SkyView SE

Pilot's User Guide

This product is not TSO'd and cannot be installed into traditional FAA Part 23 and similarly type-certificated aircraft.

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For use with software version 16.2

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Dynon Avionics Returns and Warranty web page can be found at dynon.com/warranty.

Revision History

Revision	Revision Date	Description
A	April 2016	Initial release
B	January 2020	Added the SV-COM-X25 COM radio to Sections: 2, 3, and 8.
C	February 2021	Updated document for Software Version 16.0: • Added Flight ID to Transponder Submenu section. • Added new note to ADS-B OUT Transmissions section.
D	November 2021	Updated document for Software Version 16.2: • Added info about Auto-Trim Control and SV-AP-TRIMAMP to Section 2. • Added info about twin-engine monitoring to Section 5. • Added info about disabling ADS-B OUT transmissions to Section 6. • Added info about Auto-Trim Control and SV-AP-TRIMAMP to Section 7. • Updated the Aviation Databases content in Section 8. • Updated the Messages, Alerts, and Audio Details content in Section 9.

Table 1 – SkyView SE Pilot's User Guide Revision History

Table of Contents

1. Introduction 1-1

Before You Fly 1-1
Warning 1-1
Dynon Avionics Product Registration 1-1
About this Guide 1-1

2. System Overview 2-1

SV-D600 and SV-D900 2-1
SV-ADAHRS-200/201 2-3
SV-MAG-236 2-4
SV-EMS-220 2-5
SV-GPS-250 & SV-GPS-2020 2-5
SV-BAT-320 Backup Battery 2-5
SV-XPNDR-261/262 2-5
SV-COM-C25 2-6
SV-COM-X25 2-6
SV-COM-X83 2-6
SV-INTERCOM-2S 2-6
SV-KNOB-PANEL 2-6
SV-KNOB-DIMMER 2-6
Autopilot Servos 2-6
Autopilot Auto-Trim Control – SV-AP-PANEL 2-7
SV-BUTTON-LEVEL 2-7

3. SV-D600 and SV-D900 Operation 3-1

Screen Synchronization 3-1
Display Bezel Layout 3-1
Joystick and Button Operation 3-3
Menu Navigation 3-4
Basic Display Operation Procedures 3-6
Screen Layout Configuration 3-8
Backup Battery Charging and Testing 3-9

4. PFD Operation 4-1

PFD Page Layout 4-1
PFD Symbology 4-2
ADAHRS (Flight Instrument) Redundancy and Cross-Checking 4-13
Top Bar 4-17
SV-KNOB-PANEL Operation 4-18

5. EMS Operation 5-1

Engine Page Layout 5-1
Rotax 912 Behavior 5-4
Timers 5-5
Fuel Computer 5-6

6. Transponder Operation 6-1

Transponder Status 6-1
Transponder Sub-Menu 6-3
Reported Pressure Altitude 6-4
ADS-B OUT Transmissions 6-5

Flight Plan Codes 6-5

7. Autopilot Operation 7-1

Autopilot Safety Features 7-1
Top Bar Autopilot Status Area 7-2
Other Autopilot Status Information 7-2
Auto-Trim 7-6
Simplified Autopilot Operation and Controls 7-7

8. COM Radio Operation 8-1

Top Bar COM Radio Status Overview 8-2
Using your COM Radio 8-2
Loading Airports to the SkyView SE Com Radio 8-6
Using the TWR, ATIS, GND, and ATC Buttons 8-8
Aviation Database 8-9
Other Status Information 8-9
External Flip/Flop 8-12
Dual COM Radios 8-12

9. Messages and Alerts 9-1

Loss of Information 9-1
Message, Caution, and Warning Alerting System 9-1
Prompts Requiring Interaction 9-4
Audio Alerts 9-5
Inhibited Alerts 9-5
Messages, Alerts, and Audio Alert Details 9-5

10. Appendix A: SkyView SE System Specifications 10-1

11. Appendix B: License Information 11-1

1. Introduction

Thank you for purchasing the Dynon Avionics SkyView SE system. This chapter provides some important cautionary information and general usage instructions for this guide.

The printed version of this guide is in grayscale. Some figures and diagrams contain important color information. Reference the electronic version of this guide to view it in color.

Before You Fly

We strongly recommended that you read this entire guide before attempting to use SkyView SE in an actual flying situation. Additionally, we encourage you to spend time on the ground familiarizing yourself with the operation of the system. While first learning to use the system in the air, we recommend you have a backup pilot with you in the aircraft. Finally, we encourage you to keep this guide in the aircraft with you at all times. This document is designed to give you quick access to information that might be needed in flight. *In a flying situation, it is the pilot's responsibility to use the system and the guide prudently.*

Warning

Dynon Avionics' products incorporate a variety of precise, sensitive electronics. SkyView SE products do not contain any field/user-serviceable parts. Units found to have been taken apart may not be eligible for repair under warranty. Additionally, once a Dynon Avionics unit is opened up, it is not considered airworthy and must be serviced at the factory.

Dynon Avionics Product Registration

Please take a moment to register your Dynon Avionics SkyView SE system at dynon.com/register. Registering your product with Dynon ensures that your contact information is up-to-date. This helps verify product ownership, can expedite warranty claims, and allows us to notify you in the event a service bulletin is published for your product. You can also optionally sign up to receive other Dynon news and product announcements. Dynon will not share your contact information with third parties or send you announcements without your explicit consent.

About this Guide

This guide helps you configure and get acquainted with SkyView SE's many functions and facilitates quick access to vital information. For detailed technical and installation information, refer to the *SkyView Classic / SE / HDX System Installation Guide*.

In the electronic (.PDF) version of this guide, page and section references in the Table of Contents and elsewhere act as hyperlinks taking you to the relevant location in the guide. The latest electronic version (.PDF) of this guide may be downloaded from our website at dynon.com/download.

This guide discusses the most common operation scenarios. If you have an operational issue that is not discussed in this guide, you can find additional operational information on Dynon's Internet sites:

- forum.flydynon.com – Dynon's Online Customer Forum is a resource for Dynon Avionics customers to discuss installation and operational issues relating to Dynon Avionics products. The Forum is especially useful for pilots with uncommon aircraft or unusual installation issues. For customers that cannot call Dynon Technical Support during our normal business hours, the Forum is a convenient way to interact with Dynon Avionics Technical Support. The Forum allows online sharing of wiring diagrams, photos, and other types of electronic files.
- dynon.com/videos – is an online video database including a series of SkyView / SkyView SE training and feature videos. These videos help new owners quickly learn the basics so they can safely start flying with the system. Also, current SkyView / SkyView SE owners can gain in-depth knowledge of many of the more advanced or complex features.
- dynon.com/training – To help you in your transition to new Dynon Avionics instruments we are offering an ongoing series of hands-on training classes. These are typically half-day courses, sitting in front of live SkyView / SkyView SE equipment, and with in-depth instruction on how to operate your avionics. Visit our training page to register for the next class coming to an airshow near you.

The following icon is used in this guide.

This icon denotes information that merits special attention.

This icon denotes a helpful tip.

2. System Overview

SkyView SE is an evolution of Dynon's industry-leading SkyView system, since 2010 one of the most popular integrated avionics systems available for Experimental/Amateur-Built and Light Sport aircraft. SkyView offers virtually all of the features and capabilities needed and wanted by pilots of small General Aviation aircraft.

Since SkyView's launch, however, many pilots have expressed the desire for an avionics package of more modest capabilities. Some pilots are seeking lower cost or less complexity. Others simply have more modest mission requirements for their aircraft. SkyView SE has been designed specifically to meet those more modest budgets and requirements. It is intended exclusively for VFR aircraft, since it excludes many of the features and capabilities required for IFR operations and flight in IMC.

At its core, SkyView SE is comprised of the same proven hardware as the SkyView system, including ADAHRS sensor model, engine monitoring system, 7" and 10" displays, autopilot servos, and many optional components. These common components assure SkyView SE owners of the same outstanding performance SkyView owners have known. At the same time, many optional SkyView components required for more complex aircraft operations are not supported in SkyView SE. Excluding support for these components allows the screen and pilot controls to be as uncluttered, intuitive and simple to use as possible. Those are major objectives for many pilots of VFR aircraft, especially those transitioning from familiar "steam gauges".

This chapter provides a general overview of the various parts of SkyView SE as well as a theory of operation. The information in this chapter serves as a reference only and helps familiarize you with the inner workings of the units. It should not be used for diagnostic or reparative work.

Dynon Avionics provides periodic firmware updates that enable new functionality. Use the contact information mentioned earlier in this guide as resources for staying current on firmware availability for SkyView equipment. Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to update firmware on SkyView equipment.

SV-D600 and SV-D900

This guide refers to the SV-D600 and SV-D900 as displays.

Functions

SkyView SE displays can act as a Primary Flight Display (PFD) or an Engine Monitoring System (EMS), in a variety of customizable screen layouts. Data is sourced from various connected modules and devices. Subsequent chapters in this guide address PFD and EMS functions in more detail.

Power

SkyView SE displays require between 10 and 30 volts DC for operation. Approximate current consumption of a SkyView SE system at 12 and 24 volts DC is 3.5 amps and 1.8 amps, respectively. SkyView SE robust power protection allows it to be powered on during engine start.

The current draw figures for the display provided do not include Autopilot servo, COM radio or transponder power draw as they receive power directly from the aircraft and not from the SkyView displays. Be sure to include these power requirements when considering your overall power budget.

Each SkyView SE display supports an optional external SV-BAT-320 Backup Battery. See the SV-BAT-320 section for more information about backup battery behavior and operation.

SkyView Network

Modules such as the SV-ADAHRS-200/201 (flight instruments), SV-EMS-220/221 (engine instruments), SV-COM-C25/X25/X83 (COM Radios), SV-KNOB-PANEL, and Autopilot servos use Dynon's redundant SkyView Network to communicate with SkyView SE's displays.

SkyView Network is designed to continue to work properly in the event of wiring or module faults by utilizing multiple power pathways and a redundant data network. In fact, SkyView has the ability to annunciate wiring issues as they are discovered, often while preserving full system functionality until full troubleshooting can be performed on the ground. These alerts are presented in SkyView's alerting system, which is described in a later chapter of this guide.

Serial I/O

SkyView SE displays have five RS-232 serial ports for connection to compatible equipment. All serial ports are wired into the SkyView Display Harness (SV-HARNESS-D37). All serial ports have configurable baud rates and data formats for use as general purpose inputs and outputs.

USB

SkyView SE displays have three USB ports. Two are built into the back of the display and one is wired into the SkyView Display Harness for convenience. USB ports are used for firmware updates and backups, database updates, and configuration file uploads and downloads. Each SkyView SE display ships with a USB flash drive for use in these instances. Note that only one USB flash drive memory stick can be connected to a SkyView SE display at a time.

Display

The SV-D600 display is a 7-inch, 800 by 480 pixel, 1200+ nit TFT active matrix LCD screen. The SV-D900 display is a 10.2-inch, 1024 by 600 pixel, 1350+ nit TFT active matrix LCD screen. SkyView SE displays utilize LED backlighting technology for increased lifespan, more uniform brightness, superior dimming capability, and reduced power consumption.

Displays are capable of automatic screen backlight level management. Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to enable this feature. (Note: Both SkyView and SkyView SE system components are covered in the same installation manual.)

Joysticks and Buttons

User interaction takes place via the two joysticks and eight buttons along the bottom of the display's bezel.

Data Logging

SkyView SE displays with Software version 14.1 or higher have the ability to record and store flight information in two logs for export by the user. The User Data Log recording rate can be configured by the user in the SkyView Setup Menu. For more information on configuration, retrieval, and analysis see the *SkyView Classic / SE / HDX System Installation Guide*.

SV-ADAHRS-200/201

This guide uses SV-ADAHRS-200/201 to refer to both the SV-ADAHRS-200 and the SV-ADAHRS-201. The SV-ADAHRS-200 and SV-ADAHRS-201 are identical in performance and are designed to work together as a redundant ADAHRS solution. An SV-ADAHRS-200 must be installed in your SkyView SE system in order to use an SV-ADAHRS-201.

The primary flight instruments on your SkyView SE PFD are generated using a group of calibrated sensors built into the SV-ADAHRS-200/201 ADAHRS module. All sensors are solid state–that is, there are no moving parts. These sensors include accelerometers, which measure forces in all three directions; rotational rate sensors, which sense rotation about all three axes; pressure transducers for measuring air data; and magnetometers on all three axes for measuring magnetic heading. These sensors form the core of Dynon's Air Data Attitude and Heading Reference System (ADAHRS). Additionally, in some installations the magnetic heading is provided by the SV-MAG-236 remote magnetometer. When it is installed, it deactivates and replaces the magnetic sensors in the ADAHRS.

Table 2 describes which inputs and sensors are used within the ADAHRS module to generate the different displayed instruments.

	GPS	Pitot	Static	AOA	Magneto meters	Rate Sensors	Accelerom eters	OAT	External magnetometer
Ball							✓		
Altitude			✓						
Airspeed		✓	✓						
AOA		✓		✓					
Turn Rate		✓	✓			✓	✓		
Heading		✓	✓		✓**	✓	✓		✓
Attitude	✓*	✓	✓			✓	✓		
Density Altitude			✓					✓	
TAS		✓	✓					✓	
Winds	✓	✓	✓		✓**			✓	✓
Ground Speed	✓								

Table 2 – Instruments and Sensors (*GPS only used when airspeed from pitot and static is not available) (ADAHRS Magnetometer deactivated when remote magnetomber installed)**

Attitude Calculation

The SkyView SE artificial horizon display (attitude) is generated via a complex algorithm using a multitude of sensors as described in Table 2. In normal operation SkyView SE uses airspeed to provide superior attitude accuracy. Should airspeed become unavailable due to inadvertent pitot icing, GPS ground speed will be used as an attitude aid. You will see a GPS ASSIST annunciation on the primary flight display when this is the case.

Compass Accuracy Effects on Synthetic Vision, Map Performance, and Autopilot

It is critical that the magnetic heading be as accurate as possible. The ADAHRS or Remote Magnetometer must be installed correctly, calibrated, and operating well *in all attitudes*. However, it is important to note that magnetic heading is not used to aid attitude determination under any circumstance.

SV-MAG-236

Due to the sensitivity of the SkyView ADAHRS to magnetic interference, some aircraft installations are better served by mounting the SV-ADAHRS-200/201 within the center of gravity box and also installing a remote magnetometer outside the box and well away from any dynamic magnetic interference. When installed, the SV-MAG-236 is the sole source of magnetic heading data to the SkyView SE System.

SV-EMS-220

The engine gauges on your SkyView SE Engine Page are generated from the data acquired by the SV-EMS-220 Engine Monitoring module and its sensors. This module supports popular four and six-cylinder engine installations and can measure a variety of engine and environmental parameters such as RPM, manifold pressure, oil temperature and pressure, exhaust gas temperature (EGT), cylinder head temperature (CHT), fuel levels for multiple tanks, voltage, current, fuel pressure, fuel flow, carburetor air temperature, coolant pressure and temperature, flap and trim potentiometers, external contacts, and general purpose temperature sensors. The SkyView SE EMS system can monitor all cylinder temperatures on engines with up to 6 cylinders. Pilots needing to monitor engines with more than 6 cylinders or aircraft with two engines will need to select the fully featured SkyView system with its ability to support 2 EMS modules.

SV-GPS-250 & SV-GPS-2020

The SV-GPS-250 GPS and SV-GPS-2020 Receiver modules are optional externally mounted 5 Hz WAAS enabled GPS receivers designed specifically for use with SkyView. Either one can supply GPS data in NMEA format and automatically set the time on SkyView SE.

The SV-GPS-2020 is an ADS-B Out 2020 compliant GPS position source. When included in a SkyView SE system with Dynon's SV-XPNDR-261 Class 1 transponder (described below), the aircraft will be fully compliant for the 2020 ADS-B Out mandate.

The WAAS capabilities of both Dynon GPS receivers do not allow them to be used as a primary navigation sources in an IFR environment where a TSO'd WAAS GPS may be required. Both receivers do utilize the WAAS GPS satellite to improve positional accuracy compared to a non-WAAS enabled GPS.

SV-BAT-320 Backup Battery

The SV-BAT-320 Backup Battery is an optional backup battery for use with SkyView SE. It can power a typical SkyView SE display and most of its connected modules for at least 60 minutes in the event of failure of the aircraft electrical system.

SV-XPNDR-261/262

The SV-XPNDR-261 and SV-XPNDR-262 are TSO'd remote mounted Mode-S transponder modules that, in addition to their transponder capability, contain ADS-B Out capability via 1090 ES, and TIS traffic input capability (US Only). NOTE: Only the Class 1 SV-XPNDR-261 is compliant as the transmitter for the ADS-B Out 2020 mandate.

SV-COM-C25

The SV-COM-C25 is an integrated VHF Com Radio for SkyView SE consisting of two modules, the SV-COM-PANEL, and the SV-COM-425. The SV-COM-C25 has 25 kHz spacing and is able to tune frequencies by integrating with SkyView SE's aviation database. SkyView SE can support two SkyView COM radios. The SV-COM-C25 is available in both horizontal and vertical versions.

SV-COM-X25

The SV-COM-X25 is an integrated VHF Com Radio for SkyView SE consisting of two modules, the SV-COM-PANEL, and the SV-COM-T25. The SV-COM-X25 has 25 kHz spacing and is able to tune frequencies by integrating with SkyView SE's aviation database. SkyView SE can support two SkyView COM radios. The SV-COM-X25 is available in both horizontal and vertical versions. The SV-COM-X25 replaced the SV-COM-C25 in late 2019.

SV-COM-X83

The SV-COM-X83 is an integrated VHF Com Radio for SkyView SE consisting of two modules, the SV-COM-PANEL, and the SV-COM-T8. The SV-COM-X83 has 8.33 kHz spacing and is able to tune frequencies by integrating with SkyView SE's aviation database. SkyView SE can support two SkyView COM radios. The SV-COM-X83 is available in both horizontal and vertical versions.

SV-INTERCOM-2S

A two-place stereo intercom that is designed to pair perfectly with your SkyView SE system and SkyView COM Radio. It has stereo inputs for SkyView SE, stereo music, and multiple other mono muting and non-muting inputs for all the technology in your cockpit.

SV-KNOB-PANEL

The SV-KNOB-PANEL is an optional panel-mounted module for SkyView SE. This control panel has three knobs dedicated to the most common SkyView SE bug functions. This module is particularly useful in systems with the SkyView autopilot installed. The SV-KNOB-PANEL is available in both horizontal and vertical versions.

SV-KNOB-DIMMER

The SV-KNOB-DIMMER is an optional panel-mounted knob for manually changing the brightness of the SkyView SE display and other SkyView panel units.

Autopilot Servos

SV32, SV42, and SV52 servos enable SkyView SE to operate as an autopilot.

Autopilot Auto-Trim Control – SV-AP-PANEL

The optional SV-AP-PANEL functions as a complete electric trim controller, replacing the conventional "relay deck". When trim motors are connected through the SV-AP-PANEL, it also controls the autopilot's Auto-Trim feature. Auto-Trim allows the autopilot to adjust the elevator trim system as required while the autopilot is engaged. This ensures that the airplane is always properly trimmed when the pilot disconnects the autopilot.

