



# STE-C 55X AUTOPILOT PLUGIN

User Manual

This manual state the important thinks about how the AP works and what you have to do to accomplish what you want to do. Please note that the author of this manual is **not** a real pilot, so this manual is **for flight-simulation purpose only!**

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## OVERVIEW

Thank you for downloading the “STE-C 55X AP System”, an autopilot system working like the “S-TEC FIFTY FIVE X” by Genesys Aerosystems. Its purpose is to add a simple autopilot stack to any aircraft included in the flight simulation “X-Plane 11” by Laminar Research.

This manual state the important thinks about how the AP works and what you have to do to accomplish what you want to do. Please note that the author of this manual is **not** a real pilot, so this manual is **for flight-simulation purpose only!**

To make things simple, this is just a very simplified manual. Also, it only states those functions which are available on this state of development. If you want to know more or need a more detailed manual, have a look on the [Pilot Operating Handbook \(POH\)](#) provided by [Genesys Aerosystems](#).

Also note, that this manual is based on the POH and may include quoted content. For more information see the sources section of this document.

## KNOWN ISSUES

Although the STE-C already has many features included, there are some important things missing which were mentioned in the POH. If you found any feature missing in the Plugin **and** this list, let me know by writing a comment or send me a mail (view contact section).

- Chapter “Pre-Flight-Procedures” not implemented
- NAV mode intercept Heading should be a standard 45° angle, currently it uses only the user input data
- NAV annunciator should flash if CDI needle exceeds 50% deflection or the Navaid is not reachable
- CWS mode not implemented
- TRIM annunciator working the wrong way
- GS enable/disable function not implemented
- REV mode may work but only on XPlane standard behavior
- Some APR modes are not implemented
- FD currently not supported
- Operating Parameters (see POH) may be wrong (not customized, standard XPlane behavior)
- No sounds (beep warnings)

If you are a real-world pilot and/or have **access to the real S-TEC Fifty-Five X System** I would really appreciate if you contact me. There are still some in-detail questions which even the POH doesn't answer.

## INSTALLATION

The plugin was created using the free version of SASL by FlightFactor. For more information see licenses.

First unzip the downloaded folder into any directory (you should already have done that if you read this manual). Drag and drop the folder “STE-C 55X” to your XPlane plugins directory.

*X:\..\X-Plane 11/Resources/plugins/*

After doing this, you have to restart XPlane (if it's already running). After loading a flight, you can easily open/close the window through the XPlane “Plugins” menu. Go to

*Plugins -> STE-C 55X -> show/hide*

If this worked, then **congratulations! You have successfully installed your new plugin!**

## FLYING WITH THE S-TEC

### HEADING MODE

In the current state of development, there are five modes available. These are: Heading (HDG), Navigation/Navaid (NAV), Approach (APR), Altitude (ALT), Vertical Speed (VS).

To use the Autopilot and any function of it, your aircraft **must** be equipped with a battery switch, an altimeter, and a compass (with a HDG select button).

To fly a specific Heading, just select the wanted Heading by using the HDG selector and then press the “HDG” button on the AP. The Aircraft will follow this Heading until you select another horizontal mode or disengage the AP. The “HDG” annunciation will show up to acknowledge that this mode is active. For further see Figure 1.



Figure 1 - HDG and ALT mode

## ALTITUDE HOLD MODE

Another mode shown in Figure 1 is the ALT hold mode. As the name states, you can press this button to hold the current altitude in the moment, in which you activate this mode. If you need to make small changes (e.g., because the QNH has changed), you can do this by using the knob on the right side to decrease or increase the selected altitude. Each step will be a change of 200 feet with a maximum range of  $\pm 360$  feet. An important need to say is that there will be **now indication** for this occurrence.

Please keep in mind that a bigger change of the altitude requires to disable the ALT mode and activate it again on the new desired altitude.

