



Veronte Ops

Release 6.12/1.0

Embention Sistemas Inteligentes, S.A.

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Scope of Changes

- Version 1.0
 - Added:
 - Important note on [operation license](#) when the platform is a PCS
 - Warning note on blocking widgets when a condition is used in the [Group widget](#)
 - Important note on [Knob widget](#) behavior when the Start angle defined is negative
 - New [6.12.38 Software Changelog](#) subsection
 - Removed:
 - References and explanation to the Weather option in the [Status bar](#), since it has been removed in the 6.12.38 version of the app

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

Compatible browsers

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

Functional

- **Google Chrome**: version 85 Q2 2020
- **Edge (Chromium)**: Q1 2020

Optional

- **Opera (Chromium)**: latest
- **Safari**: version 12

Unsupported

- **Edge not based on Chromium**
- **Firefox**

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:

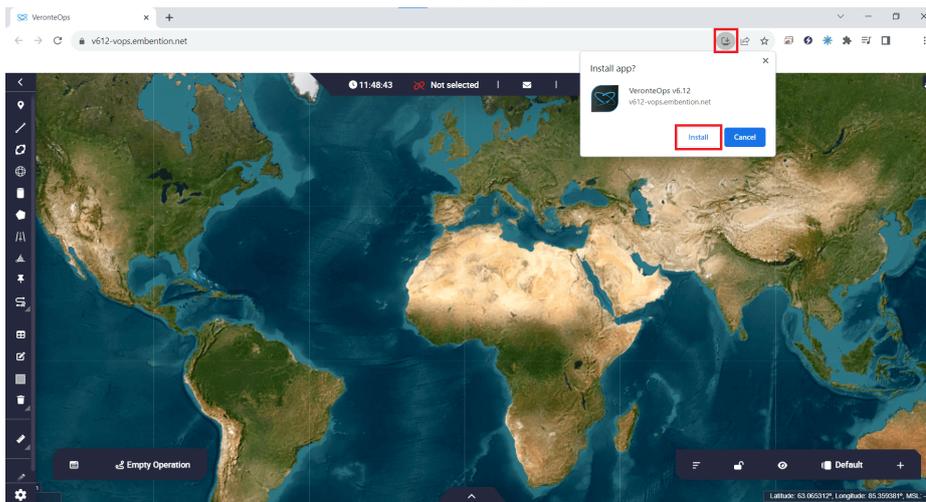
- No internet connection is required, i.e. for users who need to work offline.
- No automatic updates are carried out.
- Users do not need to have a browser installed.
- The application does not depend on the browser.

Website

- To access the web version of the application, simply click on the following link: <https://v612-vops.embention.net/>.

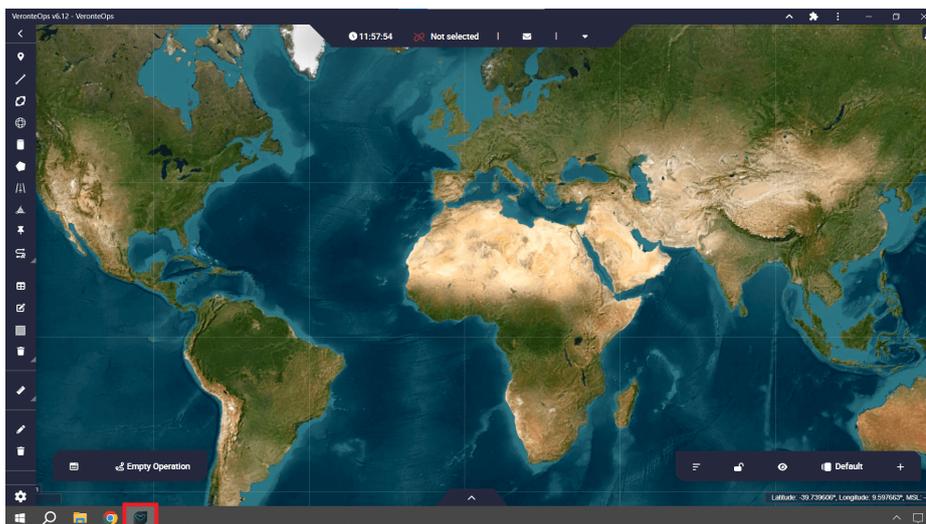
- Users can work with it from the **browser** or **download** it to the PC.

- **Browser**

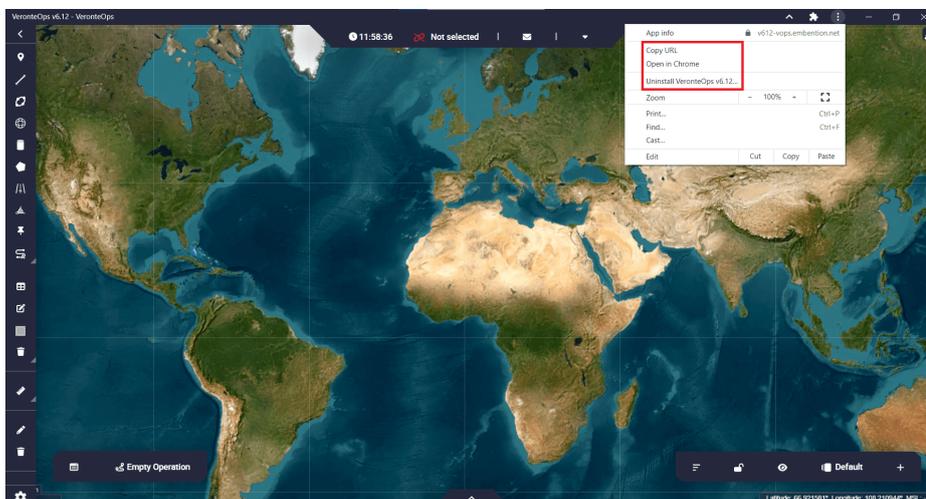


Download Veronte Ops

- **Installed in PC**



Veronte Ops in PC



Uninstall/Open in browse Veronte Ops

- As it is a web application, **updates** will be done on their own and will appear as a **changelog** in the application.

Executable

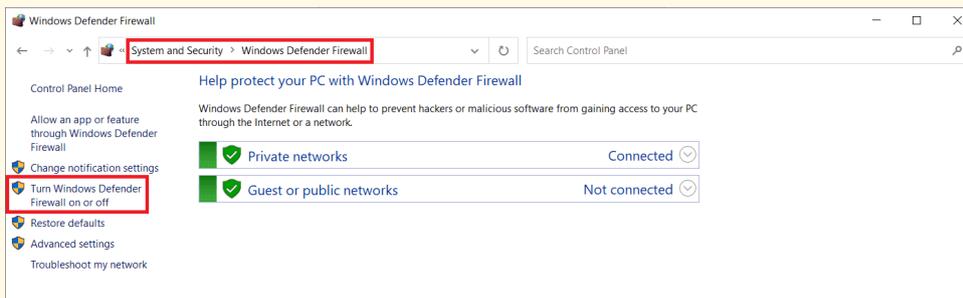
If users wish to work with the executable app and they do not have it yet as a release in their **Joint Collaboration Framework**, contact the support team (by creating a ticket in the customer's **JCF**) and they will create the corresponding release. For more information, please refer to [Releases](#) section of the **JCF** manual.

Then, to install **Veronte Ops** on Windows, just execute "VeronteOps.msi" and follow the indications of the Setup Wizard. Administrator rights are needed.

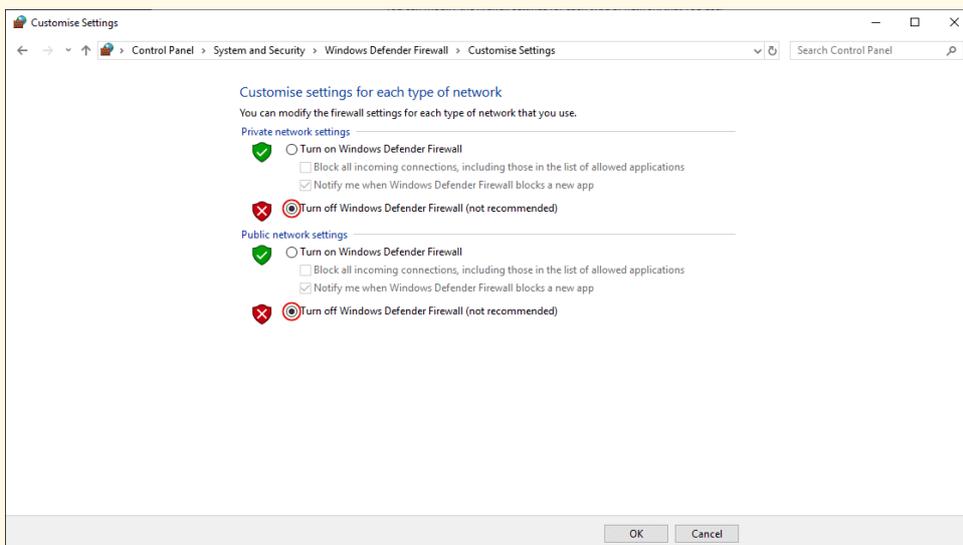
Warning

If users have any problems with the installation, please disable the antivirus and the Windows firewall. Disabling the antivirus depends on the antivirus software.

To disable the firewall, go to "Control Panel" → "System and Security" → "Windows Defender Firewall" and then, click on "Turn windows Defender Firewall on or off".



Windows Defender Firewall



Windows Defender Firewall: Settings

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

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.

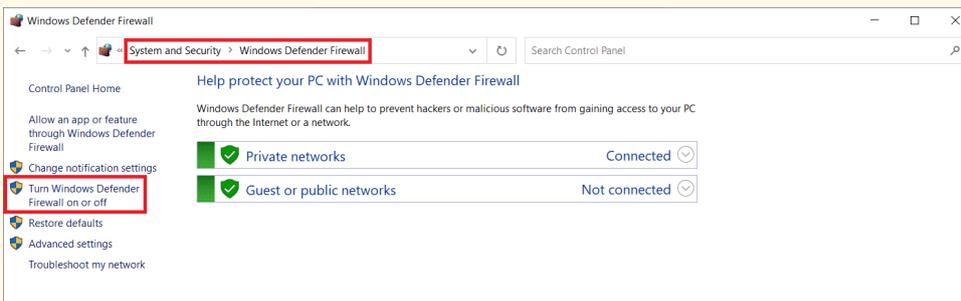
Installation

To install **Veronte Terrain Provider** on Windows just execute "VeronteTerrainProvider.exe" and follow the indications of the setup wizard.

⚠ Warning

If users have any problems with the installation, please disable the antivirus and the Windows firewall. Disabling the antivirus depends on the antivirus software.

To disable the firewall, go to "Control Panel" → "System and Security" → "Windows Defender Firewall" and then, click on "Turn windows Defender Firewall on or off".



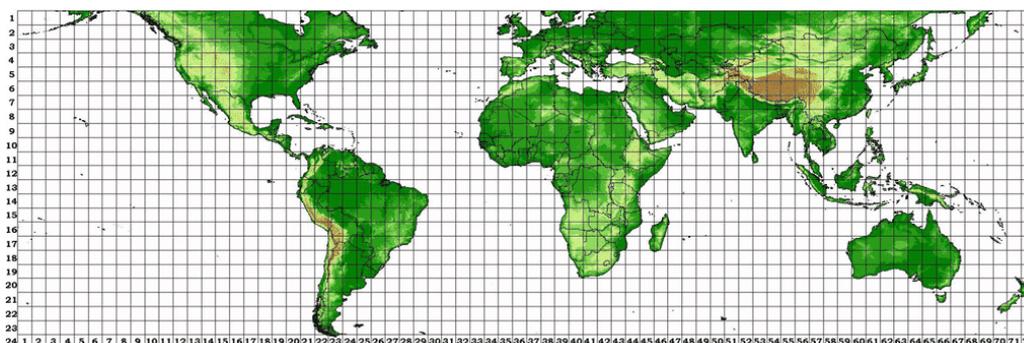
Windows Defender Firewall

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.

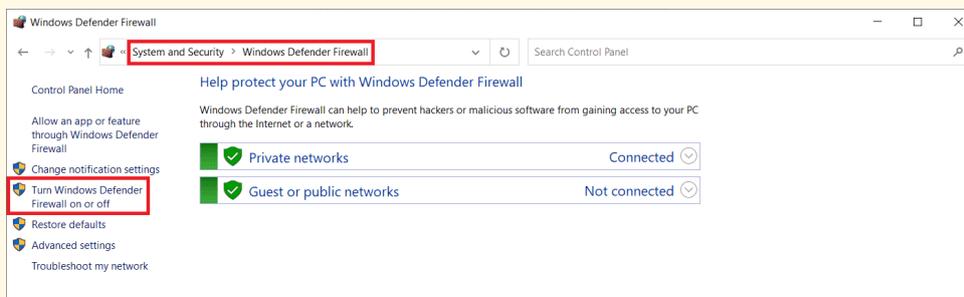
Installation

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

⚠ Warning

If users have any problems with the installation, please disable the antivirus and the Windows firewall. Disabling the antivirus depends on the antivirus software.

To disable the firewall, go to "Control Panel" → "System and Security" → "Windows Defender Firewall" and then, click on "Turn windows Defender Firewall on or off".



Windows Defender Firewall

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 settings 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.

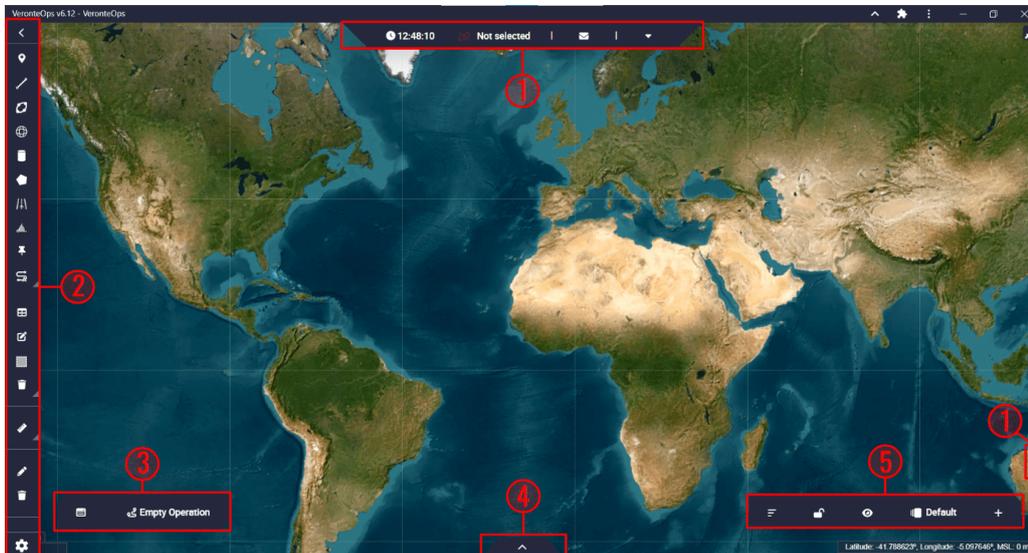
Operation

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.

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](#)
- [Background configuration](#)
- [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.

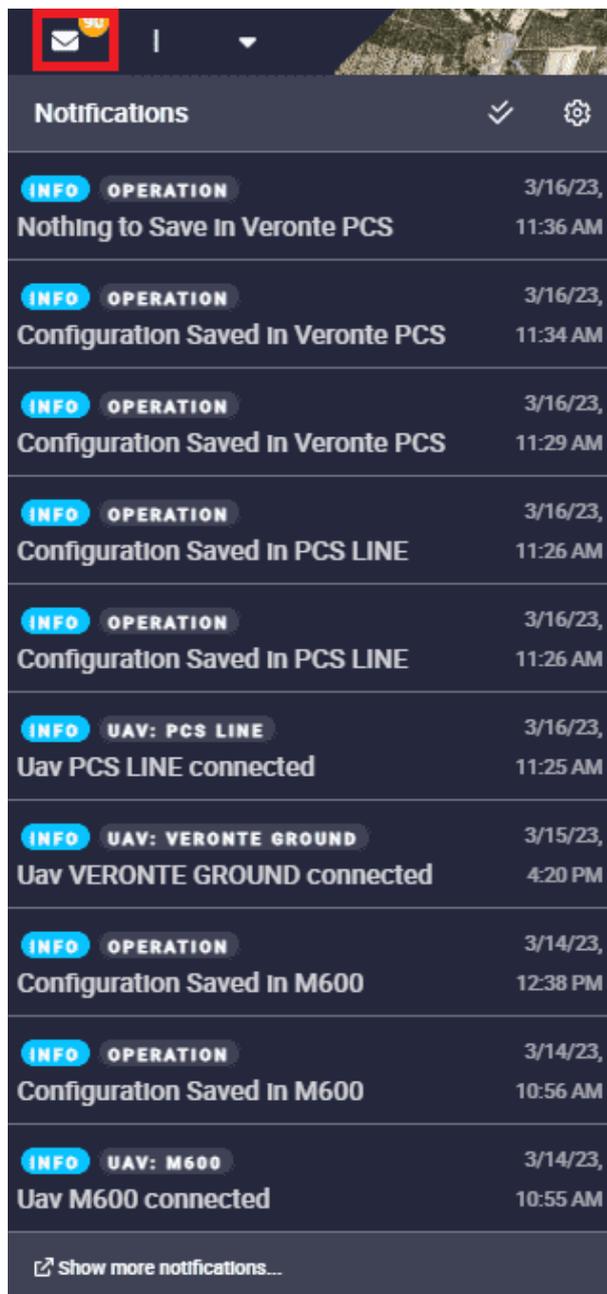
The user can choose to show/hide each of these elements from the [Status bar settings](#).

By default, they are displayed as shown in the image above.

- [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.

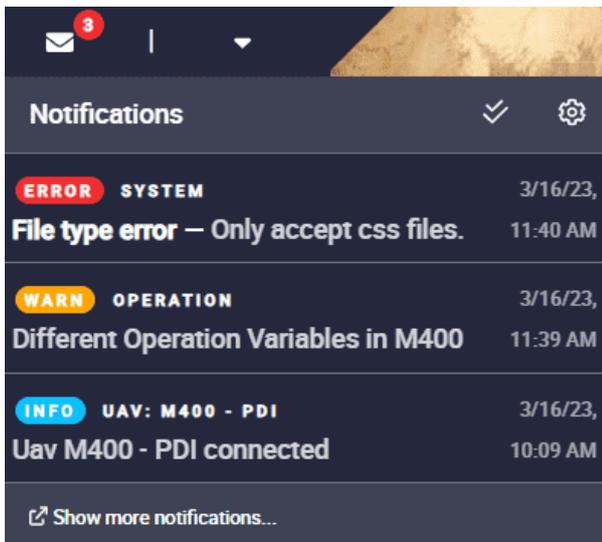
Notifications

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:



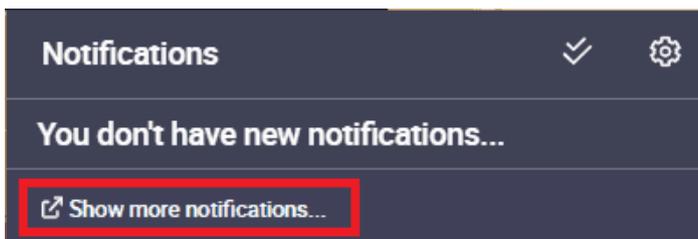
Notifications menu

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



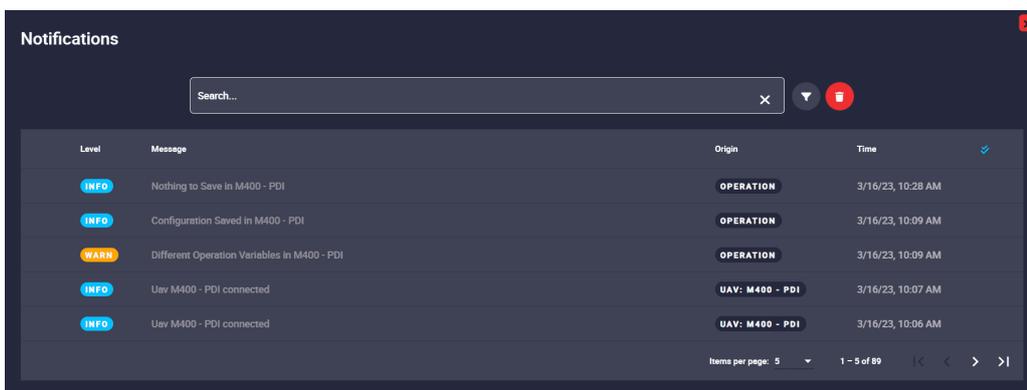
Notifications menu - Classification

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:

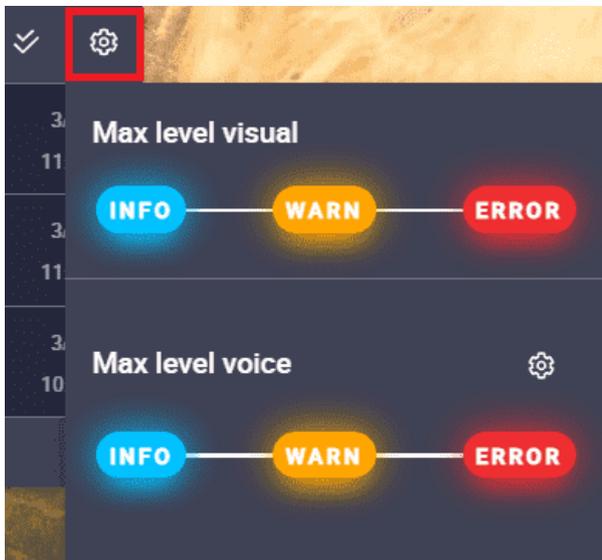


History of notifications

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

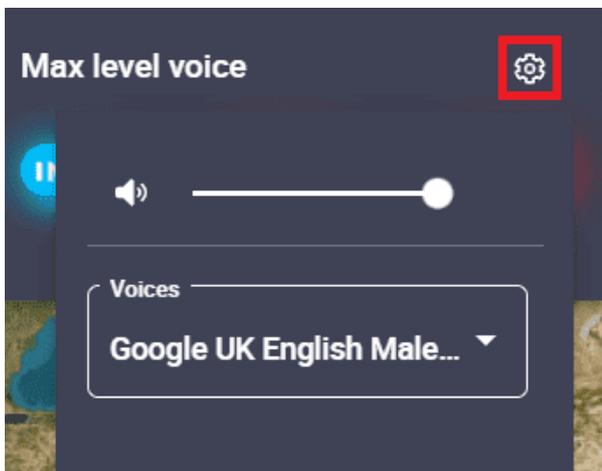
importance, **error notifications will always be shown** (as they are the most important ones) but warning and information notifications can be chosen to be seen/heard or not.

To access it, simply click on the  icon at the top of this menu:



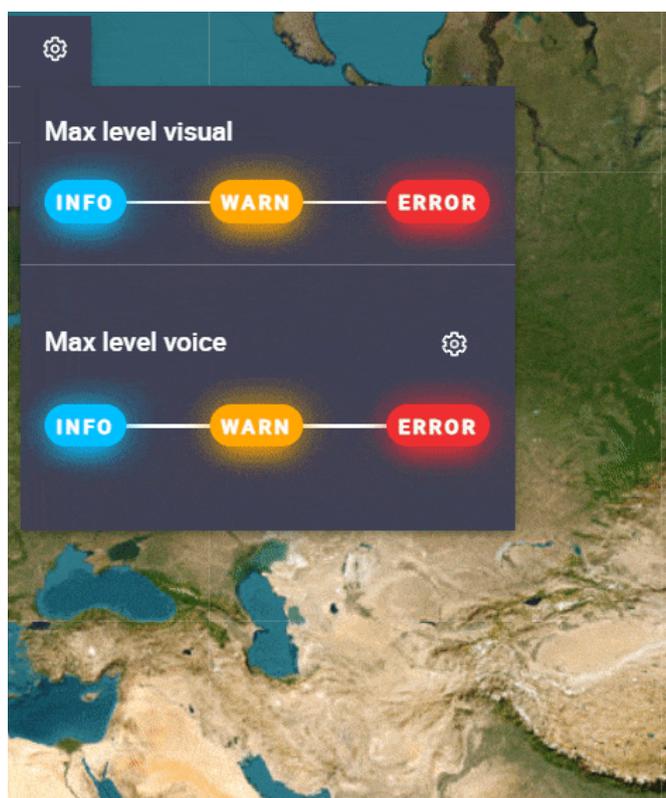
Notifications menu - Configuration

Besides, the user can also choose the language of the sound notifications by clicking on the settings icon:



Sound notifications language

Below is an example of how to customize the notification settings:

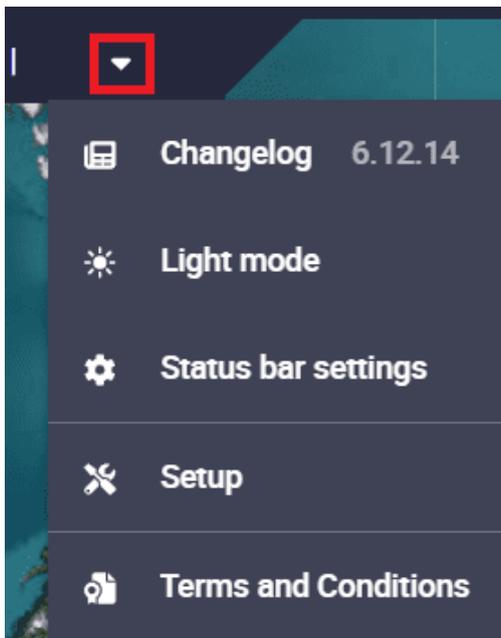


Modified notifications

More options

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

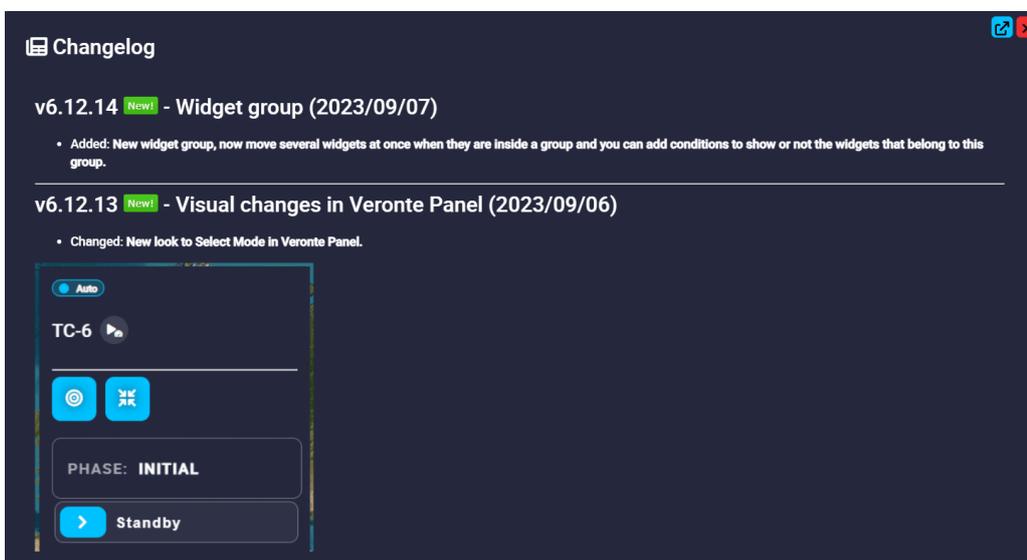
- [Changelog](#)
- [Light/Dark mode](#)
- [Status bar settings](#)
- [Setup](#)
- [Terms and Conditions](#)



Drop-down menu

Changelog

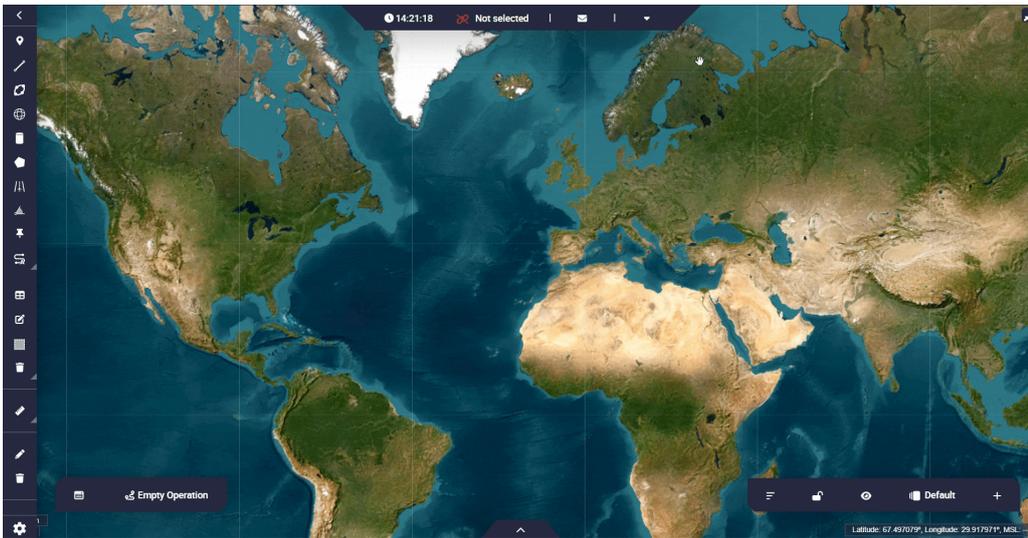
Users can consult the changelog, which shows all updates made to the application.



Changelog

Light/Dark mode

Change the interface display mode: Light/Dark mode.



Light/Dark mode

Status bar settings

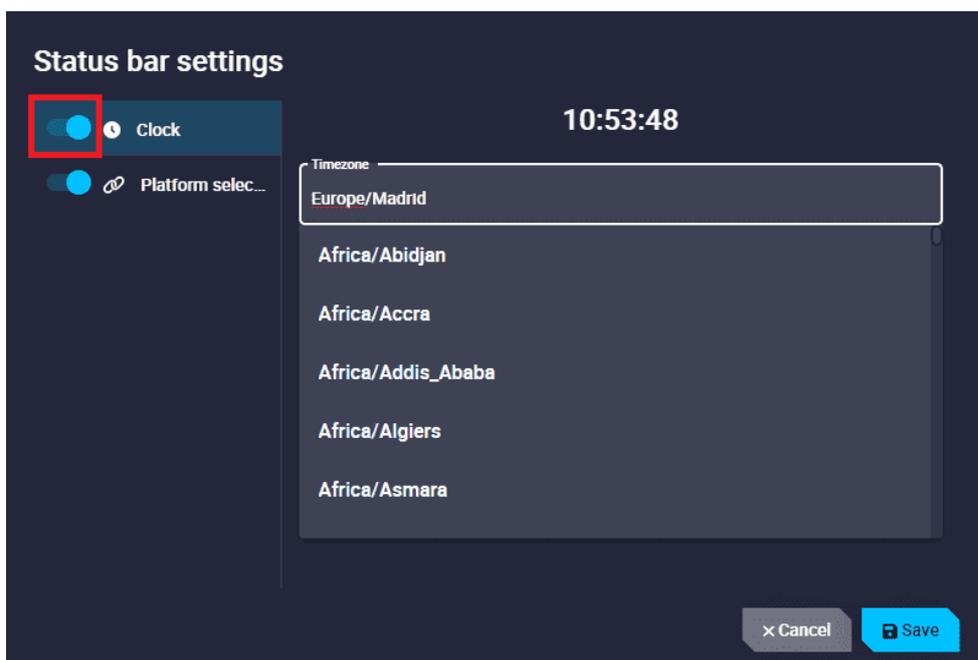
This menu allows the user to **enable/disable** the information items in the status bar.

Note

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

- **Clock**

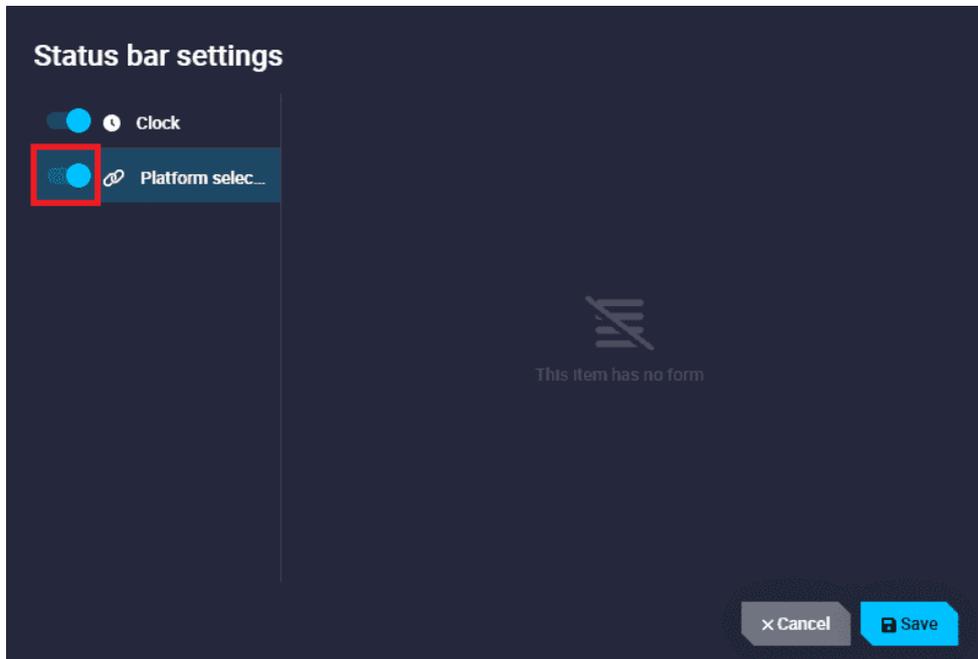
It is possible to customize the timezone where users are working.



Clock panel

- **Platform selected**

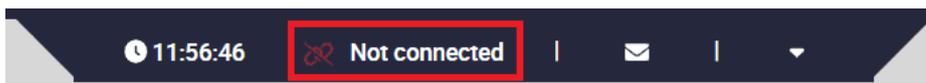
This element informs the user whether a **Veronte Autopilot 1x** is **not connected, not selected, connected, disconnected** or **in maintenance mode**, and the name of this device.



Platform selected panel

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

- **Not connected:**



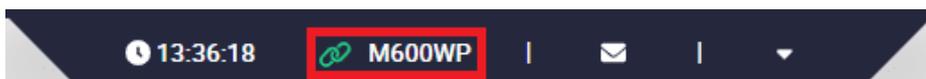
Platform selected - Autopilot not connected

- **Not selected:**



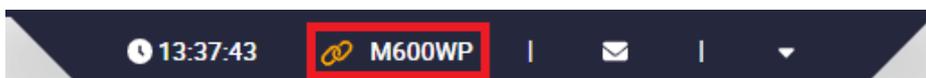
Platform selected - Autopilot not selected

- **Connected:**



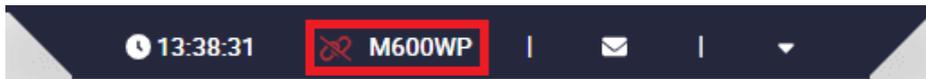
Platform selected - Autopilot connected

- **Maintenance mode:**



Platform selected - Autopilot in maintenance mode

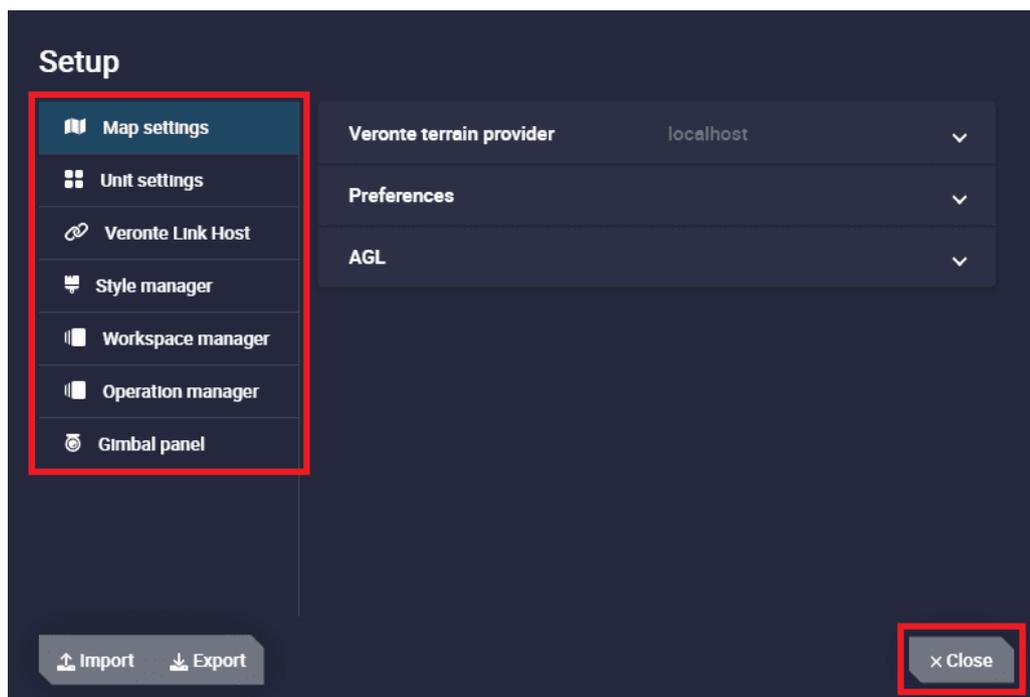
- **Disconnected:**



Platform selected - Autopilot disconnected

Setup

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



Status bar - Setup

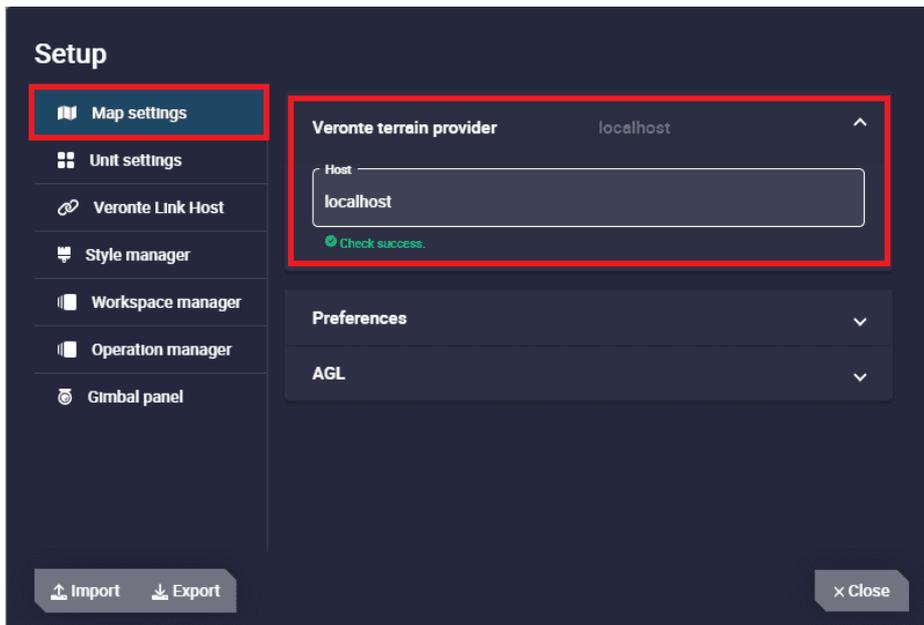
Note

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

• **Map settings**

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

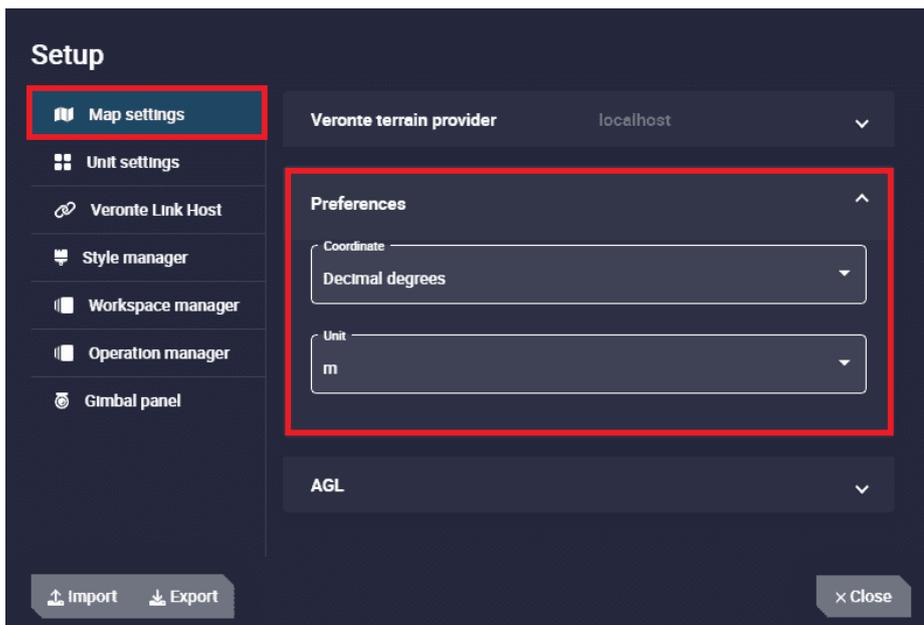
- **Veronte Ops SRTM data provider:**
 - **Host:** The default SRTM data provider configured is the [Veronte Terrain Provider](#) application (i.e., localhost), but users can enter another SRTM data provider that is located on the PC.



Map settings panel - Veronte Terrain Provider

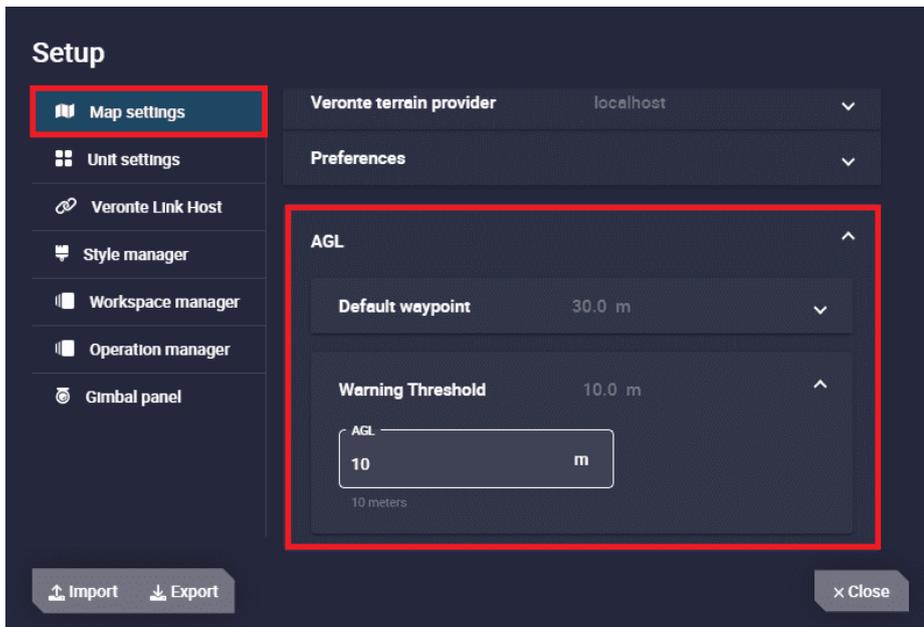
- **Preferences**

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



Map settings panel - Preferences

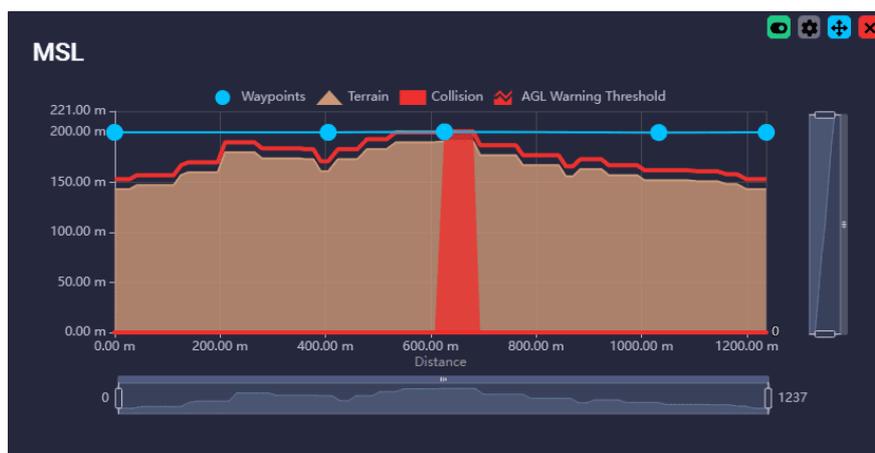
- **Coordinate:** Select the units of the coordinates. The available options are **Decimal degree**, **Degrees**, **UTM** and **MGRS**.
 - **Unit:** It is possible to select the units of the height from the drop-down menu.
- **AGL**



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 10 metres, a **red warning line** will be drawn in the 'elevations' menu **10 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**:

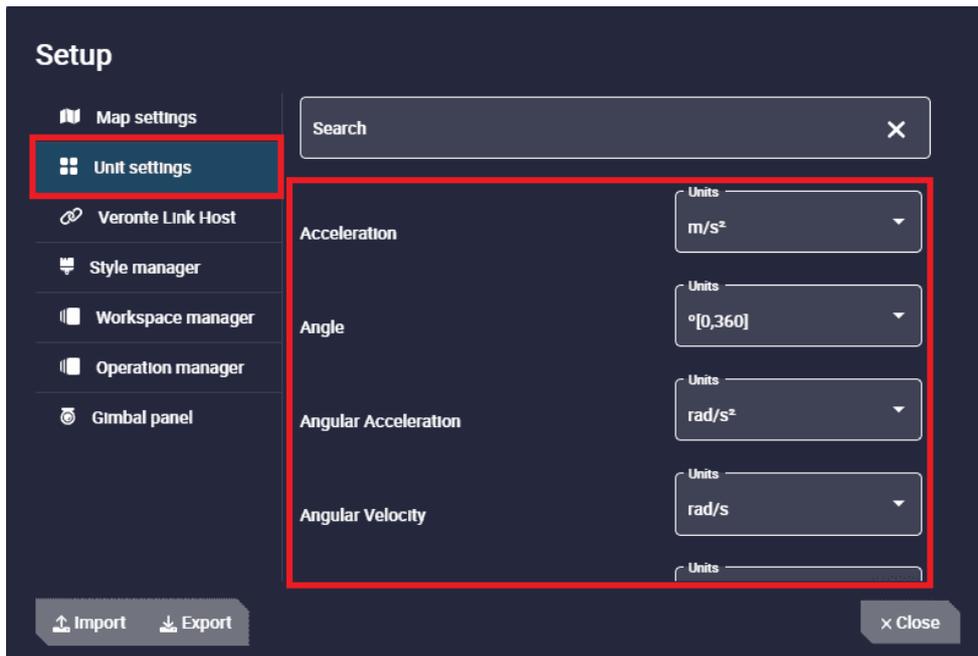


Map settings panel - Warning

- **Unit settings**

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.



Unit settings panel

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

Variable Type	Units
Acceleration	[m/s ²] [ft/s ²] [in/s ²] [g]
Angle	rad[$-\pi$; π] °[-180;180] °[0;360] [° ' "] [rad] rad[0;2 π] °
Angular Acceleration	[rpm/s] [rad/s ²] [rad/m ²] [rad/h ²] [°/s ²] [°/m ²] [°/h ²]
Angular Velocity	[rad/s] [rad/m] [rad/h] [rps] [rpm] [rph] [°/s]
Area	[m ²] [cm ²] [mm ²] [km ²] [mile ²] [ft ²] [yd ²]

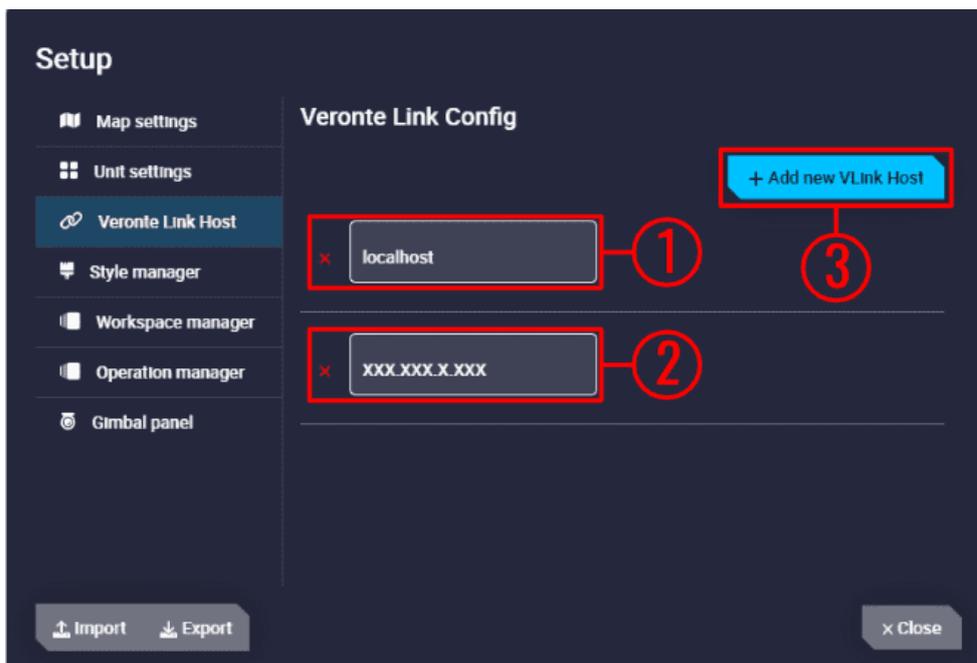
Variable Type	Units
Baudrate	[Bd] [kBd] [MBd]
Centimeters/ Pixels	[cm/pixel]
Current	[A] [mA]
Data	[bit] [byte] [KB] [GB] [bytes/s]
Decibel	[db]
Density	[kg/m ³]
Flow Rate	[m ³ /s] [gal/s] [gal/h] [l/s] [l/h]
Force	[N] [kN] [lbf] [pdl]
Frequency	[Hz] [mHz] [kHz]
Jerk	[m/s ³]
Length	[m] [km] [mi] [NM] [yd] [ft] [in] [cm] [mm]
Magfield Variance	[T ²]
Magnetic Flux Density	[T] [mG] [gauss] [nT]
Mass	[kg] [g] [tonnes] [lbs] [oz]
Numeral System	[bin] [octal] [dec] [hex]

Variable Type	Units
Percentage	[x1] [%]
Power	[W] [kW] [Kgm/s] [erg/s] [CV]
Pressure	[Pa] [kPa] [bar] [mbar] [psi] [mmHg] [at] [atm]
Pressure Square Error Rate	[Pa ² /s]
Pressure Variance	[Pa ²]
Resistence	[Ω]
Temperature	[K] [°C] [°F]
Time	[s] [min] [h] [μ s] [ms] [Time]
Transfer	[pkts/s]
Velocity	[m/s] [kt] [km/h] [mph] [ft/s] [mm/s] [ft/m]
Velocity Variance	[(m/s) ²] [(cm/s) ²] [(mm/ s) ²]
Voltage	[V] [mV]
Volume	[m ³] [dm ³] [mm ³] [L] [mL]

- **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.



Veronte Link Host panel

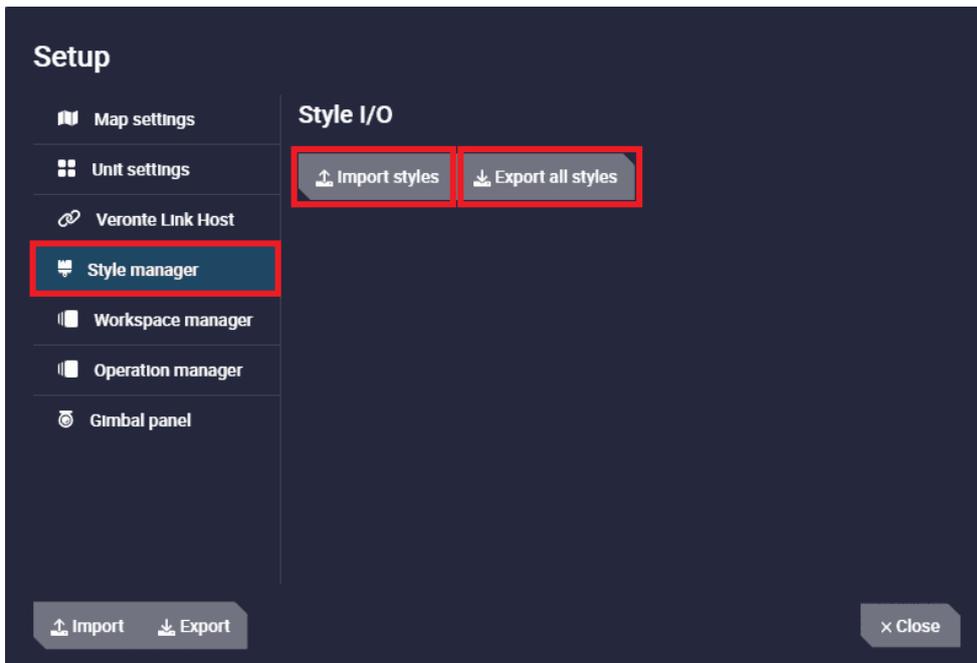
In the image above, users can identify:

1. The local IP: 'localhost'
2. The IP address of another computer
3. **Add a new VLink Host:** It is possible to have access to several Veronte Link and therefore multiple users can manage the same Veronte Link, the same products.

If the user has any problems when trying to connect **Veronte Ops** to Veronte Link, see [Connecting to Veronte Link - Troubleshooting](#) section of this manual.

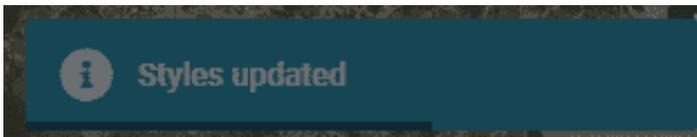
- **Style manager**

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



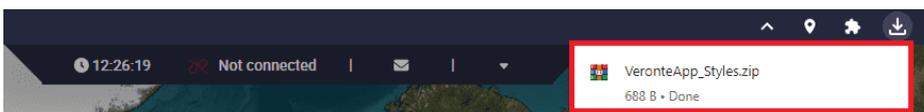
Style manager panel

- **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:

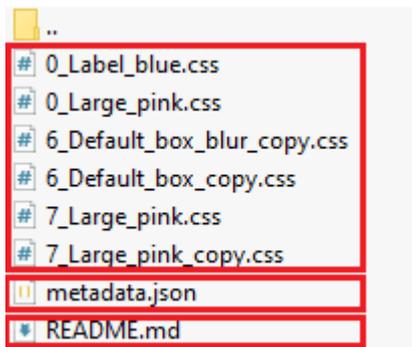


Style manager panel - Export

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.

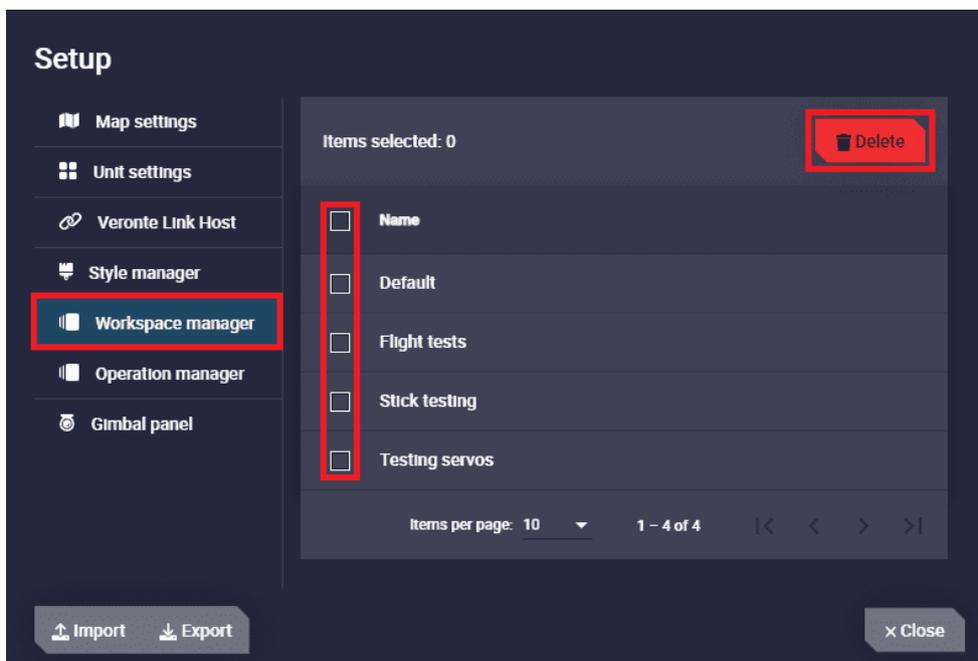
Danger

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.

• Workspace manager

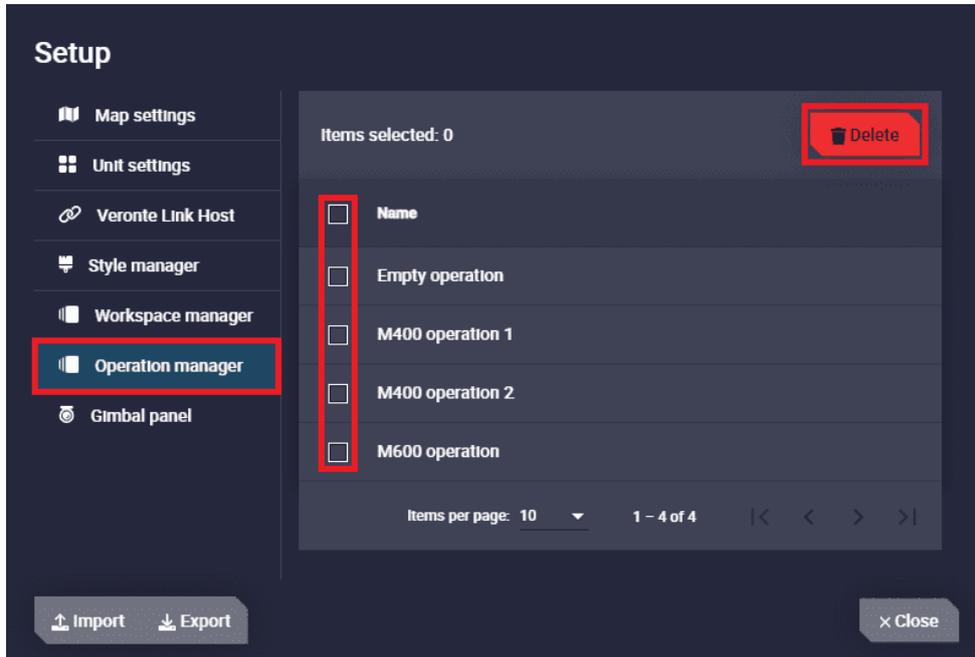
From this panel users can **delete** one, several or all **workspaces** created. To do this, simply **select** the **workspaces** to be deleted and then click on the '**Delete**' button.



Workspace manager panel

• Operation manager

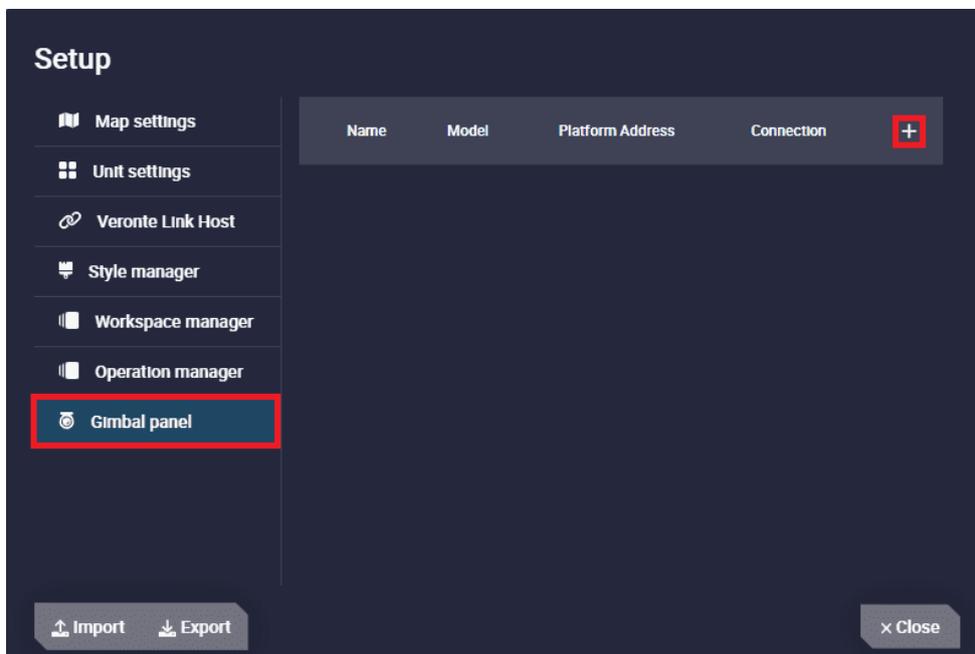
From this panel users can **delete** one, several or all **operations** created. To do this, simply **select** the **operations** to be deleted and then click on the '**Delete**' button.



Operation manager panel

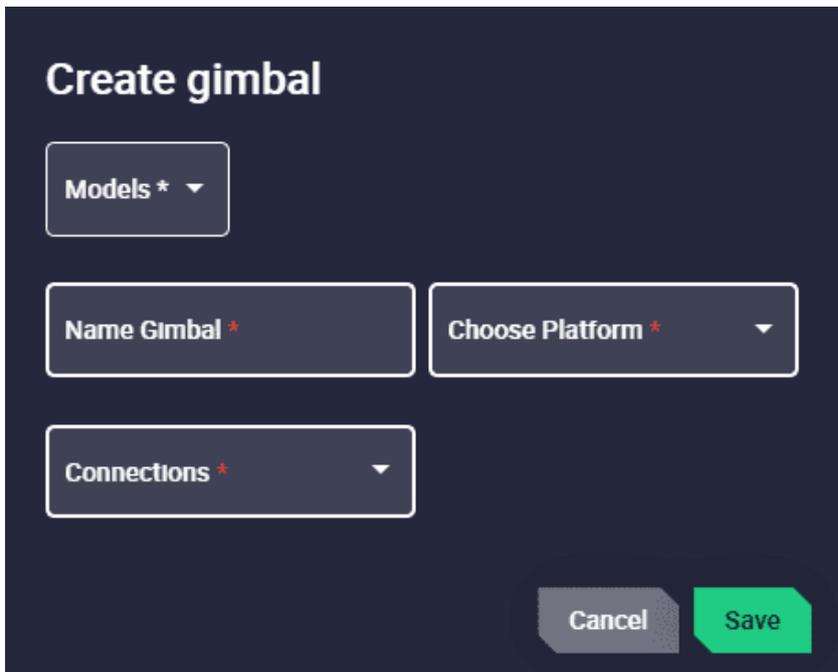
- **Gimbal panel**

Users can add a predefined gimbal from this panel:



Gimbal panel

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



Create gimbal

Models * ▾

Name Gimbal * Choose Platform * ▾

Connections * ▾

Cancel Save

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.

- **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.

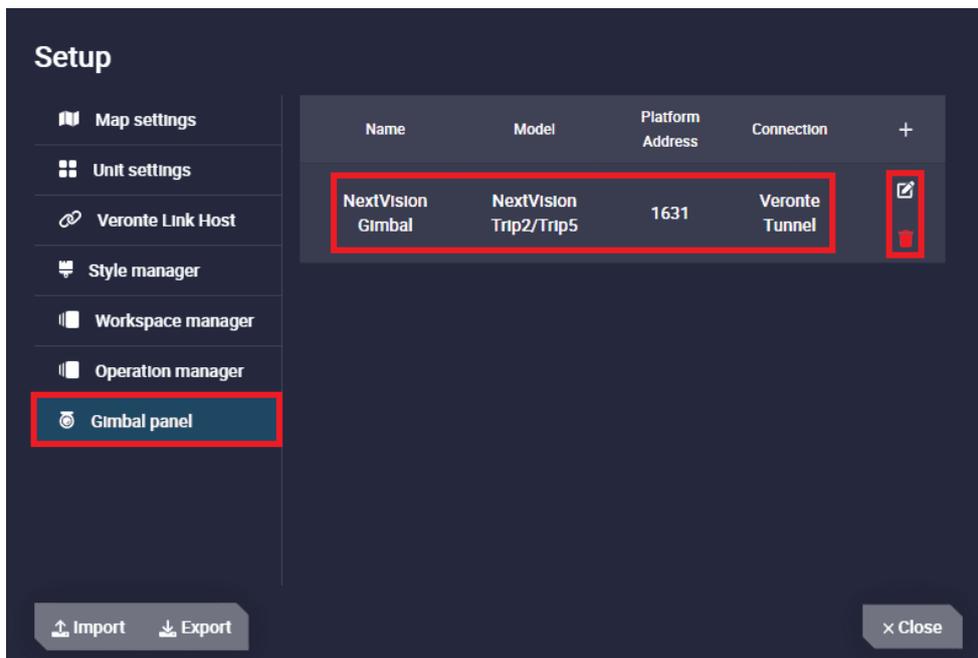
- **Advanced:** Depending on the gimbal model chosen, some additional options can be configured which are characteristic of each gimbal.

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:

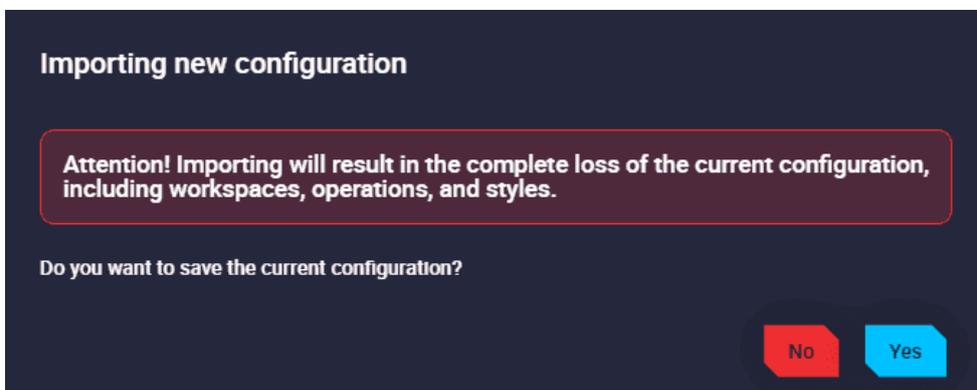


Gimbal panel - Gimbal added

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

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

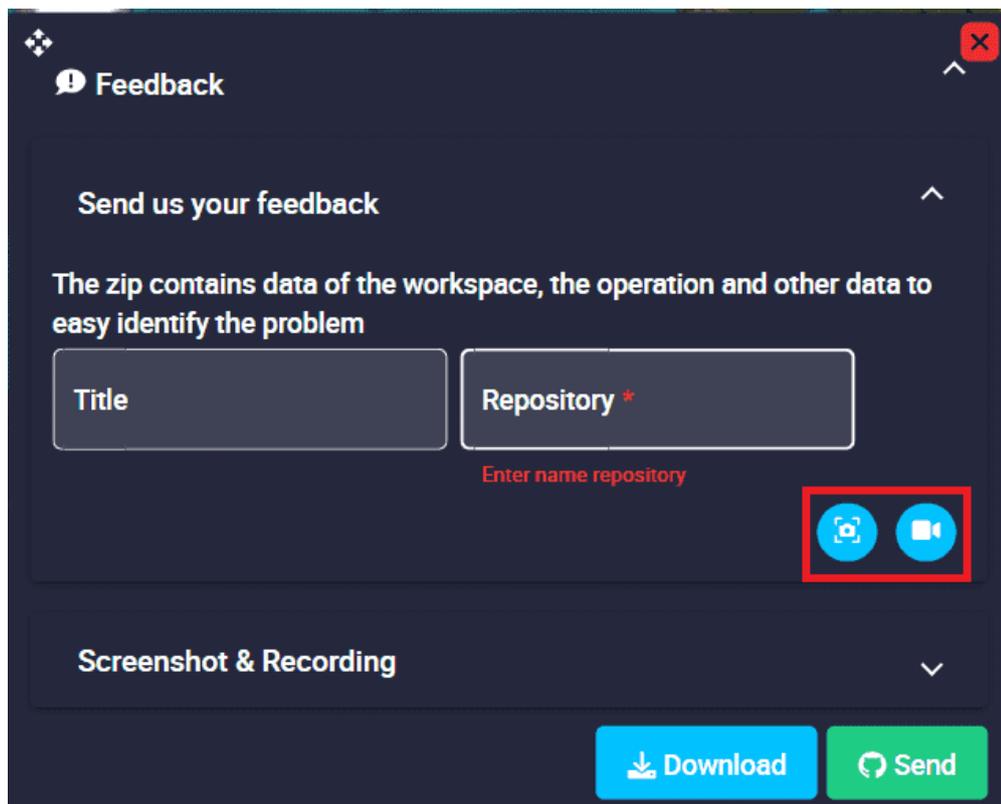
Users can consult the 'End User License Agreement (**EULA**)' by simply clicking on this button.

Feedback menu



Feedback button

Press the button above to access the Feedback menu:



The screenshot shows a 'Feedback' dialog box with a dark background. At the top left is a diamond-shaped icon and the word 'Feedback'. Below it is the text 'Send us your feedback'. A message states: 'The zip contains data of the workspace, the operation and other data to easy identify the problem'. There are two input fields: 'Title' and 'Repository *'. Below the 'Repository' field is the text 'Enter name repository'. To the right of the input fields are two circular icons: one with a camera (screenshot) and one with a video camera (recording), both highlighted with a red box. Below these icons is a section titled 'Screenshot & Recording'. At the bottom are two buttons: 'Download' (blue) and 'Send' (green).

Feedback menu

Users can report a problem they have encountered by **creating an issue in their own 'Joint Collaboration Framework'**

Note

The user's '**Joint Collaboration Framework**' is simply a **own Github repository for each customer**.

