).



## Events Waypoints

In addition, when clicking on it, the Waypoint name defined by the user will appear in its description, as well as the events linked to it.

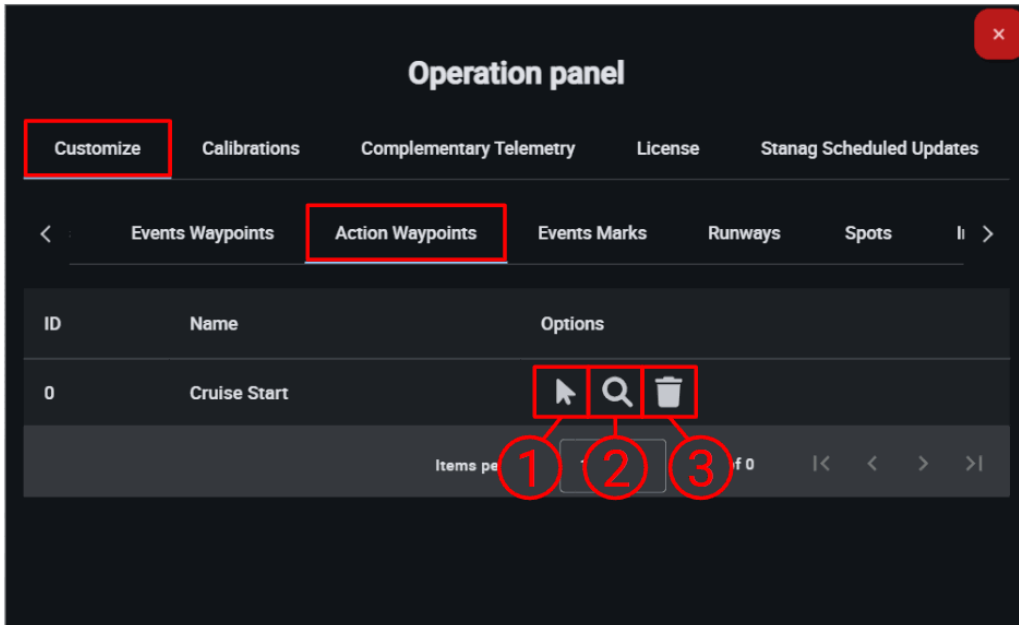
An example is shown below:



## Events Waypoints - description

## Action Waypoints

**An Action Waypoints is a navigation points that are not just passing points, but are intrinsically linked to the execution of a complex action by the system (e.g., initiating a search pattern, releasing a payload).**



### Action Waypoints - Settings

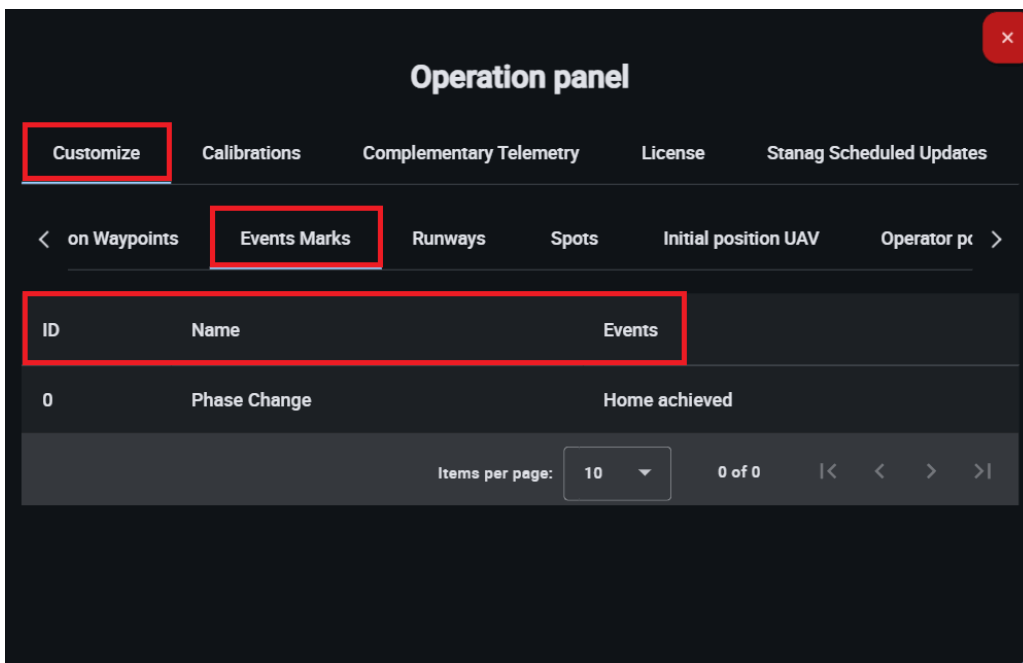
- 1. Click Waypoint to set action:** To link the Action Waypoint point to a different waypoint, click here and select it on the map.
- 2. Serach:** By clicking here, Veronte Ops will center and zoom in on the area of the map where this Waypoint is defined.
- 3. Remove reference:** The user can remove the Waypoint configuration by clicking here.

## Events Marks

**A Mark is an operation element that can be linked to a Mark (reference placed in a patch) of the configured mission.**

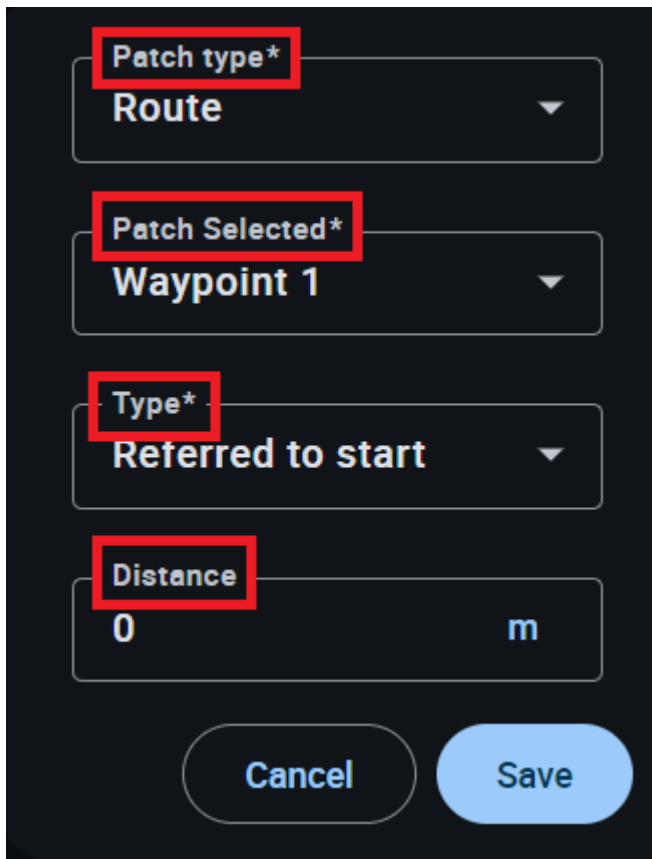
**The procedure for defining and configuring a Mark is the same as described above in the [Events Waypoints](#) section.**

**Once a Mark is configured, the following options will appear in the operation panel:**



## Marks

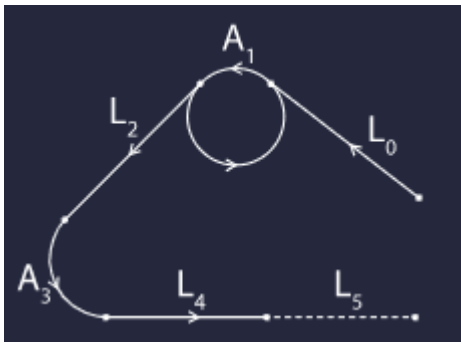
- **ID:** Mark identification number.
- **Name:** Element identifier, this has been defined in the 1x PDI Builder software.
- **Events:** Here is displayed the list of any events that are linked to this Mark, such as triggers for automatic actions.
- **Options:** These are configuration options of the Mark:
  - **Set distance:**



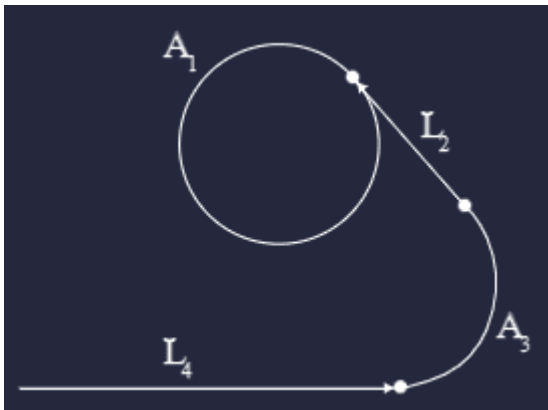
The image shows a dark-themed dialog box titled "Marks - Edit". It contains four input fields, each with a red box highlighting its label: "Patch type\*" (dropdown menu showing "Route"), "Patch Selected\*" (dropdown menu showing "Waypoint 1"), "Type\*" (dropdown menu showing "Referred to start"), and "Distance" (text input field showing "0" and "m"). At the bottom of the dialog are two buttons: "Cancel" and "Save".

#### Marks - Edit

- **Patch type:** The user can select different flight guidance phases where the Marks will be placed: Approach, Climbing, Route, Taxi, VTol and Rendezvous. Except for Route patches, for the rest of the guidance phase, patches are generated when the user, or an automation, activates them. As the user cannot select these patches, as they cannot be generated initially, this option will automatically create the Marking on the selected patch.
  - **Patch Selected:** Most flight guidance phases have predefined patches with specific names. The user can select where the Mark will be placed on those patches. A table summarizing the available options is shown below.
  - **Type:** Right now the only possible option is "Referred to start" of the selected patch.
  - **Distance:** Distance from the Mark to the start of the patch.
- Climbing and Approach guidances are defined as follows:**



**Marks - Approach patches**



**Marks - Climbing patches**

<b>Approach</b>	<b>L0/A1/L2/A3/L4/L5</b>
<b>Climbing</b>	<b>A1/L2/A3/L4</b>
<b>Route</b>	<b>512 patches</b>
<b>Taxi</b>	<b>Taxi 0/Taxi 1</b>
<b>VTol</b>	<b>VTol 0/VTol 1/VTol 3</b>
<b>Rendezvous</b>	<b>Rendezvous 0/ Rendezvous 1/ Rendezvous 2</b>

- 1. Create Mark in map and select:** If the mark is not yet created in the mission, by clicking on this option, Veronte Ops will create it at the point on the map where the user clicks. In addition, Veronte Ops will automatically link this operation element to this newly created Marker.

**Note**

This option also appears although the Mark is not yet configured (linked to a created Mark).

2. **Select in map:** To link this operation element to a different Mark, click here and select it on the map.
3. **Remove reference:** The user can remove the Mark configuration by clicking here.

Moreover, if the event that is linked to the Mark has an associated icon, the icon will appear on that Mark. In addition, when clicking on it, its description will appear with the name defined by the user and the events linked to it will also appear. An example is shown below:

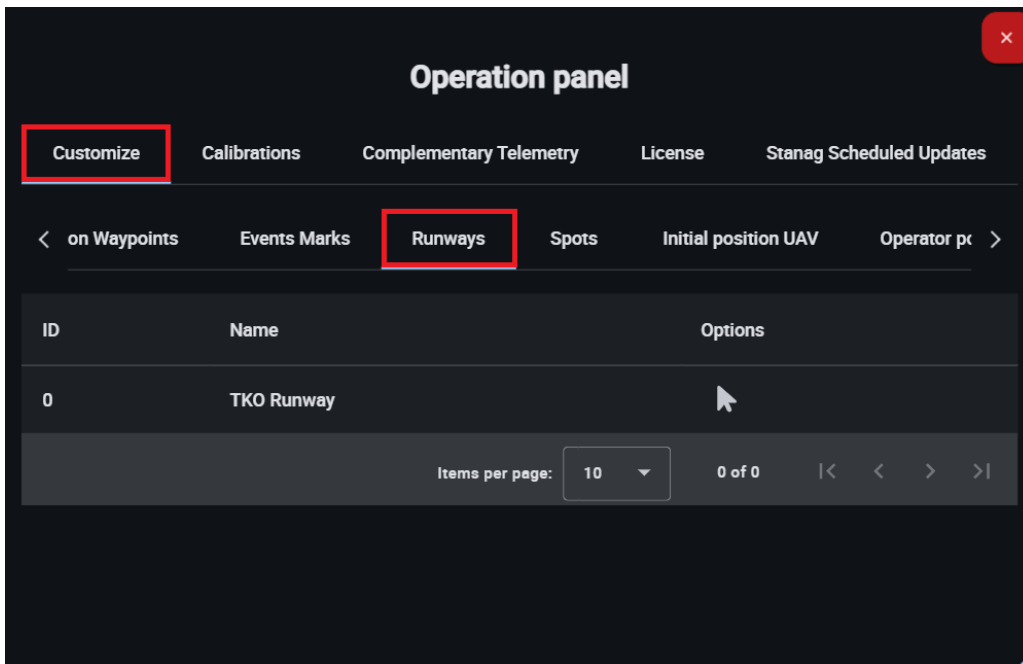


**Marks - Icon and description**

## Runways

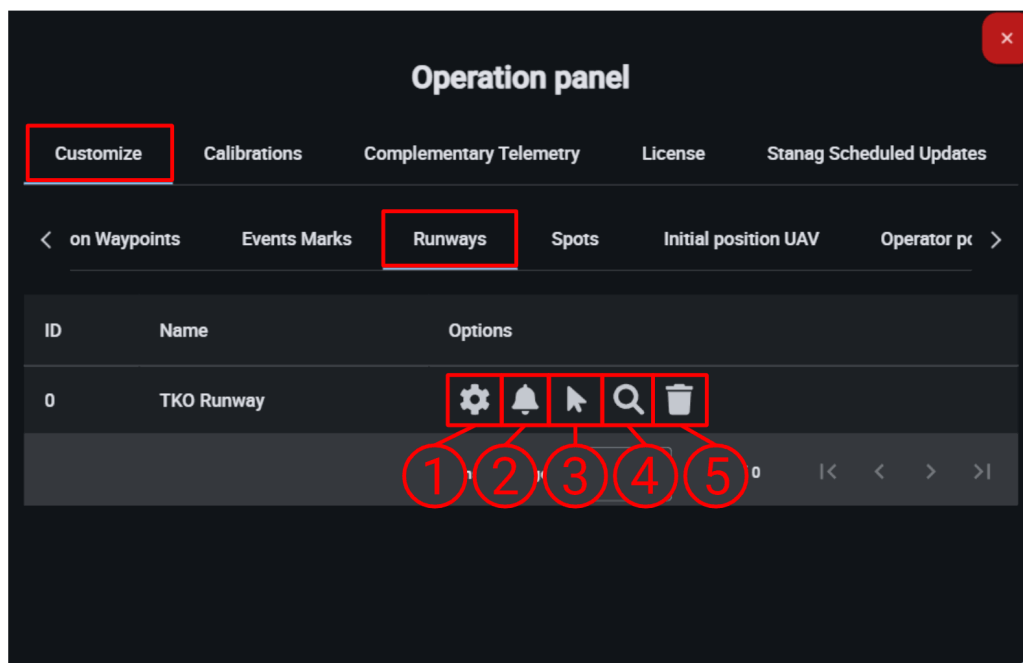
**Runways are operation elements that can be linked to the runways of the configured mission.**

**Like all other operation elements, Runways have to be defined in 1x PDI Builder and then configured by selecting a runway from the map.**



## Runways

The following configurable options will then appear in the operation panel:



## Runways configuration

- **ID:** Runway identification number.
- **Name:** Element identifier, this has been defined in the 1x PDI Builder software.

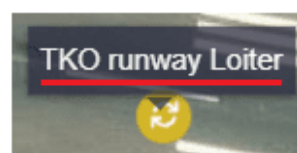
- **Options:** These are configuration options of the Runway:
  1. **Edit:** By clicking here the user will be able to modify the runway settings. A detailed explanation of how to configure it can be found in the [Runway - Mission](#) section of this manual.
  2. **Configure Alarms:** Alarms can be associated to Runways. A detailed explanation of how to configure them can be found in [Runway - Mission](#) section of this manual.
  3. **Click to map:** To link this operation element to a different runway, click here and select it on the map.
  4. **Search:** By clicking here, Veronte Ops will center and zoom in on the area of the map where this Runway is defined.
  5. **Remove reference:** The user can remove the Runway configuration by clicking here.

Moreover, by clicking on the linked runway, it will appear with the name of the configured Runway:



### Runways description

If the user clicks on the Start, End or Loiter points of the Runway, they are also renamed:

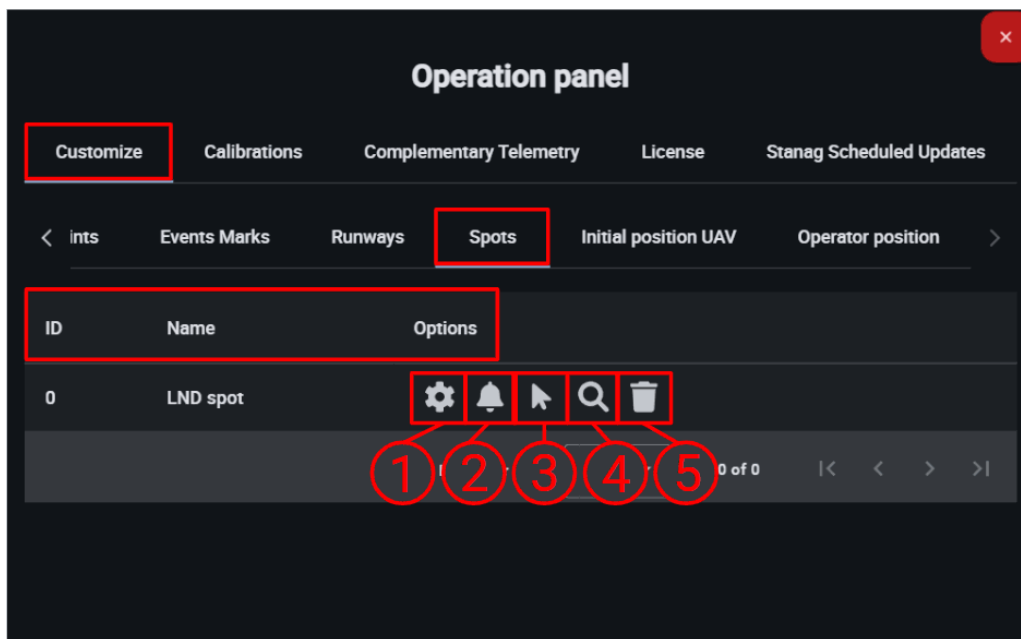


### Runways - Start, End and Loiter points

## Spots

**Spots** are operation elements that can be linked to the spots of the configured mission.

**They function in the same way as the Runways operation elements:**



## Spots configuration

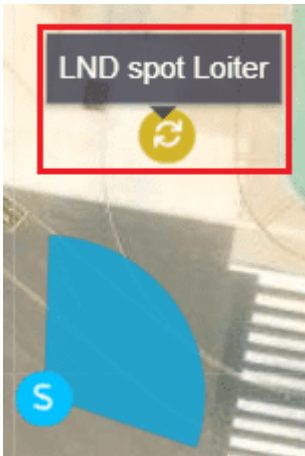
- **ID:** Spot identification number.
- **Name:** Element identifier, this has been defined in the 1x PDI Builder software.
- **Options:** These are configuration options of the Spot:
  1. **Edit:** By clicking here the user will be able to modify the spot settings. A detailed explanation of how to configure it can be found in [Spot - Mission](#) section of this manual.
  2. **Configure Alarms:** Alarms can be associated to Spots. A detailed explanation of how to configure them can be found in [Spot - Mission](#) section of this manual.
  3. **Click to map:** To link this operation element to a different spot, click here and select it on the map.
  4. **Search:** By clicking here, Veronte Ops will center and zoom in on the area of the map where this Spot is defined.
  5. **Remove reference:** The user can remove the Spot configuration by clicking here.

Moreover, by clicking on the linked spot, it will appear with the name of the configured Spot:



### Spots description

**If the user clicks on the spot loiter point, it is also renamed:**

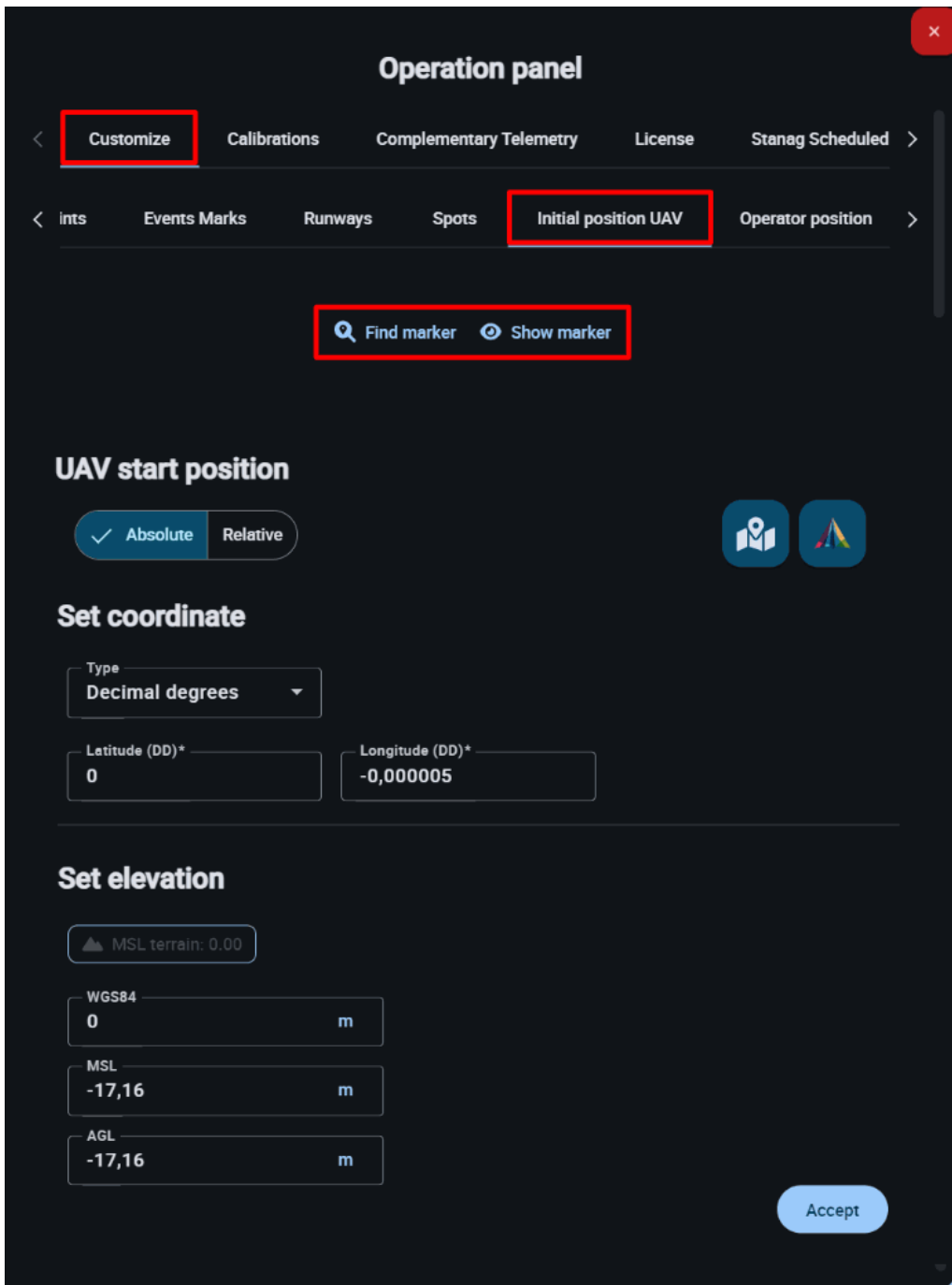


### Spots - Loiter point

Initial position UAV

**It is a marker indicating the initial position of the UAV.**

**In addition, users can find and center this marker on the map, as well as show/hide it.**

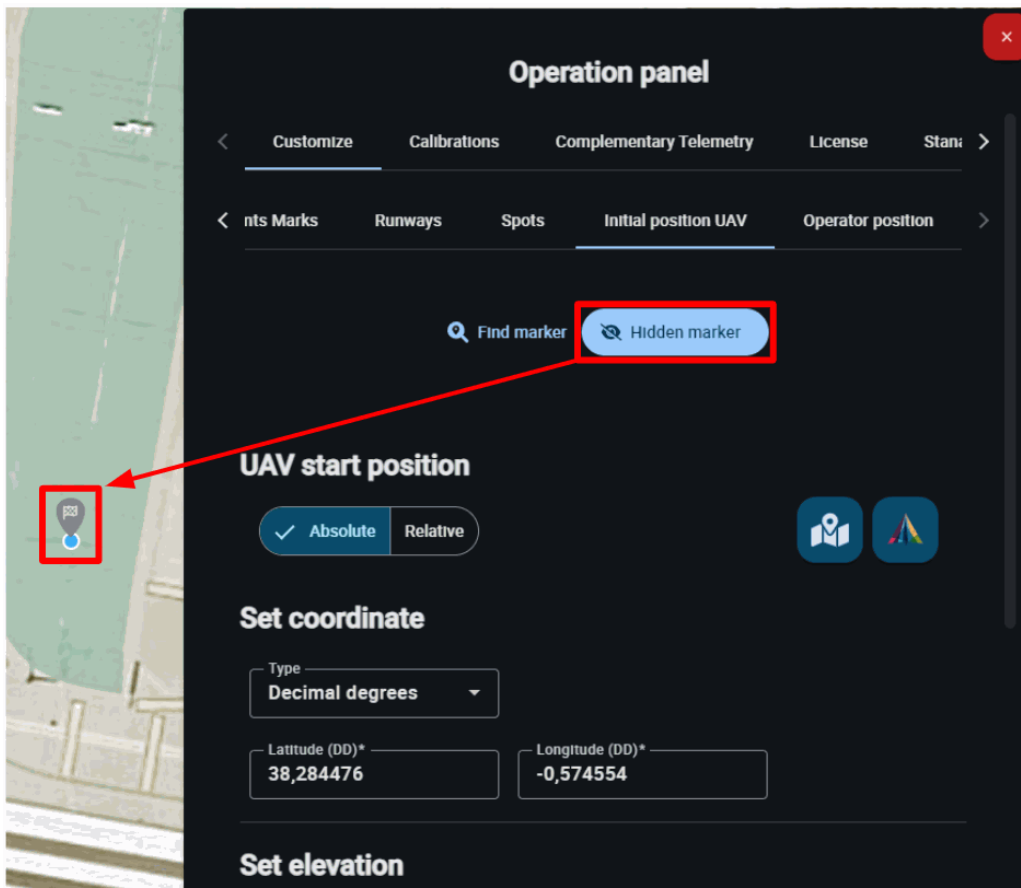


### Initial position UAV

It is configured in the same way as waypoints. For a detailed explanatin of this, please refer to the [Waypoint - Mission](#) section of this manual.

After setting the position, it is necessary to click **Accept** and then **Save and Upload** the operation.

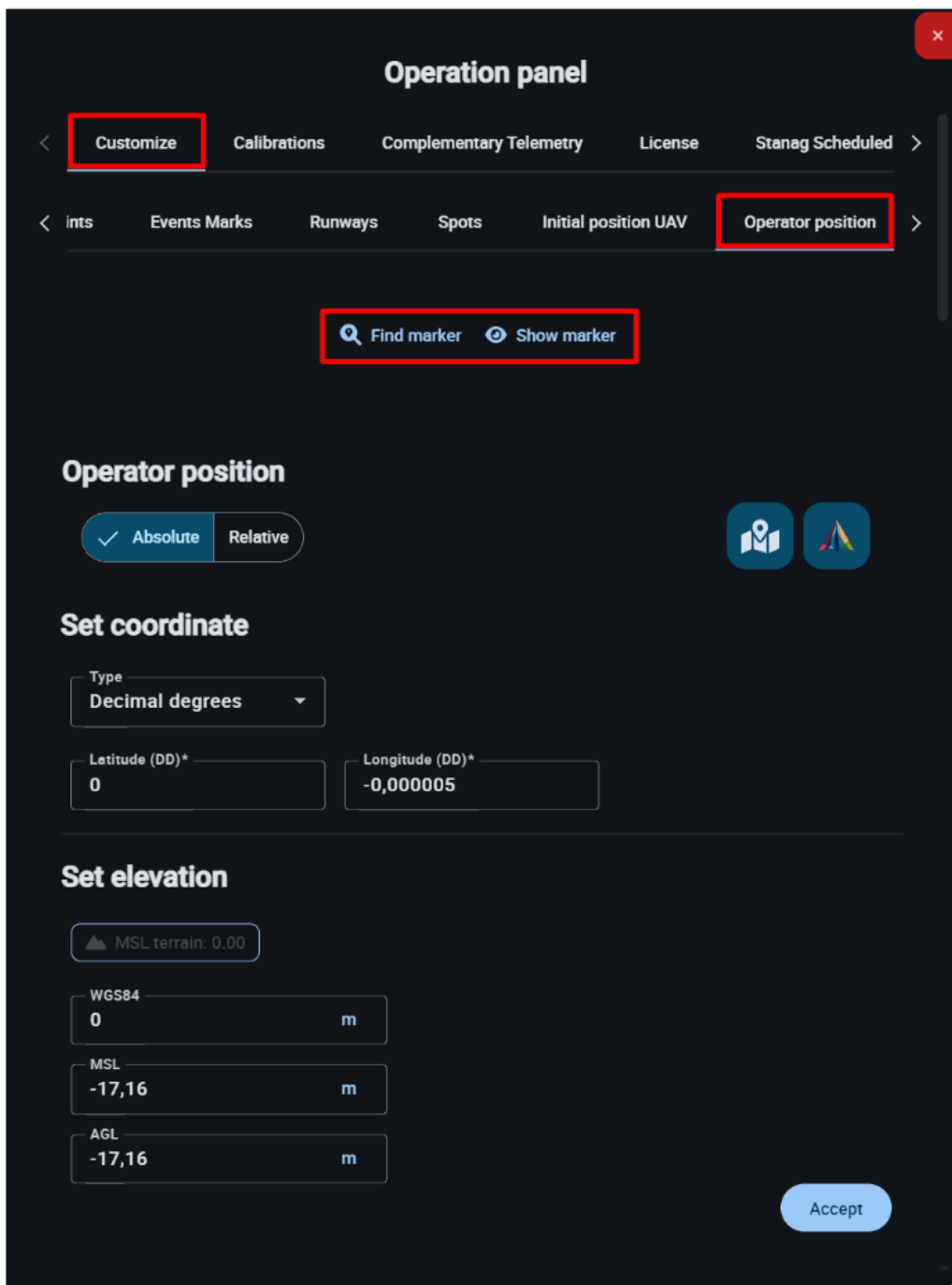
In the figure below, the marker is "shown" (as the hidden button appears):



**Initial position UAV - Marker in map**

Operator position

**This tab enables the configuration of the Operator position.**

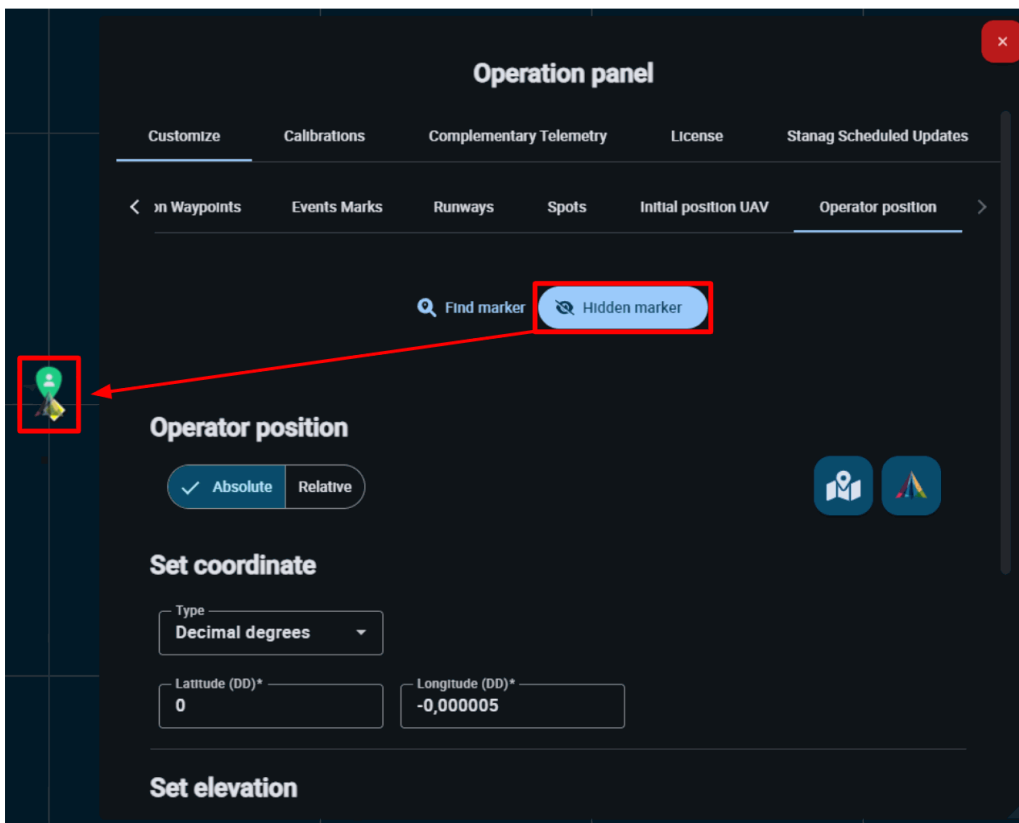


## Operator position

It is configured in the same way as waypoints. For a detailed explanatin of this, please refer to the [Waypoint - Mission](#) section of this manual.

After setting the position, it is necessary to click **Accept** and then **Save and Upload** the operation.

In the figure below, the marker is "shown" (as the hidden button appears):



Operator position - Marker in map

### **Note**

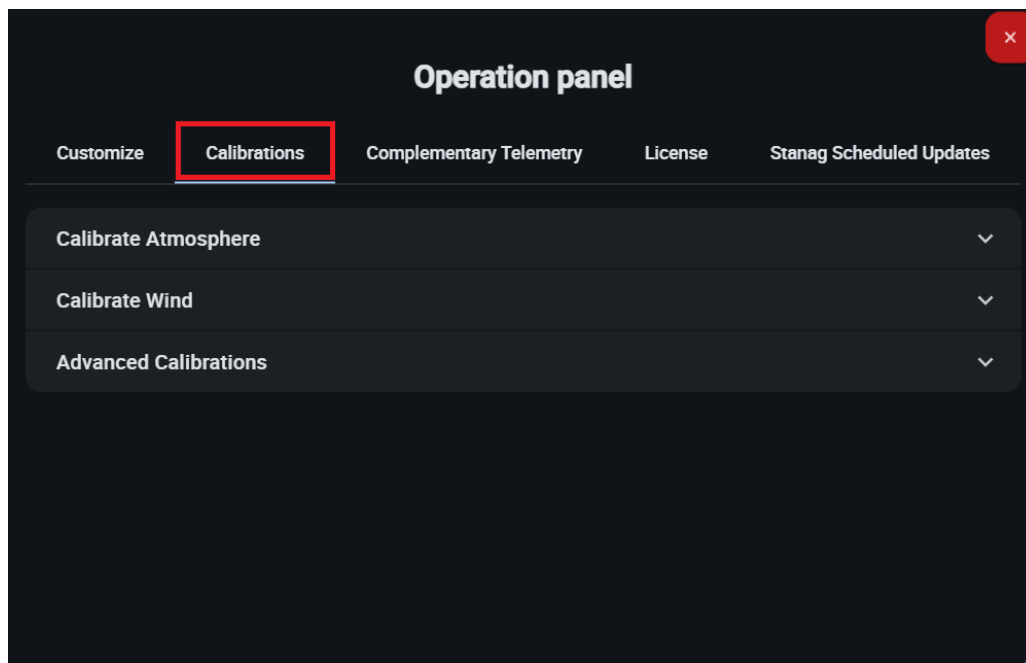
From the operator position defined in this panel, the distance allowed by the license to operate is calculated. Remember that Veronte Autopilot 1x has limited-operation depending on the license status. For more information on this limitation, please refer to the [1x Hardware Manual](#).

## Calibrations

In this tab, the user can carry out simple calibrations during a standard operation. This way, there is no need of modifying the configuration or building a specific automation.

### **Note**

Some of the following calibrations can also be triggered automatically using [Automations](#).



## Operation Panel - Calibrations tab

### Note

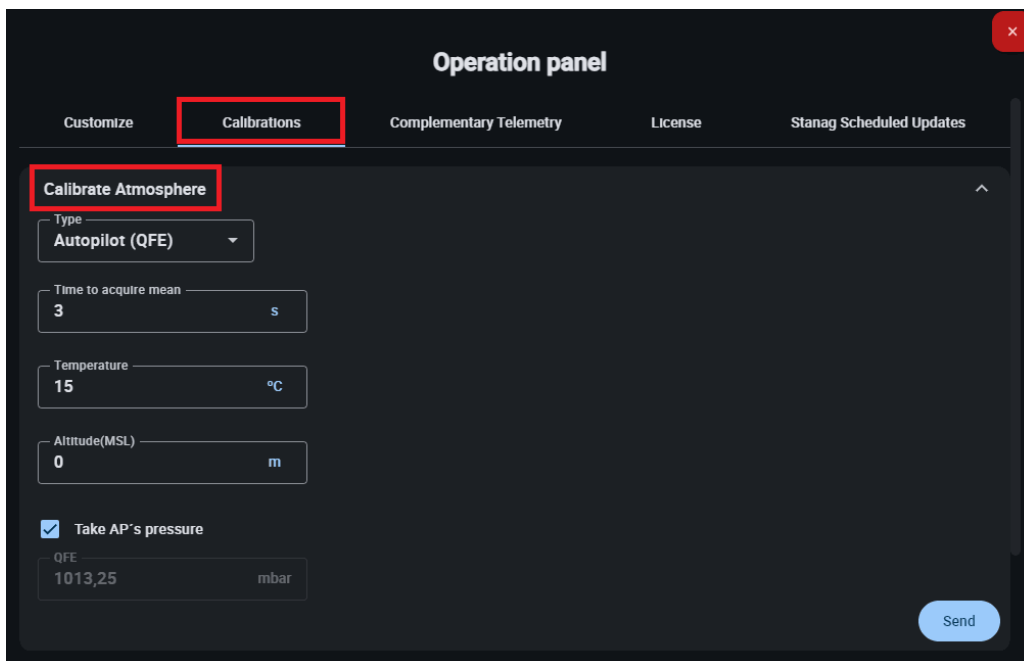
**These calibrations will never modify the autopilot's current configuration: the changes are volatile, and will disappear once the system is rebooted.**

### Warning

**To send any of these calibrations, it is necessary to click on the 'Send' button.**

Calibrate Atmosphere

**Calibration for MSL calculation with barometric pressure.**

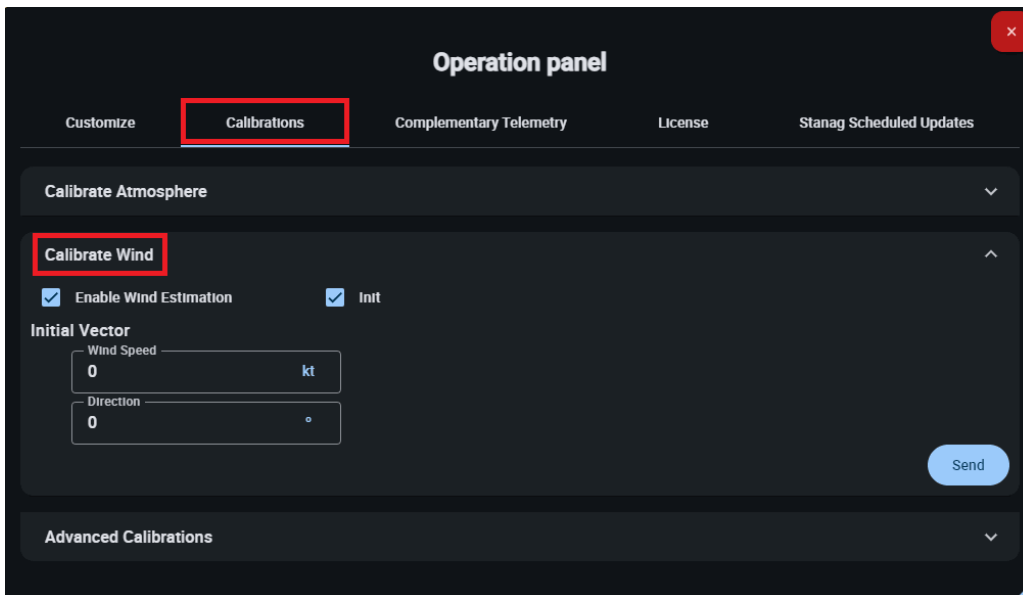


## Calibrate Atmosphere

- **Type:** QFE and QNH options are available.
- **Time to acquire mean:** Specified time during which the static pressure is read from the static pressure sensor.
- **Temperature:** Outside air temperature.
- **Altitude (MSL):** Actual MSL altitude.
- **Take AP's pressure:** If enabled, static pressure will be selected from the autopilot measurement, otherwise users will have to enter it manually.

## Calibrate Wind

**This command allows to enter initial values for wind state and start wind estimation algorithm.**

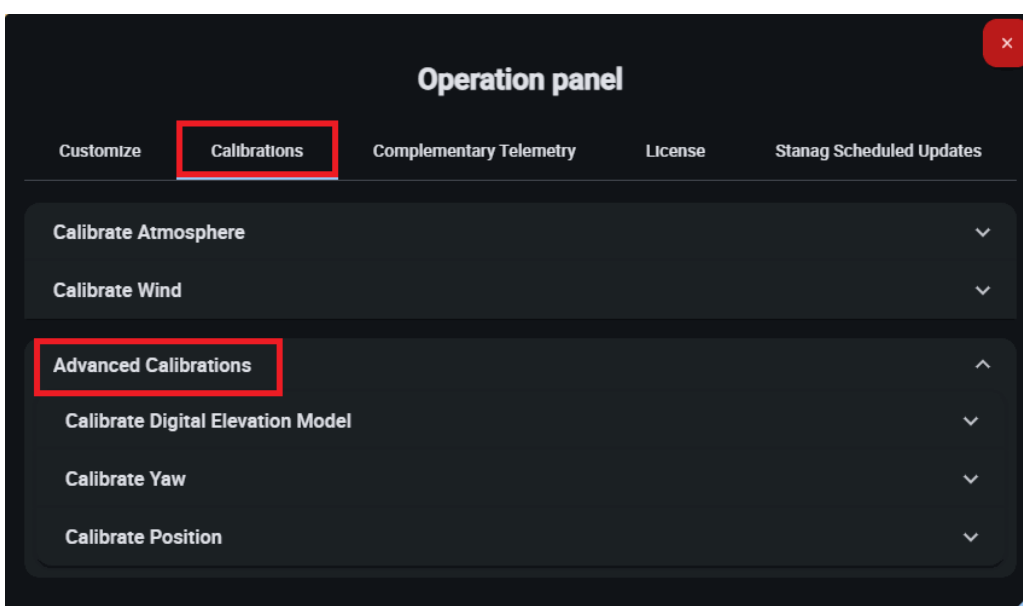


## Calibrate Wind

- **Enable Wind Estimation.**
- **Init:** By enabling it, an initial wind vector can be set to a faster convergence of the estimation.
- **Wind Speed:** Module of the initial wind speed.
- **Direction:** Argument/Direction of the initial wind speed.

## Advanced Calibrations

The following are the advanced calibrations that can be performed by the user during operation:



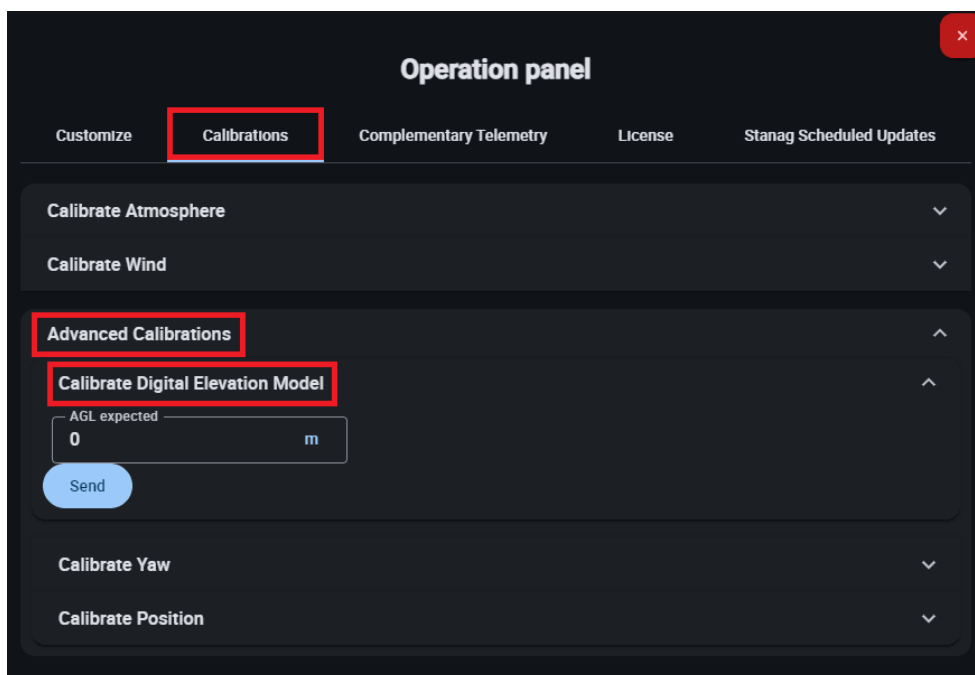
## Advanced Calibrations

- **Calibrate Digital Elevation Model (DEM)**

This calibration calculates the offset that the SRTM of the current point should have so that the estimated AGL results in the desired AGL (the one indicated in the calibration).

**Warning**

- This offset is only valid for the point where the DEM has been calibrated.
- Always perform this action on the ground, unless an accurate estimation of current AGL is available.



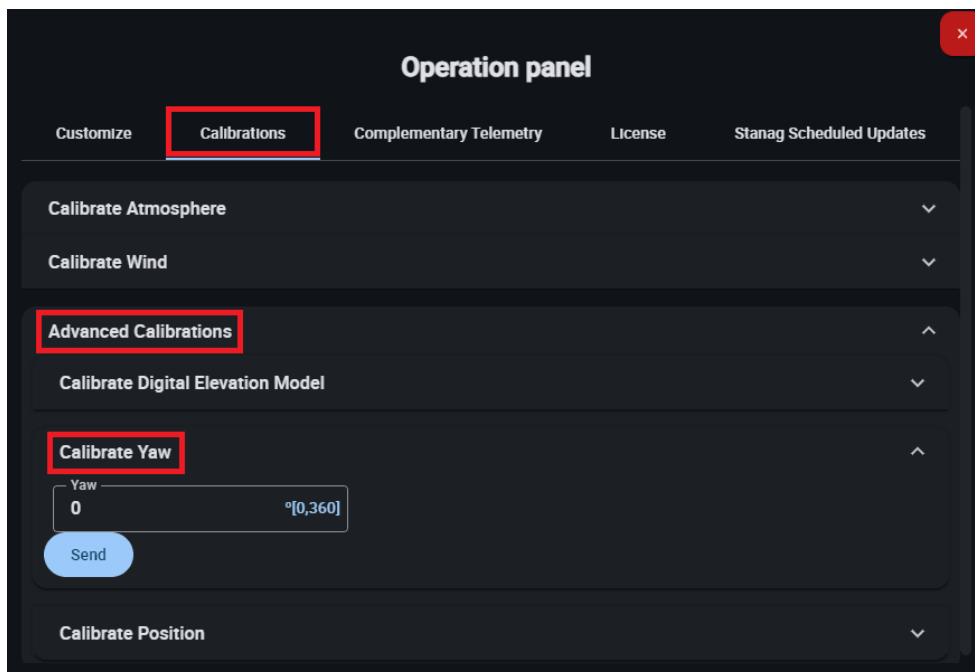
### Advanced Calibrations - Calibrate DEM

- **Calibrate Yaw**

Allows to manually modify the Yaw Navigation state.

**Warning**

If there is any Yaw sensor active (i.e. Magnetometer), this command will not work since it will be automatically overridden.



### Advanced Calibrations - Calibrate Yaw

- **Calibrate Position**

**Allows to manually modify the Position Navigation state.**

**The configurable parameters of the position calibration are the same as for configuring the position of a waypoint. So they have already been described in detail earlier in the [Waypoint - Mission](#) section of this manual.**

**⚠ Warning**

**If there is any absolute positioning sensor active (i.e. GNSS), this command will not work since it will be automatically overridden.**

**Operation panel**

Customize **Calibrations** Complementary Telemetry License Stanag Scheduled Updates

Calibrate Atmosphere

Calibrate Wind

**Advanced Calibrations**

Calibrate Digital Elevation Model

Calibrate Yaw

**Calibrate Position**

Set coordinate

Type  
Decimal degrees

Latitude (DD)\* 0 Longitude (DD)\* -0,000005

Set elevation

MSL terrain: 0.00

WGS84 0 m

MSL 0 m

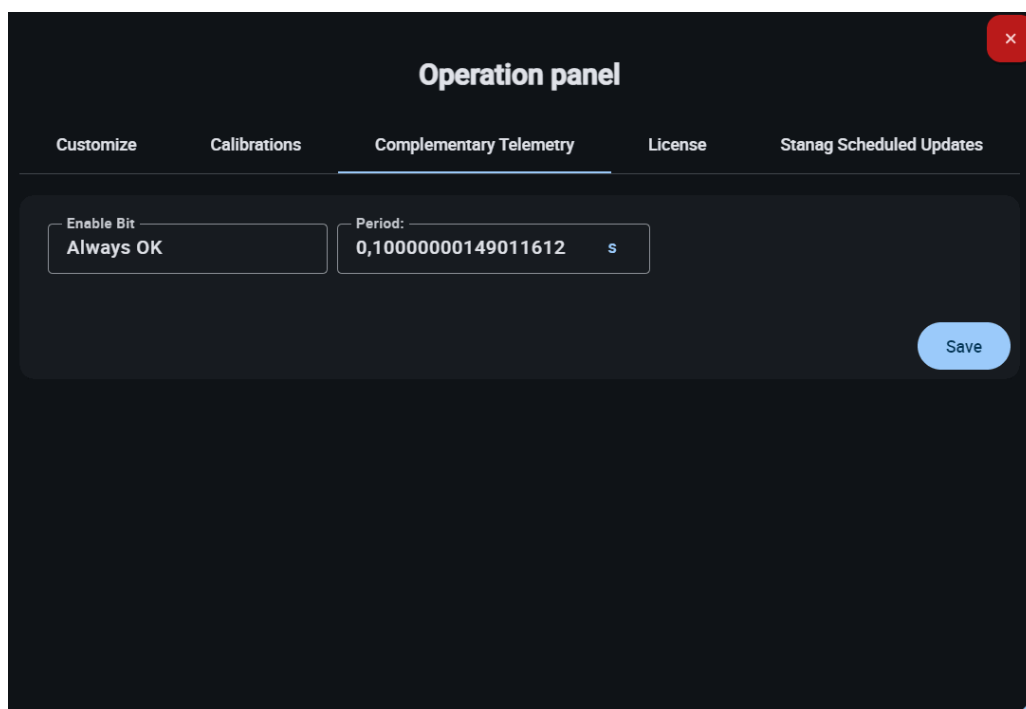
AGL 0 m

Send

### Advanced Calibrations - Calibrate Position

#### Complementary Telemetry

**The Complementary Telemetry panel enables users to include extra flight data. While telemetry is primarily configured in [1x PDI Builder](#), further parameters can be added directly within Veronte Ops.**



### Complementary Telemetry - Panel

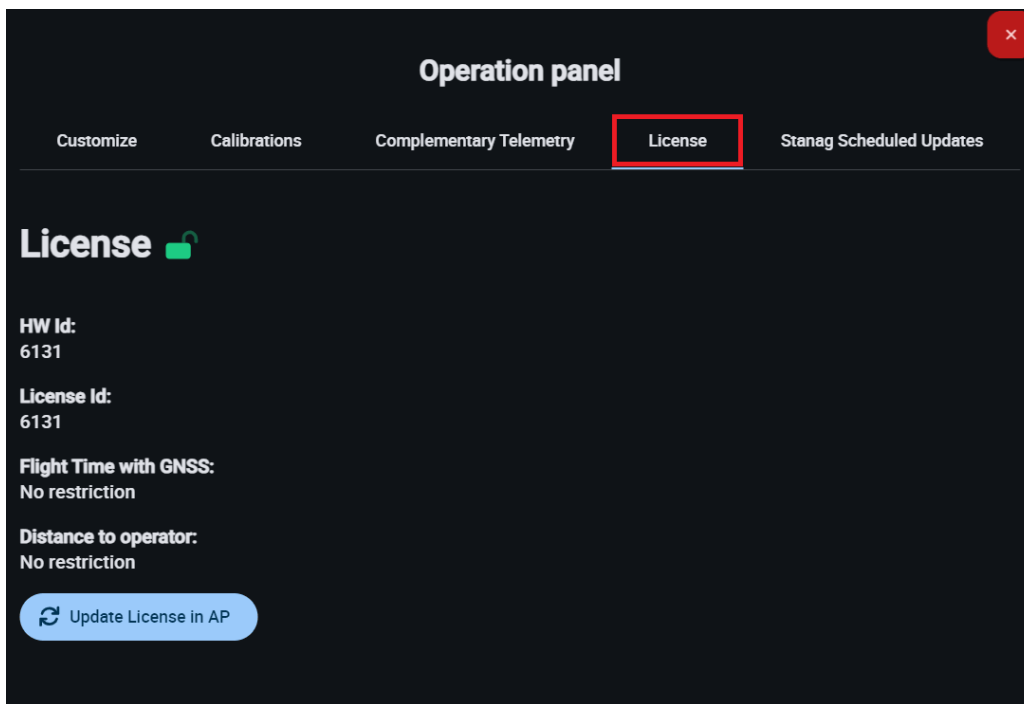
- **Enable Bit:**
  - **Always OK:** Enable Complementary Telemetry.
  - **Always Fail:** Disable Complementary Telemetry.
- **Period:** Determines the time interval between the transmission of one data packet and the next. It is possible to choose between s, min, h,  $\mu$ s and ms.

#### Important

The complementary vector telemetry always runs at a fixed frequency of 10 Hz (not configurable), and variables are sent uncompressed. Therefore, it is recommended to add the variables to the 'Data to Vapp' telemetry vector to configure the desired frequency, variable compression/uncompression, etc.