If your aircraft's trim motor(s) exceeds a current draw of 2 amps, then an SV-AP-TRIMAMP Trim Motor Adapter is required to operate the Auto-Trim feature.

Be advised that the SV-AP-PANEL's buttons are not compatible with SkyView SE. However, an SV-AP-PANEL may be installed, possibly behind the panel "in the blind" to provide trim control and Autopilot Auto-Trim features.

Trim Motor Adapter – SV-AP-TRIMAMP

The SV-AP-TRIMAMP allows the SkyView Autopilot system to interface with trim motors drawing up to a maximum of 5 amps.

To enhance safety, the SV-AP-TRIMAMP also monitors the elevator trim system for faults and provides crew alerts for conditions such as a runaway trim system, an inoperative trim system, or a system test failure during Skyview bootup. The SV-AP-TRIMAMP can provided these safety enhancements to any electric trim system that operates at 5 amps or less.

SV-BUTTON-LEVEL

The SV-BUTTON-LEVEL is an optional panel-mounted button for engaging AP Level Mode.

3. SV-D600 and SV-D900 Operation

After reading this chapter, you should be familiar with basic SkyView SE display operation. For details regarding specific procedures (e.g., adjusting the barometer), refer to the PFD and EMS operation chapters.

The SkyView SE SV-D600 and SV-D900 displays are identical in functionality and presentation. The only difference is in the size and resolution of the screen.

Screen Synchronization

If you have multiple SkyView SE displays in your aircraft, the system will synchronize important information between them. Actions such as setting baro, bugs, engaging the autopilot, or acknowledging warnings only need to be performed on one display (or control panel) to be reflected across the system.

Some settings such as screen layout are not synchronized on purpose. Firmware sensor configuration file (.sfg) updates must also be done to each screen individually. The Aviation database (which provides airport frequency information to the SV-COM radio) may or may not synchronize, depending on whether the displays are connected together via Ethernet. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information on this topic.

Display Bezel Layout

Figure 1 illustrates the front of an SV-D900 display and its important parts.

Figure 1 – SkyView SE Display Front Bezel Layout

Note the Top Bar, screen, joystick and button labels, light sensor, two joysticks and eight buttons.

The Top Bar is user configurable and displays important textual information. The Top Bar will display clock time or a timer (when running), autopilot status, battery status (when an issue requiring attention is detected), transponder status, and COM Radio status. Reference the How to Configure the Top Bar Section of this guide for details on how to configure the Top Bar.

The screen shows PFD and Engine data, configuration information, and system alerts. Its layout is user configurable. See the Screen Layout Configuration Section for specific instructions on how to configure the layout of your screen.

Joystick and button labels are also on the screen as seen in Figure 1. SkyView SE's simplified feature set and menu system assures that most menu buttons have a single dedicated function. However, there is one button on the main menu – XPNDR – which accesses a sub-menu. Thus the function of that button is *contextual based on which submenu is displayed.*

The set of button labels displayed immediately after the display turns on is referred to as the *Main Menu*.

Each SkyView SE display has an integrated light-detecting sensor in the front bezel. This light sensor can be used for automatic backlight level management. Manual dimming can be

performed if you have installed the optional SV-KNOB-DIMMER dimming control (shown at right). Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to configure the display for automatic backlight level management or for instructions on configure the SV-KNOB-DIMMER per your preferences.

Figure 2 – SV-KNOB-DIMMER

Joystick and Button Operation

Joysticks and buttons are used for various functions including powering the unit on and off, entering and navigating menus, and adjusting values.

Operation Basics

Joysticks can be turned and moved. Specific joystick behavior is addressed in subsequent sections of this guide when necessary.

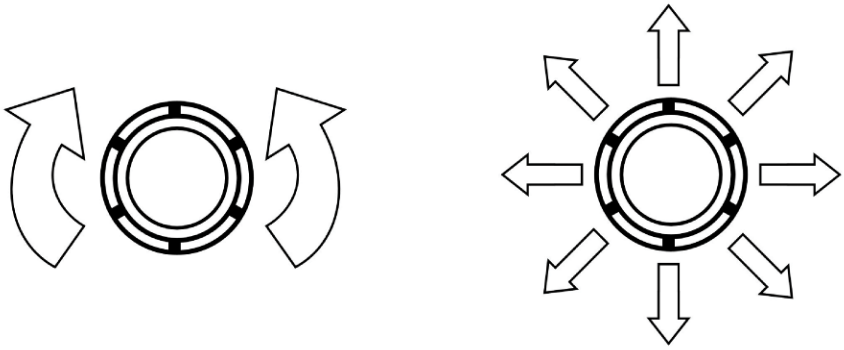

Figure 3 – Joystick Turn (left) and Movement (right) Directions

A button has a function if there is a label above it. If there is no label, there is no function. The figure below shows an example button label.

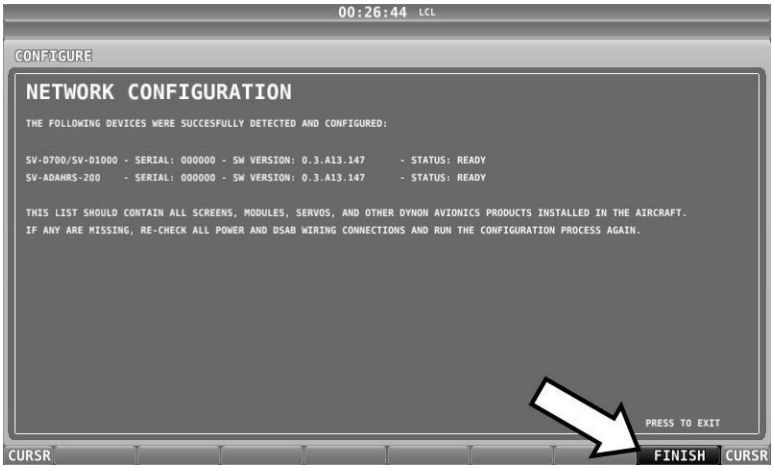

Figure 4 – Example Button Label

When you press the softkey button momentarily, its action is invoked.

Button labels are called out in all capital letters such as BACK, EXIT, FINISH, and CLEAR. This guide directs users to press a button by using its label. For example, when this guide asks you to press FINISH, it is asking you to press the button with the FINISH label above it.

Joystick and Button Operation Example

Some parameters may need to be adjusted using a joystick. When setting values with the joystick, each character (symbol, letter or digit) must be selected and adjusted successively.

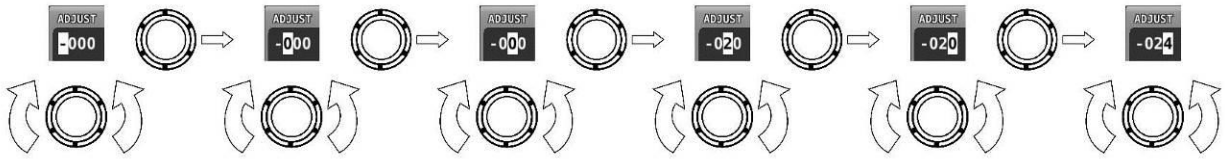

Figure 5 – Adjusting Successive Characters with a Joystick

In this example, the first time you turn the joystick, you toggle between the "-" and "+" symbols. To change the succeeding characters, you must move the cursor joystick to the right. In this example, you first adjust the "-" or "+" character, move the joystick right, then adjust the one hundreds digit, and so forth. Once you have adjusted the value appropriately, press ACCEPT or move the joystick to the right again.

At times, the next item in the menu path in this guide may be a joystick selection OR a button push—the correct choice will be apparent.

Menu Navigation

After the display turns on, you will see a screen similar to the one in Figure 1. This guide refers to the label bar at the bottom of the screen as the *Main Menu*. In SkyView SE, this menu has been simplified so that most buttons have a single dedicated function.

However, the SkyView SE display has a comprehensive set of system setup and configuration options accessible through a System Setup menu system. Navigating through the System Setup menus requires more understanding, provided in the following paragraphs.

Throughout this guide, the ">" character is used to indicate a sequence of menu selections or other actions you would take as you navigate the menu system. Menu selections which are followed by "…" indicate full-screen wizard interfaces which guide you through the appropriate steps. These wizard interfaces are not described in detail in this guide, as the on-screen instructions provide adequate information.

SkyView SE setup menus follow this structure: SETUP MENU > MENU > ... > MENU > PAGE or WIZARD. The setup menus (In Flight Setup or Setup) are the root of most menu navigation. Each nested menu is more specific than the previous one and there is no set limit for the number of nested menus before reaching a page. A page or wizard is at the end of the chain

and it is where the user can perform a specific action such as create a system software backup, configure a SkyView network, or set up the layout of the onscreen engine gauges. Wizards employ easy-to-follow onscreen instructions.

For example, SETUP MENU > SYSTEM SETUP > MEASUREMENT UNITS > BAROMETER indicates entering the SETUP MENU, then selecting SYSTEM SETUP, then selecting MEASUREMENT UNITS, and then entering the BAROMETER Menu to select INHG, MBAR, or MMHG.

Table 3 is a summary of menu navigation.

Desired Menu Action	User Action
Enter the Setup Menu	Simultaneously press and hold buttons 7 and 8 (if airspeed is greater than zero, you will enter the In Flight Setup Menu)
Scroll through different menus	Turn either joystick OR Move either joystick up or down
Enter menu	Move either joystick toward the right
Return to previous menu	Move either joystick toward the left (saves settings) OR Press BACK (saves settings) OR Press CANCEL (does not save settings)
Save adjusted value	Press ACCEPT
Reset adjustable value	Press DEFAULT
Save settings and return to Main Menu	Press EXIT

Table 3 – Menu Navigation Summary

Basic Display Operation Procedures

This subsection covers basic operation procedures for displays. *Detailed instructions for various menus and individual menu items are described in the SkyView Classic / SE / HDX System Installation Guide.*

How to Turn the System On or Off

Table 4 summarizes the procedures for toggling SkyView SE system power states.

SkyView System Displays	Toggle SkyView System Power
One display	Toggle primary power state OR Toggle display power by pressing and holding button 1
Multiple displays	Toggle primary power state OR Toggle all displays off or on by pressing and holding button 1 on each display.

Table 4 – How to Toggle SkyView SE System Power State

In the first seconds after turning a SkyView SE display on, you may see momentary display artifacts such as multicolored lines and/or flashes of light as the display initializes. This is normal.

Loss of External Power with Backup Battery Connected

If external power is lost to a display that is connected to a backup battery, it will either stay on for an additional 30 seconds or stay on for the duration of the battery charge depending on whether or not the aircraft is in flight. This feature minimizes backup battery discharge when on the ground and master/external power is shut off normally. It also reduces pilot workload during an actual in-flight power loss.

If the aircraft is not in flight, SkyView displays the message “POWERING DOWN IN xx SECONDS” while counting down from 30 seconds. During this countdown, the menu displays the buttons STAY ON and PWR OFF at the bottom of the screen. Press PWR OFF to turn off the SkyView SE display immediately. Press STAY ON to keep the SkyView SE display on via the connected backup battery. If STAY ON is pressed, the display will continue to use the backup battery to power itself until the battery’s charge is depleted or the display is turned off manually pressing and holding button 1. Finally, if neither button is pressed before the countdown expires; the display will automatically turn off after 30 seconds to conserve the backup battery charge.

If the aircraft is in flight, SkyView displays the message “AIRCRAFT POWER LOST” with no additional count down. This ensures that active pilot action is required to turn off a display when power is lost in-flight and backup battery power is available. The STAY ON and PWR OFF buttons are still offered, but the display will stay on indefinitely unless PWR OFF is pressed.

How to Reboot the Display

Press and hold buttons 1, 2 and 5 simultaneously to instantly reboot the system. This may be helpful if you need to cycle power after changing certain settings and for general troubleshooting.

How to Manually Adjust the Backlight Brightness or Dim Level

SkyView SE's display backlighting is controlled by its ambient light sensor to actively adjust the brightness based on the current lighting conditions in the cockpit. The brightness is synchronized across multiple displays and SkyView network panel mounted modules (COM Radio and Knob Control Panel). SkyView will not dim the display to a level that would cause it to be illegible for the ambient lighting conditions.

If however, you find that the displays are too bright or not bright enough for you, you can adjust the default brightness values by going to the BRIGHTNESS SETUP menu in System Setup. See the *SkyView Classic / SE / HDX System Installation Guide* for further information about the brightness settings.

How to Enter the Joystick Function Menu

Figure 6
Joystick Menu

These menus are used to specify which bug or parameter that joystick adjusts if turned. For example, joystick 1 could be set to adjust the heading bug and joystick 2 could be set to adjust the altitude bug.

Figure 6 illustrates the joystick menu in SkyView SE:

To set the function of a joystick:

1. Click a joystick or move it in any direction to enter its Joystick Function Menu.
2. Choose the joystick function by moving the joystick up or down.
3. Confirm the highlighted function by clicking the joystick or moving it left or right.

How to Enter the In Flight Setup Menu

When airspeed is greater than zero or groundspeed is greater than 15 knots, simultaneously pressing and holding buttons 7 and 8 when on the Main Menu will open the In Flight Setup Menu. This menu gives users access to SkyView system tools which may be useful during flight such as the Flight Angle Pitch Adjust Page and the Angle of Attack Calibration Wizard.

You may also access the Setup Menu from the In Flight Setup Menu by using the ENTER FULL SCREEN SETUP MENU… option.

How to Adjust Time Zone Offset

Enter the Time Zone Offset Page (IN FLIGHT SETUP MENU > FULL PAGE SETUP MENU > SYSTEM SETUP > TIME > TIME ZONE OFFSET) and adjust the time zone accordingly.

How to Configure the Top Bar

The Top Bar is the strip across the top of the screen. It displays textual information such as the clock and autopilot status. Future software updates will use this space for information such as radio status.

Enter the Top Bar Setup Page to configure the Top Bar (IN FLIGHT SETUP MENU > FULL PAGE SETUP MENU or > LOCAL DISPLAY SETUP > TOP BAR SETUP).

Screen Layout Configuration

SkyView SE can display 4 combinations of PFD and Engine data in full-screen and partial-screen configurations as well as distribute this data across multiple displays. Each display in the system can also have its own layout. This section tells you how to configure the display(s) in your SkyView SE system.

SkyView SE displays only display data from connected modules. For example, if an SV-EMS-220 module is not present on the network, the display will not show any engine data.

The following table lists the amount of screen space you can allot for a given page. Note that pages may also be turned off by the user.

Page	100%	80%	50%	20%	OFF
PFD	✓	✓	✓		✓
Engine	✓		✓	✓	✓

Table 5 – Onscreen Page Allotments

The following diagram illustrates example screen layout configurations.

Figure 7 – Example Screen Layout Configurations

Selecting and Arranging Pages on your SkyView SE Screen

1. Press LAYOUT on the Main Menu Button 7.
2. Each press of the LAYOUT button will rotate to the next screen configuration in sequence, as follows:
    a. 100% PFD
    b. 80% PFD / 20% EMS
    c. 50% PFD / 50% EMS
    d. 100% EMS
3. After sequencing through the 4 available screen configurations, additional presses of the LAYOUT button will repeat the sequence in rotary fashion.
4. From any screen configuration, at most 3 presses of the LAYOUT button are required to select any other desired configuration.

Backup Battery Charging and Testing

In the event of an electrical failure that causes SkyView SE to run on the SV-BAT-320, the SV-BAT-320 supplies power to the SkyView SE display it is connected to, along with any connected SV-ADAHRS-26X, SV-EMS-220, and SV-GPS-250 or -2020 modules. Because of higher power requirements, the SV-BAT-320 does not power Autopilot servos, the SV-XPNDR-261/262, SV-COM-C25/X25/X83, devices connected via a serial connection, or any other third party devices. SkyView's maximum display brightness is reduced very slightly when operating on backup battery power to reduce power consumption.

When connected, the battery's charge level is automatically managed by the SkyView SE display it is physically connected to. This ensures that the display has a fully charged backup battery in case of emergency. Charging a completely discharged battery may take up to 4 hours. To conserve your aircraft battery, the SV-BAT-320 is only charged when SkyView detects that your alternator or generator is online. Specifically:

- If SkyView system voltage is above 12.25V: SkyView runs on master power and charges the SV-BAT-320.
- If SkyView system voltage is above 10V, but below 12.25V: SkyView runs on master power but does not charge the SV-BAT-320.
- If SkyView system voltage is below 10V: SkyView runs on the SV-BAT-320. This discharges the SV-BAT-320.

Reference the *SkyView Classic / SE / HDX System Installation Guide* for more details regarding current consumption while charging a backup battery.

A battery is fully charged when it reaches 12.25 volts and should power a typical SkyView system for at least 60 minutes. If SkyView has switched to the backup battery due to a power loss in your aircraft, it is advised that you land as soon as possible.

Backup Battery Status

SkyView SE performs an automatic 30 second self-test of the battery every time a SkyView SE display is shut down normally when master power is turned off after a flight. Additionally, a manually-actuated discharge test should be performed annually when prompted by SkyView.

A battery status icon in the top bar and alert messages let you know when SkyView's backup battery is not operating nominally. These indications are as follows:

No battery icon displayed

- No battery has been connected to this display or battery status is normal. If a battery is connected, and no icon is displayed, all of the following are true:
    - The Annual Backup Battery Test is not yet due.
    - The self-test routine has not discovered abnormal behavior. Backup battery self-tests are performed automatically every time master power is removed on the ground (after a flight, for example) while the 30-second "power lost" timer is counting down.

Needs Test:

Figure 8 - Backup Battery Test Needed

- SkyView has determined that the backup battery should be tested using the manually-actuated Backup Battery Test. This can be because:
    - It has been one year since the last full Backup Battery Test. See the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to perform this test.
    - The 30 second automatic battery self-check that is performed when master power is removed during a normal shutdown did not complete properly at least 3 consecutive times. Perform the Backup Battery Test per the *SkyView Classic / SE / HDX System Installation Guide*.

Fault/Test Failed:

Figure 9 - Backup Battery Test Failed

A fault has been detected because of one of the following conditions:

- The battery is no longer connected.
- A battery test has failed. The battery may need to be replaced. Contact Dynon Technical Support for more information.

4. PFD Operation

One of the main functions of SkyView SE is its Primary Flight Display (PFD). This chapter highlights the layout of the PFD page, its symbology, and contains instructions for adjusting bugs.

SkyView's PFD requires data from an SV-ADAHRS-200/201 module. If installed, SkyView's heading will be determined by the SV-MAG-236 Remote Magnetometer.

The heading/track, altitude, vertical speed and indicated airspeed bugs are used to control the SkyView Autopilot.

PFD Page Layout

The PFD Page as shown in Figure 10 displays important flight information.

