Operating Handbook

For

Vizion PMA Autopilot

TRUTRAK FLIGHT SYSTEMS

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1. Revisions

Rev Number	Notes	Date
Initial	Manual Created	13-Jun-17
A	Changed click to momentary press and release	19-Jul-17

2. General Introduction

2.1. About Trutrak and your Vizion autopilot

Thank you for purchasing this Trutrak product. At Trutrak, we strive to provide the highest quality avionics and autopilots available in the Standard Category Aviation market. The team at TruTrak are not only committed to quality, but to industry leading customer service and support.

We believe that the Vizion is the best stand-alone autopilot that we have ever created. This is no small accomplishment considering the huge success of the Digiflight II product line. The Vizion capitalizes on the simple user interface and supreme flight dynamics that were established by the Digiflight II.

Your new Vizion autopilot was created with both the VFR and IFR pilot in mind. The new Emergency Level Mode was designed primarily for the VFR pilot that inadvertently finds himself in IMC.

The new Automatic Envelope Protection feature (AEP) will help to mitigate stall/spin incidents by providing a layer of safety previously unseen in the certified market.

The operation of the Altitude Select and Altitude Preselect Modes were designed to be extremely useable and useful in IFR flight, even to the extent that an Altitude Select can be entered and the vertical speed is easily adjusted to any desired value. This feature is extremely useful when initiating approaches or during step down approaches.

Please read this manual carefully and get to know your new autopilot.

2.2. Definitions

This section will define terms used throughout the operation manual to help with clarification regarding user interfaces, mode usage, and display annunciation.

MOMENTARY PRESS AND RELEASE– Refers to user interface. A momentary press and release of the noted button or knob.

PRESS – Refers to user interface. A press and hold of the noted button or knob.

ROTATE – Refers to user interface. A rotation of the knob.

GPS Nav – Refers to mode usage. A point to point navigation type that does not anticipate upcoming turns in a flight-plan. Typically used with portable GPS units.

GPSS – Refers to mode usage. A turn anticipating navigation type that flies smooth intercepts to the next waypoint. Requires an IFR GPS.

Altitude Select – Refers to mode usage. Selects a target altitude for climbs or descents with the autopilot already engaged.

Altitude Pre-select – Refers to mode usage. Selects a target altitude for climbs with the autopilot disengaged.

Cursor – Refers to display annunciation. An underlined value can be adjusted by using the knob to select.

2.3. User Interface and Display Annunciation

The face of the autopilot has a display for showing mode and other information to the pilot. Also on the face of the autopilot there is a **MODE** button, **ALT** button, and a **KNOB**.

Not on the face of the unit, but also integral pieces of the autopilot system, are the control wheel steering button or **CWS** button, and the **AP LVL** button.

Most modes and features of the autopilot are accessed using **MODE**, **ALT**, and **KNOB**.

The display incorporates a cursor that underlines an adjustable value. The cursor can be moved to other adjustable values by a momentary press and release of the **KNOB**. The cursor moves in a counter-clockwise direction from the selected track value; i.e. from track to vertical speed to selected altitude.

3. Autopilot Power Up

The autopilot master switch should be in the off position when the engine is started. After starting the aircraft engine, turn on the autopilot master switch. After the autopilot master is turned on the software and autopilot version will be displayed on the screen. It is not necessary to hold the aircraft stationary during this time, although it is recommended. The autopilot power can be removed and reinstated during flight without causing any problems with the system. Momentary power loss will also not cause any problems. Autopilot type and software version is shown in figure 3a.

Figure 3a

The autopilot and software versions are shown for three seconds, after that time the display will show AP OFF, as shown in figure 3b.

Figure 3b

Note: Before using the autopilot, an altimeter sync should be completed. See section 5.1 for altimeter sync instructions

4. Autopilot Display

The autopilot display shows operating modes and associated data. When displaying operating modes, the left side shows lateral data and the right side shows vertical data.

4.1. GPS Signal Status

4.1.1. Autopilot Not Engaged

The current GPS signal status is indicated in the top left corner of the display. NO GPS is displayed when no valid signal is being received. This is shown in Figure 4.1.1a

Figure 4.1.1a

A flashing period is displayed in the upper left when a GPS signal is detected but no position information is available and the words NO FIX are displayed. This is shown in Figure 4.1.1b

Figure4.1.1b

A flashing asterisk (*) and GPS OK is displayed when the GPS position information is valid. This is shown in Figure 4.1.1c.

Figure 4.1.1c

A flashing plus (**+**) is displayed when GPS flight plan information is received via RS232 or GPS Steering information is received via ARINC 429. This is shown in Figure 4.1.1d.

Figure 4.1.1d

If the aircraft is travelling at a ground speed greater than 10 knots and has a valid GPS fix (a flashing asterisk (*) or plus (**+**) is displayed), the display will show the current ground track or TRK. This is shown in Figure 4.1.1e.