### License

The License section of the Operation panel determines that the platform has a limited operation license. This means that the aircraft is submitted to several restrictions, such as limits on the area of operation.



## License

- **Status:** Displays license status (e.g., License, License limited).
- **HW Id:** The unique identification code of the connected hardware. This ID is essential for technical support and for generating unit-specific license files.
- **License Id:** The identification number of the license currently installed on the device.
- **Flight Time with GNSS:** Indicates the maximum allowed flight time using satellite positioning.
- **Distance to operator:** Specifies the maximum operational radius allowed between the UAV and the control station.
- **Update:** The Update License in AP button allows loading new permissions or renewing the license directly on the unit.

### Note

The License Address must match the UAV Address.

However, if users do not have the license activated, they will continue to have limited operation, in which case they should contact [sales@embention.com](mailto:sales@embention.com).

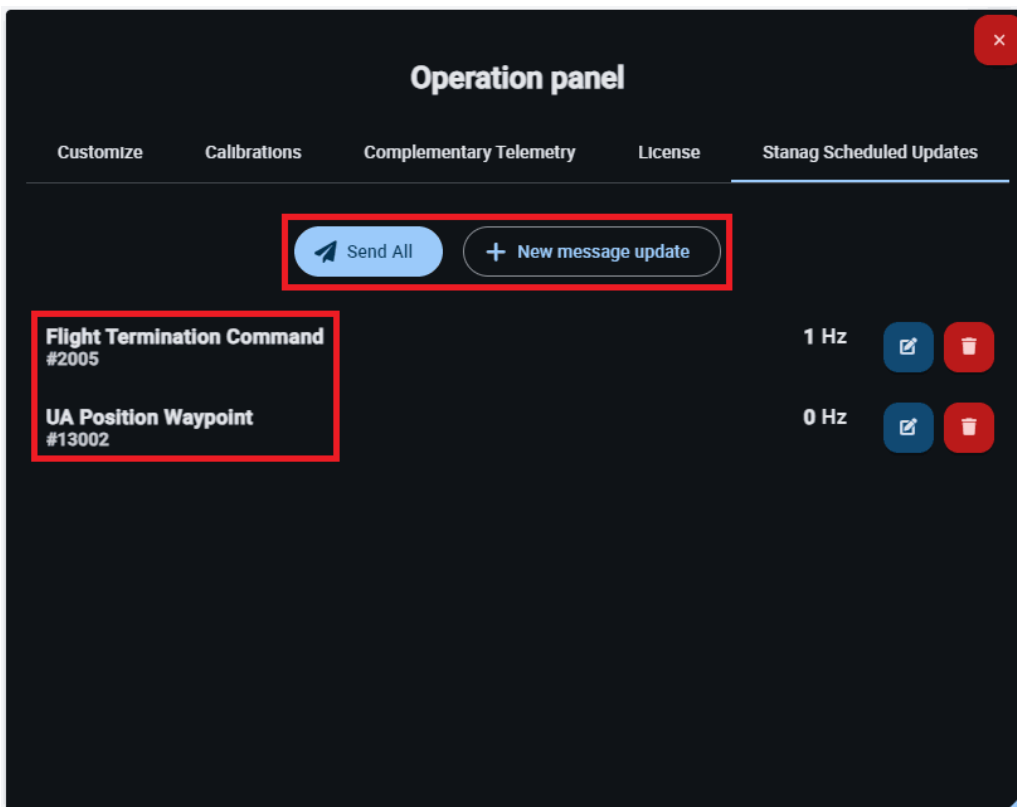
For more information on this operation license, see [Limited Operation](#) section of the 1x Hardware Manual.

### ⚠ Important

Users should take into account that if the platform is a **PCS**, it will not have an operation license. This is because PCS units do not need to fly.



## STANAG 4586 Scheduled Updates

The **STANAG 4586 Scheduled Updates** section allows configuring the transmission frequency of messages compliant with the STANAG 4586 standard.



## STANAG 4586 Scheduled Updates

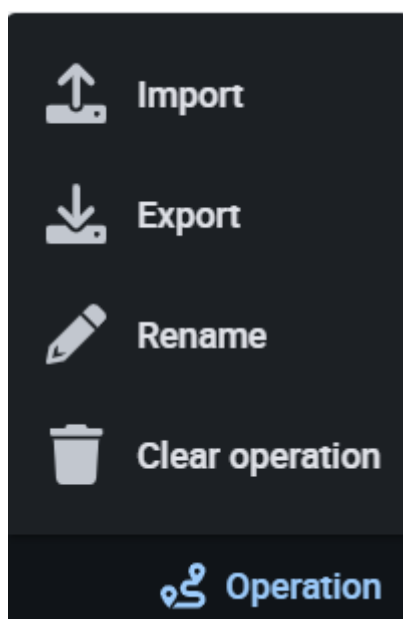
- **Send All:** Manually triggers the immediate transmission of all messages in the list, regardless of their programmed frequency.
- **New message update:** Allows the user to add a new STANAG 4586 message to the monitoring list by selecting it from a library of standard identifiers.

- **Message Name and ID:** Indicates the type of data being transmitted.
- **Frequency (Hz):** Allows defining the number of updates per second for each individual data packet.
-  **Edit:** Allows the operator to change the message type or the update frequency.
-  **Delete:** Allows the operator to remove the message from the scheduled updates list.

## Operations

By clicking here, it is possible to modify the operation.

The following options are available:

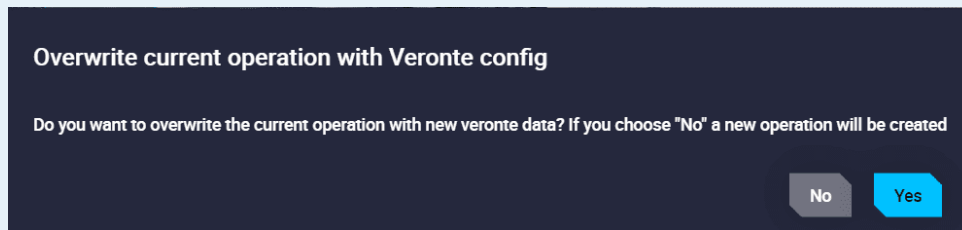


## Options

- **Import:** The user can import an operation, the available formats are: **ZIP**, **KML** and **GEOJSON**.
- **Export:** The current operation can be exported, the available formats are: **ZIP**, **KML** and **GEOJSON**.
- **Rename:** The user can rename the operation as desired.
- **Clear operation:** Clicking here will delete the selected operation.

**Note**

**When a configuration is saved in the 1x PDI Builder software, the following message will appear to inform the user that there is a new operation loaded in the Autopilot 1x:**

**Operation overwrite/new**

- **If the user does not select anything, after 10 seconds this message will disappear and a new operation will be created.**
- **If the user selects NO, a new operation will also be created, as described in the message.**
- **If the user selects YES, no new operation will be created and the changes saved in the 1x PDI Builder software will be applied to the current operation, i.e. the current operation will be overwritten.**

**Operation actions****Revert Operation changes**

- **When a change is made, it is possible to revert it by pressing this button. This is only possible if the changes have not yet been saved.**

**Save Operation**

- **Local saving of the mission.**



## Reload

- The Reload command reverts the operation to the last saved version.

### Warning

This operation is only available if the mission has not been uploaded to the device.

To apply any change to the device, it is necessary to save it by pressing this button.



## Upload to '(Platform name)'

- To update the operation loaded on the autopilot with the new saved changes, click on this button.
- If there is no change to upload to the operation configuration, the following message will appear:



Nothing to save in AP800

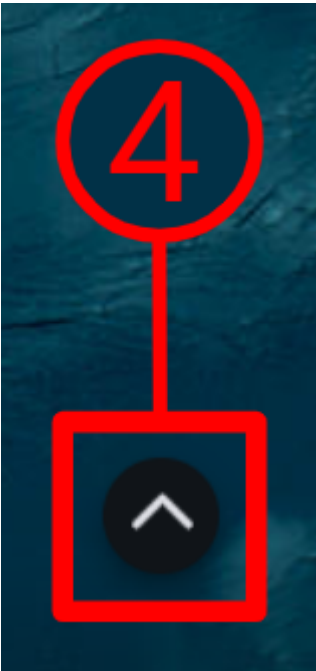
Nothing to Save in '...'

## 4. Platform

This panel lists the linked Veronte Autopilots, either connected by radio link or directly to the laptop, summarizing important information about these platforms such as:

- **Platform name**
- **Platform connection status**
- **Platform license**

Moreover, this menu allows to interact with the platform in Veronte Ops workspace through **Platform actions**.



### Platform list

Platform name

**The name of the unit configured in 1x PDI Builder is displayed:**

ID	Name	T/N	Type	Vehicle	Status
0x000017F3	AP800	4278190080	Not Identified	<input type="button" value="x"/> <input type="button" value="⋮"/>	<input type="button" value="Connected"/>

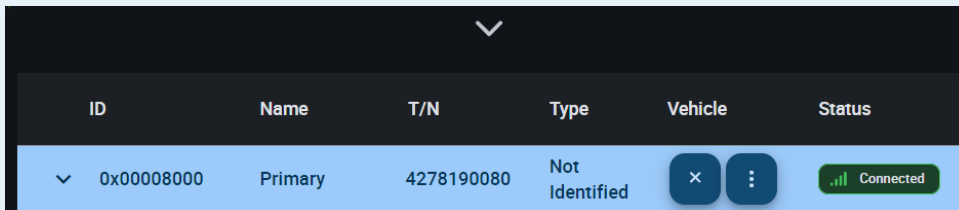
Items per page: 5 1 - 1 of 1

Platform name

**For more information on customizing the platform name, please refer to [Unit name -Veronte](#) section of 1x PDI Builder manual.**

**Note**

In the case of the DRX, the Primary 1x Autopilot will be displayed.



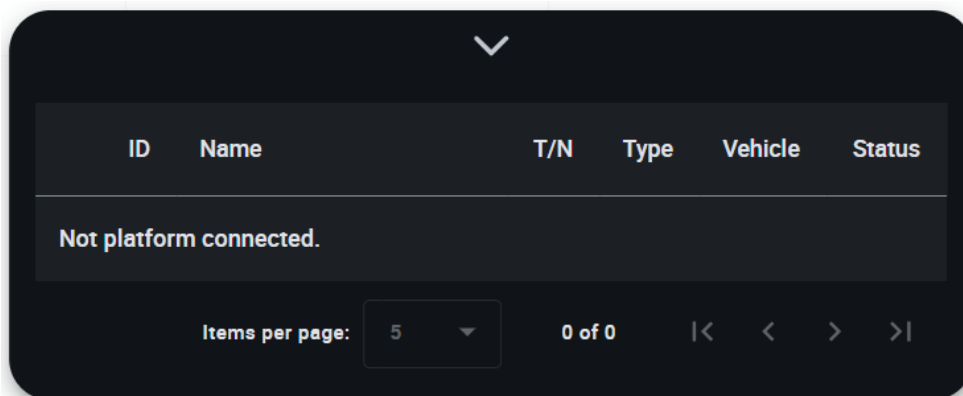
ID	Name	T/N	Type	Vehicle	Status
0x00008000	Primary	4278190080	Not Identified		Connected

**Platform name - Veronte Autopilot 4x**

Platform connection status

This menu allows the user to check the connection status of linked autopilots:

- **Not connected**



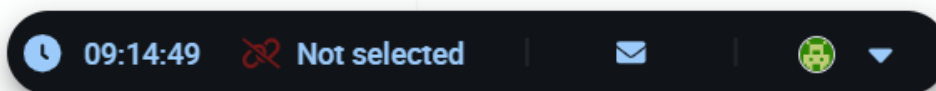
ID	Name	T/N	Type	Vehicle	Status
Not platform connected.					

Items per page: 5 0 of 0

**Connection status - Not connected**

- **Not selected:**

Even if an Autopilot 1x is connected, until it is selected by the user, Veronte Ops will operate as if no autopilot is connected:



**Connection status - Not selected**

- **Connected:**

Once Veronte Autopilot is connected and selected, Veronte Ops appears as shown in the figure below:

ID	Name	T/N	Type	Vehicle	Status
0x000017F3	AP800	4278190080	Not Identified	<input type="button" value="x"/> <input type="button" value="⋮"/>	Connected

Items per page: 5 1 - 1 of 1

**Connection status - Connected**

- **Disconnected:**

ID	Name	T/N	Type	Vehicle	Status
0x000017F3	AP800	4278190080	Not Identified	<input type="button" value="x"/> <input type="button" value="⋮"/>	Disconnected

Items per page: 5 1 - 1 of 1

**Connection status - Disconnected**

- **Maintenance mode:**

ID	Name	T/N	Type	Vehicle	Status
0x000017F3	AP800	4278190080	Not Identified	<input type="button" value="x"/> <input type="button" value="⋮"/>	Maintenance mode

Items per page: 5 1 - 1 of 1

**Connection status - Maintenance mode**

- **Maintenance mode (loaded with errors):**

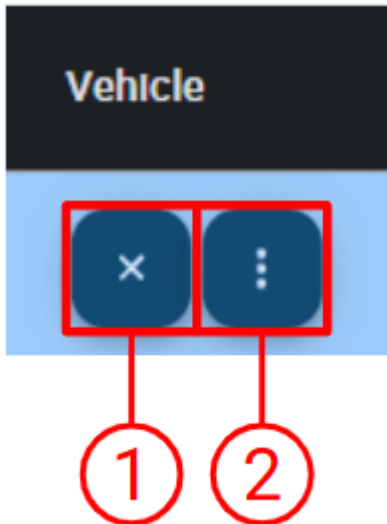
ID	Name	T/N	Type	Vehicle	Status
0x000017F3	AP800	4278190080	Not Identified	<input type="button" value="x"/> <input type="button" value="⋮"/>	Loaded with errors

Items per page: 5 1 - 1 of 1

**Connection status - Maintenance mode (loaded with errors)**

## Platform actions

Moreover, when in Veronte Ops the Autopilot 1x is displayed in any connection state other than 'not connected', the following actions appear in this menu:



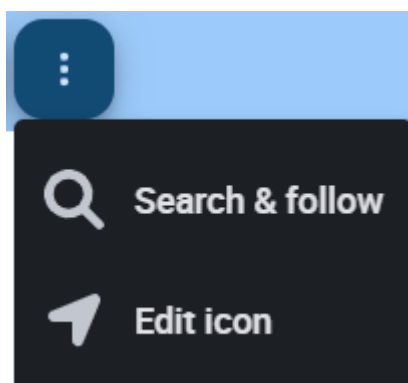
## Platform list actions

### 1. Select type of LOI

The LOI menu defines the level of authority and control the operator holds over the UAV system during the mission.

- **LOI2:** Allows telemetry monitoring and sensor data reception.
- **LOI3:** Enables control of the payload and onboard sensors.
- **LOI4:** Provides control over aircraft navigation and routing.
- **LOI5:** Guarantees full control, including takeoff and landing phases.
- **Release:** Releases any level of control previously acquired over the system.

### 2. Options



## Platform Options

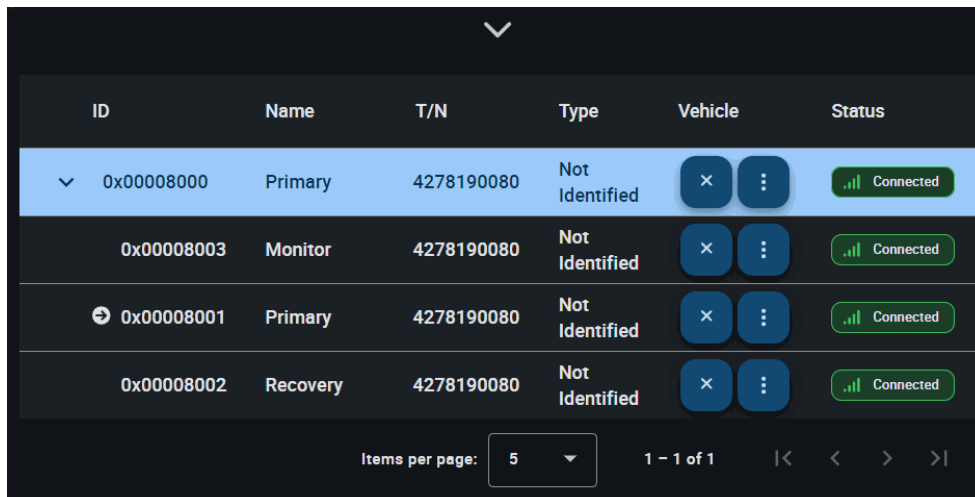
- **Search & follow:** Centers the view on the aircraft and follows it during movement.
- **Edit Icon:** Allows modifying the icon representing the aircraft on the map.

Consult the [Platform Icon](#) section for additional information.

## DRx features

When an DRx is linked to Veronte Ops, the following extra features are available:

- **Show Platforms button:** By expanding the DRx tab, each Autopilot 1x within the DRx group is displayed.

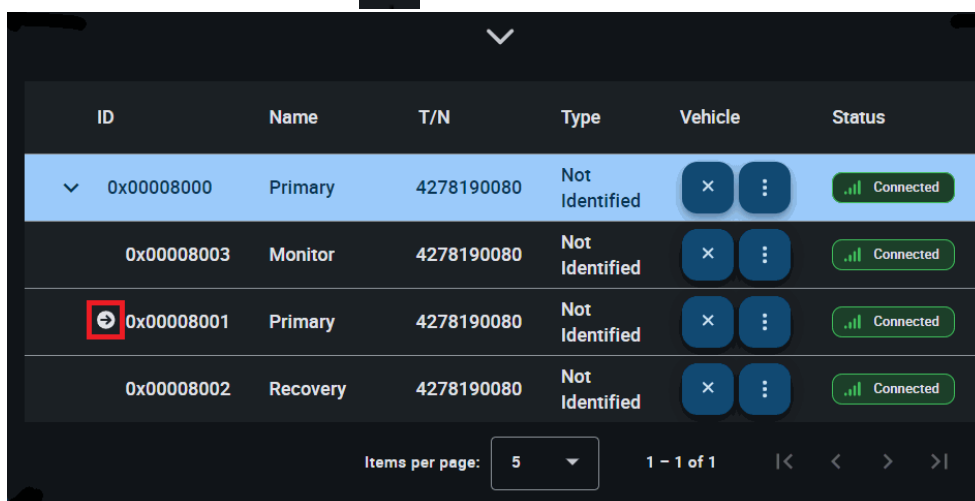



ID	Name	T/N	Type	Vehicle	Status
0x00008000	Primary	4278190080	Not Identified	[x] [⋮]	[📶] Connected
0x00008003	Monitor	4278190080	Not Identified	[x] [⋮]	[📶] Connected
0x00008001	Primary	4278190080	Not Identified	[x] [⋮]	[📶] Connected
0x00008002	Recovery	4278190080	Not Identified	[x] [⋮]	[📶] Connected

Items per page: 5 1 - 1 of 1

## DRx features - Show Platforms

- **Autopilot 1x in command:** The Autopilot 1x selected by the monitor is marked with the  icon.



ID	Name	T/N	Type	Vehicle	Status
0x00008000	Primary	4278190080	Not Identified	[x] [⋮]	[📶] Connected
0x00008003	Monitor	4278190080	Not Identified	[x] [⋮]	[📶] Connected
 0x00008001	Primary	4278190080	Not Identified	[x] [⋮]	[📶] Connected
0x00008002	Recovery	4278190080	Not Identified	[x] [⋮]	[📶] Connected

Items per page: 5 1 - 1 of 1

## DRx features - 1x in command

### ⚠ Important

'1x Selected by the monitor' is not equivalent of '1x Selected in Veronte Ops'.

### Example:

In the image below:

- **Autopilot 1x Primary** : Autopilot selected by the arbiter, i.e. in command.
- **Autopilot 1x Recovery** : Autopilot selected in Veronte Ops.

ID	Name	T/N	Type	Vehicle	Status
0x00008000	Primary	4278190080	Not Identified	✕ ⋮	Connected
0x00008003	Monitor	4278190080	Not Identified	✕ ⋮	Connected
0x00008001	Primary	4278190080	Not Identified	✕ ⋮	Connected
0x00008002	Recovery	4278190080	Not Identified	✕ ⋮	Connected

Items per page: 5 1 - 1 of 1

## DRx features - 1x Selected vs 1x in command

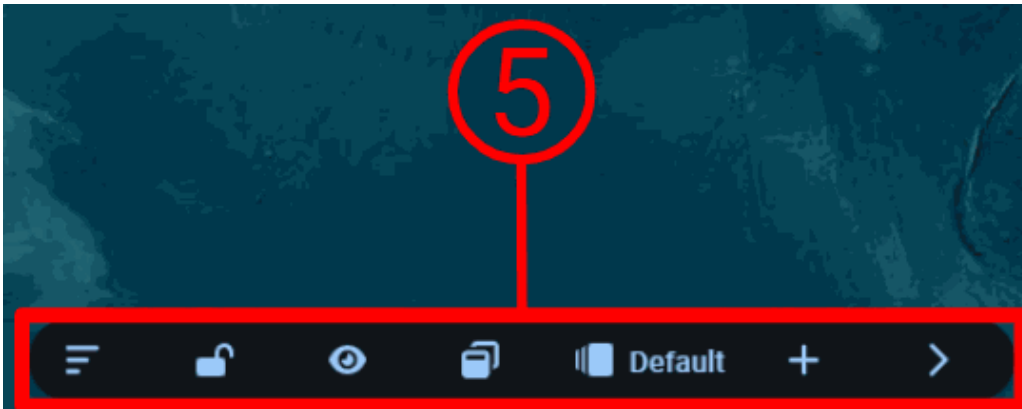
In the following image, the recovery autopilot is selected instead.

ID	Name	T/N	Type	Vehicle	Status
0x00008000	Recovery	4278190080	Not Identified	✕ ⋮	Connected
0x00008003	Monitor	4278190080	Not Identified	✕ ⋮	Connected
0x00008001	Primary	4278190080	Not Identified	✕ ⋮	Connected
0x00008002	Recovery	4278190080	Not Identified	✕ ⋮	Connected

Items per page: 5 1 - 1 of 1

## DRx features - 1x Selected vs 1x in command

## 5. Workspace



### Workspace toolbar

Workspace settings allow the user to customize any information to be displayed on the screen for monitoring the operation.

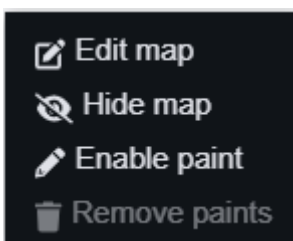
#### Attention

Although Veronte Ops cannot be extended to multiple screens, it is possible to open more than one Veronte Ops in order to display all the widgets necessary for the operation.

### Map options

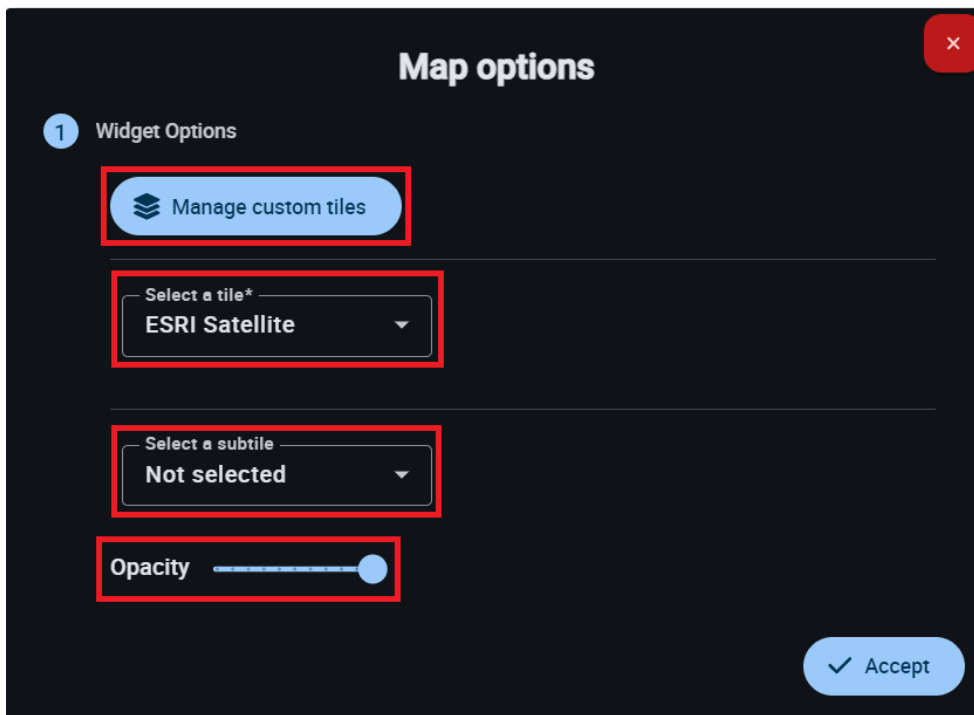
The map widget configures the background map that appears in Veronte Ops screen.

By right clicking on the map the following map options are available:



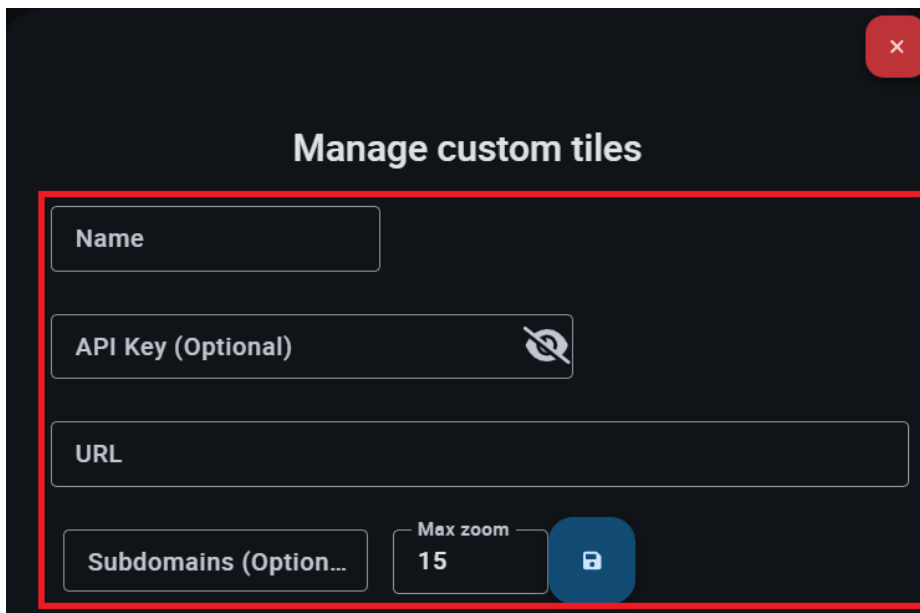
### Map options

- **Edit map:** In this menu the following options can be configured:



### Edit map options

- **Manage custom tiles:** This menu allows the user to add and manage their own map tiles. When a custom tile is added, it will appear as a new option under the "Custom tiles" category to select it either as a "tile" or as a "subtile".



### Manage custom tiles

- **Name:** Users can customize the name of this tile.
- **API Key (Optional):** Enter the API Key if needed (this depends on the map server).

- **URL:** Enter the URL of the map to be added. This URL must be of type "Slippy map tilename".

The necessary "parts" of the URL are listed below with an example: `https://tile.waymarkedtrails.org/hiking/{z}/{x}/{y}.png`

- The first part of the URL specifies the tile server ⇒ `tile.waymarkedtrails.org`
- Tile coordinates are usually specified using the `/zoom/x/y.png` or `/z/x/y.png` tail ⇒ `{z}/{x}/{y}.png`
- Some tileservers will use a directory to specify a particular stylesheet ⇒ `/hiking/`

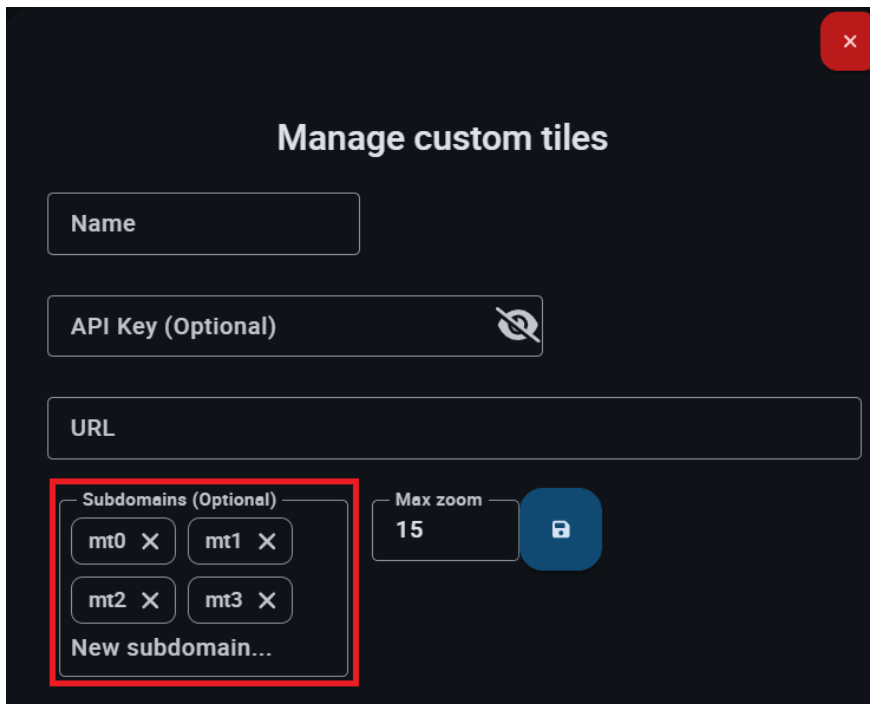
#### **Caution**

If the added map requires an API Key, users must add as part of the URL the following: `{apiKey}` (it is important to respect the lowercase and uppercase of this). This is so that Veronte Ops correctly recognizes that the API Key entered above must be substituted in the URL.

An example is shown below:

```
https://{s}.api.tiles.openaip.net/api/data/openaip/{z}/{x}/{y}.png?apiKey={apiKey}
```

- **Subdomains (Optional):** This is not needed, but can be entered. Multiple subdomains can be entered (as many as the server provides), they are added as pills as shown below.



**Manage custom tiles**

Name

API Key (Optional)

URL

Subdomains (Optional)

mt0 X mt1 X

mt2 X mt3 X

New subdomain...

Max zoom 15

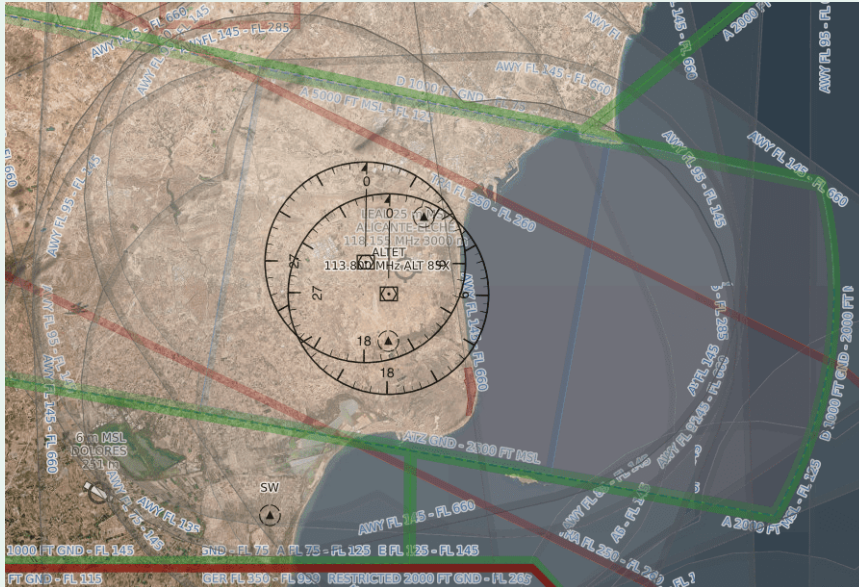
### Manage custom tiles - Subdomains

- **Select a tile:** It is possible to select the map provider from several options, including "Custom Tiles" if they have been created in the Manage custom tiles option.
- **Select a subtile:** Users can add a second map. The available options are:
  - **Not selected:** This is the default selected option.
  - **OpenAIP.**
  - **GaoDe Annotation.**
  - **Custom tiles:** Only appears when a custom tile has been created in the Manage custom tiles option.
- **Opacity:** The user can set the opacity of this subtile. It is expressed as a percentage of 1 (i.e. the minimum is 0 and the maximum is 1).

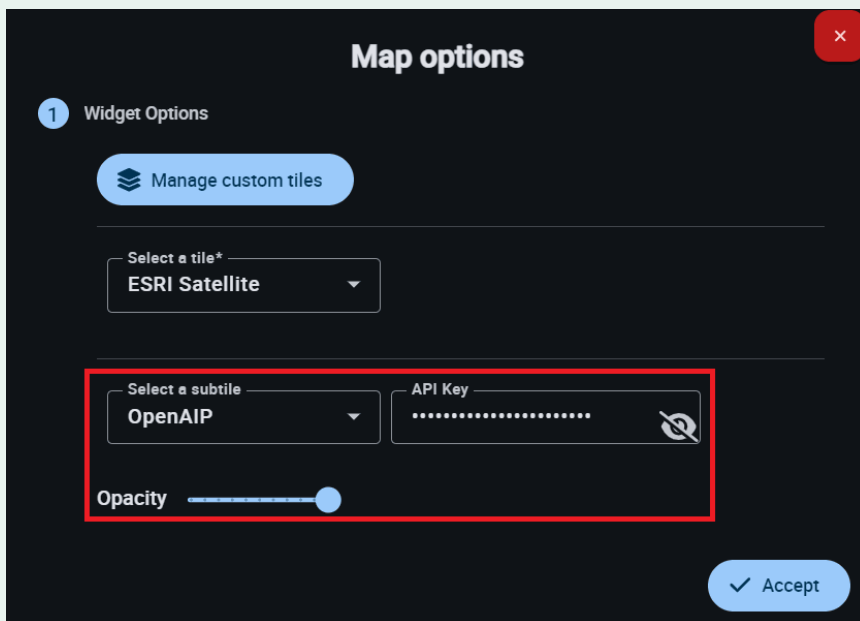
**Tip**

This allows the user to have one map overlaid on top of another.

For example, it can be used to have as tile the main map and as a subtile a map with airspace information (OpenAIP map):




Example of map with subtile

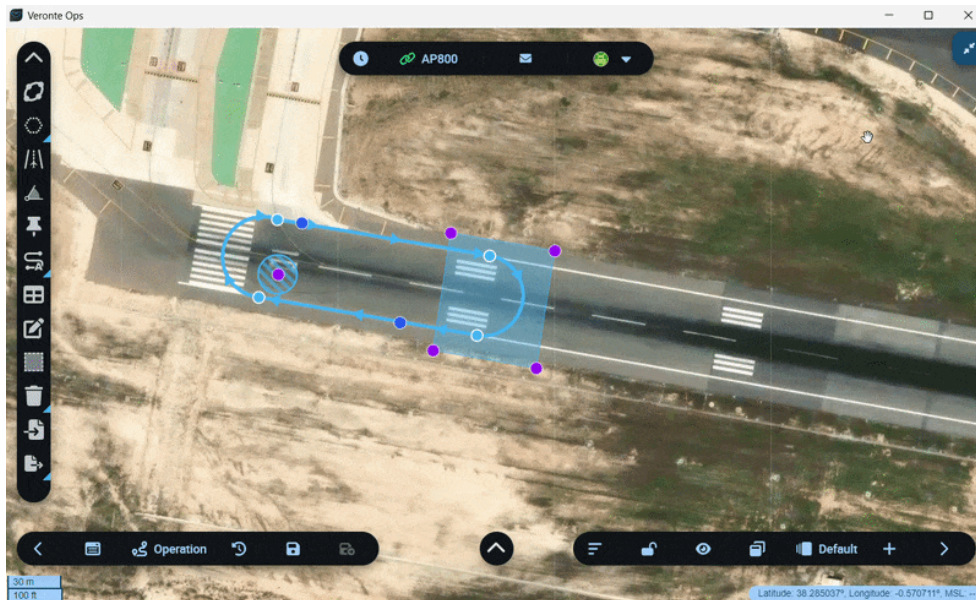


Example of map with subtile configuration

- **Hide map:** The map will be hidden. To show it again, go to 'Main Widgets' menu and select 'Map'.

In addition, double-clicking on the map will zoom in on the area the user is clicking on.

Furthermore, the map can be minimized/maximized by clicking on the  icon in the top right corner of the application. An example is shown below:

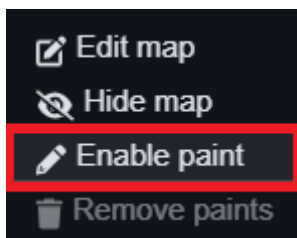


### Minimize/Maximize map

- **Enable paint:**

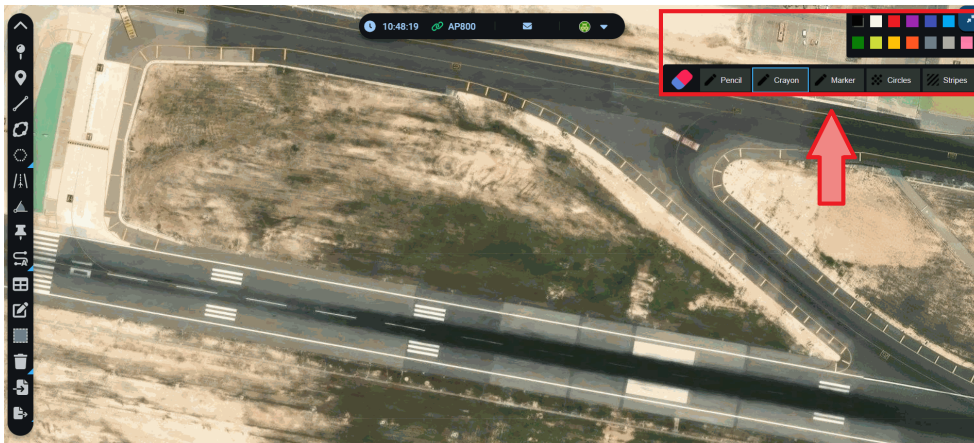
This tool allows the user to make quick notes during the operation.

To access the paint option, right-click and select .



### Enable paint

A 'Paint toolbar' will then appear:

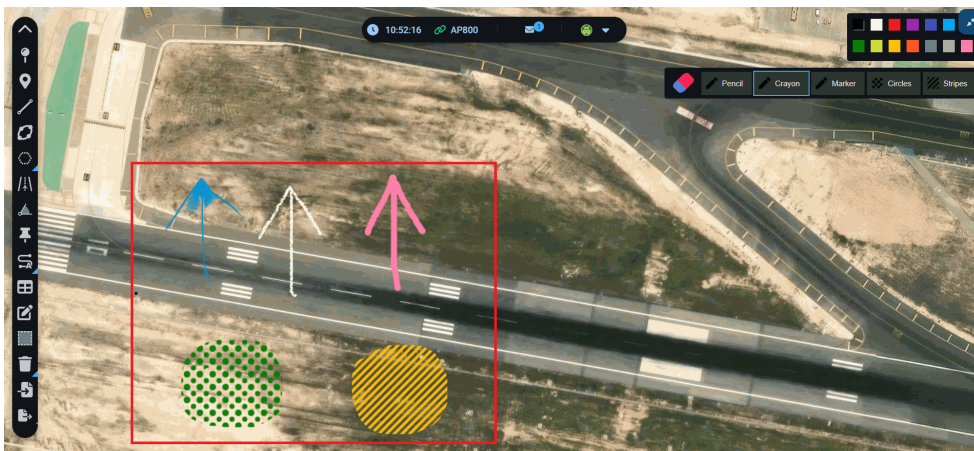


### Paint toolbar

Users can choose from a variety of 'writing elements' and colors to paint:

- Pencil
- Crayon
- Marker
- Circles
- Stripes

An example of each is shown in the figure below:



### Paint examples

In addition, all notes made can be erased with an eraser, if they are not already saved, by clicking on the 'eraser option' in the toolbar.



**Paint erased**


**Note**

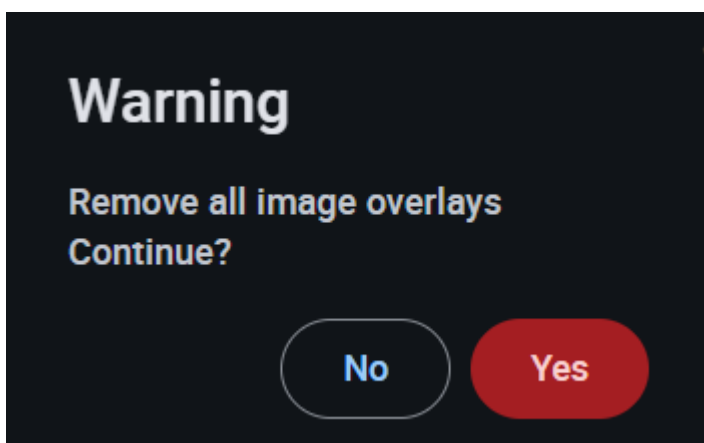
Changes will be saved automatically upon exiting the '\*Paint' option. When exiting, the following message appear:

**Paint successfully added.**

**Message paint added**

• **Remove paint:**

By clicking it , all paints will be removed. The following confirmation pop-up window will appear:



**Remove paint**

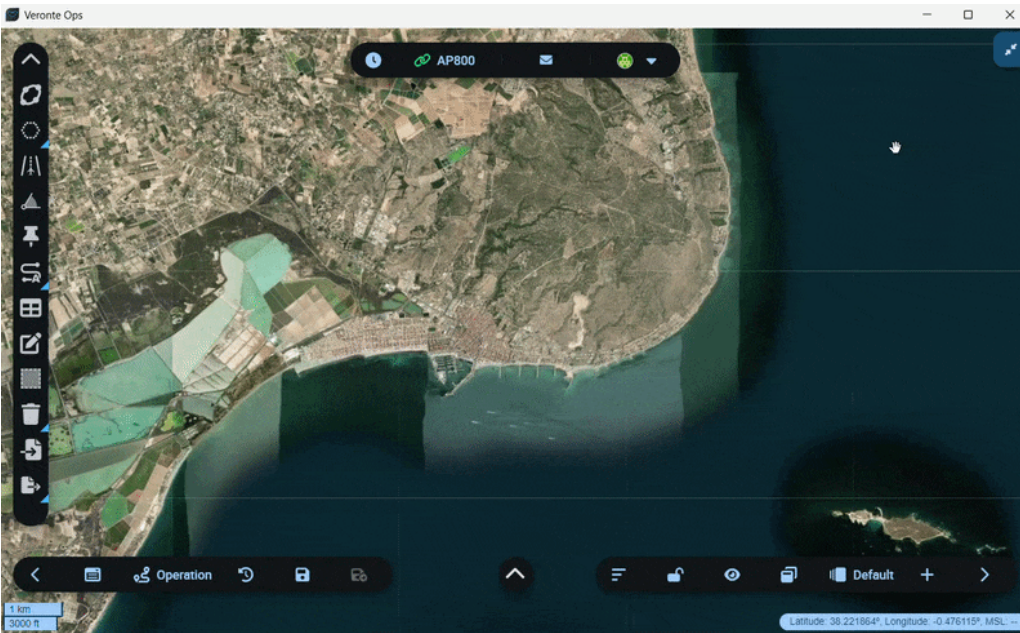
After clicking 'Yes', the following confirmation message will be displayed.

**Paint successfully deleted.**

## Message paint deleted

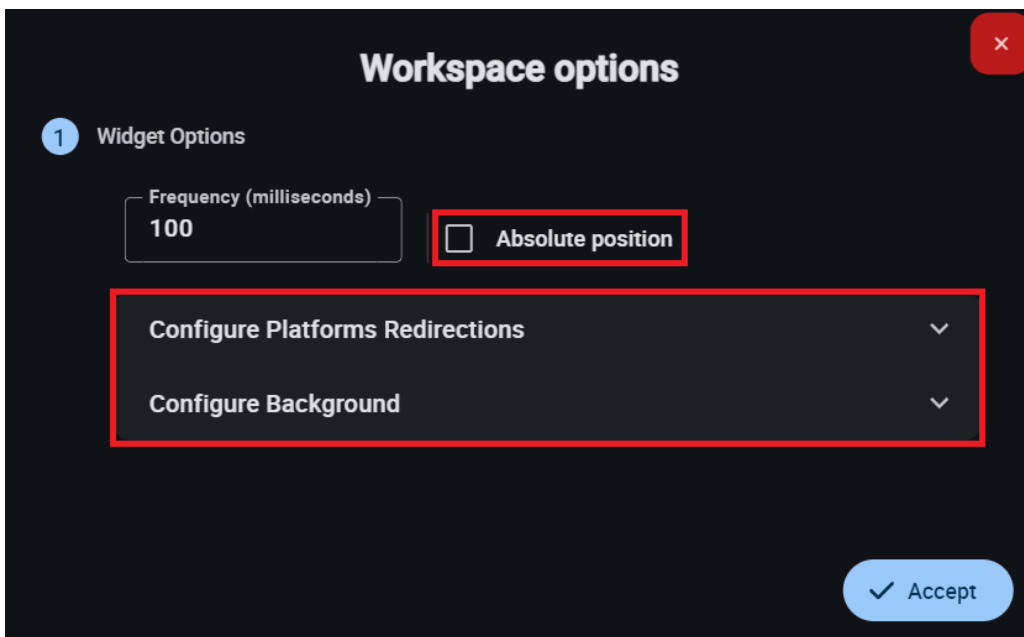
### Workspace options

It is possible to edit the background behind the map. To access this editing menu it is necessary to first minimize the map (or hide it) and then right click on the background:




### Access background edition

In this menu, users will find:



### Background edition

 **Tip**

By right-clicking on the  **Workspace** button, it is possible to open the Workspace options.

- **Absolute position:** When enabled, this checkbox locks the widget to a specific fixed position on the screen, preventing it from moving when the workspace is scrolled or resized.
- **Widget options:** The user can change the refresh frequency of the workspace, of the widgets. By default this frequency is 100 milliseconds.
- **Configure Platforms Redirections:** Users can create a redirection to link a platform to a custom "role".

 **Hint**

A common approach is to create two roles: "Air" and "Ground", and assign the desired widgets to the corresponding role instead of linking them directly to a specific platform. This allows users to easily switch the platform assigned to the Air/Ground role from this menu if a different Autopilot 1x unit is used, without needing to update each widget individually.

**Workspace options**

1 Widget Options

Frequency (milliseconds)  
100

Absolute position

**Configure Platforms Redirections**

**Name\***  
Name is required

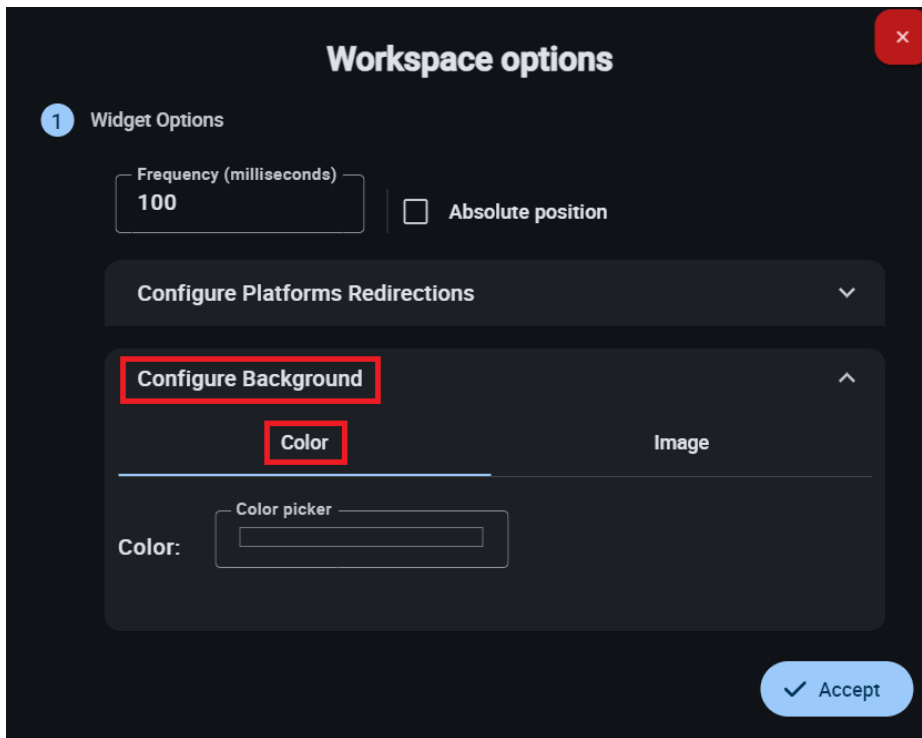
Choose platform  
Selected Platform

Accept

### Background - Platforms Redirections

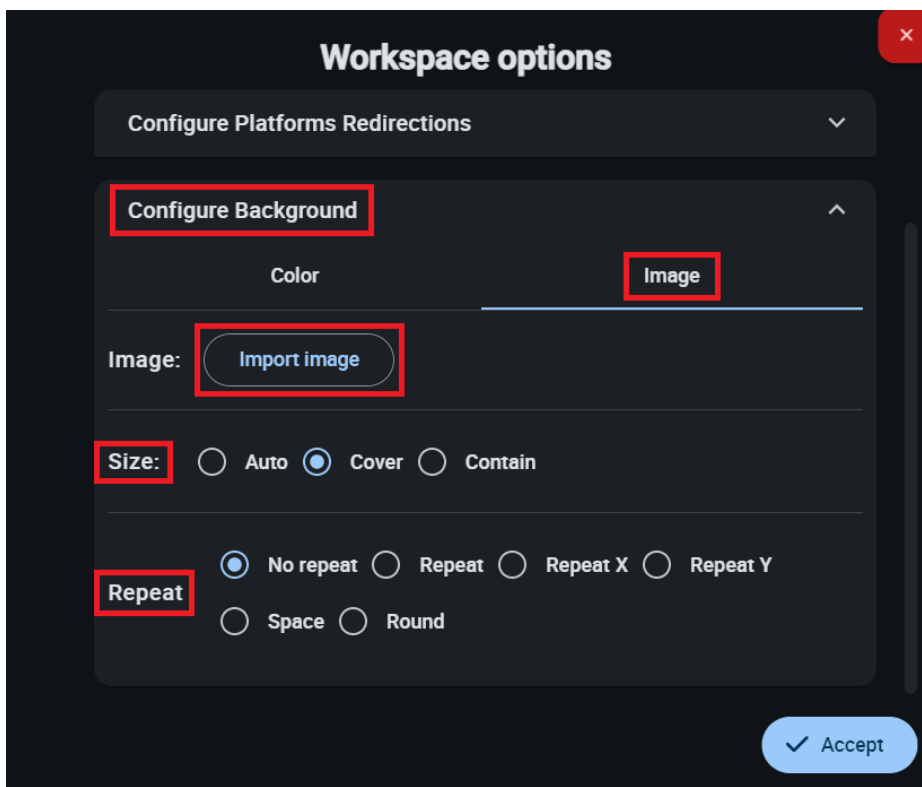
Click on "+" to add a new redirection:

- **Name:** Enter the desired name for the rule.
- **Choose platform:** Users must select the platform for which the redirection is configured. The available options will always be the IDs of the connected Autopilots 1x and 'Selected platform', i.e. the platform that is selected.
- **Delete button**
- **Configure Background:** Choose the type of background style between a color or an image:
  - **Color:** Users can select the desired color for the background.



### Background - Configure color

- **Image:** When choosing 'Image', users must configure some parameters:



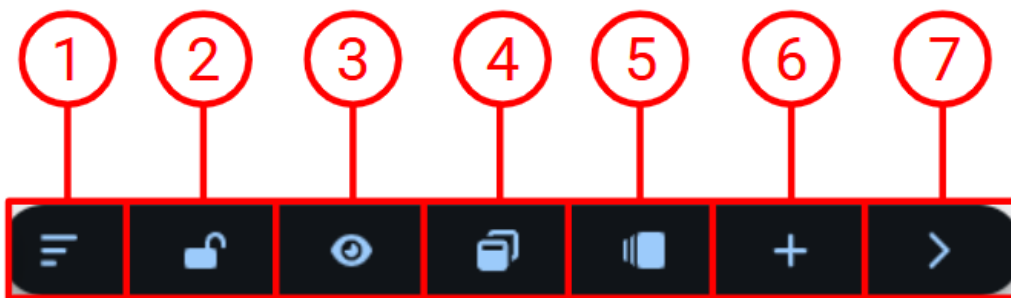
### Background - Configure image

- **Image:** A Veronte Ops image is set by default, but it is possible to import another image from the local PC.

- **Size:** The size of the background can be modified, the available options are: Auto, Cover and Contain.
- **Repeat:** The repetition of the image can also be customized, choose from: No repeat, Repeat, Repeat X, Repeat Y, Space and Round.

## Workspace toolbar

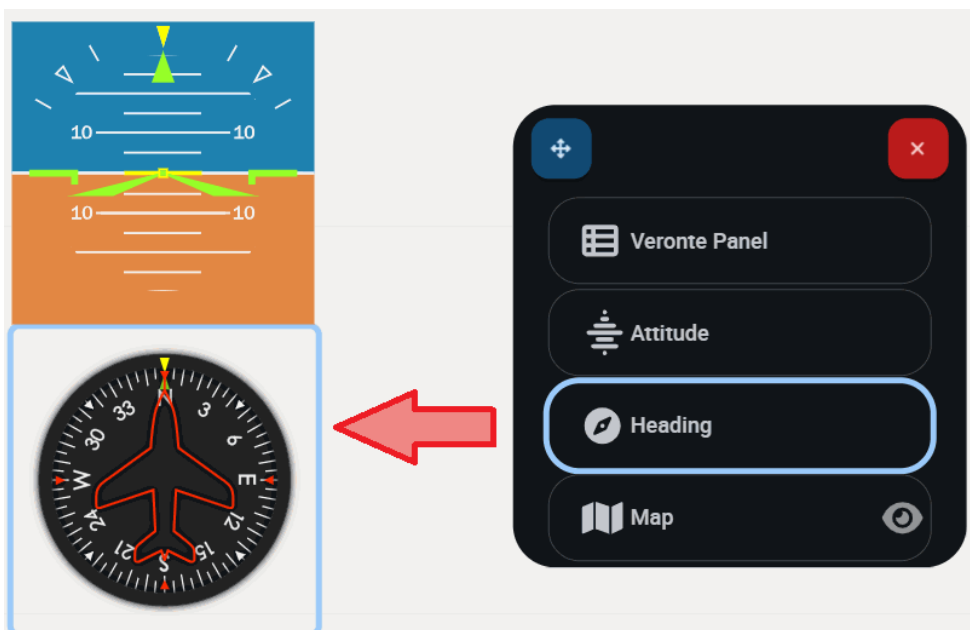
The workspace toolbar is divided into 5 different 'parts':



## Workspace toolbar parts

1. **Sort widgets:** With this button it is possible to sort the widgets, i.e. the user can place one widget on top of another.