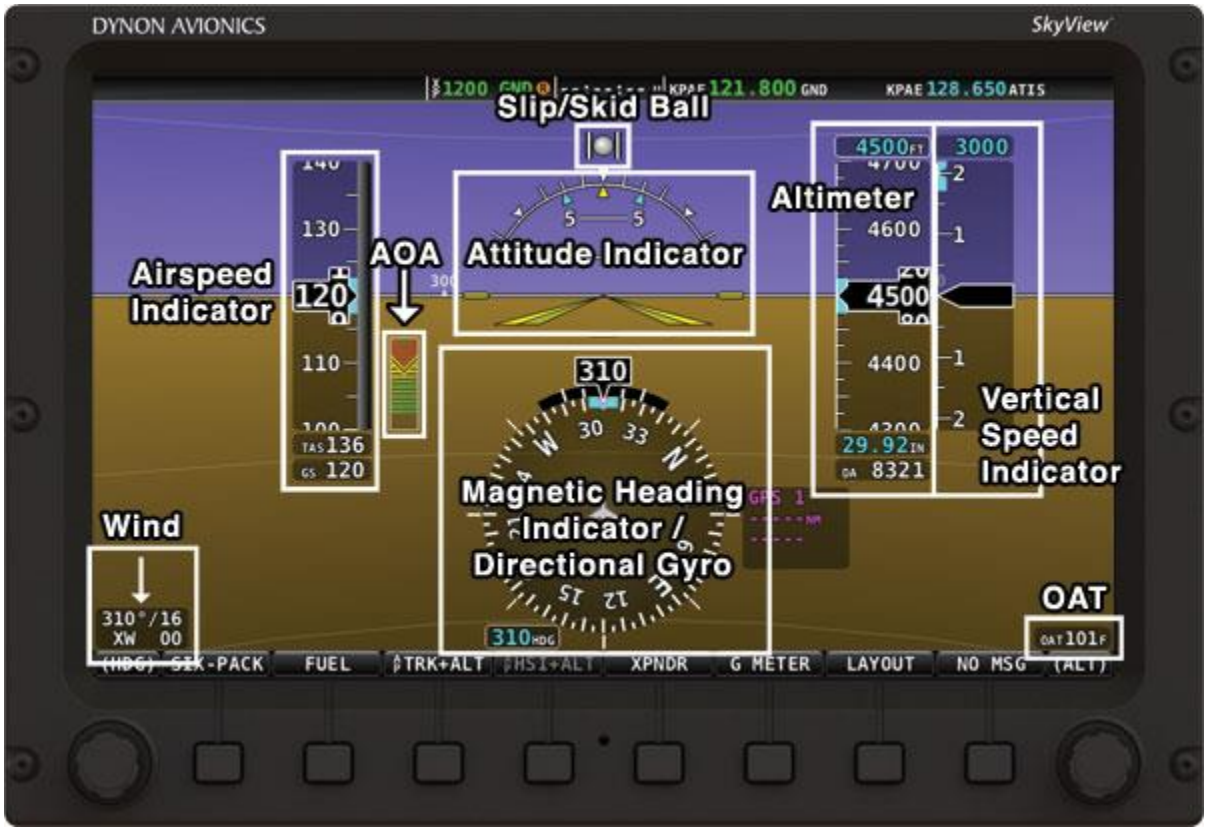

Figure 10 – SkyView SE Primary Flight Display (PFD)

The primary information shown on the PFD includes:

- Airspeed Indicator with Airspeed Bug and Airspeed Trend Rate
- Attitude Indicator with Extreme Pitch Warning Indicators (Pitch Warning Indicators not shown in Figure 10)
- Altimeter with Altitude Bug, Altitude Trend Rate, Barometer Setting, and Density Altitude
- Vertical Speed Indicator with Vertical Speed Bug
- Heading Indicator/Directional Gyro with Heading Bug
- Slip/Skid Ball
- Angle of Attack Indicator
- OAT
- Wind Information

The PFD in Figure 10 is a basic depiction and does not include any HSI or autopilot information.

PFD Symbology

Bugs

The SkyView SE PFD makes use of heading (or track), altitude, and vertical speed bugs. Note that the altitude, vertical speed, and heading (or track) bugs are used for autopilot control if Autopilot servos are installed. Instructions for setting bugs are detailed in subsequent sections of this guide.

The airspeed, altitude, vertical speed and indicated airspeed bugs are located above their respective tapes and the heading (or track) bug is located to the lower left of the Magnetic Heading Indicator/ Directional Gyro.

Airspeed Indicator

The Airspeed Indicator is displayed on the left side of the PFD and incorporates an airspeed tape with a digital readout, true airspeed (TAS), airspeed trend indicator, and airspeed bug. Figure 11 is an example SkyView Airspeed Indicator.

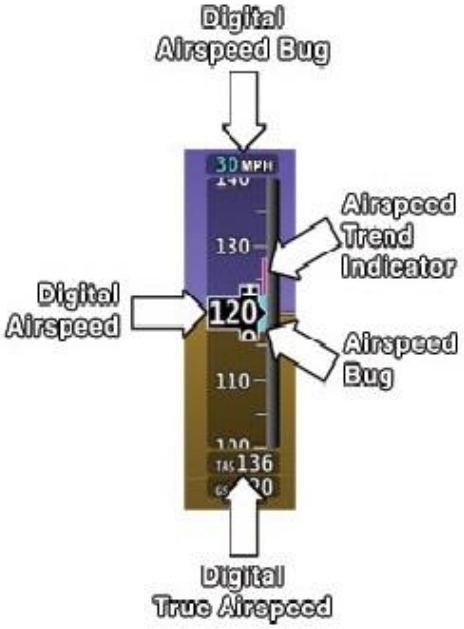

Figure 11
Airspeed Indicator

Units can be set to miles per hour, nautical miles per hour (knots), or kilometers per hour. Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to change the displayed units.

The airspeed tape displays indicated airspeed including gray, white, green, yellow, and red ranges to provide a graphical representation of aircraft speed in relation to the aircraft's limits. These ranges are controlled by setting the airspeed limitations for the aircraft. Performance speeds (Vx, Vy and Va) are

displayed as a letter on the right side of the airspeed tape. Refer to the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to configure the airspeed limitation color thresholds.

Airspeed will display "---" at zero through 20 knots, at which point it will become alive. Once alive, it will read down to 15 knots. Below 15 knots, "---" will again be displayed.

The indicated airspeed (IAS) digits scroll up and down, simulating an analog Airspeed Indicator. The rate of change of the digits provides a sense of the increase or decrease in speed.

The airspeed trend indicator (ATI) is displayed as a magenta bar on the airspeed tape. It grows proportionally in the direction of the rate of change (acceleration or deceleration). The ATI is scaled to indicate a 6-second airspeed trend which means that if the acceleration is kept constant, the airspeed will end up at the number indicated at the end of the trend line after 6 seconds have passed.

True airspeed (TAS) is digitally displayed at the bottom of the airspeed tape. If configured with a GPS, Ground Speed (GS) is also displayed under the True Airspeed.

In some aircraft, Vne (red line) is limited by TAS instead of IAS. When SkyView is configured to indicate Vne as TAS, the red airspeed range will dynamically adjust so that the TAS limit is what starts the red airspeed range. Additionally, a red marker is shown at the IAS that Vne would be at when at sea-level on a standard day, which is when TAS equals IAS. This lets you quickly see the difference between your current Vne as TAS and Vne as IAS. In the example shown here, the Vne is configured to be based on a TAS of 190. However, because the aircraft is at altitude, that TAS occurs at a lower IAS. In this case, you can see that the red range has been lowered to an IAS of 173, which is where the TAS has reached its limit of 190.

Figure 12
Vne as TAS

Attitude Indicator

Attitude indicator symbology is displayed on PFD and incorporates a roll scale with roll pointers and a zero pointer reference, pitch scale with horizon lines, and water line symbology. Figure 13 is an example SkyView attitude indicator.

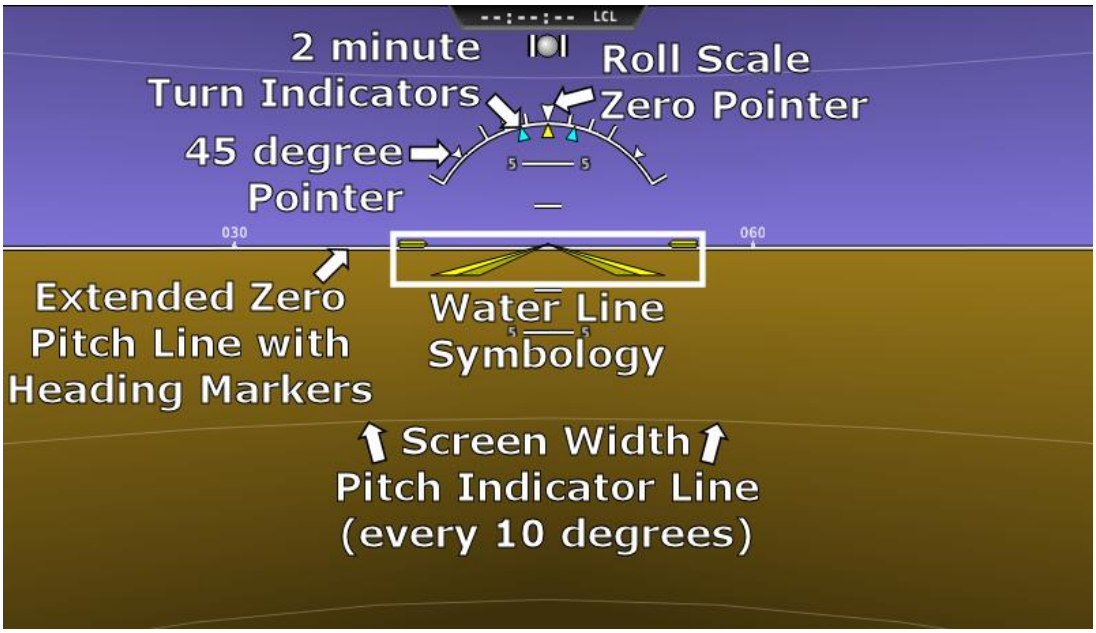

Figure 13 – Example Attitude Indicator

The roll scale contains tick marks at 10, 20, 30, and 60 degrees and larger white triangles at 0 and 45 degrees. The roll pointer (small yellow triangle on the bottom side of the roll scale) points to your current bank angle. The roll scale will rotate 360 degrees. When the aircraft is wings level, the roll pointer aligns with the roll scale zero point. The water line symbology also indicates wings level flight.

The pitch scale has tick marks in 2.5 degree increments and every 10 degree tick mark provides a horizon line across the width of the screen. If the displayed pitch on the screen requires adjustment to match the view outside, use the Flight Angle Pitch Adjust Page in the In Flight Setup Menu (IN FLIGHT SETUP MENU > FLIGHT ANGLE PITCH ADJUST…). The pitch may be adjusted to a maximum of ±20 degrees.

The extended zero pitch line features heading markers every 30 degrees to help maintain directional awareness when attention is being paid to the attitude indicator.

Attitude Rate Limit

SkyView's ADAHRS will operate normally at rotational rates of up to 150 degrees per second in any axis. If the aircraft's rotational rate exceeds 150 degrees per second – as can happen in a well-developed spin or when performing aggressive aerobatic maneuvers – the PFD page will annunciate "ATTITUDE RECOVERING". During this time, SkyView's attitude indication may be degraded and other instruments should be used to maintain safe flight.

After straight and level flight is restored for a few seconds, the ATTITUDE RECOVERING message will disappear. Full performance of the attitude indication is restored. This requires no additional action by the pilot.

GPS Assist

In the event of airspeed loss (due to icing or other blockage) an accurate attitude is maintained if there is an accurate GPS ground speed source. When in this mode, a magenta GPS ASSIST message is displayed on the PFD and the ground speed is displayed below the indicated airspeed (IAS). If the connectivity with the GPS fails while in GPS assist mode, the attitude continues to be displayed, using the last known GPS ground speed as a reference. This mode is flagged on the horizon with a yellow CROSS CHECK ATTITUDE message. In the very rare case that this sequence of events occurs, the ADAHRS' attitude accuracy is reduced; use other references in the aircraft to cross-check against the SkyView display.

Note that due to a limitation of the SV-GPS-250 and SV-GPS-2020 hardware, it cannot be used for GPS Assist above 415 knots ground speed if it is being used as the GPS source

Altimeter

The altimeter is displayed on the right side of the PFD. It incorporates an altitude tape and digital readout, Density Altitude (DA), barometer setting, and altitude bug. Figure 14 is an example SkyView altimeter.

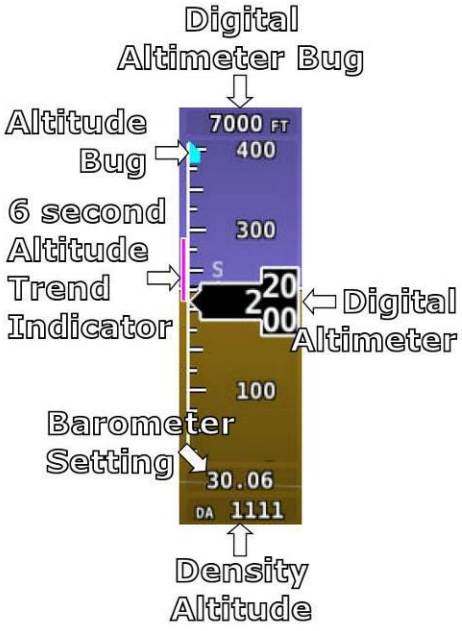

Figure 14 – Altimeter

The altitude tape displays 200 units above and below the current altitude digital readout. Each tick represents 25 units, with every 50 unit tick drawn slightly longer to differentiate them. Units can be set to feet or meters. Reference the SkyView / SkyView SE System Installation Guide instructions on how to change the displayed units.

The digital readout scrolls up and down in the manner of an analog altimeter. The rate of change of the digits provides a sense of the increase or decrease in altitude.

An altitude trend indicator based on current vertical speed is represented as a magenta bar on the altimeter. It grows proportionally as your climb or descent rate increases/decreases. The altitude trend indictor is scaled to indicate a 6-second altitude trend. This means that if current rate of altitude change is kept constant, the altitude will end up at the number indicated at the end of the trend line after 6 seconds have passed.

DA will display "----" if an OAT probe is not connected to the SkyView ADAHRS module. Since relative humidity is not readily available to SkyView in flight, density altitude is calculated using an approximation. The results of SkyView's DA computation will closely match a traditional handheld E6B.

Barometer Setting

To change the barometer setting:

1. Enter the Joystick Function Menu.
2. Move the joystick up or down to highlight (BARO).
3. Click the joystick or move it left or right to close the menu (this is optional).

(BARO) will now display just above that joystick. The barometer setting on the PFD will be outlined to signal that it is selected. Turn the joystick to adjust the barometer setting. Note that while the barometer setting is changing, its display window lights up in cyan to draw your attention to it.

To quickly sync the barometer, press and hold the joystick to the left or right for 2 seconds or middle (½ second click). When BARO is synchronized a message will appear above the knob. If no GPS position source is available when the airplane is on the ground, the altimeter will not synchronize and "NO SYNC" will appear in the altimeter box on the PFD. Table 6 below details how the BARO setting is synchronized:

On the Ground:	Adjusts the altimeter based on the current GPS Altitude. After the (BARO) is synchronized a GPSALT message will appear in the altimeter box on the PFD.
In the Air:	Adjusts the altimeter to the standard pressure setting (i.e., 29.92 in Hg, 1013 mbar, or 760 mm Hg).
Above 18,000 ft. indicated altitude	Resets the altimeter to standard pressure altitude for use in the flight levels (i.e., 29.92 in Hg, 1013 mbar, or 760 mm Hg).

Table 6 – How BARO Settings are Synchronized

Altitude Bug

The altitude bug is displayed in cyan on the altitude tape and its associated digital readout is displayed at the top of the altimeter. *The altitude bug is used as a target for the pitch axis of the SkyView Autopilot when a pitch axis servo is installed.*

The reaction of the autopilot to an altitude bug change depends on the state of the pitch axis, its armed mode of operation, and the current state of the aircraft. See the Autopilot Operation chapter for more information about how the autopilot uses the altitude bug.

To set the altitude bug:

1. Enter the Joystick Function Menu.
2. Move the joystick up or down to highlight (ALT).
3. Click the joystick or move it joystick left or right to close the menu (this is optional).

(ALT) will now display just above that joystick. The altitude bug setting on the PFD will be outlined to signal that it is selected. Turn the joystick to adjust the altitude bug. Note that while the altitude bug is changing, its display window lights up in cyan to draw your attention to it.

You can synchronize the altitude bug with the current altitude by pressing and holding the ALT joystick to the left or right for 2 seconds or middle (½ second click). After the bug is synchronized an "ALT SYNC" message will appear above the knob.

Altitude Alerter

SkyView can be configured to audibly alert as the aircraft changes altitude in relation to the altitude bug. When the bug is active, audio out is configured, and the altitude alerter is configured, SkyView announces "APPROACHING ALTITUDE" as the aircraft flies within a chosen amount of feet/meters of the bug. SkyView announces "LEAVING ALTITUDE" as the aircraft flies away from the altitude bug by more than a chosen amount of feet/meters. The altitude thresholds that trigger the two above alerts are individually configurable, and the altitude alerter will work whether or not the autopilot is engaged. See the *SkyView Classic / SE / HDX System Installation Guide* for details on how to configure the altitude alerter.

Vertical Speed Indicator

The vertical speed indicator (VSI) is displayed to the immediate right of the altimeter and incorporates a vertical speed tape, vertical speed pointer (with digital readout), and bug. Figure 15 is an example SkyView SE VSI.

The VSI tape can display ±1000 units, ±2000 units, or ±4000 units. Units can be set to feet or meters. Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to change the displayed units and the indicator scale.

The vertical speed pointer scrolls up and down the VSI tape, simultaneously displaying the instantaneous vertical speed in both analog and digital formats. If there is very little or no vertical speed, the pointer appears blank.

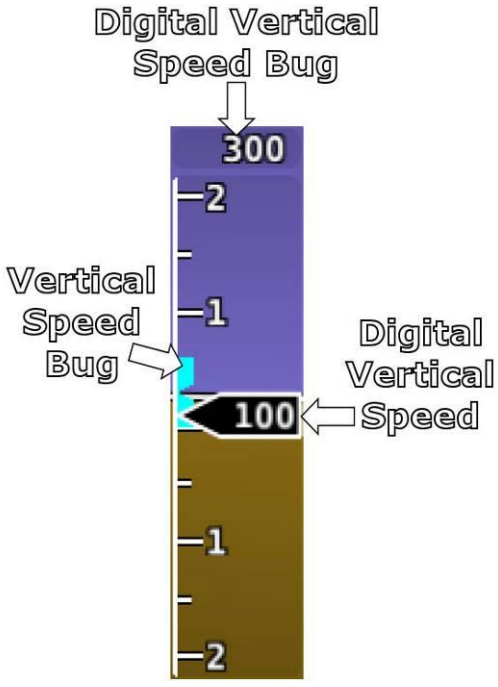

Figure 15 – Vertical Speed Indicator.

Vertical Speed Bug

The vertical speed bug is displayed in cyan on the right side of the VSI tape and its associated digital readout is displayed at the top of the VSI. This bug is also used as a target for the pitch axis of the SkyView SE Autopilot. See the Autopilot Operation chapter for details.