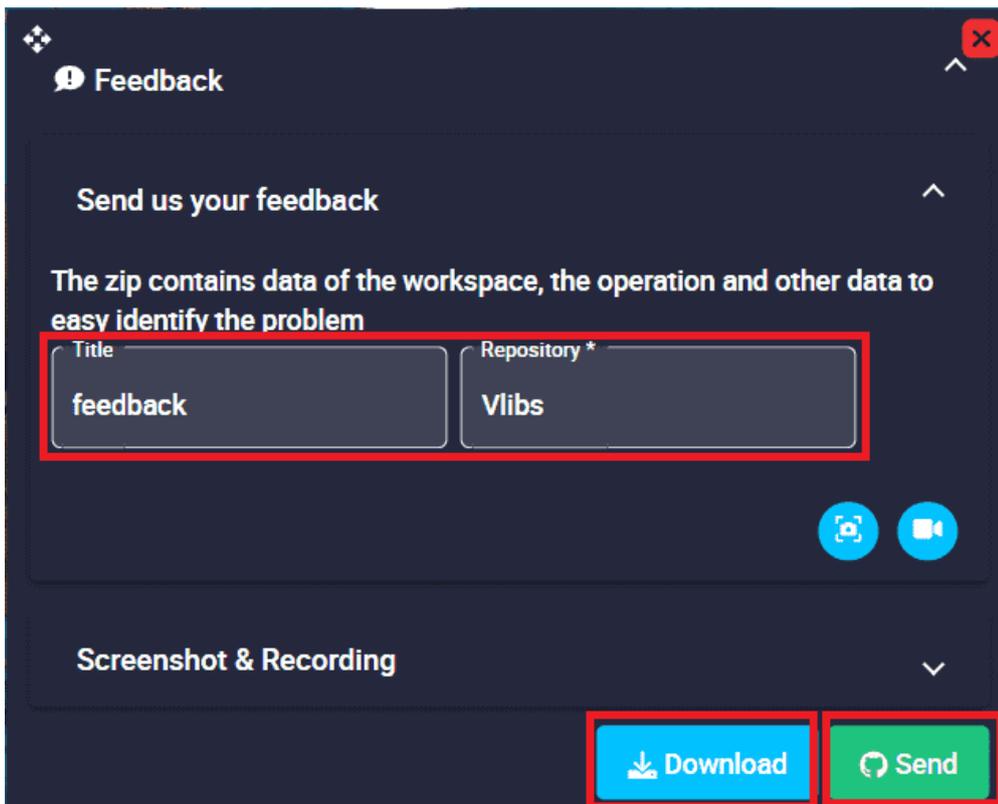
In case of having any question about this **Joint Collaboration Framework**, please read its [user manual](#).

It is also possible to take a snapshot or a recording of that problem.

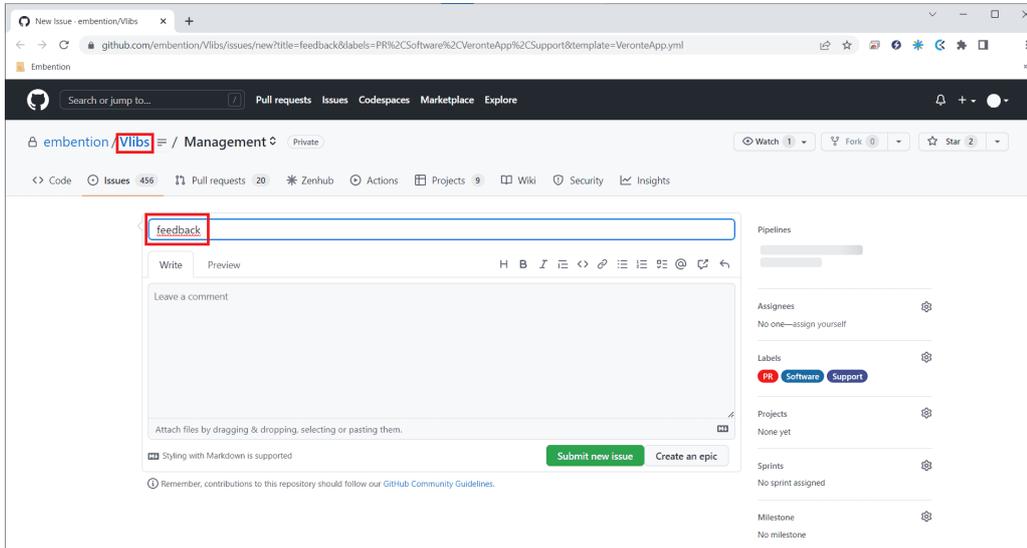
Clicking on the '**Download**' **button** downloads a zipped folder with the data of the workspace, the operation and other data to easily identify the problem. It is advisable to attach this folder when creating the issue.

Finally, by clicking on the '**Send**' **button**, a Github window will open in the browser with an issue. This issue is created in the repository indicated before with the title that has been defined.

Find below an **example** of the creation of a feedback:



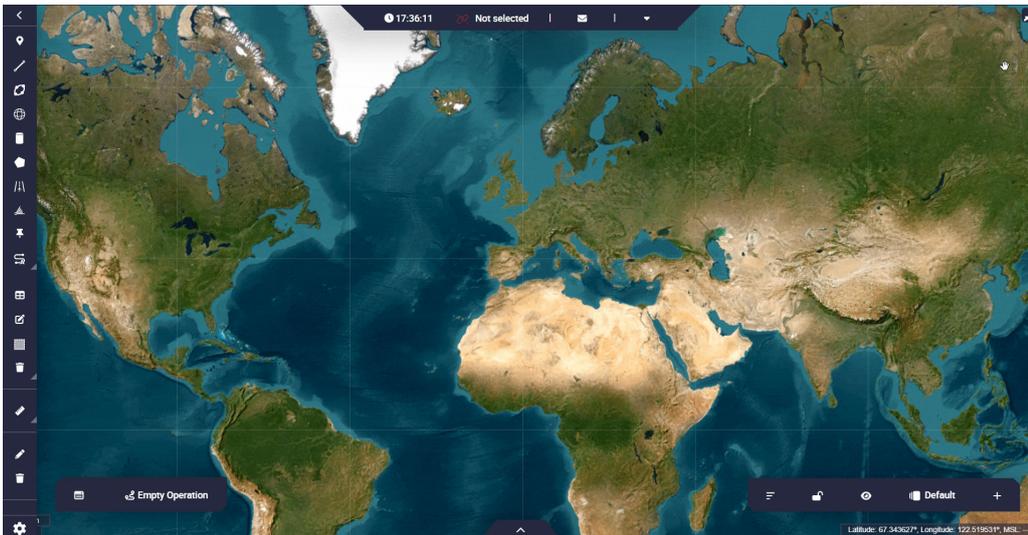
Feedback example - Feedback menu



Feedback example - Issue created in Github

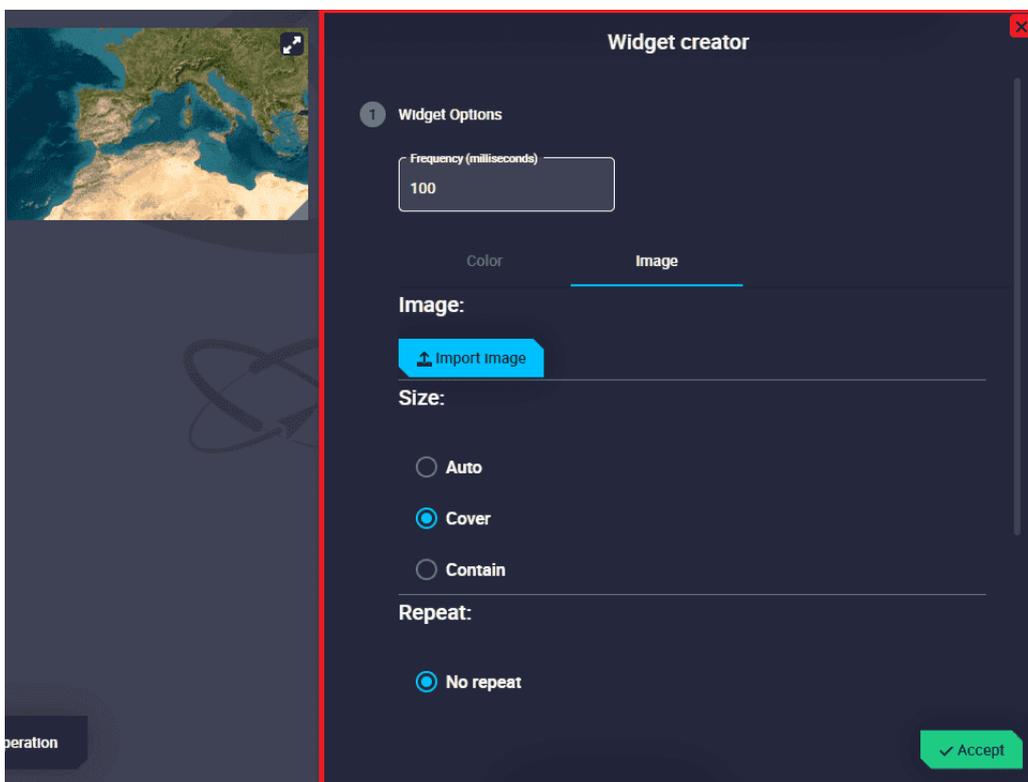
Background configuration

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**:



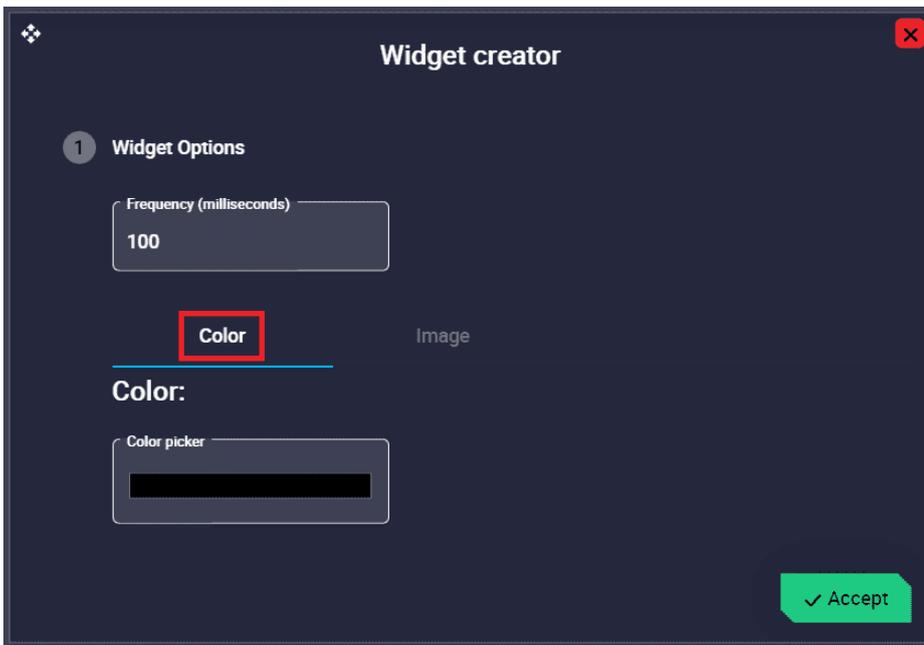
Access background edition

In this menu, users will find:



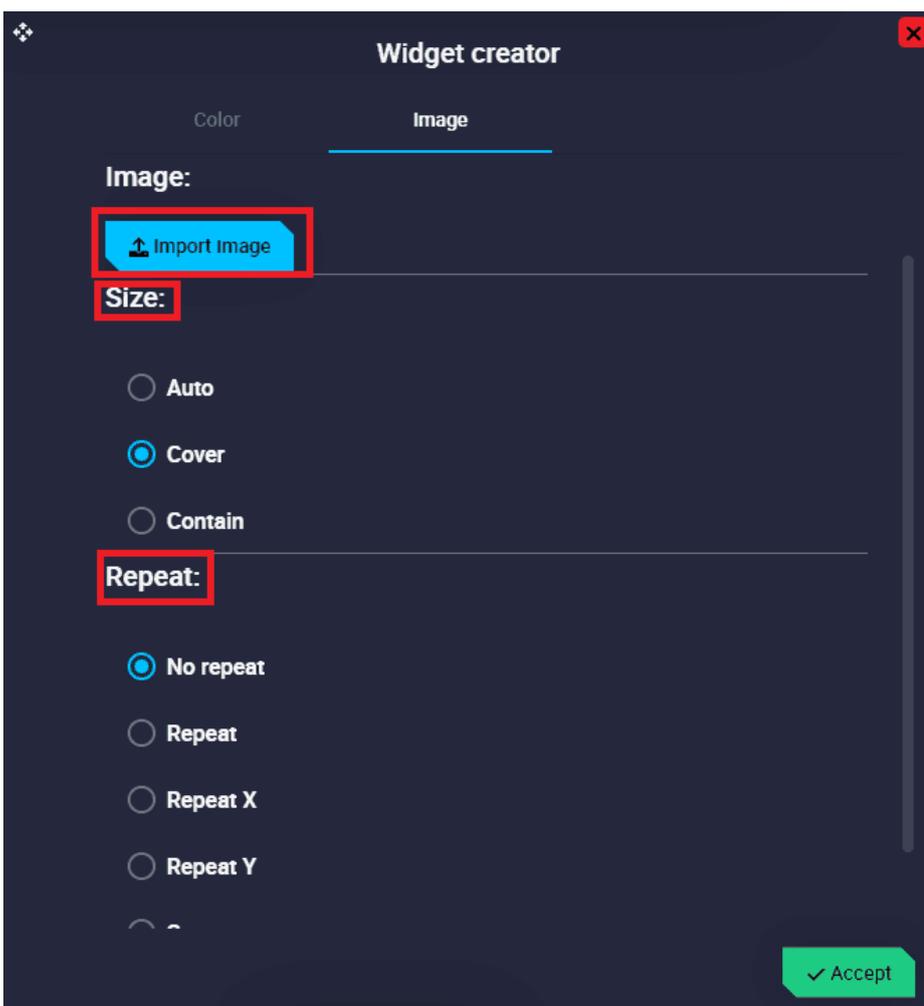
Background edition

1. **Widget options:** The user can change the refresh frequency of the workspace, of the widgets. By default this frequency is **100 miliseconds**.
2. **Background options:** Choose the type of background style between a color or an image:
 - **Color:** Users can select the desired color for the background.



Background - Color

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



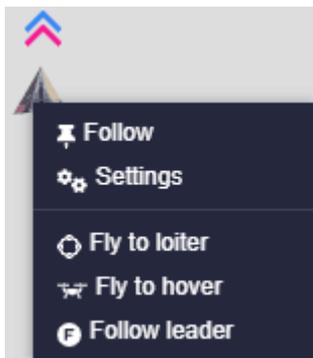
Background - Image

- **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.

Platform icon

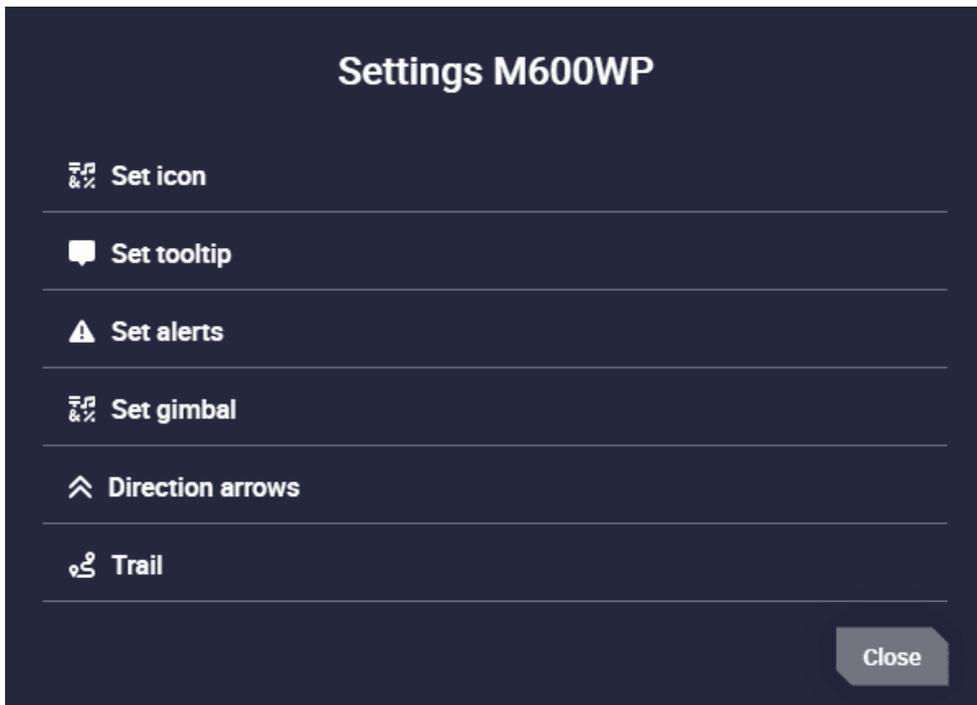
This icon allows the user to locate and follow the position of the platform at any time during the operation.

By **right-clicking** on it, users will access its **options**:



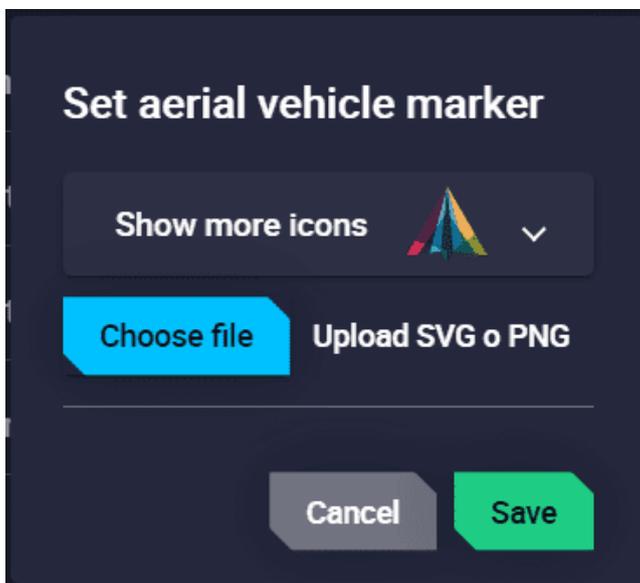
Platform icon options

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



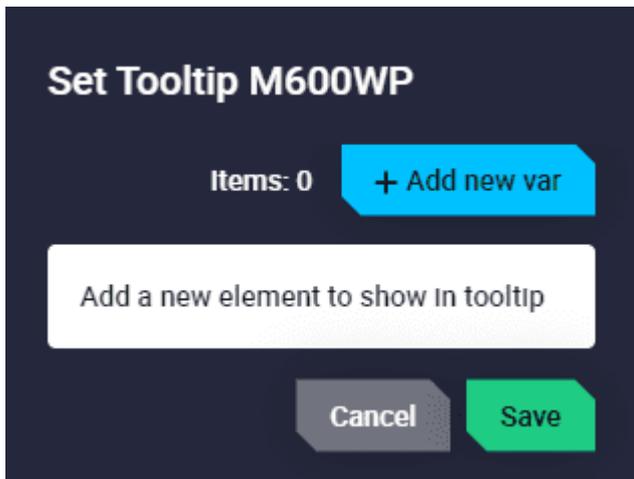
Platform icon settings

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



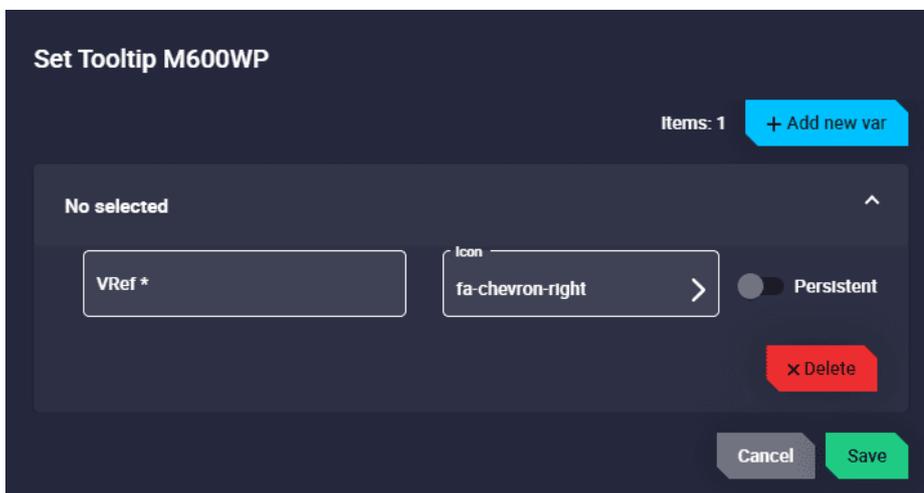
Platform icon settings - Set icon

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



Platform icon settings - Set tooltip

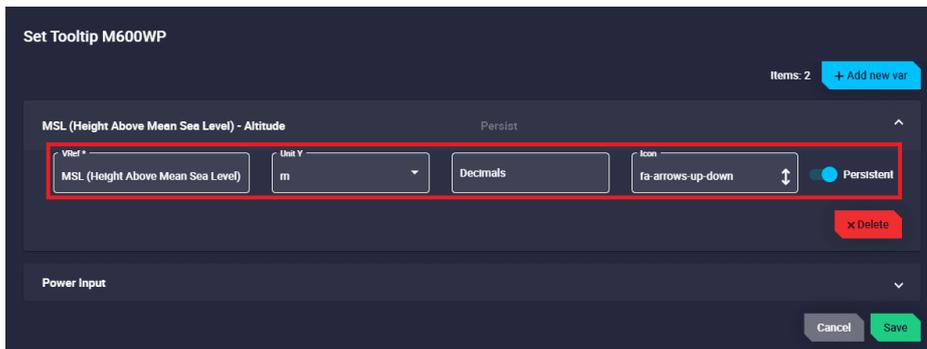
The following parameters must be configured by clicking on '**Add new var**':



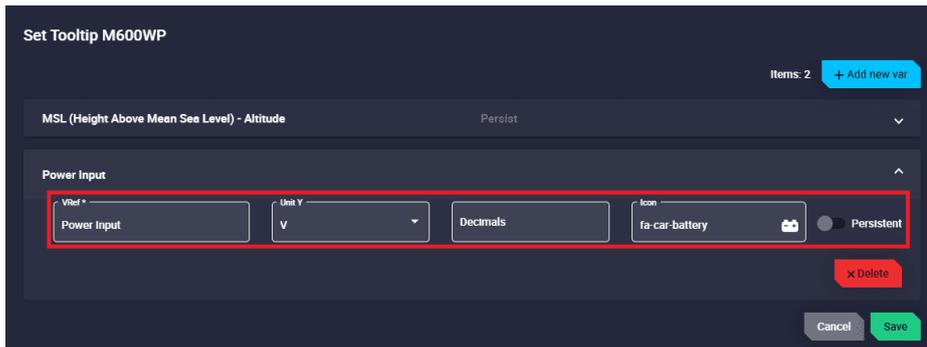
Platform icon settings - Set tooltip configuration

- **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

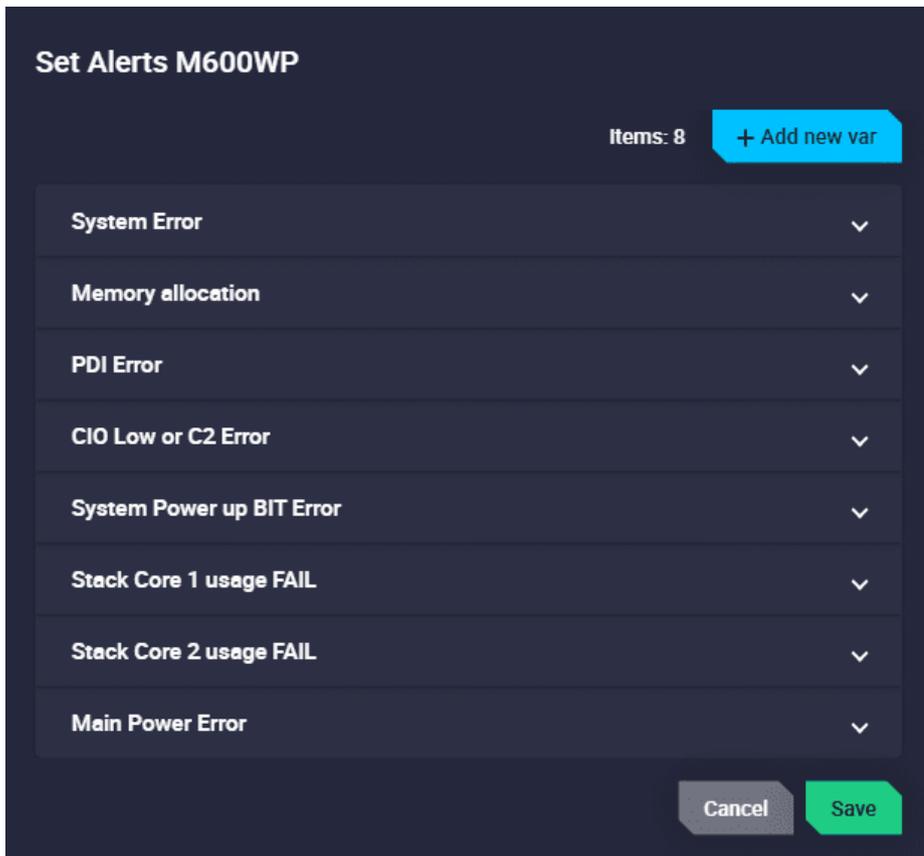


Platform icon settings - Set tooltip example



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, the same bits that are sent in the autopilot 'Status Message' are configured as alerts. The user can add as many alerts as desired.



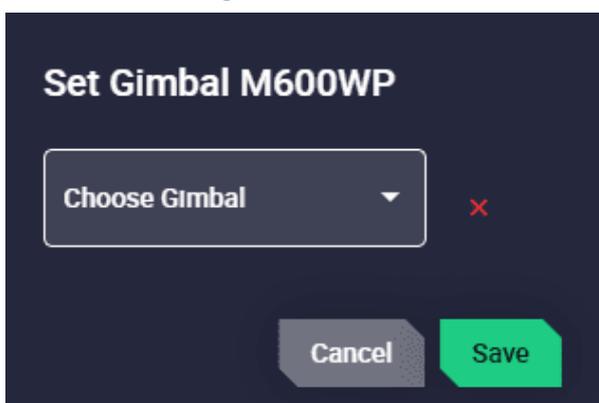
Platform icon settings - Set alerts

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:



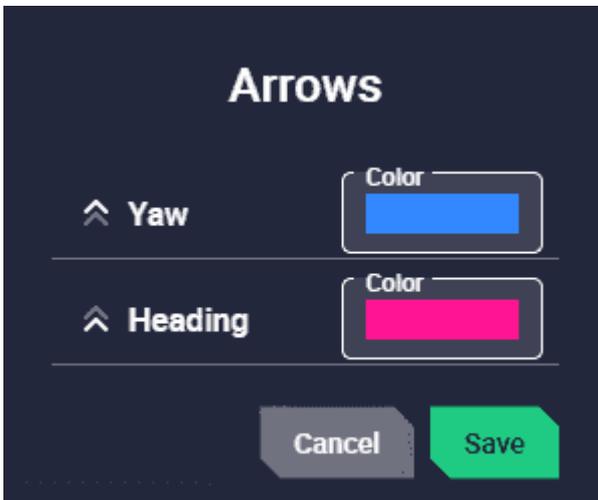
Platform icon settings - Set alerts

- **Set gimbal:** Allows the display of information on the map provided by the selected gimbal.



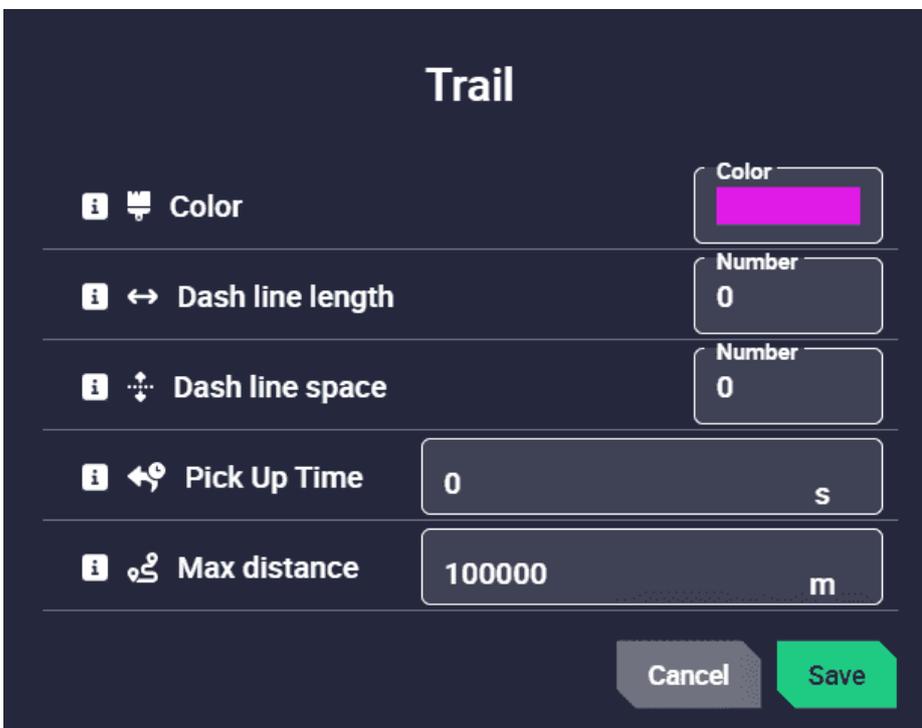
Platform icon settings - Set gimbal

- **Choose Gimbal:** Select the desired gimbal to add from those previously configured in the [Gimbal panel](#).
- **Direction arrows:** Users can change the color of the yaw and heading arrows.



Platform icon settings - Direction arrows

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



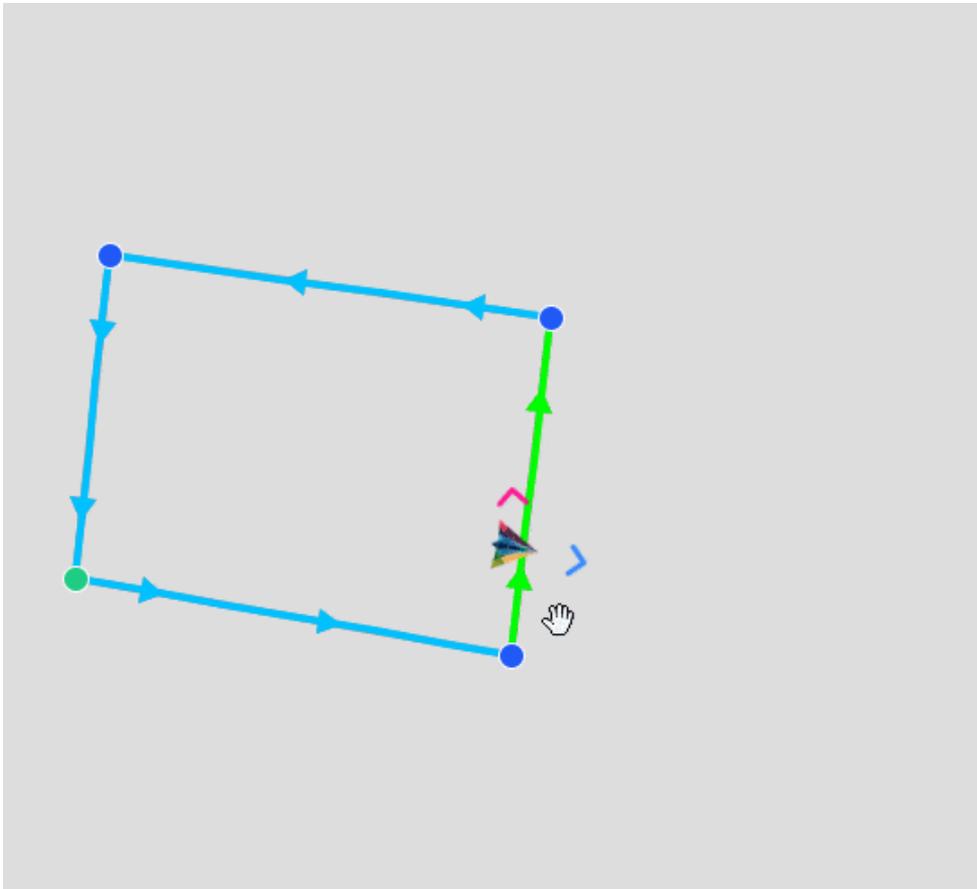
Platform icon settings - Trail

- **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 0 and greater than** dash line length is set.
 - **Pick Up Time:** Sets the time for the first point of the trial 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.

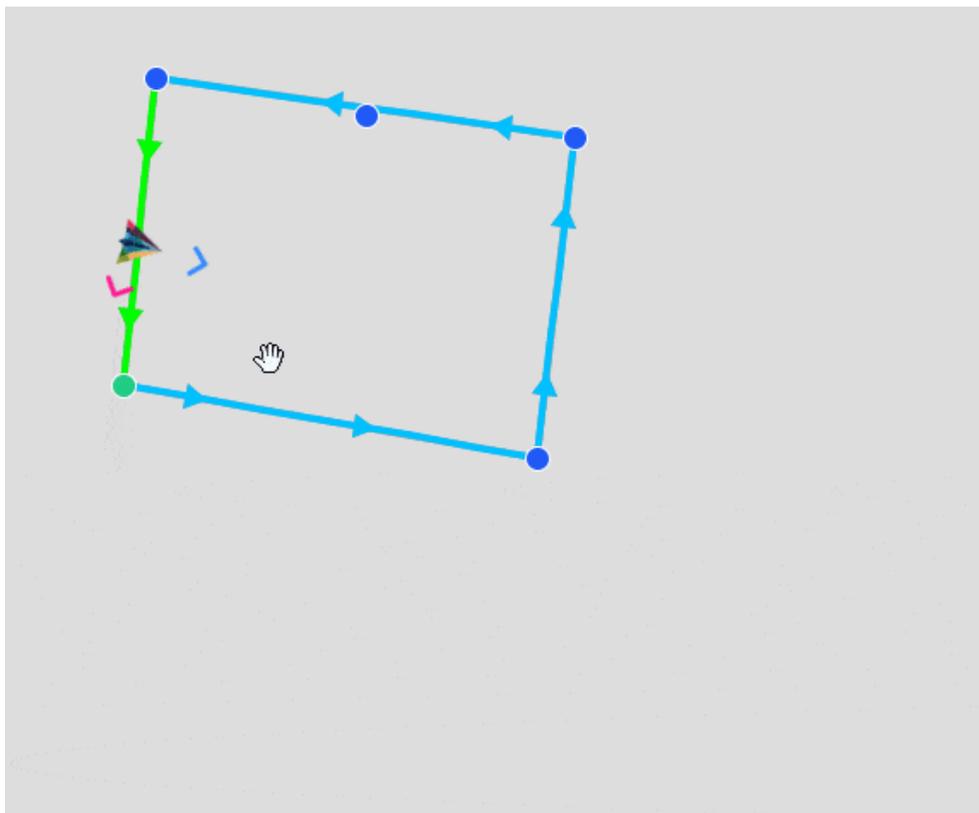


Platform icon - Fly to loiter

- **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.

- By default, it is placed in the world coordinates (0,0).



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

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.

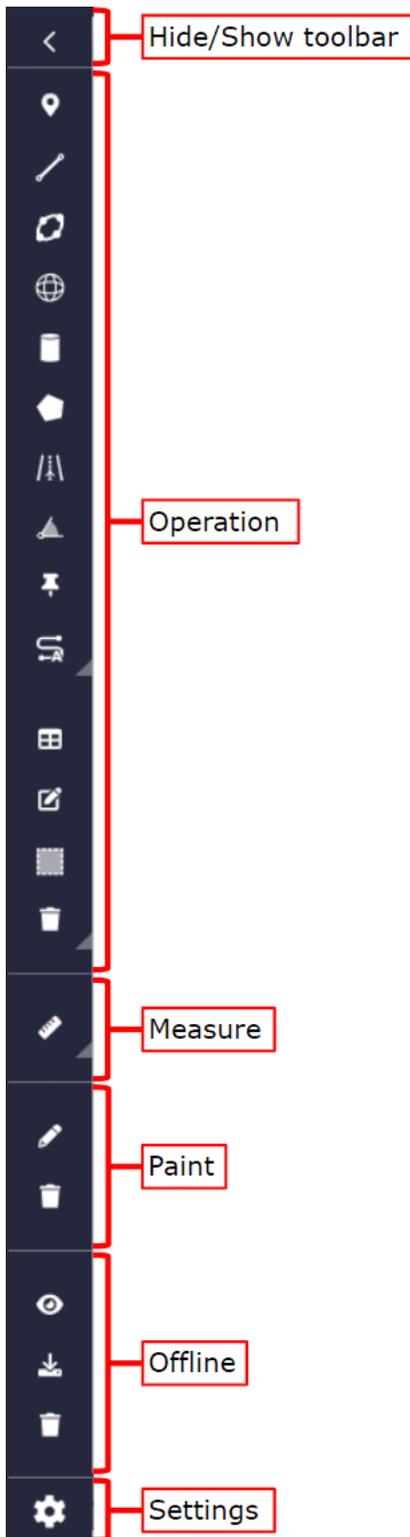
Multiple missions can be created for different purposes. The missions generated are stored in the **Operation folder of the PDI configuration files** when the user saves the changes. For more information on the folders

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.

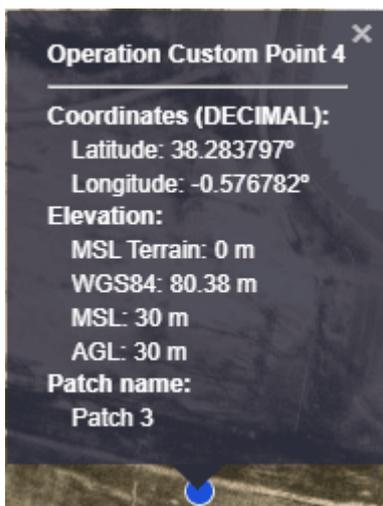
Waypoint

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.

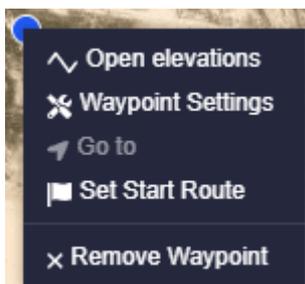
In relation to waypoints, the following actions can be performed with the mouse:

- **Clicking once** on the waypoint will display a summary of the **waypoint information**: Operation Custom Point ID, coordinates, elevation and Patch name:



Waypoint information

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



Waypoint options

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

- **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 is only available when a **Veronte Autopilot 1x** is connected and the operation, which the user is working on, is stored in the autopilot.

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

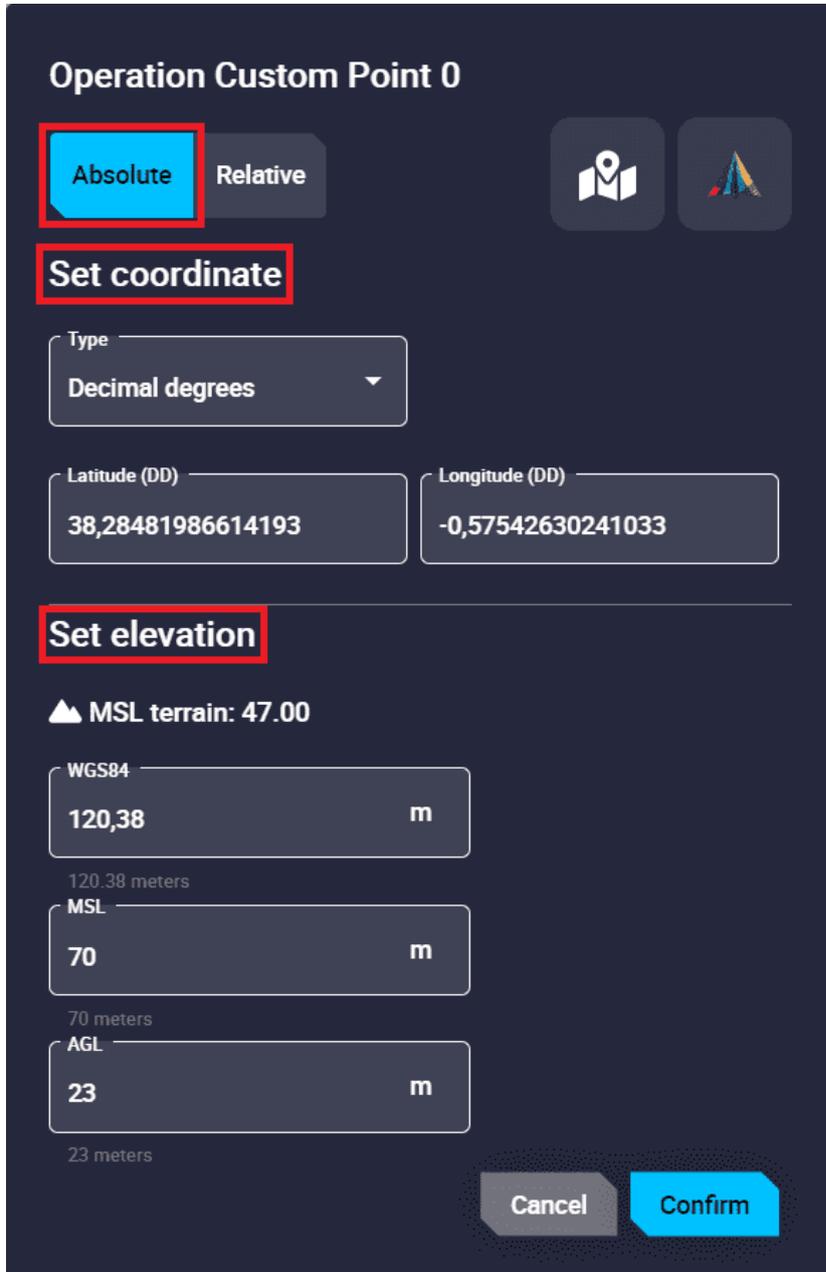
Waypoint configuration

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

1. **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.

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.
3. Entering the exact coordinates and elevation here:

- **Absolute:**



Operation Custom Point 0

Absolute Relative  

Set coordinate

Type
Decimal degrees

Latitude (DD) Longitude (DD)

38,28481986614193 -0,57542630241033

Set elevation

▲ MSL terrain: 47.00

WGS84
120,38 m
120.38 meters

MSL
70 m
70 meters

AGL
23 m
23 meters

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 **Operation Custom Point**. They are indicated through North, East and Down.

Operation Custom Point 0

Absolute **Relative**

Set Relative

Fid
UAV position

North
53,30627705294138

East
-112,94664275670836

Down
0,004091889115361624

Cancel Confirm

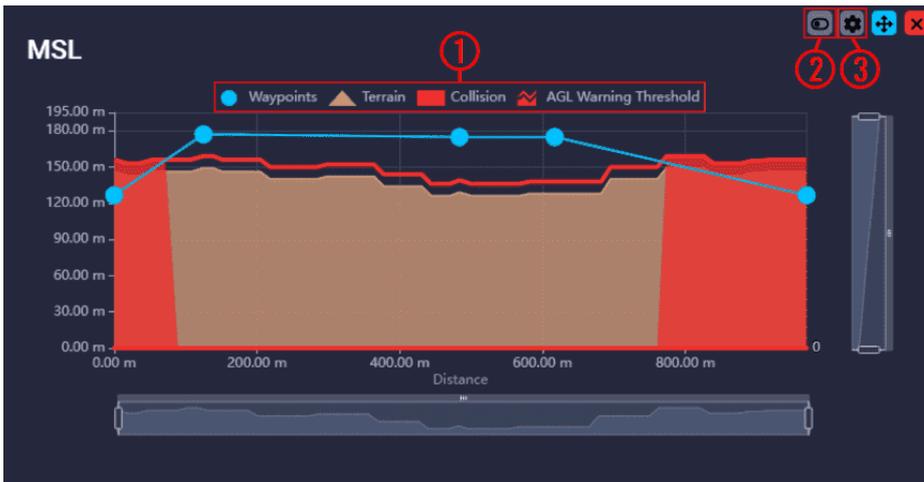
Relative waypoint position

- **Open elevations:** 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.

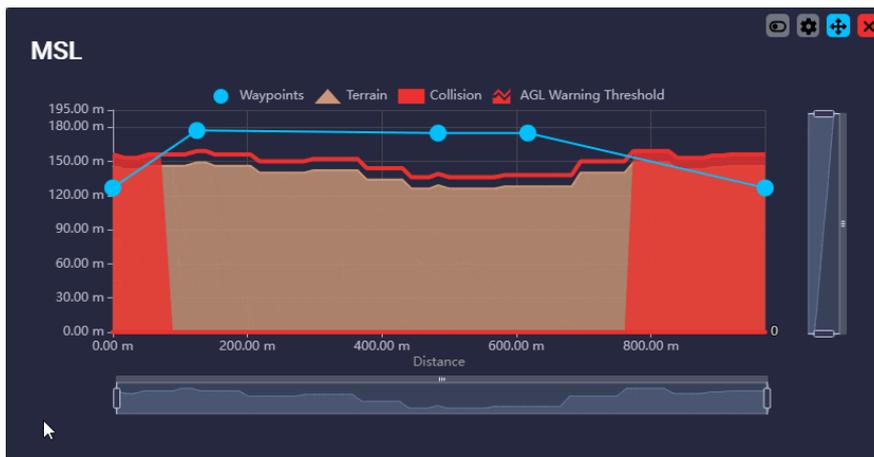
In addition, users can set up a **Warning Threshold**, which will be represented as a red warning line over the terrain. For more information, see [Map settings - Veronte Ops configuration](#) section of this manual.

By clicking on it, the following menu will appear:



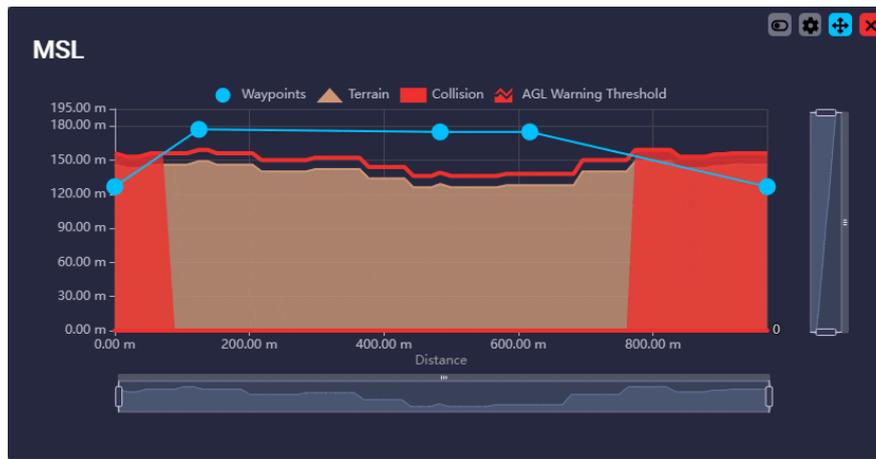
Elevation (MSL) menu

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:



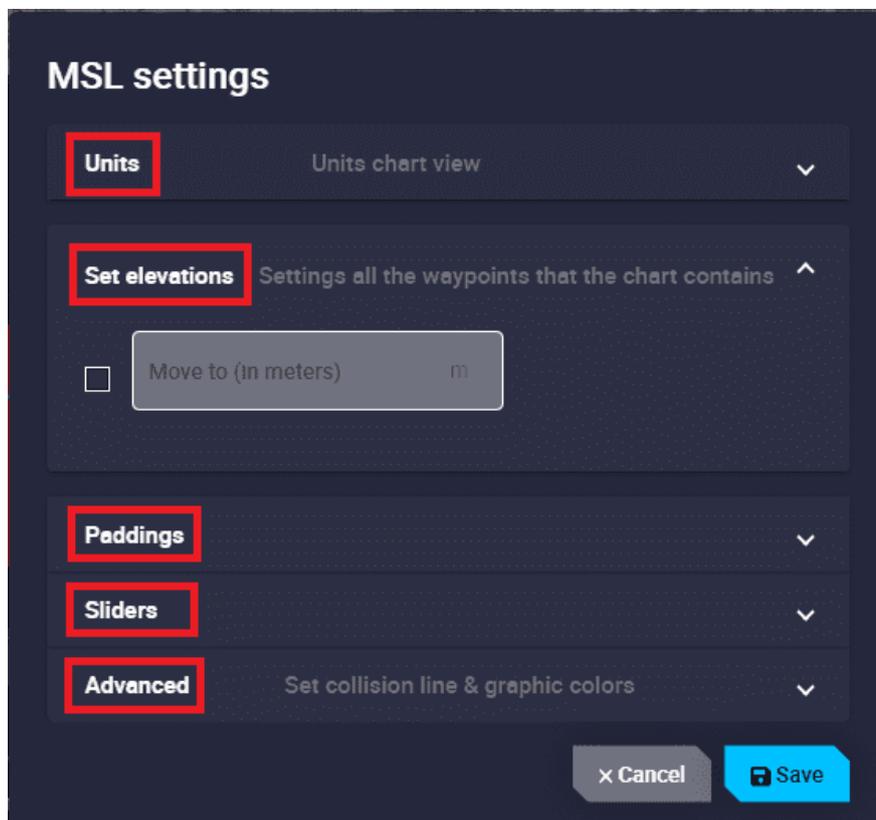
Elevation (MSL) menu - Legend

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

- **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

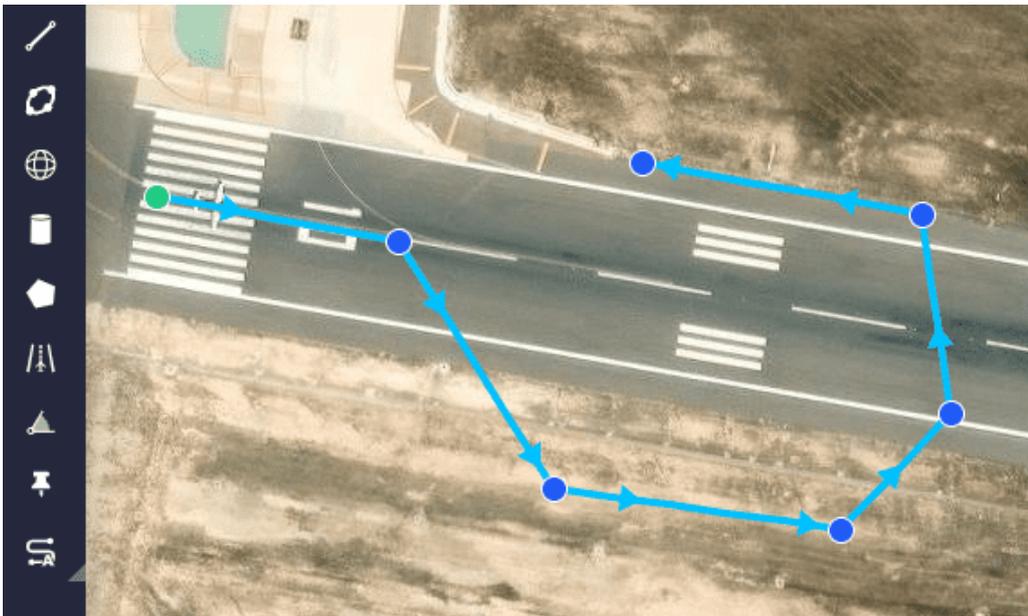
Segment

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:



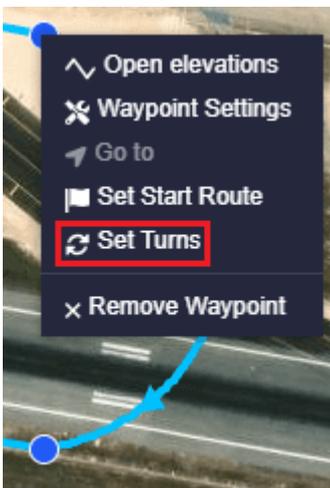
Closed route

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:



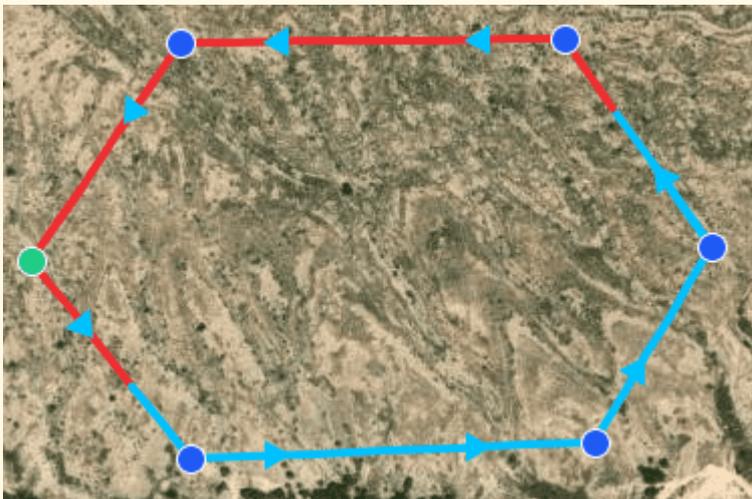
Curved segment - Turns

⚠ 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, the affected segment will change its color to red. To solve this, change the altitude of the waypoints. An example is shown below:



Segment under the ground altitude

Orbit

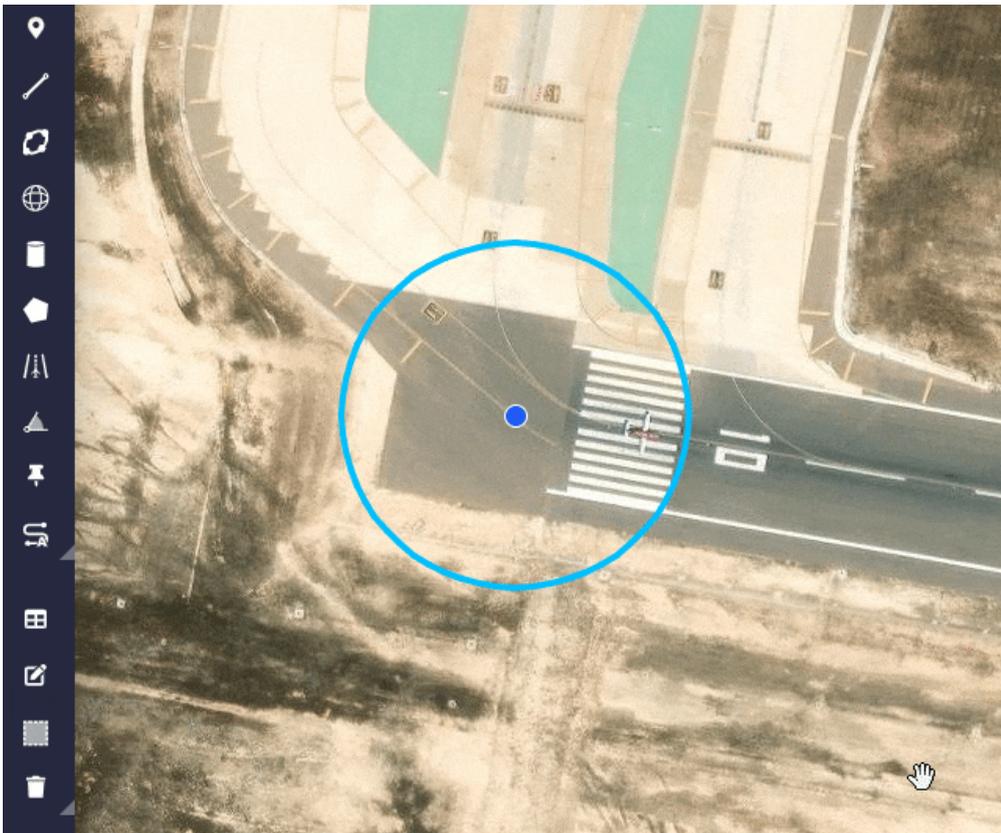
This tool allows the user to create a new orbit on the map.

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'.



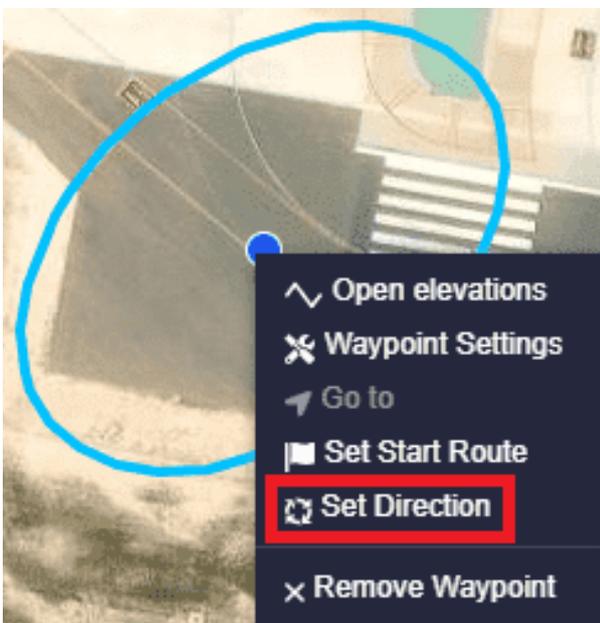
Orbit

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

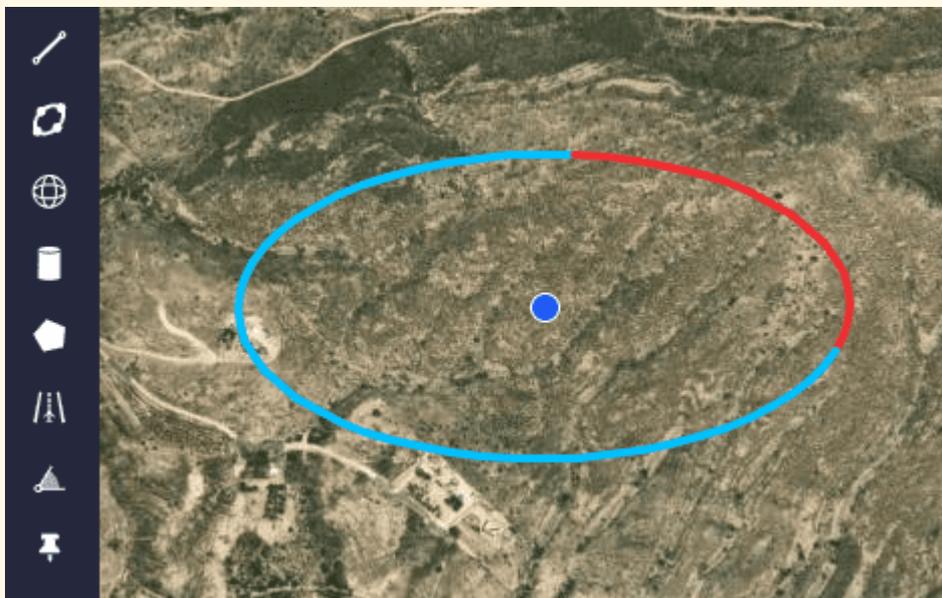
- **Set Direction:** It is possible to select the direction of the loiter: **Auto**, **Clockwise** and **Anticlockwise**.

⚠ 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, the affected segment will change its color to red. To solve this, change the altitude of the waypoint.



Orbit partially below ground level

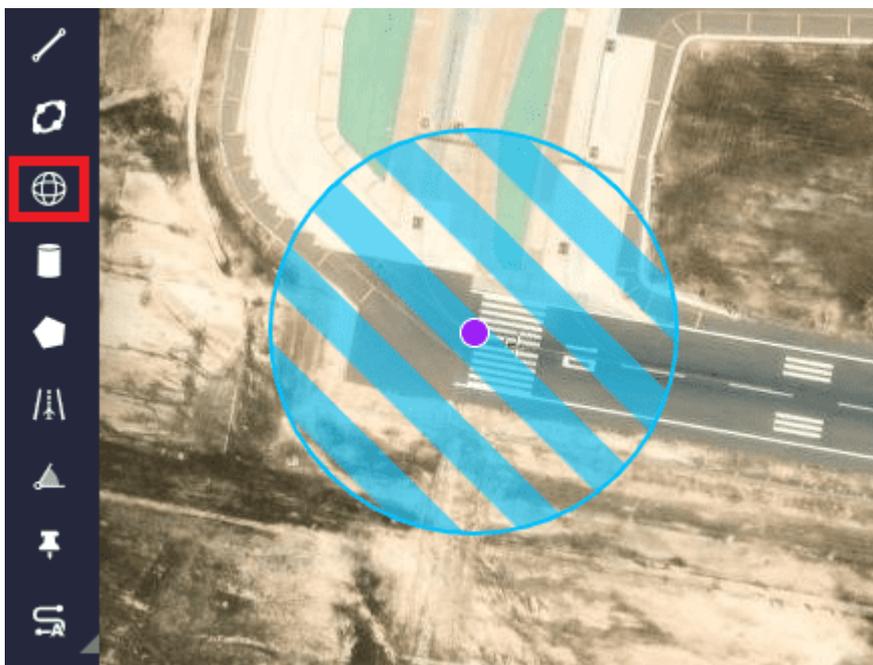
Sphere

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.

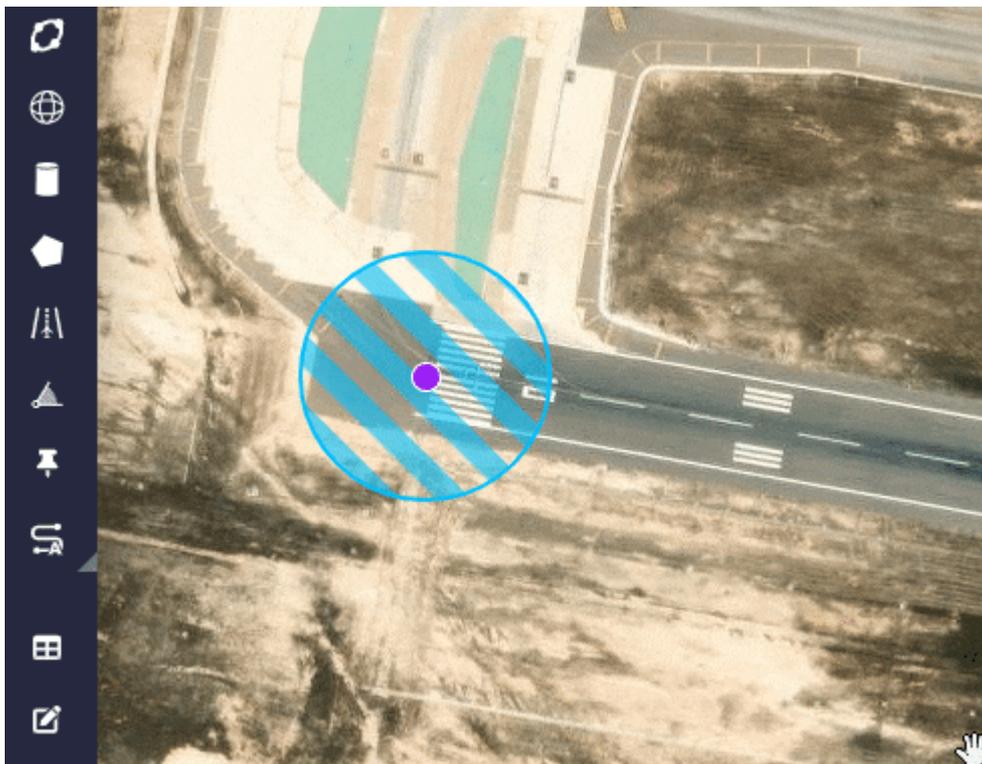
Note

The linking of a spherical volume 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 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'.

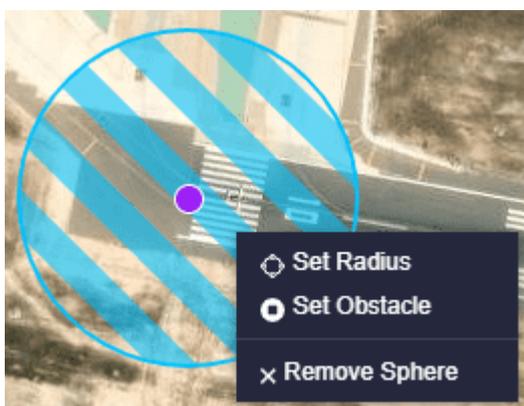
**Sphere**

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**:

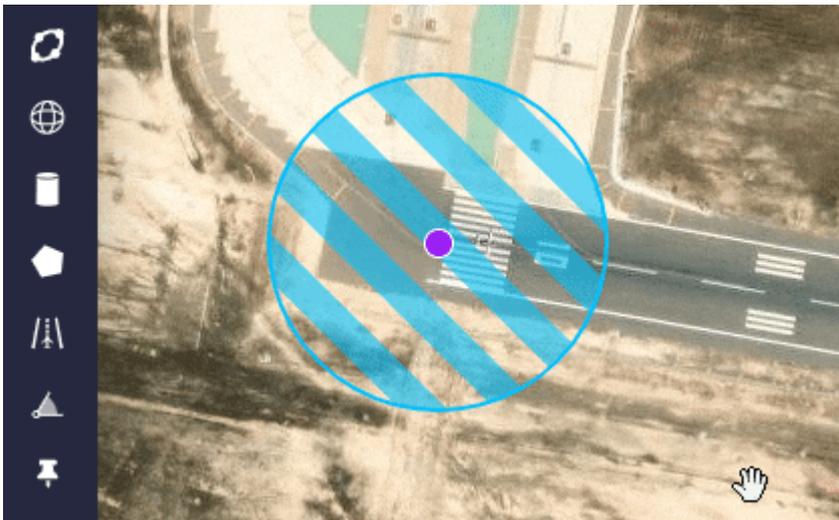


Sphere options

- **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.

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 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.

- **Remove Sphere:** Deletes the sphere.

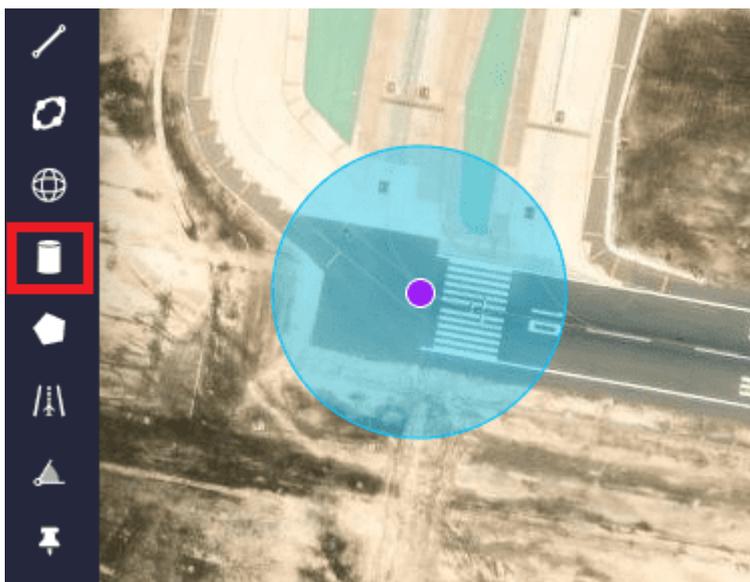
Cylinder

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.

Note

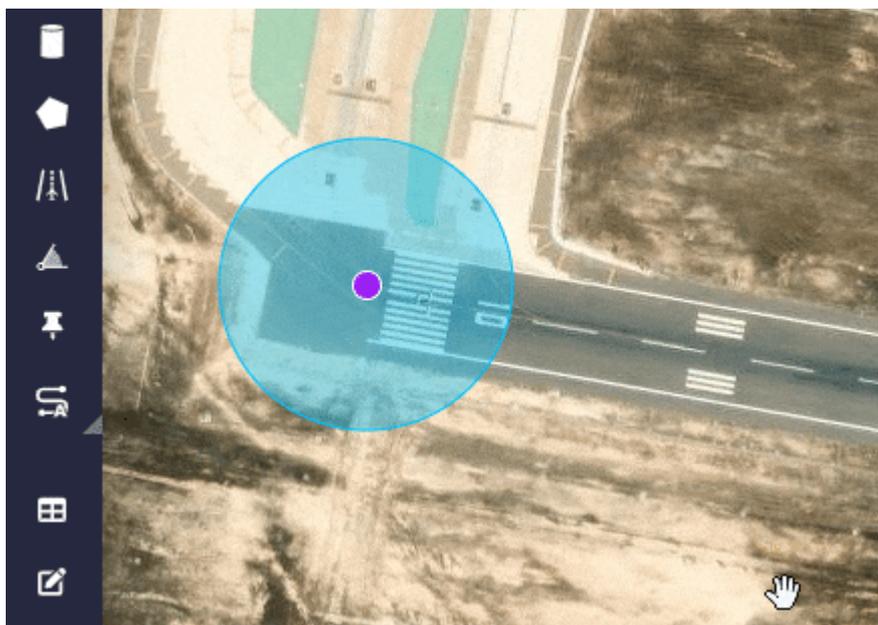
The linking of a cylindrical area to an automation is done in the **Operation Panel**, for more information about this, see [Operation Panel - Operation](#) section of this manual.

To add a 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'.



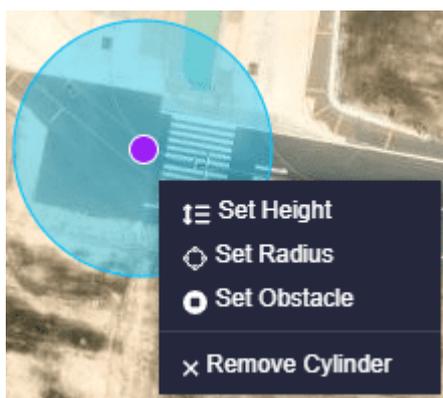
Cylinder

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



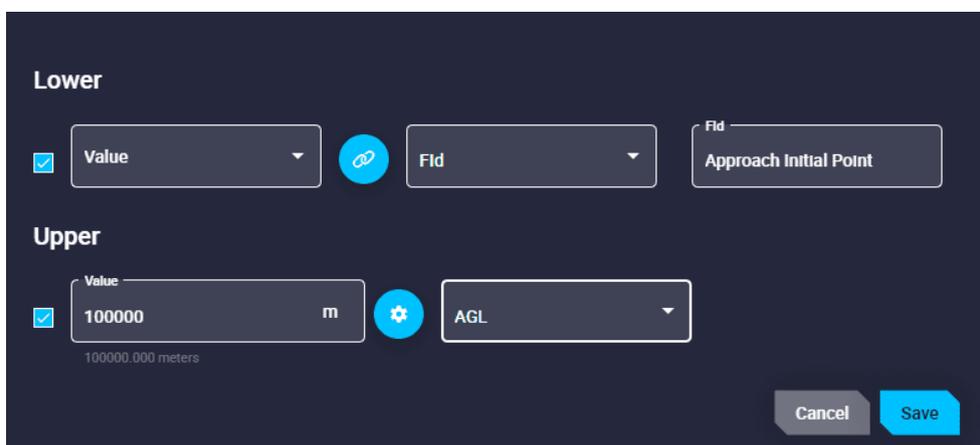
Cylinder radius

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



Cylinder options

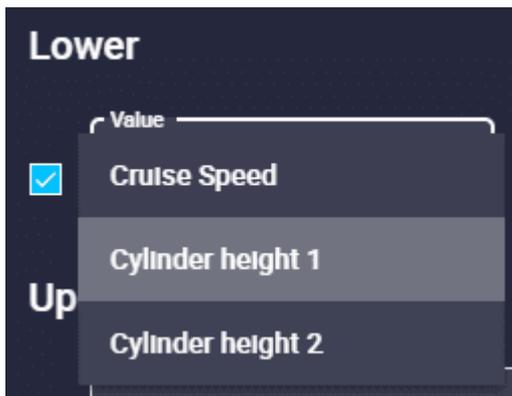
- **Set Height:** Users can set the upper and lower heights of the cylindrical area. By default, cylindrical areas have infinite lower and upper boundaries.



