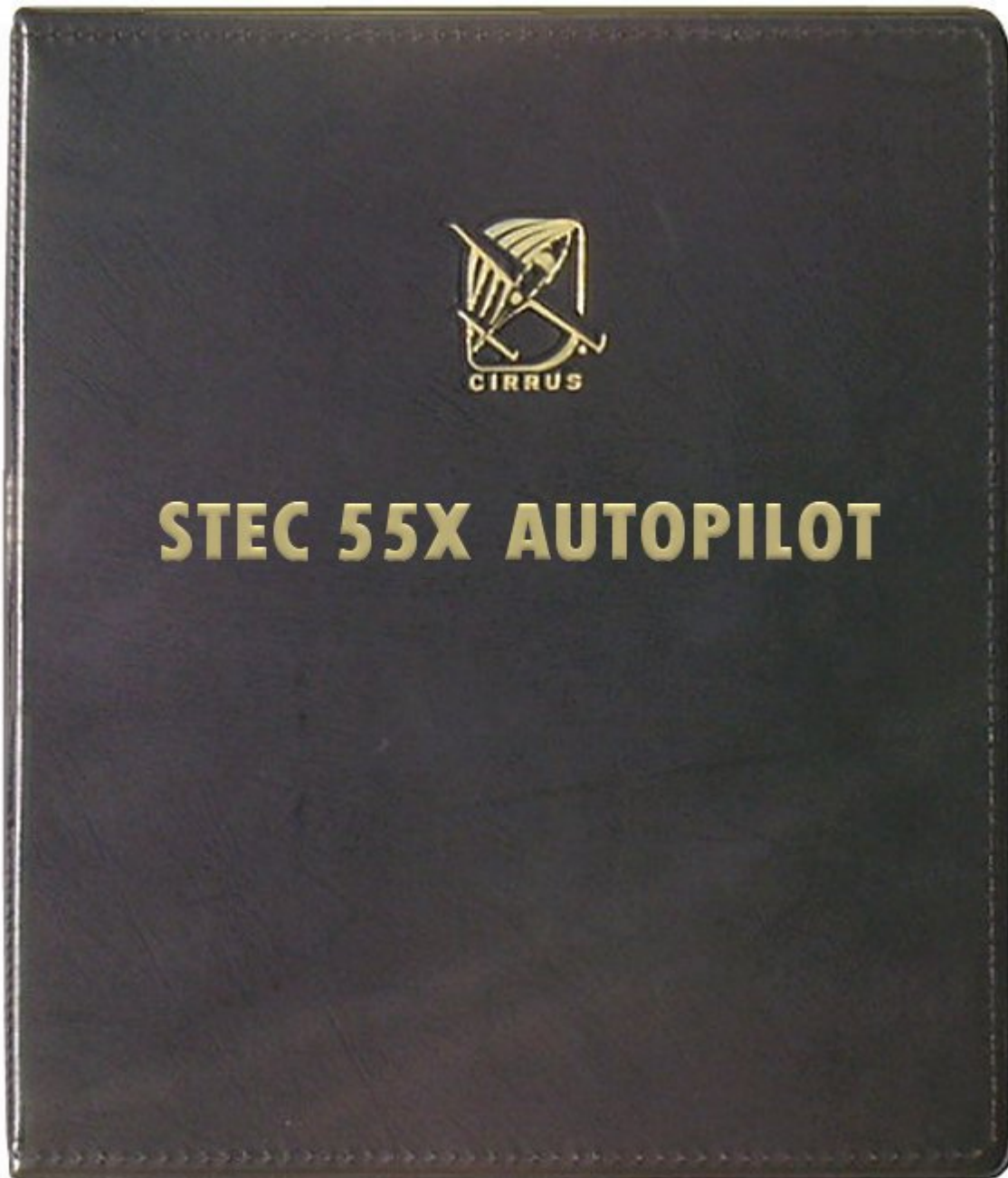


CIRRUS SR20 G2 STEC 55X AUTOPILOT



Standard Disclaimer

This manual is intended for recreational use in Microsoft Flight Simulation 2004 ONLY and may NOT be used in any Real World Aviation application. The authors are not responsible for errors or omissions.

CIRRUS SR20 G2 STEC 55X AUTOPILOT

The Eaglesoft Development Group Cirrus SR20 G2 STEC 55X Manual is designed to quickly orient the novice or experienced flight simulation pilot with an overview of the various controls of the STEC 55X Autopilot available in the Cirrus SR20 G2 model.

The following pages will help you become familiar with the operation of Cirrus SR20 G2 STEC 55X.

