Table of Contents

Introduction
Getting Started
The Views

About this project

This application is the analyzing software for our flight data recorder. This software is to be used in conjunction with the FDR-hardware. The recorded data can be exported, analyzed and displayed in human-readable formats using this software. To learn more about how to use this software visit this article: **How to use this software**

Getting Started

Basics

This software works on Windows PC`s with .Net Framework 4.7.2 installed. If you are running Windows 10 with the latest updates installed this should work out of the box for you. If you are not running Windows 10 head to this link and download and install it manually.

Installation

Installer

Download the installer and execute it.

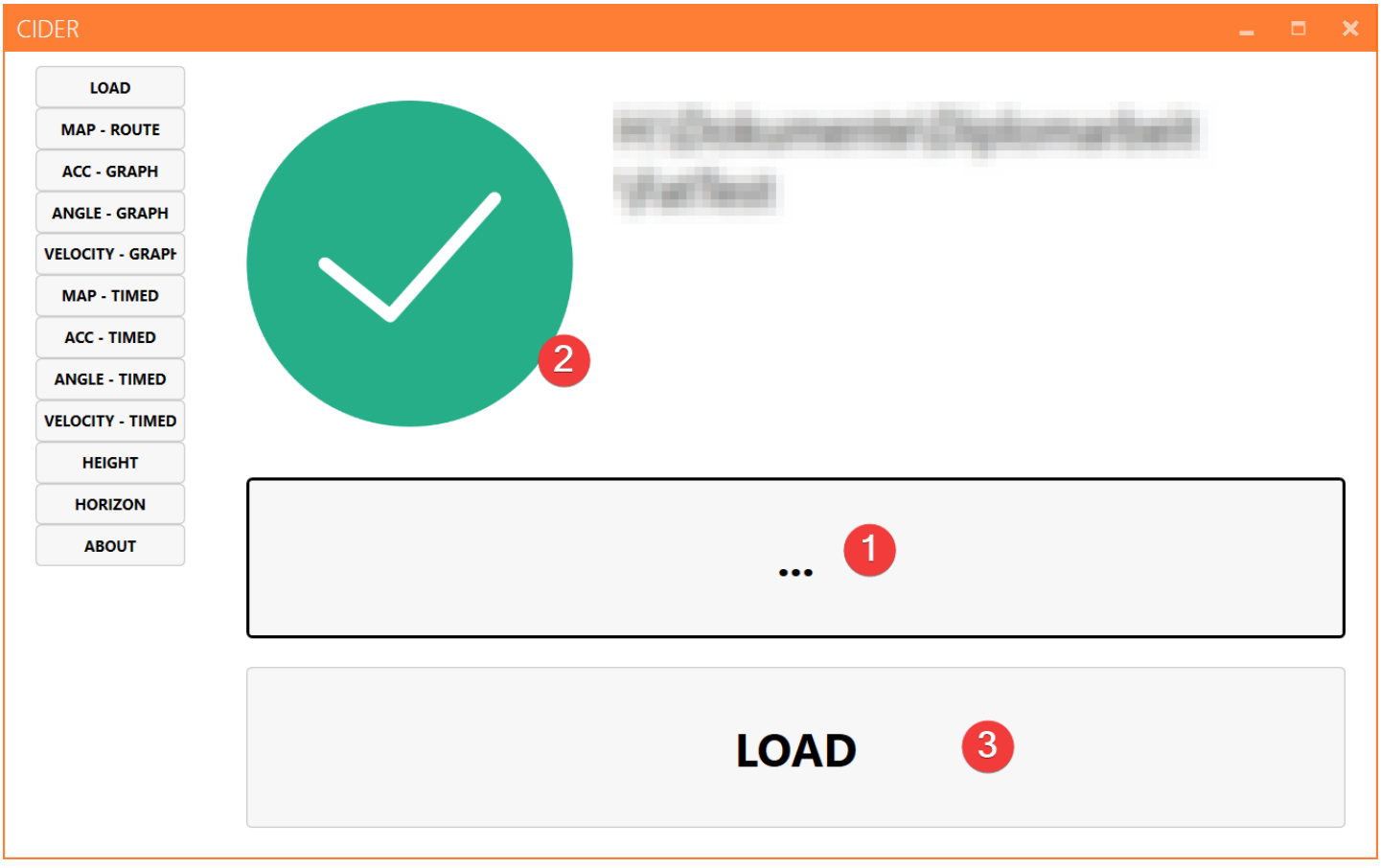
Build from Source

If you want to build this project from source download or clone the repository to your computer. After downloading, open the .sln file in visual studio. The project should be loaded. Set the build settings to "Release" and press the start button - afterwards, copy the contents of the Release folder to a location of your choosing.

Setup

After successfully installing the application, launch the application. You will be presented with a license dialog. Accept the licenses and click ok. You will now notice that the map views are greyed out. Please head to the Bing Maps Portal and create an account. Afterwards click "My Keys", the create a new key. Set the application name to CIDER, and the key type to Windows App. Copy the key into a new file at a location of your choosing. The file ending should be .key. Add the key to the application. Head to the about view and press "Add new key". Select the file and press ok. You should be able to use the map views now.