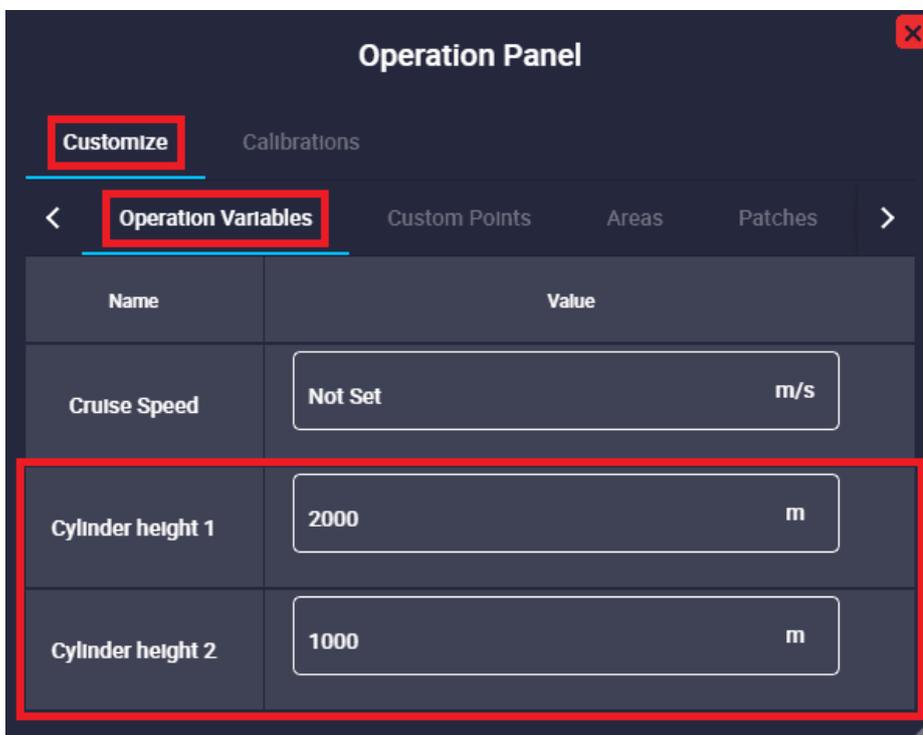
Cylinder options - Set Height

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 a **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 FId (feature) that has to be selected.



Cylinder options - Height relative



Cylinder 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.
- **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.

 **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 [sphere](#) as an obstacle, but taking into account **only 2 dimensions**. Therefore, the platform will not be able to prevent the obstacle from passing over it (it has no upper or lower limits).

- **Remove Cylinder:** Deletes the cylinder.

Prism

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

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.

Note

The linking of a prism area 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 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. It works in the same way as in the cylindrical areas, described above.
- **Invert:** This inverts the defined area. This option has been implemented to be used together with the **geocaging** functionality.

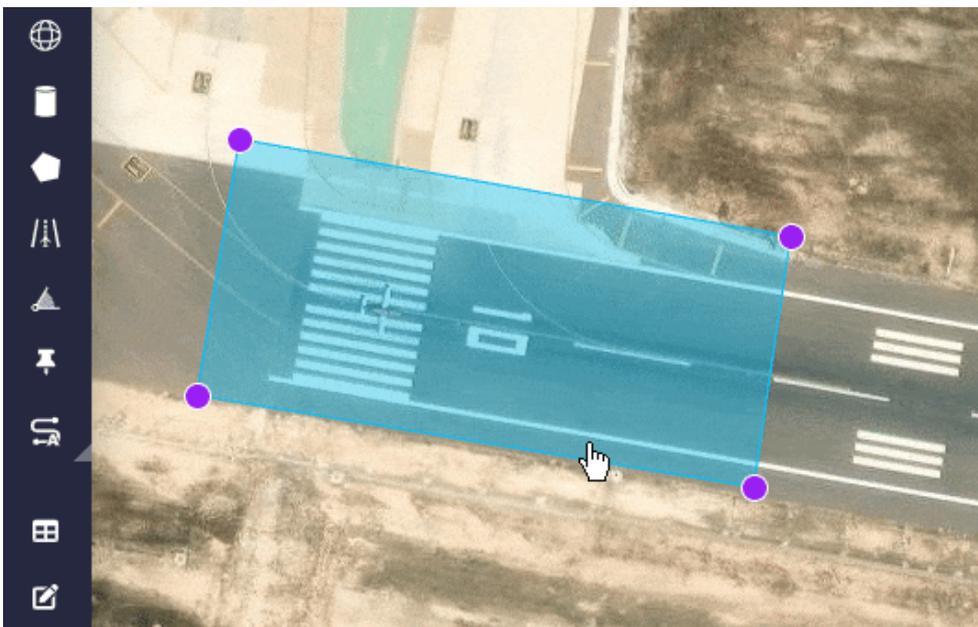


Prism options - Invert

- **Set Obstacle:** A prism can become an obstacle, an area that is desired to avoid.

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

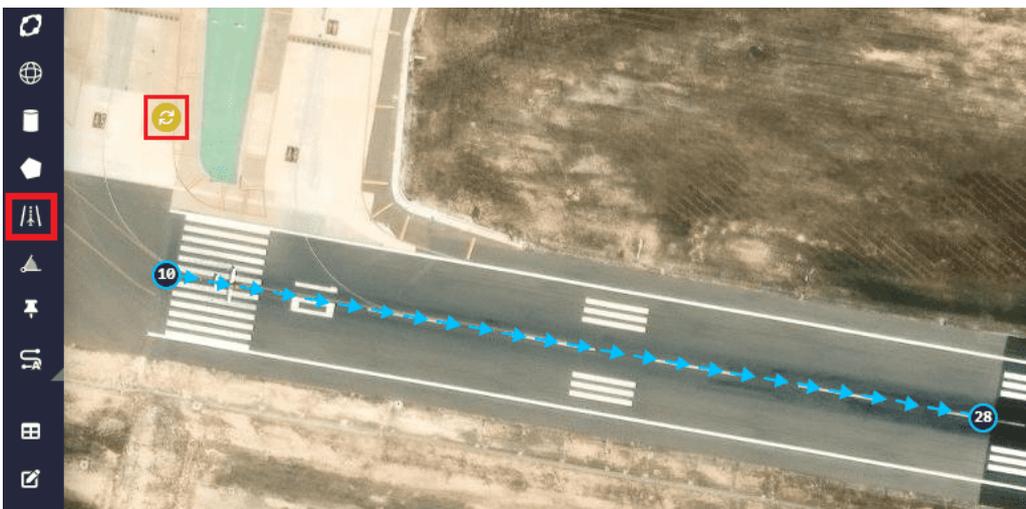
This functionality acts in the same way as when defining a [sphere](#) as an obstacle, but taking into account **only 2 dimensions**. Therefore, the platform will not be able to prevent the obstacle from passing over it (it has no upper or lower limits).

- **Remove Prism:** Deletes the prism.

Runway

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

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.

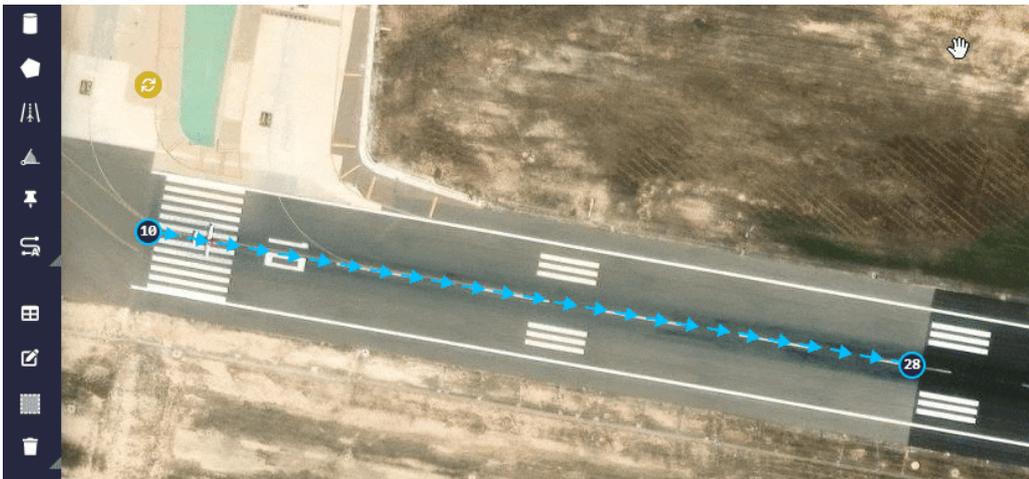


Runway

Note

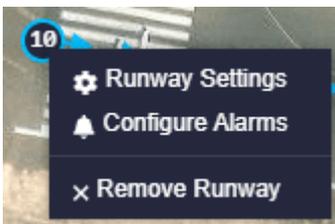
The loiter position is automatically defined and it is identified by this icon: , as can be seen in the image above.

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:



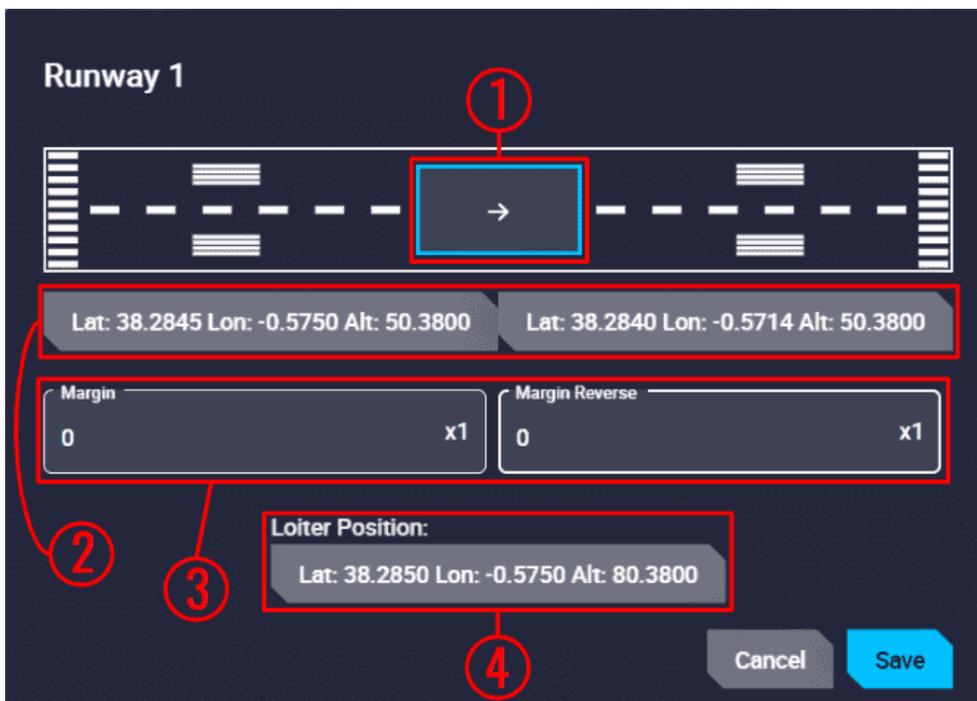
Runway position

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



Runway options

- **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

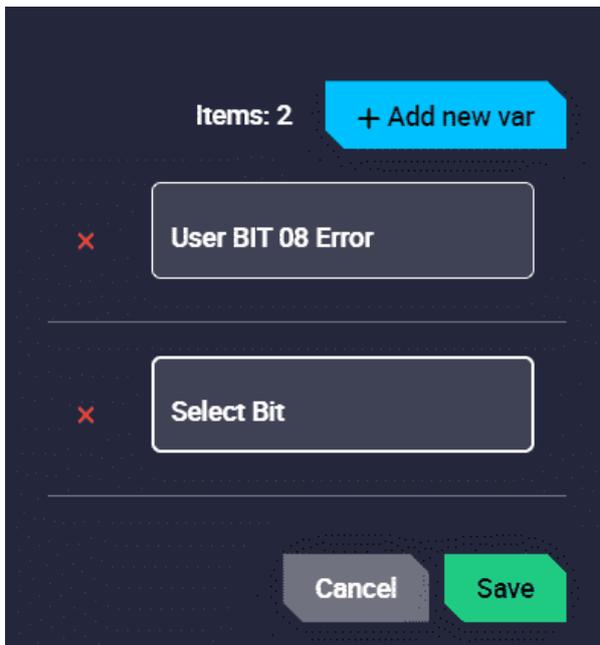
When the **AUTO** option is selected, the runway direction will be defined by the **wind direction**.

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.



Spot

i Note

The loiter position is automatically defined and it is identified by this icon:



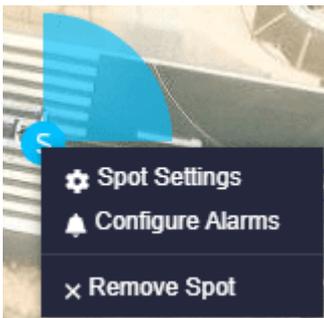
, as can be seen in the image above.

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



Spot position

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



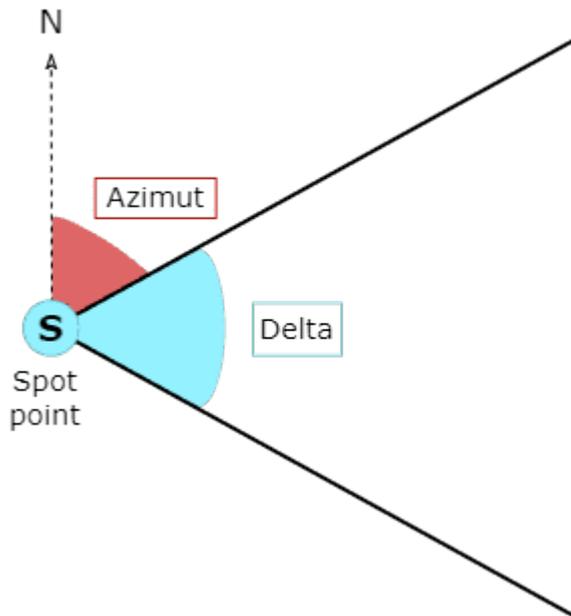
Spot options

- **Spot Settings:** The aircraft will land or take-off using the best orientation computed within the area bounded by the parameters entered here:

A screenshot of a configuration dialog box titled 'Spot 1'. It has a dark background with white text and input fields. The 'Position' field shows 'Lat: 38.2844 Lon: -0.5750 Alt: 50.3800'. Below it are two input fields: 'Azimuth' with the value '0' and a range of '°[0,360]', and 'Delta' with the value '119,99999999999999' and a range of '°[0,360]'. A gear icon is between these two fields. At the bottom, the 'Loiter Position' field shows 'Lat: 38.2845 Lon: -0.5744 Alt: 80.3800'. There are 'Cancel' and 'Save' buttons at the bottom right.

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
 - $[0, 360]$, $^{\circ} ' ''$, rad , $rad[0, 2\pi]$, $^{\circ}$, $rad[-\pi, \pi]$ and $^{\circ}[-180, 180]$.



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.

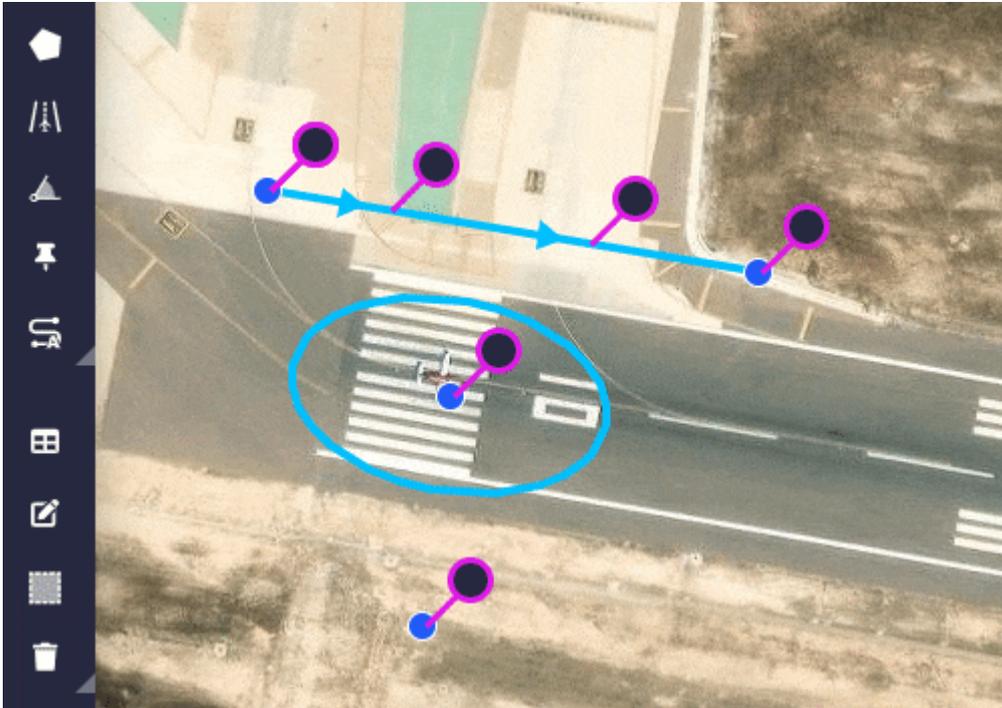


Mark

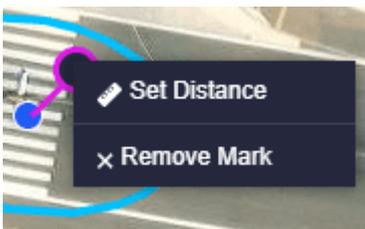
Marks can be moved along the patch by clicking on the  icon:

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**:

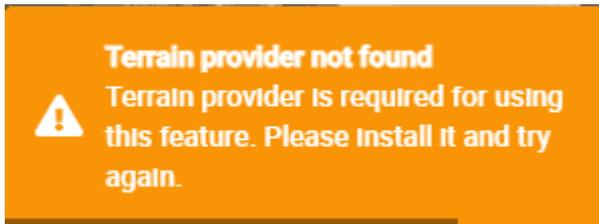
**Mark options**

- **Set 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.
- **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.

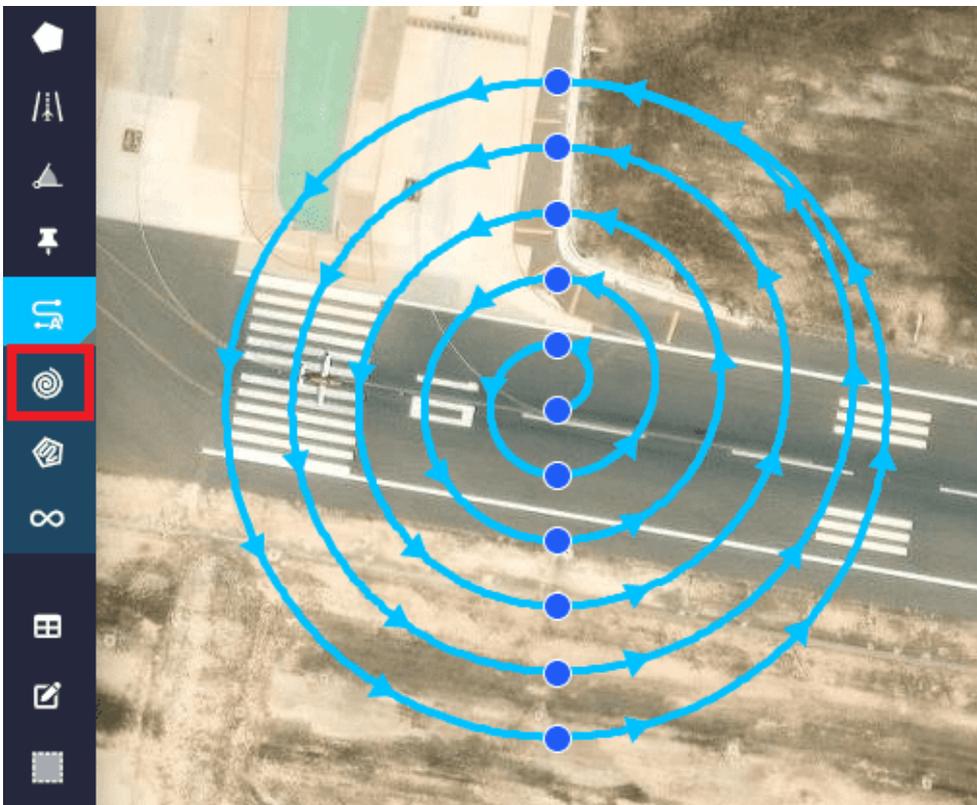
If this tool is not initialized, the following warning message will appear when trying to use any 'Generate Route' element:



Generate route warning message

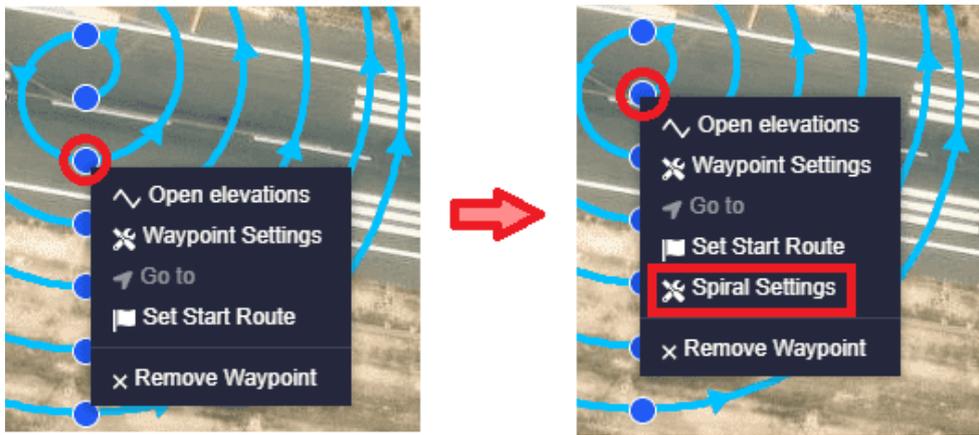
-  **Spiral**

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



Generate route - Spiral

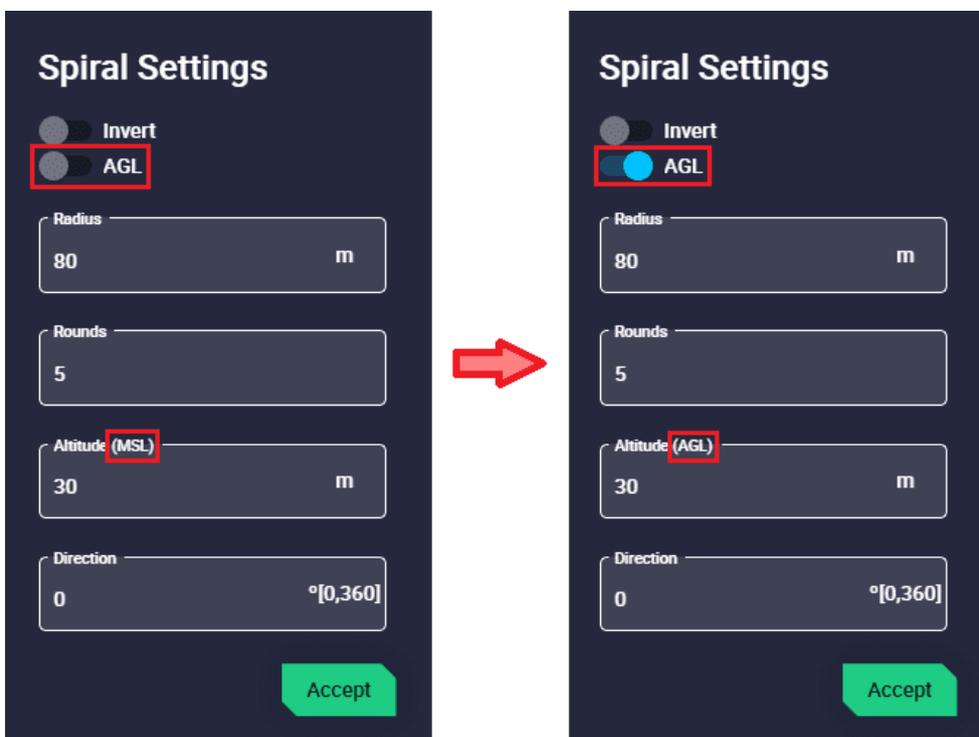
The spiral options are accessed in the same way as for the other elements described above, and are the same as the [Waypoint](#) options. However, by **clicking on the central waypoint of the spiral**, an extra option appears that allows the user to access the '**Spiral Settings**':



Generate route - Spiral options

The following parameters can be configured:

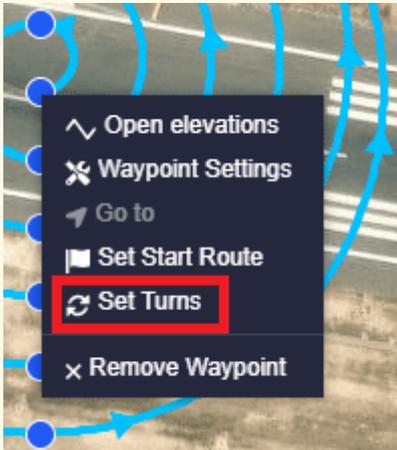
- **Invert:** When enabled, the direction of the route will be the opposite to the direction configured below.
- **AGL:** If enabled, the waypoint altitude is set in AGL, otherwise it is expressed in MSL.
- **Radius:** Spiral maximum radius.
- **Rounds:** The number of spiral rounds.
- **Altitude (MSL/AGL):** 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. In addition, the spiral will act as a **curved segment** and will have the same options like this one:

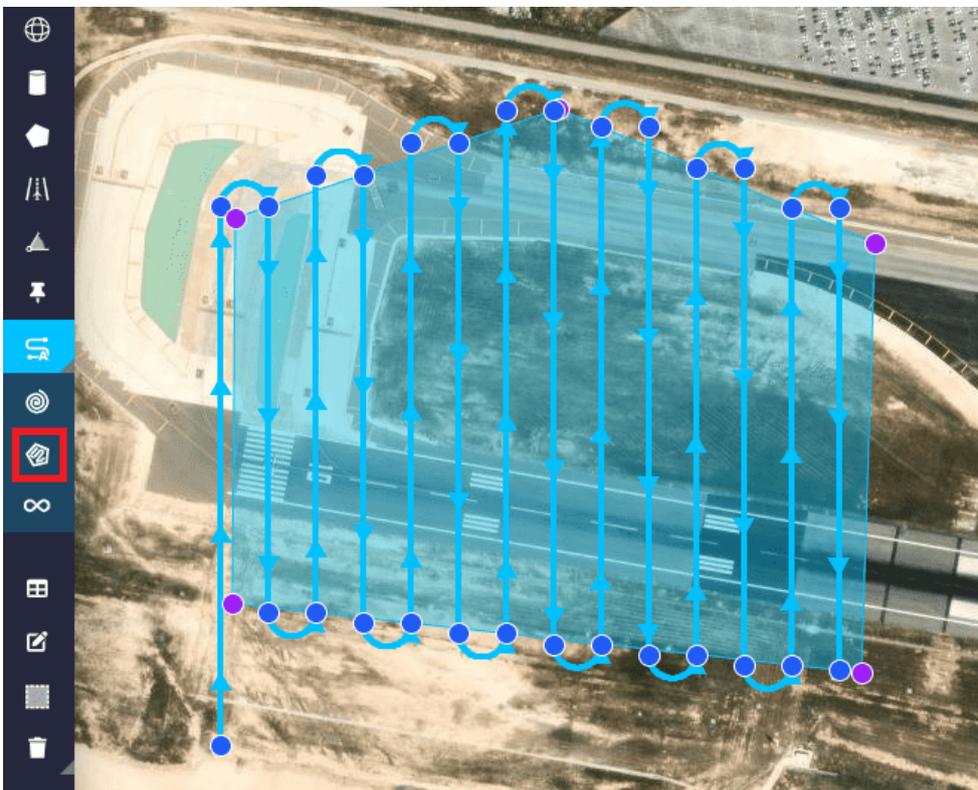


Generate route - Spiral options after refresh



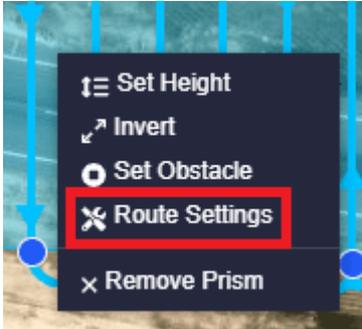
Photogrammetry Mission

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



Generate route - Photogrammetry Mission

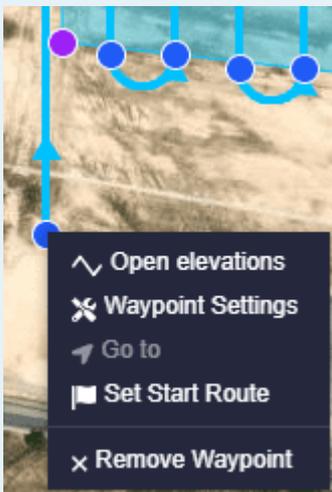
The photogrammetry mission options are accessed in the same way and are the same as for a prism (see [Prism](#) section on this page for more information). However, an extra option appears that allows the user to access the '**Photogrammetry Settings**' (Route Settings):



Generate route - Photogrammetry Mission options

ⓘ 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.

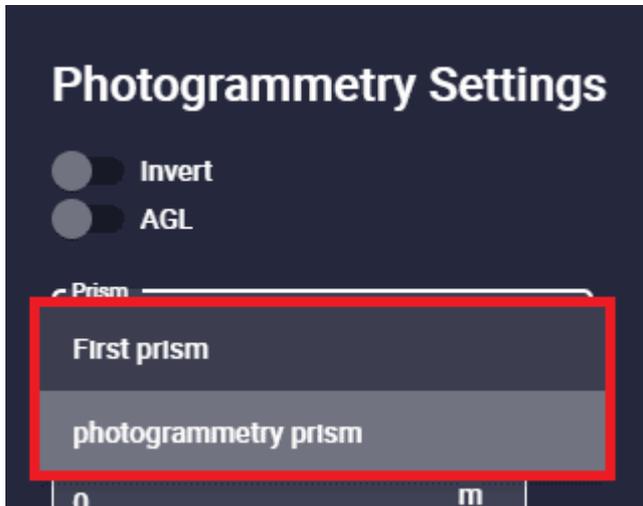


Generate route - Waypoint route options

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.

- **Prism:** As with prisms, users can link a predefined prism to this photogrammetry mission in the **Operation Panel**. For more information about this, see [Operation Panel - Operation](#) section of this manual.



Generate route - Photogrammetry Settings prism

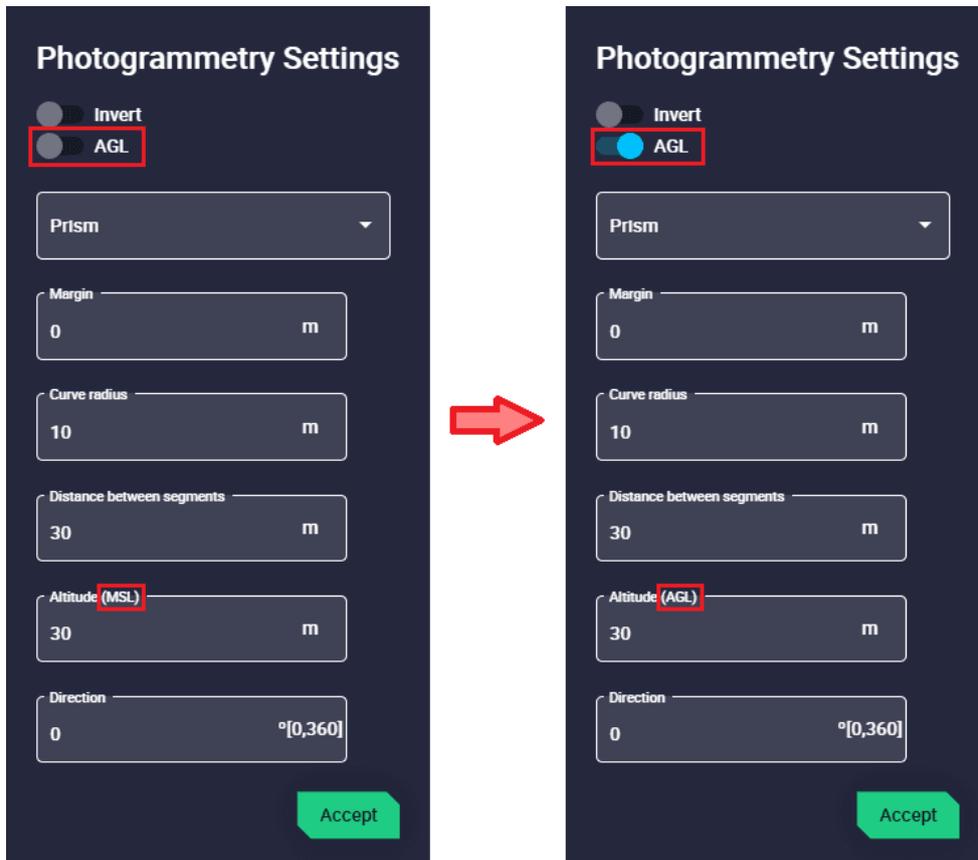
- **Margin:** This option allows the user to add boundary margins for the route to each side of the photogrammetry mission.
- **Curve radius:** Radius of the route turns.
- **Distance between segments:** Distance between segments can be modified.

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.



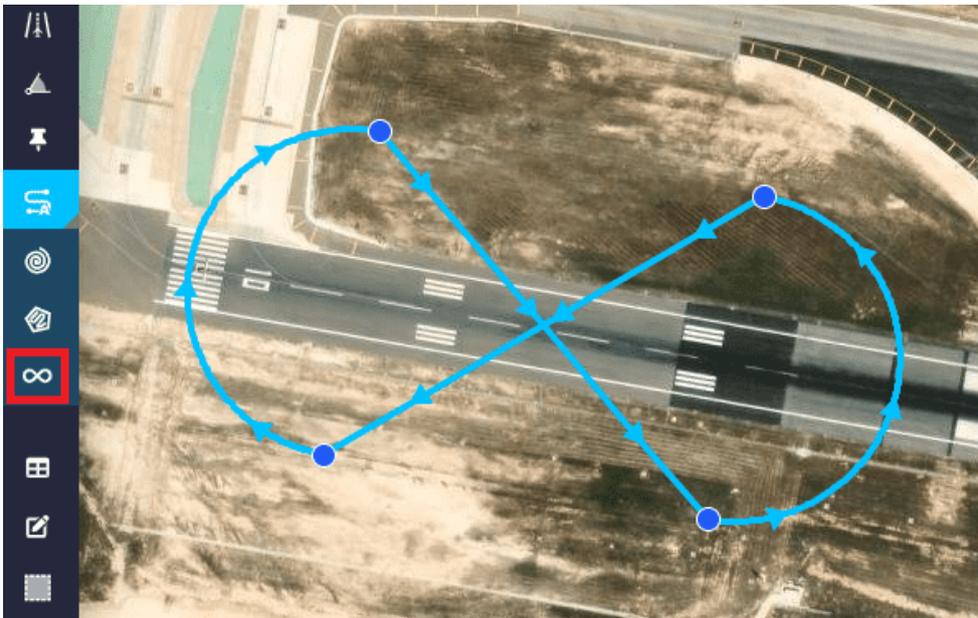
Generate route - Photogrammetry Settings

Warning

If the user 'refreshes' **Veronte Ops**, it will no longer be possible to access this configuration menu. Therefore, photogrammetry mission will act as a [prism](#).

Figure

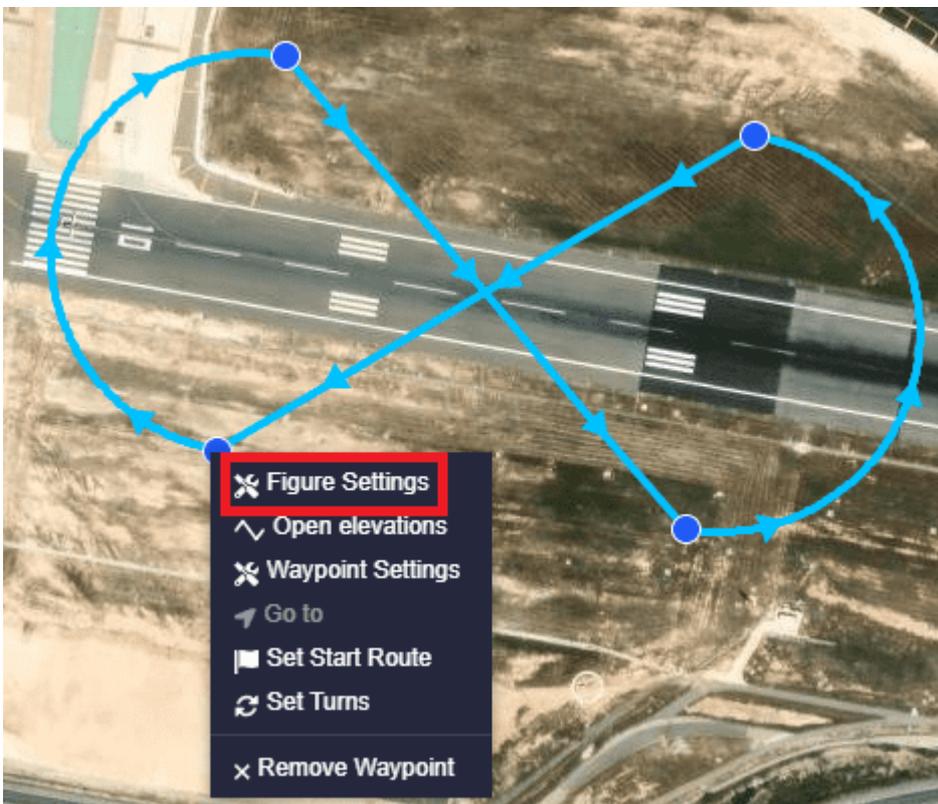
This tool allows users to create their own mission from a pre-designed route. To create it, click and drag to make the figure as big as desired.



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

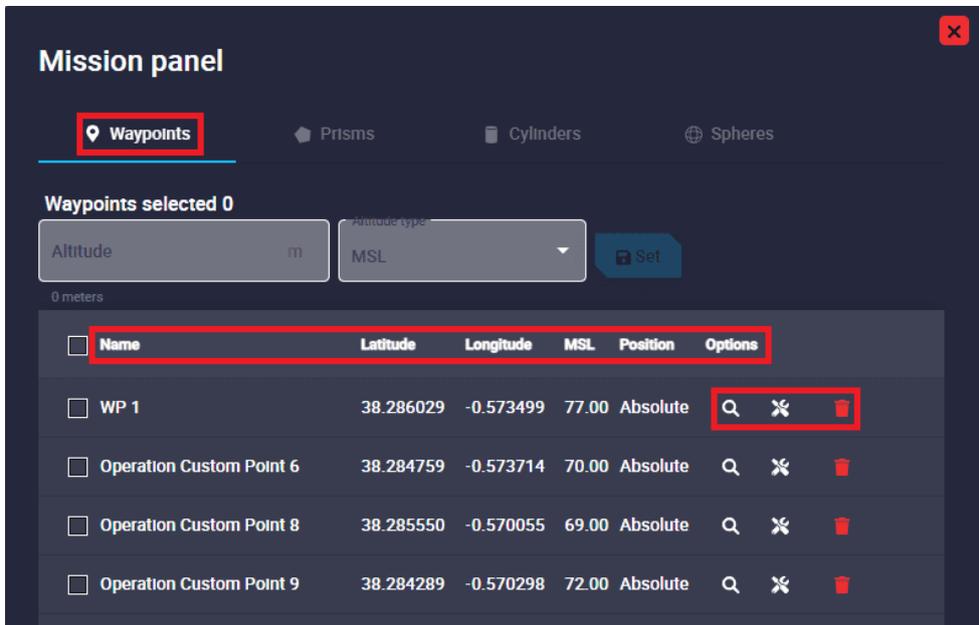
If the user 'refreshes' **Veronte Ops**, it will no longer be possible to access this configuration menu. Therefore, the figure will act as a "normal segment".

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 selected 0

Altitude: m, MSL, Set

Name	Latitude	Longitude	MSL	Position	Options
<input type="checkbox"/> WP 1	38.286029	-0.573499	77.00	Absolute	🔍 ✖ 🗑
<input type="checkbox"/> Operation Custom Point 6	38.284759	-0.573714	70.00	Absolute	🔍 ✖ 🗑
<input type="checkbox"/> Operation Custom Point 8	38.285550	-0.570055	69.00	Absolute	🔍 ✖ 🗑
<input type="checkbox"/> Operation Custom Point 9	38.284289	-0.570298	72.00	Absolute	🔍 ✖ 🗑

Mission panel - Waypoints

- **Name:** Name of this waypoint defined in the **1x PDI Builder** software.
- **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.

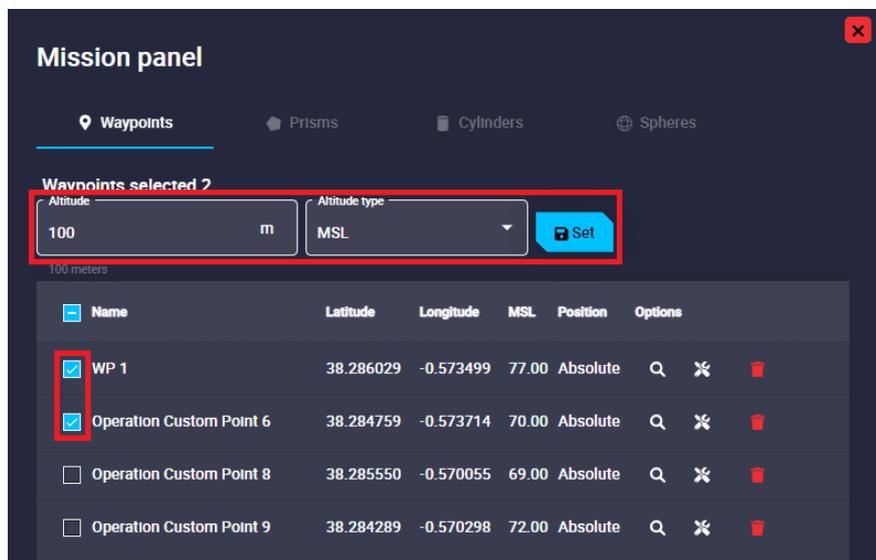
-  **Edit:** Open the waypoint edit menu. For more information on waypoint settings, click [here](#).

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'.

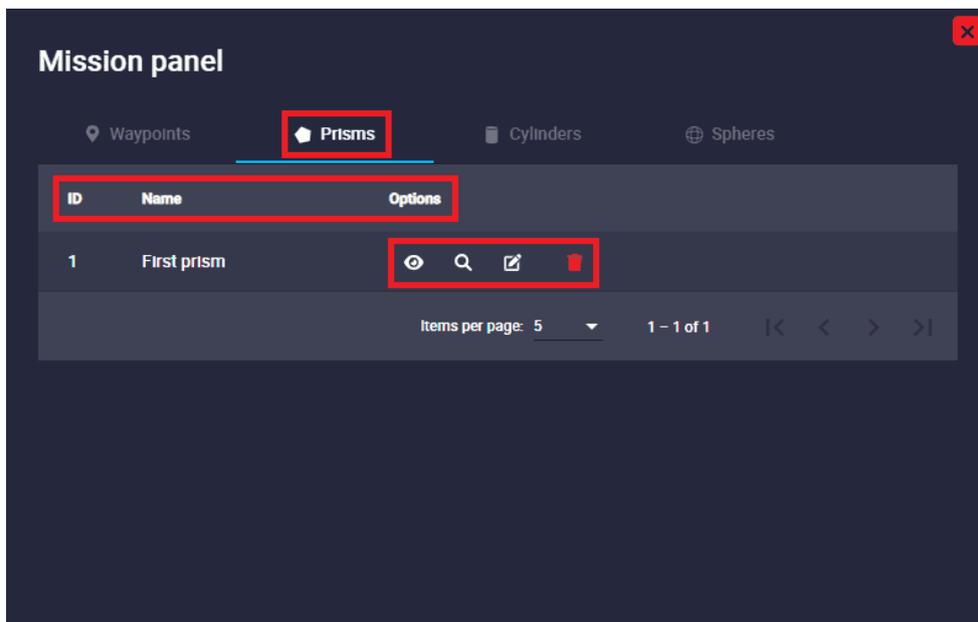


Mission panel - Waypoints altitude

-  **Delete:** Deletes this waypoint.

- **Prisms**

The following fields can be found in this menu:

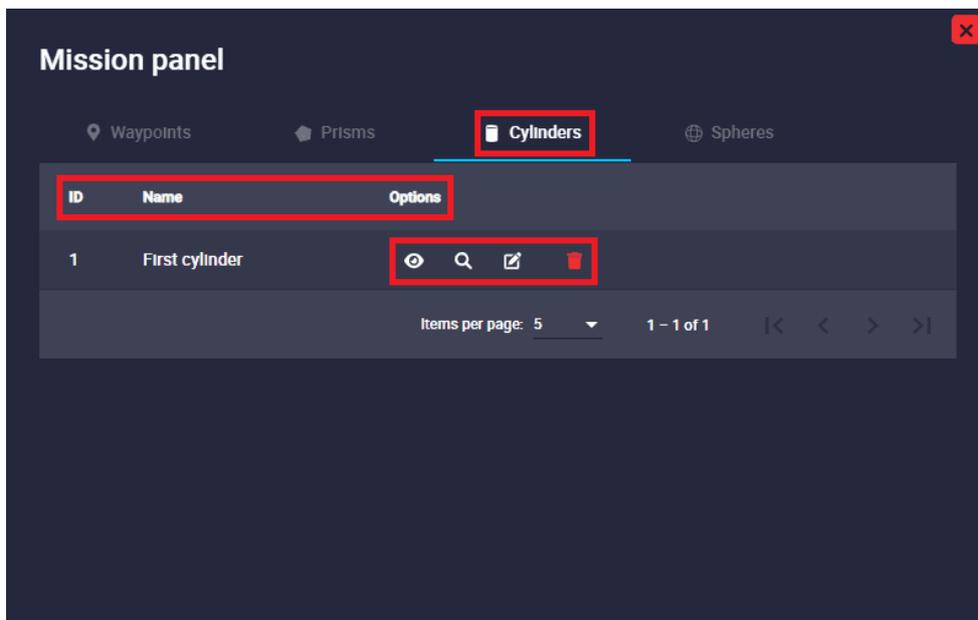


Mission panel - Prisms

- **ID:** Feature Id of this prism.
- **Name:** Name of this prism defined in the **1x PDI Builder** software.
- **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:** Open the prism edit menu. For more information on prism settings, click [here](#).
 -  **Delete:** Deletes this prism.

• Cylinders

The following fields can be found in this menu:

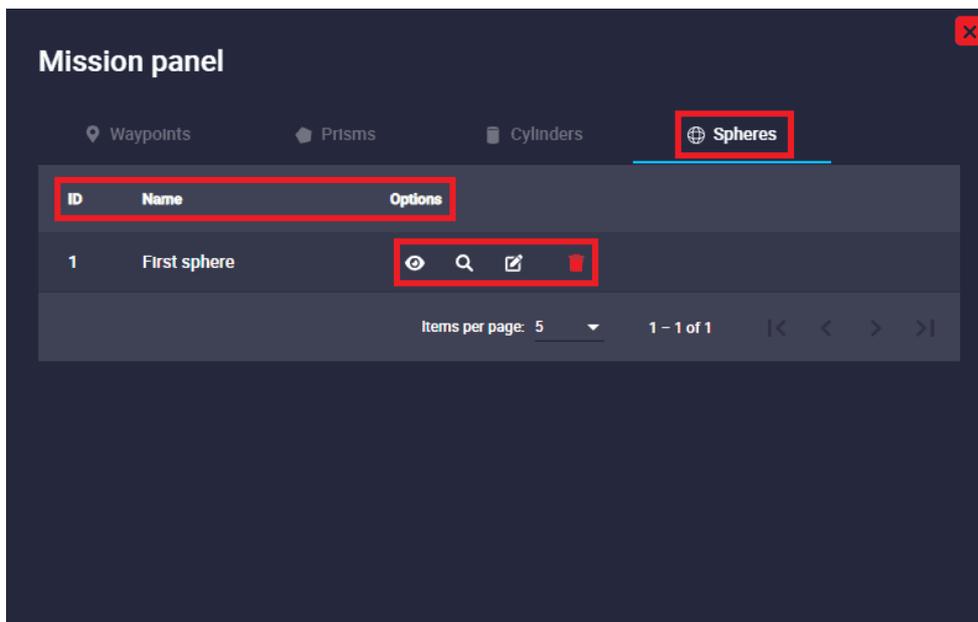


Mission panel - Cylinders

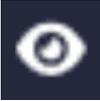
- **ID:** Feature Id of this cylinder.
- **Name:** Name of this cylinder defined in the **1x PDI Builder** software.
- **Options:**
 -  **Show/hide:** It is possible to show/hide the cylinder on the map by clicking here.
 -  **Search:** Clicking here will center and zoom the cylinder on the map.
 -  **Edit:** Open the cylinder edit menu. For more information on cylinder 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 defined in the **1x PDI Builder** software.
- **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.
 -  **Edit:** Open the sphere edit menu. For more information on sphere settings, click [here](#).
 -  **Delete:** Deletes this sphere.

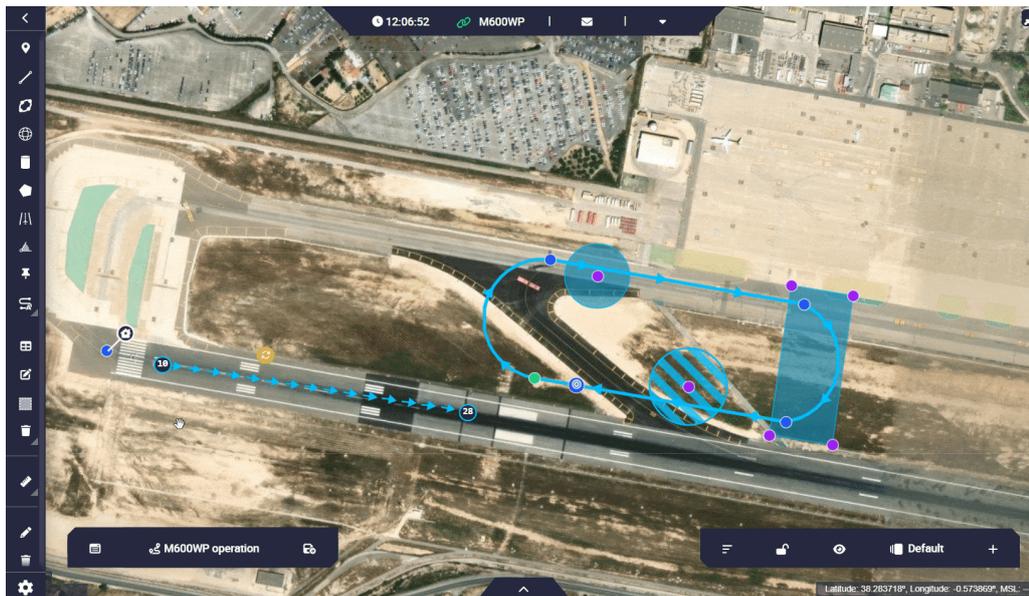
Edit mission

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 waypoints you want to move fall into it.
- With the points selected, click and drag the rectangle to move it to the desired location. And to rotate it, click on the 'white pin' (📌) and drag it to the desired rotation angle.
- After that, click again in the tool's icon to deselect.

Note

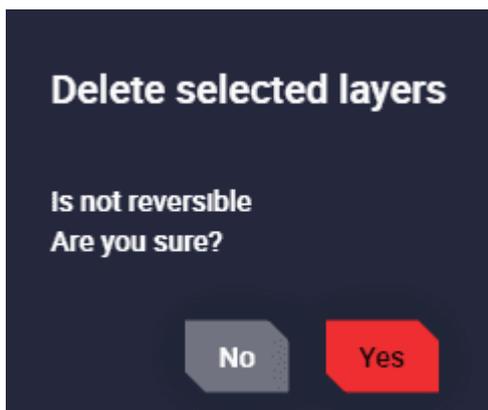
Runways and spots cannot be moved with this tool.



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

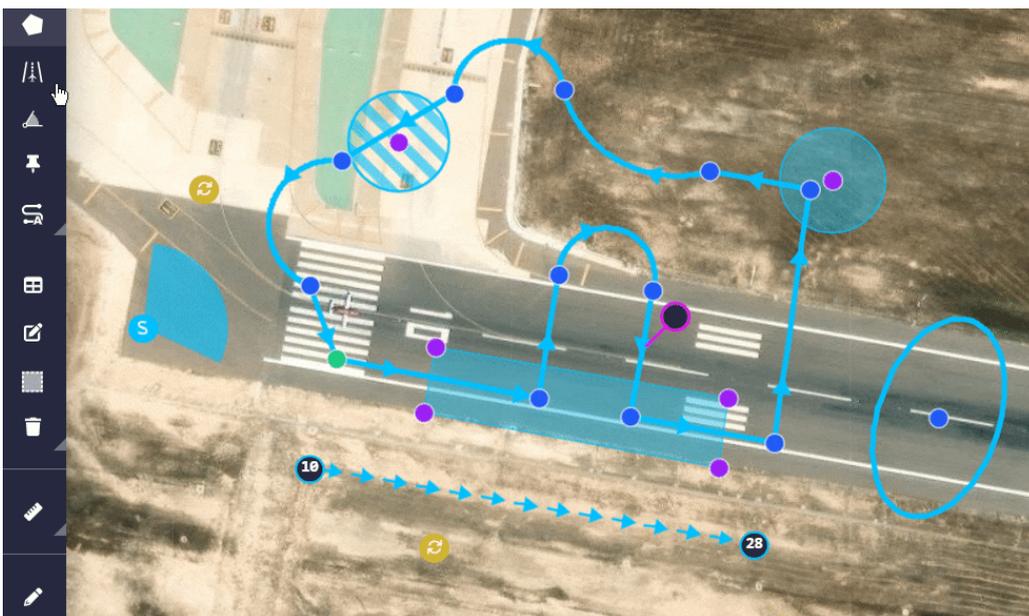
Runways and spots cannot be deleted in this way.



Multiselection tool - Remove

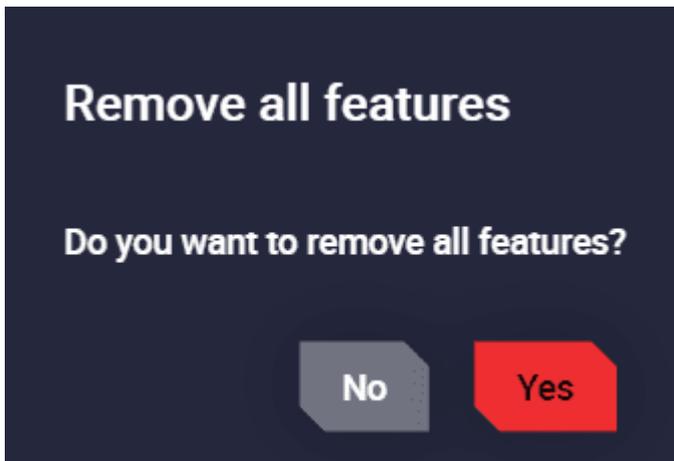
Remove mission

By clicking on this icon, the user can remove all the elements created by simply clicking on each of them.



Remove mission

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

Measure

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 ($^{\circ}$): **Azimuth** in **degrees** of the 'incoming' measure. The **azimuth** is the angle of the segment with respect to North.
- Out ($^{\circ}$): **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.

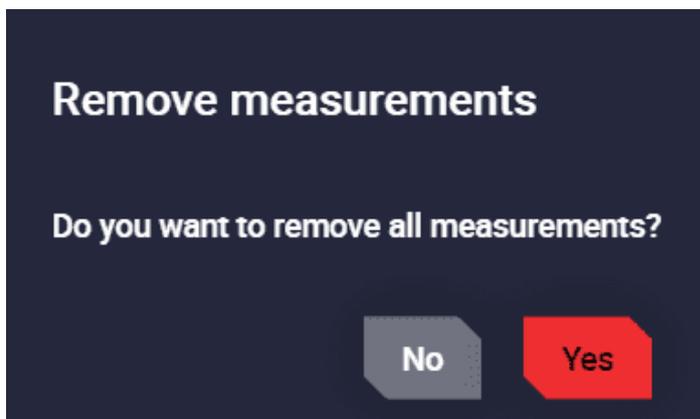
In addition, by clicking on the ruler icon, two more options will appear:

-  **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.



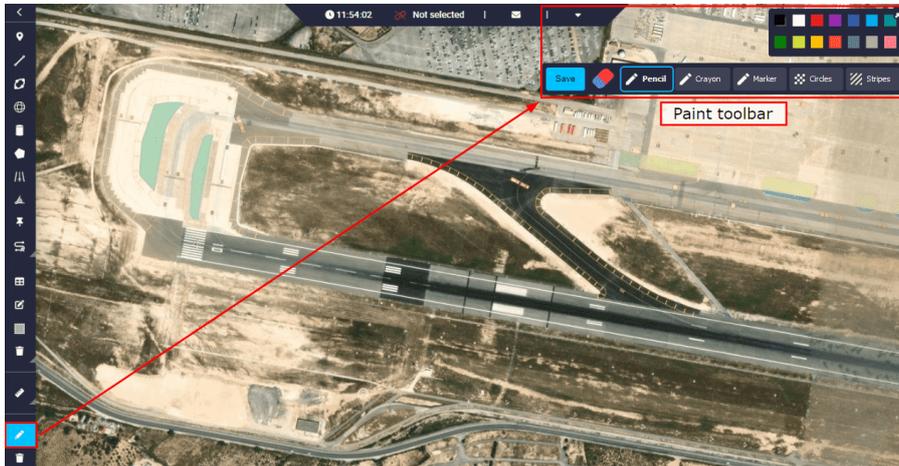
Remove all measurements

Paint

Enable paint

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

To access the paint option, click on this icon, a 'Paint toolbar' will then appear:

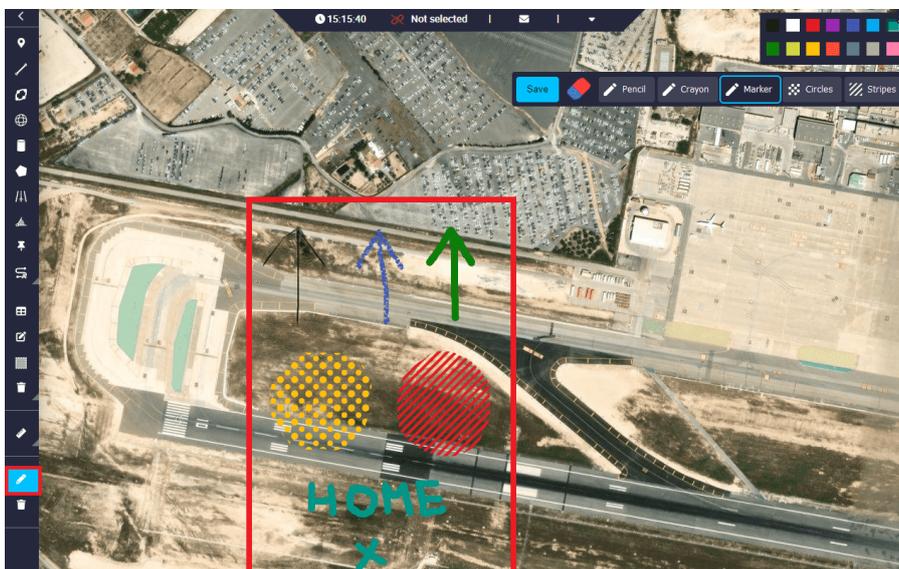


Paint toolbar

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

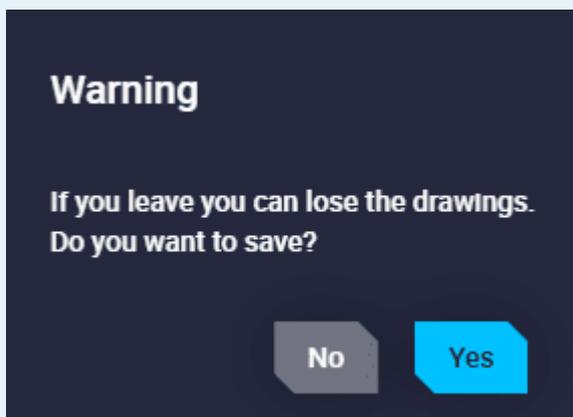
In addition, all notes made can be erased with an eraser, if they are not already saved, by clicking on the 'eraser option' in the toolbar.



Paint erased

i Note

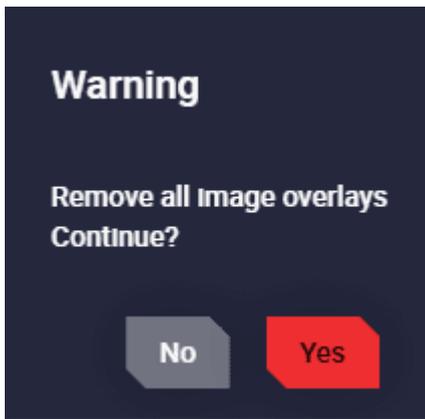
To save all the notes made here, it is important to click on the '**Save**' button, otherwise they will not be saved. If they are not saved, the following message will appear when exiting the 'Paint' option:



Warning paint not saved

Delete paint

All paints will be removed. The following confirmation pop-up window will appear:



Remove paint

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

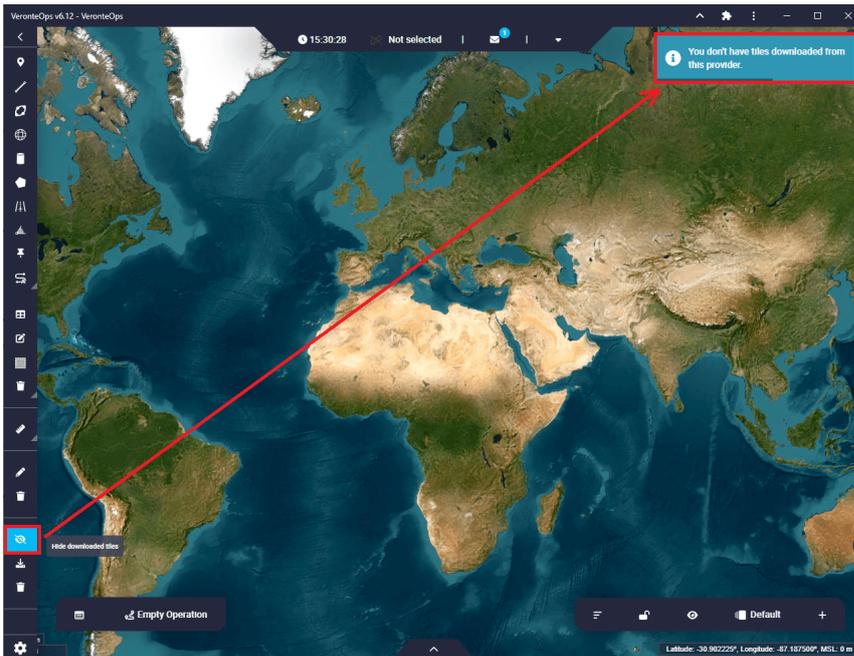
This option works differently when working online and offline:

- **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:



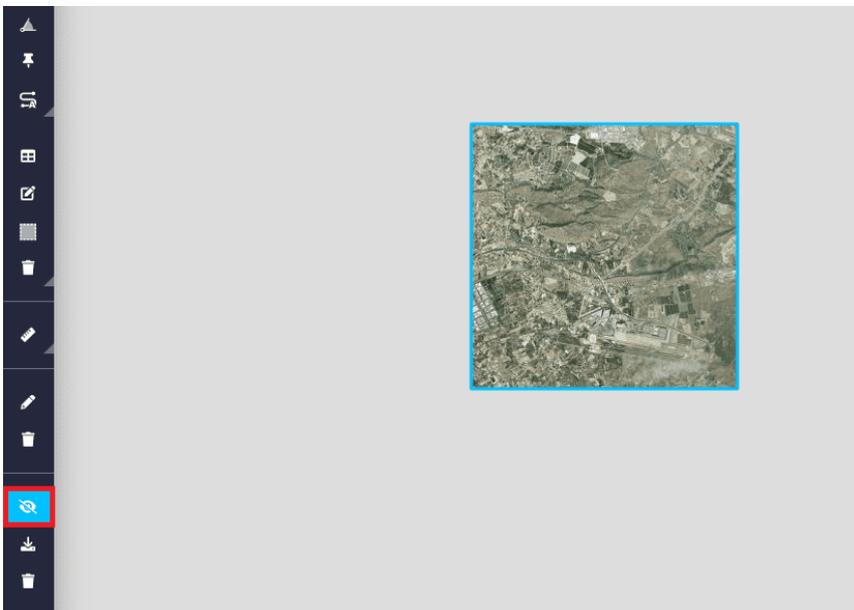
Show tiles

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.

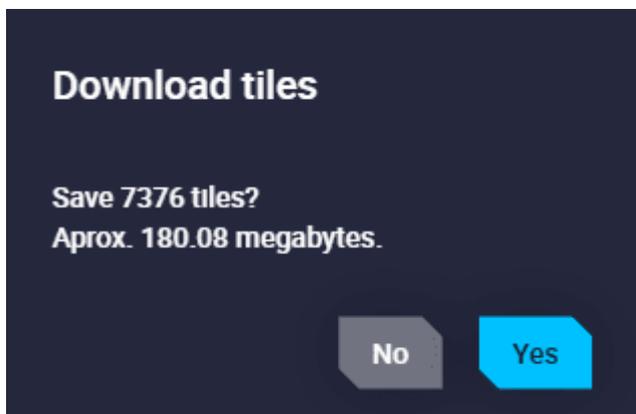
Save tiles

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:

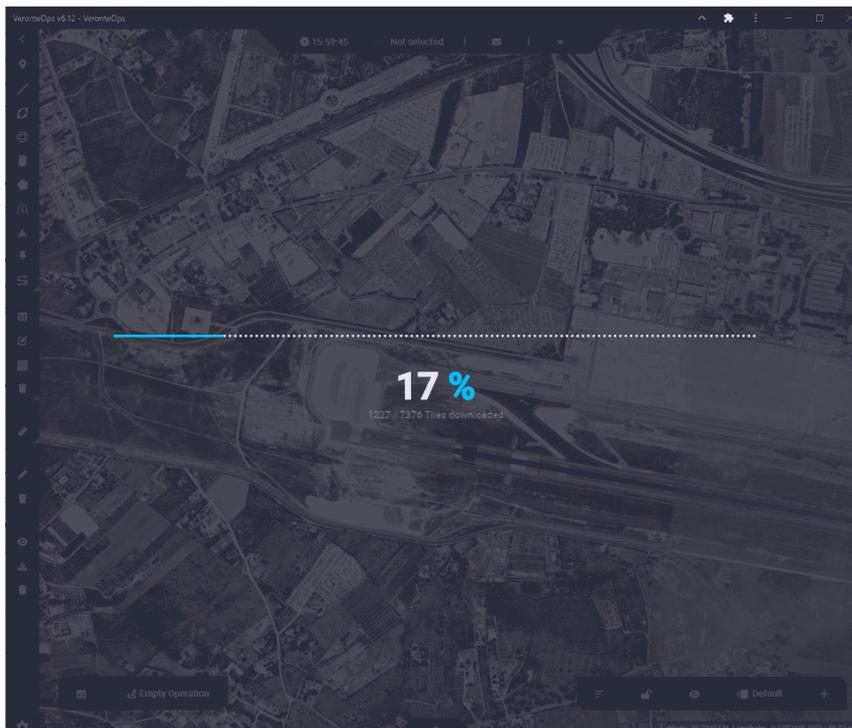
Warning

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

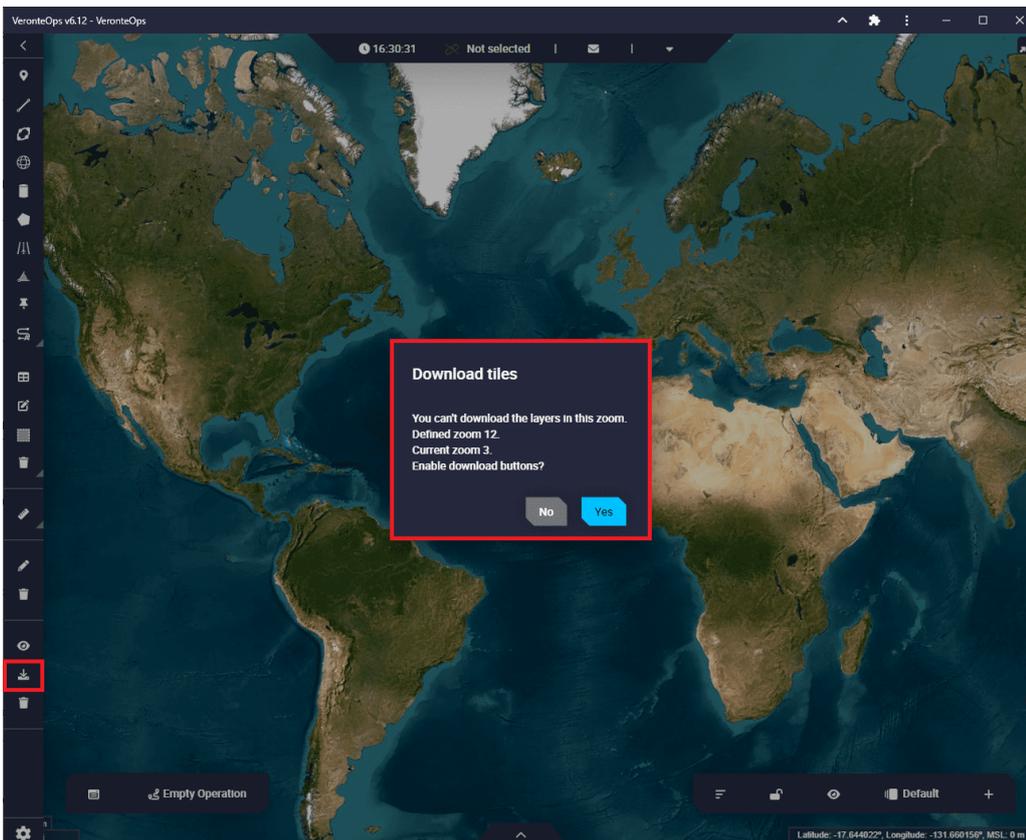
2. The tile download process will then begin:



Downloading tiles

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

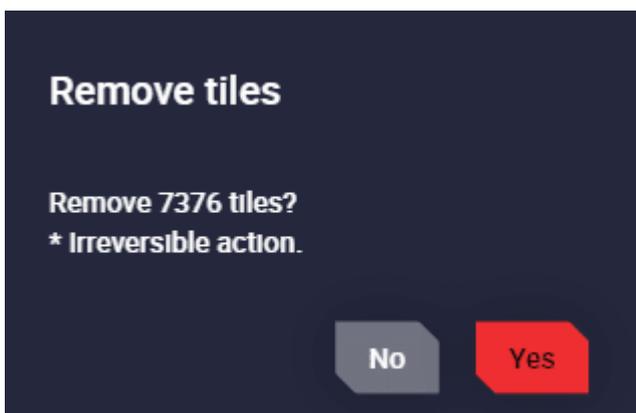
However, if there is no significant zoom, **Veronte Ops** will not download these files because there are too many of them. The following message will appear:



Not possible to download tiles

Remove tiles

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



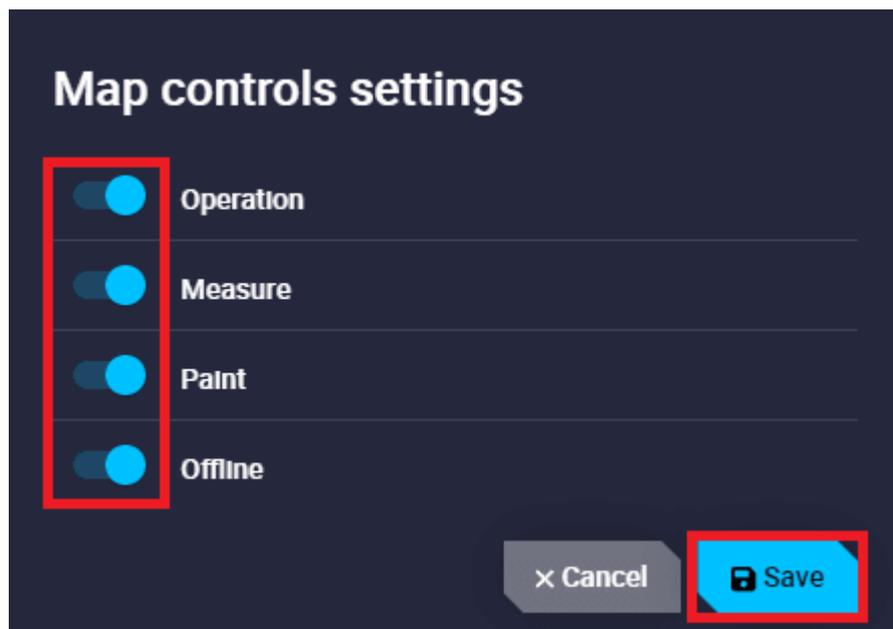
Remove tiles

 Remove 7376 tiles successfully.