Figure 4.1.1e

4.1.2. Autopilot Engaged

When the autopilot is engaged without a valid GPS signal present, BANK is displayed in the top left corner of the display. This is shown in Figure 4.1.2a.

Figure 4.1.2a

A flashing period is displayed under BANK when a GPS signal is detected but no position information is available. This is shown in Figure 4.1.2b.

Figure 4.1.2b

A flashing asterisk (*) is displayed when the GPS position information is valid. TRK replaces GPS OK once the aircraft has 10 knots of ground speed. This is shown in Figure 4.1.2c.

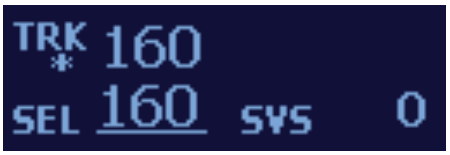


Figure 4.1.2c

A flashing plus (**+**) shows when GPS flight plan information is received via RS232 or GPS Steering information is received via ARINC 429. This is shown in Figure 4.1.2d.

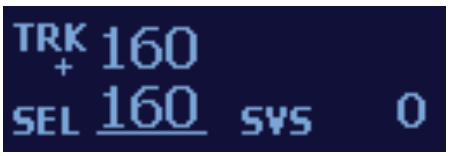


Figure 4.1.2d

4.2. DG Display

The upper left display shows TRK and the current GPS ground track only when there is at least 10 kts of ground speed and a valid GPS signal. The DG display is a gyroscopically enhanced GPS ground track. This enhancement creates a very easy to fly track based DG, which is free of the usual GPS based lag in many displays. The DG is shown in the upper left of figure 4.3a

4.3. Trim Annunciation

The autopilot monitors the trim condition of the aircraft while it is engaged. It will indicate a need for trim by annunciating trim up or trim down on the display. Figure 4.3a shows the screen with trim up annunciated. Note the word UP is shown with an arrow pointing up above it. This indicates the need for nose up trim.

Figure 4.3b shows the screen with trim down annunciated. Note the letters DN are shown with an arrow pointing down below them. This indicates the need for nose down trim.

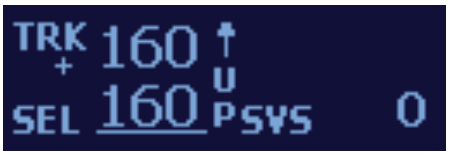


Figure 4.3a

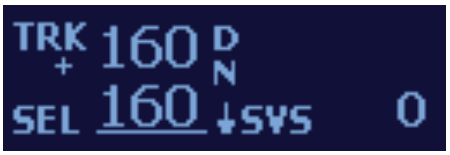


Figure 4.3b

4.4. Contrast Adjustment and Minimum Backlight

4.4.1. Contrast Adjustment

The contrast adjustment allows the user to set a desired contrast level for the autopilot display. This mode is accessed by a momentary press and release of the **KNOB** while turning on the autopilot master switch. Once power is applied, release the **KNOB** to show the contrast setup screen. Rotate the **KNOB** to set the desired value. Momentarily press and release the **KNOB** to advance to the minimum backlight adjustment. Figure 4.4.1a shows the contrast adjustment screen.

Figure 4.4.1a

4.4.2. Minimum Backlight Adjustment

The minimum backlight adjustment allows the user to set a minimum value for the autopilot backlight automatic dimming feature. It is accessed after the contrast adjustment (section 5.3.1). Rotate the **KNOB** to set the desired value. Momentarily press and release the **KNOB** to exit the minimum backlight adjustment screen. This will advance to the setup enable screen. Figure 4.4.2a shows the Minimum Backlight Adjustment.

Figure 4.4.2a

4.4.3. Setup Enable

The setup enable screen is used only by installers. It has no role in the operation of the autopilot.

5. Autopilot Operation

5.1. Syncing the altimeter

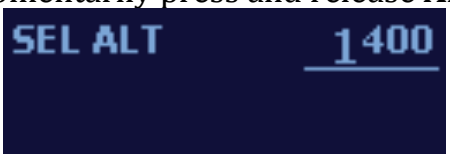
Sync the altimeter as part of pre-takeoff checklist!

The autopilot has a built in altimeter that must be synced to the aircraft altimeter for proper operation of the altitude select and pre-select modes.

This is accessed by two momentary presses and releases of the **ALT** button when not in the altitude select setup screen.

Rotate the **KNOB** to set the altimeter to the aircraft altimeter reading, in feet, and then momentarily press and release the **KNOB**. Each time the power is cycled on the autopilot, the altimeter will return to an equivalent baro setting of 29.92. When the autopilot is disengaged, the transition to altimeter sync setup screen is shown in Figure 5.1a.

