SkyView HDX System

Maintenance Manual

Includes Instructions for Continued Airworthiness

103221-000

Revision E

6/24/2019

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Revision History

Rev	Date	Approved	Description of Change
A	03/05/2018		Initial Release

B	08/25/2018		• Added information supporting the following components:
			  ○ Second Display
			  ○ HDX-800
			  ○ VHF COM
			  ○ Autopilot Panel
			  ○ Knob Panel
			• Moved Autopilot Servo Removal and Installation content to airplane-specific document(s).

C	6/24/2019		• Added information supporting the following new functions:
			  ○ Switch-controlled monitoring circuits used for systems such as retractable landing gear
			  ○ 6 cylinders EGT/CHT sensing and display
			• Revised block diagrams.
			• Revised Section 6 to become the airplane- specific data repository.
			• Revised Appendix A to be a repository of forms to be used by the installer to populate Section 6.

D	5/29/2019	ECO 329407	• Renamed document SkyView HDX System Maintenance Manual • Document generally updated to standardize language, nomenclature, and layout/style. • Document restructured to demonstrate more clearly compliance with §23.1529 Instructions for continued airworthiness, Appendix A. • Added operating information to System Description. • Troubleshooting sections verified, edited, and standardized • Removal and Installation sections verified, edited, and standardized. • Added EMS Sensors information to Troubleshooting and Removal and Installation sections. • Added Servicing section and included within the instructions for continued airworthiness • Removed the Appendix A Aircraft Specific Data forms to new document.
E	6/24/2019	ECO 330857	• Fixed document number field. • Fixed link to software download in Sections 5.2 and 5.3. • Changed ICA to Maintenance Manual in Section 1.1.1. and Cover Page. • Removed references to STC number. • Added words “includes instructions for continued airworthiness” to the cover. • Added website link and verbiage regarding revision notification to Section 1.1.1. • Fixed cross-links in Section 3.2. • Added Section 4.3: Replacement Hardware, all subsequent sections renumbered. • Updated all subsections of Section 4 with specific fastener information.

References

Document Title
103272-000 SkyView HDX Aircraft Flight Manual Supplement for STC SA02594SE
102949-003 SkyView HDX Pilot's User Guide
103261-000 SkyView HDX General Installation Manual for STC SA02594SE
43.13-1B Acceptable Methods, Techniques and Practices - Aircraft Inspection and Repair
43.13-2B Acceptable Methods, Techniques and Practices - Aircraft Alterations

Table of Contents

1 Introduction

This document provides Instructions for Continued Airworthiness for use by authorized personnel to maintain the Dynon SkyView HDX System according to Federal Aviation Regulation (FAR) 14 CFR § 23.1529 and 14 CFR 23 Appendix G.

1.1 Document Introduction

The following outline describes the organization of this manual:

- **System Description and Operation**: Provides an overview of the Skyview HDX system and components installed by STC SA02594SE. Presents basic control and operation information specifically tailored to maintenance practices.
- **Troubleshooting Information**: Provides instructions for troubleshooting SkyView HDX system and components.
- **Component Removal and Installation Instructions**: Provides instructions for the removal and installation of Skyview HDX system components.
- **Service:** Provides information and instructions for the continued airworthiness of the Skyview HDX system and components.
- **Airworthiness Limitations**: Identifies any issues associated with the installation of the Skyview HDX system, as defined in FAR 14 CFR § 23, Appendix G. G23.4.

1.1.1 Document Control

This document is released, archived, and controlled according to the Dynon document control system. To revise these instructions for continued airworthiness, a letter is submitted to the ACO with the revision. The ACO then obtains AEG acceptance and approves any revision to Section 6 *Airworthiness Limitations*. After FAA acceptance/approval, Dynon posts the revised Maintenance Manual for customer use at www.dynon.aero/stcdocs, and STC owners and installers are notified of the new revision via an official Dynon Marketing email release.

1.1.2 Permission to Use Documents

Permission is granted to any corporation or person servicing a Dynon SkyView HDX System to use and reference appropriate STC documents to complete the maintenance and show compliance with STC engineering data. This permission does not construe suitability of the documents. It is the responsibility of the servicer to determine the suitability of the documents for continued airworthiness.

1.2 Acronyms and Definitions

The following abbreviations/acronyms are used within this document:

ACO Aircraft Certification Offices (FAA)

ADAHRS Air Data, Attitude and Heading Reference System

ADS-B Automatic Dependent Surveillance Broadcast

AHRS Attitude and Heading Reference System

AEG Airplane Evaluation Group (FAA)

ALT Altitude

AML Approved Model List

AoA Angle of Attack

AP Autopilot

ARINC Aeronautical Radio Incorporated

ATC Air Traffic Control

BARO Barometric Indication

BAT Battery

BIT Built-In Test

CFR Code of Federal Regulations

CHT Cylinder Head Temperature

COM Communications

EFIS Electronic Flight Instrument System

EGT Exhaust Gas Temperature

EMS Engine Monitoring System

ES Extended Squitter

FAA Federal Aviation Administration

FD Flight Director

FAR Federal Aviation Regulations

GND	Ground
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
HDG	Heading
HSI	Horizontal Situation Indicator
ICA	Instructions for Continued Airworthiness
IFR	Instrument Flight Rules
LRU	Line Replaceable Unit
MAG	Magnetic
MHz	Mega-Hertz
NAV	Navigation
OAT	Outside Air Temperature
PFD	Primary Flight Display
STC	Supplemental Type Certificate
TIS	Traffic Information Service
TRK	Track
TSO	Technical Standard Order
VFR	Visual Flight Rules
VSI	Vertical Speed Indicator
XPDR	Transponder

1.3 SkyView HDX System Overview

The Skyview HDX system is an integrated Electronic Flight Instrument System (EFIS) that aggregates air, engine, traffic, and navigation information for display to the pilot. The information is made available on the SkyView HDX Primary Display, which is a touchscreen coupled with mechanical knobs and buttons. The SkyView HDX Primary Display always provides a Primary Flight Display (PFD). It can also provide the Moving Map and Engine Monitoring System (EMS) information.

When a secondary SkyView HDX Display is installed, it is called a Multi-Function Display (MFD) system. The MFD can provide any combination of PFD, Map, and EMS display options in

various percentages of the screen. The MFD can also function as a backup display should the primary display fail.

Air data and airplane motion data is collected by the Air Data, Attitude Heading Reference System (ADAHRS) module. Engine, fuel, and electrical system data is collected by the Engine Monitoring System (EMS) module. Navigation data is provided by the integrated GPS position source receiver as well as external navigation sources. Traffic data is provided by an ADS-B IN Receiver. ADS-B Out capability is provided by the position source and the Transponder. The GPS Antenna/Receiver, ADS-B IN Receiver, and Transponder connect to the SkyView HDX system using RS-232 serial communications. All serial ports have configurable baud rates and data formats for use as general-purpose inputs and outputs.

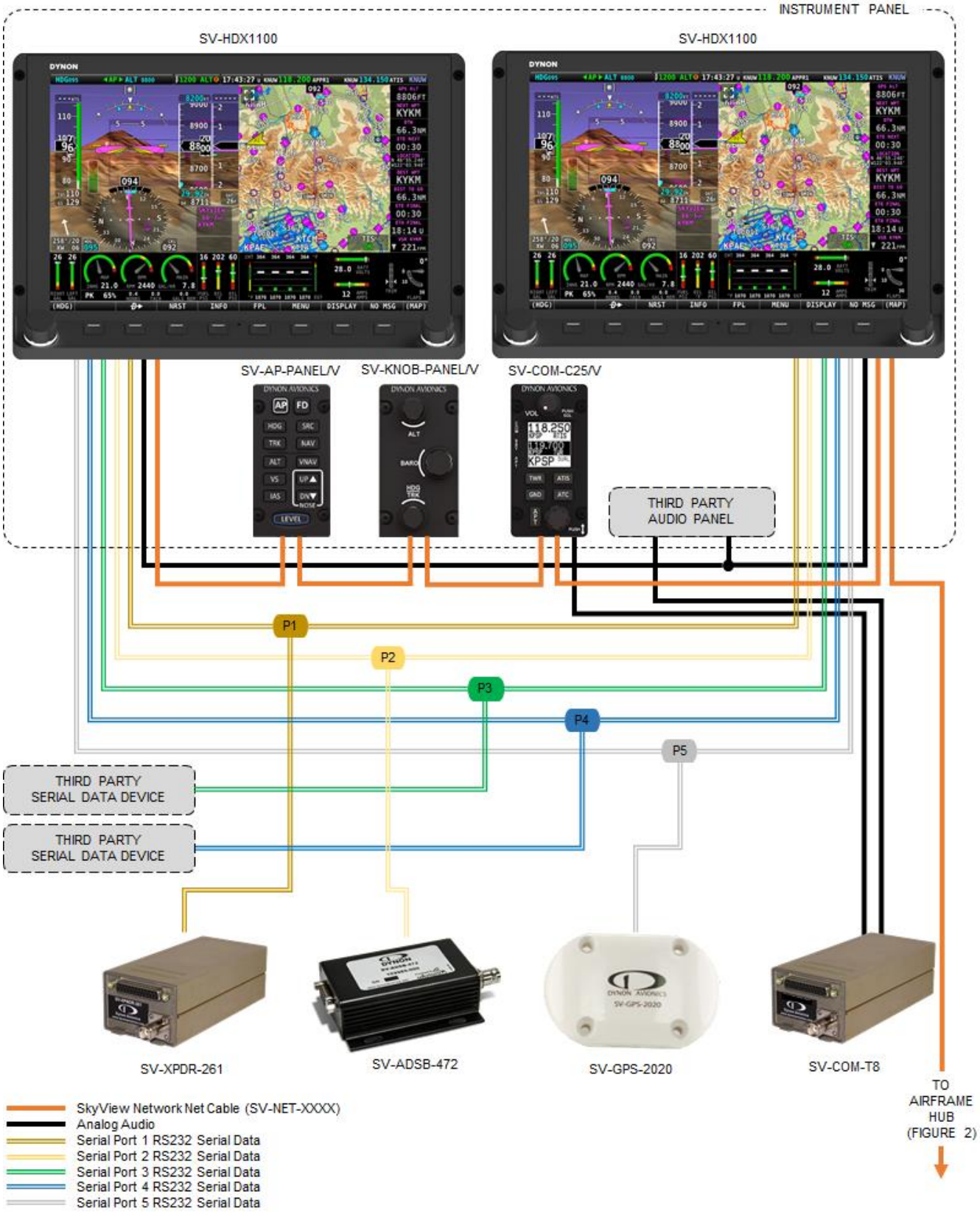

Figure 1: Overview of SkyView HDX System, Part 1

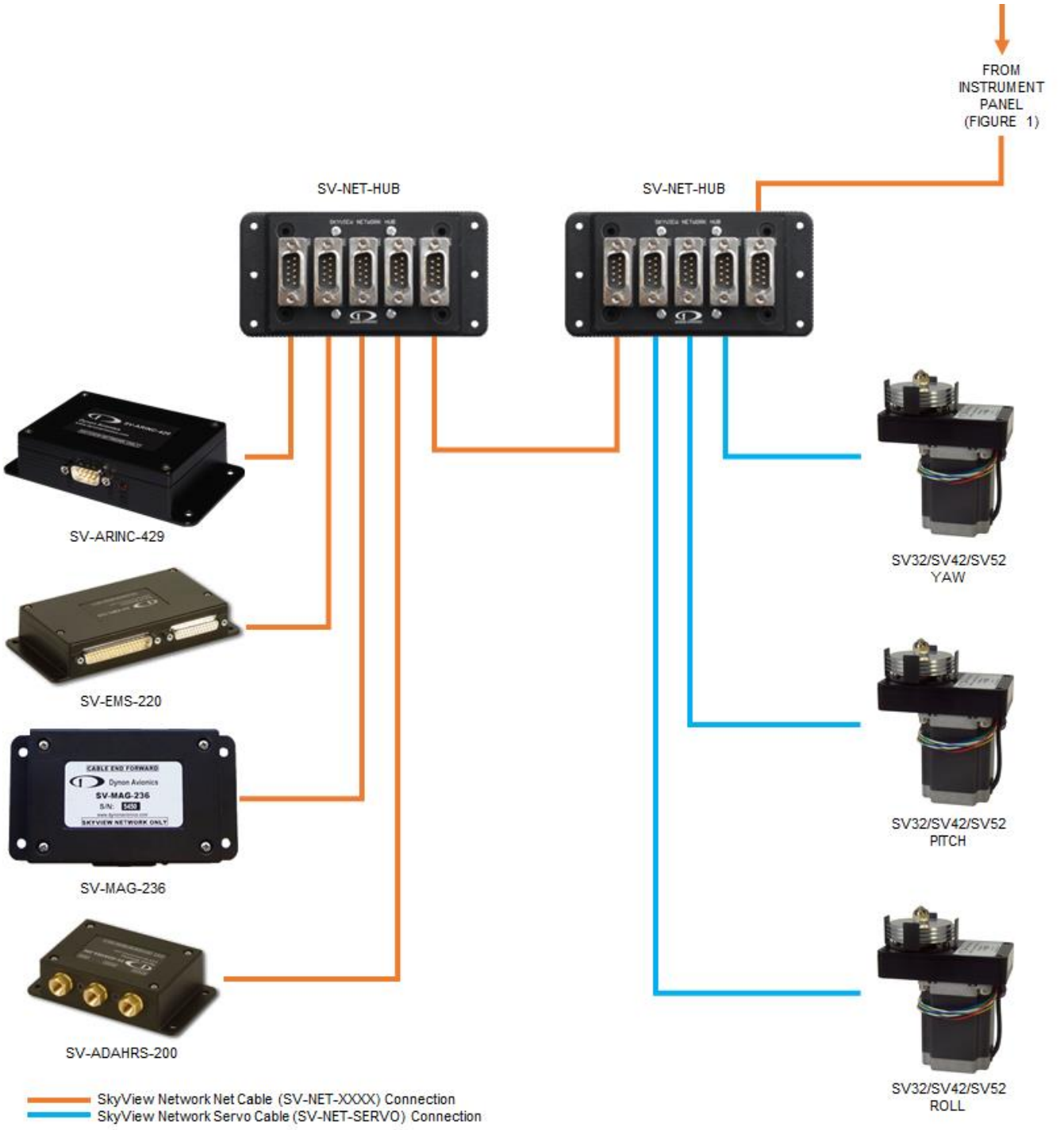

Figure 2: Overview of SkyView HDX System, Part 2

1.3.1 System Functions

This section is an overview of the functions of the SkyView HDX system. For detailed information on operational use and configuration of the system, please refer to the *SkyView HDX Airplane Flight Manual Supplement* and the *SkyView HDX System Installation Manual* documents.

Required Functions:

- Airspeed Indicator (ASI)
- Altimeter
- Attitude Indicator (Pitch and Roll)
- Magnetic Heading Indicator
- Turn Rate Indicator
- Horizontal Situation Indicator (HSI)
- Inclinometer
- Vertical Speed Indicator (VSI)
- Outside Air Temperature (OAT)
- True Airspeed
- Density Altitude
- Ground Speed
- Wind Velocity Indicator
- Flight Path Indicator
- Synthetic Vision
- Audio Alerts
- Clock and Timer
- Navigation (NAV) Functions
- Visual Flight Rules (VFR) Moving Map with Airspace, Airports, Navaids, Terrain
- Terrain and Obstacle Alerting
- Flight Planning

Optional Functions:

- Mode-S/ES Transponder with ADS-B OUT
- ADS-B Weather and Traffic Display
- VHF COM Radio
- Sectionals, Airport Diagrams, Approach Plates
- Angle of Attack (AoA) Aural Annunciator
- Engine Instruments
- Fuel System Instruments
- Flap Position, Trim Position, and Landing Gear Position
- Autopilot with Flight Director

1.4 EFIS-D10A Standby Display

In the SkyView HDX system, the EFIS-D10A (see Figure 3) serves as a backup Altitude, Attitude, and Airspeed indicator in the event of a SkyView HDX Display failure or loss of power. The flight instruments on EFIS-D10A display are generated using internal calibrated sensors.

Figure 3 EFIS-D10A Standby Display

2 System Description and Operation

2.1 SkyView HDX Display (SV-HDX1100 & SV-HDX800)

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

Two sizes of the SkyView HDX Displays exist. Both are active-matrix capacitive, multi-touch LCD screens.

- The SV-HDX1100 is a 10.1-inch, 1280 x 800-pixel display
- The SV-HDX800 is a 7.1-inch, 1280 x 800-pixel display

The displays utilize LED backlighting technology for increased lifespan, more uniform brightness, superior dimmability, and reduced power consumption. Up to three (3) SkyView HDX Displays, with any combination of the two sizes, can be installed in the airplane's instrument panels.

The following image shows the front of a SkyView HDX 10" Display (SV-HDX1100) and its important parts. (This image is also applicable for the SV-HDX800.)

Figure 4: SkyView HDX Display Front Bezel Layout (SV-HDX1100 shown)

The structure surrounding the lighted LCD screen is referred to as the bezel. All tactile controls for the system are located on the tilted shelf at the bottom of the bezel. Buttons, knobs, and an integrated light sensor are located on the bezel. User interaction takes place via two knobs with integrated buttons, eight buttons along the bottom of the bezel, and via touch gestures on the display itself. The light sensor is used for automatic screen brightness control. Reference the

SkyView HDX System Installation Manual document for instructions on how to configure the display for automatic backlight dimming.

The LCD screen contains three main regions, described from top to bottom:

- The Top Bar (i.e. Status Bar) is configurable and displays important contextual information. The Status Bar will display clock time or a timer (when running), Autopilot status, battery status (when running on Backup Battery), COM radio frequency, and transponder status.
- The central portion of the screen presents the PFD, Map, and Engine, data, configuration information, menu and feature control pages, and many system messages. The layout is user configurable.
- Knob and button labels are arranged across the bottom of the display in a menu bar. Knob and button functionality are contextual based on what is on screen, and these labels show the user the current function.

Throughout this manual, the buttons are referred to by their relative numbered position, counting from left to right. Button #1 is the leftmost button, and Button #8 is the rightmost button.

The bottom Menu Bar that is initially displayed once the system is fully powered on is referred to as the Main Menu.

The SkyView HDX Display has touchscreen functionality. Touching various items on the display allows for the item to be selected and the value adjusted. For example, tapping the HSI data source allows for alternate sources to be selected.

Pilot-selectable choices for the layout of each screen can be selected by pressing the display softkey. This allows the pilot to choose whether a display should show PFD, moving map, or engine information, or some combination thereof (see Figure 5 for details on touchable screen regions).

1. Autopilot Menu Selector
2. Transponder Menu Selector
3. Speed Bug Selector
4. Altitude Bug Selector
5. Vertical Speed Bug Selector
6. Heading Bug Selector
7. BARO Selector
8. Density Altitude Display
9. HSI Source Selector

Figure 5: SkyView HDX Display Touch Controls

2.1.1 General Operation

This section covers basic operation for the SkyView HDX Display. Detailed instructions for various setup menus and individual menu items are described in the *SkyView HDX System Installation Manual* document.

2.1.1.1 Turn System ON/ OFF

Turn Unit *ON*:

- Press and hold Button #1.

Turn Unit *OFF*:

- Press and hold Button #1.

2.1.1.2 Screen Content

Each SkyView HDX Display can present many types and combinations of information.

Primary Content (Full Page):

- PFD (An MFD can have any display as primary content.)

Optional Content (50% Page Split-content Window):

- PFD
- Moving Map display
- Engine Monitoring display

Menu and Feature Control Pages:

- There are many icon-based menu pages for controlling various SkyView HDX system features, optional components, and the content of the primary pages.

Setup Menus:

- In-Flight and System Setup pages are used for controlling the overall configuration and behavior of the SkyView HDX system. See the *SkyView HDX System General Installation Manual,* or the *Configuration Manual* for your airplane for more information.

2.1.1.3 Button and Knob Operation

Buttons and knobs are used for various functions, including powering the unit *ON* and *OFF*, entering and navigating menus, selecting or activating features, and adjusting values.

Buttons generally require a single action (i.e. momentarily press). Pressing the button will provide a distinct tactile click response to the pilot. The click occurs when the button is fully pressed, but the action does not occur until the button is released.

When a button is pressed in this manner, a function or action denoted by the label above the button is invoked. Button labels are contextual and may change dependent on menus and feature control pages the pilot selects.

A button has a function if there is a label above it. If there is no label, there is no function.

Some buttons have an additional behavior when the button is pressed and held down for 2 seconds. This action is called ‘press-and-hold’. An example is Button #1. When you press-and-hold Button #1, the SkyView HDX Display will either power *ON* or *OFF*, depending on its current state. Additional press-and-hold behaviors for other buttons are described in the *SkyView HDX System Pilot's Guide* document.

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.

Knobs can be rotated both directions and pushed. The current knob function is indicated by the label above the knob. Knob function is contextual and can change when the contents of the screen is changed by the pilot.

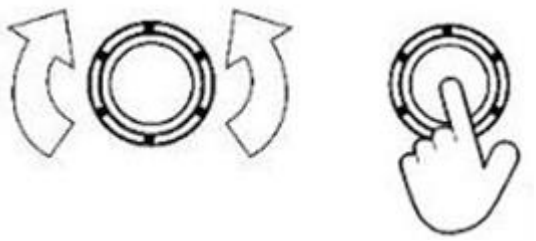

Figure 6: Knob Rotation and Pushbutton Actions

On some screen pages with both vertical lists and a horizontal group of tabs, one or both knobs can exhibit a push and rotate behavior which controls horizontal scrolling of the cursor across rows and columns on some menus.

2.1.1.4 Setup Menu Navigation

To enter the Setup Menu, press-and-hold Buttons #7 and #8 concurrently for approximately 2 seconds. This button combination will change the entire display to present the SETUP MENU screen (see Figure 7). This happens only if the airplane is stationary on the ground. While the SETUP MENU screen is displayed, none of the regular display contents are available to the pilot.

Figure 7: SETUP MENU

2.1.2 Major Display Functions

This section provides an overview of the major functions on the SkyView HDX Display.

2.1.2.1 Primary Flight Display

Figure 8 shows the Primary Flight Display (PFD) of the SkyView HDX Display. The PFD can be set to either Full (100%) or Split (50%) display layout. On the display designated as the primary (the Pilot's display), the PFD will always be present. On a secondary display, the PFD has no restriction. To change the layout, press Button #7 (DISPLAY) and change the layout as needed.