Remove tiles successfully

Settings

By clicking here, a settings menu window will appear:



Settings menu

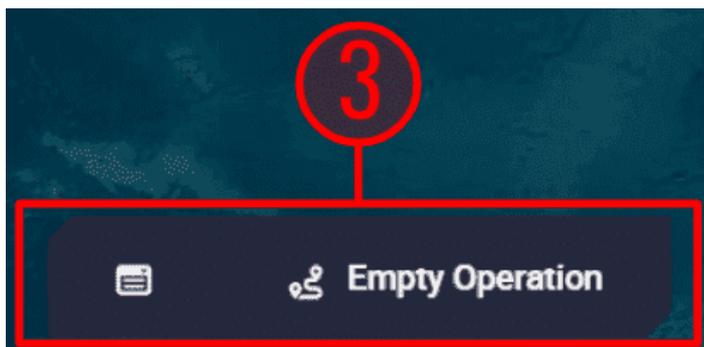
Here, the user can choose, by enabling or disabling them, the group of functionalities to be displayed in the mission toolbar.

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

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

- [Operation](#)
- [Measure](#)
- [Paint](#)
- [Offline](#)

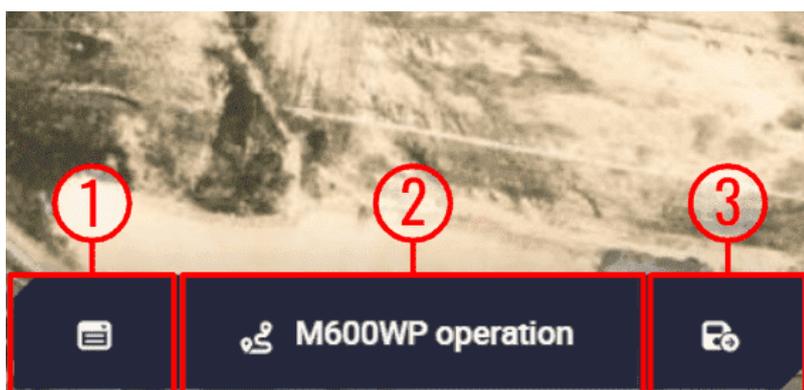
3. Operation



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:

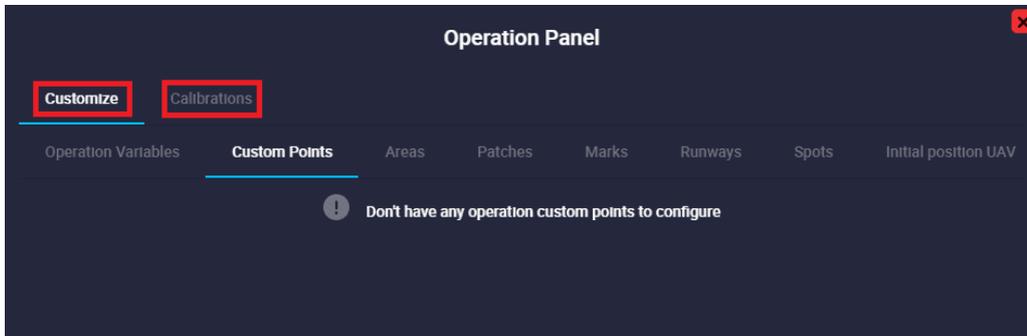


Operation toolbar - Autopilot connected

1. **Operation Panel**: Here the user can customize operation elements related to the operation and carry out some simple calibrations such as calibration of atmosphere, wind, DEM, etc.
2. **Operations**: Users shall be able to select an operation other than the one loaded on the autopilot and load it.
3. **Operation actions**: These are actions related to when changes are applied to the operation/mission, such as Revert, Save and Upload changes. This 'part' is only available when a **Veronte Autopilot 1x** is connected. In addition, when a change is made, the other 2 actions (Revert and Save) appear.

Operation Panel

This menu is divided into 2 different functionalities: manage **operation elements** in the **Customize** tab, and **simple calibrations** in the **Calibrations** tab.

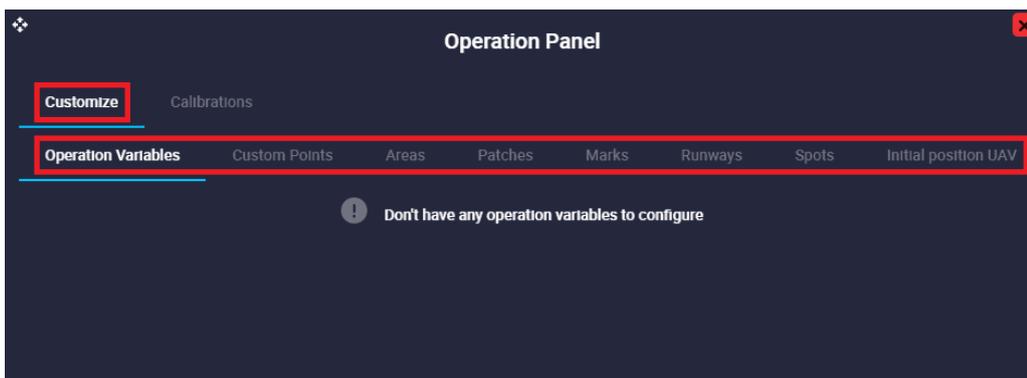


Operation Panel

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, Custom Points, Areas (prisms, cylinders and spheres), Patches, Marks, Runways, Spots and Initial position UAV.



Operation Panel - Customize tab

If users wish to link a mark, patch, 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.

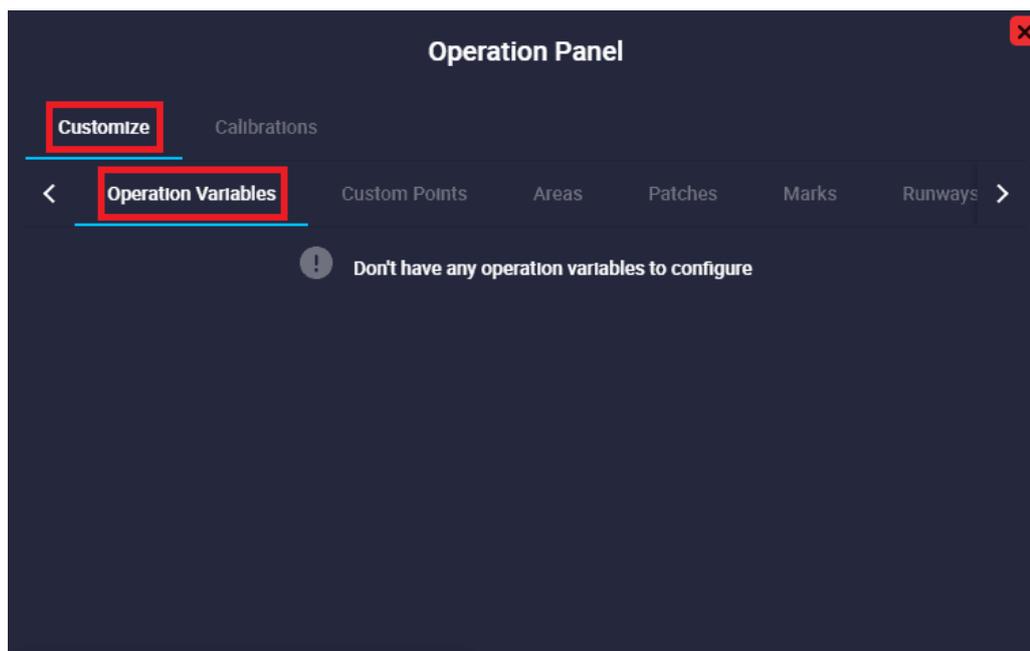
⚠ Important

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

Examples of Operation Variables can be:

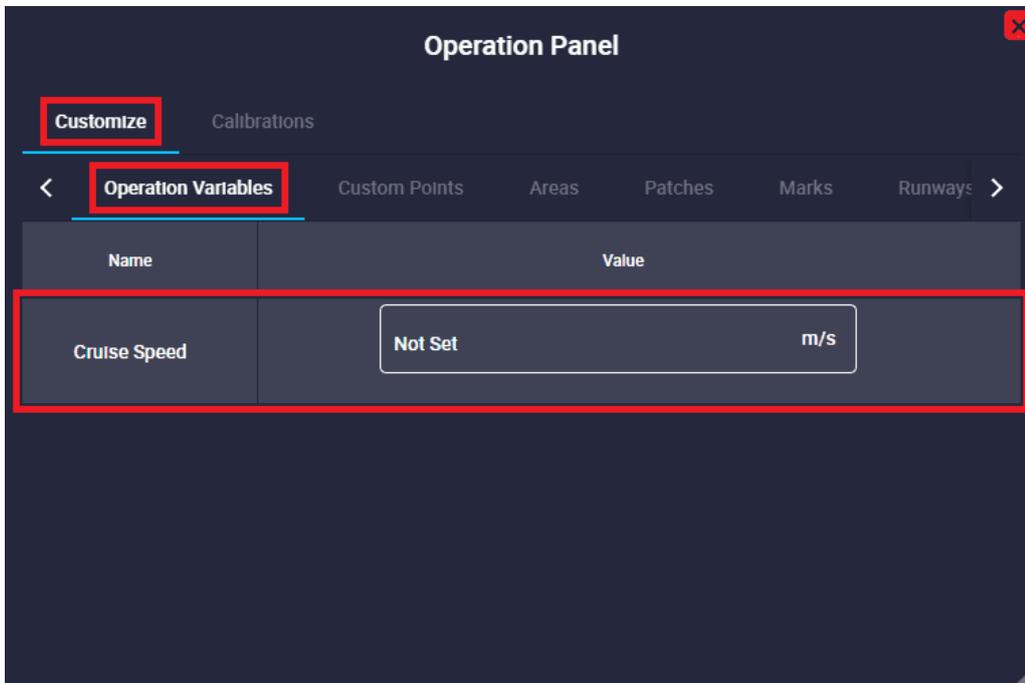
- Mission duration
- Cruise speed
- Flight level
- Takeoff and landing direction
- Home point
- Start of route

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

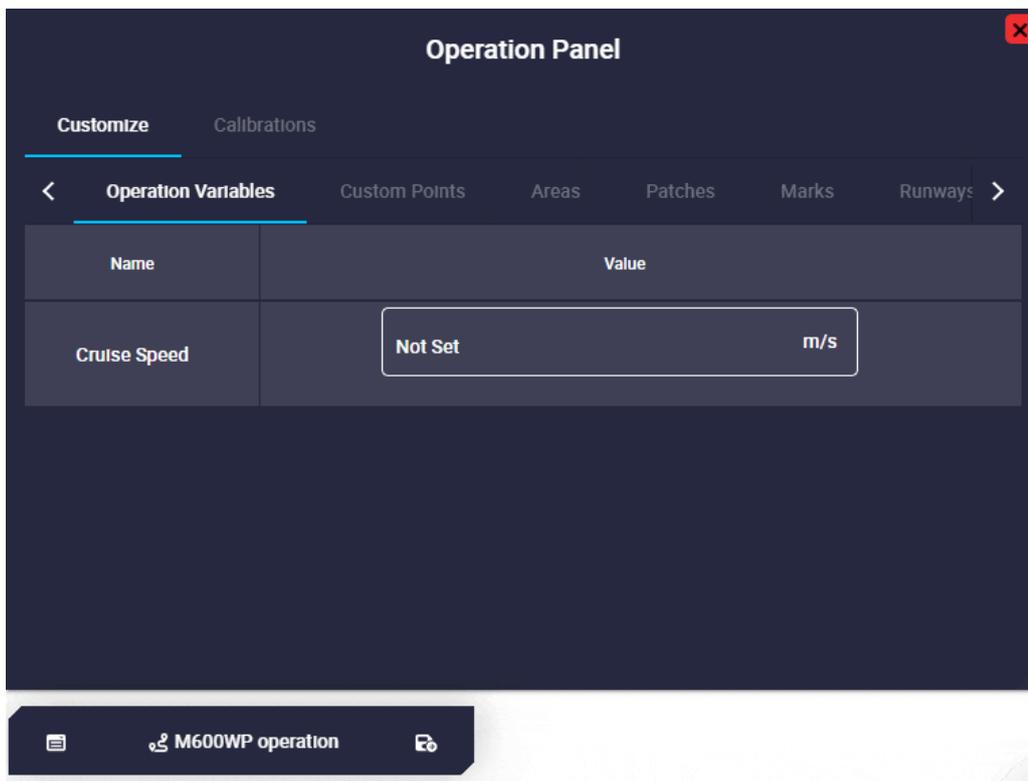
As explained above, operation elements must be created while building a Veronte Autopilot configuration. So, when a new Operation Variable is created, a new field will appear in the operation variables tab:



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).

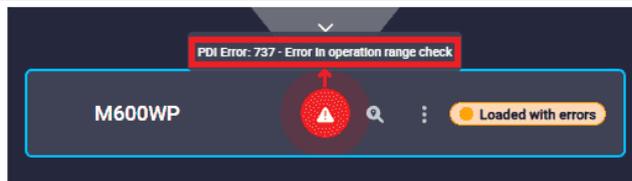
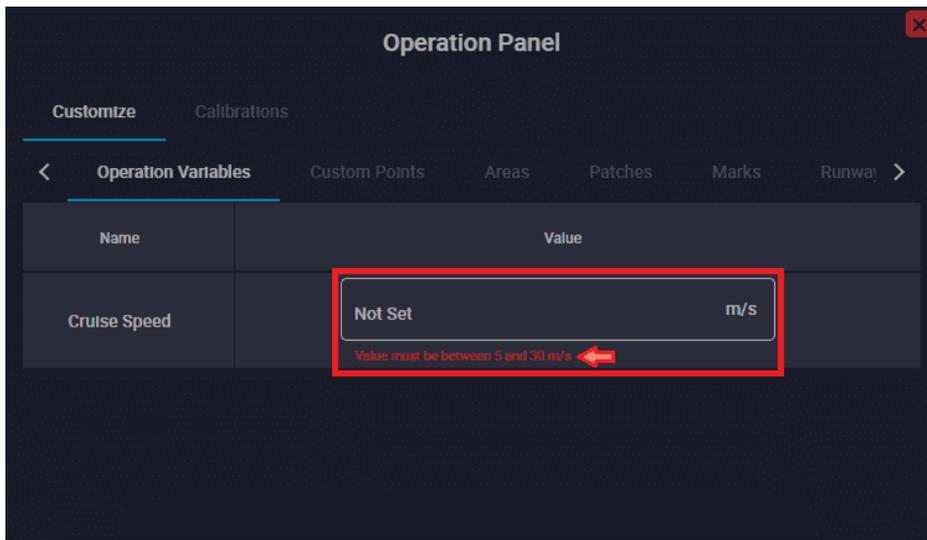
An example is shown below:



Operations Variables configuration

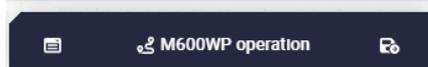
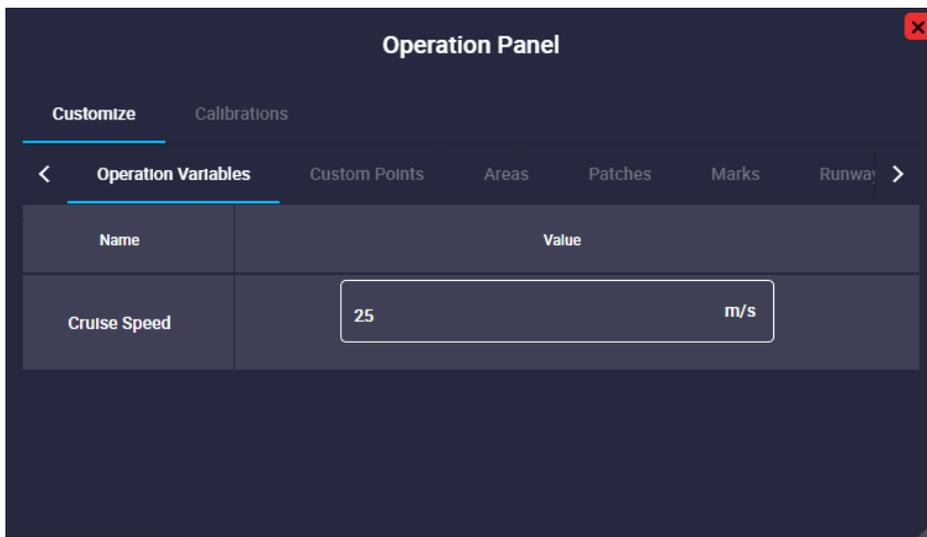
Users should note that these **Operation Variables can have minimum and maximum ranges** defined in their configuration in the **1x PDI Builder** software.

- 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. Otherwise, the [PDI error:737](#) will be shown in the [Platform panel](#).



Operation Variable error: Value Not Set

- 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 in range

- 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

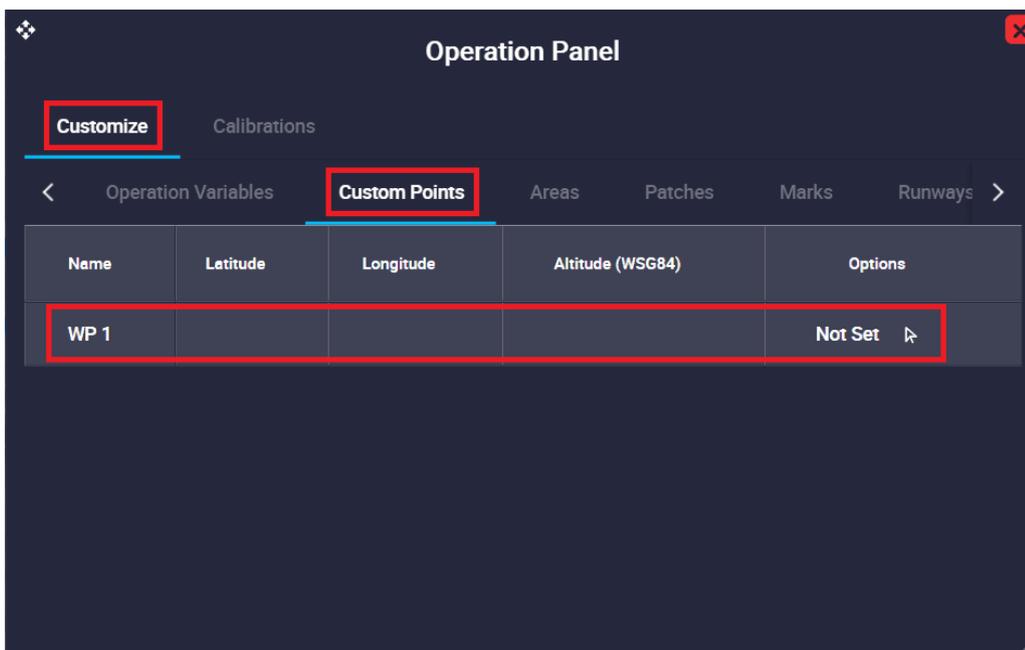
Although it is possible to modify operation elements during the flight, this practice is not recommended.

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

Custom Points

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

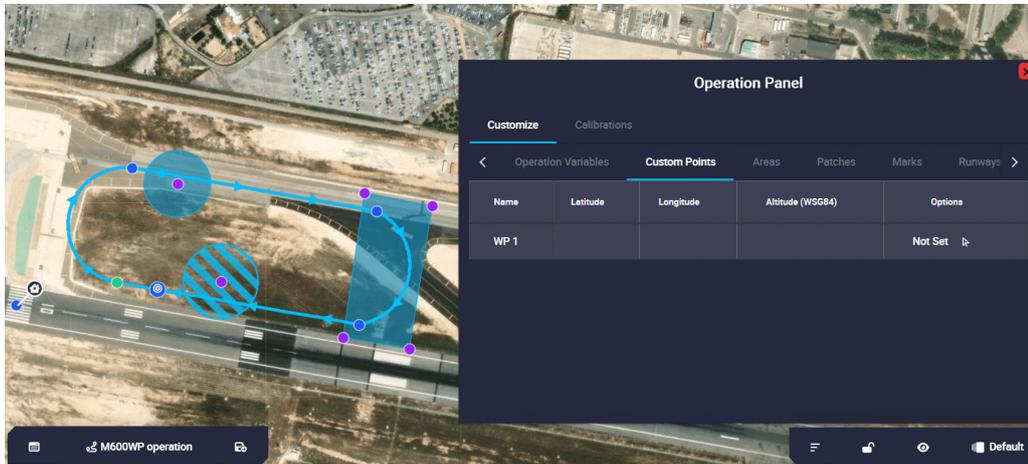
As explained above, an operation element only appears in this panel when it has been previously defined in the **1x PDI Builder** software.



Custom point

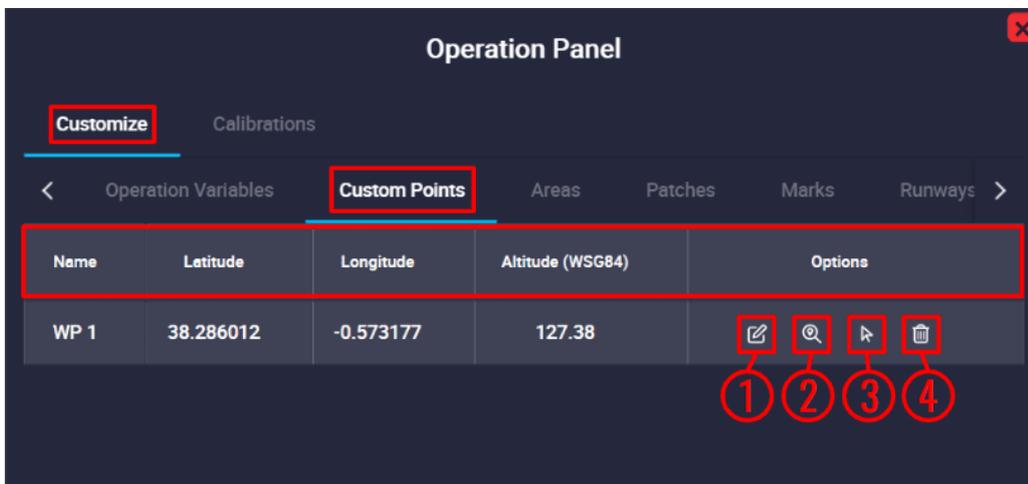
Therefore, as can be seen in the figure above, this Custom point has been defined in the autopilot configuration, but is **not yet configured**.

To configure it, it is necessary to click on the  icon to link this Custom point to a waypoint of the mission. An example is shown below:



Custom point configuration - Select point

Once, the Custom point is linked to a waypoint, the following options will appear in the operation panel:



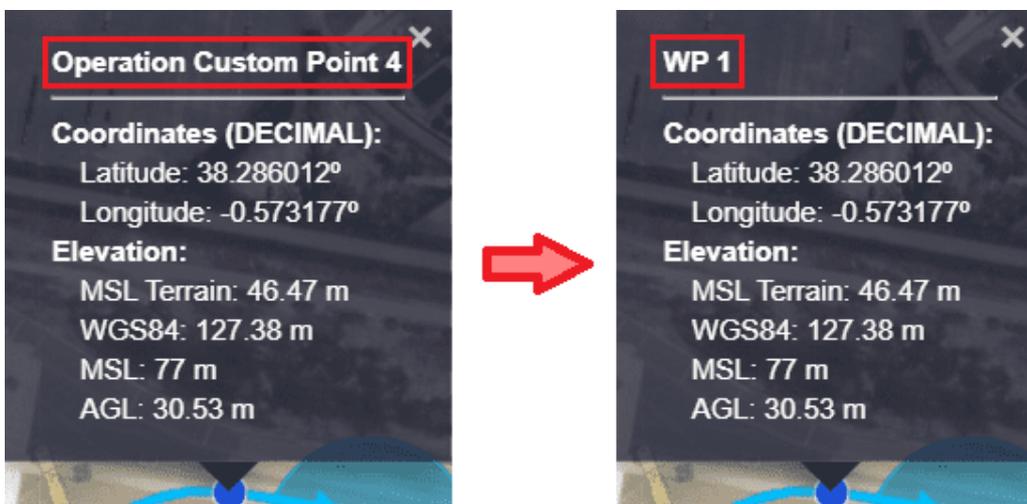
Custom point configuration

- **Name:** Name of this Custom point **defined in the 1x PDI Builder** software.
- **Coordinates:** Latitude, longitude and altitude (WGS884) of the selected point.
- **Options:** These are configuration options of the Custom point:
 1. **Edit options:** This option allows the user to manually edit the position of the Custom point. Its configuration is the same as for a waypoint (a

detailed explanation of this has been described in the [Waypoint - Mission](#) section of this manual).

2. **Search:** By clicking here, **Veronte Ops** will center and zoom in on the area of the map where this Custom point is defined.
3. **Select in map:** To link the Custom point to a different waypoint, click here and select it on the map.
4. **Remove reference:** The user can remove the Custom point configuration by clicking here.

Moreover, by clicking on the linked waypoint, it will appear with the name of the configured Custom point:

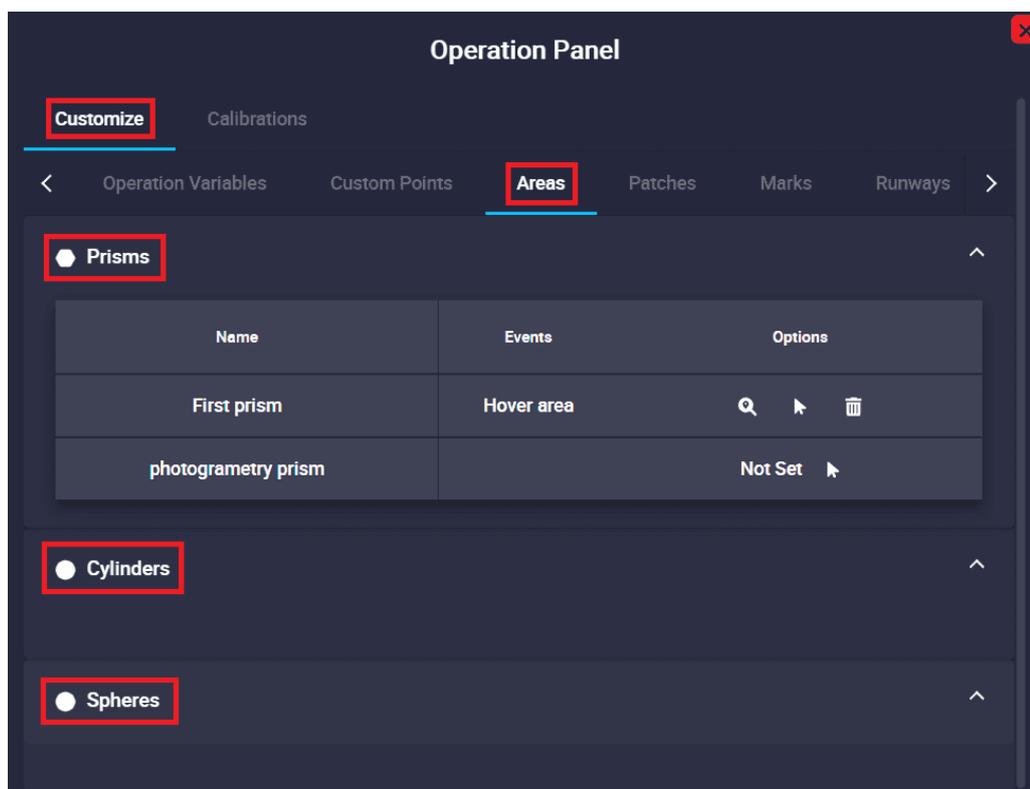


Custom point description

Areas

This tab includes **prisms, cylinders and spheres**.

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

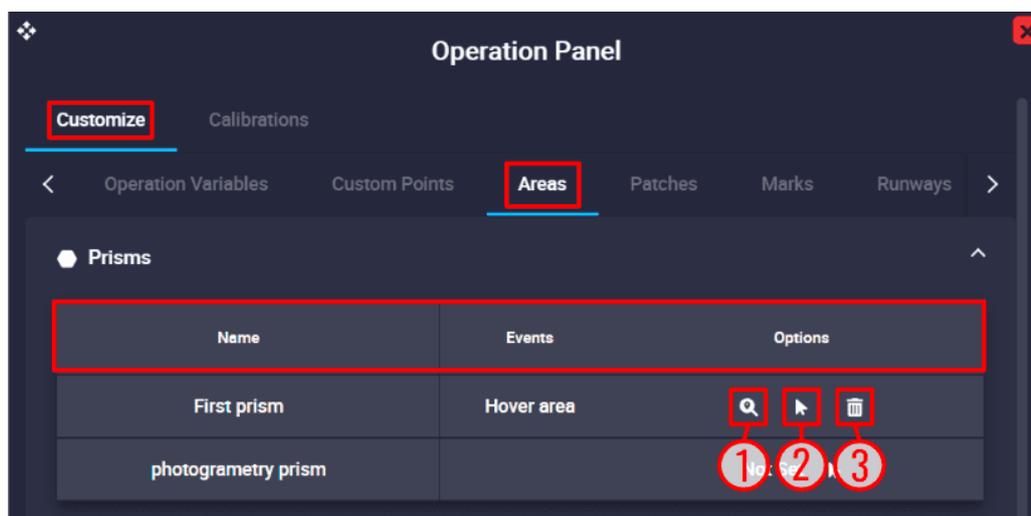


Areas

In the image above, the user can identify that there is a prism already defined and configured, a prism defined but not configured, and that there is no cylinder or sphere either configured or defined.

If the user wants to **define** cylindrical or spherical areas, this must be done in the **1x PDI Builder** software, as described at the beginning of the [Customize](#) section. Then, to configure them, the process is the same as described for [Custom points](#).

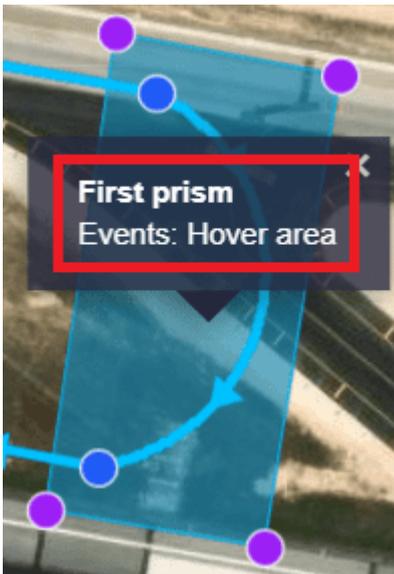
Once an Area has been defined and configured, the following options are displayed in the operation panel:



Area configuration

- **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.
- **Options:** These are configuration options of the Area:
 1. **Search:** By clicking here, **Veronte Ops** will center and zoom in on the area of the map where this Area is defined.
 2. **Select in map:** To link this operation element to a different area, click here and select it on the map.
 3. **Remove reference:** The user can remove the Area configuration by clicking here.

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

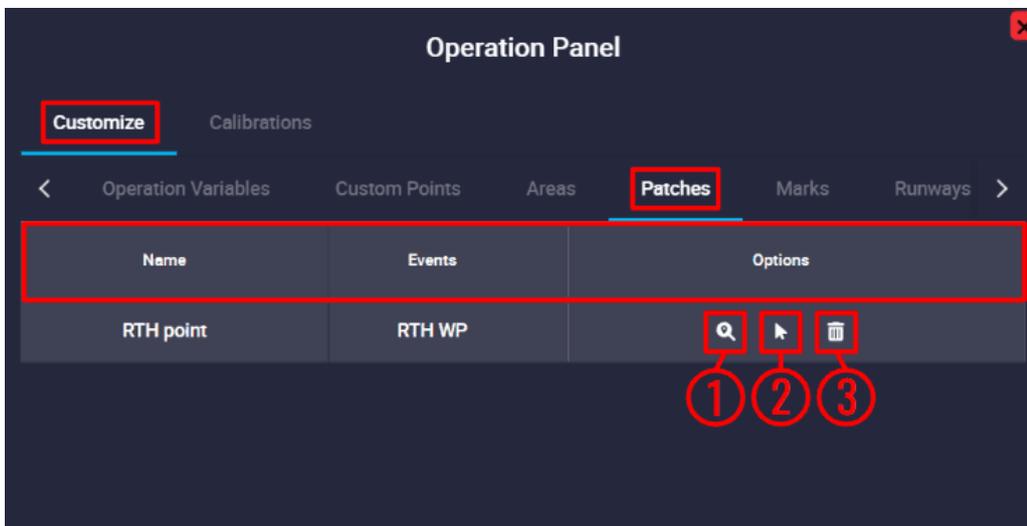


Area description

Patches

A **Patch** is an operation element that can be linked to patches associated with waypoints, segments, arcs or orbits of the configured mission.

This tab has the same options and works exactly the same way as the previous section ([Areas](#) section).

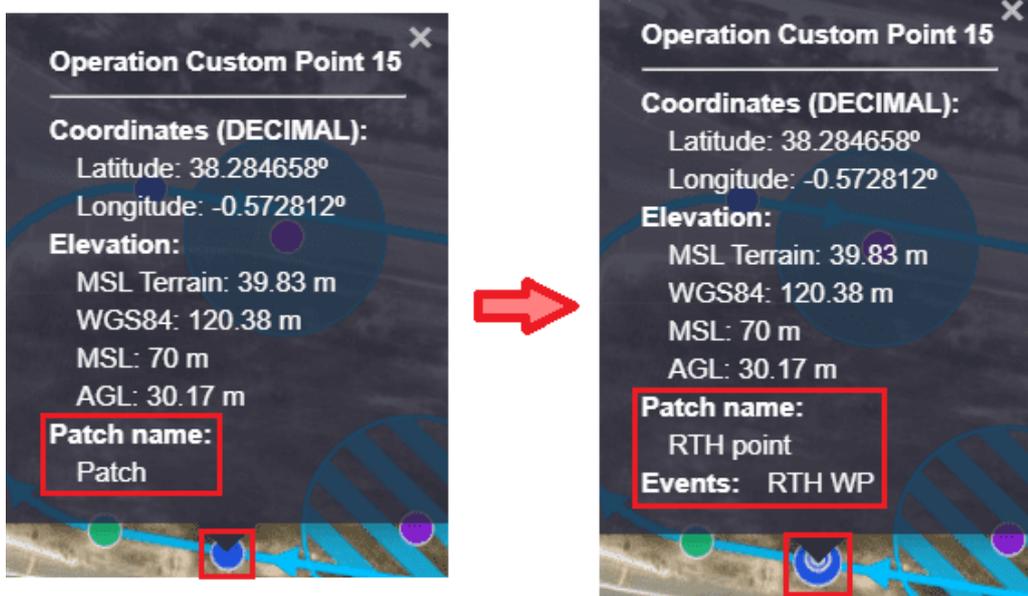


Patches

Moreover, if the event that is linked to the Patch has an associated icon and the element of the mission is the patch of a **waypoint**, the icon will appear at this waypoint. In addition, when clicking on it, the patch name defined by the user will appear in its description, as well as the events linked to it. An example is shown below:

Note

As this is a patch, the Operation Custom Point is not renamed as in the case of Custom Points, the name of the patch associated to this waypoint is renamed in the description.



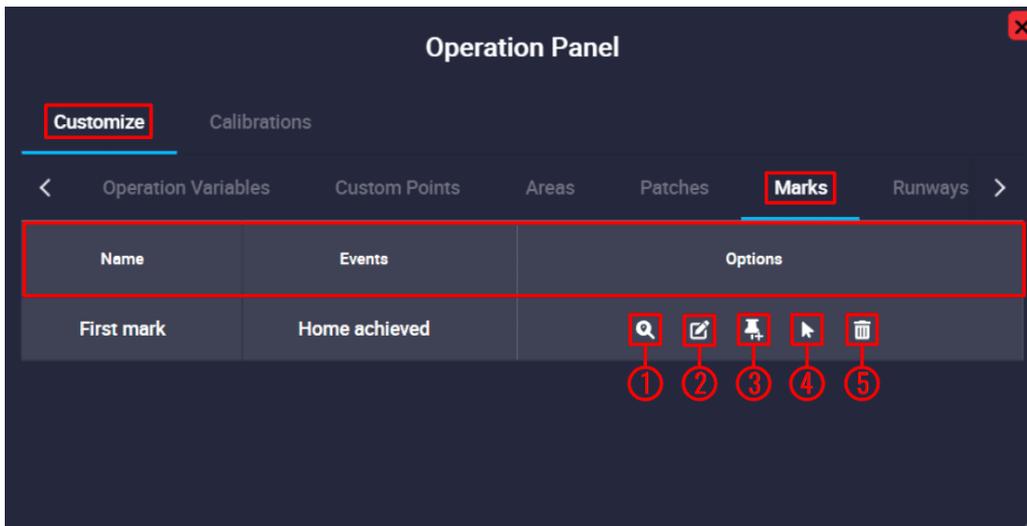
Patches - WP description

Marks

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

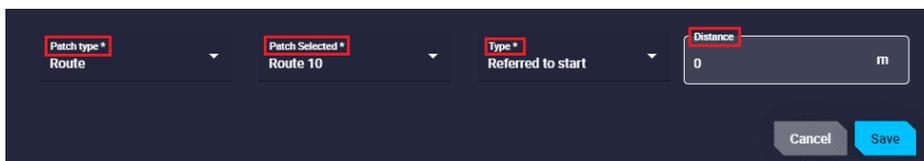
The procedure for defining and configuring a mark is the same as described above in the [Areas](#) section.

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



Marks

- **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:
 1. **Search:** By clicking here, **Veronte Ops** will center and zoom in on the area of the map where this Mark is defined.
 2. **Edit/Create:**

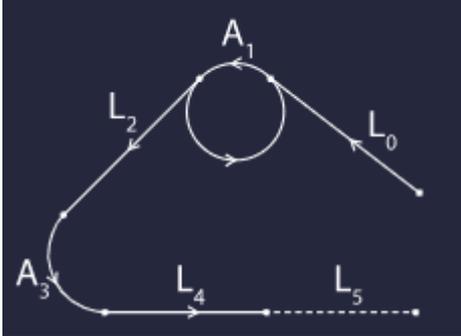


Marks - Edit

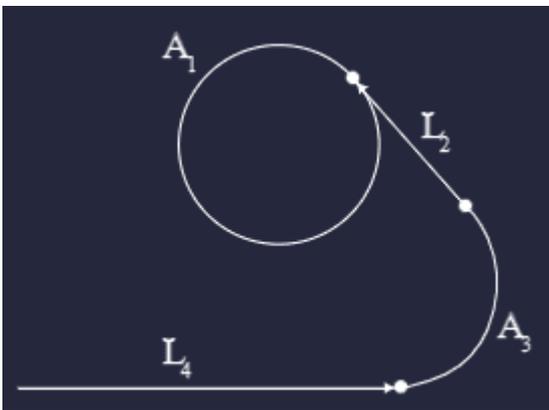
- **Patch type:** The user can select different flight guidance phases where the marks will be placed: **Approach, Climbing, Route, Taxi, VTol** and **Rendezvous**. Except for Route patches, for the rest of the guidance phase, **patches are generated when the user, or an automation, activates them**. 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

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

3. **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).

4. **Select in map:** To link this operation element to a different mark, click here and select it on the map.
5. **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:

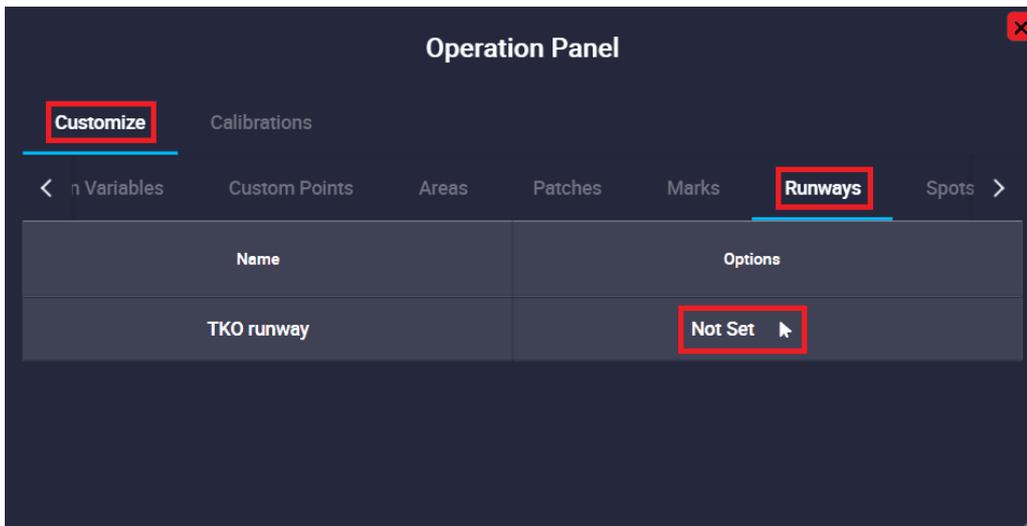


Marks - Icon and description

Runways

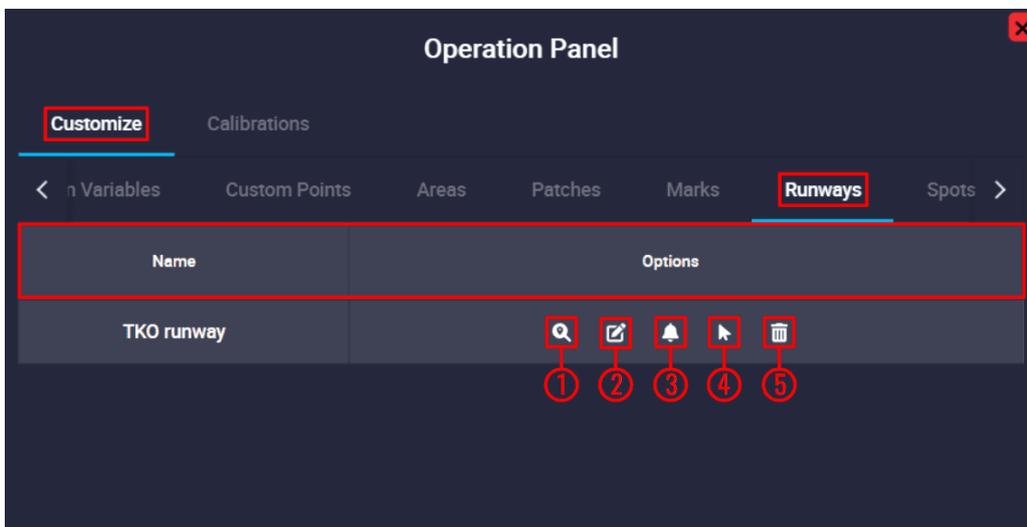
Runways are operation elements that can be linked to the runways of the configured mission.

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

- **Name:** Element identifier, this has been **defined in the 1x PDI Builder** software.
- **Options:** These are configuration options of the Runway:
 1. **Search:** By clicking here, **Veronte Ops** will center and zoom in on the area of the map where this Runway is defined.
 2. **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.
 3. **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.

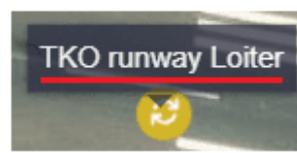
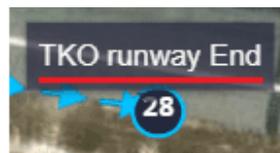
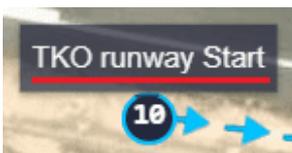
4. **Select in map:** To link this operation element to a different runway, click here and select it on the map.
5. **Remove reference:** The user can remove the Runway configuration by clicking here.

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:

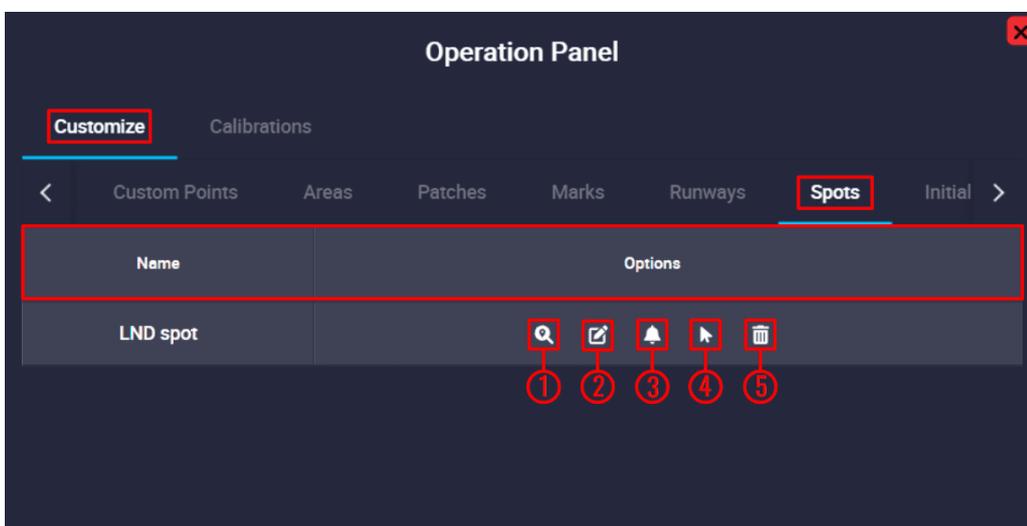


Runways - Start, End and Loiter points

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

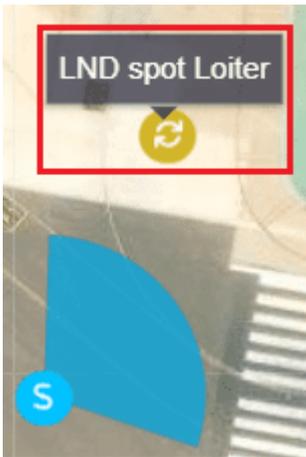
- **Name:** Element identifier, this has been **defined in the 1x PDI Builder** software.
- **Options:** These are configuration options of the Spot:
 1. **Search:** By clicking here, **Veronte Ops** will center and zoom in on the area of the map where this Spot is defined.
 2. **Edit:** By clicking 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.
 3. **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.
 4. **Select in map:** To link this operation element to a different spot, click here and select it on the map.
 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:

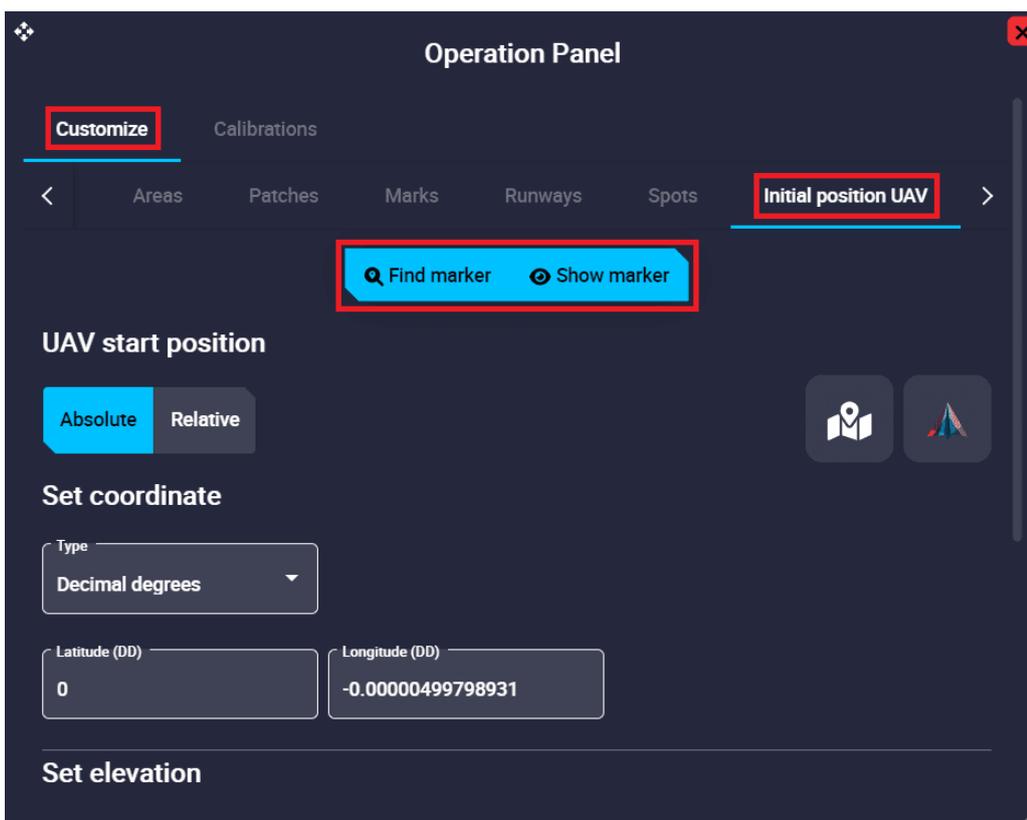


Spots - Loiter point

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.

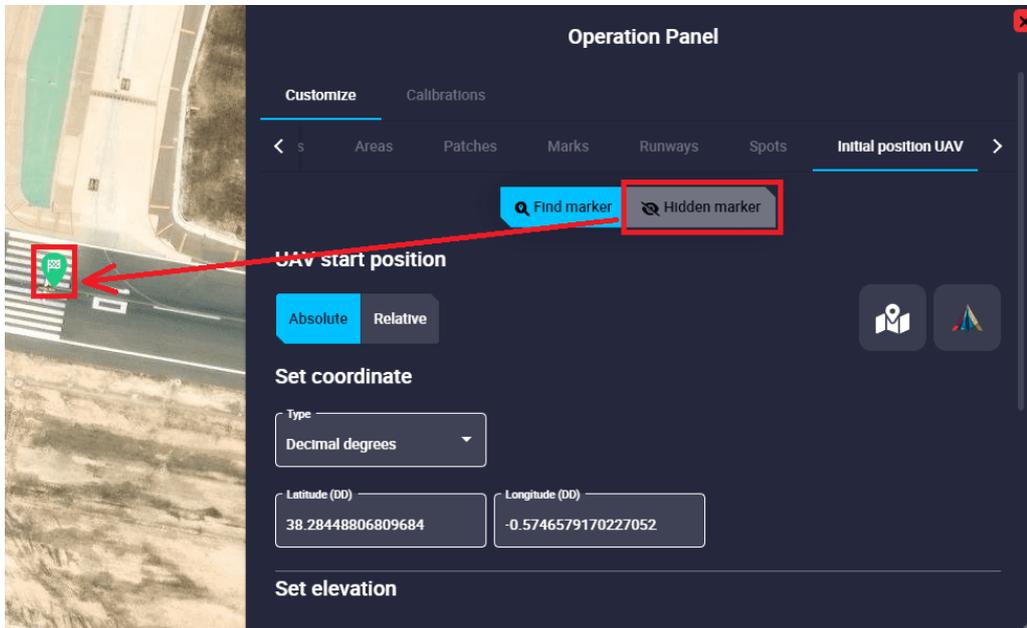


Initial position UAV

It is configured in the same way as **waypoints**. For a detailed explanation 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):



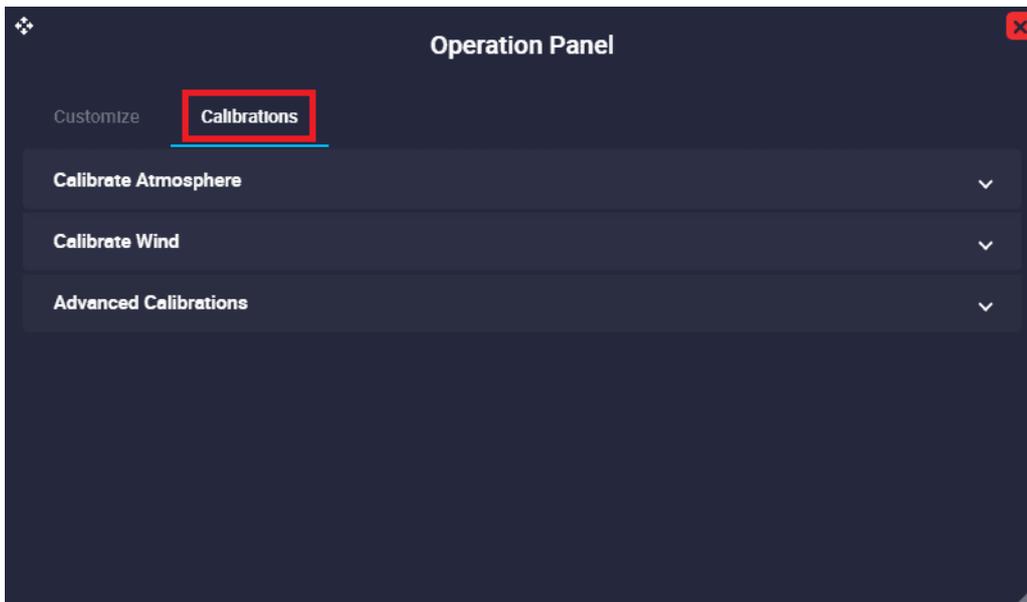
Initial position UAV - Marker in map

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

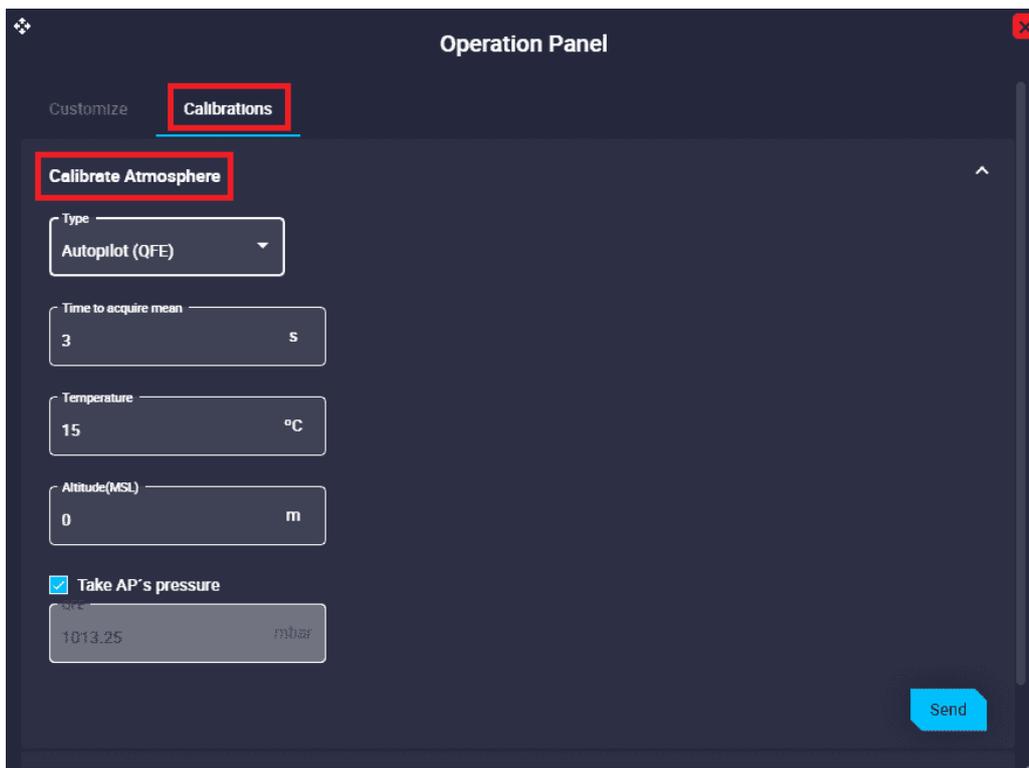
These calibrations will never modify the autopilot's current configuration: the changes are volatile, and will disappear once the system is rebooted.

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.

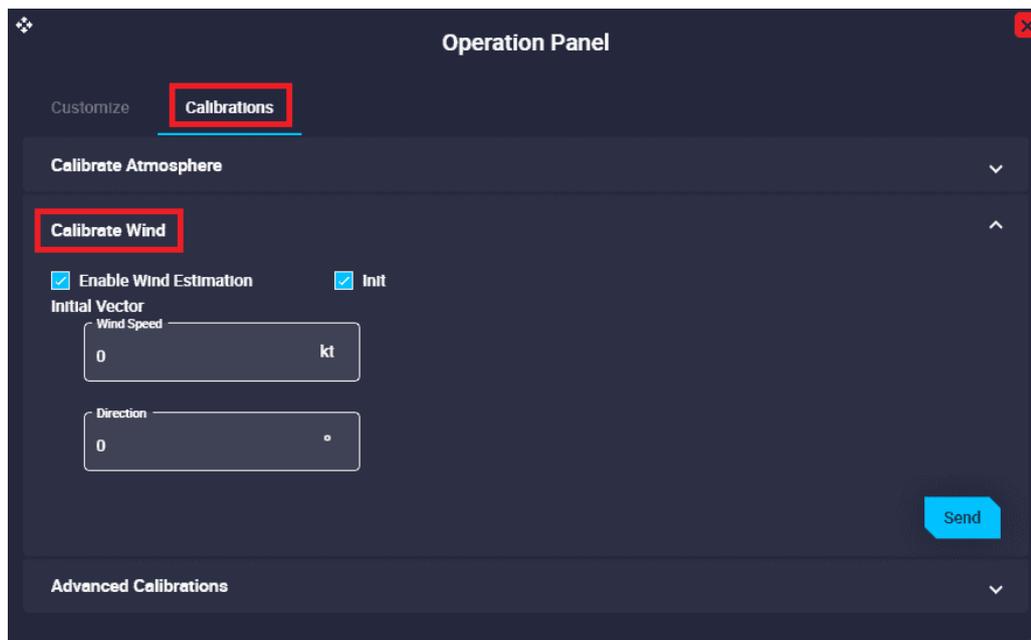


Calibrate Atmosphere

- **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.

Wind Calibration

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

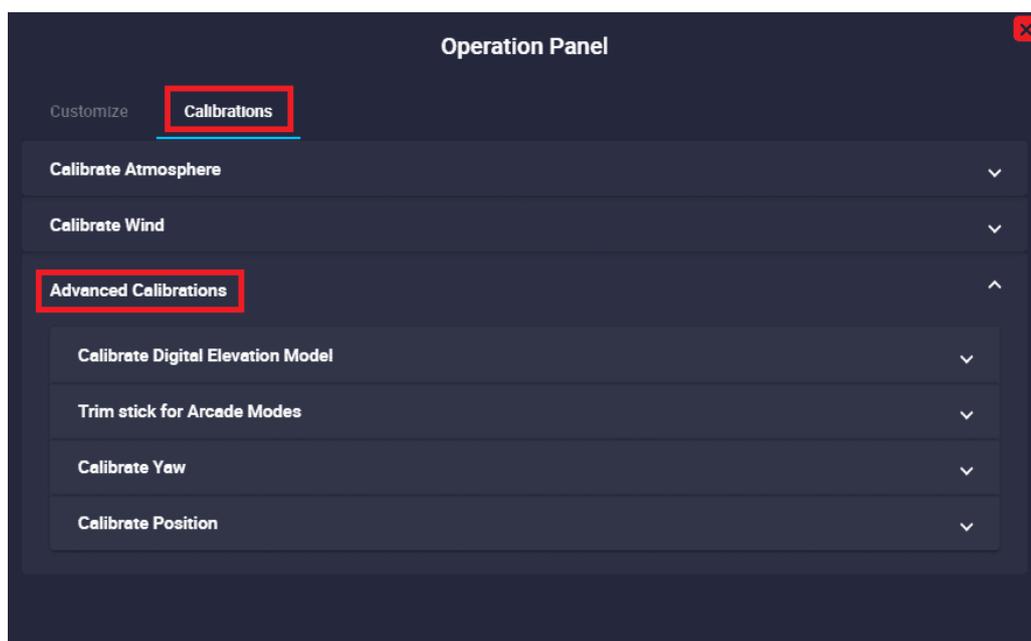


Calibrate Wind

- **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:



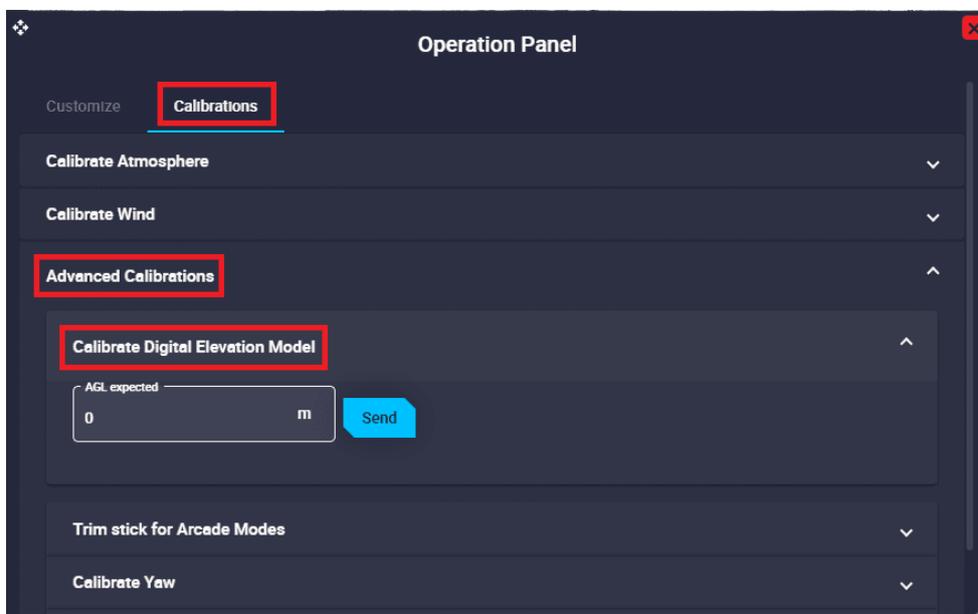
Advanced Calibrations

- **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

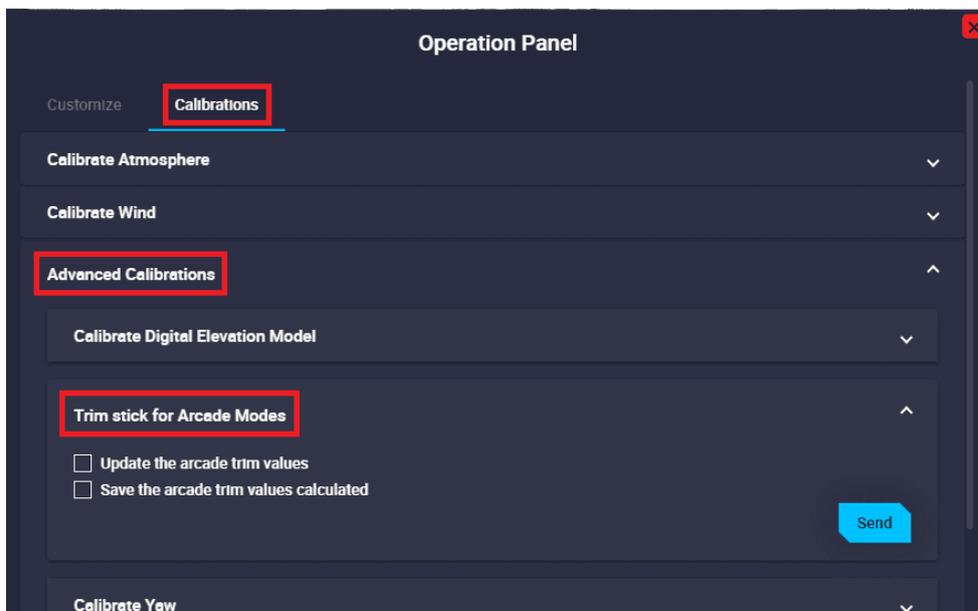
- This offset is only valid for the point where the DEM has been calibrated.
- Always perform this action on the ground, unless an accurate estimation of current AGL is available.



Advanced Calibrations - Calibrate DEM

- **Trim stick for Arcade Modes**

This command calibrates the current stick for arcade commands.



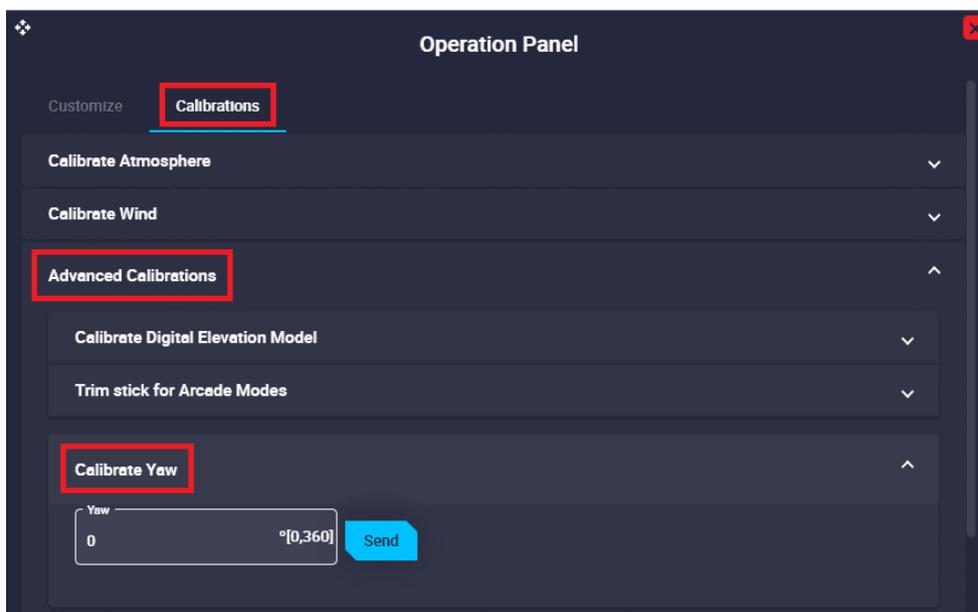
Advanced Calibrations - Trim stick

- **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

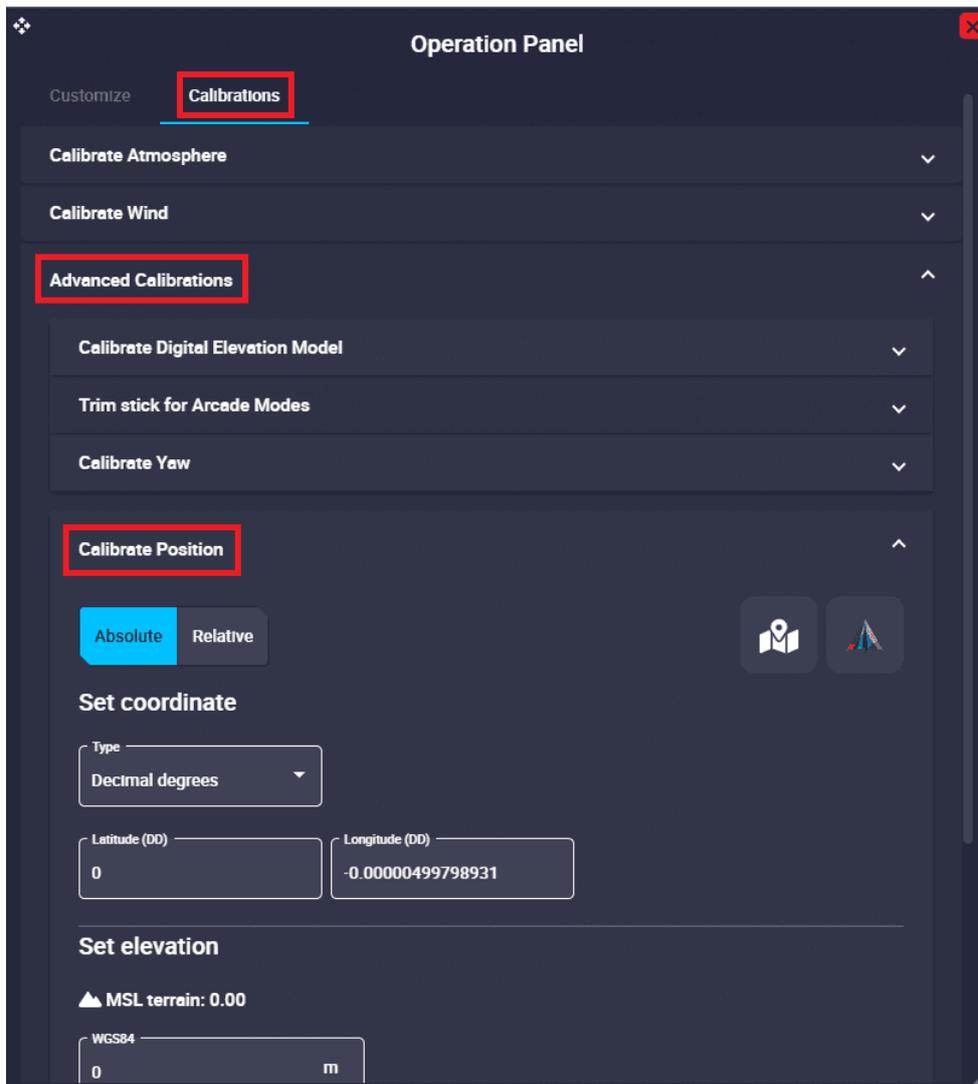
- **Calibrate Position**

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

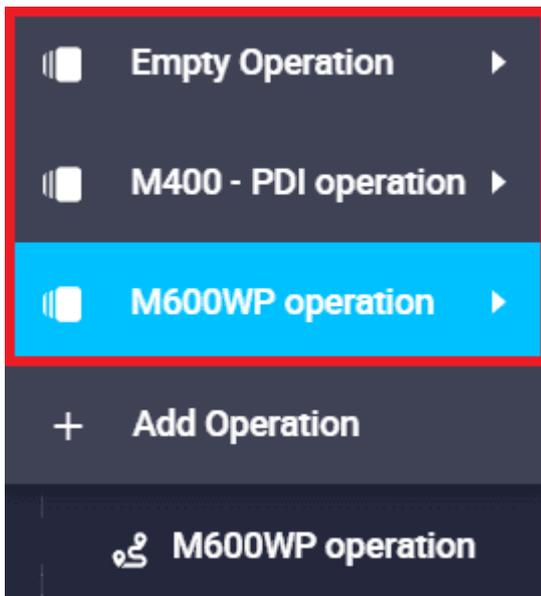
If there is any **absolute positioning sensor active** (i.e. GNSS), this command will **not work** since it will be automatically **overridden**.