To do this, click on this button and a 'sorting panel' will appear for the user to sort widgets, so that the first in the list will be on top of the second, the second on top of the third and so on. For ease of use, the widget selected for sorting will be outlined in blue, as shown in the example below:



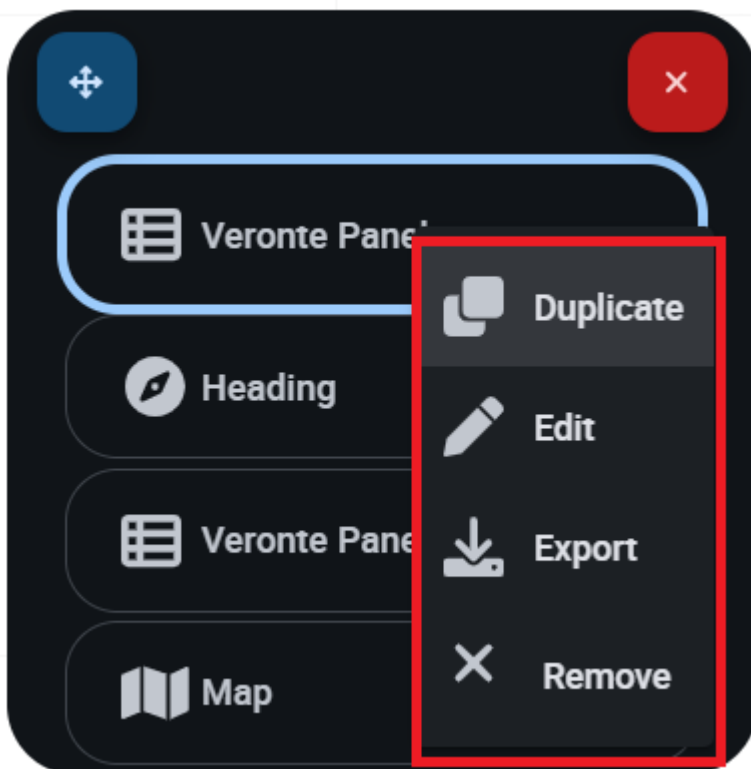
## Sort widgets

In this example, 'Heading widget' is selected and is ordered above the 'Attitude widget'.

**Warning**

The map will always be at the back (the last widget in the list), except when minimized, which can be sorted as desired.

In addition, by right-clicking on each widget from this sorting panel it is possible to access its options (note that groups in the sorting panel also behave like widgets):



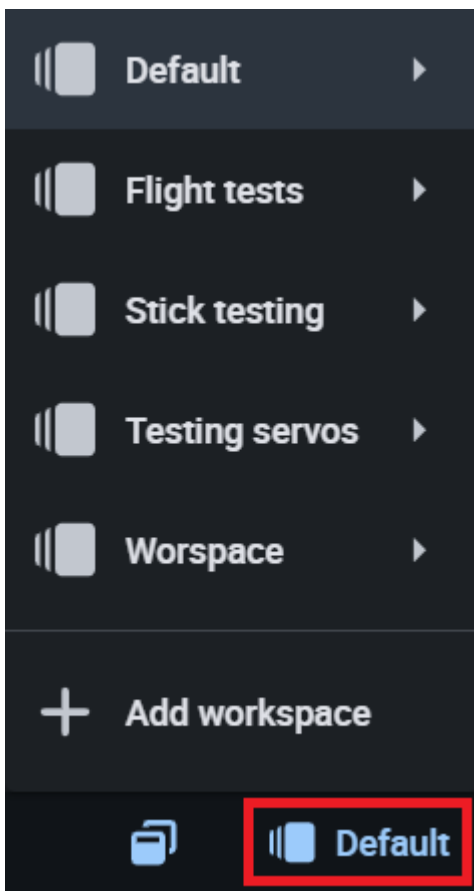
### Sort widgets options

- **Duplicate:** Duplicates this widget.
  - **Edit:** Accesses the edit configuration menu of each widget. For more information on the configuration of each widget, please refer to the corresponding widget section of this manual.
  - **Export:** Saves the element.
  - **Remove:** Removes this widget.
- 2. Lock/Unlock widgets:** When widgets are locked, users will not be able to move them.
  - 3. Show/Hide widgets:** Users can choose to show/hide all widgets by pressing this button.

4. **New window:** User can create another window to view the operation.
5. **Workspaces:** Veronte Ops allows users to create different workspaces.  
This is useful to change the displayed information/widgets depending on the purpose of the operation, i.e., the widgets desired to be displayed during a simulation or flight test may not be the same as the widgets desired to be displayed for the final mission.
6. **Widgets:** Veronte Ops offers several applications to display parameters and variables in real time of the flight mission.
7. **Close Worspace bar**

## Workspaces

By clicking here, a list of all workspaces loaded in Veronte Ops will appear. The current workspace is the one that is selected, the one shown in blue.



## Workspaces

The following options are available for each workspace:

### Workspaces options

- **Rename:** The user can rename the workspace as desire.
- **Duplicate:** Duplicates this workspace.
- **Export:** The current workspace can be exported. This file is exported in `.json` format.
- **Export:** Workspace export.
- **Open in new window:** User can open the desired workspace in a different window.
- **Remove:** Clicking here will delete the selected workspace.

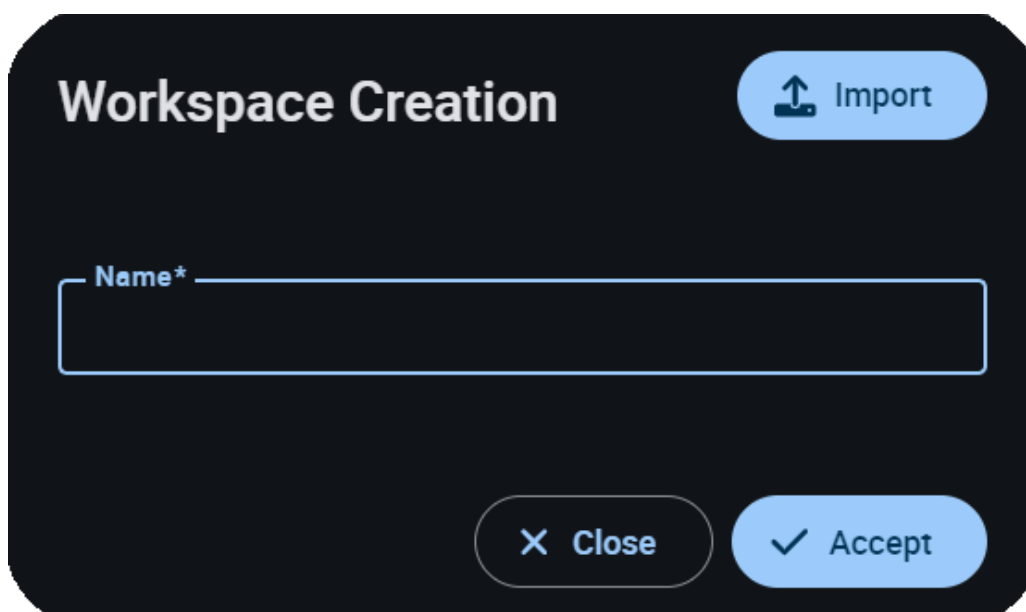
#### **Note**

It is possible to delete several or all workspaces at once from the Workspace manager menu of the Status bar, click [here](#) for more information.

### Adding a workspace

It is possible to create a new workspace by simply clicking on 'Add workspace'.

The user can choose between adding an empty workspace or importing one from the laptop, which has been previously exported. To import a workspace, the format file must be a `.json`.



**Workspace Creation**

Import

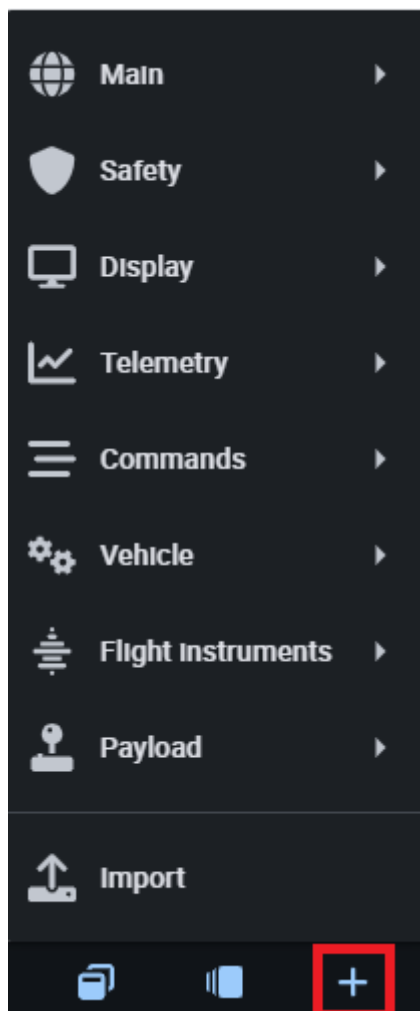
Name\*

Close Accept

## Add workspace

Widgets

**By clicking here, the user will see different widget menus sorted by categories.**

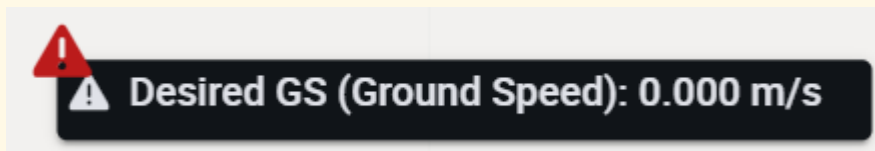


Widgets

**To display any widget on the map, just search for the desired widget and configure it.**

**⚠ Warning**

If the variable configured for a widget is not present in the telemetry configuration of the PDI, the widget will appear with a red triangle (warning icon), indicating that the selected variable is not being received in Veronte Ops.



Not receiving telemetry in this widget

Therefore, the variable must be added to the [Complementary Telemetry](#).

**Widgets common configuration****⚠ Warning**

This does not apply to widgets in the 'Statics' category.

All widget editing menus except those in the 'Statics' category have at least the following configurable parameters:

**Label options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

+ Add new variable

Add a new element to show

Settings

→ Next

Widget Styling

✓ Accept

### Edit menu - Widget Options

- **Widget Position X / Y:** Allows entering exact numerical coordinates to determine where the label appears on the screen.
- **Add new variable:** Button to link telemetric data or specific system variables for monitoring.
- **Add a new element to show:** Area dedicated to adding new graphic or textual components within the same widget.

**Settings:** Drop-down menu to access advanced widget settings.



### Edit menu - Widget Styling

Here the user can choose the style of the widget:

1. **Select style:** Default and custom styles can be selected. The available default styles are Default\_box, Default\_box\_transparent, Default\_box\_blur, Default\_box\_black, Default\_pill and Default\_pill\_blur.

#### **Note**

Not all these default styles are available in all widgets.

2. **Add new style:** A new style can be created from the currently selected style by clicking here.
3. **Import style:** Users can import a custom style from local storage. It must be a `.css` file.
4. **Export style:** By clicking here, the selected custom style will be exported in a zip folder. More information about the contents of this folder is described in the [Style manager - Veronte Ops configuration](#) section of this manual.

#### **Important**

This option is only available when a custom style is selected.

**5. Edit style:** Users can directly edit the configuration (code in `.css` format) of the selected style by clicking here.

 **Important**

This option is only available when a custom style is selected.

**6. Remove style:** The selected style will be deleted.

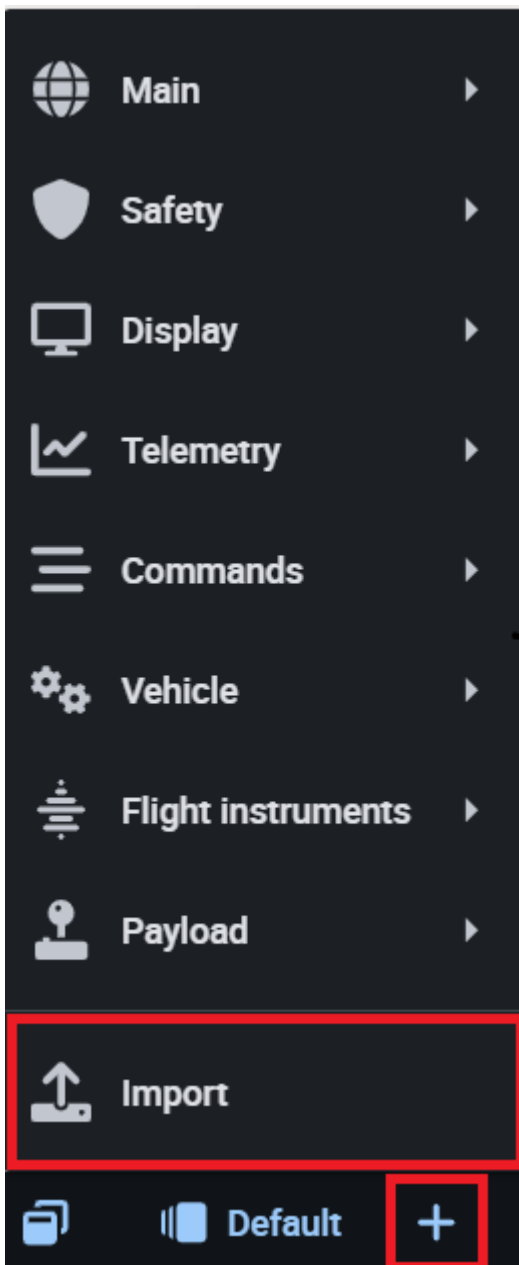
 **Important**

This option is only available when a custom style is selected.

All widgets are explained in detail in the following sections:

- [Main](#)
- [Safety](#)
- [Display](#)
- [Telemetry](#)
- [Commands](#)
- [Vehicle](#)
- [Flight instruments](#)
- [Payload](#)

The Import feature enables the user to import a single widget or a widget group.



### Widget - Import

Main

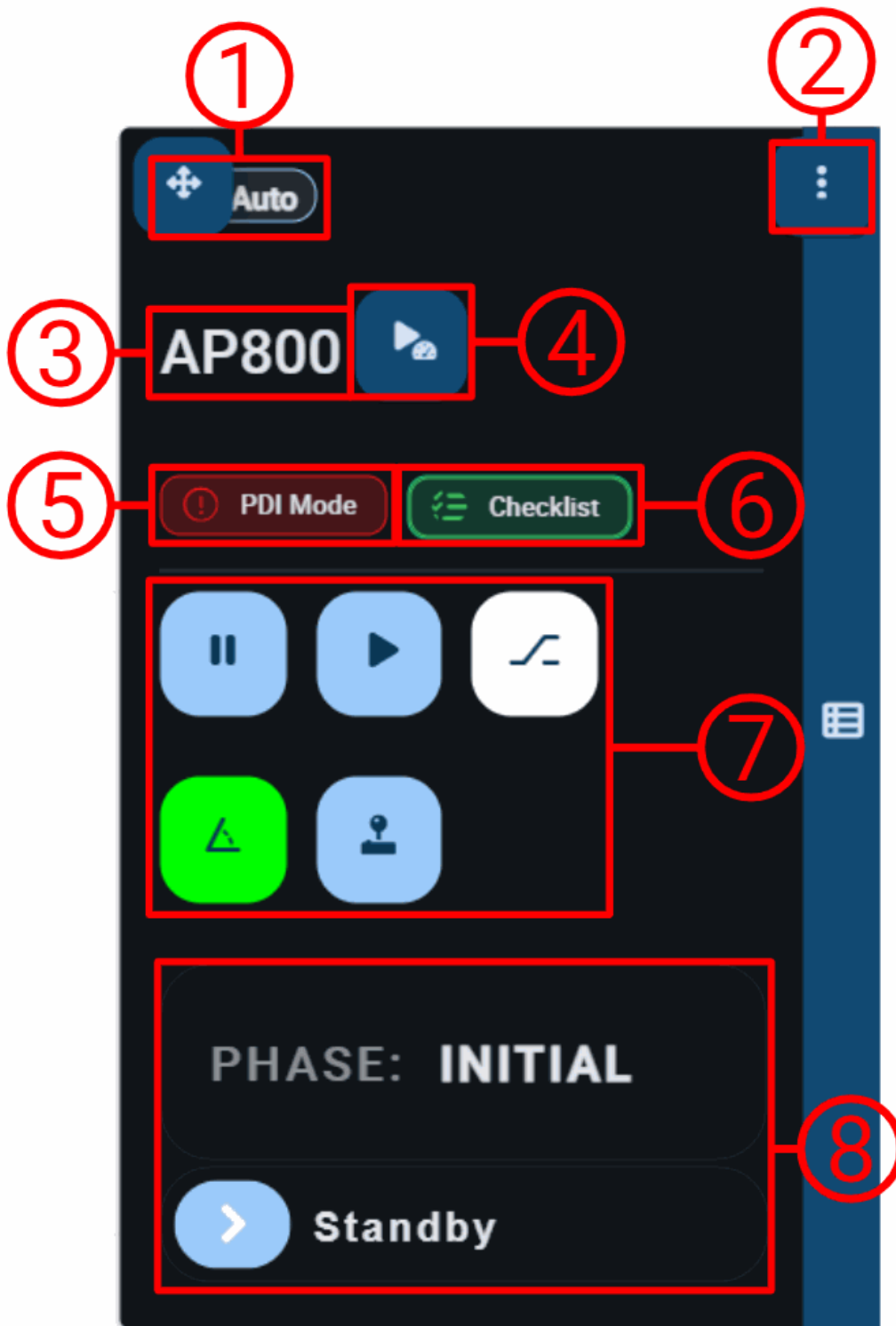
Map

**This widget corresponds to the map and only appears in this menu when the map has been hidden by the user.**

Veronte Panel

**This panel is the basic operator tool. It includes all basic commands (phase and action buttons) and information needed during a standard**

mission. These commands can be triggered with a single click, by sliding and/or automatically.



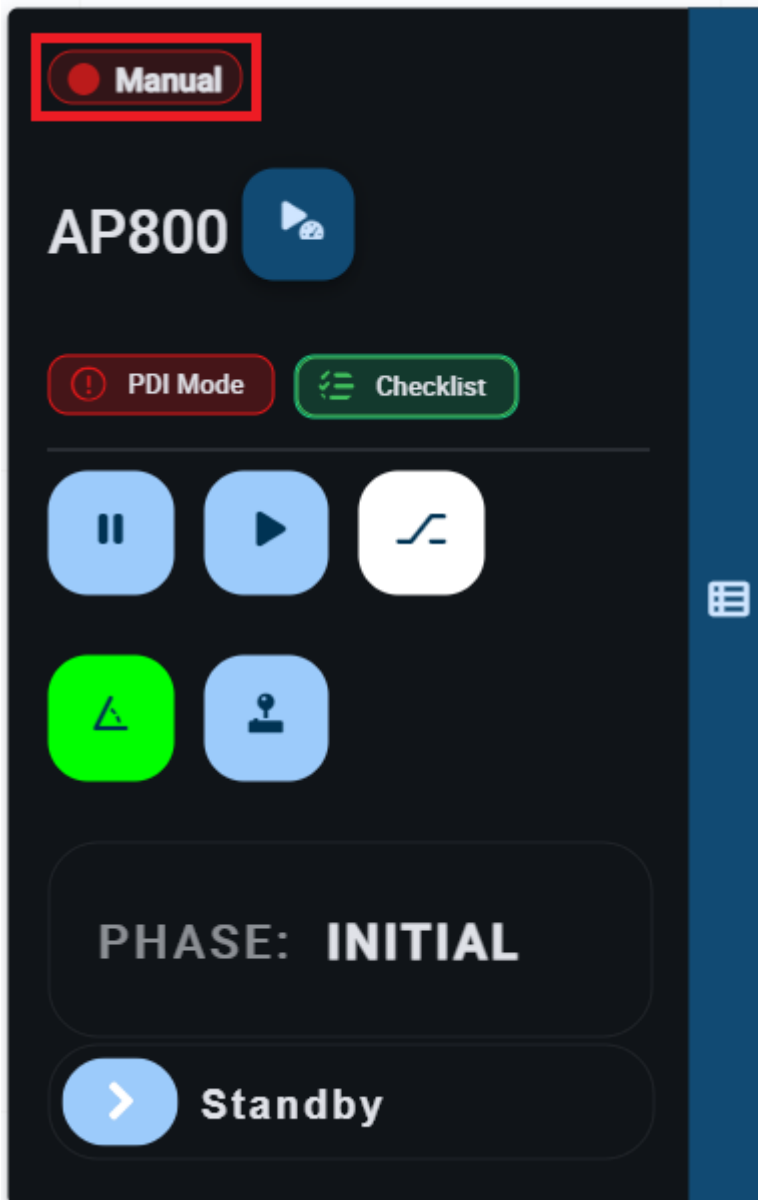
### Veronte Panel

1. **Flight mode:** Displays the currently selected flight mode in which the user is operating.

By clicking on it, it is possible to manually change the selected mode. The flight modes available here must be previously defined in the **Modes - Control** section of the 1x PDI Builder software.

### Veronte Panel - Flight modes

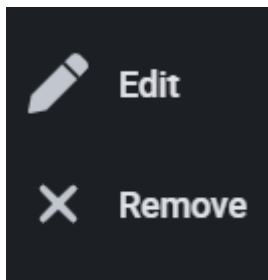
When in manual mode, the lettering of the icon will be red, to warn the operator to be careful in this mode.



### Veronte Panel - Manual flight mode

Besides, the mode can also be changed automatically with an automation or manually with a configured stick.

2. Options: By clicking here, the following options are available:



### Veronte Panel options

- **Edit:** This allows the user to access the Veronte panel configuration menu.

This widget has two extra edit parameter compared to the ones described in [Widgets common configuration](#):

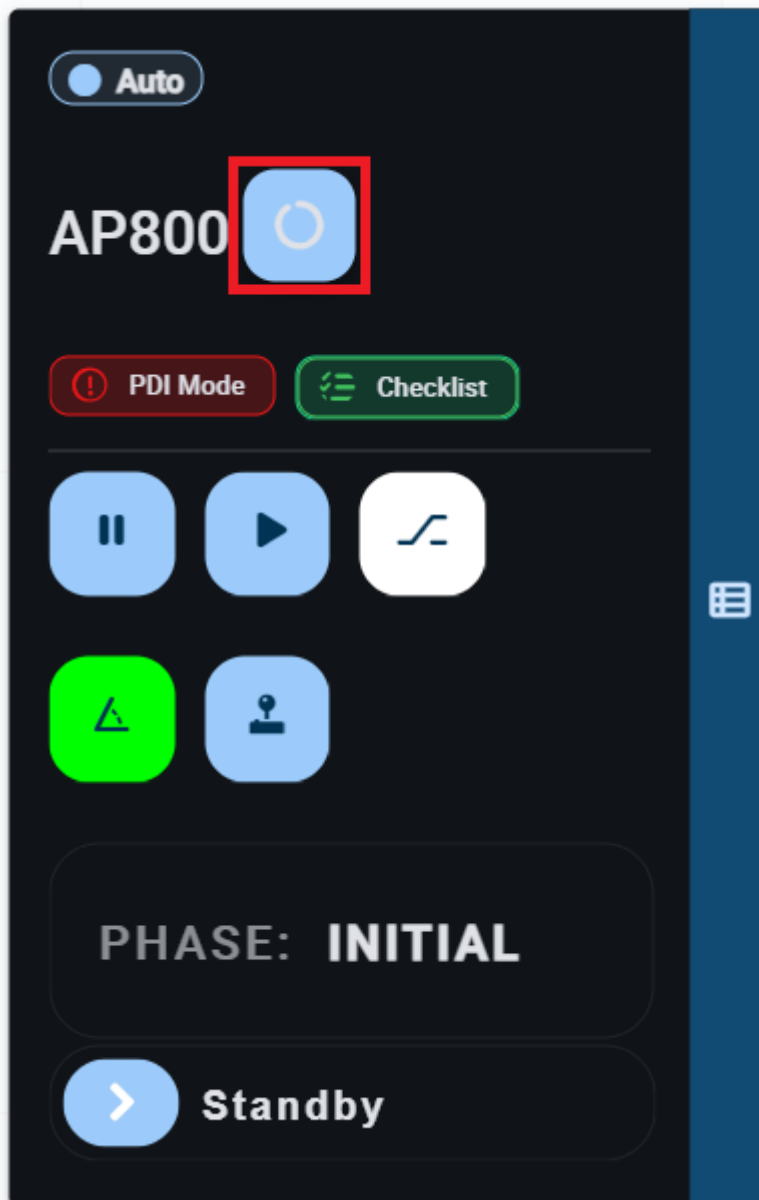
### Veronte Panel configuration

- **Widget Options**
  - **Show Action Buttons:** When enabled, all the **Action buttons** are displayed in the Veronte panel.
  - **Scale (50% minimal):** Veronte panel widget can be scaled from 50% to 100% of its size. By default it is set to 100%.
  - **Toggle slider/buttons:** Allows to choose whether to display the widget controls via a sliding bar or through pressable buttons.

- **Checklist position:** Set the checklist alignment to the left or right side of the Veronte Panel interface.
- **Remove:** Deletes this widget.

3. **Platform name:** The name of the selected platform is shown here.

4. **FastLog:** By pressing this button, the Veronte Autopilot 1x will start recording the fastlog and this option will be as shown in the figure below:



Veronte Panel - FastLog recording

To stop fastlog recording, simply click this button again.

For more information on Fast Log, see the [Fast Log - Telemetry](#) section of the 1x PDI Builder user manual.

 **Important**

**This button only appears when Fast Log has been configured in the 1x PDI Builder software.**

**5. PDI Mode:** This only appears if PDI Mode is configured in the 1x PDI Builder software.

**For more information on PDI Mode, check the [PDI Mode](#) description of the 1x PDI Builder user manual.**


**6. Checklist:** This panel is used to make sure that some requirements have been accomplished, for example, prior to a phase change or to avoid a possible malfunction.

**It must be previously defined in the [Checklist - Safety](#) section of the 1x PDI Builder software.**

**As this widget behaves like a drop-down menu, clicking on the  icon will display all checklists:**

IMU Check	<input type="checkbox"/>
Magnetometer Calibration	<input type="checkbox"/>
GPS Accuracy	<input type="checkbox"/>
Center of Gravity Check	<input type="checkbox"/>
Propellers Check	<input type="checkbox"/>
Stick Ok	<input type="checkbox"/>
Stick Transition - VTOL flight	<input checked="" type="checkbox"/>
Battery Level	<input type="checkbox"/>
Trim Stick Check	<input type="checkbox"/>
Automatic Atmosphere Calibr...	<input type="checkbox"/>

**Checklist deployed**

If there are mandatory checks, they are marked with an asterisk (\*) on the right. Mandatory checks must be checked to proceed. If all conditions are met to start the operation, the Checklist button  Checklist turns green, even if there are no checkmarks in the list.

IMU Check	<input type="checkbox"/>
Magnetometer Calibration	<input type="checkbox"/>
GPS Accuracy	<input type="checkbox"/>
Center of Gravity Check	<input type="checkbox"/>
Propellers Check	<input type="checkbox"/>
Stick Ok *	<input checked="" type="checkbox"/>
Stick Transition - VTOL flight *	<input checked="" type="checkbox"/>
Battery Level	<input type="checkbox"/>
Trim Stick Check	<input type="checkbox"/>
Automatic Atmosphere Calibr...	<input type="checkbox"/>

Checklist - Complete

7. **Action buttons:** Action buttons can be used to manually trigger certain actions. They must have been previously defined in the [Automations menu](#) of the 1x PDI Builder software.


**Note**

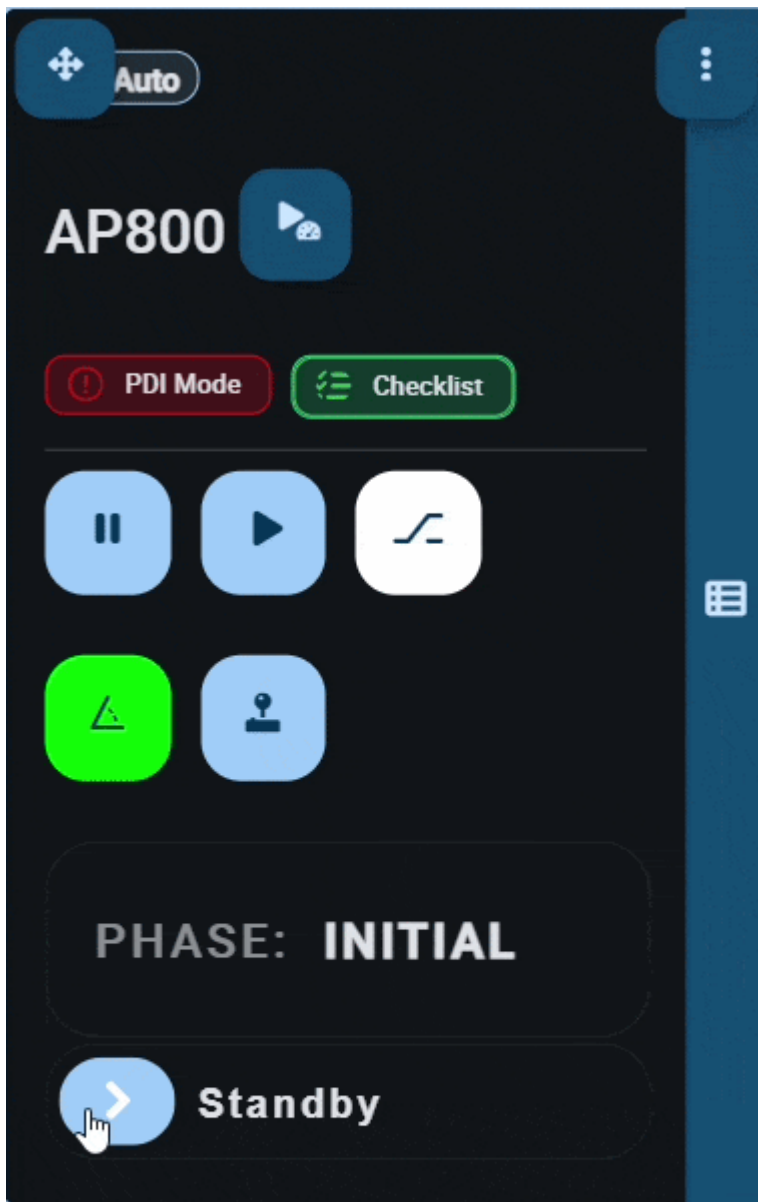
For further details about Action buttons, refer to [Action Button - Inputs](#) section of the present manual.

8. **Phase buttons:** The currently selected phase is always displayed at the top in the current phase identifier.

**⚠ Important**

**Not all existing flight phases are initially displayed. Only flight phases that can be entered from the currently selected phase are displayed.**

To change phase, simply slide the  icon to the right. Then, if everything is correct, the phase will be displayed in the current phase identifier and will be colored green while switching to that phase. An example is shown below:



### Veronte Panel - Changing phase

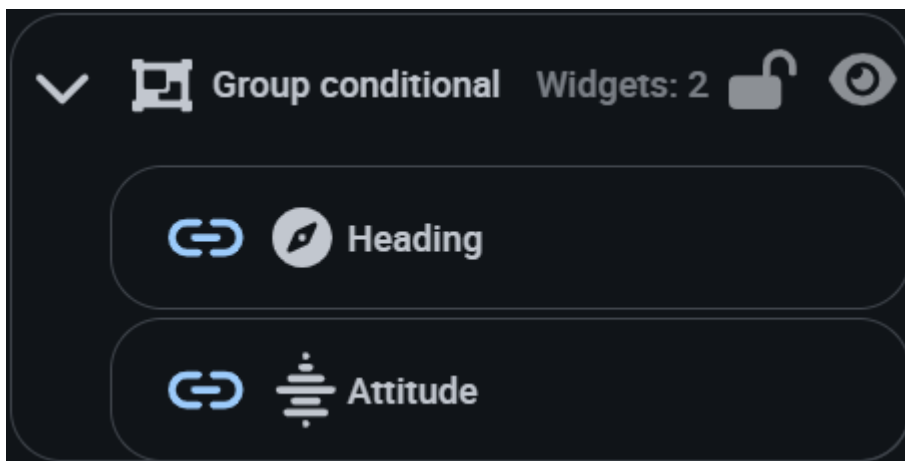
#### **Warning**

An error may occur when changing phase, so that the phase change does not take place. To solve this problem, please check the [Error when changing phase - Troubleshooting](#) section of this manual.

## Group Conditional

**Veronte Ops allows users to create groups of widgets, where they can group as many widgets as they wish. This is useful for linking widgets and moving them together. In addition, it is possible to create a condition to choose when the group is shown.**

**Moreover, it is also common to create groups containing a single widget when using a condition for the group.**



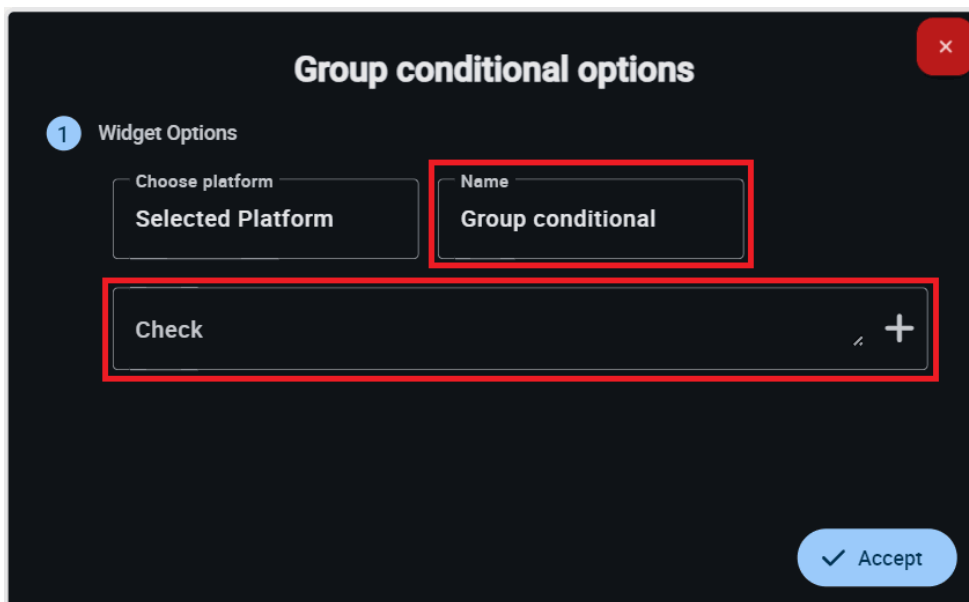
### Group

#### ⚠ Important

This widget is managed from the [sorting panel](#).

**Once the group is created, go to the sorting panel and right click on the group to access its options:**

- **Remove:** Removes the group and also the widgets in the group.
- **Edit:** This allows the user to access the **Group configuration menu**.



### Group configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in [Widgets common configuration](#).

- **Name:** For easy identification of each group, users can enter a custom name for each one.
- **Check:** Here users can set the conditions they want for a group to be displayed or not.

These conditions must be set according to the values of the system variables.

**Note**

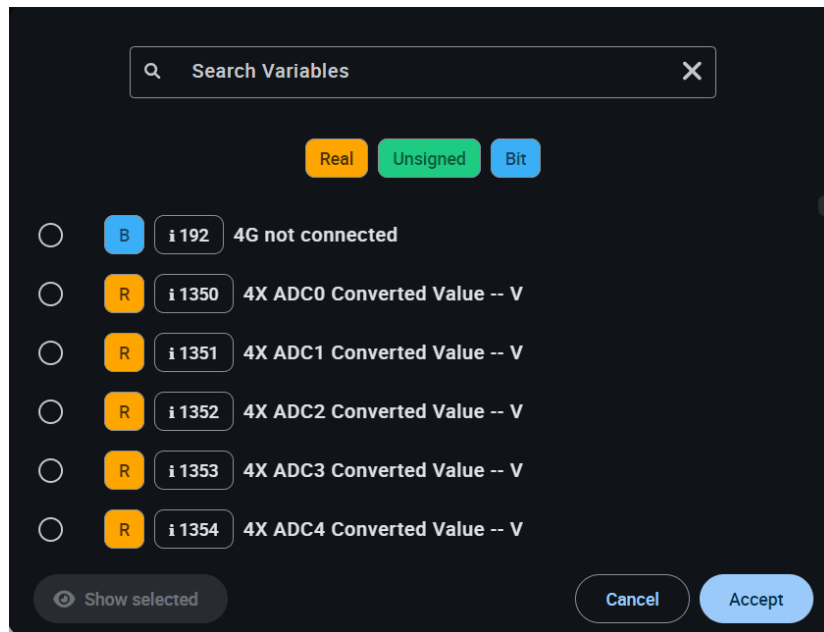
It is not mandatory to have a condition for a group.

**Warning**

For these conditions to apply correctly, widgets must be locked from the [Workspace toolbar](#). Otherwise, these conditions will have no effect.

Follow the next steps to correctly define a condition:

1. Click on the **+** icon and select the desired variable from the list to established the condition:



### Group configuration - Variables to create a condition

2. Build the condition with logical operators. The following is a list of logical operators that can be used by the user:

Condition	Operator	Description
Equality	==	For more information click <a href="#">here</a>
Inequality	!=	For more information click <a href="#">here</a>
Greater than	>	For more information click <a href="#">here</a>
Greater than or equal	>=	For more information click <a href="#">here</a>
Less than	<	







---

Condition	Operator	Description
		For more information click <a href="#">here</a>
Less than or equal	<=	For more information click <a href="#">here</a>
Logical AND	&&	For more information click <a href="#">here</a>
Logical NOT	!	For more information click <a href="#">here</a>
Logical OR		For more information click <a href="#">here</a>
Grouping operator	()	For more information click <a href="#">here</a>

3. Press the Accept button to create the group with this condition.




After configuring it, return to the [sorting panel](#) where users can add widgets to the created group, link/unlink, show/hide, lock/unlock, move and remove the added widgets, as well as access the Group widget configuration menu (as described above).

The following are the actions to be performed in the sorting panel in order to manage the widgets within the group:

- To add a widget to a group, simply select it and drag it into the Group widget:  
Adding widgets to a group
- To remove a widget from a group, select it and drag it out of the Group widget.
- Linking widgets. By default, widgets are linked and appear with a  icon next to them in the group. Therefore, if users move one of the widgets in the group, the rest of the linked ones will move together. To unlink them, click on the  icon on the widgets to be unlinked, then they will appear as unlinked (). Thus, if one is not marked, it may move with respect to the other elements in the group.
- Show/Hide groups. By default, all groups are shown in the workspace (they appear as ). Nonetheless, by clicking on  they can be hidden.  
To show them again, simply click on .

#### Hint

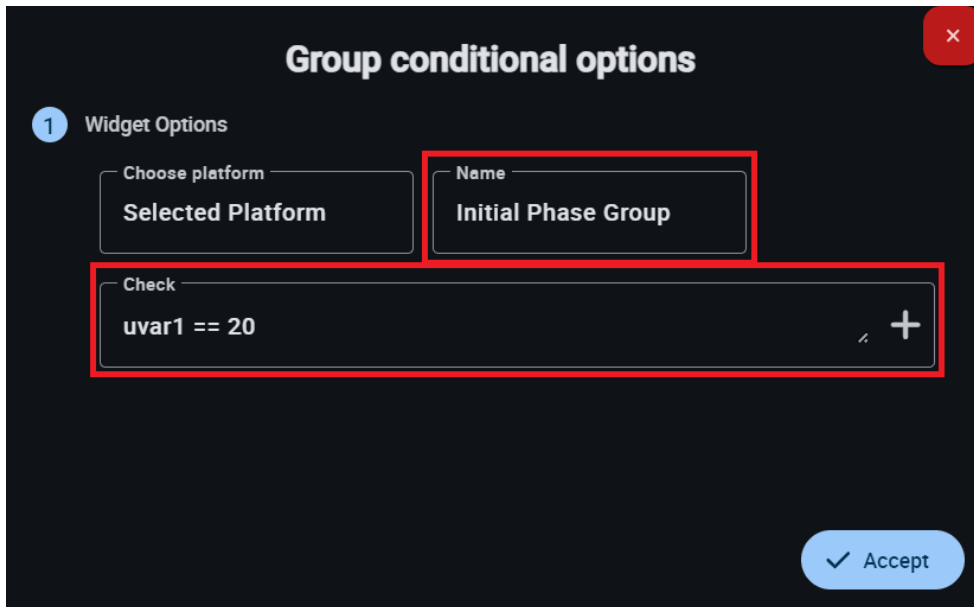
If users want to show different groups at different "moments" of the flight, it may be useful to hide them during creation. In this way, groups can be placed in the same place and thus "save" space in the workspace.

- Lock/Unlock groups. When groups are locked, users will not be able to move them in the workspace. By default, all groups are unlocked ().  
To lock them, simply click on  and they will appear as . In addition, when a group is locked, users cannot add, remove, link or unlink the widgets that belong to it.

**Example of a Group widget with condition**

If users only want to have a pre-flight Gauge widget before starting the flight (i.e. only in the initial phase):

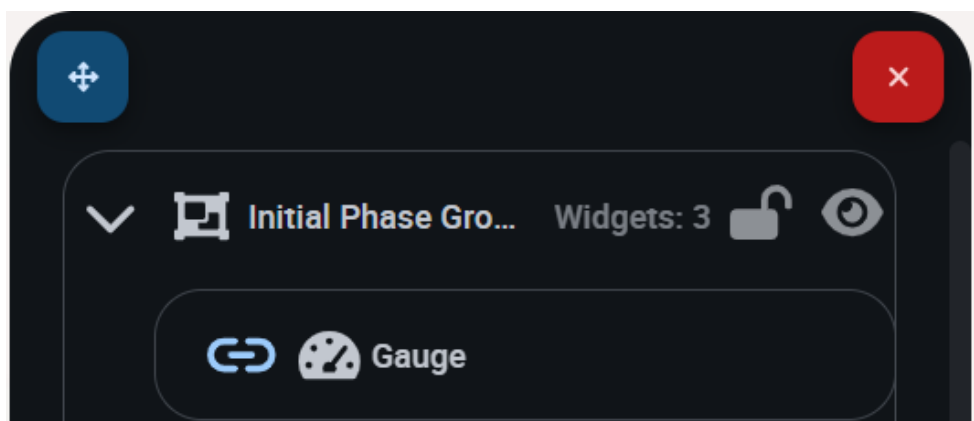
- For only displaying this group in the initial phase, build the following condition in the Group widget configuration:



Configuration of group with condition

Where:

- **uvar1** is the Phase identifier variable
  - **= =** is the equality operator
  - **20** is the ID of the initial phase
- Add the desired Gauge widget to the group just created

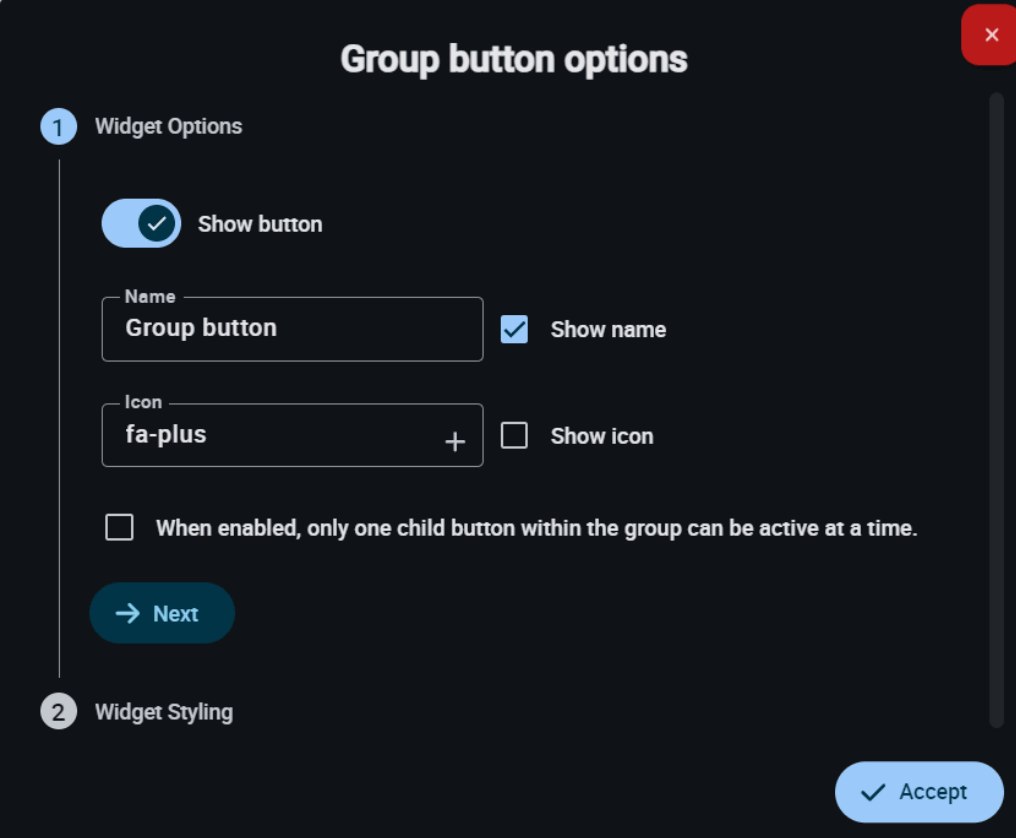


Group with condition

Therefore, this implies that: Only when the flight phase is the one with ID 20 (initial phase), widgets added to this group, in this case the Gauge widget, will be displayed.

## Group button

This panel is used to group more than one variable in a single graphical element, optimizing space on the control dashboard and allowing multiple commands to be activated from a single interface.

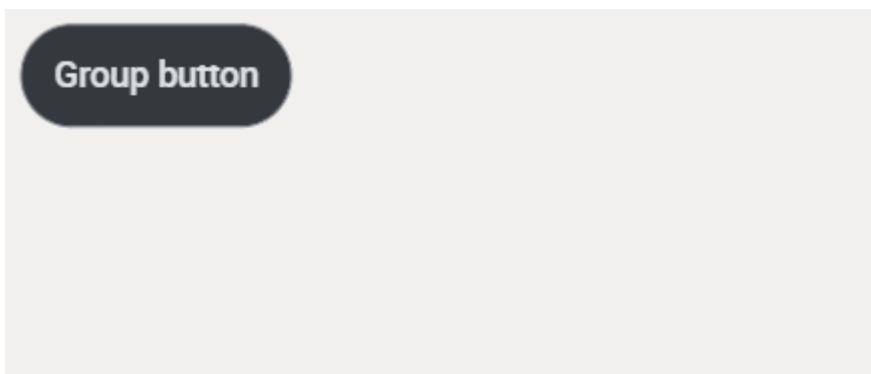


### Group Button Options

- **Name:** Defines the name of the button group. By checking the **Show name** box, the user decides whether to display the text on the widget.
- **Icon:** Allows choosing an identification icon for the group. By checking the **Show icon** box, the user can decide whether to show the icon on the widget.
- **Show name:** If this checkbox is selected, the text entered in the **Name** field will be displayed directly on the widget within the dashboard.
- **Show icon:** If this checkbox is selected, the icon chosen in the **Icon** field will be visible on the widget. This allows for visual identification of the button group's function without needing to read the text.

- **When enabled, only one child button within the group can be active at a time: If this option is enabled, the buttons contained within the group will function as a single-choice selector: activating one button will automatically deactivate any other previously active button in the same group.**

**As this widget behaves like a pop-up menu, clicking on the main button will display all the buttons configured within it, ready to be activated by the operator during the mission.**



### **Group Button**

Script

**The Script options panel allows integrating and configuring custom scripts, defining their behavior and display settings.**

**Script options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose Platform\*: Selected Platform

Name

Code

1

Import script

Color mode

Text Background

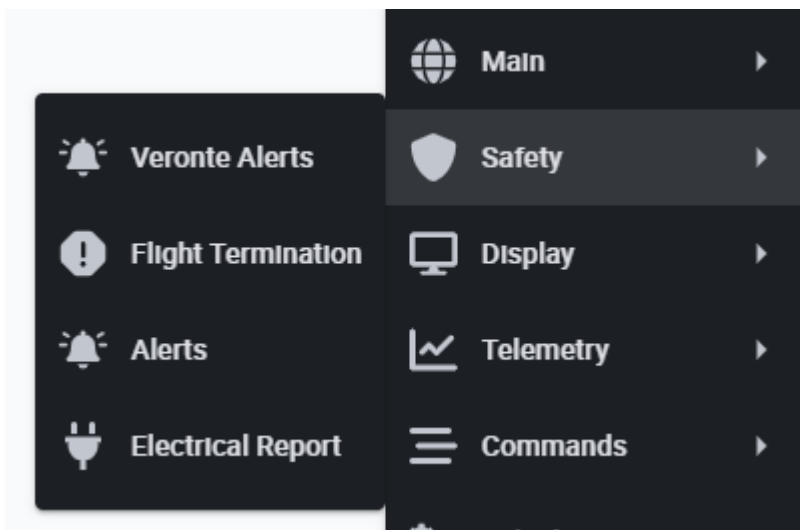
Accept

## Script

- **Name:** Field for assigning an identifying name to the script.
- **Code:** Area dedicated to entering or viewing the numerical or logical code of the script.
- **Import script:** Button to upload script files from outside the system.
- **Color mode:** Allows customizing the visual appearance by choosing between Text or Background color modification.

## Safety

**The Safety menu groups features dedicated to system health monitoring and the execution of emergency procedures according to proprietary and international standards.**



## Safety

Veronte alerts

**These alerts are bits variables that appear depending on the state of the bit, failure or success. The user can define in the widget configuration which of them will be the triggering state.**

**By default, alerts are "collapsed" into the widget, as the widget acts as a drop-down menu. However, users can quickly find out how many alerts there are and what type they are without having to drop it down thanks to the colored indicators in the form of pills:**

- **Red: Alerts on failure state**
- **Orange: Alerts in failure state and configured as warnings**
- **Green: Alerts in success state**
- **Grey: Alerts for which the necessary telemetry is not being received.**

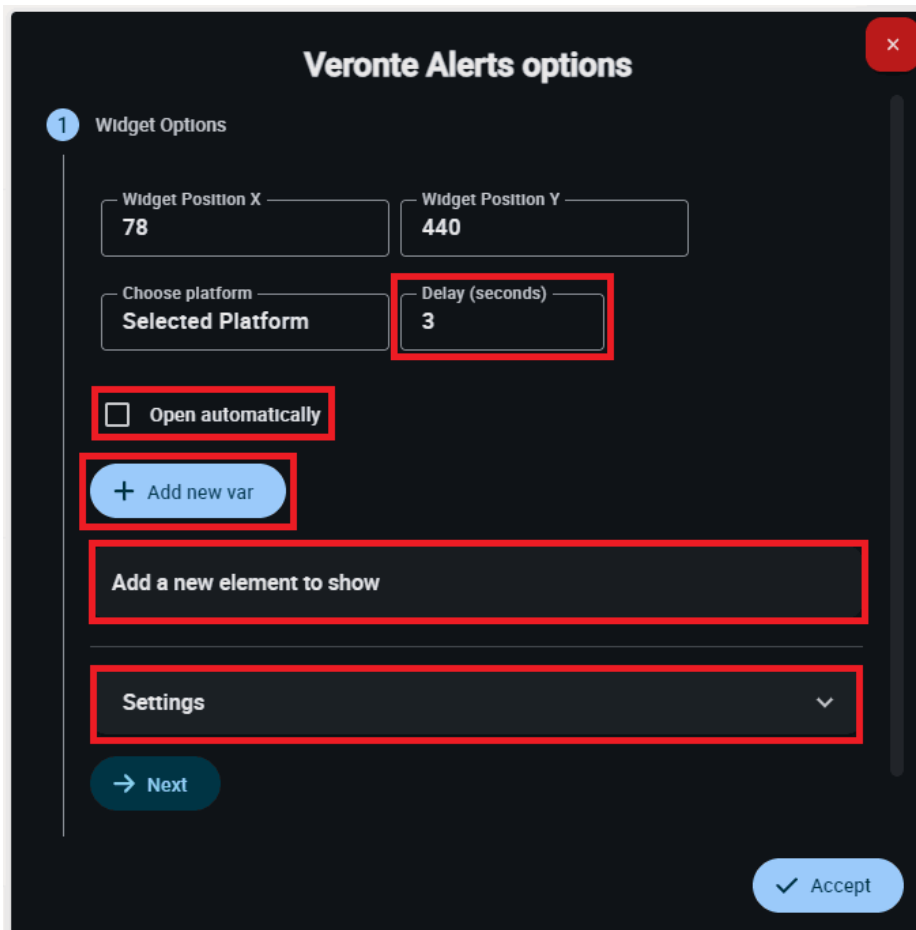
### **Note**

- **This color code is also extended to the displayed alerts.**
- **The alert type can be configured by accessing its edit menu.**



## Alerts

- 1. Enable/Disable Loop:** Users can enable/disable the sound of the alerts to be in loop, i.e. sounding continuously.
- 2. Mute/Unmute all alerts:** The sound of all alerts can be mute/unmute.
- 3. Options:**
  - **Duplicate:** Duplicates this widget.
  - **Edit:** This allows the user to access the Alerts configuration menu.



## Alerts configuration

- **Widget Options**

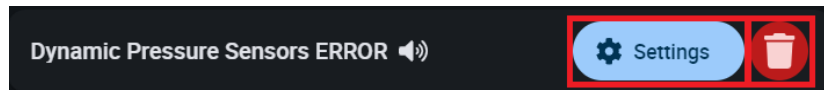
This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Delay:** This is the time (in seconds) between the sounding of alerts when the loop option is enabled.
- **Open automatically:** If enabled, Alerts widget will automatically "expand" when a configured alert is triggered.

**Note**

This check only takes effect when the widget is not deployed.