Figure 8: SkyView HDX Primary Flight Display (PFD) in Full-Screen Layout

Attitude Indicator:

The attitude function is a gyro-style indicator (see Figure 9) that appears on the top center of the PFD (see Figure 8). The Attitude Indicator shows the pilot the airplane's orientation relative to the horizon. Data from the ADAHRS module is used to present the Attitude Indicator on the SkyView HDX Display. The Attitude Indicator includes the following sub-indicators, symbols, markers, and reference scales:

- Slip/Skid Indicator
- Zero Degree Bank Indicator
- Two Minute Turn Indicator
- 45 Degree Bank Indicator
- 5 Degree Pitch Attitude Indicator
- Flight Path Marker
- Flight Director Symbol
- Airplane Symbol
- Horizon Indicator
- Pitch Attitude Scale
- Bank Attitude Scale
- Current Bank Attitude Indicator

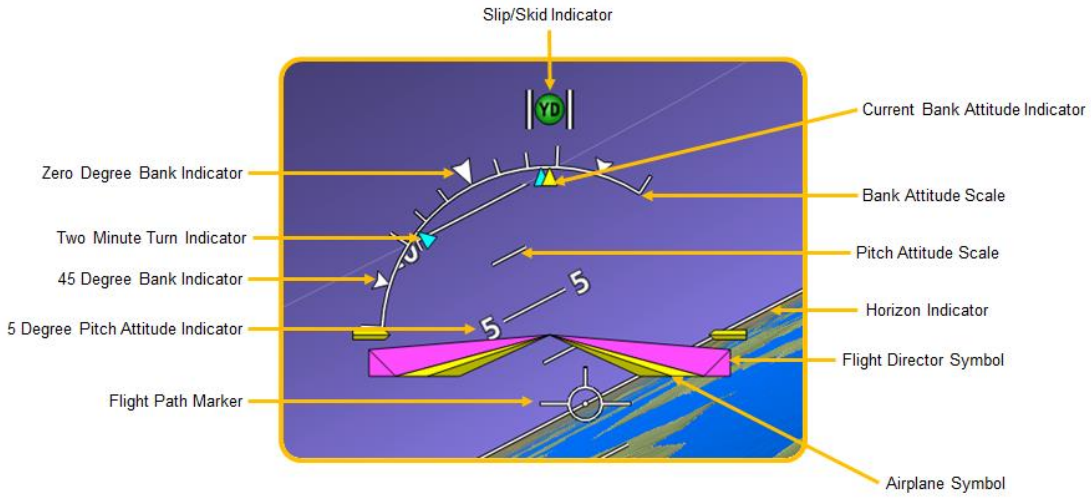

Figure 9: Attitude Indicator

Altitude Indicator:

The altitude function is a tape-style indicator (See Figure 10) that appears on the right of the PFD (see Figure 8). The Altitude Indicator tells the pilot the barometric altitude of the airplane. The pilot can set an altitude bug using a knob. The bug appears on top of (numerically) and inside (graphically) the indicator. The pilot can also set the barometric pressure using a knob. Barometric pressure is displayed on the bottom of the indicator. Density Altitude (DA) is also displayed on the bottom of the indicator. Data generated from the ADAHRS module is used to present the Altitude Indicator on the SkyView HDX Display.

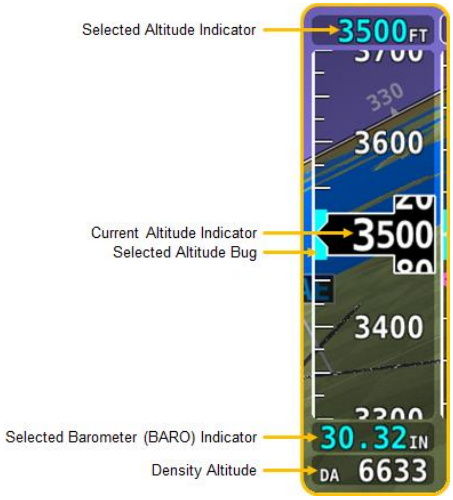

Figure 10: Altitude Indicator

Airspeed Indicator:

The airspeed function is a tape-style indicator (see Figure 11) that appears on the left of the PFD (see Figure 8). The Airspeed Indicator shows the pilot the Indicated Airspeed (IAS) of the airplane in knots or MPH. The pilot can set an airspeed bug using a knob. The bug appears on top of (numerically) and inside (graphically) the indicator. True Airspeed (TAS) and Ground Speed (GS) are also displayed on the bottom of the indicator. Data generated from the ADAHRS module is used to present the Airspeed Indicator on the SkyView HDX Display.

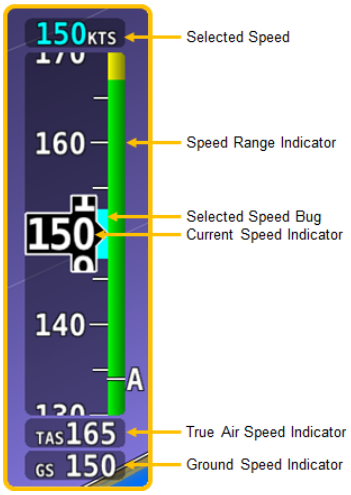

Figure 11: Airspeed Indicator

Vertical Airspeed Indicator:

The vertical airspeed function is a tape-style indicator (see Figure 12) that appears on the far right of the PFD (see Figure 8). The Vertical Airspeed Indicator tells the pilot whether the airplane is climbing/descending (in FPM) or level in flight. The pilot can set a vertical speed bug using a knob. The bug appears on top of (numerically) and inside (graphically) the indicator. Data from the ADAHRS module is used to present the Vertical Airspeed Indicator on the SkyView HDX Display.

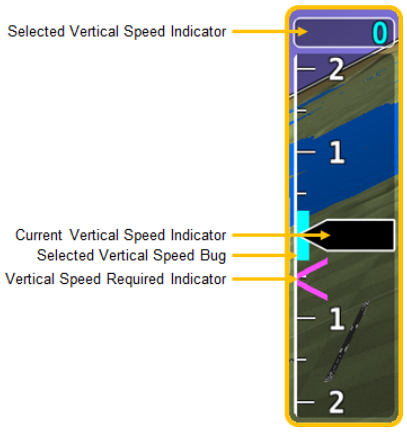

Figure 12: Vertical Airspeed Indicator

Horizontal Situation Indicator:

The Horizontal Situation Indicator (HSI) is a compass-style indicator (see Figure 9) that appears on the bottom center of the PFD (see Figure 8). The HSI shows the pilot the airplane's course, heading (HDG), or track (TRK when using the Autopilot's Track mode). The pilot can set the HDG/TRK target value and indicator bug using the HDG/TRK knob. The bug is the Cyan colored indicator that appears on inside (graphically) of the Compass Rose indicator. Data from the ADAHRS module, Magnetometer, GPS Antenna/Receiver, and Navigators is used to present the HSI on the SkyView HDX Display. The HSI includes the following sub-indicators, symbols, pointers, and reference scales:

- NAV Pointer
- Compass Rose
- Airplane Symbol
- Horizontal Deviation Scale
- Selected Heading Indicator
- Current Heading Indicator
- Selected Heading Bug
- Vertical Deviation Indicator
- Horizontal Deviation Indicator
- Vertical Deviation Indicator
- Distance to Station
- Course Indicator

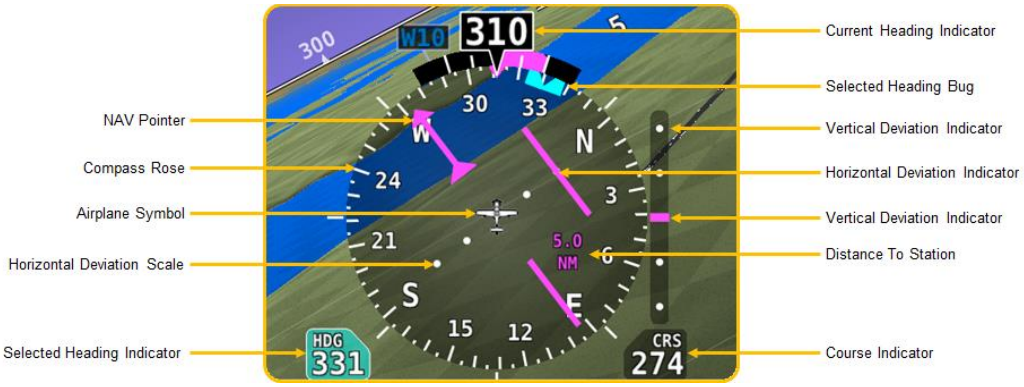

Figure 13: Horizontal Situation Indicator (HSI)

Vertical Deviation Indicator:

The vertical deviation indicator is a vertical scale that appears on the right of the HSI indicator (see Figure 13). The indicator tells the pilot whether the airplane is above or below the selected descent slope or path. Data from an ILS NAV Radio or IFR GPS Navigator is used to present the vertical deviation indicator on the SkyView HDX Display.

Wind Indicator:

The wind indicator appears on the bottom left corner of the PFD (see Figure 8). Data provided by the ADAHRS module, Magnetometer, GPS Antenna/Receiver is used to present the Wind Indicator on the SkyView HDX Display.

Navigation Source Indicator:

The selected (current) navigation source appears on the right side of the PDF, just below the Altitude Indicator (see Figure 8). The pilot can toggle through configured NAV sources, such as the internal VFR Navigator or third-party Navigators, using the touch screen. In the Navigation Source Indicator, data provided by radio is green and data provided by a GPS is magenta.

Outside Air Temperature Indicator:

The OAT indicator appears on the right side of the PFD, just below the Vertical Speed Indicator (see Figure 8). Data from the OAT Sensor (routed through the ADAHRS or Remote Magnetometer module) is used by the system to calculate the Density Altitude (DA). Both the DA and the raw OAT are presented on the PFD

2.1.2.2 Moving Map & VFR GPS Navigator

The SkyView HDX Display uses navigation databases (i.e. terrain, aviation, obstacle, and base) and GPS-derived airplane position data to present the Moving Map (see Figure 14) and Navigation (see Figure 15) and Flight Planning (see Figure 16) functions. The Moving Map can display airport, airspace, obstacles, and other available aviation data. The Moving Map is for advisory purposes only and is not an IFR-approved navigation source. The Navigation and Flight Planning functions help the pilot find airports or navaids and navigate to a sequence of one or more waypoints.

Figure 14: SkyView HDX Moving Map in Split-Screen (50%) Layout

Figure 15: Navigation Info in Split-Screen (50%) Layout

Figure 16: Flight Plan in Split-Screen (50%) Layout

Navigation Databases

The SkyView HDX system should be kept updated with the latest available databases. Depending on the database, these may be updated as frequently as every month. See Section 5.3 for instructions for downloading and installing databases on the SkyView HDX Display.

GPS Sources

To present the Moving Map and Navigation and Flight Planning functions, the SkyView HDX needs a valid GPS source installed. The GPS source must also be configured for priority of use. If the primary GPS source (POS 1) fails, SkyView HDX will automatically use the next available GPS source (POS 2) configured in the system. See the *SkyView HDX System Installation Manual* document for additional information about configuring GPS sources.

2.1.2.3 Synthetic Vision

The SkyView HDX Display provides a synthetic vision representation of the local terrain and obstacles. This display is for advisory purposes only and must not be used as the sole means of terrain and obstacle avoidance.

When enabled, terrain clearance advisories are provided based on the predicted path of the airplane relative to the terrain database and the proximity of the aircraft to terrain.

The synthetic vision advisory is based both on altitude and on flight path. Terrain shown in Red is an immediate threat to the airplane. The map advisory is based solely on GPS altitude.

- YELLOW terrain is between 100 and 1000 feet below airplane GPS altitude.

- RED terrain is above the airplane, or 100 feet or less below the airplane.

NOTE: Terrain advisories are provided any time they are enabled, even if topographical relief is not shown on the map.

When enabled, terrain advisories are suppressed prior to takeoff and are enabled approximately 200 feet above the takeoff altitude.

2.1.2.4 Charts

The SkyView HDX Display can "geo-map" FAA Charts and present them on the Moving Map. See Section 5.3 for instructions for downloading and installing Charts on the SkyView HDX Display.

2.1.2.5 Angle of Attack

The SkyView HDX Display uses data from the ADAHRS module, which is connected to the AoA Probe, to produce audible "beeps" as the airplane approaches a stall.

2.1.2.6 Traffic and Weather

The SkyView HDX Display uses data from the ADS-B IN Receiver to present traffic indicators on the PFD and Moving Map and weather indicators on the Moving Map.

2.1.2.7 Warning, Caution, and Message Alerting System

The area directly above the rightmost button (Button #8) is the Message Notification Area (see Figure 17). This area is reserved to notify the flight crew of various messages and alerts that the SkyView HDX Display can present. All messages and alerts are categorized by severity into one of three categories. These include advisory "messages", "caution" alerts, and "warning" alerts. The definition of messages and alerts are as follows:

WARNING

- Warning alerts are for conditions that require immediate flight crew awareness and immediate flight crew response.

CAUTION

- Caution alerts are for conditions that require immediate flight crew awareness and subsequent flight crew response.

MESSAGE

- Messages are for conditions that require flight crew awareness and may require subsequent flight crew response

Figure 17: Message Notification Area Showing a Warning Notification

Whenever a new alert or message is generated, the message notification indicator (also the soft key label) will flash to provide a visual indication that there are unviewed messages or alerts that have not yet been seen and acknowledged. In addition, a corresponding voice aural will annunciate. The annunciation is typically the spoken word "WARNING", or "CAUTION" if the alert is a warning or caution.

Pressing Button #8 will open the Message Window. The message window provides alerts in the form of a written message correlating with each active alert. After Button 8 is pressed, the messages present in the window are considered acknowledged and the message notification indicator will stop flashing. The message notification indicator will remain highlighted to indicate whether a message, caution, or warning condition exists.

The appearance of messages within the Message Notification Area is different when they are first activated and when they become acknowledged. The difference between un-acknowledged and acknowledged messages are shown in Figure 18.

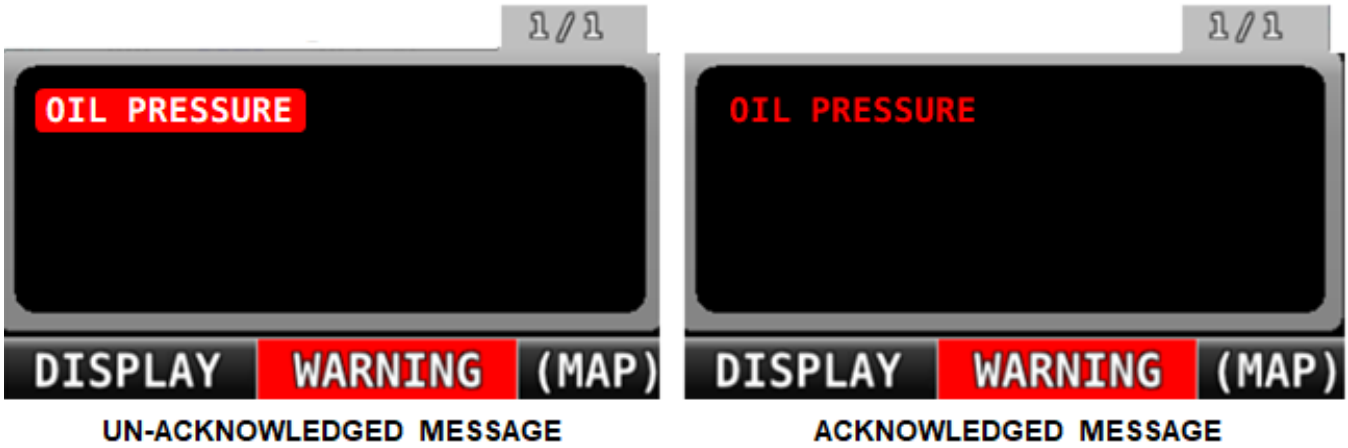

***Figure 18**: Un-acknowledged vs Acknowledged Message Appearance*

Table 1: Warning Alerts

WARNING	DESCRIPTION	POSSIBLE CAUSES
ADAHRS CAL CORRUPT	Contact Dynon technical support. Always have a properly certified mechanic or repair facility remove the unit.	
ARINC-429 OFFLINE	The ARINC 429 module, if installed, is not communicating with the SkyView HDX Display.	See Section 3.12
AUDIO OUTPUT FAIL	Audio Alert System inoperative.	See Section 3.2.3
BACKUP BATTERY LOW	The backup battery connected to this display is low.	See Section 3.6
ADAHRS FAIL	ADAHRS failure.	See Section 3.3
EMS FAIL	Engine monitor failure.	See Section 3.8

WARNING	DESCRIPTION	POSSIBLE CAUSES
<ENGINE PARAMETER> HIGH or <ENGINE PARAMETER> LOW	These messages indicate a problem with the airplane. If the engine and fuel systems are determined to be good, then there may a problem with a sensor. Engine Parameter High or Low. "High" or "Low" is not displayed for all parameters. Engine Alerts may be optionally configured to be inhibited before engine start or 5 minutes, whichever comes first. See the SkyView HDX Installation Manual for details.	See Section 3.8

Table 2: Caution Alerts

CAUTION	DESCRIPTION	POSSIBLE CAUSES
ACTV ADAHRS VIBRATION	The currently active ADAHRS has detected vibration that will affect the performance of the: G Meter, Autopilot, Attitude indicator	See Section 3.3
ADS-B IN OFFLINE	The connected ADS-B traffic/weather receiver has failed or is no longer communicating with SkyView HDX.	See Section 3.10
AP DISCONNECT BROKEN	Autopilot disconnect switch wire is broken.	See Section 3.14
AP DISCONNECT STUCK	Autopilot disconnect switch is stuck.	See Section 3.14
B/U BATT IN USE	System has switched to SkyView Backup Battery.	See Section 3.2
B/U BATT UNAVAIL	A previously connected backup battery is no longer detected or has failed.	See Section 3.6
CHECK PITOT HEAT	Airspeed information is not available; GPS is being used to aid in the computation of attitude information; Attitude may be degraded.	
HDG SOURCE FAIL	The Remote Magnetometer has failed or is no longer communicating via SkyView HDX network.	See Section 3.4

CAUTION	DESCRIPTION	POSSIBLE CAUSES
CPU TEMP CRITICAL	The SkyView HDX Display internal temperature is too high. The display may shut down at any time to prevent permanent damage unless immediate action is taken to cool it down.	See Section 3.2
CROSS CHECK ATTITUDE	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.	See Section 3.5
NEED COMPASS CAL	Compass needs calibration	See Section 5.10
NO ADSB OUT: GPS LOST	The GPS source that provides GPS position to the Transponder for ADS-B Out transmission is offline.	See Sections 3.9 and 3.5
NO HI-RES TERRAIN	SkyView HDX has detected that there is no high-resolution terrain database installed for the aircraft's current position.	See Section 5.3
POSITION SOURCE or GPS X FAIL	Position source (GPS) failure.	See Section 3.5
STANDBY NETWORK ERROR	SkyView Network has lost its secondary standby network redundancy.	See Section 3.2
TOUCH PANEL FAULT	Touch Hardware is currently offline.	See Section 3.2
XPNDR ALT ENCODER FAIL	Altitude is not being sent to the Transponder because it is not available from its nominal barometric altitude source.	See Section 3.9

Table 3: Messages

MESSAGE	DESCRIPTION	POSSIBLE CAUSES
B/U BATT TEST FAILED	A full backup battery test was performed, and it failed.	See Section 5.4
B/U BATT TEST NEEDED	12 months or more has passed since the last successful backup battery test, or the last three SkyView HDX Display shutdowns were abnormal.	See Section 5.4
B/U BATT LOW CHARGE	The backup battery connected to SkyView HDX Display is not charged.	See Section 5.4

MESSAGE	DESCRIPTION	POSSIBLE CAUSES
CHECK BARO SETTING	The current BARO setting and the nearest METAR-based altimeter setting are more than 0.1 inHg apart; or, the aircraft has descended below FL180 and the BARO should be reset	
CPU TEMP HIGH	The SkyView HDX Display internal temperature is significantly higher than the normal operating temperature.	See Section 3.2
EXT LEVEL BUTTON STUCK	The external Level Button is stuck and is inoperative.	See Section 3.14.3
PITCH SERVO OFFLINE	The Pitch Autopilot servo has stopped communicating with SkyView HDX. This message also displays if Autopilot servos are not receiving power.	See Section 3.14.1
ROLL SERVO OFFLINE	The Roll Autopilot servo has stopped communicating with SkyView. This message also displays if Autopilot servos are not receiving power.	See Section 3.14.1
YAW SERVO OFFLINE	The Yaw Autopilot servo has stopped communicating with SkyView. This message also displays if Autopilot servos are not receiving power.	See Section 3.14.1
SYSTEM EVENT X	SkyView HDX has detected a possible problem with software or hardware.	Contact Dynon technical support. Always have a properly certified mechanic or repair facility remove the unit.
TIMER EXPIRED	A DOWN timer under TOOLS > TIMER has expired.	
XPNDR FAIL	The Transponder has failed.	See Section 3.9
XPNDR NOT IN ALT MODE	The aircraft is in flight and the Transponder is not in Alt Mode.	See Section 3.9
XPNDR WARNING MESSAGE	The Transponder has detected a problem and notified SkyView HDX.	See Section 3.9

2.2 ADAHRS (SV-ADAHRS-200)

The primary flight instruments on your SkyView HDX Display are generated using a group of calibrated sensors built into the Air Data Attitude Heading Reference System (ADAHRS) module. All sensors are solid state (i.e. 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. The OAT sensor (see Section 2.3) may connect to the ADAHRS module.

Figure 19: SV-ADAHRS-200

2.3 Remote Magnetometer (SV-MAG-236)

The Remote Magnetometer module was developed for situations where the ADAHRS module, which has an integrated magnetometer, cannot be installed in an area free of magnetic disturbances while satisfying the other installation constraints (such as proximity to center of gravity) of the ADAHRS module.

Figure 20: SV-MAG-236

2.4 OAT Sensor (SV-OAT-340)

Only one OAT Sensor is required in a SkyView HDX system. The OAT Sensor can be connected to either the ADAHRS module (SV-ADHRS-200) or the Remote Magnetometer module (SV-MAG-236),

Figure 21: SV-OAT-340

2.5 GPS Antenna/Receiver (SV-GPS-2020)

The GPS Antenna/Receiver is externally mounted and designed specifically for use with SkyView HDX systems. It is powered by the SkyView HDX Display (and thus will provide position updates when the SkyView HDX Display is operating on Backup Battery power). This device provides primary position and time information to the SkyView HDX Display.

Figure 22: SV-GPS-2020

2.6 Backup Battery (SV-BAT-320)

With the Backup Battery installed, a SkyView HDX Display can be powered up without external power. This allows the monitoring of engine parameters during engine start. If avionics power is lost in flight, a properly operating Backup Battery can provide power to a SkyView HDX Display, certain SkyView HDX components, and a GPS Antenna/Receiver for at least 45 minutes. The Backup Battery is automatically charged by the SkyView HDX Display during flight. The Backup Battery does not provide power to the Autopilot, Transponder, or ADS-B components.

Figure 23: SV-BAT-320

2.7 EFIS-D10A Standby Display

The EFIS-D10A is a standby attitude instrument, airspeed indicator, and altimeter. It is intended to be used as a backup in case primary attitude, airspeed, or altitude information is lost. Only pitot and static lines are connected to the EFIS-D10A along with power. It has no other external units. If avionics power is lost in flight, the EFIS-D10A has an internal backup battery provides power for at least 45 minutes.

Figure 24: EFIS-D10A

2.8 Engine Monitoring System (SV-EMS-220)

The engine gauges on your SkyView Engine Page are generated from the data acquired by the Engine Monitoring System (EMS) module and connected sensors. This module supports popular four- and six-cylinder engine installations and can measure a variety of engine and environmental parameters, including:

- Oil Pressure
- Oil Temperature
- Fuel Pressure
- Fuel Flow
- Fuel Level
- Carburetor Temperature
- Cylinder Head Temperature (CHT)
- Exhaust Gas Temperature (EGT)
- Amps
- Voltmeter
- Tachometer
- Manifold Air Pressure
- Flap Position
- Landing Gear Position

The EMS utilizes a file to define sensor behavior and a file to map those sensors to pins on the EMS module and configure the sensors' onscreen visual representations or widgets. The sensor definition file is preloaded into the SkyView HDX Display during manufacture but may need to be updated. The sensor mapping and configuration file is not preloaded into the SkyView HDX Display and must be downloaded and installed by the user. For information about configuring the EMS, see the *SkyView HDX System Installation Manual* and *SkyView HDX System Configuration Manual* documents associated with the airplane.

Figure 25: SV-EMS-220

There are three (3) display options (Bottom Band, 50% Page, Full Page) for viewing engine monitoring information on the SkyView HDX Display.