Advanced Calibrations - Calibrate Position

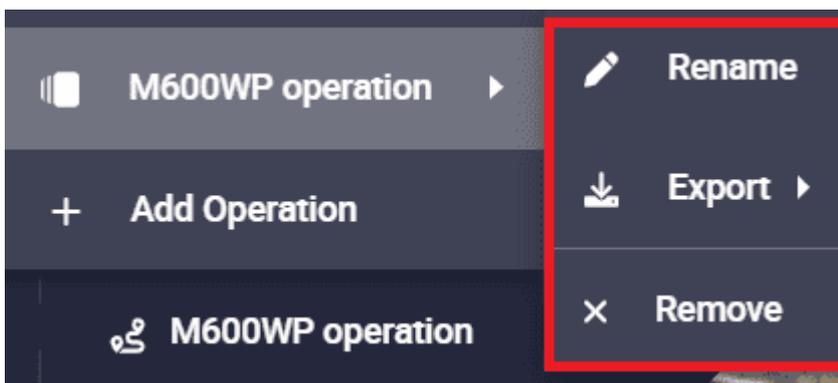
Operations

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



Operations

The following options are available for each operation:



Operation options

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

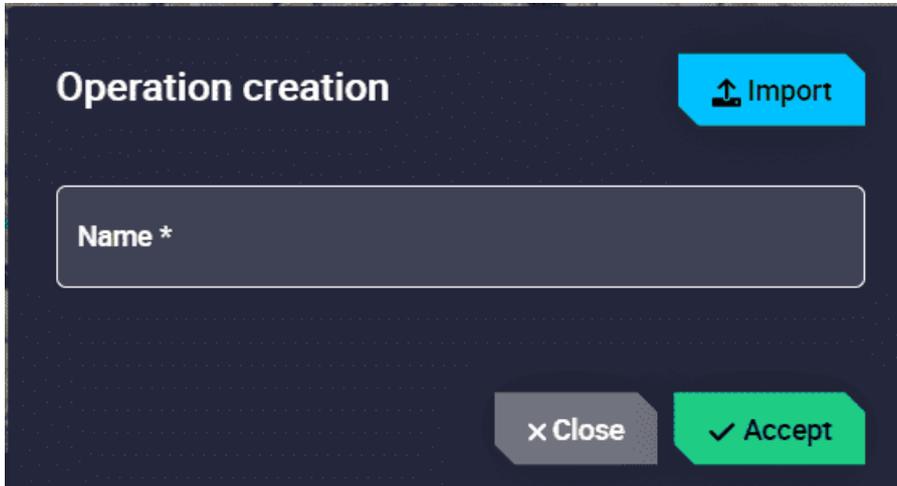
Note

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

Adding an operation

It is possible to create a new operation by simply clicking on '**Add Operation**'.

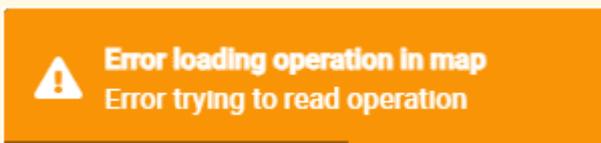
The user can choose between adding an empty operation or importing one from the laptop, which has been previously exported. The available formats for importing an operation are the same as for exporting it: **ZIP**, **KML** and **GEOJSON**.



Operation creation

Warning

If users export an operation from **Veronte Ops v6.8** and attempt to import it into **Veronte Ops v6.12**, **Veronte Ops** will not be able to import it as the operations are not compatible between versions and the following warning message will be displayed:

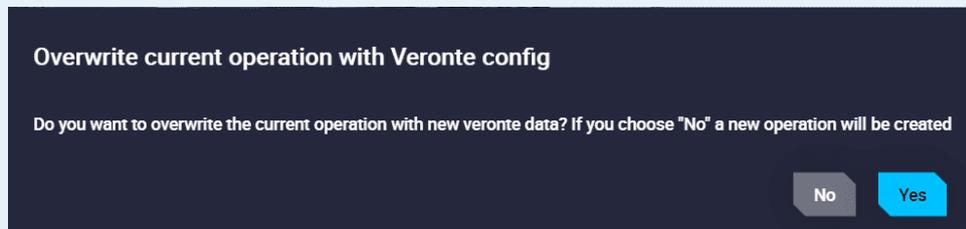


Importing operation error

Therefore, if users want to migrate an operation, they will have to **upload** this operation to a **Veronte Autopilot 1x** through the **1x PDI Builder** software in version **6.12** and the migration from **6.8** to **6.12** will be performed automatically.

 **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**

- To apply any change 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 M600WP

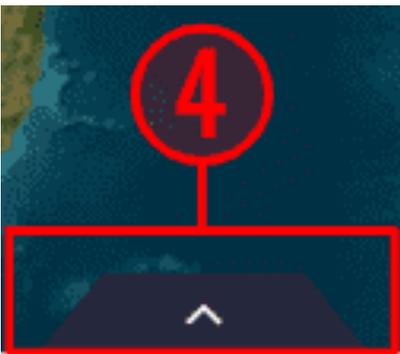
Nothing to Save in '...'

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:

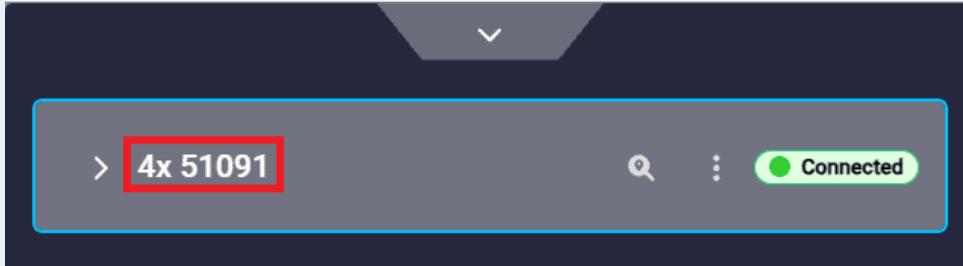


Platform name

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 **Veronte Autopilot 4x**, the displayed name corresponds to the address configured in the **Control** menu of the **1x PDI Builder**. For further details, refer to [4x Veronte - Control](#) section of **1x PDI Builder** manual.

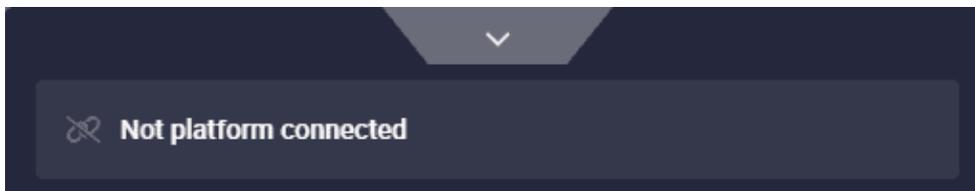


Platform name - Veronte Autopilot 4x

Platform connection status

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

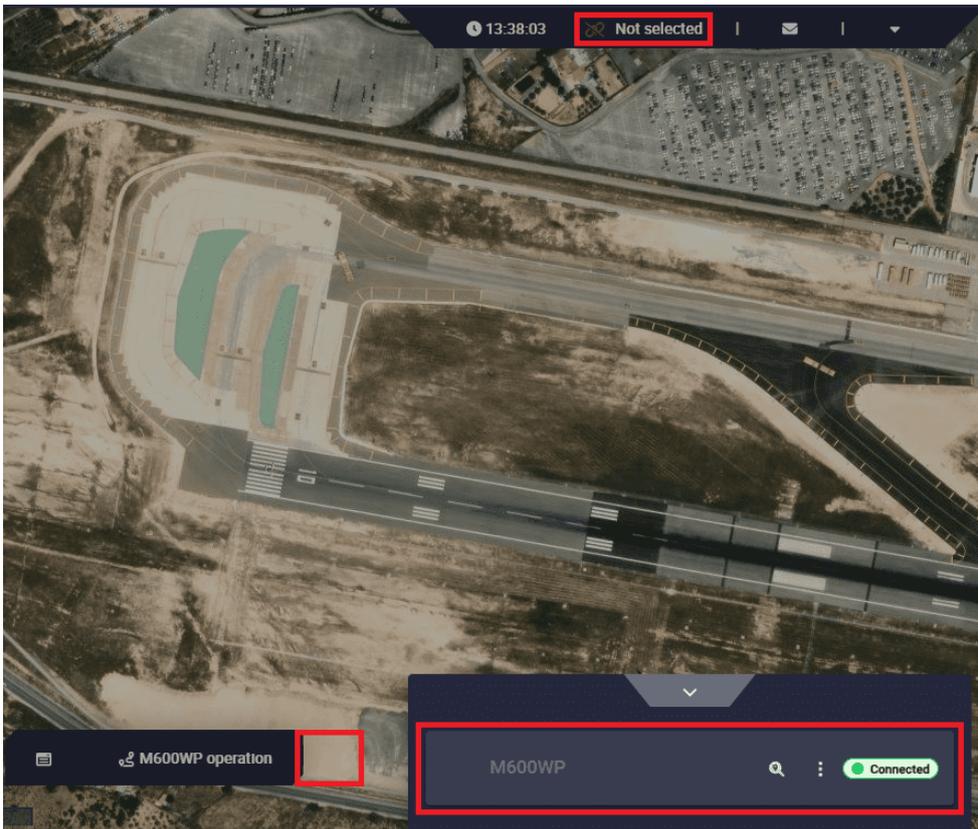
- **Not connected**



Connection status - Not connected

- **Not selected:**

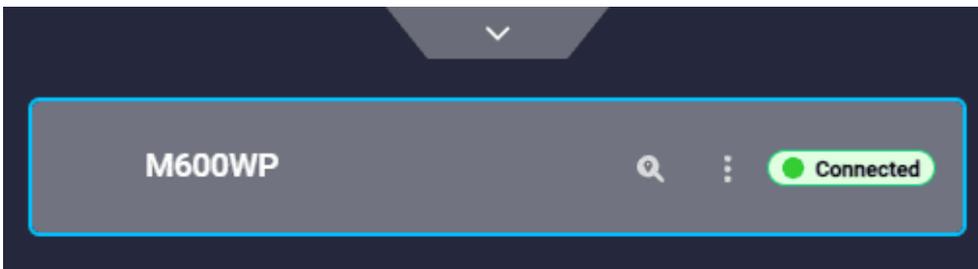
Even if an **Autopilot 1x** is connected, until it is selected by the user, **Veronte Ops** will operate as if no autopilot is connected:



Connection status - Not selected

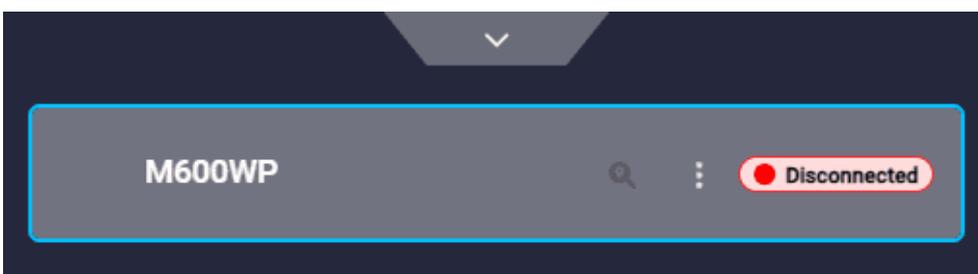
• **Connected:**

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



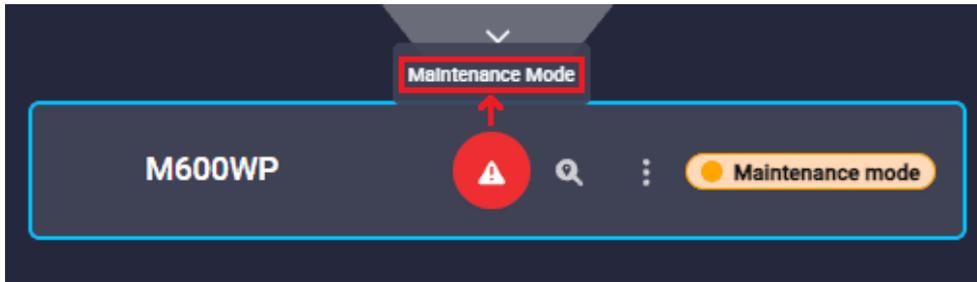
Connection status - Connected

• **Disconnected:**



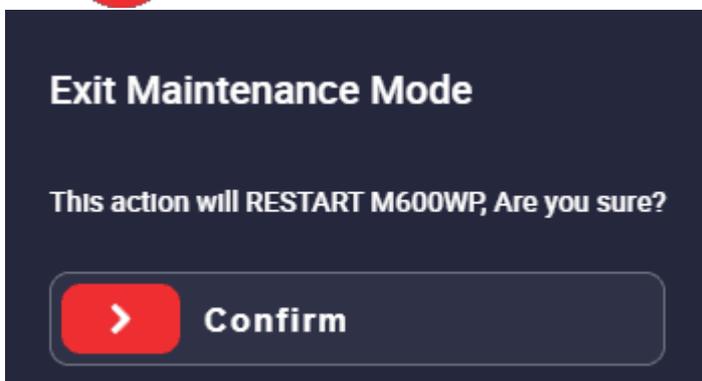
Connection status - Disconnected

- **Maintenance mode:** By **placing** the mouse cursor over the  icon, a message appears indicating that the autopilot is in maintenance mode:



Connection status - Maintenance mode

It is possible to exit of maintenance mode from this menu by **clicking** on the  icon. Then, the following confirmation message will appear:



Connection status - Exit of maintenance mode

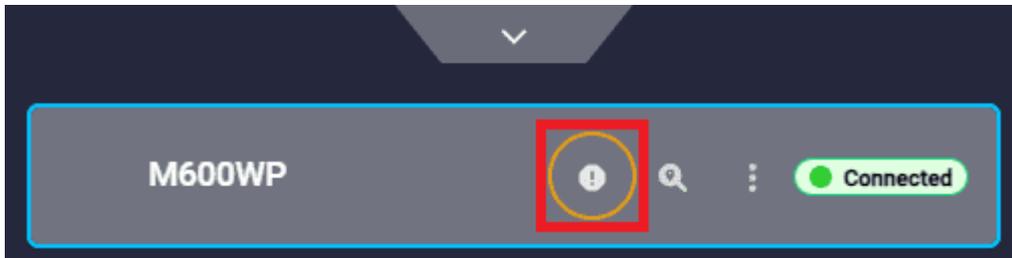
- **Maintenance mode (loaded with errors):** In this case, by placing the mouse cursor over the  icon, **Veronte Ops** will report the **ID of the PDI error and a brief description of the error.**



Connection status - Maintenance mode (loaded with errors)

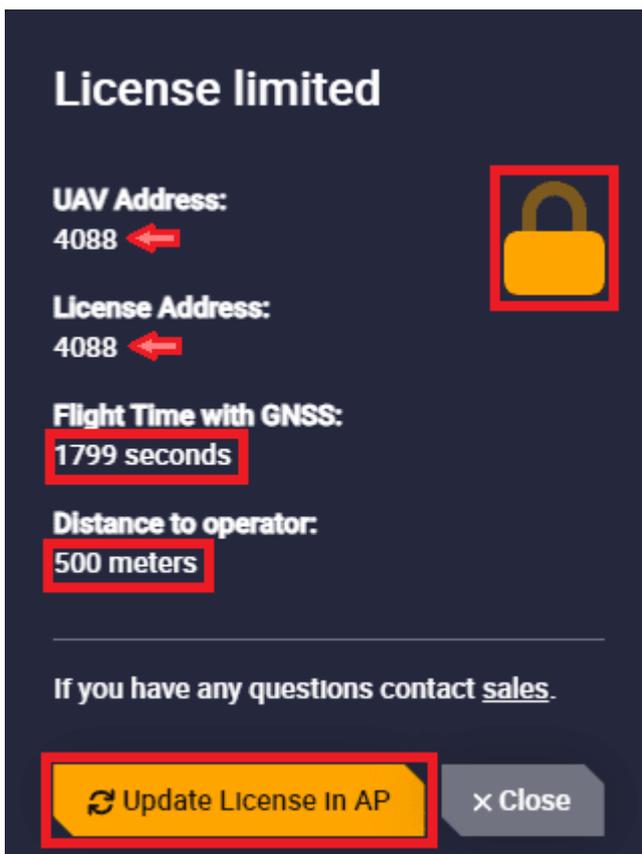
Platform license

The following indicator 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.



Platform indicator - Limited operation license

By **clicking** on , the following information panel will pop up summarizing the details of the license:



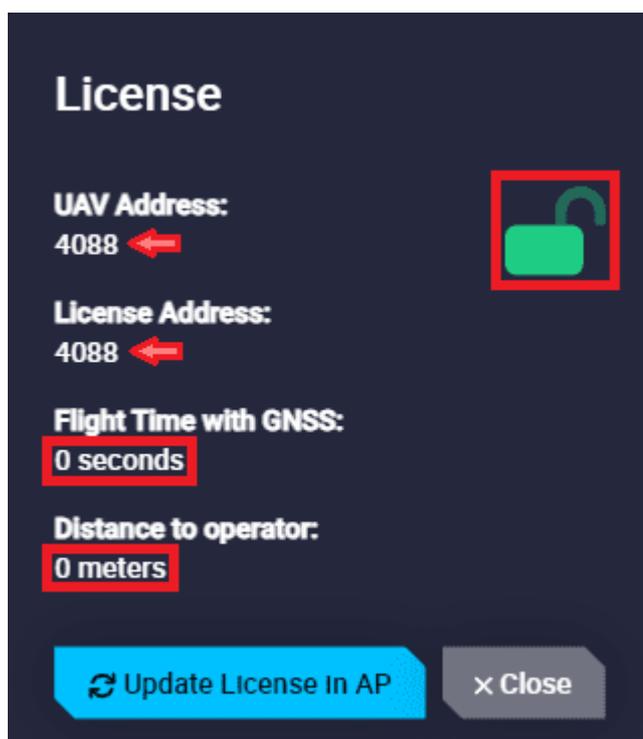
Platform list - Operation License limited message

Clicking on the button "**Update License in AP**", if the users have the **license activated**, **Veronte Ops** will be updated and they will be able to **operate without limitation**.

Note

The License Address must match the UAV Address.

In this case, the information regarding the license changes and the padlock opens and turns green:

**Platform list - Operation License updated message**

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.

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.

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:



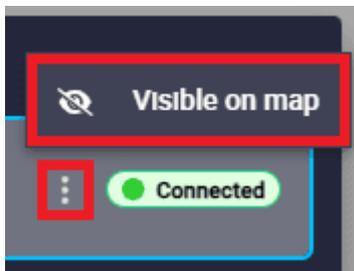
Platform list actions

1. **Search & follow:** This action searches the platform's position and centers it on the map.

ⓘ Note

This action is only **available** when the platform is **visible** on the map. In addition, it is **disabled** when **Autopilot 1x** is in '**disconnected**' state.

2. Options



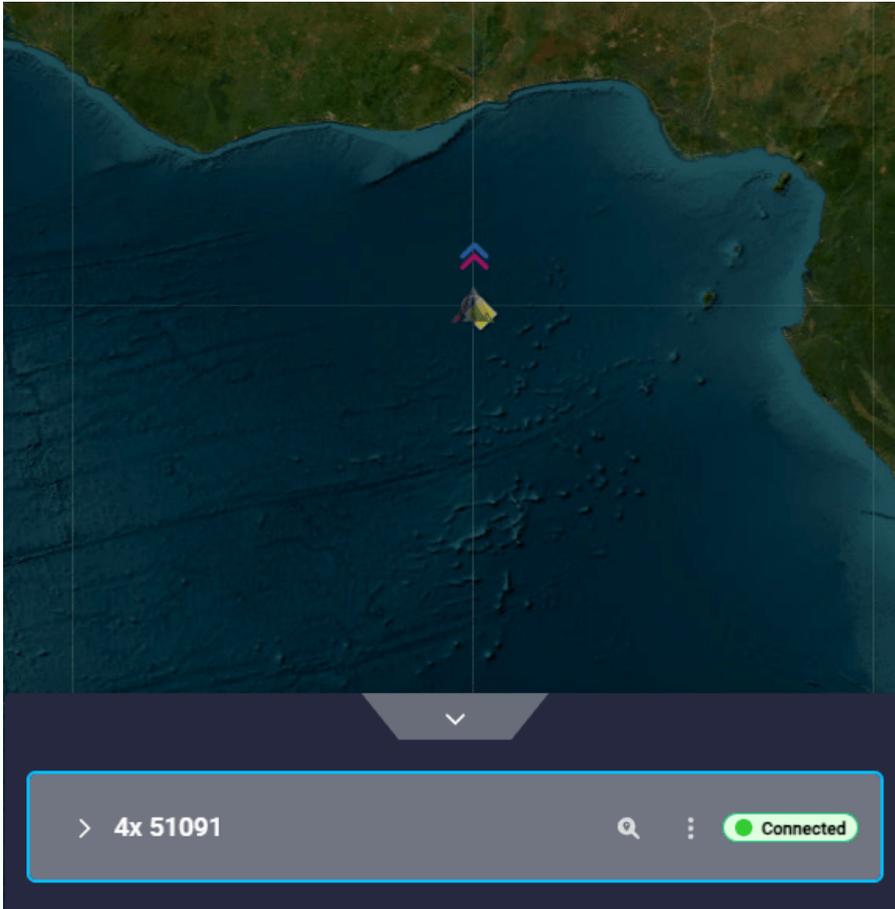
Platform list actions - Options

- **Visible/Invisible on map:** When the icon is , the platform icon is visible on the map, when the icon is , the platform does not appear on the map.
3. **Minimize/maximize** this pill: By clicking here, this 'pill' will be minimized/maximized.

Autopilot 4x features

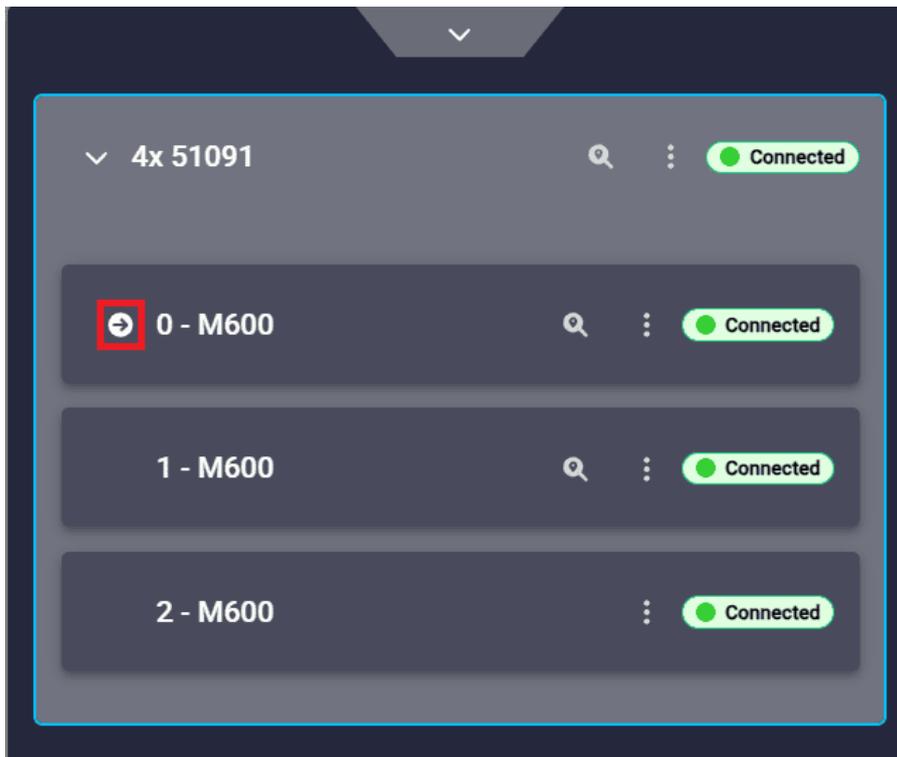
When an **Autopilot 4x** is linked to **Veronte Ops**, the following extra features are available:

- **Show Platforms** button: By expanding the 4x tab, each **Autopilot 1x** within the 4x group is displayed.



Autopilot 4x features - Show Platforms

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

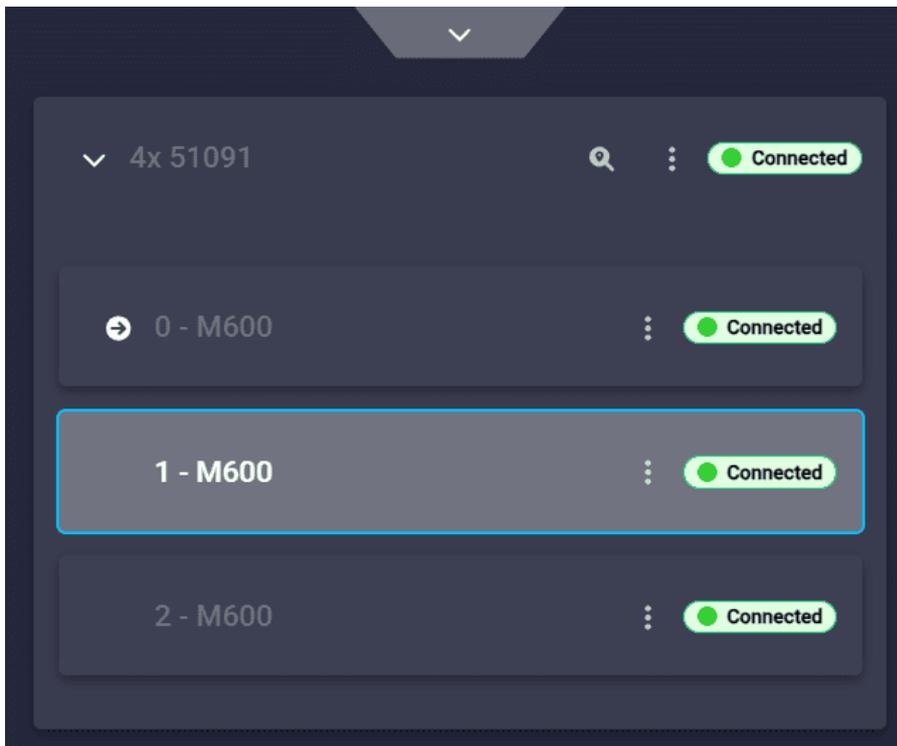


Autopilot 4x features - 1x in command

⚠ Important

'1x Selected by the arbiter' is not equivalent of '1x Selected in Veronte Ops'. For further information about **Autopilot 4x** general functioning, refer to [Control diagram - Introduction](#) section of the **4x Hardware Manual**.

Example:

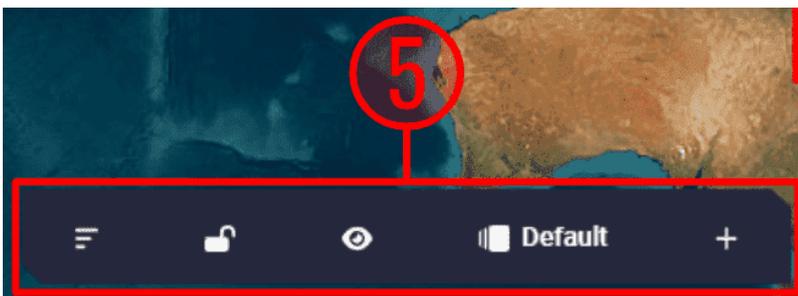


Autopilot 4x features - 1x Selected vs 1x in command

In the image above:

- **Autopilot 1x 0**: Autopilot **selected by the arbiter**, i.e. in command.
- **Autopilot 1x 1**: Autopilot **selected in Veronte Ops**.

5. Workspace



Workspace toolbar

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

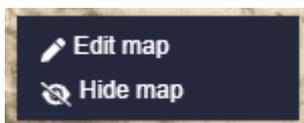
Attention

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

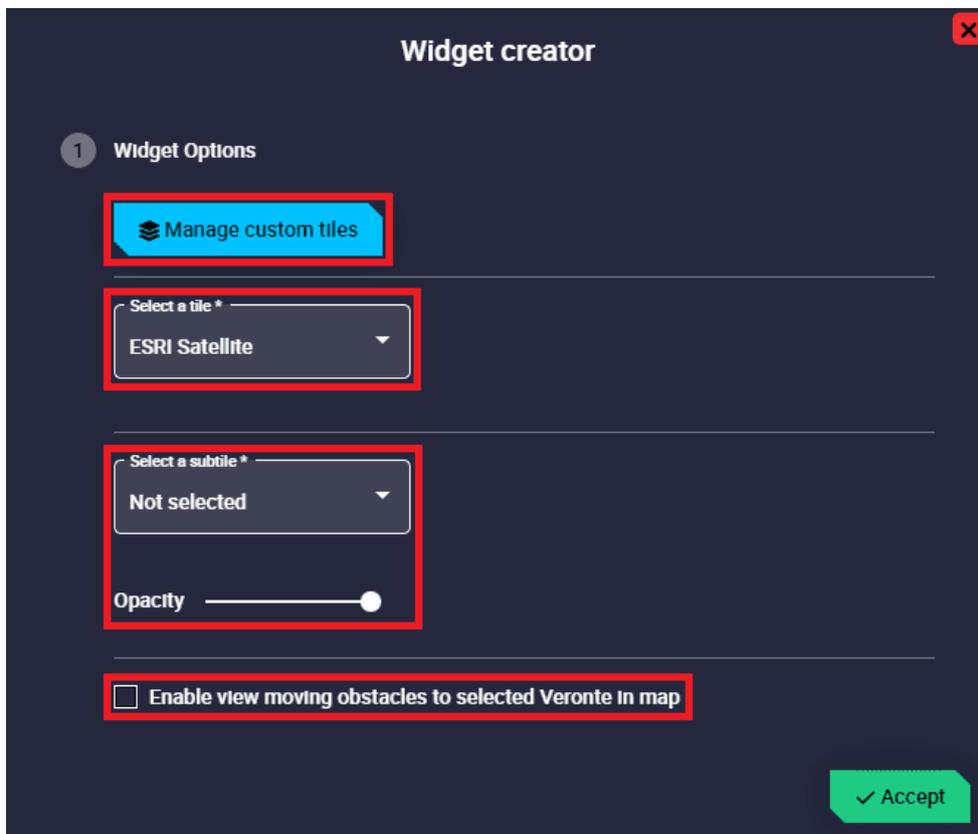
The map widget configures the background map that appears in **Veronte Ops** screen.

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



Map options

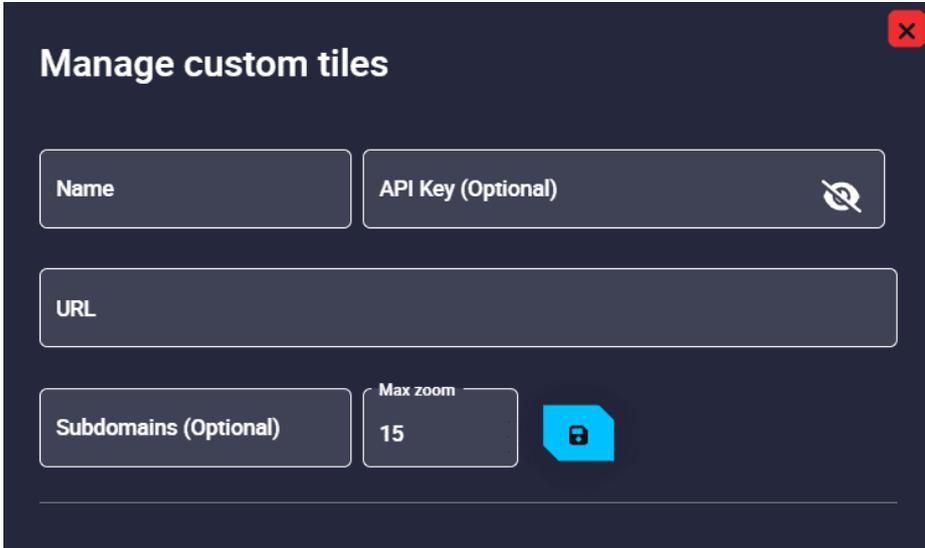
- **Edit map:** In this menu the following options can be configured:



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 filename**".

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.

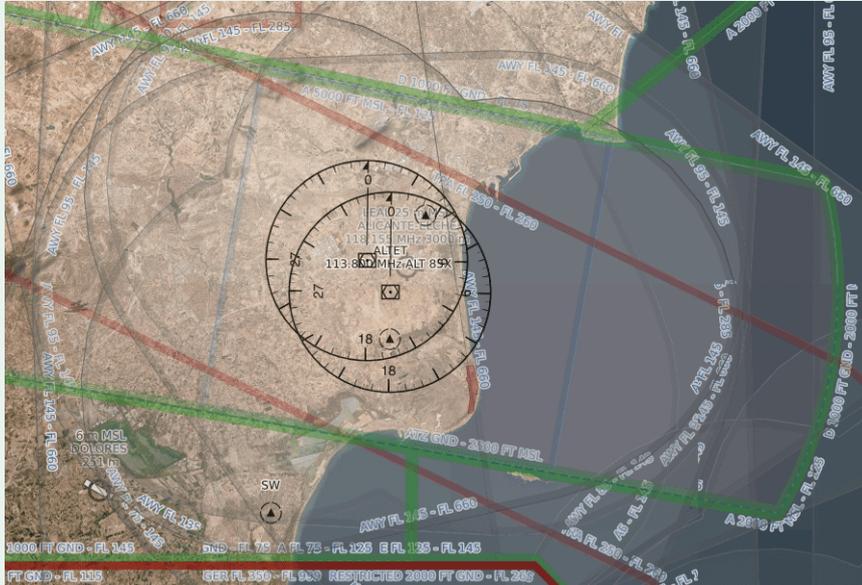
Manage custom tiles - Subdomains

- **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 subtitle:** Users can add a second map. The available options are:
 - Not selected: This is the default selected option.
 - OpenAIP.
 - GaoDe Annotation.

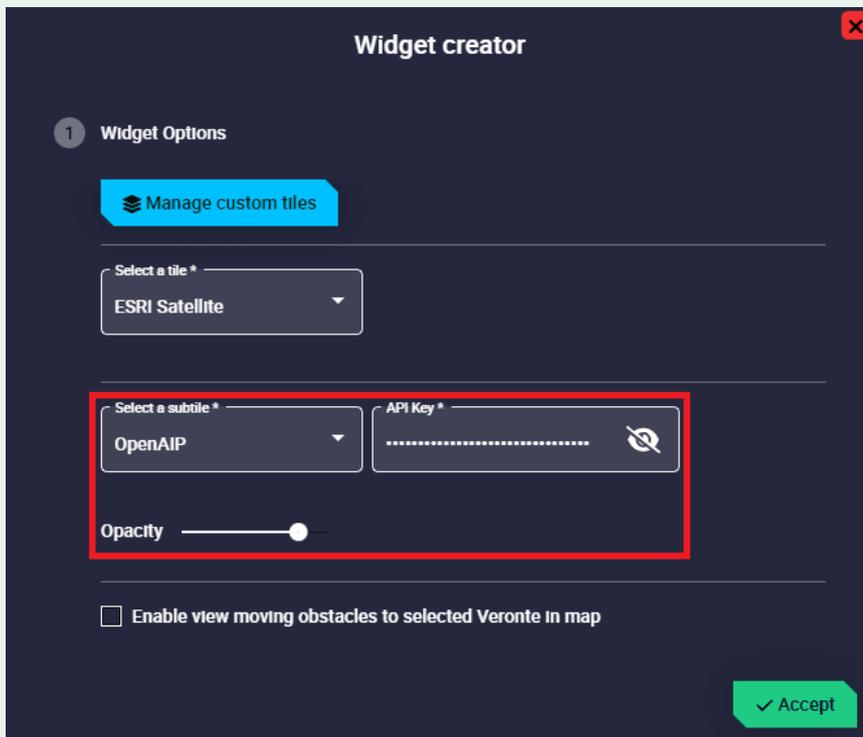
- **Custom tiles:** Only appears when a custom tile has been created in the Manage custom tiles option.
- **Opacity:** The user can set the opacity of this subtitle. It is expressed as a percentage of 1 (i.e. the minimum is 0 and the maximum is 1).

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

- **Enable view moving obstacles to selected Veronte in map:** If enabled, moving objects configured in the **1x PDI Builder** software

will be displayed on the map. In addition, if the autopilot possesses an **ADS-B system and it is enabled**, Veronte Ops will show aircraft detected by it on the map as moving objects.

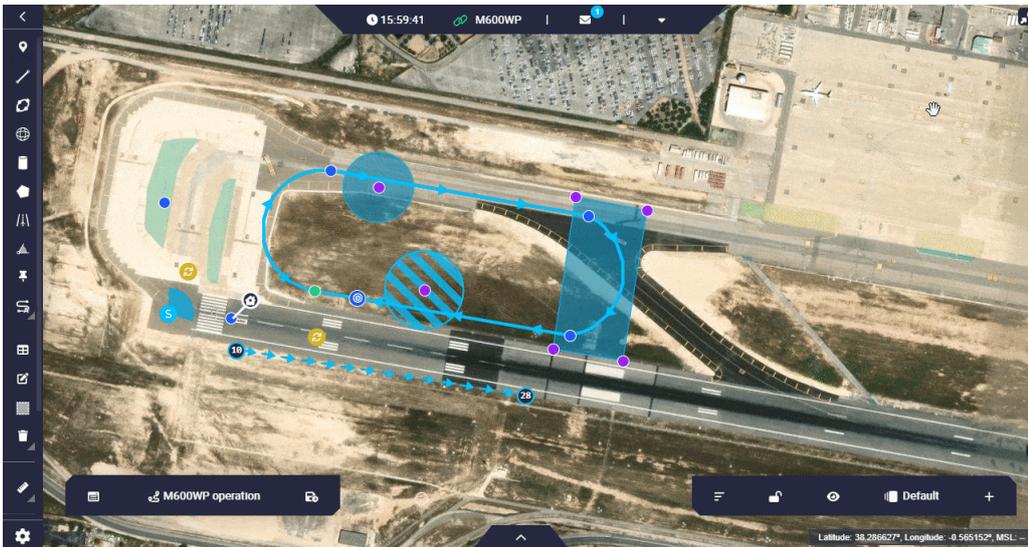


Moving objects - ADS-B activated

- **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.

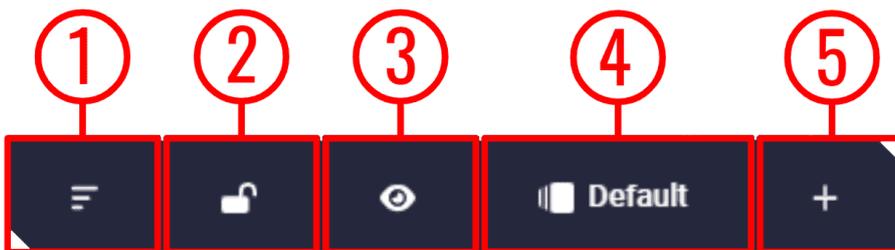
Furthermore, the map can be minimized/maximized by clicking on the  icon in the top right corner of the application. An example is shown below:



Minimize/Maximize map

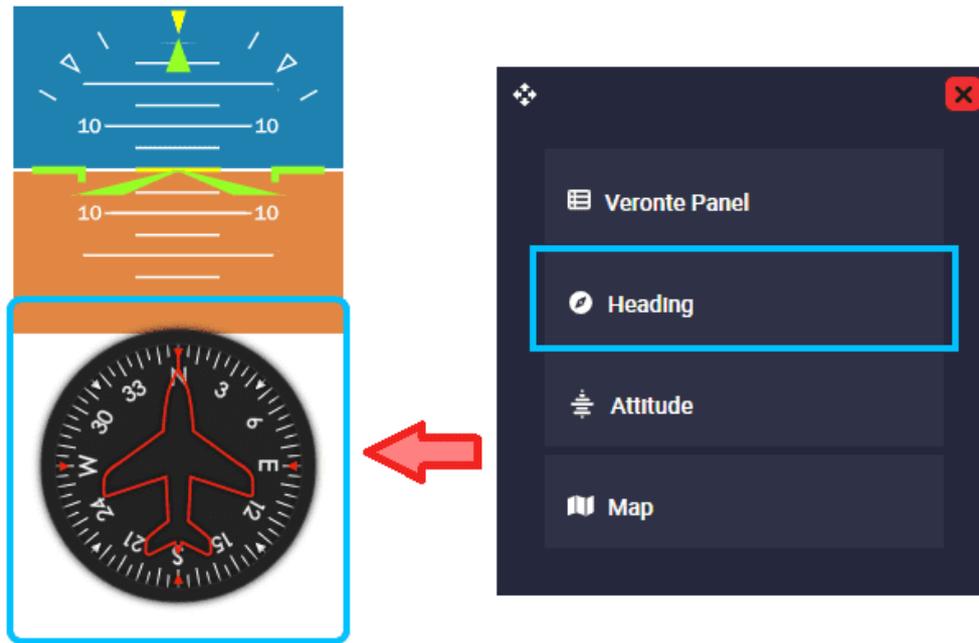
Workspace toolbar

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:



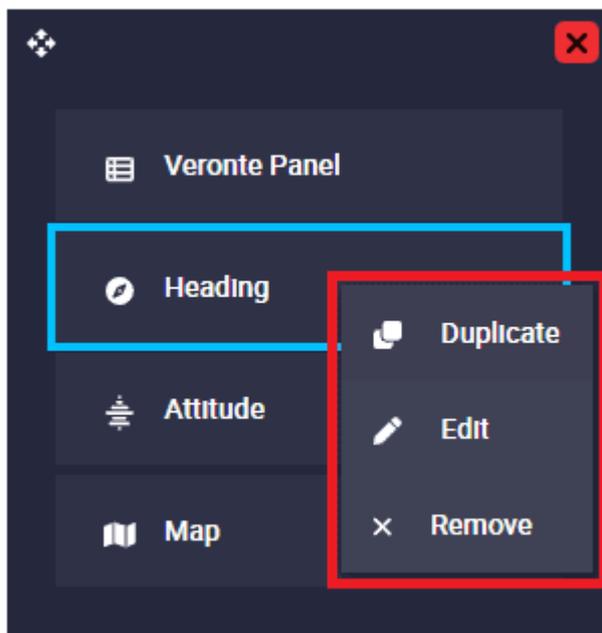
Sort widgets

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):

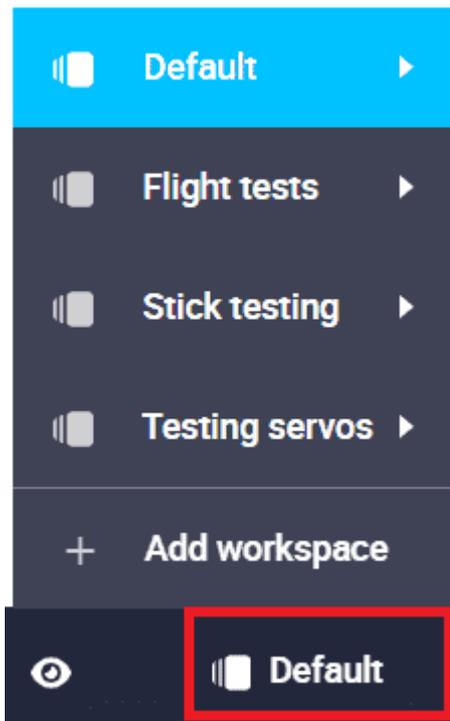


Sort widgets options

- **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.
 - **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. **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.
 5. **Widgets:** **Veronte Ops** offers several applications to display parameters and variables in real time of the flight mission.

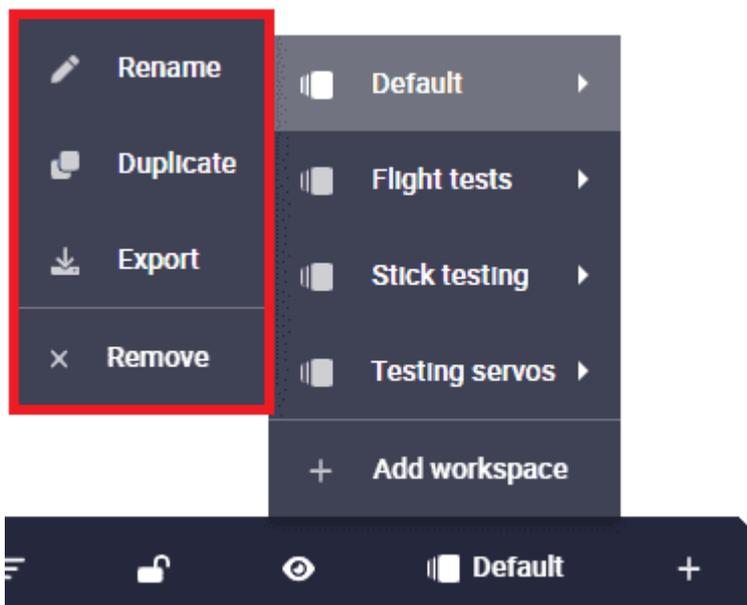
Workspaces

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.
- **Remove:** Clicking here will delete the selected workspace.

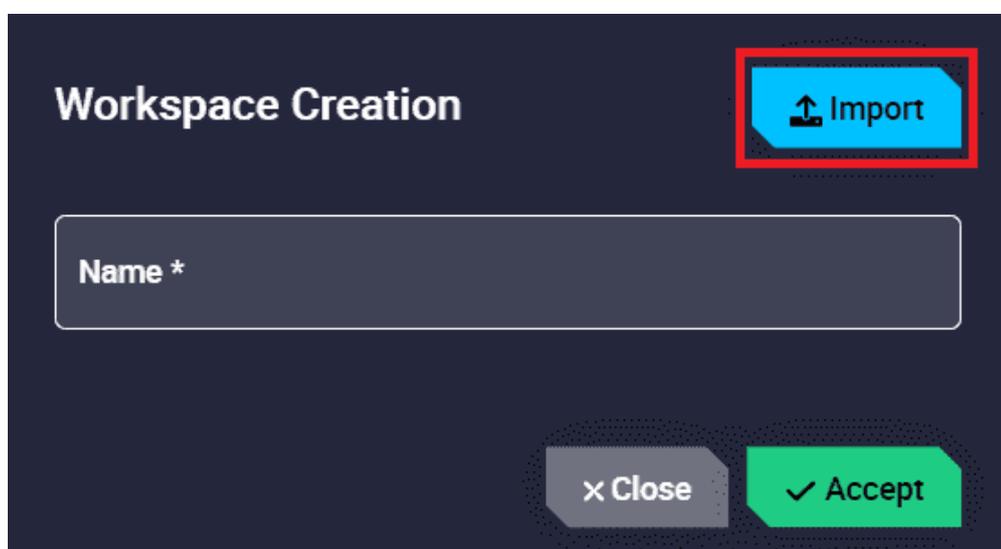
Note

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

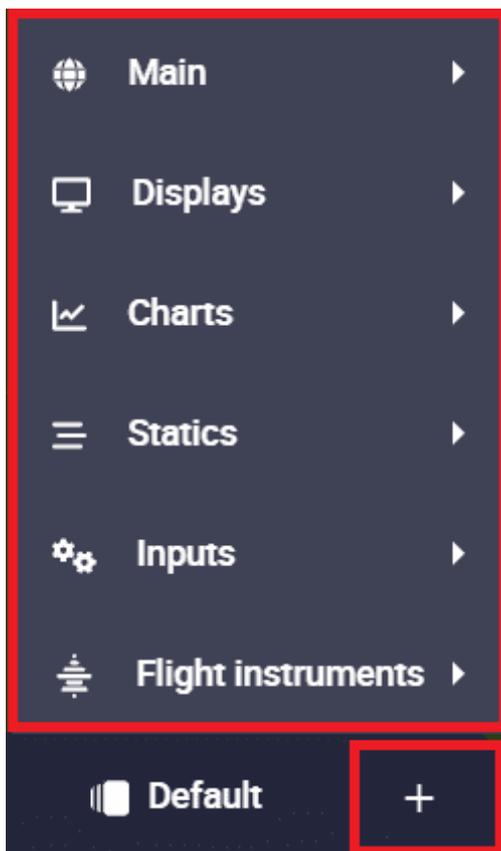
It is possible to create a new workspace by simply clicking on '**Add workspace**'.

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`.

**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

In order for the widgets to correctly receive data from the variable they represent, i.e. the variable that has been selected in their configuration, it is necessary that this variable has been added to the **Data to Vapp** telemetry vector in the telemetry configuration of the **1x PDI Builder** software. For more information, see the [Data vectors - Telemetry](#) section of the **1x PDI Builder** user manual.

Therefore, users should add to that telemetry vector all normally used variables, as well as those variables of the current configuration that are expected to be used during operation.

Otherwise, 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), which means that the variable selected for this widget is not being received in **Veronte Ops**:



Not receiving telemetry in this widget

To fix this, users can simply add this variable to the **complementary vector telemetry** by [uploading the current operation](#) to the platform configuration. However, this complementary vector telemetry is **always** running at a frequency of **10 Hz** (not configurable) and the variables are sent uncompressed.

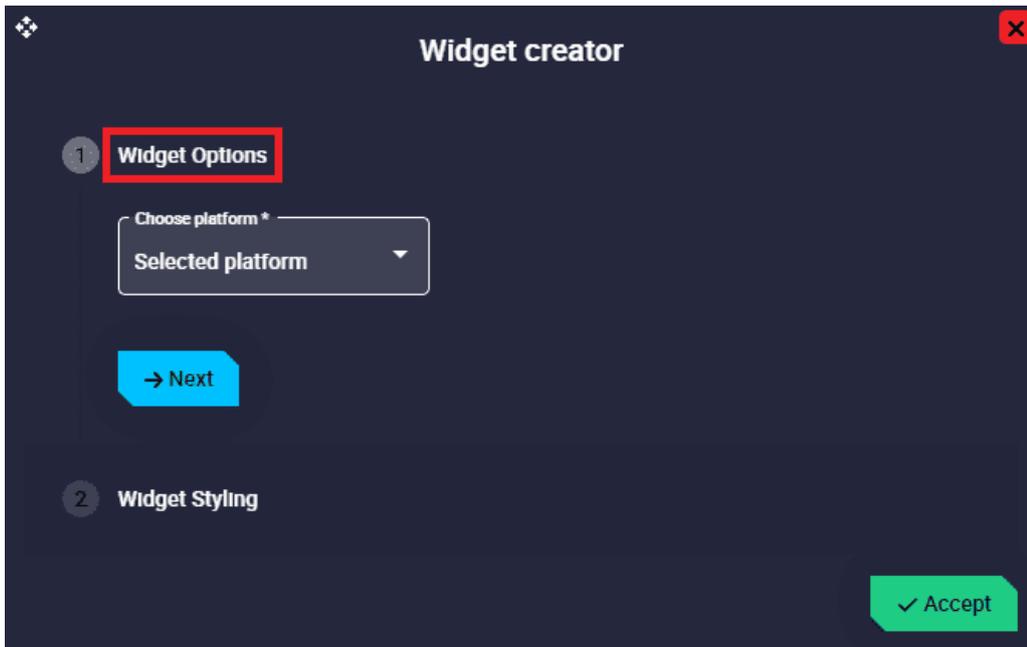
It is therefore **recommended** to add the variables to the **Data to Vapp** telemetry vector to configure the desired frequency, the compression/uncompression of the variables, etc.

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:

**Edit menu - Widget Options**

- **Choose platform:** Users must select the platform for which the widget 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.



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](#)
- [Displays](#)
- [Charts](#)
- [Statics](#)
- [Inputs](#)
- [Flight instruments](#)

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

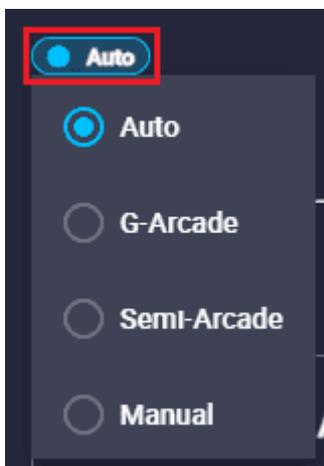
This pannel is the **basic operator tool**. It includes all basic commands (phase and action buttons) and information needed during a standard mission. These commands can be triggered with a single click, by sliding and/or automatically.



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

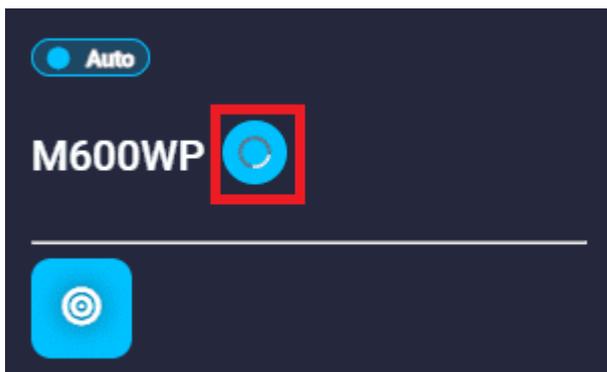
When in manual mode, the lettering of the icon will be **red**, to warn the operator to be careful in this mode.



Veronte Panel - Manual flight mode

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

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

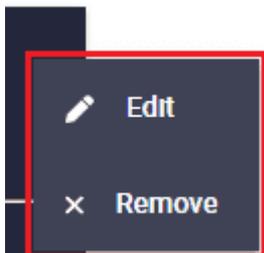
To **stop fastlog recording**, simply **click this button again**.

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.

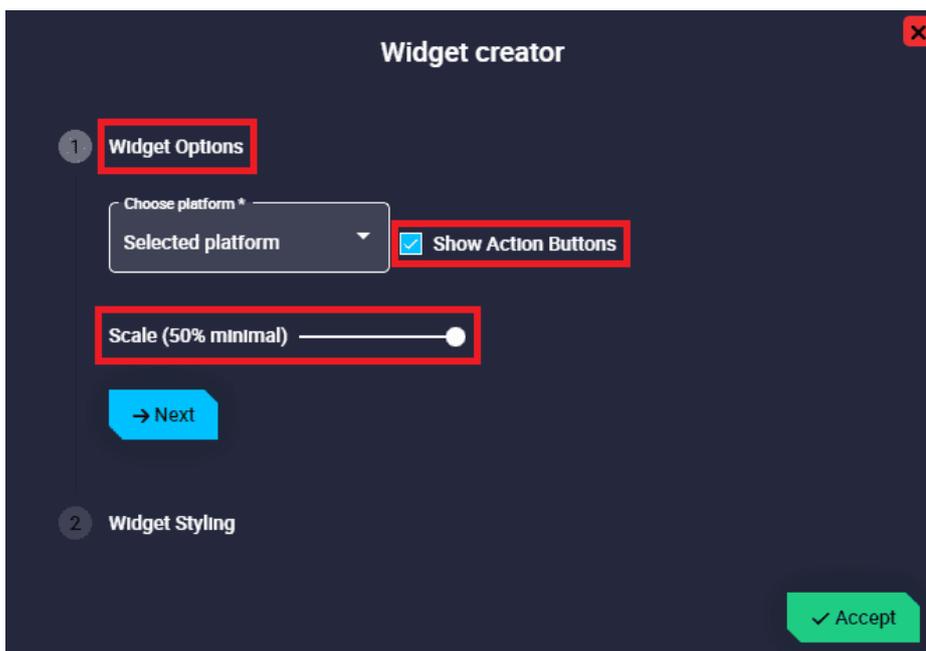
4. **Options:** By clicking here, the following options are available:



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%.
- **Remove:** Deletes this widget.

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. **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.

7. **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

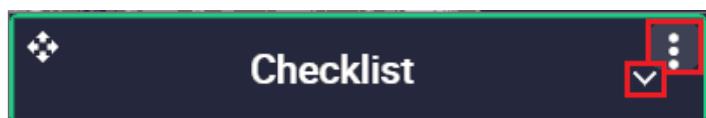
Warning

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.

Checklist

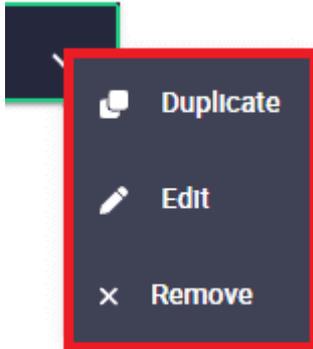
This panel is used to make sure that some requirements have been accomplished, for example, prior to a phase change or to avoid a possible malfunction.

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



Checklist

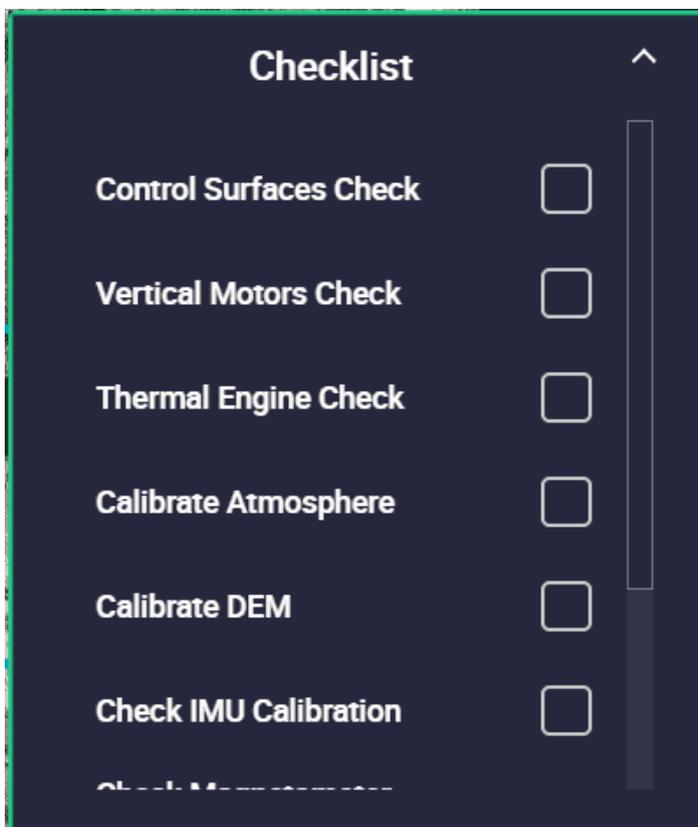
- **Options:**



Checklist options

- **Duplicate:** Duplicates this widget.
- **Edit:** This allows the user to access the Checklist configuration menu. This widget has only the 'basic' configuration described in the [Widgets common configuration](#).
- **Remove:** Deletes this widget.

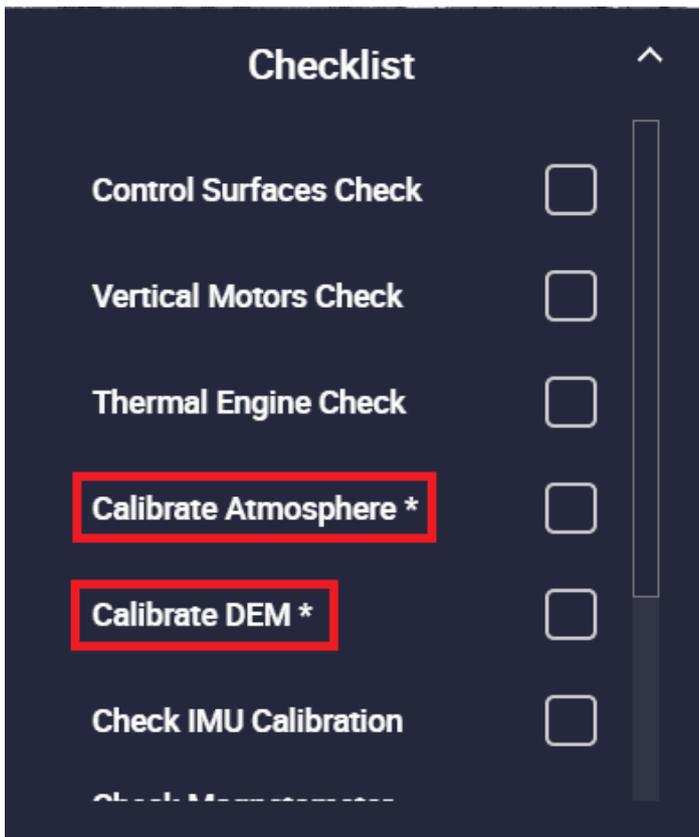
As this widget behaves like a drop-down menu, clicking on the  icon will display all checklists:



Checklist deployed

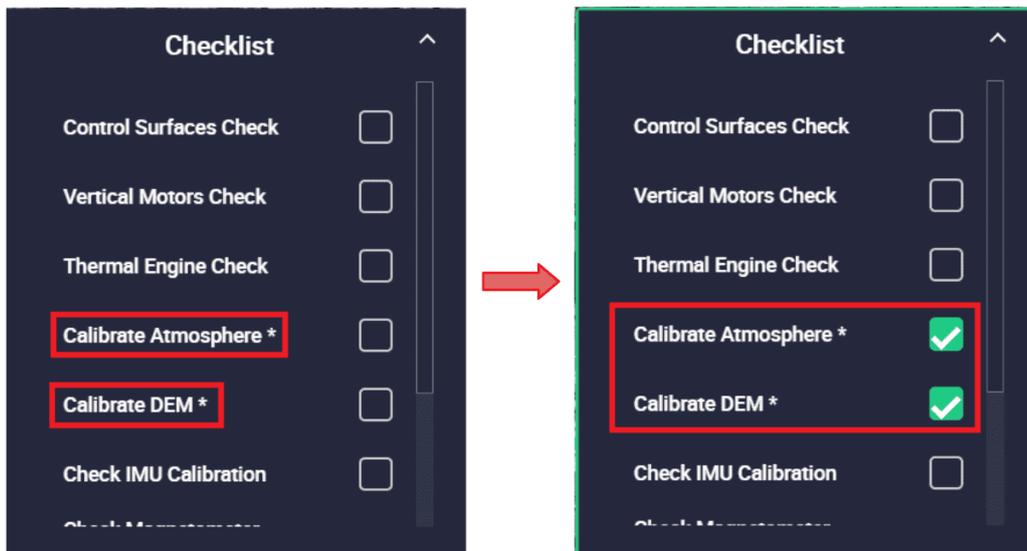
Besides, as can be seen in the figures above, the **checklist widget has a small green border**. This indicates that **everything is OK to start the operation**, even though there is no 'check' in the list.

This is because **none of these checks are mandatory** to switch phases or start the operation. **The mandatory checks are marked with an asterisk (*)** on the right, as shown in the image below.



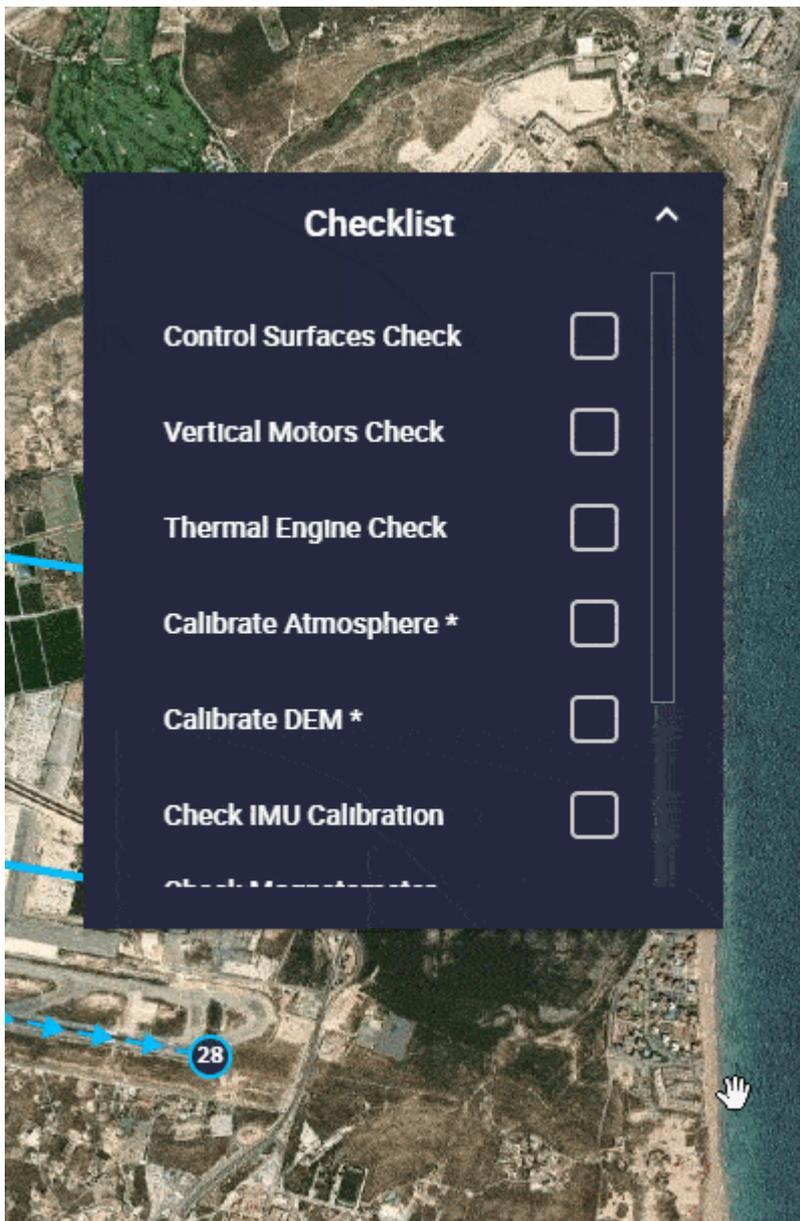
Checklist deployed - Not checked

In this case, the widget has **no green border until these mandatory actions are performed**:



Checklist deployed - Checked

To do so, checking them opens a menu that allows the user to perform these actions, in this case, some calibrations. An example is shown below:

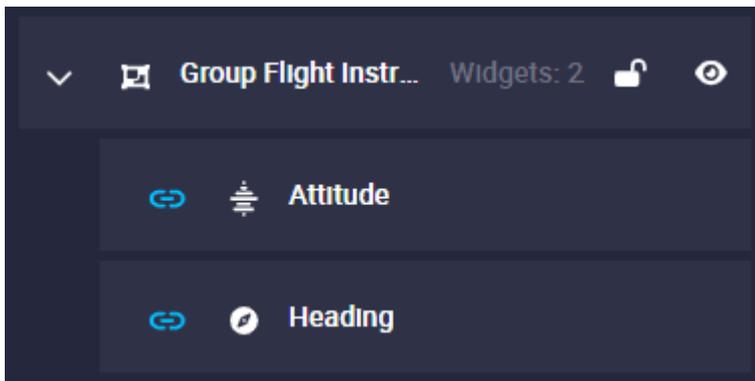


Checklist - Actions

Group

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.



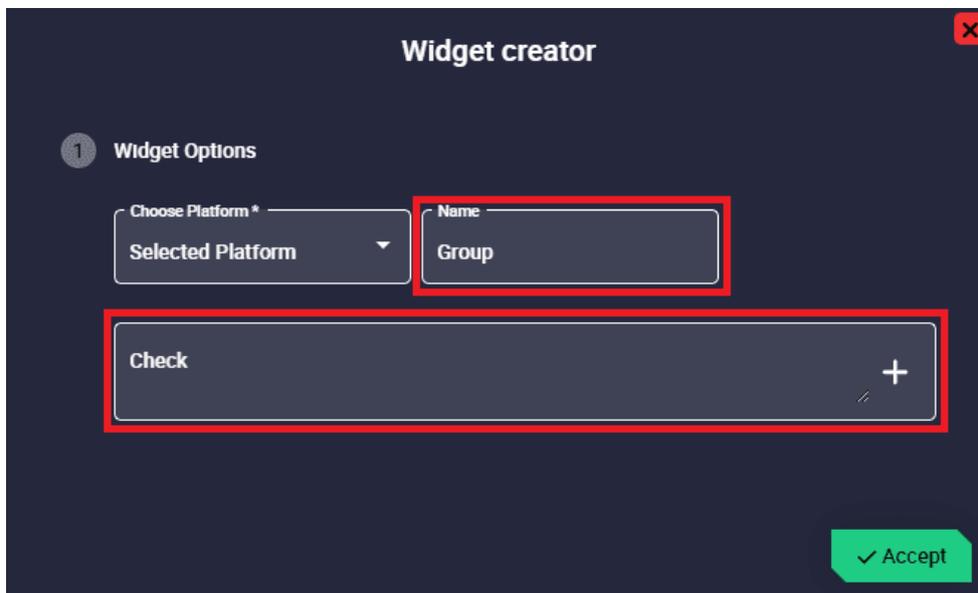
Group

⚠ 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 two 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

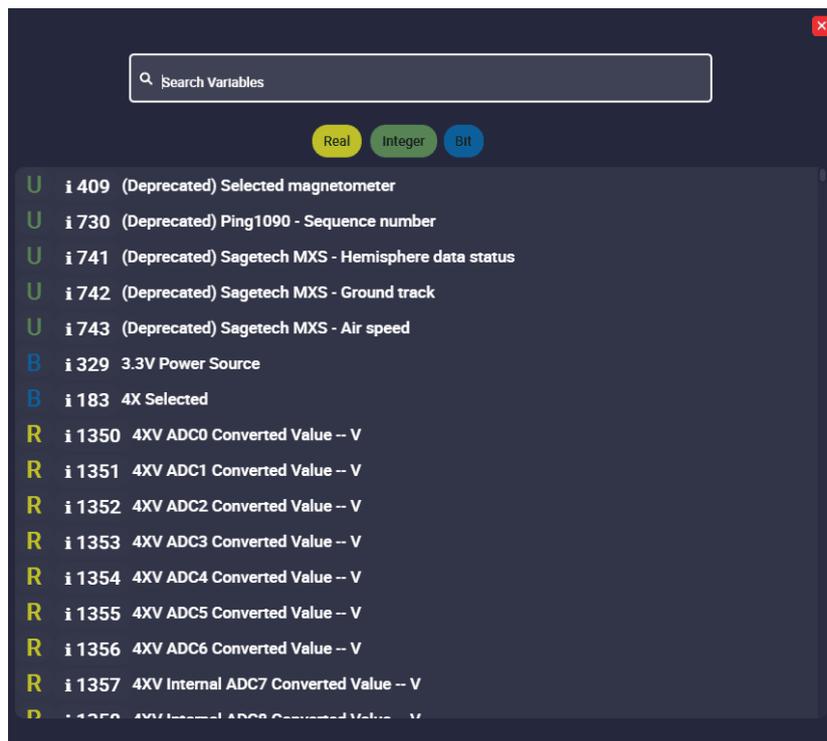
It is not mandatory to have a condition for a group.