To set the VS bug:

1. Enter the Joystick Function Menu.
2. Move the joystick up or down to highlight (VS).
3. Click the joystick or move it left or right to close the menu (this is optional).

(VS) will now display just above that joystick. The vertical speed bug setting on the PFD will be outlined to signal that it is selected. Turn the joystick to adjust the vertical speed bug. Note that while the vertical speed bug is changing, its display window lights up in cyan to draw your attention to it.

You can synchronize the vertical speed bug with the current vertical speed by pressing and holding the VS joystick to the left or right for 2 seconds or middle (½ second click).

The vertical speed bug is used by the autopilot as a target vertical speed when it is climbing or descending. Reference the **Error! Reference source not found.** Chapter for more information r egarding autopilot functionality, symbology, and operation information.

Magnetic Heading Indicator/ Directional Gyro

The Magnetic Heading Indicator/ Directional Gyro is displayed on the lower center of the PFD and incorporates a magnetic heading compass rose, magnetic heading digital display, turn rate indicator, ground track GPS pointer, heading bug, and heading bug digital display. Figure 16 is an example SkyView SE Magnetic Heading Indicator/ Directional Gyro.

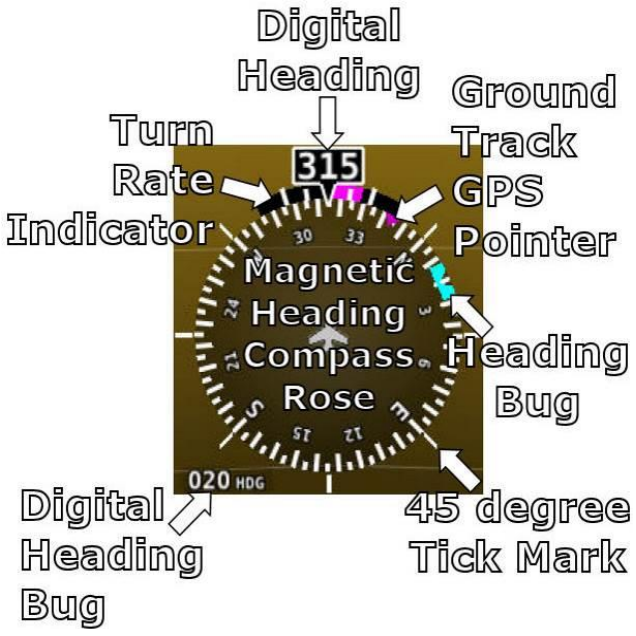

Figure 16 – Example Magnetic Heading

The compass rose displays in heading-up orientation. The cardinal points are displayed as letters, and 30 degree increments are displayed numerically without the trailing zero (e.g., 330 degrees is displayed as 33). The numeric display at the top of the compass rose indicates magnetic heading. If magnetic heading is unavailable, for example due to a remote magnetometer failure, GPS ground track is displayed at the top, as shown in the figure.

Figure 17
GPS Track substitute for Magnetic Heading

The turn rate indicator is displayed as a curved magenta bar along the top, outside curve of the compass rose. The bar grows in the direction that the aircraft is currently turning and is anchored at the arrow of the numeric display. The minor tick marks to the immediate right and left of the numeric display arrow represents a half-standard-rate-turn.

The major tick marks to the left and right of the minor tick marks represent a standard rate turn of 3 degrees per second.

The ground track GPS pointer is displayed as a magenta triangle on the inner edge of the compass rose.

Heading/Track Bug

If your SkyView SE system includes an autopilot, the heading (HDG) bug is replaced by a track (TRK) bug when the autopilot is flying in GPS ground track (TRK) mode. The bug is displayed in cyan on the inner edge of the compass rose. The digital display of the bug is displayed to the lower left of the compass rose.

To set the heading/track bug:

1. Enter the Joystick Function Menu.
2. Move the joystick up or down to highlight (HDG) or (TRK).
3. Click the joystick or move it left or right to close the menu (this is optional).

(HDG) or (TRK) will now display just above that joystick. The heading/track bug setting on the PFD will be outlined to signal that it is selected. Turn the joystick to adjust the heading/track bug. Note that while the heading/track bug is changing, its display window lights up in cyan to draw your attention to it.

You can synchronize the heading/track bug to the current heading or track by pressing and holding the joystick to the left or right for 2 seconds or middle (½ second click).

HSI

When a valid external VFR GPS navigation source is connected to your SkyView SE system, its data can be displayed on and around the heading indicator in a standard HSI presentation. Refer to the *SkyView Classic / SE / HDX System Installation Guide* for details on how to connect and configure these data sources. The following sections describe the HSI display elements.

Figure 18 – HSI Displaying GPS

HSI Source

SkyView SE supports a single VFR GPS navigation source in NMEA format. Anytime a GPS is being used as an HSI source, all of the HSI data is colored magenta. When such as source is properly configured, a textual info box is displayed to the right of the heading indicator describing the data source “GPS 1”. If the navigator has an active waypoint defined, the info box will include the waypoint identifier and the distance to the waypoint.

Course Needle and Course Deviation Indicator (CDI)

The course needle is a magenta line with an arrow at its end which points to the course defined by the external GPS navigator.

Figure 19
HSI CDI

The Course Deviation Indicator (CDI) is the middle section of the course needle. When the aircraft is not precisely positioned on the indicated course, that middle bar will slide left or right to indicate the location of the intended course relative to the aircraft's position. If the CDI bar is to the right of the course needle, the intended course is to the right of the aircraft's current position.

When following a GPS course, a full scale deflection of the bar represents 5 nautical miles of deviation. When on course, the course indicator and the CDI make a solid line, making it easy to see when there is little error in your aircraft's position. Unlike a CDI indicator found in basic aircraft, the CDI needle on an HSI rotates with the heading indicator and course indicator. By turning the aircraft towards the CDI needle you reduce your deviation.

Wind Vector

Wind vector information is located just above the OAT display on the PFD. The winds aloft arrow indicates the wind direction relative to your current direction of flight. The wind strength, direction, and cross wind component are also textually provided. If SkyView SE cannot make an accurate winds aloft calculation, the arrow is not displayed and the numbers are replaced by dashes. The display of winds aloft requires an active GPS connection and an OAT probe. In very light winds, the wind speed number is not displayed, although the arrow is. Note that due to a limitation in the SV-GPS-250 and SV-GPS-2020 hardware, winds information will not be available above 415 knots ground speed if it is being used as the GPS source. The Wind Vector will not appear if the SV-ADAHRS-200/201, SV-MAG-236, GPS, or OAT is not functional.

Figure 20
Wind Vector

Slip/Skid Ball

The action of the slip/skid ball simulates an analog slip/skid ball and provides a visual representation of lateral acceleration. When the ball is within the two vertical lines, the aircraft is in coordinated flight. Figure 21 is an example SkyView SE slip/skid ball.

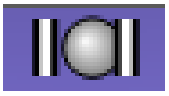
Figure 21
Slip/Skid Ball

Angle of Attack Indicator

Figure 22
AOA Indicator

The Angle Of Attack (AOA) Indicator will display only when a Dynon AOA/Pitot probe has been properly installed and calibrated. During normal flight, the AOA Indicator will display green. As the AOA approaches and then reaches critical, the green and yellow bars will disappear, leaving only red. Figure 22 is an example SkyView SE AOA indicator.

A thorough explanation of AOA and the principles of operation of Dynon's AOA Pitot probe are beyond the scope of this guide. Detailed information about AOA and Dynon's approach to AOA is available at dynon.com/aoa.

OAT

Outside air temperature (OAT) as shown in Figure 23 is displayed in the very lower-right corner of the PFD. Units can be set to degrees Fahrenheit or degrees Celsius. Reference the *SkyView Classic / SE / HDX System Installation Guide* for instructions on how to change the displayed units. If OAT is not valid (i.e., disconnected or damaged), then "OAT ---" is displayed.

Figure 23 – OAT

Extreme Pitch Warning Indicators

The SkyView SE PFD shows large red arrows as pitch warning indicators in extreme attitudes (i.e., 45 degrees or greater pitch up or down). These indicators point to the horizon and indicate which way to maneuver to attain a level attitude. Indicators are accompanied with a small sliver of sky or ground bordered with a white dashed horizon line, depending on the current attitude. The pitch warning indicators can be enabled or disabled through the setup menus. See the *SkyView Classic / SE / HDX System Installation Guide* for information about this setting. Figure 24 illustrates the pitch up warning arrows with the slivers of ground.

Figure 24 – Extreme Pitch Warning Indicator Arrows

Six-Pack Presentation

SkyView SE includes the traditional six-pack analog presentation of flight instruments as well as the EFIS tape-based display. SkyView SE's "six-pack" flight instrumentation mode lets you fly the gauges you're used to if you're new to glass. After flying in the six-pack mode, try out the "EFIS" style as you get comfortable: changing the presentation is just a few buttons away.

Figure 25 – SIX-PACK Display

To turn on the six-pack, press Button 1 "SIX-PACK" on the main menu. The button background will turn grey, denoting that feature is turned on. All the same information is displayed on the six-pack and EFIS tapes and the six-pack format respects all the same settings. All of the information boxes for Density Altitude, True Airspeed, Autopilot alert banners, and bugs, etc. appear just like they do for the EFIS tapes. However, EFIS tapes are required to view the Extreme Pitch Warning Indicators.

Return to displaying EFIS instruments by again pressing SIX-PACK. The button will turn back when the six-pack instruments are turned off.

ADAHRS (Flight Instrument) Redundancy and Cross-Checking

SkyView SE systems support multiple SV-ADAHRS-200/201 modules for redundancy and manage failure scenarios by automatically switching to backup modules should an ADAHRS completely fail.

Additionally, in the event that multiple ADAHRS disagree, the display will annunciate this with an on-screen alert that calls out which parameter(s) are not the same on all ADAHRS. Parameters that are continuously cross-checked include attitude (pitch and roll), magnetic heading, G Meter, turn coordinator (slip/skid ball), airspeed, and altitude.

Figure 26 – ADAHRS Cross-Checking Disagreement

Once SkyView SE has annunciated a cross-check comparison problem, press COMPARE to see both ADAHRS side-by side. The ADAHRS that was previously displayed on the PFD is labeled "ACTIVE", while the one that was not previously being displayed - but which was being used as the cross-check reference – will be labeled as "STANDBY". Additionally, the labels "PRIMARY" and "ALTERNATE" designate which ADAHRS is normally displayed when both are in agreement and neither is disabled.

Figure 27 – ADAHRS Cross-Check Comparison

Once you have determined which ADAHRS is incorrect, press DISABLE to tell SkyView SE not to use it for the duration of the flight:

Figure 28 – ADAHRS Cross-Check Comparison (one ADAHRS disabled)

Figure 29 –ADAHRS Cross-Check Comparison – SIX-PACK

Press exit to return to normal operation. The PFD will annunciate that only a single ADAHRS is available for use:

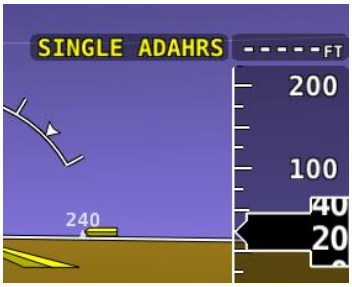

Figure 30 – Single ADAHRS Mode Flag

If, after you've entered the ADAHRS comparison screen, you do not disable an ADAHRS, a red warning and ADAHRS CROSS CHK ERROR alert will persist in the Message Alert Area (above button 8). To go back to the ADAHRS comparison screen to disable an ADAHRS, see the below instructions:

ADAHRS Source Selection and Configuration

Enter the ADAHRS Source Selection Page: IN FLIGHT SETUP MENU (press/hold buttons 7/8)> ADAHRS SOURCE SELECTION…).

If you are on the ground, this will be under SETUP MENU > PFD SETUP > ADAHRS SOURCE SELECTION.

ADAHRS Status

The ADAHRS labeled ACTIVE is the one that is being displayed on the PFD.

An ADAHRS labeled STANDBY is being used for cross-checking, but it is not being displayed on the PFD.

PRIMARY / ALTERNATE ADAHRS Selection

The ADAHRS labeled PRIMARY is the one that will be preferentially chosen by SkyView SE as the active ADAHRS.

An ADAHRS labeled ALTERNATE is one that is available to be used in the event of a failure or problem with the primary ADAHRS. However, it normally won't be chosen for display on the PFD unless the primary ADAHRS has failed or has manually been disabled.

To change which ADAHRS is the PRIMARY ADAHRS, highlight an ALTERNATE ADAHRS and press the PRIMARY button to elevate it to PRIMARY status.

To disable an ADAHRS until SkyView SE is next powered up, simply highlight it with the joystick and press the DISABLE button.

To see the same comparison screen that is presented when a cross-check error occurs, press the COMPARE button at the bottom of the display.

Press BACK to exit the ADAHRS Source Selection Page or press EXIT to return to the Main Menu. Either of these actions will save the ADAHRS source settings.

G Meter

Press G METER (Button 6) to toggle the G Meter on and off. When the G Meter is displayed, it replaces the HSI/Compass Rose, though numerical magnetic heading above the HSI area remains. The G Meter shows an analog "needle" that indicates the instantaneous G loading of the aircraft. Depending on how the G Meter is configured, the analog range may have yellow and/or red caution ranges configured to visually indicate aircraft G limits are being approached. Instantaneous G information is also shown digitally in the center of the gauge.

Figure 31 – G Meter on PFD

The smaller digital numbers above and below the larger instantaneous G number are the maximum and minimum Gs that the aircraft has experienced since the G Meter was last reset. Press and hold G METER (Button 6) to manually reset the G Meter. The G Meter may also be set up to automatically reset the min/max G readings every time SkyView SE starts up.

The G Meter can also be configured to “pop up” automatically under certain conditions. When configured this way, the G Meter will appear automatically when the aircraft’s instantaneous G loads exceed thresholds that have been selected. Once the G Meter has appeared, it will remain on the display until the instantaneous aircraft G loading falls back below those thresholds.

See the *SkyView Classic / SE / HDX System Installation Guide* for further information about G Meter configuration.

Top Bar

The Top Bar contains a clock, as well as status information for Autopilot, Transponder, SkyView SE Backup Battery and COM Radio. Clock behavior is described here. All other Top Bar behavior is covered in the relevant chapter of this guide.

The clock is part of the Top Bar which is always displayed regardless of the screen layout.

Figure 32 – SkyView Clock

The clock is always displayed centered at the top of the screen in all screen display modes on the Top Bar in 24 hour/military format. Time is initially sourced from a GPS feed and is only displayed when valid GPS data is being received or if (primary or battery) power has been maintained continuously since valid GPS data was received. If there has never been an initial GPS time set or time has been lost due to loss of power,”--:--:--“ is displayed. When valid GPS data is received again, time will be displayed.

Reference the How to Configure the Top Bar Section of this guide for instructions on how to configure the Top Bar.

SV-KNOB-PANEL Operation

Figure 34 - SV-KNOB-PANEL/H

Figure 33
SV-KNOB-PANEL/V

The optional SV-KNOB-PANEL adds three additional dedicated knobs to the SkyView SE system for the most frequently adjusted bugs. One knob is dedicated to each of the Altitude Bug (ALT), Altimeter Setting (BARO) and Heading/Track Bug (HDG/TRK) on the primary flight display. These knobs behave exactly like the joystick knobs on a SkyView SE display do when they are set to these functions: turn them to adjust the value they control. Press and hold them to synchronize the ALT and HDG/TRK bugs to the aircraft's current altitude or heading/track. Press and hold BARO set the altimeter setting to either GPS altitude (when on the ground), or to standard pressure (29.92 inHg or 1013 millibars) (when in the air, typically used when above 18,000 feet).

5. EMS Operation

This chapter describes SkyView SE EMS functionality and a few of the advanced ways to use it to monitor the health and operation of your engine.

This chapter references the Engine Page. This page should have been configured during SkyView SE installation. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information.

Engine Page Layout

The three Engine Pages (100%, 50%, and 20%) should have been configured during installation. The appearance of the 20% and 50% Engine Pages are not scaled down versions of the 100% Engine Page. They are unique layouts and must be laid out individually.

The Engine Page as shown in Figure 35 displays important engine parameters acquired using an SV-EMS-220 module, its sensors, and other advanced engine monitoring features.

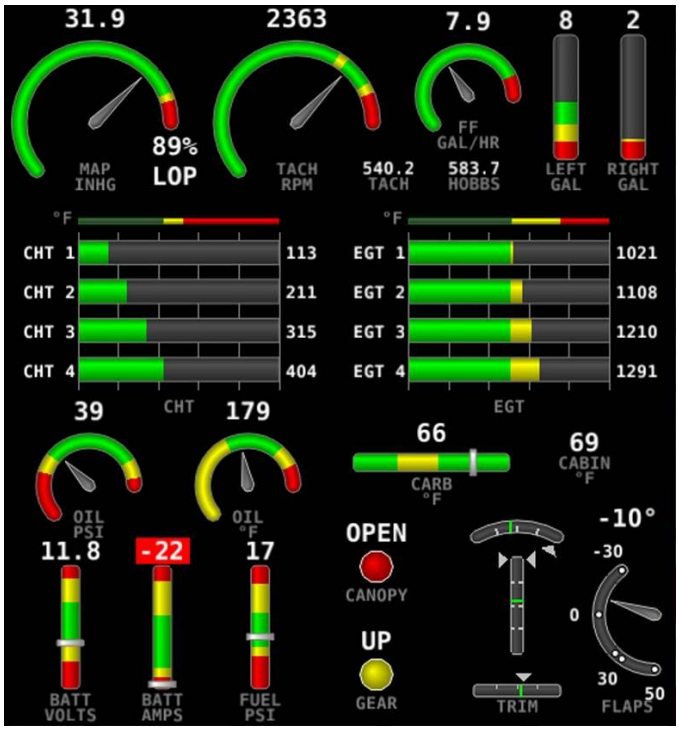

Figure 35 – Example 50% Engine Page for Single Engine

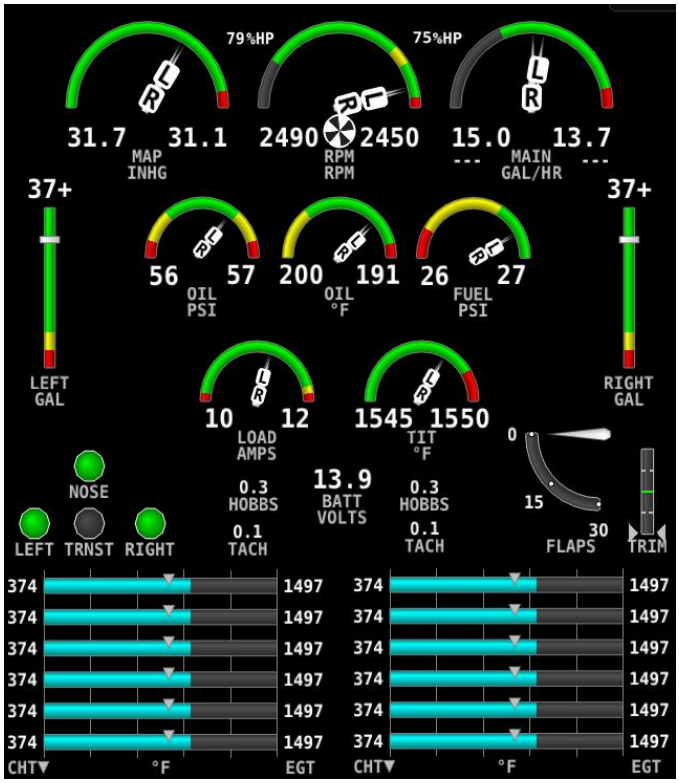

Figure 36 – Example 50% Engine Page for Twin Engine

Its appearance is determined using the Screen Layout Editor under the EMS Setup Menu and should have been configured during installation. All EMS widgets that have assignable color ranges, can include: red, yellow, green, black, blue, white, purple, cyan, and orange, for customization. For more information regarding the Screen Layout Editor, reference the *SkyView Classic / SE / HDX System Installation Guide*.