Figure 26: EMS Information in Bottom Band and Split-Screen (50%) Layout

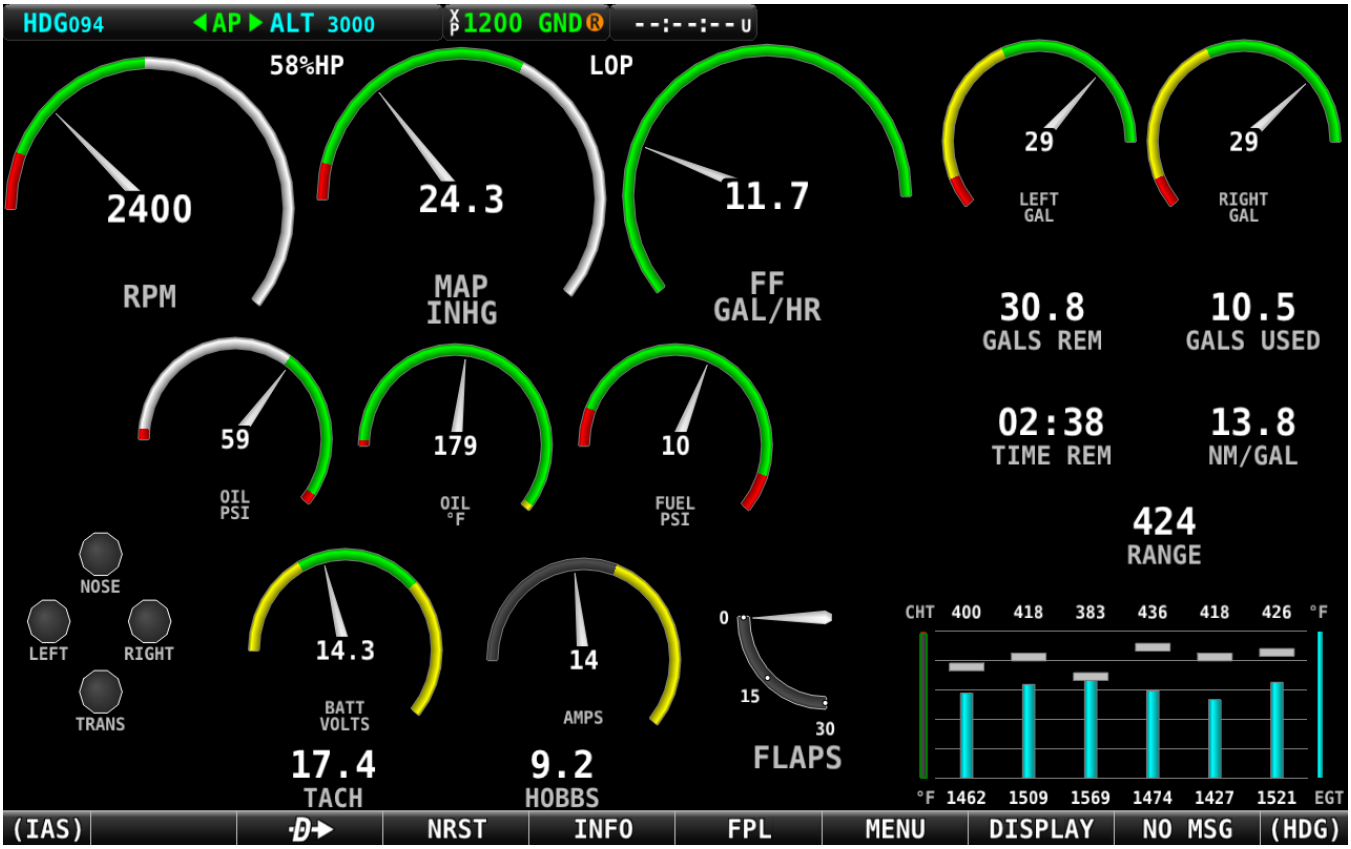

Figure 27: EMS Information in Full-Screen Layout

2.9 Transponder (SV-XPNDR-261)

The Transponder module is a Class 1, Technical Standard Ordered (TSO), remote-mounted, Mode S module that contains Automatic Dependent Surveillance-Broadcast (ADS-B) OUT capability via 1090ES, and Traffic Information Service (TIS) traffic input capability.

Figure 28: SV-XPNDR-261

2.10 ADS-B IN Receiver (SV-ADSB-472)

The ADS-B IN Receiver receives Automatic Dependent Surveillance-Broadcast (ADS-B) traffic via 978 MHz (UAT) and 1090 MHz. In the United States, it also receives free text and graphical weather data from the FAA's network of ADS-B ground stations.

Figure 29: SV-ADSB-472

2.11 COM Control Panel and Transceiver (SV-COM-X83)

The COM system is an integrated VHF COM Radio consisting of two modules: the COM Control Panel (SV-COM-PANEL) and the COM Transceiver (SV-COM-T8). The COM Radio has 8.33 kHz channel spacing required for European pilots. The COM Radio can tune frequencies by querying an aviation database installed in the SkyView HDX Display.

Figure 30: SV-COM-PANEL (Horizontal and Vertical Configurations)

2.12 ARINC 429 Connection Module (SV-ARINC-429)

Through the Aeronautical Radio, Incorporated (ARINC) 429 Connection Module, the SkyView HDX Display can connect to advanced GPS/NAV devices, like the Avidyne IFD 440/540.

Figure 31: SV-ARINC-429

2.13 Autopilot System

SkyView HDX Autopilot is an optional, digitally controlled two-axis (roll and pitch) or three-axis (roll, pitch, and yaw) servo-activated system that provides flight path control functions to the pilot. The Autopilot can follow a heading by reference to the compass, follow direction over the ground by reference to GPS track information, or navigate according to a CDI when coupled to SkyView HDX's internal VFR GPS Navigation data, or when coupled to external navigation source providing VOR, localizer, cross track error or GPS navigation data.

The Autopilot can also hold altitude, and transition between altitudes at either a selected climb rate or airspeed. The autopilot will also follow vertical guidance including glideslope and glidepath information when coupled to an external navigation source.

In addition, the autopilot can have a third servo connected to the rudder. The rudder servo acts as a yaw damper to reduce and prevent yaw excursions while cruising or maneuvering, whenever the autopilot is engaged. The Yaw Damper (YD) function may also be activated during manual flight.

2.13.1 Autopilot Control

Operating the Autopilot requires selection of the correct control mode to accomplish the desired Autopilot task. The lateral and vertical servos can be engaged individually or simultaneously. The servos can be engaged using the Autopilot Control Menu (see Figure 32), located on the display, or by using the optional instrument panel mounted Autopilot Control Panel (see Figure 33). Both controls provide the same buttons and functions, with two exceptions:

1. The Autopilot Control Menu does not provide the LEVEL button or function.
2. The Autopilot Control Panel does not provide the Yaw Damper button or function.

Figure 32: Autopilot Control Menu

NOTE: Only the AP and the LEVEL buttons will engage the autopilot servos.

Table 4: Autopilot Control Modes

CONTROL MODE	FUNCTIONALITY DESCRIPTION
LEVEL	• Rolls wings level. Simultaneously raises nose above horizon, then holds zero vertical speed.
HDG	• Turns toward and holds compass heading as selected by HDG/TRK bug.
TRK	• Turns toward and holds ground track as selected by HDG/TRK bug.
ROLL	• Holds current bank angle, within bank angle limits. • This mode can only be activated when Autopilot is activated and no other lateral mode (HDG, TRK, or NAV) has been selected at the moment of engagement.
NAV	• Intercepts course by turning towards CDI needle then maintains selected OBS course. • VOR/LOC: Reverts to HDG mode if CDI is lost with HDG target set to OBS value, or to current HDG if OBS is not set. • GPS: Reverts to TRK mode if CDI is lost with TRK target set to OBS value, or to current GPS ground track if OBS is not set.
ALT	• Holds altitude commanded in the autopilot status bar. • When activating this mode commanded altitude is automatically set to the current indicated altitude.
VS	• Maintains the selected vertical speed as aircraft performance allows, until approaching the altitude bug, then transitions to ALT mode. NOTE: If VS mode is selected when altitude is near the selected altitude the autopilot will not automatically capture altitude. This allows the pilot to initiate a VS climb/descent away from the altitude bug. NOTE: A VS setting of 0 will not maintain a specific altitude. However, if a specific altitude is not required, a VS setting of 0 can provide a more comfortable ride quality than ALT mode in turbulent conditions.
IAS	• Maintains the selected air speed (if not aircraft performance limited) until the selected altitude approaches, then transitions to ALT to maintain selected altitude.
VNAV	• Intercepts and tracks a glideslope or glidepath. • Will not capture if descending from above the glideslope or glidepath.

2.13.2 Autopilot Control Panel (SV-AP-PANEL)

The Autopilot Control Panel is an optional control panel for a SkyView HDX system that provides controls for the Autopilot that are otherwise operated from the SkyView HDX Display menu buttons (which are still accessible after installation of the control panel). The Autopilot Control Panel includes dedicated buttons for engaging the Flight Director, Autopilot, and all control modes, including setting up fully coupled approaches, VNAV, IAS Hold, and mode sequencing (provided that IFR navigation sources are installed). It also has a LEVEL button to immediately return the aircraft to straight and level flight.

Figure 33: SV-AP-PANEL (Horizontal and Vertical Configurations)

2.13.3 Auto Pilot Disconnect Button (SV-BUTTON-APDISC)

An Autopilot Disconnect (A/P DISC) button is required if Autopilot is installed. The button can be mounted on the instrument panel or affixed to the control yoke. The panel mounted version should be located toward center of airplane's instrument panel. The button's primary purpose is to immediately disengage the Autopilot.

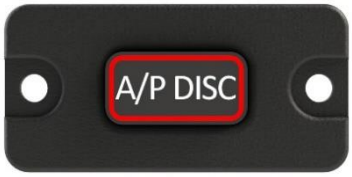

Figure 34: SV-BUTTON-APDISC

2.13.4 Level Button (SV-BUTTON-LEVEL)

The Level (LEVEL) button is an optional button for SkyView HDX Autopilot. The button's purpose is to activate/deactivate Level Mode. 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.

Figure 35: SV-BUTTON-LEVEL

2.13.5 Yaw Damper

The Yaw Damper function, when installed, will dampen yaw oscillations induced by turbulence, which improves ride quality in some airplanes. The function will also aid the Autopilot by keeping the Slip/Skid Indicator centered during turns.

The Yaw Damper is engaged independently from the autopilot and can be engaged when the autopilot is not engaged. The Yaw Damper control appears only on the Autopilot Control Menu (see Figure 32).

2.14 Knob Control Panel (SV-KNOB-PANEL)

The Knob Control Panel is an optional control panel for a SkyView HDX system that provides dedicated function knobs for ALT, BARO, and HDG/TRK bugs. The control panel is available in horizontal and vertically orientations to accommodate various instrument panel layouts. Operationally, the two versions are identical.

Without the Knob Control Panel, ALT, BARO, and HDG/TRK bugs are adjusted from the multifunction knobs on a SkyView HDX Display. Each Knob Control Panel knob can be pressed to sync each bug/setting, the same as using the knobs on the SkyView display. When a Knob Control Panel is installed in a SkyView HDX system, the knobs on a SkyView HDX Display can still be set to ALT, BARO, and HDG/TRK if desired. Up to two Knob Control Panels can be installed in a SkyView HDX system.

Figure 36: SV-KNOB-PANEL (Horizontal & Vertical Configurations)

2.15 Panel Mount USB Port

The Panel Mount USB Port is an optional accessory that is typically installed in the instrument panel. It extends easy access to the SkyView HDX Display's USB ports. These ports are used for transferring files (firmware updates and backups, database updates, configuration file uploads and downloads) to the SkyView HDX Display.

Figure 37: Panel Mount USB Port

3 Troubleshooting

3.1 Identifying Failures

If a major failure occurs that prevents SkyView HDX Display from presenting information, it will respond with a Red X and a descriptive label of which input failed. The Red X may overlay the entire page if a data source such as the ADAHRS module fails (see Figure 38).

If an EMS module fails, there will be a Red X over the entire EMS display segment (bottom band, 50% page, etc.) and a yellow "EMS FAIL" label. If a sensor fails, only the area associated with the display of that sensor's data will have a Red X displayed over it (see Figure 40).

Fundamentally, the Red X indicates a failure to communicate with a SkyView HDX component or a sensor connected to a component. Potential communication faults are listed in Section 2.1.2.7.

Figure 38: Example of an ADAHRS Module Failure

Figure 39: Example of a GPS Antenna/Receiver Failure

Figure 40: Example of an EMS Module Failure

3.2 SkyView HDX Display (SV-HDX1100 & SV-HDX800)

If troubleshooting requires accessing or removing the SkyView HDX Display, refer to Section 4.3.

3.2.1 Blank Screen

1. Verify airplane has power.
2. Make sure Master Switch is *ON*. (If Backup Battery is connected, the SkyView HDX Display should power up regardless of switch position.)
3. Press and hold Button #1. The SkyView HDX Display should power up. If not, complete the following steps:
   a) Access rear of SkyView HDX Display (see Section 4.4.1).
   b) Observe the lights on the ethernet port. Unlike other ethernet ports, these lights are used for display status.
      - Yellow light *ON*: Power is connected to pin 1, and ground is connected to pin 20.
      - Yellow light *OFF*: SkyView HDX Display not connected to power.
      - Green light *ON* (flashing): Normal when SkyView HDX Display is turned *ON* or *OFF* with an SV-BAT-320 connected.
      - Green light *ON* (steady, not flashing) or *OFF*: Something is wrong with the SkyView HDX Display. Contact Dynon Technical support. Always have a properly rated mechanic or qualified facility remove unit.
4. If there is no power to SkyView HDX Display and everything is *ON*, check circuit breakers and wiring to unit.

3.2.2 Fault Messages

Messages: CPU TEMP CRITICAL or CPU TEMP HIGH:

1. Access rear of SkyView HDX Display (see Section 4.4.1).
2. Turn unit on and, during bootup, verify both fans in the back of unit are working.
3. If both are not working, contact Dynon technical support. Always have a properly certified mechanic or facility remove unit.

Message: TOUCH PANEL FAULT

- Turn unit *OFF* and *ON* again. If message persists, then unit is not working correctly. Contact Dynon technical support. Always have a properly certified mechanic or facility remove unit.

3.2.3 No Audio

If audio messages are not heard when a message appears, complete the following procedure:

1. With airplane on ground, press LEVEL button and verify Autopilot engages and the aural message “Autopilot” is heard.
2. If Step #1 passes, audio is okay.

3. If Step #1 fails, then there is a problem with wiring from SkyView HDX Display to airplane intercom.
4. Access rear of SkyView HDX Display (see Section 4.4.1). Test all wiring leads and make sure wiring is correct per *SkyView HDX Wiring Diagram* document.

3.3 ADAHRS (SV-ADAHRS-200)

3.3.1 Red X Over Primary Flight Display

The ADAHRS module is not communicating with the SkyView HDX Display. To check the connection, complete the following:

1. Access ADAHRS module (see Section 4.5).
2. Check LED light on rear of ADAHRS module to determine status:
   - Red light *OFF*: The module is not receiving power.
   - Red light *ON* (flashing quickly): The module is connected to the SkyView network and communicating properly.
   - Red light *ON* (flashing slowly): The module is receiving power and operating normally but is not fully communicating with SkyView HDX Display.
   - Red light *ON* (not flashing): The module has a problem, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.3.2 Airspeed Indication Frozen / Indicates Zero

If the airspeed indication is a fixed value of zero, and does not change, or only increases slightly, the pitot sensor and lines may be either disconnected or leaking. To resolve, inspect the entire Pitot system for loose or open connections and repair on condition.

If the airspeed indication is a fixed number value and does not change, the pitot sensor and lines may be obstructed. To check for and remove the obstruction, complete the following:

1. Access ADAHRS (see Section 4.5).
2. Disconnect Pitot tube from ADAHRS Pitot connection.
3. Blow pressurized air through Pitot tube from ADAHRS connection end out through Pitot sensor. Take note of any foreign objects or water that exits Pitot sensor.
4. Make sure air flows readily through tube/lines and out Pitot sensor.
5. Re-connect Pitot tube to ADAHRS Pitot connection.
6. Test the system to ensure proper functionality.

3.3.3 Altitude Indication Frozen

If the altitude indication is a fixed value that does not change, the static sensor and tube may be obstructed. To check for and remove the obstruction, complete the following:

1. Access ADAHRS (see Section 4.5).
2. Disconnect Static tube from ADAHRS Static connection.

3. Blow pressurized air through Static tube from ADAHRS connection end out through Static sensor. Take note of any foreign objects or water that exits Static sensor.
4. Make sure air flows readily through tube/lines and out Static sensor.
5. Re-connect Static tube to ADAHRS Static connection.
6. Test the system to ensure proper functionality.

3.3.4 Density Altitude and OAT Indications Incorrect

If the Density Altitude or the OAT indications read low or high, or do not change, the OAT sensor may have become disconnected from the ADAHRS module or may have failed. To test the OAT sensor, complete the following:

1. Compare OAT indication on PFD to that of ambient temperature. The two values should be close to the same.
2. If values are similar, apply low heat to OAT sensor while monitoring OAT indication on PFD. The indication should increase as heat is applied to the sensor.
3. If the sensor fails to respond to heat, access the ADAHRS or Remote Magnetometer (see Section 4.5) and inspect OAT sensor connection to make sure the OAT sensor is connected to the module.

   NOTE: The OAT sensor can be connected to either the ADAHRS module or the Remote Magnetometer module. If the sensor is not connected to the ADAHRS module, check to see it is connected to the Remote Magnetometer instead.
4. Assuming all other functions of the ADAHRS/Remote Magnetometer function correctly, if the sensor is properly connected and continues to not function correctly, replace the OAT sensor.

3.3.5 No AoA Audio Alerts

Normally the AoA probe will produce audible “beeps” as the aircraft approaches a stall. If no AoA audio alerts are heard approaching a stall, perform the following checks:

1. Verify audio is heard for other SkyView HDX Display messages (see Section 3.2.3). If audio is heard for other messages, then there may be a problem with the pneumatic tube from the AoA probe to the ADAHRS module.
2. Check for blockage or disconnection of AoA probe tubing:
   a. Remove AoA probe and make sure the pneumatic tube is securely attached (see Section 4.19).
   b. Access the ADAHRS (See section 3.3, to gain access to ADAHRS module) to ensure the AoA tube is securely attached.
3. Complete AoA Probe calibration (see Section 5.8).

If all steps pass, the ADAHRS module likely needs to be replaced. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.4 Remote Magnetometer (SV-MAG-236)

Message: HDG SOURCE FAIL

If the SkyView HDX Display generates this message, the Remote Magnetometer module is not communicating with the SkyView HDX Display.

To gain access to the Remote Magnetometer module, see Section 4.7. The Remote Magnetometer module has an LED light to determine its status as follows:

- Red light *OFF*: The module is not receiving power.
- Red light *ON* (flashing slowly): The module is not connected to the network, but it is getting power.
- Red light *ON* (flashing quickly): The module is connected to the network and communicating properly.
- Red light *ON* (not flashing): The module has a problem. Contact Dynon technical support. Always have a properly certified mechanic or facility remove unit.

3.5 GPS Antenna/Receiver (SV-GPS-2020)

3.5.1 Red X Over Moving Map

The GPS Antenna/Receiver is not communicating with the SkyView HDX Display. To check the connection, complete the following:

1. Access rear of SkyView HDX Display (see Section 0) and check/fix wiring connections.
2. If wiring appears correct, and GPS is still not communicating with SkyView HDX Display, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.5.2 GPS Position Incorrect

1. Verify GPS Antenna/Receiver has an unobstructed view of the sky.
2. Check the GPS status page on SkyView HDX Display.

3.6 Backup Battery (SV-BAT-320)

Message: B/U BATT TEST NEEDED

If the SkyView HDX Display generates this message, perform battery test on each Backup Battery (see Section 5.2). If a Backup Battery is determined to be bad, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

Caution message: B/U BATT UNAVAIL

If the SkyView HDX Display generates this message, check Backup Battery wiring connections. If wiring appears correct, then the Backup Battery has likely failed. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

Warning message: B/U BATT LOW CHARGE

If the SkyView HDX Display generates this message, perform battery test on each Backup Battery (see Section 5.2). If a Backup Battery is determined to be bad, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.7 EFIS-D10A

The EFIS-D10A includes limited self-diagnostic capability.

3.7.1 EFIS-D10A Warnings (EFIS-D10A Self Diagnostics)

If a fault with the EFIS-D10A is detected, a message will be displayed on the screen. The following table provides a recommendation for each specific warning.

Table 5: EFIS-D10A Self Diagnostic Messages

MESSAGE	POSSIBLE CAUSES	RESULT/ACTION
INTERNAL ERROR SERVICE UNIT	This error can occur for a few reasons, including an aborted upload. It signifies that the EFIS-D10A has detected internal problems in its firmware or calibration tables.	When this error appears, it may be possible to recover your unit in the field. The best way of ensuring this is to call Dynon technical support immediately. However, it is likely that the unit will have to be returned for service.
TEMPERATURE UNSTABLE	When the unit is turned on after having been off for a long period, its internal temperature will rise above ambient at a fast rate. This fast change in temperature can sometimes reduce the reliability of the output of the sensors. Therefore, this alert is displayed, and the horizon indication is changed from blue/brown to grey/black.	The screen remains normal color, but the message is displayed until the temperature within the unit has stabilized. This temperature instability should last no longer than 2 minutes. For this reason, it is a good idea to turn the unit on before you run through any of the preflight procedures, so that it will be ready by the time you are ready to fly.
TEMPERATURE OUT OF SPEC	The temperature inside the unit is outside of -30ºC to 50ºC.	The screen remains normal color, but the message is displayed until the temperature within the unit is within the specified range. This is most common in unventilated panels during hot periods. If you continue to see this alert, provide more airflow to the space around the EFIS-D10A.

MESSAGE	POSSIBLE CAUSES	RESULT/ACTION
INTERNAL BATTERY LOW	You will see this alert only when operating the unit solely off the internal backup battery. When its voltage has dropped below a certain threshold, you will see this alert. Additionally, the voltmeter will be displayed onscreen.	The alert will disappear when you press any button on the EFIS-D10A; however, it is advised that you do not ignore this alert, as it appears when the unit's internal battery has very little life left. This alert will also go away upon the application of external power. At that point, the battery will begin charging off the external power.

3.8 Engine Monitoring System (SV-EMS-220)

3.8.1 Red X Over Entire Engine Display

The EMS module is not communicating with the SkyView HDX Display. To gain access to the EMS module, see Section 4.12. The EMS module has an LED light to determine its status as follows:

- Red light O*FF*: The module is not receiving power.
- Red light *ON* (flashing slowly): The module is not connected to the network, but it is getting power.
- Red light *ON* (flashing quickly): The module is connected to the network and communicating properly.
- Red light *ON* (not flashing): The unit has a problem. Contact Dynon technical support. Always have a properly certified mechanic or facility remove unit.

3.8.2 Sensor Failures

The following list represents the sensors that may be installed on your airplane:

- Oil Pressure
- Oil Temperature
- Fuel Pressure
- Fuel Flow
- Fuel Level
- Carburetor Temperature
- Cylinder Head Temperature (CHT)
- Exhaust gas Temperature (EGT)
- Amps
- Voltmeter
- Tachometer
- Manifold Air Pressure
- Flap Position
- Landing Gear Position

A Red X will be displayed over the widget on the bottom of the SkyView HDX Display whenever the following occur:

- Wiring faults
- Switches in the circuitry (if installed) fail in the incorrect position

- A sensor fails

To remove the Red X:

1. Check wiring and repair as required. Some sensors require 5 volts of power from EMS C37P18 (pin 18, white/red wire) to operate.
2. Inspect and test position switches, if installed in the circuitry, and replace as required.

If a sensor fails and needs to be replaced, contact Dynon technical support. Always have a properly certified mechanic or facility remove unit.

3.9 Transponder (SV-XPNDR-261)

The Transponder includes limited self-diagnostic capability.

3.9.1 Transponder Warnings (Transponder Self Diagnostics)

If a fault with the Transponder is detected, a system message will be displayed on the SkyView HDX Display: XPNDR WARNING MESSAGE. To see detailed information on the fault, go to SETUP MENU > TRANSPONDER SETUP. The words TRANSPONDER WARNING will be displayed in Yellow. Right-click the knob and see the specific warning.