## VERTICAL SPEED MODE

To make the aircraft follow a special rate of vertical velocity, you can activate the Vertical Speed Mode by pressing the “VS” button (Figure 2). The AP will hold that vertical velocity, which it detected on the time you activated the mode.

So if you are climbing with five fpm (feet per minute) and you press the VS button, the AP will hold five fpm. An “VS” and the current selected VS will show up to prove that this mode has been activated.

You can easily change the selected VS by rotating the rotary knob on the right side, on step equals 100ft and you can change that value  $\pm 1600$  fpm starting from the first value when we activated the mode. So, according to our example, you can change the vertical speed now from -1100 fpm until +2100 fpm.

Should your aircraft become unable to follow the desired rate of climb over a time period from 15 seconds, e.g., because you're too slow and hence your VS too high, the “VS” annunciation will flash until you reach your desired VS again or you lowered the VS value.



Figure 2 - Vertical Speed Mode

## NAVIGATION/NAVAID MODE

If flying by giving headings bores you, you can use the NAV mode. It will follow a specific radial of a VOR, which you have to select in the CDI instrument (Figure 3). Please understand that, because of the subject of this manual, I will not further describe how you can use VOR for navigation.

On the current state of development, you have to proceed in this order to fly from/to a VOR station:

*Set VOR frequency -> set desired radial -> activate NAV mode -> select intercept HDG*

After you activate the mode, a “NAV” indication should occur. Thereafter you have to set an intercept HDG to that radial (most it will be 45° - so if your radial is 180° and you’re coming from the east, your intercept HDG will be 225°). Until you are established on the radial, the AP will show an additional “HDG” announcement. Once established, there should only be the “NAV” showing up.



Figure 3 - CDI instrument

You can also use the NAV mode to follow a course provided by the GPS. For that, first program a route into your GPS (even only one waypoint/airport/anything). Then you have to press the NAV button **twice**, until it shows “NAV” and “GPSS”. Please note that if you already are in the “normal” NAV mode, you only have to press NAV **once**.

## APPROACH MODE

The APR mode, as the name may indicate, helps you to perform approaches. From the working theory and also the activation process there are no big differences. Only thing is that next to the horizontal guidance it also provides vertical information for the descend glideslope.

The important thing is, that it’s necessary to capture the horizontal localizer **before** the vertical glideslope. Otherwise, it will not work correctly. To show that your aircraft is established on the glideslope, a “GS” annunciation will occur.



## DISENGAGING THE AP

For aircraft which don't have an autopilot disengage knob, you can turn off the AP by clicking on the "STEC like AP" label on the AP. You can also assign a hotkey: The command for that is located under "STE-C/ap\_disengage" (see Figures 4 and 5).

The autopilot will also automatically disengage if your own inputs to the yoke are too strong for the AP to handle.