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 here
Inequality	!=	For more information click here
Greater than	>	For more information click here
Greater than or equal	>=	For more information click here
Less than	<	For more information click here
Less than or equal	<=	For more information click here
Logical AND	&&	For more information click here
Logical NOT	!	For more information click here
Logical OR		

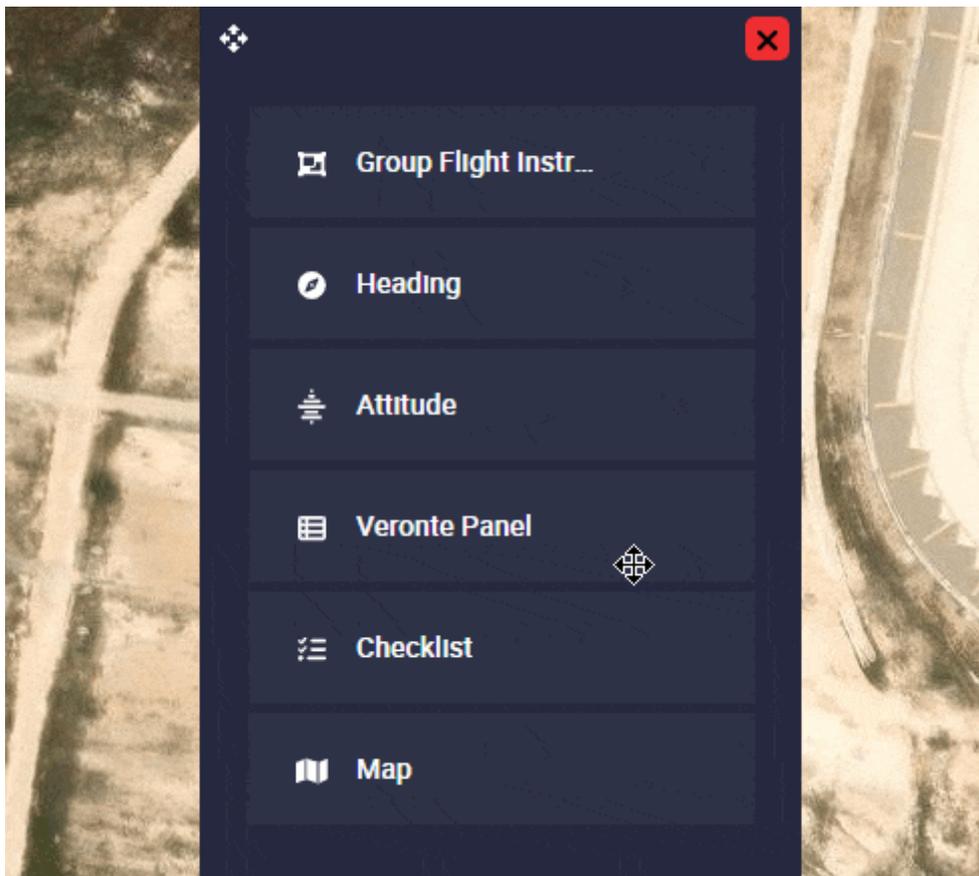
Condition	Operator	Description
		For more information click here
Grouping operator	()	For more information click here

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).

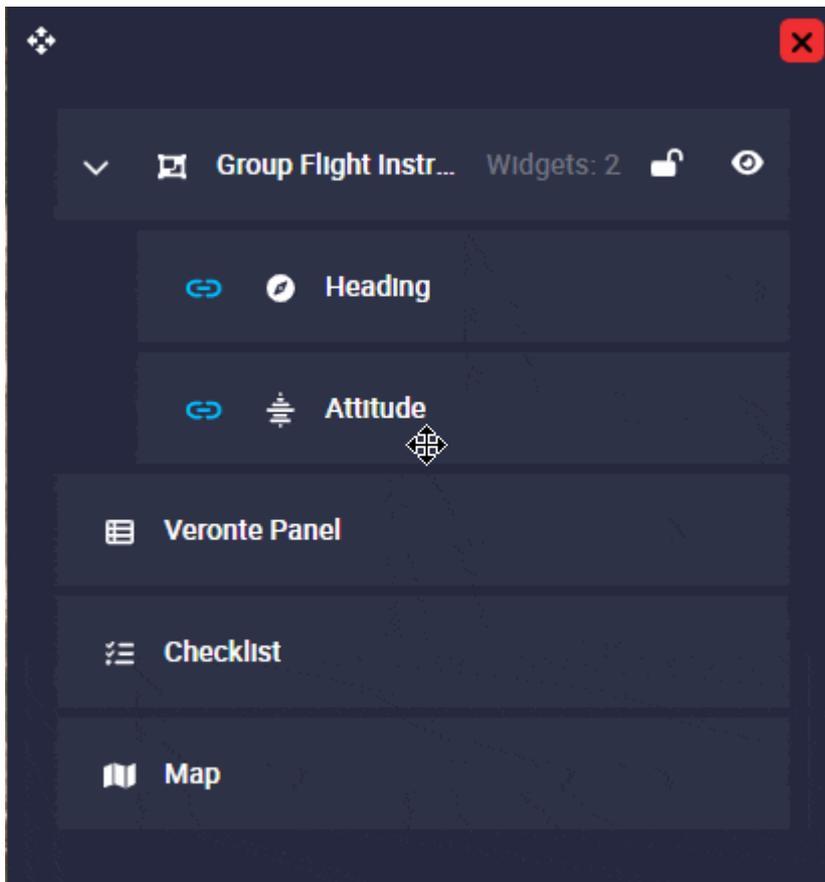
The following are the actions to be performed in the **sorting panel** in order to manage the widgets within the group:

- **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:



Removing widgets from a group

- **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.

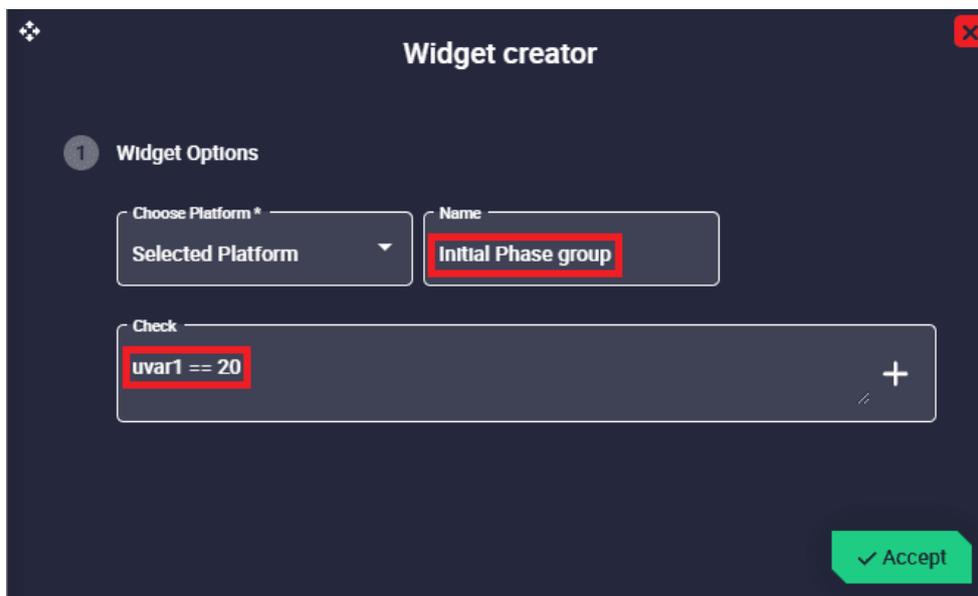
- **Lock/Unlock groups.** When groups are locked, users will not be able to move them in the workspace. By default, all groups are unlocked (.

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 Checklist widget before starting the flight (i.e. only in the **initial phase**):

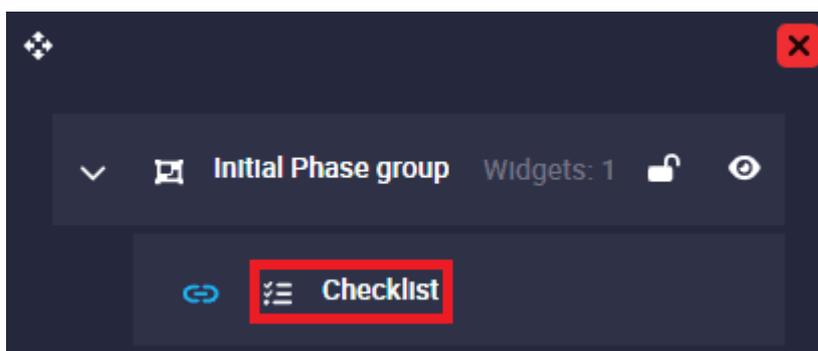
- For only displaying this group in the initial phase, build the following condition in the Group widget configuration:



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 Checklist 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 Checklist widget, will be displayed.

Displays

Label

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

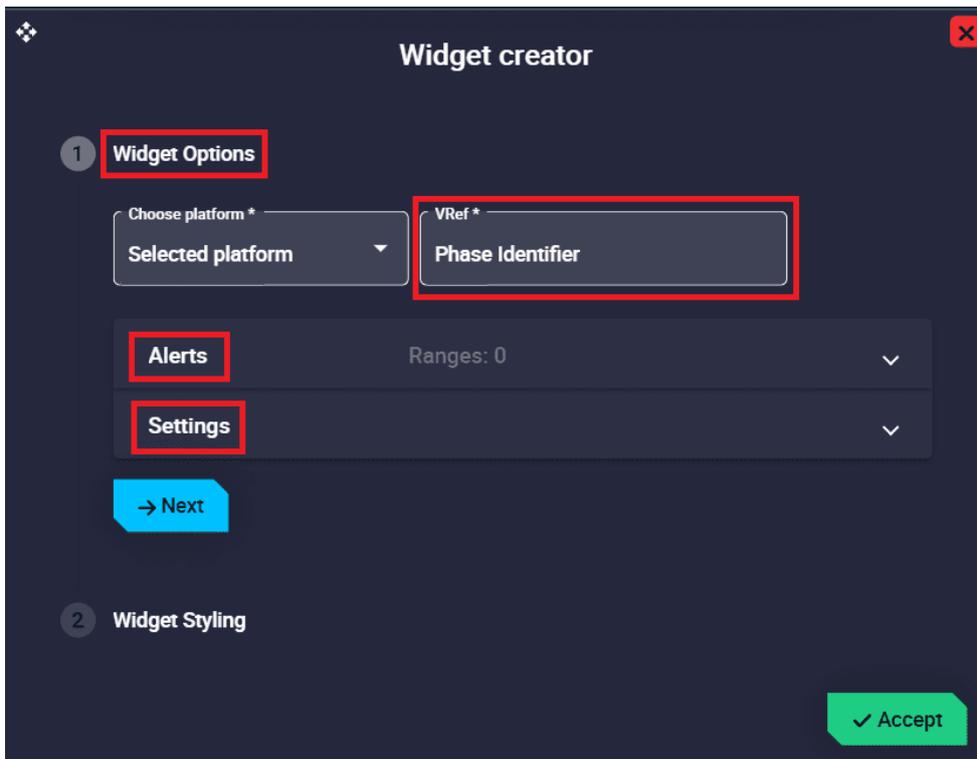


Label

1. **Integer variables:** Only the variable with its value is displayed.
2. **Real variables:** The units of the variable are 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.



The screenshot shows the 'Widget creator' interface. The first step is 'Widget Options'. It features a 'Choose platform *' dropdown menu with 'Selected platform' selected. To its right is a 'VRef *' text input field containing 'Phase Identifier'. Below these are two expandable sections: 'Alerts' (with 'Ranges: 0' and a dropdown arrow) and 'Settings' (with a dropdown arrow). A blue '→ Next' button is positioned below the 'Settings' section. At the bottom right, there is a green '✓ Accept' button. A second step, 'Widget Styling', is partially visible at the bottom left.

Label 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 label.
- **Unit:** Unit of measurement of the displayed variable.

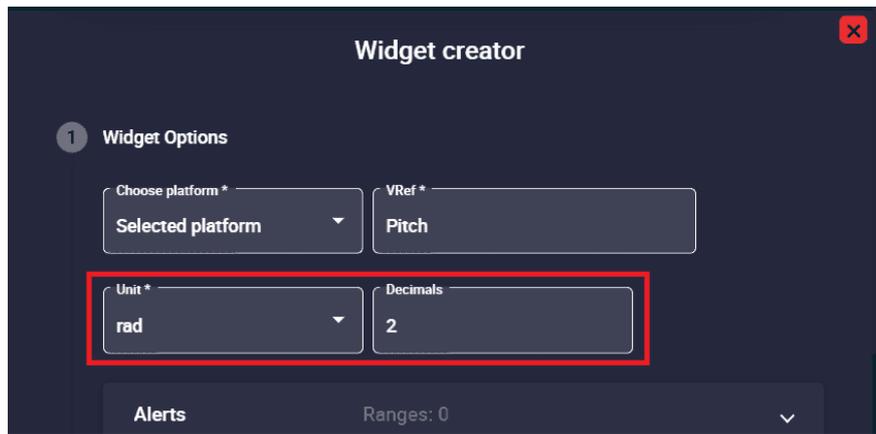
Note

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.



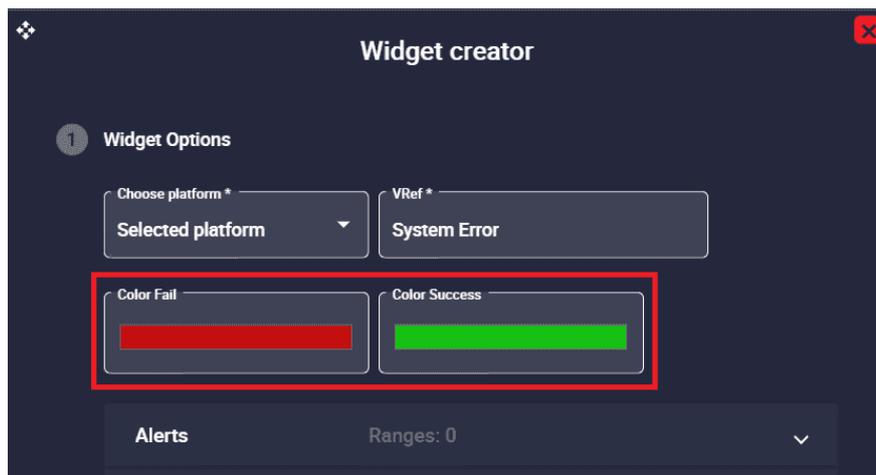
The screenshot shows the 'Widget creator' interface with the 'Widget Options' section. The 'Unit' dropdown is set to 'rad' and the 'Decimals' input is set to '2'. These two fields are highlighted with a red border. Other visible fields include 'Choose platform *' (Selected platform), 'VRef *' (Pitch), 'Alerts', and 'Ranges: 0'.

Real label configuration

- **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.

Note

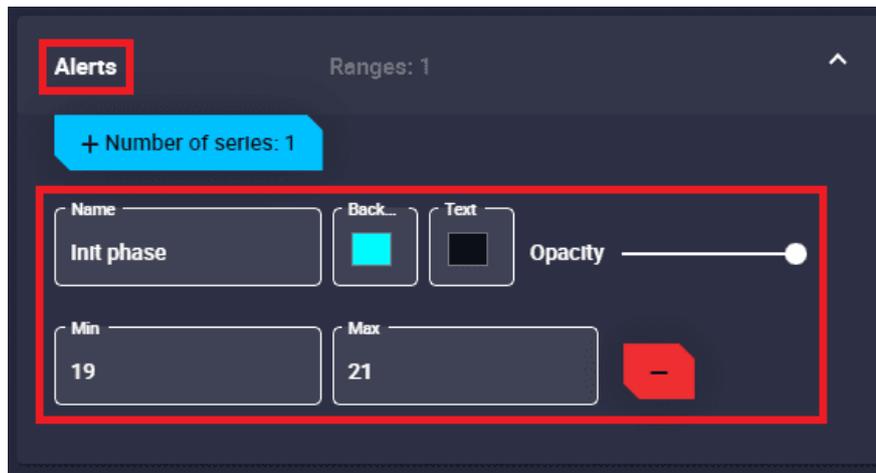
This is only available with Bit variables.



The screenshot shows the 'Widget creator' interface with the 'Widget Options' section. The 'Color Fail' field is set to red and the 'Color Success' field is set to green. These two color selection fields are highlighted with a red border. Other visible fields include 'Choose platform *' (Selected platform), 'VRef *' (System Error), 'Alerts', and 'Ranges: 0'.

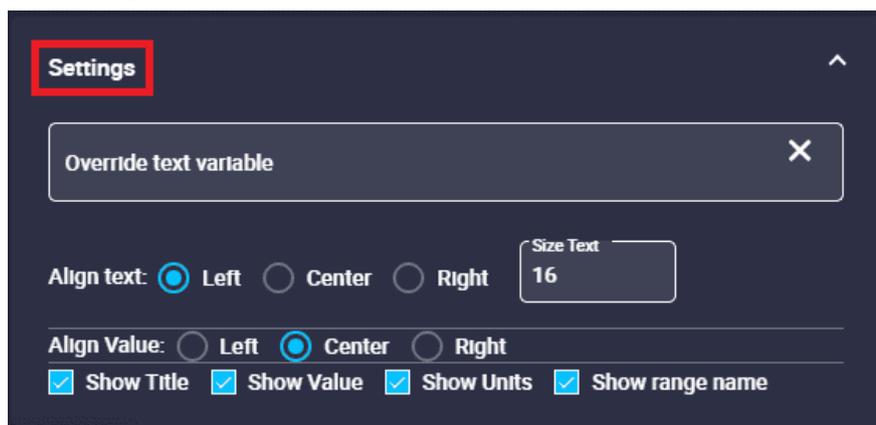
Bit label configuration

- **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.
- **Remove:** Click to delete this interval.
- **Settings:** The 'shape' of the displayed text can be edited:



Label configuration - Settings

- **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.

- **Align text:** The text of the variable can be left, center or right aligned.
- **Size text.**
- **Align Value:** The value of the variable can be left, center or right aligned.
- **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.

Alerts

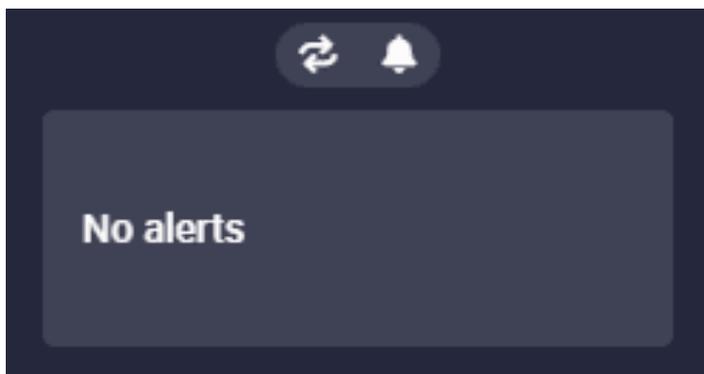
These alerts are **bits** variables that **appear depending on the state of the bit, failure or success**. The user can define in the widget configuration which of them will be the triggering state.

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.

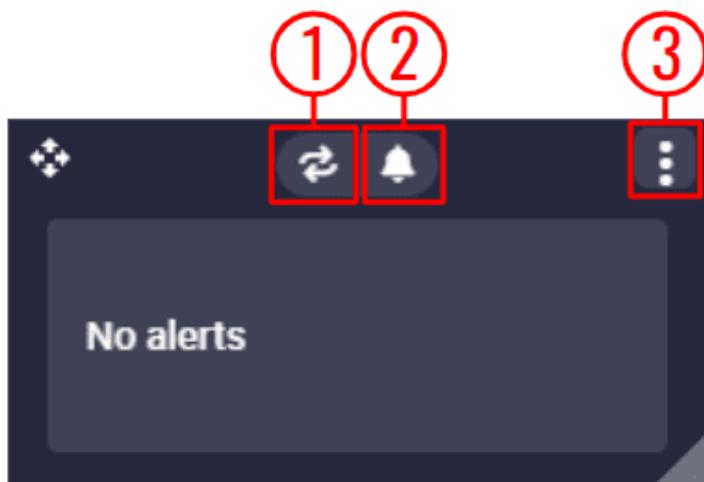
 **Note**

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



Alerts

By hovering the mouse cursor over the widget, the following actions appear:



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.

Widget creator

1 **Widget Options**

Choose platform *
Selected platform

Delay (seconds)
3

Add Extended Vars Open automatically

+ Add new var

Add a new element alert to show in widget

Settings

→ Next

2 **Widget Styling**

✓ Accept

Alerts configuration

- **Widget Options**

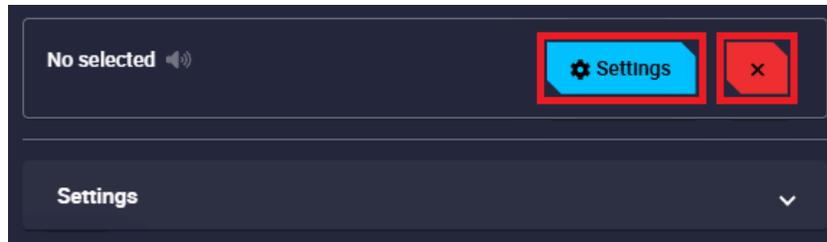
This widget has **extra edit parameters** compared to the ones described in the [Widgets common configuration](#).

- **Delay:** This is the time (in seconds) between the sounding of alerts **when the loop option is enabled**.
- **Add Extended Vars:** If enabled, all bit variables of the autopilot status message will be added as alerts. For more information on status message variables, please refer to the [Status Message variables - Lists of interest](#) section of the **1x Software Manual**.
- **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.

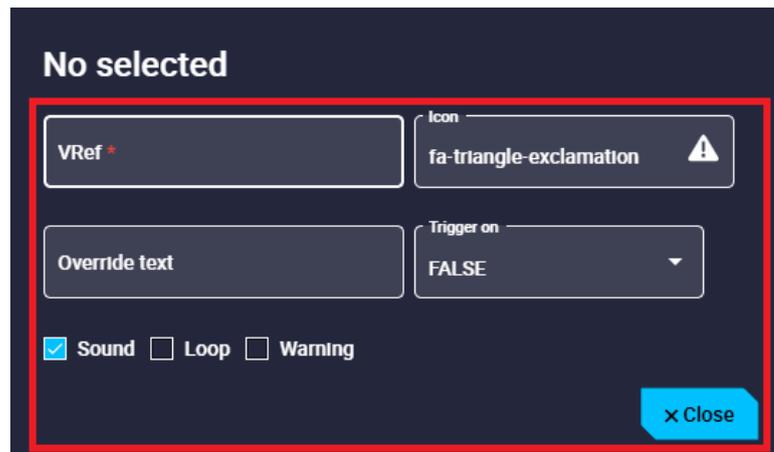
- **Add new var:** Press this button to add a new alert variable. They are configured below.
- **Add a new element alert to show in widget:** When adding a variable (by clicking on the '**Add new var**' button), the following field is added to the configuration menu:



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:



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.

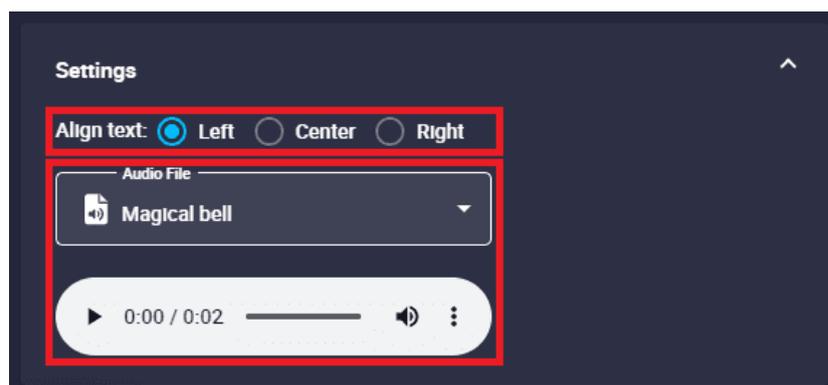
- **Trigger on:** Users can choose when they want the alert to be displayed, when **FALSE** or **TRUE**. By default, **FALSE** is set.
- **Sound:** Here users can choose whether each alert sounds or not by simply enabling/disabling it. By default, it is activated.
- **Loop:** If **enabled**, the sound 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.

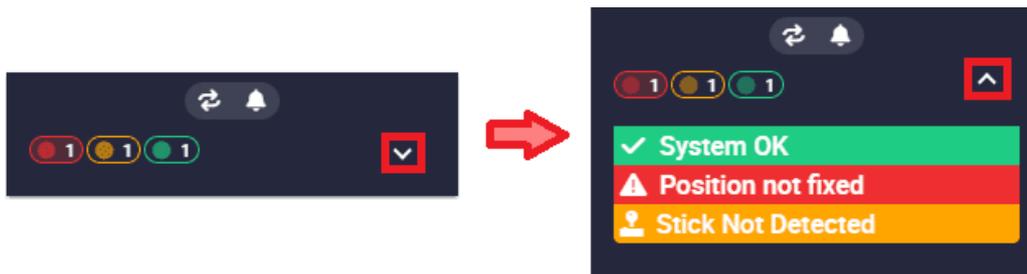
- **Warning:** If enabled, the selected alert will be displayed in orange instead of red.
- **Close:** Save and close button.
- **Delete var.**
- **Settings:** Here the user can modify the settings common to all alerts:



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.

Some examples of alerts are shown below:



Alerts example

The following figures show how these alerts have been configured:

The screenshot shows the 'Widget creator' interface with a dark theme. At the top, there's a title 'Widget creator' and a close button (X). Below it, the first step is '1 Widget Options'. This section includes a 'Choose platform *' dropdown menu with 'Selected platform' and a 'Delay (seconds)' input field with the value '3'. There are two checkboxes: 'Add Extended Vars' and 'Open automatically', both of which are currently unchecked. A blue button labeled '+ Add new var' is positioned below these options. A red rectangular box highlights a list of three alerts. Each alert entry consists of a title, a status icon, a 'Settings' button, and a close button (X). The first alert is 'Stick Not Detected' with a warning triangle icon. The second is 'System Error' with a text 'System OK' below it and a warning triangle icon. The third is 'Position not fixed' with a speaker icon. Below the highlighted list is a 'Settings' dropdown menu. At the bottom of the 'Widget Options' section is a blue button labeled '→ Next'. The second step, '2 Widget Styling', is partially visible at the bottom. A green button labeled '✓ Accept' is located at the bottom right of the interface.

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.

The screenshot shows the configuration for an alert titled "Stick Not Detected". The interface includes the following fields and options:

- VRef**: A text input field containing "Stick Not Detected".
- Icon**: A dropdown menu showing "fa-joystick" with a joystick icon.
- Override text**: An empty text input field.
- Trigger on**: A dropdown menu set to "FALSE".
- Sound**: An unchecked checkbox.
- Warning**: A checked checkbox.
- Close**: A blue button with "x Close" text.

Alerts configuration example - Stick Not Detected

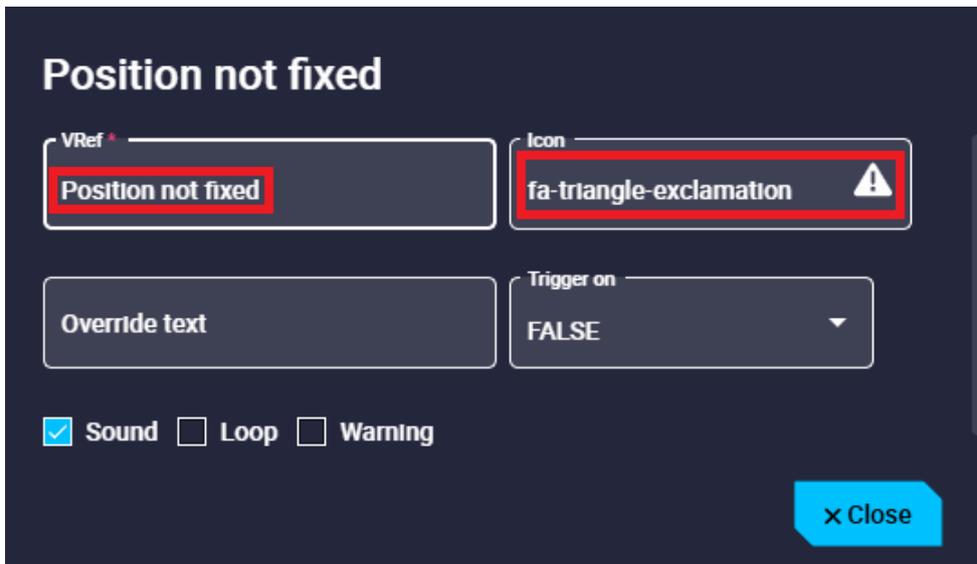
- System Error: This variable has been configured as an alert but it is triggered in **successful state**, so it is colored green. In addition, it has been customized with a different text from the variable name, with a 'check' icon and no sound.

The screenshot shows the configuration for an alert titled "System Error". The interface includes the following fields and options:

- VRef**: A text input field containing "System Error".
- Icon**: A dropdown menu showing "fa-check" with a checkmark icon.
- Override text**: A text input field containing "System OK".
- Trigger on**: A dropdown menu set to "TRUE".
- Sound**: An unchecked checkbox.
- Warning**: An unchecked checkbox.
- Close**: A blue button with "x Close" text.

Alerts configuration example - System Error

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



The image shows a configuration window for an alert titled "Position not fixed". It features several input fields and checkboxes. The "VRef" field contains the text "Position not fixed". The "Icon" field contains "fa-triangle-exclamation" and a warning icon. The "Trigger on" dropdown is set to "FALSE". There are three checkboxes: "Sound" (checked), "Loop" (unchecked), and "Warning" (unchecked). A blue "x Close" button is located at the bottom right.

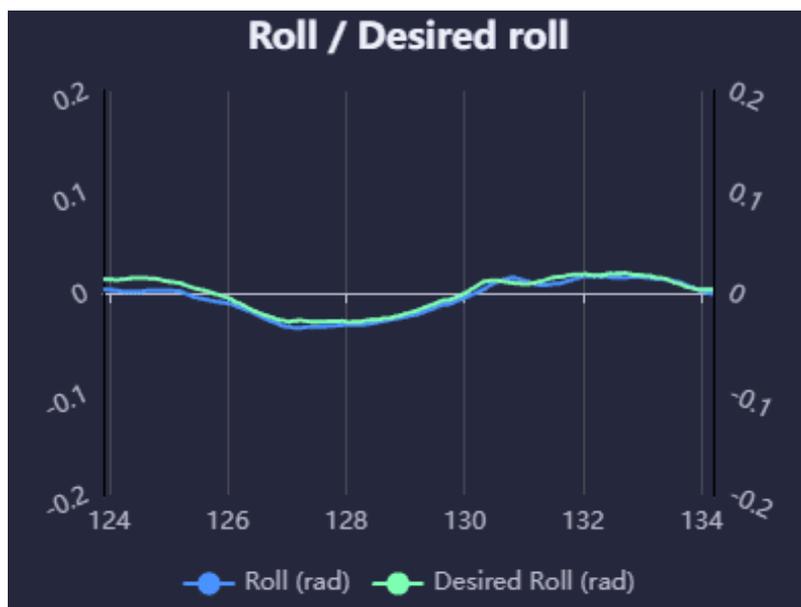
Alerts configuration example - Position not fixed

Charts

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 screenshot shows the 'Widget creator' interface. The 'Widget Options' section is highlighted with a red border and contains the following elements:

- Title**: An input field for the chart title.
- Maximum Sample Size ***: An input field with the value '100'.
- + Number of series: 0**: A button to add series.
- Interface settings**: A dropdown menu.
- Next**: A blue button to proceed to the next step.
- ✓ Accept**: A green button to confirm the configuration.

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.
- **Maximum Sample Size**: Maximum number of samples of the selected variable drawn in the chart. By default it is set to 100.
- **Number of series**: Number of variables drawn in the chart. Users can add as many series as they wish to represent in the same chart.

The appearance of this series in the chart can be configured below:

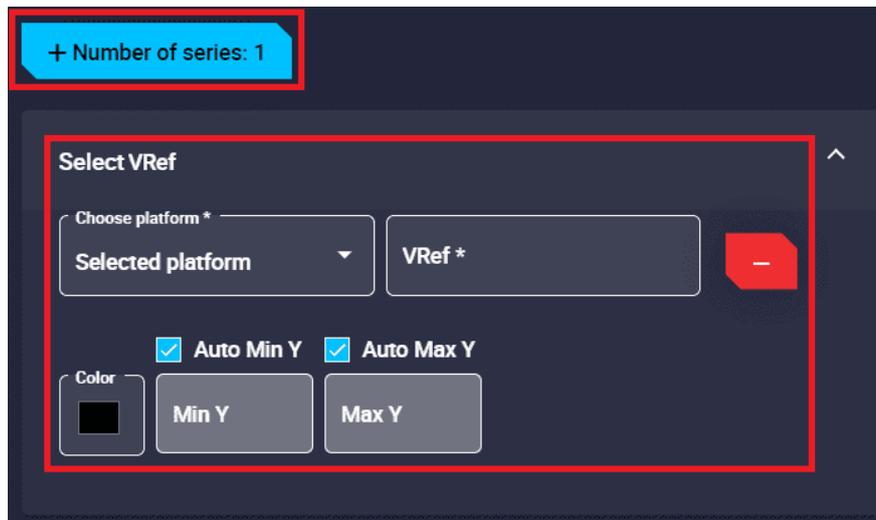


Chart configuration - Series

- **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.

- **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.
- **Auto Min/Max Y:** If enabled, minimum and maximum of the Y axis of the chart are automatically adjusted.
- **Min/Max Y:** Minimum and maximum Y axis of the chart can be adjusted manually.
- **Interface settings:**

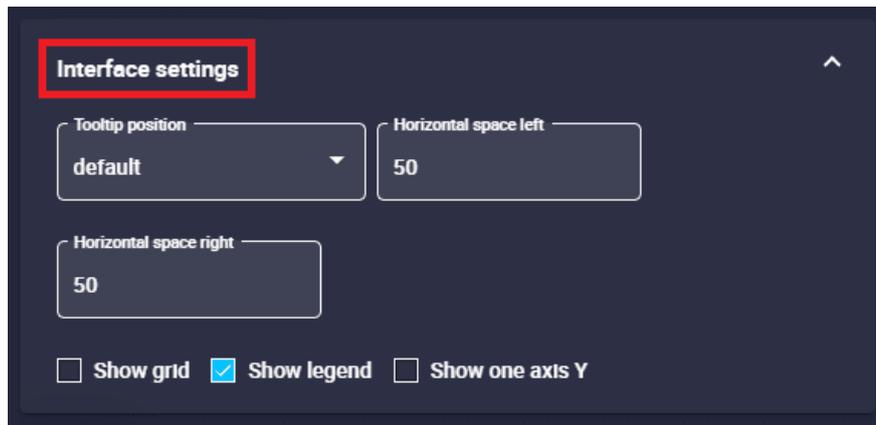


Chart configuration - Interface settings

- 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:

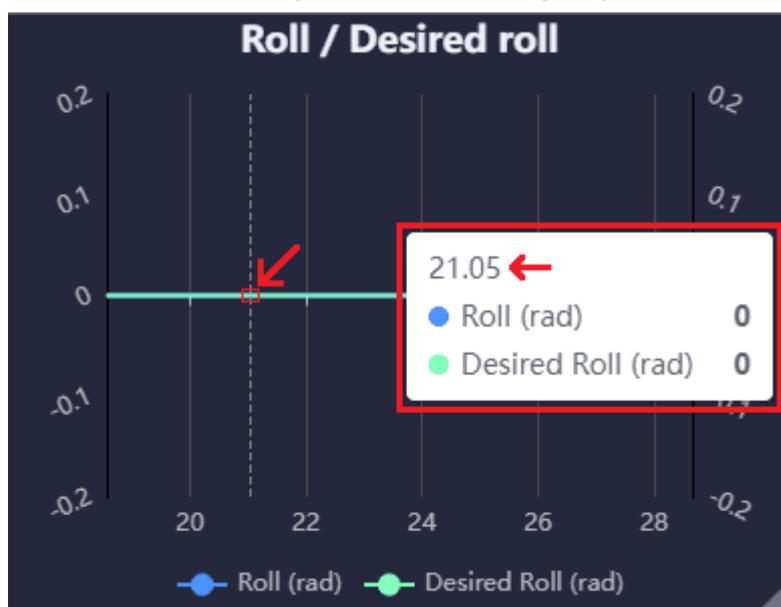


Chart configuration - Tooltip position

- **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:

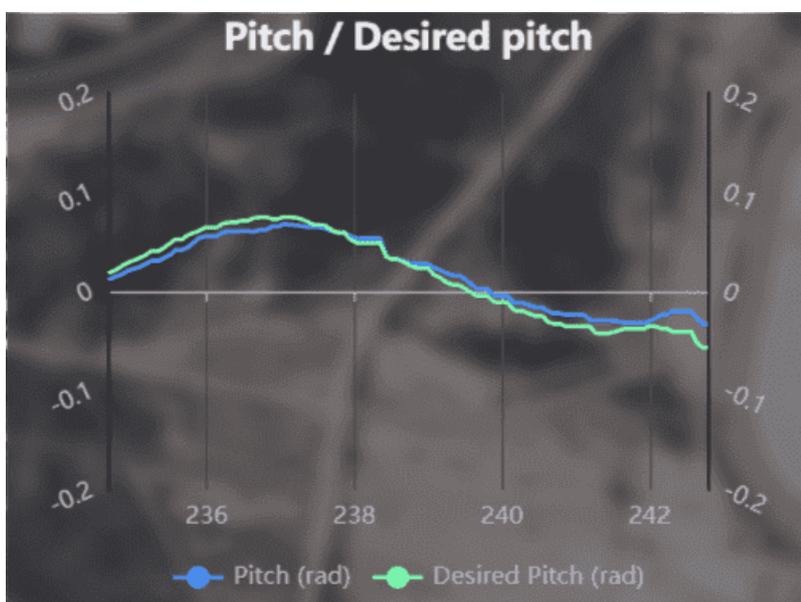


Chart example

The custom configuration made for this chart is as follows:

Widget creator

1 Widget Options

Title: Pitch / Desired pitch Maximum Sample Size *: 100

+ Number of series: 2

Pitch rad

Desired Pitch rad

Interface settings

Tooltip position: bottom Horizontal space left: 50

Horizontal space right: 50

Show grid Show legend Show one axis Y

→ Next

2 Widget Styling

Accept

Chart configuration - Widget Options example

Widget creator

+ Number of series **2**

Pitch rad

Choose platform * Selected platform

VRef * Pitch

Unit Y rad

Decimals 5

Color Auto Min Y Auto Max Y

Min Y -0.2

Max Y 0.2

Desired Pitch rad

Choose platform * Selected platform

VRef * Desired Pitch

Unit Y rad

Decimals 5

Color Auto Min Y Auto Max Y

Min Y -0.2

Max Y 0.2

Accept

Chart configuration - Series example

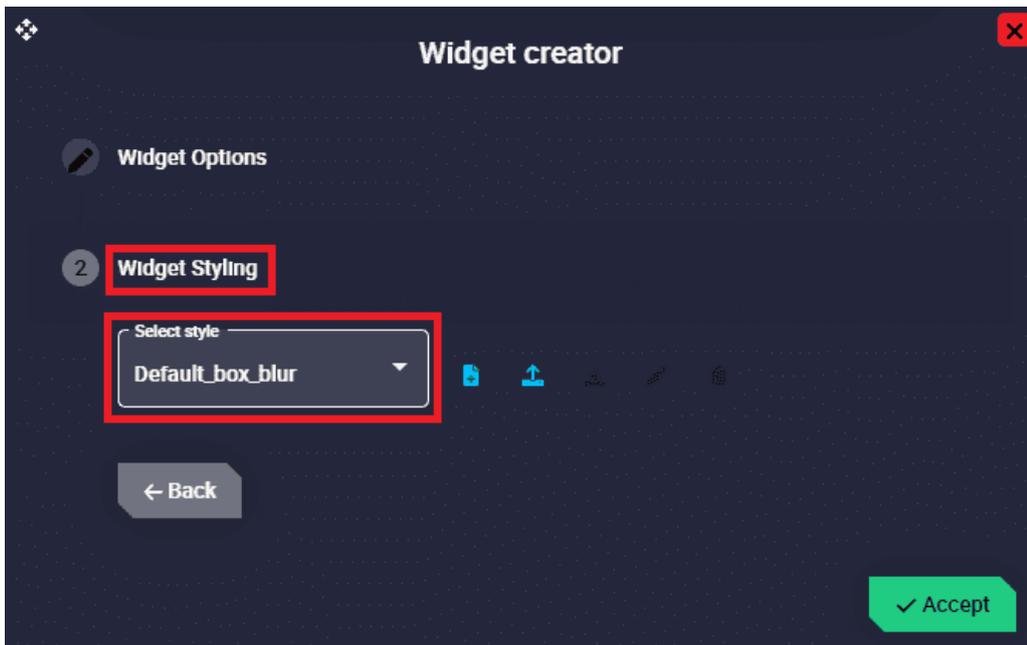
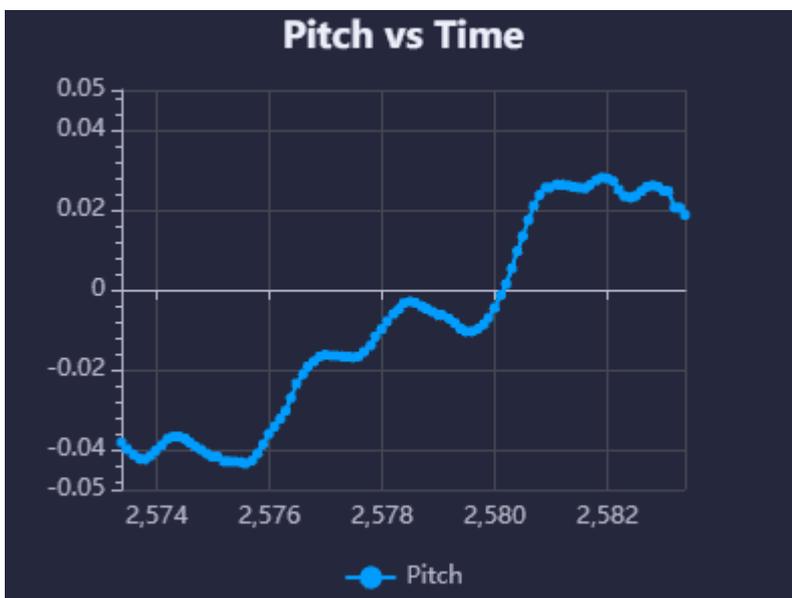


Chart configuration - Widget Styling example

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.

Widget creator

1 **Widget Options**

Title

Maximum Sample Size *
100

Color

Axis X

Axis Y

Interface settings

→ Next

2 **Widget Styling**

✓ Accept

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.
- **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.

The screenshot shows the configuration panel for Axis X. It includes checkboxes for 'Auto Min X' and 'Auto Max X', input fields for 'Min X' (0) and 'Max X' (1), a dropdown for 'Choose platform *' (Selected platform), and a text input for 'VRef *'. The 'Axis X' and 'Axis Y' headers are highlighted with red boxes.

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.

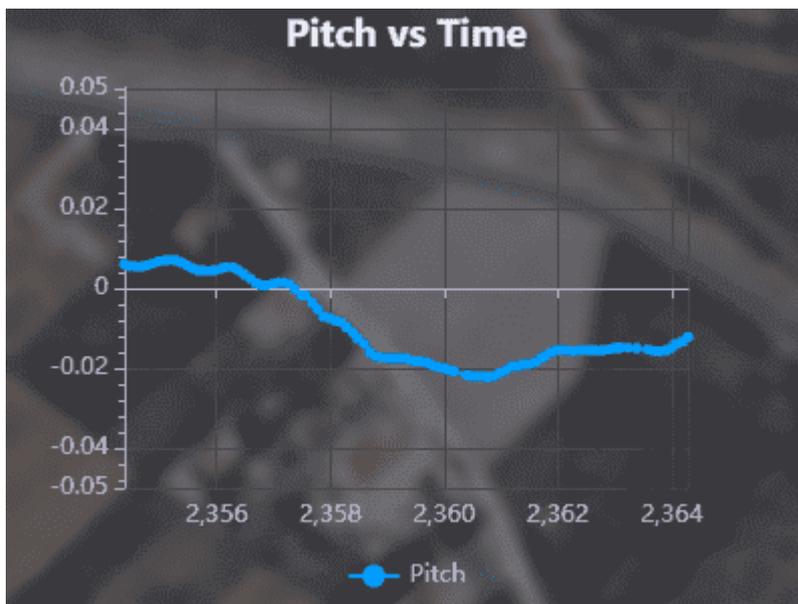
- **Interface settings:**

The screenshot shows a configuration panel for a scatter plot. At the top, there are two dropdown menus labeled 'Axis X' and 'Axis Y'. Below them is a section titled 'Interface settings' which is highlighted with a red border. This section contains several input fields: 'Horizontal space left' (value 40), 'Horizontal space right' (value 40), 'Vertical space top' (value 40), 'Vertical space bottom' (value 60), 'Symbol size' (value 5), a checked checkbox for 'Show legend', and a 'Legend offset' field (value 5).

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:

Widget creator

1 Widget Options

Title: Pitch vs Time

Maximum Sample Size *: 100

Color:

Axis X

Auto Min X Min X Auto Max X Max X

Choose platform *: Selected platform ▾

VRef *: Relative Timestamp

Unit *: s ▾

Decimals: 3

Axis Y ▾

Interface settings ▾

→ Next

Widget Styling

✓ Accept

Axis X

Axis Y

Auto Min Y Auto Max Y

Choose platform * VRef *

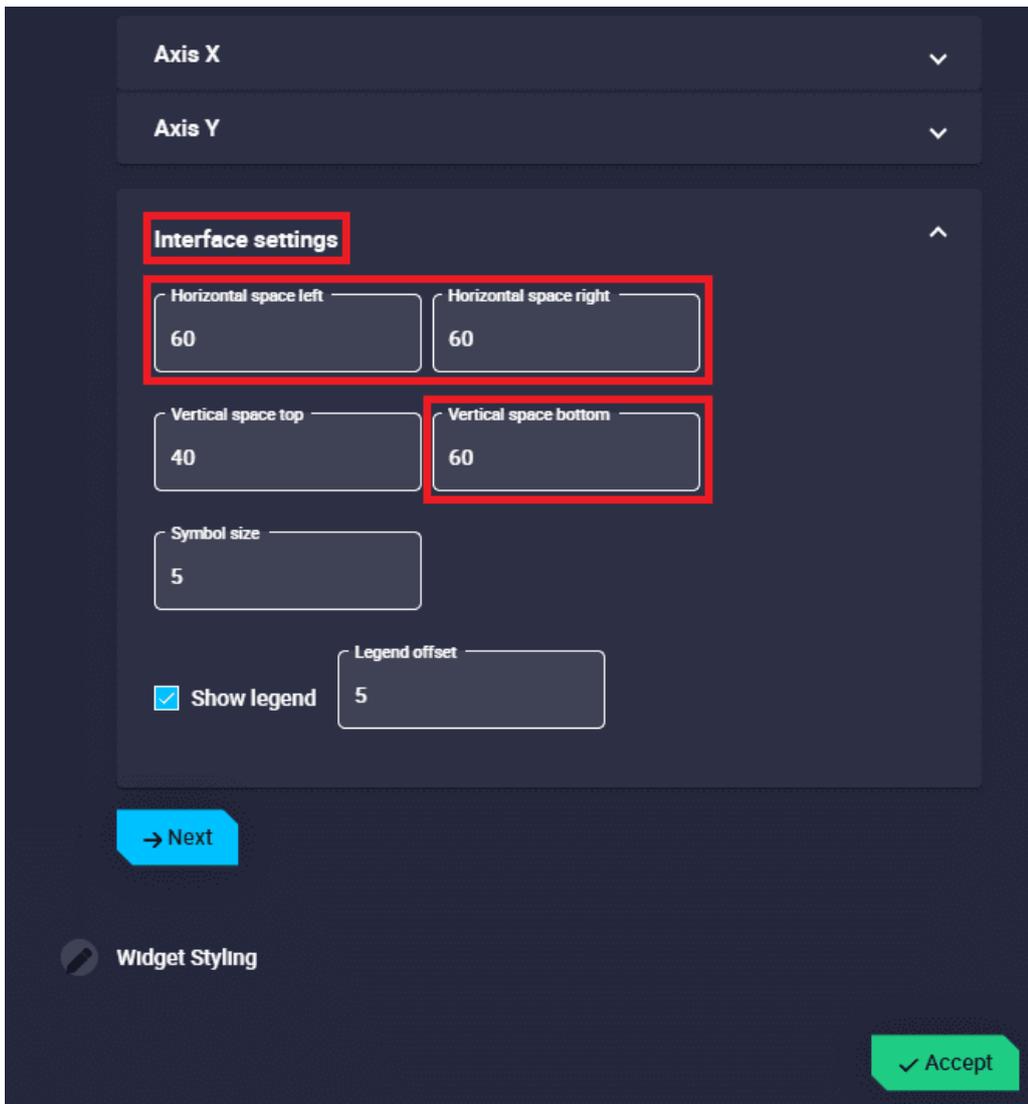
Unit Y Decimals

Interface settings

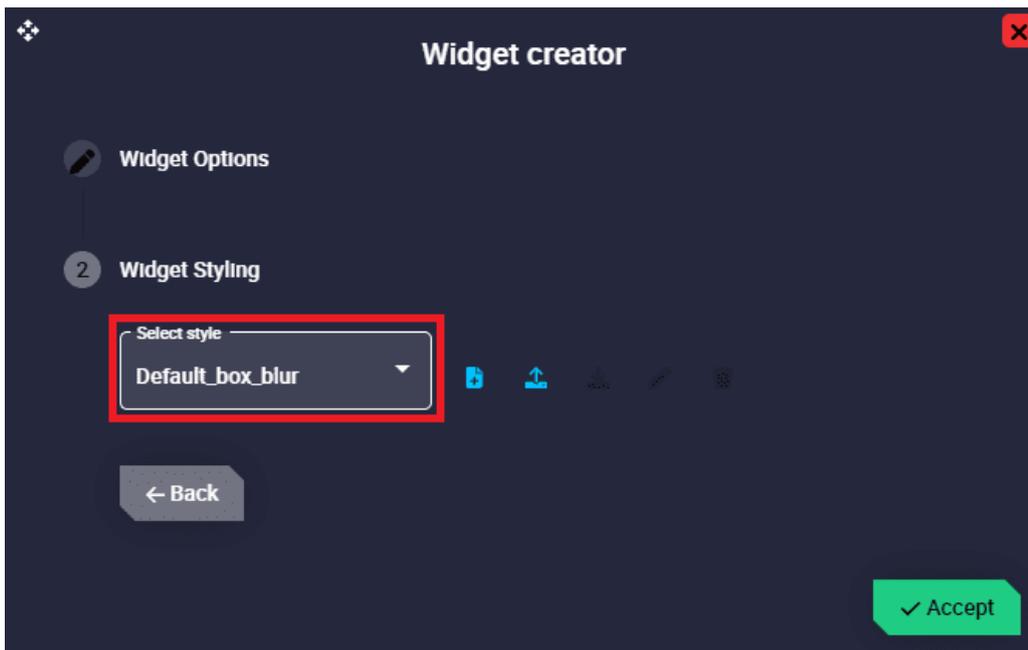
→ Next

Widget Styling

✓ 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.

The screenshot shows the 'Widget creator' interface. The 'Widget Options' section is active, showing a 'Choose platform *' dropdown menu with 'Selected platform' and a 'VRef *' input field. Below this are four expandable sections: 'Values', 'Ranges' (with 'Ranges: 0' text), 'Reference settings', and 'Pointer settings'. A blue 'Next' button is located below these sections. At the bottom right, there is a green 'Accept' button. The interface is dark-themed with a red close button in the top right corner.

Gauge 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 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 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.
- **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

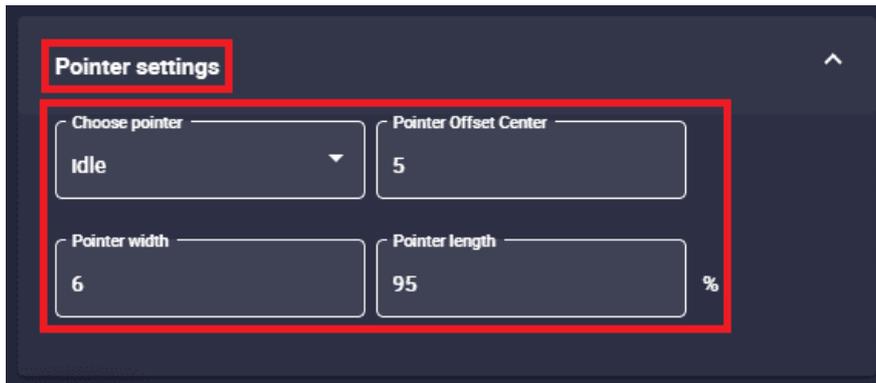
If **ranges** are defined and the value falls within a range, the color of the value will not be this selected color, but will be colored according to the color of the range the value is in.

- **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:

Widget creator

1 **Widget Options**

Choose platform *
Selected platform ▾

VRef *
Throttle

Unit *
-- ▾

Decimals
2

Values ^

Min * 0 Max * 1 Start angle * 260 End angle * 280

Ranges Ranges: 2 ▾

Reference settings ▾

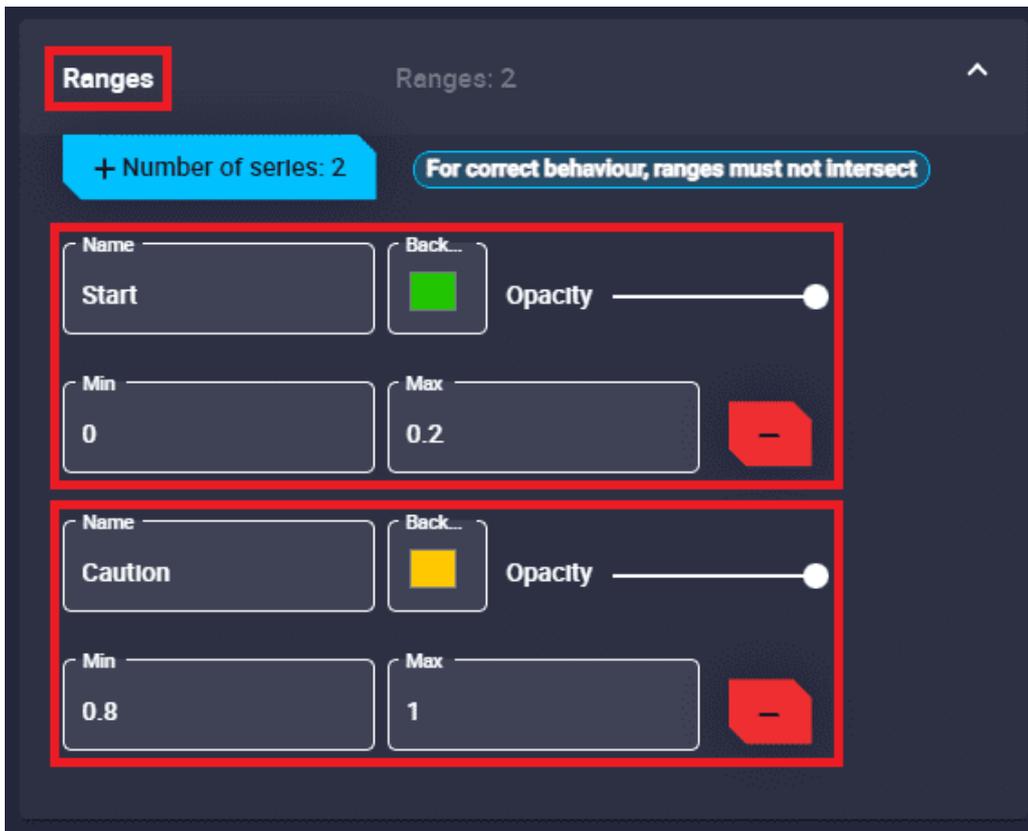
Pointer settings ▾

→ Next

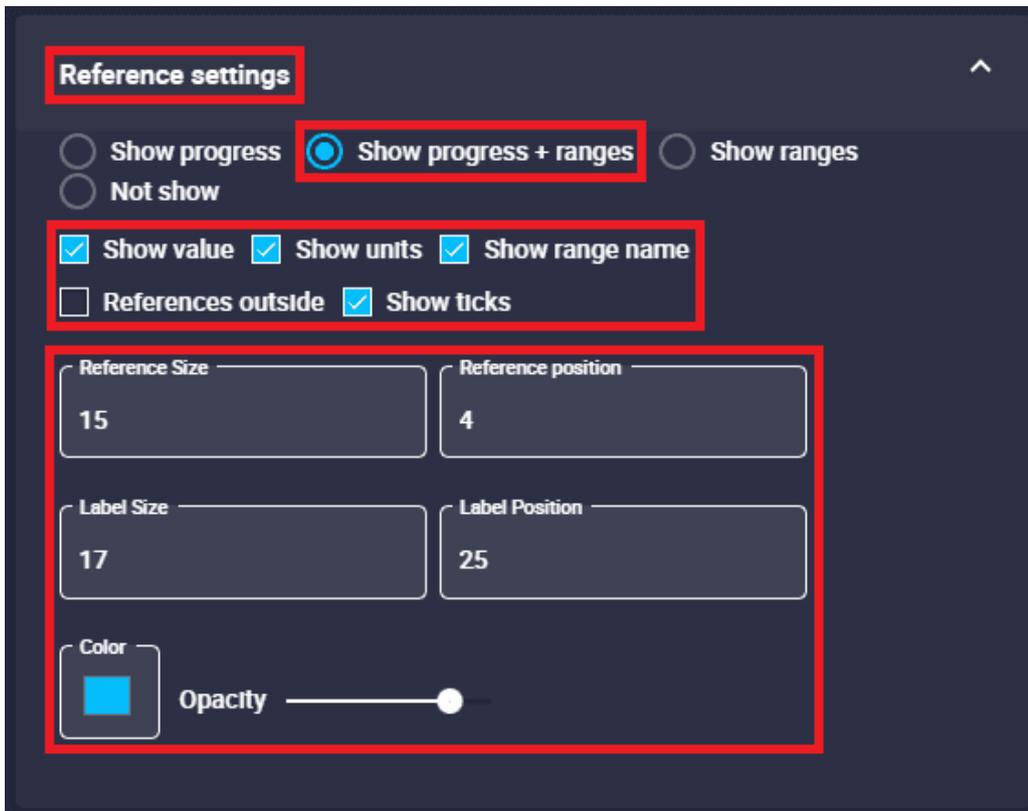
2 **Widget Styling**

✓ Accept

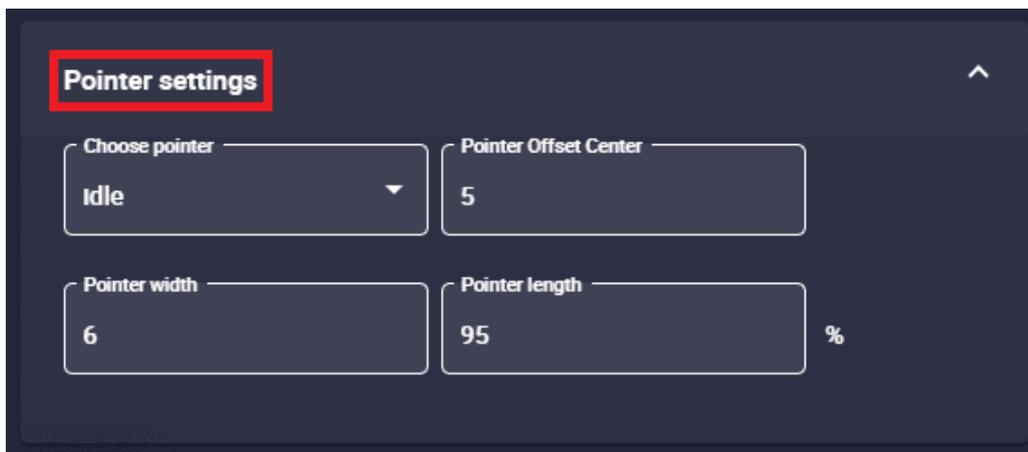
Gauge configuration - Values example



Gauge configuration - Ranges example



Gauge configuration - Reference settings example

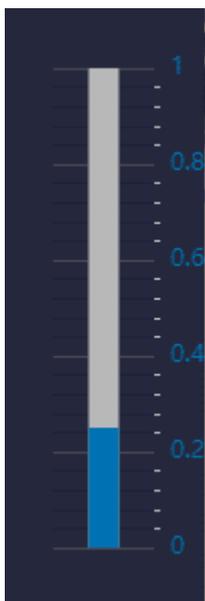


Gauge configuration - Pointer settings example

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.

The screenshot shows the 'Widget creator' interface. At the top, it says 'Widget creator' with a close button. Below that, there are two main sections: '1 Widget Options' and '2 Widget Styling'. In the 'Widget Options' section, there is a 'Choose platform *' dropdown menu with 'Selected platform' and a 'VRef *' input field. The 'VRef *' field is highlighted with a red box. Below this are three expandable sections: 'Bar options', 'Alerts Ranges: 0', and 'Interface settings'. A blue button with a right arrow and the text 'Next' is located below the expandable sections. At the bottom right, there is a green button with a checkmark and the text 'Accept'.

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

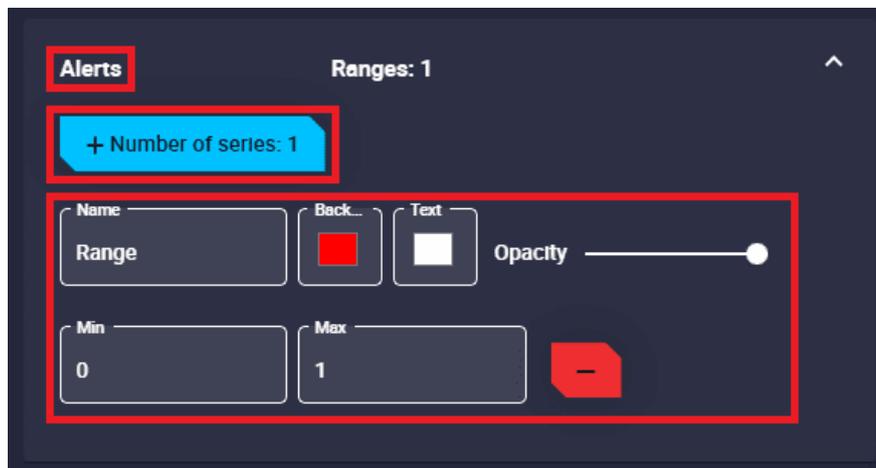
This parameter is only available with Real variables.

- **Bar options:**



Bar configuration - Bar options

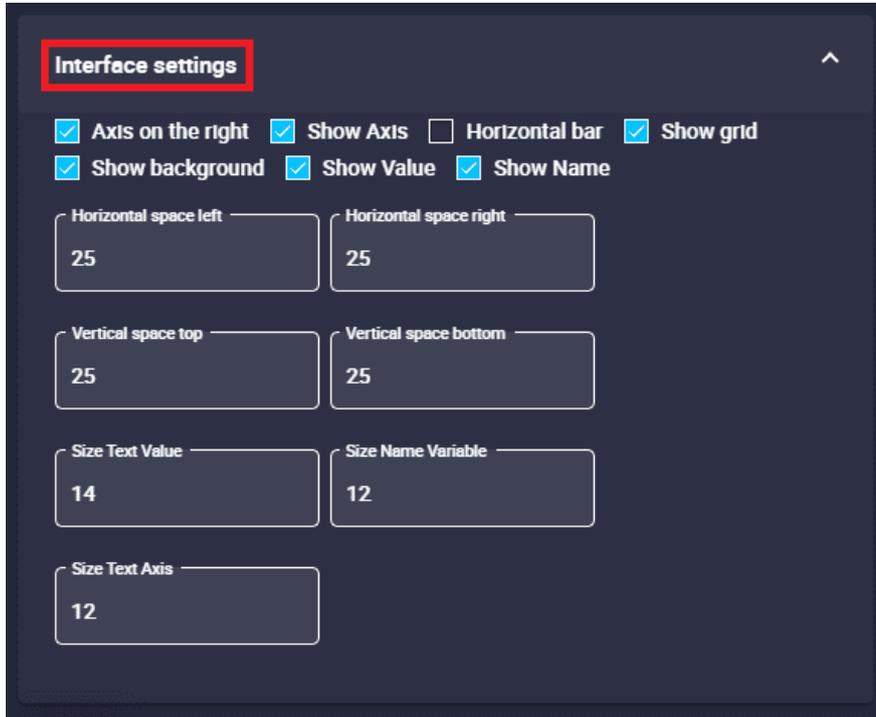
- **Bar color:** The color of the bar with the value can be changed here.
- **Color text:** The color of the selected variable value can be modified.
- **Bar Width:** The user can modify the width of the bar as desired. By default it is set to 30.
- **Min/Max:** Minimum and maximum values displayed in 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:**



Interface settings

Axis on the right Show Axis Horizontal bar Show grid
 Show background Show Value Show Name

Horizontal space left: 25 Horizontal space right: 25

Vertical space top: 25 Vertical space bottom: 25

Size Text Value: 14 Size Name Variable: 12

Size Text Axis: 12

Bar configuration - Interface settings

The appearance of the bar widget can be highly customized using the following parameters:

- **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.