Momentarily press and release **ALT**



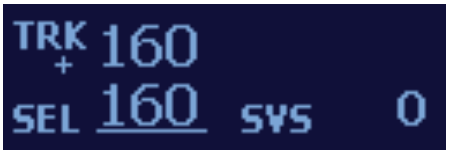
Momentarily press and release **ALT**

Rotate **KNOB** then momentarily press and release **KNOB**

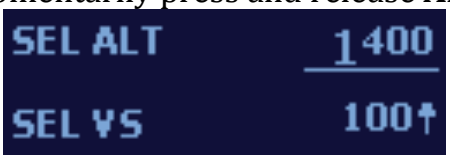
Figure 5.1a

NOTE**:** If the sync page is entered by accident, momentarily pressing and releasing the **MODE** button will exit back to the normal operation screen.

Figure 5.1b shows the transition from a normal autopilot engaged operating home screen (TRK mode and SVS mode in this case) to the altimeter sync setup screen.



Momentarily press and release **ALT**



Momentarily press and release **ALT**

Rotate **KNOB** then Momentarily press and release **KNOB**

Figure 5.1b

5.2. Engaging/Disengaging the autopilot

5.2.1. Engaging the autopilot

The autopilot can be engaged in one of two ways:

1) Momentarily press and release the **KNOB** on the autopilot face;

4) Using the **AP LEVEL** button. (See section 6.5.1 for Emergency Level Mode).

When engaged using the **KNOB**, the autopilot will synchronize to the current ground track and the current vertical speed, as shown in Figure 5.2.1a. The aircraft is flying a track of 200 degrees and a positive vertical speed of 1000 fpm.

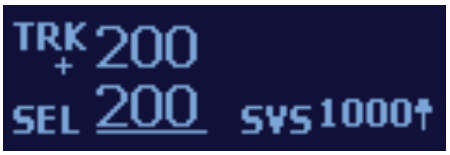


Figure 5.2.1a

5.2.2. Disengaging the autopilot

The autopilot can be disengaged in one of three ways:

1) Momentarily press and release the **KNOB** on the face of the autopilot for 1.5 seconds;

2) Momentarily press and release the **CWS** button.

3) Removing power from the entire autopilot using the AP MASTER or AP Circuit Breaker.

When disengaged, the autopilot will release control of both servos. An example of a disengaged autopilot is shown in Figure 5.2.2a.

Whenever the autopilot is disengaged, it will send three short tones to the buzzer (if equipped).

Figure 5.2.2a

5.3. Normal Lateral Autopilot Modes

5.3.1. Track Select Mode

The track select mode, or TRK mode, is the default lateral mode that is activated when the autopilot is engaged. When the autopilot is engaged it will synchronize to the track being flown at that time. This mode allows the user to select a desired track for the autopilot to fly. The selected track can be adjusted by rotating the **KNOB**.

1) 5° increments when rotating the **KNOB**.

2) 1° increments when pressing and rotating the **KNOB**.

To access the TRK mode from GPS NAV mode (see section 6.3.2) or GPSS mode (see section 6.3.3), momentarily press and release the **MODE** button on the autopilot. Figure 5.3.1a shows the transition from GPS NAV mode to TRK mode.

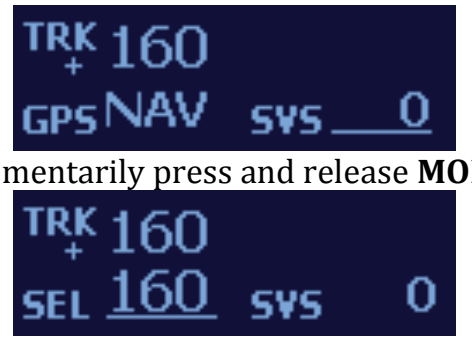


Figure 5.3.1a

Figure 5.3.1b shows the autopilot in TRK mode and SVS mode (see section 5.4.1 for SVS mode).

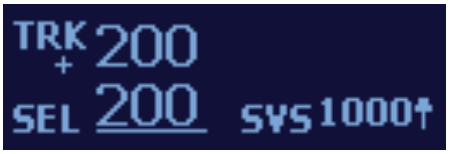


Figure 5.3.1b

Figure 5.3.1c shows the autopilot in TRK mode and ALT HOLD mode (see section 5.4.2 for ALT HOLD mode).

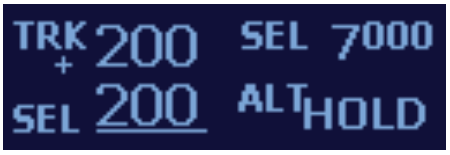


Figure 5.3.1c

Figure 5.3.1d shows the autopilot in TRK mode and SEL mode (see section 5.4.3 for SEL mode).

