

# Coyote Avionics S-TEC Autopilots User's Guide



Coyote Avionics Design™  
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## **Standard Disclaimer**

This software is designed **for entertainment only**. Although it has been designed to resemble and function as much like the actual avionics as possible, it is not designed as a training device. Only a subset of the functions have been implemented.

NOT CERTIFIED FOR USE IN REAL FLIGHT OR FLIGHT TRAINING.

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## **Introduction**

The goal of Coyote Avionics Design is to provide modern, high quality avionics for the use of the flightsim community.

The purpose of this document is to provide a reference for S-TEC autopilot gauges developed by Coyote Avionics Design for use in FS2002. An updated version of this document will be included with each new release. The latest version is also available on our website.

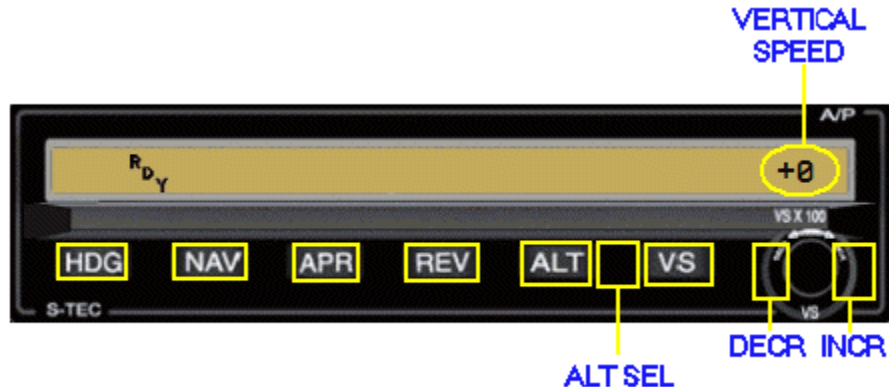
## S-TEC Autopilot Set

The S-TEC autopilot set simulates the S-TEC System 55 autopilot. The set consists of autopilot, altitude selector/alerter, and annunciator.



Although every attempt has been made to make the autopilot as realistic as practical within the limitations of FS2002, there has been no attempt to control the aircraft dynamics. All dynamic control is provided by the autopilot functions of FS2002.

## S-TEC System 55 AUTOPILOT



### Autopilot hotspots

The S-TEC autopilot can be used standalone, or with the Altitude Selector and/or Annunciator. The autopilot is turned on and off using an external switch. The AP button that is part of the Mooney\_Bravo is commonly used for this application.

The HDG, NAV, APR, and REV buttons work just like any other FS2002 autopilot.

A GPS annunciator is provided to indicate that the GPS is providing the NAV source.

[ALT] button -- Selecting the ALT button will enter altitude hold mode with holding altitude = current altitude and VS = 0.

[VS] button -- Selecting the VS button will enter attitude hold with VS = current vertical rate.

[ALT SEL] -- Selecting the hotspot between ALT button and VS button will enter altitude select mode using Altitude Selector altitude and VS. This simulates the pressing of both the ALT button and the VS button.

VS knob -- The VS knob will increase/decrease the climb rate in VS mode or altitude select mode.

The vertical speed is displayed in 100 ft increments at the far right of the autopilot window next to the VS annunciator. A plus (+) value indicates climb and a minus (-) value indicates descent.

Gauge Size	:	500x119
Minimum Recommended width	:	240
Gauge name	:	cad_StecSys55ap!autopilot

## S-TEC Altitude Selector/Alerter



### altpreselector hotspots

The Altitude Selector/Alerter is an option which is used with the System 55 autopilot.

### DISPLAY

The leftmost numerical indication is the altitude in 1000 ft increments and the right most numerical indication is the climb/descent rate in 100 ft increments. For example an altitude reading of 4.0 is 4000 ft and a climb rate of 7 is a climb rate of 700 ft/min.

The annunciators provided are ENT, ALT, ALT SEL, ALR, DH, VS, and BARO.

The Altitude Selector powers up in the ENT BARO mode displaying the current altimeter barometric pressure setting.

[BAR] button -- Toggles on and off the BARO display mode in ENT mode.

[DTA] button -- Toggles between ENT mode and operate mode. Selecting the DTA button places unit in ALT SEL mode, displaying altitude setting of 0.0.