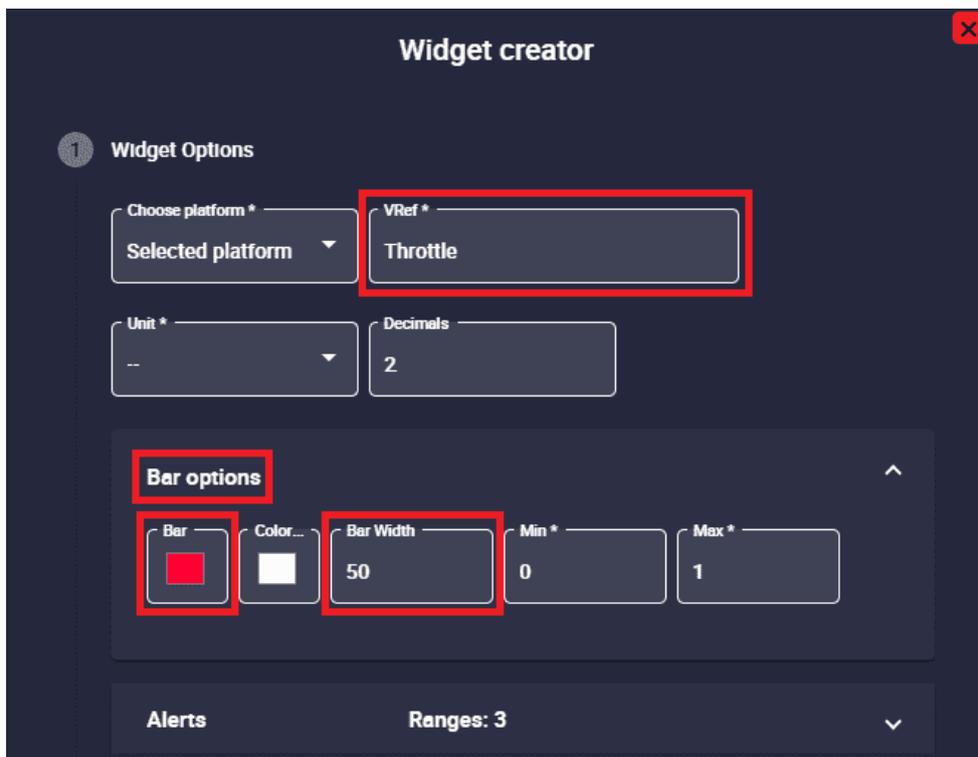
Some examples are given below:

- **Example 1:**



Bar example 1

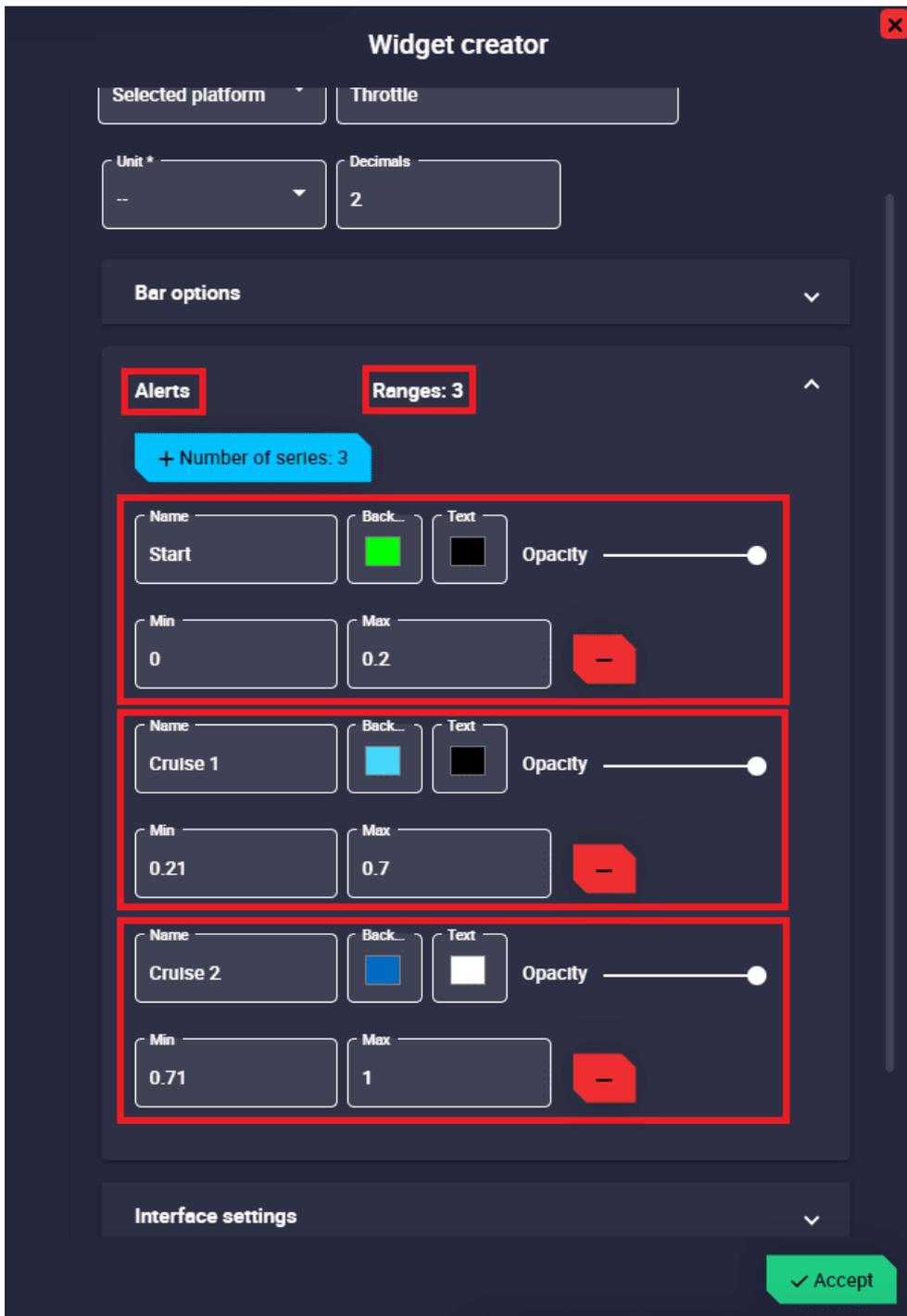
The custom configuration made for this bar is as follows:



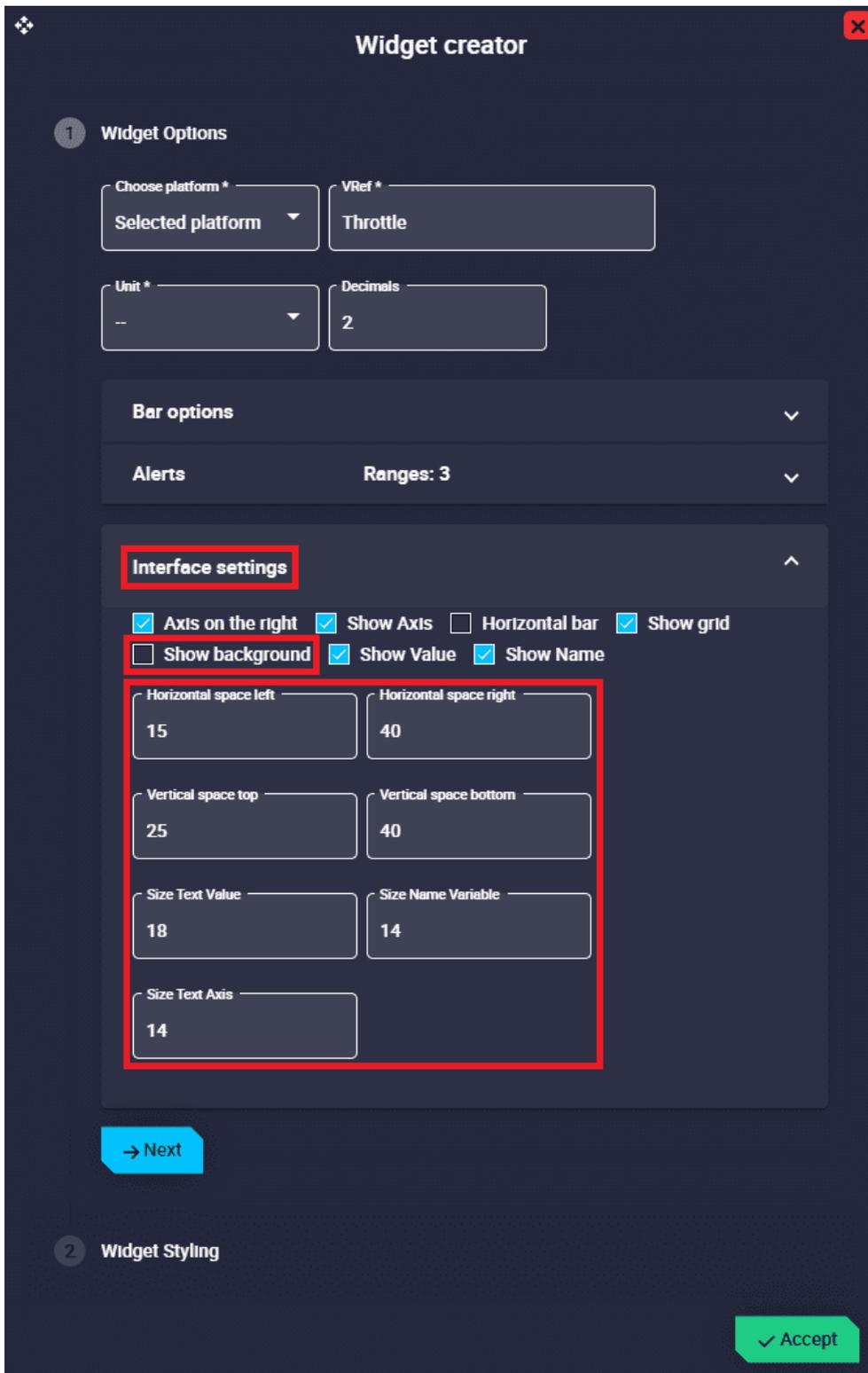
The image shows a 'Widget creator' interface with a dark theme. At the top, it says 'Widget creator' with a close button (X) in the top right corner. Below that, there's a section titled 'Widget Options' with a circled '1' icon. The options include: 'Choose platform *' with a dropdown menu showing 'Selected platform'; 'VRef *' with a text input field containing 'Throttle'; 'Unit *' with a dropdown menu showing '--'; and 'Decimals' with a text input field containing '2'. Below these is a section titled 'Bar options' with an upward arrow. This section contains: 'Bar' with a red color swatch; 'Color...' with a white color swatch; 'Bar Width' with a text input field containing '50'; 'Min *' with a text input field containing '0'; and 'Max *' with a text input field containing '1'. At the bottom, there are 'Alerts' and 'Ranges: 3' with a downward arrow.

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:

A screenshot of a 'Widget creator' interface. The interface is dark-themed and has a close button (red 'X') in the top right corner. It is divided into two main sections: '1 Widget Options' and '2 Widget Styling'. In the 'Widget Options' section, there are several input fields: 'Choose platform *' with a dropdown menu showing 'Selected platform'; 'VRef *' with a text input field containing 'Throttle'; 'Unit *' with a dropdown menu showing '--'; and 'Decimals' with a text input field containing '2'. Below these is a 'Bar options' section with a red border, containing: 'Bar' with a red color swatch; 'Color...' with a black color swatch; 'Bar Width' with a text input field containing '50'; 'Min *' with a text input field containing '0'; and 'Max *' with a text input field containing '1'. Below the 'Bar options' section are 'Alerts' and 'Interface settings' sections, both with dropdown arrows. The 'Alerts' section has a 'Ranges: 0' label. At the bottom of the 'Widget Options' section is a blue button labeled '→ Next'. In the '2 Widget Styling' section, there is a green button labeled '✓ Accept'.

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.

The screenshot shows the 'Widget creator' interface. The 'Widget Options' section includes fields for 'Choose platform *' (Selected platform), 'VRef *' (Throttle), 'Unit *' (--), and 'Decimals' (2). Below this are sections for 'Bar options', 'Alerts', and 'Ranges: 0'. The 'Interface settings' section is highlighted with a red box and contains the following options:

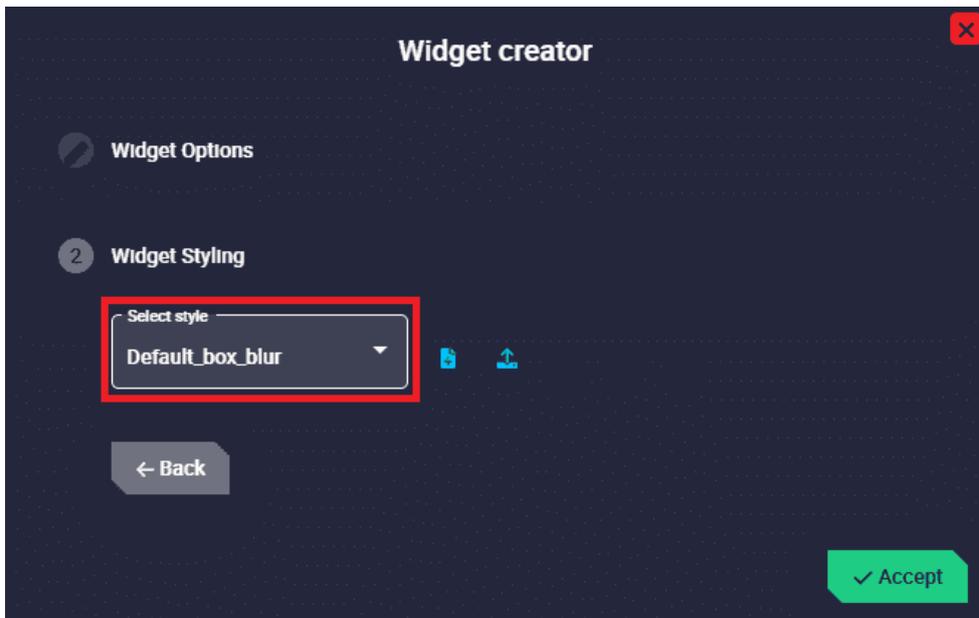
- Axis on the right
- Show Axis
- Horizontal bar
- Show grid
- Show background
- Show Value
- Show Name

Below these are input fields for spacing and text sizes:

- Horizontal space left: 5
- Horizontal space right: 5
- Vertical space top: 25
- Vertical space bottom: 5
- Size Text Value: 16
- Size Name Variable: 14
- Size Text Axis: 14

At the bottom of the 'Widget Options' section is a blue button labeled '→ Next'. The 'Widget Styling' section is partially visible at the bottom, with a green button labeled '✓ Accept'.

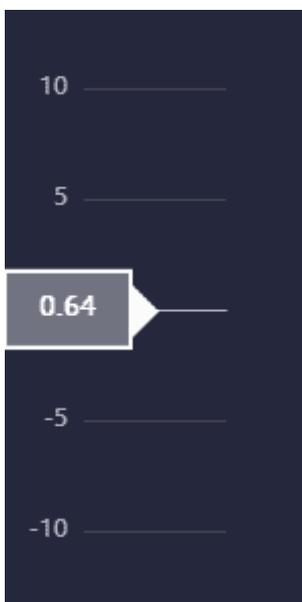
Bar configuration - Reference settings example 2



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 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

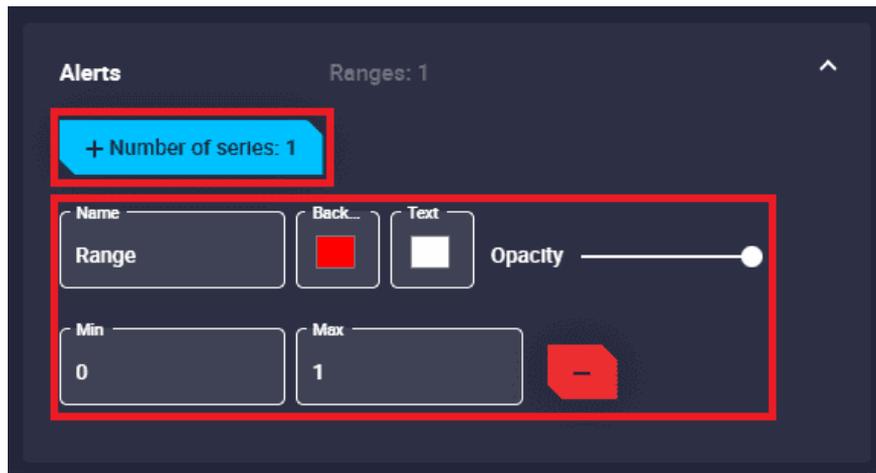
This parameter is only available with Real variables.

- **Decimals**: Number of decimals displayed for the selected variable.

Note

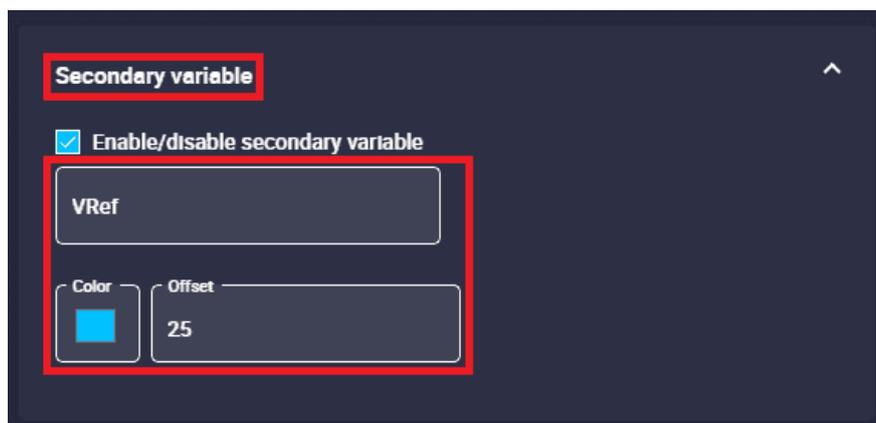
This parameter is only available with Real variables.

- **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:**

The screenshot shows a dark-themed configuration panel for a roll tape widget. The panel is titled "Options" and contains several input fields and toggle switches. The fields are: Title (empty), Label decimals (2), Range (+ 10), Interval (5), Top spacing (40), Bottom spacing (40), Left spacing (40), and Right spacing (40). At the bottom, there are three toggle switches: "Toggle direction" (unchecked), "Toggle axis" (checked), and "Toggle text position" (unchecked).

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
- **Label decimals:** Decimals of the value to be displayed on the roll tape. By default it is set to 2.

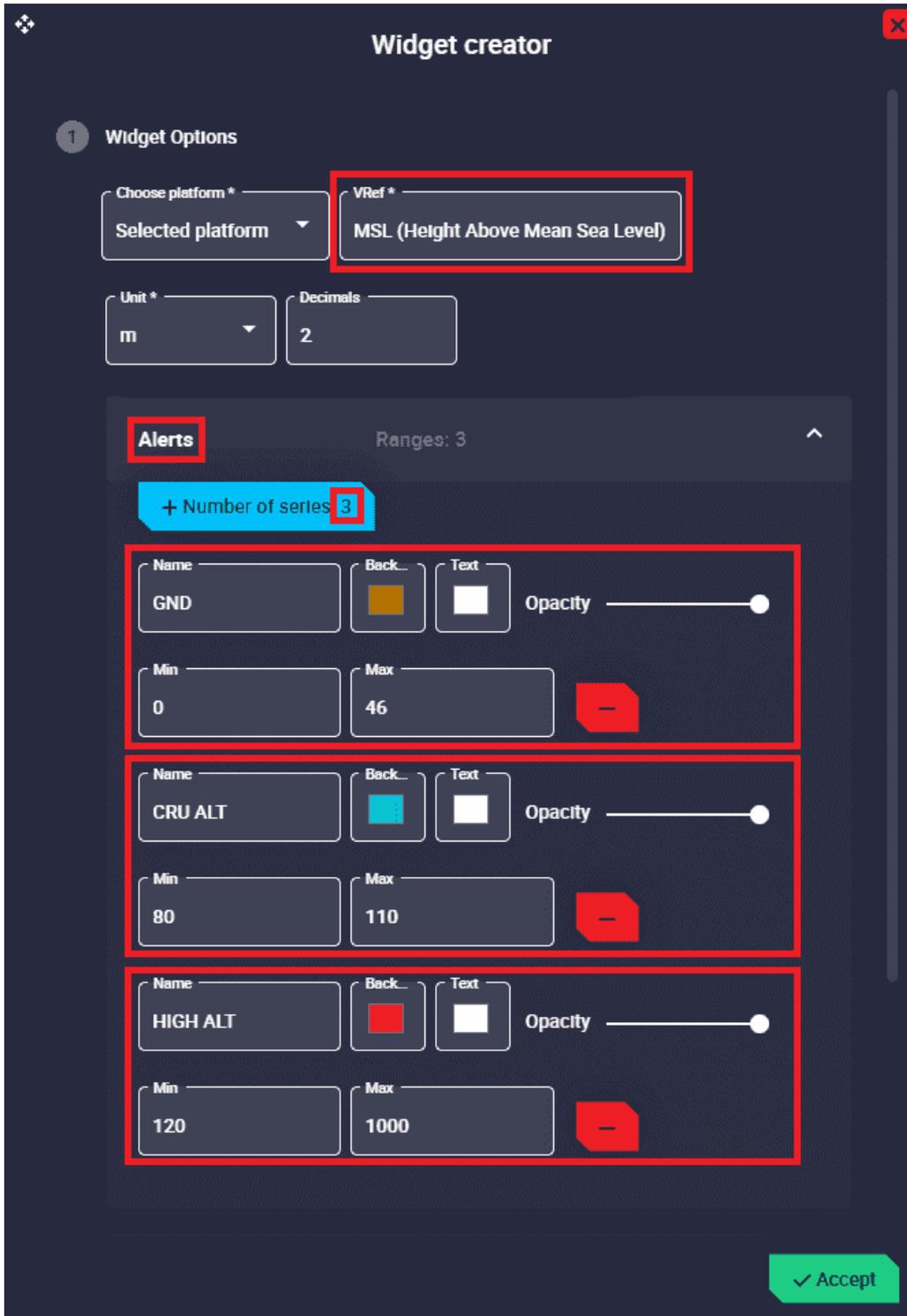
- **Range (+/-):** Space between the center and the top and bottom boundaries. The default value is 10.
- **Interval:** Axis interval. Default is 5.
- **Top/Bottom spacing:** The top/bottom spacing of the roll tape widget background can be customized. The default value is 40.
- **Left/Right spacing:** 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 configuration - Alerts example

Alerts Ranges: 3

Secondary variable

Enable/disable secondary variable

Desired MSL (Height Above Mean Se

Unit * m Decimals 2

Color [Blue] Offset 45

Options

Roll Tape configuration - Secondary variable example

Alerts Ranges: 3

Secondary variable

Options

Title ALTITUDE (MSL) Label decimals 2

Range ± 100 Interval 50

Top spacing 40 Bottom spacing 35

Left spacing 50 Right spacing 40

Toggle direction Toggle axis Toggle text position

Roll Tape configuration - Options example

Statics

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

Text

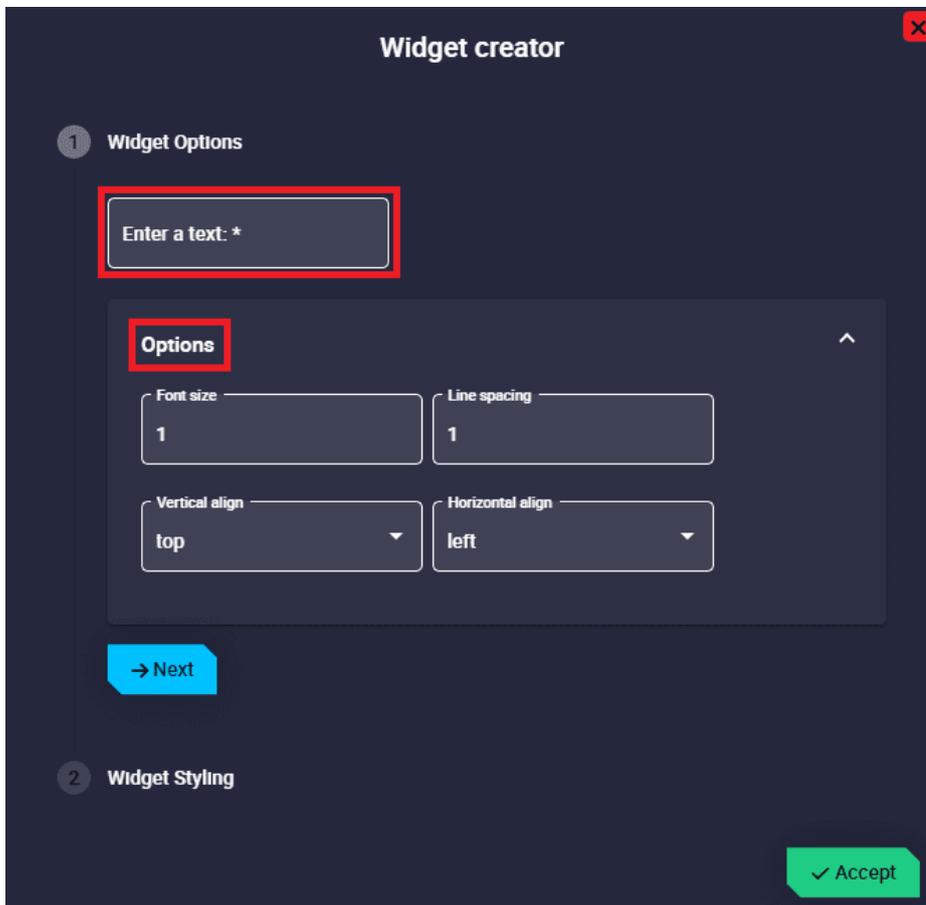
Text widget allows the user to insert text labels in the workspace.



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

- **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 ≥ 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 ≥ 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**:

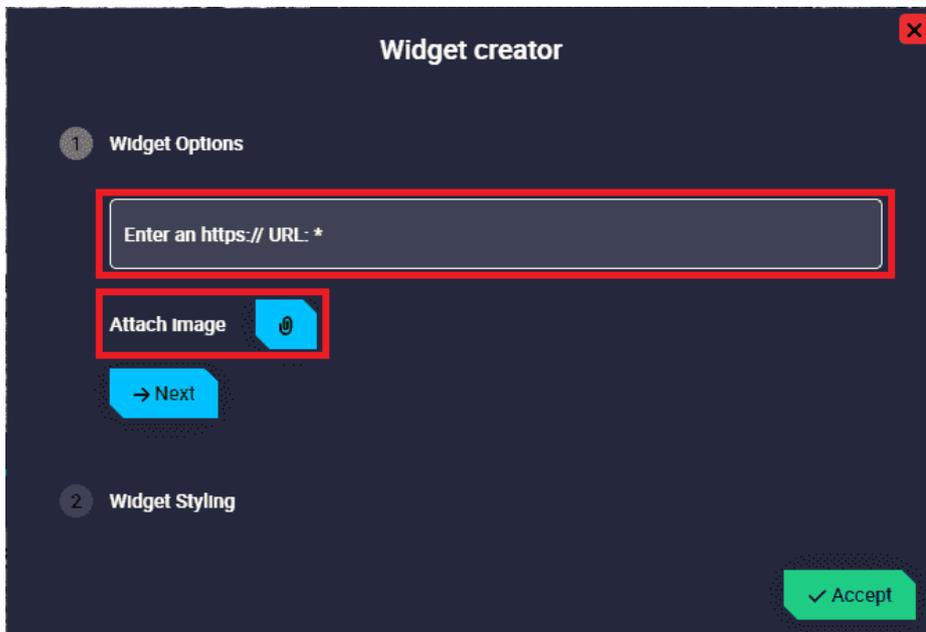


Image configuration

- **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.

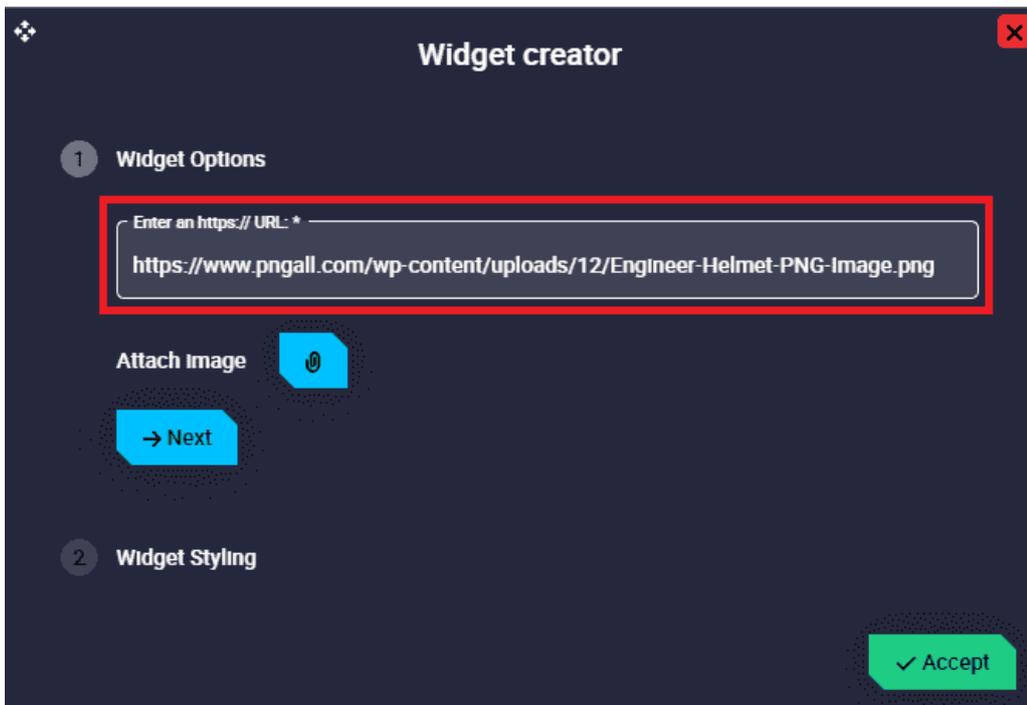


Image configuration - Widget Options example

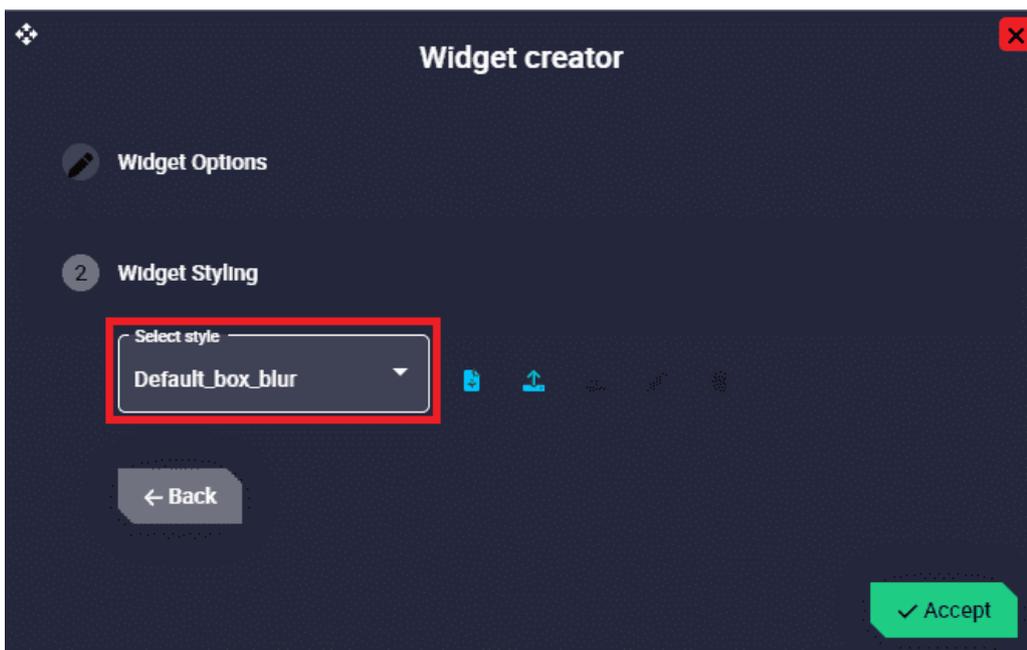
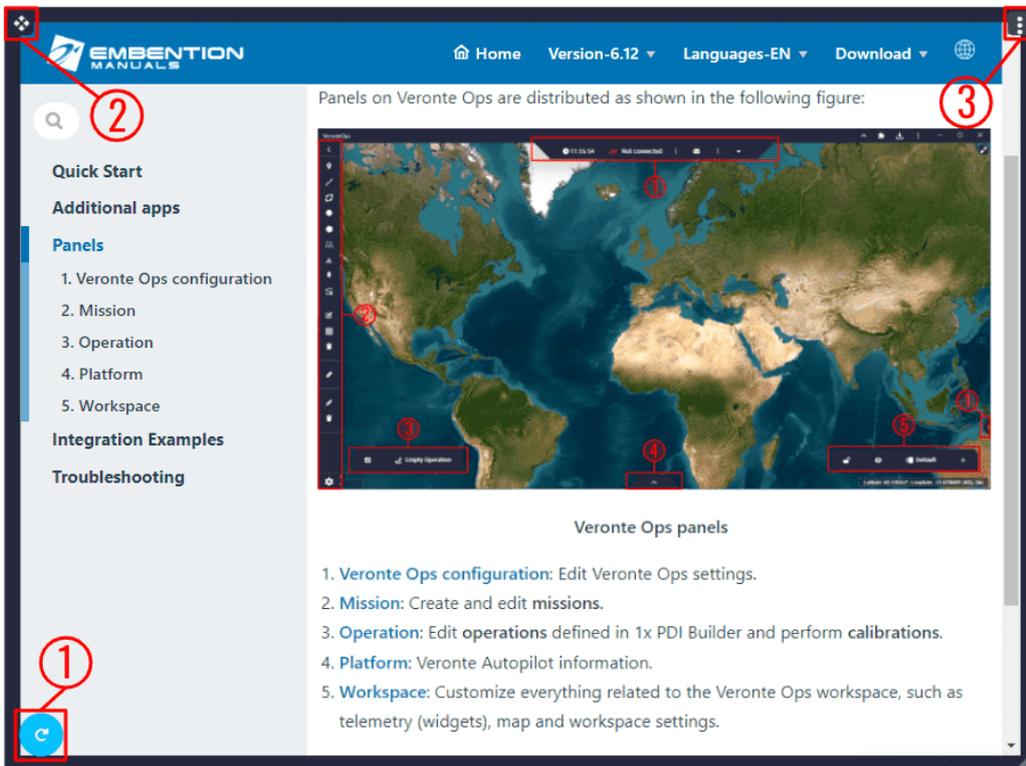


Image configuration - Widget Styling example

Iframe

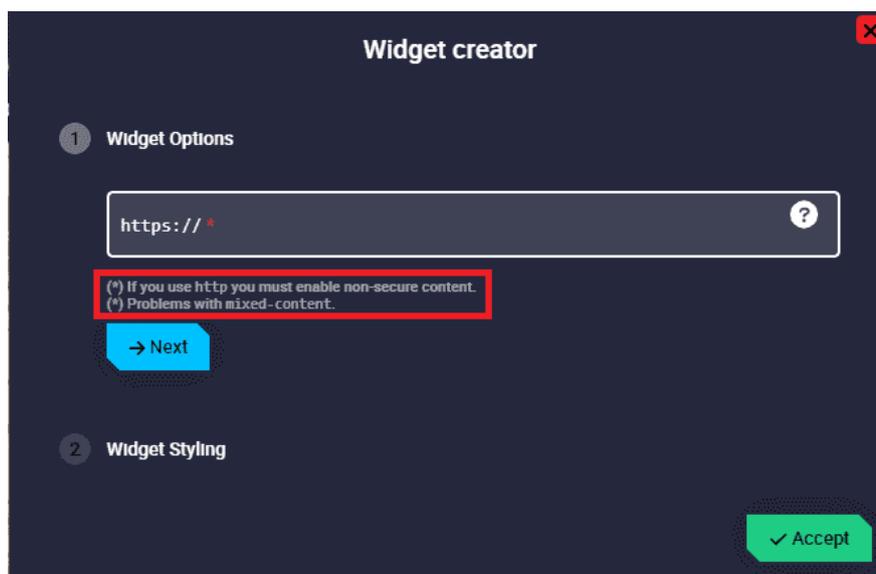
Iframe widget allows the user to embed a **web page** as a widget in the workspace, as well as to visualize video from a gimbal camera.

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. **Reload page:** Refreshes the web page embedded as a widget.
2. **Move:** Allows the user to move the widget to the desired position in the workspace.
3. **Options:**
 - **Duplicate:** Duplicates this widget.
 - **Edit:** This allows the user to access the Iframe configuration menu.
 - **Widget Options:**



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**.

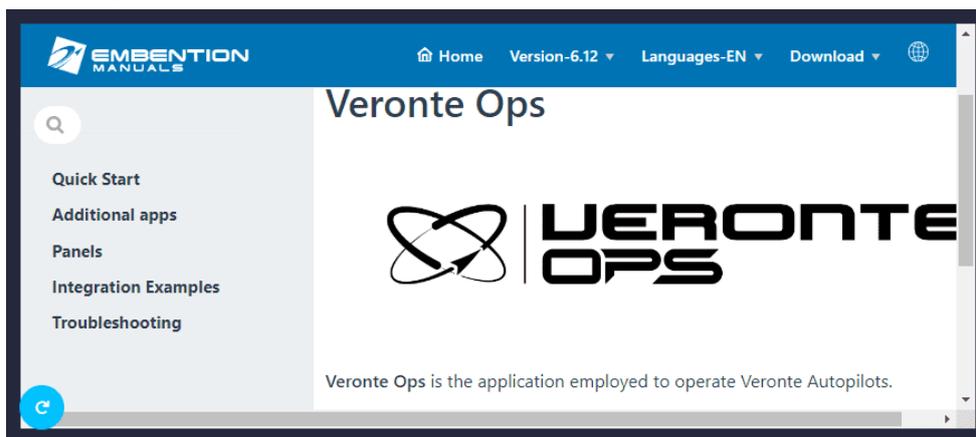
Warning

Please take into account the notes in the widget.

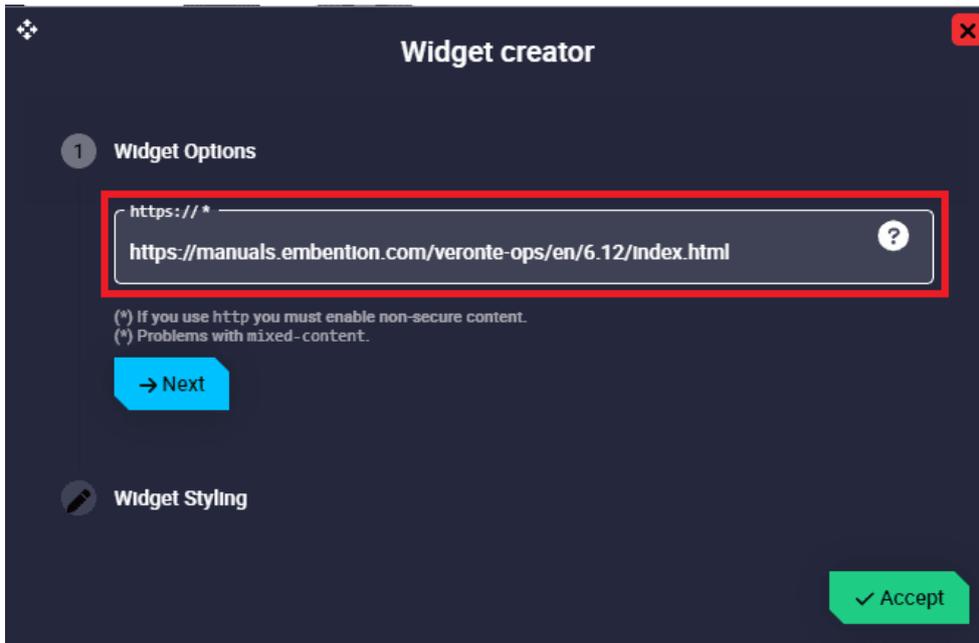
- **Widget Styling:** This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).
- **Remove:** Deletes this widget.

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**:

Widget creator

1 Widget Options

Enter a URL: *

Autoplay
 Muted
 Controls
 Loop

→ Next

2 Widget Styling

✓ Accept

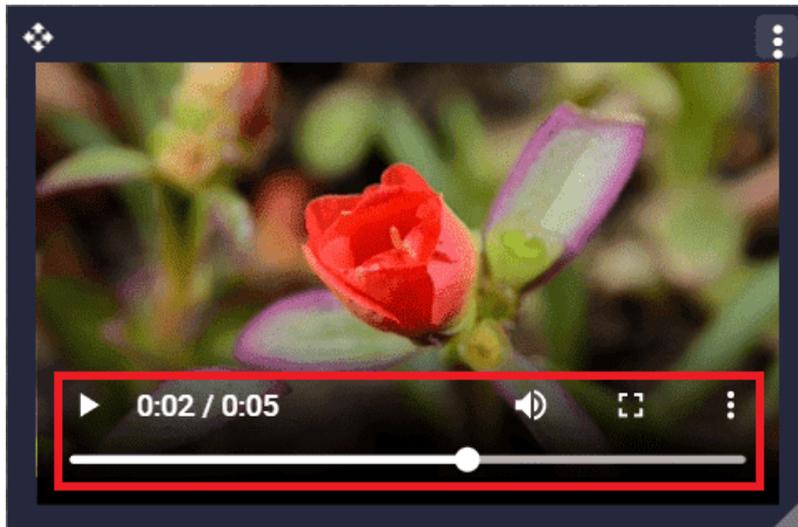
Video configuration

- **Enter a URL:** Users can enter the URL of the video to be displayed.

⚠ Caution

The video must be in `.mp4` , `.ogg` , `.webm` or `.avi` format.

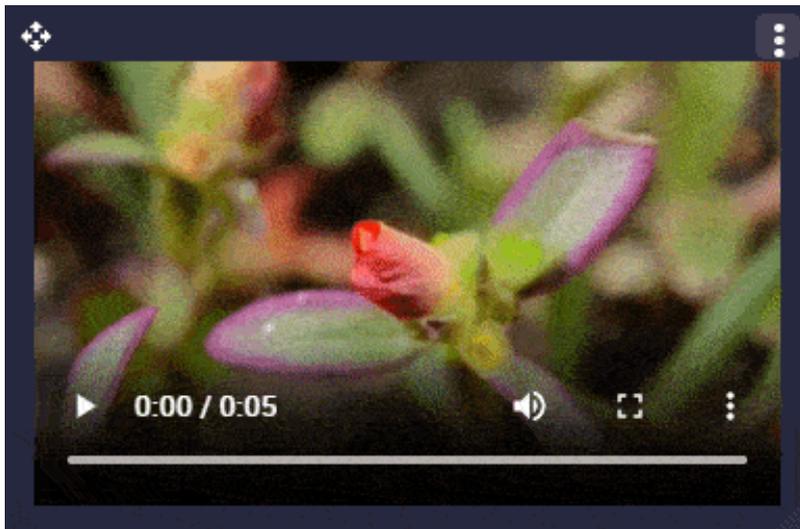
- **Autoplay:** The video plays automatically when the user enters its URL. By default it is enabled.
- **Muted:** The video can be muted/unmuted. By default it is enabled.
- **Controls:** Video controls can be added to the widget. Controls such as play/pause, mute/unmute, full screen, etc. By default it is disabled.



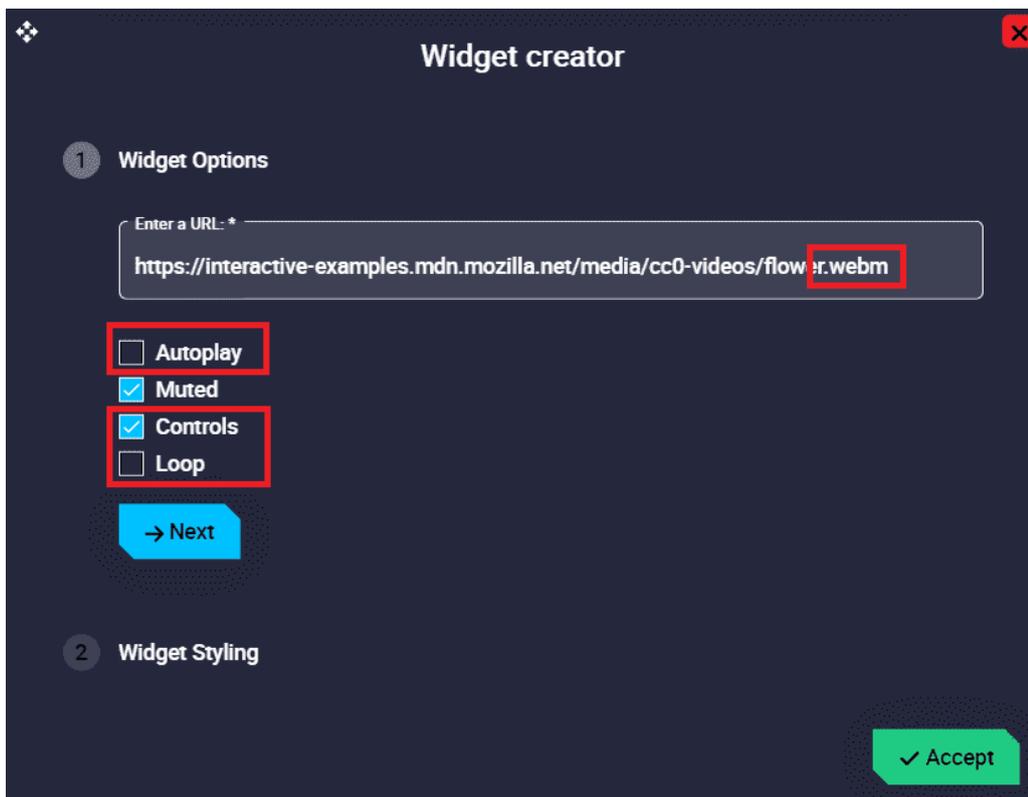
Video configuration - Controls

- **Loop:** Video plays continuously, like a gif. By default it is enabled.
- **Widget Styling:** This widget has the 'basic' Widget Styling configuration described in the [Widgets common configuration](#).

An example is given below:



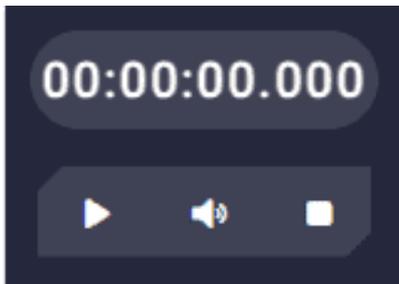
Video example



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.

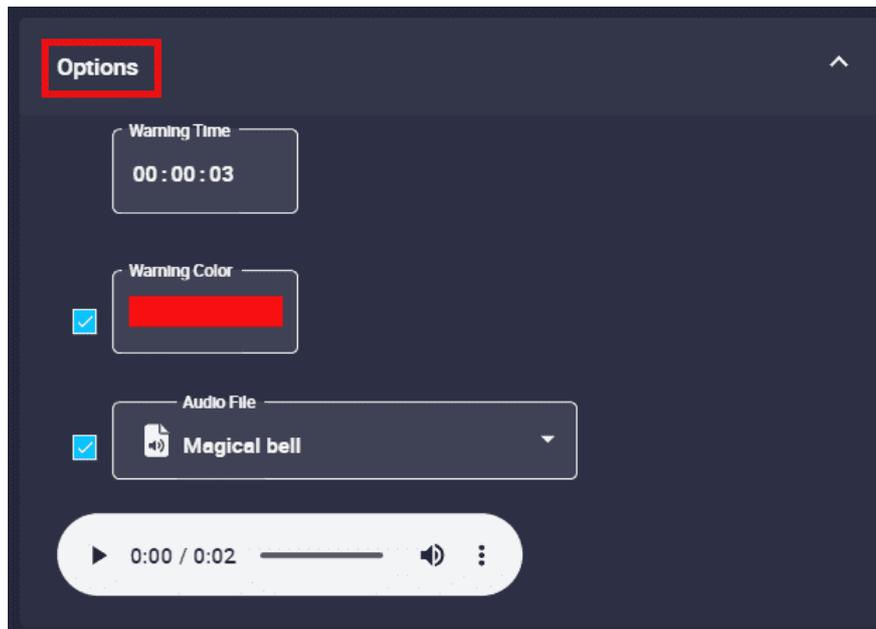
The screenshot shows the 'Widget creator' interface. The 'Widget Options' section is active, showing a 'Time' input field with '00:00:00', an 'Is countdown' checkbox (unchecked), and a 'Have milliseconds' checkbox (checked). There are also 'Options' and 'Alerts' dropdown menus. A '→ Next' button is visible, and an 'Accept' button is at the bottom right.

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.

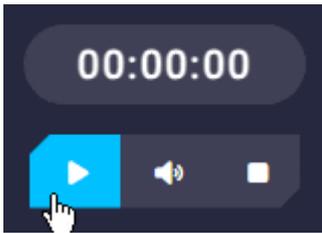
In other words, the audio will sound 1.5 times.

⚠ Important

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

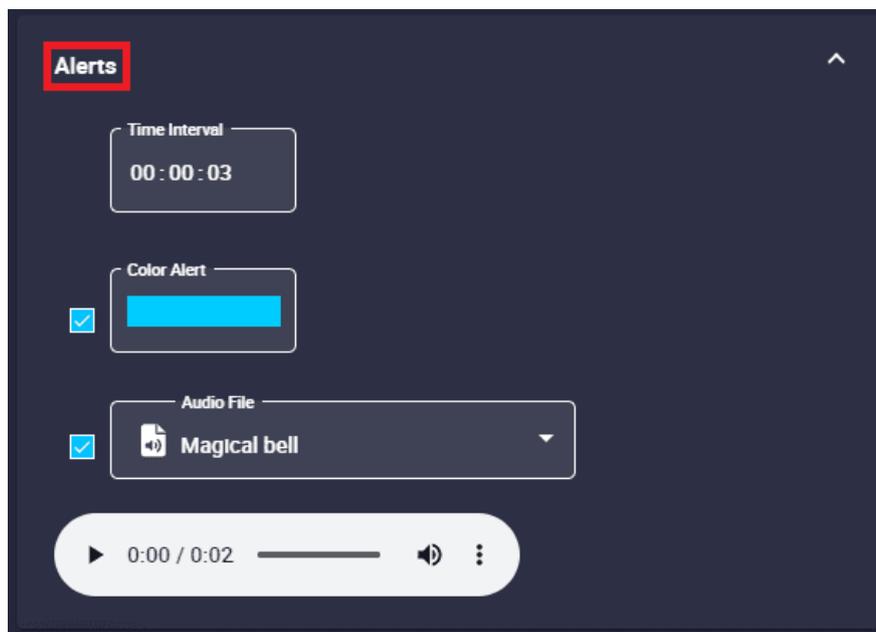
For example, if the timer is configured as a **countdown** with a time of 8 seconds and the warning time is set to 3 seconds, the widget will be

displayed with the color and/or sound defined here each of those final 3 seconds, i.e. from 3 to 0 seconds:



Timer - Countdown example

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



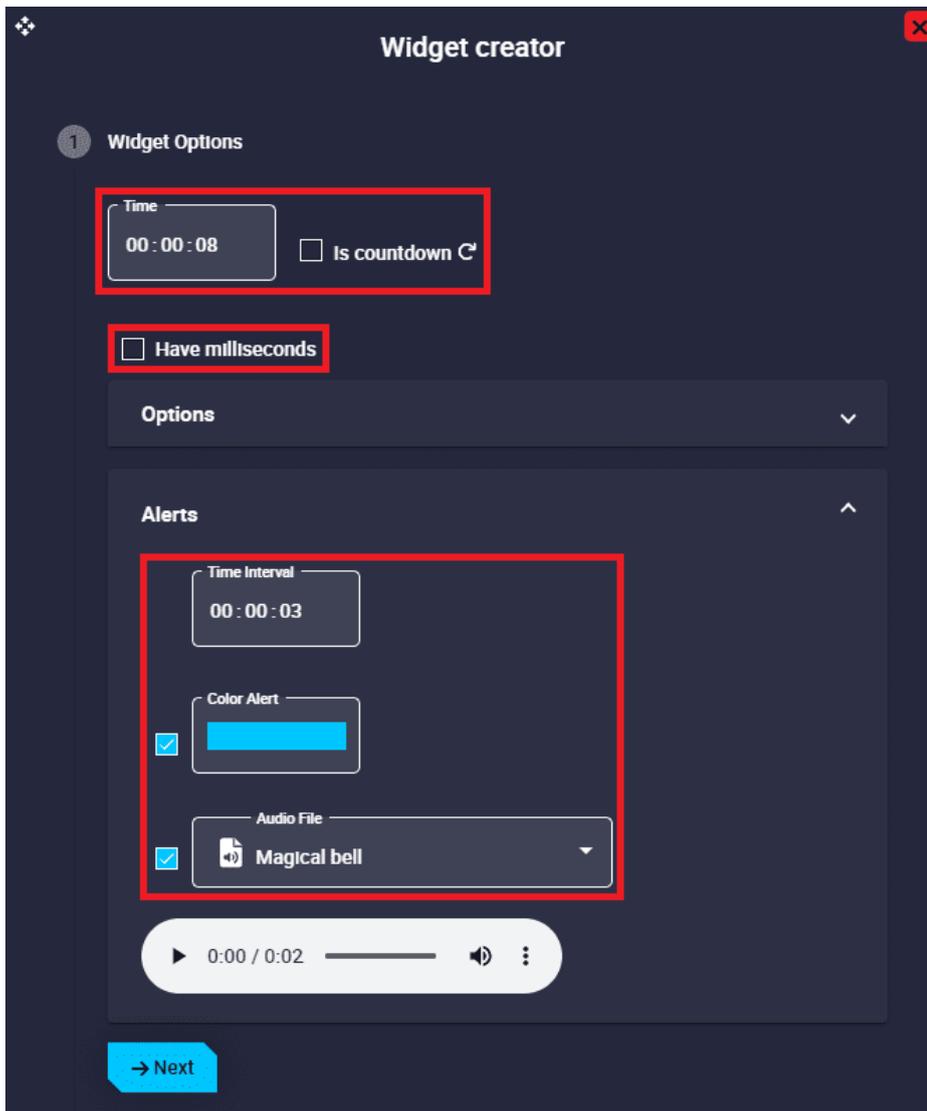
Timer configuration - Alerts

- **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.

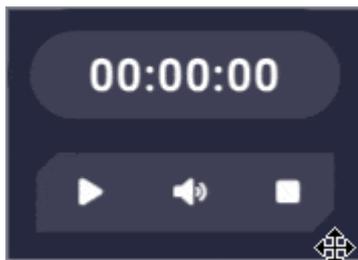
⚠ Important

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

An example is given below:



Timer - Alert example



Timer - Alert example

Inputs

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

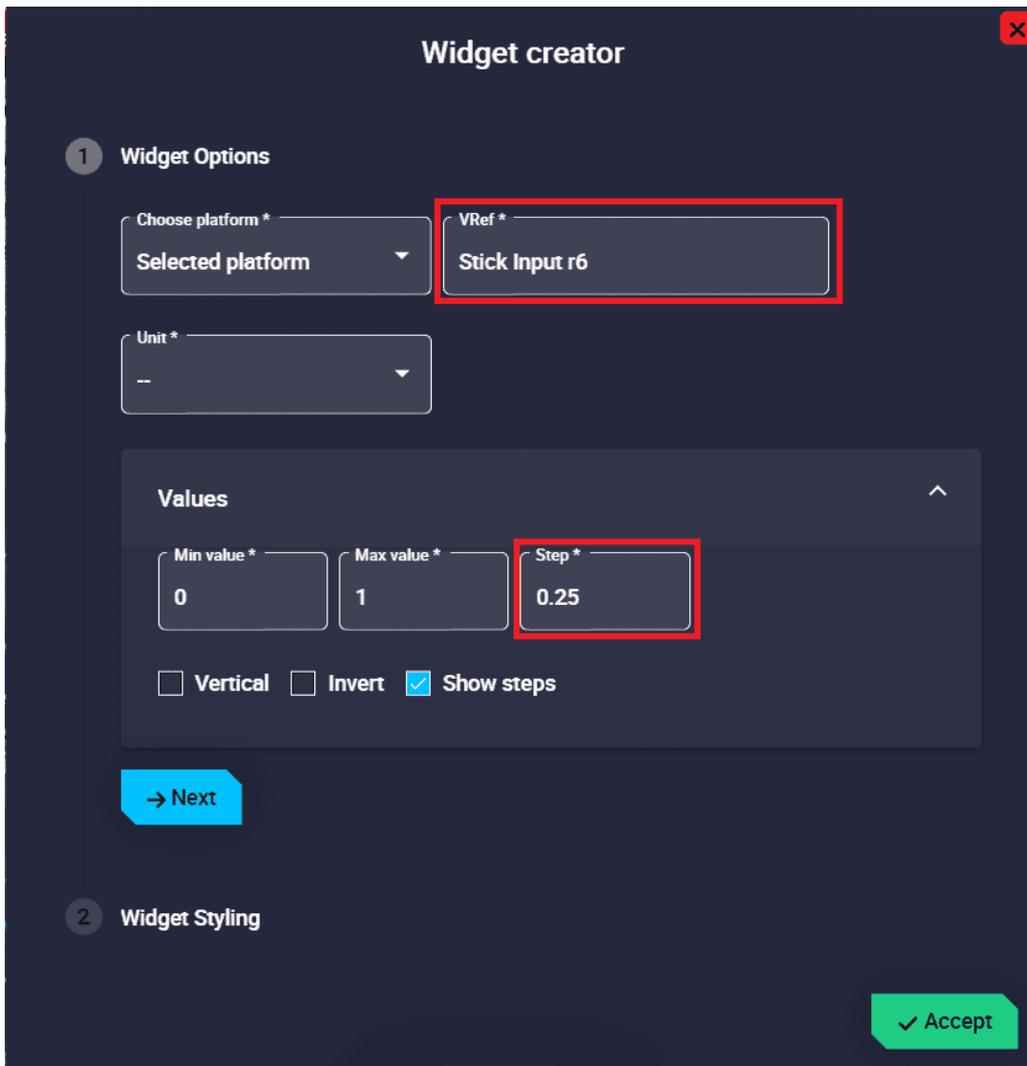
This parameter is only available with Real variables.

- **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



The screenshot shows the 'Widget creator' interface with a dark theme. It is divided into two main sections: '1 Widget Options' and '2 Widget Styling'. In the 'Widget Options' section, there is a 'Choose platform *' dropdown menu with 'Selected platform' selected. To its right is a 'VRef *' text input field containing 'Stick Input r6', which is highlighted with a red box. Below this is a 'Unit *' dropdown menu with '--' selected. A 'Values' section is expanded, showing 'Min value *' (0), 'Max value *' (1), and 'Step *' (0.25), with the 'Step *' field also highlighted by a red box. At the bottom of the 'Values' section are three checkboxes: 'Vertical' (unchecked), 'Invert' (unchecked), and 'Show steps' (checked). A blue '→ Next' button is located below the 'Values' section. In the 'Widget Styling' section, there is a green '✓ Accept' button.

Slider configuration example

Action Button

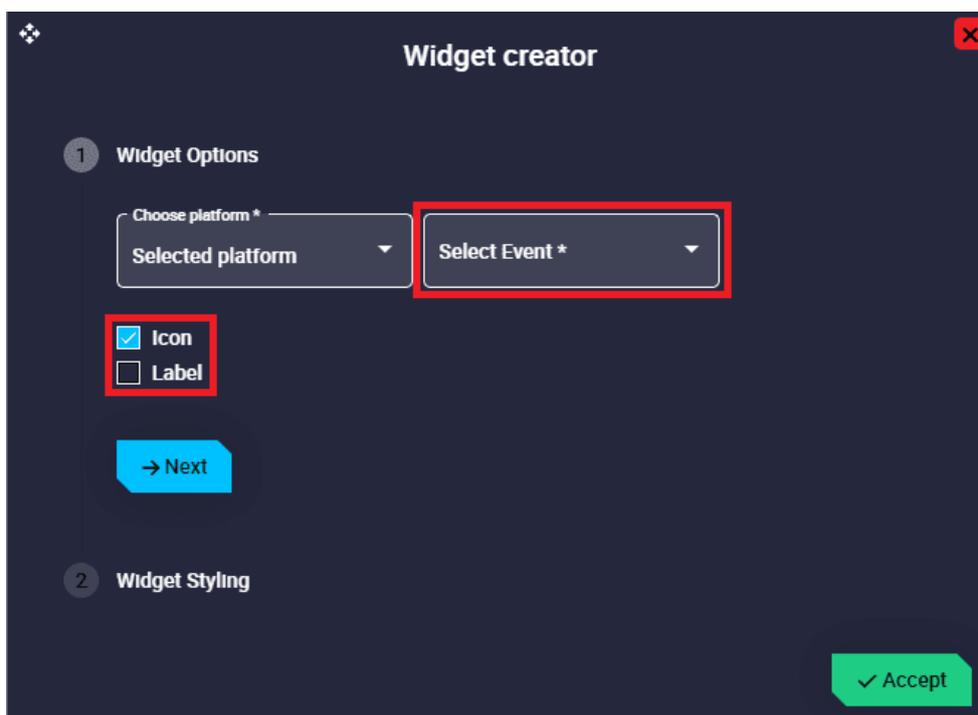
Action Button widgets can be added to the workspace **independently** and also be displayed all together embedded in the [Veronte Panel](#).



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.



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.

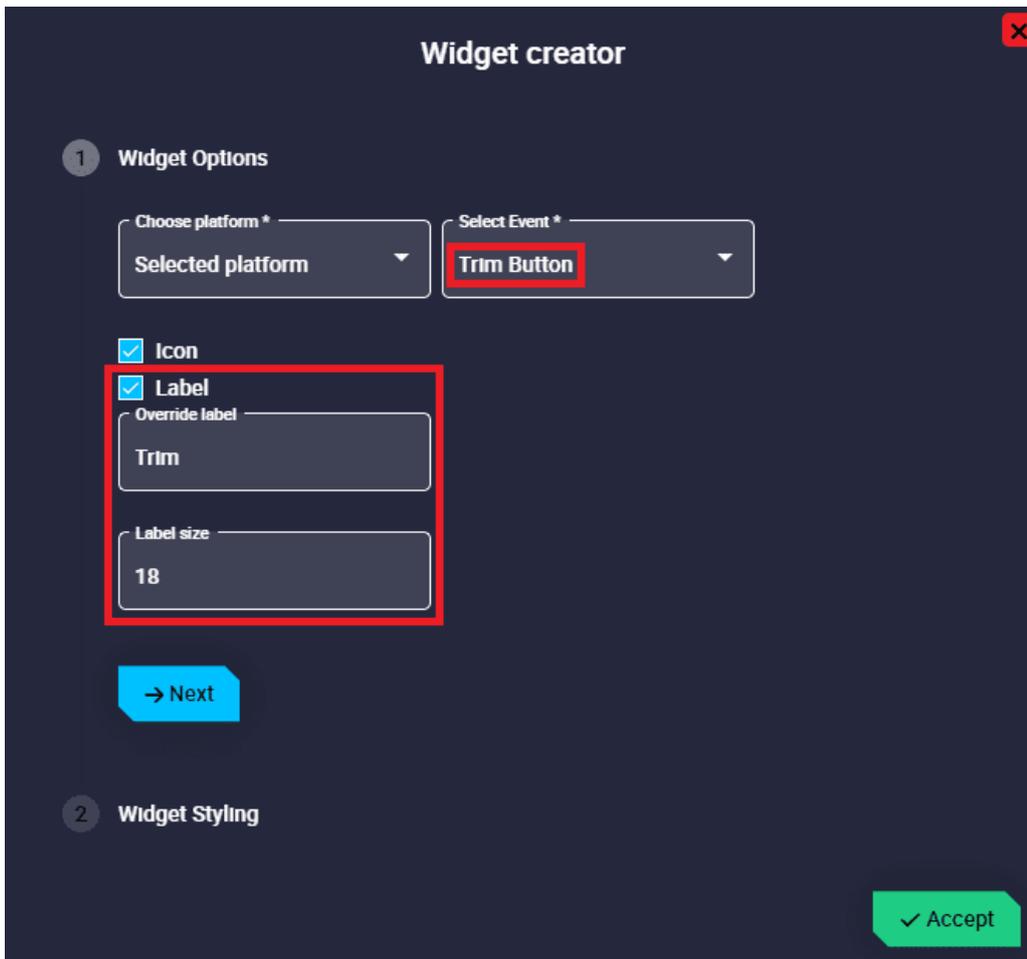


Action button - Time control of 3s

An example of the **configuration of an Action button** widget is given below:



Action Button example



Widget creator

1 **Widget Options**

Choose platform *
Selected platform

Select Event *
Trim Button

Icon

Label

Override label
Trim

Label size
18

→ Next

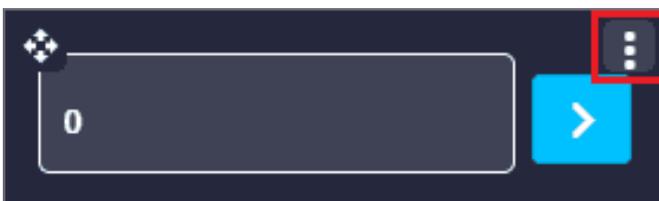
2 **Widget Styling**

✓ Accept

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](#).

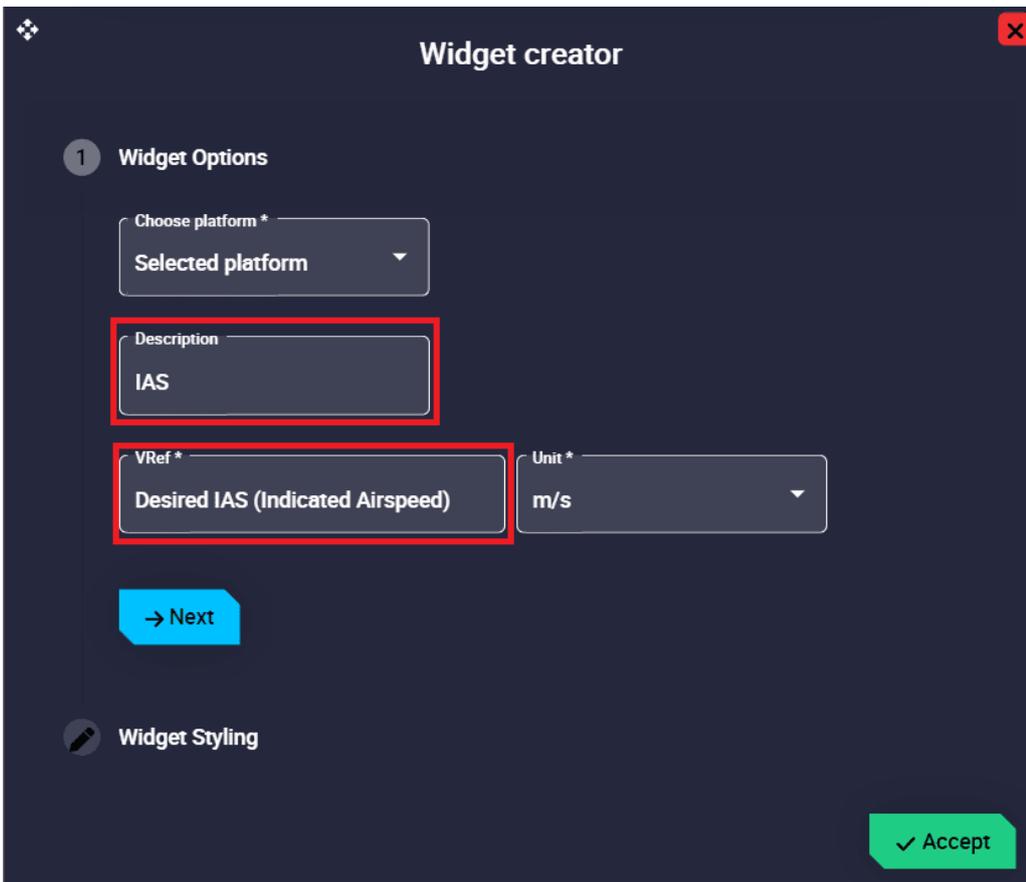
- **Description:** A description can be added to the widget by substituting the selected variable name.
- **VRef:** Users can choose any real, integer or bit variable to be displayed on the widget.
- **Unit:** Unit of measurement of the displayed variable.

Note

This parameter is only available with Real variables.

An example is given below:

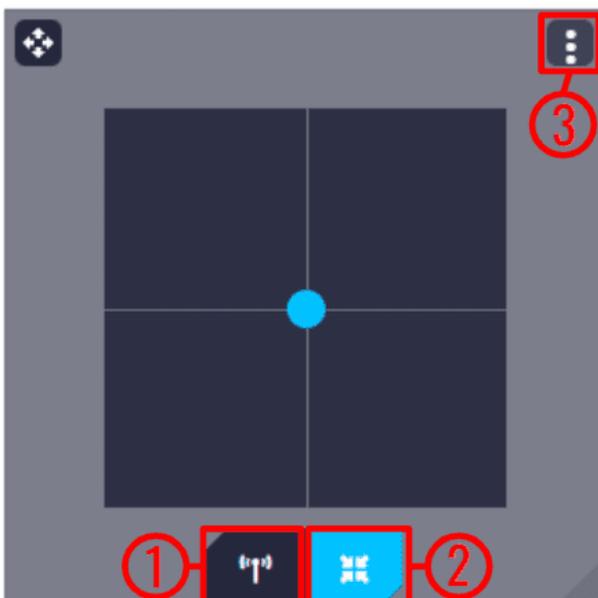
Input Data example



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.

Widget creator

1 Widget Options

Type PLATFORM

Choose platform * Selected platform

Port 0

Gamepad No gamepad

Direction All directions

Label

Axis X Channel X: 1 | Gamepad Axis X: 0

Axis Y Channel Y: 2 | Gamepad Axis Y: 1

Test stick Automatic: Disable | Multiplier: x1

→ Next

2 Widget Styling

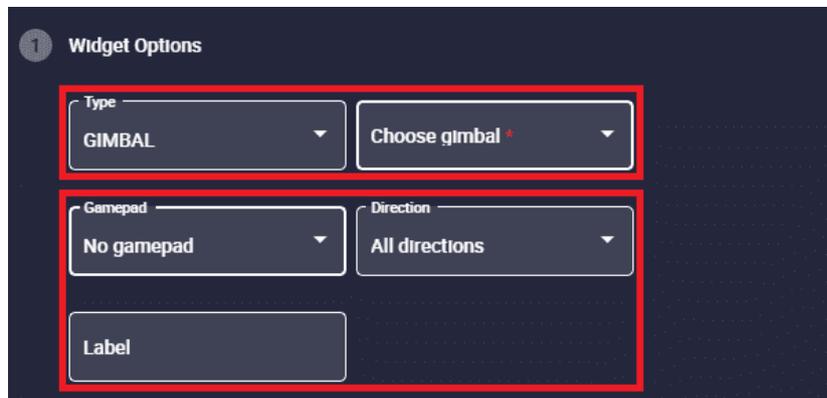
✓ Accept

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.



Stick configuration - Gimbal type

- **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:** 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.

⚠ Important

This parameter is **only available** when **PLATFORM** type is selected.

- **Gamepad:** Users must select a desired gamepad from the list for which the widget is configured.

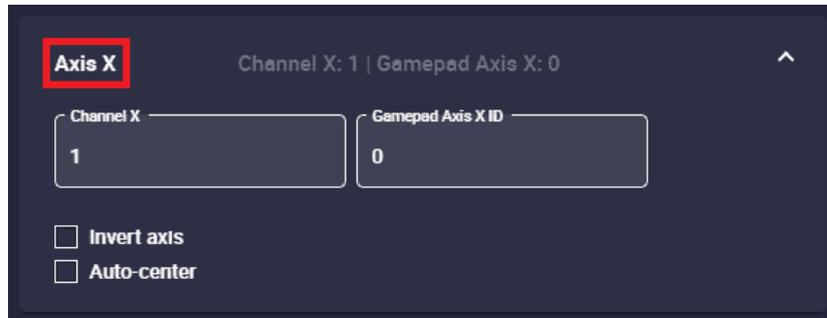
⚠ Important

If no physical gamepad (via USB) is connected to the PC, No gamepad option will be selected.

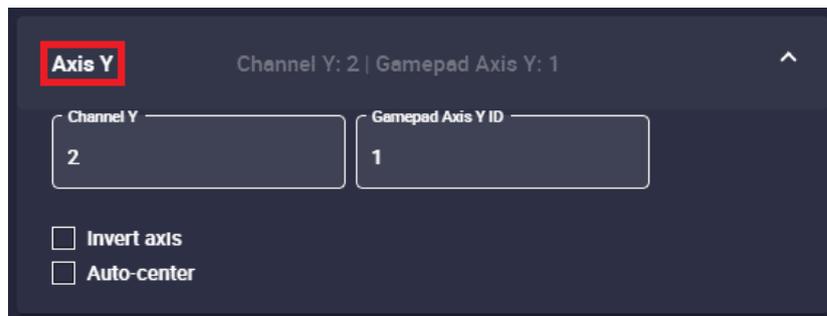
- **Direction:** The user has to configure the directions in which the stick can be moved, the available options are All directions,

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:** Select which channel is controlled by each axis. By default, channel 1 is configured for the X axis and channel 2 for the Y axis.
- **Gamepad Axis X/Y ID:** Correlation of the physical gamepad axis IDs with those of the virtual stick.

Important

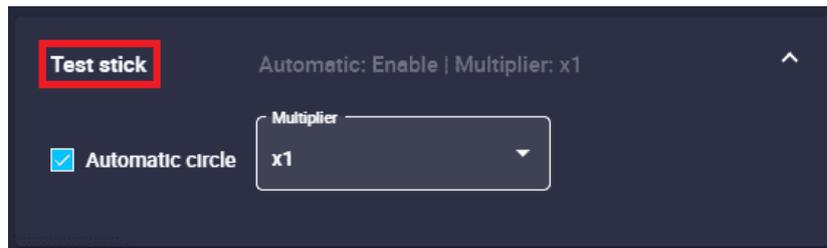
If no physical gamepad (via USB) is connected, this parameter has no effect on the widget. It can be left at the default value.

- **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.