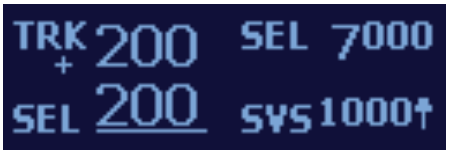
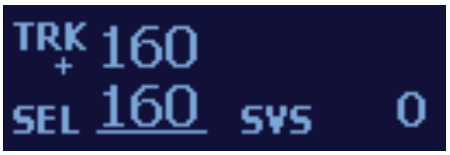


Figure 5.3.1d

5.3.2. GPS NAV Mode (Portable GPS)

The GPS NAV mode allows the autopilot to follow a direct-to or multi-leg flight plan from the connected handheld or non-IFR GPS. This mode uses only RS232 data and will not anticipate any turns or fly any procedure turns/approaches. This mode is accessed from the TRK mode by a momentary press and release of the **MODE** button.

To access the GPS NAV mode from TRK mode, momentarily press and release the **MODE** button**.** Figure 5.3.2a shows the transition from TRK mode to GPS NAV mode.



Momentarily press and release **MODE**

Figure 5.3.2a

Figure 5.3.2b shows the autopilot in GPS NAV mode and SVS mode (see section 5.4.1 for SVS mode).

Figure 5.3.2b

Figure 5.3.2c shows the autopilot in GPS NAV mode and ALT HOLD mode (see section 5.4.2 for ALT HOLD mode).

Figure 5.3.2c

Figure 5.3.2d shows the autopilot in GPS NAV mode and SEL mode (see section 5.4.3 for SEL mode).

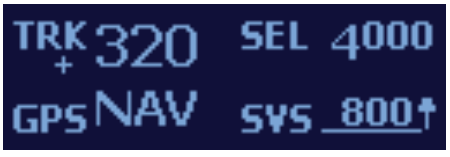
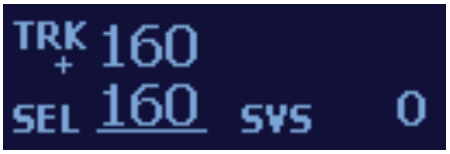


Figure 5.3.2d

5.3.3. GPSS Mode (Requires IFR GPS)

The GPSS mode allows the autopilot to follow a direct-to or multi-leg flight plan from an IFR GPS. This mode uses ARINC 429 data. This mode will anticipate upcoming turns, rounding the corners instead of overshooting the next course. It will also fly procedure turns and approaches. This mode is accessed from the track selector mode by a momentary press and release of the **MODE** button on the autopilot. When in GPSS Mode, the autopilot display will show GPSS on the display. *If ARINC 429 steering inputs are present, GPS Nav mode will be skipped.*

To access the GPSS mode from TRK mode, momentarily press and release the **MODE** button**.** Figure 5.3.3a shows the transition from TRK mode to GPSS mode.



Momentarily press and release **MODE**

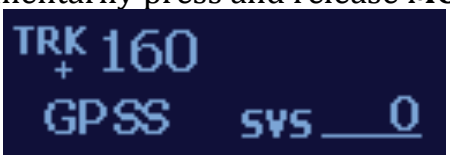


Figure 5.3.3a

Figure 5.3.3b shows the autopilot in GPSS mode and SVS mode (see section 5.4.1 for SVS mode).

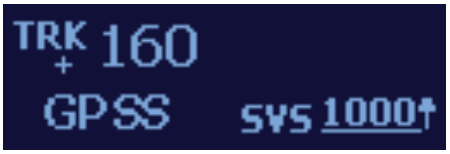


Figure 5.3.3b

Figure 5.3.3c shows the autopilot in GPSS mode and ALT HOLD mode (see section 5.4.2 for ALT HOLD mode).

Figure 5.3.3c

Figure 5.3.3c shows the autopilot in GPSS mode and SEL mode (see section 5.4.3 for SEL mode).

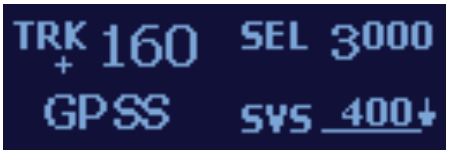


Figure 5.3.3c

Figure 5.3.3d shows the autopilot in GPSS mode and GS ARM mode (see section 5.4.6 for GS ARM mode).

Figure 5.3.3d

Figure 5.3.3e shows the autopilot in GPSS mode and GS CPLD mode (see section 5.4.6 for GS CPLD mode).

Figure 5.3.3e

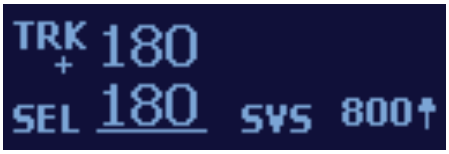
5.4. Normal Vertical Autopilot Modes

5.4.1. Vertical Speed Mode

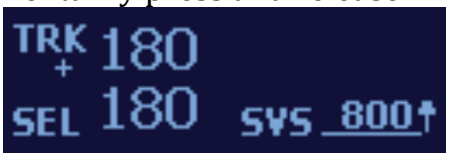
The vertical speed mode or SVS mode is the default vertical mode that is activated when the autopilot is engaged (as long as an altitude pre-select has not been entered).