Load a track



1. Head to the load view
2. Press "..."
3. If you see a green tick mark, press "Load"

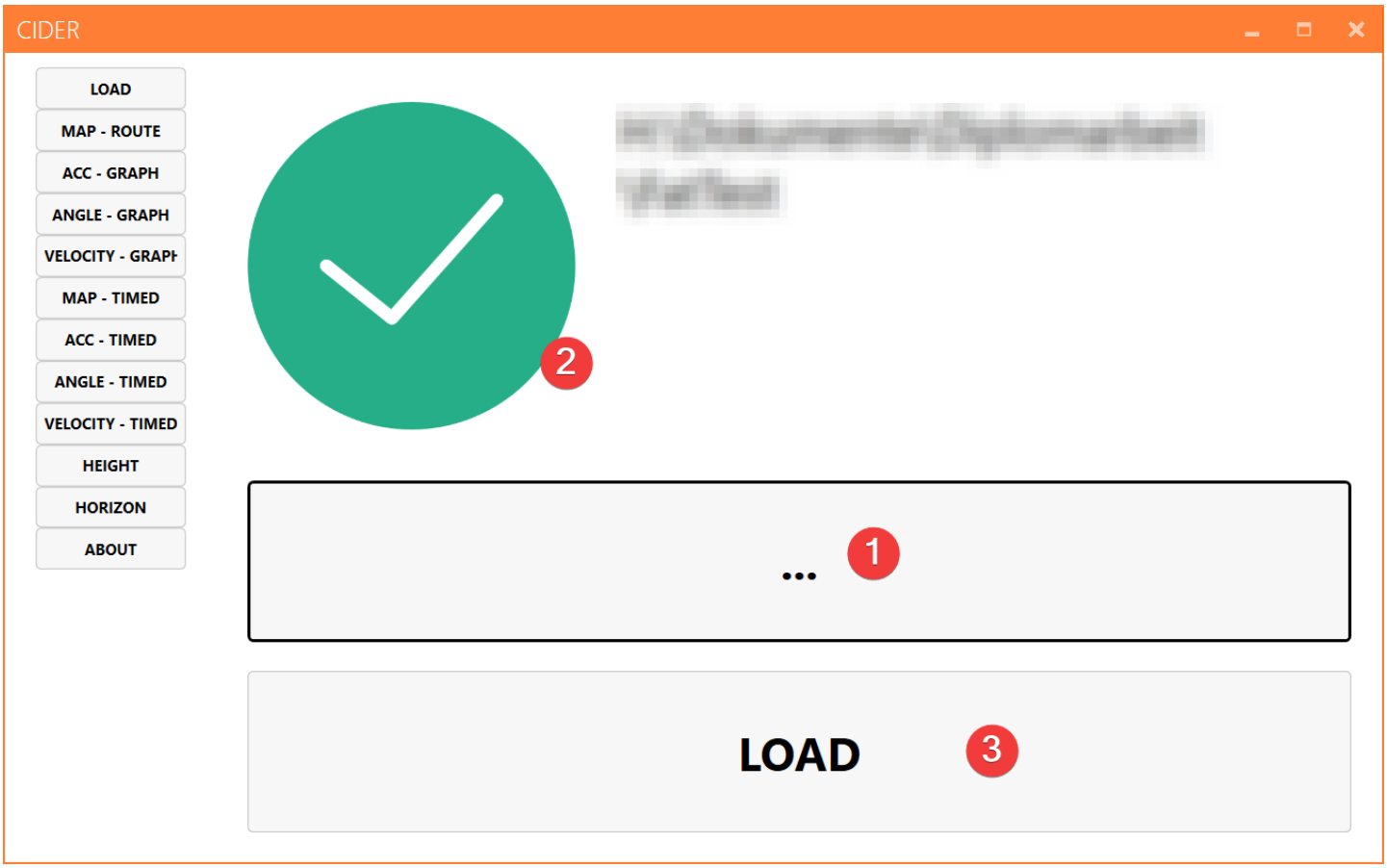
You successfully loaded the track.

The Views

The following article is going to explain the different views available in the application and what their use is.

About View

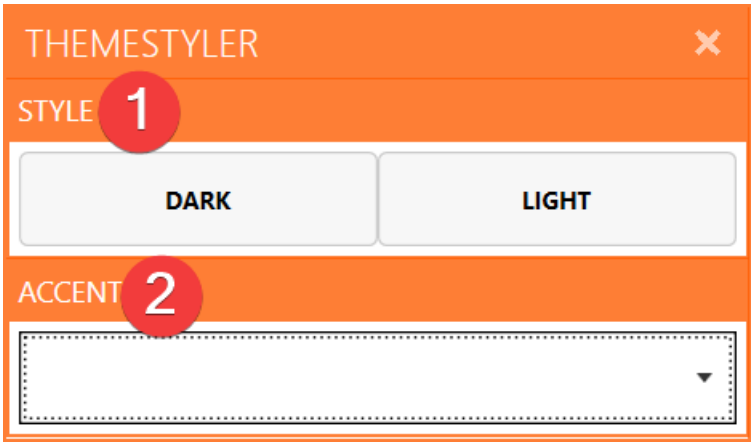
The "about" view is the standard (startup) view of the application. The "about" view contains multiple features:



1. SET API KEY - press this button to set the reference to an API key (.key) file
2. CHANGE THEME - press this button to open the theme manager
3. E-MAIL US! - press this button to open your e-mail program and send an e-mail to us
4. VIEW LICENSES - press this button to open the license manager

Theme Manager

The theme manager allows you to change the look and feel of the application. You can select a light and a dark theme as well as different accent colours. The settings will be remembered for the next startups.



1. Select the Theme - Dark or Light
2. Select the Accent colour - see the table below

AMBER	
Blue	
Brown	
Cider Standard	
Cobalt	
Crimson	
Cyan	
Emerald	
Green	
Indigo	
Lime	
Magenta	
Mauve	
Olive	
Orange	
Pink	
Purple	
Red	
Sienna	
Steel	
Taupe	
Teal	
Violet	
Yellow	

Map Views

The map views are only available if a valid key was added to the application. If you have not done this already, head to **this tutorial** on how to do that.

Map - Route

The map-route view allows seeing the recorded route on bing maps. The view will automatically focus on the route. The start direction is marked by a bright blue arrow, following the direction of the arrow follows the recorded data. If no route is loaded, the map will be focused on Linz-Hörsching airport.