Note: For Real World information and free Real World PDF Documents please visit the Cirrus Site from the following URL. <http://www.cirrusdesign.com/>

Note: For Real World information and free Real World PDF Documents please visit the Avidyne Site from the following URL. <http://www.avidyne.com/techpubs.shtm>

Note: For Eaglesoft Development Group Product Support: Please Register and Login to our Support Forums for product support at the following URL. <http://www.eaglesoftdg.com/forum>

Note: See **Avidyne Flightmax PFD and MFD Manuals** for detailed operation of **PFD** and **MFD**.

Note: See **Garmin Manual** for detailed operation of **Audio Panel**, **GNS 430**, and **Transponder**.

CIRRUS SR20 G2 STEC 55X AUTOPILOT



The Eaglesoft Development Group Cirrus SR20 G2, Meggitt STEC 55X Operation is outlined below...

The System 55X is a rate autopilot that controls the roll and the pitch axes of the aircraft. The autopilot's main function is to convert pilot commands to logic signals for the roll and pitch computers.

The roll computer receives select input signals from the Horizontal Situation Indicator (HSI), VOR signals, Localizer (LOC) or GPS, deviation indicators and the turn coordinator.

The S-Tec System 55X Autopilot provides multiple control modes for automated flight. Along with the Avidyne Entegra PFD and the Garmin 430 GPS/NAVCOM components it provides state of the art automated flight for the Cirrus SR20.

CIRRUS SR20 G2 STEC 55X MOUSE OPERATION

Mouse hotspots numbered 1-9 along the face are shown below along with their clickable areas.

The VS values may be changed by first clicking VS hotspot [8] then Left clicking [Decrease] or Right clicking [Increase] near the right or left portion of the VS knob [9]. Users may also use the mouse wheel Forward motion to [Increase] or Rearward motion to [Decrease] the VS values.



Clicking within a rectangle enables the associated function as outlined in the numbered illustrations on the following pages.

CIRRUS SR20 G2 STEC 55X SELF TEST

**Activate the Autopilot Master Switch**

Verify that all segments of the Programmer / Computer display and annunciators illuminate for 5 seconds during the test.



Satisfactory completion of the self-test is indicated when the **RDY** annunciator remains on at the end of the 5 second self-test.

Note: The System 55X autopilot has a built in self test that requires a 100% pass rate before the autopilot can be engaged.



If a fault in the autopilot system is detected, the **FAIL** annunciator will remain on at the end of the self-test and the autopilot will not operate.

CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION

**1. Heading Mode**

To activate the Heading mode, set the heading bug on the PFD's HSI to the desired heading, then press the **HDG** button on the autopilot panel. The HDG annunciator will illuminate. While the HDG mode is active a new heading may be entered by repositioning the heading bug on the PFD.

Note: When flying in the HDG mode, the autopilot simply flies the heading referenced by the heading bug. The system is not coupled to any navigational aid. Monitoring of the navigational instruments is necessary for course deviation due to wind drift and wind correction angles.

**2. Pilot Selectable Intercept Angles**

While in NAV mode the autopilot will intercept the selected course at a standard 45°; however, the pilot may select an intercept angle less than the standard 45°. To select an intercept angle dial the heading bug to the desired heading to be used for the course intercept and press both the **HDG** and **NAV** buttons simultaneously.

In the simulation the Selectable Intercept Mode is activated by clicking the space between the **HDG** and **NAV** buttons. Both HDG and NAV annunciators will be illuminated.

The selected intercept heading will be flown until the autopilot determines that an 'on course' turn must be made to avoid overshooting the point of intercept. When the 'on course' turn begins the HDG annunciator will extinguish and normal Nav tracking will continue.

Note: Intercept angles greater than 45° usually result in some course overshoot depending on the distance of the aircraft from the station and aircraft speed. For this reason intercept angles greater than 45° are not recommended.

CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION



3. Navigation Mode

The navigation mode is used for tracking a VOR or GPS course. To intercept and track the course, select the desired course on the PFD with the HSI Course Pointer and press the **NAV** button on the autopilot panel. The NAV annunciator will illuminate. The autopilot will then direct the plane to the course via an appropriate intercept course.

If the course needle is at full scale deflection, the autopilot will establish a 45° intercept angle. As the aircraft nears the selected course, the autopilot gradually shallows the intercept angle.



The System 55X is equipped with a GPS steering mode (GPSS) that can be used for normal GPS tracking or GPS approaches. IN GPSS mode the, the heading bug and/or the course pointer positions have no effect on the autopilot. This is a useful feature since the heading bug and/or course pointer can be preset for the missed approach heading.

When in GPSS mode and coupled to the GPS receiver, the autopilot steers the aircraft through around the GPS approach without additional heading or course inputs from the pilot.

To activate the GPSS mode, push the **NAV** button twice, the NAV and GPSS annunciators will display. To disable the GPSS mode, press the **NAV** button again or select the HDG mode.