When the autopilot is engaged it will synchronize to the vertical speed being flown at that time. The SVS mode allows the user to select a desired vertical speed for the autopilot to fly. The selected vertical speed can be adjusted by a momentary press and release of the **KNOB** to move the cursor under the number next to SVS, and then rotating the **KNOB**.

Once the SVS is selected the autopilot will continue climbing or descending at the selected vertical speed until the user stops the climb or descent. Figure 5.4.1a shows the movement of the cursor from TRK to SVS.



Momentarily press and release **KNOB**



Rotate **KNOB**

Figure 5.4.1a

Figure 5.4.1b shows the autopilot in TRK mode (see section 5.3.1 for TRK mode) and SVS mode. Note: in this figure, the cursor will have to be moved to change the SVS**.**

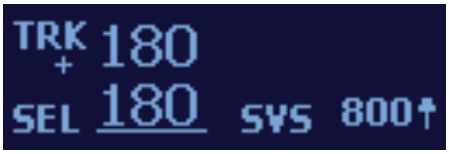


Figure 5.4.1b

Figure 5.4.1c shows the autopilot in GPS NAV mode (see section 5.3.2 for GPS NAV mode) and SVS mode.

Figure 5.4.1c

Figure 5.4.1d shows the autopilot in GPSS mode (see section 5.3.3 for GPSS mode) and SVS mode.

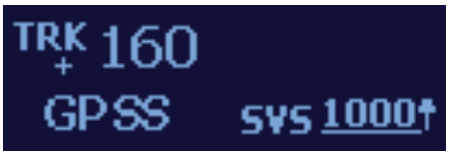


Figure 5.4.1d

NOTE: There is a special case of vertical speed when zero (0) is selected. This is <u>not</u> altitude hold, but will maintain zero vertical speed. This mode allows the aircraft to vary in altitude, and in heavy turbulence will give a smoother ride to the occupants. The SVS zero mode is shown in figure 5.4.1e.

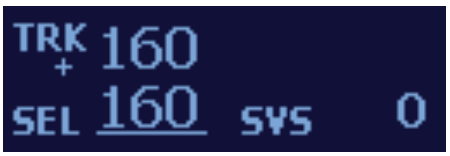


Figure 5.4.1e

To get back to the SVS zero mode from altitude hold mode, simply momentarily press and release the **KNOB**:

5.4.2. Altitude Hold Mode

The altitude hold mode or ALT HOLD holds the selected altitude. The autopilot can hold at any 100-foot increment. When directly entering the ALT HOLD mode, the autopilot will go to the nearest 100-foot increment. It is recommended that the altimeter be synced prior to using altitude hold.

This mode is accessed from SVS, SEL, or GS ARM mode by a momentary press and release of the ALT button and then a momentary press and release of the **KNOB**. The transition from SVS to ALT HOLD mode is shown in figure 5.4.2a.

NOTE: A momentary press and release of the **ALT** button when in GS CPLD mode will initiate the Missed Approach! (see section 5.4.7 for Missed Approach mode)

NOTE: A momentary press and release of the **ALT** button while in GPSV mode will not change any vertical modes! (see section 5.4.5 for GPSV mode)

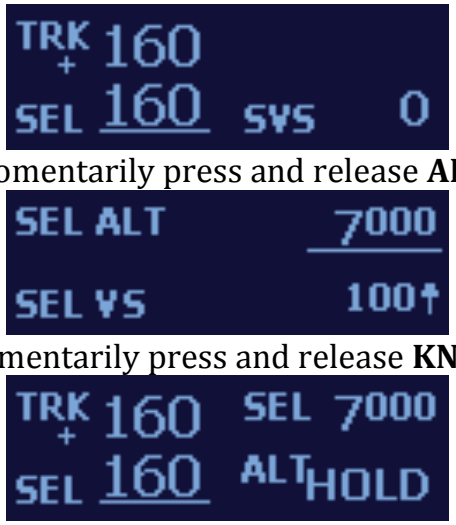


Figure 5.4.2a

5.4.3. Altitude Select Mode

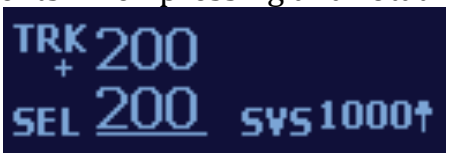
Sync the altimeter before performing altitude select (see section 5.1)

The altitude select mode allows the user to select a target altitude above or below the current altitude, as well as a vertical speed to transition to that altitude. This mode is accessed by a momentary press and release of the **ALT** button.