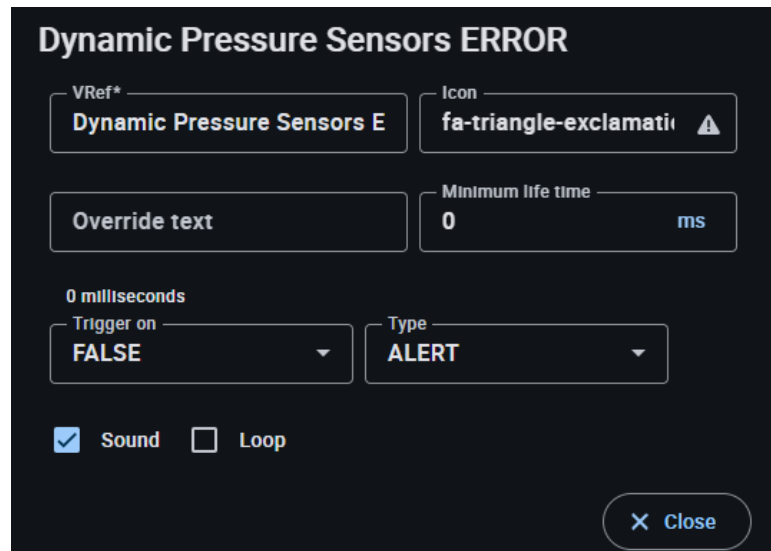
- **Add new var:** Press this button to add a new alert variable. They are configured below.
- **Add a new element alert to show in widget:** When adding a variable (by clicking on the 'Add new var' button), the following field is added to the configuration menu:




### Alerts configuration - Variables

Next, 2 buttons appear to configure the new variable added:

- **Settings var:** Pressing this button takes the user to the configuration menu of the added variable:



**Dynamic Pressure Sensors ERROR**

VRef\*  Icon  

Override text  Minimum life time  ms

0 milliseconds

Trigger on  Type

Sound  Loop

X Close

### Alerts configuration - Variables settings

- **VRef:** Users can select the desired bit variable to be displayed as an alert.
- **Icon:** Choose the icon to be displayed next to the variable. By default, it is an exclamation icon, as can be seen in the figure above.
- **Override text:** The alert name can be changed by typing a new one different from the variable name.

#### **Warning**

This does not rename the selected variable in the configuration, it is only the name shown in the alert.

- **Minimum life time:** Minimum delay before the alert activates.
- **Trigger on:** Users can choose when they want the alert to be displayed, when FALSE or TRUE. By default, FALSE is set.
- **Type:** Specifies the category of the notification. It is possible to choose between ALERT, WARNING, INFO, OK.

- **Sound:** Here users can choose whether each alert sounds or not by simply enabling/disabling it. By default, it is activated.
- **Loop:** If enabled, the sound of the selected alert will be looped with the delay time specified above.

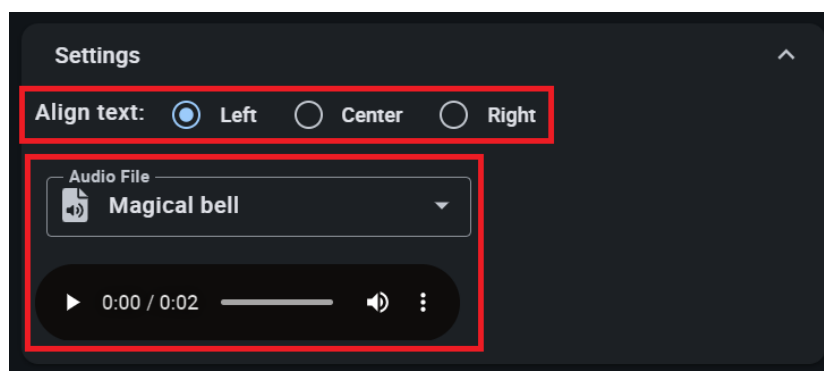
Otherwise, the alert sound will only play when the alert is triggered.

For example, if the delay is set to 3 seconds, the loop option is enabled and the selected variable is in fail mode, the alert sound will sound every 3 seconds.

**Important**

This is only available when Sound is activated.

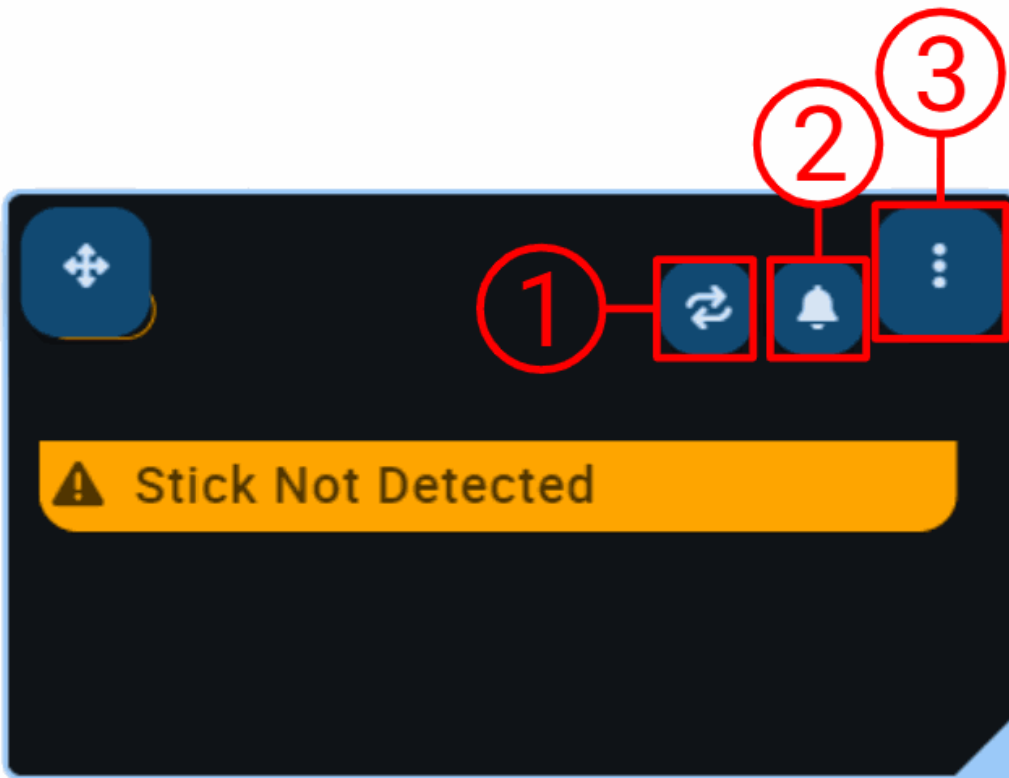
- **Close:** Save and close button.
- **Delete var.**
- **Settings:** Here the user can modify the settings common to all alerts:



#### Alerts configuration - Settings

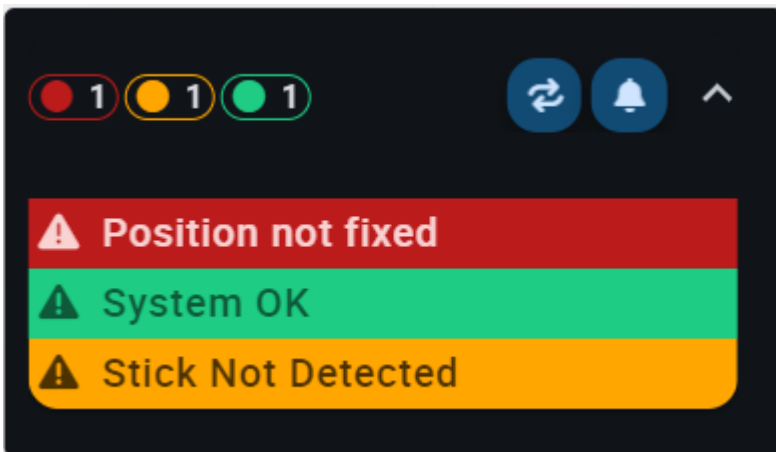
- **Align text:** The variable text can be left, center or right aligned.
- **Audio File:** Users can select the audio of the alert from the audio list.
- **Remove:** Deletes this widget.

After configuring at least one alert, the following actions appear:



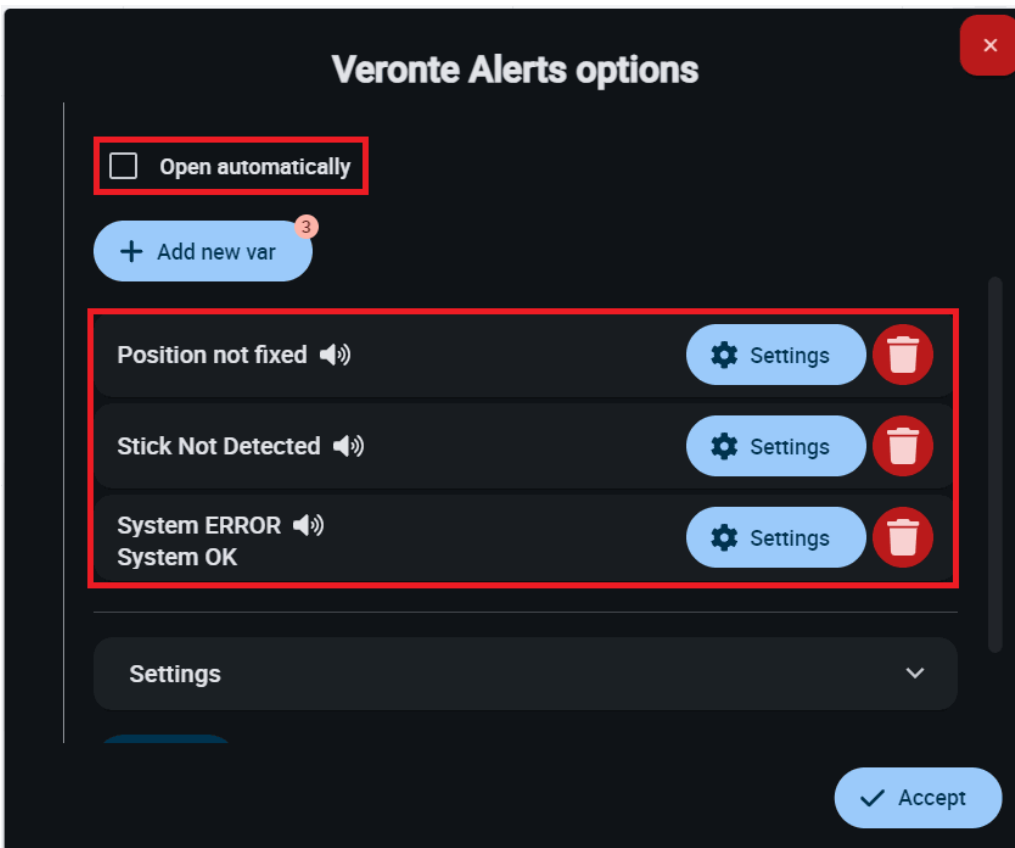
### Alerts

Some examples of alerts are shown below:



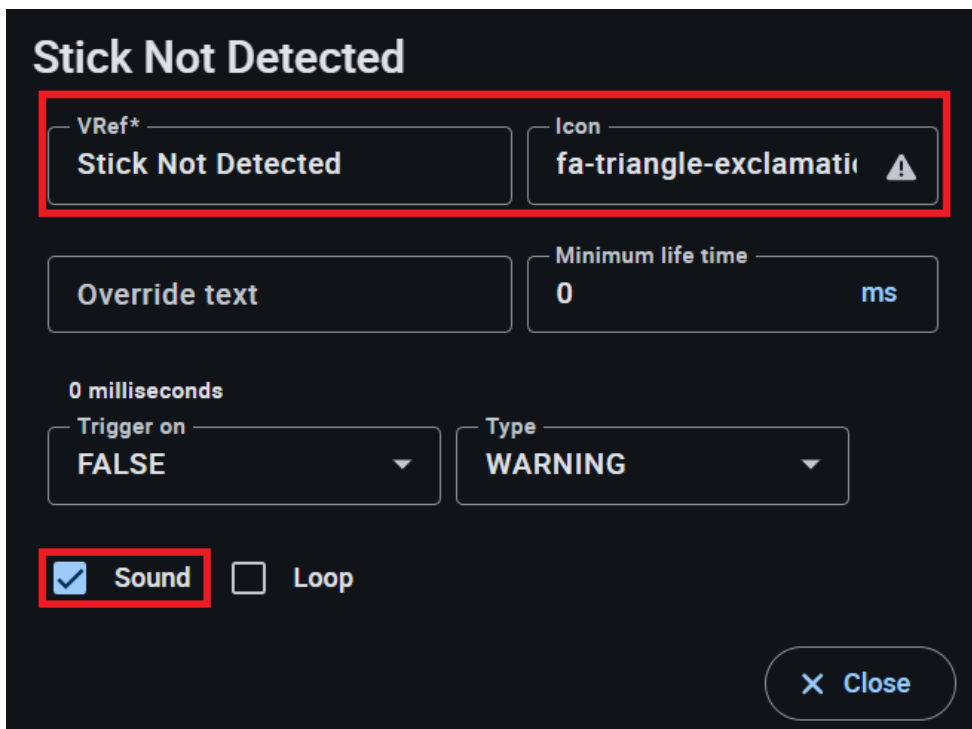
### Alerts example

The following figures show how these alerts have been configured:



Alerts configuration example

- **Stick Not Detected:** This alert has been defined as a warning, its icon has been replaced by another icon more related to the variable (a joystick icon) and has been configured without sound.



Alerts configuration example - Stick Not Detected

- **System Error:** This variable has been configured as an alert but it is triggered in successful state, so it is colored green. In addition, it has been customized with a different text from the variable name, with a 'check' icon and no sound.

**System ERROR**

VRef\* System ERROR Icon fa-triangle-exclamati ⚠

Override text System OK Minimum life time 0 ms

0 milliseconds

Trigger on FALSE Type OK

Sound  Loop

Close

Alerts configuration example - System Error

- **Position not fixed:** This alert has not been customized, it appears with the default configuration.

**Position not fixed**

VRef\* Position not fixed Icon fa-triangle-exclamati ⚠

Override text Minimum life time 0 ms

0 milliseconds

Trigger on FALSE Type ALERT

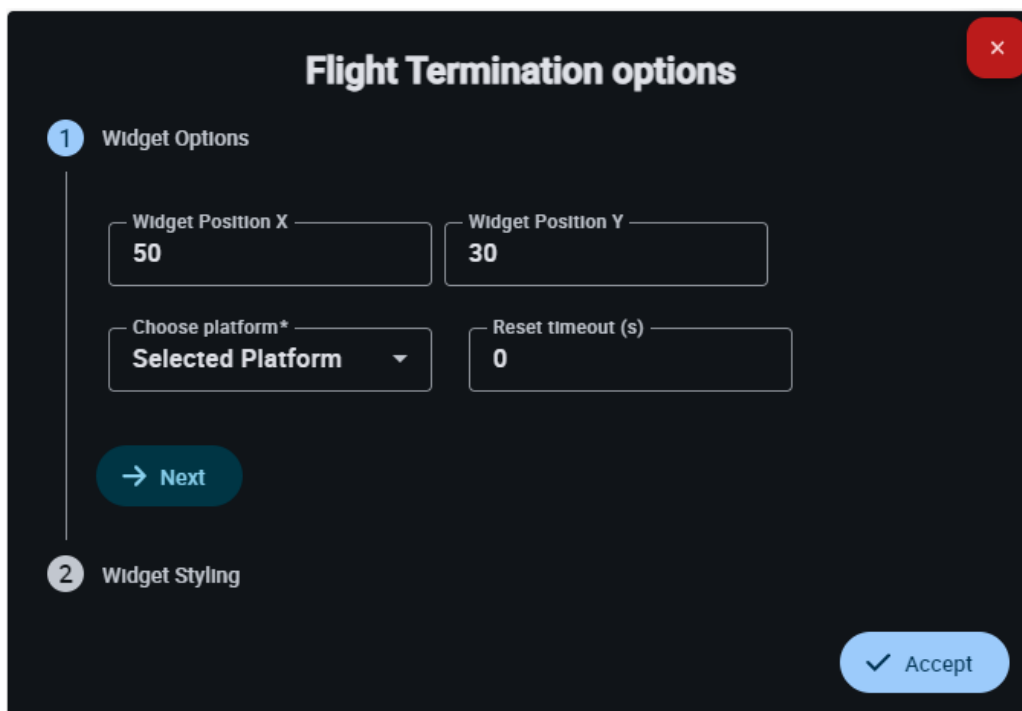
Sound  Loop

Close

Alerts configuration example - Position not fixed

## Flight Termination

**Interface dedicated to executing the Flight Termination System command via the specific message defined by the STANAG standard.**



The screenshot shows a dark-themed configuration window titled "Flight Termination options" with a red close button in the top right corner. The window is divided into two sections: "1 Widget Options" and "2 Widget Styling". In the "Widget Options" section, there are four input fields: "Widget Position X" with the value "50", "Widget Position Y" with the value "30", "Choose platform\*" with a dropdown menu showing "Selected Platform", and "Reset timeout (s)" with the value "0". A teal "Next" button with a right-pointing arrow is located below these fields. In the "Widget Styling" section, there is a light blue "Accept" button with a checkmark icon.

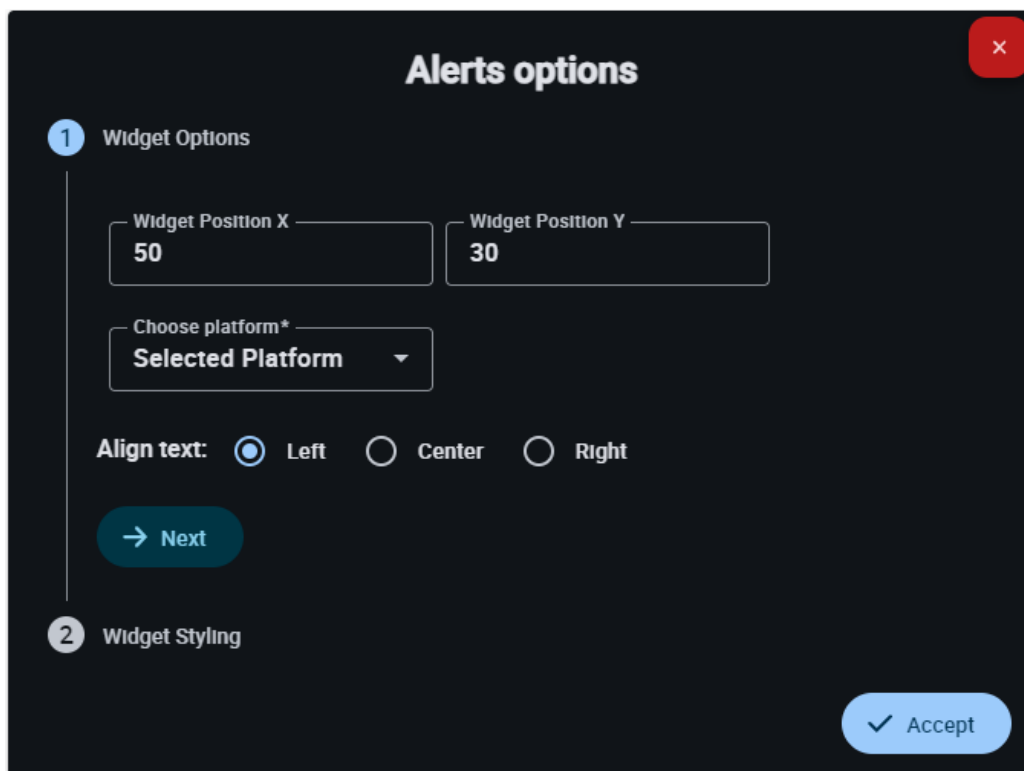
### Flight Termination options

**This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).**

- **Reset timeout (s):** Specifies the time after which the command or widget status is reset.

## Alerts

**Alert panel compliant with the STANAG 4586 standard; it displays exclusively the messages defined by the international protocol.**



The image shows a configuration dialog titled "Alerts options" with a dark background. It features a red close button in the top right corner. The dialog is divided into two sections: "1 Widget Options" and "2 Widget Styling". In the "Widget Options" section, there are two input fields: "Widget Position X" with the value "50" and "Widget Position Y" with the value "30". Below these is a dropdown menu labeled "Choose platform\*" with the selected option "Selected Platform". Underneath, there are three radio buttons for "Align text": "Left" (selected), "Center", and "Right". A teal "Next" button with a right arrow is positioned below the radio buttons. In the "Widget Styling" section, there is a light blue "Accept" button with a checkmark icon.

## Alerts options

This widget has extra edit parameter compared to the ones described in the [Widgets common configuration](#).

- **Align text:** This setting determines the horizontal justification of alert messages within the widget.

Electrical Report

**Tool based on STANAG messaging for real-time monitoring of the aircraft's electrical system parameters.**

**Electrical Report options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform\*: Selected Platform

Voltage Bus Unit\*: V

Current Bus Unit\*: A

→ Next

2 Widget Styling

✓ Accept

## Electrical Report options

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Voltage Bus Unit:** Allows selecting the unit of measurement for the bus voltage between V and mV.
- **Current Bus Unit:** Allows selecting the unit of measurement for the bus current between A and mA.

## Display

Static widgets do not depend on the selected platform, therefore the 'Choose platform' parameter will not appear in any of the widgets described below.

## Text

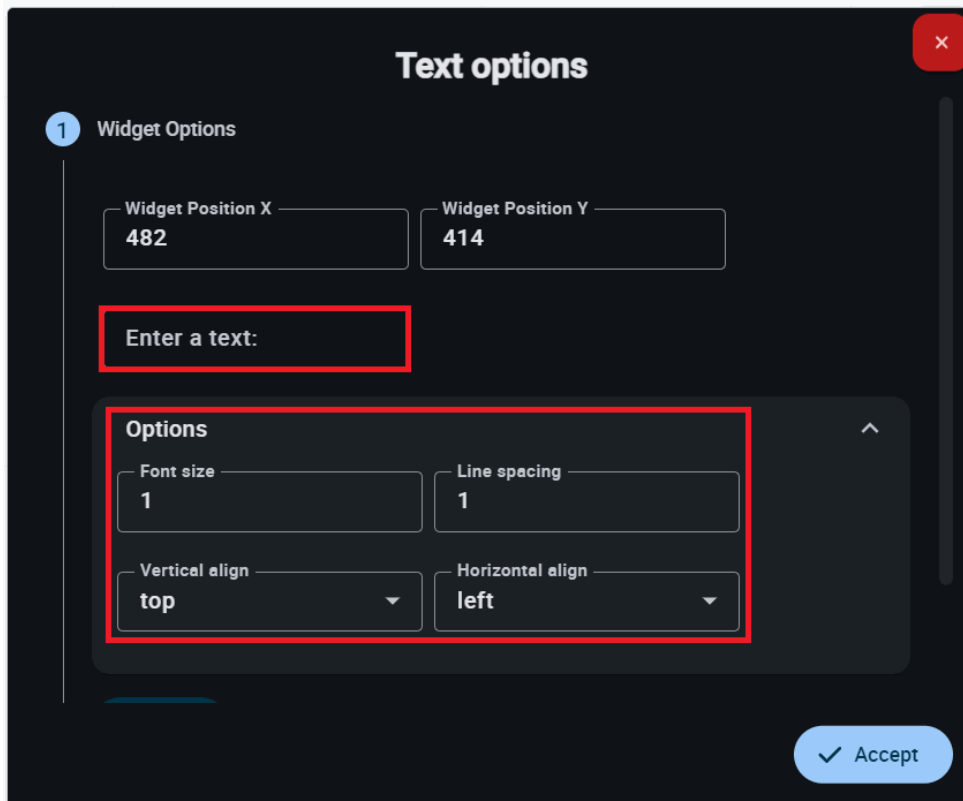
**Text widget** allows the user to insert text labels in the workspace.



## Text

Right click on the text to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Text configuration menu.
  - **Widget Options**:



### Text configuration

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Enter a text:** Enter the desired text to be displayed as a label.
- **Options:** The following options allow the user to customize the Text widget as desired:
  - **Font size:** The text size can be adjusted by the user. The value must be  $\geq 1$ .
  - **Line spacing:** When the text in the widget becomes a paragraph, this is the space between each line of that paragraph. The value must be  $\geq 1$ .
  - **Vertical align:** Text can be vertically aligned. The available options are center, bottom and top.

- **Horizontal align:** Text can be aligned horizontally. The available options are center, justify, left and right. The justify option only makes sense when the text is a paragraph.
- **Widget Styling:** This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).

Image

**Image widget allows the user to insert an image in the workspace.**

**Note**

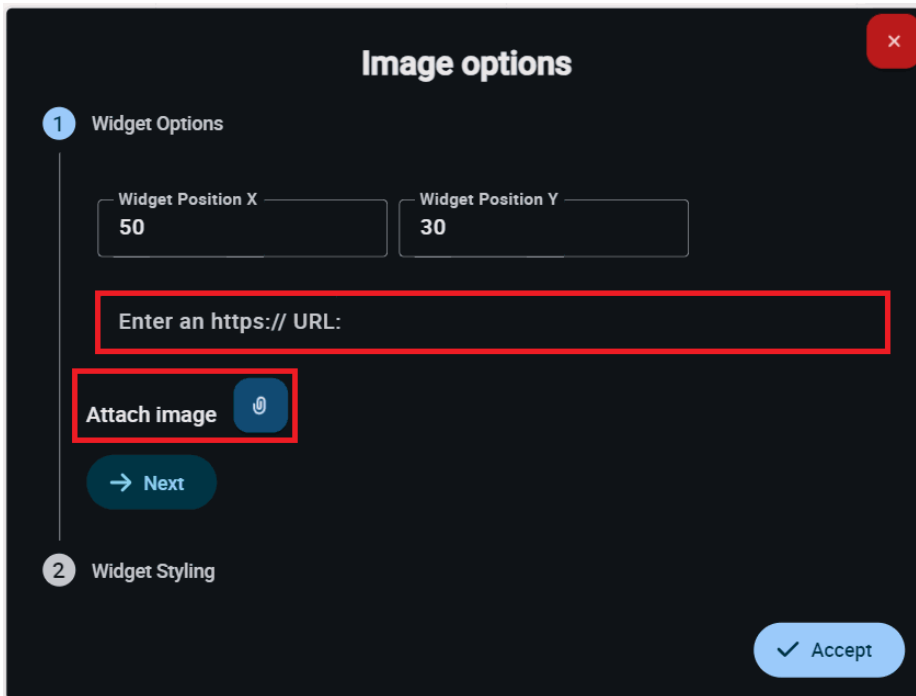
**A gif can also be added with this widget.**



Image

**Right click on the image to access its options (Duplicate, Edit and Remove).**

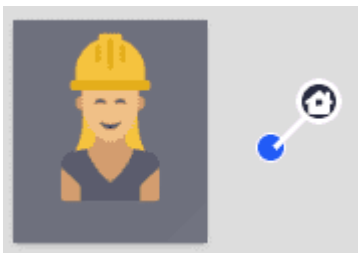
- **Options** → **Edit:** This allows the user to access the Image configuration menu.
  - **Widget Options:**



### Image configuration

- **Enter an https:// URL:** Users can enter the URL of the image to be displayed.
- **Attach Image:** It is possible to import an image from PC.
- **Widget Styling:** This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).

An example is given below:



### Image example

As can be seen in the figure below, this image has been imported from the browse.

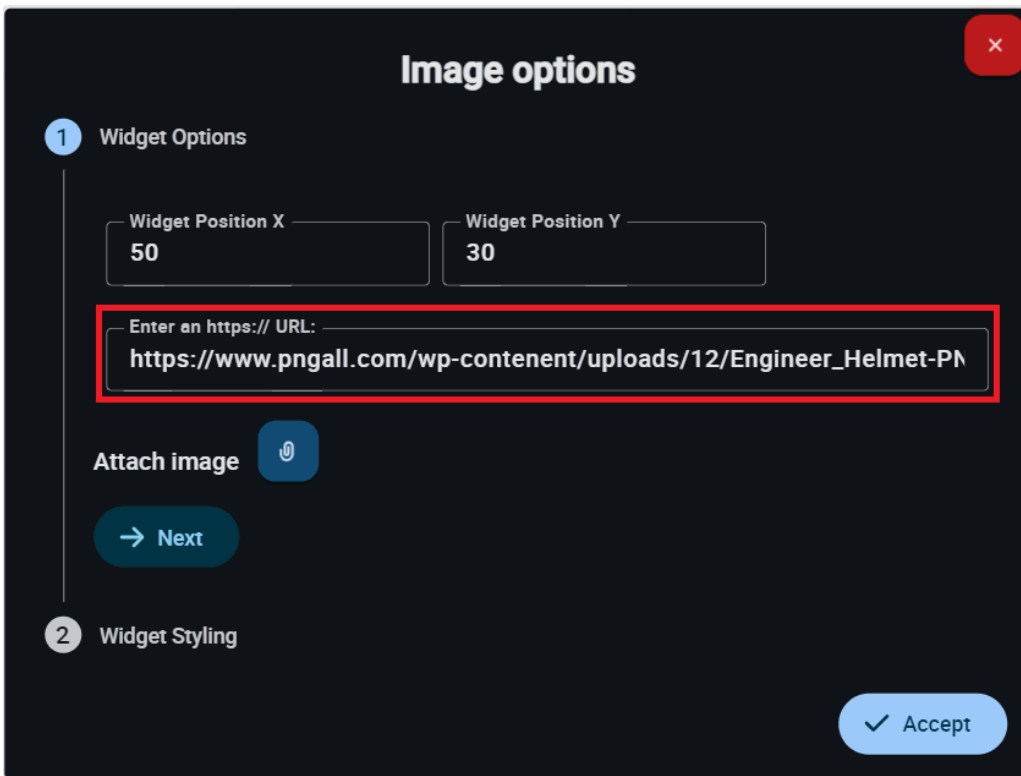


Image configuration - Widget Options example

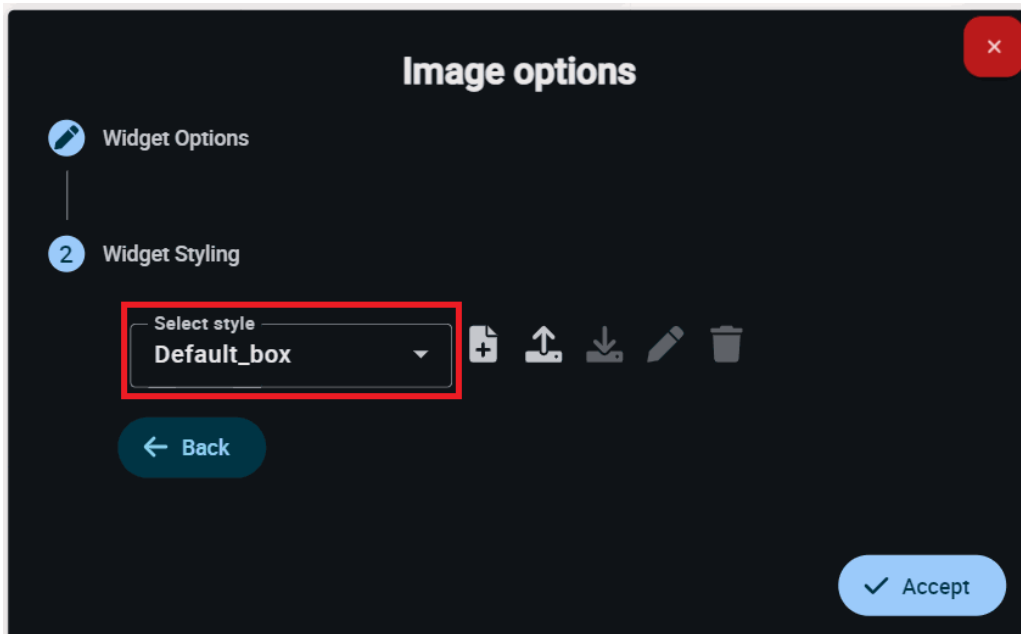
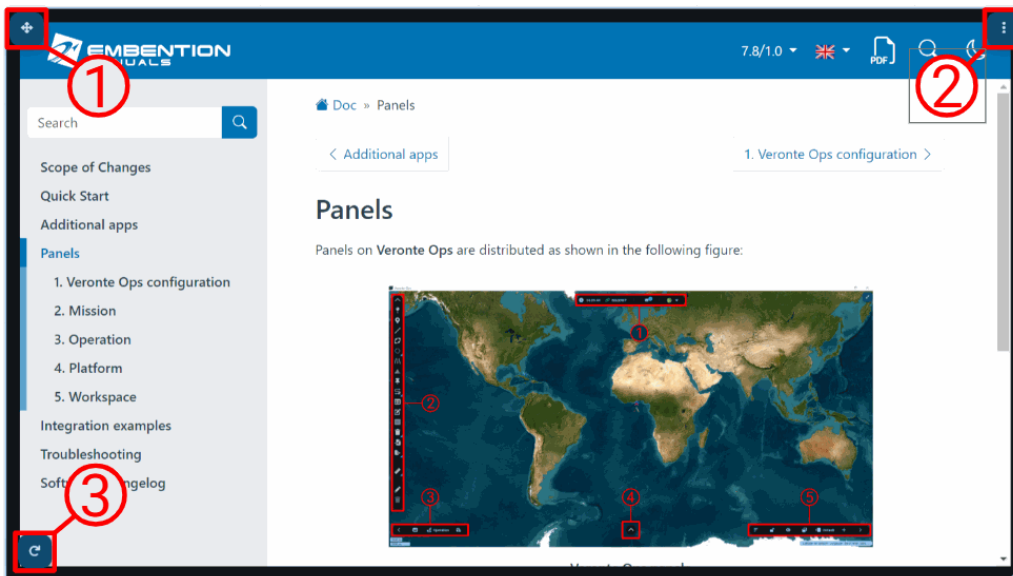


Image configuration - Widget Styling example

### Iframe

**Iframe widget allows the user to embed a web page as a widget in the workspace, as well as to visualize video from a gimbal camera.**

For example, useful websites could be: the windy website, the veronte operations manuals, the web application of the external radio if it is being used for operation, etc.



## Iframe

**1. Move:** Allows the user to move the widget to the desired position in the workspace.

**2. Options:**

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Iframe configuration menu.
- **Widget Options:**

### Iframe options

1
Widget Options
✕

Widget Position X

Widget Position Y

https://\*

?

(\*) If you use http you must enable non-secure content.  
 (\*) Problems with mixed-content.

→ Next

2
Widget Styling

✓ Accept

## Iframe configuration

- **https://** : Users can enter the URL of the web page to be displayed.

In order to be able to view the video recording from a gimbal and also tracking directly with the image, users must copy here the URL generated by the [Web Converter](#), which converts from RTSP to WebRTC.

### **Warning**

Please take into account the notes in the widget.

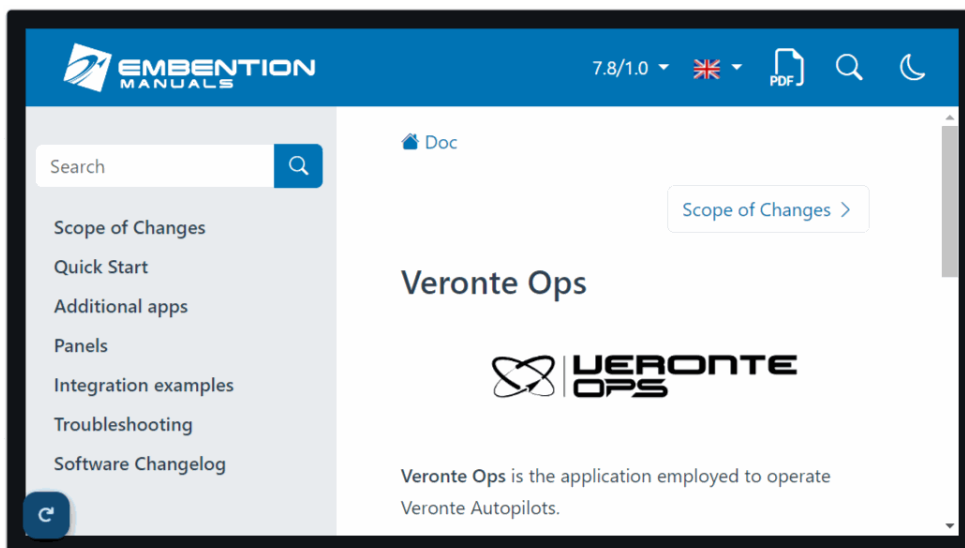
- **Widget Styling:** This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).

**3. Reload page:** Refreshes the web page embedded as a widget.

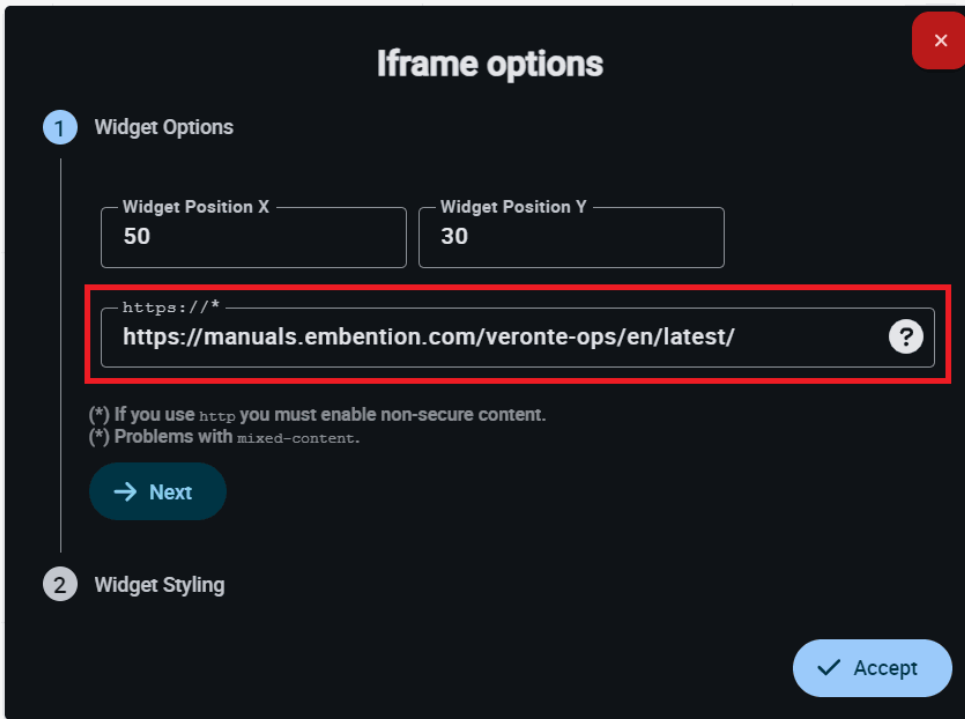
- **Remove:** Deletes this widget.

Some examples example are given below:

- **Example 1:**

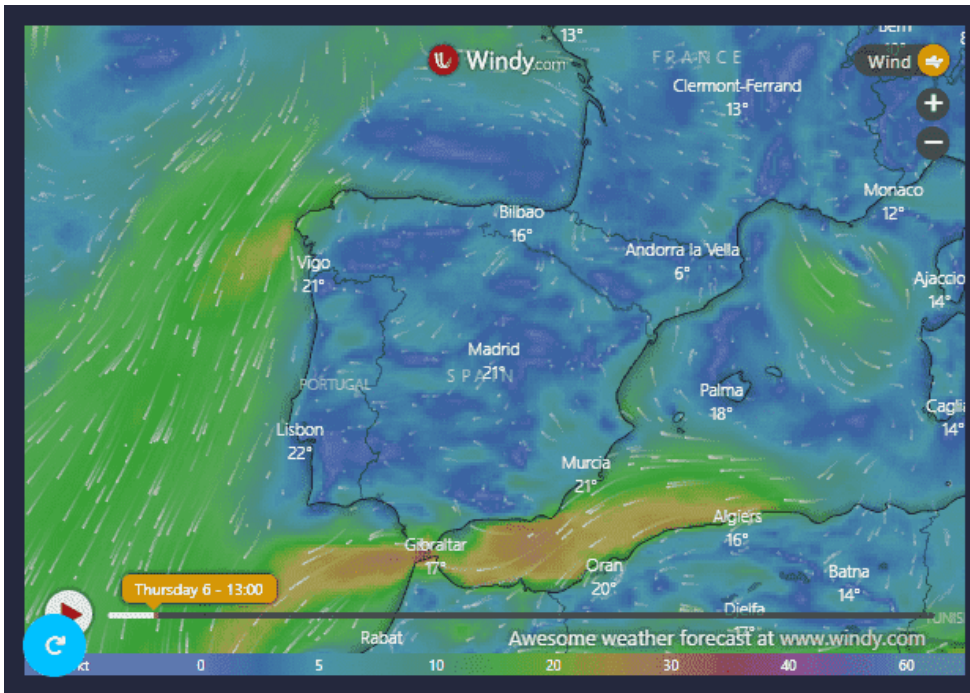


**Iframe example 1**

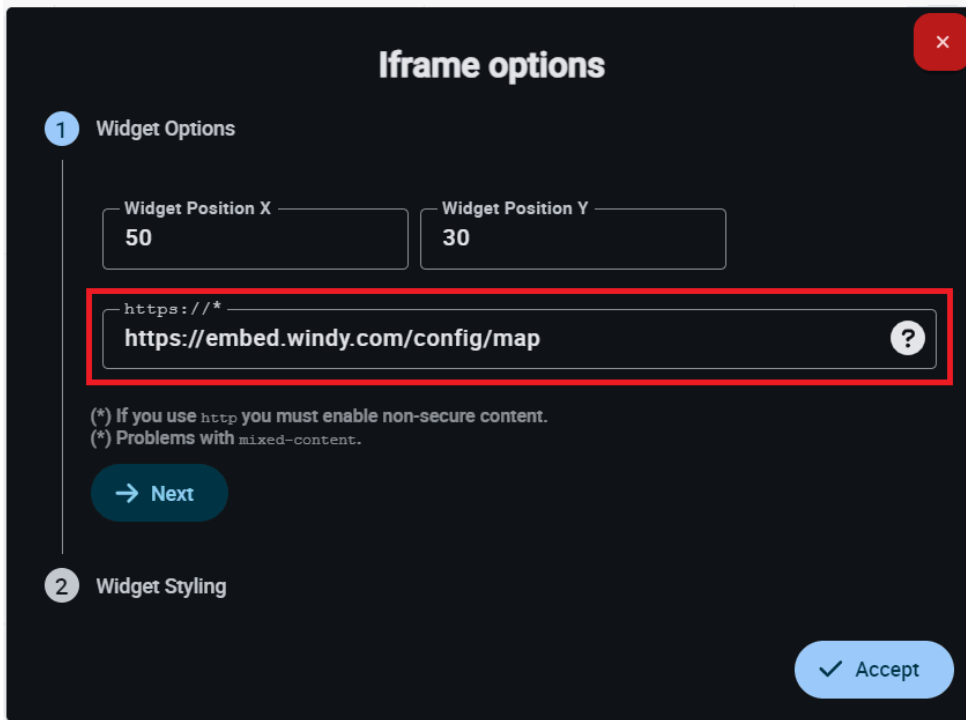


**Iframe configuration example 1**

• **Example 2:**



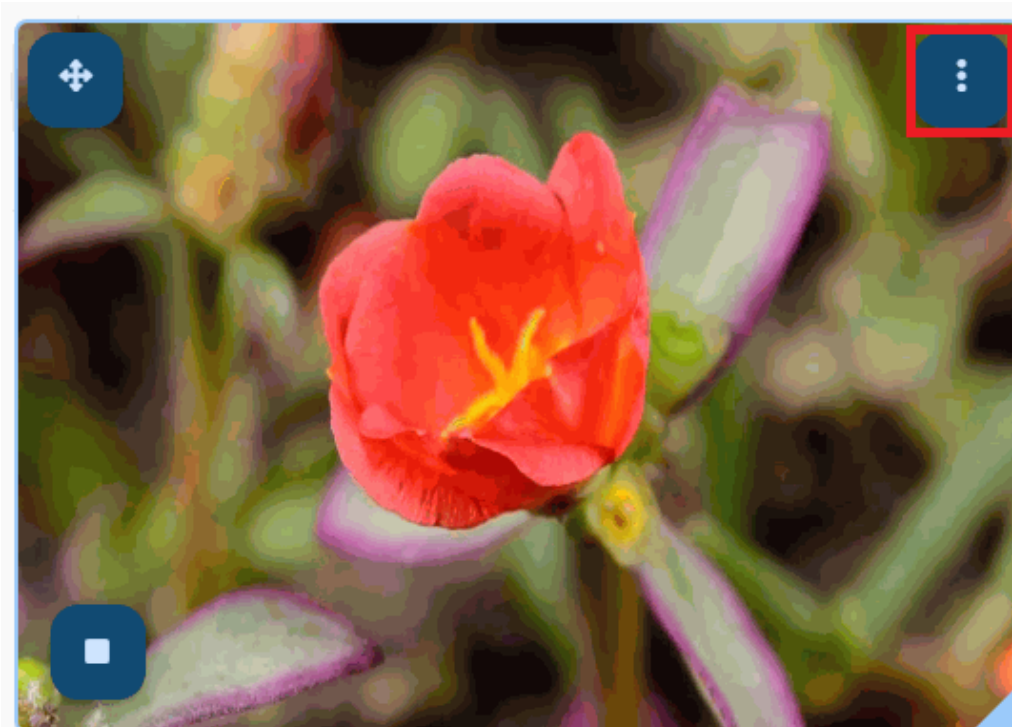
**Iframe example 2**



Iframe configuration example 2

Video

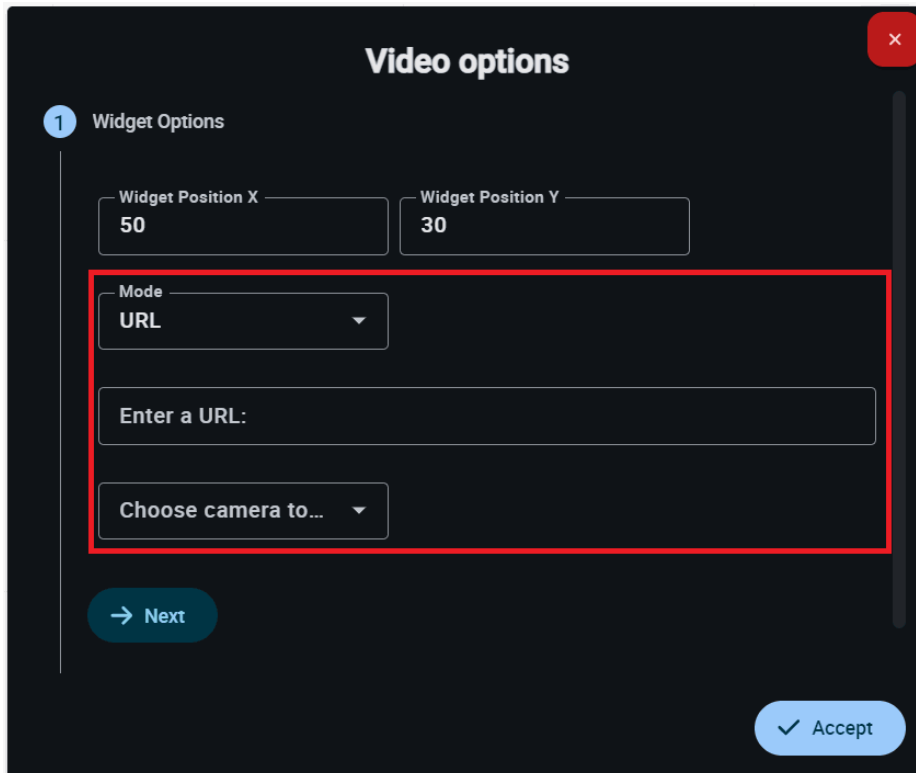
Video widget allows the user to insert a video in the workspace.



Video

Click the  button to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Video configuration menu.
  - **Widget Options**:



### Video configuration

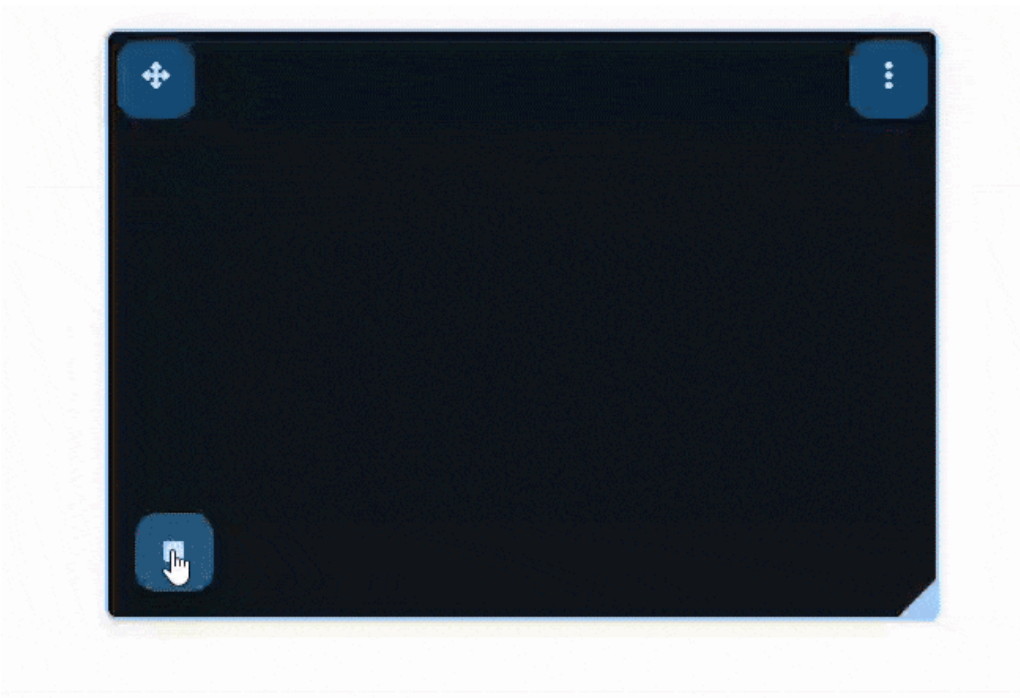
- **Mode**: Choos between URL, SCREEN, WEBCAM.
- **Enter a URL**: Users can enter the URL of the video to be displayed.

#### **Caution**

If URL mode has been selected, the video must be in `.mp4` , `.ogg` , `.webm` or `.avi` format.

- **Widget Styling**: This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).

An example is given below:



**Video example**

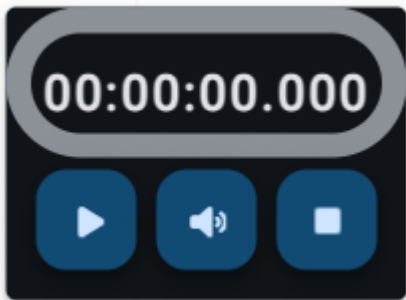
A "Video options" configuration dialog box with a red close button in the top right. It contains a section "1 Widget Options" with the following fields:

- Widget Position X: 50
- Widget Position Y: 30
- Mode: URL (dropdown)
- Enter a URL: interactive-examples.mdn.mozilla.net/media/cc0-videos/flower.webm (text input, with ".webm" highlighted in red)
- Choose camera to... (dropdown)
- Next (button)
- ✓ Accept (button)

**Video configuration example**

### Timer

**This widget is a counter, which can also function as a countdown counter if configured as such.**



Timer

Right click on the widget to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit:** This allows the user to access the Timer configuration menu.

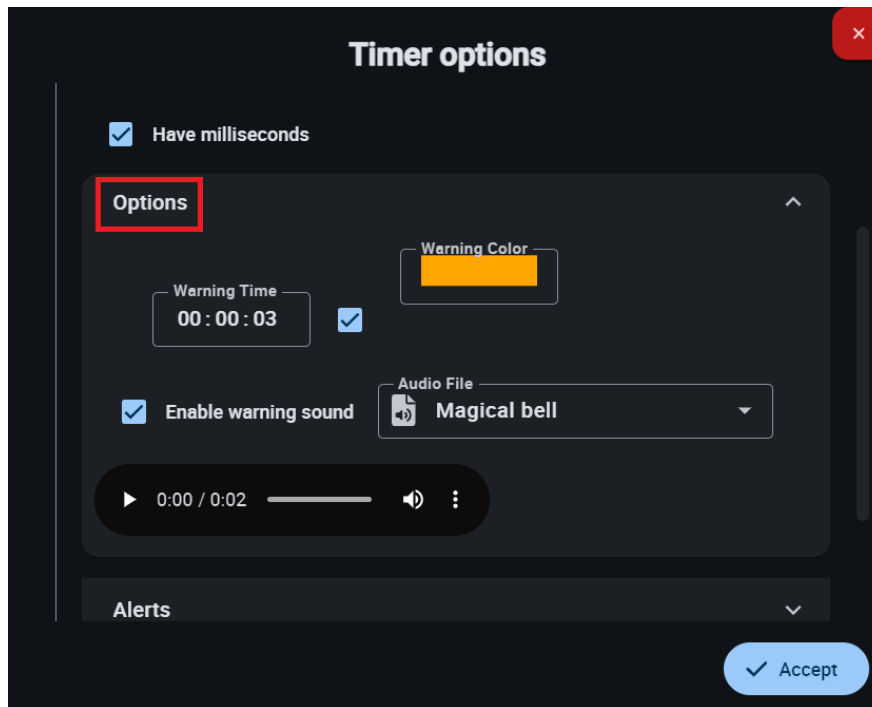
Timer configuration

- **Widget Options**

This widget has different edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Time:** Users must enter the desired counter time. Note that if the **Is countdown** checkbox is enabled, this becomes the **countdown time**.

- **Is countdown:** Enabling this option turns the widget into a countdown timer. Default is disabled.
- **Have milliseconds:** If enabled, the time will be displayed with milliseconds. By default it is enabled.
- **Options:** Users can set a warning time, color and sound for when the timer reaches the end of the set counter/ countdown time.



### Timer configuration - Options

- **Warning Time:** Time for the color and/or sound to be displayed until the end of the counter/countdown time.
- **Warning Color:** If enabled, this color shall be displayed flashing continuously from the time the warning time is reached until the end of the counter/countdown.
- **Audio File:** If enabled, the audio that users have selected from the audio list will play when the warning time is reached, sounding continuously until the end of the counter/countdown.

For example, if the audio file has a duration of 2 seconds and the warning time is set to 3 seconds, the audio will start playing for the first time from 3 seconds

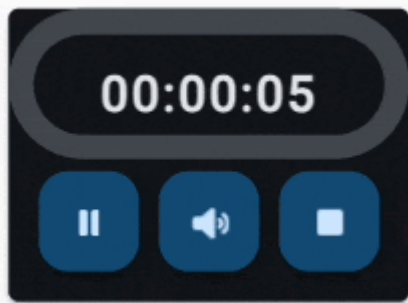
left until 1 second left and then play for the second time from 1 second left until the end.

In other words, the audio will sound 1.5 times.