The green markings on pitch/roll/rudder trim indications, if they exist, nominally depict the take-off position markings as defined during calibration.

Engine warning alerts are only triggered when their respective sensors are configured as self-clearing or latching alarms. If a sensor's alarm is configured as off, no alert will trigger, even if that sensor's measurement enters a range defined as red. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information regarding alarm configuration.

Engine parameters only trigger alerts in the Message Notification Area and Message Window when they enter their "red" ranges. In other words, "yellow" caution ranges for engine parameters do not trigger alerts. Yellow caution ranges, however, are visually annunciated via yellow highlighting on the Engine Page.

Combined CHT/EGT Widgets

Most of the graphical engine widgets present information from a single engine sensor. An exception is the combined CHT/EGT widget shown in the figure blow.

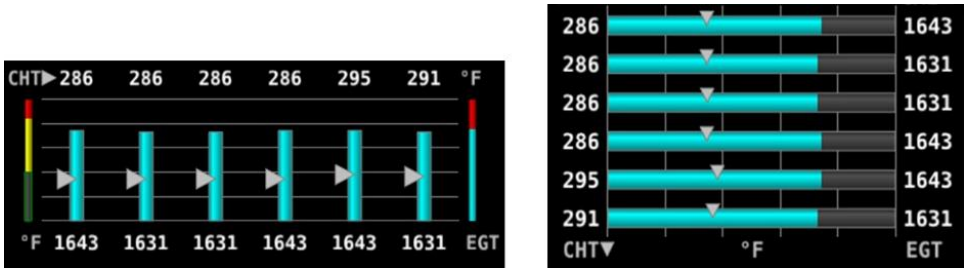

Figure 37 – Example of Combined CHT/EGT Gauge (Vertical and Horizontal Styles)

This combined CHT/EGT widget displays all of the engine's CHTs and EGTs in one compact gauge. EGTs are displayed numerically down the right side of the gauge. They are represented graphically by the solid bar graph. CHTs are displayed numerically on the left side of the gauge. They are graphically represented by the white "tick marks" that overlay the EGT bars. When caution or alarm points are red, this tick mark changes colors with the numbers. This representation allows all CHTs and EGTs to be displayed in a way that affords quick comparison of their values, whether raw data or a graphical comparison is preferred.

Combined Twin-Engine Widgets

The following functions can be placed on an Engine page as combined widgets:

- Oil Pressure (OIL PRES)
- Oil Temperature (OIL TEMP)
- Fuel Pressure (FUEL PRES)
- Main Fuel Flow (MAIN FLOW)
- Amperage Load (LOAD AMPS)
- Manifold Air Pressure (MAP PRES)
- Turbine Inlet Temperature (TIT TEMP)
- RPMs (RPM RPM)

Figure 38 – Example of Combined Oil Temperature Widget Styles

Combined twin-engine widgets are useful for laying-out Engine pages with 50% and smaller page layouts. They have two pointers or tick marks, indicating left and right engines. Combined engine widgets are configurable using the Screen Layout Editor. These widgets should have been configured during installation.

Synchroscope

The Synchroscope is used to help synchronize engine RPMs in twin-engine aircraft. It should be located near the RPM widget (see Figure 39). When the Synchroscope is rotating clockwise, the right engine is turning faster than the left. When the Synchroscope is rotating counterclockwise, the left engine is turning faster than the right. This indication is configurable using the Screen Layout Editor. These widgets should have been configured during installation.

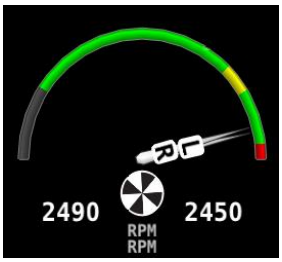

Figure 39 – Example of a Synchroscope and a Combined RPM Widget

Rotax 912 Behavior

Indicators for the Power/Eco mode and Throttle Position are available:

- The POWR/ECO widget will turn green and display “ECO mode” when the engine is running economically. In this mode you will experience reduced fuel consumption.
- When the engine is off, the THRTL widget will show a green range to assist cold-start scenarios. Note that both lane switches and start power must be on in order to display the throttle position widget.

See your Rotax manual for more information.

SkyView SE can be configured to adjust the oil temperature and tachometer gauges for the Rotax 912 engine dynamically to reflect limitations that Rotax specifies for that engine. When this behavior is turned on (per the *SkyView Classic / SE / HDX System Installation Guide*), the tachometer and oil temperature behave in the following ways:

Tachometer for Rotax 912:

When OIL TEMP < 120ºF, the TACHOMETER displays these ranges:

- 0-1400 *and* 4000-6000 RPM in RED
- 1400-1800 *and* 2500-4000 RPM in YELLOW
- 1800-2500 RPM in GREEN

When OIL TEMP > 120ºF, the TACHOMETER displays *different* ranges:

- 0-1400 *and* 5800-6000 RPM in RED
- 1400-1800 *and* 5500-5800 RPM in YELLOW
- 1800-5500 RPM in GREEN

The alarm type for the tachometer is the "self-clearing" type.

Oil Temperature Gauge for Rotax 912:

When OIL TEMP < 190ºF, the OIL TEMP gauge displays these ranges:

- 100-120 and 230-266ºF in YELLOW
- 120-190ºF in GREEN *if OIL TEMP has been above 190ºF "more recently" than OIL TEMP was below 120ºF;* otherwise 120-190ºF is displayed in BLACK OUTLINED IN WHITE
- 190-230ºF in GREEN
- 266-280ºF in RED.

When OIL TEMP is > 190ºF, the OIL TEMP gauge will display *different* ranges:

- 100-120 *and* 230-266ºF in YELLOW
- 120-230ºF in GREEN
- 266-280ºF in RED

The alarm type for oil temperature is the "self-clearing" type.

Timers

SkyView SE has internal tach, Hobbs, and other timers that each run at different times. EMS timers are available for placement on the Engine Pages via the Screen Layout Editor. For more information regarding the Screen Layout Editor, reference the *SkyView Classic / SE / HDX System Installation Guide*.

Engine timers are displayed at 1/10 hour increments.

Tach Time - labeled **TACH** when displayed on an Engine Page - is a measure of engine time normalized to a cruise RPM. The cruise RPM parameter must be set properly in the system setup to generate a correct tach time

Hobbs Time - labeled **HOBBS** when displayed on an Engine Page - is a simple timer that runs whenever the oil pressure is above 15 PSI or the engine is above 200 RPM. It essentially runs when the engine does.

The **Engine Run Timer** - labeled **RUN TIME** when displayed on an Engine Page - is a Hobbs style timer that records the time your engine has been running during your current flight. It resets the first time the engine is started after SkyView SE is powered on. This allows you to view your previous flight's Engine Run Time any time before you start your engine before a flight.

The **Total Air Timer** - labeled **AIR TOTAL** when displayed on an Engine Page - runs any time that SkyView SE determines that the aircraft is in flight. SkyView SE uses the presence of significant airspeed or GPS speed to decide whether the aircraft is flying. This timer can only be reset or

adjusted in the Aircraft Information menu within SkyView SE Setup. See the *SkyView Classic / SE / HDX System Installation Guide* for information about using SkyView SE's Setup Menu.

The **Air Timer** - labeled **AIR TIME** when displayed on an Engine Page - runs any time SkyView SE determines the aircraft is in flight. SkyView SE uses the presence of significant airspeed or GPS speed to decide whether the aircraft is flying. Resets as SkyView SE detects that the aircraft has transition to "in the air" This time is also optionally used to calculate the Switch Fuel Tank Reminder.

A **Switch Fuel Tank Reminder** can be configured to alert the pilot to switch their fuel tanks at a set time or fuel usage interval (based on the fuel computer's fuel calculations). When enabled, it will periodically annunciate a "Switch Fuel Tank" alert message and audio alert. There is no visible counter for this timer. See the *SkyView Classic / SE / HDX System Installation Guide* for details on configuring this reminder.

Fuel Computer

The Fuel Computer is a built-in feature which monitors fuel consumption as determined by an optional fuel flow sensor and maintains continuously updated dual engine monitoring.

For aircraft with two engines, SkyView can be configured to monitor both engines when two SV-EMS-220/221 modules are installed. The flow-based fuel computer feature can be configured in one of two ways:

- In one configuration, it will totalize all fuel and usage throughout the aircraft – as you'd want when there is a single combined fuel system in the aircraft.
- Alternatively, it can compute each engine's fuel totals and usage quantities separately, as you'd want if each engine were served by a completely independent fuel system.

In either case, the instantaneous fuel flow reading will be indicative of the current fuel usage of the corresponding engine. The following info items will either be based on either the total fuel in the aircraft or the total fuel per fuel system: Fuel Remaining, Fuel Used, Fuel Efficiency, Fuel at Waypoint, and Range values.

In a dual engine system, the following timers are running when either engine is running: Run Time, Total Air Time, Trip Run, Air Trip, and Air Timer. However, the Hobbs and Tach timers are tied to the individual engine.

See the *SkyView Classic / SE / HDX System Installation Guide* for more details on setup and configuration of dual engine monitoring.

By using the fuel flow sensor data and GPS information together, SkyView can generate and display different info items that pertain to your aircraft's computed fuel state and performance. They are available for placement on the Engine Pages via the Screen Layout Editor. For more information regarding the Screen Layout Editor, reference the *SkyView Classic / SE / HDX System Installation Guide*.

The Fuel Remaining, Fuel Used, Fuel Efficiency, and Range values are not directly measured. These values are calculated based upon measured flow rates and *user input* of fuel quantity. Do not use these values as primary indicators.

By using the optional fuel flow sensor and GPS information together, SkyView SE can generate and display different info items that pertain to your aircraft's computed fuel state and performance. They are available for placement on the Engine Pages via the Screen Layout Editor. For more information regarding the Screen Layout Editor, reference the *SkyView Classic / SE / HDX System Installation Guide*.

The Fuel Remaining info item (displayed as FUEL REM) displays the current amount of fuel computed on board, based on your input of the aircraft's starting fuel state and the amount of fuel that has the fuel flow sensor has seen flow through it.

The Fuel Used info item (displayed as GALS USED) displays the amount of fuel that has been used during your flight. Note that Fuel Used resets itself when the unit detects that oil pressure has exceeded 15 PSI for the first time after being powered on. This allows you to view the fuel used value from your last flight before engine start.

The Time Remaining info item (displayed as TIME REM) displays how much time is estimated remaining before the aircraft is out of fuel.

The Fuel Efficiency info item (displayed as NM/GAL) displays how efficiently the aircraft is using fuel with respect to the speed it is traveling over the ground (this also can be displayed as MI/GAL, KT/GAL, KM/LTR).

The Fuel Range info item (displayed as RANGE) displays the distance the aircraft can travel at its current GPS ground speed before it is out of fuel.

Fuel Menu (Adjusting the Fuel Computer)

To obtain accurate data, you must reset the fuel computer every time you add fuel to the aircraft. SkyView can assist with this through the Fuel Auto Detect setting described in this section.

Fuel computer adjustments are made using the FUEL feature on Button 2 of SkyView SE's main menu. When FUEL is pressed, the window in Figure 40 is displayed:

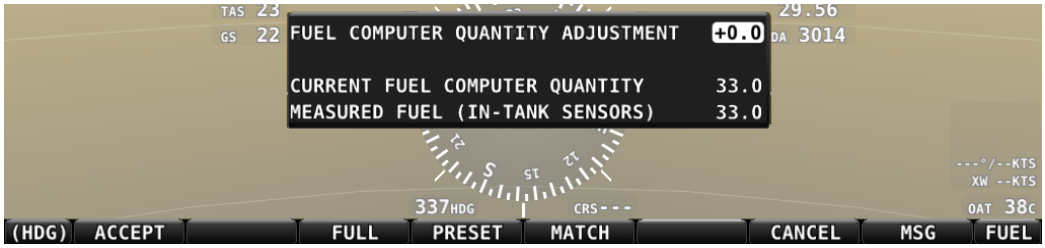

Figure 40 – Fuel Computer and Fuel Menu

- "Fuel Computer Quantity Adjustment" is the amount of fuel that you have told the fuel computer to presently add or subtract from the previous total fuel state.

- "Current Fuel Computer Quantity" is the total amount of fuel on board as far as the fuel computer knows. This is the number that ultimately needs to be correct in order for the fuel computer to accurately perform its calculations.
- "Measured Fuel (In-Tank Sensors)" is the amount of fuel measured by the resistive or capacitance senders, if installed. If these are well-calibrated, then the Total Fuel and the Measured Fuel lines should be very close to each other.
- If no fuel sensors are installed or calibrated, "Measured Fuel" and "Levels Mismatch" will not be displayed.

There are a few different ways to adjust the fuel computer's fuel state:

- While the FUEL menu is displayed, turn the FUEL knob to add or subtract fuel. This is limited to adjustments that set the Total Fuel to between 0 and the total fuel capacity as defined in the Setup Menu.
- Press FULL to have SkyView SE recall a previously programmed amount of fuel which represents the full fuel load of the aircraft. See the *SkyView Classic / SE / HDX System Installation Guide* for information about how to set this value.
- Press PRESET to have SkyView SE recall a previously programmed amount of fuel which represents different fuel loading besides "full". This is commonly used in aircraft that have visual tabs in the tanks to easily fill to a non-full but well-defined fuel state. See the *SkyView Classic / SE / HDX System Installation Guide* for information about how to set this value.
- Press MATCH to have SkyView SE automatically add/subtract the appropriate amount of fuel so that Total Fuel matches the Measured Fuel value that the physical fuel tank sensors are measuring. Press ACCEPT to confirm the new displayed Total Fuel and exits the FUEL menu,
- Press CANCEL to discard any changes made to the Total Fuel and exit the FUEL menu.

Beware that the value that SkyView SE adjusts the fuel computer when MATCH is used is only as accurate as your fuel level sensor measurements.

Auto Fuel Detect

The fuel computer can optionally be configured to detect when fuel has been added while SkyView SE was off, as would be the case during a normal refueling operation. When configured to detect fuel additions, SkyView SE will automatically display the FUEL menu upon startup as a reminder to adjust the fuel computer, along with a FUEL MISMATCH message to indicate that the fuel measured by the in-tank fuel quantity sensors does not closely match the fuel computer's fuel remaining value.

6. Transponder Operation

Dynon Avionics offers two transponder modules that can be connected to SkyView SE. When installed and configured, SkyView SE displays gain an integrated transponder that is controlled directly from the SkyView SE display.

The SV-XPNDR-262 is a Class 2 Mode S transponder that is limited to use beneath 15,000 feet and under 175 knots. The SV-XPNDR-261 is a Class 1 Mode S transponder that can be used above those limitations.

For US aircraft, the FAA 2020 ADS-B Out mandate (14 CFR § / FAR 91.227) requires a Class 1 transponder for flight in Class B or Class C airspaces.

Throughout this manual, they are often referred to together as the SV-XPNDR-261/262 for instructions that apply to both versions. Be sure that your aircraft is operated within the limitations of the transponder model that is installed in your aircraft.

The SV-XPNDR-261/262 also outputs ADS-B OUT messages via its 1090ES capability.

It is critical to note that only the Class 1 version SV-XPNDR-261 meets the requirements for an ADS-B Out transmitter under the 2020 mandate. Regardless of your aircraft's performance, you must use the Class 1 transponder to be complaint for ADS-B Out.

The SV-XPNDR-261/262 has no control head. Rather it is exclusively controlled by accessing the transponder submenu (XPNDR - Button 5 – on SkyView SE's main menu). This allows the transponder to be mounted separately from the instrument panel, and reduces the amount of panel space taken by the transponder. SkyView SE also provides pressure altitude directly to the transponder, eliminating the need for a separate altitude encoder.

Transponder Status

When the transponder is installed and configured, the Top Bar will display transponder status as shown in the following figure:

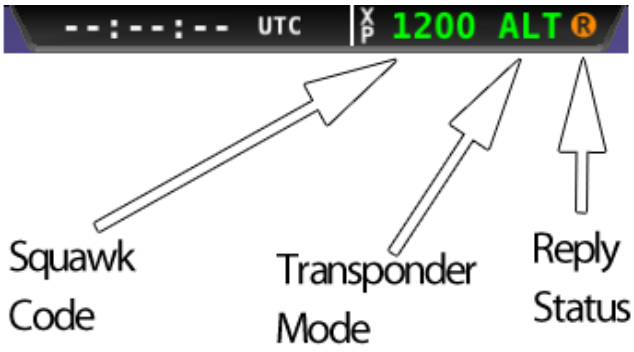

Figure 41 – Transponder Status Area in Top Bar

The transponder status area is comprised of the following status elements:

- Squawk Code: This code is transmitted when the transponder is in a broadcast mode.
- Transponder Mode: Displays the current operating mode and status of the transponder. Modes in which the transponder will reply to interrogations are colored green, while other modes, such as standby and errors, are in yellow or red. The different modes possible include:
    a. SBY: The transponder is on, but will not reply to any interrogations. This is the mode that the transponder is in when none of the modes below are active.
    b. GND: The transponder will only reply to direct Mode S interrogations using the specific ICAO address from surface movement radar. It will not reply to mode A, C and Mode S all-call interrogations.
    c. AUTO (replaces GND, above): Available when the transponder is configured to automatically switch between ALT/GND automatically (see the *SkyView Classic / SE / HDX System Installation Guide* for details). When AUTO is selected, the transponder will automatically switch between ALT and GND modes - reflected in the transponder status in the top bar – using a combination of GPS and air data changes.
    d. ON: The transponder will respond to all interrogations, but altitude reporting is suppressed.
    e. ALT: The transponder will respond to all interrogations.
    f. IDT: Displayed while the transponder is broadcasting an ident after the IDENT button is pressed at ATC's request.
    g. Big red "X" (covering entire transponder status area): Indicates an error, either with the transponder itself or in the communication between the transponder module and SkyView SE. The transponder is not responding to interrogations. Check the wiring and settings between the transponder module and SkyView SE if you are authorized to maintain your aircraft. Contact Dynon Technical Support for further assistance.

- Reply Status: The reply indicator illuminates when the transponder replies to interrogations.

When connected properly, third party transponders such as the Garmin GTX 330 and GTX 327 can provide status as described above. However, they cannot be controlled from the SkyView SE display as the SV-XPNDR-261/262 can.