The following table provides a recommendation for each specific warning.

Table 6: Transponder Self Diagnostic Messages

ANNUNCIATION	DESCRIPTION	POSSIBLE CAUSES
ANT FAULT (value)	Antenna Fault; value is Power output.	Generally, this is an installation issue with antenna, feedline, or the connector. Check the antenna, feedline, or connector. A visual inspection is often not enough to find the fault with the antenna, feedline, or connector.
NO ADSB POSITION	GPS data is not being received by transponder.	Check connection to GPS receiver or transponder configuration.
DPSK UNLOCK	Internal diagnostic warning.	Internal fault, contact Dynon technical support to arrange for repair or replacement.
REMOTE HOT (value)	Transponder is receiving excessive heat; value is Temperature (°C).	Check location of transponder for exposure to excessive heat.
RX PSU FAIL	Internal diagnostic warning.	Internal fault, contact Dynon technical support to arrange for repair or replacement.
SQUITTER FAIL	Extended Squitter data not transmitted.	Internal fault, contact Dynon technical support to arrange for repair or replacement.

ANNUNCIATION	DESCRIPTION	POSSIBLE CAUSES
TX POWER LOW (value)	Transmit power output is low; value is Power output.	Generally, this is an installation issue with antenna, feedline, or the connector. Check the antenna, feedline, or connector. A visual inspection is often not enough to find the fault with the antenna, feedline, or connector.
TX PSU HIGH (value)	Transmitter power supply output is abnormally high; value is Volts.	Internal fault, contact Dynon technical support to arrange for repair or replacement.
TX PSU LOW (value)	Transmitter power supply output is abnormally low; value is Volts.	Check power being supplied to |SV-XPNDR-261.
TX RESTART	Internal diagnostic warning	Remove and re-apply power to transponder.
TXPNDR FAULT	Generic fault message	Internal fault, contact Dynon technical support to arrange for repair or replacement.

3.10 ADS-B IN Receiver (SV-ADSB-472)

If no traffic or weather is appearing on the PFD or Moving Map, the ADS-B IN Receiver is not communicating with the SkyView HDX Display.

To gain access to the ADS-B IN Receiver, see Section 4.14. A multicolored LED indicator on the ADS-B IN receiver module confirms hardware operation:

- Green light *ON*: The module has power.
- Green light *OFF*: The module is not receiving power.
- Green light *ON* (with brief yellow flash): The module is connected to the SkyView HDX network and communicating properly.

3.11 COM Transceiver & Control Panel (SV-COM-X83)

The COM System is made up of two modules: the COM Transceiver (SV-COM-T8) and the COM Control Panel (SV-COM-PANEL). To gain access to the modules, see Sections 4.16 and 4.17.

COM Panel is not illuminated:

1. Make sure COM Transceiver module is powered on.
2. Check harness for proper connections between COM Control Panel and COM Transceiver modules.
3. Check rear of COM Control panel. A red LED indicator on rear of module confirms hardware operation:

a. Red light *OFF*: The module is not receiving power.

b. Red light *ON* (flashing quickly): The module is connected to SkyView HDX network and communicating properly.

c. Red light *ON* (flashing slowly): The module is receiving power and operating normally but is not fully communicating with SkyView HDX Display.

d. Red light *ON* (not flashing): The module has a problem. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

Message: NoSV

The COM Control Panel is not communicating with SkyView HDX Display:

1. Make sure SkyView HDX system is powered on. (The COM Control Panel receives power from the COM Transceiver module.)
2. Check SkyView HDX network harness(es) for proper connections between COM Control Panel and SkyView HDX Display.

Message: NoDB

The COM Control Panel is not communicating with SkyView HDX system database:

- Load Aviation and Obstacle databases in SkyView HDX system.

3.12 ARINC 429 Connection Module (SV-ARINC-429)

If the SkyView HDX Display is not receiving advanced GPS/NAV data, the ARINC 429 Connection Module is not communicating with the SkyView HDX Display.

To gain access to the ARINC 429 Connection Module, see Section 4.18. The ARINC 429 Connection Module has an LED light to determine its status as follows:

- Red light O*FF*: The module is not receiving power.
- Red light *ON* (flashing quickly): The module is connected to SkyView HDX network and communicating properly.
- Red light *ON* (flashing slowly): The module is receiving power and operating normally but is not fully communicating with SkyView HDX Display.
- Red light *ON* (not flashing): The module has a problem. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.13 AoA Probe

Normally the AoA will produce audible “beeps” as the airplane approaches a stall. If no AoA audio alerts are heard approaching a stall, perform the following checks:

1. Verify audio is heard for other SkyView HDX system messages. If audio is heard for other messages, then there may be a problem with the pneumatic tube from the AoA probe to the ADAHRS module.
2. Remove AoA probe and make sure the pneumatic tube is securely attached.
3. Check for blockage of AoA probe.

4. If Steps 1-3 pass, inspect the AoA connector going into the AoA port on ADAHRS module. To gain access to ADAHRS module, see Section 4.5.
5. Complete AoA Probe calibration (see Section 5.8).

If all steps pass, the ADAHRS module likely needs to be replaced. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.14 Autopilot System

3.14.1 Servos

Condition: One or more of the following messages appear:

1. PITCH SERVO OFFLINE
2. ROLL SERVO OFFLINE
3. YAW SERVO OFFLINE

If all three messages annunciate:

1. Verify Master Power is *ON.*
2. Verify Autopilot circuit breaker and switch are *ON*.
3. Verify all harness connectors for all servos are properly mated.
4. Verify electrical power to all servos.
5. Verify adequate ground quality for all servos.

If condition persists, or if only one message annunciates:

1. Enter SETUP menu (hold Buttons #7 and #8)
2. Enter SYSTEM SETUP -> SKYVIEW NETWORK SETUP-> NETWORK STATUS
3. Locate the SV32/SV42/SV52 devices (servos) in list of network devices. If necessary, use knobs to scroll through entire list. If you don't see a servo entry in the list of network devices for each servo installed, press BACK button and perform a SkyView Network Configuration.
4. If any servos are highlighted in RED:
    a. Verify Autopilot circuit breaker and switch are *ON*.
    b. Inspect/fix wiring to affected servo, or common wiring if multiple servos are offline.
5. If any servos are highlighted in YELLOW, a software upgrade did not complete properly.
6. If all above fails, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.14.2 Autopilot Control Panel (SV-AP-PANEL)

If buttons on Autopilot Control Panel do not control Autopilot functions on SkyView HDX Display, complete the following:

1. Access connectors on rear of SkyView HDX Display (see Section 0).

2. Check lights on rear of control panel. The control panel has a LED light to determine its status as follows:
    a. Red light *OFF*: The control panel is not receiving power.
    b. Red light *ON* (flashing slowly): The control panel is not connected to SkyView HDX network but is getting power.
    c. Red light *ON* (flashing quickly): The control panel is connected to SkyView HDX network and is communicating properly.
    d. Red light *ON* (not flashing): The control panel has a problem. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.14.3 Autopilot Level Button (SV-BUTTON-LEVEL)

1. Check if SkyView HDX Display has generated an error messages associated with button.
2. If there are no error messages associated with button, engage Autopilot by pressing LEVEL button and verify the Autopilot enters Level mode. If not, check the wiring. If wiring is correct, the switch needs to be replaced. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.14.4 Autopilot Disconnect Button (SV-BUTTON-APDISC)

1. With Autopilot engaged, press A/P DISC button.
2. Check SkyView HDX Display for the following:
    a) If AP BROKEN DISCONNECT message annunciates, and Autopilot fails to disconnect, the switch wiring has failed, and contacts are open. Inspect wiring for fault and repair as required.
    b) If AP DISCONNECT STUCK message annunciates, and Autopilot fails to disconnect, the switch wiring is shorted to ground, or the switch is stuck closed and needs to be replaced.

Note: An A/P DISC button is required for SkyView HDX Autopilot operation. The button can be mounted on the panel and/or a suitable button can be affixed to the control yoke.

3.15 Knob Control Panel (SV-KNOB-PANEL)

If the knobs on Knob Control Panel do not control the Barometer (BARO), Altitude (ALT), and Heading/Track (HDG/TRK) functions on SkyView HDX Display, complete the following:

1. Access electrical connectors on rear of SkyView HDX Display (see Section 0).
2. Check lights on rear of panel. The control panel has a LED light to determine its status as follows:
    a. Red light *OFF*: The control panel is not receiving power.
    b. Red light *ON* (flashing slowly): The control panel is not connected to SkyView HDX network but is getting power.
    c. Red light *ON* (flashing quickly): The control panel is connected to SkyView HDX network and is communicating properly.
    d. Red light *ON* (not flashing): The control panel has a problem. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

3.16 Panel Mount USB Port

1. Connect a USB-compatible device to all ports on Panel Mount USB Port to confirm proper operation.
2. If all ports fail, access rear of SkyView HDX Display (see Section 0) and check USB cable connection from SkyView HDX Display to Panel Mount USB Port.
3. If USB cable connection is good, Panel Mount USB Port has a problem. Contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove unit.

4 Component Removal and Installation

This section contains removal and installation instructions for the SkyView HDX system components. It is intended to be used in conjunction with Section 3 *Troubleshooting*.

4.1 Equipment Installation Record

Per the *SkyView HDX System Installation Manual* document, a record of the equipment installation, including component locations, installation notes, wiring routing, and drawings, should have been made by the mechanic or facility that installed the SkyView HDX system. That document should be kept with the airplane.

4.2 Access to Equipment

See Figure 41and Figure 42 for typical SkyView HDX system components locations and layouts. The majority of the SkyView HDX system components are located behind the instrument panel. Locations may differ depending on installation, so refer to *SkyView HDX System Equipment Installation Record* document associated with the airplane. You may need to remove the SkyView HDX Display from the instrument panel to access some equipment.

The instrument panel should be based on the aircraft's existing panel. The illustrations that follow provide suggestions for layout configuration of the SkyView HDX Displays and associated components.

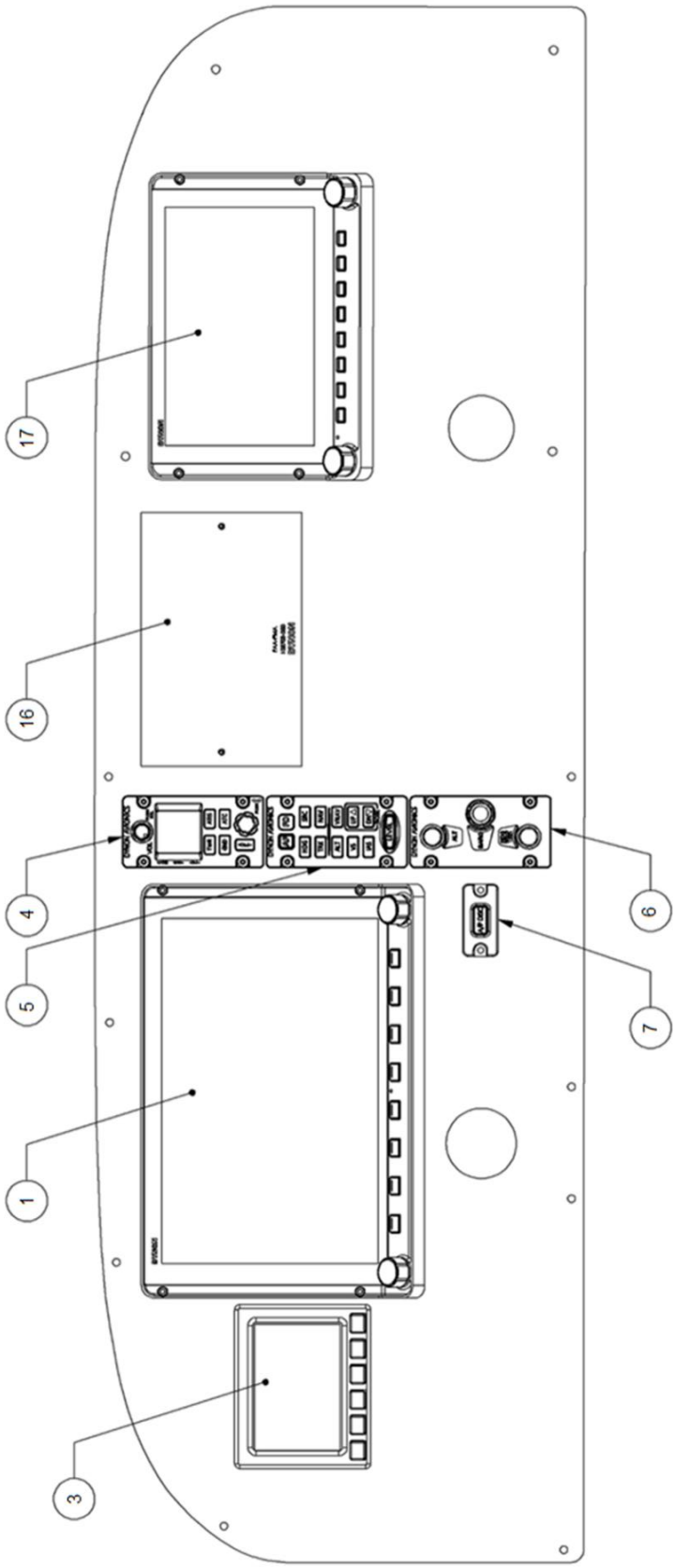

Figure 41: Typical Instrument Panel Front View (landscape view)

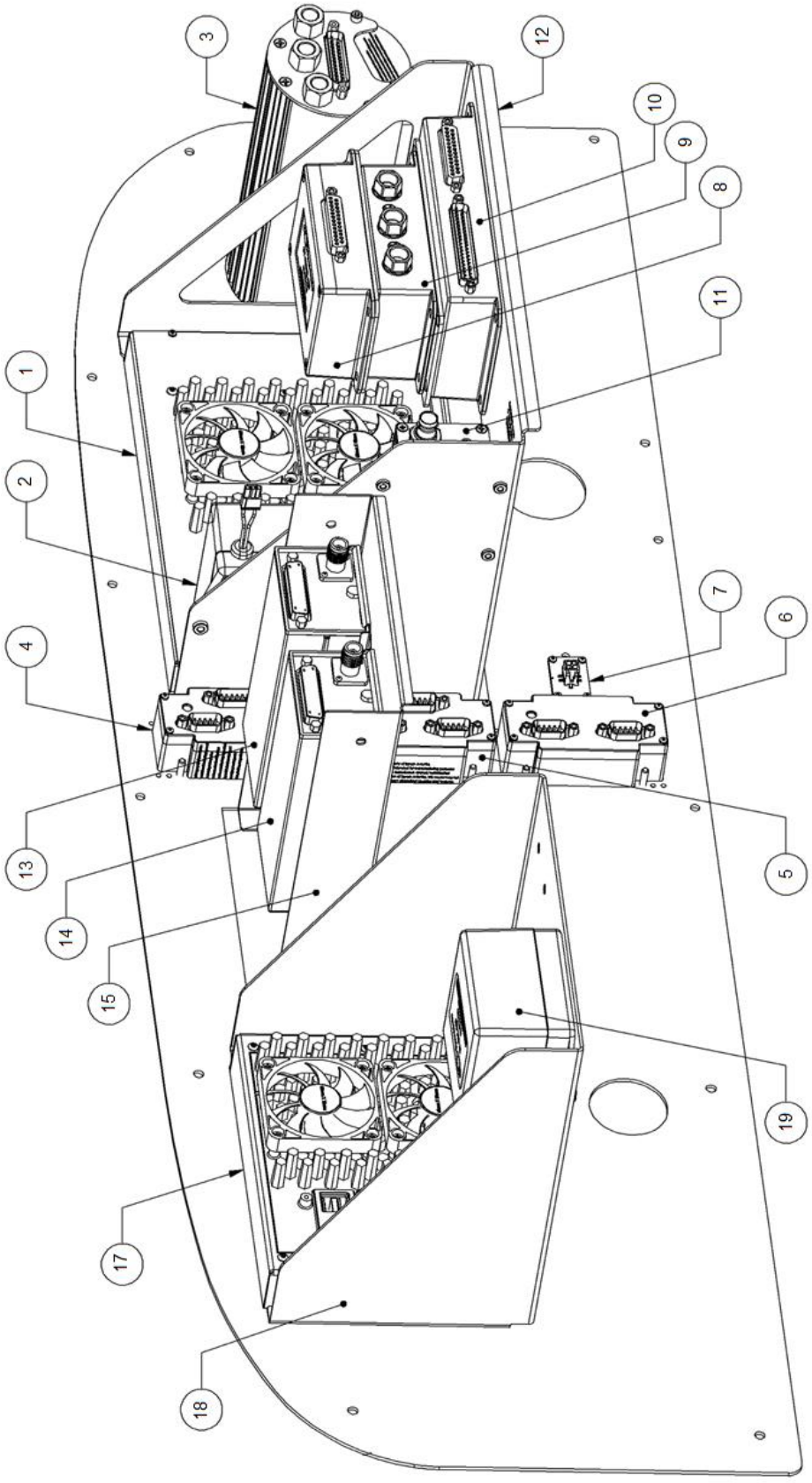

Figure 42: Typical Instrument Panel Rear View (landscape view)