**⚠ Important**

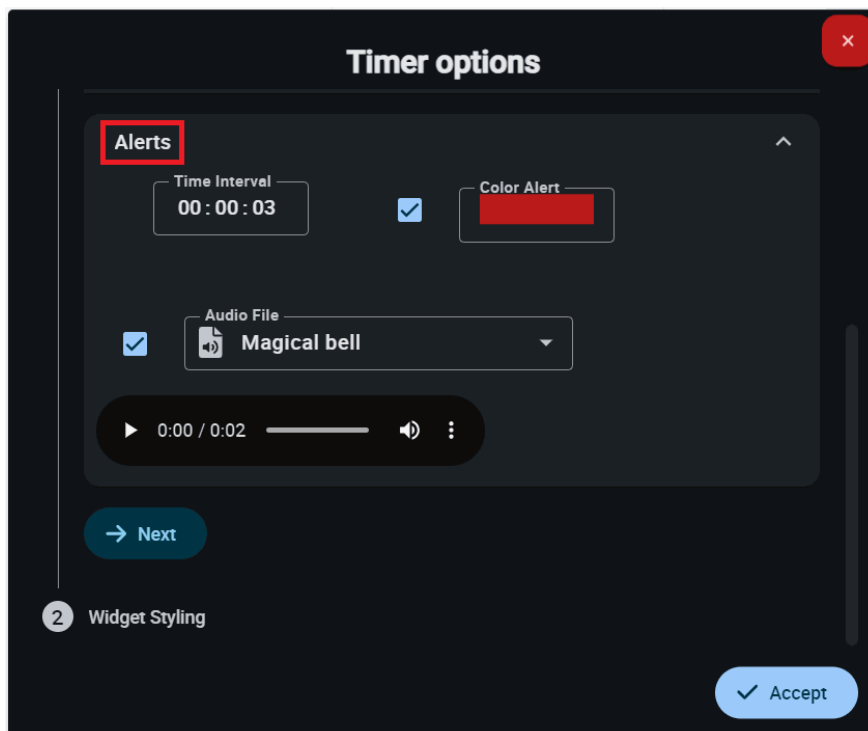
If Warning Color and Audio File parameters are disabled, the warnings will be disabled.

For example, if the timer is configured as a countdown with a time of 5 seconds and the warning time is set to 2 seconds, the widget will be displayed with the color and/or sound defined here each of those final 2 seconds, i.e. from 2 to 0 seconds:



Timer - Countdown example

- **Alerts:** Light and/or sound alerts can be activated every certain specified time.



Timer configuration - Alerts

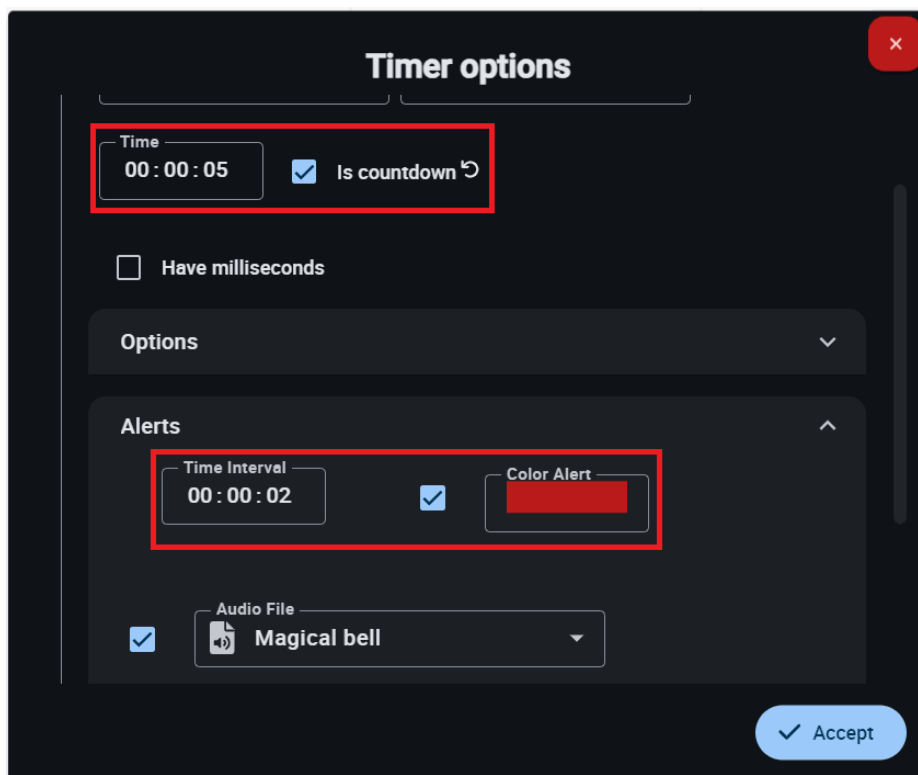
- **Time Interval:** The time interval for the light and sound alerts is set here.
- **Color Alert:** If enabled, the timer will have a light alert with the color specified here when the time interval elapses.
- **Audio file:** If enabled, the timer will have an audible alert with the audio specified here when the time interval elapses.

Users can select the audio of the alert from the audio list.

**Important**

If Color Alert and Audio File parameters are disabled, the alerts will be disabled.

An example is given below:

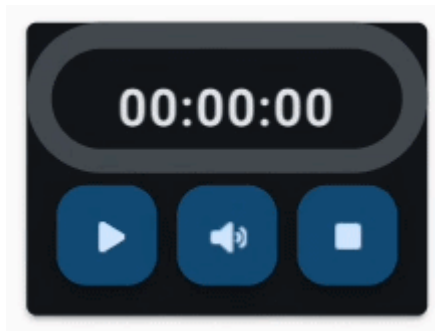


The screenshot shows a 'Timer options' dialog box with a dark background. At the top, there is a title 'Timer options' and a red close button. Below the title, there are several sections:

- Time:** A text input field containing '00 : 00 : 05' and a checked checkbox labeled 'Is countdown' with a circular arrow icon.
- Have milliseconds:** An unchecked checkbox.
- Options:** A dropdown menu.
- Alerts:** A section containing:
  - Time Interval:** A text input field containing '00 : 00 : 02' and a checked checkbox.
  - Color Alert:** A color selection box showing a red color.
- Audio File:** A checked checkbox and a dropdown menu showing 'Magical bell'.

At the bottom right, there is a blue 'Accept' button with a checkmark icon.

Timer - Alert example

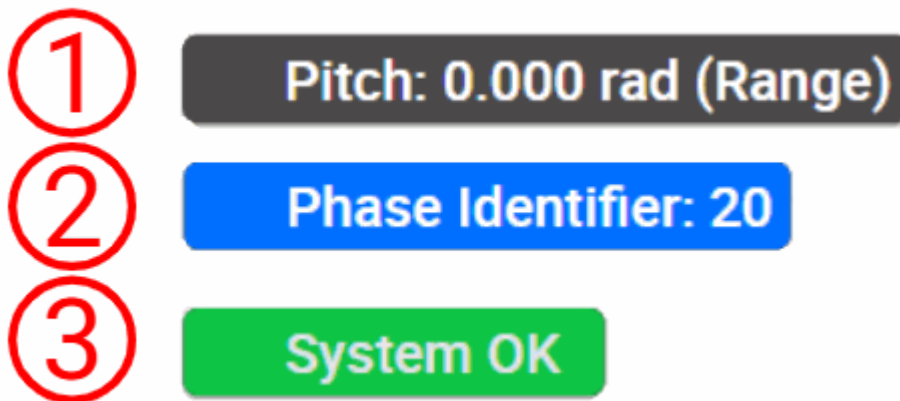


**Timer - Alert example**

## Telemetry

### Label

**Depending on the type of variable selected, the appearance of the label (by default) is different.**



### Label

- 1. Real variables: The units of the variable are displayed.**
- 2. Integer variables: Only the variable with its value is displayed.**
- 3. Bit variables: These labels have failure/success color.**

**Right click on the labels to access their options (Duplicate, Edit and Remove):**

- **Options** → **Edit: This allows the user to access the Label configuration menu.**

**Label options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

+ Add new variable

Phase Identifier

Settings

Settings

→ Next

✓ Accept

### Label - Option

Click 'Settings' to change the configuration.

**Phase Identifier**

Choose platform: Selected Platform

VRef\*: Phase Identifier

Override text variable

Alerts Ranges: 0

✕ Close

### Label - Settings

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the label.

- **Override text variable:** The label name can be changed by typing a new one different from the variable name.

**⚠ Warning**

This does not rename the selected variable in the configuration, it is only the name shown in the label.

- **Available with Bit variables.**

**System ERROR**

Choose platform  
Selected Platform

VRef\*  
System ERROR

Color Fail  
Color Success

Text Fail

Text Success

Override text variable

Close

### Bit variables - Settings

- **Color Fail/Success:** By default, when the bit variable is in 'fail mode', the label is red and when it is in 'success mode', it is green.
- **Text Fail:** The specific message to display during a failure state.
- **Text Success:** The message to display when everything is working.
- **Available with Real variables.**

**Pitch**

Choose platform  
Selected Platform

VRef\*  
Pitch

Unit Y  
rad

Decimals  
3

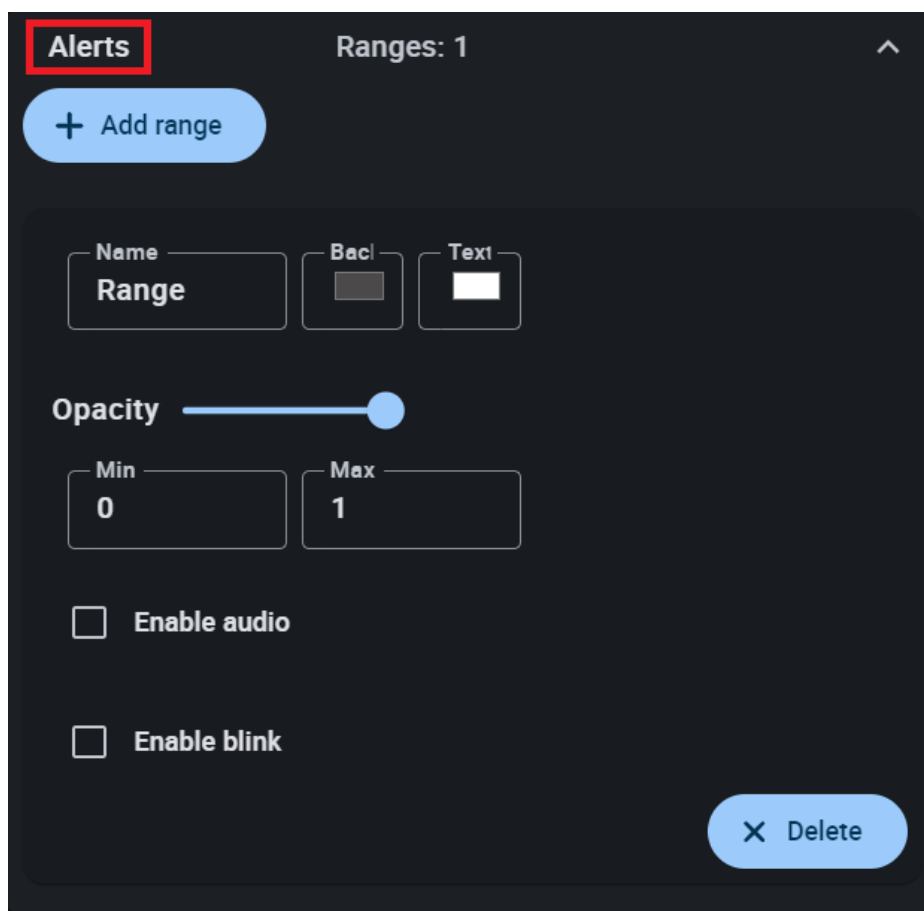
Override text variable

Alerts Ranges: 1

X Close

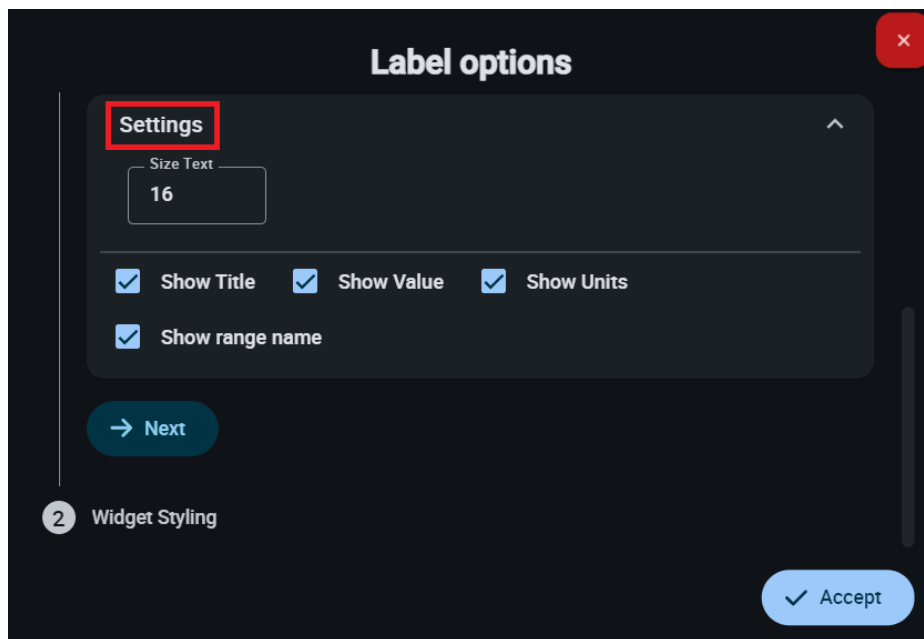
### Real variables - Settings

- **Unit:** Unit of measurement of the displayed variable.
  - **Note**  
This parameter is only available with Real variables.
- **Decimals:** Number of decimals displayed for the selected variable.
- **Alerts:** Allows the user to set different ranges. For this range several customizations can be made:



### Label configuration - Alerts

- **Name:** An identifier name of the range can be set.
- **Background color:** Changes the color of the label when the variable is in this range.
- **Text color:** Changes the color of the label text when the variable is in this range.
- **Opacity:** The opacity of the label can be customized in this interval.
- **Min/Max:** Defines the minimum and maximum values of the range.
- **Enable Audio:** Activates acoustic alerts and voice notifications to monitor the aircraft's status.
- **Enable Blink:** Enables the visual flashing of the label on the map to identify the aircraft during specific events or alarms.
- **Settings:** The 'shape' of the displayed text can be edited:



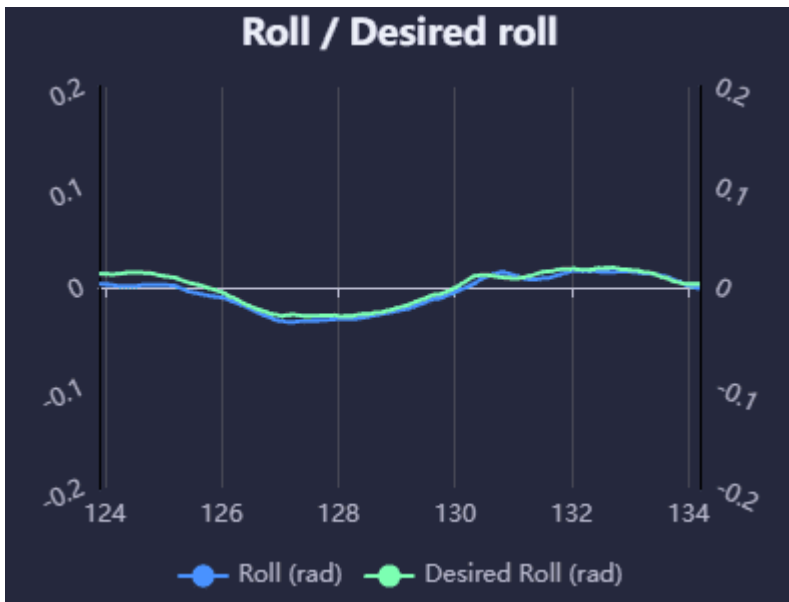
### Label configuration - Settings

- **Size text.**
- **Show Title/Value/Units:** The title, value and units of the variable can be shown/hidden.
- **Show range name:** If enabled, the name assigned to the range will appear next to the variable.

### Chart

**Charts widgets allow the user to represent any variable of the system with respect to time. Thus, the user can visualize the evolution of that variable over time.**

**It is very useful during flight tests (gain tuning) and operations to monitor the behavior of the platform.**



## Chart

Right click on the chart to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Chart configuration menu.

The 'Chart options' menu is displayed with a red border around the 'Title', 'Title size', and 'Time (sec)\*' fields. The 'Title' field is empty, 'Title size' is empty, and 'Time (sec)\*' is set to 60. Other fields include 'Widget Position X' (50) and 'Widget Position Y' (30). A blue button '+ Add new variable' and a grey button 'Add a new element to show' are also visible. An 'Accept' button is at the bottom right.

Field	Value
Widget Position X	50
Widget Position Y	30
Title	
Title size	
Time (sec)*	60

## Chart configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Title:** Title of the chart.
- **Title size:** Adjust the font size of the chart title for better visibility.
- **Time (sec):** Sets the refresh interval or the time window for the data displayed on the chart, measured in seconds.
- **Add new variable:** Click this button to link additional variables to the chart. The appearance of this series in the chart can be configured below:

#### Chart configuration - Series

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the chart.
- **Unit Y:** Unit of measurement of the displayed variable.

#### **Note**

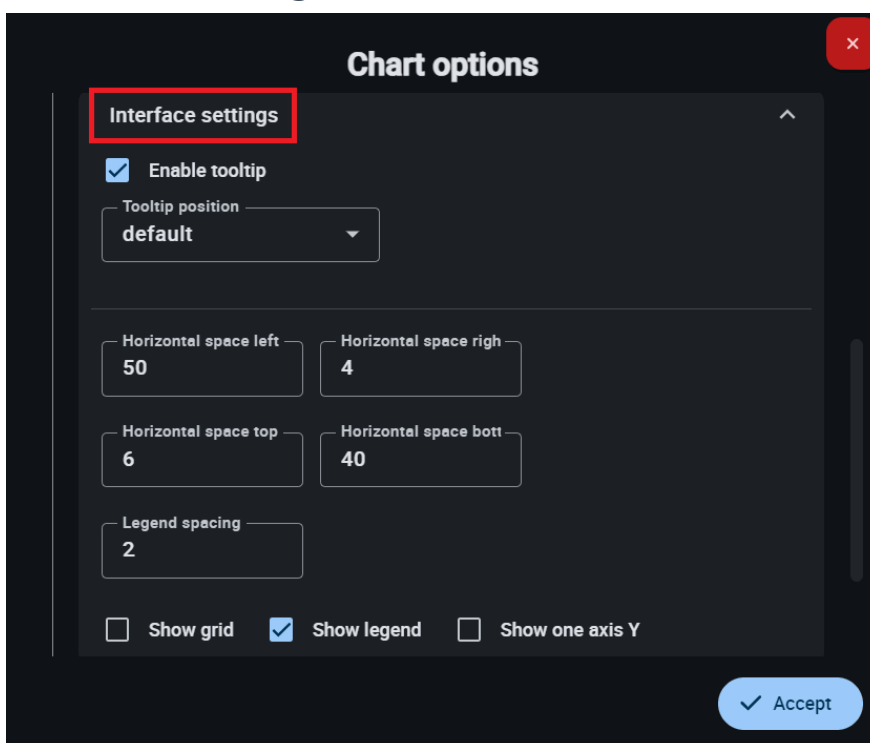
This parameter is only available with Real variables.

- **Decimals:** Number of decimals displayed for the selected variable.

**Note**

This parameter is only available with Real variables.

- **Auto Min/Max Y:** If enabled, minimum and maximum of the Y axis of the chart are automatically adjusted.
- **Color:** This is the color in which the line with the values of the series is drawn.  
By default, the first series is drawn in blue, the second in green, the third in yellow, the fourth in red, etc.
- **Min/Max Y:** Minimum and maximum Y axis of the chart can be adjusted manually.
- **Interface settings:**

**Chart configuration - Interface settings**

- **Tooltip position:** When users hover the mouse over the series, a tooltip appears with the exact value of the selected variable at that instant of time. It is then

possible to define where this tooltip is displayed in the chart, the available positions are:

- **default:** The tooltip position is set by default by the chart.
- **top:** The tooltip is displayed on the top center of the chart.
- **left:** The tooltip is displayed in the center left of the chart.
- **right:** The tooltip is displayed in the center right part of the chart.
- **bottom:** The tooltip is displayed in the bottom center of the chart.

Below is an example when the right position is selected:

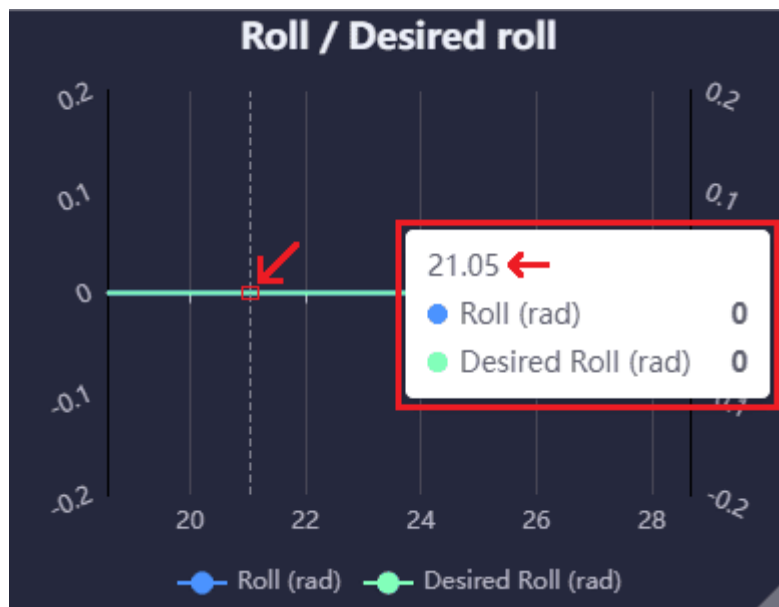


Chart configuration - Tooltip position

- **Horizontal space left/right:** The horizontal space left/right of the chart background can be customized. By default they are set to 50.
- **Show grid:** The grid of the chart can be shown/hidden.
- **Show legend:** The legend of the series can be shown/hidden on the chart.
- **Show one axis Y:** When more than one series is added, it is possible to show only one Y axis by enabling this option.

The following is an example of a typical chart used during operation:

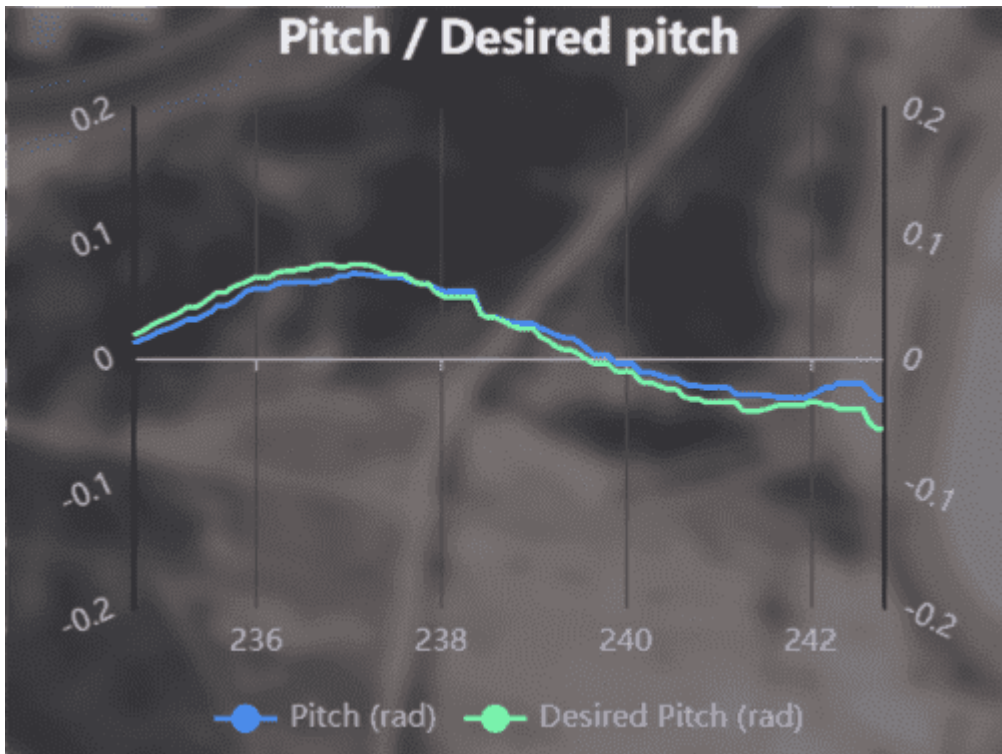


Chart example

The custom configuration made for this chart is as follows:

The 'Chart options' panel includes the following settings:

- Widget Position X: 50
- Widget Position Y: 30
- Title: (empty)
- Title size: (empty)
- Time (sec)\*: 60
- + Add new variable (2)
- Variables list:
  - Pitch -- rad (Settings, Delete)
  - Desired Pitch -- rad (Settings, Delete)
- Accept button

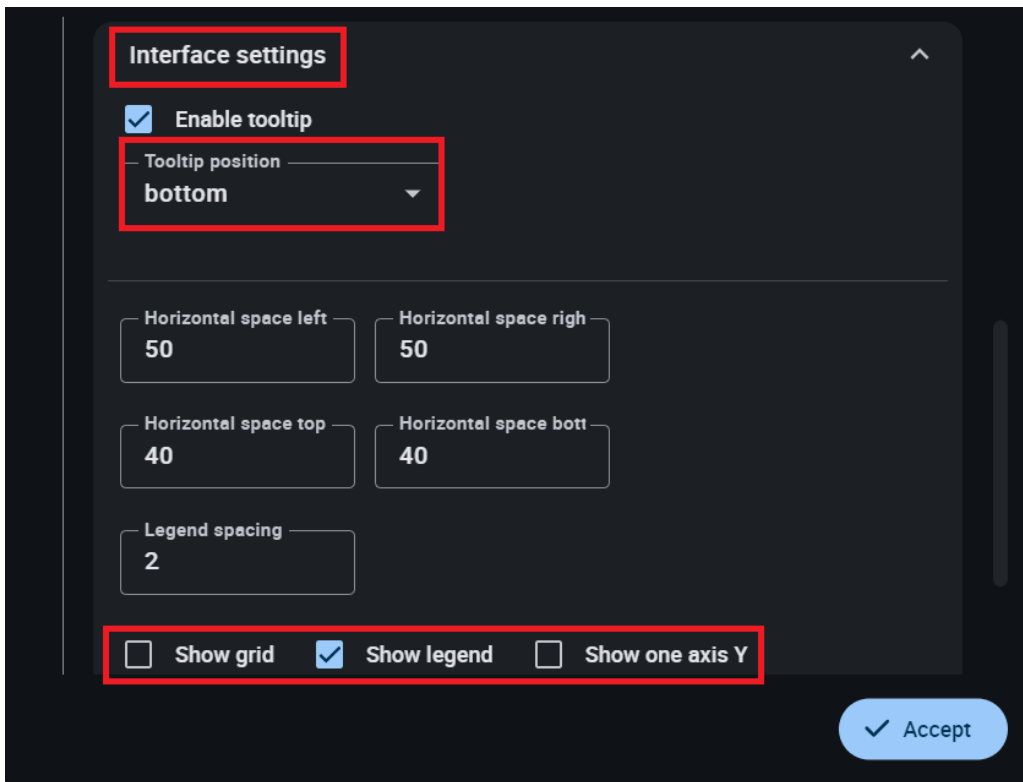
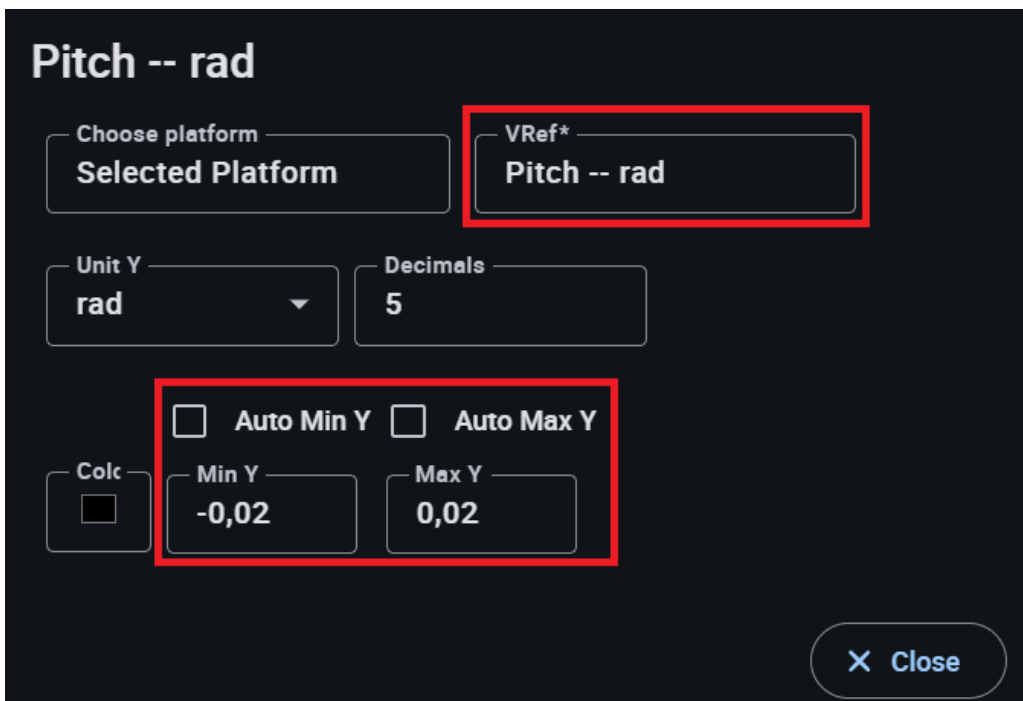


Chart configuration - Widget Options example



**Desired Pitch -- rad**

Choose platform  
Selected Platform

VRef\*  
Desired Pitch -- rad

Unit Y  
rad

Decimals  
5

Auto Min Y  Auto Max Y

Colc

Min Y  
-0,02

Max Y  
0,02

Close

**Chart configuration - Series example**

**Chart options**

Widget Options

2 Widget Styling

Select style  
Default\_box

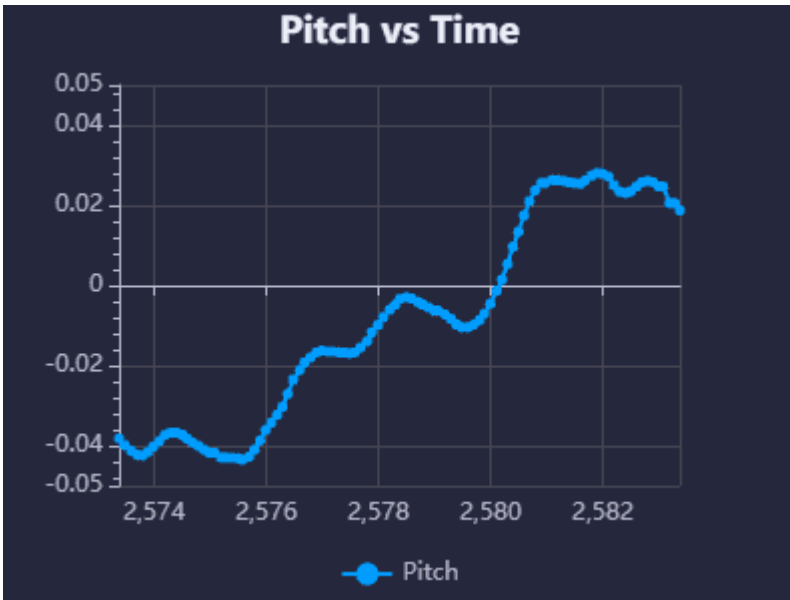
Back

Accept

**Chart configuration - Widget Styling example**

### Scatter

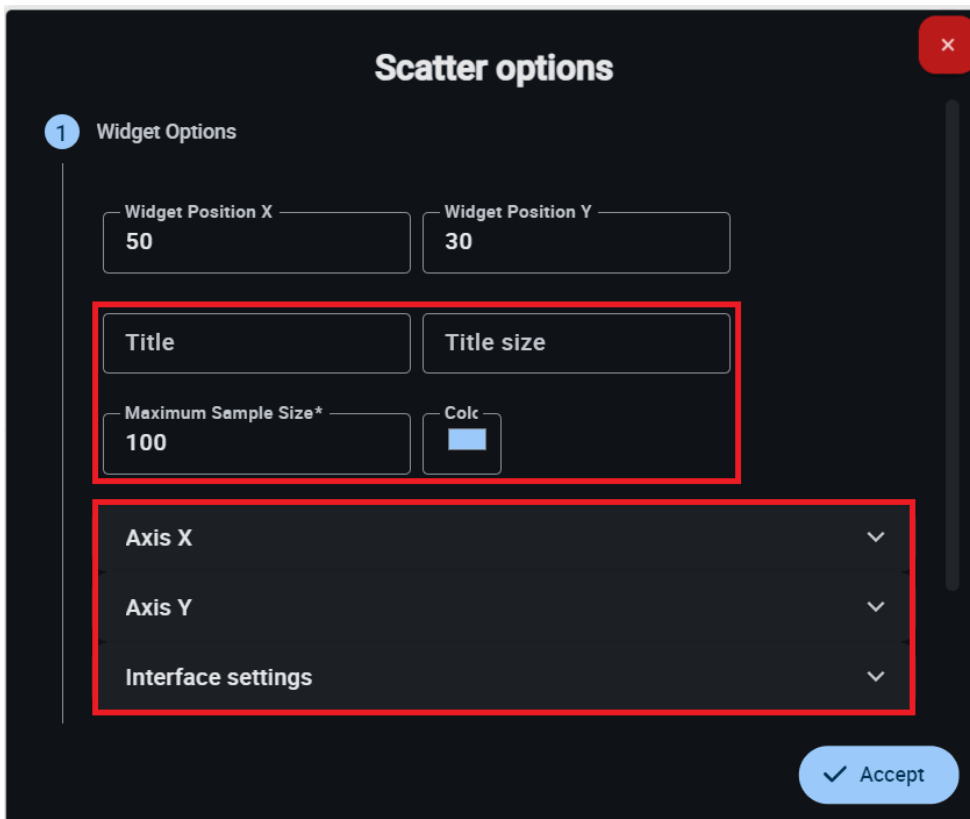
**Scatter widget allows the user to represent any variable in the system with respect to another variable.**



### Scatter

Right click on the scatter to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Scatter configuration menu.

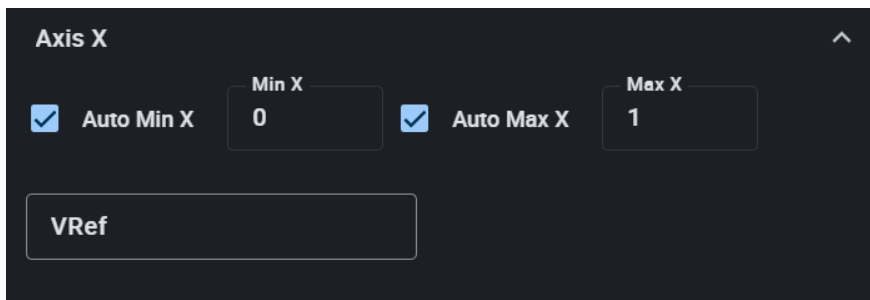


### Scatter configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Title:** Title of the scatter.
- **Title size:** Set the font size for the widget's title.
- **Maximum Sample Size:** Maximum number of samples of the selected variables that are drawn in the scatter. By default it is set to 100.
- **Color:** This is the color in which the values are drawn.
- **Axis X/Y:** The user must select the variables to be plotted on both axes.



#### Scatter configuration - Axis X/Y

The appearance of the variables in the scatter can then be modified:

- **Auto Min/Max X/Y:** If enabled, the minimum and maximum of the X/Y axes of the scatter are automatically adjusted.
- **Min/Max X/Y:** The minimum and maximum X/Y axes of the scatter can be adjusted manually.
- **VRef:** Users can choose any real, integer or bit variables to be displayed in the scatter.
- **Unit:** Unit of measurement of the displayed variable.

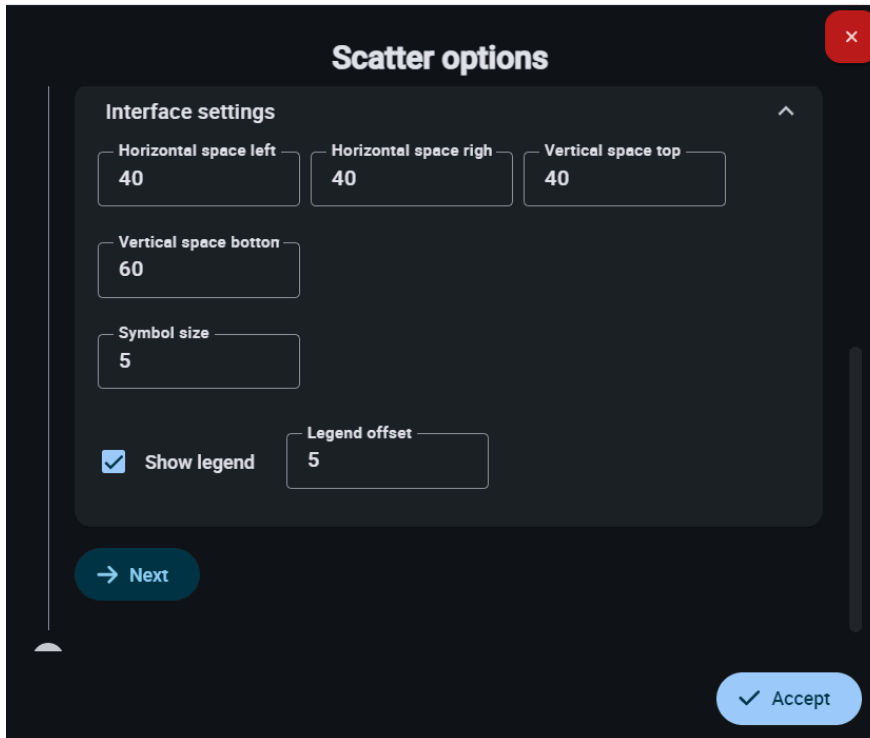
#### Note

This parameter is only available with Real variables.

- **Decimals:** Number of decimals displayed for the selected variable.

**Note**

This parameter is only available with Real variables.

**Interface settings:**

**Scatter options**

**Interface settings**

Horizontal space left: 40

Horizontal space right: 40

Vertical space top: 40

Vertical space bottom: 60

Symbol size: 5

Show legend

Legend offset: 5

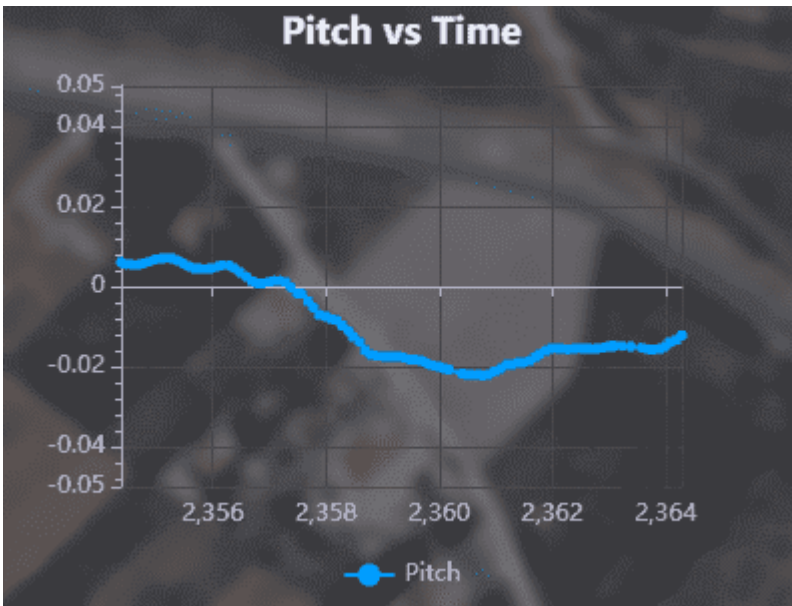
→ Next

✓ Accept

**Scatter configuration - Interface settings**

- **Horizontal space left/right:** The left/right horizontal spacing of the scatter background can be customized. By default they are set to 40.
- **Vertical space top/bottom:** The top/bottom vertical spacing of the scatter background can be customized. By default they are set to 40.
- **Symbol size:** The size of the symbol in the scatter (points) can be modified by the user. Default is set to 5.
- **Show legend:** The legend of the variable on the Y axis can be shown/hidden in the scatter.
- **Legend offset:** Vertical position of the legend relative to the bottom edge of the scatter, where 0 matches the bottom edge of the scatter. By default it is set to 5.

An example is given below:



Scatter example

The custom configuration made for this scatter is as follows:

**Scatter options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Title: **Pitche vs. Time**

Title size

Maximum Sample Size\*: 100

Colc: ■

Axis X

Axis Y

Interface settings

✓ Accept

### Scatter options

**Axis X**

Auto Min X    Min X: 0     Auto Max X    Max X: 1

VRef: Relative Timestamp -- s

Unit: s    Decimals: 2

Axis Y

Interface settings

→ Next

✓ Accept

### Scatter options

**Axis Y**

Auto Min Y    Min Y: -0.05     Auto Max Y    Max Y: 0.05

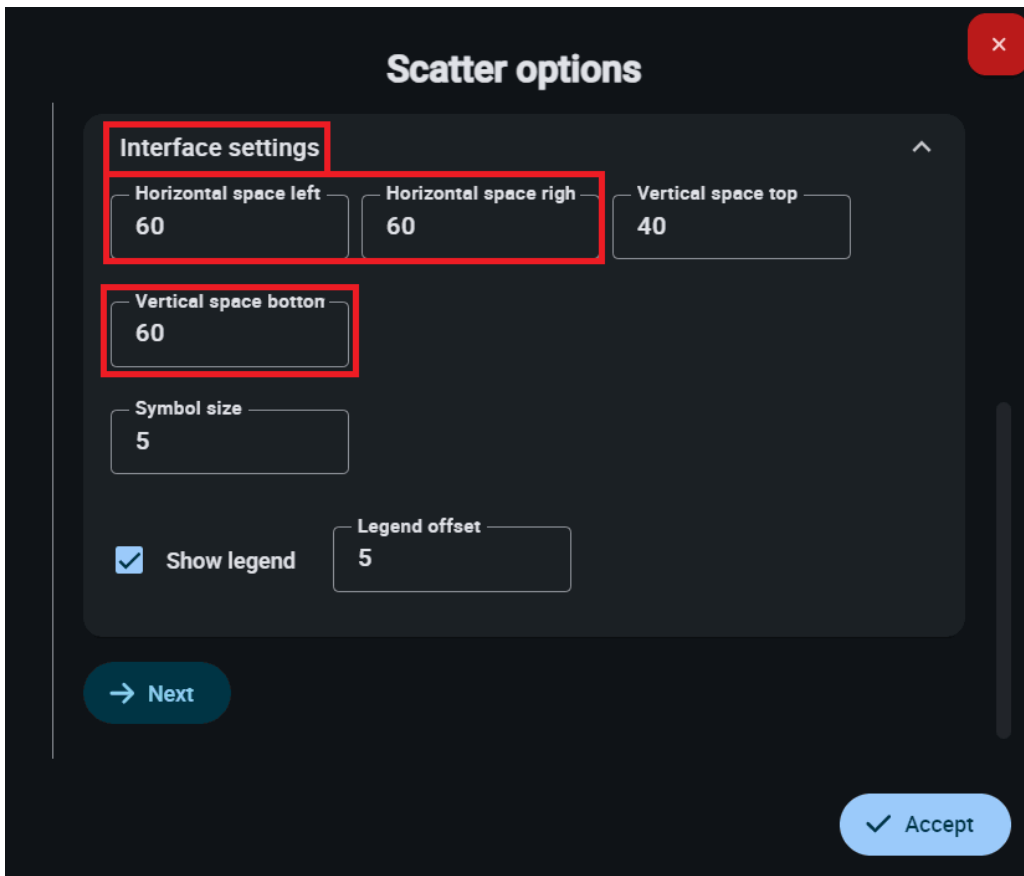
VRef: Pitch -- rad

Unit Y: rad    Decimals: 2

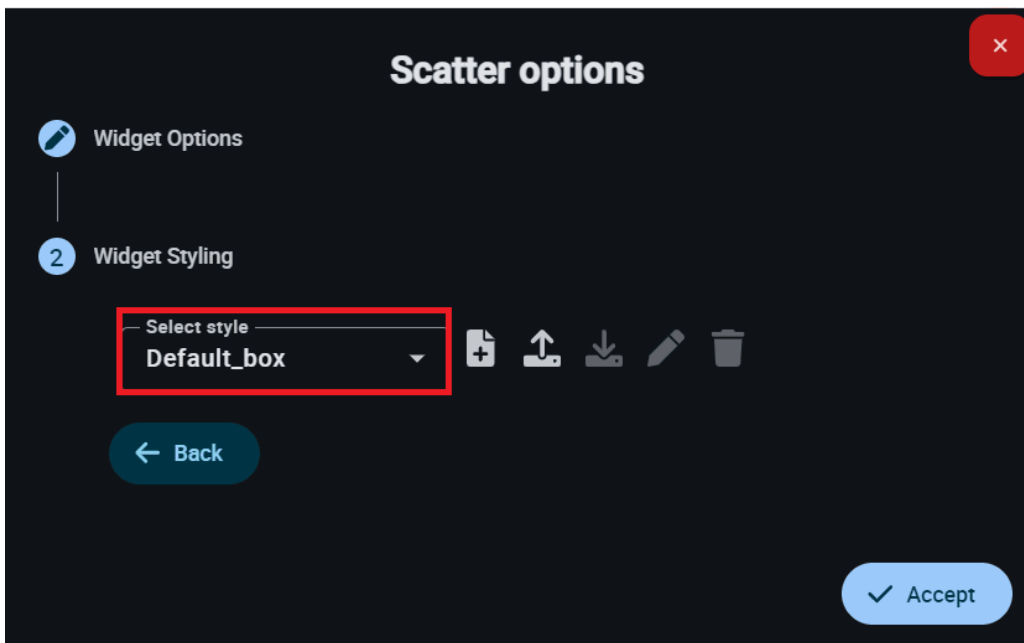
Interface settings

→ Next

✓ Accept



Scatter configuration - Widget Options example



Scatter configuration - Widget Styling example

### Gauge

**Gauge widget is a data visualisation tool that can be used to show the progress of data or display data in ranges in a precise and compact area.**

**This allows to display the progress of measurements in a circular arc or to see these numerical values in a range of colors that can have a certain meaning for the user.**



## Gauge

**Right click on the gauge to access its options (Duplicate, Edit and Remove).**

- **Options** → **Edit: This allows the user to access the Gauge configuration menu.**

**Gauge options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform: Selected Platform (VRef\*)

Values

Ranges: Ranges: 0

Reference settings

Pointer settings

Accept

## Gauge configuration

### o Widget Options

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the gauge.
- **Unit:** Unit of measurement of the displayed variable.

**Note**

This parameter is only available with Real variables.

- **Decimals:** Number of decimals displayed for the selected variable.

**Note**

This parameter is only available with Real variables.

- **Values:**

### Gauge configuration - Values

- **Min/Max:** Minimum and maximum values displayed on the gauge.
- **Start/End angle:** Start and end angle of the position of the minimum and maximum values respectively.
- **Ranges:** Allows the user to set different ranges.

#### **Warning**

The panel warns the user that for correct behavior, ranges must not intersect.

Several customizations can be made in the different ranges:

### Gauge configuration - Ranges

- **Name:** An identifying name for the range can be set.
- **Background color:** Sets the color of the gauge arc in this range.

- **Opacity:** The opacity of the circular arc can be customized in this range.
- **Min/Max:** Defines the minimum and maximum values of the range.
- **Remove:** Click to delete this range.
- **Reference settings:**

**Gauge options**

**Reference settings**

Show progress  Show progress + ranges  Show ranges

Not show

Show value  Show units  Show range name

References outside  Show ticks

Show variable name

Override variable name

Reference Size: 15 Reference position: 0

Label Size: 15 Label Position: 84

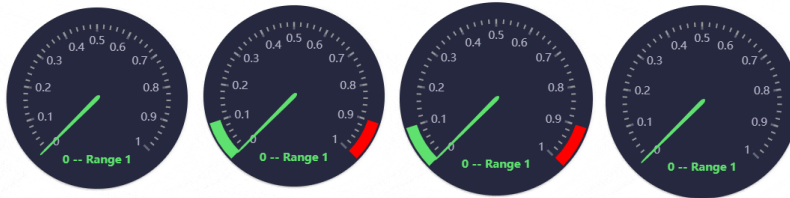
Colc  Opacity

Accept

### Gauge configuration - Reference settings

The gauge can be configured to show different cases:

- **Show progress:** Shows the progress arc of the selected variable in the gauge.
- **Show progress + ranges:** Displays the progress arc of the selected variable in the gauge together with the previously defined ranges.
- **Show ranges:** Displays the gauge only with the previously defined ranges.
- **Not show:** The needle indicates the value but neither the progress nor the ranges are shown in the gauge.



**Reference settings - 'Show progress', 'Show progress + ranges', 'Show ranges' and 'Not show' respectively**

**⚠ Important**

- **Only one of the four options described below can be selected.**
- **If the progress bar falls within a defined range, it will always be colored in the color of that range even when users choose not to display them.**

**In addition, this widget is highly customizable so that users can configure it to their wishes:**

- **Show value:** If enabled, displays on the gauge the value of the selected variable that the needle is pointing to.
- **Show units:** If enabled, displays the units of the value of the selected variable that the needle is pointing to.
- **Show range name:** If enabled, it displays, next to the value, the name of the range (previously defined) in which the value is in.

**In addition, the color of this text will be the same as that of its corresponding range.**

- **References outside:** References refers to the displayed axis and its numbering.

**By default, the arc axis numbering is "inside" the arc, by enabling it, it will be in the "outside" part.**

- **Show ticks:** Axis ticks can be shown/hidden. By default it is enabled, i.e. they are shown.
- **Override variable name:** Allows for the replacement of the default variable name with a custom label.

- **Reference Size:** The size of the axis numbering can be modified.
- **Reference position:** The position of the axis numbering can be adjusted by the user. The default position is 0.
- **Label Size:** The size of the text value can be modified.
- **Label Position:** The position of the value can be adjusted. The default position is at 70, at the bottom of the gauge.

If set to 0, the label will be in the center of the gauge.

- **Color:** This is the color in which the value is drawn.

**Note**

If ranges are defined and the value falls within a range, the color of the value will not be this selected color, but will be colored according to the color of the range the value is in.

- **Opacity:** The opacity of the progress arc can be customized in this range.

**Tip**

This is useful when the option Show progress + ranges \* has been selected. Since if a range is overpainted by the progress bar, users can still see where the range is.

- **Pointer settings:** Here the user can configure the pointer of the gauge.

**Gauge configuration - Pointer settings**

- **Choose pointer:** Users can choose a desired pointer from the list. If none is selected, no pointer will be drawn.
- **Pointer Offset Center:** Position of the "start" of the needle with respect to the center of the gauge. Default is set to 5.
- **Pointer width:** Width of the pointer. The default width is 6.
- **Pointer length:** Pointer length is set as a percentage of the distance between the center and the edge of the gauge.

An example is given below:



**Gauge example**

**The custom configuration made for this gauge is as follows:**

**Gauge options**

1 Widget Options

Widget Position X: 50      Widget Position Y: 30

Choose platform: Selected Platform      VRef\*: Stick - Throttle -- --

Unit: [dropdown]      Decimals: 2

Values

Min\*: 0      Max\*: 1      Start angle\*: 260      End angle\*: 280

Accept

Gauge configuration - Values example

+ Add range      For correct behaviour, ranges must not intersect

Name: Start      Back: [Green]

Opacity: [Slider]

Min: 0      Max: 1

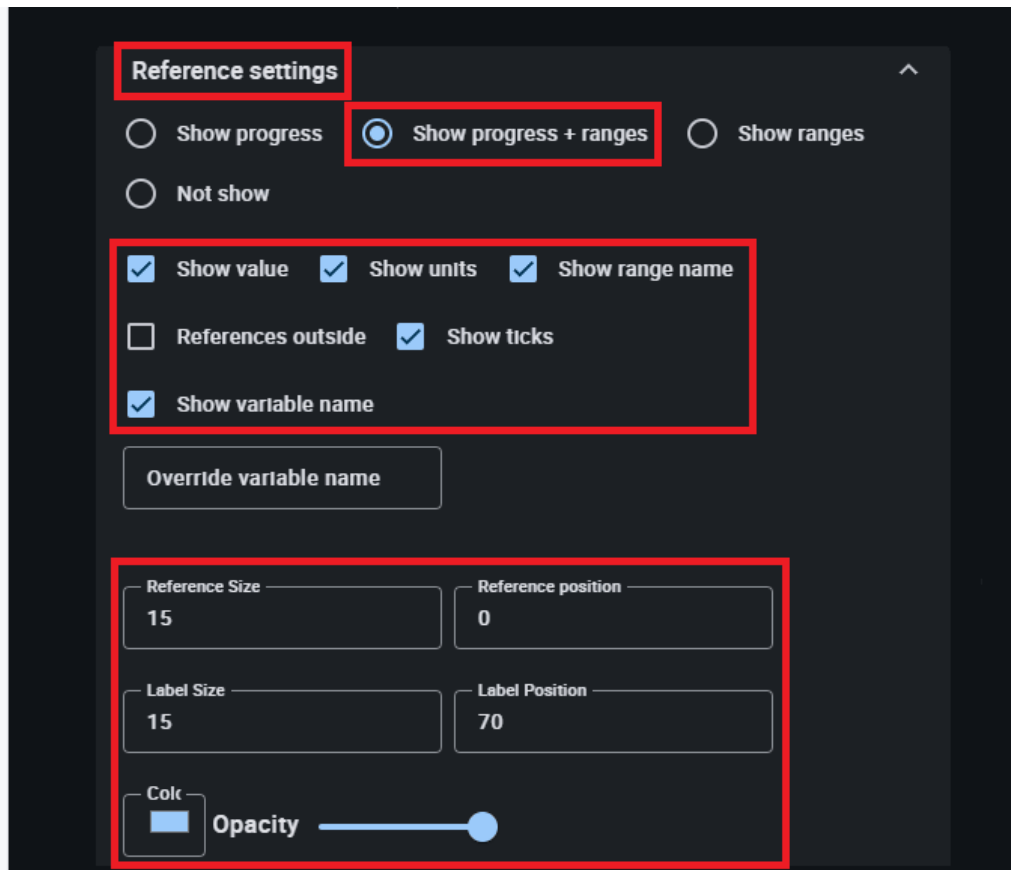
Name: Caution      Back: [Yellow]

Opacity: [Slider]

Min: 0.8      Max: 1

Delete

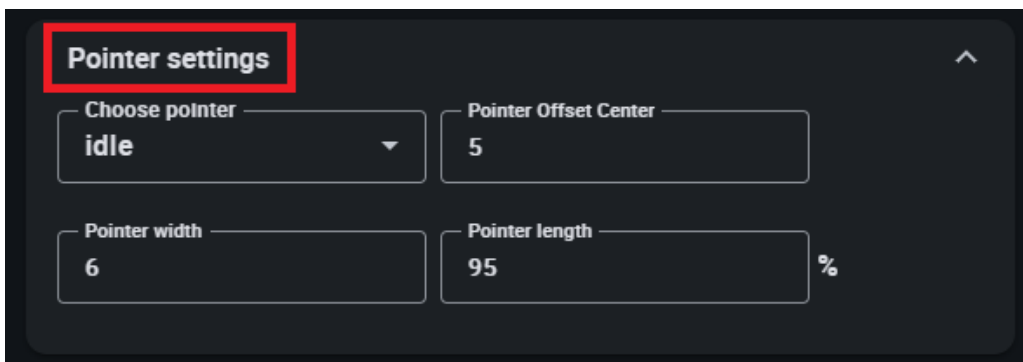
Gauge configuration - Ranges example



The image shows a dark-themed settings panel titled "Reference settings". It contains several sections:

- Display Mode:** Three radio buttons: "Show progress" (unselected), "Show progress + ranges" (selected), and "Show ranges" (unselected). A fourth option "Not show" is also present.
- Visibility Toggles:** A group of checkboxes: "Show value" (checked), "Show units" (checked), "Show range name" (checked), "References outside" (unchecked), "Show ticks" (checked), and "Show variable name" (checked).
- Override:** A text input field labeled "Override variable name".
- Dimensions:** Four input fields: "Reference Size" (15), "Reference position" (0), "Label Size" (15), and "Label Position" (70).
- Color and Opacity:** A color selection box labeled "Color" and a slider labeled "Opacity".