[ALT] button -- Toggles between ALT SEL display mode and ALT display mode. When in ALT display mode the current pressure altitude is displayed.

ALT SEL mode displays the altitude setting.

To adjust selected altitude select [DTA] button to enter ENT ALT SEL mode, select the ALT button and adjust inc knob for desired reading. The knob defaults to 1000 ft increments and clicking the center of the knob will change it to 100 ft increments. Select [DTA] button after desired altitude setting is reached to return to operate mode.

[VS] button -- Toggles VS setting mode on and off. Select VS button to enter VS setting mode and adjust knob for desired climb/descent rate. In VS setting mode each click of the knob increments or decrements the vertical rate setting in 100 ft

increments. VS adjustment is the default and it does not require being in the ENT mode.

NOTE : The VS button on the altitude selector toggles the VS setting mode on and off, it does not toggle the autopilot VS mode.

[ALR] button -- Toggles Altitude Alert mode on and off. Select the ALR button to turn on the Altitude Alert mode. If Altitude Alert is turned on the alert sound will occur at 1000 ft before selected altitude and 300 ft before selected altitude.

[DH] button -- Toggles Decision Height Alert mode on and off. To adjust Decision Height (DH), select DTA button to go to ENT mode and then select DH button. The gauge now indicates decision height setting in 1000 ft increments. At startup the setting is 0.0. Adjust the knob for the desired DH. The knob will adjust the DH in 100 ft increments. When DH adjustment is completed select the DTA button to return to operate mode, then toggle DH mode off until ready for approach. Toggle on DH mode when preparing for landing. When the aircraft descends to 50' about the DH setting an alert sound will be heard. As the aircraft continues to descend it will sound an alert again at DH - 50'.

In order for the Altitude Alert and Decision Height Alert system to work the snd gauge must be installed.

Gauge Size	:	213x100
Minimum Recommended width	:	100
Gauge name	:	cad_StecSys55ap!altpreselector

Other gauges and files required :

fs2002\Sound\dingdong.wav	//	required for DH and Alt Alerts
fs2002\Modules\FSSound.dll	//	required for DH and Alt Alerts



## S-TEC Annunciator



The annunciator is optional with the S-TEC System 55 autopilot. Most installations do not use it in order to conserve panel space. Only the modes supported by FS2002 are implemented.

Gauge Size	:	208x98
Minimum Recommended width	:	100
Gauge name	:	cad_StecSys55ap!annunciator

## **DESIGN STATEMENT :**

All of these gauges are original implementations by Coyote Avionics Design™ . The graphics used are either modified versions of vendor product information graphics available on the Internet, scanned images or digital pictures provided by other flightsimmers or graphics developed especially for Coyote Avionics Design projects.

## **NOTES :**

Coyote Avionics are constantly being updated and I will release updates as required. If you have a project which uses my gauges send me an email and I will send you the latest version. Please send me an email if anything doesn't work as expected or if there are any questions.

I am always open for suggestions. If you have any ideas on improvements that can be made feel free to suggest them.

## INSTALLATION HINTS

### ASPECT RATIO

Because of the details implemented in these gauges and the fact that most of the text displays are as close to scale as possible for maximum reality, the aspect ratio of the gauges should be maintained as close as possible.

This means that if a gauge is 500x100 pixels and you need a 240 pixel wide gauge, the size of the gauge in the panel should be 240x48. Since you usually know the width desired, the height of the gauge can be determined using the following approach.

Gauge size is 500x100 (WxH)

ratio is equal to  $H/W$

therefore ratio =  $100/500 = .20$

required\_height is equal to ratio x required\_width

therefore required\_height =  $0.20 * 240 = 48$

If the value is a decimal value such as 48.3 it is usually better to round up instead of down. For example use 49 if your calculation results are 48.3, etc.

The gauge size of all Coyote Avionics gauges are provided in the description.

### GAUGE SIZE

For most gauges there is a minimum recommended size. The best way to determine the minimum size for a gauge is try it. The minimum size recommended in the description is only a guideline and they are based on a 1024x768 panel size.

**If you follow these guidelines your panels will be a lot more realistic and a lot more readable.**

## **Known Problems :**

None

## **REFERENCES :**

S-TEC System 55 Pilot Information Manual  
Cirrus SR-22 Pilot's Operating Handbook

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