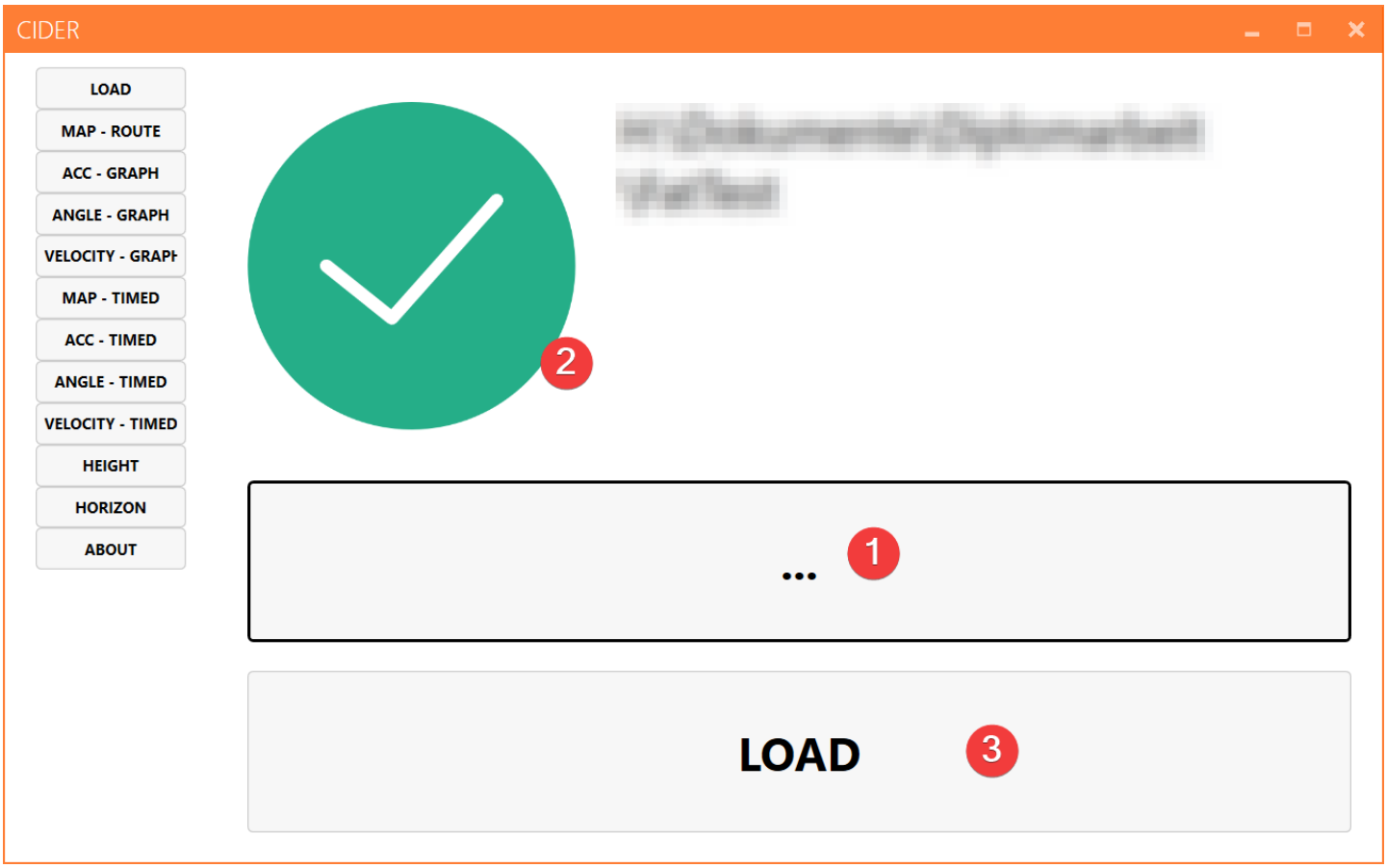
Map - Timed

The map-timed view shows the recorded route and a slider. Adjusting the slider gradually increases the shown part of the route. The shown part is increased on a per-data-point basis so you can slowly show the flown route.

Load View

The load view is used to select a valid dataset. Pressing the "..."-button opens a menu where a folder can be selected. After accepting the selected folder by pressing "Ok", the application checks the validity and data integrity of the selected folder. If the check fails, a red cross is displayed. If the check passes, a green tick is displayed. If the green tick is displayed, the "Load"-button is set to be available. Pressing the "Load"-button loads the selected data. During the loading procedure, the navigation bar to the side of the application turns grey. When the loading process is finished, the buttons are made available again.

The load view:



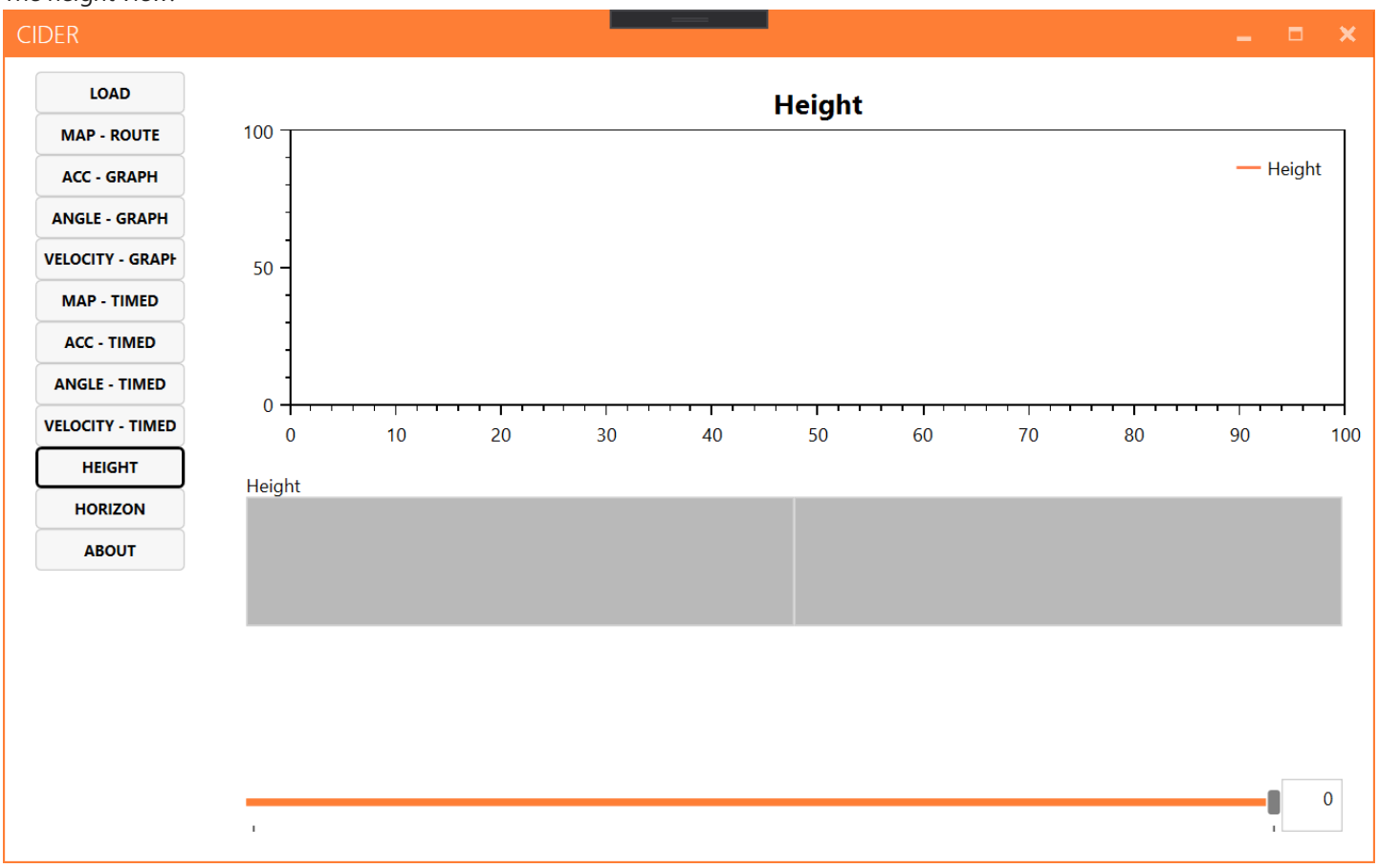
The view with a valid dataset:

The view with an invalid dataset:

The Height View

The height view shows the height of the plane. There are two parts: The first part shows a graph of the flight height throughout the flight. The second part shows the current height, adjustable by a slider found at the bottom of the view. You can also enter a specific value (only numbers without comma!) in the box found to the right of the slider - this will set the value of the slider to the entered value.

The height view:



The Angle Views

Angle Timed

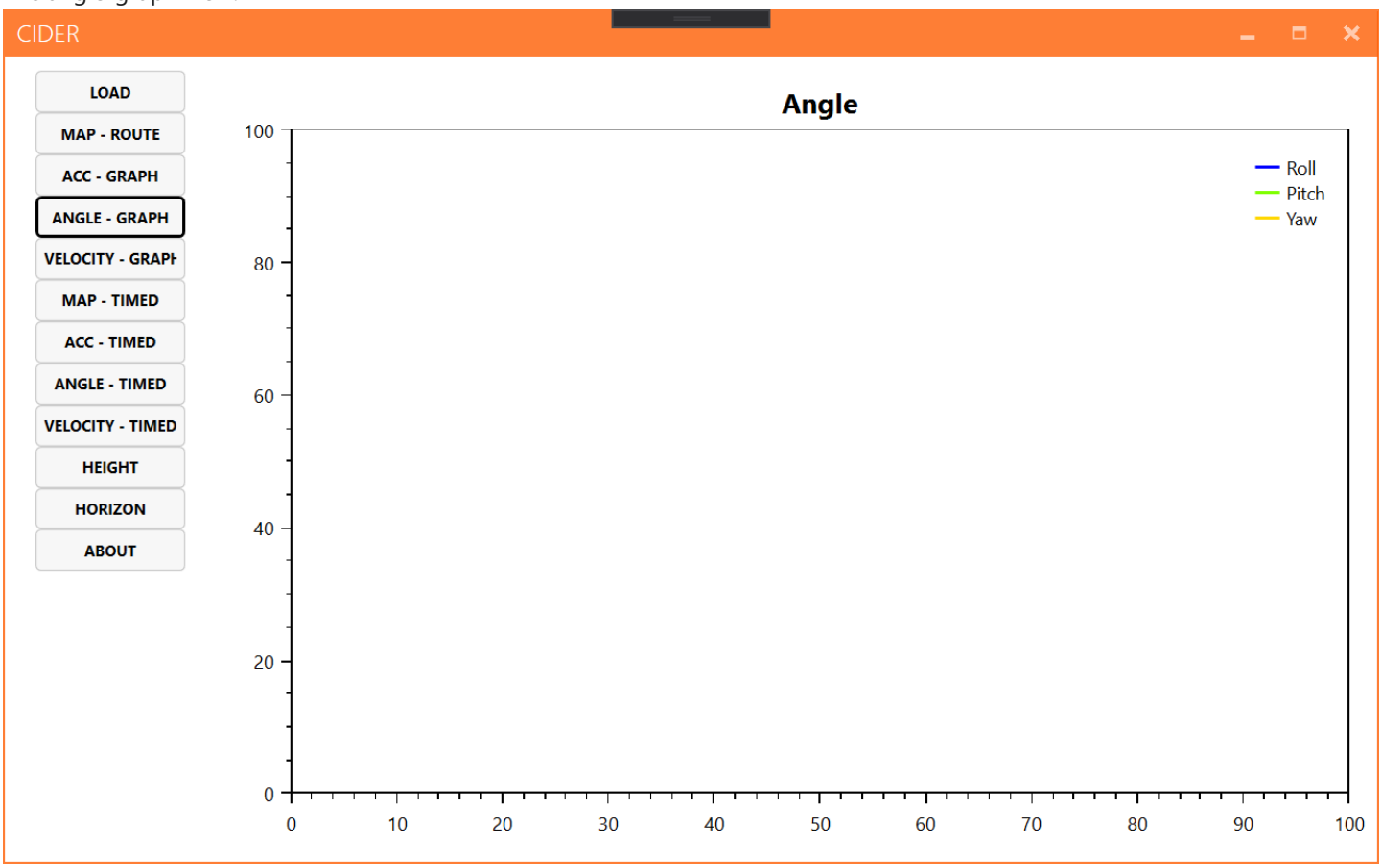
Using the angle-timed view you can watch the roll, pitch, and yaw angles of the plane at every point. The data point shown can be selected using the slider at the bottom of the page. Alternatively, you could also enter a value in the text field next to the slider.

The angle-timed view:

Angle Graph

The angle-graph view shows the roll, pitch, and yaw angles over the whole duration of the recording.