Gauge configuration - Reference settings example



The image shows a dark-themed settings panel titled "Pointer settings". It contains several input fields:

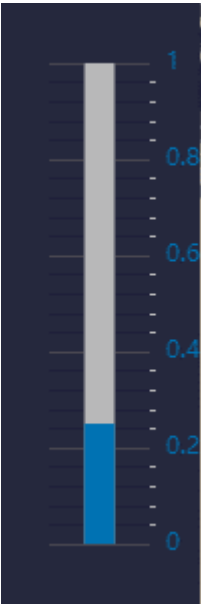
- Choose pointer:** A dropdown menu with "idle" selected.
- Pointer Offset Center:** An input field with the value "5".
- Pointer width:** An input field with the value "6".
- Pointer length:** An input field with the value "95" and a percentage symbol (%) to its right.

Gauge configuration - Pointer settings example

Bar

**Bar widget graphically displays the value of a selected variable by means of a bar. In addition, color ranges can be specified according to specific values.**

**The appearance of this widget is highly customizable, allowing the user to adapt it to the desired use.**



## Bar

Right click on the bar to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Bar configuration menu.

## Bar configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the bar.
- **Unit:** Unit of measurement of the displayed variable.

**Note**

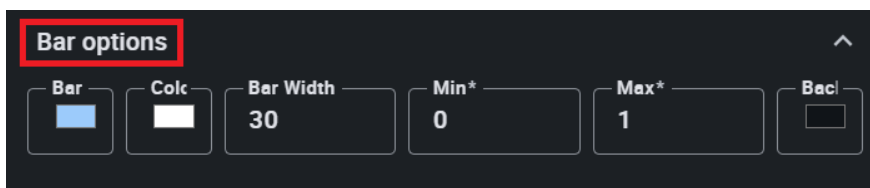
This parameter is only available with Real variables.

- **Decimals:** Number of decimals displayed for the selected variable.

**Note**

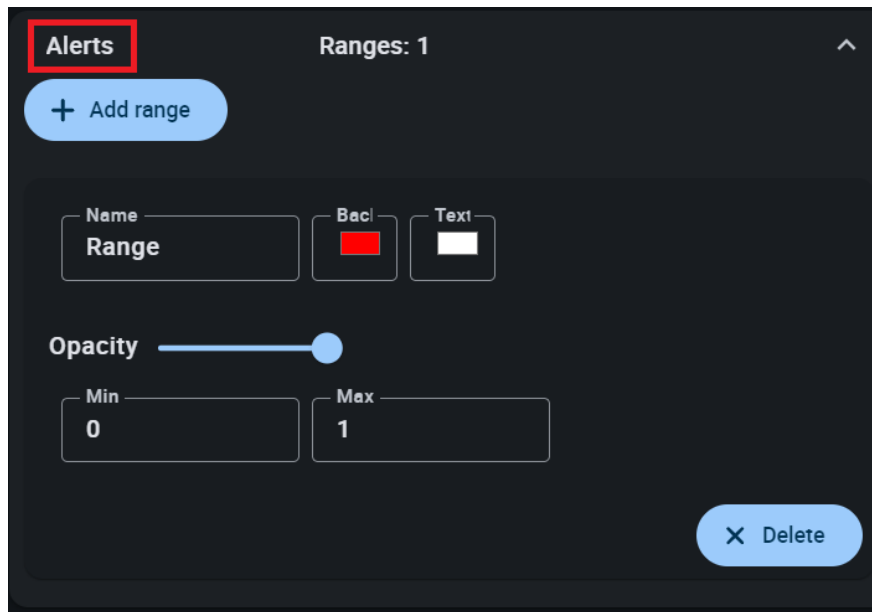
This parameter is only available with Real variables.

- **Bar options:**



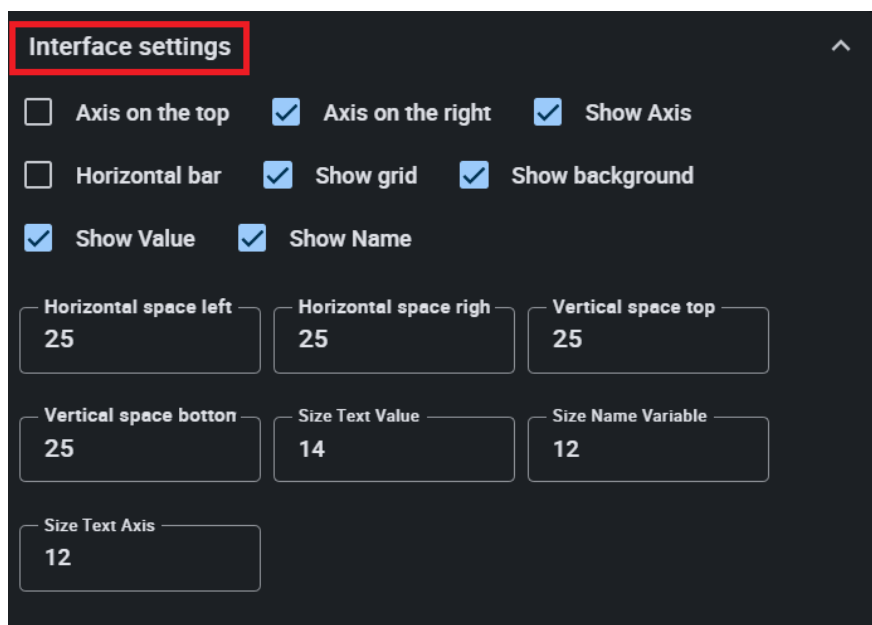
**Bar configuration - Bar options**

- **Bar color:** The color of the bar with the value can be changed here.
- **Color text:** The color of the selected variable value can be modified.
- **Bar Width:** The user can modify the width of the bar as desired. By default it is set to 30.
- **Min/Max:** Minimum and maximum values displayed in the bar.
- **Background color:** The color of the background bar can be set here.
- **Alerts:** Allows the user to set different ranges. For these ranges several customizations can be made:



### Bar configuration - Alerts

- **Name:** An identifier name of the range can be set.
- **Background color:** Sets the color of the bar for this range.
- **Text color:** Changes the color of the selected variable value in this range.
- **Opacity:** The opacity of the bar can be customized in this range.
- **Min/Max:** Defines the minimum and maximum values of the range.
- **Remove:** Click to delete this range.
- **Interface settings:**



---

## **Bar configuration - Interface settings**

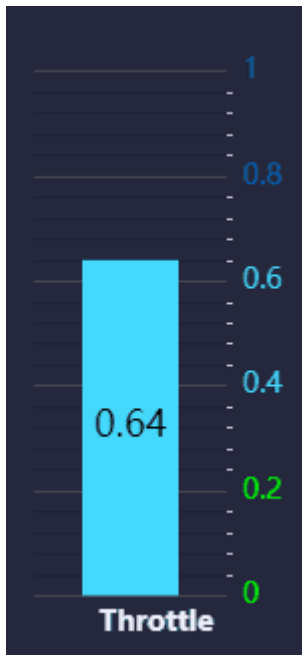
**The appearance of the bar widget can be highly customized using the following parameters:**

- **Axis on the top:** If enabled, permits placing the axis above the bar instead of below it.
- **Axis on the right:** If enabled, the axis is placed to the right of the bar, otherwise to the left. By default it is enabled.
- **Show Axis:** If enabled, the axis of the bar is shown, otherwise it is hidden. By default it is enabled.
- **Horizontal bar:** If enabled, the bar and the axis are displayed in horizontal format, otherwise it is in vertical position.  
**By default disabled (in vertical position).**
- **Show grid:** If enabled, a grid with the subdivisions of the axes is shown, otherwise it is hidden. By default it is enabled.
- **Show background:** If enabled, the rest of the bar that is not colored by the value is shown with the color previously defined in Bar options.  
**By default it is enabled.**
- **Show Value:** If enabled, shows the value of the selected variable in the bar. By default it is enabled.
- **Show Name:** If enabled, the name of the selected variable is displayed at the bottom of the bar. By default it is enabled.
- **Horizontal space left/right:** The left/right horizontal spacing of the bar widget background can be customized. By default they are set to 25.
- **Vertical space top/bottom:** The top/bottom vertical spacing of the bar widget background can be customized. By default they are set to 25.
- **Size Text Value:** The size of the text value can be modified. Default is 14.

- **Size Name Variable:** The size of the selected variable name can be changed. Default is 12.
- **Size Text Axis:** The size of the axis text can be modified. Default is 12.

Some examples are given below:

- **Example 1:**



**Bar example 1**

**The custom configuration made for this bar is as follows:**

**Bar options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform: Selected Platform

VRef\*: Stick - Throttle -- --

Unit\*: [dropdown]

Decimals: 10

**Bar options**

Bar: [blue swatch]

Colc: [white swatch]

Bar Width: 30

Min\*: 0

Max\*: 1

Bacl: [small square]

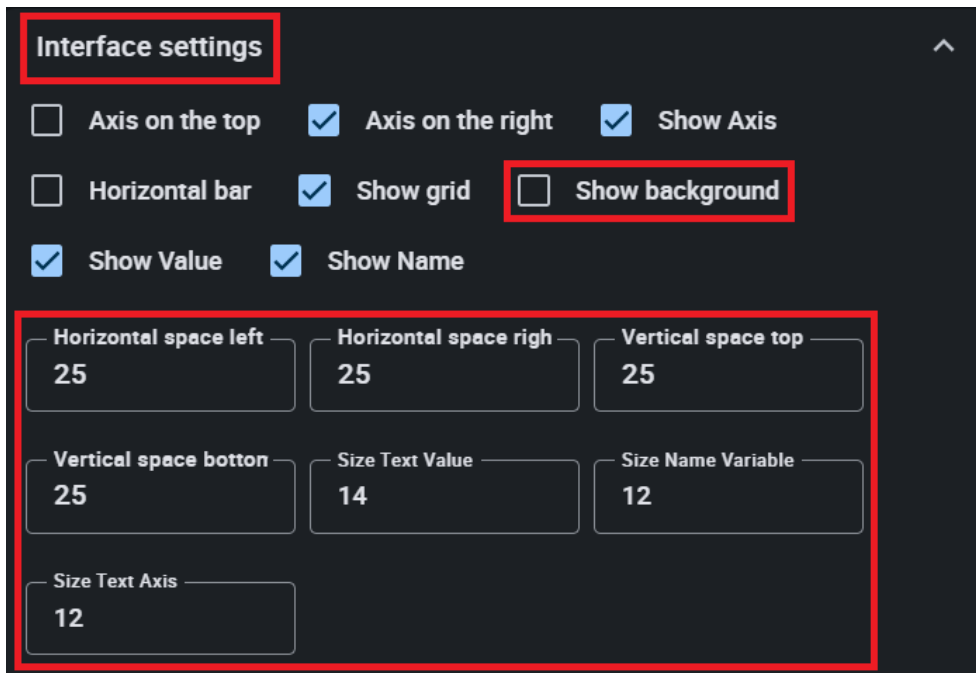
Accept

### Bar configuration - Bar options example 1

As shown in the figure above, when the background bar is hidden ('Show background' option is disabled), the 'Background color' parameter does not appear.

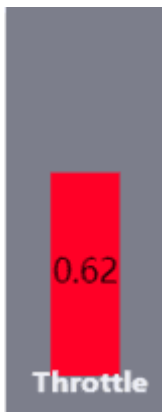


Bar configuration - Alerts example 1



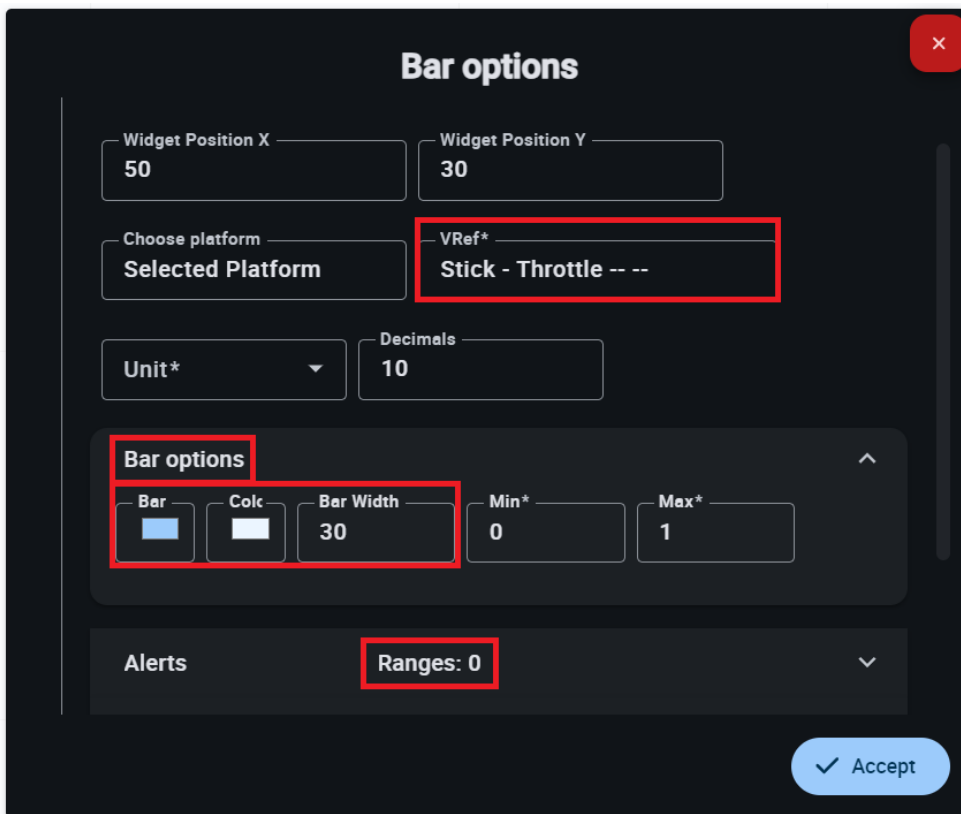
**Bar configuration - Reference settings example 1**

• **Example 2:**



**Bar example 2**

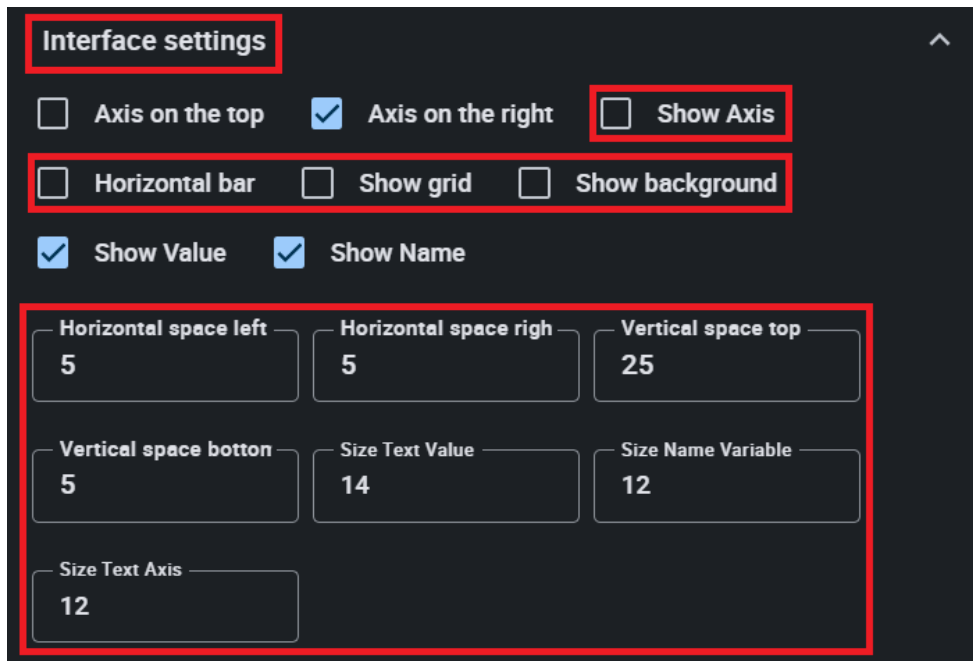
**The custom configuration made for this bar is as follows:**



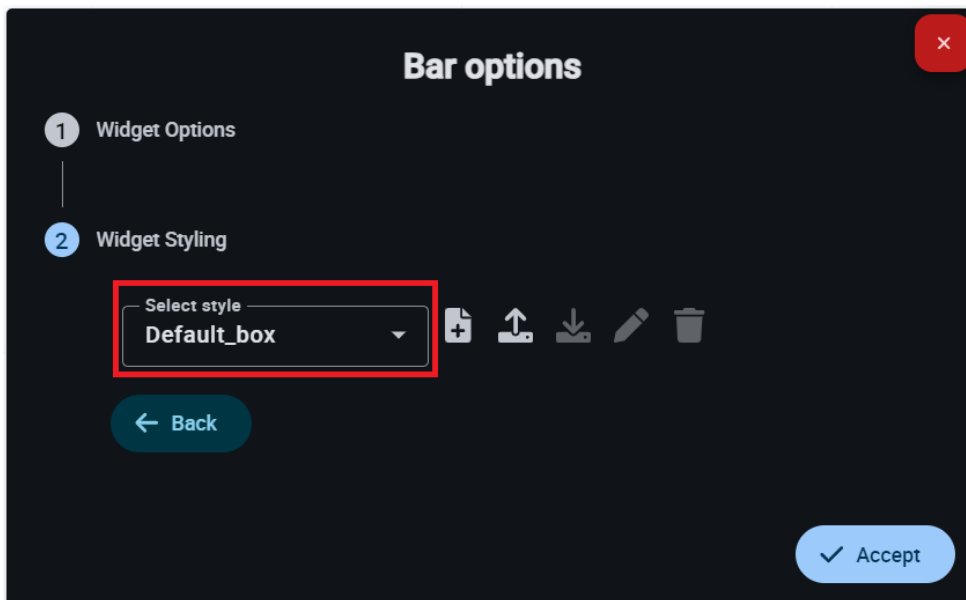
**Bar configuration - Bar options example 2**

As shown in the figure above, when the background bar is hidden ('Show background' option is disabled), the 'Background color' parameter does not appear.

In addition, as there is no range specified, the color of the bar will always be the one specified in the 'Bar color' parameter.



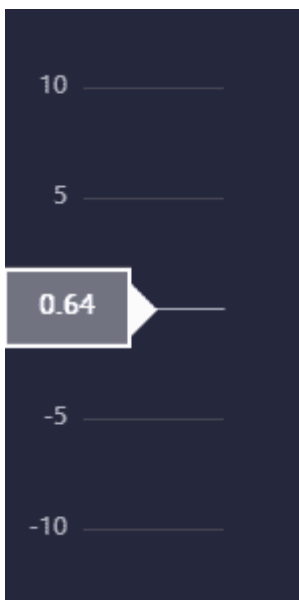
**Bar configuration - Reference settings example 2**



**Bar configuration - Widget Styling example 2**

## Roll Tape

**Roll tape widget shows the value of the selected variable with a marker always in the center position of the widget. It is also possible to add color ranges according to the values of the variable. In addition, a second variable can be used as a reference marker.**



**Roll Tape**

Right click on the roll tape to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the Roll Tape configuration menu.

**Roll Tape options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform: Selected Platform, VRef

Alerts Ranges: 0

Secondary variable

Options

→ Next

✓ Accept

### Roll Tape configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef**: Users can choose any real, integer or bit variable to be displayed on the roll tape.
- **Unit**: Unit of measurement of the displayed variable.

**Note**

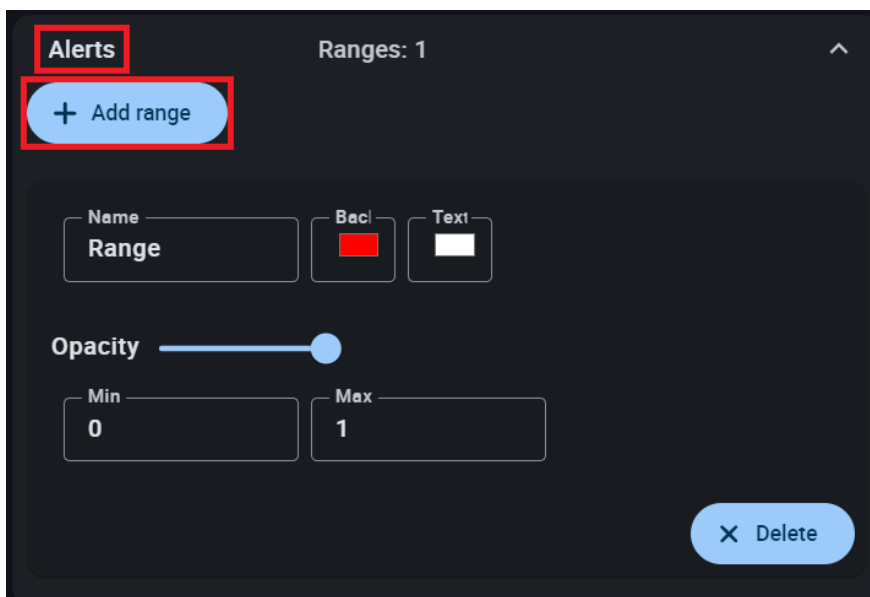
This parameter is only available with Real variables.

- **Decimals**: Number of decimals displayed for the selected variable.

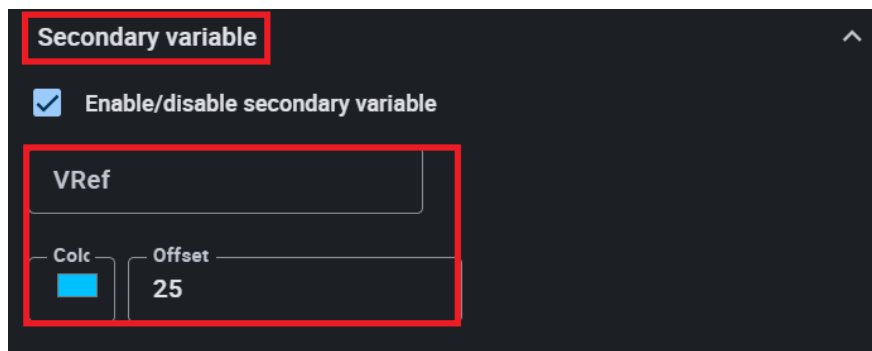
**Note**

This parameter is only available with Real variables.

- **Alerts:** Allows the user to set different ranges. For these ranges several customizations can be made:

**Roll Tape configuration - Alerts**

- **Name:** An identifying name can be set for the range.
- **Background color:** Sets the color of the roll tape for this range.
- **Text color:** Sets the color of the range name for this range.
- **Opacity:** The opacity of the roll tape can be customized in this range.
- **Min/Max:** Defines the minimum and maximum values of the range.
- **Remove:** Click to delete this range.
- **Secondary variable:** A second variable can be added to be used, for example, as a reference.



### Roll Tape configuration - Secondary variable

- **Enable/disable secondary variable:** If enabled, it is displayed as a marker.
- **VRef:** Users can choose any real, integer or bit variable to be displayed on the roll tape as a secondary variable.
- **Unit:** Unit of measurement of the displayed variable.

**Note**

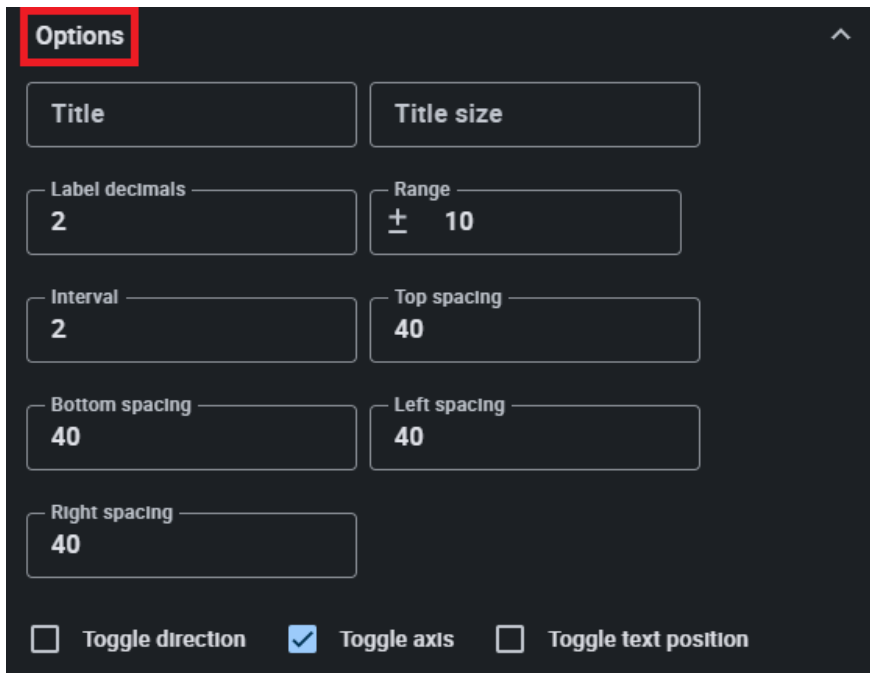
This parameter is only available with Real variables.

- **Decimals:** Number of decimals displayed for the selected variable.

**Note**

This parameter is only available with Real variables.

- **Color:** Sets the color of the secondary variable marker.
- **Offset:** Horizontal position of the marker. By default it is set to 25.
- **Options:**



**Options**

Title Title size

Label decimals 2 Range  $\pm$  10

Interval 2 Top spacing 40

Bottom spacing 40 Left spacing 40

Right spacing 40

Toggle direction  Toggle axis  Toggle text position

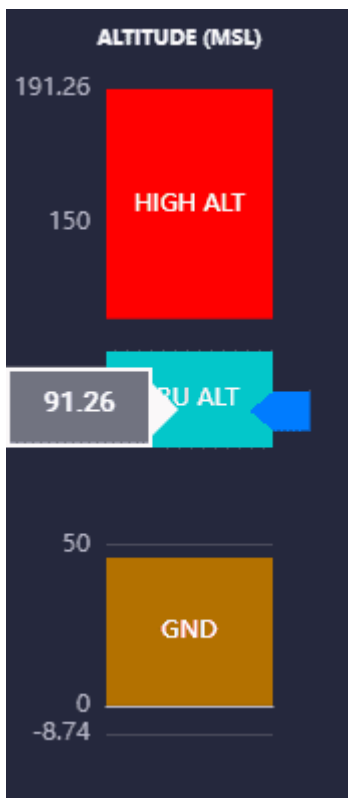
### Roll Tape configuration - Options

The appearance of the roll tape widget can be customized using the following parameters:

- **Title:** Title of the roll tape widget
- **Title size:** Adjust the font size of the chart title for better visibility.
- **Label decimals:** Decimals of the value to be displayed on the roll tape. By default it is set to 2.
- **Range (+/-):** Space between the center and the top and bottom boundaries. The default value is 10.
- **Interval:** Axis interval. Default is 5.
- **Top/Bottom spacing:** The top/bottom spacing of the roll tape widget background can be customized. The default value is 40.
- **Left/Right spacing:** The left/right horizontal spacing of the roll tape widget background can be customized. The default value is 40.
- **Toggle direction:** If enabled, the roll tape and the axis are displayed in horizontal format, otherwise it is in vertical position.  
By default disabled (in vertical position).

- **Toggle axis:** If enabled, the axis is positioned to the left of the roll tape, otherwise to the right. By default it is enabled.
- **Toggle text position:** If enabled, the previously defined title is positioned at the top of the widget, otherwise it is positioned at the bottom. By default disabled.

An example is given below:



**Roll Tape example**

The custom configuration made for this roll tape is as follows:

### Roll Tape options

**1** Widget Options

Widget Position X: 130      Widget Position Y: 78

Choose platform: Selected Platform      VRef: MSL (Height Above Mean Se)

Unit: [dropdown]      Decimals: 2

**Alerts**      Ranges: 3

+ Add range

Name: GND      Back: [yellow]      Text: [white]

Opacity: [slider]

Min: 0      Max: 46

X Delete

Name: CRU ALT      Back: [cyan]      Text: [white]

Opacity: [slider]

Min: 80      Max: 110

X Delete

Name: HIGHT ALT      Back: [red]      Text: [white]

Opacity: [slider]

Min: 120      Max: 1000

X Delete

✓ Accept

### Roll Tape configuration - Alerts example

**Secondary variable**

Enable/disable secondary variable

VRef  
Desired MSL (Height Above I)

Unit      Decimals  
2

Colc      Offset  
25

### Roll Tape configuration - Secondary variable example

**Options**

Title  
ALTITUDE (MSL)      Title size

Label decimals      Range  
2      ± 20

Interval      Top spacing  
20      40

Bottom spacing      Left spacing  
30      50

Right spacing  
40

Toggle direction     Toggle axis     Toggle text position

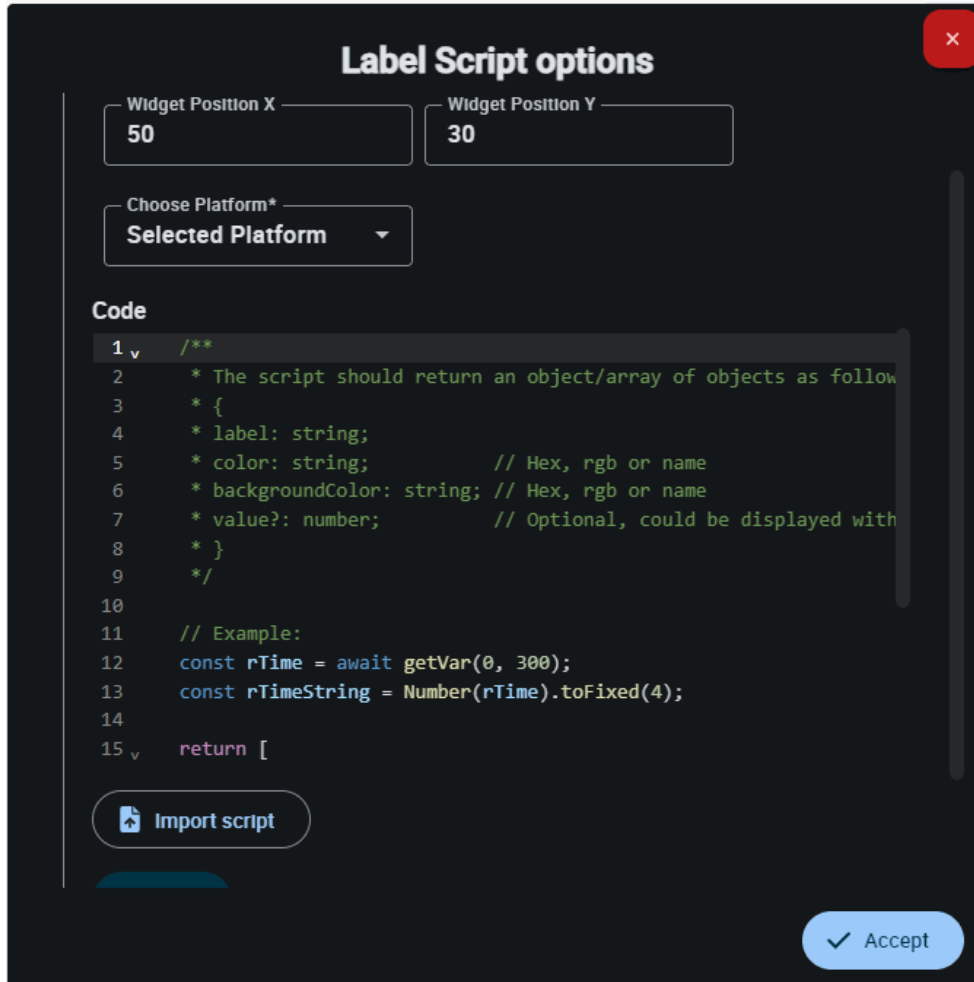
### Roll Tape configuration - Options example

#### Label Script

**The Label Script options panel allows creating highly customized widgets within the Veronte Ops interface using JavaScript code.**

Right click on the Label Script to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit:** This allows the user to access the Roll Tape configuration menu.



### Label Script options

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

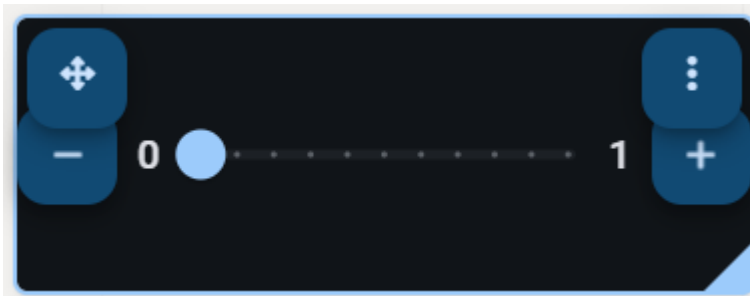
- **Code:** The area where the logic is written. The script must return an object or an array of objects containing parameters such as label, color, backgroundColor, and value.
- **Import script:** Allows uploading pre-configured external script files.

## Commands

**Veronte Ops allows the user to modify some variables during a flight to test some parameters or to simulate a stick control.**

### Slider

**Slider widgets allow the user to choose a certain variable and change its value by simply moving the slider to the desired value from the workspace during a flight.**



### Slider

Click the  button to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit:** This allows the user to access the Slider configuration menu.

### Slider configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the slider.
- **Unit:** Unit of measurement of the displayed variable.

**Note**

This parameter is only available with Real variables.

- **Values:**
  - **Min/Max value:** Minimum and maximum values displayed in the slider. Defaults are 0 and 1 respectively.
  - **Step:** Here users must enter the step they want the slider to have. By default it is set to 0.1.
  - **Vertical:** If enabled, the slider widget is displayed in vertically, otherwise it is displayed horizontally. By default disabled (in horizontal position).

- **Invert:** If enabled, the minimum and maximum values are swapped, otherwise the minimum value is to the left of the widget and the maximum value to the right. By default disabled.
- **Show steps:** If enabled, the step divisions of the slider are shown when interacting with the widget, otherwise they are hidden. By default it is enabled.

An example is given below:



Slider example

**Slider options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform: Selected Platform

VRef\*: Stick Input r6 -- --

Unit: [dropdown]

Values

Min value\*: 0

Max value\*: 1

Step\*: 25

Vertical  Invert  Show steps

✓ Accept

Slider configuration example

Action Button

**Action Button** widgets can be added to the workspace independently and also be displayed all together embedded in the [Veronte Panel](#).



## Action Button

Click the  button to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit:** This allows the user to access the Action Button configuration menu.

The image shows a dark-themed configuration dialog titled 'Action Button options'. It has a red close button in the top right corner. The dialog is divided into two sections: '1 Widget Options' and '2 Widget Styling'. In the 'Widget Options' section, there are two input fields for 'Widget Position X' (value 50) and 'Widget Position Y' (value 30). Below these are two dropdown menus: 'Choose platform' (value 'Selected Platform') and 'Select Event\*' (highlighted with a red box). Underneath are two checkboxes: 'Icon' (checked, highlighted with a red box) and 'Label' (unchecked). A 'Next' button with a right arrow is located below the checkboxes. In the 'Widget Styling' section, there is an 'Accept' button with a checkmark. A vertical scrollbar is visible on the right side of the dialog.

## Action Button configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Select Event:** Select the desired button event to be displayed as an action button.

This event must be previously configured as a [button automation](#) in the 1x PDI Builder software.

- **Icon:** If enabled, the icon already configured for this event in the corresponding **automation button** is drawn. By default it is enabled.
- **Label:** If enabled, users can add a desired text to be displayed on the action button next to the icon. By default, it is disabled.
  - **Override label:** Enter the desired text to be displayed in the widget. If no text is entered, the name of the selected event will be shown.
  - **Label size:** Size of the text displayed on the action button. Default is 16.

The triggering of linked actions is subjected to the button configuration carried out in 1x PDI Builder:

- **No time control:** The action is triggered when the button is pressed.



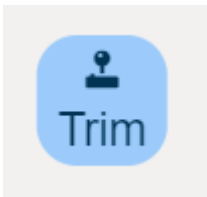
#### Action button - No time control

- **Time control:** The action is triggered when the button is pressed during the configured time.

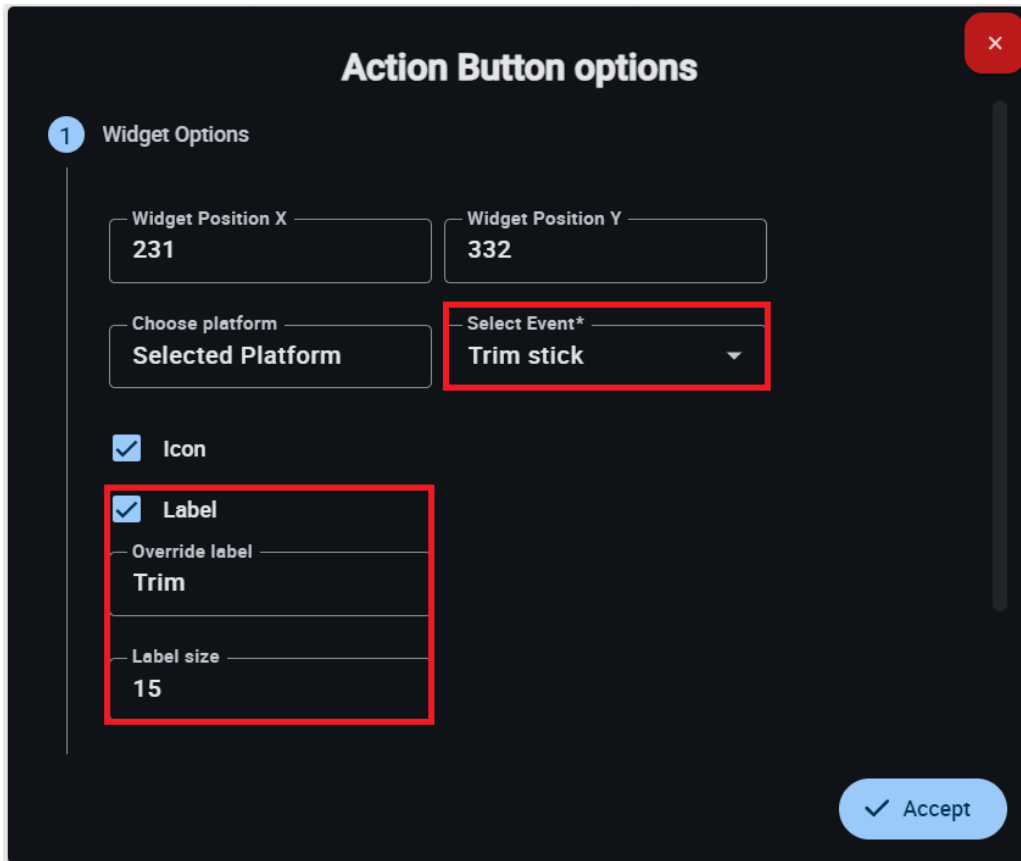


#### Action button - Time control of 3s

An example of the configuration of an Action button widget is given below:



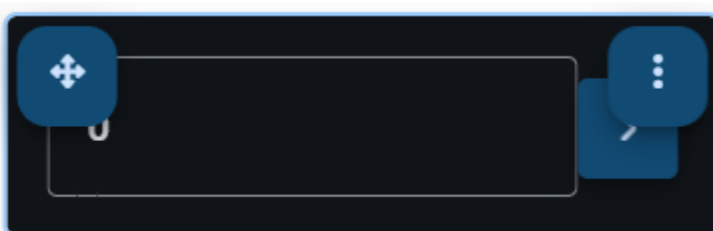
Action Button example




Action Button configuration example

### Input Data

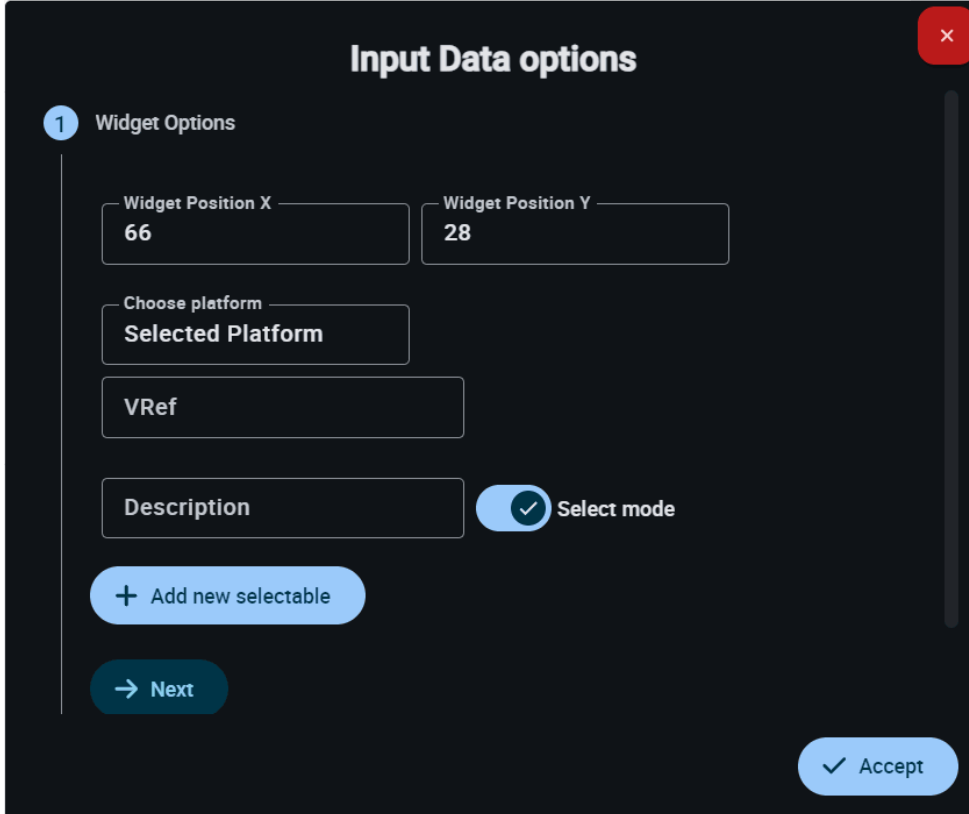
**Input Data widgets allow the user to choose a certain variable and change its value by manually entering the value and sending it to the platform from the workspace during a flight.**



### Input Data

Click the  button to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit**: This allows the user to access the **Input Data configuration menu**.



### Input Data configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Description**: A description can be added to the widget by substituting the selected variable name.
- **VRef**: Users can choose any real, integer or bit variable to be displayed on the widget.
- **Unit**: Unit of measurement of the displayed variable.

 **Note**

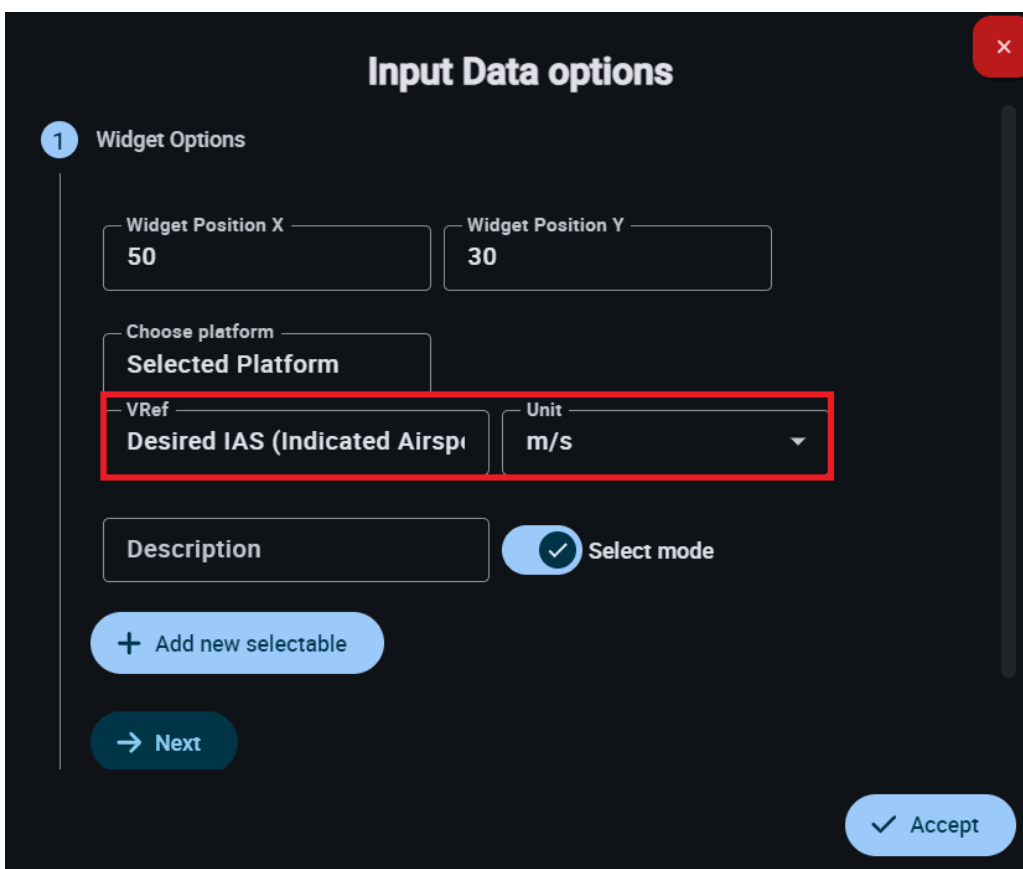
This parameter is only available with Real variables.

- **Add new selectable: Allows creating custom widget options by defining a technical Key and a user-facing label Value for each.**

An example is given below:



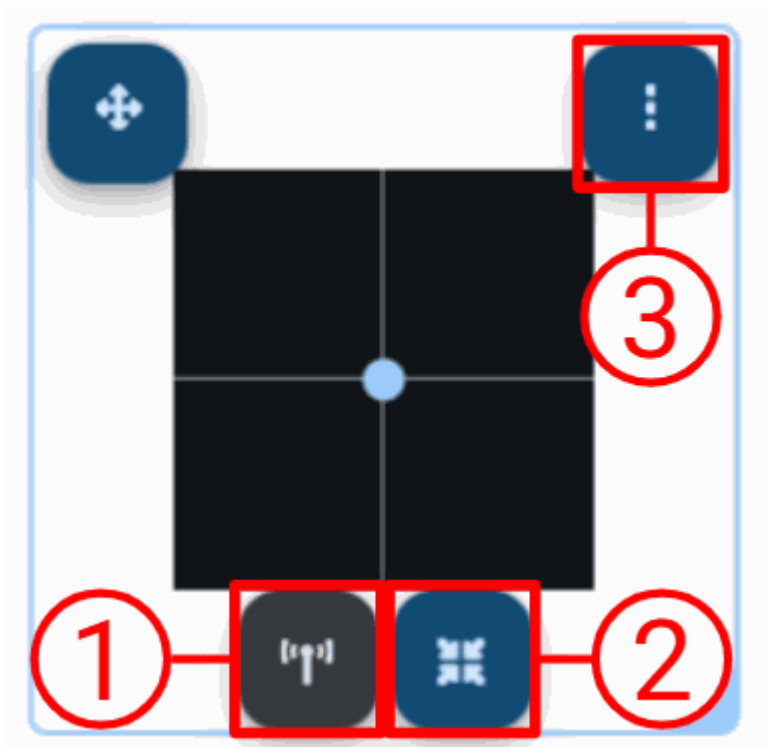
**Input Data example**



**Input Data configuration example**

Stick

**Stick (Virtual stick) widgets are created to simulate a radio controller that controls the platform channels directly from the computer.**



## Stick

On the stick display, there are 3 icons/buttons and their functions are as follows:

1. **Send command enable/disable:** Enables/Disables the virtual stick commands.

### **Warning**

If the Stick is not activated, it will have no effect on the system.

2. **Go to center:** Returns the stick to the center.

### 3. Options

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Stick configuration menu.

**Stick options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Type\*: PLATFORM

Choose platform: Selected Platform

Port: 0

Stick controller: No gamepad

Direction\*: All directions

Label

Axis X: Channel X: 0 | Gamepad Axis X: 0

Axis Y: Channel Y: 1 | Gamepad Axis Y: 1

Test stick: Automatic: Disable | Multiplier: x1

→ Next

✓ Accept

### Stick configuration

- **Widget Options**

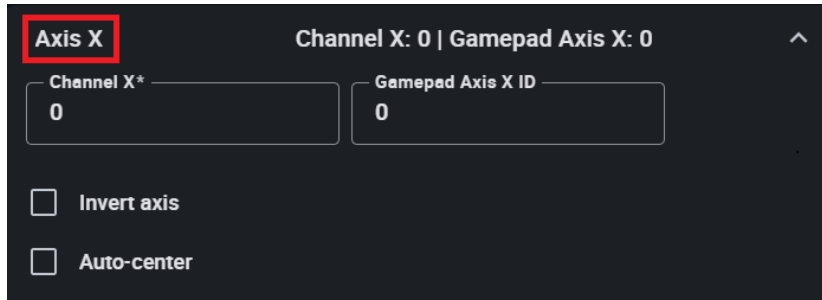
This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Type:** Users can configure the widget stick to be used in "normal" mode, i.e. to control the platform, or to control a gimbal instead.
- **Choose platform/gimbal:** Depending on the type selected, the user will have to choose the platform or the gimbal for which the widget is configured.
- **Port:** Specifies the communication port assigned.
- **Stick controller:** Users must select a desired gamepad from the list for which the widget is configured.

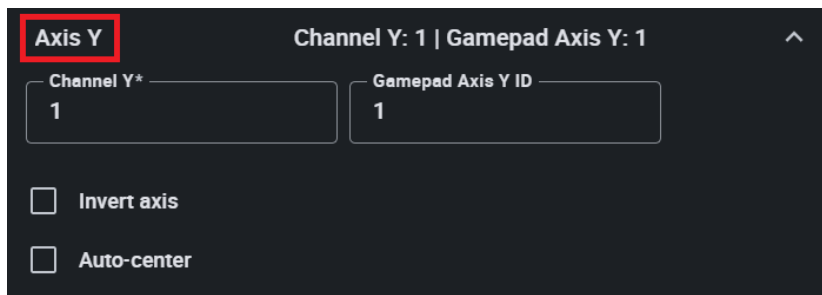
**Important**

If no physical gamepad (via USB) is connected to the PC, No gamepad option will be selected.

- **Direction:** The user has to configure the directions in which the stick can be moved, the available options are **All directions, Only vertical and Only horizontal**. By default, 'All directions' option is selected.
- **Label:** If there is more than one stick widget, users can easily differentiate between them by configuring an identifying label for each one.
- **Axis X/Y:** X and Y axes must be configured.



#### Stick configuration - Axis X



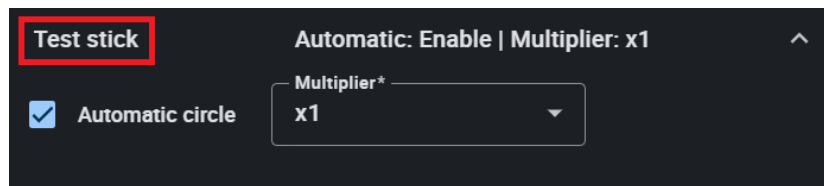
#### Stick configuration - Axis Y

- **Channel X/Y\*:** Specifies the internal software channel assigned to the axis. This parameter links the physical movement of the stick to a specific control variable within the platform's logic.
- **Gamepad Axis X/Y ID:** Correlation of the physical gamepad axis IDs with those of the virtual stick.

#### ⚠ Important

If no physical gamepad (via USB) is connected, this parameter has no effect on the widget. It can be left at the default value.

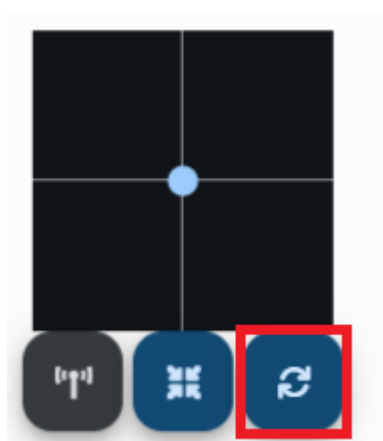
- **Invert axis:** If enabled, the minimum and maximum of the axis in the variable associated with this channel will be inverted.  
 For example, if in the Y axis, the bottom of the axis corresponds to a value of 0 in the stick input r2 variable.  
 If the Inverted axis is enabled, now the bottom of the axis will correspond to a value of 1 in the variable.
- **Auto-center:** When activated, the stick automatically returns to the center position when released.
- **Test stick:** This option is used to generate stick inputs that are introduced in the system. This is a way to check how the system behaves when a stick command enters the autopilot.