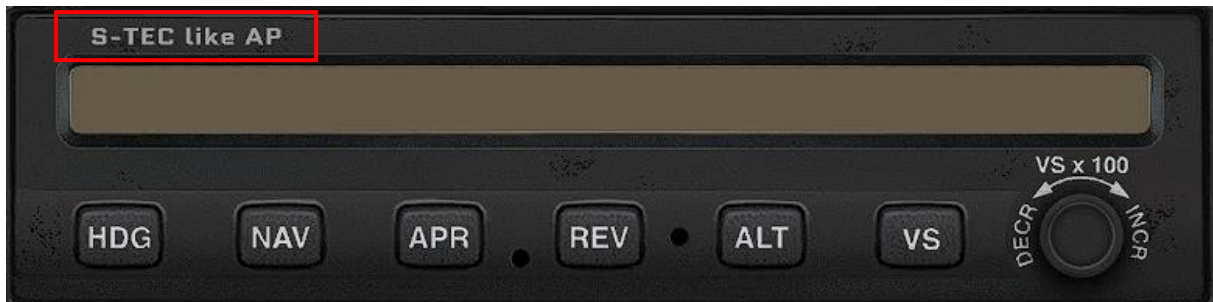


Figure 4 - AP disengage click spot

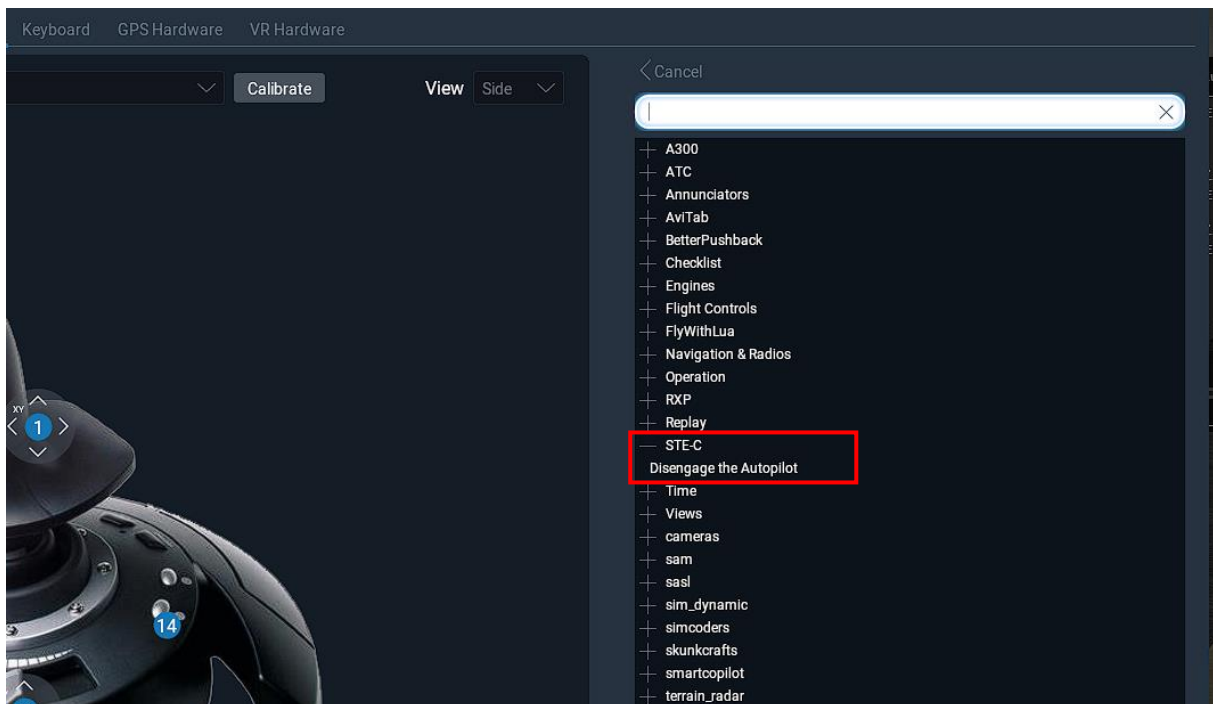


Figure 5 - AP disengage command

## SOURCES AND LICENSES

All pictures shown in this document are showing the behavior of the Flight Simulation “X-Plane 11” created by *Laminar Research*. The Aircraft used for those screenshots is the “Piper Turbo Arrow III” by *Just Flight*. Software theory and the linked POH fully belong to the *Genesys Aerosystems* Company. The Frontend texture of the Autopilot plugin shows the standard XPlane “STEC like AP” stack which has been created by *Laminar Research*.

For other licenses of used material provided with the AP please have a look in the license.txt file in the plugins folder.

## CONTACT

For bug-reports or improvements please use the GitHub-functions “Issues” and “Pull requests”. You can find the official STE-C 55X Autopilot project GitHub here:

[https://github.com/QuackDerBruchpilot/STE-C\\_55X\\_Autopilot](https://github.com/QuackDerBruchpilot/STE-C_55X_Autopilot)

If you have any personal things to discuss, you can write an E-Mail to:

[QuackDerBruchpilot05@gmail.com](mailto:QuackDerBruchpilot05@gmail.com)