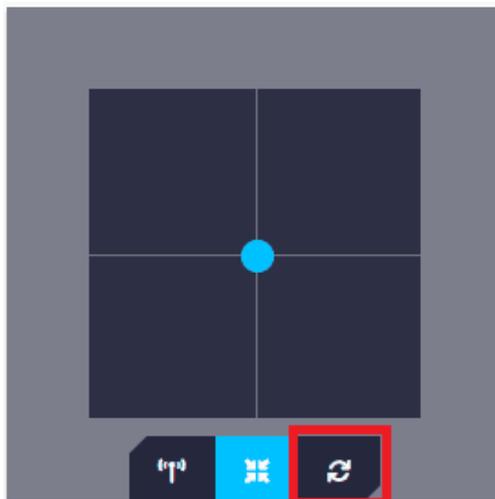
- **Auto-center:** When activated, the stick automatically returns to the center position when released.
- **Test stick:** This option is used to generate stick inputs that are introduced in the system. This is a way to check how the system behaves when a stick command enters the autopilot.



Stick configuration - Test stick

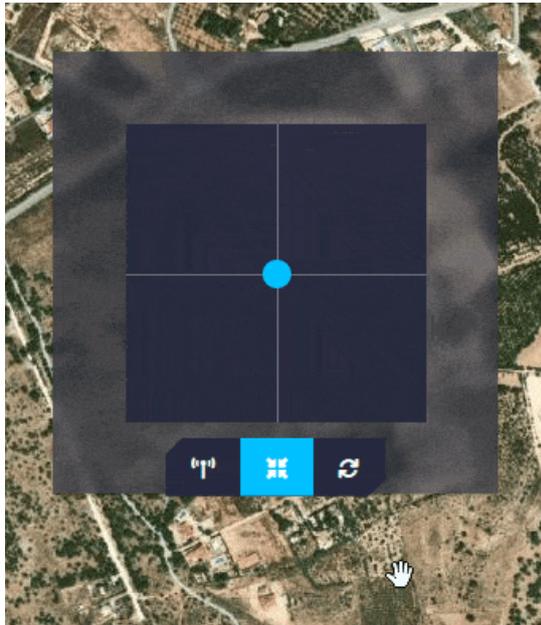
- **Automatic circle:** An automatic circle test is activated.
- **Multiplier:** The speed of the test can be adjusted. Available options are: x1, x2, x4, x8 and x16.

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.

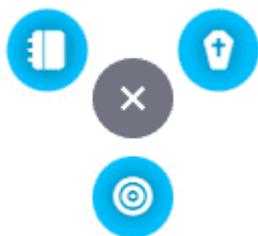
Dial Button

Dial Button widget groups different [action buttons](#) into a single 'drop-down' button.



Dial Button

When clicked, the action buttons will appear/disappear.

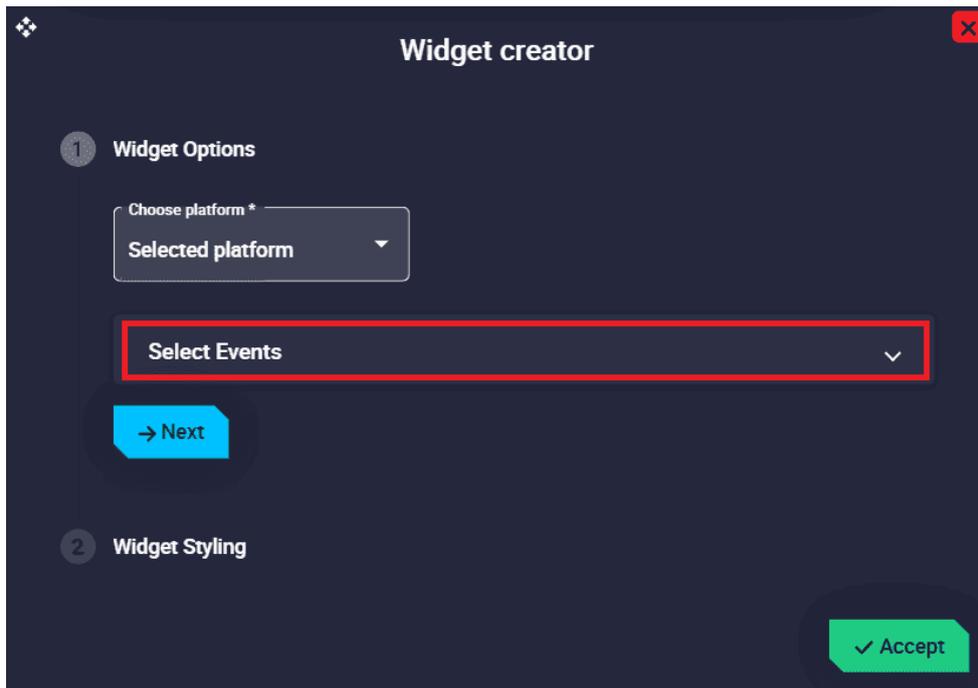


Dial Button - Action buttons

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.

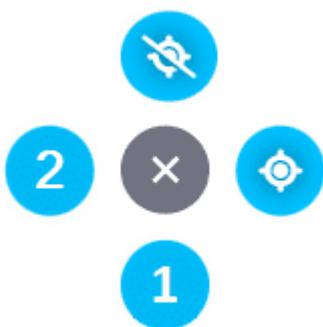
This widget has only **one extra edit parameter** compared to the ones described in [Widgets common configuration](#):



Dial Button configuration

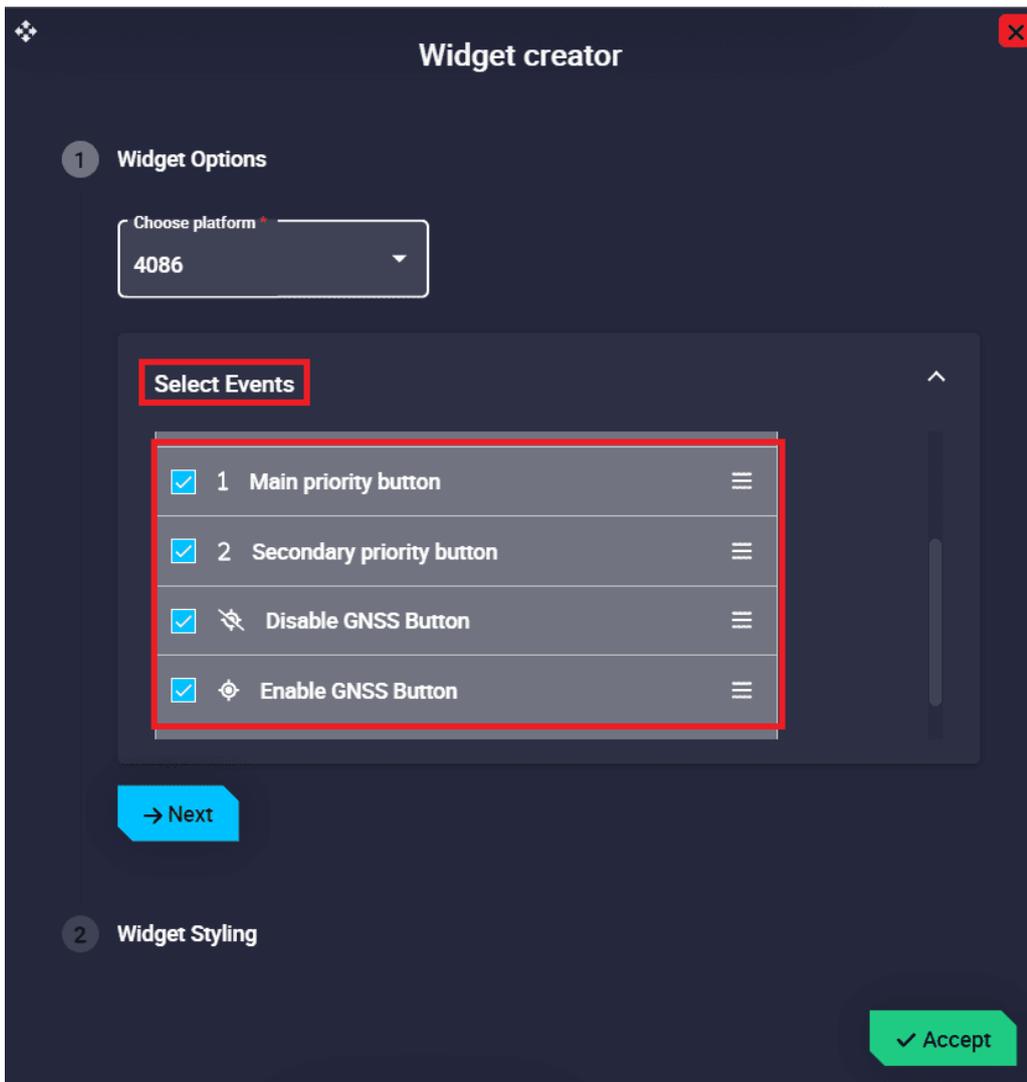
- **Widget Options** → **Select Events**: Select the desired button events that will be displayed as action buttons on the Dial Button. These events must be previously configured as [automations](#) in the **1x PDI Builder** software.

An example is given below:



Dial Button example

These action buttons can be ordered in the configuration:



Dial Button configuration example

Gimbal Buttons

Gimbal Buttons widget groups different control buttons of the selected gimbal into a single 'drop-down' button.

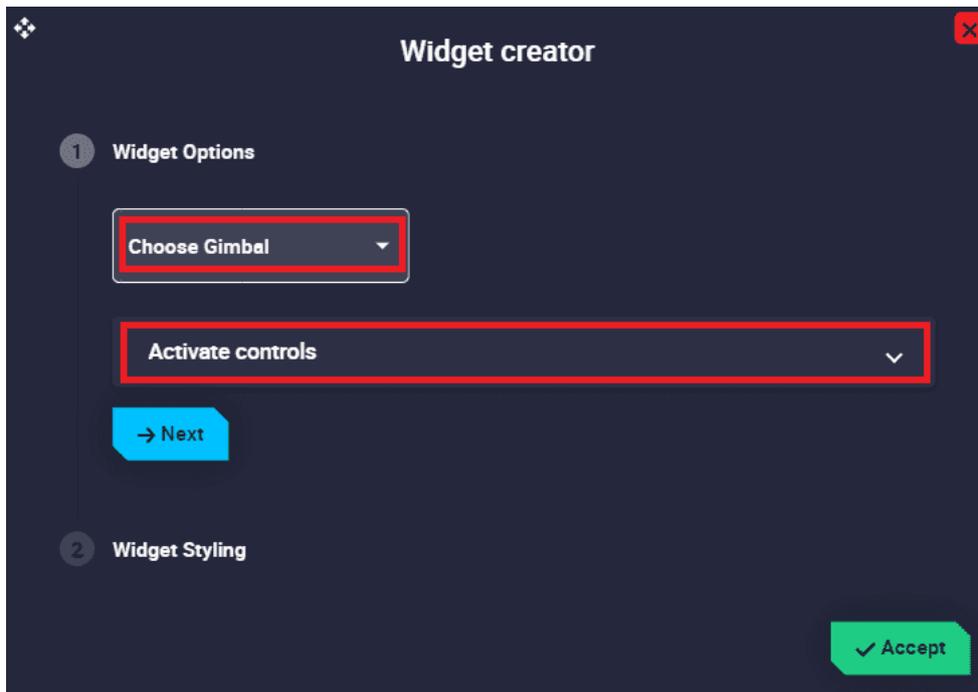


Gimbal Buttons

When clicked, the control buttons will appear/disappear.

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

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



Gimbal Buttons configuration

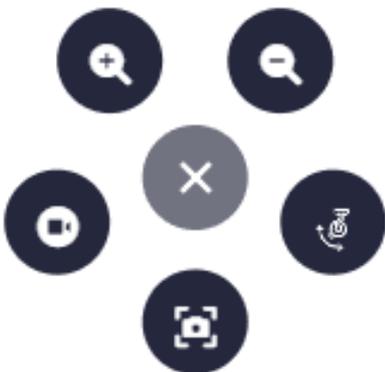
- **Widget Options:**

- **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

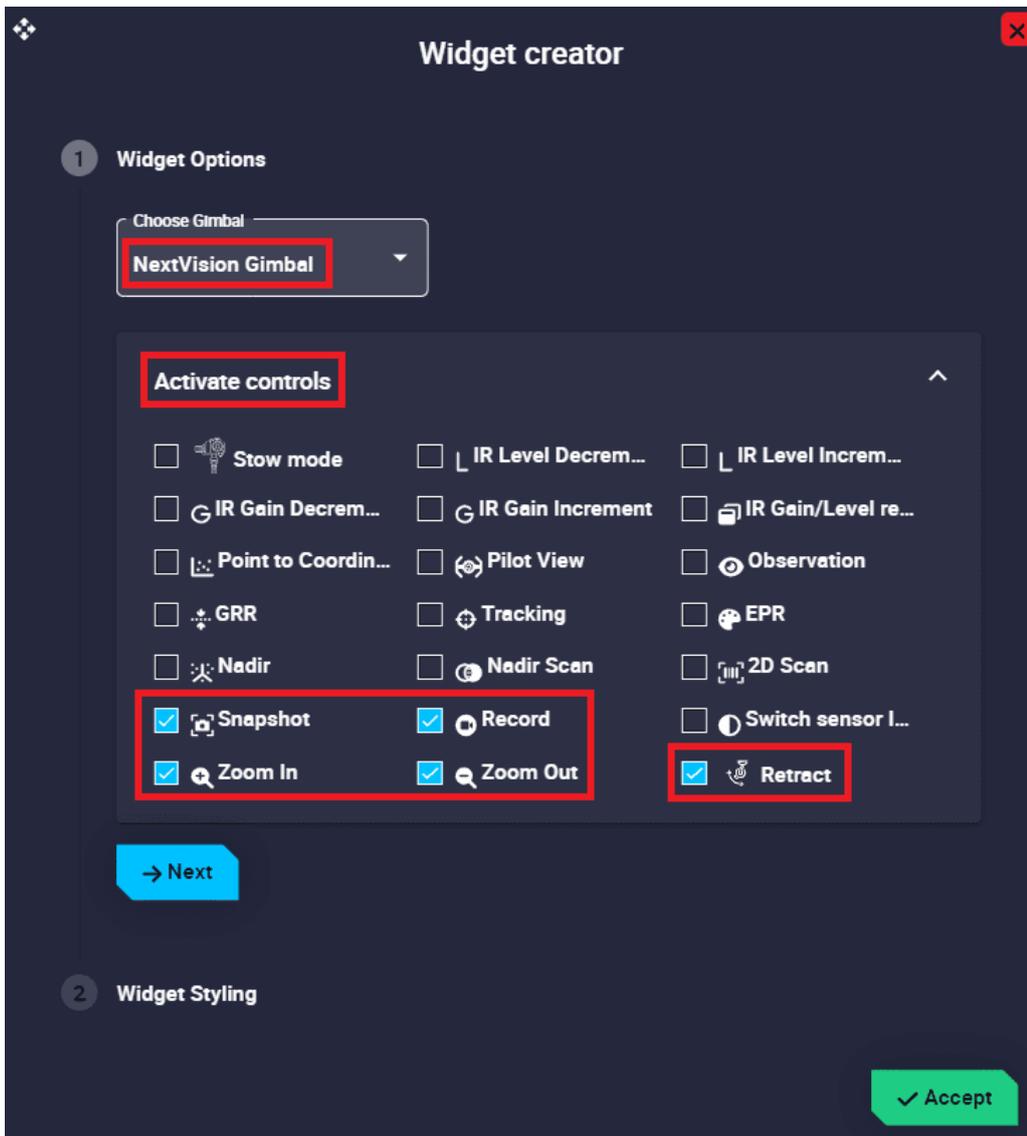
The controls shown here depend on the selected gimbal, each gimbal has its own control buttons.

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

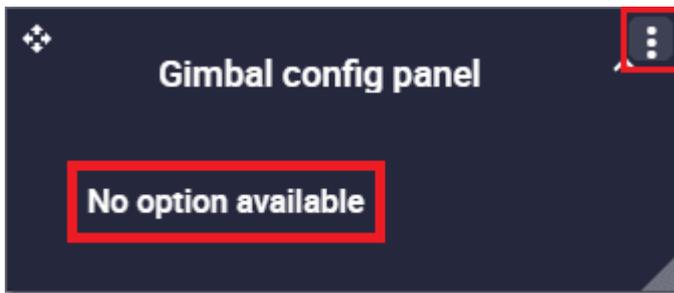
Gimbal Setup

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:



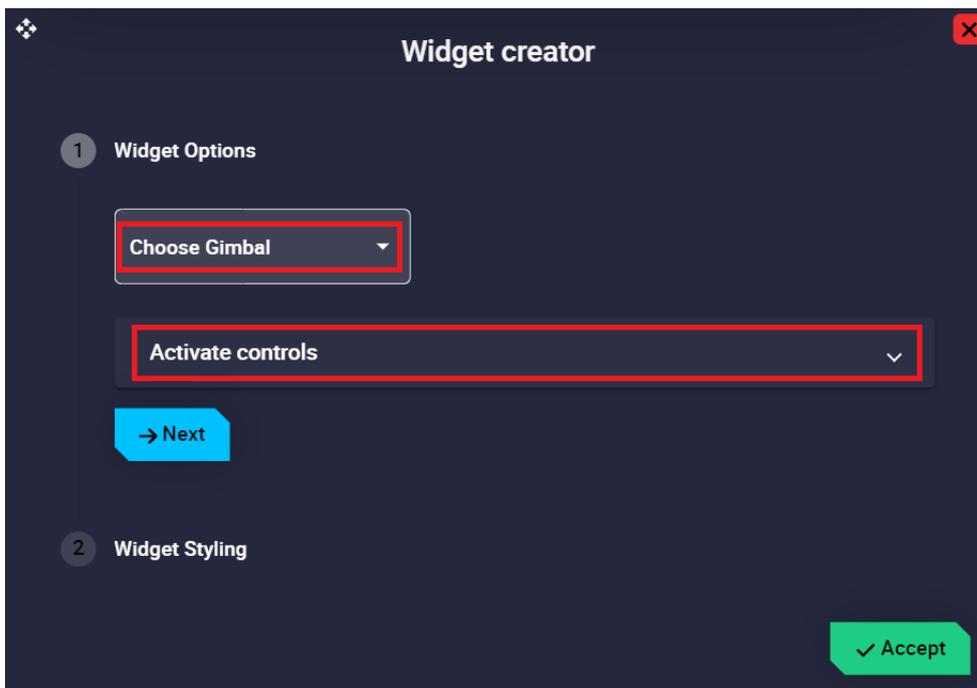
Gimbal Setup deployed

i 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.



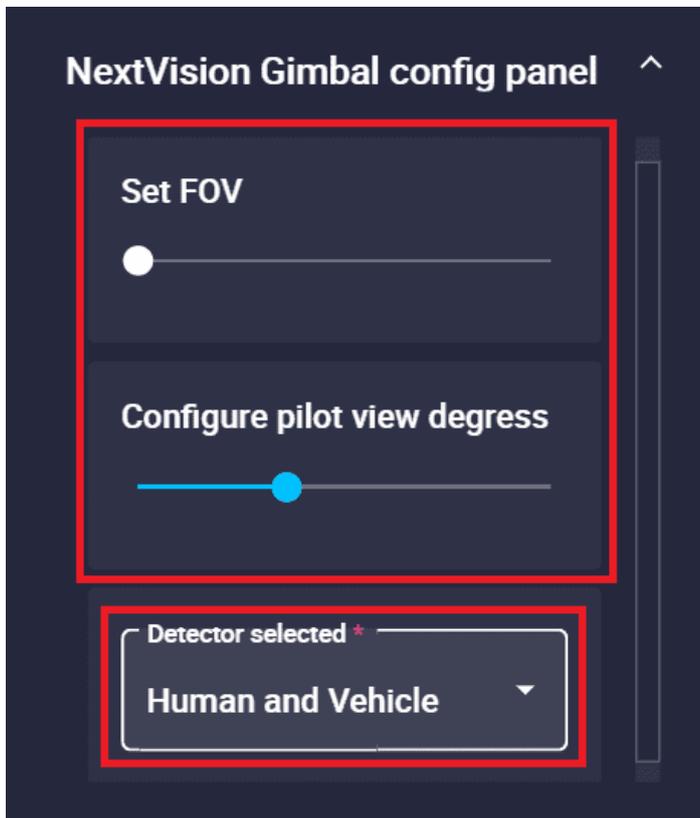
Gimbal Setup

- **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.

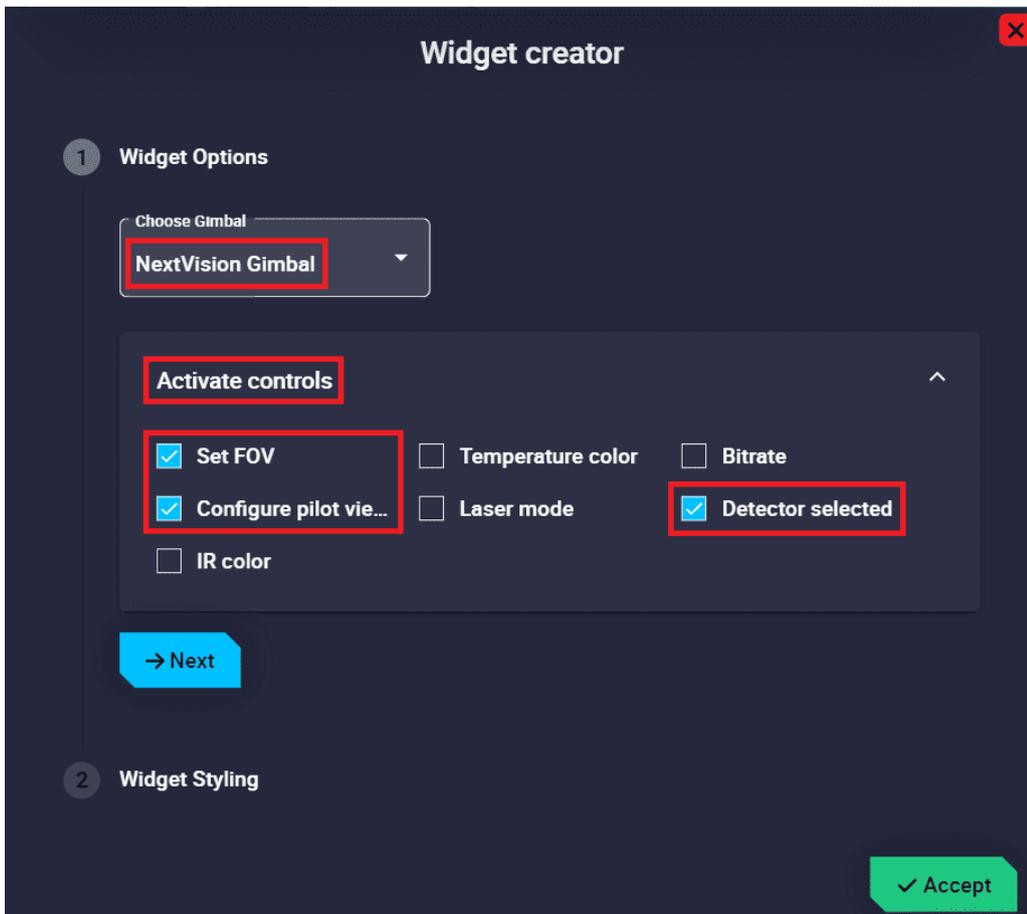
Important

The controls shown here depend on the selected gimbal, each gimbal has its own controls.

Below is an example with the **NextVision gimbal**:

**Gimbal Setup example**

These controls can be activated/deactivated in the configuration:



Gimbal Setup configuration example

As can be seen in the example above, these controls can be in form of sliders, drop-down menus, etc.

Important

This will also depend on the pre-configured controls for each gimbal model.

Knob

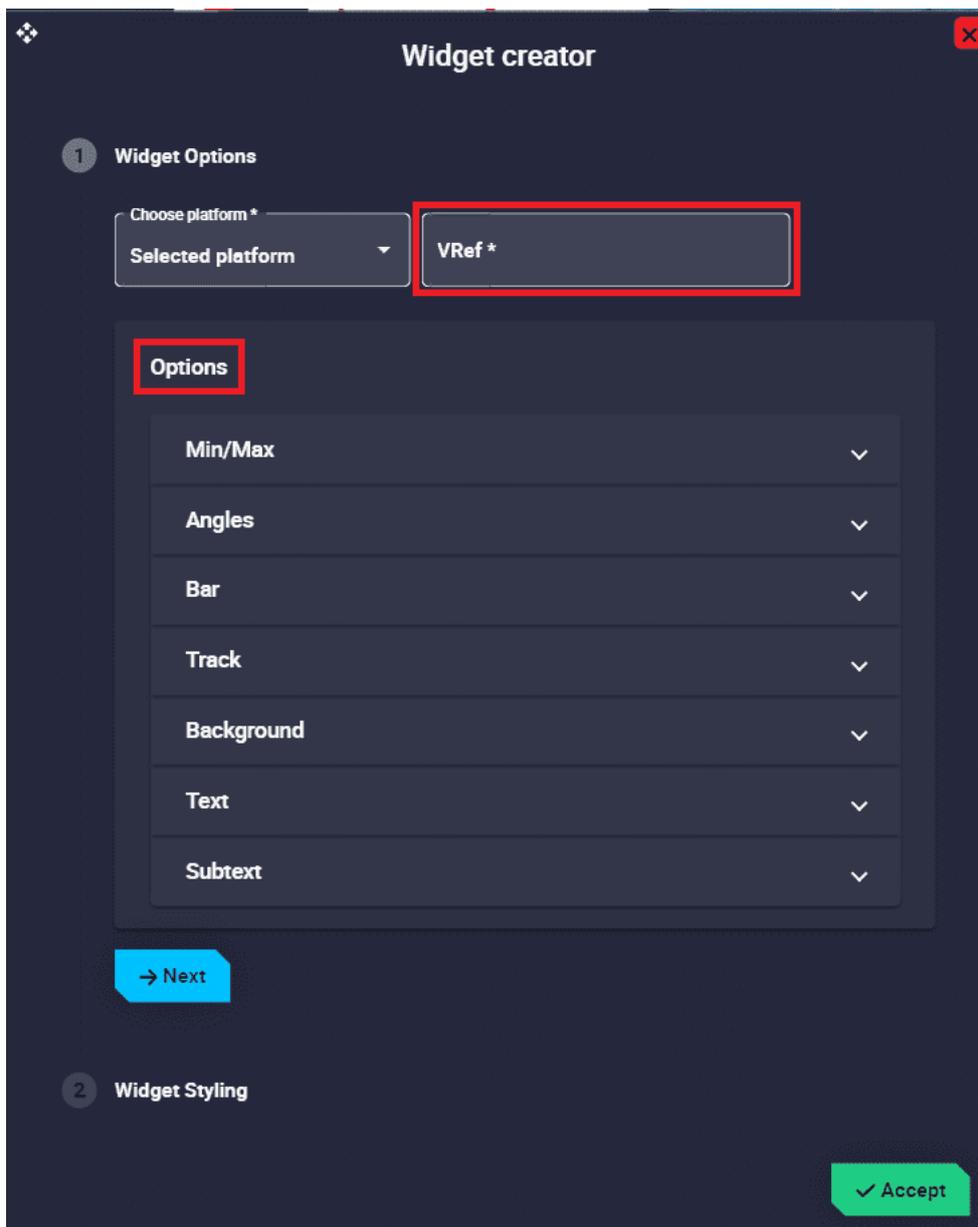
Knob widget is similar to the [slider widget](#) but in circular format. It also allows the user to choose a certain variable and change its value by simply moving the circular bar to the desired value from the workspace during a flight.



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.

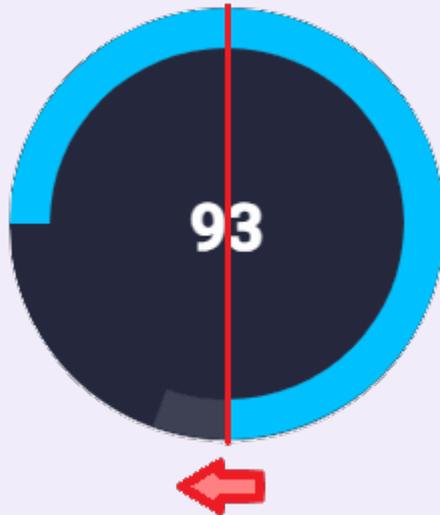
Note

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

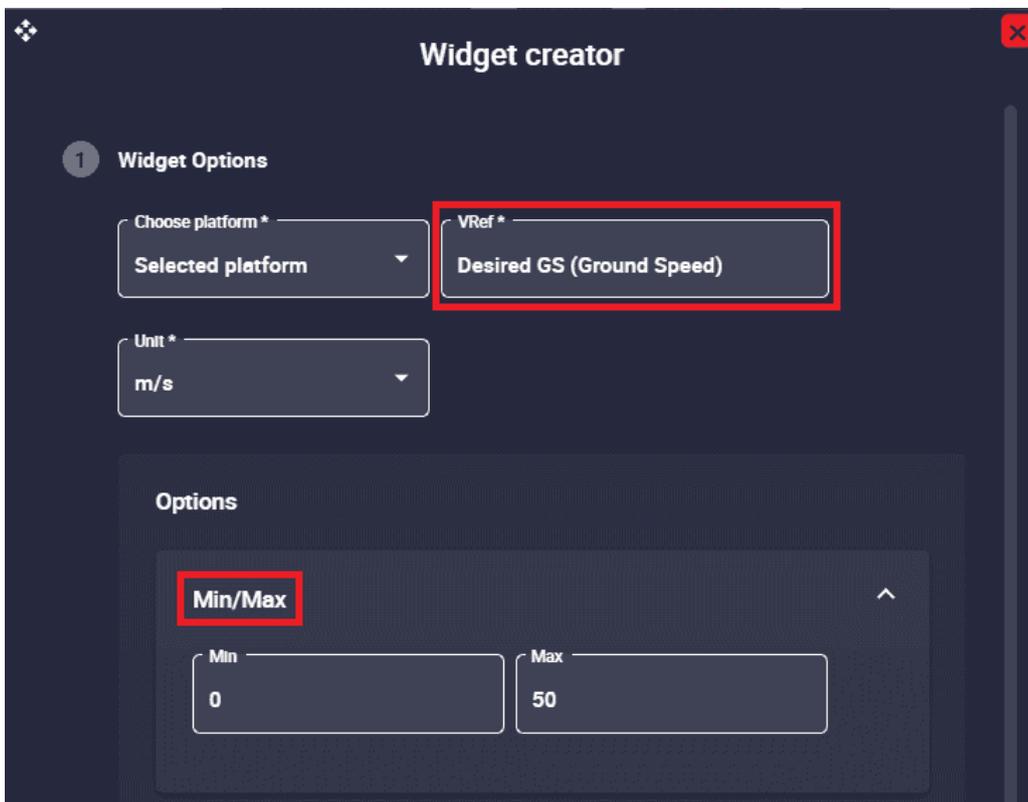
- **Text:** This text refers to the value of the selected variable displayed in the knob.
 - **Display:** If enabled, displays on the knob the value of the selected variable. By default it is enabled.
 - **Size:** The size of the text value can be modified. Default is 32.
 - **Weight:** The weight of 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 and Min/Max option

The image shows a configuration interface for knob settings, divided into two sections: 'Angles' and 'Bar'. Both section titles are highlighted with red boxes. The 'Angles' section contains two input fields: 'Start' with the value '-90' and 'End' with the value '90'. The 'Bar' section contains several options: 'Cap' set to '10', 'Width' set to '20', 'Step' set to '1', and 'Color' set to a bright blue color. Below these is a checked checkbox labeled 'Display previous bar' with a 'Color' field set to a bright yellow color. Each input field is a rounded rectangle with a white border and a dark background.

Knob configuration example - Angles and Bar options

The image shows a configuration interface with two sections: 'Track' and 'Background'. The 'Track' section is highlighted with a red box and contains three input fields: 'Track cap' with the value '0', 'Track width' with the value '20', and 'Color' with a white color swatch. The 'Background' section is also highlighted with a red box and contains a 'Color' input with a teal color swatch and a checked checkbox labeled 'Full'.

Knob configuration example - Track and Background options

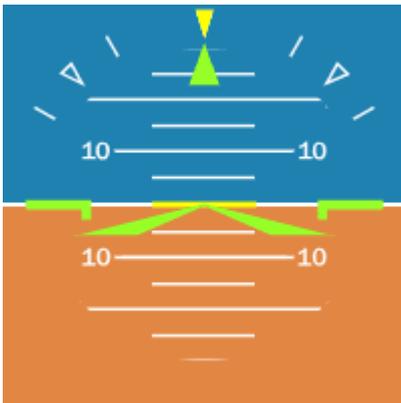
The image shows a configuration panel with two sections: 'Text' and 'Subtext'. Both sections have a 'Display' checkbox checked. The 'Text' section includes a 'Size' input field with the value '34', a 'Weight' dropdown menu with the value '700', and a 'Color' input field with a blue color swatch. The 'Subtext' section includes an 'Offset' input field with the value '10', a 'Size' input field with the value '15', a 'Weight' dropdown menu with the value '200', and a 'Color' input field with a light gray color swatch.

Knob configuration example - Text and Subtext options

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.

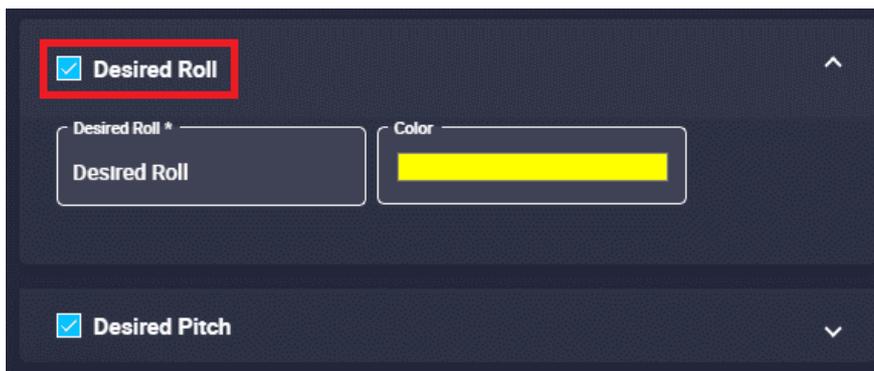
Attitude configuration

- **Widget Options:**

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

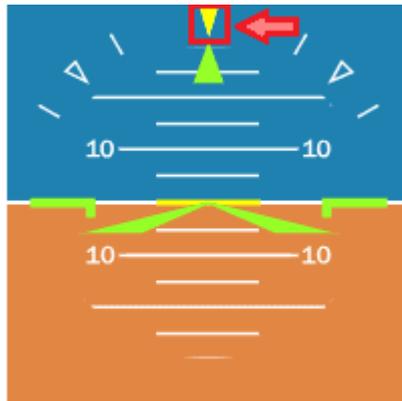
- **Roll:** Users can choose a variable from the **real angular variables** of the system to be displayed as **the roll of the widget**.
By default, the variable Roll is displayed.
- **Pitch:** Users can choose a variable from the **real angular variables** of the system to be displayed as **the pitch of the widget**.
By default, the variable Pitch is displayed.
- **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

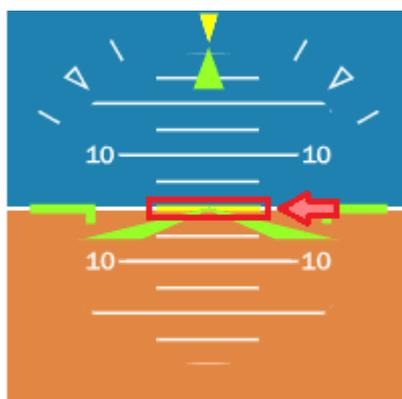
- **Desired Pitch:** By activating/deactivating this parameter, it is possible to show/hide the desired pitch together with the pitch in the attitude widget.

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

- **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 only **one extra edit parameter** compared to the ones described in [Widgets common configuration](#):

Heading configuration

- **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.

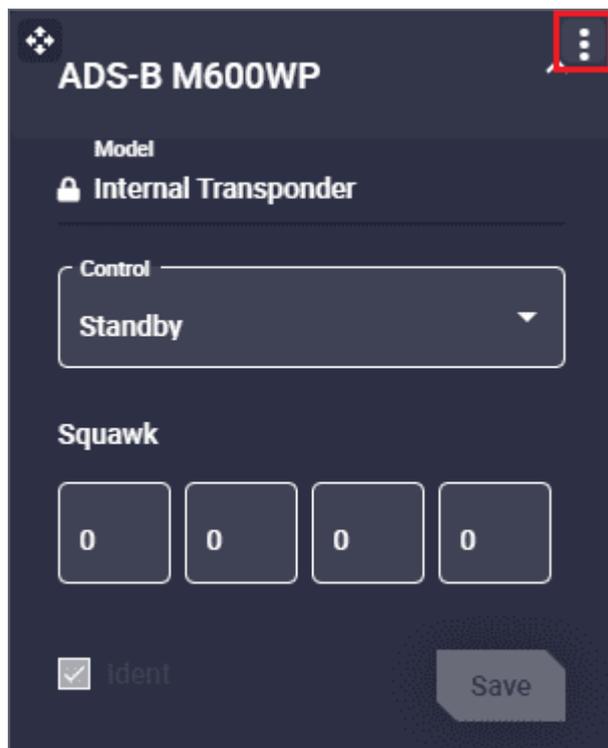
ADS-B

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**).

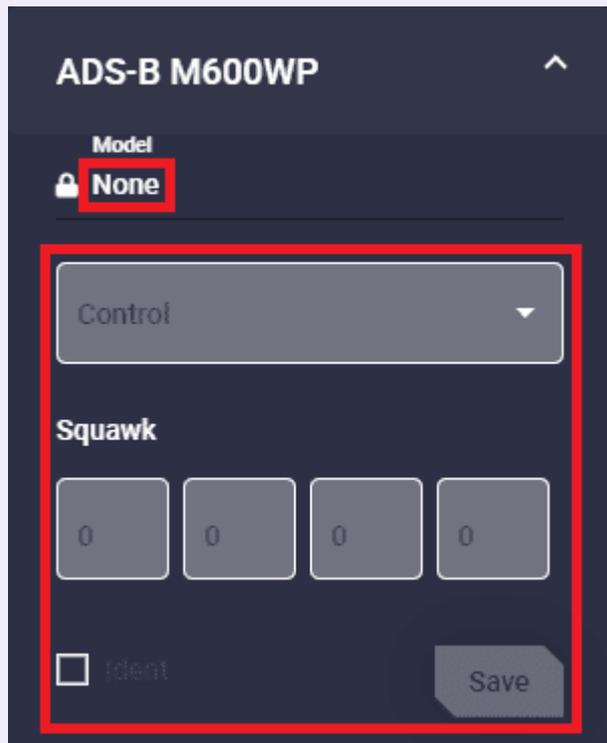
- **Options:**
 - **Duplicate**: Duplicates this widget.
 - **Edit**: This allows the user to access the ADS-B configuration menu.

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.



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**

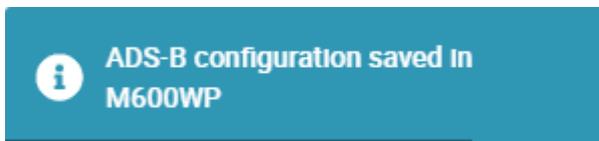
This parameter may be configured depending on the ADS-B Model.

- **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.

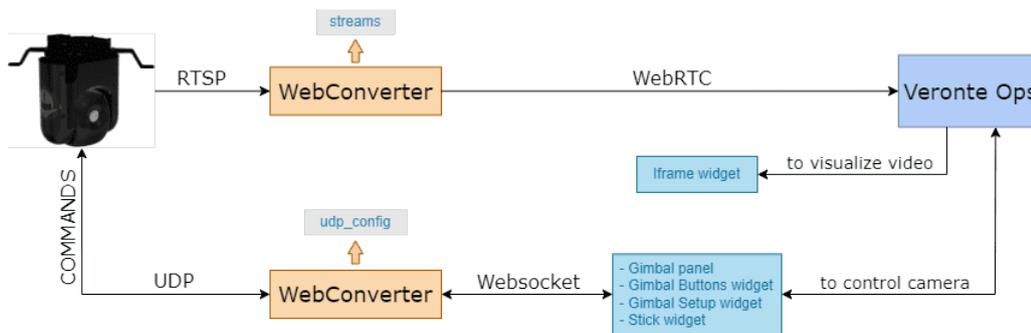
- **Save:** After modifying any parameter, press here to save the changes into the configuration. The following message will appear:

**ADS-B configuration - Save message**

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.

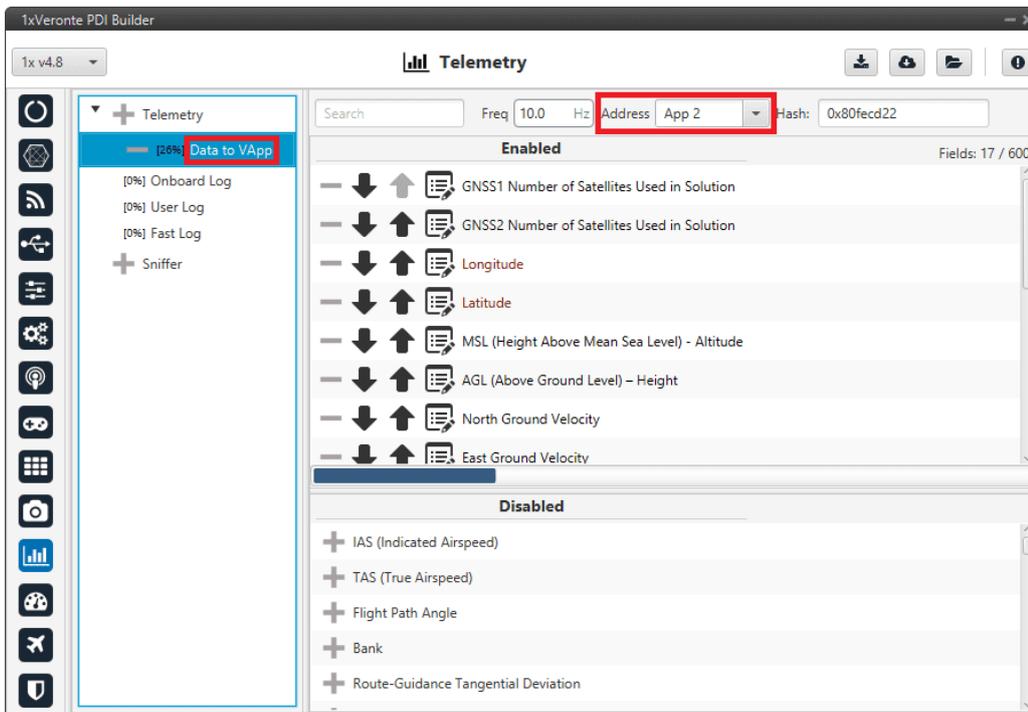
Furthermore, it is necessary to configure the following variables in the telemetry vector of the **Autopilot 1x** in order to establish a correct

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

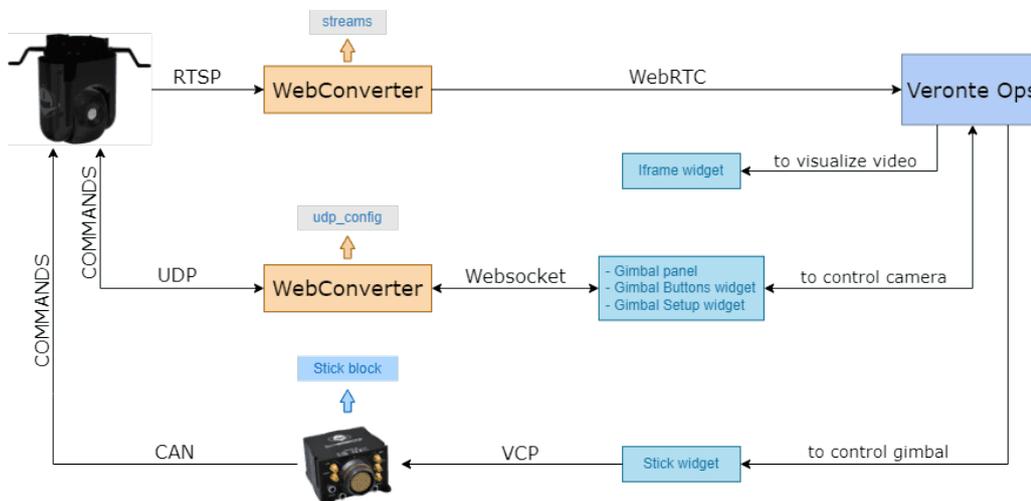
The **Data to Vapp** telemetry vector in the **Autopilot 1x** configuration (using **1x PDI Builder** software) should look like this:



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**:



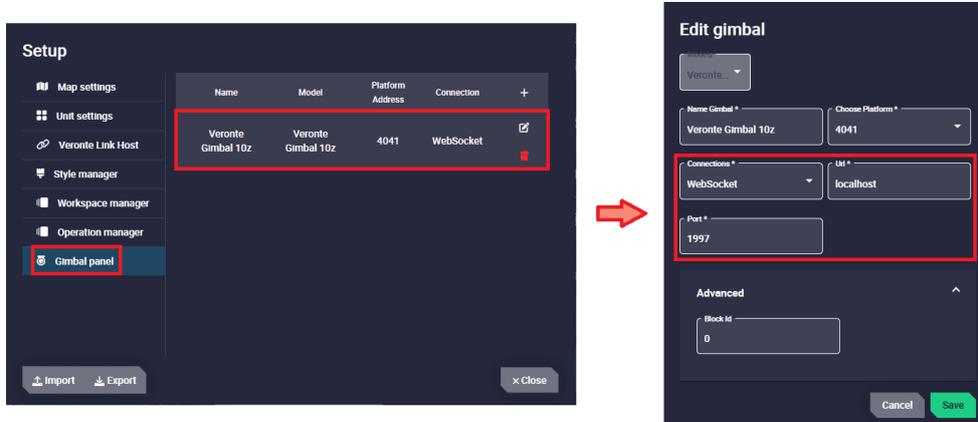
Veronte Gimbal connection diagram

Note

The configuration described in this section covers how to set up and control a **Veronte Gimbal** with **Veronte Ops**.

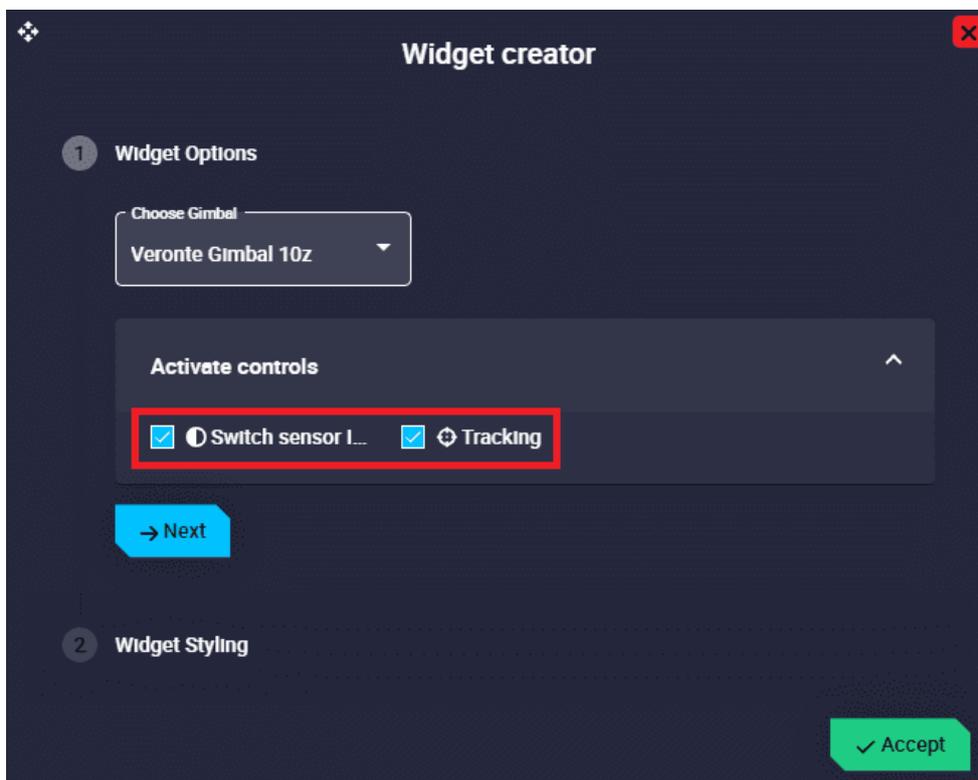
To configure and control a **Veronte Gimbal** from **Veronte Ops**, the following must be considered:

- The gimbal must be configured in the [Gimbal panel](#). If the user has a Veronte Gimbal 10z, the configuration should look like this:



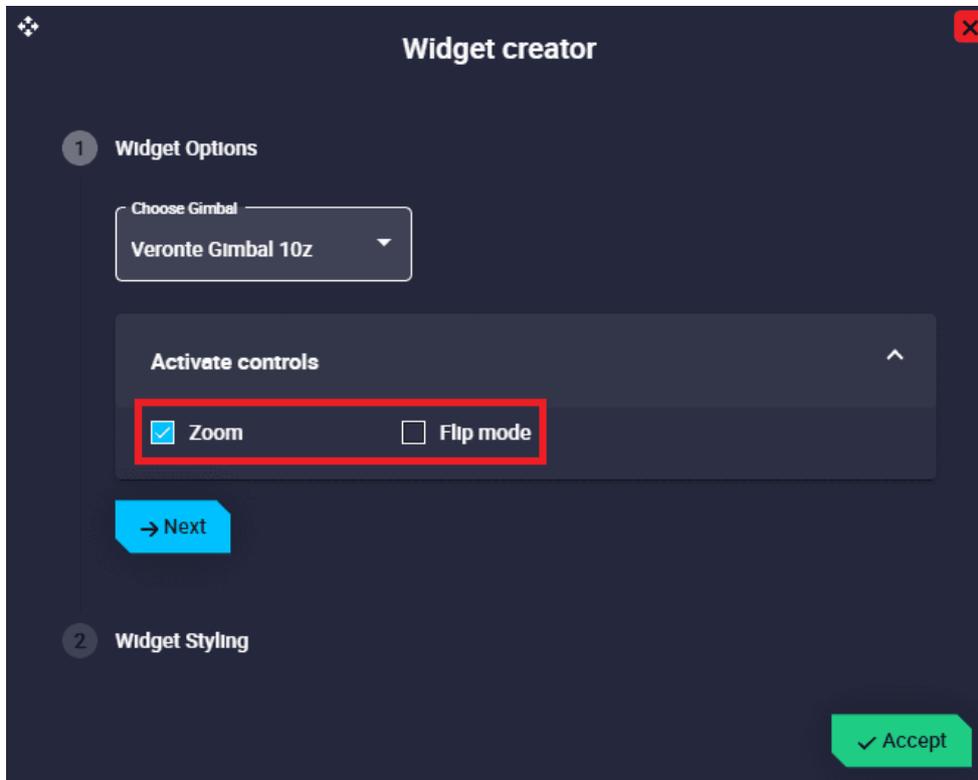
Veronte Gimbal configuration - Gimbal panel

- **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:



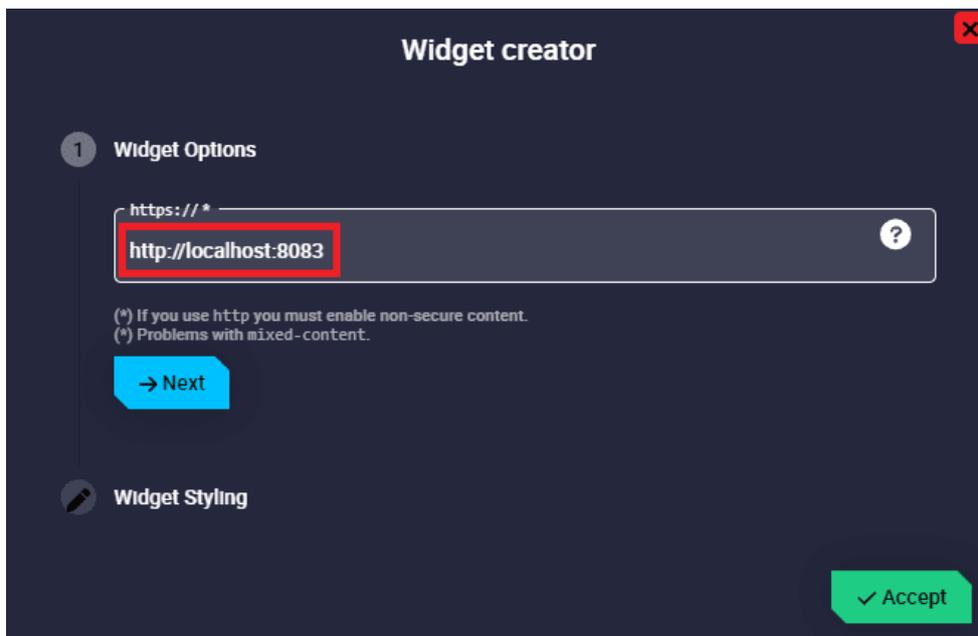
Veronte Gimbal configuration - Gimbal Buttons widget

- **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:



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:

Widget creator

1 **Widget Options**

Type: PLATFORM

Choose platform *: Selected platform

Port: 0

Gamepad

Direction: All directions

Label: Veronte Gimbal 10z

Axis X: Channel X: 0 | Gamepad Axis X: 0 | Auto-center

Axis Y: Channel Y: 1 | Gamepad Axis Y: 1 | Auto-center

Test stick: Automatic: Disable | Multiplier: x1

→ Next

2 **Widget Styling**

✓ Accept

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.

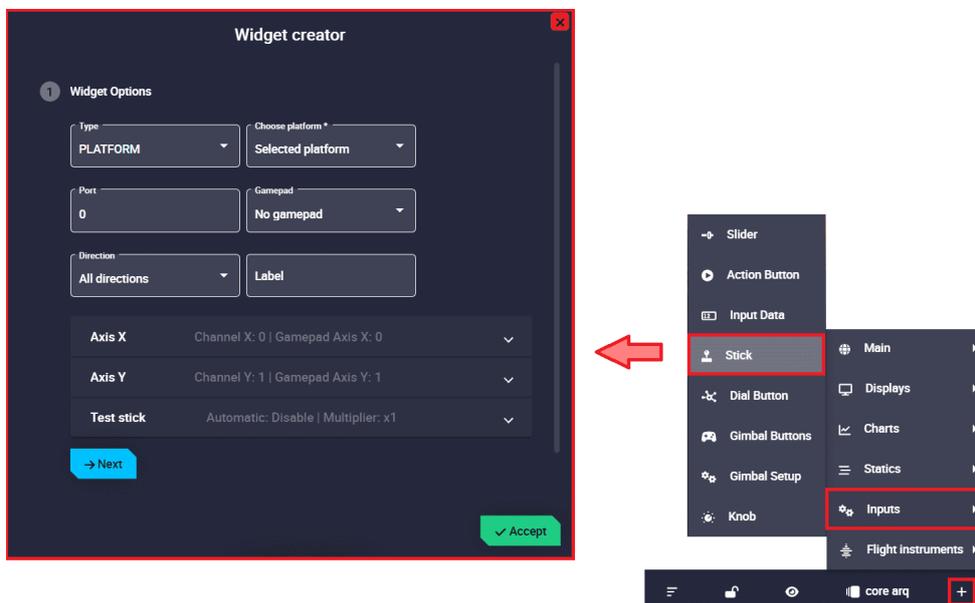
Stick widget

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**.

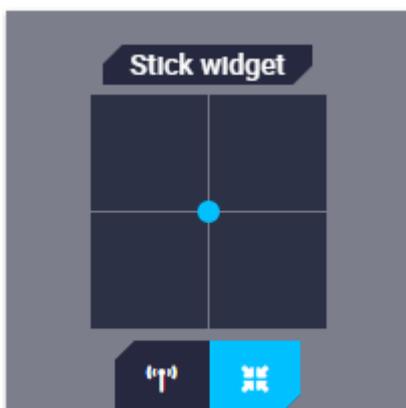
Note

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:

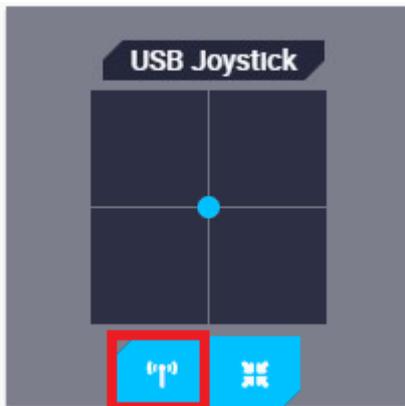
1. Select the **Gamepad** that corresponds with the USB joystick connected to the PC.
2. And configure the **Gamepad Axis X/Y ID** so that the axes IDs of the stick widget gamepad correspond to those of the physical joystick.

The screenshot shows the 'Widget creator' interface with the following configuration:

- Widget Options:**
 - Type: PLATFORM
 - Choose platform *: Selected platform
 - Port: 1
 - Gamepad: WISENET SPC-2000 (Ve...)
 - Direction: All directions
 - Label: USB Joystick
- Axis X:** Channel X: 1 | Gamepad Axis X: 0 | Auto-center
 - Channel X: 1
 - Gamepad Axis X ID: 0
 - Invert axis
 - Auto-center
- Axis Y:** Channel Y: 2 | Gamepad Axis Y: 1 | Auto-center
 - Channel Y: 2
 - Gamepad Axis Y ID: 1
 - Invert axis
 - Auto-center

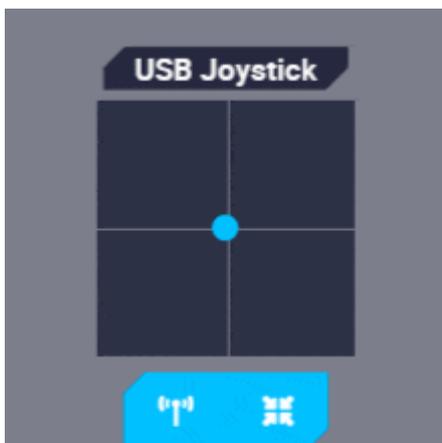
Stick widget - USB joystick

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:



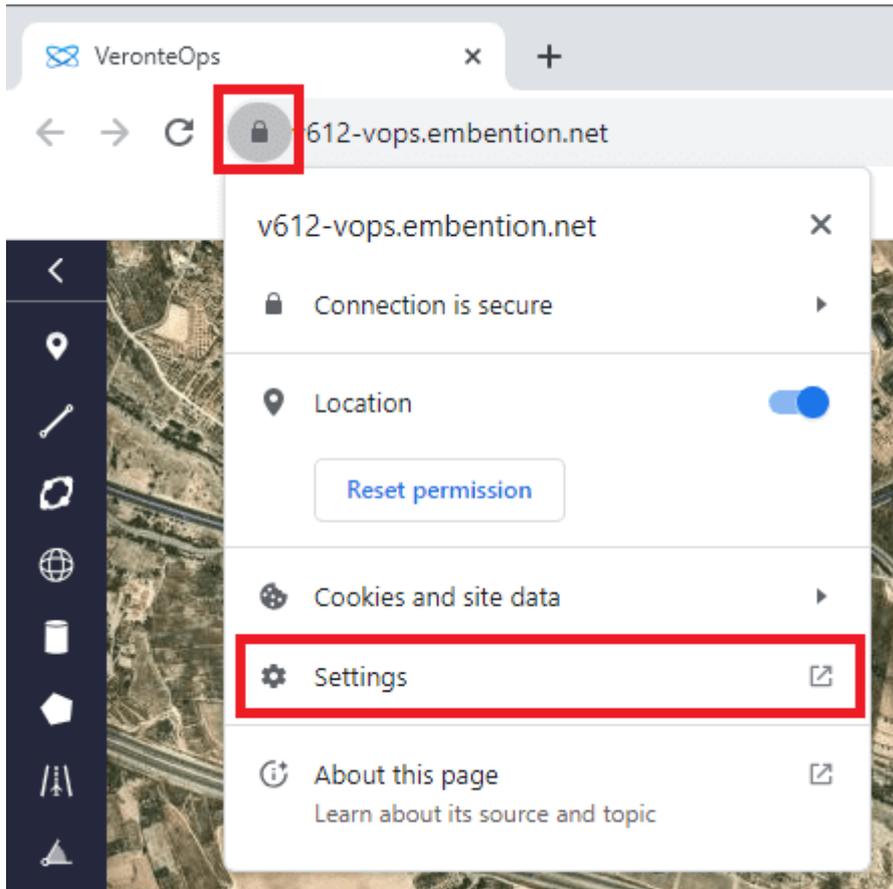
Stick widget - USB joystick movement

Troubleshooting

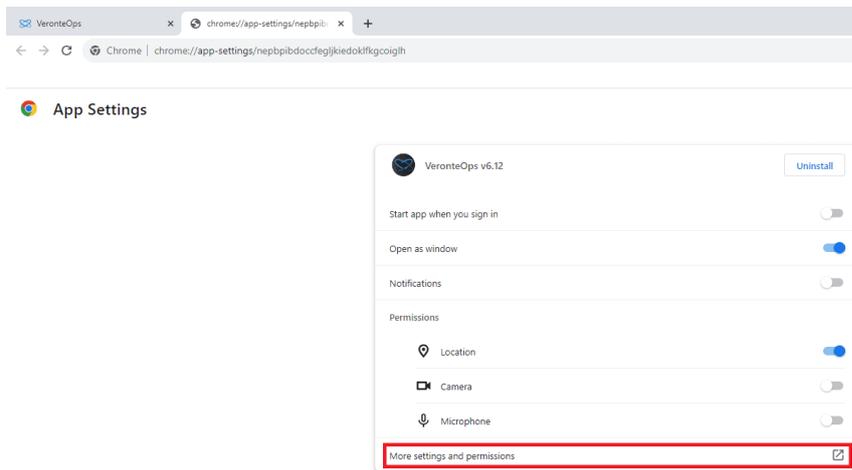
Connecting to Veronte Link

In case of having problems to connect with **Veronte Link**, allow all the content in the browser. To do this in Google Chrome follow the steps:

1. Click on  → **Settings**.

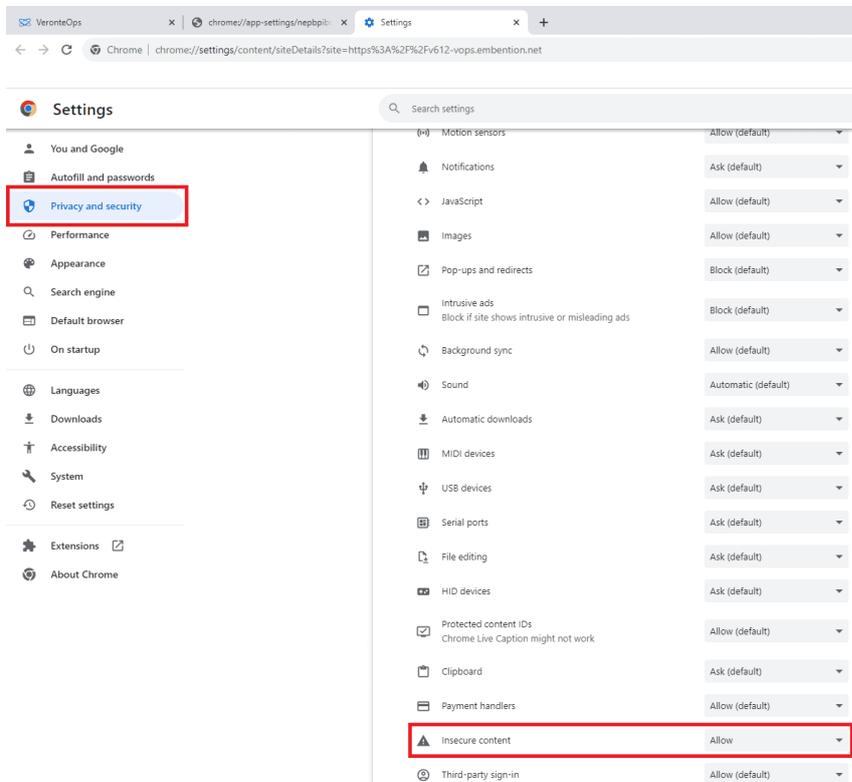


2. Click on **More settings and permissions**.



More settings and permissions

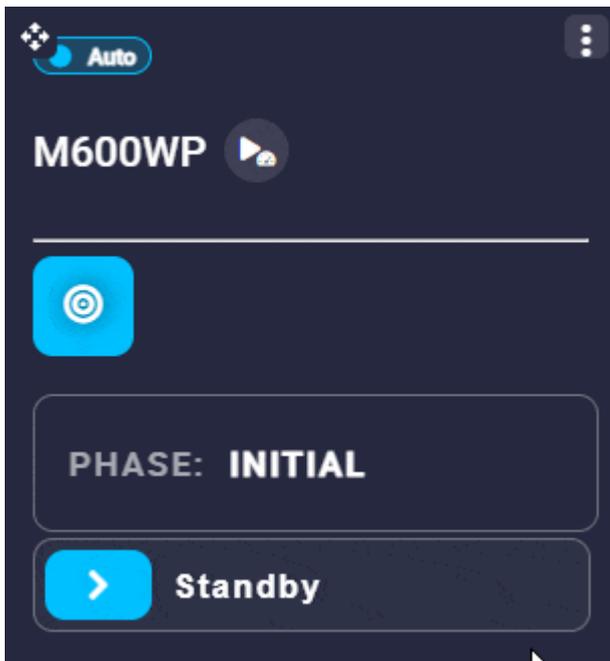
3. Click on **Privacy and security** → **Insecure content** → **Allow**.



Privacy and security → **Insecure content** → **Allow**

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).

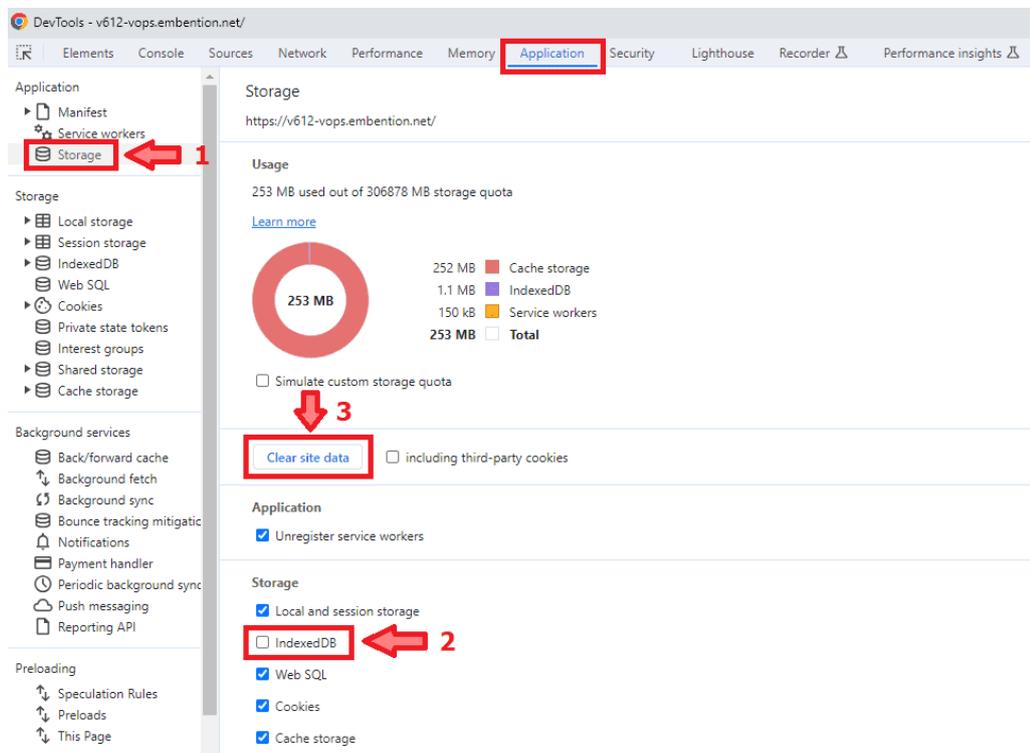
A list of all errors that can cause this bit to be set can be found in the [Activation System Error bits - Lists of interest](#) section of the **1x Software manual**.

- **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.

Software Changelog

This section presents the changes between versions of **Veronte Ops** application.

6.12.22

This section presents the changes between the previous app version **v.6.8** and **v.6.12.22**.

New

- Veronte Gimbal 10z and 30z models
- Autogeneration of mission figures: "racetrack" and "figure of 8"
- Group widget
- ADS-B widget

Improved

- The position of runway and spot operation elements can now be "relative"
- Secondary layer (map) can be added with transparency options
- Alert widget configuration options
- Chart widget configuration options
- Scatter widget configuration options
- New configuration options in the Text widget
- New options in the Action widget configuration menu
- Attitude widget

Changed

- Location of the FastLog button, now in the Veronte Panel widget
- Stamen maps are no longer available

6.12.24

This section presents the changes between the previous app version **v.6.12.22** and **v.6.12.24**.

Improved

- **Escape** and **Enter** keyboard keys have associated events in the confirmation dialogs
- Widgets are repositioned when resizing the window
- Widgets within the Group widget can now be locked independently
- Label widget now supports the "Time" unit
- Customization options of Gauge widget, such as range representation
- Bar widget configuration menu

Changed

- Wikimedia maps are no longer available

6.12.26

This section presents the changes between the previous app version **v.6.12.24** and **v.6.12.26**.

Improved

- The response of Action buttons with time control

6.12.28

This section presents the changes between the previous app version **v.6.12.26** and **v.6.12.28**. For further details, please consult [the Service Bulletin nº 0004](#).

- Interactivity and depth of detail of 4x unit:
 - Enabled selection of 1x units within 4x
 - Added indicator of the 1x in command
- Interface reliability to avoid user mistakes:
 - **Enter** keyboard key **does not** have associated events in the confirmation dialogs

6.12.30

This section presents the changes between the previous app version **v.6.12.28** and **v.6.12.30**.

New

- Internal Remote ID in ADS-B widget
- Check ranges in Operation variables
- PDI Mode status displayed directly on the Veronte Panel

Improved

- Timer and ADS-B widgets can be locked on the workspace

6.12.32

This section presents the changes between the previous app version **v.6.12.30** and **v.6.12.32**.

Improved

- Phases are automatically updated in the Veronte Panel widget when the configuration changes

6.12.34

This section presents the changes between the previous app version **v.6.12.32** and **v.6.12.34**.

Improved

- Coordinates panel:
 - Fly to loiter/hover position definition
 - Conversion of UTM/MGRS position

6.12.36

This section presents the changes between the previous app version **v.6.12.34** and **v.6.12.36**.

Improved

- Checks added for no valid positions on the map
- Checks added if the Chart widget does not contain series data

6.12.38

This section presents the changes between the previous app version **v.6.12.36** and **v.6.12.38**.

Improved

- Improved removal of Custom Points from the Mission panel
- Added compatibility with 16-bit (half-precision) float compression telemetry
- Improved performance when editing Alerts widget
- Guidance path printing

Removed

- Weather option of the Status bar