Stick configuration - Test stick

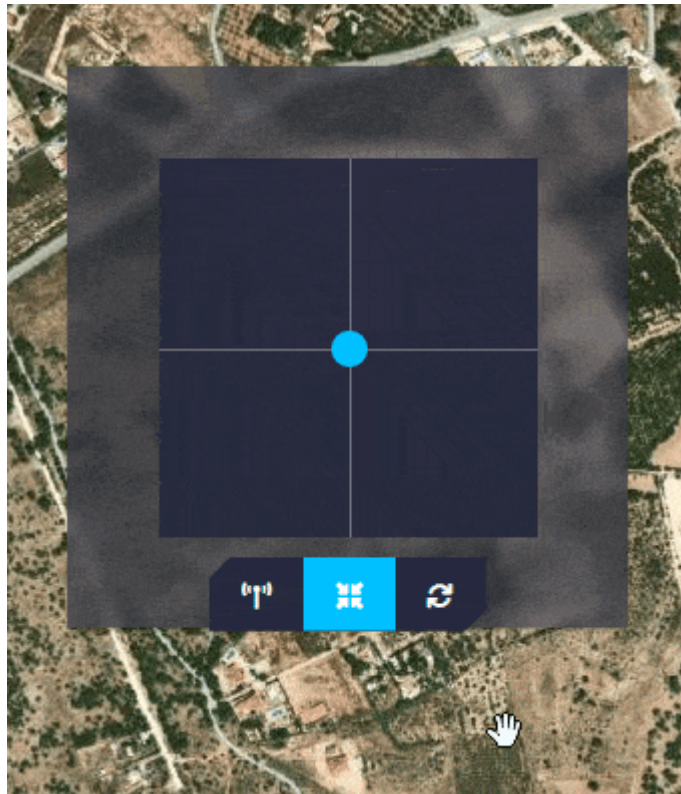
- **Automatic circle:** An automatic circle test is activated.
- **Multiplier:** The speed of the test can be adjusted. Available options are: x1, x2, x4, x8 and x16.

An additional button appears in the widget to start/stop the test.



Stick configuration - Test stick button

An example is presented below:



Stick configuration - Test stick example

- **Remove:** Deletes this widget.

Dial Button

**Dial Button widget groups different [action buttons](#) into a single 'drop-down' button.**



**Dial Button**

**When clicked, the action buttons will appear/disappear.**

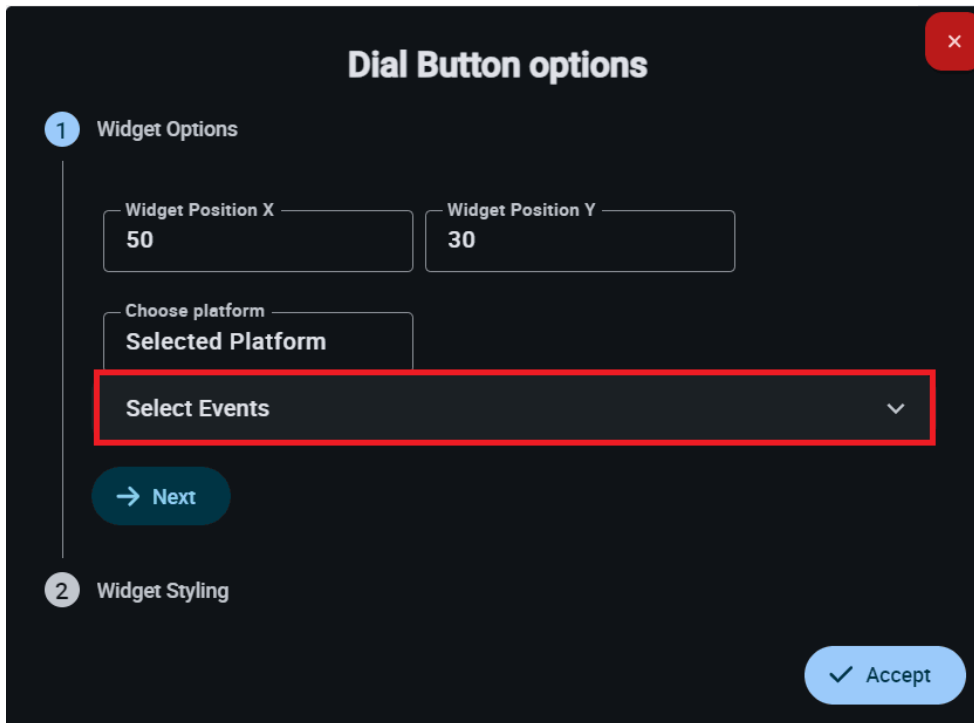


**Dial Button - Action buttons**

Right click on the widget to access its options (Duplicate, Edit and Remove).

- **Options** → **Edit:** This allows the user to access the Dial Button configuration menu.

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).



### Dial Button configuration

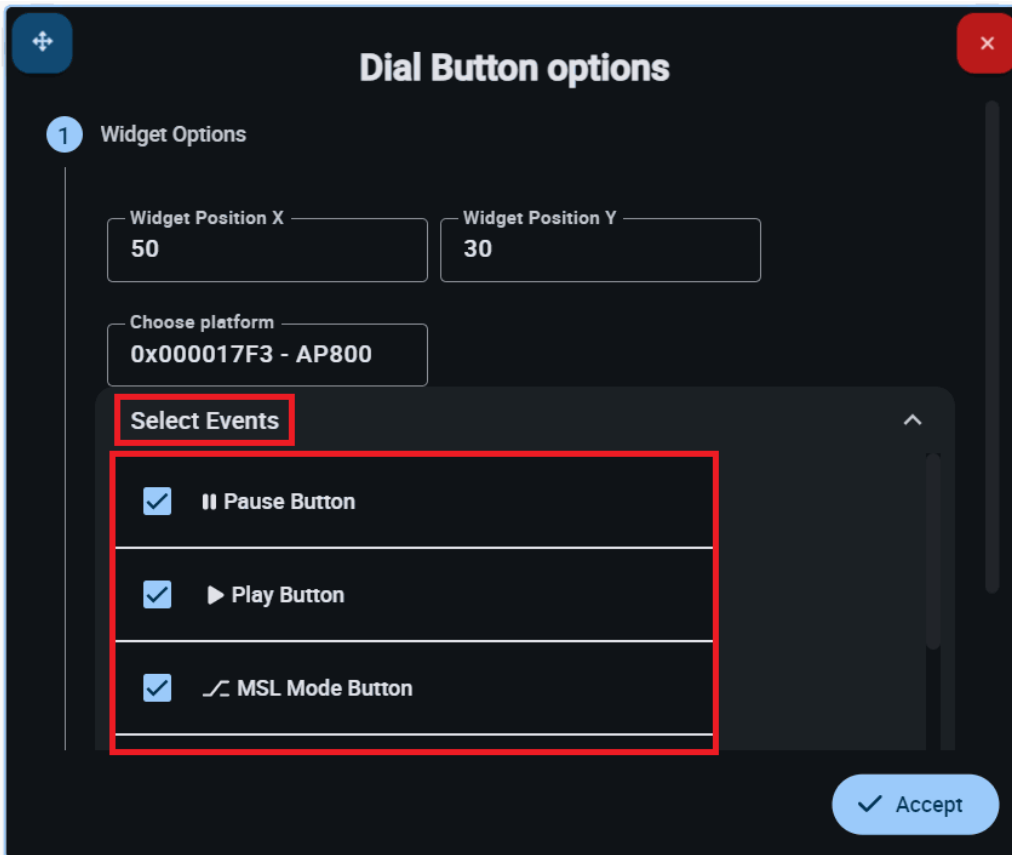
- **Widget Options** → **Select Events:** Select the desired button events that will be displayed as action buttons on the Dial Button. These events must be previously configured as [automations](#) in the 1x PDI Builder software.

An example is given below:



### Dial Button example

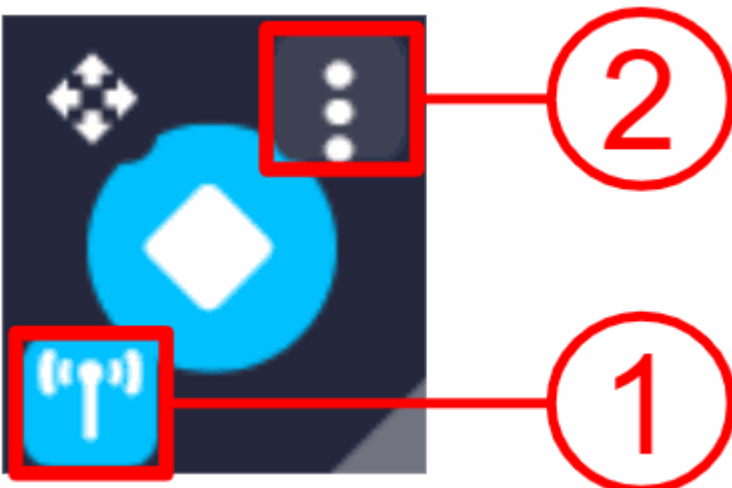
These action buttons can be ordered in the configuration:



Dial Button configuration example

### Stick Buttons

Stick Buttons widgets are created to map and manage the physical buttons of a connected controller to trigger specific actions or variables within the system.



### Stick Buttons

**On the stick buttons display, the icons allow for the following functions:**

- 1. Send command enable/disable:** Enables or disables the transmission of button commands to the platform.
- 2. Options:**
  - **Duplicate:** Duplicates this widget.
  - **Edit:** Permits access to the Stick Buttons configuration menu.

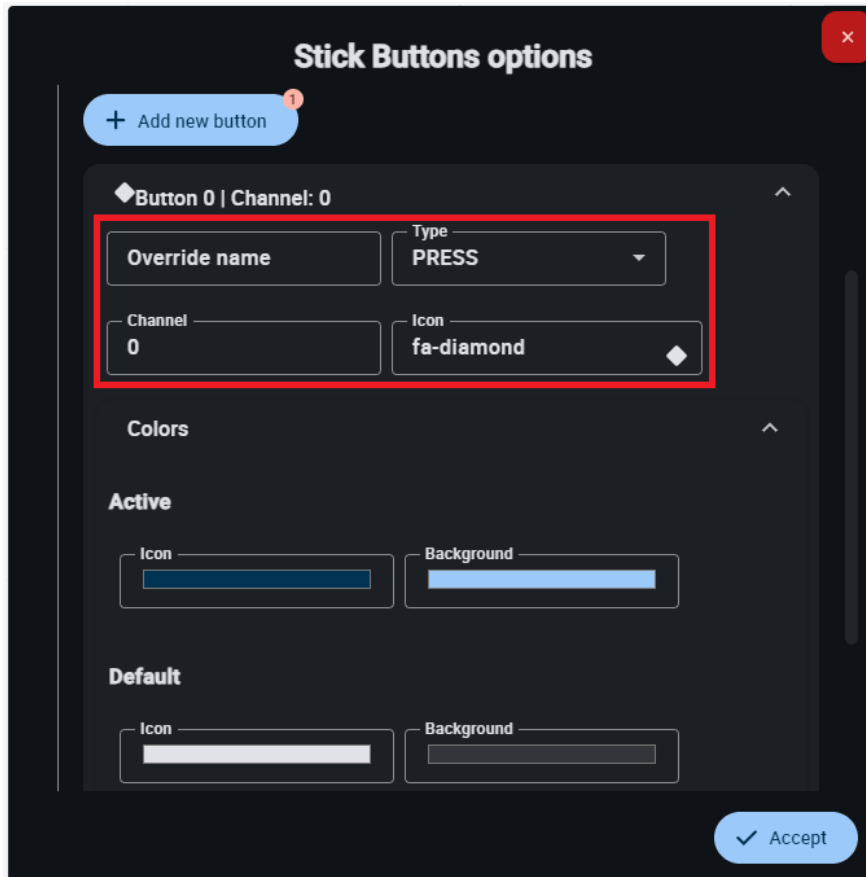
### Stick Buttons - Options

- **Widget Options:** This widget has extra edit parameters compared to the ones described in the Widgets common configuration.
  - **Choose platform:** Permits the selection of the specific platform for which the widget is configured.
  - **Command type:** Allows for the selection of the command category.
  - **Stick controller:** Permits the selection of the desired physical gamepad from the list of connected devices.

- **Port:** As it is possible to have more than one stick configured, each transmitter must be configured on a different port.

This port must match the port configured in the 1x PDI Builder software. For more information, see the [Output - Stick](#) section of the 1x PDI Builder user manual.

- **Number of buttons:** Defines the total number of physical buttons to be configured for this widget.



### Stick Buttons

- **Override Name:** Assigns a custom label to identify the button.
- **Type:** Determines the activation logic of the command, defining whether the action should be momentary (Press) or toggled (Switch).
- **Channel:** Defines the controller channel associated with the command.
- **Icon:** Allows selecting a graphic symbol to visually represent the function.

- **Colors:** Defines the button's visual appearance to provide immediate feedback on its current operational status.
- **Remove:** Deletes this widget.

## Knob

**Knob widget is similar to the [slider widget](#) but in circular format. It also allows the user to choose a certain variable and change its value by simply moving the circular bar to the desired value from the workspace during a flight.**



## Knob

**Right click on the widget to access its options (Duplicate, Edit and Remove).**

- **Options** → **Edit:** This allows the user to access the Knob configuration menu.

### Knob configuration

- **Widget Options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **VRef:** Users can choose any real, integer or bit variable to be displayed on the knob.
- **Unit:** Unit of measurement of the displayed variable.

**Note**

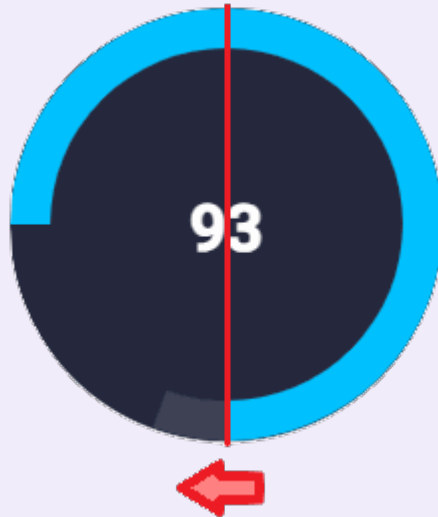
This parameter is only available with Real variables.

- **Options:** This widget is highly customizable by simply modifying the following parameters:
  - **Min/Max:** Minimum and maximum values displayed in the knob. Defaults are 0 and 100 respectively.

- **Angles:** Start and end angle of the position of the minimum and maximum values respectively. Defaults are -140 and 140 respectively.

⚠ **Important**

If the defined Start angle is a negative angle, the widget will not allow to pass from the right to the left side, at the most southern point. That is:



Knob - Negative start angle

- **Bar:**
  - **Cap:** This parameter allows users to choose whether they want the ends of the bar to be right angles or rounded.
    - ⇒ 100% rounded = 50% of the width parameter.
  - **Width:** The user can modify the width of the bar as desired. By default it is set to 20.
  - **Step:** Here users must enter the step by which they want the bar to move. By default it is set to 1.
  - **Color:** This is the color in which the bar is drawn.
  - **Display previous bar:** If enabled, the bar stays colored at the position of the previously set value while the bar is moving to set the new value. Default is enabled.
    - **Color:** Color of the previous bar.

An example is given below:



**Knob configuration - Display previous bar option enabled**

- **Track:** This parameter refers to the bar between the minimum and maximum values defined above, which is always below the bar that indicates the desired value.
  - **Track cap:** This parameter allows users to choose whether they want the ends of the track bar to be right angles or rounded.
    - ⇒ **100% rounded = 50% of the track width parameter.**
  - **Track width:** The user can modify the width of the track bar as desired. By default it is set to 20.
  - **Color:** This is the color in which the track bar is drawn.
- **Background:**
  - **Color:** Color of the knob widget background.
  - **Full:** If enabled, the entire knob widget is colored with the previously defined color. Otherwise, the knob will only be colored between the previously defined start and end angles. By default it is enabled.

**In the following example, the start and end angles are set to -90 and 90 respectively.**



**Knob configuration - Full option enabled/disabled respectively**

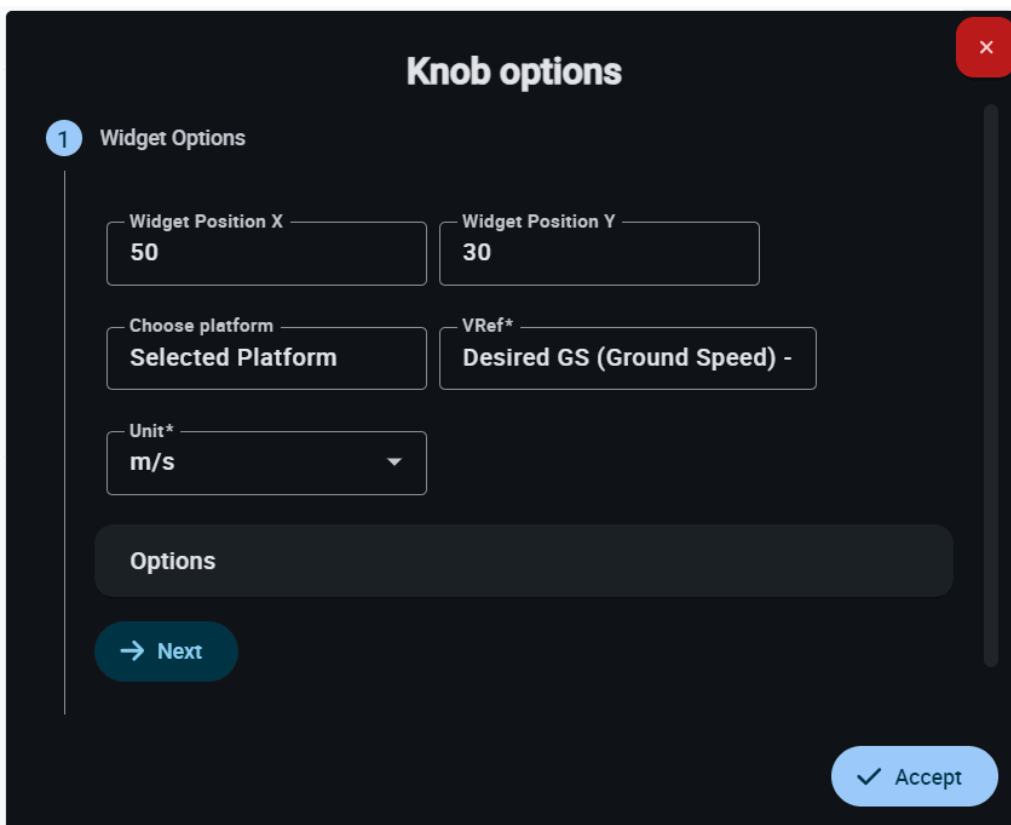
- **Text:** This text refers to the value of the selected variable displayed in the knob.
  - **Display:** If enabled, displays on the knob the value of the selected variable. By default it is enabled.
  - **Size:** The size of the text value can be modified. Default is 32.
  - **Weight:** The weight of the text value can be modified. The available options go from 100 to 900, default is 700.
  - **Color:** Color in which the value is displayed.
- **Subtext:** This subtext refers to the name of the selected variable displayed in the knob.
  - **Display:** If enabled, displays on the knob the name of the selected variable. By default it is enabled.
  - **Offset:** Vertical position of the selected variable name can be adjusted as desired. Default is 7.
  - **Size:** The size of the selected variable name can be changed. By default it is set to 14.
  - **Weight:** The weight of the selected variable name can be changed. The available options go from 100 to 900, default is 700.
  - **Color:** Color in which the selected variable name is displayed.

**An example is given below:**

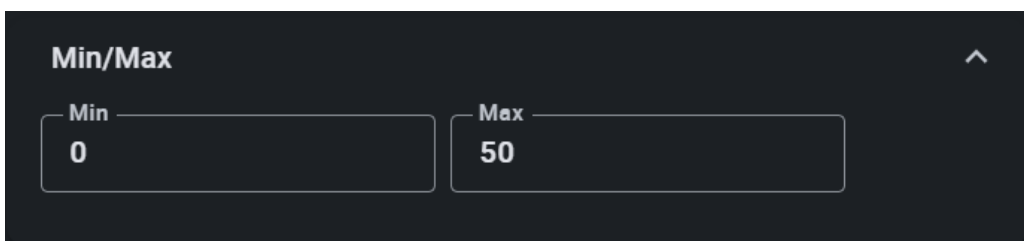


### Knob example

The configuration for this example is as follows:



### Knob configuration example - Variable



### Knob configuration example - Min/Max

**Angles** ^

Start

End

### Knob configuration example - Angles options

**Bar** ^

Cap

Width

Step

Display previous bar

### Knob configuration example - Bar options

**Track** ^

Track cap

Track width

### Knob configuration example - Track options

**Background** ^

Full

### Knob configuration example - Background options



**Knob configuration example - Text options**



**Knob configuration example - Subtext options**

Vehicle

Lights

**The Lights Options widgets allows the user to configure the position and data source for the lighting system widget.**

**Lights options**

1 Widget Options

Widget Position X: 224

Widget Position Y: 86

Choose platform\*: Selected Platform

→ Next

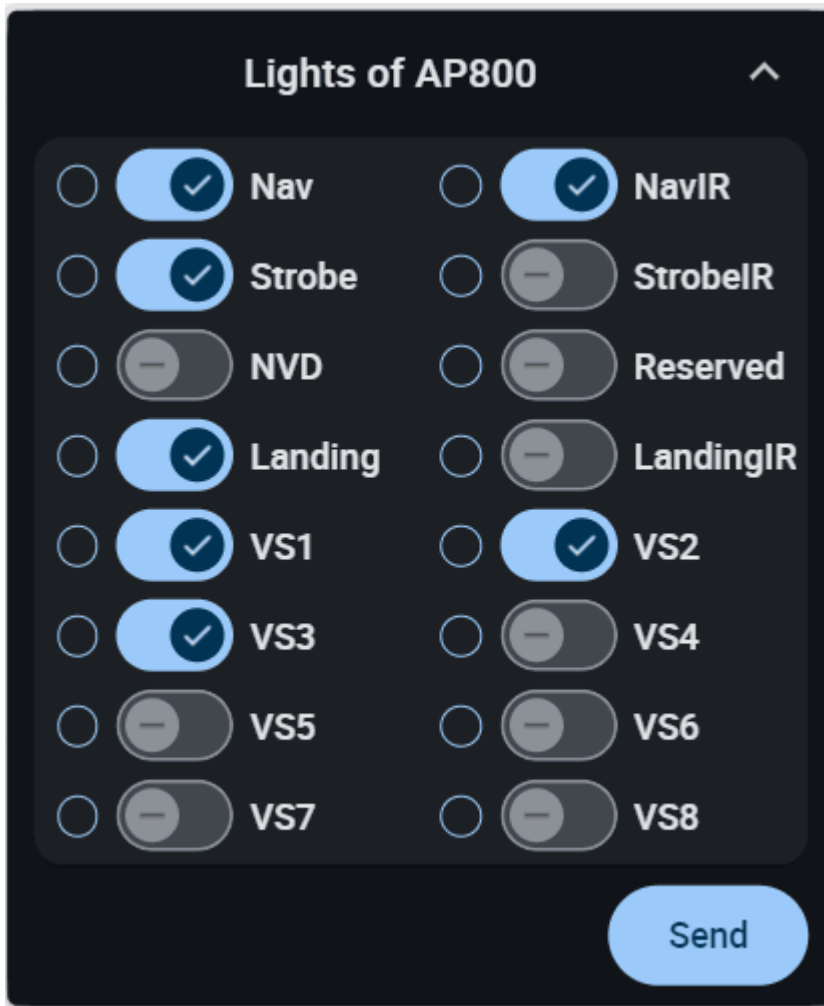
2 Widget Styling

✓ Accept

## Lights options

The parameters are described in the [Widgets common configuration](#).

In the Lights widget, it is possible to select specific lights and click 'Send' to update the configuration.



### Lights - Widget

Engine Command

**Engine Command** allows the operator to configure the location and data source for the engine control widget on the display.

**Engine Command options**

1 Widget Options

Widget Position X: 225

Widget Position Y: 163

Choose platform\*: Selected Platform

→ Next

2 Widget Styling

✓ Accept

### Engine Command options

The parameters are described in the [Widgets common configuration](#).

This widget is divided into two main functional areas: the Command Panel for active control and the Engine Operating States for detailed telemetry monitoring.

## AP800 Engine Command

Send
^

<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <b>Engine Number*</b>  <input style="width: 90%; border: none; text-align: center;" type="text" value="2"/> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <b>Reverse Thrust Power*</b>  <input style="width: 90%; border: none;" type="text" value="On"/> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <b>Ignition Switch Power*</b>  <input style="width: 90%; border: none;" type="text" value="On"/> </div>	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <b>Engine Command*</b>  <input style="width: 90%; border: none;" type="text" value="Start"/> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <b>Reverse Thrust*</b>  <input style="width: 90%; border: none;" type="text" value="AutoAllEngines"/> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <b>Ignition Switch Activati</b>  <input style="width: 90%; border: none;" type="text" value="On"/> </div>
---	--

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### Engine Operating States

<b>Engine Number:</b>	<b>Engine Status:</b>
<b>Reported Engine Command:</b>	<b>Reverse Thrust Power Status:</b>
<b>Reported Reverse Thrust:</b>	<b>Ignition Switch Power Status:</b>
<b>Ignition Switch Activation:</b>	<b>Engine Power Setting:</b>
<b>Engine Speed 1 Type:</b>	<b>Engine Speed 1:</b>
<b>Engine Speed 2 Type:</b>	<b>Engine Speed 2:</b>
<b>Engine Speed 3 Type:</b>	<b>Engine Speed 3:</b>
<b>Propeller Pitch Angle:</b>	<b>Output Power (Shaft Torque) Status:</b>
<b>Engine Temperature 1 Type:</b>	<b>Engine Temperature 1:</b>
<b>Engine Temperature 2 Type:</b>	<b>Engine Temperature 2:</b>
<b>Engine Temperature 3 Type:</b>	<b>Engine Temperature 3:</b>
<b>Engine Temperature 4 Type:</b>	<b>Engine Temperature 4:</b>
<b>Engine Pressure 1 Type:</b>	<b>Engine Pressure 1:</b>
<b>Engine Pressure 1 Status:</b>	<b>Engine Pressure 2 Type:</b>
<b>Engine Pressure 2:</b>	<b>Engine Pressure 2 Status:</b>
<b>Fire Detection Sensor Status:</b>	<b>Engine Energy Flow:</b>
<b>Engine Body Temperature Status:</b>	<b>Exhaust Gas Temperature Status:</b>
<b>Coolant Temperature Status:</b>	<b>Lubricant Temperature Status:</b>

### Engine Command - Widget

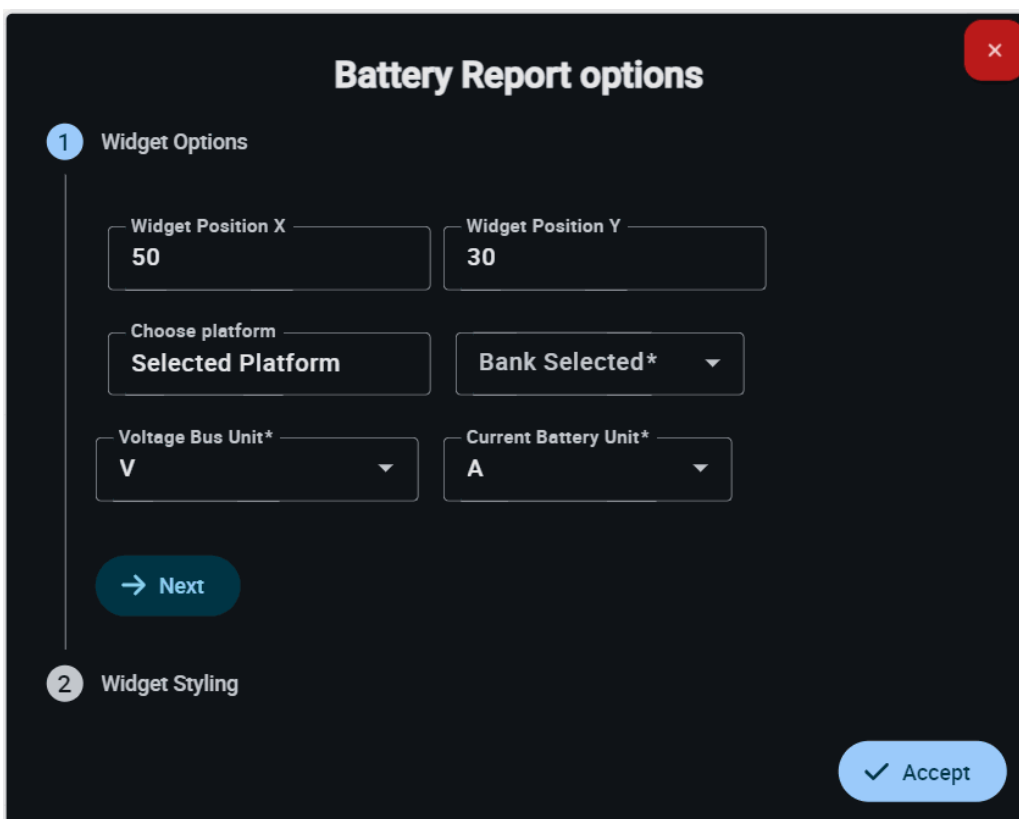
- **Engine Number:** The numerical ID of the engine to which the command is directed.
- **Engine Command:** The primary operational instruction (e.g., Start, Stop, EnableOrRun).

- **Reverse Thrust Power: Enables (On) or disables (Off) the electrical or hydraulic power to the thrust reversal system.**
- **Reverse Thrust: Sets the mode for thrust reversal (e.g., OffAllEngines, OnAllEngine, AutoAllEngines), used to decelerate the aircraft after touchdown.**
- **Ignition Switch Power: Controls the power supply to the engine's ignition circuit.**
- **Ignition Switch Activation: The actual trigger to engage the ignition system**

Click Send to update the configuration.

Battery Report

The Battery Report Options enables the user to configure the monitoring of the system's power parameters on the display.



The screenshot shows a configuration window titled "Battery Report options" with a red close button in the top right corner. The window is divided into two sections: "1 Widget Options" and "2 Widget Styling".

**1 Widget Options**

- Widget Position X: 50
- Widget Position Y: 30
- Choose platform: Selected Platform
- Bank Selected\*: [Dropdown arrow]
- Voltage Bus Unit\*: V [Dropdown arrow]
- Current Battery Unit\*: A [Dropdown arrow]

A "Next" button with a right arrow is located below the "Choose platform" and "Bank Selected\*" fields.

**2 Widget Styling**

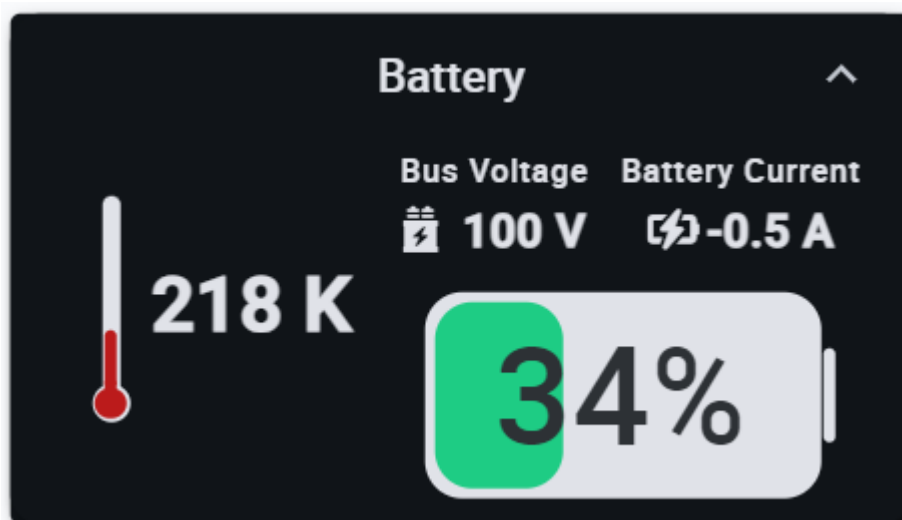
An "Accept" button with a checkmark is located at the bottom right of the window.

**Battery Report options**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Bank Selected:** Allows the user to select which bank or battery pack to monitor, in case the system features multiple independent units.
- **Voltage Bus Unit:** Defines the measurement unit for the system's bus voltage in V or mV.
- **Current Battery Unit:** Defines the measurement unit for the current delivered by the battery in A or mA.

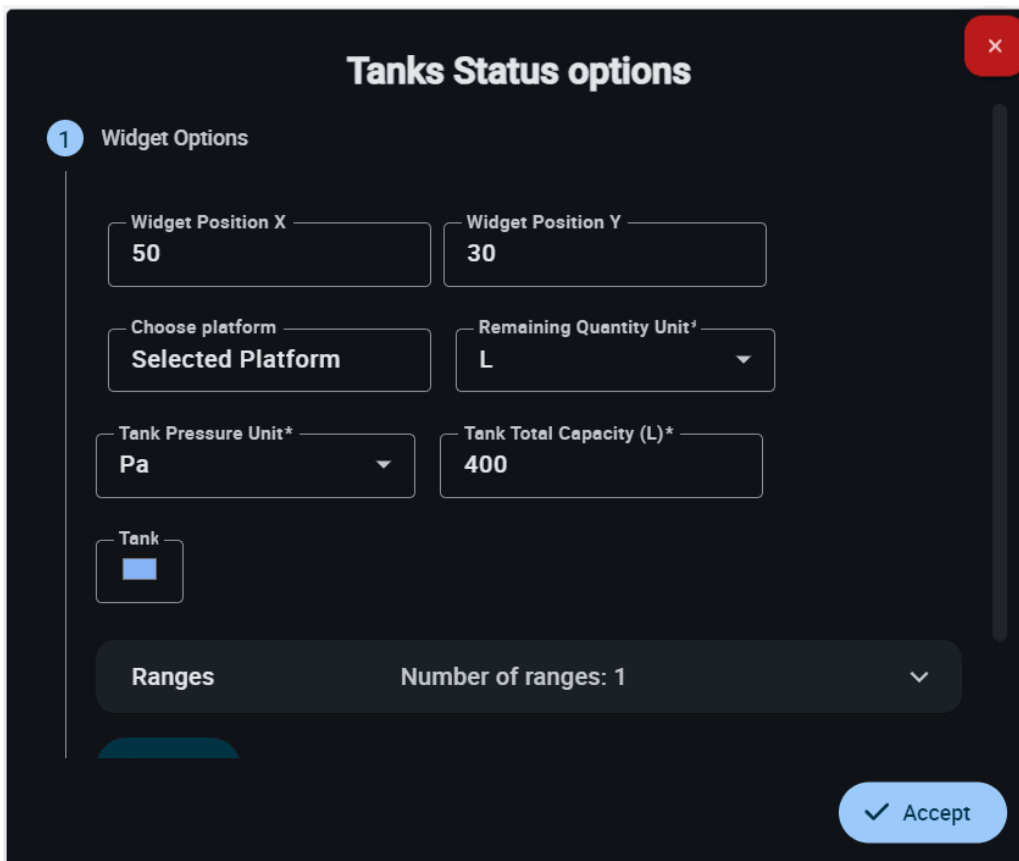
The Battery Report widget enables the user to monitor the system's power parameters in real-time.



**Battery Report - Widget**

Tanks Status

**Tanks Status options** allows the user to configure the monitoring of onboard tanks on the Display.



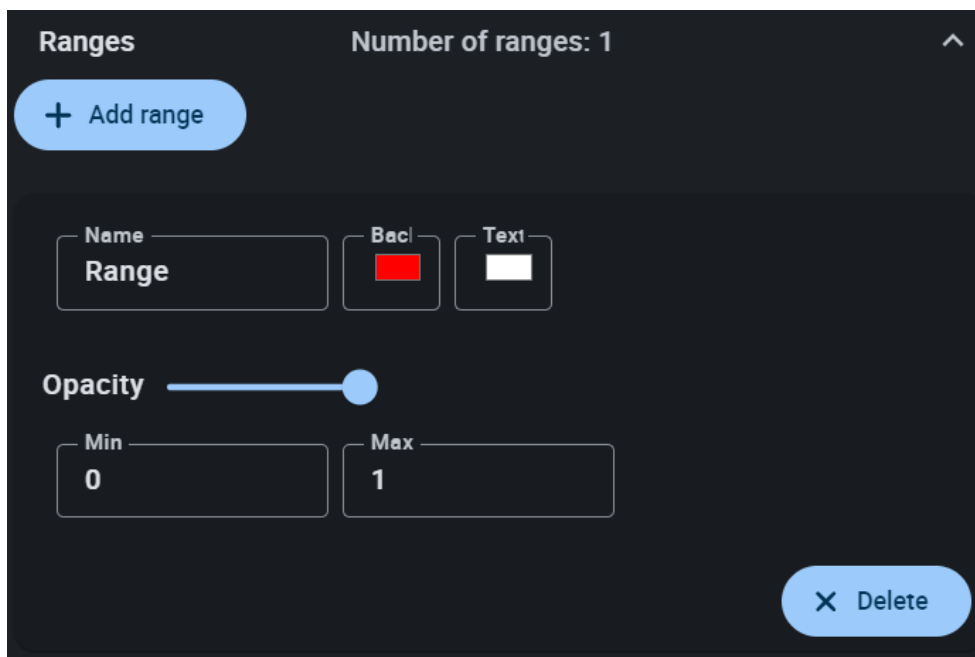
### Tanks Status options

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Remaining Quantity Unit:** Defines the measurement unit for the remaining liquid quantity. It is possible to select one of the following units of measurement:  $m^3$ ,  $dm^3$ ,  $mm^3$ , L, mL.
- **Tank Pressure Unit:** Specifies the measurement unit for the tank's internal pressure. It is possible to select the units of measurement
- **Tank Total Capacity (L):** Indicates the total maximum capacity of the tank expressed in liters.
- **Tank:** Allows the user to select the representative color for the tank in the graphic interface.
- **Ranges:** Allows the user to set different ranges.

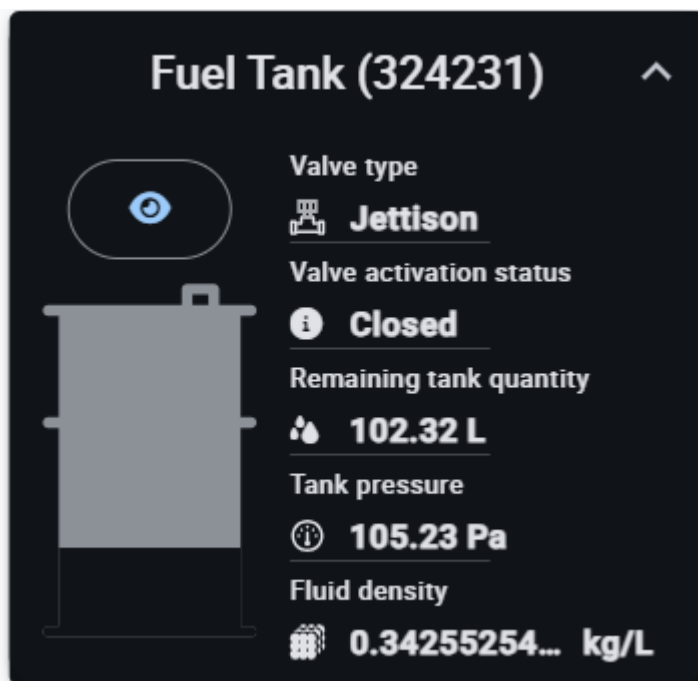
#### **Warning**

The panel warns the user that for correct behavior, ranges must not intersect.

**Several customizations can be made in the different ranges:****Tanks Status - Ranges**

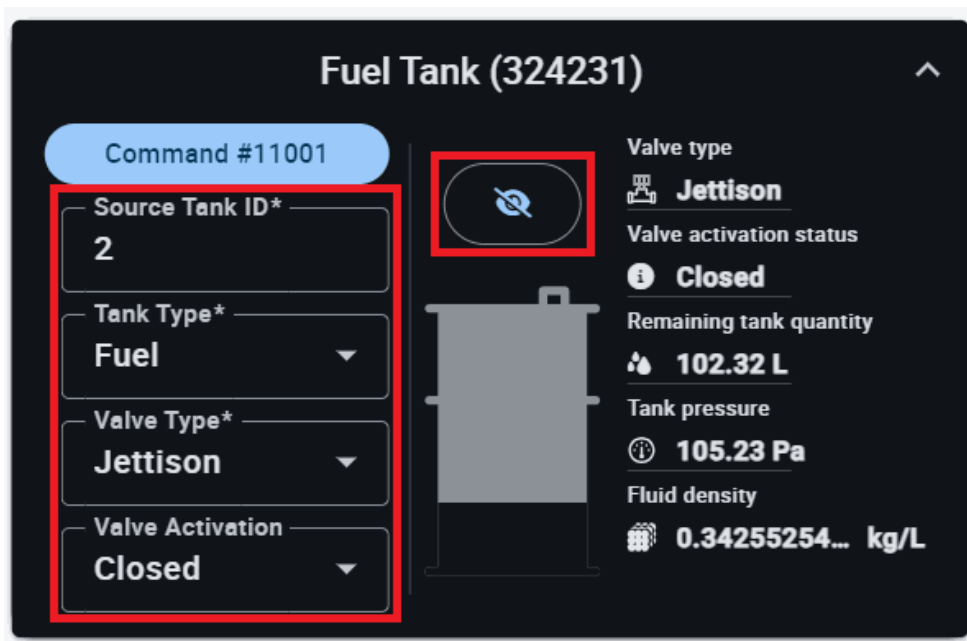
- **Name:** An identifying name for the range can be set.
- **Background color:** Sets the background color of the widget when the tank level or pressure falls within this range.
- **Text color:** Changes the color of the label text when the variable is in this range.
- **Opacity:** The opacity of the circular arc can be customized in this range.
- **Min/Max:** Defines the minimum and maximum values of the range.
- **Delete:** Click to delete this range.

**The Tanks Status widget provides the user with a real-time overview of the tank status and allows for direct interaction with the onboard fluid management system.**



### Tanks Status - Widget

- **Valve Type:** Indicates the hardware configuration of the valve.
- **Valve Activation:** A control field to select the desired state of the valve (e.g., Closed or Open, Moving to Close or Moving to Open).
- **Remaining tank quantity:** Displays the exact volume of liquid remaining in the unit.
- **Tank pressure:** Shows the internal pressure of the tank.
- **Fluid density:** Current density of the fluid, which is critical for calculating weight and balance.
- **Status icon:** Acts as a toggle to manage the visibility and configuration of the following parameters:



### Widget icon

- **Source Tank ID\*:** Used to define the unique identifier for the telemetry source.
- **Tank Type\*:** Allows the selection of the fluid type.
- **Valve Type\*:** Used to specify the hardware type of the valve.
- **Valve Activation:** Enables the manual override or command of the valve stat (e.g., Closed or Open, Moving to Close or Moving to Open).

### Vehicle Auxiliary

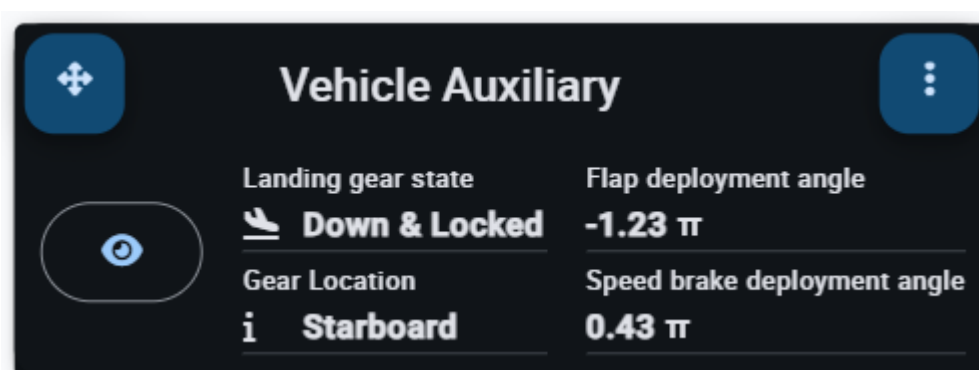
**Vehicle Auxiliary options menu enables the user to configure the display of the vehicle's auxiliary data.**

### Vehicle Auxiliary - Options

This widget has extra edit parameter compared to the ones described in the [Widgets common configuration](#).

- **Angles Unit:** Defines the measurement unit for auxiliary angles on the display.

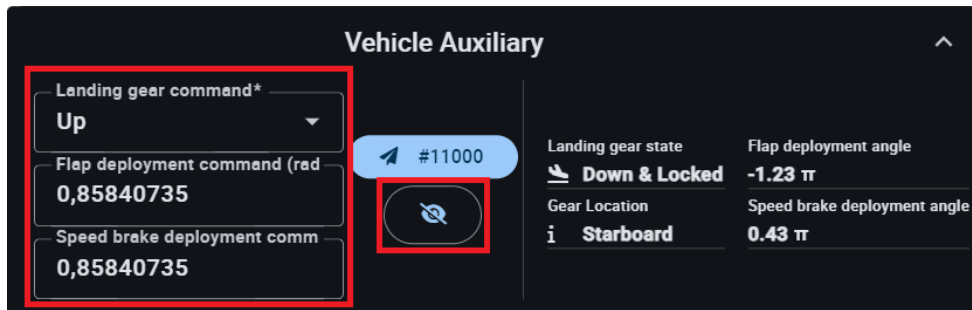
The Vehicle Auxiliary widget provides real-time monitoring of secondary mechanical systems.



### Vehicle Auxiliary options - Widget

- **Landing gear state:** Displays the current mechanical status (e.g., Up or Down).
- **Flap deployment angle:** Shows the current extension angle of the flaps.

- **Gear Location:** Identifies which specific gear is being monitored.
- **Speed brake deployment angle:** Shows the current position of the speed brakes.
- **Status icon:** Acts as a toggle to manage the visibility and configuration of the following parameters:

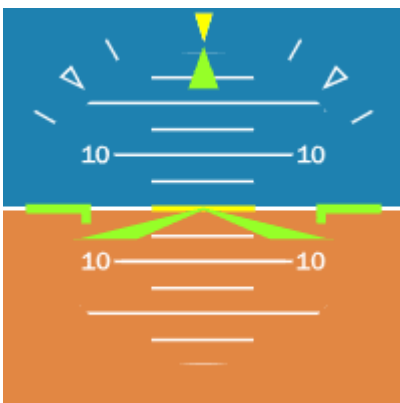


### Widget icon

## Flight instruments

### Attitude

The attitude widget, commonly known as **Primary Flight Display (PFD)** or 'artificial horizon', represents graphically the attitude of the aircraft (roll and pitch).



### Attitude

Right click on the widget to access its options (**Duplicate, Edit and Remove**).

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Attitude configuration menu.

**Attitude options**

1 Widget Options

Widget Position X: 85

Widget Position Y: 35

Choose platform: Selected Platform

Roll\*: Roll

Pitch\*: Pitch

Yaw\*: Yaw

Flight Path Vector

Desired Roll

Desired Pitch

Desired Flight Path Vector

Accept

### Attitude configuration

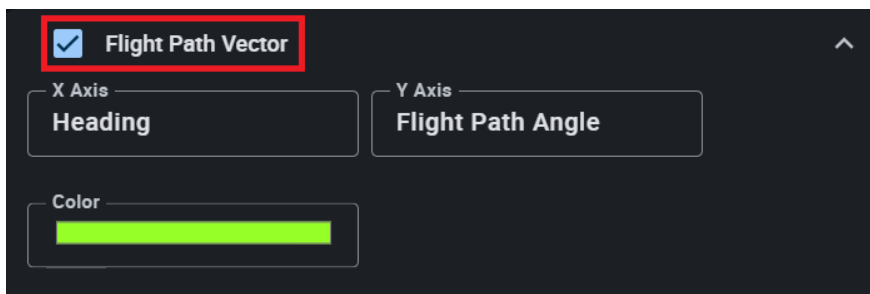
- **Widget Options:**

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

- **Roll:** Users can choose a variable from the real angular variables of the system to be displayed as the roll of the widget.  
By default, the variable Roll is displayed.
- **Pitch:** Users can choose a variable from the real angular variables of the system to be displayed as the pitch of the widget.  
By default, the variable Pitch is displayed.
- **Yaw:** Users can choose a variable from the real angular variables of the system to be displayed as the yaw of the widget.  
By default, the variable Yaw is displayed.

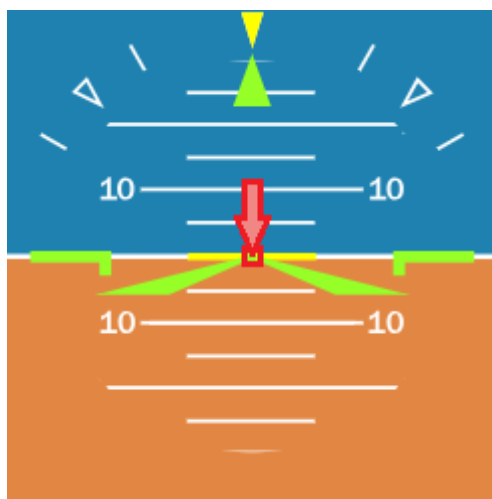
- **Flight Path Vector:** By activating/deactivating this parameter, it is possible to show/hide the flight path vector in the attitude widget.

By default it is activated.



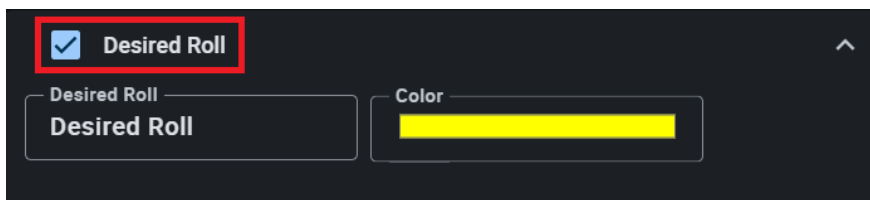
Attitude configuration - Flight Path Vector

- **Flight Path Vector:** A variable from the real angular variables of the system can be selected to be displayed as the flight path vector of the widget. By default, the variable Flight Path Vector is displayed.
- **Color:** The color in which the Flight Path Vector is displayed can be customized. By default, green is selected.



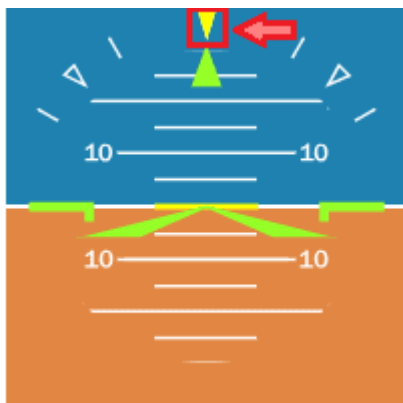
Attitude configuration - Flight Path Vector example

- **Desired Roll:** By activating/deactivating this parameter, it is possible to show/hide the desired roll together with the roll in the attitude widget. By default it is activated.



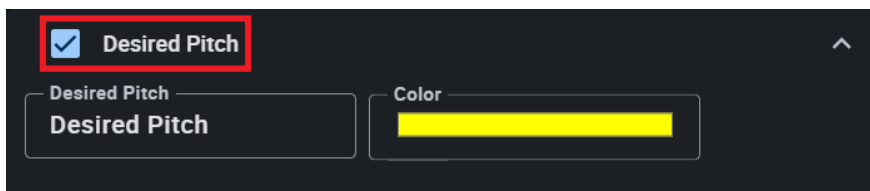
### Attitude configuration - Desired Roll

- **Desired Roll:** Users can choose a variable from the real angular variables of the system to be displayed as the desired roll of the widget.  
By default, the variable **Desired Roll** is displayed.
- **Color:** The color in which the desired roll is colored can be customized by the user. By default, yellow is selected.



### Attitude configuration - Desired Roll example

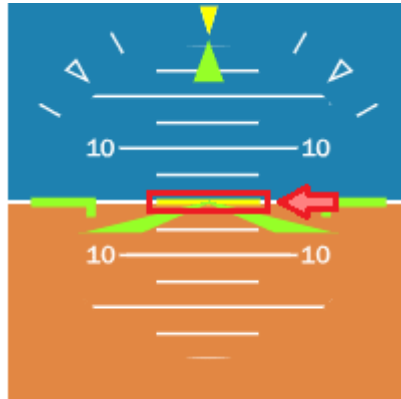
- **Desired Pitch:** By activating/deactivating this parameter, it is possible to show/hide the desired pitch together with the pitch in the attitude widget.  
By default it is activated.



### Attitude configuration - Desired Pitch

- **Desired Pitch:** Users can choose a variable from the real angular variables of the system to be displayed as the desired pitch of the widget.  
By default, the variable **Desired Pitch** is displayed.

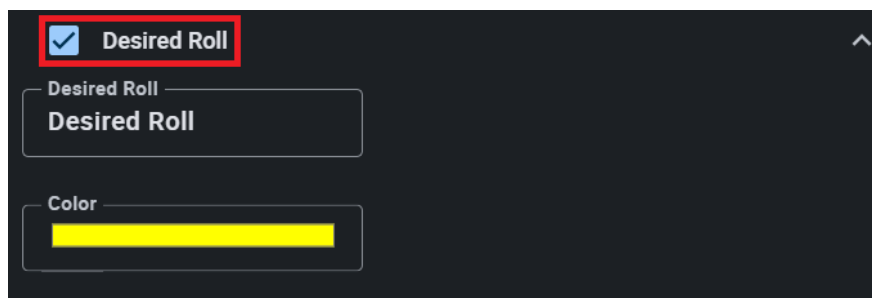
- **Color:** The color in which the desired pitch is colored can be customized by the user. By default, yellow is selected.



**Attitude configuration - Desired Pitch example**

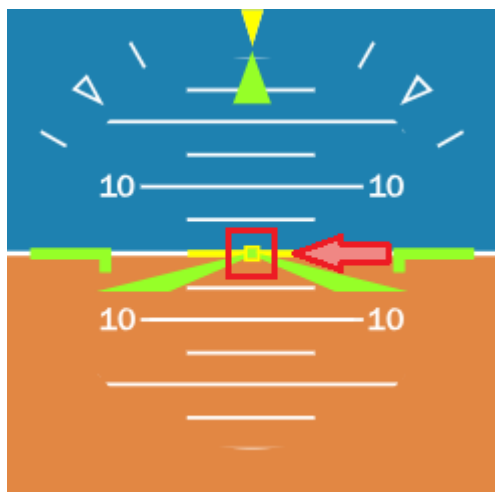
- **Desired Flight Path Vector:** By activating/deactivating this parameter, it is possible to show/hide the desired flight path vector together with the flight path vector in the attitude widget.

By default it is activated.



**Attitude configuration - Desired Flight Path Vector**

- **Desired Flight Path Vector:** Users can choose a variable from the real angular variables of the system to be displayed as the desired flight path vector of the widget.  
By default, the variable **Desired Flight Path Vector** is displayed.
- **Color:** The color in which the **Desired Flight Path Vector** is colored can be customized by the user. By default, yellow is selected.



**Attitude configuration - Desired Flight Path Vector example**

- **Remove:** Deletes this widget.

## Heading

**The heading widget, commonly known as compass, usually shows the platform's yaw relative to the magnetic north.**



## Heading

**Right click on the widget to access its options:**

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Heading configuration menu.