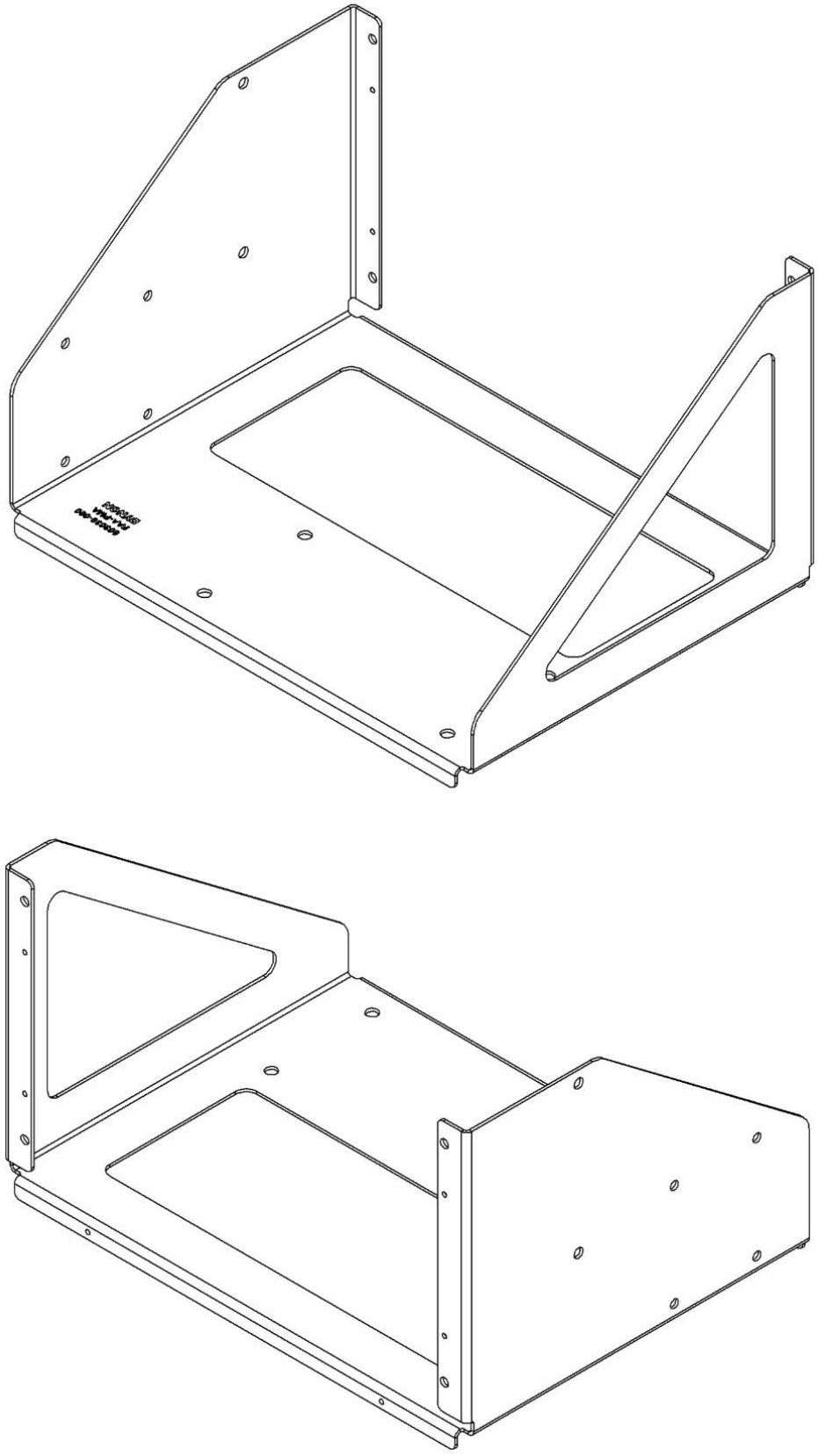

Figure 43: HDX1100 Avionics Tray

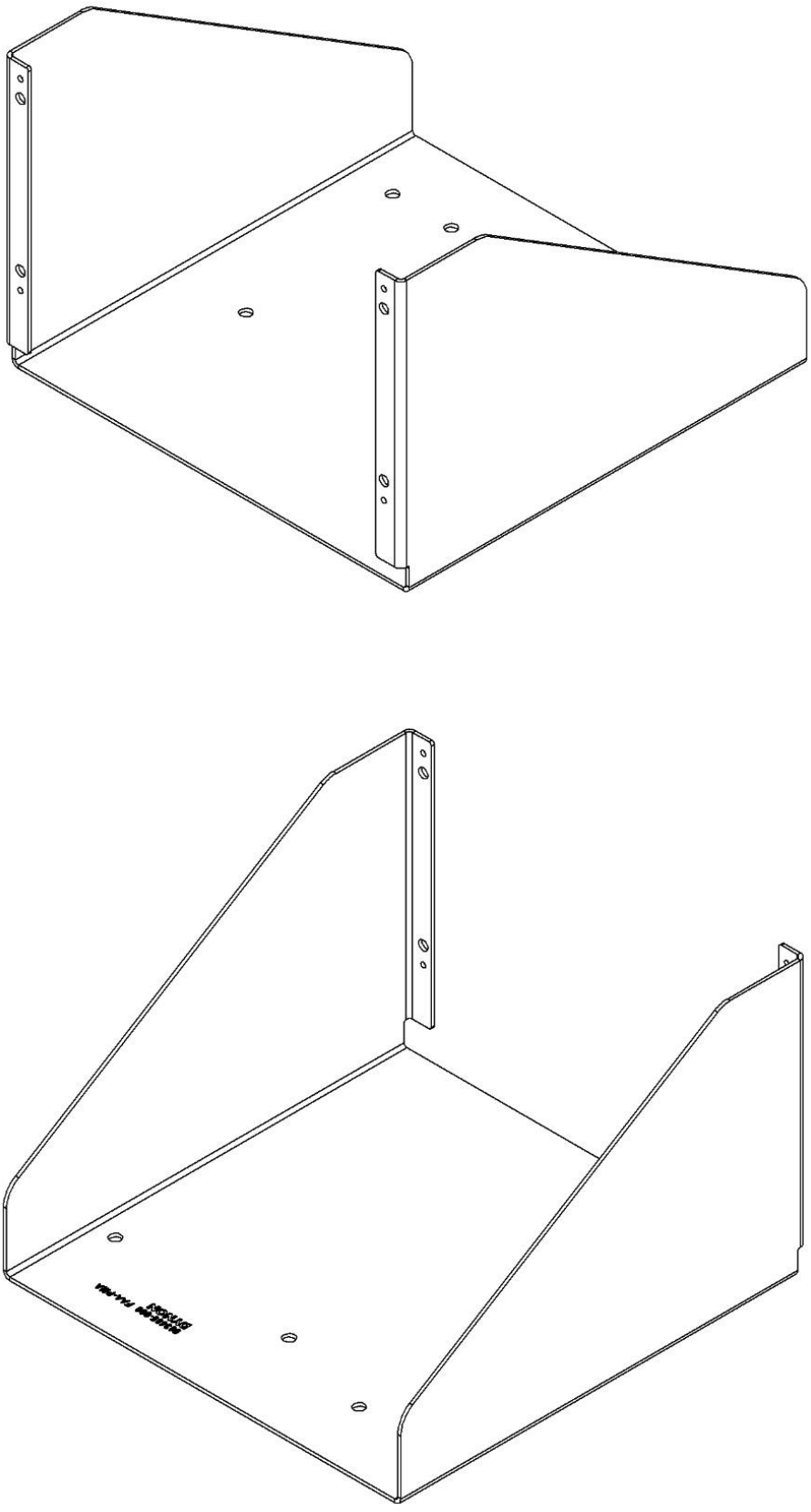

Figure 44: HDX800 Avionics Tray

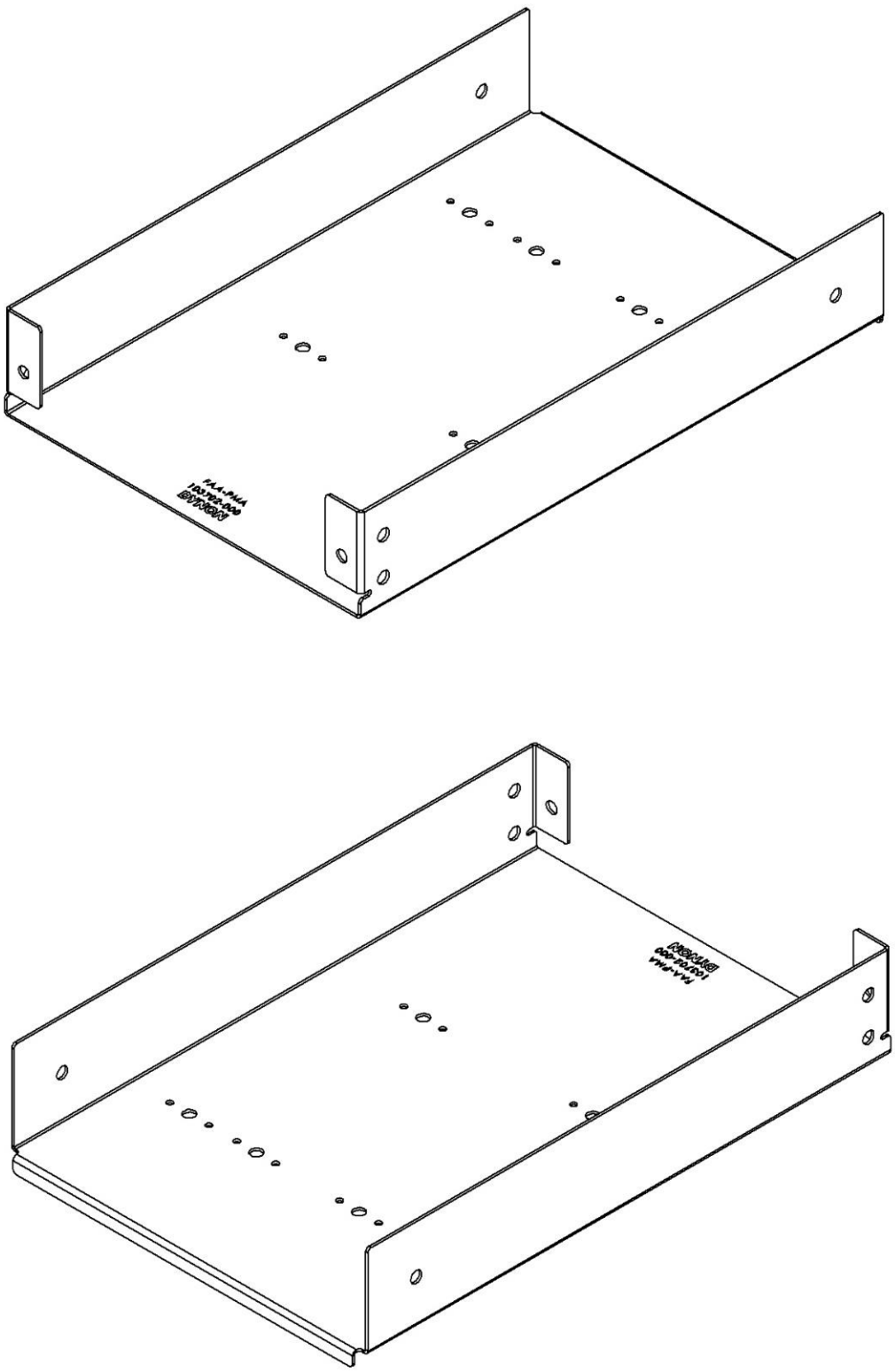

Figure 45: Remote Module Mounting Tray

Table 7: Typical Instrument Panel Mounted Equipment

Item	Description
1	HDX1100 Primary Display
2	SV-BAT-320 Backup Battery
3	EFIS-D10A Standby Display
4	SV-COM-X83 COM Radio Control Panel
5	SV-AP-PANEL Autopilot Control Panel
6	SV-KNOB-Panel Knob Control Panel
7	SV-BUTTON-APDISC Autopilot Disconnect Button
8	SV-ARINC-429 ARINC 429 Interface Module
9	SV-ADAHRS-200 ADAHRS
10	SV-EMS-220 Engine Monitoring System
11	SV-ADSB-472 ADS-B Receiver
12	HDX1100 Avionics Tray
13	SV-COM-X83 COM Radio Transceiver
14	SV-XPNDR-261 Transponder Mode-S
15	Remote Module Mounting Tray
16	Remote Module Mounting Tray Cover Plate
17	HDX800 Secondary Display
18	HDX800 Avionics Tray
19	SV-BAT-320 Backup Battery

4.3 Replacement Hardware

The mounting hardware required to install SkyView HDX system components is listed below.

Table 8: Replacement Hardware

COMPONENT MODEL	HARDWARE NUMBER	HARDWARE DESCRIPTION	NOTES
SV-ADAHRS-200	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-BAT-320	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-GPS-2020	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-BAT-320	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-XPNDR-261	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-EMS-220	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-COM-T8	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-ARINC-429	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 8-32	OR USE COMPARABLE
SV-MAG-236	MS35214-XX	NON-MAGNETIC BLACK ANODIZED PAN HEAD BRASS INSTRUMENT MACHINE SCREWS	OR USE COMPARABLE
SV-ADSB-472	AN526-632-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 6-32	OR USE COMPARABLE
SV-OAT-340	503291-000	SALES ASSY PMA OAT PROBE SKYVIEW SV-OAT-340	AVAILIBLE FROM DYNON
AOA SENSOR MAST	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 10-32	OR COMPARABLE
	AN960-8	WASHER	OR COMPARABLE
	AN365-832	ELASTIC STOP NUT	OR COMPARABLE
AOA SENSOR	MS35190-251-8R6	COUNTERSUNK MACHINE SCREWS	OR COMPARABLE

COMPONENT MODEL	HARDWARE NUMBER	HARDWARE DESCRIPTION	NOTES
MAP SENSOR	AN526-832-XX	PHILLIPS TRUSS HEAD STAINLESS MACHINE SCREW 10-32	OR USE COMPARABLE
	AN960-8	WASHER	OR USE COMPARABLE
	AN365-832	ELASTIC STOP NUT	OR USE COMPARABLE
FUEL FLOW SENSOR	AN3-XX	BOLT	OR USE COMPARABLE
	AN960-10	WASHER	OR USE COMPARABLE
	AN365-1032	ELASTIC STOP NUT	OR USE COMPARABLE
AMP SENSOR	AN3-XX	BOLT	OR USE COMPARABLE
	AN960-10	WASHER	OR USE COMPARABLE
	AN365-1032	ELASTIC STOP NUT	OR USE COMPARABLE
SV-HDX1100	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-HDX800	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-KNOB-PANEL	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-AP-PANEL	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-COM-PANEL	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-BUTTON-APDISC	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
SV-BUTTON-LEVEL	101281-007	SCREW 5/64IN HEX BTTN STL #6-32 5/8IN BLK ZINC	PURCHASE KIT 102487-000 SALE ASSY KIT SCREWS PANEL MOUNT
EFIS-D10A	AN365-832	ELASTIC STOP NUT	OR USE COMPARABLE
	AN960-8	WASHER	OR USE COMPARABLE

4.4 SkyView HDX Display (SV-HDX1100 & SV-HDX800)

This section provides removal and installation procedures for the primary and secondary SkyView HDX Displays.

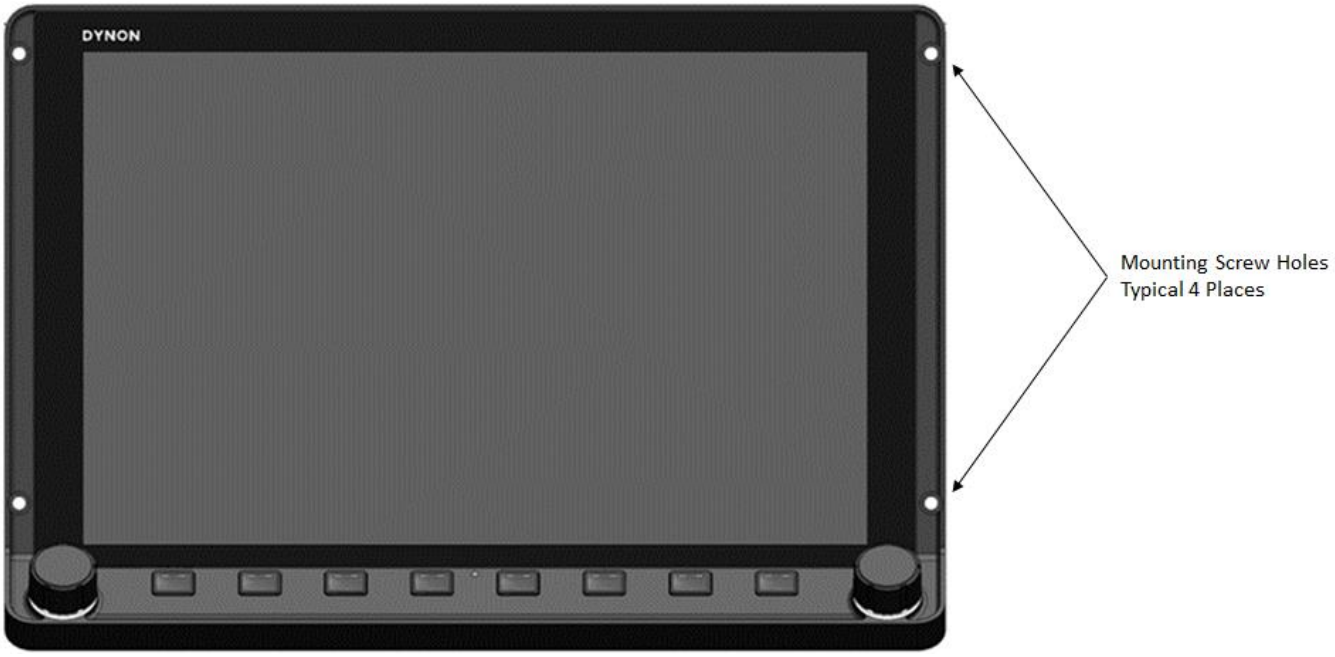

Figure 46: SV-HDX110 or SV-HDX800, Front View

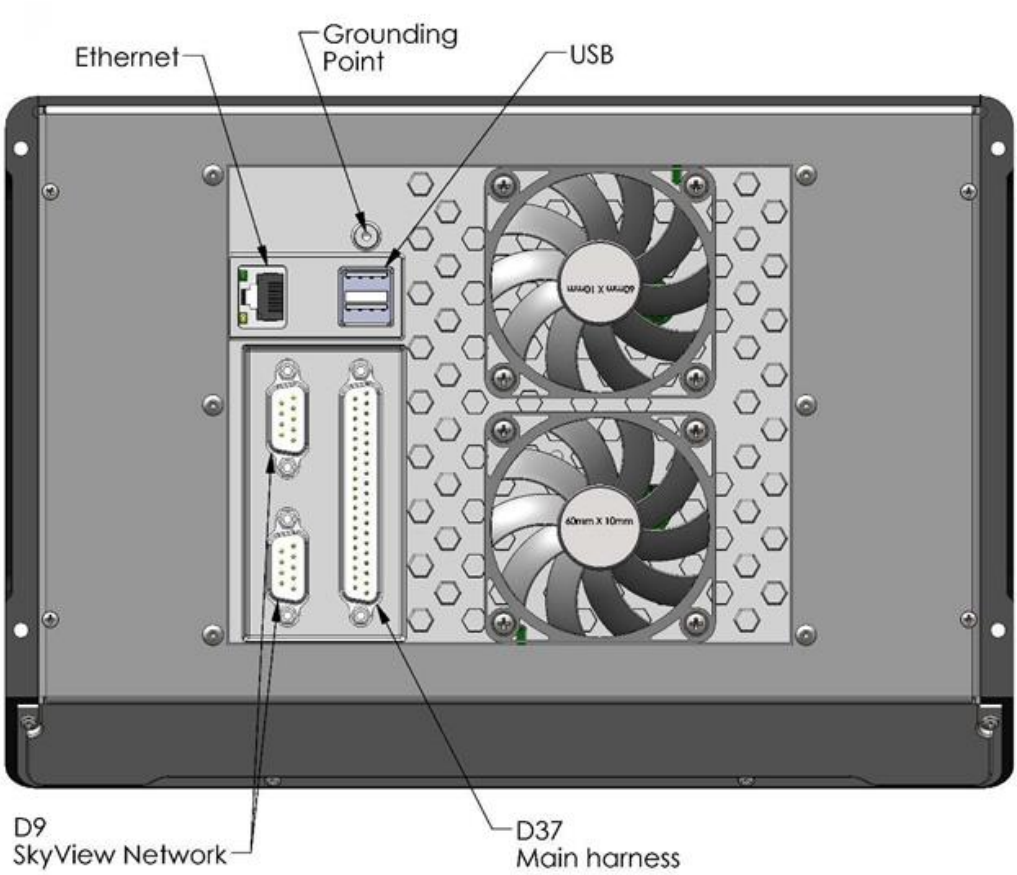

Figure 47: SV-HDX110 or SV-HDX800, Rear View

4.4.1 Location

Primary display is typically located on left instrument panel; secondary display is typically located on right instrument panel. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.4.2 Removal

1. Shut down airplane power.
2. Remove screws that secure the SkyView HDX Display to instrument panel. Keep screws for re-installation.
3. Slide SkyView HDX Display out of instrument panel to expose backside of unit and gain access to connectors.
4. Disconnect all cables and D37 and D9 electrical connectors from back of unit. This is accomplished by removing two retention screws on both D37 and D9 electrical connectors.

4.4.3 Installation

1. Connect D37 and D9 electrical connectors and all cables to back of unit.
2. Slide SkyView HDX Display back into instrument panel.
3. Reinstall screws that secure unit to instrument panel (see Table 8: *Replacement Hardware* if screws need to be replaced).
4. If all other removed system components are installed, reconnect battery and provide power to SkyView HDX Display and other system components.
5. Make sure SkyView HDX Display powers up normally and no unexpected messages appear. If an issue occurs, see Section 3.2.

4.5 ADAHRS (SV-ADAHRS-200)

This section provides removal and installation procedures for the Air Data Attitude Heading Reference System (ADAHRS) module.

Figure 48: SV-ADAHRS-200

4.5.1 Location

The ADAHRS unit is typically mounted behind the SkyView HDX Display on the avionics tray. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.5.2 Removal

1. Shut down airplane power.
2. Disconnect pitot, static, and AoA (if installed) pneumatic tubes.
3. Cap pitot, static, and AoA (if installed) pneumatic tubes and ports on ADAHRS module.
4. Disconnect the DB9 connector from ADAHRS module.
5. If necessary, remove piggybacked ARINC module (see Section 4.18.2).
6. Remove screws that secure ADAHRS module to avionics tray, and then remove it from airplane. Keep screws for re-installation.

4.5.3 Installation

1. Install ADAHRS module in same location on avionics tray using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Remove caps from pitot, static, and AoA pneumatic tubes and ports. (If AoA is not installed, AoA port cap remains in place.)
3. Attach DB9 connector to ADAHRS module.
4. If necessary, install piggybacked ARINC module (see Section 4.18.3).
5. If original ADAHRS module is re-installed, perform a pitot/static leakage test (see Section 5.6).
6. If new ADAHRS unit is installed, perform SkyView Network Configuration, pitot/static leakage test (see Section 5.6), and zero pressure IAS/AoA calibration (see Section 5.7).

4.6 OAT Sensor (SV-OAT-340)

This section provides removal and installation procedures for the Outside Air Temperature (OAT) sensor.

4.6.1 Location

The OAT sensor is typically located under the left wing on the same plate as the AoA probe. For specific location, see the *Equipment Installation Record* document associated with the airplane.

Figure 49: OAT Probe Location (Typical Installation Shown)

4.6.2 Removal

1. Shut down airplane power.
2. Unscrew nylon nut threaded onto OAT sensor inside airplane.
3. Disconnect OAT sensor wiring connector from the ADAHRS module.
4. Remove nylon nut and washer from OAT sensor, and then remove it and wiring from airplane. You may need to de-pin connector from wiring to remove. Keep nylon nut and washer for re-installation.

4.6.3 Installation

1. Install OAT sensor in same location using nylon nut and washer (see Table 8: *Replacement Hardware* if nylon nut and washer need to be replaced).
2. Connect OAT sensor wiring connector to the ADAHRS unit. You may need to re-pin connector to wiring.
3. Restore power to airplane.
4. Turn SkyView HDX system *ON*.
5. Make sure OAT data is displayed on the SkyView HDX Display. If an issue occurs, see Section 3.3.4.

4.7 Remote Magnetometer (SV-MAG-236)

This section provides removal and installation procedures for the Remote Magnetometer unit.

Figure 50: SV-MAG-236, Photo

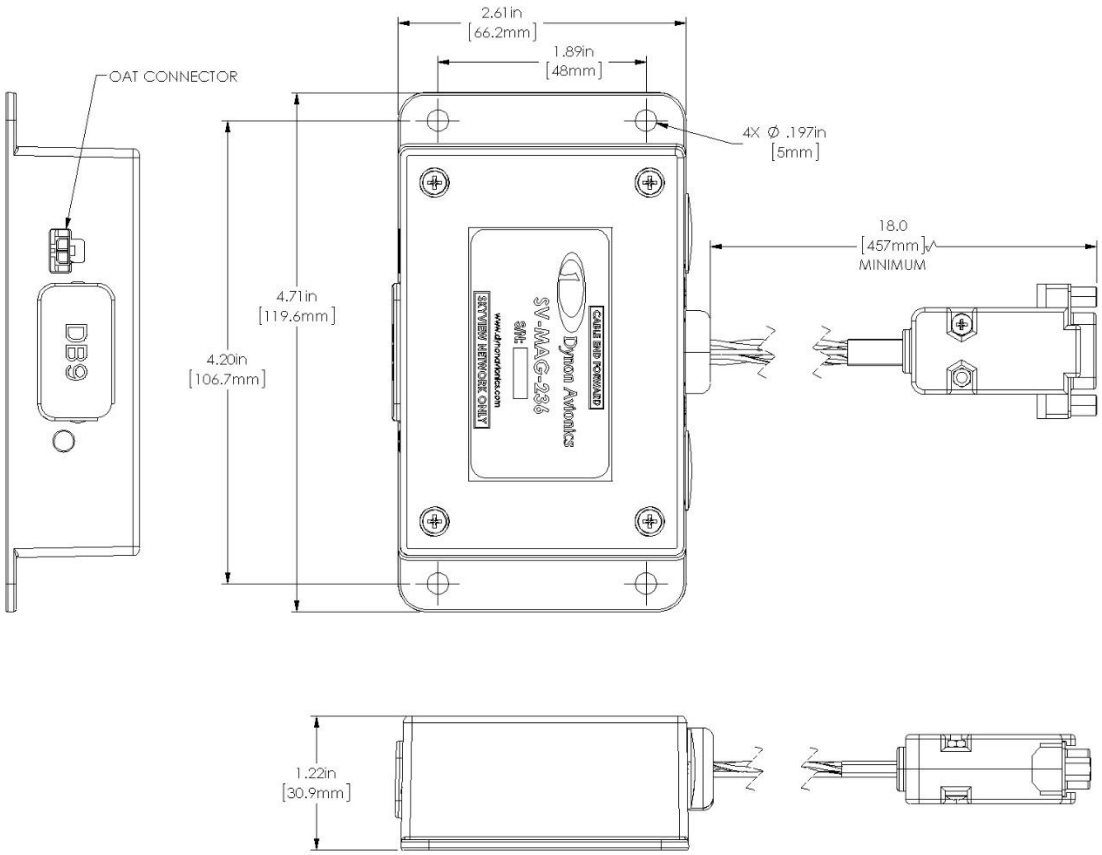

Figure 51: SV-MAG-236, Mounting Dimensions

4.7.1 Location

For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.7.2 Removal

1. Shut down airplane power.
2. Disconnect DB9 connector from Remote Magnetometer module.
3. Disconnect OAT sensor (if installed) (see Section 4.6.2).
4. Remove screws that secure Remote Magnetometer module to airplane, and then remove it from airplane. Keep screws for re-installation.

4.7.3 Installation

1. Install Remote Magnetometer module in same location using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Connect DB9 connector to Remote Magnetometer module.
3. Restore power to airplane.
4. Turn Skyview HDX system *ON*.
5. Perform compass calibration (see Section 5.10).

4.8 GPS Antenna/Receiver (SV-GPS-2020)

This section provides removal and installation procedures for the Global Positioning System (GPS) Antenna/Receiver.

Figure 52: SV-GPS-2020, Photo

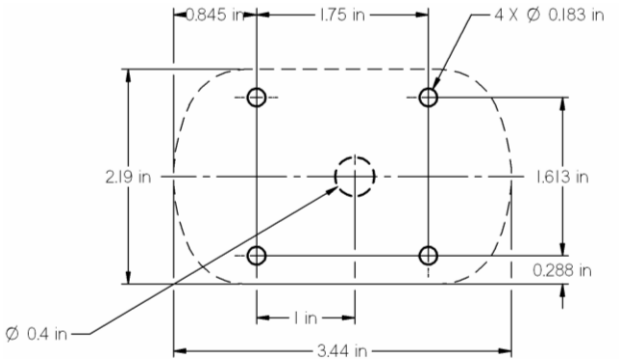

Figure 53: SV-GPS-2020, Mounting Dimensions

4.8.1 Location

The GPS Antenna/Receiver is typically located on the top surface of the airplane. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.8.2 Removal

1. Shut down airplane power.
2. Disconnect GPS Antenna/Receiver wiring connector from SkyView HDX wiring harness.
3. Remove screws that secure GPS Antenna/Receiver to airplane, and then remove it from airplane. You may need to de-pin the connector from wiring to remove. Keep screws for re-installation.

4.8.3 Installation

1. Install GPS Antenna/Receiver in same location using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced). To keep moisture from entering the airplane, apply a sealant around the fasteners and holes, as well as the wire pass-through. For extra protection, use a weather sealant around the outside of the receiver where it meets the skin of the airplane.
2. Connect GPS Antenna/Receiver wiring connector to SkyView HDX wiring harness. You may need to re-pin connector to wiring.

3. Restore power to airplane
4. Turn SkyView system *ON*.
5. With airplane unobstructed from sky, verify that GPS position is received. If GPS position is not received, perform troubleshooting (see Section 3.5).