Transponder Sub-Menu

Figure 42 – Transponder Menu Example

When the Dynon SV-XPNDR-261/262 transponder module is installed and configured, the Transponder submenu becomes accessible from the Main Menu by pressing XPNDR (Button 6). All transponder operation can be accomplished from this submenu. There is no dedicated or separate control panel needed (or available).

Note that there are some situations when the selected transponder mode may be different from the status annunciated in the Transponder Status Area. For example, if you select ALT mode, but there is a squat switch installed, it will keep the transponder in GND mode until the aircraft has become airborne. The requested ALT mode would then be activated.

BACK

Press BACK to return to the Main Menu.

GND

Press to set the transponder to ground mode. In ground mode, the transponder will respond to Mode S ground interrogations from surface movement radar. When active, the GND button will remain highlighted in this menu, and GND is annunciated in the transponder status area in the Top Bar. When the transponder is in ground mode, pressing GND again will turn ground mode off and put the transponder in standby mode.

ON

Press to set the transponder to respond to all interrogations, but with altitude reporting suppressed. When active, the ON button will remain highlighted in this menu, and ON is annunciated in the transponder status area in the Top Bar. When the transponder is on in this mode, pressing ON again will turn put the transponder in standby mode.

FLIGHT ID

If enabled, FLIGHT ID allows you to enter an ADS-B Flight ID (i.e., aircraft name). If FLIGHT ID is enabled, but no value is entered, SkyView will report the aircraft's tail number by default. (Refer to the Installation Guide to enable the FLIGHT ID function.)

ALT

Press to set the transponder to respond to all interrogations with altitude reporting. When active, the ALT button will remain highlighted in this menu, and ALT is annunciated in the transponder status area in the Top Bar. When the transponder is on in this mode, pressing ALT again will turn put the transponder in standby mode.

CODE

Press to type in a squawk code. If you make a mistake while typing a squawk code, stop typing and after a few seconds the CODE menu will exit automatically without changing the squawk code. Codes that are standardized include:

1200:	VFR code in the USA
7000:	VFR code commonly used in Europe.
7500:	Hijack code
7600:	Loss of communications
7700:	Emergency code

VFR

Press to quickly tune the VFR squawk code. This is usually 1200 in the US and 7000 in Europe. Refer to the Installation Guide to set the VFR code that this button tunes. Once pressed, the VFR button will remain highlighted until the transponder code is changed to show that you are in VFR mode. Press the button while VFR is highlighted to return the transponder to the last code tuned.

IDENT

Press to ident when requested to “ident” by ATC. “IDT” will be displayed in the Transponder Status Area for the next 18 seconds as the transponder sends the ident signal. Note that if a button is pressed to change the transponder mode or to turn it off, that action will be delayed until the ident transmission completes.

Reported Pressure Altitude

At times it may be useful to know the altitude that is being reported to the transponder. Since SkyView SE sends pressure altitude to the SV-XPNDR-261/262, setting BARO to 29.92 will

display the pressure altitude being transmitted to the transponder in the normal SkyView SE altitude display on the PFD page.

ADS-B OUT Transmissions

If SkyView SE has a valid GPS signal and a SV-XPNDR-261/262 module is installed and working, it automatically provides ADS-B output at the appropriate integrity level for the GPS signal being used.

ADS-B OUT transmissions that meet the 2020 FAA ADS-B equipment mandate require that a compliant GPS be provided to a capable ADS-B device (such as the SV-XPNDR-261). For this purpose, a dedicated serial input is provided on the SV-XPNDR-261/262 module that allows an appropriate GPS receiver serial output to be connected directly to the SV-XPNDR-261/262. When an SV-XPNDR-261 is connected to a suitable GPS source – including Dynon's SV-GPS-2020) and is running the latest version of transponder software, the SV-XPNDR-261's ADS-B transmissions can attain the integrity level necessary to meet the FAA's 2020 ADS-B equipment mandate. Refer to the *SkyView Classic / SE / HDX System Installation Guide* for more details about connectivity and information on updating the firmware on the SV-XPNDR-261 for this compliance. Note that only the SV-XPNDR-261 is capable of meeting the 2020 ADS-B Out mandate because of power transmission requirements that the FAA ADS-B rules imposes on ADS-B transmitter devices.

If you are operating in a region where ADS-B broadcast is not permitted or may be legally disabled, you can disable ADS-B OUT transmissions without disabling GPS-based functions. (Refer to the *SkyView Classic / SE / HDX System Installation Guide* for instructions.) Within the United States, ADS-B Out features must - per FAA rule - be enabled if equipped.

If you are operating within the United States, there may be a service bulletin which applies to your transponder, please see the Service Bulletins section of our website for more information.

Flight Plan Codes

ICAO and FAA Flight Plans

If you do not have a certified GPS navigator on board, but do have a Dynon Mode-S transponder, the appropriate ICAO Surveillance Equipment Code is "S".

7. Autopilot Operation

This chapter guides you through the functionality, symbology, and operation of the SkyView SE Autopilot. It assumes that the Autopilot servos have been properly installed, calibrated, tested, and tuned according to the procedures in the *SkyView Classic / SE / HDX System Installation Guide* and the *SkyView Autopilot In-Flight Tuning Guide*. For instructions on how to change Autopilot controls see the *SkyView Classic / SE / HDX System Installation Guide*.

Autopilot Safety Features

Servo Failsafe

The Dynon Avionics Autopilot is designed with multiple failsafe features to ensure that the autopilot can always be disabled, even in the event of electronic or mechanical failure.

First, the required disconnect switch commands the servos to disengage directly, ensuring that the pilot can always override SkyView SE's commands.

Next, the Autopilot servos are designed so that the pilot can always overpower them and move the control stick/yoke manually with minimal force, even when the servo is operating at its highest torque output capability.

When the servos are not receiving power, they revert to their normal power-off state. Thus, simply opening the Autopilot circuit breaker or fuse on in the aircraft will completely inhibit the Autopilot servos from controlling the airplane.

However, SkyView SE does continuously look for the presence of powered-up servos, even when the autopilot is disengaged, and will show an error condition if they are not communicating with the rest of the system. Therefore, Dynon Avionics recommends that the servos be powered on whenever SkyView SE is powered on in routine operation. When the servos are receiving power but the autopilot is not engaged, the servos draw negligible power.

Finally, in the unlikely event of an internal catastrophic failure of the servo, moderate but firm force on the control/stick yoke will physically decouple the servo internals from its link to the aircraft control surface. This action breaks a specially-designed shear screw which is designed to yield in this scenario to preserve positive pilot control of the aircraft.

Level Mode

The autopilot's Level Mode (or Straight and Level Mode) will immediately attempt to reach zero vertical speed and a roll angle of zero. It will not attempt to fly the aircraft to any previous altitude or track and it will not respect any bug inputs. When activated, Level Mode will cause the autopilot to engage if it was not already engaged.

In SkyView SE, Level Mode is engaged by pushing the (optional) SV-BUTTON-LEVEL button on the panel (shown at right).

Figure 43 – SV-BUTTON-LEVEL

Top Bar Autopilot Status Area

Figure 44 – Example Top Bar with Autopilot Status

The status of SkyView SE's autopilot is presented in the left portion of the top Status Bar Area. The various enunciations which may be presented are described below:

Center AP Text AP

- AP is displayed in green when either or both AP axes' servos are engaged.
- AP flashes in yellow when the autopilot has been disengaged within the last 10 seconds.

Roll and Pitch Axes Engaged Arrows or

- A green arrow to the left and right of the green AP center text points at the axis or axes for which the servo is engaged.
- Flashes in yellow when the autopilot has been disengaged within the last 10 seconds.
- Arrows scroll up/down AP during Pitch Auto-Trim and left/right during Roll Auto-Trim.

Roll and Pitch Axis Information

- Active Mode and Target TRK042 or VS -500
  - The current mode and the mode's target for each axis for which the autopilot is providing guidance.
  - Flashes for 10 seconds when an armed mode is sequenced and has become the active mode.
- Armed Mode →GPS or →ALT
  - The mode to which the autopilot will automatically transition when the capture criteria for the new mode is satisfied.

Other Autopilot Status Information

In addition to the modes that are engaged and armed, the Top Bar and the area around it can communicate other important Autopilot status information.

Pitch Trim Indicator

When the autopilot is flying the aircraft in the pitch axis, a Pitch Trim Indicator can appear. This indicator alerts you when the pitch servo detects excessive load on the elevator which would result in an out-of-trim condition when the autopilot is disengaged. To eliminate the excessive trim forces that the autopilot is trying to overcome, trim the nose of the aircraft in the direction indicated: up or down. Adjust the trim in small increments and wait a few seconds between adjustments to see whether the adjustment is sufficient to remove the out-of-trim indication. If you have roll Auto-Trim configured on the roll axis, the autopilot will automatically apply trim

commands to resolve the out-of-trim condition and the Autopilot engaged arrows will spin up or down.

Figure 45 – Trim Nose Up Indicator

Pitch Slip Indicator

You may see this during periods of turbulence or if the strength of the servo is not sufficient to actuate the control surface.

If slipping occurs on the pitch servo, SkyView SE displays a slip warning as illustrated:

Figure 46 – Pitch Slip Indicator

Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information regarding servo slippage.

Pitch Slip/Trim Indicator

If prolonged periods of pitch slipping are detected, the condition may be relieved with pitch trim. SkyView SE displays a slip indication combined with a trim request. However, Auto-Trim will not attempt to actuate the trim controllers during a slip.

Figure 47 – Pitch Slip / Trim Nose Up Indicator

Roll Trim Indicators

When the autopilot is flying the aircraft in the roll axis, a Roll Trim Indicator may appear. This indicator lets you know when the roll servo is having to maintain a sustained force on the ailerons in order to hold the desired bank angle. To eliminate the excessive trim forces that the autopilot is trying to overcome, trim aircraft in the direction indicated: left or right. Adjust the trim in small increments and wait a few seconds between adjustments to see whether the adjustment is sufficient to remove the out-of-trim indication. This alert may not be configured in all aircraft. See the *SkyView Classic / SE / HDX System Installation Guide* for more information regarding trim indication configuration. If you have roll Auto-Trim configured on the roll axis,

the autopilot will automatically apply trim commands to resolve the out-of-trim condition and the Autopilot engaged arrows will turn to the left or right.

Figure 48 – Roll Trim Indicators

Roll Slip Indicator

You may see this during periods of turbulence or if the strength of the servo is not sufficient to actuate the control surface. If slipping occurs on the roll servo, SkyView SE displays a slip warning as illustrated in the following figure. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information regarding servo slippage.

Figure 49 – Roll Slip Indicator

Hold To Engage Indicator

Displayed when the disconnect switch is held down to engage the autopilot. The behavior upon release is different for Simplified and Expert Autopilot Control schemes. See the Simplified and Expert Control sections below for additional Hold To Engage behavior information.

Figure 50 – Hold to Engage Indicator

Control Wheel Steering Indicator

Displayed when the disconnect switch is held down while the autopilot is engaged to adjust the autopilot's targets. Control Wheel Steering behavior is different for Simplified and Expert Autopilot Control schemes. See the Simplified and Expert Control sections below for additional Control Wheel Steering behavior information.

Figure 51 – Control Wheel Steering Mode Indicator

The Control Wheel Steering feature can be enabled and disabled via the Autopilot Setup Menu. See the *SkyView Classic / SE / HDX System Installation Guide* for details.

Airspeed Out-Of-Range Indicator

SkyView SE uses the indicator shown below to denote that the aircraft airspeed is outside of the specified autopilot airspeed range as specified during installation. *When SPD is displayed in the Top Bar the autopilot cannot be engaged.*

Figure 52 – Speed Out-Of-Range Indicator

G Limit Indicator

SkyView SE uses the indicator shown in the following figure to denote that the autopilot's preset G limits are hit, and therefore the autopilot will not pull or push on the pitch axis in a way that would exceed these limits.

Figure 53 – G-Limit Indicator

Airspeed High/Low Indicator

When the Autopilot is engaged, SkyView SE uses the indicator shown in the following figure to denote that the aircraft has reached its maximum or minimum airspeed limits as configured when the Autopilot was set up.

When either of these indications is displayed, the autopilot will not pull or push on the pitch axis in a way that would exceed these limits. Instead, the Autopilot will actively pitch the aircraft up or down to prevent exceeding the maximum airspeed or dropping below the minimum airspeed. This may prevent the Autopilot from reaching its programmed targets, and can even cause the Autopilot to maneuver contrary to its programmed targets in order to remain within the allowed airspeed limits.

Figure 54 – Airspeed Low Indicator

When GPS ASSIST is annunciated on the PFD page SkyView SE does not have airspeed information, likely due to a pitot failure or icing event. Therefore, when GPS ASSIST is active, SkyView SE cannot limit operations to the maximum and minimum airspeeds as described in this section. Use extreme caution when using the autopilot under this circumstance.

Servo Errors

When a servo is offline (for example, when the Autopilot circuit breaker has been pulled) or has failed, ROLL ERR and/or PTCH ERR are displayed in the Top Bar:

Figure 55 – Roll and Pitch Servo Failures

When Expert Autopilot is in use, press the MESSAGE button twice to view and acknowledge this error. After the error is acknowledged, the Top Bar message is suppressed so that you can continue to use the Flight Director for guidance.

Auto-Trim

SkyView has the ability to automatically trim the aircraft while the Autopilot is engaged. This feature requires that you have an SV-AP-PANEL installed and are using its integrated trim controller to actuate your pitch and/or roll trim servos. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information about configuring Auto-Trim.

Be advised that the SV-AP-PANEL's buttons are not compatible with SkyView SE. However, an SV-AP-PANEL may be installed, possibly behind the panel "in the blind" to provide trim control and Autopilot Auto-Trim features.

When Auto-Trim is enabled, you should not need to manually adjust the trim when the autopilot is engaged. When the AP is running the trim, the Roll and/or Pitch Axes Engaged Arrows will animate as described in the above sections. SkyView's Auto-Trim feature is only active on roll or pitch when that axis' Autopilot servo is engaged. It does not actuate the trim when you are hand-flying.

The Auto-Trim's goal is to minimize the stick forces so that the Autopilot servos do not need to apply much force to the control surface to maneuver the aircraft. This allows it to have the ideal amount of control authority over the control surface, while keeping the aircraft in trim continuously. Essentially, Auto-Trim flies the aircraft very similarly to how you do.

Although Auto-Trim is constantly monitoring and adjusting to neutralize trim forces, you may occasionally see the Pitch and Roll Trim messages and advice as described in the above section. However, given a short period of time, the Auto-Trim system's movement should neutralize the forces and the messages should subside. Note that Auto-Trim moves the trim surfaces slower than your trim switch commands normally do.

Similarly, Autopilot servo slips may still be observed, particularly when in turbulence. Note that Auto-Trim is not active in the moments that the air loads are overpowering the servos when a servo slip annunciation is being shown.

If persistent servo slip alerts are accompanied by trim up/down/left/right alerts, the Auto-Trim feature many not be able to achieve its goals. This could be due to an Autopilot or Auto-Trim configuration issue, a broken trim motor, or another issue.

Simplified Autopilot Operation and Controls

Autopilot controls in SkyView SE are extraordinarily simple. The autopilot has been optimized for use in VFR-only aircraft.

SkyView SE's main menu contains only two Autopilot controls, on Buttons 3 and 4.

Button 3: TRK+ALT

The quickest and simplest way to engage the autopilot it by pressing Button 3: TRK+ALT. This engages the autopilot in Track Hold and Altitude Hold modes simultaneously when both pitch and roll servos are installed. If only a single servo is installed, pressing Button 3 will engage that servo in the mode specific to its control axis.

When engaged, the TRK+ALT button will highlighted in green, and the ground track and altitude that the autopilot is flying is shown in the Top Bar.

Figure 56 – TRK+ALT Active

Figure 57 – Target Track and Altitude in Top Bar

To disengage the autopilot, press Button 3 again, turning the button black, or press the autopilot disconnect switch.

TRK+ALT will be unavailable and grayed-out if there is not a valid GPS signal or if the autopilot is outside of its allowable engagement speed ranges.

Button 4: HSI+ ALT

If an external VFR GPS navigator is configured and has an active waypoint program, pressing the HSI+ALT button will engage the autopilot in HSI and Altitude Hold modes simultaneously when two servos are installed. If only a Roll servo is installed, Button 4 will be labeled HSI and that servo will be engaged. If only a pitch servo is installed, Button 4 will be blank and will have no function.

When engaged, the HSI+ALT button will highlighted in green, and the HSI source and altitude that the autopilot is flying is shown in the Top Bar.

Figure 58 – HSI+ALT Active

Figure 59 – HSI Source and Target Altitude in Top Bar

To disengage the autopilot, press Button 4 again, turning the button black, or press the autopilot disconnect switch.

HSI+ALT will be unavailable and grayed-out if there is no valid external GPS navigation source (with active CDI), or if the autopilot is outside of its allowable engagement speed ranges.

LEVEL (Requires optional SV-BUTTON-LEVEL)

Figure 60 – SV-BUTTON-LEVEL

If an SV-BUTTON-LEVEL (shown at right) is installed and properly configured, pressing the SV-BUTTON-LEVEL will command the AP to immediately attempt to reach zero vertical speed and a roll angle of zero. Level mode will not attempt to fly the aircraft to any previous altitude or track and it will not respect any bug inputs. When activated, Level Mode will cause the autopilot to engage if it was not already engaged. For safety in emergency situations, subsequent presses of the LEVEL button do not disengage level mode (unlike other AP mode switches).

To disengage the autopilot, press the autopilot disconnect switch. Alternatively, change to one of the other autopilot modes by pressing the TRK+ALT or HSI+ALT buttons.

Autopilot Modes

The following table summarizes the different autopilot modes of operation for the roll axis as annunciated in the Top Bar.

Mode	Annunciation	Description
Track Hold (TRK)	TRK042	Track hold mode keeps the aircraft flying in a particular direction, as determined by the GPS's ground track, or direction of travel over the ground. This target is reflected by the track (TRK) bug in the HSI. When the autopilot is initially engaged, the TRK bug will automatically be synchronized to the current ground track of the aircraft. Effectively, this means that the autopilot will keep flying in the same direction that the aircraft was flying in the moment before the autopilot was engaged. After the autopilot is engaged, change the track you want the autopilot to fly by adjusting the TRK bug.
HSI (GPS)	GPS	In HSI mode, the autopilot will fly the lateral course guidance that is displayed on the HSI from the provided source. For example, if the selected HSI source is the SkyView SE GPS, and there is an active Flight Plan, the autopilot will fly that flight plan. Or if the source is a VOR the autopilot will seek to capture and hold the set CRS to or from the VOR. If the HSI source provided GPS roll steering commands (GPSS) the autopilot will follow those commands.
Level Mode	STRAIGHT	Holds the aircraft in a wings level attitude (zero degrees roll).

Figure 61 – Autopilot Roll Modes

The following table summarizes the different autopilot modes of operation for the pitch axis.