**This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).**

**Heading options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform: Selected Platform

Yaw: Yaw

Heading

Desired Yaw

→ Next

✓ Accept

### Heading configuration

- **Heading:** By activating/deactivating this parameter, it is possible to show/hide the desired heading together with the heading in the attitude widget.

By default it is activated.

Heading

Heading: Heading

Color: [Yellow bar]

### Heading configuration - Heading

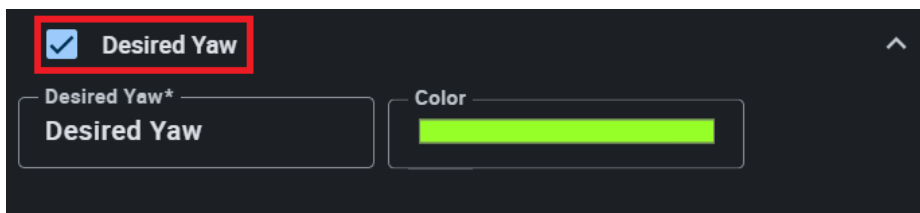
- **Color:** The color in which the heading is colored can be customized by the user. By default, yellow is selected.



Heading configuration - Heading example

- **Desired Yaw:** By activating/deactivating this parameter, it is possible to show/hide the desired yaw together with the yaw in the attitude widget.

By default it is activated.



Heading configuration - Desired Yaw

- **Color:** The color in which the desired yaw is colored can be customized by the user. By default, green is selected.

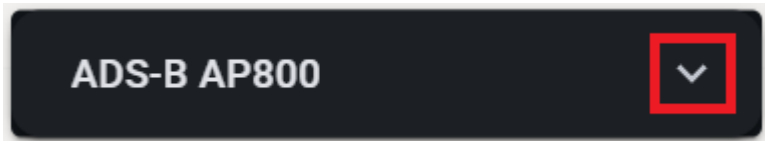


Heading configuration - Desired Yaw example


- **Widget Options** → **VRef:** Users can choose a variable from the the real angular variables in the system to be displayed. By default, the variable Yaw is displayed.
- **Remove:** Deletes this widget.

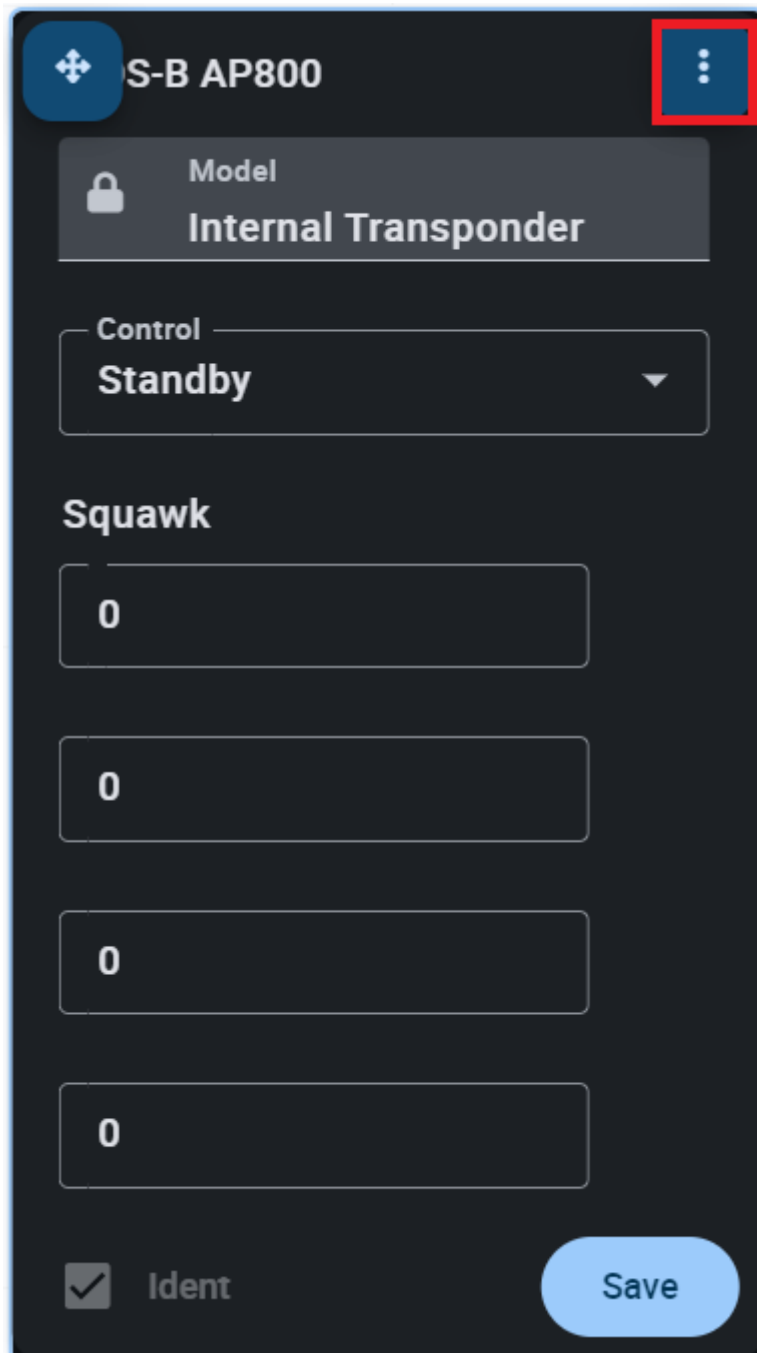
## ADS-B

**ADS-B widget inputs the required information into the ADS-B system.**




## ADS-B

**Note that, as this widget behaves like a drop-down menu, clicking on the  icon will display all ADS-B parameters:**



## ADS-B deployed

Click the  button to access its options (Duplicate, Edit and Remove).

- **Options:**

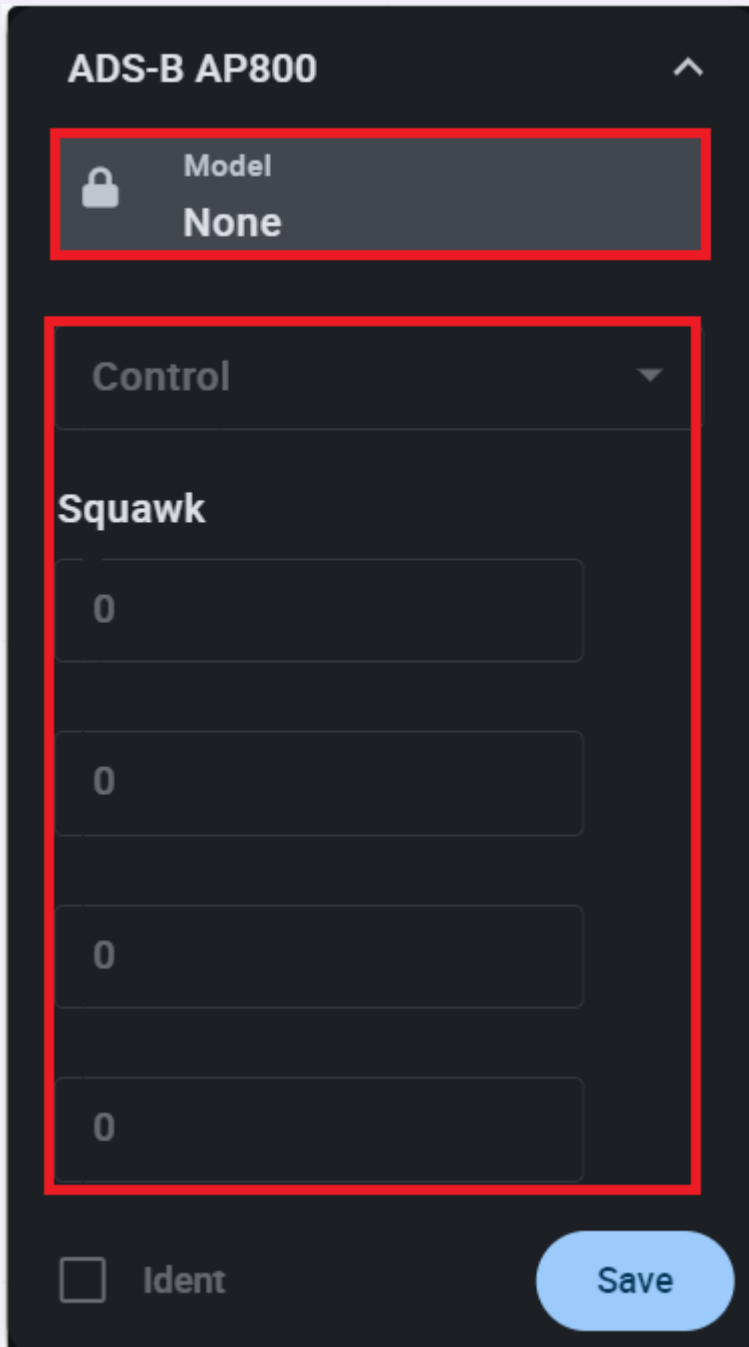
- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the ADS-B configuration menu.

This widget has only the 'basic' configuration described in the [Widgets common configuration](#).

- **Remove:** Deletes this widget.

**⚠ Important**

If the ADS-B has not been configured in the 1x PDI Builder software, this widget will appear as unavailable as shown in the figure below.

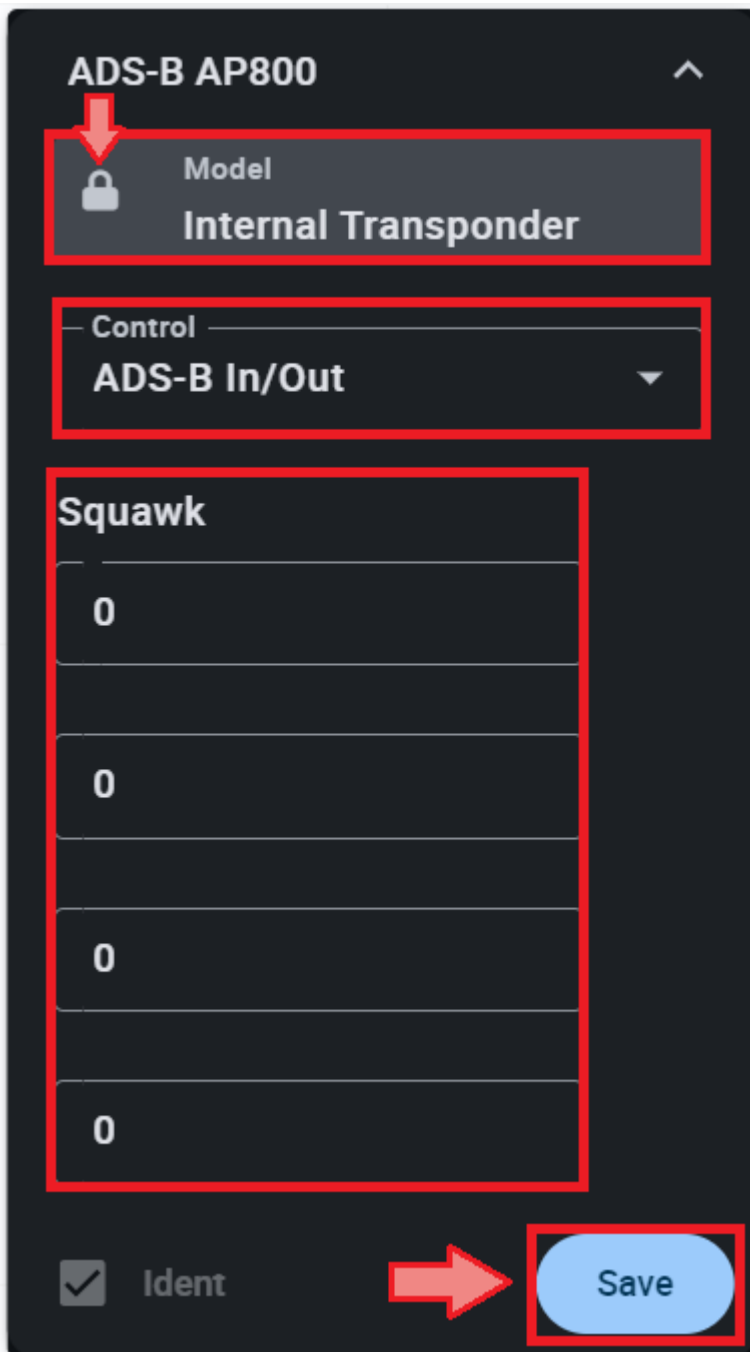


The screenshot shows a configuration screen for 'ADS-B AP800'. At the top, there is a title bar with 'ADS-B AP800' and an upward arrow. Below the title bar, a red box highlights a 'Model' field with a lock icon and the value 'None'. Below this, another red box highlights a 'Control' dropdown menu set to 'Control'. Underneath the dropdown is a section titled 'Squawk' containing four input fields, each with the value '0'. At the bottom of the screen, there is an 'Ident' checkbox and a 'Save' button.

**ADS-B - No ADS-B configured**

This widget has different parameters to modify the ADS-B configuration. For more information on the ADS-B configuration,

please refer to the [Transponder/ADS-B - Devices](#) section of the 1x PDI Builder user manual.



### ADS-B configuration

- **Model:** This only indicates the ADS-B model that has been configured in the 1x PDI Builder software.

**Important**

It cannot be modified from this widget, only in the 1x PDI Builder configuration.

- **Control:** Users can change the transponder control type. It can be Standby, ADS-B In, ADS-B Out and ADS-B In/Out.

 **Important**

The control modes displayed for setting this parameter depend on the selected ADS-B Model. Therefore, not all options described will always appear.

- **Squawk:** Users must introduce the Squawk Code provided. This is the transponder code to identify the flight.

For certain type of flights and/or situations, specific transponder codes are used. These codes are four/digital octal numbers.

 **Important**

This parameter may be configured depending on the ADS-B Model.

- **Ident:** This is an identification of the UAV at the request of ATC, in order to help them to locate the aircraft.

 **Important**

The configuration of this option depends on the Model type selected.

- **Save:** After modifying any parameter, press here to save the changes into the configuration. The following message will appear:



ADS-B configuration saved in  
AP800

**ADS-B configuration - Save message**

## GPS Report

The GPS Report Options menu enables the user to configure the location, data source, and styling of the global positioning widget on the Display

**Right click on the widget to access its options:**

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Heading configuration menu.

**GPS Report options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose platform\*: Selected Platform

→ Next

2 Widget Styling

✓ Accept

### GPS Report configuration

Wind

**The Wind Options menu enables the operator to configure the location, data source, and graphic style of the wind telemetry widget on the display.**



## Wind Widgets

Right click on the widget to access its options:

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Heading configuration menu.

This widget has extra edit parameters compared to the ones described in the [Widgets common configuration](#).

The screenshot shows a 'Wind options' configuration window. It features a title bar with a close button (red 'x'). The main area is titled '1 Widget Options' and contains several configuration fields. A red box highlights the 'Wind\*' field (Wind Azimuth Angle (Deprec)), the 'Color' field (a blue color bar), and the 'Arrow type\*' field (Arrow 1). At the bottom, there are 'Next' and 'Accept' buttons.

### Wind configuration

- **Wind:** Defines which telemetry variable is used to calculate wind direction.
- **Color:** Allows the user to select the color of the graphic indicator to ensure optimal visibility against the map or background.
- **Arrow type:** Defines the graphic style of the wind arrow.

Payload

Gimbal Buttons

**Gimbal Buttons** widget groups different control buttons of the selected gimbal into a single 'drop-down' button.



## Gimbal Buttons

When clicked, the control buttons will appear/disappear.

Right click on the widget to access its options (Duplicate, Edit and Remove).

This widget has extra edit parameters compared to the ones described in [Widgets common configuration](#).

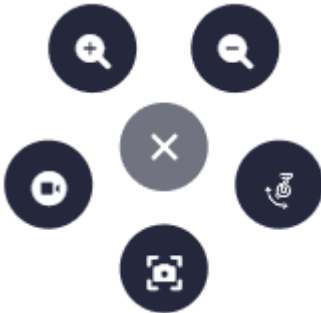
- **Options** → **Edit**: This allows the user to access the Gimbal Buttons configuration menu.

### Gimbal Buttons configuration

- **Widget Options:**
  - **Choose Gimbal:** The user has to choose from the gimbal predefined list the gimbal for which the widget is configured.
  - **Activate controls:** Select the desired controls of the selected gimbal that will be displayed on the Gimbal Buttons.

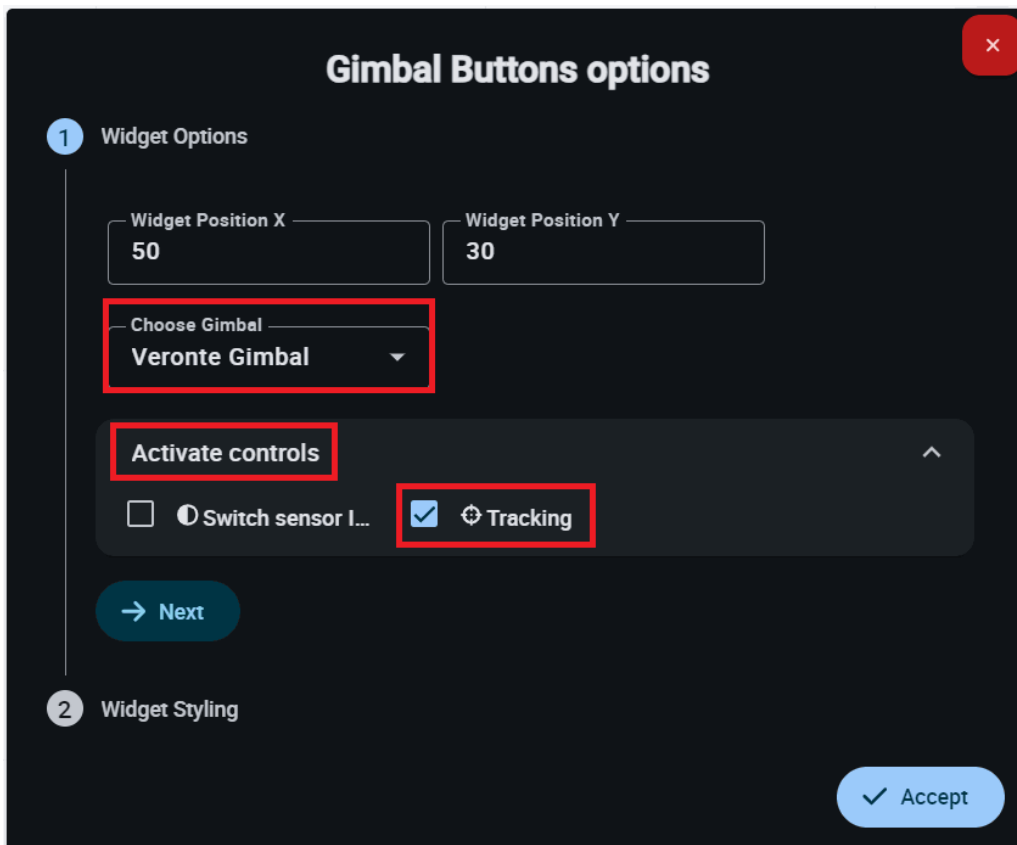
**Important**  
The controls shown here depend on the selected gimbal, each gimbal has its own control buttons.

Below is an example with the NextVision gimbal:



Gimbal Buttons example

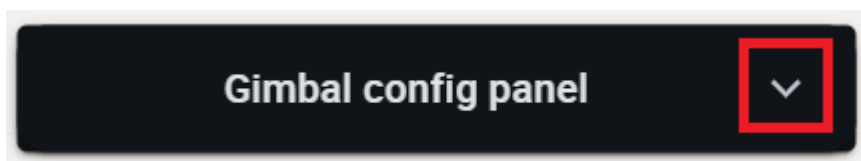
These control buttons can be enabled/disabled in the configuration:




Gimbal Buttons configuration example

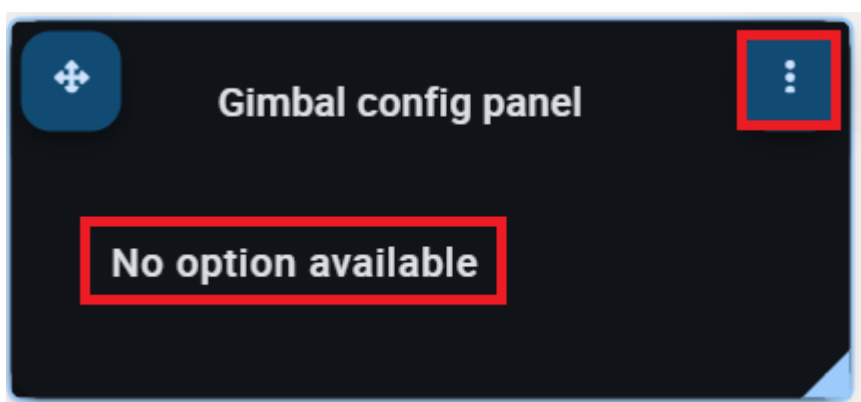
## Gimbal Setup

**Gimbal Setup widget is a gimbal configuration panel, where the user can choose which gimbal controls can be managed from Veronte Ops.**



### Gimbal Setup

**Note that, as this widget behaves like a drop-down menu, clicking on the  icon will display all gimbal controls:**



### Gimbal Setup deployed

#### **Note**

**As no controls have been configured yet, No option available is displayed when deployed.**

**Click the  button to access its options (Duplicate, Edit and Remove).**

- **Options** → **Edit:** This allows the user to access the Gimbal Setup configuration menu.

**Gimbal Setup options**

1 Widget Options

Widget Position X: 58

Widget Position Y: 338

Choose Gimbal\*

Activate controls

→ Next

2 Widget Styling

✓ Accept

## Gimbal Setup

This widget has extra edit parameters compared to the ones described in [Widgets common configuration](#).

- **Widget Options:**

- **Choose Gimbal:** The user has to choose from the gimbal predefined list the gimbal for which the widget is configured.
- **Activate controls:** Select the desired controls of the selected gimbal that will be displayed on the gimbal configuration panel.

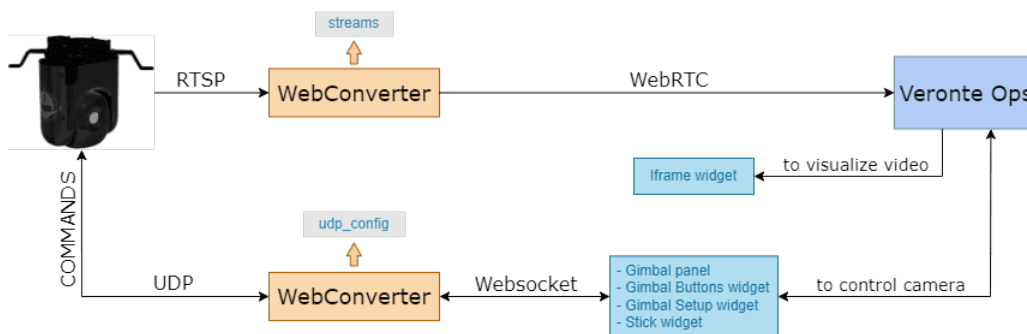
⚠ **Important**

The controls shown here depend on the selected gimbal, each gimbal has its own controls.

# Integration examples

## Gimbal

The following diagram summarizes the "connection" and "elements" required to view video recording and/or command a generic gimbal in Veronte Ops:



### Gimbal connection diagram

#### **Note**

The configuration described in this section covers how to set up and control a generic gimbal with Veronte Ops.

To configure and control a gimbal from Veronte Ops, the following must be considered:

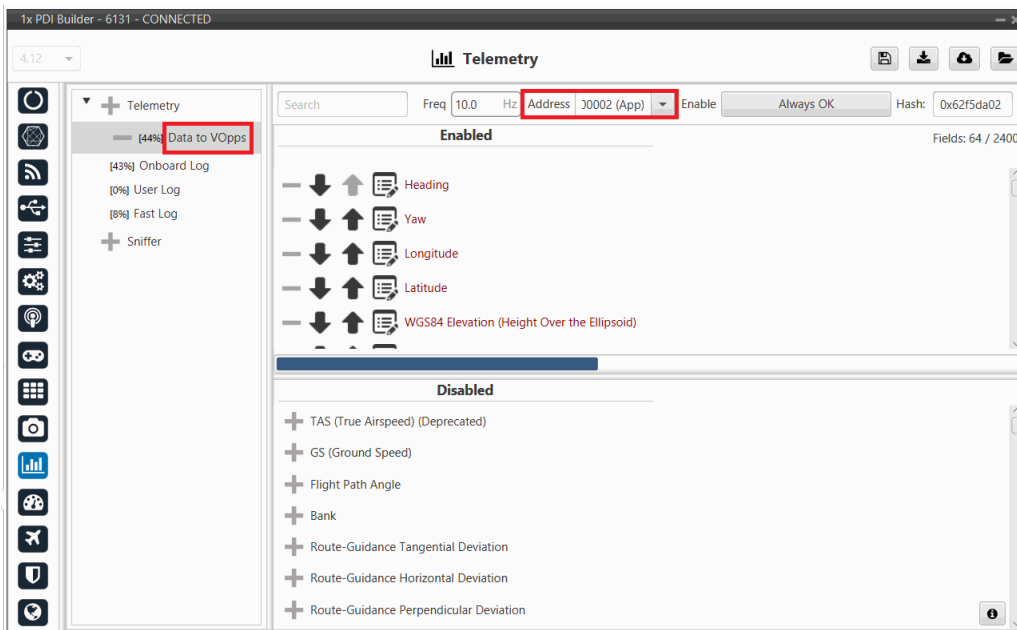
- The gimbal must be configured in the **Gimbal panel**.
- Use the **Gimbal Buttons widget** to command actions to the gimbal camera.
- Use the **Gimbal Setup widget** to configure some options of the gimbal camera video.
- To view the video recording and/or track directly with the displayed image, the **Iframe widget** is needed.
- Finally, if the user wants to manage the gimbal with a Veronte Ops virtual stick or a USB joystick, the **Stick widget** must also be configured.

---

**Furthermore, it is necessary to configure the following variables in the telemetry vector of the Autopilot 1x in order to establish a correct communication for commanding between Veronte Autopilot 1x ⇒ Veronte Ops ⇒ Gimbal:**

- **GNSS2 Number of Satellites Used in Solution**
- **GNSS1 Number of Satellites Used in Solution**
- **Longitude**
- **Latitude**
- **MSL (Height Above Mean Sea Level) - Altitude**
- **AGL (Above Ground Level) - Height**
- **North Ground Velocity**
- **East Ground Velocity**
- **Down Ground Velocity**
- **Heading**
- **GS (Ground Speed)**
- **p (Angular Velocity - X Body Axis)**
- **q (Angular Velocity - Y Body Axis)**
- **r (Angular Velocity - Z Body Axis)**
- **Yaw**
- **Pitch**
- **Roll**

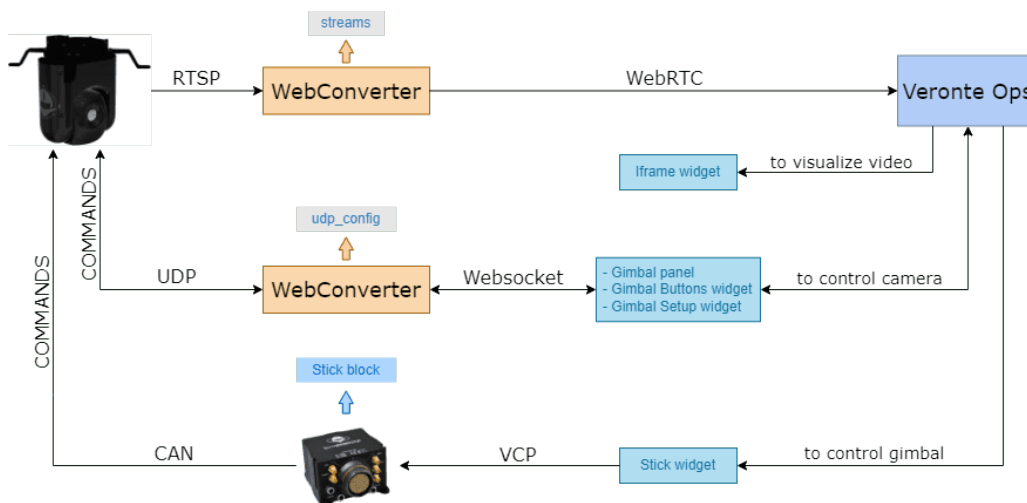
**The Data to Vapp telemetry vector in the Autopilot 1x configuration (using 1x PDI Builder software) should look like this:**



### Gimbal - Telemetry configuration

### Veronte Gimbal

The following diagram summarizes the "connection" and "elements" required to view video recording and/or command a Veronte Gimbal in Veronte Ops:



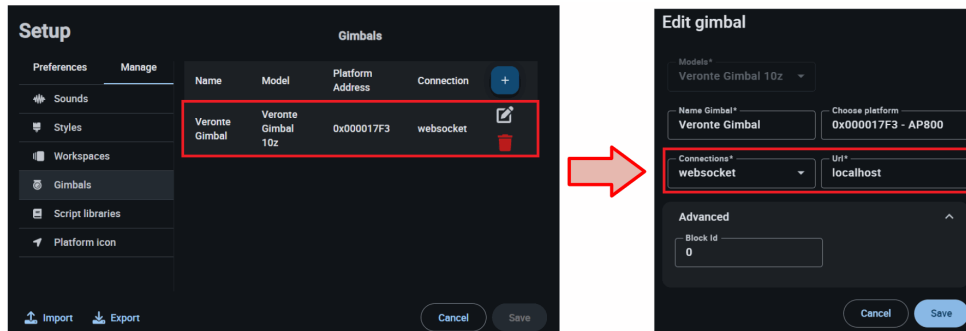
### Veronte Gimbal connection diagram

**Note**

The configuration described in this section covers how to set up and control a Veronte Gimbal with Veronte Ops.

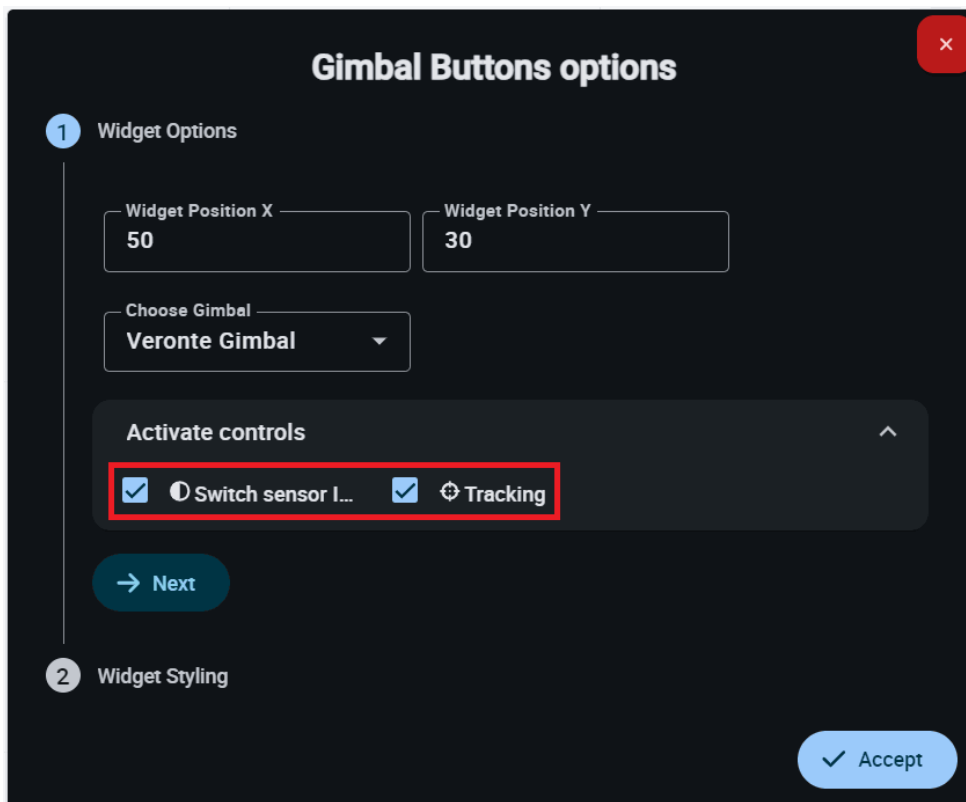
To configure and control a Veronte Gimbal from Veronte Ops, the following must be considered:

- The gimbal must be configured in the **Gimbal panel**. If the user has a Veronte Gimbal 10z, the configuration should look like this:



Veronte Gimbal configuration - Gimbal panel

- **Model:** Veronte Gimbal 10z
- **Connections:** WebSocket
- **Url:** `websocket_url` configured in the **Web Converter app**.
- **Port:** `websocket_port` configured in the **Web Converter app**.
- Use the **Gimbal Buttons widget** to command actions to the gimbal camera. For the Veronte Gimbal 10z, the following actions are available:



Veronte Gimbal configuration - Gimbal Buttons widget

- **Switch sensor IR/Day:** Button to switch between IR and EO camera.
- **Tracking:** Button to stop tracking.
- Use the **Gimbal Setup widget** to configure some options of the gimbal camera video. For the Veronte Gimbal 10z, the following controls are available:

**Gimbal Setup options**

1 Widget Options

Widget Position X: 50

Widget Position Y: 30

Choose Gimbal\*: Veronte Gimbal

Activate controls

Zoom  Flip mode

→ Next

2 Widget Styling

✓ Accept

### Veronte Gimbal configuration - Gimbal Setup widget

- **Zoom:** Users can zoom from 0% to 100% with a slider.
- **Flip mode:** Users can flip the camera as desired. The available options are Normal, Mirror, Flip and Mirror and flip.
- To visualize the video recording and/or track directly with the displayed image, the **Iframe widget** is needed.

### Veronte Gimbal configuration - Iframe widget

- **https://**: Enter the URL generated by the [Web Converter app](#).
- Finally, to control the gimbal with a Veronte Ops virtual stick or a USB joystick, the [Stick widget](#) must also be configured as shown in the figure below:

### Veronte Gimbal configuration - Stick widget

**Note**

In this case, it is controlled directly with the virtual stick (no USB joystick is being used).

- **Type:** PLATFORM must be selected.
- **Port:** Select the port configured in the Stick block in the 1x PDI Builder software.
- **Axis X/Y:** Configure both channels X and Y.

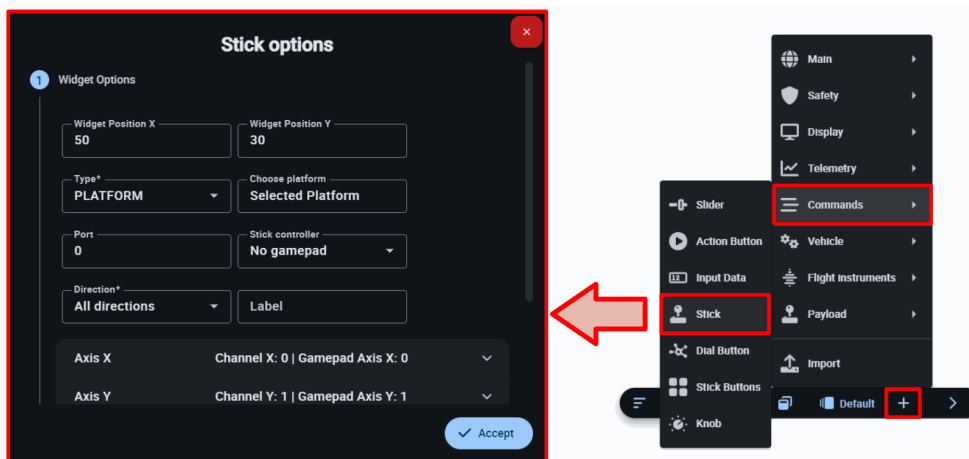
## Stick widget

Once the steps described in the [Stick widget - Integration examples](#) section of the 1x PDI Builder manual have been performed, configure Veronte Ops to enable the commands of the Stick widget. To do so:

### 1. Add a Stick widget.

**Note**

The connection should work with the default settings. For more information on the configuration of the Stick widget, please refer to [Stick - Workspace](#) section of this manual.



### Stick widget - Stick configuration

### 2. Enable the send of commands to Veronte Autopilot by clicking on the Send command button of the widget.



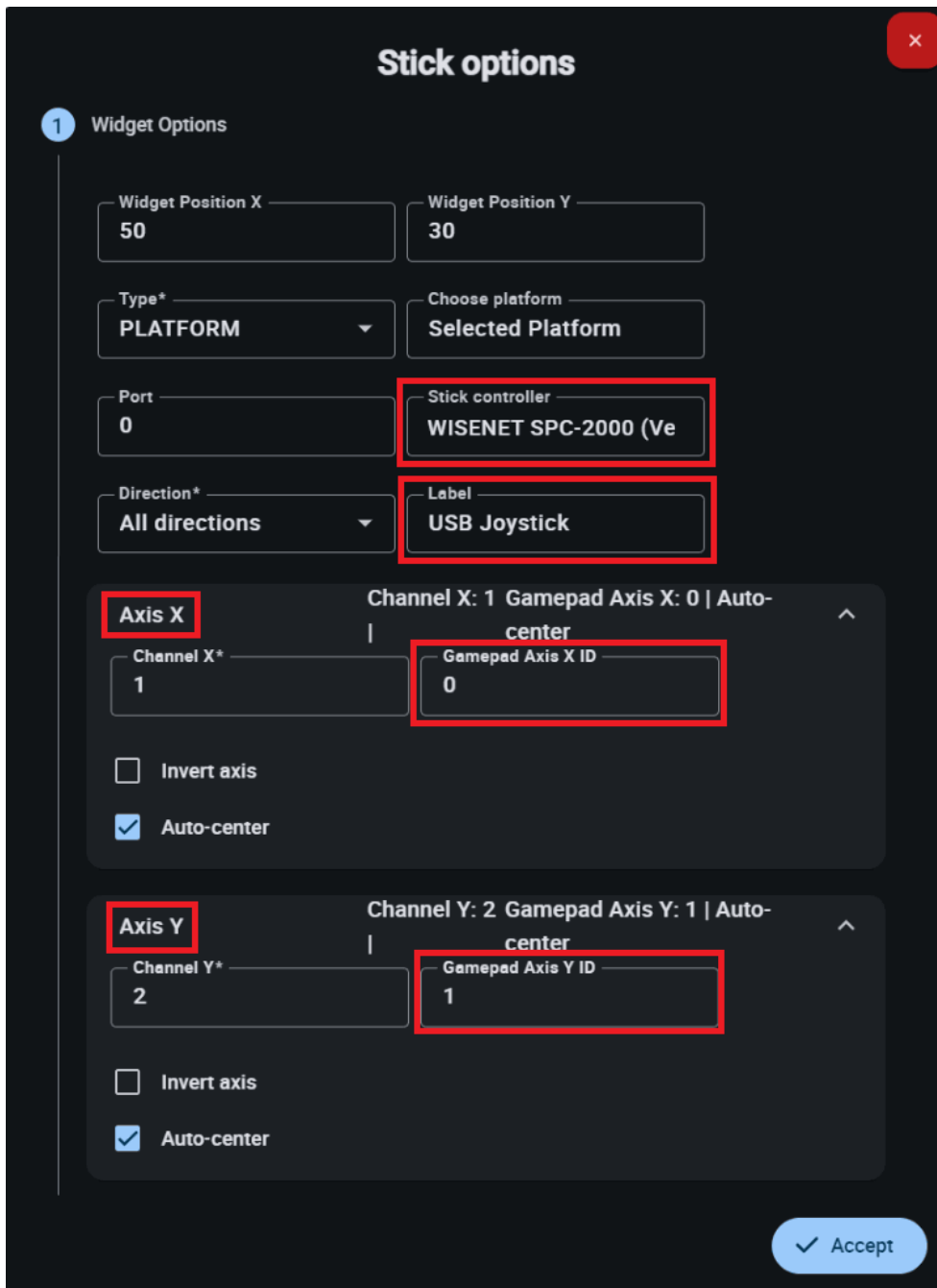
**Stick widget - Enable send commands**

## USB joystick

**Veronte Ops is able to detect USB devices such as joysticks. The buttons and axes of these devices can be read and configured to send stick information to Veronte Autopilot 1x.**

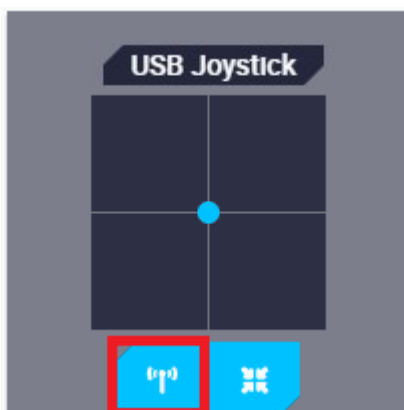
**Once the steps described in the [USB joystick - Integration examples](#) section of 1x PDI Builder manual have been performed, configure a Stick widget to be connected to a USB joystick. To do so, follow the steps below:**

- 1. Select the Gamepad that corresponds with the USB joystick connected to the PC.**
- 2. And configure the Gamepad Axis X/Y ID so that the axes IDs of the stick widget gamepad correspond to those of the physical joystick.**



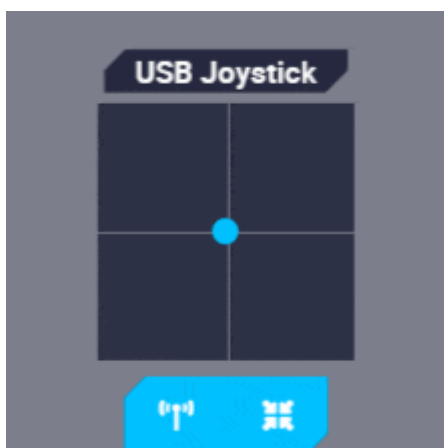
**Stick widget - USB joystick**

- 3. Enable the send of commands to Veronte Autopilot by clicking on the Send command button of the widget.**



**Stick widget - Enable send commands**

**Below is an example of how the stick widget works with the previous configuration:**



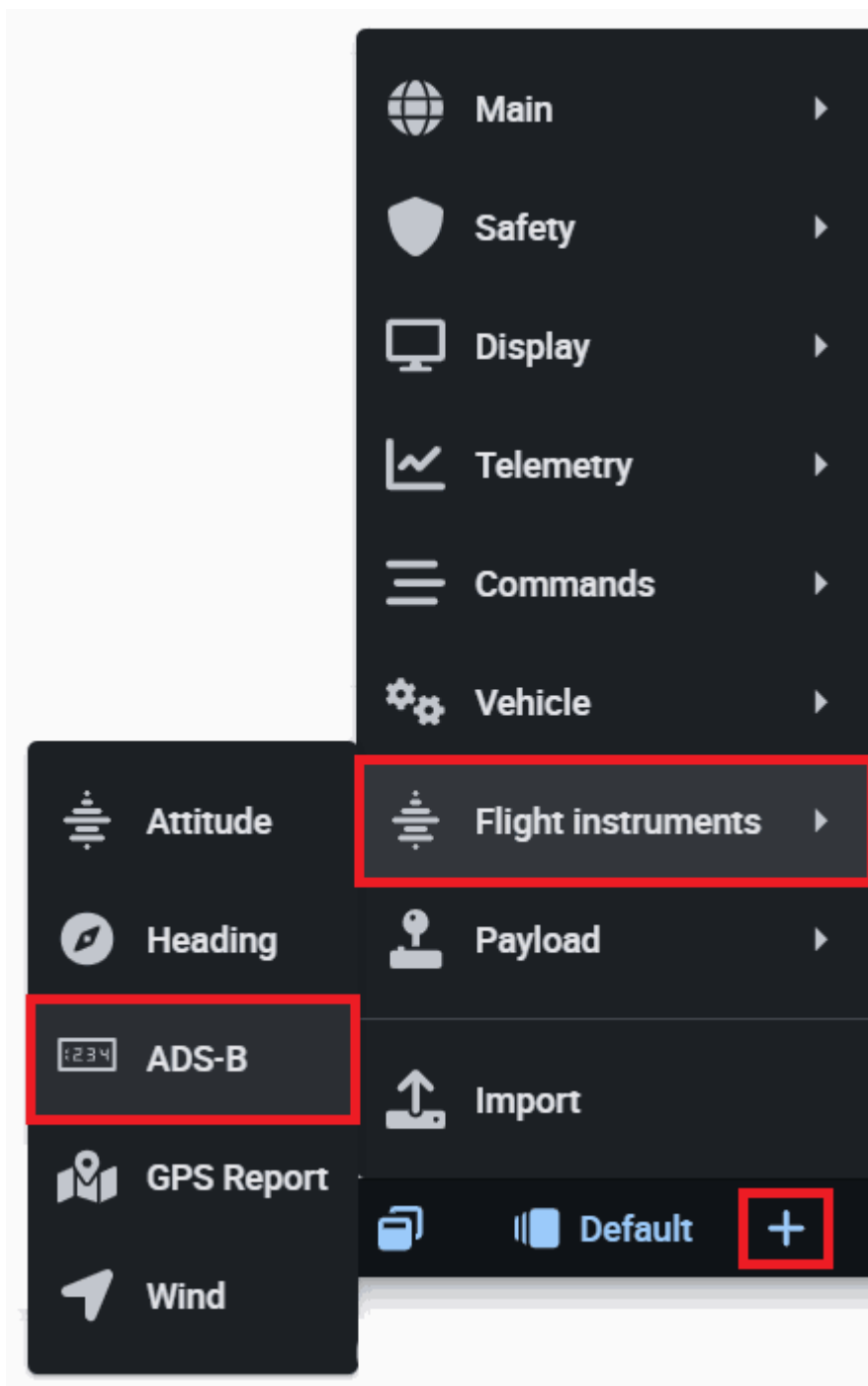
**Stick widget - USB joystick movement**

## Remote ID

**To configure the Remote ID, it is necessary to verify that it has been configured in [1x PDI Builder](#).**

**The control mode can be changed within Veronte Ops, so it is not necessary to reconfigure the PDI files.**

**To do this, open Veronte Ops → in the Workspace toolbar, click  → Flight instruments → ADS-B. An ADS-B widget will be added to the workspace:**




### Remote ID - Configuration

This widget displays the Internal Remote ID as the Model (the model previously selected in 1x PDI Builder).

The Control mode can be modified; press Save to upload the changes.

**ADS-B AP800** ^

 Model  
**Internal Remote ID**

Control  
**Standby** ▼

**Squawk**

0

0

0

0

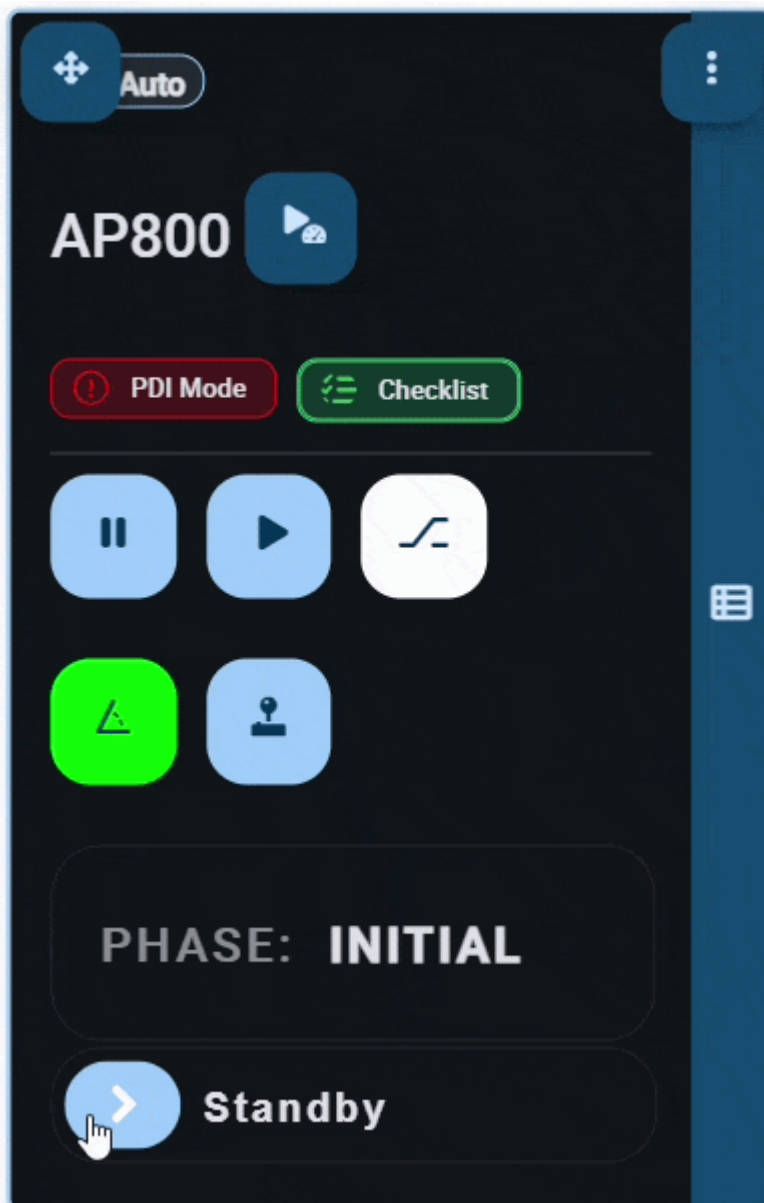
Ident **Save**

**Remote ID - Widgets**

# Troubleshooting

## Error when changing phase

When changing phase, an error may occur so that the phase change does not take place and also the current phase identifier is colored red (the phase that appears is the one the platform was in before the phase change was attempted):



Veronte Panel - Changing phase error

## The reason for this error depends on the user's goal:

- **During simulation or simple test**
  - **If this error occurs while the user is running simulations or simple tests without all sensors connected, it is most often because Veronte Autopilot 1x has not been configured in PDI Mode. If it has been configured in PDI Mode, a pill indicating this appears directly on the Veronte Panel.**  
**For more information on PDI Mode, visit the [PDI Mode](#) description of the 1x PDI Builder user manual.**
  - **It may also be due to navigation not initialized. For more information, see [Navigation does not start](#) section of this page.**
- **During flight test or operation**

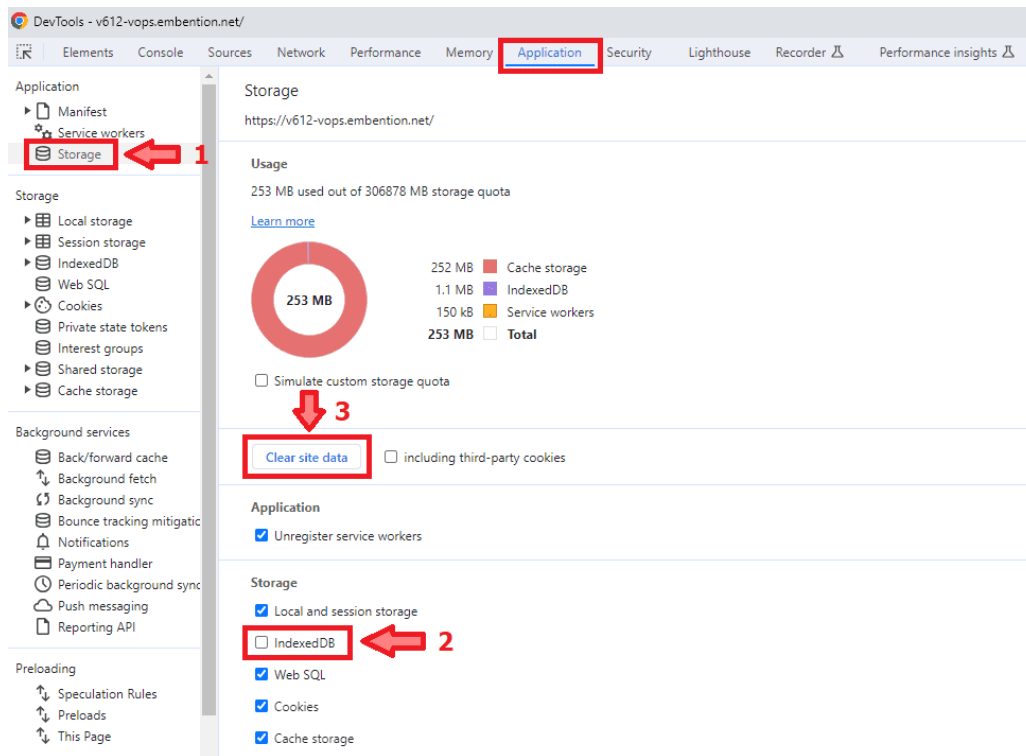
**If this happens when the user is not in PDI mode (e.g. because the user is operating with the configuration finished and all sensors connected), it may be due to one of the following reasons:**

  - **System bit is in error mode (not OK).**  
**A list of all errors that can cause this bit to be set can be found in the [Activation System Error bits - Lists of interest](#) section of the 1x Software manual.**
  - **Navigation attitude could not be initialized. For more information, see [Navigation does not start](#) section of this page.**

## Installed Veronte Ops app does not load

**When users open the installed Veronte Ops application and it does not load or takes a long time to load, follow the steps below to fix it in:**

- 1. Press the [F12](#) key on the keyboard to open the DevTools window.**
- 2. Go to Application tab ⇒ Storage.**
- 3. To avoid losing workspaces and operations that are already loaded in the application, the IndexedDB checkbox must be unchecked.**
- 4. Finally click on [Clear site data](#)**



## DevTools window

## Navigation does not start

To start the navigation, the following requirements must be met:

- **Correct IMU measurements.**
- **The yaw must be initialized with magnetometer measurements or with an yaw initialization command.**

To do the latter, see [Calibrate Yaw - Operation](#) section of this manual.

## Sounds Notification Language

**The app will only support the languages found in the user's system settings.**

# Software Changelog

**This section presents the changes between the previous app version v. 7.8.24 and the current v.8.2.22.**

## **Added:**

- **Direct RTSTP video stream playback support within the video widget.**
- **Veronte LM PAT as an available camera and gimbal option.**
- **Capability to select a specific camera or gimbal directly from the video widget to execute track commands.**
- **The checklist widget has been integrated into the veronte panel widget itself.**
- **Network interface selector within the Setup Cucs panel to allow configuration of the adapter used for multicast traffic.**
- **Option to toggle the visibility of the UAV icon on the map within the settings menu.**
- **A chip has been added to indicate the license status if necessary.**

## **Fixed:**

- **Widget Slider max, min and step settings.**
- **Widget Dial color selector position.**
- **Checklist in the Veronte Panel widget.**
- **Platform selection in widgets.**
- **Refresh drx license.**
- **Show guidance in map.**
- **Reload Redundancy platform config.**
- **Restored the correct application of user preferences regarding platform icons.**

## **Removed:**

- **The requirement to use an external web converter for RTSP video playback.**
- **The checklist widget has been removed.**