With the autopilot engaged, momentarily press and release **ALT**, rotate the **KNOB** to select the target altitude, momentarily press and release the **KNOB**, select desired vertical speed, momentarily press and release the **KNOB**. The sequence for entering altitude select is shown in Figure 5.4.3a

1) 500 foot increments when rotating the **KNOB**.

2) 100 foot increments when pressing and rotating the **KNOB**.



Momentarily press and release **ALT**

Rotate **KNOB** then momentarily press and release **KNOB**

Rotate **KNOB** then momentarily press and release **KNOB**

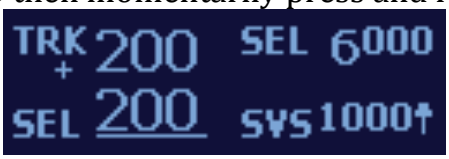


Figure 5.4.3a.

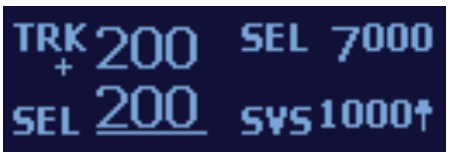
NOTE: The selected vertical speed will default to the last selected.

The vertical speed and altitude can be adjusted at any time during a transition to a selected altitude. This requires simply moving the cursor, which normally resides beneath the SEL track, to the value to be edited. To move the cursor momentarily press and release the **KNOB** and the cursor will move to SVS, momentarily press and release the **KNOB** again to move the cursor to SEL altitude. Figure 5.4.3b shows moving the cursor around the display.

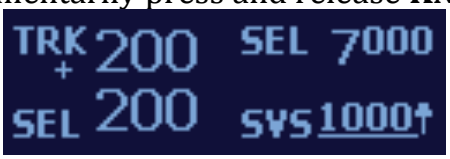
If the SEL altitude is moved to the current altitude the autopilot will enter ALT HOLD.

The SVS can be adjusted to ANY value during a transition, even the opposite direction. This may be useful when flying instrument approaches, as the desired altitude can be entered and the vertical speed set to zero until time to begin the transition to the selected altitude. Note that zero vertical speed will NOT keep the aircraft locked at a specific altitude, but will certainly hold fairly close for several minutes.

If the autopilot is in GPS Nav or GPSS mode, the cursor will reside underneath SVS. In this case there will be no need to move the cursor to adjust the selected vertical speed.



Momentarily press and release **KNOB**



Momentarily press and release **KNOB**

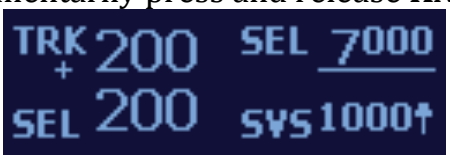


Figure 5.4.3b

5.4.4. Altitude Pre-Select Mode

Sync the altimeter before performing altitude pre-select (see section 5.1)

The altitude pre-select mode allows the user to pre-select a target altitude before takeoff. Once engaged, the autopilot will proceed in a climb to the selected target altitude and synchronize to the current vertical speed. This mode is accessed by a momentary press and release of the **ALT** button once while the autopilot is disengaged.

From autopilot disengaged, momentarily press and release **ALT** button, rotate the **KNOB** to select the target altitude, momentarily press and release the **KNOB**. The sequence for entering an altitude pre-select is shown in figure 5.4.4a.

1) 500 foot increments when rotating the **KNOB**.

2) 100 foot increments when pressing and rotating the **KNOB**.

Momentarily press and release **ALT**

Rotate **KNOB**

Momentarily press and release **KNOB**

Engage AP (Momentarily press and release **KNOB**)

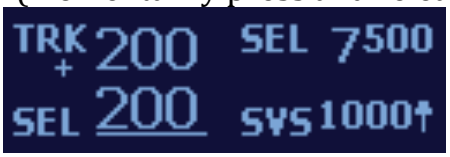


Figure 5.4.4a

Once a target altitude is selected, it will be displayed in the top right of the autopilot display. This is shown in the fourth picture of Figure 5.4.4a.

When the autopilot is engaged, it will synchronize to the current vertical speed, as long as the current vertical speed is above 400 fpm, otherwise it will synchronize to 500 fpm.

The vertical speed and altitude can be adjusted at any time during a transition to a selected altitude. This requires simply moving the cursor, which normally resides beneath the SEL track, to the value to be edited. To move the cursor momentarily press and release the **KNOB** and the cursor will move to SVS, momentarily press and release the **KNOB** again to move the cursor to SEL altitude.

If the SEL altitude is moved to the current altitude the autopilot will enter ALT HOLD.

The SVS can be adjusted to ANY value during a transition, even the opposite direction.