4.9 Backup Battery (SV-BAT-320)

This section provides removal and installation procedures for the Backup Battery unit of both the primary and secondary SkyView HDX Displays.

Figure 54: SV-BAT-320

4.9.1 Location

The Backup Battery is typically mounted on the avionics tray. For specific locations, see the *Equipment Installation Record* document associated with the airplane.

4.9.2 Removal

1. Shut down airplane power.
2. Make sure Skyview HDX system is turned off.
3. Disconnect Backup Battery harness connector. Make sure to protect battery leads from shorting.
4. Remove screws that secure Backup battery to avionics tray, and then remove it from airplane. Keep screws for re-installation.

4.9.3 Installation

1. Install Backup Battery in same location on avionics tray using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Reconnect Backup Battery harness connector.
3. Restore power to airplane.
4. Perform the battery test in Section 3.6.

4.10 EFIS-D10A Standby Display

This section provides removal and installation procedures for the Electronic Flight Instrument System (EFIS) D10A.

4.10.1 Location

The EFIS-D10A is typically located on the left instrument panel. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.10.2 Removal

1. Shut down airplane power.
2. Remove nuts from mounting studs (see Figure 55) that secure EFIS-D10A to instrument panel, and then carefully slide it out. Keep nuts for re-installation.
3. Disconnect and cap the 1/8 NPT pitot and static fittings on the EFIS-D10A (see Figure 55), as well as the pitot and static pneumatic tubes. The AoA fitting should already be capped.
4. Disconnect DB25 electrical connector from back of the EFIS-D10A (see Figure 55). This is accomplished by removing two retention screws and pulling out the connector.

4.10.3 Installation

1. Reconnect DB25 electrical connector to EFIS-D10A (see Figure 55).
2. Attach pitot and static pneumatic tubes to EFIS-D10A (see Figure 55).
3. Slide EFIS-D10A back into instrument panel.
4. Secure EFIS-D10A to instrument panel by tightening nuts onto mounting studs (see Figure 55). See Table 8: *Replacement Hardware* if nuts need to be replaced.
5. Restore power to airplane.
6. Power up EFIS-D10A. If it will not power up, perform troubleshooting (see Section 3.7).
7. Check system for leaks (see Section 5.6).

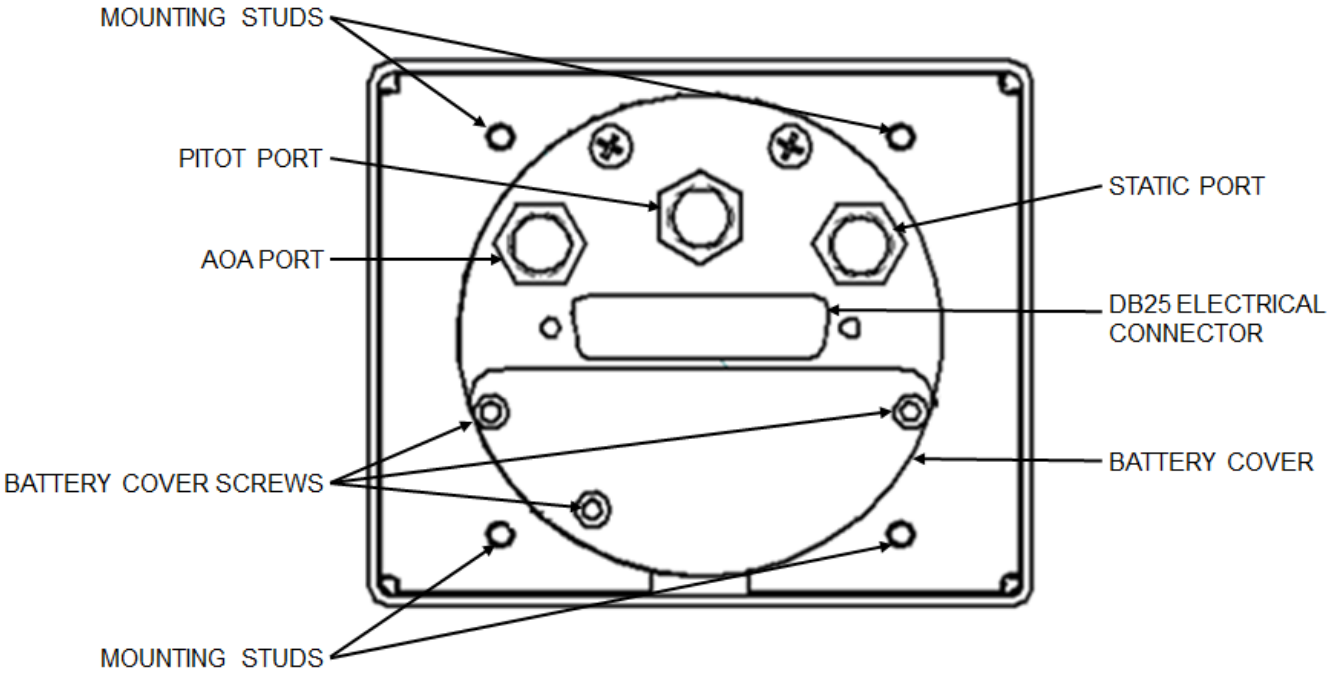

Figure 55: EFIS-D10A, Drawing, Rear View

4.11 EFIS-D10A Backup Battery

This section provides removal and installation procedures for the Backup Battery of the Electronic Flight Instrument System (EFIS) D10A.

4.11.1 Location

The Backup Battery is internal to the EFIS-D10A.

4.11.2 Removal

If the Backup Battery needs replacement, it can be replaced in the field. Replacement batteries are available from Dynon or an authorized dealer. To remove the Backup Battery, complete the following steps:

1. Remove hex screws from battery door on rear of EFIS-D10A (see Figure 55). Do not remove Phillips or D-sub screws. To access rear of EFIS-D10A, it may need to be removed from instrument panel (see Section 4.10.2. If access permits, EFIS-D10A may remain in instrument panel. Not removing pitot and static pneumatic tubes will allow unit to return to service without a leak check.
2. Disconnect existing Backup Battery from EFIS-D10A by unplugging battery connector and gently pulling out old battery. It is safe to gently pull on battery wire to remove battery.

4.11.3 Installation

1. Insert new Backup Battery with “bumpy” side up, toward the foam.
2. Connect battery connector to Backup Battery. The connector is keyed; make sure it is positioned correctly.
3. Verify Backup Battery is operational by pressing Button #1 under the EFIS-D10A screen. The unit should boot up and show the screen. Press and hold Button #1 until the unit powers off.
4. Position connector so it is centered on end of battery pack. Verify battery pack is properly centered, not under screw #2.
5. Re-insert screw #2 first and tighten. Screws #1 and #3 are screwed into the extrusion where it is easy to over-tighten and strip the threads. Press on the back plate as you insert screws #1 and #3 and tighten. DO NOT over-tighten.

4.12 Engine Monitoring System (SV-EMS-220)

This section provides removal and installation procedures for the Engine Monitoring System (EMS) module.

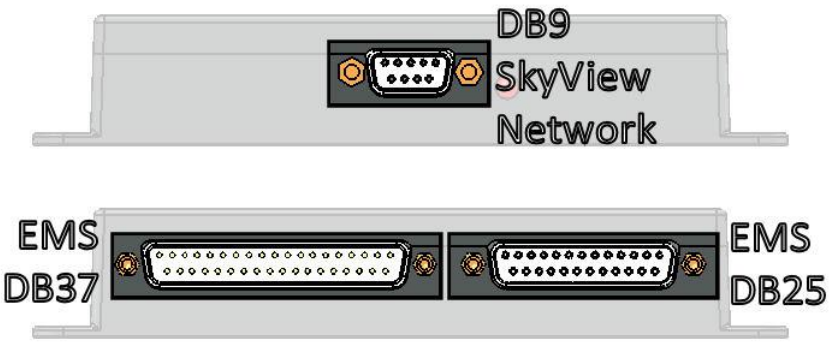

Figure 56: SV-EMS-220, Connectors

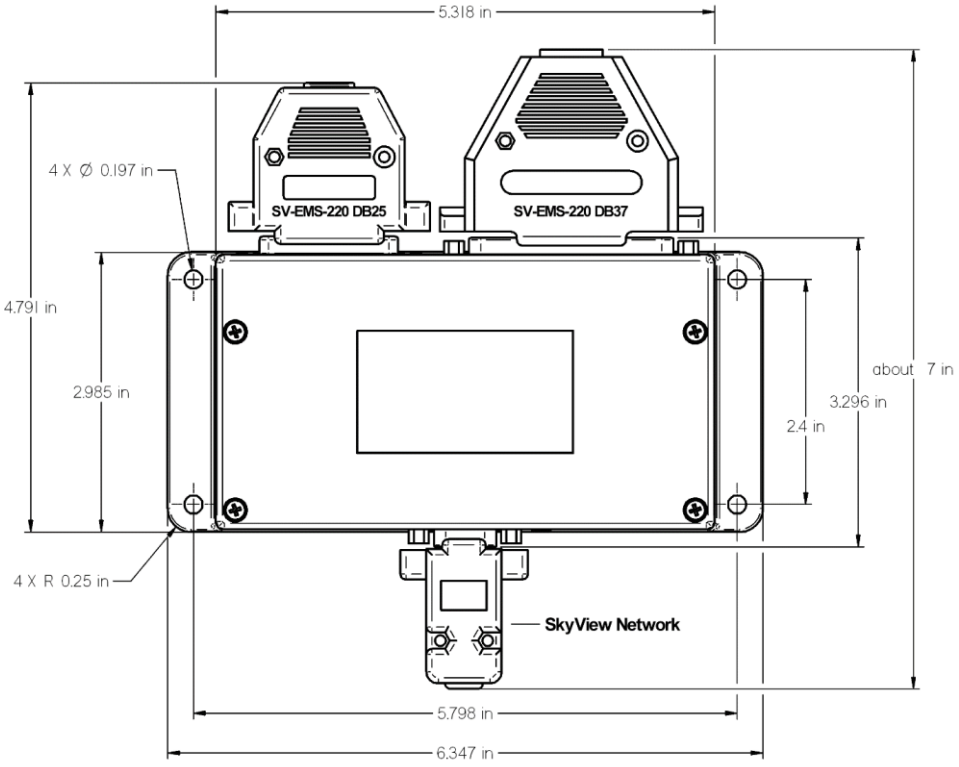

Figure 57: SV-EMS-220, Mounting Dimensions

4.12.1 Location

The EMS module is typically located behind the SkyView HDX display on the avionics tray. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.12.2 Removal

1. Shut down airplane power.
2. Disconnect DB25 and DB37 connectors from EMS module.
3. Disconnect Skyview HDX network connector.
4. If necessary, remove piggybacked ADAHRS module (see Section 4.5.2).
5. If necessary, remove piggybacked ARINC module (see Section 4.18.2).
6. Remove screws that secure EMS module to avionics tray, and then remove it from airplane. Keep screws for re-installation.

4.12.3 Installation

1. Install EMS unit in same location using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Re-connect SkyView HDX network connector.
3. Re-connect DB25 and DB37 connectors to EMS module.
4. If necessary, install piggybacked ADAHRS module (see Section 4.5.3).
5. If necessary, install piggybacked ARINC module (see Section 4.18.3).
6. Restore power to airplane.
7. Turn SkyView system *ON*.
8. Verify that there are no error messages, and no failure indications appear on SkyView HDX Display. If an issue occurs, see Section 3.8

4.12.4 Oil Pressure Sensor

The SV-EMS-220 supports a variety of oil pressure sensors. The oil pressure sensor can be is threaded directly into the accessory housing of your airplane's engine, or remotely located away from the engine connected by a flexible oil pressure hose. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

Removal:

To remove the oil pressure sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals.

Installation:

To install the oil pressure sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals.

4.12.5 Oil Temperature Sensor

The SV-EMS-220 supports a variety of oil temperature sensors. The oil temperature sensor can be is threaded directly into the accessory housing of your airplane's engine. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

Removal:

To remove the oil temperature sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals.

Installation:

To install the oil temperature sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals.

4.12.6 Fuel Pressure Sensor

The fuel pressure sensor is normally located in the fuel plumbing downstream of the fuel pressure pump(s), and upstream of the fuel metering device. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

If your airplane did not originally come equipped with this sensor, refer to the *Equipment Installation Record* document to see where the sensor is located on your airplane.

Removal:

To remove the fuel pressure sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Disconnect wiring harness connector at sensor.
2. Using a wrench, unthread sensor from its threaded mounting boss.
3. Remove sensor from boss.
4. If sensor is not immediately replaced, temporarily cover open boss to prevent system contamination.

Installation:

To install the fuel pressure sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Apply thread sealant to pipe threads.
2. Thread sensor into boss and tighten to prevent fluid leak.
3. Connect wiring harness connector to sensor.
4. Conduct an operation test to confirm correct operation and that there are no fluid leaks.

4.12.7 Fuel Flow Sensor

The fuel flow sensor is normally located in the fuel plumbing downstream of the fuel metering device if fuel injected, and upstream if carbureted. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

If your aircraft did not originally come equipped with this sensor, refer to the *Equipment Installation Record* document to see where the sensor is located on your airplane.

Removal:

To remove the fuel flow sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Disconnect wiring harness connector from sensor.
2. Disconnect fuel hoses or lines connected to sensor inlet and outlet.
3. Remove sensor from bracket.
4. If sensor is not immediately replaced, temporarily cover open hose or lines to prevent system contamination.

Installation:

To install the fuel flow sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Attach sensor to bracket (see Table 8: *Replacement Hardware* if screw needs to be replaced.)
2. Connect fuel hoses or lines connected to sensor inlet and outlet.
3. Connect wiring harness connector to sensor.
4. Conduct an operation test to confirm correct operation and that there are no fluid leaks.

4.12.8 Fuel Level Sensor

The SV-EMS-220 utilizes the fuel level sensors originally installed in your airplane and are typically located in the airplane's fuel tanks. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

Removal:

To remove the fuel level sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals.

Installation:

To install the fuel level sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals.

4.12.9 Carburetor Temperature Sensor

The carburetor temperature sensor is typically installed in a threaded boss that leads to the venturi of the engine carburetor.

Removal:

To remove the fuel pressure sensor, follow the removal instructions in the airplane, engine or carburetor manufacturer's maintenance manuals, or complete the following steps:

1. Disconnect wiring harness connector at sensor.
2. Using a wrench, unthread sensor from its threaded mounting boss.
3. Remove sensor from boss.
4. If sensor is not immediately replaced, temporarily cover open boss to prevent system contamination.

Installation:

To install the carburetor temperature sensor, follow the installation instructions in the airplane, engine or carburetor manufacturer's maintenance manuals, or complete the following steps:

1. Apply thread sealant to pipe threads.
2. Thread sensor into boss and tighten to prevent fluid leak.
3. Connect wiring harness connector to sensor.
4. Conduct an operation test to confirm correct operation and that there are no fluid leaks.

4.12.10 Cylinder Head Temperature Sensor

The SV-EMS-220 supports a variety of cylinder head temperature (CHT) sensors. The CHT sensor is threaded into bottom side of each cylinder head. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

Removal:

To remove a CHT sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Disconnect wiring harness connector at sensor.
2. Using a wrench, unthread sensor from its threaded mounting boss.

3. Remove sensor from boss.
4. If sensor is not immediately replaced, temporarily cover open boss to prevent system contamination.

Installation:

To install a CHT sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Apply thread sealant to pipe threads.
2. Thread sensor into boss and tighten to prevent fluid leak.
3. Connect wiring harness connector to sensor.
4. Conduct an operation test to confirm correct operation and that there are no fluid leaks.

4.12.11 Exhaust Gas Temperature Sensor

The SV-EMS-220 supports a variety of exhaust gas temperature (EGT) sensors. The EGT sensor attaches to the engines exhaust stacks near each cylinder's exhaust port. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

Removal:

To remove an EGT sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Loosen attachment clamp completely.
2. Remove sensor from hole in exhaust stack.

Installation:

To install an EGT sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Insert sensor into hole in exhaust stack.
2. Connect and tighten attachment clamp to secure sensor.

4.12.12 Amps Sensor

The SV-EMS-220 utilizes an ammeter shunt to sense amps. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

If your aircraft did not originally come equipped with this sensor, refer to the *Equipment Installation Record* document to see where the sensor is located on your airplane.

Removal:

To remove the Amp sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Shut down airplane power.
2. Temporarily label wires connected to sensor to ensure correct orientation when reconnecting wires.
3. Remove screws that secure large input wire cable terminals to sensor.
4. Remove screws that secure large output wire cable terminals to sensor.
5. Remove screws that secure small signal wire connected to input side of sensor.

6. Remove screws that secure small signal wire connected to output side of sensor.
7. Remove screws that secure sensor to airframe, and then remove sensor.

Installation:

To install the Amp sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Locate sensor and install screws that secure sensor to airframe (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Install screws that secure small signal wire connected to input side of sensor.
3. Install screws that secure small signal wire connected to output side of sensor.
4. Install screws that secure large input wire cable terminals to sensor.
5. Install screws that secure large output wire cable terminals to sensor.
6. Restore power to airplane.

4.12.13 Voltmeter Sensor

The SV-EMS-220 utilizes the existing wire connected to the main battery bus supplying your airplane's original volt indicator to provide the voltage indication in the SkyView HDX Display. This wire connects to the EMS module wiring harness as depicted in the *103488-000 - WIRING DIAGRAM, TYPICAL HDX DUAL DISPLAY* document.

4.12.14 Tachometer Sensor

The SV-EMS-220 utilizes the existing P-lead wires connecting the left and right magnetos to the magneto control switch mounted to the airplane instrument panel to provide left and right magneto pulse signals to the Skyview HDX Display. The left and right tachometer sensing wires on the EMS module wiring harness connect to the magneto control switch as depicted in the *103488-000 - WIRING DIAGRAM, TYPICAL HDX DUAL DISPLAY* document.

4.12.15 Manifold Air Pressure Sensor

The Manifold Air Pressure (MAP) sensor is typically connected to the engine induction system by a flexible hose. This hose may be attached to a boss or bung on an intake pipe, or it may be connected to an unused primer plug near an intake port of a cylinder. The MAP sensor is typically mounted on a bracket remote from the engine. Refer to the airplane or engine manufacturer's maintenance manuals for detailed location information.

If your aircraft did not originally come equipped with this sensor, refer to the *SkyView HDX System Equipment Installation Record* document to see where the sensor is located on your airplane.

Removal:

To remove the MAP sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Disconnect wiring harness connector from sensor.
2. Disconnect flexible hose connected to sensor.
3. Remove screw that secures sensor to bracket, and then remove sensor.

4. If sensor is not immediately replaced, temporarily cap open hose to prevent system contamination.

Installation:

To install the MAP sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals, or complete the following steps:

1. Mount sensor to bracket with same screw (see Table 8: *Replacement Hardware* if screw needs to be replaced).
2. Connect hose to sensor.
3. Connect wiring harness connector to sensor.

4.12.16 Flap Position Sensor

The SV-EMS-220 utilizes the Flap Position sensor originally installed in your airplane. Refer to your airplane manufacturer's maintenance manuals for detailed location information. Also refer to

Removal:

To remove the Flap Position sensor, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals.

The SkyView HDX system also utilizes the existing Flap Position signal wires connected to the Flap Position signal wires on the EMS module wiring harness as depicted in the *103488-000 - WIRING DIAGRAM, TYPICAL HDX DUAL DISPLAY* document.

Installation:

To install the Flap Position sensor, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals.

4.12.17 Landing Gear Position Sensor

The SV-EMS-220 utilizes the Landing Gear position sensing switches originally installed in your airplane. Refer to your airplane manufacturer's maintenance manuals for detailed location information.

The SkyView HDX system also utilizes the existing Landing Gear Position signal wires connected to the Landing Gear Position signal wires on the EMS module wiring harness as depicted in the *103488-000 - WIRING DIAGRAM, TYPICAL HDX DUAL DISPLAY* document.

Removal:

To remove the Landing Gear position sensing switches, follow the removal instructions in the airplane or engine manufacturer's maintenance manuals.

Installation:

To install the Landing Gear position sensing switches, follow the installation instructions in the airplane or engine manufacturer's maintenance manuals.

4.13 Transponder (SV-XPNDR-261)

This section provides removal and installation procedures for the Transponder module.

Figure 58: SV-XPNDR-261, Photo

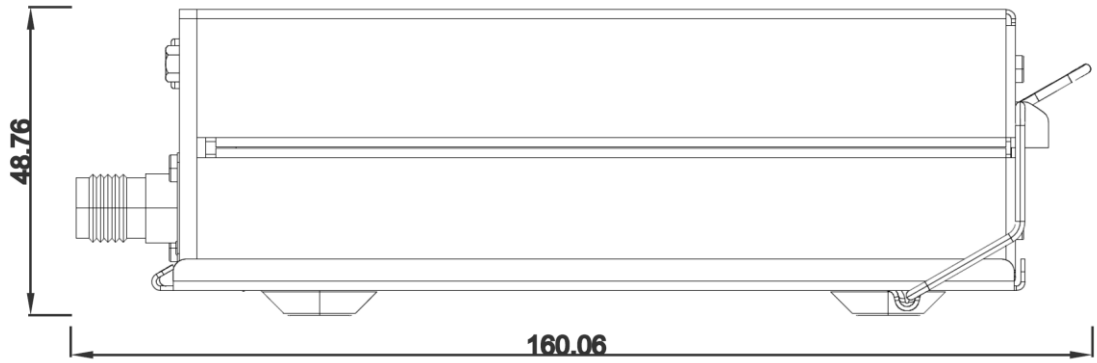

Figure 59: SV-XPNDR-261, Mounting Dimensions in MM

4.13.1 Location

Typically, the Transponder module is located as close to its antenna as possible. For specific location, see the refer to the *SkyView HDX Equipment Installation Record* document associated with the airplane.

4.13.2 Removal

1. Shut down airplane power.
2. Remove D25 connector and antenna TNC connector from Transponder module.

3. Release retaining clip that secures Transponder module to tray, and then remove it from airplane.

4.13.3 Installation

1. Install Transponder module into tray and secure with retaining clip.
2. Connect D25 connector and antenna TNC connector to Transponder module.
3. Restore power to airplane.
4. Turn SkyView system ON.
5. Perform Transponder tests (see Section 5.9).

4.14 ADS-B IN Receiver (SV-ADSB-472)

This section provides removal and installation procedures for the Automatic Dependent Surveillance-Broadcast (ADS-B) IN Receiver.