Note: Turns while in GPSS mode may exceed standard rate by 20 to 30%.

CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION

**4. Approach Mode**

The APR mode offers increase sensitivity for VOR or GSP approaches. To engage this mode press the **APR** button, the APR annunciator will illuminate. Use this mode to track the localizer on LOC/ILS approaches.

**5. Reverse Mode**

The Reverse mode provides roll commands for intercept and tracking the localizer back course inbound or localizer front course outbound. To track a reverse course, select the **REV** button. The REV annunciator will illuminate.

**6. Altitude**

The Altitude mode may be used with any roll mode (NAV, HDG, etc.) and is engaged by pressing the **ALT** button, the autopilot will then maintain the pressure altitude present when the button was engaged.

While enroute, altitude correction for barometric pressure changes can be made while in the ALT mode by rotation of the VS knob. Each 'click' of the knob changes the altitude by 20 ft. Maximum altitude correction is +/- 360 ft.

CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION

**7. Altitude Select**

Pressing both the **ALT** and the **VS** button together activates the altitude select mode. In the simulator click the space between the **ALT** and the **VS** button to activate. The aircraft will then climb/descent to the altitude and vertical speed that were pre-selected on the PFD.

Note: Maintain proper power settings to achieve the desired speed and climb rate.

**8. Vertical Speed Mode**

Before engaging the Vertical Speed Mode, the autopilot roll axis must be engaged. Selecting the HDG mode or another roll mode the HDG or any other roll mode will satisfy this requirement. With the roll mode engaged the pilot may select the Vertical Speed mode by pressing the **VS** button.

The autopilot will synchronize with the aircraft's vertical speed at the time the VS mode was engaged and will display the corresponding vertical speed in the autopilot's display.

Note: If the VS mode annunciator flashes while in VS mode, this indicates a discrepancy between selected vertical speed and the aircraft's actual vertical speed. Adjust the aircraft's power or reduce the amount of vertical speed as appropriate.

CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION

**9. Vertical Speed knob**

The vertical speed can be adjusted in 100 ft increments by turning the VS knob. The + (positive) symbol indicates a vertical speed climb. Clockwise rotation of the VS knob increases the rate of climb and counterclockwise rotation decreases the rate of climb to 0.

The - (negative) symbol indicates a vertical speed descent. Counter-clockwise rotation of the VS knob increases the rate of descent and Clockwise rotation decreases the rate of descent to 0.

The rate shown in the display is in hundreds of feet (add two zeros after the displayed number)

Trim Annunciations

When the elevator trim is in motion, TRIM and the up or down symbols will annunciate indicating trim in motion and the direction of travel. If the trim continues to annunciate in excess of 7 seconds, these annunciators will flash.



CIRRUS SR20 G2 STEC 55X SETTINGS SELECTION

Glideslope Interception

Arming the automatic glideslope (GS) capture function requires the following conditions:

NAV receiver must be tuned to an appropriate frequency

Glide-slope signal must be valid (no GS failure flag)

Autopilot must be in the NAV – APR – ALT modes

Aircraft must be below the GS centerline during the approach to the intercept point and within half the needle deflection of the localizer centerline point of intercept.

When the above conditions are met for 10 seconds, glide-slope arming will occur. The GS annunciator will illuminate along with the ALT annunciator, indicating arming. Glide-slope capture is indicated by the extinguishing of the ALT annunciator.

System Failure / Caution Indicators

Annunciation	Condition	Action
Flashing RDY for 5 seconds with audible tone.	Indicates autopilot disconnect.	N/A
Flashing RDY with audible tone, then extinguished.	Turn coordinator gyro rotor speed is low. Autopilot disconnects and cannot be re-engaged.	Check power to turn coordinator. Additional system checks as necessary.
Flashing NAV, REV or APR	Indicates off navigation course by 50% needle deviation or more.	Use HDG mode until problem is identified. Cross-check NAV data, compass HDG, radio operation.
Flashing NAV, REV or APR Steady FAIL	Indicates invalid radio navigational signal.	Check NAV radio for proper reception. Use HDG mode until problem is corrected.
Flashing VS	Indicates excessive Vertical Speed error over selected VS	Reduce VS command and / or adjust power as appropriate.
Flashing GS	Indicates off glideslope centerline by 50% of needle deviation or more.	Check altitude, power. Add or reduce power as appropriate.
Flashing GS, steady FAIL	Indicates invalid glide-slope radio navigational signal.	Disconnect autopilot and initiate go-around or missed approach as appropriate. Inform ATC.
Flashing GS and ALT	Indicate manual glide-slope disable.	Re-enable by pushing APR mode switch.