The angle-graph view:

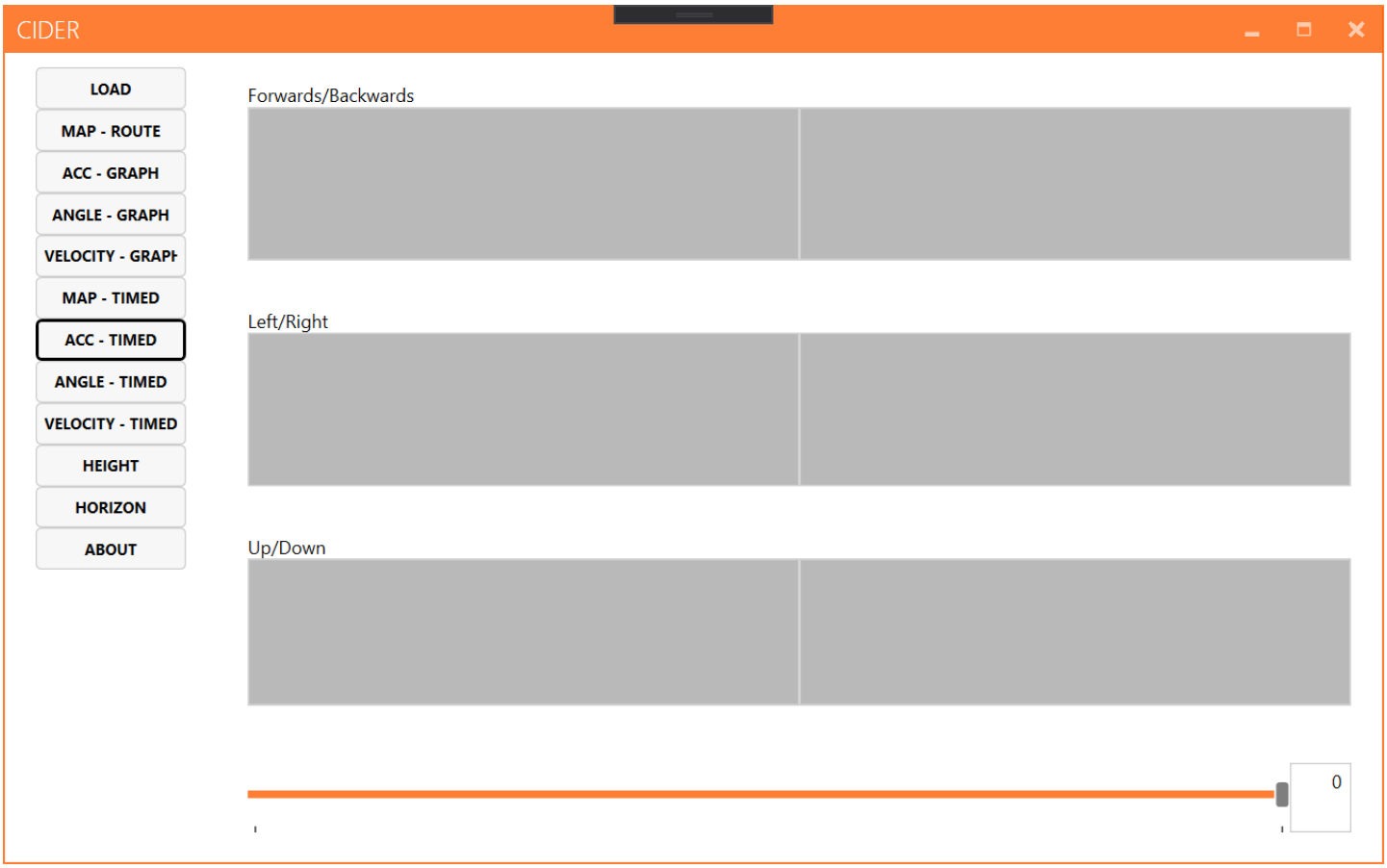


The Acceleration Views

Acceleration Timed

The acceleration-timed view can be used to access the recorded acceleration data in all 3 directions. The data point shown can be selected using the slider at the bottom of the page. Alternatively, you could also enter a value in the text field next to the slider.

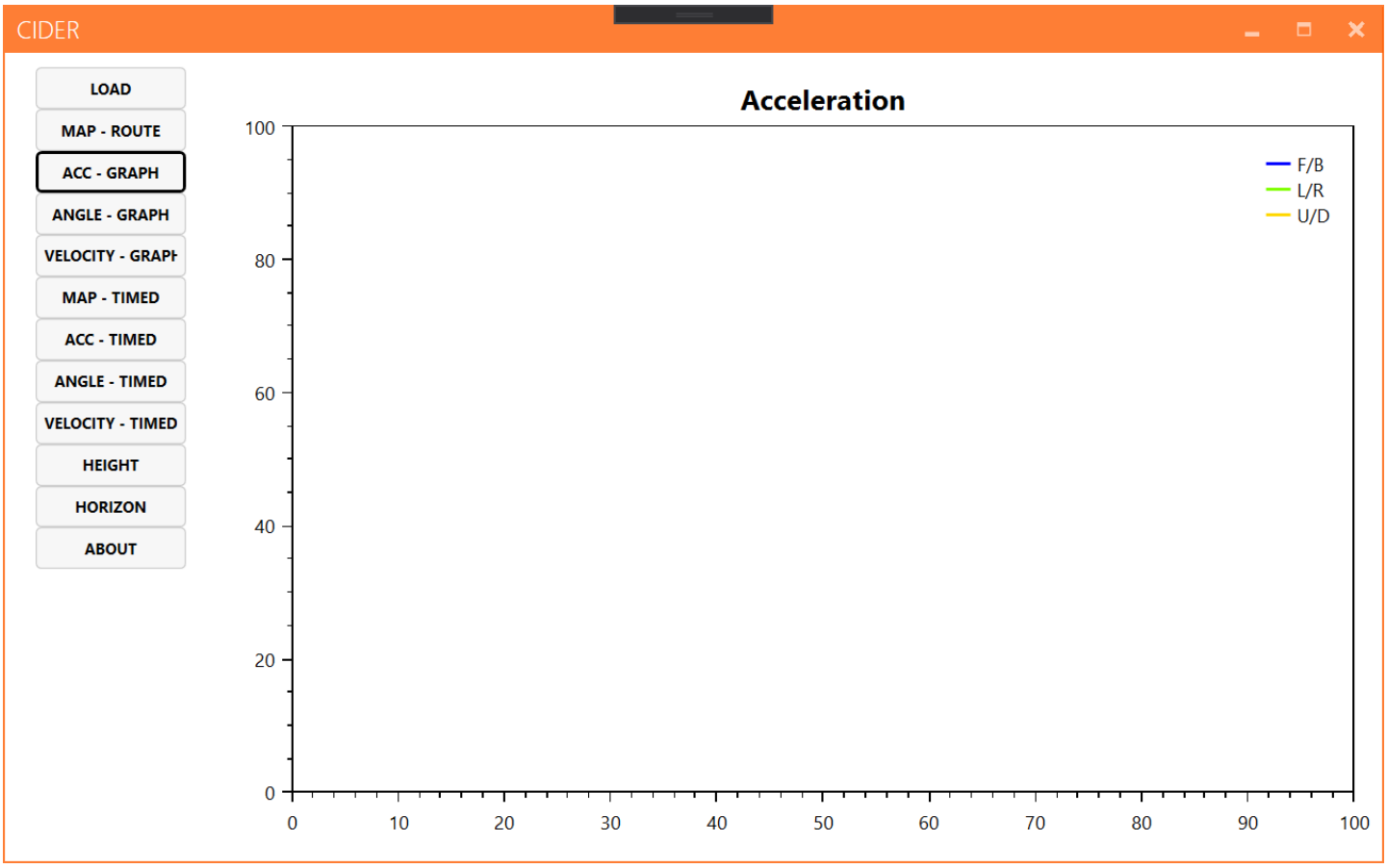
The acceleration-timed view:



Acceleration Graph

The acceleration-graph view shows the accelerations in the three directions as a graph. The whole duration of the flight is printed to the graph.

The acceleration-graph view:

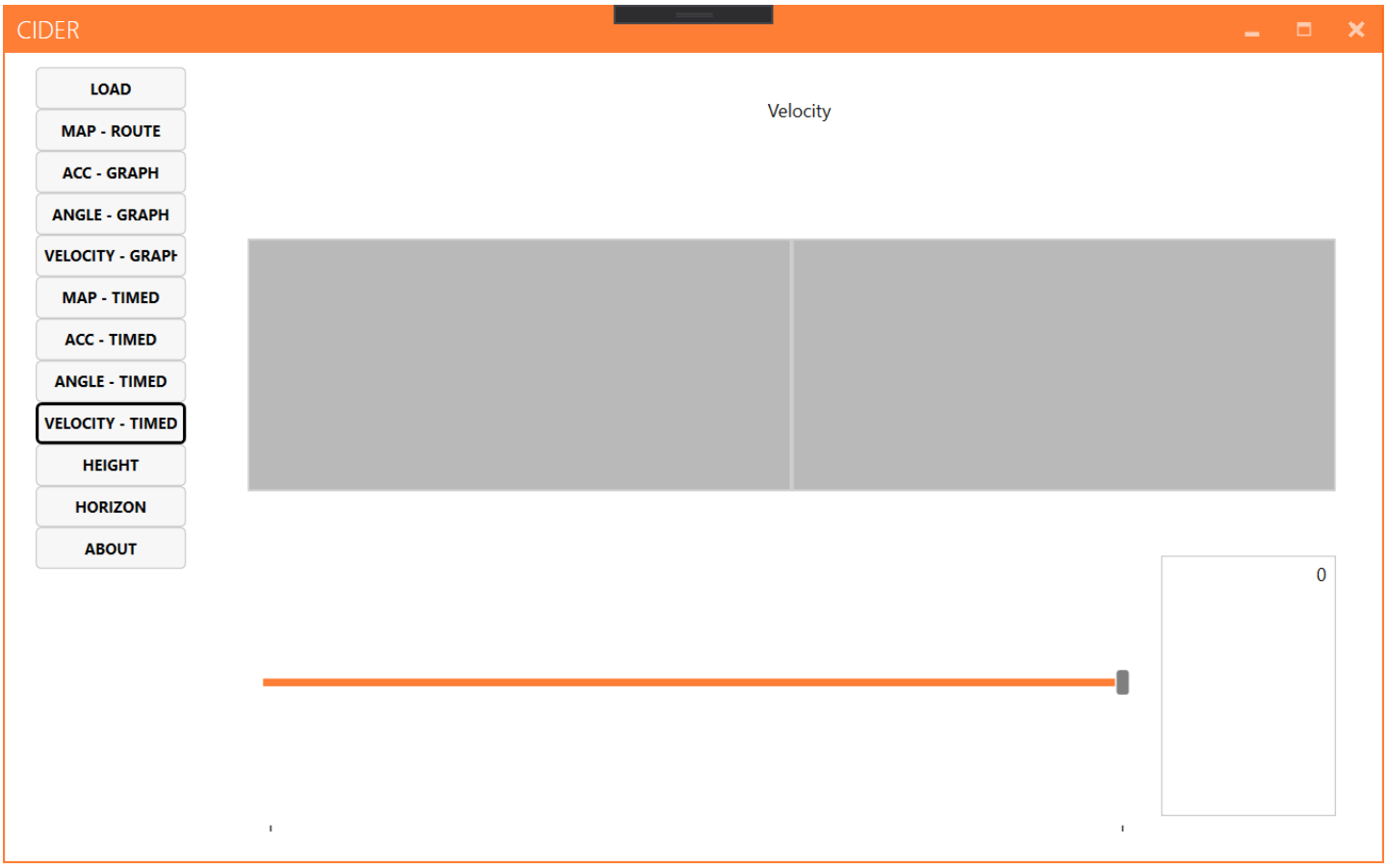


The Velocity Views

Velocity Timed

The velocity-timed view shows the velocity of the airplane at the currently selected time. The data can be selected using the slider or by manually entering a number in the box to the left of the slider.