Figure 60: SV-ADSB-472, Photo

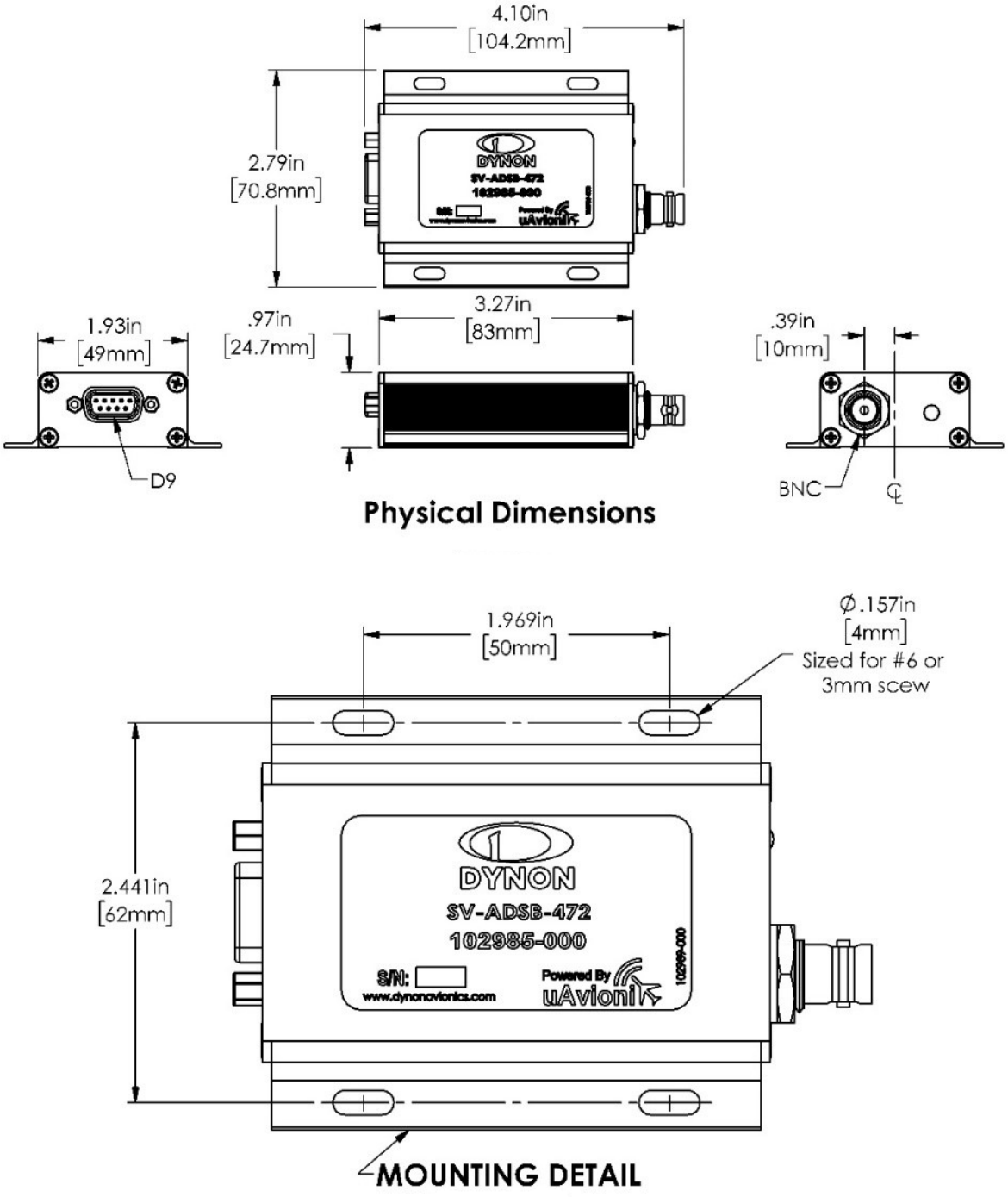

Figure 61: SV-ADSB-472, Mounting Dimensions

4.14.1 Location

The ADS-B IN Receiver is typically located behind the SkyView HDX Display on the avionics tray. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.14.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove rear DB9 connector from ADS-B IN Receiver.

3. Remove BNC connector from ADS-B IN Receiver.
4. Remove screws that secure ADS-B IN Receiver to avionics tray, and then remove it. Keep screws for re-installation.

4.14.3 Installation

1. Install GPS ADS-B IN Receiver in same location using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Connect ADS-B Antenna to BNC connector on back of ADS-B IN Receiver.
3. Connect DB9 connector to ADS-B IN Receiver.
4. Restore power to airplane
5. Turn SkyView system *ON*.
6. Go to SETUP MENU > ADS-B STATUS.
7. Confirm that the DEVICE line reads SV-ADSB-472.
8. Use the STATUS line to determine whether the SV-ADSB-472 is successfully communicating with SkyView HDX. It can also be used to determine if it is able to see any ADS-B ground stations. The status line can display any of the following states:
   - NOT FOUND: The device is not communicating with SkyView HDX. This usually means a connectivity/wiring problem between the ADS-B IN Receiver and SkyView HDX, or that the ADS-B IN Receiver is not receiving power.
   - NO SIGNAL: The device is communicating with SkyView HDX Display, but data is not being received from an ADS-B ground station. This may occur when you are on the ground and do not have line-of-sight reception of an ADS-B ground station, or if you are in the air and are out of range of all ADS-B ground stations. If there is an ADS-B ground station in range, and NO SIGNAL is persistently displayed, it may mean a connectivity problem with your ADS-B Antenna or an installation issue that is preventing the ADS-B Antenna from receiving ADS-B ground station broadcasts. When in flight, the Map Page displays a status widget in its lower left corner that contains the same information as this menu status item. That widget will be more useful for ascertaining proper operation once you are in the air and are most likely to be receiving data from ADS-B ground stations. See Section 3.10 for more information.
   - RECEIVING: The device is communicating with SkyView HDX Display and data is being received from an ADS-B ground station.

4.15 ADS-B Antenna

This section provides removal and installation procedures for the ADS-B Antenna. Since a variety of antennas can be used, the manufacturer's installation manual is required.

Figure 62: ADS-B Antenna

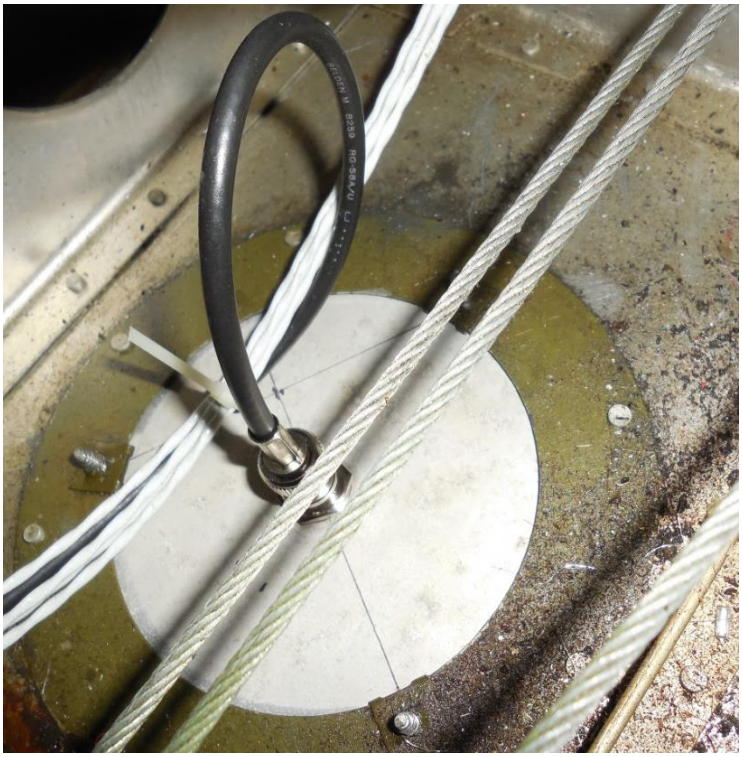

Figure 63: ADS-B Antenna Installed, Interior View

Figure 64: ADS-B Antenna Installed, Exterior View

4.15.1 Location

The ADS-B Antenna is typically located on the underside of the airplane. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.15.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Disconnect coaxial cable from ADS-B Antenna.
3. Remove ADS-B Antenna per manufacturer's instructions.

4.15.3 Installation

1. Install ADS-B Antenna per manufacturer's instructions.
2. Reconnect coax cable to ADS-B Antenna.
3. Restore power to airplane.

4.16 COM Transceiver (SV-COM-T8 / SV-COM-T25)

This section provides removal and installation procedures for the COM Transceiver.

4.16.1 Location

For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.16.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove D25 connector and antenna TNC connector from COM Transceiver.
3. Release retaining clip that secures Transceiver to tray, remove it from airplane.

4.16.3 Installation

1. Install Transceiver into tray and secure with retaining clip.
2. Connect D25 connector and antenna TNC connector to COM Transceiver.
3. Restore power to airplane.
4. Turn SkyView system ON.
5. Verify there are no error messages associated with the COM system. If there is an error message, see Section 3.11.

4.17 COM Control Panel (SV-COM-PANEL)

This section provides removal and installation procedures for the COM Control Panel. The COM Control Panel can be oriented horizontally or vertically.

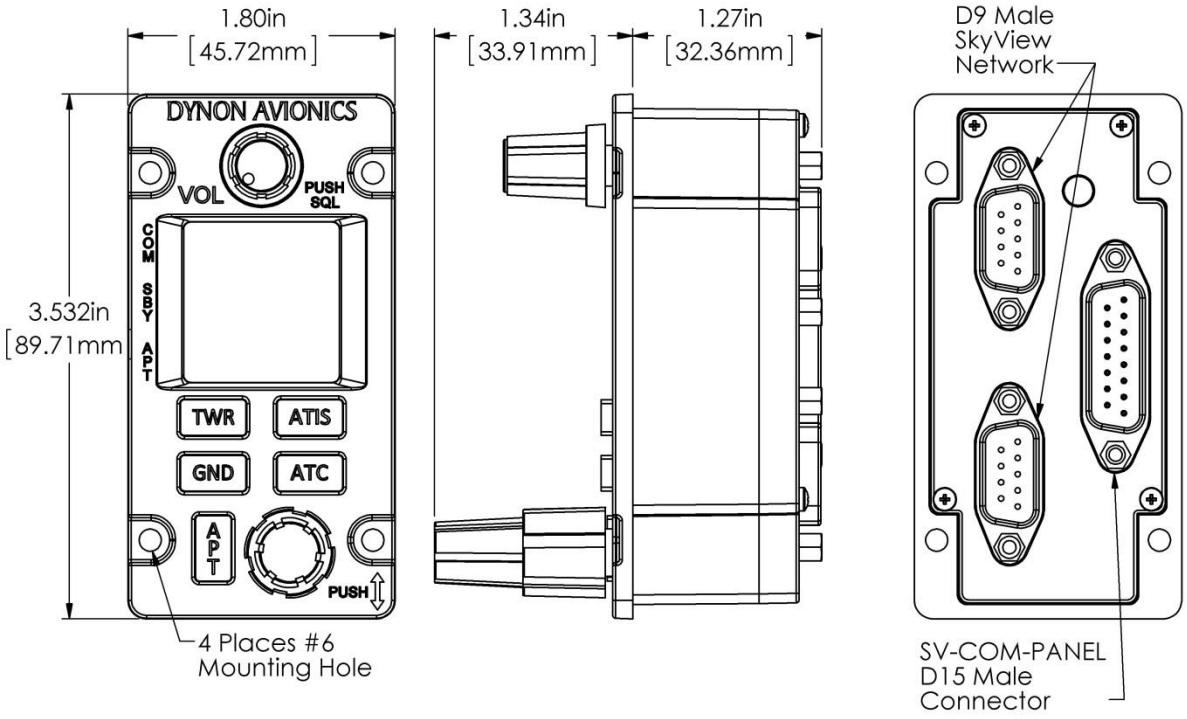

Figure 65: SV-COM-PANEL, Mounting Dimensions

4.17.1 Location

The COM Control Panel is typically located on the left instrument panel to the right of the SkyView HDX Display. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.17.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove screws that secure control panel faceplate to instrument panel. Keep screws for re-installation.
3. Remove control panel and disconnect electrical connectors from control panel.

4.17.3 Installation

1. Connect electrical connectors to control panel, as depicted in the *103488-000 - WIRING DIAGRAM, TYPICAL HDX DUAL DISPLAY* document.
2. Install control panel in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. Verify there are no error messages associated with the COM system. If there is an error message, see Section 3.11.

4.18 ARINC 429 Connection Module (SV-ARINC-429)

This section provides removal and installation procedures for the Aeronautical Radio, Incorporated (ARINC) 429 Connection Module.

Figure 66: SV-ARINC-429, Photo

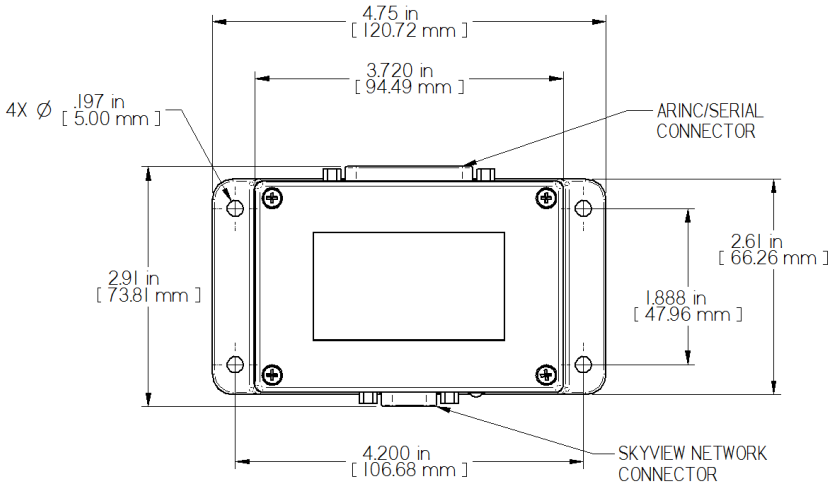

Figure 67: SV-ARINC-429, Mounting Dimensions

4.18.1 Location

The ARINC 429 Connection Module is typically located behind the SkyView HDX display on the avionics tray. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.18.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove D9 and D25 connectors from ARINC 429 Connection Module.
3. Remove screws that secure ARINC 429 Connection Module to avionics tray, and then remove it. Keep screws for re-installation.

4.18.3 Installation

1. Install ARINC 429 Connection Module unit in same location using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Connect D9 and D25 connectors to ARINC 429 Connection Module.
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. On the SkyView HDX Display, verify that the Navigator can be selected for the HSI source. (See Section 3.12 for Troubleshooting information.)

4.19 AoA Probe

This section provides removal and installation procedures for the Angle of Attack (AoA) probe.

4.19.1 Location

Typically, the AoA probe is located underneath the left or right wing. For specific location, see the *Airplane-specific Install Record* document associated with the airplane.

Figure 68: AoA Probe (Typical Installation Shown)

4.19.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Disconnect the pneumatic tubing from the AoA Probe plumbing line. Plug the tube end.

   NOTE: Because the pitot and AoA plumbing lines have not been annealed, they work-harden rapidly when manipulated. Make gentle bends, and only bend any given section once.
3. Remove screws that secure AoA Probe to mounting mast. Keep screws for re-installation.
4. To remove from airplane, gently and firmly pull AoA Probe in a downward motion and pull plumbing lines through mast.

4.19.3 Installation

1. Insert the AoA plumbing lines through the mast and into the airplane.
2. With a firm upward motion insert the probe into the mast.
3. Secure AoA probe to mast using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
4. Remove pneumatic tube plug.
5. Connect the pneumatic tubing to the AoA Probe plumbing line.
6. If the original equipment is re-installed in the same location, no calibration is required. Performance of the system should be verified in flight. If new equipment is installed or installed in a new location perform the Zero Pressure IAS/AoA Calibration (see Section 5.7) and AoA Calibration (see Section 5.8).

4.20 Autopilot Servos

Autopilot servo removal and installation instructions are specific to airplane model.

4.20.1 Location

For specific location, see the *SkyView HDX System Equipment Installation Record* document associated with the airplane.

4.20.2 Removal

See the *Autopilot Servo Installation Manual* associated with your airplane.

4.20.3 Installation

See the *Autopilot Servo Installation Manual* associated with your airplane.

4.21 Autopilot Control Panel (SV-AP-PANEL)

The Autopilot Control Panel is an optional control panel that can be oriented horizontally or vertically to give the pilot easier access to the SkyView HDX Autopilot. The Autopilot controls are still accessible through the SkyView HDX Display menu buttons after installation of the Autopilot Control Panel.

Figure 69**: **SV-AP-PANEL (Horizontal and Vertical Configurations)

4.21.1 Location

The Autopilot Control Panel is typically located on the left instrument panel to the right of the SkyView HDX Display. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.21.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove screws that secure control panel faceplate to instrument panel. Keep screws for re-installation.
3. Remove control panel and disconnect electrical connectors from control panel.

4.21.3 Installation

1. Connect electrical connectors to control panel.
2. Install control panel in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. Make sure control panel is operational. If not, see Section 3.14.2.

4.22 Autopilot Level Button (SV-BUTTON-LEVEL)

An Autopilot Level (LEVEL) button is an optional button for SkyView HDX Autopilot.

Figure 70: SV-BUTTON-LEVEL

4.22.1 Location

The LEVEL button is typically located on the left instrument panel. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.22.2 Removal

1. Shut down airplane power.
2. Remove screws that secure button faceplate to instrument panel. Keep screws for re-installation.
3. Remove button and disconnect electrical connector from button.

4.22.3 Installation

1. Connect electrical connector to button.
2. Install button in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).

3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. Make sure button is operational. If not, see Section 1.

4.23 Autopilot Disconnect Panel Button

An Autopilot Disconnect (A/P DISC) button is required if SkyView HDX Autopilot is installed. The button can be mounted on the instrument panel or affixed to the control yoke by a shop-manufactured bracket.

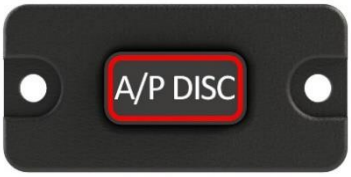

Figure 71: SV-BUTTON-APDISC

4.23.1 Location

The A/P DISC button is typically located on the left instrument panel. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.23.2 Removal

1. Shut down airplane power.
2. Remove screws that secure button faceplate to instrument panel. Keep screws for re-installation.
3. Remove button and disconnect electrical connector from button.

4.23.3 Installation

1. Connect electrical connector to button.
2. Install button in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. On SkyView HDX Display, verify the AP DISCONNECT message is not displayed. If it is, see Section 3.14.4.

4.24 Autopilot Disconnect Yoke Button

An Autopilot Disconnect (A/P DISC) button is required if SkyView Autopilot is installed. The button can be mounted on the instrument panel or affixed to the control yoke by a shop-manufactured bracket.

4.24.1 Location

The pilot's control yoke, as shown below:

Figure 72: Autopilot Disconnect Yoke Button

4.24.2 Removal

1. Shut down airplane power.
2. Remove button from yoke bracket by removing retaining nut. Keep retaining nut for re-installation.
3. Remove button and disconnect electrical connector from button.

4.24.3 Installation

1. Connect electrical connector to button.
2. Install button in same location on yoke bracket using retaining nut (contact button manufacturer if retaining nut need to be replaced).
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. On SkyView HDX Display, verify the AP DISCONNECT message is not displayed. If it is, see 3.14.4.

4.25 Knob Control Panel (SV-KNOB-PANEL)

This section provides removal and installation procedures for the Knob Control Panel. It is an optional control panel that can be oriented horizontally or vertically.

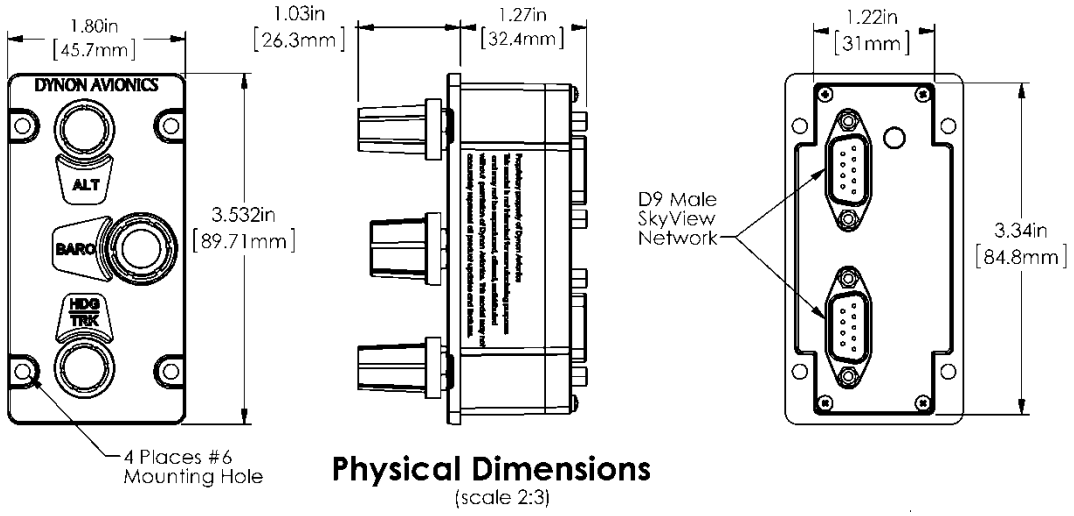

Figure 73: SV-KNOB-PANEL, Mounting Dimensions

4.25.1 Location

The Knob Control Panel is typically located on the left instrument panel to the right of the SkyView HDX Display. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.25.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove screws that secure control panel faceplate to instrument panel. Keep screws for re-installation.
3. Remove control panel and disconnect electrical connectors from control panel.

4.25.3 Installation

1. Connect electrical connectors to control panel.
2. Install control panel in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
3. Restore power to airplane.
4. Turn SkyView system *ON*.
5. Make sure control panel is operational. If not, see Section 3.15.

4.26 Panel Mount USB Port

This section provides removal and installation procedures for the Panel Mount USB Port.

Figure 74: Panel Mount USB Port

4.26.1 Location

The Panel Mount USB Port is typically located on the left instrument panel underneath SkyView HDX Display. For specific location, see the *Equipment Installation Record* document associated with the airplane.

4.26.2 Removal

1. Shut down airplane power and disconnect the battery.
2. Remove SkyView HDX Display (see Section 4.4.2).
3. Unplug USB cable from rear of SkyView HDX Display.
4. Remove screws that secure Panel Mount USB Port to instrument panel. Keep screws for re-installation.
5. Remove Panel Mount USB Port from instrument panel.

4.26.3 Installation

1. Install Panel Mount USB Port in same location on instrument panel using same screws (see Table 8: *Replacement Hardware* if screws need to be replaced).
2. Plug USB cable into a USB Port on rear of SkyView HDX Display.
3. Install SkyView HDX Display (see Section 4.4.3).
4. Restore power to airplane.
5. Turn SkyView system *ON.*
6. Make sure Panel Mount USB Port is operational.

5 Servicing

The Skyview HDX system does not require special servicing. In the event of system failures, contact Dynon technical support. Always have a properly rated mechanic or qualified facility remove a failed component.

5.1 Periodic Maintenance

The Skyview HDX system components are designed to detect internal failures. A thorough self-test is performed upon application of power to the components, and BITs (Built-In Tests) are continuously executed. Detected errors are indicated on the SkyView HDX Display. See *Troubleshooting* on Page 37 for more information.

Table 9: Period Maintenance

ITEM	DESCRIPTION / PROCEDURE	INTERVAL
Component Removal, Re-installation, and Replacement	• SV-HDX1100 or SV-HDX800 Primary Flight Display • SV-HDX1100 or SV-HDX800 Secondary Flight Display • SV-ADAHRS 200 ADAHRS • SV-OAT-340 OAT Probe • SV-MAG-236 Remote Magnetometer • SV-GPS-2020 GPS • SV-BAT-320 Backup Battery • EFIS-D10A Standby Display • SV-EMS-220 EMS • SV-XPNDR-261 Transponder • SV-ADSB-472 ADS-B IN Receiver • ADS-B Antenna • SV-COM-T8 COM Transceiver • SV-COM-PANEL COM Control Panel • SV-ARINC-429 ARINC 429 Connection Module • AoA Probe • Autopilot Servos • SV-AP-PANEL, Autopilot Control Panel • SV-BUTTON-LEVEL Autopilot Level Button • SV-BUTTON-APDISC Autopilot Disconnect Button • SV-PANEL-KNOB Knob Control Panel • Panel Mount USB Port	On condition, see the following sections: • Section 3 Troubleshooting • Section 4 Component Removal and Installation Always have a properly rated mechanic or qualified facility remove equipment.