5.4.5. Vertical Approach Mode (Requires connection to LPV capable GPS)

The vertical approach mode allows the autopilot to couple to and track the glide slope of a GPS LPV approach. This mode is only available in GPSS mode. To access this mode, the autopilot must be in GPSS mode and have zero vertical speed selected (section 6.4.1) or ALT HOLD (section 6.4.2) selected. Once ALT HOLD or zero vertical speed is selected the approach mode will automatically engage. It is displayed by sequencing GS ARM initially to GS CPLD**,** once the glide slope is intercepted, on the lower right of the display. Figure 5.4.5a shows the sequencing on the display.

Figure 5.4.5a

In the event that the GPS sends out a flagged vertical steering signal, the autopilot will display GS FLG and maintain the current altitude. Figure 5.4.5b shows the GS FLG display.

Figure 5.4.5b

5.4.6. Missed Approach Mode (Requires connection to LPV capable GPS)

This mode allows the autopilot to break off from a coupled glide slope and initiate a 500 fpm climb while maintaining the current track, but staying in GPSS mode. This mode can only be initiated while coupled to an LPV glide slope with the display showing GS CPLD. To use the missed approach mode, momentarily press and release **ALT**. Figure 5.4.6a shows the autopilot in the missed approach mode.

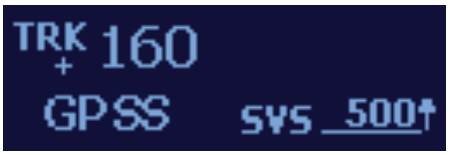


Figure 5.4.6a

5.4.7. Control Wheel Steering Mode

This mode allows the autopilot to be temporarily disengaged to make a quick course change and/or vertical speed change. This mode is accessed by a press of the **CWS** switch. While the switch is held, the display will show the autopilot is in CWS mode and will send three short tones to the buzzer (if equipped). Figure 5.4.7a shows the CWS mode screen.

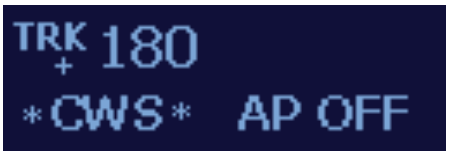


Figure 5.4.7a

When the button is released, the autopilot will hold the new track and the new vertical speed, if greater than 400 fpm in either direction. If the vertical speed at time of release is less than 400 fpm, then the autopilot will hold zero vertical speed. Figure 5.4.7b shows the screen after release at a vertical speed of 800 fpm up.

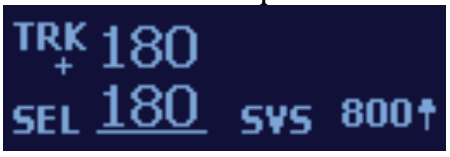


Figure 5.4.7b

6. Safety Features

6.1. Emergency Level Mode

This mode allows the autopilot to be engaged into zero degrees of bank and zero vertical speed from ANY attitude or any state, with the momentary press and release of a single button. Figure 6.1a shows the display when the emergency level mode is engaged. To engage the emergency level mode, momentarily press and release the **AP LVL** button.

After approximately 15 seconds the autopilot will revert back to TRK mode and hold the current track. At this time, other autopilot modes can be selected.

Figure 6.1a

6.2. AEP (Automatic Envelope Protection)

This mode serves as a passive protection system while the aircraft is being flown with the autopilot disengaged. AEP monitors the aircraft bank angle; if the bank angle exceeds 40°, AEP will show AEP ACTIVE on the display of the autopilot as well as use the autopilot roll servo to both nudge the aircraft back to a safe bank angle and to inform the pilot that the bank angle limit has been reached. There will also be a long, single tone sent to the buzzer (if equipped) when AEP is active. Figure 6.2a shows the AEP ACTIVE on the display.

Figure 6.2a

While the autopilot is disengaged, AEP is in a standby mode while monitoring the bank angle. This is indicated on the display by

showing AEP STBY in the lower left area of the display. Figure 6.2b shows this screen. Three short tones will be sent to the buzzer when AEP returns to standby mode from active mode.

Figure 6.2b

By default, AEP is in standby mode. Each time the power to the autopilot is cycled, AEP will be in standby mode when the autopilot is disengaged. However, it can be turned off completely by a momentary press and release of the **MODE** button when the display shows AEP STBY. Likewise, it can be turned back on by a momentary press and release of the **MODE** button again. Figure 6.3c shows the AEP OFF screen.

When AEP is off, it will not be monitoring the aircraft bank angle and, therefore, will not inform the pilot of excessive bank angles.

Figure 6.2c

6.3. Gyro Backup Mode

This mode is the lateral mode available when the RS232 signal from the GPS is lost. It allows selection of a bank angle in either the left or right direction up to 30° of bank. This mode is essentially a wing leveler. Rotate the **KNOB** to select the desired bank angle. Figure 6.3a shows the gyro backup mode screen.