Mode	Annunciation	Description
Altitude Hold	ALT 3500	Altitude hold mode keeps the aircraft flying at a particular altitude. The altitude that the autopilot holds is governed by the ALT (altitude) bug. When the autopilot is initially engaged, the ALT bug will automatically be synchronized to your current altitude. Effectively, this means that the autopilot will maintain the altitude that the aircraft was at the moment before the autopilot was engaged. After the autopilot is engaged, you may adjust the altitude that the autopilot holds by adjusting the ALT bug.
Vertical Speed Hold to Altitude Capture	VS -500→ALT	Moving the ALT (altitude) bug away from the current altitude (when already holding altitude) automatically initiates a climb or descent to the new altitude in vertical speed mode. The rate of climb or descent during autopilot controlled changes in altitude is governed by the VS (vertical speed) bug. When the autopilot is engaged and a new altitude is selected, the Autopilot will automatically choose one of two preset default vertical speeds to perform that altitude change, depending on whether or not the Autopilot needs to climb or descend. These default climb and descent vertical speeds are configured during Autopilot setup. See the *SkyView Classic / SE / HDX System Installation Guide* for further details on adjusting these defaults. Once the Autopilot is climbing or descending to a new altitude, the VS bug can be adjusted by the pilot at any time.
Level Mode	LEVEL	Holds the aircraft level by holding zero vertical speed.

Figure 62 – Autopilot Pitch Modes

If a GPS signal is not available, neither autopilot mode will be available.

Control Wheel Steering

When the autopilot is engaged, press and hold the Autopilot disconnect switch to put the autopilot into Control Wheel Steering mode.

Figure 63 – Control Wheel Steering Active

While Control Wheel Steering mode is active, the Autopilot servos are temporarily disengaged. This lets you fly the aircraft by hand for short periods to make an adjustment to the autopilot's targets without completely disengaging the Autopilot.

When the disconnect switch is released, the Autopilot's targets are adjusted as follows:

When in TRK+ALT mode:
- Pitch axis: The ALT bug (and therefore the Autopilot's altitude target) is synchronized to the aircraft's current altitude.
- Roll axis: The TRK bug (and therefore the Autopilot's track target) is synchronized to the aircraft's current GPS ground track.

When in HSI+ALT mode:
- Pitch axis: The ALT bug (and therefore the Autopilot's altitude target) is synchronized to the aircraft's current altitude.
- Roll axis: No change. The roll axis resumes tracking its HSI source.

The Control Wheel Steering feature can be enabled and disabled via the Autopilot Setup Menu. See the *SkyView Classic / SE / HDX System Installation Guide* for details.

Hold To Engage

When the autopilot is not already engaged, press and hold the Autopilot disconnect switch will place the autopilot into Hold To Engage mode. The Top Bar annunciates REL TO ENG (release to engage) while the disconnect switch is held.

Figure 64 – Hold to Engage Indicator

When the disconnect switch is released, the Autopilot engages in TRK+ALT mode, and the TRK and ALT targets are both synchronized to the aircraft's current GPS ground track and altitude. Effectively, this operation is the same as pressing the TRK+ALT button in the Autopilot menu.

The Hold To Engage feature can be enabled and disabled via the Autopilot Setup Menu. See the *SkyView Classic / SE / HDX System Installation Guide* for details.

Single Axis Operation

If only one axis is installed the autopilot control buttons reflect the actions available for the single axis that can be controlled.

8. COM Radio Operation

The SV-COM-C25/X25/X83 integrates with your SkyView SE system in a novel way, allowing you to “load” airports to it to enable quick, single button-push frequency tuning via the dedicated TWR, ATIS, GND, and ATC buttons. Of course, you can also spin frequencies in the “old fashioned way” when you’re feeling nostalgic (or are following ATC instructions). COM Control Panel Overview

The SV-COM-C25/X25/X83 has a dedicated control panel that contains full status information:

Figure 65 – SV-COM-PANEL Operations

Top Bar COM Radio Status Overview

COM Radio Status is also reflected in the top bar of your SkyView SE displays. The identification lettering depicted below matches the figure above:

Figure 66 – SkyView SE Display (Illustrating Top Bar / SV-COM-C25/X25/X83 Status)

Using your COM Radio

Power

The SV-COM-C25/X25/X83 is not powered by the SkyView SE system, so they may not power up at the same time as your SkyView SE displays. Press and hold the Volume Knob / Power Button to manually turn the SkyView SE COM Radio off and on.

Volume

Use the volume knob to adjust the radio volume. You may want to use Squelch Override – covered below, to aid in finding a comfortable volume level.

Transmitting and Receiving

The SV-COM-C25/X25/X83 transmits on the active frequency only, and normally receives only on that frequency. When transmitting, the following indications are shown:

Figure 67

Figure 68

When receiving on the active frequency, the following indications are shown.

Figure 69

Figure 70

Note the arrow on the top bar that points to the active frequency, and the up arrow on the RX area of the control panel display that points "up" to the active frequency:

Squelch Override (Monitor)

The radio has an automatic squelch function which screens out noise and only receives radio stations that have active transmissions on them. However, you may wish to override this feature to hear a distant radio station or to help set the radio volume. To listen to the active frequency, press the volume knob momentarily.

RXSQ will be shown in the RX/TX Status Indicator areas on both the control panel and SkyView SE Top Bar to indicate the squelch is being overridden.

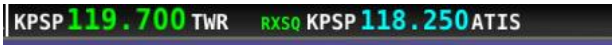

Figure 71

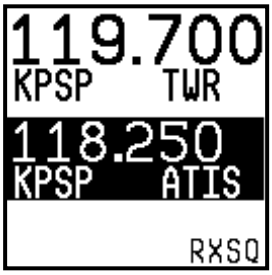

Figure 72

The squelch setting, which determines how strong a radio transmission must be before the radio receives it, is configured during setup. See the *SkyView Classic / SE / HDX System Installation Guide* for instructions on adjusting this parameter.

Dual Watch

Press and hold the dual concentric knob to enable dual watch.

Figure 73

Figure 74

When dual watch is enabled, the SkyView SE COM Radio monitors the standby frequency for transmissions while simultaneously monitoring the active frequency, allowing you to listen to both (but not simultaneously). This allows you to listen to ATIS on standby, for example, while keeping tower tuned to the active frequency.

The active frequency always receives priority. This is true even if dual watch is listening to a continuous broadcast on the standby frequency. For example, if ATIS is on standby and tower is on active, and dual watch is enabled, the COM will receive ATIS continuously on standby when there is no tower activity. But, when a tower transmission is received on the active frequency, it immediately takes priority and is heard exclusively.

To help you determine whether the radio is receiving on the active or standby frequency, both the control panel and SkyView SE's top bar visually indicate which of the standby or active frequency is being received on at any moment:

Figure 75

Figure 76

Figure 77

Figure 78

Manual Frequency Tuning

To manually tune a frequency via the control panel:

- Turn the large, outer ring of the dual concentric knob to change the standby frequency in 1 MHz increments.
- Turn the small, inner ring of the dual concentric knob to change the standby frequency. The SV-COM-C25/X25 adjusts in 25 kHz increments and by either 25kHz or 8.33kHz increments on the SV-COM-X83 (depending on how it is configured).
    - For example, if the frequency you start with is 123.450, turning the large knob will change the numbers before the decimal – 123 – while the small knob will adjust the numbers after the decimal – 450.
- Press the dual concentric knob on the control panel to flip/flop the chosen frequency from the standby frequency to the active frequency.

Airport / Station Type Reverse-Lookup

When a frequency is manually tuned, SkyView SE will search for the closest known airport within 75 miles that has that frequency and automatically show that airport's identifier in the associated airport and station type fields on both the control panel and top bar.

For example, if you manually tune 118.300 near Seattle's Boeing Field, the associated airport will be shown as KBFI and the station type as TWR1.

Figure 79

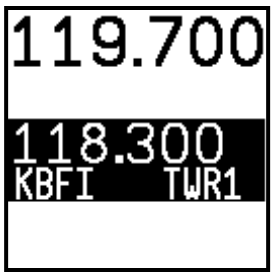

Figure 80

Loading Airports to the SkyView SE Com Radio

The SV-COM-C25/X25/X83 radio's most unique and innovative feature is its ability to load airports onto the control panel. Once an airport is loaded, single presses of the TWR, ATIS, GND, and ATC buttons automatically tune those frequencies (to the standby location) for that airport.

Loading Airports via the COM Control Panel

By Nearest

- Press the APT button once. NRST APT is displayed on the control panel, and the top bar shows a list of the nearest airports within 75nm of your current location:

Figure 81

Figure 82

- Rotate the small, inner dual concentric knob to the airport you wish to load

Figure 83

Figure 84

- Press the dual concentric knob on the control panel to load the airport to the control panel (or press APT to cancel your selection)

Figure 85

Figure 86

- Use the TWR, ATIS, GND, and ATC buttons to send the associated airport frequencies to the standby frequency location.

Figure 87

Figure 88

By A-Z / 0-9 Character Entry

- Press the APT button twice.

Figure 89

Figure 90

- Use the dual concentric knob to type an airport identifier. Note that this search is limited to airports within 75 miles of your location to speed up entry by limiting the airport possibilities.
    - The small, inner knob chooses characters (A-Z, 0-9)
    - The larger, outer knob moves the cursor.

Figure 91

Figure 92

Figure 93

Figure 94

- When the desired airport is displayed, press the dual concentric knob on the control panel to load the airport to the control panel (or press APT to cancel your selection)
- Use the TWR, ATIS, GND, and ATC buttons to send the associated airport frequencies to the standby frequency location.

Using the TWR, ATIS, GND, and ATC Buttons

When an airport is loaded on the radio, press the TWR, ATIS, GND, and ATC buttons to send frequencies associated with that airport to the standby frequency. Repeated presses of these buttons will cycle through all available frequencies of that type (for example busy airports may have multiple tower frequencies):

TWR: Tunes tower, UNICOM, and MULTICOM frequencies.

ATIS: Tunes ATIS and other weather/information frequencies, including AWOS, ASOS, AWIB, and AWIS frequencies.

GND: Tunes ground control frequencies.

ATC: When on the ground: Tunes pre-taxi, clearance, and departure frequencies associated with an airport. When in the air: Tunes departure, center, and approach frequencies when associated with an airport.

Aviation Database

Because SkyView SE has no mapping, flight planning or navigation capability, it relies on a single aviation database as the source of airport frequency information for access by the Dynon COM radio. While that aviation data file contains various other airport information, the data is disregarded in SkyView SE systems.

All SkyView SE displays are shipped with the free US aviation data file installed. SkyView SE customers in other parts of the world using the Dynon COM radio would need to obtain and load an aviation data file from one of the other sources listed below.

Each of the aviation data sources discussed below includes obstacles data either contained in the same download file or in a separate file that can be downloaded together with the aviation data. However, SkyView SE does not support the use or display of obstacles data. If your download file includes obstacles data, it will be imported together with the aviation data file, but the obstacle data will be ignored by SkyView SE.

US Customers – Free Dynon Aviation Data

US Aviation data is available free-of-charge for US customers. Go to dynon.com/download, to download the database to a USB memory stick. Reference the Loading and Removing Databases section below of this guide for instructions on how to import the file onto a SkyView SE display. Aviation data is updated every 28 days. Once the installed Aviation database is out of date a message will appear in the Messages list on Button 8 (MSG) at power up. Once you acknowledge the alert message by pressing Button 8, this message will be cleared until the next power-up or until and up-to-date aviation database is loaded.

Worldwide Customers

PocketFMS AeroData Subscription

The PocketFMS Foundation has been providing worldwide aeronautical data since 2003. AeroData is professionally maintained and updated for SkyView SE every 28 days, and is available as a yearly subscription including obstacles for €119. Coverage encompasses Europe, North America (including Canada), Australia, and New Zealand. It includes Aviation data (including visual reporting points) and obstacle data. To order and download PocketFMS AeroData, visit their website at www.pocketfms.com/dynon/

Jeppesen NavData® and Obstacle Data Services

Aviation and Obstacle for customers outside the US is available from Jeppesen. Only one update or annual subscription purchase is needed per airplane. To purchase Jeppesen data:

- Visit www.JeppDirect.com/viewavionics for data subscription information from Jeppesen for your SkyView SE display.
- Additional technical support from Jeppesen can be found online at http://www.jeppesen.com/support/technical-support.jsp

Loading and Removing Databases

See the current revision of the *SkyView Classic / SE / HDX System Installation Guide*.

Other Status Information

Operating Without SkyView SE

The SV-COM-C25/X25/X83 can be used when SkyView SE is powered off or has failed. However, only manual tuning will be available and the control panel will display NoSV. The control panel annunciates this condition in the following way:

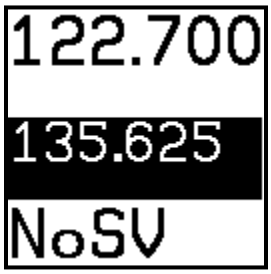

Figure 95 – No SkyView mode

You may see this annunciation as your SkyView SE displays first power up, as they take longer to initialize than the COM radio.

No Aviation Database

If SkyView SE does not have an aviation database loaded, the airport loading and TWR/ATIS/GND/ATC buttons will not be available. The control panel annunciates this condition by displaying NoDB:

Figure 96

Figure 97

Waiting for Data

The loaded airport area of the control panel will show an animating scrolling black cursor momentarily when it is waiting for airport data from SkyView SE:

Figure 98 – Scrolling Cursor

No GPS

The control panel and SkyView SE top bar annunciate that SkyView SE does not have GPS position information in the following way:

Figure 99

Figure 100

Without GPS position, airport loading and TWR/ATIS/GND/ATC will not be available.

You may see this annunciation as SkyView SE starts up or when the aircraft does not have GPS reception (for example, when inside the hangar).

Stuck Microphone

If a transmission lasts more than 30 seconds, the microphone push-to-talk is assumed to be stuck. Transmitting is discontinued, and both the top bar and control panel annunciate “STUC” in the TX/RX indication area.

Figure 101

Figure 102

External Flip/Flop

If you have an external flip/flop switch connected (typically to your control stick or yoke), pressing it flip/flops the active and standby frequencies just like pressing the dual concentric knob does. See the *SkyView Classic / SE / HDX System Installation Guide* for details on connecting an external flip/flop switch.

Dual COM Radios

If you have more than one COM radio that is capable of communicating with SkyView SE, only the primary COM radio's status information will be displayed in the Top Bar. Additionally, only the primary radio will receive airports or frequencies from SkyView SE when SkyView SE's TUNE or APT>COM buttons are used.

However, if your second COM radio is a Dynon SV-COM-C25/X25/X83, all of its control-panel based features work just like the primary radio's. In other words, you can still use the APT button to load airports, the TWR/GND/ATIS/ATC buttons to tune frequencies, and airport/station types are reverse-looked up when you manually tune the second radio.

9. Messages and Alerts

SkyView SE annunciates important notifications onscreen, in a dedicated Message Window, and optionally via audio (if connected and configured). This chapter describes SkyView SE alert behavior.

Loss of Information

SkyView SE notifies users with a large red X and a descriptive label if a major failure occurs that prevents the display of information. A red X may overlay an entire page if a data source such as an EMS module fails or a red X may overlay a single widget if a single engine sensor fails or is not connected.

For example, the PFD would look like Figure 103 if all ADAHRS in the system fail:

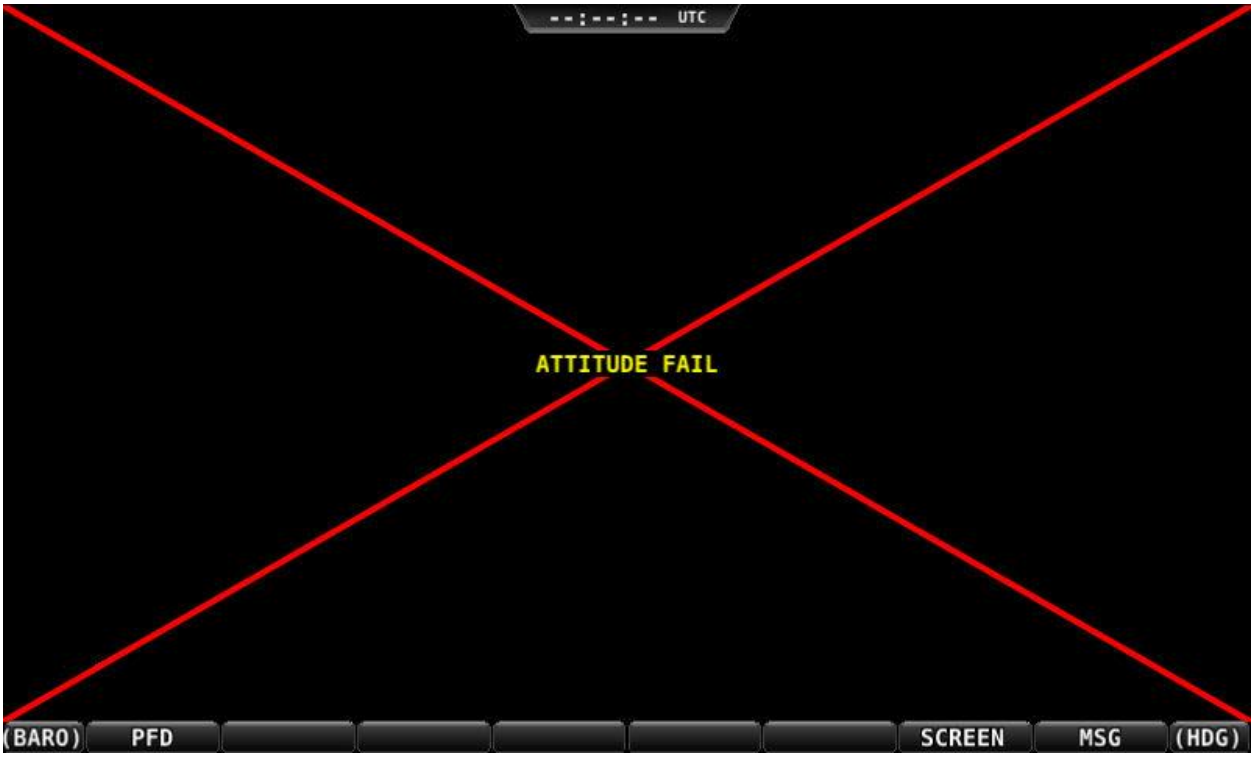

Figure 103 – Example SkyView SE Failure

Message, Caution, and Warning Alerting System

Message Notification Area

The area directly above the rightmost button (button 8) is the Message Notification Area. This area is reserved to notify the pilot of various messages and alerts that SkyView SE can present. All messages and alerts are categorized by severity into one of three categories. These include advisory “messages”, “caution” alerts, and “warning” alerts.

Alerts and messages are all categorized into one of three severity levels:

- MESSAGE
  - Advisory message.
- CAUTION
  - A condition which is abnormal but not critical in nature; may increase pilot workload.
- WARNING
  - A critical condition that should be addressed immediately; may affect safety of flight if not addressed.