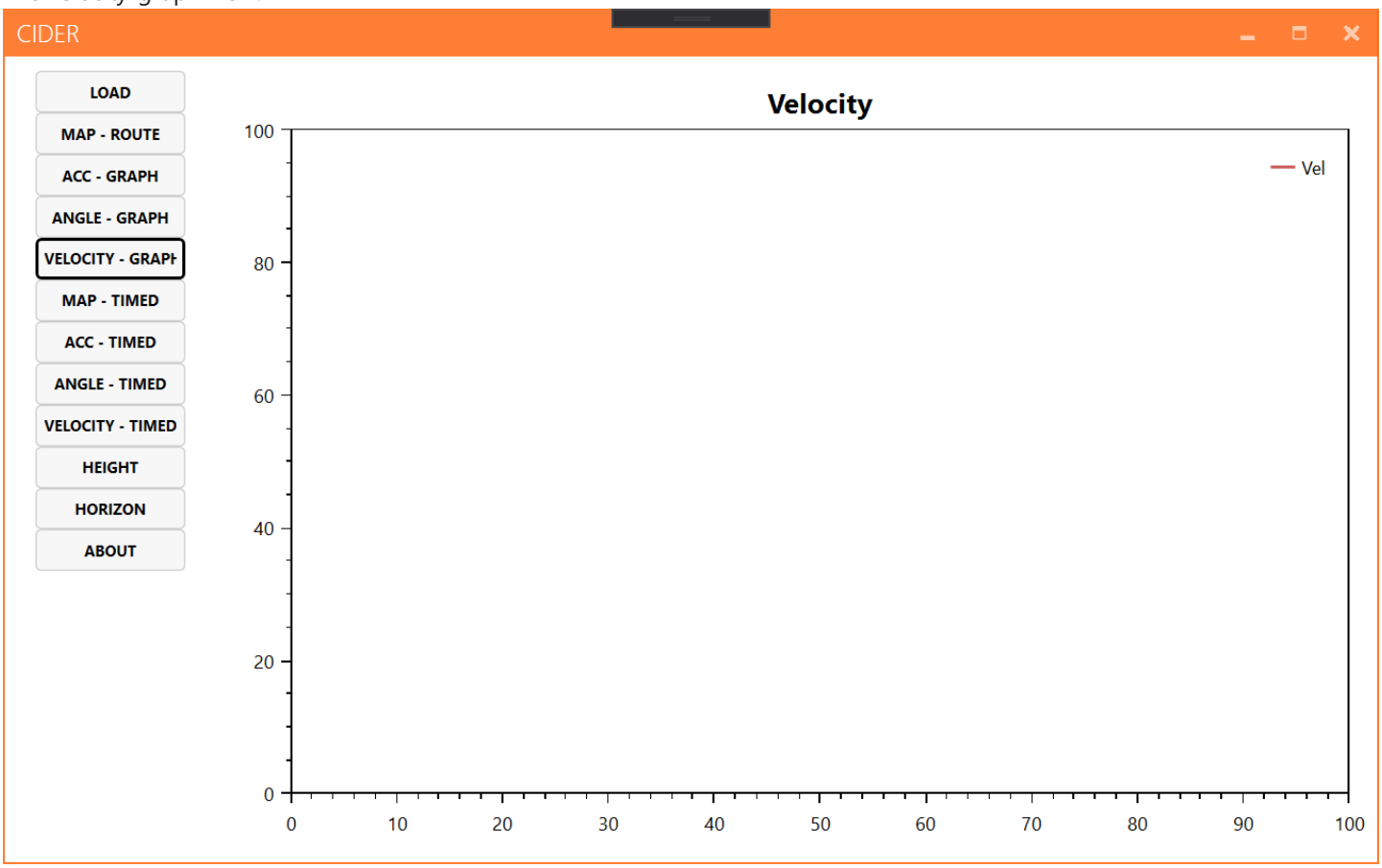
The velocity-timed view:



Velocity Graph

The velocity-graph view can be used to display the velocity of the airplane throughout the flight.

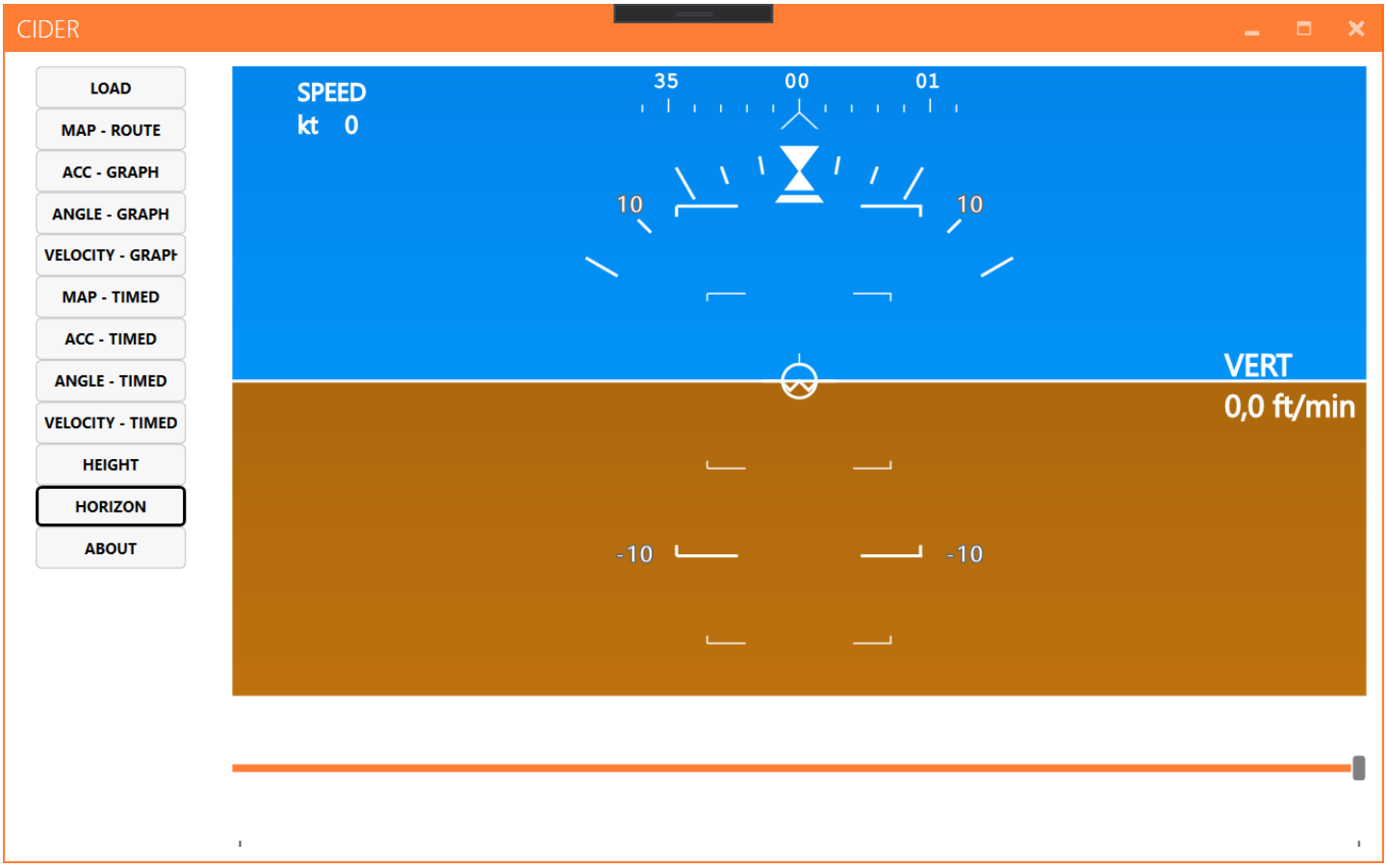
The velocity-graph view:



The Artificial Horizon

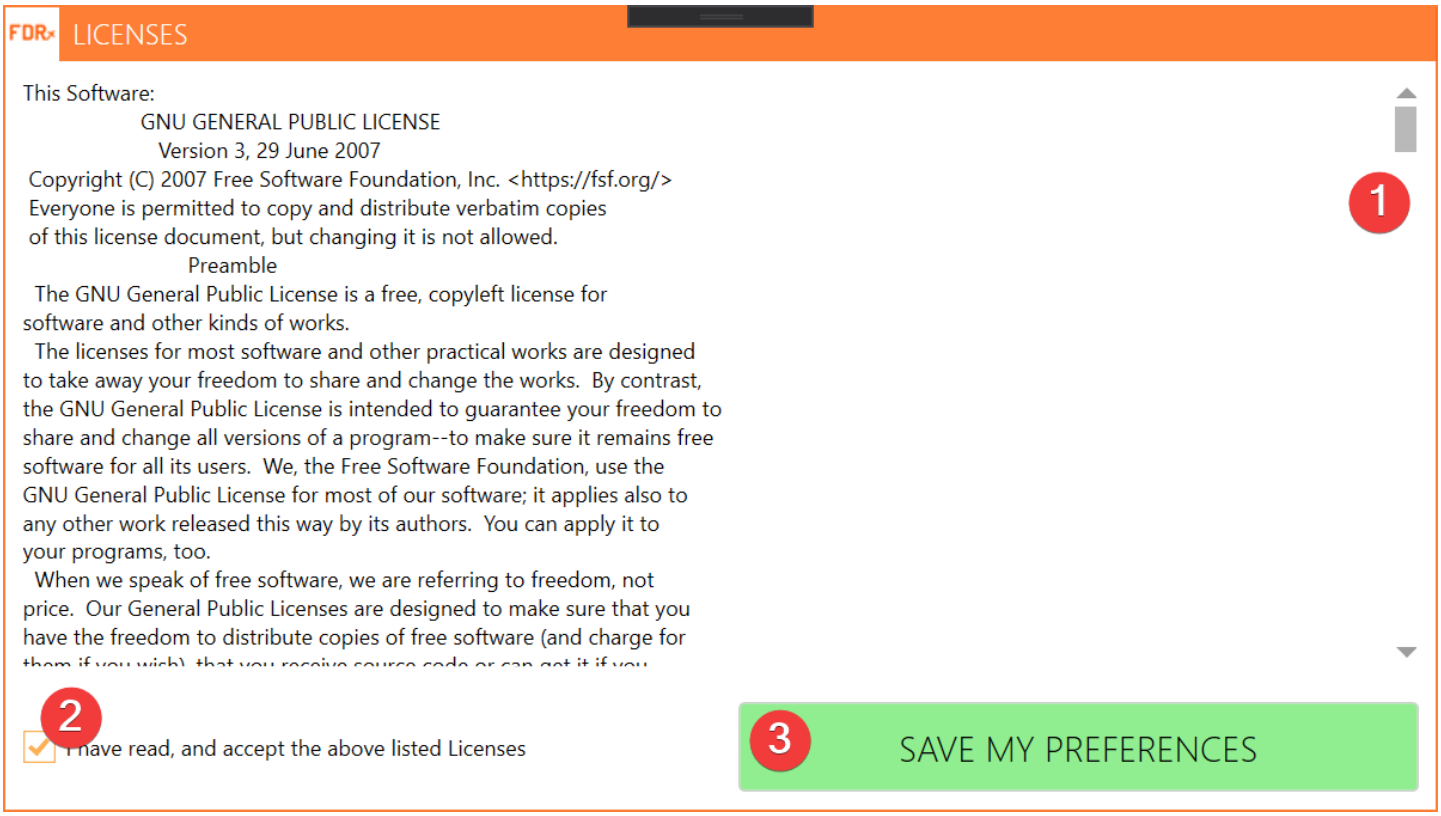
The artificial horizon is a view that unites almost all of the recorded values in one place. Just like in a real airplane, you can see the climb rate, the heading, the velocity, and the roll and pitch angles.

The artificial horizon looks like this:



The license manager

The license manager is the first window shown when you start the application for the first time. It contains all the necessary licenses and agreements. To be able to use the software as intended you need to accept the licenses and press the green button in the bottom left corner of the view.


FDR
LICENSES
This Software:
GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007
Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
Preamble
The GNU General Public License is a free, copyleft license for
software and other kinds of works.
The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.
When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
1
2
I have read, and accept the above listed Licenses
3
SAVE MY PREFERENCES