Figure 6.3a

Altitude select, altitude hold, and vertical speed select modes are still accessible when no GPS signal or fix is available. Figure 6.3b shows a 10 degree left bank and altitude hold at 7000 feet. (see section 5.4.2 for ALT HOLD)

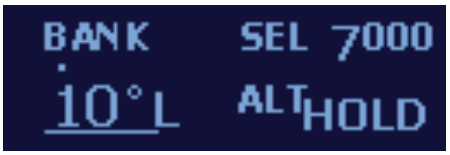


Figure 6.3b

If the autopilot is drifting left or right with 0° selected, the gyro trim needs to be adjusted. Press and rotate the **KNOB** to access the gyro trim screen. Adjust the gyro trim in the appropriate direction in 0.2°/min increments. Figure 6.3c shows the gyro backup mode screen and the gyro trim screen.

Note: the autopilot may momentarily switch to the AP OFF screen while performing the press of the **KNOB**, rotating the knob left of right will bring the normal display back into view and the autopilot will not disengage.

Figure 6.3c

6.4. Sensor Failure Monitoring

The Vizion internally monitors its own sensors to ensure proper operation and to allow for detection of faults. If a sensor fault is detected, the autopilot will disengage, flash a warning on the display, and provide three short tones to the buzzer (if equipped). Figure 6.4a shows the flashing warning sequence on the display.

To clear this mode, the power must be cycled on the autopilot. It is recommended to have the autopilot inspected before returning to service if this error occurs.

Figure 6.4a

6.5. Minimum and Maximum Airspeeds

The autopilot includes minimum and maximum airspeed protections. This prevents the autopilot from flying the aircraft into a stall or past V_{NE}.

If the aircraft reaches the minimum airspeed (in knots indicated airspeed) with the autopilot engaged, it will flash a warning on the display, send one long tone to the buzzer (if equipped), and lower the nose of the aircraft to maintain the minimum setting. Figure 6.5a shows the minimum airspeed display warning.

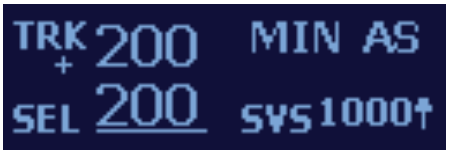


Figure 6.5a

If the aircraft reaches the maximum airspeed (in knots indicated airspeed) with the autopilot engaged, it will flash a warning on the display, send one long tone to the buzzer (if equipped), and raise the nose to maintain the maximum setting. Figure 6.5b shows the maximum airspeed display warning.

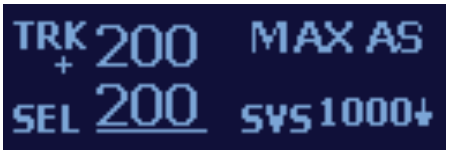


Figure 6.5b

Once the aircraft returns above the minimum airspeed or below the maximum airspeed, the autopilot will resume its previous modes before the limit was reached.

7. Quick Reference Card

The following Quick Reference Cards will give a quick overview of the Vizion controls.

GPS Status

GPS OK and flashing * or + means GPS communication is working properly and GPS has a fix.

Engage Autopilot

Momentarily press and release knob

or

Momentarily press and release AP LVL button

Disengage Autopilot

Press knob for 2 seconds

or

Momentarily press and release CWS switch

Lateral Modes

Track Mode

Select desired track with knob

GPS Nav Mode

Momentarily press and release MODE button to follow flight plan on GPS.

GPS Steering Mode (GPSS)

Momentarily press and release MODE button to follow flight plan on GPS.

Gyro Back-Up Mode (Bank) – Only with GPS failure

Rotate knob to select desired bank angle (up to 30 degrees)

Push and hold knob in and rotate to trim gyro drift when commanding zero bank angle

Vertical Modes

Altimeter Sync (AP disengaged or engaged)

Momentarily press and release ALT button twice ->
Sync altimeter, Momentarily press and release knob

Altitude Pre-Select Mode (AP disengaged)

Momentarily press and release ALT button ->
Select altitude, momentarily press and release knob
AP will sync to current vertical speed when engaged, or default to 500 fpm if current vertical speed is less than 500 fpm

Altitude Select Mode

Momentarily press and release ALT button ->
Select altitude, momentarily press and releasek nob ->
Select vertical speed, momentarily press and release knob

Altitude Hold Mode

Automatically entered when target altitude is reached
or
Momentarily press and release ALT button ->
Momentarily press and release knob (without adjusting target altitude)

Vertical Approach Mode

Momentarily press and release MODE button for GPSS->
Select zero vertical speed or altitude hold (must be underneath the glide slope)

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TruTrak Flight Systems, Inc.

(07-17)
Printed in U.S.A.