Figure 104 - Message Notification Area above button 8 (2nd from right), showing a Warning Notification

The Message Notification Area changes its appearance to reflect the highest level of alert that is present in the system at any given time:

Notification	Style	Alert Type
MESSAGE / MESSAGE	Flashing	Unacknowledged Advisory Message
CAUTION / CAUTION	Flashing	Unacknowledged Caution Alert
WARNING / WARNING	Flashing	Unacknowledged Warning Alert
MESSAGE	Solid	Persistent (but acknowledged) Advisory Message condition still present
CAUTION	Solid	Persistent (but acknowledged) Caution Alert condition still present
WARNING	Solid	Persistent (but acknowledged) Warning Alert condition still present
NO MSG	Solid	No active alerts or messages (no color)

Table 7 – Notification Types

Whenever a new alert or message is generated, the Message Notification Area will flash to provide a clear visual indication that there are unviewed messages or alerts that have not yet been seen and acknowledged.

When alert conditions are present - but they have been acknowledged by viewing them - the Message Notification Area will continue to show the highest notification type of all persisting alerts or messages. However, if there are no unviewed messages or alerts, the Message Notification Area will not flash.

Anytime a yellow caution alert is triggered, the following simultaneous events occur:

- If audio is connected and an audio alert exists for the particular alert, it will be played.

Anytime a red warning alert is first triggered, the following simultaneous evens may occur:

- If installed, the external alarm light will flash (for EMS-based alerts only).
- If audio is connected and an audio alert exists for the particular alert, it will be played.
- If the alert is related to an on-screen parameter on the Engine Page, that parameter's value will flash and highlight red simultaneously.

Engine warning alerts are only triggered when their respective sensors are configured as self-clearing or latching alarms. If a sensor's alarm is configured as off, no alert will trigger, even if that sensor's measurement enters a range defined as red. Reference the *SkyView Classic / SE / HDX System Installation Guide* for more information regarding alarm configuration.

Engine parameters only trigger alerts in the Message Notification Area and Message Window when they enter their "red" ranges. In other words, "yellow" caution ranges for engine parameters do not trigger alerts. Yellow caution ranges, however, are visually annunciated via yellow highlighting on the Engine Page.

Message Window

The Message Window provides more detailed information about messages and alerts. Press the rightmost button under the Message Notification Area to display the Message Window.

Figure 105 – Message Window

The Message Window prioritizes alerts and messages from top to bottom in the following order:

- Red warning alerts
- Yellow caution alerts
- White advisory messages

Additionally, messages are further sorted in the order in which they occur, with the newest being higher.

Messages that are highlighted indicate that they are new (not acknowledged) and have not been seen before.

The tab at the top-right corner of the Message Window indicates how many pages of messages there are, and which page is being viewed. For example, if there were 2 pages of messages, and the first was being displayed, this tab would display "1/2". If there is only one page of Alert Messages, pressing the rightmost button simply closes the Message Window. If there are more Messages present than can fit in the window, pressing the right most button moves to the next

page of Messages. When you are on the last page of Messages, another press of the rightmost button closes the Message Window.

Alert and Message Acknowledgement

New messages and alerts that have not been seen are considered unacknowledged and are highlighted. Acknowledged messages are not highlighted in the Message Window. Display the Message Window with the rightmost button to acknowledge an alert message. This action displays the current alerts and messages and causes the Message Notification Area to stop flashing. Note that self-clearing alerts may not need acknowledgement if the alarm condition ceases.

Figure 106 – Unacknowledged (left) and Acknowledged (right) Alarms

Note that, even when all alerts are acknowledged, the Message Notification Area will remain solidly red, yellow, or white as long as an alert condition or message persists. Additionally, other on-screen displays - such as Engine gauges - will continue to blink and remain highlighted yellow or red until their alert condition ceases.

For EMS-based alerts only – the optional external alarm light will either remain lit after acknowledgement of a red warning alert (while the alarm condition continues to exist) or may extinguish with acknowledgement, depending on how SkyView SE is configured. Instructions for adjusting this behavior are discussed in the *SkyView Classic / SE / HDX System Installation Guide*.

If new messages or alerts are triggered while the Message Window is being displayed, they are not immediately displayed and will not be seen until the NEXT time the Message Window is displayed. This reduces visual noise in dynamic situations where alerts and messages may be triggering and/or clearing rapidly. If new alerts occur while viewing the window, the Message Notification Area will begin to flash again. In other words, any time the Message Notification Area is flashing, there are alerts that have not yet been seen and acknowledged.

In Dual Engine systems, the EMS alerts are not synchronized across the displays. Alerts appear on the display tied to that engine, audio is sent from that display, and alerts can only be acknowledged on that display.

Prompts Requiring Interaction

Some system events display outside of the Message Window and alerting system – usually via a “pop-up” near the bottom of the display. These often require a particular menu action or choice to proceed. An example of this is loss of primary power resulting in SkyView SE operating

from backup battery (if installed). In this condition, the pilot must choose whether to keep the display on (on battery power) or to power the display off.

Audio Alerts

When connected to an audio panel or intercom, SkyView SE can generate tones or voice alerts for various conditions.

Inhibited Alerts

Audio alerts that occur within 5 seconds of SkyView SE initially powering on are inhibited to reduce transient nuisance alerts that may occur as SkyView SE comes online.

Engine Alerts can be optionally configured to be inhibited before engine start or 5 minutes, whichever comes first. See the *SkyView Classic / SE / HDX System Installation Guide* for details.

Messages, Alerts, and Audio Alert Details

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Warning"	ADAHRS FAIL	WARNING	ADAHRS failure
"ADAHRS Cross Check Error"	ADAHRS CROSS CHK ERROR	WARNING	Displayed after an ADAHRS cross-check error was announced in a multi-ADAHRS systems, but you did not disable one of the disagreeing ADAHRS.
"Warning"	ADAHRS INTERNAL ERROR	WARNING	SkyView has detected a problem with the ADAHRS module. Contact Dynon Avionics for assistance
"Warning"	EMS FAIL	WARNING	Engine monitor failure
"Engine Monitor" "Oil Pressure" "Fuel Pressure" "Fuel Flow" "Fuel Quantity" "Electrical Current" "Voltage" "Exhaust Gas Temperature" "Cylinder Head Temperature" "Engine Speed"	<Engine Parameter> HIGH or LOW	WARNING	Engine Parameter High or Low. "High" or "Low" is not displayed for all parameters. Engine Alerts can be optionally configured to be inhibited before engine start or 5 minutes, whichever comes first. See the SkyView Classic / SE / HDX System Installation Guide for details.

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Warning"	ADAHRS CAL CORRUPT	WARNING	Contact Dynon Avionics for assistance
"Warning"	DEMO MODE	WARNING	System is in Dynon demo mode and is not airworthy
"Warning"	BACKUP BATTERY LOW	WARNING	The backup battery connected to this display is low.
"Warning"	SKYNET POWER FAULT	WARNING	A fault has been detected in the wires that provide power to SkyView Network devices.
"Warning"	AUDIO SUBSYSTEM FAIL	WARNING	SkyView has detected a problem with the audio system.
"Check Canopy Latch"	CHECK CANOPY LATCH	WARNING	A canopy latch alert is configured; The canopy is not latched; and the engine has been advanced past a configured RPM.
"Warning"	MAG FACT CAL CORRUPT	WARNING	Contact Dynon Avionics for assistance
"Warning"	TRIM FEEDBACK STUCK	WARNING	The trim feedback monitor received a positive activity signal during system boot.
"Trim Runaway"	None	*On PFD:* **TRIM RUNAWAY**	SkyView detected electric Trim motor activity that was not commanded. *Requires SV-AP-TRIMAMP Installation.*
"Caution"	STANDBY NETWORK ERROR	CAUTION	SkyView Network has lost its secondary standby network redundancy. See below for more information.
"Caution"	POSITION SOURCE or GPS X FAIL	CAUTION	Position source (GPS) failure
"Caution"	XPNDR HEX CODE NOT SET	CAUTION	A SkyView Transponder or ADS-B receiver is installed but the HEX Code has not been set.
"Caution"	EMS SFG FILE MISMATCH	CAUTION	The Engine sensor indications may be incorrect, and screens may disagree.

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Caution"	NO ADSB OUT: GPS LOST	CAUTION	The GPS source that provides GPS position to the SV-XPNDR-261 for ADS-B Out use is offline.
"Caution"	BACKUP BATTERY IN USE	CAUTION	System has switched to SkyView Backup Battery.
"Caution"	OTHER DISPLAY OFFLINE	CAUTION	A SkyView Display has failed or is no longer communicating via SkyView Network.
"Caution"	NEED COMPASS CAL	CAUTION	Magnetic compass heading in either the SV-ADAHRS-20X or SV-MAG-236 is not calibrated.
"Caution"	COMPASS FAIL	CAUTION	The SkyView Remote Magnetometer has failed or is no longer communicating via SkyView Network.
"Caution"	NEED USER AOA CAL	CAUTION	AOA is not properly calibrated
"Caution"	CHECK PITOT HEAT	CAUTION	Airspeed information is not available; GPS is being used to aid in the computation of attitude information; Attitude may be degraded
"Caution"	ADAHRS CAL OLD	CAUTION	Contact Dynon Avionics for assistance
"Caution"	AP BROKEN DISCONNECT	CAUTION	Autopilot disconnect switch wire is broken
"Caution"	AP DISCONNECT STUCK	CAUTION	Autopilot disconnect switch wire is stuck
"Caution"	XPNDR ALT ENCODER FAIL	CAUTION	Altitude is not being sent to the SV-XPNDR-261/262 because it is not available from its nominal barometric altitude source.
"Caution"	ACTV ADAHRS VIBRATION	CAUTION	The currently-active ADAHRS has detected vibration that will affect G Meter and Autopilot, attitude indicator performance. Troubleshoot when able.
"Caution"	ADS-B IN OFFLINE	CAUTION	The connected ADS-B traffic/weather receiver has failed or is no longer communicating with SkyView.

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Caution"	COM RADIO PANL OFFLINE	CAUTION	The COM radio control panel is no longer communicating with SkyView.
"Caution"	COM XCEIVER OFFLINE	CAUTION	The COM radio transceiver module Is no longer communicating with SkyView.
"Caution"	AP PANEL OFFLINE	CAUTION	The Autopilot Control Panel is no longer communicating with SkyView.
"Caution"	KNOB PANEL OFFLINE	CAUTION	The Knob Control Panel is no longer communicating with SkyView.
"Caution"	BATTERY MISSING/FAULT	CAUTION	A previously connected backup battery is no longer detected or has failed.
"Caution"	CROSS CHECK ATTITUDE	CAUTION	While in flight, IAS has become invalid (likely due to icing or obstruction), and all GPS sources have failed. The attitude indication should be considered unreliable.
"Caution"	TOUCH PANEL FAULT	CAUTION	Touch Hardware is currently offline.
"Caution"	CPU TEMP CRITICAL	CAUTION	The display internal temperature is high. To prevent permanent damage, the display may shut down at any time unless immediate action is taken to cool it down.
"Caution"	ROTAX: LIMIT FLIGHT OP	CAUTION	The ROTAX engine has informed SkyView there is a problem with the engine.
"Caution"	ROTAX: LAND AIRCRAFT	CAUTION	The ROTAX engine has informed the SkyView EMS-221 there is a significant problem with the engine.
"Caution"	TEMP HIGH – INCR RPM	CAUTION	The ROTAX engine coolant temperature should be reduced by increasing idle speed.

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Caution"	AP TRIM MALFUNCTION	CAUTION	SkyView sent a command to move the Trim motor but did not receive feedback that the motor is moving. A trim switch was held ON continuously for more than 5 seconds while Auto-Trim was enabled.
“Switch Fuel Tank”	SWITCH FUEL TANK	MESSAGE	The optionally-configured fuel tank timer has reached its pre-configured time or fuel quantity consumption limit.
“Timer Expired”	TIMER EXPIRED	MESSAGE	A DOWN timer under TOOLS > TIMER has expired.
“Message”	ROLL SERVO OFFLINE	MESSAGE	The Roll Autopilot servo has stopped communicating with SkyView. Will be seen if Autopilot servos are not receiving power.
“Message”	PITCH SERVO OFFLINE	MESSAGE	The Pitch Autopilot servo has stopped communicating with SkyView. Will be seen if Autopilot servos are not receiving power.
"Message"	YAW SERVO OFFLINE	MESSAGE	The Yaw Autopilot servo has stopped communicating with SkyView. Will be seen if Autopilot servos are not receiving power.
“Message”	TRANSPONDER FAIL	MESSAGE	Transponder failure.
“Message”	EXT LEVEL BUTTON STUCK	MESSAGE	The external Level Button is stuck and is inoperative.
“Message”	CHECK BARO SETTING	MESSAGE	The current BARO setting and the nearest METAR-based altimeter setting are more than .1 inHg apart. Or the aircraft has descended below FL180 and the BARO should be reset.
“Message”	BATTERY TEST FAILED	MESSAGE	A full backup battery test was performed, and it failed. See the Installation Guide for further troubleshooting information.

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
“Message”	BATTERY TEST NEEDED		A year or more has passed since the last successful backup battery test, or the last three SkyView shutdowns were abnormal.
“Message”	SOFTWARE MISMATCH		SkyView components are not all running the same firmware version
“Message”	OEM CONFIG MISMATCH		OEM-customized displays are not in sync with each other
“Message”	TAIL # MISMATCH		Tail numbers differ between SkyView displays – settings will not properly synchronize
“Message”	XPNDR NOT IN ALT MODE		The aircraft is in flight and the Transponder is not in Alt Mode
“Message”	CPU TEMP HIGH		The display internal temperature is significantly higher than the normal operating temperature.
“Message”	BACKUP BATT LOW CHARGE		The backup battery connected to this display is not charged.
“Message”	SYSTEM EVENT n		SkyView has detected a possible problem with software or hardware. Please fill out form at http://dynon.aero/event5 when convenient.
“Message”	XPNDR WARNING MESSAGE		The transponder has detected a problem and notified SkyView. See the SETUP MENU for the specific problem.
“Gees” (repeats)	None	n/a	The G meter is in the yellow caution range
“Over Gees” (repeats)	None	n/a	The G meter is in the red warning range
“Autopilot”	None	n/a	The roll or pitch autopilot axis has been engaged
“Autopilot Mode”	None	n/a	The autopilot roll mode has changed since it was engaged. This includes sequencing onto an armed mode (such as an ALT Hold > VNAV sequence)
“Autopilot Disconnect”	None	n/a	The roll and pitch autopilot axis has disconnected

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
“Autopilot Roll Disconnect”	None	n/a	Only the roll autopilot axis has disconnected
“Autopilot Pitch Disconnect”	None	n/a	Only the pitch autopilot axis has disconnected
"Yaw Damper"	None	n/a	The Autopilot Yaw Damper has been engaged.
"Yaw Damper Disconnect"	None	n/a	The Autopilot Yaw Damper has been disengaged.
“Go Around”	None	*On PFD:* **ADD POWER**	The autopilot go around function has been engaged.
“Trim Nose Up”	None	n/a	The autopilot requires nose up trim to maintain control of the aircraft, and has been annunciating this visually on the display for at least 30 seconds. This alert is played a maximum of once every 30 seconds.
“Trim Nose Down”	None	n/a	The autopilot requires nose down trim to maintain control of the aircraft, and has been annunciating this visually on the display for at least 30 seconds. This alert is played a maximum of once every 30 seconds.
“Autopilot Airspeed High/Low”	None	n/a	The autopilot airspeed limits are exceeded.
“Approaching Minimums”	None	n/a	Altitude is within 200 feet of the MIN bug
“Minimums”	None	*On PFD:* **MINIMUMS**	Aircraft has descended below MIN bug
“Approaching Altitude” / “Leaving Altitude”	None	n/a	Altitude alerter notification that the aircraft is approaching or leaving the bugged altitude
“Overspeed”	None	n/a	Indicated airspeed is exceeding Vne
“Flaps Overspeed”	None	n/a	Indicated airspeed is exceeding Vfe (and flaps are at least partially deployed)

Spoken Alert (if configured)	Message Displayed in Message Window	Notification Area Alert (severity)	Description
"Approaching Waypoint"	None	n/a	The aircraft is within 30 seconds of an upcoming SkyView flight plan waypoint (except the final waypoint)
"Check Gear"	None	n/a	The aircraft is configured as a Retractable gear, and the Landing Gear is UP, and the aircraft is descending through the configured minimum warning speed.
"Gear Overspeed"	None	n/a	The aircraft is configured as either a retractable or amphibious gear, the landing gear is not UP, and the airspeed is exceeding the configured maximum gear down speed.
"Gear is Up for Water Landing"	None	n/a	The aircraft is configured as an amphibious gear capability of runway landings, and the gear is in the UP state and the airspeed is descending through the configured minimum warning speed.
"Gear is Down for Runway Landing"	None	n/a	The aircraft is configured as an amphibious gear capability of runway landings, and the gear is in the DOWN state and the airspeed is descending through the configured minimum warning speed.

Table 8 – Messages, Alerts, and Audio Alert Details

STANDBY NETWORK ERROR Explained

The SkyView Network that connects your ADAHRS(s), EMS module, Autopilot servos, ARINC module, and display are designed with fully redundant data pathways. When the STANDBY NETWORK ERROR alert is displayed, SkyView SE is telling you that SkyView Network no longer has a backup or redundant data pathway to fall back on should the primary data path fail. You should treat this error similarly to the way you would treat the failure of a single ADAHRS in a system that is equipped with two of them: There is little you can do to troubleshoot such an issue in flight, should it occur. However, you should exercise the same precautions you would exercise if you did not have backup flight instruments. If you are flying in IMC, especially, you should consider making a precautionary landing as soon as possible. Since a STANDBY

NETWORK ERROR may be either a discrete single failure (breakage of a single wire) or indicative of a more serious failure in progress (an entire wire bundle that is slowly fraying against another object), Dynon Avionics recommends that the root cause of the failure is determined before flying again.

The *SkyView Classic / SE / HDX System Installation Guide* has troubleshooting procedures for finding the root cause of standby network errors.

AOA Alerts

When AOA audio alerting is enabled, it enables a progressive tone that increases in intensity as AOA increases. It is similar in nature to a conventional reed-type aircraft stall warning sound, although it is much more predictable in its progression. It can be set to start its progressive tones at either the border of the yellow/green marks on the AOA bars, the middle of the yellow, or at the yellow/red border. The tones start at the level selected and get progressively quicker and closer together until a solid tone is played at critical AOA (in the red).

10. Appendix A: SkyView SE System Specifications

See the current revision of the *SkyView Classic / SE / HDX System Installation Guide*.

11. Appendix B: License Information

GPL License Information
SkyView SE's operating system contains copyrighted software that is licensed under GPL and LGPL. A copy of that license is included in this document on the following page. You may obtain the complete Corresponding Source code from us for a period of three years after our last shipment of this product, by sending a check or money order for $15 to:

Dynon Avionics
Attn: GPL Source Code Offer
19825 141st Pl NE
Woodinville, WA 98072

Please write "SkyView SE source code request" in the memo line of your payment.

Also see http://www.dynonavionics.com/docs/SkyView_GPL.html for more information.

This offer is valid to anyone in receipt of this information.

In accordance with the Gnu General Public License v2 (GPLv2), the source code for the operating system kernel used in SkyView panels is available under GPLv2 terms. The SkyView SE application itself, which runs on top of Linux, is not subject to GPLv2 requirements and is not available in source code form.

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Version 2, June 1991

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