ITEM	DESCRIPTION / PROCEDURE	INTERVAL
Cleaning the Displays	SkyView HDX Display or EFIS-D10A Standby Display: The front bezel, keypad, and display can be cleaned with a soft cotton cloth dampened with clean water. DO NOT use any chemical-based cleaning agents. Take care to not scratch surface of display.	On condition
Display Backlight	On SkyView HDX Display or EFIS-D10A Standby Display, the backlight lamp may dim over time, and the display may not perform as well in direct sunlight conditions. User must determine by observation when the display brightness is not suitable for intended use. Contact Dynon technical support.	On condition or every 24 calendar months. Always have a properly rated mechanic or qualified facility remove unit.
Backup Battery	The SkyView HDX System Backup Battery (SV-BAT-320) has an internal test performed at powerup. If the test fails at powerup, see Section 3 Troubleshooting. The battery should be tested every 12 calendar months; an alert will display if not done within that time period. See Section 5.4 for annual backup battery test. Regular planned replacement is not necessary. EFIS-D10A Backup Battery should be tested every 12 calendar months. See Section 5.5 for annual backup battery test. Regular planned replacement is not necessary.	On Condition, or every 12 calendar months.
Altimeter	SkyView HDX Display: Test Altimeter (system) per Title 14 CFR §91.411 Part 43, Appendix E., and documented in the airplane log as required by §43.9. EFIS-D10A: Test Altimeter (system) per Title 14 CFR §91.411 Part 43, Appendix E., and documented in the airplane log as required by §43.9.	Every 24 calendar months.
ATC Transponder Test	Test per Title 14 by CFR §91.413, must be checked and Part 43 Appendix F and documented in the aircraft log as required by §43.9.	Every 24 calendar months.
Visual Inspection	The Skyview HDX system components, switches, and wiring harnesses should be inspected to ensure continued integrity of the installation (see below). • Inspect the SkyView HDX system for security of attachment, which includes visual inspection of mounting trays and other supporting structures that attach the components to the airplane. • Inspect for signs of corrosion. • Inspect all switches, knobs, panels, and buttons for damage. • Inspect condition of wiring, shield terminations, routing and attachment/clamping, along with any airplane penetration points. • SkyView HDX Display or EFIS-D10A Standby Display:	Every 24 calendar months or 100 flight hours, whichever occurs first.

ITEM	DESCRIPTION / PROCEDURE	INTERVAL
	Visually inspect display fans, bezel, and buttons for dust, dirt, or obstructions. Clean as needed (see above). • SkyView HDX System Backup Battery: Inspect backup battery for damage. • GPS Antenna/Receiver: Visually inspect GPS unit for damage and wear. GPS wiring should be checked for integrity, damage, chafing, or excessive wear. The installation should be inspected for cracks, and loose, or damaged fasteners. • OAT Probe: Visually inspect OAT probe for damage and wear. The OAT wiring should be checked for integrity, damage, chafing, or excessive wear. The installation should be inspected for cracks in the fuselage, and loose, or damaged fasteners. • AoA Probe: The the AoA probe should be visually inspected for damage and wear. The AoA pneumatic tubing should be checked for integrity, damage, chafing, or excessive wear. The installation should be inspected for cracks in the fuselage, and loose, or damaged fasteners. • Autopilot Components: Inspect all autopilot servos, servo brackets and cables. Make sure there is no damage or wear. Cables are within tension and cable clamp bolts are torqued within tolerance.	

5.2 Updating SkyView HDX System Software

1. Download latest Dynon Certified SkyView HDX system software and from http://www.dynoncertified.com/software-updates.php
2. Copy software files onto a 16GB or larger USB flash drive. *The files must be in the root directory of the drive or it will not be recognizable by the SkyView HDX Display.*
3. Insert the USB flash drive into one of SkyView HDX Display's USB ports. On the SkyView HDX Display, go to SETUP MENU > SYSTEM SOFTWARE > UPGRADE SYSTEM SOFTWARE…) > (highlight file and push right knob).

If some SkyView HDX system components are not powered on or connected to the SkyView HDX network, the screen will appear like Figure 75.

Figure 75: System components not online and cannot be updated

4. If you see a screen like Figure 75, power on or reconnect all SkyView HDX network devices. Note: This error is typically caused by the autopilot servos not being powered on.

5. Update software by pressing UPDATE, or press CANCEL to return to the SYSTEM SOFTWARE Menu.

6. Go to SETUP MENU > SYSTEM SETUP > SKYVIEW NETWORK SETUP > NETWORK STATUS and confirm software version is correct per Figure 76.

Updating the software on a SkyView HDX Display automatically updates all the modules connected on the same SkyView HDX network; however, each SkyView HDX Display must be updated individually.

Prior to updating the software, all SkyView HDX network devices must be powered on and online. If all previously configured SkyView HDX network devices are not detected, a warning screen will appear. The most common cause for this error is the autopilot servos are powered off (AP switch not *ON*). As soon as the offline module(s) resume communicating with SkyView HDX Display, the software update will automatically proceed. (SkyView HDX network devices do not include the ADS-B IN Receiver, Transponder, or GPS – those devices are connected via serial ports).

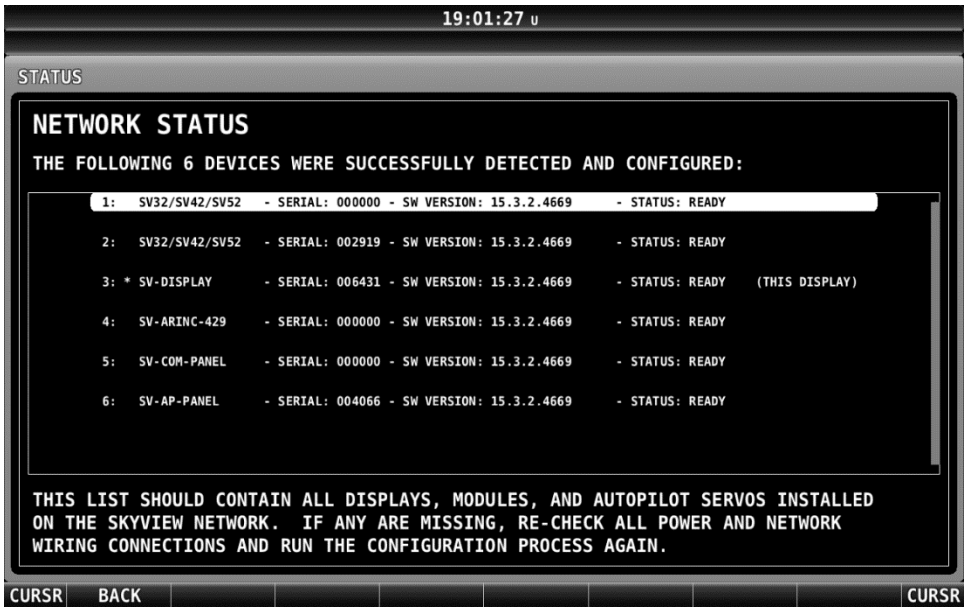

Figure 76: Network Status

5.3 Updating Aviation Databases and Charts

1. Download the databases and charts you need from:
   - http://www.dynoncertified.com/us-aviation-obstacle-data.php
   - http://www.dynoncertified.com/charts-airport-diagrams.php
2. Copy database and chart files onto a 16GB or larger USB flash drive. *The files must be in the root directory of the drive or it will not be recognizable by the SkyView HDX Display.*
3. Insert the USB flash drive into one of SkyView HDX Display's USB ports. On the SkyView HDX Display, go to SETUP MENU > SYSTEM SOFTWARE > LOAD FILES…
4. Select a file and press LOAD. NOTE: Press REMOVE to delete old files from USB flash drive.
5. Once loaded, go to SETUP MENU > LOCAL DISPLAY SETUP > INSTALLED DATABASES to verify databases and charts are current (see Figure 77).

Figure 77: Installed Databases

5.4 SkyView HDX System Backup Battery Test

The Backup Battery for the SkyView HDX system must be tested once every 12 months to ensure it is operational and meets the nominal 45-minute expected backup operation period. Each SkyView HDX Display requires a Backup Battery, and each Backup Battery must be tested. The Backup Battery must be fully charged prior to beginning the test. To test the battery, complete the following steps:

1. Remove power from SkyView HDX Display by turning off Master Switch.
2. On SkyView HDX Display, during the 30-second power off countdown, press TEST BAT button (see

Figure 78: TEST BAT Button

3. The BATTERY TEST screen will appear, displaying the status of the test. If the Backup Battery can power the system for at least 45 minutes, the battery passes the test.
4. After test completes, the SkyView HDX Display will automatically power itself off.

   To see the results of the test, go to SETUP MENU > LOCAL DISPLAY SETUP > BATTERY BACKUP (SV-BAT-320) STATUS>TEST RESULTS. Make sure the TEST RESULT says PASS. If PASS is displayed, battery is good. If FAIL is displayed, battery needs to be replaced (see Section 4.9)

This test discharges the Backup Battery. Recharging the Backup Battery after the test is recommended by flying for approximately four hours or by powering on SkyView HDX Display with ground power greater than 12.25 volts for approximately four hours.

5.5 EFIS-D10A Backup Battery Test

The internal backup battery must be tested once every 12 months to ensure it is operational and meets the nominal 45-minute expected backup operation period. The backup battery must be fully charged prior to beginning the test. To ensure the battery is fully charged, do the following:

- While EFIS-D10A draws power from airplane power, allow internal battery in EFIS-D10A to charge above 16.0 volts.
- To view the voltmeter, enter the menu system by pressing any button beneath an EFIS page (except far left or far right hotkeys) and go to EFIS > INFO > LEFT > VMETER.
- The battery may charge as high as 16.8 volts, but it is only necessary to charge it to 16.0 volts for the test.

To test back up battery, complete the follow steps:

1. Remove all sources of external power from EFIS-D10A. When power is lost, a red bar will appear with a 30-second countdown timer. Press STAY ON to continue the EFIS-D10A operating off its internal backup battery.
2. Ensure EFIS-D10A screen is at its full brightness level. To do this, enter the menu system by pressing any button beneath an EFIS page (except the far left or far right hotkeys) and press MORE > DIM and fully increase the brightness level.
3. Let the unit remain on.
4. After 45 minutes, if the EFIS-D10A has not turned off and does not display the INTERNAL BATTERY LOW warning, the battery passes the capacity test.
5. If the battery does not pass the capacity test, it will be necessary to replace the battery (see Section 4.11).
6. Re-apply aircraft power to EFIS-D10A and charge battery until voltage is above 15.0 volts before returning to service.

5.6 Pitot/Static Leakage Test

This test must be done to make sure there are no leaks in the pitot or static pneumatic tubes. The check needs to be performed anytime the pitot and static pneumatic tubes are removed from the ADAHRS module or the EFIS-D10A Standby Display.

This test must be used when performing pitot/static, transponder, or other tests that manipulate either the pitot or static pressures.

Equipment:

- Calibrated pitot/static tester
- Rubber or plastic tube

5.6.1 Pitot System Leak Test Procedure

1. Put a piece of tape over the small hole in lower aft end of pitot tube.
2. Attach a piece of rubber or plastic tubing over pitot tube and close opposite end of tube.
3. Make sure both SkyView HDX Display and EFIS-D10A Standby Display are powered on.

4. Slowly roll up tube until airspeed indicator shows in cruise range of 120-140 Knots.
5. Attach tube to prevent air pressure change and look at airspeed on SkyView HDX Display and EFIS-D10A Standby Display. After one minute, if there is a leak, pressure in system will be reduced, and you will see a lower airspeed on the displays.
6. If there is a leak in the system, you must examine and tighten all connections, hoses, and fittings before you do another check.
7. If there are no leaks, slowly unroll the tubing to let pressure in the instrument slowly return to ambient pressure.

5.6.2 Static System Leak Test Procedure

1. Make sure that static system is free of restrictions and moisture.
2. Make sure that there are no alterations or deformations to airframe surface that may affect relation between the air pressure in static pressure system and true ambient static air pressure for any flight configuration.
3. Close static pressure alternate source control.
4. Attach a vacuum source to static pressure source opening.
5. Make sure both SkyView HDX Display and EFIS-D10A Standby Display are powered on.
6. Slowly apply vacuum source until altimeter indication is a 1,000-foot increase in altitude indicated on both SkyView HDX Display and EFIS-D10A Standby Display.
7. Cut off vacuum source to make sure that there is a closed system for one minute.
8. If altimeter loss on SkyView HDX Display or EFIS-D10A Standby Display is not more than 100 feet after one minute, then the system is good, and you can slowly release vacuum until the system goes back to ambient. If altimeter loss is more than 100 feet, tighten all connections and perform leak test again.

5.7 Zero Pressure IAS/AoA Calibration

This calibration samples pitot, static, and AoA pressures. It should be performed before the AoA calibration. Calibration should be performed in a windless environment to allow the SkyView HDX system to provide the best possible Indicated Airspeed (IAS) readings at very low airspeeds.

- To calibrate, go to SETUP > HARDWARE CALIBRATION > ADAHRS CALIBRATION > ZERO PRESSURE IAS/AOA CALIBRATION and follow the on-screen instructions.

5.8 AoA Calibration

Perform the following calibration after the Zero Pressure IAS/AoA Calibration. If a Dynon Avionics AoA/Pitot Sensor is re-installed, a calibration is required. This calibration is performed while flying.

- Once you are flying straight and level at a safe altitude for stalls, go into the AoA Calibration Wizard (IN FLIGHT SETUP MENU > AOA CALIBRATION) and follow the onscreen instructions to calibrate angle of attack while in flight.

5.9 Transponder Tests

The transponder must be tested and inspected per FAR 91.413 and AC 43.13-1B.

Post-installation tests should be carried out in accordance with your certification requirements. These tests should include the following:

- Mode-S interrogations to verify correct address programming.
- Verification of the reported altitude using a static tester.
- Where installed, verification of correct squat switch ground/airborne indications. In an aircraft with a squat switch, setting the Mode switch to ALT when the aircraft is on the ground should leave the Transponder in GND mode; when the aircraft becomes airborne, the mode should switch automatically to ALT.
- Interrogations to verify the receiver sensitivity. A Mode-S transponder should have a minimum triggering level (MTL) of between -77 dBm and -71 dBm. Failure to meet this requirement usually indicates antenna or coaxial cable problems.
- Interrogations to verify the transmitted power. A Class 1 installation should have no less than 125 Watts at the antenna (and no more than 500 Watts). A Class 2 installation should have no less than 71 Watts at the antenna (and no more than 500 Watts). Failure to meet this requirement is also generally due to antenna or wiring issues.
- Verification of the GPS position source and ADS-B outputs. Whenever a valid position is received by the Transponder and it is in any mode other than Standby, ADS-B Extended Squitter should be observed on the Transponder test set.

5.9.1 Manual ALT/GND Mode Switching

Transponder checks require manual switching to ALT and GND mode.

1. The Transponder is normally configured to automatically switch between GND and ALT mode, based on airspeed and other parameters – SETUP MENU > TRANSPONDER SETUP > AUTO ALT/GND > AUTOMATIC (AIR DATA). In this mode, in the XPNDR menu, the GND button does not appear, and the ALT button will not change mode unless you are in flight.
2. Some aircraft may be equipped with a squat switch for Transponder mode control; before changing AUTO ALT/GND, record which squat switch configuration is set. You will need this information to restore AUTO ALT/GND to this setting after Transponder testing is complete.
3. To be able to manually switch the Transponder between ALT and GND mode, you must temporarily reconfigure the transponder: SETUP MENU > TRANSPONDER SETUP > AUTO ALT/GND > NONE > EXIT (button).
4. The Transponder can now be manually switched to ALT and GND modes: XPNDR > ALT and XPNDR > GND.SV-ADSB-472 ADS-B IN Receiver.

After transponder testing is complete, remember to return the transponder to its normal configuration: SETUP MENU > TRANSPONDER SETUP > AUTO ALT/GND > AUTOMATIC (AIR DATA).

5.9.2 Manipulating Altitude

If the test on your Transponder requires manipulating the static pressure, be sure to manipulate static pressure only after activating SkyView HDX's pitot/static test mode. Pitot/static test mode is accessed via SETUP MENU > HARDWARE CALIBRATION.

Connect Pitot and Static to the same test pressure altitude, or strange attitude behaviors may occur.

5.10 Compass Calibration

Performing an in-flight compass calibration after an on-ground compass calibration can increase the magnetic heading accuracy of the compass. The best compass performance will be achieved by performing the on-ground compass calibration, then performing the in-flight compass calibration. It is not required that the in-flight compass calibration be performed immediately after the on-ground compass calibration.

The on-ground compass calibration requires pointing the airplane in four (4) directions and acquiring data at each direction. An accurate method of aligning the airplane with magnetic north, east, south, and west, such as an airport's compass rose, is required.

During the compass calibration, the airplane's configuration and major systems should be in a state that resembles flight conditions (i.e. the aircraft's pitch attitude matches SkyView HDX's attitude depiction and all electronic devices used in flight should be on).

5.10.1 On-ground Compass Calibration

1. Turn on SkyView HDX system and allow it to warm up for a minimum of 5 minutes.
2. Using a compass rose, move aircraft into position so that it is convenient to orient it in four (4) cardinal directions.
3. Enter Setup Menu on SkyView HDX Display and go to Compass Calibration Wizard (SETUP MENU > HARDWARE CALIBRATION > ADAHRS CALIBRATION > COMPASS CALIBRATION).

   NOTE: GPS data on the Compass Calibration Page must be green. If it is red, GPS data is not valid.
4. Orient airplane to north, south, east, or west.
5. When airplane is stable at chosen orientation, push button indicating the direction the airplane is oriented. For example, when the airplane is pointed north, push the NORTH button.
6. Wait for data collection to reach 100%.
7. Rotate to next cardinal direction and repeat steps 4, 5, and 6 for all remaining headings.
8. When calibration is complete, a CALIBRATION COMPLETE message appears. Press FINISH to return to menu navigation mode.

5.10.2 In-flight Compass Calibration

While the in-flight compass calibration is optional, it will likely improve the dynamic performance of the heading indications of your airplane.

The in-flight compass calibration should be conducted on a clear, VFR day. Before commencing the compass calibration, ensure that you have adequate altitude, clear weather, no traffic, no obstructions in the flight path, great visibility, and no airspace conflicts. It is recommended that clearing turns be performed before executing each procedure.

It is recommended that you bring someone along for the in-flight compass calibration procedure. At times the pilot's attention will be divided between reading documentation, configuring the SkyView HDX Display, and maintaining situational awareness.

Confine the flying for the in-flight compass calibration to a specific area to minimize variations in the earth's magnetic field during the calibration process (i.e. don't combine the in-flight compass calibration with a cross-country flight).

The best compass performance will be achieved by performing the in-flight compass calibration *AFTER* the on-ground compass calibration has been performed.

Calibration Procedure:

1. While observing conditions listed above, push Buttons 7 and 8 simultaneously to enter IN-FLIGHT SETUP MENU.
2. Select COMPASS CALIBRATION.
3. Click knob to enter in-flight COMPASS CALIBRATION menu (see Figure 79).

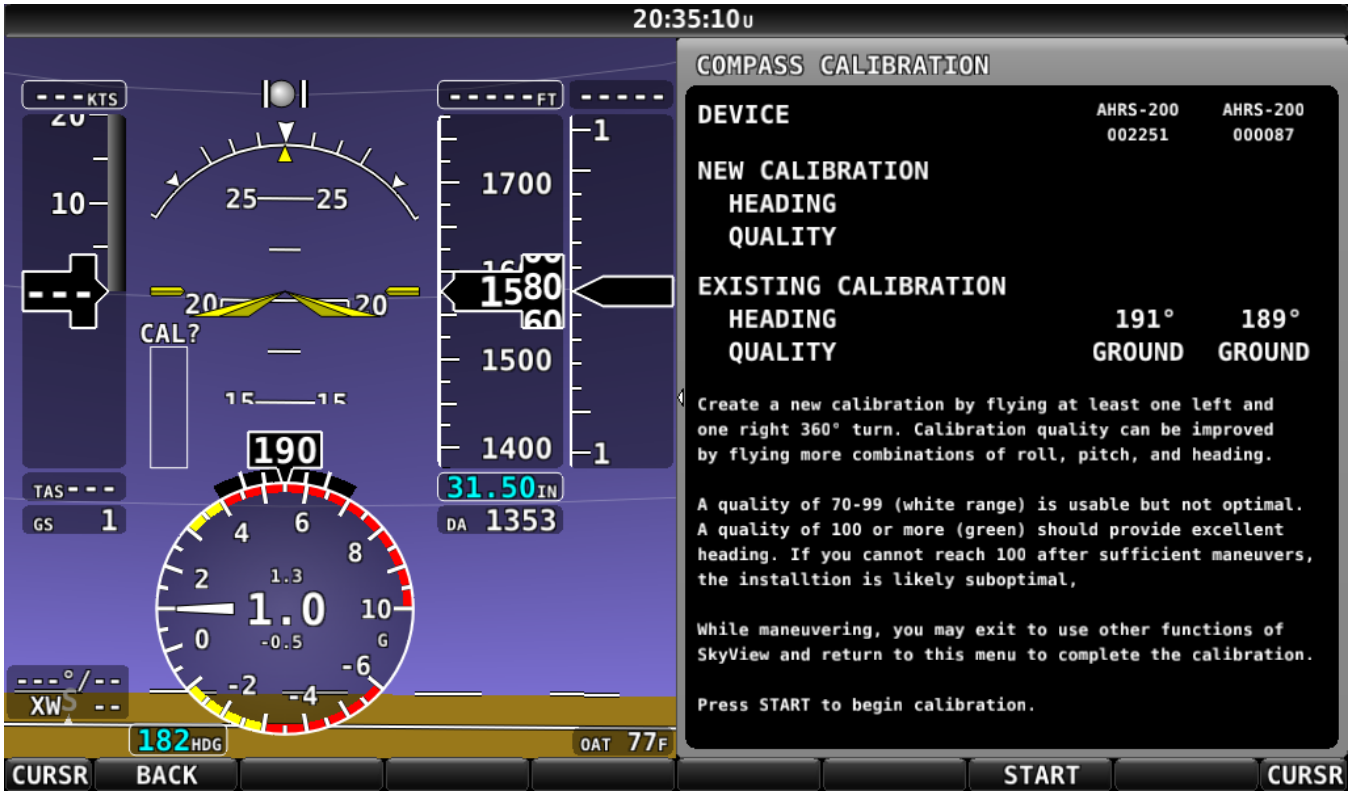

Figure 79: In-Flight Compass Calibration Menu

4. Push START button to begin calibration.
5. View NEW CALIBRATION section of menu. The goal of the in-flight compass calibration is to achieve a compass calibration "quality" of at least 100.
6. Perform calibration maneuvers. The minimum maneuvers for in-flight compass calibration are one (1) 360° turn clockwise, and one (1) 360° turn counterclockwise. Flying additional maneuvers that incorporate pitch and roll changes will likely improve the in-flight compass calibration.
7. When the quality is as high as you can obtain (minimum is 70), push the FINISH button to complete the in-flight compass calibration. Flying additional maneuvers beyond the minimum may improve in-flight compass calibration but will not make it worse.

   QUALITY of 70-99 is acceptable, but not optimum; the accuracy of your magnetic heading may not be acceptable. Additionally, a sub-optimal quality may have the following effects:

   - Degraded performance of the SkyView Autopilot (AP) in HDG and NAV modes.
   - Degraded accuracy of wind direction and velocity.

   If, after multiple attempts at in-flight compass calibration, you cannot achieve a quality of at least 70, it's likely the compass sensor in the Remote Magnetometer module cannot sense the earth's magnetic field with enough precision (excessive magnetic interference). The location of the Remote Magnetometer module should then be changed.

6 Airworthiness Limitations

There are no new or additional Airworthiness Limitations associated with this equipment and/or installation as defined in 14 CFR § 23, Appendix G. G23.4 that result from this modification.

The Airworthiness Limitations Section is FAA-approved and specifies maintenance required under 14 CFR §43.16 and §91.403 of the Federal Aviation Regulations unless an alternative program has been approved by the FAA.

FAA Approved

Jeff Morfitt
Small Airplanes and Engines Program Manager
Seattle ACO Branch; Compliance and Airworthiness Division; AIR-780